

# ETSI TS 125 123 V11.0.0 (2012-11)



Technical Specification

**Universal Mobile Telecommunications System (UMTS);  
Requirements for support of radio  
resource management (TDD)  
(3GPP TS 25.123 version 11.0.0 Release 11)**



---

**Reference**

RTS/TSGR-0425123vb00

---

**Keywords**

UMTS

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

---

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

---

**Important notice**

---

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

[http://portal.etsi.org/chaicor/ETSI\\_support.asp](http://portal.etsi.org/chaicor/ETSI_support.asp)

---

**Copyright Notification**

---

No part may be reproduced except as authorized by written permission.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2012.  
All rights reserved.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.  
**3GPP™** and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.  
**GSM®** and the GSM logo are Trade Marks registered and owned by the GSM Association.

---

## Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://ipr.etsi.org>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

---

## Foreword

This Technical Specification (TS) has been produced by ETSI 3rd Generation Partnership Project (3GPP).

The present document may refer to technical specifications or reports using their 3GPP identities, UMTS identities or GSM identities. These should be interpreted as being references to the corresponding ETSI deliverables.

The cross reference between GSM, UMTS, 3GPP and ETSI identities can be found under <http://webapp.etsi.org/key/queryform.asp>.

# Contents

|  |    |
|--|----|
| Intellectual Property Rights .....   | 2  |
| Foreword.....  | 2  |
| Foreword.....  | 26 |
| 1 Scope .....  | 27 |
| 2 References .....   | 27 |
| 3 Definitions, symbols and abbreviations .....                                       | 28 |
| 3.1 Definitions .....  | 28 |
| 3.2 Symbols.....   | 29 |
| 3.3 Abbreviations .....  | 30 |
| 3.4 Test tolerances.....   | 30 |
| 4 Idle Mode .....  | 31 |
| 4.1 Cell Selection .....   | 31 |
| 4.1.1 Introduction.....  | 31 |
| 4.2 Cell Re-selection .....  | 31 |
| 4.2.1 Introduction.....  | 31 |
| 4.2.1.1 3.84 Mcps TDD option .....   | 31 |
| 4.2.1.2 1.28 Mcps TDD option .....   | 31 |
| 4.2.1.3 7.68 Mcps TDD option .....   | 31 |
| 4.2.2 Requirements .....   | 31 |
| 4.2.2.1 Measurement and evaluation of cell selection criteria S of serving cell..... | 32 |
| 4.2.2.1.1 3.84 Mcps TDD option.....  | 32 |
| 4.2.2.1.2 1.28 Mcps TDD option.....  | 32 |
| 4.2.2.1.3 7.68 Mcps TDD option.....  | 32 |
| 4.2.2.2 Measurement of intra-frequency cells.....                                    | 33 |
| 4.2.2.2.1 3.84 Mcps option .....   | 33 |
| 4.2.2.2.2 1.28 Mcps option .....   | 33 |
| 4.2.2.2.3 7.68 Mcps option.....  | 33 |
| 4.2.2.3 Measurement of inter-frequency TDD cells.....                                | 33 |
| 4.2.2.3.1 3.84 Mcps option.....  | 34 |
| 4.2.2.3.2 1.28 Mcps option.....  | 34 |
| 4.2.2.3.3 7.68 Mcps option.....  | 34 |
| 4.2.2.3A 1.28 Mcps TDD to 3.84 Mcps TDD cell re-selection .....                      | 35 |
| 4.2.2.3B 3.84 Mcps TDD to 1.28 Mcps TDD cell re-selection .....                      | 35 |
| 4.2.2.3C 7.68 Mcps TDD to 3.84 Mcps TDD cell re-selection .....                      | 36 |
| 4.2.2.3D 3.84 Mcps TDD to 7.68 Mcps TDD cell re-selection .....                      | 36 |
| 4.2.2.4 Measurement of inter-frequency FDD cells.....                                | 37 |
| 4.2.2.4.1 3.84 Mcps option.....  | 37 |
| 4.2.2.4.2 1.28 Mcps option.....  | 37 |
| 4.2.2.4.3 7.68 Mcps option.....  | 38 |
| 4.2.2.5 Measurement of inter-RAT GSM cells .....                                     | 38 |
| 4.2.2.5.1 3.84 Mcps option.....  | 38 |
| 4.2.2.5.2 1.28 Mcps option.....  | 39 |
| 4.2.2.5.3 7.68 Mcps option.....  | 39 |
| 4.2.2.5.4 Cell reselection based on priority information .....                       | 39 |
| 4.2.2.5a Measurements of inter-RAT E-UTRA cells.....                                 | 40 |
| 4.2.2.6 Evaluation of cell reselection criteria.....                                 | 41 |
| 4.2.2.6.1 3.84 Mcps option.....  | 41 |
| 4.2.2.6.2 1.28 Mcps option.....  | 41 |
| 4.2.2.6.3 7.68 Mcps option.....  | 41 |
| 4.2.2.7 Maximum interruption time in paging reception.....                           | 42 |
| 4.2.2.7.1 3.84 Mcps option.....  | 42 |
| 4.2.2.7.2 1.28 Mcps option.....  | 42 |
| 4.2.2.7.3 7.68 Mcps option.....  | 43 |

|           |   |    |
|-----------|---|----|
| 4.2.2.8   | Number of cells in cell lists.....  | 44 |
| 4.2.2.8.1 | 3.84 Mcps option.....   | 44 |
| 4.2.2.8.2 | 1.28 Mcps option.....   | 45 |
| 4.2.2.8.3 | 7.68 Mcps option.....   | 45 |
| 4.2.2.9   | Additional requirements for inter-frequency measurements when MBMS reception is active..... | 45 |
| 4.2.2.9.1 | 3.84 Mcps option.....   | 45 |
| 4.2.2.9.2 | (void).....   | 46 |
| 4.2.2.9.3 | 7.68 Mcps option.....   | 46 |
| 4.3       | MBSFN cluster selection for carriers dedicated to MBSFN .....                               | 46 |
| 4.3.1     | Introduction.....   | 46 |
| 4.4       | MBSFN cluster reselection for carriers dedicated to MBSFN .....                             | 46 |
| 4.4.1     | Introduction.....   | 46 |
| 4.5       | Minimization of Drive Tests (MDT).....  | 46 |
| 4.5.1     | 1.28 Mcps option .....  | 46 |
| 4.5.1.1   | Introduction.....   | 46 |
| 4.5.2     | Measurements .....  | 46 |
| 4.5.2.1   | Requirements .....  | 47 |
| 4.5.3     | Relative Time Stamp Accuracy .....  | 47 |
| 4.5.3.1   | Requirements .....  | 47 |
| 5         | UTRAN Connected Mode Mobility.....  | 47 |
| 5.1       | TDD/TDD Handover.....   | 47 |
| 5.1.1     | Introduction.....   | 47 |
| 5.1.1.1   | 3.84 Mcps TDD option .....  | 47 |
| 5.1.1.2   | 1.28 Mcps TDD option .....  | 47 |
| 5.1.1.3   | 7.68 Mcps TDD option .....  | 48 |
| 5.1.2     | Requirements .....  | 48 |
| 5.1.2.1   | TDD/TDD handover delay.....   | 48 |
| 5.1.2.1.1 | 3.84 Mcps TDD option.....   | 48 |
| 5.1.2.1.2 | 1.28 Mcps TDD option.....   | 48 |
| 5.1.2.1.3 | 7.68 Mcps TDD option.....   | 48 |
| 5.1.2.2   | Interruption time .....   | 49 |
| 5.1.2.2.1 | 3.84 Mcps TDD option.....   | 49 |
| 5.1.2.2.2 | 1.28 Mcps TDD option.....   | 49 |
| 5.1.2.2.3 | 7.68 Mcps TDD option.....   | 50 |
| 5.2       | TDD/FDD Handover.....   | 50 |
| 5.2.1     | Introduction.....   | 50 |
| 5.2.1.1   | 3.84 Mcps TDD option .....  | 50 |
| 5.2.1.2   | 1.28 Mcps TDD option .....  | 51 |
| 5.2.1.3   | 7.68 Mcps TDD option .....  | 51 |
| 5.2.2     | Requirements .....  | 51 |
| 5.2.2.1   | TDD/FDD handover delay.....   | 51 |
| 5.2.2.1.1 | 3.84 Mcps TDD option.....   | 51 |
| 5.2.2.1.2 | 1.28 Mcps TDD option.....   | 51 |
| 5.2.2.1.3 | 7.68 Mcps TDD option.....   | 51 |
| 5.2.2.2   | Interruption time .....   | 52 |
| 5.2.2.2.1 | 3.84 Mcps TDD option.....   | 52 |
| 5.2.2.2.2 | 1.28 Mcps TDD option.....   | 52 |
| 5.2.2.2.3 | 7.68 Mcps TDD option.....   | 53 |
| 5.3       | TDD/GSM Handover .....  | 53 |
| 5.3.1     | Introduction.....   | 53 |
| 5.3.1.1   | 3.84 Mcps TDD option .....  | 53 |
| 5.3.1.2   | 1.28 Mcps TDD option .....  | 54 |
| 5.3.1.3   | 7.68 Mcps TDD option .....  | 54 |
| 5.3.2     | Requirements .....  | 54 |
| 5.3.2.1   | TDD/GSM handover delay .....  | 54 |
| 5.3.2.1.1 | 3.84 Mcps TDD option.....   | 54 |
| 5.3.2.1.2 | 1.28 Mcps TDD option.....   | 54 |
| 5.3.2.1.3 | 7.68 Mcps TDD option.....   | 54 |
| 5.3.2.2   | Interruption time .....   | 55 |
| 5.3.2.2.1 | 3.84 Mcps TDD option.....   | 55 |
| 5.3.2.2.2 | 1.28 Mcps TDD option.....   | 55 |

|           |   |    |
|-----------|---|----|
| 5.3.2.2.3 | 7.68 Mcps TDD option.....   | 56 |
| 5.3a      | TDD to E-UTRAN FDD Handover .....   | 56 |
| 5.3a.1    | Introduction.....   | 56 |
| 5.3a.2    | Requirements .....  | 56 |
| 5.3a.2.1  | Handover delay .....  | 56 |
| 5.3a.2.2  | Interruption time .....   | 56 |
| 5.3b      | TDD to E-UTRAN TDD Handover .....   | 57 |
| 5.3b.1    | Introduction.....   | 57 |
| 5.3b.2    | Requirements .....  | 57 |
| 5.3b.2.1  | Handover delay .....  | 57 |
| 5.3b.2.2  | Interruption time .....   | 57 |
| 5.4       | Cell Re-selection in Cell_FACH.....   | 58 |
| 5.4.1     | Introduction.....   | 58 |
| 5.4.2     | Requirements for 3.84Mcps TDD option .....                                    | 58 |
| 5.4.2.1   | Cell re-selection delay.....  | 58 |
| 5.4.2.1.1 | Intra-frequency cell re-selection.....  | 58 |
| 5.4.2.1.2 | Inter-frequency cell re-selection.....  | 59 |
| 5.4.2.1.3 | TDD FDD cell re-selection.....  | 59 |
| 5.4.2.1.4 | Inter-RAT cell re-selection.....  | 60 |
| 5.4.2.2   | Interruption time .....   | 60 |
| 5.4.2.2.1 | TDD-TDD cell re-selection.....  | 61 |
| 5.4.2.2.2 | TDD-FDD cell re-selection .....   | 61 |
| 5.4.2.2.3 | TDD-GSM cell re-selection.....  | 61 |
| 5.4.2.3   | Measurement and evaluation of cell selection criteria S of serving cell ..... | 62 |
| 5.4.3     | Requirements for 1.28Mcps TDD option .....                                    | 62 |
| 5.4.3.1   | Measurements .....  | 62 |
| 5.4.3.2   | Cell re-selection delay.....  | 62 |
| 5.4.3.2.1 | Intra-frequency cell re-selection.....  | 62 |
| 5.4.3.2.2 | Inter-frequency TDD cell re-selection.....                                    | 63 |
| 5.4.3.2.3 | Inter-frequency FDD cell re-selection .....                                   | 64 |
| 5.4.3.2.4 | Inter-RAT cell re-selection.....  | 64 |
| 5.4.3.3   | Interruption time .....   | 65 |
| 5.4.3.3.1 | TDD-TDD cell re-selection.....  | 65 |
| 5.4.3.3.2 | TDD-FDD cell re-selection .....   | 65 |
| 5.4.3.3.3 | TDD-GSM cell re-selection.....  | 66 |
| 5.4.3.4   | Measurement and evaluation of cell selection criteria S of serving cell ..... | 66 |
| 5.4.4     | Requirements for 7.68Mcps TDD option .....                                    | 66 |
| 5.4.4.1   | Cell re-selection delay.....  | 67 |
| 5.4.4.1.1 | Intra-frequency cell re-selection.....  | 67 |
| 5.4.4.1.2 | Inter-frequency cell re-selection.....  | 67 |
| 5.4.4.1.3 | TDD FDD cell re-selection.....  | 68 |
| 5.4.4.1.4 | Inter-RAT cell re-selection.....  | 68 |
| 5.4.4.2   | Interruption time .....   | 69 |
| 5.4.4.2.1 | TDD-TDD cell re-selection.....  | 69 |
| 5.4.4.2.2 | TDD-FDD cell re-selection .....   | 69 |
| 5.4.4.2.3 | TDD-GSM cell re-selection.....  | 70 |
| 5.4.4.3   | Measurement and evaluation of cell selection criteria S of serving cell ..... | 70 |
| 5.5       | Cell Re-selection in Cell_PCH.....  | 71 |
| 5.5.1     | Introduction.....   | 71 |
| 5.5.2     | Requirements .....  | 71 |
| 5.5.2.1   | 3.84 Mcps option.....   | 71 |
| 5.5.2.2   | 1.28 Mcps option.....   | 71 |
| 5.5.2.3   | 7.68 Mcps option.....   | 71 |
| 5.6       | Cell Re-selection in URA_PCH.....   | 71 |
| 5.6.1     | Introduction.....   | 71 |
| 5.6.2     | Requirements .....  | 71 |
| 5.6.2.1   | 3.84 Mcps option.....   | 71 |
| 5.6.2.2   | 1.28 Mcps option.....   | 71 |
| 5.6.2.3   | 7.68 Mcps option.....   | 72 |
| 5.7       | RACH reporting .....  | 72 |
| 5.7.1     | Introduction.....   | 72 |
| 5.7.1.1   | 3.84 Mcps TDD option .....  | 72 |

|            |   |    |
|------------|---|----|
| 5.7.1.2    | 1.28 Mcps TDD option .....  | 72 |
| 5.7.1.3    | 7.68 Mcps TDD option .....  | 72 |
| 5.7.2      | Requirements .....  | 72 |
| 5.7.2.1    | 3.84 Mcps TDD option .....  | 72 |
| 5.7.2.2    | 1.28 Mcps TDD option .....  | 72 |
| 5.7.2.3    | 7.68 Mcps TDD option .....  | 73 |
| 5.8        | Inter-RAT cell change order from UTRAN in CELL_DCH and CELL_FACH..... | 73 |
| 5.8.1      | Introduction.....   | 73 |
| 5.8.1.1    | 3.84 Mcps TDD option .....  | 73 |
| 5.8.1.2    | 1.28 Mcps TDD option .....  | 73 |
| 5.8.1.3    | 7.68 Mcps TDD option .....  | 73 |
| 5.8.2      | Requirements .....  | 74 |
| 5.8.2.1    | Delay .....   | 74 |
| 5.8.2.1.1  | 3.84 Mcps TDD option.....   | 74 |
| 5.8.2.1.2  | 1.28 Mcps TDD option.....   | 74 |
| 5.8.2.1.3  | 7.68 Mcps TDD option.....   | 75 |
| 5.8.2.2    | Interruption time .....   | 75 |
| 5.8.2.2.1  | 3.84 Mcps TDD option.....   | 75 |
| 5.8.2.2.2  | 1.28 Mcps TDD option.....   | 76 |
| 5.8.2.2.3  | 7.68 Mcps TDD option.....   | 76 |
| 5.9        | Serving HS-DSCH cell change .....                                     | 77 |
| 5.9.1      | Introduction.....   | 77 |
| 5.9.1.1    | 3.84 Mcps option.....   | 77 |
| 5.9.1.2    | 1.28 Mcps option.....   | 77 |
| 5.9.1.3    | 7.68 Mcps option.....   | 77 |
| 5.9.2      | Requirements .....  | 77 |
| 5.9.2.1    | 3.84 Mcps option.....   | 77 |
| 5.9.2.2    | 1.28 Mcps option.....   | 77 |
| 5.9.2.2.1  | Serving HS-DSCH cell change delay .....                               | 77 |
| 5.9.2.2.2  | Processing time.....  | 77 |
| 5.9.2.3    | 7.68 Mcps option.....   | 78 |
| 6          | (void).....   | 78 |
| 6A         | RRC Connection Control .....  | 78 |
| 6A.1       | RRC re-establishment.....   | 78 |
| 6A.1.1     | Introduction.....   | 78 |
| 6A.1.2     | Requirements .....  | 78 |
| 6A.1.2.1   | 3.84Mcps TDD option .....   | 78 |
| 6A.1.2.1.1 | UE re-establishment delay requirement.....                            | 78 |
| 6A.1.2.2   | 1.28Mcps TDD option .....   | 79 |
| 6A.1.2.2.1 | Re-establishment delay requirement.....                               | 79 |
| 6A.1.2.3   | 7.68Mcps TDD option .....   | 80 |
| 6A.1.2.3.1 | UE re-establishment delay requirement.....                            | 80 |
| 6A.2       | Transport format combination selection in UE .....                    | 80 |
| 6A.2.1     | Introduction.....   | 80 |
| 6A.2.1.1   | 3.84 Mcps TDD option .....  | 81 |
| 6A.2.1.2   | 1.28 Mcps TDD option .....  | 81 |
| 6A.2.1.3   | 7.68 Mcps TDD option .....  | 81 |
| 6A.2.2     | Requirements .....  | 81 |
| 6A.2.2.1   | 3.84 Mcps TDD option .....  | 81 |
| 6A.2.2.2   | 1.28 Mcps TDD option .....  | 82 |
| 6A.2.2.3   | 7.68 Mcps TDD option .....  | 83 |
| 6A.3       | Maximum allowed UL TX Power.....                                      | 85 |
| 6A.3.1     | Introduction.....   | 85 |
| 6A.3.2     | Requirements .....  | 85 |
| 6A.3.2.1   | 3.84 Mcps option.....   | 85 |
| 6A.3.2.2   | 1.28 Mcps option.....   | 85 |
| 6A.3.2.3   | 7.68 Mcps option.....   | 85 |
| 6A.4       | Random Access .....   | 85 |
| 6A.4.1     | Introduction.....   | 85 |
| 6A.4.2     | Requirements .....  | 85 |

|             |   |    |
|-------------|---|----|
| 6A.4.2.1    | 3.84 Mcps TDD option .....  | 85 |
| 6A.4.2.2    | 1.28 Mcps TDD option .....  | 86 |
| 6A.4.2.2.1  | Correct behaviour when receiving FPACH .....                                      | 86 |
| 6A.4.2.2.2  | Correct behaviour when reaching maximum allowed UL transmit power .....           | 86 |
| 6A.4.2.3    | 7.68 Mcps TDD option .....  | 86 |
| 7           | Timing characteristics .....  | 86 |
| 7.1         | Timing Advance .....  | 86 |
| 7.1.1       | 3.84 Mcps TDD option .....  | 86 |
| 7.1.1.1     | Introduction .....  | 86 |
| 7.1.1.2     | Requirements .....  | 87 |
| 7.1.1.2.1   | Timing Advance adjustment accuracy .....  | 87 |
| 7.1.1.2.2   | Timing Advance adjustment delay .....   | 87 |
| 7.1.2       | 1.28 Mcps TDD option .....  | 87 |
| 7.1.2.1     | Uplink synchronization control requirements for UE for 1.28 Mcps TDD option ..... | 87 |
| 7.1.2.1.1   | Uplink synchronization control steps .....  | 87 |
| 7.1.2.1.1.1 | Minimum requirement .....   | 87 |
| 7.1.3       | 7.68 Mcps TDD option .....  | 88 |
| 7.1.3.1     | Introduction .....  | 88 |
| 7.1.3.2     | Requirements .....  | 88 |
| 7.1.3.2.1   | Timing Advance adjustment accuracy .....  | 88 |
| 7.1.3.2.2   | Timing Advance adjustment delay .....   | 88 |
| 7.2         | Cell synchronization accuracy .....   | 88 |
| 7.2.1       | Definition .....  | 88 |
| 7.2.2       | Minimum requirements .....  | 88 |
| 7.3         | UE Transmit Timing for 3.84 Mcps TDD Option .....                                 | 88 |
| 7.3.1       | Definition .....  | 88 |
| 7.3.2       | Minimum Requirement .....   | 88 |
| 7.3A        | UE Transmit Timing for 7.68 Mcps TDD Option .....                                 | 89 |
| 7.3A.1      | Definition .....  | 89 |
| 7.3A.2      | Minimum Requirement .....   | 89 |
| 7.4         | UE timer accuracy .....   | 89 |
| 7.4.1       | Introduction .....  | 89 |
| 7.4.2       | Requirements .....  | 89 |
| 7.5         | UE Uplink Synchronization .....   | 89 |
| 7.5.1       | 3.84 Mcps TDD option .....  | 89 |
| 7.5.2       | 1.28 Mcps TDD option .....  | 89 |
| 7.5.2.1     | Uplink synchronization control for PRACH .....                                    | 89 |
| 7.5.2.1.1   | Introduction .....  | 89 |
| 7.5.2.1.2   | Requirements .....  | 90 |
| 7.5.2.2     | Uplink synchronization control during handover .....                              | 90 |
| 7.5.2.2.1   | Introduction .....  | 90 |
| 7.5.2.2.2   | Requirements .....  | 90 |
| 7.5.3       | 7.68 Mcps TDD option .....  | 91 |
| 8           | UE Measurements Procedures .....  | 91 |
| 8.1         | General Measurement Requirements in CELL_DCH State (3.84 Mcps option) .....       | 91 |
| 8.1.1       | Introduction .....  | 91 |
| 8.1.2       | Requirements .....  | 91 |
| 8.1.2.1     | UE Measurement Capability .....   | 91 |
| 8.1.2.2     | TDD intra frequency measurements .....  | 92 |
| 8.1.2.2.1   | Identification of a new cell .....  | 92 |
| 8.1.2.2.2   | UE P-CCPCH RSCP measurement capability .....                                      | 92 |
| 8.1.2.2.2A  | Timeslot ISCP measurement capability .....  | 93 |
| 8.1.2.2.3   | Periodic Reporting .....  | 93 |
| 8.1.2.2.4   | Event-triggered Periodic Reporting .....  | 93 |
| 8.1.2.2.5   | Event Triggered Reporting .....   | 93 |
| 8.1.2.3     | TDD inter frequency measurements .....  | 93 |
| 8.1.2.3.1   | Identification of a new cell .....  | 94 |
| 8.1.2.3.2   | P-CCPCH RSCP measurement period .....   | 94 |
| 8.1.2.3.3   | Periodic Reporting .....  | 95 |
| 8.1.2.3.4   | Event Triggered Reporting .....   | 95 |



|              |  |     |
|--------------|--|-----|
| 8.1.2.4      | FDD measurements .....   | 95  |
| 8.1.2.4.1    | Identification of a new cell .....   | 95  |
| 8.1.2.4.2    | UE CPICH measurement capability .....  | 95  |
| 8.1.2.4.3    | Periodic Reporting .....   | 96  |
| 8.1.2.4.4    | Event Triggered Reporting .....  | 96  |
| 8.1.2.5      | GSM measurements .....   | 96  |
| 8.1.2.5.1    | GSM carrier RSSI .....   | 97  |
| 8.1.2.5.2    | BSIC verification .....  | 97  |
| 8.1.2.5.2.1  | Initial BSIC identification .....  | 98  |
| 8.1.2.5.2.2  | BSIC re-confirmation .....   | 99  |
| 8.1.2.5.3    | Periodic Reporting .....   | 99  |
| 8.1.2.5.4    | Event Triggered Reporting .....  | 99  |
| 8.1.2.6      | TDD Synchronisation to new cells .....                                       | 100 |
| 8.1.2.7      | E-UTRAN FDD measurements .....   | 100 |
| 8.1.2.7.1    | Identification of a new cell .....   | 100 |
| 8.1.2.7.2    | E-UTRAN RSRP and RSRQ measurement period .....                               | 101 |
| 8.1.2.7.3    | Periodic reporting .....   | 101 |
| 8.1.2.7.4    | Void .....   | 101 |
| 8.1.2.7.5    | Event Triggered reporting .....  | 101 |
| 8.1.2.8      | E-UTRAN TDD measurements .....   | 101 |
| 8.1.2.8.1    | Identification of a new cell .....   | 102 |
| 8.1.2.8.2    | E-UTRAN RSRP and RSRQ measurement period .....                               | 102 |
| 8.1.2.8.3    | Periodic reporting .....   | 102 |
| 8.1.2.8.4    | Void .....   | 102 |
| 8.1.2.8.5    | Event Triggered reporting .....  | 102 |
| 8.1A         | General Measurements Requirements in CELL_DCH State (1.28 Mcps option) ..... | 103 |
| 8.1A.1       | Introduction .....   | 103 |
| 8.1A.2       | Requirements .....   | 103 |
| 8.1A.2.1     | UE Measurement Capability .....  | 103 |
| 8.1A.2.2     | TDD intra frequency measurements .....                                       | 104 |
| 8.1A.2.2.1   | Identification of a new cell .....   | 104 |
| 8.1A.2.2.2   | UE P-CCPCH RSCP measurement capability .....                                 | 104 |
| 8.1A.2.2.2A  | Timeslot ISCP measurement capability .....                                   | 105 |
| 8.1A.2.2.3   | Periodic Reporting .....   | 105 |
| 8.1A.2.2.4   | Event-triggered Periodic Reporting .....                                     | 105 |
| 8.1A.2.2.5   | Event Triggered Reporting .....  | 105 |
| 8.1A.2.3     | TDD inter frequency measurements .....                                       | 106 |
| 8.1A.2.3.1   | Identification of a new cell .....   | 106 |
| 8.1A.2.3.2   | UE P-CCPCH RSCP measurement capability .....                                 | 106 |
| 8.1A.2.3.3   | Periodic Reporting .....   | 106 |
| 8.1A.2.3.4   | Event Triggered Reporting .....  | 107 |
| 8.1A.2.4     | FDD measurements .....   | 107 |
| 8.1A.2.4.1   | Identification of a new cell .....   | 107 |
| 8.1A.2.4.2   | UE CPICH measurement capability .....  | 107 |
| 8.1A.2.4.3   | Periodic Reporting .....   | 108 |
| 8.1A.2.4.4   | Event Triggered Reporting .....  | 108 |
| 8.1A.2.5     | GSM measurements .....   | 108 |
| 8.1A.2.5.1   | GSM carrier RSSI .....   | 108 |
| 8.1A.2.5.2   | BSIC verification .....  | 109 |
| 8.1A.2.5.2.1 | Initial BSIC identification .....  | 110 |
| 8.1A.2.5.2.2 | BSIC re-confirmation .....   | 110 |
| 8.1A.2.5.2.3 | Periodic Reporting .....   | 110 |
| 8.1A.2.5.2.4 | Event Triggered Reporting .....  | 110 |
| 8.1A.2.6     | E-UTRAN FDD measurements .....   | 111 |
| 8.1A.2.6.1   | Identification of a new cell .....   | 111 |
| 8.1A.2.6.2   | E-UTRAN RSRP and RSRQ measurement period .....                               | 112 |
| 8.1A.2.6.3   | Periodic reporting .....   | 112 |
| 8.1A.2.6.4   | void .....   | 112 |
| 8.1A.2.6.5   | Event Triggered reporting .....  | 112 |
| 8.1A.2.7     | E-UTRAN TDD measurements .....   | 112 |
| 8.1A.2.7.1   | Identification of a new cell .....   | 112 |
| 8.1A.2.7.2   | E-UTRAN RSRP and RSRQ measurement period .....                               | 113 |

|              |  |     |
|--------------|--|-----|
| 8.1A.2.7.3   | Periodic reporting .....   | 113 |
| 8.1A.2.7.4   | void .....   | 113 |
| 8.1A.2.7.5   | Event Triggered reporting .....  | 113 |
| 8.1B         | General Measurement Requirements in CELL_DCH State (7.68 Mcps option) .....                                    | 114 |
| 8.1B.1       | Introduction .....   | 114 |
| 8.1B.2       | Requirements .....   | 114 |
| 8.1B.2.1     | UE Measurement Capability .....  | 114 |
| 8.1B.2.2     | TDD intra frequency measurements .....   | 115 |
| 8.1B.2.2.1   | Identification of a new cell .....   | 115 |
| 8.1B.2.2.2   | UE P-CCPCH RSCP measurement capability .....   | 115 |
| 8.1B.2.2.3   | Timeslot ISCP measurement capability .....   | 115 |
| 8.1B.2.2.4   | Periodic Reporting .....   | 116 |
| 8.1B.2.2.5   | Event-triggered Periodic Reporting .....   | 116 |
| 8.1B.2.2.6   | Event Triggered Reporting .....  | 116 |
| 8.1B.2.3     | TDD inter frequency measurements .....   | 116 |
| 8.1B.2.3.1   | Identification of a new cell .....   | 116 |
| 8.1B.2.3.2   | P-CCPCH RSCP measurement period .....  | 117 |
| 8.1B.2.3.3   | Periodic Reporting .....   | 117 |
| 8.1B.2.3.4   | Event Triggered Reporting .....  | 117 |
| 8.1B.2.4     | FDD measurements .....   | 118 |
| 8.1B.2.4.1   | Identification of a new cell .....   | 118 |
| 8.1B.2.4.2   | UE CPICH measurement capability .....  | 118 |
| 8.1B.2.4.3   | Periodic Reporting .....   | 119 |
| 8.1B.2.4.4   | Event Triggered Reporting .....  | 119 |
| 8.1B.2.5     | GSM measurements .....   | 119 |
| 8.1B.2.5.1   | GSM carrier RSSI .....   | 119 |
| 8.1B.2.5.2   | BSIC verification .....  | 120 |
| 8.1B.2.5.2.1 | Initial BSIC identification .....  | 121 |
| 8.1B.2.5.2.2 | BSIC re-confirmation .....   | 122 |
| 8.1B.2.5.3   | Periodic Reporting .....   | 122 |
| 8.1B.2.5.4   | Event Triggered Reporting .....  | 122 |
| 8.1B.2.6     | TDD Synchronisation to new cells .....   | 122 |
| 8.1B.2.7     | E-UTRAN FDD measurements .....   | 123 |
| 8.1B.2.7.1   | Identification of a new cell .....   | 123 |
| 8.1B.2.7.2   | E-UTRAN RSRP and RSRQ measurement period .....   | 123 |
| 8.1B.2.7.3   | Periodic reporting .....   | 124 |
| 8.1B.2.7.4   | Void .....   | 124 |
| 8.1B.2.7.5   | Event Triggered reporting .....  | 124 |
| 8.1B.2.8     | E-UTRAN TDD measurements .....   | 124 |
| 8.1B.2.8.1   | Identification of a new cell .....   | 124 |
| 8.1B.2.8.2   | E-UTRAN RSRP and RSRQ measurement period .....   | 125 |
| 8.1B.2.8.3   | Periodic reporting .....   | 125 |
| 8.1B.2.8.4   | Void .....   | 125 |
| 8.1B.2.8.5   | Event Triggered reporting .....  | 125 |
| 8.2          | Measurements in CELL_DCH State with special requirements (3.84 Mcps option) .....                              | 126 |
| 8.2.1        | Introduction .....   | 126 |
| 8.2.2        | Requirements .....   | 126 |
| 8.2A         | Parallel Measurements in CELL_DCH State (1.28 Mcps option) .....   | 126 |
| 8.2A.1       | Introduction .....   | 126 |
| 8.2A.2       | Requirements .....   | 126 |
| 8.2B         | Measurements in CELL_DCH State with special requirements (7.68 Mcps option) .....                              | 127 |
| 8.2B.1       | Introduction .....   | 127 |
| 8.2B.2       | Requirements .....   | 127 |
| 8.3          | Capabilities for Support of Event Triggering and Reporting Criteria in CELL_DCH state (3.84 Mcps option) ..... | 127 |
| 8.3.1        | Introduction .....   | 127 |
| 8.3.2        | Requirements .....   | 128 |
| 8.3A         | Capabilities for Support of Event Triggering and Reporting Criteria in CELL_DCH State (1.28 Mcps option) ..... | 128 |
| 8.3A.1       | Introduction .....   | 128 |
| 8.3A.2       | Requirements .....   | 128 |

|              |  |     |
|--------------|--|-----|
| 8.3B         | Capabilities for Support of Event Triggering and Reporting Criteria in CELL_DCH state (7.68 Mcps option) ..... | 129 |
| 8.3B.1       | Introduction.....  | 129 |
| 8.3B.2       | Requirements .....   | 129 |
| 8.4          | Measurements in CELL_FACH State (3.84 Mcps option).....  | 130 |
| 8.4.1        | Introduction.....  | 130 |
| 8.4.2        | Requirements .....   | 130 |
| 8.4.2.1      | UE Measurement Capability .....  | 130 |
| 8.4.2.2      | TDD intra frequency measurements.....  | 131 |
| 8.4.2.2.1    | Identification of a new cell .....   | 131 |
| 8.4.2.2.2    | UE P-CCPCH RSCP measurement capability.....  | 131 |
| 8.4.2.2.3    | (void) .....   | 132 |
| 8.4.2.2.4    | (void) .....   | 132 |
| 8.4.2.2.5    | Timeslot ISCP measurement capability.....  | 132 |
| 8.4.2.2.6    | RACH reporting .....   | 132 |
| 8.4.2.3      | TDD inter frequency measurements.....  | 132 |
| 8.4.2.3.1    | Identification of a new cell .....   | 132 |
| 8.4.2.3.2    | P-CCPCH RSCP measurement period .....  | 132 |
| 8.4.2.3.3    | (void) .....   | 133 |
| 8.4.2.3.4    | (void) .....   | 133 |
| 8.4.2.4      | FDD measurements .....   | 133 |
| 8.4.2.4.1    | Identification of a new cell .....   | 133 |
| 8.4.2.4.2    | UE CPICH measurement capability .....  | 133 |
| 8.4.2.4.3    | (void) .....   | 134 |
| 8.4.2.4.4    | (void) .....   | 134 |
| 8.4.2.5      | GSM measurements .....   | 134 |
| 8.4.2.5.1    | GSM carrier RSSI.....  | 134 |
| 8.4.2.5.2    | BSIC verification.....   | 135 |
| 8.4.2.5.2.1  | Initial BSIC identification.....   | 136 |
| 8.4.2.5.2.2  | BSIC re-confirmation.....  | 137 |
| 8.4A         | Measurements in CELL_FACH State (1.28 Mcps option).....  | 137 |
| 8.4A.1       | Introduction.....  | 137 |
| 8.4A.2       | Requirements .....   | 137 |
| 8.4A.2.1     | UE Measurement Capability .....  | 137 |
| 8.4A.2.2     | TDD intra frequency measurements.....  | 138 |
| 8.4A.2.2.1   | Identification of a new cell .....   | 138 |
| 8.4A.2.2.2   | UE P-CCPCH RSCP measurement capability.....  | 138 |
| 8.4A.2.2.2A  | Timeslot ISCP measurement capability.....  | 139 |
| 8.4A.2.2.3   | RACH Reporting .....   | 139 |
| 8.4A.2.3     | TDD inter frequency measurements.....  | 139 |
| 8.4A.2.3.1   | Identification of a new cell .....   | 139 |
| 8.4A.2.3.2   | UE P-CCPCH RSCP measurement capability.....  | 139 |
| 8.4A.2.4     | FDD measurements .....   | 140 |
| 8.4A.2.4.1   | Identification of a new cell .....   | 140 |
| 8.4A.2.4.2   | UE CPICH measurement capability .....  | 140 |
| 8.4A.2.5     | GSM measurements .....   | 141 |
| 8.4A.2.5.1   | GSM carrier RSSI.....  | 141 |
| 8.4A.2.5.2   | BSIC verification.....   | 142 |
| 8.4A.2.5.2.1 | Initial BSIC identification.....   | 143 |
| 8.4A.2.5.2.2 | BSIC re-confirmation.....  | 143 |
| 8.4B         | Measurements in CELL_FACH State (7.68 Mcps option).....  | 143 |
| 8.4B.1       | Introduction.....  | 143 |
| 8.4B.2       | Requirements .....   | 144 |
| 8.4B.2.1     | UE Measurement Capability .....  | 144 |
| 8.4B.2.2     | TDD intra frequency measurements.....  | 145 |
| 8.4B.2.2.1   | Identification of a new cell .....   | 145 |
| 8.4B.2.2.2   | UE P-CCPCH RSCP measurement capability.....  | 145 |
| 8.4B.2.2.3   | Timeslot ISCP measurement capability.....  | 145 |
| 8.4B.2.2.4   | RACH reporting .....   | 145 |
| 8.4B.2.3     | TDD inter frequency measurements.....  | 145 |
| 8.4B.2.3.1   | Identification of a new cell .....   | 146 |
| 8.4B.2.3.2   | P-CCPCH RSCP measurement period .....  | 146 |

|              |   |     |
|--------------|---|-----|
| 8.4B.2.4     | FDD measurements .....  | 146 |
| 8.4B.2.4.1   | Identification of a new cell .....  | 146 |
| 8.4B.2.4.2   | UE CPICH measurement capability .....   | 147 |
| 8.4B.2.5     | GSM measurements .....  | 147 |
| 8.4B.2.5.1   | GSM carrier RSSI.....   | 148 |
| 8.4B.2.5.2   | BSIC verification.....  | 148 |
| 8.4B.2.5.2.1 | Initial BSIC identification.....  | 149 |
| 8.4B.2.5.2.2 | BSIC re-confirmation.....   | 150 |
| 8.5          | Capabilities for Support of Event Triggering and Reporting Criteria in CELL_FACH state (3.84 Mcps TDD option) ..... | 150 |
| 8.5.1        | Introduction.....   | 150 |
| 8.5.2        | Requirements .....  | 150 |
| 8.5A         | Capabilities for Support of Event Triggering and Reporting Criteria in CELL_FACH state (1.28 Mcps option) .....     | 151 |
| 8.5A.1       | Introduction.....   | 151 |
| 8.5A.2       | Requirements .....  | 151 |
| 8.5B         | Capabilities for Support of Event Triggering and Reporting Criteria in CELL_FACH state (7.68 Mcps TDD option) ..... | 151 |
| 8.5B.1       | Introduction.....   | 151 |
| 8.5B.2       | Requirements .....  | 151 |
| 9            | Measurements performance requirements.....  | 151 |
| 9.1          | Measurements performance for UE.....  | 152 |
| 9.1.1        | Performance for UE measurements in downlink (RX) .....  | 152 |
| 9.1.1.1      | P-CCPCH RSCP (TDD) .....  | 152 |
| 9.1.1.1.1    | Absolute accuracy requirements.....   | 152 |
| 9.1.1.1.1.1  | 3.84 Mcps TDD option .....  | 152 |
| 9.1.1.1.1.2  | 1.28 Mcps TDD option .....  | 152 |
| 9.1.1.1.1.3  | 7.68 Mcps TDD option .....  | 153 |
| 9.1.1.1.2    | Relative accuracy requirements.....   | 153 |
| 9.1.1.1.2.1  | 3.84 Mcps TDD option .....  | 153 |
| 9.1.1.1.2.2  | 1.28 Mcps TDD option .....  | 154 |
| 9.1.1.1.2.3  | 7.68 Mcps TDD option .....  | 155 |
| 9.1.1.1.3    | Range/mapping.....  | 155 |
| 9.1.1.2      | CPICH measurements (FDD).....   | 156 |
| 9.1.1.2.1    | CPICH RSCP .....  | 156 |
| 9.1.1.2.1.1  | Inter frequency measurement absolute accuracy requirement .....   | 156 |
| 9.1.1.2.1.2  | Range/mapping .....   | 156 |
| 9.1.1.2.2    | CPICH Ec/Io.....  | 157 |
| 9.1.1.2.2.1  | Inter frequency measurement relative accuracy requirement.....  | 157 |
| 9.1.1.2.2.2  | Range/mapping .....   | 157 |
| 9.1.1.3      | Timeslot ISCP .....   | 157 |
| 9.1.1.3.1    | Absolute accuracy requirements.....   | 158 |
| 9.1.1.3.1.1  | 3.84 Mcps TDD option .....  | 158 |
| 9.1.1.3.1.2  | 1.28 Mcps TDD option .....  | 158 |
| 9.1.1.3.1.3  | 7.68 Mcps TDD option .....  | 158 |
| 9.1.1.3.2    | Range/mapping.....  | 158 |
| 9.1.1.4      | UTRA carrier RSSI .....   | 158 |
| 9.1.1.4.1    | Absolute accuracy requirement .....   | 159 |
| 9.1.1.4.1.1  | 3.84 Mcps TDD option .....  | 159 |
| 9.1.1.4.1.2  | 1.28 Mcps TDD option .....  | 159 |
| 9.1.1.4.1.3  | 7.68 Mcps TDD option .....  | 159 |
| 9.1.1.4.2    | Relative accuracy requirement .....   | 159 |
| 9.1.1.4.2.1  | 3.84 Mcps TDD option .....  | 159 |
| 9.1.1.4.2.2  | 1.28 Mcps TDD option .....  | 159 |
| 9.1.1.4.2.3  | 7.68 Mcps TDD option .....  | 160 |
| 9.1.1.4.3    | Range/mapping.....  | 160 |
| 9.1.1.5      | GSM carrier RSSI .....  | 160 |
| 9.1.1.5a     | E-UTRAN RSRP .....  | 161 |
| 9.1.1.5b     | E-UTRAN RSRQ .....  | 161 |
| 9.1.1.6      | SIR .....   | 161 |
| 9.1.1.6.1    | Absolute accuracy requirements.....   | 161 |

|              |  |     |
|--------------|--|-----|
| 9.1.1.6.1.1  | 3.84 Mcps TDD option .....   | 161 |
| 9.1.1.6.1.2  | 1.28 Mcps TDD option .....   | 162 |
| 9.1.1.6.1.3  | 7.68 Mcps TDD option .....   | 162 |
| 9.1.1.6.2    | Range/mapping.....   | 162 |
| 9.1.1.7      | Transport channel BLER.....  | 162 |
| 9.1.1.7.1    | BLER measurement requirement .....                                   | 162 |
| 9.1.1.7.2    | Range/mapping.....   | 162 |
| 9.1.1.8      | SFN-SFN observed time difference .....                               | 163 |
| 9.1.1.8.1    | Accuracy requirements .....  | 163 |
| 9.1.1.8.1.1  | 3.84 Mcps TDD option .....   | 163 |
| 9.1.1.8.1.2  | 1.28 Mcps TDD option .....   | 163 |
| 9.1.1.8.1.3  | 7.68 Mcps TDD option .....   | 164 |
| 9.1.1.8.2    | Range/mapping.....   | 164 |
| 9.1.1.8.2.1  | 3.84 Mcps TDD option .....   | 164 |
| 9.1.1.8.2.2  | 1.28 Mcps TDD option .....   | 165 |
| 9.1.1.8.2.3  | 7.68 Mcps TDD option .....   | 165 |
| 9.1.1.9      | Observed time difference to GSM cell.....                            | 166 |
| 9.1.1.9.1    | Accuracy requirements .....  | 166 |
| 9.1.1.9.2    | Range/mapping.....   | 166 |
| 9.1.1.10     | UE GPS Timing of Cell Frames for UP.....                             | 167 |
| 9.1.1.10.1   | Accuracy requirement .....   | 167 |
| 9.1.1.10.1.1 | 3.84 Mcps TDD Option .....   | 167 |
| 9.1.1.10.1.2 | 1.28 Mcps TDD Option .....   | 167 |
| 9.1.1.10.1.3 | 7.68 Mcps TDD Option .....   | 167 |
| 9.1.1.10.2   | UE GPS timing of Cell Frames for UP measurement report mapping ..... | 168 |
| 9.1.1.10.2.1 | 3.84 Mcps TDD Option .....   | 168 |
| 9.1.1.10.2.2 | 1.28 Mcps TDD Option .....   | 168 |
| 9.1.1.10.2.3 | 7.68 Mcps TDD Option .....   | 168 |
| 9.1.1.11     | SFN-CFN observed time difference.....                                | 169 |
| 9.1.1.11.1   | Accuracy requirements .....  | 169 |
| 9.1.1.11.1.1 | 3.84 Mcps TDD Option .....   | 169 |
| 9.1.1.11.1.2 | 1.28 Mcps TDD Option .....   | 169 |
| 9.1.1.11.1.3 | 7.68 Mcps TDD Option .....   | 170 |
| 9.1.1.11.2   | Range/mapping.....   | 170 |
| 9.1.2        | Performance for UE Measurements in Uplink (TX).....                  | 171 |
| 9.1.2.1      | UE transmitted power .....   | 171 |
| 9.1.2.1.1    | Absolute accuracy requirements.....                                  | 171 |
| 9.1.2.1.2    | Range/mapping.....   | 172 |
| 9.1.2.2      | Timing Advance ( $T_{ADV}$ ) for 1.28 Mcps TDD.....                  | 172 |
| 9.1.2.2.1    | Accuracy requirements.....   | 172 |
| 9.1.2.2.2    | Range/mapping.....   | 172 |
| 9.1.2.3      | UE transmission power headroom .....                                 | 173 |
| 9.1.2.3.1    | 3.84Mcps TDD Option.....   | 173 |
| 9.1.2.3.2    | 1.28 Mcps TDD Option.....  | 173 |
| 9.1.2.3.2.1  | Delay requirement.....   | 173 |
| 9.1.2.3.1.2  | Measurement period requirement .....                                 | 173 |
| 9.1.2.3.1.3  | UE transmission power headroom measurement report mapping.....       | 173 |
| 9.1.2.3.1.4  | UE transmission power headroom measurement report accuracy .....     | 174 |
| 9.2          | Measurements Performance for UTRAN .....                             | 175 |
| 9.2.1        | Performance for UTRAN Measurements in Uplink (RX) .....              | 175 |
| 9.2.1.1      | RSCP.....  | 175 |
| 9.2.1.1.1    | Absolute accuracy requirements.....                                  | 175 |
| 9.2.1.1.1.1  | 3.84 Mcps TDD Option .....   | 175 |
| 9.2.1.1.1.2  | 1.28 Mcps TDD Option .....   | 175 |
| 9.2.1.1.1.3  | 7.68 Mcps TDD Option .....   | 176 |
| 9.2.1.1.2    | Relative accuracy requirements.....                                  | 176 |
| 9.2.1.1.2.1  | 3.84 Mcps TDD Option .....   | 176 |
| 9.2.1.1.2.2  | 1.28 Mcps TDD Option .....   | 176 |
| 9.2.1.1.2.3  | 7.68 Mcps TDD Option .....   | 177 |
| 9.2.1.1.3    | Range/mapping.....   | 177 |
| 9.2.1.2      | Timeslot ISCP .....  | 177 |
| 9.2.1.2.1    | Absolute accuracy requirements.....                                  | 177 |

|             |  |     |
|-------------|--|-----|
| 9.2.1.2.1.1 | 3.84 Mcps TDD Option .....                               | 177 |
| 9.2.1.2.1.2 | 1.28 Mcps TDD Option .....                               | 178 |
| 9.2.1.2.1.3 | 7.68 Mcps TDD Option .....                               | 178 |
| 9.2.1.2.2   | Range/mapping.....                                       | 178 |
| 9.2.1.3     | Received Total Wide Band Power .....                     | 178 |
| 9.2.1.3.1   | Absolute accuracy requirements.....                      | 179 |
| 9.2.1.3.1.1 | 3.84 Mcps TDD Option .....                               | 179 |
| 9.2.1.3.1.2 | 1.28 Mcps TDD Option .....                               | 179 |
| 9.2.1.3.1.3 | 7.68 Mcps TDD Option .....                               | 179 |
| 9.2.1.3.2   | Range/mapping.....                                       | 179 |
| 9.2.1.4     | SIR .....  | 180 |
| 9.2.1.4.1   | Absolute accuracy requirements.....                      | 180 |
| 9.2.1.4.1.1 | 3.84 Mcps TDD Option .....                               | 180 |
| 9.2.1.4.1.2 | 1.28 Mcps TDD Option .....                               | 180 |
| 9.2.1.4.1.3 | 7.68 Mcps TDD Option .....                               | 180 |
| 9.2.1.4.2   | Range/mapping.....                                       | 180 |
| 9.2.1.5     | Transport Channel BER .....                              | 181 |
| 9.2.1.5.1   | Accuracy requirement .....                               | 181 |
| 9.2.1.5.2   | Range/mapping.....                                       | 181 |
| 9.2.1.6     | RX Timing Deviation.....                                 | 182 |
| 9.2.1.6.1   | Accuracy requirements .....                              | 182 |
| 9.2.1.6.1.1 | 3.84 Mcps TDD option .....                               | 182 |
| 9.2.1.6.1.2 | 1.28 Mcps TDD option .....                               | 182 |
| 9.2.1.6.1.3 | 7.68 Mcps TDD option .....                               | 182 |
| 9.2.1.6.2   | Range/mapping.....                                       | 182 |
| 9.2.1.6.2.1 | 3.84 Mcps TDD option .....                               | 182 |
| 9.2.1.6.2.2 | 1.28 Mcps TDD option .....                               | 182 |
| 9.2.1.6.2.3 | 7.68 Mcps TDD option .....                               | 183 |
| 9.2.1.7     | (void).....  | 183 |
| 9.2.1.8     | (void).....  | 183 |
| 9.2.1.9     | UTRAN GPS Timing of Cell Frames for UP.....              | 183 |
| 9.2.1.9.1   | Accuracy requirement .....                               | 183 |
| 9.2.1.9.1.1 | 3.84 Mcps TDD Option .....                               | 183 |
| 9.2.1.9.1.2 | 1.28 Mcps TDD Option .....                               | 184 |
| 9.2.1.9.1.3 | 7.68 Mcps TDD Option .....                               | 184 |
| 9.2.1.9.2   | Range/mapping.....                                       | 184 |
| 9.2.1.9.2.1 | 3.84 Mcps TDD Option .....                               | 184 |
| 9.2.1.9.2.2 | 1.28 Mcps TDD Option .....                               | 184 |
| 9.2.1.9.2.3 | 7.68 Mcps TDD Option .....                               | 185 |
| 9.2.1.10    | SYNC-UL Timing Deviation for 1.28 Mcps.....              | 185 |
| 9.2.1.10.1  | Accuracy requirements .....                              | 185 |
| 9.2.1.10.2  | Range/mapping.....                                       | 185 |
| 9.2.1.11    | Node B Synchronisation for 3.84 Mcps.....                | 186 |
| 9.2.1.11.1  | Cell Synchronisation burst timing Type1 and Type 2 ..... | 186 |
| 9.2.1.11.2  | Range/mapping Type 1.....                                | 186 |
| 9.2.1.11.3  | Range/mapping Type 2.....                                | 186 |
| 9.2.1.11.4  | Cell Synchronisation burst SIR Type1 and Type2 .....     | 187 |
| 9.2.1.11.5  | Range/Mapping for Type1 and Type 2.....                  | 187 |
| 9.2.1.11B   | Node B Synchronisation for 1.28Mcps TDD.....             | 187 |
| 9.2.1.11B.1 | Cell Synchronisation burst timing Type1 and Type 2 ..... | 187 |
| 9.2.1.11B.2 | Range/mapping Type 1.....                                | 188 |
| 9.2.1.11B.3 | Range/mapping Type 2.....                                | 188 |
| 9.2.1.11B.4 | Cell Synchronisation burst SIR Type1 and Type2 .....     | 188 |
| 9.2.1.11B.5 | Range/Mapping for Type1 and Type 2.....                  | 188 |
| 9.2.1.11C   | Node B Synchronisation for 7.68 Mcps.....                | 189 |
| 9.2.1.11C.1 | Cell Synchronisation burst timing Type1 and Type 2 ..... | 189 |
| 9.2.1.11C.2 | Range/mapping Type 1.....                                | 189 |
| 9.2.1.11C.3 | Range/mapping Type 2.....                                | 189 |
| 9.2.1.11C.4 | Cell Synchronisation burst SIR Type1 and Type2 .....     | 190 |
| 9.2.1.11C.5 | Range/Mapping for Type1 and Type 2.....                  | 190 |
| 9.2.1.12    | SFN-SFN observed time difference .....                   | 190 |
| 9.2.1.12.1  | Accuracy requirements.....                               | 190 |

|  |   |            |
|--|---|------------|
| 9.2.1.12.1.1                                 | 3.84 Mcps TDD option .....  | 190        |
| 9.2.1.12.1.2                                 | 1.28 Mcps TDD option .....  | 191        |
| 9.2.1.12.1.3                                 | 7.68 Mcps TDD option .....  | 191        |
| 9.2.1.12.2                                   | Range/mapping.....  | 191        |
| 9.2.1.12.2.1                                 | 3.84 Mcps TDD option .....  | 191        |
| 9.2.1.12.2.2                                 | 1.28 Mcps TDD option .....  | 191        |
| 9.2.1.12.2.3                                 | 7.68 Mcps TDD option .....  | 192        |
| 9.2.1.13                                     | AOA measurement for UE positioning for 1.28Mcps TDD option .....  | 192        |
| 9.2.1.13.1                                   | Accuracy requirements.....  | 192        |
| 9.2.1.13.2                                   | Range/mapping.....  | 192        |
| 9.2.1.14                                     | HS-SICH reception quality .....   | 193        |
| 9.2.1.14.1                                   | Range/mapping.....  | 193        |
| 9.2.1.14.1.1                                 | 3.84 Mcps TDD and 7.68 Mcps TDD.....  | 193        |
| 9.2.1.14.1.2                                 | 1.28 Mcps TDD .....   | 194        |
| 9.2.1.15                                     | UpPTS interference (1.28Mcps TDD) .....   | 194        |
| 9.2.1.15.1                                   | Absolute accuracy requirements.....   | 194        |
| 9.2.1.15.2                                   | Range/mapping.....  | 195        |
| 9.2.2  | Performance for UTRAN measurements in downlink (TX).....  | 195        |
| 9.2.2.1                                      | Transmitted carrier power .....   | 195        |
| 9.2.2.1.1                                    | Accuracy requirements.....  | 195        |
| 9.2.2.1.2                                    | Range/mapping.....  | 195        |
| 9.2.2.2                                      | Transmitted code power .....  | 196        |
| 9.2.2.2.1                                    | Absolute accuracy requirements.....   | 196        |
| 9.2.2.2.2                                    | Relative accuracy requirements.....   | 196        |
| 9.2.2.2.3                                    | Range/mapping.....  | 196        |
| 9.2.2.3                                      | Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission..... | 197        |
| 9.2.2.3.1                                    | Accuracy requirements.....  | 197        |
| 9.2.2.3.2                                    | Range/mapping.....  | 197        |
| 10   | FPACH physical layer information field definition (1.28 Mcps TDD) .....                                   | 197        |
| 10.1   | Received starting position of the UpPCH (UpPCH <sub>POS</sub> ) (1.28 Mcps TDD) .....                     | 198        |
| 10.2   | Transmit Power Level Command for the RACH message (1.28 Mcps TDD) .....                                   | 198        |
| 10.2.1                                       | Accuracy requirements .....   | 198        |
| 10.2.2                                       | Range/mapping .....   | 198        |
| <b>Annex A (normative): Test Cases .....</b> |   | <b>199</b> |
| A.1  | Purpose of Annex .....  | 199        |
| A.2  | Requirement classification for statistical testing.....   | 199        |
| A.2.1  | Types of requirements in TS 25.123 .....  | 199        |
| A.2.1.1                                      | Time and delay requirements on UE higher layer actions .....  | 199        |
| A.2.1.2                                      | Measurements of power levels, relative powers and time .....  | 200        |
| A.2.1.3                                      | Implementation requirements .....   | 200        |
| A.2.1.4                                      | Physical layer timing requirements.....   | 200        |
| A.2.1.5                                      | BER and BLER requirements.....  | 200        |
| A.3  | RRM test configurations .....   | 200        |
| A.3.1  | UE with single antenna connector.....   | 200        |
| A.3.2  | UE with multiple antenna connectors.....  | 200        |
| A.4  | Idle Mode .....   | 200        |
| A.4.1  | Cell selection.....   | 200        |
| A.4.2  | Cell Re-Selection.....  | 201        |
| A.4.2.1                                      | Scenario 1: Cell re-selection to intra frequency TDD cell .....   | 201        |
| A.4.2.1.1                                    | Test Purpose and Environment .....  | 201        |
| A.4.2.1.1.1                                  | 3.84 Mcps TDD option.....   | 201        |
| A.4.2.1.1.2                                  | 1.28 Mcps TDD option.....   | 202        |
| A.4.2.1.1.3                                  | 7.68 Mcps TDD option.....   | 204        |
| A.4.2.1.2                                    | Test Requirements.....  | 205        |
| A.4.2.1.2.1                                  | 3.84 Mcps TDD option.....   | 205        |
| A.4.2.1.2.2                                  | 1.28 Mcps TDD option.....   | 206        |
| A.4.2.1.2.3                                  | 7.68 Mcps TDD option.....   | 206        |

|               |  |     |
|---------------|--|-----|
| A.4.2.2       | Scenario 2: Cell re-selection to inter-frequency TDD cell.....           | 206 |
| A.4.2.2.1     | Test Purpose and Environment .....                                       | 206 |
| A.4.2.2.1.1   | 3.84 Mcps TDD option.....  | 206 |
| A.4.2.2.1.2   | 1.28 Mcps TDD option.....  | 208 |
| A.4.2.2.1.3   | 7.68 Mcps TDD option.....  | 209 |
| A.4.2.2.2     | Test Requirements.....   | 211 |
| A.4.2.2.2.1   | 3.84 Mcps TDD option.....  | 211 |
| A.4.2.2.2.2   | 1.28 Mcps TDD option.....  | 211 |
| A.4.2.2.2.3   | 7.68 Mcps TDD option.....  | 211 |
| A.4.2.2A      | Scenario 2A: 3.84 Mcps TDD cell re-selection for 1.28 Mcps TDD UE .....  | 212 |
| A.4.2.2A.1    | Test Purpose and Environment .....                                       | 212 |
| A.4.2.2A.2    | Test Requirements.....   | 213 |
| A.4.2.2B      | Scenario 2B: 3.84 Mcps/1.28 Mcps TDD cell re-selection.....              | 213 |
| A.4.2.2B.1    | Test Purpose and Environment .....                                       | 213 |
| A.4.2.2B.2    | Test Requirements.....   | 215 |
| A.4.2.2C      | Scenario 2C: 3.84 Mcps TDD cell re-selection for 7.68 Mcps TDD UE.....   | 215 |
| A.4.2.2C.1    | Test Purpose and Environment .....                                       | 215 |
| A.4.2.2C.2    | Test Requirements.....   | 216 |
| A.4.2.2D      | Scenario 2D: 3.84 Mcps/7.68 Mcps TDD cell re-selection .....             | 217 |
| A.4.2.2D.1    | Test Purpose and Environment .....                                       | 217 |
| A.4.2.2E      | Scenario 2E: 1.28Mcps TDD inter-band cell re-selection .....             | 218 |
| A.4.2.2E.1    | Test Purpose and Environment .....                                       | 218 |
| A.4.2.2E.2    | Test Requirements.....   | 218 |
| A.4.2.3       | Scenario 3: TDD/FDD cell re-selection.....                               | 219 |
| A.4.2.3.1     | Test Purpose and Environment .....                                       | 219 |
| A.4.2.3.1.1   | 3.84 Mcps TDD option.....  | 219 |
| A.4.2.3.1.2   | 1.28 Mcps TDD option.....  | 220 |
| A.4.2.3.1.3   | 7.68 Mcps TDD option.....  | 221 |
| A.4.2.3.2     | Test Requirements.....   | 222 |
| A.4.2.3.2.1   | 3.84 Mcps TDD option.....  | 222 |
| A.4.2.3.2.2   | 1.28 Mcps TDD option.....  | 223 |
| A.4.2.3.2.3   | 7.68 Mcps TDD option.....  | 223 |
| A.4.2.4       | Scenario 4: inter RAT cell re-selection.....                             | 223 |
| A.4.2.4.1     | Test Purpose and Environment .....                                       | 223 |
| A.4.2.4.1.1   | 3.84 Mcps TDD option.....  | 223 |
| A.4.2.4.1.2   | 1.28 Mcps TDD option.....  | 224 |
| A.4.2.4.1.3   | 7.68 Mcps TDD option.....  | 225 |
| A.4.2.4.2     | Test Requirements.....   | 226 |
| A.4.2.4.2.1   | 3.84 Mpcs TDD option.....  | 226 |
| A.4.2.4.2.2   | 1.28 Mpcs TDD option.....  | 227 |
| A.4.2.4.2.3   | 7.68 Mpcs TDD option.....  | 227 |
| A.4.2.4.3     | Scenario 4A Test Purpose and Environment.....                            | 228 |
| A.4.2.4.3.1   | (void).....  | 228 |
| A.4.2.4.3.2   | 1.28 Mcps TDD option.....  | 228 |
| A.4.2.4.4     | Scenario 4A Requirements.....  | 229 |
| A.4.2.4.4.1   | (void).....  | 229 |
| A.4.2.4.4.2   | 1.28 Mpcs TDD option.....  | 229 |
| A.4.2.4.5     | Scenario 4B: HCS with only UTRA level changed .....                      | 229 |
| A.4.2.4.5.1   | Test Purpose and Environment.....  | 229 |
| A.4.2.4.5.1.1 | 3.84 Mcps TDD option .....   | 229 |
| A.4.2.4.5.1.2 | 1.28 Mcps TDD option .....   | 229 |
| A.4.2.4.5.1.3 | 7.68 Mcps TDD option .....   | 230 |
| A.4.2.4.5.2   | Requirements.....  | 231 |
| A.4.2.4.5.2.1 | 3.84 Mcps TDD option .....   | 231 |
| A.4.2.4.5.2.2 | 1.28 Mcps TDD option .....   | 231 |
| A.4.2.4.5.2.3 | 7.68 Mcps TDD option .....   | 231 |
| A.4.2.5       | Scenario 5: TDD/E-UTRA cell re-selection .....                           | 231 |
| A.4.2.5.1     | UTRA to E-UTRA TDD cell re-selection: E-UTRA is of higher priority ..... | 231 |
| A.4.2.5.1.1   | Test Purpose and Environment.....  | 231 |
| A.4.2.5.1.1.1 | 3.84 Mcps TDD option .....   | 231 |
| A.4.2.5.1.1.2 | 1.28 Mcps TDD option .....   | 231 |
| A.4.2.5.1.1.3 | 7.68 Mcps TDD option .....   | 233 |



|               |   |     |
|---------------|---|-----|
| A.4.2.5.1.2   | Test Requirements .....   | 233 |
| A.4.2.5.1.2.1 | 3.84 Mcps TDD option .....  | 233 |
| A.4.2.5.1.2.2 | 1.28 Mcps TDD option .....  | 233 |
| A.4.2.5.2     | UTRA to E-UTRA TDD cell re-selection: E-UTRA is of lower priority ..... | 234 |
| A.4.2.5.2.1   | Test Purpose and Environment .....                                      | 234 |
| A.4.2.5.2.1.1 | 3.84 Mcps TDD option .....  | 234 |
| A.4.2.5.2.1.2 | 1.28 Mcps TDD option .....  | 234 |
| A.4.2.5.2.1.3 | 7.68 Mcps TDD option .....  | 236 |
| A.4.2.5.2.2   | Test Requirements .....   | 236 |
| A.4.2.5.2.2.1 | 3.84 Mcps TDD option .....  | 236 |
| A.4.2.5.2.2.2 | 1.28 Mcps TDD option .....  | 236 |
| A.5           | UTRAN Connected Mode Mobility .....                                     | 237 |
| A.5.1         | TDD/TDD Handover .....  | 237 |
| A.5.1.1       | 3.84Mcps TDD option .....   | 237 |
| A.5.1.1.1     | Handover to intra-frequency cell .....                                  | 237 |
| A.5.1.1.1.1   | Test Purpose and Environment .....                                      | 237 |
| A.5.1.1.1.2   | Test Requirements .....   | 238 |
| A.5.1.1.2     | Handover to inter-frequency cell .....                                  | 238 |
| A.5.1.1.2.1   | Test Purpose and Environment .....                                      | 238 |
| A.5.1.1.2.2   | Test Requirements .....   | 239 |
| A.5.1.2       | 1.28Mcps TDD option .....   | 240 |
| A.5.1.2.1     | Handover to intra-frequency cell .....                                  | 240 |
| A.5.1.2.1.1   | Scenario 1 .....  | 240 |
| A.5.1.2.1.1.1 | Test Purpose and Environment .....                                      | 240 |
| A.5.1.2.1.1.2 | Test Requirements .....   | 241 |
| A.5.1.2.1.2   | Scenario 2 .....  | 241 |
| A.5.1.2.1.2.1 | Test Purpose and Environment .....                                      | 241 |
| A.5.1.2.1.2.2 | Test Requirements .....   | 243 |
| A.5.1.2.2     | Handover to inter-frequency cell .....                                  | 243 |
| A.5.1.2.2.1   | Scenario 1 .....  | 243 |
| A.5.1.2.2.1.1 | Test Purpose and Environment .....                                      | 243 |
| A.5.1.2.2.1.2 | Test Requirements .....   | 245 |
| A.5.1.2.2.2   | Scenario 2 .....  | 245 |
| A.5.1.2.2.2.1 | Test Purpose and Environment .....                                      | 245 |
| A.5.1.2.2.2.2 | Test Requirements .....   | 247 |
| A.5.1.2.3     | Handover to inter-band cell .....                                       | 247 |
| A.5.1.2.3.1   | Scenario 1 .....  | 247 |
| A.5.1.2.3.1.1 | Test Purpose and Environment .....                                      | 247 |
| A.5.1.2.3.1.2 | Test Requirements .....   | 249 |
| A.5.1.2.3.2   | Scenario 2 .....  | 249 |
| A.5.1.2.3.2.1 | Test Purpose and Environment .....                                      | 249 |
| A.5.1.2.3.2.2 | Test Requirements .....   | 251 |
| A.5.1.3       | 7.68Mcps TDD option .....   | 253 |
| A.5.1.3.1     | Handover to intra-frequency cell .....                                  | 253 |
| A.5.1.3.1.1   | Test Purpose and Environment .....                                      | 253 |
| A.5.1.3.1.2   | Test Requirements .....   | 254 |
| A.5.1.3.2     | Handover to inter-frequency cell .....                                  | 255 |
| A.5.1.3.2.1   | Test Purpose and Environment .....                                      | 255 |
| A.5.1.3.2.2   | Test Requirements .....   | 256 |
| A.5.2         | TDD/FDD Handover .....  | 256 |
| A.5.2.1       | 3.84 Mcps TDD option .....  | 256 |
| A.5.2.1.1     | Test purpose and Environment .....                                      | 256 |
| A.5.2.1.2     | Test Requirements .....   | 258 |
| A.5.2.2       | 1.28 Mcps TDD option .....  | 258 |
| A.5.2.2.1     | Test purpose and Environment .....                                      | 258 |
| A.5.2.2.2     | Test Requirements .....   | 260 |
| A.5.2.3       | 7.68 Mcps TDD option .....  | 260 |
| A.5.2.3.1     | Test purpose and Environment .....                                      | 260 |
| A.5.2.3.2     | Test Requirements .....   | 262 |
| A.5.3         | TDD/GSM Handover .....  | 262 |
| A.5.3.1       | Test Purpose and Environment .....                                      | 262 |

|             |  |     |
|-------------|--|-----|
| A.5.3.1.1   | 3.84 Mcps TDD option .....                                 | 262 |
| A.5.3.1.2   | 1.28 Mcps TDD option .....                                 | 264 |
| A.5.3.1.3   | 7.68 Mcps TDD option .....                                 | 265 |
| A.5.3.2     | Test Requirements .....                                    | 267 |
| A.5.3.2.1   | 3.84 Mcps TDD option .....                                 | 267 |
| A.5.3.2.2   | 1.28 Mcps TDD option .....                                 | 267 |
| A.5.3.2.3   | 7.68 Mcps TDD option .....                                 | 267 |
| A.5.3a      | TDD to E-UTRA FDD Handover .....                           | 267 |
| A.5.3a.1    | Test Purpose and Environment .....                         | 267 |
| A.5.3a.1.1  | 3.84 Mcps TDD option .....                                 | 267 |
| A.5.3a.1.2  | 1.28 Mcps TDD option .....                                 | 267 |
| A.5.3a.1.3  | 7.68 Mcps TDD option .....                                 | 269 |
| A.5.3a.2    | Test Requirements .....                                    | 269 |
| A.5.3a.2.1  | 3.84 Mcps TDD option .....                                 | 269 |
| A.5.3a.2.2  | 1.28 Mcps TDD option .....                                 | 269 |
| A.5.3a.2.3  | 7.68 Mcps TDD option .....                                 | 269 |
| A.5.3b      | TDD to E-UTRA TDD Handover .....                           | 270 |
| A.5.3b.1    | Test Purpose and Environment .....                         | 270 |
| A.5.3b.1.1  | 3.84 Mcps TDD option .....                                 | 270 |
| A.5.3b.1.2  | 1.28 Mcps TDD option .....                                 | 270 |
| A.5.3b.1.3  | 7.68 Mcps TDD option .....                                 | 272 |
| A.5.3b.2    | Test Requirements .....                                    | 272 |
| A.5.3b.2.1  | 3.84 Mcps TDD option .....                                 | 272 |
| A.5.3b.2.2  | 1.28 Mcps TDD option .....                                 | 272 |
| A.5.3b.2.3  | 7.68 Mcps TDD option .....                                 | 272 |
| A.5.3c      | UTRA TDD to E-UTRA FDD handover: unknown target cell ..... | 272 |
| A.5.3c.1    | Test Purpose and Environment .....                         | 272 |
| A.5.3c.1.1  | 3.84 Mcps TDD option .....                                 | 272 |
| A.5.3c.1.2  | 1.28 Mcps TDD option .....                                 | 272 |
| A.5.3c.1.3  | 7.68 Mcps TDD option .....                                 | 274 |
| A.5.3c.2    | Test Requirements .....                                    | 274 |
| A.5.3c.2.1  | 3.84 Mcps TDD option .....                                 | 274 |
| A.5.3c.2.2  | 1.28 Mcps TDD option .....                                 | 274 |
| A.5.3c.2.3  | 7.68 Mcps TDD option .....                                 | 274 |
| A.5.3d      | UTRA TDD to E-UTRA TDD handover: unknown target cell ..... | 275 |
| A.5.3d.1    | Test Purpose and Environment .....                         | 275 |
| A.5.3d.1.1  | 3.84 Mcps TDD option .....                                 | 275 |
| A.5.3d.1.2  | 1.28 Mcps TDD option .....                                 | 275 |
| A.5.3d.1.3  | 7.68 Mcps TDD option .....                                 | 276 |
| A.5.3d.2    | Test Requirements .....                                    | 277 |
| A.5.3d.2.1  | 3.84 Mcps TDD option .....                                 | 277 |
| A.5.3d.2.2  | 1.28 Mcps TDD option .....                                 | 277 |
| A.5.3d.2.3  | 7.68 Mcps TDD option .....                                 | 277 |
| A.5.3e      | TDD/GSM Handover: Non-synchronization target cell .....    | 277 |
| A.5.3e.1    | Test Purpose and Environment .....                         | 277 |
| A.5.3e.1.1  | 3.84 Mcps TDD option .....                                 | 277 |
| A.5.3e.1.2  | 1.28 Mcps TDD option .....                                 | 277 |
| A.5.3e.1.3  | 7.68 Mcps TDD option .....                                 | 278 |
| A.5.3e.2    | Test Requirements .....                                    | 278 |
| A.5.3e.2.1  | 3.84 Mcps TDD option .....                                 | 278 |
| A.5.3e.2.2  | 1.28 Mcps TDD option .....                                 | 278 |
| A.5.3e.2.3  | 7.68 Mcps TDD option .....                                 | 278 |
| A.5.4       | Cell Re-selection in CELL_FACH .....                       | 279 |
| A.5.4.1     | 3.84 Mcps TDD option .....                                 | 279 |
| A.5.4.1.1   | Scenario 1: Re-selection to intra-frequency TDD cell ..... | 279 |
| A.5.4.1.1.1 | Test Purpose and Environment .....                         | 279 |
| A.5.4.1.1.2 | Test Requirements .....                                    | 280 |
| A.5.4.1.2   | Scenario 2: Re-selection to inter-frequency TDD cell ..... | 281 |
| A.5.4.1.2.1 | Test Purpose and Environment .....                         | 281 |
| A.5.4.1.2.2 | Test Requirements .....                                    | 283 |
| A.5.4.2     | 1.28 Mcps TDD option .....                                 | 283 |
| A.5.4.2.1   | Re-selection to intra-frequency TDD cell .....             | 283 |

|              |   |     |
|--------------|---|-----|
| A.5.4.2.1.1  | Test purpose and Environment .....                              | 283 |
| A.5.4.2.1.2  | Test Requirements .....   | 284 |
| A.5.4.2.2    | Re-selection to inter-frequency TDD cell .....                  | 285 |
| A.5.4.2.2.1  | Test Purpose and Environment .....                              | 285 |
| A.5.4.2.2.2  | Test Requirements .....   | 288 |
| A.5.4.2.3    | Re-selection to GSM cell .....                                  | 288 |
| A.5.4.2.3.1  | Test Purpose and Environment .....                              | 288 |
| A.5.4.2.3.2  | Test Requirements .....   | 289 |
| A.5.4.3      | 7.68 Mcps TDD option .....                                      | 290 |
| A.5.4.3.1    | Scenario 1: TDD/TDD cell re-selection single carrier case ..... | 290 |
| A.5.4.3.1.1  | Test Purpose and Environment .....                              | 290 |
| A.5.4.3.1.2  | Test Requirements .....   | 292 |
| A.5.4.3.2    | Scenario 2: TDD/TDD cell re-selection multi carrier case .....  | 292 |
| A.5.4.1.2.1  | Test Purpose and Environment .....                              | 292 |
| A.5.4.3.2.2  | Test Requirements .....   | 294 |
| A.5.4A       | Cell Re-selection in Enhanced CELL_FACH .....                   | 294 |
| A.5.4A.1     | 3.84 Mcps TDD option .....                                      | 294 |
| A.5.4A.2     | 1.28 Mcps TDD option .....                                      | 294 |
| A.5.4A.2.1   | Re-selection to intra-frequency TDD cell .....                  | 294 |
| A.5.4A.2.1.1 | Test purpose and Environment .....                              | 294 |
| A.5.4A.2.1.2 | Test Requirements .....   | 295 |
| A.5.4A.2.2   | Re-selection to inter-frequency TDD cell .....                  | 296 |
| A.5.4A.2.2.1 | Test Purpose and Environment .....                              | 296 |
| A.5.4A.2.2.2 | Test Requirements .....   | 298 |
| A.5.4A.3     | 7.68 Mcps TDD option .....                                      | 298 |
| A.5.5        | Cell Re-selection in CELL_PCH .....                             | 298 |
| A.5.5.1      | Scenario 1: Re-selection to intra-frequency TDD cell .....      | 298 |
| A.5.5.1.1    | Test Purpose and Environment .....                              | 298 |
| A.5.5.1.1.1  | 3.84Mcps TDD option .....                                       | 298 |
| A.5.5.1.1.2  | 1.28Mcps TDD option .....                                       | 300 |
| A.5.5.1.1.3  | 7.68Mcps TDD option .....                                       | 301 |
| A.5.5.1.2    | Test Requirements .....   | 302 |
| A.5.5.1.2.1  | for 3.84Mcps TDD option .....                                   | 302 |
| A.5.5.1.2.2  | for 1.28Mcps TDD option .....                                   | 303 |
| A.5.5.1.2.3  | for 7.68Mcps TDD option .....                                   | 303 |
| A.5.5.2      | Scenario 2: Re-selection to inter-frequency TDD cell .....      | 303 |
| A.5.5.2.1    | Test Purpose and Environment .....                              | 303 |
| A.5.5.2.1.1  | for 3.84Mcps TDD option .....                                   | 303 |
| A.5.5.2.1.2  | for 1.28Mcps TDD option .....                                   | 305 |
| A.5.5.2.1.3  | for 7.68Mcps TDD option .....                                   | 306 |
| A.5.5.2.2    | Test Requirements .....   | 308 |
| A.5.5.2.2.1  | for 3.84Mcps TDD option .....                                   | 308 |
| A.5.5.2.2.2  | for 1.28Mcps TDD option .....                                   | 308 |
| A.5.5.2.2.3  | for 7.68Mcps TDD option .....                                   | 308 |
| A.5.6        | Cell Re-selection in URA_PCH .....                              | 309 |
| A.5.6.1      | Scenario 1: Re-selection to intra-frequency TDD cell .....      | 309 |
| A.5.6.1.1    | Test Purpose and Environment .....                              | 309 |
| A.5.6.1.1.1  | for 3.84Mcps TDD option .....                                   | 309 |
| A.5.6.1.1.2  | for 1.28Mcps TDD option .....                                   | 310 |
| A.5.6.1.1.3  | for 7.68Mcps TDD option .....                                   | 312 |
| A.5.6.1.2    | Test Requirements .....   | 313 |
| A.5.6.1.2.1  | for 3.84Mcps TDD option .....                                   | 313 |
| A.5.6.1.2.2  | for 1.28Mcps TDD option .....                                   | 314 |
| A.5.6.1.2.3  | for 7.68Mcps TDD option .....                                   | 314 |
| A.5.6.2      | Scenario 2: Re-selection to inter-frequency TDD cell .....      | 314 |
| A.5.6.2.1    | Test Purpose and Environment .....                              | 314 |
| A.5.6.2.1.1  | for 3.84Mcps TDD option .....                                   | 314 |
| A.5.6.2.1.2  | for 1.28Mcps TDD option .....                                   | 316 |
| A.5.6.2.1.3  | for 7.68Mcps TDD option .....                                   | 317 |
| A.5.6.2.2    | Test Requirements .....   | 318 |
| A.5.6.2.2.1  | 3.84Mcps TDD option .....                                       | 318 |
| A.5.6.2.2.2  | 1.28Mcps TDD option .....                                       | 319 |

|              |  |     |
|--------------|--|-----|
| A.5.6.2.2.3  | 7.68Mcps TDD option.....                                     | 319 |
| A.5.7        | Serving HS-DSCH cell change .....                            | 319 |
| A.5.7.1      | Test Purpose and Environment .....                           | 319 |
| A.5.7.1.1    | 3.84Mcps TDD option .....                                    | 319 |
| A.5.7.1.2    | 1.28Mcps TDD option .....                                    | 319 |
| A.5.7.1.3    | 7.68Mcps TDD option .....                                    | 321 |
| A.5.7.2      | Test Requirements .....                                      | 322 |
| A.5.7.2.1    | 3.84Mcps TDD option .....                                    | 322 |
| A.5.7.2.2    | 1.28Mcps TDD option .....                                    | 322 |
| A.5.7.2.3    | 7.68Mcps TDD option .....                                    | 322 |
| A.5.8        | Inter-RAT cell change order from UTRAN TDD to GSM(GPRS)..... | 322 |
| A.5.8.1      | Test Purpose and Environment .....                           | 322 |
| A.5.8.1.1    | 3.84Mcps TDD option .....                                    | 322 |
| A.5.8.1.2    | 1.28Mcps TDD option .....                                    | 322 |
| A.5.8.1.3    | 7.68Mcps TDD option .....                                    | 324 |
| A.5.8.2      | Test Requirements .....                                      | 324 |
| A.5.8.2.1    | 3.84Mcps TDD option .....                                    | 324 |
| A.5.8.2.2    | 1.28Mcps TDD option .....                                    | 324 |
| A.5.8.2.3    | 7.68Mcps TDD option .....                                    | 324 |
| A.6          | (void).....  | 324 |
| A.6A         | RRC Connection Control .....                                 | 324 |
| A.6A.1       | RRC re-establishment delay .....                             | 324 |
| A.6A.1.1     | 3.84 Mcps TDD option .....                                   | 324 |
| A.6A.1.1.1   | RRC re-establishment delay to a known target cell .....      | 324 |
| A.6A.1.1.1.1 | Test Purpose and Environment.....                            | 324 |
| A.6A.1.1.1.2 | Test Requirements .....                                      | 325 |
| A.6A.1.1.2   | RRC re-establishment delay to an unknown target cell .....   | 326 |
| A.6A.1.1.2.1 | Test Purpose and Environment.....                            | 326 |
| A.6A.1.1.2.2 | Test Requirements .....                                      | 327 |
| A.6A.1.2     | 1.28 Mcps TDD Option.....                                    | 328 |
| A.6A.1.2.1   | Test Purpose and Environment.....                            | 328 |
| A.6A.1.2.1.1 | Test 1 .....   | 328 |
| A.6A.1.2.1.2 | Test 2 .....   | 329 |
| A.6A.1.2.2   | Test Requirements .....                                      | 330 |
| A.6A.1.2.2.1 | Test 1 .....   | 330 |
| A.6A.1.2.2.2 | Test 2 .....   | 330 |
| A.6A.1.3     | 7.68 Mcps TDD option .....                                   | 331 |
| A.6A.1.3.1   | RRC re-establishment delay to a known target cell .....      | 331 |
| A.6A.1.3.1.1 | Test Purpose and Environment.....                            | 331 |
| A.6A.1.3.1.2 | Test Requirements.....                                       | 332 |
| A.6A.1.3.2   | RRC re-establishment delay to an unknown target cell .....   | 333 |
| A.6A.1.3.2.1 | Test Purpose and Environment.....                            | 333 |
| A.6A.1.3.2.2 | Test Requirements.....                                       | 334 |
| A.6A.2       | Transport format combination selection in UE .....           | 334 |
| A.6A.2.1     | 3.84 Mcps TDD option .....                                   | 334 |
| A.6A.2.1.1   | Test Purpose and Environment .....                           | 334 |
| A.6A.2.1.1.1 | Interactive or Background, PS, UL: 64 kbps .....             | 335 |
| A.6A.2.1.2   | Test Requirements.....                                       | 336 |
| A.6A.2.1.2.1 | Interactive or Background, PS, UL: 64 kbps .....             | 336 |
| A.6A.2.2     | 1.28 Mcps TDD option .....                                   | 337 |
| A.6A.2.2.1   | Test Purpose and Environment .....                           | 337 |
| A.6A.2.2.1.1 | Interactive or Background, PS, UL: 64 kbps .....             | 337 |
| A.6A.2.2.2   | Test Requirements.....                                       | 338 |
| A.6A.2.2.2.1 | Interactive or Background, PS, UL: 64 kbps .....             | 338 |
| A.6A.2.3     | 7.68 Mcps TDD option .....                                   | 339 |
| A.6A.2.3.1   | Test Purpose and Environment .....                           | 339 |
| A.6A.2.3.1.1 | Interactive or Background, PS, UL: 64 kbps .....             | 339 |
| A.6A.2.3.2   | Test Requirements.....                                       | 341 |
| A.6A.2.3.2.1 | Interactive or Background, PS, UL: 64 kbps .....             | 341 |
| A.6A.3       | E-TFC restriction in UE .....                                | 341 |

|               |  |     |
|---------------|--|-----|
| A.6A.3.1      | 3.84 Mcps TDD option .....   | 341 |
| A.6A.3.2      | 1.28 Mcps TDD option .....   | 341 |
| A.6A.3.2.1    | Test Purpose and Environment .....                                       | 341 |
| A.6A.3.2.1.1  | 5ms TTI E-DCH E-TFC restriction testcase.....                            | 341 |
| A.6A.3.2.2    | Test Requirements.....   | 343 |
| A.6A.3.2.2.1  | 5ms TTI E-DCH E-TFC selection testcase .....                             | 343 |
| A.6A.3.3      | 7.68 Mcps TDD option .....   | 343 |
| A.6A.4        | Random Access .....  | 343 |
| A.6A.4.1      | 3.84 Mcps TDD option .....   | 343 |
| A.6A.4.2      | 1.28 Mcps TDD option .....   | 343 |
| A.6A.4.2.1    | Test Purpose and Environment .....                                       | 343 |
| A.6A.4.2.2    | Test Requirements.....   | 344 |
| A.6A.4.2.2.1  | Correct behaviour when receiving an ACK.....                             | 344 |
| A.6A.4.2.2.2  | Correct behaviour when reaching maximum allowed UL transmit power.....   | 344 |
| A.6A.4.3      | 7.68 Mcps TDD option .....   | 344 |
| A.7           | Timing characteristics .....   | 345 |
| A.7.1         | Timing Advance .....   | 345 |
| A.7.1.1       | 3.84 Mcps TDD option .....   | 345 |
| A.7.1.1.1     | Test Purpose and Environment .....                                       | 345 |
| A.7.1.1.2     | Test Requirements.....   | 346 |
| A.7.1.2       | 1.28 Mcps TDD option .....   | 346 |
| A.7.1.2.1     | Test Purpose and Environment .....                                       | 346 |
| A.7.1.2.2     | Test procedure.....  | 346 |
| A.7.1.2.3     | Test Requirements.....   | 346 |
| A.7.1.3       | 7.68 Mcps TDD option .....   | 347 |
| A.7.1.3.1     | Test Purpose and Environment .....                                       | 347 |
| A.7.1.3.2     | Test Requirements.....   | 347 |
| A.7.2         | Cell synchronization accuracy.....                                       | 348 |
| A.7.3         | UE Transmit Timing for 3.84 Mcps TDD option.....                         | 348 |
| A.7.4         | UE Uplink Synchronization .....  | 348 |
| A.7.4.1       | 3.84 Mcps TDD option .....   | 348 |
| A.7.4.2       | 1.28 Mcps TDD option .....   | 348 |
| A.7.4.2.1     | Uplink synchronization control for PRACH.....                            | 348 |
| A.7.4.2.1.1   | Test Purpose and Environment.....  | 348 |
| A.7.4.2.1.2   | Test Requirements.....   | 349 |
| A.7.4.2.2     | Uplink synchronization control during handover.....                      | 349 |
| A.7.4.2.2.1   | Scenario 1: Handover to intra-frequency cell .....                       | 349 |
| A.7.4.2.2.1.1 | Test Purpose and Environment .....                                       | 349 |
| A.7.4.2.2.1.2 | Test Requirements .....  | 351 |
| A.7.4.2.2.2   | Scenario 2: Handover to inter-frequency cell .....                       | 351 |
| A.7.4.2.2.2.1 | Test Purpose and Environment .....                                       | 351 |
| A.7.4.2.2.2.2 | Test Requirements .....  | 353 |
| A.7.4.3       | 7.68 Mcps TDD option .....   | 353 |
| A.8           | UE Measurements Procedures.....  | 354 |
| A.8.1         | TDD intra frequency measurements.....                                    | 354 |
| A.8.1.1       | Event 1G triggered reporting in AWGN propagation conditions .....        | 354 |
| A.8.1.1.1     | Test Purpose and Environment .....                                       | 354 |
| A.8.1.1.1.1   | 3.84 Mcps TDD option.....  | 354 |
| A.8.1.1.1.2   | 1.28 Mcps TDD option.....  | 355 |
| A.8.1.1.1.3   | 7.68 Mcps TDD option.....  | 356 |
| A.8.1.1.2     | Test Requirements.....   | 357 |
| A.8.1.1.2.1   | 3.84Mcps TDD option.....   | 357 |
| A.8.1.1.2.2   | 1.28Mcps TDD option.....   | 358 |
| A.8.1.1.2.3   | 7.68Mcps TDD option.....   | 358 |
| A.8.1.2       | Event 1H and 1I triggered reporting in AWGN propagation conditions ..... | 358 |
| A.8.1.2.1     | 3.84 Mcps TDD option .....   | 358 |
| A.8.1.2.1.1   | Test Purpose and Environment.....  | 358 |
| A.8.1.2.1.2   | Test Requirements .....  | 361 |
| A.8.1.2.2     | 1.28 Mcps TDD option .....   | 361 |
| A.8.1.2.2.1   | Test Purpose and Environment.....  | 361 |

|               |   |     |
|---------------|---|-----|
| A.8.1.2.2.2   | Test Requirements .....   | 363 |
| A.8.1.2.3     | 7.68 Mcps TDD option .....  | 363 |
| A.8.1.2.3.1   | Test Purpose and Environment.....   | 363 |
| A.8.1.2.3.2   | Test Requirements .....   | 366 |
| A.8.1.3       | Correct reporting of neighbours in fading propagation condition.....                        | 366 |
| A.8.1.3.1     | 3.84 Mcps TDD option .....  | 366 |
| A.8.1.3.1.1   | Test Purpose and Environment.....   | 366 |
| A.8.1.3.1.2   | Test Requirements .....   | 367 |
| A.8.1.3.2     | (void).....   | 367 |
| A.8.1.3.3     | 7.68 Mcps TDD option .....  | 367 |
| A.8.1.3.3.1   | Test Purpose and Environment.....   | 367 |
| A.8.1.3.3.2   | Test Requirements .....   | 368 |
| A.8.2         | TDD inter frequency measurements.....   | 368 |
| A.8.2.1       | Correct reporting of neighbours in AWGN propagation condition .....                         | 368 |
| A.8.2.1.1     | Test Purpose and Environment .....  | 368 |
| A.8.2.1.1.1   | 3.84Mcps TDD option.....  | 368 |
| A.8.2.1.1.2   | 1.28Mcps TDD option.....  | 369 |
| A.8.2.1.1.3   | 7.68Mcps TDD option.....  | 370 |
| A.8.2.1.2     | Test Requirements.....  | 371 |
| A.8.2.1.2.1   | 3.84Mcps TDD option.....  | 371 |
| A.8.2.1.2.2   | 1.28Mcps TDD option.....  | 372 |
| A.8.2.1.2.3   | 7.68Mcps TDD option.....  | 372 |
| A.8.3         | FDD measurements .....  | 372 |
| A.8.3.1       | Correct reporting of FDD neighbours in AWGN propagation condition.....                      | 372 |
| A.8.3.1.1     | Test Purpose and Environment .....  | 372 |
| A.8.3.1.1.1   | 3.84 Mcps TDD option.....   | 372 |
| A.8.3.1.1.2   | 1.28 Mcps TDD option.....   | 373 |
| A.8.3.1.1.3   | 7.68 Mcps TDD option.....   | 374 |
| A.8.3.1.2     | Test Requirements.....  | 375 |
| A.8.3.1.2.1   | 3.84 Mcps TDD option.....   | 375 |
| A.8.3.1.2.2   | 1.28 Mcps TDD option.....   | 376 |
| A.8.3.1.2.3   | 7.68 Mcps TDD option.....   | 376 |
| A.8.4         | GSM measurements .....  | 376 |
| A.8.4.1       | Correct reporting of GSM neighbours in AWGN propagation condition.....                      | 376 |
| A.8.4.1.1     | Test Purpose and Environment .....  | 376 |
| A.8.4.1.1.1   | 3.84 Mcps TDD option.....   | 376 |
| A.8.4.1.1.2   | 1.28 Mcps TDD option.....   | 377 |
| A.8.4.1.1.2.1 | Test 1. With BSIC verification required .....   | 378 |
| A.8.4.1.1.2.2 | Test 2. Without BSIC verification required .....  | 379 |
| A.8.4.1.1.3   | 7.68 Mcps TDD option.....   | 380 |
| A.8.4.1.2     | Test Requirements.....  | 382 |
| A.8.4.1.2.1   | 3.84 Mcps TDD option.....   | 382 |
| A.8.4.1.2.2   | 1.28 Mcps TDD option.....   | 382 |
| A.8.4.1.2.2.1 | Test Requirement with BSIC verification required.....                                       | 382 |
| A.8.4.1.2.2.1 | Test Requirement without BSIC verification required .....                                   | 382 |
| A.8.4.1.2.3   | 7.68 Mcps TDD option.....   | 382 |
| A.8.4.2       | Combined UTRA TDD inter-frequency and GSM cell search under AWGN propagation condition..... | 383 |
| A.8.4.2.1     | Test Purpose and Environment .....  | 383 |
| A.8.4.2.1.1   | 3.84 Mcps TDD option.....   | 383 |
| A.8.4.2.1.2   | 1.28 Mcps TDD option.....   | 383 |
| A.8.4.2.1.3   | 7.68 Mcps TDD option.....   | 384 |
| A.8.4.2.2     | Test Requirement .....  | 384 |
| A.8.4.2.2.1   | 3.84 Mcps TDD option.....   | 384 |
| A.8.4.2.2.2   | 1.28 Mcps TDD option.....   | 384 |
| A.8.4.2.2.3   | 7.68 Mcps TDD option.....   | 384 |
| A.8.5         | E-UTRA Measurements .....   | 385 |
| A.8.5.1       | UTRA TDD to E-UTRA FDD cell search under fading propagation conditions .....                | 385 |
| A.8.5.1.1     | Test Purpose and Environment .....  | 385 |
| A.8.5.1.1.1   | 3.84 Mcps TDD option.....   | 385 |
| A.8.5.1.1.2   | 1.28 Mcps TDD option.....   | 385 |
| A.8.5.1.1.3   | 7.68 Mcps TDD option.....   | 386 |
| A.8.5.1.2     | Test Requirements.....  | 387 |

|               |   |     |
|---------------|---|-----|
| A.8.5.1.2.1   | 3.84 Mcps TDD option.....   | 387 |
| A.8.5.1.2.2   | 1.28 Mcps TDD option.....   | 387 |
| A.8.5.1.2.3   | 7.68 Mcps TDD option.....   | 387 |
| A.8.5.2       | UTRA TDD to E-UTRA TDD cell search under fading propagation conditions .....                          | 387 |
| A.8.5.2.1     | Test Purpose and Environment .....  | 387 |
| A.8.5.2.1.1   | 3.84 Mcps TDD option.....   | 387 |
| A.8.5.2.1.2   | 1.28 Mcps TDD option.....   | 387 |
| A.8.5.2.1.3   | 7.68 Mcps TDD option.....   | 389 |
| A.8.5.2.2     | Test Requirements.....  | 389 |
| A.8.5.2.2.1   | 3.84 Mcps TDD option.....   | 389 |
| A.8.5.2.2.2   | 1.28 Mcps TDD option.....   | 389 |
| A.8.5.2.2.3   | 7.68 Mcps TDD option.....   | 390 |
| A.8.5.3       | Combined UTRA TDD inter-frequency and E-UTRA FDD cell search under fading propagation conditions..... | 390 |
| A.8.5.3.1     | Test Purpose and Environment .....  | 390 |
| A.8.5.3.1.1   | 3.84 Mcps TDD option.....   | 390 |
| A.8.5.3.1.2   | 1.28 Mcps TDD option.....   | 390 |
| A.8.5.3.1.3   | 7.68 Mcps TDD option.....   | 392 |
| A.8.5.3.2     | Test Requirements.....  | 392 |
| A.8.5.3.2.1   | 3.84 Mcps TDD option.....   | 392 |
| A.8.5.3.2.2   | 1.28 Mcps TDD option.....   | 392 |
| A.8.5.3.2.3   | 7.68 Mcps TDD option.....   | 393 |
| A.8.5.4       | Combined UTRA TDD inter-frequency and E-UTRA TDD cell search under fading propagation conditions..... | 393 |
| A.8.5.4.1     | Test Purpose and Environment .....  | 393 |
| A.8.5.4.1.1   | 3.84 Mcps TDD option.....   | 393 |
| A.8.5.4.1.2   | 1.28 Mcps TDD option.....   | 393 |
| A.8.5.4.1.3   | 7.68 Mcps TDD option.....   | 395 |
| A.8.5.4.2     | Test Requirements.....  | 395 |
| A.8.5.4.2.1   | 3.84 Mcps TDD option.....   | 395 |
| A.8.5.4.2.2   | 1.28 Mcps TDD option.....   | 395 |
| A.8.5.4.2.3   | 7.68 Mcps TDD option.....   | 396 |
| A.9           | Measurement Performance Requirements.....   | 396 |
| A.9.1         | Measurement Performance for UE (3.84 Mcps TDD option) .....   | 396 |
| A.9.1.1       | P-CCPCH RSCP.....   | 396 |
| A.9.1.1.1     | Test Purpose and Environment .....  | 396 |
| A.9.1.1.1.1   | Intra frequency test parameters.....  | 396 |
| A.9.1.1.1.2   | Inter frequency test parameters.....  | 396 |
| A.9.1.1.2     | Test Requirements.....  | 397 |
| A.9.1.2       | CPICH measurements.....   | 397 |
| A.9.1.2.1     | CPICH RSCP .....  | 397 |
| A.9.1.2.1.1   | Test Purpose and Environment.....   | 397 |
| A.9.1.2.1.1.1 | Inter frequency test parameters .....   | 397 |
| A.9.1.2.1.2   | Test Requirements.....  | 398 |
| A.9.1.2.2     | CPICH Ec/Io .....   | 398 |
| A.9.1.3       | Timeslot ISCP.....  | 398 |
| A.9.1.3.1     | Test Purpose and Environment .....  | 398 |
| A.9.1.3.1.1   | Intra frequency test parameters.....  | 398 |
| A.9.1.3.2     | Test Requirements.....  | 399 |
| A.9.1.4       | UTRA Carrier RSSI.....  | 399 |
| A.9.1.4.1     | Test Purpose and Environment .....  | 399 |
| A.9.1.4.1.1   | Inter frequency test parameters.....  | 399 |
| A.9.1.4.2     | Test Requirements.....  | 400 |
| A.9.1.5       | GSM carrier RSSI.....   | 400 |
| A.9.1.5.1     | Test Purpose and Environment .....  | 400 |
| A.9.1.5.1.1   | Inter frequency test parameters.....  | 400 |
| A.9.1.5.2     | Test Requirements.....  | 401 |
| A.9.1.6       | SIR.....  | 401 |
| A.9.1.7       | Transport channel BLER .....  | 401 |
| A.9.1.8       | SFN-SFN observed time difference.....   | 401 |
| A.9.1.8.1     | SFN-SFN observed time difference type 1 .....   | 401 |

|               |   |     |
|---------------|---|-----|
| A.9.1.8.1.1   | Test Purpose and Environment.....                             | 401 |
| A.9.1.8.1.1.1 | Intra frequency test parameters.....                          | 402 |
| A.9.1.8.1.1.2 | Inter frequency test parameters.....                          | 402 |
| A.9.1.8.1.2   | Test Requirements.....  | 402 |
| A.9.1.8.2     | SFN-SFN observed time difference type 2.....                  | 403 |
| A.9.1.8.2.1   | Test Purpose and Environment.....                             | 403 |
| A.9.1.8.2.1.1 | Intra frequency test parameters.....                          | 403 |
| A.9.1.8.2.1.2 | Inter frequency test parameters.....                          | 403 |
| A.9.1.8.2.2   | Test Requirements.....  | 404 |
| A.9.1.9       | Observed time difference to GSM cell.....                     | 404 |
| A.9.1.10      | SFN-CFN observed time difference.....                         | 404 |
| A.9.1.10.1    | Test Purpose and Environment.....                             | 404 |
| A.9.1.10.1.1  | Intra frequency test parameters.....                          | 404 |
| A.9.1.10.1.2  | Inter frequency test parameters.....                          | 405 |
| A.9.1.10.2    | Test Requirements.....  | 405 |
| A.9.1.11      | UE transmitted power.....                                     | 405 |
| A.9.2         | Measurement Performance for UE for 1.28 Mcps TDD.....         | 406 |
| A.9.2.1       | P-CCPCH RSCP.....   | 406 |
| A.9.2.1.1     | Test Purpose and Environment.....                             | 406 |
| A.9.2.1.1.1   | Intra frequency test parameters.....                          | 406 |
| A.9.2.1.1.1A  | Intra-frequency with two neighbour cells test parameters..... | 407 |
| A.9.2.1.1.2   | Inter frequency test parameters.....                          | 409 |
| A.9.2.1.1.2A  | Inter-frequency absolute accuracy test parameters.....        | 410 |
| A.9.2.1.1.3   | Local cell absolute accuracy test parameters.....             | 411 |
| A.9.2.1.1.4   | Local cell in white noise test parameters.....                | 412 |
| A.9.2.1.2     | Test Requirements.....  | 414 |
| A.9.2.2       | CPICH measurements.....                                       | 414 |
| A.9.2.2.1     | CPICH RSCP.....   | 414 |
| A.9.2.2.1.1   | Test Purpose and Environment.....                             | 414 |
| A.9.2.2.1.1.1 | Inter frequency test parameters.....                          | 414 |
| A.9.2.2.1.2   | Test Requirements.....  | 414 |
| A.9.2.2.2     | CPICH Ec/Io.....  | 415 |
| A.9.2.3       | Timeslot ISCP.....  | 415 |
| A.9.2.3.1     | Test Purpose and Environment.....                             | 415 |
| A.9.2.3.1.1   | Intra frequency test parameters.....                          | 415 |
| A.9.2.3.2     | Test Requirements.....  | 416 |
| A.9.2.4       | UTRA carrier RSSI.....  | 417 |
| A.9.2.4.1     | Test Purpose and Environment.....                             | 417 |
| A.9.2.4.1.1   | Inter frequency test parameters.....                          | 417 |
| A.9.2.4.2     | Test Requirements.....  | 418 |
| A.9.2.5       | GSM carrier RSSI.....   | 419 |
| A.9.2.5.1     | Test Purpose and Environment.....                             | 419 |
| A.9.2.5.1.1   | Inter RAT test parameters.....                                | 419 |
| A.9.2.5.2     | Test Requirements.....  | 419 |
| A.9.2.6       | SIR.....  | 419 |
| A.9.2.7       | Transport channel BLER.....                                   | 420 |
| A.9.2.8       | SFN-SFN observed time difference.....                         | 420 |
| A.9.2.8.1     | SFN-SFN observed time difference type 1.....                  | 420 |
| A.9.2.8.1.1   | Test Purpose and Environment.....                             | 420 |
| A.9.2.8.1.1.1 | Intra frequency test parameters.....                          | 420 |
| A.9.2.8.1.1.2 | Inter frequency test parameters.....                          | 421 |
| A.9.2.8.1.2   | Test Requirements.....  | 422 |
| A.9.2.8.2     | SFN-SFN observed time difference type 2.....                  | 423 |
| A.9.2.8.2.1   | Test Purpose and Environment.....                             | 423 |
| A.9.2.8.2.1.1 | Intra frequency test parameters.....                          | 423 |
| A.9.2.8.2.1.2 | Inter frequency test parameters.....                          | 424 |
| A.9.2.8.2.2   | Test Requirements.....  | 425 |
| A.9.2.9       | Observed time difference to GSM cell.....                     | 426 |
| A.9.2.10      | SFN-CFN observed time difference.....                         | 426 |
| A.9.2.10.1    | Test Purpose and Environment.....                             | 426 |
| A.9.2.10.1.1  | Intra frequency test parameters.....                          | 426 |
| A.9.2.10.1.2  | Inter frequency test parameters.....                          | 427 |



|               |   |     |
|---------------|---|-----|
| A.9.2.10.2    | Test Requirements.....                                      | 428 |
| A.9.2.11      | UE transmitted power .....                                  | 429 |
| A.9.2.11.1    | Test purpose and Environment.....                           | 429 |
| A.9.2.11.1.1  | Test procedure .....  | 429 |
| A.9.2.11.2    | Test requirements.....                                      | 430 |
| A.9.3         | Measurement Performance for UE (7.68 Mcps TDD option) ..... | 430 |
| A.9.3.1       | P-CCPCH RSCP.....   | 430 |
| A.9.3.1.1     | Test Purpose and Environment .....                          | 430 |
| A.9.3.1.1.1   | Intra frequency test parameters.....                        | 430 |
| A.9.3.1.1.2   | Inter frequency test parameters.....                        | 430 |
| A.9.3.1.2     | Test Requirements.....                                      | 431 |
| A.9.3.2       | CPICH measurements.....                                     | 431 |
| A.9.3.2.1     | CPICH RSCP .....  | 431 |
| A.9.3.2.1.1   | Test Purpose and Environment.....                           | 431 |
| A.9.3.2.1.1.1 | Inter frequency test parameters .....                       | 431 |
| A.9.3.2.1.2   | Test Requirements .....                                     | 432 |
| A.9.3.2.2     | CPICH Ec/Io .....   | 432 |
| A.9.3.3       | Timeslot ISCP.....  | 432 |
| A.9.3.3.1     | Test Purpose and Environment .....                          | 432 |
| A.9.3.3.1.1   | Intra frequency test parameters.....                        | 432 |
| A.9.3.3.2     | Test Requirements.....                                      | 433 |
| A.9.3.4       | UTRA Carrier RSSI.....                                      | 433 |
| A.9.3.4.1     | Test Purpose and Environment .....                          | 433 |
| A.9.3.4.1.1   | Inter frequency test parameters.....                        | 433 |
| A.9.3.4.2     | Test Requirements.....                                      | 434 |
| A.9.3.5       | GSM carrier RSSI.....                                       | 434 |
| A.9.3.5.1     | Test Purpose and Environment .....                          | 434 |
| A.9.3.5.1.1   | Inter frequency test parameters.....                        | 434 |
| A.9.3.5.2     | Test Requirements.....                                      | 435 |
| A.9.3.6       | (void) .....  | 435 |
| A.9.3.7       | (void) .....  | 435 |
| A.9.3.8       | SFN-SFN observed time difference.....                       | 435 |
| A.9.3.8.1     | SFN-SFN observed time difference type 1 .....               | 435 |
| A.9.3.8.1.1   | Test Purpose and Environment.....                           | 435 |
| A.9.3.8.1.1.1 | Intra frequency test parameters .....                       | 436 |
| A.9.3.8.1.1.2 | Inter frequency test parameters .....                       | 436 |
| A.9.3.8.1.2   | Test Requirements .....                                     | 436 |
| A.9.3.8.2     | SFN-SFN observed time difference type 2 .....               | 437 |
| A.9.3.8.2.1   | Test Purpose and Environment.....                           | 437 |
| A.9.3.8.2.1.1 | Intra frequency test parameters .....                       | 437 |
| A.9.3.8.2.1.2 | Inter frequency test parameters .....                       | 437 |
| A.9.3.8.2.2   | Test Requirements .....                                     | 438 |
| A.9.3.9       | Observed time difference to GSM cell .....                  | 438 |
| A.9.3.10      | SFN-CFN observed time difference .....                      | 438 |
| A.9.3.10.1    | Test Purpose and Environment .....                          | 438 |
| A.9.3.10.1.1  | Intra frequency test parameters.....                        | 438 |
| A.9.3.10.1.2  | Inter frequency test parameters.....                        | 439 |
| A.9.3.10.2    | Test Requirements.....                                      | 439 |
| A.9.3.11      | UE transmitted power .....                                  | 439 |
| A.9.2.5a      | E-UTRA RSRP .....   | 440 |
| A.9.2.5a.1    | E-UTRAN FDD RSRP .....                                      | 440 |
| A.9.2.5a.1.1  | Test Purpose and Environment.....                           | 440 |
| A.9.2.5a.1.2  | Test parameters.....  | 440 |
| A.9.2.5a.1.3  | Test Requirements .....                                     | 442 |
| A.9.2.5a.2    | E-UTRAN TDD RSRP .....                                      | 442 |
| A.9.2.5a.2.1  | Test Purpose and Environment.....                           | 442 |
| A.9.2.5a.2.2  | Test parameters.....  | 442 |
| A.9.2.5a.1.3  | Test Requirements .....                                     | 444 |
| A.9.2.5b      | E-UTRA RSRQ .....   | 444 |
| A.9.2.5b.1    | E-UTRAN FDD RSRQ.....                                       | 444 |
| A.9.2.5b.1.1  | Test Purpose and Environment.....                           | 444 |
| A.9.2.5b.1.2  | Test parameters.....  | 444 |

|              |                                   |     |
|--------------|-----------------------------------|-----|
| A.9.2.5b.1.3 | Test Requirements .....           | 446 |
| A.9.2.5b.2   | E-UTRAN TDD RSRQ.....             | 446 |
| A.9.2.5b.2.1 | Test Purpose and Environment..... | 446 |
| A.9.2.5b.2.2 | Test parameters.....              | 446 |
| A.9.2.5b.2.3 | Test Requirements .....           | 448 |

**Annex B (normative):        Conditions for RRM requirements applicability for operating bands ...449**

|        |  |     |
|--------|--|-----|
| B.1.   | Conditions for Idle mode.....  | 449 |
| B.1.1. | Conditions for measurements of inter-RAT E-UTRA cells .....                            | 449 |
| B.2.   | Conditions for UE Measurements Procedures .....  | 449 |
| B.2.1. | Conditions for identification of a new cell in CELL_DCH State (3.84 Mcps option) ..... | 449 |
| B.2.2. | Conditions for identification of a new cell in CELL_DCH State (1.28 Mcps option) ..... | 450 |
| B.2.3. | Conditions for identification of a new cell in CELL_DCH State (7.68 Mcps option) ..... | 450 |

**Annex B (informative):        Change History .....451**

|               |     |
|---------------|-----|
| History ..... | 454 |
|---------------|-----|

---

# Foreword

This Technical Specification has been produced by the 3<sup>rd</sup> Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

Version x.y.z

where:

- x the first digit:
  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
  - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

---

# 1 Scope

This Technical Specification specifies requirements for support of Radio Resource Management for TDD. These requirements include requirements on measurements in UTRAN and the UE as well as requirements on node dynamic behaviour and interaction, in terms of delay and response characteristics.

---

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] [\(void\)](#)
- [2] [\(void\)](#)
- [3] 3GPP TS 25.101: "UE Radio transmission and reception (FDD)".
- [4] 3GPP TS [25.104: "UTRAN\(BS\) FDD; Radio transmission and reception "](#).
- [5] 3GPP TS 25.102: "UTRAN (UE) TDD; Radio transmission and reception "
- [6] 3GPP TS [25.105: "UTRAN \(BS\) TDD; Radio transmission and reception "](#).
- [7] [3GPP TS 25.303: "Interlayer Procedures in Connected Mode"](#).
- [8] [\(void\)](#)
- [9] 3GPP TS 25.142: "Base station conformance testing (TDD)".
- [10] [\(void\)](#)
- [11] [\(void\)](#)
- [12] 3GPP TR 25.922: "RRM Strategies".
- [13] [3GPP TS 25.321: "MAC protocol specification"](#).
- [14] 3GPP TS 25.225: "Physical layer measurements (TDD)".
- [15] 3GPP TS 25.302: "Services provided by physical layer".
- [16] 3GPP TS 25.331: "RRC protocol specification".
- [17] 3GPP TS 25.224: "Physical layer procedures (TDD)".
- [18] 3GPP TS 25.304: "UE Procedures in Idle Mode and Procedures for Cell Reselection in Connected Mode "
- [19] ETSI ETR 273-1-2: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement of radiated methods of measurement (using test sites) and evaluation of the corresponding measurement uncertainties; Part 1: Uncertainties in the measurement of mobile radio equipment characteristics; Sub-part 2: Examples and annexes".
- [20] 3GPP TS 45.005: "Radio transmission and reception".

- [21] 3GPP TS 45.008: "Radio subsystem link control".
- [22] 3GPP TS 45.010: "Radio subsystem synchronization".
- [23] 3GPP TS 25.214: "Physical layer procedures (FDD)".
- [24] 3GPP TS 36.133: "Requirements for support of radio resource management".
- [25] 3GPP TS 36.304: "User Equipment (UE) procedures in idle mode".
- [26] 3GPP TS 36.101: 'User Equipment (UE) radio transmission and reception'
- [27] 3GPP TS 37.320: "Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; Stage 2"

---

## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

For the purpose of the present document the following terms and definitions apply.

The main general definitions strictly related to the transmission and reception characteristics but important also for the present document can be found in [3] for UE FDD, in [4] for BS FDD, in [5] for UE TDD, in [6] for BS TDD.

**Node B:** A logical node responsible for radio transmission / reception in one or more cells to/from the User Equipment. Terminates the Iub interface towards the RNC.

**Power Spectral Density:** The units of Power Spectral Density (PSD) are extensively used in this document. PSD is a function of power versus frequency and when integrated across a given bandwidth, the function represents the mean power in such a bandwidth. When the mean power is normalised to (divided by) the chip-rate it represents the mean energy per chip. Some signals are directly defined in terms of energy per chip, (DPCH\_ $E_c$ ,  $E_c$ , OCNS\_ $E_c$  and P-CCPCH\_ $E_c$ ) and others defined in terms of PSD ( $I_o$ ,  $I_{oc}$ ,  $I_{or}$  and  $\hat{I}_{or}$ ). There also exist quantities that are a ratio of energy per chip to PSD (DPCH\_ $E_c/I_{or}$ ,  $E_c/I_{or}$  etc.). This is the common practice of relating energy magnitudes in communication systems.

It can be seen that if both energy magnitudes in the ratio are divided by time, the ratio is converted from an energy ratio to a power ratio, which is more useful from a measurement point of view. It follows that an energy per chip of X dBm/3.84 MHz (3.84 Mcps TDD option) or X dBm/1.28 MHz (1.28 Mcps TDD option) can be expressed as a mean power per chip of X dBm. Similarly, a signal PSD of Y dBm/3.84 MHz (3.84 Mcps TDD option) or Y dBm/1.28 MHz (1.28 Mcps TDD option) can be expressed as a signal power of Y dBm.

**MBSFN cluster:** Set of cells operating in MBSFN mode providing only MBMS service in PtM mode and seen as one cell by a UE.

The following two definitions are applicable for LCR TDD multi-frequency operation.

**Intra-frequency cell:** In idle, CELL-FACH, CELL-PCH and URA-PCH state, intra-frequency cell is defined as the cell of which the primary frequency is the same as the user's current frequency. In CELL-DCH state, intra-frequency cell is defined as the cell of which the frequency to be measured in that cell is the same as the operating frequency for single carrier operation or is the same as the associated DPCH operating frequency for multi-carrier operation when DPCH is configured, or is the same as the associated E-RUCCH operating frequency for multi-carrier operation when DPCH is not configured.

**Inter-frequency cell:** In idle, CELL-FACH, CELL-PCH and URA-PCH state, inter-frequency cell is defined as the cell of which the primary frequency is different from the user's current frequency. In CELL-DCH state, inter-frequency cell is defined as the cell of which the frequency to be measured in that cell is different from the operating frequency for single carrier operation or is different from the associated DPCH operating frequency for multi-carrier operation when DPCH is configured, or is different from the associated E-RUCCH operating frequency for multi-carrier operation when DPCH is not configured.

## 3.2 Symbols

For the purposes of the present document, the following symbols apply:

|                               |   |
|-------------------------------|---|
| [...]                         | Values included in square bracket must be considered for further studies, because it means that a decision about that value was not taken.  |
| $\frac{DPCH - E_c}{I_{or}}$   | The ratio of the transmit energy per PN chip of the DPCH to the total transmit power spectral density at the Node B antenna connector.  |
| $E_c$                         | Average energy per PN chip.   |
| $\hat{E}_s$                   | Received energy per RE (power normalized to the subcarrier spacing) during the useful part of the symbol, i.e. excluding the cyclic prefix, at the UE antenna connector   |
| $\frac{E_c}{I_{or}}$          | The ratio of the average transmit energy per PN chip for different fields or physical channels to the total transmit power spectral density at the Node B antenna connector.  |
| $I_o$                         | The total received power spectral density, including signal and interference, as measured at the UE antenna connector.  |
| $I_{ob}$                      | The total received power density, including signal and interference, as measured at the BS antenna connector.   |
| $I_{oc}$                      | The power spectral density (integrated in a noise bandwidth equal to the chip rate and normalized to the chip rate) of a band limited white noise source (simulating interference from cells, which are not defined in a test procedure) as measured at the UE antenna connector. |
| $I_{or}$                      | The total transmit power spectral density (integrated in a bandwidth of $(1+\alpha)$ times the chip rate and normalized to the chip rate) of the down link signal at the Node B antenna connector.  |
| $\hat{I}_{or}$                | The received power spectral density (integrated in a bandwidth of $(1+\alpha)$ times the chip rate and normalized to the chip rate) of the down link signal as measured at the UE antenna connector.  |
| $I_{ot}$                      | The received power spectral density of the total noise and interference for a certain RE (power integrated over the RE and normalized to the subcarrier spacing) as measured at the UE antenna connector  |
| $\frac{OCNS - E_c}{I_{or}}$   | The ratio of the average transmit energy per PN chip for the OCNS to the total transmit power spectral density at the Node B antenna connector.   |
| $\frac{PICH - E_c}{I_{or}}$   | The ratio of the average transmit energy per PN chip for the PICH to the total transmit power spectral density at the Node B antenna connector.   |
| $\frac{PCCPCH - E_c}{I_{or}}$ | The ratio of the average transmit energy per PN chip for the PCCPCH to the total transmit power spectral density at the Node B antenna connector.   |
| $\frac{SCH - E_c}{I_{or}}$    | The ratio of the average transmit energy per PN chip for the SCH to the total transmit power spectral density at the Node B antenna connector. The transmit energy per PN chip for the SCH is averaged over the 256 chip duration when the SCH is present in the time slot        |
| SCH_RP                        | Received (linear) average power of the resource elements that carry E-UTRA synchronisation signal, measured at the UE antenna connector.  |
| PENALTY_TIME                  | Defined in TS 25.304  |
| Qhyst                         | Defined in TS 25.304  |
| Qoffset <sub>s,n</sub>        | Defined in TS 25.304  |
| Qqualmin                      | Defined in TS 25.304  |
| Qrxlevmin                     | Defined in TS 25.304  |
| Sintersearch                  | Defined in TS 25.304  |
| Sintrasearch                  | Defined in TS 25.304  |
| SsearchRAT                    | Defined in TS 25.304  |
| T1                            | Time period 1   |
| T2                            | Time period 2   |
| TEMP_OFFSET                   | Defined in TS 25.304  |

Treselection Defined in TS 25.304  
 UE\_TXPWR\_MAX\_RACH Defined in TS 25.304

### 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

|         |   |
|---------|---|
| ACPR    | Adjacent Channel Power Ratio  |
| AWGN    | Additive White Gaussian Noise   |
| BER     | Bit Error Ratio   |
| BLER    | Block Error Ratio   |
| BS      | Base Station  |
| CW      | Continuous wave (unmodulated signal)  |
| CFN     | Connection Frame Number   |
| CPICH   | Common Pilot Channel  |
| DL      | Downlink (forward link)   |
| DPCH    | Dedicated Physical Channel  |
| DRX     | Discontinuous Reception   |
| EIRP    | Equivalent Isotropic Radiated Power   |
| eNB     | E-UTRAN NodeB   |
| FDD     | Frequency Division Duplex   |
| GERAN   | GSM EDGE Radio Access Network   |
| GSM     | Global System for Mobile communication  |
| HO      | Handover  |
| MBSFN   | MBMS over a Single Frequency Network  |
| MDT     | Minimization of Drive Tests   |
| OCNS    | Orthogonal Channel Noise Simulator, a mechanism used to simulate the users or control signals on the other orthogonal channels of a Forward link. |
| OFDM    | Orthogonal Frequency Division Multiplexing  |
| OFDMA   | Orthogonal Frequency Division Multiple Access   |
| P-CCPCH | Primary Common Control Physical Channel   |
| PICH    | Paging Indicator Channel  |
| PIN     | Personal Identification Number  |
| PLMN    | Public Land Mobile Network  |
| PPM     | Parts Per Million   |
| QAM     | Quadrature Amplitude Modulation   |
| RAT     | Radio Access Technology   |
| RNC     | Radio Network Controller  |
| RRM     | Radio Resource Management   |
| RRC     | Radio Resource Control  |
| RSCP    | Received Signal Code Power  |
| RSRP    | Reference Signal Received Power   |
| RSRQ    | Reference Signal Received Quality   |
| RSSI    | Received Signal Strength Indicator  |
| SCH     | Synchronization Channel consisting of Primary and Secondary synchronization channels  |
| SFN     | System Frame Number   |
| SIR     | Signal to Interference ratio  |
| TDD     | Time Division Duplex  |
| TPC     | Transmit Power Control  |
| TTI     | Transmission Time Interval  |
| UE      | User Equipment  |
| UL      | Uplink (reverse link)   |
| UTRA    | UMTS Terrestrial Radio Access   |
| UTRAN   | Universal Terrestrial Radio Access Network  |

### 3.4 Test tolerances

The requirements given in the present document make no allowance for measurement uncertainty. The test specification 34.122 and 25.142 define test tolerances. These test tolerances are individually calculated for each test. The test

tolerances are then added to the limits in this specification to create test limits. The measurement results are compared against the test limits as defined by the shared risk principle.

Shared Risk is defined in ETR 273 Part 1 sub-part 2 subclause 6.5.

---

## 4 Idle Mode

### 4.1 Cell Selection

#### 4.1.1 Introduction

After a UE has switched on and a PLMN has been selected, the Cell selection process takes place, as described in [18]. This process allows the UE to select a suitable cell where to camp on in order to access available services. In this process the UE can use stored information (*Stored information cell selection*) or not (*Initial cell selection*).

### 4.2 Cell Re-selection

#### 4.2.1 Introduction

##### 4.2.1.1 3.84 Mcps TDD option

The cell reselection procedure allows the UE to select a more suitable cell and camp on it.

When the UE is in either *Camped Normally state* or *Camped on Any Cell* state on a TDD cell, the UE shall attempt to identify, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in [18], allowing the UE to limit its measurement activity if certain conditions are fulfilled.

##### 4.2.1.2 1.28 Mcps TDD option

The cell reselection procedure allows the UE to select a more suitable cell and camp on it.

When the UE is in either *Camped Normally state* or *Camped on Any Cell* state on a TDD cell, the UE shall attempt to identify, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in [18], allowing the UE to limit its measurement activity if certain conditions are fulfilled.

##### 4.2.1.3 7.68 Mcps TDD option

The cell reselection procedure allows the UE to select a more suitable cell and camp on it.

When the UE is in either *Camped Normally state* or *Camped on Any Cell* state on a TDD cell, the UE shall attempt to identify, synchronise and monitor intra-frequency, inter-frequency and inter-RAT cells indicated in the measurement control system information of the serving cell. UE measurement activity is also controlled by measurement rules defined in [18], allowing the UE to limit its measurement activity if certain conditions are fulfilled.

#### 4.2.2 Requirements

In the following sections,  $T_{\text{higher\_priority\_search}}$  is defined as  $(60 * N_{\text{layers}})$  seconds, where  $N_{\text{layers}}$  is the total number of configured higher priority E-UTRA, UTRA FDD and UTRA TDD carrier frequencies and is additionally increased by one if one or more groups of GSM frequencies is configured as a higher priority.



#### 4.2.2.1 Measurement and evaluation of cell selection criteria S of serving cell

##### 4.2.2.1.1 3.84 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion  $S_{rxlev}$  defined in [18] for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP measurement of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least  $T_{measureTDD}/2$  (see table 4.1).

If the UE has evaluated in  $N_{serv}$  successive measurements that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in [18].

On transition from CELL\_DCH to CELL\_PCH/URA\_PCH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

##### 4.2.2.1.2 1.28 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion S defined in [18] for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP level of the serving cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least  $T_{measureNTDD}/2$  (see table 4.1A).

If the UE has evaluated in  $N_{serv}$  consecutive DRX cycles that the serving cell does not fulfil the cell selection criterion S the UE shall initiate the measurements of all neighbour cells indicated in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in [18].

After this 12 s period a UE in Cell\_PCH or URA\_PCH is considered to be "out of service area" and shall perform actions according to [16].

On transition from CELL\_DCH to CELL\_PCH/URA\_PCH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

##### 4.2.2.1.3 7.68 Mcps TDD option

The UE shall measure the PCCPCH RSCP level of the serving cell and evaluate the cell selection criterion  $S_{rxlev}$  defined in [18] for the serving cell at least every DRX cycle. The UE shall filter the PCCPCH RSCP measurement of the serving cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least  $T_{measureTDD}/2$  (see table 4.1B).

If the UE has evaluated in  $N_{serv}$  successive measurements that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated in the measurement control system information, regardless of the measurement rules currently limiting UE measurement activities.

If the UE has not found any new suitable cell based on searches and measurements of the neighbour cells indicated in the measurement control system information for 12 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in [18].

On transition from CELL\_DCH to CELL\_PCH/URA\_PCH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

## 4.2.2.2 Measurement of intra-frequency cells

### 4.2.2.2.1 3.84 Mcps option

The UE shall measure PCCPCH RSCP at least every  $T_{\text{measureTDD}}$  (see table 4.1) for intra-frequency cells that are identified and measured according to the measurement rules.  $T_{\text{measureTDD}}$  is defined in Table 4.1. The UE shall filter PCCPCH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurements used for filtering is at least  $T_{\text{measureTDD}}/2$ .

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better ranked than the serving cell within  $T_{\text{evaluateTDD}}$  (see table 4.1), from the moment the intra-frequency cell became at least 2 dB better ranked than the current serving cell, provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the intra frequency cell is better ranked than the serving cell, the UE shall evaluate this intra frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

If the UE is receiving the MTCH, the UE shall be able to identify new intra-frequency cells and take them into use for MTCH combing purposes as defined in section 8.4.2.2.1.

### 4.2.2.2.2 1.28 Mcps option

The UE shall measure PCCPCH RSCP at least every  $T_{\text{measureNTDD}}$  (see table 4.1A) for intra-frequency cells that are identified and measured according to the measurement rules.  $T_{\text{measureNTDD}}$  is defined in Table 4.1A. The UE shall filter PCCPCH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least  $T_{\text{measureNTDD}}/2$ .

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better ranked than the serving cell within  $T_{\text{evaluateNTDD}}$  (see table 4.1A), from the moment the intra-frequency cell became at least 3 dB better ranked than the current serving cell, provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the intra frequency cell is better ranked than the serving cell, the UE shall evaluate this intra frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

If the UE is receiving the MTCH, the UE shall be able to identify new intra-frequency cells and take them into use for MTCH combing purposes as defined in section 8.4A.2.2.1.

### 4.2.2.2.3 7.68 Mcps option

The UE shall measure PCCPCH RSCP at least every  $T_{\text{measureTDD}}$  (see table 4.1B) for intra-frequency cells that are identified and measured according to the measurement rules.  $T_{\text{measureTDD}}$  is defined in Table 4.1B. The UE shall filter PCCPCH RSCP measurements of each measured intra-frequency cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurements used for filtering is at least  $T_{\text{measureTDD}}/2$ .

The filtering shall be such that the UE shall be capable of evaluating that an intra-frequency cell has become better ranked than the serving cell within  $T_{\text{evaluateTDD}}$  (see table 4.1B), from the moment the intra-frequency cell became at least 2 dB better ranked than the current serving cell, provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the intra frequency cell is better ranked than the serving cell, the UE shall evaluate this intra frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

## 4.2.2.3 Measurement of inter-frequency TDD cells

If priority information for UTRA TDD carrier frequencies is provided in the measurement control systems information and  $S_{\text{rxlevServingCell}} > S_{\text{prioritysearch}}$  then the UE shall search for any higher priority UTRA inter-frequency cells at least every  $T_{\text{higher\_priority\_search}}$  where  $T_{\text{higher\_priority\_search}}$  is described in section 4.2.2. If higher priority UTRA cells are found by the higher priority search, they shall be measured at least every  $(N_{\text{carrier}}-1) * T_{\text{measureTDD}}$  for 3.84 Mcps option and 7.68

Mcps option,  $(N_{\text{carrier}}-1) * T_{\text{measureNTDD}}$  for 1.28 Mcps option. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell. If priority information for UTRA TDD carrier frequencies is provided in the measurement control systems information and  $S_{\text{rxlev}}^{\text{ServingCell}} \leq S_{\text{prioritysearch}}$ , the rules defined below apply irrespective of the priority of the inter-frequency layer.

#### 4.2.2.3.1 3.84 Mcps option

The UE shall measure PCCPCH RSCP at least every  $(N_{\text{carrier}}-1) * T_{\text{measureTDD}}$  (see table 4.1) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter  $N_{\text{carrier}}$  is the number of carriers used for TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the first and the last measurements used for filtering is at least  $T_{\text{measureTDD}}/2$ .

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within  $(N_{\text{carrier}}-1) * T_{\text{evaluateTDD}}$  from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

#### 4.2.2.3.2 1.28 Mcps option

The UE shall measure PCCPCH RSCP at least every  $(N_{\text{carrier}}-1) * T_{\text{measureNTDD}}$  (see table 4.1A) for inter-frequency 1.28 Mcps TDD OPTION cells that are identified and measured according to the measurement rules. The parameter  $N_{\text{carrier}}$  is the number of carriers used for 1.28 Mcps TDD OPTION cells. The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least  $T_{\text{measureNTDD}}/2$ .

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within  $(N_{\text{carrier}}-1) * T_{\text{evaluateNTDD}}$  from the moment the inter-frequency cell became at least 6 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 6 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

In the case of multi-frequency network,  $N_{\text{carrier}}$  is the number of primary frequencies.

#### 4.2.2.3.3 7.68 Mcps option

The UE shall measure PCCPCH RSCP at least every  $(N_{\text{carrier}}-1) * T_{\text{measureTDD}}$  (see table 4.1B) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter  $N_{\text{carrier}}$  is the number of carriers used for TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured inter-frequency cell using at least 2 measurements, which are taken so that the time difference between the first and the last measurements used for filtering is at least  $T_{\text{measureTDD}}/2$ .

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within  $(N_{\text{carrier}}-1) * T_{\text{evaluateTDD}}$  from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

#### 4.2.2.3A 1.28 Mcps TDD to 3.84 Mcps TDD cell re-selection

This requirement only applies to 1.28 Mcps UEs supporting this mode.

The ranking of the low and high chip rate TDD cells shall be made according to the cell reselection criteria specified in [18].

If priority information for UTRA TDD carrier frequencies is provided in the measurement control systems information and  $S_{rxlev}^{ServingCell} > S_{prioritysearch}$  then the UE shall search for any higher priority UTRA TDD 3.84 Mcps option cells at least every  $T_{higher\_priority\_search}$  where  $T_{higher\_priority\_search}$  is described in section 4.2.2. If higher priority UTRA TDD 3.84 Mcps option cells are found by the higher priority search, they shall be measured at least every  $(N_{carrier}-1) * T_{measureTDD}$ . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell. If priority information for UTRA TDD carrier frequencies is provided in the measurement control systems information and  $S_{rxlev}^{ServingCell} \leq S_{prioritysearch}$ , the rules defined below apply irrespective of the priority of the inter-frequency layer.

The UE shall measure PCCPCH RSCP at least every  $N_{TDDcarrier} * T_{measureTDD}$  (see table 4.1A) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter  $N_{carrier}$  is the number of carriers used for 3.84 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured high chip rate TDD cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least  $T_{measureTDD}/2$ .

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a high chip rate TDD cell has become better ranked than the serving cell within  $N_{TDDcarrier} * T_{evaluateTDD}$  from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 3.84Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 3.84Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

#### 4.2.2.3B 3.84 Mcps TDD to 1.28 Mcps TDD cell re-selection

This requirement in this section only applies to UEs supporting both 3.84 Mcps TDD and 1.28Mcps TDD.

If priority information for UTRA TDD carrier frequencies is provided in the measurement control systems information and  $S_{rxlev}^{ServingCell} > S_{prioritysearch}$  then the UE shall search for any higher priority UTRA TDD 1.28 Mcps option cells at least every  $T_{higher\_priority\_search}$  where  $T_{higher\_priority\_search}$  is described in section 4.2.2. If higher priority UTRA TDD 1.28 Mcps option cells are found by the higher priority search, they shall be measured at least every  $(N_{carrier}-1) * T_{measureNTDD}$ . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell. If priority information for UTRA TDD carrier frequencies is provided in the measurement control systems information and  $S_{rxlev}^{ServingCell} \leq S_{prioritysearch}$ , the rules defined below apply irrespective of the priority of the inter-frequency layer.

The UE shall measure PCCPCH RSCP at least every  $N_{carrierNTDD} * T_{measureNTDD}$  (see table 4.1A) for inter-frequency 1.28 Mcps TDD OPTION cells that are identified and measured according to the measurement rules. The parameter  $N_{carrierNTDD}$  is the number of carriers used for 1.28 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured 1.28 Mcps TDD cell using at least 2 measurements, which are taken so that the time difference between the measurements is at least  $T_{measureNTDD}/2$ .

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a 1.28 Mcps TDD cell has become better ranked than the serving cell within  $N_{carrierNTDD} * T_{evaluateNTDD}$  from the moment the inter-frequency cell became at least 3 better ranked than the current serving cell provided that Treselection timer is set to zero. For non-

identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 1.28 Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 1.28 Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

In the case of cell re-selection to 1.28 Mcps TDD multi-frequency network,  $N_{\text{carrierNTDD}}$  is the number of primary frequencies.

#### 4.2.2.3C 7.68 Mcps TDD to 3.84 Mcps TDD cell re-selection

This requirement in this section only applies to UEs supporting both 3.84 Mcps TDD and 7.68Mcps TDD.

The ranking of 3.84 Mcps and 7.68 Mcps chip rate TDD cells shall be made according to the cell reselection criteria specified in [18].

If priority information for UTRA TDD carrier frequencies is provided in the measurement control systems information and  $S_{\text{rxlevServingCell}} > S_{\text{prioritysearch}}$  then the UE shall search for any higher priority UTRA TDD 3.84 Mcps option cells at least every  $T_{\text{higher\_priority\_search}}$  where  $T_{\text{higher\_priority\_search}}$  is described in section 4.2.2. If higher priority UTRA TDD 3.84 Mcps option cells are found by the higher priority search, they shall be measured at least every  $(N_{\text{carrier}}-1) * T_{\text{measureTDD}}$ . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell. If priority information for UTRA TDD carrier frequencies is provided in the measurement control systems information and  $S_{\text{rxlevServingCell}} \leq S_{\text{prioritysearch}}$ , the rules defined below apply irrespective of the priority of the inter-frequency layer.

The UE shall measure PCCPCH RSCP at least every  $N_{\text{TDDcarrier}} * T_{\text{measureTDD}}$  (see Table 4.1B) for inter-frequency cells that are identified and measured according to the measurement rules. The parameter  $N_{\text{carrier}}$  is the number of carriers used for 3.84 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured 3.84 Mcps chip rate TDD cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least  $T_{\text{measureTDD}}/2$ .

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a 3.84 Mcps chip rate TDD cell has become better ranked than the serving cell within  $N_{\text{TDDcarrier}} * T_{\text{evaluateTDD}}$  from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 3.84Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 3.84Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

#### 4.2.2.3D 3.84 Mcps TDD to 7.68 Mcps TDD cell re-selection

This requirement in this section only applies to UEs supporting both 3.84 Mcps TDD and 7.68Mcps TDD.

If priority information for UTRA TDD carrier frequencies is provided in the measurement control systems information and  $S_{\text{rxlevServingCell}} > S_{\text{prioritysearch}}$  then the UE shall search for any higher priority UTRA TDD 7.86 Mcps option cells at least every  $T_{\text{higher\_priority\_search}}$  where  $T_{\text{higher\_priority\_search}}$  is described in section 4.2.2. If higher priority UTRA TDD 7.86 Mcps option cells are found by the higher priority search, they shall be measured at least every  $(N_{\text{carrier}}-1) * T_{\text{measureTDD}}$ . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell. If priority information for UTRA TDD carrier frequencies is provided in the measurement control systems information and  $S_{\text{rxlevServingCell}} \leq S_{\text{prioritysearch}}$ , the rules defined below apply irrespective of the priority of the inter-frequency layer.

The UE shall measure PCCPCH RSCP at least every  $N_{\text{carrierNTDD}} * T_{\text{measureNTDD}}$  (see Table 4.1B) for inter-frequency 7.68 Mcps TDD OPTION cells that are identified and measured according to the measurement rules. The parameter

$N_{\text{carrierNTDD}}$  is the number of carriers used for 7.68 Mcps TDD cells. The UE shall filter PCCPCH RSCP measurements of each measured 7.68 Mcps TDD cell using at least 2 measurements, which are taken so that the time difference between the first measurement and the last measurement is at least  $T_{\text{measureNTDD}}/2$ .

The filtering of PCCPCH RSCP shall be such that the UE shall be capable of evaluating that a 7.68 Mcps TDD cell has become better ranked than the serving cell within  $N_{\text{carrierNTDD}} * T_{\text{evaluateNTDD}}$  from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 3 dB better ranked than the current serving cell provided that Treselection timer is set to zero.

If Treselection timer has a non zero value and the inter-frequency 7.68 Mcps TDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency 7.68 Mcps TDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

#### 4.2.2.4 Measurement of inter-frequency FDD cells

If priority information for UTRA carrier frequencies is provided in the measurement control systems information and  $S_{\text{rxlev}}^{\text{ServingCell}} > S_{\text{prioritysearch}}$  then the UE shall search for any higher priority UTRA FDD cells at least every  $T_{\text{higher\_priority\_search}}$  where  $T_{\text{higher\_priority\_search}}$  is described in section 4.2.2. If higher priority UTRA FDD cells are found by the higher priority search, they shall be measured at least every  $(N_{\text{carrier}}-1) * T_{\text{measureFDD}}$ . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell. If priority information for UTRA carrier frequencies is provided in the measurement control systems information and  $S_{\text{rxlev}}^{\text{ServingCell}} \leq S_{\text{prioritysearch}}$ , the rules defined below apply irrespective of the priority of UTRA FDD layer.

##### 4.2.2.4.1 3.84 Mcps option

The UE shall measure the CPICH RSCP and CPICH Ec/Io of each FDD neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in [18], at least every  $T_{\text{measureFDD}}$  (see table 4.1). The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements which are taken so that the time difference between the first and last measurements used for filtering is at least  $T_{\text{measureFDD}}/2$ .

The filtering of CPICH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within  $N_{\text{carrierFDD}} * T_{\text{evaluateFDD}}$  from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. The parameter  $N_{\text{carrierFDD}}$  is the number of carriers used for FDD cells.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in [18]. If FDD cell has been ranked as the best cell and IE cell\_selection\_and\_reselection-quality\_measure is set to CPICH Ec/No, then UE shall perform a second ranking of the FDD cells using CPICH Ec/Io as the measurement quantity, before performing cell reselection.

##### 4.2.2.4.2 1.28 Mcps option

This requirement only applies to 1.28 Mcps UEs supporting both 1.28 Mcps TDD OPTION and FDD.

The UE shall measure the CPICH RSCP and CPICH Ec/Io at least every  $N_{\text{carrierFDD}} * T_{\text{measureFDD}}$  (see table 4.1A) for inter-frequency FDD cells that are identified and measured according to the measurement rules. The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements which are taken so that the time difference between the first measurement and the last measurement used for filtering is at least  $T_{\text{measureFDD}}/2$ .

CPICH RSCP is used as basic measurement quantity for cell ranking, the filtering of CPICH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within  $N_{\text{carrierFDD}} * T_{\text{evaluateFDD}}$  from the moment the inter-frequency cell became at least 5 dB better ranked than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better ranked than the current serving cell provided that Treselection timer is set to zero. The parameter  $N_{\text{carrierFDD}}$  is the number of carriers used for FDD cells.

If Treselection timer has a non zero value and the inter-frequency FDD cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency FDD cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. If FDD cell has been ranked as the best cell and IE cell\_selection\_and\_reselection-quality\_measure is set to CPICH Ec/No, then UE shall perform a second ranking of the FDD cells using CPICH Ec/Io as the measurement quantity, before performing cell re-selection.

#### 4.2.2.4.3 7.68 Mcps option

The UE shall measure the CPICH RSCP and CPICH Ec/Io of each FDD neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in [18], at least every  $T_{\text{measureFDD}}$  (see table 4.1B). The UE shall filter CPICH RSCP measurements of each measured inter-frequency cell using at least 2 measurements which are taken so that the time difference between the first and last measurements used for filtering is at least  $T_{\text{measureFDD}}/2$ .

The filtering of CPICH RSCP shall be such that the UE shall be capable of evaluating that an already identified inter-frequency cell has become better ranked than the serving cell within  $N_{\text{carrierFDD}} * T_{\text{evaluateFDD}}$  from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. For non-identified inter-frequency cells, the filtering shall be such that the UE shall be capable of evaluating that inter-frequency cell has become better ranked than the serving cell within 30 s from the moment the inter-frequency cell became at least 5 dB better than the current serving cell provided that Treselection timer is set to zero. The parameter  $N_{\text{carrierFDD}}$  is the number of carriers used for FDD cells.

If Treselection timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in [18]. If FDD cell has been ranked as the best cell and IE cell\_selection\_and\_reselection-quality\_measure is set to CPICH Ec/No, then UE shall perform a second ranking of the FDD cells using CPICH Ec/Io as the measurement quantity, before performing cell re-selection.

#### 4.2.2.5 Measurement of inter-RAT GSM cells

##### 4.2.2.5.1 3.84 Mcps option

The requirements in this subclause shall apply if the UE uses the cell ranking algorithm for inter-RAT cell reselection [18].

The UE shall measure the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in [18], at least every  $T_{\text{measureGSM}}$  (see table 4.1). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If GSM measurements are required by the measurement rules in [18], The UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers and rank the verified GSM BCCH cells according to the cell re-selection criteria in [18]. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell.

If the UE detects a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

If Treselection timer has a non zero value and the inter-RAT GSM cell is better ranked than the serving cell, the UE shall evaluate this inter-RAT GSM cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

#### 4.2.2.5.2 1.28 Mcps option

The requirements in this subclause shall apply if the UE uses the cell ranking algorithm for inter-RAT cell reselection [18].

The UE shall measure the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in [18], at least every  $T_{\text{measureGSM}}$  (see table 4.1A). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If GSM measurements are required by the measurement rules in [18], the UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers and rank the verified GSM BCCH cells according to the cell re-selection criteria in [18]. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell.

If the UE detects a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

If Treselection timer has a non zero value and the inter-RAT GSM cell is better ranked than the serving cell, the UE shall evaluate this inter-RAT GSM cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

#### 4.2.2.5.3 7.68 Mcps option

The requirements in this subclause shall apply if the UE uses the cell ranking algorithm for inter-RAT cell reselection [18].

The UE shall measure the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell, according to the measurement rules defined in [18], at least every  $T_{\text{measureGSM}}$  (see table 4.1B). The UE shall maintain a running average of 4 measurements for each cell. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If GSM measurements are required by the measurement rules in [18], The UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers and rank the verified GSM BCCH cells according to the cell re-selection criteria in [18]. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell.

If the UE detects a BSIC, which is not indicated in the measurement control system information, the UE shall not consider that GSM BCCH carrier in cell reselection. The UE also shall not consider the GSM BCCH carrier in cell reselection, if the UE can not demodulate the BSIC of that GSM BCCH carrier.

If Treselection timer has a non zero value and the inter-RAT GSM cell is better ranked than the serving cell, the UE shall evaluate this inter-RAT GSM cell for the Treselection time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

#### 4.2.2.5.4 Cell reselection based on priority information

The requirements in this subclause shall apply if the UE uses the absolute priorities based algorithm for inter-RAT cell reselection [18].

If  $S_{\text{rxlev}}^{\text{ServingCell}} > S_{\text{prioritysearch}}$  then

- the UE may not search for, or measure GSM cells if the priority of GSM is lower than the serving cell.



- the UE shall search for and measure GSM cells if the priority of GSM is higher than the serving cell. The minimum rate at which the UE is required to search for and measure such layers may be reduced in this scenario to maintain UE battery life.

If  $S_{rxlev}^{ServingCell} \leq S_{prioritysearch}$  then the UE shall measure, according to the measurement rules defined in [18], at least every  $T_{measure,GSM}$  (see table 4.1, 4.1A and 4.1B):

- if a detailed neighbour cell list is provided, the signal level of the GSM BCCH carrier of each GSM neighbour cell indicated in the measurement control system information of the serving cell; or
- if only BCCH carriers are provided, the signal level of the GSM BCCH carriers indicated in the measurement control system information of the serving cell.

*Note : If it is concluded that only blacklist, or only whitelist can be used for reselection to GSM then one of these bullets can be deleted.*

If  $S_{rxlev}^{ServingCell} > S_{prioritysearch}$  then the UE shall search for GSM BCCH carrier at least every  $T_{higher\_priority\_search}$  where  $T_{higher\_priority\_search}$  is described in section 4.2.2. When higher priority GSM BCCH carriers are found by the higher priority search, they shall be measured at least every  $T_{measure,GSM}$ , and the UE shall decode the BSIC of the GSM BCCH carrier. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection to continuously verify the BSIC of the GSM BCCH carrier every 30s. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell. If  $S_{rxlev}^{ServingCell} \leq S_{prioritysearch}$ , the rules defined below apply irrespective of the priority of the GSM layer.

The UE shall maintain a running average of 4 measurements for each GSM BCCH carrier. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If continuous GSM measurements are required by the measurement rules in [18], the UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell. If the UE detects on a BCCH carrier a BSIC which is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform BSIC re-confirmation for that cell.

The UE shall not consider the GSM BCCH carrier in cell reselection, if the UE cannot demodulate the BSIC of that GSM BCCH carrier. Additionally, the UE shall not consider a GSM neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

#### 4.2.2.5a Measurements of inter-RAT E-UTRA cells

The UE shall be able to identify new E-UTRA cells and perform RSRP measurements of identified E-UTRA cells if carrier frequency information is provided by the serving cell, even if no explicit neighbour list with physical layer cell identities is provided.

If  $S_{rxlev}^{ServingCell} > S_{prioritysearch}$  then the UE shall search for and measure E-UTRA layers of higher priority at least every  $T_{higher\_priority\_search}$  where  $T_{higher\_priority\_search}$  is described in section 4.2.2.. The minimum rate at which the UE is required to search for and measure such layers may be reduced in this scenario to maintain UE battery life.

If  $S_{rxlev}^{ServingCell} \leq S_{prioritysearch}$ , then the UE shall search for and measure E-UTRA frequency layers of higher or lower priority in preparation for possible reselection. In this scenario, the minimum rate at which the UE is required to search for and measure higher priority layers is not reduced and shall be the same as that defined below for a lower priority layers.

The UE shall be able to evaluate whether a new detectable lower priority inter-RAT E-UTRA cell meets the reselection criteria defined in [18] within  $K_{carrier} * T_{detectE-UTRA}$ , where  $T_{detectE-UTRA}$  is given in Table 4.2 or 4.2A or 4.2B if at least E-UTRA carrier frequency information is provided in the inter-RAT measurement control system information when  $T_{reselection} = 0$  provided that the reselection criteria is met by a margin of at least 6dB. The parameter  $K_{carrier}$  is the number of E-UTRA carrier frequencies indicated in the inter-RAT measurement control system information. An inter-RAT E-UTRAN cell is considered to be detectable if:

- $RSRP|_{dBm}$  and  $RSRP \hat{E}s/Iot_{,}$  according to Annex B.1.1 for a corresponding Band<sub>l</sub>

- SCH\_RP and SCH  $\hat{E}_s/\text{Tot}$ , according to Annex B.1.1 for a corresponding Band

The UE shall measure RSRP at least every  $K_{\text{carrier}} * T_{\text{measure,EUTRA}}$  as defined in table 4.2 or 4.2A or 4.2B for identified E-UTRA cells.

When higher priority cells are found by the higher priority search, they shall be measured at least every  $T_{\text{measureE-UTRA}}$ . If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this section shall still be met by the UE before it makes any determination that it may stop measuring the cell.

If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall filter RSRP measurements of each measured E-UTRA cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least  $(K_{\text{carrier}} * T_{\text{measure,EUTRA}})/2$ .

RSRP measurements of E-UTRA cells shall not be filtered over a longer period than that specified in Table 4.2 or 4.2A or 4.2B.

The UE shall not consider an E-UTRA neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

For an inter-RAT E-UTRA cell that has been already detected, but that has not been reselected to, The filtering shall be such that the UE shall be capable of evaluating that the EUTRAN cell has met reselection criterion defined in [25] within  $K_{\text{carrier}} * T_{\text{evaluateEUTRA}}$  as specified in table 4.2 or 4.2A or 4.2B provided that the reselection criteria is met by a margin of at least 6dB when  $T_{\text{reselection}} = 0$ .

If  $T_{\text{reselection}}$  timer has a non zero value and an E-UTRA cell is better ranked than the serving cell, the UE shall evaluate this E-UTRA cell for the  $T_{\text{reselection}}$  time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

#### 4.2.2.6 Evaluation of cell reselection criteria

##### 4.2.2.6.1 3.84 Mcps option

The UE shall evaluate the cell re-selection criteria defined in [18] for the cells, which have new measurement results available, at least once every DRX cycle.

UE shall perform cell reselection immediately after the UE has found a better ranked suitable cell unless less than 1 second has elapsed from the moment the UE started camping on the current serving cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

##### 4.2.2.6.2 1.28 Mcps option

The UE shall evaluate the cell re-selection criteria defined in [18] for the cells, which have new measurement results available, at least every DRX cycle.

Cell reselection shall take place immediately after the UE has found a better ranked suitable cell unless the UE has made cell reselection within the last 1 second.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

##### 4.2.2.6.3 7.68 Mcps option

The UE shall evaluate the cell re-selection criteria defined in [18] for the cells, which have new measurement results available, at least once every DRX cycle.

UE shall perform cell reselection immediately after the UE has found a better ranked suitable cell unless less than 1 second has elapsed from the moment the UE started camping on the current serving cell.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

## 4.2.2.7 Maximum interruption time in paging reception

### 4.2.2.7.1 3.84 Mcps option

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

At inter-frequency and inter-RAT cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-frequency cell. For inter-frequency cell re-selection, the interruption time shall not exceed  $T_{SI} + 50$  ms. For inter-RAT cell re-selection the interruption time shall not exceed  $T_{BCCH} + 50$  ms for GSM or  $T_{SI-EUTRA} + [50\text{ms}]$  for E-UTRA.

$T_{SI}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell.

$T_{BCCH}$  is the maximum time allowed to read BCCH data from a GSM cell as defined in [21].

$T_{SI-EUTRA}$  is the maximum time allowed to read system information from an E-UTRA cell [24].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors and does not take into account cell re-selection failure.

**Table 4.1:  $T_{\text{measureTDD}}$ ,  $T_{\text{evaluateTDD}}$ ,  $T_{\text{measureNTDD}}$ ,  $T_{\text{evaluateNTDD}}$ ,  $T_{\text{measureFDD}}$ ,  $T_{\text{evaluateFDD}}$  and  $T_{\text{measureGSM}}$**

| DRX cycle length [s] | $N_{\text{serv}}$ (number of DRX cycles) | $T_{\text{measureTDD}}$ [s] (number of DRX cycles) | $T_{\text{evaluateTDD}}$ [s] (number of DRX cycles) | $T_{\text{measureNTDD}}$ [s] (number of DRX cycles) | $T_{\text{evaluateNTDD}}$ [s] (number of DRX cycles) | $T_{\text{measureFDD}}$ [s] (number of DRX cycles) | $T_{\text{evaluateFDD}}$ [s] (number of DRX cycles) | $T_{\text{measureGSM}}$ [s] (number of DRX cycles) |
|----------------------|--|--|---|---|--|--|---|--|
| 0.08                 | 4  | 0.64 (8 DRX cycles)                                | 2.56 (32 DRX cycles)                                | 0.64 (8 DRX cycles)                                 | 2.56 (32 DRX cycles)                                 | 0.64 (8 DRX cycles)                                | 2.56 (32 DRX cycles)                                | 2.56 (32 DRX cycles)                               |
| 0.16                 | 4  | 0.64 (4)   | 2.56 (16)   | 0.64 (4)  | 2.56 (16)  | 0.64 (4)   | 2.56 (16)   | 2.56 (16)  |
| 0.32                 | 4  | 1.28 (4)   | 5.12 (16)   | 1.28 (4)  | 5.12 (16)  | 1.28 (4)   | 5.12 (16)   | 5.12 (16)  |
| 0.64                 | 4  | 1.28 (2)   | 5.12 (8)  | 1.28 (2)  | 5.12 (8)   | 1.28 (2)   | 5.12 (8)  | 5.12 (8)   |
| 1.28                 | 2  | 1.28 (1)   | 6.4 (5)   | 1.28 (1)  | 6.4 (5)  | 1.28 (1)   | 6.4 (5)   | 6.4 (5)  |
| 2.56                 | 2  | 2.56 (1)   | 7.68 (3)  | 2.56 (1)  | 7.68 (3)   | 2.56 (1)   | 7.68 (3)  | 7.68 (3)   |
| 5.12                 | 1  | 5.12 (1)   | 10.24 (2)   | 5.12 (1)  | 10.24 (2)  | 5.12 (1)   | 10.24 (2)   | 10.24 (2)  |

**Table 4.2:  $T_{\text{detectE-UTRA}}$ ,  $T_{\text{measureE-UTRA}}$  and  $T_{\text{evaluateEUTRA}}$**

| DRX cycle length [s] | $T_{\text{detectE-UTRA}}$ [s] | $T_{\text{measureE-UTRA}}$ [s] (number of DRX cycles) | $T_{\text{evaluateEUTRA}}$ [s] (number of DRX cycles) |
|----------------------|-------------------------------|---|---|
| 0.08                 | 30                            | 2.56 (32)   | 7.68 (96)   |
| 0.16                 |                               | 2.56 (16)   | 7.68 (48)   |
| 0.32                 |                               | 5.12 (16)   | 15.36 (48)  |
| 0.64                 |                               | 5.12 (8)  | 15.36 (24)  |
| 1.28                 |                               | 6.4 (5)   | 19.2 (15)   |
| 2.56                 | 60                            | 7.68 (3)  | 23.04 (9)   |
| 5.12                 |                               | 10.24 (2)   | 30.72 (6)   |

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [16].

### 4.2.2.7.2 1.28 Mcps option

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

At inter-frequency and inter-RAT cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-frequency cell. For inter-frequency cell re-selection the interruption time must not exceed  $T_{SI} + 50$  ms. For inter-Rat cell re-selection the interruption time must not exceed  $T_{BCCH} + 50$  ms for GSM or  $T_{SI-EUTRA} + [50\text{ms}]$  for E-UTRA.

$T_{SI}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell.

$T_{BCCH}$  is the maximum time allowed to read BCCH data from a GSM cell [21].

$T_{SI-EUTRA}$  is the maximum time allowed to read system information from an E-UTRA cell [24].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors and does not take into account cell re-selection failure.

**Table 4.1A:  $T_{\text{measureNTDD}}$ ,  $T_{\text{evaluateNTDD}}$ ,  $T_{\text{measureTDD}}$ ,  $T_{\text{evaluateTDD}}$ ,  $T_{\text{measureFDD}}$ ,  $T_{\text{evaluateFDD}}$  and  $T_{\text{measureGSM}}$**

| DRX cycle length [s] | $N_{\text{serv}}$ (number of DRX cycles) | $T_{\text{measureNTDD}}$ [s] (number of DRX cycles) | $T_{\text{evaluateNTDD}}$ [s] (number of DRX cycles) | $T_{\text{measureTDD}}$ [s] (number of DRX cycles) | $T_{\text{evaluateTDD}}$ [s] (number of DRX cycles) | $T_{\text{measureFDD}}$ [s] (number of DRX cycles) | $T_{\text{evaluateFDD}}$ [s] (number of DRX cycles) | $T_{\text{measureGSM}}$ [s] (number of DRX cycles) |
|----------------------|--|---|--|--|---|--|---|--|
| 0.08                 | 4  | 0.64 (8 DRX cycles)                                 | 2.56 (32 DRX cycles)                                 | 0.64 (8 DRX cycles)                                | 2.56 (32 DRX cycles)                                | 0.64 (8 DRX cycles)                                | 2.56 (32 DRX cycles)                                | 2.56 (32 DRX cycles)                               |
| 0.16                 | 4  | 0.64 (4)  | 2.56 (16)  | 0.64 (4)   | 2.56 (16)   | 0.64 (4)   | 2.56 (16)   | 2.56 (16)  |
| 0.32                 | 4  | 1.28 (4)  | 5.12 (16)  | 1.28 (4)   | 5.12 (16)   | 1.28 (4)   | 5.12 (16)   | 5.12 (16)  |
| 0.64                 | 4  | 1.28 (2)  | 5.12 (8)   | 1.28 (2)   | 5.12 (8)  | 1.28 (2)   | 5.12 (8)  | 5.12 (8)   |
| 1.28                 | 2  | 1.28 (1)  | 6.4 (5)  | 1.28 (1)   | 6.4 (5)   | 1.28 (1)   | 6.4 (5)   | 6.4 (5)  |
| 2.56                 | 2  | 2.56 (1)  | 7.68 (3)   | 2.56 (1)   | 7.68 (3)  | 2.56 (1)   | 7.68 (3)  | 7.68 (3)   |
| 5.12                 | 1  | 5.12 (1)  | 10.24 (2)  | 5.12 (1)   | 10.24 (2)   | 5.12 (1)   | 10.24 (2)   | 10.24 (2)  |

**Table 4.2A:  $T_{\text{detectE-UTRA}}$ ,  $T_{\text{measureE-UTRA}}$  and  $T_{\text{evaluateEUTRA}}$**

| DRX cycle length [s] | $T_{\text{detectE-UTRA}}$ [s] | $T_{\text{measureE-UTRA}}$ [s] (number of DRX cycles) | $T_{\text{evaluateEUTRA}}$ [s] (number of DRX cycles) |
|----------------------|-------------------------------|---|---|
| 0.08                 | 30                            | 2.56 (32)   | 7.68 (96)   |
| 0.16                 |                               | 2.56 (16)   | 7.68 (48)   |
| 0.32                 |                               | 5.12 (16)   | 15.36 (48)  |
| 0.64                 |                               | 5.12 (8)  | 15.36 (24)  |
| 1.28                 |                               | 6.4 (5)   | 19.2 (15)   |
| 2.56                 | 60                            | 7.68 (3)  | 23.04 (9)   |
| 5.12                 |                               | 10.24 (2)   | 30.72 (6)   |

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s.

#### 4.2.2.7.3 7.68 Mcps option

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.

At intra-frequency cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency cell for paging reception. The interruption time shall not exceed 50 ms.

At inter-frequency and inter-RAT cell re-selection, the UE shall monitor the downlink of current serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-

frequency cell. For inter-frequency cell re-selection, the interruption time shall not exceed  $T_{SI} + 50$  ms. For inter-RAT cell re-selection the interruption time shall not exceed  $T_{BCCH} + 50$  ms for GSM or  $T_{SI-EUTRA} + [50\text{ms}]$  for E-UTRA.

$T_{SI}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell.

$T_{BCCH}$  is the maximum time allowed to read BCCH data from a GSM cell as defined in [21].

$T_{SI-EUTRA}$  is the maximum time allowed to read system information from an E-UTRA cell [24].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors and does not take into account cell re-selection failure.

**Table 4.1B:  $T_{\text{measureTDD}}$ ,  $T_{\text{evaluateTDD}}$ ,  $T_{\text{measureNTDD}}$ ,  $T_{\text{evaluateNTDD}}$ ,  $T_{\text{measureFDD}}$ ,  $T_{\text{evaluateFDD}}$  and  $T_{\text{measureGSM}}$**

| DRX cycle length [s] | $N_{\text{serv}}$ (number of DRX cycles) | $T_{\text{measureTDD}}$ [s] (number of DRX cycles) | $T_{\text{evaluateTDD}}$ [s] (number of DRX cycles) | $T_{\text{measureNTDD}}$ [s] (number of DRX cycles) | $T_{\text{evaluateNTDD}}$ [s] (number of DRX cycles) | $T_{\text{measureFDD}}$ [s] (number of DRX cycles) | $T_{\text{evaluateFDD}}$ [s] (number of DRX cycles) | $T_{\text{measureGSM}}$ [s] (number of DRX cycles) |
|----------------------|--|--|---|---|--|--|---|--|
| 0.08                 | 4  | 0.64 (8 DRX cycles)                                | 2.56 (32 DRX cycles)                                | 0.64 (8 DRX cycles)                                 | 2.56 (32 DRX cycles)                                 | 0.64 (8 DRX cycles)                                | 2.56 (32 DRX cycles)                                | 2.56 (32 DRX cycles)                               |
| 0.16                 | 4  | 0.64 (4)   | 2.56 (16)   | 0.64 (4)  | 2.56 (16)  | 0.64 (4)   | 2.56 (16)   | 2.56 (16)  |
| 0.32                 | 4  | 1.28 (4)   | 5.12 (16)   | 1.28 (4)  | 5.12 (16)  | 1.28 (4)   | 5.12 (16)   | 5.12 (16)  |
| 0.64                 | 4  | 1.28 (2)   | 5.12 (8)  | 1.28 (2)  | 5.12 (8)   | 1.28 (2)   | 5.12 (8)  | 5.12 (8)   |
| 1.28                 | 2  | 1.28 (1)   | 6.4 (5)   | 1.28 (1)  | 6.4 (5)  | 1.28 (1)   | 6.4 (5)   | 6.4 (5)  |
| 2.56                 | 2  | 2.56 (1)   | 7.68 (3)  | 2.56 (1)  | 7.68 (3)   | 2.56 (1)   | 7.68 (3)  | 7.68 (3)   |
| 5.12                 | 1  | 5.12 (1)   | 10.24 (2)   | 5.12 (1)  | 10.24 (2)  | 5.12 (1)   | 10.24 (2)   | 10.24 (2)  |

**Table 4.2B:  $T_{\text{measureE-UTRA}}$  and  $T_{\text{evaluateEUTRA}}$**

| DRX cycle length [s] | $T_{\text{detectE-UTRA}}$ [s] | $T_{\text{measureE-UTRA}}$ [s] (number of DRX cycles) | $T_{\text{evaluateEUTRA}}$ [s] (number of DRX cycles) |
|----------------------|-------------------------------|---|---|
| 0.08                 | 30                            | 2.56 (32)   | 7.68 (96)   |
| 0.16                 |                               | 2.56 (16)   | 7.68 (48)   |
| 0.32                 |                               | 5.12 (16)   | 15.36 (48)  |
| 0.64                 |                               | 5.12 (8)  | 15.36 (24)  |
| 1.28                 |                               | 6.4 (5)   | 19.2 (15)   |
| 2.56                 | 60                            | 7.68 (3)  | 23.04 (9)   |
| 5.12                 |                               | 10.24 (2)   | 30.72 (6)   |

In idle mode, UE shall support DRX cycles lengths 0.64, 1.28, 2.56 and 5.12 s, according to [16].

#### 4.2.2.8 Number of cells in cell lists

##### 4.2.2.8.1 3.84 Mcps option

For idle mode cell re-selection purposes, the UE shall be capable of monitoring:

- 32 intra-frequency cells (including serving cell), and
- 32 inter-frequency cells, including
  - TDD mode cells on maximum 2 additional TDD carriers, and
  - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers, and
- Depending on UE capability, 32 inter RAT GSM cells,
- Depending on UE capability, up to 4 E-UTRA TDD carriers, and
- Depending on UE capability, up to 4 E-UTRA FDD carriers

as indicated in cell information lists sent in system information (BCCH).

For a UE supporting E-UTRA measurements in RRC\_IDLE state, the UE shall be capable of monitoring a minimum total of at least 8 carrier frequency layers, including the intrafrequency serving layer and comprising of any allowed combination of E-UTRA FDD, E-UTRA TDD, UTRA FDD, UTRA TDD and GSM layers (one GSM layer corresponds to 32 cells).

#### 4.2.2.8.2 1.28 Mcps option

For idle mode cell re-selection purposes, the UE shall be capable of monitoring:

- 32 intra-frequency cells (including serving cell), and
- 32 inter-frequency cells, including
  - TDD mode cells on up to minimum 8 additional TDD carriers, and
  - Depending on UE capability, FDD mode cells distributed on up to 3 FDD carriers, and
- Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers,
- Depending on UE capability, up to 4 E-UTRA TDD carriers, and
- Depending on UE capability, up to 4 E-UTRA FDD carriers

as indicated in cell information lists sent in system information (BCCH).

For a UE supporting E-UTRA measurements in RRC\_IDLE state, the UE shall be capable of monitoring a minimum total of at least [10] carrier frequency layers, including the intrafrequency serving layer and comprising of any allowed combination of E-UTRA FDD, E-UTRA TDD, UTRA FDD, UTRA TDD and GSM layers (one GSM layer corresponds to 32 cells).

#### 4.2.2.8.3 7.68 Mcps option

For idle mode cell re-selection purposes, the UE shall be capable of monitoring:

- 32 intra-frequency cells (including serving cell), and
- 32 inter-frequency cells, including
  - TDD mode cells on maximum 2 additional TDD carriers, and
  - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers, and
- Depending on UE capability, 32 inter RAT GSM cells,
- Depending on UE capability, up to 4 E-UTRA carriers, and
- Depending on UE capability, up to 4 E-UTRA FDD carriers

as indicated in cell information lists sent in system information (BCCH).

For a UE supporting E-UTRA measurements in RRC\_IDLE state, the UE shall be capable of monitoring a minimum total of at least 8 carrier frequency layers, including the intrafrequency serving layer and comprising of any allowed combination of E-UTRA FDD, E-UTRA TDD, UTRA FDD, UTRA TDD and GSM layers (one GSM layer corresponds to 32 cells).

#### 4.2.2.9 Additional requirements for inter-frequency measurements when MBMS reception is active

##### 4.2.2.9.1 3.84 Mcps option

For MBMS capable UE, when MBMS reception is active the following requirements shall apply:

If the UE is required to perform inter-frequency measurements as indicated by the cell reselection measurement rules in 25.304, the UE shall ensure that it switches back to its serving cell frequency in time to perform demodulation of MTCH signals.

4.2.2.9.2 (void)

4.2.2.9.3 7.68 Mcps option

For MBMS capable UE, when MBMS reception is active the following requirements shall apply:

If the UE is required to perform inter-frequency measurements as indicated by the cell reselection measurement rules in 25.304, the UE shall ensure that it switches back to its serving cell frequency in time to perform demodulation of MTCH signals.

## 4.3 MBSFN cluster selection for carriers dedicated to MBSFN

### 4.3.1 Introduction

UEs supporting MBSFN services may search for and select an appropriate MBSFN cluster according to [18]. No test requirements are specified.

## 4.4 MBSFN cluster reselection for carriers dedicated to MBSFN

### 4.4.1 Introduction

UEs supporting MBSFN services employ MBSFN cluster reselection procedures in order to identify and select a more suitable MBSFN cluster on which to camp on (and to possibly receive service from) according to [18]. No test requirements are specified.

## 4.5 Minimization of Drive Tests (MDT)

### 4.5.1 1.28 Mcps option

UE supporting minimisation of drive tests shall be capable of logging measurements and reporting the logged measurements as specified in [27] in idle, CELL\_PCH and URA\_PCH states. The requirements for logged measurements are given in the following sections.

#### 4.5.1.1 Introduction

The MDT requirements consist of measurement requirements as specified in section 4.5.2.1 and relative time stamp accuracy requirements as specified in section 4.5.3.1. Both sets of requirements are applicable for intra-frequency, inter-frequency and inter-RAT cases in idle, CELL\_PCH and URA\_PCH states. The MDT procedures are described in [27].

#### 4.5.2 Measurements

The measurements (both RSRP and RSRQ for EUTRA, both RSCP and  $E_c/N_0$  for UTRA, P-CCPCH RSCP for UTRA 1.28 TDD, and Rxlev for GERAN) used by the UE for the logged MDT in idle, CELL\_PCH and URA\_PCH states shall be the same as specified for the serving cell measurement and evaluation in section 4.2.2.1.2, for the measurements of intra-frequency UTRAN cells in section 4.2.2.2.2, for the measurements of inter-frequency UTRAN cells in sections 4.2.2.3.2 and 4.2.2.4.2 and for the measurements of inter-RAT cells in sections 4.2.2.5.2.

### 4.5.2.1 Requirements

The measurement values that are used to meet serving cell and reselection requirements as specified in sections 4.2.2.1.2, 4.2.2.2.2, 4.2.2.3.2, 4.2.2.4.2 and 4.2.2.5.2 shall also apply to the values logged for MDT measurements in idle state.

The measurement values that are used to meet serving cell and reselection requirements as specified in section 5.6 shall also apply to the values logged for MDT measurements in CELL\_PCH state.

The measurement values that are used to meet serving cell and reselection requirements as specified in section 5.7 shall also apply for the values logged for MDT measurements in URA\_PCH state.

### 4.5.3 Relative Time Stamp Accuracy

The relative time stamp for a logged measurement is defined as the time from the moment the MDT configuration was received at the UE until the measurement was logged, see [16].

#### 4.5.3.1 Requirements

The accuracy of the relative time stamping is such that the drift of the time stamping shall be not more than  $\pm 2$  seconds per hour.

---

## 5 UTRAN Connected Mode Mobility

This section contains the requirements on the mobility procedures in UTRAN connected mode such as handover and cell re-selection.

Requirements related to the measurements in support of the execution of the UTRAN connected mode mobility procedures are specified in section 8.

The radio links the UE shall use are controlled by UTRAN with RRC signalling.

UE behaviour in response to UTRAN RRC messages is described in [16].

The purpose of Cell reselection in CELL\_FACH, CELL\_PCH and URA\_PCH states is that the UE shall select a better cell according to the cell reselection criteria in [18]. CELL\_FACH, CELL\_PCH and URA\_PCH states are described in [16].

### 5.1 TDD/TDD Handover

#### 5.1.1 Introduction

##### 5.1.1.1 3.84 Mcps TDD option

The TDD/TDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

The TDD/TDD handover procedure may cause the UE to change its frequency.

##### 5.1.1.2 1.28 Mcps TDD option

The purpose of TDD/TDD handover is to change the cell of the connection between UE and UTRAN. The handover procedure is initiated from UTRAN with a RRC message that implies a handover, refer to [16]. The handover procedure may cause the UE to change its frequency.

In the case of multi-frequency network, handover can occur between primary frequency in serving cell and primary frequency in target cell, primary frequency in serving cell and secondary frequency in target cell, secondary frequency in serving cell and primary frequency in target cell.



### 5.1.1.3 7.68 Mcps TDD option

The TDD/TDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

The TDD/TDD handover procedure may cause the UE to change its frequency.

## 5.1.2 Requirements

### 5.1.2.1 TDD/TDD handover delay

#### 5.1.2.1.1 3.84 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover are specified in [16].

When the UE receives a RRC message implying TDD/TDD handover with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH within  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH at the designated activation time + interruption time.

where:

$D_{\text{handover}}$  equals the RRC procedure performance value defined in [16] plus the interruption time stated in section 5.1.2.2.1.

#### 5.1.2.1.2 1.28 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover are specified in [16].

When the UE receives a RRC message that implies a TDD/TDD handover, with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall start transmission within  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH or the SYNC-UL in case that a handover to 1.28 Mcps TDD option with SYNCH uplink exchange is recommended at the designated activation time + interruption time.

where  $D_{\text{handover}}$  equals the RRC procedure performance value defined [16] plus the interruption time stated in section 5.1.2.2.2.

#### 5.1.2.1.3 7.68 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover are specified in [16].

When the UE receives a RRC message implying TDD/TDD handover with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH within  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH at the designated activation time + interruption time.

where:

- $D_{\text{handover}}$  equals the RRC procedure performance value defined in [16] plus the interruption time stated in section 5.1.2.2.3.

## 5.1.2.2 Interruption time

### 5.1.2.2.1 3.84 Mcps TDD option

The interruption time i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH, is dependent on whether the target cell is known for the UE or not.

If TDD/TDD intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than,

$$T_{\text{interrupt}} = T_{\text{offset}} + T_{\text{UL}} + 30 * F_{\text{SFN}} + 20 * \text{KC} + 180 * \text{UC} + 10 * F_{\text{max}} \text{ ms}$$

where,

|                     |   |
|---------------------|---|
| $T_{\text{offset}}$ | Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell and the time that can elapse until the appearance of a Beacon channel |
| $T_{\text{UL}}$     | Equal to 10 ms, the time that can elapse until the appearance of the UL timeslot in the target cell   |
| $F_{\text{SFN}}$    | Equal to 1 if SFN decoding is required and equal to 0 otherwise   |
| KC                  | Equal to 1 if a known target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise  |
| UC                  | Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise                                     |
| $F_{\text{max}}$    | denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.      |

An intra-frequency or inter-frequency TDD target cell shall be considered as known by the UE, if either or both of the following conditions are true:

- the target cell has been measured during the last 5 seconds
- the UE has had a radio link connected to the target cell during the last 5 seconds.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

### 5.1.2.2.2 1.28 Mcps TDD option

The interruption time i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH or the SYNC-UL in case that a handover with SYNCH uplink exchange is recommended, shall be less than the value defined in the equation below. There is different requirement on the interruption time depending on if the cell is known or not and if the SFN of the target cell has to be decoded by the UE or not.

If TDD/TDD intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than,

$$T_{\text{interrupt}} = T_{\text{offset}} + T_{\text{UL}} + 30 * F_{\text{SFN}} + 20 * \text{KC} + 180 * \text{UC} + 10 * F_{\text{max}} \text{ ms}$$

where,

|                     |   |
|---------------------|---|
| $T_{\text{offset}}$ | Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell and the time that can elapse until the appearance of a Beacon channel |
| $T_{\text{UL}}$     | Equal to 10 ms, the time that can elapse until the appearance of the UL timeslot in the target cell   |
| $F_{\text{SFN}}$    | Equal to 1 if SFN decoding is required and equal to 0 otherwise   |
| KC                  | Equal to 1 if a known target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise  |
| UC                  | Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise                                     |

$F_{\max}$  denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

A cell shall be regarded as known by the UE if either or both of the following conditions are true:

- it has been measured during the last 5 seconds or
- a dedicated connection existed between the UE and the cell during the last 5 seconds.

The SFN of the target cell needs not to be decoded by the UE if either or both of the following conditions are true:

- a handover with timing maintain is commanded by the UTRAN or
- the SFN of the target cell is known by the UE.

The interruption time requirement for the cell shall apply if the signal quality of the unknown cell is good enough for successful synchronisation with one attempt.

### 5.1.2.2.3 7.68 Mcps TDD option

The interruption time i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH, is dependent on whether the target cell is known for the UE or not.

If TDD/TDD intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than,

$$T_{\text{interrupt}} = T_{\text{offset}} + T_{\text{UL}} + 30 * F_{\text{SFN}} + 20 * \text{KC} + 180 * \text{UC} + 10 * F_{\text{max}} \text{ ms}$$

where,

|                     |   |
|---------------------|---|
| $T_{\text{offset}}$ | Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell and the time that can elapse until the appearance of a Beacon channel |
| $T_{\text{UL}}$     | Equal to 10 ms, the time that can elapse until the appearance of the UL timeslot in the target cell   |
| $F_{\text{SFN}}$    | Equal to 1 if SFN decoding is required and equal to 0 otherwise   |
| KC                  | Equal to 1 if a known target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise  |
| UC                  | Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/TDD handover and equal to 0 otherwise                                     |
| $F_{\text{max}}$    | denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.      |

An intra-frequency or inter-frequency TDD target cell shall be considered as known by the UE, if either or both of the following conditions are true:

- the target cell has been measured during the last 5 seconds
- the UE has had a radio link connected to the target cell during the last 5 seconds.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

## 5.2 TDD/FDD Handover

### 5.2.1 Introduction

#### 5.2.1.1 3.84 Mcps TDD option

The purpose of TDD/FDD handover is to change the radio access mode from TDD to FDD. The TDD/FDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

### 5.2.1.2 1.28 Mcps TDD option

The purpose of TDD/FDD handover is to change the radio access mode from TDD to FDD.

The TDD/FDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16]

### 5.2.1.3 7.68 Mcps TDD option

The purpose of TDD/FDD handover is to change the radio access mode from TDD to FDD. The TDD/FDD handover procedure is initiated from UTRAN with a RRC message that implies a hard handover as described in [16].

## 5.2.2 Requirements

The requirements in this section shall apply to UE supporting TDD and FDD.

### 5.2.2.1 TDD/FDD handover delay

#### 5.2.2.1.1 3.84 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover, are specified in [16].

When the UE receives a RRC message implying TDD/FDD handover with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCCH within RRC procedure delay seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCCH at the designated activation time + interruption time.

where:

$D_{\text{handover}}$  equals the RRC procedure performance value as defined in [16] plus the interruption time stated in section 5.2.2.2.

#### 5.2.2.1.2 1.28 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover, are specified in [16].

When the UE receives a RRC message that implies a TDD/FDD handover, with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCCH within  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCCH at the designated activation time + interruption time.

$D_{\text{handover}}$  equals the RRC procedure performance value defined in [16] plus the interruption time stated in section 5.2.2.2.2.

#### 5.2.2.1.3 7.68 Mcps TDD option

RRC procedure performance values for all RRC procedures that can command a hard handover, are specified in [16].

When the UE receives a RRC message implying TDD/FDD handover with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCCCH within RRC procedure delay seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink DPCH at the designated activation time + interruption time.

where:

- $D_{\text{handover}}$  equals the RRC procedure performance value as defined in [16] plus the interruption time stated in section 5.2.2.2.3.

## 5.2.2.2 Interruption time

### 5.2.2.2.1 3.84 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH, is dependent on whether the target cell is known for the UE or not.

If TDD/FDD handover is commanded, the interruption time shall be less than,

$$T_{\text{interrupt}} = T_{\text{offset}} + 40 + 50 * KC + 150 * UC + 10 * F_{\text{max}} \text{ ms}$$

where,

|                     |  |
|---------------------|--|
| $T_{\text{offset}}$ | Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell.   |
| KC                  | Equal to 1 if a known target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise                                   |
| UC                  | Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise                                |
| $F_{\text{max}}$    | denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH. |

An inter-frequency FDD target cell shall be considered known by the UE, if the target cell has been measured by the UE during the last 5 seconds.

The phase reference is the Primary CPICH.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

Note that the requirements in this section assume that N312 has the smallest possible value, i.e. only one in-sync indication as described in [23] is required.

### 5.2.2.2.2 1.28 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH, is dependent on whether the target cell is known for the UE or not.

If TDD/FDD handover is commanded, the interruption time shall be less than,

$$T_{\text{interrupt}} = T_{\text{IU}} + 40 + 50 * KC + 150 * UC + 10 * F_{\text{max}} \text{ ms}$$

where,

|                 |   |
|-----------------|---|
| $T_{\text{IU}}$ | The interruption uncertainty when changing the timing from the old to the new cell. $T_{\text{IU}}$ can be up to one frame (10 ms). |
| KC              | Equal to 1 if a known target cell is indicated in the RRC message implying 1.28Mcps TDD/FDD handover and equal to 0 otherwise.      |
| UC              | Equal to 1 if an unknown target cell is indicated in the RRC message implying 1.28Mcps TDD/FDD handover and equal to 0 otherwise.   |

$F_{\max}$  denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH.

An inter-frequency FDD target cell shall be considered known by the UE, if the target cell has been measured by the UE during the last 5 seconds.

The phase reference is the Primary CPICH.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

Note that the requirements in this section assume that N312 has the smallest possible value, i.e. only one in-sync indication as described in [23] is required.

### 5.2.2.2.3 7.68 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE starts transmission of the new uplink DPCH, is dependent on whether the target cell is known for the UE or not.

If TDD/FDD handover is commanded, the interruption time shall be less than,

$$T_{\text{interrupt}} = T_{\text{offset}} + 40 + 50 * KC + 150 * UC + 10 * F_{\max} \text{ ms}$$

where,

|                     |  |
|---------------------|--|
| $T_{\text{offset}}$ | Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell.   |
| KC                  | Equal to 1 if a known target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise                                   |
| UC                  | Equal to 1 if an unknown target cell is indicated in the RRC message implying TDD/FDD handover and equal to 0 otherwise                                |
| $F_{\max}$          | denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH. |

An inter-frequency FDD target cell shall be considered known by the UE, if the target cell has been measured by the UE during the last 5 seconds.

The phase reference is the Primary CPICH.

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

Note that the requirements in this section assume that N312 has the smallest possible value, i.e. only one in-sync indication as described in [23] is required.

## 5.3 TDD/GSM Handover

### 5.3.1 Introduction

#### 5.3.1.1 3.84 Mcps TDD option

The purpose of inter-RAT handover from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND) as described in [16].

### 5.3.1.2 1.28 Mcps TDD option

The purpose of inter-RAT handover from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND). The procedure is described in [16]

### 5.3.1.3 7.68 Mcps TDD option

The purpose of inter-RAT handover from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND) as described in [16].

## 5.3.2 Requirements

The requirements in this section shall apply to UE supporting TDD and GSM.

### 5.3.2.1 TDD/GSM handover delay

#### 5.3.2.1.1 3.84 Mcps TDD option

The RRC procedure performance value for the RRC HANDOVER FROM UTRAN COMMAND shall be 50 ms.

If the activation time is used in the RRC HANDOVER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified [22] on the new channel of the new RAT within  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified in [22] on the new channel of the new RAT at the designated activation time + interruption time.

$D_{\text{handover}}$  equals the RRC procedure performance value plus the interruption time stated in section 5.3.2.2.

#### 5.3.2.1.2 1.28 Mcps TDD option

The RRC procedure performance value for the RRC HANDOVER FROM UTRAN COMMAND shall be within 50 ms.

If the activation time is used in the RRC HANDOVER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified in [22] on the new channel within the new RAT within  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified in [22] on the new channel of the new RAT at the designated activation time + interruption time.

$D_{\text{handover}}$  equals the RRC procedure performance value (50 ms) plus the interruption time stated in section 5.3.2.2.2.

#### 5.3.2.1.3 7.68 Mcps TDD option

The RRC procedure performance value for the RRC HANDOVER FROM UTRAN COMMAND shall be 50 ms.

If the activation time is used in the RRC HANDOVER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified [22] on the new channel of the new RAT within  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to transmit as specified in [22] on the new channel of the new RAT at the designated activation time + interruption time.

$D_{\text{handover}}$  equals the RRC procedure performance value plus the interruption time stated in section 5.3.2.2.

### 5.3.2.2 Interruption time

#### 5.3.2.2.1 3.84 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE is ready to transmit on the new channel of the new RAT, is dependent on whether the UE has synchronised to the target cell or not before receiving the RRC HANDOVER FROM UTRAN COMMAND.

The interruption time for the purpose of TDD/GSM handover shall be less than the value in Table 5.4.

**Table 5.4: TDD/GSM interruption time**

| Synchronisation status   | Interruption time [ms] |
|--|------------------------|
| The UE has synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received     | 40                     |
| The UE has not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received | 140                    |

The requirements in Table 5.4 for the case where the UE has not synchronised to the GSM target cell before receiving the RRC HANDOVER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target cell is sufficient for successful synchronisation with one attempt.

If the UE is unable to synchronise to the GSM cell on the first attempt, it shall continue to search for synchronisation information for up to 800 ms. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [16].

#### 5.3.2.2.2 1.28 Mcps TDD option

The interruption time, i.e. the time between the end of last TTI containing a transport block on the old DPCH and the time the UE is ready to transmit on the new channel of the new RAT, is dependent on whether the UE has synchronised to the target cell or not before receiving the RRC HANDOVER FROM UTRAN COMMAND.

The interruption time for the purpose of TDD/GSM handover shall be less than the value in Table 5.4A.

**Table 5.4A: TDD/GSM interruption time**

| Synchronisation status   | Interruption time [ms] |
|--|------------------------|
| The UE has synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received     | 40                     |
| The UE has not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received | 140                    |

The requirements in Table 5.4A for the case where the UE has not synchronised to the GSM target cell before receiving the RRC HANDOVER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target cell is sufficient for successful synchronisation with one attempt.

If the UE is unable to synchronise to the GSM cell on the first attempt, it shall continue to search for synchronisation information for up to 800 ms. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [16].



### 5.3.2.2.3 7.68 Mcps TDD option

The interruption time, i.e. the time between the end of the last TTI containing a transport block on the old DPCH and the time the UE is ready to transmit on the new channel of the new RAT, is dependent on whether the UE has synchronised to the target cell or not before receiving the RRC HANDOVER FROM UTRAN COMMAND.

The interruption time for the purpose of TDD/GSM handover shall be less than the value in Table 5.4B.

**Table 5.4B: TDD/GSM interruption time**

| Synchronisation status   | Interruption time [ms] |
|--|------------------------|
| The UE has synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received     | 40                     |
| The UE has not synchronised to the GSM cell before the HANDOVER FROM UTRAN COMMAND is received | 140                    |

The requirements in Table 5.4B for the case where the UE has not synchronised to the GSM target cell before receiving the RRC HANDOVER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target cell is sufficient for successful synchronisation with one attempt.

If the UE is unable to synchronise to the GSM cell on the first attempt, it shall continue to search for synchronisation information for up to 800 ms. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [16].

## 5.3a TDD to E-UTRAN FDD Handover

### 5.3a.1 Introduction

The purpose of inter-RAT handover from UTRAN TDD to E-UTRAN FDD is to transfer a connection between the UE and UTRAN TDD to E-UTRAN FDD. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND). The procedure is described in TS 25.331.

Scheduled idle intervals according to the UE capability may be used to be able to make measurements on E-UTRAN.

### 5.3a.2 Requirements

The requirements in this section shall apply to UE supporting TDD and E-UTRAN FDD.

#### 5.3a.2.1 Handover delay

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND message with activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink PRACH channel within  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command, where:

- $D_{\text{handover}}$  equals the maximum RRC procedure delay defined plus the interruption time stated in section 5.3a.2.2.

The UE shall process the RRC procedures for the RRC HANDOVER FROM UTRAN COMMAND within [50] ms, which is noted as RRC procedure delay.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink PRACH channel at the designated activation time + interruption time.

#### 5.3a.2.2 Interruption time

The interruption time is the time between end of the last TTI in which the UE has received the handover command and the time the UE starts transmission of the PRACH in the new E-UTRA cell, excluding the RRC procedure delay. This requirement applies when UE is not required to perform any synchronisation procedure before transmitting on the new PRACH.

When inter-RAT handover to E-UTRAN is commanded, the interruption time shall be less than  $T_{\text{interrupt}}$ :

$$T_{\text{interrupt}} = T_{\text{search}} + T_{\text{IU}} + 20 \text{ ms}$$

where

$T_{\text{search}}$  is the time required to search the target cell when the target cell is not already known when the handover command is received by the UE. If the target cell is known, then  $T_{\text{search}} = 0$  ms.

$T_{\text{IU}}$  is the interruption uncertainty in acquiring the first available PRACH occasion in the new cell.  $T_{\text{IU}}$  can be up to 30 ms.

NOTE: The actual value of  $T_{\text{IU}}$  shall depend upon the PRACH configuration used in the target cell.

In the interruption requirement a cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds otherwise it is unknown. Relevant cell identification requirements are described in Section 8.1.2.7.1 for 3.84 Mcps TDD option and Section 8.1A.2.6.1 for 1.28 Mcps TDD option and Section 8.1B.2.7.1 for 7.68 Mcps TDD option.

## 5.3b TDD to E-UTRAN TDD Handover

### 5.3b.1 Introduction

The purpose of inter-RAT handover from UTRAN TDD to E-UTRAN TDD is to transfer a connection between the UE and UTRAN TDD to E-UTRAN TDD. The handover procedure is initiated from UTRAN with a RRC message (HANDOVER FROM UTRAN COMMAND). The procedure is described in TS 25.331.

Scheduled idle intervals according to the UE capability may be used to be able to make measurements on E-UTRAN.

### 5.3b.2 Requirements

The requirements in this section shall apply to UE supporting TDD and E-UTRAN TDD.

#### 5.3b.2.1 Handover delay

When the UE receives a RRC HANDOVER FROM UTRAN COMMAND message with activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink PRACH channel within  $D_{\text{handover}}$  seconds from the end of the last TTI containing the RRC command, where:

- $D_{\text{handover}}$  equals the maximum RRC procedure delay defined plus the interruption time stated in section 5.3b.2.2.

The UE shall process the RRC procedures for the RRC HANDOVER FROM UTRAN COMMAND within [50] ms, which is noted as RRC procedure delay.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink [TBD] channel at the designated activation time + interruption time.

#### 5.3b.2.2 Interruption time

The interruption time is the time between end of the last TTI in which the UE has received the handover command and the time the UE starts transmission of the UpPTS or PRACH in the new E-UTRA cell, excluding the RRC procedure delay. This requirement applies when UE is not required to perform any synchronisation procedure before transmitting on the new UpPTS or PRACH.

When inter-RAT handover to E-UTRAN is commanded, the interruption time shall be less than  $T_{\text{interrupt}}$ :

$$T_{\text{interrupt}} = T_{\text{search}} + T_{\text{IU}} + 20 \text{ ms}$$

where

$T_{\text{search}}$  is the time required to search the target cell when the target cell is not already known when the handover command is received by the UE. If the target cell is known, then  $T_{\text{search}} = 0$  ms.

$T_{\text{IU}}$  is the interruption uncertainty in acquiring the first available UpPTS or PRACH occasion in the new cell.  $T_{\text{IU}}$  can be up to 30 ms.

NOTE: The actual value of  $T_{\text{IU}}$  shall depend upon the PRACH configuration used in the target cell.

In the interruption requirement a cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds otherwise it is unknown. Relevant cell identification requirements are described in Section 8.1.2.8.1 for 3.84 Mcps TDD option and Section 8.1A.2.7.1 for 1.28 Mcps TDD option and Section 8.1B.2.8.1 for 7.68 Mcps TDD option.

## 5.4 Cell Re-selection in Cell\_FACH

### 5.4.1 Introduction

The UE shall evaluate the cell re-selection criteria specified in [18], based on radio measurements, and if a better ranked cell is found that cell is selected.

### 5.4.2 Requirements for 3.84Mcps TDD option

The cell re-selection delays specified below are applicable when the RRC parameter  $T_{\text{reselection}}$  is set to 0. Otherwise the Cell reselection delay is increased by  $T_{\text{reselection S}}$ .

P-CCPCH RSCP shall be used for cell reselection in Cell-FACH state to another TDD cell, CPICH Ec/Io and CPICH RSCP shall be used for cell re-selection to a FDD cell and GSM carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for cell re-selection in an AWGN environment shall comply with the requirements in chapter 9. The measurements used for S-criteria and cell re-selection evaluation in CELL\_FACH state shall be performed according to section 8.4.

#### 5.4.2.1 Cell re-selection delay

For UTRA TDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger the cell re-selection process and the moment in time when the UE starts sending the RRC CELL UPDATE message to the UTRAN on RACH.

For UTRA FDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger the cell re-selection process and the moment in time when the UE starts sending the the preambles on the PRACH for sending RRC CELL UPDATE message to the UTRAN.

For GSM, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the random access in the target cell of the new RAT.

These requirements assume radio conditions to be sufficient, so that reading of system information can be done without errors.

##### 5.4.2.1.1 Intra-frequency cell re-selection

The cell re-selection delay in CELL\_FACH state for intra frequency TDD cells shall be less than:

$$T_{\text{reselection, intra}} = T_{\text{identify, intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

where

$T_{\text{identify, intra}}$  is specified in 8.4.2.2.1.

$T_{IU}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{IU}$  can be up to one frame (10 ms).

$T_{SI}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

$T_{RA}$  is the additional delay caused by the random access procedure.

If a cell has been detectable at least  $T_{\text{identify, intra}}$ , the cell re-selection delay in CELL\_FACH state to an intra-frequency TDD cell shall be less than,

$$T_{\text{reselection, intra}} = T_{\text{measurement period, intra}} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{\text{measurement period intra}}$  is specified in 8.4.2.2.2.

#### 5.4.2.1.2 Inter-frequency cell re-selection

The cell re-selection delay in CELL\_FACH state for inter-frequency TDD cells shall be less than:

$$T_{\text{reselection, inter}} = T_{\text{identify, inter}} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{\text{identify, inter}}$  is specified in 8.4.2.3.1.

$T_{IU}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{IU}$  can be up to one frame (10 ms).

$T_{SI}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

$T_{RA}$  is the additional delay caused by the random access procedure.

If a cell has been detectable at least  $T_{\text{identify, inter}}$ , the cell re-selection delay in CELL\_FACH state to an inter-frequency TDD cell shall be less than,

$$T_{\text{reselection, inter}} = T_{\text{measurement inter}} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{\text{measurement inter}}$  is specified in 8.4.2.3.2.

#### 5.4.2.1.3 TDD FDD cell re-selection

The requirements in this section shall apply to UE supporting TDD and FDD.

The cell re-selection delay in CELL\_FACH state to an inter-frequency FDD cells shall be less than:

$$T_{\text{reselection, FDD}} = T_{\text{identify FDD inter}} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{\text{identify, FDD}}$  is specified in 8.4.2.4.1

$T_{IU}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{IU}$  can be up to one frame (10 ms).

$T_{SI}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

$T_{RA}$  is the additional delay caused by the random access procedure.

If a cell has been detectable at least  $T_{\text{identify FDD inter}}$ , the cell re-selection delay in CELL\_FACH state to an inter-frequency FDD cell shall be less than,

$$T_{\text{reselection, FDD}} = T_{\text{measurement FDD inter}} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{\text{measurement FDD inter}}$  is specified in 8.4.2.4.1.

#### 5.4.2.1.4 Inter-RAT cell re-selection

The requirements in this section shall apply to UE supporting TDD and GSM.

The cell re-selection delay in CELL\_FACH state for inter-RAT cells shall be less than:

$$T_{\text{reselection GSM}} = T_{\text{identify GSM}} + T_{\text{measurement GSM}} + 40 + T_{BCCH} + T_{RA} \text{ ms}$$

where

$T_{BCCH}$  is the maximum time allowed to read the BCCH data from a GSM cell [21].

$T_{RA}$  is the additional delay caused by the random access procedure.

a) For a UE using measurement occasions and idle intervals to perform GSM measurements

$T_{\text{identify, GSM}}$  equal to  $T_{\text{identify about}}$  as is specified in 8.4.2.5.2.1.

$$T_{\text{measurement, GSM}} = \text{Max} \left\{ 8 \cdot \frac{N_{\text{carriers}}}{N_{\text{GSM carrier RSSI}}} \cdot T_{\text{meas}}, 4 * T_{\text{meas}}, 480 \text{ms} \right\}$$

where

$N_{\text{carriers}}$  is the number of GSM carriers in the Inter-RAT cell info list

$N_{\text{GSM carrier RSSI}}$  shall be derived from the values in table 8.7 section 8.4.2.5.1.

$T_{\text{meas}}$  is specified in section 8.4.2.1.

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

$$T_{\text{identify GSM}} = 150 \text{ ms}$$

$$T_{\text{measurement GSM}} = 480 \text{ ms}$$

#### 5.4.2.2 Interruption time

For UTRA TDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts to transmit the RRC CELL UPDATE message to the UTRAN on the RACH.

For UTRA FDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending preambles on the PRACH for sending the RRC CELL UPDATE message to the UTRAN.

For GSM, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending the random access in the target cell of the new RAT.

The requirements on interruption time in this section shall apply only if the signal quality of the serving cell is sufficient to allow decoding of the FACH during cell-re-selection.

#### 5.4.2.2.1 TDD-TDD cell re-selection

In case of cell reselection to an intra-frequency TDD cell or cell re-selection to an inter-frequency TDD cell and when the UE does not need measurement occasions to perform TDD inter-frequency measurements, the interruption time shall be less than,

$$T_{\text{interrupt1}} = T_{\text{IU}} + 20 + T_{\text{RA}} \text{ ms}$$

In case of cell re-selection to an inter-frequency TDD cell and when the UE needs measurement occasions to perform inter-frequency TDD measurements, the interruption time shall be less than

$$T_{\text{interrupt2}} = T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

where

- $T_{\text{IU}}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{\text{IU}}$  can be up to one frame (10 ms).
- $T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].
- $T_{\text{RA}}$  is the additional delay caused by the random access procedure.

#### 5.4.2.2.2 TDD-FDD cell re-selection

The requirements in this section shall apply to UE supporting TDD and FDD.

In case of cell re-selection to an inter-frequency FDD cell and when the UE does not need measurement occasions to perform inter-frequency FDD measurements, the interruption time shall be less than,

$$T_{\text{interrupt1, FDD}} = T_{\text{IU}} + 20 + T_{\text{RA}} \text{ ms}$$

In case of cell re-selection to an inter-frequency TDD cell and when the UE needs measurement occasions to perform inter-frequency TDD measurements, the interruption time shall be less than

$$T_{\text{interrupt2, FDD}} = T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

where

- $T_{\text{IU}}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{\text{IU}}$  can be up to one frame (10 ms).
- $T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].
- $T_{\text{RA}}$  is the additional delay caused by the random access procedure.

#### 5.4.2.2.3 TDD-GSM cell re-selection

The requirements in this section shall apply to UE supporting TDD and GSM.

In case of cell re-selection to an inter-RAT cell, the interruption time shall be less than,

$$T_{\text{interrupt, GSM}} = 40 + T_{\text{BCCH}} + T_{\text{RA}} \text{ ms}$$

where

- $T_{\text{BCCH}}$  is the maximum time allowed to read BCCH data from the GSM cell [21].

$T_{RA}$  is the additional delay caused by the random access procedure.

### 5.4.2.3 Measurement and evaluation of cell selection criteria S of serving cell

The S-criteria detection delay is defined as the time between the occurrence of an event which leads to that the cell selection criteria S for serving cell is not fulfilled and the moment in time when the UE detects that the cell selection criteria S for serving cell is not fulfilled.

The UE shall filter the P-CCPCH RSCP measurements used for cell selection criteria S evaluation of the serving cell over at least 3 measurement periods  $T_{\text{Measurement period intra}}$ .

The S-criteria detection delay in CELL\_FACH state shall be less than:

$$T_{S\text{-criteria}} = 5 \times T_{\text{measurement period intra}} \text{ ms}$$

where

$T_{\text{measurement period intra}}$  is specified in 8.4.2.2.2.

If the UE has evaluated that the serving cell does not fulfil the cell selection criterion S during 4 s and if during this time period the UE has not found any new suitable cell based on measurements of neighbour cells as indicated in the measurement control system information, the UE shall consider having detected "out of service area" and initiate actions according to [16] and [18].

On transition from CELL\_DCH to CELL\_FACH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

## 5.4.3 Requirements for 1.28Mcps TDD option

The cell re-selection delays specified below are applicable when the RRC parameter  $T_{\text{reselection S}}$  is set to 0. Otherwise the Cell reselection delay is increased by  $T_{\text{reselection S}}$ .

P-CCPCH RSCP shall be used for cell reselection in Cell-FACH state to another TDD cell, CPICH RSCP and if requested in addition CPICH Ec/Io shall be used for cell re-selection to a FDD cell and GSM BCCH carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for cell re-selection in an AWGN environment shall comply with the requirements in chapter 9. The measurements used for S-criteria and cell re-selection evaluation in CELL\_FACH state shall be performed according to section 8.4A.

NOTE: In CELL\_FACH state, there are no requirements for inter-RAT reselection to an E-UTRAN cell.

### 5.4.3.1 Measurements

The UE measurement capability according to section 8.4A shall apply.

### 5.4.3.2 Cell re-selection delay

For cell re-selection to TDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts to send SYNCH-UL sequence for sending the RRC CELL UPDATE message to the UTRAN.

For cell re-selection to FDD the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the preambles on the PRACH for sending RRC CELL UPDATE message to the UTRAN.

For cell re-selection to GSM the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the random access in the target cell of the new RAT.

#### 5.4.3.2.1 Intra-frequency cell re-selection

The cell re-selection delay in CELL\_FACH state to an intra frequency cell shall be less than:

$$T_{\text{reselection, intra}} = T_{\text{identify, intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

If a cell has been detectable at least for  $T_{\text{identify, intra}}$ , the cell re-selection delay in CELL\_FACH state to an intra frequency cell shall be less than:

$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} + T_{\text{CSI}} \text{ ms}$$

where

$T_{\text{identify, intra}}$  is specified in 8.4A.2.2.1

$T_{\text{Measurement Period Intra}}$  is specified in 8.4A.2.2.2

$T_{\text{IU}}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{\text{IU}}$  can be up to one frame (10 ms).

$T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell.

$T_{\text{RA}}$  is the additional delay caused by the random access procedure.

$T_{\text{CSI}}$  is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL\_FACH state.  $T_{\text{CSI}}$  can be up to one sub frame (5ms) or the delay caused by the random access procedure ( $T_{\text{RA}}$ ).

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

#### 5.4.3.2.2 Inter-frequency TDD cell re-selection

The cell re-selection delay in CELL\_FACH state to an inter-frequency TDD cell shall be less than:

$$T_{\text{reselection, inter}} = T_{\text{identify, inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} + T_{\text{CSI}} \text{ ms}$$

If a cell has been detectable at least for  $T_{\text{identify, inter}}$ , the cell re-selection delay in CELL\_FACH state to an inter frequency cell shall be less than:

$$T_{\text{reselection, inter}} = T_{\text{measurement inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} + T_{\text{CSI}} \text{ ms}$$

where

$T_{\text{identify, inter}}$  is specified in 8.4A.2.3.1

$T_{\text{measurement inter}}$  is specified in 8.4A.2.3.2

$T_{\text{IU}}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{\text{IU}}$  can be up to one frame (10 ms).

$T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell.

$T_{\text{RA}}$  is the additional delay caused by the random access procedure.

$T_{\text{CSI}}$  is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL\_FACH state.  $T_{\text{CSI}}$  can be up to one sub frame (5ms) or the delay caused by the random access procedure ( $T_{\text{RA}}$ ).

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.



### 5.4.3.2.3 Inter-frequency FDD cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and FDD.

The cell re-selection delay in CELL\_FACH state to a FDD cell shall be less than:

$$T_{\text{reselection, FDD}} = T_{\text{identify FDD inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} + T_{\text{CSI}} \text{ ms}$$

If a cell has been detectable at least  $T_{\text{identify FDD inter}}$ , the cell re-selection delay in CELL\_FACH state to FDD cell shall be less than:

$$T_{\text{reselection, FDD}} = T_{\text{measurement FDD inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} + T_{\text{CSI}} \text{ ms}$$

where

$T_{\text{identify FDD inter}}$  is specified in 8.4A.2.4.1

$T_{\text{measurement FDD inter}}$  is specified in 8.4A.2.4.1.

$T_{\text{IU}}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{\text{IU}}$  can be up to one frame (10 ms).

$T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell.

$T_{\text{RA}}$  is the additional delay caused by the random access procedure.

$T_{\text{CSI}}$  is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL\_FACH state.  $T_{\text{CSI}}$  can be up to one sub frame (5ms) or the delay caused by the random access procedure ( $T_{\text{RA}}$ ).

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

### 5.4.3.2.4 Inter-RAT cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

The cell re-selection delay in CELL\_FACH state to an inter-RAT cell shall be less than:

$$T_{\text{reselection, GSM}} = T_{\text{identify GSM}} + T_{\text{measurement GSM}} + 40 + T_{\text{BCCH}} + T_{\text{RA}} + T_{\text{CSI}} \text{ ms}$$

$T_{\text{RA}}$  = The additional delay caused by the random access procedure.

$T_{\text{BCCH}}$  = The maximum time allowed to read BCCH data from GSM cell [21].

$T_{\text{CSI}}$  is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL\_FACH state.  $T_{\text{CSI}}$  can be up to one sub frame (5ms) or the delay caused by the random access procedure ( $T_{\text{RA}}$ ).

where

a) For UE requiring idle intervals or measurement occasions:

$T_{\text{identify GSM}}$  is equal to  $T_{\text{identify abort}}$  as specified in 8.4A.2.5.2.1.

$T_{\text{Measurement GSM}}$  is the worst case time for measuring one previously identified GSM carrier.

$$T_{\text{measurement GSM}} = \text{Max} \left\{ 8 \cdot \frac{N_{\text{carriers}}}{N_{\text{GSM carrier RSSI}}} \cdot T_{\text{meas}}, 480 \text{ms} \right\}$$

where

$N_{\text{carriers}}$  is the number of GSM carriers in the Inter-RAT cell info list

$N_{\text{GSM carrier RSSI}}$  is specified in section 8.4A.2.5.1.

$T_{\text{meas}}$  is specified in section 8.4A.2.1.

b) For UE not requiring idle intervals and measurement occasions

$T_{\text{identify, GSM}} = 150 \text{ ms}$

$T_{\text{Measurement, GSM}} = 480 \text{ ms}$

This requirement assumes radio conditions to be sufficient, so reading of system information can be done without errors.

### 5.4.3.3 Interruption time

For UTRA TDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts to transmit the SYNC-UL sequence in the UpPTS for sending the RRC CELL UPDATE message to the UTRAN.

For UTRA FDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending preambles on the PRACH for sending the RRC CELL UPDATE message to the UTRAN.

For GSM, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending the random access in the target cell of the new RAT.

The requirements on interruption time in this section shall apply only if the signal quality of the serving cell is sufficient to allow decoding of the FACH during cell-re-selection.

#### 5.4.3.3.1 TDD-TDD cell re-selection

In case of cell re-selection to a TDD cell, the interruption time shall be less than

$$T_{\text{interrupt, TDD}} = T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} + T_{\text{CSI}} \text{ ms}$$

where

$T_{\text{IU}}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{\text{IU}}$  can be up to one frame (10 ms).

$T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

$T_{\text{RA}}$  is the additional delay caused by the random access procedure.

$T_{\text{CSI}}$  is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL\_FACH state.  $T_{\text{CSI}}$  can be up to one sub frame (5ms) or the delay caused by the random access procedure ( $T_{\text{RA}}$ ).

#### 5.4.3.3.2 TDD-FDD cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and FDD.

In case of cell re-selection to a FDD cell, the interruption time shall be less than

$$T_{\text{interrupt, FDD}} = T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} + T_{\text{CSI}} \text{ ms}$$

where

|           |   |
|-----------|---|
| $T_{IU}$  | is the interruption uncertainty when changing the timing from the old to the new cell. $T_{IU}$ can be up to one frame (10 ms).   |
| $T_{SI}$  | is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].                  |
| $T_{RA}$  | is the additional delay caused by the random access procedure.  |
| $T_{CSI}$ | is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL_FACH state. $T_{CSI}$ can be up to one sub frame (5ms) or the delay caused by the random access procedure ( $T_{RA}$ ). |

#### 5.4.3.3.3 TDD-GSM cell re-selection

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

In case of cell re-selection to an inter-RAT cell, the interruption time shall be less than

$$T_{\text{interrupt,GSM}} = 40 + T_{\text{BCCH}} + T_{\text{RA}} + T_{\text{CSI}} \text{ ms}$$

where

|                   |   |
|-------------------|---|
| $T_{\text{BCCH}}$ | is the maximum time allowed to read BCCH data from the GSM cell [21].   |
| $T_{\text{RA}}$   | is the additional delay caused by the random access procedure.  |
| $T_{\text{CSI}}$  | is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL_FACH state. $T_{\text{CSI}}$ can be up to one sub frame (5ms) or the delay caused by the random access procedure ( $T_{\text{RA}}$ ). |

#### 5.4.3.4 Measurement and evaluation of cell selection criteria S of serving cell

The S-criteria detection delay is defined as the time between the occurrence of an event which leads to that the cell selection criteria S for serving cell is not fulfilled and the moment in time when the UE detects that the cell selection criteria S for serving cell is not fulfilled.

The UE shall filter the P-CCPCH RSCP measurements used for cell selection criteria S evaluation of the serving cell over at least 3 measurement periods  $T_{\text{Measurement_Period Intra}}$ .

The S-criteria detection delay in CELL\_FACH state shall be less than:

$$T_{\text{S-criteria}} = 5 \times T_{\text{Measurement_Period Intra}} \text{ ms}$$

where  $T_{\text{Measurement_Period Intra}}$  is specified in 8.4A.2.2.2.

The UE is "out of service area" if the UE has evaluated for 4 s that the serving cell does not fulfil the cell selection criterion S and if the UE has not found any new suitable cell based on searches and measurements of the neighbour cells indicated in the measurement control system information during these 4 s. When the UE is "out of service area" it shall initiate cell selection procedures for the selected PLMN as defined in [18].

On transition from CELL\_DCH to CELL\_FACH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

### 5.4.4 Requirements for 7.68Mcps TDD option

The cell re-selection delays specified below are applicable when the RRC parameter  $T_{\text{reselection S}}$  is set to 0. Otherwise the Cell reselection delay is increased by  $T_{\text{reselection S}}$ .

P-CCPCH RSCP shall be used for cell reselection in Cell-FACH state to another TDD cell, CPICH Ec/Io and CPICH RSCP shall be used for cell re-selection to a FDD cell and GSM carrier RSSI shall be used for cell re-selection to a GSM cell. The accuracies of the measurements used for cell re-selection in an AWGN environment shall comply with the requirements in chapter 9. The measurements used for S-criteria and cell re-selection evaluation in CELL\_FACH state shall be performed according to section 8.4B.

#### 5.4.4.1 Cell re-selection delay

For UTRA TDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger the cell re-selection process and the moment in time when the UE starts sending the RRC CELL UPDATE message to the UTRAN on RACH.

For UTRA FDD, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger the cell re-selection process and the moment in time when the UE starts sending the the preambles on the PRACH for sending RRC CELL UPDATE message to the UTRAN.

For GSM, the cell re-selection delay is defined as the time between the occurrence of an event which will trigger Cell Reselection process and the moment in time when the UE starts sending the random access in the target cell of the new RAT.

These requirements assume radio conditions to be sufficient, so that reading of system information can be done without errors.

##### 5.4.4.1.1 Intra-frequency cell re-selection

The cell re-selection delay in CELL\_FACH state for intra frequency TDD cells shall be less than:

$$T_{\text{reselection, intra}} = T_{\text{identify, intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

where

$T_{\text{identify, intra}}$  is specified in 8.4B.2.2.1.

$T_{\text{IU}}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{\text{IU}}$  can be up to one frame (10 ms).

$T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

$T_{\text{RA}}$  is the additional delay caused by the random access procedure.

If a cell has been detectable at least  $T_{\text{identify, intra}}$ , the cell re-selection delay in CELL\_FACH state to an intra-frequency TDD cell shall be less than,

$$T_{\text{reselection, intra}} = T_{\text{measurement period, intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

where

$T_{\text{measurement period intra}}$  is specified in 8.4B.2.2.2.

##### 5.4.4.1.2 Inter-frequency cell re-selection

The cell re-selection delay in CELL\_FACH state for inter-frequency TDD cells shall be less than:

$$T_{\text{reselection, inter}} = T_{\text{identify, inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

where

$T_{\text{identify, inter}}$  is specified in 8.4B.2.3.1.

$T_{\text{IU}}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{\text{IU}}$  can be up to one frame (10 ms).

$T_{SI}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

$T_{RA}$  is the additional delay caused by the random access procedure.

If a cell has been detectable at least  $T_{identify,inter}$ , the cell re-selection delay in CELL\_FACH state to an inter-frequency TDD cell shall be less than,

$$T_{reselection, inter} = T_{measurement inter} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{measurement inter}$  is specified in 8.4B.2.3.2.

#### 5.4.4.1.3 TDD FDD cell re-selection

The requirements in this section shall apply to UE supporting TDD and FDD.

The cell re-selection delay in CELL\_FACH state to an inter-frequency FDD cells shall be less than:

$$T_{reselection, FDD} = T_{identify FDD inter} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{identify, FDD}$  is specified in 8.4B.2.4.1

$T_{IU}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{IU}$  can be up to one frame (10 ms).

$T_{SI}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

$T_{RA}$  is the additional delay caused by the random access procedure.

If a cell has been detectable at least  $T_{identify FDD inter}$ , the cell re-selection delay in CELL\_FACH state to an inter-frequency FDD cell shall be less than,

$$T_{reselection, FDD} = T_{measurement FDD inter} + T_{IU} + 20 + T_{SI} + T_{RA} \text{ ms}$$

where

$T_{measurement FDD inter}$  is specified in 8.4B.2.4.1.

#### 5.4.4.1.4 Inter-RAT cell re-selection

The requirements in this section shall apply to UE supporting TDD and GSM.

The cell re-selection delay in CELL\_FACH state for inter-RAT cells shall be less than:

$$T_{reselection GSM} = T_{identify GSM} + T_{measurement GSM} + 40 + T_{BCCH} + T_{RA} \text{ ms}$$

where

$T_{BCCH}$  is the maximum time allowed to read the BCCH data from a GSM cell [21].

$T_{RA}$  is the additional delay caused by the random access procedure.

a) For a UE using measurement occasions and idle intervals to perform GSM measurements

$T_{identify, GSM}$  equal to  $T_{identify about}$  as is specified in 8.4B.2.5.2.1.

$$T_{\text{measurement, GSM}} = \text{Max} \left\{ 8 \cdot \frac{N_{\text{carriers}}}{N_{\text{GSM carrier RSSI}}} \cdot T_{\text{meas}}, 4 * T_{\text{meas}}, 480\text{ms} \right\}$$

where

$N_{\text{carriers}}$  is the number of GSM carriers in the Inter-RAT cell info list

$N_{\text{GSM carrier RSSI}}$  shall be derived from the values in section 8.4B.2.5.1.

$T_{\text{meas}}$  is specified in section 8.4B.2.1.

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

$$T_{\text{identify GSM}} = 150 \text{ ms}$$

$$T_{\text{measurement GSM}} = 480 \text{ ms}$$

#### 5.4.4.2 Interruption time

For UTRA TDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts to transmit the RRC CELL UPDATE message to the UTRAN on the RACH.

For UTRA FDD, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending preambles on the PRACH for sending the RRC CELL UPDATE message to the UTRAN.

For GSM, the interruption time is defined as the time period between the last TTI the UE monitors the FACH on the serving cell and the time instant the UE starts sending the random access in the target cell of the new RAT.

The requirements on interruption time in this section shall apply only if the signal quality of the serving cell is sufficient to allow decoding of the FACH during cell-re-selection.

##### 5.4.4.2.1 TDD-TDD cell re-selection

In case of cell reselection to an intra-frequency TDD cell or cell re-selection to an inter-frequency TDD cell and when the UE does not need measurement occasions to perform TDD inter-frequency measurements, the interruption time shall be less than,

$$T_{\text{interrupt1}} = T_{\text{IU}} + 20 + T_{\text{RA}} \text{ ms}$$

In case of cell re-selection to an inter-frequency TDD cell and when the UE needs measurement occasions to perform inter-frequency TDD measurements, the interruption time shall be less than

$$T_{\text{interrupt2}} = T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

where

$T_{\text{IU}}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{\text{IU}}$  can be up to one frame (10 ms).

$T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

$T_{\text{RA}}$  is the additional delay caused by the random access procedure.

##### 5.4.4.2.2 TDD-FDD cell re-selection

The requirements in this section shall apply to UE supporting TDD and FDD.

In case of cell re-selection to an inter-frequency FDD cell and when the UE does not need measurement occasions to perform inter-frequency FDD measurements, the interruption time shall be less than,

$$T_{\text{interrupt1, FDD}} = T_{\text{IU}} + 20 + T_{\text{RA}} \text{ ms}$$

In case of cell re-selection to an inter-frequency TDD cell and when the UE needs measurement occasions to perform inter-frequency TDD measurements, the interruption time shall be less than

$$T_{\text{interrupt2, FDD}} = T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

where

$T_{\text{IU}}$  is the interruption uncertainty when changing the timing from the old to the new cell.  $T_{\text{IU}}$  can be up to one frame (10 ms).

$T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16].

$T_{\text{RA}}$  is the additional delay caused by the random access procedure.

#### 5.4.4.2.3 TDD-GSM cell re-selection

The requirements in this section shall apply to UE supporting TDD and GSM.

In case of cell re-selection to an inter-RAT cell, the interruption time shall be less than,

$$T_{\text{interrupt, GSM}} = 40 + T_{\text{BCCH}} + T_{\text{RA}} \text{ ms}$$

where

$T_{\text{BCCH}}$  is the maximum time allowed to read BCCH data from the GSM cell [21].

$T_{\text{RA}}$  is the additional delay caused by the random access procedure.

#### 5.4.4.3 Measurement and evaluation of cell selection criteria S of serving cell

The S-criteria detection delay is defined as the time between the occurrence of an event which leads to that the cell selection criteria S for serving cell is not fulfilled and the moment in time when the UE detects that the cell selection criteria S for serving cell is not fulfilled.

The UE shall filter the P-CCPCH RSCP measurements used for cell selection criteria S evaluation of the serving cell over at least 3 measurement periods  $T_{\text{measurement period intra}}$ .

The S-criteria detection delay in CELL\_FACH state shall be less than:

$$T_{\text{S-criteria}} = 5 \times T_{\text{measurement period intra}} \text{ ms}$$

where

$T_{\text{measurement period intra}}$  is specified in 8.4B.2.2.2.

If the UE has evaluated that the serving cell does not fulfil the cell selection criterion S during 4 s and if during this time period the UE has not found any new suitable cell based on measurements of neighbour cells as indicated in the measurement control system information, the UE shall consider having detected "out of service area" and initiate actions according to [16] and [18].

On transition from CELL\_DCH to CELL\_FACH, if a UE cannot find a suitable UTRA cell, then it is considered to be "out of service area" and shall perform actions according to [16].

## 5.5 Cell Re-selection in Cell\_PCH

### 5.5.1 Introduction

The UE shall evaluate the cell re-selection criteria specified in [18], based on radio measurements, and if a better cell is found that cell is selected.

### 5.5.2 Requirements

#### 5.5.2.1 3.84 Mcps option

Requirements for cell re-selection in Cell\_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1, according to [16].

The UE shall consider having detected "out of service area" and initiate actions according to [16] and [18], if the serving cell does not fulfil the cell selection criterion S in  $N_{serv}$  consecutive DRX cycles and if during the following 12 s no new suitable cell based upon measurements of all neighbour cells indicated in the measurement control system information has been found.

#### 5.5.2.2 1.28 Mcps option

Requirements for cell re-selection in Cell\_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1A, according to [16].

#### 5.5.2.3 7.68 Mcps option

Requirements for cell re-selection in Cell\_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1B, according to [16].

The UE shall consider having detected "out of service area" and initiate actions according to [16] and [18], if the serving cell does not fulfil the cell selection criterion S in  $N_{serv}$  consecutive DRX cycles and if during the following 12 s no new suitable cell based upon measurements of all neighbour cells indicated in the measurement control system information has been found.

## 5.6 Cell Re-selection in URA\_PCH

### 5.6.1 Introduction

The UE shall evaluate the cell re-selection criteria specified in [18], based on radio measurements, and if a better cell is found that cell is selected.

### 5.6.2 Requirements

#### 5.6.2.1 3.84 Mcps option

Requirements for cell re-selection in URA\_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1, according to [16].

The UE shall consider having detected "out of service area" and initiate actions according to [16] and [18], if the serving cell does not fulfil the cell selection criterion S in  $N_{serv}$  consecutive DRX cycles and if during the following 12 s no new suitable cell based upon measurements of all neighbour cells indicated in the measurement control system information has been found.

#### 5.6.2.2 1.28 Mcps option

Requirements for cell re-selection in URA\_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1A, according to [16].



### 5.6.2.3 7.68 Mcps option

Requirements for cell re-selection in URA\_PCH state are the same as for cell re-selection in idle mode, see section 4.2. The UE shall support all DRX cycle lengths in table 4.1B, according to [16].

The UE shall consider having detected "out of service area" and initiate actions according to [16] and [18], if the serving cell does not fulfil the cell selection criterion  $S$  in  $N_{serv}$  consecutive DRX cycles and if during the following 12 s no new suitable cell based upon measurements of all neighbour cells indicated in the measurement control system information has been found.

## 5.7 RACH reporting

### 5.7.1 Introduction

#### 5.7.1.1 3.84 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells.

#### 5.7.1.2 1.28 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells.

#### 5.7.1.3 7.68 Mcps TDD option

The network may request the UE to report on RACH P-CCPCH RSCP for the serving cell and up to 6 strongest monitored set cells and SFN-SFN observed time difference between the serving cell and up to 6 different monitored set cells.

### 5.7.2 Requirements

#### 5.7.2.1 3.84 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of  $N_{RACH} * 50$  ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH
- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL\_FACH state according to the requirements defined in Section 8.4.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

$N_{RACH}$  is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH.

#### 5.7.2.2 1.28 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of  $N_{RACH} * 50$  ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH

- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL\_FACH state according to the requirements defined in Section 8.4A.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

$N_{\text{RACH}}$  is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH.

### 5.7.2.3 7.68 Mcps TDD option

If all of the following conditions are true, the UE is allowed to have an additional delay of  $N_{\text{RACH}} * 50$  ms in RACH transmission compared to the normal RACH transmission delay.

- SFN-SFN observed time difference measurement results are required to be reported on RACH
- The set of cells on which the SFN-SFN observed time difference measurement is to be reported has not changed since the previous RACH measurement report
- The UE has not measured the SFN-SFN observed time differences for the cells to be reported on RACH in the CELL\_FACH state according to the requirements defined in Section 8.4B.2.2

If at least one of the previous conditions is false, the UE shall be able to report the requested measurement results on RACH within a normal RACH transmission delay.

$N_{\text{RACH}}$  is the number of cells requiring SFN decoding prior to the reporting of SFN-SFN observed time difference measurement results on RACH.

## 5.8 Inter-RAT cell change order from UTRAN in CELL\_DCH and CELL\_FACH

### 5.8.1 Introduction

#### 5.8.1.1 3.84 Mcps TDD option

The purpose of inter-RAT cell change order from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. This procedure may be used in CELL\_DCH and CELL\_FACH state. The cell change order procedure is initiated from UTRAN with a RRC message (CELL CHANGE ORDER FROM UTRAN). The procedure is described in [16].

#### 5.8.1.2 1.28 Mcps TDD option

The purpose of inter-RAT cell change order from 1.28 Mcps TDD to GSM is to transfer a connection between the UE and 1.28 Mcps TDD to GSM. This procedure may be used in CELL\_DCH and CELL\_FACH state. The cell change order procedure is initiated from UTRAN with a RRC message (CELL CHANGE ORDER FROM UTRAN). The procedure is described in [16].

NOTE: No procedure is defined for Inter-RAT cell change order from 1.28Mcps TDD to E-UTRAN.

#### 5.8.1.3 7.68 Mcps TDD option

The purpose of inter-RAT cell change order from UTRAN TDD to GSM is to transfer a connection between the UE and UTRAN TDD to GSM. This procedure may be used in CELL\_DCH and CELL\_FACH state. The cell change order procedure is initiated from UTRAN with a RRC message (CELL CHANGE ORDER FROM UTRAN). The procedure is described in [16].

## 5.8.2 Requirements

### 5.8.2.1 Delay

#### 5.8.2.1.1 3.84 Mcps TDD option

The requirements in this section shall apply to UE supporting 3.84 Mcps TDD and GSM.

When the UE receives a RRC CELL CHANGE ORDER FROM UTRAN COMMAND with the activation time "now" or earlier than the value in table 5.5 from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT within the value in table 5.5 from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than the value in table 5.5 from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT at the designated activation time.

The UE shall process the RRC procedures for the RRC CELL CHANGE ORDER FROM UTRAN COMMAND within 50 ms. If the activation time is used, it corresponds to the CFN of the UTRAN channel.

**Table 5.5: Inter-RAT cell change order from UTRAN - delay**

| UE synchronisation status   | delay [ms]                |
|---|---------------------------|
| The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received     | $90 + T_{BCCH} + T_{RA}$  |
| The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received | $190 + T_{BCCH} + T_{RA}$ |

where

$T_{BCCH}$  = the maximum time allowed to read BCCH data from the GSM cell [21].

$T_{RA}$  = the additional delay caused by the random access procedure

#### 5.8.2.1.2 1.28 Mcps TDD option

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

The RRC procedure performance value for the RRC CELL CHANGE ORDER FROM UTRAN COMMAND shall be within 50 ms.

If the activation time is used in the RRC CELL CHANGE ORDER FROM UTRAN COMMAND, it corresponds to the CFN of the UTRAN channel.

When the UE receives a RRC CELL CHANGE ORDER FROM UTRAN COMMAND with the activation time "now" or earlier than the value in table 5.5A from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT within the value in table 5.5A from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than the value in table 5.5A from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT at the designated activation time.

**Table 5.5A: Inter-RAT cell change order from UTRAN - delay**

| UE synchronisation status   | delay [ms]                |
|---|---------------------------|
| The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received     | $90 + T_{BCCH} + T_{RA}$  |
| The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received | $190 + T_{BCCH} + T_{RA}$ |

where

$T_{\text{BCCH}}$  = the maximum time allowed to read BCCH data from the GSM cell [21].

$T_{\text{RA}}$  = the additional delay caused by the random access procedure

### 5.8.2.1.3 7.68 Mcps TDD option

The requirements in this section shall apply to UE supporting 7.68 Mcps TDD and GSM.

When the UE receives a RRC CELL CHANGE ORDER FROM UTRAN COMMAND with the activation time "now" or earlier than the value in table 5.5B from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT within the value in table 5.5B from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than the value in table 5.5B from the end of the last TTI containing the RRC command, the UE shall start transmit the random access in the target cell of the new RAT at the designated activation time.

The UE shall process the RRC procedures for the RRC CELL CHANGE ORDER FROM UTRAN COMMAND within 50 ms. If the activation time is used, it corresponds to the CFN of the UTRAN channel.

**Table 5.5B: Inter-RAT cell change order from UTRAN - delay**

| UE synchronisation status   | delay [ms]                              |
|---|---|
| The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received     | $90 + T_{\text{BCCH}} + T_{\text{RA}}$  |
| The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received | $190 + T_{\text{BCCH}} + T_{\text{RA}}$ |

where

$T_{\text{BCCH}}$  = the maximum time allowed to read BCCH data from the GSM cell [21].

$T_{\text{RA}}$  = the additional delay caused by the random access procedure

### 5.8.2.2 Interruption time

#### 5.8.2.2.1 3.84 Mcps TDD option

The requirements in this section shall apply to UE supporting 3.84 Mcps TDD and GSM.

The requirements on interruption time below is valid when the signal quality of the serving cell is good enough to allow decoding of the old channel during the inter-RAT cell change order from UTRAN delay.

The interruption time, i.e. the time between the end of the last TTI containing a transport block that the UE is able to receive on the old channel and the time the UE starts transmit the random access in the target cell, shall be less than the value in table 5.6. The requirement in table 5.6 for the case, that UE is not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received, is valid when the signal quality of the GSM cell is good enough for successful synchronisation with one attempt.

**Table 5.6: Inter-RAT cell change order from UTRAN - interruption time**

| Synchronisation status  | Interruption time [ms]                  |
|---|---|
| The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received     | $40 + T_{\text{BCCH}} + T_{\text{RA}}$  |
| The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received | $140 + T_{\text{BCCH}} + T_{\text{RA}}$ |

where

$T_{\text{BCCH}}$  = the maximum time allowed to read BCCH data from the GSM cell [21].

$T_{\text{RA}}$  = the additional delay caused by the random access procedure

## 5.8.2.2.2 1.28 Mcps TDD option

The requirements in this section shall apply to UE supporting both 1.28 Mcps TDD and GSM.

The requirement on interruption time below is valid when the signal quality of the serving cell is good enough to allow decoding of the old channel during the inter-RAT cell change order from UTRAN delay.

The interruption time, i.e. the time between the end of the last TTI containing a transport block that the UE is able to receive on the old channel and the time the UE starts transmit the random access in the target cell, shall be less than the value in table 5.6A.

**Table 5.6A: Inter-RAT cell change order from UTRAN - interruption time**

| Synchronisation status  | Interruption time [ms]                  |
|---|---|
| The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received     | $40 + T_{\text{BCCH}} + T_{\text{RA}}$  |
| The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received | $140 + T_{\text{BCCH}} + T_{\text{RA}}$ |

where

$T_{\text{BCCH}}$  = the maximum time allowed to read BCCH data from the GSM cell [21].

$T_{\text{RA}}$  = the additional delay caused by the random access procedure

The requirements in Table 5.6A for the case where the UE has not synchronised to the GSM target cell before receiving the RRC CELL CHANGE ORDER FROM UTRAN COMMAND shall apply only if the signal quality of the GSM target cell is sufficient for successful synchronisation with one attempt.

If the UE is unable to synchronise to the GSM cell on the first attempt, it shall continue to search for synchronisation information for up to 800 ms. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the cell change order from UTRAN failure procedure specified in [16].

## 5.8.2.2.3 7.68 Mcps TDD option

The requirements in this section shall apply to UE supporting 7.68 Mcps TDD and GSM.

The requirements on interruption time below is valid when the signal quality of the serving cell is good enough to allow decoding of the old channel during the inter-RAT cell change order from UTRAN delay.

The interruption time, i.e. the time between the end of the last TTI containing a transport block that the UE is able to receive on the old channel and the time the UE starts transmit the random access in the target cell, shall be less than the value in table 5.6B. The requirement in table 5.6B for the case, that UE is not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received, is valid when the signal quality of the GSM cell is good enough for successful synchronisation with one attempt.

**Table 5.6B: Inter-RAT cell change order from UTRAN - interruption time**

| Synchronisation status  | Interruption time [ms]                  |
|---|---|
| The UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received     | $40 + T_{\text{BCCH}} + T_{\text{RA}}$  |
| The UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN COMMAND is received | $140 + T_{\text{BCCH}} + T_{\text{RA}}$ |

where

$T_{\text{BCCH}}$  = the maximum time allowed to read BCCH data from the GSM cell [21].

$T_{\text{RA}}$  = the additional delay caused by the random access procedure

## 5.9 Serving HS-DSCH cell change

### 5.9.1 Introduction

#### 5.9.1.1 3.84 Mcps option

Void.

#### 5.9.1.2 1.28 Mcps option

When the UE receives a RRC message implying HS-DSCH cell change with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to receive the HS-SCCH channel from the new cell within  $T_{\text{cell\_change}}$  seconds from the end of the last TTI containing the RRC command.

#### 5.9.1.3 7.68 Mcps option

Void.

### 5.9.2 Requirements

#### 5.9.2.1 3.84 Mcps option

Void.

#### 5.9.2.2 1.28 Mcps option

##### 5.9.2.2.1 Serving HS-DSCH cell change delay

Procedure delay for the procedure, which can command a HS-DSCH cell change, is specified in TS25.331 section 13.5.2.

When the UE receives a RRC message implying HS-DSCH cell change with the activation time "now" or earlier than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to receive the HS-SCCH channel from the new cell within  $T_{\text{cell\_change}}$  seconds from the end of the last TTI containing the RRC command.

If the access is delayed to an indicated activation time later than RRC procedure delay seconds from the end of the last TTI containing the RRC command, the UE shall be ready to start the transmission of the new uplink HS-SICH at the designated activation time + processing time.

where:

$$T_{\text{cell\_change}} = T_{\text{RRC}} + T_{\text{processing}}$$

The RRC procedure delay  $T_{\text{RRC}}$  is defined in TS25.331 Section 13.5.2.

$T_{\text{cell\_change}}$  equals the RRC procedure delay defined in TS25.331 Section 13.5.2 plus the processing time stated in section 5.9.2.2.2.

##### 5.9.2.2.2 Processing time

The HS-DSCH processing time is the time between the last received TTI that can contain a transport block on the old HS-PDSCH and the time when the UE is ready to transmit CQI reports based on the quality of the new cell and the UE have started to receive the HS-SCCH of the new cell.

$$T_{\text{processing}} = T_{\text{ul/dl sync}} + T_{\text{hs-sich/hs-scch interval}}$$

$T_{\text{ul/dl sync}}$  Defined as Uplink and Downlink synchronisation time, specified as 80ms.

$T_{\text{hs-sich/hs-sch interval}}$  Defined as interval time between HS-SCCH and the corresponding HS-SICH, for 1,28Mcps option specified as 15ms.

### 5.9.2.3 7.68 Mcps option

Void.

## 6 (void)

## 6A RRC Connection Control

### 6A.1 RRC re-establishment

#### 6A.1.1 Introduction

RRC connection re-establishment is needed, when a UE in CELL\_DCH state loses radio connection due to radio link failure. The procedure when a radio link failure occurs in CELL\_DCH state is specified in [16].

#### 6A.1.2 Requirements

##### 6A.1.2.1 3.84Mcps TDD option

The requirements in this section are applicable when the UE performs a RRC connection re-establishment to a cell belonging to any of the frequencies present in the previous monitored set.

The UE moves from CELL\_DCH to CELL\_FACH state and shall be capable of sending a RRC CELL UPDATE message using the cause value "radio link failure" within  $T_{\text{RE-ESTABLISH}}$  seconds from when the radio link failure occurred.

$T_{\text{RE-ESTABLISH}}$  equals the RRC procedure performance value  $T_{\text{RRC-RE-ESTABLISH}}$  according to [16] plus the UE re-establishment delay  $T_{\text{UE-RE-ESTABLISH-REQ}}$  specified in 6A.1.2.1.

$$T_{\text{RE-ESTABLISH}} = T_{\text{RRC-RE-ESTABLISH}} + T_{\text{UE-RE-ESTABLISH-REQ}}$$

##### 6A.1.2.1.1 UE re-establishment delay requirement

For UTRA TDD, the UE re-establishment delay  $T_{\text{UE-RE-ESTABLISH-REQ}}$  is defined as the time between the moment when radio link failure is considered by the UE to when the UE starts sending the RRC CELL UPDATE message to the UTRAN on RACH.

$T_{\text{UE-RE-ESTABLISH-REQ}}$  is depending on whether the target cell is known by the UE or not. A cell shall be considered known by the UE if either or both of the following conditions are true:

- the UE has had a radio link connected to the cell during the last 5 seconds
- the cell has been measured by the UE during the last 5 seconds.

In case that the target cell is known by the UE, the UE re-establishment delay shall be less than

$$T_{\text{UE-RE-ESTABLISH-REQ-KNOWN}} = 50 + T_{\text{SEARCH-KNOWN}} + T_{\text{SI}} \text{ ms}$$

In case that the target cell is not known by the UE, the UE re-establishment delay shall be less than,

$$T_{\text{UE-RE-ESTABLISH-REQ-UNKNOWN}} = 50 + T_{\text{SEARCH-UNKNOWN}} * \text{NF} + T_{\text{SI}} \text{ ms}$$

in case that the target cell is not known by the UE;

where,

- $T_{\text{SEARCH-KNOWN}}$  Equal to 100 ms, the time it takes for the UE to search for the known target cell
- $T_{\text{SEARCH-UNKNOWN}}$  Equal to 800 ms, the time it takes for the UE to search for the unknown target cell
- $T_{\text{SI}}$  The time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.
- NF The number of different frequencies in the previous (old) monitored set.

These requirements assume radio conditions to be sufficient, so that reading of system information can be done without errors.

### 6A.1.2.2 1.28Mcps TDD option

The requirements in this section are applicable when the UE performs a RRC connection re-establishment to a cell belonging to any of the frequencies present in the previous monitored set.

The UE moves from CELL\_DCH to CELL\_FACH state and shall be capable of sending a CELL UPDATE message using the cause "radio link failure" within  $T_{\text{RE-ESTABLISH}}$  seconds from when the radio link failure occurred.

$T_{\text{RE-ESTABLISH}}$  equals the RRC procedure delay ( $T_{\text{RRC-RE-ESTABLISH}}$ ) according to TS25.331 plus the UE Re-establishment delay requirement ( $T_{\text{UE-RE-ESTABLISH-REQ}}$ ), specified in 6A.1.2.2.1.

$$T_{\text{RE-ESTABLISH}} = T_{\text{RRC-RE-ESTABLISH}} + T_{\text{UE-RE-ESTABLISH-REQ}}$$

#### 6A.1.2.2.1 Re-establishment delay requirement

The UE Re-establishment delay requirement ( $T_{\text{UE-RE-ESTABLISH-REQ}}$ ) is defined as the time between the moment when radio link failure is considered by the UE to when the UE starts to send SYNC-UL in the UpPTS for sending a CELL UPDATE message using the cause "radio link failure".

$T_{\text{UE-RE-ESTABLISH-REQ}}$  is depending on whether the target cell is known by the UE or not. A cell is known if either or both of the following conditions are true:

- the UE has had a dedicated connection to the cell during the last 5 seconds
- the cell has been measured by the UE during the last 5 seconds

The UE Re-establishment delay shall be less than

$$T_{\text{UE-RE-ESTABLISH-REQ-KNOWN}} = 50\text{ms} + T_{\text{search}} + T_{\text{SI}} + T_{\text{RA}}$$

in case that the target cell is known by the UE, and

$$T_{\text{UE-RE-ESTABLISH-REQ-UNKNOWN}} = 50\text{ms} + T_{\text{search}} * \text{NF} + T_{\text{SI}} + T_{\text{RA}}$$

in case that the target cell is unknown by the UE

where

- $T_{\text{search}}$  is the time it takes for the UE to search the cell.
- $T_{\text{search}} = 100$  ms if the target cell is known by the UE, and
- $T_{\text{search}} = 800$  ms if the target cell is not known by the UE.
- $T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms)
- $T_{\text{RA}}$  = The additional delay caused by the random access procedure.
- $\text{NF}$  is the number of different frequencies in the monitored set.



This requirement assumes radio conditions to be sufficient, so that reading of system information can be done without errors.

### 6A.1.2.3 7.68Mcps TDD option

The requirements in this section are applicable when the UE performs a RRC connection re-establishment to a cell belonging to any of the frequencies present in the previous monitored set.

The UE moves from CELL\_DCH to CELL\_FACH state and shall be capable of sending a RRC CELL UPDATE message using the cause value "radio link failure" within  $T_{RE-ESTABLISH}$  seconds from when the radio link failure occurred.

$T_{RE-ESTABLISH}$  equals the RRC procedure performance value  $T_{RRC-RE-ESTABLISH}$  according to [16] plus the UE re-establishment delay  $T_{UE-RE-ESTABLISH-REQ}$  specified in 6A.1.2.3.

$$T_{RE-ESTABLISH} = T_{RRC-RE-ESTABLISH} + T_{UE-RE-ESTABLISH-REQ}$$

#### 6A.1.2.3.1 UE re-establishment delay requirement

For UTRA TDD, the UE re-establishment delay  $T_{UE-RE-ESTABLISH-REQ}$  is defined as the time between the moment when radio link failure is considered by the UE to when the UE starts sending the RRC CELL UPDATE message to the UTRAN on RACH.

$T_{UE-RE-ESTABLISH-REQ}$  is depending on whether the target cell is known by the UE or not. A cell shall be considered known by the UE if either or both of the following conditions are true:

- the UE has had a radio link connected to the cell during the last 5 seconds
- the cell has been measured by the UE during the last 5 seconds.

In case that the target cell is known by the UE, the UE re-establishment delay shall be less than

$$T_{UE-RE-ESTABLISH-REQ-KNOWN} = 50 + T_{SEARCH-KNOWN} + T_{SI} \text{ ms}$$

In case that the target cell is not known by the UE, the UE re-establishment delay shall be less than,

$$T_{UE-RE-ESTABLISH-REQ-UNKNOWN} = 50 + T_{SEARCH-UNKNOWN} * NF + T_{SI} \text{ ms}$$

in case that the target cell is not known by the UE;

where,

$T_{SEARCH-KNOWN}$  Equal to 100 ms, the time it takes for the UE to search for the known target cell

$T_{SEARCH-UNKNOWN}$  Equal to 800 ms, the time it takes for the UE to search for the unknown target cell

$T_{SI}$  The time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

NF The number of different frequencies in the previous (old) monitored set.

These requirements assume radio conditions to be sufficient, so that reading of system information can be done without errors.

## 6A.2 Transport format combination selection in UE

### 6A.2.1 Introduction

When the UE estimates that a certain TFC would require more power than the maximum transmit power, it shall limit the usage of transport format combinations for the assigned transport format combination set. This in order to make it possible for the network operator to maximise the coverage. The transport format combination selection in UE is described in [13].

### 6A.2.1.1 3.84 Mcps TDD option

Void.

### 6A.2.1.2 1.28 Mcps TDD option

The E-TFC selection delay is defined as the time from the moment SS starts to send TPC\_Cmd=UP to the moment UE E-TFCI becomes 0. UE E-TFC selection is specified in section 11.9.1.4 in TS25.321.

### 6A.2.1.3 7.68 Mcps TDD option

Void.

## 6A.2.2 Requirements

### 6A.2.2.1 3.84 Mcps TDD option

The UE shall continuously evaluate based on the *Elimination*, *Recovery* and *Blocking* criteria defined below, how TFCs can be used for the purpose of TFC selection. The evaluation shall be performed using the estimated UE transmit power of a given CCTrCH in its associated timeslots.

In the case of a single CCTrCH or multiple CCTrCHs having mutually exclusive timeslot assignments, the UE shall consider the *Elimination* criterion for a given TFC of a CCTrCH to be fulfilled if for 3 successive frames the estimated UE transmit power is greater than the Maximum UE transmitter power for at least one timeslot associated with the CCTrCH in each frame.

. In the case of multiple CCTrCHs not having mutually exclusive timeslot assignments, if for a given CCTrCH for 3 successive frames the estimated UE transmit power is greater than the Maximum UE transmitter power for at least one timeslot associated with the CCTrCH in each frame, the UE shall consider the *Elimination* criterion for a given TFC to be fulfilled if the use of this TFC will cause the estimated UE transmit power to continue to be greater than the Maximum UE transmitter power in at least one timeslot associated with the CCTrCH.

In the case of multi-frame operation of UL Physical Channels, the UE shall only consider active frames for the evaluation of the *Elimination* criterion.

If the *Elimination* criterion for a given TFC is fulfilled, the MAC in the UE shall consider that the TFC is in Excess-Power state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within  $T_{\text{notify}}$  from the moment the *Elimination* criterion was fulfilled.

The UE shall not consider the *Recovery* criterion for a given TFC to be fulfilled until the use of this TFC will not cause the estimated UE transmit power to be greater than the Maximum UE transmitter power for all UL timeslots associated with the TFC for a minimum of 3 successive frames.

In the case of multi-frame operation of UL Physical Channels, the UE shall only consider active frames for the evaluation of the *Recovery* criterion.

. If the *Recovery* criterion for a given TFC is fulfilled, the MAC in the UE shall consider that the TFC is in Supported state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within  $T_{\text{notify}}$  from the moment the *Recovery* criterion was fulfilled.

The UE shall consider the *Blocking* criterion for a given TFC to be fulfilled at the latest at the start of the longest uplink TTI after the moment at which the TFC will have been in Excess-Power state for a duration of

$$(T_{\text{notify}} + T_{\text{modify}} + T_{\text{L1\_proc}}).$$

where:

$T_{\text{notify}}$  equals 15 ms, and

$T_{\text{modify}}$  equals  $\text{MAX}(T_{\text{adapt\_max}}, T_{\text{TTI}})$ , and

$T_{\text{L1\_proc}}$  equals 35 ms, and

$T_{\text{adapt\_max}}$  equals  $\text{MAX}(T_{\text{adapt\_1}}, T_{\text{adapt\_2}}, \dots, T_{\text{adapt\_N}})$ , and

$N$  equals the number of logical channels that need to change rate, and

$T_{\text{adapt\_n}}$  equals the time it takes for higher layers to provide data to MAC in a new supported bitrate, for logical channel  $n$ . Table 6A.1 defines  $T_{\text{adapt}}$  times for different services. For services where no codec is used  $T_{\text{adapt}}$  shall be considered to be equal to 0 ms.

**Table 6A.1:  $T_{\text{adapt}}$**

| Service    | $T_{\text{adapt}}$ [ms] |
|------------|-------------------------|
| UMTS AMR   | 40                      |
| UMTS AMR 2 | 60                      |

$T_{\text{TTI}}$  equals the longest uplink TTI of the selected TFC (ms).

The Maximum UE transmitter power is defined as follows

Maximum UE transmitter power =  $\text{MIN}(\text{Maximum allowed UL TX Power}, \text{UE maximum transmit power})$

where

Maximum allowed UL TX Power is set by UTRAN and defined in [16], and

UE maximum transmit power is defined by the UE power class, and specified in [5].

#### 6A.2.2.2 1.28 Mcps TDD option

The UE shall continuously evaluate based on the *Elimination*, *Recovery* and *Blocking* criteria defined below, how TFCs can be used for the purpose of TFC selection. The evaluation shall be performed using the estimated UE transmit power of a given TFC. The UE transmit power estimation shall be made using the UE transmitted power measured over the measurement period and the gain factors of the corresponding TFC.

The UE shall consider the *Elimination* criterion for a given TFC to be fulfilled if the estimated UE transmit power needed for this TFC is greater than the Maximum UE transmitter power for at least  $X$  out of  $Y$  successive measurement periods. The MAC in the UE shall consider that the TFC is in Excess-Power state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within [15 ms] from the moment the *Elimination* criterion was fulfilled.

The UE shall consider the *Recovery* criterion for a given TFC to be fulfilled if the estimated UE transmit power needed for this TFC has not been greater than the Maximum UE transmitter power for at least  $Y$  successive measurement periods. The MAC in the UE shall consider that the TFC is in Supported state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within  $T_{\text{notify}}$  from the moment the *Recovery* criterion was fulfilled.

The UE shall consider the *Blocking* criterion for a given TFC to be fulfilled at the latest at the start of the longest uplink TTI after the moment at which the TFC will have been in Excess-Power state for a duration of  $(T_{\text{notify}} + T_{\text{modify}} + T_{\text{L1\_proc}})$ .

where:

$T_{\text{notify}}$  equals [15] ms, and

$T_{\text{modify}}$  equals  $\text{MAX}(T_{\text{adapt\_max}}, T_{\text{TTI}})$ , and

$T_{\text{L1\_proc}}$  equals 15 ms, and

$T_{\text{adapt\_max}}$  equals  $\text{MAX}(T_{\text{adapt\_1}}, T_{\text{adapt\_2}}, \dots, T_{\text{adapt\_N}})$ , and

N equals the number of logical channels that need to change rate, and

$T_{\text{adapt}_n}$  equals the time it takes for higher layers to provide data to MAC in a new supported bitrate, for logical channel n. Table 6A.2 defines  $T_{\text{adapt}}$  times for different services. For services where no codec is used  $T_{\text{adapt}}$  shall be considered to be equal to 0 ms.

**Table 6A.2:  $T_{\text{adapt}}$**

| Service | $T_{\text{adapt}}$ [ms] |
|---------|-------------------------|
| AMR     | 40                      |

$T_{\text{TTI}}$  equals the longest uplink TTI of the selected TFC (ms).

E-TFC selection is allowed only in the CELL\_DCH state.

UE will calculate the power of E-PUCH according to the expressions as below, which is stated in TS 25.224 clause 4.2.2.4)

$$P_{E\text{-PUCH}} = P_{e\text{-base}} + L + \beta_e + K_{E\text{-PUCH}}$$

maximum supported transmission power for a certain E-TFC = min(maximum UE transmission power, E-PUCH transmission power).

where , maximum UE transmission power is the maximum transmission power of UE.

E-PUCH transmission power is calculated by the expressions above with  $\beta_e = (AG + \alpha_e)$ .

The UE shall consider the *Blocking* criterion for a given E-TFC to be fulfilled if the estimated power of E-PUCH is larger than maximum supported transmission power for a certain E-TFC.

The Maximum UE transmitter power is defined as follows

Maximum UE transmitter power = MIN(Maximum allowed UL TX Power, UE maximum transmit power)

where

Maximum allowed UL TX Power is set by UTRAN and defined in [16], and

UE maximum transmit power is defined by the UE power class, and specified in [5].

### 6A.2.2.3 7.68 Mcps TDD option

The UE shall continuously evaluate based on the *Elimination*, *Recovery* and *Blocking* criteria defined below, how TFCs can be used for the purpose of TFC selection. The evaluation shall be performed using the estimated UE transmit power of a given CCTrCH in its associated timeslots.

In the case of a single CCTrCH or multiple CCTrCHs having mutually exclusive timeslot assignments, the UE shall consider the *Elimination* criterion for a given TFC of a CCTrCH to be fulfilled if for 3 successive frames the estimated UE transmit power is greater than the Maximum UE transmitter power for at least one timeslot associated with the CCTrCH in each frame.

In the case of multiple CCTrCHs not having mutually exclusive timeslot assignments, if for a given CCTrCH for 3 successive frames the estimated UE transmit power is greater than the Maximum UE transmitter power for at least one timeslot associated with the CCTrCH in each frame, the UE shall consider the *Elimination* criterion for a given TFC to be fulfilled if the use of this TFC will cause the estimated UE transmit power to continue to be greater than the Maximum UE transmitter power in at least one timeslot associated with the CCTrCH.

In the case of multi-frame operation of UL Physical Channels, the UE shall only consider active frames for the evaluation of the *Elimination* criterion.

If the *Elimination* criterion for a given TFC is fulfilled, the MAC in the UE shall consider that the TFC is in Excess-Power state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within  $T_{\text{notify}}$  from the moment the *Elimination* criterion was fulfilled.

The UE shall not consider the *Recovery* criterion for a given TFC to be fulfilled until the use of this TFC will not cause the estimated UE transmit power to be greater than the Maximum UE transmitter power for all UL timeslots associated with the TFC for a minimum of 3 successive frames.

In the case of multi-frame operation of UL Physical Channels, the UE shall only consider active frames for the evaluation of the *Recovery* criterion.

If the *Recovery* criterion for a given TFC is fulfilled, the MAC in the UE shall consider that the TFC is in Supported state for the purpose of TFC selection.

MAC in the UE shall indicate the available bitrate for each logical channel to upper layers within  $T_{\text{notify}}$  from the moment the *Recovery* criterion was fulfilled.

The UE shall consider the *Blocking* criterion for a given TFC to be fulfilled at the latest at the start of the longest uplink TTI after the moment at which the TFC will have been in Excess-Power state for a duration of

$$(T_{\text{notify}} + T_{\text{modify}} + T_{\text{L1\_proc}}).$$

where:

$T_{\text{notify}}$  equals 15 ms, and

$T_{\text{modify}}$  equals  $\text{MAX}(T_{\text{adapt\_max}}, T_{\text{TTI}})$ , and

$T_{\text{L1\_proc}}$  equals 35 ms, and

$T_{\text{adapt\_max}}$  equals  $\text{MAX}(T_{\text{adapt\_1}}, T_{\text{adapt\_2}}, \dots, T_{\text{adapt\_N}})$ , and

$N$  equals the number of logical channels that need to change rate, and

$T_{\text{adapt\_n}}$  equals the time it takes for higher layers to provide data to MAC in a new supported bitrate, for logical channel  $n$ . Table 6A.3 defines  $T_{\text{adapt}}$  times for different services. For services where no codec is used  $T_{\text{adapt}}$  shall be considered to be equal to 0 ms.

**Table 6A.3:  $T_{\text{adapt}}$**

| Service    | $T_{\text{adapt}}$ [ms] |
|------------|-------------------------|
| UMTS AMR   | 40                      |
| UMTS AMR 2 | 60                      |

$T_{\text{TTI}}$  equals the longest uplink TTI of the selected TFC (ms).

The Maximum UE transmitter power is defined as follows

$$\text{Maximum UE transmitter power} = \text{MIN}(\text{Maximum allowed UL TX Power, UE maximum transmit power})$$

where

Maximum allowed UL TX Power is set by UTRAN and defined in [16], and

UE maximum transmit power is defined by the UE power class, and specified in [5].

## 6A.3 Maximum allowed UL TX Power

### 6A.3.1 Introduction

UTRAN may limit the power the UE is using on the uplink by setting the maximum allowed UL TX power IE defined in [16].

### 6A.3.2 Requirements

#### 6A.3.2.1 3.84 Mcps option

For each measurement period, the UE shall with the use of the UE transmitted power measurement, estimate if it has reached the Maximum allowed UL TX Power or not. With tolerances as defined for the UE transmitted power measurement accuracy (section 9.1.2.1.1), the UE output power shall not exceed the Maximum allowed UL TX Power, as set by the UTRAN.

For UE output powers that are outside the range covered by the UE transmitted power measurement the UE output power shall not exceed the Maximum allowed UL TX Power with more than the tolerances specified for the UL Power Control in [5].

#### 6A.3.2.2 1.28 Mcps option

For each measurement period, the UE shall with the use of the UE transmitted power measurement, estimate if it has reached the Maximum allowed UL TX Power or not. With tolerances as defined for the UE transmitted power measurement accuracy (section 9.1.2.1.1), the UE output power shall not exceed the Maximum allowed UL TX Power, as set by the UTRAN.

For UE output powers that are outside the range covered by the UE transmitted power measurement the UE output power shall not exceed the Maximum allowed UL TX Power with more than the tolerances specified for the UL Power Control in [5].

#### 6A.3.2.3 7.68 Mcps option

For each measurement period, the UE shall with the use of the UE transmitted power measurement, estimate if it has reached the Maximum allowed UL TX Power or not. With tolerances as defined for the UE transmitted power measurement accuracy (section 9.1.2.1.1), the UE output power shall not exceed the Maximum allowed UL TX Power, as set by the UTRAN.

For UE output powers that are outside the range covered by the UE transmitted power measurement the UE output power shall not exceed the Maximum allowed UL TX Power with more than the tolerances specified for the UL Power Control in [5].

## 6A.4 Random Access

### 6A.4.1 Introduction

The random access procedure is used when establishing the layer 1 communication between the UE and UTRAN. The random access shall provide a fast access but without disturbing ongoing connections. The random access is specified in section 5.6 of TS 25.224 and the control of the RACH transmission is specified in section 11.2.3.2 of TS 25.321. A random access transmit sequence is described in section 6.7.3.2 of TS 25.303.

### 6A.4.2 Requirements

#### 6A.4.2.1 3.84 Mcps TDD option

Void.

### 6A.4.2.2 1.28 Mcps TDD option

The UE shall have capability to calculate initial power according to the open loop algorithm and apply this power level at the first UpPCH and increase the power on additional UpPCH:

$$P_{\text{UpPCH}} = L_{\text{PCCPCH}} + \text{PRX}_{\text{UpPCHdes}} + (i-1) * P_{\text{Wramp}}$$

The absolute power applied to the first UpPCH shall have the accuracy as specified in table 6.4.1.2 of TS 25.102. The accuracy is  $\pm 9$ dB in the case of normal condition or  $\pm 12$ dB in the case of extreme condition.

The relative power, which is the power difference for UpPCH ramping. The test requirement of the power difference for all SYNC\_UL ramping is 0~3dB ( $P_{\text{Wramp}}$ ). The relative power applied to additional UpPCH shall have an accuracy as below, which is referred to 6.5.2.1 of TS 25.101.

**Table 6A.4: Transmitter power difference tolerance**

| Power step size<br>$P_{\text{Wramp}}$ [dB] | Transmitter power difference<br>tolerance [dB] |
|--|--|
| 0  | +/- 1  |
| 1  | +/- 1  |
| 2  | +/- 1.5  |
| 3  | +/- 2  |

The UE shall stop transmit UpPCH when FPACH has been received correctly or if the maximum number of UpPCH has been reached. When FPACH has been received correctly the UE shall transmit PRACH.

#### 6A.4.2.2.1 Correct behaviour when receiving FPACH

The UE shall stop transmitting UpPCH when FPACH has been received correctly and then transmit a PRACH message.

The absolute power applied to the first UpPCH shall have an accuracy as specified in table 6.3A of TS 25.102. The relative power applied to additional UpPCH shall have an accuracy as below.

#### 6A.4.2.2.2 Correct behaviour when reaching maximum allowed UL transmit power

The UE shall not exceed the maximum allowed UL TX power configured by the UTRAN.

The absolute power of any UpPCH shall not exceed the maximum allowed UL TX power with more than specified in section 6A.3.

### 6A.4.2.3 7.68 Mcps TDD option

Void.

## 7 Timing characteristics

### 7.1 Timing Advance

#### 7.1.1 3.84 Mcps TDD option

##### 7.1.1.1 Introduction

The timing advance is initiated from UTRAN with an RRC message that implies an adjustment of the timing advance, see TS 25.331 section 8.6.6.26.

To update timing advance of a UE, the UTRAN measures RX Timing deviation. The measurements are defined in TS 25.225 and measurement accuracies are specified in section 9.

## 7.1.1.2 Requirements

### 7.1.1.2.1 Timing Advance adjustment accuracy

The UE shall adjust the timing of its transmissions with an accuracy better than or equal to  $\pm 0.5$  chip to the signalled timing advance value.

### 7.1.1.2.2 Timing Advance adjustment delay

The UE shall adjust the timing of its transmission at the designated activation time, when the indicated activation time is later than  $D_{TA}$  msec from the end of the last TTI containing the RRC message implying an adjustment of the timing advance.

$D_{TA}$  equals the RRC procedure delay of the RRC message implying an adjustment of the timing advance as defined in TS25.331 section 13.5.

## 7.1.2 1.28 Mcps TDD option

For 1.28 Mcps TDD the timing advance in the UE is adjusted by means of uplink synchronization. For the random access procedure the node B commands the UE to adjust its synchronisation shift by means of signalling the received position of the UpPTS in the FPACH. During the connection the node B measures the timing in the uplink and transmits a SS (Synchronization Shift) command to the UE at least once per sub-frame.

These SS commands determined whether the UE synchronization shift is either left unchanged, or adjusted 1 step up or 1 step down. The step size of the SS adjustment is  $(k/8)T_c$  where  $k$  ( $=1, 2, \dots, 8$ ) is signalled by higher layer signalling.

### 7.1.2.1 Uplink synchronization control requirements for UE for 1.28 Mcps TDD option

Uplink synchronization control is the ability of the UE transmitter to adjust its TX timing in accordance with one or more SS commands received in the downlink.

#### 7.1.2.1.1 Uplink synchronization control steps

The SS step is the change in UE transmission timing in response to a single SS command, SS\_cmd, received by the UE.

##### 7.1.2.1.1.1 Minimum requirement

The UE transmitter shall have the capability of changing the transmission timing with a step size of  $1/8, 2/8, 3/8, \dots, 1$  chip according to the value of  $\Delta_{SS}$ , within  $n=(1, 2, \dots, 6)$  time slots excluding special timeslots (DwPTS, GP, UpPTS) after the SS\_cmd arrived (closed loop). For the open loop any step being a multiple of  $1/8$  chip has to be allowed.

- The minimum transmission timing step  $\Delta_{SS, \min}$  due to closed loop uplink synchronization control shall be within the range shown in Table 7.1.
- In case uplink synchronization control implies larger adjustment than the minimum step the UE shall perform a multiple integer number of the minimum step. Within the implementation grid of the applicable timing steps of the UE the step being closest to the required step should be executed.

**Table 7.1: Uplink synchronisation control range**

| SS_cmd | Uplink synchronisation control range for minimum step |          |
|--------|---|----------|
|        | 1/8 chip step size                                    |          |
|        | Lower   | Upper    |
| Up     | 1/9 chip  | 1/7 chip |
| Down   | 1/9 chip  | 1/7 chip |



## 7.1.3 7.68 Mcps TDD option

### 7.1.3.1 Introduction

The timing advance is initiated from UTRAN with an RRC message that implies an adjustment of the timing advance, see TS 25.331 section 8.6.6.26.

To update timing advance of a UE, the UTRAN measures RX Timing deviation. The measurements are defined in TS 25.225 and measurement accuracies are specified in section 9.

### 7.1.3.2 Requirements

#### 7.1.3.2.1 Timing Advance adjustment accuracy

The UE shall adjust the timing of its transmissions with an accuracy better than or equal to  $\pm 0.5$  chip to the signalled timing advance value.

#### 7.1.3.2.2 Timing Advance adjustment delay

The UE shall adjust the timing of its transmission at the designated activation time, when the indicated activation time is later than  $D_{TA}$  msec from the end of the last TTI containing the RRC message implying an adjustment of the timing advance.

$D_{TA}$  equals the RRC procedure delay of the RRC message implying an adjustment of the timing advance as defined in TS25.331 section 13.5.

## 7.2 Cell synchronization accuracy

### 7.2.1 Definition

Cell synchronization accuracy is defined as the maximum deviation in frame start times between any pair of cells on the same frequency that have overlapping coverage areas.

### 7.2.2 Minimum requirements

The cell synchronization accuracy shall be better than or equal to  $3\mu\text{s}$ .

## 7.3 UE Transmit Timing for 3.84 Mcps TDD Option

### 7.3.1 Definition

UE transmit timing is defined as the frame start time of uplink transmissions relative to the downlink frame timing at zero propagation delay with timing advance turned off. The reference point for UE transmit timing shall be the antenna connector. This is applicable for the AWGN propagation condition. In the case of multi-path fading conditions, the reference point for UE transmit timing shall be the first significant path of the received PCCPCH.

### 7.3.2 Minimum Requirement

The UE transmit timing error shall be within 0 to +3 chips for the AWGN propagation condition.

## 7.3A UE Transmit Timing for 7.68 Mcps TDD Option

### 7.3A.1 Definition

UE transmit timing is defined as the frame start time of uplink transmissions relative to the downlink frame timing at zero propagation delay with timing advance turned off. The reference point for UE transmit timing shall be the antenna connector. This is applicable for the AWGN propagation condition. In the case of multi-path fading conditions, the reference point for UE transmit timing shall be the first significant path of the received PCCPCH.

### 7.3A.2 Minimum Requirement

The UE transmit timing error shall be within 0 to +3 chips for the AWGN propagation condition.

## 7.4 UE timer accuracy

### 7.4.1 Introduction

UE timers are used in different protocol entities to control the UE behaviour.

### 7.4.2 Requirements

For UE timers  $T_{3xx}$ ,  $T_{\text{barred}}$ ,  $T_{\text{reselection}}$ ,  $\text{Penalty\_time}$ ,  $T_{\text{CRmax}}$ ,  $T_{\text{CRmaxHyst}}$  [16], UE shall comply with the timer accuracies according to Table 7.2.

The requirements are only related to the actual timing measurements internally in the UE. They do not include the following:

- Inaccuracy in the start and stop conditions of a timer (e.g. UE reaction time to detect that start and stop conditions of a timer is fulfilled), or
- Inaccuracies due to restrictions in observability of start and stop conditions of a UE timer (e.g. TTI alignment when UE sends messages at timer expiry).

**Table 7.2**

| Timer value [s]      | Accuracy    |
|----------------------|-------------|
| timer value <4       | $\pm 0.1$ s |
| timer value $\geq 4$ | $\pm 2.5$ % |

## 7.5 UE Uplink Synchronization

### 7.5.1 3.84 Mcps TDD option

Void.

### 7.5.2 1.28 Mcps TDD option

#### 7.5.2.1 Uplink synchronization control for PRACH

##### 7.5.2.1.1 Introduction

The establishment of uplink synchronization is done during the random access procedure and involves the UpPCH and the PRACH. To update timing advance of a UE, the UTRAN measures SYNC-UL Timing deviation. Uplink synchronization control for PRACH is used to adjust its synchronisation shift by means of signalling the received position of the UpPTS in the FPACH.

Time of the beginning of the PRACH  $T_{TX-PRACH}$  is given by:

$$T_{TX-PRACH} = T_{RX-PRACH} - (UpPCH_{ADV} + UpPCH_{POS} - 8*16 T_C)$$

in multiple of 1/8 chips, where

$T_{TX-PRACH}$  is the beginning time of PRACH transmission with the UE's timing,

$T_{RX-PRACH}$  is the beginning time of PRACH reception with the UE's timing if the PRACH was a DL channel.

$UpPCH_{POS}$  is the received SYNC-UL timing deviation measured by UTRAN.

$UpPCH_{ADV}$  is the timing advance of SYNC-UL given by UE.

Then the timing advance for PRACH is given by:

$$T_{ADV-PRACH} = T_{RX-PRACH} - T_{TX-PRACH} = (UpPCH_{ADV} + UpPCH_{POS} - 8*16 T_C)$$

The procedure and measurements are defined in TS 25.224 section 5.2.2 and section 5.2.3.

### 7.5.2.1.2 Requirements

The uplink synchronization accuracy for PRACH is defined as PRACH timing deviation between received PRACH position and desired PRACH position. The accuracy requirements of uplink synchronization control for PRACH are decided by the accuracy of UpPCH timing advance  $UpPCH_{ADV}$  measured by UE and the accuracy of SYNC-UL timing deviation  $UpPCH_{POS}$  measured by UTRAN, which refer to section 9.1.2.2 and section 9.2.1.10.

**Table 7.3: Uplink synchronisation control accuracy requirements**

| Parameter                                | Unit | Accuracy [chip] | Conditions            |
|--|------|-----------------|-----------------------|
|  |      |                 | $I_0$ [dBm/ 1.28 MHz] |
| Uplink synchronization control for PRACH | chip | +/- 0.5         | -94...-50             |

## 7.5.2.2 Uplink synchronization control during handover

### 7.5.2.2.1 Introduction

The closed loop uplink synchronisation control uses layer 1 symbols (SS commands) for DPCH and PUSCH. After establishment of the uplink synchronisation, NodeB and UE start to use the closed loop UL synchronisation control procedure. This procedure is continuous during connected mode.

During a 1.28 Mcps TDD to 1.28 Mcps TDD hand-over the UE shall transmit in the new cell with timing advance  $TA$  adjusted by the relative timing difference  $\Delta t$  between the new and the old cell if indicated by higher layers:

$$TA_{new} = TA_{old} + 2\Delta t.$$

$TA_{new}$  is the timing advance of the new cell.

$TA_{old}$  is the timing advance of the old cell,

$\Delta t$  is the relative timing difference between the new and the old cell, which is measured by UE as SFN-SFN observed time difference type 2.

### 7.5.2.2.2 Requirements

The uplink synchronization accuracy during handover is defined as timing deviation between the initial actual uplink synchronization position and the desired position of the first uplink DPCH on the target cell. The accuracy requirements of uplink synchronization control during handover are decided by the accuracy of the timing advance and the accuracy of SFN-SFN observed time difference type 2 measured by UE, which refer to section 9.1.1.8 and section 9.1.2.2.

**Table 7.4: Uplink synchronisation control accuracy requirements**

| Parameter                                      | Unit | Accuracy [chip] | Conditions         |
|--|------|-----------------|--------------------|
|  |      |                 | Io [dBm/ 1.28 MHz] |
| Uplink synchronization control during handover | chip | +/- 0.5         | -94...-50          |

### 7.5.3 7.68 Mcps TDD option

Void.

---

## 8 UE Measurements Procedures

### 8.1 General Measurement Requirements in CELL\_DCH State (3.84 Mcps option)

#### 8.1.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL\_DCH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. Control of measurement reporting is specified in [16] and parallel measurements are specified in section 8.2. For the description of the idle intervals see [14].

#### 8.1.2 Requirements

##### 8.1.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells (including serving cell), and
- 32 inter frequency cells, including
  - TDD mode cells distributed on up to 2 additional TDD carriers and
  - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers.
- Depending on UE capability, 32 inter RAT GSM cells,
- Depending on UE capability, [32] E-UTRA cells distributed on up to [TBD] E-UTRA carriers

The requirements in section 9 are applicable for a UE performing measurements according to this section.

For measurements on intra- and inter-frequency TDD, inter-frequency FDD and GSM cells, idle intervals as described in [14] can be used. The time  $T_{\text{measure}}$  per 480 ms period available for these measurements is the sum of the duration of all idle intervals during any given 480 ms period, i.e. the amount of time not used by the UE for receiving in active DL timeslots or for transmission in active UL timeslots. Note that Beacon timeslots of the serving cell can be located inside idle intervals and that implementation margin due to frequency switching is not taken into account for  $T_{\text{measure}}$ .

The requirements in this section are based upon the assumption, that the time durations  $T_{\text{intra}}$  and  $T_{\text{inter}}$  during any given 480 ms period for the purpose of measurements on intra-frequency TDD cells and for measurements on inter-frequency TDD, inter-frequency FDD and GSM cells are respectively,

$$T_{\text{intra}} = \left[ 96 + 24 \cdot \text{Floor} \left\{ \frac{M_{\text{intra}} + 3}{4} \right\} \right] \text{ ms}$$

$$T_{\text{inter}} = 480 \text{ ms} - T_{\text{intra}}$$

where,  $M_{\text{intra}}$  is equal to the number of intra-frequency TDD cells in the neighbour list

The time duration  $T_{\text{inter}}$  shall be equally shared for inter-frequency measurements on the different modes and systems which the UE has capability for and that are in the monitored set signalled by UTRAN, i.e.

$$T_{\text{inter}} = N_{\text{TDD}} \cdot T_{\text{TDD inter}} + N_{\text{FDD}} \cdot T_{\text{FDD inter}} + N_{\text{GSM}} \cdot T_{\text{GSM inter}}$$

For this, the following parameters are defined,

$T_{\text{TDD inter}}$  is the time duration allocated for the purpose of TDD inter-frequency measurements.

$T_{\text{FDD inter}}$  is the time duration allocated for the purpose of FDD inter-frequency measurements.

$T_{\text{GSM inter}}$  is the time duration allocated for the purpose of GSM measurements.

$N_{\text{TDD}}$  is equal to 1 if there are inter-frequency TDD cells in the neighbour list, equal to 0 otherwise.

$N_{\text{FDD}}$  is equal to 1 if the UE has capability for FDD and if there are inter-frequency FDD cells in the neighbour list, equal to 0 otherwise.

$N_{\text{GSM}}$  is equal to 1 if the UE has capability for GSM and if there are GSM cells in the neighbour list, equal to 0 otherwise.

### 8.1.2.2 TDD intra frequency measurements

During the CELL\_DCH state, the UE shall continuously measure identified intra frequency TDD cells and search for new intra frequency TDD cells in the monitored set. In case the UTRAN requests the UE to report detected set cells, the UE shall also search for intra frequency TDD cells outside the monitored and active set. Cells, which are neither included in the active set nor in the monitored set, and are identified by the UE belong to the detected set according to [16].

In order for the requirements in the following subsections to apply, the Beacon timeslots of the intra-frequency TDD cells indicated in the measurement control information shall either be synchronised with the Beacon timeslots of the serving cell or non-overlapping in time with the active UL timeslots used by the UE for transmission, such that the UE can measure an intra-frequency TDD cell at least once every frame for the slot allocation case in use in this cell. The UE shall be capable of intra frequency measurements during active DL timeslots.

#### 8.1.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable intra-frequency TDD cell belonging to the monitored set within  $T_{\text{identify intra}}$  ms, where  $T_{\text{identify intra}} = 800$  ms.

When L3 filtering is used, an additional delay can be expected.

#### 8.1.2.2.2 UE P-CCPCH RSCP measurement capability

In CELL\_DCH state, the UE shall be capable of performing P-CCPCH RSCP measurements for  $X_{\text{measurement intra}}$  identified intra-frequency TDD cells of the monitored set with a measurement period for intra-frequency P-CCPCH RSCP measurements  $T_{\text{measurement period intra}}$ , where

$$X_{\text{measurement intra}} = 6 \text{ (cells)}$$

$$T_{\text{measurement period intra}} = 200 \text{ ms}$$

The UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period  $T_{\text{measurement period intra}}$ .

If the UE has identified more than  $X_{\text{measurement intra}}$  intra-frequency TDD cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from the UE physical layer to higher layers may be decreased.. The measurement accuracy for all measured cells shall be as specified in the section 9.

#### 8.1.2.2.2A Timeslot ISCP measurement capability

In CELL\_DCH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing Timeslot ISCP measurements for a total of 10 different combinations of an arbitrary DL timeslot and an intra-frequency cell [16], including the current serving cell. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

When inter-frequency measurements are required by the network, the UE shall be capable of performing Timeslot ISCP measurements for at least  $Y_{\text{measurement intra ISCP}}$  different combinations, where  $Y_{\text{measurement intra ISCP}}$  is defined in the following equation. Any Timeslot ISCP measurement that could not be performed during that measurement period, shall be measured in the following measurement periods. The measurement accuracy of the Timeslot ISCP measurement shall be as specified in the section 9.

$$Y_{\text{measurement intra ISCP}} = \text{Floor} \left\{ X_{\text{basic measurement ISCP}} \cdot \frac{5}{6} \frac{T_{\text{intra}}}{T_{\text{measurement period intra ISCP}}} \right\}$$

whereby function Floor(x) takes the integer part of x.

- $X_{\text{basic measurement ISCP}} = 10$  (combinations of an arbitrary DL timeslot and an intra-frequency cell)
- $T_{\text{measurement period, intra, ISCP}} = 400$  ms. The measurement period for intra frequency Timeslot ISCP measurements.
- $T_{\text{intra}}$  is specified in 8.1.2.1.

#### 8.1.2.2.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.2.4 Event-triggered Periodic Reporting

Reported measurements in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1.2.2.5 Event Triggered Reporting.

#### 8.1.2.2.5 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

For P-CCPCH RSCP measurements, the event triggered measurement reporting delay, on cells belonging to the monitored set, measured without L3 filtering shall be less than  $T_{\text{identify intra}}$  defined in Section 8.1.2.2.1. When L3 filtering is used an additional delay can be expected..

If a cell, belonging to the monitored set has been detectable at least for the time period  $T_{\text{identify intra}}$  and then enters the reporting range, the event triggered P-CCPCH RSCP measurement reporting delay shall be less than  $T_{\text{measurement period intra}}$  when the L3 filter has not been used and the UE P-CCPCH RSCP measurement capabilities of section 8.1.2.2.1 are valid.

#### 8.1.2.3 TDD inter frequency measurements

When signalled by UTRAN during CELL\_DCH state, the UE shall continuously measure detected inter-frequency TDD cells and search for new inter-frequency TDD cells indicated in the measurement control information.

In order for the requirements in the following subsections to apply, the Beacon timeslots of the inter-frequency TDD cells indicated in the measurement control information shall be non-overlapping in time with the active DL and UL timeslots used by the UE for reception and transmission such that the UE can measure an inter-frequency cell TDD cell at least once every frame for the slot allocation case in use in this cell and by assuming 2\*0.5 ms implementation margin for frequency switching per idle interval.

#### 8.1.2.3.1 Identification of a new cell

When idle intervals are used for inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within

$$T_{\text{identify\_inter}} = \text{Max} \left\{ 5000, N_{\text{basic\_identify\_TDD\_inter}} \cdot \frac{T_{\text{measurement\_period\_TDD\_inter}}}{N_{\text{TDD\_inter}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not require idle intervals to perform inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

When L3 filtering is used, an additional delay can be expected.

#### 8.1.2.3.2 P-CCPCH RSCP measurement period

When idle intervals are used for TDD inter frequency measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for  $X_{\text{measurement\_TDD\_inter}}$  inter-frequency TDD cells per TDD frequency of the monitored set.

The UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 and with a measurement period of  $T_{\text{measurement\_inter}}$ .

$$T_{\text{measurement\_inter}} = \text{Max} \left\{ T_{\text{measurement\_period\_TDD\_inter}}, N_{\text{basic\_measurement\_TDD\_inter}} \cdot \frac{T_{\text{measurement\_period\_TDD\_inter}}}{N_{\text{TDD\_inter}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not require idle intervals to perform TDD inter-frequency measurements, the measurement period for inter frequency P-CCPCH RSCP measurements shall be 480 ms.

Where,

$$X_{\text{measurement\_TDD\_inter}} = 6 \text{ (cells)}$$

$T_{\text{measurement\_period\_inter}} = 480$  ms. The time period used for calculating the measurement period  $T_{\text{measurement\_inter}}$  for inter frequency P-CCPCH RSCP measurements.

$N_{\text{TDD\_inter}}$ : This is the available number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period  $T_{\text{TDD\_inter}}$ . The UE shall consider that a measurement opportunity on a Beacon timeslot of an inter-frequency TDD cell is provided if an idle interval of length equal to or greater than 3 timeslots less 2\*0.5 ms implementation margin for frequency switching per idle interval completely overlaps in time with the Beacon timeslot of the inter-frequency TDD cell.

$N_{\text{basic\_identify\_TDD\_inter}} = 80$ . This is a number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period used in the inter frequency TDD equation where the maximum allowed time for the UE to identify a new detectable inter-frequency TDD cell is defined.

$N_{\text{basic\_measurement\_TDD\_inter}} = 5$ . This is a number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period  $T_{\text{TDD\_inter}}$  used in the inter-frequency TDD equation where the measurement period for inter-frequency P-CCPCH RSCP measurements is defined.

$N_{\text{Freq\_TDD}}$ : This is the number of TDD frequencies indicated in the inter frequency measurement control information.

Note that the number of measurement opportunities available to the UE depends on UL and DL timeslot assignments for transmission and reception and on Beacon timeslot allocations in the inter-frequency TDD cells.

### 8.1.2.3.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

### 8.1.2.3.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{identify\_inter}}$  defined in Section 8.1.2.3.1 When L3 filtering is used an additional delay can be expected.

If an intra frequency TDD cell has been detectable at least for the time period  $T_{\text{identify\_inter}}$  and then enters the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{measurement\_period\_inter}}$  when the L3 filter has not been used.

## 8.1.2.4 FDD measurements

The requirements in this section shall apply to UE supporting TDD and FDD.

In the CELL\_DCH state when FDD inter frequency measurements are scheduled the UE shall continuously measure detected inter frequency FDD cells and search for new inter frequency FDD cells indicated in the measurement control information.

### 8.1.2.4.1 Identification of a new cell

When idle intervals are used for inter-frequency FDD measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within

$$T_{\text{identify\_FDD\_inter}} = \text{Max} \left\{ 5000, T_{\text{basic\_identify\_FDD\_inter}} \cdot \frac{T_{\text{measurement\_period\_FDD\_inter}}}{T_{\text{FDD\_inter}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not require idle intervals to perform FDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within 5000 ms.

When L3 filtering is used an additional delay can be expected.

An inter-frequency FDD cell shall be considered detectable, when CPICH  $E_c/I_o \geq -20$  dB, SCH  $E_c/I_o \geq -17$  dB and SCH  $E_c/I_o$  is equally divided between primary synchronisation code and secondary synchronisation code.

### 8.1.2.4.2 UE CPICH measurement capability

When idle intervals are used for FDD inter frequency measurements, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement\_FDD\_inter}} = \text{Max} \left\{ T_{\text{measurement\_period\_FDD\_inter}}, T_{\text{basic\_measurement\_FDD\_inter}} \cdot \frac{T_{\text{measurement\_period\_FDD\_inter}}}{T_{\text{FDD\_inter\_available}}} \cdot N_{\text{Freq,FDD}} \right\} \text{ms}$$

If the UE does not require idle intervals to perform FDD inter-frequency measurements, the measurement period for inter frequency CPICH measurements shall be 480 ms.



The UE shall be capable of performing CPICH measurements for  $X_{\text{measurement FDD inter}}$  inter-frequency FDD cells per frequency of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{\text{measurement FDD inter}}$ .

$$X_{\text{basic measurement FDD inter}} = 6 \text{ (cells)}$$

$T_{\text{measurement\_period FDD inter}} = 480$  ms. The time period used for calculating the measurement period  $T_{\text{measurement\_FDD inter}}$  for inter frequency CPICH measurements.

$T_{\text{FDD inter: available}}$ : This is the available time for measurements on inter-frequency FDD cells.  $T_{\text{FDD inter available}}$  shall be derived from  $T_{\text{FDD inter}}$  by assuming  $2 \cdot 0.5$  ms implementation margin for frequency switching per idle interval and by only taking into account the remaining number of full timeslots per idle interval. Idle intervals smaller than 3 timeslots shall not be taken into account for calculating  $T_{\text{FDD inter available}}$ .

$T_{\text{basic\_identify\_FDD inter}} = 800$  ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new detectable inter-frequency FDD cell is defined.

$T_{\text{basic\_measurement\_FDD inter}} = 50$  ms. This is the time period used in the inter-frequency equation for defining the measurement period for inter frequency CPICH measurements.

$N_{\text{Freq}}$ : This is the number of FDD frequencies indicated in the inter frequency measurement control information.

#### 8.1.2.4.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.4.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{identify FDD inter}}$  defined in Section 8.1.2.4.1. When L3 filtering is used an additional delay can be expected.

If an inter frequency FDD cell has been detectable at least for the time period  $T_{\text{identify\_FDD inter}}$  and then enters the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{measurement\_period FDD inter}}$  provided the timing to that cell has not changed more than  $\pm 32$  chips during the time period  $T_{\text{identify FDD inter}}$  and the L3 filter has not been used.

#### 8.1.2.5 GSM measurements

The requirements in this section shall apply to UE supporting TDD and GSM.

In CELL\_DCH state, measurements opportunities for GSM measurements are provided by means of idle intervals.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

- a) In CELL\_DCH state, when signaled by UTRAN and when idle intervals are used for GSM measurements, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.
  - In section 8.1.2.1 the split of measurements between different modes and systems is defined. Every second measurement opportunity scheduled for GSM measurements, as given by 8.1.2.1 shall be allocated for GSM initial BSIC identification.
  - The remaining measurements opportunities scheduled for GSM measurements shall be used as follows. 3 measurement opportunities out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4

shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement opportunities between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

- b) In CELL\_DCH state, when signaled by UTRAN and when the UE does not need idle intervals to perform GSM measurements, the UE shall measure all GSM cells present in the monitored set
- the relevant requirements for GSM dedicated mode when a TCH channel is assigned in [21] shall apply. This is further detailed in the following sub-sections.

#### 8.1.2.5.1 GSM carrier RSSI

- a) For a UE using idle intervals to perform GSM measurements

A UE supporting GSM measurements using idle intervals shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.1.

In the CELL\_DCH state the measurement period,  $T_{\text{measurement period GSM}}$ , for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [21], when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

**Table 8.1**

| Idle interval length (timeslots) | Number of GSM carrier RSSI samples in each idle interval |
|----------------------------------|--|
| 3                                | 1  |
| 4                                | 2  |
| 5                                | 3  |
| 6                                | 4  |
| 7                                | 6  |
| 8                                | 7  |
| 9                                | 8  |
| 10                               | 10   |
| 11                               | 11   |
| 12                               | 12   |
| 13                               | 14   |

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

- b) For a UE not using idle intervals to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per GSM carrier RSSI measurement. The measurement period shall be 480 ms.

#### 8.1.2.5.2 BSIC verification

- a) For a UE using idle intervals to perform GSM measurements

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

- 1) Initial BSIC identification: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell.. The requirements for Initial BSIC identification can be found in section 8.1.2.5.2.1.
- 2) BSIC re-confirmation: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed.. The requirements for Initial BSIC identification can be found in section 8.1.2.5.2.2.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified, the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

If the UTRAN requests measurements on a GSM cell with BSIC verified, the UE shall behave as follows:

- The UE shall perform GSM carrier RSSI measurements according to Section 8.1.2.5.1 and the UE shall perform measurement reporting as defined in Section 8.6.7.6 of [16].
- The UE shall use the last available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification.
- The UE shall perform BSIC re-confirmation according to Section 8.1.2.5.2.2

The UE shall perform event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the last available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting. Periodic reports shall be triggered according to the given reporting period even if the BSIC of a GSM cell has not been verified as defined in Sections 8.6.7.5 and 8.6.7.6 of [16]. Non verified BSIC shall be indicated in the measurement report.

The UE shall consider the BSIC of a GSM cell to be "verified", if it has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification). From that time instant, the UE shall attempt to re-confirm the BSIC at least once every  $T_{\text{re-confirm abort}}$  seconds. Otherwise, the UE shall consider the BSIC of the GSM cell to be "non-verified".

The time requirement for initial BSIC identification,  $T_{\text{identify abort}}$ , and the BSIC re-confirmation interval  $T_{\text{re-confirm abort}}$  can be found in the sections below.

The UE shall be able to decode a BSIC for the purpose of initial BSIC identification or BSIC reconfirmation within an idle interval, when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the idle interval is within the limits specified in Table 8.1.AA.

**Table 8.1AA**

| Idle Interval Length (timeslots) | Maximum time difference [ $\mu\text{s}$ ] |
|----------------------------------|---|
| 3                                | $\pm 65$                                  |
| 4                                | $\pm 398$                                 |
| 5                                | $\pm 732$                                 |
| 6                                | $\pm 1065$                                |
| 7                                | $\pm 1398$                                |
| 8                                | $\pm 1732$                                |
| 9                                | $\pm 2065$                                |
| 10                               | $\pm 2398$                                |
| 11                               | $\pm 2732$                                |
| 12                               | $\pm 3065$                                |
| 13                               | $\pm 3398$                                |

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

b) For a UE not using idle intervals to perform GSM measurements

If a BSIC is decoded and matches the expected value, the UE shall consider it as "verified", otherwise it shall consider it as "non-verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

#### 8.1.2.5.2.1 Initial BSIC identification

For GSM cells that are requested with BSIC verified the UE shall attempt to decode the SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give

priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering. The GSM signal strength levels used in BSIC identification for arranging GSM cells in signal strength order shall be based on the latest GSM carrier RSSI measurement results available.

If the BSIC of a GSM BCCH carriers has been successfully decoded the UE shall immediately continue BSIC identification with the next BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within  $T_{\text{identify\_abort}}$ , the UE shall abort the BSIC decoding attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC decoding of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC decoding failed shall not be re-considered for BSIC decoding until BSIC decoding attempts have been made for all the rest of the 8 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

Where  $T_{\text{identify\_abort}} = 5000$  ms.

#### 8.1.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of at least 8 identified GSM cells. Initial timing information is obtained from the initial BSIC decoding. The timing information shall be updated every time the BSIC is decoded.

If more than one BSIC can be decoded within the same measurement window given by the idle intervals, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM BCCH carrier within  $T_{\text{re-confirm\_abort}}$  seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM BCCH carrier. The GSM BCCH carrier shall be treated as a new GSM BCCH carrier with unidentified BSIC and the GSM BCCH carrier shall be moved to the initial BSIC decoding procedure, see section 8.1.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 8 strongest GSM cells in the monitored list.

Where  $T_{\text{re-confirm\_abort}} = 5000$  ms.

#### 8.1.2.5.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.5.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered reporting delay requirement is valid, when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period  $T_{\text{measurement period GSM}}$  (see section 8.1.2.5.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC, measured without L3 filtering shall be less than  $2 * T_{\text{measurement period GSM}}$ , where  $T_{\text{measurement period GSM}}$  is defined in Section 8.1.2.5.1. When L3 filtering is used an additional delay can be expected. For a GSM cell with non-verified BSIC an additional delay according to section 8.1.2.5.2.1 Initial BSIC identification can be expected.

### 8.1.2.6 TDD Synchronisation to new cells

For the requirements in section 8 and 9 to apply, an intra-frequency or inter-frequency TDD cell shall be considered

detectable when,

$$\left( \frac{P - \text{CCPCH} - E_c}{I_o} \right) \Big|_{in \text{ dB}} \geq -8 \text{ dB}$$

$$\left( \frac{\text{SCH} - E_c}{I_o} \right) \Big|_{in \text{ dB}} \geq -13 \text{ dB}$$

where the received P-CCPCH  $E_c/I_o$  is defined as

$$\left( \frac{P - \text{CCPCH} - E_c}{I_o} \right) \Big|_{in \text{ dB}} = \left( \frac{P - \text{CCPCH} - E_c}{I_{or}} \right) \Big|_{in \text{ dB}} - \left( \frac{I_o}{\hat{I}_{or}} \right) \Big|_{in \text{ dB}}$$

and the received SCH  $E_c/I_o$  is defined as

$$\left( \frac{\text{SCH} - E_c}{I_o} \right) \Big|_{in \text{ dB}} = \left( \frac{\text{SCH} - E_c}{I_{or}} \right) \Big|_{in \text{ dB}} - \left( \frac{I_o}{\hat{I}_{or}} \right) \Big|_{in \text{ dB}}$$

and  $\text{SCH}_{-}E_c/I_{or}$  is equally divided between primary synchronisation code and the sum of all secondary synchronisation codes, where the secondary synchronisation codes are also equally divided.

### 8.1.2.7 E-UTRAN FDD measurements

The requirements in this section apply only to UEs supporting 3.84Mcps TDD and E-UTRAN FDD.

- 1) For a UE requiring idle intervals to perform E-UTRAN FDD measurements. In CELL\_DCH state when signalled by UTRAN and when idle intervals are used, the UE shall continuously measure previously detected E-UTRAN FDD cells and search for new E-UTRAN FDD cells.
- 2) For a UE not requiring idle intervals to perform E-UTRAN FDD measurements:
  - the UE shall measure either all E-UTRAN FDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.
  - the relevant requirements for E-UTRAN RRC\_CONNECTED mode specified in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses 8.1.2.7.1.

#### 8.1.2.7.1 Identification of a new cell

When idle intervals are used for E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within

$$T_{\text{Identify E-UTRAN FDD}} = T_{\text{Basic\_Identify\_E-UTRAN FDD}} \cdot \frac{T_{\text{Measurement\_Period\_E-UTRAN FDD}}}{T_{\text{E-UTRAN FDD}}} \quad \text{ms};$$

If the UE does not need idle intervals to perform E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within  $T_{\text{Basic\_Identify\_E-UTRAN FDD}}$  ms.

Where:

$T_{\text{E-UTRAN FDD}}$ : This is the minimum time that is available for E-UTRAN FDD measurements during the measurement period  $T_{\text{Measurement\_Period\_E-UTRAN FDD}}$  with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming  $2 \cdot 0.5$  ms for implementation margin.

$$T_{\text{Basic\_Identify\_E-UTRAN FDD}} = 480 \text{ ms}$$

When L3 filtering is used an additional delay can be expected.

An E-UTRAN FDD cell shall be considered detectable when

- $RSRP|_{dBm}$  and  $RSRP \hat{E}s/Iot$ , according to Annex B.2.1 for a corresponding Band
- Other RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band,
- $SCH\_RP|_{dBm}$  and  $SCH\_ \hat{E}s/Iot$ , according to Annex B.2.1 for a corresponding Band

#### 8.1.2.7.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN FDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of  $T_{\text{Measurement\_Period\_E-UTRAN FDD}} = 480 \times N_{\text{Freq}}$  ms where  $N_{\text{Freq}}$  is the number of FDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 E-UTRAN FDD cells per E-UTRAN FDD frequency for up to 4 FDD E-UTRAN frequencies.

#### 8.1.2.7.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.7.4 Void

#### 8.1.2.7.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{Identify E-UTRAN FDD}}$  defined in Section 8.1.2.7.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period  $T_{\text{Identify E-UTRAN FDD}}$  and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{Measurement\_Period\_E-UTRAN FDD}}$  provided the timing to that cell has not changed more than [FFS] while idel interval has not been available and the L3 filter has not been used.

#### 8.1.2.8 E-UTRAN TDD measurements

The requirements in this section apply only to UEs supporting 1.28Mcps TDD and E-UTRAN TDD.

- 1) For a UE requiring idle intervals to perform E-UTRAN TDD measurements. In CELL\_DCH state when signalled by UTRAN and when idle intervals are used, the UE shall continuously measure previously detected E-UTRAN TDD cells and search for new E-UTRAN TDD cells.
- 2) For a UE not requiring idle intervals to perform E-UTRAN TDD measurements:

- the UE shall measure either all E-UTRAN TDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.
- the relevant requirements for E-UTRAN RRC\_CONNECTED mode specified in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses 8.1.2.8.1.

#### 8.1.2.8.1 Identification of a new cell

When idle intervals are used for E-UTRAN measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within

$$T_{\text{Identify E-UTRAN TDD}} = T_{\text{Basic\_Identify\_E-UTRAN TDD}} \cdot \frac{T_{\text{Measurement\_Period\_E-UTRAN TDD}}}{T_{\text{E-UTRAN TDD}}} \text{ ms};$$

If the UE does not need idle intervals to perform E-UTRAN TDD measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within  $T_{\text{Basic\_Identify\_E-UTRAN TDD}}$  ms.

Where:

$T_{\text{E-UTRAN TDD}}$ : This is the minimum time that is available for E-UTRAN TDD measurements during the measurement period  $T_{\text{Measurement\_Period\_E-UTRAN TDD}}$  with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming  $2 \cdot 0.5$  ms for implementation margin.

$$T_{\text{Basic\_Identify\_E-UTRAN TDD}} = 480 \text{ ms}$$

When L3 filtering is used an additional delay can be expected.

An E-UTRAN TDD cell shall be considered detectable when

- $\text{RSRP}_{\text{dBm}}$  and  $\text{RSRP } \hat{E}_s/I_{ot}$ , according to Annex B.2.1 for a corresponding Band
- Other RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band,
- $\text{SCH\_RP}_{\text{dBm}}$  and  $\text{SCH } \hat{E}_s/I_{ot}$  according to Annex B.2.1 for a corresponding Band

#### 8.1.2.8.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN TDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of  $T_{\text{Measurement\_Period\_E-UTRAN TDD}} = 480 \times N_{\text{Freq}}$  ms where  $N_{\text{Freq}}$  is the number of TDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 E-UTRAN TDD cells per E-UTRAN TDD frequency for up to 4 E-UTRAN TDD frequencies.

#### 8.1.2.8.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1.2.8.4 Void

#### 8.1.2.8.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a

delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{Identify E-UTRAN TDD}}$  defined in Section 8.1.2.8.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period  $T_{\text{Identify E-UTRAN TDD}}$  and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{Measurement_Period_E-UTRAN_TDD}}$  provided the timing to that cell has not changed more than [FFS] while idel interval has not been available and the L3 filter has not been used.

## 8.1A General Measurements Requirements in CELL\_DCH State (1.28 Mcps option)

### 8.1A.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL\_DCH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD, GSM and E-UTRAN measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in TS 25.225, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331 and parallel measurements are specified in section 8.2A. For the description of the idle intervals see TS 25.225, Annex A.

### 8.1A.2 Requirements

#### 8.1A.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells, and
- 32 inter frequency cells, including
  - TDD cells on up to minimum 8 additional TDD carriers, and
  - Depending on UE capability, FDD cells, distributed on up to 3 FDD carriers, and
  - Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.
  - Depending on UE capability, [32] E-UTRA cells distributed on up to [TBD] E-UTRA carriers

Performance requirements for different types of measurements and different number of cells are defined in the following sections.

The requirements in section 9 are applicable for a UE performing measurements according to this section.

The received P-CCPCH  $E_c/I_o$  is defined as

$$\left( \frac{P-CCPCH-E_c}{I_o} \right) \Big|_{in \text{ dB}} = \left( \frac{P-CCPCH-E_c}{I_{or}} \right) \Big|_{in \text{ dB}} - \left( \frac{I_o}{\hat{I}_{or}} \right) \Big|_{in \text{ dB}}$$

The received DwPTS  $E_c/I_o$  is defined as

$$\left( \frac{DwPCH-E_c}{I_o} \right) \Big|_{in \text{ dB}} = \left( \frac{DwPCH-E_c}{I_{or}} \right) \Big|_{in \text{ dB}} - \left( \frac{I_o}{\hat{I}_{or}} \right) \Big|_{in \text{ dB}}$$



### 8.1A.2.2 TDD intra frequency measurements

During the CELL\_DCH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitored set. In case the UTRAN requests the UE to report detected set cells, the UE shall also search for intra frequency cells outside the monitored and active set set. Cells, which are neither included in the active set nor in the monitored set, and are identified by the UE belong to the detected set according to TS 25.331. Intra frequency measurements can be performed (simultaneously to data reception from the active cell) in all time slots not used for inter frequency measurements.

#### 8.1A.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify intra}} = T_{\text{basic identify TDD, intra}} \cdot \frac{N_{\text{Period, Intra}}}{N_{\text{Intra}}} \text{ ms}$$

A cell shall be considered detectable when P-CCPCH Ec/Io  $\geq$  -8 dB and DwPCH\_Ec/Io  $\geq$  -5 dB. When L3 filtering is used an additional delay can be expected.

The UE shall be able to identify a new detectable cell not belonging to the monitored set within

$$T_{\text{identify detected set}} = 30s$$

when P-CCPCH Ec/Io  $\geq$  -8 dB, DwPCH\_Ec/Io  $\geq$  -5 dB. When L3 filtering is used an additional delay can be expected.

#### 8.1A.2.2.2 UE P-CCPCH RSCP measurement capability

In the CELL\_DCH state the measurement period for intra frequency P-CCPCH RSCP measurements is 200 ms. When all TS0, DwPTS and main guard periods in the measurement period are scheduled for intra frequency measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for 6 identified intra-frequency cells of the monitored set and the UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period of 200 ms. When inter-frequency measurements required by the network have to be performed during periods of TS0, DwPTS or main guard period, the UE shall be capable of performing P-CCPCH RSCP measurements for at least  $Y_{\text{measurement intra}}$  cells, where  $Y_{\text{measurement intra}}$  is defined in the following equation. The measurement accuracy for all measured cells shall be as specified in the section 9. If the UE has identified more than  $Y_{\text{measurement intra}}$  cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement intra}} = \text{Floor} \left\{ X_{\text{basic measurement TDD}} \cdot \frac{N_{\text{Intra}}}{N_{\text{Period, Intra}}} \right\}$$

whereby function Floor(x) takes the integer part of x.

$X_{\text{basic measurement TDD}} = 6$  (cells)

$T_{\text{Measurement_Period, Intra}} = 200$  ms. The measurement period for Intra frequency P-CCPCH RSCP measurements.

$N_{\text{Period, Intra}} = 40$  Number of subframes in  $T_{\text{Measurement_Period, Intra}}$ .

$N_{\text{Intra}}$  : This is the minimum number of sub-frame in that the period of TS0, DwPTS and main guard period is available for intra frequency measurements, during the measurement period.

$T_{\text{basic identify TDD, intra}} = 800$  ms. This is the time period used in the intra frequency equation where the maximum allowed time for the UE to identify a new TDD cell is defined.

The UE shall furthermore be capable of performing P-CCPCH measurements for at least 1 detected intra-frequency cell, in the detected set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 10 s. The measurement accuracy for all measured cells shall be as specified in the section 9.

### 8.1A.2.2.2A Timeslot ISCP measurement capability

In the CELL\_DCH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing Timeslot ISCP measurements for a total of 5 different combinations of an arbitrary DL timeslot and an intra-frequency cell [16], including the current serving cell. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

When inter-frequency measurements are required by the network, the UE shall be able to perform Timeslot ISCP measurements for at least  $Y_{\text{measurement intra ISCP}}$  different combinations, where  $Y_{\text{measurement intra ISCP}}$  is defined in the following equation. Any Timeslot ISCP measurement that could not be performed during that measurement period, shall be measured in the following measurement periods. The measurement accuracy of the Timeslot ISCP measurement shall be as specified in the section 9.

$$Y_{\text{measurement intra ISCP}} = \text{Floor} \left\{ X_{\text{basic measurement ISCP}} \cdot \frac{T_{\text{Intra}}}{T_{\text{Measurement Period, Intra, ISCP}}} \right\}$$

whereby function Floor(x) takes the integer part of x.

$X_{\text{basic measurement ISCP}} = 5$  (combinations of an arbitrary DL timeslot and an intra-frequency cell)

$T_{\text{Measurement Period, Intra, ISCP}} = 400$  ms. The measurement period for Intra frequency Timeslot ISCP measurements.

$T_{\text{Intra}}$ : This is the minimum time (representing a time corresponding to an integer number of full slots) that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing.

### 8.1A.2.2.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

### 8.1A.2.2.4 Event-triggered Periodic Reporting

Reported measurements in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1A.2.2.5 Event Triggered Reporting.

### 8.1A.2.2.5 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, on cells belonging to monitored set, measured without L3 filtering shall be less than  $T_{\text{identify intra}}$  defined in Section 8.1A.2.2.1

If a cell belonging to monitored set has been detectable at least for the time period  $T_{\text{identify intra}}$  and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{Measurement Period Intra}}$  when the L3 filter has not been used and the UE P-CCPCH measurement capabilities of Section 8.1A.2.2.2 are valid.

The event triggered measurement reporting delay on cells not belonging to monitored set, measured without L3 filtering, shall be less than the above defined  $T_{\text{identify detected set}}$  defined in Section 8.1A.2.2.1.

### 8.1A.2.3 TDD inter frequency measurements

When signalled by the network during CELL\_DCH state, the UE shall continuously measure identified inter frequency TDD cells and search for new inter frequency TDD cells indicated in the measurement control information.

#### 8.1A.2.3.1 Identification of a new cell

When idle intervals are used for inter-frequency TDD measurements, the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify\_inter}} = \text{Max} \left\{ 5000, N_{\text{basic\_identify\_TDD,inter}} \cdot \frac{T_{\text{Measurement\_Period,Inter}}}{N_{\text{Inter}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not require idle intervals to perform inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

A cell shall be considered detectable when P-CCPCH Ec/Io  $\geq$  -8 dB and DwPCH\_Ec/Io  $\geq$  -5 dB. When L3 filtering is used an additional delay can be expected.

#### 8.1A.2.3.2 UE P-CCPCH RSCP measurement capability

When idle intervals are used for TDD inter frequency measurements, the UE physical layer shall be capable of reporting P-CCPCH RSCP measurements to higher layers with measurement accuracy as specified in section 9 and with measurement period given by

$$T_{\text{measurement\_inter}} = \text{Max} \left\{ T_{\text{Measurement\_Period,Inter}}, N_{\text{basic\_measurement\_TDD\_inter}} \cdot \frac{T_{\text{Measurement\_Period,Inter}}}{N_{\text{Inter}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not require idle intervals to perform TDD inter-frequency measurements, the measurement period for inter frequency P-CCPCH RSCP measurements is 480 ms.

The UE shall be capable of performing P-CCPCH RSCP measurements for  $X_{\text{basic\_measurement\_TDD\_inter}}$  inter-frequency cells per TDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{\text{Measurement\_Inter}}$ .

$$X_{\text{basic\_measurement\_TDDinter}} = 6$$

$T_{\text{Measurement\_Period\_Inter}} = 480$  ms. The period used for calculating the measurement period  $T_{\text{measurement\_inter}}$  for inter frequency P-CCPCH RSCP measurements.

$N_{\text{Inter}}$ : This is the minimum number of sub-frame in that the signal of P-CCPCH and DwPCH can be received for inter frequency target cell during the period  $T_{\text{Measurement\_Period\_inter}}$  with an arbitrarily chosen timing. It depends on the channel allocation and is calculated by assuming  $2 \cdot 0.1$ ms for implementation margin (for the description of the idle intervals see Annex A of 25.225).

$T_{\text{basic\_identify\_TDD,inter}} = 800$ ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new TDD cell is defined.

$N_{\text{basic\_identify\_TDD,Inter}} = 160$ , Number of subframes in  $T_{\text{basic\_identify\_TDD,inter}}$ .

$T_{\text{basic\_measurement\_TDD\_inter}} = 50$  ms. This is the time period used in the equation for defining the measurement period for inter frequency P-CCPCH RSCP measurements.

$N_{\text{basic\_measurement\_TDD,Inter}} = 10$ , Number of subframes in  $T_{\text{basic\_measurement\_TDD\_Inter}}$ .

$N_{\text{Freq}}$  Number of TDD frequencies indicated in the inter frequency measurement control information.

#### 8.1A.2.3.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1A.2.3.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{identify inter}}$  defined in Section 8.1A.2.3.1. When L3 filtering is used an additional delay can be expected.

#### 8.1A.2.4 FDD measurements

The requirements in this section shall apply to UE supporting 1.28Mcps TDD and FDD.

In the CELL\_DCH state when FDD inter frequency measurements are scheduled the UE shall continuously measure identified inter frequency FDD cells and search for new inter frequency FDD cells indicated in the measurement control information.

##### 8.1A.2.4.1 Identification of a new cell

When idle intervals are used for inter-frequency FDD measurements, the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify FDD inter}} = \text{Max} \left\{ 5000, T_{\text{basic identify FDD inter}} \cdot \frac{T_{\text{Measurement Period FDD inter}}}{T_{\text{FDD inter}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

IF the UE does not require idle intervals to perform inter-frequency FDD measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within 5000 ms.

When L3 filtering is used an additional delay can be expected.

A cell shall be considered detectable when  $CPICH_{Ec/Io} \geq -20$  dB,  $SCH_{Ec/Io} \geq -17$  dB and  $SCH_{Ec/Ior}$  is equally divided between primary synchronisation code and secondary synchronisation code.

##### 8.1A.2.4.2 UE CPICH measurement capability

When idle intervals are used for FDD inter frequency measurements, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement FDD inter}} = \text{Max} \left\{ T_{\text{Measurement Period FDD inter}}, T_{\text{basic measurement FDD inter}} \cdot \frac{T_{\text{Measurement Period FDD inter}}}{T_{\text{FDD inter}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not need idle intervals to perform FDD measurements, the measurement period for inter frequency measurements is 480 ms.

The UE shall be capable of performing FDD measurements for  $X_{\text{basic measurement FDD inter}}$  inter-frequency cells per FDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{\text{Measurement\_FDDInter}}$ .

$$X_{\text{basic measurement FDDinter}} = 6$$

$T_{\text{Measurement\_Period FDD inter}} = 480$  ms. The period used for calculating the measurement period  $T_{\text{measurement\_FDD inter}}$  for inter frequency CPICH measurements.

$T_{\text{FDD\_inter}}$ : This is the minimum time that is available for inter frequency measurements, during the period  $T_{\text{Measurement\_Period\_FDD\_inter}}$  with an arbitrarily chosen timing. The minimum time depends on the channel allocation and is calculated by assuming  $2 \times 0.1$  ms for implementation margin (for the description of the idle intervals see Annex A of 25.225). It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

$T_{\text{basic\_identify\_FDD\_inter}} = 800$  ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new FDD cell is defined.

$T_{\text{basic\_measurement\_FDD\_inter}} = 50$  ms. This is the time period used in the equation for defining the measurement period for inter frequency CPICH measurements.

$N_{\text{Freq}}$ : Number of FDD frequencies indicated in the inter frequency measurement control information.

### 8.1A.2.4.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

### 8.1A.2.4.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{identify\_FDD\_inter}}$  defined in Section 8.1A.2.4.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period  $T_{\text{identify\_FDD\_inter}}$  and then enters the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{Measurement\_Period\_FDD\_Inter}}$  provided the timing to that cell has not changed more than  $\pm 32$  chips while idle intervals have not been available and the L3 filter has not been used.

### 8.1A.2.5 GSM measurements

The requirements in this section shall apply to UE supporting 1.28Mcps TDD and GSM.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

- 1) For a UE requiring idle intervals to perform GSM measurements. In CELL\_DCH state when signalled by UTRAN and when idle intervals are used, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.
- 2) For a UE not requiring idle intervals to perform GSM measurements:
  - the UE shall measure all GSM cells present in the monitored set
  - the relevant requirements for GSM dedicated mode when a TCH channel is assigned in TS 45.008 shall apply. This is further detailed in the following sub-sections.

#### 8.1A.2.5.1 GSM carrier RSSI

- 1) For a UE requiring idle intervals to perform GSM measurements

An UE supporting GSM measurements using idle intervals shall meet the minimum number of GSM RSSI carrier measurements specified in table 8.1A.

In the CELL\_DCH state the measurement period,  $T_{\text{Measurement\_Period, GSM}}$ , for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008, when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

**Table 8.1A**

| Idle Interval Length (timeslots) | Number of GSM carrier RSSI samples in each idle interval |
|----------------------------------|--|
| 3                                | 1  |
| 4                                | 2  |
| 5                                | 3  |

For the description of the idle intervals see Annex A of 25.225.

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

2) For a UE not requiring idle intervals to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per RSSI value. The measurement period is 480 ms.

#### 8.1A.2.5.2 BSIC verification

1) For a UE requiring idle intervals to perform GSM measurements

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

1) Initial BSIC identification

Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell. The UE shall trigger the initial BSIC identification within the available idle intervals. The requirements for Initial BSIC identification can be found in section 8.1A.2.5.2.1, "Initial BSIC identification".

2) BSIC re-confirmation

Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available idle intervals. The requirements for BSIC re-confirmation can be found in section 8.1A.2.5.2.2, "BSIC re-confirmation".

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The UE shall use the last available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification. The UE shall perform event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the last available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting. Periodic reports shall be triggered according to Sections 8.6.7.5 and 8.6.7.6 of [16]

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every  $T_{\text{re-confirm abort}}$  seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified". The time requirement for initial BSIC identification,  $T_{\text{identify abort}}$ , and the BSIC re-confirmation interval  $T_{\text{re-confirm abort}}$  can be found in the sections below.

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

2) For a UE not requiring idle intervals to perform GSM measurements

If a BSIC is decoded and matches the expected value, it is considered as "verified", else it is considered as "non verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

#### 8.1A.2.5.2.1 Initial BSIC identification

For GSM cells that are requested with BSIC verified the UE shall attempt to decode the SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering. The GSM signal strength levels used in BSIC identification for arranging GSM cells in signal strength order shall be based on the latest GSM carrier RSSI measurement results available.

If the BSIC of a GSM BCCH carriers has been successfully decoded the UE shall immediately continue BSIC identification with the next BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within  $T_{\text{identify\_abort}}$ , the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC decoding attempts have been made for all the rest of the 8 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{\text{identify\_abort}} = 5000$  ms. This is the time necessary to identify one new GSM cell. It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

#### 8.1A.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of at least 8 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each idle interval, the UE is able to use for BSIC re-confirmation, the UE shall attempt to decode the BSIC falling within the effective measurement window. If more than one BSIC can be decoded within the same measurement window given by the idle intervals, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM BCCH carrier within  $T_{\text{re-confirm\_abort}}$  seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM BCCH carrier. The GSM BCCH carrier shall be treated as a new GSM BCCH carrier with unidentified BSIC and the GSM BCCH carrier shall be moved to the initial BSIC decoding procedure, see section 8.1A.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 8 strongest GSM cells in the monitored list.

$T_{\text{re-confirm\_abort}} = 5000$  ms. This is the BSIC reconfirmation interval.

It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements.

#### 8.1A.2.5.2.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1A.2.5.2.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a

delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered reporting delay requirement is valid when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period  $T_{\text{Measurement Period, GSM}}$  (see section 8.1A.2.5.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC, measured without L3 filtering shall be less than  $2 \cdot T_{\text{Measurement Period, GSM}}$ , where  $T_{\text{Measurement Period, GSM}}$  is defined in Section 8.1A.2.5.1. When L3 filtering is used an additional delay can be expected. For a GSM cell with non-verified BSIC an additional delay according to section 8.1A.2.5.2.1 Initial BSIC identification can be expected.

## 8.1A.2.6 E-UTRAN FDD measurements

The requirements in this section apply only to UEs supporting 1.28Mcps TDD and E-UTRAN FDD.

1) For a UE requiring idle intervals to perform E-UTRAN FDD measurements:

- a minimum idle interval of 6ms shall be scheduled by the network.
- when signalled by UTRAN, the UE shall continuously measure previously detected E-UTRAN FDD cells and search for new E-UTRAN FDD cells.

2) For a UE not requiring idle intervals to perform E-UTRAN FDD measurements:

- the UE shall measure either all E-UTRAN FDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.
- the relevant requirements for E-UTRAN RRC\_CONNECTED mode specified in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses 8.1A.2.6.1.

### 8.1A.2.6.1 Identification of a new cell

When idle intervals are used for E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within

$$T_{\text{Identify E-UTRAN FDD}} = T_{\text{Basic\_Identify\_E-UTRAN FDD}} \cdot \frac{T_{\text{Measurement\_Period\_E-UTRAN FDD}}}{T_{\text{E-UTRAN FDD}}} \quad \text{ms};$$

If the UE does not need idle intervals to perform E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within  $T_{\text{Basic\_Identify\_E-UTRAN FDD}}$  ms.

Where:

$T_{\text{E-UTRAN FDD}}$ : This is the minimum time that is available for E-UTRAN FDD measurements during the measurement period  $T_{\text{Measurement\_Period\_E-UTRAN FDD}}$  with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming  $2 \cdot 0.5$  ms for implementation margin.

$$T_{\text{Basic\_Identify\_E-UTRAN FDD}} = 480 \text{ ms}$$

When L3 filtering is used an additional delay can be expected.

An E-UTRAN FDD cell shall be considered detectable when

- $\text{RSRP}_{\text{dBm}}$  and  $\text{RSRP} \hat{E}_s/\text{Iot}$ , according to Annex B.2.2 for a corresponding Band
- Other RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band,
- $\text{SCH\_RP}_{\text{dBm}}$  and  $\text{SCH\_E}_s/\text{Iot}$ , according to Annex B.2.2 for a corresponding Band



### 8.1A.2.6.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN FDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of  $T_{\text{Measurement\_Period\_E-UTRAN\_FDD}} = 480 \times N_{\text{Freq}}$  ms where  $N_{\text{Freq}}$  is the number of FDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 E-UTRAN FDD cells per E-UTRAN FDD frequency for up to 4 FDD E-UTRAN frequencies.

### 8.1A.2.6.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

### 8.1A.2.6.4 void

### 8.1A.2.6.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{identify\_E-UTRAN\_FDD}}$  defined in Section 8.1A.2.6.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period  $T_{\text{identify\_E-UTRAN\_FDD}}$  and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{Measurement\_Period\_E-UTRAN\_FDD}}$  provided the timing to that cell has not changed more than [FFS] while idle interval has not been available and the L3 filter has not been used.

## 8.1A.2.7 E-UTRAN TDD measurements

The requirements in this section apply only to UEs supporting 1.28Mcps TDD and E-UTRAN TDD.

1) For a UE requiring idle intervals to perform E-UTRAN TDD measurements:

- a minimum idle interval of 6ms shall be scheduled by the network.
- when signalled by UTRAN, the UE shall continuously measure previously detected E-UTRAN TDD cells and search for new E-UTRAN TDD cells.

2) For a UE not requiring idle intervals to perform E-UTRAN TDD measurements:

- the UE shall measure either all E-UTRAN TDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.
- the relevant requirements for E-UTRAN RRC\_CONNECTED mode specified in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses 8.1A.2.7.1.

### 8.1A.2.7.1 Identification of a new cell

When idle intervals are used for E-UTRAN measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within

$$T_{\text{Identify E-UTRAN TDD}} = T_{\text{Basic\_Identify\_E-UTRAN TDD}} \cdot \frac{T_{\text{Measurement\_Period\_E-UTRAN TDD}}}{T_{\text{E-UTRAN TDD}}} \text{ ms};$$

If the UE does not need idle intervals to perform E-UTRAN TDD measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within  $T_{\text{Basic\_Identify\_E-UTRAN TDD}}$  ms.

Where:

$T_{\text{E-UTRAN TDD}}$ : This is the minimum time that is available for E-UTRAN TDD measurements during the measurement period  $T_{\text{Measurement\_Period\_E-UTRAN TDD}}$  with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming  $2 \cdot 0.5$  ms for implementation margin.

$T_{\text{Basic\_Identify\_E-UTRAN TDD}} = 480$  ms

When L3 filtering is used an additional delay can be expected.

An E-UTRAN TDD cell shall be considered detectable when

- $\text{RSRP}_{\text{dBm}}$  and  $\text{RSRP } \hat{E}_s/\text{Iot}$ , according to Annex B.2.2 for a corresponding Band
- Other RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band,
- $\text{SCH\_RP}_{\text{dBm}}$  and  $\text{SCH } \hat{E}_s/\text{Iot}$ , according to Annex B.2.2 for a corresponding Band

#### 8.1A.2.7.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN TDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of  $T_{\text{Measurement\_Period\_E-UTRAN TDD}} = 480 \times N_{\text{Freq}}$  ms where  $N_{\text{Freq}}$  is the number of TDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 E-UTRAN TDD cells per E-UTRAN TDD frequency for up to 4 E-UTRAN TDD frequencies.

#### 8.1A.2.7.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1A.2.7.4 void

#### 8.1A.2.7.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{Identify E-UTRAN TDD}}$  defined in Section 8.1A.2.7.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period  $T_{\text{Identify E-UTRAN TDD}}$  and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{Measurement\_Period\_E-UTRAN TDD}}$  provided the timing to that cell has not changed more than [FFS] while idel interval has not been available and the L3 filter has not been used.

## 8.1B General Measurement Requirements in CELL\_DCH State (7.68 Mcps option)

### 8.1B.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL\_DCH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. Control of measurement reporting is specified in [16] and parallel measurements are specified in section 8.2B. For the description of the idle intervals see [14].

### 8.1B.2 Requirements

#### 8.1B.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells (including serving cell), and
- 32 inter frequency cells, including
  - TDD mode cells distributed on up to 2 additional TDD carriers and
  - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers.
- Depending on UE capability, 32 inter RAT GSM cells.
- Depending on UE capability, [32] E-UTRA cells distributed on up to [TBD] E-UTRA carriers

The requirements in section 9 are applicable for a UE performing measurements according to this section.

For measurements on intra- and inter-frequency TDD, inter-frequency FDD and GSM cells, idle intervals as described in [14] can be used. The time  $T_{\text{measure}}$  per 480 ms period available for these measurements is the sum of the duration of all idle intervals during any given 480 ms period, i.e. the amount of time not used by the UE for receiving in active DL timeslots or for transmission in active UL timeslots. Note that Beacon timeslots of the serving cell can be located inside idle intervals and that implementation margin due to frequency switching is not taken into account for  $T_{\text{measure}}$ .

The requirements in this section are based upon the assumption, that the time durations  $T_{\text{intra}}$  and  $T_{\text{inter}}$  during any given 480 ms period for the purpose of measurements on intra-frequency TDD cells and for measurements on inter-frequency TDD, inter-frequency FDD and GSM cells are respectively,

$$T_{\text{intra}} = \left[ 96 + 24 \cdot \text{Floor} \left\{ \frac{M_{\text{intra}} + 3}{4} \right\} \right] \text{ ms}$$

$$T_{\text{inter}} = 480 \text{ ms} - T_{\text{intra}}$$

where,  $M_{\text{intra}}$  is equal to the number of intra-frequency TDD cells in the neighbour list

The time duration  $T_{\text{inter}}$  shall be equally shared for inter-frequency measurements on the different modes and systems which the UE has capability for and that are in the monitored set signalled by UTRAN, i.e.

$$T_{\text{inter}} = N_{\text{TDD}} \cdot T_{\text{TDD inter}} + N_{\text{FDD}} \cdot T_{\text{FDD inter}} + N_{\text{GSM}} \cdot T_{\text{GSM inter}}$$

For this, the following parameters are defined,

$T_{\text{TDD inter}}$  is the time duration allocated for the purpose of TDD inter-frequency measurements.

$T_{\text{FDD inter}}$  is the time duration allocated for the purpose of FDD inter-frequency measurements.

$T_{\text{GSM inter}}$  is the time duration allocated for the purpose of GSM measurements.

$N_{\text{TDD}}$  is equal to 1 if there are inter-frequency TDD cells in the neighbour list, equal to 0 otherwise.

$N_{\text{FDD}}$  is equal to 1 if the UE has capability for FDD and if there are inter-frequency FDD cells in the neighbour list, equal to 0 otherwise.

$N_{\text{GSM}}$  is equal to 1 if the UE has capability for GSM and if there are GSM cells in the neighbour list, equal to 0 otherwise.

### 8.1B.2.2 TDD intra frequency measurements

During the CELL\_DCH state, the UE shall continuously measure identified intra frequency TDD cells and search for new intra frequency TDD cells in the monitored set. In case the UTRAN requests the UE to report detected set cells, the UE shall also search for intra frequency TDD cells outside the monitored and active set. Cells, which are neither included in the active set nor in the monitored set, and are identified by the UE belong to the detected set according to [16].

In order for the requirements in the following subsections to apply, the Beacon timeslots of the intra-frequency TDD cells indicated in the measurement control information shall either be synchronised with the Beacon timeslots of the serving cell or non-overlapping in time with the active UL timeslots used by the UE for transmission, such that the UE can measure an intra-frequency TDD cell at least once every frame for the slot allocation case in use in this cell. The UE shall be capable of intra frequency measurements during active DL timeslots.

#### 8.1B.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable intra-frequency TDD cell belonging to the monitored set within  $T_{\text{identify intra}}$  ms, where  $T_{\text{identify intra}} = 800$  ms.

When L3 filtering is used, an additional delay can be expected.

#### 8.1B.2.2.2 UE P-CCPCH RSCP measurement capability

In CELL\_DCH state, the UE shall be capable of performing P-CCPCH RSCP measurements for  $X_{\text{measurement intra}}$  identified intra-frequency TDD cells of the monitored set with a measurement period for intra-frequency P-CCPCH RSCP measurements  $T_{\text{measurement period intra}}$ , where

$$X_{\text{measurement intra}} = 6 \text{ (cells)}$$

$$T_{\text{measurement period intra}} = 200 \text{ ms}$$

The UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period  $T_{\text{measurement period intra}}$ .

If the UE has identified more than  $X_{\text{measurement intra}}$  intra-frequency TDD cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from the UE physical layer to higher layers may be decreased.. The measurement accuracy for all measured cells shall be as specified in the section 9.

#### 8.1B.2.2.3 Timeslot ISCP measurement capability

In CELL\_DCH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing Timeslot ISCP measurements for a total of 10 different combinations of an arbitrary DL timeslot and an intra-frequency cell [16], including the current serving cell. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

When inter-frequency measurements are required by the network, the UE shall be capable of performing Timeslot ISCP measurements for at least  $Y_{\text{measurement intra ISCP}}$  different combinations, where  $Y_{\text{measurement intra ISCP}}$  is defined in the following equation. Any Timeslot ISCP measurement that could not be performed during that measurement period, shall be measured in the following measurement periods. The measurement accuracy of the Timeslot ISCP measurement shall be as specified in the section 9.

$$Y_{\text{measurement intra ISCP}} = \text{Floor} \left\{ X_{\text{basic measurement ISCP}} \cdot \frac{5}{6} \frac{T_{\text{intra}}}{T_{\text{measurement period intra ISCP}}} \right\}$$

whereby function Floor(x) takes the integer part of x.

- $X_{\text{basic measurement ISCP}} = 10$  (combinations of an arbitrary DL timeslot and an intra-frequency cell)
- $T_{\text{measurement period, intra, ISCP}} = 400$  ms. The measurement period for intra frequency Timeslot ISCP measurements.
- $T_{\text{intra}}$  is specified in 8.1B.2.1.

#### 8.1B.2.2.4 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1B.2.2.5 Event-triggered Periodic Reporting

Reported measurements in event triggered periodic measurement reports shall meet the requirements in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in section 8.1B.2.2.6 Event Triggered Reporting.

#### 8.1B.2.2.6 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

For P-CCPCH RSCP measurements, the event triggered measurement reporting delay, on cells belonging to the monitored set, measured without L3 filtering shall be less than  $T_{\text{identify intra}}$  defined in Section 8.1B.2.2.1. When L3 filtering is used an additional delay can be expected..

If a cell, belonging to the monitored set has been detectable at least for the time period  $T_{\text{identify intra}}$  and then enters the reporting range, the event triggered P-CCPCH RSCP measurement reporting delay shall be less than  $T_{\text{measurement period intra}}$  when the L3 filter has not been used and the UE P-CCPCH RSCP measurement capabilities of section 8.1B.2.2.1 are valid.

#### 8.1B.2.3 TDD inter frequency measurements

When signalled by UTRAN during CELL\_DCH state, the UE shall continuously measure detected inter-frequency TDD cells and search for new inter-frequency TDD cells indicated in the measurement control information.

In order for the requirements in the following subsections to apply, the Beacon timeslots of the inter-frequency TDD cells indicated in the measurement control information shall be non-overlapping in time with the active DL and UL timeslots used by the UE for reception and transmission such that the UE can measure an inter-frequency cell TDD cell at least once every frame for the slot allocation case in use in this cell and by assuming 2\*0.5 ms implementation margin for frequency switching per idle interval.

##### 8.1B.2.3.1 Identification of a new cell

When idle intervals are used for inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within

$$T_{\text{identify\_inter}} = \text{Max} \left\{ 5000, N_{\text{basic\_identify\_TDD\_inter}} \cdot \frac{T_{\text{measurement\_period\_TDD\_inter}}}{N_{\text{TDD\_inter}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not require idle intervals to perform inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

When L3 filtering is used, an additional delay can be expected.

### 8.1B.2.3.2 P-CCPCH RSCP measurement period

When idle intervals are used for TDD inter frequency measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for  $X_{\text{measurement\_TDD\_inter}}$  inter-frequency TDD cells per TDD frequency of the monitored set.

The UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 and with a measurement period of  $T_{\text{measurement\_inter}}$ .

$$T_{\text{measurement\_inter}} = \text{Max} \left\{ T_{\text{measurement\_period\_TDD\_inter}}, N_{\text{basic\_measurement\_TDD\_inter}} \cdot \frac{T_{\text{measurement\_period\_TDD\_inter}}}{N_{\text{TDD\_inter}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not require idle intervals to perform TDD inter-frequency measurements, the measurement period for inter frequency P-CCPCH RSCP measurements shall be 480 ms.

Where,

$$X_{\text{measurement\_TDD\_inter}} = 6 \text{ (cells)}$$

$T_{\text{measurement\_period\_inter}} = 480$  ms. The time period used for calculating the measurement period  $T_{\text{measurement\_inter}}$  for inter frequency P-CCPCH RSCP measurements.

$N_{\text{TDD\_inter}}$ : This is the available number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period  $T_{\text{TDD\_inter}}$ . The UE shall consider that a measurement opportunity on a Beacon timeslot of an inter-frequency TDD cell is provided if an idle interval of length equal to or greater than 3 timeslots less  $2 \cdot 0.5$  ms implementation margin for frequency switching per idle interval completely overlaps in time with the Beacon timeslot of the inter-frequency TDD cell.

$N_{\text{basic\_identify\_TDD\_inter}} = 80$ . This is a number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period used in the inter frequency TDD equation where the maximum allowed time for the UE to identify a new detectable inter-frequency TDD cell is defined.

$N_{\text{basic\_measurement\_TDD\_inter}} = 5$ . This is a number of measurement opportunities for a Beacon timeslot of an inter-frequency TDD cell during the time period  $T_{\text{TDD\_inter}}$  used in the inter-frequency TDD equation where the measurement period for inter-frequency P-CCPCH RSCP measurements is defined.

$N_{\text{Freq\_TDD}}$ : This is the number of TDD frequencies indicated in the inter frequency measurement control information.

Note that the number of measurement opportunities available to the UE depends on UL and DL timeslot assignments for transmission and reception and on Beacon timeslot allocations in the inter-frequency TDD cells.

### 8.1B.2.3.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

### 8.1B.2.3.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report, until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a

delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{identify\_inter}}$  defined in Section 8.1B.2.3.1 When L3 filtering is used an additional delay can be expected.

If an intra frequency TDD cell has been detectable at least for the time period  $T_{\text{identify\_inter}}$  and then enters the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{measurement\_period\_inter}}$  when the L3 filter has not been used.

## 8.1B.2.4 FDD measurements

The requirements in this section shall apply to UE supporting TDD and FDD.

In the CELL\_DCH state when FDD inter frequency measurements are scheduled the UE shall continuously measure detected inter frequency FDD cells and search for new inter frequency FDD cells indicated in the measurement control information.

### 8.1B.2.4.1 Identification of a new cell

When idle intervals are used for inter-frequency FDD measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within

$$T_{\text{identify\_FDD\_inter}} = \text{Max} \left\{ 5000, T_{\text{basic\_identify\_FDD\_inter}} \cdot \frac{T_{\text{measurement\_period\_FDD\_inter}}}{T_{\text{FDD\_inter}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not require idle intervals to perform FDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within 5000 ms.

When L3 filtering is used an additional delay can be expected.

An inter-frequency FDD cell shall be considered detectable, when  $\text{CPICH Ec/Io} \geq -20$  dB,  $\text{SCH\_Ec/Io} \geq -17$  dB and  $\text{SCH\_Ec/Ior}$  is equally divided between primary synchronisation code and secondary synchronisation code.

### 8.1B.2.4.2 UE CPICH measurement capability

When idle intervals are used for FDD inter frequency measurements, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement\_FDD\_inter}} = \text{Max} \left\{ T_{\text{measurement\_period\_FDD\_inter}}, T_{\text{basic\_measurement\_FDD\_inter}} \cdot \frac{T_{\text{measurement\_period\_FDD\_inter}}}{T_{\text{FDD\_inter\_available}}} \cdot N_{\text{Freq,FDD}} \right\} \text{ms}$$

If the UE does not require idle intervals to perform FDD inter-frequency measurements, the measurement period for inter frequency CPICH measurements shall be 480 ms.

The UE shall be capable of performing CPICH measurements for  $X_{\text{measurement\_FDD\_inter}}$  inter-frequency FDD cells per frequency of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{\text{measurement\_FDD\_inter}}$ .

$$X_{\text{basic\_measurement\_FDD\_inter}} = 6 \text{ (cells)}$$

$T_{\text{measurement\_period\_FDD\_inter}} = 480$  ms. The time period used for calculating the measurement period  $T_{\text{measurement\_FDD\_inter}}$  for inter frequency CPICH measurements.

$T_{\text{FDD\_inter\_available}}$ : This is the available time for measurements on inter-frequency FDD cells.  $T_{\text{FDD\_inter\_available}}$  shall be derived from  $T_{\text{FDD\_inter}}$  by assuming 2\*0.5 ms implementation margin for frequency switching per idle interval and by only taking into account the remaining number of full timeslots per idle interval. Idle intervals smaller than 3 timeslots shall not be taken into account for calculating  $T_{\text{FDD\_inter\_available}}$ .

$T_{\text{basic\_identify\_FDD inter}} = 800$  ms. This is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new detectable inter-frequency FDD cell is defined.

$T_{\text{basic\_measurement\_FDD inter}} = 50$  ms. This is the time period used in the inter-frequency equation for defining the measurement period for inter frequency CPICH measurements.

$N_{\text{Freq}}$ : This is the number of FDD frequencies indicated in the inter frequency measurement control information.

#### 8.1B.2.4.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1B.2.4.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{identify FDD inter}}$  defined in Section 8.1B.2.4.1. When L3 filtering is used an additional delay can be expected.

If an inter frequency FDD cell has been detectable at least for the time period  $T_{\text{identify\_FDD inter}}$  and then enters the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{measurement\_period FDD inter}}$  provided the timing to that cell has not changed more than  $\pm 32$  chips during the time period  $T_{\text{identify FDD inter}}$  and the L3 filter has not been used.

#### 8.1B.2.5 GSM measurements

The requirements in this section shall apply to UE supporting TDD and GSM.

In CELL\_DCH state, measurements opportunities for GSM measurements are provided by means of idle intervals.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

- a) In CELL\_DCH state, when signaled by UTRAN and when idle intervals are used for GSM measurements, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.
  - In section 8.1B.2.1 the split of measurements between different modes and systems is defined. Every second measurement opportunity scheduled for GSM measurements, as given by 8.1B.2.1 shall be allocated for GSM initial BSIC identification.
  - The remaining measurements opportunities scheduled for GSM measurements shall be used as follows. 3 measurement opportunities out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement opportunities between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.
- b) In CELL\_DCH state, when signaled by UTRAN and when the UE does not need idle intervals to perform GSM measurements, the UE shall measure all GSM cells present in the monitored set
  - the relevant requirements for GSM dedicated mode when a TCH channel is assigned in [21] shall apply. This is further detailed in the following sub-sections.

##### 8.1B.2.5.1 GSM carrier RSSI

- a) For a UE using idle intervals to perform GSM measurements

A UE supporting GSM measurements using idle intervals shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.1B.



In the CELL\_DCH state the measurement period,  $T_{\text{measurement period GSM}}$ , for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [21], when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

**Table 8.1B**

| Idle interval length (timeslots) | Number of GSM carrier RSSI samples in each idle interval |
|----------------------------------|--|
| 3                                | 1  |
| 4                                | 2  |
| 5                                | 3  |
| 6                                | 4  |
| 7                                | 6  |
| 8                                | 7  |
| 9                                | 8  |
| 10                               | 10   |
| 11                               | 11   |
| 12                               | 12   |
| 13                               | 14   |

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

b) For a UE not using idle intervals to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per GSM carrier RSSI measurement. The measurement period shall be 480 ms.

#### 8.1B.2.5.2 BSIC verification

a) For a UE using idle intervals to perform GSM measurements

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

- 1) Initial BSIC identification: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell.. The requirements for Initial BSIC identification can be found in section 8.1B.2.5.2.1.
- 2) BSIC re-confirmation: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed.. The requirements for Initial BSIC identification can be found in section 8.1B.2.5.2.2.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified, the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

If the UTRAN requests measurements on a GSM cell with BSIC verified, the UE shall behave as follows:

- The UE shall perform GSM carrier RSSI measurements according to Section 8.1B.2.5.1 and the UE shall perform measurement reporting as defined in Section 8.6.7.6 of [16].
- The UE shall use the last available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification.
- The UE shall perform BSIC re-confirmation according to Section 8.1B.2.5.2.2

The UE shall perform event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the last available GSM carrier RSSI measurement results in event evaluation and event-triggered

reporting. Periodic reports shall be triggered according to the given reporting period even if the BSIC of a GSM cell has not been verified as defined in Sections 8.6.7.5 and 8.6.7.6 of [16]. Non verified BSIC shall be indicated in the measurement report.

The UE shall consider the BSIC of a GSM cell to be "verified", if it has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification). From that time instant, the UE shall attempt to re-confirm the BSIC at least once every  $T_{\text{re-confirm abort}}$  seconds. Otherwise, the UE shall consider the BSIC of the GSM cell to be "non-verified".

The time requirement for initial BSIC identification,  $T_{\text{identify abort}}$ , and the BSIC re-confirmation interval  $T_{\text{re-confirm abort}}$  can be found in the sections below.

The UE shall be able to decode a BSIC for the purpose of initial BSIC identification or BSIC reconfirmation within an idle interval, when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the idle interval is within the limits specified in Table 8.1C.

**Table 8.1C**

| Idle Interval Length (timeslots) | Maximum time difference [ $\mu\text{s}$ ] |
|----------------------------------|---|
| 3                                | $\pm 65$                                  |
| 4                                | $\pm 398$                                 |
| 5                                | $\pm 732$                                 |
| 6                                | $\pm 1065$                                |
| 7                                | $\pm 1398$                                |
| 8                                | $\pm 1732$                                |
| 9                                | $\pm 2065$                                |
| 10                               | $\pm 2398$                                |
| 11                               | $\pm 2732$                                |
| 12                               | $\pm 3065$                                |
| 13                               | $\pm 3398$                                |

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

b) For a UE not using idle intervals to perform GSM measurements

If a BSIC is decoded and matches the expected value, the UE shall consider it as "verified", otherwise it shall consider it as "non-verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

#### 8.1B.2.5.2.1 Initial BSIC identification

For GSM cells that are requested with BSIC verified the UE shall attempt to decode the SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value after layer 3 filtering. The GSM signal strength levels used in BSIC identification for arranging GSM cells in signal strength order shall be based on the latest GSM carrier RSSI measurement results available.

If the BSIC of a GSM BCCH carriers has been successfully decoded the UE shall immediately continue BSIC identification with the next BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within  $T_{\text{identify abort}}$ , the UE shall abort the BSIC decoding attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC decoding of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC decoding failed shall not be re-considered for BSIC decoding until BSIC decoding attempts have been made for all the rest of the 8 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

Where  $T_{\text{identify abort}} = 5000$  ms.

### 8.1B.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of at least 8 identified GSM cells. Initial timing information is obtained from the initial BSIC decoding. The timing information shall be updated every time the BSIC is decoded.

If more than one BSIC can be decoded within the same measurement window given by the idle intervals, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM BCCH carrier within  $T_{\text{re-confirm\_abort}}$  seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM BCCH carrier. The GSM BCCH carrier shall be treated as a new GSM BCCH carrier with unidentified BSIC and the GSM BCCH carrier shall be moved to the initial BSIC decoding procedure, see section 8.1B.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 8 strongest GSM cells in the monitored list.

Where  $T_{\text{re-confirm\_abort}} = 5000$  ms.

### 8.1B.2.5.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

### 8.1B.2.5.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH.

The event triggered reporting delay requirement is valid, when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period  $T_{\text{measurement period GSM}}$  (see section 8.1B.2.5.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC, measured without L3 filtering shall be less than  $2 * T_{\text{measurement period GSM}}$ , where  $T_{\text{measurement period GSM}}$  is defined in Section 8.1B.2.5.1. When L3 filtering is used an additional delay can be expected. For a GSM cell with non-verified BSIC an additional delay according to section 8.1B.2.5.2.1 Initial BSIC identification can be expected.

### 8.1B.2.6 TDD Synchronisation to new cells

For the requirements in section 8 and 9 to apply, an intra-frequency or inter-frequency TDD cell shall be considered

detectable when,

$$\left( \frac{P - \text{CCPCH} - E_c}{I_o} \right)_{\text{in dB}} \geq -11 \text{dB}$$

$$\left( \frac{\text{SCH} - E_c}{I_o} \right)_{\text{in dB}} \geq -13 \text{dB}$$

where the received P-CCPCH  $E_c/I_o$  is defined as

$$\left( \frac{P - \text{CCPCH} - E_c}{I_o} \right)_{\text{in dB}} = \left( \frac{P - \text{CCPCH} - E_c}{I_{or}} \right)_{\text{in dB}} - \left( \frac{I_o}{\hat{I}_{or}} \right)_{\text{in dB}}$$

and the received SCH  $E_c/I_o$  is defined as

$$\left( \frac{SCH\_Ec}{I_o} \right)_{in\ dB} = \left( \frac{SCH\_Ec}{I_{or}} \right)_{in\ dB} - \left( \hat{I}_{or} \right)_{in\ dB}$$

and  $SCH\_Ec/I_{or}$  is equally divided between primary synchronisation code and the sum of all secondary synchronisation codes, where the secondary synchronisation codes are also equally divided.

### 8.1B.2.7 E-UTRAN FDD measurements

The requirements in this section apply only to UEs supporting 7.68Mcps TDD and E-UTRAN FDD.

- 1) For a UE requiring idle intervals to perform E-UTRAN FDD measurements. In CELL\_DCH state when signalled by UTRAN and when idle intervals are used, the UE shall continuously measure previously detected E-UTRAN FDD cells and search for new E-UTRAN FDD cells.
- 2) For a UE not requiring idle intervals to perform E-UTRAN FDD measurements:
  - the UE shall measure either all E-UTRAN FDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.
  - the relevant requirements for E-UTRAN RRC\_CONNECTED mode specified in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses 8.1B.2.7.1.

#### 8.1B.2.7.1 Identification of a new cell

When idle intervals are used for E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within

$$T_{\text{Identify E-UTRAN FDD}} = T_{\text{Basic\_Identify\_E-UTRAN FDD}} \cdot \frac{T_{\text{Measurement\_Period\_E-UTRAN FDD}}}{T_{\text{E-UTRAN FDD}}} \quad \text{ms};$$

If the UE does not need idle intervals to perform E-UTRAN FDD measurements, the UE shall be able to identify a new detectable E-UTRAN FDD cell within  $T_{\text{Basic\_Identify\_E-UTRAN FDD}}$  ms.

Where:

$T_{\text{E-UTRAN FDD}}$ : This is the minimum time that is available for E-UTRAN FDD measurements during the measurement period  $T_{\text{Measurement\_Period\_E-UTRAN FDD}}$  with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming  $2 \cdot 0.5$  ms for implementation margin.

$$T_{\text{Basic\_Identify\_E-UTRAN FDD}} = 480 \text{ ms}$$

When L3 filtering is used an additional delay can be expected.

An E-UTRAN FDD cell shall be considered detectable when

- $RSRP|_{dBm}$  and  $RSRP \hat{E}_s/I_{ot}$ , according to Annex B.2.3 for a corresponding Band
- Other RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band<sub>1</sub>
- $SCH\_RP|_{dBm}$  and  $SCH\_E_s/I_{ot}$ . according to Annex B.2.3 for a corresponding Band

#### 8.1B.2.7.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN FDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of  $T_{\text{Measurement\_Period\_E-UTRAN FDD}} = 480 \times N_{\text{Freq}}$  ms where  $N_{\text{Freq}}$  is the number of FDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 E-UTRAN FDD cells per E-UTRAN FDD frequency for up to 4 FDD E-UTRAN frequencies.

### 8.1B.2.7.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

### 8.1B.2.7.4 Void

### 8.1B.2.7.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{\text{Identify E-UTRAN FDD}}$  defined in Section 8.1B.2.7.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period  $T_{\text{Identify E-UTRAN FDD}}$  and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{\text{Measurement_Period_E-UTRAN_FDD}}$  provided the timing to that cell has not changed more than [FFS] while idel interval has not been available and the L3 filter has not been used.

## 8.1B.2.8 E-UTRAN TDD measurements

The requirements in this section apply only to UEs supporting 1.28Mcps TDD and E-UTRAN TDD.

- 1) For a UE requiring idle intervals to perform E-UTRAN TDD measurements. In CELL\_DCH state when signalled by UTRAN and when idle intervals are used, the UE shall continuously measure previously detected E-UTRAN TDD cells and search for new E-UTRAN TDD cells.
- 2) For a UE not requiring idle intervals to perform E-UTRAN TDD measurements:
  - the UE shall measure either all E-UTRAN TDD cells present in the monitored set or, if only frequencies are provided in the neighbour cell list, the strongest cells present in the detected set, up to the monitoring capabilities of the UE.
  - the relevant requirements for E-UTRAN RRC\_CONNECTED mode specified in 3GPP TS 36.133 [24] shall apply. This is further detailed in the following subclauses 8.1B.2.8.1.

### 8.1B.2.8.1 Identification of a new cell

When idle intervals are used for E-UTRAN measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within

$$T_{\text{Identify E-UTRAN TDD}} = T_{\text{Basic_Identify_E-UTRAN TDD}} \cdot \frac{T_{\text{Measurement_Period_E-UTRAN TDD}}}{T_{\text{E-UTRAN TDD}}} \quad \text{ms} ;$$

If the UE does not need idle intervals to perform E-UTRAN TDD measurements, the UE shall be able to identify a new detectable E-UTRAN TDD cell within  $T_{\text{Basic_Identify_E-UTRAN TDD}}$  ms.

Where:

$T_{E-UTRAN\ TDD}$ : This is the minimum time that is available for E-UTRAN TDD measurements during the measurement period  $T_{Measurement\_Period\_E-UTRAN\ TDD}$  with an arbitrarily chosen timing. The minimum time per idle interval is calculated by assuming  $2 \times 0.5$  ms for implementation margin.

$T_{Basic\_Identify\_E-UTRAN\ TDD} = 480$ ms

When L3 filtering is used an additional delay can be expected.

An E-UTRAN TDD cell shall be considered detectable when

- $RSRP_{dBm}$  and  $RSRP\ \hat{E}s/Iot$ , according to Annex B.2.3 for a corresponding Band
- Other RSRP related side condition given in Section 9.1 of [24] are fulfilled for a corresponding Band<sub>i</sub>
- $SCH\_RP_{dBm}$  and  $SCH\ \hat{E}s/Iot$ , according to Annex B.2.3 for a corresponding Band

#### 8.1B.2.8.2 E-UTRAN RSRP and RSRQ measurement period

When idle intervals are scheduled for E-UTRAN TDD measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.1.5a and 9.1.1.5b with measurement period of  $T_{Measurement\_Period\_E-UTRAN\ TDD} = 480 \times N_{Freq}$  ms where  $N_{Freq}$  is the number of TDD frequencies indicated in the E-UTRAN measurement control information.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 E-UTRAN TDD cells per E-UTRAN TDD frequency for up to 4 E-UTRAN TDD frequencies.

#### 8.1B.2.8.3 Periodic reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

#### 8.1B.2.8.4 Void

#### 8.1B.2.8.5 Event Triggered reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than  $T_{Identify\ E-UTRAN\ TDD}$  defined in Section 8.1B.2.8.1. When L3 filtering is used an additional delay can be expected.

If a cell has been detectable at least for the time period  $T_{Identify\ E-UTRAN\ TDD}$  and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than  $T_{Measurement\_Period\_E-UTRAN\_TDD}$  provided the timing to that cell has not changed more than [FFS] while idel interval has not been available and the L3 filter has not been used.

## 8.2 Measurements in CELL\_DCH State with special requirements (3.84 Mcps option)

### 8.2.1 Introduction

This section contains specific requirements for certain measurements beyond those specified in section 8.1. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. As long as the measurement configuration does not exceed the requirements stated in section 8.2.2, the UE shall meet the performance requirements defined in section 9. Control of measurement reporting is specified in [16]. Idle intervals for the purpose of measurements are described in [14].

### 8.2.2 Requirements

The UE shall be able to perform in parallel all physical layer measurements according to table 8.2. In this section one physical layer measurement corresponds to a measurement at the reference point B (i.e. measurement reported by layer 1 after layer 1 filtering) in the measurement model in [15].

In addition to the requirements in table 8.2, a UE in CELL\_DCH state shall also be able to measure and report the quantities according to section 8.1.

**Table 8.2: Parallel physical layer measurement requirements**

| Measurement quantity                    | Number of parallel physical layer measurements possible to request from the UE | Note  |
|---|--|---|
| Transport channel BLER                  | 1 per Transport Channel  |   |
| UE transmitted power                    | 1 per UL timeslot  |   |
| SFN-SFN observed time difference type 2 | 1  |   |
| UE GPS Timing of Cell Frames for UP     | 1  | Only applicable for UE with this capability |

## 8.2A Parallel Measurements in CELL\_DCH State (1.28 Mcps option)

### 8.2A.1 Introduction

The purpose with this section is to ensure that all UE can handle a certain number of measurements in parallel. The measurements are defined in TS 25.225, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. As long as the measurement configuration does not exceed the requirements stated in section 8.2.2, the UE shall meet the performance requirements defined in section 9. Control of measurement reporting is specified in TS 25.331 and measurements reporting delays are specified in section 8.1A. For the description of the idle intervals see TS 25.225, Annex A.

### 8.2A.2 Requirements

The UE shall be able to perform in parallel all physical layer measurements according to table 8.2A. In this section one physical layer measurement corresponds to a measurement at the reference point B (i.e. measurement reported by layer 1 after layer 1 filtering) in the measurement model in TS 25.302 [15].

In addition to the requirements in table 8.2A the UE shall in parallel, in state CELL\_DCH, also be able to measure and report the quantities according to section 8.1A.

**Table 8.2A: Parallel physical layer measurement requirements**

| Measurement quantity                    | Number of parallel physical layer measurements possible to request from the UE |
|---|--|
| Transport channel BLER                  | 1 per TrCh   |
| UE transmitted power                    | 1  |
| SFN-SFN observed time difference type 2 | 1  |
| UE GPS Timing of Cell Frames for UP     | 1  |

## 8.2B Measurements in CELL\_DCH State with special requirements (7.68 Mcps option)

### 8.2B.1 Introduction

This section contains specific requirements for certain measurements beyond those specified in section 8.1B. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. As long as the measurement configuration does not exceed the requirements stated in section 8.2B.2, the UE shall meet the performance requirements defined in section 9. Control of measurement reporting is specified in [16]. Idle intervals for the purpose of measurements are described in [14].

### 8.2B.2 Requirements

The UE shall be able to perform in parallel all physical layer measurements according to table 8.2B. In this section one physical layer measurement corresponds to a measurement at the reference point B (i.e. measurement reported by layer 1 after layer 1 filtering) in the measurement model in [15].

In addition to the requirements in table 8.2B, a UE in CELL\_DCH state shall also be able to measure and report the quantities according to section 8.1B.

**Table 8.2B: Parallel physical layer measurement requirements**

| Measurement quantity                    | Number of parallel physical layer measurements possible to request from the UE | Note  |
|---|--|---|
| Transport channel BLER                  | 1 per Transport Channel  |   |
| UE transmitted power                    | 1 per UL timeslot  |   |
| SFN-SFN observed time difference type 2 | 1  |   |
| UE GPS Timing of Cell Frames for UP     | 1  | Only applicable for UE with this capability |

## 8.3 Capabilities for Support of Event Triggering and Reporting Criteria in CELL\_DCH state (3.84 Mcps option)

### 8.3.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria. As long as the measurement configuration does not exceed the requirements stated in section 8.3.2, the UE shall meet the performance requirements defined in section 9.

The UE can be requested to make measurements under different measurement identities. Each Measurement Identity corresponds to either event based reporting, periodic reporting or no reporting. In case of event based reporting each Measurement Identity is associated with one or more events, each identified with an Event Identity. In case of periodic reporting, a Measurement Identity is associated with one periodic reporting criterion. In case of no reporting, a Measurement Identity is associated with one no reporting criterion.



The purpose of this section is to set some limits on the number of different event, periodic and no reporting criteria the UE may be requested to track in parallel.

### 8.3.2 Requirements

In this section a reporting criterion corresponds to either one event (in the case of event based reporting), or one periodic reporting criterion (in the case of periodic reporting), or one no reporting criterion (in case of no reporting). For event based reporting, each instance of event, with the same or different Event Identities, is counted as separate reporting criterion in Table 8.6.

The UE shall be able to support in parallel per category up to  $E_{cat}$  reporting criteria according to Table 8.6. The same type of events (e.g. events 1G) are counted as different events if either any of the parameters related to the events or their neighbour cell lists or both differ from each other.

For the measurement categories: Intra-frequency, Inter frequency and Inter-RAT the UE need not support more than 14 reporting criteria in total. For the measurement categories Traffic volume and Quality measurements the UE need not support more than 16 reporting criteria in total.

For the measurement category Intra-frequency the UE shall support at least 2 reporting criteria for event type 1G and at least 4 reporting criteria for an arbitrary combination of event types 1H and 1I.

**Table 8.6: Requirements for reporting criteria per measurement category**

| Measurement category        | $E_{cat}$                     | Note   |
|-----------------------------|-------------------------------|--|
| Intra-frequency             | 6                             |  |
| Inter-frequency             | 6                             |  |
| Inter-RAT                   | 4                             | Only applicable for UE with this capability  |
| UE internal measurements    | 8                             |  |
| Traffic volume measurements | 2 + (2 per Transport Channel) |  |
| Quality measurements        | 2 per Transport Channel       |  |
| UP measurements             | 2                             | Only applicable for UE with this capability. |

## 8.3A Capabilities for Support of Event Triggering and Reporting Criteria in CELL\_DCH State (1.28 Mcps option)

### 8.3A.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria. As long as the measurement configuration does not exceed the requirements stated in section 8.3A.2, the UE shall meet the performance requirements defined in section 9.

The UE can be requested to make measurements under different measurement identities. Each Measurement Identity corresponds to either event based reporting, periodic reporting or no reporting. In case of event based reporting, each Measurement Identity is associated with one or more events, each identified with an Event Identity. In case of periodic reporting, a Measurement Identity is associated with one periodic reporting criterion. In case of no reporting, a Measurement Identity is associated with one no reporting criterion.

The purpose of this section is to set some limits on the number of different event, periodic and no reporting criteria the UE may be requested to track in parallel.

### 8.3A.2 Requirements

In this section a reporting criterion corresponds to either one event (in the case of event based reporting), or one periodic reporting criterion (in case of periodic reporting), or one no reporting criterion (in case of no reporting). For event based reporting, each instance of event, with the same or different Event Identities, is counted as separate reporting criterion in Table 8.6A.

The UE shall be able to support in parallel per category up to  $E_{cat}$  reporting criteria according to Table 8.6A. The same type of events (e.g. events 1G) are counted as different events if either any of the parameters related to the events or their neighbour cell lists differ from each other.

For the measurement categories: Intra-frequency, Inter frequency and Inter-RAT the UE need not support more than 14 reporting criteria in total. For the measurement categories Traffic volume and Quality measurements the UE need not support more than 16 reporting criteria in total.

**Table 8.6A: Requirements for reporting criteria per measurement category**

| Measurement category        | $E_{cat}$                     | Note   |
|-----------------------------|-------------------------------|--|
| Intra-frequency             | 4                             |  |
| Inter-frequency             | 6                             |  |
| Inter-RAT GSM               | 4                             | Only applicable for UE with this capability  |
| Inter-RAT E-UTRA            | [TBD]                         | Only applicable for UE with this capability  |
| UE internal measurements    | 8                             |  |
| Traffic volume measurements | 2 + (2 per Transport Channel) |  |
| Quality measurements        | 2 per Transport Channel       |  |
| UP measurements             | 2                             | Only applicable for UE with this capability. |

## 8.3B Capabilities for Support of Event Triggering and Reporting Criteria in CELL\_DCH state (7.68 Mcps option)

### 8.3B.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria. As long as the measurement configuration does not exceed the requirements stated in section 8.3B.2, the UE shall meet the performance requirements defined in section 9.

The UE can be requested to make measurements under different measurement identities. Each Measurement Identity corresponds to either event based reporting, periodic reporting or no reporting. In case of event based reporting each Measurement Identity is associated with one or more events, each identified with an Event Identity. In case of periodic reporting, a Measurement Identity is associated with one periodic reporting criterion. In case of no reporting, a Measurement Identity is associated with one no reporting criterion.

The purpose of this section is to set some limits on the number of different event, periodic and no reporting criteria the UE may be requested to track in parallel.

### 8.3B.2 Requirements

In this section a reporting criterion corresponds to either one event (in the case of event based reporting), or one periodic reporting criterion (in the case of periodic reporting), or one no reporting criterion (in case of no reporting). For event based reporting, each instance of event, with the same or different Event Identities, is counted as separate reporting criterion in Table 8.6B.

The UE shall be able to support in parallel per category up to  $E_{cat}$  reporting criteria according to Table 8.6B. The same type of events (e.g. events 1G) are counted as different events if either any of the parameters related to the events or their neighbour cell lists or both differ from each other.

For the measurement categories: Intra-frequency, Inter frequency and Inter-RAT the UE need not support more than 14 reporting criteria in total. For the measurement categories Traffic volume and Quality measurements the UE need not support more than 16 reporting criteria in total.

For the measurement category Intra-frequency the UE shall support at least 2 reporting criteria for event type 1G and at least 4 reporting criteria for an arbitrary combination of event types 1H and 1I.

**Table 8.6B: Requirements for reporting criteria per measurement category**

| Measurement category        | $E_{cat}$                     | Note   |
|-----------------------------|-------------------------------|--|
| Intra-frequency             | 6                             |  |
| Inter-frequency             | 6                             |  |
| Inter-RAT                   | 4                             | Only applicable for UE with this capability  |
| UE internal measurements    | 8                             |  |
| Traffic volume measurements | 2 + (2 per Transport Channel) |  |
| Quality measurements        | 2 per Transport Channel       |  |
| UP measurements             | 2                             | Only applicable for UE with this capability. |

## 8.4 Measurements in CELL\_FACH State (3.84 Mcps option)

### 8.4.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL\_FACH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. Control of measurement reporting is specified in [16] and parallel measurements are specified in section 8.2. For the description of the idle intervals see [14].

### 8.4.2 Requirements

#### 8.4.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells (including serving cell), and
- 32 inter frequency cells, including
  - TDD mode cells distributed on up to 2 additional TDD carriers and
  - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers.
- Depending on UE capability, 32 inter RAT GSM cells.

The requirements in section 9 on P-CCPCH RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in [16] and idle intervals as described in [14] are used to find and measure on other cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on the assumption that the time during the measurement occasions and idle intervals that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

The UE is required to measure periodically once every time period  $T_{meas}$  on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers, for which the corresponding parameter  $N_{FDD}$ ,  $N_{TDD}$  and  $N_{GSM}$  is set to 1, within the measurement time  $T_{meas}$

$$T_{meas} = \left[ (N_{FDD} + N_{TDD} + N_{GSM}) \cdot N_{TTI} \cdot M\_REP \cdot 10 \right] \text{ms}$$

where the following parameters are defined:

- $N_{TDD}$  = 0 or 1. If there are inter-frequency TDD cells in the neighbour list  $N_{TDD}=1$ , otherwise  $N_{TDD}=0$ .
- $N_{FDD}$  = 0 or 1. If the UE is capable of FDD and there are FDD cells in the neighbour list  $N_{FDD}=1$  otherwise  $N_{FDD}=0$ .

$N_{GSM}$  = 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list,  $N_{GSM}=1$ , otherwise  $N_{GSM}=0$ .

$M\_REP$  is the Measurement Occasion cycle length in number of frames as specified in [16].

$N_{TTI}$  is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE. FACHs that only carry MBMS logical channels (MTCH MSCH or MCCH) are excluded from measurement occasion calculation.

For 3.84 Mcps TDD UE capable of MBMS reception and if MBMS reception is active, during Measurement Occasion the UE shall:

- Start to switch back to its serving cell frequency 1 timeslot prior to the start of the MBMS reception
- Switch back to its target inter-frequency within 1 timeslot immediately after the last MBMS reception.

The FACH Measurement Occasion of  $N_{TTI}$  frames will be repeated every  $N_{TTI} * M\_REP$  frame.

**Table 8.6B: K values for each  $N_{TTI}$  value**

| $N_{TTI}$ | K       |
|-----------|---------|
| 1         | 3,4,5,6 |
| 2         | 2,3,4,5 |
| 4         | 2,3,4   |
| 8         | 1,2,3   |

## 8.4.2.2 TDD intra frequency measurements

During the CELL\_FACH state the UE shall continuously measure identified intra frequency TDD cells and search for new intra frequency TDD cells in the monitored set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

In case no measurement occasion is activated, in order for the requirements in the following subsections to apply, the Beacon timeslots of the intra-frequency TDD cells indicated in the measurement control information shall either be synchronised with the Beacon timeslots of the serving cell, such that the UE can measure an intra-frequency cell TDD cell at least once every frame for the slot allocation case in use in this cell. The UE shall be capable of intra frequency measurements during active DL timeslots.

### 8.4.2.2.1 Identification of a new cell

The UE shall be able to identify a new inter frequency TDD detectable cell belonging to the monitored set within  $T_{identify\ intra}$  ms, where  $T_{identify\ intra}$  is specified in section 8.1.2.2.1.

In the case that MTCH is being received, the UE shall be able to take identified cells into use for MTCH combining purposes within  $T_{identify\ intra}$  ms.

If more candidate cells are identified than the UE has combining capability, then cells ranked in decreasing MTCH reception quality shall be considered for combining purposes.

### 8.4.2.2.2 UE P-CCPCH RSCP measurement capability

In CELL\_FACH state the UE shall be capable of performing P-CCPCH RSCP measurements for  $X_{measurement\ intra}$  identified intra-frequency TDD cells of the monitored set with a measurement period for intra-frequency P-CCPCH RSCP measurements  $T_{measurement\ period\ intra}$ , where

$X_{measurement\ intra}$  is specified in section 8.1.2.2.2

$T_{measurement\ period\ intra}$  is specified in section 8.1.2.2.2

The UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period  $T_{measurement\ period\ intra}$ .

If the UE has identified more than  $X_{\text{measurement intra}}$  intra-frequency cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from UE physical layer to higher layers may be decreased. The measurement accuracy for all measured cells shall be as specified in the section 9.

8.4.2.2.3 (void)

8.4.2.2.4 (void)

8.4.2.2.5 Timeslot ISCP measurement capability

In CELL\_FACH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. The UE shall be capable of performing Timeslot ISCP measurements on the current serving cell for 10 arbitrary DL timeslots. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

8.4.2.2.6 RACH reporting

Reporting measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

8.4.2.3 TDD inter frequency measurements

When signalled by UTRAN during CELL\_FACH state, the UE shall continuously measure identified inter frequency TDD cells and search for new inter frequency TDD cells indicated in the measurement control information.

In CELL\_FACH state, measurements opportunities for TDD inter-frequency measurements are provided by means of measurement occasions and idle intervals.

8.4.2.3.1 Identification of a new cell

When measurement occasions and idle intervals are used for inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within

$$T_{\text{identify inter}} = \text{Max} \left\{ 5000, \text{Ceil} \left\{ \frac{T_{\text{basic identify TDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{\text{Freq.TDD}} \right\} \text{ms}$$

If the UE does not require measurement occasions and idle intervals to perform TDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

8.4.2.3.2 P-CCPCH RSCP measurement period

When measurement occasions and idle intervals are used for inter-frequency TDD measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for  $X_{\text{measurement TDD inter}}$  inter-frequency TDD cells per TDD frequency of the monitored set.

The UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 with measurement period of  $T_{\text{measurement inter}}$ .

$$T_{\text{measurement inter}} = \text{Max} \left\{ T_{\text{measurement period TDD inter}}, 2 \cdot T_{\text{meas}}, \text{Ceil} \left\{ \frac{T_{\text{basic measurement TDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{\text{Freq}} \right\}$$

If the UE does not require idle intervals to perform inter-frequency TDD measurements, the measurement period for inter frequency P-CCPCH RSCP measurements shall be 480 ms.

Where,

$X_{\text{measurement TDD inter}}$  is specified in section 8.1.2.4.2.

$T_{\text{measurement\_period inter}}$  is specified in section 8.1.2.3.2

$T_{\text{Meas}}$  is specified in section 8.4.2.1.

$T_{\text{Inter FACH}}$  is equal to  $(N_{\text{TTI}} * 10 - 2 * 0.5)$  ms.

$T_{\text{basic identify TDD inter}} = 800$  ms.

$T_{\text{basic measurement TDD inter}} = 50$  ms

$N_{\text{Freq TDD}}$  is specified in section 8.1.2.3.2

8.4.2.3.3 (void)

8.4.2.3.4 (void)

#### 8.4.2.4 FDD measurements

The requirements in this section shall apply to UE supporting TDD and FDD.

In the CELL\_FACH state when FDD inter frequency measurements are scheduled the UE shall continuously measure detected inter frequency FDD cells and search for new inter frequency cells indicated in the measurement control information.

In CELL\_FACH state, measurements opportunities for FDD inter-frequency measurements are provided by means of measurement occasions and idle intervals.

##### 8.4.2.4.1 Identification of a new cell

When measurement occasions and idle intervals are used for inter-frequency FDD measurements, the UE shall be able to identify a new detectable inter frequency FDD cell belonging to the monitored set within

$$T_{\text{identify FDD inter}} = \text{Max} \left\{ 5000, \text{Ceil} \left\{ \frac{T_{\text{basic identify FDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{\text{Freq,FDD}} \right\}$$

If the UE does not require measurement occasions and idle intervals to perform FDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within 5000 ms.

An inter-frequency FDD cell shall be considered detectable, when CPICH Ec/Io  $\geq$  -20 dB, SCH\_Ec/Io  $\geq$  -17 dB and SCH\_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

##### 8.4.2.4.2 UE CPICH measurement capability

When measurement occasions and idle intervals are used for FDD inter frequency measurements, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement FDD inter}} = \text{Max} \left\{ T_{\text{measurement period FDD inter}}, 2 \cdot T_{\text{meas}}, \text{Ceil} \left\{ \frac{T_{\text{basic measurement FDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{\text{Freq,FDD}} \right\} \text{ ms}$$

If the UE does not require measurement occasions and idle intervals to perform inter-frequency FDD measurements, the measurement period for inter frequency CPICH measurements shall be 480 ms.

The UE shall be capable of performing CPICH measurements for  $X_{\text{measurement FDD inter}}$  inter-frequency FDD cells per frequency of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{\text{measurement FDD inter}}$ .

$X_{\text{basic measurement FDD inter}}$  is specified in section 8.1.2.4.2.

$T_{\text{measurement\_period FDD inter}}$  is specified in section 8.1.2.4.2

$T_{\text{Inter FACH}}$  is specified in section 8.4.2.3.2

$T_{\text{basic identify FDD inter}}$  is specified in section 8.1.2.4.2

$T_{\text{basic measurement FDD inter}}$  is specified in section 8.1.2.4.2.

$N_{\text{Freq FDD}}$  is specified in section 8.1.2.4.2

8.4.2.4.3 (void)

8.4.2.4.4 (void)

### 8.4.2.5 GSM measurements

The requirements in this section shall apply to UE supporting TDD and GSM.

In CELL\_FACH state, measurements opportunities for GSM measurements are provided by means of measurement occasions and idle intervals.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

- a) In CELL\_DCH state, when signaled by UTRAN and when measurement occasions and idle intervals are used for GSM measurements, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.
  - In section 8.4.2.1 the split of measurements between different modes and systems is defined. Every second measurement opportunity scheduled for GSM measurements, as given by 8.4.2.1 shall be allocated for GSM initial BSIC identification.
  - The remaining measurement opportunities scheduled for GSM measurements shall be scheduled as follows. 3 measurement opportunities out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement opportunities between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.
- b) In CELL\_FACH state, when signaled by UTRAN and when the UE does not need measurement occasions and idle intervals to perform GSM measurements, the UE shall measure all GSM cells present in the monitored set
  - the relevant requirements for GSM dedicated mode when a TCH channel is assigned in [21] shall apply. This is further detailed in the following sub-sections.

#### 8.4.2.5.1 GSM carrier RSSI

- a) For a UE using measurement occasions and idle intervals to perform GSM measurements

A UE supporting GSM measurements using measurement occasions and idle intervals shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.7.

In CELL\_FACH state the measurement period,  $T_{\text{measurement period GSM}}$ , for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [21], when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.7

| Measurement opportunity length (timeslots) | Number of GSM carrier RSSI samples per measurement opportunity. |
|--|---|
| 3  | 1   |
| 4  | 2   |
| 5  | 3   |
| 6  | 4   |
| 7  | 6   |
| 8  | 7   |
| 9  | 8   |
| 10   | 10  |
| 11   | 11  |
| 12   | 12  |
| 13   | 14  |
| 15   | 16  |
| 30   | 32  |
| 60   | 64  |
| 120  | 128   |

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per GSM carrier RSSI measurement. The measurement period shall be 480 ms.

In case UTRA RACH procedure prevents the UE from acquiring the required number of samples per GSM carrier during one measurement period, the GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

#### 8.4.2.5.2 BSIC verification

a) For a UE using measurement occasions and idle intervals to perform GSM measurements

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

- 1) Initial BSIC identification: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.1.
- 2) BSIC re-confirmation: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The requirements for Initial BSIC identification can be found in 8.4.2.5.2.2.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The UE shall consider the BSIC of a GSM cell to be "verified" if it has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) From that time instant, the UE shall attempt to re-confirm the BSIC at least once every 6 times  $T_{\text{re-confirm abort}}$  seconds. Otherwise, the UE shall consider the BSIC of the GSM cell to be "non-verified".

The time requirement for initial BSIC identification,  $T_{\text{identify abort}}$ , and the BSIC re-confirmation interval  $T_{\text{re-confirm abort}}$  can be found in the sections below.



The UE shall be able to decode a BSIC for the purpose of initial BSIC identification or BSIC reconfirmation within a measurement opportunity, when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement opportunity is within the limits specified in Table 8.7.A.

**Table 8.7A**

| Idle Interval Length (timeslots) | Maximum time difference [ $\mu$ s] |
|----------------------------------|------------------------------------|
| 3                                | $\pm 65$                           |
| 4                                | $\pm 398$                          |
| 5                                | $\pm 732$                          |
| 6                                | $\pm 1065$                         |
| 7                                | $\pm 1398$                         |
| 8                                | $\pm 1732$                         |
| 9                                | $\pm 2065$                         |
| 10                               | $\pm 2398$                         |
| 11                               | $\pm 2732$                         |
| 12                               | $\pm 3065$                         |
| 13                               | $\pm 3398$                         |
| 15                               | $\pm 4100$                         |
| 30                               | $\pm 9100$                         |
| 60                               | $\pm 19100$                        |
| 120                              | $\pm 39100$                        |

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

The UE shall attempt to verify the BSIC for at least the 6 strongest GSM carriers at least every 10 seconds, to confirm that it is monitoring the same cell, as far as UTRA RACH procedure does not prevent UE from decoding BSIC.

If a BSIC is decoded and matches the expected value, the UE shall consider it as "verified", otherwise it shall consider it as "non-verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

#### 8.4.2.5.2.1 Initial BSIC identification

This measurement shall be performed in the measurement opportunities as described in 8.4.2.5.

The UE shall continuously attempt to decode the BSIC of the SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurement opportunities allocated for GSM initial BSIC identification according section 8.4.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within  $T_{\text{identify abort}}$ , the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{\text{identify abort}}$  is specified in section 8.1.2.5.

#### 8.4.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of 6 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement opportunity allocated for GSM BSIC reconfirmation as described in 8.4.2.5, the UE shall attempt to decode the BSIC occurring during the measurement opportunity. When the UE has to select one out of several possible GSM cells to reconfirm during the same measurement opportunity, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

Where  $T_{\text{re-confirm abort}}$  is specified in section 8.1.2.5.

## 8.4A Measurements in CELL\_FACH State (1.28 Mcps option)

### 8.4A.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL\_FACH state. The requirements for cell re-selection are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. The measurements are defined in TS 25.225, the measurement model is defined in TS 25.302 and measurement accuracies are specified in section 9. Control of measurement reporting is specified in TS 25.331 and parallel measurements are specified in section 8.2. For the description of the idle intervals see TS 25.225, Annex A.

NOTE: In CELL\_FACH state, there are no requirements for measurements of inter-RAT E-UTRAN cells.

### 8.4A.2 Requirements

#### 8.4A.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells, and
- 32 inter frequency cells, including
  - TDD cells distributed on up to 8 additional TDD carriers and
  - Depending on UE capability, FDD cells, distributed on up to 3 FDD carriers.
  - Depending on UE capability, 32 GSM cells distributed on up to 32 GSM carriers.

The requirements in section 9 on P-CCPCH RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in TS 25.331 and, in addition, idle intervals as described in TS 25.225 are used to find and measure on these cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on the assumption that the time during the measurement occasions and idle intervals that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

The UE is required to measure periodically once every time period  $T_{\text{meas}}$  on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers, for which the corresponding parameter  $N_{\text{FDD}}$ ,  $N_{\text{TDD}}$  and  $N_{\text{GSM}}$  is set to 1, within the measurement time  $T_{\text{meas}}$

$$T_{\text{meas}} = \left[ (N_{\text{FDD}} + N_{\text{TDD}} + N_{\text{GSM}}) \cdot N_{\text{TTI}} \cdot \text{M\_REP} \cdot 10 \right] \text{ms}$$

where the following parameters are defined:

|           |   |
|-----------|---|
| $N_{TDD}$ | = 0 or 1. If there are inter-frequency TDD cells in the neighbour list $N_{TDD}=1$ , otherwise $N_{TDD}=0$ .  |
| $N_{FDD}$ | = 0 or 1. If the UE is capable of FDD and there are FDD cells in the neighbour list $N_{FDD}=1$ otherwise $N_{FDD}=0$ .   |
| $N_{GSM}$ | = 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list, $N_{GSM}=1$ , otherwise $N_{GSM}=0$ .  |
| $M\_REP$  | is the Measurement Occasion cycle length in number of frames as specified in TS 25.331.   |
| $N_{TTI}$ | is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE. FACHs that only carry MBMS logical channels (MTCH MSCH or MCCH) are excluded from measurement occasion calculation. |

The FACH Measurement Occasion of  $N_{TTI}$  frames will be repeated every  $N_{TTI} * M\_REP$  frame.

### 8.4A.2.2 TDD intra frequency measurements

During the CELL\_FACH state the UE shall continuously measure identified intra frequency cells and search for new intra frequency cells in the monitored set. Intra frequency measurements can be performed (simultaneously to data reception from the active cell) in all time slots not used for inter frequency measurements.

#### 8.4A.2.2.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify intra}} = T_{\text{basic identify TDD, intra}} \cdot \frac{N_{\text{Period, Intra}}}{N_{\text{Intra}}} \text{ ms}$$

A cell shall be considered detectable when P-CCPCH  $E_c/I_0 \geq -8$  dB, DwPCH  $E_c/I_0 \geq -5$  dB.

In the case that MTCH is being received, the UE shall be able to take identified cells into use for MTCH combining purposes within  $T_{\text{identify intra}}$  ms.

If more candidate cells are identified than the UE has combining capability, then cells ranked in decreasing MTCH reception quality shall be considered for combining purposes.

#### 8.4A.2.2.2 UE P-CCPCH RSCP measurement capability

In the CELL\_FACH state the measurement period for intra frequency P-CCPCH RSCP measurements is 200 ms. When all TSO, DwPTS and main guard period in the measurement period are scheduled for intra frequency measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for 6 identified intra-frequency cells of the monitored set and the UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period of 200 ms. When inter-frequency measurements required by the network have to be performed during periods of TSO, DwPTS and main guard period, the UE shall be capable of performing P-CCPCH RSCP measurements for at least  $Y_{\text{measurement intra}}$  cells, where  $Y_{\text{measurement intra}}$  is defined in the following equation.. The measurement accuracy for all measured cells shall be as specified in the section 9. If the UE has identified more than  $Y_{\text{measurement intra}}$  cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement intra}} = \text{Floor} \left\{ X_{\text{basic measurement TDD}} \cdot \frac{N_{\text{Intra}}}{N_{\text{Period, Intra}}} \right\}$$

whereby function Floor(x) takes the integer part of x.

$X_{\text{basic measurement TDD}}$  is specified in section 8.1A.2.2.2

$T_{\text{Measurement_Period, Intra}}$  is specified in section 8.1A.2.2.2

$N_{\text{Period, Intra}}$  : is specified in section 8.1A.2.2.2

$N_{\text{Intra}}$  : is specified in section 8.1A.2.2.2

$T_{\text{basic\_identify\_TDD, intra}}$  is specified in section 8.1A.2.2.2

#### 8.4A.2.2.2A Timeslot ISCP measurement capability

In the CELL\_FACH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. When no inter frequency measurement is scheduled, the UE shall be capable of performing Timeslot ISCP measurements on the current serving cell for 5 arbitrary DL timeslots. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

When inter-frequency measurements are required by the network, the UE shall be able to perform Timeslot ISCP measurements on the current serving for at least  $Y_{\text{measurement intra ISCP}}$  arbitrary DL timeslots, where  $Y_{\text{measurement intra ISCP}}$  is defined in the following equation. Any Timeslot ISCP measurement that could not be performed during that measurement period, shall be measured in the following measurement periods. The measurement accuracy of the Timeslot ISCP measurement shall be as specified in the section 9.

$$Y_{\text{measurement intra ISCP}} = \text{Floor} \left\{ X_{\text{basic measurement ISCP}} \cdot \frac{T_{\text{Intra}}}{T_{\text{Measurement Period, Intra, ISCP}}} \right\}$$

whereby function Floor(x) takes the integer part of x,

$X_{\text{basic measurement ISCP}} = 5$  (arbitrary DL timeslots of the current serving cell)

$T_{\text{Measurement\_Period, Intra, ISCP}}$  is specified in section 8.1A.2.2.2A,

$T_{\text{Intra}}$  is specified in section 8.1A.2.2.2A.

#### 8.4A.2.2.3 RACH Reporting

Reported measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

#### 8.4A.2.3 TDD inter frequency measurements

When signalled by the network during CELL\_FACH state, the UE shall continuously measure identified inter frequency cells and search for new inter frequency cells indicated in the measurement control information.

##### 8.4A.2.3.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify inter}} = \text{Max} \left\{ 5000, N_{\text{basic identify TDD,inter}} \cdot \frac{T_{\text{Measurement Period, Inter}}}{N_{\text{Inter FACH}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not require measurement occasions and idle intervals to perform TDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

A cell shall be considered detectable when  $P\text{-CCPCH } E_c/I_o \geq -8$  dB,  $DwPCH\_E_c/I_o \geq -5$  dB.

##### 8.4A.2.3.2 UE P-CCPCH RSCP measurement capability

When TDD inter frequency measurements are scheduled, the UE physical layer shall be capable of reporting P-CCPCH RSCP measurements to higher layers with measurement accuracy as specified in section 9 with measurement period given by

$$T_{\text{measurement inter}} = \text{Max} \left\{ T_{\text{Measurement Period, Inter}} \cdot N_{\text{basic measurement TDD inter}} \cdot \frac{T_{\text{Measurement Period, Inter}}}{N_{\text{Inter FACH}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

where

$T_{\text{Measurement\_Period Inter}}$  is specified in section 8.1A.2.3.2

$N_{\text{Inter FACH}}$ : This is the minimum number of sub-frame in that the signal of P-CCPCH and DwPCH can be received for inter frequency target cell during the period  $T_{\text{Measurement\_Period Inter}}$  with an arbitrarily chosen timing. It depends on the channel allocation and on measurement occasions during CELL\_FACH state and is calculated by assuming  $2 \cdot 0.1$  ms for implementation margin (for the description of the idle intervals see Annex A of 25.225 and for definition of measurement occasions during CELL\_FACH state given by  $M_{\text{REP}}$  and TTI see TS 25.331). During the measurement occasions for CELL\_FACH state the UE shall measure primarily cells that can not be measured in the idle intervals.

$T_{\text{basic\_identify\_TDD,inter}}$  is specified in section 8.1A.2.3.2

$N_{\text{basic identify TDD, Inter}}$  is specified in section 8.1A.2.3.2

$T_{\text{basic\_measurement\_TDD inter}}$  is specified in section 8.1A.2.3.2

$N_{\text{basic measurement TDD, Inter}}$  is specified in section 8.1A.2.3.2

$N_{\text{Freq}}$  is specified in section 8.1A.2.3.2

If the UE does not need measurement occasions and idle intervals to perform inter-frequency measurements, the measurement period for inter frequency measurements is 480ms.

The UE shall be capable of performing P-CCPCH measurements for  $X_{\text{basic measurement TDD inter}}$  inter-frequency cells per TDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{\text{Measurement\_Inter}}$ .

$X_{\text{basic measurement TDDinter}}$  is defined in section 8.1A.2.3.2.

## 8.4A.2.4 FDD measurements

The requirements in this section shall apply only to UE supporting 1.28Mcps TDD and FDD.

In the CELL\_FACH state when FDD inter frequency measurements are scheduled the UE shall continuously measure identified inter frequency FDD cells and search for new inter frequency FDD cells indicated in the measurement control information.

### 8.4A.2.4.1 Identification of a new cell

The UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify FDD inter}} = \text{Max} \left\{ 5000, T_{\text{basic identify FDD inter}} \cdot \frac{T_{\text{Measurement Period FDD inter}}}{T_{\text{Inter FACH}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

If the UE does not require measurement occasions and idle intervals to perform FDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000ms.

An inter-frequency FDD cell shall be considered detectable, when  $CPICH Ec/Io \geq -20$  dB,  $SCH_{Ec/Io} \geq -17$  dB and  $SCH_{Ec/Ior}$  is equally divided between primary synchronisation code and secondary synchronisation code.

### 8.4A.2.4.2 UE CPICH measurement capability

When FDD inter frequency measurements are scheduled, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement FDD inter}} = \text{Max} \left\{ T_{\text{Measurement Period FDD inter}}, T_{\text{basic measurement FDD inter}} \cdot \frac{T_{\text{Measurement Period FDD inter}}}{T_{\text{Inter FACH}}} \cdot N_{\text{Freq}} \right\} \text{ms}$$

$T_{\text{Measurement\_Period FDD inter}}$  is specified in section 8.1A.2.4.2

$T_{\text{Inter FACH}}$ : This is the minimum time that is available for the inter frequency measurements during the period  $T_{\text{Measurement\_Period FDD inter}}$  with an arbitrarily chosen timing. The minimum time depends on the channel allocation and on measurement occasions during CELL\_FACH state and is calculated by assuming  $2 \cdot 0.1$  ms for implementation margin (for the description of the idle intervals see Annex A of 25.225 and for definition of measurement occasions during CELL\_FACH state given by  $M_{\text{REP}}$  and TTI see TS 25.331). It is assumed for the requirement that the slot allocation allows measurement windows in the idle periods to be of minimum duration necessary to perform the measurements. During the measurement occasions for CELL\_FACH state the UE shall measure primarily cells that can not be measured in the idle intervals.

$T_{\text{basic\_identify\_FDD,inter}}$  is specified in section 8.1A.2.4.2

$T_{\text{basic\_measurement\_FDD inter}}$  is specified in section 8.1A.2.4.2.

$N_{\text{Freq}}$  is specified in section 8.1A.2.4.2

If the UE does not need measurement occasions and idle intervals to perform inter-frequency measurements, the measurement period for FDD measurements is 480 ms.

The UE shall be capable of performing CPICH measurements for  $X_{\text{basic measurement FDD inter}}$  inter-frequency cells per FDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{\text{Measurement FDD Inter}}$ .

$X_{\text{basic measurement FDD inter}}$  is defined in section 8.1A.2.4.2

### 8.4A.2.5 GSM measurements

The requirements in this section shall apply to UE supporting 1.28Mcps TDD and GSM.

To support cell reselection the UE shall always perform BSIC verification in Cell FACH state.

1) For a UE requiring idle intervals or measurement occasions to perform GSM measurements. When signalled by UTRAN during CELL\_FACH state, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.

In section 8.4A.2.1 the split of measurements between different modes and systems is defined. Every second measurement window due to idle intervals and measurements occasions scheduled for GSM measurements, as given by 8.4A.2.1 shall be allocated for GSM initial BSIC identification.

The remaining measurement windows due to idle intervals and measurements occasions used for GSM measurements shall be scheduled as follows. 3 window out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement windows between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.

2) For a UE not requiring idle intervals and measurement occasions to perform GSM measurements:

- the UE shall measure all GSM cells present in the monitored set
- the relevant requirements for GSM dedicated mode when a TCH channel is assigned in TS 45.008 shall apply. This is further detailed in the following sub-sections.

#### 8.4A.2.5.1 GSM carrier RSSI

1) For a UE requiring idle intervals or measurement occasions to perform GSM measurements.

An UE supporting GSM measurements shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.8. This measurement shall be based on measurement windows allocated for GSM carrier RSSI measurements as described in 8.4A.2.5. In the CELL\_FACH state the measurement period for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008, when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

Table 8.8

| Measurement Window Length (slots) | Number of GSM carrier RSSI samples per measurement window |
|-----------------------------------|---|
| 3                                 | 1   |
| 4                                 | 2   |
| 5                                 | 3   |
| 7                                 | 6   |
| 15                                | 16  |
| 30                                | 32  |
| 60                                | 64  |
| 120                               | 128   |

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

2) For a UE not requiring idle intervals and measurement occasions to perform GSM measurements:

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per RSSI value. The measurement period is 480 ms.

In case UTRA RACH procedure prevents the UE from acquiring the required number of samples per GSM carrier during one measurement period, the GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

#### 8.4A.2.5.2 BSIC verification

1) For a UE requiring idle intervals or measurement occasions to perform GSM measurements.

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

##### Initial BSIC identification

Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell. The UE shall trigger the initial BSIC identification within 50% of the available measurement windows. The requirements for Initial BSIC identification can be found in 8.4A.2.5.2.1, Initial BSIC identification

##### BSIC re-confirmation

Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement windows. The requirements for BSIC re-confirmation can be found in section 8.4A.2.5.2.2, BSIC re-confirmation.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) and from that moment the BSIC shall be re-confirmed at least once every 6 times  $T_{re-confirm\ abort}$  seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified". The time requirement for initial BSIC identification,  $T_{identify\ abort}$ , and the BSIC re-confirmation interval  $T_{re-confirm\ abort}$  can be found in the sections below.

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

2) For a UE not requiring idle intervals and measurement occasions to perform GSM measurements:

The UE shall attempt to check the BSIC for at least the 6 strongest GSM carriers at least every 10 seconds, to confirm that it is monitoring the same cell, as far as UTRA RACH procedure does not prevent UE from decoding BSIC.

If a BSIC is decoded and matches the expected value, it is considered as "verified", else it is considered as "non verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005.

#### 8.4A.2.5.2.1 Initial BSIC identification

This measurement is performed in the measurement windows allocated for Initial BSIC identification as described in 8.4A.2.5.

For GSM cells that are requested with BSIC verified the UE shall continuously attempt to decode the SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurements windows allocated for GSM initial BSIC identification according section 8.4A.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within  $T_{\text{identify abort}}$ , the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{\text{identify abort}}$  is specified in section 8.1A.2.5.

#### 8.4A.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of 6 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement window allocated for GSM BSIC reconfirmation as described in 8.4A.2.5, the UE shall attempt to decode the BSIC falling within the effective measurement window duration. If more than one BSIC can be decoded within the same measurement window, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4A.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

$T_{\text{re-confirm abort}}$  is specified in section 8.1A.2.5.

It is assumed for the requirement that the measurement windows possible due to higher layer parameters are of minimum duration necessary to perform the measurements.

## 8.4B Measurements in CELL\_FACH State (7.68 Mcps option)

### 8.4B.1 Introduction

This section contains requirements on the UE regarding measurement reporting in CELL\_FACH state. The requirements are split in TDD intra frequency, TDD inter frequency, FDD and GSM measurements. These measurements may be used by the UTRAN, e.g. for handover decisions. The measurements are defined in [14], the measurement model is defined in [15] and measurement accuracies are specified in section 9. Control of measurement



reporting is specified in [16] and parallel measurements are specified in section 8.2B. For the description of the idle intervals see [14].

## 8.4B.2 Requirements

### 8.4B.2.1 UE Measurement Capability

The UE shall be able to monitor up to

- 32 intra frequency TDD cells (including serving cell), and
- 32 inter frequency cells, including
  - TDD mode cells distributed on up to 2 additional TDD carriers and
  - Depending on UE capability, FDD mode cells, distributed on up to 3 FDD carriers.
- Depending on UE capability, 32 inter RAT GSM cells.

The requirements in section 9 on P-CCPCH RSCP measurements are applicable for a UE performing measurements according to this section. For inter-frequency FDD, TDD and GSM cell re-selection, measurement occasions as specified in [16] and idle intervals as described in [14] are used to find and measure on other cells.

It is defined below how the measurements on different systems and modes are performed given the time allocated to that system. The requirements in this section are based on the assumption that the time during the measurement occasions and idle intervals that is allocated to each of the different modes and systems shall be equally shared by the modes which the UE has capability for and that are in the monitored set signalled by the network.

The UE is required to measure periodically once every time period  $T_{meas}$  on each of the modes and systems, FDD interfrequency cells, TDD interfrequency cells and GSM carriers, for which the corresponding parameter  $N_{FDD}$ ,  $N_{TDD}$  and  $N_{GSM}$  is set to 1, within the measurement time  $T_{meas}$

$$T_{meas} = [(N_{FDD} + N_{TDD} + N_{GSM}) \cdot N_{TTI} \cdot M\_REP \cdot 10] \text{ms}$$

where the following parameters are defined:

- |           |   |
|-----------|---|
| $N_{TDD}$ | = 0 or 1. If there are inter-frequency TDD cells in the neighbour list $N_{TDD}=1$ , otherwise $N_{TDD}=0$ .                    |
| $N_{FDD}$ | = 0 or 1. If the UE is capable of FDD and there are FDD cells in the neighbour list $N_{FDD}=1$ , otherwise $N_{FDD}=0$ .       |
| $N_{GSM}$ | = 0 or 1. If the UE is capable of GSM and there are GSM cells in the neighbour list, $N_{GSM}=1$ , otherwise $N_{GSM}=0$ .      |
| $M\_REP$  | is the Measurement Occasion cycle length in number of frames as specified in [16].  |
| $N_{TTI}$ | is the number of frames in each measurement occasion, equal to the length of the largest TTI on the SCCPCH monitored by the UE. |

For 7.68 Mcps TDD UE capable of MBMS reception and if MBMS reception is active, during Measurement Occasion the UE shall:

- Start to switch back to its serving cell frequency 1 timeslot prior to the start of the MBMS reception
- Switch back to its target inter-frequency within 1 timeslot immediately after the last MBMS reception.

The FACH Measurement Occasion of  $N_{TTI}$  frames will be repeated every  $N_{TTI} * M\_REP$  frame.

**Table 8.8A: K values for each  $N_{TTI}$  value**

| $N_{TTI}$ | K       |
|-----------|---------|
| 1         | 3,4,5,6 |
| 2         | 2,3,4,5 |
| 4         | 2,3,4   |
| 8         | 1,2,3   |

### 8.4B.2.2 TDD intra frequency measurements

During the CELL\_FACH state the UE shall continuously measure identified intra frequency TDD cells and search for new intra frequency TDD cells in the monitored set. If a measurement occasion is activated, intra frequency measurements can be performed between the measurement occasions.

In case no measurement occasion is activated, in order for the requirements in the following subsections to apply, the Beacon timeslots of the intra-frequency TDD cells indicated in the measurement control information shall either be synchronised with the Beacon timeslots of the serving cell, such that the UE can measure an intra-frequency cell TDD cell at least once every frame for the slot allocation case in use in this cell. The UE shall be capable of intra frequency measurements during active DL timeslots.

#### 8.4B.2.2.1 Identification of a new cell

The UE shall be able to identify a new inter frequency TDD detectable cell belonging to the monitored set within  $T_{\text{identify intra}}$  ms, where  $T_{\text{identify intra}}$  is specified in section 8.1B.2.2.1.

#### 8.4B.2.2.2 UE P-CCPCH RSCP measurement capability

In CELL\_FACH state the UE shall be capable of performing P-CCPCH RSCP measurements for  $X_{\text{measurement intra}}$  identified intra-frequency TDD cells of the monitored set with a measurement period for intra-frequency P-CCPCH RSCP measurements  $T_{\text{measurement period intra}}$ , where

$X_{\text{measurement intra}}$  is specified in section 8.1B.2.2.2

$T_{\text{measurement period intra}}$  is specified in section 8.1B.2.2.2

The UE physical layer shall be capable of reporting these measurements to higher layers with the measurement period  $T_{\text{measurement period intra}}$ .

If the UE has identified more than  $X_{\text{measurement intra}}$  intra-frequency cells, the UE shall perform measurements of all identified cells but the reporting rate of P-CCPCH RSCP measurements of cells from UE physical layer to higher layers may be decreased. The measurement accuracy for all measured cells shall be as specified in the section 9.

#### 8.4B.2.2.3 Timeslot ISCP measurement capability

In CELL\_FACH state the measurement period for intra frequency Timeslot ISCP measurements on arbitrary DL timeslots, including Beacon timeslots is 400 ms. The UE shall be capable of performing Timeslot ISCP measurements on the current serving cell for 10 arbitrary DL timeslots. The UE physical layer shall be capable of reporting Timeslot ISCP measurements to higher layers with the measurement period of 400 ms.

#### 8.4B.2.2.4 RACH reporting

Reporting measurements in the measurement reports sent on the RACH shall meet the requirements in section 9.

### 8.4B.2.3 TDD inter frequency measurements

When signalled by UTRAN during CELL\_FACH state, the UE shall continuously measure identified inter frequency TDD cells and search for new inter frequency TDD cells indicated in the measurement control information.

In CELL\_FACH state, measurements opportunities for TDD inter-frequency measurements are provided by means of measurement occasions and idle intervals.

#### 8.4B.2.3.1 Identification of a new cell

When measurement occasions and idle intervals are used for inter-frequency TDD measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within

$$T_{\text{identify inter}} = \text{Max} \left\{ 5000, \text{Ceil} \left\{ \frac{T_{\text{basic identify TDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{\text{Freq,TDD}} \right\} \text{ms}$$

If the UE does not require measurement occasions and idle intervals to perform TDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency TDD cell belonging to the monitored set within 5000 ms.

#### 8.4B.2.3.2 P-CCPCH RSCP measurement period

When measurement occasions and idle intervals are used for inter-frequency TDD measurements, the UE shall be capable of performing P-CCPCH RSCP measurements for  $X_{\text{measurement TDD inter}}$  inter-frequency TDD cells per TDD frequency of the monitored set.

The UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in section 9 with measurement period of  $T_{\text{measurement inter}}$ .

$$T_{\text{measurement inter}} = \text{Max} \left\{ T_{\text{measurement period TDD inter}}, 2 \cdot T_{\text{meas}}, \text{Ceil} \left\{ \frac{T_{\text{basic measurement TDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{\text{Freq}} \right\}$$

If the UE does not require idle intervals to perform inter-frequency TDD measurements, the measurement period for inter frequency P-CCPCH RSCP measurements shall be 480 ms.

Where,

$X_{\text{measurement TDD inter}}$  is specified in section 8.1B.2.4.2.

$T_{\text{measurement\_period inter}}$  is specified in section 8.1B.2.3.2

$T_{\text{Meas}}$  is specified in section 8.4B.2.1.

$T_{\text{Inter FACH}}$  is equal to  $(N_{\text{TTI}} * 10 - 2 * 0.5)$  ms.

$T_{\text{basic identify TDD inter}} = 800$  ms.

$T_{\text{basic measurement TDD inter}} = 50$  ms

$N_{\text{Freq TDD}}$  is specified in section 8.1B.2.3.2

#### 8.4B.2.4 FDD measurements

The requirements in this section shall apply to UE supporting TDD and FDD.

In the CELL\_FACH state when FDD inter frequency measurements are scheduled the UE shall continuously measure detected inter frequency FDD cells and search for new inter frequency cells indicated in the measurement control information.

In CELL\_FACH state, measurements opportunities for FDD inter-frequency measurements are provided by means of measurement occasions and idle intervals.

##### 8.4B.2.4.1 Identification of a new cell

When measurement occasions and idle intervals are used for inter-frequency FDD measurements, the UE shall be able to identify a new detectable inter frequency FDD cell belonging to the monitored set within

$$T_{\text{identify FDD inter}} = \text{Max} \left\{ 5000, \text{Ceil} \left\{ \frac{T_{\text{basic identify FDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{\text{Freq,FDD}} \right\}$$

If the UE does not require measurement occasions and idle intervals to perform FDD inter-frequency measurements, the UE shall be able to identify a new detectable inter-frequency FDD cell belonging to the monitored set within 5000 ms.

An inter-frequency FDD cell shall be considered detectable, when  $CPICH\ Ec/I_0 \geq -20$  dB,  $SCH\_Ec/I_0 \geq -17$  dB and  $SCH\_Ec/I_{or}$  is equally divided between primary synchronisation code and secondary synchronisation code.

#### 8.4B.2.4.2 UE CPICH measurement capability

When measurement occasions and idle intervals are used for FDD inter frequency measurements, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9 with measurement period given by

$$T_{\text{measurement FDD inter}} = \text{Max} \left\{ T_{\text{measurement period FDD inter}}, 2 \cdot T_{\text{meas}}, \text{Ceil} \left\{ \frac{T_{\text{basic measurement FDD inter}}}{T_{\text{Inter FACH}}} \right\} \cdot T_{\text{meas}} \cdot N_{\text{Freq.FDD}} \right\} \text{ms}$$

If the UE does not require measurement occasions and idle intervals to perform inter-frequency FDD measurements, the measurement period for inter frequency CPICH measurements shall be 480 ms.

The UE shall be capable of performing CPICH measurements for  $X_{\text{measurement FDD inter}}$  inter-frequency FDD cells per frequency of the monitored set and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of  $T_{\text{measurement FDD inter}}$ .

$X_{\text{basic measurement FDD inter}}$  is specified in section 8.1B.2.4.2.

$T_{\text{measurement\_period FDD inter}}$  is specified in section 8.1B.2.4.2

$T_{\text{Inter FACH}}$  is specified in section 8.4B.2.3.2

$T_{\text{basic identify FDD inter}}$  is specified in section 8.1B.2.4.2

$T_{\text{basic measurement FDD inter}}$  is specified in section 8.1B.2.4.2.

$N_{\text{Freq FDD}}$  is specified in section 8.1B.2.4.2

#### 8.4B.2.5 GSM measurements

The requirements in this section shall apply to UE supporting TDD and GSM.

In CELL\_FACH state, measurements opportunities for GSM measurements are provided by means of measurement occasions and idle intervals.

Measurements on GSM cells can be requested with BSIC verified or BSIC non-verified.

- a) In CELL\_DCH state, when signaled by UTRAN and when measurement occasions and idle intervals are used for GSM measurements, the UE shall continuously measure GSM cells and search for new GSM cells given in the monitored set.
  - In section 8.4B.2.1 the split of measurements between different modes and systems is defined. Every second measurement opportunity scheduled for GSM measurements, as given by 8.4B.2.1 shall be allocated for GSM initial BSIC identification.
  - The remaining measurement opportunities scheduled for GSM measurements shall be scheduled as follows. 3 measurement opportunities out of 4 shall be allocated for GSM carrier RSSI measurements and 1 out of 4 shall be allocated for GSM BSIC reconfirmation. The scheduling of measurement opportunities between GSM carrier RSSI measurements and GSM BSIC reconfirmation is up to the UE.
- b) In CELL\_FACH state, when signaled by UTRAN and when the UE does not need measurement occasions and idle intervals to perform GSM measurements, the UE shall measure all GSM cells present in the monitored set
  - the relevant requirements for GSM dedicated mode when a TCH channel is assigned in [21] shall apply. This is further detailed in the following sub-sections.

### 8.4B.2.5.1 GSM carrier RSSI

- a) For a UE using measurement occasions and idle intervals to perform GSM measurements

A UE supporting GSM measurements using measurement occasions and idle intervals shall meet the minimum number of GSM carrier RSSI measurements specified in table 8.8B.

In CELL\_FACH state the measurement period,  $T_{\text{measurement period GSM}}$ , for the GSM carrier RSSI measurement is 480 ms.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [21], when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

**Table 8.8B**

| Measurement opportunity length (timeslots) | Number of GSM carrier RSSI samples per measurement opportunity. |
|--|---|
| 3  | 1   |
| 4  | 2   |
| 5  | 3   |
| 6  | 4   |
| 7  | 6   |
| 8  | 7   |
| 9  | 8   |
| 10   | 10  |
| 11   | 11  |
| 12   | 12  |
| 13   | 14  |
| 15   | 16  |
| 30   | 32  |
| 60   | 64  |
| 120  | 128   |

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods. This means that, in this particular case, the L1 reporting period to higher layers of a GSM neighbour can be a multiple of the measurement period.

- b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

The samples allocated to each carrier shall as far as possible be uniformly distributed over each measurement period. At least 3 received signal level measurement samples are required per GSM carrier RSSI measurement. The measurement period shall be 480 ms.

In case UTRA RACH procedure prevents the UE from acquiring the required number of samples per GSM carrier during one measurement period, the GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

### 8.4B.2.5.2 BSIC verification

- a) For a UE using measurement occasions and idle intervals to perform GSM measurements

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

- 1) Initial BSIC identification: Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the TDD and GSM cell. The requirements for Initial BSIC identification can be found in 8.4B.2.5.2.1.
- 2) BSIC re-confirmation: Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The requirements for Initial BSIC identification can be found in 8.4B.2.5.2.2.

Measurements on a GSM cell can be requested with BSIC verified or BSIC non-verified. If GSM measurements are requested with BSIC verified the UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The UE shall consider the BSIC of a GSM cell to be "verified" if it has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification) From that time instant, the UE shall attempt to re-confirm the BSIC at least once every 6 times  $T_{re-confirm\ abort}$  seconds. Otherwise, the UE shall consider the BSIC of the GSM cell to be "non-verified".

The time requirement for initial BSIC identification,  $T_{identify\ abort}$ , and the BSIC re-confirmation interval  $T_{re-confirm\ abort}$  can be found in the sections below.

The UE shall be able to decode a BSIC for the purpose of initial BSIC identification or BSIC reconfirmation within a measurement opportunity, when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the measurement opportunity is within the limits specified in Table 8.8.C.

**Table 8.8C**

| Idle Interval Length (timeslots) | Maximum time difference [ $\mu$ s] |
|----------------------------------|------------------------------------|
| 3                                | $\pm 65$                           |
| 4                                | $\pm 398$                          |
| 5                                | $\pm 732$                          |
| 6                                | $\pm 1065$                         |
| 7                                | $\pm 1398$                         |
| 8                                | $\pm 1732$                         |
| 9                                | $\pm 2065$                         |
| 10                               | $\pm 2398$                         |
| 11                               | $\pm 2732$                         |
| 12                               | $\pm 3065$                         |
| 13                               | $\pm 3398$                         |
| 15                               | $\pm 4100$                         |
| 30                               | $\pm 9100$                         |
| 60                               | $\pm 19100$                        |
| 120                              | $\pm 39100$                        |

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

b) For a UE not using measurement occasions and idle intervals to perform GSM measurements

The UE shall attempt to verify the BSIC for at least the 6 strongest GSM carriers at least every 10 seconds, to confirm that it is monitoring the same cell, as far as UTRA RACH procedure does not prevent UE from decoding BSIC.

If a BSIC is decoded and matches the expected value, the UE shall consider it as "verified", otherwise it shall consider it as "non-verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [20].

#### 8.4B.2.5.2.1 Initial BSIC identification

This measurement shall be performed in the measurement opportunities as described in 8.4B.2.5.

The UE shall continuously attempt to decode the BSIC of the SCH on the BCCH carrier of the 6 strongest BCCH carriers of the GSM cells indicated in the measurement control information. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BSIC carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

When the UE attempts to decode the BSIC of one GSM BCCH carrier with unknown BSIC, the UE shall use all available measurement opportunities allocated for GSM initial BSIC identification according section 8.4B.2.5 to attempt to decode the BSIC from that GSM BCCH carrier.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within  $T_{\text{identify abort}}$ , the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 6 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

$T_{\text{identify abort}}$  is specified in section 8.1B.2.5.

#### 8.4B.2.5.2.2 BSIC re-confirmation

The requirements of this section are applicable for BSIC re-confirmation.

The UE shall maintain the timing information of 6 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement opportunity allocated for GSM BSIC reconfirmation as described in 8.4B.2.5, the UE shall attempt to decode the BSIC occurring during the measurement opportunity. When the UE has to select one out of several possible GSM cells to reconfirm during the same measurement opportunity, priority shall be given to the least recently decoded BSIC.

If the UE fails to decode the BSIC after two successive attempts, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see section 8.4B.2.5.2.1. The UE shall be able to make BSIC re-confirmation attempts for the 6 strongest GSM cells in the monitored list.

Where  $T_{\text{re-confirm abort}}$  is specified in section 8.1B.2.5.

## 8.5 Capabilities for Support of Event Triggering and Reporting Criteria in CELL\_FACH state (3.84 Mcps TDD option)

### 8.5.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria.

### 8.5.2 Requirements

In this section reporting criteria can be either event triggered reporting criteria or periodic reporting criteria.

**Table 8.9A: Requirements for reporting criteria per measurement category**

| Measurement category        | $E_{\text{cat}}$              | Note |
|-----------------------------|-------------------------------|------|
| Traffic volume measurements | 2 + (2 per Transport Channel) |      |

## 8.5A Capabilities for Support of Event Triggering and Reporting Criteria in CELL\_FACH state (1.28 Mcps option)

### 8.5A.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria.

### 8.5A.2 Requirements

In this section reporting criteria can be either event triggered reporting criteria or periodic reporting criteria.

**Table 8.9: Requirements for reporting criteria per measurement category**

| Measurement category        | E <sub>cat</sub> | Note |
|-----------------------------|------------------|------|
| Traffic volume measurements | 2                |      |

## 8.5B Capabilities for Support of Event Triggering and Reporting Criteria in CELL\_FACH state (7.68 Mcps TDD option)

### 8.5B.1 Introduction

This section contains requirements on UE capabilities for support of event triggering and reporting criteria.

### 8.5B.2 Requirements

In this section reporting criteria can be either event triggered reporting criteria or periodic reporting criteria.

**Table 8.9B: Requirements for reporting criteria per measurement category**

| Measurement category        | E <sub>cat</sub>              | Note |
|-----------------------------|-------------------------------|------|
| Traffic volume measurements | 2 + (2 per Transport Channel) |      |

---

## 9 Measurements performance requirements

One of the key services provided by the physical layer is the measurement of various quantities which are used to trigger or perform a multitude of functions. Both the UE and the UTRAN are required to perform a variety of measurements. The complete list of measurements is specified in 3GPP TS 25.302 "Services Provided by Physical Layer". The physical layer measurements for TDD are described and defined in 3GPP TS 25.225 "Physical layer - Measurements (TDD)". In this clause for TDD, per each measurement the relevant requirements on performance in terms of accuracy are reported.

The accuracy requirements in this clause are applicable for AWGN radio propagation conditions.

Unless explicitly stated,

- Reported measurements shall be within defined range in 90 % of the cases.
- Measurement channel is 12,2 kbps as defined in 3GPP TS 25.102 annex A. This measurement channel is used both in active cell and cells to be measured.
- Physical channels used as defined in 3GPP TS 25.102 annex A.
- All requirements are defined when UE is in a CELL\_DCH or CELL\_FACH stage. The difference between modes are the reporting delay. Some of the measurements are not requested to be reported in both stages.



- Single task reporting.
- Power control is active.

## 9.1 Measurements performance for UE

The requirements in this clause are applicable for a UE:

- in state CELL\_DCH and state CELL\_FACH.
- performing measurements according to section 8.
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in TS25.302.

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

### 9.1.1 Performance for UE measurements in downlink (RX)

#### 9.1.1.1 P-CCPCH RSCP (TDD)

These measurements consider *P-CCPCH RSCP* measurements for TDD cells.

The measurement period for CELL\_DCH state and CELL\_FACH state can be found in section 8.

##### 9.1.1.1.1 Absolute accuracy requirements

###### 9.1.1.1.1.1 3.84 Mcps TDD option

The accuracy requirements in table 9.1 are valid under the following conditions:

$P\text{-CCPCH RSCP} \geq -102$  dBm.

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

**Table 9.1: P-CCPCH\_RSCP absolute accuracy**

| Parameter    | Unit | Accuracy [dB]    |                   | Conditions        |
|--------------|------|------------------|-------------------|-------------------|
|              |      | Normal condition | Extreme condition | Io [dBm/3.84 MHz] |
| P-CCPCH_RSCP | dBm  | $\pm 6$          | $\pm 9$           | -94...-70         |
|              | dBm  | $\pm 8$          | $\pm 11$          | -70...-50         |

###### 9.1.1.1.1.2 1.28 Mcps TDD option

The accuracy requirements in table 9.1A are valid under the following conditions:

$P\text{-CCPCH RSCP} \geq -102$  dBm

$P\text{-CCPCH } E_c/I_o \geq -8$  dB

$DwPCH\_E_c/I_o \geq -5$  dB

**Table 9.1A: P-CCPCH\_RSCP absolute accuracy**

| Parameter    | Unit | Accuracy [dB]    |                   | Conditions         |
|--------------|------|------------------|-------------------|--------------------|
|              |      | Normal condition | Extreme condition | Io [dBm/ 1.28 MHz] |
| P-CCPCH_RSCP | dBm  | ± 6              | ± 9               | -94...-70          |
|              | dBm  | ± 8              | ± 11              | -70...-50          |

## 9.1.1.1.1.3 7.68 Mcps TDD option

The accuracy requirements in table 9.1B are valid under the following conditions:

P-CCPCH RSCP ≥ -102 dBm.

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1B.2.6

**Table 9.1B: P-CCPCH\_RSCP absolute accuracy**

| Parameter    | Unit | Accuracy [dB]    |                   | Conditions        |
|--------------|------|------------------|-------------------|-------------------|
|              |      | Normal condition | Extreme condition | Io [dBm/7.68 MHz] |
| P-CCPCH_RSCP | dBm  | ± 6              | ± 9               | -94...-70         |
|              | dBm  | ± 8              | ± 11              | -70...-50         |

## 9.1.1.1.2 Relative accuracy requirements

## 9.1.1.1.2.1 3.84 Mcps TDD option

The P-CCPCH\_RSCP intra-frequency relative accuracy is defined as the P-CCPCH\_RSCP measured from one cell compared to the P-CCPCH\_RSCP measured from another cell on the same frequency.

The accuracy requirements in table 9.2 are valid under the following conditions:

P-CCPCH RSCP<sub>1,2</sub> ≥ -102 dBm.

$$\left| P - CCPCH RSCP1 \Big|_{in\ dBm} - P - CCPCH RSCP2 \Big|_{in\ dBm} \right| \leq 20dB$$

Relative Io difference [dB] ≤ relative RSCP difference [dB]

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

It is assumed that the measurements of P-CCPCH RSCP1 and P-CCPCH RSCP2 can be performed within 20ms due to slot allocations in the cells concerned.

**Table 9.2: P-CCPCH\_RSCP intra-frequency relative accuracy**

| Parameter    | Unit | Accuracy [dB]    |                   | Conditions        |                               |
|--------------|------|------------------|-------------------|-------------------|-------------------------------|
|              |      | Normal condition | Extreme condition | Io [dBm/ 3.84MHz] | Relative RSCP difference [dB] |
| P-CCPCH_RSCP | dBm  | ±1               | ±1                | -94...-50         | <2                            |
|              |      | ±2               | ±2                |                   | 2...14                        |
|              |      | ±3               | ±3                |                   | >14                           |

The P-CCPCH\_RSCP inter-frequency relative accuracy is defined as the P-CCPCH\_RSCP measured from one cell compared to the P-CCPCH\_RSCP measured from another cell on a different frequency.

The accuracy requirements in table 9.3 are valid under the following conditions:

P-CCPCH RSCP<sub>1,2</sub> ≥ -102 dBm.

$$\left| P\text{-CCPCH RSCP1} \Big|_{in\ dBm} - P\text{-CCPCH RSCP2} \Big|_{in\ dBm} \right| \leq 20\text{dB}$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

**Table 9.3: P-CCPCH\_RSCP inter-frequency relative accuracy**

| Parameter    | Unit | Accuracy [dB]    |                   | Conditions<br>Io [dBm/3.84<br>MHz] |
|--------------|------|------------------|-------------------|------------------------------------|
|              |      | Normal condition | Extreme condition |                                    |
| P-CCPCH_RSCP | dBm  | ± 6              | ± 6               | -94...-50                          |

#### 9.1.1.1.2.2 1.28 Mcps TDD option

The P-CCPCH\_RSCP intra-frequency relative accuracy is defined as the P-CCPCH\_RSCP measured from one cell compared to the P-CCPCH\_RSCP measured from another cell on the same frequency.

The accuracy requirements in table 9.3A are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left| P\text{-CCPCH RSCP1} \Big|_{in\ dBm} - P\text{-CCPCH RSCP2} \Big|_{in\ dBm} \right| \leq 8\text{dB}$$

P-CCPCH Ec/Io ≥ -8 dB

DwPCH\_Ec/Io ≥ -5 dB

It is assumed that the measurements of P-CCPCH RSCP1 and P-CCPCH RSCP2 can be performed within 20ms.

**Table 9.3A: P-CCPCH\_RSCP intra-frequency relative accuracy**

| Parameter    | Unit | Accuracy [dB]    |                   | Conditions<br>Io [dBm/1.28<br>MHz] |
|--------------|------|------------------|-------------------|------------------------------------|
|              |      | Normal condition | Extreme condition |                                    |
| P-CCPCH_RSCP | dBm  | ±3               | ±3                | -94...-50                          |

The P-CCPCH\_RSCP inter-frequency relative accuracy is defined as the P-CCPCH\_RSCP measured from one cell compared to the P-CCPCH\_RSCP measured from another cell on a different frequency.

The accuracy requirements in table 9.3B are valid under the following conditions:

P-CCPCH RSCP1,2 ≥ -102 dBm.

$$\left| P\text{-CCPCH RSCP1} \Big|_{in\ dBm} - P\text{-CCPCH RSCP2} \Big|_{in\ dBm} \right| \leq 20\text{dB}$$

P-CCPCH Ec/Io ≥ -8 dB

DwPCH\_Ec/Io ≥ -5 dB

**Table 9.3B: P-CCPCH\_RSCP inter-frequency relative accuracy**

| Parameter    | Unit | Accuracy [dB]    |                   | Conditions<br>Io [dBm/1.28<br>MHz] |
|--------------|------|------------------|-------------------|------------------------------------|
|              |      | Normal condition | Extreme condition |                                    |
| P-CCPCH_RSCP | dBm  | ± 6              | ± 6               | -94...-50                          |

## 9.1.1.1.2.3 7.68 Mcps TDD option

The P-CCPCH\_RSCP intra-frequency relative accuracy is defined as the P-CCPCH\_RSCP measured from one cell compared to the P-CCPCH\_RSCP measured from another cell on the same frequency.

The accuracy requirements in table 9.3C are valid under the following conditions:

P-CCPCH RSCP<sub>1,2</sub> ≥ -102 dBm.

$$\left| P\text{-CCPCH RSCP1}_{in\ dBm} - P\text{-CCPCH RSCP2}_{in\ dBm} \right| \leq 20dB$$

Relative I<sub>o</sub> difference [dB] ≤ relative RSCP difference [dB]

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1B.2.6

It is assumed that the measurements of P-CCPCH RSCP1 and P-CCPCH RSCP2 can be performed within 20ms due to slot allocations in the cells concerned.

**Table 9.3C: P-CCPCH\_RSCP intra-frequency relative accuracy**

| Parameter    | Unit | Accuracy [dB]    |                   | Conditions                   |                               |
|--------------|------|------------------|-------------------|------------------------------|-------------------------------|
|              |      | Normal condition | Extreme condition | I <sub>o</sub> [dBm/7.68MHz] | relative RSCP difference [dB] |
| P-CCPCH_RSCP | dBm  | ±1               | ±1                | -94...-50                    | <2                            |
|              |      | ±2               | ±2                |                              | 2...14                        |
|              |      | ±3               | ±3                |                              | >14                           |

The P-CCPCH\_RSCP inter-frequency relative accuracy is defined as the P-CCPCH\_RSCP measured from one cell compared to the P-CCPCH\_RSCP measured from another cell on a different frequency.

The accuracy requirements in table 9.3D are valid under the following conditions:

P-CCPCH RSCP<sub>1,2</sub> ≥ -102 dBm.

$$\left| P\text{-CCPCH RSCP1}_{in\ dBm} - P\text{-CCPCH RSCP2}_{in\ dBm} \right| \leq 20dB$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1B.2.6

**Table 9.3D: P-CCPCH\_RSCP inter-frequency relative accuracy**

| Parameter    | Unit | Accuracy [dB]    |                   | Conditions                    |
|--------------|------|------------------|-------------------|-------------------------------|
|              |      | Normal condition | Extreme condition | I <sub>o</sub> [dBm/7.68 MHz] |
| P-CCPCH_RSCP | dBm  | ± 6              | ± 6               | -94...-50                     |

## 9.1.1.1.3 Range/mapping

The reporting range for P-CCPCH RSCP is from -120 ...-25 dBm.

In table 9.4 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.4

| Reported value       | Measured quantity value    | Unit |
|----------------------|----------------------------|------|
| P-CCPCH RSCP_LEV_-05 | P-CCPCH RSCP < -120        | dBm  |
| P-CCPCH RSCP_LEV_-04 | -120 ≤ P-CCPCH RSCP < -119 | dBm  |
| P-CCPCH RSCP_LEV_-03 | -119 ≤ P-CCPCH RSCP < -118 | dBm  |
| ...                  | ...                        | ...  |
| P-CCPCH RSCP_LEV_89  | -27 ≤ P-CCPCH RSCP < -26   | dBm  |
| P-CCPCH RSCP_LEV_90  | -26 ≤ P-CCPCH RSCP < -25   | dBm  |
| P-CCPCH RSCP_LEV_91  | -25 ≤ P-CCPCH RSCP         | dBm  |

### 9.1.1.2 CPICH measurements (FDD)

NOTE: This measurement is used for handover between UTRA TDD and UTRA FDD.

These measurements consider *CPICH RSCP* and *CPICH Ec/Io* measurements. The requirements in this section are valid for terminals supporting this capability.

The measurement period for CELL\_DCH state and CELL\_FACH state can be found in section 8.

#### 9.1.1.2.1 CPICH RSCP

##### 9.1.1.2.1.1 Inter frequency measurement absolute accuracy requirement

The accuracy requirements in table 9.5 are valid under the following conditions:

$$CPICH\_RSCP1|_{dBm} \geq -114 \text{ dBm.}$$

$$\left| \frac{I_o}{\hat{I}_{or}} \right|_{in \text{ dB}} - \left( \frac{CPICH\_E_c}{I_{or}} \right)_{in \text{ dB}} \leq 20 \text{ dB}$$

Table 9.5: CPICH\_RSCP Inter frequency absolute accuracy

| Parameter  | Unit | Accuracy [dB]    |                   | Conditions<br>Io [dBm/ 3.84<br>MHz] |
|------------|------|------------------|-------------------|-------------------------------------|
|            |      | Normal condition | Extreme condition |                                     |
| CPICH_RSCP | dBm  | ± 6              | ± 9               | -94...-70                           |
|            | dBm  | ± 8              | ± 11              | -70...-50                           |

##### 9.1.1.2.1.2 Range/mapping

The reporting range for *CPICH RSCP* is from -120 ...-25 dBm.

In table 9.6 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.6

| Reported value     | Measured quantity value  | Unit |
|--------------------|--------------------------|------|
| CPICH_RSCP_LEV_-05 | CPICH RSCP < -120        | dBm  |
| CPICH_RSCP_LEV_-04 | -120 ≤ CPICH RSCP < -119 | dBm  |
| CPICH_RSCP_LEV_-03 | -119 ≤ CPICH RSCP < -118 | dBm  |
| ...                | ...                      | ...  |
| CPICH_RSCP_LEV_89  | -27 ≤ CPICH RSCP < -26   | dBm  |
| CPICH_RSCP_LEV_90  | -26 ≤ CPICH RSCP < -25   | dBm  |
| CPICH_RSCP_LEV_91  | -25 ≤ CPICH RSCP         | dBm  |

## 9.1.1.2.2 CPICH Ec/Io

## 9.1.1.2.2.1 Inter frequency measurement relative accuracy requirement

The relative accuracy of CPICH Ec/Io is defined as the CPICH Ec/Io measured from one cell compared to the CPICH Ec/Io measured from another cell on a different frequency.

The accuracy requirements in table 9.7 are valid under the following conditions:

CPICH\_RSC1,2 ≥ -114 dBm.

$$\left| CPICH\_RSCP1 \Big|_{in\ dBm} - CPICH\_RSCP2 \Big|_{in\ dBm} \right| \leq 20\ dB$$

$$|Channel\ 1\_Io|_{dBm/3.84\ MHz} - Channel\ 2\_Io|_{dBm/3.84\ MHz}| \leq 20\ dB$$

$$\left( \frac{I_o}{\hat{I}_{or}} \right) \Big|_{in\ dB} - \left( \frac{CPICH\_E_c}{I_{or}} \right) \Big|_{in\ dB} \leq 20\ dB$$

**Table 9.7: CPICH Ec/Io Inter frequency relative accuracy**

| Parameter   | Unit | Accuracy [dB]   |                   | Conditions<br>Io<br>[dBm/3.84<br>MHz] |
|-------------|------|---|-------------------|---------------------------------------|
|             |      | Normal condition  | Extreme condition |                                       |
| CPICH_Ec/Io | dB   | ± 1.5 for -14 ≤ CPICH Ec/Io<br>± 2 for -16 ≤ CPICH Ec/Io < -14<br>± 3 for -20 ≤ CPICH Ec/Io < -16 | ± 3               | -94...-50                             |

## 9.1.1.2.2.2 Range/mapping

The reporting range for CPICH Ec/Io is from -24 ...0 dB.

In table 9.8 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.8**

| Reported value | Measured quantity value   | Unit |
|----------------|---------------------------|------|
| CPICH_Ec/Io_00 | CPICH Ec/Io < -24         | dB   |
| CPICH_Ec/Io_01 | -24 ≤ CPICH Ec/Io < -23.5 | dB   |
| CPICH_Ec/Io_02 | -23.5 ≤ CPICH Ec/Io < -23 | dB   |
| ...            | ...                       | ...  |
| CPICH_Ec/Io_47 | -1 ≤ CPICH Ec/Io < -0.5   | dB   |
| CPICH_Ec/Io_48 | -0.5 ≤ CPICH Ec/Io < 0    | dB   |
| CPICH_Ec/Io_49 | 0 ≤ CPICH Ec/Io           | dB   |

## 9.1.1.3 Timeslot ISCP

The measurement period for CELL\_DCH state and CELL\_FACH state can be found in section 8.

## 9.1.1.3.1 Absolute accuracy requirements

## 9.1.1.3.1.1 3.84 Mcps TDD option

**Table 9.9: Timeslot\_ISCP Intra frequency absolute accuracy**

| Parameter     | Unit | Accuracy [dB]    |                   | Conditions         |
|---------------|------|------------------|-------------------|--------------------|
|               |      | Normal condition | Extreme condition | Io [dBm/ 3.84 MHz] |
| Timeslot_ISCP | dBm  | ± 6              | ± 9               | -94...-70          |
|               | dBm  | ± 8              | ± 11              | -70...-50          |

## 9.1.1.3.1.2 1.28 Mcps TDD option

**Table 9.9A: Timeslot\_ISCP Intra frequency absolute accuracy**

| Parameter     | Unit | Accuracy [dB]    |                   | Conditions        |
|---------------|------|------------------|-------------------|-------------------|
|               |      | Normal condition | Extreme condition | Io [dBm/ 1.28MHz] |
| Timeslot_ISCP | dBm  | ± 6              | ± 9               | -94...-70         |
|               | dBm  | ± 8              | ± 11              | -70...-50         |

## 9.1.1.3.1.3 7.68 Mcps TDD option

**Table 9.9B: Timeslot\_ISCP Intra frequency absolute accuracy**

| Parameter     | Unit | Accuracy [dB]    |                   | Conditions         |
|---------------|------|------------------|-------------------|--------------------|
|               |      | Normal condition | Extreme condition | Io [dBm/ 7.68 MHz] |
| Timeslot_ISCP | dBm  | ± 6              | ± 9               | -94...-70          |
|               | dBm  | ± 8              | ± 11              | -70...-50          |

## 9.1.1.3.2 Range/mapping

The reporting range for *Timeslot ISCP* is from -115...-25 dBm.

In table 9.10 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.10**

| Reported value    | Measured quantity value     | Unit |
|-------------------|-----------------------------|------|
| UE_TS_ISCP_LEV_00 | Timeslot_ISCP < -115        | dBm  |
| UE_TS_ISCP_LEV_01 | -115 ≤ Timeslot_ISCP < -114 | dBm  |
| UE_TS_ISCP_LEV_02 | -114 ≤ Timeslot_ISCP < -113 | dBm  |
| ...               | ...                         | ...  |
| UE_TS_ISCP_LEV_89 | -27 ≤ Timeslot_ISCP < -26   | dBm  |
| UE_TS_ISCP_LEV_90 | -26 ≤ Timeslot_ISCP < -25   | dBm  |
| UE_TS_ISCP_LEV_91 | -25 ≤ Timeslot_ISCP         | dBm  |

## 9.1.1.4 UTRA carrier RSSI

NOTE: The purpose of measurement is for Inter-frequency handover evaluation.

The measurement period is equal to the measurement period for UE P-CCPCH RSCP measurement. The measurement period for CELL\_DCH state can be found in section 8.

## 9.1.1.4.1 Absolute accuracy requirement

Absolute accuracy case only one carrier is applied.

## 9.1.1.4.1.1 3.84 Mcps TDD option

**Table 9.11: UTRA carrier RSSI Inter frequency absolute accuracy**

| Parameter         | Unit | Accuracy [dB]    |                   | Conditions                     |
|-------------------|------|------------------|-------------------|--------------------------------|
|                   |      | Normal condition | Extreme condition | I <sub>o</sub> [dBm/ 3.84 MHz] |
| UTRA Carrier RSSI | dBm  | ± 4              | ± 7               | -94...-70                      |
|                   | dBm  | ± 6              | ± 9               | -70...-50                      |

## 9.1.1.4.1.2 1.28 Mcps TDD option

**Table 9.11A: UTRA carrier RSSI Inter frequency absolute accuracy**

| Parameter         | Unit | Accuracy [dB]    |                   | Conditions                    |
|-------------------|------|------------------|-------------------|-------------------------------|
|                   |      | Normal condition | Extreme condition | I <sub>o</sub> [dBm/ 1.28MHz] |
| UTRA Carrier RSSI | dBm  | ± 4              | ± 7               | -94...-70                     |
|                   | dBm  | ± 6              | ± 9               | -70...-50                     |

## 9.1.1.4.1.3 7.68 Mcps TDD option

**Table 9.11B: UTRA carrier RSSI Inter frequency absolute accuracy**

| Parameter         | Unit | Accuracy [dB]    |                   | Conditions                     |
|-------------------|------|------------------|-------------------|--------------------------------|
|                   |      | Normal condition | Extreme condition | I <sub>o</sub> [dBm/ 7.68 MHz] |
| UTRA Carrier RSSI | dBm  | ± 4              | ± 7               | -94...-70                      |
|                   | dBm  | ± 6              | ± 9               | -70...-50                      |

## 9.1.1.4.2 Relative accuracy requirement

Relative accuracy requirement is defined as active cell frequency UTRAN RSSI compared to measured other frequency UTRAN RSSI level.

## 9.1.1.4.2.1 3.84 Mcps TDD option

The accuracy requirements in table 9.12 are valid under the following conditions:

$$| \text{Channel 1\_Io}_{\text{dBm/3.84 MHz}} - \text{Channel 2\_Io}_{\text{dBm/3.84 MHz}} | < 20 \text{ dB.}$$

**Table 9.12: UTRA carrier RSSI Inter frequency relative accuracy**

| Parameter         | Unit | Accuracy [dB]    |                   | Conditions                    |
|-------------------|------|------------------|-------------------|-------------------------------|
|                   |      | Normal condition | Extreme condition | I <sub>o</sub> [dBm/3.84 MHz] |
| UTRA Carrier RSSI | dBm  | ± 7              | ± 11              | -94...-50                     |

## 9.1.1.4.2.2 1.28 Mcps TDD option

The accuracy requirements in table 9.12A are valid under the following conditions:

$$| \text{Channel 1\_Io}_{\text{dBm/1.28 MHz}} - \text{Channel 2\_Io}_{\text{dBm/1.28 MHz}} | < 20 \text{ dB.}$$



**Table 9.12A: UTRA carrier RSSI Inter frequency relative accuracy**

| Parameter         | Unit | Accuracy [dB]    |                   | Conditions        |
|-------------------|------|------------------|-------------------|-------------------|
|                   |      | Normal condition | Extreme condition | Io [dBm/1.28 MHz] |
| UTRA Carrier RSSI | dBm  | ± 7              | ± 11              | -94...-50         |

## 9.1.1.4.2.3 7.68 Mcps TDD option

The accuracy requirements in table 9.12B are valid under the following conditions:

$$|\text{Channel 1}_{\text{Io}}|_{\text{dBm}/7.68 \text{ MHz}} - \text{Channel 2}_{\text{Io}}|_{\text{dBm}/7.68 \text{ MHz}}| < 20 \text{ dB}.$$

**Table 9.12B: UTRA carrier RSSI Inter frequency relative accuracy**

| Parameter         | Unit | Accuracy [dB]    |                   | Conditions        |
|-------------------|------|------------------|-------------------|-------------------|
|                   |      | Normal condition | Extreme condition | Io [dBm/7.68 MHz] |
| UTRA Carrier RSSI | dBm  | ± 7              | ± 11              | -94...-50         |

## 9.1.1.4.3 Range/mapping

The reporting range for *UTRA carrier RSSI* is from -100 ...-25 dBm.

In table 9.13 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.13**

| Reported value           | Measured quantity value        | Unit |
|--------------------------|--------------------------------|------|
| UTRA_carrier_RSSI_LEV_00 | UTRA carrier RSSI < -100       | dBm  |
| UTRA_carrier_RSSI_LEV_01 | -100 ≤ UTRA carrier RSSI < -99 | dBm  |
| UTRA_carrier_RSSI_LEV_02 | -99 ≤ UTRA carrier RSSI < -98  | dBm  |
| ...                      | ...                            | ...  |
| UTRA_carrier_RSSI_LEV_74 | -27 ≤ UTRA carrier RSSI < -26  | dBm  |
| UTRA_carrier_RSSI_LEV_75 | -26 ≤ UTRA carrier RSSI < -25  | dBm  |
| UTRA_carrier_RSSI_LEV_76 | -25 ≤ UTRA carrier RSSI        | dBm  |

## 9.1.1.5 GSM carrier RSSI

NOTE: This measurement is for handover between UTRAN and GSM.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for CELL\_DCH state can be found in section 8.1.2.5, 8.1A.2.5 and 8.1B.2.5. The measurement period for CELL\_FACH state can be found in section 8.4.2.5, 8.4A.2.5 and 8.4B.2.5.

If the UE, in CELL\_DCH state, does not need idle intervals to perform GSM measurements, the measurement accuracy requirements for RXLEV in TS 45.008 shall apply.

If the UE, in CELL\_DCH state needs idle intervals to perform GSM measurements, the measurement accuracy requirement is stated in section 8.1.2.5, 8.1A.2.5 and 8.1B.2.5.

If the UE, in CELL\_FACH state, does not need measurement occasions and/or idle intervals to perform GSM measurements, the measurement accuracy requirements for RXLEV in TS 45.008 shall apply.

If the UE, in CELL\_FACH state needs measurement occasions and/or idle intervals to perform GSM measurements, the measurement accuracy requirement is stated in section 8.4.2.5, 8.4A.2.5 and 8.4B.2.5.

The reporting range and mapping specified for RXLEV in TS 45.008 shall apply.

### 9.1.1.5a E-UTRAN RSRP

NOTE: This measurement is for handover between UTRAN and E-UTRAN.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for E-UTRA RSRP in CELL\_DCH state can be found in section 8.1.2.7 / 8.1.2.8, section 8.1A.2.6 / 8.1A.2.7 and section 8.1B.2.7 / 8.1B.2.8.

In Cell DCH state, whether or not UE requires idle intervals to perform E-UTRAN measurements, the requirements for accuracy of E-UTRA RSRP measurements in CELL\_DCH state shall be the same as the inter-frequency RSRP Accuracy Requirements in 3GPP TS 36.133 [24].

The reporting range and mapping specified for RSRP in 3GPP TS 36.133 [24] shall apply.

### 9.1.1.5b E-UTRAN RSRQ

NOTE: This measurement is for handover between UTRAN and E-UTRAN.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for E-UTRA RSRQ in CELL\_DCH state can be found in section 8.1.2.7 / 8.1.2.8, section 8.1A.2.6 / 8.1A.2.7 and section 8.1B.2.7 / 8.1B.2.8.

In CELL DCH state, whether or not UE requires idle intervals to perform E-UTRAN measurements, the requirements for accuracy of E-UTRA RSRQ measurements in CELL\_DCH state shall be the same as the inter-frequency RSRQ Accuracy Requirements in 3GPP TS 36.133 [24].

The reporting range and mapping specified for RSRQ in 3GPP TS 36.133 [24] shall apply.

### 9.1.1.6 SIR

The measurement period is equal to the measurement period for UE P-CCPCH RSCP measurement. The measurement period for CELL\_DCH state and CELL\_FACH state can be found in section 8.

#### 9.1.1.6.1 Absolute accuracy requirements

##### 9.1.1.6.1.1 3.84 Mcps TDD option

**Table 9.14: SIR Intra frequency absolute accuracy**

| Parameter | Unit | Accuracy [dB]         |                    | Conditions  |
|-----------|------|-----------------------|--------------------|---|
|           |      | Normal conditions     | Extreme conditions |   |
| SIR       | dB   | $\pm 3$ dB            | [ ]                | For $0 < \text{SIR} < 20$ dB and lo range -94...-50 dBm/3.84MHz       |
| SIR       | dB   | $\pm(3 - \text{SIR})$ | [ ]                | For $-7 \leq \text{SIR} \leq 0$ dB and lo range -94...-50 dBm/3.84MHz |

## 9.1.1.6.1.2 1.28 Mcps TDD option

**Table 9.14A: SIR Intra frequency absolute accuracy**

| Parameter | Unit | Accuracy [dB]     |                    | Conditions   |
|-----------|------|-------------------|--------------------|--|
|           |      | Normal conditions | Extreme conditions |  |
| SIR       | dB   | $\pm 3$ dB        | [ ]                | For $0 < SIR < 20$ dB and lo range -94...-50 dBm/1.28MHz       |
| SIR       | dB   | $\pm(3 - SIR)$    | [ ]                | For $-7 \leq SIR \leq 0$ dB and lo range -94...-50 dBm/1.28MHz |

## 9.1.1.6.1.3 7.68 Mcps TDD option

**Table 9.14B: SIR Intra frequency absolute accuracy**

| Parameter | Unit | Accuracy [dB]     |                    | Conditions   |
|-----------|------|-------------------|--------------------|--|
|           |      | Normal conditions | Extreme conditions |  |
| SIR       | dB   | $\pm 3$ dB        | [ ]                | For $0 < SIR < 20$ dB and lo range -94...-50 dBm/7.68MHz       |
| SIR       | dB   | $\pm(3 - SIR)$    | [ ]                | For $-7 \leq SIR \leq 0$ dB and lo range -94...-50 dBm/7.68MHz |

## 9.1.1.6.2 Range/mapping

The reporting range for *SIR* is from -11 ...20 dB.

In table 9.15 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.15**

| Reported value | Measured quantity value  | Unit |
|----------------|--------------------------|------|
| UE_SIR_00      | $SIR < -11,0$            | dB   |
| UE_SIR_01      | $-11,0 \leq SIR < -10,5$ | dB   |
| UE_SIR_02      | $-10,5 \leq SIR < -10,0$ | dB   |
| ...            | ...                      | ...  |
| UE_SIR_61      | $-19 \leq SIR < 19,5$    | dB   |
| UE_SIR_62      | $19,5 \leq SIR < 20$     | dB   |
| UE_SIR_63      | $20 \leq SIR$            | dB   |

## 9.1.1.7 Transport channel BLER

## 9.1.1.7.1 BLER measurement requirement

The Transport Channel BLER value shall be calculated from a window with the size equal to the reporting interval (see clause on periodical reporting criteria in TS 25.331).

## 9.1.1.7.2 Range/mapping

The *Transport channel BLER* reporting range is from 0 to 1.

In table 9.16 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.16

| Reported value | Measured quantity value  | Unit |
|----------------|--|------|
| BLER_LOG_00    | Transport channel BLER = 0   | -    |
| BLER_LOG_01    | $-\infty < \text{Log}_{10}(\text{Transport channel BLER}) < -4,03$   | -    |
| BLER_LOG_02    | $-4,03 \leq \text{Log}_{10}(\text{Transport channel BLER}) < -3,965$ | -    |
| BLER_LOG_03    | $-3,965 \leq \text{Log}_{10}(\text{Transport channel BLER}) < -3,9$  | -    |
| ...            | ...  | ...  |
| BLER_LOG_61    | $-0,195 \leq \text{Log}_{10}(\text{Transport channel BLER}) < -0,13$ | -    |
| BLER_LOG_62    | $-0,13 \leq \text{Log}_{10}(\text{Transport channel BLER}) < -0,065$ | -    |
| BLER_LOG_63    | $-0,065 \leq \text{Log}_{10}(\text{Transport channel BLER}) \leq 0$  | -    |

### 9.1.1.8 SFN-SFN observed time difference

The measurement period is equal to the measurement period for UE P-CCPCH RSCP measurement. The measurement period for CELL\_DCH state and CELL\_FACH state can be found in section 8.

#### 9.1.1.8.1 Accuracy requirements

##### 9.1.1.8.1.1 3.84 Mcps TDD option

The accuracy requirement in table 9.17 is valid under the following conditions:

$P\text{-CCPCH\_RSCP}_{1,2} \geq -102 \text{ dBm}$ .

$$\left| P\text{-CCPCH\_RSCP1}_{in \text{ dBm}} - P\text{-CCPCH\_RSCP2}_{in \text{ dBm}} \right| \leq 20 \text{ dB}$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6.

Table 9.17: SFN-SFN observed time difference accuracy

| Parameter                        | Unit | Accuracy [chip]              | Conditions        |
|----------------------------------|------|------------------------------|-------------------|
|                                  |      |                              | Io [dBm/3.84 MHz] |
| SFN-SFN observed time difference | chip | +/-0,5 for both type 1 and 2 | -94...-50         |

##### 9.1.1.8.1.2 1.28 Mcps TDD option

The accuracy requirements in table 9.17A are valid under the following conditions:

$P\text{-CCPCH\_RSCP}_{1,2} \geq -102 \text{ dBm}$ .

$$\left| P\text{-CCPCH\_RSCP1}_{in \text{ dBm}} - P\text{-CCPCH\_RSCP2}_{in \text{ dBm}} \right| \leq 20 \text{ dB}$$

$P\text{-CCPCH\_Ec/Io} \geq -8 \text{ dB}$

$DwPCH\_Ec/Io \geq -5 \text{ dB}$

Table 9.17A: SFN-SFN observed time difference accuracy

| Parameter                        | Unit | Accuracy [chip]                            | Conditions        |
|----------------------------------|------|--|-------------------|
|                                  |      |  | Io [dBm/1.28 MHz] |
| SFN-SFN observed time difference | chip | +/-0,5 for type 1 but +/- 0.125 for type 2 | -94...-50         |

## 9.1.1.8.1.3 7.68 Mcps TDD option

The accuracy requirement in table 9.17B is valid under the following conditions:

$P\text{-CCPCH\_RSCP}_{1,2} \geq -102 \text{ dBm}$ .

$$\left| P\text{-CCPCH\_RSCP}_1 \Big|_{in \text{ dBm}} - P\text{-CCPCH\_RSCP}_2 \Big|_{in \text{ dBm}} \right| \leq 20 \text{ dB}$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1B.2.6.

**Table 9.17B: SFN-SFN observed time difference accuracy**

| Parameter                        | Unit | Accuracy [chip]            | Conditions        |
|----------------------------------|------|----------------------------|-------------------|
|                                  |      |                            | Io [dBm/7.68 MHz] |
| SFN-SFN observed time difference | chip | +/-1 for both type 1 and 2 | -94...-50         |

## 9.1.1.8.2 Range/mapping

## 9.1.1.8.2.1 3.84 Mcps TDD option

The reporting range for *SFN-SFN observed time difference type 1* is from 0 ... 9830400 chip.

In table 9.18 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.18**

| Reported value           | Measured quantity value   | Unit |
|--------------------------|---|------|
| T1_SFN-SFN_TIME _0000000 | $0 \leq \text{SFN-SFN observed time difference type 1} < 1$             | Chip |
| T1_SFN-SFN_TIME _0000001 | $1 \leq \text{SFN-SFN observed time difference type 1} < 2$             | Chip |
| T1_SFN-SFN_TIME _0000002 | $2 \leq \text{SFN-SFN observed time difference type 1} < 3$             | Chip |
| ...                      | ...   | ...  |
| T1_SFN-SFN_TIME _9830397 | $9830397 \leq \text{SFN-SFN observed time difference type 1} < 9830398$ | Chip |
| T1_SFN-SFN_TIME _9830398 | $9830398 \leq \text{SFN-SFN observed time difference type 1} < 9830399$ | Chip |
| T1_SFN-SFN_TIME _9830399 | $9830399 \leq \text{SFN-SFN observed time difference type 1} < 9830400$ | Chip |

The reporting range for *SFN-SFN observed time difference type 2* is from -1280 ... +1280 chip.

In table 9.19 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.19

| Reported value         | Measured quantity value   | Unit |
|------------------------|---|------|
| T2_SFN-SFN_TIME _00000 | SFN-SFN observed time difference type 2 < -1280,0000              | Chip |
| T2_SFN-SFN_TIME _00001 | -1280,0000 ≤ SFN-SFN observed time difference type 2 < -1279,9375 | Chip |
| T2_SFN-SFN_TIME _00002 | -1279,9375 ≤ SFN-SFN observed time difference type 2 < -1279,8750 | Chip |
| ...                    | ...   | ...  |
| T2_SFN-SFN_TIME _40959 | 1279,8750 ≤ SFN-SFN observed time difference type 2 < 1279,9375   | Chip |
| T2_SFN-SFN_TIME _40960 | 1279,9375 ≤ SFN-SFN observed time difference type 2 < 1280,0000   | Chip |
| T2_SFN-SFN_TIME _40961 | 1280,0000 ≤ SFN-SFN observed time difference type 2               | Chip |

## 9.1.1.8.2.2 1.28 Mcps TDD option

The reporting range for *SFN-SFN observed time difference type 1* is from 0 ... 3276800 chip.

In table 9.18A mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.18A

| Reported value           | Measured quantity value                                     | Unit |
|--------------------------|---|------|
| T1_SFN-SFN_TIME _0000000 | 0 ≤ SFN-SFN observed time difference type 1 < 1             | chip |
| T1_SFN-SFN_TIME _0000001 | 1 ≤ SFN-SFN observed time difference type 1 < 2             | chip |
| T1_SFN-SFN_TIME _0000002 | 2 ≤ SFN-SFN observed time difference type 1 < 3             | chip |
| ...                      | ...   | ...  |
| T1_SFN-SFN_TIME _3276797 | 3276797 ≤ SFN-SFN observed time difference type 1 < 3276798 | chip |
| T1_SFN-SFN_TIME _3276798 | 3276798 ≤ SFN-SFN observed time difference type 1 < 3276799 | chip |
| T1_SFN-SFN_TIME _3276799 | 3276799 ≤ SFN-SFN observed time difference type 1 < 3276800 | chip |

The reporting range for *SFN-SFN observed time difference type 2* is from -432 ... +432 chip.

In table 9.19A mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.19A

| Reported value         | Measured quantity value   | Unit |
|------------------------|---|------|
| T2_SFN-SFN_TIME _00000 | SFN-SFN observed time difference type 2 < -432,00000              | chip |
| T2_SFN-SFN_TIME _00001 | -432,00000 ≤ SFN-SFN observed time difference type 2 < -431,96875 | chip |
| T2_SFN-SFN_TIME _00002 | -431,96875 ≤ SFN-SFN observed time difference type 2 < -431,9375  | chip |
| ...                    | ...   | ...  |
| T2_SFN-SFN_TIME _27647 | 431,9375 ≤ SFN-SFN observed time difference type 2 < 431,96875    | chip |
| T2_SFN-SFN_TIME _27648 | 431,96875 ≤ SFN-SFN observed time difference type 2 < 432,00000   | chip |
| T2_SFN-SFN_TIME _27649 | 432,00000 ≤ SFN-SFN observed time difference type 2               | chip |

## 9.1.1.8.2.3 7.68 Mcps TDD option

The reporting range for *SFN-SFN observed time difference type 1* is from 0 ... 19660800 chip.

In table 9.18B mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.18B**

| Reported value           | Measured quantity value   | Unit |
|--------------------------|---|------|
| T1_SFN-SFN_TIME _0000000 | $0 \leq \text{SFN-SFN observed time difference type 1} < 2$               | Chip |
| T1_SFN-SFN_TIME _0000001 | $2 \leq \text{SFN-SFN observed time difference type 1} < 4$               | Chip |
| T1_SFN-SFN_TIME _0000002 | $4 \leq \text{SFN-SFN observed time difference type 1} < 6$               | Chip |
| ...                      | ...   | ...  |
| T1_SFN-SFN_TIME _9830397 | $19660794 \leq \text{SFN-SFN observed time difference type 1} < 19660796$ | Chip |
| T1_SFN-SFN_TIME _9830398 | $19660796 \leq \text{SFN-SFN observed time difference type 1} < 19660798$ | Chip |
| T1_SFN-SFN_TIME _9830399 | $19660798 \leq \text{SFN-SFN observed time difference type 1} < 19660800$ | Chip |

The reporting range for *SFN-SFN observed time difference type 2* is from -2560 ... +2560 chip.

In table 9.19B mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.19B**

| Reported value         | Measured quantity value  | Unit |
|------------------------|--|------|
| T2_SFN-SFN_TIME _00000 | $\text{SFN-SFN observed time difference type 2} < -2560,0000$                | Chip |
| T2_SFN-SFN_TIME _00001 | $-2560,0000 \leq \text{SFN-SFN observed time difference type 2} < -2559,875$ | Chip |
| T2_SFN-SFN_TIME _00002 | $-2559,875 \leq \text{SFN-SFN observed time difference type 2} < -2559,750$  | Chip |
| ...                    | ...  | ...  |
| T2_SFN-SFN_TIME _40959 | $2559,750 \leq \text{SFN-SFN observed time difference type 2} < 2559,875$    | Chip |
| T2_SFN-SFN_TIME _40960 | $2559,875 \leq \text{SFN-SFN observed time difference type 2} < 2560,0000$   | Chip |
| T2_SFN-SFN_TIME _40961 | $2560,0000 \leq \text{SFN-SFN observed time difference type 2}$              | Chip |

#### 9.1.1.9 Observed time difference to GSM cell

NOTE: This measurement is used to determine the system time difference between UTRAN and GSM cells.

The requirements in this section are valid for terminals supporting UTRA TDD and GSM.

The measurement period for CELL\_DCH state can be found in section 8.

##### 9.1.1.9.1 Accuracy requirements

**Table 9.20 Observed time difference to GSM cell accuracy**

| Parameter                            | Unit | Accuracy [chip] | Conditions |
|--------------------------------------|------|-----------------|------------|
| Observed time difference to GSM cell | chip | $\pm 20$        |            |

##### 9.1.1.9.2 Range/mapping

The reporting range for *Observed time difference to GSM cell* is from 0 ... 3060/13 ms.

In table 9.21 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.21**

| Reported value | Measured quantity value  | Unit |
|----------------|--|------|
| GSM_TIME _0000 | $0 \leq \text{Observed time difference to GSM cell} < 1 \times 3060 / (4096 \times 13)$                                      | ms   |
| GSM_TIME _0001 | $1 \times 3060 / (4096 \times 13) \leq \text{Observed time difference to GSM cell} < 2 \times 3060 / (4096 \times 13)$       | ms   |
| GSM_TIME _0002 | $2 \times 3060 / (4096 \times 13) \leq \text{Observed time difference to GSM cell} < 3 \times 3060 / (4096 \times 13)$       | ms   |
| GSM_TIME _0003 | $3 \times 3060 / (4096 \times 13) \leq \text{Observed time difference to GSM cell} < 4 \times 3060 / (4096 \times 13)$       | ms   |
| ...            | ...  | ...  |
| GSM_TIME _4093 | $4093 \times 3060 / (4096 \times 13) \leq \text{Observed time difference to GSM cell} < 4094 \times 3060 / (4096 \times 13)$ | ms   |
| GSM_TIME _4094 | $4094 \times 3060 / (4096 \times 13) \leq \text{Observed time difference to GSM cell} < 4095 \times 3060 / (4096 \times 13)$ | ms   |
| GSM_TIME _4095 | $4095 \times 3060 / (4096 \times 13) \leq \text{Observed time difference to GSM cell} < 3060 / 13$                           | ms   |

### 9.1.1.10 UE GPS Timing of Cell Frames for UP

#### 9.1.1.10.1 Accuracy requirement

##### 9.1.1.10.1.1 3.84 Mcps TDD Option

The requirements in this section are valid for terminals supporting this capability

The measurement period for CELL\_DCH state and CELL\_FACH state can be found in section 8.

**Table 9.22**

| Parameter                            | Unit | Accuracy [chip] | Conditions |
|--------------------------------------|------|-----------------|------------|
| UE GPS Timing of Cell Frames for LCS | chip | [ ]             |            |

##### 9.1.1.10.1.2 1.28 Mcps TDD Option

The requirements in this section are valid for terminals supporting this capability

The measurement period for CELL\_DCH state and CELL\_FACH state can be found in section 8.

**Table 9.22A**

| Parameter                            | Unit | Accuracy [chip] | Conditions |
|--------------------------------------|------|-----------------|------------|
| UE GPS Timing of Cell Frames for LCS | chip | [ ]             |            |

##### 9.1.1.10.1.3 7.68 Mcps TDD Option

The requirements in this section are valid for terminals supporting this capability

The measurement period for CELL\_DCH state and CELL\_FACH state can be found in section 8.

**Table 9.22B**

| Parameter                            | Unit | Accuracy [chip] | Conditions |
|--------------------------------------|------|-----------------|------------|
| UE GPS Timing of Cell Frames for LCS | chip | [ ]             |            |



## 9.1.1.10.2 UE GPS timing of Cell Frames for UP measurement report mapping

## 9.1.1.10.2.1 3.84 Mcps TDD Option

The reporting range for *UE GPS timing of Cell Frames for UP* is from 0 ... 2322432000000 chip.

In table 9.23 mapping of the measured quantity is defined.

Table 9.23

| Reported value          | Measured quantity value   | Unit |
|-------------------------|---|------|
| GPS_TIME_00000000000000 | UE GPS timing of Cell Frames for UP < 0,0625                                  | chip |
| GPS_TIME_00000000000001 | 0,0625 ≤ UE GPS timing of Cell Frames for UP < 0,1250                         | chip |
| GPS_TIME_00000000000002 | 0,1250 ≤ UE GPS timing of Cell Frames for UP < 0,1875                         | chip |
| ...                     | ...   | ...  |
| GPS_TIME_37158911999997 | 2322431999999,8125 ≤ UE GPS timing of Cell Frames for UP < 2322431999999,8750 | chip |
| GPS_TIME_37158911999998 | 2322431999999,8750 ≤ UE GPS timing of Cell Frames for UP < 2322431999999,9375 | chip |
| GPS_TIME_37158911999999 | 2322431999999,9375 ≤ UE GPS timing of Cell Frames for UP < 2322432000000,0000 | chip |

## 9.1.1.10.2.2 1.28 Mcps TDD Option

The reporting range for *UE GPS timing of Cell Frames for UP* is from 0 ... 774144000000 chip.

In table 9.23A mapping of the measured quantity is defined.

Table 9.23A

| Reported value          | Measured quantity value   | Unit |
|-------------------------|---|------|
| GPS_TIME_00000000000000 | UE GPS timing of Cell Frames for UP < 0,25                              | chip |
| GPS_TIME_00000000000001 | 0,25 ≤ UE GPS timing of Cell Frames for UP < 0,50                       | chip |
| GPS_TIME_00000000000002 | 0,50 ≤ UE GPS timing of Cell Frames for UP < 0,75                       | chip |
| ...                     | ...   | ...  |
| GPS_TIME_3096575999997  | 774143999999,25 ≤ UE GPS timing of Cell Frames for UP < 774143999999,50 | chip |
| GPS_TIME_3096575999998  | 774143999999,50 ≤ UE GPS timing of Cell Frames for UP < 774143999999,75 | chip |
| GPS_TIME_3096575999999  | 774143999999,75 ≤ UE GPS timing of Cell Frames for UP < 774144000000,00 | chip |

## 9.1.1.10.2.3 7.68 Mcps TDD Option

The reporting range for *UE GPS timing of Cell Frames for UP* is from 0 ... 4644864000000 chip.

In table 9.23B mapping of the measured quantity is defined.

Table 9.23B

| Reported value          | Measured quantity value  | Unit |
|-------------------------|--|------|
| GPS_TIME_00000000000000 | UE GPS timing of Cell Frames for UP < 0,125                                  | chip |
| GPS_TIME_00000000000001 | 0,125 ≤ UE GPS timing of Cell Frames for UP < 0,250                          | chip |
| GPS_TIME_00000000000002 | 0,250 ≤ UE GPS timing of Cell Frames for UP < 0,375                          | chip |
| ...                     | ...  | ...  |
| GPS_TIME_37158911999997 | 4644863999999,625 ≤ UE GPS timing of Cell Frames for UP < 4644863999999,750  | chip |
| GPS_TIME_37158911999998 | 4644863999999,750 ≤ UE GPS timing of Cell Frames for UP < 4644863999999,875  | chip |
| GPS_TIME_37158911999999 | 4644863999999,875 ≤ UE GPS timing of Cell Frames for UP < 4644864000000,0000 | chip |

### 9.1.1.11 SFN-CFN observed time difference

NOTE: This measurement is for handover timing purposes to identify active cell and neighbour cell time difference.

The measurement period is equal to the measurement period for UE P-CCPCH RSCP measurement. The measurement period for CELL\_DCH state can be found in section 8.

#### 9.1.1.11.1 Accuracy requirements

##### 9.1.1.11.1.1 3.84 Mcps TDD Option

The accuracy requirements in tables 9.24 are valid under the following conditions:

$P\text{-CCPCH\_RSCP}_{1,2} \geq -102\text{dBm}$ .

$$\left| P\text{-CCPCH\_RSCP1}_{in\ dBm} - P\text{-CCPCH\_RSCP2}_{in\ dBm} \right| \leq 20\text{dB}$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1.2.6

**Table 9.24 SFN-CFN observed time difference accuracy for a TDD neighbour cell**

| Parameter                        | Unit | Accuracy [chip] | Conditions        |
|----------------------------------|------|-----------------|-------------------|
|                                  |      |                 | Io [dBm/3.84 MHz] |
| SFN-CFN observed time difference | chip | +/-0,5          | -94...-50         |

The accuracy requirements in table 9.25 are valid under the following conditions:

$CPICH\_RSCP_{1,2} \geq -114\ \text{dBm}$ .

$$\left| CPICH\_RSCP1_{in\ dBm} - CPICH\_RSCP2_{in\ dBm} \right| \leq 20\text{dB}$$

The received signal levels on SCH and CPICH are according the requirements in paragraph 8.1.2.6.

**Table 9.25: SFN-CFN observed time difference accuracy for a FDD neighbour cell**

| Parameter                        | Unit | Accuracy [chip] | Conditions        |
|----------------------------------|------|-----------------|-------------------|
|                                  |      |                 | Io [dBm/3.84 MHz] |
| SFN-CFN observed time difference | chip | +/-1            | -94...-50         |

##### 9.1.1.11.1.2 1.28 Mcps TDD Option

The accuracy requirements in tables 9.25A are valid under the following conditions:

$P\text{-CCPCH\_RSCP}_{1,2} \geq -102\text{dBm}$ .

$$\left| P\text{-CCPCH\_RSCP1}_{in\ dBm} - P\text{-CCPCH\_RSCP2}_{in\ dBm} \right| \leq 20\text{dB}$$

$P\text{-CCPCH\_Ec/Io} \geq -8\ \text{dB}$

$DwPCH\_Ec/Io \geq -5\ \text{dB}$

**Table 9.25A SFN-CFN observed time difference accuracy for a TDD neighbour cell**

| Parameter                        | Unit | Accuracy [chip] | Conditions        |
|----------------------------------|------|-----------------|-------------------|
|                                  |      |                 | Io [dBm/1.28 MHz] |
| SFN-CFN observed time difference | chip | +/-0,5          | -94...-50         |

The accuracy requirements in table 9.25B are valid under the following conditions:

$CPICH\_RSCP_{1,2} \geq -114$  dBm.

$$\left| CPICH\_RSCP1 \Big|_{in\ dBm} - CPICH\_RSCP2 \Big|_{in\ dBm} \right| \leq 20dB$$

The received signal levels on SCH and CPICH are according the requirements in paragraph 8.1.2.6

**Table 9.25B SFN-CFN observed time difference accuracy for a FDD neighbour cell**

| Parameter                        | Unit | Accuracy [chip] | Conditions       |
|----------------------------------|------|-----------------|------------------|
|                                  |      |                 | Io [dBm/3.84MHz] |
| SFN-CFN observed time difference | chip | +/-1            | -94...-50        |

#### 9.1.1.11.1.3 7.68 Mcps TDD Option

The accuracy requirements in tables 9.25C are valid under the following conditions:

$P\text{-CCPCH\_RSCP}_{1,2} \geq -102$ dBm.

$$\left| P\text{-CCPCH\_RSCP1} \Big|_{in\ dBm} - P\text{-CCPCH\_RSCP2} \Big|_{in\ dBm} \right| \leq 20dB$$

The received signal levels on SCH and P-CCPCH are according the requirements in paragraph 8.1B.2.6

**Table 9.25C: SFN-CFN observed time difference accuracy for a TDD neighbour cell**

| Parameter                        | Unit | Accuracy [chip] | Conditions        |
|----------------------------------|------|-----------------|-------------------|
|                                  |      |                 | Io [dBm/7.68 MHz] |
| SFN-CFN observed time difference | chip | +/-1            | -94...-50         |

The accuracy requirements in table 9.25D are valid under the following conditions:

$CPICH\_RSCP_{1,2} \geq -114$  dBm.

$$\left| CPICH\_RSCP1 \Big|_{in\ dBm} - CPICH\_RSCP2 \Big|_{in\ dBm} \right| \leq 20dB$$

The received signal levels on SCH and CPICH are according the requirements in paragraph 8.1B.2.6.

**Table 9.25D: SFN-CFN observed time difference accuracy for a FDD neighbour cell**

| Parameter                        | Unit | Accuracy [chip] | Conditions        |
|----------------------------------|------|-----------------|-------------------|
|                                  |      |                 | Io [dBm/3.84 MHz] |
| SFN-CFN observed time difference | chip | +/-2            | -94...-50         |

#### 9.1.1.11.2 Range/mapping

The reporting range for SFN-CFN observed time difference for a TDD neighbour cell is from 0...256 frames.

In table 9.26 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.26: SFN-CFN observed time difference range/mapping for a TDD neighbour cell**

| Reported value   | Measured quantity value                                  | Unit  |
|------------------|--|-------|
| SFN-CFN_TIME_000 | $0 \leq \text{SFN-CFN observed time difference} < 1$     | frame |
| SFN-CFN_TIME_001 | $1 \leq \text{SFN-CFN observed time difference} < 2$     | frame |
| SFN-CFN_TIME_002 | $2 \leq \text{SFN-CFN observed time difference} < 3$     | frame |
| ...              | ...  | ...   |
| SFN-CFN_TIME_253 | $253 \leq \text{SFN-CFN observed time difference} < 254$ | frame |
| SFN-CFN_TIME_254 | $254 \leq \text{SFN-CFN observed time difference} < 255$ | frame |
| SFN-CFN_TIME_255 | $255 \leq \text{SFN-CFN observed time difference} < 256$ | frame |

The reporting range for *SFN-CFN observed time difference* for a FDD neighbour cell is from 0 ... 9830400 chip.

In table 9.27 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.27: SFN-CFN observed time difference range/mapping for a FDD neighbour cell**

| Reported value       | Measured quantity value  | Unit |
|----------------------|--|------|
| SFN-CFN_TIME_0000000 | $0 \leq \text{SFN-CFN observed time difference} < 1$             | chip |
| SFN-CFN_TIME_0000001 | $1 \leq \text{SFN-CFN observed time difference} < 2$             | chip |
| SFN-CFN_TIME_0000002 | $2 \leq \text{SFN-CFN observed time difference} < 3$             | chip |
| ...                  | ...  | ...  |
| SFN-CFN_TIME_9830397 | $9830397 \leq \text{SFN-CFN observed time difference} < 9830398$ | chip |
| SFN-CFN_TIME_9830398 | $9830398 \leq \text{SFN-CFN observed time difference} < 9830399$ | chip |
| SFN-CFN_TIME_9830399 | $9830399 \leq \text{SFN-CFN observed time difference} < 9830400$ | chip |

## 9.1.2 Performance for UE Measurements in Uplink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off  $\alpha = 0,22$  and a bandwidth equal to the chip rate.

### 9.1.2.1 UE transmitted power

The measurement period for CELL\_DCH state and CELL\_FACH state is 1 slot.

#### 9.1.2.1.1 Absolute accuracy requirements

**Table 9.28 UE transmitted power absolute accuracy**

| Parameter  | Unit | Accuracy [dB] |              |
|--|------|---------------|--------------|
|  |      | PUEMAX 24dBm  | PUEMAX 21dBm |
| UE transmitted power $\geq$ PUEMAX               | dBm  | +1/-3         | $\pm 2$      |
| PUEMAX > UE transmitted power $\geq$ PUEMAX-1    | dBm  | +1,5/-3,5     | $\pm 2,5$    |
| PUEMAX-1 > UE transmitted power $\geq$ PUEMAX-2  | dBm  | +2/-4         | $\pm 3$      |
| PUEMAX-2 > UE transmitted power $\geq$ PUEMAX-3  | dBm  | +2,5/-4,5     | $\pm 3,5$    |
| PUEMAX-3 > UE transmitted power $\geq$ PUEMAX-10 | dBm  | +3/-5         | $\pm 4$      |

NOTE 1: User equipment maximum output power, PUEMAX, is the maximum output power level without tolerance defined for the power class of the UE in 3GPP TS 25.102 "UTRA (UE) TDD; Radio Transmission and Reception".

NOTE 2: UE transmitted power is the reported value.

#### 9.1.2.1.2 Range/mapping

The reporting range for *UE transmitted power* is from -50 ...+34 dBm.

In table 9.29 mapping of the measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

**Table 9.29**

| Reported value  | Measured quantity value          | Unit |
|-----------------|----------------------------------|------|
| UE_TX_POWER_021 | -50 ≤ UE transmitted power < -49 | dBm  |
| UE_TX_POWER_022 | -49 ≤ UE transmitted power < -48 | dBm  |
| UE_TX_POWER_023 | -48 ≤ UE transmitted power < -47 | dBm  |
| ...             | ...                              | ...  |
| UE_TX_POWER_102 | 31 ≤ UE transmitted power < 32   | dBm  |
| UE_TX_POWER_103 | 32 ≤ UE transmitted power < 33   | dBm  |
| UE_TX_POWER_104 | 33 ≤ UE transmitted power < 34   | dBm  |

#### 9.1.2.2 Timing Advance (T<sub>ADV</sub>) for 1.28 Mcps TDD

This measurement refers to TS25.225 subsection 5.1.14.

##### 9.1.2.2.1 Accuracy requirements

**Table 9.28A**

| Parameter      | Unit | Accuracy [chip] | Conditions       |
|----------------|------|-----------------|------------------|
|                |      |                 | Range [chips]    |
| Timing Advance | chip | +/- 0.125       | 0, ..., 1023.875 |

##### 9.1.2.2.2 Range/mapping

The reporting range for *Timing Advance* is from 0 ... 1023.875 chips.

In table 9.29A the mapping of the measured quantity is defined. The signalling range may be larger than the guaranteed accuracy range.

**Table 9.29A**

| Reported value      | Measured quantity value             | Unit |
|---------------------|-------------------------------------|------|
| TIMING_ADVANCE_0000 | Timing Advance < 0.125              | Chip |
| TIMING_ADVANCE_0001 | 0.125 ≤ Timing Advance < 0.25       | Chip |
| ...                 | ...                                 | ...  |
| TIMING_ADVANCE_1023 | 127.875 ≤ Timing Advance < 128      | Chip |
| ...                 | ...                                 | ...  |
| TIMING_ADVANCE_8189 | 1023.625 ≤ Timing Advance < 1023.75 | Chip |
| TIMING_ADVANCE_8190 | 1023.75 ≤ Timing Advance < 1023.875 | Chip |
| TIMING_ADVANCE_8191 | 1023.875 ≤ Timing Advance           | Chip |

NOTE: This measurement can be used for timing advance (synchronisation shift) calculation for uplink synchronisation or location services.

### 9.1.2.3 UE transmission power headroom

#### 9.1.2.3.1 3.84Mcps TDD Option

<Void>

#### 9.1.2.3.2 1.28 Mcps TDD Option

This measurement refers to TS25.225 subsection 5.1.16.

##### 9.1.2.3.2.1 Delay requirement

The UE transmission power headroom measurement reporting delay is defined as the time between the end of the UE transmission power headroom measurement period and the time when the UE starts transmitting the measurement report over the Uu interface. The reporting delay of the UE transmission power headroom measurement result shall be not more than 10ms, which is applicable for all configured triggering mechanisms for UE transmission power headroom measurement.

##### 9.1.2.3.1.2 Measurement period requirement

The reported UE transmission power headroom measurement result shall be an estimate of the average value of the UE transmission power headroom over a 100ms period.

##### 9.1.2.3.1.3 UE transmission power headroom measurement report mapping

The UE transmission power headroom reporting range is from -12 ...+48 dB. Table 9.28B defines the mapping

Table 9.28B

| Reported value       | Measured quantity value | Unit |
|----------------------|-------------------------|------|
| UE_POWER_HEADROOM_0  | $UPH < -12$             | dB   |
| UE_POWER_HEADROOM_1  | $-12 \leq UPH < -8$     | dB   |
| UE_POWER_HEADROOM_2  | $-8 \leq UPH < -4$      | dB   |
| UE_POWER_HEADROOM_3  | $-4 \leq UPH < 0$       | dB   |
| UE_POWER_HEADROOM_4  | $0 \leq UPH < 2$        | dB   |
| UE_POWER_HEADROOM_5  | $2 \leq UPH < 4$        | dB   |
| UE_POWER_HEADROOM_6  | $4 \leq UPH < 6$        | dB   |
| UE_POWER_HEADROOM_7  | $6 \leq UPH < 7$        | dB   |
| UE_POWER_HEADROOM_8  | $7 \leq UPH < 8$        | dB   |
| UE_POWER_HEADROOM_9  | $8 \leq UPH < 9$        | dB   |
| UE_POWER_HEADROOM_10 | $9 \leq UPH < 10$       | dB   |
| UE_POWER_HEADROOM_11 | $10 \leq UPH < 11$      | dB   |
| UE_POWER_HEADROOM_12 | $11 \leq UPH < 12$      | dB   |
| UE_POWER_HEADROOM_13 | $12 \leq UPH < 13$      | dB   |
| UE_POWER_HEADROOM_14 | $13 \leq UPH < 14$      | dB   |
| UE_POWER_HEADROOM_15 | $14 \leq UPH < 15$      | dB   |
| UE_POWER_HEADROOM_16 | $15 \leq UPH < 16$      | dB   |
| UE_POWER_HEADROOM_17 | $16 \leq UPH < 17$      | dB   |
| UE_POWER_HEADROOM_18 | $17 \leq UPH < 18$      | dB   |
| UE_POWER_HEADROOM_19 | $18 \leq UPH < 19$      | dB   |
| UE_POWER_HEADROOM_20 | $19 \leq UPH < 20$      | dB   |
| UE_POWER_HEADROOM_21 | $20 \leq UPH < 21$      | dB   |
| UE_POWER_HEADROOM_22 | $21 \leq UPH < 23$      | dB   |
| UE_POWER_HEADROOM_23 | $23 \leq UPH < 24$      | dB   |
| UE_POWER_HEADROOM_24 | $24 \leq UPH < 25$      | dB   |
| UE_POWER_HEADROOM_25 | $25 \leq UPH < 26$      | dB   |
| UE_POWER_HEADROOM_26 | $26 \leq UPH < 28$      | dB   |
| UE_POWER_HEADROOM_27 | $28 \leq UPH < 30$      | dB   |
| UE_POWER_HEADROOM_28 | $30 \leq UPH < 33$      | dB   |
| UE_POWER_HEADROOM_29 | $33 \leq UPH < 38$      | dB   |
| UE_POWER_HEADROOM_30 | $38 \leq UPH < 48$      | dB   |
| UE_POWER_HEADROOM_31 | $48 \leq UPH$           | dB   |

#### 9.1.2.3.1.4 UE transmission power headroom measurement report accuracy

The accuracy requirements for UE transmission power headroom depends on the total power transmitted by the UE. Table 9.29B defines the accuracy of the measured quantity.

Table 9.29B

| Total UE putput power value (dBm)   | UPH reporting Accuracy [dB]* |              |
|---|------------------------------|--------------|
|   | PUEMAX 24dBm                 | PUEMAX 21dBm |
| Total output power $\geq$ PUEMAX  | +1/-3                        | $\pm 2$      |
| PUEMAX-1 $\leq$ Total output power < PUEMAX   | +1,5/-3,5                    | $\pm 2,5$    |
| PUEMAX-2 $\leq$ Total output power < PUEMAX-1   | +2/-4                        | $\pm 3$      |
| PUEMAX-3 $\leq$ Total output power < PUEMAX-2   | +2,5/-4,5                    | $\pm 3,5$    |
| PUEMAX-10 $\leq$ Total output power < PUEMAX-3  | +3/-5                        | $\pm 4$      |
| *Note: UPH reporting accuracy is the difference between the UPH reported by the UE and the actual uplink power headroom     |                              |              |
| **Note: PUEMAX, is the maximum output power level without tolerance defined for the power class of the UE in 3GPP TS 25.102 |                              |              |

## 9.2 Measurements Performance for UTRAN

### 9.2.1 Performance for UTRAN Measurements in Uplink (RX)

#### 9.2.1.1 RSCP

The measurement period shall be 100 ms.

##### 9.2.1.1.1 Absolute accuracy requirements

##### 9.2.1.1.1.1 3.84 Mcps TDD Option

Table 9.30: RSCP absolute accuracy for Wide Area BS

| Parameter | Unit | Accuracy [dB]     |                    | Conditions        |
|-----------|------|-------------------|--------------------|-------------------|
|           |      | Normal conditions | Extreme conditions | Io [dBm/3.84 MHz] |
| RSCP      | dBm  | $\pm 6$           | $\pm 9$            | -105..-74         |

Table 9.30A: RSCP absolute accuracy for Local Area BS

| Parameter | Unit | Accuracy [dB]     |                    | Conditions        |
|-----------|------|-------------------|--------------------|-------------------|
|           |      | Normal conditions | Extreme conditions | Io [dBm/3.84 MHz] |
| RSCP      | dBm  | $\pm 6$           | $\pm 9$            | -91..-60          |

##### 9.2.1.1.1.2 1.28 Mcps TDD Option

Table 9.30B: RSCP absolute accuracy for Wide Area BS

| Parameter | Unit | Accuracy [dB]     |                    | Conditions        |
|-----------|------|-------------------|--------------------|-------------------|
|           |      | Normal conditions | Extreme conditions | Io [dBm/1.28 MHz] |
| RSCP      | dBm  | $\pm 6$           | $\pm 9$            | -105..-74         |



**Table 9.30C: RSCP absolute accuracy for Local Area BS**

| Parameter | Unit | Accuracy [dB]     |                    | Conditions        |
|-----------|------|-------------------|--------------------|-------------------|
|           |      | Normal conditions | Extreme conditions | Io [dBm/1.28 MHz] |
| RSCP      | dBm  | ± 6               | ± 9                | -91..-60          |

## 9.2.1.1.1.3 7.68 Mcps TDD Option

**Table 9.30D: RSCP absolute accuracy for Wide Area BS**

| Parameter | Unit | Accuracy [dB]     |                    | Conditions        |
|-----------|------|-------------------|--------------------|-------------------|
|           |      | Normal conditions | Extreme conditions | Io [dBm/7.68 MHz] |
| RSCP      | dBm  | ± 6               | ± 9                | -105..-74         |

**Table 9.30E: RSCP absolute accuracy for Local Area BS**

| Parameter | Unit | Accuracy [dB]     |                    | Conditions        |
|-----------|------|-------------------|--------------------|-------------------|
|           |      | Normal conditions | Extreme conditions | Io [dBm/7.68 MHz] |
| RSCP      | dBm  | ± 6               | ± 9                | -91..-60          |

## 9.2.1.1.2 Relative accuracy requirements

The relative accuracy of RSCP in inter frequency case is defined as the RSCP measured from one UE compared to the RSCP measured from another UE.

## 9.2.1.1.2.1 3.84 Mcps TDD Option

**Table 9.31: RSCP relative accuracy for Wide Area BS**

| Parameter | Unit | Accuracy [dB]           | Conditions        |
|-----------|------|-------------------------|-------------------|
|           |      |                         | Io [dBm/3.84 MHz] |
| RSCP      | dBm  | ± 3 for intra-frequency | -105..-74         |

**Table 9.31A: RSCP relative accuracy for Local Area BS**

| Parameter | Unit | Accuracy [dB]           | Conditions       |
|-----------|------|-------------------------|------------------|
|           |      |                         | Io [dBm/3.84MHz] |
| RSCP      | dBm  | ± 3 for intra-frequency | -91..-60         |

## 9.2.1.1.2.2 1.28 Mcps TDD Option

**Table 9.31B: RSCP relative accuracy for Wide Area BS**

| Parameter | Unit | Accuracy [dB]           | Conditions       |
|-----------|------|-------------------------|------------------|
|           |      |                         | Io [dBm/1.28MHz] |
| RSCP      | dBm  | ± 3 for intra-frequency | -105..-74        |

**Table 9.31C: RSCP relative accuracy for Local Area BS**

| Parameter | Unit | Accuracy [dB]           | Conditions       |
|-----------|------|-------------------------|------------------|
|           |      |                         | Io [dBm/1.28MHz] |
| RSCP      | dBm  | ± 3 for intra-frequency | -91..-60         |

## 9.2.1.1.2.3 7.68 Mcps TDD Option

**Table 9.31D: RSCP relative accuracy for Wide Area BS**

| Parameter | Unit | Accuracy [dB]           | Conditions        |
|-----------|------|-------------------------|-------------------|
|           |      |                         | Io [dBm/7.68 MHz] |
| RSCP      | dBm  | ± 3 for intra-frequency | -105..-74         |

**Table 9.31E: RSCP relative accuracy for Local Area BS**

| Parameter | Unit | Accuracy [dB]           | Conditions       |
|-----------|------|-------------------------|------------------|
|           |      |                         | Io [dBm/7.68MHz] |
| RSCP      | dBm  | ± 3 for intra-frequency | -91..-60         |

## 9.2.1.1.3 Range/mapping

The reporting range for *RSCP* is from -120 ...-57 dBm.

In table 9.32 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.32**

| Reported value | Measured quantity value | Unit |
|----------------|-------------------------|------|
| RSCP_LEV_00    | RSCP < -120,0           | dBm  |
| RSCP_LEV_01    | -120,0 ≤ RSCP < -119,5  | dBm  |
| RSCP_LEV_02    | -119,5 ≤ RSCP < -119,0  | dBm  |
| ...            | ...                     | ...  |
| RSCP_LEV_125   | -58,0 ≤ RSCP < -57,5    | dBm  |
| RSCP_LEV_126   | -57,5 ≤ RSCP < -57,0    | dBm  |
| RSCP_LEV_127   | -57,0 ≤ RSCP            | dBm  |

## 9.2.1.2 Timeslot ISCP

The measurement period shall be 100 ms.

## 9.2.1.2.1 Absolute accuracy requirements

## 9.2.1.2.1.1 3.84 Mcps TDD Option

**Table 9.33: Timeslot ISCP Intra frequency absolute accuracy for Wide Area BS**

| Parameter     | Unit | Accuracy [dB]     |                    | Conditions        |
|---------------|------|-------------------|--------------------|-------------------|
|               |      | Normal conditions | Extreme conditions | Io [dBm/3.84 MHz] |
| Timeslot ISCP | dBm  | ± 6               | ± 9                | -105..-74         |

**Table 9.33A: Timeslot ISCP Intra frequency absolute accuracy for Local Area BS**

| Parameter     | Unit | Accuracy [dB]     |                    | Conditions        |
|---------------|------|-------------------|--------------------|-------------------|
|               |      | Normal conditions | Extreme conditions | Io [dBm/3.84 MHz] |
| Timeslot ISCP | dBm  | ± 6               | ± 9                | -91..-60          |

## 9.2.1.2.1.2 1.28 Mcps TDD Option

**Table 9.33B: Timeslot ISCP Intra frequency absolute accuracy for Wide Area BS**

| Parameter     | Unit | Accuracy [dB]     |                    | Conditions        |
|---------------|------|-------------------|--------------------|-------------------|
|               |      | Normal conditions | Extreme conditions | Io [dBm/1.28 MHz] |
| Timeslot ISCP | dBm  | ± 6               | ± 9                | -105..-74         |

**Table 9.33C: Timeslot ISCP Intra frequency absolute accuracy for Local Area BS**

| Parameter     | Unit | Accuracy [dB]     |                    | Conditions        |
|---------------|------|-------------------|--------------------|-------------------|
|               |      | Normal conditions | Extreme conditions | Io [dBm/1.28 MHz] |
| Timeslot ISCP | dBm  | ± 6               | ± 9                | -91..-60          |

## 9.2.1.2.1.3 7.68 Mcps TDD Option

**Table 9.33D: Timeslot ISCP Intra frequency absolute accuracy for Wide Area BS**

| Parameter     | Unit | Accuracy [dB]     |                    | Conditions        |
|---------------|------|-------------------|--------------------|-------------------|
|               |      | Normal conditions | Extreme conditions | Io [dBm/7.68 MHz] |
| Timeslot ISCP | dBm  | ± 6               | ± 9                | -105..-74         |

**Table 9.33E: Timeslot ISCP Intra frequency absolute accuracy for Local Area BS**

| Parameter     | Unit | Accuracy [dB]     |                    | Conditions        |
|---------------|------|-------------------|--------------------|-------------------|
|               |      | Normal conditions | Extreme conditions | Io [dBm/7.68 MHz] |
| Timeslot ISCP | dBm  | ± 6               | ± 9                | -91..-60          |

## 9.2.1.2.2 Range/mapping

The reporting range for *Timeslot ISCP* is from -120...-57 dBm.

In table 9.34 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.34**

| Reported value        | Measured quantity value         | Unit |
|-----------------------|---------------------------------|------|
| UTRAN_TS_ISCP_LEV_00  | Timeslot_ISCP < -120,0          | dBm  |
| UTRAN_TS_ISCP_LEV_01  | -120,0 ≤ Timeslot_ISCP < -119,5 | dBm  |
| UTRAN_TS_ISCP_LEV_02  | -119,5 ≤ Timeslot_ISCP < -119,0 | dBm  |
| ...                   | ...                             | ...  |
| UTRAN_TS_ISCP_LEV_125 | -58,0 ≤ Timeslot_ISCP < -57,5   | dBm  |
| UTRAN_TS_ISCP_LEV_126 | -57,5 ≤ Timeslot_ISCP < -57,0   | dBm  |
| UTRAN_TS_ISCP_LEV_127 | -57,0 ≤ Timeslot_ISCP           | dBm  |

## 9.2.1.3 Received Total Wide Band Power

The measurement period shall be 100 ms.

## 9.2.1.3.1 Absolute accuracy requirements

## 9.2.1.3.1.1 3.84 Mcps TDD Option

**Table 9.35: RECEIVED TOTAL WIDE BAND POWER** Intra frequency absolute accuracy for Wide Area BS

| Parameter | Unit        | Accuracy [dB] | Conditions         |
|-----------|-------------|---------------|--------------------|
|           |             |               | lob [dBm/3.84 MHz] |
| lob       | dBm/3.84MHz | $\pm 4$       | -105..-74          |

**Table 9.35A: RECEIVED TOTAL WIDE BAND POWER** Intra frequency absolute accuracy for Local Area BS

| Parameter | Unit        | Accuracy [dB] | Conditions        |
|-----------|-------------|---------------|-------------------|
|           |             |               | lob [dBm/3.84MHz] |
| lob       | dBm/3.84MHz | $\pm 4$       | -91..-60          |

## 9.2.1.3.1.2 1.28 Mcps TDD Option

**Table 9.35B: RECEIVED TOTAL WIDE BAND POWER** Intra frequency absolute accuracy for Wide Area BS

| Parameter | Unit        | Accuracy [dB] | Conditions        |
|-----------|-------------|---------------|-------------------|
|           |             |               | lob [dBm/1.28MHz] |
| lob       | dBm/1.28MHz | $\pm 4$       | -105..-74         |

**Table 9.35C: RECEIVED TOTAL WIDE BAND POWER** Intra frequency absolute accuracy for Local Area BS

| Parameter | Unit        | Accuracy [dB] | Conditions        |
|-----------|-------------|---------------|-------------------|
|           |             |               | lob [dBm/1.28MHz] |
| lob       | dBm/1.28MHz | $\pm 4$       | -91..-60          |

## 9.2.1.3.1.3 7.68 Mcps TDD Option

**Table 9.35D: RECEIVED TOTAL WIDE BAND POWER** Intra frequency absolute accuracy for Wide Area BS

| Parameter | Unit        | Accuracy [dB] | Conditions         |
|-----------|-------------|---------------|--------------------|
|           |             |               | lob [dBm/7.68 MHz] |
| lob       | dBm/7.68MHz | $\pm 4$       | -105..-74          |

**Table 9.35E: RECEIVED TOTAL WIDE BAND POWER** Intra frequency absolute accuracy for Local Area BS

| Parameter | Unit        | Accuracy [dB] | Conditions        |
|-----------|-------------|---------------|-------------------|
|           |             |               | lob [dBm/7.68MHz] |
| lob       | dBm/7.68MHz | $\pm 4$       | -91..-60          |

## 9.2.1.3.2 Range/mapping

The reporting range for *RECEIVED TOTAL WIDE BAND POWER* is from -112 ... -50 dBm.

In table 9.36 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.36

| Reported value                         | Measured quantity value                          | Unit |
|--|--|------|
| RECEIVED TOTAL WIDE BAND POWER_LEV_000 | RECEIVED TOTAL WIDE BAND POWER < -112,0          | dBm  |
| RECEIVED TOTAL WIDE BAND POWER_LEV_001 | -112,0 ≤ RECEIVED TOTAL WIDE BAND POWER < -111,9 | dBm  |
| RECEIVED TOTAL WIDE BAND POWER_LEV_002 | -111,9 ≤ RECEIVED TOTAL WIDE BAND POWER < -111,8 | dBm  |
| ...                                    | ...  | ...  |
| RECEIVED TOTAL WIDE BAND POWER_LEV_619 | -50,2 ≤ RECEIVED TOTAL WIDE BAND POWER < -50,1   | dBm  |
| RECEIVED TOTAL WIDE BAND POWER_LEV_620 | -50,1 ≤ RECEIVED TOTAL WIDE BAND POWER < -50,0   | dBm  |
| RECEIVED TOTAL WIDE BAND POWER_LEV_621 | -50,0 ≤ RECEIVED TOTAL WIDE BAND POWER           | dBm  |

### 9.2.1.4 SIR

The measurement period shall be 80 ms.

#### 9.2.1.4.1 Absolute accuracy requirements

##### 9.2.1.4.1.1 3.84 Mcps TDD Option

Table 9.37: SIR Intra frequency absolute accuracy

| Parameter | Unit | Accuracy [dB] | Conditions                                  |
|-----------|------|---------------|---|
|           |      |               | Range                                       |
| SIR       | dB   | ± 3           | For 0<SIR<20 dB when l0b > -105 dBm/3.84MHz |
| SIR       | dB   | +/- (3 - SIR) | For -7<SIR<0 dB when l0b > -105 dBm/3.84MHz |

##### 9.2.1.4.1.2 1.28 Mcps TDD Option

Table 9.37A: SIR Intra frequency absolute accuracy

| Parameter | Unit | Accuracy [dB] | Conditions                                  |
|-----------|------|---------------|---|
|           |      |               | Range                                       |
| SIR       | dB   | ± 3           | For 0<SIR<20 dB when l0b > -105 dBm/1.28MHz |
| SIR       | dB   | +/- (3 - SIR) | For -7<SIR<0 dB when l0b > -105 dBm/1.28MHz |

##### 9.2.1.4.1.3 7.68 Mcps TDD Option

Table 9.37B: SIR Intra frequency absolute accuracy

| Parameter | Unit | Accuracy [dB] | Conditions                                  |
|-----------|------|---------------|---|
|           |      |               | Range                                       |
| SIR       | dB   | ± 3           | For 0<SIR<20 dB when l0b > -105 dBm/7.68MHz |
| SIR       | dB   | +/- (3 - SIR) | For -7<SIR<0 dB when l0b > -105 dBm/7.68MHz |

#### 9.2.1.4.2 Range/mapping

The reporting range for *SIR* is from -11 ... 20 dB.

In table 9.38 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.38**

| Reported value | Measured quantity value  | Unit |
|----------------|--------------------------|------|
| UTRAN_SIR_00   | $SIR < -11,0$            | dB   |
| UTRAN_SIR_01   | $-11,0 \leq SIR < -10,5$ | dB   |
| UTRAN_SIR_02   | $-10,5 \leq SIR < -10,0$ | dB   |
| ...            | ...                      | ...  |
| UTRAN_SIR_61   | $19,0 \leq SIR < 19,5$   | dB   |
| UTRAN_SIR_62   | $19,5 \leq SIR < 20,0$   | dB   |
| UTRAN_SIR_63   | $20,0 \leq SIR$          | dB   |

### 9.2.1.5 Transport Channel BER

The measurement period shall be equal to the TTI of the transport channel. Each reported Transport channel BER measurement shall be an estimate of the BER averaged over one measurement period only.

#### 9.2.1.5.1 Accuracy requirement

The average of consecutive Transport channel BER measurements is required to fulfil the accuracy stated in table 9.39 if the total number of erroneous bits during these measurements is at least 500 and the absolute BER value for each of the measurements is within the range given in table 9.39.

**Table 9.39: Transport channel BER accuracy**

| Parameter | Unit | Accuracy [% of the absolute BER value] | Conditions   |
|-----------|------|--|--|
|           |      |  | Range  |
| TrpBER    | -    | +/- 10                                 | Convolutional coding 1/3 <sup>rd</sup> with any amount of repetition or a maximum of 25% puncturing:<br>for absolute BER value $\leq 15\%$<br>Convolutional coding 1/2 with any amount of repetition or no puncturing:<br>for absolute BER value $\leq 15\%$<br>Turbo coding 1/3 <sup>rd</sup> with any amount of repetition or a maximum of 20% puncturing:<br>for absolute BER value $\leq 15\%$ . |

#### 9.2.1.5.2 Range/mapping

The *Transport channel BER* reporting range is from 0 to 1.

In table 9.40 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.40**

| Reported value   | Measured quantity value   | Unit |
|------------------|---|------|
| TrCh_BER_LOG_000 | Transport channel BER = 0   | -    |
| TrCh_BER_LOG_001 | $-\infty < \text{Log}_{10}(\text{Transport channel BER}) < -2,06375$      | -    |
| TrCh_BER_LOG_002 | $-2,06375 \leq \text{Log}_{10}(\text{Transport channel BER}) < -2,055625$ | -    |
| TrCh_BER_LOG_003 | $-2,055625 \leq \text{Log}_{10}(\text{Transport channel BER}) < -2,0475$  | -    |
| ...              | ...   | ...  |
| TrCh_BER_LOG_253 | $-0,024375 \leq \text{Log}_{10}(\text{Transport channel BER}) < -0,01625$ | -    |
| TrCh_BER_LOG_254 | $-0,01625 \leq \text{Log}_{10}(\text{Transport channel BER}) < -0,008125$ | -    |
| TrCh_BER_LOG_255 | $-0,008125 \leq \text{Log}_{10}(\text{Transport channel BER}) \leq 0$     | -    |

### 9.2.1.6 RX Timing Deviation

The measurement period shall be 100 ms.

#### 9.2.1.6.1 Accuracy requirements

##### 9.2.1.6.1.1 3.84 Mcps TDD option

**Table 9.41: RX Timing Deviation accuracy**

| Parameter           | Unit | Accuracy [chip] | Conditions       |
|---------------------|------|-----------------|------------------|
|                     |      |                 | Range [chips]    |
| RX Timing Deviation | chip | +/- 0,5         | -1024, ..., 1024 |

##### 9.2.1.6.1.2 1.28 Mcps TDD option

**Table 9.41A: RX Timing Deviation accuracy**

| Parameter           | Unit | Accuracy [chip] | Conditions     |
|---------------------|------|-----------------|----------------|
|                     |      |                 | Range [chips]  |
| RX Timing Deviation | chip | +/- 0.125       | -16, ....., 16 |

##### 9.2.1.6.1.3 7.68 Mcps TDD option

**Table 9.41B: RX Timing Deviation accuracy**

| Parameter           | Unit | Accuracy [chip] | Conditions       |
|---------------------|------|-----------------|------------------|
|                     |      |                 | Range [chips]    |
| RX Timing Deviation | chip | +/- 1.0         | -2048, ..., 2048 |

### 9.2.1.6.2 Range/mapping

#### 9.2.1.6.2.1 3.84 Mcps TDD option

The reporting range for *RX Timing Deviation* is from -1023,9375 ... 1023,9375 chips.

In table 9.42 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.42**

| Reported value    | Measured quantity value                      | Unit |
|-------------------|--|------|
| RX_TIME_DEV_0000  | RX Timing Deviation < -1023,9375             | chip |
| RX_TIME_DEV_0001  | -1023,9375 ≤ RX Timing Deviation < 1023,875  | chip |
| RX_TIME_DEV_0002  | -1023,875 ≤ RX Timing Deviation < -1023,8125 | chip |
| ...               | ...  | ...  |
| RX_TIME_DEV_16384 | 000,00 ≤ RX Timing Deviation < 0,0625        | chip |
| ...               | ...  | ...  |
| RX_TIME_DEV_32765 | 1023,8125 ≤ RX Timing Deviation < 1023,875   | chip |
| RX_TIME_DEV_32766 | 1023,875 ≤ RX Timing Deviation < 1023,9375   | chip |
| RX_TIME_DEV_32767 | 1023,9375 ≤ RX Timing Deviation              | chip |

NOTE: This measurement may be used for timing advance calculation or location services.

#### 9.2.1.6.2.2 1.28 Mcps TDD option

The reporting range for *RX Timing Deviation* is from -16 .... 16 chips.

In table 9.42A mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.42A**

| Reported value  | Measured quantity value                  | Unit |
|-----------------|--|------|
| RX_TIME_DEV_000 | RX Timing Deviation < -15,9375           | Chip |
| RX_TIME_DEV_001 | -15,9375 ≤ RX Timing Deviation < -15,875 | Chip |
| RX_TIME_DEV_002 | -15,875 ≤ RX Timing Deviation < -15,8125 | Chip |
| ...             | ...                                      | ...  |
| RX_TIME_DEV_509 | 15,8125 ≤ RX Timing Deviation < 15,875   | Chip |
| RX_TIME_DEV_510 | 15,875 ≤ RX Timing Deviation < 15,9375   | Chip |
| RX_TIME_DEV_511 | 15,9375 ≤ RX Timing Deviation            | Chip |

NOTE: This measurement can be used for timing advance (synchronisation shift) calculation for uplink synchronisation or location services.

#### 9.2.1.6.2.3 7.68 Mcps TDD option

The reporting range for *RX Timing Deviation* is from -2047,9375 ... 2047,9375 chips.

In Table 9.42B mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.42B**

| Reported value    | Measured quantity value                      | Unit |
|-------------------|--|------|
| RX_TIME_DEV_0000  | RX Timing Deviation < -2047,9375             | chip |
| RX_TIME_DEV_0001  | -2047,9375 ≤ RX Timing Deviation < -2047,875 | chip |
| RX_TIME_DEV_0002  | -2047,875 ≤ RX Timing Deviation < -2047,8125 | chip |
| ...               | ...  | ...  |
| RX_TIME_DEV_32768 | 000,00 ≤ RX Timing Deviation < 0,0625        | chip |
| ...               | ...  | ...  |
| RX_TIME_DEV_65533 | 2047,8125 ≤ RX Timing Deviation < 2047,875   | chip |
| RX_TIME_DEV_65534 | 2047,875 ≤ RX Timing Deviation < 2047,9375   | chip |
| RX_TIME_DEV_65535 | 2047,9375 ≤ RX Timing Deviation              | chip |

NOTE: This measurement may be used for timing advance calculation or location services.

#### 9.2.1.7 (void)

#### 9.2.1.8 (void)

#### 9.2.1.9 UTRAN GPS Timing of Cell Frames for UP

NOTE: This measurement is used for UP purposes.

The measurement period shall be [1] second.

##### 9.2.1.9.1 Accuracy requirement

##### 9.2.1.9.1.1 3.84 Mcps TDD Option

Three accuracy classes are defined for the UTRAN GPS Timing of Cell Frames for UP measurement, i.e. accuracy class A, B and C. The implemented accuracy class depends on the UP methods that are supported.



**Table 9.43**

| Parameter                              | Unit | Accuracy [chip]   | Conditions          |
|--|------|---|---------------------|
| UTRAN GPS timing of Cell Frames for UP | chip | Accuracy Class A: +/- [20000] chip<br>Accuracy Class B: +/- [20] chip<br>Accuracy Class C: +/- [X] chip | Over the full range |

## 9.2.1.9.1.2 1.28 Mcps TDD Option

Three accuracy classes are defined for the UTRAN GPS Timing of Cell Frames for UP measurement, i.e. accuracy class A, B and C. The implemented accuracy class depends on the UP methods that are supported.

**Table 9.43A**

| Parameter                              | Unit | Accuracy [chip]   | Conditions          |
|--|------|---|---------------------|
| UTRAN GPS timing of Cell Frames for UP | chip | Accuracy Class A: +/- [5000] chip<br>Accuracy Class B: +/- [5] chip<br>Accuracy Class C: +/- [X] chip | Over the full range |

## 9.2.1.9.1.3 7.68 Mcps TDD Option

Three accuracy classes are defined for the UTRAN GPS Timing of Cell Frames for UP measurement, i.e. accuracy class A, B and C. The implemented accuracy class depends on the UP methods that are supported.

**Table 9.43B**

| Parameter                              | Unit | Accuracy [chip]   | Conditions          |
|--|------|---|---------------------|
| UTRAN GPS timing of Cell Frames for UP | chip | Accuracy Class A: +/- [40000] chip<br>Accuracy Class B: +/- [40] chip<br>Accuracy Class C: +/- [X] chip | Over the full range |

## 9.2.1.9.2 Range/mapping

## 9.2.1.9.2.1 3.84 Mcps TDD Option

The reporting range for *UTRAN GPS timing of Cell Frames for UP* is from 0 ... 2322432000000 chip.

In table 9.44 the mapping of measured quantity is defined.

**Table 9.44**

| Reported value            | Measured quantity value   | Unit |
|---------------------------|---|------|
| GPS_TIME_0000000000000000 | UTRAN GPS timing of Cell Frames for UP < 0,0625                                       | Chip |
| GPS_TIME_0000000000000001 | $0,0625 \leq$ UTRAN GPS timing of Cell Frames for UP < 0,1250                         | Chip |
| GPS_TIME_0000000000000002 | $0,1250 \leq$ UTRAN GPS timing of Cell Frames for UP < 0,1875                         | Chip |
| ...                       | ...   | ...  |
| GPS_TIME_37158911999997   | $2322431999999,8125 \leq$ UTRAN GPS timing of Cell Frames for UP < 2322431999999,8750 | Chip |
| GPS_TIME_37158911999998   | $2322431999999,8750 \leq$ UTRAN GPS timing of Cell Frames for UP < 2322431999999,9375 | Chip |
| GPS_TIME_37158911999999   | $2322431999999,9375 \leq$ UTRAN GPS timing of Cell Frames for UP < 2322432000000,0000 | Chip |

## 9.2.1.9.2.2 1.28 Mcps TDD Option

The reporting range for *UTRAN GPS timing of Cell Frames for UP* is from 0 ... 774144000000 chip.

In table 9.44A mapping of the measured quantity is defined.

**Table 9.44A**

| Reported value         | Measured quantity value   | Unit |
|------------------------|---|------|
| GPS_TIME_0000000000000 | UTRAN GPS timing of Cell Frames for UP < 0,25                                     | chip |
| GPS_TIME_0000000000001 | $0,25 \leq$ UTRAN GPS timing of Cell Frames for UP < 0,50                         | chip |
| GPS_TIME_0000000000002 | $0,50 \leq$ UTRAN GPS timing of Cell Frames for UP < 0,75                         | chip |
| ...                    | ...   | ...  |
| GPS_TIME_3096575999997 | $774143999999,25 \leq$ UTRAN GPS timing of Cell Frames for UP < $774143999999,50$ | chip |
| GPS_TIME_3096575999998 | $774143999999,50 \leq$ UTRAN GPS timing of Cell Frames for UP < $774143999999,75$ | chip |
| GPS_TIME_3096575999999 | $774143999999,75 \leq$ UTRAN GPS timing of Cell Frames for UP < $774144000000,00$ | chip |

### 9.2.1.9.2.3 7.68 Mcps TDD Option

The reporting range for *UTRAN GPS timing of Cell Frames for UP* is from 0 ... 4644864000000 chip.

In table 9.44B the mapping of measured quantity is defined.

**Table 9.44B**

| Reported value          | Measured quantity value  | Unit |
|-------------------------|--|------|
| GPS_TIME_0000000000000  | UTRAN GPS timing of Cell Frames for UP < 0,125   | Chip |
| GPS_TIME_0000000000001  | $0,125 \leq$ UTRAN GPS timing of Cell Frames for UP < 0, 250                           | Chip |
| GPS_TIME_0000000000002  | $0,250 \leq$ UTRAN GPS timing of Cell Frames for UP < 0,375                            | Chip |
| ...                     | ...  | ...  |
| GPS_TIME_37158911999997 | $4644863999999,625 \leq$ UTRAN GPS timing of Cell Frames for UP < $4644863999999,750$  | Chip |
| GPS_TIME_37158911999998 | $4644863999999,750 \leq$ UTRAN GPS timing of Cell Frames for UP < $4644863999999,875$  | Chip |
| GPS_TIME_37158911999999 | $4644863999999,875 \leq$ UTRAN GPS timing of Cell Frames for UP < $4644864000000,0000$ | Chip |

### 9.2.1.10 SYNC-UL Timing Deviation for 1.28 Mcps

This measurement refers to TS25.225 subsection 5.2.8.1.

#### 9.2.1.10.1 Accuracy requirements

**Table 9.44AA**

| Parameter                | Unit | Accuracy [chip] | Conditions       |
|--------------------------|------|-----------------|------------------|
|                          |      |                 | Range [chips]    |
| SYNC-UL Timing Deviation | chip | +/- 0.125       | 0, ..., 1023.875 |

#### 9.2.1.10.2 Range/mapping

The reporting range for *SYNC-UL Timing Deviation* is from 0 ... 1023.875 chips.

In table 9.44B the mapping of the measured quantity is defined. Signaling range may be larger than the guaranteed accuracy range.

Table 9.44B

| Reported value        | Measured quantity value                              | Unit |
|-----------------------|--|------|
| SYNC_UL_TIME_DEV_0000 | <b>SYNC-UL</b> Timing Deviation < 0.125              | Chip |
| SYNC_UL_TIME_DEV_0001 | 0.125 ≤ <b>SYNC-UL</b> Timing Deviation < 0.25       | Chip |
| ...                   | ...  | ...  |
| SYNC_UL_TIME_DEV_1023 | 127.875 ≤ <b>SYNC-UL</b> Timing Deviation < 128      | Chip |
| ...                   | ...  | ...  |
| SYNC_UL_TIME_DEV_8189 | 1023.625 ≤ <b>SYNC-UL</b> Timing Deviation < 1023.75 | Chip |
| SYNC_UL_TIME_DEV_8190 | 1023.75 ≤ <b>SYNC-UL</b> Timing Deviation < 1023.875 | Chip |
| SYNC_UL_TIME_DEV_8191 | 1023.875 < ≤ <b>SYNC-UL</b> Timing Deviation         | Chip |

NOTE: This measurement can be used for timing advance (synchronisation shift) calculation for uplink synchronisation or location services.

### 9.2.1.11 Node B Synchronisation for 3.84 Mcps

Cell synchronisation burst timing is the time of start (defined by the first detected path in time) of the cell sync burst of a neighbouring cell. Type 1 is used for the initial phase of Node B synchronization. Type 2 is used for the steady-state phase of Node B synchronization. Both have different range.

The reference point for the cell sync burst timing measurement shall be the Rx antenna connector.

#### 9.2.1.11.1 Cell Synchronisation burst timing Type1 and Type 2

Table 9.44C

| Parameter                         | Unit | Accuracy [chip]                     | Conditions |
|-----------------------------------|------|-------------------------------------|------------|
| Cell Synchronisation burst timing | chip | [+/-0,5 for both type 1 and type 2] |            |

#### 9.2.1.11.2 Range/mapping Type 1

The reporting range for Cell Synchronisation burst timing type 1 is from -131072 to +131072 chips with 1/4 chip resolution.

In table 9.44D the mapping of measured quantity is defined for burst type 1.

Table 9.44D

| Reported value            | Measured quantity value                      | Unit |
|---------------------------|--|------|
| Burst_TIME__TYPE1_0000000 | -131072 ≤ burst timing Type 1 < -131071.75   | Chip |
| Burst_TIME__TYPE1_0000001 | -131071.75 ≤ burst timing Type 1 < -131071.5 | Chip |
| Burst_TIME__TYPE1_0000002 | -131071.5 ≤ burst timing Type 1 < -131071.25 | Chip |
| ...                       | ...  | ...  |
| Burst_TIME__TYPE1_1048573 | 131071.25 ≤ burst timing Type 1 < 131071.5   | Chip |
| Burst_TIME__TYPE1_1048574 | 131071.5 ≤ burst timing Type 1 < 131071.75   | Chip |
| Burst_TIME__TYPE1_1048575 | 131071.75 ≤ burst timing Type 1 < 131072     | Chip |

#### 9.2.1.11.3 Range/mapping Type 2

The reporting range for Cell Synchronisation burst timing type 2 is from -16 to +16 chips with 1/8 chip resolution. In table 9.44E the mapping of measured quantity is defined for burst type 2.

Table 9.44E

| Reported value         | Measured quantity value                             | Unit |
|------------------------|---|------|
| Burst_TIME__TYPE2_0000 | $-16 \leq \text{burst timing Type 2} < -15.875$     | Chip |
| Burst_TIME__TYPE2_0001 | $-15.875 \leq \text{burst timing Type 2} < -15.750$ | Chip |
| Burst_TIME__TYPE2_0002 | $-15.750 \leq \text{burst timing Type 2} < -15.625$ | Chip |
| ...                    | ...   | ...  |
| Burst_TIME__TYPE2_0253 | $15.625 \leq \text{burst timing Type 2} < 15.750$   | Chip |
| Burst_TIME__TYPE2_0254 | $15.750 \leq \text{burst timing Type 2} < 15.875$   | Chip |
| Burst_TIME__TYPE2_0255 | $15.875 \leq \text{burst timing Type 2} < 16$       | Chip |

#### 9.2.1.11.4 Cell Synchronisation burst SIR Type1 and Type2

Signal to Interference Ratio for the cell sync burst, defined according to TS25.225.

The reference point for the cell synchronisation burst SIR shall be the Rx antenna connector.

Table 9.44F

| Parameter                      | Unit | Accuracy [dB]                    |                    | Conditions |
|--------------------------------|------|----------------------------------|--------------------|------------|
|                                |      | Normal conditions                | Extreme conditions |            |
| Cell Synchronisation burst SIR | dB   | $\pm 3$ dB for both type 1 and 2 | [ ]                |            |

#### 9.2.1.11.5 Range/Mapping for Type1 and Type 2

The reporting range for *SIR* is from 0 ... 60 dB with a resolution of 2dB.

In table 9.44H mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44H

| Reported value          | Measured quantity value   | Unit |
|-------------------------|---------------------------|------|
| Cell_Synch_Burst_SIR_00 | $\text{SIR} < 0$          | dB   |
| Cell_Synch_Burst_SIR_01 | $0 \leq \text{SIR} < 2$   | dB   |
| Cell_Synch_Burst_SIR_02 | $2 \leq \text{SIR} < 4$   | dB   |
| ...                     | ...                       | ...  |
| Cell_Synch_Burst_SIR_29 | $56 \leq \text{SIR} < 58$ | dB   |
| Cell_Synch_Burst_SIR_30 | $58 \leq \text{SIR} < 60$ | dB   |
| Cell_Synch_Burst_SIR_31 | $60 \leq \text{SIR}$      | dB   |

#### 9.2.1.11B Node B Synchronisation for 1.28Mcps TDD

Cell synchronisation burst timing is the time of start (defined by the first detected path in time) of the cell sync burst of a neighbouring cell. Type 1 is used for the initial phase of Node B synchronisation. Type 2 is used for the steady-state phase of Node B synchronisation. Both have different range.

The reference point for the cell sync burst timing measurement shall be the Rx antenna connector.

##### 9.2.1.11B.1 Cell Synchronisation burst timing Type1 and Type 2

Table 9.44HA

| Parameter                         | Unit | Accuracy [chip]                           | Conditions |
|-----------------------------------|------|---|------------|
| Cell Synchronisation burst timing | chip | [ $\pm 0.125$ for both type 1 and type 2] |            |

### 9.2.1.11B.2 Range/mapping Type 1

The reporting range for Cell Synchronisation burst timing type 1 is from -65536 to +65536 chips with 1/4 chip resolution.

In table 9.44HB the mapping of measured quantity is defined for burst type 1.

**Table 9.44HB**

| Reported value            | Measured quantity value                                | Unit |
|---------------------------|--|------|
| Burst_TIME__TYPE1_0000000 | $-65536 \leq \text{burst timing Type 1} < -65535.75$   | Chip |
| Burst_TIME__TYPE1_0000001 | $-65535.75 \leq \text{burst timing Type 1} < -65535.5$ | Chip |
| Burst_TIME__TYPE1_0000002 | $-65535.5 \leq \text{burst timing Type 1} < -65535.25$ | Chip |
| ...                       | ...  | ...  |
| Burst_TIME__TYPE1_0524285 | $65535.25 \leq \text{burst timing Type 1} < 65535.5$   | Chip |
| Burst_TIME__TYPE1_0524286 | $65535.5 \leq \text{burst timing Type 1} < 65535.75$   | Chip |
| Burst_TIME__TYPE1_0524287 | $65535.75 \leq \text{burst timing Type 1} < 65536$     | Chip |

### 9.2.1.11B.3 Range/mapping Type 2

The reporting range for Cell Synchronisation burst timing type 2 is from -8 to +8 chips with 1/8 chip resolution. In table 9.44HC the mapping of measured quantity is defined for burst type 2.

**Table 9.44HC**

| Reported value         | Measured quantity value                           | Unit |
|------------------------|---|------|
| Burst_TIME__TYPE2_0000 | $-8 \leq \text{burst timing Type 2} < -7.875$     | Chip |
| Burst_TIME__TYPE2_0001 | $-7.875 \leq \text{burst timing Type 2} < -7.750$ | Chip |
| Burst_TIME__TYPE2_0002 | $-7.750 \leq \text{burst timing Type 2} < -7.625$ | Chip |
| ...                    | ...   | ...  |
| Burst_TIME__TYPE2_0125 | $7.625 \leq \text{burst timing Type 2} < 7.750$   | Chip |
| Burst_TIME__TYPE2_0126 | $7.750 \leq \text{burst timing Type 2} < 7.875$   | Chip |
| Burst_TIME__TYPE2_0127 | $7.875 \leq \text{burst timing Type 2} < 8$       | Chip |

### 9.2.1.11B.4 Cell Synchronisation burst SIR Type1 and Type2

Signal to Interference Ratio for the cell sync burst, defined according to TS25.225.

The reference point for the cell synchronisation burst SIR shall be the Rx antenna connector.

**Table 9.44HD**

| Parameter                      | Unit | Accuracy [dB]                    |                    | Conditions |
|--------------------------------|------|----------------------------------|--------------------|------------|
|                                |      | Normal conditions                | Extreme conditions |            |
| Cell Synchronisation burst SIR | dB   | $\pm 3$ dB for both type 1 and 2 | [ ]                |            |

### 9.2.1.11B.5 Range/Mapping for Type1 and Type 2

The reporting range for SIR is from 0 ... 30 dB with a resolution of 1dB.

In table 9.44HE mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44HE

| Reported value         | Measured quantity value | Unit |
|------------------------|-------------------------|------|
| Cell_Sync_Burst_SIR_00 | $SIR < 0$               | dB   |
| Cell_Sync_Burst_SIR_01 | $0 \leq SIR < 1$        | dB   |
| Cell_Sync_Burst_SIR_02 | $1 \leq SIR < 2$        | dB   |
| ...                    | ...                     | ...  |
| Cell_Sync_Burst_SIR_29 | $28 \leq SIR < 29$      | dB   |
| Cell_Sync_Burst_SIR_30 | $29 \leq SIR < 30$      | dB   |
| Cell_Sync_Burst_SIR_31 | $30 \leq SIR$           | dB   |

### 9.2.1.11C Node B Synchronisation for 7.68 Mcps

Cell synchronisation burst timing is the time of start (defined by the first detected path in time) of the cell sync burst of a neighbouring cell. Type 1 is used for the initial phase of Node B synchronization. Type 2 is used for the steady-state phase of Node B synchronization. Both have different range.

The reference point for the cell sync burst timing measurement shall be the Rx antenna connector.

#### 9.2.1.11C.1 Cell Synchronisation burst timing Type1 and Type 2

Table 9.44HF

| Parameter                         | Unit | Accuracy [chip]                   | Conditions |
|-----------------------------------|------|-----------------------------------|------------|
| Cell Synchronisation burst timing | chip | [+/-1 for both type 1 and type 2] |            |

#### 9.2.1.11C.2 Range/mapping Type 1

The reporting range for Cell Synchronisation burst timing type 1 is from -262144 to +262144 chips with 1/2 chip resolution.

In table 9.44HG the mapping of measured quantity is defined for burst type 1.

Table 9.44HG

| Reported value            | Measured quantity value                               | Unit |
|---------------------------|---|------|
| Burst_TIME__TYPE1_0000000 | $-262144 \leq \text{burst timing Type 1} < -262143.5$ | Chip |
| Burst_TIME__TYPE1_0000001 | $-262143.5 \leq \text{burst timing Type 1} < -262143$ | Chip |
| Burst_TIME__TYPE1_0000002 | $-262143 \leq \text{burst timing Type 1} < -262142.5$ | Chip |
| ...                       | ...   | ...  |
| Burst_TIME__TYPE1_1048573 | $262142.5 \leq \text{burst timing Type 1} < 262143$   | Chip |
| Burst_TIME__TYPE1_1048574 | $262143 \leq \text{burst timing Type 1} < 262143.5$   | Chip |
| Burst_TIME__TYPE1_1048575 | $262143.5 \leq \text{burst timing Type 1} < 262144$   | Chip |

#### 9.2.1.11C.3 Range/mapping Type 2

The reporting range for Cell Synchronisation burst timing type 2 is from -32 to +32 chips with 1/4 chip resolution. In table 9.44HH the mapping of measured quantity is defined for burst type 2.

Table 9.44HH

| Reported value         | Measured quantity value                          | Unit |
|------------------------|--|------|
| Burst_TIME__TYPE2_0000 | $-32 \leq \text{burst timing Type 2} < -31.75$   | Chip |
| Burst_TIME__TYPE2_0001 | $-31.75 \leq \text{burst timing Type 2} < -31.5$ | Chip |
| Burst_TIME__TYPE2_0002 | $-31.5 \leq \text{burst timing Type 2} < -31.25$ | Chip |
| ...                    | ...  | ...  |
| Burst_TIME__TYPE2_0253 | $31.25 \leq \text{burst timing Type 2} < 31.5$   | Chip |
| Burst_TIME__TYPE2_0254 | $31.5 \leq \text{burst timing Type 2} < 31.75$   | Chip |
| Burst_TIME__TYPE2_0255 | $31.75 \leq \text{burst timing Type 2} < 32$     | Chip |

## 9.2.1.11C.4 Cell Synchronisation burst SIR Type1 and Type2

Signal to Interference Ratio for the cell sync burst, defined according to TS25.225.

The reference point for the cell synchronisation burst SIR shall be the Rx antenna connector.

Table 9.44HI

| Parameter                      | Unit | Accuracy [dB]                    |                    | Conditions |
|--------------------------------|------|----------------------------------|--------------------|------------|
|                                |      | Normal conditions                | Extreme conditions |            |
| Cell Synchronisation burst SIR | dB   | $\pm 3$ dB for both type 1 and 2 | [ ]                |            |

## 9.2.1.11C.5 Range/Mapping for Type1 and Type 2

The reporting range for *SIR* is from 0 ... 60 dB with a resolution of 2dB.

In table 9.44HJ mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44HJ

| Reported value          | Measured quantity value   | Unit |
|-------------------------|---------------------------|------|
| Cell_Synch_Burst_SIR_00 | $\text{SIR} < 0$          | dB   |
| Cell_Synch_Burst_SIR_01 | $0 \leq \text{SIR} < 2$   | dB   |
| Cell_Synch_Burst_SIR_02 | $2 \leq \text{SIR} < 4$   | dB   |
| ...                     | ...                       | ...  |
| Cell_Synch_Burst_SIR_29 | $56 \leq \text{SIR} < 58$ | dB   |
| Cell_Synch_Burst_SIR_30 | $58 \leq \text{SIR} < 60$ | dB   |
| Cell_Synch_Burst_SIR_31 | $60 \leq \text{SIR}$      | dB   |

## 9.2.1.12 SFN-SFN observed time difference

The measurement period shall be 100 ms.

## 9.2.1.12.1 Accuracy requirements

## 9.2.1.12.1.1 3.84 Mcps TDD option

Table 9.44I: SFN-SFN observed time difference accuracy

| Parameter                        | Unit | Accuracy [chip] | Conditions      |
|----------------------------------|------|-----------------|-----------------|
|                                  |      |                 | Range [chips]   |
| SFN-SFN observed time difference | chip | $\pm 0,5$       | -1280 ... +1280 |

## 9.2.1.12.1.2 1.28 Mcps TDD option

**Table 9.44J: SFN-SFN observed time difference accuracy**

| Parameter                        | Unit | Accuracy [chip] | Conditions    |
|----------------------------------|------|-----------------|---------------|
|                                  |      |                 | Range [chips] |
| SFN-SFN observed time difference | chip | +/- 0.125       | -432 ... +432 |

## 9.2.1.12.1.3 7.68 Mcps TDD option

**Table 9.44JA: SFN-SFN observed time difference accuracy**

| Parameter                        | Unit | Accuracy [chip] | Conditions      |
|----------------------------------|------|-----------------|-----------------|
|                                  |      |                 | Range [chips]   |
| SFN-SFN observed time difference | chip | +/-1.0          | -2560 ... +2560 |

## 9.2.1.12.2 Range/mapping

## 9.2.1.12.2.1 3.84 Mcps TDD option

The reporting range for *SFN-SFN observed time difference* is from -1280 ... +1280 chip.

In table 9.44K mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.44K**

| Reported value     | Measured quantity value                                    | Unit |
|--------------------|--|------|
| SFN-SFN_TIME_00000 | SFN-SFN observed time difference < -1280,0000              | Chip |
| SFN-SFN_TIME_00001 | -1280,0000 ≤ SFN-SFN observed time difference < -1279,9375 | Chip |
| SFN-SFN_TIME_00002 | -1279,9375 ≤ SFN-SFN observed time difference < -1279,8750 | Chip |
| ...                | ...  | ...  |
| SFN-SFN_TIME_40959 | 1279,8750 ≤ SFN-SFN observed time difference < 1279,9375   | Chip |
| SFN-SFN_TIME_40960 | 1279,9375 ≤ SFN-SFN observed time difference < 1280,0000   | Chip |
| SFN-SFN_TIME_40961 | 1280,0000 ≤ SFN-SFN observed time difference               | Chip |

## 9.2.1.12.2.2 1.28 Mcps TDD option

The reporting range for *SFN-SFN observed time difference* is from -432 ... +432 chip.

In table 9.44L mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.



Table 9.44L

| Reported value     | Measured quantity value                                    | Unit |
|--------------------|--|------|
| SFN-SFN_TIME_00000 | SFN-SFN observed time difference < -432,00000              | chip |
| SFN-SFN_TIME_00001 | -432,00000 ≤ SFN-SFN observed time difference < -431,96875 | chip |
| SFN-SFN_TIME_00002 | -431,96875 ≤ SFN-SFN observed time difference < -431,9375  | chip |
| ...                | ...  | ...  |
| SFN-SFN_TIME_27647 | 431,9375 ≤ SFN-SFN observed time difference < 431,96875    | chip |
| SFN-SFN_TIME_27648 | 431,96875 ≤ SFN-SFN observed time difference < 432,00000   | chip |
| SFN-SFN_TIME_27649 | 432,00000 ≤ SFN-SFN observed time difference               | chip |

## 9.2.1.12.2.3 7.68 Mcps TDD option

The reporting range for *SFN-SFN observed time difference* is from -2560 ... +2560 chip.

In Table 9.44LA mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.44LA

| Reported value     | Measured quantity value                                    | Unit |
|--------------------|--|------|
| SFN-SFN_TIME_00000 | SFN-SFN observed time difference < -2560,0000              | Chip |
| SFN-SFN_TIME_00001 | -2560,0000 ≤ SFN-SFN observed time difference < -2559,8750 | Chip |
| SFN-SFN_TIME_00002 | -2559,8750 ≤ SFN-SFN observed time difference < -2559,7500 | Chip |
| ...                | ...  | ...  |
| SFN-SFN_TIME_40959 | 2559,7500 ≤ SFN-SFN observed time difference < 2559,8750   | Chip |
| SFN-SFN_TIME_40960 | 2559,8750 ≤ SFN-SFN observed time difference < 2560,0000   | Chip |
| SFN-SFN_TIME_40961 | 2560,0000 ≤ SFN-SFN observed time difference               | Chip |

## 9.2.1.13 AOA measurement for UE positioning for 1.28Mcps TDD option

AOA defines the angle of arrival of the signals from a user at the antenna. The reference direction for this measurement shall be the North. The measurement period shall be 200ms.

## 9.2.1.13.1 Accuracy requirements

Eight accuracy classes are defined for UTRAN AOA measurement, i.e. accuracy class A to H.

Table 9.44M

| Parameter                                | Unit   | Accuracy [degree]  | Conditions          |
|--|--------|--|---------------------|
|  |        |  |                     |
| UTRAN AOA measurement for UE positioning | degree | Accuracy Class A: +/- 180 degree<br>Accuracy Class B: +/- 90 degree<br>Accuracy Class C: +/- 60 degree<br>Accuracy Class D: +/- 20 degree<br>Accuracy Class E: +/- 10 degree<br>Accuracy Class F: +/- 5 degree<br>Accuracy Class G: +/- 2 degree<br>Accuracy Class H: +/- 1 degree | Over the full range |

## 9.2.1.13.2 Range/mapping

The reporting range for AOA measurement is from 0 ... 360 degree.

The mapping of the measured quantity is defined in table 9.44N.

Table 9.44N

| Reported value | Measured quantity value              | Unit   |
|----------------|--------------------------------------|--------|
| AOA_ANGLE_000  | $0 \leq \text{AOA\_ANGLE} < 0,5$     | degree |
| AOA_ANGLE_001  | $0,5 \leq \text{AOA\_ANGLE} < 1$     | degree |
| AOA_ANGLE_002  | $1 \leq \text{AOA\_ANGLE} < 1,5$     | degree |
| ...            | ...                                  | ...    |
| AOA_ANGLE_717  | $358,5 \leq \text{AOA\_ANGLE} < 359$ | degree |
| AOA_ANGLE_718  | $359 \leq \text{AOA\_ANGLE} < 359,5$ | degree |
| AOA_ANGLE_719  | $359,5 \leq \text{AOA\_ANGLE} < 360$ | degree |

### 9.2.1.14 HS-SICH reception quality

The measurement period shall be 200 ms

#### 9.2.1.14.1 Range/mapping

##### 9.2.1.14.1.1 3.84 Mcps TDD and 7.68 Mcps TDD

The *HS-SICH reception quality* reporting range is from 0...20 reception indications.

The mappings of the measured quantities are defined in tables 9.44O, 9.44P and 9.44Q.

Table 9.44O

| Reported value    | Measured quantity value        | Unit |
|-------------------|--------------------------------|------|
| FAILED_HS_SICH_00 | Failed HS-SICH receptions = 0  | -    |
| FAILED_HS_SICH_01 | Failed HS-SICH receptions = 1  | -    |
| FAILED_HS_SICH_02 | Failed HS-SICH receptions = 2  | -    |
| ...               | ...                            | ...  |
| FAILED_HS_SICH_17 | Failed HS-SICH receptions = 17 | -    |
| FAILED_HS_SICH_18 | Failed HS-SICH receptions = 18 | -    |
| FAILED_HS_SICH_19 | Failed HS-SICH receptions = 19 | -    |
| FAILED_HS_SICH_20 | Failed HS-SICH receptions = 20 | -    |

Table 9.44P

| Reported value    | Measured quantity value        | Unit |
|-------------------|--------------------------------|------|
| MISSED_HS_SICH_00 | Missed HS-SICH receptions = 0  | -    |
| MISSED_HS_SICH_01 | Missed HS-SICH receptions = 1  | -    |
| MISSED_HS_SICH_02 | Missed HS-SICH receptions = 2  | -    |
| ...               | ...                            | ...  |
| MISSED_HS_SICH_17 | Missed HS-SICH receptions = 17 | -    |
| MISSED_HS_SICH_18 | Missed HS-SICH receptions = 18 | -    |
| MISSED_HS_SICH_19 | Missed HS-SICH receptions = 19 | -    |
| MISSED_HS_SICH_20 | Missed HS-SICH receptions = 20 | -    |

Table 9.44Q

| Reported value   | Measured quantity value             | Unit |
|------------------|-------------------------------------|------|
| TOTAL_HS_SICH_00 | Expected HS-SICH transmissions = 0  | -    |
| TOTAL_HS_SICH_01 | Expected HS-SICH transmissions = 1  | -    |
| TOTAL_HS_SICH_02 | Expected HS-SICH transmissions = 2  | -    |
| ...              | ...                                 | ...  |
| TOTAL_HS_SICH_17 | Expected HS-SICH transmissions = 17 | -    |
| TOTAL_HS_SICH_18 | Expected HS-SICH transmissions = 18 | -    |
| TOTAL_HS_SICH_19 | Expected HS-SICH transmissions = 19 | -    |
| TOTAL_HS_SICH_20 | Expected HS-SICH transmissions = 20 | -    |

## 9.2.1.14.1.2 1.28 Mcps TDD

The *HS-SICH reception quality* reporting range is from 0...40 reception indications.

The mappings of the measured quantities are defined in tables 9.44O-1, 9.44P-1 and 9.44Q-1.

**Table 9.44O-1**

| Reported value    | Measured quantity value        | Unit |
|-------------------|--------------------------------|------|
| FAILED_HS_SICH_00 | Failed HS-SICH receptions = 0  | -    |
| FAILED_HS_SICH_01 | Failed HS-SICH receptions = 1  | -    |
| FAILED_HS_SICH_02 | Failed HS-SICH receptions = 2  | -    |
| ...               | ...                            | ...  |
| FAILED_HS_SICH_37 | Failed HS-SICH receptions = 37 | -    |
| FAILED_HS_SICH_38 | Failed HS-SICH receptions = 38 | -    |
| FAILED_HS_SICH_39 | Failed HS-SICH receptions = 39 | -    |
| FAILED_HS_SICH_40 | Failed HS-SICH receptions = 40 | -    |

**Table 9.44P-1**

| Reported value    | Measured quantity value        | Unit |
|-------------------|--------------------------------|------|
| MISSED_HS_SICH_00 | Missed HS-SICH receptions = 0  | -    |
| MISSED_HS_SICH_01 | Missed HS-SICH receptions = 1  | -    |
| MISSED_HS_SICH_02 | Missed HS-SICH receptions = 2  | -    |
| ...               | ...                            | ...  |
| MISSED_HS_SICH_37 | Missed HS-SICH receptions = 37 | -    |
| MISSED_HS_SICH_38 | Missed HS-SICH receptions = 38 | -    |
| MISSED_HS_SICH_39 | Missed HS-SICH receptions = 39 | -    |
| MISSED_HS_SICH_40 | Missed HS-SICH receptions = 40 | -    |

**Table 9.44Q-1**

| Reported value   | Measured quantity value             | Unit |
|------------------|-------------------------------------|------|
| TOTAL_HS_SICH_00 | Expected HS-SICH transmissions = 0  | -    |
| TOTAL_HS_SICH_01 | Expected HS-SICH transmissions = 1  | -    |
| TOTAL_HS_SICH_02 | Expected HS-SICH transmissions = 2  | -    |
| ...              | ...                                 | ...  |
| TOTAL_HS_SICH_37 | Expected HS-SICH transmissions = 37 | -    |
| TOTAL_HS_SICH_38 | Expected HS-SICH transmissions = 38 | -    |
| TOTAL_HS_SICH_39 | Expected HS-SICH transmissions = 39 | -    |
| TOTAL_HS_SICH_40 | Expected HS-SICH transmissions = 40 | -    |

## 9.2.1.15 UpPTS interference (1.28Mcps TDD)

The measurement period shall be 100 ms.

## 9.2.1.15.1 Absolute accuracy requirements

**Table 9.44R: UpPTS interference Intra frequency absolute accuracy for Wide Area BS**

| Parameter          | Unit | Accuracy [dB]     |                    | Conditions        |
|--------------------|------|-------------------|--------------------|-------------------|
|                    |      | Normal conditions | Extreme conditions | Io [dBm/1.28 MHz] |
| UpPTS interference | dBm  | ± 6               | ± 9                | -105...-74        |

**Table 9.44S: UpPTS interference Intra frequency absolute accuracy for Local Area BS**

| Parameter          | Unit | Accuracy [dB]     |                    | Conditions        |
|--------------------|------|-------------------|--------------------|-------------------|
|                    |      | Normal conditions | Extreme conditions | Io [dBm/1.28 MHz] |
| UpPTS interference | dBm  | ± 6               | ± 9                | -91..-60          |

### 9.2.1.15.2 Range/mapping

The reporting range for UpPTS interference is from -120...-57 dBm.

In table 9.44T mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.44T**

| Reported value      | Measured quantity value              | Unit |
|---------------------|--------------------------------------|------|
| UTRAN_UPPTS_LEV_00  | UpPTS interference < -120,0          | dBm  |
| UTRAN_UPPTS_LEV_01  | -120,0 ≤ UpPTS interference < -119,5 | dBm  |
| UTRAN_UPPTS_LEV_02  | -119,5 ≤ UpPTS interference < -119,0 | dBm  |
| ...                 | ...                                  | ...  |
| UTRAN_UPPTS_LEV_125 | -58,0 ≤ UpPTS interference < -57,5   | dBm  |
| UTRAN_UPPTS_LEV_126 | -57,5 ≤ UpPTS interference < -57,0   | dBm  |
| UTRAN_UPPTS_LEV_127 | -57,0 ≤ UpPTS interference           | dBm  |

## 9.2.2 Performance for UTRAN measurements in downlink (TX)

The output power is defined as the average power of the transmit timeslot, and is measured with a filter that has a Root-Raised Cosine (RRC) filter response with a roll off  $\alpha = 0,22$  and a bandwidth equal to the chip rate.

### 9.2.2.1 Transmitted carrier power

The measurement period shall be 100 ms.

#### 9.2.2.1.1 Accuracy requirements

**Table 9.45 Transmitted carrier power accuracy**

| Parameter                 | Unit | Accuracy [% units] | Conditions                                |
|---------------------------|------|--------------------|---|
|                           |      |                    | Range                                     |
| Transmitted carrier power | %    | ± 10               | For 10% ≤ Transmitted carrier power ≤ 90% |

#### 9.2.2.1.2 Range/mapping

The reporting range for *Transmitted carrier power* is from 0 ... 100 %.

In table 9.46 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

Table 9.46

| Reported value     | Measured quantity value                          | Unit |
|--------------------|--|------|
| UTRAN_TX_POWER_000 | Transmitted carrier power = 0                    | %    |
| UTRAN_TX_POWER_001 | $0 < \text{Transmitted carrier power} \leq 1$    | %    |
| UTRAN_TX_POWER_002 | $1 < \text{Transmitted carrier power} \leq 2$    | %    |
| UTRAN_TX_POWER_003 | $2 < \text{Transmitted carrier power} \leq 3$    | %    |
| ...                | ...  | ...  |
| UTRAN_TX_POWER_098 | $97 < \text{Transmitted carrier power} \leq 98$  | %    |
| UTRAN_TX_POWER_099 | $98 < \text{Transmitted carrier power} \leq 99$  | %    |
| UTRAN_TX_POWER_100 | $99 < \text{Transmitted carrier power} \leq 100$ | %    |

### 9.2.2.2 Transmitted code power

The measurement period shall be 100 ms.

#### 9.2.2.2.1 Absolute accuracy requirements

Table 9.47: Transmitted code power absolute accuracy

| Parameter              | Unit | Accuracy [dB] | Conditions          |
|------------------------|------|---------------|---------------------|
|                        |      |               | Range               |
| Transmitted code power | dBm  | $\pm 3$       | Over the full range |

#### 9.2.2.2.2 Relative accuracy requirements

The relative accuracy of transmitted code power is defined as the transmitted code power measured at one dedicated radio link compared to the transmitted code power measured from a different dedicated radio link in the same cell.

Table 9.48: Transmitted code power relative accuracy

| Parameter              | Unit | Accuracy [dB] | Conditions          |
|------------------------|------|---------------|---------------------|
|                        |      |               | Range               |
| Transmitted code power | dBm  | $\pm 2$       | Over the full range |

#### 9.2.2.2.3 Range/mapping

The reporting range for *Transmitted code power* is from -10 ... 46 dBm.

In table 9.49 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.49

| Reported value       | Measured quantity value                           | Unit |
|----------------------|---|------|
| UTRAN_CODE_POWER_010 | $-10,0 \leq \text{Transmitted code power} < -9,5$ | dBm  |
| UTRAN_CODE_POWER_011 | $-9,5 \leq \text{Transmitted code power} < -9,0$  | dBm  |
| UTRAN_CODE_POWER_012 | $-9,0 \leq \text{Transmitted code power} < -8,5$  | dBm  |
| ...                  | ...   | ...  |
| UTRAN_CODE_POWER_120 | $45,0 \leq \text{Transmitted code power} < 45,5$  | dBm  |
| UTRAN_CODE_POWER_121 | $45,5 \leq \text{Transmitted code power} < 46,0$  | dBm  |
| UTRAN_CODE_POWER_122 | $46,0 \leq \text{Transmitted code power} < 46,5$  | dBm  |

### 9.2.2.3 Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission

The measurement period shall be 100 ms.

#### 9.2.2.3.1 Accuracy requirements

**Table 9.50: Transmitted carrier power accuracy**

| Parameter  | Unit | Accuracy [% units] | Conditions   |
|--|------|--------------------|--|
|  |      |                    | Range  |
| Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission | %    | $\pm 10$           | For $10\% \leq$ Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH E-AGCH or E-HICH, transmission $\leq 90\%$ |

#### 9.2.2.3.2 Range/mapping

The reporting range for *Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission* is from 0 ... 100 %.

In table 9.51 mapping of the measured quantity is defined. Signalling range may be larger than the guaranteed accuracy range.

**Table 9.51**

| Reported value   | Measured quantity value  | Unit |
|--|--|------|
| Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission_000 | Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission = 0               | %    |
| mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission_001      | $0 <$ Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission $\leq 1$    | %    |
| mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission_002      | $1 <$ Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission $\leq 2$    | %    |
| mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission_003      | $2 <$ Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission $\leq 3$    | %    |
| ...  | ...  | ...  |
| mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission_098      | $97 <$ Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission $\leq 98$  | %    |
| mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission_099      | $98 <$ Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission $\leq 99$  | %    |
| mitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission 100      | $99 <$ Transmitted carrier power of all codes not used for HS-PDSCH, HS-SCCH, E-AGCH or E-HICH transmission $\leq 100$ | %    |

## 10 FPACH physical layer information field definition (1.28 Mcps TDD)

1.28 Mcps TDD introduces the FPACH (Fast Physical Access CHannel) which carries physical layer information. Two of these information fields are the "received starting position of the UpPCH" (Uplink Pilot CHannel) and the "transmit power level command for the RACH message". Both information fields are directly (received starting position of the

UpPCH) or can be indirectly (transmit power level command for the RACH message) derived from measurements but are no measurements themselves.

## 10.1 Received starting position of the UpPCH (UpPCH<sub>POS</sub>) (1.28 Mcps TDD)

The received starting position of the UpPCH (UpPCH<sub>POS</sub>) is directly derived from measurement, it is equivalent to the received SYNC-UL Timing Deviation for 1.28 Mcps. Its accuracy and range/mapping is defined in section 9.2.1.10. The information field value, UpPCH<sub>POS</sub>-FIELD\_LEV\_xxxx, is equivalent to the reported value SYNC\_UL\_TIME\_DEV\_xxxx.

## 10.2 Transmit Power Level Command for the RACH message (1.28 Mcps TDD)

### 10.2.1 Accuracy requirements

Since this is a desired RX power at the node B and this is no measured value and the derivation of this value in the node B is implementation specific, accuracy requirements are not applicable.

### 10.2.2 Range/mapping

PRX<sub>PRACH,des</sub> FIELD is given with a resolution of 0.5 dB with the range [-120,-80] dBm.

PRX<sub>PRACH,des</sub> FIELD shall be transmitted in the FPACH.

**Table 10.1**

| Information field value               | Measured quantity value                  | Unit |
|---------------------------------------|--|------|
| PRX <sub>PRACH,des</sub> FIELD_LEV_00 | PRX <sub>PRACH,des</sub> < -120          | dBm  |
| PRX <sub>PRACH,des</sub> FIELD_LEV_01 | -120 ≤ PRX <sub>PRACH,des</sub> < -119.5 | dBm  |
| PRX <sub>PRACH,des</sub> FIELD_LEV_02 | -119.5 ≤ PRX <sub>PRACH,des</sub> < -119 | dBm  |
| ...                                   | ...                                      | ...  |
| PRX <sub>PRACH,des</sub> FIELD_LEV_79 | -81 ≤ PRX <sub>PRACH,des</sub> < -80.5   | dBm  |
| PRX <sub>PRACH,des</sub> FIELD_LEV_80 | -80.5 ≤ PRX <sub>PRACH,des</sub> < -80   | dBm  |
| PRX <sub>PRACH,des</sub> FIELD_LEV_81 | -80 ≤ PRX <sub>PRACH,des</sub>           | dBm  |

---

## Annex A (normative): Test Cases

### A.1 Purpose of Annex

This Annex specifies test specific parameters for some of the functional requirements in chapters 4 to 9. The tests provide additional information to how the requirements should be interpreted for the purpose of conformance testing. The tests in this Annex are described such that one functional requirement may be tested in one or several test and one test may verify several requirements. Some requirements may lack a test.

The conformance tests are specified in TS34.122. Statistical interpretation of the requirements is described in Annex A.2.

---

### A.2 Requirement classification for statistical testing

Requirements in this specification are either expressed as absolute requirements with a single value stating the requirement, or expressed as a success rate. There are no provisions for the statistical variations that will occur when the parameter is tested.

Annex A outlines the test in more detail and lists the test parameters needed. The test will result in an outcome of a test variable value for the DUT inside or outside the test limit. Overall, the probability of a "good" DUT being inside the test limit(s) and the probability of a "bad" DUT being outside the test limit(s) should be as high as possible. For this reason, when selecting the test variable and the test limit(s), the statistical nature of the test is accounted for.

The statistical nature depends on the type of requirement. Some have large statistical variations, while others are not statistical in nature at all. When testing a parameter with a statistical nature, a confidence level is set. This establishes the probability that a DUT passing the test actually meets the requirement and determines how many times a test has to be repeated and what the pass and fail criteria are. Those aspects are not covered by TS 25.123. The details of the tests, how many times to run it and how to establish confidence in the tests are described in TS 34.122. This Annex establishes what the test variable is and whether it can be viewed as statistical in nature or not.

#### A.2.1 Types of requirements in TS 25.123

##### A.2.1.1 Time and delay requirements on UE higher layer actions

One part of the RRM requirements are delay requirements:

- In idle mode (A.4) there is cell re-selection delay.
- In UTRAN Connected Mode Mobility (A.5) there is measurement reporting delay, handover delay and cell re-selection delay.
- In RRC Connection Control (A.6) there is RRC re-establishment delay. In case of 1,28Mcps TDD option there is also TFC blocking delay.

All have in common that the UE is required to perform an action observable in higher layers (e.g. camp on the correct cell) within a certain time after a specific event (e.g. a new strong pilot arises). The delay time is statistical in nature for several reasons, among others that measurements required by the UE are performed in a fading radio environment.

The variations make a strict limit unsuitable for a test. Instead there is a condition set for a correct action by the UE, e.g. that the UE shall camp on the correct cell within X seconds. Then the rate of correct events as observed during repeated tests shall be at least 90% in case of AWGN propagation condition. How the limit is applied in the test depends on the confidence required, further detailed are in TS 34.122.



## A.2.1.2 Measurements of power levels, relative powers and time

A very large number of requirements are on measurements that the UE performs:

- In UTRAN Connected Mode Mobility (A.5) there are measurement reports.
- Measurement performance requirements (A.8) has requirements on all type of measurements.

The accuracy requirements on measurements are expressed in this specification as a fixed limit (e.g. +/-X dB), but the measurement error will have a distribution that is not easily confined in fixed limits. Assuming a Gaussian distribution of the error, the limits will have to be set at  $\pm 3,29\sigma$  if the probability of failing a "good DUT" in a single test is to be kept at 0,1%. It is more reasonable to set the limit tighter and test the DUT by counting the rate of measurements that are within the limits, in a way similar to the requirements on delay.

## A.2.1.3 Implementation requirements

A few requirements are strict actions the UE should take or capabilities the UE should have, without any allowance for deviations. These requirements are absolute and should be tested as such. Examples are

- "Event triggered report rate" in UTRAN Connected Mode Mobility (A.5)

## A.2.1.4 Physical layer timing requirements

All requirements on "Timing Characteristics" (A.7) are absolute limits on timing accuracy.

## A.2.1.5 BER and BLER requirements

Some measurement report procedures in "UE Measurement procedures" (A.8) have requirements on DCH BLER. These are tested in the same way as BLER requirements in TS 25.102.

---

# A.3 RRM test configurations

## A.3.1 UE with single antenna connector

For testing a UE with a single UTRA antenna connector, the test configuration is fully described in sections A.4 to A.9

## A.3.2 UE with multiple antenna connectors

For testing a 1.28Mcps TDD UE with multiple UTRA receive diversity antenna connectors, test signals from each cell in section A.4 to A.9 shall be generated and applied to each antenna port. For each carrier frequency specified in the test case, independent noise shall be generated with independent fading and applied to each antenna port. For each carrier frequency specified in the testcase, independent noise shall be generated and applied to each antenna port. The received power spectral density at each antenna connector  $n$ , denoted as  $\hat{I}_{or,n}$  shall be the same to the received power spectral density  $\hat{I}_{or}$  specified for testing a UE with a single antenna connector. The noise spectral density at each antenna connector  $n$ , denoted as  $I_{oc,n}$  shall be the same as the noise spectral density  $I_{oc}$  specified for testing a UE with a single antenna connector.

---

# A.4 Idle Mode

## A.4.1 Cell selection

NOTE: This section is included for consistency with numbering with section 4; no test covering requirements exist.

## A.4.2 Cell Re-Selection

For each of the re-selection scenarios in section 4.2 a test is proposed.

For TDD/TDD cell reselection two scenarios are considered:

Scenario 1: Single carrier case

Scenario 2: Multi carrier case

### A.4.2.1 Scenario 1: Cell re-selection to intra frequency TDD cell

#### A.4.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in the single carrier case reported in section 4.2.2.

##### A.4.2.1.1.1 3.84 Mcps TDD option

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.4.1 and A.4.2. Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.1: General test parameters for Cell Re-selection to intra-frequency TDD cell**

| Parameter   |                 | Unit | Value                             | Comment   |
|---|-----------------|------|-----------------------------------|---|
| Initial condition                                   | Active cell     |      | Cell1                             |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     |      | Cell2                             |   |
| HCS   |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                    |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 15                                |   |
| T2  |                 | s    | 15                                |   |

Table A.4.2: Cell re-selection to intra-frequency TDD cell

| Parameter               | Unit                | Cell 1  |      |      |      | Cell 2                       |      |      |      | Cell 3                       |      |      |      |
|-------------------------|---------------------|---|------|------|------|------------------------------|------|------|------|------------------------------|------|------|------|
|                         |                     | 0   |      | 8    |      | 0                            |      | 8    |      | 0                            |      | 8    |      |
| Timeslot Number         |                     | T1  | T2   | T1   | T2   | T1                           | T2   | T1   | T2   | T1                           | T2   | T1   | T2   |
| UTRA RF Channel Number  |                     | Channel 1                                       |      |      |      | Channel 1                    |      |      |      | Channel 1                    |      |      |      |
| PCCPCH_Ec/lor           | dB                  | -3  | -3   |      |      | -3                           | -3   |      |      | -3                           | -3   |      |      |
| SCH_Ec/lor              | dB                  | -9  | -9   | -9   | -9   | -9                           | -9   | -9   | -9   | -9                           | -9   | -9   | -9   |
| SCH_t_offset            |                     | 0   | 0    | 0    | 0    | 5                            | 5    | 5    | 5    | 10                           | 10   | 10   | 10   |
| PICH_Ec/lor             | dB                  |   |      | -3   | -3   |                              |      | -3   | -3   |                              |      | -3   | -3   |
| OCNS_Ec/lor             | dB                  | -   | -    | -    | -    | -                            | -    | -    | -    | -                            | -    | -    | -    |
| $\hat{I}_{or}/I_{oc}$   | dB                  | 3,12  | 3,12 | 3,12 | 3,12 | 3,12                         | 3,12 | 3,12 | 3,12 | 3,12                         | 3,12 | 3,12 | 3,12 |
| PCCPCH RSCP             | dBm                 | -64   | -66  |      |      | -66                          | -64  |      |      | -74                          | -74  |      |      |
| Qoffset1 <sub>s,n</sub> | dB                  | C1, C2: 0; C1, C3:0; C1,C4:0                    |      |      |      | C2, C1: 0; C2, C3:0; C2,C4:0 |      |      |      | C3, C1: 0; C3, C2:0; C3,C4:0 |      |      |      |
| Qhyst1 <sub>s</sub>     | dB                  | 0   |      |      |      | 0                            |      |      |      | 0                            |      |      |      |
| Treselection            | s                   | 0   |      |      |      | 0                            |      |      |      | 0                            |      |      |      |
| Sintrasearch            | dB                  | not sent  |      |      |      | not sent                     |      |      |      | not sent                     |      |      |      |
|                         |                     | Cell 4  |      |      |      | Cell 5                       |      |      |      | Cell 6                       |      |      |      |
| Timeslot                |                     | 0   |      | 8    |      | 0                            |      | 8    |      | 0                            |      | 8    |      |
|                         |                     | T1  | T2   | T1   | T2   | T1                           | T2   | T1   | T2   | T1                           | T2   | T1   | T2   |
| UTRA RF Channel Number  |                     | Channel 1                                       |      |      |      | Channel 1                    |      |      |      | Channel 1                    |      |      |      |
| PCCPCH_Ec/lor           | dB                  | -3  | -3   |      |      | -3                           | -3   |      |      | -3                           | -3   |      |      |
| SCH_Ec/lor              | dB                  | -9  | -9   | -9   | -9   | -9                           | -9   | -9   | -9   | -9                           | -9   | -9   | -9   |
| SCH_t_offset            |                     | 15  | 15   | 15   | 15   | 20                           | 20   | 20   | 20   | 25                           | 25   | 25   | 25   |
| PICH_Ec/lor             | dB                  |   |      | -3   | -3   |                              |      | -3   | -3   |                              |      | -3   | -3   |
| OCNS_Ec/lor             | dB                  | -   | -    | -    | -    | -                            | -    | -    | -    | -                            | -    | -    | -    |
| $\hat{I}_{or}/I_{oc}$   | dB                  | -1  | -1   | -1   | -1   | -1                           | -1   | -1   | -1   | -1                           | -1   | -1   | -1   |
| PCCPCH RSCP             | dBm                 | -74   | -74  |      |      | -74                          | -74  |      |      | -74                          | -74  |      |      |
| Qoffset1 <sub>s,n</sub> | dB                  | C4, C1: 0; C4, C2:0; C4,C3:0 C4, C5:0; C4, C6:0 |      |      |      | C5, C1: 0; C5, C2:0; C5,C3:0 |      |      |      | C6, C1: 0; C6, C2:0; C6,C3:0 |      |      |      |
| Qhyst1 <sub>s</sub>     | dB                  | 0   |      |      |      | 0                            |      |      |      | 0                            |      |      |      |
| Treselection            | s                   | 0   |      |      |      | 0                            |      |      |      | 0                            |      |      |      |
| Sintrasearch            | dB                  | not sent  |      |      |      | not sent                     |      |      |      | not sent                     |      |      |      |
| $I_{oc}$                | dBm/<br>3,84<br>MHz | -70   |      |      |      |                              |      |      |      |                              |      |      |      |
| Propagation Condition   |                     | AWGN  |      |      |      |                              |      |      |      |                              |      |      |      |

A.4.2.1.1.2 1.28 Mcps TDD option

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.4.1A and A.4.2A. The UE is requested to monitor neighbouring cells on 1 carrier. Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.1A: General test parameters for Cell Re-selection to intra-frequency TDD cell**

| Parameter  |                 | Unit | Value                             | Comment   |
|--|-----------------|------|-----------------------------------|---|
| Initial condition                                    | Active cell     |      | Cell1                             |   |
|  | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                      | Active cell     |      | Cell2                             |   |
| HCS  |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                    |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin  |                 | dBm  | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>-- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                      |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                     |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1   |                 | s    | 15                                |   |
| T2   |                 | s    | 15                                |   |

**Table A.4.2A: Cell re-selection to intra-frequency TDD cell**

| Parameter               | Unit                | Cell 1  |     |       |    | Cell 2   |     |       |    | Cell 3   |     |       |    |
|-------------------------|---------------------|---|-----|-------|----|--|-----|-------|----|--|-----|-------|----|
|                         |                     | 0   |     | DWPTS |    | 0  |     | DWPTS |    | 0  |     | DWPTS |    |
| Timeslot Number         |                     | T1  | T2  | T1    | T2 | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 |
| UTRA RF Channel Number  |                     | Channel 1   |     |       |    | Channel 1  |     |       |    | Channel 1  |     |       |    |
| PCCPCH_Ec/lor           | dB                  | -3  | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| DwPCH_Ec/lor            | dB                  |   |     | 0     | 0  |  |     | 0     | 0  |  |     | 0     | 0  |
| OCNS_Ec/lor             | dB                  | -3  | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$   | dB                  | 10  | 7   | 10    | 7  | 7  | 10  | 7     | 10 | -1   | -1  | -1    | -1 |
| PCCPCH RSCP             | dBm                 | -63   | -66 |       |    | -66  | -63 |       |    | -74  | -74 |       |    |
| Qoffset1 <sub>s,n</sub> | dB                  | C1, C2: 0; C1, C3:0;<br>C1,C4:0<br>C1, C5:0; C1,C6:0  |     |       |    | C2, C1: 0; C2, C3:0;<br>C2,C4:0<br>C2, C5: 0; C2, C6:0 |     |       |    | C3, C1: 0; C3, C2:0;<br>C3,C4:0<br>C3, C5: 0; C3, C6:0 |     |       |    |
| Qhyst1 <sub>s</sub>     | dB                  | 0   |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Treselection            | s                   | 0   |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Sintrasearch            | dB                  | not sent  |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Timeslot                |                     | Cell 4  |     |       |    | Cell 5   |     |       |    | Cell 6   |     |       |    |
|                         |                     | 0   |     | DWPTS |    | 0  |     | DWPTS |    | 0  |     | DWPTS |    |
| UTRA RF Channel Number  |                     | Channel 1   |     |       |    | Channel 1  |     |       |    | Channel 1  |     |       |    |
| PCCPCH_Ec/lor           | dB                  | -3  | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| DwPCH_Ec/lor            | dB                  |   |     | 0     | 0  |  |     | 0     | 0  |  |     | 0     | 0  |
| OCNS_Ec/lor             | dB                  | -3  | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$   | dB                  | -1  | -1  | -1    | -1 | -1   | -1  | -1    | -1 | -1   | -1  | -1    | -1 |
| PCCPCH RSCP             | dBm                 | -74   | -74 |       |    | -74  | -74 |       |    | -74  | -74 |       |    |
| Qoffset1 <sub>s,n</sub> | dB                  | C4, C1: 0; C4, C2:0;<br>C4,C3:0 C4, C5:0; C4,<br>C6:0 |     |       |    | C5, C1: 0; C5, C2:0;<br>C5,C3:0<br>C5, C4:0; C5, C6:0  |     |       |    | C6, C1: 0; C6, C2:0;<br>C6,C3:0<br>C6, C4:0; C6, C5:0  |     |       |    |
| Qhyst1 <sub>s</sub>     | dB                  | 0   |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Treselection            | s                   | 0   |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Sintrasearch            | dB                  | not sent  |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| $I_{oc}$                | dBm/<br>1.28<br>MHz | -70   |     |       |    |  |     |       |    |  |     |       |    |
| Propagation Condition   |                     | AWGN  |     |       |    |  |     |       |    |  |     |       |    |

Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

## A.4.2.1.1.3 7.68 Mcps TDD option

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.4.1B and A.4.2B. Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.1B: General test parameters for Cell Re-selection to intra-frequency TDD cell**

| Parameter   |                 | Unit | Value                             | Comment   |
|---|-----------------|------|-----------------------------------|---|
| Initial condition                                   | Active cell     |      | Cell1                             |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     |      | Cell2                             |   |
| HCS   |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                    |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 15                                |   |
| T2  |                 | s    | 15                                |   |

Table A.4.2B: Cell re-selection to intra-frequency TDD cell

| Parameter               | Unit                | Cell 1  |      |      |      | Cell 2  |      |      |      | Cell 3  |      |      |      |
|-------------------------|---------------------|---|------|------|------|---|------|------|------|---|------|------|------|
|                         |                     | 0   |      | 8    |      | 0   |      | 8    |      | 0   |      | 8    |      |
| Timeslot Number         |                     | T1  | T2   | T1   | T2   | T1  | T2   | T1   | T2   | T1  | T2   | T1   | T2   |
| UTRA RF Channel Number  |                     | Channel 1   |      |      |      | Channel 1   |      |      |      | Channel 1   |      |      |      |
| PCCPCH_Ec/lor           | dB                  | -3  | -3   |      |      | -3  | -3   |      |      | -3  | -3   |      |      |
| SCH_Ec/lor              | dB                  | -9  | -9   | -9   | -9   | -9  | -9   | -9   | -9   | -9  | -9   | -9   | -9   |
| SCH_t_offset            |                     | 0   | 0    | 0    | 0    | 5   | 5    | 5    | 5    | 10  | 10   | 10   | 10   |
| PICH_Ec/lor             | dB                  |   |      | -3   | -3   |   |      | -3   | -3   |   |      | -3   | -3   |
| OCNS_Ec/lor             | dB                  | -   | -    | -    | -    | -   | -    | -    | -    | -   | -    | -    | -    |
|                         |                     | 3,12  | 3,12 | 3,12 | 3,12 | 3,12  | 3,12 | 3,12 | 3,12 | 3,12  | 3,12 | 3,12 | 3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB                  | 9   | 7    | 9    | 7    | 7   | 9    | 7    | 9    | -1  | -1   | -1   | -1   |
| PCCPCH RSCP             | dBm                 | -64   | -66  |      |      | -66   | -64  |      |      | -74   | -74  |      |      |
| Qoffset1 <sub>s,n</sub> | dB                  | C1, C2: 0; C1, C3:0;<br>C1,C4:0                       |      |      |      | C2, C1: 0; C2, C3:0;<br>C2,C4:0                       |      |      |      | C3, C1: 0; C3, C2:0;<br>C3,C4:0                       |      |      |      |
| Qhyst 1 <sub>s</sub>    | dB                  | 0   |      |      |      | 0   |      |      |      | 0   |      |      |      |
| Treselection            | s                   | 0   |      |      |      | 0   |      |      |      | 0   |      |      |      |
| Sintrasearch            | dB                  | not sent  |      |      |      | not sent  |      |      |      | not sent  |      |      |      |
|                         |                     | Cell 4  |      |      |      | Cell 5  |      |      |      | Cell 6  |      |      |      |
| Timeslot                |                     | 0   |      | 8    |      | 0   |      | 8    |      | 0   |      | 8    |      |
|                         |                     | T1  | T2   | T1   | T2   | T1  | T2   | T1   | T2   | T1  | T2   | T1   | T2   |
| UTRA RF Channel Number  |                     | Channel 1   |      |      |      | Channel 1   |      |      |      | Channel 1   |      |      |      |
| PCCPCH_Ec/lor           | dB                  | -3  | -3   |      |      | -3  | -3   |      |      | -3  | -3   |      |      |
| SCH_Ec/lor              | dB                  | -9  | -9   | -9   | -9   | -9  | -9   | -9   | -9   | -9  | -9   | -9   | -9   |
| SCH_t_offset            |                     | 15  | 15   | 15   | 15   | 20  | 20   | 20   | 20   | 25  | 25   | 25   | 25   |
| PICH_Ec/lor             | dB                  |   |      | -3   | -3   |   |      | -3   | -3   |   |      | -3   | -3   |
| OCNS_Ec/lor             | dB                  | -   | -    | -    | -    | -   | -    | -    | -    | -   | -    | -    | -    |
|                         |                     | 3,12  | 3,12 | 3,12 | 3,12 | 3,12  | 3,12 | 3,12 | 3,12 | 3,12  | 3,12 | 3,12 | 3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB                  | -1  | -1   | -1   | -1   | -1  | -1   | -1   | -1   | -1  | -1   | -1   | -1   |
| PCCPCH RSCP             | dBm                 | -74   | -74  |      |      | -74   | -74  |      |      | -74   | -74  |      |      |
| Qoffset1 <sub>s,n</sub> | dB                  | C4, C1: 0; C4, C2:0;<br>C4,C3:0 C4, C5:0; C4,<br>C6:0 |      |      |      | C5, C1: 0; C5, C2:0;<br>C5,C3:0<br>C5, C4:0; C5, C6:0 |      |      |      | C6, C1: 0; C6, C2:0;<br>C6,C3:0<br>C6, C4:0; C6, C5:0 |      |      |      |
| Qhyst1 <sub>s</sub>     | dB                  | 0   |      |      |      | 0   |      |      |      | 0   |      |      |      |
| Treselection            | s                   | 0   |      |      |      | 0   |      |      |      | 0   |      |      |      |
| Sintrasearch            | dB                  | not sent  |      |      |      | not sent  |      |      |      | not sent  |      |      |      |
| $I_{oc}$                | dBm/<br>7,68<br>MHz | -70   |      |      |      |   |      |      |      |   |      |      |      |
| Propagation Condition   |                     | AWGN  |      |      |      |   |      |      |      |   |      |      |      |

### A.4.2.1.2 Test Requirements

#### A.4.2.1.2.1 3.84 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1 in section 4.2.2.7.

$T_{\text{SI}}$  Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.4.2.1.2.2 1.28 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateNTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateNTDD}}$ : A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateNTDD}}$  of 6.4s according to Table 4.1A in section 4.2.

$T_{\text{SI}}$ : Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.4.2.1.2.3 7.68 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1B in section 4.2.2.7.

$T_{\text{SI}}$  Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

### A.4.2.2 Scenario 2: Cell re-selection to inter-frequency TDD cell

#### A.4.2.2.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in the multi carrier case reported in section 4.2.2.

##### A.4.2.2.1.1 3.84 Mcps TDD option

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.4.3 and A.4.4. Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.3: General test parameters for Cell Re-selection to inter-frequency TDD cell**

| Parameter  |                 | Unit | Value                             | Comment   |
|--|-----------------|------|-----------------------------------|---|
| Initial condition                                | Active cell     |      | Cell1                             |   |
|  | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                  | Active cell     |      | Cell2                             |   |
| HCS  |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin  |                 | dBm  | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0) - Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                  |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                 |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1   |                 | s    | 30                                |   |
| T2   |                 | s    | 15                                |   |

**Table A.4.4: Cell re-selection to iner-frequency TDD cell**

| Parameter               | Unit          | Cell 1   |       |       |       | Cell 2   |       |       |       | Cell 3   |       |       |       |
|-------------------------|---------------|--|-------|-------|-------|--|-------|-------|-------|--|-------|-------|-------|
|                         |               | 0  |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
| Timeslot Number         |               | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number  |               | Channel 1  |       |       |       | Channel 2  |       |       |       | Channel 1  |       |       |       |
| PCCPCH_Ec/lor           | dB            | -3   | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB            | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_toffset             |               | 0  | 0     | 0     | 0     | 5  | 5     | 5     | 5     | 10   | 10    | 10    | 10    |
| PICH_Ec/lor             | dB            |  |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor             | dB            | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB            | 6  | 0     | 6     | 0     | 0  | 6     | 0     | 6     | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm           | -67  | -73   |       |       | -73  | -67   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB            | C1, C2: 0; C1, C3:0; C1, C4:0 C1, C5:0; C1, C6:0 |       |       |       | C2, C1: 0; C2, C3:0; C2, C4:0 C2, C5:0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0; C3, C4:0 C3, C5:0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB            | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s             | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB            | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB            | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
|                         |               | Cell 4   |       |       |       | Cell 5   |       |       |       | Cell 6   |       |       |       |
| Timeslot                |               | 0  |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
|                         |               | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number  |               | Channel 1  |       |       |       | Channel 2  |       |       |       | Channel 2  |       |       |       |
| PCCPCH_Ec/lor           | dB            | -3   | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB            | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_toffset             |               | 15   | 15    | 15    | 15    | 20   | 20    | 20    | 20    | 25   | 25    | 25    | 25    |
| PICH_Ec/lor             | dB            |  |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS                    | dB            | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB            | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm           | -76  | -76   |       |       | -76  | -76   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB            | C4, C1: 0; C4, C2:0; C4, C3:0 C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5, C3:0 C5, C4:0; C5, C6:0 |       |       |       | C6, C1: 0; C6, C2:0; C6, C3:0 C6, C4:0; C6, C5:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB            | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s             | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB            | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB            | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| $I_{oc}$                | dBm/3, 84 MHz | -70  |       |       |       |  |       |       |       |  |       |       |       |
| Propagation Condition   |               | AWGN   |       |       |       |  |       |       |       |  |       |       |       |



## A.4.2.2.1.2 1.28 Mcps TDD option

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.4.3A and A.4.4A. The UE is requested to monitor neighbouring cells on 2 carriers. Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.3A: General test parameters for Cell Re-selection to inter-frequency TDD cell**

| Parameter   |                 | Unit | Value                             | Comment   |
|---|-----------------|------|-----------------------------------|---|
| Initial condition                                   | Active cell     |      | Cell1                             |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     |      | Cell2                             |   |
| HCS   |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                    |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 30                                |   |
| T2  |                 | s    | 15                                |   |

**Table A.4.4A: Cell re-selection to inter-frequency TDD cell**

| Parameter               | Unit   | Cell 1  |     |       |    | Cell 2  |     |       |    | Cell 3  |     |       |    |
|-------------------------|--|---|-----|-------|----|---|-----|-------|----|---|-----|-------|----|
|                         |  | 0   |     | DWPTS |    | 0   |     | DWPTS |    | 0   |     | DWPTS |    |
|                         |  | T1  | T2  | T1    | T2 | T1  | T2  | T1    | T2 | T1  | T2  | T1    | T2 |
| UTRA RF Channel Number  |  | Channel 1   |     |       |    | Channel 2   |     |       |    | Channel 1   |     |       |    |
| PCCPCH_Ec/lor           | dB   | -3  | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| DwPCH_Ec/lor            | dB   |   |     | 0     | 0  |   |     | 0     | 0  |   |     | 0     | 0  |
| OCNS_Ec/lor             | dB   | -3  | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$   | dB   | 10  | 4   | 10    | 4  | 4   | 10  | 4     | 10 | -1  | -1  | -1    | -1 |
| PCCPCH RSCP             | dBm  | -63   | -69 |       |    | -69   | -63 |       |    | -74   | -74 |       |    |
| Qoffset1 <sub>s,n</sub> | dB   | C1, C2: 0; C1, C3:0;<br>C1,C4:0 C1, C5:0; C1,<br>C6:0 |     |       |    | C2, C1: 0; C2, C3:0;<br>C2,C4:0C2, C5:0; C2,<br>C6:0  |     |       |    | C3, C1: 0; C3, C2:0;<br>C3,C4:0<br>C3, C5:0; C3, C6:0 |     |       |    |
| Qhyst1 <sub>s</sub>     | dB   | 0   |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Treselection            | s  | 0   |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Sintrasearch            | dB   | not sent  |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| Sintersearch            | dB   | not sent  |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
|                         |  | Cell 4  |     |       |    | Cell 5  |     |       |    | Cell 6  |     |       |    |
| Timeslot                |  | 0   |     | DWPTS |    | 0   |     | DWPTS |    | 0   |     | DWPTS |    |
|                         |  | T1  | T2  | T1    | T2 | T1  | T2  | T1    | T2 | T1  | T2  | T1    | T2 |
|                         |  | Channel 1   |     |       |    | Channel 2   |     |       |    | Channel 2   |     |       |    |
| UTRA RF Channel Number  |  | Channel 1   |     |       |    | Channel 2   |     |       |    | Channel 2   |     |       |    |
| PCCPCH_Ec/lor           | dB   | -3  | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| DwPCH_Ec/lor            | dB   |   |     | 0     | 0  |   |     | 0     | 0  |   |     | 0     | 0  |
| OCNS_Ec/lor             | dB   | -3  | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$   | dB   | -1  | -1  | -1    | -1 | -1  | -1  | -1    | -1 | -1  | -1  | -1    | -1 |
| PCCPCH RSCP             | dBm  | -74   | -74 |       |    | -74   | -74 |       |    | -74   | -74 |       |    |
| Qoffset1 <sub>s,n</sub> | dB   | C4, C1: 0; C4, C2:0;<br>C4,C3:0<br>C4, C5:0; C4, C6:0 |     |       |    | C5, C1: 0; C5, C2:0;<br>C5,C3:0<br>C5, C4:0; C5, C6:0 |     |       |    | C6, C1: 0; C6, C2:0;<br>C6,C3:0<br>C6, C4:0; C6, C5:0 |     |       |    |
| Qhyst1 <sub>s</sub>     | dB   | 0   |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Treselection            | s  | 0   |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Sintrasearch            | dB   | not sent  |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| Sintersearch            | dB   | not sent  |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| $I_{oc}$                | dBm/<br>1.28<br>MHz  | -70   |     |       |    |   |     |       |    |   |     |       |    |
| Propagation Condition   |  | AWGN  |     |       |    |   |     |       |    |   |     |       |    |
| NOTE:                   | In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number. |   |     |       |    |   |     |       |    |   |     |       |    |

**A.4.2.2.1.3 7.68 Mcps TDD option**

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.4.3B and A.4.4B. Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.3B: General test parameters for Cell Re-selection to intra-frequency TDD cell**

| Parameter  |                 | Unit | Value                             | Comment   |
|--|-----------------|------|-----------------------------------|---|
| Initial condition                                | Active cell     |      | Cell1                             |   |
|  | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                  | Active cell     |      | Cell2                             |   |
| HCS  |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin  |                 | dBm  | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0) - Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                  |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                 |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1   |                 | s    | 30                                |   |
| T2   |                 | s    | 15                                |   |

**Table A.4.4B: Cell re-selection to inter-frequency TDD cell**

| Parameter               | Unit          | Cell 1   |       |       |       | Cell 2   |       |       |       | Cell 3   |       |       |       |
|-------------------------|---------------|--|-------|-------|-------|--|-------|-------|-------|--|-------|-------|-------|
|                         |               | 0  |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
| Timeslot Number         |               | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number  |               | Channel 1  |       |       |       | Channel 2  |       |       |       | Channel 1  |       |       |       |
| PCCPCH_Ec/lor           | dB            | -3   | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB            | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_toffset             |               | 0  | 0     | 0     | 0     | 5  | 5     | 5     | 5     | 10   | 10    | 10    | 10    |
| PICH_Ec/lor             | dB            |  |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor             | dB            | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB            | 6  | 0     | 6     | 0     | 0  | 6     | 0     | 6     | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm           | -67  | -73   |       |       | -73  | -67   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB            | C1, C2: 0; C1, C3:0; C1, C4:0 C1, C5:0; C1, C6:0 |       |       |       | C2, C1: 0; C2, C3:0; C2, C4:0 C2, C5:0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0; C3, C4:0 C3, C5:0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB            | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s             | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB            | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB            | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
|                         |               | Cell 4   |       |       |       | Cell 5   |       |       |       | Cell 6   |       |       |       |
| Timeslot                |               | 0  |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
|                         |               | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number  |               | Channel 1  |       |       |       | Channel 2  |       |       |       | Channel 2  |       |       |       |
| PCCPCH_Ec/lor           | dB            | -3   | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB            | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_toffset             |               | 15   | 15    | 15    | 15    | 20   | 20    | 20    | 20    | 25   | 25    | 25    | 25    |
| PICH_Ec/lor             | dB            |  |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS                    | dB            | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB            | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm           | -76  | -76   |       |       | -76  | -76   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB            | C4, C1: 0; C4, C2:0; C4, C3:0 C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5, C3:0 C5, C4:0; C5, C6:0 |       |       |       | C6, C1: 0; C6, C2:0; C6, C3:0 C6, C4:0; C6, C5:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB            | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s             | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB            | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB            | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| $I_{oc}$                | dBm/7, 68 MHz | -70  |       |       |       |  |       |       |       |  |       |       |       |
| Propagation Condition   |               | AWGN   |       |       |       |  |       |       |       |  |       |       |       |

## A.4.2.2.2 Test Requirements

### A.4.2.2.2.1 3.84 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

**NOTE:**

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1 in section 4.2.2.7.

$T_{\text{SI}}$  Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

### A.4.2.2.2.2 1.28 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

**NOTE:**

The cell re-selection delay can be expressed as:  $T_{\text{evaluateNTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateNTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateNTDD}}$  of 6.4s according to Table 4.1A in section 4.2.

$T_{\text{SI}}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

### A.4.2.2.2.3 7.68 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

**NOTE:**

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1B in section 4.2.2.7.

$T_{SI}$  Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

## A.4.2.2A Scenario 2A: 3.84 Mcps TDD cell re-selection for 1.28 Mcps TDD UE

### A.4.2.2A.1 Test Purpose and Environment

This test is to verify the requirement for the 1.28 Mcps TDD OPTION/3.84 Mcps TDD OPTION cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 low chip rate (1.28 Mcps TDD OPTION) and 1 high chip rate (3.84 Mcps TDD OPTION) cell as given in Table A.4.3B and A.4.4B.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.3B: General test parameters for TDD low chip rate to TDD high chip rate cell re-selection**

| Parameter   |                | Unit | Value    | Comment   |
|---|----------------|------|----------|---|
| Initial condition                                   | Active cell    |      | Cell1    | 1.28 Mcps TDD OPTION cell   |
|   | Neighbour cell |      | Cell2    | 3.84 Mcps TDD OPTION cell   |
| Final condition                                     | Active cell    |      | Cell2    | 3.84 Mcps TDD OPTION cell   |
| HCS   |                |      | Not used |   |
| UE_TXPWR_MAX_RACH                                   |                | dBm  | 21       | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                |      | 1        | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| $T_{SI}$  |                | s    | 1,28     | The value shall be used for all cells in the test.  |
| DRX cycle length                                    |                | s    | 1,28     | The value shall be used for all cells in the test.  |
| T1  |                | s    | 30       |   |
| T2  |                | s    | 15       |   |

**Table A.4.4B: Test parameters for TDD low chip rate to TDD high chip rate cell re-selection**

| Parameter                     | Unit  | Cell 1            |     |       |    | Cell 2            |       |       |       |
|-------------------------------|---|-------------------|-----|-------|----|-------------------|-------|-------|-------|
|                               |   | 0                 |     | DwPTS |    | 0                 |       | 8     |       |
| Timeslot Number               |   |                   |     |       |    |                   |       |       |       |
|                               |   | T1                | T2  | T1    | T2 | T1                | T2    | T1    | T2    |
| UTRA RF Channel Number (NOTE) |   | Channel 1         |     |       |    | Channel 2         |       |       |       |
| PCCPCH_Ec/Ior                 | dB  | -3                | -3  |       |    | -3                | -3    |       |       |
| DwPCH_Ec/Ior                  | dB  |                   |     | 0     | 0  | n.a.              | n.a.  |       |       |
| SCH_Ec/Ior                    | dB  | n.a.              |     | n.a.  |    | -9                | -9    | -9    | -9    |
| SCH_t_offset                  |   | n.a.              |     | n.a.  |    | 0                 | 0     | 0     | 0     |
| PICH_Ec/Ior                   | dB  |                   |     |       |    |                   |       | -3    | -3    |
| OCNS_Ec/Ior                   | dB  | -3                |     | n.a.  |    | -3,12             | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$         | dB  | 10                | 7   |       |    | 7                 | 10    | 7     | 10    |
| $I_{oc}$                      |   | -70 dBm/ 1.28 MHz |     |       |    | -70 dBm/ 3.84 MHz |       |       |       |
| PCCPCH_RSCP                   | dBm   | -63               | -66 |       |    | -66               | -63   |       |       |
| Qrxlevmin                     | dBm   | -103              |     |       |    | -103              |       |       |       |
| Qoffset1_s,n                  | dB  | C1, C2: 0         |     |       |    | C2, C1: 0         |       |       |       |
| Qhyst1_s                      | dB  | 0                 |     |       |    | 0                 |       |       |       |
| Treselection                  | s   | 0                 |     |       |    | 0                 |       |       |       |
| Sintersearch                  | dB  | not sent          |     |       |    | not sent          |       |       |       |
| Propagation Condition         |   | AWGN              |     |       |    | AWGN              |       |       |       |
| NOTE:                         | In the case of multi-frequency cell for 1.28 Mcps TDD option, the UTRA RF Channel Number is the primary frequency's channel number. |                   |     |       |    |                   |       |       |       |

#### A.4.2.2A.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{evaluateTDD}} + T_{\text{SI}}$$

where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1A in section 4.2.

$T_{\text{SI}}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.4.2.2B Scenario 2B: 3.84 Mcps/1.28 Mcps TDD cell re-selection

##### A.4.2.2B.1 Test Purpose and Environment

This test is to verify the requirement for the 3.84 Mcps/1.28 Mcps TDD cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 3.84 Mcps TDD serving cell, and 1 1.28 Mcps TDD cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 3.84Mcps TDD carrier and 1 1.28Mcps TDD carrier. Test parameters are given in Table A.4.3C, A4.4C, and A.4.4D. Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.3C: General test parameters for 3.84 Mcps /1.28 Mcps TDD cell re-selection**

| Parameter   |                | Unit | Value    | Comment   |
|---|----------------|------|----------|---|
| Initial condition                                   | Active cell    |      | Cell 1   | 3.84 Mcps TDD OPTION cell   |
|   | Neighbour cell |      | Cell 2   | 1.28 Mcps TDD OPTION cell   |
| Final condition                                     | Active cell    |      | Cell 2   | 1.28 Mcps TDD OPTION cell   |
| HCS   |                |      | Not used |   |
| UE_TXPWR_MAX_RACH                                   |                | dBm  | 21       | The value shall be used for all cells in the test.  |
| $Q_{rxlevmin}$                                      |                | dBm  | -103     |   |
| Access Service Class (ASC#0)<br>- Persistence value |                |      | 1        | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| $T_{SI}$  |                | s    | 1,28     | The value shall be used for all cells in the test.  |
| DRX cycle length                                    |                | s    | 1,28     | The value shall be used for all cells in the test.  |
| T1  |                | s    | 30       |   |
| T2  |                | s    | 15       |   |

**Table A.4.4C: Cell 1 specific test parameters for 3.84 Mcps TDD/1.28 Mcps TDD cell re-selection**

| Parameter              | Unit         | Cell 1    |     |     |     |
|------------------------|--------------|-----------|-----|-----|-----|
| Timeslot Number        |              | 0         |     | 8   |     |
|                        |              | T1        | T2  | T 1 | T 2 |
| UTRA RF Channel Number |              | Channel 1 |     |     |     |
| PCCPCH_Ec/Ior          | dB           | -3        | -3  |     |     |
| SCH_Ec/Ior             | dB           | -9        | -9  | -9  | -9  |
| SCH_t_offset           |              | 0         |     |     |     |
| PICH_Ec/Ior            | dB           |           |     | -3  | -3  |
| OCNS_Ec/Ior            | dB           | -3.12     |     |     |     |
| $\hat{I}_{or}/I_{oc}$  | dB           | 10        | 7   | 10  | 7   |
| PCCPCH_RSCP            | dBm          | -63       | -66 |     |     |
| Qoffset1s,n            | dB           | C1, C2: 0 |     |     |     |
| Qhyst1s                | dB           | 0         |     |     |     |
| Treselection           | s            | 0         |     |     |     |
| Sintersearch           | dB           | not sent  |     |     |     |
| $I_{oc}$               | dBm/3.84 MHz | -70       |     |     |     |
| Propagation Condition  |              | AWGN      |     |     |     |

**Table A.4.4D: Cell 2 specific test parameters for 3.84 Mcps TDD/1.28 Mcps TDD cell re-selection**

| Parameter                 | Unit   | Cell 2    |     |       |     |
|---------------------------|--|-----------|-----|-------|-----|
|                           |  | 0         |     | DwPTS |     |
| Timeslot Number           |  | T1        | T2  | T 1   | T 2 |
| UTRA RF Channel Number*   |  | Channel 2 |     |       |     |
| PCCPCH_Ec/I <sub>or</sub> | dB   | -3        | -3  |       |     |
| DwPCH_Ec/I <sub>or</sub>  | dB   |           |     | 0     | 0   |
| OCNS_Ec/I <sub>or</sub>   | dB   | -3        |     |       |     |
| $\hat{I}_{or}/I_{oc}$     | dB   | 7         | 10  | 7     | 10  |
| PCCPCH_RSCP               | dBm  | -66       | -63 |       |     |
| Qoffset1 <sub>s,n</sub>   | dB   | C2, C1: 0 |     |       |     |
| Qhyst1 <sub>s</sub>       | dB   | 0         |     |       |     |
| Treselection              | s  | 0         |     |       |     |
| Sintersearch              | dB   | not sent  |     |       |     |
| I <sub>oc</sub>           | dBm/1.28 MHz   | -70       |     |       |     |
| Propagation Condition     |  | AWGN      |     |       |     |
| * Note:                   | In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency"s channel number. |           |     |       |     |

### A.4.2.2B.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{evaluateNTDD}} + T_{\text{SI}}$$

where:

$T_{\text{evaluateNTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateNTDD}}$  of 6.4s according to Table 4.1 in section 4.2.

$T_{\text{SI}}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

## A.4.2.2C Scenario 2C: 3.84 Mcps TDD cell re-selection for 7.68 Mcps TDD UE

### A.4.2.2C.1 Test Purpose and Environment

This test is to verify the requirement for the 7.68 Mcps TDD OPTION/3.84 Mcps TDD OPTION cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 higher chip rate (7.68 Mcps TDD OPTION) and 1 high chip rate (3.84 Mcps TDD OPTION) cell as given in Table A.4.4E and A4.4F.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.



Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.4E: General test parameters for TDD higher chip rate (7.68 Mcps) to TDD high chip rate (3.84 Mcps) cell re-selection**

| Parameter   |                | Unit | Value    | Comment   |
|---|----------------|------|----------|---|
| Initial condition                                   | Active cell    |      | Cell1    | 7.68 Mcps TDD OPTION cell   |
|   | Neighbour cell |      | Cell2    | 3.84 Mcps TDD OPTION cell   |
| Final condition                                     | Active cell    |      | Cell2    | 3.84 Mcps TDD OPTION cell   |
| HCS   |                |      | Not used |   |
| UE_TXPWR_MAX_RACH                                   |                | dBm  | 21       | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                | dBm  | -102     | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                |      | 1        | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     |                | S    | 1,28     | The value shall be used for all cells in the test.  |
| DRX cycle length                                    |                | S    | 1,28     | The value shall be used for all cells in the test.  |
| T1  |                | S    | 30       |   |
| T2  |                | S    | 15       |   |

**Table A.4.4F: Test parameters for TDD higher chip rate (7.68 Mcps) to TDD high chip rate (3.84 Mcps) cell re-selection**

| Parameter               | Unit | Cell 1           |       |       |       | Cell 2           |       |       |       |
|-------------------------|------|------------------|-------|-------|-------|------------------|-------|-------|-------|
|                         |      | 0                |       | 8     |       | 0                |       | 8     |       |
| Timeslot Number         |      | T1               | T2    | T1    | T2    | T1               | T2    | T1    | T2    |
| UTRA RF Channel Number  |      | Channel 1        |       |       |       | Channel 2        |       |       |       |
| PCCPCH_Ec/lor           | dB   | -3               | -3    |       |       | -3               | -3    |       |       |
| SCH_Ec/lor              | dB   | -9               | -9    | -9    | -9    | -9               | -9    | -9    | -9    |
| SCH_t <sub>offset</sub> |      | 0                | 0     | 0     | 0     | 5                | 5     | 5     | 5     |
| PICH_Ec/lor             | dB   |                  |       | -3    | -3    |                  |       | -3    | -3    |
| OCNS_Ec/lor             |      | -3,12            | -3,12 | -3,12 | -3,12 | -3,12            | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB   | 10               | 7     | 10    | 7     | 7                | 10    | 7     | 10    |
| PCCPCH_RSCP             | dBm  | -63              | -66   |       |       | -66              | -63   |       |       |
| Qoffset1 <sub>s,n</sub> | dB   | C1, C2: 0        |       |       |       | C2, C1: 0        |       |       |       |
| Qhyst1 <sub>s</sub>     | dB   | 0                |       |       |       | 0                |       |       |       |
| Treselection            | s    | 0                |       |       |       | 0                |       |       |       |
| Sintersearch            | dB   | not sent         |       |       |       | not sent         |       |       |       |
| $I_{oc}$                |      | -70 dBm/7.68 MHz |       |       |       | -70 dBm/3.84 MHz |       |       |       |
| Propagation Condition   |      | AWGN             |       |       |       |                  |       |       |       |

#### A.4.2.2C.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{evaluateTDD}} + T_{\text{SI}}$$

where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1B in section 4.2.

$T_{\text{SI}}$  Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

## A.4.2.2D Scenario 2D: 3.84 Mcps/7.68 Mcps TDD cell re-selection

### A.4.2.2D.1 Test Purpose and Environment

This test is to verify the requirement for the 3.84 Mcps/7.68 Mcps TDD cell re-selection delay reported in section 4.2.

This scenario implies the presence of one 3.84 Mcps TDD serving cell, and one 7.68 Mcps TDD cell to be re-selected. The UE is requested to monitor neighbouring cells on one 3.84Mcps TDD carrier and one 7.68 Mcps TDD carrier. Test parameters are given in Table A.4.4G and A.4.4H. Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.4G: General test parameters for 3.84 Mcps /7.68 Mcps TDD cell re-selection**

| Parameter   |                | Unit | Value    | Comment   |
|---|----------------|------|----------|---|
| Initial condition                                   | Active cell    |      | Cell 1   | 3.84 Mcps TDD OPTION cell   |
|   | Neighbour cell |      | Cell 2   | 7.68 Mcps TDD OPTION cell   |
| Final condition                                     | Active cell    |      | Cell 2   | 7.68 Mcps TDD OPTION cell   |
| HCS   |                |      | Not used |   |
| UE_TXPWR_MAX_RACH                                   |                | dBm  | 21       | The value shall be used for all cells in the test.  |
| $Q_{\text{rxlevmin}}$                               |                | dBm  | -102     |   |
| Access Service Class (ASC#0)<br>- Persistence value |                |      | 1        | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| $T_{\text{SI}}$                                     |                | S    | 1,28     | The value shall be used for all cells in the test.  |
| DRX cycle length                                    |                | S    | 1,28     | The value shall be used for all cells in the test.  |
| T1  |                | S    | 30       |   |
| T2  |                | S    | 15       |   |

Table A.4.4H: Cell 1 specific test parameters for 3.84 Mcps TDD/7.68 Mcps TDD cell re-selection

| Parameter               | Unit | Cell 1           |       |       |       | Cell 2           |       |       |       |
|-------------------------|------|------------------|-------|-------|-------|------------------|-------|-------|-------|
|                         |      | 0                |       | 8     |       | 0                |       | 8     |       |
| Timeslot Number         |      | T1               | T2    | T1    | T2    | T1               | T2    | T1    | T2    |
| UTRA RF Channel Number  |      | Channel 1        |       |       |       | Channel 2        |       |       |       |
| PCCPCH_Ec/lor           | dB   | -3               | -3    |       |       | -3               | -3    |       |       |
| SCH_Ec/lor              | dB   | -9               | -9    | -9    | -9    | -9               | -9    | -9    | -9    |
| SCH_t_offset            |      | 0                | 0     | 0     | 0     | 5                | 5     | 5     | 5     |
| PICH_Ec/lor             | dB   |                  |       | -3    | -3    |                  |       | -3    | -3    |
| OCNS_Ec/lor             |      | -3,12            | -3,12 | -3,12 | -3,12 | -3,12            | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB   | 10               | 7     | 10    | 7     | 7                | 10    | 7     | 10    |
| PCCPCH_RSCP             | dBm  | -63              | -66   |       |       | -66              | -63   |       |       |
| Qoffset1 <sub>s,n</sub> | dB   | C1, C2: 0        |       |       |       | C2, C1: 0        |       |       |       |
| Qhyst1 <sub>s</sub>     | dB   | 0                |       |       |       | 0                |       |       |       |
| Treselection            | s    | 0                |       |       |       | 0                |       |       |       |
| Sintersearch            | dB   | not sent         |       |       |       | not sent         |       |       |       |
| $I_{oc}$                |      | -70 dBm/3.84 MHz |       |       |       | -70 dBm/7.68 MHz |       |       |       |
| Propagation Condition   |      | AWGN             |       |       |       |                  |       |       |       |

## A.4.2.2E Scenario 2E: 1.28Mcps TDD inter-band cell re-selection

### A.4.2.2E.1 Test Purpose and Environment

This test is to verify the requirement for the cell re-selection delay in the inter-band reported in section 4.2.2.

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.4.4J and A.4.4K. The UE is requested to monitor neighbouring cells on 2 band carriers. Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.4I: General test parameters for Cell Re-selection to inter-frequency TDD cell

| Parameter   | Unit            | Value                             | Comment   |
|---|-----------------|-----------------------------------|---|
| Initial condition                                   | Active cell     | Cell1                             |   |
|   | Neighbour cells | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     | Cell2                             |   |
| HCS   |                 | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   | dBm             | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   | dBm             | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     | s               | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                    | s               | 1.28                              | The value shall be used for all cells in the test.  |
| T1  | s               | 30                                |   |
| T2  | s               | 15                                |   |

### A.4.2.2E.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{evaluateNTDD}} + T_{\text{SI}}$$

where:

$T_{\text{evaluateNTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateNTDD}}$  of 6.4s according to Table 4.1 in section 4.2.

$T_{\text{SI}}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [16] for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

### A.4.2.3 Scenario 3: TDD/FDD cell re-selection

#### A.4.2.3.1 Test Purpose and Environment

##### A.4.2.3.1.1 3.84 Mcps TDD option

This test is to verify the requirement for the TDD/FDD cell re-selection delay reported in section 4.2.2.

This scenario implies the presence of 1 UTRA TDD and 1 UTRA FDD cell as given in Table A.4.5 and A.4.6. The maximum repetition period of the relevant system information blocks that need to be received by the UE to camp on a cell shall be 1280 ms.

Cell 1 and cell 2 shall belong to different Location Areas.

**Table A.4.5: General test parameters for the TDD/FDD cell re-selection**

| Parameter   | Unit            | Value    | Comment   |
|---|-----------------|----------|---|
| Initial condition                                   | Active cell     | Cell1    | TDD cell  |
|   | Neighbour cells | Cell2    | FDD cell  |
| Final condition                                     | Active cell     | Cell2    |   |
| HCS   |                 | Not used |   |
| UE_TXPWR_MAX_RACH                                   | dBm             | 21       | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 | 1        | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| DRX cycle length                                    | s               | 1.28     | The value shall be used for all cells in the test.  |
| T1  | s               | 30       | During T1 cell 1 better ranked than cell 2  |
| T2  | s               | 15       | During T2 cell 2 better ranked than cell 1  |

Table A.4.6: TDD/FDD cell re-selection

| Parameter  | Unit             | Cell 1      |       |       |       | Cell 2      |        |
|--|------------------|-------------|-------|-------|-------|-------------|--------|
|  |                  | 0           |       | 8     |       | n.a.        | n.a.   |
| Timeslot Number                                      |                  | T1          | T2    | T1    | T2    | T1          | T2     |
| UTRA RF Channel Number                               |                  | Channel 1   |       |       |       | Channel 2   |        |
| CPICH_Ec/Ior   | dB               | n.a.        |       | n.a.  |       | -10         | -10    |
| PCCPCH_Ec/Ior  | dB               | -3          | -3    |       |       | -12         | -12    |
| SCH_Ec/Ior   | dB               | -9          | -9    | -9    | -9    | -12         | -12    |
| SCH_offset   |                  | 0           | 0     | 0     | 0     | n.a.        | n.a.   |
| PICH_Ec/Ior  | dB               |             |       | -3    | -3    | -15         | -15    |
| OCNS_Ec/Ior  | dB               | -3,12       | -3,12 | -3,12 | -3,12 | -0,941      | -0,941 |
| $\hat{I}_{or}/I_{oc}$                                | dB               | 3           | -2    | 3     | -2    | -2          | 3      |
| $I_{oc}$   | dBm/3.8<br>4 MHz | -70         |       |       |       |             |        |
| CPICH_RSCP   | dBm              | n.a.        |       | n.a.  |       | -82         | -77    |
| PCCPCH_RSCP  | dBm              | -70         | -75   |       |       | n.a.        | n.a.   |
| Cell_selection_and<br>reselection_quality<br>measure |                  | CPICH_RSCP  |       |       |       | CPICH_RSCP  |        |
| Qrxlevmin  | dBm              | -102        |       |       |       | -115        |        |
| Qoffset1 <sub>s,n</sub>                              | dB               | C1, C2: -12 |       |       |       | C2, C1: +12 |        |
| Qhyst1 <sub>s</sub>                                  | dB               | 0           |       |       |       | 0           |        |
| Treselection   | s                | 0           |       |       |       | 0           |        |
| Propagation<br>Condition                             |                  | AWGN        |       |       |       | AWGN        |        |

## A.4.2.3.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the 1.28 Mcps TDD OPTION/FDD cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 1.28Mps TDD serving cell, and 1 FDD cell to be selected. The UE is requested to monitor neighbouring cells on 1 1.28Mcps TDD carrier and 1 FDD carrier. Test parameters are given in Table A.4.5A, A4.6A, and A.4.6AA.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.5A: General test parameters for the TDD/FDD cell re-selection

| Parameter   | Unit            | Value    | Comment   |
|---|-----------------|----------|---|
| Initial condition                                   | Active cell     | Cell1    | 1.28 Mcps TDD OPTION cell   |
|   | Neighbour cells | Cell2    | FDD cell  |
| Final condition                                     | Active cell     | Cell2    | FDD cell  |
| HCS   |                 | Not used |   |
| UE_TXPWR_MAX_RACH                                   | dBm             | 21       | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 | 1        | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     | s               | 1.28     | The value shall be used for all cells in the test.  |
| DRX cycle length                                    | s               | 1.28     | The value shall be used for all cells in the test.  |
| T1  | s               | 30       |   |
| T2  | s               | 15       |   |

Table A.4.6A: Cell 1 specific test parameters for 1.28 Mcps TDD/FDD cell re-selection

| Parameter  | Unit         | Cell 1      |     |       |     |
|--|--------------|-------------|-----|-------|-----|
|  |              | 0           |     | DwPTS |     |
| Timeslot Number  |              | T1          | T2  | T 1   | T 2 |
| UTRA RF Channel Number*  |              | Channel 1   |     |       |     |
| PCCPCH_Ec/lor  | dB           | -3          | -3  |       |     |
| DwPCH_Ec/lor   | dB           |             |     | 0     | 0   |
| OCNS_Ec/lor  | dB           | -3          |     |       |     |
| $\hat{I}_{or}/I_{oc}$  | dB           | 8           | 2   | 8     | 2   |
| PCCPCH_RSCP  | dBm          | -65         | -71 |       |     |
| Cell_selection_and_reselection_quality_measure   |              | CPICH RSCP  |     |       |     |
| Qrxlevmin  | dBm          | -103        |     |       |     |
| Qoffset1 <sub>s,n</sub>  | dB           | C1, C2: -12 |     |       |     |
| Qhyst1 <sub>s</sub>  | dB           | 0           |     |       |     |
| Treselection   | s            | 0           |     |       |     |
| Sintersearch   | dB           | not sent    |     |       |     |
| $I_{oc}$   | dBm/1.28 MHz | -70         |     |       |     |
| Propagation Condition  |              | AWGN        |     |       |     |
| * Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number. |              |             |     |       |     |

Table A.4.6AA: Cell 2 specific test parameters for 1.28 Mcps TDD/FDD cell re-selection

| Parameter                                      | Unit         | Cell 2 (UTRA) |     |
|--|--------------|---------------|-----|
|  |              | T1            | T2  |
| UTRA RF Channel Number                         |              | Channel 2     |     |
| CPICH_Ec/lor                                   | dB           | -10           |     |
| PCCPCH_Ec/lor                                  | dB           | -12           |     |
| SCH_Ec/lor                                     | dB           | -12           |     |
| PICH_Ec/lor                                    | dB           | -15           |     |
| OCNS_Ec/lor                                    | dB           | -0.941        |     |
| $\hat{I}_{or}/I_{oc}$                          | dB           | -3            | 3   |
| CPICH_RSCP                                     | dBm          | -83           | -77 |
| Cell_selection_and_reselection_quality_measure |              | CPICH RSCP    |     |
| Qrxlevmin                                      | dBm          | -115          |     |
| Qoffset1 <sub>s,n</sub>                        | dB           | C2, C1: +12   |     |
| Qhyst1   | dB           | 0             |     |
| Treselection                                   | s            | 0             |     |
| Sintersearch                                   | dB           | not sent      |     |
| $I_{oc}$                                       | dBm/3.84 MHz | -70           |     |
| Propagation Condition                          |              | AWGN          |     |

#### A.4.2.3.1.3 7.68 Mcps TDD option

This test is to verify the requirement for the TDD/FDD cell re-selection delay reported in section 4.2.2.

This scenario implies the presence of 1 UTRA TDD and 1 UTRA FDD cell as given in Table A.4.5B and A.4.6B. The maximum repetition period of the relevant system information blocks that need to be received by the UE to camp on a cell shall be 1280 ms.

Cell 1 and cell 2 shall belong to different Location Areas.

Table A.4.5B: General test parameters for the TDD/FDD cell re-selection

| Parameter   |                 | Unit | Value    | Comment   |
|---|-----------------|------|----------|---|
| Initial condition                                   | Active cell     |      | Cell1    | TDD cell  |
|   | Neighbour cells |      | Cell2    | FDD cell  |
| Final condition                                     | Active cell     |      | Cell2    |   |
| HCS   |                 |      | Not used |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21       | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1        | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| DRX cycle length                                    |                 | s    | 1.28     | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 30       | During T1 cell 1 better ranked than cell 2  |
| T2  |                 | s    | 15       | During T2 cell 2 better ranked than cell 1  |

Table A.4.6B: TDD/FDD cell re-selection

| Parameter   | Unit | Cell 1           |       |       |       | Cell 2           |        |
|---|------|------------------|-------|-------|-------|------------------|--------|
|   |      | 0                |       | 8     |       | n.a.             | n.a.   |
| Timeslot Number                                       |      | T1               | T2    | T1    | T2    | T1               | T2     |
| UTRA RF Channel Number                                |      | Channel 1        |       |       |       | Channel 2        |        |
| CPICH_Ec/lor  | dB   | n.a.             |       | n.a.  |       | -10              | -10    |
| PCCPCH_Ec/lor   | dB   | -3               | -3    |       |       | -12              | -12    |
| SCH_Ec/lor  | dB   | -9               | -9    | -9    | -9    | -12              | -12    |
| SCH_toffset   |      | 0                | 0     | 0     | 0     | n.a.             | n.a.   |
| PICH_Ec/lor   | dB   |                  |       | -3    | -3    | -15              | -15    |
| OCNS_Eclor  | dB   | -3,12            | -3,12 | -3,12 | -3,12 | -0,941           | -0,941 |
| $\hat{I}_{or}/I_{oc}$                                 | dB   | 3                | -2    | 3     | -2    | -2               | 3      |
| $I_{oc}$  |      | -70 dBm/7.68 MHz |       |       |       | -70 dBm/3.84 MHz |        |
| CPICH_RSCP  | dBm  | n.a.             |       | n.a.  |       | -82              | -77    |
| PCCPCH_RSCP   | dBm  | -70              | -75   |       |       | n.a.             | n.a.   |
| Cell_selection_and<br>reselection_quality<br>_measure |      | CPICH_RSCP       |       |       |       | CPICH_RSCP       |        |
| Qrxlevmin   | dBm  | -102             |       |       |       | -115             |        |
| Qoffset1 <sub>s,n</sub>                               | dB   | C1, C2: -12      |       |       |       | C2, C1: +12      |        |
| Qhyst1 <sub>s</sub>                                   | dB   | 0                |       |       |       | 0                |        |
| Treselection  | s    | 0                |       |       |       | 0                |        |
| Propagation<br>Condition                              |      | AWGN             |       |       |       | AWGN             |        |

### A.4.2.3.2 Test Requirements

#### A.4.2.3.2.1 3.84 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateFDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateFDD}}$  See Table 4.1 in section 4.2.2.

$T_{\text{SI}}$  Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.4.2.3.2.2 1.28 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{evaluateFDD}} + T_{\text{SI}}$$

where:

$T_{\text{evaluateFDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateFDD}}$  of 6.4s according to Table 4.1A in section 4.2.

$T_{\text{SI}}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.4.2.3.2.3 7.68 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Location Registration on cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as:

$$T_{\text{evaluateFDD}} + T_{\text{SI}}, \text{ where:}$$

$T_{\text{evaluateFDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateFDD}}$  of 6.4s according to Table 4.1B in section 4.2.

$T_{\text{SI}}$  Maximum repetition rate of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

### A.4.2.4 Scenario 4: inter RAT cell re-selection

#### A.4.2.4.1 Test Purpose and Environment

##### A.4.2.4.1.1 3.84 Mcps TDD option

This test is to verify the requirement for the UTRA TDD to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRA TDD serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 UTRA TDD carrier and 12 GSM cells. Test parameters are given in Table, A.4.7, A.4.8, A.4.9. Cell 1 and Cell 2 shall belong to different Location Areas.



For this test environment the ranking/mapping function indicated in the broadcast of cell 1 shall be in such a way as to enable the UE to evaluate that the TDD cell 1 is better ranked as the GSM cell 2 during T1 and the GSM cell 2 is better ranked than the TDD cell 1 during T2.

**Table A.4.7: General test parameters for UTRAN to GSM Cell Re-selection**

| Parameter         |                | Unit | Value    | Comment       |
|-------------------|----------------|------|----------|---------------|
| Initial condition | Active cell    |      | Cell1    | UTRA TDD Cell |
|                   | Neighbour cell |      | Cell2    | GSM Cell      |
| Final condition   | Active cell    |      | Cell2    |               |
| HCS               |                |      | Not used |               |
| DRX cycle length  |                | s    | 1,28     | UTRA TDD cell |
| T1                |                | s    | 45       |               |
| T2                |                | s    | 35       |               |

**Table A.4.8: Cell re-selection UTRA TDD to GSM cell case (cell 1)**

| Parameter               | Unit             | Cell 1 (UTRA TDD) |       |           |       |
|-------------------------|------------------|-------------------|-------|-----------|-------|
|                         |                  | 0                 |       | 8         |       |
| Timeslot Number         |                  | T1                | T2    | T1        | T2    |
| UTRA RF Channel Number  |                  | Channel 1         |       | Channel 1 |       |
| PCCPCH_Ec/lor           | dB               | -3                | -3    |           |       |
| SCH_Ec/lor              | dB               | -9                | -9    | -9        | -9    |
| SCH_toffset             |                  | 0                 | 0     | 0         | 0     |
| PICH_Ec/lor             | dB               |                   |       | -3        | -3    |
| OCNS_Ec/lor             | dB               | -3,12             | -3,12 | -3,12     | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB               | 3                 | -2    | 3         | -2    |
| $I_{oc}$                | dBm/3,<br>84 MHz | -70               |       | -70       |       |
| PCCPCH RSCP             | dBm              | -70               | -75   | n.a.      | n.a.  |
| Propagation Condition   |                  | AWGN              |       | AWGN      |       |
| Qrxlevmin               | dBm              | -102              |       |           |       |
| Qoffset <sub>1s,n</sub> | dB               | C1, C2: 0         |       |           |       |
| Qhyst1                  | dB               | 0                 |       |           |       |
| Treselection            | s                | 0                 |       |           |       |
| Ssearch <sub>RAT</sub>  | dB               | not sent          |       |           |       |

**Table A.4.9: Cell re-selection UTRA TDD to GSM cell case (cell 2)**

| Parameter                  | Unit | Cell 2 (GSM) |     |
|----------------------------|------|--------------|-----|
|                            |      | T1           | T2  |
| Absolute RF Channel Number |      | ARFCN 1      |     |
| RXLEV                      | dBm  | -90          | -75 |
| RXLEV_ACCESS_MIN           | dBm  | -104         |     |
| MS_TXPWR_MAX_CCH           | dBm  | 33           |     |

#### A.4.2.4.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table A.4.7A, A.4.8A, A.4.9A.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. Cell 1 and cell 2 shall belong to different location areas.

**Table A.4.7A: General test parameters for UTRAN (1.28 Mcps TDD OPTION) to GSM Cell Re-selection**

| Parameter         |                | Unit | Value    | Comment                   |
|-------------------|----------------|------|----------|---------------------------|
| Initial condition | Active cell    |      | Cell1    | 1.28 Mcps TDD OPTION cell |
|                   | Neighbour cell |      | Cell2    | GSM cell                  |
| Final condition   | Active cell    |      | Cell2    | GSM cell                  |
| DRX cycle length  |                | s    | 1,28     |                           |
| HCS               |                |      | Not used |                           |
| T1                |                | s    | 45       |                           |
| T2                |                | s    | 15       |                           |

**Table A.4.8A: Cell re-selection UTRAN to GSM cell case (cell 1)**

| Parameter  | Unit         | Cell 1 (UTRA)   |     |           |      |
|--|--------------|-----------------|-----|-----------|------|
|  |              | Timeslot Number |     | DwPTS     |      |
|  |              | T1              | T2  | T1        | T2   |
| UTRA RF Channel Number*  |              | Channel 1       |     | Channel 1 |      |
| PCCPCH_Ec/I <sub>or</sub>  | dB           | -3              | -3  |           |      |
| DwPCH_Ec/I <sub>or</sub>   | dB           |                 |     | 0         | 0    |
| OCNS_Ec/I <sub>or</sub>  | dB           | -3              | -3  |           |      |
| $\hat{I}_{or}/I_{oc}$  | dB           | 13              | -12 | 13        | -12  |
| $I_{oc}$   | dBm/1.28 MHz | -80             |     |           |      |
| PCCPCH RSCP  | dBm          | -70             | -95 | n.a.      | n.a. |
| Propagation Condition  |              | AWGN            |     | AWGN      |      |
| Treselection   | s            | 0               |     |           |      |
| S <sub>search</sub> RAT  | dB           | Not sent        |     |           |      |
| Q <sub>rxlevmin</sub>  | dBm          | -103            |     |           |      |
| Q <sub>offset1s,n</sub>  | dB           | C1, C2: 0       |     |           |      |
| Q <sub>hyst1s</sub>  | dB           | 0               |     |           |      |
| * Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number. |              |                 |     |           |      |

**Table A.4.9A: Cell re-selection UTRAN to GSM cell case (cell 2)**

| Parameter                  | Unit | Cell 2 (GSM) |     |
|----------------------------|------|--------------|-----|
|                            |      | T1           | T2  |
| Absolute RF Channel Number |      | ARFCN 1      |     |
| RXLEV                      | dBm  | -75          | -75 |
| RXLEV_ACCESS_MIN           | dBm  | -104         |     |
| MS_TXPWR_MAX_CCH           | dBm  | 33           |     |

#### A.4.2.4.1.3 7.68 Mcps TDD option

This test is to verify the requirement for the UTRA TDD to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRA TDD serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 UTRA TDD carrier and 12 GSM cells. Test parameters are given in Table, A.4.7B, A.4.8B, A.4.9B. Cell 1 and Cell 2 shall belong to different Location Areas.

For this test environment the ranking/mapping function indicated in the broadcast of cell 1 shall be in such a way as to enable the UE to evaluate that the TDD cell 1 is better ranked as the GSM cell 2 during T1 and the GSM cell 2 is better ranked than the TDD cell 1 during T2.

**Table A.4.7B: General test parameters for UTRAN to GSM Cell Re-selection**

| Parameter         |                | Unit | Value    | Comment       |
|-------------------|----------------|------|----------|---------------|
| Initial condition | Active cell    |      | Cell1    | UTRA TDD Cell |
|                   | Neighbour cell |      | Cell2    | GSM Cell      |
| Final condition   | Active cell    |      | Cell2    |               |
| HCS               |                |      | Not used |               |
| DRX cycle length  |                | s    | 1,28     | UTRA TDD cell |
| T1                |                | s    | 45       |               |
| T2                |                | s    | 35       |               |

**Table A.4.8B: Cell re-selection UTRA TDD to GSM cell case (cell 1)**

| Parameter               | Unit             | Cell 1 (UTRA TDD) |       |           |       |
|-------------------------|------------------|-------------------|-------|-----------|-------|
|                         |                  | 0                 |       | 8         |       |
| Timeslot Number         |                  | T1                | T2    | T1        | T2    |
| UTRA RF Channel Number  |                  | Channel 1         |       | Channel 1 |       |
| PCCPCH_Ec/lor           | dB               | -3                | -3    |           |       |
| SCH_Ec/lor              | dB               | -9                | -9    | -9        | -9    |
| SCH_toffset             |                  | 0                 | 0     | 0         | 0     |
| PICH_Ec/lor             | dB               |                   |       | -3        | -3    |
| OCNS_Ec/lor             | dB               | -3,12             | -3,12 | -3,12     | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB               | 3                 | -2    | 3         | -2    |
| $I_{oc}$                | dBm/7,<br>68 MHz | -70               |       | -70       |       |
| PCCPCH RSCP             | dBm              | -70               | -75   | n.a.      | n.a.  |
| Propagation Condition   |                  | AWGN              |       | AWGN      |       |
| Qrxlevmin               | dBm              | -102              |       |           |       |
| Qoffset1 <sub>s,n</sub> | dB               | C1, C2: 0         |       |           |       |
| Qhyst1                  | dB               | 0                 |       |           |       |
| Treselection            | s                | 0                 |       |           |       |
| Ssearch <sub>RAT</sub>  | dB               | not sent          |       |           |       |

**Table A.4.9B: Cell re-selection UTRA TDD to GSM cell case (cell 2)**

| Parameter                  | Unit | Cell 2 (GSM) |     |
|----------------------------|------|--------------|-----|
|                            |      | T1           | T2  |
| Absolute RF Channel Number |      | ARFCN 1      |     |
| RXLEV                      | dBm  | -90          | -75 |
| RXLEV_ACCESS_MIN           | dBm  | -104         |     |
| MS_TXPWR_MAX_CCH           | dBm  | 33           |     |

#### A.4.2.4.2 Test Requirements

##### A.4.2.4.2.1 3.84 Mpcs TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than  $26 \text{ s} + T_{\text{BCCH}}$ , where  $T_{\text{BCCH}}$  is the maximum time allowed to read BCCH data in the GSM cell [21].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$4 * T_{\text{measureGSM}} + T_{\text{BCCH}}$$

where:

$T_{\text{measureGSM}}$  Equal to the value specified in Table 4.1 in section 4.2

$T_{\text{BCCH}}$  Equal to 1.9 s, i.e. the maximum time allowed to read BCCH data when synchronised to a BCCH carrier from a GSM cell [21].

This gives a total of  $25.6 \text{ s} + T_{\text{BCCH}}$ , allow  $26 \text{ s} + T_{\text{BCCH}}$  in the test case.

#### A.4.2.4.2.2 1.28 Mpcs TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send RR Channel Request message to perform a Location update.

The cell re-selection delay shall be less than  $8 \text{ s} + T_{\text{BCCH}}$  where  $T_{\text{BCCH}}$  is the maximum time allowed to read BCCH data from GSM cell [21].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$\text{Max}(3 * T_{\text{measureNTDD}}, T_{\text{measureGSM}} + 1\text{DRX}) + T_{\text{BCCH}}$$

where:

$T_{\text{measureNTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{measureNTDD}}$  of 1.28s according to Table 4.1A in section 4.2.

$T_{\text{measureGSM}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{measureGSM}}$  of 6.4s according to Table 4.1A in section 4.2.

DRX cycle length 1.28s is assumed, see Table A.4.1A

$T_{\text{BCCH}}$  Maximum time allowed to read BCCH data from GSM cell [20].

According to [21], the maximum time allowed to read the BCCH data, when being synchronized to a BCCH carrier, is 1.9 s.

This gives a total of  $7.68\text{s} + T_{\text{BCCH}}$ , thus allow  $8\text{s} + T_{\text{BCCH}}$ .

#### A.4.2.4.2.3 7.68 Mpcs TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than  $26 \text{ s} + T_{\text{BCCH}}$ , where  $T_{\text{BCCH}}$  is the maximum time allowed to read BCCH data in the GSM cell [21].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$4 * T_{\text{measureGSM}} + T_{\text{BCCH}}$$

where:

$T_{\text{measureGSM}}$  Equal to the value specified in Table 4.1B in section 4.2

$T_{\text{BCCH}}$  Equal to 1.9 s, i.e. the maximum time allowed to read BCCH data when synchronised to a BCCH carrier from a GSM cell [21].

This gives a total of  $25.6 \text{ s} + T_{\text{BCCH}}$ , allow  $26 \text{ s} + T_{\text{BCCH}}$  in the test case.

### A.4.2.4.3 Scenario 4A Test Purpose and Environment

#### A.4.2.4.3.1 (void)

#### A.4.2.4.3.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.2.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table A.4.10A, A.4.11A, A.4.12A.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304. Cell 1 and cell 2 shall belong to different location areas.

**Table A.4.10A: General test parameters for UTRAN (1.28 Mcps TDD OPTION) to GSM Cell Re-selection**

| Parameter         | Unit           | Value    | Comment                   |
|-------------------|----------------|----------|---------------------------|
| Initial condition | Active cell    | Cell1    | 1.28 Mcps TDD OPTION cell |
|                   | Neighbour cell | Cell2    | GSM cell                  |
| Final condition   | Active cell    | Cell2    | GSM cell                  |
| DRX cycle length  | s              | 1,28     |                           |
| HCS               |                | Not Used |                           |
| T1                | s              | 45       |                           |
| T2                | s              | 45       |                           |

**Table A.4 11A: Cell re-selection UTRAN to GSM cell case (cell 1)**

| Parameter                     | Unit   | Cell 1 (UTRA) |     |           |    |
|-------------------------------|--|---------------|-----|-----------|----|
|                               |  | 0             |     | DwPTS     |    |
| Timeslot Number               |  | T1            | T2  | T1        | T2 |
| UTRA RF Channel Number (NOTE) |  | Channel 1     |     | Channel 1 |    |
| PCCPCH_Ec/I <sub>or</sub>     | dB   | -3            | -3  |           |    |
| DwPCH_Ec/I <sub>or</sub>      | dB   |               |     | 0         | 0  |
| OCNS_Ec/I <sub>or</sub>       | dB   | -3            | -3  |           |    |
| $\hat{I}_{or}/I_{oc}$         | dB   | 6             | 6   | 6         | 6  |
| $I_{oc}$                      | dBm/1.28 MHz   | -80           |     |           |    |
| PCCPCH RSCP                   | dBm  | -77           | -77 |           |    |
| Propagation Condition         |  | AWGN          |     | AWGN      |    |
| Treselection                  | s  | 0             |     |           |    |
| S <sub>search</sub> RAT       | dB   | Not sent      |     |           |    |
| Q <sub>rxlevmin</sub>         | dBm  | -103          |     |           |    |
| Q <sub>offset1s,n</sub>       | dB   | C1, C2: 0     |     |           |    |
| Q <sub>hyst1s</sub>           | dB   | 0             |     |           |    |
| NOTE:                         | In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number. |               |     |           |    |

**Table A.4.12A: Cell re-selection UTRAN to GSM cell case (cell 2)**

| Parameter                  | Unit | Cell 2 (GSM) |     |
|----------------------------|------|--------------|-----|
|                            |      | T1           | T2  |
| Absolute RF Channel Number |      | ARFCN 1      |     |
| RXLEV                      | dBm  | -90          | -70 |
| RXLEV_ACCESS_MIN           | dBm  | -104         |     |
| MS_TXPWR_MAX_CCH           | dBm  | 33           |     |

#### A.4.2.4.4 Scenario 4A Requirements

A.4.2.4.4.1 (void)

A.4.2.4.4.2 1.28 Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than  $26\text{ s} + T_{\text{BCCH}}$ , where  $T_{\text{BCCH}}$  is the maximum time allowed to read BCCH data from GSM cell [21].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The UE shall keep a running average of 4 measurements, thus gives  $4 * T_{\text{measureGSM}} + T_{\text{BCCH}}$ , where:

$T_{\text{measureGSM}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{measureGSM}}$  of 6.4s according to Table 4.1A in section 4.2.

$T_{\text{BCCH}}$  Maximum time allowed to read BCCH data from GSM cell [21].

According to [21], the maximum time allowed to read the BCCH data, when being synchronized to a BCCH carrier, is 1.9 s.

This gives a total of  $25.6\text{ s} + T_{\text{BCCH}}$ , thus allow  $26\text{ s} + T_{\text{BCCH}}$ .

#### A.4.2.4.5 Scenario 4B: HCS with only UTRA level changed

A.4.2.4.5.1 Test Purpose and Environment

A.4.2.4.5.1.1 3.84 Mcps TDD option

Void.

A.4.2.4.5.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRAN to GSM cell re-selection delay reported in section 4.2 when measurement rules according to HCS is used.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. Test parameters are given in Table A.4.13B, A.4.14B, A.4.15B.

Cell 1 and cell 2 shall belong to different location areas.

Table A.4.13B: General test parameters for UTRAN (1.28 Mcps TDD option) to GSM Cell Re-selection

| Parameter         |                  | Unit | Value | Comment                   |
|-------------------|------------------|------|-------|---------------------------|
| Initial condition | Active cell      |      | Cell1 | 1.28 Mcps TDD option cell |
|                   | Neighbour cell   |      | Cell2 | GSM cell                  |
| Final condition   | Active cell      |      | Cell2 | GSM cell                  |
|                   | DRX cycle length | s    | 1,28  |                           |
| HCS               |                  |      | Used  |                           |
| T1                |                  | s    | 45    |                           |
| T2                |                  | s    | 45    |                           |

Table A.4 14B: Cell re-selection UTRAN to GSM cell case (cell 1)

| Parameter  | Unit         | Cell 1 (UTRA)            |     |           |     |
|--|--------------|--------------------------|-----|-----------|-----|
|  |              | 0                        |     | DwPTS     |     |
| Timeslot Number  |              | T1                       | T2  | T1        | T2  |
| UTRA RF Channel Number (NOTE)  |              | Channel 1                |     | Channel 1 |     |
| PCCPCH_Ec/I <sub>or</sub>  | dB           | -3                       | -3  |           |     |
| DwPCH_Ec/I <sub>or</sub>   | dB           |                          |     | 0         | 0   |
| OCNS_Ec/I <sub>or</sub>  | dB           | -3                       | -3  |           |     |
| $\hat{I}_{or}/I_{oc}$  | dB           | 13                       | -12 | 13        | -12 |
| $I_{oc}$   | dBm/1.28 MHz | -80                      |     |           |     |
| PCCPCH RSCP  | dBm          | -70                      | -95 |           |     |
| Propagation Condition  |              | AWGN                     |     | AWGN      |     |
| Treselection   | s            | 0                        |     |           |     |
| Ssearch <sub>RAT</sub>   | dB           | Not sent                 |     |           |     |
| Qrxlevmin  | dBm          | -103                     |     |           |     |
| Qoffset1 <sub>s,n</sub>  | dB           | C1, C2: 0                |     |           |     |
| Qhyst1 <sub>s</sub>  | dB           | 0                        |     |           |     |
| T <sub>reselection</sub>   | s            | 0                        |     |           |     |
| Ssearch <sub>RAT</sub>   | dB           | 0                        |     |           |     |
| Penalty_time   | s            | 0 (default value)        |     |           |     |
| HCS_PRIO   |              | 0 (default value)        |     |           |     |
| Q <sub>hcs</sub>   |              | 0 (default value)        |     |           |     |
| T <sub>Cmax</sub>  | s            | not used (default value) |     |           |     |
| NOTE: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number. |              |                          |     |           |     |

Table A.4.15B: Cell re-selection UTRAN to GSM cell case (cell 2)

| Parameter                  | Unit | Cell 2 (GSM) |     |
|----------------------------|------|--------------|-----|
|                            |      | T1           | T2  |
| Absolute RF Channel Number |      | ARFCN 1      |     |
| RXLEV                      | dBm  | -80          | -80 |
| RXLEV_ACCESS_MIN           | dBm  | -104         |     |
| MS_TXPWR_MAX_CCH           | dBm  | 33           |     |
| Qsearch_I                  |      | always       |     |

A.4.2.4.5.1.3 7.68 Mcps TDD option

Void.

#### A.4.2.4.5.2 Requirements

##### A.4.2.4.5.2.1 3.84 Mcps TDD option

Void.

##### A.4.2.4.5.2.2 1.28 Mcps TDD option

The cell re-selection delay is defined as the time from when the cell quality levels change to the moment when this change makes the UE reselect a cell, and starts to send LOCATION UPDATING REQUEST message to perform a Location update to the new cell.

The cell re-selection delay shall be less than  $37.7\text{ s} + T_{\text{BCCH}}$ , where  $T_{\text{BCCH}}$  is the maximum time allowed to read BCCH data from GSM cell.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:  $30\text{ s} + T_{\text{measureGSM}} + \text{DRX cycle length} + T_{\text{BCCH}}$ , where::

$T_{\text{measureGSM}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{measureGSM}}$  of 6.4s according to Table 4.1A in section 4.2.

DRX cycle length A DRX cycle length of 1280ms is assumed for this test case.

$T_{\text{BCCH}}$  Maximum time allowed to read BCCH data from GSM cell.

The maximum time allowed to read the BCCH data, when being synchronized to a BCCH carrier, is 1.9 s.

This gives a total of  $37.68\text{ s} + T_{\text{BCCH}}$ , thus allow  $37.7\text{ s} + T_{\text{BCCH}}$ .

##### A.4.2.4.5.2.3 7.68 Mcps TDD option

Void.

### A.4.2.5 Scenario 5: TDD/E-UTRA cell re-selection

#### A.4.2.5.1 UTRA to E-UTRA TDD cell re-selection: E-UTRA is of higher priority

##### A.4.2.5.1.1 Test Purpose and Environment

###### A.4.2.5.1.1.1 3.84 Mcps TDD option

###### A.4.2.5.1.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRA TDD to E-UTRA TDD inter-RAT cell re-selection requirements specified in section 4.2.2.5a when the E-UTRA cell is of higher priority.

This test scenario comprised of 1 UTRA TDD serving cell, and 1 E-UTRA TDD cell to be re-selected. Test parameters are given in table A.4.2.5.1.1.2-1, A.4.2.5.1.1.2-2, and A.4.2.5.1.1.2-3. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. UTRA cell 1 is already identified by the UE prior to the start of the test. At T1 the UE is camped on to cell 1. Cell 2 is of higher priority than cell 1.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.



**Table A.4.2.5.1.1.2-1: General test parameters for UTRAN (1.28 Mcps TDD OPTION) to E-UTRAN TDD Cell Re-selection**

| Parameter                                |                | Unit | Value    | Comment   |
|--|----------------|------|----------|---|
| Initial condition                        | Active cell    |      | Cell 1   | UE is on cell 1 in the initialisation phase, so that reselection to cell 2 occurs during the first T2 phase   |
| T2 end condition                         | Active cell    |      | Cell 2   | UE shall perform reselection to cell 2 during T2  |
|  | Neighbour cell |      | Cell 1   | UTRA 1.28 Mcps TDD option cell  |
| T3 end condition                         | Active cell    |      | Cell 1   | UE shall perform reselection to cell 1 during T3  |
|  | Neighbour cell |      | Cell 2   | E-UTRA TDD cell   |
| Uplink-downlink configuration of cell 2  |                |      | 1        | As specified in table 4.2.2 in TS 36.211  |
| Special subframe configuration of cell 2 |                |      | 6        | As specified in table 4.2.1 in TS 36.211  |
| PRACH configuration of cell 2            |                |      | 53       | As specified in table 4.7.1-3 in TS 36.211  |
| CP length of cell 2                      |                |      | Normal   |   |
| Time offset between cells                |                |      | 3 ms     | Asynchronous cells  |
| Access Barring Information               |                | -    | Not sent | No additional delays in random access procedure.  |
| Treselection                             |                | s    | 0        |   |
| DRX cycle length                         |                | s    | 1,28     |   |
| HCS                                      |                |      | Not used |   |
| T1                                       |                | s    | >20      | During T1, cell 2 shall be powered off, and during the off time the physical layer cell identity shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T2 |
| T2                                       |                | s    | 85       | T2 need to be defined so that cell re-selection reaction time is taken into account.  |
| T3                                       |                | s    | 25       | T3 need to be defined so that cell re-selection reaction time is taken into account.  |

**Table A.4.2.5.1.1.2-2: Cell specific test parameters for cell re-selection UTRA TDD to E-UTRA TDD test case (cell 1)**

| Parameter   | Unit         | Cell 1 (UTRA) |     |     |       |    |    |
|---|--------------|---------------|-----|-----|-------|----|----|
|   |              | 0             |     |     | DwPTS |    |    |
| Timeslot Number   |              | T1            | T2  | T3  | T1    | T2 | T3 |
| UTRA RF Channel Number<br><small>Note1</small>  |              | Channel 1     |     |     |       |    |    |
| PCCPCH_Ec/Ior   | dB           | -3            | -3  | -3  |       |    |    |
| DwPCH_Ec/Ior  | dB           |               |     |     | 0     | 0  | 0  |
| OCNS_Ec/Ior   | dB           | -3            | -3  | -3  |       |    |    |
| $\hat{I}_{or}/I_{oc}$   | dB           | 11            | 11  | 11  | 11    | 11 | 11 |
| $I_{oc}$  | dBm/1.28 MHz | -80           |     |     |       |    |    |
| PCCPCH RSCP   | dBm          | -72           | -72 | -72 | n.a.  |    |    |
| Propagation Condition   |              | AWGN          |     |     |       |    |    |
| $Q_{rxlevmin}$  | dBm          | -103          |     |     |       |    |    |
| $Q_{offset1_{s,n}}$   | dB           | C1, C2: 0     |     |     |       |    |    |
| $Q_{hyst1s}$  | dB           | 0             |     |     |       |    |    |
| $Thresh_{x,high}$<br><small>Note2</small>   | dB           | 46 (-94dBm)   |     |     |       |    |    |
| $S_{prioritysearch1}$   | dB           | 24 (-79dBm)   |     |     |       |    |    |
| $S_{prioritysearch2}$   | dB           | 0             |     |     |       |    |    |
| $S_{searchE-UTRA}$  | dB           | Not send      |     |     |       |    |    |
| <p>Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.</p> <p>Note2: This refers to the value of <math>Thresh_{x,high}</math> which is included in UTRA system information, and is a threshold for the E-UTRA target cell</p> |              |               |     |     |       |    |    |

**Table A.4.2.5.1.1.2-3: Cell specific test parameters for cell re-selection UTRA TDD to E-UTRA TDD test case (cell 2)**

| Parameter  | Unit      | Cell 2      |     |      |
|--|-----------|-------------|-----|------|
|  |           | T1          | T2  | T3   |
| E-UTRA RF Channel Number   |           | 2           |     |      |
| BWchannel  | MHz       | 10          |     |      |
| PBCH_RA  | dB        | 0           | 0   | 0    |
| PBCH_RB  | dB        |             |     |      |
| PSS_RB   | dB        |             |     |      |
| SSS_RB   | dB        |             |     |      |
| PCFICH_PA  | dB        |             |     |      |
| PHICH_PA   | dB        |             |     |      |
| PHICH_PB   | dB        |             |     |      |
| PDCCH_PA   | dB        |             |     |      |
| PDCCH_PB   | dB        |             |     |      |
| PDSCH_PA   | dB        |             |     |      |
| PDSCH_PB   | dB        |             |     |      |
| OCNG_RA <sup>Note 1</sup>  | dB        |             |     |      |
| OCNG_RB <sup>Note 1</sup>  | dB        |             |     |      |
| $Q_{rxlevmin}$   | dBm/15kHz |             |     |      |
| $N_{oc}$   | dBm/15kHz | -98         |     |      |
| RSRP   | dBm/15kHz | -inf        | -87 | -101 |
| $\hat{E}_s / I_{ot}$   | dB        | -inf        | 11  | -3   |
| $S_{noninrasearch}$  | dB        | Not sent    |     |      |
| $Thresh_{serving, low}$  | dB        | 46 (-94dBm) |     |      |
| $Thresh_{x, low}$ <sup>Note2</sup>   | dB        | 24 (-79dBm) |     |      |
| Propagation Condition  |           | AWGN        |     |      |
| Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. |           |             |     |      |
| Note2: This refers to the value of $Thresh_{x, low}$ which is included in E-UTRA system information, and is a threshold for the UTRA target cell       |           |             |     |      |

A.4.2.5.1.1.3 7.68 Mcps TDD option

A.4.2.5.1.2 Test Requirements

A.4.2.5.1.2.1 3.84 Mpcs TDD option

A.4.2.5.1.2.2 1.28 Mpcs TDD option

The cell reselection delay to higher priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to higher priority shall be less than 81s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to higher priority cell can be expressed as:  $T_{higher\_priority\_search} + T_{evaluateE-UTRA} + T_{SI}$ ,

Where:

$T_{higher\_priority\_search}$  60s, See section 4.2.2.5a

$T_{evaluateE-UTRA}$  19.2s, See Table 4.2A in section 4.2.2.7

$T_{SI}$  Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 80.48 s, allow 81 s for higher priority cell reselection in the test case.

A.4.2.5.1.2.3 7.68 Mcps TDD option

#### A.4.2.5.2 UTRA to E-UTRA TDD cell re-selection: E-UTRA is of lower priority

##### A.4.2.5.2.1 Test Purpose and Environment

A.4.2.5.2.1.1 3.84 Mcps TDD option

A.4.2.5.2.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the UTRA TDD to E-UTRA TDD inter-RAT cell re-selection requirements specified in section 4.2.2.5a when the E-UTRA cell is of lower priority.

This test scenario comprised of 1 UTRA TDD serving cell, and 1 E-UTRA TDD cell to be re-selected. Test parameters are given in table A.4.2.5.2.1.2-1, A.4.2.5.2.1.2-2, and A.4.2.5.2.1.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. At T1 the UE is camped on to cell 1. Cell 2 is of lower priority than cell 1.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS25.304.

**Table A.4.2.5.2.1.2-1: General test parameters for UTRAN (1.28 Mcps TDD OPTION) to E-UTRAN TDD Cell Re-selection**

| Parameter                                |                | Unit | Value    | Comment   |
|--|----------------|------|----------|---|
| Initial condition                        | Active cell    |      | Cell 1   | UTRA 1.28 Mcps TDD option cell  |
| T1 end condition                         | Active cell    |      | Cell1    | UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test. |
|  | Neighbour cell |      | Cell2    | E-UTRA TDD cell   |
| T2 end condition                         | Active cell    |      | Cell2    | UE shall perform reselection to cell 2 during T2  |
|  | Neighbour cell |      | Cell1    | UTRA 1.28 Mcps TDD option cell  |
| Uplink-downlink configuration of cell 2  |                |      | 1        | As specified in table 4.2.2 in TS 36.211  |
| Special subframe configuration of cell 2 |                |      | 6        | As specified in table 4.2.1 in TS 36.211  |
| PRACH configuration of cell 2            |                |      | 53       | As specified in table 4.7.1-3 in TS 36.211  |
| CP length of cell 2                      |                |      | Normal   |   |
| Time offset between cells                |                |      | 3 ms     | Asynchronous cells  |
| Access Barring Information               |                | -    | Not sent | No additional delays in random access procedure.  |
| Treselection                             |                | s    | 0        |   |
| DRX cycle length                         |                | s    | 1,28     |   |
| HCS                                      |                |      | Not used |   |
| T1                                       |                | s    | 85       | T1 need to be defined so that cell re-selection reaction time is taken into account.    |
| T2                                       |                | s    | 25       | T2 need to be defined so that cell re-selection reaction time is taken into account.    |

**Table A.4.2.5.2.1.2-2: Cell specific test parameters for cell re-selection UTRA TDD to E-UTRA TDD test case (cell 1)**

| Parameter                               | Unit   | Cell 1 (UTRA) |     |       |      |
|---|--|---------------|-----|-------|------|
|   |  | 0             |     | DwPTS |      |
|   |  | T1            | T2  | T1    | T2   |
| UTRA RF Channel Number <sup>Note1</sup> |  | Channel 1     |     |       |      |
| PCCPCH_Ec/Ior                           | dB   | -3            | -3  |       |      |
| DwPCH_Ec/Ior                            | dB   |               |     | 0     | 0    |
| OCNS_Ec/Ior                             | dB   | -3            | -3  |       |      |
| $\hat{I}_{or}/I_{oc}$                   | dB   | 11            | -3  | 11    | -3   |
| $I_{oc}$                                | dBm/1.28 MHz   | -80           |     |       |      |
| PCCPCH RSCP                             | dBm  | -72           | -86 | n.a.  | n.a. |
| Propagation Condition                   |  | AWGN          |     |       |      |
| $Q_{rxlevmin}$                          | dBm  | -103          |     |       |      |
| $Q_{offset1_{s,n}}$                     | dB   | C1, C2: 0     |     |       |      |
| $Q_{hyst1s}$                            | dB   | 0             |     |       |      |
| $Thresh_{serving,low}$                  | dB   | 24 (-79dBm)   |     |       |      |
| $Thresh_{x,low}$ <sup>Note2</sup>       | dB   | 46 (-94dBm)   |     |       |      |
| $S_{prioritysearch1}$                   | dB   | 62            |     |       |      |
| $S_{prioritysearch2}$                   | dB   | 0             |     |       |      |
| $S_{searchE-UTRA}$                      | dB   | Not send      |     |       |      |
| Note1:                                  | In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.                               |               |     |       |      |
| Note2:                                  | This refers to the value of $Thresh_{x,low}$ which is included in UTRA system information, and is a threshold for the E-UTRA target cell |               |     |       |      |

**Table A.4.2.5.2.1.2-3: Cell specific test parameters for cell re-selection UTRA TDD to E-UTRA TDD test case (cell 2)**

| Parameter  | Unit      | Cell 2     |      |
|--|-----------|------------|------|
|  |           | T1         | T2   |
| E-UTRA RF Channel Number   |           | 2          |      |
| $BW_{channel}$   | MHz       | 10         |      |
| PBCH_RA  | dB        | 0          | 0    |
| PBCH_RB  | dB        |            |      |
| PSS_RB   | dB        |            |      |
| SSS_RB   | dB        |            |      |
| PCFICH_PA  | dB        |            |      |
| PHICH_PA   | dB        |            |      |
| PHICH_PB   | dB        |            |      |
| PDCCH_PA   | dB        |            |      |
| PDCCH_PB   | dB        |            |      |
| PDSCH_PA   | dB        |            |      |
| PDSCH_PB   | dB        |            |      |
| OCNG_RA <sup>Note1</sup>   | dB        |            |      |
| OCNG_RB <sup>Note1</sup>   | dB        |            |      |
| $Q_{rxlevmin}$   | dBm/15kHz | -140       | -140 |
| $N_{oc}$   | dBm/15kHz | -98        |      |
| RSRP   | dBm/15kHz | -87        | -87  |
| $\hat{E}_s / I_{ot}$   | dB        | 11         | 11   |
| Thresh <sub>x, high</sub> <sup>Note2</sup>   | dB        | 24(-79dBm) |      |
| $S_{nonintrasearch}$   | dB        | 46         |      |
| Propagation Condition  |           | AWGN       |      |
| Note1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.    |           |            |      |
| Note2: This refers to the value of Thresh <sub>x, high</sub> which is included in E-UTRA system information, and is a threshold for the UTRA target cell |           |            |      |

A.4.2.5.2.1.3 7.68 Mcps TDD option

A.4.2.5.2.2 Test Requirements

A.4.2.5.2.2.1 3.84 Mpcs TDD option

A.4.2.5.2.2.2 1.28 Mpcs TDD option

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to lower priority shall be less than 21s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as:  $T_{evaluateE-UTRA} + T_{SI}$ .

Where:

$T_{evaluateE-UTRA}$  19.2s, See Table 4.2A in section 4.2.2.7

$T_{SI}$  Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s, allow 21 s for lower priority cell reselection in the test case.

A.4.2.5.2.2.3 7.68 Mcps TDD option

## A.5 UTRAN Connected Mode Mobility

### A.5.1 TDD/TDD Handover

#### A.5.1.1 3.84Mcps TDD option

##### A.5.1.1.1 Handover to intra-frequency cell

###### A.5.1.1.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL\_DCH state in the single carrier case reported in section 5.1.2.1.

The test parameters are given in Table A.5.1.1 and A.5.1.2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 1G. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The UL DPCH shall be transmitted in timeslot 12.

**Table A.5.1.1: General test parameters for Handover to intra-frequency cell**

| Parameter                    |                | Unit | Value   | Comment   |
|------------------------------|----------------|------|---|---|
| DCH parameters               |                |      | DL and UL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2 and A.2.1                           |
| Power Control                |                |      | On  |   |
| Target quality value on DTCH |                | BLER | 0.01  |   |
| Initial conditions           | Active cell    |      | Cell 1  |   |
|                              | Neighbour cell |      | Cell 2  |   |
| Final condition              | Active cell    |      | Cell 2  |   |
| HCS                          |                |      | Not used  |   |
| O                            |                | dB   | 0   | Cell individual offset. This value shall be used for all cells in the test. |
| Hysteresis                   |                | dB   | 0   |   |
| Time to Trigger              |                | ms   | 0   |   |
| Filter coefficient           |                |      | 0   |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1                     |   |
| T1                           |                | s    | 10  |   |
| T2                           |                | s    | 10  |   |
| T3                           |                | s    | 10  |   |

Table A.5.1.2: Cell specific test parameters for Handover to intra-frequency cell

| Parameter   | Unit                | Cell 1    |    |    |        |    |      | Cell 2    |       |    |       |        |    |
|---|---------------------|-----------|----|----|--------|----|------|-----------|-------|----|-------|--------|----|
|   |                     | 0         |    |    | 4      |    |      | 0         |       |    | 5     |        |    |
| DL timeslot number  |                     | T1        | T2 | T3 | T1     | T2 | T3   | T1        | T2    | T3 | T1    | T2     | T3 |
| UTRA RF Channel Number  |                     | Channel 1 |    |    |        |    |      | Channel 1 |       |    |       |        |    |
| PCCPCH_Ec/I <sub>or</sub>   | dB                  | -3        |    |    | n.a.   |    |      | -3        |       |    | n.a.  |        |    |
| SCH_Ec/I <sub>or</sub>  | dB                  | -9        |    |    | n.a.   |    |      | -9        |       |    | n.a.  |        |    |
| SCH_t <sub>offset</sub>   | dB                  | 0         |    |    | n.a.   |    |      | 5         |       |    | n.a.  |        |    |
| DPCH_Ec/I <sub>or</sub>   | dB                  | n.a.      |    |    | Note 1 |    | n.a. | n.a.      |       |    | n.a.  | Note 1 |    |
| OCNS_Ec/I <sub>or</sub>   | dB                  | -3,12     |    |    | Note 2 |    | n.a. | n.a.      | -3,12 |    | n.a.  | Note 2 |    |
| $\hat{I}_{or}/I_{oc}$   | dB                  | 1         |    |    |        |    |      | -Inf.     | 3     |    | -Inf. | 3      |    |
| PCCPCH RSCP   | dBm                 | -72       |    |    | n.a.   |    |      | -Inf.     | -70   |    | n.a.  |        |    |
| $I_{oc}$  | dBm/<br>3,84<br>MHz | -70       |    |    |        |    |      |           |       |    |       |        |    |
| Propagation Condition   |                     | AWGN      |    |    |        |    |      |           |       |    |       |        |    |
| Note 1: The DPCH level is controlled by the power control loop  |                     |           |    |    |        |    |      |           |       |    |       |        |    |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> . |                     |           |    |    |        |    |      |           |       |    |       |        |    |

#### A.5.1.1.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

#### A.5.1.1.2 Handover to inter-frequency cell

##### A.5.1.1.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL\_DCH state in the dual carrier case reported in section 5.1.2.1.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.1.3 and A.5.1.4 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed time difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with one active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2. The UL DPCH shall be transmitted in timeslot 12.

Table A.5.1.3: General test parameters for Handover to inter-frequency cell

| Parameter                    |                | Unit | Value  | Comment   |
|------------------------------|----------------|------|--|---|
| DCH parameters               |                |      | DL and UL Reference Measurement Channel 12.2 kbps              | As specified in TS 25.102 section A.2.2 and A.2.1                           |
| Power Control                |                |      | On   |   |
| Target quality value on DTCH |                | BLER | 0.01   |   |
| Initial conditions           | Active cell    |      | Cell 1   |   |
|                              | Neighbour cell |      | Cell 2   |   |
| Final condition              | Active cell    |      | Cell 2   |   |
| HCS                          |                |      | Not used   |   |
| O                            |                | dB   | 0  | Cell individual offset. This value shall be used for all cells in the test. |
| Hysteresis                   |                | dB   | 0  | Hysteresis parameter for event 2C   |
| Time to Trigger              |                | ms   | 0  |   |
| Threshold non-used frequency |                | dBm  | -80  | Applicable for Event 2C   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1<br>6 TDD neighbours on Channel 2 |   |
| T <sub>SI</sub>              |                | s    | 1.28   | The value shall be used for all cells in the test.                          |
| T1                           |                | s    | 10   |   |
| T2                           |                | s    | 10   |   |
| T3                           |                | s    | 10   |   |

Table A.5.1.4: Cell Specific parameters for Handover to inter-frequency cell

| Parameter   | Unit          | Cell 1    |    |    |        |    |      | Cell 2    |       |    |       |    |        |
|---|---------------|-----------|----|----|--------|----|------|-----------|-------|----|-------|----|--------|
|   |               | 0         |    |    | 4      |    |      | 2         |       |    | 5     |    |        |
| DL timeslot number  |               | T1        | T2 | T3 | T1     | T2 | T3   | T1        | T2    | T3 | T1    | T2 | T3     |
| UTRA RF Channel Number  |               | Channel 1 |    |    |        |    |      | Channel 2 |       |    |       |    |        |
| PCCPCH_Ec/lor   | dB            | -3        |    |    | n.a.   |    |      | -3        |       |    | n.a.  |    |        |
| SCH_Ec/lor  | dB            | -9        |    |    | n.a.   |    |      | -9        |       |    | n.a.  |    |        |
| SCH_t <sub>offset</sub>   | dB            | 0         |    |    | n.a.   |    |      | 5         |       |    | n.a.  |    |        |
| DPCH_Ec/lor   | dB            | n.a.      |    |    | Note 1 |    | n.a. | n.a.      |       |    | n.a.  |    | Note 1 |
| OCNS_Ec/lor   | dB            | -3,12     |    |    | Note 2 |    | n.a. | n.a.      | -3,12 |    | n.a.  |    | Note 2 |
| $\hat{I}_{or}/I_{oc}$   | dB            | 1         |    |    |        |    |      | -Inf.     | 7     |    | -Inf. | 7  |        |
| PCCPCH RSCP   | dBm           | -72       |    |    | n.a.   |    |      | -Inf.     | -66   |    | n.a.  |    |        |
| $I_{oc}$  | dBm/ 3,84 MHz | -70       |    |    |        |    |      |           |       |    |       |    |        |
| Propagation Condition   |               | AWGN      |    |    |        |    |      |           |       |    |       |    |        |
| Note 1: The DPCH level is controlled by the power control loop  |               |           |    |    |        |    |      |           |       |    |       |    |        |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor . |               |           |    |    |        |    |      |           |       |    |       |    |        |

#### A.5.1.1.2.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 160 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.



## A.5.1.2 1.28Mcps TDD option

### A.5.1.2.1 Handover to intra-frequency cell

#### A.5.1.2.1.1 Scenario 1

This test case is applicable for UE handovers in single frequency network and UE handovers from primary frequency to primary frequency in multi-frequency network.

##### A.5.1.2.1.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL\_DCH state in the case as reported in section 5.1.2.1.2.

The test parameters are given in Table A.5.1.5 and A.5.1.6 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that PCCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 1G. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

**Table A.5.1.5: General test parameters for intra-frequency handover**

| Parameter                    | Unit              | Value   | Comment   |
|------------------------------|-------------------|---|---|
| DPCH parameters              |                   | DL and UL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2.2 and A.2.1.2   |
| Power Control                |                   | On  |   |
| Target quality value on DPCH | BLER              | 0.01  |   |
| Initial conditions           | Active cell       | Cell 1  | In the case of multi-frequency network, the UE has a RRC connection on the primary frequency in cell 1. |
|                              | Neighbouring cell | Cell 2  |   |
| Final condition              | Active cell       | Cell 2  | In the case of multifrequency network, UE will handover to the primary frequency in cell 2.             |
| O                            | dB                | 0   | cell-individual-offset<br>The value shall be used for all cells in the test.                            |
| Hysteresis                   | dB                | 0   |   |
| Time to Trigger              | ms                | 0   |   |
| Filter coefficient           |                   | 0   |   |
| Monitored cell list size     |                   | 6 TDD neighbours on Channel 1                     |   |
| T1                           | s                 | 5   |   |
| T2                           | s                 | 5   |   |
| T3                           | s                 | 5   |   |

Table A.5.1.6: Cell specific test parameters for intra-frequency handover

| Parameter                     | Unit   | Cell 1    |     |    |       |    |    |       |       |    |
|-------------------------------|--|-----------|-----|----|-------|----|----|-------|-------|----|
|                               |  | 0         |     |    | DwPTS |    |    | 5     |       |    |
| Timeslot Number               |  | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note3) |  | Channel 1 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/Ior                 | dB   | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/Ior                  |  |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/Ior                   | dB   | n.a.      |     |    | n.a.  |    |    | Note1 | n.a.  |    |
| OCNS_Ec/Ior                   | dB   | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$         | dB   | 3         |     |    | 3     |    |    | 3     |       |    |
| $I_{oc}$                      | dBm/<br>1.28<br>MHz  | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                   | dBm  | -70       |     |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition         |  | AWGN      |     |    |       |    |    |       |       |    |
| Parameter                     | Unit   | Cell 2    |     |    |       |    |    |       |       |    |
|                               |  | 0         |     |    | DwPTS |    |    | 5     |       |    |
| Timeslot Number               |  | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note3) |  | Channel 1 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/Ior                 | dB   | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/Ior                  |  |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/Ior                   | dB   | n.a.      |     |    | n.a.  |    |    | n.a.  | Note1 |    |
| OCNS_Ec/Ior                   | dB   | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$         | dB   | -Inf.     | 6   |    | -Inf. | 6  |    | -Inf. | 6     |    |
| $I_{oc}$                      | dBm/<br>1.28<br>MHz  | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                   | dBm  | -Inf.     | -67 |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition         |  | AWGN      |     |    |       |    |    |       |       |    |
| Note 1:                       | The DPCH level is controlled by the power control loop   |           |     |    |       |    |    |       |       |    |
| Note 2:                       | The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ . |           |     |    |       |    |    |       |       |    |
| Note 3:                       | In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.  |           |     |    |       |    |    |       |       |    |

## A.5.1.2.1.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

## A.5.1.2.1.2 Scenario 2

This test case is applicable for UE handovers from secondary frequency to primary frequency in the case of multi-frequency network.

## A.5.1.2.1.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL\_DCH state in the case as reported in section 5.1.2.1.2.

The test parameters are given in Table A.5.1.5A and A.5.1.6A below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that PCCPCH RSCP and SFN-CFN observed time difference shall be reported together with Event 1G. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" at the beginning of T3 with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 1G. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

**Table A.5.1.5A: General test parameters for intra-frequency handover**

| Parameter                    |                   | Unit | Value   | Comment  |
|------------------------------|-------------------|------|---|--|
| DPCH parameters              |                   |      | DL and UL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2.2 and A.2.1.2                        |
| Power Control                |                   |      | On  |  |
| Target quality value on DPCH |                   | BLER | 0.01  |  |
| Initial conditions           | Active cell       |      | Cell 1  | The UE has a RRC connection on the secondary frequency in cell 1.            |
|                              | Neighbouring cell |      | Cell 2  |  |
| Final condition              | Active cell       |      | Cell 2  | The UE will handover to the primary frequency in cell 2.                     |
| O                            |                   | dB   | 0   | cell-individual-offset<br>The value shall be used for all cells in the test. |
| Hysteresis                   |                   | dB   | 0   |  |
| Time to Trigger              |                   | ms   | 0   |  |
| Filter coefficient           |                   |      | 0   |  |
| Monitored cell list size     |                   |      | 6 TDD neighbours on Channel 1                     |  |
| T1                           |                   | s    | 5   |  |
| T2                           |                   | s    | 5   |  |
| T3                           |                   | s    | 5   |  |

Table A.5.1.6A: Cell specific test parameters for intra-frequency handover

| Parameter  | Unit                | Cell 1    |     |    |       |    |    |       |       |    |
|--|---------------------|-----------|-----|----|-------|----|----|-------|-------|----|
|  |                     | 0         |     |    | DwPTS |    |    | 5     |       |    |
| Timeslot Number  |                     | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note3)  |                     | Channel 1 |     |    |       |    |    |       |       |    |
| UTRA RF Channel Number(Note4)  |                     | Channel 2 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/Ior  | dB                  | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/Ior   |                     |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/Ior  | dB                  | n.a.      |     |    | n.a.  |    |    | Note1 | n.a.  |    |
| OCNS_Ec/Ior  | dB                  | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$  | dB                  | 3         |     |    | 3     |    |    | 3     |       |    |
| $I_{oc}$   | dBm/<br>1.28<br>MHz | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP  | dBm                 | -70       |     |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition  |                     | AWGN      |     |    |       |    |    |       |       |    |
| Parameter  | Unit                | Cell 2    |     |    |       |    |    |       |       |    |
| Timeslot Number  |                     | 0         |     |    | DwPTS |    |    | 5     |       |    |
|  |                     | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note3)  |                     | Channel 2 |     |    |       |    |    |       |       |    |
| UTRA RF Channel Number(Note4)  |                     | Channel 1 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/Ior  | dB                  | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/Ior   |                     |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/Ior  | dB                  | n.a.      |     |    | n.a.  |    |    | n.a.  | Note1 |    |
| OCNS_Ec/Ior  | dB                  | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$  | dB                  | -Inf.     | 6   |    | -Inf. | 6  |    | -Inf. | 6     |    |
| $I_{oc}$   | dBm/<br>1.28<br>MHz | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP  | dBm                 | -Inf.     | -67 |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition  |                     | AWGN      |     |    |       |    |    |       |       |    |
| Note 1: The DPCH level is controlled by the power control loop   |                     |           |     |    |       |    |    |       |       |    |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ . |                     |           |     |    |       |    |    |       |       |    |
| Note3: The UTRA RF Channel Number is the primary frequency's channel number.   |                     |           |     |    |       |    |    |       |       |    |
| Note3: The UTRA RF Channel Number is the secondary frequency's channel number.   |                     |           |     |    |       |    |    |       |       |    |

#### A.5.1.2.1.2.2 Test Requirements

The UE shall start to transmit the UL DPCH in cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

#### A.5.1.2.2 Handover to inter-frequency cell

##### A.5.1.2.2.1 Scenario 1

This test case is applicable for UE handovers in single frequency network and UE handovers from primary frequency to the primary frequency in multi-frequency network.

##### A.5.1.2.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL\_DCH in the case as reported in section 5.1.2.1.2.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.1.7 and A.5.1.8 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed timed difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

**Table A.5.1.7: General test parameters for inter-frequency handover**

| Parameter                    |                | Unit | Value  | Comment   |
|------------------------------|----------------|------|--|---|
| DPCH parameters              |                |      | DL and UL Reference Measurement Channel 12.2 kbps              | As specified in TS 25.102 section A.2.2.2 and A.2.1.2   |
| Power Control                |                |      | On   |   |
| Target quality value on DPCH |                | BLER | 0.01   |   |
| Initial conditions           | Active cell    |      | Cell 1   | In the case of multi-frequency network, the UE has a RRC connection on the primary frequency in cell 1. |
|                              | Neighbour cell |      | Cell 2   |   |
| Final conditions             | Active cell    |      | Cell 2   | In the case of multi-frequency network, the UE will handover to the primary frequency in cell 2.        |
| Threshold non used frequency |                | dBm  | -75  | Absolute RSCP threshold for event 2C  |
| O                            |                | dB   | 0  | cell-individual-offset<br>The value shall be used for all cells in the test.                            |
| Hysteresis                   |                | dB   | 0  |   |
| Time to Trigger              |                | ms   | 0  |   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1<br>6 TDD neighbours on Channel 2 |   |
| T1                           |                | s    | 5  |   |
| T2                           |                | s    | 10   |   |
| T3                           |                | s    | 5  |   |

TableA.5.1.8: Cell Specific parameters for inter-frequency handover

| Parameter                      | Unit   | Cell 1    |     |    |       |    |    |       |       |    |
|--------------------------------|--|-----------|-----|----|-------|----|----|-------|-------|----|
|                                |  | 0         |     |    | DwPTS |    |    | 5     |       |    |
| Timeslot Number                |  | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3) |  | Channel 1 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/Ior                  | dB   | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/Ior                   |  |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/Ior                    | dB   | n.a.      |     |    | n.a.  |    |    | Note1 | n.a.  |    |
| OCNS_Ec/Ior                    | dB   | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$          | dB   | 3         |     |    | 3     |    |    | 3     |       |    |
| $I_{oc}$                       | dBm/<br>1.28<br>MHz  | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                    | dBm  | -70       |     |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition          |  | AWGN      |     |    |       |    |    |       |       |    |
| Parameter                      | Unit   | Cell 2    |     |    |       |    |    |       |       |    |
| Timeslot Number                |  | 0         |     |    | DwPTS |    |    | 5     |       |    |
| UTRA RF Channel Number(Note 3) |  | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3) |  | Channel 2 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/Ior                  | dB   | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/Ior                   |  |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/Ior                    | dB   | n.a.      |     |    | n.a.  |    |    | n.a.  | Note1 |    |
| OCNS_Ec/Ior                    | dB   | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$          | dB   | -Inf.     | 4   |    | -Inf. | 4  |    | -Inf. | 4     |    |
| $I_{oc}$                       | dBm/<br>1.28<br>MHz  | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                    | dBm  | -Inf.     | -69 |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition          |  | AWGN      |     |    |       |    |    |       |       |    |
| Note 1:                        | The DPCH level is controlled by the power control loop   |           |     |    |       |    |    |       |       |    |
| Note 2:                        | The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ . |           |     |    |       |    |    |       |       |    |
| Note 3:                        | In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.  |           |     |    |       |    |    |       |       |    |

#### A.5.1.2.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

#### A.5.1.2.2.2 Scenario 2

This test case is applicable for UE handovers from secondary frequency to primary frequency in the case of multi-frequency network.

##### A.5.1.2.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL\_DCH in the case as reported in section 5.1.2.1.2.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.1.7A and A.5.1.8A below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed timed difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

**Table A.5.1.7: General test parameters for inter-frequency handover**

| Parameter                    |                | Unit | Value  | Comment  |
|------------------------------|----------------|------|--|--|
| DPCH parameters              |                |      | DL and UL Reference Measurement Channel 12.2 kbps              | As specified in TS 25.102 section A.2.2.2 and A.2.1.2                        |
| Power Control                |                |      | On   |  |
| Target quality value on DPCH |                | BLER | 0.01   |  |
| Initial conditions           | Active cell    |      | Cell 1   | The UE has a RRC connection on the secondary frequency in cell 1.            |
|                              | Neighbour cell |      | Cell 2   |  |
| Final conditions             | Active cell    |      | Cell 2   | The UE will handover to the primary frequency in cell 2.                     |
| Threshold non used frequency |                | dBm  | -75  | Absolute RSCP threshold for event 2C   |
| O                            |                | dB   | 0  | cell-individual-offset<br>The value shall be used for all cells in the test. |
| Hysteresis                   |                | dB   | 0  |  |
| Time to Trigger              |                | ms   | 0  |  |
| Filter coefficient           |                |      | 0  |  |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1<br>6 TDD neighbours on Channel 2 |  |
| T1                           |                | s    | 5  |  |
| T2                           |                | s    | 10   |  |
| T3                           |                | s    | 5  |  |

TableA.5.1.8: Cell Specific parameters for inter-frequency handover

| Parameter  | Unit                | Cell 1    |     |    |       |    |    |       |       |    |
|--|---------------------|-----------|-----|----|-------|----|----|-------|-------|----|
|  |                     | 0         |     |    | DwPTS |    |    | 5     |       |    |
| Timeslot Number  |                     | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3)   |                     | Channel 1 |     |    |       |    |    |       |       |    |
| UTRA RF Channel Number(Note 4)   |                     | Channel 2 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/I <sub>or</sub>  | dB                  | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/I <sub>or</sub>   |                     |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/I <sub>or</sub>  | dB                  | n.a.      |     |    | n.a.  |    |    | Note1 | n.a.  |    |
| OCNS_Ec/I <sub>or</sub>  | dB                  | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$  | dB                  | 3         |     |    | 3     |    |    | 3     |       |    |
| $I_{oc}$   | dBm/<br>1.28<br>MHz | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP  | dBm                 | -70       |     |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition  |                     | AWGN      |     |    |       |    |    |       |       |    |
| Parameter  | Unit                | Cell 2    |     |    |       |    |    |       |       |    |
| Timeslot Number  |                     | 0         |     |    | DwPTS |    |    | 5     |       |    |
|  |                     | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3)   |                     | Channel 1 |     |    |       |    |    |       |       |    |
| UTRA RF Channel Number(Note 4)   |                     | Channel 2 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/I <sub>or</sub>  | dB                  | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/I <sub>or</sub>   |                     |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/I <sub>or</sub>  | dB                  | n.a.      |     |    | n.a.  |    |    | n.a.  | Note1 |    |
| OCNS_Ec/I <sub>or</sub>  | dB                  | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$  | dB                  | -Inf.     | 4   |    | -Inf. | 4  |    | -Inf. | 4     |    |
| $I_{oc}$   | dBm/<br>1.28<br>MHz | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP  | dBm                 | -Inf.     | -69 |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition  |                     | AWGN      |     |    |       |    |    |       |       |    |
| Note 1: The DPCH level is controlled by the power control loop<br>Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ .<br>Note3: The UTRA RF Channel Number is the primary frequency's channel number.<br>Note4: The UTRA RF Channel Number is the secondary frequency's channel number. |                     |           |     |    |       |    |    |       |       |    |

#### A.5.1.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

#### A.5.1.2.3 Handover to inter-band cell

##### A.5.1.2.3.1 Scenario 1

This test case is applicable for UE handovers from primary frequency to the primary frequency in multi-band frequency network.

##### A.5.1.2.3.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-band handover delay in CELL\_DCH in the case as reported in section 5.1.2.1.2.



The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.1.8A and A.5.1.8B below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed timed difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

**Table A.5.1.8A: General test parameters for inter-band handover**

| Parameter                    |                | Unit | Value  | Comment   |
|------------------------------|----------------|------|--|---|
| DPCH parameters              |                |      | DL and UL Reference Measurement Channel 12.2 kbps              | As specified in TS 25.102 section A.2.2.2 and A.2.1.2   |
| Power Control                |                |      | On   |   |
| Target quality value on DPCH |                | BLER | 0.01   |   |
| Initial conditions           | Active cell    |      | Cell 1   | In the case of multi-frequency network, the UE has a RRC connection on the primary frequency in cell 1. |
|                              | Neighbour cell |      | Cell 2   |   |
| Final conditions             | Active cell    |      | Cell 2   | In the case of multi-frequency network, the UE will handover to the primary frequency in cell 2.        |
| Threshold non used frequency | dBm            |      | -75  | Absolute RSCP threshold for event 2C  |
| O                            | dB             |      | 0  | cell-individual-offset<br>The value shall be used for all cells in the test.                            |
| Hysteresis                   |                | dB   | 0  |   |
| Time to Trigger              |                | ms   | 0  |   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1<br>6 TDD neighbours on Channel 2 |   |
| T1                           |                | s    | 5  |   |
| T2                           |                | s    | 10   |   |
| T3                           |                | s    | 5  |   |

TableA.5.1.8B: Cell Specific parameters for inter-band handover

| Parameter                      | Unit   | Cell 1    |     |    |       |    |    |       |       |    |
|--------------------------------|--|-----------|-----|----|-------|----|----|-------|-------|----|
|                                |  | 0         |     |    | DwPTS |    |    | 5     |       |    |
| Timeslot Number                |  | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3) |  | Channel 1 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/I <sub>or</sub>      | dB   | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/I <sub>or</sub>       |  |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/I <sub>or</sub>        | dB   | n.a.      |     |    | n.a.  |    |    | Note1 | n.a.  |    |
| OCNS_Ec/I <sub>or</sub>        | dB   | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$          | dB   | 3         |     |    | 3     |    |    | 3     |       |    |
| $I_{oc}$                       | dBm/<br>1.28<br>MHz  | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                    | dBm  | -70       |     |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition          |  | AWGN      |     |    |       |    |    |       |       |    |
| Parameter                      | Unit   | Cell 2    |     |    |       |    |    |       |       |    |
| Timeslot Number                |  | 0         |     |    | DwPTS |    |    | 5     |       |    |
| UTRA RF Channel Number(Note 3) |  | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3) |  | Channel 2 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/I <sub>or</sub>      | dB   | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/I <sub>or</sub>       |  |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/I <sub>or</sub>        | dB   | n.a.      |     |    | n.a.  |    |    | n.a.  | Note1 |    |
| OCNS_Ec/I <sub>or</sub>        | dB   | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$          | dB   | -Inf.     | 4   |    | -Inf. | 4  |    | -Inf. | 4     |    |
| $I_{oc}$                       | dBm/<br>1.28<br>MHz  | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                    | dBm  | -Inf.     | -69 |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition          |  | AWGN      |     |    |       |    |    |       |       |    |
| Note 1:                        | The DPCH level is controlled by the power control loop   |           |     |    |       |    |    |       |       |    |
| Note 2:                        | The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ . |           |     |    |       |    |    |       |       |    |
| Note 3:                        | In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.  |           |     |    |       |    |    |       |       |    |

#### A.5.1.2.3.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

#### A.5.1.2.3.2 Scenario 2

This test case is applicable for UE handovers from primary frequency to secondary frequency in multi-band network.

#### A.5.1.2.3.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL\_DCH in the case as reported in section 5.1.2.1.2.

In cell 1, the primary frequency uses frequency b of band a, and the secondary frequency uses frequencies a and c of band a. In cell 2, the primary frequency uses frequency e of band a, and the secondary frequency uses frequencies d and f of band f.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.1.8C and A.5.1.8D below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed timed difference of the

best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

**Table A.5.1.8C: General test parameters for inter-band handover**

| Parameter                    |                | Unit | Value  | Comment   |
|------------------------------|----------------|------|--|---|
| DPCH parameters              |                |      | DL and UL Reference Measurement Channel 12.2 kbps              | As specified in TS 25.102 section A.2.2.2 and A.2.1.2   |
| Power Control                |                |      | On   |   |
| Target quality value on DPCH |                | BLER | 0.01   |   |
| Initial conditions           | Active cell    |      | Cell 1   | In the case of multi-frequency network, the UE has a RRC connection on the primary frequency in cell 1. |
|                              | Neighbour cell |      | Cell 2   |   |
| Final conditions             | Active cell    |      | Cell 2   | In the case of multi-frequency network, the UE will handover to the primary frequency in cell 2.        |
| Threshold non used frequency |                | dBm  | -75  | Absolute RSCP threshold for event 2C  |
| O                            |                | dB   | 0  | cell-individual-offset<br>The value shall be used for all cells in the test.                            |
| Hysteresis                   |                | dB   | 0  |   |
| Time to Trigger              |                | ms   | 0  |   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1<br>6 TDD neighbours on Channel 2 |   |
| T1                           |                | s    | 5  |   |
| T2                           |                | s    | 10   |   |
| T3                           |                | s    | 5  |   |

Table A.5.1.8D: Cell Specific parameters for inter-band handover

| Parameter                      | Unit   | Cell 1    |     |    |       |    |    |       |       |    |
|--------------------------------|--|-----------|-----|----|-------|----|----|-------|-------|----|
|                                |  | 0         |     |    | DwPTS |    |    | 5     |       |    |
| Timeslot Number                |  | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3) |  | Channel 1 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/Ior                  | dB   | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/Ior                   |  |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/Ior                    | dB   | n.a.      |     |    | n.a.  |    |    | Note1 | n.a.  |    |
| OCNS_Ec/Ior                    | dB   | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$          | dB   | 3         |     |    | 3     |    |    | 3     |       |    |
| $I_{oc}$                       | dBm/<br>1.28<br>MHz  | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                    | dBm  | -70       |     |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition          |  | AWGN      |     |    |       |    |    |       |       |    |
| Parameter                      | Unit   | Cell 2    |     |    |       |    |    |       |       |    |
| Timeslot Number                |  | 0         |     |    | DwPTS |    |    | 5     |       |    |
| UTRA RF Channel Number(Note 3) |  | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3) |  | Channel 2 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/Ior                  | dB   | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/Ior                   |  |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/Ior                    | dB   | n.a.      |     |    | n.a.  |    |    | n.a.  | Note1 |    |
| OCNS_Ec/Ior                    | dB   | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$          | dB   | -Inf.     | 4   |    | -Inf. | 4  |    | -Inf. | 4     |    |
| $I_{oc}$                       | dBm/<br>1.28<br>MHz  | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                    | dBm  | -Inf.     | -69 |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition          |  | AWGN      |     |    |       |    |    |       |       |    |
| Note 1:                        | The DPCH level is controlled by the power control loop   |           |     |    |       |    |    |       |       |    |
| Note 2:                        | The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ . |           |     |    |       |    |    |       |       |    |
| Note 3:                        | In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.  |           |     |    |       |    |    |       |       |    |

#### A.5.1.2.3.2.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

#### A.5.1.2.3.3 Scenario 3

This test case is applicable for UE handovers from secondary frequency to secondary frequency in multi-band network.

##### A.5.1.2.3.3.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL\_DCH in the case as reported in section 5.1.2.1.2.

In cell 1, the primary frequency uses frequency e of band a, and the secondary frequency uses frequencies d and f of band f. In cell 2, the primary frequency uses frequency b of band a, and the secondary frequency uses frequencies a and c of band a.

The test consists of three successive time periods, with a time duration T1, T2 and T3. The test parameters are given in tables A.5.1.8E and A.5.1.8F below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed timed difference of the

best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

**Table A.5.1.8E: General test parameters for inter-band handover**

| Parameter                    |                | Unit | Value  | Comment   |
|------------------------------|----------------|------|--|---|
| DPCH parameters              |                |      | DL and UL Reference Measurement Channel 12.2 kbps              | As specified in TS 25.102 section A.2.2.2 and A.2.1.2   |
| Power Control                |                |      | On   |   |
| Target quality value on DPCH |                | BLER | 0.01   |   |
| Initial conditions           | Active cell    |      | Cell 1   | In the case of multi-frequency network, the UE has a RRC connection on the primary frequency in cell 1. |
|                              | Neighbour cell |      | Cell 2   |   |
| Final conditions             | Active cell    |      | Cell 2   | In the case of multi-frequency network, the UE will handover to the secondary frequency in cell 2.      |
| Threshold non used frequency |                | dBm  | -75  | Absolute RSCP threshold for event 2C  |
| O                            |                | dB   | 0  | cell-individual-offset<br>The value shall be used for all cells in the test.                            |
| Hysteresis                   |                | dB   | 0  |   |
| Time to Trigger              |                | ms   | 0  |   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1<br>6 TDD neighbours on Channel 2 |   |
| T1                           |                | s    | 5  |   |
| T2                           |                | s    | 10   |   |
| T3                           |                | s    | 5  |   |

Table A.5.1.8F: Cell Specific parameters for inter-band handover

| Parameter                      | Unit   | Cell 1    |     |    |       |    |    |       |       |    |
|--------------------------------|--|-----------|-----|----|-------|----|----|-------|-------|----|
|                                |  | 0         |     |    | DwPTS |    |    | 5     |       |    |
| Timeslot Number                |  | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3) |  | Channel 1 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/Ior                  | dB   | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/Ior                   |  |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/Ior                    | dB   | n.a.      |     |    | n.a.  |    |    | Note1 | n.a.  |    |
| OCNS_Ec/Ior                    | dB   | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$          | dB   | 3         |     |    | 3     |    |    | 3     |       |    |
| $I_{oc}$                       | dBm/<br>1.28<br>MHz  | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                    | dBm  | -70       |     |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition          |  | AWGN      |     |    |       |    |    |       |       |    |
| Parameter                      | Unit   | Cell 2    |     |    |       |    |    |       |       |    |
| Timeslot Number                |  | 0         |     |    | DwPTS |    |    | 5     |       |    |
| UTRA RF Channel Number(Note 3) |  | Channel 2 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/Ior                  | dB   | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/Ior                   |  |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/Ior                    | dB   | n.a.      |     |    | n.a.  |    |    | n.a.  | Note1 |    |
| OCNS_Ec/Ior                    | dB   | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$          | dB   | -Inf.     | 4   |    | -Inf. | 4  |    | -Inf. | 4     |    |
| $I_{oc}$                       | dBm/<br>1.28<br>MHz  | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                    | dBm  | -Inf.     | -69 |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition          |  | AWGN      |     |    |       |    |    |       |       |    |
| Note 1:                        | The DPCH level is controlled by the power control loop   |           |     |    |       |    |    |       |       |    |
| Note 2:                        | The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ . |           |     |    |       |    |    |       |       |    |
| Note 3:                        | In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.  |           |     |    |       |    |    |       |       |    |

#### A.5.1.2.3.3.2 Test Requirements

The UE shall start to transmit the UL DPCH to cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

### A.5.1.3 7.68Mcps TDD option

#### A.5.1.3.1 Handover to intra-frequency cell

##### A.5.1.3.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the intra-frequency handover delay in CELL\_DCH state in the single carrier case reported in section 5.1.2.1.

The test parameters are given in Table A.5.1.9 and A.5.1.10 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP and SFN-CFN observed timed difference shall be reported together with Event 1G. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 1G. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The UL DPCH shall be transmitted in timeslot 12.

**Table A.5.1.9: General test parameters for Handover to intra-frequency cell**

| Parameter                    |                | Unit | Value   | Comment   |
|------------------------------|----------------|------|---|---|
| DCH parameters               |                |      | DL and UL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2 and A.2.1                           |
| Power Control                |                |      | On  |   |
| Target quality value on DTCH |                | BLER | 0.01  |   |
| Initial conditions           | Active cell    |      | Cell 1  |   |
|                              | Neighbour cell |      | Cell 2  |   |
| Final condition              | Active cell    |      | Cell 2  |   |
| HCS                          |                |      | Not used  |   |
| O                            |                | dB   | 0   | Cell individual offset. This value shall be used for all cells in the test. |
| Hysteresis                   |                | dB   | 0   |   |
| Time to Trigger              |                | ms   | 0   |   |
| Filter coefficient           |                |      | 0   |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1                     |   |
| T1                           |                | s    | 10  |   |
| T2                           |                | s    | 10  |   |
| T3                           |                | s    | 10  |   |

**Table A.5.1.10: Cell specific test parameters for Handover to intra-frequency cell**

| Parameter   | Unit                | Cell 1    |    |    |        |    |      | Cell 2    |       |    |       |    |        |
|---|---------------------|-----------|----|----|--------|----|------|-----------|-------|----|-------|----|--------|
|   |                     | 0         |    |    | 4      |    |      | 0         |       |    | 5     |    |        |
| DL timeslot number  |                     | T1        | T2 | T3 | T1     | T2 | T3   | T1        | T2    | T3 | T1    | T2 | T3     |
| UTRA RF Channel Number  |                     | Channel 1 |    |    |        |    |      | Channel 1 |       |    |       |    |        |
| PCCPCH_Ec/I <sub>or</sub>   | dB                  | -3        |    |    | n.a.   |    |      | -3        |       |    | n.a.  |    |        |
| SCH_Ec/I <sub>or</sub>  | dB                  | -9        |    |    | n.a.   |    |      | -9        |       |    | n.a.  |    |        |
| SCH_t <sub>offset</sub>   | dB                  | 0         |    |    | n.a.   |    |      | 5         |       |    | n.a.  |    |        |
| DPCH_Ec/I <sub>or</sub>   | dB                  | n.a.      |    |    | Note 1 |    | n.a. | n.a.      |       |    | n.a.  |    | Note 1 |
| OCNS_Ec/I <sub>or</sub>   | dB                  | -3,12     |    |    | Note 2 |    | n.a. | n.a.      | -3,12 |    | n.a.  |    | Note 2 |
| $\hat{I}_{or}/I_{oc}$   | dB                  | 1         |    |    |        |    |      | -Inf.     | 3     |    | -Inf. |    | 3      |
| PCCPCH RSCP   | dBm                 | -72       |    |    | n.a.   |    |      | -Inf.     | -70   |    | n.a.  |    |        |
| $I_{oc}$  | dBm/<br>7,68<br>MHz | -70       |    |    |        |    |      |           |       |    |       |    |        |
| Propagation Condition   |                     | AWGN      |    |    |        |    |      |           |       |    |       |    |        |
| Note 1: The DPCH level is controlled by the power control loop  |                     |           |    |    |        |    |      |           |       |    |       |    |        |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> . |                     |           |    |    |        |    |      |           |       |    |       |    |        |

#### A.5.1.3.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 160 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

### A.5.1.3.2 Handover to inter-frequency cell

#### A.5.1.3.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the inter-frequency handover delay in CELL\_DCH state in the dual carrier case reported in section 5.1.2.1.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.5.1.11 and A.5.1.12 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. The PCCPCH RSCP and SFN-CFN observed time difference of the best cell on the unused frequency shall be reported together with Event 2C reporting. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with one active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2C. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2. The UL DPCH shall be transmitted in timeslot 12.

**Table A.5.1.11: General test parameters for Handover to inter-frequency cell**

| Parameter                    |                | Unit | Value  | Comment   |
|------------------------------|----------------|------|--|---|
| DCH parameters               |                |      | DL and UL Reference Measurement Channel 12.2 kbps              | As specified in TS 25.102 section A.2.2 and A.2.1                           |
| Power Control                |                |      | On   |   |
| Target quality value on DTCH |                | BLER | 0.01   |   |
| Initial conditions           | Active cell    |      | Cell 1   |   |
|                              | Neighbour cell |      | Cell 2   |   |
| Final condition              | Active cell    |      | Cell 2   |   |
| HCS                          |                |      | Not used   |   |
| O                            |                | dB   | 0  | Cell individual offset. This value shall be used for all cells in the test. |
| Hysteresis                   |                | dB   | 0  | Hysteresis parameter for event 2C   |
| Time to Trigger              |                | ms   | 0  |   |
| Threshold non-used frequency |                | dBm  | -80  | Applicable for Event 2C   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1<br>6 TDD neighbours on Channel 2 |   |
| T <sub>SI</sub>              |                | s    | 1.28   | The value shall be used for all cells in the test.                          |
| T1                           |                | s    | 10   |   |
| T2                           |                | s    | 10   |   |
| T3                           |                | s    | 10   |   |



TableA.5.1.12: Cell Specific parameters for Handover to inter-frequency cell

| Parameter   | Unit          | Cell 1    |    |    |        |    |      | Cell 2    |       |    |       |        |    |
|---|---------------|-----------|----|----|--------|----|------|-----------|-------|----|-------|--------|----|
|   |               | 0         |    |    | 4      |    |      | 2         |       |    | 5     |        |    |
| DL timeslot number  |               | T1        | T2 | T3 | T1     | T2 | T3   | T1        | T2    | T3 | T1    | T2     | T3 |
| UTRA RF Channel Number  |               | Channel 1 |    |    |        |    |      | Channel 2 |       |    |       |        |    |
| PCCPCH_Ec/lor   | dB            | -3        |    |    | n.a.   |    |      | -3        |       |    | n.a.  |        |    |
| SCH_Ec/lor  | dB            | -9        |    |    | n.a.   |    |      | -9        |       |    | n.a.  |        |    |
| SCH_t_offset  | dB            | 0         |    |    | n.a.   |    |      | 5         |       |    | n.a.  |        |    |
| DPCH_Ec/lor   | dB            | n.a.      |    |    | Note 1 |    | n.a. | n.a.      |       |    | n.a.  | Note 1 |    |
| OCNS_Ec/lor   | dB            | -3,12     |    |    | Note 2 |    | n.a. | n.a.      | -3,12 |    | n.a.  | Note 2 |    |
| $\hat{I}_{or}/I_{oc}$   | dB            | 1         |    |    |        |    |      | -Inf.     | 7     |    | -Inf. | 7      |    |
| PCCPCH RSCP   | dBm           | -72       |    |    | n.a.   |    |      | -Inf.     | -66   |    | n.a.  |        |    |
| $I_{oc}$  | dBm/ 7,68 MHz | -70       |    |    |        |    |      |           |       |    |       |        |    |
| Propagation Condition   |               | AWGN      |    |    |        |    |      |           |       |    |       |        |    |
| Note 1: The DPCH level is controlled by the power control loop  |               |           |    |    |        |    |      |           |       |    |       |        |    |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor . |               |           |    |    |        |    |      |           |       |    |       |        |    |

#### A.5.1.3.2.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 160 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

## A.5.2 TDD/FDD Handover

### A.5.2.1 3.84 Mcps TDD option

#### A.5.2.1.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the TDD/FDD handover delay in CELL\_DCH state reported in section 5.2.2.1.

The test parameters are given in Table A.5.2.1, A.5.2.2 and A.5.2.3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G and 2B shall be used. The CPICH\_RSCP of the best cell on the unused frequency shall be reported together with Event 2B reporting. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2B. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

Table A.5.2.1: General test parameters for TDD/FDD handover

| Parameter                                  |                   | Unit | Value  | Comment  |
|--|-------------------|------|--|--|
| DCH parameters                             |                   |      | DL and UL Reference<br>Measurement Channel 12.2 kbps           | As specified in TS 25.102 annex A.2.2<br>and TS 25.101 annex A                 |
| Power Control                              |                   |      | On   |  |
| Target quality value on<br>DTCH            |                   | BLER | 0.01   |  |
| Initial<br>conditions                      | Active cell       |      | Cell 1   | TDD cell   |
|  | Neighbour<br>cell |      | Cell 2   | FDD cell   |
| Final<br>condition                         | Active cell       |      | Cell 2   | FDD cell   |
| HCS  |                   |      | Not used   |  |
| O  |                   | dB   | 0  | Cell individual offset. This value shall be<br>used for all cells in the test. |
| Hysteresis                                 |                   | dB   | 3  | Hysteresis parameter for event 2B  |
| Time to Trigger                            |                   | ms   | 0  |  |
| Absolute threshold used<br>frequency       |                   | dBm  | -71  | Applicable for Event 2B  |
| Threshold non-used<br>frequency            |                   | dBm  | -80  | Applicable for Event 2B  |
| W non-used frequency<br>Filter coefficient |                   |      | 1<br>0   | Applicable for Event 2B  |
| Monitored cell list size                   |                   |      | 6 TDD neighbours on Channel 1<br>6 FDD neighbours on Channel 2 |  |
| T <sub>SI</sub>                            |                   | s    | 1.28   | The value shall be used for all cells in the<br>test.                          |
| T1   |                   | s    | 5  |  |
| T2   |                   | s    | 15   |  |
| T3   |                   | s    | 5  |  |

Table A.5.2.2: Cell 1 specific test parameters for TDD/FDD handover

| Parameter  | Unit                | Cell 1    |     |    |        |    |      |
|--|---------------------|-----------|-----|----|--------|----|------|
|  |                     | 0         |     |    | 2      |    |      |
| DL timeslot number   |                     | T1        | T2  | T3 | T1     | T2 | T3   |
| UTRA RF Channel<br>Number  |                     | Channel 1 |     |    |        |    |      |
| PCCPCH_Ec/lor  | dB                  | -3        |     |    | n.a.   |    |      |
| SCH_Ec/lor   | dB                  | -9        |     |    | n.a.   |    |      |
| SCH_t <sub>offset</sub>  | dB                  | 0         |     |    | n.a.   |    |      |
| DPCH_Ec/lor  | dB                  | n.a.      |     |    | Note 1 |    | n.a. |
| OCNS_Ec/lor  | dB                  | -3,12     |     |    | Note 2 |    | n.a. |
| $\hat{I}_{or}/I_{oc}$  | dB                  | 5         | -1  |    | 5      | -1 |      |
| PCCPCH RSCP  | dBm                 | -68       | -74 |    | n.a.   |    |      |
| $I_{oc}$   | dBm/<br>3,84<br>MHz | -70       |     |    |        |    |      |
| Propagation Condition  |                     | AWGN      |     |    |        |    |      |
| Note 1: The DPCH level is controlled by the power control loop   |                     |           |     |    |        |    |      |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell<br>to be equal to lor . |                     |           |     |    |        |    |      |

Table A.5.2.3: Cell 2 specific test parameters for TDD/FDD handover

| Parameter  | Unit             | Cell 2 |        |
|--|------------------|--------|--------|
|  |                  | T1, T2 | T3     |
| CPICH_Ec/I <sub>or</sub>   | dB               | -10    |        |
| PCCPCH_Ec/I <sub>or</sub>  | dB               | -12    |        |
| SCH_Ec/I <sub>or</sub>   | dB               | -12    |        |
| PICH_Ec/I <sub>or</sub>  | dB               | -15    |        |
| DPCH_Ec/I <sub>or</sub>  | dB               | n.a.   | Note 1 |
| OCNS_Ec/I <sub>or</sub>  | dB               | -0.941 | Note 2 |
| CPICH_RSCP   | dBm              | -83    | -77    |
| $\hat{I}_{or}/I_{oc}$  | dB               | -3     | 3      |
| $I_{oc}$   | dBm/3.<br>84 MHz | -70    |        |
| Propagation Condition  |                  | AWGN   |        |
| Note 1: The DPCH level is controlled by the power control loop   |                  |        |        |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ . |                  |        |        |

### A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 220 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

## A.5.2.2 1.28 Mcps TDD option

### A.5.2.2.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the TDD/FDD handover delay in CELL\_DCH state reported in section 5.2.2.2.

The test parameters are given in Table A.5.2.4, A.5.2.5 and A.5.2.6 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G and 2B shall be used. The CPICH\_RSCP of the best cell on the unused frequency shall be reported together with Event 2B reporting. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2B. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

Table A.5.2.4: General test parameters for TDD/FDD handover

| Parameter                            |                   | Unit | Value  | Comment  |
|--------------------------------------|-------------------|------|--|--|
| DCH parameters                       |                   |      | DL and UL Reference<br>Measurement Channels 12.2 kbps          | As specified in TS 25.102 annex A and<br>TS 25.101 annex A                     |
| Power Control                        |                   |      | On   |  |
| Initial<br>conditions                | Active cell       |      | Cell 1   | TDD cell   |
|                                      | Neighbour<br>cell |      | Cell 2   | FDD cell   |
| Final<br>condition                   | Active cell       |      | Cell 2   | FDD cell   |
| O                                    |                   | dB   | 0  | Cell individual offset. This value shall be<br>used for all cells in the test. |
| Hysteresis                           |                   | dB   | 3  | Hysteresis parameter for event 2B  |
| Time to Trigger                      |                   | ms   | 0  |  |
| Absolute threshold used<br>frequency |                   | dBm  | -71  | Applicable for Event 2B  |
| Threshold non-used<br>frequency      |                   | dBm  | -80  | Applicable for Event 2B  |
| W non-used frequency                 |                   |      | 1  | Applicable for Event 2B  |
| Filter coefficient                   |                   |      | 0  |  |
| Monitored cell list size             |                   |      | 6 TDD neighbours on Channel 1<br>6 FDD neighbours on Channel 2 |  |
| T <sub>SI</sub>                      |                   | s    | 1.28   | The value shall be used for all cells in the<br>test.                          |
| T1                                   |                   | s    | 5  |  |
| T2                                   |                   | s    | 15   |  |
| T3                                   |                   | s    | 5  |  |

Table A.5.2.5: Cell 1 specific test parameters for TDD/FDD handover

| Parameter                        | Unit   | Cell 1    |     |    |        |    |      |
|----------------------------------|--|-----------|-----|----|--------|----|------|
|                                  |  | 0         |     |    | 5      |    |      |
| Timeslot number                  |  | T1        | T2  | T3 | T1     | T2 | T3   |
| UTRA RF Channel<br>Number(Note3) |  | Channel 1 |     |    |        |    |      |
| PCCPCH_Ec/I <sub>or</sub>        | dB   | -3        |     |    | n.a.   |    |      |
| DPCH_Ec/I <sub>or</sub>          | dB   | n.a.      |     |    | Note 1 |    | n.a. |
| OCNS_Ec/I <sub>or</sub>          | dB   | -3        |     |    | Note 2 |    | n.a. |
| $\hat{I}_{or}/I_{oc}$            | dB   | 5         | -1  |    | 5      | -1 |      |
| PCCPCH RSCP                      | dBm  | -68       | -74 |    | n.a.   |    |      |
| $I_{oc}$                         | dBm/<br>1.28 MHz   | -70       |     |    |        |    |      |
| Propagation Condition            |  | AWGN      |     |    |        |    |      |
| Note 1:                          | The DPCH level is controlled by the power control loop   |           |     |    |        |    |      |
| Note 2:                          | The power of the OCNS channel that is added shall make the total power from the cell<br>to be equal to I <sub>or</sub> . |           |     |    |        |    |      |
| Note3:                           | In the case of multi-frequency network, the UTRA RF Channel Number can be set for<br>the primary frequency in this test. |           |     |    |        |    |      |

Table A.5.2.6: Cell 2 specific test parameters for TDD/FDD handover

| Parameter  | Unit          | Cell 2 |        |        |
|--|---------------|--------|--------|--------|
|  |               | T1     | T2     | T3     |
| CPICH_Ec/I <sub>or</sub>   | dB            |        | -10    |        |
| PCCPCH_Ec/I <sub>or</sub>  | dB            |        | -12    |        |
| SCH_Ec/I <sub>or</sub>   | dB            |        | -12    |        |
| PICH_Ec/I <sub>or</sub>  | dB            |        | -15    |        |
| DPCH_Ec/I <sub>or</sub>  | dB            |        | n.a.   | Note 1 |
| OCNS_Ec/I <sub>or</sub>  | dB            |        | -0.941 | Note 2 |
| CPICH_RSCP   | dBm           | -Inf   |        | -75    |
| $\hat{I}_{or}/I_{oc}$  | dB            | -Inf   |        | 5      |
| $I_{oc}$   | dBm/ 3.84 MHz |        |        | -70    |
| Propagation Condition  |               |        |        | AWGN   |
| Note 1: The DPCH level is controlled by the power control loop   |               |        |        |        |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ . |               |        |        |        |

### A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 220 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

### A.5.2.3 7.68 Mcps TDD option

#### A.5.2.3.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the TDD/FDD handover delay in CELL\_DCH state reported in section 5.2.2.1.

The test parameters are given in Table A.5.2.7, A.5.2.8 and A.5.2.9 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G and 2B shall be used. The CPICH\_RSCP of the best cell on the unused frequency shall be reported together with Event 2B reporting. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration message with activation time "now" with a new active cell, cell 2. The Physical Channel reconfiguration message shall be sent to the UE during period T2, after the UE has reported event 2B. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

Table A.5.2.7: General test parameters for TDD/FDD handover

| Parameter                            |                   | Unit | Value  | Comment  |
|--------------------------------------|-------------------|------|--|--|
| DCH parameters                       |                   |      | DL and UL Reference<br>Measurement Channel 12.2 kbps           | As specified in TS 25.102 annex A.2.2<br>and TS 25.101 annex A                 |
| Power Control                        |                   |      | On   |  |
| Target quality value on<br>DTCH      |                   | BLER | 0.01   |  |
| Initial<br>conditions                | Active cell       |      | Cell 1   | TDD cell   |
|                                      | Neighbour<br>cell |      | Cell 2   | FDD cell   |
| Final<br>condition                   | Active cell       |      | Cell 2   | FDD cell   |
| HCS                                  |                   |      | Not used   |  |
| O                                    |                   | dB   | 0  | Cell individual offset. This value shall be<br>used for all cells in the test. |
| Hysteresis                           |                   | dB   | 3  | Hysteresis parameter for event 2B  |
| Time to Trigger                      |                   | ms   | 0  |  |
| Absolute threshold used<br>frequency |                   | dBm  | -71  | Applicable for Event 2B  |
| Threshold non-used<br>frequency      |                   | dBm  | -80  | Applicable for Event 2B  |
| W non-used frequency                 |                   |      | 1  | Applicable for Event 2B  |
| Filter coefficient                   |                   |      | 0  |  |
| Monitored cell list size             |                   |      | 6 TDD neighbours on Channel 1<br>6 FDD neighbours on Channel 2 |  |
| $T_{SI}$                             |                   | s    | 1.28   | The value shall be used for all cells in the<br>test.                          |
| T1                                   |                   | s    | 5  |  |
| T2                                   |                   | s    | 15   |  |
| T3                                   |                   | s    | 5  |  |

Table A.5.2.8: Cell 1 specific test parameters for TDD/FDD handover

| Parameter   | Unit                | Cell 1    |     |    |        |    |      |
|---|---------------------|-----------|-----|----|--------|----|------|
|   |                     | 0         |     |    | 2      |    |      |
| DL timeslot number  |                     | T1        | T2  | T3 | T1     | T2 | T3   |
| UTRA RF Channel<br>Number   |                     | Channel 1 |     |    |        |    |      |
| PCCPCH_Ec/lor   | dB                  | -3        |     |    | n.a.   |    |      |
| SCH_Ec/lor  | dB                  | -9        |     |    | n.a.   |    |      |
| SCH_toffset   | dB                  | 0         |     |    | n.a.   |    |      |
| DPCH_Ec/lor   | dB                  | n.a.      |     |    | Note 1 |    | n.a. |
| OCNS_Ec/lor   | dB                  | -3,12     |     |    | Note 2 |    | n.a. |
| $\hat{I}_{or}/I_{oc}$   | dB                  | 5         | -1  |    | 5      | -1 |      |
| PCCPCH RSCP   | dBm                 | -68       | -74 |    | n.a.   |    |      |
| $I_{oc}$  | dBm/<br>7,68<br>MHz | -70       |     |    |        |    |      |
| Propagation Condition   |                     | AWGN      |     |    |        |    |      |
| Note 1: The DPCH level is controlled by the power control loop  |                     |           |     |    |        |    |      |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell<br>to be equal to $I_{or}$ |                     |           |     |    |        |    |      |

Table A.5.2.9: Cell 2 specific test parameters for TDD/FDD handover

| Parameter  | Unit         | Cell 2 |        |
|--|--------------|--------|--------|
|  |              | T1, T2 | T3     |
| CPICH_Ec/I <sub>or</sub>   | dB           | -10    |        |
| PCCPCH_Ec/I <sub>or</sub>  | dB           | -12    |        |
| SCH_Ec/I <sub>or</sub>   | dB           | -12    |        |
| PICH_Ec/I <sub>or</sub>  | dB           | -15    |        |
| DPCH_Ec/I <sub>or</sub>  | dB           | n.a.   | Note 1 |
| OCNS_Ec/I <sub>or</sub>  | dB           | -0.941 | Note 2 |
| CPICH_RSCP   | dBm          | -83    | -77    |
| $\hat{I}_{or}/I_{oc}$  | dB           | -3     | 3      |
| $I_{oc}$   | dBm/7.68 MHz | -70    |        |
| Propagation Condition  |              | AWGN   |        |
| Note 1: The DPCH level is controlled by the power control loop   |              |        |        |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ . |              |        |        |

### A.5.2.3.2 Test Requirements

The UE shall start to transmit the UL DPCH to Cell 2 less than 220 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

## A.5.3 TDD/GSM Handover

### A.5.3.1 Test Purpose and Environment

#### A.5.3.1.1 3.84 Mcps TDD option

The purpose of this test is to verify the requirement for the UTRA TDD to GSM handover delay reported in section 5.4.2.1.

The test parameters are given in Tables A.5.3.1, A.5.3.2 and A.5.3.3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3C shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a HANOVER FROM UTRAN COMMAND message with activation time "now" with one active cell, cell 2. The HANOVER FROM UTRAN COMMAND message shall be sent to the UE during period T2. The starting point of T3 is defined as the end of the last TTI containing the HO command. In the GSM Handover command contained in this message, IE starting time shall not be included.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be transmitted in timeslot 0 for cell 1 and no second Beacon timeslot shall be provided for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

Table A.5.3.1: General test parameters for TDD/GSM handover

| Parameter                      | Unit           | Value  | Comment   |
|--------------------------------|----------------|--|---|
| DCH parameters                 |                | DL Reference Measurement Channel<br>12.2 kbps                        | As specified in TS 25.102 section A.2.2                                     |
| Power Control                  |                | On   |   |
| Target quality value on DTCH   | BLER           | 0.01   |   |
| Initial conditions             | Active cell    | Cell 1   | UTRA TDD cell   |
|                                | Neighbour cell | Cell 2   | GSM cell  |
| Final condition                | Active cell    | Cell 2   | GSM cell  |
| Inter-RAT measurement quantity |                | GSM carrier RSSI   |   |
| BSIC verification required     |                | Required   |   |
| Threshold other system         | dBm            | -80  | Absolute GSM carrier RSSI threshold for Event 3C.                           |
| Hysteresis                     | dB             | 0  |   |
| Time to Trigger                | ms             | 0  |   |
| Filter coefficient             |                | 0  |   |
| Monitored cell list size       |                | 12 TDD neighbours on Channel 1<br>6 GSM neighbours including ARFCN 1 | Measurement control information is sent before the start of time period T1. |
| T <sub>identify abort</sub>    | s              | 5  | As specified in section 8.1.2.5   |
| T <sub>reconfirm abort</sub>   | s              | 5  | As specified in section 8.1.2.5   |
| T1                             | s              | 10   |   |
| T2                             | s              | 10   |   |
| T3                             | s              | 10   |   |

Table A.5.3.2: Cell 1 specific test parameters for TDD/GSM handover

| Parameter   | Unit                | Cell 1    |    |    |        |    |      |
|---|---------------------|-----------|----|----|--------|----|------|
|   |                     | 0         |    |    | 1      |    |      |
| DL timeslot number  |                     | T1        | T2 | T3 | T1     | T2 | T3   |
| UTRA RF Channel Number  |                     | Channel 1 |    |    |        |    |      |
| PCCPCH_Ec/lor   | dB                  | -3        |    |    | n.a.   |    |      |
| SCH_Ec/lor  | dB                  | -9        |    |    | n.a.   |    |      |
| SCH_t <sub>offset</sub>   | dB                  | 0         |    |    | n.a.   |    |      |
| DPCH_Ec/lor   | dB                  | n.a.      |    |    | Note 1 |    | n.a. |
| OCNS_Ec/lor   | dB                  | -3,12     |    |    | Note 2 |    | n.a. |
| $\hat{I}_{or}/I_{oc}$   | dB                  | 6         |    |    | 6      |    |      |
| PCCPCH RSCP   | dBm                 | -68       |    |    | n.a.   |    |      |
| $I_{oc}$  | dBm/<br>3,84<br>MHz | -70       |    |    |        |    |      |
| Propagation Condition   |                     | AWGN      |    |    |        |    |      |
| Note 1: The DPCH level is controlled by the power control loop  |                     |           |    |    |        |    |      |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor . |                     |           |    |    |        |    |      |

Table A.5.3.3: Cell 2 specific test parameters for TDD/GSM handover

| Parameter                  | Unit | Cell 2  |        |
|----------------------------|------|---------|--------|
|                            |      | T1      | T2, T3 |
| Absolute RF Channel Number |      | ARFCN 1 |        |
| RXLEV                      | dBm  | -85     | -75    |



### A.5.3.1.2 1.28Mcps TDD option

The purpose of this test is to verify the requirement for the UTRA TDD to GSM handover delay reported in section 5.3.2.

The test parameters are given in Tables A.5.3.4, A.5.3.5 and A.5.3.6 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3C shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a HANOVER FROM UTRAN COMMAND message with activation time "now" with one active cell, cell 2. The HANOVER FROM UTRAN COMMAND message shall be sent to the UE during period T2. The starting point of T3 is defined as the end of the last TTI containing the HO command. In the GSM Handover command contained in this message, the IE starting time shall not be included.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

**Table A.5.3.4: General test parameters for TDD/GSM handover**

| Parameter                      | Unit           | Value  | Comment   |
|--------------------------------|----------------|--|---|
| DCH parameters                 |                | DL Reference Measurement Channel<br>12.2 kbps                        | As specified in TS 25.102 section A   |
| Power Control                  |                | On   |   |
| Target quality value on DTCH   | BLER           | 0.01   |   |
| Initial conditions             | Active cell    | Cell 1   | UTRA TDD cell   |
|                                | Neighbour cell | Cell 2   | GSM cell  |
| Final condition                | Active cell    | Cell 2   | GSM cell  |
| Inter-RAT measurement quantity |                | GSM carrier RSSI   |   |
| BSIC verification required     |                | Required   |   |
| Threshold other system         | dBm            | -80  | Absolute GSM carrier RSSI threshold for Event 3C.                           |
| Hysteresis                     | dB             | 0  |   |
| Time to Trigger                | ms             | 0  |   |
| Filter coefficient             |                | 0  |   |
| Monitored cell list size       |                | 12 TDD neighbours on Channel 1<br>6 GSM neighbours including ARFCN 1 | Measurement control information is sent before the start of time period T1. |
| T <sub>identify abort</sub>    | s              | 5  | As specified in section 8.1A.2.5  |
| T <sub>reconfirm abort</sub>   | s              | 5  | As specified in section 8.1A.2.5  |
| T1                             | s              | 10   |   |
| T2                             | s              | 10   |   |
| T3                             | s              | 10   |   |

**Table A.5.3.5: Cell 1 specific test parameters for TDD/GSM handover**

| Parameter                     | Unit  | Cell 1    |    |    |       |    |    |
|-------------------------------|---|-----------|----|----|-------|----|----|
|                               |   | 0         |    |    | DwPTS |    |    |
| DL timeslot number            |   | T1        | T2 | T3 | T1    | T2 | T3 |
| UTRA RF Channel Number (NOTE) |   | Channel 1 |    |    |       |    |    |
| PCCPCH_Ec/lor                 | dB  | -3        |    |    |       |    |    |
| DwPCH_Ec/lor                  | dB  |           |    |    | 0     |    |    |
| OCNS_Ec/lor                   | dB  | -3        |    |    |       |    |    |
| $\hat{I}_{or}/I_{oc}$         | dB  | 5         |    |    | 5     |    |    |
| $I_{oc}$                      | dBm/<br>1.28<br>MHz   | -70       |    |    |       |    |    |
| Propagation Condition         |   | AWGN      |    |    |       |    |    |
| NOTE:                         | In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test. |           |    |    |       |    |    |

**Table A.5.3.6: Cell 2 specific test parameters for TDD/GSM handover**

| Parameter                  | Unit | Cell 2  |        |
|----------------------------|------|---------|--------|
|                            |      | T1      | T2, T3 |
| Absolute RF Channel Number |      | ARFCN 1 |        |
| RXLEV                      | dBm  | -85     | -75    |

### A.5.3.1.3 7.68 Mcps TDD option

The purpose of this test is to verify the requirement for the UTRA TDD to GSM handover delay reported in section 5.4.2.1.

The test parameters are given in Tables A.5.3.7, A.5.3.8 and A.5.3.9 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3C shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a HANDOVER FROM UTRAN COMMAND message with activation time "now" with one active cell, cell 2. The HANDOVER FROM UTRAN COMMAND message shall be sent to the UE during period T2. The starting point of T3 is defined as the end of the last TTI containing the HO command. In the GSM Handover command contained in this message, IE starting time shall not be included.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be transmitted in timeslot 0 for cell 1 and no second Beacon timeslot shall be provided for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

Table A.5.3.7: General test parameters for TDD/GSM handover

| Parameter                      | Unit           | Value  | Comment   |
|--------------------------------|----------------|--|---|
| DCH parameters                 |                | DL Reference Measurement Channel<br>12.2 kbps                        | As specified in TS 25.102 section A.2.2                                     |
| Power Control                  |                | On   |   |
| Target quality value on DTCH   | BLER           | 0.01   |   |
| Initial conditions             | Active cell    | Cell 1   | UTRA TDD cell   |
|                                | Neighbour cell | Cell 2   | GSM cell  |
| Final condition                | Active cell    | Cell 2   | GSM cell  |
| Inter-RAT measurement quantity |                | GSM carrier RSSI   |   |
| BSIC verification required     |                | Required   |   |
| Threshold other system         | dBm            | -80  | Absolute GSM carrier RSSI threshold for Event 3C.                           |
| Hysteresis                     | dB             | 0  |   |
| Time to Trigger                | ms             | 0  |   |
| Filter coefficient             |                | 0  |   |
| Monitored cell list size       |                | 12 TDD neighbours on Channel 1<br>6 GSM neighbours including ARFCN 1 | Measurement control information is sent before the start of time period T1. |
| T <sub>identify abort</sub>    | s              | 5  | As specified in section 8.1.2.5   |
| T <sub>reconfirm abort</sub>   | s              | 5  | As specified in section 8.1.2.5   |
| T1                             | s              | 10   |   |
| T2                             | s              | 10   |   |
| T3                             | s              | 10   |   |

Table A.5.3.8: Cell 1 specific test parameters for TDD/GSM handover

| Parameter   | Unit                | Cell 1    |    |    |        |    |      |
|---|---------------------|-----------|----|----|--------|----|------|
|   |                     | 0         |    |    | 1      |    |      |
| DL timeslot number  |                     | T1        | T2 | T3 | T1     | T2 | T3   |
| UTRA RF Channel Number  |                     | Channel 1 |    |    |        |    |      |
| PCCPCH_Ec/I <sub>or</sub>   | dB                  | -3        |    |    | n.a.   |    |      |
| SCH_Ec/I <sub>or</sub>  | dB                  | -9        |    |    | n.a.   |    |      |
| SCH_t <sub>offset</sub>   | dB                  | 0         |    |    | n.a.   |    |      |
| DPCH_Ec/I <sub>or</sub>   | dB                  | n.a.      |    |    | Note 1 |    | n.a. |
| OCNS_Ec/I <sub>or</sub>   | dB                  | -3,12     |    |    | Note 2 |    | n.a. |
| $\hat{I}_{or}/I_{oc}$   | dB                  | 6         |    |    | 6      |    |      |
| PCCPCH RSCP   | dBm                 | -68       |    |    | n.a.   |    |      |
| I <sub>oc</sub>   | dBm/<br>7,68<br>MHz | -70       |    |    |        |    |      |
| Propagation Condition   |                     | AWGN      |    |    |        |    |      |
| Note 1: The DPCH level is controlled by the power control loop  |                     |           |    |    |        |    |      |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> . |                     |           |    |    |        |    |      |

Table A.5.3.9: Cell 2 specific test parameters for TDD/GSM handover

| Parameter                  | Unit | Cell 2  |        |
|----------------------------|------|---------|--------|
|                            |      | T1      | T2, T3 |
| Absolute RF Channel Number |      | ARFCN 1 |        |
| RXLEV                      | dBm  | -85     | -75    |

## A.5.3.2 Test Requirements

### A.5.3.2.1 3.84 Mcps TDD option

The UE shall begin to send access bursts on the new DCCH of the target cell less than 90 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

### A.5.3.2.2 1.28 Mcps TDD option

The UE shall begin to send access bursts on the new DCCH of the target cell less than 90 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

### A.5.3.2.3 7.68 Mcps TDD option

The UE shall begin to send access bursts on the new DCCH of the target cell less than 90 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

## A.5.3a TDD to E-UTRA FDD Handover

### A.5.3a.1 Test Purpose and Environment

#### A.5.3a.1.1 3.84 Mcps TDD option

#### A.5.3a.1.2 1.28 Mcps TDD option

This test is to verify the requirement for UTRAN TDD to E-UTRAN FDD handover requirements specified in section 5.3a.

The test scenario comprises of 1 UTRA TDD cell and 1 E-UTRA FDD cell as given in tables Table A.5.3a.1.2-1, Table A.5.3a.1.2-2, and Table A.5.3a.1.2-3. Idle interval of 80ms period as defined in TS25.331 is configured before T2 begins to enable E-UTRAN monitoring.

The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event 3a. The end of the last TTI containing handover message is begin of T3 duration.

**Table A.5.3a.1.2-1: General test parameters for UTRA TDD to E-UTRA FDD handover test case**

| Parameter                     |                | Unit | Value   | Comment   |
|-------------------------------|----------------|------|---|---|
| DPCH parameters active cell   |                |      | DL Reference Measurement Channel<br>12.2 kbps | As specified in TS 25.102 section A. The DPCH is located in an other timeslot than 0. |
| PDSCH parameters              |                |      | DL Reference Measurement Channel R.0<br>FDD   | As specified in TS 36.133 section A.3.1.1.1   |
| PCFICH/PDCCH/PHICH parameters |                |      | DL Reference Measurement Channel R.6<br>FDD   | As specified in TS 36.133 section A.3.1.2.1   |
| Initial conditions            | Active cell    |      | Cell 1  | UTRA 1.28Mcps TDD cell  |
|                               | Neighbour cell |      | Cell 2  | E-UTRA FDD cell   |
| Final conditions              | Active cell    |      | Cell 2  | E-UTRA FDD cell   |
| CP length of cell 2           |                |      | normal  |   |
| PRACH configuration           |                |      | 4   | As specified in table 5.7.1-2 in 3GPP TS 36.211                                       |
| Idle intervals period         |                | ms   | 80  | As specified in TS 25.331   |
| Handover activation time      |                |      | now   |   |
| Access Barring Information    |                |      | Not Sent                                      | No additional delays in random access procedure.                                      |
| $CIO_{\text{other\_RAT}}$     |                | dB   | 0   | Cell individual offset  |
| $H_{3c}$                      |                | dB   | 0   | Hysteresis parameter for event 3a   |
| $T_{\text{Used}}$             |                | dBm  | -80   | UTRA event 3a threshold   |
| $T_{\text{other\_RAT}}$       |                | dBm  | -93   | Absolute RSRP threshold for event 3a  |
| TimeToTrigger                 |                | dB   | 0   |   |
| Filter coefficient            |                |      | 0   | L3 filtering is not used  |
| T1                            |                | s    | 5   |   |
| T2                            |                | s    | ≤10   |   |
| T3                            |                | s    | 1   |   |

**Table A.5.3a.1.2-2: Cell specific test parameters for UTRA TDD to E-UTRA FDD handover test case (cell 1)**

| Parameter   | Unit         | Cell 1 (UTRA) |        |        |       |    |    |
|---|--------------|---------------|--------|--------|-------|----|----|
|   |              | 0             |        |        | DwPTS |    |    |
| Timeslot Number   |              | T1            | T2     | T3     | T1    | T2 | T3 |
| UTRA RF Channel Number<br><small>Note 1</small>   |              | Channel 1     |        |        |       |    |    |
| PCCPCH_Ec/lor   | dB           | -3            |        |        |       |    |    |
| DwPCH_Ec/lor  | dB           |               |        |        | 0     |    |    |
| OCNS_Ec/lor   | dB           | -3            |        |        |       |    |    |
| $\hat{I}_{or} / I_{oc}$   | dB           | 11            | -3     | -3     | 11    | -3 | -3 |
| $I_{oc}$  | dBm/1.28 MHz | -80           |        |        |       |    |    |
| PCCPCH_RSCP<br><small>Note 2</small>  | dBm          | -72           | -86    | -86    | n.a.  |    |    |
| $I_o$<br><small>Note 2</small>  | dBm/1.28 MHz | -68.67        | -78.24 | -78.24 |       |    |    |
| Propagation Condition   |              | AWGN          |        |        |       |    |    |
| <p>Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.</p> <p>Note 2: PCCPCH_RSCP and <math>I_o</math> levels have been derived from other parameters for information purposes. They are not settable parameters themselves.</p> |              |               |        |        |       |    |    |

**Table A.5.3a.1.2-3: Cell specific test parameters for UTRA TDD to E-UTRA FDD handover test case (cell 2)**

| Parameter  | Unit       | Cell 2   |          |          |
|--|------------|----------|----------|----------|
|  |            | T1       | T2       | T3       |
| E-UTRA RF Channel Number   |            | 2        |          |          |
| BW <sub>channel</sub>  | MHz        | 10       |          |          |
| OCNG Patterns defined in TS36.133 A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)   |            | OP.2 FDD | OP.2 FDD | OP.1 FDD |
| PBCH_RA  | dB         | 0        | 0        | 0        |
| PBCH_RB  | dB         |          |          |          |
| PSS_RB   | dB         |          |          |          |
| SSS_RB   | dB         |          |          |          |
| PCFICH_PA  | dB         |          |          |          |
| PHICH_PA   | dB         |          |          |          |
| PHICH_PB   | dB         |          |          |          |
| PDCCH_PA   | dB         |          |          |          |
| PDCCH_PB   | dB         |          |          |          |
| PDSCH_PA   | dB         |          |          |          |
| PDSCH_PB   | dB         |          |          |          |
| OCNG_RA <sup>Note 1</sup>  | dB         |          |          |          |
| OCNG_RB <sup>Note 1</sup>  | dB         |          |          |          |
| $\hat{E}_s / N_{oc}$   | dB         |          |          |          |
| $N_{oc}$   | dBm/15kHz  | -98      |          |          |
| $\hat{E}_s / I_{ot}$   | dB         | -3       | 13       | 13       |
| RSRP <sup>Note 2</sup>   | dBm/15kHz  | -101     | -85      | -85      |
| SCH_RP <sup>Note 2</sup>   | dBm/15 kHz | -101     | -85      | -85      |
| $I_o$ <sup>Note 2</sup>  | dBm/9MHz   | -68.45   | -57.01   | -57.01   |
| Propagation Condition  |            | AWGN     |          |          |
| Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. |            |          |          |          |
| Note 2: RSRP, SCH_RP and $I_o$ levels have been derived from other parameters for information purposes. They are not settable parameters themselves.   |            |          |          |          |

### A.5.3a.1.3 7.68 Mcps TDD option

## A.5.3a.2 Test Requirements

### A.5.3a.2.1 3.84 Mcps TDD option

### A.5.3a.2.2 1.28 Mcps TDD option

The UE shall start to transmit the PRACH to Cell 2 less than 85 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

### A.5.3a.2.3 7.68 Mcps TDD option

## A.5.3b TDD to E-UTRA TDD Handover

### A.5.3b.1 Test Purpose and Environment

#### A.5.3b.1.1 3.84 Mcps TDD option

#### A.5.3b.1.2 1.28 Mcps TDD option

This test is to verify the requirement for UTRAN TDD to E-UTRAN TDD handover requirements specified in section 5.3b.

The test scenario comprises of 1 UTRA TDD cell and 1 E-UTRA TDD cell as given in tables Table A.5.3b.1.2-1, Table A.5.3b.1.2-2, and Table A.5.3b.1.2-3. Idle interval of 80ms period as defined in TS25.331 is configured before T2 begins to enable E-UTRAN monitoring.

The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event 3a. The end of the last TTI containing handover message is begin of T3 duration.

**Table A.5.3b.1.2-1: General test parameters for UTRA TDD to E-UTRA TDD handover test case**

| Parameter                            |                | Unit | Value   | Comment   |
|--------------------------------------|----------------|------|---|---|
| DPCH parameters active cell          |                |      | DL Reference Measurement Channel<br>12.2 kbps | As specified in TS 25.102 section A. The DPCH is located in an other timeslot than 0. |
| PDSCH parameters                     |                |      | DL Reference Measurement Channel R.0 TDD      | As specified in section A.3.1.1.2 in [24]   |
| PCFICH/PDCCH/PHICH parameters        |                |      | DL Reference Measurement Channel R.6 TDD      | As specified in section A.3.1.2.2 in [24]   |
| Initial conditions                   | Active cell    |      | Cell 1  | UTRA 1.28Mcps TDD cell  |
|                                      | Neighbour cell |      | Cell 2  | E-UTRA TDD cell   |
| Final conditions                     | Active cell    |      | Cell 2  | E-UTRA TDD cell   |
| CP length of cell 2                  |                |      | normal  |   |
| Uplink-downlink configuration        |                |      | 1   | As specified in table 4.2-2 in 3GPP TS 36.211   |
| Special subframe configuration       |                |      | 6   | As specified in table 4.2-1 in 3GPP TS 36.211   |
| PRACH configuration                  |                |      | 53  | As specified in table 5.7.1-3 in 3GPP TS 36.211                                       |
| Idle intervals period                |                | ms   | 80  | As specified in TS 25.331   |
| Handover activation time             |                |      | now   |   |
| Access Barring Information           |                |      | Not Sent                                      | No additional delays in random access procedure.                                      |
| C <sub>IO</sub> <sub>other_RAT</sub> |                | dB   | 0   | Cell individual offset  |
| H <sub>3c</sub>                      |                | dB   | 0   | Hysteresis parameter for event 3a   |
| T <sub>Used</sub>                    |                | dBm  | -80   | UTRA event 3a threshold   |
| T <sub>other_RAT</sub>               |                | dBm  | -93   | Absolute RSRP threshold for event 3a  |
| TimeToTrigger                        |                | dB   | 0   |   |
| Filter coefficient                   |                |      | 0   | L3 filtering is not used  |
| T1                                   |                | s    | 5   |   |
| T2                                   |                | s    | ≤10   |   |
| T3                                   |                | s    | 1   |   |

**Table A.5.3b.1.2-2: Cell specific test parameters for UTRA TDD to E-UTRA TDD handover test case (cell 1)**

| Parameter   | Unit         | Cell 1 (UTRA) |       |       |       |    |    |
|---|--------------|---------------|-------|-------|-------|----|----|
|   |              | 0             |       |       | DwPTS |    |    |
| Timeslot Number   |              | T1            | T2    | T3    | T1    | T2 | T3 |
| UTRA RF Channel Number <sup>Note 1</sup>  |              | Channel 1     |       |       |       |    |    |
| PCCPCH_Ec/I <sub>or</sub>   | dB           | -3            |       |       |       |    |    |
| DwPCH_Ec/I <sub>or</sub>  | dB           |               |       |       | 0     |    |    |
| OCNS_Ec/I <sub>or</sub>   | dB           | -3            |       |       |       |    |    |
| $\hat{I}_{or}/I_{oc}$   | dB           | 11            | -3    | -3    | 11    | -3 | -3 |
| $I_{oc}$  | dBm/1.28 MHz | -80           |       |       |       |    |    |
| PCCPCH RSCP <sup>Note 2</sup>   | dBm          | -72           | -86   | -86   | n.a.  |    |    |
| $I_o$ <sup>Note 2</sup>   | dBm/1.28 MHz | -             | -     | -     |       |    |    |
|   |              | 68.67         | 78.24 | 78.24 |       |    |    |
| Propagation Condition   |              | AWGN          |       |       |       |    |    |
| Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.                                  |              |               |       |       |       |    |    |
| Note 2: PCCPCH_RSCP and $I_o$ levels have been derived from other parameters for information purposes. They are not settable parameters themselves. |              |               |       |       |       |    |    |

**Table A.5.3b.1.2-3: Cell specific test parameters for UTRA TDD to E-UTRA TDD handover test case (cell 2)**

| Parameter  | Unit       | Cell 2   |          |          |
|--|------------|----------|----------|----------|
|  |            | T1       | T2       | T3       |
| E-UTRA RF Channel Number   |            | 2        |          |          |
| $BW_{channel}$   | MHz        | 10       |          |          |
| OCNG Patterns defined in TS36.133 A.3.2.2.1 (OP.1 TDD) and in A.3.2.2.2 (OP.2 TDD)   |            | OP.2 TDD | OP.2 TDD | OP.1 TDD |
| PBCH_RA  | dB         | 0        | 0        | 0        |
| PBCH_RB  | dB         |          |          |          |
| PSS_RB   | dB         |          |          |          |
| SSS_RB   | dB         |          |          |          |
| PCFICH_PA  | dB         |          |          |          |
| PHICH_PA   | dB         |          |          |          |
| PHICH_PB   | dB         |          |          |          |
| PDCCH_PA   | dB         |          |          |          |
| PDCCH_PB   | dB         |          |          |          |
| PDSCH_PA   | dB         |          |          |          |
| PDSCH_PB   | dB         |          |          |          |
| OCNG_RA <sup>Note 1</sup>  | dB         |          |          |          |
| OCNG_RB <sup>Note 1</sup>  | dB         |          |          |          |
| $\hat{E}_s/N_{oc}$   | dB         | -3       | 13       | 13       |
| $N_{oc}$   | dBm/15kHz  | -98      |          |          |
| $\hat{E}_s/I_{ot}$   | dB         | -3       | 13       | 13       |
| RSRP <sup>Note 2</sup>   | dBm/15kHz  | -101     | -85      | -85      |
| SCH_RP <sup>Note 2</sup>   | dBm/15 kHz | -101     | -85      | -85      |
| $I_o$ <sup>Note 2</sup>  | dBm/9MHz   | -68.45   | -57.01   | -57.01   |
| Propagation Condition  |            | AWGN     |          |          |
| Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. |            |          |          |          |
| Note 2: RSRP, SCH_RP and $I_o$ levels have been derived from other parameters for information purposes. They are not settable parameters themselves.   |            |          |          |          |



### A.5.3b.1.3 7.68 Mcps TDD option

## A.5.3b.2 Test Requirements

### A.5.3b.2.1 3.84 Mcps TDD option

### A.5.3b.2.2 1.28 Mcps TDD option

The UE shall start to transmit the PRACH to Cell 2 less than 85 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

### A.5.3b.2.3 7.68 Mcps TDD option

## A.5.3c UTRA TDD to E-UTRA FDD handover: unknown target cell

### A.5.3c.1 Test Purpose and Environment

#### A.5.3c.1.1 3.84 Mcps TDD option

#### A.5.3c.1.2 1.28 Mcps TDD option

This test is to verify the requirement for UTRAN TDD to E-UTRAN FDD handover requirements specified in section 5.3a when the target E-UTRAN cell is unknown.

The test scenario comprises of 1 UTRA TDD cell and 1 E-UTRA FDD cell as given in tables A.5.3c.1.2-1, A.5.3c.1.2-2, and A.5.3c.1.2-3. No scheduled idle interval is configured in the test case.

The test consists of two successive time periods, with time durations of T1 and T2 respectively. During time duration T1, a RRC HANDOVER FROM UTRAN COMMAND message shall be sent to the UE with activation time "now" with a new active E-UTRA FDD cell, cell2. The end of the last TTI containing handover message is the beginning of T2 duration. At the start of time duration T2, the UE does not have any timing information of Cell 2.

**Table A.5.3c.1.2-1: General test parameters for UTRA TDD to unknown E-UTRA FDD handover test case**

| Parameter                     |                | Unit | Value                                      | Comment  |
|-------------------------------|----------------|------|--|--|
| DPCH parameters active cell   |                |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A. The DPCH is located in an other timeslot than 0.                              |
| PDSCH parameters              |                |      | DL Reference Measurement Channel R.0 FDD   | As specified in TS 36.133 section A.3.1.1.1  |
| PCFICH/PDCCH/PHICH parameters |                |      | DL Reference Measurement Channel R.6 FDD   | As specified in TS 36.133 section A.3.1.2.1  |
| Initial conditions            | Active cell    |      | Cell 1                                     | UTRA 1.28Mcps TDD cell   |
|                               | Neighbour cell |      | Cell 2                                     | E-UTRA FDD cell  |
| Final conditions              | Active cell    |      | Cell 2                                     | E-UTRA FDD cell  |
| CP length of cell 2           |                |      | Normal                                     |  |
| PRACH configuration           |                |      | 4  | As specified in table 5.7.1-2 in 3GPP TS 36.211  |
| Handover activation time      |                |      | Now  |  |
| Access Barring Information    |                |      | Not Sent                                   | No additional delays in random access procedure.   |
| TimeToTrigger                 |                | ms   | 0  |  |
| Filter coefficient            |                |      | 0  | L3 filtering is not used   |
| Hysteresis                    |                | dB   | 0  |  |
| T1                            |                | s    | 5  | During T1, cell 2 shall be powered off, and during the off time the physical layer cell identity shall be changed. |
| T2                            |                | s    | 1  |  |

**Table A.5.3c.1.2-2: Cell specific test parameters for UTRA TDD to unknown E-UTRA FDD handover test case (cell 1)**

| Parameter  | Unit         | Cell 1 (UTRA)   |     |       |    |
|--|--------------|-----------------|-----|-------|----|
|  |              | Timeslot Number |     | DwPTS |    |
| Timeslot Number  |              | 0               |     | DwPTS |    |
|  |              | T1              | T2  | T1    | T2 |
| UTRA RF Channel Number*  |              | Channel 1       |     |       |    |
| PCCPCH_Ec/Ior  | dB           | -3              |     |       |    |
| DwPCH_Ec/Ior   | dB           |                 |     | 0     |    |
| OCNS_Ec/Ior  | dB           | -3              |     |       |    |
| $\hat{I}_{or}/I_{oc}$  | dB           | 4               | 4   | 4     | 4  |
| $I_{oc}$   | dBm/1.28 MHz | -80             |     |       |    |
| PCCPCH RSCP  | dBm          | -79             | -79 | n.a.  |    |
| Propagation Condition  |              | AWGN            |     |       |    |
| * Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number. |              |                 |     |       |    |

**Table A.5.3c.1.2-3: Cell specific test parameters for UTRA TDD to unknown E-UTRA FDD handover test case (cell 2)**

| Parameter  | Unit      | Cell 2    |          |
|--|-----------|-----------|----------|
|  |           | T1        | T2       |
| E-UTRA RF Channel Number   |           | 2         |          |
| $BW_{\text{channel}}$  | MHz       | 10        |          |
| OCNG Patterns defined in TS36.133 A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)   |           | OP.2 FDD  | OP.1 FDD |
| PBCH_RA  | dB        | 0         | 0        |
| PBCH_RB  | dB        |           |          |
| PSS_RB   | dB        |           |          |
| SSS_RB   | dB        |           |          |
| PCFICH_PA  | dB        |           |          |
| PHICH_PA   | dB        |           |          |
| PHICH_PB   | dB        |           |          |
| PDCCH_PA   | dB        |           |          |
| PDCCH_PB   | dB        |           |          |
| PDSCH_PA   | dB        |           |          |
| PDSCH_PB   | dB        |           |          |
| OCNG_RA <sup>Note1</sup>   | dB        |           |          |
| OCNG_RB <sup>Note1</sup>   | dB        |           |          |
| $\hat{E}_s / N_{oc}$   | dB        | -Infinity | 0        |
| $N_{oc}$   | dBm/15kHz | -98       |          |
| $\hat{E}_s / I_{ot}$   | dB        | -Infinity | 0        |
| RSRP   | dBm/15kHz | -Infinity | -98      |
| SCH_RP   | dBm/15kHz | -Infinity | -98      |
| Propagation Condition  |           | AWGN      |          |
| Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. |           |           |          |
| Note 2: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.                     |           |           |          |

### A.5.3c.1.3 7.68 Mcps TDD option

## A.5.3c.2 Test Requirements

### A.5.3c.2.1 3.84 Mcps TDD option

### A.5.3c.2.2 1.28 Mcps TDD option

The UE shall start to transmit the PRACH to Cell 2 less than  $[T_{\text{search}}$  for the unknown target cell] + [85] ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

### A.5.3c.2.3 7.68 Mcps TDD option

## A.5.3d UTRA TDD to E-UTRA TDD handover: unknown target cell

### A.5.3d.1 Test Purpose and Environment

#### A.5.3d.1.1 3.84 Mcps TDD option

#### A.5.3d.1.2 1.28 Mcps TDD option

This test is to verify the requirement for UTRAN TDD to E-UTRAN TDD handover requirements specified in section 5.3b when the target E-UTRAN cell is unknown.

The test scenario comprises of 1 UTRA TDD cell and 1 E-UTRA TDD cell as given in tables A.5.3d.1.2-1, A.5.3d.1.2-2, and A.5.3d.1.2-3. No scheduled idle interval is configured in the test case.

The test consists of two successive time periods, with time durations of T1 and T2 respectively. During time duration T1, a RRC HANDOVER FROM UTRAN COMMAND message shall be sent to the UE with activation time "now" with a new active E-UTRA TDD cell, cell2. The end of the last TTI containing handover message is the beginning of T2 duration. At the start of time duration T2, the UE does not have any timing information of Cell 2.

**Table A.5.3d.1.2-1: General test parameters for UTRA TDD to unknown E-UTRA TDD handover test case**

| Parameter                      |                | Unit | Value   | Comment  |
|--------------------------------|----------------|------|---|--|
| DPCH parameters active cell    |                |      | DL Reference Measurement Channel<br>12.2 kbps | As specified in TS 25.102 section A. The DPCH is located in an other timeslot than 0.                              |
| PDSCH parameters               |                |      | DL Reference Measurement Channel<br>R.0 TDD   | As specified in section A.3.1.1.2 in [24]  |
| PCFICH/PDCCH/PHICH parameters  |                |      | DL Reference Measurement Channel<br>R.6 TDD   | As specified in section A.3.1.2.2 in [24]  |
| Initial conditions             | Active cell    |      | Cell 1  | UTRA 1.28Mcps TDD cell   |
|                                | Neighbour cell |      | Cell 2  | E-UTRA TDD cell  |
| Final conditions               | Active cell    |      | Cell 2  | E-UTRA TDD cell  |
| CP length of cell 2            |                |      | Normal  |  |
| Uplink-downlink configuration  |                |      | 1   | As specified in table 4.2-2 in 3GPP TS 36.211  |
| Special subframe configuration |                |      | 6   | As specified in table 4.2-1 in 3GPP TS 36.211  |
| PRACH configuration            |                |      | 53  | As specified in table 5.7.1-3 in 3GPP TS 36.211  |
| Handover activation time       |                |      | now   |  |
| Access Barring Information     |                |      | Not Sent                                      | No additional delays in random access procedure.   |
| TimeToTrigger                  |                | ms   | 0   |  |
| Filter coefficient             |                |      | 0   | L3 filtering is not used   |
| Hysteresis                     |                | dB   | 0   |  |
| T1                             |                | s    | 5   | During T1, cell 2 shall be powered off, and during the off time the physical layer cell identity shall be changed. |
| T2                             |                | s    | 1   |  |

**Table A.5.3d.1.2-2: Cell specific test parameters for UTRA TDD to unknown E-UTRA TDD handover test case (cell 1)**

| Parameter  | Unit         | Cell 1 (UTRA) |     |       |    |
|--|--------------|---------------|-----|-------|----|
|  |              | 0             |     | DwPTS |    |
| Timeslot Number  |              | T1            | T2  | T1    | T2 |
| UTRA RF Channel Number*  |              | Channel 1     |     |       |    |
| PCCPCH_Ec/lor  | dB           | -3            |     |       |    |
| DwPCH_Ec/lor   | dB           |               |     | 0     |    |
| OCNS_Ec/lor  | dB           | -3            |     |       |    |
| $\hat{I}_{or}/I_{oc}$  | dB           | 4             | 4   | 4     | 4  |
| $I_{oc}$   | dBm/1.28 MHz | -80           |     |       |    |
| PCCPCH RSCP  | dBm          | -79           | -79 | n.a.  |    |
| Propagation Condition  |              | AWGN          |     |       |    |
| * Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number. |              |               |     |       |    |

**Table A.5.3d.1.2-3: Cell specific test parameters for UTRA TDD to unknown E-UTRA TDD handover test case (cell 2)**

| Parameter  | Unit      | Cell 2    |          |
|--|-----------|-----------|----------|
|  |           | T1        | T2       |
| E-UTRA RF Channel Number   |           | 2         |          |
| BWchannel  | MHz       | 10        |          |
| OCNG Patterns defined in TS36.133 A.3.2.2.1 (OP.1 TDD) and in A.3.2.2.2 (OP.2 TDD)   |           | OP.2 TDD  | OP.1 TDD |
| PBCH_RA  | dB        | 0         | 0        |
| PBCH_RB  | dB        |           |          |
| PSS_RB   | dB        |           |          |
| SSS_RB   | dB        |           |          |
| PCFICH_PA  | dB        |           |          |
| PHICH_PA   | dB        |           |          |
| PHICH_PB   | dB        |           |          |
| PDCCH_PA   | dB        |           |          |
| PDCCH_PB   | dB        |           |          |
| PDSCH_PA   | dB        |           |          |
| PDSCH_PB   | dB        |           |          |
| OCNG_RA <sup>Note1</sup>   | dB        |           |          |
| OCNG_RB <sup>Note1</sup>   | dB        |           |          |
| $\hat{E}_s/N_{oc}$   | dB        | -Infinity | 0        |
| $N_{oc}$   | dBm/15kHz | -98       |          |
| $\hat{E}_s/I_{ot}$   | dB        | -Infinity | 0        |
| RSRP   | dBm/15kHz | -Infinity | -98      |
| SCH_RP   | dBm/15kHz | -Infinity | -98      |
| Propagation Condition  |           | AWGN      |          |
| Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. |           |           |          |
| Note 2: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.                     |           |           |          |

A.5.3d.1.3 7.68 Mcps TDD option

## A.5.3d.2 Test Requirements

### A.5.3d.2.1 3.84 Mcps TDD option

### A.5.3d.2.2 1.28 Mcps TDD option

The UE shall start to transmit the PRACH to Cell 2 less than  $[T_{\text{search}}$  for the unknown target cell] + [80] ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

### A.5.3d.2.3 7.68 Mcps TDD option

## A.5.3e TDD/GSM Handover: Non-synchronization target cell

### A.5.3e.1 Test Purpose and Environment

#### A.5.3e.1.1 3.84 Mcps TDD option

#### A.5.3e.1.2 1.28 Mcps TDD option

The purpose of this test is to verify the requirement for the UTRA TDD to GSM handover delay reported in section 5.3.2.

The test parameters are given in Tables A.5.3e.4, A.5.3e.5 and A.5.3e.6 below. The test consists of two successive time periods, with a time duration of T1 and T2 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

Starting T2, cell 2 becomes detectable and the UE receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

**Table A.5.3e.1.2-1: General test parameters for TDD/GSM handover**

| Parameter                      | Unit           | Value   | Comment                             |
|--------------------------------|----------------|---|-------------------------------------|
| DCH parameters                 |                | DL Reference Measurement Channel<br>12.2 kbps | As specified in TS 25.102 section A |
| Power Control                  |                | On  |                                     |
| Target quality value on DTCH   | BLER           | 0.01  |                                     |
| Initial conditions             | Active cell    | Cell 1  | UTRA TDD cell                       |
|                                | Neighbour cell | Cell 2  | GSM cell                            |
| Final condition                | Active cell    | Cell 2  | GSM cell                            |
| Inter-RAT measurement quantity |                | GSM carrier RSSI                              |                                     |
| T1                             | s              | 10  |                                     |
| T2                             | s              | 1   |                                     |

Table A.5.3e.1.2-2: Cell 1 specific test parameters for TDD/GSM handover

| Parameter                     | Unit  | Cell 1    |    |       |    |
|-------------------------------|---|-----------|----|-------|----|
|                               |   | 0         |    | DwPTS |    |
| DL timeslot number            |   | T1        | T2 | T1    | T2 |
| UTRA RF Channel Number (NOTE) |   | Channel 1 |    |       |    |
| PCCPCH_Ec/Ior                 | dB  | -3        |    |       |    |
| DwPCH_Ec/Ior                  | dB  |           |    | 0     |    |
| OCNS_Ec/Ior                   | dB  | -3        |    |       |    |
| $\hat{I}_{or}/I_{oc}$         | dB  | 5         |    | 5     |    |
| $I_{oc}$                      | dBm/<br>1.28<br>MHz   | -70       |    |       |    |
| Propagation Condition         |   | AWGN      |    |       |    |
| NOTE:                         | In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test. |           |    |       |    |

Table A.5.3e.1.2-3: Cell 2 specific test parameters for TDD/GSM handover

| Parameter                  | Unit | Cell 2    |     |
|----------------------------|------|-----------|-----|
|                            |      | T1        | T2  |
| Absolute RF Channel Number |      | ARFCN 1   |     |
| RXLEV                      | dBm  | -Infinity | -75 |

## A.5.3e.1.3 7.68 Mcps TDD option

## A.5.3e.2 Test Requirements

## A.5.3e.2.1 3.84 Mcps TDD option

## A.5.3e.2.2 1.28 Mcps TDD option

The UE shall begin to send access bursts on the new DCCH of the target cell less than 200 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

$$T_{\text{Handover delay}} = 190 \text{ ms} + T_{\text{offset}} + T_{\text{UL}}$$

$T_{\text{offset}}$ : Equal to 4.65 ms, GSM timing uncertainty between the time from when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure

$T_{\text{UL}}$ : Equal to 4.65 ms, the time the UE has to wait in case the next timeslot is an idle frame or a SACCH frame.

This gives a total of 199.3 ms, allow 200 ms in the test case.

## A.5.3e.2.3 7.68 Mcps TDD option

(Void)

## A.5.4 Cell Re-selection in CELL\_FACH

### A.5.4.1 3.84 Mcps TDD option

#### A.5.4.1.1 Scenario 1: Re-selection to intra-frequency TDD cell

##### A.5.4.1.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL\_FACH state in the single carrier case reported in section 5.4.2.1.1. The test parameters are given in Tables A.5.4.1 to A.5.4.4.

**Table A.5.4.1: General test parameters for Cell Re-selection in CELL\_FACH**

| Parameter   | Unit            | Value                             | Comment   |
|---|-----------------|-----------------------------------|---|
| Initial condition                                   | Active cell     | Cell1                             |   |
|   | Neighbour cells | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     | Cell2                             |   |
| HCS   |                 | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   | dBm             | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   | dBm             | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value | -               | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     | s               | 1,28                              | The value shall be used for all cells in the test.  |
| T1  | s               | 15 (initial),<br>5 (repetition)   |   |
| T2  | s               | 5                                 |   |

**Table A.5.4.2: Physical channel parameters for S-CCPCH.**

| Parameter           | Unit | Level                       |
|---------------------|------|-----------------------------|
| Channel bit rate    | Kbps | 24,4                        |
| Channel symbol rate | Ksps | 12,2                        |
| Slot Format #       | -    | 0                           |
| Frame allocation    | -    | Continuous frame allocation |
| Midamble allocation | -    | Default Midamble            |

**Table A.5.4.3: Transport channel parameters for S-CCPCH**

| Parameter                  | FACH                 |
|----------------------------|----------------------|
| Transport Channel Number   | 1                    |
| Transport Block Size       | 240                  |
| Transport Block Set Size   | 240                  |
| Transmission Time Interval | 20 ms                |
| Type of Error Protection   | Convolutional Coding |
| Coding Rate                | 1/2                  |
| Rate Matching attribute    | 256                  |
| Size of CRC                | 16                   |



Table A.5.4.4: Cell specific test parameters for Cell Re-selection in CELL\_FACH

| Parameter                      | Unit                | Cell 1  |       |       |       | Cell 2   |       |       |       | Cell 3   |       |       |       |
|--------------------------------|---------------------|---|-------|-------|-------|--|-------|-------|-------|--|-------|-------|-------|
|                                |                     | 0   |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
| Timeslot Number                |                     | T1  | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number         |                     | Channel 1   |       |       |       | Channel 1  |       |       |       | Channel 1  |       |       |       |
| PCCPCH_Ec/Ior                  | dB                  | -3  | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/Ior                     | dB                  | -9  | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_toffset                    |                     | 0   | 0     | 0     | 0     | 5  | 5     | 5     | 5     | 10   | 10    | 10    | 10    |
| PICH_Ec/Ior                    | dB                  |   |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/Ior                    | dB                  | -3,12   | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$          | dB                  | 9   | 7     | 9     | 7     | 7  | 9     | 7     | 9     | -1   | -1    | -1    | -1    |
| PCCPCH RSCP                    | dBm                 | -64   | -66   |       |       | -66  | -64   |       |       | -74  | -74   |       |       |
| Qoffset1 <sub>s,n</sub>        | dB                  | C1, C2: 0; C1, C3:0;<br>C1,C4:0<br>C1, C5:0; C1,C6:0  |       |       |       | C2, C1: 0; C2, C3:0;<br>C2,C4:0<br>C2, C5: 0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0;<br>C3,C4:0<br>C3, C5: 0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>            | dB                  | 0   |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection                   |                     | 0   |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch                   | dB                  | not sent  |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| FACH measurement occasion info |                     | not sent  |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| $I_{oc}$                       | dBm/<br>3,84<br>MHz | -70   |       |       |       |  |       |       |       |  |       |       |       |
| Propagation Condition          |                     | AWGN  |       |       |       |  |       |       |       |  |       |       |       |
|                                |                     | Cell 4  |       |       |       | Cell 5   |       |       |       | Cell 6   |       |       |       |
| Timeslot                       |                     | 0   |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
|                                |                     | T1  | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number         |                     | Channel 1   |       |       |       | Channel 1  |       |       |       | Channel 1  |       |       |       |
| PCCPCH_Ec/Ior                  | dB                  | -3  | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/Ior                     | dB                  | -9  | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_toffset                    |                     | 15  | 15    | 15    | 15    | 20   | 20    | 20    | 20    | 25   | 25    | 25    | 25    |
| PICH_Ec/Ior                    | dB                  |   |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/Ior                    | dB                  | -3,12   | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$          | dB                  | -1  | -1    | -1    | -1    | -1   | -1    | -1    | -1    | -1   | -1    | -1    | -1    |
| PCCPCH RSCP                    | dBm                 | -74   | -74   |       |       | -74  | -74   |       |       | -74  | -74   |       |       |
| Qoffset1 <sub>s,n</sub>        | dB                  | C4, C1: 0; C4, C2:0;<br>C4,C3:0 C4, C5:0; C4,<br>C6:0 |       |       |       | C5, C1: 0; C5, C2:0;<br>C5,C3:0<br>C5, C4:0; C5, C6:0  |       |       |       | C6, C1: 0; C6, C2:0;<br>C6,C3:0<br>C6, C4:0; C6, C5:0  |       |       |       |
| Qhyst1 <sub>s</sub>            | dB                  | 0   |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection                   |                     | 0   |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch                   | dB                  | not sent  |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| FACH measurement occasion info |                     | not sent  |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| $I_{oc}$                       | dBm/<br>3,84<br>MHz | -70   |       |       |       |  |       |       |       |  |       |       |       |
| Propagation Condition          |                     | AWGN  |       |       |       |  |       |       |       |  |       |       |       |

NOTE: S-CCPCH shall not be located in TS0.

#### A.5.4.1.1.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 2,5 s.

The rate of correct cell re-selections observed during repeated tests shall be at least 90%.

## A.5.4.1.2 Scenario 2: Re-selection to inter-frequency TDD cell

## A.5.4.1.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL\_FACH state in the multi carrier case reported in section 5.4.2.1.2. The test parameters are given in Tables A.5.4.5 to A.5.4.8.

**Table A.5.4.5: General test parameters for Cell Re-selection in CELL\_FACH**

| Parameter   | Unit            | Value                             | Comment   |
|---|-----------------|-----------------------------------|---|
| Initial condition                                   | Active cell     | Cell1                             |   |
|   | Neighbour cells | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     | Cell2                             |   |
| HCS   |                 | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   | dBm             | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   | dBm             | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value | -               | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     | s               | 1,28                              | The value shall be used for all cells in the test.  |
| T1  | s               | 15 (initial),<br>5 (repetition)   |   |
| T2  | s               | 5                                 |   |

**Table A.5.4.6: Physical channel parameters for S-CCPCH.**

| Parameter           | Unit | Level                       |
|---------------------|------|-----------------------------|
| Channel bit rate    | Kbps | 24,4                        |
| Channel symbol rate | Ksps | 12,2                        |
| Slot Format #       | -    | 0                           |
| Frame allocation    | -    | Continuous frame allocation |
| Midamble allocation | -    | Default Midamble            |

**Table A.5.4.7: Transport channel parameters for S-CCPCH**

| Parameter                  | FACH                 |
|----------------------------|----------------------|
| Transport Channel Number   | 1                    |
| Transport Block Size       | 240                  |
| Transport Block Set Size   | 240                  |
| Transmission Time Interval | 20 ms                |
| Type of Error Protection   | Convolutional Coding |
| Coding Rate                | ½                    |
| Rate Matching attribute    | 256                  |
| Size of CRC                | 16                   |

**Table A.5.4.8: Cell specific test parameters for Cell Re-selection in CELL\_FACH**

| Parameter                                 | Unit                | Cell 1  |       |       |       | Cell 2   |       |       |       | Cell 3   |       |       |       |
|---|---------------------|---|-------|-------|-------|--|-------|-------|-------|--|-------|-------|-------|
|   |                     | 0   |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
| Timeslot Number                           |                     | T1  | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number                    |                     | Channel 1   |       |       |       | Channel 2  |       |       |       | Channel 1  |       |       |       |
| PCCPCH_Ec/lor                             | dB                  | -3  | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor                                | dB                  | -9  | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_t_offset                              |                     | 0   | 0     | 0     | 0     | 5  | 5     | 5     | 5     | 10   | 10    | 10    | 10    |
| PICH_Ec/lor                               | dB                  |   |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor                               | dB                  | -3,12   | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$                     | dB                  | 9   | 3     | 9     | 3     | 3  | 9     | 3     | 9     | -1   | -1    | -1    | -1    |
| PCCPCH RSCP                               | dBm                 | -64   | -70   |       |       | -70  | -64   |       |       | -74  | -74   |       |       |
| Qoffset1 <sub>s,n</sub>                   | dB                  | C1, C2: 0; C1, C3:0;<br>C1,C4:0<br>C1, C5:0; C1,C6:0  |       |       |       | C2, C1: 0; C2, C3:0;<br>C2,C4:0<br>C2, C5: 0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0;<br>C3,C4:0<br>C3, C5: 0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>                       | dB                  | 0   |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection                              |                     | 0   |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch                              | dB                  | not sent  |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch                              | dB                  | not sent  |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| FACH measurement occasion info            |                     | not sent  |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Inter-frequency TDD measurement indicator |                     | TRUE  |       |       |       | TRUE   |       |       |       | TRUE   |       |       |       |
| $I_{oc}$                                  | dBm/<br>3,84<br>MHz | -70   |       |       |       |  |       |       |       |  |       |       |       |
| Propagation Condition                     |                     | AWGN  |       |       |       |  |       |       |       |  |       |       |       |
|   |                     | Cell 4  |       |       |       | Cell 5   |       |       |       | Cell 6   |       |       |       |
| Timeslot                                  |                     | 0   |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
|   |                     | T1  | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number                    |                     | Channel 1   |       |       |       | Channel 2  |       |       |       | Channel 2  |       |       |       |
| PCCPCH_Ec/lor                             | dB                  | -3  | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor                                | dB                  | -9  | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_t_offset                              |                     | 15  | 15    | 15    | 15    | 20   | 20    | 20    | 20    | 25   | 25    | 25    | 25    |
| PICH_Ec/lor                               | dB                  |   |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor                               | dB                  | -3,12   | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$                     | dB                  | -1  | -1    | -1    | -1    | -1   | -1    | -1    | -1    | -1   | -1    | -1    | -1    |
| PCCPCH RSCP                               | dBm                 | -74   | -74   |       |       | -74  | -74   |       |       | -74  | -74   |       |       |
| Qoffset1 <sub>s,n</sub>                   | dB                  | C4, C1: 0; C4, C2:0;<br>C4,C3:0 C4, C5:0; C4,<br>C6:0 |       |       |       | C5, C1: 0; C5, C2:0;<br>C5,C3:0<br>C5, C4:0; C5, C6:0  |       |       |       | C6, C1: 0; C6, C2:0;<br>C6,C3:0<br>C6, C4:0; C6, C5:0  |       |       |       |
| Qhyst1 <sub>s</sub>                       | dB                  | 0   |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection                              |                     | 0   |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch                              | dB                  | not sent  |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch                              | dB                  | not sent  |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| FACH measurement occasion info            |                     | not sent  |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Inter-frequency TDD measurement indicator |                     | TRUE  |       |       |       | TRUE   |       |       |       | TRUE   |       |       |       |
| $I_{oc}$                                  | dBm/<br>3,84<br>MHz | -70   |       |       |       |  |       |       |       |  |       |       |       |
| Propagation Condition                     |                     | AWGN  |       |       |       |  |       |       |       |  |       |       |       |

NOTE: S-CCPCH shall not be located in TS0.

### A.5.4.1.2.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 3 s.

The rate of correct cell re-selections observed during repeated tests shall be at least 90%.

## A.5.4.2 1.28 Mcps TDD option

### A.5.4.2.1 Re-selection to intra-frequency TDD cell

#### A.5.4.2.1.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL\_FACH state in the case reported in section 5.4.3.2.1.

The test parameters are given in Tables A.5.4.9 to A.5.4.12

**Table A.5.4.9: General test parameters for Cell Re-selection in CELL\_FACH**

| Parameter   |                 | Unit | Value                             | Comment   |
|---|-----------------|------|-----------------------------------|---|
| initial condition                                   | Active cell     |      | Cell1                             |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| final condition                                     | Active cell     |      | Cell2                             |   |
| HCS   |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 15 (initial), 5 (repetition)      |   |
| T2  |                 | s    | 5                                 |   |

**Table A.5.4.10: Physical channel parameters for S-CCPCH.**

| Parameter           | Unit | Level                       |
|---------------------|------|-----------------------------|
| Channel bit rate    | kbps | 35.2                        |
| Channel symbol rate | ksps | 17.6                        |
| Slot Format #       | -    | 0; 2                        |
| Frame allocation    | -    | Continuous frame allocation |
| Midamble allocation | -    | Common Midamble             |

Table A.5.4.11: Transport channel parameters for S-CCPCH

| Parameter                  | FACH               |
|----------------------------|--------------------|
| Transport Channel Number   | 1                  |
| Transport Block Size       | 240                |
| Transport Block Set Size   | 240                |
| Transmission Time Interval | 20 ms              |
| Type of Error Protection   | Convolution Coding |
| Coding Rate                | $\frac{1}{2}$      |
| Rate Matching attribute    | 256                |
| Size of CRC                | 16                 |

Table A.5.4.12: Cell specific test parameters for Cell Re-selection in CELL\_FACH

| Parameter                       | Unit         | Cell 1   |     |       |    | Cell 2  |     |       |    | Cell 3  |     |       |    |
|---------------------------------|--------------|--|-----|-------|----|---|-----|-------|----|---|-----|-------|----|
|                                 |              | 0  |     | DWPTS |    | 0   |     | DWPTS |    | 0   |     | DWPTS |    |
|                                 |              | T1   | T2  | T1    | T2 | T1  | T2  | T1    | T2 | T1  | T2  | T1    | T2 |
| UTRA RF Channel Number (NOTE 2) |              | Channel 1  |     |       |    | Channel 1   |     |       |    | Channel 1   |     |       |    |
| PCCPCH_Ec/lor                   | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| DwPCH_Ec/lor                    | dB           |  |     | 0     | 0  |   |     | 0     | 0  |   |     | 0     | 0  |
| OCNS_Ec/lor                     | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$           | dB           | 10   | 7   | 10    | 7  | 7   | 10  | 7     | 10 | -1  | -1  | -1    | -1 |
| PCCPCH RSCP                     | dBm          | -63  | -66 |       |    | -66   | -63 |       |    | -74   | -74 |       |    |
| Qoffset1 <sub>s,n</sub>         | dB           | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |     |       |    | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2, C6:0 |     |       |    | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3, C6:0 |     |       |    |
| Qhyst1 <sub>s</sub>             | dB           | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Treselection                    |              | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Sintrasearch                    | dB           | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| FACH measurement occasion info  |              | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
|                                 |              | Cell 4   |     |       |    | Cell 5  |     |       |    | Cell 6  |     |       |    |
|                                 |              | 0  |     | DWPTS |    | 0   |     | DWPTS |    | 0   |     | DWPTS |    |
|                                 |              | T1   | T2  | T1    | T2 | T1  | T2  | T1    | T2 | T1  | T2  | T1    | T2 |
| UTRA RF Channel Number (NOTE 2) |              | Channel 1  |     |       |    | Channel 1   |     |       |    | Channel 1   |     |       |    |
| PCCPCH_Ec/lor                   | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| DwPCH_Ec/lor                    | dB           |  |     | 0     | 0  |   |     | 0     | 0  |   |     | 0     | 0  |
| OCNS_Ec/lor                     | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$           | dB           | -1   | -1  | -1    | -1 | -1  | -1  | -1    | -1 | -1  | -1  | -1    | -1 |
| PCCPCH RSCP                     | dBm          | -74  | -74 |       |    | -74   | -74 |       |    | -74   | -74 |       |    |
| Qoffset1 <sub>s,n</sub>         | dB           | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |     |       |    | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0  |     |       |    | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0  |     |       |    |
| Qhyst1 <sub>s</sub>             | dB           | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Treselection                    |              | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Sintrasearch                    | dB           | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| FACH measurement occasion info  |              | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| $I_{oc}$                        | dBm/1.28 MHz | -70  |     |       |    |   |     |       |    |   |     |       |    |
| Propagation Condition           |              | AWGN   |     |       |    |   |     |       |    |   |     |       |    |

NOTE 1: S-CCPCH is located in an other downlink TS than TS0.

NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.

#### A.5.4.2.1.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 1.6 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as:

$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms}$$

where:

$T_{\text{Measurement Period Intra}}$  Specified in 8.4A.2.2.2 gives 200ms for this test case.

$T_{\text{SI}}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

$T_{\text{RA}}$  The additional delay caused by the random access procedure described in TS25.224. In this test case the persistence value is 1 thus  $T_{\text{RA}}$  is set to 35ms in the test case.

This gives a total of 1.545s, allow 1.6s in the test case.

#### A.5.4.2.2 Re-selection to inter-frequency TDD cell

##### A.5.4.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL\_FACH state in section 5.4.3.2.2. The test parameters are given in Tables A.5.4.13 to A.5.4.16

**Table A.5.4.13: General test parameters for Cell Re-selection in CELL\_FACH**

| Parameter   |                 | Unit | Value                             | Comment   |
|---|-----------------|------|-----------------------------------|---|
| initial condition                                   | Active cell     |      | Cell1                             |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| final condition                                     | Active cell     |      | Cell2                             |   |
| HCS   |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| $T_{\text{SI}}$                                     |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 15 (initial), 5 (repetition)      |   |
| T2  |                 | s    | 5                                 |   |

**Table A.5.4.14: Physical channel parameters for S-CCPCH.**

| Parameter           | Unit | Level                       |
|---------------------|------|-----------------------------|
| Channel bit rate    | kbps | 35.2                        |
| Channel symbol rate | ksps | 17.6                        |
| Slot Format #       | -    | 0; 2                        |
| Frame allocation    | -    | Continuous frame allocation |
| Midamble allocation | -    | Common Midamble             |

**Table A.5.4.15: Transport channel parameters for S-CCPCH**

| <b>Parameter</b>           | <b>FACH</b>        |
|----------------------------|--------------------|
| Transport Channel Number   | 1                  |
| Transport Block Size       | 240                |
| Transport Block Set Size   | 240                |
| Transmission Time Interval | 20 ms              |
| Type of Error Protection   | Convolution Coding |
| Coding Rate                | $\frac{1}{2}$      |
| Rate Matching attribute    | 256                |
| Size of CRC                | 16                 |

Table A.5.4.16: Cell specific test parameters for Cell re-selection in CELL\_FACH state

| Parameter                                 | Unit                | Cell 1   |     |       |    | Cell 2   |     |       |    | Cell 3   |     |       |    |
|---|---------------------|--|-----|-------|----|--|-----|-------|----|--|-----|-------|----|
|   |                     | 0  |     | DWPTS |    | 0  |     | DWPTS |    | 0  |     | DWPTS |    |
| Timeslot Number                           |                     | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 |
| UTRA RF Channel Number (NOTE 2)           |                     | Channel 1  |     |       |    | Channel 2  |     |       |    | Channel 1  |     |       |    |
| PCCPCH_Ec/Ior                             | dB                  | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| DwPCH_Ec/Ior                              | dB                  |  |     | 0     | 0  |  |     | 0     | 0  |  |     | 0     | 0  |
| OCNS_Ec/Ior                               | dB                  | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$                     | dB                  | 10   | 4   | 10    | 4  | 4  | 10  | 4     | 10 | -1   | -1  | -1    | -1 |
| PCCPCH RSCP                               | dBm                 | -63  | -69 |       |    | -69  | -63 |       |    | -74  | -74 |       |    |
| Qoffset1 <sub>s,n</sub>                   | dB                  | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |     |       |    | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2:C6:0 |     |       |    | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3:C6:0 |     |       |    |
| Qhyst1 <sub>s</sub>                       | dBm                 | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Treselection                              | s                   | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Sintrasearch                              | dB                  | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Sintersearch                              | dB                  | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| FACH measurement occasion info            |                     | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| FACH measurement occasion cycle length    |                     | 4  |     |       |    | 4  |     |       |    | 4  |     |       |    |
| Inter-frequency TDD measurement indicator |                     | TRUE   |     |       |    | TRUE   |     |       |    | TRUE   |     |       |    |
| Inter-frequency FDD measurement indicator |                     | FALSE  |     |       |    | FALSE  |     |       |    | FALSE  |     |       |    |
| Parameter                                 | Unit                | Cell 4   |     |       |    | Cell 5   |     |       |    | Cell 6   |     |       |    |
|   |                     | 0  |     | DWPTS |    | 0  |     | DWPTS |    | 0  |     | DWPTS |    |
| Timeslot                                  |                     | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 |
| UTRA RF Channel Number (NOTE 2)           |                     | Channel 1  |     |       |    | Channel 2  |     |       |    | Channel 2  |     |       |    |
| PCCPCH_Ec/Ior                             | dB                  | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| DwPCH_Ec/Ior                              | dB                  |  |     | 0     | 0  |  |     | 0     | 0  |  |     | 0     | 0  |
| OCNS_Ec/Ior                               | dB                  | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$                     | dB                  | -1   | -1  | -1    | -1 | -1   | -1  | -1    | -1 | -1   | -1  | -1    | -1 |
| PCCPCH RSCP                               | dBm                 | -74  | -74 |       |    | -74  | -74 |       |    | -74  | -74 |       |    |
| Qoffset1 <sub>s,n</sub>                   | dB                  | C4, C1: 0; C4, C2:0; C4,C3:0;<br>C4, C5:0; C4:C6:0 |     |       |    | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5:C6:0  |     |       |    | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6:C5:0  |     |       |    |
| Qhyst1 <sub>s</sub>                       | dB                  | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Treselection                              | s                   | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Sintrasearch                              | dB                  | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Sintersearch                              | dB                  | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| FACH measurement occasion info            |                     | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| FACH measurement occasion cycle length    |                     | 4  |     |       |    | 4  |     |       |    | 4  |     |       |    |
| Inter-frequency TDD measurement indicator |                     | TRUE   |     |       |    | TRUE   |     |       |    | TRUE   |     |       |    |
| Inter-frequency FDD measurement indicator |                     | FALSE  |     |       |    | FALSE  |     |       |    | FALSE  |     |       |    |
| $I_{oc}$                                  | dBm/<br>1.28<br>MHz | -70  |     |       |    |  |     |       |    |  |     |       |    |
| Propagation Condition                     |                     | AWGN   |     |       |    |  |     |       |    |  |     |       |    |

NOTE 1: S-CCPCH is located in an other downlink TS than TS0.

NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.



#### A.5.4.2.2.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 2 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{reselection, inter}} = T_{\text{measurement inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} \text{ ms,}$$

where:

$T_{\text{measurement inter}}$  is specified in 8.4A.2.3.2 gives 480ms for this test case.

$T_{\text{SI}}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

$T_{\text{RA}}$  The additional delay caused by the random access procedure described in TS25.224. In this test case the persistence value is 1 thus  $T_{\text{RA}}$  is set to 35ms in the test case.

This gives a total of 1.825s, allow 1.9s in the test case.

#### A.5.4.2.3 Re-selection to GSM cell

##### A.5.4.2.3.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL\_FACH state in section 5.4.3.2.4.

This scenario implies the presence of 1 UTRAN serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 UMTS carrier and 6 GSM cells. Test parameters are given in Table, A.5.4.16A, A.5.4.16B, A.5.4.16C, A.5.4.16D, A.5.4.16E.

**Table A.5.4.16A: General test parameters for UTRAN to GSM Cell Re-selection**

| Parameter  |                | Unit | Value | Comment   |
|--|----------------|------|-------|---|
| Initial condition                                | Active cell    |      | Cell1 |   |
|  | Neighbour cell |      | Cell2 |   |
| Final condition                                  | Active cell    |      | Cell2 |   |
| HCS  |                |      |       | Not used  |
| UE_TXPWR_MAX_RACH                                |                | dBm  | 21    | The value shall be used for all cells in the test |
| $Q_{\text{rxlevmin}}$                            |                | dBm  | -103  | The value shall be used for all cells in the test |
| Access Service Class (ASC#0) - Persistence value |                |      | 1     | The value shall be used for all cells in the test |
| $T_{\text{SI}}$                                  |                | s    | 1,28  |   |
| T1   |                | s    | 15    |   |
| T2   |                | s    | 15    |   |

The transport and physical parameters of the S-CCPCH carrying the FACH are defined in Table A.5.4.16B and Table A.5.4.16C.

**Table A.5.4.16B: Physical channel parameters for S-CCPCH.**

| Parameter           | Unit | Level                       |
|---------------------|------|-----------------------------|
| Channel bit rate    | kbps | 35.2                        |
| Channel symbol rate | ksps | 17.6                        |
| Slot Format #1      | -    | 0; 2                        |
| Frame allocation    | -    | Continuous frame allocation |
| Midamble allocation | -    | Common Midamble             |

**Table A.5.4.16C: Transport channel parameters for S-CCPCH**

| Parameter                  | FACH               |
|----------------------------|--------------------|
| Transport Channel Number   | 1                  |
| Transport Block Size       | 240                |
| Transport Block Set Size   | 240                |
| Transmission Time Interval | 20 ms              |
| Type of Error Protection   | Convolution Coding |
| Coding Rate                | $\frac{1}{2}$      |
| Rate Matching attribute    | 256                |
| Size of CRC                | 16                 |

**Table A.5.4.16D: Cell re-selection UTRAN TDD 1,28 Mcps Option to GSM cell case (cell 1)**

| Parameter              | Unit         | Cell 1 (UTRA) |    |           |    |
|------------------------|--------------|---------------|----|-----------|----|
|                        |              | 0             |    | DwPTS     |    |
| Timeslot Number        |              | T1            | T2 | T1        | T2 |
| UTRA RF Channel Number |              | Channel 1     |    | Channel 1 |    |
| PCCPCH_Ec/lor          | dB           | -3            | -3 |           |    |
| DwPCH_Ec/lor           | dB           |               |    | 0         | 0  |
| OCNS_Ec/lor            | dB           | -3            | -3 |           |    |
| $\hat{I}_{or}/I_{oc}$  | dB           | 6             | 6  | 6         | 6  |
| $I_{oc}$               | dBm/1,28 MHz | -80           |    |           |    |
| PCCPCH RSCP            | dBm          | -77           |    |           |    |
| Propagation Condition  |              | AWGN          |    | AWGN      |    |
| Treselection           | s            | 0             |    |           |    |
| SsearchRAT             | dB           | Not sent      |    |           |    |
| Qrxlevmin              | dBm          | -103          |    |           |    |
| Qoffset1s,n            | dB           | C1, C2: 0     |    |           |    |
| Qhyst1s                | dB           | 0             |    |           |    |

**Table A.5.4.16E: Cell re-selection UTRAN to GSM cell case (cell 2)**

| Parameter                  | Unit | Cell 2 (GSM) |     |
|----------------------------|------|--------------|-----|
|                            |      | T1           | T2  |
| Absolute RF Channel Number |      | ARFCN 1      |     |
| RXLEV                      | dBm  | -90          | -70 |
| RXLEV_ACCESS_MIN           | dBm  | -103         |     |
| MS_TXPWR_MAX_CCH           | dBm  | 33           |     |
| Qsearch_I                  | -    | always       |     |

#### A.5.4.2.3.2 Test Requirements

The cell re-selection delay is defined as the time from when the cell quality levels change to the moment when this change makes the UE reselect a better ranked cell, and starts to send CHANNEL REQUEST message to perform a Location update to the new cell.

This test is for the case where the UE camps on a 1,28 Mcps TDD cell and reselects to a GSM cell.

The requirements and this test apply to UEs supporting both 1,28 Mcps TDD and GSM.

The cell re-selection delay shall be less than 7.5 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:  $T_{\text{reselection GSM}} = 40 + T_{\text{identify GSM}} + T_{\text{measurement GSM}} + T_{\text{BCCH}} + T_{\text{RA}}$  where:

$T_{\text{RA}}$  = The additional delay caused by the random access procedure , 10ms.

$T_{\text{identify GSM}}$  Specified in TS 25.123 ,here it is 5000ms.

$T_{\text{measureGSM}}$  480ms according to Table 4.1A in section 4.2.

$T_{\text{BCCH}}$  Maximum time allowed to read BCCH data from GSM cell.

The maximum time allowed to read the BCCH data, when being synchronized to a BCCH carrier, is 1.9 s.

This gives a total of 7.43s, thus allow 7.5s.

### A.5.4.3 7.68 Mcps TDD option

#### A.5.4.3.1 Scenario 1: TDD/TDD cell re-selection single carrier case

##### A.5.4.3.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL\_FACH state in the single carrier case reported in section 5.4.4.1.1. The test parameters are given in Tables A.5.4.17 to A.5.4.20.

**Table A.5.4.17: General test parameters for Cell Re-selection in CELL\_FACH**

| Parameter   | Unit            | Value                            | Comment   |
|---|-----------------|----------------------------------|---|
| Initial condition                                   | Active cell     | Cell1                            |   |
|   | Neighbour cells | Cell2, Cell3,Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     | Cell2                            |   |
| HCS   |                 | Not used                         |   |
| UE_TXPWR_MAX_RACH                                   | dBm             | 21                               | The value shall be used for all cells in the test.  |
| Qrxlevmin   | dBm             | -102                             | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value | -               | 1                                | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| $T_{\text{SI}}$                                     | s               | 1,28                             | The value shall be used for all cells in the test.  |
| T1  | s               | 15 (initial),<br>5 (repetition)  |   |
| T2  | s               | 5                                |   |

**Table A.5.4.18: Physical channel parameters for S-CCPCH.**

| Parameter           | Unit | Level                       |
|---------------------|------|-----------------------------|
| Channel bit rate    | Kbps | 24,4                        |
| Channel symbol rate | Ksps | 12,2                        |
| Slot Format #       | -    | 0                           |
| Frame allocation    | -    | Continuous frame allocation |
| Midamble allocation | -    | Default Midamble            |

Table A.5.4.19: Transport channel parameters for S-CCPCH

| Parameter                  | FACH                 |
|----------------------------|----------------------|
| Transport Channel Number   | 1                    |
| Transport Block Size       | 240                  |
| Transport Block Set Size   | 240                  |
| Transmission Time Interval | 20 ms                |
| Type of Error Protection   | Convolutional Coding |
| Coding Rate                | $\frac{1}{2}$        |
| Rate Matching attribute    | 256                  |
| Size of CRC                | 16                   |

Table A.5.4.20: Cell specific test parameters for Cell Re-selection in CELL\_FACH

| Parameter                      | Unit             | Cell 1   |       |       |       | Cell 2  |       |       |       | Cell 3  |       |       |       |
|--------------------------------|------------------|--|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|
|                                |                  | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
| Timeslot Number                |                  | T1   | T2    | T1    | T2    | T1  | T2    | T1    | T2    | T1  | T2    | T1    | T2    |
| UTRA RF Channel Number         |                  | Channel 1  |       |       |       | Channel 1   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/lor                  | dB               | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/lor                     | dB               | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH_offset                     |                  | 0  | 0     | 0     | 0     | 5   | 5     | 5     | 5     | 10  | 10    | 10    | 10    |
| PICH_Ec/lor                    | dB               |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/lor                    | dB               | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$          | dB               | 9  | 7     | 9     | 7     | 7   | 9     | 7     | 9     | -1  | -1    | -1    | -1    |
| PCCPCH RSCP                    | dBm              | -64  | -66   |       |       | -66   | -64   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub>        | dB               | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |       |       |       | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>            | dB               | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection                   |                  | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch                   | dB               | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| FACH measurement occasion info |                  | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| $I_{oc}$                       | dBm/7,<br>68 MHz | -70  |       |       |       |   |       |       |       |   |       |       |       |
| Propagation Condition          |                  | AWGN   |       |       |       |   |       |       |       |   |       |       |       |
|                                |                  | Cell 4   |       |       |       | Cell 5  |       |       |       | Cell 6  |       |       |       |
| Timeslot                       |                  | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
|                                |                  | T1   | T2    | T1    | T2    | T1  | T2    | T1    | T2    | T1  | T2    | T1    | T2    |
| UTRA RF Channel Number         |                  | Channel 1  |       |       |       | Channel 1   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/lor                  | dB               | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/lor                     | dB               | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH_offset                     |                  | 15   | 15    | 15    | 15    | 20  | 20    | 20    | 20    | 25  | 25    | 25    | 25    |
| PICH_Ec/lor                    | dB               |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/lor                    | dB               | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$          | dB               | -1   | -1    | -1    | -1    | -1  | -1    | -1    | -1    | -1  | -1    | -1    | -1    |
| PCCPCH RSCP                    | dBm              | -74  | -74   |       |       | -74   | -74   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub>        | dB               | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0  |       |       |       | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0  |       |       |       |
| Qhyst1 <sub>s</sub>            | dB               | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection                   |                  | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch                   | dB               | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| FACH measurement occasion info |                  | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| $I_{oc}$                       | dBm/7,<br>68 MHz | -70  |       |       |       |   |       |       |       |   |       |       |       |
| Propagation Condition          |                  | AWGN   |       |       |       |   |       |       |       |   |       |       |       |

NOTE: S-CCPCH shall not be located in TS0.

### A.5.4.3.1.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 2,5 s.

The rate of correct cell re-selections observed during repeated tests shall be at least 90%.

### A.5.4.3.2 Scenario 2: TDD/TDD cell re-selection multi carrier case

#### A.5.4.1.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL\_FACH state in the multi carrier case reported in section 5.4.4.1.2. The test parameters are given in Tables A.5.4.21 to A.5.4.24.

**Table A.5.4.21: General test parameters for Cell Re-selection in CELL\_FACH**

| Parameter   |                 | Unit | Value                             | Comment   |
|---|-----------------|------|-----------------------------------|---|
| Initial condition                                   | Active cell     |      | Cell1                             |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     |      | Cell2                             |   |
| HCS   |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 | -    | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     |                 | s    | 1,28                              | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 15 (initial),<br>5 (repetition)   |   |
| T2  |                 | s    | 5                                 |   |

**Table A.5.4.22: Physical channel parameters for S-CCPCH.**

| Parameter           | Unit | Level                       |
|---------------------|------|-----------------------------|
| Channel bit rate    | Kbps | 24,4                        |
| Channel symbol rate | Ksps | 12,2                        |
| Slot Format #       | -    | 0                           |
| Frame allocation    | -    | Continuous frame allocation |
| Midamble allocation | -    | Default Midamble            |

**Table A.5.4.23: Transport channel parameters for S-CCPCH**

| Parameter                  | FACH                 |
|----------------------------|----------------------|
| Transport Channel Number   | 1                    |
| Transport Block Size       | 240                  |
| Transport Block Set Size   | 240                  |
| Transmission Time Interval | 20 ms                |
| Type of Error Protection   | Convolutional Coding |
| Coding Rate                | 1/2                  |
| Rate Matching attribute    | 256                  |
| Size of CRC                | 16                   |

Table A.5.4.24: Cell specific test parameters for Cell Re-selection in CELL\_FACH

| Parameter                                 | Unit             | Cell 1   |       |       |       | Cell 2  |       |       |       | Cell 3  |       |       |       |
|---|------------------|--|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|
|   |                  | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
| Timeslot Number                           |                  | T1   | T2    | T1    | T2    | T1  | T2    | T1    | T2    | T1  | T2    | T1    | T2    |
| UTRA RF Channel Number                    |                  | Channel 1  |       |       |       | Channel 2   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/lor                             | dB               | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/lor                                | dB               | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH_t_offset                              |                  | 0  | 0     | 0     | 0     | 5   | 5     | 5     | 5     | 10  | 10    | 10    | 10    |
| PICH_Ec/lor                               | dB               |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/lor                               | dB               | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$                     | dB               | 9  | 3     | 9     | 3     | 3   | 9     | 3     | 9     | -1  | -1    | -1    | -1    |
| PCCPCH RSCP                               | dBm              | -64  | -70   |       |       | -70   | -64   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub>                   | dB               | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |       |       |       | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>                       | dB               | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection                              |                  | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch                              | dB               | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| Sintersearch                              | dB               | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| FACH measurement occasion info            |                  | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| Inter-frequency TDD measurement indicator |                  | TRUE   |       |       |       | TRUE  |       |       |       | TRUE  |       |       |       |
| $I_{oc}$                                  | dBm/<br>7,68 MHz | -70  |       |       |       |   |       |       |       |   |       |       |       |
| Propagation Condition                     |                  | AWGN   |       |       |       |   |       |       |       |   |       |       |       |
|   |                  | Cell 4   |       |       |       | Cell 5  |       |       |       | Cell 6  |       |       |       |
| Timeslot                                  |                  | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
|   |                  | T1   | T2    | T1    | T2    | T1  | T2    | T1    | T2    | T1  | T2    | T1    | T2    |
| UTRA RF Channel Number                    |                  | Channel 1  |       |       |       | Channel 2   |       |       |       | Channel 2   |       |       |       |
| PCCPCH_Ec/lor                             | dB               | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/lor                                | dB               | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH_t_offset                              |                  | 15   | 15    | 15    | 15    | 20  | 20    | 20    | 20    | 25  | 25    | 25    | 25    |
| PICH_Ec/lor                               | dB               |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/lor                               | dB               | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$                     | dB               | -1   | -1    | -1    | -1    | -1  | -1    | -1    | -1    | -1  | -1    | -1    | -1    |
| PCCPCH RSCP                               | dBm              | -74  | -74   |       |       | -74   | -74   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub>                   | dB               | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0  |       |       |       | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0  |       |       |       |
| Qhyst1 <sub>s</sub>                       | dB               | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection                              |                  | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch                              | dB               | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| Sintersearch                              | dB               | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| FACH measurement occasion info            |                  | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| Inter-frequency TDD measurement indicator |                  | TRUE   |       |       |       | TRUE  |       |       |       | TRUE  |       |       |       |
| $I_{oc}$                                  | dBm/<br>7,68 MHz | -70  |       |       |       |   |       |       |       |   |       |       |       |
| Propagation Condition                     |                  | AWGN   |       |       |       |   |       |       |       |   |       |       |       |

NOTE: S-CCPCH shall not be located in TS0.

### A.5.4.3.2.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 3 s.

The rate of correct cell re-selections observed during repeated tests shall be at least 90%.

## A.5.4A Cell Re-selection in Enhanced CELL\_FACH

### A.5.4A.1 3.84 Mcps TDD option

Void

### A.5.4A.2 1.28 Mcps TDD option

#### A.5.4A.2.1 Re-selection to intra-frequency TDD cell

##### A.5.4A.2.1.1 Test purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in Enhanced CELL\_FACH state in the case reported in section 5.4.3.2.1.

The test parameters are given in Tables A.5.4.25 and A.5.4.26

**Table A.5.4.25: General test parameters for Cell Re-selection to intra-frequency TDD cell in Enhanced CELL\_FACH**

| Parameter   |                 | Unit | Value                             | Comment   |
|---|-----------------|------|-----------------------------------|---|
| initial condition                                   | Active cell     |      | Cell1                             |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| final condition                                     | Active cell     |      | Cell2                             |   |
| HCS   |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 15 (initial), 5 (repetition)      |   |
| T2  |                 | s    | 5                                 |   |

**Table A.5.4.26: Cell specific test parameters for Cell Re-selection to intra-frequency TDD cell in Enhanced CELL\_FACH**

| Parameter                       | Unit         | Cell 1   |     |       |    | Cell 2  |     |       |    | Cell 3  |     |       |    |
|---------------------------------|--------------|--|-----|-------|----|---|-----|-------|----|---|-----|-------|----|
|                                 |              | 0  |     | DWPTS |    | 0   |     | DWPTS |    | 0   |     | DWPTS |    |
| Timeslot Number                 |              | T1   | T2  | T1    | T2 | T1  | T2  | T1    | T2 | T1  | T2  | T1    | T2 |
| UTRA RF Channel Number (NOTE 2) |              | Channel 1  |     |       |    | Channel 1   |     |       |    | Channel 1   |     |       |    |
| PCCPCH_Ec/lor                   | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| DwPCH_Ec/lor                    | dB           |  |     | 0     | 0  |   |     | 0     | 0  |   |     | 0     | 0  |
| OCNS_Ec/lor                     | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$           | dB           | 10   | 7   | 10    | 7  | 7   | 10  | 7     | 10 | -1  | -1  | -1    | -1 |
| PCCPCH RSCP                     | dBm          | -63  | -66 |       |    | -66   | -63 |       |    | -74   | -74 |       |    |
| Qoffset1 <sub>s,n</sub>         | dB           | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |     |       |    | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2, C6:0 |     |       |    | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3, C6:0 |     |       |    |
| Qhyst1 <sub>s</sub>             | dB           | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Treselection                    |              | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Sintrasearch                    | dB           | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| FACH measurement occasion info  |              | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| Timeslot                        |              | Cell 4   |     |       |    | Cell 5  |     |       |    | Cell 6  |     |       |    |
|                                 |              | 0  |     | DWPTS |    | 0   |     | DWPTS |    | 0   |     | DWPTS |    |
| UTRA RF Channel Number (NOTE 2) |              | Channel 1  |     |       |    | Channel 1   |     |       |    | Channel 1   |     |       |    |
| PCCPCH_Ec/lor                   | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| DwPCH_Ec/lor                    | dB           |  |     | 0     | 0  |   |     | 0     | 0  |   |     | 0     | 0  |
| OCNS_Ec/lor                     | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$           | dB           | -1   | -1  | -1    | -1 | -1  | -1  | -1    | -1 | -1  | -1  | -1    | -1 |
| PCCPCH RSCP                     | dBm          | -74  | -74 |       |    | -74   | -74 |       |    | -74   | -74 |       |    |
| Qoffset1 <sub>s,n</sub>         | dB           | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |     |       |    | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0  |     |       |    | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0  |     |       |    |
| Qhyst1 <sub>s</sub>             | dB           | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Treselection                    |              | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Sintrasearch                    | dB           | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| FACH measurement occasion info  |              | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| $I_{oc}$                        | dBm/1.28 MHz | -70  |     |       |    |   |     |       |    |   |     |       |    |
| Propagation Condition           |              | AWGN   |     |       |    |   |     |       |    |   |     |       |    |

NOTE 1: S-CCPCH is located in another downlink TS than TS0.

NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.

#### A.5.4A.2.1.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 1.6 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE:

The cell re-selection delay can be expressed as:

$$T_{\text{reselection, intra}} = T_{\text{Measurement Period Intra}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} + T_{\text{CSI}_{\text{ms}}}$$

where:

$T_{\text{Measurement Period Intra}}$  Specified in 8.4A.2.2.2 gives 200ms for this test case.



- $T_{SI}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.
- $T_{RA}$  The additional delay caused by the random access procedure described in TS25.224. In this test case the persistence value is 1 thus  $T_{RA}$  is set to 35ms in the test case.
- $T_{CSI}$  is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL\_FACH state.  $T_{CSI}$  can be up to one sub frame (5ms) or the delay caused by the random access procedure ( $T_{RA}$ ). In this test case the delay is  $T_{RA}$  and is set to 35ms in the test case.

This gives a total of 1.58s, allow 1.6s in the test case.

## A.5.4A.2.2 Re-selection to inter-frequency TDD cell

### A.5.4A.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the cell re-selection delay in CELL\_FACH state in section 5.4.3.2.2. The test parameters are given in Tables A.5.4.27 to A.5.4.28

**Table A.5.4.27: General test parameters for Cell Re-selection to inter-frequency TDD cell in Enhanced CELL\_FACH**

| Parameter   |                 | Unit | Value                             | Comment   |
|---|-----------------|------|-----------------------------------|---|
| initial condition                                   | Active cell     |      | Cell1                             |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| final condition                                     | Active cell     |      | Cell2                             |   |
| HCS   |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| $T_{SI}$  |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 15 (initial), 5 (repetition)      |   |
| T2  |                 | s    | 5                                 |   |

**Table A.5.4.28: Cell specific test parameters for Cell re-selection to inter-frequency TDD cell in Enhanced CELL\_FACH state**

| Parameter                                 | Unit                | Cell 1   |     |       |    | Cell 2   |     |       |    | Cell 3   |     |       |    |
|---|---------------------|--|-----|-------|----|--|-----|-------|----|--|-----|-------|----|
|   |                     | 0  |     | DWPTS |    | 0  |     | DWPTS |    | 0  |     | DWPTS |    |
|   |                     | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 |
| UTRA RF Channel Number (NOTE 2)           |                     | Channel 1  |     |       |    | Channel 2  |     |       |    | Channel 1  |     |       |    |
| PCCPCH_Ec/lor                             | dB                  | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| DwPCH_Ec/lor                              | dB                  |  |     | 0     | 0  |  |     | 0     | 0  |  |     | 0     | 0  |
| OCNS_Ec/lor                               | dB                  | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$                     | dB                  | 10   | 4   | 10    | 4  | 4  | 10  | 4     | 10 | -1   | -1  | -1    | -1 |
| PCCPCH RSCP                               | dBm                 | -63  | -69 |       |    | -69  | -63 |       |    | -74  | -74 |       |    |
| Qoffset1 <sub>s,n</sub>                   | dB                  | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |     |       |    | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2:C6:0 |     |       |    | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3:C6:0 |     |       |    |
| Qhyst1 <sub>s</sub>                       | dBm                 | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Treselection                              | s                   | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Sintrasearch                              | dB                  | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Sintersearch                              | dB                  | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| FACH measurement occasion info            |                     | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| FACH measurement occasion cycle length    |                     | 4  |     |       |    | 4  |     |       |    | 4  |     |       |    |
| Inter-frequency TDD measurement indicator |                     | TRUE   |     |       |    | TRUE   |     |       |    | TRUE   |     |       |    |
| Inter-frequency FDD measurement indicator |                     | FALSE  |     |       |    | FALSE  |     |       |    | FALSE  |     |       |    |
|   |                     | Cell 4   |     |       |    | Cell 5   |     |       |    | Cell 6   |     |       |    |
| Timeslot                                  |                     | 0  |     | DWPTS |    | 0  |     | DWPTS |    | 0  |     | DWPTS |    |
|   |                     | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 |
|   |                     |  |     |       |    |  |     |       |    |  |     |       |    |
| UTRA RF Channel Number (NOTE 2)           |                     | Channel 1  |     |       |    | Channel 2  |     |       |    | Channel 2  |     |       |    |
| PCCPCH_Ec/lor                             | dB                  | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| DwPCH_Ec/lor                              | dB                  |  |     | 0     | 0  |  |     | 0     | 0  |  |     | 0     | 0  |
| OCNS_Ec/lor                               | dB                  | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$                     | dB                  | -1   | -1  | -1    | -1 | -1   | -1  | -1    | -1 | -1   | -1  | -1    | -1 |
| PCCPCH RSCP                               | dBm                 | -74  | -74 |       |    | -74  | -74 |       |    | -74  | -74 |       |    |
| Qoffset1 <sub>s,n</sub>                   | dB                  | C4, C1: 0; C4, C2:0; C4,C3:0;<br>C4, C5:0; C4:C6:0 |     |       |    | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5:C6:0  |     |       |    | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6:C5:0  |     |       |    |
| Qhyst1 <sub>s</sub>                       | dB                  | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Treselection                              | s                   | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Sintrasearch                              | dB                  | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Sintersearch                              | dB                  | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| FACH measurement occasion info            |                     | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| FACH measurement occasion cycle length    |                     | 4  |     |       |    | 4  |     |       |    | 4  |     |       |    |
| Inter-frequency TDD measurement indicator |                     | TRUE   |     |       |    | TRUE   |     |       |    | TRUE   |     |       |    |
| Inter-frequency FDD measurement indicator |                     | FALSE  |     |       |    | FALSE  |     |       |    | FALSE  |     |       |    |
| $I_{oc}$                                  | dBm/<br>1.28<br>MHz | -70  |     |       |    |  |     |       |    |  |     |       |    |
| Propagation Condition                     |                     | AWGN   |     |       |    |  |     |       |    |  |     |       |    |

NOTE 1: S-CCPCH is located in another downlink TS than TS0.

NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.

#### A.5.4A.2.2.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the CELL UPDATE message with cause value "cell reselection" in cell 2.

The cell re-selection delay shall be less than 1.9 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{reselection, inter}} = T_{\text{measurement inter}} + T_{\text{IU}} + 20 + T_{\text{SI}} + T_{\text{RA}} + T_{\text{CSI}} \text{ ms,}$$

where:

$T_{\text{measurement inter}}$  is specified in 8.4A.2.3.2 gives 480ms for this test case.

$T_{\text{SI}}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

$T_{\text{RA}}$  The additional delay caused by the random access procedure described in TS25.224. In this test case the persistence value is 1 thus  $T_{\text{RA}}$  is set to 35ms in the test case.

$T_{\text{CSI}}$  is the additional delay in case the cell re-selection indication shall be sent in enhanced CELL\_FACH state.  $T_{\text{CSI}}$  can be up to one sub frame (5ms) or the delay caused by the random access procedure ( $T_{\text{RA}}$ ). In this test case the delay is  $T_{\text{RA}}$  and is set to 35ms in the test case.

This gives a total of 1.86s, allow 1.9s in the test case.

#### A.5.4A.3 7.68 Mcps TDD option

Void

### A.5.5 Cell Re-selection in CELL\_PCH

#### A.5.5.1 Scenario 1: Re-selection to intra-frequency TDD cell

##### A.5.5.1.1 Test Purpose and Environment

###### A.5.5.1.1.1 3.84Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL\_PCH state in section 5.5.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.1 and A.5.5.2.

**Table A.5.5.1: General test parameters for Cell Re-selection to intra-frequency cell**

| Parameter  | Unit            | Value                             | Comment   |
|--|-----------------|-----------------------------------|---|
| Initial condition                                | Active cell     | Cell1                             |   |
|  | Neighbour cells | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                  | Active cell     | Cell2                             |   |
| HCS  |                 | Not used                          |   |
| UE_TXPWR_MAX_RACH                                | dBm             | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin  | dBm             | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0) - Persistence value |                 | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                  | s               | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                 | s               | 1.28                              | The value shall be used for all cells in the test.  |
| T1   | s               | 15                                |   |
| T2   | s               | 15                                |   |

**Table A.5.5.2: Cell re-selection to intra-frequency cell**

| Parameter               | Unit          | Cell 1   |       |       |       | Cell 2  |       |       |       | Cell 3  |       |       |       |
|-------------------------|---------------|--|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|
|                         |               | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
| Timeslot Number         |               | T1   | T2    | T1    | T2    | T1  | T2    | T1    | T2    | T1  | T2    | T1    | T2    |
| UTRA RF Channel Number  |               | Channel 1  |       |       |       | Channel 1   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/lor           | dB            | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/lor              | dB            | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH <sub>toffset</sub>  |               | 0  | 0     | 0     | 0     | 5   | 5     | 5     | 5     | 10  | 10    | 10    | 10    |
| PICH_Ec/lor             | dB            |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/lor             | dB            | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB            | 9  | 7     | 9     | 7     | 7   | 9     | 7     | 9     | -1  | -1    | -1    | -1    |
| PCCPCH RSCP             | dBm           | -64  | -66   |       |       | -66   | -64   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub> | dB            | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |       |       |       | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB            | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection            | s             | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch            | dB            | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| Timeslot                |               | Cell 4   |       |       |       | Cell 5  |       |       |       | Cell 6  |       |       |       |
|                         |               | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
| UTRA RF Channel Number  |               | T1   | T2    | T1    | T2    | T1  | T2    | T1    | T2    | T1  | T2    | T1    | T2    |
| UTRA RF Channel Number  |               | Channel 1  |       |       |       | Channel 1   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/lor           | dB            | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/lor              | dB            | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH <sub>toffset</sub>  |               | 15   | 15    | 15    | 15    | 20  | 20    | 20    | 20    | 25  | 25    | 25    | 25    |
| PICH_Ec/lor             | dB            |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/lor             | dB            | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB            | -1   | -1    | -1    | -1    | -1  | -1    | -1    | -1    | -1  | -1    | -1    | -1    |
| PCCPCH RSCP             | dBm           | -74  | -74   |       |       | -74   | -74   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub> | dB            | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0  |       |       |       | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0  |       |       |       |
| Qhyst1 <sub>s</sub>     | dB            | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection            | s             | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch            | dB            | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| $I_{oc}$                | dBm/3, 84 MHz | -70  |       |       |       |   |       |       |       |   |       |       |       |
| Propagation Condition   |               | AWGN   |       |       |       |   |       |       |       |   |       |       |       |

## A.5.5.1.1.2 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL\_PCH state in section 5.5.2.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.3 and A.5.5.4.

**Table A.5.5.3: General test parameters for Cell Re-selection to intra-frequency TDD cell in**

| Parameter  |                 | Unit | Value                             | Comment   |
|--|-----------------|------|-----------------------------------|---|
| Initial condition                                    | Active cell     |      | Cell1                             |   |
|  | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                      | Active cell     |      | Cell2                             |   |
| HCS  |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                    |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin  |                 | dBm  | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>-- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                      |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                     |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1   |                 | s    | 15                                |   |
| T2   |                 | s    | 15                                |   |

Table A.5.5.4: Cell re-selection to intra-frequency TDD cell

| Parameter               | Unit         | Cell 1   |     |       |    | Cell 2  |     |       |    | Cell 3  |     |       |    |
|-------------------------|--------------|--|-----|-------|----|---|-----|-------|----|---|-----|-------|----|
|                         |              | 0  |     | DWPTS |    | 0   |     | DWPTS |    | 0   |     | DWPTS |    |
| Timeslot Number         |              | T1   | T2  | T1    | T2 | T1  | T2  | T1    | T2 | T1  | T2  | T1    | T2 |
| UTRA RF Channel Number  |              | Channel 1  |     |       |    | Channel 1   |     |       |    | Channel 1   |     |       |    |
| PCCPCH_Ec/Ior           | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| DwPCH_Ec/Ior            | dB           |  |     | 0     | 0  |   |     | 0     | 0  |   |     | 0     | 0  |
| OCNS_Ec/Ior             | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$   | dB           | 10   | 7   | 10    | 7  | 7   | 10  | 7     | 10 | -1  | -1  | -1    | -1 |
| PCCPCH RSCP             | dBm          | -63  | -66 |       |    | -66   | -63 |       |    | -74   | -74 |       |    |
| Qoffset1 <sub>s,n</sub> | dB           | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |     |       |    | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2, C6:0 |     |       |    | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3, C6:0 |     |       |    |
| Qhyst1 <sub>s</sub>     | dB           | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Treselection            | s            | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Sintrasearch            | dB           | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| Timeslot                |              | Cell 4   |     |       |    | Cell 5  |     |       |    | Cell 6  |     |       |    |
|                         |              | 0  |     | DWPTS |    | 0   |     | DWPTS |    | 0   |     | DWPTS |    |
| UTRA RF Channel Number  |              | T1   | T2  | T1    | T2 | T1  | T2  | T1    | T2 | T1  | T2  | T1    | T2 |
| UTRA RF Channel Number  |              | Channel 1  |     |       |    | Channel 1   |     |       |    | Channel 1   |     |       |    |
| PCCPCH_Ec/Ior           | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| DwPCH_Ec/Ior            | dB           |  |     | 0     | 0  |   |     | 0     | 0  |   |     | 0     | 0  |
| OCNS_Ec/Ior             | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$   | dB           | -1   | -1  | -1    | -1 | -1  | -1  | -1    | -1 | -1  | -1  | -1    | -1 |
| PCCPCH RSCP             | dBm          | -74  | -74 |       |    | -74   | -74 |       |    | -74   | -74 |       |    |
| Qoffset1 <sub>s,n</sub> | dB           | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |     |       |    | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0  |     |       |    | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0  |     |       |    |
| Qhyst1 <sub>s</sub>     | dB           | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Treselection            | s            | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Sintrasearch            | dB           | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| $I_{oc}$                | dBm/1.28 MHz | -70  |     |       |    |   |     |       |    |   |     |       |    |
| Propagation Condition   |              | AWGN   |     |       |    |   |     |       |    |   |     |       |    |

NOTE: In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.

#### A.5.5.1.1.3 7.68Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL\_PCH state in section 5.5.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.3A and A.5.5.4A.

Table A.5.5.3A: General test parameters for Cell Re-selection to intra-frequency TDD cell

| Parameter  | Unit            | Value                             | Comment   |
|--|-----------------|-----------------------------------|---|
| Initial condition                                | Active cell     | Cell1                             |   |
|  | Neighbour cells | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                  | Active cell     | Cell2                             |   |
| HCS  |                 | Not used                          |   |
| UE_TXPWR_MAX_RACH                                | dBm             | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin  | dBm             | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0) - Persistence value |                 | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                  | s               | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                 | s               | 1.28                              | The value shall be used for all cells in the test.  |
| T1   | s               | 15                                |   |
| T2   | s               | 15                                |   |

Table A.5.5.4A: Cell re-selection to intra-frequency TDD cell

| Parameter               | Unit             | Cell 1   |       |       |       | Cell 2  |       |       |       | Cell 3  |       |       |       |
|-------------------------|------------------|--|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|
|                         |                  | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
| Timeslot Number         |                  | T1   | T2    | T1    | T2    | T1  | T2    | T1    | T2    | T1  | T2    | T1    | T2    |
| UTRA RF Channel Number  |                  | Channel 1  |       |       |       | Channel 1   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/lor           | dB               | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/lor              | dB               | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH_offset              |                  | 0  | 0     | 0     | 0     | 5   | 5     | 5     | 5     | 10  | 10    | 10    | 10    |
| PICH_Ec/lor             | dB               |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/lor             | dB               | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB               | 9  | 7     | 9     | 7     | 7   | 9     | 7     | 9     | -1  | -1    | -1    | -1    |
| PCCPCH RSCP             | dBm              | -64  | -66   |       |       | -66   | -64   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub> | dB               | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |       |       |       | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB               | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection            | s                | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch            | dB               | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| Timeslot                |                  | Cell 4   |       |       |       | Cell 5  |       |       |       | Cell 6  |       |       |       |
|                         |                  | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
| UTRA RF Channel Number  |                  | Channel 1  |       |       |       | Channel 1   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/lor           | dB               | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/lor              | dB               | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH_offset              |                  | 15   | 15    | 15    | 15    | 20  | 20    | 20    | 20    | 25  | 25    | 25    | 25    |
| PICH_Ec/lor             | dB               |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/lor             | dB               | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB               | -1   | -1    | -1    | -1    | -1  | -1    | -1    | -1    | -1  | -1    | -1    | -1    |
| PCCPCH RSCP             | dBm              | -74  | -74   |       |       | -74   | -74   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub> | dB               | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0  |       |       |       | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0  |       |       |       |
| Qhyst1 <sub>s</sub>     | dB               | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection            | s                | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch            | dB               | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| $I_{oc}$                | dBm/7,<br>68 MHz | -70  |       |       |       |   |       |       |       |   |       |       |       |
| Propagation Condition   |                  | AWGN   |       |       |       |   |       |       |       |   |       |       |       |

## A.5.5.1.2 Test Requirements

### A.5.5.1.2.1 for 3.84Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1 in section 4.2.2.7.

$T_{\text{SI}}$  Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.5.5.1.2.2 1.28Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{evaluateNTDD}} + T_{\text{SI}}$$

where:

$T_{\text{evaluateNTDD}}$ : A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateNTDD}}$  of 6.4s according to Table 4.1A in section 4.2.

$T_{\text{SI}}$ : Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.5.5.1.2.3 7.68Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$ : A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1B in section 4.2.2.7.

$T_{\text{SI}}$ : Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

### A.5.5.2 Scenario 2: Re-selection to inter-frequency TDD cell

#### A.5.5.2.1 Test Purpose and Environment

##### A.5.5.2.1.1 for 3.84Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL\_PCH state in section 5.5.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.5 and A.5.5.6



Table A.5.5.5: General test parameters for Cell Re-selection to inter-frequency TDD cell

| Parameter  | Unit            | Value                             | Comment   |
|--|-----------------|-----------------------------------|---|
| Initial condition                                | Active cell     | Cell1                             |   |
|  | Neighbour cells | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                  | Active cell     | Cell2                             |   |
| HCS  |                 | Not used                          |   |
| UE_TXPWR_MAX_RACH                                | dBm             | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin  | dBm             | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0) - Persistence value |                 | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| $T_{SI}$   | s               | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                 | s               | 1.28                              | The value shall be used for all cells in the test.  |
| T1   | s               | 30                                |   |
| T2   | s               | 15                                |   |

Table A.5.5.6: Cell re-selection to inter-frequency TDD cell

| Parameter               | Unit             | Cell 1   |       |       |       | Cell 2   |       |       |       | Cell 3   |       |       |       |
|-------------------------|------------------|--|-------|-------|-------|--|-------|-------|-------|--|-------|-------|-------|
|                         |                  | 0  |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
| Timeslot Number         |                  | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number  |                  | Channel 1  |       |       |       | Channel 2  |       |       |       | Channel 1  |       |       |       |
| PCCPCH_Ec/lor           | dB               | -3   | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB               | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_offset              |                  | 0  | 0     | 0     | 0     | 5  | 5     | 5     | 5     | 10   | 10    | 10    | 10    |
| PICH_Ec/lor             | dB               |  |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor             | dB               | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB               | 6  | 0     | 6     | 0     | 0  | 6     | 0     | 6     | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm              | -67  | -73   |       |       | -73  | -67   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB               | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1, C6:0 |       |       |       | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5:0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5:0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB               | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s                | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB               | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB               | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Timeslot                |                  | Cell 4   |       |       |       | Cell 5   |       |       |       | Cell 6   |       |       |       |
|                         |                  | 0  |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
| UTRA RF Channel Number  |                  | Channel 1  |       |       |       | Channel 2  |       |       |       | Channel 2  |       |       |       |
| PCCPCH_Ec/lor           | dB               | -3   | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB               | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_offset              |                  | 15   | 15    | 15    | 15    | 20   | 20    | 20    | 20    | 25   | 25    | 25    | 25    |
| PICH_Ec/lor             | dB               |  |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor             | dB               | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB               | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm              | -76  | -76   |       |       | -76  | -76   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB               | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0 |       |       |       | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB               | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s                | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB               | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB               | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| $I_{oc}$                | dBm/3,<br>84 MHz | -70  |       |       |       |  |       |       |       |  |       |       |       |
| Propagation Condition   |                  | AWGN   |       |       |       |  |       |       |       |  |       |       |       |

## A.5.5.2.1.2 for 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL\_PCH state in section 5.5.2.2.

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.5.5.7 and A.5.5.8.

**Table A.5.5.7: General test parameters for Cell Re-selection to inter-frequency TDD cell**

| Parameter   | Unit            | Value                             | Comment   |
|---|-----------------|-----------------------------------|---|
| Initial condition                                   | Active cell     | Cell1                             |   |
|   | Neighbour cells | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     | Cell2                             |   |
| HCS   |                 | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   | dBm             | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   | dBm             | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     | s               | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                    | s               | 1.28                              | The value shall be used for all cells in the test.  |
| T1  | s               | 30                                |   |
| T2  | s               | 15                                |   |

Table A.5.5.8: Cell re-selection to inter-frequency TDD cell

| Parameter                     | Unit             | Cell 1   |     |       |    | Cell 2   |     |       |    | Cell 3   |     |       |    |
|-------------------------------|------------------|--|-----|-------|----|--|-----|-------|----|--|-----|-------|----|
|                               |                  | 0  |     | DWPTS |    | 0  |     | DWPTS |    | 0  |     | DWPTS |    |
| Timeslot Number               |                  | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 |
| UTRA RF Channel Number (NOTE) |                  | Channel 1  |     |       |    | Channel 2  |     |       |    | Channel 1  |     |       |    |
| PCCPCH_Ec/Ior                 | dB               | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| DwPCH_Ec/Ior                  | dB               |  |     | 0     | 0  |  |     | 0     | 0  |  |     | 0     | 0  |
| OCNS_Ec/Ior                   | dB               | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$         | dB               | 10   | 4   | 10    | 4  | 4  | 10  | 4     | 10 | -1   | -1  | -1    | -1 |
| PCCPCH RSCP                   | dBm              | -63  | -69 |       |    | -69  | -63 |       |    | -74  | -74 |       |    |
| Qoffset1 <sub>s,n</sub>       | dB               | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1, C6:0 |     |       |    | C2, C1: 0; C2, C3:0;<br>C2,C4:0C2, C5:0; C2, C6:0  |     |       |    | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5:0; C3, C6:0 |     |       |    |
| Qhyst1 <sub>s</sub>           | dB               | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Treselection                  | s                | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Sintrasearch                  | dB               | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Sintersearch                  | dB               | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Timeslot                      |                  | Cell 4   |     |       |    | Cell 5   |     |       |    | Cell 6   |     |       |    |
|                               |                  | 0  |     | DWPTS |    | 0  |     | DWPTS |    | 0  |     | DWPTS |    |
| UTRA RF Channel Number (NOTE) |                  | Channel  |     |       |    | Channel 2  |     |       |    | Channel  |     |       |    |
| PCCPCH_Ec/Ior                 | dB               | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| DwPCH_Ec/Ior                  | dB               |  |     | 0     | 0  |  |     | 0     | 0  |  |     | 0     | 0  |
| OCNS_Ec/Ior                   | dB               | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$         | dB               | -1   | -1  | -1    | -1 | -1   | -1  | -1    | -1 | -1   | -1  | -1    | -1 |
| PCCPCH RSCP                   | dBm              | -74  | -74 |       |    | -74  | -74 |       |    | -74  | -74 |       |    |
| Qoffset1 <sub>s,n</sub>       | dB               | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |     |       |    | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0 |     |       |    | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0 |     |       |    |
| Qhyst1 <sub>s</sub>           | dB               | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Treselection                  | s                | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Sintrasearch                  | dB               | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Sintersearch                  | dB               | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| $I_{oc}$                      | dBm/<br>1.28 MHz | -70  |     |       |    |  |     |       |    |  |     |       |    |
| Propagation Condition         |                  | AWGN   |     |       |    |  |     |       |    |  |     |       |    |

NOTE: In case of multi-frequency network, the UTRA RF Channel Number is the primary frequency"s channel number.

A.5.5.2.1.3 7.68Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in CELL\_PCH state in section 5.5.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.5.9 and A.5.5.10

Table A.5.5.9: General test parameters for Cell Re-selection to inter-frequency TDD cell

| Parameter  | Unit            | Value                             | Comment   |
|--|-----------------|-----------------------------------|---|
| Initial condition                                | Active cell     | Cell1                             |   |
|  | Neighbour cells | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                  | Active cell     | Cell2                             |   |
| HCS  |                 | Not used                          |   |
| UE_TXPWR_MAX_RACH                                | dBm             | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin  | dBm             | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0) - Persistence value |                 | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| $T_{SI}$   | s               | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                 | s               | 1.28                              | The value shall be used for all cells in the test.  |
| T1   | s               | 30                                |   |
| T2   | s               | 15                                |   |

Table A.5.5.10: Cell re-selection to inter-frequency TDD cell

| Parameter               | Unit             | Cell 1   |       |       |       | Cell 2   |       |       |       | Cell 3   |       |       |       |
|-------------------------|------------------|--|-------|-------|-------|--|-------|-------|-------|--|-------|-------|-------|
|                         |                  | 0  |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
| Timeslot Number         |                  | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number  |                  | Channel 1  |       |       |       | Channel 2  |       |       |       | Channel 1  |       |       |       |
| PCCPCH_Ec/lor           | dB               | -3   | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB               | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_offset              |                  | 0  | 0     | 0     | 0     | 5  | 5     | 5     | 5     | 10   | 10    | 10    | 10    |
| PICH_Ec/lor             | dB               |  |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor             | dB               | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB               | 6  | 0     | 6     | 0     | 0  | 6     | 0     | 6     | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm              | -67  | -73   |       |       | -73  | -67   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB               | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1, C6:0 |       |       |       | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5:0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5:0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB               | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s                | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB               | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB               | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Timeslot                |                  | Cell 4   |       |       |       | Cell 5   |       |       |       | Cell 6   |       |       |       |
|                         |                  | 0  |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
| UTRA RF Channel Number  |                  | Channel 1  |       |       |       | Channel 2  |       |       |       | Channel 2  |       |       |       |
| PCCPCH_Ec/lor           | dB               | -3   | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB               | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_offset              |                  | 15   | 15    | 15    | 15    | 20   | 20    | 20    | 20    | 25   | 25    | 25    | 25    |
| PICH_Ec/lor             | dB               |  |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor             | dB               | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB               | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm              | -76  | -76   |       |       | -76  | -76   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB               | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0 |       |       |       | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB               | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s                | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB               | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB               | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| $I_{oc}$                | dBm/7,<br>68 MHz | -70  |       |       |       |  |       |       |       |  |       |       |       |
| Propagation Condition   |                  | AWGN   |       |       |       |  |       |       |       |  |       |       |       |

## A.5.5.2.2 Test Requirements

### A.5.5.2.2.1 for 3.84Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1 in section 4.2.2.7.

$T_{\text{SI}}$  Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

### A.5.5.2.2.2 for 1.28Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{evaluateNTDD}} + T_{\text{SI}}$$

where:

$T_{\text{evaluateNTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateNTDD}}$  of 6.4s according to Table 4.1A in section 4.2.

$T_{\text{SI}}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

### A.5.5.2.2.3 for 7.68Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the CELL UPDATE message with cause "cell reselection" in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1B in section 4.2.2.7.

$T_{\text{SI}}$  Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

## A.5.6 Cell Re-selection in URA\_PCH

### A.5.6.1 Scenario 1: Re-selection to intra-frequency TDD cell

#### A.5.6.1.1 Test Purpose and Environment

##### A.5.6.1.1.1 for 3.84Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA\_PCH state in section 5.6.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.1 and A.5.6.2.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

**Table A.5.6.1: General test parameters for Cell Re-selection to intra-frequency TDD cell**

| Parameter   |                 | Unit | Value                                | Comment   |
|---|-----------------|------|--------------------------------------|---|
| Initial condition                                   | Active cell     |      | Cell1                                |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4,<br>Cell5, Cell6 |   |
| Final condition                                     | Active cell     |      | Cell2                                |   |
| HCS   |                 |      | Not used                             |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                   | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -102                                 | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1                                    | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     |                 | s    | 1.28                                 | The value shall be used for all cells in the test.  |
| DRX cycle length                                    |                 | s    | 1.28                                 | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 15                                   |   |
| T2  |                 | s    | 15                                   |   |

Table A.5.6.2: Cell re-selection to intra-frequency TDD cell

| Parameter               | Unit         | Cell 1   |       |       |       | Cell 2  |       |       |       | Cell 3  |       |       |       |
|-------------------------|--------------|--|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|
|                         |              | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
| Timeslot Number         |              | T1   | T2    | T1    | T2    | T1  | T2    | T1    | T2    | T1  | T2    | T1    | T2    |
| UTRA RF Channel Number  |              | Channel 1  |       |       |       | Channel 1   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/lor           | dB           | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/lor              | dB           | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH_t_offset            |              | 0  | 0     | 0     | 0     | 5   | 5     | 5     | 5     | 10  | 10    | 10    | 10    |
| PICH_Ec/lor             | dB           |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/lor             | dB           | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB           | 9  | 7     | 9     | 7     | 7   | 9     | 7     | 9     | -1  | -1    | -1    | -1    |
| PCCPCH RSCP             | dBm          | -64  | -66   |       |       | -66   | -64   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub> | dB           | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |       |       |       | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB           | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection            | s            | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch            | dB           | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| Timeslot                |              | Cell 4   |       |       |       | Cell 5  |       |       |       | Cell 6  |       |       |       |
|                         |              | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
| UTRA RF Channel Number  |              | T1   | T2    | T1    | T2    | T1  | T2    | T1    | T2    | T1  | T2    | T1    | T2    |
| UTRA RF Channel Number  |              | Channel 1  |       |       |       | Channel 1   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/lor           | dB           | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/lor              | dB           | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH_t_offset            |              | 15   | 15    | 15    | 15    | 20  | 20    | 20    | 20    | 25  | 25    | 25    | 25    |
| PICH_Ec/lor             | dB           |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/lor             | dB           | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB           | -1   | -1    | -1    | -1    | -1  | -1    | -1    | -1    | -1  | -1    | -1    | -1    |
| PCCPCH RSCP             | dBm          | -74  | -74   |       |       | -74   | -74   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub> | dB           | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0  |       |       |       | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0  |       |       |       |
| Qhyst1 <sub>s</sub>     | dB           | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection            | s            | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch            | dB           | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| $I_{oc}$                | dBm/3,84 MHz | -70  |       |       |       |   |       |       |       |   |       |       |       |
| Propagation Condition   |              | AWGN   |       |       |       |   |       |       |       |   |       |       |       |

## A.5.6.1.1.2 for 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA\_PCH state in section 5.6.2.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.3 and A.5.6.4.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

**Table A.5.6.3: General test parameters for Cell Re-selection to intra-frequency TDD cell**

| Parameter  |                 | Unit | Value                             | Comment   |
|--|-----------------|------|-----------------------------------|---|
| Initial condition                                    | Active cell     |      | Cell1                             |   |
|  | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                      | Active cell     |      | Cell2                             |   |
| HCS  |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                    |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin  |                 | dBm  | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>-- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                      |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                     |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1   |                 | s    | 15                                |   |
| T2   |                 | s    | 15                                |   |

**Table A.5.6.4: Cell re-selection to intra-frequency TDD cell**

| Parameter                     | Unit         | Cell 1   |     |       |    | Cell 2  |     |       |    | Cell 3  |     |       |    |
|-------------------------------|--------------|--|-----|-------|----|---|-----|-------|----|---|-----|-------|----|
|                               |              | 0  |     | DWPTS |    | 0   |     | DWPTS |    | 0   |     | DWPTS |    |
| Timeslot Number               |              | T1   | T2  | T1    | T2 | T1  | T2  | T1    | T2 | T1  | T2  | T1    | T2 |
| UTRA RF Channel Number (NOTE) |              | Channel 1  |     |       |    | Channel 1   |     |       |    | Channel 1   |     |       |    |
| PCCPCH_Ec/I <sub>or</sub>     | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| DwPCH_Ec/I <sub>or</sub>      | dB           |  |     | 0     | 0  |   |     | 0     | 0  |   |     | 0     | 0  |
| OCNS_Ec/I <sub>or</sub>       | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$         | dB           | 10   | 7   | 10    | 7  | 7   | 10  | 7     | 10 | -1  | -1  | -1    | -1 |
| PCCPCH RSCP                   | dBm          | -63  | -66 |       |    | -66   | -63 |       |    | -74   | -74 |       |    |
| Qoffset <sub>1s,n</sub>       | dB           | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |     |       |    | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2, C6:0 |     |       |    | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3, C6:0 |     |       |    |
| Qhyst <sub>1s</sub>           | dB           | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Treselection                  | s            | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Sintrasearch                  | dB           | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| Timeslot                      |              | Cell 4   |     |       |    | Cell 5  |     |       |    | Cell 6  |     |       |    |
|                               |              | 0  |     | DWPTS |    | 0   |     | DWPTS |    | 0   |     | DWPTS |    |
| UTRA RF Channel Number (NOTE) |              | Channel 1  |     |       |    | Channel 1   |     |       |    | Channel 1   |     |       |    |
| PCCPCH_Ec/I <sub>or</sub>     | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| DwPCH_Ec/I <sub>or</sub>      | dB           |  |     | 0     | 0  |   |     | 0     | 0  |   |     | 0     | 0  |
| OCNS_Ec/I <sub>or</sub>       | dB           | -3   | -3  |       |    | -3  | -3  |       |    | -3  | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$         | dB           | -1   | -1  | -1    | -1 | -1  | -1  | -1    | -1 | -1  | -1  | -1    | -1 |
| PCCPCH RSCP                   | dBm          | -74  | -74 |       |    | -74   | -74 |       |    | -74   | -74 |       |    |
| Qoffset <sub>1s,n</sub>       | dB           | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |     |       |    | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0  |     |       |    | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0  |     |       |    |
| Qhyst <sub>1s</sub>           | dB           | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Treselection                  | s            | 0  |     |       |    | 0   |     |       |    | 0   |     |       |    |
| Sintrasearch                  | dB           | not sent   |     |       |    | not sent  |     |       |    | not sent  |     |       |    |
| $I_{oc}$                      | dBm/1.28 MHz | -70  |     |       |    |   |     |       |    |   |     |       |    |
| Propagation Condition         |              | AWGN   |     |       |    |   |     |       |    |   |     |       |    |

NOTE1: In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.



## A.5.6.1.1.3 for 7.68Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA\_PCH state in section 5.6.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.3A and A.5.6.4A.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

**Table A.5.6.3A: General test parameters for Cell Re-selection to intra-frequency TDD cell**

| Parameter   |                 | Unit | Value                                | Comment   |
|---|-----------------|------|--------------------------------------|---|
| Initial condition                                   | Active cell     |      | Cell1                                |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4,<br>Cell5, Cell6 |   |
| Final condition                                     | Active cell     |      | Cell2                                |   |
| HCS   |                 |      | Not used                             |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                   | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -102                                 | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1                                    | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     |                 | s    | 1.28                                 | The value shall be used for all cells in the test.  |
| DRX cycle length                                    |                 | s    | 1.28                                 | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 15                                   |   |
| T2  |                 | s    | 15                                   |   |

Table A.5.6.4A: Cell re-selection to intra-frequency TDD cell

| Parameter               | Unit         | Cell 1   |       |       |       | Cell 2  |       |       |       | Cell 3  |       |       |       |
|-------------------------|--------------|--|-------|-------|-------|---|-------|-------|-------|---|-------|-------|-------|
|                         |              | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
| Timeslot Number         |              | T1   | T2    | T1    | T2    | T1  | T2    | T1    | T2    | T1  | T2    | T1    | T2    |
| UTRA RF Channel Number  |              | Channel 1  |       |       |       | Channel 1   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/Ior           | dB           | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/Ior              | dB           | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH_t_offset            |              | 0  | 0     | 0     | 0     | 5   | 5     | 5     | 5     | 10  | 10    | 10    | 10    |
| PICH_Ec/Ior             | dB           |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/Ior             | dB           | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB           | 9  | 7     | 9     | 7     | 7   | 9     | 7     | 9     | -1  | -1    | -1    | -1    |
| PCCPCH RSCP             | dBm          | -64  | -66   |       |       | -66   | -64   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub> | dB           | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1,C6:0  |       |       |       | C2, C1: 0; C2, C3:0; C2,C4:0<br>C2, C5: 0; C2, C6:0 |       |       |       | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5: 0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB           | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection            | s            | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch            | dB           | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| Timeslot                |              | Cell 4   |       |       |       | Cell 5  |       |       |       | Cell 6  |       |       |       |
|                         |              | 0  |       | 8     |       | 0   |       | 8     |       | 0   |       | 8     |       |
| UTRA RF Channel Number  |              | Channel 1  |       |       |       | Channel 1   |       |       |       | Channel 1   |       |       |       |
| PCCPCH_Ec/Ior           | dB           | -3   | -3    |       |       | -3  | -3    |       |       | -3  | -3    |       |       |
| SCH_Ec/Ior              | dB           | -9   | -9    | -9    | -9    | -9  | -9    | -9    | -9    | -9  | -9    | -9    | -9    |
| SCH_t_offset            |              | 15   | 15    | 15    | 15    | 20  | 20    | 20    | 20    | 25  | 25    | 25    | 25    |
| PICH_Ec/Ior             | dB           |  |       | -3    | -3    |   |       | -3    | -3    |   |       | -3    | -3    |
| OCNS_Ec/Ior             | dB           | -3,12  | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 | -3,12   | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB           | -1   | -1    | -1    | -1    | -1  | -1    | -1    | -1    | -1  | -1    | -1    | -1    |
| PCCPCH RSCP             | dBm          | -74  | -74   |       |       | -74   | -74   |       |       | -74   | -74   |       |       |
| Qoffset1 <sub>s,n</sub> | dB           | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0  |       |       |       | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0  |       |       |       |
| Qhyst1 <sub>s</sub>     | dB           | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Treselection            | s            | 0  |       |       |       | 0   |       |       |       | 0   |       |       |       |
| Sintrasearch            | dB           | not sent   |       |       |       | not sent  |       |       |       | not sent  |       |       |       |
| $I_{oc}$                | dBm/7,68 MHz | -70  |       |       |       |   |       |       |       |   |       |       |       |
| Propagation Condition   |              | AWGN   |       |       |       |   |       |       |       |   |       |       |       |

## A.5.6.1.2 Test Requirements

### A.5.6.1.2.1 for 3.84Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the URA UPDATE message with URA update cause value "change of URA " in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1 in section 4.2.2.7.

$T_{\text{SI}}$  Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.5.6.1.2.2 for 1.28Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNCH-UL sequence in the UpPTS for sending the URA UPDATE message with URA update cause value "change of URA" in cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{evaluateNTDD}} + T_{\text{SI}}$$

where:

$T_{\text{evaluateNTDD}}$ : A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateNTDD}}$  of 6.4s according to Table 4.1A in section 4.2.

$T_{\text{SI}}$ : Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.5.6.1.2.3 for 7.68Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the URA UPDATE message with URA update cause value "change of URA " in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$ : A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1B in section 4.2.2.7.

$T_{\text{SI}}$ : Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

### A.5.6.2 Scenario 2: Re-selection to inter-frequency TDD cell

#### A.5.6.2.1 Test Purpose and Environment

##### A.5.6.2.1.1 for 3.84Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA\_PCH state in section 5.6.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.5 and A.5.6.6.

**Table A.5.6.5: General test parameters for Cell Re-selection to inter-frequency TDD cell**

| Parameter   | Unit            | Value                             | Comment   |
|---|-----------------|-----------------------------------|---|
| Initial condition                                   | Active cell     | Cell1                             |   |
|   | Neighbour cells | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     | Cell2                             |   |
| HCS   |                 | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   | dBm             | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   | dBm             | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| $T_{SI}$  | s               | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                    | s               | 1.28                              | The value shall be used for all cells in the test.  |
| T1  | s               | 30                                |   |
| T2  | s               | 15                                |   |

**Table A.5.6.6: Cell re-selection to inter-frequency TDD cell**

| Parameter               | Unit         | Cell 1   |       |       |       | Cell 2   |       |       |       | Cell 3   |       |       |       |
|-------------------------|--------------|--|-------|-------|-------|--|-------|-------|-------|--|-------|-------|-------|
|                         |              | 0  |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
| Timeslot Number         |              | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number  |              | Channel 1  |       |       |       | Channel 2  |       |       |       | Channel 1  |       |       |       |
| PCCPCH_Ec/lor           | dB           | -3   | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB           | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_t_offset            |              | 0  | 0     | 0     | 0     | 5  | 5     | 5     | 5     | 10   | 10    | 10    | 10    |
| PICH_Ec/lor             | dB           |  |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor             | dB           | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB           | 6  | 0     | 6     | 0     | 0  | 6     | 0     | 6     | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm          | -67  | -73   |       |       | -73  | -67   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB           | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1, C6:0 |       |       |       | C2, C1: 0; C2, C3:0;<br>C2,C4:0C2, C5:0; C2, C6:0  |       |       |       | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5:0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB           | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s            | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB           | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB           | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Timeslot                |              | Cell 4   |       |       |       | Cell 5   |       |       |       | Cell 6   |       |       |       |
|                         |              | 0  |       | 8     |       | 0  |       | 8     |       | 0  |       | 8     |       |
| UTRA RF Channel Number  |              | Channel 1  |       |       |       | Channel 2  |       |       |       | Channel 2  |       |       |       |
| PCCPCH_Ec/lor           | dB           | -3   | -3    |       |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB           | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_t_offset            |              | 15   | 15    | 15    | 15    | 20   | 20    | 20    | 20    | 25   | 25    | 25    | 25    |
| PICH_Ec/lor             | dB           |  |       | -3    | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor             | dB           | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB           | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm          | -76  | -76   |       |       | -76  | -76   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB           | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |       |       |       | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0 |       |       |       | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB           | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s            | 0  |       |       |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB           | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB           | not sent   |       |       |       | not sent   |       |       |       | not sent   |       |       |       |
| $I_{oc}$                | dBm/3,84 MHz | -70  |       |       |       |  |       |       |       |  |       |       |       |
| Propagation Condition   |              | AWGN   |       |       |       |  |       |       |       |  |       |       |       |

## A.5.6.2.1.2 1.28Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA\_PCH state in section 5.6.2.2.

This scenario implies the presence of 2 carriers and 6 cells as given in Table A.5.6.7 and A.5.6.8.

Cell1 and Cell2 shall belong to different UTRAN Registration Areas (URA).

**Table A.5.6.7: General test parameters for Cell Re-selection to inter-frequency TDD cell**

| Parameter   |                 | Unit | Value                             | Comment   |
|---|-----------------|------|-----------------------------------|---|
| Initial condition                                   | Active cell     |      | Cell1                             |   |
|   | Neighbour cells |      | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                     | Active cell     |      | Cell2                             |   |
| HCS   |                 |      | Not used                          |   |
| UE_TXPWR_MAX_RACH                                   |                 | dBm  | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin   |                 | dBm  | -103                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0)<br>- Persistence value |                 |      | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                     |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                    |                 | s    | 1.28                              | The value shall be used for all cells in the test.  |
| T1  |                 | s    | 30                                |   |
| T2  |                 | s    | 15                                |   |

Table A.5.6.8: Cell re-selection to inter-frequency TDD cell

| Parameter               | Unit         | Cell 1   |     |       |    | Cell 2   |     |       |    | Cell 3   |     |       |    |
|-------------------------|--------------|--|-----|-------|----|--|-----|-------|----|--|-----|-------|----|
|                         |              | 0  |     | DWPTS |    | 0  |     | DWPTS |    | 0  |     | DWPTS |    |
| Timeslot Number         |              | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 | T1   | T2  | T1    | T2 |
| UTRA RF Channel Number  |              | Channel 1  |     |       |    | Channel 2  |     |       |    | Channel 1  |     |       |    |
| PCCPCH_Ec/lor           | dB           | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| DwPCH_Ec/lor            | dB           |  |     | 0     | 0  |  |     | 0     | 0  |  |     | 0     | 0  |
| OCNS_Ec/lor             | dB           | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$   | dB           | 10   | 4   | 10    | 4  | 4  | 10  | 4     | 10 | -1   | -1  | -1    | -1 |
| PCCPCH RSCP             | dBm          | -63  | -69 |       |    | -69  | -63 |       |    | -74  | -74 |       |    |
| Qoffset1 <sub>s,n</sub> | dB           | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1, C6:0 |     |       |    | C2, C1: 0; C2, C3:0;<br>C2,C4:0C2, C5:0; C2, C6:0  |     |       |    | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5:0; C3, C6:0 |     |       |    |
| Qhyst1 <sub>s</sub>     | dB           | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Treselection            | s            | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Sintrasearch            | dB           | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Sintersearch            | dB           | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Timeslot                |              | Cell 4   |     |       |    | Cell 5   |     |       |    | Cell 6   |     |       |    |
|                         |              | 0  |     | DWPTS |    | 0  |     | DWPTS |    | 0  |     | DWPTS |    |
| UTRA RF Channel Number  |              | Channel  |     |       |    | Channel 2  |     |       |    | Channel  |     |       |    |
| PCCPCH_Ec/lor           | dB           | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| DwPCH_Ec/lor            | dB           |  |     | 0     | 0  |  |     | 0     | 0  |  |     | 0     | 0  |
| OCNS_Ec/lor             | dB           | -3   | -3  |       |    | -3   | -3  |       |    | -3   | -3  |       |    |
| $\hat{I}_{or}/I_{oc}$   | dB           | -1   | -1  | -1    | -1 | -1   | -1  | -1    | -1 | -1   | -1  | -1    | -1 |
| PCCPCH RSCP             | dBm          | -74  | -74 |       |    | -74  | -74 |       |    | -74  | -74 |       |    |
| Qoffset1 <sub>s,n</sub> | dB           | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |     |       |    | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0 |     |       |    | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0 |     |       |    |
| Qhyst1 <sub>s</sub>     | dB           | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Treselection            | s            | 0  |     |       |    | 0  |     |       |    | 0  |     |       |    |
| Sintrasearch            | dB           | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| Sintersearch            | dB           | not sent   |     |       |    | not sent   |     |       |    | not sent   |     |       |    |
| $I_{oc}$                | dBm/1.28 MHz |  |     |       |    | -70  |     |       |    |  |     |       |    |
| Propagation Condition   |              |  |     |       |    | AWGN   |     |       |    |  |     |       |    |

## A.5.6.2.1.3 for 7.68Mcps TDD option

This test is to verify the requirement for the cell re-selection delay in URA\_PCH state in section 5.6.2.

This scenario implies the presence of 1 carrier and 6 cells as given in Table A.5.6.9 and A.5.6.10.

Table A.5.6.9: General test parameters for Cell Re-selection to inter-frequency TDD cell

| Parameter  | Unit            | Value                             | Comment   |
|--|-----------------|-----------------------------------|---|
| Initial condition                                | Active cell     | Cell1                             |   |
|  | Neighbour cells | Cell2, Cell3, Cell4, Cell5, Cell6 |   |
| Final condition                                  | Active cell     | Cell2                             |   |
| HCS  |                 | Not used                          |   |
| UE_TXPWR_MAX_RACH                                | dBm             | 21                                | The value shall be used for all cells in the test.  |
| Qrxlevmin  | dBm             | -102                              | The value shall be used for all cells in the test.  |
| Access Service Class (ASC#0) - Persistence value |                 | 1                                 | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| T <sub>SI</sub>                                  | s               | 1.28                              | The value shall be used for all cells in the test.  |
| DRX cycle length                                 | s               | 1.28                              | The value shall be used for all cells in the test.  |
| T1   | s               | 30                                |   |
| T2   | s               | 15                                |   |

Table A.5.6.10: Cell re-selection to inter-frequency TDD cell

| Parameter               | Unit         | Cell 1   |       |        |       | Cell 2   |       |       |       | Cell 3   |       |       |       |
|-------------------------|--------------|--|-------|--------|-------|--|-------|-------|-------|--|-------|-------|-------|
|                         |              | 0  |       | 8      |       | 0  |       | 8     |       | 0  |       | 8     |       |
| Timeslot Number         |              | T1   | T2    | T1     | T2    | T1   | T2    | T1    | T2    | T1   | T2    | T1    | T2    |
| UTRA RF Channel Number  |              | Channel 1  |       |        |       | Channel 2  |       |       |       | Channel 1  |       |       |       |
| PCCPCH_Ec/lor           | dB           | -3   | -3    |        |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB           | -9   | -9    | -9     | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_toffset             |              | 0  | 0     | 0      | 0     | 5  | 5     | 5     | 5     | 10   | 10    | 10    | 10    |
| PICH_Ec/lor             | dB           |  |       | -3     | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor             | dB           | -3,12  | -3,12 | -3,12  | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB           | 6  | 0     | 6      | 0     | 0  | 6     | 0     | 6     | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm          | -67  | -73   |        |       | -73  | -67   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB           | C1, C2: 0; C1, C3:0; C1,C4:0<br>C1, C5:0; C1, C6:0 |       |        |       | C2, C1: 0; C2, C3:0;<br>C2,C4:0C2, C5:0; C2, C6:0  |       |       |       | C3, C1: 0; C3, C2:0; C3,C4:0<br>C3, C5:0; C3, C6:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB           | 0  |       |        |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s            | 0  |       |        |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB           | not sent   |       |        |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB           | not sent   |       |        |       | not sent   |       |       |       | not sent   |       |       |       |
| Timeslot                |              | Cell 4   |       | Cell 5 |       | Cell 6   |       |       |       |  |       |       |       |
|                         |              | 0  | 8     | 0      | 8     | 0  | 8     | 0     | 8     | 0  | 8     | 0     | 8     |
| UTRA RF Channel Number  |              | Channel 1  |       |        |       | Channel 2  |       |       |       | Channel 2  |       |       |       |
| PCCPCH_Ec/lor           | dB           | -3   | -3    |        |       | -3   | -3    |       |       | -3   | -3    |       |       |
| SCH_Ec/lor              | dB           | -9   | -9    | -9     | -9    | -9   | -9    | -9    | -9    | -9   | -9    | -9    | -9    |
| SCH_toffset             |              | 15   | 15    | 15     | 15    | 20   | 20    | 20    | 20    | 25   | 25    | 25    | 25    |
| PICH_Ec/lor             | dB           |  |       | -3     | -3    |  |       | -3    | -3    |  |       | -3    | -3    |
| OCNS_Ec/lor             | dB           | -3,12  | -3,12 | -3,12  | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 | -3,12  | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB           | -3   | -3    | -3     | -3    | -3   | -3    | -3    | -3    | -3   | -3    | -3    | -3    |
| PCCPCH RSCP             | dBm          | -76  | -76   |        |       | -76  | -76   |       |       | -76  | -76   |       |       |
| Qoffset1 <sub>s,n</sub> | dB           | C4, C1: 0; C4, C2:0; C4,C3:0<br>C4, C5:0; C4, C6:0 |       |        |       | C5, C1: 0; C5, C2:0; C5,C3:0<br>C5, C4:0; C5, C6:0 |       |       |       | C6, C1: 0; C6, C2:0; C6,C3:0<br>C6, C4:0; C6, C5:0 |       |       |       |
| Qhyst1 <sub>s</sub>     | dB           | 0  |       |        |       | 0  |       |       |       | 0  |       |       |       |
| Treselection            | s            | 0  |       |        |       | 0  |       |       |       | 0  |       |       |       |
| Sintrasearch            | dB           | not sent   |       |        |       | not sent   |       |       |       | not sent   |       |       |       |
| Sintersearch            | dB           | not sent   |       |        |       | not sent   |       |       |       | not sent   |       |       |       |
| $I_{oc}$                | dBm/7,68 MHz | -70  |       |        |       |  |       |       |       |  |       |       |       |
| Propagation Condition   |              | AWGN   |       |        |       |  |       |       |       |  |       |       |       |

## A.5.6.2.2 Test Requirements

### A.5.6.2.2.1 3.84Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the URA UPDATE message with URA update cause "change of URA " in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1 in section 4.2.2.7.

$T_{\text{SI}}$  Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.5.6.2.2.2 1.28Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the URA UPDATE message with URA update cause "change of URA" in cell 2.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as:

$$T_{\text{evaluateNTDD}} + T_{\text{SI}}$$

where:

$T_{\text{evaluateNTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateNTDD}}$  of 6.4s according to Table 4.1A in section 4.2.

$T_{\text{SI}}$  Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

#### A.5.6.2.2.3 7.68Mcps TDD option

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the URA UPDATE message with URA update cause "change of URA " in cell 2.

The cell re-selection delay shall be less than 8 s.

NOTE:

The cell re-selection delay can be expressed as:  $T_{\text{evaluateTDD}} + T_{\text{SI}}$ , where:

$T_{\text{evaluateTDD}}$  A DRX cycle length of 1280ms is assumed for this test case, this leads to a  $T_{\text{evaluateTDD}}$  of 6.4s according to Table 4.1B in section 4.2.2.7.

$T_{\text{SI}}$  Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell. 1280 ms is assumed in this test case.

This gives a total of 7.68 s, allow 8s in the test case.

## A.5.7 Serving HS-DSCH cell change

### A.5.7.1 Test Purpose and Environment

#### A.5.7.1.1 3.84Mcps TDD option

Void.

#### A.5.7.1.2 1.28Mcps TDD option

The purpose of this test is to verify the requirement for the delay when performing the serving HS-DSCH cell change in CELL\_DCH state specified in section 5.9.

The test parameters are given in Table A.5.7.1 and A.5.7.2 below. The test consists of 3 successive time periods, with a time duration of T1, T2, T3 respectively. At the start of time duration T1 the UE have cell 1 in active set and cell 1 as the serving HS-DSCH cell.

Data shall be transmitted continuously to the UE on the HS-DSCH channel.



**Table A.5.7.1: General test parameters for serving HS-DSCH cell change**

| Parameter                    |                      | Unit | Value   | Comment   |
|------------------------------|----------------------|------|---|---|
| DCH parameters               |                      |      | DL and UL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2.2 and A.2.1.2                       |
| Power Control                |                      |      | On  |   |
| Target quality value on DTCH |                      | BLER | 0.001   |   |
| HSDPA parameters             |                      |      | with QPSK modulation only                         | As specified in TS 25.102 section   |
| Initial conditions           | Active cells         |      | Cell 1  |   |
|                              | Serving HS-DSCH cell |      | Cell 1  |   |
| Final condition              | Active cell          |      | Cell 2  |   |
|                              | Serving HS-DSCH cell |      | Cell 2  |   |
| Hysteresis                   |                      | dB   | 0   |   |
| O                            |                      | dB   | 0   | Cell individual offset. This value shall be used for all cells in the test. |
| Time to Trigger              |                      | ms   | 0   |   |
| Filter coefficient           |                      |      | 0   |   |
| Monitored cell list size     |                      |      | 6 TD-SCDMA neighbours on Channel 1                |   |
| T1                           |                      | s    | 5   |   |
| T2                           |                      | s    | 5   |   |
| T3                           |                      | s    | 5   |   |

**Table A.5.7.2: Cell specific test parameters for serving HS-DSCH cell change**

| Parameter   | Unit         | Cell 1              |     |    |       |    |    |       |    |      |
|---|--------------|---------------------|-----|----|-------|----|----|-------|----|------|
|   |              | 0                   |     |    | DwPTS |    |    | 5     |    |      |
| Timeslot Number   |              | T1                  | T2  | T3 | T1    | T2 | T3 | T1    | T2 | T3   |
| UTRA RF Channel Number  |              | Channel 1 □ Note3 □ |     |    |       |    |    |       |    |      |
| PCCPCH_Ec/lor   | dB           | -3                  |     |    |       |    |    | n.a.  |    |      |
| DwPCH_Ec/lor  |              | n.a.                |     |    | -3    |    |    | n.a.  |    |      |
| DPCH_Ec/lor   | dB           | n.a.                |     |    | n.a.  |    |    | Note1 |    |      |
| HS-PDSCH_Ec/lor   | dB           | n.a.                |     |    | n.a.  |    |    | -1    |    | -inf |
| HS-SCCH_Ec/lor  | dB           | n.a.                |     |    | n.a.  |    |    | -4    |    | -inf |
| $\frac{DPCH_o - E_c}{I_{or}}$   | dB           | -3                  |     |    | n.a.  |    |    | Note2 |    |      |
| $\hat{I}_{or} / I_{oc}$   | dB           | 10                  | 7   |    | 10    | 7  |    | 10    | 7  |      |
| $I_{oc}$  | dBm/1.2 8MHz | -70                 |     |    |       |    |    |       |    |      |
| PCCPCH_RSCP   | dBm          | -63                 | -66 |    | n.a.  |    |    | n.a.  |    |      |
| Propagation Condition   |              | AWGN                |     |    |       |    |    |       |    |      |
| Parameter   | Unit         | Cell 2              |     |    |       |    |    |       |    |      |
| Timeslot Number   |              | 0                   |     |    | DwPTS |    |    | 5     |    |      |
|   |              | T1                  | T2  | T3 | T1    | T2 | T3 | T1    | T2 | T3   |
| UTRA RF Channel Number  |              | Channel 1 □ Note3 □ |     |    |       |    |    |       |    |      |
| PCCPCH_Ec/lor   | dB           | -3                  |     |    |       |    |    | n.a.  |    |      |
| DwPCH_Ec/lor  |              |                     |     |    | -3    |    |    |       |    |      |
| DPCH_Ec/lor   | dB           | n.a.                |     |    | n.a.  |    |    | Note1 |    |      |
| HS-PDSCH_Ec/lor   | dB           | -inf.               |     | -1 | n.a.  |    |    | -inf. |    | -1   |
| HS-SCCH_Ec/lor  | dB           | -inf.               |     | -4 | n.a.  |    |    | -inf. |    | -4   |
| $\frac{DPCH_o - E_c}{I_{or}}$   | dB           | -3                  |     |    | n.a.  |    |    | Note2 |    |      |
| $\hat{I}_{or} / I_{oc}$   | dB           | 7                   | 10  |    | 7     | 10 |    | 7     | 10 |      |
| $I_{oc}$  | dBm/1.2 8MHz | -70                 |     |    |       |    |    |       |    |      |
| PCCPCH_RSCP   | dBm          | -66                 | -63 |    | n.a.  |    |    | n.a.  |    |      |
| Propagation Condition   |              | AWGN                |     |    |       |    |    |       |    |      |
| Note1: The DPCH level is controlled by the power control loop<br>Note2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor.<br>Note3 : In the multi-carrier networks, UTRA RF Channel Number is the main carrier channel number. |              |                     |     |    |       |    |    |       |    |      |

- 1) The test is started at the beginning of T1.
- 2) During time period T2 an Event 1G triggered measurement report shall be sent by the UE.
- 3) During time period T2 UTRAN shall send a Physical Channel Configuration command with activation time now changing serving HS-DSCH from cell 1 to cell 2.
- 4) T3 is defined as the end of the last TTI of Physical Channel Configuration command.

**A.5.7.1.3 7.68Mcps TDD option**

Void.

## A.5.7.2 Test Requirements

### A.5.7.2.1 3.84Mcps TDD option

Void.

### A.5.7.2.2 1.28Mcps TDD option

The UE shall start to transmit the CQI to cell 2 less than 175 ms from the beginning of time period T3.

The UE shall also start to receive the first HS-SCCH message from cell 2 less than 175 ms from the beginning of time period T3 and transmit the ACK or NAK which corresponds to the HS-SCCH message.

NOTE: The delay  $T_{\text{Dell change}} = T_{\text{RRC}} + T_{\text{ul/dl sync}} + T_{\text{hs-sich/hs-scch interval}} = 80 + 80 + 15 = 175\text{ms}$ .

$T_{\text{RRC}}$  RRC procedure delay is defined in TS25.331 Section 13.5.2.

$T_{\text{ul/dl sync}}$  Defined as Uplink and Downlink synchronisation time, specified as 80ms.

$T_{\text{hs-sich/hs-scch interval}}$  Defined as interval time between HS-SCCH and the corresponding HS-SICH, for 1,28Mcps option specified as 15ms.

### A.5.7.2.3 7.68Mcps TDD option

Void.

## A.5.8 Inter-RAT cell change order from UTRAN TDD to GSM(GPRS)

### A.5.8.1 Test Purpose and Environment

#### A.5.8.1.1 3.84Mcps TDD option

Void.

#### A.5.8.1.2 1.28Mcps TDD option

The purpose of this test is to verify the requirement for the delay when performing the Inter-RAT cell change order from UTRAN TDD to GSM(GPRS) specified in section 5.8.

The test parameters are given in Table A.5.8.1, A.5.8.2, and A.5.8.3 below.

The SS starts the UTRAN cell and brings the UE into PS-DCCH+DTCH\_DCH. The SS starts GPRS cell, then sends CELL CHANGE ORDER FROM UTRAN indicating the target cell description, GPRS cell, to the UE through DCCH of the serving UTRAN cell.

After UE receives the command it shall configure itself accordingly and switch to the new channel on the target GPRS cell. The SS checks whether the cell change is performed by checking that the UE receives a successful response to the CHANNEL REQUEST message from the SS through GPRS cell.

The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. The UTRAN shall send CELL CHANGE ORDER FROM UTRAN message. The start of T3 is defined as the end of the last TTI containing the CELL CHANGE ORDER FROM UTRAN.

**Table A.5.8.1: General test parameters for Correct reporting of UTRAN neighbours in AWGN propagation condition**

| Parameter                      | Unit           | Value   | Comments  |
|--------------------------------|----------------|---|---|
| DCH parameters                 |                | DL Reference Measurement Channel 12.2 kbps                                | As specified in TS 34.122 clause C2.2                                       |
| Power Control                  |                | On  |   |
| Target quality value on DTCH   | BLER           | 0.01  |   |
| Initial conditions             | Active cell    | Cell 1  | UTRAN TDD cell  |
|                                | Neighbour cell | Cell 2  | GSM cell  |
| Final condition                | Active cell    | Cell 2  | GSM cell  |
| Inter-RAT measurement quantity |                | GSM Carrier RSSI  |   |
| Hysteresis                     | dB             | 0   |   |
| Time to Trigger                | ms             | 0   |   |
| Filter coefficient             |                | 0   |   |
| Monitored cell list size       | s              | 12 TD-SCDMA neighbours on Channel 1<br>6 GSM neighbours including ARFCN 1 | Measurement control information is sent before the start of time period T1. |
| Tidentify abort                | s              | 5   |   |
| Treconfirm abort               | s              | 5   |   |
| T1                             | s              | 10  |   |
| T2                             | s              | 10  |   |
| T3                             | s              | 10  |   |

**Table A.5.8.2: Cell Specific Parameters for UTRAN to GPRS cell change order cell case (cell 1)**

| Parameter              | Unit         | Cell 1    |    |    |       |    |    |
|------------------------|--------------|-----------|----|----|-------|----|----|
|                        |              | 0         |    |    | DwPTS |    |    |
|                        |              | T1        | T2 | T3 | T1    | T2 | T3 |
| DL timeslot number     |              | Channel 1 |    |    |       |    |    |
| UTRA RF Channel Number |              | Channel 1 |    |    |       |    |    |
| PCCPCH_Ec/Ior          | dB           | -3        |    |    |       |    |    |
| DwPCH_Ec/Ior           | dB           |           |    |    | 0     |    |    |
| OCNS_Ec/Ior            | dB           | -3        |    |    |       |    |    |
| $\hat{I}_{or}/I_{oc}$  | dB           | 5         |    |    | 5     |    |    |
| $I_{oc}$               | dBm/1.28 MHz | -70       |    |    |       |    |    |
| Propagation Condition  |              | AWGN      |    |    |       |    |    |

**Table A.5.8.3: Cell Specific Parameters for UTRAN to GPRS cell change order cell case (cell 2)**

| Parameter                  | Unit | Cell 2  |        |
|----------------------------|------|---------|--------|
|                            |      | T1      | T2, T3 |
| Absolute RF Channel Number |      | ARFCN 1 |        |
| RXLEV                      | dBm  | -85     | -75    |

- 1) The test is started at the beginning of T1.
- 2) During time period T2, UTRAN shall send CELL CHANGE ORDER FROM UTRAN message.

3) The start of T3 is defined as the end of the last TTI containing the CELL CHANGE ORDER FROM UTRAN.

#### A.5.8.1.3 7.68Mcps TDD option

Void.

### A.5.8.2 Test Requirements

#### A.5.8.2.1 3.84Mcps TDD option

Void.

#### A.5.8.2.2 1.28Mcps TDD option

The UE shall begin to transmit on the new RACH of the target cell less than  $190\text{ms} + T_{\text{BCCH}} + T_{\text{RA}}$  from the beginning of time period T3. The rate of correct handovers observed during repeated tests shall be at least 90% with a confidence level of 95 %.

NOTE: The test requirement in this case is expressed as:

$$T_{\text{CCO delay}} = 190\text{ms} + T_{\text{BCCH}} + T_{\text{RA}} \text{ or}$$

$$T_{\text{CCO delay}} = 90\text{ms} + T_{\text{BCCH}} + T_{\text{RA}}$$

190ms: is delay switch from UTRAN to GSM when UE has not synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN is received; when UE has synchronised to the GSM cell before the CELL CHANGE ORDER FROM UTRAN is received, delay switch from UTRAN to GSM is 90ms.

$T_{\text{BCCH}}$  is the maximum time allowed to read BCCH data from GSM cell. According to TS 45.002, the maximum time allowed to read the BCCH data, when being synchronized to a BCCH carrier, is 7.6s (in order to read System Information type 13).

$T_{\text{RA}}$  The additional delay caused by the random access procedure in the GSM cell, is 10 ms (2 GSM radio frames).

#### A.5.8.2.3 7.68Mcps TDD option

Void.

## A.6 (void)

### A.6A RRC Connection Control

#### A.6A.1 RRC re-establishment delay

##### A.6A.1.1 3.84 Mcps TDD option

###### A.6A.1.1.1 RRC re-establishment delay to a known target cell

###### A.6A.1.1.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay to a known target cell is within the specified limits. This test will partly verify the requirements in section 6A.1.2.

The test parameters are given in table A.6A.1 and table A.6A.2 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with time durations of T1 and T2 respectively.

During T1, the DL DPCH in cell 1 shall be transmitted in timeslot 2 and the UL DPCH in cell 1 shall be transmitted in timeslot 10. At the beginning of time period T2, the DPCH shall be removed.

Cell 1 and cell shall be synchronised, i.e. share the same frame and timeslot timing.

**Table A.6A.1: General test parameters for RRC re-establishment delay, known target cell case**

| Parameter   |                | Unit    | Value                                      | Comment   |
|---|----------------|---------|--|---|
| DCH parameters                                      |                |         | DL reference measurement channel 12.2 kbps | As specified in TS 25.102 section A.2.2   |
| Power Control                                       |                |         | On   |   |
| Target quality value on DTCH                        |                | BLER    | 0.01                                       |   |
| Initial conditions                                  | Active cell    |         | Cell 1                                     | Cell 2 shall be included in the monitored set in Cell 1.  |
|   | Neighbour cell |         | Cell 2                                     |   |
| Final conditions                                    | Active cell    |         | Cell 2                                     |   |
| Access Service Class (ASC#0)<br>- Persistence value |                | -       | 1  | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| N313  |                |         | 20   |   |
| N315  |                |         | 1  |   |
| T313  |                | Seconds | 0  |   |
| T <sub>SI</sub>                                     |                | ms      | 1280                                       |   |
| Monitored cell list size                            |                |         | 24 TDD neighbours on Channel 1             |   |
| Reporting frequency                                 |                | Seconds | 4  |   |
| T1  |                |         | 10   |   |
| T2  |                |         | 6  |   |

**Table A.6A.2: Cell specific parameters for RRC re-establishment delay test, known target cell case**

| Parameter                 | Unit          | Cell 1    |       |       |       | Cell 2    |       |       |       |
|---------------------------|---------------|-----------|-------|-------|-------|-----------|-------|-------|-------|
|                           |               | 0         |       | 8     |       | 0         |       | 8     |       |
|                           |               | T1        | T2    | T1    | T2    | T1        | T2    | T1    | T2    |
| UTRA RF Channel Number    |               | Channel 1 |       |       |       | Channel 1 |       |       |       |
| PCCPCH_Ec/I <sub>or</sub> | dB            | -3        | -3    | n.a.  | n.a.  | -3        | -3    | n.a.  | n.a.  |
| SCH_Ec/I <sub>or</sub>    | dB            | -9        | -9    | -9    | -9    | -9        | -9    | -9    | -9    |
| SCH_t <sub>offset</sub>   |               | 0         | 0     | 0     | 0     | 15        | 15    | 15    | 15    |
| PICH_Ec/I <sub>or</sub>   | dB            | n.a.      | n.a.  | -3    | -3    | n.a.      | n.a.  | -3    | -3    |
| OCNS_Ec/I <sub>or</sub>   | dB            | -3,12     | -3,12 | -3,12 | -3,12 | -3,12     | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$     | dB            | 3         | -13   | 3     | -13   | 5         | 5     | 5     | 5     |
| $I_{oc}$                  | dBm/ 3.84 MHz | -70       |       |       |       |           |       |       |       |
| P-CCPCH_RSCP              | dB            | -70       | -86   | n.a.  | n.a.  | -68       | -68   | n.a.  | n.a.  |
| Propagation Condition     |               | AWGN      |       |       |       |           |       |       |       |

#### A.6A.1.1.1.2 Test Requirements

The RRC re-establishment delay  $T_{RE-ESTABLISH}$  to a known target cell shall be less than 2 s.

The rate of successful RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in this test case can be expressed as,

$$T_{\text{RE-ESTABLISH}} = T_{\text{RRC-RE-ESTABLISH}} + T_{\text{UE-RE-ESTABLISH-REQ-KNOWN}}$$

where,

$$T_{\text{RRC-RE-ESTABLISH}} = 160\text{ms} + (N_{313} - 1) * 10\text{ms} + T_{313}$$

$$T_{\text{UE-RE-ESTABLISH-REQ-KNOWN}} = 50\text{ms} + T_{\text{SEARCH-KNOWN}} + T_{\text{SI}} + T_{\text{RA}}$$

and,

$N_{313}$  Equal to 20 and therefore resulting in 200 ms delay.

$T_{313}$  Equal to 0 s.

$T_{\text{SEARCH-KNOWN}}$  Equal to 100 ms

$T_{\text{SI}}$  Equal to 1280 ms, the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

$T_{\text{RA}}$  Equal to 40 ms, the additional delay caused by the random access procedure.

### A.6A.1.1.2 RRC re-establishment delay to an unknown target cell

#### A.6A.1.1.2.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay to an unknown target cell is within the specified limits. This test will partly verify the requirements in section 6A.1.2.

The test parameters are given in table A.6A.3 and table A.6A.4 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with time durations of T1 and T2 respectively.

During T1, the DL DPCH in cell 1 shall be transmitted in timeslot 2 and the UL DPCH in cell 1 shall be transmitted in timeslot 10. At the beginning of time period T2, the DPCH shall be removed.

Cell 1 and cell shall be synchronised, i.e. share the same frame and timeslot timing.

**Table A.6A.3: General test parameters for RRC re-establishment delay, unknown target cell case**

| Parameter   | Unit           | Value                                      | Comment   |
|---|----------------|--|---|
| DCH parameters                                      |                | DL reference measurement channel 12.2 kbps | As specified in TS 25.102 section A.2.2   |
| Power Control                                       |                | On   |   |
| Target quality value on DTCH                        | BLER           | 0.01                                       |   |
| Initial conditions                                  | Active cell    | Cell 1                                     | Cell 2 shall not be included in the monitored set in Cell 1.  |
|   | Neighbour cell | Cell 2                                     |   |
| Final conditions                                    | Active cell    | Cell 2                                     |   |
| Access Service Class (ASC#0)<br>- Persistence value | -              | 1  | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |

|                          |         |  |  |
|--------------------------|---------|--|--|
| N313                     |         | 20   |  |
| N315                     |         | 1  |  |
| T313                     | Seconds | 0  |  |
| T <sub>SI</sub>          | ms      | 1280   |  |
| Monitored cell list size |         | 16 TDD neighbours on Channel 1<br>16 TDD neighbours on Channel 2 |  |
| Reporting frequency      | Seconds | 4  |  |
| T1                       |         | 10   |  |
| T2                       |         | 6  |  |

Table A.6A.4: Cell specific parameters for RRC re-establishment delay test, unknown target cell case

| Parameter                 | Unit          | Cell 1    |       |       |       | Cell 2    |       |       |       |
|---------------------------|---------------|-----------|-------|-------|-------|-----------|-------|-------|-------|
|                           |               | 0         |       | 8     |       | 0         |       | 8     |       |
| Timeslot Number           |               | T1        | T2    | T1    | T2    | T1        | T2    | T1    | T2    |
| UTRA RF Channel Number    |               | Channel 1 |       |       |       | Channel 2 |       |       |       |
| PCCPCH_Ec/I <sub>or</sub> | dB            | -3        | -3    | n.a.  | n.a.  | -3        | -3    | n.a.  | n.a.  |
| SCH_Ec/I <sub>or</sub>    | dB            | -9        | -9    | -9    | -9    | -9        | -9    | -9    | -9    |
| SCH_t <sub>offset</sub>   |               | 0         | 0     | 0     | 0     | 15        | 15    | 15    | 15    |
| PICH_Ec/I <sub>or</sub>   | dB            | n.a.      | n.a.  | -3    | -3    | n.a.      | n.a.  | -3    | -3    |
| OCNS_Ec/I <sub>or</sub>   | dB            | -3,12     | -3,12 | -3,12 | -3,12 | -3,12     | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$     | dB            | 3         | -13   | 3     | -13   | 5         | 5     | 5     | 5     |
| I <sub>oc</sub>           | dBm/ 3.84 MHz | -70       |       |       |       |           |       |       |       |
| P-CCPCH_RSCP              | dB            | -70       | -86   | n.a.  | n.a.  | -68       | -68   | n.a.  | n.a.  |
| Propagation Condition     |               | AWGN      |       |       |       |           |       |       |       |

#### A.6A.1.1.2.2 Test Requirements

The RRC re-establishment delay T<sub>RE-ESTABLISH</sub> to an unknown target cell shall be less than 3,7 s.

The rate of successful RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in this test case can be expressed as,

$$T_{RE-ESTABLISH} = T_{RRC-RE-ESTABLISH} + T_{UE-RE-ESTABLISH-REQ-UNKNOWN}$$

where,

$$T_{RRC-RE-ESTABLISH} = 160\text{ms} + (N_{313} - 1) * 10\text{ms} + T_{313}$$

$$T_{UE-RE-ESTABLISH-REQ-KNOWN} = 50\text{ms} + T_{SEARCH-UNKNOWN} * NF + T_{SI} + T_{RA}$$

and,

N<sub>313</sub> Equal to 20 and therefore resulting in 200 ms delay.

T<sub>313</sub> Equal to 0 s.

T<sub>SEARCH-UNKNOWN</sub> Equal to 800 ms

NF Equal to 2, the number of different frequencies in the monitored set of cell 1.

T<sub>SI</sub> Equal to 1280 ms, the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

T<sub>RA</sub> Equal to 40 ms, the additional delay caused by the random access procedure.



## A.6A.1.2 1.28 Mcps TDD Option

## A.6A.1.2.1 Test Purpose and Environment

## A.6A.1.2.1.1 Test 1

The purpose is to verify that the RRC connection re-establishment delay is within the specified limits. These tests will verify the requirements in section 6A.1.2.2.

The test parameters are given in table A.6A.5 and table A.6A.6 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

**Table A.6A.5: General test parameters for RRC connection re-establishment delay, Test 1**

| Parameter                      | Unit    | Value                                      | Comment  |
|--------------------------------|---------|--|--|
| DCH Parameters                 |         | DL Reference measurement channel 12.2 kbps | As specified in TS25.102, section A.2.2.2  |
| Power Control                  |         | On   |  |
| Active cell, Initial condition |         | Cell 1                                     |  |
| Active cell, Final condition   |         | Cell 2                                     |  |
| N313                           |         | 20   |  |
| N315                           |         | 1  |  |
| T313                           | Seconds | 0  |  |
| T <sub>SI</sub>                | ms      | 1280                                       | Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms).<br><br>Note: Since 1280 ms is one of the typical values for repeating system information blocks, T <sub>SI</sub> of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms |
| Monitored cell list size       |         | 24   | Monitored set shall only include intra frequency neighbours  |
| Cell 2                         |         |  | Included in monitored set  |
| Reporting frequency            | Seconds | 4  |  |
| T1                             | s       | 10   |  |
| T2                             | s       | 6  |  |

**Table A.6A.6: Cell specific parameters for RRC connection re-establishment delay test, Test 1**

| Parameter   | Unit          | Cell 1         |           |                |           | Cell 2         |     |    |    |
|---|---------------|----------------|-----------|----------------|-----------|----------------|-----|----|----|
|   |               | 0              |           | 5              |           | 0              |     |    |    |
| Timeslot Number   |               | T1             | T2        | T1             | T2        | T1             | T2  | T1 | T2 |
| UTRA RF Channel Number (NOTE3)  |               | Channel 1      |           |                |           | Channel 1      |     |    |    |
| DPCH_Ec/I <sub>or</sub>   | dB            | Not applicable |           | Note 1         | -infinity | Not applicable |     |    |    |
| OCNS_Ec/I <sub>or</sub>   | dB            | Note 2         |           | Note 2         |           | Note 2         |     |    |    |
| PCCPCH_Ec/I <sub>or</sub>   | dB            | -3             |           |                |           | -3             |     |    |    |
|   |               |                |           |                |           |                |     |    |    |
| $\hat{I}_{or}/I_{oc}$   | dB            | [3]            | -infinity | 3              | -infinity | 6              | 6   |    |    |
| $I_{oc}$  | dBm/ 1.28 MHz | -70            |           |                |           |                |     |    |    |
| PCCPCH_RSCP   | dBm           | -70            | -infinity | Not applicable |           | -67            | -67 |    |    |
| Propagation Condition   |               | AWGN           |           |                |           |                |     |    |    |
| NOTE 1: The DPCH level is controlled by the power control loop.   |               |                |           |                |           |                |     |    |    |
| NOTE 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> . |               |                |           |                |           |                |     |    |    |
| NOTE 3: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency.              |               |                |           |                |           |                |     |    |    |

## A.6A.1.2.1.2 Test 2

The test parameters are given in table A.6A.7 and table A.6A.8 below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively. At the start of time period T2, the dedicated channel is removed.

**Table A.6A.7: General test parameters for RRC connection re-establishment delay, Test 2**

| Parameter                      | Unit    | Value                                      | Comment  |
|--------------------------------|---------|--|--|
| DCH Parameters                 |         | DL Reference measurement channel 12.2 kbps | As specified in TS25.102, section A.2.2.2  |
| Power Control                  |         | On   |  |
| Active cell, Initial condition |         | Cell 1                                     | Channel 1  |
| Active cell, Final condition   |         | Cell 2                                     | Channel 2 or 3   |
| N313                           |         | 20   |  |
| N315                           |         | 1  |  |
| T313                           | Seconds | 0  |  |
| T <sub>SI</sub>                | ms      | 1280                                       | Time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms).<br><br>Note: Since 1280 ms is one of the typical values for repeating system information blocks, T <sub>SI</sub> of 1280 ms could be increased by the RRC procedure delay in order to allow the SIB repetition period of 1280 ms |
| Cells in the monitored set     |         | 24   |  |
| Channels in the monitored set  |         | Channel 1, Channel 2, Channel 3            |  |
| Cell 2                         |         |  | Cell 2 is not included in the monitored set. Cell 2 is located on a different channel than cell 1.   |
| Reporting frequency            | Seconds | 4  |  |
| T1                             | s       | 10   |  |
| T2                             | s       | 6  |  |

**Table A.6A.8: Cell specific parameters for RRC connection re-establishment delay test, Test 2**

| Parameter   | Unit             | Cell 1         |           |                |           | Cell 2         |     |  |  |
|---|------------------|----------------|-----------|----------------|-----------|----------------|-----|--|--|
|   |                  | 0              |           | 5              |           | 0              |     |  |  |
| Timeslot Number   |                  | T1             | T2        | T1             | T2        | T1             | T2  |  |  |
| UTRA RF Channel Number (NOTE3)  |                  | Channel 1      |           |                |           | Channel 2      |     |  |  |
| PCCPCH_Ec/I <sub>or</sub>   | dB               | -3             |           |                |           | -3             |     |  |  |
| DPCH_Ec/I <sub>or</sub>   | dB               | Not applicable |           | Note 1         | -infinity | Not applicable |     |  |  |
| OCNS_Ec/I <sub>or</sub>   | dB               | Note 2         |           | Note 2         |           | Note 2         |     |  |  |
|   |                  |                |           |                |           |                |     |  |  |
| $\hat{I}_{or}/I_{oc}$   | dB               | 3              | -infinity | 3              | -infinity | 6              | 6   |  |  |
| $I_{oc}$  | dBm/<br>1.28 MHz | -70            |           |                |           |                |     |  |  |
| PCCPCH_RSCP   | dBm              | -70            | -infinity | Not applicable |           | -67            | -67 |  |  |
| Propagation Condition   |                  | AWGN           |           |                |           |                |     |  |  |
| NOTE 1: The DPCH level is controlled by the power control loop.   |                  |                |           |                |           |                |     |  |  |
| NOTE 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> . |                  |                |           |                |           |                |     |  |  |
| NOTE 3: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency.              |                  |                |           |                |           |                |     |  |  |

### A.6A.1.2.2 Test Requirements

#### A.6A.1.2.2.1 Test 1

The Re-establishment delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNC-UL in the UpPTS for sending a CELL UPDATE message using the cause "radio link failure".

The Re-establishment delay  $T_{RE-ESTABLISH}$  to a known cell shall be less than 1815 ms.

The rate of correct tests observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay can be expressed in this case as

$$T_{RE-ESTABLISH} = T_{RRC-RE-ESTABLISH} + T_{UE-RE-ESTABLISH-REQ-KNOWN}$$

Where

$$T_{RRC-RE-ESTABLISH} = 160\text{ms} + (N_{313} - 1) * 10\text{ms} + T_{313}$$

$$T_{UE-RE-ESTABLISH-REQ-KNOWN} = 50\text{ms} + T_{search} + T_{SI} + T_{RA}$$

$$N_{313} = 20$$

$$T_{313} = 0\text{s}$$

$T_{search}$  is the time it takes for the UE to search the cell.  $T_{search} = 100$  ms in case of a known target cell.

$T_{RA}$  The additional delay caused by the random access procedure. 35 ms is assumed in this test case

$T_{SI}$   $T_{SI}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms) 1280 ms is assumed in this test case.

This gives a total delay of 1.815s allow 1.9s in the test case.

#### A.6A.1.2.2.2 Test 2

The Re-establishment delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send SYNC-UL in the UpPTS for sending a CELL UPDATE message using the cause "radio link failure".

The Re-establishment delay to an unknown cell shall be less than 4115 ms.

The rate of correct tests observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay can be expressed in case as

$$T_{\text{RE-ESTABLISH}} = T_{\text{RRC-RE-ESTABLISH}} + T_{\text{UE-RE-ESTABLISH-REQ-UNKNOWN}}$$

Where

$$T_{\text{RRC-RE-ESTABLISH}} = 160\text{ms} + (N_{313} - 1) * 10\text{ms} + T_{313}$$

$$T_{\text{UE-RE-ESTABLISH-REQ-UNKNOWN}} = 50\text{ms} + T_{\text{search}} * NF + T_{\text{SI}} + T_{\text{RA}}$$

$$N_{313} = 20$$

$$T_{313} = 0\text{s}$$

$T_{\text{search}}$  is the time it takes for the UE to search the cell.  $T_{\text{search}} = 800$  ms in case of an unknown target cell.

$NF$  is the number of different frequencies in the monitored set.  $NF = 3$

$T_{\text{RA}}$  The additional delay caused by the random access procedure. 35 ms is assumed in this test case

$T_{\text{SI}}$  is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in 25.331 for a UTRAN cell (ms). 1280 ms is assumed in this test case.

This gives a total of 4.115s, allow 4.2s in the test case.

## A.6A.1.3 7.68 Mcps TDD option

### A.6A.1.3.1 RRC re-establishment delay to a known target cell

#### A.6A.1.3.1.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay to a known target cell is within the specified limits. This test will partly verify the requirements in section 6A.1.2.

The test parameters are given in table A.6A.5A and table A.6A.6A below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with time durations of T1 and T2 respectively.

During T1, the DL DPCH in cell 1 shall be transmitted in timeslot 2 and the UL DPCH in cell 1 shall be transmitted in timeslot 10. At the beginning of time period T2, the DPCH shall be removed.

Cell 1 and cell shall be synchronised, i.e. share the same frame and timeslot timing.

**Table A.6A.5A: General test parameters for RRC re-establishment delay, known target cell case**

| Parameter   |                | Unit | Value                                      | Comment   |
|---|----------------|------|--|---|
| DCH parameters                                      |                |      | DL reference measurement channel 12.2 kbps | As specified in TS 25.102 section A.2.2   |
| Power Control                                       |                |      | On   |   |
| Target quality value on DTCH                        |                | BLER | 0.01                                       |   |
| Initial conditions                                  | Active cell    |      | Cell 1                                     | Cell 2 shall be included in the monitored set in Cell 1.  |
|   | Neighbour cell |      | Cell 2                                     |   |
| Final conditions                                    | Active cell    |      | Cell 2                                     |   |
| Access Service Class (ASC#0)<br>- Persistence value |                | -    | 1  | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |

|                          |         |                              |  |
|--------------------------|---------|------------------------------|--|
| N313                     |         | 20                           |  |
| N315                     |         | 1                            |  |
| T313                     | Seconds | 0                            |  |
| T <sub>SI</sub>          | ms      | 1280                         |  |
| Monitored cell list size |         | 24 TDD neighbours on Channel |  |
| Reporting frequency      | Seconds | 4                            |  |
| T1                       |         | 10                           |  |
| T2                       |         | 6                            |  |

Table A.6A.6A: Cell specific parameters for RRC re-establishment delay test, known target cell case

| Parameter               | Unit          | Cell 1    |       |       |       | Cell 2    |       |       |       |
|-------------------------|---------------|-----------|-------|-------|-------|-----------|-------|-------|-------|
|                         |               | 0         |       | 8     |       | 0         |       | 8     |       |
| Timeslot Number         |               | T1        | T2    | T1    | T2    | T1        | T2    | T1    | T2    |
| UTRA RF Channel Number  |               | Channel 1 |       |       |       | Channel 1 |       |       |       |
| PCCPCH_Ec/lor           | dB            | -3        | -3    | n.a.  | n.a.  | -3        | -3    | n.a.  | n.a.  |
| SCH_Ec/lor              | dB            | -9        | -9    | -9    | -9    | -9        | -9    | -9    | -9    |
| SCH_t <sub>offset</sub> |               | 0         | 0     | 0     | 0     | 15        | 15    | 15    | 15    |
| PICH_Ec/lor             | dB            | n.a.      | n.a.  | -3    | -3    | n.a.      | n.a.  | -3    | -3    |
| OCNS_Ec/lor             | dB            | -3,12     | -3,12 | -3,12 | -3,12 | -3,12     | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$   | dB            | 3         | -13   | 3     | -13   | 5         | 5     | 5     | 5     |
| $I_{oc}$                | dBm/ 7.68 MHz | -70       |       |       |       |           |       |       |       |
| P-CCPCH_RSCP            | dB            | -70       | -86   | n.a.  | n.a.  | -68       | -68   | n.a.  | n.a.  |
| Propagation Condition   |               | AWGN      |       |       |       |           |       |       |       |

### A.6A.1.3.1.2 Test Requirements

The RRC re-establishment delay  $T_{RE-ESTABLISH}$  to a known target cell shall be less than 2 s.

The rate of successful RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in this test case can be expressed as,

$$T_{RE-ESTABLISH} = T_{RRC-RE-ESTABLISH} + T_{UE-RE-ESTABLISH-REQ-KNOWN}$$

where,

$$T_{RRC-RE-ESTABLISH} = 160\text{ms} + (N_{313} - 1) * 10\text{ms} + T_{313}$$

$$T_{UE-RE-ESTABLISH-REQ-KNOWN} = 50\text{ms} + T_{SEARCH-KNOWN} + T_{SI} + T_{RA}$$

and,

$N_{313}$  Equal to 20 and therefore resulting in 200 ms delay.

$T_{313}$  Equal to 0 s.

$T_{SEARCH-KNOWN}$  Equal to 100 ms

$T_{SI}$  Equal to 1280 ms, the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

$T_{RA}$  Equal to 40 ms, the additional delay caused by the random access procedure.

### A.6A.1.3.2 RRC re-establishment delay to an unknown target cell

#### A.6A.1.3.2.1 Test Purpose and Environment

The purpose is to verify that the RRC re-establishment delay to an unknown target cell is within the specified limits. This test will partly verify the requirements in section 6A.1.2.

The test parameters are given in table A.6A.7A and table A.6A.8A below. In the measurement control information it is indicated to the UE that periodic reporting shall be used. The test consists of 2 successive time periods, with time durations of T1 and T2 respectively.

During T1, the DL DPCH in cell 1 shall be transmitted in timeslot 2 and the UL DPCH in cell 1 shall be transmitted in timeslot 10. At the beginning of time period T2, the DPCH shall be removed.

Cell 1 and cell shall be synchronised, i.e. share the same frame and timeslot timing.

**Table A.6A.7A: General test parameters for RRC re-establishment delay, unknown target cell case**

| Parameter   |                | Unit    | Value  | Comment   |
|---|----------------|---------|--|---|
| DCH parameters                                      |                |         | DL reference measurement channel 12.2 kbps                       | As specified in TS 25.102 section A.2.2   |
| Power Control                                       |                |         | On   |   |
| Target quality value on DTCH                        |                | BLER    | 0.01   |   |
| Initial conditions                                  | Active cell    |         | Cell 1   | Cell 2 shall not be included in the monitored set in Cell 1.  |
|   | Neighbour cell |         | Cell 2   |   |
| Final conditions                                    | Active cell    |         | Cell 2   |   |
| Access Service Class (ASC#0)<br>- Persistence value |                | -       | 1  | Selected so that no additional delay is caused by the random access procedure. The value shall be used for all cells in the test. |
| N313  |                |         | 20   |   |
| N315  |                |         | 1  |   |
| T313  |                | Seconds | 0  |   |
| T <sub>SI</sub>                                     |                | ms      | 1280   |   |
| Monitored cell list size                            |                |         | 16 TDD neighbours on Channel 1<br>16 TDD neighbours on Channel 2 |   |
| Reporting frequency                                 |                | Seconds | 4  |   |
| T1  |                |         | 10   |   |
| T2  |                |         | 6  |   |

**Table A.6A.8A: Cell specific parameters for RRC re-establishment delay test, unknown target cell case**

| Parameter                 | Unit          | Cell 1    |       |       |       | Cell 2    |       |       |       |
|---------------------------|---------------|-----------|-------|-------|-------|-----------|-------|-------|-------|
|                           |               | 0         |       | 8     |       | 0         |       | 8     |       |
| Timeslot Number           |               | T1        | T2    | T1    | T2    | T1        | T2    | T1    | T2    |
| UTRA RF Channel Number    |               | Channel 1 |       |       |       | Channel 2 |       |       |       |
| PCCPCH_Ec/I <sub>or</sub> | dB            | -3        | -3    | n.a.  | n.a.  | -3        | -3    | n.a.  | n.a.  |
| SCH_Ec/I <sub>or</sub>    | dB            | -9        | -9    | -9    | -9    | -9        | -9    | -9    | -9    |
| SCH_t <sub>offset</sub>   |               | 0         | 0     | 0     | 0     | 15        | 15    | 15    | 15    |
| PICH_Ec/I <sub>or</sub>   | dB            | n.a.      | n.a.  | -3    | -3    | n.a.      | n.a.  | -3    | -3    |
| OCNS_Ec/I <sub>or</sub>   | dB            | -3,12     | -3,12 | -3,12 | -3,12 | -3,12     | -3,12 | -3,12 | -3,12 |
| $\hat{I}_{or}/I_{oc}$     | dB            | 3         | -13   | 3     | -13   | 5         | 5     | 5     | 5     |
| $I_{oc}$                  | dBm/ 7.68 MHz | -70       |       |       |       |           |       |       |       |
| P-CCPCH_RSCP              | dB            | -70       | -86   | n.a.  | n.a.  | -68       | -68   | n.a.  | n.a.  |
| Propagation Condition     |               | AWGN      |       |       |       |           |       |       |       |

### A.6A.1.3.2.2 Test Requirements

The RRC re-establishment delay  $T_{RE-ESTABLISH}$  to an unknown target cell shall be less than 3,7 s.

The rate of successful RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in this test case can be expressed as,

$$T_{RE-ESTABLISH} = T_{RRC-RE-ESTABLISH} + T_{UE-RE-ESTABLISH-REQ-UNKNOWN}$$

where,

$$T_{RRC-RE-ESTABLISH} = 160\text{ms} + (N_{313} - 1) * 10\text{ms} + T_{313}$$

$$T_{UE-RE-ESTABLISH-REQ-KNOWN} = 50\text{ms} + T_{SEARCH-UNKNOWN} * NF + T_{SI} + T_{RA}$$

and,

$N_{313}$  Equal to 20 and therefore resulting in 200 ms delay.

$T_{313}$  Equal to 0 s.

$T_{SEARCH-UNKNOWN}$  Equal to 800 ms

NF Equal to 2, the number of different frequencies in the monitored set of cell 1.

$T_{SI}$  Equal to 1280 ms, the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure performance value of system information blocks defined in [16] for a UTRAN cell.

$T_{RA}$  Equal to 40 ms, the additional delay caused by the random access procedure.

## A.6A.2 Transport format combination selection in UE

### A.6A.2.1 3.84 Mcps TDD option

#### A.6A.2.1.1 Test Purpose and Environment

The purpose is to verify the UE blocks (stops using) a currently used TFC when the UE output power is not sufficient to support that TFC. This test will verify the general requirement on TFC selection in section 6A.2.

## A.6A.2.1.1.1 Interactive or Background, PS, UL: 64 kbps

The test will verify the general requirement on TFC selection in section 6A.2 for a 64 kbps UL reference RAB intended for packet data services, i.e. Interactive or Background, PS as defined in TS 34.108 and multiplexed to a 3.4 kbps DCCH.

The test parameters are given in Table A.6A.9, A.6A.10, A.6A.11 and Table A.6A.12 below. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively.

Details on the UL reference RAB in table A.6A.10 can be found in TS 34.108 section "Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH".

**Table A.6A.9: General test parameters**

| Parameter                   | Unit | Value  | Comment   |
|-----------------------------|------|--|---|
| TFCS size                   |      | 10   |   |
| TFCS                        |      | UL_TFC0, UL_TFC1,<br>UL_TFC2, UL_TFC3,<br>UL_TFC4, UL_TFC5,<br>UL_TFC6, UL_TFC7,<br>UL_TFC8, UL_TFC9 | Gain factors for TFC0 to TFC9 shall be set to 1.                                  |
| Power Control               |      | On   |   |
| Active cell                 |      | Cell 1   |   |
| Maximum allowed UL TX power | dBm  | 0  | Value of IE "Maximum allowed UL Tx power"   |
| Primary CCPCH Tx power      | dBm  | 18   | Value of IE "Primary CCPCH Tx power"  |
| UL timeslot interference    | dBm  | -80  | Value of IE "UL timeslot interference"<br>This value shall apply to all timeslots |
| $\alpha$                    |      | 1  | IE "Alpha" either not sent or explicitly set to value                             |
| UL target SIR               | dB   | 6  |   |
| DPCH constant offset        | dB   | adjustable   | Value of IE "DPCH constant power"   |
| T1                          | s    | 10   |   |
| T2                          | s    | 10   |   |

**Table A.6A.10: Transport channel parameters for UL reference RAB, Interactive or Background and DCCH**

| Parameter                  | Unit | 64 kbps RAB         | DCCH 3.4kbps         |
|----------------------------|------|---------------------|----------------------|
| Transport Channel Number   |      | 1                   | 2                    |
| Transmission Time Interval | ms   | 20                  | 40                   |
| Type of Error Protection   |      | Turbo coding        | Convolutional coding |
| Coding Rate                |      |                     | 1/3                  |
| Size of CRC                | bits |                     | 16                   |
| Transport Block Size       | bits | 336                 | 148                  |
| Transport Block Set Size   | bits | 336*B (B=0,1,2,3,4) | 148*B (B=0,1)        |
| Transport Format Set       | bits |                     |                      |
| TF0                        |      | 0x336               | 0x148                |
| TF1                        |      | 1x336               | 1x148                |
| TF2                        |      | 2x336               | N/A                  |
| TF3                        |      | 3x336               | N/A                  |
| TF4                        |      | 4x336               | N/A                  |



Table A.6A.11: UL TFCI

| TFCI    | (64 kbps RAB, DCCH) |
|---------|---------------------|
| UL_TFC0 | (TF0, TF0)          |
| UL_TFC1 | (TF0, TF1)          |
| UL_TFC2 | (TF1, TF0)          |
| UL_TFC3 | (TF1, TF1)          |
| UL_TFC4 | (TF2, TF0)          |
| UL_TFC5 | (TF2, TF1)          |
| UL_TFC6 | (TF3, TF0)          |
| UL_TFC7 | (TF3, TF1)          |
| UL_TFC8 | (TF4, TF0)          |
| UL_TFC9 | (TF4, TF1)          |

Table A.6A.12: Physical channel parameters

| Parameter        | Unit | Value  |
|------------------|------|--|
| UL timeslot      |      | 7  |
| Burst type       |      | 1  |
| Resource units   |      | {{(spreading factor 16 x 1 code) + (spreading factor 4 x 1 code)}<br>x 1 time slot |
| TFCI             | Bits | 16   |
| TPC              | Bits | 2  |
| Frame allocation |      | Continuous   |

The test shall be performed in AWGN channel propagation conditions. The P-CCPCH in the DL shall be transmitted in timeslot 0.

The amount of available user data shall be sufficient to allow uplink transmission at the highest bit rate (UL\_TFC8 or UL\_TFC9) during the entire test and it shall be ensured that the UE is using UL\_TFC8 or UL\_TFC9 at the end of T1.

The test shall be performed in the following way:

#### Before time period T1:

The allowed TFCS according to table A.6A.5 shall be signalled to the UE.

#### During time period T1:

With the received P-CCPCH power level set to -60 dBm, the value of the DPCH constant value shall be adjusted such that the mean UE output power is -10 dBm. These conditions are held steady during period T1.

#### During time period T2:

At the beginning of time period T2, the received P-CCPCH power level shall be decreased by 20 dB.

### A.6A.2.1.2 Test Requirements

#### A.6A.2.1.2.1 Interactive or Background, PS, UL: 64 kbps

The UE shall have stopped using UL\_TFC8 and UL\_TFC9 within 170 ms from beginning of time period T2.

The rate of correct TFC selections observed during repeated tests shall be at least 90%.

NOTE: The delay from the beginning of T2 can be expressed as:

$$T_{\text{detect\_block}} + T_{\text{notify}} + T_{\text{modify}} + T_{\text{L1\_proc}} + T_{\text{align\_TTI}} + T_{\text{offset}}$$

where:

$T_{\text{detect\_block}}$  Equal to 30 ms, the time needed to detect that UL\_TFC8 and UL\_TFC9 can no longer be supported. This defines the maximum time to detect that the *Elimination* criterion is fulfilled for UL\_TFC8 and UL\_TFC9.

|                         |  |
|-------------------------|--|
| $T_{\text{notify}}$     | Equal to 15 ms, the time allowed for MAC to indicate to higher layers that UL_TFC8 and UL_TFC9 can no longer be supported. |
| $T_{\text{modify}}$     | Equal to $\text{MAX}(T_{\text{adapt\_max}}, T_{\text{TTI}}) = \text{MAX}(0, 40) = 40\text{ms}$                             |
| $T_{\text{adapt\_max}}$ | Equals to 0 ms for the case without codec.   |
| $T_{\text{TTI}}$        | See section 6A.2. Equals 40 ms in the test case.   |
| $T_{\text{LL\_proc}}$   | Equals 35 ms.  |
| $T_{\text{align\_TTI}}$ | Align with the longest uplink TTI where the new TFC can be selected. The worst case equals 40ms in this test case.         |
| $T_{\text{offset}}$     | Equal to 10 ms, the maximum time between reception of the DL beacon timeslot and the UL DPCH timeslot.                     |

## A.6A.2.2 1.28 Mcps TDD option

### A.6A.2.2.1 Test Purpose and Environment

The purpose is to verify the UE blocks (stops using) a currently used TFC when the UE output power is not sufficient to support that TFC. This test will verify the general requirement on TFC selection in section 6.4.

#### A.6A.2.2.1.1 Interactive or Background, PS, UL: 64 kbps

The test will verify the general requirement on TFC selection in section 6.4 for a RAB intended for packet data services, i.e. Interactive or Background, PS, UL: 64kbps as defined in TS 34.108.

The test parameters are given in Table A.6A.13 , A.6A.14 and Table A.6A.15 below. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively.

Details on the UL reference RAB in table A.6A.13 and A.6A.14 can be found in TS 34.108 section "Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH".

**Table A.6A.13: UL reference RAB, Interactive or Background**

|     | TFI       | 64 kbps RAB (20ms TTI) | DCCH 3.4kbps (40ms TTI) |
|-----|-----------|------------------------|-------------------------|
| TFS | TF0, bits | 0x336                  | 0x148                   |
|     | TF1, bits | 1x336                  | 1x148                   |
|     | TF2, bits | 2x336                  | N/A                     |
|     | TF3, bits | 3x336                  | N/A                     |
|     | TF4, bits | 4x336                  | N/A                     |

**Table A.6A.14: UL TFCI**

| TFCI    | (64 kbps RAB, DCCH) |
|---------|---------------------|
| UL_TFC0 | (TF0, TF0)          |
| UL_TFC1 | (TF0, TF1)          |
| UL_TFC2 | (TF1, TF0)          |
| UL_TFC3 | (TF1, TF1)          |
| UL_TFC4 | (TF2, TF0)          |
| UL_TFC5 | (TF2, TF1)          |
| UL_TFC6 | (TF3, TF0)          |
| UL_TFC7 | (TF3, TF1)          |
| UL_TFC8 | (TF4, TF0)          |
| UL_TFC9 | (TF4, TF1)          |

Table A.6A.15: General test parameters

| Parameter                   | Unit | Value  | Comment |
|-----------------------------|------|--|---------|
| TFCS size                   |      | 10   |         |
| TFCS                        |      | UL_TFC0, UL_TFC1, UL_TFC2, UL_TFC3,<br>UL_TFC4, UL_TFC5, UL_TFC6, UL_TFC7,<br>UL_TFC8, UL_TFC9 |         |
| Power Control               |      | On   |         |
| TPC step size               | dB   | 1  |         |
| Maximum allowed UL TX power | dBm  | 21   |         |
| T1                          | s    | 30   |         |
| T2                          | s    | 10   |         |

The test shall be performed in AWGN channel propagation conditions.

The radio conditions in the test shall be sufficient, so that decoding of the TPC commands can be made without errors.

The amount of available user data shall be sufficient to allow uplink transmission at the highest bit rate (UL\_TFC8 or UL\_TFC9) during the entire test and it shall be ensured that the UE is using UL\_TFC8 or UL\_TFC9 at the end of T1.

The test shall be performed in the following way:

#### Before time period T1:

The allowed TFCS according to table A.x.z shall be signalled to the UE.

#### During time period T1:

The system simulator shall ensure that the UE output power is commanded to be between 9 to 10 dB below the UE Maximum allowed UL TX power.

#### During time period T2:

The system simulator shall continuously send TPC\_cmd=Up to the UE from the beginning of T2 until the end of T2.

NOTE: This will emulate that UL\_TFC8 to UL\_TFC9 can not be supported because the UE reaches the maximum UL Tx power and still UTRAN is sending power-up commands. The time from the beginning of T2 until the UE blocks (stops using) UL\_TFC8 and UL\_TFC9 shall be measured.

## A.6A.2.2.2 Test Requirements

### A.6A.2.2.2.1 Interactive or Background, PS, UL: 64 kbps

The UE shall have stopped using UL\_TFC8 and UL\_TFC9 within [TBD] ms from beginning of time period T2.

The rate of correct tests observed during repeated tests shall be at least 90%.

NOTE: The delay from the beginning of T2 can be expressed as:  $T_{\text{ramp}} + T_{\text{detect\_block}} + T_{\text{notify}} + T_{\text{modify}} + T_{\text{L1\_proc}} + T_{\text{align\_TTI}}$ , where:

$T_{\text{ramp}}$  Margin added for the increase of UE output power to the UE maximum power. A margin of 7 frames (70ms) is used, i.e. 14 TPC commands.

$T_{\text{detect\_block}}$  The time needed to detect that UL\_TFC8 and UL\_TFC9 can no longer be supported, i.e. defines the maximum time to detect that the *Limited TFC Set* criterion is fulfilled for UL\_TFC8 and UL\_TFC9. This figure is currently TBD as X and Y in the general requirement, see section 6.4.2, are not finalised yet.

$T_{\text{notify}}$  Equal to [15] ms, the time allowed for MAC to indicate to higher layers that UL\_TFC8 and UL\_TFC9 can no longer be supported.

$T_{\text{modify}}$  Equal to  $\text{MAX}(T_{\text{adapt\_max}}, T_{\text{TTI}}) = \text{MAX}(0, 40) = 40\text{ms}$

$T_{\text{adapt\_max}}$  Equals to 0ms for the case without codec.

|                  |  |
|------------------|--|
| $T_{LL\_proc}$   | Equals 15ms.   |
| $T_{align\_TTI}$ | Align with the longest uplink TTI where the new TFC can be selected. The worst case equals 40ms in this test case. |
| $T_{TTI}$        | See section 6.4.2. Equals 40 ms in the test case.  |

This gives a maximum delay of  $(70 + T_{detect\_block} + [15] + 40 + 15 + 40)$  ms from the beginning of T2.

## A.6A.2.3 7.68 Mcps TDD option

### A.6A.2.3.1 Test Purpose and Environment

The purpose is to verify the UE blocks (stops using) a currently used TFC when the UE output power is not sufficient to support that TFC. This test will verify the general requirement on TFC selection in section 6A.2.

#### A.6A.2.3.1.1 Interactive or Background, PS, UL: 64 kbps

The test will verify the general requirement on TFC selection in section 6A.2 for a 64 kbps UL reference RAB intended for packet data services, i.e. Interactive or Background, PS as defined in TS 34.108 and multiplexed to a 3.4 kbps DCCH.

The test parameters are given in Table A.6A.16, A.6A.17, A.6A.18 and Table A.6A.19 below. The test consists of 2 successive time periods, with a time duration of T1 and T2 respectively.

Details on the UL reference RAB in table A.6A.17 is similar to that in TS 34.108 section "Interactive or background / UL:64 DL: 64 kbps / PS RAB + UL:3.4 DL:3.4 kbps SRBs for DCCH" with the exception that the Spreading Factor is 32 here instead of 16.

**Table A.6A.16: General test parameters**

| Parameter                   | Unit | Value  | Comment   |
|-----------------------------|------|--|---|
| TFCS size                   |      | 10   |   |
| TFCS                        |      | UL_TFC0, UL_TFC1,<br>UL_TFC2, UL_TFC3,<br>UL_TFC4, UL_TFC5,<br>UL_TFC6, UL_TFC7,<br>UL_TFC8, UL_TFC9 | Gain factors for TFC0 to TFC9 shall be set to 1.                                  |
| Power Control               |      | On   |   |
| Active cell                 |      | Cell 1   |   |
| Maximum allowed UL TX power | dBm  | 0  | Value of IE "Maximum allowed UL Tx power"   |
| Primary CCPCH Tx power      | dBm  | 18   | Value of IE "Primary CCPCH Tx power"  |
| UL timeslot interference    | dBm  | -80  | Value of IE "UL timeslot interference"<br>This value shall apply to all timeslots |
| $\alpha$                    |      | 1  | IE "Alpha" either not sent or explicitly set to value                             |
| UL target SIR               | dB   | 6  |   |
| DPCH constant offset        | dB   | adjustable   | Value of IE "DPCH constant power"   |
| T1                          | s    | 10   |   |
| T2                          | s    | 10   |   |

**Table A.6A.17: Transport channel parameters for UL reference RAB, Interactive or Background and DCCH**

| Parameter                  | Unit | 64 kbps RAB         | DCCH 3.4kbps         |
|----------------------------|------|---------------------|----------------------|
| Transport Channel Number   |      | 1                   | 2                    |
| Transmission Time Interval | ms   | 20                  | 40                   |
| Type of Error Protection   |      | Turbo coding        | Convolutional coding |
| Coding Rate                |      | 1/3                 |                      |
| Size of CRC                | bits | 16                  |                      |
| Transport Block Size       | bits | 336                 | 148                  |
| Transport Block Set Size   | bits | 336*B (B=0,1,2,3,4) | 148*B (B=0,1)        |
| Transport Format Set       | bits |                     |                      |
| TF0                        |      | 0x336               | 0x148                |
| TF1                        |      | 1x336               | 1x148                |
| TF2                        |      | 2x336               | N/A                  |
| TF3                        |      | 3x336               | N/A                  |
| TF4                        |      | 4x336               | N/A                  |

**Table A.6A.18: UL TFCI**

| TFCI    | (64 kbps RAB, DCCH) |
|---------|---------------------|
| UL_TFC0 | (TF0, TF0)          |
| UL_TFC1 | (TF0, TF1)          |
| UL_TFC2 | (TF1, TF0)          |
| UL_TFC3 | (TF1, TF1)          |
| UL_TFC4 | (TF2, TF0)          |
| UL_TFC5 | (TF2, TF1)          |
| UL_TFC6 | (TF3, TF0)          |
| UL_TFC7 | (TF3, TF1)          |
| UL_TFC8 | (TF4, TF0)          |
| UL_TFC9 | (TF4, TF1)          |

**Table A.6A.19: Physical channel parameters**

| Parameter        | Unit | Value  |
|------------------|------|--|
| UL timeslot      |      | 7  |
| Burst type       |      | 1  |
| Resource units   |      | {{(spreading factor 32 x 1 code) + (spreading factor 8 x 1 code)}<br>x 1 time slot |
| TFCI             | Bits | 16   |
| TPC              | Bits | 2  |
| Frame allocation |      | Continuous   |

The test shall be performed in AWGN channel propagation conditions. The P-CCPCH in the DL shall be transmitted in timeslot 0.

The amount of available user data shall be sufficient to allow uplink transmission at the highest bit rate (UL\_TFC8 or UL\_TFC9) during the entire test and it shall be ensured that the UE is using UL\_TFC8 or UL\_TFC9 at the end of T1.

The test shall be performed in the following way:

**Before time period T1:**

The allowed TFCS according to table A.6A.16 shall be signalled to the UE.

**During time period T1:**

With the received P-CCPCH power level set to -60 dBm, the value of the DPCH constant value shall be adjusted such that the mean UE output power is -10 dBm. These conditions are held steady during period T1.

**During time period T2:**

At the beginning of time period T2, the received P-CCPCH power level shall be decreased by 20 dB.

**A.6A.2.3.2 Test Requirements****A.6A.2.3.2.1 Interactive or Background, PS, UL: 64 kbps**

The UE shall have stopped using UL\_TFC8 and UL\_TFC9 within 170 ms from beginning of time period T2.

The rate of correct TFC selections observed during repeated tests shall be at least 90%.

NOTE: The delay from the beginning of T2 can be expressed as:

$$T_{\text{detect\_block}} + T_{\text{notify}} + T_{\text{modify}} + T_{\text{L1\_proc}} + T_{\text{align\_TTI}} + T_{\text{offset}}$$

where:

|                            |  |
|----------------------------|--|
| $T_{\text{detect\_block}}$ | Equal to 30 ms, the time needed to detect that UL_TFC8 and UL_TFC9 can no longer be supported. This defines the maximum time to detect that the <i>Elimination</i> criterion is fulfilled for UL_TFC8 and UL_TFC9. |
| $T_{\text{notify}}$        | Equal to 15 ms, the time allowed for MAC to indicate to higher layers that UL_TFC8 and UL_TFC9 can no longer be supported.   |
| $T_{\text{modify}}$        | Equal to $\text{MAX}(T_{\text{adapt\_max}}, T_{\text{TTI}}) = \text{MAX}(0, 40) = 40\text{ms}$   |
| $T_{\text{adapt\_max}}$    | Equals to 0 ms for the case without codec.   |
| $T_{\text{TTI}}$           | See section 6A.2. Equals 40 ms in the test case.   |
| $T_{\text{L1\_proc}}$      | Equals 35 ms.  |
| $T_{\text{align\_TTI}}$    | Align with the longest uplink TTI where the new TFC can be selected. The worst case equals 40ms in this test case.   |
| $T_{\text{offset}}$        | Equal to 10 ms, the maximum time between reception of the DL beacon timeslot and the UL DPCCH timeslot.  |

**A.6A.3 E-TFC restriction in UE****A.6A.3.1 3.84 Mcps TDD option**

Void.

**A.6A.3.2 1.28 Mcps TDD option****A.6A.3.2.1 Test Purpose and Environment****A.6A.3.2.1.1 5ms TTI E-DCH E-TFC restriction testcase**

The purpose is to verify the UE stops using a currently used E-TFC when its power is not sufficient to support that E-TFC, and resumes using that E-TFC when its power is sufficient to support it.

This test is to verify the requirement for the cell re-selection delay in the single carrier case.

The test parameters are given in Table A.6A.20 and A.6A.21 below. The test consists of 3 time periods, with a time duration of T1, T2 and T3 respectively.

An E-DCH radio bearer shall be configured, so that UE is transmitting E-PUCH in the initial condition before the time T1, defined as T0.

Table A.6A.20: General test parameters

| Parameter  | Unit | Value  | Comment  |
|--|------|--|--|
| UL DPCH configuration                              |      | 12.2kbps reference measurement channel                                       |  |
| E-DCH Transport Block Size Table                   |      | 5ms TTI E-DCH Transport Block Size Table 0 according to TS 25.321 annex BC.1 |  |
| UL Power Control                                   |      | On   |  |
| Active cell  |      | Cell 1   |  |
| Maximum allowed UL TX power                        | dBm  | 24   | For a class 4 UE maximum allowed TX power can still be signalled as 24dBm however the UE only has capability to transmit 21dBm |
| Propagation condition                              |      | AWGN   |  |
| $\Delta_{\text{harq}}$                             | dB   | 0  |  |
| Periodicity for Scheduling Info                    |      | Every TTI  |  |
| E-DCH MAC-D flow maximum number of retransmissions |      | 0  |  |
| T1   | S    | 30   |  |
| T2   | S    | 10   |  |
| T3   | S    | 10   |  |

Table A.6A.21: Additional cell specific parameters

| Parameter  | Unit         | Cell 1    |    |    |    |       |    |    |    |
|--|--------------|-----------|----|----|----|-------|----|----|----|
|  |              | 0         |    |    |    | DwPTS |    |    |    |
|  |              | T0        | T1 | T2 | T3 | T0    | T1 | T2 | T3 |
| UTRA RF Channel Number   |              | Channel 1 |    |    |    |       |    |    |    |
| PCCPCH_Ec/Ior  |              | -3        |    |    |    |       |    |    |    |
| DwPCH_Ec/Ior   | dB           |           |    |    |    | -3    |    |    |    |
| HS-SCCH_Ec/Ior   | dB           | -7        |    |    |    |       |    |    |    |
| HS-SICH_Ec/Ior   | dB           | -7        |    |    |    |       |    |    |    |
| HS-PDSCH_Ec/Ior  | dB           | -3        |    |    |    |       |    |    |    |
| E-AGCH_Ec/Ior  | dB           | -15       |    |    |    |       |    |    |    |
| E-HICH_Ec/Ior  | dB           | -15       |    |    |    |       |    |    |    |
| OCNS_Ec/Ior  | dB           | Note 1    |    |    |    |       |    |    |    |
| $\hat{I}_{or}$   | dBm/1.28 MHz | -70       |    |    |    |       |    |    |    |
| Note 1: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{or}$ . |              |           |    |    |    |       |    |    |    |

The amount of available user data shall be sufficient to allow E-DCH uplink transmission at the highest possible bit rate with E-DCH TB index 58.

The test shall be performed in the following way:

#### Initial conditions:

Call is established with HSDPA and E-DCH radio bearers. An absolute grant with the value 31 is sent on the E-AGCH to give the UE sufficient grants to make use of the maximum possible data rate.

#### During time period T1:

From the start of T1 the system simulator shall send sufficient consecutive TPC\_cmd=Up to the UE until the value of TFCI changes.

#### During time period T2:

The system simulator shall continuously send TPC\_cmd=UP to the UE from the beginning of T2 until the end of T2. Within 150ms from the start of T2, the UE uplink E-UCCH shall indicate use of E-TFCI with index 0.

**During time period T3:**

The system simulator shall continuously send TPC\_cmd=Down for 15 times to the UE from the beginning of T3 until the end of T3. The UE uplink E-UCCH shall indicate use of E-TFCI with index 58.

Time periods T1, T2 and T3 shall be repeated until the necessary statistical confidence is achieved.

**A.6A.3.2.2 Test Requirements****A.6A.3.2.2.1 5ms TTI E-DCH E-TFC selection testcase**

During time period T1, uplink power control shall be adjusted so that the UE is able to make use of the maximum of its capabilities.

- 1) The amount of available user data shall be sufficient to allow E-DCH uplink transmission at the highest possible bit rate with E-DCH TB index 58.
- 2) UE shall decrease E-TFCI to 0 within  $T_s$ .

$$T_s = \text{Power level change time} + \text{UE processing time} = 15 \cdot 5 + 15 \cdot 5 = 150 \text{ms}$$

For the test to pass, the total number of successful tests shall be more than 90% with a confidence level of 95% of the cases.

**A.6A.3.3 7.68 Mcps TDD option**

Void.

**A.6A.4 Random Access****A.6A.4.1 3.84 Mcps TDD option**

Void.

**A.6A.4.2 1.28 Mcps TDD option****A.6A.4.2.1 Test Purpose and Environment**

The purpose of these tests is to verify that the behaviour of the random access procedure is according to the requirements and that the PRACH power settings and timing are within specified limits. This test will verify the requirements in section 6A.4.2.2.

**Table A.6A.21: RF Parameters for Random Access test**

| Parameter              | Unit        | Cell 1    |
|------------------------|-------------|-----------|
| UTRA RF Channel Number |             | Channel 1 |
| PCCPCH_Ec/Ior          | dB          | -3        |
| OCNS_Ec/Ior            | dB          | -3        |
| $\hat{I}_{or}/I_{oc}$  | dB          | 10        |
| $I_{oc}$               | dBm/1.28MHz | -70       |
| PCCPCH_RSCP            | dBm/1.28MHz | -63       |
| Propagation Condition  |             | AWGN      |

The test parameters "System Information Block (SIB) type 5 (ASC #0)" defined in clause 6.1 of TS 34.108, shall be used in all random access tests. Crucial parameters for the test requirements are repeated in Table A.6A.22 and these overrule the parameters defined in SIB type 5.



**Table A.6A.22: UE/SS parameters for Random Access test**

| Parameter  | Unit | Value   |
|--|------|---------|
| Access Service Class (ASC#0)<br>- Persistence value                | 0..1 | 1       |
| PCCPCH Power -Broadcast  | dBm  | 18      |
| Maximum number of UpPCH Transmissions                              |      | 8       |
| Power step when no FPACH is received ( $P_{wramp}$ )               | dB   | 1~3     |
| Maximum allowed UL TX power  | dBm  | 21      |
| Desired UpPCH RX power at the cell's receiver ( $PRX_{UpPCHdes}$ ) | dBm  | -100dBm |

Notes:  $PRX_{PRACHdes}$ : Desired PRACH RX power at the cell's receiver in dBm signalled to the UE by the network in the FPACH response to the UE's successful UpPCH transmission.

## A.6A.4.2.2 Test Requirements

### A.6A.4.2.2.1 Correct behaviour when receiving an ACK

The UE shall stop transmitting UpPCH upon a successful FPACH has been received and then transmit a message of PRACH. A FPACH shall be transmitted after 8 UpPCH have been received by the UTRAN.

The absolute power applied to the first UpPCH shall have an accuracy as specified in section 6.4.1.2.1 of TS 25.102. The relative power applied to additional preambles shall have an accuracy as specified in section 6A.4.2.2.

The UE shall transmit 6 UpPCH and 1 message of PRACH if the max number of UpPCH transmissions is 8.

### A.6A.4.2.2.2 Correct behaviour when reaching maximum allowed UL transmit power

The UE shall not exceed the maximum allowed UL TX power configured by the UTRAN. No FPACH shall be sent by UTRAN during this test as specified in section 6.4.1.2.1 of TS 25.102.

**Table A.6A.24: Specific UE parameter for correct behaviour when reaching maximum transmit power**

| Parameter  | Unit | Value |
|--|------|-------|
| Maximum allowed UL TX power                          | dBm  | 0     |
| Power step when no FPACH is received ( $P_{wramp}$ ) | dB   | 3     |

## A.6A.4.3 7.68 Mcps TDD option

Void.

## A.7 Timing characteristics

### A.7.1 Timing Advance

#### A.7.1.1 3.84 Mcps TDD option

##### A.7.1.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirements on timing advance adjustment accuracy and timing advance adjustment delay in section 7.1.1.

The test parameters are given in table A.7.1 and table A.7.1A. The test consists of two successive time periods, with a time duration of T1 and T2 respectively. At the start of time duration T1, the UE shall transmit with the Uplink Timing Advance value set to zero, i.e. Timing Advance disabled.

During time period T1, UTRAN shall send an Uplink Physical Channel control message with activation time at the beginning of T2. The Uplink Physical Channel Control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T2 is greater than or equal to the RRC procedure delay as defined in [16].

**Table A.7.1.1: General test parameters for Timing Advance test**

| Parameter                    |                      | Unit | Value                                      | Comment   |
|------------------------------|----------------------|------|--|---|
| DCH parameters               |                      |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2   |
| Power Control                |                      |      | On   |   |
| Target quality value on DTCH |                      | BLER | 0.01                                       |   |
| Initial conditions           | Timing Advance value |      | 0  | IE "Uplink timing advance" value zero or IE "Uplink timing advance control" value disabled. |
| Final condition              | Timing Advance value |      | 5  | IE "Uplink timing advance" value set to 5.  |
| Monitored cell list size     |                      |      | 6 TDD neighbors on Channel 1               |   |
| T <sub>SI</sub>              |                      | s    | 1.28                                       | The value shall be used for all cells in the test.  |
| T1                           |                      | s    | 5  |   |
| T2                           |                      | s    | 5  |   |

**Table A.7.1.2: Cell specific test parameters for Timing Advance test**

| Parameter   | Unit             | Cell 1    |    |        |    |
|---|------------------|-----------|----|--------|----|
|   |                  | 0         |    | 2      |    |
| DL timeslot number  |                  | T1        | T2 | T1     | T2 |
| UTRA RF Channel Number  |                  | Channel 1 |    |        |    |
| PCCPCH_Ec/I <sub>or</sub>   | dB               | -3        |    | n.a.   |    |
| SCH_Ec/I <sub>or</sub>  | dB               | -9        |    | n.a.   |    |
| SCH_t <sub>offset</sub>   | dB               | 0         |    | n.a.   |    |
| DPCH_Ec/I <sub>or</sub>   | dB               | n.a.      |    | Note 1 |    |
| OCNS_Ec/I <sub>or</sub>   | dB               | -3,12     |    | Note 2 |    |
| $\hat{I}_{or}/I_{oc}$   | dB               | 3         |    |        |    |
| I <sub>oc</sub>   | dBm/<br>3,84 MHz | -70       |    |        |    |
| Propagation Condition   |                  | AWGN      |    |        |    |
| Note 1: The DPCH level is controlled by the power control loop  |                  |           |    |        |    |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> . |                  |           |    |        |    |

### A.7.1.1.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the UL DPCH transmission timing at the designated activation time, i.e the beginning of time period T2. The Timing Advance adjustment accuracy shall be within the limits specified in section 7.1.1.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

### A.7.1.2 1.28 Mcps TDD option

#### A.7.1.2.1 Test Purpose and Environment

Timing advance is applied to adjust the UE transmit time in order to ensure that all the signal received by the BS is synchronised.

The purpose of this test is to verify the ability of the UE to adjust its timing advance according to the SS commands within the specified accuracy defined in section 7.1.2.

The test parameters are given in table A.7.1.3 and table A.7.1.4. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

**Table A.7.1.3: General test parameters for Timing Advance test**

| Parameter                    | Unit | Value                                      | Comment                                 |
|------------------------------|------|--|---|
| DCH parameters               |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2 |
| Power Control                |      | On   |   |
| Target quality value on DTCH | BLER | 0.01                                       |   |
| Monitored cell list size     |      | 6 TDD neighbors on Channel 1               |   |

**Table A.7.1.4: Cell specific test parameters for Timing Advance test**

| Parameter  | Unit             | Cell 1    |       |
|--|------------------|-----------|-------|
| Timeslot Number  |                  | 0         | DwPTS |
| UTRA RF Channel Number (NOTE)  |                  | Channel 1 |       |
| PCCPCH_Ec/Ior  | dB               | -3        |       |
| DwPCH_Ec/Ior   | dB               |           | 0     |
| OCNS_Ec/Ior  | dB               | -3        |       |
| $\hat{I}_{or}/I_{oc}$  | dB               | 6         | 6     |
| $I_{oc}$   | dBm/<br>1.28 MHz | -80       |       |
| PCCPCH RSCP  | dBm              | -77       |       |
| Propagation Condition  |                  | AWGN      |       |
| NOTE: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency. |                  |           |       |

#### A.7.1.2.2 Test procedure

- 1) Configure the UE transmitter to enable synchronisation steps of size 1/8 chip
- 2) send synchronisation commands to the UE under test
- 3) measure the received time of the uplink signal.
- 4) check that the measured UE synchronisation control range is within the limits defined in section 7.1.2.1.1.1 Table 7.1

#### A.7.1.2.3 Test Requirements

The rate of correct uplink synchronisation control range observed during repeated tests shall be at least 90%.

### A.7.1.3 7.68 Mcps TDD option

#### A.7.1.3.1 Test Purpose and Environment

The purpose of this test is to verify the requirements on timing advance adjustment accuracy and timing advance adjustment delay in section 7.1.3.

The test parameters are given in table A.7.5 and table A.7.6. The test consists of two successive time periods, with a time duration of T1 and T2 respectively. At the start of time duration T1, the UE shall transmit with the Uplink Timing Advance value set to zero, i.e. Timing Advance disabled.

During time period T1, UTRAN shall send an Uplink Physical Channel control message with activation time at the beginning of T2. The Uplink Physical Channel Control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T2 is greater than or equal to the RRC procedure delay as defined in [16].

**Table A.7.1.5: General test parameters for Timing Advance test**

| Parameter                    |                      | Unit | Value                                      | Comment   |
|------------------------------|----------------------|------|--|---|
| DCH parameters               |                      |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2   |
| Power Control                |                      |      | On   |   |
| Target quality value on DTCH |                      | BLER | 0.01                                       |   |
| Initial conditions           | Timing Advance value |      | 0  | IE "Uplink timing advance" value zero or IE "Uplink timing advance control" value disabled. |
| Final condition              | Timing Advance value |      | 5  | IE "Uplink timing advance" value set to 5.  |
| Monitored cell list size     |                      |      | 6 TDD neighbors on Channel 1               |   |
|                              | $T_{SI}$             | s    | 1.28                                       | The value shall be used for all cells in the test.  |
|                              | T1                   | s    | 5  |   |
|                              | T2                   | s    | 5  |   |

**Table A.7.1.6: Cell specific test parameters for Timing Advance test**

| Parameter   | Unit             | Cell 1    |    |        |    |
|---|------------------|-----------|----|--------|----|
|   |                  | 0         |    | 2      |    |
| DL timeslot number  |                  | T1        | T2 | T1     | T2 |
| UTRA RF Channel Number  |                  | Channel 1 |    |        |    |
| PCCPCH_Ec/lor   | dB               | -3        |    | n.a.   |    |
| SCH_Ec/lor  | dB               | -9        |    | n.a.   |    |
| SCH_t_offset  | dB               | 0         |    | n.a.   |    |
| DPCH_Ec/lor   | dB               | n.a.      |    | Note 1 |    |
| OCNS_Ec/lor   | dB               | -3,12     |    | Note 2 |    |
| $\hat{I}_{or}/I_{oc}$   | dB               | 3         |    |        |    |
| $I_{oc}$  | dBm/<br>7,68 MHz | -70       |    |        |    |
| Propagation Condition   |                  | AWGN      |    |        |    |
| Note 1: The DPCH level is controlled by the power control loop  |                  |           |    |        |    |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor . |                  |           |    |        |    |

#### A.7.1.3.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the UL DPCH transmission timing at the designated activation time, i.e. the beginning of time period T2. The Timing Advance adjustment accuracy shall be within the limits specified in section 7.1.3.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

## A.7.2 Cell synchronization accuracy

NOTE: This section is included for consistency with numbering with section 7; currently no test covering requirements in section 7.2 exists.

## A.7.3 UE Transmit Timing for 3.84 Mcps TDD option

NOTE: This section is included for consistency with numbering with section 7; currently no test covering requirements in section 7.3 exists.

## A.7.4 UE Uplink Synchronization

### A.7.4.1 3.84 Mcps TDD option

Void.

### A.7.4.2 1.28 Mcps TDD option

#### A.7.4.2.1 Uplink synchronization control for PRACH

##### A.7.4.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the ability of the UE to achieve its uplink synchronization control for PRACH within the specified accuracy defined in section 7.5.2.1.

**Table A.7.4.1: RF Parameters for Uplink synchronization control test for PRACH**

| Parameter              | Unit        | Cell 1    |
|------------------------|-------------|-----------|
| UTRA RF Channel Number |             | Channel 1 |
| PCCPCH_Ec/lor          | dB          | -3        |
| OCNS_Ec/lor            | dB          | -3        |
| $\hat{I}_{or}/I_{oc}$  | dB          | 10        |
| $I_{oc}$               | dBm/1.28MHz | -70       |
| PCCPCH_RSCP            | dBm/1.28MHz | -63       |
| Propagation Condition  |             | AWGN      |

The test parameters "System Information Block (SIB) type 5 (ASC #0)" defined in clause 6.1 of TS 34.108 , shall be used in all random access tests. Crucial parameters for the test requirements are repeated in Table A.7.4.2 and these overrule the parameters defined in SIB type 5.

**Table A.7.4.2: UE/SS parameters for Uplink synchronization control test for PRACH**

| Parameter  | Unit | Value |
|--|------|-------|
| Access Service Class (ASC#0)<br>- Persistence value                | 0..1 | 1     |
| PCCPCH Power -Broadcast  | dBm  | 18    |
| Maximum number of UpPCH Transmissions                              |      | 8     |
| Power step when no FPACH is received ( $P_{wramp}$ )               | dB   | 1     |
| Maximum allowed UL TX power  | dBm  | 21    |
| Desired UpPCH RX power at the cell's receiver ( $PRX_{UpPCHdes}$ ) | dBm  | -100  |

### A.7.4.2.1.2 Test Requirements

The UE shall not exceed the accuracy requirements as Table A.7.4.3.

**Table A.7.4.3: Uplink synchronisation control accuracy requirements**

| Parameter                                | Unit | Accuracy [chip] | Conditions            |
|--|------|-----------------|-----------------------|
|  |      |                 | $I_0$ [dBm/ 1.28 MHz] |
| Uplink synchronization control for PRACH | chip | +/- 0.5         | -94...-50             |

The rate of correct uplink synchronisation control observed during repeated tests shall be at least 90% with a confidence level of 95%.

### A.7.4.2.2 Uplink synchronization control during handover

#### A.7.4.2.2.1 Scenario 1: Handover to intra-frequency cell

This test case is applicable for UE handovers in single frequency network and UE handovers from primary frequency to primary frequency in multi-frequency network.

##### A.7.4.2.2.1.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the uplink synchronization control during intra-frequency handover in CELL\_DCH state as reported in section 7.5.2.2.

The test parameters are given in Tables A.7.4.4 and A.7.4.5 below. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" at the beginning of T3 with a new active cell, cell 2, after the UE has reported event 1G. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

UTRAN measures the initial uplink synchronization timing position of the first uplink DPCH on the target cell and compares it with the desired position. If the difference does not exceed the accuracy requirements in section 7.5.2.2, it is recorded as success once.

Table A.7.4.4: General test parameters for intra-frequency handover

| Parameter                    |                   | Unit | Value   | Comment   |
|------------------------------|-------------------|------|---|---|
| DPCH parameters              |                   |      | DL and UL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2.2 and A.2.1.2   |
| Power Control                |                   |      | On  |   |
| Target quality value on DPCH |                   | BLER | 0.01  |   |
| Initial conditions           | Active cell       |      | Cell 1  | In the case of multi-frequency network, the UE has a RRC connection on the primary frequency in cell 1. |
|                              | Neighbouring cell |      | Cell 2  |   |
| Final condition              | Active cell       |      | Cell 2  | In the case of multifrequency network, UE will handover to the primary frequency in cell 2.             |
| O                            |                   | dB   | 0   | cell-individual-offset<br>The value shall be used for all cells in the test.                            |
| Hysteresis                   |                   | dB   | 0   |   |
| Time to Trigger              |                   | ms   | 0   |   |
| Filter coefficient           |                   |      | 0   |   |
| Monitored cell list size     |                   |      | 6 TDD neighbours on Channel 1                     |   |
| T1                           |                   | s    | 5   |   |
| T2                           |                   | s    | 5   |   |
| T3                           |                   | s    | 5   |   |

Table A.7.4.5: Cell specific test parameters for intra-frequency handover

| Parameter                     | Unit  | Cell 1    |     |    |       |    |    |       |       |    |
|-------------------------------|---|-----------|-----|----|-------|----|----|-------|-------|----|
|                               |   | 0         |     |    | DwPTS |    |    | 5     |       |    |
| Timeslot Number               |   | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note3) |   | Channel 1 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/I <sub>or</sub>     | dB  | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/I <sub>or</sub>      |   |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/I <sub>or</sub>       | dB  | n.a.      |     |    | n.a.  |    |    | Note1 | n.a.  |    |
| OCNS_Ec/I <sub>or</sub>       | dB  | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$         | dB  | 3         |     |    | 3     |    |    | 3     |       |    |
| $I_{oc}$                      | dBm/<br>1.28<br>MHz   | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                   | dBm   | -70       |     |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition         |   | AWGN      |     |    |       |    |    |       |       |    |
| Parameter                     | Unit  | Cell 2    |     |    |       |    |    |       |       |    |
| Timeslot Number               |   | 0         |     |    | DwPTS |    |    | 5     |       |    |
| UTRA RF Channel Number(Note3) |   | Channel 1 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/I <sub>or</sub>     | dB  | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/I <sub>or</sub>      |   |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/I <sub>or</sub>       | dB  | n.a.      |     |    | n.a.  |    |    | n.a.  | Note1 |    |
| OCNS_Ec/I <sub>or</sub>       | dB  | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$         | dB  | -Inf.     | 6   |    | -Inf. | 6  |    | -Inf. | 6     |    |
| $I_{oc}$                      | dBm/<br>1.28<br>MHz   | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP                   | dBm   | -Inf.     | -67 |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition         |   | AWGN      |     |    |       |    |    |       |       |    |
| Note 1:                       | The DPCH level is controlled by the power control loop  |           |     |    |       |    |    |       |       |    |
| Note 2:                       | The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> . |           |     |    |       |    |    |       |       |    |
| Note 3:                       | In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.         |           |     |    |       |    |    |       |       |    |

## A.7.4.2.2.1.2 Test Requirements

The UE shall not exceed the accuracy requirements as Table A.7.4.6.

Table A.7.4.6: Uplink synchronisation control accuracy requirements

| Parameter                                      | Unit | Accuracy [chip] | Conditions                     |
|--|------|-----------------|--------------------------------|
|  |      |                 | I <sub>o</sub> [dBm/ 1.28 MHz] |
| Uplink synchronization control during handover | chip | +/- 0.5         | -94...-50                      |

The rate of correct handovers observed during repeated tests shall be at least 90% with a confidence level of 95%.

## A.7.4.2.2.2 Scenario 2: Handover to inter-frequency cell

This test case is applicable for UE handovers in single frequency network and UE handovers from primary frequency to secondary frequency in multi-frequency network.

## A.7.4.2.2.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirement for the uplink synchronization control during intra-frequency handover in CELL\_DCH state as reported in section 7.5.2.2.



The test parameters are given in Tables A.7.4.7 and A.7.4.8 as below. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

UTRAN shall send a Physical Channel reconfiguration with activation time "now" at the beginning of T3 with a new active cell, cell 2, after the UE has reported event 1G. The starting point of T3 is defined as the end of the last TTI containing the physical channel reconfiguration message.

UTRAN measures the initial uplink synchronization timing position of the first uplink DPCH on the target cell and compare it with the desired position. If the difference does not exceed the accuracy requirements in section 7.5.2.2, it is recorded as success once.

**Table A.7.4.7: General test parameters for inter-frequency handover**

| Parameter                    |                | Unit | Value  | Comment  |
|------------------------------|----------------|------|--|--|
| DPCH parameters              |                |      | DL and UL Reference Measurement Channel 12.2 kbps              | As specified in TS 25.102 section A.2.2.2 and A.2.1.2                        |
| Power Control                |                |      | On   |  |
| Target quality value on DPCH |                | BLER | 0.01   |  |
| Initial conditions           | Active cell    |      | Cell 1   | The UE has a RRC connection on the secondary frequency in cell 1.            |
|                              | Neighbour cell |      | Cell 2   |  |
| Final conditions             | Active cell    |      | Cell 2   | The UE will handover to the primary frequency in cell 2.                     |
| Threshold non used frequency |                | dBm  | -75  | Absolute RSCP threshold for event 2C   |
| O                            |                | dB   | 0  | cell-individual-offset<br>The value shall be used for all cells in the test. |
| Hysteresis                   |                | dB   | 0  |  |
| Time to Trigger              |                | ms   | 0  |  |
| Filter coefficient           |                |      | 0  |  |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1<br>6 TDD neighbours on Channel 2 |  |
| T1                           |                | s    | 5  |  |
| T2                           |                | s    | 10   |  |
| T3                           |                | s    | 5  |  |

**Table A.7.4.8: Cell Specific parameters for inter-frequency handover**

| Parameter   | Unit                | Cell 1    |     |    |       |    |    |       |       |    |
|---|---------------------|-----------|-----|----|-------|----|----|-------|-------|----|
|   |                     | 0         |     |    | DwPTS |    |    | 5     |       |    |
| Timeslot Number   |                     | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3)  |                     | Channel 1 |     |    |       |    |    |       |       |    |
| UTRA RF Channel Number(Note 4)  |                     | Channel 2 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/I <sub>or</sub>   | dB                  | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/I <sub>or</sub>  |                     |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/I <sub>or</sub>   | dB                  | n.a.      |     |    | n.a.  |    |    | Note1 | n.a.  |    |
| OCNS_Ec/I <sub>or</sub>   | dB                  | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$   | dB                  | 3         |     |    | 3     |    |    | 3     |       |    |
| $I_{oc}$  | dBm/<br>1.28<br>MHz | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP   | dBm                 | -70       |     |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition   |                     | AWGN      |     |    |       |    |    |       |       |    |
| Parameter   | Unit                | Cell 2    |     |    |       |    |    |       |       |    |
| Timeslot Number   |                     | 0         |     |    | DwPTS |    |    | 5     |       |    |
|   |                     | T1        | T2  | T3 | T1    | T2 | T3 | T1    | T2    | T3 |
| UTRA RF Channel Number(Note 3)  |                     | Channel 1 |     |    |       |    |    |       |       |    |
| UTRA RF Channel Number(Note 4)  |                     | Channel 2 |     |    |       |    |    |       |       |    |
| PCCPCH_Ec/I <sub>or</sub>   | dB                  | -3        |     |    |       |    |    | n.a.  |       |    |
| DwPCH_Ec/I <sub>or</sub>  |                     |           |     |    | 0     |    |    |       |       |    |
| DPCH_Ec/I <sub>or</sub>   | dB                  | n.a.      |     |    | n.a.  |    |    | n.a.  | Note1 |    |
| OCNS_Ec/I <sub>or</sub>   | dB                  | -3        |     |    |       |    |    | Note2 |       |    |
| $\hat{I}_{or}/I_{oc}$   | dB                  | -Inf.     | 4   |    | -Inf. | 4  |    | -Inf. | 4     |    |
| $I_{oc}$  | dBm/<br>1.28<br>MHz | -70       |     |    |       |    |    |       |       |    |
| PCCPCH_RSCP   | dBm                 | -Inf.     | -69 |    | n.a.  |    |    | n.a.  |       |    |
| Propagation Condition   |                     | AWGN      |     |    |       |    |    |       |       |    |
| Note 1: The DPCH level is controlled by the power control loop  |                     |           |     |    |       |    |    |       |       |    |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> . |                     |           |     |    |       |    |    |       |       |    |
| Note3: The UTRA RF Channel Number is the primary frequency"s channel number.  |                     |           |     |    |       |    |    |       |       |    |
| Note4: The UTRA RF Channel Number is the secondary frequency"s channel number.  |                     |           |     |    |       |    |    |       |       |    |

#### A.7.4.2.2.2 Test Requirements

The UE shall not exceed the accuracy requirements as Table A.7.4.9.

**Table A.7.4.9: Uplink synchronisation control accuracy requirements**

| Parameter                                      | Unit | Accuracy [chip] | Conditions                     |
|--|------|-----------------|--------------------------------|
|  |      |                 | I <sub>o</sub> [dBm/ 1.28 MHz] |
| Uplink synchronization control during handover | chip | +/- 0.5         | -94...-50                      |

The rate of correct handovers observed during repeated tests shall be at least 90% with a confidence level of 95%.

#### A.7.4.3 7.68 Mcps TDD option

Void.

## A.8 UE Measurements Procedures

### A.8.1 TDD intra frequency measurements

#### A.8.1.1 Event 1G triggered reporting in AWGN propagation conditions

##### A.8.1.1.1 Test Purpose and Environment

###### A.8.1.1.1.1 3.84 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1.2 and section 9.1.

The test parameters are given in Table A.8.1.1 and A.8.1.1A below. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. Three cells shall be present in the test, cell 1 being the serving cell and cell 2 and cell 3 being neighbour cells on the used frequency. All cells shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP shall be reported together with Event 1G. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The DL DPCH shall be transmitted in timeslot 2 and the UL DPCH shall be transmitted in timeslot 10. The TTI of the uplink DCCH shall be 20ms.

**Table A.8.1.1: General test parameters for Event 1G triggered reporting in AWGN propagation condition**

| Parameter                    | Unit           | Value                                      | Comment   |
|------------------------------|----------------|--|---|
| DCH parameters               |                | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2                                     |
| Power Control                |                | On   |   |
| Target quality value on DTCH | BLER           | 0.01                                       |   |
| Initial conditions           | Active cell    | Cell 1                                     |   |
|                              | Neighbour cell | Cell 2, Cell 3                             |   |
| Final condition              | Active cell    | Cell 1                                     |   |
| O                            | dB             | 0  | Cell individual offset. This value shall be used for all cells in the test. |
| Hysteresis                   | dB             | 0  |   |
| Time to Trigger              | ms             | 0  |   |
| Threshold used frequency     | dBm            | -70  | Applicable for Event 1G   |
| Filter coefficient           |                | 0  |   |
| Monitored cell list size     |                | 12 TDD neighbours on Channel 1             |   |
| T1                           | s              | 6  |   |
| T2                           | s              | 6  |   |
| T3                           | s              | 6  |   |

**Table A.8.1.1A: Cell specific parameters for Event 1G triggered correct reporting in AWGN propagation condition**

| Parameter               | Unit              | Cell 1    |     |    | Cell 2    |     |      | Cell 3    |    |     |
|-------------------------|-------------------|-----------|-----|----|-----------|-----|------|-----------|----|-----|
|                         |                   | T1        | T2  | T3 | T1        | T2  | T3   | T1        | T2 | T3  |
| DL timeslot number      |                   | 0         |     |    | 0         |     |      | 0         |    |     |
| UTRA RF Channel Number  |                   | Channel 1 |     |    | Channel 1 |     |      | Channel 1 |    |     |
| PCCPCH_Ec/lor           | dB                | -3        |     |    | -3        |     |      | -3        |    |     |
| SCH_Ec/lor              | dB                | -9        |     |    | -9        |     |      | -9        |    |     |
| SCH_t <sub>offset</sub> |                   | 0         |     |    | 5         |     |      | 10        |    |     |
| OCNS_Ec/lor             | dB                | -3,12     |     |    | -3,12     |     |      | -3,12     |    |     |
| $\hat{I}_{or}/I_{oc}$   | dB                | 7         | 5   |    | 5         | 7   | -Inf | -Inf      |    | 7   |
| PCCPCH RSCP             | dBm               | -66       | -68 |    | -68       | -66 | -Inf | -Inf      |    | -66 |
| $I_{oc}$                | dBm /<br>3,84 MHz | -70       |     |    |           |     |      |           |    |     |
| Propagation Condition   |                   | AWGN      |     |    |           |     |      |           |    |     |

**A.8.1.1.1.2 1.28 Mcps TDD option**

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1A.2 and section 9.1.

The test parameters are given in Table A.8.1.1B and A.8.1.1C below. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. Three cells shall be present in the test, cell 1 being the serving cell and cell 2 and cell 3 being neighbour cells on the used frequency. All cells shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP shall be reported together with Event 1G reporting. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16]. The cell specific test parameters are given in Table A.8.1.1C below.

The TTI of the uplink DCCH shall be 40ms.

**Table A.8.1.1B: General test parameters for Event 1G triggered reporting in AWGN propagation condition**

| Parameter                    | Unit | Value   | Comment  |
|------------------------------|------|---|--|
| DPCH parameters active cell  |      | DL Reference Measurement Channel<br>12.2 kbps | As specified in TS 25.102 section A. The DPCH is located in an other timeslot than 0 |
| Power Control                |      | On  |  |
| Target quality value on DTCH | BLER | 0.01  |  |
| Active cell                  |      | Cell 1  |  |
| Neighbour cell               |      | Cell 2, Cell 3                                |  |
| O                            | dB   | 0   | Cell individual offset. This value shall be used for all cells in the test.          |
| Hysteresis                   | dB   | 0   |  |
| Time to Trigger              | ms   | 0   |  |
| Filter coefficient           |      | 0   |  |
| Monitored cell list size     |      | 12 TDD neighbours on Channel 1                |  |
| T1                           | s    | 6   |  |
| T2                           | s    | 6   |  |
| T3                           | s    | 6   |  |

**Table A.8.1.1C: Cell specific parameters for Event 1G triggered correct reporting in AWGN propagation condition**

| Parameter  | Unit                | Cell 1    |     |    |       |    |    | Cell 2    |     |      |       |    |      | Cell 3    |     |    |       |    |    |
|--|---------------------|-----------|-----|----|-------|----|----|-----------|-----|------|-------|----|------|-----------|-----|----|-------|----|----|
|  |                     | 0         |     |    | DwPTS |    |    | 0         |     |      | DwPTS |    |      | 0         |     |    | DwPTS |    |    |
| DL timeslot number   |                     | T1        | T2  | T3 | T1    | T2 | T3 | T1        | T2  | T3   | T1    | T2 | T3   | T1        | T2  | T3 | T1    | T2 | T3 |
| UTRA RF Channel Number (NOTE 2)  |                     | Channel 1 |     |    |       |    |    | Channel 1 |     |      |       |    |      | Channel 1 |     |    |       |    |    |
| PCCPCH_Ec/lor  | dB                  | -3        |     |    |       |    |    | -3        |     |      |       |    |      | -3        |     |    |       |    |    |
| DwPCH_Ec/lor   | dB                  |           |     |    | 0     |    |    |           |     |      | 0     |    |      |           |     |    | 0     |    |    |
| OCNS_Ec/lor  | dB                  | -3        |     |    |       |    |    | -3        |     |      |       |    |      | -3        |     |    |       |    |    |
| $\hat{I}_{or}/I_{oc}$  | dB                  | 7         | 4   |    | 7     | 4  |    | 4         | 7   | -Inf | 4     | 7  | -Inf | -Inf      | 6   |    | -Inf  | 6  |    |
| PCCPCH RSCP  | dBm                 | -66       | -69 |    |       |    |    | -69       | -66 | -Inf |       |    |      | -Inf      | -66 |    |       |    |    |
| $I_{oc}$   | dBm/<br>1,28<br>MHz | -70       |     |    |       |    |    |           |     |      |       |    |      |           |     |    |       |    |    |
| Propagation Condition  |                     | AWGN      |     |    |       |    |    |           |     |      |       |    |      |           |     |    |       |    |    |
| Note 1: The DPCH of all cells are located in a timeslot other than 0.<br>Note 2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test. |                     |           |     |    |       |    |    |           |     |      |       |    |      |           |     |    |       |    |    |

#### A.8.1.1.1.3 7.68 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of events. This test will partly verify the requirements in section 8.1B.2 and section 9.1.

The test parameters are given in Table A.8.1.1D and A.8.1.1E below. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. Three cells shall be present in the test, cell 1 being the serving cell and cell 2 and cell 3 being neighbour cells on the used frequency. All cells shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP shall be reported together with Event 1G. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The DL DPCH shall be transmitted in timeslot 2 and the UL DPCH shall be transmitted in timeslot 10. The TTI of the uplink DCCH shall be 20ms.

**Table A.8.1.1D: General test parameters for Event 1G triggered reporting in AWGN propagation condition**

| Parameter                    |                | Unit | Value   | Comment   |
|------------------------------|----------------|------|---|---|
| DCH parameters               |                |      | DL Reference Measurement<br>Channel 12.2 kbps | As specified in TS 25.102 section A.2.2                                     |
| Power Control                |                |      | On  |   |
| Target quality value on DTCH |                | BLER | 0.01  |   |
| Initial conditions           | Active cell    |      | Cell 1  |   |
|                              | Neighbour cell |      | Cell 2, Cell 3                                |   |
| Final condition              | Active cell    |      | Cell 1  |   |
| O                            |                | dB   | 0   | Cell individual offset. This value shall be used for all cells in the test. |
| Hysteresis                   |                | dB   | 0   |   |
| Time to Trigger              |                | ms   | 0   |   |
| Threshold used frequency     |                | dBm  | -70   | Applicable for Event 1G   |
| Filter coefficient           |                |      | 0   |   |
| Monitored cell list size     |                |      | 12 TDD neighbours on Channel 1                |   |
| T1                           |                | s    | 6   |   |
| T2                           |                | s    | 6   |   |
| T3                           |                | s    | 6   |   |

**Table A.8.1.1E: Cell specific parameters for Event 1G triggered correct reporting in AWGN propagation condition**

| Parameter                 | Unit              | Cell 1    |     |    | Cell 2    |     |      | Cell 3    |    |     |
|---------------------------|-------------------|-----------|-----|----|-----------|-----|------|-----------|----|-----|
|                           |                   | T1        | T2  | T3 | T1        | T2  | T3   | T1        | T2 | T3  |
| DL timeslot number        |                   | 0         |     |    | 0         |     |      | 0         |    |     |
| UTRA RF Channel Number    |                   | Channel 1 |     |    | Channel 1 |     |      | Channel 1 |    |     |
| PCCPCH_Ec/I <sub>or</sub> | dB                | -3        |     |    | -3        |     |      | -3        |    |     |
| SCH_Ec/I <sub>or</sub>    | dB                | -9        |     |    | -9        |     |      | -9        |    |     |
| SCH_t <sub>offset</sub>   |                   | 0         |     |    | 5         |     |      | 10        |    |     |
| OCNS_Ec/I <sub>or</sub>   | dB                | -3,12     |     |    | -3,12     |     |      | -3,12     |    |     |
| $\hat{I}_{or}/I_{oc}$     | dB                | 7         | 5   |    | 5         | 7   | -Inf | -Inf      |    | 7   |
| PCCPCH RSCP               | dBm               | -66       | -68 |    | -68       | -66 | -Inf | -Inf      |    | -66 |
| I <sub>oc</sub>           | dBm /<br>7,68 MHz | -70       |     |    |           |     |      |           |    |     |
| Propagation Condition     |                   | AWGN      |     |    |           |     |      |           |    |     |

### A.8.1.1.2 Test Requirements

#### A.8.1.1.2.1 3.84Mcps TDD option

The UE shall send one Event 1G triggered measurement report for Cell 2 with a measurement reporting delay less than 200ms from the beginning of time period T2.

The UE shall send one Event 1G triggered measurement report for Cell 3 with a measurement reporting delay less than 800ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

#### A.8.1.1.2.2 1.28Mcps TDD option

The UE shall send one Event 1G triggered measurement report for cell 2, with a measurement reporting delay less than 280ms from the beginning of time period T2.

The UE shall send one Event 1G triggered measurement report for Cell 3 with a measurement reporting delay less than 880ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

#### A.8.1.1.2.3 7.68Mcps TDD option

The UE shall send one Event 1G triggered measurement report for Cell 2 with a measurement reporting delay less than 200ms from the beginning of time period T2.

The UE shall send one Event 1G triggered measurement report for Cell 3 with a measurement reporting delay less than 800ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

### A.8.1.2 Event 1H and 1I triggered reporting in AWGN propagation conditions

#### A.8.1.2.1 3.84 Mcps TDD option

##### A.8.1.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of event 1H and event 1I. This test will partly verify the requirements in section 8.1.2 and section 9.1.

The test parameters are given in Table A.8.1.2, Table A.8.1.2A and Table A.8.1.2B below. The test consists of five successive time periods, with a time duration of T1, T2, T3, T4 and T5 respectively. Two cells shall be present in the test, cell 1 being the current serving cell and cell 2 being a neighbour cell on the used frequency.

In the measurement control information it shall be indicated to the UE that event-triggered reporting with event 1H and event 1I shall be used and that Timeslot ISCP and P-CCPCH RSCP shall be reported together with event 1H and 1I. Measurement control information shall be sent to the UE before the beginning of time period T1.

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The UL DPCH shall be transmitted in timeslot 10. In addition, timeslots 3 and 4 shall be allocated as DL timeslots. Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing.

**Table A.8.1.2: General test parameters for correct event 1H and 1I reporting in AWGN propagation condition**

| Parameter                    |                | Unit | Value                                      | Comment   |
|------------------------------|----------------|------|--|---|
| DCH parameters               |                |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2   |
| Power Control                |                |      | On   |   |
| Target quality value on DTCH |                | BLER | 0.01                                       |   |
| Initial conditions           | Active cell    |      | Cell 1                                     |   |
|                              | Neighbour cell |      | Cell 2                                     |   |
| Final condition              | Active cell    |      | Cell 1                                     |   |
| HCS                          |                |      | Not used                                   |   |
| O                            |                | dB   | 0  | Cell individual offset. This value shall be used for all cells in the test.         |
| Timeslot list cell 1         |                |      | 2, 3, 4                                    | Timeslot numbers in IE "Cell info" for Cell 1                                       |
| Timeslot list cell 2         |                |      | 4  | Timeslot numbers in IE "Cell info" for Cell 2                                       |
| Threshold used frequency     |                | dBm  | -68  | Threshold 1 applicable for event 1H, cell 1 timeslots 2, 4 and cell 2 timeslot 4    |
| Threshold used frequency     |                | dBm  | -73  | Threshold 2 applicable for event 1H, cell 1 timeslots 2, 3, 4 and cell 2 timeslot 4 |
| Threshold used frequency     |                | dBm  | -67  | Applicable for event 1I, cell 1 timeslots 2, 4 and cell 2 timeslot 4                |
| Hysteresis                   |                | dB   | 0  |   |
| Time to Trigger              |                | ms   | 0  |   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1              | Cell 2 shall belong to the monitored set  |
| T1                           |                | s    | 5  |   |
| T2                           |                | s    | 5  |   |
| T3                           |                | s    | 5  |   |
| T4                           |                | s    | 5  |   |
| T5                           |                | s    | 5  |   |



**Table A.8.1.2A: Cell 1 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition**

| Parameter   | Unit           | Cell 1    |    |    |    |    |          |    |    |    |    |
|---|----------------|-----------|----|----|----|----|----------|----|----|----|----|
|   |                | T1        | T2 | T3 | T4 | T5 | T1       | T2 | T3 | T4 | T5 |
| UTRA RF Channel Number  |                | Channel 1 |    |    |    |    |          |    |    |    |    |
| <b>DL timeslot number</b>   |                | <b>0</b>  |    |    |    |    | <b>2</b> |    |    |    |    |
| PCCPCH_Ec/lor   | dB             | -3        |    |    |    |    | n.a.     |    |    |    |    |
| SCH_Ec/lor  | dB             | -9        |    |    |    |    | n.a.     |    |    |    |    |
| SCH_t <sub>offset</sub>   | dB             | 5         |    |    |    |    | n.a.     |    |    |    |    |
| DPCH_Ec/lor   | dB             | n.a.      |    |    |    |    | Note 1   |    |    |    |    |
| OCNS_Ec/lor   | dB             | -3,12     |    |    |    |    | Note 2   |    |    |    |    |
| $\hat{I}_{or}/I_{oc}$   | dB             | 4         |    |    |    |    | 4        |    |    |    |    |
| PCCPCH RSCP   | dBm            | -69       |    |    |    |    | n.a.     |    |    |    |    |
| $I_{oc}$  | dBm / 3,84 MHz | -70       |    |    |    |    |          |    |    |    |    |
| Propagation Condition   |                | AWGN      |    |    |    |    |          |    |    |    |    |
| <b>DL timeslot number</b>   |                | <b>3</b>  |    |    |    |    | <b>4</b> |    |    |    |    |
| PCCPCH_Ec/lor   | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| SCH_Ec/lor  | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| SCH_t <sub>offset</sub>   | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| DPCH_Ec/lor   | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| OCNS_Ec/lor   | dB             | 0         |    |    |    |    | 0        |    |    |    |    |
| $\hat{I}_{or}/I_{oc}$   | dB             | 3         |    |    |    |    | 0        |    |    | 6  |    |
| PCCPCH RSCP   | dBm            | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| $I_{oc}$  | dBm / 3,84 MHz | -70       |    |    |    |    |          |    |    |    |    |
| Propagation Condition   |                | AWGN      |    |    |    |    |          |    |    |    |    |
| Note 1: The DPCH level is controlled by the power control loop  |                |           |    |    |    |    |          |    |    |    |    |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor |                |           |    |    |    |    |          |    |    |    |    |

**Table A.8.1.2B: Cell 2 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition**

| Parameter                 | Unit           | Cell 2    |    |    |    |    |          |    |    |    |    |
|---------------------------|----------------|-----------|----|----|----|----|----------|----|----|----|----|
|                           |                | T1        | T2 | T3 | T4 | T5 | T1       | T2 | T3 | T4 | T5 |
| UTRA RF Channel Number    |                | Channel 1 |    |    |    |    |          |    |    |    |    |
| <b>DL timeslot number</b> |                | <b>0</b>  |    |    |    |    | <b>2</b> |    |    |    |    |
| PCCPCH_Ec/lor             | dB             | -3        |    |    |    |    | n.a.     |    |    |    |    |
| SCH_Ec/lor                | dB             | -9        |    |    |    |    | n.a.     |    |    |    |    |
| SCH_t <sub>offset</sub>   | dB             | 10        |    |    |    |    | n.a.     |    |    |    |    |
| DPCH_Ec/lor               | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| OCNS_Ec/lor               | dB             | -3,12     |    |    |    |    | 0        |    |    |    |    |
| $\hat{I}_{or}/I_{oc}$     | dB             | 1         |    |    |    |    | 0        | 6  | 0  |    |    |
| PCCPCH RSCP               | dBm            | -72       |    |    |    |    | n.a.     |    |    |    |    |
| $I_{oc}$                  | dBm / 3,84 MHz | -70       |    |    |    |    |          |    |    |    |    |
| Propagation Condition     |                | AWGN      |    |    |    |    |          |    |    |    |    |
| <b>DL timeslot number</b> |                | <b>3</b>  |    |    |    |    | <b>4</b> |    |    |    |    |
| PCCPCH_Ec/lor             | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| SCH_Ec/lor                | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| SCH_t <sub>offset</sub>   | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| DPCH_Ec/lor               | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| OCNS_Ec/lor               | dB             | 0         |    |    |    |    | 0        |    |    |    |    |
| $\hat{I}_{or}/I_{oc}$     | dB             | 3         |    |    |    |    | 6        |    |    | 0  |    |
| PCCPCH RSCP               | dBm            | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| $I_{oc}$                  | dBm / 3,84 MHz | -70       |    |    |    |    |          |    |    |    |    |
| Propagation Condition     |                | AWGN      |    |    |    |    |          |    |    |    |    |

#### A.8.1.2.1.2 Test Requirements

The UE shall send one event 1I triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T2.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T3.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T4.

The UE shall send one event 1I triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T5.

The UE shall not send event 1H or 1I triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

#### A.8.1.2.2 1.28 Mcps TDD option

##### A.8.1.2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of event 1H and event 1I. This test will partly verify the requirements in section 8.1A.2 and section 9.1.

The test parameters are given in Table A.8.1.2C, Table A.8.1.2D and Table A.8.1.2E below. The test consists of four successive time periods, with a time duration of T1, T2, T3 and T4 respectively. Two cells shall be present in the test, cell 1 being the current serving cell and cell 2 being a neighbour cell on the used frequency.

In the measurement control information it shall be indicated to the UE that event-triggered reporting with event 1H and event 1I shall be used and that Timeslot ISCP and P-CCPCH RSCP shall be reported together with event 1H and 1I. Measurement control information shall be sent to the UE before the beginning of time period T1.

The UL DPCH shall be transmitted in timeslot 2. In addition, timeslots 5 and 6 shall be allocated as DL timeslots.

**Table A.8.1.2C: General test parameters for correct event 1H and 1I reporting in AWGN propagation condition**

| Parameter                    |                | Unit | Value                                      | Comment   |
|------------------------------|----------------|------|--|---|
| DCH parameters active cell   |                |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.  |
| Power Control                |                |      | On   |   |
| Target quality value on DTCH |                | BLER | 0.01                                       |   |
| Initial conditions           | Active cell    |      | Cell 1                                     |   |
|                              | Neighbour cell |      | Cell 2                                     |   |
| Final condition              | Active cell    |      | Cell 1                                     |   |
| O                            |                | dB   | 0  | Cell individual offset. This value shall be used for all cells in the test. |
| Timeslot list cell 1         |                |      | 5, 6                                       | Timeslot numbers in IE "Cell info" for Cell 1                               |
| Timeslot list cell 2         |                |      | 6  | Timeslot numbers in IE "Cell info" for Cell 2                               |
| Threshold used frequency     |                | dBm  | -68  | Applicable for event 1H, cell 1 timeslots 5, 6 and cell 2 timeslot 6        |
| Threshold used frequency     |                | dBm  | -66  | Applicable for event 1I, cell 1 timeslots 5, 6 and cell 2 timeslot 6        |
| Hysteresis                   |                | dB   | 0  |   |
| Time to Trigger              |                | ms   | 0  |   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1              | Cell 2 shall belong to the monitored set                                    |
| T1                           |                | s    | 5  |   |
| T2                           |                | s    | 5  |   |
| T3                           |                | s    | 5  |   |
| T4                           |                | s    | 5  |   |

**Table A.8.1.2D: Cell 1 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition**

| Parameter  | Unit           | Cell 1    |    |    |    |        |    |    |    |      |     |        |        |  |
|--|----------------|-----------|----|----|----|--------|----|----|----|------|-----|--------|--------|--|
|  |                | T1        | T2 | T3 | T4 | T1     | T2 | T3 | T4 | T1   | T2  | T3     | T4     |  |
| UTRA RF Channel Number (Note 3)  |                | Channel 1 |    |    |    |        |    |    |    |      |     |        |        |  |
| DL timeslot number   |                | 0         |    |    |    | 5      |    |    |    | 6    |     |        |        |  |
| PCCPCH_Ec/lor  | dB             | -3        |    |    |    |        |    |    |    |      |     |        |        |  |
| DPCH_Ec/lor  | dB             |           |    |    |    | Note 1 |    |    |    |      |     |        |        |  |
| OCNS_Ec/lor  | dB             | -3        |    |    |    | Note 2 |    |    |    | 0    |     |        |        |  |
| $\hat{I}_{or}/I_{oc}$  | dB             | 4         |    |    |    | 3      |    |    |    | 4    | 20  |        | 4      |  |
| PCCPCH RSCP  | dBm            | -79       |    |    |    | n.a.   |    |    |    | n.a. |     |        |        |  |
| ISCP   | dBm            | Note 4    |    |    |    | Note 4 |    |    |    | -60  | -60 | -74.54 | -74.54 |  |
| $I_{oc}$   | dBm / 1.28 MHz | -80       |    |    |    |        |    |    |    |      |     |        |        |  |
| <p>Note 1: The DPCH level is controlled by the power control loop</p> <p>Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor</p> <p>Note 3: In the case of multi-frequency network, the UARA RF Channel Number can be set for the primary frequency in this test.</p> <p>Note 4: ISCP of TS0 and TS5 remains changeless.</p> |                |           |    |    |    |        |    |    |    |      |     |        |        |  |

**Table A.8.1.2E: Cell 2 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition**

| Parameter                       | Unit  | Cell 2    |    |    |    |            |     |     |            |
|---------------------------------|---|-----------|----|----|----|------------|-----|-----|------------|
|                                 |   | T1        | T2 | T3 | T4 | T1         | T2  | T3  | T4         |
| UTRA RF Channel Number (Note 1) |   | Channel 1 |    |    |    |            |     |     |            |
| DL timeslot number              |   | 0         |    |    |    | 6          |     |     |            |
| PCCPCH_Ec/Ior                   | dB  | -3        |    |    |    |            |     |     |            |
| DPCH_Ec/Ior                     | dB  |           |    |    |    |            |     |     |            |
| OCNS_Ec/Ior                     | dB  | -3        |    |    |    | 0          |     |     |            |
| $\hat{I}_{or}/I_{oc}$           | dB  | 4         |    |    |    | 20         |     | 4   |            |
| PCCPCH RSCP                     | dBm   | -79       |    |    |    | n.a.       |     |     |            |
| ISCP                            | dBm   | Note2     |    |    |    | -74.5<br>4 | -60 | -60 | -74.5<br>4 |
| $I_{oc}$                        | dBm /<br>1.28 MHz   | -80       |    |    |    |            |     |     |            |
| Note1:                          | In the case of multi-frequency network, the UARA RF Channel Number can be set for the primary frequency in this test. |           |    |    |    |            |     |     |            |
| Note2:                          | ISCP of TS0 remains changeless.   |           |    |    |    |            |     |     |            |

#### A.8.1.2.2.2 Test Requirements

The UE shall send one event 1I triggered measurement report, with a measurement reporting delay less than 480 ms from the beginning of time period T2.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 480 ms from the beginning of time period T3.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 480 ms from the beginning of time period T4.

The UE shall not send event 1H or 1I triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

#### A.8.1.2.3 7.68 Mcps TDD option

##### A.8.1.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of event 1H and event 1I. This test will partly verify the requirements in section 8.1B.2 and section 9.1.

The test parameters are given in Table A.8.1.2F, Table A.8.1.2G and Table A.8.1.2H below. The test consists of five successive time periods, with a time duration of T1, T2, T3, T4 and T5 respectively. Two cells shall be present in the test, cell 1 being the current serving cell and cell 2 being a neighbour cell on the used frequency.

In the measurement control information it shall be indicated to the UE that event-triggered reporting with event 1H and event 1I shall be used and that Timeslot ISCP and P-CCPCH RSCP shall be reported together with event 1H and 1I. Measurement control information shall be sent to the UE before the beginning of time period T1.

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The UL DPCH shall be transmitted in timeslot 10. In addition, timeslots 3 and 4 shall be allocated as DL timeslots. Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing.

**Table A.8.1.2F: General test parameters for correct event 1H and 1I reporting in AWGN propagation condition**

| Parameter                    |                | Unit | Value                                      | Comment   |
|------------------------------|----------------|------|--|---|
| DCH parameters               |                |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2   |
| Power Control                |                |      | On   |   |
| Target quality value on DTCH |                | BLER | 0.01                                       |   |
| Initial conditions           | Active cell    |      | Cell 1                                     |   |
|                              | Neighbour cell |      | Cell 2                                     |   |
| Final condition              | Active cell    |      | Cell 1                                     |   |
| HCS                          |                |      | Not used                                   |   |
| O                            |                | dB   | 0  | Cell individual offset. This value shall be used for all cells in the test.         |
| Timeslot list cell 1         |                |      | 2, 3, 4                                    | Timeslot numbers in IE "Cell info" for Cell 1                                       |
| Timeslot list cell 2         |                |      | 4  | Timeslot numbers in IE "Cell info" for Cell 2                                       |
| Threshold used frequency     |                | dBm  | -68  | Threshold 1 applicable for event 1H, cell 1 timeslots 2, 4 and cell 2 timeslot 4    |
| Threshold used frequency     |                | dBm  | -73  | Threshold 2 applicable for event 1H, cell 1 timeslots 2, 3, 4 and cell 2 timeslot 4 |
| Threshold used frequency     |                | dBm  | -67  | Applicable for event 1I, cell 1 timeslots 2, 4 and cell 2 timeslot 4                |
| Hysteresis                   |                | dB   | 0  |   |
| Time to Trigger              |                | ms   | 0  |   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1              | Cell 2 shall belong to the monitored set  |
| T1                           |                | s    | 5  |   |
| T2                           |                | s    | 5  |   |
| T3                           |                | s    | 5  |   |
| T4                           |                | s    | 5  |   |
| T5                           |                | s    | 5  |   |

**Table A.8.1.2G: Cell 1 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition**

| Parameter                 | Unit  | Cell 1    |    |    |    |    |          |    |    |    |    |
|---------------------------|---|-----------|----|----|----|----|----------|----|----|----|----|
|                           |   | T1        | T2 | T3 | T4 | T5 | T1       | T2 | T3 | T4 | T5 |
| UTRA RF Channel Number    |   | Channel 1 |    |    |    |    |          |    |    |    |    |
| <b>DL timeslot number</b> |   | <b>0</b>  |    |    |    |    | <b>2</b> |    |    |    |    |
| PCCPCH_Ec/lor             | dB  | -3        |    |    |    |    | n.a.     |    |    |    |    |
| SCH_Ec/lor                | dB  | -9        |    |    |    |    | n.a.     |    |    |    |    |
| SCH_t <sub>offset</sub>   | dB  | 5         |    |    |    |    | n.a.     |    |    |    |    |
| DPCH_Ec/lor               | dB  | n.a.      |    |    |    |    | Note 1   |    |    |    |    |
| OCNS_Ec/lor               | dB  | -3,12     |    |    |    |    | Note 2   |    |    |    |    |
| $\hat{I}_{or}/I_{oc}$     | dB  | 4         |    |    |    |    | 4        |    |    |    |    |
| PCCPCH RSCP               | dBm   | -69       |    |    |    |    | n.a.     |    |    |    |    |
| $I_{oc}$                  | dBm / 7,68 MHz  | -70       |    |    |    |    |          |    |    |    |    |
| Propagation Condition     |   | AWGN      |    |    |    |    |          |    |    |    |    |
| <b>DL timeslot number</b> |   | <b>3</b>  |    |    |    |    | <b>4</b> |    |    |    |    |
| PCCPCH_Ec/lor             | dB  | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| SCH_Ec/lor                | dB  | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| SCH_t <sub>offset</sub>   | dB  | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| DPCH_Ec/lor               | dB  | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| OCNS_Ec/lor               | dB  | 0         |    |    |    |    | 0        |    |    |    |    |
| $\hat{I}_{or}/I_{oc}$     | dB  | 3         |    |    |    |    | 0        |    |    |    | 6  |
| PCCPCH RSCP               | dBm   | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| $I_{oc}$                  | dBm / 7,68 MHz  | -70       |    |    |    |    |          |    |    |    |    |
| Propagation Condition     |   | AWGN      |    |    |    |    |          |    |    |    |    |
| Note 1:                   | The DPCH level is controlled by the power control loop  |           |    |    |    |    |          |    |    |    |    |
| Note 2:                   | The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor |           |    |    |    |    |          |    |    |    |    |

**Table A.8.1.2H: Cell 2 specific test parameters for correct event 1H and 1I reporting in AWGN propagation condition**

| Parameter                 | Unit           | Cell 2    |    |    |    |    |          |    |    |    |    |
|---------------------------|----------------|-----------|----|----|----|----|----------|----|----|----|----|
|                           |                | T1        | T2 | T3 | T4 | T5 | T1       | T2 | T3 | T4 | T5 |
| UTRA RF Channel Number    |                | Channel 1 |    |    |    |    |          |    |    |    |    |
| <b>DL timeslot number</b> |                | <b>0</b>  |    |    |    |    | <b>2</b> |    |    |    |    |
| PCCPCH_Ec/lor             | dB             | -3        |    |    |    |    | n.a.     |    |    |    |    |
| SCH_Ec/lor                | dB             | -9        |    |    |    |    | n.a.     |    |    |    |    |
| SCH_t <sub>offset</sub>   | dB             | 10        |    |    |    |    | n.a.     |    |    |    |    |
| DPCH_Ec/lor               | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| OCNS_Ec/lor               | dB             | -3,12     |    |    |    |    | 0        |    |    |    |    |
| $\hat{I}_{or}/I_{oc}$     | dB             | 1         |    |    |    |    | 0        | 6  | 0  |    |    |
| PCCPCH RSCP               | dBm            | -72       |    |    |    |    | n.a.     |    |    |    |    |
| $I_{oc}$                  | dBm / 7,68 MHz | -70       |    |    |    |    |          |    |    |    |    |
| Propagation Condition     |                | AWGN      |    |    |    |    |          |    |    |    |    |
| <b>DL timeslot number</b> |                | <b>3</b>  |    |    |    |    | <b>4</b> |    |    |    |    |
| PCCPCH_Ec/lor             | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| SCH_Ec/lor                | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| SCH_t <sub>offset</sub>   | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| DPCH_Ec/lor               | dB             | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| OCNS_Ec/lor               | dB             | 0         |    |    |    |    | 0        |    |    |    |    |
| $\hat{I}_{or}/I_{oc}$     | dB             | 3         |    |    |    |    | 6        |    |    |    | 0  |
| PCCPCH RSCP               | dBm            | n.a.      |    |    |    |    | n.a.     |    |    |    |    |
| $I_{oc}$                  | dBm / 7,68 MHz | -70       |    |    |    |    |          |    |    |    |    |
| Propagation Condition     |                | AWGN      |    |    |    |    |          |    |    |    |    |

### A.8.1.2.3.2 Test Requirements

The UE shall send one event 1I triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T2.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T3.

The UE shall send one event 1H triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T4.

The UE shall send one event 1I triggered measurement report, with a measurement reporting delay less than 400 ms from the beginning of time period T5.

The UE shall not send event 1H or 1I triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

## A.8.1.3 Correct reporting of neighbours in fading propagation condition

### A.8.1.3.1 3.84 Mcps TDD option

#### A.8.1.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs sufficient layer 1 filtering of the P-CCPCH RSCP measurement which is the base for Event 1G evaluation. This test is performed in fading propagation conditions and will partly verify the requirements in section 8.1.2.

The test parameters are given in Table A.8.1.3 and A.8.1.3A below. The test consists of one time period with time duration of T1. Two cells shall be present in the test, cell 1 being the current serving cell and cell 2 being a neighbour cell on the used frequency. Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP shall be reported together with Event 1G. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The TTI of the UL DCCH shall be 20ms.

**Table A.8.1.3: General test parameters for correct reporting of neighbours in fading propagation condition**

| Parameter                    | Unit           | Value                                      | Comment   |
|------------------------------|----------------|--|---|
| DCH parameters               |                | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2                                     |
| Power Control                |                | On   |   |
| Target quality value on DTCH | BLER           | 0.01                                       |   |
| Initial conditions           | Active cell    | Cell 1                                     |   |
|                              | Neighbour cell | Cell 2                                     |   |
| Final condition              | Active cell    | Cell 1                                     |   |
| O                            | dB             | 0  | Cell individual offset. This value shall be used for all cells in the test. |
| Hysteresis                   | dB             | 0  |   |
| Time to Trigger              | ms             | 200  |   |
| Filter coefficient           |                | 0  |   |
| Monitored cell list size     |                | 6 TDD neighbours on Channel 1              | Sent before the beginning of time period T1                                 |
| T1                           | s              | 200  |   |

**Table A.8.1.3A: Cell specific test parameters for correct reporting of neighbours in fading propagation condition**

| Parameter                 | Unit          | Cell 1                                  |          | Cell 2    |          |
|---------------------------|---------------|---|----------|-----------|----------|
|                           |               | T1                                      | T1       | T1        | T1       |
| <b>DL timeslot number</b> |               | <b>0</b>                                | <b>8</b> | <b>0</b>  | <b>8</b> |
| UTRA RF Channel Number    |               | Channel 1                               |          | Channel 1 |          |
| PCCPCH_Ec/lor             | dB            | -3                                      | n.a.     | -3        | n.a.     |
| SCH_Ec/lor                | dB            | -9                                      | -9       | -9        | -9       |
| SCH_t <sub>offset</sub>   |               | 0                                       | 0        | 2         | 2        |
| PICH_Ec/lor               | dB            | n.a.                                    | -3       | n.a.      | -3       |
| OCNS_Ec/lor               | dB            | -3,12                                   | -3,12    | -3,12     | -3,12    |
| $\hat{I}_{or}/I_{oc}$     | dB            | 7                                       | 7        | 2         | 2        |
| PCCPCH RSCP               | dBm           | -66                                     | n.a.     | -71       | n.a.     |
| $I_{oc}$                  | dBm/ 3,84 MHz | -70                                     |          |           |          |
| Propagation Condition     |               | Case 4 as specified in TS25.102 Annex B |          |           |          |

**A.8.1.3.1.2 Test Requirements**

The number of Event 1G triggered measurement reports during time period T2 shall be less than 60.

**A.8.1.3.2 (void)****A.8.1.3.3 7.68 Mcps TDD option****A.8.1.3.3.1 Test Purpose and Environment**

The purpose of this test is to verify that the UE performs sufficient layer 1 filtering of the P-CCPCH RSCP measurement which is the base for Event 1G evaluation. This test is performed in fading propagation conditions and will partly verify the requirements in section 8.1.2B.

The test parameters are given in Table A.8.1.3B and A.8.1.3C below. The test consists of one time period with time duration of T1. Two cells shall be present in the test, cell 1 being the current serving cell and cell 2 being a neighbour cell on the used frequency. Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 1G shall be used, and that P-CCPCH RSCP shall be reported together with Event 1G. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The TTI of the UL DCCH shall be 20ms.



**Table A.8.1.3B: General test parameters for correct reporting of neighbours in fading propagation condition**

| Parameter                    |                | Unit | Value   | Comment   |
|------------------------------|----------------|------|---|---|
| DCH parameters               |                |      | DL Reference Measurement<br>Channel 12.2 kbps | As specified in TS 25.102 section A.2.2                                     |
| Power Control                |                |      | On  |   |
| Target quality value on DTCH |                | BLER | 0.01  |   |
| Initial conditions           | Active cell    |      | Cell 1  |   |
|                              | Neighbour cell |      | Cell 2  |   |
| Final condition              | Active cell    |      | Cell 1  |   |
| O                            |                | dB   | 0   | Cell individual offset. This value shall be used for all cells in the test. |
| Hysteresis                   |                | dB   | 0   |   |
| Time to Trigger              |                | ms   | 200   |   |
| Filter coefficient           |                |      | 0   |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on Channel 1                 | Sent before the beginning of time period T1                                 |
| T1                           |                | s    | 200   |   |

**Table A.8.1.3C: Cell specific test parameters for correct reporting of neighbours in fading propagation condition**

| Parameter                 | Unit          | Cell 1                                  |       | Cell 2    |       |
|---------------------------|---------------|---|-------|-----------|-------|
|                           |               | T1                                      | T1    | T1        | T1    |
| DL timeslot number        |               | 0                                       | 8     | 0         | 8     |
| UTRA RF Channel Number    |               | Channel 1                               |       | Channel 1 |       |
| PCCPCH_Ec/I <sub>or</sub> | dB            | -3                                      | n.a.  | -3        | n.a.  |
| SCH_Ec/I <sub>or</sub>    | dB            | -9                                      | -9    | -9        | -9    |
| SCH_t <sub>offset</sub>   |               | 0                                       | 0     | 2         | 2     |
| PICH_Ec/I <sub>or</sub>   | dB            | n.a.                                    | -3    | n.a.      | -3    |
| OCNS_Ec/I <sub>or</sub>   | dB            | -3,12                                   | -3,12 | -3,12     | -3,12 |
| $\hat{I}_{or}/I_{oc}$     | dB            | 7                                       | 7     | 2         | 2     |
| PCCPCH RSCP               | dBm           | -66                                     | n.a.  | -71       | n.a.  |
| $I_{oc}$                  | dBm/ 7,68 MHz | -70                                     |       |           |       |
| Propagation Condition     |               | Case 4 as specified in TS25.102 Annex B |       |           |       |

### A.8.1.3.3.2 Test Requirements

The number of Event 1G triggered measurement reports during time period T2 shall be less than 60.

## A.8.2 TDD inter frequency measurements

### A.8.2.1 Correct reporting of neighbours in AWGN propagation condition

#### A.8.2.1.1 Test Purpose and Environment

##### A.8.2.1.1.1 3.84Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 8.1.2. and 9.1

The test consists of 2 successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.8.2A and A.8.2B below. Two cells shall be present in the test, cell 1 being the serving cell and cell 2 being a UTRA TDD neighbour cell on the unused frequency. All cells shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. P-CCPCH RSCP of the best cell on the unused frequency shall be reported together with Event 2C reporting. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3. The TTI of the uplink DCCH shall be 20 ms.

**Table A.8.2A: General test parameters for correct reporting of TDD inter frequency neighbours in AWGN propagation condition**

| Parameter                    |                | Unit | Value                                      | Comment                               |
|------------------------------|----------------|------|--|---------------------------------------|
| DPCH parameters              |                |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 annex A.2.2 |
| Power Control                |                |      | On   |                                       |
| Target quality value on DTCH |                | BLER | 0.01                                       |                                       |
| Initial conditions           | Active cell    |      | Cell 1                                     | UTRA TDD cell                         |
|                              | Neighbour cell |      | Cell 2                                     | UTRA TDD cell                         |
| Threshold non used frequency |                | dB   | -71  | Applicable for event 2C               |
| Hysteresis                   |                | dB   | 0  | Applicable for event 2C               |
| Time to Trigger              |                | ms   | 0  |                                       |
| Filter coefficient           |                |      | 0  |                                       |
| Monitored cell list size     |                |      | 24 on channel 1<br>16 on channel 2         |                                       |
| T1                           |                | s    | 10   |                                       |
| T2                           |                | s    | 10   |                                       |

**Table A.8.2B: Cell specific test parameters for correct reporting of TDD inter frequency neighbours in AWGN propagation condition**

| Parameter              | Unit             | Cell 1    |       |       |       | Cell 2    |       |           |       |
|------------------------|------------------|-----------|-------|-------|-------|-----------|-------|-----------|-------|
|                        |                  | 0         |       | 8     |       | 0         |       | 8         |       |
| Timeslot Number        |                  | T1        | T2    | T1    | T2    | T1        | T2    | T1        | T2    |
| UTRA RF Channel Number |                  | Channel 1 |       |       |       | Channel 2 |       |           |       |
| PCCPCH_Ec/lor          | dB               | -3        | -3    |       |       | -3        | -3    |           |       |
| SCH_Ec/lor             | dB               | -9        | -9    | -9    | -9    | -9        | -9    | -9        | -9    |
| SCH_toffset            |                  | 0         | 0     | 0     | 0     | 15        | 15    | 15        | 15    |
| PICH_Ec/lor            |                  |           |       | -3    | -3    |           |       | -3        | -3    |
| OCNS                   |                  | -4,28     | -4,28 | -4,28 | -4,28 | -4,28     | -4,28 | -4,28     | -4,28 |
| $\hat{I}_{or}/I_{oc}$  | dB               | 3         | 3     | 3     | 3     | -Infinity | 9     | -Infinity | 9     |
| $I_{oc}$               | dBm/3.8<br>4 MHz | -70       |       |       |       |           |       |           |       |
| PCCPCH_RSCP            | dB               | -70       | -70   |       |       | -Infinity | -64   |           |       |
|                        |                  |           |       |       |       |           |       |           |       |
|                        |                  |           |       |       |       |           |       |           |       |
| Propagation Condition  |                  | AWGN      |       |       |       |           |       |           |       |

#### A.8.2.1.1.2 1.28Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 8.1A.2 and 9.1.

The test consist of 2 successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.8.2C and A.8.2D below. Two cells shall be present in the test, cell 1 being the active cell and cell 2 being a 1.28Mcps TDD option neighbour cell on the unused frequency.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. P-CCPCH RSCP of the best cell on the unused frequency shall be reported together with Event 2C reporting. The measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

**Table A.8.2C: General test parameters for correct reporting of TDD inter frequency neighbours in AWGN propagation condition**

| Parameter                    |                | Unit | Value                                      | Comment  |
|------------------------------|----------------|------|--|--|
| DPCH parameters active cell  |                |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2. The DPCH is located in an other timeslot than 0 |
| Power Control                |                |      | On   |  |
| Target quality value on DTCH |                | BLER | 0.01                                       |  |
| Initial conditions           | Active cell    |      | Cell 1                                     | 1.28Mcps TDD cell  |
|                              | Neighbour cell |      | Cell 2                                     | 1.28Mcps TDD cell  |
| Final condions               | Active cell    |      | Cell 1                                     |  |
| Threshold non used frequency |                | dBm  | -71  | Absolute P-CCPCH RSCP threshold for event 2C   |
| W non-used frequency         |                |      | 1  | Applicable for event 2C  |
| Hysteresis                   |                | dB   | 0  |  |
| Time to Trigger              |                | ms   | 0  |  |
| Filter coefficient           |                |      | 0  |  |
| Monitored cell list size     |                |      | 24 on channel 1<br>16 on channel 2         |  |
| T1                           |                | s    | 10   |  |
| T2                           |                | s    | 10   |  |

**Table A.8.2D: Cell Specific Parameters for Correct Reporting of Neighbours in AWGN Propagation Condition**

| Parameter  | Unit         | Cell 1    |     |       |    | Cell 2    |     |       |    |
|--|--------------|-----------|-----|-------|----|-----------|-----|-------|----|
|  |              | 0         |     | DwPTS |    | 0         |     | DwPTS |    |
| Timeslot Number  |              | T1        | T2  | T1    | T2 | T1        | T2  | T1    | T2 |
| UTRA RF Channel Number (NOTE)  |              | Channel 1 |     |       |    | Channel 2 |     |       |    |
| PCCPCH_Ec/Ior  | dB           | -3        |     |       |    | -3        |     |       |    |
| DwPCH_Ec/Ior   | dB           |           |     | 0     |    |           |     | 0     |    |
| OCNS_Ec/Ior  | dB           | -3        |     |       |    | -3        |     |       |    |
| $\hat{I}_{or}/I_{oc}$  | dB           | 3         | 3   |       |    | -Infinity | 8   |       |    |
| $I_{oc}$   | dBm/1.28 MHz | -70       |     |       |    |           |     |       |    |
| PCCPCH_RSCP  | dBm          | -70       | -70 |       |    | -Infinity | -65 |       |    |
| Propagation Condition  |              | AWGN      |     |       |    |           |     |       |    |
| NOTE1: The DPCH of all cells are located in a timeslot other than 0.   |              |           |     |       |    |           |     |       |    |
| NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test. |              |           |     |       |    |           |     |       |    |

#### A.8.2.1.1.3 7.68Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements. The test will partly verify the requirements in section 8.1.2B and 9.1

The test consists of 2 successive time periods, with a time duration T1 and T2. The test parameters are given in tables A.8.2E and A.8.2F below. Two cells shall be present in the test, cell 1 being the serving cell and cell 2 being a UTRA

TDD neighbour cell on the unused frequency. All cells shall be synchronised, i.e. share the same frame and timeslot timing.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used. P-CCPCH RSCP of the best cell on the unused frequency shall be reported together with Event 2C reporting. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3. The TTI of the uplink DCCH shall be 20 ms.

**Table A.8.2E: General test parameters for correct reporting of TDD inter frequency neighbours in AWGN propagation condition**

| Parameter                    |                | Unit | Value                                      | Comment                               |
|------------------------------|----------------|------|--|---------------------------------------|
| DPCH parameters              |                |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 annex A.2.2 |
| Power Control                |                |      | On   |                                       |
| Target quality value on DTCH |                | BLER | 0.01                                       |                                       |
| Initial conditions           | Active cell    |      | Cell 1                                     | UTRA TDD cell                         |
|                              | Neighbour cell |      | Cell 2                                     | UTRA TDD cell                         |
| Threshold non used frequency |                | dB   | -71  | Applicable for event 2C               |
| Hysteresis                   |                | dB   | 0  | Applicable for event 2C               |
| Time to Trigger              |                | ms   | 0  |                                       |
| Filter coefficient           |                |      | 0  |                                       |
| Monitored cell list size     |                |      | 24 on channel 1<br>16 on channel 2         |                                       |
| T1                           |                | s    | 10   |                                       |
| T2                           |                | s    | 10   |                                       |

**Table A.8.2F: Cell specific test parameters for correct reporting of TDD inter frequency neighbours in AWGN propagation condition**

| Parameter                       | Unit             | Cell 1    |       |       |       | Cell 2    |       |           |       |
|---------------------------------|------------------|-----------|-------|-------|-------|-----------|-------|-----------|-------|
|                                 |                  | 0         |       | 8     |       | 0         |       | 8         |       |
| Timeslot Number                 |                  | T1        | T2    | T1    | T2    | T1        | T2    | T1        | T2    |
| UTRA RF Channel Number (Note 1) |                  | Channel 1 |       |       |       | Channel 2 |       |           |       |
| PCCPCH_Ec/Ior                   | dB               | -3        | -3    |       |       | -3        | -3    |           |       |
| SCH_Ec/Ior                      | dB               | -9        | -9    | -9    | -9    | -9        | -9    | -9        | -9    |
| SCH_toffset                     |                  | 0         | 0     | 0     | 0     | 15        | 15    | 15        | 15    |
| PICH_Ec/Ior                     |                  |           |       | -3    | -3    |           |       | -3        | -3    |
| OCNS                            |                  | -4,28     | -4,28 | -4,28 | -4,28 | -4,28     | -4,28 | -4,28     | -4,28 |
| $\hat{I}_{or}/I_{oc}$           | dB               | 3         | 3     | 3     | 3     | -Infinity | 9     | -Infinity | 9     |
| $I_{oc}$                        | dBm/7.6<br>8 MHz | -70       |       |       |       |           |       |           |       |
| PCCPCH_RSCP                     | dB               | -70       | -70   |       |       | -Infinity | -64   |           |       |
| Propagation Condition           |                  | AWGN      |       |       |       |           |       |           |       |

## A.8.2.1.2 Test Requirements

### A.8.2.1.2.1 3.84Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 s from the beginning of time period T2.

The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

#### A.8.2.1.2.2 1.28Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5080ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

#### A.8.2.1.2.3 7.68Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 s from the beginning of time period T2.

The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

### A.8.3 FDD measurements

#### A.8.3.1 Correct reporting of FDD neighbours in AWGN propagation condition

##### A.8.3.1.1 Test Purpose and Environment

###### A.8.3.1.1.1 3.84 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of events when measuring on UTRA FDD cells. This test will partly verify the requirements in section 8.1.2 and 9.1.

The test parameters are given in Table A.8.3A and A.8.3B below. The test consists of two successive time periods, with time durations of T1 and T2 respectively. Two cells shall be present in the test, cell 1 being the serving UTRA TDD cell and cell 2 being a UTRA FDD neighbour cells on the unused frequency.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used and that CPICH  $E_c/I_0$  of the best cell on the unused frequency shall be reported together with Event 2C. The Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3. The TTI of the uplink DCCH shall be 20 ms.

**Table A.8.3A: General test parameters for correct reporting of FDD neighbours in AWGN**

| Parameter                    |                | Unit | Value  | Comment                                 |
|------------------------------|----------------|------|--|---|
| DPCH parameters              |                |      | DL Reference Measurement<br>Channel 12.2 kbps                  | As specified in TS 25.102 section A.2.2 |
| Power Control                |                |      | On   |   |
| Target quality value on DTCH |                | BLER | 0.01   |   |
| Initial conditions           | Active cell    |      | Cell 1   | UTRA TDD cell                           |
|                              | Neighbour cell |      | Cell 2   | UTRA FDD cell                           |
| Final conditions             | Active cell    |      | Cell 1   |   |
| Threshold non used frequency |                | dB   | -18  | Applicable for event 2C                 |
| W non-used frequency         |                |      | 1  | Applicable for event 2C                 |
| Hysteresis                   |                | dB   | 0  | Applicable for event 2C                 |
| Time to Trigger              |                | ms   | 0  |   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on channel 1<br>6 FDD neighbours on channel 2 |   |
| T1                           |                | s    | 15   |   |
| T2                           |                | s    | 10   |   |

**Table A.8.3B: Cell specific parameters for correct reporting of FDD neighbours in AWGN propagation condition**

| Parameter              | Unit          | Cell 1    |       |       |       | Cell 2    |      |
|------------------------|---------------|-----------|-------|-------|-------|-----------|------|
|                        |               | 0         |       | 8     |       | n.a       |      |
| Timeslot Number        |               | T1        | T2    | T1    | T2    | T1        | T2   |
| UTRA RF Channel Number |               | Channel 1 |       |       |       | Channel 2 |      |
| CPICH_Ec/lor           | dB            | n.a.      |       | n.a.  |       | -10       |      |
| PCCPCH_Ec/lor          | dB            | -3        | -3    |       |       | -12       |      |
| SCH_Ec/lor             | dB            | -9        | -9    | -9    | -9    | -12       |      |
| SCH_t_offset           |               | 0         | 0     | 0     | 0     | n.a.      |      |
| PICH_Ec/lor            |               |           |       | -3    | -3    | -15       |      |
| OCNS                   | dB            | -4,28     | -4,28 | -4,28 | -4,28 | -0,941    |      |
| $\hat{I}_{or}/I_{oc}$  | dB            | 3         | 3     | 3     | 3     | -infinity | -1.8 |
| $I_{oc}$               | dBm/ 3.84 MHz | -70       |       |       |       | -70       |      |
| CPICH_Ec/lo            |               | n.a.      |       |       |       | -infinity | -14  |
| PCCPCH_RSCP            | dB            | -70       | -70   | -70   | -70   | n.a.      |      |
| Propagation Condition  |               | AWGN      |       |       |       | AWGN      |      |

#### A.8.3.1.1.2 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when measuring on UTRA FDD cells. This test will partly verify the requirements in section 8.1A.2 and 9.1.

The test consists of two successive time periods, with a time duration T1 and T2. The test parameters are given in Table A.8.3C and A.8.3D. Two cells shall be present in the test, cell 1 being current active 1.28Mcps TDD cell and cell 2 being a UTRA FDD neighbouring cell.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used and the CPICH RSCP of the best cell on the unused frequency shall be reported together with Event 2C. The measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

**Table A.8.3C: General test parameters for Correct reporting of FDD neighbours in AWGN propagation condition**

| Parameter                    | Unit           | Value  | Comment   |
|------------------------------|----------------|--|---|
| DPCH parameters active cell  |                | DL Reference Measurement Channel 12.2 kbps                     | As specified in TS 25.102 section A. The DPCH is located in an other timeslot than 0. |
| Power Control                |                | On   |   |
| Target quality value on DTCH | BLER           | 0.01   |   |
| Initial conditions           | Active cell    | Cell 1   | 1.28Mcps TDD cell   |
|                              | Neighbour cell | Cell2  | FDD cell  |
| Final conditions             | Active cell    | Cell 1   | 1.28Mcps TDD cell   |
| Threshold non used frequency | dBm            | -86  | Absolute CPICH RSCP threshold for event 2C  |
| Hysteresis                   | dB             | 0  |   |
| W non-used frequency         |                | 1  | Applicable for event 2C   |
| Time to Trigger              | ms             | 0  |   |
| Filter coefficient           |                | 0  |   |
| Monitored cell list size     |                | 6 TDD neighbours on Channel 1<br>6 FDD neighbours on Channel 2 |   |
| T1                           | s              | 10   |   |
| T2                           | s              | 10   |   |

**Table A.8.3D: Cell Specific parameters for Correct reporting of FDD neighbours in AWGN propagation condition:**

| Parameter   | Unit         | Cell 1             |     |       |    | Cell 2    |        |
|---|--------------|--------------------|-----|-------|----|-----------|--------|
|   |              | 0                  |     | DwPTS |    | n.a.      | n.a.   |
|   |              | T1                 | T2  | T1    | T2 | T1        | T2     |
| UTRA RF Channel Number  |              | Channel 1 (Note 1) |     |       |    | Channel 2 |        |
| CPICH_Ec/lor  | dB           | n.a.               |     | n.a.  |    | -10       | -10    |
| PCCPCH_Ec/lor   | dB           | -3                 | -3  |       |    | -12       | -12    |
| SCH_Ec/lor  | dB           |                    |     |       |    | -12       | -12    |
| PICH_Ec/lor   | dB           |                    |     |       |    | -15       | -15    |
| DwPCH_Ec/lor  | dB           |                    |     | 0     | 0  | n.a.      | n.a.   |
| OCNS  | dB           | -3                 | -3  |       |    | -0,941    | -0,941 |
| $\hat{I}_{or}/I_{oc}$   | dB           | 3                  | 3   | 3     | 3  | -Infinity | -2     |
| $I_{oc}$  | dBm/1.28 MHz | -70                |     |       |    |           |        |
| $I_{oc}$  | dBm/3.84 MHz |                    |     |       |    | -70       |        |
| CPICH_RSCP  | dBm          | n.a.               |     |       |    | -Infinity | -82    |
| PCCPCH_RSCP   | dBm          | -70                | -70 |       |    | n.a.      | n.a.   |
| Propagation Condition   |              | AWGN               |     |       |    | AWGN      |        |
| NOTE 1: The DPCH of cell 1 is located in a timeslot other than 0.   |              |                    |     |       |    |           |        |
| NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test. |              |                    |     |       |    |           |        |

**A.8.3.1.1.3 7.68 Mcps TDD option**

The purpose of this test is to verify that the UE makes correct reporting of events when measuring on UTRA FDD cells. This test will partly verify the requirements in section 8.1.2B and 9.1.

The test parameters are given in Table A.8.3E and A.8.3F below. The test consists of two successive time periods, with time durations of T1 and T2 respectively. Two cells shall be present in the test, cell 1 being the serving UTRA TDD cell and cell 2 being a UTRA FDD neighbour cells on the unused frequency.

In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C shall be used and that CPICH Ec/I0 of the best cell on the unused frequency shall be reported together with Event 2C. The

Measurement control message shall be sent to the UE such that the delay between the end of the last received TTI containing the message and the beginning of T1 is at least equal to the RRC procedure delay as defined in [16].

The second Beacon timeslot shall be provided in timeslot 8 for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3. The TTI of the uplink DCCH shall be 20 ms.

**Table A.8.3E: General test parameters for correct reporting of FDD neighbours in AWGN**

| Parameter                    |                | Unit | Value  | Comment                                 |
|------------------------------|----------------|------|--|---|
| DPCH parameters              |                |      | DL Reference Measurement Channel 12.2 kbps                     | As specified in TS 25.102 section A.2.2 |
| Power Control                |                |      | On   |   |
| Target quality value on DTCH |                | BLER | 0.01   |   |
| Initial conditions           | Active cell    |      | Cell 1   | UTRA TDD cell                           |
|                              | Neighbour cell |      | Cell 2   | UTRA FDD cell                           |
| Final conditions             | Active cell    |      | Cell 1   |   |
| Threshold non used frequency |                | dB   | -18  | Applicable for event 2C                 |
| W non-used frequency         |                |      | 1  | Applicable for event 2C                 |
| Hysteresis                   |                | dB   | 0  | Applicable for event 2C                 |
| Time to Trigger              |                | ms   | 0  |   |
| Filter coefficient           |                |      | 0  |   |
| Monitored cell list size     |                |      | 6 TDD neighbours on channel 1<br>6 FDD neighbours on channel 2 |   |
| T1                           |                | s    | 15   |   |
| T2                           |                | s    | 10   |   |

**Table A.8.3F: Cell specific parameters for correct reporting of FDD neighbours in AWGN propagation condition**

| Parameter                 | Unit          | Cell 1    |       |       |       | Cell 2    |      |
|---------------------------|---------------|-----------|-------|-------|-------|-----------|------|
|                           |               | 0         |       | 8     |       | n.a.      |      |
| Timeslot Number           |               | T1        | T2    | T1    | T2    | T1        | T2   |
| UTRA RF Channel Number    |               | Channel 1 |       |       |       | Channel 2 |      |
| CPICH_Ec/I <sub>oc</sub>  | dB            | n.a.      |       | n.a.  |       | -10       |      |
| PCCPCH_Ec/I <sub>oc</sub> | dB            | -3        | -3    |       |       | -12       |      |
| SCH_Ec/I <sub>oc</sub>    | dB            | -9        | -9    | -9    | -9    | -12       |      |
| SCH_t <sub>offset</sub>   |               | 0         | 0     | 0     | 0     | n.a.      |      |
| PICH_Ec/I <sub>oc</sub>   |               |           |       | -3    | -3    | -15       |      |
| OCNS                      | dB            | -4,28     | -4,28 | -4,28 | -4,28 | -0,941    |      |
| $\hat{I}_{or}/I_{oc}$     | dB            | 3         | 3     | 3     | 3     | -infinity | -1.8 |
| I <sub>oc</sub>           | dBm/ 7.68 MHz | -70       |       |       |       | -70       |      |
| CPICH_Ec/I <sub>o</sub>   |               | n.a.      |       |       |       | -infinity | -14  |
| PCCPCH_RSCP               | dB            | -70       | -70   | -70   | -70   | n.a.      |      |
| Propagation Condition     |               | AWGN      |       |       |       | AWGN      |      |

### A.8.3.1.2 Test Requirements

#### A.8.3.1.2.1 3.84 Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 seconds from the start of time period T2.

The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly observed during repeated tests shall be at least 90%.



#### A.8.3.1.2.2 1.28 Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 s from the beginning of time period T2.

The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

#### A.8.3.1.2.3 7.68 Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5 seconds from the start of time period T2.

The UE shall not send any measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly observed during repeated tests shall be at least 90%.

### A.8.4 GSM measurements

#### A.8.4.1 Correct reporting of GSM neighbours in AWGN propagation condition

##### A.8.4.1.1 Test Purpose and Environment

###### A.8.4.1.1.1 3.84 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing GSM measurements. This test will partly verify the requirements in section 8.1.2.5. The requirements are also applicable for a UE not requiring idle intervals to perform GSM measurements.

The test parameters are given in Tables A.8.4.1, A.8.4.2 and A.8.4.3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3B and 3C shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be transmitted in timeslot 0 for cell 1 and no second Beacon timeslot shall be provided for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

**Table A.8.4.1: General test parameters for correct reporting of GSM neighbours in AWGN propagation condition**

| Parameter                      | Unit | Value  | Comment   |
|--------------------------------|------|--|---|
| DCH parameters                 |      | DL Reference Measurement Channel<br>12.2 kbps                        | As specified in TS 25.102 section A.2.2                                     |
| Power Control                  |      | On   |   |
| Target quality value on DTCH   | BLER | 0.01   |   |
| Active cell                    |      | Cell 1   |   |
| Inter-RAT measurement quantity |      | GSM carrier RSSI   |   |
| BSIC verification required     |      | Required   |   |
| Threshold other system         | dBm  | -80  | Absolute GSM carrier RSSI threshold for Events 3B and 3C.                   |
| Hysteresis                     | dB   | 0  |   |
| Time to Trigger                | ms   | 0  |   |
| Filter coefficient             |      | 0  |   |
| Monitored cell list size       |      | 12 TDD neighbours on Channel 1<br>6 GSM neighbours including ARFCN 1 | Measurement control information is sent before the start of time period T1. |
| T <sub>identify abort</sub>    | s    | 5  | As specified in section 8.1.2.5   |
| T <sub>reconfirm abort</sub>   | s    | 5  | As specified in section 8.1.2.5   |
| T1                             | s    | 10   |   |
| T2                             | s    | 10   |   |
| T3                             | s    | 10   |   |

**Table A.8.4.2: Cell specific parameters for correct reporting of GSM neighbours in AWGN propagation condition (cell 1)**

| Parameter   | Unit              | Cell 1     |        |
|---|-------------------|------------|--------|
|   |                   | T1, T2, T3 |        |
| DL timeslot number  |                   | 0          | 1      |
| UTRA RF Channel number  |                   | Channel 1  |        |
| PCCPCH_Ec/Ior   | dB                | -3         | n.a.   |
| SCH_Ec/Ior  | dB                | -9         | n.a.   |
| SCH_t <sub>offset</sub>   |                   | 0          | n.a.   |
| OCNS_Ec/Ior   | dB                | -3,12      | Note 2 |
| DPCH_Ec/Ior   | dB                | n.a.       | Note 1 |
| I <sub>or</sub> /I <sub>oc</sub>  | dB                | 6          | 6      |
| I <sub>o</sub> , Note 1   | dBm /<br>3.84 MHz | -70        |        |
| Propagation condition   |                   | AWGN       |        |
| Note 1: The DPCH level is controlled by the power control loop  |                   |            |        |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> . |                   |            |        |

**Table A.8.4.3: Cell specific parameters for correct reporting of GSM neighbours in AWGN propagation condition (cell 2)**

| Parameter                  | Unit | Cell 2  |     |     |
|----------------------------|------|---------|-----|-----|
|                            |      | T1      | T2  | T3  |
| Absolute RF Channel Number |      | ARFCN 1 |     |     |
| RXLEV                      | dBm  | -85     | -75 | -85 |

#### A.8.4.1.1.2 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter-RAT GSM measurements. This test will partly verify the requirements in section 8.1A.2.5. The requirements are also applicable for a UE not requiring idle intervals to perform GSM measurements.

Two cells shall be present in the test, Cell 1 is current active cell, cell 2 is a GSM cell. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3B and 3C shall be used. At the start of time duration T1, the UE may not have any timing information of cell 2.

#### A.8.4.1.1.2.1 Test 1. With BSIC verification required

The test parameters are given in Tables A.8.4.4, A.8.4.5 and A.8.4.6.

**Table A.8.4.4: General test parameters for Correct reporting of GSM neighbours in AWGN propagation condition, Test 1.**

| Parameter                      | Unit | Value  | Comment   |
|--------------------------------|------|--|---|
| DCH parameters                 |      | DL Reference Measurement Channel<br>12.2 kbps                        | As specified in TS 25.102 section A.2.2. The DPCH is located in an other timeslot than 0. |
| Power Control                  |      | On   |   |
| Target quality value on DTCH   | BLER | 0.01   |   |
| Active cell                    |      | Cell 1   |   |
| Inter-RAT measurement quantity |      | GSM Carrier RSSI   |   |
| BSIC verification required     |      | required   |   |
| Threshold other system         | dBm  | -80  | Absolute GSM carrier RSSI threshold for event 3B and 3C.                                  |
| Hysteresis                     | dB   | 0  |   |
| Time to Trigger                | ms   | 0  |   |
| Filter coefficient             |      | 0  |   |
| Monitored cell list size       |      | 12 TDD neighbours on Channel 1<br>6 GSM neighbours including ARFCN 1 | Measurement control information is sent before T1 starts.                                 |
| T Identify abort               | s    | 5.0  |   |
| T Reconfirm abort              | s    | 5.0  |   |
| T1                             | s    | 5  |   |
| T2                             | s    | 7  |   |
| T3                             | s    | 5  |   |

**Table A.8.4.5: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 1)**

| Parameter  | Unit         | Cell 1     |       |
|--|--------------|------------|-------|
|  |              | T1, T2, T3 |       |
| Timeslot Number  |              | 0          | DwPTS |
| UTRA RF Channel Number (NOTE 3)  |              | Channel 1  |       |
| PCCPCH_Ec/I <sub>or</sub>  | dB           | -3         |       |
| DwPCH_Ec/I <sub>or</sub>   | dB           |            | 0     |
| OCNS_Ec/I <sub>or</sub>  |              | -3         |       |
| $\hat{I}_{or}/I_{oc}$  | dB           | 3          |       |
| $I_{oc}$   | dBm/1.28 MHz | -70        |       |
| PCCPCH_RSCP  | dB           | -70        |       |
| Propagation Condition  |              | AWGN       |       |
| NOTE 1: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> .                |              |            |       |
| NOTE 2: PCCPCH RSCP levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |            |       |
| NOTE 3: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                |              |            |       |

**Table A.8.4.6: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 2)**

| Parameter                  | Unit | Cell 2    |     |     |
|----------------------------|------|-----------|-----|-----|
|                            |      | T1        | T2  | T3  |
| Absolute RF Channel Number |      | ARFCN 1   |     |     |
| RXLEV                      | dBm  | -infinity | -75 | -85 |

A.8.4.1.1.2.2 Test 2. Without BSIC verification required

The test parameters are given in Tables A.8.4.7, A.8.4.8 and A.8.4.9.

**Table A.8.4.7: General test parameters for Correct reporting of GSM neighbours in AWGN propagation condition, Test 2**

| Parameter                      | Unit | Value  | Comment   |
|--------------------------------|------|--|---|
| DCH parameters                 |      | DL Reference Measurement Channel<br>12.2 kbps                        | As specified in TS 25.102 section A.2.2. The DPCH is located in an other timeslot than 0. |
| Power Control                  |      | On   |   |
| Target quality value on DTCH   | BLER | 0.01   |   |
| Active cell                    |      | Cell 1   |   |
| Inter-RAT measurement quantity |      | GSM Carrier RSSI   |   |
| BSIC verification required     |      | Not required   |   |
| Threshold other system         | dBm  | -80  | Absolute GSM carrier RSSI threshold for event 3B and 3C.                                  |
| Hysteresis                     | dB   | 0  |   |
| Time to Trigger                | ms   | 0  |   |
| Filter coefficient             |      | 0  |   |
| Monitored cell list size       |      | 12 TDD neighbours on Channel 1<br>6 GSM neighbours including ARFCN 1 | Measurement control information is sent before T1 starts.                                 |
| T1                             | s    | 5  |   |
| T2                             | s    | 2  |   |
| T3                             | s    | 5  |   |

**Table A.8.4.8: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 1)**

| Parameter  | Unit         | Cell 1     |       |
|--|--------------|------------|-------|
|  |              | T1, T2, T3 |       |
| Timeslot Number  |              | 0          | DwPTS |
| UTRA RF Channel Number (NOTE 3)  |              | Channel 1  |       |
| PCCPCH_Ec/I <sub>or</sub>  | dB           | -3         |       |
| DwPCH_Ec/I <sub>or</sub>   | dB           |            | 0     |
| OCNS_Ec/I <sub>or</sub>  |              | -3         |       |
| $\hat{I}_{or}/I_{oc}$  | dB           | 3          |       |
| $I_{oc}$   | dBm/1.28 MHz | -70        |       |
| PCCPCH_RSCP  | dB           | -70        |       |
| Propagation Condition  |              | AWGN       |       |
| NOTE 1: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> .                |              |            |       |
| NOTE 2: PCCPCH RSCP levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |            |       |
| NOTE 3: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                |              |            |       |

**Table A.8.4.9: Cell specific test parameters for Correct reporting of GSM neighbours in AWGN propagation condition (cell 2)**

| Parameter                  | Unit | Cell 2    |     |     |
|----------------------------|------|-----------|-----|-----|
|                            |      | T1        | T2  | T3  |
| Absolute RF Channel Number |      | ARFCN 1   |     |     |
| RXLEV                      | dBm  | -infinity | -75 | -85 |

#### A.8.4.1.1.3 7.68 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when doing GSM measurements. This test will partly verify the requirements in section 8.1.2B.5. The requirements are also applicable for a UE not requiring idle intervals to perform GSM measurements.

The test parameters are given in Tables A.8.4.7, A.8.4.8 and A.8.4.9 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 3B and 3C shall be used. The test consists of three successive time periods, with a time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be transmitted in timeslot 0 for cell 1 and no second Beacon timeslot shall be provided for cell 1. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

**Table A.8.4.7: General test parameters for correct reporting of GSM neighbours in AWGN propagation condition**

| Parameter                      | Unit | Value  | Comment   |
|--------------------------------|------|--|---|
| DCH parameters                 |      | DL Reference Measurement Channel<br>12.2 kbps                        | As specified in TS 25.102 section A.2.2                                     |
| Power Control                  |      | On   |   |
| Target quality value on DTCH   | BLER | 0.01   |   |
| Active cell                    |      | Cell 1   |   |
| Inter-RAT measurement quantity |      | GSM carrier RSSI   |   |
| BSIC verification required     |      | Required   |   |
| Threshold other system         | dBm  | -80  | Absolute GSM carrier RSSI threshold for Events 3B and 3C.                   |
| Hysteresis                     | dB   | 0  |   |
| Time to Trigger                | ms   | 0  |   |
| Filter coefficient             |      | 0  |   |
| Monitored cell list size       |      | 12 TDD neighbours on Channel 1<br>6 GSM neighbours including ARFCN 1 | Measurement control information is sent before the start of time period T1. |
| T <sub>identify abort</sub>    | s    | 5  | As specified in section 8.1.2B.5  |
| T <sub>reconfirm abort</sub>   | s    | 5  | As specified in section 8.1.2B.5  |
| T1                             | s    | 10   |   |
| T2                             | s    | 10   |   |
| T3                             | s    | 10   |   |

**Table A.8.4.8: Cell specific parameters for correct reporting of GSM neighbours in AWGN propagation condition (cell 1)**

| Parameter   | Unit              | Cell 1     |        |
|---|-------------------|------------|--------|
|   |                   | T1, T2, T3 |        |
| DL timeslot number  |                   | 0          | 1      |
| UTRA RF Channel number  |                   | Channel 1  |        |
| PCCPCH_Ec/Ior   | dB                | -3         | n.a.   |
| SCH_Ec/Ior  | dB                | -9         | n.a.   |
| SCH_t <sub>offset</sub>   |                   | 0          | n.a.   |
| OCNS_Ec/Ior   | dB                | -3,12      | Note 2 |
| DPCH_Ec/Ior   | dB                | n.a.       | Note 1 |
| I <sub>or</sub> /I <sub>oc</sub>  | dB                | 6          | 6      |
| I <sub>o</sub> , Note 1   | dBm /<br>7.68 MHz | -70        |        |
| Propagation condition   |                   | AWGN       |        |
| Note 1: The DPCH level is controlled by the power control loop  |                   |            |        |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I <sub>or</sub> . |                   |            |        |

**Table A.8.4.9: Cell specific parameters for correct reporting of GSM neighbours in AWGN propagation condition (cell 2)**

| Parameter                  | Unit | Cell 2  |     |     |
|----------------------------|------|---------|-----|-----|
|                            |      | T1      | T2  | T3  |
| Absolute RF Channel Number |      | ARFCN 1 |     |     |
| RXLEV                      | dBm  | -85     | -75 | -85 |

## A.8.4.1.2 Test Requirements

### A.8.4.1.2.1 3.84 Mcps TDD option

The UE shall send one Event 3C triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the start of time period T2.

The UE shall send one Event 3B triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the start of time period T3.

The UE shall not send any Event 3B or 3C triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

### A.8.4.1.2.2 1.28 Mcps TDD option

#### A.8.4.1.2.2.1 Test Requirement with BSIC verification required

The UE shall send one Event 3C triggered measurement report for cell 2, with a measurement reporting delay less than 5.96s from the beginning of time period T2.

The UE shall send one Event 3B triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly observed during repeated tests shall be at least 90%.

#### A.8.4.1.2.2.1 Test Requirement without BSIC verification required

The UE shall send one Event 3C triggered measurement report for cell 2, with a measurement reporting delay less than 960ms from the beginning of time period T2.

The UE shall send one Event 3B triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly observed during repeated tests shall be at least 90%.

### A.8.4.1.2.3 7.68 Mcps TDD option

The UE shall send one Event 3C triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the start of time period T2.

The UE shall send one Event 3B triggered measurement report for cell 2, with a measurement reporting delay less than 960 ms from the start of time period T3.

The UE shall not send any Event 3B or 3C triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

## A 8.4.2 Combined UTRA TDD inter-frequency and GSM cell search under AWGN propagation condition

### A8.4.2.1 Test Purpose and Environment

#### A8.4.2.1.1 3.84 Mcps TDD option

#### A8.4.2.1.2 1.28 Mcps TDD option

This test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements and GSM measurements. The test will partly verify the requirements in section 8.1A.2.3 combined 8.1A.2.5 under AWGN propagation conditions.

This test scenario comprised of 2 UTRA TDD cells working on different frequency, and 1 GSM cell. Test parameters are given in Table A.8.4.2.1.2-1, A.8.4.2.1.2-2, and A.8.4.2.1.2-3. Two UTRA TDD cells shall be synchronized, i.e. sharing the same frame and timeslot timing.

The test consists of 3 successive time periods, with time duration T1, T2 and T3. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2C and 3C shall be used.

**Table A. 8.4.2.1.2-1: General test parameters for combined UTRA TDD inter-frequency and GSM cells search under AWGN propagation conditions**

| Parameter                      | Unit | Value   | Comment  |
|--------------------------------|------|---|--|
| DPCH parameters active cell    |      | DL Reference Measurement Channel 12.2 kbps                          | As specified in TS 25.102 section A.2.2.           |
| Power Control                  |      | On  |  |
| Target quality value on DTCH   | BLER | 0.01  |  |
| Active cell                    |      | Cell 1  | 1.28Mcps TDD cell operating on channel 1           |
| Neighbour cell                 |      | Cell 2  | 1.28Mcps TDD cell operating on channel 2           |
|                                |      | Cell 3  | GSM cell   |
| T <sub>non used 2c</sub>       | dBm  | -71   | Absolute P-CCPCH RSCP threshold for event 2C       |
| Inter-RAT measurement quantity |      | GSM carrier RSSI  |  |
| BSIC verification required     |      | Required  |  |
| T <sub>other_RAT</sub>         | dBm  | -80   | Absolute GSM carrier RSSI threshold for event 3C   |
| H <sub>2c</sub>                | dB   | 0   | The hysteresis parameter for the event 2C          |
| H <sub>3c</sub>                | dB   | 0   | The hysteresis parameter for the event 3C          |
| TimeToTrigger                  | ms   | 0   |  |
| Filter coefficient             |      | 0   | L3 filtering is not used                           |
| Monitored cell list size       |      | 16 TDD neighbour on channel 1<br>6 GSM neighbours including ARFCN 1 |  |
| Propagation Condition          |      | AWGN  |  |
| T1                             | s    | 5   | During T1, cell 2 and cell 3 shall be powered off. |
| T2                             | s    | 6   |  |
| T3                             | s    | 8   |  |



**Table A. 8.4.2.1.2-2: Cell specific test parameters for combined UTRA TDD inter-frequency and E-UTRA FDD cell search under fading propagation conditions (cell 1 and cell 2)**

| Parameter               | Unit                | Cell 1 (UTRA) |    |    |       |    |    | Cell 2 (UTRA) |    |     |       |    |    |
|-------------------------|---------------------|---------------|----|----|-------|----|----|---------------|----|-----|-------|----|----|
|                         |                     | 0             |    |    | DwPTS |    |    | 0             |    |     | DwPTS |    |    |
| Timeslot Number         |                     | T1            | T2 | T3 | T1    | T2 | T3 | T1            | T2 | T3  | T1    | T2 | T3 |
| UTRA RF Channel Number* |                     | Channel 1     |    |    |       |    |    | Channel 2     |    |     |       |    |    |
| PCCPCH_Ec/Ior           | dB                  | -3            |    |    |       |    |    | -3            |    |     |       |    |    |
| DwPCH_Ec/Ior            | dB                  |               |    |    | 0     |    |    |               |    |     | 0     |    |    |
| OCNS_Ec/Ior             | dB                  | -3            |    |    |       |    |    | -3            |    |     |       |    |    |
| $\hat{I}_{or}/I_{oc}$   | dB                  | 3             |    | 3  |       |    |    | -Infinity     |    | 6   |       |    |    |
| $I_{oc}$                | dBm/<br>1.28<br>MHz | -70           |    |    |       |    |    | -70           |    |     |       |    |    |
| PCCPCH RSCP             | dBm                 | -70           |    |    |       |    |    | -Infinity     |    | -67 |       |    |    |
| Propagation Condition   |                     | AWGN          |    |    |       |    |    |               |    |     |       |    |    |

**Table A. 8.4.2.1.2-3: Cell specific test parameters for combined UTRA TDD inter-frequency and GSM cell search under AWGN propagation conditions (cell 3)**

| Parameter                  | Unit | Cell 3    |    |     |
|----------------------------|------|-----------|----|-----|
|                            |      | T1        | T2 | T3  |
| Absolute RF Channel Number |      | ARFCN 1   |    |     |
| RXLEV                      | dBm  | -Infinity |    | -75 |

A8.4.2.1.3 7.68 Mcps TDD option

A8.4.2.2 Test Requirement

A8.4.2.2.1 3.84 Mcps TDD option

A8.4.2.2.2 1.28 Mcps TDD option

The UE shall send one Event 2C triggered measurement report, with a measurement reporting delay less than 5080ms from the beginning of time period T2.

The UE shall send one Event 3C triggered measurement report for cell 3, with a measurement reporting delay less than 6040ms from the beginning of time period T3.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of events correctly reported during repeated tests shall be at least 90%.

A8.4.2.2.3 7.68 Mcps TDD option

(void)

## A.8.5 E-UTRA Measurements

### A.8.5.1 UTRA TDD to E-UTRA FDD cell search under fading propagation conditions

#### A.8.5.1.1 Test Purpose and Environment

##### A.8.5.1.1.1 3.84 Mcps TDD option

##### A.8.5.1.1.2 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when measuring on E-UTRA FDD cells. This test will partly verify the E-UTRA FDD cell search requirements in section 8.1A.2.6 under fading propagation conditions.

This test scenario comprised of 1 UTRA TDD serving cell, and 1 E-UTRA FDD cell to be searched. Test parameters are given in Table A.8.5.1.1.2-1, A.8.5.1.1.2-2, and A.8.5.1.1.2-3. Idle interval of 80ms period as defined in TS25.331 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event 3c is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively.

**Table A.8.5.1.1.2-1: General test parameters for UTRA TDD to E-UTRA FDD cell search under fading propagation conditions**

| Parameter                   | Unit | Value   | Comment  |
|-----------------------------|------|---|--|
| DPCH parameters active cell |      | DL Reference Measurement Channel<br>12.2 kbps | As specified in TS 25.102 section A. The DPCH is located in an other timeslot than 0.                              |
| Active cell                 |      | Cell 1  | 1.28Mcps TDD cell  |
| Neighbour cell              |      | Cell 2  | E-UTRA FDD cell  |
| CP length of cell 2         |      | normal  |  |
| Idle intervals period       | ms   | 80  | As specified in TS 25.331  |
| $T_{\text{other\_RAT}}$     | dBm  | -100  | Absolute RSRP threshold for event 3c   |
| $CIO_{\text{other\_RAT}}$   | dB   | 0   | Cell individual offset   |
| $H_{3c}$                    | dB   | 0   | Hysteresis parameter for event 3c  |
| TimeToTrigger               | dB   | 0   |  |
| Filter coefficient          |      | 0   | L3 filtering is not used   |
| T1                          | s    | 5   | During T1, cell 2 shall be powered off, and during the off time the physical layer cell identity shall be changed. |
| T2                          | s    | 10  |  |

**Table A.8.5.1.1.2-2: Cell specific test parameters for cell search UTRA TDD to E-UTRA FDD test case (cell 1)**

| Parameter  | Unit         | Cell 1 (UTRA) |     |       |      |
|--|--------------|---------------|-----|-------|------|
|  |              | 0             |     | DwPTS |      |
| Timeslot Number  |              | T1            | T2  | T1    | T2   |
| UTRA RF Channel Number*  |              | Channel 1     |     |       |      |
| PCCPCH_Ec/lor  | dB           | -3            | -3  |       |      |
| DwPCH_Ec/lor   | dB           |               |     | 0     | 0    |
| OCNS_Ec/lor  | dB           | -3            | -3  |       |      |
| $\hat{I}_{or} / I_{oc}$  | dB           | 3             | 3   | 3     | 3    |
| $I_{oc}$   | dBm/1.28 MHz | -70           |     |       |      |
| PCCPCH RSCP  | dBm          | -70           | -70 | n.a.  | n.a. |
| Propagation Condition  |              | Case 3        |     |       |      |
| * Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number. |              |               |     |       |      |

**Table A.8.5.1.1.2-3: Cell specific test parameters for cell search UTRA TDD to E-UTRA FDD test case (cell 2)**

| Parameter  | Unit      | Cell 2    |          |
|--|-----------|-----------|----------|
|  |           | T1        | T2       |
| E-UTRA RF Channel Number   |           | 2         |          |
| BW <sub>channel</sub>  | MHz       | 10        |          |
| OCNG Pattern defined in A.3.2.1.2 (OP.2 FDD) in [24]   |           | OP.2 FDD  | OP.2 FDD |
| PBCH_RA  | dB        | 0         | 0        |
| PBCH_RB  | dB        |           |          |
| PSS_RB   | dB        |           |          |
| SSS_RB   | dB        |           |          |
| PCFICH_PA  | dB        |           |          |
| PHICH_PA   | dB        |           |          |
| PHICH_PB   | dB        |           |          |
| PDCCH_PA   | dB        |           |          |
| PDCCH_PB   | dB        |           |          |
| PDSCH_PA   | dB        |           |          |
| PDSCH_PB   | dB        |           |          |
| OCNG_RA <sup>Note1</sup>   | dB        |           |          |
| OCNG_RB <sup>Note1</sup>   | dB        |           |          |
| $\hat{E}_s / N_{oc}$   | dB        | -Infinity | 9        |
| $N_{oc}$   | dBm/15kHz | -98       |          |
| $\hat{E}_s / I_{ot}$   | dB        | -Infinity | 9        |
| RSRP <sup>Note 2</sup>   | dBm/15kHz | -Infinity | -89      |
| SCH_RP <sup>Note 2</sup>   | dBm/15kHz | -Infinity | -89      |
| $I_o$ <sup>Note 2</sup>  | dBm/9MHz  | -70.22    | -60.70   |
| Propagation Condition  |           | ETU70     |          |
| Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. |           |           |          |
| Note 2: RSRP, SCH_RP and $I_o$ levels have been derived from other parameters for information purposes. They are not settable parameters themselves.   |           |           |          |
| Note 3: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.   |           |           |          |

A.8.5.1.1.3 7.68 Mcps TDD option

## A.8.5.1.2 Test Requirements

### A.8.5.1.2.1 3.84 Mcps TDD option

### A.8.5.1.2.2 1.28 Mcps TDD option

The UE shall send one Event 3c triggered measurement report, with a measurement reporting delay less than 7.7s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2 \times TTI_{DCCCH}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

### A.8.5.1.2.3 7.68 Mcps TDD option

## A.8.5.2 UTRA TDD to E-UTRA TDD cell search under fading propagation conditions

### A.8.5.2.1 Test Purpose and Environment

#### A.8.5.2.1.1 3.84 Mcps TDD option

#### A.8.5.2.1.2 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event when measuring on E-UTRA TDD cells. This test will partly verify the E-UTRA TDD cell search requirements in section 8.1A.2.7 under fading propagation conditions.

This test scenario comprised of 1 UTRA TDD serving cell, and 1 E-UTRA TDD cell to be searched. Test parameters are given in Table A.8.5.2.1.2-1, A.8.5.2.1.2-2, and A.8.5.2.1.2-3. Idle interval of 80ms period as defined in TS25.331 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event 3c is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively.

**Table A.8.5.2.1.2-1: General test parameters for UTRA TDD to E-UTRA TDD cell search under fading propagation conditions**

| Parameter                                | Unit | Value                                      | Comment  |
|--|------|--|--|
| DPCH parameters active cell              |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A. The DPCH is located in an other timeslot than 0.                              |
| Active cell                              |      | Cell 1                                     | 1.28Mcps TDD cell  |
| Neighbour cell                           |      | Cell 2                                     | E-UTRA TDD cell  |
| Uplink-downlink configuration of cell 2  |      | 1  | As specified in table 4.2.2 in TS 36.211   |
| Special subframe configuration of cell 2 |      | 6  | As specified in table 4.2.1 in TS 36.211   |
| CP length of cell 2                      |      | normal                                     |  |
| Idle intervals period                    | ms   | 80   | As specified in TS 25.331  |
| $T_{\text{other\_RAT}}$                  | dBm  | -100                                       | Absolute RSRP threshold for event 3c   |
| $CIO_{\text{other\_RAT}}$                | dB   | 0  | Cell individual offset   |
| $H_{3c}$                                 | dB   | 0  | Hysteresis parameter for event 3c  |
| TimeToTrigger                            | dB   | 0  |  |
| Filter coefficient                       |      | 0  | L3 filtering is not used   |
| T1                                       | s    | 5  | During T1, cell 2 shall be powered off, and during the off time the physical layer cell identity shall be changed. |
| T2                                       | s    | 10   |  |

**Table A.8.5.2.1.2-2: Cell specific test parameters for cell search UTRA TDD to E-UTRA TDD test case (cell 1)**

| Parameter  | Unit         | Cell 1 (UTRA) |     |       |      |
|--|--------------|---------------|-----|-------|------|
|  |              | 0             |     | DwPTS |      |
| Timeslot Number  |              | T1            | T2  | T1    | T2   |
| UTRA RF Channel Number*  |              | Channel 1     |     |       |      |
| PCCPCH_Ec/Ior  | dB           | -3            | -3  |       |      |
| DwPCH_Ec/Ior   | dB           |               |     | 0     | 0    |
| OCNS_Ec/Ior  | dB           | -3            | -3  |       |      |
| $\hat{I}_{or} / I_{oc}$  | dB           | 3             | 3   | 3     | 3    |
| $I_{oc}$   | dBm/1.28 MHz | -70           |     |       |      |
| PCCPCH RSCP  | dBm          | -70           | -70 | n.a.  | n.a. |
| Propagation Condition  |              | Case 3        |     |       |      |
| * Note: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency"s channel number. |              |               |     |       |      |

**Table A.8.5.2.1.2-3: Cell specific test parameters for cell search UTRA TDD to E-UTRA TDD test case (cell 2)**

| Parameter  | Unit      | Cell 2    |          |
|--|-----------|-----------|----------|
|  |           | T1        | T2       |
| E-UTRA RF Channel Number   |           | 2         |          |
| $BW_{\text{channel}}$  | MHz       | 10        |          |
| OCNG Pattern defined in A.3.2.2.2 (OP.2 TDD) in [24]   |           | OP.2 TDD  | OP.2 TDD |
| PBCH_RA  | dB        | 0         | 0        |
| PBCH_RB  | dB        |           |          |
| PSS_RB   | dB        |           |          |
| SSS_RB   | dB        |           |          |
| PCFICH_PA  | dB        |           |          |
| PHICH_PA   | dB        |           |          |
| PHICH_PB   | dB        |           |          |
| PDCCH_PA   | dB        |           |          |
| PDCCH_PB   | dB        |           |          |
| PDSCH_PA   | dB        |           |          |
| PDSCH_PB   | dB        |           |          |
| OCNG_RA <sup>Note1</sup>   | dB        |           |          |
| OCNG_RB <sup>Note1</sup>   | dB        |           |          |
| $\hat{E}_s / N_{oc}$   | dB        |           |          |
| $N_{oc}$   | dBm/15kHz | -98       |          |
| $\hat{E}_s / I_{ot}$   | dB        | -Infinity | 9        |
| RSRP <sup>Note 2</sup>   | dBm/15kHz | -Infinity | -89      |
| SCH_RP <sup>Note 2</sup>   | dBm/15kHz | -Infinity | -89      |
| $I_o$ <sup>Note 2</sup>  | dBm/9MHz  | -70.22    | -60.70   |
| Propagation Condition  |           | ETU70     |          |
| <p>Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.</p> <p>Note 2: RSRP, SCH_RP and <math>I_o</math> levels have been derived from other parameters for information purposes. They are not settable parameters themselves.</p> <p>Note 3: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.</p> |           |           |          |

### A.8.5.2.1.3 7.68 Mcps TDD option

## A.8.5.2.2 Test Requirements

### A.8.5.2.2.1 3.84 Mcps TDD option

### A.8.5.2.2.2 1.28 Mcps TDD option

The UE shall send one Event 3c triggered measurement report, with a measurement reporting delay less than 7.7s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

**NOTE:** The actual overall delays measured in the test may be up to  $2 \times TTI_{\text{DCCCH}}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCCH.

## A.8.5.2.2.3 7.68 Mcps TDD option

## A.8.5.3 Combined UTRA TDD inter-frequency and E-UTRA FDD cell search under fading propagation conditions

## A.8.5.3.1 Test Purpose and Environment

## A.8.5.3.1.1 3.84 Mcps TDD option

## A.8.5.3.1.2 1.28 Mcps TDD option

This test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements and E-UTRA FDD measurements. The test will partly verify the requirements in section 8.1A.2.3 combined 8.1A.2.6 under fading propagation conditions.

This test scenario comprised of 2 UTRA TDD cells working on different frequency, and 1 E-UTRA FDD cell. Test parameters are given in Table A.8.5.3.1.2-1, A.8.5.3.1.2-2, and A.8.5.3.1.2-3. Scheduled idle interval of 80ms period as defined in TS25.331 is provided. Two UTRA TDD cells shall be synchronised, i.e. sharing the same frame and timeslot timing.

The test consists of 2 successive time periods, with time duration T1 and T2. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2B and 3A shall be used.

**Table A.8.5.3.1.2-1: General test parameters for combined UTRA TDD inter-frequency and E-UTRA FDD cells search under fading propagation conditions**

| Parameter                   | Unit | Value   | Comment   |
|-----------------------------|------|---|---|
| DPCH parameters active cell |      | DL Reference Measurement Channel<br>12.2 kbps | As specified in TS 25.102 section A.2.2. The DPCH is located in an other timeslot than 0.                                     |
| Active cell                 |      | Cell 1  | 1.28Mcps TDD cell operating on channel 1  |
| Neighbour cell              |      | Cell 2  | 1.28Mcps TDD cell operating on channel 2  |
|                             |      | Cell 3  | E-UTRA FDD cell   |
| CP length of cell 3         |      | Normal  |   |
| Idle intervals period       | ms   | 80  | As specified in TS 25.331   |
| T <sub>used 2b</sub>        | dBm  | -73   | Absolute P-CCPCH RSCP threshold for event 2B  |
| T <sub>non used 2b</sub>    | dBm  | -82   | Absolute P-CCPCH RSCP threshold for event 2B  |
| T <sub>used</sub>           | dBm  | -73   | Absolute P-CCPCH RSCP threshold for event 3A  |
| T <sub>other_RAT</sub>      | dBm  | -100  | Absolute RSRP threshold for event 3A  |
| H <sub>2b</sub>             | dB   | 0   | The hysteresis parameter for the event 2B   |
| H <sub>3a</sub>             | dB   | 0   | The hysteresis parameter for the event 3A   |
| CIO <sub>other_RAT</sub>    | dB   | 0   | Cell individual offset for the cell of the other system   |
| TimeToTrigger               | ms   | 0   |   |
| Filter coefficient          |      | 0   | L3 filtering is not used  |
| Monitored cell list size    |      | 24 on channel 1<br>16 on channel 2            |   |
| T1                          | s    | 5   | During T1, cell 2 and cell 3 shall be powered off, and during the off time the physical layer cell identity shall be changed. |
| T2                          | s    | 7   |   |

**Table A.8.5.3.1.2-2: Cell specific test parameters for combined UTRA TDD inter-frequency and E-UTRA FDD cell search under fading propagation conditions (cell 1 and cell 2)**

| Parameter                                | Unit  | Cell 1 (UTRA) |        |        |        | Cell 2 (UTRA) |        |           |        |
|--|---|---------------|--------|--------|--------|---------------|--------|-----------|--------|
|  |   | 0             |        | DwPTS  |        | 0             |        | DwPTS     |        |
| Timeslot Number                          |   | T1            | T2     | T1     | T2     | T1            | T2     | T1        | T2     |
| UTRA RF Channel Number <sup>Note 1</sup> |   | Channel 1     |        |        |        | Channel 2     |        |           |        |
| PCCPCH_Ec/I <sub>or</sub>                | dB  | -3            |        |        |        | -3            |        |           |        |
| DwPCH_Ec/I <sub>or</sub>                 | dB  |               |        | 0      |        |               |        | 0         |        |
| OCNS_Ec/I <sub>or</sub>                  | dB  | -3            |        |        |        | -3            |        |           |        |
| $\hat{I}_{or}/I_{oc}$                    | dB  | 4             | 4      | 4      | 4      | -Infinity     | 12     | -Infinity | 12     |
| $I_{oc}$                                 | dBm/<br>1.28<br>MHz   | -80           |        |        |        |               |        |           |        |
| PCCPCH RSCP <sup>Note 2</sup>            | dBm   | -79           | -79    | n.a.   |        | -Infinity     | -71    | n.a.      |        |
| $I_o$ <sup>Note 2</sup>                  | dBm/<br>1.28<br>MHz   | -74.54        | -74.54 | -74.54 | -74.54 | -80           | -67.73 | -80       | -67.73 |
| Propagation Condition                    |   | AWGN          |        |        |        | Case 3        |        |           |        |
| Note 1:                                  | In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                       |               |        |        |        |               |        |           |        |
| Note 2:                                  | PCCPCH_RSCP and $I_o$ levels have been derived from other parameters for information purposes. They are not settable parameters themselves. |               |        |        |        |               |        |           |        |
| Note 3:                                  | The DPCH of all cells are located in a timeslot other than 0.   |               |        |        |        |               |        |           |        |



**Table A.8.5.3.1.2-3: Cell specific test parameters for combined UTRA TDD inter-frequency and E-UTRA FDD cell search under fading propagation conditions (cell 3)**

| Parameter  | Unit      | Cell 3         |          |
|--|-----------|----------------|----------|
|  |           | T1             | T2       |
| E-UTRA RF Channel Number   |           | 3              |          |
| $BW_{\text{channel}}$  | MHz       | 10             |          |
| OCNG Pattern defined in A.3.2.1.2 (OP.2 FDD) in [24]   |           | OP.2 FDD       | OP.2 FDD |
| PBCH_RA  | dB        | 0              | 0        |
| PBCH_RB  | dB        |                |          |
| PSS_RB   | dB        |                |          |
| SSS_RB   | dB        |                |          |
| PCFICH_PA  | dB        |                |          |
| PHICH_PA   | dB        |                |          |
| PHICH_PB   | dB        |                |          |
| PDCCH_PA   | dB        |                |          |
| PDCCH_PB   | dB        |                |          |
| PDSCH_PA   | dB        |                |          |
| PDSCH_PB   | dB        |                |          |
| OCNG_RANote1   | dB        |                |          |
| OCNG_RBNote1   | dB        |                |          |
| $\hat{E}_s / N_{oc}$   | dB        |                |          |
| $N_{oc}$   | dBm/15kHz | -98            |          |
| $\hat{E}_s / I_{ot}$   | dB        | -Infinity      | 9        |
| RSRP <sup>Note 3</sup>   | dBm/15kHz | -Infinity      | -89      |
| SCH_RP <sup>Note 3</sup>   | dBm/15kHz | -Infinity      | -89      |
| $I_o$ <sup>Note 3</sup>  | dBm/9MHz  | -70.22         | -60.70   |
| Propagation Condition  |           | ETU70 (Note 4) |          |
| Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.<br>Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.<br>Note 3: RSRP, SCH_RP and $I_o$ levels have been derived from other parameters for information purposes. They are not settable parameters themselves.<br>Note 4: ETU70 propagation conditions are specified in Annex B.2 of 3GPP TS 36.101. |           |                |          |

A.8.5.3.1.3 7.68 Mcps TDD option

A.8.5.3.2 Test Requirements

A.8.5.3.2.1 3.84 Mcps TDD option

A.8.5.3.2.2 1.28 Mcps TDD option

The UE shall send one Event 2B triggered measurement report for Cell2, with a measurement reporting delay less than 5s from the beginning of time period T2.

The UE shall send one Event 3A triggered measurement report for Cell3, with a measurement reporting delay less than 4270ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2 \times TTI_{\text{DCCH}}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

## A.8.5.3.2.3 7.68 Mcps TDD option

## A.8.5.4 Combined UTRA TDD inter-frequency and E-UTRA TDD cell search under fading propagation conditions

## A.8.5.4.1 Test Purpose and Environment

## A.8.5.4.1.1 3.84 Mcps TDD option

## A.8.5.4.1.2 1.28 Mcps TDD option

This test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements and E-UTRA TDD measurements. The test will partly verify the requirements in section 8.1A.2.3 combined 8.1A.2.7 under fading propagation conditions.

This test scenario comprised of 2 UTRA TDD cells working on different frequency, and 1 E-UTRA TDD cell. Test parameters are given in Table A.8.5.4.1.2-1, A.8.5.4.1.2-2, and A.8.5.4.1.2-3. Scheduled idle interval of 80ms period as defined in TS25.331 is provided. Two UTRA TDD cells shall be synchronised, i.e. sharing the same frame and timeslot timing.

The test consists of 2 successive time periods, with time duration T1 and T2. In the measurement control information it is indicated to the UE that event-triggered reporting with Event 2B and 3a shall be used.

**Table A.8.5.4.1.2-1: General test parameters for combined UTRA TDD inter-frequency and E-UTRA TDD cells search under fading propagation conditions**

| Parameter                   | Unit | Value   | Comment   |
|-----------------------------|------|---|---|
| DPCH parameters active cell |      | DL Reference Measurement Channel<br>12.2 kbps | As specified in TS 25.102 section A.2.2. The DPCH is located in an other timeslot than 0.                                     |
| Active cell                 |      | Cell 1  | 1.28Mcps TDD cell operating on channel 1  |
| Neighbour cell              |      | Cell 2  | 1.28Mcps TDD cell operating on channel 2  |
|                             |      | Cell 3  | E-UTRA TDD cell   |
| CP length of cell 3         |      | Normal  |   |
| Idle intervals period       | ms   | 80  | As specified in TS 25.331   |
| T <sub>used 2b</sub>        | dBm  | -73   | Absolute P-CCPCH RSCP threshold for event 2B  |
| T <sub>non used 2b</sub>    | dBm  | -82   | Absolute P-CCPCH RSCP threshold for event 2B  |
| T <sub>used</sub>           | dBm  | -73   | Absolute P-CCPCH RSCP threshold for event 3A  |
| T <sub>other_RAT</sub>      | dBm  | -100  | Absolute RSRP threshold for event 3A  |
| H <sub>2b</sub>             | dB   | 0   | The hysteresis parameter for the event 2B   |
| H <sub>3a</sub>             | dB   | 0   | The hysteresis parameter for the event 3A   |
| CIO <sub>other_RAT</sub>    | dB   | 0   | Cell individual offset for the cell of the other system   |
| TimeToTrigger               | dB   | 0   |   |
| Filter coefficient          |      | 0   | L3 filtering is not used  |
| Monitored cell list size    |      | 24 on channel 1<br>16 on channel 2            |   |
| T1                          | s    | 5   | During T1, cell 2 and cell 3 shall be powered off, and during the off time the physical layer cell identity shall be changed. |
| T2                          | s    | 7   |   |

**Table A.8.5.4.1.2-2: Cell specific test parameters for combined UTRA TDD inter-frequency and E-UTRA TDD cell search under fading propagation conditions (cell 1 and cell 2)**

| Parameter                                | Unit  | Cell 1 (UTRA) |        |        |        | Cell 2 (UTRA) |     |           |        |
|--|---|---------------|--------|--------|--------|---------------|-----|-----------|--------|
|  |   | 0             |        | DwPTS  |        | 0             |     | DwPTS     |        |
| Timeslot Number                          |   | T1            | T2     | T1     | T2     | T1            | T2  | T1        | T2     |
| UTRA RF Channel Number <sup>Note 1</sup> |   | Channel 1     |        |        |        | Channel 2     |     |           |        |
| PCCPCH_Ec/Ior                            | dB  | -3            |        |        |        | -3            |     |           |        |
| DwPCH_Ec/Ior                             | dB  |               |        | 0      |        |               |     | 0         |        |
| OCNS_Ec/Ior                              | dB  | -3            |        |        |        | -3            |     |           |        |
| $\hat{I}_{or}/I_{oc}$                    | dB  | 4             | 4      | 4      | 4      | -Infinity     | 12  | -Infinity | 12     |
| $I_{oc}$                                 | dBm/1.28 MHz  | -80           |        |        |        |               |     |           |        |
| PCCPCH RSCP <sup>Note 2</sup>            | dBm   | -79           | -79    | n.a.   |        | -Infinity     | -71 | n.a.      |        |
| $I_o$ <sup>Note 2</sup>                  | dBm/1.28 MHz  | -74.54        | -74.54 | -74.54 | -74.54 | -80           |     | -80       | -67.73 |
| Propagation Condition                    |   | AWGN          |        |        |        | Case 3        |     |           |        |
| Note 1:                                  | In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                       |               |        |        |        |               |     |           |        |
| Note 2:                                  | PCCPCH_RSCP and $I_o$ levels have been derived from other parameters for information purposes. They are not settable parameters themselves. |               |        |        |        |               |     |           |        |
| Note 3:                                  | The DPCH of all cells are located in a timeslot other than 0.   |               |        |        |        |               |     |           |        |

**Table A.8.5.4.1.2-3: Cell specific test parameters for combined UTRA TDD inter-frequency and E-UTRA TDD cell search under fading propagation conditions (cell 3)**

| Parameter  | Unit      | Cell 3         |          |
|--|-----------|----------------|----------|
|  |           | T1             | T2       |
| E-UTRA RF Channel Number   |           | 3              |          |
| $BW_{\text{channel}}$  | MHz       | 10             |          |
| OCNG Pattern defined in A.3.2.2.2 (OP.2 TDD) in [24]   |           | OP.2 TDD       | OP.2 TDD |
| PBCH_RA  | dB        | 0              | 0        |
| PBCH_RB  | dB        |                |          |
| PSS_RB   | dB        |                |          |
| SSS_RB   | dB        |                |          |
| PCFICH_PA  | dB        |                |          |
| PHICH_PA   | dB        |                |          |
| PHICH_PB   | dB        |                |          |
| PDCCH_PA   | dB        |                |          |
| PDCCH_PB   | dB        |                |          |
| PDSCH_PA   | dB        |                |          |
| PDSCH_PB   | dB        |                |          |
| OCNG_RANote1   | dB        |                |          |
| OCNG_RBNote1   | dB        |                |          |
| $\hat{E}_s / N_{oc}$   | dB        |                |          |
| $N_{oc}$   | dBm/15kHz | -98            |          |
| $\hat{E}_s / I_{ot}$   | dB        | -Infinity      | 9        |
| RSRP <sup>Note 3</sup>   | dBm/15kHz | -Infinity      | -89      |
| SCH_RP <sup>Note 3</sup>   | dBm/15kHz | -Infinity      | -89      |
| $I_o$ <sup>Note 3</sup>  | dBm/9MHz  | -70.22         | -60.70   |
| Propagation Condition  |           | ETU70 (Note 4) |          |
| Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.<br>Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.<br>Note 3: RSRP, SCH_RP and $I_o$ levels have been derived from other parameters for information purposes. They are not settable parameters themselves.<br>Note 4: ETU70 propagation conditions are specified in Annex B.2 of 3GPP TS 36.101. |           |                |          |

A.8.5.4.1.3 7.68 Mcps TDD option

A.8.5.4.2 Test Requirements

A.8.5.4.2.1 3.84 Mcps TDD option

A.8.5.4.2.2 1.28 Mcps TDD option

The UE shall send one Event 2B triggered measurement report for Cell2, with a measurement reporting delay less than 5s from the beginning of time period T2.

The UE shall send one Event 3a triggered measurement report for Cell3, with a measurement reporting delay less than 4270ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to  $2 \times TTI_{\text{DCCH}}$  higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

## A.8.5.4.2.3 7.68 Mcps TDD option

## A.9 Measurement Performance Requirements

Unless explicitly stated:

- Measurement channel is 12.2 kbps as defined in TS 25.102 annex A. This measurement channel is used both in active cell and cells to be measured.
- Cell 1 is the active cell.
- Single task reporting.
- Power control is active.

### A.9.1 Measurement Performance for UE (3.84 Mcps TDD option)

#### A.9.1.1 P-CCPCH RSCP

##### A.9.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the P-CCPCH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.1.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

##### A.9.1.1.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2.

Both P-CCPCH RSCP intra frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.1.

**Table A.9.1: P-CCPCH RSCP Intra frequency test parameters**

| Parameter   | Unit           | Test 1    |        | Test 2    |        | Test 3    |        |
|---|----------------|-----------|--------|-----------|--------|-----------|--------|
|   |                | Cell 1    | Cell 2 | Cell 1    | Cell 2 | Cell 1    | Cell 2 |
| DL timeslot number  |                | 0         | 0      | 0         | 0      | 0         | 0      |
| UTRA RF Channel number  |                | Channel 1 |        | Channel 1 |        | Channel 1 |        |
| PCCPCH_Ec/lor   | dB             | -3        |        | -3        |        | -3        |        |
| SCH_Ec/lor  | dB             | -9        |        | -9        |        | -9        |        |
| SCH_t <sub>offset</sub>   |                | 0         | 5      | 0         | 5      | 0         | 5      |
| OCNS_Ec/lor   | dB             | -3,12     |        | -3,12     |        | -3,12     |        |
| I <sub>oc</sub>   | dBm / 3.84 MHz | -75.7     |        | -59.8     |        | -98.7     |        |
| I <sub>or/lor</sub>   | dB             | 5         | 2      | 9         | 2      | 3         | 0      |
| PCCPCH RSCP, Note 1   | dBm            | -73.7     | -76.7  | -53.8     | -60.8  | -98.7     | -101.7 |
| I <sub>o</sub> , Note 1   | dBm / 3.84 MHz | -69       |        | -50       |        | -94       |        |
| Propagation condition   |                | AWGN      |        | AWGN      |        | AWGN      |        |
| NOTE 1: PCCPCH RSCP and I <sub>o</sub> levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                |           |        |           |        |           |        |

##### A.9.1.1.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

P-CCPCH RSCP inter frequency relative accuracy requirements are tested by using test parameters in Table A.9.2.

**Table A.9.2: P-CCPCH RSCP Inter frequency tests parameters**

| Parameter  | Unit           | Test 1    |           | Test 2    |           | Test 3    |           |
|--|----------------|-----------|-----------|-----------|-----------|-----------|-----------|
|  |                | Cell 1    | Cell 2    | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number   |                | 0         | 2         | 0         | 2         | 0         | 2         |
| UTRA RF Channel number   |                | Channel 1 | Channel 2 | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| PCCPCH_Ec/Ior  | dB             | -3        |           | -3        |           | -3        |           |
| SCH_Ec/Ior   | dB             | -9        |           | -9        |           | -9        |           |
| SCH_toffset  |                | 0         | 5         | 0         | 5         | 0         | 5         |
| OCNS_Ec/Ior  | dB             | -3,12     |           | -3,12     |           | -3,12     |           |
| Ior  | dBm / 3.84 MHz | -75.2     | -75.2     | -57.8     | -54.1     | -98.7     | -97       |
| Ior/Ior  | dB             | 5         | 5         | 7         | 2         | 3         | 0         |
| PCCPCH RSCP, Note 1  | dBm            | -73.2     | -73.2     | -54.8     | -55.1     | -98.7     | -100      |
| Ior, Note 1  | dBm / 3.84 MHz | -69       |           | -50       |           | -94       |           |
| Propagation condition  |                | AWGN      |           | AWGN      |           | AWGN      |           |
| NOTE 1: PCCPCH RSCP and Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                |           |           |           |           |           |           |

### A.9.1.1.2 Test Requirements

The P-CCPCH RSCP measurement accuracy shall meet the requirements in section 9.1.1.1.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.1.2 CPICH measurements

### A.9.1.2.1 CPICH RSCP

#### A.9.1.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.2 and applies to UE's supporting this capability.

The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

##### A.9.1.2.1.1.1 Inter frequency test parameters

In this case both cells are on different frequencies. Cell 1 is a UTRA TDD cell and cell 2 is a UTRA FDD cell. No second Beacon timeslot shall be provided for cell 1.

CPICH RSCP inter frequency absolute accuracy requirements are tested by using test parameters in Table A.9.3.

**Table A.9.3: CPICH RSCP Inter frequency tests parameters**

| Parameter   | Unit          | Test 1    |           | Test 2    |           |
|---|---------------|-----------|-----------|-----------|-----------|
|   |               | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number  |               | 0         | n.a.      | 0         | n.a.      |
| UTRA RF Channel number  |               | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| CPICH_Ec/lor  | dB            | n.a.      | -10       | n.a.      | -10       |
| PCCPCH_Ec/lor   | dB            | -3        | -12       | -3        | -12       |
| SCH_Ec/lor  | dB            | -9        | -12       | -9        | -12       |
| SCH_t <sub>offset</sub>   |               | 5         | n.a.      | 5         | n.a.      |
| PICH_Ec/lor   | dB            | n.a.      | -15       | n.a.      | -15       |
| OCNS_Ec/lor   | dB            | -3.12     | -0.94     | -3.12     | -0.94     |
| loc   | dBm/ 3.84 MHz | -57.7     | -60       | -84.7     | -84       |
| lor/loc   | dB            | 7         | 9.54      | 3         | 0         |
| PCCPCH RSCP, Note 1   | dBm           | -53.7     | n.a.      | -84.7     | n.a.      |
| CPICH RSCP, Note 1  | dBm           | n.a.      | -60.46    | n.a.      | -94       |
| lo, Note 1  | dBm/ 3.84 MHz | -50       | -50       | -80       | -81       |
| Propagation condition   | -             | AWGN      |           | AWGN      |           |
| NOTE 1: PCCPCH RSCP, CPICH RSCP and lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |               |           |           |           |           |

#### A.9.1.2.1.2 Test Requirements

The CPICH RSCP measurement accuracy shall meet the requirements in section 9.1.1.2.

The rate of correct measurements observed during repeated tests shall be at least 90%.

#### A.9.1.2.2 CPICH Ec/lo

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.3 exists.

### A.9.1.3 Timeslot ISCP

#### A.9.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the Timeslot ISCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.3.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

##### A.9.1.3.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2.

The Timeslot ISCP intra frequency absolute accuracy requirements are tested by using test parameters in Table A.9.4.

Table A.9.4: Timeslot ISCP Intra frequency test parameters

| Parameter   | Unit           | Test 1    |        | Test 2    |        | Test 3    |        |
|---|----------------|-----------|--------|-----------|--------|-----------|--------|
|   |                | Cell 1    | Cell 2 | Cell 1    | Cell 2 | Cell 1    | Cell 2 |
| DL timeslot number  |                | 0         | 0      | 0         | 0      | 0         | 0      |
| UTRA RF Channel number  |                | Channel 1 |        | Channel 1 |        | Channel 1 |        |
| PCCPCH_Ec/Ior   | dB             | -3        |        | -3        |        | -3        |        |
| SCH_Ec/Ior  | dB             | -9        |        | -9        |        | -9        |        |
| SCH_t <sub>offset</sub>   |                | 0         | 5      | 0         | 5      | 0         | 5      |
| OCNS_Ec/Ior   | dB             | -3,12     |        | -3,12     |        | -3,12     |        |
| I <sub>oc</sub>   | dBm / 3.84 MHz | -75.7     |        | -59.8     |        | -98.7     |        |
| I <sub>or/loc</sub>   | dB             | 5         | 2      | 9         | 2      | 3         | 0      |
| Timeslot ISCP, Note 1   | dBm            | -73.7     | -70.7  | -57.8     | -50.8  | -98.7     | -95.7  |
| I <sub>o</sub> , Note 1   | dBm / 3.84 MHz | -69       |        | -50       |        | -94       |        |
| Propagation condition   |                | AWGN      |        | AWGN      |        | AWGN      |        |
| NOTE 1: Timeslot ISCP and I <sub>o</sub> levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                |           |        |           |        |           |        |

### A.9.1.3.2 Test Requirements

The Timeslot ISCP measurement accuracy shall meet the requirements in section 9.1.1.3.

The rate of correct measurements observed during repeated tests shall be at least 90%.

### A.9.1.4 UTRA Carrier RSSI

#### A.9.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRA Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.4.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

##### A.9.1.4.1.1 Inter frequency test parameters

In this case both cells are on different frequencies. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

Both UTRA Carrier RSSI absolute and relative accuracy requirements are tested by using test parameters in Table A.9.5.



**Table A.9.5: UTRA Carrier RSSI Inter frequency tests parameters**

| Parameter  | Unit              | Test 1    |           | Test 2    |           | Test 3    |           |
|--|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|  |                   | Cell 1    | Cell 2    | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number   |                   | 0         | 2         | 0         | 2         | 0         | 2         |
| UTRA RF Channel number   |                   | Channel 1 | Channel 2 | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| PCCPCH_Ec/Ior  | dB                | -3        |           | -3        |           | -3        |           |
| SCH_Ec/Ior   | dB                | -9        |           | -9        |           | -9        |           |
| SCH_toffset  |                   | 0         | 5         | 0         | 5         | 0         | 5         |
| OCNS_Ec/Ior  | dB                | -3,12     |           | -3,12     |           | -3,12     |           |
| Ior  | dBm /<br>3.84 MHz | -75.2     | -75.2     | -57.8     | -54.1     | -98.7     | -97       |
| Ior/Ior  | dB                | 5         | 5         | 7         | 2         | 3         | 0         |
| Ior, Note 1  | dBm /<br>3.84 MHz | -69       |           | -50       |           | -94       |           |
| Propagation condition  |                   | AWGN      |           | AWGN      |           | AWGN      |           |
| NOTE 1: Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |           |           |           |           |           |

#### A.9.1.4.2 Test Requirements

The UTRA Carrier RSSI absolute measurement accuracy shall meet the requirements in section 9.1.1.4.

The UTRA Carrier RSSI relative measurement accuracy shall meet the requirements in Table A.9.6 by taking into account the effect of thermal noise and noise added by the receiver.

**Table A.9.6: UTRA Carrier RSSI relative accuracy**

| Parameter         | Unit | Accuracy [dB]    |                   | Conditions         |
|-------------------|------|------------------|-------------------|--------------------|
|                   |      | Normal condition | Extreme condition | Ior [dBm/3.84 MHz] |
| UTRA Carrier RSSI | dBm  | -4...5.2         | -7...8.2          | -94...-87          |
|                   | dBm  | ± 4              | ± 7               | -87...-70          |
|                   | dBm  | ± 6              | ± 9               | -70...-50          |

The rate of correct measurements observed during repeated tests shall be at least 90%.

#### A.9.1.5 GSM carrier RSSI

##### A.9.1.5.1 Test Purpose and Environment

*The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.5.*

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be provided in timeslot 0 and no second Beacon timeslot shall be provided for cell 1. In the measurement control information it is indicated to the UE that periodic reporting of the GSM carrier RSSI measurement is used. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

##### A.9.1.5.1.1 Inter frequency test parameters

GSM carrier RSSI accuracy requirements are tested by using test parameters in Table A.9.6A and A.9.6B.

The limits of the GSM test parameters are defined in [21].

**Table A.9.6A: General GSM Carrier RSSI test parameters**

| Parameter                      | Unit | Value                                      | Comment                                 |
|--------------------------------|------|--|---|
| DCH parameters                 |      | DL reference measurement channel 12.2 kbps | As specified in TS 25.102 section A.2.2 |
| Power Control                  |      | On   |   |
| Target quality value on DTCH   | BLER | 0.01                                       |   |
| Inter-RAT measurement quantity |      | GSM carrier RSSI                           |   |
| BSIC verification required     |      | No   |   |
| Monitored cell list size       |      | 6 GSM neighbours including ARFCN 1         |   |

**Table A.9.6B: Cell 1 specific GSM Carrier RSSI test parameters**

| Parameter  | Unit              | Cell 1    |        |
|--|-------------------|-----------|--------|
| DL timeslot number   |                   | 0         | 1      |
| UTRA RF Channel number   |                   | Channel 1 |        |
| PCCPCH_Ec/lor  | dB                | -3        | n.a.   |
| SCH_Ec/lor   | dB                | -9        | n.a.   |
| SCH_t <sub>offset</sub>  |                   | 0         | n.a.   |
| OCNS_Ec/lor  | dB                | -3,12     | Note 2 |
| DPCH_Ec/lor  | dB                | n.a.      | Note 1 |
| lor/loc  | dB                | 6         | 6      |
| lo, Note 1   | dBm /<br>3.84 MHz | -70       |        |
| Propagation condition  |                   | AWGN      |        |
| Note 1: The DPCH level is controlled by the power control loop   |                   |           |        |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor. |                   |           |        |

### A.9.1.5.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.1.5.

The rate of correct measurements observed during repeated tests shall be at least 90%.

### A.9.1.6 SIR

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.6 exists.

### A.9.1.7 Transport channel BLER

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.7 exists.

### A.9.1.8 SFN-SFN observed time difference

#### A.9.1.8.1 SFN-SFN observed time difference type 1

##### A.9.1.8.1.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 1 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from 0...9830400 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

#### A.9.1.8.1.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-SFN observed time difference type 1 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.7.

**Table A.9.7: SFN-SFN observed time difference type 1 Intra frequency test parameters**

| Parameter  | Unit              | Test 1    |        | Test 2    |        | Test 3    |        |
|--|-------------------|-----------|--------|-----------|--------|-----------|--------|
|  |                   | Cell 1    | Cell 2 | Cell 1    | Cell 2 | Cell 1    | Cell 2 |
| DL timeslot number   |                   | 0         | 2      | 0         | 2      | 0         | 2      |
| UTRA RF Channel number   |                   | Channel 1 |        | Channel 1 |        | Channel 1 |        |
| PCCPCH_Ec/Ior  | dB                | -3        |        | -3        |        | -3        |        |
| SCH_Ec/Ior   | dB                | -9        |        | -9        |        | -9        |        |
| SCH_toffset  |                   | 0         | 5      | 0         | 5      | 0         | 5      |
| OCNS_Ec/Ior  | dB                | -3,12     |        | -3,12     |        | -3,12     |        |
| Ior  | dBm /<br>3.84 MHz | -75.2     | -75.2  | -57.8     | -54.7  | -98.7     | -98.7  |
| Ior/Ior  | dB                | 5         | 5      | 7         | 3      | 3         | 3      |
| Ior, Note 1  | dBm /<br>3.84 MHz | -69       |        | -50       |        | -94       |        |
| Propagation condition  |                   | AWGN      |        | AWGN      |        | AWGN      |        |
| NOTE 1: Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |        |           |        |           |        |

#### A.9.1.8.1.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-SFN observed time difference type 2 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.8.

**Table A.9.8: SFN-SFN observed time difference type 1 Inter frequency tests parameters**

| Parameter  | Unit              | Test 1    |           | Test 2    |           | Test 3    |           |
|--|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|  |                   | Cell 1    | Cell 2    | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number   |                   | 0         | 2         | 0         | 2         | 0         | 2         |
| UTRA RF Channel number   |                   | Channel 1 | Channel 2 | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| PCCPCH_Ec/Ior  | dB                | -3        |           | -3        |           | -3        |           |
| SCH_Ec/Ior   | dB                | -9        |           | -9        |           | -9        |           |
| SCH_toffset  |                   | 0         | 5         | 0         | 5         | 0         | 5         |
| OCNS_Ec/Ior  | dB                | -3,12     |           | -3,12     |           | -3,12     |           |
| Ior  | dBm /<br>3.84 MHz | -75.2     | -75.2     | -57.8     | -54.7     | -98.7     | -98.7     |
| Ior/Ior  | dB                | 5         | 5         | 7         | 3         | 3         | 3         |
| Ior, Note 1  | dBm /<br>3.84 MHz | -69       |           | -50       |           | -94       |           |
| Propagation condition  |                   | AWGN      |           | AWGN      |           | AWGN      |           |
| NOTE 1: Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |           |           |           |           |           |

#### A.9.1.8.1.2 Test Requirements

The SFN-SFN observed time difference type 1 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.1.8.2 SFN-SFN observed time difference type 2

### A.9.1.8.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from -1280 ... +1280 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

#### A.9.1.8.2.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-SFN observed time difference type 2 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.8A.

**Table A.9.8A: SFN-SFN observed time difference type 2 Intra frequency test parameters**

| Parameter   | Unit              | Test 1    |        | Test 2    |        | Test 3    |        |
|---|-------------------|-----------|--------|-----------|--------|-----------|--------|
|   |                   | Cell 1    | Cell 2 | Cell 1    | Cell 2 | Cell 1    | Cell 2 |
| DL timeslot number  |                   | 0         | 2      | 0         | 2      | 0         | 2      |
| UTRA RF Channel number  |                   | Channel 1 |        | Channel 1 |        | Channel 1 |        |
| PCCPCH_Ec/lor   | dB                | -3        |        | -3        |        | -3        |        |
| SCH_Ec/lor  | dB                | -9        |        | -9        |        | -9        |        |
| SCH_t_offset  |                   | 0         | 5      | 0         | 5      | 0         | 5      |
| OCNS_Ec/lor   | dB                | -3,12     |        | -3,12     |        | -3,12     |        |
| loc   | dBm /<br>3.84 MHz | -75.2     | -75.2  | -57.8     | -54.7  | -98.7     | -98.7  |
| lor/loc   | dB                | 5         | 5      | 7         | 3      | 3         | 3      |
| lo, Note 1  | dBm /<br>3.84 MHz | -69       |        | -50       |        | -94       |        |
| Propagation condition   |                   | AWGN      |        | AWGN      |        | AWGN      |        |
| NOTE 1: lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |        |           |        |           |        |

#### A.9.1.8.2.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-SFN observed time difference type 2 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.8B.

**Table A.9.8B: SFN-SFN observed time difference type 2 Inter frequency tests parameters**

| Parameter  | Unit              | Test 1    |           | Test 2    |           | Test 3    |           |
|--|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|  |                   | Cell 1    | Cell 2    | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number   |                   | 0         | 2         | 0         | 2         | 0         | 2         |
| UTRA RF Channel number   |                   | Channel 1 | Channel 2 | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| PCCPCH_Ec/lor  | dB                | -3        |           | -3        |           | -3        |           |
| SCH_Ec/lor   | dB                | -9        |           | -9        |           | -9        |           |
| SCH_toffset  |                   | 0         | 5         | 0         | 5         | 0         | 5         |
| OCNS_Ec/lor  | dB                | -3,12     |           | -3,12     |           | -3,12     |           |
| lor  | dBm /<br>3.84 MHz | -75.2     | -75.2     | -57.8     | -54.7     | -98.7     | -98.7     |
| lor/lor  | dB                | 5         | 5         | 7         | 3         | 3         | 3         |
| lor, Note 1  | dBm /<br>3.84 MHz | -69       |           | -50       |           | -94       |           |
| Propagation condition  |                   | AWGN      |           | AWGN      |           | AWGN      |           |
| NOTE 1: lor levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |           |           |           |           |           |

#### A.9.1.8.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurements observed during repeated tests shall be at least 90%.

#### A.9.1.9 Observed time difference to GSM cell

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.9 exists.

#### A.9.1.10 SFN-CFN observed time difference

##### A.9.1.10.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-CFN observed time difference measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.10.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from 0...256 frames.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

##### A.9.1.10.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-CFN observed time difference accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.9.

**Table A.9.9: SFN-CFN observed time difference Intra frequency test parameters**

| Parameter  | Unit              | Test 1    |        | Test 2    |        | Test 3    |        |
|--|-------------------|-----------|--------|-----------|--------|-----------|--------|
|  |                   | Cell 1    | Cell 2 | Cell 1    | Cell 2 | Cell 1    | Cell 2 |
| DL timeslot number   |                   | 0         | 2      | 0         | 2      | 0         | 2      |
| UTRA RF Channel number   |                   | Channel 1 |        | Channel 1 |        | Channel 1 |        |
| PCCPCH_Ec/Ior  | dB                | -3        |        | -3        |        | -3        |        |
| SCH_Ec/Ior   | dB                | -9        |        | -9        |        | -9        |        |
| SCH_toffset  |                   | 0         | 5      | 0         | 5      | 0         | 5      |
| OCNS_Ec/Ior  | dB                | -3,12     |        | -3,12     |        | -3,12     |        |
| Ior  | dBm /<br>3.84 MHz | -75.2     | -75.2  | -57.8     | -54.7  | -98.7     | -98.7  |
| Ior/Ior  | dB                | 5         | 5      | 7         | 3      | 3         | 3      |
| Ior, Note 1  | dBm /<br>3.84 MHz | -69       |        | -50       |        | -94       |        |
| Propagation condition  |                   | AWGN      |        | AWGN      |        | AWGN      |        |
| NOTE 1: Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |        |           |        |           |        |

#### A.9.1.10.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-CFN observed time difference accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.10.

**Table A.9.10: SFN-CFN observed time difference Inter frequency tests parameters**

| Parameter  | Unit              | Test 1    |           | Test 2    |           | Test 3    |           |
|--|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|  |                   | Cell 1    | Cell 2    | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number   |                   | 0         | 2         | 0         | 2         | 0         | 2         |
| UTRA RF Channel number   |                   | Channel 1 | Channel 2 | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| PCCPCH_Ec/Ior  | dB                | -3        |           | -3        |           | -3        |           |
| SCH_Ec/Ior   | dB                | -9        |           | -9        |           | -9        |           |
| SCH_toffset  |                   | 0         | 5         | 0         | 5         | 0         | 5         |
| OCNS_Ec/Ior  | dB                | -3,12     |           | -3,12     |           | -3,12     |           |
| Ior  | dBm /<br>3.84 MHz | -75.2     | -75.2     | -57.8     | -54.7     | -98.7     | -98.7     |
| Ior/Ior  | dB                | 5         | 5         | 7         | 3         | 3         | 3         |
| Ior, Note 1  | dBm /<br>3.84 MHz | -69       |           | -50       |           | -94       |           |
| Propagation condition  |                   | AWGN      |           | AWGN      |           | AWGN      |           |
| NOTE 1: Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |           |           |           |           |           |

#### A.9.1.10.2 Test Requirements

The SFN-CFN observed time difference measurement accuracy shall meet the requirements in section 9.1.1.10.

The rate of correct measurements observed during repeated tests shall be at least 90%.

#### A.9.1.11 UE transmitted power

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.11 exists.

## A.9.2 Measurement Performance for UE for 1.28 Mcps TDD

### A.9.2.1 P-CCPCH RSCP

#### A.9.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the P-CCPCH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.1.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

##### A.9.2.1.1.1 Intra frequency test parameters

Both P-CCPCH RSCP intra frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.11.

Table A.9.11: P-CCPCH RSCP Intra frequency test parameters

|   |                  | Test 1    |       |           |       |
|---|------------------|-----------|-------|-----------|-------|
| Parameter   | Unit             | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |                  | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |                  | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/I <sub>or</sub>   | dB               | -3        |       | -3        |       |
| DwPCH_Ec/I <sub>or</sub>  | dB               |           | 0     |           | 0     |
| OCNS_Ec/I <sub>or</sub>   | dB               | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB               | 5         |       | 2         |       |
| $I_{oc}$  | dBm/<br>1.28 MHz | -76.6     |       |           |       |
| PCCPCH RSCP, Note 1   | dBm              | -74.6     |       | -77.6     |       |
| I <sub>o</sub> , Note 1   | dBm/<br>1.28 MHz | -69       |       |           |       |
| Propagation condition   |                  | AWGN      |       |           |       |
|   |                  | Test 2    |       |           |       |
| Parameter   | Unit             | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |                  | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |                  | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/I <sub>or</sub>   | dB               | -3        |       | -3        |       |
| DwPCH_Ec/I <sub>or</sub>  | dB               |           | 0     |           | 0     |
| OCNS_Ec/I <sub>or</sub>   | dB               | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB               | 9         |       | 2         |       |
| $I_{oc}$  | dBm/<br>1.28 MHz | -60.2     |       |           |       |
| PCCPCH RSCP, Note 1   | dBm              | -54.2     |       | -61.2     |       |
| I <sub>o</sub> , Note 1   | dBm/<br>1.28 MHz | -50       |       |           |       |
| Propagation condition   |                  | AWGN      |       |           |       |
|   |                  | Test 3    |       |           |       |
| Parameter   | Unit             | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |                  | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |                  | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/I <sub>or</sub>   | dB               | -3        |       | -3        |       |
| DwPCH_Ec/I <sub>or</sub>  | dB               |           | 0     |           | 0     |
| OCNS_Ec/I <sub>or</sub>   | dB               | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB               | 5         |       | 3         |       |
| $I_{oc}$  | dBm/<br>1.28 MHz | -101.9    |       |           |       |
| PCCPCH RSCP, Note 1   | dBm              | -99.9     |       | -101.9    |       |
| I <sub>o</sub> , Note 1   | dBm/<br>1.28 MHz | -94       |       |           |       |
| Propagation condition   |                  | AWGN      |       |           |       |
| NOTE 1: PCCPCH RSCP and I <sub>o</sub> levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                  |           |       |           |       |
| NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                                    |                  |           |       |           |       |

## A.9.2.1.1.1A Intra-frequency with two neighbour cells test parameters

Both P-CCPCH RSCP intra-frequency absolute and relative accuracy requirements with two neighbour cells are tested by using test parameters in Table A.9.11a.



Table A.9.11a: P-CCPCH RSCP intra-frequency with two neighbour cells test parameters

| Test 1   |              |           |       |           |       |           |       |
|--|--------------|-----------|-------|-----------|-------|-----------|-------|
| Parameter  | Unit         | Cell 1    |       | Cell 2    |       | Cell 3    |       |
| Timeslot Number                                    |              | 0         | DwPTS | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number                             |              | Channel 1 |       | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/lor                                      | dB           | -3        |       | -3        |       | -3        |       |
| DwPCH_Ec/lor                                       | dB           |           | 0     |           | 0     |           | 0     |
| OCNS_Ec/lor  | dB           | -3        |       | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$                              | dB           | 9         |       | 3         |       | 1         |       |
| $I_{oc}$   | dBm/1.28 MHz | -79.5     |       |           |       |           |       |
| PCCPCH RSCP (Note 1)                               | dBm          | -73.5     |       | -79.5     |       | -81.5     |       |
| Io (Note 1)  | dBm/1.28 MHz | -69       |       |           |       |           |       |
| Initial Time Delay<br>( $c_{init}$ ) (Note 2)      | Chip         | 1         |       | 5         |       | 7         |       |
| Initial Frequency<br>Shift ( $f_{init}$ ) (Note 3) | Hz           | 20        |       | 40        |       | -40       |       |
| Initial Phase ( $\phi_{init}$ ) (Note 4)           | Degree       | 0         |       | $\pi/2$   |       | $\pi$     |       |
| Propagation condition                              |              | AWGN      |       |           |       |           |       |
| Test 2   |              |           |       |           |       |           |       |
| Parameter  | Unit         | Cell 1    |       | Cell 2    |       | Cell 3    |       |
| Timeslot Number                                    |              | 0         | DwPTS | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number                             |              | Channel 1 |       | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/lor                                      | dB           | -3        |       | -3        |       | -3        |       |
| DwPCH_Ec/lor                                       | dB           |           | 0     |           | 0     |           | 0     |
| OCNS_Ec/lor  | dB           | -3        |       | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$                              | dB           | 7         |       | 7         |       | 1         |       |
| $I_{oc}$   | dBm/1.28 MHz | -60.5     |       |           |       |           |       |
| PCCPCH RSCP (Note 1)                               | dBm          | -56.5     |       | -56.5     |       | -62.5     |       |
| Io (Note 1)  | dBm/1.28 MHz | -50       |       |           |       |           |       |
| Initial Time Delay<br>( $c_{init}$ ) (Note 2)      | Chip         | 1         |       | 5         |       | 7         |       |
| Initial Frequency<br>Shift ( $f_{init}$ ) (Note 3) | Hz           | 20        |       | 40        |       | -40       |       |
| Initial Phase ( $\phi_{init}$ ) (Note 4)           | Degree       | 0         |       | $\pi/2$   |       | $\pi$     |       |
| Propagation condition                              |              | AWGN      |       |           |       |           |       |
| Test 3   |              |           |       |           |       |           |       |
| Parameter  | Unit         | Cell 1    |       | Cell 2    |       | Cell 3    |       |
| Timeslot Number                                    |              | 0         | DwPTS | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number                             |              | Channel 1 |       | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/lor                                      | dB           | -3        |       | -3        |       | -3        |       |
| DwPCH_Ec/lor                                       | dB           |           | 0     |           | 0     |           | 0     |
| OCNS_Ec/lor  | dB           | -3        |       | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$                              | dB           | 3         |       | 3         |       | 3         |       |
| $I_{oc}$   | dBm/1.28 MHz | -101.8    |       |           |       |           |       |

|  |                 |        |  |         |  |        |  |
|--|-----------------|--------|--|---------|--|--------|--|
|  | MHz             |        |  |         |  |        |  |
| PCCPCH RSCP<br>(Note 1)  | dBm             | -101.8 |  | -101.8  |  | -101.8 |  |
| Io (Note 1)  | dBm/1.28<br>MHz | -94    |  |         |  |        |  |
| Initial Time Delay<br>( $c_{init}$ ) (Note 2)  | Chip            | 1      |  | 5       |  | 7      |  |
| Initial Frequency<br>Shift ( $f_{init}$ ) (Note 3)   | Hz              | 20     |  | 40      |  | -40    |  |
| Initial Phase ( $\phi_{init}$ )<br>(Note 4)  | Degree          | 0      |  | $\pi/2$ |  | $\pi$  |  |
| Propagation<br>condition   |                 | AWGN   |  |         |  |        |  |
| Note 1: PCCPCH RSCP and Io levels are calculated from other parameters for information purposes.   |                 |        |  |         |  |        |  |
| Note 2: The delay of each base station ( $c$ ) is moving between [0chips, 2chips] around the base point, that is, the initial cell delay ( $c_{init}$ ). The delay variation interval is $\frac{1}{8}$ chip / 5ms. $c_n$ is the current subframe delay. The definition is as follows:  |                 |        |  |         |  |        |  |
| $\begin{cases} c_n = c_{init} + \frac{1}{8} \times (n \bmod 16), & \lfloor n/16 \rfloor \bmod 2 = 0 \\ c_n = c_{init} + 2 - \frac{1}{8} \times (n \bmod 16), & \lfloor n/16 \rfloor \bmod 2 = 1 \end{cases}$   |                 |        |  |         |  |        |  |
| Here, $n$ is the difference between the current subframe and initial subframe in the cell.   |                 |        |  |         |  |        |  |
| Note 3: Frequency offset ( $f$ ) is the difference between the actual transmit frequency and the nominal frequency in the cell. $f_{init}$ is the frequency offset of the initial subframe, $f_n$ is the frequency offset of the current subframe, and $f_{n+1}$ is the frequency offset of the next subframe. The frequency offset variation interval is 1Hz / 5ms. The definition is as follows: |                 |        |  |         |  |        |  |
| $\begin{cases} f_{n+1} = f_n + \Delta \\ \Delta_{init} = 1 \\ \Delta = -\Delta, \text{ (if } f_n = \pm 100\text{Hz)} \end{cases}$  |                 |        |  |         |  |        |  |
| Here, $n$ is the difference between the current subframe and initial subframe in the cell.   |                 |        |  |         |  |        |  |
| Note 4: The cell phase ( $\phi$ ) is changing continuously in the range of $[0, 2\pi)$ . $\phi_{init}$ is the initial phase of the cell, $\phi_n$ is the current subframe cell phase, and the phase variation interval is $\frac{\pi}{16}$ / 5ms. The definition is as follows:  |                 |        |  |         |  |        |  |
| $\phi_n = (\phi_{init} + n \times \frac{\pi}{16}) \bmod 2\pi$  |                 |        |  |         |  |        |  |
| Here, $n$ is the difference between the current subframe and initial subframe in the cell.   |                 |        |  |         |  |        |  |

#### A.9.2.1.1.2 Inter frequency test parameters

P-CCPCH RSCP inter frequency relative accuracy requirements are tested by using test parameters in Table A.9.12.

Table A.9.12: P-CCPCH RSCP Inter frequency tests parameters

|   |                  | Test 1    |       |           |       |
|---|------------------|-----------|-------|-----------|-------|
| Parameter   | Unit             | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |                  | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |                  | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB               | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB               |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB               | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB               | 5         |       | 5         |       |
| $I_{oc}$  | dBm/<br>1.28 MHz | -75.2     |       | -75.2     |       |
| PCCPCH RSCP, Note 1   | dBm              | -73.2     |       | -73.2     |       |
| Io, Note 1  | dBm/<br>1.28 MHz | -69       |       |           |       |
| Propagation condition   |                  | AWGN      |       |           |       |
|   |                  | Test 2    |       |           |       |
| Parameter   | Unit             | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |                  | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |                  | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB               | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB               |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB               | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB               | 7         |       | 2         |       |
| $I_{oc}$  | dBm/<br>1.28 MHz | -57.8     |       | -54.1     |       |
| PCCPCH RSCP, Note 1   | dBm              | -53.8     |       | -55.1     |       |
| Io, Note 1  | dBm/<br>1.28 MHz | -50       |       |           |       |
| Propagation condition   |                  | AWGN      |       |           |       |
|   |                  | Test 3    |       |           |       |
| Parameter   | Unit             | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |                  | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |                  | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB               | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB               |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB               | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB               | 3         |       | 0         |       |
| $I_{oc}$  | dBm/<br>1.28 MHz | -98.7     |       | -97       |       |
| PCCPCH RSCP, Note 1   | dBm              | -98.7     |       | -100      |       |
| Io, Note 1  | dBm/<br>1.28 MHz | -94       |       |           |       |
| Propagation condition   |                  | AWGN      |       |           |       |
| NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                  |           |       |           |       |
| NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                        |                  |           |       |           |       |

## A.9.2.1.1.2A Inter-frequency absolute accuracy test parameters

P-CCPCH RSCP inter-frequency absolute accuracy requirement is tested by using test parameters in Table A.9.12a.

**Table A.9.12a: P-CCPCH RSCP inter-frequency absolute accuracy test parameters**

| <b>Test 1</b>  |              |           |       |           |       |
|--|--------------|-----------|-------|-----------|-------|
| Parameter  | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number  |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior  | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior   | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior  | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$  | dB           | 5         |       | 5         |       |
| $I_{oc}$   | dBm/1.28 MHz | -75.2     |       | -75.2     |       |
| PCCPCH RSCP (Note 1)   | dBm          | -73.2     |       | -73.2     |       |
| Io (Note 1)  | dBm/1.28 MHz | -69       |       |           |       |
| Propagation condition  |              | AWGN      |       |           |       |
| <b>Test 2</b>  |              |           |       |           |       |
| Parameter  | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number  |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior  | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior   | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior  | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$  | dB           | 7         |       | 2         |       |
| $I_{oc}$   | dBm/1.28 MHz | -57.8     |       | -54.1     |       |
| PCCPCH RSCP (Note 1)   | dBm          | -53.8     |       | -55.1     |       |
| Io (Note 1)  | dBm/1.28 MHz | -50       |       |           |       |
| Propagation condition  |              | AWGN      |       |           |       |
| <b>Test 3</b>  |              |           |       |           |       |
| Parameter  | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number  |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior  | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior   | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior  | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$  | dB           | 3         |       | 0         |       |
| $I_{oc}$   | dBm/1.28 MHz | -98.7     |       | -97       |       |
| PCCPCH RSCP (Note 1)   | dBm          | -98.7     |       | -100      |       |
| Io (Note 1)  | dBm/1.28 MHz | -94       |       |           |       |
| Propagation condition  |              | AWGN      |       |           |       |
| Note 1: PCCPCH RSCP and Io levels are calculated from other parameters for information purposes. |              |           |       |           |       |

### A.9.2.1.1.3 Local cell absolute accuracy test parameters

P-CCPCH RSCP local cell absolute accuracy requirements are tested by using test parameters in Table A.9.12b.

**Table A.9.12b: P-CCPCH RSCP local cell absolute accuracy test parameters**

| <b>Test 1</b>          |              |           |       |
|------------------------|--------------|-----------|-------|
| Parameter              | Unit         | Cell 1    |       |
| Timeslot Number        |              | 0         | DwPTS |
| UTRA RF Channel Number |              | Channel 1 |       |
| PCCPCH_Ec/lor          | dB           | 0         |       |
| DwPCH_Ec/lor           | dB           |           | 0     |
| $\hat{I}_{or}$         | dBm/1.28 MHz | -76.6     |       |
| PCCPCH RSCP            | dBm          | -76.6     |       |
| <b>Test 2</b>          |              |           |       |
| Parameter              | Unit         | Cell 1    |       |
| Timeslot Number        |              | 0         | DwPTS |
| UTRA RF Channel Number |              | Channel 1 |       |
| PCCPCH_Ec/lor          | dB           | 0         |       |
| DwPCH_Ec/lor           | dB           |           | 0     |
| $\hat{I}_{or}$         | dBm/1.28 MHz | -85       |       |
| PCCPCH RSCP            | dBm          | -85       |       |
| <b>Test 3</b>          |              |           |       |
| Parameter              | Unit         | Cell 1    |       |
| Timeslot Number        |              | 0         | DwPTS |
| UTRA RF Channel Number |              | Channel 1 |       |
| PCCPCH_Ec/lor          | dB           | 0         |       |
| DwPCH_Ec/lor           | dB           |           | 0     |
| $\hat{I}_{or}$         | dBm/1.28 MHz | -90       |       |
| PCCPCH RSCP            | dBm          | -90       |       |
| <b>Test 4</b>          |              |           |       |
| Parameter              | Unit         | Cell 1    |       |
| Timeslot Number        |              | 0         | DwPTS |
| UTRA RF Channel Number |              | Channel 1 |       |
| PCCPCH_Ec/lor          | dB           | 0         |       |
| DwPCH_Ec/lor           | dB           |           | 0     |
| $\hat{I}_{or}$         | dBm/1.28 MHz | -95       |       |
| PCCPCH RSCP            | dBm          | -95       |       |

#### A.9.2.1.1.4 Local cell in white noise test parameters

P-CCPCH RSCP local cell in white noise absolute accuracy requirements are tested by using test parameters in Table A.9.12c.

Table A.9.12c: P-CCPCH RSCP local-cell in white noise test parameters

| Test 1  |              |           |       |
|---|--------------|-----------|-------|
| Parameter   | Unit         | Cell 1    |       |
| Timeslot Number   |              | 0         | DwPTS |
| UTRA RF Channel Number  |              | Channel 1 |       |
| PCCPCH_Ec/Ior   | dB           | 0         |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |
| $\hat{I}_{or}/I_{oc}$   | dB           | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -76.6     |       |
| PCCPCH RSCP (Note 1)  | dBm          | -74.6     |       |
| Propagation condition   |              | AWGN      |       |
| Test 2  |              |           |       |
| Parameter   | Unit         | Cell 1    |       |
| Timeslot Number   |              | 0         | DwPTS |
| UTRA RF Channel Number  |              | Channel 1 |       |
| PCCPCH_Ec/Ior   | dB           | 0         |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |
| $\hat{I}_{or}/I_{oc}$   | dB           | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -87       |       |
| PCCPCH RSCP (Note 1)  | dBm          | -85       |       |
| Propagation condition   |              | AWGN      |       |
| Test 3  |              |           |       |
| Parameter   | Unit         | Cell 1    |       |
| Timeslot Number   |              | 0         | DwPTS |
| UTRA RF Channel Number  |              | Channel 1 |       |
| PCCPCH_Ec/Ior   | dB           | 0         |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |
| $\hat{I}_{or}/I_{oc}$   | dB           | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -92       |       |
| PCCPCH RSCP (Note 1)  | dBm          | -90       |       |
| Propagation condition   |              | AWGN      |       |
| Test 4  |              |           |       |
| Parameter   | Unit         | Cell 1    |       |
| Timeslot Number   |              | 0         | DwPTS |
| UTRA RF Channel Number  |              | Channel 1 |       |
| PCCPCH_Ec/Ior   | dB           | 0         |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |
| $\hat{I}_{or}/I_{oc}$   | dB           | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -97       |       |
| PCCPCH RSCP (Note 1)  | dBm          | -95       |       |
| Propagation condition   |              | AWGN      |       |
| Note 1: PCCPCH RSCP and $I_o$ levels are calculated from other parameters for information purposes. |              |           |       |

### A.9.2.1.2 Test Requirements

The P-CCPCH RSCP measurement accuracy shall meet the requirements in section 9.1.1.1.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.2.2 CPICH measurements

### A.9.2.2.1 CPICH RSCP

#### A.9.2.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.2 and applies to UE's supporting this capability.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

#### A.9.2.2.1.1.1 Inter frequency test parameters

Cell 1 is a UTRA TDD cell and cell 2 is a UTRA FDD cell.

CPICH RSCP inter frequency absolute accuracy requirements are tested by using test parameters in Table A.9.13.

**Table A.9.13: CPICH RSCP Inter frequency tests parameters**

| Parameter   | Unit             | Test 1    |           | Test 2    |        |           |       |
|---|------------------|-----------|-----------|-----------|--------|-----------|-------|
|   |                  | Cell 1    | Cell 2    | Cell 1    | Cell 2 |           |       |
| DL timeslot number  |                  | 0         | DwP<br>TS | n.a.      | 0      | DwP<br>TS | n.a.  |
| UTRA RF Channel number<br>(NOTE 3)  |                  | Channel 1 |           | Channel 2 |        | Channel 1 |       |
| CPICH_Ec/lor  | dB               | n.a.      |           | -10       |        | n.a.      |       |
| PCCPCH_Ec/lor   | dB               | -3        |           | -12       | -3     |           | -12   |
| DwPCH_Ec/lor  | dB               |           | 0         | n.a.      |        | 0         | n.a.  |
| SCH_Ec/lor  | dB               | n.a.      |           | -12       |        | n.a.      |       |
| PICH_Ec/lor   | dB               | n.a.      |           | -15       |        | n.a.      |       |
| OCNS_Ec/lor   | dB               | -3        |           | -0.94     | -3     |           | -0.94 |
| loc, Note 2   | dBm/ 3.84<br>MHz | n.a.      |           | -60       |        | n.a.      |       |
| loc, Note 2   | dBm/ 1.28<br>MHz | -57.7     |           | n.a.      |        | -84.7     |       |
|   |                  |           |           |           |        |           |       |
| lor/loc   | dB               | 7         |           | 9.54      |        | 3         |       |
| PCCPCH RSCP, Note 1   | dBm              | -53.7     |           | n.a.      | -84.7  |           | n.a.  |
| CPICH RSCP, Note 1  | dBm              | n.a.      |           | -60.46    |        | n.a.      |       |
| lo, Notes 1, 2  | dBm/3.84<br>MHz  | n.a.      |           | -50       |        | n.a.      |       |
| lo, Notes 1, 2  | dBm/1.28<br>MHz  | -50       |           | n.a.      |        | -80       |       |
| Propagation condition   | -                | AWGN      |           | AWGN      |        | AWGN      |       |
| NOTE 1: PCCPCH RSCP, CPICH RSCP and lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                  |           |           |           |        |           |       |
| NOTE 2: loc and lo are given independently for TDD and FDD cells.   |                  |           |           |           |        |           |       |
| NOTE 3: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel Number can be set for the primary frequency in this test.                  |                  |           |           |           |        |           |       |

#### A.9.2.2.1.2 Test Requirements

The CPICH RSCP measurement accuracy shall meet the requirements in section 9.1.1.2.

The rate of correct measurements observed during repeated tests shall be at least 90%.

#### A.9.2.2.2 CPICH $E_c/I_0$

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.3 exists.

### A.9.2.3 Timeslot ISCP

#### A.9.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the Timeslot ISCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.3.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

##### A.9.2.3.1.1 Intra frequency test parameters

The Timeslot ISCP intra frequency absolute accuracy requirements are tested by using test parameters in Table A.9.14.



Table A.9.14: Timeslot ISCP Intra frequency test parameters

| Test 1  |              |           |       |           |       |
|---|--------------|-----------|-------|-----------|-------|
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/I <sub>or</sub>   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/I <sub>or</sub>  | dB           |           | 0     |           | 0     |
| OCNS_Ec/I <sub>or</sub>   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -76.6     |       |           |       |
| TS ISCP, Note 1   | dBm          | -74.6     |       | -71.6     |       |
| I <sub>o</sub> , Note 1   | dBm/1.28 MHz | -69       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
| Test 2  |              |           |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/I <sub>or</sub>   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/I <sub>or</sub>  | dB           |           | 0     |           | 0     |
| OCNS_Ec/I <sub>or</sub>   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 9         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -60.2     |       |           |       |
| TS ISCP, Note 1   | dBm          | -58.2     |       | -51.2     |       |
| I <sub>o</sub> , Note 1   | dBm/1.28 MHz | -50       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
| Test 3  |              |           |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/I <sub>or</sub>   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/I <sub>or</sub>  | dB           |           | 0     |           | 0     |
| OCNS_Ec/I <sub>or</sub>   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 3         |       |
| $I_{oc}$  | dBm/1.28 MHz | -101.9    |       |           |       |
| TS ISCP, Note 1   | dBm          | -98.9     |       | -96.9     |       |
| I <sub>o</sub> , Note 1   | dBm/1.28 MHz | -94       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
| NOTE 1: TS ISCP and I <sub>o</sub> levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |           |       |           |       |
| NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                               |              |           |       |           |       |

### A.9.2.3.2 Test Requirements

The Timeslot ISCP measurement accuracy shall meet the requirements in section 9.1.1.3.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.2.4 UTRA carrier RSSI

### A.9.2.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRA Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.4.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

#### A.9.2.4.1.1 Inter frequency test parameters

Both UTRA Carrier RSSI absolute and relative accuracy requirements are tested by using test parameters in Table A.9.15.

Table A.9.15: UTRA Carrier RSSI Inter frequency tests parameters

|   |              | Test 1    |       |           |       |
|---|--------------|-----------|-------|-----------|-------|
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 5         |       |
| $I_{oc}$  | dBm/1.28 MHz | -75.2     |       | -75.2     |       |
| Io, Note 1  | dBm/1.28 MHz | -69       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 2    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)r  |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 7         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -57.8     |       | -54.1     |       |
| Io, Note 1  | dBm/1.28 MHz | -50       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 3    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 3         |       | 0         |       |
| $I_{oc}$  | dBm/1.28 MHz | -98.7     |       | -97       |       |
| Io, Note 1  | dBm/1.28 MHz | -94       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
| NOTE 1: Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |           |       |           |       |
| NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number is the primary frequency's channel number.               |              |           |       |           |       |

#### A.9.2.4.2 Test Requirements

The UTRA Carrier RSSI absolute and relative measurement accuracy shall meet the requirements in section 9.1.1.4.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.2.5 GSM carrier RSSI

### A.9.2.5.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.5.

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. In the measurement control information it is indicated to the UE that periodic reporting of the GSM carrier RSSI measurement is used.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

#### A.9.2.5.1.1 Inter RAT test parameters

GSM carrier RSSI accuracy requirements are tested by using test parameters in Table A.9.16A and A.9.16B.

The limits of the GSM test parameters are defined in [21].

**Table A.9.16A: General GSM Carrier RSSI test parameters**

| Parameter                      | Unit | Value                                      | Comment                                 |
|--------------------------------|------|--|---|
| DCH parameters                 |      | DL reference measurement channel 12.2 kbps | As specified in TS 25.102 section A.2.2 |
| Power Control                  |      | On   |   |
| Target quality value on DTCH   | BLER | 0.01                                       |   |
| Inter-RAT measurement quantity |      | GSM carrier RSSI                           |   |
| BSIC verification required     |      | No   |   |
| Monitored cell list size       |      | 6 GSM neighbours including ARFCN 1         |   |

**Table A.9.16B: Cell 1 specific GSM Carrier RSSI test parameters**

| Parameter                     | Unit  | Cell 1    |       |
|-------------------------------|---|-----------|-------|
| DL timeslot number            |   | 0         | DwPTS |
| UTRA RF Channel number (NOTE) |   | Channel 1 |       |
| PCCPCH_Ec/Ior                 | dB  | -3        |       |
| DwPCH_Ec/Ior                  | dB  |           | 0     |
| OCNS_Ec/Ior                   | dB  | -3        |       |
| Ior/Ioc                       | dB  | 3         |       |
| Ioc                           | dBm / 1.28MHz   | -70       |       |
| Propagation condition         |   | AWGN      |       |
| NOTE:                         | In the case of multi-frequency, the UTRA RF Channel Number can be set for the primary frequency in this test. |           |       |

### A.9.2.5.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.1.5.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.2.6 SIR

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.6 exists.

## A.9.2.7 Transport channel BLER

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.7 exists.

## A.9.2.8 SFN-SFN observed time difference

### A.9.2.8.1 SFN-SFN observed time difference type 1

#### A.9.2.8.1.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 1 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised. During the test, the timing difference between cell 1 and cell 2 can be set to valid values in the range 0...3276800 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

#### A.9.2.8.1.1.1 Intra frequency test parameters

The SFN-SFN observed time difference type 1 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.17.

Table A.9.17: SFN-SFN observed time difference type 1 Intra frequency test parameters

|   |              | Test 1    |       |           |       |
|---|--------------|-----------|-------|-----------|-------|
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/lor   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/lor  | dB           |           | 0     |           | 0     |
| OCNS_Ec/lor   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -76.6     |       |           |       |
| PCCPCH RSCP, Note 1   | dBm          | -74.6     |       | -77.6     |       |
| Io, Note 1  | dBm/1.28 MHz | -69       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 2    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/lor   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/lor  | dB           |           | 0     |           | 0     |
| OCNS_Ec/lor   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 9         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -60.2     |       |           |       |
| PCCPCH RSCP, Note 1   | dBm          | -54.2     |       | -61.2     |       |
| Io, Note 1  | dBm/1.28 MHz | -50       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 3    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/lor   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/lor  | dB           |           | 0     |           | 0     |
| OCNS_Ec/lor   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 3         |       |
| $I_{oc}$  | dBm/1.28 MHz | -101.9    |       |           |       |
| PCCPCH RSCP, Note 1   | dBm          | -99.9     |       | -101.9    |       |
| Io, Note 1  | dBm/1.28 MHz | -94       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
| NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |           |       |           |       |
| NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                       |              |           |       |           |       |

## A.9.2.8.1.1.2 Inter frequency test parameters

The SFN-SFN observed time difference type 1 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.18.

Table A.9.18: SFN-SFN observed time difference type 1 Inter frequency tests parameters

|   |              | Test 1    |       |           |       |
|---|--------------|-----------|-------|-----------|-------|
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 5         |       |
| $I_{oc}$  | dBm/1.28 MHz | -75.2     |       | -75.2     |       |
| PCCPCH RSCP, Note 1   | dBm          | -73.2     |       | -73.2     |       |
| Io, Note 1  | dBm/1.28 MHz | -69       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 2    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 7         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -57.8     |       | -54.1     |       |
| PCCPCH RSCP, Note 1   | dBm          | -53.8     |       | -55.1     |       |
| Io, Note 1  | dBm/1.28 MHz | -50       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 3    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 3         |       | 0         |       |
| $I_{oc}$  | dBm/1.28 MHz | -98.7     |       | -97       |       |
| PCCPCH RSCP, Note 1   | dBm          | -98.7     |       | -100      |       |
| Io, Note 1  | dBm/1.28 MHz | -94       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
| NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |           |       |           |       |
| NOTE 2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency.                                    |              |           |       |           |       |

## A.9.2.8.1.2 Test Requirements

The SFN-SFN observed time difference type 1 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.2.8.2 SFN-SFN observed time difference type 2

### A.9.2.8.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised and share the same frame timing. During the test, the timing difference between cell 1 and cell 2 can be set to valid values in the range from -432 to 432 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

#### A.9.2.8.2.1.1 Intra frequency test parameters

The SFN-SFN observed time difference type 2 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.18A.



**Table A.9.18A: SFN-SFN observed time difference type 2 Intra frequency test parameters**

|   |              | Test 1    |       |           |       |
|---|--------------|-----------|-------|-----------|-------|
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/lor   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/lor  | dB           |           | 0     |           | 0     |
| OCNS_Ec/lor   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -76.6     |       |           |       |
| PCCPCH RSCP, Note 1   | dBm          | -74.6     |       | -77.6     |       |
| Io, Note 1  | dBm/1.28 MHz | -69       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 2    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/lor   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/lor  | dB           |           | 0     |           | 0     |
| OCNS_Ec/lor   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 9         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -60.2     |       |           |       |
| PCCPCH RSCP, Note 1   | dBm          | -54.2     |       | -61.2     |       |
| Io, Note 1  | dBm/1.28 MHz | -50       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 3    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/lor   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/lor  | dB           |           | 0     |           | 0     |
| OCNS_Ec/lor   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 3         |       |
| $I_{oc}$  | dBm/1.28 MHz | -101.9    |       |           |       |
| PCCPCH RSCP, Note 1   | dBm          | -99.9     |       | -101.9    |       |
| Io, Note 1  | dBm/1.28 MHz | -94       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
| NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |           |       |           |       |
| NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                        |              |           |       |           |       |

#### A.9.2.8.2.1.2 Inter frequency test parameters

The SFN-SFN observed time difference type 2 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.18B.

Table A.9.18B: SFN-SFN observed time difference type 2 Inter frequency tests parameters

|   |              | Test 1    |       |           |       |
|---|--------------|-----------|-------|-----------|-------|
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)r  |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 5         |       |
| $I_{oc}$  | dBm/1.28 MHz | -75.2     |       | -75.2     |       |
| PCCPCH RSCP, Note 1   | dBm          | -73.2     |       | -73.2     |       |
| Io, Note 1  | dBm/1.28 MHz | -69       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 2    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 7         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -57.8     |       | -54.1     |       |
| PCCPCH RSCP, Note 1   | dBm          | -53.8     |       | -55.1     |       |
| Io, Note 1  | dBm/1.28 MHz | -50       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 3    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 3         |       | 0         |       |
| $I_{oc}$  | dBm/1.28 MHz | -98.7     |       | -97       |       |
| PCCPCH RSCP, Note 1   | dBm          | -98.7     |       | -100      |       |
| Io, Note 1  | dBm/1.28 MHz | -94       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
| NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |           |       |           |       |
| NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency's channel number.                    |              |           |       |           |       |

## A.9.2.8.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurement observed during repeated tests shall be at least 90%.

### A.9.2.9 Observed time difference to GSM cell

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.9 exists.

### A.9.2.10 SFN-CFN observed time difference

#### A.9.2.10.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-CFN observed time difference measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.10.

Cell 1 and cell 2 shall be synchronised. During the test, the timing difference between cell 1 and cell 2 can be set to any value from 0...256 frames.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

##### A.9.2.10.1.1 Intra frequency test parameters

The SFN-CFN observed time difference accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.19.

**Table A.9.19: SFN-CFN observed time difference Intra frequency test parameters**

|   |              | Test 1    |       |           |       |
|---|--------------|-----------|-------|-----------|-------|
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -76.6     |       |           |       |
| PCCPCH RSCP, Note 1   | dBm          | -74.6     |       | -77.6     |       |
| Io, Note 1  | dBm/1.28 MHz | -69       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 2    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 9         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -60.2     |       |           |       |
| PCCPCH RSCP, Note 1   | dBm          | -54.2     |       | -61.2     |       |
| Io, Note 1  | dBm/1.28 MHz | -50       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 3    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 1 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 3         |       |
| $I_{oc}$  | dBm/1.28 MHz | -101.9    |       |           |       |
| PCCPCH RSCP, Note 1   | dBm          | -99.9     |       | -101.9    |       |
| Io, Note 1  | dBm/1.28 MHz | -94       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
| NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |           |       |           |       |
| NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                        |              |           |       |           |       |

#### A.9.2.10.1.2 Inter frequency test parameters

The SFN-CFN observed time difference accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.20.

Table A.9.20: SFN-CFN observed time difference Inter frequency tests parameters

|   |              | Test 1    |       |           |       |
|---|--------------|-----------|-------|-----------|-------|
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 5         |       | 5         |       |
| $I_{oc}$  | dBm/1.28 MHz | -75.2     |       | -75.2     |       |
| PCCPCH RSCP, Note 1   | dBm          | -73.2     |       | -73.2     |       |
| Io, Note 1  | dBm/1.28 MHz | -69       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 2    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 7         |       | 2         |       |
| $I_{oc}$  | dBm/1.28 MHz | -57.8     |       | -54.1     |       |
| PCCPCH RSCP, Note 1   | dBm          | -53.8     |       | -55.1     |       |
| Io, Note 1  | dBm/1.28 MHz | -50       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
|   |              | Test 3    |       |           |       |
| Parameter   | Unit         | Cell 1    |       | Cell 2    |       |
| Timeslot Number   |              | 0         | DwPTS | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)   |              | Channel 1 |       | Channel 2 |       |
| PCCPCH_Ec/Ior   | dB           | -3        |       | -3        |       |
| DwPCH_Ec/Ior  | dB           |           | 0     |           | 0     |
| OCNS_Ec/Ior   | dB           | -3        |       | -3        |       |
| $\hat{I}_{or}/I_{oc}$   | dB           | 3         |       | 0         |       |
| $I_{oc}$  | dBm/1.28 MHz | -98.7     |       | -97       |       |
| PCCPCH RSCP, Note 1   | dBm          | -98.7     |       | -100      |       |
| Io, Note 1  | dBm/1.28 MHz | -94       |       |           |       |
| Propagation condition   |              | AWGN      |       |           |       |
| NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |           |       |           |       |
| NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.                        |              |           |       |           |       |

### A.9.2.10.2 Test Requirements

The SFN-CFN observed time difference measurement accuracy shall meet the requirements in section 9.1.1.10.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.2.11 UE transmitted power

### A.9.2.11.1 Test purpose and Environment

The purpose of the test is to verify that the UE transmitted power measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.2.1.

The test parameters are given in Table A.9.21 and A.9.22 below. In the measurement control information it shall be indicated to the UE that periodic reporting of the UE transmitted power measurement shall be used.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2.

**Table A.9.21: General test parameters for UE transmitted power**

| Parameter                    | Unit | Value                                      | Comment                                 |
|------------------------------|------|--|---|
| DCH parameters               |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2 |
| Power Control                |      | On   |   |
| Target quality value on DTCH | BLER | 0.01                                       |   |

**Table A.9.22: Cell Specific parameters for UE transmitted power**

| Parameter  | Unit         | Cell 1    |       |
|--|--------------|-----------|-------|
| Timeslot Number  |              | 0         | DwPTS |
| UTRA RF Channel Number (NOTE 2)  |              | Channel 1 |       |
| PCCPCH_Ec/lor  | dB           | -3        |       |
| DwPCH_Ec/lor   | dB           |           | 0     |
| OCNS_Ec/lor  | dB           | -3        |       |
| $\hat{I}_{or}/I_{oc}$  | dB           | 3         |       |
| $I_{oc}$   | dBm/1.28 MHz | -70       |       |
| PCCPCH RSCP, Note 1  | dBm          | -70       |       |
| Propagation Condition  |              | AWGN      |       |
| NOTE 1: PCCPCH RSCP level has been calculated from other parameters for information purposes. They are not settable parameters themselves. |              |           |       |
| NOTE2: In the case of multi-frequency network, the UTRA RF Channel Number can be set for the primary frequency in this test.               |              |           |       |

#### A.9.2.11.1.1 Test procedure

- 1) Set the UE power and Maximum allowed UL TX power to the maximum power for that UE power class specified in section 9.1.2.1.
- 2) Send continuously Up power control commands to the UE during the entire test.
- 3) Check the UE reported value
- 4) Map the UE reported value to accuracy requirement and define the test limits
- 5) Measure the output power of the UE. The output power shall be averaged over one timeslot.
- 6) Check that the measured UE transmitted power is within the limits defined in step 4).
- 7) Decrease the Maximum allowed UL TX power with 1dB and signal the new value to the UE.
- 8) Repeat from step 3) until the entire specified range for the UE transmitted power measurement has been tested, i.e. the accuracy requirement for the UE transmitted power measurement is specified 10dB below the maximum power for the UE power class specified in section 9.1.2.1.

### A.9.2.11.2 Test requirements

The UE transmitted power measurement accuracy shall meet the requirements in section 9.1.2.1.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.3 Measurement Performance for UE (7.68 Mcps TDD option)

### A.9.3.1 P-CCPCH RSCP

#### A.9.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the P-CCPCH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.1.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

##### A.9.3.1.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2.

Both P-CCPCH RSCP intra frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.23.

**Table A.9.23: P-CCPCH RSCP Intra frequency test parameters**

| Parameter   | Unit           | Test 1    |        | Test 2    |        | Test 3    |        |
|---|----------------|-----------|--------|-----------|--------|-----------|--------|
|   |                | Cell 1    | Cell 2 | Cell 1    | Cell 2 | Cell 1    | Cell 2 |
| DL timeslot number  |                | 0         | 0      | 0         | 0      | 0         | 0      |
| UTRA RF Channel number  |                | Channel 1 |        | Channel 1 |        | Channel 1 |        |
| PCCPCH_Ec/Ior   | dB             | -3        |        | -3        |        | -3        |        |
| SCH_Ec/Ior  | dB             | -9        |        | -9        |        | -9        |        |
| SCH_t <sub>offset</sub>   |                | 0         | 5      | 0         | 5      | 0         | 5      |
| OCNS_Ec/Ior   | dB             | -3,12     |        | -3,12     |        | -3,12     |        |
| I <sub>oc</sub>   | dBm / 7.68 MHz | -75.7     |        | -59.8     |        | -98.7     |        |
| I <sub>or</sub> /I <sub>oc</sub>  | dB             | 5         | 2      | 9         | 2      | 3         | 0      |
| PCCPCH RSCP, Note 1   | dBm            | -73.7     | -76.7  | -53.8     | -60.8  | -98.7     | -101.7 |
| I <sub>o</sub> , Note 1   | dBm / 7.68 MHz | -69       |        | -50       |        | -94       |        |
| Propagation condition   |                | AWGN      |        | AWGN      |        | AWGN      |        |
| NOTE 1: PCCPCH RSCP and I <sub>o</sub> levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                |           |        |           |        |           |        |

##### A.9.3.1.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

P-CCPCH RSCP inter frequency relative accuracy requirements are tested by using test parameters in Table A.9.24.

Table A.9.24: P-CCPCH RSCP Inter frequency tests parameters

| Parameter  | Unit           | Test 1    |           | Test 2    |           | Test 3    |           |
|--|----------------|-----------|-----------|-----------|-----------|-----------|-----------|
|  |                | Cell 1    | Cell 2    | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number   |                | 0         | 2         | 0         | 2         | 0         | 2         |
| UTRA RF Channel number   |                | Channel 1 | Channel 2 | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| PCCPCH_Ec/Ior  | dB             | -3        |           | -3        |           | -3        |           |
| SCH_Ec/Ior   | dB             | -9        |           | -9        |           | -9        |           |
| SCH_offset   |                | 0         | 5         | 0         | 5         | 0         | 5         |
| OCNS_Ec/Ior  | dB             | -3,12     |           | -3,12     |           | -3,12     |           |
| Ior  | dBm / 7.68 MHz | -75.2     | -75.2     | -57.8     | -54.1     | -98.7     | -97       |
| Ior/Ior  | dB             | 5         | 5         | 7         | 2         | 3         | 0         |
| PCCPCH RSCP, Note 1  | dBm            | -73.2     | -73.2     | -54.8     | -55.1     | -98.7     | -100      |
| Ior, Note 1  | dBm / 7.68 MHz | -69       |           | -50       |           | -94       |           |
| Propagation condition  |                | AWGN      |           | AWGN      |           | AWGN      |           |
| NOTE 1: PCCPCH RSCP and Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                |           |           |           |           |           |           |

### A.9.3.1.2 Test Requirements

The P-CCPCH RSCP measurement accuracy shall meet the requirements in section 9.1.1.1.

The rate of correct measurements observed during repeated tests shall be at least 90%.

### A.9.3.2 CPICH measurements

#### A.9.3.2.1 CPICH RSCP

##### A.9.3.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.2 and applies to UE's supporting this capability.

The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

##### A.9.3.2.1.1.1 Inter frequency test parameters

In this case both cells are on different frequencies. Cell 1 is a UTRA TDD cell and cell 2 is a UTRA FDD cell. No second Beacon timeslot shall be provided for cell 1.

CPICH RSCP inter frequency absolute accuracy requirements are tested by using test parameters in Table A.9.25.



Table A.9.25: CPICH RSCP Inter frequency tests parameters

| Parameter   | Unit          | Test 1    |           | Test 2    |           |
|---|---------------|-----------|-----------|-----------|-----------|
|   |               | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number  |               | 0         | n.a.      | 0         | n.a.      |
| UTRA RF Channel number  |               | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| CPICH_Ec/Ior  | dB            | n.a.      | -10       | n.a.      | -10       |
| PCCPCH_Ec/Ior   | dB            | -3        | -12       | -3        | -12       |
| SCH_Ec/Ior  | dB            | -9        | -12       | -9        | -12       |
| SCH_t <sub>offset</sub>   |               | 5         | n.a.      | 5         | n.a.      |
| PICH_Ec/Ior   | dB            | n.a.      | -15       | n.a.      | -15       |
| OCNS_Ec/Ior   | dB            | -3.12     | -0.94     | -3.12     | -0.94     |
| I <sub>oc</sub>   | dBm/ 7.68 MHz | -57.7     | -60       | -84.7     | -84       |
| I <sub>or/Ioc</sub>   | dB            | 7         | 9.54      | 3         | 0         |
| PCCPCH RSCP, Note 1   | dBm           | -53.7     | n.a.      | -84.7     | n.a.      |
| CPICH RSCP, Note 1  | dBm           | n.a.      | -60.46    | n.a.      | -94       |
| I <sub>o</sub> , Note 1   | dBm/ 7.68 MHz | -50       | -50       | -80       | -81       |
| Propagation condition   | -             | AWGN      |           | AWGN      |           |
| NOTE 1: PCCPCH RSCP, CPICH RSCP and I <sub>o</sub> levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |               |           |           |           |           |

#### A.9.3.2.1.2 Test Requirements

The CPICH RSCP measurement accuracy shall meet the requirements in section 9.1.1.2.

The rate of correct measurements observed during repeated tests shall be at least 90%.

#### A.9.3.2.2 CPICH Ec/I<sub>o</sub>

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.3 exists.

### A.9.3.3 Timeslot ISCP

#### A.9.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the Timeslot ISCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.3.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

##### A.9.3.3.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The second Beacon timeslot shall be provided in timeslot 8 for both cell 1 and cell 2.

The Timeslot ISCP intra frequency absolute accuracy requirements are tested by using test parameters in Table A.9.26.

Table A.9.26: Timeslot ISCP Intra frequency test parameters

| Parameter   | Unit           | Test 1    |        | Test 2    |        | Test 3    |        |
|---|----------------|-----------|--------|-----------|--------|-----------|--------|
|   |                | Cell 1    | Cell 2 | Cell 1    | Cell 2 | Cell 1    | Cell 2 |
| DL timeslot number  |                | 0         | 0      | 0         | 0      | 0         | 0      |
| UTRA RF Channel number  |                | Channel 1 |        | Channel 1 |        | Channel 1 |        |
| PCCPCH_Ec/Ior   | dB             | -3        |        | -3        |        | -3        |        |
| SCH_Ec/Ior  | dB             | -9        |        | -9        |        | -9        |        |
| SCH_t <sub>offset</sub>   |                | 0         | 5      | 0         | 5      | 0         | 5      |
| OCNS_Ec/Ior   | dB             | -3,12     |        | -3,12     |        | -3,12     |        |
| I <sub>oc</sub>   | dBm / 7.68 MHz | -75.7     |        | -59.8     |        | -98.7     |        |
| I <sub>or/loc</sub>   | dB             | 5         | 2      | 9         | 2      | 3         | 0      |
| Timeslot ISCP, Note 1   | dBm            | -73.7     | -70.7  | -57.8     | -50.8  | -98.7     | -95.7  |
| I <sub>o</sub> , Note 1   | dBm / 7.68 MHz | -69       |        | -50       |        | -94       |        |
| Propagation condition   |                | AWGN      |        | AWGN      |        | AWGN      |        |
| NOTE 1: Timeslot ISCP and I <sub>o</sub> levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                |           |        |           |        |           |        |

### A.9.3.3.2 Test Requirements

The Timeslot ISCP measurement accuracy shall meet the requirements in section 9.1.1.3.

The rate of correct measurements observed during repeated tests shall be at least 90%.

### A.9.3.4 UTRA Carrier RSSI

#### A.9.3.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRA Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.4.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12.

##### A.9.3.4.1.1 Inter frequency test parameters

In this case both cells are on different frequencies. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

Both UTRA Carrier RSSI absolute and relative accuracy requirements are tested by using test parameters in Table A.9.27.

**Table A.9.27: UTRA Carrier RSSI Inter frequency tests parameters**

| Parameter  | Unit              | Test 1    |           | Test 2    |           | Test 3    |           |
|--|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|  |                   | Cell 1    | Cell 2    | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number   |                   | 0         | 2         | 0         | 2         | 0         | 2         |
| UTRA RF Channel number   |                   | Channel 1 | Channel 2 | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| PCCPCH_Ec/Ior  | dB                | -3        |           | -3        |           | -3        |           |
| SCH_Ec/Ior   | dB                | -9        |           | -9        |           | -9        |           |
| SCH_toffset  |                   | 0         | 5         | 0         | 5         | 0         | 5         |
| OCNS_Ec/Ior  | dB                | -3,12     |           | -3,12     |           | -3,12     |           |
| Ior  | dBm /<br>7.68 MHz | -75.2     | -75.2     | -57.8     | -54.1     | -98.7     | -97       |
| Ior/Ior  | dB                | 5         | 5         | 7         | 2         | 3         | 0         |
| Ior, Note 1  | dBm /<br>7.68 MHz | -69       |           | -50       |           | -94       |           |
| Propagation condition  |                   | AWGN      |           | AWGN      |           | AWGN      |           |
| NOTE 1: Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |           |           |           |           |           |

### A.9.3.4.2 Test Requirements

The UTRA Carrier RSSI absolute measurement accuracy shall meet the requirements in section 9.1.1.4.

The UTRA Carrier RSSI relative measurement accuracy shall meet the requirements in Table A.9.28 by taking into account the effect of thermal noise and noise added by the receiver.

**Table A.9.28: UTRA Carrier RSSI relative accuracy**

| Parameter         | Unit | Accuracy [dB]    |                   | Conditions         |
|-------------------|------|------------------|-------------------|--------------------|
|                   |      | Normal condition | Extreme condition | Ior [dBm/7.68 MHz] |
| UTRA Carrier RSSI | dBm  | -4...5.2         | -7...8.2          | -94...-87          |
|                   | dBm  | ± 4              | ± 7               | -87...-70          |
|                   | dBm  | ± 6              | ± 9               | -70...-50          |

The rate of correct measurements observed during repeated tests shall be at least 90%.

### A.9.3.5 GSM carrier RSSI

#### A.9.3.5.1 Test Purpose and Environment

*The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.5.*

Cell 1 is a UTRA TDD cell and cell 2 is a GSM cell. The Beacon timeslot shall be provided in timeslot 0 and no second Beacon timeslot shall be provided for cell 1. In the measurement control information it is indicated to the UE that periodic reporting of the GSM carrier RSSI measurement is used. The DL DPCH shall be transmitted in timeslot 1 and the UL DPCH shall be transmitted in timeslot 3.

##### A.9.3.5.1.1 Inter frequency test parameters

GSM carrier RSSI accuracy requirements are tested by using test parameters in Table A.9.29 and A.9.30.

The limits of the GSM test parameters are defined in [21].

**Table A.9.29: General GSM Carrier RSSI test parameters**

| Parameter                      | Unit | Value                                      | Comment                                 |
|--------------------------------|------|--|---|
| DCH parameters                 |      | DL reference measurement channel 12.2 kbps | As specified in TS 25.102 section A.2.2 |
| Power Control                  |      | On   |   |
| Target quality value on DTCH   | BLER | 0.01                                       |   |
| Inter-RAT measurement quantity |      | GSM carrier RSSI                           |   |
| BSIC verification required     |      | No   |   |
| Monitored cell list size       |      | 6 GSM neighbours including ARFCN 1         |   |

**Table A.9.30: Cell 1 specific GSM Carrier RSSI test parameters**

| Parameter  | Unit           | Cell 1    |        |
|--|----------------|-----------|--------|
| DL timeslot number   |                | 0         | 1      |
| UTRA RF Channel number   |                | Channel 1 |        |
| PCCPCH_Ec/lor  | dB             | -3        | n.a.   |
| SCH_Ec/lor   | dB             | -9        | n.a.   |
| SCH_t <sub>offset</sub>  |                | 0         | n.a.   |
| OCNS_Ec/lor  | dB             | -3,12     | Note 2 |
| DPCH_Ec/lor  | dB             | n.a.      | Note 1 |
| lor/loc  | dB             | 6         | 6      |
| lo, Note 1   | dBm / 7.68 MHz | -70       |        |
| Propagation condition  |                | AWGN      |        |
| Note 1: The DPCH level is controlled by the power control loop   |                |           |        |
| Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor. |                |           |        |

### A.9.3.5.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.1.5.

The rate of correct measurements observed during repeated tests shall be at least 90%.

### A.9.3.6 (void)

### A.9.3.7 (void)

### A.9.3.8 SFN-SFN observed time difference

#### A.9.3.8.1 SFN-SFN observed time difference type 1

##### A.9.3.8.1.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 1 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from 0...19660800 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

## A.9.3.8.1.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-SFN observed time difference type 1 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.31.

**Table A.9.31: SFN-SFN observed time difference type 1 Intra frequency test parameters**

| Parameter   | Unit              | Test 1    |        | Test 2    |        | Test 3    |        |
|---|-------------------|-----------|--------|-----------|--------|-----------|--------|
|   |                   | Cell 1    | Cell 2 | Cell 1    | Cell 2 | Cell 1    | Cell 2 |
| DL timeslot number  |                   | 0         | 2      | 0         | 2      | 0         | 2      |
| UTRA RF Channel number  |                   | Channel 1 |        | Channel 1 |        | Channel 1 |        |
| PCCPCH_Ec/lor   | dB                | -3        |        | -3        |        | -3        |        |
| SCH_Ec/lor  | dB                | -9        |        | -9        |        | -9        |        |
| SCH_t <sub>offset</sub>   |                   | 0         | 5      | 0         | 5      | 0         | 5      |
| OCNS_Ec/lor   | dB                | -3,12     |        | -3,12     |        | -3,12     |        |
| lo <sub>c</sub>   | dBm /<br>7.68 MHz | -75.2     | -75.2  | -57.8     | -54.7  | -98.7     | -98.7  |
| l <sub>or</sub> /lo <sub>c</sub>  | dB                | 5         | 5      | 7         | 3      | 3         | 3      |
| lo, Note 1  | dBm /<br>7.68 MHz | -69       |        | -50       |        | -94       |        |
| Propagation condition   |                   | AWGN      |        | AWGN      |        | AWGN      |        |
| NOTE 1: lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |        |           |        |           |        |

## A.9.3.8.1.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-SFN observed time difference type 2 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.32.

**Table A.9.32: SFN-SFN observed time difference type 1 Inter frequency tests parameters**

| Parameter   | Unit              | Test 1    |           | Test 2    |           | Test 3    |           |
|---|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|   |                   | Cell 1    | Cell 2    | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number  |                   | 0         | 2         | 0         | 2         | 0         | 2         |
| UTRA RF Channel number  |                   | Channel 1 | Channel 2 | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| PCCPCH_Ec/lor   | dB                | -3        |           | -3        |           | -3        |           |
| SCH_Ec/lor  | dB                | -9        |           | -9        |           | -9        |           |
| SCH_t <sub>offset</sub>   |                   | 0         | 5         | 0         | 5         | 0         | 5         |
| OCNS_Ec/lor   | dB                | -3,12     |           | -3,12     |           | -3,12     |           |
| lo <sub>c</sub>   | dBm /<br>7.68 MHz | -75.2     | -75.2     | -57.8     | -54.7     | -98.7     | -98.7     |
| l <sub>or</sub> /lo <sub>c</sub>  | dB                | 5         | 5         | 7         | 3         | 3         | 3         |
| lo, Note 1  | dBm /<br>7.68 MHz | -69       |           | -50       |           | -94       |           |
| Propagation condition   |                   | AWGN      |           | AWGN      |           | AWGN      |           |
| NOTE 1: lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |           |           |           |           |           |

## A.9.3.8.1.2 Test Requirements

The SFN-SFN observed time difference type 1 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.3.8.2 SFN-SFN observed time difference type 2

### A.9.3.8.2.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-SFN observed time difference type 2 measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.8.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from -2560 ... +2560 chip.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

#### A.9.3.8.2.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-SFN observed time difference type 2 accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.33.

**Table A.9.33: SFN-SFN observed time difference type 2 Intra frequency test parameters**

| Parameter  | Unit              | Test 1    |        | Test 2    |        | Test 3    |        |
|--|-------------------|-----------|--------|-----------|--------|-----------|--------|
|  |                   | Cell 1    | Cell 2 | Cell 1    | Cell 2 | Cell 1    | Cell 2 |
| DL timeslot number   |                   | 0         | 2      | 0         | 2      | 0         | 2      |
| UTRA RF Channel number   |                   | Channel 1 |        | Channel 1 |        | Channel 1 |        |
| PCCPCH_Ec/Ior  | dB                | -3        |        | -3        |        | -3        |        |
| SCH_Ec/Ior   | dB                | -9        |        | -9        |        | -9        |        |
| SCH_offset   |                   | 0         | 5      | 0         | 5      | 0         | 5      |
| OCNS_Ec/Ior  | dB                | -3,12     |        | -3,12     |        | -3,12     |        |
| Ior  | dBm /<br>7.68 MHz | -75.2     | -75.2  | -57.8     | -54.7  | -98.7     | -98.7  |
| Ior/Ior  | dB                | 5         | 5      | 7         | 3      | 3         | 3      |
| Ior, Note 1  | dBm /<br>7.68 MHz | -69       |        | -50       |        | -94       |        |
| Propagation condition  |                   | AWGN      |        | AWGN      |        | AWGN      |        |
| NOTE 1: Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |        |           |        |           |        |

#### A.9.3.8.2.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-SFN observed time difference type 2 accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.34.

**Table A.9.34: SFN-SFN observed time difference type 2 Inter frequency tests parameters**

| Parameter  | Unit              | Test 1    |           | Test 2    |           | Test 3    |           |
|--|-------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|  |                   | Cell 1    | Cell 2    | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number   |                   | 0         | 2         | 0         | 2         | 0         | 2         |
| UTRA RF Channel number   |                   | Channel 1 | Channel 2 | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| PCCPCH_Ec/lor  | dB                | -3        |           | -3        |           | -3        |           |
| SCH_Ec/lor   | dB                | -9        |           | -9        |           | -9        |           |
| SCH_toffset  |                   | 0         | 5         | 0         | 5         | 0         | 5         |
| OCNS_Ec/lor  | dB                | -3,12     |           | -3,12     |           | -3,12     |           |
| lor  | dBm /<br>7.68 MHz | -75.2     | -75.2     | -57.8     | -54.7     | -98.7     | -98.7     |
| lor/lor  | dB                | 5         | 5         | 7         | 3         | 3         | 3         |
| lor, Note 1  | dBm /<br>7.68 MHz | -69       |           | -50       |           | -94       |           |
| Propagation condition  |                   | AWGN      |           | AWGN      |           | AWGN      |           |
| NOTE 1: lor levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                   |           |           |           |           |           |           |

#### A.9.3.8.2.2 Test Requirements

The SFN-SFN observed time difference type 2 measurement accuracy shall meet the requirements in section 9.1.1.8.

The rate of correct measurements observed during repeated tests shall be at least 90%.

#### A.9.3.9 Observed time difference to GSM cell

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.9 exists.

#### A.9.3.10 SFN-CFN observed time difference

##### A.9.3.10.1 Test Purpose and Environment

The purpose of this test is to verify that the SFN-CFN observed time difference measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.10.

Cell 1 and cell 2 shall be synchronised, i.e. share the same frame and timeslot timing. During the test, the timing difference between cell 1 and cell 2 can be set to any value from 0...256 frames.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 12. The second Beacon timeslot shall be provided in timeslot 8 for cell 1 and in timeslot 10 for cell 2.

##### A.9.3.10.1.1 Intra frequency test parameters

In this case all cells are on the same frequency. The SFN-CFN observed time difference accuracy requirements in the intra-frequency case are tested by using test parameters in Table A.9.35.

**Table A.9.35: SFN-CFN observed time difference Intra frequency test parameters**

| Parameter  | Unit           | Test 1    |        | Test 2    |        | Test 3    |        |
|--|----------------|-----------|--------|-----------|--------|-----------|--------|
|  |                | Cell 1    | Cell 2 | Cell 1    | Cell 2 | Cell 1    | Cell 2 |
| DL timeslot number   |                | 0         | 2      | 0         | 2      | 0         | 2      |
| UTRA RF Channel number   |                | Channel 1 |        | Channel 1 |        | Channel 1 |        |
| PCCPCH_Ec/Ior  | dB             | -3        |        | -3        |        | -3        |        |
| SCH_Ec/Ior   | dB             | -9        |        | -9        |        | -9        |        |
| SCH_toffset  |                | 0         | 5      | 0         | 5      | 0         | 5      |
| OCNS_Ec/Ior  | dB             | -3,12     |        | -3,12     |        | -3,12     |        |
| Ior  | dBm / 7.68 MHz | -75.2     | -75.2  | -57.8     | -54.7  | -98.7     | -98.7  |
| Ior/Ior  | dB             | 5         | 5      | 7         | 3      | 3         | 3      |
| Ior, Note 1  | dBm / 7.68 MHz | -69       |        | -50       |        | -94       |        |
| Propagation condition  |                | AWGN      |        | AWGN      |        | AWGN      |        |
| NOTE 1: Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                |           |        |           |        |           |        |

### A.9.3.10.1.2 Inter frequency test parameters

In this case both cells are on different frequencies. The SFN-CFN observed time difference accuracy requirements in the inter-frequency case are tested by using test parameters in Table A.9.36.

**Table A.9.36: SFN-CFN observed time difference Inter frequency tests parameters**

| Parameter  | Unit           | Test 1    |           | Test 2    |           | Test 3    |           |
|--|----------------|-----------|-----------|-----------|-----------|-----------|-----------|
|  |                | Cell 1    | Cell 2    | Cell 1    | Cell 2    | Cell 1    | Cell 2    |
| DL timeslot number   |                | 0         | 2         | 0         | 2         | 0         | 2         |
| UTRA RF Channel number   |                | Channel 1 | Channel 2 | Channel 1 | Channel 2 | Channel 1 | Channel 2 |
| PCCPCH_Ec/Ior  | dB             | -3        |           | -3        |           | -3        |           |
| SCH_Ec/Ior   | dB             | -9        |           | -9        |           | -9        |           |
| SCH_toffset  |                | 0         | 5         | 0         | 5         | 0         | 5         |
| OCNS_Ec/Ior  | dB             | -3,12     |           | -3,12     |           | -3,12     |           |
| Ior  | dBm / 7.68 MHz | -75.2     | -75.2     | -57.8     | -54.7     | -98.7     | -98.7     |
| Ior/Ior  | dB             | 5         | 5         | 7         | 3         | 3         | 3         |
| Ior, Note 1  | dBm / 7.68 MHz | -69       |           | -50       |           | -94       |           |
| Propagation condition  |                | AWGN      |           | AWGN      |           | AWGN      |           |
| NOTE 1: Ior levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |                |           |           |           |           |           |           |

### A.9.3.10.2 Test Requirements

The SFN-CFN observed time difference measurement accuracy shall meet the requirements in section 9.1.1.10.

The rate of correct measurements observed during repeated tests shall be at least 90%.

### A.9.3.11 UE transmitted power

NOTE: This section is included for consistency with numbering in section 9, currently no test covering requirements in sections 9.1.1.11 exists.



## A.9.2.5a E-UTRA RSRP

### A.9.2.5a.1 E-UTRAN FDD RSRP

#### A.9.2.5a.1.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRA FDD RSRP measurement absolute accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.5a and applies to UE supporting this capability.

Cell 1 is a UTRA TDD cell and cell 2 is a E-UTRA cell. In all tests, Cell 1 is the serving cell and Cell 2 the target cell. In the measurement control information it is indicated to the UE that periodic reporting of the E-UTRA RSRP measurement is used.

Idle interval of 80ms period as defined in TS25.331 is provided.

#### A.9.2.5a.1.2 Test parameters

E-UTRA FDD RSRP accuracy requirements are tested by using test parameters in Table A.9.2.5a.1-1, A.9.2.5a.1-2 and A.9.2.5a.1-3.

**Table A.9.2.5a.1-1: General E-UTRA RSRP test parameters**

| Parameter                                  | Unit | Value   | Comment                                 |
|--|------|---|---|
| DCH parameters                             |      | DL Reference Measurement Channel<br>12.2 kbps | As specified in TS 25.102 section A.2.2 |
| Power Control                              |      | On  |   |
| Target quality value on DTCH               | BLER | 0.01  |   |
| Active cell                                |      | Cell 1  | 1.28Mcps TDD cell                       |
| Neighbour cell                             |      | Cell 2  | E-UTRA FDD cell                         |
| CP length of cell 2                        |      | normal  |   |
| Idle intervals period                      | ms   | 80  | As specified in TS 25.331               |
| Filter coefficient                         |      | 0   | L3 filtering is not used                |
| Inter-RAT(E-UTRA FDD) measurement quantity |      | E-UTRA FDD RSRP                               |   |

**Table A.9.2.5a.1-2: Cell specific test parameters for E-UTRA RSRP test parameters (cell 1)**

| Parameter   | Unit             | Test 1, Test 2 |       |
|---|------------------|----------------|-------|
| DL timeslot number  |                  | 0              | DwPTS |
| UTRA RF Channel number (NOTE)   |                  | Channel 1      |       |
| PCCPCH_Ec/Ior   | dB               | -3             |       |
| DwPCH_Ec/Ior  | dB               |                | 0     |
| OCNS_Ec/Ior   | dB               | -3             |       |
| $\hat{I}$ or/loc  | dB               | 3              |       |
| loc   | dBm /<br>1.28MHz | -75            |       |
| Propagation condition   |                  | AWGN           |       |
| NOTE: In the case of multi-frequency, the UTRA RF Channel Number can be set for the primary frequency in this test. |                  |                |       |

**Table A.9.2.5a.1-3: Cell specific test parameters for E-UTRA RSRP test parameters (cell 2)**

| Parameter   |  | Unit       | Test 1   | Test 2   |            |        |      |
|---|--|------------|----------|----------|------------|--------|------|
| E-UTRA RF Channel Number  |  |            | 1        | 1        |            |        |      |
| BW <sub>channel</sub>   |  | MHz        | 10       | 10       |            |        |      |
| Measurement bandwidth   |  | $n_{PRB}$  | 22—27    | 22—27    |            |        |      |
| PDCCH/PCFICH/PHICH<br>Reference measurement channel<br>defined in A.3.1.2.1   |  |            | R.6 FDD  | R.6 FDD  |            |        |      |
| OCNG Patterns defined in<br>A.3.2.1.2 (OP.2 FDD)  |  |            | OP.2 FDD | OP.2 FDD |            |        |      |
| PBCH_RA   |  | dB         | 0        | 0        |            |        |      |
| PBCH_RB   |  |            |          |          |            |        |      |
| PSS_RA  |  |            |          |          |            |        |      |
| SSS_RA  |  |            |          |          |            |        |      |
| PCFICH_RB   |  |            |          |          |            |        |      |
| PHICH_RA  |  |            |          |          |            |        |      |
| PHICH_RB  |  |            |          |          |            |        |      |
| PDCCH_RA  |  |            |          |          |            |        |      |
| PDCCH_RB  |  |            |          |          |            |        |      |
| PDSCH_RA  |  |            |          |          |            |        |      |
| PDSCH_RB  |  |            |          |          |            |        |      |
| OCNG_RA <sup>Note1</sup>  |  |            |          |          |            |        |      |
| OCNG_RB <sup>Note1</sup>  |  |            |          |          |            |        |      |
| $N_{oc}$ <sup>Note2</sup>   | Bands 1, 4, 6, 10,<br>11, 18, 19, 21, 23<br>and 24 |            |          |          | dBm/15 kHz | -88.65 | -117 |
|   | Bands 2, 5, 7 and<br>27                            |            |          |          |            |        | -115 |
|   | Band 25  | -113.5     |          |          |            |        |      |
|   | Band 28  | -115.5     |          |          |            |        |      |
|   | Bands 3, 8, 12,<br>13, 14, 17, 20<br>and 22        | -114       |          |          |            |        |      |
|   | Band 9   | -116       |          |          |            |        |      |
| $\hat{E}_s / I_{ot}$  |  | dB         | 10       | -4       |            |        |      |
| RSRP <sup>Note3</sup>   | Bands 1, 4, 6, 10,<br>11, 18, 19, 21, 23<br>and 24 | dBm/15 kHz | -78.65   | -121     |            |        |      |
|   | Bands 2, 5, 7 and<br>27                            |            |          | -119     |            |        |      |
|   | Band 25  |            |          | -117.5   |            |        |      |
|   | Band 28  |            |          | -119.5   |            |        |      |
|   | Bands 3, 8, 12,<br>13, 14, 17, 20<br>and 22        |            |          | -118     |            |        |      |
|   | Band 9   |            |          | -120     |            |        |      |
| $I_o$ <sup>Note3</sup>  | Bands 1, 4, 6, 10,<br>11, 18, 19, 21, 23<br>and 24 | dBm/9 MHz  | -49.5    | -87.76   |            |        |      |
|   | Bands 2, 5, 7 and<br>27                            |            |          | -85.76   |            |        |      |
|   | Band 25  |            |          | -84.26   |            |        |      |
|   | Band 28  |            |          | -86.26   |            |        |      |
|   | Bands 3, 8, 12,<br>13, 14, 17, 20<br>and 22        |            |          | -84.76   |            |        |      |
|   | Band 9   |            |          | -86.76   |            |        |      |
| $\hat{E}_s / N_{oc}$  |  | dB         | 10       | -4       |            |        |      |
| Propagation condition   |  | -          | AWGN     | AWGN     |            |        |      |
| Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. |  |            |          |          |            |        |      |
| Note 2: Interference from other cells and noise sources not specified in the test is assumed to   |  |            |          |          |            |        |      |

be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for  $N_{oc}$  to be fulfilled.

Note 3: RSRP and  $I_0$  levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

### A.9.2.5a.1.3 Test Requirements

The E-UTRA RSRP measurement absolute accuracy shall meet the requirements in section 9.1.1.5a.

The rate of correct measurements observed during repeated tests shall be at least 90%.

### A.9.2.5a.2 E-UTRAN TDD RSRP

#### A.9.2.5a.2.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRA TDD RSRP measurement absolute accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.5a and applies to UE supporting this capability.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2. Idle interval of 80ms period as defined in TS25.331 is provided. In the measurement control information it is indicated to the UE that periodic reporting of the E-UTRA RSRP measurement is used.

#### A.9.2.5a.2.2 Test parameters

In this set of test cases there are two cells. Cell 1 is a UTRA TDD cell and cell 2 is a E-UTRA TDD cell. In all test cases, Cell 1 is the serving cell and Cell 2 is the target cell. The RSRP absolute accuracy requirements are tested by using test parameters in Table A.9.2.5a.2-1, Table A.9.2.5a.2-2, and Table A.9.2.5a.2-3.

**Table A.9.2.5a.2-1: General parameters of E-UTRA TDD RSRP measurement tests**

| Parameter                                  | Unit | Value                                      | Comment                                  |
|--|------|--|--|
| DCH parameters                             |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2  |
| Power Control                              |      | On   |  |
| Target quality value on DTCH               | BLER | 0.01                                       |  |
| Active cell                                |      | Cell 1                                     | 1.28Mcps UTRA TDD cell                   |
| Neighbour cell                             |      | Cell 2                                     | E-UTRA TDD cell                          |
| CP length of cell 2                        |      | Normal                                     |  |
| Uplink-downlink configuration of cell 2    |      | 1  | As specified in table 4.2.2 in TS 36.211 |
| Special subframe configuration of cell 2   |      | 6  | As specified in table 4.2.1 in TS 36.211 |
| Idle intervals period                      | ms   | 80   | As specified in TS 25.331                |
| Filter coefficient                         |      | 0  | L3 filtering is not used                 |
| Inter-RAT(E-UTRA TDD) measurement quantity |      | E-UTRA TDD RSRP                            |  |

**Table A.9.2.5a.2-2: E-UTRA TDD RSRP measurement tests parameters (cell 1)**

| Parameter   | Unit        | Test 1, Test 2 |       |
|---|-------------|----------------|-------|
|   |             | 0              | DwPTS |
| DL timeslot number  |             | 0              | DwPTS |
| UTRA RF Channel number <sup>Note2</sup>   |             | Channel 1      |       |
| PCCPCH_Ec/lor   | dB          | -3             |       |
| DwPCH_Ec/lor  | dB          |                | 0     |
| OCNS_Ec/lor   | dB          | -3             |       |
| loc   | dBm/1.28MHz | -75            |       |
| lor/loc   | dB          | 3              |       |
| PCCPCH RSCP <sup>Note1</sup>  | dBm         | -75            |       |
| Io <sup>Note 1</sup>  | dBm/1.28MHz | -70.24         |       |
| Propagation condition   |             | AWGN           |       |
| NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |             |                |       |
| NOTE 2: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel Number can be set for the primary frequency in this test.      |             |                |       |

**Table A.9.2.5a.2-3: E-UTRA TDD RSRP measurement tests parameters (cell 2)**

| Parameter  | Unit            | Test 1   | Test 2   |
|--|-----------------|----------|----------|
| E-UTRA RF Channel Number   |                 | 2        | 2        |
| BWchannel  | MHz             | 10       | 10       |
| OCNG Patterns defined in A.3.2.2.2 (OP.2 TDD) in [24]  |                 | OP.2 TDD | OP.2 TDD |
| PBCH_RA  | dB              | 0        | 0        |
| PBCH_RB  |                 |          |          |
| PSS_RA   |                 |          |          |
| SSS_RA   |                 |          |          |
| PCFICH_RB  |                 |          |          |
| PHICH_RA   |                 |          |          |
| PHICH_RB   |                 |          |          |
| PDCCH_RA   |                 |          |          |
| PDCCH_RB   |                 |          |          |
| PDSCH_RA   |                 |          |          |
| PDSCH_RB   |                 |          |          |
| OCNG_RA <sup>Note1</sup>   |                 |          |          |
| OCNG_RB <sup>Note1</sup>   |                 |          |          |
| $N_{oc}$ <sup>Note2</sup>  |                 |          |          |
|  | Bands 42 and 43 | -116     |          |
|  | Bands 41 and 44 | -115     |          |
| $\hat{E}_s / I_{ot}$   | dB              | 10       | -4       |
| RSRP <sup>Note3</sup>  | Bands 33 ~ 40   | -78.65   | -121     |
|  | Bands 42 and 43 |          | -120     |
|  | Bands 41 and 44 |          | -119     |
| Io <sup>Note3</sup>  | Bands 33 ~ 40   | -49.5    | -87.76   |
|  | Bands 42 and 43 |          | -86.76   |
|  | Bands 41 and 44 |          | -85.76   |
| $\hat{E}_s / N_{oc}$   | dB              | 10       | -4       |
| Propagation condition  | -               | AWGN     | AWGN     |
| Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  |                 |          |          |
| Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled. |                 |          |          |
| Note 3: RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  |                 |          |          |
| Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.   |                 |          |          |

## A.9.2.5a.1.3 Test Requirements

The RSRP measurement accuracy shall meet the requirements in section 9.1.1.5a.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## A.9.2.5b E-UTRA RSRQ

## A.9.2.5b.1 E-UTRAN FDD RSRQ

## A.9.2.5b.1.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRA FDD RSRQ measurement absolute accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.5b and applies to UE supporting this capability.

Cell 1 is a UTRA TDD cell and cell 2 is a E-UTRA FDD cell. In all tests, Cell 1 is the serving cell and Cell 2 the target cell. In the measurement control information it is indicated to the UE that periodic reporting of the E-UTRA RSRQ measurement is used.

Idle interval of 80ms period as defined in TS25.331 is provided.

## A.9.2.5b.1.2 Test parameters

E-UTRA FDD RSRQ accuracy requirements are tested by using test parameters in Table A.9.2.5b.1-1, A.9.2.5b.1-2, and A.9.2.5b.1-3.

**Table A.9.2.5b.1-1: General E-UTRA RSRQ test parameters**

| Parameter                                  | Unit | Value   | Comment                                 |
|--|------|---|---|
| DCH parameters                             |      | DL Reference Measurement Channel<br>12.2 kbps | As specified in TS 25.102 section A.2.2 |
| Power Control                              |      | On  |   |
| Target quality value on DTCH               | BLER | 0.01  |   |
| Active cell                                |      | Cell 1  | 1.28Mcps TDD cell                       |
| Neighbour cell                             |      | Cell 2  | E-UTRA FDD cell                         |
| CP length of cell 2                        |      | normal  |   |
| Idle intervals period                      | ms   | 80  | As specified in TS 25.331               |
| Filter coefficient                         |      | 0   | L3 filtering is not used                |
| Inter-RAT(E-UTRA FDD) measurement quantity |      | E-UTRA FDD RSRQ                               |   |

**Table A.9.2.5b.1-2: Cell specific test parameters for E-UTRA RSRQ test parameters (cell 1)**

| Parameter                     | Unit  | Test 1, Test 2 |       |
|-------------------------------|---|----------------|-------|
| DL timeslot number            |   | 0              | DwPTS |
| UTRA RF Channel number (NOTE) |   | Channel 1      |       |
| PCCPCH_Ec/Ior                 | dB  | -3             |       |
| DwPCH_Ec/Ior                  | dB  |                | 0     |
| OCNS_Ec/Ior                   | dB  | -3             |       |
| Ior/Ioc                       | dB  | 3              |       |
| Ioc                           | dBm / 1.28MHz   | -75            |       |
| Propagation condition         |   | AWGN           |       |
| NOTE:                         | In the case of multi-frequency, the UTRA RF Channel Number can be set for the primary frequency in this test. |                |       |

**Table A.9.2.5b.1-3: Cell specific test parameters for E-UTRA RSRQ test parameters (cell 2)**

| Parameter  |  | Unit          | Test 1   | Test 2   | Test 3   |
|--|--|---------------|----------|----------|----------|
| E-UTRA RF Channel Number   |  |               | 1        | 1        | 1        |
| Bwchannel  |  | MHz           | 10       | 10       | 10       |
| Measurement bandwidth  |  | $n_{PRB}$     | 22—27    | 22—27    | 22—27    |
| PDCCH/PCFICH/PHICH<br>Reference measurement channel<br>defined in A.3.1.2.1  |  |               | R.6 FDD  | R.6 FDD  | R.6 FDD  |
| OCNG Patterns defined in<br>A.3.2.1.1 (OP.1 FDD) and<br>A.3.2.1.2 (OP.2 FDD) |  |               | OP.2 FDD | OP.2 FDD | OP.2 FDD |
| PBCH_RA  |  | dB            | 0        | 0        | 0        |
| PBCH_RB  |  |               |          |          |          |
| PSS_RA   |  |               |          |          |          |
| SSS_RA   |  |               |          |          |          |
| PCFICH_RB  |  |               |          |          |          |
| PHICH_RA   |  |               |          |          |          |
| PHICH_RB   |  |               |          |          |          |
| PDCCH_RA   |  |               |          |          |          |
| PDCCH_RB   |  |               |          |          |          |
| PDSCH_RA   |  |               |          |          |          |
| PDSCH_RB   |  |               |          |          |          |
| OCNG_RA <sup>Note1</sup>   |  |               |          |          |          |
| OCNG_RB <sup>Note1</sup>   |  |               |          |          |          |
| $N_{oc}$ <sup>Note2</sup>  | Bands 1, 4, 6, 10,<br>11, 18, 19, 21, 23<br>and 24 |               |          |          |          |
|  | Bands 2, 5, 7 and<br>27                            | -117.50       |          |          |          |
|  | Band 25  | -116.00       |          |          |          |
|  | Band 28  | -118.00       |          |          |          |
|  | Bands 3, 8, 12,<br>13, 14, 17, 20<br>and 22        | -116.50       |          |          |          |
|  | Band 9   | -118.50       |          |          |          |
| $\hat{E}_s / I_{ot}$   |  | dB            | -1.75    | -4.0     | -4.0     |
| RSRP <sup>Note3</sup>  | Bands 1, 4, 6, 10,<br>11, 18, 19, 21, 23<br>and 24 | dBm/15<br>kHz | -81.75   | -108.70  | -123.50  |
|  | Bands 2, 5, 7 and<br>27                            |               |          |          | -121.50  |
|  | Band 25  |               |          |          | -120.00  |
|  | Band 28  |               |          |          | -122.00  |
|  | Bands 3, 8, 12,<br>13, 14, 17, 20<br>and 22        |               |          |          | -120.50  |
|  | Band 9   |               |          |          | -122.50  |
| RSRQ <sup>Note3</sup>  | Bands 1, 4, 6, 10,<br>11, 18, 19, 21, 23<br>and 24 | dB            | -14.76   | -16.25   | -16.25   |
|  | Bands 2, 5, 7 and<br>27                            |               |          |          |          |
|  | Band 25  |               |          |          |          |
|  | Band 28  |               |          |          |          |
|  | Bands 3, 8, 12,<br>13, 14, 17, 20<br>and 22        |               |          |          |          |
|  | Band 9   |               |          |          |          |
| $I_o$ <sup>Note3</sup>   | Bands 1, 4, 6, 10,<br>11, 18, 19, 21, 23<br>and 24 | dBm/9<br>MHz  | -50      | -75.46   | -90.26   |
|  | Bands 2, 5, 7 and<br>27                            |               |          |          | -88.26   |

|   |   |    |       |      |        |
|---|---|----|-------|------|--------|
|   | Band 25                                     |    |       |      | -86.76 |
|   | Band 28                                     |    |       |      | -88.76 |
|   | Bands 3, 8, 12,<br>13, 14, 17, 20<br>and 22 |    |       |      | -87.26 |
|   | Band 9                                      |    |       |      | -89.26 |
| $\hat{E}_s / N_{oc}$  |   | dB | -1.75 | -4.0 | -4.0   |
| Propagation condition   |   | -  | AWGN  | AWGN | AWGN   |
| <p>Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.</p> <p>Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for <math>N_{oc}</math> to be fulfilled.</p> <p>Note 3: RSRQ, RSRP and <math>I_0</math> levels have been derived from other parameters for information purposes. They are not settable parameters themselves.</p> <p>Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.</p> |   |    |       |      |        |

### A.9.2.5b.1.3 Test Requirements

The E-UTRA RSRQ measurement absolute accuracy shall meet the requirements in section 9.1.1.5b.

The rate of correct measurements observed during repeated tests shall be at least 90%.

### A.9.2.5b.2 E-UTRAN TDD RSRQ

#### A.9.2.5b.2.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRA TDD RSRQ absolute measurement accuracy is within the specified limits. This test will verify the requirements in section 9.1.1.5b and applies to UE supporting this capability.

The DL DPCH shall be transmitted in timeslot 4 and the UL DPCH shall be transmitted in timeslot 2. Idle interval of 80ms period as defined in TS25.331 is provided. In the measurement control information it is indicated to the UE that periodic reporting of the E-UTRA RSRQ measurement is used.

#### A.9.2.5b.2.2 Test parameters

In this set of test cases there are two cells. Cell 1 is a UTRA TDD cell and cell 2 is a E-UTRA TDD cell. The RSRQ absolute accuracy requirements are tested by using test parameters in Table A.9.2.5b.2-1, Table A.9.2.5b.2-2 and Table A.9.2.5b.2-3. In all test cases, Cell 1 is the serving cell and Cell 2 is the target cell.

**Table A.9.2.5b.2-1: General parameters of E-UTRA TDD RSRQ measurement tests**

| Parameter                                  | Unit | Value                                      | Comment                                  |
|--|------|--|--|
| DCH parameters                             |      | DL Reference Measurement Channel 12.2 kbps | As specified in TS 25.102 section A.2.2  |
| Power Control                              |      | On   |  |
| Target quality value on DTCH               | BLER | 0.01                                       |  |
| Active cell                                |      | Cell 1                                     | 1.28Mcps UTRA TDD cell                   |
| Neighbour cell                             |      | Cell 2                                     | E-UTRA TDD cell                          |
| CP length of cell 2                        |      | Normal                                     |  |
| Uplink-downlink configuration of cell 2    |      | 1  | As specified in table 4.2.2 in TS 36.211 |
| Special subframe configuration of cell 2   |      | 6  | As specified in table 4.2.1 in TS 36.211 |
| Idle intervals period                      | ms   | 80   | As specified in TS 25.331                |
| Filter coefficient                         |      | 0  | L3 filtering is not used                 |
| Inter-RAT(E-UTRA TDD) measurement quantity |      | E-UTRA TDD RSRQ                            |  |

**Table A.9.2.5b.2-2: E-UTRA TDD RSRQ measurement tests parameters (cell 1)**

| Parameter   | Unit        | Test 1, Test 2, and Test 3 |       |
|---|-------------|----------------------------|-------|
| DL timeslot number  |             | 0                          | DwPTS |
| UTRA RF Channel number <sup>Note2</sup>   |             | Channel 1                  |       |
| PCCPCH_Ec/lor   | dB          | -3                         |       |
| DwPCH_Ec/lor  | dB          |                            | 0     |
| OCNS_Ec/lor   | dB          | -3                         |       |
| lor   | dBm/1.28MHz | -75                        |       |
| lor/lor   | dB          | 3                          |       |
| PCCPCH RSCP <sup>Note1</sup>  | dBm         | -75                        |       |
| Io <sup>Note 1</sup>  | dBm/1.28MHz | -70.24                     |       |
| Propagation condition   |             | AWGN                       |       |
| NOTE 1: PCCPCH RSCP and Io levels have been calculated from other parameters for information purposes. They are not settable parameters themselves. |             |                            |       |
| NOTE 2: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel Number can be set for the primary frequency in this test.      |             |                            |       |

**Table A.9.2.5b.2-3: E-UTRA TDD RSRP measurement tests parameters (cell 2)**

| Parameter  | Unit            | Test 1   | Test 2   | Test 3   |
|--|-----------------|----------|----------|----------|
| E-UTRA RF Channel Number   |                 | 2        | 2        | 2        |
| BWchannel  | MHz             | 10       | 10       | 10       |
| OCNG Patterns defined in A.3.2.2.2 (OP.2 TDD) in [24]  |                 | OP.2 TDD | OP.2 TDD | OP.2 TDD |
| PBCH_RA  | dB              | 0        | 0        | 0        |
| PBCH_RB  |                 |          |          |          |
| PSS_RA   |                 |          |          |          |
| SSS_RA   |                 |          |          |          |
| PCFICH_RB  |                 |          |          |          |
| PHICH_RA   |                 |          |          |          |
| PHICH_RB   |                 |          |          |          |
| PDCCH_RA   |                 |          |          |          |
| PDCCH_RB   |                 |          |          |          |
| PDSCH_RA   |                 |          |          |          |
| PDSCH_RB   |                 |          |          |          |
| OCNG_RA <sup>Note1</sup>   |                 |          |          |          |
| OCNG_RB <sup>Note1</sup>   |                 |          |          |          |
| $N_{oc}$ <sup>Note2</sup>  |                 |          |          |          |
|  | Bands 42 and 43 | -118.50  |          |          |
|  | Bands 41 and 44 | -117.50  |          |          |
| $\hat{E}_s / I_{ot}$   | dB              | -1.75    | -4.0     | -4.0     |
| RSRP <sup>Note3</sup>  | Bands 33 – 40   | -81.75   | -108.70  | -123.50  |
|  | Bands 42 and 43 |          |          | -122.50  |
|  | Bands 41 and 44 |          |          | -121.50  |
| RSRQ <sup>Note3</sup>  | Bands 33 – 44   | -14.76   | -16.25   | -16.25   |
| Io <sup>Note3</sup>  | Bands 33 – 40   | -50      | -75.46   | -90.26   |
|  | Bands 42 and 43 |          |          | -89.26   |
|  | Bands 41 and 44 |          |          | -88.26   |
| $\hat{E}_s / N_{oc}$   | dB              | -1.75    | -4.0     | -4.0     |
| Propagation condition  | -               | AWGN     | AWGN     | AWGN     |
| Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.  |                 |          |          |          |
| Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}$ to be fulfilled. |                 |          |          |          |
| Note 3: RSRP, RSRQ and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.  |                 |          |          |          |
| Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.  |                 |          |          |          |



### A.9.2.5b.2.3 Test Requirements

The RSRQ measurement accuracy shall meet the requirements in section 9.1.1.5b.

The rate of correct measurements observed during repeated tests shall be at least 90%.

## Annex B (normative): Conditions for RRM requirements applicability for operating bands

### B.1. Conditions for Idle mode

#### B.1.1. Conditions for measurements of inter-RAT E-UTRA cells

This section defines the E-UTRAN RSRP, RSRP  $\hat{E}_s/I_{ot}$ , SCH\_RP and SCH  $\hat{E}_s/I_{ot}$  applicable for a corresponding operating band.

The conditions for measurements of inter-RAT E-UTRAN cells are defined in Table B.1.1-1

**Table B.1.1-1. Conditions for measurements of inter-RAT E-UTRA cells**

| Parameter                    | Conditions  |           |                     |                              |           |           |
|------------------------------|---|-----------|---------------------|------------------------------|-----------|-----------|
|                              | Bands   | Bands     | Bands               | Bands                        | Bands     | Bands     |
|                              | 1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38, 39, 40 | 9, 42, 43 | 2, 5, 7, 27, 41, 44 | 3, 8, 12, 13, 14, 17, 20, 22 | 25        | 28        |
| RSRP <sub>dBm</sub> $\geq$   | -124 dBm  | -123 dBm  | -122 dBm            | -121 dBm                     | -120.5dBm | -122.5dBm |
| SCH_RP <sub>dBm</sub> $\geq$ | -124 dBm  | -123 dBm  | -122 dBm            | -121 dBm                     | -120.5dBm | -122.5dBm |
| RSRP $\hat{E}_s/I_{ot} \geq$ | -4 dB   |           |                     |                              |           |           |
| SCH $\hat{E}_s/I_{ot} \geq$  | -4 dB   |           |                     |                              |           |           |

### B.2. Conditions for UE Measurements Procedures

#### B.2.1. Conditions for identification of a new cell in CELL\_DCH State (3.84 Mcps option)

This section defines the E-UTRAN RSRP, RSRP  $\hat{E}_s/I_{ot}$ , SCH\_RP and SCH  $\hat{E}_s/I_{ot}$  applicable for a corresponding operating band.

The conditions for identification of a new cell in CELL\_DCH State (3.84 Mcps option) are defined in Table B.2.1-1

**Table B.2.1-1. Conditions for identification of a new cell in CELL\_DCH State**

| Parameter                    | Conditions   |           |                        |                                    |           |           |
|------------------------------|--|-----------|------------------------|------------------------------------|-----------|-----------|
|                              | Bands  | Bands     | Bands                  | Bands                              | Bands     | Bands     |
|                              | 1, 4, 6, 10,<br>11, 18, 19,<br>21, 23, 24,<br>33, 34, 35,<br>36, 37, 38,<br>39, 40 | 9, 42, 43 | 2, 5, 7, 27,<br>41, 44 | 3, 8, 12,<br>13, 14, 17,<br>20, 22 | 25        | 28        |
| $RSRP _{dBm} \geq$           | -125 dBm   | -124 dBm  | -123 dBm               | -122 dBm                           | -121.5dBm | -123.5dBm |
| $SCH\_RP _{dBm} \geq$        | -125 dBm   | -124 dBm  | -123 dBm               | -122 dBm                           | -121.5dBm | -123.5dBm |
| $RSRP \hat{E}_s/I_{ot} \geq$ | -4 dB  |           |                        |                                    |           |           |
| $SCH\ RP/I_{ot} \geq$        | -4 dB  |           |                        |                                    |           |           |

### B.2.2. Conditions for identification of a new cell in CELL\_DCH State (1.28 Mcps option)

This section defines the E-UTRAN RSRP,  $RSRP \hat{E}_s/I_{ot}$ , SCH\_RP and  $SCH \hat{E}_s/I_{ot}$  applicable for a corresponding operating band.

The conditions for identification of a new cell in CELL\_DCH State (1.28 Mcps option) are defined in Table B.2.1-1

### B.2.3. Conditions for identification of a new cell in CELL\_DCH State (7.68 Mcps option)

This section defines the E-UTRAN RSRP,  $RSRP \hat{E}_s/I_{ot}$ , SCH\_RP and  $SCH \hat{E}_s/I_{ot}$  applicable for a corresponding operating band.

The conditions for identification of a new cell in CELL\_DCH State (7.68 Mcps option) are defined in Table B.2.1-1

## Annex B (informative): Change History

**Table B.1: Change History**

| TSG   | Doc       | CR   | R | Title  | Cat | Curr  | New   | Work Item              |
|-------|-----------|------|---|--|-----|-------|-------|------------------------|
| RP-31 |           |      |   | Release 7 created following decision at RAN #31  |     | 6.6.0 | 7.0.0 |                        |
| RP-32 | RP-060313 | 0363 |   | Intra frequency mobility requirement during a MBMS session   | B   | 7.0.0 | 7.1.0 | MBMS-RAN-RF-TDD        |
| RP-32 | RP-060311 | 0364 |   | 7.68 Mcps Idle Mode Cell Selection & Reselection   | B   | 7.0.0 | 7.1.0 | VHCRTDD-RF             |
| RP-32 | RP-060311 | 0365 |   | 7.68 Mcps UTRAN Connected Mode Mobility  | B   | 7.0.0 | 7.1.0 | VHCRTDD-RF             |
| RP-32 | RP-060311 | 0366 |   | 7.68 Mcps RRC Connection Control & Timing Characteristics  | B   | 7.0.0 | 7.1.0 | VHCRTDD-RF             |
| RP-32 | RP-060311 | 0367 |   | 7.68 Mcps UE Measurement Procedures  | B   | 7.0.0 | 7.1.0 | VHCRTDD-RF             |
| RP-32 | RP-060311 | 0368 |   | 7.68 Mcps Measurements Performance Requirements  | B   | 7.0.0 | 7.1.0 | VHCRTDD-RF             |
| RP-32 | RP-060311 | 0369 |   | 7.68 Mcps Test Cases for RRM   | B   | 7.0.0 | 7.1.0 | VHCRTDD-RF             |
| RP-32 | RP-060313 | 0371 |   | MBMS Reception during Inter-frequency Measurements (3.84 Mcps)   | B   | 7.0.0 | 7.1.0 | MBMS-RAN-RF-TDD        |
| RP-32 | RP-060314 | 0372 |   | 3.84 Mcps RX Timing Deviation range update   | C   | 7.0.0 | 7.1.0 | TEI7                   |
| RP-33 | RP-060523 | 0374 | 1 | Correction of GSM measurement test case for 1.28Mcps TDD   | A   | 7.1.0 | 7.2.0 | TEI6                   |
| RP-33 | RP-060523 | 0376 |   | Removal of square brackets from requirement for Event Triggering and Reporting Criteria CELL_FACH state  | A   | 7.1.0 | 7.2.0 | TEI6                   |
| RP-34 | RP-060808 | 0378 |   | Correction to A.8.4.1 for 1.28Mcps TDD   | A   | 7.2.0 | 7.3.0 | TEI4                   |
| RP-35 | RP-070081 | 0380 |   | Correction to UE measurement reporting requirements in Annex 8   | A   | 7.3.0 | 7.4.0 | TEI6                   |
| RP-36 | RP-070376 | 0381 |   | MBSFN Cluster Selection/Reselection  | B   | 7.4.0 | 7.5.0 | MBMSE-RANPhysTDD       |
| RP-36 | RP-070377 | 0382 |   | Requirements for non-HSDPA and non-EDCH transmitter carrier power  | B   | 7.4.0 | 7.5.0 | LCRTDD-EDCH-RF         |
| RP-37 | RP-070733 | 0388 | 1 | Introduction of multi-frequency operation for LCR TDD  | F   | 7.5.0 | 7.6.0 | TEI7                   |
| RP-37 | RP-070652 | 0385 |   | Correction to HS-SICH reception quality for 1.28Mcps TDD   | A   | 7.5.0 | 7.6.0 | TEI6                   |
| RP-37 | RP-070651 | 0386 |   | Inter-frequency measurement in MBMS for 7.68 Mcps TDD Option.  | F   | 7.5.0 | 7.6.0 | TEI7                   |
| RP-38 | RP-070935 | 0389 |   | Requirements for the UE transmission power headroom (UPH)  | F   | 7.6.0 | 7.7.0 | LCRTDD-EDCH-RF         |
| RP-38 | RP-070935 | 0390 |   | MBSFN Cluster Selection/Reselection  | B   | 7.6.0 | 7.7.0 | MBMSE-RANPhysLCRTDD    |
| RP-41 | RP-080637 | 392  |   | Updates of TS 25.123 to include UTRA TDD to E-UTRA mobility related requirements   | F   | 7.7.0 | 8.0.0 | LTE-RF                 |
| RP-42 | RP-080902 | 400  | 1 | Modification for P-CCPCH RSCP intra frequency relative requirement   | A   | 8.0.0 | 8.1.0 | TEI4                   |
| RP-42 | RP-080903 | 405  | 1 | Correction on Intra/Inter-frequency cell power level for UE to correctly evaluate a better ranked cell in idle state and power settings for related test cases | A   | 8.0.0 | 8.1.0 | TEI4                   |
| RP-42 | RP-080901 | 406  |   | Modifying the inter frequency monitoring ability of UE in TDD 1.28Mcps   | A   | 8.0.0 | 8.1.0 | TEI7                   |
| RP-42 | RP-080946 | 408  |   | Update of the requirement for cell re-selection in enhanced CELL_FACH state in 1.28Mcps TDD  | B   | 8.0.0 | 8.1.0 | RANimp-EnhState1.28TDD |
| RP-42 | RP-080944 | 395  |   | Some clarifications on TD-SCDMA/E-UTRA interworking in CELL_FACH state   | F   | 8.0.0 | 8.1.0 | TEI8                   |
| RP-42 | RP-080944 | 393  |   | RRC re-establishment requirements  | F   | 8.0.0 | 8.1.0 | TEI8                   |
| RP-42 | RP-080938 | 394  | 3 | Correction of UTRAN TDD to E-UTRAN TDD mobility requirements   | F   | 8.0.0 | 8.1.0 | LTE-RF                 |
| RP-43 | RP-090189 | 410  |   | UTRA TDD – E-UTRA TDD cell reselection: E-UTRA is of lower priority  | F   | 8.1.0 | 8.2.0 | LTE-RF                 |
| RP-43 | RP-090189 | 411  |   | UTRA TDD – E-UTRA TDD cell reselection: E-UTRA is of higher priority   | F   | 8.1.0 | 8.2.0 | LTE-RF                 |

|       |           |       |   |  |   |       |       |                |
|-------|-----------|-------|---|--|---|-------|-------|----------------|
| RP-43 | RP-090196 | 409   |   | Correction of UE transmitted Power absolute accuracy requirements  | F | 8.1.0 | 8.2.0 | TEI8           |
| RP-44 | RP-090539 | 413   |   | Revision of UE transmission power headroom reporting range and mapping for 1.28Mcps TDD  | F | 8.2.0 | 8.3.0 | TEI7           |
| RP-44 | RP-090547 | 417   |   | UTRA TDD-E-UTRA FDD cell search(fading). (Technically Endorsed CR in R4-50bis - R4-091397)   | F | 8.2.0 | 8.3.0 | LTE-RF         |
| RP-44 | RP-090547 | 418   |   | UTRA TDD-E-UTRA TDD cell search(fading). (Technically Endorsed CR in R4-50bis - R4-091398)   | F | 8.2.0 | 8.3.0 | LTE-RF         |
| RP-44 | RP-090547 | 419   |   | UTRA TDD-E-UTRA FDD HO delay. (Technically Endorsed CR in R4-50bis - R4-091399)  | F | 8.2.0 | 8.3.0 | LTE-RF         |
| RP-44 | RP-090547 | 420   |   | UTRA TDD-E-UTRA TDD HO delay. (Technically Endorsed CR in R4-50bis - R4-091400)  | F | 8.2.0 | 8.3.0 | LTE-RF         |
| RP-44 | RP-090551 | 414   |   | Correction on cell reselection requirements for UTRAN TDD to E-UTRAN. (Technically Endorsed CR in R4-50bis - R4-091176)                    | F | 8.2.0 | 8.3.0 | LTE-RF         |
| RP-44 | RP-090556 | 415   |   | Adding cell reselection requirements based on priority information for UTRAN TDD. (Technically Endorsed CR in R4-50bis - R4-091186)        | F | 8.2.0 | 8.3.0 | TEI8           |
| RP-44 | RP-090556 | 416   |   | Adding cell reselection requirements based on priority information for UTRAN TDD to GSM. (Technically Endorsed CR in R4-50bis - R4-091187) | F | 8.2.0 | 8.3.0 | TEI8           |
| RP-45 | RP-090831 | 422   |   | Set 2.2. UTRA TDD to E-UTRA blind handover test  | F | 8.3.0 | 8.4.0 | LTE-RF         |
| RP-45 | RP-090831 | 421   | 1 | Set 2.1. Test case of UTRA TDD to UTRA TDD and E-UTRA combined cell search under fading  | F | 8.3.0 | 8.4.0 | LTE-RF         |
| RP-45 | RP-090821 | 423   |   | Clarification of RRM test configuration for LCR TDD UE with multiple antenna connectors  | F | 8.3.0 | 8.4.0 | RANimp-LCRMIMO |
| RP-46 | RP-091274 | 428   | 1 | E-UTRA TDD RSRP absolute accuracy measurement in UTRA TDD  | F | 8.4.0 | 9.0.0 | LTE-RF         |
| RP-46 | RP-091274 | 429   | 1 | E-UTRA TDD RSRQ absolute accuracy measurement in UTRA TDD  | F | 8.4.0 | 9.0.0 | LTE-RF         |
| RP-46 | RP-091274 | 433   |   | E-UTRA FDD RSRP Absolute Accuracy Test Case in UTRAN TDD Mode  | F | 8.4.0 | 9.0.0 | LTE-RF         |
| RP-46 | RP-091274 | 434   |   | E-UTRA FDD RSRQ Absolute Accuracy Test Case in UTRAN TDD Mode  | F | 8.4.0 | 9.0.0 | LTE-RF         |
| RP-47 | RP-100258 | 455   |   | Addition of requirement Serving HS-DSCH cell change for 1,28 Mcps TDD  | A | 9.0.0 | 9.1.0 | TEI7           |
| RP-47 | RP-100258 | 446   |   | Addition of requirement 5ms TTI E-DCH E-TFC restriction for 1,28 Mcps TDD  | A | 9.0.0 | 9.1.0 | TEI7           |
| RP-47 | RP-100258 | 452   |   | Addition of requirement Random Access for 1,28 Mcps TDD  | A | 9.0.0 | 9.1.0 | TEI7           |
| RP-47 | RP-100258 | 437   | 1 | Cell re-selection to inter-band TDD cell 25.123 9.0.0  | A | 9.0.0 | 9.1.0 | TEI7           |
| RP-47 | RP-100258 | 461   | 1 | Addition of requirement UTRAN to GSM Cell Re-Selection: HCS with only UTRA level changed for 1,28 Mcps TDD                                 | A | 9.0.0 | 9.1.0 | TEI7           |
| RP-47 | RP-100259 | 440   |   | TDD/TDD Handover for 1,28 Mcps Option: Hard Handover to inter-band cell 25.123 9.0.0   | A | 9.0.0 | 9.1.0 | TEI7           |
| RP-47 | RP-100259 | 458   |   | Addition of requirement TDD/TDD Handover for 1,28 Mcps: Handover to inter-band cell: Scenario 2  | A | 9.0.0 | 9.1.0 | TEI7           |
| RP-47 | RP-100259 | 449   |   | Addition of requirement Cell Re-selection in CELL_FACH: Cell Re-selection to GSM for 1,28 Mcps TDD   | A | 9.0.0 | 9.1.0 | TEI7           |
| RP-47 | RP-100259 | 443   |   | 1.28Mcps TDD P-CCPCH RSCP measurement test case  | A | 9.0.0 | 9.1.0 | TEI7           |
| RP-47 | RP-100260 | 465r1 |   | UTRA TDD - GSM non-synchronzation HO test_R9_CR  | A | 9.0.0 | 9.1.0 | TEI8           |
| RP-47 | RP-100260 | 463r1 |   | Combined UTRAN TDD interfrequency and GSM cell search under AWGN test_R9_CR  | A | 9.0.0 | 9.1.0 | TEI8           |
| RP-48 | RP-100618 | 474   |   | Addition of requirement UE uplink synchronization control for PRACH for 1.28 Mcps TDD  | A | 9.1.0 | 9.2.0 | TEI7           |

|       |           |      |   |   |   |        |        |                        |
|-------|-----------|------|---|---|---|--------|--------|------------------------|
| RP-48 | RP-100618 | 477  |   | Addition of requirement UE uplink synchronization control during handover for 1.28 Mcps TDD                             | A | 9.1.0  | 9.2.0  | TEI7                   |
| RP-48 | RP-100618 | 471  |   | Addition of requirement Inter-RAT cell change order from UTRAN TDD to GSM(GPRS) for 1.28 Mcps TDD Option                | A | 9.1.0  | 9.2.0  | TEI7                   |
| RP-48 | RP-100618 | 468  | 2 | Modification of requirement Event 1H and 1I triggered reporting in AWGN propagation conditions for 1.28 Mcps TDD Option | A | 9.1.0  | 9.2.0  | TEI7                   |
| RP-49 | RP-100918 | 479  |   | Correction on UTRAN TDD - E-UTRAN cell re-selection requirements in R9  | A | 9.2.0  | 9.3.0  | LTE-RF                 |
| RP-49 | RP-100918 | 481  |   | Correction on location band 11 in 25.123(R9)  | A | 9.2.0  | 9.3.0  | LTE-RF                 |
| RP-49 | RP-100918 | 483  |   | Adding the test case for cell re-selection in enhanced CELL_FACH state in 1.28Mcps TDD                                  | A | 9.2.0  | 9.3.0  | RANimp-EnhState1.28TDD |
| RP-50 | RP-101351 | 484  |   | Introduction of RRM requirements for 1.28Mcps TDD MC-HSUPA  | B | 9.3.0  | 10.0.0 | TDD_MC_HSUPA           |
| RP-51 | RP-110342 | 0487 | - | Correction of inter-frequency measurement accuracy test cases   | A | 10.0.0 | 10.1.0 | TEI9                   |
| RP-51 | RP-110334 | 0491 | - | Modification of inter-band handover for 1.28 Mcps TDD (Scenario 2)  | A | 10.0.0 | 10.1.0 | TEI7                   |
| RP-51 | RP-110334 | 0495 | - | Addition of new inter-band handover for 1.28 Mcps TDD (Scenario 3)  | A | 10.0.0 | 10.1.0 | TEI7                   |
| RP-52 | RP-110796 | 496  |   | Simplification of frequency dependent requirements in 25.123  | F | 10.1.0 | 10.2.0 | TEI10                  |
| RP-52 | RP-110786 | 503  |   | Modification on UTRA TDD to E-UTRA cell reselection test case A.4.2.5.2 for Rel-10                                      | A | 10.1.0 | 10.2.0 | LTE-RF                 |
| RP-52 | RP-110786 | 500  | 1 | Modification on UTRA TDD to E-UTRA cell reselection test case A.4.2.5.1 for Rel-10                                      | A | 10.1.0 | 10.2.0 | LTE-RF                 |
| RP-52 | RP-110803 | 497  | 1 | Introduction of MDT UE measurements requirements for LCR TDD in TS25.123  | B | 10.1.0 | 10.2.0 | MDT_UMTSLTE-Core       |
| RP-53 | RP-111250 | 507  |   | Correction to inter-RAT signal levels for band 17   | A | 10.2.0 | 10.3.0 | TEI8                   |
| RP-54 | RP-111680 | 513  |   | Removing [] and adding Sprioritysearch in test cases of reselection to E-UTRA cell for Rel-10                           | A | 10.3.0 | 10.4.0 | LTE-RF                 |
| RP-54 | RP-111735 | 514  |   | Corrections on the table number in TS 25.123  | F | 10.3.0 | 10.4.0 | TEI10                  |
| RP-55 | RP-120291 | 517  |   | Thresholds and margins for UTRA TDD to E-UTRA handover test A.5.3a and A.5.3b for R10                                   | A | 10.4.0 | 10.5.0 | LTE-RF                 |
| RP-55 | RP-120291 | 520  |   | Thresholds and margins for E-UTRA cell search test A.8.5.1 and A.8.5.2 for R10  | A | 10.4.0 | 10.5.0 | LTE-RF                 |
| RP-55 | RP-120291 | 523  |   | Thresholds and margins for E-UTRA cell search test A.8.5.3 and A.8.5.4 for R10  | A | 10.4.0 | 10.5.0 | LTE-RF                 |
| RP-55 | RP-120308 | 526  |   | Timestamp Accuracy Requirements for MDT   | B | 10.4.0 | 10.5.0 | MDT_UMTSLT E-Core      |
| RP-55 | RP-120304 | 527  | 1 | Inter-RAT E-UTRA RSRP, RSRQ band dependency   | F | 10.4.0 | 10.5.0 | TEI10                  |
| RP-56 | RP-120779 | 530  |   | CR for 25.123: Aligning requirements in TS 25.123 with TS 36.133 regarding the modification of B41 REFSSENS             | F | 10.5.0 | 10.6.0 | TEI10                  |
| RP-56 | RP-120794 | 532  |   | Introduction of Band 44   | B | 10.6.0 | 11.0.0 | LTE_APAC700-Perf       |
| RP-56 | RP-120792 | 533  |   | Introduction of e850_LB (Band 27) to TS 25.123  | B | 10.6.0 | 11.0.0 | LTE_e850_LB-Perf       |
| RP-56 | RP-120794 | 531  |   | Introduction of Band 28   | B | 10.6.0 | 11.0.0 | LTE_APAC700-Perf       |

---

## History

| <b>Document history</b> |               |             |
|-------------------------|---------------|-------------|
| V11.0.0                 | November 2012 | Publication |
|                         |               |             |
|                         |               |             |
|                         |               |             |
|                         |               |             |