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Foreword

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

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- x the first digit:
 - 1 presented to TSG for information;
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- 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

The present document specifies requirements for support of Radio Resource Management for the FDD and TDD modes of Evolved UTRA. These requirements include requirements on measurements in UTRAN and the UE as well as requirements on node dynamical 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] 3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode"
- [2] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".
- [3] 3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures"
- [4] 3GPP TS 36.214: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements"
- [5] 3GPP TS 36.101: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception"
- [6] 3GPP TS 25.302: "Services provided by the Physical Layer".
- [7] 3GPP TS 25.331: "RRC Protocol Specification".
- [8] 3GPP TS 45.008: "Radio subsystem link control".
- [9] 3GPP TS 45.005: "Radio transmission and reception".
- [10] 3GPP TS 45.010: "Radio subsystem synchronization".
- [11] 3GPP2 C.S0024-B: "cdma2000 High Rate Packet Data Air Interface Specification".
- [12] 3GPP2 C.S0002-D: "Physical Layer Standard for cdma2000 Spread Spectrum Systems Release A".
- [13] 3GPP2 C.S0033-B: "Recommended Minimum Performance Standards for cdma2000 High Rate Packet Data Access Terminal".
- [14] 3GPP2 C.S0011-C: "Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations".
- [15] 3GPP2 C.S0005-D: Upper Layer (Layer 3) Signaling Specification for cdma2000 Spread Spectrum Systems
- [16] 3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation"

- [17] 3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification".
- [18] 3GPP TS 25.133: "Requirements for Support of Radio Resource Management (FDD)".
- [19] 3GPP TS 25.123: "Requirements for Support of Radio Resource Management (TDD)".
- [20] 3GPP TS 25.214: "Physical layer procedures (FDD)".
- [21] 3GPP TS 36. 212 "Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding".
- [22] 3GPP TS 36.302: "Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer"
- [23] 3GPP TS 36.521-3: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 3: Radio Resource Management conformance testing".
- [24] 3GPP TS 36.355: "Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)".
- [25] 3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2"
- [26] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [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"
- [28] 3GPP TS 36.423: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [26] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [26].

Primary Cell: As defined in [2].

Secondary Cell: As defined in [2].

Serving Cell: As defined in [2].

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.
BW _{Channel}	Channel bandwidth, defined in TS 36.101 subclause 3.2
CPICH_Ec	Average energy per PN chip for the CPICH
CPICH_Ec/Io	The ratio of the received energy per PN chip for the CPICH to the total received power spectral
	density at the UE antenna connector.
Ec	Average energy per PN chip.
Ês	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

Іо	The total received power density, including signal and interference, as measured at the UE antenna
Ioc	connector. The power spectral density (integrated in a noise bandwidth equal to the chip rate and normalized to the chip rate) of a band limited noise source (simulating interference from cells, which are not
Iot	defined in a test procedure) as measured at the UE antenna connector. 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
N_{oc}	The power spectral density of a white noise source (average power per RE normalised to the
	subcarrier spacing), simulating interference from cells that are not defined in a test procedure, as measured at the UE antenna connector
N_{PRS}	Number of consecutive downlink positioning subframes as defined in subclause 6.10.4.3 in 3GPP
	TS 36.211
n_{PRB}	Physical Resource Block number as defined in subclause 3.1 in 3GPP TS 36.211.
N_{TA}	Timing offset between uplink and downlink radio frames at the UE, as defined in subclause 3.1 in 3GPP TS 36.211.
$N_{\rm TA \ offset}$	Fixed timing advance offset, as defined in subclause 3.1 in 3GPP TS 36.211.
$P_{\rm CMAX}$	Configured UE transmitted power as defined in subclause 6.2.5 in 3GPP TS 36.101.
$P_{\mathrm{CMAX},c}$	Configured UE transmitted power on a serving cell c as defined in subclause 6.2.5A in 3GPP TS
CMAX,c	36.101.
PRP	Received (linear) average power of the resource elements that carry E-UTRA PRS, measured at the UE antenna connector.
S	Cell Selection Criterion defined in TS 36.304, subclause 5.2.3.2 for E-UTRAN
SCH_Ec/Ior	The ratio of the transmit energy per PN chip of the SCH to the total transmit power spectral density at the UTRA Node B antenna connector
SCH_RP	Received (linear) average power of the resource elements that carry E-UTRA synchronisation signal, measured at the UE antenna connector
Srxlev	Cell selection RX level, defined in TS 36.304, subclause 5.2.3.2
Squal	Cell selection quality, defined in TS 36.304, subclause 5.2.3.2
Sintersearch	Defined in TS 25.304, subclause 5.2.6.1.5
Sintrasearch	Defined in TS 25.304, subclause 5.2.6.1.5 for UTRAN and in TS 36.304, subclause 5.2.4.7 for E-UTRAN
Snonintrasearch	Defined in TS 36.304, subclause 5.2.4.7
SsearchRAT	Defined in TS 25.304, subclause 5.2.6.1.5
Thresh _{x, high}	Defined in TS 36.304, subclause 5.2.4.7
Thresh _{x, low}	Defined in TS 36.304, subclause 5.2.4.7
Thresh _{serving, low}	Defined in TS 36.304, subclause 5.2.4.7
$T_{ m PRS}$	Cell-specific positioning subframe configuration period as defined in subclause 6.10.4.3 in 3GPP
_	TS 36.211
	The RRC Re-establishment delay requirement, the time between the moment when erroneous CRCs are applied, to when the UE starts to send preambles on the PRACH.
Treselection	Defined in TS 25.304, subclause 5.2.6.1.5
Treselection _{RAT} Treselection _{EUTR}	Defined in TS 36.304, subclause 5.2.4.7 Defined in TS 36.304, subclause 5.2.4.7
	$_{A}$ Defined in TS 36.304, subclause 5.2.4.7 Defined in TS 36.304, subclause 5.2.4.7
	Defined in TS 36.304, subclause 5.2.4.7
T _S	Basic time unit, defined in TS 36.211, clause 4

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [x] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [x].

1x RTT	CDMA2000 1x Radio Transmission Technology
ARQ	Automatic Repeat Request

AWGN	Additive White Gaussian Noise
BCCH	Broadcast Control Channel
BCH	Broadcast Channel
CA	Carrier Aggregation
CCCH SDU	Common Control Channel SDU
CGI	Cell Global Identifier
CPICH	Common Pilot Channel
CPICH Ec/No	CPICH Received energy per chip divided by the power density in the band
C-RNTI	Cell RNTI
DCCH	Dedicated Control Channel
DL	Downlink
DRX	Discontinuous Reception
DTCH	Dedicated Traffic Channel
DUT	Device Under Test
E-CID	Enhanced Cell-ID (positioning method)
ECGI	Evolved CGI
eNB	E-UTRAN NodeB
E-UTRA	Evolved UTRA
E-UTRAN	Evolved UTRAN
FDD	Frequency Division Duplex
GERAN	GSM EDGE Radio Access Network
GSM	Global System for Mobile communication
HARQ	Hybrid Automatic Repeat Request
HO	Handover
HRPD	High Rate Packet Data
LPP	LTE Positioning Protocol
MAC	Medium Access Control
MDT	Minimization of Drive Tests
OCNG	OFDMA Channel Noise Generator
OFDM	Orthogonal Frequency Division Multiplexing
OFDMA	Orthogonal Frequency Division Multiple Access
OTDOA	Observed Time Difference of Arrival
PBCH PCCPCU	Physical Broadcast Channel
P-CCPCH	Primary Common Control Physical Channel
PCell	Primary Cell Physical Control Format Indiaston Cliannel
PCFICH	Physical Control Format Indicator CHannel
PDCCH PDSCH	Physical Downlink Control CHannel Physical Downlink Shared CHannel
PHICH	Physical Hybrid-ARQ Indicator CHannel
PLMN	• •
PRACH	Public Land Mobile Network Physical Random Access CHannel
PRS	Positioning Reference Signal
PUCCH	Physical Uplink Control CHannel
PUSCH	Physical Uplink Shared Channel
RSCP	Received Signal Code Power
RSRP	Reference Signal Received Power
RSRQ	Reference Signal Received Quality
RSSI	Received Signal Strength Indicator
RSTD	Reference Signal Time Difference
QAM	Quadrature Amplitude Modulation
RACH	Random Access Channel
RAT	Radio Access Technology
RNC	Radio Network Controller
RNTI	Radio Network Temporary Identifier
RRC	Radio Resource Control
RRM	Radio Resource Management
SCH	Synchronization Channel
SCell	Secondary Cell
SDU	Service Data Unit
SFN	System Frame Number
SI	System Information
SON	Self Optimized Network
~ ~ - '	······

TDD	Time Division Duplex
TTI	Transmission Time Interval
UE	User Equipment
UL	Uplink
UMTS	Universal Mobile Telecommunication System
UTRA	Universal 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 36.521-3 [23] defines the 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 section 6.5].

4 E-UTRAN RRC_IDLE state mobility

4.1 Cell Selection

After a UE has switched on and a PLMN has been selected, the Cell selection process takes place, as described in TS36.304. 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

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 cell, the UE shall attempt to detect, synchronise, and monitor intra-frequency, inter-frequency and inter-RAT cells indicated by the serving cell. For intra-frequency and inter-frequency cells the serving cell may not provide explicit neighbour list but carrier frequency information and bandwidth information only. UE measurement activity is also controlled by measurement rules defined in TS36.304, allowing the UE to limit its measurement activity.

4.2.2 Requirements

The UE shall search every layer of higher priority at least every $T_{higher_priority_search} = (60 * N_{layers})$ seconds, where N_{layers} is the total number of configured higher priority E-UTRA, UTRA FDD, UTRA TDD, CDMA2000 1x and HRPD 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 serving cell

The UE shall measure the RSRP and RSRQ level of the serving cell and evaluate the cell selection criterion S defined in [1] for the serving cell at least every DRX cycle.

The UE shall filter the RSRP and RSRQ measurements of the serving 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 DRX cycle/2.

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 by the serving cell, regardless of the measurement rules currently limiting UE measurement activities.

If the UE in RRC_IDLE has not found any new suitable cell based on searches and measurements using the intrafrequency, inter-frequency and inter-RAT information indicated in the system information for 10 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in [1].

DRX cycle length [s]	N _{serv} [number of DRX cycles]	
0.32	4	
0.64	4	
1.28	2	
2.56	2	

Table 4.2.2.1-1: N_{serv}

4.2.2.2 Void

4.2.2.3 Measurements of intra-frequency E-UTRAN cells

The UE shall be able to identify new intra-frequency cells and perform RSRP and RSRQ measurements of identified intra-frequency cells without an explicit intra-frequency neighbour list containing physical layer cell identities.

The UE shall be able to evaluate whether a newly detectable intra-frequency cell meets the reselection criteria defined in TS36.304 within $T_{detect,EUTRAN_Intra}$ when that Treselection=0. An intra frequency cell is considered to be detectable according to RSRP, RSRP \hat{E}_s/Iot , SCH_RP and SCH \hat{E}_s/Iot defined in Annex B.1.1 for a corresponding Band.

The UE shall measure RSRP and RSRQ at least every $T_{measure,EUTRAN_Intra}$ (see table 4.2.2.3-1) for intra-frequency cells that are identified and measured according to the measurement rules.

The UE shall filter RSRP and RSRQ measurements of each measured intra-frequency 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 $T_{measure,EUTRAN_Intra}/2$

The UE shall not consider a 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 intra-frequency 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 intra-frequency cell has met reselection criterion defined [1] within $T_{evaluate,E-UTRAN_intra}$ when $T_{reselection} = 0$ as specified in table 4.2.2.3-1 provided that the cell is at least 3dB better ranked. When evaluating cells for reselection, the side conditions for RSRP and SCH apply to both serving and non-serving intra-frequency cells.

If $T_{reselection}$ 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 $T_{reselection}$ time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T _{detect,EUTRAN_Intra} [s] (number of DRX cycles)	T _{measure,EUTRAN_Intra} [s] (number of DRX cycles)	T _{evaluate,E-UTRAN_intra} [s] (number of DRX cycles)
0.32	11.52 (36)	1.28 (4)	5.12 (16)
0.64	17.92 (28)	1.28 (2)	5.12 (8)
1.28	32(25)	1.28 (1)	6.4 (5)
2.56	58.88 (23)	2.56 (1)	7.68 (3)

 $Table \ 4.2.2.3-1: T_{detect, EUTRAN_Intra}, T_{measure, EUTRAN_Intra} \ and \ T_{evaluate, \ E-UTRAN_intra}$

4.2.2.4 Measurements of inter-frequency E-UTRAN cells

The UE shall be able to identify new inter-frequency cells and perform RSRP or RSRQ measurements of identified inter-frequency 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 $Srxlev > S_{nonIntraSearchP}$ and $Squal > S_{nonIntraSearchQ}$ then the UE shall search for inter-frequency layers of higher priority at least every $T_{higher_priority_search}$ where $T_{higher_priority_search}$ is described in section 4.2.2.

If $Srxlev \leq S_{nonIntraSearchP}$ or $Squal \leq S_{nonIntraSearchQ}$ then the UE shall search for and measure inter-frequency layers of higher, equal 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 shall be the same as that defined below.

The UE shall be able to evaluate whether a newly detectable inter-frequency cell meets the reselection criteria defined in TS36.304 within $K_{carrier} * T_{detect,EUTRAN_Inter}$ if at least carrier frequency information is provided for inter-frequency neighbour cells by the serving cells when $T_{reselection} = 0$ provided that the reselection criteria is met by a margin of at least 5dB for reselections based on ranking or 6dB for RSRP reselections based on absolute priorities or 4dB for RSRQ reselections based on absolute priorities. The parameter $K_{carrier}$ is the number of E-UTRA inter-frequency carriers indicated by the serving cell. An interfrequency cell is considered to be detectable according to RSRP, RSRP $\hat{E}s/Iot$, SCH_RP and SCH $\hat{E}s/Iot$ defined in Annex B.1.2 for a corresponding Band.

When higher priority cells are found by the higher priority search, they shall be measured at least every $T_{measure,E-}_{UTRAN_Inter}$. 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 measure RSRP or RSRQ at least every $K_{carrier} * T_{measure,EUTRAN_Inter}$ (see table 4.2.2.4-1) for identified lower or equal priority inter-frequency cells. 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 or RSRQ measurements of each measured higher, lower and equal priority inter-frequency 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 $T_{measure,EUTRAN_Inter}/2$.

The UE shall not consider a 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-frequency 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 inter-frequency cell has met reselection criterion defined TS 36.304 within $K_{carrier} * T_{evaluate,E-UTRAN_Inter}$ when $T_{reselection} = 0$ as specified in table 4.2.2.4-1 provided that the reselection criteria is met by a margin of at least 5dB for reselections based on ranking or 6dB for RSRP reselections based on absolute priorities or 4dB for RSRQ reselections based on absolute priorities. When evaluating cells for reselection, the side conditions for RSRP and SCH apply to both serving and inter-frequency cells.

If $T_{reselection}$ 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 $T_{reselection}$ time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T _{detect,EUTRAN_Inter} [s] (number of DRX cycles)	T _{measure,EUTRAN_Inter} [s] (number of DRX cycles)	T _{evaluate,E} . UTRAN_Inter [s] (number of DRX cycles)
0.32	11.52 (36)	1.28 (4)	5.12 (16)
0.64	17.92 (28)	1.28 (2)	5.12 (8)
1.28	32(25)	1.28 (1)	6.4 (5)
2.56	58.88 (23)	2.56 (1)	7.68 (3)

Table 4.2.2.4-1 : T_{detect,EUTRAN_Inter}, T_{measure,EUTRAN_Inter} and T_{evaluate,E-UTRAN_Inter}

For higher priority cells, a UE may optionally use a shorter value for $T_{measureE-UTRA_Inter}$, which shall not be less than Max(0.64 s, one DRX cycle).

4.2.2.5 Measurements of inter-RAT cells

If $Srxlev > S_{nonIntraSearchP}$ and $Squal > S_{nonIntraSearchQ}$ then the UE shall search for inter-RAT layers of higher priority at least every $T_{higher_priority_search}$ where $T_{higher_priority_search}$ is described in section 4.2.2

If $Srxlev \leq S_{nonIntraSearchP}$ or $Squal \leq S_{nonIntraSearchQ}$ then the UE shall search for and measure inter-RAT layers of higher, 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 inter-RAT layers shall be the same as that defined below for lower priority RATs.

4.2.2.5.1 Measurements of UTRAN FDD cells

When the measurement rules indicate that UTRA FDD cells are to be measured, the UE shall measure CPICH Ec/Io and CPICH RSCP of detected UTRA FDD cells in the neighbour frequency list at the minimum measurement rate specified in this section. The parameter $N_{UTRA_carrier}$ is the number of carriers in the neighbour frequency list. The UE shall filter CPICH Ec/Io and CPICH RSCP measurements of each measured UTRA FDD 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 half the minimum specified measurement period.

The UE shall evaluate whether newly detectable UTRA FDD cells have met the reselection criteria in TS 36.304 within time $(N_{UTRA_carrier}) * T_{detectUTRA_FDD}$ when $Srxlev \leq S_{nonIntraSearchP}$ or $Squal \leq S_{nonIntraSearchQ}$ when $Treselection_{RAT} = 0$ provided that the reselection criteria is met by a margin of at least 6dB for reselections based on RSCP, or a margin of at least 3dB for reselections based on Ec/Io.

 $\begin{array}{l} \mbox{Cells which have been detected shall be measured at least every } (N_{UTRA_carrier}) * T_{measureUTRA_FDD} \ \mbox{when } Srxlev \leq S_{nonIntraSearchP} \ \mbox{or } Squal \leq S_{nonIntraSearchQ}. \end{array}$

When higher priority UTRA FDD cells are found by the higher priority search, they shall be measured at least every $T_{measure,UTRA_FDD}$. 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.

For a 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 an already identified UTRA FDD cell has met reselection criterion defined in 3GPP TS 36.304 [1] within $(N_{UTRA_carrier}) * T_{evaluateUTRA_FDD}$ when $T_{reselection} = 0$ as speficied in table 4.2.2.5.1-1 provided that the reselection criteria is met by a margin of at least 6dB for reselections based on RSCP, or a margin of at least 3dB for reselections based on Ec/Io.

If $T_{reselection}$ timer has a non zero value and the UTRA FDD cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this UTRA FDD cell for the $T_{reselection}$ time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T _{detectUTRA_FDD}	T _{measureUTRA_FDD} [s] (number of DRX cycles)	T _{evaluateUTRA_FDD} [s] (number DRX cycles)	of
0.32		5.12 (16)	15.36 (48)	
0.64	30	5.12 (8)	15.36 (24)	
1.28		6.4(5)	19.2 (15)	
2.56	60	7.68 (3)	23.04 (9)	

Table 4.2.2.5.1-1: T_{detectUTRA_FDD}, T_{measureUTRA_FDD}, and T_{evaluateUTRA_FDD}

For higher priority cells, a UE may optionally use a shorter value for $T_{measureUTRA_FDD}$, which shall not be less than Max(0.64 s, one DRX cycle).

4.2.2.5.2 Measurements of UTRAN TDD cells

When the measurement rules indicate that UTRA TDD cells are to be measured, the UE shall measure P-CCPCH RSCP of detected UTRA TDD cells in the neighbour frequency list at the minimum measurement rate specified in this section. The parameter $N_{UTRA_carrier_TDD}$ is the number of carriers used in the neighbour frequency list. The UE shall filter P-CCPCH RSCP measurements of each measured UTRA TDD 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 half the minimum specified measurement period. P-CCPCH RSCP of UTRAN TDD cells shall not be filtered over a longer period than that specified in table 4.2.2.5.2-1.

The UE shall evaluate whether newly detectable UTRA TDD cells have met the reselection criteria in TS 36.304 within time $(N_{UTRA_carrier_TDD}) * T_{detectUTRA_TDD}$ when $Srxlev \leq S_{nonIntraSearchP}$ or $Squal \leq S_{nonIntraSearchQ}$ when $T_{reselection} = 0$ provided that the reselection criteria is met by a margin of at least 6dB.

 $\begin{array}{l} \mbox{Cells which have been detected shall be measured at least every } (N_{UTRA_carrier_TDD}) \ * \ T_{measureUTRA_TDD} \ Srxlev \leq S_{nonIntraSearchP} \ or \ Squal \leq S_{nonIntraSearchP}. \end{array}$

When higher priority UTRA TDD cells are found by the higher priority search, they shall be measured at least every $T_{measure,UTRA_TDD}$. 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.

For a 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 an already identified UTRA TDD cell has met reselection criterion defined in [1] within $N_{UTRA_carrier_TDD} *T_{evaluateUTRA_TDD}$ when $T_{reselection} = 0$ as specified in table 4.2.2.5.2-1 provided that the reselection criteria is met by a margin of at least 6dB.

If $T_{reselection}$ timer has a non zero value and the UTRA TDD cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this UTRA TDD cell for the $T_{reselection}$ time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T _{detect} UTRA_TDD	T _{measureUTRA_TDD} [s] (number of DRX cycles)	T _{evaluateUTRA_TDD} [s] (number DRX cycles)	of
0.32		5.12 (16)	15.36 (48)	
0.64	30	5.12 (8)	15.36 (24)	
1.28		6.4(5)	19.2 (15)	
2.56	60	7.68 (3)	23.04 (9)	

Table 4.2.2.5.2-1: $T_{detectUTRA_TDD}$, $T_{measureUTRA_TDD}$ and $T_{evaluateUTRA_TDD}$

For higher priority cells, a UE may optionally use a shorter value for $T_{measureE-UTRA_Inter}$, which shall not be less than Max(0.64 s, one DRX cycle).

4.2.2.5.3 Measurements of GSM cells

When the measurement rules defined in [1] indicate that E-UTRAN inter-frequencies or inter-RAT frequency cells are to be measured, the UE shall measure the signal level of the GSM BCCH carriers if the GSM BCCH carriers are indicated in the measurement control system information of the serving cell. GSM BCCH carriers of lower priority than the serving cell shall be measured at least every $T_{measure.GSM}$ (see table 4.2.2.5.3-1).

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, or 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.

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 [1], 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.

If $T_{reselection}$ timer has a non zero value and the GSM cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this GSM cell for the $T_{reselection}$ time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T _{measure,GSM} [s] (number of DRX cycles)	
0.32	5.12 (16)	
0.64	5.12 (8)	
1.28	6.4(5)	
2.56	7.68 (3)	

Table 4.2.2.5.3-1: T_{measure,GSM},

4.2.2.5.4 Measurements of HRPD cells

In order to perform measurement and cell reselection to HRPD cell, the UE shall acquire the timing of HRPD cells.

When the measurement rules indicate that HRPD cells are to be measured, the UE shall measure CDMA2000 HRPD Pilot Strength of HRPD cells in the neighbour cell list at the minimum measurement rate specified in this section.

The parameter 'Number of HRPD Neighbor Frequency', which is transmitted on E-UTRAN BCCH, is the number of carriers used for all HRPD cells in the neighbour cell list.

When the E-UTRA serving cell fulfils $Srxlev > S_{nonIntraSearchP}$ and $Squal > S_{nonIntraSearchQ}$, the UE shall search for CDMA2000 HRPD layers of higher priority at least every $T_{higher_priority_search}$ where $T_{higher_priority_search}$ is defined in section 4.2.2.

For CDMA2000 HRPD cells which have been detected, the UE shall measure CDMA2000 HRPD Pilot Strength at least every (Number of HRPD Neighbor Frequency)*T_{measureHRPD}, when the E-UTRA serving cell Srxlev \leq S_{nonIntraSearchP} or Squal \leq S_{nonIntraSearchQ}.

The UE shall be capable of evaluating that the CDMA2000 HRPD cell has met cell reselection criterion defined in [1] within $T_{evaluateHRPD}$.

Table 4.2.2.5.4-1 gives values of T_{measureHRPD} and T_{evaluateHRPD}.

DRX cycle length [s]	T _{measureHRPD} [s] (number of DRX cycles)	T _{evaluateHRPD} [s] (number of DRX cycles)
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	7.68 (3)	23.04 (9)

Table 4.2.2.5.4-1: TmeasureHRPD and TevaluateHRPD

If $T_{reselection}$ timer has a non zero value and the CDMA2000 HRPD cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this CDMA2000 HRPD cell for the $T_{reselection}$ time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

4.2.2.5.5 Measurements of cdma2000 1X

In order to perform measurement and cell reselection to cdma2000 1X cell, the UE shall acquire the timing of cdma2000 1X cells.

When the measurement rules indicate that cdma2000 1X cells are to be measured, the UE shall measure cdma2000 1x RTT Pilot Strength of cdma2000 1X cells in the neighbour cell list at the minimum measurement rate specified in this section.

The parameter 'Number of CDMA2000 1X Neighbor Frequency', which is transmitted on E-UTRAN BCCH, is the number of carriers used for all cdma2000 1X cells in the neighbour cell list.

When the E-UTRA serving cell fulfils $Srxlev > S_{nonIntraSearchP}$ and $Squal > S_{nonIntraSearchQ}$, the UE shall search for cdma2000 1X layers of higher priority at least every $T_{higher_priority_search}$ where $T_{higher_priority_search}$ is defined in section 4.2.2.

For CDMA2000 1X cells which have been detected, the UE shall measure CDMA2000 1xRTT Pilot Strength at least every (Number of CDMA2000 1X Neighbor Frequency)*T_{measureCDMA2000_1X}, when the E-UTRA serving cell Srxlev $\leq S_{nonIntraSearchP}$ or Squal $\leq S_{nonIntraSearchQ}$. The UE shall be capable of evaluating that the cdma2000 1X cell has met cell reselection criterion defined in [1] within T_{evaluateCDMA2000_1X}.

Table 4.2.2.5.5-1 gives values of $T_{measureCDMA2000_1X}$ and $T_{evaluateCDMA2000_1X}$.

DRX cycle length [s]	T _{measureCDMA2000_1X} [s] (number of DRX cycles)	T _{evaluateCDMA2000_1X} [s] (number of DRX cycles)
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	7.68 (3)	23.04 (9)

Table 4.2.2.5.5-1:	TmeasureCDMA2000 1X and	evaluateCDMA2000 1X
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If $T_{reselection}$ timer has a non zero value and the CDMA2000 1X cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this CDMA2000 1X cell for the $T_{reselection}$ time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

4.2.2.6 Evaluation of cell re-selection criteria

The UE shall evaluate the intra-frequency, inter-frequency and inter-RAT cell reselection criteria defined in [1] at least every DRX cycle. When a non zero value of $T_{reselection}$ is used, the UE shall only perform reselection on an evaluation which occurs simultaneously to, or later than the expiry of the $T_{reselection}$ timer.

4.2.2.7 Maximum interruption in paging reception

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

At intra-frequency and inter-frequency cell re-selection, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency and inter-frequency cell for paging reception. The interruption time shall not exceed $T_{SI-EUTRA}$ + 50 ms.

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

 $T_{SI-EUTRA}$ 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 [2] for a E-UTRAN cell.

 $T_{SI-UTRA}$ 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 [7] for a UTRAN cell.

T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell defined in [8].

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.

At cell re-selection to HRPD, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable of starting to monitor downlink channels for paging reception of the target HRPD cell. For HRPD cell reselection the interruption time must not exceed $T_{SI-HRPD} + 50$ ms.

 $T_{SI-HRPD}$ is the time required for receiving all the relevant system information data according to the reception procedure and the upper layer (Layer 3) procedure delay of system information blocks defined in [11] in for HRPD cell.

At cell re-selection to cdma2000 1X, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable of starting to monitor downlink channels for paging reception of the target cdma2000 1X cell. For cdma2000 1X cell re-selection the interruption time must not exceed $T_{SI-cdma2000_{-1}X} + 50$ ms.

 $T_{SI-cdma2000_{1X}}$ is the time required for receiving all the relevant system information data according to the reception procedure and the upper layer (Layer 3) procedure delay of system information blocks defined in [15] for cdma2000 1X cell.

4.2.2.8 void

4.2.2.9 UE measurement capability

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

- Intra-frequency carrier, and
- Depending on UE capability, 3 FDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 3 TDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 3 FDD UTRA carriers, and
- Depending on UE capability, 3 TDD UTRA carriers, and
- Depending on UE capability, 32 GSM carriers, and
- Depending on UE capability, 3 cdma2000 1x carriers, and
- Depending on UE capability, 3 HRPD carriers.

In addition to the requirements defined above, a UE supporting E-UTRA measurements in RRC_IDLE state shall be capable of monitoring a total of at least 8 carrier frequency layers, which includes serving layer, comprising of any above defined combination of E-UTRA FDD, E-UTRA TDD, UTRA FDD, UTRA TDD, GSM (one GSM layer corresponds to 32 cells), cdma2000 1x and HRPD layers.

4.2.2.10 Reselection to CSG cells

Note: Requirements in this section are minimum requirements defined to ensure the testability of autonomous CSG search. Further information on autonomous search times in practical deployments is available in [25].

Reselection from non CSG to CSG cells may be performed using UE autonomous search as defined in [1] when at least one CSG ID is included in the UE's CSG whitelist. The requirements in this section are valid for reselection to CSG cells previously visited by the UE when the radio configuration parameters, including the carrier frequency and physical cell identity of the CSG cell, non CSG cell and other neighbour cells are unchanged from the most recent previous visit.

NOTE: According to [1], the UE autonomous search function, per UE implementation, determines when and/or where to search for allowed CSG cells.

4.2.2.10.1 Reselection from a non CSG to an inter-frequency CSG cell

The UE shall perform search and reselection to an allowed inter-frequency CSG cell that has met CSG reselection criterion defined in [1] and that is in its whitelist, within 6 minutes in the conditions shown in table 4.2.2.10.1-1. There is no need for statistical testing of this requirement.

Parameter	Unit	Cell 1	Cell 2
E-UARFCN Note1		Channel 1	Channel 2
CSG indicator		False	True
Physical cell identity ^{Note1}		1	2
CSG identity		Not sent	Sent
			(Already stored
			in UE whitelist
			from previous
			visit)
Propagation conditions		Static, non	
CSG cell previously		Ye	S
visited by UE			
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		0
PHICH_RB	dB	0	0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
Qrxlevmin	dBm	-140	-140
N_{oc}	dBm/15 kHz	Off	
RSRP ^{Note2}	dBm/15 KHz	[≥TBD]	[≥TBD]
Note 1: For this requirement to be applicable, the E-UARFCN and physical cell identity for cell 1 and cell 2 shall be unchanged from when the CSG cell was visited previously			
Note 2: Chosen to ensure that CSG autonomous search has a high probability of success on every attempt made by UE			

Table 4.2.2.10.1-1: Parameters for CSG inter-frequency reselection

4.2.2.10.2 Reselection from a non CSG to an inter-RAT UTRAN FDD CSG cell

The UE shall perform search and reselection to an allowed inter-RAT UTRAN FDD CSG cell that has met CSG reselection criterion defined in [1] and that is in its whitelist, within 6 minutes in the conditions shown in table 4.2.2.10.2-1. There is no need for statistical testing of this requirement.

Parameter	Unit	Cell 1	Cell 2
E-UARFCN Note1	0	Channel 1	N/A
UARFCN Note1		N/A	Channel 2
CSG indicator		False	True
Physical cell identity ^{Note1}		1	N/A
Primary scrambling code		N/A	Scrambling
Note1			code 2
CSG identity		Not sent	Sent
CSC identity		NOT SER	(Already stored
			in UE whitelist
			from previous
			visit)
Propagation conditions		Static, non	
CSG cell previously		Ye	
visited by UE		10	0
PBCH RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH RB	dB	0	N/A
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
Qrxlevmin	dBm	-140	
	dBm/15 kHz	Off	
N _{oc}		-	
RSRP ^{Note2}	dBm/15 KHz	[≥TBD]	
CPICH_Ec ^{Note2}	dBm		[≥TBD]
CPICH_Ec/lor	dB		-10
PCCPCH_Ec/lor	dB		-12
SCCPCH_Ec/lor	dB	N1/A	-12
AICH_Ec/lor	dB	N/A	-15
SCH_Ec/lor	dB		-15
PICH_Ec/lor	dB		-15
I _{oc}	dBm/3.84 MHz		Off
Note 1:For this requirement to be applicable, the E-UARFCN and physical cell identity for cell 1 and the UARFCN and scrambling code for cell 2 shall be unchanged from when the CSG cell was visited previouslyNote 2:Chosen to ensure that CSG autonomous search has a high probability of success on every attempt made by UE			

Table 4.2.2.10.2-1: Parameters for CSG inter-RAT UTRAN FDD reselection

4.3 Minimization of Drive Tests (MDT)

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

4.3.1 Introduction

The MDT requirements consist of measurement requirements as specified in section 4.3.2 and relative time stamp accuracy requirements as specified in section 4.3.3. Both sets of requirements are applicable for intra-frequency, inter-frequency and inter-RAT cases in RRC_IDLE state. The MDT procedures are described in [27].

4.3.2 Measurements

The measurements (GSM carrier RSSI, UTRA CPICH RSCP, UTRA CPICH Ec/Io, P-CCPCH RSCP for UTRA 1.28 TDD, E-UTRA RSRP and E-UTRA RSRQ) used by the UE for the logged MDT in RRC_IDLE shall be the same as specified for the serving cell measurement and evaluation in section 4.2.2.1, for the measurements of intra-frequency E-UTRAN cells in section 4.2.2.3, for the measurements of inter-frequency E-UTRAN cells in section 4.2.2.4 and for the measurements of inter-RAT cells in section 4.2.2.5.

4.3.2.1 Requirements

The measurement values that are used to meet serving cell and reselection requirements as specified in sections 4.2.2.1, 4.2.2.3, 4.2.2.4, 4.2.2.5 shall also apply to values logged for MDT measurements in RRC_IDLE state.

4.3.3 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 [2].

4.3.3.1 Requirements

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

5 E-UTRAN RRC_CONNECTED state mobility

Note 1: For the performance requirements specified hereafter, the state when no DRX is used is defined as follows:

- DRX parameters are not configured; or
- DRX parameters are configured and
 - o *drx-InactivityTimer* is running; or
 - o drx-RetransmissionTimer is running; or
 - o mac-ContentionResolutionTimer is running; or
 - o a Scheduling Request sent on PUCCH is pending; or
 - an uplink grant for a pending HARQ retransmission can occur and there is data in the corresponding HARQ buffer; or
 - a PDCCH indicating a new transmission addressed to the C-RNTI of the UE has not been received after successful reception of a Random Access Response for the explicitly signaled preamble (only applicable to UEs in RRC_CONNECTED).

Otherwise

- It is the state when DRX is used.

Note 2: Unless otherwise stated, the requirements in sections 5.1, 5.2.2.2, 5.2.2.3, 5.2.2.4, 5.3 and 5.4 are also applicable when a UE is configured with Scell(s).

5.1 E-UTRAN Handover

5.1.1 Introduction

5.1.2 Requirements

5.1.2.1 E-UTRAN FDD – FDD

The requirements in this section are applicable to both intra-frequency and inter-frequency handovers.

5.1.2.1.1 Handover delay

Procedure delays for all procedures that can command a handover are specified in [2].

When the UE receives a RRC message implying handover the UE shall be ready to start the transmission of the new uplink PRACH channel within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

Where:

 $D_{handover}$ equals the maximum RRC procedure delay to be defined in section 11.2 in 3GPP TS 36.331 [2] plus the interruption time stated in section 5.1.2.1.2.

5.1.2.1.2 Interruption time

The interruption time is the time between end of the last TTI containing the RRC command on the old PDSCH and the time the UE starts transmission of the new PRACH, 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 intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than Tinterrupt

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

Where:

 T_{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 $T_{search} = 0$ ms. If the target cell is unknown and signal quality is sufficient for successful cell detection on the first attempt, then $T_{search} = 80$ ms. Regardless of whether DRX is in use by the UE, T_{search} shall still be based on non-DRX target cell search times.

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

NOTE: The actual value of T_{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 8.1.2.2.1 for intra-frequency handover and Section 8.1.2.3.1 for inter-frequency handover.

5.2.2.2 E-UTRAN FDD – TDD

The requirements in this section are applicable to handover from FDD to TDD. The requirements in this section shall apply to UE supporting FDD and TDD.

The requirements in section 5.2.2.4 apply for this section.

5.2.2.2.1 (Void)

5.2.2.2.2 (Void)

5.2.2.3 E-UTRAN TDD – FDD

The requirements in this section are applicable to handover from TDD to FDD. The requirements in this section shall apply to UE supporting FDD and TDD.

The requirements in section 5.1.2.1 apply for this section.

5.2.2.3.1	(Void)	
5.2.2.3.2	(Void)	

5.2.2.4 E-UTRAN TDD – TDD

The requirements in this section are applicable to both intra-frequency and inter-frequency handovers.

5.2.2.4.1 Handover delay

Procedure delays for all procedures that can command a handover are specified in 3GPP TS 36.331 [2].

When the UE receives a RRC message implying handover, the UE shall be ready to start the transmission of the new uplink PRACH channel within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

Where:

 $D_{handover}$ equals the maximum RRC procedure delay to be defined in section 11.2 in 3GPP TS36.331 [2] plus the interruption time stated in section 5. 2.2.4.2.

5.2.2.4.2 Interruption time

The interruption time is the time between end of the last TTI containing the RRC command on the old PDSCH and the time the UE starts transmission of the new PRACH, 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 intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than Tinterrupt

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

Where

 T_{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 $T_{search} = 0$ ms. If the target cell is unknown and signal quality is sufficient for successful cell detection on the first attempt, then $T_{search} = 80$ ms. Regardless of whether DRX is in use by the UE, T_{search} shall still be based on non-DRX target cell search times.

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

NOTE: The actual value of T_{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 8.1.2.2.2 for intra-frequency handover and Section 8.1.2.3.4 for inter-frequency handover.

5.3 Handover to other RATs

5.3.1 E-UTRAN - UTRAN FDD Handover

5.3.1.1 Introduction

The purpose of inter-RAT handover from E-UTRAN to UTRAN FDD is to change the radio access mode from E-UTRAN to UTRAN FDD. The handover procedure is initiated from E-UTRAN with a RRC message that implies a hard handover as described in [2].

5.3.1.1.1 Handover delay

When the UE receives a RRC message implying handover to UTRAN the UE shall be ready to start the transmission of the new UTRA uplink DPCCH within $D_{handover}$ seconds from the end of the last E-UTRAN TTI containing the RRC MOBILITY FROM E-UTRA command.

where:

- D_{handover} equals the RRC procedure delay, which is 50 ms plus the interruption time stated in section 5.3.1.1.2.

5.3.1.1.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission on the uplink DPCCH in UTRAN FDD, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

The target cell is known if it has been measured by the UE during the last 5 seconds otherwise it is unknown. The UE shall always perform a UTRA synchronisation procedure as part of the handover procedure.

If the target cell is known the interruption time shall be less than Tinterrupt1

$$T_{interrupt1} = T_{IU} + T_{sync} + 50 + 10 * F_{max} ms$$

If the target cell is unknown the interruption time shall be less than Tinterrupt2

 $T_{interrupt2} = T_{IU} + T_{sync} + 150 + 10*F_{max} ms$

This requirement shall be met, provided that there is one target cell in the MOBILITY FROM E-UTRA command. Performance requirements for E-UTRA to UTRA soft handover are not specified. When UE is connected to an E-UTRA cell, UTRA SFN timing measurements are not reported. This implies that the timing of the DPCH of the UTRA target cells in the active set cannot be configured by UTRAN to guarantee that all target cells fall within the UE reception window of T_0 +/- 148 chips.

Where:

T_{IU}	is the interruption uncertainty when changing the timing from the E-UTRAN to the new UTRAN cell. T_{IU} can be up to one UTRA frame (10 ms).
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 on the UTRA target cell.
T _{sync}	is the time required for measuring the downlink DPCCH channel as stated in 3GPP TS 25.214 section 4.3.1.2 [20]. In case higher layers indicate the usage of a post-verification period $T_{sync}=0$ ms. Otherwise $T_{sync}=40$ ms.

The phase reference is the primary CPICH.

The requirements in this section assume that N312 has the smallest possible value i.e. only one insync is required.

5.3.2 E-UTRAN - UTRAN TDD Handover

5.3.2.1 Introduction

The purpose of inter-RAT handover from E-UTRAN to UTRAN TDD is to change the radio access mode from E-UTRAN to UTRAN TDD. The handover procedure is initiated from E-UTRAN with a RRC message that implies a hard handover as described in [2].

5.3.2.2 Requirements

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

5.3.2.2.1 Handover delay

When the UE receives a RRC message implying E-UTRAN/UTRAN TDD handover the UE shall be ready to start the transmission of the new uplink DPCH or the SYNC-UL within $D_{handover}$ seconds from the end of the last TTI containing the RRC MOBILITY FROM E-UTRA command.

Where:

- D_{handover} equals the RRC procedure delay, which is 50 ms plus the interruption time stated in section 5.3.2.2.

5.3.2.2.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission on the uplink DPCH or the SYNC-UL in UTRAN TDD, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

The UE shall always perform a UTRA synchronisation procedure as part of the handover procedure.

If the target cell has been measured by the UE during the last 5 seconds, the interruption time shall be less than Tinterrupt1

 $T_{interrupt1} = T_{offset} + T_{UL} + 30*F_{SFN} + 20 + 10*F_{max} ms$

If the target cell has not been measured by the UE during the last 5 seconds, the interruption time shall be less than $T_{interrupt2}$

$$T_{interrupt2} = T_{offset} + T_{UL} + 30*F_{SFN} + 180 + 10*F_{max} ms$$

Where:

T _{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 _{UL}	Equal to 10 ms, the time that can elapse until the appearance of the UL timeslot in the target cell
F _{SFN}	Equal to 1 if SFN decoding is required 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.

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.

5.3.3 E-UTRAN - GSM Handover

5.3.3.1 Introduction

The purpose of inter-RAT handover from E-UTRAN to GSM is to transfer a connection between the UE and E-UTRAN to GSM. The handover procedure is initiated from E-UTRAN with a RRC message (MOBILITY FROM E-UTRA). The procedure is described in in 3GPP TS 36.331 [2].

5.3.3.2 Requirements

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

The requirements given below in Tables 5.3.3.2.1-1 and 5.3.3.2.2-1 for the case where the UE has not synchronised to the GSM cell before receiving the RRC MOBILITY FROM E-UTRA command are valid when the signal quality of the GSM 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 duration. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in [2].

5.3.3.2.1 Handover delay

When the UE receives a RRC MOBILITY FROM E-UTRA command the UE shall be ready to transmit (as specified in [10]) on the channel of the new RAT within the value in table 5.3.3.2.1-1 from the end of the last TTI containing the RRC command. The UE shall process the RRC procedures for the MOBILITY FROM E-UTRA command within 50 ms, which is noted as RRC procedure delay.

UE synchronisation status	handover delay [ms]
The UE has synchronised to the GSM cell before the	90
RRC MOBILITY FROM E-UTRA COMMAND is received	
The UE has not synchronised to the GSM cell before	190
the RRC MOBILITY FROM E-UTRA COMMAND is	
received	

5.3.3.2.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission on the uplink channel in GSM, excluding the RRC procedure delay. The interruption time depends on whether the UE has synchronized to the target GSM cell or not and shall be less than the value specified in table 5.3.3.2.2-1.

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the	40
RRC MOBILITY FROM E-UTRA COMMAND is received	
The UE has not synchronised to the GSM cell before	140
the RRC MOBILITY FROM E-UTRA COMMAND is	
received	

5.4 Handover to Non-3GPP RATs

5.4.1 E-UTRAN – HRPD Handover

5.4.1.1 Introduction

The handover procedure from E-UTRAN to HRPD is initiated when E-UTRAN sends handover command to the UE through dedicated RRC signalling.

5.4.1.1.1 Handover delay

The handover delay ($D_{handover}$) is defined as the sum of the RRC procedure delay, which is 50 ms and the interruption time specified in section 5.4.1.1.2.

When the UE receives a RRC message implying handover to HRPD, the UE shall be ready to start the transmission of the new reverse control channel in HRPD within $D_{handover}$ from the end of the last E-UTRAN TTI containing the RRC command.

5.4.1.1.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission of the reverse control channel in HRPD, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

An HRPD cell is known if it has been measured by the UE during the last 5 seconds otherwise it is unknown. Under the reference conditions specified in sub-clause 6.6 of [13], the interruption time shall be less than $T_{interrupt}$

$$\Gamma_{\text{interrupt}} = T_{\text{IU}} + 40 + 10 \text{*KC} \text{*SW}_{\text{K}} + 10 \text{*OC} \text{*SW}_{\text{O}} \text{ ms}$$

Where:

 T_{IU}

It is the interruption uncertainty when changing the timing from the E-UTRAN to the new HRPD cell. T_{IU} can be up to one HRPD frame (26.66 ms).

SW_K is SW_K =
$$\left| \frac{\text{srch}_win_k}{60} \right|$$
 where srch_win_k is the number of HRPD chips indicated by the

search window for known target HRPD cells in the message

SW₀ is SW₀ =
$$\left| \frac{\text{srch}_win_o}{60} \right|$$
 where srch_win_o is the number of HRPD chips indicated by the

search window for unknown target HRPD cells in the message

KC It is the number of known target HRPD cells in the message, and

OC It is the number of unknown target HRPD cells in the message.

Note: An additional delay in the interruption time may occur due to the reverse link silence interval [11], which is specific to HRPD.

5.4.2 E-UTRAN – cdma2000 1X Handover

5.4.2.1 Introduction

The handover procedure from E-UTRAN to cdma2000 1X is initiated when E-UTRAN sends handover command to the UE through dedicated RRC signalling.

5.4.2.1.1 Handover delay

The handover delay ($D_{handover}$) is defined as the sum of the RRC procedure delay, which is 130 ms and the interruption time specified in section 5.4.2.1.2.

When the UE receives a RRC message implying handover to cdma2000 1X, the UE shall be ready to start the transmission of the new reverse control channel in cdma2000 1X within $D_{handover}$ from the end of the last E-UTRAN TTI containing the RRC command.

5.4.2.1.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission of the reverse control channel in cdma2000 1X, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

A cdma2000 1X cell is known if it has been measured by the UE during the last 5 seconds otherwise it is unknown. Under the reference conditions specified in sub-clause 4.2.1 of [14], the interruption time shall be less than T_{interrupt}:

$$\Gamma_{\text{interrupt}} = T_{\text{IU}} + 40 + 10 \text{*KC} \text{*SW}_{\text{K}} + 10 \text{*OC} \text{*SW}_{\text{O}} \text{ ms}$$

Where:

$$T_{IU}$$
It is the interruption uncertainty when changing the timing from the E-UTRAN to the new
cdma2000 1X cell. T_{IU} can be up to one cdma2000 1X frame (20 ms). SW_K is $SW_K = \left[\frac{\text{srch}_win_k}{60}\right]$ where srch_win_k is the number of cdma2000 1x chips indicated by
the search window for known target cdma2000 1x cells in the message SW_O is $SW_O = \left[\frac{\text{srch}_win_o}{60}\right]$ where srch_win_o is the number of cdma2000 1x chips indicated by
the search window for unknown target cdma2000 1x cells in the message SW_O It is the number of known target cdma2000 1x cells in the messageKCIt is the number of known target cdma2000 1X cells in the message, andOCIt is the number of unknown target cdma2000 1X cells in the message.

6 RRC Connection Mobility Control

6.1 RRC Re-establishment

The requirements in this section are applicable to both E-UTRAN FDD and TDD.

6.1.1 Introduction

RRC connection re-establishment is initiated when a UE in RRC connected mode looses RRC connection due to any of these reasons: radio link failure, handover failure or radio link problem. The RRC es-tablishment procedure is specified in section 5.3.7 in TS 36.331 [2].

6.1.2 Requirements

In RRC connected mode the UE shall be capable of sending *RRCConnectionReestablishmentRequest* message within $T_{re-establish_delay}$ seconds from the moment it detects a loss in RRC connection. The total RRC connection delay ($T_{re-establish_delay}$) shall be less than:

 $T_{re-establish_delay} = T_{UL_grant} + T_{UE_re-establish_delay}$

 T_{UL_grant} : It is the time required to acquire and process uplink grant from the target PCell. The uplink grant is required to transmit *RRCConnectionReestablishmentRequest* message.

The UE re-establishment delay ($T_{UE_re-establish_delay}$) is specified in section 6.1.2.1.

6.1.2.1 UE Re-establishment delay requirement

The UE re-establishment delay ($T_{UE_re-establish_delay}$) is the time between the moments when any of the conditions requiring RRC re-establishment as defined in section 5.3.7 in TS 36.331 [2] is detected by the UE to the time when the UE sends PRACH to the target PCell. The UE re-establishment delay ($T_{UE_re-establish_delay}$) requirement shall be less than:

 $T_{UE\text{-}re\text{-}establish_delay} = 50 \ ms + N_{freq} * Tsearch + T_{SI} + T_{PRACH}$

T_{search}: It is the time required by the UE to search the target PCell.

 $T_{\text{search}} = \text{It is [100] ms if the target PCell is known by the UE; the target PCell is known if it has been measured by the UE in the last 5 seconds.$

 $T_{search} = It$ is 800 ms if the target PCell is unknown by the UE; the target PCell is unknown if it has not been measured by the UE in the last 5 seconds.

 T_{SI} = It is the time required for receiving all the relevant system information according to the reception procedure and the RRC procedure delay of system information blocks defined in TS 36.331 [2] for the target PCell.

 T_{PRACH} = The additional delay caused by the random access procedure; it will be at least 10 ms due to random access occasion and there might be additional delay due to ramping procedure.

 N_{freq} : It is the total number of E-UTRA frequencies to be monitored for RRC re-establishment; $N_{freq} = 1$ if the target PCell is known.

There is no requirement if the target cell does not contain the UE context.

6.2 Random Access

6.2.1 Introduction

The random access procedure is used when establishing the layer 1 communication between the UE and E-UTRAN. The random access is specified in section 6 of TS 36.213[3] and the control of the RACH transmission is specified in section 5.1 of TS 36.321[17].

6.2.2 Requirements

The UE shall have capability to calculate PRACH transmission power according to the PRACH power formula defined in TS 36.213[3] and apply this power level at the first preamble or additional preambles. The absolute power applied to the first preamble shall have an accuracy as specified in table 6.3.5.1.1-1 of TS 36.101[5]. The relative power applied to additional preambles shall have an accuracy as specified in table 6.3.5.2.1-1 of 36.101[5].

The UE shall indicate a Random Access problem to upper layers if the maximum number of preamble transmission counter has been reached.

6.2.2.1 Contention based random access

6.2.2.1.1 Correct behaviour when receiving Random Access Response reception

The UE may stop monitoring for Random Access Response(s) and shall transmit the msg3 if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

6.2.2.1.2 Correct behaviour when not receiving Random Access Response reception

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if no Random Access Response is received within the RA Response window defined in clause 5.1.4 TS 36.321.

6.2.2.1.3 Correct behaviour when receiving a NACK on msg3

The UE shall re-transmit the msg3 upon the reception of a NACK on msg3.

6.2.2.1.4 Void

6.2.2.1.5 Correct behaviour when receiving a message over Temporary C-RNTI

The UE shall send ACK if the Contention Resolution is successful.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires unless the received message includes a UE Contention Resolution Identity MAC control element and the UE Contention Resolution Identity included in the MAC control element matches the CCCH SDU transmitted in the uplink message.

6.2.2.1.6 Correct behaviour when contention Resolution timer expires

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if the Contention Resolution Timer expires.

6.2.2.2 Non-Contention based random access

6.2.2.2.1 Correct behaviour when receiving Random Access Response

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

6.2.2.2.2 Correct behaviour when not receiving Random Access Response

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

6.3 RRC Connection Release with Redirection

6.3.1 Introduction

RRC connection release with redirection is initiated by the UE upon receiving the "*RRCConnectionRelease*" message from the E-UTRAN [2]. The RRC connection release with redirection procedure is specified in section 5.3.8 in TS 36.331 [2].

The requirements in this section are applicable to both E-UTRAN FDD and TDD.

6.3.2 Requirements

6.3.2.1 RRC connection release with redirection to UTRAN FDD

The UE shall be capable of performing the RRC connection release with redirection to the target UTRAN FDD cell within $T_{connection_release_redirect_UTRA FDD}$.

The time delay ($T_{connection_release_redirect_UTRA\,FDD}$) is the time between the end of the last TTI containing the RRC command, "*RRCConnectionRelease*" [2] on the E-UTRAN PDSCH and the time the UE starts to send random access to the target UTRA FDD cell. The time delay ($T_{connection_release_redirect_UTRA\,FDD}$) shall be less than:

 $T_{connection_release_redirect_UTRA~FDD} = T_{RRC_procedure_delay} + T_{identify_UTRA~FDD} + T_{SI_UTRA~FDD} + T_{RA}$

The target UTRA FDD cell shall be considered detectable when:

- CPICH Ec/Io \geq -15 dB,
- SCH_Ec/Io \geq -15 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

 $T_{RRC_procedure_delay}$: It is the RRC procedure for processing the received message "*RRCConnectionRelease*". It shall be less than 110 ms.

T_{identify-UTRA FDD}: It is the time to identify the target UTRA FDD cell. It shall be less than 500 ms.

 $T_{SI-UTRA FDD}$: It is the time required for acquiring all the relevant system information of the target UTRA FDD cell. This time depends upon whether the UE is provided with the relevant system information of the target UTRA FDD cell or not by the E-UTRAN before the RRC connection is released.

 T_{RA} : It is the delay caused due to the random access procedure when sending random access to the target UTRA FDD cell.

6.3.2.2 RRC connection release with redirection to GERAN

The UE shall be capable of performing the RRC connection release with redirection to the target GERAN cell within $T_{connection_release_redirect_GERAN}$.

The time delay ($T_{connection_release_redirect_GERAN$) is the time between the end of the last TTI containing the RRC command, "*RRCConnectionRelease*" [2] on the E-UTRAN PDSCH and the time the UE starts to send random access to the target GERAN cell. The time delay ($T_{connection_release_redirect_GERAN$) shall be less than:

 $T_{connection_release_redirect_GERAN} = T_{RRC_procedure_delay} + T_{identify_GERAN} + T_{SI_GERAN} + T_{RA}$

The target GERAN cell shall be considered detectable when the UE receives the GERAN cell at levels down to 10 dB + the reference sensitivity level or reference interference levels as specified in [9].

 $T_{RRC_procedure_delay}$: It is the RRC procedure for processing the received message "*RRCConnectionRelease*". It shall be less than 110 ms.

T_{identify-UTRA GERAN}: It is the time to identify the BSIC of the target GERAN cell. It shall be less than 1 second.

 $T_{SI-UTRA GERAN}$: It is the time required for acquiring all the relevant system information of the target GERAN cell. This time depends upon whether the UE is provided with the relevant system information of the target GERAN cell or not by the E-UTRAN before the RRC connection is released.

 T_{RA} : It is the delay caused due to the random access procedure when sending random access burst to the target GERAN cell.

6.3.2.3 RRC connection release with redirection to UTRAN TDD

The UE shall be capable of performing the RRC connection release with redirection to the target UTRAN TDD cell within $T_{connection_release_redirect_UTRA_TDD}$.

The time delay ($T_{connection_release_redirect_UTRA\ TDD}$) is the time between the end of the last TTI containing the RRC command, "*RRCConnectionRelease*" [2] on the E-UTRAN PDSCH and the time the UE starts to send random access to the target UTRA TDD cell. The time delay ($T_{connection_release_redirect_UTRA\ TDD}$) shall be less than:

 $T_{connection_release_redirect_UTRA\ TDD} = T_{RRC_procedure_delay} + T_{identify_UTRA\ TDD} + T_{SI_UTRA\ TDD} + T_{RA}$

The target UTRA TDD cell shall be considered detectable when:

- P-CCPCH Ec/Io \geq -6 dB,
- $DwPCH_Ec/Io \ge -1 dB$.

 $T_{RRC_procedure_delay}$: It is the RRC procedure for processing the received message "*RRCConnectionRelease*". It shall be less than 110 ms.

 $T_{identify-UTRA TDD}$: It is the time to identify the target UTRA TDD cell. It shall be less than 500 ms.

T_{SI-UTRA TDD}: It is the time required for acquiring all the relevant system information of the target UTRA TDD cell. This time depends upon whether the UE is provided with the relevant system information of the target UTRA TDD cell or not by the E-UTRAN before the RRC connection is released.

T_{RA}: It is the delay caused due to the random access procedure when sending random access to the target UTRA TDD cell.

Timing and signalling characteristics 7

7.1 UE transmit timing

7.1.1 Introduction

The UE shall have capability to follow the frame timing change of the connected eNode B. The uplink frame transmission takes place $(N_{\text{TA}} + N_{\text{TA offset}}) \times T_{\text{s}}$ before the reception of the first detected path (in time) of the corresponding downlink frame from the reference cell. When the UE is configured with SCell(s), it shall use PCell as the reference cell for deriving the UE transmit timing. UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are defined in the following requirements.

7.1.2 Requirements

The UE initial transmission timing error shall be less than or equal to $\pm T_e$ where the timing error limit value T_e is specified in Table 7.1.2-1. This requirement applies when it is the first transmission in a DRX cycle for PUCCH, PUSCH and SRS or it is the PRACH transmission. The reference point for the UE initial transmit timing control requirement shall be the downlink timing minus $(N_{\text{TA Ref}} + N_{\text{TA offset}}) \times T_{\text{s}}$. The downlink timing is defined as the time when the first detected path (in time) of the corresponding downlink frame is received from the reference cell. N_{TA_Ref} for PRACH is defined as 0. $(N_{TA_Ref} + N_{TA offset})$ (in T_s units) for other channels is the difference between UE

transmission timing and the Downlink timing immediately after when the last timing advance in section 7.3 was applied. N_{TA_Ref} for other channels is not changed until next timing advance is received.

Downlink Bandwidth (MHz)	T _e _
1.4	24*T _S
≥3	12*T _S
Note: T _S is the basic timing unit defined in TS 36.211	

Table 7.1.2-1: Te Timing Error Limit

When it is not the first transmission in a DRX cycle or there is no DRX cycle, and when it is the transmission for PUCCH, PUSCH and SRS transmission, the UE shall be capable of changing the transmission timing according to the received downlink frame except when the timing advance in section 7.3 is applied. When the transmission timing error between the UE and the reference timing exceeds $\pm T_e$ the UE is required to adjust its timing to within $\pm T_e$. The reference timing shall be $(N_{\text{TA_Ref}} + N_{\text{TA offset}}) \times T_s$ before the downlink timing. All adjustments made to the UE uplink timing shall follow these rules:

- 1) The maximum amount of the magnitude of the timing change in one adjustment shall be T_q seconds.
- 2) The minimum aggregate adjustment rate shall be $7*T_s$ per second.
- 3) The maximum aggregate adjustment rate shall be T_q per 200ms.

where the maximum autonomous time adjustment step T_q is specified in Table 7.1.2-2.

Downlink Bandwidth (MHz)	T _{q_}
1.4	16*T _S
3	8*Ts
5	4*Ts
≥10	2*Ts
Note: T _S is the basic timing unit defined in TS 36.211	

Table 7.1.2-2: T_q Maximum Autonomous Time Adjustment Step

7.2 UE timer accuracy

7.2.1 Introduction

UE timers are used in different protocol entities to control the UE behaviour.

7.2.2 Requirements

For UE timers specified in [2], UE shall comply with the timer accuracies according to Table 7.2.2-1.

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).

Timer value [s]	Accuracy
timer value < 4	±0.1s
timer value \geq 4	± 2.5%

7.3 Timing Advance

7.3.1 Introduction

The timing advance is initiated from E-UTRAN with MAC message that implies and adjustment of the timing advance, see 3GPP TS 36.321 [17] section 5.2.

7.3.2 Requirements

7.3.2.1 Timing Advance adjustment delay

UE shall adjust the timing of its uplink transmission timing at sub-frame n+6 for a timing advancement command received in sub-frame n.

7.3.2.2 Timing Advance adjustment accuracy

The UE shall adjust the timing of its transmissions with a relative accuracy better than or equal to $\pm 4*$ T_s seconds to the signalled timing advance value compared to the timing of preceding uplink transmission. The timing advance command is expressed in multiples of 16* T_s and is relative to the current uplink timing.

7.4 Cell phase synchronization accuracy (TDD)

7.4.1 Definition

Cell phase synchronization accuracy is defined as the maximum absolute deviation in frame start timing between any pair of cells on the same frequency that have overlapping coverage areas.

7.4.2 Minimum requirements

For Wide Area BS, the cell phase synchronization accuracy measured at BS antenna connectors shall be better than the requirement specified in table 7.4.2-1. If a cell's coverage area overlaps with another cell with different cell radius then the cell phase synchronization accuracy corresponding to the larger of the two cell sizes applies to the overlapping cells with different radii.

Table 7.4.2-1 Cell phase synchronization requirement for wide area BS (TDD)

Cell Type	Cell Radius	Requirement
Small cell	≤ 3 km	≤ 3 μs
Large cell	> 3 km	≤ 10 μs

For Home BS, the cell phase synchronization accuracy measured at BS antenna connectors shall be better than the requirement specified in table 7.4.2-2.

Table 7.4.2-2	Cell phase	synchronization	requirement fo	r Home BS (TDD)

Source Cell Type	Propagation Distance	Requirement
Small cell	≤ 500 m	≤ 3 μs
Large cell	> 500 m	\leq 1.33 + <i>T</i> _{propagation} µs

- Note 1: $T_{propagation}$ is the propagation delay between the Home BS and the cell selected as the network listening synchronization source. In terms of the network listening synchronization source selection, the best accurate synchronization source to GNSS should be selected.
- Note 2: If the Home BS obtains synchronization without using network listening, the small cell requirement applies.

7.5 Synchronization Requirements for E-UTRAN to 1xRTT and HRPD Handovers

7.5.1 Introduction

This section contains the synchronization requirements for eNodeB capable of supporting E-UTRAN to CDMA 1xRTT and HRPD handovers. To facilitate E-UTRAN to CDMA 1xRTT and HRPD handovers, the CDMA System Time reference needs to be provided to the UE in order for the UE to report the pilot PN phases of the target 1xRTT or HRPD cells. This is achieved through the SIB8 message broadcasted by the serving eNodeB:

If the eNodeB is synchronized to the GPS time then the size of CDMA System Time information is 39 bits and the unit is 10 ms based on a 1.2288 Mcps chip rate.

If the eNodeB is not synchronized to the GPS time then the size of CDMA System Time information is 49 bits and the unit is 8 CDMA chips based on 1.2288 Mcps chip rate.

The CDMA system time reference provided by the serving eNodeB has to be within a certain level of accuracy in order to facilitate accurate reporting of the pilot PN phases of the target 1xRTT or HRPD cells and enable reliable handover to the 1xRTT or HRPD networks.

7.5.2 eNodeB Synchronization Requirements

7.5.2.1 Synchronized E-UTRAN

The eNodeB shall be synchronized to the GPS time. With external source of CDMA System Time disconnected, the eNodeB shall maintain the timing accuracy within $\pm 10 \mu s$ of CDMA System Time for a period of not less than 8 hours.

The timing deviation between the SFN boundary at or immediately after the ending boundary of the SI-window in which *SystemInformationBlockType8* (containing the broadcasted CDMA System Time with 10-ms granularity) is transmitted and the broadcasted CDMA System Time shall be within 10 µs.

7.5.2.2 Non-Synchronized E-UTRAN

The timing deviation between the SFN boundary at or immediately after the end of the boundary of the SI-window in which *SystemInformationBlockType8* (containing the broadcasted CDMA System Time with 8-chip granularity) is transmitted and the broadcasted CDMA System Time shall be within 10 μ s. With external source of CDMA System Time disconnected the SFN boundary at or immediately after the broadcasted CDMA System Time in the SIB8 message shall maintain the timing accuracy within ±10 μ s of CDMA System Time for a period of not less than 8 hours.

7.6 Radio Link Monitoring

7.6.1 Introduction

The UE shall monitor the downlink link quality based on the cell-specific reference signal in order to detect the downlink radio link quality of the PCell as specified in [3].

The UE shall estimate the downlink radio link quality and compare it to the thresholds Q_{out} and Q_{in} for the purpose of monitoring downlink radio link quality of the PCell.

The threshold Q_{out} is defined as the level at which the downlink radio link cannot be reliably received and shall correspond to 10% block error rate of a hypothetical PDCCH transmission taking into account the PCFICH errors with transmission parameters specified in Table 7.6.1-1.

The threshold Q_{in} is defined as the level at which the downlink radio link quality can be significantly more reliably received than at Q_{out} and shall correspond to 2% block error rate of a hypothetical PDCCH transmission taking into account the PCFICH errors with transmission parameters specified in Table 7.6.1-2.

When higher-layer signalling indicates certain subframes for restricted radio link monitoring, the radio link quality shall be monitored as specified in [3].

The requirements in sections 7.6.2.1, 7.6.2.2 and 7.6.2.3 shall also apply when a time domain measurement resource restriction pattern for performing radio link monitoring measurements is configured by higher layers [2], provided that also the following additional condition is fulfilled:

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the radio link monitoring measurements.

Note: For the requirements in the following sections, similar Release 8 and 9 requirements apply for time domain measurements restriction under colliding CRS with ABS configured in non-MBSFN subframes.

Attribute	Value
DCI format	1A
Number of control OFDM symbols	2; Bandwidth ≥ 10 MHz
	3; [3] MHz \leq Bandwidth \leq 10 MHz
	4; Bandwidth = 1.4 MHz
Aggregation level (CCE)	4; Bandwidth = 1.4 MHz
	8; Bandwidth \geq 3 MHz
Ratio of PDCCH RE energy to	4 dB; when single antenna port is used for cell-
average RS RE energy	specific reference signal transmission by the
	PCell.
	1 dB: when two or four antenna ports are used
	for cell-specific reference signal transmission by
	the PCell.
Ratio of PCFICH RE energy to	4 dB; when single antenna port is used for cell-
average RS RE energy	specific reference signal transmission by the
	PCell.
	1 dB: when two or four antenna ports are used
	for cell-specific reference signal transmission by
Note 1: DCI format 1A is defined	the PCell.
	in section 5.3.3.1.3 in 3GPP TS 36.212 [21].
	ansmission corresponding to the number of
control symbols shall be a	assumeu.

 Table 7.6.1-1 PDCCH/PCFICH transmission parameters for out-of-sync

Table 7.6.1-2 PDCCH/PCFICH transmission parameters for in-sync

Attribute	Value
DCI format	1C
Number of control OFDM symbols	2; Bandwidth ≥ 10 MHz
	3; 3 MHz \leq Bandwidth \leq 5 MHz
	4; Bandwidth = 1.4 MHz
Aggregation level (CCE)	4
Ratio of PDCCH RE energy to average RS RE energy	0 dB; when single antenna port is used for cell- specific reference signal transmission by the PCell.
	-3 dB; when two or four antenna ports are used for cell-specific reference signal transmission by the PCell.
Ratio of PCFICH RE energy to average RS RE energy	4 dB; when single antenna port is used for cell- specific reference signal transmission by the PCell.
	1 dB: when two or four antenna ports are used for cell-specific reference signal transmission by the PCell.
Note 1: DCI format 1C is defined in section 5.3.3.1.4 in 3GPP TS 36.212 [21].	
	ansmission corresponding to the number of
control symbols shall be a	assumed.

7.6.2 Requirements

7.6.2.1 Minimum requirement when no DRX is used

When the downlink radio link quality of the PCell estimated over the last 200 ms period becomes worse than the threshold Q_{out} , Layer 1 of the UE shall send an out-of-sync indication for the PCell to the higher layers within 200 ms Q_{out} evaluation period. A Layer 3 filter shall be applied to the out-of-sync indications as specified in [2].

When the downlink radio link quality of the PCell estimated over the last 100 ms period becomes better than the threshold Q_{in} , Layer 1 of the UE shall send an in-sync indication for the PCell to the higher layers within 100 ms Q_{in} evaluation period. A L3 filter shall be applied to the in-sync indications as specified in [2].

When the UE creates autonomous gaps for identification the CGI of an E-UTRA intra-frequency cell or an E-UTRA inter-frequency cell and when higher-layer signalling indicates certain subframes for restricted radio link monitoring, the UE shall also perform radio link monitoring. In this case, the Q_{out} evaluation period ($T_{Evaluate}Q_{out}$) is [200] ms, and the Q_{in} evaluation period ($T_{Evaluate}Q_{in}$) is [100] ms ^{Note 1}.

Note 1: This RLM requirement does not need to be tested.

The out-of-sync and in-sync evaluations of the PCell shall be performed as specified in section 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least 10 ms.

The transmitter power of the UE shall be turned off within 40 ms after expiry of T310 timer as specified in section 5.3.11 in [2].

7.6.2.2 Minimum requirement when DRX is used

When DRX is used the Q_{out} evaluation period ($T_{Evaluate}Q_{out}DRX$) and the Q_{in} evaluation period ($T_{Evaluate}Q_{in}DRX$) is specified in Table 7.6.2.2-1 will be used.

When higher-layer signalling indicates certain subframes for restricted radio link monitoring, the Q_{out} evaluation period ($T_{Evaluate}Q_{out_DRX}$) and the Q_{in} evaluation period ($T_{Evaluate}Q_{in_DRX}$) specified in Table 7.6.2.2-2 will be used.

When the UE creates autonomous gaps for identification the CGI of an E-UTRA intra-frequency cell or an E-UTRA inter-frequency cell and when higher-layer signalling indicates certain subframes for restricted radio link monitoring, the UE shall also perform radio link monitoring. In this case, the Q_{out} evaluation period ($T_{Evaluate}Q_{out_DRX}$) and the Q_{in} evaluation period ($T_{Evaluate}Q_{in_DRX}$) are [TBD]^{Note 1}.

Note 1: This RLM requirement does not need to be tested.

When the downlink radio link quality of the PCell estimated over the last $T_{Evaluate}Q_{out_DRX}$ [s] period becomes worse than the threshold Q_{out} , Layer 1 of the UE shall send out-of-sync indication for the PCell to the higher layers within $T_{Evaluate}Q_{out_DRX}$ [s] evaluation period. A Layer 3 filter shall be applied to the out-of-sync indications as specified in [2].

When the downlink radio link quality of the PCell estimated over the last $T_{Evaluate}Q_{in_DRX}$ [s] period becomes better than the threshold Q_{in} , Layer 1 of the UE shall send in-sync indications for the PCell to the higher layers within $T_{Evaluate}Q_{in_DRX}$ [s] evaluation period. A L3 filter shall be applied to the in-sync indications as specified in [2].

The out-of-sync and in-sync evaluations of the PCell shall be performed as specified in section 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least max(10 ms, DRX_cycle_length).

Upon start of T310 timer as specified in section 5.3.11 in [2], the UE shall monitor the link for recovery using the evaluation period and Layer 1 indication interval corresponding to the non-DRX mode until the expiry or stop of T310 timer.

The transmitter power of the UE shall be turned off within 40 ms after expiry of T310 timer as specified in section 5.3.11 in [2].

DRX cycle length (s)	T _{Evaluate} _Q _{out_DRX} and T _{Evaluate} _Q _{in_DRX} (s) (DRX cycles)
≤ 0.01	Non-DRX requirements in section
	7.6.2.1 are applicable.
0.01 < DRX cycle ≤0.04	Note (20)
0.04 < DRX cycle ≤ 0. 64	Note (10)
0.64 < DRX cycle ≤ 2.56	Note (5)
Note: Evaluation period length in time depends on the length of	
the DRX cycle in use	

Table 7.6.2.2-1: Q_{out} and Q_{in} Evaluation Period in DRX

Table 7.6.2.2-2: Q_{out} and Q_{in} Evaluation Period in DRX when higher-layer signalling restricted measurement resource

DRX cycle length (s)	T _{Evaluate} _Q _{out_DRX} and T _{Evaluate} _Q _{in_DRX} (s) (DRX cycles)	
≤ 0.01	Non-DRX requirements in section 7.6.2.1 are applicable.	
0.01 < DRX cycle ≤0.04	Note (40)	
0.04 < DRX cycle ≤ 0. 16	Note (20)	
0. 16 < DRX cycle ≤ 0.64	Note (10)	
0.64 < DRX cycle ≤ 2.56	Note (5)	
Note: Evaluation period length in time depends on the length of the DRX cycle in use		

7.6.2.3 Minimum requirement at transitions

The out-of-sync and in-sync evaluations of the PCell shall be performed as specified in section 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least max(10 ms, DRX_cycle_length).

When the UE transitions between DRX and non-DRX or when DRX cycle periodicity changes, for a duration of time equal to the evaluation period corresponding to the second mode after the transition occurs, the UE shall use an evaluation period that is no less than the minimum of evaluation periods corresponding to the first mode and the second mode. Subsequent to this duration, the UE shall use an evaluation period corresponding to the second mode. This requirement shall be applied to both out-of-sync evaluation and in-sync evaluation of the PCell.

7.6.2.4 Minimum requirement during SI Acquisition with autonomous gaps

For E-UTRAN FDD-UTRAN FDD measurements with autonomous gaps, for identification of the CGI of a UTRA FDD cell (section 8.1.2.4.17), the UE shall also perform radio link monitoring. In this case the out-of sync and in-sync evaluation periods can be longer than those defined in sections 7.6.2.1-7.6.2.3.

For E-UTRAN TDD-UTRAN FDD measurements with autonomous gaps, for identification of the CGI of a UTRA FDD cell (section 8.1.2.4.18), the UE shall also perform radio link monitoring. In this case the out-of sync and in-sync evaluation periods can be longer than those defined in sections 7.6.2.1-7.6.2.3.

8 UE Measurements Procedures in RRC_CONNECTED State

8.1 General Measurement Requirements

8.1.1 Introduction

This section contains requirements on the UE regarding measurement reporting in RRC_CONNECTED state. The requirements are split in E-UTRA intra frequency, E-UTRA inter frequency, Inter-RAT UTRA FDD, UTRA TDD and GSM measurements. These measurements may be used by the E-UTRAN, e.g. for handover decisions. The

measurement quantities are defined in [4], the measurement model is defined in [22] and measurement accuracies are specified in section 9. Control of measurement reporting is specified in [2].

8.1.2 Requirements

8.1.2.1 UE measurement capability

If the UE requires measurement gaps to identify and measure inter-frequency and/or inter-RAT cells, in order for the requirements in the following subsections to apply the E-UTRAN must provide a single measurement gap pattern with constant gap duration for concurrent monitoring of all frequency layers and RATs.

During the measurement gaps the UE:

- shall not transmit any data
- is not expected to tune its receiver on the E-UTRAN serving carrier frequency.

Inter-frequency and inter-RAT measurement requirements within this section rely on the UE being configured with one measurement gap pattern. UEs shall only support those measurement gap patterns listed in Table 8.1.2.1-1 that are relevant to its measurement capabilities.

Table 8.1.2.1-1: Gap Pattern Configurations supported by the UE

Gap Pattern Id	MeasurementGap Length (MGL, ms)	Measurement Gap Repetition Period (MGRP, ms)	Minimum available time for inter-frequency and inter-RAT measurements during 480ms period (Tinter1, ms)	Measurement Purpose
0	6	40	60	Inter-Frequency E-UTRAN FDD and TDD, UTRAN FDD, GERAN, LCR TDD, HRPD, CDMA2000 1x
1	6	80	30	Inter-Frequency E-UTRAN FDD and TDD, UTRAN FDD, GERAN, LCR TDD, HRPD, CDMA2000 1x

- [Editor's note: Further patterns still need to be defined in order to fulfil all required Inter-RAT monitoring purposes.]
- NOTE 1: For E-UTRAN FDD, the UE shall not transmit in the subframe occurring immediately after the measurement gap.
- NOTE 2: For E-UTRAN TDD, the UE shall not transmit in the uplink subframe occurring immediately after the measurement gap if the subframe occurring immediately before the measurement gap is a downlink subframe.
- NOTE 3: When inter-frequency RSTD measurements are configured as a part of the measurement configuration only Gap Pattern 0 can be used. For defining the inter-frequency and inter-RAT requirements T_{inter1} =30ms shall be assumed.

The requirements in section 9 are applicable for a UE performing measurements according to this section.

8.1.2.1.1 Monitoring of multiple layers using gaps

When monitoring of multiple inter-frequency E-UTRAN and inter-RAT (UTRAN, GSM) using gaps is configured, the UE shall be capable of performing one measurement of the configured measurement type (RSRP, RSRQ, UTRAN TDD P-CCPCH RSCP, UTRAN FDD CPICH measurements, GSM carrier RSSI, etc.) of detected cells on all the layers

The effective total number of frequencies excluding the serving frequency being monitored using gaps is N_{freq} , which is defined as:

 $N_{freq} = N_{freq, \ E-UTRA} + N_{freq, \ UTRA} + M_{gsm} + N_{freq, \ cdma2000} + N_{freq, \ HRPD}$

where

N_{freq, E-UTRA} is the number of E-UTRA carriers being monitored (FDD and TDD)

N_{freq, UTRA} is the number of UTRA carriers being monitored (FDD and TDD)

 M_{GSM} is an integer which is a function of the number of GSM carriers on which measurements are being performed. M_{GSM} is equal to 0 if no GSM carrier is being monitored. For a MGRP of 40 ms, M_{GSM} is equal to 1 if cells on up to 32 GSM carriers are being measured. For a MGRP of 80 ms, M_{GSM} is equal to ceil($N_{carriers,GSM}$ /20) where $N_{carriers,GSM}$ is the number of GSM carriers on which cells are being measured.

 $N_{freq, cdma2000}$ is the number of cdma2000 1x carriers being monitored

 $N_{\text{freq, HRPD}}$ is the number of HRPD carriers being monitored

8.1.2.1.1.1 Maximum allowed layers for multiple monitoring

The UE shall be capable of monitoring using gaps at least per RAT group:

- Depending on UE capability, 3 FDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 1 FDD E-UTRA inter-frequency carrier for RSTD measurements, and
- Depending on UE capability, 3 TDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 1 TDD E-UTRA inter-frequency carrier for RSTD measurements, and
- Depending on UE capability, 3 FDD UTRA carriers, and
- Depending on UE capability, 3 TDD UTRA carriers, and
- Depending on UE capability, 32 GSM carriers (one GSM layer corresponds to 32 cells), and
- Depending on UE capability, 5 cdma2000 1x carriers, and
- Depending on UE capability, 5 HRPD carriers

In addition to the requirements defined above, the UE shall be capable of monitoring using gaps a total of at least 7 carrier frequency layers comprising of any above defined combination of E-UTRA FDD, E-UTRA TDD, UTRA FDD, UTRA TDD, GSM (one GSM layer corresponds to 32 carriers), cdma2000 1x and HRPD layers.

8.1.2.2 E-UTRAN intra frequency measurements

The UE shall be able to identify new intra-frequency cells and perform RSRP measurements of identified intrafrequency cells without an explicit intra-frequency neighbour cell list containing physical layer cell identities. During the RRC_CONNECTED state the UE shall continuously measure identified intra frequency cells and additionally search for and identify new intra frequency cells.

8.1.2.2.1 E-UTRAN FDD intra frequency measurements

8.1.2.2.1.1 E-UTRAN intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within

$$T_{identify intra} = T_{basic_identify_E-UTRA_FDD, intra} \cdot \frac{T_{Measurement_Period, Intra}}{T_{Intra}} ms$$

where

T_{basic_identify_E-UTRA_FDD, intra} is 800 ms

A cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band.

 T_{Intra} : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. Time is assumed to be available for performing intra frequency measurements whenever the receiver is guaranteed to be active on the intra frequency carrier.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRPand RSRQ measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least $Y_{measurement intra}$ cells, where $Y_{measurement intra}$ is defined in the following equation. If the UE has identified more than $Y_{measurement intra}$ cells, the UE shall perform measurements of at least 8 identified intra-frequency cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement intra}} = Floor \left\{ X_{\text{basic measurement FDD}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement_Period, Intra}}} \right\} \text{ cells}$$

where

 $X_{\text{basic measurement FDD}} = 8$ (cells)

 $T_{Measurement Period, Intra} = 200 \text{ ms.}$ The measurement period for Intra frequency RSRP and RSRQ measurements.

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

8.1.2.2.1.1.1 Measurement Reporting Requirements

8.1.2.2.1.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.2.1.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.2.1.1.1.3 Event Triggered Reporting.

8.1.2.2.1.1.1.3 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: $2 \times TTI_{DCCH}$. 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 $_{identify intra}$ defined in Section 8.1.2.2.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra}$ defined in section 8.1.2.2.1.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period, Intra}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.2.1.2 E-UTRAN intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within $T_{identify_{intra}}$ as shown in table 8.1.2.2.1.2-1

Table 8.1.2.2.1.2-1: Requirement to identify a newly detectable FDD intrafrequency cell

DRX cycle length (s)	T _{identify_intra} (s) (DRX cycles)	
≤0.04	0.8 (Note1)	
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)	
cycle≤0.08		
0.128	3.2 (25)	
0.128 <drx-< td=""><td>Note2(20)</td></drx-<>	Note2(20)	
cycle≤2.56		
Note1: Number of DRX cycle depends upon the DRX cycle in use Note2: Time depends upon the DRX cycle in use		

A cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra}$ as shown in table 8.1.2.2.1.2-2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra}$.

Table 8.1.2.2.1.2-2: Requ	uirement to measure FDD	intrafrequency cells
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DRX cycle	T _{measure_intra} (s)	
length (s)	(DRX cycles)	
≤0.04	0.2 (Note1)	
0.04 <drx-< td=""><td>Note2 (5)</td></drx-<>	Note2 (5)	
cycle≤2.56		
Note1: Number of DRX cycle		
depends upon the DRX cycle in use		
Note2: Time depends upon the DRX		
cycle in use		

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

8.1.2.2.1.2.1 Measurement Reporting Requirements

8.1.2.2.1.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.2.1.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.2.1.3 Event Triggered Reporting.

8.1.2.2.1.2.1.3 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 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: $2 \times TTI_{DCCH}$. 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 $_{identify_{intra}}$ defined in Section 8.1.2.2.1.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra}$ defined in section 8.1.2.2.1.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra}$ provided the timing to that cell has not changed more than ± 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.2.2 E-UTRAN TDD intra frequency measurements

8.1.2.2.2.1 E-UTRAN intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within

$$\mathbf{T}_{\text{identify intra}} = \mathbf{T}_{\text{basic identify } E-UTRA_TDD, \text{ intra}} \cdot \frac{\mathbf{T}_{\text{Measurement Period, Intra}}}{\mathbf{T}_{\text{Intra}}} \quad ms$$

where

T_{basic_identify_E-UTRA_TDD, intra} is 800 ms

A cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band

 T_{Intra} : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. Time is assumed to be available for performing intra frequency measurements whenever the receiver is guaranteed to be active on the intra frequency carrier.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP and RSRQ measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least $Y_{measurement intra}$ cells , where $Y_{measurement intra}$ is defined in the following equation. If the UE has identified more than $Y_{measurement intra}$ cells, the UE shall perform measurements of at least 8 identified intra-frequency

cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement intra}} = Floor \left\{ X_{\text{basic measurement TDD}} \cdot \frac{T_{\text{Intra}}}{T_{\text{Measurement}} \text{Period, Intra}} \right\} \text{ cells}$$

where

 $X_{\text{basic measurement TDD}} = 8 \text{ (cells)}$

T_{Measurement Period Intra} = 200 ms. The measurement period for Intra frequency RSRP and RSRQ measurements.

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

8.1.2.2.2.1.1 Measurement Reporting Requirements

8.1.2.2.2.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.2.2.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.2.2.1.1.3 Event Triggered Reporting.

8.1.2.2.2.1.1.3 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 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: 2 x TTI_{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 $_{identify intra}$ defined in Section 8.1.2.2.2.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra}$ defined in section 8.1.2.2.2.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period Intra}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.2.2.2 E-UTRAN intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within $T_{identify_intra}$ as shown in table 8.1.2.2.2-1

DRX cycle length (s)	T _{identify_intra} (s) (DRX cycles)	
<u>≤0.04</u>	0.8 (Note1)	
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)	
cycle≤0.08		
0.128	3.2 (25)	
0.128 <drx- note2(20)<="" td=""></drx->		
cycle≤2.56		
Note1: Number of DRX cycle		
depends upon the DRX cycle in use		
Note2: Time depends upon the DRX		
cycle in use		

A cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra}$ as shown in table 8.1.2.2.2.2.2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified-intra-frequency cells and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra}$.

Table 8.1.2.2.2.2-2: Requirement to measure TDD intra frequency cells

DRX cycle length (s)	T _{measure_intra} (s) (DRX cycles)	
≤0.04	0.2 (Note1)	
0.04 <drx- cycle≤2.56</drx- 	Note2 (5)	
Note1: Number of DRX cycle depends upon the DRX cycle in use.		
Note2: Time depends upon the DRX cycle in use.		

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

8.1.2.2.2.1 Measurement Reporting Requirements

8.1.2.2.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.2.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.2.2.2.1.3 Event Triggered Reporting.

8.1.2.2.2.2.1.3 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 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: [2] x TTI_{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 $_{identify_{intra}}$ defined in Section 8.1.2.2.2.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra}$ defined in section 8.1.2.2.2.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.2.3 E-UTRAN FDD intra frequency measurements with autonomous gaps

8.1.2.2.3.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose 'reportCGI'. The UE may make autonomous gaps in downlink reception and uplink transmission for receiving MIB and SIB1 message according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{identify_CGI, intra} = T_{basic_identify_CGI, intra}$$
 ms

Where

 $T_{\text{basic_identify_CGI, intra}} = 150 \text{ ms.}$ This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of an E-UTRA cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.2 for a corresponding Band

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,intra}$ is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

Given that continuous DL data allocation and no DRX is used, and no measurement gaps are configured, the UE shall have more than [60] ACK/NACKs transmitted during the identification of a new CGI of E-UTRA cell.

8.1.2.2.3.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle.

8.1.2.2.4 E-UTRAN TDD intra frequency measurements with autonomous gaps

8.1.2.2.4.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose 'reportCGI'. The UE may make autonomous gaps in downlink reception and uplink transmission for receiving MIB and SIB1 messages according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps

are used for measurement with the purpose of 'reportCGI', the UE shall be able to identify a new CGI of E-UTRA cell within:

$$\Gamma_{\text{identify}_CGI, \text{ intra}} = \Gamma_{\text{basic}_\text{identify}_CGI, \text{ intra}} ms$$

Where

 $T_{\text{basic_identify_CGI, intra}} = 150 \text{ ms.}$ This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of an E-UTRA cell is defined.

A cell shall be considered identifiable when the following conditions are fulfilled:

- RSRP related side conditions given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.2 for a corresponding Band

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI, intra}$ is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

Given that continuous DL data allocation and no DRX is used, and no measurement gaps are configured, the UE shall be able to transmit at least the number of ACK/NACKs stated in Table 8.1.2.2.4.1-1 during the identification of a new CGI of E-UTRA cell.

Table 8.1.2.2.4.1-1: Requirement on minimum number of ACK/NACKs to transmit during T_{basic_identify_CGI, intra}.

UL/DL configuration	Minimum number of transmitted ACK/NACKs
0	[18]
1	[35]
2	[43]
3	[36]
4	[39]
5	[42]
6	[30]

8.1.2.2.4.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle.

8.1.2.3 E-UTRAN inter frequency measurements

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

8.1.2.3.1 E-UTRAN FDD – FDD inter frequency measurements

8.1.2.3.1.1 E-UTRAN FDD – FDD inter frequency measurements when no DRX is used

When measurement gaps are scheduled the UE shall be able to identify a new FDD inter-frequency within $T_{Identify_Inter}$ according to the following expression:

$$\mathbf{T}_{\text{Identify_Inter}} = \mathbf{T}_{\text{Basic_Identify_Inter}} \cdot \frac{480}{\mathbf{T}_{\text{Inter1}}} \cdot N_{freq} \quad ms$$

Where:

 $T_{Basic_Identify_Inter} = 480$ ms. It is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new FDD inter-frequency cell is defined.

 N_{freg} is defined in section 8.1.2.1.1 and T_{inter1} is defined in section 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP and RSRP Ês/Iot according to Annex B.2.3 for a corresponding Band
- other RSRP related side conditions given in Section 9.1 are fulfilled.
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.3 for a corresponding Band

When measurement gaps are scheduled 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 9.1.3 with measurement period given by table 8.1.2.3.1.1-1.

Table 8.1.2.3.1.1-1: RSRP measurement period and measurement bandwidth

Configuration	Physical Layer Measurement period: T _{Measurement_Period_Inter_FDD} [ms]	Measurement bandwidth [RB]	
0	480 x N _{freq}	6	
1 (Note)	240 x N _{freq}	50	
Note: This configuration is optional			

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per FDD inter-frequency for up to 3 FDD inter-frequencies and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in Table 8.1.2.3.1.1-1.

8.1.2.3.1.1.1 Measurement Reporting Requirements

8.1.2.3.1.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.3.1.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.3.1.1.1.3 Event Triggered Reporting.

8.1.2.3.1.1.1.3 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 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: 2 x TTI_{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 $_{identify-inter}$ defined in Section 8.1.2.3.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_inter}$ defined in section 8.1.2.3.1.1 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_Inter_FDD}$ defined in section 8.1.2.3.1.1 provided the timing to that cell has not changed more than ± 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.3.1.2 E-UTRAN FDD – FDD inter frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable E-UTRAN FDD inter frequency cell within $T_{identify_inter}$ as shown in table 8.1.2.3.1.2-1

DRX	T _{identify_inter} (s) (DRX cycles)			
cycle	Gap period	Gap period		
length (s)	= 40 ms	= 80 ms		
≤0.16	Non DRX	Non DRX		
	Requirements	Requirements		
	in section	in section		
	8.1.2.3.1.1	8.1.2.3.1.1		
	are applicable	are applicable		
0.256	5.12*N _{freq}	7.68*N _{freq}		
	(20*N _{freq})	(30*N _{freq})		
0.32	6.4*N _{freq}	7.68*N _{freq}		
	(20*N _{freq})	(24*N _{freq})		
0.32<	Note	Note		
DRX-	(20*N _{freq})	(20*N _{freq})		
cycle≤2.56	cycle≤2.56			
Note: Time depends upon the DRX				
cycle in use				

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP|_{dBm} RSRP Ês/Iot according to Annex B.2.3 for a corresponding Band
- other RSRP related side conditions given in Section 9.1 are fulfilled,
- SCH_RP|_{dBm} SCH Ês/Iot according to Annex B.2.3 for a corresponding Band,

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per FDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in table 8.1.2.3.1.2-2.

Table 8.1.2.3.1.2-2: Requirement to measure FDD interfrequency cells

DRX cycle length (s)	T _{measure_inter} (s) (DRX cycles)	
≤0.08	Non DRX	
	Requirements in	
	section 8.1.2.3.1.1	
	are applicable	
0.08 <drx-< td=""><td>Note (5*N_{freq})</td></drx-<>	Note (5*N _{freq})	
cycle≤2.56		
Note: Time depends upon the DRX		
cycle in use		

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

8.1.2.3.1.2.1 Measurement Reporting Requirements

8.1.2.3.1.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.3.1.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.3.1.2.1.3 Event Triggered Reporting.

8.1.2.3.1.2.1.3 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 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: 2 x TTI_{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 $T_{identify_{inter}}$ defined in Section 8.1.2.3.1.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_inter}$ defined in section 8.1.2.3.1.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measure_inter}$ defined in section 8.1.2.3.1.2 provided the timing to that cell has not changed more than ± 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.3.2 E-UTRAN TDD – TDD inter frequency measurements

8.1.2.3.2.1 E-UTRAN TDD – TDD inter frequency measurements when no DRX is used

When measurement gaps are scheduled the UE shall be able to identify a new TDD inter-frequency within $T_{Identify_Inter}$ according to the following expression:

$$T_{Identify_Inter} = T_{Basic_Identify_Inter} \cdot \frac{480}{T_{Inter}} \cdot N_{freq} \quad ms$$

Where:

 $T_{Basic_Identify_Inter} = 480$ ms. It is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new TDD inter-frequency cell is defined.

 N_{freq} is defined in section 8.1.2.1.1 and T_{inter1} is defined in section 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- $RSRP|_{dBm}$ and RSRP És/Iot according to Annex B.2.3 for a corresponding Band,
- other RSRP related side conditions given in Section 9.1 are fulfilled,
- SCH_RP|dBm and SCH Ês/Iot according to Annex B.2.3 for a corresponding Band

When measurement gaps are scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.3 with measurement period ($T_{Measurement Period TDD Inter$) given by table 8.1.2.3.2.1-1:

Configuration	Measurement bandwidth [RB]	Number of UL/DL sub- frames per half frame (5 ms)		DwPTS		T _{Measurement_} Period_TDD _Inter [ms]
		DL	UL	Normal CP	Extended CP	
0	6	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	480 x N _{freq}
1 (Note 1)	50	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	240 x N _{freq}
Note 1: This cont	figuration is option	al				
Note 2: T _s is defi	ned in 3GPP TS 3	6.211 [16]				

Table 8.1.2.3.2.1-1: T_{Measurement_Period_TDD_Inter} for different configurations

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per TDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period $T_{Measurement_Period_TDD_Inter}$.

8.1.2.3.2.1.1 Measurement Reporting Requirements

8.1.2.3.2.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.3.2.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.3.2.1.1.3 Event Triggered Reporting.

8.1.2.3.2.1.1.3 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 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: 2 x TTI_{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 $T_{Identify_Inter}$ defined in Section 8.1.2.3.2.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{Identify_Inter}$ defined in section 8.1.2.3.2.1 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_TDD_Inter}$ defined in section 8.1.2.3.2.1 provided the timing to that cell has not changed more than ± 50 Ts while measurementgap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.3.2.2 E-UTRAN TDD – TDD inter frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable E-UTRAN TDD inter frequency cell within $T_{identify inter}$ as shown in table 8.1.2.3.2.2-1

DRX cycle	Tidentify_inter (s) (DRX cycles)		
length (s)	Gap period	Gap period	
	= 40 ms	= 80 ms	
≤0.16	Non DRX	Non DRX	
	Requirements	Requirements	
	in section	in section	
	8.1.2.3.2.1	8.1.2.3.2.1	
	are applicable	are applicable	
0.256	5.12*Nfreq	7.68*Nfreq	
	(20*Nfreq)	(30*Nfreq)	
0.32	6.4*Nfreq	7.68*Nfreq	
	(20*Nfreq)	(24*Nfreq)	
0.32 <drx-< td=""><td>Note</td><td>Note</td></drx-<>	Note	Note	
cycle≤2.56	(20*Nfreq)	(20*Nfreq)	
Note: Time depends upon the DRX			
cycle in use			

A cell shall be considered detectable provided following conditions are fulfilled:

- $RSRP|_{dBm}$ and RSRP És/Iot according to Annex B.2.3 for a corresponding Band
- RSRP related side conditions given in Section 9.1 are fulfilled,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.3 for a corresponding Band,.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per TDD inter-frequencies and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in Table 8.1.2.3.2.2-2.

	X cycle	T _{measure_inter} (s)	
lei	ngth (s)	(DRX cycles)	
	≤0.08	Non DRX	
		Requirements in	
		section 8.1.2.3.2.1	
		are applicable	
0.0	8 <drx-< td=""><td>Note (5*N_{freq})</td></drx-<>	Note (5*N _{freq})	
cyc	cle≤2.56		
Note	Note: Time depends upon the		
	DRX cycle in use		

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

8.1.2.3.2.2.1 Measurement Reporting Requirements

8.1.2.3.2.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.3.2.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.3.2.2.1.3 Event Triggered Reporting.

8.1.2.3.2.2.1.3 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 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: $2 \times TTI_{DCCH}$. 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 $T_{Identify_Inter}$ defined in Section 8.1.2.3.2.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{Identify_Inter}$ in section 8.1.2.3.2.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measure_inter}$ in section 8.1.2.3.2.2 provided the timing to that cell has not changed more than \pm 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.3.3 E-UTRAN TDD – FDD inter frequency measurements

8.1.2.3.3.1 E-UTRAN TDD – FDD inter frequency measurements when no DRX is used

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

The requirements in section 8.1.2.3.1.1 also apply for this section.

8.1.2.3.3.2 E-UTRAN TDD – FDD inter frequency measurements when DRX is used

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

The requirements in section 8.1.2.3.1.2 also apply for this section.

8.1.2.3.4 E-UTRAN FDD – TDD inter frequency measurements

8.1.2.3.4.1 E-UTRAN FDD – TDD inter frequency measurements when no DRX is used

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

The requirements in section 8.1.2.3.2.1 also apply for this section.

8.1.2.3.4.2 E-UTRAN FDD – TDD inter frequency measurements when DRX is used

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

The requirements in section 8.1.2.3.2.2 also apply for this section.

8.1.2.3.5 E-UTRAN FDD-FDD inter frequency measurements with autonomous gaps

8.1.2.3.5.1 Identification of a new CGI of E-UTRA FDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for receiving MIB and SIB1 message according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

 $T_{identify CGI, inter} = T_{basic identify CGI, inter} ms$

Where

 $T_{\text{basic_identify_CGI, inter}} = 150 \text{ ms.}$ This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of E-UTRA cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.3 for a corresponding Band

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,inter}$ is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

Given that continuous DL data allocation and no DRX is used, and no measurement gaps are configured, the UE shall have more than [60] ACK/NACKs transmitted during the identification of a new CGI of E-UTRA cell.

8.1.2.3.5.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle.

8.1.2.3.6 E-UTRAN TDD-FDD inter frequency measurements using autonomous gaps

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

8.1.2.3.6.1 Identification of a new CGI of E-UTRA FDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for receiving MIB and SIB1 message according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

 $T_{identify_CGI, inter} = T_{basic_identify_CGI, inter}$ ms

Where

 $T_{basic_identify_CGI, inter} = 150 \text{ ms.}$ This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of E-UTRA cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP|dBm and SCH Ês/Iot according to Annex B.2.4 for a corresponding Band

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,inter}$ is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

Given that continuous DL data allocation and no DRX is used, no measurement gaps are configured, and TDD configuration as in Table 8.1.2.3.2.1-1 is used, the UE shall have more than [30] ACK/NACK transmitted during the identification of a new CGI of E-UTRA cell.

8.1.2.3.6.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle.

8.1.2.3.7 E-UTRAN TDD-TDD inter frequency measurements with autonomous gaps

8.1.2.3.7.1 Identification of a new CGI of E-UTRA TDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for receiving MIB and SIB1 message according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{identify_CGI, inter} = T_{basic_identify_CGI, inter}$$
 ms

Where

 $T_{\text{basic_identify_CGI, inter}} = 150 \text{ ms.}$ This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of E-UTRA cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.4 for a corresponding Band.

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,inter}$ is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

Given that continuous DL data allocation and no DRX is used, no measurement gaps are configured, and TDD configuration as in Table 8.1.2.3.2.1-1 is used, the UE shall have more than [30] ACK/NACKs transmitted during the identification of a new CGI of E-UTRA cell.

8.1.2.3.7.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle.

8.1.2.3.8 E-UTRAN FDD-TDD inter frequency measurements using autonomous gaps

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

8.1.2.3.8.1 Identification of a new CGI of E-UTRA TDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for receiving MIB and SIB1 message according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps

are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{identify_CGI, inter} = T_{basic_identify_CGI, inter}$$
 ms

Where

 $T_{\text{basic_identify}_CGI, inter} = 150 \text{ ms.}$ This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of E-UTRA cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.4 for a corresponding Band.

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,inter}$ is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

Given that continuous DL data allocation and no DRX is used, and no measurement gaps are configured, the UE shall have more than [60] ACK/NACKs transmitted during the identification of a new CGI of E-UTRA cell.

8.1.2.3.8.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle.

8.1.2.4 Inter RAT measurements

- 8.1.2.4.1 E-UTRAN FDD UTRAN FDD measurements
- 8.1.2.4.1.1 E-UTRAN FDD UTRAN FDD measurements when no DRX is used

8.1.2.4.1.1.1 Identification of a new UTRA FDD cell

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, UTRA_FDD}} = T_{\text{basic_identify}_UTRA_FDD} \cdot \frac{480}{T_{\text{inter1}}} \cdot N_{Freq} \quad ms$$

A cell shall be considered detectable when

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io ≥ -17 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

8.1.2.4.1.1.1a Enhanced UTRA FDD cell identification requirements

When explicit neighbour list is provided and no DRX is used or when DRX cycle length ≤ 40 ms the UE shall be able to identify a new detectable cell belonging to the monitored set within $T_{identify, enhanced_UTRA_FDD}$:

$$T_{\text{identify, enhanced_UTRA_FDD}} = (T_{\text{basic_identify_enhanced_UTRA_FDD}} \cdot \frac{480}{T_{\text{inter1}}} + 480) N_{Freq} \quad ms$$

A cell shall be considered detectable when:

- CPICH Ec/Io \geq -15 dB,

 SCH_Ec/Io ≥ -15 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

8.1.2.4.1.1.2 UE UTRA FDD CPICH measurement capability

When measurement gaps are scheduled for UTRA FDD inter RAT measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in Section 9.2 with measurement period given by

$$T_{\text{measurement}_UTRA_FDD} = Max \left\{ T_{\text{Measurement}_Period UTRA_FDD}, T_{\text{basic}_measurement}_UTRA_FDD} \cdot \frac{480}{T_{\text{interl}}} \cdot N_{Freq} \right\} ms$$

If the UE does not need measurement gaps to perform UTRA FDD measurements, the measurement period for UTRA FDD measurements is 480 ms.

The UE shall be capable of performing UTRA FDD CPICH measurements for $X_{basic measurementUTRA_FDD}$ inter-frequency cells per FDD frequency and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{Measurement_UTRA_FDD}$.

 $X_{\text{basic measurement UTRA_FDD}} = 6$

 $T_{Measurement_Period UTRA_FDD} = 480 \text{ ms.}$ The period used for calculating the measurement period $T_{measurement_UTRA_FDD}$ for UTRA FDD CPICH measurements.

 $T_{\text{basic_identify}_UTRA_FDD} = 300 \text{ ms.}$ This is the time period used in the inter RAT equation in section 8.1.2.4.1.1.1 where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

 $T_{\text{basic_identify}_enhanced_UTRA_FDD} = 60 \text{ ms.}$ This is the time period used in the inter RAT equation in section 8.1.2.4.1.1.1a where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

 $T_{\text{basic_measurement_UTRA_FDD}} = 50$ ms. This is the time period used in the equation for defining the measurement period for inter RAT CPICH measurements.

 N_{freq} is defined in section 8.1.2.1.1 and T_{inter1} is defined in section 8.1.2.1

8.1.2.4.1.1.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.4.1.1.4 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. This measurement reporting delay excludes a delay uncertainty for the uplink DCCH. This measurement reporting delay excludes a 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 $T_{identify, UTRA_FDD}$ defined in Section 8.1.2.4.1.1.1 for the minimum requirements or $T_{identify, enhanced_UTRA_FDD}$ defined in Section 8.1.2.4.1.1.1 a for the enhanced requirements When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify, UTRA_FDD}$ defined in section 8.1.2.4.1.1.1 for the minimum requirements or $T_{identify, enhanced_UTRA_FDD}$ defined in Section 8.1.2.4.1.1.1 a for the enhanced requirements and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measurement_UTRA_FDD}$ defined in section 8.1.2.4.1.1.2 provided the timing to that cell has not changed more than \pm 32 chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.4.1.1.5 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.4.1.1.4 Event Triggered Reporting.

8.1.2.4.1.2 E-UTRAN FDD – UTRAN FDD measurements when DRX is used

When explicit neighbour list is provided and DRX is used the UE shall be able to identify a new detectable cell belonging to the neighbour cell list within $T_{identify,UTRA_FDD}$ as shown in table 8.1.2.4.1.2-1

Table 8.1.2.4.1.2-1: Requirement to identify a newly detectable UTRA FDD cell

DRX cycle length (s)	T _{identify_UTRA_FDD} (s) (DRX cycles)	
	Gap period =	Gap period
	40 ms	= 80 ms
≤0.04	Non DRX	Non DRX
	Requirements	Requirements
	in section	in section
	8.1.2.4.1.1 are	8.1.2.4.1.1
	applicable	are applicable
0.064	2.56* Nfreq	4.8* Nfreq
	(40* Nfreq)	(75* Nfreq)
0.08	3.2* Nfreq	4.8* Nfreq
	(40* Nfreq)	(60* Nfreq)
0.128	3.2* Nfreq (25*	4.8* Nfreq
	Nfreq)	(37.5* Nfreq)
0.16	3.2* Nfreq (20*	4.8* Nfreq
	Nfreq)	(30* Nfreq)
0.16 <drx-< td=""><td>Note (20*</td><td>Note</td></drx-<>	Note (20*	Note
cycle≤2.56	Nfreq)	(20* Nfreq)
Note: Time depends upon the DRX cycle in use		

A cell shall be considered detectable provided following conditions are fulfilled: A cell shall be considered detectable when

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io \geq -17 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

The UE shall be capable of performing RSCP and Ec/Io measurements of at least 6 UTRA cells per UTRA FDD carrier for up to 3 UTRA FDD carriers and the UE physical layer shall be capable of reporting RSCP and Ec/Io measurements to higher layers with the measurement period defined in table 8.1.2.3.1.2-2.

DRX cycle length (s)	T _{measure_UTRA_FDD} (s) (DRX cycles)		
	Gap period	Gap period =	
	= 40 ms	80 ms	
≤0.04	Non DRX	Non DRX	
	Requirements	Requirements	
	in section	in section	
	8.1.2.4.1.1	8.1.2.4.1.1 are	
	are applicable	applicable	
0.064	0.48* N _{freq}	0.8* N _{freq}	
	(7.5* N _{freq})	(12.5* N _{freq})	
0.08	0.48* N _{freq}	0. 8* N _{freq} (10*	
	(6* N _{freq})	N _{freq})	
0.128	0.64* N _{freq}	0. 8* N _{freq}	
	(5* N _{freq})	(6.25* N _{freq})	
0.128 <drx-< td=""><td>Note (5* N_{freq})</td><td>Note (5* N_{freq})</td></drx-<>	Note (5* N _{freq})	Note (5* N _{freq})	
cycle≤2.56			
Note: Time depends upon the DRX cycle in use			

Table 8.1.2.4.1.2-2: Requirement to measure UTRA FDD cells

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

8.1.2.4.1.2.1 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.4.1.2.2 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. This measurement reporting delay excludes a delay uncertainty for the uplink DCCH. This measurement reporting delay excludes a 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 $T_{identify,UTRA_FDD}$ defined in Section 8.1.2.4.1.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify, UTRA_FDD}$ defined in section 8.1.2.4.1.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measurement_UTRA_FDD}$ defined in section 8.1.2.4.1.2 provided the timing to that cell has not changed more than ± 32 chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.4.1.2.3 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.4.1.2.2 Event Triggered Reporting.

8.1.2.4.2 E-UTRAN TDD – UTRAN FDD measurements

The requirements in section 8.1.2.4.1 also apply for this section.

8.1.2.4.2.2 E-UTRAN TDD – UTRAN FDD measurements when DRX is used

8.1.2.4.3 E-UTRAN TDD – UTRAN TDD measurements

8.1.2.4.3.1 E-UTRAN TDD – UTRAN TDD measurements when no DRX is used

8.1.2.4.3.1.1 Identification of a new UTRA TDD cell

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, UTRA_TDD}} = Max \left\{ 5000, T_{\text{basic identify UTRA_TDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot N_{Freq} \right\} ms$$

If the UE does not require transmit gap to perform inter-RAT UTRA TDD measurements, the UE shall be able to identify a new detectable inter-RAT UTRA TDD cell belonging to the monitored set within 5000 ms.

A cell shall be considered detectable when

- P-CCPCH Ec/Io \geq -8 dB,
- DwPCH Ec/Io > -5 dB.

When L3 filtering is used an additional delay can be expected.

8.1.2.4.3.1.1a Enhanced UTRA TDD cell identification requirements

When explicit neighbour list is provided and no DRX is used or when DRX cycle length ≤ 40 ms the UE shall be able to identify a new detectable cell belonging to the monitored set within T_{identify, enhanced UTRA TDD}:

$$T_{identify, enhanced_UTRA_TDD} = (T_{basic_identify_enhanced_UTRA_TDD} \cdot \frac{480}{T_{interl}} + 480) \cdot N_{Freq} \quad ms$$

If the UE does not require transmit gap to perform inter-RAT UTRA TDD measurements, the UE shall be able to identify a new detectable inter-RAT UTRA TDD cell belonging to the monitored set within 500 ms.

A cell shall be considered detectable when:

- P-CCPCH_Ec/Io \geq -6 dB,
- $DwPCH_Ec/Io \ge -1 dB$

When L3 filtering is used an additional delay can be expected.

8.1.2.4.3.1.2 UE UTRA TDD P-CCPCH RSCP measurement capability

When measurement gaps are scheduled for UTRA TDD inter RAT measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in Section 9.3 with measurement period given by

$$T_{\text{measurement UTRA_TDD}} = Max \left\{ T_{\text{Measurement_Period UTRA_TDD}}, T_{\text{basic measurement UTRA_TDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot N_{Freq} \right\} ms$$

If the UE does not need measurement gaps to perform UTRA TDD measurements, the measurement period for UTRA TDD measurements is 480 ms.

The UE shall be capable of performing UTRA TDD P-CCPCH RSCP measurements for $X_{\text{basic measurementUTRA_TDD}}$ interfrequency 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 $T_{\text{Measurement_UTRA_TDD}}$.

 $X_{\text{basic measurementUTRA_TDD}} = 6$

 $T_{Measurement_Period UTRA_TDD} = 480$ ms is the period used for calculating the measurement period $T_{measurement_UTRA_TDD}$ for UTRA TDD P-CCPCH RSCP measurements.

 $T_{\text{basic_identify}_UTRA_TDD} = 800 \text{ ms}$ is the time period used in the inter RAT equation in section 8.1.2.4.3.1.1 where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

 $T_{\text{basic_identify_enhanced_UTRA_TDD}} = 80 \text{ ms}$ is the time period used in the inter RAT equation in section 8.1.2.4.3.1.1a where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

 $T_{\text{basic_measurement_UTRA_TDD}} = 50 \text{ ms}$ is the time period used in the equation for defining the measurement period for inter RAT P-CCPCH RSCP measurements.

 N_{freq} is defined in section 8.1.2.1.1 and T_{inter1} is defined in section 8.1.2.1

8.1.2.4.3.1.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.4.3.1.4 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. This measurement reporting delay excludes a delay uncertainty for the uplink DCCH. This measurement reporting delay excludes a 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 $T_{identify, UTRA_TDD}$ defined in Section 8.1.2.4.3.1.1 for the minimum requirements or $T_{identify, enhanced_UTRA_TDD}$ defined in Section 8.1.2.4.3.1.1 a for the enhanced requirements. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify, UTRA_TDD}$ defined in section 8.1.2.4.3.1.1 for the minimum requirements and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measurement_UTRA_TDD}$ defined in section 8.1.2.4.3.1.2 provided the timing to that cell has not changed more than ± [10] chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.4.3.1.5 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.4.3.1.4 Event Triggered Reporting.

8.1.2.4.3.2 E-UTRAN TDD – UTRAN TDD measurements when DRX is used

When explicit neighbour list is provided and DRX is used the UE shall be able to identify a new detectable cell belonging to the neighbour cell list within $T_{identify,UTRA_TDD}$ as shown in table 8.1.2.4.3.2-1

DRX cycle length (s)	T _{identify_UTRA_TDD} (s) (DRX cycles)		
iciigiii (3)	Gap period =	Gap period =	
	40 ms	80 ms	
≤0.32	Non DRX	Non DRX	
	Requirements	Requirements	
	in section	in section	
	8.1.2.4.3.1	8.1.2.4.3.1	
	are applicable	are applicable	
0.32 <drx-< td=""><td>Note (20*</td><td>Note (25*</td></drx-<>	Note (20*	Note (25*	
cycle≤0.512	Nfreq)	Nfreq)	
0.512 <drx-< td=""><td>Note (20*</td><td>Note</td></drx-<>	Note (20*	Note	
cycle≤2.56	Nfreq)	(20* Nfreq)	
Note: Tim	Note: Time depends upon the DRX cycle		
in use			

Table 8.1.2.4.3.2-1: Requirement to identify a newly detectable UTRA TDD cell

A cell shall be considered detectable provided following conditions are fulfilled: A cell shall be considered detectable 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.

The UE shall be capable of performing UTRA TDD P-CCPCH RSCP measurements of at least 6 UTRA cells per UTRA TDD carrier for up to 3 UTRA TDD carriers and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period defined in table 8.1.2.4.3.2-2.

DRX cycle length (s)	T _{measure_UTRA_TDD} (s) (DRX cycles)		
	Gap period = 40 ms	Gap period = 80 ms	
≤0.04	Non DRX Requirements in	Non DRX Requirements in	
	section 8.1.2.4.3.1 are applicable	section 8.1.2.4.3.1 are applicable	
0.064	0.48*N _{freq} (7.5*N _{freq})	0.8*N _{freq} (12.5*N _{freq})	
0.08	0.48*N _{freq} (6*N _{freq})	0. 8*N _{freq} (10*N _{freq})	
0.128	0.64*N _{freq} (5*N _{freq})	0. 8*N _{freq} (6.25*N _{freq})	
0. 128 <drx- cycle≤2.56</drx- 	Note (5*N _{freq})	Note (5*N _{freq})	
Note: Time depends upon the DRX cycle in use			

Table 8.1.2.4.3.2-2: Requirement to measure UTRA TDD cells

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

8.1.2.4.3.2.1 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.4.3.2.2 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. This measurement reporting delay excludes a delay uncertainty for the uplink DCCH. This measurement reporting delay excludes a 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 $T_{identify, UTRA_TDD}$ defined in Section 8.1.2.4.3.2 When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify, UTRA_TDD}$ defined in section 8.1.2.4.3.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measurement_UTRA_TDD}$ defined in section 8.1.2.4.3.2 provided the timing to that cell has not changed more than ± [10] chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.4.3.2.3 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.4.3.2.2 Event Triggered Reporting.

8.1.2.4.4 E-UTRAN FDD – UTRAN TDD measurements

The requirements in section 8.1.2.4.3 also apply for this section.

8.1.2.4.5 E-UTRAN FDD – GSM measurements

8.1.2.4.5.1 E-UTRAN FDD – GSM measurements when no DRX is used

The requirements in this section apply only to UE supporting E-UTRAN FDD and GSM.

Measurements on GSM cells can be requested with BSIC verified.

In RRC_CONNECTED state when a supported measurement gap pattern sequence according to Table 8.1.2.1-1 is configured by E-UTRAN the UE shall continuously measure GSM cells, search for new GSM cells given in the monitored set and re-confirm the BSIC for already detected cells.

8.1.2.4.5.1.1 GSM carrier RSSI

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in section 8.1.2.1. A UE supporting GSM measurements shall measure minimum number of 10 GSM carrier RSSI measurement samples ($N_{GSM \text{ carrier RSSI}}$) per measurement gap. In RRC_CONNECTED state the measurement period, $T_{Measurement Period, GSM}$, for the GSM carrier RSSI measurement is N_{freq} *480 ms. The parameter N_{freq} is defined in section 8.1.2.1.1.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [8], 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.

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.

8.1.2.4.5.1.2 BSIC verification

Measurements on a GSM cell can be 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 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 E-UTRAN FDD and GSM cells. The UE shall trigger the initial BSIC identification within the available measurement gap pattern sequence. The requirements for BSIC re-confirmation can be found in section 8.1.2.4.5.1.2.1.
- **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 gap pattern. The requirements for BSIC re-confirmation can be found in section 8.1.2.4.5.1.2.2.

If the network requests measurements on a GSM cell the UE shall behave as follows:

- The UE shall perform GSM carrier RSSI measurements according to section 8.1.2.4.5.1 when a measurement gap pattern sequence is activated.
- The UE shall perform measurement reporting as defined in [2].
- The UE shall perform BSIC identification. The UE shall use the most recently 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 on all the GSM cells that have been successfully identified.
- The UE shall perform all configured event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the most recently available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting.
- Event-triggered and periodic reports shall be triggered according to [2].

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). Once a GSM cell has been identified the BSIC shall be re-confirmed at least once every $8*T_{re-confirm,GSM}$ seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified". If a measurement gap pattern sequence is deactivated by the network after BSIC has been identified or verified, the UE shall consider the BSIC as non-verified.

 $T_{identify,GSM}$ indicates the maximum time allowed for the UE to decode the unknown BSIC of the GSM cell in one GSM BCCH carrier in the initial BSIC identification procedure.

 $T_{re-confirm,GSM}$ indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure.

The UE shall be able to decode a BSIC within a measurement gap when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the effective measurement gap is within the limits specified in table 8.1.2.4.5.1.2-1.

Table 8.1.2.4.5.1.2-1: The gap length and maximum time difference for BSIC verification

Gap length [ms]	Maximum time difference [µs]
6	± 2350 μs

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [9].

8.1.2.4.5.1.2.1 Initial BSIC identification

This measurement shall be based on the measurement gaps used for Initial BSIC identification as described in section 8.1.2.4.5.1.2.

The UE shall continuously attempt to decode the BSIC of SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

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 $T_{identify,GSM}$ ms, 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 8 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

 $T_{identify,GSM}$ values are given for a set of reference gap patterns in table 8.1.2.4.5.1.2.1-1. The requirements in the table represent the time required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. If interfrequency RSTD measurements are configured as a part of the measurement configuration, $T_{identify,GSM}$ shall be based on the 80ms gap configuration.

Number	T _{identify,gsm} (ms)		T _{reconfirm,}	_{gsm} (ms)
of				
carriers	10	00	10	00
other	40ms gap	80ms gap	40ms gap	80ms gap
than	configuration	configuration	configuration	configuration
GSM	(ID 0)	(ID 1)	(ID 0)	(ID 1)
0	2160	5280	1920	5040
1	5280	21760	5040	17280
2	5280	31680	5040	29280
		No		No
3	19440	requirement	13320	requirement
		No		No
4	31680	requirement	29280	requirement
		No		No
5	31680	requirement	29280	requirement

Table 8.1.2.4.5.1.2.1-1

8.1.2.4.5.1.2.2 BSIC re-confirmation

The UE shall maintain the timing information of up to 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 measurement gap used for GSM BSIC reconfirmation as described in section 8.1.2.4.5.1.2, the UE shall attempt to decode the BSIC falling within the measurement gap according to table 8.1.2.4.5.1.2.1-1. If more than one BSIC can be decoded within the same measurement gap, priority shall be given to the least recently decoded BSIC. If inter-frequency RSTD measurements are configured as a part of the measurement configuration, $T_{re-confirm,GSM}$ shall be based on the 80ms gap configuration.

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 cell within $T_{re-confirm,GSM}$ seconds, 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 8.1.2.4.5.1.2.1.

8.1.2.4.5.1.2a Enhanced BSIC verification

In addition to the BSIC verification requirements in section 8.1.2.4.5.1.2, when the UE receives the GSM cell at levels down to 10 dB + the reference sensitivity level or reference interference levels as specified in [9] the BSIC identification requirement in table 8.1.2.4.5.1.2a-1 applies. The BSIC verification requirements in table 8.1.2.4.5.1.2a-1 shall apply when no DRX is used or when DRX cycle length \leq 40 ms.

	T _{enhanced identify.gsm} (ms)		T _{enhanced} reco	_{nfirm.qsm} (ms)
		40ms gap		40ms gap
		configuration		configuration
Number		when		when
of		interfrequency		interfrequency
carriers		RSTD		RSTD
other	40ms gap	measurement	40ms gap	measurement
than	configuration	is also	configuration	is also
GSM	(ID 0)	configured	(ID 0)	configured
0	1320	2160	1080	1920

8.1.2.4.5.1.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.4.5.1.4 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 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 that the measurement report is not delayed by other RRC signalling on the 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 $T_{Measurement Period, GSM}$ (see section 8.1.2.4.5.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC , measured without L3 filtering shall be less than $2*T_{Measurement Period, GSM}$, where $T_{Measurement Period, GSM}$ is defined in section 8.1.2.4.5.1. When L3 filtering is used an additional delay can be expected.

8.1.2.4.5.1.5 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.4.5.1.4 Event Triggered Reporting.

8.1.2.4.5.2 E-UTRAN FDD – GSM measurements when DRX is used

The requirements in this section apply only to UE supporting E-UTRAN FDD and GSM.

Measurements on GSM cells can be requested with BSIC verified.

In RRC_CONNECTED state when a supported measurement gap pattern sequence according to Table 8.1.2.1-1 is configured by E-UTRAN the UE shall continuously measure GSM cells, search for new GSM cells given in the monitored set and re-confirm the BSIC for already detected cells. During DRX periods the UE may use other periods of time outside the specified measurement gap patterns. The UE is not required to make measurements of GSM cells during DRX periods if a measurement gap pattern has not been configured.

8.1.2.4.5.2.1 GSM carrier RSSI

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in section 8.1.2.1. A UE supporting GSM measurements shall measure minimum number of 10 GSM carrier RSSI measurement samples ($N_{GSM \text{ carrier RSSI}}$) per DRX cycle. In RRC_CONNECTED state the measurement period, $T_{Measurement \text{ Period}, \text{ GSM}}$, for the GSM carrier RSSI measurement is shown in table 8.1.2.4.5.2.1-1. The parameter N_{freq} is defined in section 8.1.2.1.1.

DRX cycle length (s)	T _{measure,GSM} (s) (DRX cycles)	
≤0.04	Non DRX Requirements are	
	applicable	
0.04 <drx-cycle≤ 0.08<="" td=""><td>Note (6*N_{freq})</td></drx-cycle≤>	Note (6*N _{freq})	
0.08 <drx-cycle≤ (5*n<sub="" 2.56="" note="">freq)</drx-cycle≤>		
Note: Time depends upon the DRX cycle in use		

The UE shall meet the measurement accuracy requirements stated for RXLEV in [8], 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.

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.

8.1.2.4.5.2.2 BSIC verification

Measurements on a GSM cell can be 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 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 E-UTRAN FDD and GSM cells.
- **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 gap pattern

If the network requests measurements on a GSM cell, the UE shall behave as follows:

- The UE shall perform GSM carrier RSSI measurements according to section 8.1.2.4.5.2.1 when a measurement gap pattern sequence is activated.
- The UE shall perform measurement reporting as defined in [2].
- The UE shall perform BSIC identification. The UE shall use the most recently 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 on all the GSM cells that have been successfully identified.
- The UE shall perform all configured event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the most recently available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting.
- Event-triggered and periodic reports shall be triggered according to [2].

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). Once a GSM cell has been identified the BSIC shall be re-confirmed at least once every 30 seconds. Otherwise the BSIC of the GSM cell 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 [9].

8.1.2.4.5.2.2.1 Initial BSIC identification

This measurement shall be made on GSM cells that are requested with BSIC verified.

For DRX cycle length \leq 40 ms, the initial GSM BSIC identification requirements corresponding to the non DRX requirements as specified in section 8.1.2.4.5.1.2.1 shall apply.

For DRX cycle length > 40 ms, the UE shall make at least one attempt every N_{freq} *30s to decode the BSIC of SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within N_{freq} *60 s, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value. The parameter N_{freq} is defined in section 8.1.2.1.1.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall 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.

8.1.2.4.5.2.2.2 BSIC re-confirmation

The UE shall maintain the timing information of up to 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 DRX cycle length \leq 40 ms, the GSM BSIC re-conformation requirements corresponding to the non DRX requirements as specified in section 8.1.2.4.5.1.2.2 shall apply.

For DRX cycle length > 40 ms, at least every N_{freq} *30 seconds, the UE shall attempt to decode the BSIC of each identified GSM cell.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 cell within N_{freq} *60 seconds, 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 8.1.2.4.5.2.2.1. The parameter N_{freq} is defined in section 8.1.2.1.1.

8.1.2.4.5.2.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.4.5.2.4 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 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 that the measurement report is not delayed by other RRC signalling on the 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 $T_{Measurement Period, GSM}$ (see section 8.1.2.4.5.2.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC , measured without L3 filtering shall be less than $2*T_{Measurement Period, GSM}$, where $T_{Measurement Period, GSM}$ is defined in section 8.1.2.4.5.2.1. When L3 filtering is used an additional delay can be expected.

8.1.2.4.5.2.5 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.4.5.2.4 Event Triggered Reporting.

8.1.2.4.6 E-UTRAN TDD – GSM measurements

The requirements in section 8.1.2.4.5 also apply for this section.

8.1.2.4.7 E-UTRAN FDD – UTRAN FDD measurements for SON

8.1.2.4.7.1 Identification of a new UTRA FDD cell for SON

No explicit neighbour list is provided to the UE for identifying a UTRA cell for SON. The UE shall identify and report only the strongest cell when requested by the network for the purpose of SON.

8.1.2.4.7.1.1 Requirements when no DRX is used

When no DRX is used the UE shall be able to identify a new cell within:

$$T_{\text{identify, UTRA_FDD}} = T_{\text{basic_identify_UTRA_FDD}} \cdot \frac{480}{\text{Tinter1}} \cdot N_{Freq} \quad ms$$

 $T_{\text{basic_identify}_UTRA_FDD} = 300 \text{ ms.}$ This is the time period used in the above equation where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io \geq -17 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA cell for SON within $8^{T_{identify, UTRA_FDD}}$ ms, the UE may stop searching UTRA cells for SON.

8.1.2.4.7.1.2 Requirements when DRX is used

When DRX is used the UE shall be able to identify a new cell within $T_{identify, UTRA_{FDD}}$ as defined in table 8.1.2.4.7.1.2-1.

Table 8.1.2.4.7.1.2-1: Requirement to identify a new UTRA FDD cell for SON

DRX cycle length (s)	Tidentify, UTRA_FDD (S) (DRX cycles)		
	Gap period = 40 ms	Gap period = 80 ms	
≤0.04	Non DRX Requirements in section 8.1.2.4.7.1.1are applicable	Non DRX Requirements in section 8.1.2.4.7.1.1 are applicable	
0.04 <drx cycle≤0.08<="" td=""><td>Note (45* N_{freq})</td><td>Note (95* N_{freg})</td></drx>	Note (45* N _{freq})	Note (95* N _{freg})	
0.128	3.84* N _{freq} (30* N _{freq})	8.0* N _{freq} (62.5* N _{freq})	
0.16	4.0* N _{freq} (25* N _{freq})	8.0* N _{freq} (50* N _{freq})	
0.256	6.4* N _{freq} (25* N _{freq})	8.96* N _{freq} (35* N _{freq})	
0.32	8* N _{freq} (25* N _{freq})	8.96* N _{freq} (28* N _{freq})	
0.32 <drx cycle≤2.56<="" td=""><td>Note (25* N_{freq})</td><td>Note (25* N_{freq})</td></drx>	Note (25* N _{freq})	Note (25* N _{freq})	
Note: Time depends upon the DRX cycle in use			

A cell shall be considered identifiable provided following conditions are fulfilled:

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io \geq -17 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA cell for SON within $8*T_{identify, UTRA_FDD}$ seconds, the UE may stop searching UTRA cells for SON; $T_{identify, UTRA_FDD}$ is defined in table 8.1.2.4.7.1.2-1.

8.1.2.4.7.1.3 Reporting Delay

The UE shall not report the physical cell identity of an identifiable cell for SON as long as the reporting criteria are not fulfilled.

The reporting delay is defined as the time between the identification of the strongest cell for SON until the UE starts to transmit its physical cell identity over the Uu interface. This requirement assumes that the reporting of the physical cell identity is not delayed by other RRC signalling on the DCCH. This reporting delay excludes a delay uncertainty resulted when inserting the physical cell identity of the strongest cell for SON to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This reporting delay excludes any delay caused by unavailability of UL resources for UE sending the physical cell identity of the strongest cell for SON.

The reporting delay of the physical cell identity of the strongest cell for SON without L3 filtering shall be less than $T_{identify, UTRA_FDD}$ defined in section 8.1.2.4.7.1.1 and in section 8.1.2.4.7.1.2 for non DRX and DRX cases respectively. When L3 filtering is used an additional delay can be expected.

8.1.2.4.8 E-UTRAN TDD – UTRAN FDD measurements for SON

The requirements in section 8.1.2.4.7 also apply for this section.

8.1.2.4.9 E-UTRAN FDD – cdma2000 1xRTT measurements

UE shall perform cdma2000 1xRTT measurements according to the procedure defined in [15] on the cdma2000 1xRTT neighbor cells indicated by the serving eNode B. If measurement gaps are required, the UE shall perform cdma2000 1xRTT measurements only during the measurement gaps configured by the serving eNode B.

8.1.2.4.9.1A E-UTRAN FDD – cdma2000 1xRTT measurements when no DRX is used

When measurement gaps are scheduled for CDMA2000 1xRTT inter RAT measurements, the UE physical layer shall be capable of reporting CDMA2000 1xRTT Pilot Strength measurements to higher layers with measurement accuracy as specified in Section 9.5, corresponding to a 90% measurement success rate, with measurement period given by

 $\mathbf{T}_{\text{measurement}_{CDMA2000_1x}} = \mathbf{T}_{\text{basic}_{measurement}_{CDMA2000_1x}} \cdot N_{Freq} \cdot S_{gap}$

where $T_{basic_measurement_CDMA2000_1x} = 100$ ms and the measurement gap specific scale factor S_{gap} is based on the measurement gap pattern in use as defined in Table 8.1.2.4.9.1-1. If inter-frequency RSTD measurements are configured as a part of the measurement configuration, S_{gap} shall be based to the Gap Pattern Id 1.

Table	8.1.2.	4.9.1-1	: Gap Pa	attern Sp	ecific	Scale Fa	ctor
	-	_			-		

Gap Pattern Id	S _{gap}
0	32/3
1	64/3

If the UE does not need measurement gaps to perform CDMA2000 1xRTT Pilot Strength measurements, the measurement period is given by

 $\mathbf{T}_{\text{measurement}_{\text{CDMA2000}_{1x}}} = \mathbf{T}_{\text{basic}_{\text{measurement}_{\text{CDMA2000}_{1x}}}} \cdot N_{Freq}.$

8.1.2.4.9.1 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in section 9.

The measurement reporting delay of each periodic report is defined as the time between the end of the last measurement period and the moment when the UE starts to transmit the measurement report over the Uu interface. This delay shall be

less than T_{71m} defined in [15] for each periodic report. This measurement reporting delay excludes a delay which is caused by the unavailability of the uplink resources for the UE to send the measurement report.

8.1.2.4.10 E-UTRAN TDD – cdma2000 1xRTT measurements

The requirements in section 8.1.2.4.9 also apply for this section.

8.1.2.4.11 E-UTRAN FDD – HRPD measurements

UE shall perform HRPD measurements according to the procedure defined in [11] on the HRPD neighbor cells indicated by the serving eNode B. If measurement gaps are required, the UE shall perform HRPD measurements only during the measurement gaps configured by the serving eNode B.

8.1.2.4.12 E-UTRAN TDD – HRPD measurements

The requirements in section 8.1.2.4.11 also apply for this section.

8.1.2.4.13 E-UTRAN TDD – UTRAN TDD measurements for SON

8.1.2.4.13.1 Identification of a new UTRA TDD cell for SON

No explicit neighbour list is provided to the UE for identifying a UTRA TDD cell for SON. The UE shall identify and report only the strongest cell when requested by the network for the purpose of SON.

8.1.2.4.13.1.1 Requirements when no DRX is used

When no DRX is used the UE shall be able to identify a new cell within:

$$T_{identify, UTRA_TDD} = T_{basic_identify_UTRA_TDD} \cdot \frac{480}{T_{interl}} \cdot N_{Freq} \quad ms$$

 $T_{\text{basic_identify}_UTRA_TDD} = 800 \text{ ms.}$ This is the time period used in the above equation where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- P-CCPCH Ec/Io \geq -8 dB,
- DwPCH_Ec/Io \geq -5 dB.

When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA TDD cell for SON within $8*T_{identify, UTRA_TDD}$ ms, the UE may stop searching UTRA TDD cells for SON.

8.1.2.4.13.1.2 Requirements when DRX is used

When DRX is used the UE shall be able to identify a new cell within $T_{identify, UTRA_TDD}$ as defined in table 8.1.2.4.13.1.2-1.

DRX cycle length (s)	T _{identify, UTRA_TDD} (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms
≤0.16	Non DRX Requirements in section 8.1.2.4.3.1 are applicable	Non DRX Requirements in section 8.1.2.4.3.1 are applicable
0.16 <drx cycle≤0.256<="" td=""><td>Note (25* N_{freq})</td><td>Note (50* N_{freq})</td></drx>	Note (25* N _{freq})	Note (50* N _{freq})
0.256 <drx cycle≤0.32<="" td=""><td>Note (25* N_{freq})</td><td>Note (45* N_{freq})</td></drx>	Note (25* N _{freq})	Note (45* N _{freq})

0.32 <drx cycle≤2.56<="" th=""><th>Note (25* N_{freq})</th><th>Note (25* N_{freq})</th></drx>	Note (25* N _{freq})	Note (25* N _{freq})
Note: Time depends upon the DRX cycle in use		

A cell shall be considered identifiable provided following conditions are fulfilled:

- P-CCPCH Ec/Io \geq -8 dB,
- DwPCH_Ec/Io \geq -5 dB.

When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA TDD cell for SON within $8*T_{identify, UTRA_TDD}$ seconds, the UE may stop searching UTRA TDD cells for SON; $T_{identify, UTRA_TDD}$ is defined in table 8.1.2.4.13.1.2-1.

8.1.2.4.13.1.3 Reporting Delay

The UE shall not report the physical cell identity of an identifiable cell for SON as long as the reporting criteria are not fulfilled.

The reporting delay is defined as the time between the identification of the strongest cell for SON until the UE starts to transmit its physical cell identity over the Uu interface. This requirement assumes that the reporting of the physical cell identity is not delayed by other RRC signalling on the DCCH. This reporting delay excludes a delay uncertainty resulted when inserting the physical cell identity of the strongest cell for SON to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This reporting delay excludes any delay caused by unavailability of UL resources for UE sending the physical cell identity of the strongest cell for SON.

The reporting delay of the physical cell identity of the strongest cell for SON without L3 filtering shall be less than $T_{identify, UTRA_TDD}$ defined in section 8.1.2.4.13.1.1 and in section 8.1.2.4.13.1.2 for non DRX and DRX cases respectively. When L3 filtering is used an additional delay can be expected.

8.1.2.4.14 E-UTRAN FDD – UTRAN TDD measurements for SON

The requirements in section 8.1.2.4.13 also apply for this section.

8.1.2.4.15 E-UTRAN FDD – cdma2000 1xRTT measurements for SON ANR

8.1.2.4.15.1 Identification of a new cdma2000 1xRTT cell for SON ANR

No explicit neighbour list is provided to the UE for identifying a cdma2000 1xRTT cell for SON ANR. The UE shall identify and report only the strongest cell when requested by the network for the purpose of SON ANR.

8.1.2.4.15.1.1 Requirement when no DRX is used

When measurement gaps are scheduled for CDMA2000 1xRTT inter RAT measurements, the UE physical layer shall be capable of reporting CDMA2000 1xRTT Pilot Strength measurements to higher layers with measurement accuracy as specified in Section 9.5, corresponding to a 90% measurement success rate, with measurement period given by

$$\mathbf{T}_{\text{measurement}_{\text{CDMA2000}_{1x}}} = \mathbf{T}_{\text{basic}_{\text{measurement}_{\text{CDMA2000}_{1x}}}} \cdot N_{Freq} \cdot S_{gap}$$

where $T_{basic_measurement_CDMA2000_1x} = 100$ ms and the measurement gap specific scale factor S_{gap} is based on the measurement gap pattern in use as defined in Table 8.1.2.4.15.1.1-1. If inter-frequency RSTD measurements are configured as a part of the measurement configuration, S_{gap} shall be based to the Gap Pattern Id 1.

Table 8.1.2.4.15.1.1-1: Gap Pattern Specific Scale Factor

Gap Pattern Id	S _{gap}
0	32/3
1	64/3

If the UE does not need measurement gaps to perform CDMA2000 1xRTT Pilot Strength measurements, the measurement period is given by

 $T_{\text{measurement}_{CDMA2000_{1x}}} = T_{\text{basic}_{measurement}_{CDMA2000_{1x}}} \cdot N_{Freq}$

If the UE is unable to identify the CDMA2000 1xRTT cell for SON ANR within [TBD] ms, the UE may stop searching CDMA2000 1xRTT cells for SON ANR.

8.1.2.4.15.1.2 Reporting Delay

The UE shall not report the physical cell identity of an identifiable cell for SON ANR as long as the reporting criteria are not fulfilled.

The reporting delay is defined as the time between the identification of the strongest cell for SON ANR until the UE starts to transmit its physical cell identity over the Uu interface. This delay shall be less than T_{71m} defined in [15]. This measurement reporting delay excludes a delay which is caused by the unavailability of the uplink resources for the UE to send the measurement report.

8.1.2.4.16 E-UTRAN TDD – cdma2000 1xRTT measurements for SON ANR

The requirements in section 8.1.2.4.15 also apply for this section.

8.1.2.4.17 E-UTRAN FDD-UTRAN FDD measurements with autonomous gaps

The requirements in this section apply only to UE supporting E-UTRA FDD and UTRA FDD.

8.1.2.4.17.1 Identification of a new CGI of UTRA FDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of UTRA FDD cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for decoding SFN and receiving UTRAN MIB and SIB3 messages according to section 5.5.3.1 of 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, the UE shall be able to identify a new CGI of UTRA FDD cell within:

 $T_{identify_CGI, UTRAN FDD} = [630] + 40*SIB3_REP ms$

where SIB3_REP is the repetition period at which the UTRAN cell schedules SIB3 blocks in units of frames specified in 3GPP TS 25.331 [7].

This requirement is applicable for UTRA FDD target cell configurations where the information required to make the SI report can be determined from the MIB and SIB3 alone, and MIB and SIB3 are not segmented into multiple TTIs. Additionally, for the requirement to be applicable, the reception conditions shall be [TBD] such that the system frame number of the target UTRA FDD cell, the MIB and SIB3 can each be successfully decoded in no more than four attempts.

The requirement for identifying a new CGI of an UTRA FDD cell within $T_{identify_CGI, UTRAN FDD}$ is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [2] are used.

8.1.2.4.17.2 CGI Reporting Delay

The CGI reporting delay occurs due to the delay uncertainty when inserting the CGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the CGI reporting may be delayed until the next DRX cycle.

8.1.2.4.18 E-UTRAN TDD-UTRAN FDD measurements with autonomous gaps

The requirements in this section apply only to UE supporting E-UTRA TDD and UTRA FDD.

8.1.2.4.18.1 Identification of a new CGI of UTRA FDD cell with autonomous gaps

The requirements in section 8.1.2.4.17.1 also apply for this section.

8.1.2.4.18.2 CGI Reporting Delay

The requirements in section 8.1.2.4.17.2 also apply for this section.

8.1.2.5 E-UTRAN OTDOA Intra-Frequency RSTD Measurements

All intra-frequency RSTD measurement requirements specified in Sections 8.1.2.5.1 and 8.1.2.5.2 shall apply without DRX as well as for all the DRX cycles specified in 3GPP TS 36.331 [2].

8.1.2.5.1 E-UTRAN FDD Intra-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure intra-frequency RSTD, specified in 3GPP TS 36.214 [4], for at least n=16 cells, including the reference cell, on the same carrier frequency f1 as that of the reference cell within

 $T_{RSTD IntraFreqFDD, E-UTRAN}$ ms as given below (see also Figure 8.1.2.5.1-1):

$$T_{RSTD IntraFreeFDD, E-UTRAN} = T_{PRS} \cdot (M - 1) + \Delta ms$$

where

 $T_{RSTD IntraFredFDD, E-UTRAN}$ is the total time for detecting and measuring at least *n* cells,

 $T_{\rm PRS}$ is the cell-specific positioning subframe configuration period as defined in 3GPP TS 36.211 [16],

M is the number of PRS positioning occasions as defined in Table 8.1.2.5.1-1, where each PRS positioning occasion comprises of N_{PRS} ($1 \le N_{PRS} \le 6$) consecutive downlink positioning subframes defined in 3GPP TS 36.211 [16], and $\lceil n \rceil$

 $\Delta = 160 \cdot \left| \frac{n}{M} \right|$ ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time.

Table 8.1.2.5.1-1: Number of PRS positioning occasions within	T _{RSTD IntraFreqFDD, E-UTRAN}
---	---

	• •	KSTD muarteqrDD, E-OTKAN
Positioning subframe	Number of PRS positioning occasions M	
configuration period $T_{ m PRS}$	f1 ^{Note1}	f1 and f2 Note2
160 ms	16	32
>160 ms	8	16
Note 1: When only intra-frequency RSTD measurements are performed over cells belonging to the		

Note 1: When only intra-frequency RSTD measurements are performed over cells belonging to the serving FDD carrier frequency f1.

Note 2: When intra-frequency RSTD and inter-frequency RSTD measurements are performed over cells belonging to the serving FDD carrier frequency f1 and one inter-frequency carrier frequency f2, respectively.

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells *i* out of at least (*n*-1) neighbor cells within $T_{RSTD IntraFreeFDD, E-UTRAN}$ provided:

 $(\text{PRS } \hat{\text{E}}_{s} / \text{Iot})_{ref} \ge -6 \text{ dB}$ for all Frequency Bands for the reference cell,

 $(\operatorname{PRS} \hat{\mathrm{E}}_{\mathrm{s}} / \operatorname{Iot})_i \ge -13 \text{ dB}$ for all Frequency Bands for neighbour cell *i*,

$$(\text{PRS}\,\hat{\text{E}}_{s} / \text{Iot})_{ref}$$
 and $(\text{PRS}\,\hat{\text{E}}_{s} / \text{Iot})_{i}$ conditions apply for all subframes of at least $L = \frac{M}{2}$ PRS positioning

occasions,

PRP 1,2|dBm according to Annex B.2.5 for a corresponding Band

 $PRS \hat{E}_s / Iot$ is defined as the ratio of the average received energy per PRS RE during the useful part of the symbol to the average received power spectral density of the total noise and interference for this RE, where the ratio is measured over all REs which carry PRS.

The time $T_{RSTD IntraFreqFDD, E-UTRAN}$ starts from the first subframe of the PRS positioning occasion closest in time after both the OTDOA-RequestLocationInformation message and the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in 3GPP TS 36.355 [24], are delivered to the physical layer of the UE as illustrated in Figure 8.1.2.5.1-1.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.1.

If the intra-frequency handover occurs while intra-frequency RSTD measurements are being performed then the UE shall complete the ongoing OTDOA measurement session. The UE shall also meet the intra-frequency OTDOA measurement and accuracy requirements. However in this case the RSTD measurement period

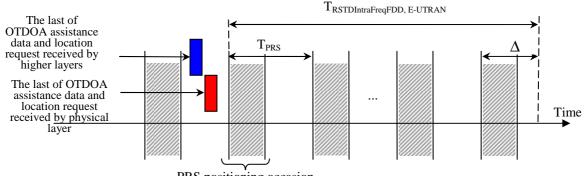
($T_{\text{RSTD IntraFreqFDD, E-UTRAN, HO}}$) shall be according to the following expression:

$$T_{\text{RSTD IntraFreqFDD, E-UTRAN, HO}} = T_{\text{RSTD IntraFreqFDD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{HO}} \qquad ms ,$$

where:

K is the number of times the intra-frequency handover occurs during $T_{RSTD IntraFreqFDD, E-UTRAN, HO}$.

 $T_{\rm HO}$ is the time during which the intra-frequency RSTD measurement may not be possible due to intra-frequency handover; it can be up to [45] ms.



PRS positioning occasion

Figure 8.1.2.5.1-1. Illustration of the RSTD reporting time requirement in an FDD system.

8.1.2.5.1.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP 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: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

8.1.2.5.2 E-UTRAN TDD Intra-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure intra-frequency RSTD, specified in 3GPP TS 36.214 [4], for at least n=16 cells, including the reference cell, on the same carrier frequency f1 as that of the reference cell within

T_{RSTD IntraFreqTDD, E-UTRAN} ms as given below:

$$T_{\text{RSTD IntraFreqTDD, E-UTRAN}} = T_{\text{PRS}} \cdot (M - 1) + \Delta \qquad ms$$

where

 $T_{RSTD IntraFredTDD, E-UTRAN}$ is the total time for detecting and measuring at least *n* cells,

 $T_{\rm PRS}$ is the cell-specific positioning subframe configuration period as defined in 3GPP TS 36.211 [16],

M is the number of PRS positioning occasions as defined in Table 8.1.2.5.2-1, where a PRS positioning occasion is as defined in Section 8.1.2.5.1, and

 $\Delta = 160 \cdot \left| \frac{n}{M} \right|$ ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time.

Table 8.1.2.5.2-1: Number of PRS positioning occasions within $T_{RSTD IntraFreeTDD, E-UTRAN}$

Positioning subframe	Number of PRS p	Number of PRS positioning occasions M	
configuration period $T_{ m PRS}$	f1 ^{Note1}	f1 and f2 Note2	
160 ms	16	32	
>160 ms	8	16	
serving TDD carrier frequency f1. Note 2: When intra-frequency RS	y RSTD measurements are performe TD and inter-frequency RSTD meas rier frequency f1 and one inter-freque	urements are performed over cells	

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells *i* out of at least (*n*-1) neighbor cells within $T_{RSTD IntraFreeTDD, E-UTRAN}$ provided:

 $(\text{PRS } \hat{E}_s / \text{Iot})_{ref} \ge -6 \text{ dB}$ for all Frequency Bands for the reference cell,

 $(\operatorname{PRS} \hat{\mathrm{E}}_{s} / \operatorname{Iot})_{i} \ge -13 \text{ dB}$ for all Frequency Bands for neighbour cell *i*,

 $(\text{PRS}\,\hat{\text{E}}_{s}/\text{Iot})_{ref}$ and $(\text{PRS}\,\hat{\text{E}}_{s}/\text{Iot})_{i}$ conditions apply for all subframes of at least $L = \frac{M}{2}$ PRS positioning

occasions,

PRP 1,2|dBm according to Annex B.2.5 for a corresponding Band

PRS \hat{E}_s / Iot is as defined in Section 8.1.2.5.1.

The time $T_{RSTD IntraFreqTDD, E-UTRAN}$ starts from the first subframe of the PRS positioning occasion closest in time after both the OTDOA-RequestLocationInformation message and the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in 3GPP TS 36.355 [24], are delivered to the physical layer of the UE.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.1.

If the intra-frequency handover occurs while intra-frequency RSTD measurements are being performed then the UE shall complete the ongoing OTDOA measurement session. The UE shall also meet the intra-frequency OTDOA measurement and accuracy requirements. However in this case the RSTD measurement period

 $(T_{RSTD IntraFreqTDD, E-UTRAN, HO})$ shall be according to the following expression:

$$T_{\text{RSTD IntraFreqTDD, E-UTRAN, HO}} = T_{\text{RSTD IntraFreqTDD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{HO}} \qquad ms ,$$

where:

K is the number of times the intra-frequency handover occurs during $T_{RSTD IntraFreqTDD, E-UTRAN, HO}$,

 $T_{\rm HO}$ is the time during which the intra-frequency RSTD measurement may not be possible due to intra-frequency handover; it can be up to [45] ms.

The intra-frequency requirements in this section (8.1.2.5.2) shall apply for all TDD special subframe configurations specified in 3GPP TS 36.211 [16] and for the TDD uplink-downlink configurations as specified in Table 8.1.2.5.2-2.

Table 8.1.2.5.2-2: TDD uplink-downlink subframe configurations applicable for TDD intra-frequency
requirements

PRS Transmission Bandwidth [RB]	Applicable TDD uplink-downlink configurations
6, 15	1, 2, 3, 4 and 5
25, 50, 75, 100	0, 1, 2, 3, 4, 5 and 6
Note: Uplink-downlink configurations are sp	pecified in Table 4.2-2 in 3GPP TS 36.211 [16].

8.1.2.5.2.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP 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: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

8.1.2.6 E-UTRAN Inter-Frequency OTDOA Measurements

All inter-frequency RSTD measurement requirements specified in Sections 8.1.2.6.1-8.1.2.6.4 shall apply when the measurement gap pattern ID # 0 specified in Section 8.1.2.1 is used.

All inter-frequency RSTD measurement requirements specified in Sections 8.1.2.6.1-8.1.2.6.4 shall apply without DRX as well as for all the DRX cycles specified in 3GPP TS 36.331 [2].

8.1.2.6.1 E-UTRAN FDD-FDD Inter-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure inter-frequency RSTD, specified in 3GPP TS 36.214 [4], for at least *n*=16 cells, including the reference cell, within $T_{RSTD InterFreqFDD, E-UTRAN}$ ms as given below:

$$T_{\text{RSTD InterFreqFDD, E-UTRAN}} = T_{\text{PRS}} \cdot (M - 1) + \Delta \qquad ms$$

where

 $T_{RSTD InterFreedFDD, E-UTRAN}$ is the total time for detecting and measuring at least *n* cells,

 T_{PRS} is the the largest value of the cell-specific positioning subframe configuration period, defined in 3GPP TS 36.211 [16], among the measured *n* cells including the reference cell,

M is the number of PRS positioning occasions as defined in Table 8.1.2.6.1-1, where a PRS positioning occasion is as defined in Section 8.1.2.5.1, and

 $\Delta = 160 \cdot \left| \frac{n}{M} \right|$ ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time.

Table 8.1.2.6.1-1: Number of PRS positioning occasions within	T _{RSTD InterFreqFDD E-UTRAN}
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Positioning subframe	Number of PRS positioning occasions M		
configuration period $T_{ m PRS}$	f2 ^{Note1}	f1 and f2 ^{Note2}	
160 ms	16	32	
>160 ms	8	16	
Note 1: When inter-frequency RSTD measurements are performed over the reference cell and neighbour cells, which belong to the FDD inter-frequency carrier frequency f2. Note 2: When inter-frequency RSTD measurements are performed over the reference cell and the neighbour cells, which belong to the serving FDD carrier frequency f1 and the FDD inter-frequency carrier frequency f2 respectively.			

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells *i* out of at least (*n*-1) neighbor cells within $T_{RSTD InterFreeFDD, E-UTRAN}$ provided:

 $\left(\text{PRS } \hat{\text{E}}_{\text{s}} / \text{Iot} \right)_{ref} \ge -6 \text{ dB}$ for all Frequency Bands for the reference cell,

 $(PRS \hat{E}_s / Iot)_i \ge -13 \text{ dB}$ for all Frequency Bands for neighbour cell *i*,

 $(\text{PRS}\,\hat{\text{E}}_{s}/\text{Iot})_{ref}$ and $(\text{PRS}\,\hat{\text{E}}_{s}/\text{Iot})_{i}$ conditions apply for all subframes of at least $L = \frac{M}{2}$ PRS positioning

occasions,

PRP 1,2|dBm according to Annex B.2.6 for a corresponding Band

PRS \hat{E}_{s} / Iot is as defined in Section 8.1.2.5.1.

The time $T_{RSTD InterFreqFDD, E-UTRAN}$ starts from the first subframe of the PRS positioning occasion closest in time after both the OTDOA-RequestLocationInformation message and the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in 3GPP TS 36.355 [24], are delivered to the physical layer of the UE.

If the inter-frequency handover occurs while inter-frequency RSTD measurements are being performed, and the interfrequency carrier on which RSTD is measured becomes the new serving carrier frequency after the inter-frequency handover, the UE shall complete the ongoing OTDOA measurement session. The UE shall also meet the interfrequency OTDOA measurement and accuracy requirements. However in this case the RSTD measurement period

 $(T_{RSTD InterFreeFDD, E-UTRAN, HO})$ shall be according to the following expression:

$$T_{\text{RSTD InterFreqFDD, E-UTRAN, HO}} = T_{\text{RSTD InterFreqFDD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{HO}} \qquad ms ,$$

where:

K is the number of times the inter-frequency handover occurs during $T_{RSTD InterFreqFDD, E-UTRAN, HO}$,

 $T_{\rm HO}$ is the time during which the inter-frequency RSTD measurement may not be possible due to inter-frequency handover; it can be up to [45] ms.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.2.

8.1.2.6.1.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP 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: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

8.1.2.6.2 E-UTRAN TDD-FDD Inter-Frequency OTDOA Measurements

The requirements in section 8.1.2.6.1 also apply for this section, assuming f1 is a TDD frequency and f2 is an FDD frequency.

8.1.2.6.3 E-UTRAN TDD-TDD Inter-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure inter-frequency RSTD, specified in 3GPP TS 36.214 [4], for at least n=16 cells, including the reference cell, within $T_{RSTD InterFreqTDD, E-UTRAN}$ ms as given below:

$$T_{\text{RSTD InterFreqTDD, E-UTRAN}} = T_{\text{PRS}} \cdot (M - 1) + \Delta \qquad ms$$

where

 $T_{RSTD InterFreqTDD, E-UTRAN}$ is the total time for detecting and measuring at least *n* cells,

 $T_{\rm PRS}$ is the largest value of the cell-specific positioning subframe configuration period, defined in 3GPP TS 36.211

[16], among the measured *n* cells including the reference cell,

M is the number of PRS positioning occasions as defined in Table 8.1.2.6.1-1, where a PRS positioning occasion is as defined in Section 8.1.2.5.1, and

 $\Delta = 160 \cdot \left| \frac{n}{M} \right|$ ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time.

Table 8.1.2.6.3-1: Number of PRS positioning occasions within $T_{RSTD InterFreqTDD, E-UTRAN}$

Positioning subframe	Number of PRS positioning occasions M			
configuration period $T_{\rm PRS}$	f2 Note1	f1 and f2 Note2		
160 ms	16	32		
>160 ms	8 16			
Note 1: When inter-frequency RS cells, which belong to the TDD int	er-frequency carrier frequency f2.	over the reference cell and neighbour		

Note 2: When inter-frequency RSTD measurements are performed over the reference cell and the neighbour cells, which belong to the serving TDD carrier frequency f1 and the TDD inter-frequency carrier frequency f2 respectively.

The inter-frequency requirements in this section (8.1.2.6.3) shall apply for all TDD special subframe configurations specified in 3GPP TS 36.211 [16] and for the TDD uplink-downlink configurations as specified in Table 8.1.2.6.3-2.

Table 8.1.2.6.3-2: TDD uplink-downlink subframe configurations applicable for inter-frequency requirements

PRS Transmission Bandwidth [RB]	Applicable TDD uplink-downlink configurations
6, 15	3, 4 and 5
25	1, 2, 3, 4, 5 and 6
50, 75, 100	0, 1, 2, 3, 4, 5 and 6
Note: Uplink-downlink configurations are specified in Table 4.2-2 in 3GPP TS 36.211 [16].	

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells *i* out of at least (*n*-1) neighbor cells within $T_{RSTD InterFreeTDD, E-UTRAN}$ provided:

 $(\text{PRS } \hat{\text{E}}_{s} / \text{Iot})_{ref} \ge -6 \text{ dB}$ for all Frequency Bands for the reference cell,

 $(\operatorname{PRS} \hat{\mathrm{E}}_{s} / \operatorname{Iot})_{i} \ge -13 \operatorname{dB}$ for all Frequency Bands for neighbour cell *i*,

$$(\text{PRS}\,\hat{\text{E}}_{s} / \text{Iot})_{ref}$$
 and $(\text{PRS}\,\hat{\text{E}}_{s} / \text{Iot})_{i}$ conditions apply for all subframes of at least $L = \frac{M}{2}$ PRS positioning

occasions,

PRP $1,2|_{dBm}$ according to Annex B.2.6 for a corresponding Band

PRS \hat{E}_s / Iot is as defined in Section 8.1.2.5.1.

The time $T_{RSTD InterFreqTDD, E-UTRAN}$ starts from the first subframe of the PRS positioning occasion closest in time after both the OTDOA-RequestLocationInformation message and the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in 3GPP TS 36.355 [24], are delivered to the physical layer of the UE.

If the inter-frequency handover occurs while inter-frequency RSTD measurements are being performed, and the interfrequency carrier on which RSTD is measured becomes the new serving carrier frequency after the inter-frequency handover, the UE shall complete the ongoing OTDOA measurement session. The UE shall also meet the inter-

frequency OTDOA measurement and accuracy requirements. However in this case the RSTD measurement period ($T_{RSTD InterFreqTDD, E-UTRAN, HO}$) shall be according to the following expression:

$$T_{\text{RSTD InterFreqTDD, E-UTRAN, HO}} = T_{\text{RSTD InterFreqTDD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{HO}} \qquad ms$$

where:

K is the number of times the inter-frequency handover occurs during $T_{RSTD InterFreqTDD, E-UTRAN, HO}$,

 $T_{\rm HO}$ is the time during which the inter-frequency RSTD measurement may not be possible due to inter-frequency handover; it can be up to [45] ms.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.2.

8.1.2.6.3.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP 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: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

8.1.2.6.4 E-UTRAN FDD-TDD Inter-Frequency OTDOA Measurements

The requirements in section 8.1.2.6.3 also apply for this section, assuming f1 is an FDD frequency and f2 is a TDD frequency.

8.1.2.7 E-UTRAN E-CID Measurements

8.1.2.7.1 E-UTRAN FDD UE Rx-Tx Time Difference Measurements

When no DRX is used the physical layer measurement period of the UE Rx-Tx time difference measurement shall be 200 ms.

When DRX is used in RRC_CONNECTED state the physical layer measurement period ($T_{measure_FDD_UE_Rx_Tx1}$) of the UE Rx-Tx time difference measurement shall be as specified in table 8.1.2.7.1-1.

Table 8.1.2.7.1-1: FDD UE Rx-Tx time difference measurement requirement when DRX is used

DRX cycle length (s)	T _{measure_FDD_UE_Rx_Tx1} (s) (DRX cycles)	
≤0.04	0.2 (Note1)	
0.04 <drx-cycle≤2.56< td=""><td>Note2 (5)</td></drx-cycle≤2.56<>	Note2 (5)	
Note1: Number of DRX cycle depends upon the DRX cycle in use		
Note2: Time depends upon the DRX cycle in use		

If the UE is performing UE Rx-Tx time difference measurement while the PCell is changed due to the handover then the UE shall restart the Rx-Tx measurement on the new cell. In this case the UE shall also meet the UE Rx-Tx time difference measurement and accuracy requirements. However the physical layer measurement period of the UE Rx-Tx measurement shall not exceed $T_{measure_{FDD_{UE_{Rx_{Tx}}}}$ as defined in the following expression:

 $T_{measure_FDD_UE_Rx_Tx3} = (K+1)^*(T_{measure_FDD_UE_Rx_Tx1}) + K^*T_{PCcell_change_handover}$

Where:

K is the number of times the PCell is changed over the measurement period ($T_{measure_FDD_UE_Rx_Tx3}$),

 $T_{PCell_change_handover}$ is the time necessary to change the PCell due to handover; it can be up to 45 ms.

If the UE supporting E-UTRA carrier aggregation when configured with the secondary component carrier is performing UE Rx-Tx time difference measurement while the PCell is changed regardless whether the primary component carrier is changed or not then the UE shall restart the Rx-Tx measurement on the new PCell. In this case the UE shall also meet the UE Rx-Tx time difference measurement and accuracy requirements. However the physical layer measurement period of the UE Rx-Tx measurement shall not exceed $T_{measure FDD UE Rx Tx2}$ as defined in the following expression:

$$T_{\text{measure FDD UE Rx Tx2}} = (N+1)*(T_{\text{measure FDD UE Rx Tx1}}) + N*T_{\text{PCell change CA}}$$

Where:

N is the number of times the PCell is changed over the measurement period (T_{measure_FDD_UE_Rx_Tx2}),

T_{PCell change CA} is the time necessary to change the PCell; it can be up to 25 ms.

The measurement accuracy for the UE Rx-Tx time difference measurement when DRX is used as well as when no DRX is used shall be as specified in the sub-clause 9.1.9.

8.1.2.7.1.1 UE Rx-Tx Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other RRC or LPP 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: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in subclause 9.1.9.

8.1.2.7.2 E-UTRAN TDD UE Rx-Tx Time Difference Measurements

When no DRX is used the physical layer measurement period of the UE Rx-Tx time difference measurement shall be 200 ms.

When DRX is used in RRC_CONNECTED state the physical layer measurement period ($T_{measure_TDD_UE_Rx_Tx1}$) of the UE Rx-Tx time difference measurement shall be as specified in table 8.1.2.7.2-1.

DRX cycle length (s)	T _{measure_TDD_UE_Rx_Tx1} (s) (DRX cycles)	
≤0.04	0.2 (Note1)	
0.04 <drx-cycle≤2.56< td=""><td>Note2 (5)</td></drx-cycle≤2.56<>	Note2 (5)	
Note1: Number of DRX cycle depends upon the DRX cycle in use Note2: Time depends upon the DRX cycle in use		

If the UE is performing UE Rx-Tx time difference measurement while the serving cell is changed due to the handover then the UE shall restart the Rx-Tx measurement on the new cell. In this case the UE shall also meet the UE Rx-Tx time difference measurement and accuracy requirements. However the physical layer measurement period of the UE Rx-Tx measurement shall not exceed $T_{measure_TDD_{UE},Rx_Tx}$ as defined in the following expression:

 $T_{measure_TDD_UE_Rx_Tx3} = (K+1)*(T_{measure_TDD_UE_Rx_Tx1}) + K*T_{PCell_change_handover}$

Where:

K is the number of times the PCell is changed over the measurement period (T_{measure_TDD_UE_Rx_Tx3}),

T_{PCell change handover} is the time necessary to change the PCell due to handover; it can be up to 45 ms.

If the UE supporting E-UTRA carrier aggregation when configured with the secondary component carrier is performing UE Rx-Tx time difference measurement while the PCell is changed regardless whether the primary component carrier is changed or not then the UE shall restart the Rx-Tx measurement on the new PCell. In this case the UE shall also meet the UE Rx-Tx time difference measurement and accuracy requirements. However the physical layer measurement period of the UE Rx-Tx measurement shall not exceed $T_{measure_TDD_UE_Rx_Tx2}$ as defined in the following expression:

 $T_{measure_TDD_UE_Rx_Tx2} = (N+1)^*(T_{measure_TDD_UE_Rx_Tx1}) + N^*T_{PCell_change_CA}$

Where:

N is the number of times the PCell is changed over the measurement period (T_{measure_TDD_UE_Rx_Tx2}),

 $T_{PCell_change_CA}$ is the time necessary to change the PCell; it can be up to 25 ms.

The measurement accuracy for the UE Rx-Tx time difference measurement when DRX is used as well as when no DRX is used shall be as specified in the sub-clause 9.1.9.

8.1.2.7.2.1 UE Rx-Tx Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other RRC or LPP 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: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in subclause 9.1.9.

8.1.2.8 E-UTRAN intra-frequency measurements under time domain measurement resource restriction

The requirements in sections 8.1.2.8.1 and 8.1.2.8.2 shall apply for cells for which time domain measurement resource restriction patterns for performing E-UTRAN FDD intra-frequency measurements and E-UTRAN TDD intra-frequency measurements, respectively, are configured by higher layers [2], provided that also the following additional condition is fulfilled:

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the intra-frequency measurements, and

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

For cells which are not configured for measurements in the subframes indicated by the time-domain measurement resource restriction pattern, the corresponding requirements specified in Section 8.1.2.2 apply.

8.1.2.8.1 E-UTRAN FDD intra-frequency measurements

8.1.2.8.1.1 E-UTRAN intra-frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD intra-frequency cell within

$$T_{\text{identify_intra_eICIC}} = T_{\text{basic_identify_E-UTRA_FDD_eICIC, intra}} \cdot \frac{T_{\text{Measurement_Period_eICIC, Intra}}}{T_{\text{Intra}}} ms$$

where

T_{basic_identify_E-UTRA_FDD_eICIC, intra} is 1000 ms.

 T_{Intra} is the minimum time available for intra-frequency measurements, during the measurement period with an arbitrarily chosen timing. The time is assumed to be available for performing intra-frequency measurements whenever the receiver is guaranteed to be active on the intra-frequency carrier.

A cell shall be considered detectable when

- RSRP related side condition given in Sections 9.1.2.3 and 9.1.2.4 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.8 for a corresponding Band.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_eICIC, Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells, including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least $Y_{measurement_intra_eICIC}$ cells , where $Y_{measurement_intra_eICIC}$ is defined in the following equation. If the UE has identified more than $Y_{measurement_intra_eICIC}$ cells, the UE shall perform measurements of at least 8 identified intra-frequency cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement_intra_eICIC}} = Floor \left\{ X_{\text{basic_measurement_FDD_eICIC}} \cdot \frac{T_{\text{Intra}}}{T_{\text{Measurement_Period_eICIC, Intra}}} \right\} \text{ cells}$$

where

 $X_{basic_measurement_FDD_eICIC} = 8$ (cells)

 $T_{Measurement_Period_eICIC, Intra} = 200$ ms is the measurement period for intra-frequency RSRP and RSRQ measurements.

The measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements shall be as specified in the sub-clauses 9.1.2.3, 9.1.2.4 and 9.1.5.2.

8.1.2.8.1.1.1 Measurement Reporting Requirements

8.1.2.8.1.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.8.1.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.8.1.1.1.3 Event Triggered Reporting.

8.1.2.8.1.1.1.3 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: $2 \times TTI_{DCCH}$. 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 $T_{identify_intra_eICIC}$ defined in Section 8.1.2.8.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_elCIC}$ defined in section 8.1.2.8.1.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_elCIC, Intra}$ provided the timing to that cell has not

changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.8.1.2 E-UTRAN intra-frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within $T_{identify_intra_elCIC}$ as shown in table 8.1.2.8.1.2-1.

Table 8.1.2.8.1.2-1: Requirement to identify a newly detectable FDD intra-frequency cell

DRX cycle length (s)		T _{identify_intra_elClC} (s) (DRX cycles)
≤0.04	4	[1] (Note1)
0.04 <d< td=""><td>RX-</td><td>Note2 ([53])</td></d<>	RX-	Note2 ([53])
cycle≤0.08		
0.128		[4.22] ([33])
0.128 <drx-< td=""><td>Note2 ([28])</td></drx-<>		Note2 ([28])
cycle≤2.56		
Note1:	Number of DRX cycle	
	depends upon the DRX	
	cycle	e in use
Note2:	Time	e depends upon the
DRX		cycle in use

A cell shall be considered detectable when

- RSRP related side condition given in Sections 9.1.2.3 and 9.1.2.4 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.8 for a corresponding Band.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is $T_{measure_intra_eICIC}$ as shown in table 8.1.2.8.1.2-2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intrafrequency cells, including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra_eICIC}$.

Table 8.1.2.8.1.2-2: Requirement to measure FDD intra-frequency cells

DRX cycle length (s)	T _{measure_intra_elCIC} (s) (DRX cycles)
≤0.04	0.2 (Note1)
0.04 <drx-< td=""><td>Note2 (7)</td></drx-<>	Note2 (7)
cycle≤0.16	
0.16 <drx-< td=""><td>Note2 (5)</td></drx-<>	Note2 (5)
cycle≤2.56	
depe	ber of DRX cycle ends upon the DRX e in use
Note2: Time	e depends upon the C cycle in use

The measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements shall be as specified in the sub-clauses 9.1.2.3, 9.1.2.4 and 9.1.5.2.

8.1.2.8.1.2.1 Measurement Reporting Requirements

8.1.2.8.1.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.8.1.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.8.1.2.1.3 Event Triggered Reporting.

8.1.2.8.1.2.1.3 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 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: 2 x TTI_{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 $_{identify_intra_eICIC}$ defined in Section 8.1.2.8.1.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_eICIC}$ defined in section 8.1.2.8.1.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_eICIC}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.8.2 E-UTRAN TDD intra-frequency measurements

8.1.2.8.2.1 E-UTRAN intra-frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable TDD intra-frequency cell within

$$T_{identify_intra_eICIC} = T_{basic_identify_E-UTRA_TDD_eICIC, intra} \cdot \frac{T_{Measurement_Period_eICIC, Intra}}{T_{Intra}} ms$$

where

T_{basic_identify_E-UTRA_TDD_eICIC, intra} is 1000 ms.

T_{Intra} is the minimum time available for intra-frequency measurements, during the measurement period with an arbitrarily chosen timing. The time is assumed to be available for performing intra-frequency measurements whenever the receiver is guaranteed to be active on the intra-frequency carrier.

A cell shall be considered detectable when

- RSRP related side condition given in Sections 9.1.2.3 and 9.1.2.4 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.8 for a corresponding Band.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_eICIC, Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells, including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least $Y_{measurement intra elCIC}$ cells, where $Y_{measurement intra elCIC}$ is defined in the following

equation. If the UE has identified more than $Y_{measurement_intra_eICIC}$ cells, the UE shall perform measurements of at least 8 identified intra-frequency cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement_intra_eICIC}} = Floor \left\{ X_{\text{basic_measurement_TDD_eICIC}} \cdot \frac{T_{\text{Intra}}}{T_{\text{Measurement_Period_eICIC, Intra}}} \right\} \text{ cells}$$

where

 $X_{\text{basic measurement TDD eICIC}} = 8 \text{ (cells)}$

 $T_{Measurement_Period_eICIC, Intra} = 200 \text{ ms}$ is the measurement period for intra-frequency RSRP and RSRQ measurements.

The measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements shall be as specified in the sub-clauses 9.1.2.3, 9.1.2.4 and 9.1.5.2.

8.1.2.8.2.1.1 Measurement Reporting Requirements

8.1.2.8.2.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.8.2.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.8.2.1.1.3 Event Triggered Reporting.

8.1.2.8.2.1.1.3 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 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: 2 x TTI_{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_intra_elCIC} defined in Section 8.1.2.8.2.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_eICIC}$ defined in section 8.1.2.8.2.1 becomes undetectable for a period \leq 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_eICIC, Intra}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.1.2.8.2.2 E-UTRAN intra-frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within $T_{identify_intra_eICIC}$ as shown in table 8.1.2.8.2.2-1.

DRX cycle length (s)		T _{identify_intra_elCIC} (s) (DRX cycles)
≤0.04	1	[1] (Note1)
0.04 <d< td=""><td>RX-</td><td>Note2 ([53])</td></d<>	RX-	Note2 ([53])
cycle≤0	.08	
0.128	3	[4.22] ([33])
0.128 <d< td=""><td>RX-</td><td>Note2 ([28])</td></d<>	RX-	Note2 ([28])
cycle≤2	.56	
Note1:	Num	ber of DRX cycle
	depe	ends upon the DRX
	cycle	e in use
Note2:		e depends upon the
DRX		cycle in use

Table 8.1.2.8.2.2-1: Requirement to identify a newly detectable TDD intra-frequency cell

A cell shall be considered detectable when

- RSRP related side condition given in Sections 9.1.2.3 and 9.1.2.4 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.8 for a corresponding Band.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra_eICIC}$ as shown in table 8.1.2.8.2.2-2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells, including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra_eICIC}$.

Table 8.1.2.8.2.2-2: Requirement to measure TDD intra-frequency cells

DRX cycle length (s)		T _{measure_intra_elCIC} (s) (DRX cycles)
≤0.04	1	0.2 (Note1)
0.04 <drx-< td=""><td>Note2 (7)</td></drx-<>		Note2 (7)
cycle≤0.16		
0.16 <d< td=""><td>RX-</td><td>Note2 (5)</td></d<>	RX-	Note2 (5)
cycle≤2.56		
Note1: Num		ber of DRX cycle
	depe	ends upon the DRX
cycle		e in use.
		e depends upon the cycle in use.

The measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements shall be as specified in the sub-clauses 9.1.2.3, 9.1.2.4 and 9.1.5.2.

8.1.2.8.2.2.1 Measurement Reporting Requirements

8.1.2.8.2.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.1.2.8.2.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.1.2.8.2.2.1.3 Event Triggered Reporting.

8.1.2.8.2.2.1.3 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 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: 2 x TTI_{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 $_{identify_intra_eICIC}$ defined in Section 8.1.2.8.2.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_eICIC}$ defined in section 8.1.2.8.2.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_eICIC}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.2 Capabilities for Support of Event Triggering and Reporting Criteria

8.2.1 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 8.2.2, the UE shall meet the performance requirements defined in section 9.

The UE can be requested to make measurements under different measurement identities defined in 3GPP TS 36.331 [2]. 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 an event. 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.

8.2.2 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 8.2.2-1.

The UE shall be able to support in parallel per category up to E_{cat} reporting criteria according to table 8.2.2-1. If the UE is not configured with SCell carrier frequencies, for the measurement categories belonging to measurements on: E-UTRA intra-frequency cells, E-UTRA inter-frequency cells, and inter-RAT per supported RAT, the UE need not support more than 25 reporting criteria in total. If the UE is configured with SCell carrier frequencies, for the measurements on: E-UTRA intra-frequency cells, E-UTRA inter-frequency cells, and inter-RAT per supported RAT, the UE need not support more than 25 reporting to measurements on: E-UTRA intra-frequency cells, E-UTRA inter frequency cells, and inter-RAT per supported RAT, the UE need not support more than 30 reporting criteria in total.

Measurement category	Ecat	Note
Intra-frequency	9	E-UTRA intra-frequency cells
Intra-frequency UE Rx-Tx time difference	2	Intra-frequency UE Rx-Tx time difference measurements reported to E-UTRAN via RRC and to positioning server via LPP. Applies for UE supporting both LPP and UE Rx-Tx time difference measurement.
Intra-frequency RSTD	1	Intra-frequency RSTD measurement reporting for UE supporting OTDOA; 1 report capable of minimum 16 cell measurements for the intra- frequency
Inter-frequency	7	E-UTRA inter-frequency cells
Inter-frequency RSTD	1	Inter-frequency RSTD measurement reporting for UE supporting OTDOA; 1 report capable of minimum 16 cell measurements for at least one inter-frequency
Inter-RAT (E-UTRAN FDD or TDD, UTRAN FDD, UTRAN TDD, GSM, cdma2000 1 x RTT and HRPD)	5	Only applicable for UE with this (inter-RAT) capability. This requirement ($E_{cat} = 5$) is per supported RAT.
Note: When the UE is configured with SCell carrier frequencies, E _{cat} for Intra-frequency is applied per serving frequency.		

 Table 8.2.2-1: Requirements for reporting criteria per measurement category

8.3 Measurements for E-UTRA carrier aggregation

8.3.1 Introduction

This section contains requirements on UE capabilities for support of E-UTRA carrier aggregation. Requirements in this section are applicable to all carrier aggregation capable UE which have been configured with one downlink Scell. Non configured frequencies may be measured with measurement gaps according to the requirements in section 8.1.2.3 (E-UTRAN inter frequency measurements). Requirements in this section are applicable to both FDD and TDD carrier aggregation.

8.3.2 Measurements of the primary component carrier

Meaurements of cells on the primary component carrier shall meet all applicable requirements (FDD or TDD) in section 8.1.2.2 (E-UTRAN intra frequency measurements)

8.3.3 Measurements of the secondary component carrier

The Secondary component carrier may be activated and deactivated by MAC-CE commands as specified in [17]. The applicable performance requirements depend on whether the Scell on the corresponding frequency is actived or deactivated.

8.3.3.1 Measurements of the secondary component carrier with active SCell

When the SCell is activated, measurement performance requirements for the frequency are those given in section 8.1.2.2(E-UTRAN intra frequency measurements). If common DRX is in use, then the requirements for the secondary component carrier are given by the applicable DRX requirements (FDD or TDD) in section 8.1.2.2, otherwise the non DRX requirements are applicable. The applicable measurement accuracy requirements are in section 9.1.11 (Carrier aggregation measurement accuracy)

8.3.3.2 Measurements of the secondary component carrier with deactivated SCell

This section defines the measurement requirements of the secondary component carrier with deactivated SCell based on the parameter *measCycleSCell* defined in [2].

8.3.3.2.1 E-UTRAN secondary component carrier measurements when no common DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD or TDD cell on the secondary component carrier within $T_{identify_scc}$, according to the parameter *measCycleSCell* where $T_{identify_scc} = 20$ measCycleSCell

A cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.7 for a corresponding Band

The measurement period for deactivated scell measurements is $T_{measure_scc}$ according to the parameter *measCycleSCell* where $T_{measure_scc} = 5$ measCycleSCell. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified cells on the secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_scc}$.

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.11 (Carrier aggregation measurement accuracy)

A UE may reconfigure receiver bandwidth when making measurements of cells on an SCC with deactivated SCell. This may cause interruptions (packet drops) to a PCell which belongs to the same frequency band as the measured secondary component carrier. Interruptions are allowed with up to 0.5% probability of missed ACK/NACK when the *measCycleSCell* is larger than or equal to 640 ms. Otherwise, no interruptions shall be allowed. The requirement considers only missed ACK/NACK due to reconfiguration of the receiver bandwith, and not due to other causes such as as RF impairments or channel conditions.

8.3.3.2.1.1 Measurement Reporting Requirements

8.3.3.2.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.3.3.2.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.3.3.2.1.1.3 Event Triggered Reporting.

8.3.3.2.1.1.3 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: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is 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 $T_{identify_scc}$ defined in Section 8.3.3.2.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_scc}$ defined in section 8.3.3.2.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event

triggered measurement reporting delay shall be less than $T_{measure_scc}$ provided the timing to that cell has not changed more than ± 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.3.3.2.2 E-UTRAN secondary component carrier measurements when common DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD or TDD cell on the secondary component carrier within $T_{identify_scc}$, according to the parameter *measCycleSCell* where $T_{identify_scc} = max(20 \text{ measCycleSCell}, T_{identify_scc1})$. $T_{identify_scc1}$ is given in table 8.3.3.2.2-1.

DRX cycle length (s)		T _{identify_scc1} (s) (DRX cycles)
≤0.	04	0.8 (Note1)
0.04<	DRX-	Note2 (40)
cycle≤0.08		
0.08<	DRX-	Note2(20)
cycle≤2.56		
Note1:	Number of DRX cycle depends	
	upon the DRX cycle in use	
Note2:	Time depends upon the DRX	
cycle in u		use

Table 8.3.3.2.2-1: Requirement for	T _{identify_scc1}
------------------------------------	----------------------------

A cell shall be considered detectable when

- RSRP related side condition given in Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.7 for a corresponding Band

The measurement period for deactivated scell measurements is $T_{measure_scc}$ according to the parameter *measCycleSCell* where $T_{measure_scc} = max(5 measCycleSCell, T_{measure_scc})$. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified cells on the secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_scc}$. $T_{measure_scc1}$ is given in table 8.3.3.2.2-2

Table 8.3.3.2.2-2	Requirement for	T _{measure scc1}
-------------------	-----------------	---------------------------

DRX cycle length (s)	T _{measure_scc1} (s) (DRX cycles)	
≤0.04	0.2 (Note1)	
0.04 <drx-< td=""><td>Note2 (5)</td></drx-<>	Note2 (5)	
cycle≤2.56		
Note1: Number of DRX cycle		
depends upon the DRX cycle in use		
Note2: Time depends upon the DRX		
cycle in use		

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.11 (Carrier aggregation measurement accuracy).

A UE may reconfigure receiver bandwidth when making measurements of cells on an SCC with deactivated SCell. This may cause interruptions (packet drops) to a PCell which belongs to the same frequency band as the measured secondary component carrier. No interruptions while the On Duration timer is running shall be allowed when common DRX is used. The requirement considers only interruptions due to reconfiguration of the receiver bandwith, and not due to other causes such as as RF impairments or channel conditions.

8.3.3.2.2.1 Measurement Reporting Requirements

8.3.3.2.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.

8.3.3.2.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained 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 8.3.3.2.2.1.3 Event Triggered Reporting.

8.3.3.2.2.1.3 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: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is 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 $T_{identify_scc}$ defined in Section 8.3.3.2.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_scc}$ defined in section 8.3.3.2.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_scc}$ provided the timing to that cell has not changed more than ± 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.4 OTDOA RSTD Measurements for E-UTRAN carrier aggregation

8.4.1 Introduction

This section contains RSTD measurement requirements on UE capabilities for support of E-UTRA carrier aggregation. Requirements in this section are applicable to all carrier aggregation capable UE which have been configured with one downlink SCell. Non-configured frequencies may be measured with measurement gaps according to the requirements in section 8.1.2.6, i.e., E-UTRAN inter-frequency RSTD measurement period applies. Requirements in this section are applicable for both FDD and TDD.

8.4.2 Measurements on the primary component carrier

The RSTD measurements on cells belonging to the primary component carrier shall meet all applicable requirements (FDD or TDD) specified in section 8.1.2.5, i.e., E-UTRAN intra-frequency RSTD measurement period applies.

The RSTD measurement accuracy for all the measurements on the primary component carrier shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.12.

If the PCell is changed, regardless whether the primary component carrier is changed or not while the RSTD measurements are being performed on cells belonging to the primary component carrier, then the UE shall complete the ongoing OTDOA measurement session. In case of change of the primary component carrier, the requirements shall apply only if the primary component carrier is swapped with the currently configured secondary component carrier. The UE shall also meet the OTDOA measurement and accuracy requirements for the primary component carrier. However in this case the total RSTD measurement period ($T_{RSTD, E-UTRAN, PCell_change}$) shall be according to the following

expression:

$$T_{\text{RSTD, E-UTRAN, PCell_change}} = T_{\text{RSTD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{PCell_change}} \qquad ms ,$$

where:

K is the number of times the PCell is changed during $T_{RSTD, E-UTRAN, PCell_change}$,

 $T_{\rm PRS}$ is defined in section 8.1.2.5,

- $T_{\text{PCell_change}}$ is the time during which the RSTD measurement may not be possible due to PCell change; it can be up to [25] ms,
- T_{RSTD, E-UTRAN} corresponds to the E-UTRAN intra-frequency RSTD measurement period as specified in section 8.1.2.5.

8.4.3 Measurements on the secondary component carrier

The RSTD measurements when all cells are on the configured secondary component carrier shall meet all applicable requirements (FDD or TDD) specified in section 8.1.2.5, i.e., E-UTRAN intra-frequency RSTD measurement period applies, regardless of whether the Scell on the corresponding frequency is activated or deactivated by the MAC-CE commands as specified in [17].

The RSTD measurement accuracy for all the measurements on the secondary component carrier shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.12.

If the PCell is changed, regardless whether the primary component carrier is changed or not while the RSTD measurements are being performed on cells belonging to the secondary component carrier, then the UE shall complete the ongoing OTDOA measurement session. In case of change of the primary component carrier, the requirements shall apply only if the primary component carrier is swapped with the currently configured secondary component carrier. The UE shall also meet the OTDOA measurement and accuracy requirements for the secondary component carrier.

However in this case the total RSTD measurement period ($T_{RSTD, E-UTRAN, PCell_change}$) shall be according to the following expression:

$$T_{\text{RSTD, E-UTRAN, PCell_change}} = T_{\text{RSTD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{PCell_change}} \qquad ms$$

where:

K is the number of times the PCell is changed during $T_{RSTD, E-UTRAN, PCell_change}$,

 $T_{\rm PRS}$ is defined in section 8.1.2.5,

- $T_{\text{PCell_change}}$ is the time during which the RSTD measurement may not be possible due to PCell change; it can be up to [25] ms,
- T_{RSTD, E-UTRAN} corresponds to the E-UTRAN intra-frequency RSTD measurement period as specified in section 8.1.2.5.

8.4.4 Measurements on both primary component carrier and secondary component carrier

The RSTD measurements of cells on both primary component carrier and configured secondary component carrier shall meet all applicable requirements (FDD or TDD) specified in section 8.1.2.6, i.e., E-UTRAN inter-frequency RSTD measurement period applies regardless of whether the SCell on the corresponding frequency is activated or deactivated by the MAC-CE commands as specified in [17], with the following exceptions

- the number of PRS positioning occasions is as specified in Table 8.4.4-1 shall apply, and
- TDD uplink-downlink subframes configurations as specified in Section 8.1.2.5.2, Table 8.1.2.5.2-2 shall apply.

Table 8.4.4-1: Number of PRS positioning occasions within measurement period

Positioning subframe configuration period $T_{\rm PRS}$	Number of PRS positioning occasions M
160 ms	32
>160 ms	16

The RSTD measurement accuracy for all the measurements on both primary component carrier and the secondary component carrier shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.12.

If the PCell is changed regardless whether the primary component carrier is changed or not while the RSTD measurements are being performed on cells belonging to both the primary component carrier and the secondary component carrier then the UE shall complete the ongoing OTDOA measurement session. In case of change of the primary component carrier, the requirements shall apply only if the primary component carrier is swapped with the currently configured secondary component carrier. The UE shall also meet the OTDOA measurement and accuracy requirements for the primary and secondary component carrier. However in this case the total RSTD measurement period ($T_{RSTD, E-UTRAN, PCell change}$) shall be according to the following expression:

 $T_{\text{RSTD, E-UTRAN, PCell_change}} = T_{\text{RSTD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{PCell_change}} \qquad ms ,$

where:

K is the number of times the PCell is changed during $T_{RSTD, E-UTRAN, PCell_change}$,

 $T_{\rm PRS}$ is defined in section 8.1.2.6,

 $T_{\text{PCell_change}}$ is the time during which the RSTD measurement may not be possible due to PCell change; it can be up to [25] ms,

 $T_{RSTD, E-UTRAN}$ corresponds to the E-UTRAN intra-frequency RSTD measurement period as specified in section 8.1.2.6 with the exception that the number of PRS positioning occasions is as specified in Table 8.4.4-1.

9 Measurements performance requirements for UE

One of the key services provided by the physical layer is the measurements used to trigger or perform a multitude of functions. Both the UE and the E-UTRAN are required to perform measurements. The physical layer measurement model and a complete list of measurements are specified in [25] and [22] respectively. The physical layer measurements are described and defined in [4]. In this clause for each measurement the relevant requirements on the measurement period, reporting range, granularity and performance in terms of accuracy are specified.

Since the UE reference sensitivity requirements are different depending on supported band, this is noted in each case with definition of the range Io for each frequency band. Definitions of each frequency bands can be found in [5].

The accuracy requirements in this clause are applicable for AWGN radio propagation conditions and assume independent interference (noise) at each receiver antenna port.

9.1 E-UTRAN measurements

9.1.1 Introduction

The requirements in this clause are applicable for a UE:

- in state RRC_CONNECTED
- performing measurements with appropriate measurement gaps as defined in Section 8.1.2.1.

- 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 [25].

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 higher layer filtering disabled.

Note: For the requirements in the following sections, similar Release 8 and 9 requirements apply for time domain measurements restriction under colliding CRS with ABS configured in non-MBSFN subframes.

9.1.2 Intra-frequency RSRP Accuracy Requirements

9.1.2.1 Absolute RSRP Accuracy

The requirements for absolute accuracy of RSRP in this section apply to a cell on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.2.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.1 for a corresponding Band

Table 9.1.2.1-1: RSRP Intra frequency a	absolute accuracy
---	-------------------

Parameter Unit		Accuracy [dB]		Conditions ¹					
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 41	Band 25	Bands 3, 8, 12, 13, 14, 17, 20, 22	Bands	
				lo	lo	lo	lo	I	
RSRP for Ês/lot ≥	dBm			-121dBm/15kHz	-119dBm/15kHz	-117.5dBm/15kHz	-118dBm/15kHz	-120dBi	
-6 dB		±6	±9	70dBm/	70dBm/	70dBm/	70dBm/	7(
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWc	
RSRP for Ês/lot ≥	dBm			-70dBm/	-70dBm/	-70dBm/	-70dBm/	-700	
-6 dB		±8	144	BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Char}	
		Ξ8	±11	50dBm/	50dBm/	50dBm/ BW _{Channel}	50dBm/	50c	
				BW _{Channel}	BW _{Channel}		BW _{Channel}	BW	

Note 1: Io is assumed to have constant EPRE across the bandwidth.

9.1.2.2 Relative Accuracy of RSRP

The relative accuracy of RSRP is defined as the RSRP measured from one cell compared to the RSRP measured from another cell on the same frequency.

The accuracy requirements in Table 9.1.2.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP1,2|_{dBm} according to Annex B.3.8 for a corresponding Band.

Parameter	Unit	Accuracy [dB]		Conditions ¹						
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 41	Band 25	Bands 3, 8, 12, 13, 14, 17, 20, 22	Bands		
				lo	lo	lo	lo	I		
RSRP for Ês/lot ≥	dBm	±2	±3	-121dBm/15kHz	-119dBm/15kHz	-117.5dBm/15kHz	-118dBm/15kHz	-120dBr		
-3 dB				50dBm/	50dBm/	50dBm/	50dBm/	5(
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWc		
RSRP for Ês/lot ≥	dBm	±3	±3	-121dBm/15kHz	-119dBm/15kHz	-117.5dBm/15kHz	-118dBm/15kHz	-120dBr		
-6 dB				50dBm/	50dBm/	50dBm/	50dBm/	5(
				BWChannel	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWo		

Note 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells.to which the requirement applies.

9.1.2.3 Absolute RSRP Accuracy under Time Domain Measurement Resource Restriction

The requirements for absolute accuracy of RSRP in this section shall apply to a cell on the same frequency as that of the serving cell when a time domain measurement resource restriction pattern for performing RSRP measurements on this cell is configured by higher layers [2].

The accuracy requirements in Table 9.1.2.3-1 are valid under the following conditions:

Cell specific reference signals in the measured cell are transmitted either from one, two or four antenna ports,

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled,

RSRP|_{dBm} according to Annex B.3.9 for a corresponding Band,

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the RSRP measurement,

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

Table 9.1.2.3-1: RSRP Intra frequency absolute accuracy under time domain measurement resource
restriction

Parameter	Unit	Accura	cy [dB]		Condi	tions ^{1,2}	
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 24, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43	Bands 2, 5, 7, 41	Bands 3, 8, 12, 13, 14, 17, 20, 22	Bands 9
				lo	lo	lo	lo
RSRP for Ês/lot ≥	dBm	±6	±9	-	-	-	-
[-4] dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz
				70dBm/	70dBm/	70dBm/	70dBm/
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}
RSRP for Ês/lot ≥	dBm	±8	±11	-70dBm/	-70dBm/	-70dBm/	-70dBm/
[-4] dB				BW _{Channel}	BWChannel	BW _{Channel}	BW _{Channel}
				50dBm/	50dBm/	50dBm/	50dBm/
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}
Note 1: Io is ass	sumed to	o have consta	nt EPRE acro	ss the bandwidth			
Note 2: lo is def	fined over	er REs in subf	rames indicate	ed by the time do	main measurem	ent resource rest	riction pattern
configui	red for p	erforming RSI	RP measurem	ents of this cell.			

9.1.2.4 Relative Accuracy of RSRP under Time Domain Measurement Resource Restriction

The requirements for relative accuracy of RSRP in this section shall apply to a cell on the same frequency as that of the serving cell when a time domain measurement resource restriction pattern for performing RSRP measurements for this cell is configured by higher layers [2].

The accuracy requirements in Table 9.1.2.4-1 are valid under the following conditions:

Cell specific reference signals in the measured cell are transmitted either from one, two or four antenna ports,

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled,

RSRP1,2|dBm according to Annex B.3.10 for a corresponding Band,

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the RSRP measurement,

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

Table 9.1.2.4-1: RSRP Intra frequency relative accuracy under time domain measurement resource restriction

Parameter	Unit	Accura	cy [dB]	Conditions ^{1,2,3}				
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19,		Bands 3, 8, 12, 13, 14, 17, 20,	Band 9, 42, 43	
				21, 24, 33, 34, 35, 36, 37, 38, 39, 40		22		
				lo	lo	lo	lo	
RSRP for Ês/lot ≥	dBm	±2	±3	-	-	-	-	
[-2] dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz	
				50dBm/	50dBm/	50dBm/	50dBm/	
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	
RSRP for Ês/lot ≥	dBm	±3	±3	-	-	-	-	
[-4] dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz	
				50dBm/	50dBm/	50dBm/	50dBm/	
				BW _{Channel}	BW _{Channel}	BW Channel	BW _{Channel}	
				ss the bandwidth				
				t of the pair of cel				
				ed by the time do	main measurem	ent resource rest	riction pattern	
configu	red for p	erforming RSF	RP measurem	ents of this cell.				

9.1.3 Inter-frequency RSRP Accuracy Requirements

9.1.3.1 Absolute RSRP Accuracy

The requirements for absolute accuracy of RSRP in this section apply to a cell that has different carrier frequency from the serving cell.

The accuracy requirements in Table 9.1.3.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.3 for a corresponding Band

Parameter	Unit	Accura	cy [dB]		Conditions ¹					
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 41	Band 25	Bands 3, 8, 12, 13, 14, 17, 20, 22	Bands		
				lo	lo	lo	lo	I		
RSRP for Ês/lot ≥	dBm	±6	±9	-121dBm/15kHz	-119dBm/15kHz	-117.5dBm/15kHz	-118dBm/15kHz	-120dBı		
-6 dB				70dBm/	70dBm/	70dBm/	70dBm/	7(
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWc		
RSRP for Ês/lot ≥	dBm	±8	±11	-70dBm/	-70dBm/	-70dBm/	-70dBm/	-700		
-6 dB				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Chai}		
				50dBm/	50dBm/	50dBm/ BW _{Channel}	50dBm/	50c		
				BW _{Channel}	BW _{Channel}		BW _{Channel}	BWc		
Note 1: lo is as	sumed t	o have const	ant EPRE ad	BW _{Channel} cross the bandwid			BW _{Channel}	BWc		

 Table 9.1.3.1-1: RSRP Inter frequency absolute accuracy

9.1.3.2 Relative Accuracy of RSRP

The relative accuracy of RSRP in inter frequency case is defined as the RSRP measured from one cell compared to the RSRP measured from another cell on a different frequency.

The accuracy requirements in Table 9.1.3.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP1,2|dBm according to Annex B.3.4 for a corresponding Band

$$\left|RSRP1\right|_{dBm} - RSRP2\right|_{dBm} \le 27dB$$

| Channel 1_Io -Channel 2_Io | \leq 20 dB

Parameter Unit		nit Accuracy [o								
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 41	Band 25	Bands 3, 8, 12, 13, 14, 17, 20, 22	Bands		
				lo	lo	lo	lo	I		
RSRP for Ês/lot ≥	dBm	±6	±6	-121dBm/15kHz	-119dBm/15kHz	-117.5dBm/15kHz	-118dBm/15kHz	-120dBı		
-6 dB				50dBm/	50dBm/	50dBm/	50dBm/	5(
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWc		

Note 1: Io is assumed to have constant EPRE across the bandwidth.

Note 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells.to which the requirement applies.

9.1.4 RSRP Measurement Report Mapping

The reporting range of RSRP is defined from -140 dBm to -44 dBm with 1 dB resolution.

The mapping of measured quantity is defined in Table 9.1.4-1. The range in the signalling may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
RSRP_00	RSRP < -140	dBm
RSRP_01	-140 ≤ RSRP < -139	dBm
RSRP_02	-139 ≤ RSRP < -138	dBm
RSRP_95	-46 ≤ RSRP < -45	dBm
RSRP_96	-45 ≤ RSRP < -44	dBm
RSRP_97	-44 ≤ RSRP	dBm

Table 9.1.4-1: RSRP measurement report mapping

9.1.5 Intra-frequency RSRQ Accuracy Requirements

9.1.5.1 Absolute RSRQ Accuracy

The requirements for absolute accuracy of RSRQ in this section apply to a cell on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.5.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.1 for a corresponding Band

Parameter	Unit Accuracy [dB]		Conditions ¹						
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 41	Band 25	Bands 3, 8, 12, 13, 14, 17, 20, 22	Bands	
				lo	lo	lo	lo	I	
RSRQ when	dBm	±2.5	±4	-121dBm/15kHz	-119dBm/15kHz	-117.5dBm/15kHz	-118dBm/15kHz	-120dBi	
RSRP Ês/lot ≥ -3				50dBm/	50dBm/	50dBm/	50dBm/	5(
dB				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWc	
RSRQ when	dBm	±3.5	±4	-121dBm/15kHz		-117.5dBm/15kHz	-118dBm/15kHz	-120dBr	
RSRP Ês/lot ≥ -6				50dBm/	50dBm/	50dBm/	50dBm/	5(
dB				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWc	

 Table 9.1.5.1-1: RSRQ Intra frequency absolute accuracy

Note 1: Io is assumed to have constant EPRE across the bandwidth.

9.1.5.2 Absolute RSRQ Accuracy under Time Domain Measurement Resource Restriction

The requirements for absolute accuracy of RSRQ in this section shall apply to a cell on the same frequency as that of the serving cell when a time domain measurement resource restriction pattern for performing RSRQ measurements of this cell is configured by higher layers [2].

The accuracy requirements in Table 9.1.5.2-1 are valid under the following conditions:

Cell specific reference signals in the measured cell are transmitted either from one, two or four antenna ports,

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled,

 $RSRP|_{dBm}$ according to Annex B.3.9 for a corresponding Band,

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the RSRQ measurement,

The RSRQ measurement is not performed in any subframe other than those indicated by the time domain measurement resource restriction pattern configured for the measured cell,

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

Table 9.1.5.2-1: RSRQ Intra frequency absolute accuracy under time domain measurement resource restriction

Parameter	Unit	Accura	acy [dB] Conditions ^{1,2}				
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 24, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 41	Bands 3, 8, 12, 13, 14, 17, 20, 22	Bands 9, 42, 43
				lo	lo	lo	lo
RSRQ when RSRP	dBm	± 2.5	± 4	-	-	-	-
Ês/lot ≥ [-2] dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz
				50dBm/	50dBm/	50dBm/	50dBm/
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}
RSRQ when RSRP	dBm	± 3.5	± 4	-	-	-	-
Ês/lot ≥ [-4] dB				121dBm/15kHz	119dBm/15kHz	118dBm/15kHz	120dBm/15kHz
				50dBm/	50dBm/	50dBm/	50dBm/
				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}
Note 1: lo is assur	ned to ha	ave constant	EPRE acros	s the bandwidth.			
				d by the time do ents of this cell.	main measureme	ent resource rest	riction pattern

9.1.6 Inter-frequency RSRQ Accuracy Requirements

9.1.6.1 Absolute RSRQ Accuracy

The requirements for absolute accuracy of RSRQ in this section apply to a cell that has different carrier frequency from the serving cell.

The accuracy requirements in Table 9.1.6.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.3 for a corresponding Band

Parameter	Unit	Accura	cy [dB]	Conditions ¹						
		Normal condition	Extreme condition	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 41	Band 25	Bands 3, 8, 12, 13, 14, 17, 20, 22	Bands		
				lo	lo	lo	lo	I		
RSRQ when	dBm	±2.5	±4	-121dBm/15kHz	-119dBm/15kHz	-117.5dBm/15kHz	-118dBm/15kHz	-120dBr		
RSRP Ês/lot > -3				50dBm/	50dBm/	50dBm/	50dBm/	5(
dB				BW _{Channel}	BW _{Channel}	BW Channel	BW Channel	BWc		
RSRQ when	dBm	±3.5	±4	-121dBm/15kHz		-117.5dBm/15kHz	-118dBm/15kHz	-120dBr		
RSRP Ês/lot ≥ -6				50dBm/	50dBm/	50dBm/	50dBm/	5(
dB				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWa		

9.1.6.2 Relative Accuracy of RSRQ

The relative accuracy of RSRQ in inter frequency case is defined as the RSRQ measured from one cell compared to the RSRQ measured from another cell on a different frequency.

The accuracy requirements in Table 9.1.6.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

RSRP1,2|dBm according to Annex B.3.4 for a corresponding Band

 $\left|RSRP1\right|_{dBm} - RSRP2\right|_{dBm} \le 27 dB$

| Channel 1_Io -Channel 2_Io | \leq 20 dB

Parameter	Unit	Accura	cy [dB]			Conditions ¹		
		Normal condition	Extreme condition	RSRQ is on Bands 1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38, 39, 40	RSRQ is on Bands 2, 5, 7, 41	RSRQ is on Band 25	RSRQ is on Bands 3, 8, 12, 13, 14, 17, 20, 22	RSRC Bands
				lo	lo	lo	lo	I
RSRQ when	dBm	±3	±4	-121dBm/15kHz	-119dBm/15kHz	-117.5dBm/15kHz	-118dBm/15kHz	-120dBi
RSRP Ês/lot > -3				50dBm/	50dBm/	50dBm/	50dBm/	5(
dB				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWc
RSRQ when	dBm	±4	±4	-121dBm/15kHz	-119dBm/15kHz	-117.5dBm/15kHz	-118dBm/15kHz	-120dBi
RSRP Ês/lot ≥ -6				50dBm/	50dBm/	50dBm/	50dBm/	5(
dB				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWc

Note 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells.to which the requirement applies.

9.1.7 RSRQ Measurement Report Mapping

The reporting range of RSRQ is defined from -19.5 dB to -3 with 0.5 dB resolution.

The mapping of measured quantity is defined in table 9.1.7-1. The range in the signalling may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
RSRQ_00	RSRQ < -19.5	dB
RSRQ_01	-19.5 ≤ RSRQ < -19	dB
RSRQ_02	-19 ≤ RSRQ < -18.5	dB
RSRQ_32	-4 ≤ RSRQ < -3.5	dB
RSRQ_33	-3.5 ≤ RSRQ < -3	dB
RSRQ_34	-3 ≤ RSRQ	dB

Table 9.1.7-1: RSRQ measured	urement report	mapping
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9.1.8 **Power Headroom**

The requirements in this section shall apply for power headroom Type 1 and for power headroom Type 2, which are specified in section 5.1.1.2 in [3].

For a UE not configured with a secondary cell, the power headroom provides the serving eNB with information about the differences between the UE configured maximum output power (P_{CMAX}) defined in TS 36.101 [5] and the estimated

power for UL-SCH transmission of the serving cell [3]. In this case the UE shall meet requirements for power headroom Type 1.

For a UE configured with a secondary cell, the power headroom provides the serving eNB with information about the differences between the UE configured maximum output power ($P_{CMAX,c}$) defined in TS 36.101[5] and the estimated power for UL-SCH transmission per activated serving cell c, or the estimated power for simultaneous PUSCH and PUCCH transmission on PCell [3]. In this case the UE shall meet requirements for both power headroom Type 1 and Type 2.

9.1.8.1 Period

The reported power headroom shall be estimated over 1 subframe.

When *extendedPHR* is not configured [17], the Type 1 power headroom shall be estimated for the primary serving cell as defined in section 5.1.1.2 in TS 36.213 [3].

When *extendedPHR* is configured [17], the Type 1 and Type 2 power headroom shall be estimated for each activated serving cell with configured uplink as defined in section 5.1.1.2 in TS 36.213 [3].

9.1.8.2 Reporting Delay

The power headroom reporting delay is defined as the time between the beginning of the power headroom reference period and the time when the UE starts transmitting the power headroom over the radio interface. The reporting delay of the power headroom shall be 0 ms, which is applicable for all configured triggering mechanisms for power headroom reporting.

9.1.8.3 Void

9.1.8.4 Report Mapping

The power headroom reporting range is from -23 ...+40 dB. Table 9.1.8.4-1 defines the report mapping.

Reported value	Measured quantity value (dB)
POWER_HEADROOM_0	-23 ≤ PH < -22
POWER_HEADROOM_1	-22 ≤ PH < -21
POWER_HEADROOM_2	-21 ≤ PH < -20
POWER_HEADROOM_3	-20 ≤ PH < -19
POWER_HEADROOM_4	-19 ≤ PH < -18
POWER_HEADROOM_5	-18 ≤ PH < -17
POWER_HEADROOM_57	$34 \le PH < 35$
POWER_HEADROOM_58	$35 \le PH < 36$
POWER_HEADROOM_59	36 ≤ PH < 37
POWER_HEADROOM_60	37 ≤ PH < 38
POWER_HEADROOM_61	38 ≤ PH < 39
POWER_HEADROOM_62	39 ≤ PH < 40
POWER_HEADROOM_63	PH ≥ 40

Table 9.1.8.4-1: Power headroom report mapping

9.1.9 UE Rx – Tx time difference

9.1.9.1 Measurement Requirement

NOTE: This measurement is used for UE positioning purposes.

The UE RX-TX time difference is measured from the Pcell.

The accuracy requirements in Table 9.1.9.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

No changes to the uplink transmission timing are applied during the measurement period.

RSRP_{dBm} according to Annex B.3.5 for a corresponding Band

Table 9.1.9.1-1: UE Rx – Tx time difference measurement accuracy
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Parameter	Downlink	Unit	Accuracy			Conditions		
	Bandwidth [MHz]		[Ts]	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 41	Bands 25	Bands 3, 8, 12, 13, 14, 17, 20, 22	Bands (
				lo	lo	lo	lo	I
UE RX-TX	≤ 3 MHz	Ts	±20	-121dBm/15kHz	-119dBm/15kHz	-117.5dBm/15kHz	-118dBm/15kHz	-120dBr
time difference	≥ 5 MHz		±10	50dBm/	50dBm/	50dBm/	50dBm/	5(
for Ês/lot ≥ -				BW _{Channel}	BW _{Channel}	BW _{Channel}	BW _{Channel}	BWc
3dB								
Note 1: Io is a	assumed to ha	ave const	tant EPRE ad	cross the bandwid	lth.			
Nata O. Tala	the heats time!	المفاحب بمح	ation and im TO 4	00.044				

Note 2: Ts is the basic timing unit defined in TS 36.211.

9.1.9.2 Measurement Report mapping

The reporting range of UE Rx - Tx time difference is defined from 0 to $20472T_s$ with $2T_s$ resolution for UE Rx - Tx time difference less than $4096T_s$ and 8Ts for UE Rx - Tx time difference equal to or greater than $4096T_s$.

The mapping of measured quantity is defined in Table 9.1.9.2-1.

Table 9.1.9.2-1: UE R>	- Tx time difference measurement	report mapping

Reported value	Measured quantity value	Unit
RX-TX_TIME_DIFFERENCE_0000	T _{UE Rx-Tx} < 2	Ts
RX-TX_TIME_DIFFERENCE_0001	$2 \le T_{UE Rx-Tx} < 4$	Ts
RX-TX_TIME_DIFFERENCE_0002	$4 \le T_{UE Rx-Tx} < 6$	Ts
RX-TX_TIME_DIFFERENCE_2046	$4092 \le T_{UE Rx-Tx} < 4094$	Ts
RX-TX_TIME_DIFFERENCE_2047	$4094 \le T_{UE Rx-Tx} < 4096$	Ts
RX-TX_TIME_DIFFERENCE_2048	$4096 \le T_{UE Rx-Tx} < 4104$	Ts
RX-TX_TIME_DIFFERENCE_2049	$4104 \le T_{UE Rx-Tx} < 4112$	Ts
RX-TX_TIME_DIFFERENCE_4093	$20456 \le T_{UE Rx-Tx} < 20464$	Ts
RX-TX_TIME_DIFFERENCE_4094	$20464 \le T_{UE Rx-Tx} < 20472$	Ts
RX-TX_TIME_DIFFERENCE_4095	$20472 \le T_{UE Rx-Tx}$	Ts

9.1.10 Reference Signal Time Difference (RSTD)

NOTE: This measurement is used for UE positioning purposes.

9.1.10.1 Intra-Frequency Accuracy Requirement

The accuracy requirements in Table 9.1.10.1-1 shall apply without DRX as well as for all the DRX cycles specified in 3GPP TS 36.331 [2].

The accuracy requirements in Table 9.1.10.1-1 are valid under the following conditions:

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

PRP 1,2_{|dBm} according to Annex B.3.6 for a corresponding Band

There are no measurement gaps overlapping with the PRS subframes of the measured cell.

The parameter expected RSTDU ncertainty signalled over LPP by E-SMLC as defined in 3GPP TS 36.355 [24] is less than 5 μ s.

Parameter	Minimum PRS	Minimum	Unit	Accuracy			Conditions	
	bandwidth	number		[Ts]	Bands 1, 4,	Bands 2, 5,	Band 25	Bands
	between the	of			6, 10, 11,	7, 41		3, 8, 12, 13,
	reference cell	available			18, 19, 21,			14, 17, 20,
	and the	measurement			23, 24, 33,			22
	measured	subframes			34, 35, 36,			
	neighbour cell	between the			37, 38, 39,			
	[RB]	reference cell			40			
		and the					lo	
		measured neighbour cell			lo	lo		lo
RSTD for (PRS	≥6	6	Ts	±15	-121dBm	-119dBm	-117.5dBm	-118dBm
Ês/lot) _{ref} ≥ -6dB	≥25	≥2		±6	/15kHz	/15kHz	/15kHz	/15kHz
and (PRS	≥50							
Ês/lot) _i ≥ -13dB	_50	≥1		±5	-50dBm/	-50dBm/	-50dBm/	-50dBm/
					BW _{Channel}	BWChannel	BWChannel	BW _{Channel}

Table 9.1.10.1-1: RSTD measurement accuracy

Note 1: Io is assumed to have constant EPRE across the bandwidth.

Note 2: Ts is the basic timing unit defined in TS 36.211 [16].

Note 3: PRS bandwidth is as indicated in prs-Bandwidth in the OTDOA assistance data defined in [24].

9.1.10.2 Inter-Frequency Accuracy Requirement

The accuracy requirements in Table 9.1.10.2-1 shall apply without DRX as well as for all the DRX cycles specified in 3GPP TS 36.331 [2].

The accuracy requirements in Table 9.1.10.2-1 are valid under the following conditions:

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled.

PRP $1,2|_{dBm}$ according to Annex B.3.7 for a corresponding Band

There are no measurement gaps overlapping with the PRS subframes in cells belonging to the serving carrier frequency.

The parameter expected RSTDU ncertainty signalled over LPP by E-SMLC as defined in 3GPP TS 36.355 [24] is less than 5 μ s.

Parameter	Minimum PRS	Minimum	Unit	Accuracy			Conditions	
	bandwidth between the reference cell and the measured neighbour cell [RB]	number of available measurement subframes between the reference cell		[Ts]	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38, 39, 40	Bands 2, 5, 7, 41	Band 25	Bands 3, 8, 12, 13 14, 17, 20, 22
		and the measured neighbour cell			lo	lo	lo	lo
RSTD for (PRS	≥6	≥4	Ts	±21	-121dBm	-119dBm	-117.5dBm	-118dBm
Ês/lot) _{ref} ≥ -6dB	≥25	≥2		±10	/15kHz	/15kHz	/15kHz	/15kHz
and (PRS Ês/lot) _i ≥ -13dB	≥50	≥1		±9	 -50dBm/ BW _{Channel}	 -50dBm/ BW _{Channel}	 -50dBm/ BW _{Channel}	 -50dBm/ BW _{Channel}

Note 2: Ts is the basic timing unit defined in TS 36.211 [16].

Note 3: PRS bandwidth is as indicated in prs-Bandwidth in the OTDOA assistance data defined in [24].

9.1.10.3 RSTD Measurement Report Mapping

The reporting range of RSTD is defined from $-15391T_s$ to $15391T_s$ with $1T_s$ resolution for absolute value of RSTD less or equal to $4096T_s$ and 5Ts for absolute value of RSTD greater than $4096T_s$.

The mapping of measured quantity is defined in Table 9.1.10.3-1.

Table 9.1.10.3-1: RSTD report mapping

Reported Value	Measured Quantity Value	Unit
RSTD_0000	-15391 > RSTD	T _s
RSTD_0001	-15391 ≤ RSTD < -15386	T _s
RSTD_2258	-4106 ≤ RSTD < -4101	Ts
RSTD_2259	-4101 ≤ RSTD < -4096	Ts
RSTD_2260	-4096 ≤ RSTD < -4095	Ts
RSTD_2261	-4095 ≤ RSTD < -4094	Ts
RSTD_6353	-3 ≤ RSTD < -2	Ts
RSTD_6354	-2 ≤ RSTD < -1	Ts
RSTD_6355	$-1 \le RSTD \le 0$	Ts
RSTD_6356	0 < RSTD ≤ 1	Ts
RSTD_6357	1 < RSTD ≤ 2	Ts
RSTD_6358	2 < RSTD ≤ 3	Ts
RSTD_10450	4094 < RSTD ≤ 4095	Ts
RSTD_10451	4095 < RSTD ≤ 4096	Ts
RSTD_10452	4096 < RSTD ≤ 4101	Ts
RSTD_10453	4101 < RSTD ≤ 4106	Ts
RSTD_12709	15381 < RSTD ≤ 15386	Ts
RSTD_12710	15386 < RSTD ≤ 15391	Ts
RSTD_12711	15391 < RSTD	Ts

9.1.11 Carrier aggregation measurement accuracy

This section contains requirements on UE capabilities for support of E-UTRA carrier aggregation. Requirements in this section are applicable to all carrier aggregation capable UEs which have been configured with a downlink Scell. Note : This section covers measurement accuracy requirements for frequencies corresponding to those used for the PCell and SCell; measurements of any other frequency are considered to be inter-frequency measurements covered by the accuracy requirements in section 9.1.3 and 9.1.6

9.1.11.1 Primary component carrier accuracy requirement

RSRP and RSRQ measurements of cells on the primary component carrier shall meet the intrafrequency absolute accuracy requirements in sections 9.1.2.1 and 9.1.5.1. Comparisons between RSRP of cells on the primary component carrier shall also meet the intra-frequency relative accuracy requirements in sections 9.1.2.2.

9.1.11.2 Secondary component carrier accuracy requirement

RSRP and RSRQ measurements of cells on the secondary component carrier shall meet the intrafrequency absolute accuracy requirements in sections 9.1.2.1 and 9.1.5.1. Comparisons between RSRP of cells on the secondary component carrier shall meet the intra-frequency relative accuracy requirements in sections 9.1.2.2

9.1.11.3 Primary and secondary component carrier relative accuracy requirement

When measurements of cells on the primary component carrier are compared with measurements of cells on the secondary component carrier, the applicable relative accuracy requirements are the RSRP and RSRQ inter-frequency accuracy requirements in sections 9.1.3.2 and 9.1.6.2.

9.1.12 Reference Signal Time Difference (RSTD) Measurement Accuracy Requirements for Carrier Aggregation

This section contains RSTD measurement accuracy requirements for a UE configured with a downlink secondary cell. The UE may operate in either E-UTRA inter-band or intra-band carrier aggregation mode. The requirements in this section shall apply regardless whether the configured downlink secondary cell is activated or deactivated by the MAC-CE command [17].

The RSTD measurements, which are obtained when both the reference cell and neighbouring cell belong to the primary component carrier, shall meet the intra-frequency RSTD accuracy requirements defined in section 9.1.10.1.

The RSTD measurements, which are obtained when both the reference cell and neighbouring cell belong to the secondary component carrier, shall meet the intra-frequency RSTD accuracy requirements defined in section 9.1.10.1.

The RSTD measurements, which are obtained when the reference cell and neighbouring cell do not belong to the same carrier, shall meet the inter-frequency RSTD accuracy requirements defined in section 9.1.10.2.

9.2 UTRAN FDD Measurements

The requirements in this clause are applicable for a UE:

- in state RRC_CONNECTED
- performing measurements according to section 8.1.2.4.1 with appropriate measurement gaps
- 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 3GPP TS 25.302 [6].

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.

9.2.1 UTRAN FDD CPICH RSCP

NOTE: This measurement is for handover between E-UTRAN and UTRAN FDD.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC_CONNECTED state is specified in section 8.1.2.4.1.

In RRC_CONNECTED state the accuracy requirements shall meet the absolute accuracy requirements in table 9.2.1-1,.

Parameter	Unit	Accura	cy [dB]			Conditions		
		Normal condition	Extreme	Band I, IV, VI, X XI, XIX and XXI	Band II, V and VII	Band XXV	Band III, VIII, XII, XIII, XIV , XX and XXII	Bar
		condition	condition	lo	lo	lo	lo	I
				[dBm/3,84 MHz]	[dBm/3,84 MHz]	[dBm/3,84 MHz]	[dBm/3,84 MHz]	[dBm/3
CPICH_RSCP	dBm	±6	±9	-9470	-9270	-90.570	-9170	-93.
	dBm	±8	±11	-7050	-7050	-7050	-7050	-70.

Table 9.2.1-1: UTRAN FDD CPICH_RSCP absolute accuracy

If the UE, in RRC_CONNECTED state, needs measurement gaps to perform UTRAN FDD measurements, the UTRAN FDD measurement procedure and measurement gap pattern stated in section 8.1.2.4.1 shall apply.

The reporting range and mapping specified for FDD CPICH RSCP in 3GPP TS 25.133 [18] shall apply.

9.2.2 UTRAN FDD carrier RSSI

NOTE: This measurement is for handover between E-UTRAN and UTRAN FDD.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC_CONNECTED state is equal to the measurement period for FDD CPICH measurements, whose measurement period is specified in section 8.1.2.4.1.

In RRC_CONNECTED state the accuracy requirements shall be the same as the measurement accuracy requirements for FDD carrier RSSI in 3GPP TS 25.133 [18].

If the UE, in RRC_CONNECTED state, needs measurement gaps to perform UTRAN FDD measurements, the UTRAN FDD measurement procedure and measurement gap pattern stated in section 8.1.2.4.1 shall apply.

The reporting range and mapping specified for FDD carrier RSSI in 3GPP TS 25.133 [18] shall apply.

9.2.3 UTRAN FDD CPICH Ec/No

NOTE: This measurement is for handover between E-UTRAN and UTRAN FDD.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC_CONNECTED state is specified in section 8.1.2.4.1.

In RRC_CONNECTED state the accuracy requirements shall be the same as the inter-frequency measurement accuracy requirements for FDD CPICH Ec/No in 3GPP TS 25.133 [18].

If the UE, in RRC_CONNECTED state, needs measurement gaps to perform UTRAN FDD measurements, the UTRAN FDD measurement procedure and measurement gap pattern stated in section 8.1.2.4.1 shall apply.

The reporting range and mapping specified for FDD CPICH Ec/No in 3GPP TS 25.133 [18] shall apply.

9.3 UTRAN TDD Measurements

The requirements in this clause are applicable for a UE:

- in state RRC_CONNECTED
- performing measurements according to section 8.1.2.4.3 with appropriate measurement gaps
- 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 3GPP TS 25.302 [6].

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.

9.3.1 UTRAN TDD P-CCPCH RSCP

NOTE: This measurement is for handover between E-UTRAN and UTRAN TDD.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC_CONNECTED state is specified in section 8.1.2.4.3.

In RRC_CONNECTED state the accuracy requirements shall be the same as the inter-frequency measurement accuracy requirements for TDD P-CCPCH in 3GPP TS 25.123 [19].

If the UE, in RRC_CONNECTED state, needs measurement gaps to perform UTRAN TDD measurements, the UTRAN TDD measurement procedure and measurement gap pattern stated in section 8.1.2.4.3 shall apply.

The reporting range and mapping specified for TDD P-CCPCH RSCP in 3GPP TS 25.123 [19] shall apply.

9.3.2 UTRAN TDD carrier RSSI

NOTE: This measurement is for handover between E-UTRAN and UTRAN TDD.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC_CONNECTED state is equal to the measurement period for TDD P-CCPCH RSCP measurement, whose measurement period is specified in section 8.1.2.4.3.

In RRC_CONNECTED state the accuracy requirements shall be the same as the inter-frequency measurement accuracy requirements for TDD carrier RSSI in 3GPP TS 25.123 [19].

If the UE, in RRC_CONNECTED state, needs measurement gaps to perform UTRAN TDD measurements, the UTRAN TDD measurement procedure and measurement gap pattern stated in section 8.1.2.4.3 shall apply.

The reporting range and mapping specified for TDD carrier RSSI in 3GPP TS 25.123 [19] shall apply.

9.3.3 Void

9.4 GSM Measurements

The requirements in this clause are applicable for a UE:

- in state RRC_CONNECTED
- performing measurements according to section 8.1.2.4.5 with appropriate measurement gaps
- 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 3GPP TS 25.302 [6].

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.

9.4.1 GSM carrier RSSI

NOTE: This measurement is for handover between E-UTRAN and GSM.

The requirements in this section are valid for terminals supporting this capability.

The measurement period for RRC_CONNECTED state is specified in section 8.1.2.4.5.

In RRC_CONNECTED state the measurement accuracy requirements for RXLEV in TS 45.008 [8] shall apply.

If the UE, in RRC_CONNECED state, needs measurement gaps to perform GSM measurements, the GSM measurement procedure and measurement gap pattern stated in section 8.1.2.4.5 shall apply.

The reporting range and mapping specified for RXLEV in TS 45.008 [8] shall apply.

9.5 CDMA2000 1x RTT Measurements

The requirements in this clause are applicable for a UE:

- in RRC_CONNECTED state.
- synchronised to the cell that is measured.

9.5.1 CDMA2000 1x RTT Pilot Strength

NOTE: This measurement is for handover between E-UTRAN and cdma2000 1 x RTT.

The requirements in this section are valid for terminals supporting this capability.

CDMA2000 1xRTT Pilot Strength defined in sub-clause 5.1.10 of [4] shall meet the performance requirement defined in sub-clause 3.2.4 of [14] on the cdma2000 1xRTT neighbour cells indicated by the serving eNode B.

9.6 P_{CMAX,c}

For a UE configured with a secondary cell, the UE is required to report the UE configured maximum output power $(P_{CMAX,c})$ together with the power headroom. This section defines the requirements for the $P_{CMAX,c}$ reporting.

9.6.1 Report Mapping

The P_{CMAX,c} reporting range is defined from -29dBm to 33 dBm with 1 dB resolution. Table 9.6.1-1 defines the reporting mapping.

Reported value	Measured quantity value	Unit
PCMAX_C_00	P _{CMAX,c} < -29	dBm
PCMAX_C_01	-29 ≤ P _{CMAX,c} < -28	dBm
PCMAX_C_02	-28 ≤ P _{CMAX,c} < -27	dBm
PCMAX_C_61	31 ≤ P _{CMAX,c} < 32	dBm
PCMAX_C_62	$32 \le P_{CMAX,c} < 33$	dBm
PCMAX_C_63	$33 \le P_{CMAX,c}$	dBm

Table 9.6.1-1 Mapping of PCMAX,c

9.6.2 Estimation Period

When *extendedPHR* is configured and UE is required to include $P_{CMAX,c}$ in Extended PHR MAC control element as defined in subclause 5.4.6 in [17], the UE shall calculate the $P_{CMAX,c}$ per activated serving cell c for UL-SCH transmission according to subclause 6.2.5A of TS 36.101 [5] over 1 subframe.

9.6.3 Reporting Delay

The $P_{CMAX,c}$ reporting delay is defined as the time between the beginning of the $P_{CMAX,c}$ reference period and the time when the UE starts transmitting $P_{CMAX,c}$ over the radio interface. The reporting delay of the $P_{CMAX,c}$ shall be 0 ms, which is applicable for all configured triggering mechanisms for $P_{CMAX,c}$ reporting.

10 Measurements Performance Requirements for E-UTRAN

10.1 Received Interference Power

The measurement period shall be 100 ms.

10.1.1 Absolute accuracy requirement

Parameter Unit Accuracy [dB]	lob [dBm/180 kHz]
lob dBm/180 kHz + 4	-11796

Table 10.1.1-1: Received Interference Power absolute accuracy

10.1.2 Relative accuracy requirement

The relative accuracy is defined as the Received Interference Power measured at one frequency compared to the Received Interference Power measured from the same frequency at a different time.

Parameter	Unit	Accuracy	Conditions
		[dB]	lob [dBm/180 kHz]
lob	dBm/180 kHz	± 0.5	-11796
			AND for changes $\leq \pm 9.0 \text{ dB}$

10.1.3 Received Interference Power measurement report mapping

The reporting range for Received Interference Power (RIP) is from -126 ... -75 dBm.

In table 10.2.3-1 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
RTWP_LEV _000	RIP < -126.0	dBm
RTWP_LEV _001	-126.0 ≤ RIP < -125.9	dBm
RTWP_LEV _002	-125.9 ≤ RIP < -125.8	dBm
RTWP_LEV _509	-75.2 ≤ RIP < -75.1	dBm
RTWP_LEV _510	-75.1 ≤ RIP < -75.0	dBm
RTWP_LEV _511	-75.0 ≤ RIP	dBm

Table 10.1.3-1: Received Interference Power measurement reporting range

10.2 Angle of Arrival (AOA)

10.2.1 Range/mapping

The reporting range for AOA measurement is from 0 to 360 degree, with resolution of 0.5 degree.

The mapping of the measured quantity is defined in table 10.2.1-1.

Reported value	Measured quantity value	Unit
AOA_ANGLE _000	$0 \le AOA_ANGLE < 0.5$	degree
AOA_ANGLE _001	0.5 ≤ AOA_ANGLE < 1	degree
AOA_ANGLE _002	$1 \le AOA_ANGLE < 1.5$	degree
AOA_ANGLE _717	358.5 ≤ AOA_ANGLE < 359	degree
AOA_ANGLE _718	359 ≤ AOA_ANGLE < 359.5	degree
AOA_ANGLE _719	359.5 ≤ AOA_ANGLE < 360	degree

Table 10.2.1-1: AOA measurement report mapping

10.3 Timing Advance (T_{ADV})

10.3.1 Report mapping

The reporting range of T_{ADV} is defined from 0 to 49232T_s with 2T_s resolution for timing advance less or equal to 4096T_s and 8T_s for timing advance greater than 4096T_s.

The mapping of measured quantity is defined in Table 10.3.1-1.

Reported value	Measured quantity value	Unit
TIME_ADVANCE_00	T _{ADV} < 2	Ts
TIME_ADVANCE_01	$2 \le T_{ADV} < 4$	Ts
TIME_ADVANCE_02	$4 \le T_{ADV} < 6$	Ts
TIME_ADVANCE_2046	$4092 \le T_{ADV} < 4094$	Ts
TIME_ADVANCE_2047	$4094 \leq T_{ADV} < 4096$	Ts
TIME_ADVANCE_2048	$4096 \le T_{ADV} < 4104$	Ts
TIME_ADVANCE_2049	$4104 \le T_{ADV} < 4112$	Ts
TIME_ADVANCE_7688	$49216 \le T_{ADV} < 49224$	Ts
TIME_ADVANCE_7689	$49224 \le T_{ADV} < 49232$	Ts
TIME_ADVANCE_7690	$49232 \le T_{ADV}$	Ts

Table 10.3.1-1:	T _{ADV} measurement	report mapping
-----------------	------------------------------	----------------

Annex A (normative): Test Cases

A.1 Purpose of annex

This Annex specifies test specific parameters for some of the functional requirements in sections 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 TS 36.521-3 [23]. 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 tests in more detail and lists the test parameters needed. The test will result in an outcome of a test variable value for the device under test (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 requirements 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 36.133. The details of the tests on how many times to run it and how to establish confidence in the tests are described in TS 36.521-3 [23]. This Annex establishes the variable to be used in the test and whether it can be viewed as statistical in nature or not.

A.2.1 Types of requirements in TS 36.133

A.2.1.1 Time and delay requirements on UE higher layer actions

A very large part of the RRM requirements are delay requirements:

- In E-UTRAN RRC_IDLE state mobility (clause A.4) there is cell re-selection delay.
- In E-UTRAN RRC_CONNECTED state mobility (clauses A.5 and A.8) there is handover delay, cell search delay and measurement reporting delay.
- In RRC Connection Control (clause A.6) there is RRC re-establishment 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. when a new strong pilot or reference signal appears). The delay time is statistical in nature for several reasons, among others that several of the measurements are performed by the UE 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 is observed during repeated tests and a limit is set on the rate of correct events, usually 90% correct events are required. How the limit is applied in the test depends on the confidence required, further detailed are in TS 36.521-3 [23].

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 E-UTRAN RRC_CONNECTED state mobility (clause A.5) there are measurement reports.
- In Measurement Performance Requirements (clause A.9) there are requirements for 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 +/- 3.29σ 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 E-UTRAN RRC_CONNECTED state mobility (clauses A.5 and A.8)
- "Correct behaviour at time-out" in RRC connection control (clause A.6)

A.2.1.4 Physical layer timing requirements

There are requirements on Timing and Signaling Characteristics (clauses A.7). There are both absolute and relative limits on timing accuracy depending upon the type of requirement. Examples are:

- Initial Transmit Timing (clause A.7.1) has an absolute limit on timing accuracy.
- Timing Advance (clause A.7.2) has a relative limit on timing accuracy.

A.3 RRM test configurations

A.3.1 Reference Measurement Channels

- A.3.1.1 PDSCH
- A.3.1.1.1 FDD

Table A.3.1.1.1-1: PDSCH Reference Measurement Channels for FDD

Parameter Unit Value									
Reference channel		R.2		R.0 R.1					
		FDD			FDD	FDD			
Channel bandwidth	MHz	1.4	3	5	10	10	20		
Number of transmitter antennas		1			1	2			
Allocated resource blocks (Note 4) 2 24 24									
Allocated subframes per Radio Frame 10 10 10									
Modulation QPSK QPSK QPSK									
Target Coding Rate 1/3 1/3									
Information Bit Payload									
For Sub-Frames 4, 9	Bits	120			2088	2088			
For Sub-Frame 5	Bits	104			2088	1736			
For Sub-Frame 0 Bits 32 1736 1736									
For Sub-Frame 1, 2, 3, 6, 7, 8 Bits 0 0 0									
Number of Code Blocks per Sub-Frame		1			1	1			
(Note 5)									
For Sub-Frames 4, 9		1			1	1			
For Sub-Frame 5		1			1	1			
For Sub-Frame 0		1			1	1			
For Sub-Frame 1, 2, 3, 6, 7, 8		0			0	0			
Binary Channel Bits Per Sub-Frame									
For Sub-Frames 4, 9	Bits	456			6624	6336			
For Sub-Frame 5	Bits	360			6336	6048			
For Sub-Frame 0	Bits	176			5784	5520			
For Sub-Frame 1, 2, 3, 6, 7, 8	Bits	0			0	0			
Max. Throughput averaged over 1 frame	kbps	37.6			800	765			
Note 1: 2 symbols allocated to PDCCH for	r 10 MHz char	nnel BW.	4 symbol	s allocate	ed to PDC	CCH for 1	.4 MHz		
channel BW.									
Note 2: Reference signal, synchronization									
Note 3: If necessary the information bit pa			sted to fac	cilitate the	e test imp	plementat	ion.		
The payload sizes are defined in 3									
Note 4: Allocation is located in the middle			. ~	a -					
Note 5: If more than one Code Block is pr		tional CF	C seque	nce of L	= 24 Bits	is attach	ed to		
each Code Block (otherwise $L = 0$									
Note 6: PDSCH allocation applies only to	subframes no	t configur	ed as PR	S subfrai	mes.				

A.3.1.1.2 TDD

Parameter Unit Val					lue		
Reference channel		R.2 TDD			R.0 TDD	R.1 TDD	
Channel bandwidth	MHz	1.4	3	5	10	10	20
Number of transmitter antennas		1			1	2	
Allocated resource blocks (Note 4)		2			24	24	
Uplink-Downlink Configuration (Note 5)		1			1	1	

Special S	Subframe Configuration (Note 6)		6			6	6				
		subframes per Radio Frame 6 6 6									
Modulatio											
Target Co	ding Rate 1/3 1/3 1/3										
	tion Bit Payload										
	-Frames 4,9	Bits	120			2088	2088				
For Sub	Frame 5 Bits 104 2088 2088										
For Sub	-Frame 0										
For Sub	-Frame 1, 6 (DwPTS)	Bits	56			1032	1032				
Number of (Note 7)	of Code Blocks per Sub-Frame		1			1	1				
	Frames 4,9		1			1	1				
For Sub-	For Sub-Frame 5 1 1 1 1										
For Sub-	For Sub-Frame 0 1 1 1										
For S	For Sub-Frame 1, 6 (DwPTS) 1 1 1										
Binary Channel Bits Per Sub-Frame											
For Sub-Frames 4,9 Bits 456 6624 6336											
For Sub-Frame 5 Bits 408 6480 6192											
For Sub-Frame 0 Bits 224 5928 5664											
	-Frame 1, 6 (DwPTS)	Bits	272			3696	3504				
Max. Throughput averaged over 1 frameMbps0.0511.0411.00626						1.0064					
Note 1:	2 symbols allocated to PDCCH for channel BW. For special subframe bandwidths.	e (1 & 6) only	nnel BW. 2 OFDM	symbols a	are alloca	ed to PDC ited to PI	DCCH for	all			
Note 2:	Reference signal, synchronization										
Note 3:	If necessary the information bit pa			sted to fac	cilitate the	e test imp	plementat	ion.			
Nists 4	The payload sizes are defined in 3										
Note 4:	Allocation is located in the middle										
Note 5: Note 6:	As per Table 4.2-2 in TS 36.211 [1										
Note 6.	As per Table 4.2-1 in TS 36.211 [1 If more than one Code Block is pre		itional CD		oo of L	24 Dite	ia attacha	nd to			
	each Code Block (otherwise L = 0	Bit)									
Note 8:	PDSCH allocation applies only to	subframes no	Note 8: PDSCH allocation applies only to subframes not configured as PRS subframes.								

A.3.1.2 PCFICH/PDCCH/PHICH

A.3.1.2.1 FDD

Table A.3.1.2.1-1: PCFICH/PDCCH/PHICH Reference Channel for FDD

Parameter	Unit			Va	lue		
Reference channel		R.8			R.6	R.7	R.9
		FDD			FDD	FDD	FDD
Channel bandwidth	MHz	1.4			10	10	10
Number of transmitter antennas		1			1	2	2
Control region OFDM symbols ^{Note1}	symbols	4			2	2	3
Aggregation level	CCE	2			8	8	8
		(Note 6)					
DCI Format		Note 3			Note 3	Note 3	Note 3
Cell ID		Note 4			Note 4	Note 4	Note 4
Payload (without CRC)	Bits	Note 5			Note 5	Note 5	Note 5
Note 1: The control region consists of PC	FICH, PHICI	H and PDC	CH.				
Note 2: DCI formats are defined in 3GPP	TS 36.212.						
Note 3: DCI format shall depend upon the	e test configu	iration.					
Note 4: Cell ID shall depend upon the tes	t configuratio	on.					
Note 5: Payload size shall depend upon t							
Note 6: For PDCCH using SI/RA/P-RNTI,	Aggregation	n level 4 is	used.				

A.3.1.2.2 TDD

Table A.3.1.2.2-1: PCFICH/PDCCH/PHICH Reference Channel for TDD

Parameter	Unit			Va	lue				
Reference channel		R.8 TDD			R.6	R.7	R.9		
					TDD	TDD	TDD		
Channel bandwidth	MHz	1.4			10	10	10		
Number of transmitter antennas		1			1	2	2		
Control region OFDM symbols ^{Note1}	symbols	4 (Note 6)			2	2	3		
Aggregation level	CCE	2 (Note 7)			8	8	8		
DCI Format		Note 3			Note 3	Note 3	Note 3		
Cell ID		Note 4			Note 4	Note 4	Note 4		
Payload (without CRC)	Bits	Note 5			Note 5	Note 5	Note 5		
Note 2: DCI formats are defined in 3GPP Note 3: DCI format shall depend upon the Note 4: Cell ID shall depend upon the tes	Payload (without CRC) Bits Note 5 Note 5 Note 5 Note 5 Note 1: The control region consists of PCFICH, PHICH and PDCCH. Note 2: DCI formats are defined in 3GPP TS 36.212. Note 3: DCI format shall depend upon the test configuration. Note 4: Cell ID shall depend upon the test configuration. Note 5: Payload size shall depend upon the test configuration. Note 5: Payload size shall depend upon the test configuration.								

Note 7: For PDCCH using SI/RA/P-RNTI, Aggregation level 4 is used.

A.3.2 OFDMA Channel Noise Generator (OCNG)

A.3.2.1 OCNG Patterns for FDD

The following OCNG patterns are used for modelling allocations to virtual UEs (which are not under test) and/or allocations used for MBSFN. The OCNG pattern for each sub frame specifies the allocations that shall be filled with OCNG, and furthermore, the relative power level of each such allocation.

In each test case the OCNG is expressed by parameters OCNG_RA and OCNG_RB which together with a relative power level (γ) specifies the PDSCH EPRE-to-RS EPRE ratios in OFDM symbols without and with reference symbols, respectively. The relative power, which is used for modelling boosting per virtual UE allocation, is expressed by:

$$\gamma_i = PDSCH_i _RA / OCNG _RA = PDSCH_i _RB / OCNG _RB,$$

where γ_i denotes the relative power level of the *i*:*th* virtual UE. The parameter settings of OCNG_RA, OCNG_RB, and the set of relative power levels γ are chosen such that when also taking allocations to the UE under test into account, as given by a PDSCH reference channel, a constant transmitted power spectral density that is constant on an OFDM symbol basis is targeted.

Moreover the OCNG pattern is accompanied by a PCFICH/PDCCH/PHICH reference channel which specifies the control region. For any aggregation and PHICH allocation, the PDCCH is padded with resource element groups with a power level given by PDCCH_RA and PDCCH_RB as specified in the test case such that a total power spectral density in the control region that is constant on an OFDM symbol basis is targeted.

A.3.2.1.1 OCNG FDD pattern 1: outer resource blocks allocation in 10 MHz

Alloca		Re	PDSCH Data	PMCH Data					
n_{P}	RB		Subfr	ame		Data	Data		
		0	5	4,9	1-3, 6-8				
0 —	12	0	0	0	N/A	Note 1	N/A		
37 -	- 49	0	0	0	N/A	NOLE I	IN/A		
0-4	19	N/A	N/A	N/A	Note 4	N/A	Note 2		
Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH. Note 2: Each physical resource block (PRB) is assigned to MBSFN transmission. The data in each PRB shall be uncorrelated with data in other PRBs over the period of any measurement. The MBSFN data shall be QPSK modulated. PMCH symbols shall not contain cell-specific Reference Signals. PMCH subframes shall contain cell-specific									
Reference Signals only in the first symbol of the first time slot. The parameter γ_{PRB} is used to scale the power of PMCH. Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213. Note 4: 0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS									
N/A: Not	Applicable	e							

Table A.3.2.1.1-1: OP.1 FDD: OCNG FDD Pattern 1

A.3.2.1.2 OCNG FDD pattern 2: full bandwidth allocation in 10 MHz

Allocation	Re	PDSCH Data	PMCH Data							
n_{PRB}		Subfr	ame		Data	Duid				
	0	0 5 4,9 1-3,6-8								
0 – 49	0	0	0	N/A	Note 1	N/A				
0 – 49	N/A	N/A	N/A	Note 4	N/A	Note 2				
Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter										
Note 2: Each pł each Pł measur	$\gamma_{\scriptscriptstyle PRB}$ is used to scale the power of PDSCH.									
The parameter γ_{PRB} is used to scale the power of PMCH. Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS										
and acc	ording to the an	tenna transmis	ssion mode 2	2. The paramete	er $\gamma_{_{PRB}}$ app	olies to				
equal b transmi	and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.									
Note 4: 0dB for	1 transmit anter	ina with CRS,	+3dB for 2 tr	ansmit antenna	s with CRS	5				
N/A: Not Applicabl	е									

Table A.3.2.1.2-1: OP.2 FDD: OCNG FDD Pattern 2

A.3.2.1.3 OCNG FDD pattern 3: outer resource blocks allocation in 1.4 MHz

Table A.3.2.1.3-1: OP.3 FDD: OCNG FDD Pattern 3

Allocation	Re	PDSCH Data	PMCH Data						
n _{PRB}		Subframe							
	0	5	4,9	1-3, 6-8					

0 -	- 1	0	0	0	N/A	Note 1	N/A
4 -	- 5	0 0 0 N/A		NOLE I	10/7		
0 -	- 5	N/A	N/A	N/A	Note 4	N/A	Note 2
Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH.							
Note 2:	Each physical resource block (PRB) is assigned to MBSFN transmission. The data in each PRB shall be uncorrelated with data in other PRBs over the period of any measurement. The MBSFN data shall be QPSK modulated. PMCH symbols shall not contain cell-specific Reference Signals. PMCH subframes shall contain cell-specific						
Note 3:	used to If two or	ce Signals only scale the power more transmit a shall be transmit	of PMCH.	CRS are used	in the test, the	e PDSCH p	part of
		ording to the an					
Note 4:	 each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213. Note 4: 0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS 					nna	
N/A: Not	N/A: Not Applicable						

A.3.2.1.4 OCNG FDD pattern 4: full bandwidth allocation in 1.4 MHz

Allocatio	n	Re	ative power I	evel $\gamma_{\scriptscriptstyle PRB}$ [dB]	PDSCH Data	PMCH Data	
n _{PRB}			Subfr	ame				
		0	1-3,6-8					
0 – 5		0	0	0	N/A	Note 1	N/A	
0-5		N/A	N/A	N/A	Note 4	N/A	Note 2	
wit be	Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter							
Note 2: Ea ea me	ach ph ich PR easure	B shall be unco	block (PRB) is prrelated with o SFN data shall	s assigned to data in other be QPSK m	MBSFN transn PRBs over the podulated. PMCI first symbol of th	period of a H subframe	ny es shall	
Note 3: If t	wo or		intennas with	CRS are use	PMCH. d in the test, the all the transmit a			
an	id acc	ording to the an	tenna transmis	ssion mode 2	2. The paramete	er $\gamma_{_{PRB}}$ app	olies to	
eq	each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.							
Note 4: 0d	B for '	1 transmit anten	na with CRS,	+3dB for 2 tra	ansmit antenna	s with CRS	5	
N/A: Not App	licable	e						

Table A.3.2.1.4-1: OP.4 FDD: OCNG FDD Pattern 4

A.3.2.1.5 OCNG FDD pattern 5: outer resource blocks allocation in 10 MHz (without MBSFN)

	location	Re	ative power I	evel $\gamma_{_{PRB}}$ [d	B]	PDSCH Data	
	n _{PRB}	Subframe (Note 1)					
		0	5	4,9	1-3, 6-8	-	
	0 – 12	0	0	0	N/A		
3	37 – 49	0	0	0	N/A	Note 2	
	0 – 49	N/A	N/A	N/A 0	0	1	
Note 1: Note 2:	 Note 1: PDSCH allocation applies only to subframes not configured as PRS subframes. Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. 						
Note 3:	The parameter $\gamma_{\scriptscriptstyle PRB}$ is used to scale the power of PDSCH.						
N/A:	of the PDS CRS used	γ_{PRB} applies to SCH part of OCN in the test. The P TS 36.213. able	IG is equal be	tween all the	transmit anten	nas with	

Table A.3.2.1.5-1: OP.5 FDD: OCNG FDD Pattern 5

A.3.2.1.6 OCNG FDD pattern 6: full bandwidth allocation in 10 MHz (without MBSFN)

Table A.3.2.1.6-1: OP.6 FDD: OCNG FDD Patte	ern 6

Alloca		Re	lative power I	evel $\gamma_{\scriptscriptstyle PRB}$ [d	B]	PDSCH Data	
n_{P}	RB	Subframe (No	Data				
	0 5 4,9 1-3,6-8						
0 –	0-49 0 0 0 0				0	Note 2	
Note 1:	PDSCH subfram	allocation appli	es only to sub	frames not cor	figured as PR	S	
Note 2:	These p virtual U	These physical resource blocks are assigned to an arbitrary number of irtual UEs with one PDSCH per virtual UE; the data transmitted over the DCNG PDSCHs shall be uncorrelated pseudo random data, which is					
	QPSK m	nodulated. The	parameter γ_{I}	PRB is used to s	scale the powe	er of	
Note 3:	PDSCH	· THD					
	mode 2.	The parameter	$\gamma_{\scriptscriptstyle PRB}$ applies	to each anten	na port separa	ately, so	
N/A:	transmit	smit power of th antennas with are specified in s licable	CRS used in th	ne test. The ar	ntenna transmi		

A.3.2.1.7 OCNG FDD pattern 7: full bandwidth allocation in 1.4 MHz (without MBSFN)

Alloc		Re	lative power I	evel $\gamma_{\scriptscriptstyle PRB}$ [d	B]	PDSCH Data	
n_P	RB	Subframe (No	Data				
		0 5 4,9 1-3,6-8					
0 -	- 5	0 0 0 0				Note 2	
Note 1: Note 2:	subfram These p virtual U	PDSCH allocation applies only to subframes not configured as PRS subframes. These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is					
Note 3:	PDSCH If two or PDSCH	QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH. If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission					
N/A:	the trans transmit	The parameter smit power of th antennas with are specified in s licable	e PDSCH par CRS used in t	t of OCNG is e he test. The ar	equal between ntenna transmi	all the	

Table A.3.2.1.8-1: OP.7 FDD: OCNG FDD Pattern 7

A.3.2.2 OCNG Patterns for TDD

The following OCNG patterns are used for modelling allocations to virtual UEs (which are not under test). The OCNG pattern for each sub frame specifies the allocations that shall be filled with OCNG, and furthermore, the relative power level of each such allocation.

In each test case the OCNG is expressed by parameters OCNG_RA and OCNG_RB which together with a relative power level (γ) specifies the PDSCH EPRE-to-RS EPRE ratios in OFDM symbols without and with reference symbols, respectively. The relative power, which is used for modelling boosting per virtual UE allocation, is expressed by:

 $\gamma_i = PDSCH_i _RA / OCNG _RA = PDSCH_i _RB / OCNG _RB,$

where γ_i denotes the relative power level of the *i:th* virtual UE. The parameter settings of OCNG_RA, OCNG_RB, and the set of relative power levels γ are chosen such that when also taking allocations to the UE under test into account, as given by a PDSCH reference channel, a transmitted power spectral density that is constant on an OFDM symbol basis is targeted.

Moreover the OCNG pattern is accompanied by a PCFICH/PDCCH/PHICH reference channel which specifies the control region. For any aggregation and PHICH allocation, the PDCCH is padded with resource element groups with a power level given by PDCCH_RA and PDCCH_RB as specified in the test case such that a total power spectral density in the control region that is constant on an OFDM symbol basis is targeted.

A.3.2.2.1 OCNG TDD pattern 1: outer resource blocks allocation in 10 MHz

Table A.3.2.2.1-1: OP.1 TDD: OCNG TDD Pattern 1 for 5ms downlink-to-uplink switch-point periodicity

Allocation	Relative power level $\gamma_{_{PRB}}$ [dB]	PDSCH Data
n_{PRB}	Subframe (Note 1)	

		0	5	3 , 4, 8, 9 and 6 (as normal subframe) ^{Note 3}	1 and 6 (as special subframe) _{Note 3}	
C) – 12	0	0	0	Table	Note 2
3.	7 – 49	0	0	0	A.3.2.2.1-2	Note 2
Note 1: PDSCH allocation applies only to subframes not configured as PRS subframes. Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated The parameter γ_{PRB} is used to scale the power of PDSCH.						
Note 3:	Subframes av		smission depends on			fined in Table
Note 4:	ote 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The					
	parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.					

Table A.3.2.2.1-2: OP.1 TDD: OCNG TDD Pattern 1 for special subframe configuration with 5ms downlink-to-uplink switch-point periodicity

Allocation	ڊ.		Relative power level $\gamma_{_{PRB}}$ [dB]							
n _{PRB}	length			S	pecial sub	frame cor	nfiguratior	1		
		0	1	2	3	4	5	6	7	8
	СЪ		Control region OFDM symbols							
	•	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
0 – 12	N	0	0	0	0	0	0	0	0	0
37 – 49	N	0	0	0	0	0	0	0	0	0
Note 1: Special su	ubframe o	configuratio	ns are defi	ned in Table	e 4.2-1 in T	S 36.211	[16].			

A.3.2.2.2 OCNG TDD pattern 2: full bandwidth allocation in 10 MHz

Table A.3.2.2.2-1: OP.2 TDD: OCNG TDD Pattern 2 for 5ms downlink-to-uplink switch-point periodicity

All	ocation		Relative power I	evel ${\gamma}_{\scriptscriptstyle PRB}$ [dB]		PDSCH Data
	n _{PRB}		Subframe	(Note 1)		
		0	5	3 , 4, 8, 9 and 6 (as normal subframe) ^{Note 3}	1 and 6 (as special subframe) _{Note 3}	
C	0-49 0 0 0 0					
Note 1:	PDSCH alloca	ation applies only t	o subframes not config	gured as PRS subfram	es.	
Note 2:				bitrary number of virtua all be uncorrelated pse		
	modulated. T	he parameter $\gamma_{_{PRH}}$	is used to scale the p	ower of PDSCH.		
Note 3:		vailable for DL tran		the Uplink-Downlink co	onfiguration in Ta	ble 4.2-2 in 3GPP
Note 4:						
	parameter ${\gamma}_{_{PRB}}$ applies to each antenna port separately, so the transmit power is equal between all the					
	transmit anter 3GPP TS 36.		ed in the test. The ante	enna transmission mod	es are specified	in section 7.1 in

A.3.2.2.3 OCNG TDD pattern 3: outer resource blocks allocation in 1.4 MHz

Table A.3.2.2.3-1: OP.3 TDD: OCNG TDD Pattern 3 for 5 ms downlink-to-uplink switch-point periodicity

Allocation		Relative power level $\gamma_{_{PRB}}$ [dB]							
n _{PRB}		Subframe (Note 1)							
	0	5	3 , 4, 8, 9 and 6 (as normal subframe) ^{Note 3}	1 and 6 (as special subframe) _{Note 3}					

	0 – 1 0		0-1 0 0		0	0	0	
	4 – 5 0		0	0	0	Note 2		
Note 1: Note 2:								
	is QPSK mod	lulated.The param	eter ${\gamma}_{\scriptscriptstyle PRB}$ is used to sc	ale the power of PDS	SCH.			
Note 3:		vailable for DL trar P TS 36.211 [16].	smission depends on	the Uplink-Downlink	configuration de	fined in Table		
Note 4:	Note 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The							
	parameter $\gamma_{_{PRB}}$ applies to each antenna port separately, so the transmit power is equal between all the							
	transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7, in 3GPP TS 36.213.							

A.3.2.2.4 OCNG TDD pattern 4: full bandwidth allocation in 1.4 MHz

Table A.3.2.2.4-1: OP.4 TDD: OCNG TDD Pattern 4 for 5 ms downlink-to-uplink switch-point periodicity

Allocation		ſ	Relative power level γ_{PRB} [dB]PDS							
n_{PRB}	3	gtl	Subframe (Note 1)							
		CP length		5	3 , 4, 8, 9 and 6 (as normal subframe) _{Note 3}	1 and 6 (as special subframe) _{Note 3}				
0 – 5			0	0	0	0	Note 2			
Note 1: Note 2:										
Note 3:										
Note 4:	e 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The									
	param	parameter $\gamma_{_{PRB}}$ applies to each antenna port separately, so the transmit power is equal between all the								
		nit anter TS 36.2		ed in the test. The ante	enna transmission mod	es are specified	in section 7.1 in			

A.3.3 Reference DRX Configurations

Parameter	Va	lue	Comments			
Reference configuration	DRX_S	DRX_L	As defined in 4.8.2.1.5 in TS 36.508			
onDurationTimer	psf2	psf6				
drx-InactivityTimer	psf100	psf1920				
drx-RetransmissionTimer	psf16	psf16				
longDRX-CycleStartOffset	sf40, 0	sf1280, 0				
shortDRX	disabled	disabled				
Note: For further information see section 6.3.2 in 3GPP TS 36.331.						

Table A.3.3-1: Reference DRX Configurations

A.4 E-UTRAN RRC_IDLE state

A.4.2 Cell Re-Selection

A.4.2.1 E-UTRAN FDD – FDD Intra frequency case

A.4.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD intra frequency cell reselection requirements specified in section 4.2.2.3.

The test scenario comprises of 1 E-UTRA FDD carrier and 2 cells as given in tables A.4.2.1.1-1 and A.4.2.1.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Only Cell 1 is already identified by the UE prior to the start of the test, i.e. Cell 2 is not identified by the UE prior to the start of the test, i.e. Cell 2 is not registered with network for the tracking area containing Cell 2.

F	Parameter		Value	Comment
Initial	Active cell		Cell1	
condition	Neighbour cells		Cell2	
T2 end	Active cell		Cell2	
condition	Neighbour cells		Cell1	
Final condition	Visited cell		Cell1	
E-UTRA R	F Channel Number		1	Only one FDD carrier frequency is used.
Channel Ba	andwidth (BW _{channel})	MHz	10	
Time offset	between cells		3 ms	Asynchronous cells
Access Ba	rring Information	-	Not Sent	No additional delays in random access
				procedure.
PRACH co	PRACH configuration		4	As specified in table 5.7.1-2 in 3GPP TS 36.211
DRX cycle length		S	1.28	The value shall be used for all cells in the test.
T1		S	>7	During T1, Cell 2 shall be powered off, and during the off time the physical 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
Τ2		S	40	T2 need to be defined so that cell re- selection reaction time is taken into account.
Т3		S	15	T3 need to be defined so that cell re- selection reaction time is taken into account.

Table A.4.2.1.1-1: General test parameters for FDD intra frequency cell reselection test case

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel Number			1			1	
BW _{channel}	MHz		10			10	
OCNG Patterns defined in A.3.2.1.2 (OP.2 FDD)		OP.2 FDD			OP.2 FDD		
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RA PDCCH_RA PDSCH_RA	dB		0			0	
PDSCH_RB OCNG_RA ^{Note 1} OCNG_RB ^{Note 1}	-	140	140	140	140	140	440
Qrxlevmin Pcompensation	dBm dB	-140	-140	-140	-140	-140	-140
	dB dB	0	0	0	0	0	0
Qhyst _s Qoffset _{s, n}	dB	0	0	0	0	0	0
Cell_selection_and_ reselection_quality_ measurement	UB	0	RSRP	0	0	RSRP	0
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	16	-3.11	2.79	-infinity	2.79	-3.11
N_{oc} Note2	dBm/15 kHz		•		-98		
\hat{E}_s/N_{oc}	dB	16	13	16	-infinity	16	13
RSRP ^{Note3}	dBm/15 kHz	-82	-85	-82	-infinity	-82	-85
Treselection	S	0	0	0	0	0	0
Sintrasearch	dB		Not sent			Not sent	
Propagation AWGN Condition							
Note 1: OCNG shall be density is achie Note 2: Interference fro	eved for all OFDM	symbols.					

Table A.4.2.1.1-2: Cell specific test parameters for FDD intra frequency cell reselection test case in AWGN

subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.1.2 Test Requirements

The cell reselection delay to a newly detectable cell 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 Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 34 s.

The cell reselection delay to an already detected cell is defined as the time from the beginning of time period T3, to the moment when the UE camps on Cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 1.

The cell re-selection delay to an already detected cell 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 to a newly detectable cell can be expressed as: $T_{detect,EUTRAN_{Intra}} + T_{SI}$, and to an already detected cell can be expressed as: $T_{evaluateFDD,intra} + T_{SI}$,

Where:

$T_{detect,EUTRAN_Intra}$	See Table 4.2.2.3-1 in section 4.2.2.3
T _{evaluateFDD,intra}	See Table 4.2.2.3-1 in section 4.2.2.3
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 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell and 7.68 s, allow 8 s for the cell re-selection delay to an already detected cell in the test case.

A.4.2.2 E-UTRAN TDD – TDD Intra frequency case

A.4.2.2.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD intra frequency cell reselection requirements specified in section 4.2.2.3.

The test scenario comprises of 1 E-UTRA TDD carrier and 2 cells as given in tables A.4.2.2.1-1 and A.4.2.2.1-2. The test consists of three successive time periods, with time duration of T1, T2, and T3 respectively. Only cell 1 is already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Parameter		Unit	Value	Comment
Initial	Active cell		Cell1	
condition	Neighbour cells		Cell2	
T2 end	Active cell		Cell2	
condition	Neighbour cells		Cell1	
Final condition	Visited cell		Cell1	
E-UTRA R	F Channel Number		1	Only one TDD carrier frequency is used.
Channel Ba	andwidth (BW _{channel})	MHz	10	
Time offset	t between cells	μs	3	Synchronous cells
Access Ba	rring Information	-	Not Sent	No additional delays in random access procedure.
Special sub	oframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-dow	nlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211
PRACH co	nfiguration index		53	As specified in table 5.7.1-3 in 3GPP TS 36.211
DRX cycle length		S	1.28	The value shall be used for all cells in the test.
T1		S	>7	During T1, Cell 2 shall be powered off, and during the off time the physical 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	Τ2		40	T2 need to be defined so that cell re-selection reaction time is taken into account.
Т3		S	15	T3 need to be defined so that cell re-selection reaction time is taken into account.

Table A.4.2.2.1-1: General test parameters for TDD intra frequency cell re-selection test case

Parameter	Unit		Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1	•		1	•	
Number								
BW _{channel}	MHz		10		10			
OCNG Pattern								
defined in A.3.2.2.2		OF	P.2 TDD		O	P.2 TDD		
(OP.2 TDD)								
PBCH_RA								
PBCH_RB								
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA								
PHICH_RB	dB		0		0			
PDCCH_RA								
PDCCH_RB								
PDSCH_RA								
PDSCH_RB								
OCNG_RA ^{Note 1}								
OCNG_RB ^{Note 1}								
Qrxlevmin	dBm	-140			-140			
Pcompensation	dB	0			0			
Qhyst₅	dB	0			0			
Qoffset _{s, n}	dB		0			0		
Cell_selection_and_								
reselection_quality_			RSRP			RSRP		
measurement			1					
\hat{E}_{s}/I_{ot}	dB	16	-3.11	2.79	-infinity	2.79	-3.11	
	dBm/15 kHz				·98			
$N_{oc}^{ m Note2}$				-	.90			
\hat{E}_s/N_{oc}	dB	16	13	16	-infinity	16	13	
RSRP Note3	dBm/15 kHz	-82	-85	-82	-infinity	-82	-85	
Treselection	S	0	0	0	0	0	0	
Sintrasearch	dB	N	lot sent		Not sent			
Propagation				AV	VGN			
Condition								
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								
	and time and the			N of and	roprioto	N_{oc}	toba	
over subcarrie fulfilled.	over subcarriers and time and shall be modelled as AWGN of appropriate power for ${}^{m N_{oc}}$ to be						io be	
Note 3: RSRP levels have been derived from other parameters for information purposes. They are not						not		
settable parameters themselves.								

Table A.4.2.2.1-2: Cell specific test parameters for TDD intra frequency cell re-selection test case in AWGN

A.4.2.2.2 Test Requirements

The cell reselection delay to a newly detectable cell 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 Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 34 s.

The cell reselection delay to an already detected cell is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

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 to a newly detectable cell can be expressed as: $T_{detect,EUTRAN_{Intra}} + T_{SI-EUTRA}$, and to an already detected cell can be expressed as: $T_{evaluate, E-UTRAN_{intra}} + T_{SI-EUTRA}$,

Where:

$T_{detect,EUTRAN_Intra}$	See Table 4.2.2.3-1 in section 4.2.2.3
$T_{evaluate,E-UTRAN_intra}$	See Table 4.2.2.3-1 in section 4.2.2.3
	faximum repetition period of relevant system info blocks that needs to be received by the UE to amp on a cell; 1280 ms is assumed in this test case.

This gives a total of 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell and 7.68 s, allow 8 s for the cell re-selection delay to an already detected cell in the test case.

A.4.2.3 E-UTRAN FDD – FDD Inter frequency case

A.4.2.3.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD inter-frequency cell reselection requirements specified in section 4.2.2.4.

The test scenario comprises of 2 E-UTRA FDD cells on 2 different carriers as given in tables A.4.2.3.1-1 and A.4.2.3.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

	Parameter	Unit	Value	Comment		
Initial	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation		
condition				phase, so that reselection to cell 1 occurs during the first T1 phase		
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1		
condition	Neighbour cell		Cell2			
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T3		
E-UTRA R	F Channel Number		1, 2	Two FDD carrier frequencies are used.		
Time offset	fset between cells		3 ms	Asynchronous cells		
PRACH co	nfiguration		4	As specified in table 5.7.1-2 in TS 36.211		
Access Ba	rring Information	-	Not Sent	No additional delays in random access		
				procedure.		
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.		
T1	T1		15	T1 need to be defined so that cell re-selection reaction time is taken into account.		
Τ2		S	>7	During T2, cell 2 shall be powered off, and during the off time the physical 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 T3.		
Т3		S	75	T3 need to be defined so that cell re-selection reaction time is taken into account.		

Table A.4.2.3.1-1: General test parameters for FDD-FDD inter frequency cell re-selection test case

Parameter	Unit	C	ell 1			Cell 2		
			T2	T3	T1	T2	T3	
E-UTRA RF Channel			1		2			
number								
BW _{channel}	MHz		10			10		
OCNG Patterns defined in								
A.3.2.1.1 (OP.2 FDD)		OP	.2 FDD			OP.2 FDD		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB					0		
PHICH_RB	dB		0					
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
Qrxlevmin	dBm	-	·140		-140			
$N_{oc}^{}$ Note 2	dBm/15 kHz				-98			
RSRP ^{Note 3}	dBm/15 KHz	-84	-84	-84	-102	-infinity	-86	
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	14	14	14	-4	-infinity	12	
\hat{E}_{s}/N_{oc}	dB	14	14	14	-4	-infinity	12	
Treselection _{EUTRAN}	S		0			0		
Snonintrasearch	dB		50			Not sent		
Thresh _{x, high}	dB		48			48		
Thresh _{serving, low}	dB	dB 44 44						
Thresh _{x, low}	dB	dB 50 50						
Propagation Condition					AWGN			
Note 1: OCNG shall be used spectral density is ac Note 2: Interference from oth	hieved for all OFE	OM symbols					-	
over subcarriers and	time and shall be	modelled as	s AWGN	of app	ropriate po	wer for $N_{_{oc}}$	to be	
fulfilled.								

Table A.4.2.3.1-2: Cell specific test parameters for FDD-FDD inter-frequency cell reselection test case in AWGN

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.3.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, 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 Tracking Area Update procedure on Cell 2.

The cell re-selection delay to higher priority shall be less than 68 s.

The cell reselection delay to lower priority is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay to lower priority 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 to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluateFDD,inter} + T_{SI}$, and to lower priority cell can be expressed as: $T_{evaluateFDD,inter} + T_{SI}$,

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Where:

$T_{higher_priority_search}$	See section 4.2.2
T _{evaluateFDD,inter}	See Table 4.2.2.4-1 in section 4.2.2.4
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 67.68 s for higher priority cell search and 7.68 s for lower priority cell search, allow 68 s for higher priority cell and 8 s for lower priority cell in the test case.

A.4.2.4 E-UTRAN FDD – TDD Inter frequency case

A.4.2.4.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-TDD inter-frequency cell reselection requirements specified in section 4.2.2.4.

The test scenario comprises of 1 E-UTRA FDD cell and 1 E-UTRA TDD cell as given in tables A.4.2.4.1-1 and A.4.2.4.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.4.1-1: General test parameters for FDD-TDD inter frequency cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
Cell 1 E	-UTRA RF Channel Number		1	One FDD carrier frequency is used. And Cell 1 is on RF channel number 1.
Cell 2 E	-UTRA RF Channel Number		2	One TDD carrier frequencies is used. And Cell 2 is on RF channel number 2.
Time offse	t between cells		3 ms	Asynchronous cells
	DD PRACH		4	As specified in table 5.7.1-2 in 3GPP TS 36.211
E-UTRA T configurati	DD PRACH		53	As specified in table 5.7.1-3 in 3GPP TS 36.211
Special subframe configuration			6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in 3GPP TS 36.211
E-UTRA F Informatior	DD Access Barring	-	Not Sent	No additional delays in random access procedure.
Information		-	Not Sent	No additional delays in random access procedure.
DRX cycle length		S	1.28	The value shall be used for all cells in the test.
T1		S	15	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	>7	During T2, cell 2 shall be powered off, and during the off time the physical 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 T3.
Т3		S	75	T3 need to be defined so that cell re-selection reaction time is taken into account.

Parameter	Unit	C	ell 1			Cell 2		
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			2		
number								
BW _{channel}	MHz		10			10		
OCNG Patterns defined in								
A.3.2.1.1 (OP.2 FDD) and		OP	.2 FDD			OP.2 TDD		
A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB		•			0		
PHICH_RB	dB		0			0		
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB				l			
Qrxlevmin	dBm	-140			-140			
$N_{_{oc}}$ Note 2	dBm/15 kHz	z -98						
RSRP ^{Note 3}	dBm/15 KHz	-84	-84	-84	-102	-infinity	-86	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	14	14	14	-4	-infinity	12	
\hat{E}_s/N_{oc}	dB	14	14	14	-4	-infinity	12	
Treselection _{EUTRAN}	S		0			0		
Snonintrasearch	dB		50		Not sent			
Thresh _{x, high}	dB	48			48			
Thresh _{serving, low}	dB	44			44			
Thresh _{x, low} dB		50 50						
Propagation Condition	AWGN							
Note 1: OCNG shall be use	ed such that both	cells are fu	lly alloca	ted and		t total transm	itted	
power spectral der Note 2: Interference from d	nsity is achieved f other cells and no	achieved for all OFDM symbols. ells and noise sources not specified in the test is assumed to be and time and shall be modelled as AWGN of appropriate power for						
N_{oc} to be fulfilled								
Note 3: RSRP levels have								

Table A.4.2.4.1-2: Cell specific test parameters for FDD-TDD inter-frequency cell reselection test case in AWGN

A.4.2.4.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, 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 Tracking Area Update procedure on cell 2.

The cell re-selection delay to higher priority shall be less than 68 s.

The cell reselection delay to lower priority is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay to lower priority 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 to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluate,E-UTRAN_inter} + T_{SI-EUTRA}$, and to lower priority cell can be expressed as: $T_{evaluate,E-UTRAN_inter} + T_{SI-EUTRA}$,

Where:

$T_{higher_priority_search}$	See section 4.2.2
$T_{evaluate,E-UTRAN_inter}$	See Table 4.2.2.4-1 in section 4.2.2.4
T _{SI-EUTRA}	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 67.68 s for higher priority cell search and 7.68 s for lower priority cell search, allow 68 s for higher priority cell and 8 s for lower priority cell in the test case.

A.4.2.5 E-UTRAN TDD – FDD Inter frequency case

A.4.2.5.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-FDD inter-frequency cell reselection requirements specified in section 4.2.2.4.

The test scenario comprises of 1 E-UTRA TDD cell and 1 E-UTRA FDD cell as given in tables A.4.2.5.1-1 and A.4.2.5.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.5.1-1: General test parameters for TDD-FDD inter frequency cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
Cell 1 E	UTRA RF Channel Number		1	One TDD carrier frequency is used. And Cell 1 is on RF channel number 1.
Cell 2 E	UTRA RF Channel Number		2	One FDD carrier frequencies is used. And Cell 2 is on RF channel number 2.
Time offset	t between cells		3 ms	Asynchronous cells
E-UTRA TI configuration	DD PRACH on		53	As specified in table 5.7.1-3 in 3GPP TS 36.211
Special subframe configuration			6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-dow	Uplink-downlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211
E-UTRA FI configuration	DD PRACH		4	As specified in table 5.7.1-2 in 3GPP TS 36.211
	DD Access Barring	-	Not Sent	No additional delays in random access procedure.
Information		-	Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	15	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	>7	During T2, cell 2 shall be powered off, and during the off time the physical 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 T3.
Т3		S	75	T3 need to be defined so that cell re-selection reaction time is taken into account.

Parameter	Unit	C	ell 1			Cell 2		
		T1	T2	T3	T1	T2	Т3	
E-UTRA RF Channel			1			2		
number								
BW _{channel}	MHz		10		10			
OCNG Patterns defined in								
A.3.2.1.1 (OP.2 FDD) and		OP	2 TDD			OP.2 FDD		
A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB					-		
PHICH_RB	dB		0		0			
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
Qrxlevmin	dBm	-140			-140			
N_{oc} Note 2	dBm/15 kHz				-98			
RSRP ^{Note 3}	dBm/15 KHz	-84	-84	-84	-102	-infinity	-86	
\hat{E}_{s}/I_{ot}	dB	14	14	14	-4	-infinity	12	
\hat{E}_{s}/N_{oc}	dB	14	14	14	-4	-infinity	12	
Treselection _{EUTRAN}	S		0			0		
Snonintrasearch	dB		50			Not sent		
Thresh _{x, high}	dB	48			48			
Thresh _{serving, low}	dB	44			44			
Thresh _{x, low} dB		50 50						
Propagation Condition	AWGN							
Note 1: OCNG shall be use	ed such that both	cells are fu	ly alloca	ted and	l a constan	t total transmi	tted	
power spectral den Note 2: Interference from c	sity is achieved f other cells and no	/ is achieved for all OFDM symbols. er cells and noise sources not specified in the test is assumed to be iers and time and shall be modelled as AWGN of appropriate power for						
N_{ac} to be fulfilled.								
Note 3: RSRP levels have								

Table A.4.2.5.1-2: Cell specific test parameters for TDD-FDD inter-frequency cell reselection test case in AWGN

A.4.2.5.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, 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 Tracking Area Update procedure on cell 2.

The cell re-selection delay to higher priority shall be less than 68 s.

The cell reselection delay to lower priority is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay to lower priority 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 to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluate,E-UTRAN_inter} + T_{SI-EUTRA}$, and to lower priority cell can be expressed as: $T_{evaluate,E-UTRAN_inter} + T_{SI-EUTRA}$,

Where:

$T_{higher_priority_search}$	See section 4.2.2
$T_{evaluate,E-UTRAN_inter}$	See Table 4.2.2.4-1 in section 4.2.2.4
T _{SI-EUTRA}	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 67.68 s for higher priority cell search and 7.68 s for lower priority cell search, allow 68 s for higher priority cell and 8 s for lower priority cell in the test case.

A.4.2.6 E-UTRAN TDD – TDD: Inter frequency case

A.4.2.6.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD inter-frequency cell reselection requirements specified in section 4.2.2.4.

The test scenario comprises of 2 E-UTRA TDD cells on 2 different carriers as given in tables A.4.2.6.1-1 and A.4.2.6.1-2. The test consists of three successive time periods, with time duration of T1, T2, and T2 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase
T1 end	Active cells		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
E-UTRA R	F Channel Number		1, 2	Two TDD carrier frequencies are used.
Time offset	offset between cells		3 μs	Synchronous cells
Access Ba	rring Information	-	Not Sent	No additional delays in random access procedure.
Special sul	bframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-dow	Uplink-downlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211
PRACH co	onfiguration index		53	As specified in table 5.7.1-3 in 3GPP TS 36.211
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	15	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	>7	During T2, cell 2 shall be powered off, and during the off time the physical 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 T3.
Т3		S	75	T3 need to be defined so that cell re-selection reaction time is taken into account.

Parameter	Unit	Cell 1			Cell 2				
		T1	T2	T3	T1	T2	Т3		
E-UTRA RF Channel			1		2				
number									
BW _{channel}	MHz		10			10			
OCNG Pattern defined in									
A.3.2.2.2 (OP.2 TDD)		OF	.2 TDD		O	P.2 TDD			
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB		0			0			
PHICH_RB	dB								
PDCCH_RA	dB								
PDCCH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note 1}	dB								
OCNG_RB ^{Note 1}	dB								
Qrxlevmin	dBm		-140		-140				
$N_{_{oc}}$ Note 2	dBm/15 kHz			-	98				
RSRP Note 3	dBm/15 KHz	-84	-84	-84	-102	-infinity	-86		
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	14	14	14	-4	-infinity	12		
\hat{E}_s/N_{oc}	dB	14	14	14	-4	-infinity	12		
TreselectionEUTRAN	S		0			0	•		
Snonintrasearch	dB		50		Ν	lot sent			
Thresh _{x, high}	dB	48				48			
Thresh _{serving, low}	dB	44				44			
Thresh _{x, low}	dB	50 50				50			
Propagation Condition				AV	VGN				
Note 1: OCNG shall be used	such that both	cells are fully	/ allocate	ed and a	constant to	tal transmit	ted		
power spectral densi Note 2: Interference from otl constant over subcar	y is achieved for ner cells and nois	^r all OFDM s se sources r	ymbols. Iot speci	fied in th	e test is ass	sumed to be	Ð		

Table A.4.2.6.1-2: Cell specific test parameters for TDD-TDD inter-frequency cell reselection test case in AWGN

 N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.6.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, 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 Tracking Area Update procedure on cell 2.

The cell re-selection delay to higher priority shall be less than 68 s.

The cell reselection delay to lower priority is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay to lower priority 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 to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluate,E-UTRAN_inter} + T_{SI-EUTRA}$, and to lower priority cell can be expressed as: $T_{evaluate,E-UTRAN_inter} + T_{SI-EUTRA}$,

Where:

$T_{higher_priority_search}$	See section 4.2.2
$T_{evaluate,E-UTRAN_inter}$	See Table 4.2.2.4-1 in section 4.2.2.4
T _{SI-EUTRA}	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 67.68 s for higher priority cell search and 7.68 s for lower priority cell search, allow 68 s for higher priority cell and 8 s for lower priority cell in the test case.

A.4.2.7 E-UTRAN FDD – FDD Inter frequency case in the existence of nonallowed CSG cell

A.4.2.7.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD inter-frequency cell reselection requirements specified in section 4.2.2.4 when there is the interference from non-allowed CSG cell and the layers have equal priority.

The test scenario comprises of 2 E-UTRA FDD cells on 2 different carriers and 1 non-allowed E-UTRA FDD CSG cell as given in tables A.4.2.7.1-1 and A.4.2.7.1-2. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both cell 1 and cell 3 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 3 is a non-allowed CSG cell. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.7.1-1: General test parameters for FDD-FDD inter frequency cell re-selection test case with non-allowed CSG cell

	Parameter		Value	Comment		
Initial condition	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation phase		
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T2		
E-UTRA R	F Channel Number		1, 2	Two FDD carrier frequencies are used.		
Time offset	t between cells		3 ms	Asynchronous cells		
PRACH co	PRACH configuration		configuration		4	As specified in table 5.7.1-2 in TS 36.211
Access Ba	Access Barring Information		Not Sent	No additional delays in random access procedure.		
DRX cycle	DRX cycle length		1.28	The value shall be used for all cells in the test.		
T1		S	[15]	T1 need to be defined so that the non-allowed CSG cell is identified.		
T2		S		T2 need to be defined so that cell re-selection reaction time is taken into account.		
Т3		S	[15]	T3 need to be defined so that whether cell re- selection would not occur is insured.		

Parameter	Unit	Cell 1			Cell 2			Cell 3(Non-allowed CSG cell)		
		T1	T2	Т3	T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel Number			1			2			1	
BW _{channel}	MHz		10			10			10	
OCNG Patterns										
defined in A.3.2.1.2										
(OP.2 FDD)			OP.2 FDI	0	O	P.2 FDD)		OP.2 FD	D
PBCH_RA	dB									
PBCH_RB	dB									
PSS_RA	dB									
SSS_RA	dB									
PCFICH_RB	dB									
PHICH_RA	dB									
PHICH_RB	dB		0			0		0		
PDCCH_RA	dB		Ū					Ŭ		
PDCCH_RB	dB									
PDSCH_RA	dB									
PDSCH_RB	dB									
OCNG_RA ^{Note 1}	dB									
OCNG_RB ^{Note}	dB									
Qrxlevmin	dBm		-140		-140			-140		
Qqualmin	dB					[-20]				
N_{oc} Note 2	dBm/15 kHz					-98				
RSRP ^{Note 3}	dBm/15 kHz	[-90]	[-90]	[-85]	[- Infinity]	[-85]	[-90]	[-90]	[-85]	[-60]
RSRQ Note 3	dB	[-14.1]	[-17.1]	[-35.8]				[-14.1]	[-12.1]	[-10.8]
\hat{E}_{s}/I_{ot}	dB	[-0.64]	[-5.21]	[-25]	[- Infinity]	[13]	[8]	[-0.64]	[4.36]	[24.8]
\hat{E}_s/N_{oc}	dB	[8]	[8]	[13]	[- Infinity]	[13]	[8]	[8]	[13]	[38]
Treselection	S		0		0			0		
Snonintrasearch	dB	TBD		Not sent		Not sent				
Propagation Condition		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 RSRQ levels have been derived from other parameters for information purposes. They are not settable parameters themselves.										

Table A.4.2.7.1-2: Cell specific test parameters for FDD-FDD inter frequency cell re-selection test case with non-allowed CSG cell

A.4.2.7.2 Test Requirements

The cell reselection delay to a newly detectable cell 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 Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 34 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

The probability of reselection from Cell 2 to Cell 1 during T3 observed during testing shall be less than [10%].

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as: $T_{detect,EUTRAN_Inter} + T_{SI}$, Where:

T_{detect,EUTRAN_Inter} See Table 4.2.2.4-1 in section 4.2.2.4

 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 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell in the test case.

A.4.2.8 E-UTRAN TDD – TDD Inter frequency case in the existence of nonallowed CSG cell

A.4.2.8.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD inter-frequency cell reselection requirements specified in section 4.2.2.4 when there is the interference from non-allowed CSG cell and the layers have equal priority.

The test scenario comprises of 2 E-UTRA TDD cells on 2 different carriers and 1 non-allowed E-UTRA TDD CSG cell as given in tables A.4.2.8.1-1 and A.4.2.8.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both cell 1 and cell 3 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 3 is a non-allowed CSG cell. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.8.1-1: General test parameters for TDD-TDD inter frequency cell re-selection test case with non-allowed CSG cell

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation phase
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
E-UTRA RI	F Channel Number		1, 2	Two TDD carrier frequencies are used.
Time offset	between cells	μs	3	Synchronous cells
Uplink-dow	nlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211
Special sub	oframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211
PRACH co	nfiguration		53	As specified in table 5.7.1-3 in TS 36.211
Access Bar	rring Information	-	Not Sent	No additional delays in random access
				procedure.
DRX cycle	DRX cycle length		1.28	The value shall be used for all cells in the test.
T1	S		[15]	T1 need to be defined so that the non-allowed
				CSG cell is identified.
T2		S	[40]	T2 need to be defined so that cell re-selection
				reaction time is taken into account.
T3	T3		[15]	T3 need to be defined so that whether cell re-
				selection would not occur is insured.

Parameter	Unit	Cell 1		Cell 2			Cell 3 (Non-allowed CSG cell)			
		T1	T2	T3	T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1	-	-	2	_		1	
Number										
BW _{channel}	MHz		10			10			10	
OCNG Pattern defined in			OP.2 TDD	`		.2 TDD			OP.2 TDD	
A.3.2.2.2 (OP.2 TDD)			OP.2 IDL	J	OP	.2 100			UP.2 IDL)
PBCH_RA	dB									
PBCH_RB	dB									
PSS_RA	dB									
SSS_RA	dB									
PCFICH_RB	dB									
PHICH_RA	dB									
PHICH_RB	dB		0			0			0	
PDCCH_RA	dB									
PDCCH_RB	dB									
PDSCH_RA	dB									
PDSCH_RB	dB									
OCNG_RA ^{Note 1}	dB									
OCNG_RB ^{Note 1}	dB									
Qrxlevmin	dBm		-140		-	-140			-140	
Qqualmin	dB	[-20]								
Note 2	dBm/	-98								
	15kHz									
RSRP Note 3	dBm/	[-90]	[-90]	[-85]	[-Infinity]	[-85]	[-90]	[-90]	[-85]	[-60]
	15kHz									
RSRQ Note 3	dB	[-14.1]	[-17.1]	[-35.8]				[-14.1]	[-12.1]	[-10.8]
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	[-0.64]	[-5.21]	[-25]	[-Infinity]	[13]	[8]	[-0.64]	[4.36]	[24.8]
\hat{E}_s / N_{oc}	dB	[8]	[8]	[13]	[-Infinity]	[13]	[8]	[8]	[13]	[38]
Treselection	S		0	1		0			0	
Snonintrasearch	dB		TBD		Not sent				Not sent	
Propagation Condition			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 RSRQ levels have been derived from other parameters for information purposes. They are not										

Table A.4.2.8.1-2: Cell specific test parameters for TDD-TDD inter frequency cell re-selection test case with non-allowed CSG cell

A.4.2.8.2 Test Requirements

settable parameters themselves.

The cell reselection delay to a newly detectable cell 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 Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 34 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

The probability of reselection from Cell 2 to Cell 1 during T3 observed during testing shall be less than [10%].

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as: $T_{detect,EUTRAN_{Inter}} + T_{SI}$,

Where:

$T_{detect,EUTRAN_Inter}$	See Table 4.2.2.4-1 in section 4.2.2.4
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 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell in the test case.

A.4.3 E-UTRAN to UTRAN Cell Re-Selection

A.4.3.1 E-UTRAN FDD – UTRAN FDD:

A.4.3.1.1 EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of higher priority

A.4.3.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRA FDD- UTRA FDD inter-RAT cell reselection requirements specified in section 4.2.2.5 when the UTRA cell is of higher priority.

The test scenario comprises of one E-UTRA FDD and one UTRA FDD cells as given in tables A.4.3.1.1.1-1, A.4.3.1.1.1-2 and A.4.3.1.1.1-3. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. E-UTRA cell 1 is already identified by the UE prior to the start of the test. Cell 2 is of higher priority than cell 1.

Table A.4.3.1.1.1-1: General test parameters for E-UTRA FDD- higher priority UTRA FDD inter RAT cell re-selection test case

	Parameter		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 T2		
T2 end	Active cell		Cell 2	UE shall perform reselection to cell 2 during T2		
condition	Neighbour cell		Cell 1			
T3 end	Active cell		Cell 1	UE shall perform reselection to cell 1 during T3		
condition	Neighbour cell		Cell 2			
E-UTRA PI	RACH configuration		4	As specified in table 5.7.1-2 in TS 36.211		
	E_UTRA Access Barring Information				Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.		
Τ1		S	>20	During T1, cell 2 shall be powered off, and during the off time the primary scrambling code 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 needs to be defined so that cell re-selection reaction time is taken into account.		
Т3		S	25	T3 need to be defined so that cell re-selection reaction time is taken into account.		

Parameter	Unit	Cell 1			
		T1	T2	T3	
E-UTRA RF Channel			1		
number					
BW _{channel}	MHz		10		
OCNG Patterns defined in					
A.3.2.1.2 (OP.2 FDD)			OP.2 FDD)	
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB		-		
PHICH_RB	dB		0		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
Qqualmin for UTRA	dB		-20		
neighbour cell	uВ	20			
Qrxlevmin for UTRA	dBm	-115			
neighbour cell	-				
Qrxlevmin	dBm	-140			
N_{oc}	dBm/15 kHz		-98		
RSRP	dBm/15 KHz	-84	-84	-84	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	14	14	14	
\hat{E}_s/N_{oc}	dB	14	14	14	
Treselection _{EUTRAN}	S		0		
Snonintrasearch	dB		50		
Thresh _{x, high} (Note 2)	dB	40			
Propagation Condition			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 OF					
Note 2: This refers to the value of Thresh _{x, high} which is included in E-					
UTRA system information, and is a threshold for the UTRA					
target cell					

Table A.4.3.1.1.1-2: Cell specific test parameters for cell 1(E-UTRA)

Table A.4.3.1.1.1-3: Cell specific test parameters for cell 2(UTRA)

Parameter	Unit	Ce	Cell 2 (UTRA)			
		T1	T2	T3		
UTRA RF Channel Number		(Channel 2	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	-Infinity	-11	-5		
I _{oc}	dBm/3,84 MHz		-70			
CPICH_Ec/lo	dB	-Infinity	-10.33	-16.19		
CPICH_RSCP	dBm	-Infinity	-69	-85		
Propagation Condition		AWGN				
Qqualmin	dB	-20				
Qrxlevmin	dBm	-115				
QrxlevminEUTRA	dBm		-140			

UE_TXPWR_MAX_RACH	dBm	21			
Treselection	S	0			
Sprioritysearch1	dB	62			
Sprioritysearch2	dB	0			
Thresh _{serving, low}	dB	36			
Thresh _{x, low} (Note 1)	dB	50			
Note 1 : his 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					

A.4.3.1.1.2 Test Requirements

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 81 s.

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: $T_{higher_priority_search} + T_{evaluateUTRA_FDD} + T_{SI-UTRA}$

Where:

$T_{higher_priority_search}$	See section 4.2.2; 60s is assumed in this test case
$T_{evaluateUTRA-FDD}$	See Table 4.2.2.5.1-1
T _{SI-UTRA}	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 for higher priority cell search, allow 81 s for higher priority cell reselection in the test case.

A.4.3.1.2 EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of lower priority

A.4.3.1.2.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA FDD- UTRA FDD inter-RAT cell reselection requirements specified in section 4.2.2.5.1 when the UTRA cell is of lower priority.

The test scenario comprises of one UTRA FDD and one E-UTRA FDD cells as given in tables A.4.3.1.2.1-1, A.4.3.1.2.1-2 and A.4.3.1.2.1-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRA cell 1 and UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

Table A.4.3.1.2.1-1: General test parameters for EUTRA FDD- lower priority UTRA FDD inter RAT cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN cell
T1 end condition	Active cells		Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	Neighbour cell		Cell2	
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	
E-UTRA PI	RACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA A	ccess Barring	-	Not Sent	No additional delays in random access
Information	1			procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
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.4.3.1.2.1-2: Cell specific test parameters for cell 1 (E-UTRA)

Parameter	Unit		Cell 1	
		T1	T2	
E-UTRA RF Channel			1	
number				
BW _{channel}	MHz		10	
OCNG Patterns defined in				
A.3.2.1.2 (OP.2 FDD)		O	P.2 FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB	1		
PHICH_RA	dB		_	
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB	1		
PDSCH_RA	dB]		
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			

Qqualmin for UTRA neighbour cell	dB		-20	
Qrxlevmin for UTRA neighbour cell	dBm		-115	
Qrxlevmin	dBm	-140		
N _{oc}	dBm/15 kHz		-98	
RSRP	dBm/15 KHz	-86	-102	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	12	-4	
\hat{E}_s/N_{oc}	dB	12	-4	
Treselection _{EUTRAN}	S	0		
Snonintrasearch	dB	Not sent		
Thresh _{serving, low}	dB	44		
Thresh _{x, low} (Note 2)	dB		42	
Propagation Condition		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 : 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 				

Table A.4.3.1.2.1-3: Cell specific test parameters for cell 2 (UTRA)

Parameter	Unit	Cell 2	(UTRA)
		T1	T2
UTRA RF Channel Number		Channel 2	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	13	13
I _{oc}	dBm/3,84 MHz	-70	
CPICH_Ec/lo	dB	-10.21	-10.21
CPICH_RSCP	dBm	-67	-67
Propagation Condition		AWGN	
Qqualmin	dB	-20	
Qrxlevmin	dBm	-115	
QrxlevminEUTRA	dBm	-140	
UE_TXPWR_MAX_RACH	dBm	21	
Treselection	S	0	
Sprioritysearch1	dB	42	
Sprioritysearch2	dB	0	
Thresh _{x, high} (Note 1)	dB	48	
Note 1: This refers to the value of Thresh _{x, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell			

A.4.3.1.2.2 Test Requirements

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 21 s.

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: $T_{evaluateUTRA_FDD} + T_{SI-UTRA}$

Where:

$T_{evaluateUTRA-FDD}$	See Table 4.2.2.5.1-1
T _{SI-UTRA}	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 for lower priority cell reselection, allow 21 s.

A.4.3.1.3 EUTRA FDD-UTRA FDD cell reselection in fading propagation conditions: UTRA FDD is of lower priority

A.4.3.1.3.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA FDD- UTRA FDD inter-RAT cell reselection requirements specified in section 4.2.2.5.1 when the UTRA cell is of lower priority, and to verify the robustness of the UE measurement filtering in a fading environment. The E-UTRA cell is in fading propagation conditions and the UTRA cell is in AWGN propagation conditions.

The test scenario comprises of one UTRA FDD and one E-UTRA FDD cells as given in tables A.4.3.1.3.1-1, A.4.3.1.3.1-2 and A.4.3.1.3.1-3. The test consists of four successive time periods, with time duration of T1 T2, T3 and T4 respectively. Both E-UTRA cell 1 and UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

Table A.4.3.1.3.1-1: General test parameters for EUTRA FDD- lower priority UTRA FDD inter RAT cell
re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN cell
T1 end condition	Active cells		Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	Neighbour cell		Cell2	
T3 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
condition	Neighbour cell		Cell1	
E-UTRA P	RACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA A Information	ccess Barring	-	Not Sent	No additional delays in random access procedure.
DRX cycle length		S	1.28	The value shall be used for all cells in the test.
T1		S	<85	T1 need to be defined so that cell re-selection reaction time is taken into account. T1 is terminated when the UE starts to send preambles to cell 1
T2		S	64	The start of T2 is defined as the time when the UE starts to send PRACH preambles to cell 1
Т3		S	<25	T3 need to be defined so that cell re-selection reaction time is taken into account. T3 is terminated when the UE starts to send preambles to cell 2
T4			The start of T4 is defined as the time when the UE starts to send PRACH preambles to cell 2	

Parameter	Unit			Cell 1			
		T1	T2	T3	T4		
E-UTRA RF Channel number		1					
BW _{channel}	MHz	10					
OCNG Patterns defined in A.3							
		OP.2 FE	DD				
PSS_RA	dB	0					
SSS_RA	dB	0					
PCFICH_RB	dB	0					
PHICH_RA	dB	0					
PHICH_RB	dB	0					
PDCCH_RA	dB	0					
PDCCH_RB	dB	0					
PDSCH_RA	dB	0					
PDSCH_RB	dB	0					
OCNG_RA ^{Note 1}	dB	0					
OCNG_RB ^{Note 1}	dB	0					
Qqualmin for UTRA neighbour		-20					
Qrxlevmin for UTRA neighbou	dBm	-115					
Qrxlevmin	dBm	-140					
N_{oc}	dBm/15 kHz	-104					
RSRP	dBm/15 KHz	-82	-82	-107	-107		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	22	22	-3	-3		
\hat{E}_s/N_{oc}	dB	22	22	-3	-3		
Treselection _{EUTRAN}	s	0					
Snonintrasearch	dB	Not sent					
Thresh _{serving, low}	dB	44					
Thresh _{x, low} (Note 2)	dB	42					
Propagation Condition		ETU70					
 Note 1: OCNG shall be used such that both cells are fully allocated and a constant total t spectral density is achieved for all OFDM symbols. Note 2 : This refers to the value of Thresh_x, low which is included in E-UTRA system inforr 							
threshold for the UT	RA target cell.						

Table A.4.3.1.3.1-2: Cell specific test parameters for cell 1 (E-UTRA)

Parameter	Unit	Cell 2 (UTRA)			
		T1	T2	T3	T4
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	13	13	13	13
I _{oc}	dBm/3,84 MHz	-70			
CPICH_Ec/lo	dB	-10.21	-10.21	-10.21	-10.21
CPICH_RSCP	dBm	-67	-67	-67	-67
Propagation Condition		AWGN			
Qqualmin	dB	-20			
Qrxlevmin	dBm	-115			
QrxlevminEUTRA	dBm	-140			
UE_TXPWR_MAX_RACH	dBm	21			
Treselection	S	0			
Sprioritysearch1	dB	42			
Sprioritysearch2	dB	0			
Thresh _{x, high} (Note 1)	dB	44			
Note 1 : This refers to the va information, and is a					ystem

Table A.4.3.1.3.1-3: Cell specific test parameters for cell 2 (UTRA)

A.4.3.1.3.2 Test Requirements

The probability of reselection from cell 1to cell 2 during T2 observed during testing shall be less than 10%

The probability of reselection from cell 2 to cell 1 during T4 observed during testing shall be less than 10%

The cell reselection delay to lower priority is defined as the time from the beginning of time period T3, 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. In order to evaluate reselection delay, the system simulator first needs to verify that the UE is camped on cell 1 at the start of T3

The cell re-selection delay to lower priority shall be less than 21 s.

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: $T_{evaluateUTRA_FDD} + T_{SI-UTRA}$

Where:

$T_{evaluateUTRA-FDD}$	See Table 4.2.2.5.1-1
T _{SI-UTRA}	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 for lower priority cell reselection, allow 21 s.

A.4.3.2 E-UTRAN FDD – UTRAN TDD:

A.4.3.2.1 Test Purpose and Environment

A.4.3.2.1.1 3.84Mcps TDD option

A.4.3.2.1.2 1.28Mcps TDD option

This test is to verify the requirement for the E-UTRA FDD to UTRA TDD inter-RAT cell reselection requirements specified in section 4.2.2.5.2 when the UTRA cell is of lower priority.

This test scenario comprised of 1 E-UTRA FDD serving cell (Cell 1), and 1 UTRA TDD cell (Cell 2) to be re-selected. Test parameters are given in table A.4.3.2.1.2-1, A.4.3.2.1.2-2, and A.4.3.2.1.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. 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 TS36.304.

Table A.4.3.2.1.2-1: General test parameters for E-UTRA FDD to UTRA (1.28 Mcps TDD OPTION) Cell Re-selection

Para	meter	Unit	Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN 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	1.28 Mcps TDD OPTION cell
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	E-UTRA FDD cell
CP length of ce	ell 1		normal	
E-UTRA PRAC configuration	Ή		4	As specified in table 5.7.1-2 in TS 36.211
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 leng	gth	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	

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel			1	
Number				
BW _{channel}	MHz		10	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0	0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note1}	dB			
OCNG_RB ^{Note1}	dB	-		
Qrxlevmin	dBm/15kHz	-140	-140	
N_{oc}	dBm/15kHz	-98		
RSRP	dBm/15kHz	-87	-101	
\hat{E}_{s}/I_{ot}	dB	11	-3	
Snonintrasearch	dB	Not	sent	
Thresh _{serving, low}	dB	46 (-9	94dBm)	
Thresh _{x, low} (Note2)	dB	24 (-7	'9dBm)	
Propagation Condition		AV	VGN	
Note 1: OCNG shall be us constant total tran all OFDM symbols	smitted power spe			
Note2: This refers to the UTRA system info target cell	value of Threshx, lo prmation, and is a th			

Table A.4.3.2.1.2-2: Cell specific test parameters for cell re-selection E-UTRA FDD to UTRA TDD test case (cell 1)

Parameter	Unit		Cell 2 ((UTRA)	
Timeslot Number		0		· · · ·	PTS
		T1	T2	T1	T2
UTRA RF Channel Number (Note1)			Chan	nel 2	
PCCPCH_Ec/lor	dB	-3	-3		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor	dB	-3	-3		
\hat{I}_{or}/I_{oc}	dB	11	11	11	11
I _{oc}	dBm/1.28 MHz	-80			
PCCPCH RSCP	dBm	-72	-72	n.a.	n.a.
Propagation Condition	AWGN				
Qrxlevmin	dBm		-1	03	
Qoffset1 _{s,n}	dB		C1, (C2: 0	
Qhyst1 _s	dB		()	
Thresh _{x, high} (Note2)	dB	dB 46 (-94dBm)			
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, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell					

Table A.4.3.2.1.2-3: Cell specific test parameters for cell re-selection E-UTRA FDD to UTRA TDD test case (cell 2)

A.4.3.2.1.3 7.68Mcps TDD option

A.4.3.2.1 Test Requirements

A.4.3.2.1.1 3.84Mcps TDD option

A.4.3.2.1.2 1.28Mcps 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 the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to lower priority shall be less than 21 s.

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: $T_{evaluateUTRA_TDD} + T_{SI-UTRA}$

Where:

$T_{evaluateUTRA_TDD}$	19.2s, See table 4.2.2.5.2-1
T _{SI-UTRA}	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.4.3.2.2.2.3 7.68Mcps TDD option

A.4.3.3 E-UTRAN TDD – UTRAN FDD:

A.4.3.3.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA TDD- UTRA FDD inter-RAT cell reselection requirements specified in section 4.2.2.5.1 when the UTRA cell is of lower priority.

The test scenario comprises of one UTRA FDD and one E-UTRA TDD cells as given in tables A.4.3.3.1-1, A.4.3.3.1-2 and A.4.3.3.1-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRA cell 1 and UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

Table A.4.3.3.1-1: General test parameters for EUTRA TDD- lower priority UTRA FDD inter RAT cell reselection test case

	Parameter		Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN cell
T1 end condition	Active cells		Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	Neighbour cell		Cell2	
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	
E-UTRA I	PRACH configuration		53	As specified in table 5.7.1-3 in TS 36.211
Uplink-dov	wnlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special sub	oframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
	E_UTRA Access Barring Information		Not Sent	No additional delays in random access procedure.
DR	X cycle length	S	1.28	The value shall be used for all cells in the test.
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.4.3.3.1-2: Cell specific test parameters for cell 1(E-UTRA)

Parameter	Unit		Cell 1
		T1	T2
E-UTRA RF Channel			1
number			
BW _{channel}	MHz		10
OCNG Patterns defined in			
A.3.2.2.2 (OP.2 TDD)		O	P.2 TDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		_
PHICH_RB	dB		0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		

Qqualmin for UTRA neighbour cell	dB		-20	
Qrxlevmin for UTRA neighbour cell	dBm		-115	
Qrxlevmin	dBm		-140	
N _{oc}	dBm/15 kHz		-98	
RSRP	dBm/15 KHz	-86	-102	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	12	-4	
\hat{E}_s/N_{oc}	dB	12	-4	
Treselection _{EUTRAN}	S	0		
Snonintrasearch	dB	Not sent		
Thresh _{serving, low}	dB	44		
Thresh _{x, low} (Note 2)	dB		42	
Propagation Condition		AWGN		
and a constant tota achieved for all OF Note 2 : This refers to the va	 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. This refers to the value of Thresh_{x, low} which is included in E- UTRA system information, and is a threshold for the UTRA 			

Table A.4.3.3.1-3: Cell specific test parameters for cell 2 (UTRA)

Parameter	Unit	Cell 2 (UTRA)			
		T1 T2			
UTRA RF Channel Number		Channel 2	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	13	13		
I _{oc}	dBm/3,84 MHz	-70			
CPICH_Ec/lo	dB	-10.21	-10.21		
CPICH_RSCP	dBm	-67	-67		
Propagation Condition		AWGN			
Qqualmin	dB	-20			
Qrxlevmin	dBm	-115			
QrxlevminEUTRA	dBm	-140			
UE_TXPWR_MAX_RACH	dBm	21			
Treselection	S	0			
Sprioritysearch1	dB	42			
Sprioritysearch2	dB	0			
Thresh _{x, high} (Note 1)	dB	48			
Note 1 : This refers to the value of Thresh _x , _{high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell					

A.4.3.3.2 Test Requirements

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 21 s.

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: $T_{evaluateUTRA_FDD} + T_{SI-UTRA}$

Where:

T_evaluateUTRA-FDDSee Table 4.2.2.5.1-1T_SI-UTRAMaximum 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 for lower priority cell reselection, allow 21 s.

A.4.3.4 E-UTRAN TDD – UTRAN TDD:

A.4.3.4.1 E-UTRA to UTRA TDD cell re-selection: UTRA is of higher priority

- A.4.3.4.1.1 Test Purpose and Environment
- A.4.3.4.1.1.1 3.84 Mcps TDD option
- A.4.3.4.1.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the E-UTRA TDD to UTRA TDD inter-RAT cell re-selection requirements specified in section 4.2.2.5 when the UTRA cell is of higher priority.

This test scenario comprised of 1 E-UTRA TDD serving cell, and 1 UTRA TDD cell to be re-selected. Test parameters are given in table A.4.3.4.1.1.2-1, A.4.3.4.1.1.2-2, and A.4.3.4.1.1.2-3. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. E-UTRA cell 1 is already identified by the UE prior to the start of the test. 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 TS36.304.

Para	ameter	Unit	Value	Comment
Initial	Active cell		Cell 1	UE is on cell 1 in the initialisation phase, so that reselection to
condition				cell 2 occurs during T2
T2 end	Active cell		Cell 2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell 1	
T3 end	Active cell		Cell 1	UE shall perform reselection to cell 1 during T3
condition	Neighbour cell		Cell 2	
Uplink-down configuration			1	As specified in table 4.2.2 in TS 36.211
Special subf configuration			6	As specified in table 4.2.1 in TS 36.211
PRACH con cell 1	PRACH configuration of		53	As specified in table 4.7.1-3 in TS 36.211
CP length of	f cell 1		Normal	
Time offset	between cells		3 ms	Asynchronous cells
Access Barr	ing	-	Not	No additional delays in random access procedure.
Information			sent	
Treselection		S	0	
DRX cycle le	ength	S	1,28	
HCS			Not used	
T1		S	>20	During T1, cell 2 shall be powered off, and during the off time the primary scrambling code 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 needs to be defined so that cell re-selection reaction time is taken into account.
Т3		S	25	T3 needs to be defined so that cell re-selection reaction time is taken into account.

Table A.4.3.4.1.1.2-1: General test parameters for E-UTRAN to UTRAN (1.28 Mcps TDD OPTION) Cell Re-selection

Table A.4.3.4.1.1.2-2: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 1)

Parameter	Unit		Cell 1		
		T1	T2	T3	
E-UTRA RF Channel			1		
Number					
BW _{channel}	MHz		10		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0	0	0	
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				

Q _{rxlevmin}	dBm/15kHz	-140	-140	-140	
N _{oc}	dBm/15kHz	-98			
RSRP	dBm/15kHz	-87 -87		-87	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	11 11		11	
Thresh _{x, high} (Note2)	dB	24(-79dBm)			
Snonintrasearch	rasearch 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 _{x, high} which is included in E-UTRA system information, and is a threshold for the UTRA target cell					

Table A.4.3.4.1.1.2-3: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 2)

Parameter	Unit	Cell 2 (UTRA)					
Timeslot Number		0 DwPTS			6		
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number (Note1)				Chan	nel 2		
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	-inf	11	-3	-inf	11	-3
I _{oc}	dBm/1.28 MHz	-80					
PCCPCH RSCP	dBm	-inf	-inf -72 -86 n.a.				
Propagation Condition				AW	'GN		
Qrxlevmin	dBm			-1	03		
Qoffset1 _{s,n}	dB			C1, (C2: 0		
Qhyst1 _s	dB			()		
Snonintrasearch	dB			Not	sent		
Thresh _{serving, low}	dB			24 (-7	9dBm)		
Thresh _{x, low} (Note2)	dB			46 (-94	4dBm)		
Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.							
Note2: This refers to th system informa							

A.4.3.4.1.1.3 7.68 Mcps TDD option

Void

- A.4.3.4.1.2 Test Requirements
- A.4.3.4.1.2.1 3.84 Mpcs TDD option

A.4.3.4.1.2.2 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 the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to higher priority shall be less than 81 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

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NOTE: The cell re-selection delay to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluateUTRA_TDD} + T_{SI_UTRA}$,

Where:

$T_{higher_priority_search}$	60s, See section 4.2.2
$T_{evaluateUTRA_TDD}$	19.2s, See Table 4.2.2.5.2-1
T _{SI_UTRA}	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.4.3.4.1.2.3	7.68 Mpcs TDD option
A.4.3.4.2	E-UTRA to UTRA TDD cell re-selection: UTRA is of lower priority
A.4.3.4.2.1	Test Purpose and Environment
A.4.3.4.2.1.1	3.84 Mcps TDD option
A.4.3.4.2.1.2	1.28 Mcps TDD option

This test is to verify the requirement for the E-UTRA TDD to UTRA TDD inter-RAT cell re-selection requirements specified in section 4.2.2.5 when the UTRA cell is of lower priority.

This test scenario comprised of 1 E-UTRA TDD serving cell (Cell 1), and 1 UTRA TDD cell (Cell 2) to be re-selected. Test parameters are given in table A.4.3.4.2.1.2-1, A.4.3.4.2.1.2-2, and A.4.3.4.2.1.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. 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 TS36.304.

Table A.4.3.4.2.1.2-1: General test parameters for E-UTRAN to UTRAN (1.28 Mcps TDD OPTION) Cell Re-selection

Parameter		Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN cell
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1 for
condition				subsequent iterations of the test
	Neighbour cell		Cell2	1.28 Mcps TDD OPTION cell
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	E-UTRA TDD cell
Uplink-downlink of cell 1	configuration of		1	As specified in table 4.2.2 in TS 36.211
Special subframe of cell 1	e configuration		6	As specified in table 4.2.1 in TS 36.211
PRACH configura	ation of cell 1		53	As specified in table 4.7.1-3 in TS 36.211
CP length of cell	1		Normal	
Time offset betwe	een cells		3 ms	Asynchronous cells
Access Barring I	nformation	-	Not	No additional delays in random access procedure.
			sent	
Treselection	selection		0	
DRX cycle length		S	1,28	
HCS			Not	
			used	
T1		S	85	
T2		S	25	

Parameter	Unit	Ce	ll 1		
		T1	T2		
E-UTRA RF Channel			1		
Number					
BW _{channel}	MHz	1	0		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0	0		
PDCCH_RA	dB]			
PDCCH_RB	dB				
PDSCH_RA	dB	-			
PDSCH_RB	dB	-			
OCNG_RA ^{Note1}	dB				
OCNG_RB ^{Note1}	dB				
Qrxlevmin	dBm/15kHz	-140	-140		
N _{oc}	dBm/15kHz	-{	98		
RSRP	dBm/15kHz	-87	-101		
\hat{E}_{s}/I_{ot}	dB	11	-3		
Snonintrasearch	dB	Not	sent		
Thresh _{serving, low}	dB	46 (-9	4dBm)		
Thresh _{x, low} (Note2)	dB	24 (-7	9dBm)		
Propagation Condition		AW	/GN		
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 _{x, low} which is included in E-UTRA system information, and is a threshold for the UTRA target cell					

Table A.4.3.4.2.1.2-2: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 1)

Parameter	Unit	Cell 2 (UTRA)				
Timeslot Number		()	DwPTS		
		T1	T2	T1	T2	
UTRA RF Channel Number (Note1)		Channel 2				
PCCPCH_Ec/lor	dB	-3	-3			
DwPCH_Ec/lor	dB			0	0	
OCNS_Ec/lor	dB	-3	-3			
\hat{I}_{or}/I_{oc}	dB	11	11	11	11	
I _{oc}	dBm/1.28 MHz	-80				
PCCPCH RSCP	dBm	-72	-72	n.a.	n.a.	
Propagation Condition		AWGN				
Qrxlevmin	dBm		-1	03		
Qoffset1 _{s,n}	dB		C1, (C2: 0		
Qhyst1 _s	dB		()		
Thresh _{x, high} (Note2)	dB		46 (-94	4dBm)		
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, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell						

Table A.4.3.4.2.1.2-3: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 2)

A.4.3.4.2.1.3 7.68 Mcps TDD option

- A.4.3.4.2.2 Test Requirements
- A.4.3.4.2.2.1 3.84 Mpcs TDD option
- A.4.3.4.2.2.2 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 the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to lower priority shall be less than 21 s.

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: $T_{evaluateUTRA TDD} + T_{SI UTRA}$,

Where:

$T_{evaluateUTRA_TDD}$	19.2s, See Table 4.2.2.5.2-1
T _{SI_UTRA}	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.4.3.4.2.2.3 7.68 Mpcs TDD option

A.4.3.4.3 EUTRA TDD-UTRA TDD cell reselection in fading propagation conditions: UTRA TDD is of lower priority

A.4.3.4.3.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA TDD- UTRA TDD inter-RAT cell reselection requirements specified in section 4.2.2.5.2 when the UTRA cell is of lower priority, and to verify the robustness of the UE measurement filtering in a fading environment. The E-UTRA cell is in fading propagation conditions and the UTRA cell is in AWGN propagation conditions.

The test scenario comprises of one UTRA TDD and one E-UTRA TDD cells as given in tables A.4.3.4.3.1-1, A.4.3.4.3.1-2 and A.4.3.4.3.1-3. The test consists of four successive time periods, with time duration of T1 T2, T3 and T4 respectively. Both E-UTRA cell 1 and UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

Table A.4.3.4.3.1-1: General test parameters for EUTRA TDD- lower priority UTRA TDD inter RAT cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN cell
T1 end condition	Active cells		Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	Neighbour cell		Cell2	
T3 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
condition	Neighbour cell		Cell1	
E-UTRA P	RACH configuration		53	As specified in table 5.7.1-3 in TS 36.211
Uplink-dow cell 1	nlink configuration of		1	As specified in table 4.2.2 in TS 36.211
Special sul cell 1	bframe configuration of		6	As specified in table 4.2.1 in TS 36.211
E_UTRA A Informatior	ccess Barring	-	Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	<85	T1 need to be defined so that cell re-selection reaction time is taken into account. T1 is terminated when the UE starts to send preambles to cell 1
T2		S	64	The start of T2 is defined as the time when the UE starts to send PRACH preambles to cell 1
Т3		S	<25	T3 need to be defined so that cell re-selection reaction time is taken into account. T3 is terminated when the UE starts to send PRACH preambles to cell 2
Τ4		S	64	The start of T4 is defined as the time when the UE starts to send PRACH preambles to cell 2

Parameter	Unit	Cell 1					
		T1	T2	T3	T4		
E-UTRA RF Channel		1					
number							
BW _{channel}	MHz		1	0			
OCNG Patterns defined in			OP.2	TDD			
A.3.2.2.2 (OP.2 TDD)							
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB						
PDCCH_RA	dB		()			
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
Qrxlevmin for UTRA	dBm	-103					
neighbour cell							
Qrxlevmin	dBm	-140					
N_{oc}	dBm/15 kHz	-104					
RSRP	dBm/15 KHz	-82	-82	-107	-107		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	22	22	-3	-3		
\hat{E}_s/N_{oc}	dB	22	22	-3	-3		
TreselectionEUTRAN	S	0					
Snonintrasearch	dB	Not sent					
Thresh _{serving, low}	dB	44					
Thresh _{x, low} (Note 2)	dB	24					
Propagation Condition		ETU70					
Note 1: OCNG shall be use							
transmitted power s	transmitted power spectral density is achieved for all OFDM symbols.						
Note 2: This refers to the va				E-UTRA sy	/stem		
information, and is	a threshold for th	ie UTRA ta	rget cell.				

Table A.4.3.4.3.1-2: Cell specific test parameters for cell 1 (E-UTRA)

Table A.4.3.4.3.1-3: Cell specific test parameters for cell 2 (UTRA)

Parameter	Unit	Cell 2 (UTRA)								
Timeslot Number		0			DwPTS					
		T1	T2	T3	T4	T1	T2	T3	T4	
UTRA RF Channel Number (Note1)		Channel 2								
PCCPCH_Ec/lor	dB	-3								
DwPCH_Ec/lor	dB							0		
OCNS_Ec/lor	dB		-:	3						
\hat{I}_{or}/I_{oc}	dB	13	13	13	13	13	13	13	13	
I _{oc}	dBm/1.28 MHz	-80								
PCCPCH RSCP	dBm	-70	-70	-70	-70	n.a.	n.a.	n.a.	n.a.	
Propagation Condition		AWGN								
Qrxlevmin	dBm	-103								
Qrxlevmin _{EUTRA}	dBm				-1	40				
UE_TXPWR_MAX_RACH	dBm				2	21				
Treselection	S					0				
Thresh _{x, high} (Note2)	dB	44								
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, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell									

A.4.3.4.3.2 Test Requirements

The probability of reselection from cell 1 to cell 2 during T2 observed during testing shall be less than 10%

The probability of reselection from cell 2 to cell 1 during T4 observed during testing shall be less than 10%

The cell reselection delay to lower priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send the SYNCH-UL sequene in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2. In order to evaluate reselection delay, the system simulator first needs to verify that the UE is camped on cell 1 at the start of T3

The cell re-selection delay to lower priority shall be less than 21 s.

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_{evaluateUTRA_TDD} + T_{SI-UTRA}

Where:

$T_{evaluateUTRA_TDD}$	19.2s, See Table 4.2.2.5.2-1
T _{SI-UTRA}	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 for lower priority cell reselection, allow 21 s.

A.4.4 E-UTRAN to GSM Cell Re-Selection

A.4.4.1 E-UTRAN FDD – GSM:

A.4.4.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to GSM cell re-selection delay reported in section 4.2.2.5.

This scenario implies the presence of 1 E-UTRAN serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 E-UTRA carrier and 12 GSM cells. Test parameters are given in Table, A.4.4.1-1, A.4.4.1-2, A.4.4.1-3. E-UTRA FDD cell (Cell 1) and GSM cell (cell 2) shall belong to different Location Areas. The test comprises two successive time periods, T1 and T2. During initialization before the start of the test, the UE is camped on cell 1. By the end of T1, the UE has identified BSIC on the GSM BCCH carrier of cell 2 but the signal levels do not meet the reselection criterion during T1. At the start of T2, the signal levels change such that cell 2 satisfies reselection criterion. The GSM layer is configured at a lower priority than the serving E-UTRA FDD layer.

Table A.4.4.1-1: General test parameters for E-UTRA FDD GSM cell re-selection test case

	Parameter	Unit	Value	Comment		
Initial condition	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation phase and shall be able to detect and monitor the 4 strongest GSM BCCH carriers in T1. Cell 1 is an E-UTRA FDD cell.		
Final condition	Neighbour cell		Cell2	UE shall perform reselection to cell 2 during T2. Cell 2 is a GSM cell.		
E-UTRA R	F Channel Number		1	1 E-UTRA FDD carrier frequency		
GSM ARF0	CN		1	12 GSM BCCH carriers are used		
PRACH co	onfiguration		4	As specified in table 5.7.1-2 in TS 36.211		
Access Ba	Access Barring Information		Not Sent	No additional delays in random access procedure.		
CP length	of cell 1		Normal			
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.		
T1		S	35	T1 need to be defined so that cell re-selection reaction time is taken into account.		
T2	T2				35	T2 need to be defined so that the higher layer search periodicity and cell re-selection reaction time are taken into account.
Propagatio	n channel		AWGN			

 Table A.4.4.1-2: Cell-specific test parameters for Cell 1 – E-UTRA FDD cell

Parameter	Unit		Cell 1
		T1	T2
E-UTRA RF Channel			1
number			
BW _{channel}	MHz		10
OCNG Patterns defined in			
A.3.2.1.1 (OP.2 FDD)		0	P.2 FDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB		0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB]	
PDSCH_RB	dB]	
OCNG_RA ^{Note 1}	dB]	
	dB		

Qrxlevmin	dBm		-140		
N _{oc}	dBm/15 kHz		-98		
RSRP	dBm/15 KHz	-89	-102		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	9	-4		
\hat{E}_s/N_{oc}	dB	9	-4		
TreselectionEUTRAN	S	0			
Snonintrasearch	dB	Not sent			
Thresh _{serving, low}	dB	44			
Thresh _{x, low} (Note 2)	dB	24			
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: This refers to Thresh _{x, low} which is included in E-UTRA system information,					
and is a threshold for GSM target cell.					

Parameter	Unit	Cell 2 (GSM)	
Falameter	Onit	T1	T2
Absolute RF Channel Number		ARFCN ²	1
RXLEV	dBm	-90	-75
RXLEV_ACCESS_MIN	dBm	-105	
MS_TXPWR_MAX_CCH	dBm	24	

A.4.4.1.2 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 RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than $26 \text{ s} + T_{BCCH}$, where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [8].

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: $4*T_{measureGSM} + T_{BCCH}$, where:

T _{measureGSM}	See Table 4.2.2.5.3-1 in section 4.2.2.5.3.
T _{BCCH}	Maximum time allowed to read BCCH data from GSM cell [8]. According to [8], 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 s + T_{BCCH} , allow 26 s + T_{BCCH} in the test case.

A.4.4.2 E-UTRAN TDD – GSM:

A.4.4.2.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD to GSM cell re-selection delay reported in section 4.2.2.5.

This scenario implies the presence of 1 E-UTRAN serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 E-UTRA carrier and 12 GSM cells. Test parameters are given in Table, A.4.4.2-1, A.4.4.2-2, A.4.4.2-3. E-UTRA TDD cell (Cell 1) and GSM cell (cell 2) shall belong to different Location Areas. The test comprises two successive time periods, T1 and T2. During initialization before the start of the test, the UE is

camped on cell 1. By the end of T1, the UE has identified BSIC on the GSM BCCH carrier of cell 2 but the signal levels do not meet the reselection criterion during T1. At the start of T2, the signal levels change such that cell 2 satisfies reselection criterion. The GSM layer is configured at a lower priority than the serving E-UTRA TDD layer.

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation phase and shall be able to detect and monitor the 4 strongest GSM BCCH carriers in T1. Cell 1 is an E-UTRA TDD cell.
Final condition	Neighbour cell		Cell2	UE shall perform reselection to cell 2 during T2. Cell 2 is a GSM cell.
E-UTRA RI	F Channel Number		1	1 E-UTRA TDD carrier frequency
GSM ARFO	CN		1	12 GSM BCCH carriers are used
Uplink-dow cell 1	nlink configuration of		1	As specified in table 4.2.2 in TS 36.211
Special sub for cell 1	oframe configuration		6	As specified in table 4.2.1 in TS 36.211
PRACH co	nfiguration for cell 1		53	As specified in table 5.7.1-3 in TS 36.211
CP length of	of cell 1		Normal	
Access Bai	rring Information	-	Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		s	35	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	35	T2 need to be defined so that the higher layer search periodicity and cell re-selection reaction time are taken into account.
Propagatio	n channel		AWGN	

Table A.4.4.2-1: General test parameters for E-UTRA TDD GSM cell re-selection test case

Parameter	Unit	Cell 1	
		T1	T2
E-UTRA RF Channel			1
number			
BW _{channel}	MHz		10
OCNG Patterns defined in			
A.3.2.1.1 (OP.2 TDD)		OF	P.2 TDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB		0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB]	
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		

Qrxlevmin	dBm		-140		
N _{oc}	dBm/15 kHz		-98		
RSRP	dBm/15 KHz	-89	-102		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	9	-4		
\hat{E}_s/N_{oc}	dB	9	-4		
TreselectionEUTRAN	S	0			
Snonintrasearch	dB	Not sent			
Thresh _{serving, low}	dB	44			
Thresh _{x, low} (Note 2)	dB	24			
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: This refers to Thresh _{x, low} which is included in E-UTRA system					
information, and is a threshold for GSM target cell.					

Parameter	Unit	Cell 2 (GSM)	
Farameter	Onit	T1	T2
Absolute RF Channel Number		ARFCN ²	1
RXLEV	dBm	-90	-75
RXLEV_ACCESS_MIN	dBm	-105	
MS_TXPWR_MAX_CCH	dBm	24	

A.4.4.2.2 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 RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than $26 \text{ s} + T_{BCCH}$, where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [8].

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: $4* T_{measureGSM} + T_{BCCH}$, where:

T _{measureGSM}	See Table 4.2.2.5.3-1 in section 4.2.2.5.3.
T _{BCCH}	Maximum time allowed to read BCCH data from GSM cell [8]. According to [8], 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 s + T_{BCCH} , allow 26 s + T_{BCCH} in the test case.

A.4.5 E-UTRAN to HRPD Cell Re-Selection

A.4.5.1 E-UTRAN FDD – HRPD

A.4.5.1.1 E-UTRAN FDD – HRPD Cell Reselection: HRPD is of Lower Priority

A.4.5.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD- HRPD inter-RAT cell reselection requirements specified in section 4.2.2.5.4 when the HRPD cell is of lower priority.

The test scenario comprises of one HRPD and one E-UTRAN FDD cells as given in tables A.4.5.1.1.1-1, A.4.5.1.1.1-2 and A.4.5.1.1.1-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRAN FDD cell 1 and HRPD cell 2 are 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 lower priority than cell 1. Cell 1 and cell 2 shall belong to different tracking areas.

Table A.4.5.1.1.1-1: General Test Parameters for E-UTRAN FDD - lower priority HRPD Cell Reselection

	Unit	Value	Comment	
Initial condition	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbour cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell is selecting during T2
DRX cycle length		S	1.28	
E-UTRA FDD RF Channel Number			1	Only one FDD carrier frequency is used.
E-UTRA FDD Channel Bandwidth (BW _{channel})		MHz	10	
HRPD RF Channel Number			1	Only one HRPD carrier frequency is used.
E-UTRA FDD PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA FDD Access Barring Information		-	Not Sent	No additional delays in random access procedure.
T1		S	30	
T2		S	30	

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel number		1		
BW _{channel}	MHz	10		
OCNG Patterns defined in A.3.2.1.1				
(OP.2 FDD)		OP.2	FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB	_		
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
N _{oc}	dBm/15 kHz	-98		
RSRP	dBm/15 KHz	-89	-102	
\hat{E}_{s}/I_{ot}	dB	9	-4	
\hat{E}_s/N_{oc}	dB	9	-4	
Treselection _{EUTRAN}	S	0		
Snonintrasearch	dB	Not s	sent	
cellReselectionPriority	-	1		
Qrxlevmin	dBm	-14	10	
Qrxlevminoffset	dB	0		
Pcompensation	dB	0		
S _{ServingCell}	dB	51	38	
Thresh _{serving, low}	dB	44	1	
Propagation Condition		AW	GN	
Note 1: CNG shall be used such that	both cells are full	y allocated and a constan	t total transmitted	
power spectral density is ach				

Table A.4.5.1.1.1-2: Cell Specific Test Parameters for E-UTRAN FDD (Cell # 1)

Parameter	Unit	Cell	2
		T1	T2
HRPD RF Channel Number		1	
$\frac{\text{Control } E_{b}}{N_{t}}$ (38.4 kbps)	dB	21	
$\frac{\text{Control} \text{E}_{\text{b}}}{\text{N}_{\text{t}}} $ (76.8 kbps)	dB	18	
\hat{I}_{or}/I_{oc}	dB	0	0
I _{oc}	dBm/ 1.2288 MHz	-55	
CDMA2000 HRPD Pilot Strength	dB	-3	-3
Propagation Condition		AWG	N
SnonServingCell,x		-6	
Treselection	S	0	
hrpd-CellReselectionPriority	-	0	
Thresh _{x, low}		-14	

Table A.4.5.1.1.1-3: Cell Specific Test Parameters for HRPD (cell # 2)

A.4.5.1.1.2 Test Requirements

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 access probe preambles on the Access Channel on cell 2.

The cell re-selection delay to the lower priority cell 2 shall be less than 21 s.

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: $T_{evaluateHRPD} + T_{SI-HRPD}$

Where:

$T_{evaluatHRPD}$	See Table 4.2.2.5.4-1
T _{SI-HRPD}	Maximum repetition period of relevant system information blocks that need to be received by the UE to camp on cell 2; 1704 ms is assumed in this test case.

This gives a total of 20.904 s for the lower priority cell reselection, allow 21 s in the test case.

A.4.5.2 E-UTRAN TDD – HRPD

A.4.5.2.1 E-UTRAN TDD – HRPD Cell Reselection: HRPD is of Lower Priority

A.4.5.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD- HRPD inter-RAT cell reselection requirements specified in section 4.2.2.5.4 when the HRPD cell is of lower priority.

The test scenario comprises of one HRPD and one E-UTRAN TDD cells as given in tables A.4.5.2.1.1-1, A.4.5.2.1.1-2 and A.4.5.2.1.1-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRAN TDD cell 1 and HRPD cell 2 are 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 lower priority than cell 1. Cell 1 and cell 2 shall belong to different tracking areas.

Table A.4.5.2.1.1-1: General Test Parameters for E-UTRAN TDD - lower priority HRPD Cell Reselection

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN TDD cell
	Neighbour cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell is selecting during T2
Uplink-downlink cc	onfiguration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe	configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
CP length of cell 1			Normal	
DRX cycle length		S	1.28	
E-UTRA TDD RF (Channel Number		1	Only one TDD carrier frequency is used.
E-UTRA TDD Cha	nnel Bandwidth (BWchannel)	MHz	10	
HRPD RF Channe	l Number		1	Only one HRPD carrier frequency is used.
E-UTRA TDD PRA	CH configuration of cell 1		53	As specified in table 4.7.1-3 in TS 36.211
E_UTRA TDD Acc	ess Barring Information	-	Not Sent	No additional delays in random access procedure.
T1		S	30	
T2		S	30	

Parameter	Unit	Ce	ll 1	
		T1	T2	
E-UTRA RF Channel number			1	
BW _{channel}	MHz	10		
OCNG Patterns defined in A.3.2.2.2				
(OP.2 TDD)		OP.2 TDD		
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB		_	
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB	-		
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
N _{oc}	dBm/15 kHz	-98		
RSRP	dBm/15 KHz	-89	-102	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	9	-4	
\hat{E}_{s}/N_{oc}	dB	9	-4	
Treselection _{EUTRAN}	S		0	
Snonintrasearch	dB	Not	sent	
cellReselectionPriority	-		1	
Qrxlevmin	dBm	-1	40	
Qrxlevminoffset	dB		0	
Pcompensation	dB		0	
SservingCell	dB	51	38	
Thresh _{serving, low}	dB	4	4	
Propagation Condition			/GN	
Note 1: OCNG shall be used such th	at both cells are fu	Illy allocated and a const	ant total transmitted	
power spectral density is ach				

Table A.4.5.2.1.1-2: Cell Specific Test Parameters for E-UTRAN TDD (Cell # 1)

Parameter	Unit	Cel	12	
		T1	T2	
HRPD RF Channel Number		1		
$\frac{Control E_{b}}{N_{t}}$ (38.4 kbps)	dB	21		
$\frac{Control E_{b}}{N_{t}}$ (76.8 kbps)	dB	18		
\hat{I}_{or}/I_{oc}	dB	0	0	
I _{oc}	dBm/ 1.2288 MHz	-55		
CDMA2000 HRPD Pilot Strength	dB	-3	-3	
Propagation Condition		AWO	GN	
SnonServingCell,x		-6		
Treselection	S	0		
hrpd-CellReselectionPriority	-	0		
Thresh _{x, low}		-14	4	

Table A.4.5.2.1.1-3: Cell Specific Test Parameters for HRPD (cell # 2)

A.4.5.2.1.2 Test Requirements

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 access probe preambles on the Access Channel on cell 2.

The cell re-selection delay to the lower priority cell 2 shall be less than 21 s.

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_{evaluateHRPD} + T_{SI-HRPD}

Where:

T_{evaluatHRPD} See Table 4.2.2.5.4-1

T_{SI-HRPD} Maximum repetition period of relevant system information blocks that need to be received by the UE to camp on cell 2; 1704 ms is assumed in this test case.

This gives a total of 20.904 s for the lower priority cell reselection, allow 21 s in the test case.

A.4.6 E-UTRAN to cdma2000 1X Cell Re-Selection

A.4.6.1 E-UTRAN FDD – cdma2000 1X

A.4.6.1.1 E-UTRAN FDD – cdma2000 1X Cell Reselection: cdma2000 1X is of Lower Priority

A.4.6.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD- cdma2000 1X inter-RAT cell reselection requirements specified in section 4.2.2.5.5 when the cdma2000 1X cell is of lower priority.

The test scenario comprises of one cdma2000 1X and one E-UTRAN FDD cells as given in tables A.4.6.1.1.1-1, A.4.6.1.1.1-2 and A.4.6.1.1.1-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRAN FDD cell 1 and cdma2000 1X cell 2 are 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 lower priority than cell 1. Cell 1 and cell 2 shall belong to different tracking areas.

Table A.4.6.1.1.1-1: General Test Parameters for E-UTRAN FDD - lower priority cdma2000 1X Cell Reselection

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbour cell		Cell 2	cdma2000 1X cell
Final condition	Active cell		Cell 2	cdma2000 1X cell is selecting during T2
DRX cycle length		s	1.28	
E-UTRA FDD RF	Channel Number		1	Only one FDD carrier frequency is used.
E-UTRA FDD Cha	nnel Bandwidth (BW _{channel})	MHz	10	
cdma2000 1X RF	Channel Number		1	Only one cdma2000 1X carrier frequency is used.
E-UTRA FDD PRA	ACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA FDD Acc	ess Barring Information	-	Not Sent	No additional delays in random access procedure.
T1		S	30	
T2		S	30	

Parameter	Parameter Unit Cell 1			
		T1	T2	
E-UTRA RF Channel number		1		
BW _{channel}	MHz	10		
OCNG Patterns defined in A.3.2.1.1				
(OP.2 FDD)		OP.2 FDD		
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB	1		
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB	_		
PHICH_RB	dB	C		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
$N_{oc}^{}$ Note 2	dBm/15 kHz	-98		
RSRP ^{Note 3}	dBm/15 KHz	z -89 -102		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	9 -4		
\hat{E}_s/N_{oc}	dB	9	-4	
Treselection _{EUTRAN}	S	C		
Snonintrasearch	dB	Not s	sent	
cellReselectionPriority	-	1		
Qrxlevmin	dBm	-14	10	
Qrxlevminoffset	dB	C		
Pcompensation	dB	C		
S _{ServingCell}	dB	51	38	
Thresh _{serving, low}	dB	44	4	
Propagation Condition		AWGN		
Note 1: CNG shall be used such that power spectral density is ach Note 2: Iterference from other cells a constant over subcarriers and	ieved for all OFD	M symbols. not specified in the test is	assumed to be	
$N_{\it ac}$ to be fulfilled.				
Note 3: SRP levels have been derive settable parameters themselve		meters for information pu	rposes. They are not	

Table A.4.6.1.1.1-2: Cell Specific Test Parameters for E-UTRAN FDD (Cell # 1)

Parameter	Unit	Cell	2	
		T1	T2	
cdma2000 1X RF Channel Number		1		
$\frac{\text{Pilot} E_{c}}{I_{\text{or}}}$	dB	-7		
Sync E _c I _{or}	dB	-16		
$\frac{Paging E_c}{I_{or}}$ (4.8 kbps)	dB	-12		
\hat{I}_{or}/I_{oc}	dB	0	0	
I _{oc}	dBm/ 1.2288 MHz	-55		
CDMA2000 1xRTT Pilot Strength	dB	-10	-10	
Propagation Condition		AWGN		
SnonServingCell,x		-20		
Treselection	S	0		
oneXRTT-CellReselectionPriority	-	0		
Thresh _{x, low}		-28	}	

Table A.4.6.1.1.1-3: Cell Specific Test Parameters for cdma2000 1X (cell # 2)

A.4.6.1.1.2 Test Requirements

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 access probe preambles on the Access Channel on cell 2.

The cell re-selection delay to the lower priority cell 2 shall be less than 21 s.

See Table 4.2.2.5.5-1

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

The cell re-selection delay to lower priority cell can be expressed as: $T_{evaluatecdma2000 1X} + T_{SI-cdma2000 1X}$ NOTE:

Where:

Tevaluatcdma2000 1X Maximum repetition period of relevant system information blocks that need to be received by T_{SI-cdma2000 1X} the UE to camp on cell 2; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for the lower priority cell reselection, allow 21 s in the test case.

A.4.6.2 E-UTRAN TDD – cdma2000 1X

E-UTRAN TDD -cdma2000 1X Cell Reselection: cdma2000 1X is of Lower A.4.6.2.1 Priority

A.4.6.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD- cdma2000 1X inter-RAT cell reselection requirements specified in section 4.2.2.5.5 when the cdma2000 1X cell is of lower priority.

The test scenario comprises of one cdma2000 1X and one E-UTRAN TDD cells as given in tables A.4.6.2.1.1-1, A.4.6.2.1.1-2 and A.4.6.2.1.1-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRAN TDD cell 1 and cdma2000 1X cell 2 are 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 lower priority than cell 1. Cell 1 and cell 2 shall belong to different tracking areas.

Table A.4.6.2.1.1-1: General Test Parameters for E-UTRAN TDD - lower priority cdma2000 1X Cell Reselection

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN TDD cell
	Neighbour cell		Cell 2	cdma2000 1X cell
Final condition	Active cell		Cell 2	cdma2000 1X cell is selecting during T2
DRX cycle length		S	1.28	
E-UTRA TDD RF	Channel Number		1	Only one TDD carrier frequency is used.
E-UTRA TDD Cha	nnel Bandwidth (BW _{channel})	MHz	10	
cdma2000 1X RF	Channel Number		1	Only one cdma2000 1X carrier frequency is used.
E-UTRA TDD PRA	ACH configuration		53	As specified in table 5.7.1-3 in TS 36.211
Uplink-dow	nlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special sub	oframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
E_UTRA TDD Acc	ess Barring Information	-	Not Sent	No additional delays in random access procedure.
T1		S	30	
T2		S	30	

Parameter	11			
	Unit	T1	T2	
E-UTRA RF Channel number		1		
BW _{channel}	MHz	10		
OCNG Patterns defined in A.3.2.2.2				
(OP.2 TDD)		OP.2 TDD		
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB	_		
PHICH_RB	dB	C		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
$N_{oc}^{}$ Note 2	dBm/15 kHz	-9	8	
RSRP ^{Note 3}	dBm/15 KHz	z -89 -102		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	9 -4		
\hat{E}_s/N_{oc}	dB	9	-4	
Treselection _{EUTRAN}	S	C		
Snonintrasearch	dB	Not s	sent	
cellReselectionPriority	-	1		
Qrxlevmin	dBm	-14	10	
Qrxlevminoffset	dB	C		
Pcompensation	dB	C		
S _{ServingCell}	dB	51	38	
Thresh _{serving, low}	dB	44	4	
Propagation Condition		AWGN		
Note 1: CNG shall be used such that power spectral density is ach Note 2: Iterference from other cells and	at both cells are fully allocated and a constant total transmitted hieved for all OFDM symbols. and noise sources not specified in the test is assumed to be nd time and shall be modelled as AWGN of appropriate power for			
$N_{\it ac}$ to be fulfilled.				
Note 3: SRP levels have been derive settable parameters themselve		meters for information pu	rposes. They are not	

Table A.4.6.2.1.1-2: Cell Specific Test Parameters for E-UTRAN TDD (Cell # 1)

Parameter	Unit	Ce	ll 2	
		T1	T2	
cdma2000 1X RF Channel Number		1		
$\frac{\text{Pilot} E_{c}}{I_{\text{or}}}$	dB	[-7]		
$\frac{\text{Sync} \text{E}_{c}}{\text{I}_{\text{or}}}$	dB	[-16]		
$\frac{\underline{\text{Paging } E_c}}{I_{\text{or}}} $ (4.8 kbps)	dB	[-12]		
\hat{I}_{or}/I_{oc}	dB	[0]	[0]	
I _{oc}	dBm/ 1.2288 MHz	-5	55	
CDMA2000 1xRTT Pilot Strength	dB	[-10]	[-10]	
Propagation Condition		AWGN		
SnonServingCell,x		[-20]		
Treselection	S	0		
oneXRTT-CellReselectionPriority	-	0		
Thresh _{x, low}		[-2	28]	

Table A.4.6.2.1.1-3: Cell Specific Test Parameters for cdma2000 1X (cell # 2)

A.4.6.2.1.2 Test Requirements

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 access probe preambles on the Access Channel on cell 2.

The cell re-selection delay to the lower priority cell 2 shall be less than 21 s.

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: $T_{evaluatecdma2000 1X} + T_{SI-cdma2000 1X}$

Where:

Tevaluatcdma2000 1XSee Table 4.2.2.5.5-1TSI-cdma2000 1XMaximum repetition period of relevant system information blocks that need to be received
by the UE to camp on cell 2; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for the lower priority cell reselection, allow 21 s in the test case.

A.5 E-UTRAN RRC CONNECTED Mode Mobility

A.5.1 E-UTRAN Handover

A.5.1.1 E-UTRAN FDD - FDD Intra frequency handover

A.5.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD intra frequency handover requirements specified in section 5.1.2.1.

The test scenario comprises of 1 E-UTRA FDD carrier and 2 cells as given in tables A.5.1.1.1-1 and A.5.1.1.1-2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. T3 is defined as the end of the last TTI containing the RRC message implying handover.

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chan	E-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidt	h (BW _{channel})	MHz	10	
A3-Offset		dB	0	
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
CP length			Normal	
Access Barring Inf	ormation	-	Not Sent	No additional delays in random
				access procedure.
PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211
Time offset between cells			3 ms	Asynchronous cells
T1		S	5	
T2		S	≤5	
Т3		S	1	

Parameter	Unit	Cell 1			Cell 2			
		T1	T2	T3	T1	T2	Т3	
E-UTRA RF Channel			1	•		1	•	
Number								
BW _{channel}	MHz		10			10		
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD	
defined in A.3.2.1.1		FDD	FDD	FDD				
(OP.1 FDD) and in								
A.3.2.1.2 (OP.2 FDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB		0			0		
PDCCH_RA	dB		0			0		
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36	
$N_{oc}^{\rm Note 2}$	dBm/15 KHz				-98	·		
\hat{E}_s/N_{oc}	dB	8	8	8	- Infinity	11	11	
RSRP Note 3	dBm/15 KHz	-90	-90	-90	- Infinity	-87	-87	
Propagation Condition		AWGN						
Note 1: OCNG shall be use for all OFDM symb Note 2: Interference from o	ols.	-		constant tota	I transmitted pow		-	
and shall be model	and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be fulfilled.							
Note 3: RSRP levels have themselves.			00		s. They are not s	ettable paramete	ers	

Table A.5.1.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra frequency handover test case

A.5.1.1.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 15 ms and is specified in section 11.2 in [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in section 5.1.2.1.2.

This gives a total of 50 ms.

A.5.1.2 E-UTRAN TDD - TDD Intra frequency handover

A.5.1.2.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD intra frequency handover requirements specified in section 5.2.2.4.

The test scenario comprises of 1 E-UTRA TDD carrier and 2 cells as given in tables A.5.1.2.1-1 and A.5.1.2.1-2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. T3 is defined as the end of the last TTI containing the RRC message implying handover.

Table A.5.1.2.1-1: General test parameters for E-UTRAN TDD-TDD Intra frequency handover test case

Parameter		Unit	Value	Comment
			DL Reference Measurement	
PDSCH parameters			Channel R.0 TDD	As specified in section A.3.1.1.2
			DL Reference Measurement	
PCFICH/PDCCHP			Channel R.6 TDD	As specified in section A.3.1.2.2
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chanr	nel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidth	n (BW _{channel})	MHz	10	
A3-Offset		dB	0	
Hysteresis		dB	0	
Time To Trigger		s	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
CP length			Normal	
Access Barring Info	ormation	-	Not Sent	No additional delays in random access procedure.
Special subframe of	configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink co	Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211
PRACH configuration index			53	As specified in table 5.7.1-3 in TS 36.211
Time offset betwee	Time offset between cells		3 μs	Synchronous cells
T1	T1		5	
T2		S	≤5	
Т3		S	1	

Parameter	Unit	Cell 1			Cell 2			
		T1	T2	Т3	T1	T2	Т3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz		10			10		
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD	
defined in A.3.2.1.1		TDD	TDD	TDD				
(OP.1 TDD) and in								
A.3.2.1.2 (OP.2 TDD)	JD							
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB dB							
SSS_RA								
PCFICH_RB	dB							
PHICH_RA PHICH_RB	dB dB							
PDCCH_RA	dB dB		0			0		
PDCCH_RA	dB dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
	dB	8	-3.3	-3.3	-Infinity	2.36	2.36	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	uБ	0	-3.3	-3.5	-minity	2.30	2.30	
N_{oc} Note 2	dBm/15 KHz	-98						
\hat{E}_s / N_{oc}	dB	8	8	8	-Infinity	11	11	
RSRP Note 3	dBm/15 KHz	-90	-90	-90	- Infinity	-87	-87	
Propagation Condition		AWGN						
Note 1: OCNG shall be use for all OEDM symb		lls are fully al	located and a	constant total	transmitted powe	er spectral densi	y is achieved	

Table A.5.1.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Intra frequency handover test case

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 $\,N_{_{
m oc}}\,$ to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.2.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 15 ms and is specified in section 11.2 in [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in section 5.2.2.4.2.

This gives a total of 50 ms.

A.5.1.3 E-UTRAN FDD – FDD Inter frequency handover

A.5.1.3.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD inter-frequency handover requirements specified in section 5.1.2.1.

The test scenario comprises of two E-UTRA FDD carriers and one cell on each carrier as given in tables A.5.1.3.1-1 and A.5.1.3.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of three successive time periods, with time durations of T1, T2 and T3

respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

Table A.5.1.3.1-1: General test parameters for E-UTRAN FDD-FDD Inter frequency handover test case

Para	Parameter		Value	Comment
PDSCH parameters			DL Reference Measurement	As specified in section A.3.1.1.1
			Channel R.0 FDD	
PCFICH/PDCCH/F	HICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1
			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	Cell 1 is on RF channel number 1
	Neighbouring cell		Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
E-UTRA RF chann	el number		1, 2	Two FDD carriers are used
Channel Bandwidth	n (BW _{channel})	MHz	10	
A3-Offset		dB	-4	
Hysteresis		dB	0	
TimeToTrigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			DRX_L	As specified in section A.3.3
PRACH configurati	on		4	As specified in table 5.7.1-2 in
				3GPP TS 36.211
Access Barring Info	ormation	-	Not sent	No additional delays in random
	, i i i i i i i i i i i i i i i i i i i			access procedure
Time offset betwee	en cells		3 ms	Asynchronous cells
Gap pattern configuration Id			0	As specified in Table 8.1.2.1-1
				started before T2 starts
T1		S	5	
T2		S	≤5	
Т3		S	1	

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel			1			2	
number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2 FDD	OP.2	OP.2 FDD	OP.1 FDD
defined in A.3.2.1.1		FDD	FDD		FDD		
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0			0	
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	4	4	4	-Infinity	y 7	7
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98					
\hat{E}_s / N_{oc}	dB	4	4	4	-Infinity	/ 7	7
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-Infinity	y -91	-91
Propagation Condition		AWGN					
Note 1: OCNG shall be use	d such that both cells	s are fully all	ocated and a d	constant total trai	nsmitted powe	er spectral density	y is achieved fo

Table A.5.1.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD Inter frequency handover test case

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 levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.3.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay $+ T_{interrupt}$, where:

RRC procedure delay = 15 ms and is specified in section 11.2 in [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in section 5.1.2.1.2.

This gives a total of 50 ms.

A.5.1.4 E-UTRAN TDD – TDD Inter frequency handover

A.5.1.4.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD inter frequency handover requirements specified in section 5.2.2.4.

The test scenario comprises of two E-UTRA TDD carriers and one cell on each carrier as given in tables Table A.5.1.4.1-1 and Table A.5.1.4.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3.

Table A.5.1.4.1-1: General test parameters for E-UTRAN TDD-TDD Inter frequency handover test case

Para	Parameter		Value	Comment
			DL Reference Measurement	
PDSCH parameters			Channel R.0 TDD	As specified in section A.3.1.1.2
			DL Reference Measurement	
PCFICH/PDCCH/	PHICH		Channel R.6 TDD	As specified in section A.3.1.2.2
parameters				
Gap Pattern Id			1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
E-UTRA RF chan	nel number		1, 2	Two TDD carriers are used
Channel Bandwid	lth (BW _{channel})	MHz	10	
A3-Offset		dB	-4	
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
DRX			DRX_L	As specified in section A.3.3
CP length			Normal	
Access Barring In	formation	-	Not Sent	No additional delays in random access procedure.
Special subframe	configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in 3GPP TS 36.211
PRACH configuration			53	As specified in table 5.7.1-3 in 3GPP TS 36.211
Time offset between cells			3 μs	Synchronous cells
T1		S	5	
T2		S	≤5	
Т3		S	1	

Parameter	Unit		Cell 1			Cell 2			
		T1	T2	Т3	T1	T2	T3		
E-UTRA RF Channel			1			2			
number									
BW _{channel}	MHz		10			10			
OCNG Patterns		OP.1	OP.1	OP.2 FDD	OP.2	OP.2 FDD	OP.1 FDD		
defined in A.3.2.1.1		FDD	FDD		FDD				
(OP.1 FDD) and in									
A.3.2.1.2 (OP.2 FDD)									
PBCH_RA	dB								
PBCH_RB	dB	_							
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB		0			0			
PHICH_RB	dB		0			0			
PDCCH_RA	dB								
PDCCH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note 1}	dB								
OCNG_RB ^{Note 1}	dB								
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{oc}}}$	dB	4	4	4	-Infinity	7	7		
$N_{_{oc}}$ Note 2	dBm/15 kHz				-98				
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7		
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-infinity	-91	-91		
Propagation Condition					AWGN	•	·		

Table A.5.1.4.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Inter frequency handover test case

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_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.4.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 15 ms and is specified in section 11.2 in [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in section 5.2.2.4.2.

This gives a total of 50 ms.

A.5.1.5 E-UTRAN FDD – FDD Inter frequency handover: unknown target cell

A.5.1.5.1 Test Purpose and Environment

This test is to verify the FDD-FDD inter-frequency handover requirements for the case when the target cell is unknown as specified in section 5.1.2.1.

The test scenario comprises of two E-UTRA FDD carriers and one cell on each carrier as given in tables A.5.1.5.1-1 and A.5.1.5.1-2. No gap patterns are configured in the test case. The test consists of two successive time periods, with time durations of T1 and T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and start to transmit the PRACH to Cell 2.

A RRC message implying handover shall be sent to the UE during period T1. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

Table A.5.1.5.1-1: General test parameters for the E-UTRAN FDD-FDD Inter frequency handover test case when the target cell is unknown

Parameter		Unit	Value	Comment
PDSCH parameter	rs		DL Reference Measurement	As specified in section A.3.1.1.1
			Channel R.0 FDD	
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1
			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbouring cell			Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
E-UTRA RF chann	nel number		1, 2	Two FDD carriers are used
Channel Bandwidt	h (BW _{channel})	MHz	10	
DRX			OFF	Non-DRX test
PRACH configurat	ion		4	As specified in table 5.7.1-2 in
-				3GPP TS 36.211
Access Barring Inf	ormation	-	Not sent	No additional delays in random
				access procedure
Time offset between cells			3 ms	Asynchronous cells
T1		S	≤5	
T2		S	1	

Parameter	Unit	Cel	1	Cel	12		
	-	T1	T2	T1	T2		
E-UTRA RF Channel		1		2			
number							
BW _{channel}	MHz	1(1(
OCNG Patterns		OP.1 FDD	OP.2 FDD	OP.2 FDD	OP.1 FDD		
defined in A.3.2.1.1							
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB	_		_			
PHICH_RB	dB	0		0			
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_s/I_{ot}	dB	4	4	-Infinity	7		
$N_{_{oc}}$ Note 2	dBm/15 kHz			-98			
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	7		
RSRP ^{Note 3}	dBm/15 KHz	-94	-94	-Infinity	-91		
Propagation Condition				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 levels have been derived from other parameters for information purposes. They are not settable parameters themselves.							

Table A.5.1.5.1-2: Cell specific test parameters for the E-UTRAN FDD-FDD Inter frequency handover test case when the target cell is unknown

A.5.1.5.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 130 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 15 ms, which is specified in section 11.2 in [2].

 $T_{interrupt}$ = 115 ms in the test. See section 5.1.2.1.2

This gives a total of 130 ms.

A.5.1.6 E-UTRAN TDD – TDD Inter frequency handover; unknown Target Cell

A.5.1.6.1 Test Purpose and Environment

This test is to verify the TDD-TDD inter-frequency handover requirements for the case when the target cell is unknown as specified in section 5.2.2.4.

The test scenario comprises of two E-UTRA TDD carriers and one cell on each carrier as given in tables A.5.1.6.1-1 and A.5.1.6.1-2. No gap patterns are configured in the test case. The test consists of two successive time periods, with time durations of T1, T2 respectively. At the start of time duration T1, the UE does 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.

Table A.5.1.6.1-1: General test parameters for the E-UTRAN TDD-TDD Inter-Frequency handover test case when the target cell is unknown

Para	ameter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.2.2.1
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.2.2.2
Initial conditions	Active cell		Cell 1	Cell 1 is on RF channel number 1
	Neighbouring cell		Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
E-UTRA RF chann	el number		1, 2	Two TDD carriers
DRX			OFF	Non-DRX test
Access Barring Info	Access Barring Information		Not sent	No additional delays in random access procedure
Special subframe of	configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-downlink co	onfiguration		1	As specified in table 4.2-2 in 3GPP TS 36.211
PRACH configuration			53	As specified in table 5.7.1-3 in 3GPP TS 36.211
Time offset between cells			3 μs	Synchronous cells
Gap pattern configuration			-	No gap pattern configured
T1		S	≤5	
T2		S	1	

Parameter	Unit	Ce	ll 1	C	cell 2			
		T1	T2	T1	T2			
E-UTRA RF Channel			1		2			
Number								
BW _{channel}	MHz	1	0		10			
OCNG Patterns		OP.1 TDD	OP.2 TDD	OP.2 TDD	OP.1 TDD			
defined in A.3.2.2.1								
(OP.1 TDD) and in								
A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB	-						
PSS_RA	dB	-						
SSS_RA	dB	-						
PCFICH_RB	dB							
PHICH_RA	dB				0			
PHICH_RB	dB	()		0			
PDCCH_RA	dB	-						
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB	-						
OCNG_RB ^{Note 1}	dB							
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98				
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-93			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	5			
SCH_RP ^{Note 4}	dBm/15 kHz	-94	-94	-Infinity	-93			
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	5			
Propagation Condition			A	WGN				
Note 1: OCNG shall be	e used such that bo	th cells are fully	allocated and a	constant total tra	ansmitted power			
	ty is achieved for all							
Note 3: Interference fr								
over subcarrie	over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be							
fulfilled.	fulfilled.							
They are not a	enable parameters							

Table A.5.1.6.1-2: Cell specific test parameters for the E-UTRAN TDD-TDD Inter frequency handover test case when the target cell is unknown

A.5.1.6.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 130 ms from the beginning of time period T2. The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 15 ms, which is specified in section 11.2 in [2].

 $T_{interrupt}$ = 115 ms in the test. See section 5.2.2.4.2

This gives a total of 130 ms.

A.5.1.7 E-UTRAN FDD – TDD Inter frequency handover

A.5.1.7.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-TDD inter frequency handover requirements specified in section 5.2.2.2.

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The test scenario comprises of one E-UTRA FDD cell and one E-UTRA TDD cell as given in tables Table A.5.1.7.1-1, Table A.5.1.7.1-2 and Table A.5.1.7.1-3. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3.

Parar	neter	Unit	Value	Comment
Cell 1 PDSCH par	ameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
Cell 1 PCFICH/PD parameters	OCCH/PHICH		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Cell 2 PDSCH par	ameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
Cell 2 PCFICH/PD			DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Gap Pattern Id			0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Initial conditions	Active cell		Cell 1	
F	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Cell 1 E-UTRA RF	channel number		1	One FDD carrier is used
Cell 2 E-UTRA RF	channel number		2	One TDD carrier is used
Channel Bandwidt	h (BW _{channel})	MHz	10	
A3-Offset		dB	-4	
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
DRX			DRX_L	As specified in section A.3.3
CP length			Normal	
E-UTRA TDD Accord	ess Barring	-	Not Sent	No additional delays in random access procedure.
Special subframe	configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211. Applicable to cell 2.
Uplink-downlink configuration			1	As specified in table 4.2-2 in 3GPP TS 36.211. Applicable to cell 2
E-UTRA TDD PRACH configuration			53	As specified in table 5.7.1-3 in 3GPP TS 36.211
Time offset between cells			3 ms	Asynchronous cells
T1		S	5	
T2		S	≤5	
Т3		S	1	

Table A.5.1.7.1-1: General test parameters for E-UTRAN FDD-TDD Inter frequency handover test case

Table A.5.1.7.1-2: Cell specific test parameters for E-UTRAN FDD (cell #1) in E-UTRAN FDD-TDD Inter frequency handover test case

Parameter	Unit	Cell 1		
		T1	T2	T3
E-UTRA RF Channel number			1	
BW _{channel}	MHz		10	
OCNG Patterns defined in		OP.1 FDD	OP.1 FDD	OP.2 FDD
A.3.2.1.1 (OP.1 FDD) and in				
A.3.2.1.2 (OP.2 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB		-	
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			

\hat{E}_s/I_{ot}		dB	4	4	4		
N_{oc} Note	2	dBm/15 kHz		-98			
\hat{E}_s / N_{oc}		dB	4 4		4		
RSRP ^{Not}	e 3	dBm/15 KHz	-94	-94	-94		
Propagation Condition		AWGN					
Note 1:		be used such that both cells are fully allocated and a constant total					
Note 2:	 transmitted power spectral density is achieved for all OFDM symbols. 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:	te 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameter themselves.						

Table A.5.1.7.1-3: Cell specific test parameters for E-UTRAN TDD (cell #2) in E-UTRAN FDD-TDD Inter frequency handover test case

Parameter	Unit		Cell 2				
		T1	T2	T3			
E-UTRA RF Channel number			2				
BW _{channel}	MHz		10				
OCNG Patterns defined in		OP.2 TDD	OP.2 TDD	OP.1 TDD			
A.3.2.2.1 (OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB	_					
PBCH_RB	dB	_					
PSS_RA	dB						
SSS_RA	dB	_					
PCFICH_RB	dB	_					
PHICH_RA	dB	_	0				
PHICH_RB	dB	_	0				
PDCCH_RA	dB	_					
PDCCH_RB	dB	_					
PDSCH_RA	dB	_					
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_s/I_{ot}	dB	-Infinity	7	7			
$N_{oc}^{\rm Note 2}$	dBm/15 kHz		-98				
\hat{E}_s / N_{oc}	dB	-Infinity	7	7			
RSRP ^{Note 3}	dBm/15 KHz	-Infinity	-91	-91			
Propagation Condition	AWGN						
Note 1: OCNG shall be used s	uch that both cells a	re fully allocated	and a constant	total			
transmitted power spe	transmitted power spectral density is achieved for all OFDM symbols.						
Note 2: Interference from othe							
constant over subcarri	t over subcarriers and time and shall be modelled as AWGN of appropriate power						
for $N_{\it oc}$ to be fulfilled.	for N_{oc} to be fulfilled.						
Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameter themselves.							

A.5.1.7.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 15 ms and is specified in section 11.2 in [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in section 5.2.2.4.2.

This gives a total of 50 ms.

A.5.1.8 E-UTRAN TDD – FDD Inter frequency handover

A.5.1.8.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-FDD inter-frequency handover requirements specified in section 5.2.2.3.

The test scenario comprises of one E-UTRA TDD cell and one E-UTRA FDD cell as given in tables Table A.5.1.8.1-1, Table A.5.1.8.1-2 and Table A.5.1.8.1-3. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

Parameter		Unit	Value	Comment
Cell 1 PDSCH para	ameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
Cell 1 PCFICH/PD	CCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2
parameters			Channel R.6 TDD	
Cell 2 PDSCH para			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
Cell 2 PCFICH/PD	CCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	Cell 1 is on RF channel number 1
	Neighbouring cell		Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
Cell 1 E-UTRA RF	channel number		1	One TDD carrier is used
Cell 2 E-UTRA RF	channel number		2	One FDD carrier is used
Channel Bandwidth	ר (BW _{channel})	MHz	10	
A3-Offset		dB	-4	
Hysteresis		dB	0	
TimeToTrigger		s	0	
Filter coefficient			0	L3 filtering is not used
DRX			DRX_L	As specified in section A.3.3
E-UTRA FDD PRA	CH configuration		4	As specified in table 5.7.1-2 in 3GPP TS 36.211
E-UTRA FDD Acce	ess Barring	-	Not sent	No additional delays in random
Information				access procedure
	Time offset between cells		3 ms	Asynchronous cells
Gap pattern configuration Id			0	As specified in Table 8.1.2.1-1
-		-		started before T2 starts
T1 To		S	5	
T2		S	≤5	
Т3		S	1	

Parameter	Unit		Cell 1				
		T1	T2	T3			
E-UTRA RF Channel number			1				
BW _{channel}	MHz		10				
OCNG Patterns defined in		OP.1 TDD	OP.1 TDD	OP.2 TDD			
A.3.2.2.1 (OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB	-					
PSS_RA	dB	-					
SSS_RA	dB	-					
PCFICH_RB	dB	-					
PHICH_RA	dB		0				
PHICH_RB	dB		0				
PDCCH_RA	dB						
PDCCH_RB	dB	-					
PDSCH_RA	dB	-					
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB	-					
OCNG_RB ^{Note 1}	dB						
\hat{E}_s/I_{ot}	dB	4	4	4			
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98					
\hat{E}_s / N_{oc}	dB	4	4	4			
RSRP ^{Note 3}	dBm/15 KHz	-94	-94	-94			
Propagation Condition	AWGN						
	such that both cells are fully allocated and a constant total						
	transmitted power spectral density is achieved for all OFDM symbols.						
	nterference 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 $N_{\it oc}$ to be fulfilled.	for N_{oc} to be fulfilled.						
Note 3: RSRP levels have bee are not settable para		parameters for	information purp	oses. They			

Table A.5.1.8.1-2: Cell specific test parameters for E-UTRAN TDD (cell #1) in E-UTRAN TDD-FDD Inter frequency handover test case

Parameter	Unit		Cell 2				
		T1	T2	Т3			
E-UTRA RF Channel number			2				
BW _{channel}	MHz		10				
OCNG Patterns defined in		OP.2 FDD	OP.2 FDD	OP.1 FDD			
A.3.2.1.1 (OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0				
PHICH_RB	dB		0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB		r				
\hat{E}_s/I_{ot}	dB	-Infinity	7	7			
$N_{_{oc}}$ Note 2	dBm/15 kHz		-98				
\hat{E}_{s}/N_{oc}	dB	-Infinity	7	7			
RSRP ^{Note 3}	dBm/15 KHz	-Infinity	-91	-91			
Propagation Condition		AWG	N				
Note 1: OCNG shall be used s							
transmitted power spe	transmitted power spectral density is achieved for all OFDM symbols.						
	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						
00	for N_{oc} to be fulfilled.						
	3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameter themselves.						

Table A.5.1.8.1-3: Cell specific test parameters for E-UTRAN FDD (cell #2) in E-UTRAN TDD-FDD Inter frequency handover test case

A.5.1.8.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 15 ms and is specified in section 11.2 in [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in section 5.1.2.1.2.

This gives a total of 50 ms.

A.5.2 E-UTRAN Handover to other RATs

A.5.2.1 E-UTRAN FDD – UTRAN FDD Handover

A.5.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to UTRAN FDD handover requirements specified in section 5.3.1.

The test parameters are given in Tables A.5.2.1.1-1, A.5.2.1.1-2 and A.5.2.1.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
	Active cell		Cell 1	E-UTRAN cell
	Neighbouring cell		Cell 2	UTRAN cell
Final condition Active cell			Cell 2	UTRAN cell
Channel Bandwidth (BW _{channel})		MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN FDD measurement quantity			RSRP	
Inter-RAT (UTRAN FDD) measurement quantity			CPICH Ec/N0	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-UTRA		dB	-18	Absolute UTRAN CPICH Ec/N0 threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		s	0	
Filter coefficient			0	L3 filtering is not used
DRX	DRX		OFF	Non-DRX test
Access Barring Information		-	Not sent	No additional delays in random access procedure
E-UTRA RF Channel Number			1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BWchannel)		MHz	10	
UTRA RF Channel Number			1	One UTRA FDD carrier frequency is used.
Monitored UTRA FDD cell list size			12	UTRA cells on UTRA RF channel 1 provided in the cell before T2.
Post-verification period			False	
T1		s	5	
T2		s	≤5	
Т3		s	1	

Parameter	Unit	Cell 1 (E-UTRA)						
		T1	T2	Т3				
E-UTRA RF Channel		1						
number								
BW _{channel}	MHz		10					
OCNG Patterns		OP.1	OP.1	OP.2				
defined in A.3.2.1.1		FDD	FDD	FDD				
(OP.1 FDD) and in								
A.3.2.1.2 (OP.2 FDD)								
PBCH_RA	dB							
PBCH_RB	dB	0						
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB							
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
\hat{E}_{s}/I_{ot}	dB	0	0	0				
N_{oc}	dBm/15 kHz	-98						
\hat{E}_{s}/N_{oc}	dB	0	0	0				
RSRP Note 2	dBm/15 KHz	-98	-98	-98				
lo Note 2	dBm/9 MHz	-67.21	-67.21	-67.21				
Propagation Condition								
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: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.								

Table A.5.2.1.1-2: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 1)

Table A.5.2.1.1-3: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 2)

Parameter	Unit	Cell 2 (UTRA)					
		T1	T2	T3			
CPICH_Ec/lor	dB	-10					
PCCPCH_Ec/lor	dB	-12					
SCH_Ec/lor	dB	-12					
PICH_Ec/lor	dB	-15					
DCH_Ec/lor	dB	N/A	N/A	Note 1			
OCNS_Ec/lor	dB	-0.941	0.941	Note 2			
\hat{I}_{or}/I_{oc}	dB	-infinity	-1.8	-1.8			
I _{oc}	dBm/3,84 MHz	-70	-70	-70			
CPICH_Ec/lo	dB	-infinity	-14	-14			
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 $I_{\rm or.}$							

A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 190 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in section 5.3.1.1.1.

 $T_{interrupt} = 140$ ms in the test; $T_{interrupt}$ is defined in section 5.3.1.1.2.

This gives a total of 190 ms.

A.5.2.2 E-UTRAN TDD - UTRAN FDD Handover

A.5.2.2.1 Test Purpose and Environment

This test is to verify the E-UTRAN TDD - UTRAN FDD handover requirements specified in section 5.3.1.

The test scenario comprises of one E-UTRAN TDD cell and one UTRAN FDD cell as given in the tables A.5.2.2.1-1, A5.2.2.1-2 and A.5.2.2.1-3. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. At start of time duration T1, the UE does not have any timing information of cell 2. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before the start of T2 to enable the monitoring of UTRAN FDD. A neighbouring cell list, including the UTRAN cell (cell2), shall be sent to the UE before T2 starts. During the time T2 cell 2 becomes detectable and the UE is expected to detect and send the measurement report. A RRC message implying handover shall be sent to the UE during T2, after the UE has reported event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Parameter		Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)			DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Initial conditions Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1.
	Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Final conditions	Active cell		Cell 2	
Special subframe	configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211. Applicable to cell 1.
Uplink-downlink c	configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211. Applicable to cell 1
E-UTRAN TDD m	neasurement quantity		RSRP	
	FDD) measurement		CPICH Ec/lo	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-UTRA		dB	-18	UTRAN FDD CPICH Ec/lo threshold for event B2
Hysteresis		dB	0	
DRX			OFF	No DRX configured.
Time to Trigger		ms	0	
Filter coefficient			0	
CP length			Normal	Applicable to cell 1
Gap pattern confi	guration Id		0	As specified in Table 8.1.2.1-1; to start before T2 starts
E-UTRA RF Char	nnel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel (BW _{channel})	Bandwidth	MHz	10	
UTRA RF Channel Number			1	One UTRA FDD carrier frequency is used.
Monitored UTRA	FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list before T2.
Post-verification p	period	1	False	Post verification is not used.
T1		s	5	
T2		S	≤5	
Т3		s	1	

Table A.5.2.2.1-1: General test parameters for E-UTRAN TDD-UTRAN FDD handover

Parameter	Unit		Cell 1 (E-UTRAN)				
		T1	T2	T3			
E-UTRA RF Channel			1				
Number							
BW _{channel}	MHz		10				
OCNG Pattern defined							
in A.3.2.2.1 (OP.1 TDD)		OP 1	TDD	OP.2 TDD			
and in A.3.2.2.2 (OP.2		01.1		01.2100			
TDD)							
PBCH_RA							
PBCH_RB							
PSS_RA							
SSS_RA							
PCFICH_RB							
PHICH_RA			_				
PHICH_RB	dB	0					
PDCCH_RA							
PDCCH_RB							
PDSCH_RA							
PDSCH_RB							
OCNG_RA ^{Note 1}							
OCNG_RB ^{Note 1}							
RSRP	dBm/15 kHz	-98	-98	-98			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	0	0	0			
-s/ ot							
\hat{E}_s/N_{oc}	dB	0	0	0			
L_s/N_{oc}							
N7.	dBm/15 kHz		-98				
N _{oc}			-30				
lo Note 2	dBm/9 MHz	-67.21	-67.21	-67.21			
Propagation Condition			AWGN				
			ated and a constant	total transmitted			
	power spectral density is achieved for all OFDM symbols.						
			parameters for inform	nation purposes.			
They are not se	ettable parameter	s themselves.					

Table A.5.2.2.1-2: Cell specific test parameters for E-UTRAN TDD (cell 1) for handover to UTRAN FDD (cell # 2)

Table A.5.2.2.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for handover from E-UTRAN TDD cell (cell #1)

Parameter	Unit	Ce	ll 1 (UTR/	RA)	
			T2	Т3	
CPICH_Ec/lor	dB		-10		
PCCPCH_Ec/lor	dB		-12		
SCH_Ec/lor	dB		-12		
PICH_Ec/lor	dB		-15		
DPCH_Ec/lor	dB	N/A N/A		Note 1	
OCNS	dB	-0.941 -0.941		Note 2	
\hat{I}_{or}/I_{oc}	dB	-infinity	-1.8	-1.8	
I _{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-infinity	-14	-14	
Propagation Condition		AWGN			
Note 1:The DPCH level is controlled by the power control loopNote 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 DPCCH to Cell 2 less than 190 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in section 5.1.1.1.1.

 $T_{interrupt} = 140$ ms in the test; $T_{interrupt}$ is defined in section 5.3.1.1.2.

This gives a total of 190 ms.

A.5.2.3 E-UTRAN FDD- GSM Handover

A.5.2.3.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN to GSM cell handover delay specified in section 5.3.3.

The test parameters are given in Table A.5.2.3.1 -1, A.5.2.3.1 -2 and A.5.2.3.1 -3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 shall be used. The test consists of three successive time periods, with 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.

The RRC message implying handover to cell 2 shall be sent to the UE during period T2, after the UE has reported Event B1. The start of T3 is defined as the end of last E-UTRAN TTI containing the RRC message implying handover.

The requirements are also applicable for a UE not requiring measurement gap, in which case no measurement gap pattern should be sent for the parameters specified in Table A.5.2.3.1 -1.

Para	meter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/ parameters	PHICH		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Gap Pattern Id			1	As specified in TS 36.133 section8.1.2.1.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Inter-RAT measu	rement quantity		GSM Carrier RSSI	
Threshold other s	system	dBm	-80	Absolute GSM carrier RSSI threshold for event B1.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient	Filter coefficient		0	L3 filtering is not used
DRX				OFF
T1		S	20	
T2		S	7	
T3		S	1	

Table A.5.2.3.1 -1: General test parameters for E-UTRAN FDD-GSM handover

Parameter	Unit	Cell 1			
		T1, T2	Т3		
BW _{channel}	MHz	10			
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.2 FDD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
	dB				
OCNG_RB ^{Note1}	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4			
N_{oc} Note 2	dBm/15 kHz	-98 (AWGN)			
\hat{E}_{s}/N_{oc}	dB	4			
RSRP ^{Note 3}	dBm/15kH z	-94			
Propagation Condition		AWGN			
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.					
		derived from other parameter stable parameters themse			

Table A. A.5.2.3.1 - 2: Cell Specific Parameters for Handover from E- UTRAN FDD to GSM cell case (cell 1)

Table A.5.2.3.1 - 3: Cell Specific Parameters for Handover from E-UTRAN FDD to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)		
Falameter	Unit	T1	T2, T3	
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-85	-75	

A.5.2.3.2 Test Requirements

The UE shall begin to send access bursts on the new DCCH of the target cell less than 100 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:

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 $T_{Handover delay} = 90 \text{ ms} (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}$

- T_{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_{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 99.3 ms, allow 100 ms in the test case.

A.5.2.4 E-UTRAN TDD - UTRAN TDD Handover

A.5.2.4.1 Test Purpose and Environment

- A.5.2.4.1.1 3.84 Mcps TDD option
- A.5.2.4.1.2 1.28 Mcps TDD option

This test is to verify the requirement for E-UTRAN TDD to UTRAN TDD handover requirements specified in section 5.3.2.

The test scenario comprises of 1 E-UTRA TDD cell and 1 UTRA TDD cell as given in tables Table A.5.2.4.1.2-1, Table A.5.2.4.1.2-2, and Table A.5.2.4.1.2-3. Gap pattern configuration #0 as defined in table 8.1.2.1-1 is provided.

The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively.

E-UTRAN shall send a RRC message implying handover to UE. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The end of the last TTI containing handover message is begin of T3 duration.

Parameter	r Unit Value		Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCC parameters	H/PHICH		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Initial	Active cell		Cell 1	E-UTRA TDD cell
conditions	Neighbour cell		Cell 2	UTRA 1.28Mcps TDD Cell
Final conditions	Active cell		Cell 2	
Gap Pattern Id			0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Uplink-downlinl cell 1	configuration of		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1			6	As specified in table 4.2.1 in TS 36.211
CP length of cell 1			Normal	
Time offset between cells			3 ms	Asynchronous cells
Access Barring	Information		Not Sent	No additional delays in random access procedure.

Table A.5.2.4.1.2-1: General test parameters for E-UTRA TDD to UTRA(1.28 Mcps TDD OPTION) handover test case

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Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Ofn	dB	0	
Thresh1	dBm	-93	E-UTRA event B2 threshold
Thresh2	dBm	-80	UTRA event B2 threshold
T1	S	5	
T2	s	≤10	
Т3	S	1	

Table A.5.2.4.1.2-2: Cell specific test parameters for E-UTRA TDD to UTRA TDD handover test case
(cell 1)

Parameter	Unit		Cell 1			
		T1	T2	Т3		
E-UTRA RF Channel			1			
Number						
BW _{channel}	MHz		10			
OCNG Pattern defined in						
A.3.2.2.1 (OP.1 TDD)		OP 1	TDD	OP.2		
and in A.3.2.1.2 (OP.2		01.1	100	TDD		
TDD)			1			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0	0	0		
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	13 -3		-3		
\hat{E}_{s}/N_{oc}	dB	13 -3		-3		
N _{oc}	dBm/15kHz		-98			
RSRP Note 2	dBm/15kHz	-85	-101	-101		
SCH_RP Note 2	dBm/15 kHz	-85	-101	-101		
lo Note 2	dBm/9MHz	-57.01	-57.01 -68.45			
Propagation Condition		AWGN				
total transmitted symbols. Note 2: RSRP, SCH_RF	total transmitted power spectral density is achieved for all OFDM symbols. : RSRP, SCH_RP and lo levels have been derived from other					
	parameters for information purposes. They are not settable parameters themselves					

Parameter		Unit	Cell 2 (UT			RA)		
Timeslot Nu	Timeslot Number		0			DwPTS		
			T1	T2	T3	T1	T2	T3
UTRA RF CI Number ^N					Channel	2		
PCCPCH_I	Ec/lor	dB		-3				
DwPCH_E	c/lor	dB					0	
OCNS_E	c/lor	dB		-3			-	-
\hat{I}_{or}/I_{o}	\hat{I}_{or}/I_{oc}		-3	11	11	-3	11	11
I _{oc}		dBm/1.28 MHz			-80			
PCCPCH RS	CP Note 2	dBm	-86 -72 -72 n.a.					
Io Note 2	2	dBm/1.28 MHz	-78.24	-68.67	-68.67			
Propagat Conditio			AWGN	1				
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 lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.								

Table A.5.2.4.1.2-3: Cell specific test parameters for cell search E-UTRA to UTRA case (cell 2)

A.5.2.4.1.3 7.68 Mcps TDD option

A.5.2.4.2 Test Requirements

A.5.2.4.2.1 3.84 Mcps TDD option

A.5.2.4.2.2 1.28 Mcps TDD option

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 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%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in section 5.3.2.2.1.

 $T_{interrupt} = 40$ ms in the test; $T_{interrupt}$ is defined in section 5.3.2.2.2.

This gives a total of 90 ms.

A.5.2.4.2.3 7.68 Mcps TDD option

A.5.2.5 E-UTRAN FDD – UTRAN TDD Handover

A.5.2.5.1 Test Purpose and Environment

- A.5.2.5.1.1 3.84 Mcps TDD option
- A.5.2.5.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the E-UTRAN FDD to UTRAN TDD handover requirements specified in section 5.3.2.

The test scenario comprises of two cells, E-UTRA TDD cell1 and UTRA TDD cell2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #1 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring. The test parameters are given in Tables A.5.2.5.1-1, A.5.2.5.1-2 and A.5.2.5.1-3.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Parar	Parameter		Value	Comment
PDSCH paramete	PDSCH parameters		DL Reference Measurement	As specified in section
			Channel R.0 FDD	A.3.1.1.1
PCFICH/PDCCH/	PHICH		DL Reference Measurement	As specified in section
parameters			Channel R.6 FDD	A.3.1.2.1
Initial conditions	Active cell		Cell 1	E-UTRA FDD cell
	Neighbour cell		Cell 2	UTRA 1.28Mcps TDD Cell
Final conditions	Active cell		Cell 2	
Gap Pattern Id			1	As specified in 3GPP TS 36.133 section 8.1.2.1.
E-UTRAN FDD m quantity	easurement		RSRP	
quantity	UTRAN TDD measurement quantity		RSCP	
CP length of cell 1			Normal	
Access Barring In	formation		Not Sent	No additional delays in random access procedure.
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	
Ofn		dB	0	
Thresh1		dBm	-93	Absolute E-UTRAN RSRP threshold for event B2
Thresh2		dBm	-80S	Absolute UTRAN RSCP threshold for event B2
T1	T1		5	
T2		S	≤ 10	
Т3		S	1	

Table A.5.2.5.1.2-1: General test parameters for E-UTRA FDD to UTRA (1.28 Mcps TDD option) handover test case

Parameter	Unit		C	ell 1 (E-UT	RA)	
		T1		T2		Т3
E-UTRA RF Channel				1		
number						
BW _{channel}	MHz			10		
OCNG Patterns		OP.1 FD	D	OP.1 FDD		OP.2
defined in A.3.2.1.1						FDD
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					-
\hat{E}_{s}/N_{oc}	dB	13		-3		-3
N_{oc}	dBm/15 kHz			-98		
\hat{E}_s / I_{ot}	dB	13		-3		-3
	dBm/15 KHz	-85		-101		-101
lo Note 2	dBm/9MHz	-57.01 -68.45		5	-68.45	
Propagation Condition 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: RSRP and Io	levels have been or irposes. They are	derived fro	m oth	ier parame	ters f	or

Table A.5.2.5.1.2-2: Cell specific test parameters for E-UTRAN FDD to UTRAN (1.28 Mcps TDD option) handover test case (cell 1)

Table A.5.2.5.1.2-3: Cell specific test parameters for E-UTRAN FDD to UTRAN (1.28 Mcps TDD option) handover test case (cell 2)

Parameter	Unit			Cell 2 (U	TRA)			
Timeslot Number			0			DwPTS		
		T1	T2	T3	T1	T2	T3	
UTRA RF Channel Number Note 21		Channel 2						
PCCPCH_Ec/lor	dB		-3					
DwPCH_Ec/lor	dB					0		
OCNS_Ec/lor	dB		-3			_	-	
\hat{I}_{or} / I_{oc}	dB	-3	11	11	-3	11	11	
I _{oc}	dBm/1.28 MHz			-80				
PCCPCH RSCP Note 2	dBm	-86	-72	-72		n.a.		
lo Note 2	dBm/1.28 MHz	-78.24	-68.67	-68.67				
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 Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.								

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A.5.2.5.1.3 7.68 Mcps TDD option

A.5.2.5.2 Test Requirements

A.5.2.5.2.1 3.84 Mcps TDD option

A.5.2.5.2.2 1.28 Mcps TDD option

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 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%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in section 5.3.2.2.1.

 $T_{interrupt} = 40$ ms in the test; $T_{interrupt}$ is defined in section 5.3.2.2.2.

This gives a total of 90 ms.

A.5.2.5.2.3 7.68 Mcps TDD option

A.5.2.6 E-UTRAN TDD - GSM Handover

A.5.2.6.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN to GSM cell handover delay specified in section 5.3.3.

The test parameters are given in Table A.5.2.6.1-1, A.5.2.6.1-2 and A.5.2.6.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 shall be used. The test consists of three successive time periods, with 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.

The RRC message implying handover to cell 2 shall be sent to the UE during period T2, after the UE has reported Event B1. The start of T3 is defined as the end of last E-UTRAN TTI containing the RRC message implying handover.

The requirements are also applicable for a UE not requiring measurement gap, in which case no measurement gap pattern should be sent for the parameters specified in Table A.5.2.6.1-1.

Table A.5.2.6.1-1: General test parameters for E-UTRAN TDD toGSM neighbours handover test case in AWGN propagation condition

Pa	rameter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH	PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Gap Pattern Id			1	As specified in TS 36.133 section 8.1.2.1.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Uplink-downlink o	configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe	configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
CP length of cell	1		Normal	
Inter-RAT measu	rement quantity		GSM Carrier RSSI	
E-UTRA RF Char	nnel Number		1	E-UTRA RF Channel Number
E-UTRA Channel (BW _{channel})	Bandwidth	MHz	10	E-UTRA Channel Bandwidth (BW _{channel})
Threshold other s	system	dBm	-80	Absolute GSM carrier RSSI threshold for event B1.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	
T1		S	20	
T2		S	7	
T3		S	1	

	Parameter	Unit	Се	ll 1		
			T1, T2	Т3		
E-UTRA R	RF Channel Number			1		
BW _{channel}		MHz	1	0		
OCNG Pa	tterns defined in					
	OP.1 TDD) and in		OP.1 TDD	OP.2 TDD		
	OP.2 TDD)					
PBCH_RA		dB				
PBCH_R	B	dB				
PSS_RA		dB				
SSS_RA		dB				
PCFICH_		dB				
PHICH_R		dB				
PHICH_R		dB	()		
PDCCH_		dB				
PDCCH_		dB				
PDSCH_I		dB				
PDSCH_I	RB	dB				
OCNG_R	A Note1	dB				
	B ^{Note1}	dB				
\hat{E}_{s}/N_{oc}		dB	4	4		
$N_{_{oc}}$ Note 2		dBm/15 kHz	-98 (A	WGN)		
\hat{E}_{s}/I_{ot}		dB	4			
RSRP ^{Note}	3	dBm/15kHz	-94			
Propagatio	on Condition		AWGN			
NOTE 1:	OCNG shall be used su	uch that cell 1 is	cell 1 is 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 levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

Table A.5.2.6.1-2: Cell Specific Parameters for Handover E- UTRAN TDD to GSM handover test case

Table A A.5.2.6.1-3: Cell Specific Parameters for Handover E-UTRAN to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)	
Farameter	Unit	T1	T2, T3
Absolute RF Channel Number		AR	FCN 1
RXLEV	dBm	-85	-75

A.5.2.6.2 Test Requirements

The UE shall begin to send access bursts on the new DCCH of the target cell less than 100 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:

 $T_{Handover delay} = 90 \text{ ms} (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}$

- T_{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_{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 99.3 ms, allow 100 ms in the test case.

A.5.2.7 E-UTRAN FDD – UTRAN FDD Handover; Unknown Target Cell

A.5.2.7.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to UTRAN FDD handover requirements for the case when the target cell is unknown as specified in section 5.3.1.

The test parameters are given in Tables A.5.2.7.1-1, A.5.2.7.1-2 and A.5.2.7.1-3. The test consists of two successive time periods, with time durations of T1, T2. At the start of time duration T1, the UE does 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. No Gap pattern configuration shall be used.

Table A.5.2.7.1-1: General test parameters for E-UTRAN FDD to UTRAN FDD handover test case

Par	Parameter		Value	Comment
PDSCH paramete	rs		DL Reference Measurement	As specified in section A.3.1.1.1
			Channel R.0 FDD	
PCFICH/PDCCH/I	PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1
			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	E-UTRAN cell
	Neighbouring cell		Cell 2	UTRAN cell
Final condition	Active cell		Cell 2	UTRAN cell
Channel Bandwidt	th (BW _{channel})	MHz	10	
E-UTRAN FDD m	easurement quantity		RSRP	
Inter-RAT (UTRAN quantity	NFDD) measurement		CPICH Ec/N0	
DRX			OFF	Non-DRX test
Access Barring Inf	formation	-	Not sent	No additional delays in random
Ū				access procedure
E-UTRA RF Chan	nel Number		1	One E-UTRA FDD carrier
				frequency is used.
E-UTRA Channel	Bandwidth	MHz	10	
(BWchannel)				
UTRA RF Channe	l Number		1	One UTRA FDD carrier frequency is used.
Monitored UTRA F	FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell before T2.
Post-verification p	eriod		False	· · · · · · · · · · · · · · · · · · ·
T1		s	≤5	
T2		s	1	

Parameter		Unit	Cell 1 (I	E-UTRA)
			T1	T2
E-UTRA RF Channel				1
number				
BW _{channel}		MHz	1	0
OCNG Patterns defin	ed in		OP.1 FDD	OP.2 FDD
A.3.2.1.1 (OP.1 FDD)	and in			
A.3.2.1.2 (OP.2 FDD)			
PBCH_RA		dB		
PBCH_RB		dB		
PSS_RA		dB		
SSS_RA		dB		
PCFICH_RB		dB		
PHICH_RA		dB		
PHICH_RB		dB		0
PDCCH_RA		dB		
PDCCH_RB		dB		
PDSCH_RA		dB		
PDSCH_RB		dB		
OCNG_RA ^{Note 1}		dB		
OCNG_RB ^{Note 1}		dB		
\hat{E}_{s}/I_{ot}		dB	0	0
$N_{oc}^{\rm Note 2}$	C	dBm/15 kHz	-!	98
\hat{E}_s / N_{oc}		dB	0	0
RSRP Note 3	C	Bm/15 KHz	-98	-98
Propagation Conditio	n		AW	/GN
Note 1: OCNG sha	II be used s	such that both	cells are fully	allocated and
a constant		nitted power s	spectral density	
Note 2: Interference	e from othe	er cells and no	oise sources no	t specified in
the test is	assumed to	be constant	over subcarrier	s and time
and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters				
themselve	5.			

Table A.5.2.7.1-2: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 1)

Parameter	Unit	Cell 2	(UTRA)	
		T1	T2	
CPICH_Ec/lor	dB	-	10	
PCCPCH_Ec/lor	dB	-	12	
SCH_Ec/lor	dB	-	12	
PICH_Ec/lor	dB	-	15	
DCH_Ec/lor	dB	Note 1		
OCNS_Ec/lor	dB	Note 2		
\hat{I}_{or}/I_{oc}	dB	-infinity	-1.8	
I _{oc}	dBm/3,84 MHz	-70	-70	
CPICH_Ec/lo	dB	-infinity	-14	
Propagation Condition	AWGN			
Note 1:The DPCH level is controlled by the power control loopNote 2:The power of the OCNS channel that is added shall make the total power from the cell to be equal to I _{or}				

Table A.5.2.7.1-3: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 2)

A.5.2.7.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 290 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay $+ T_{interrupt}$, where:

RRC procedure delay is 50ms. See section 5.3.1.1.1.

 $T_{interrupt}$ is 240ms. See section 5.3.1.1.2.

This gives a total of 290ms in the test case.

A.5.2.8 E-UTRAN FDD - GSM Handover; Unknown Target Cell

A.5.2.8.1 Test Purpose and Environment

This test is to verify the E-UTRAN FDD to GSM handover requirements for the case when the target GSM cell is unknown as specified in section 5.3.3.

The test parameters are given in Table A.5.2.8.1-1, A.5.2.8.1-2 and A.5.2.8.1-3 below. The test consists of two successive time periods, with time duration of T1, T2 respectively. At the start of time duration T1, the UE will 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. No Gap pattern configuration shall be used.

Table A.5.2.8.1-1: General test parameters for E-UTRAN FDD to GSM handover test case; unknown target cell

Parameter		Unit	Value	Comment
PDSCH paramete	PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.1
			Channel R.0 FDD	
PCFICH/PDCCH	/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters			Channel R.6 FDD	
Gap Pattern Id			None	No measurement gaps shall be
				provided.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
DRX			OFF	No DRX configured
T1		S	7	
T2		S	1	

Parameter	Unit	Cell 1			
		T1	T2		
BW _{channel}	MHz		10		
OCNG Patterns					
defined in A.3.2.1.1					
(OP.1 FDD) and in		OP.1 FDD	OP.2 FDD		
A.3.2.1.2 (OP.2					
FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB		0		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note1}	dB				
OCNG_RB ^{Note1}	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB		4		
N_{oc} Note 2	dBm/15 kHz		-98		
\hat{E}_s/N_{oc}	dB		4		
			·		
RSRP Note 3	dBm/15 kHz		-94		
Propagation		Δ	WGN		
Condition			-		
		hat cell 1 is fully allocate			
transmitted power spectral density is achieved for all OFDM symbols.					
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 lev	Note 3: RSRP levels have been derived from other parameters for information				
		able parameters themse			

Table A.5.2.8.1 - 2: Cell specific parameters for cell # 1 in E-UTRAN FDD to GSM handover test case; unknown target cell

Table A.5.2.8.1-3: Cell specific parameters for cell # 2 in E-UTRAN FDD to GSM handover test case; unknown target cell

Parameter	Unit	Cell	2 (GSM)
Farameter	Unit	T1	T2
Absolute RF Channel Number		AR	FCN 1
RXLEV	dBm	-Infinity	-75

A.5.2.8.2 Test Requirements

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 T2.

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:

 $T_{Handover delay} = 190 \text{ ms} (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}$

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 T_{offset} : Equal to 4.65 ms is the GSM timing uncertainty from the time when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure

T_{UL}: Equal to 4.65 ms is 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.5.2.9 E-UTRAN TDD - GSM Handover; Unknown Target Cell

A.5.2.9.1 Test Purpose and Environment

This test is to verify the E-UTRAN TDD to GSM handover requirements for the case when the target GSM cell is unknown as specified in section 5.3.3.

The test parameters are given in Table A.5.2.9.1 -1, A.5.2.9.1 -2 and A.5.2.9.1 -3 below. The test consists of two successive time periods, with time duration of T1, T2 respectively. At the start of time duration T1, the UE will 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. No Gap pattern configuration shall be used.

Table A.5.2.9.1-1: General test parameters for E-UTRAN TDD to GSM handover test case; unknown target cell

Para	meter	Unit	Value	Comment
PDSCH paramete	ers		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.2.2.1
PCFICH/PDCCH, parameters	PHICH		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.2.2.2
Gap Pattern Id			None	No measurement gaps shall be provided.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
DRX			OFF	No DRX configured
Special subframe	configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-downlink o	onfiguration		1	As specified in table 4.2-2 in 3GPP TS 36.211
T1		S	7	
T2		S	1	

Parameter	Unit	Cell 1			
		T1	T2		
BW _{channel}	MHz		10		
OCNG Patterns					
defined in A.3.2.2.1					
(OP.1 TDD) and in		OP.1 TDD	OP.2 TDD		
A.3.2.2.2 (OP.2					
TDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB		0		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note1}	dB				
OCNG_RB ^{Note1}	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB		4		
N_{oc} Note 2	dBm/15 kHz		-98		
\hat{E}_s/N_{oc}	dB		4		
57 00			-		
RSRP ^{Note 3}	dBm/15 kHz		-94		
Propagation		Δ	WGN		
Condition			-		
		hat cell 1 is fully allocate			
		density is achieved for al			
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					
			nd shall be modelled as		
AWGN of appropriate power for ${}^{N_{oc}}$ to be fulfilled.					
Note 3: RSRP leve	els have been dei	rived from other paramet	ers for information		
		able parameters themse			

Table A.5.2.9.1 - 2: Cell specific parameters for cell # 1 in E-UTRAN TDD to GSM handover test case; unknown target cell

Table A.5.2.9.1 - 3: Cell specific parameters for cell # 2 in E-UTRAN TDD to GSM handover test case; unknown target cell

Parameter	Unit	Cell	2 (GSM)
Farameter	Unit	T1	T2
Absolute RF Channel Number		AR	FCN 1
RXLEV	dBm	-Infinity	-75

A.5.2.9.2 Test Requirements

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 T2.

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:

 $T_{Handover delay} = 190 \text{ ms} (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}$

 T_{offset} : Equal to 4.65 ms is the GSM timing uncertainty from the time when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure

 T_{UL} : Equal to 4.65 ms is 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.5.2.10 E-UTRAN TDD to UTRAN TDD handover: unknown target cell

A.5.2.10.1 Test Purpose and Environment

This test is to verify the requirement for E-UTRAN TDD to UTRAN TDD handover requirements specified in section 5.3.2 when the target UTRAN TDD cell is unknown.

The test scenario comprises of 1 E-UTRAN TDD cell and 1 UTRAN TDD cell as given in tables A.5.2.10.1-1, A.5.2.10.1-2, and A.5.2.10.1-3. No gap pattern 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 message implying handover to UTRA 1.28Mcps TDD cell shall be sent to the UE. The end of the last TTI containing handover message is the beginning of T2 duration.

Table A.5.2.10.1-1: General test parameters for E-UTRAN TDD to unknown UTRAN TDD cell handover test case

Param	eter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCI parameters	H/PHICH		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Initial	Active cell		Cell 1	E-UTRAN TDD cell
conditions	Neighbour cell		Cell 2	UTRA 1.28Mcps TDD cell
Final conditions			Cell 2	UTRA 1.28Mcps TDD cell
CP length of cel	1		Normal	
Uplink-downlink of cell 1	configuration		1	As specified in table 4.2.2 in TS 36.211
Special subfram configuration of			6	As specified in table 4.2.1 in TS 36.211
Time offset betv	veen cells		3 ms	Asynchronous cells
Access Barring	Information		Not Sent	No additional delays in random access procedure.
TimeToTrigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	
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	

Parameter	Unit	Ce	ll 1	
		T1	T2	
E-UTRA RF Channel			1	
Number				
BWchannel	MHz	1	0	
OCNG Patterns defined in		OP.1 TDD	OP.2 TDD	
TS36.133 A.3.2.2.1 (OP.1				
TDD) and in A.3.2.2.2				
(OP.2 TDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0	0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RANote 1	dB			
OCNG_RBNote 1	dB			
\hat{E}_s/I_{ot}	dB	3	3	
\hat{E}_{s}/N_{oc}	dB	3	3	
N _{oc}	dBm/15kHz	-{	98	
RSRP	dBm/15kHz	-95	-95	
SCH_RP	dBm/15 kHz	-95	-95	
Propagation Condition		AW	'GN	
 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 and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. 				

Table A.5.2.10.1-2: Cell specific test parameters for E-UTRAN TDD to unknown UTRAN TDD cell handover test case (cell 1)

Table A.5.2.10.1-3: Cell specific test parameters for E-UTRAN TDD to unknown UTRAN TDD cell test case (cell 2)

Parameter	Unit		Cell 2	(UTRA)	
Timeslot Number		0		DwF	PTS
		T1	T2	T1	T2
UTRA RF Channel Number ^{Note1}			Char	nnel 2	
PCCPCH_Ec/lor	dB	-:	3		
DwPCH_Ec/lor	dB			C)
OCNS_Ec/lor	dB	-3			
\hat{I}_{or}/I_{oc}	dB	-infinity	13	-infinity	13
I _{oc}	dBm/1.28 MHz		-8	30	
PCCPCH RSCP	dBm	-infinity -70		n.a.	
Propagation Condition			AW	/GN	
Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the					r is the
primary frequency's channel number.Note2:P-CCPCH RSCP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

A.5.2.10.2 Test Requirements

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than [280] ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

A.5.3 E-UTRAN Handover to Non-3GPP RATs

A.5.3.1 E-UTRAN FDD – HRPD Handover

A.5.3.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to HRPD handover requirements specified in section 5.4.1.

The test parameters are given in Tables A.5.3.1.1-1, A.5.3.1.1-2 and A.5.3.1.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Parameter		Unit	Value	Comment
PDSCH parameters	S		DL Reference Measurement	As specified in section A.3.1.1.1
			Channel R.0 FDD	
PCFICH/PDCCH/P	PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1
			Channel R.6 FDD	
Initial conditions	Initial conditions Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell
Channel Bandwidth	n (BW _{channel})	MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN FDD me	asurement quantity		RSRP	
Inter-RAT (HRPD)			CDMA2000 HRPD Pilot	
quantity			Strength	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP
				threshold for event B2
b2-Threshold2-CDI	MA2000	dB	-7	Absolute 'CDMA2000 HRPD Pilot
				Strength' threshold for event B2
Hysteresis	Hysteresis		0	
TimeToTrigger		s	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Info	ormation	-	Not sent	No additional delays in random
				access procedure
E-UTRA RF Chann	el Number		1	One E-UTRA FDD carrier
				frequency is used.
E-UTRA Channel E	Bandwidth	MHz	10	
(BWchannel)				
HRPD RF Channel	Number		1	One HRPD carrier frequency is used.
HRPD neighbour cell list size			8	HRPD cells on HRPD RF channel
5				1 provided in the cell list before
				T2.
cdma2000-Search\	VindowSize		8 (60 PN chips)	Search window size as defined in
				section 6.3.5 in 3GPP TS 36.331
T1		s	5	
T2		s	≤10	
Т3		s	1	

Table A.5.3.1.1-1: General test parameters for E-UTRAN FDD to HRPD handover test case

E-UTRA RF Channel number BW _{channel} OCNG Patterns defined in	MHz	T1 OP.1	10 FDD	T3	
number BW _{channel}	MHz	OP.1	10		
BW _{channel}	MHz	OP.1			
	MHz	OP.1			
OCNG Patterns defined in		OP.1	FDD		
				OP.2	
A.3.2.1.1 (OP.1 FDD) and				FDD	
in A.3.2.1.2 (OP.2 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB		0		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
N _{oc} Note 2	dBm/15		-98		
	kHz				
RSRP ^{Note 3}	dBm/15	-98	-98	-98	
	KHz				
\hat{E}_s / N_{oc}	dB	0	0	0	
\hat{E}_s/I_{ot}	dB	0	0	0	
Propagation Condition			AWGN		
Note 1: OCNG shall be used suc	ch that bot	th cells are fu	Ilv allocated	and a	
constant total transmi					
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 levels have been	derived fr	om other para	ameters for ir	nformation	
purposes. They are n					

Table A.5.3.1.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to HRPD cell # 2

Parameter	Unit	Cell 2 (HRPD)		
		T1	Т2	Т3
$\frac{\text{Control} E_{b}}{N_{t}} $ (38.4 kbps)	dB	21		
$\frac{\text{Control} \text{E}_{\text{b}}}{\text{N}_{\text{t}}} \text{ (76.8 kbps)}$	dB	18		
\hat{I}_{or}/I_{oc}	dB	-infinity	0	0
I _{oc}	dBm/1.2288 MHz		-55	
CDMA2000 HRPD Pilot Strength	dB	-infinity	-3	-3
Propagation Condition			AWGN	

Table A.5.3.1.1-3: Cell specific test parameters for HRPD (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

A.5.3.1.2 Test Requirements

The UE shall start transmission of the reverse control channel in HRPD to Cell 2 less than 127 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in section 5.4.1.1.1.

 $T_{interrupt} = 76.66$ ms in the test; $T_{interrupt}$ is defined in section 5.4.1.1.2.

This gives a total of 126.66 ms, allow 127 ms in the test.

A.5.3.2 E-UTRAN FDD – cdma2000 1X Handover

A.5.3.2.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to cdma2000 1X handover requirements specified in section 5.4.2.

The test parameters are given in Tables A.5.3.2.1-1, A.5.3.2.1-2 and A.5.3.2.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PH	IICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	cdma2000 1X cell
Final condition	Active cell		Cell 2	cdma2000 1X cell
Channel Bandwidth	(BW _{channel})	MHz	10	
Gap Pattern Id	· · ·		0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN FDD mea	surement quantity		RSRP	
Inter-RAT (cdma200 quantity			CDMA2000 1xRTT Pilot Strength	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-CDM	A2000	dB	-14	Absolute 'CDMA2000 1xRTT Pilot Strength' threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		s	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Infor	mation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Channe	l Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Ba (BWchannel)	andwidth	MHz	10	
cdma2000 1X RF Cł	nannel Number		1	One HRPD carrier frequency is used.
cdma2000 1X neigh	bour cell list size		8	cdma2000 1X cells on cdma2000 1X RF channel 1 provided in the cell list before T2.
cdma2000-SearchW	indowSize		8 (60 PN chips)	Search window size as defined in section 6.3.5 in 3GPP TS 36.331
T1		s	5	
T2		s	≤10	
T3		s	1	

Table A.5.3.2.1-1: General test parameters for E-UTRAN FDD to cdma2000 1X handover test case

Parameter	Unit	C	ell 1 (E-UTR	A)	
		T1	T2	T3	
E-UTRA RF Channel		1			
number					
BW _{channel}	MHz		10		
OCNG Patterns defined in		OP.1	FDD	OP.2	
A.3.2.1.1 (OP.1 FDD) and		FDD		FDD	
in A.3.2.1.2 (OP.2 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB		0		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB	1			
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB]			
N _{oc} Note 2	dBm/15	-98			
	kHz				
RSRP Note 3	dBm/15	-98	-98	-98	
	KHz				
\hat{E}_s/N_{oc}	dB	0	0	0	
\hat{E}_s/I_{ot}	dB	0	0	0	
Propagation Condition			AWGN		
Note 1: OCNG shall be us	ed such that	both cells are	e fully allocate	ed and a	
constant total tran	smitted powe	r spectral dei	nsity is achiev	ved for all	
OFDM symbols.					
Note 2: Interference from other cells and noise sources not specified in					
test is assumed to	be constant	over subcarri	ers and time	and shall	
		• .	. N _a		
be modelled as A	WGN of appro	opriate power	tor ^{oc} to b	be fulfilled.	
Note 3: RSRP levels have					
information purpos	ses. They are	not settable	parameters t	nemselves.	

Table A.5.3.2.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to cdma2000 1X cell # 2

Parameter	Unit	Cell 2 (cdma2000 1X)		
		T1	Т2	Т3
Pilot E _c I _{or}	dB	-7		
$\frac{\text{Sync } E_{c}}{I_{\text{or}}}$	dB	-16		
$\frac{\text{Paging } E_{c}}{I_{or}} $ (4.8 kbps)	dB	-12		
\hat{I}_{or}/I_{oc}	dB	-infinity 0		0
I _{oc}	dBm/1.2288 MHz	-55		
CDMA2000 1xRTT Pilot Strength	dB	-infinity	-10	-10
Propagation Condition			AWGN	

Table A.5.3.2.1-3: Cell specific test parameters for cdma2000 1X (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

A.5.3.2.2 Test Requirements

The UE shall start transmission of the reverse control channel in cdma2000 1X to Cell 2 less than 200 ms from the beginning of time period T3.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 130 ms, which is specified in section 5.4.2.1.1.

 $T_{interrupt} = 70$ ms in the test; $T_{interrupt}$ is defined in section 5.4.2.1.2.

This gives a total of 200 ms.

A.5.3.3 E-UTRAN FDD – HRPD Handover; Unknown Target Cell

A.5.3.3.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to HRPD handover requirements for the case when the target HRPD cell is unknown as specified in section 5.4.1.

The test parameters are given in Tables A.5.3.3.1-1, A.5.3.3.1-2 and A.5.3.3.1-3. The test consists of two successive time periods, with time durations of T1 and T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. During time period T1, message containing Information Element *systemTimeInfo* as defined in section 6.3.1 of TS 36.331 [2] shall be sent by the System Simulator (SS). No gap patterns are configured in the test case. No HRPD neighbour cell list shall be provided to the UE.

A RRC message implying handover to the unknown HRPD cell shall be sent to the UE towards the end of the time period T1. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.3.3.1-1: General test parameters for E-UTRAN FDD to HRPD handover test case; unknown target HRPD cell

Pai	Parameter		Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/	PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell
Channel Bandwidt	th (BW _{channel})	MHz	10	
DRX	· ·		OFF	Non-DRX test
Access Barring In	formation	-	Not sent	No additional delays in random
-				access procedure
E-UTRA RF Chan	nel Number		1	One E-UTRA FDD carrier
				frequency is used.
E-UTRA Channel (BWchannel)	Bandwidth	MHz	10	
HRPD RF Channel Number			1	One HRPD carrier frequency is used.
cdma2000-SearchWindowSize			8 (60 PN chips)	Search window size as defined in section 6.3.5 in 3GPP TS 36.331
T1		S	≤5	
T2		s	1	

Parameter	Unit	Cell 1 (E-UTRAN FDD)		
		T1	T2	
E-UTRA RF Channel			1	
number				
BW _{channel}	MHz	1	0	
OCNG Patterns defined in		OP.1	FDD	
A.3.2.1.1 (OP.1 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	()	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA Note 1	dB			
OCNG_RB Note 1	dB			
N_{oc} Note 2	dBm/15 kHz	-9	98	
RSRP ^{Note 3}	dBm/15 kHz	-98	-98	
\hat{E}_{s}/N_{oc}	dB	0	0	
\hat{E}_s/I_{ot}	dB	0	0	
Propagation Condition		AW	GN	
Note 1: OCNG shall be used power spectral der Note 2: Interference from oth constant over subcar	nsity is achieved for er cells and noise so	all OFDM symbols.	st is assumed to be	
$N_{_{oc}}$ to be fulfilled.				

Table A.5.3.3.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to unknown HRPD cell # 2

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Parameter	Unit	Cell 2 (HRPD)		
		T1	T2	
$\frac{\frac{\text{Control} E_{b}}{N_{t}}}{\text{kbps}}$ (38.4	dB	2	1	
$\frac{\frac{\text{Control} E_{b}}{N_{t}}}{\text{kbps}}$ (76.8	dB	18	8	
\hat{I}_{or}/I_{oc}	dB	-infinity	0	
I _{oc}	dBm/1.22 88 MHz	-5	5	
CDMA2000 HRPD Pilot Strength	dB	-infinity	-3	
Propagation Condition		AW	GN	

Table A.5.3.3.1-3: Cell specific test parameters for unknown HRPD (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

A.5.3.3.2 Test Requirements

The UE shall start transmission of the reverse control channel in HRPD to Cell 2 less than 127 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay is expressed as: RRC procedure delay + T_{interrupt}, where:

T_{interrupt} also includes time to detect HRPD cell; see section 5.4.1.1.2

This gives a total of 126.66 ms, allow 127 ms in the test case.

A.5.3.4 E-UTRAN FDD – cdma2000 1X Handover; Unknown Target cell

A.5.3.4.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to cdma2000 1X handover requirements for the case when the target cdma2000 1X cell is unknown as specified in section 5.4.2.

The test parameters are given in Tables A.5.3.4.1-1, A.5.3.4.1-2 and A.5.3.4.1-3. The test consists of two successive time periods, with time durations of T1 and T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. During time period T1, message containing Information Element *systemTimeInfo* as defined in section 6.3.1 of TS 36.331 [2] shall be sent by the System Simulator (SS). No gap patterns are configured in the test case. No cdma2000 1X neighbour cell list shall be provided to the UE.

A RRC message implying handover to the unknown cdma2000 1X cell shall be sent to the UE towards the end of the time period T1. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.3.2.1-1: General test parameters for E-UTRAN FDD to cdma2000 1X handover test case; unknown target cdma2000 1X cell

Para	ameter	Unit	Value	Comment
PDSCH parameter	S		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	cdma2000 1X cell
Final condition	Active cell		Cell 2	cdma2000 1X cell
Channel Bandwidtl	h (BW _{channel})	MHz	10	
DRX			OFF	Non-DRX test
Access Barring Info	ormation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Chanr	nel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel E (BWchannel)	Bandwidth	MHz	10	
cdma2000 1X RF (Channel Number		1	One HRPD carrier frequency is used.
cdma2000-Search	WindowSize		8 (60 PN chips)	Search window size as defined in section 6.3.5 in 3GPP TS 36.331
T1		S	≤5	
T2		S	1	

Table A.5.3.2.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to unknown cdma2000 1X cell # 2

Parameter	Unit	Cell 1 (E-UTRAN FDD)		
		T1	T2	
E-UTRA RF Channel number			1	
BW _{channel}	MHz	1	0	
OCNG Patterns defined in		OP.1	FDD	
A.3.2.1.1 (OP.1 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	()	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA Note 1	dB			
OCNG_RB Note 1	dB			
$N_{_{oc}}$ Note 2	dBm/15 kHz	-9	98	
RSRP ^{Note 3}	dBm/15 kHz	-98	-98	
\hat{E}_s/N_{oc}	dB	0	0	
\hat{E}_s / I_{ot}	dB	0	0	
Propagation Condition		AW	GN	
Note 1: OCNG shall be used suc	h that both cells are ful	ly allocated and a const	ant total transmitted	
power spectral density is				
Note 2: Interference from other c	ells 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 levels have been of	•	ameters for information	ourposes. They are	
not settable parameters t	hemselves.			

Table A.5.3.2.1-3: Cell specific test parameters for unknown cdma2000 1X (cell # 2) for handover from
E-UTRAN FDD cell (cell #1)

Parameter	Unit	Cell 2 (cdma2000 1X)		
		T1	Т2	
Pilot E _c I _{or}	dB	-7	7	
Sync E _c I _{or}	dB	-16		
$\frac{\text{Paging} E_{c}}{I_{or}}$ (4.8 kbps)	dB	-12		
\hat{I}_{or}/I_{oc}	dB	-infinity	0	
I _{oc}	dBm/1.22 88 MHz	-55		
CDMA2000 1xRTT Pilot Strength	dB	-infinity	-10	
Propagation Condition		AWGN		

A.5.3.4.2 Test Requirements

The UE shall start transmission of the reverse control channel in cdma2000 1X to Cell 2 less than 200 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay is expressed as: RRC procedure delay + T_{interrupt}, where:

T_{interrupt} also includes time to detect cdma2000 1X cell; see section 5.4.2.1.2

This gives a total of 200 ms.

A.5.3.5 E-UTRAN TDD – HRPD Handover

A.5.3.5.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD to HRPD handover requirements specified in section 5.4.1.

The test parameters are given in Tables A.5.3.5.1-1, A.5.3.5.1-2 and A.5.3.5.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Paran	neter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement	As specified in section A.3.1.1.2
PCFICH/PDCCH/PH	ICH parameters		Channel R.0 TDD DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Initial conditions	Active cell			
			Cell 1	E-UTRAN TDD cell
	leighbouring cell		Cell 2	
	Active cell		Cell 2	HRPD cell
Channel Bandwidth (BVV _{channel})	MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN TDD meas			RSRP	
Inter-RAT (HRPD) m quantity	easurement		CDMA2000 HRPD Pilot Strength	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-CDM/	42000	dB	-7	Absolute 'CDMA2000 HRPD Pilot Strength' threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Inforr	mation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Channel	Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Ba (BWchannel)	ndwidth	MHz	10	
Uplink-downlink conf	iguration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe cor	nfiguration of cell 1		6	As specified in table 4.2.1 in TS 36.211
HRPD RF Channel Number			1	One HRPD carrier frequency is used.
HRPD neighbour cell list size			8	HRPD cells on HRPD RF channel 1 provided in the cell list before T2.
cdma2000-SearchWi	indowSize		8 (60 PN chips)	Search window size as defined in section 6.3.5 in 3GPP TS 36.331
T1		s	5	
T2		s	≤10	
T3		s	1	

Table A.5.3.5.1-1: General test parameters for E-UTRAN TDD to HRPD handover test case

Parameter	Unit	Cell 1 (E-UTRA)				
		T1 T2 T		Т3		
E-UTRA RF Channel			1			
number						
BW _{channel}	MHz		10	-		
OCNG Patterns defined in		OP.1	TDD	OP.2		
TS36.133 A.3.2.2.1 (OP.1				TDD		
TDD) and in A.3.2.2.2						
(OP.2 TDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB		0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note 2}$	dBm/15		-98			
	kHz					
RSRP ^{Note 3}	dBm/15	-98	-98	-98		
	KHz					
\hat{E}_s/N_{oc}	dB	0	0	0		
\hat{E}_s/I_{ot}	dB	0	0	0		
Propagation Condition		AWGN				
Note 1: OCNG shall be us	sed such that	such that both cells are fully allocated and a				
constant total tran	constant total transmitted power spectral density is achieved for all					
OFDM symbols.						
Note 2: Interference from						
test is assumed to	be constant	over subcarri	ers and time	and shall		
	as AWGN of appropriate power for $N_{\scriptscriptstyle oc}$ to be fulfilled.					
	ve been derived from other parameters for					
information purpo	ses. They are	not settable	parameters t	hemselves.		

Table A.5.3.5.1-2: Cell specific test parameters for E-UTRAN TDD cell#1 for handover to HRPD cell # 2

Parameter	Unit	Cell 2 (HRPD)		
		T1	T2	Т3
$\frac{\text{Control } E_{b}}{N_{t}}$ (38.4 kbps)	dB		21	
$\frac{\text{Control} \text{E}_{\text{b}}}{\text{N}_{\text{t}}} \text{ (76.8 kbps)}$	dB		18	
\hat{I}_{or}/I_{oc}	dB	-infinity	0	0
I _{oc}	dBm/1.2288 MHz		-55	
CDMA2000 HRPD Pilot Strength	dB	-infinity	-3	-3
Propagation Condition			AWGN	

Table A.5.3.5.1-3: Cell specific test parameters for HRPD (cell # 2) for handover from E-UTRAN TDD cell (cell #1)

A.5.3.5.2 Test Requirements

The UE shall start transmission of the reverse control channel in HRPD to Cell 2 less than 127 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in section 5.4.1.1.1.

 $T_{interrupt} = 76.66$ ms in the test; $T_{interrupt}$ is defined in section 5.4.1.1.2.

This gives a total of 126.66 ms, allow 127 ms in the test.

A.5.3.6 E-UTRAN TDD – cdma2000 1X Handover

A.5.3.6.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD to cdma2000 1X handover requirements specified in section 5.4.2.

The test parameters are given in Tables A.5.3.6.1-1, A.5.3.6.1-2 and A.5.3.6.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHI	CH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
	ctive cell		Cell 1	E-UTRAN TDD cell
N	leighbouring cell		Cell 2	cdma2000 1X cell
Final condition A	ctive cell		Cell 2	cdma2000 1X cell
Channel Bandwidth (I	BW _{channel})	MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN TDD meas	urement quantity		RSRP	
Inter-RAT (cdma2000 quantity) 1X) measurement		CDMA2000 1xRTT Pilot Strength	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-CDMA	b2-Threshold2-CDMA2000		-14	Absolute 'CDMA2000 1xRTT Pilot Strength' threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Inform	nation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Channel	Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bar (BWchannel)		MHz	10	
cdma2000 1X RF Ch	annel Number		1	One cdma2000 1X carrier frequency is used.
cdma2000 1X neighbour cell list size			8	cdma2000 1X cells on cdma2000 1X RF channel 1 provided in the cell list before T2.
cdma2000-SearchWi	ndowSize		8 (60 PN chips)	Search window size as defined in section 6.3.5 in 3GPP TS 36.331
T1		S	5	
T2		S	≤10	
ТЗ		S	1	

Table A.5.3.6.1-1: General test parameters for E-UTRAN TDD to cdma2000 1X handover test case

Parameter			ell 1 (E-UTR	A)				
		T1	T2	Т3				
E-UTRA RF Channel			1					
number								
BW _{channel}	MHz		10	-				
OCNG Patterns defined in		OP.1	TDD	OP.2				
A.3.2.2.1 (OP.1 TDD) and				TDD				
in A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB		0					
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
N_{oc} Note 2	dBm/15	-98						
	kHz							
RSRP Note 3	dBm/15	-98	-98	-98				
	KHz							
\hat{E}_s/N_{oc}	dB	0	0	0				
\hat{E}_s/I_{ot}	dB	0	0	0				
Propagation Condition			AWGN					
Note 1: OCNG shall be us								
	constant total transmitted power spectral density is achieved for all							
OFDM symbols.	OFDM symbols.							
test is assumed to	test is assumed to be constant over subcarriers and time and shall							
	be modelled as AWGN of appropriate power for $ N_{\scriptscriptstyle oc} $ to be fulfilled.							
be modelled as A	VGN of appro	opriate power	tor ^{oc} to b	be fulfilled.				
Note 3: RSRP levels have								
information purpo	information purposes. They are not settable parameters themselve							

Table A.5.3.6.1-2: Cell specific test parameters for E-UTRAN TDD cell#1 for handover to cdma2000 1X cell # 2

Parameter	Unit	Cell 2 (cdma2000 1X)				
		T1		Т3		
$\frac{\text{Pilot } \mathbf{E}_{c}}{\mathbf{I}_{\text{or}}}$	dB	-7				
Sync E _c I _{or}	dB	-16				
$\frac{\text{Paging } E_{c}}{I_{\text{or}}} $ (4.8 kbps)	dB	-12				
\hat{I}_{or}/I_{oc}	dB	-infinity	0	0		
I _{oc}	dBm/1.2288 MHz	-55				
CDMA2000 1xRTT Pilot Strength	dB	-infinity	-10	-10		
Propagation Condition			AWGN			

Table A.5.3.6.1-3: Cell specific test parameters for cdma2000 1X (cell # 2) for handover from E-UTRAN TDD cell (cell #1)

A.5.3.6.2 Test Requirements

The UE shall start transmission of the reverse control channel in cdma2000 1X to Cell 2 less than 200 ms from the beginning of time period T3.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 130 ms, which is specified in section 5.4.2.1.1.

 $T_{interrupt} = 70$ ms in the test; $T_{interrupt}$ is defined in section 5.4.2.1.2.

This gives a total of 200 ms.

A.6 RRC Connection Control

A.6.1 RRC Re-establishment

A.6.1.1 E-UTRAN FDD Intra-frequency RRC Re-establishment

A.6.1.1.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA FDD intra-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

The test parameters are given in table A.6.1.1.1-1 and table A.6.1.1.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of the radio link failure.

Parameter		Unit	Value	Comment
PDSCH paramete	rs		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chan	nel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidt	h (BW _{channel})	MHz	10	
N310		-	1	Maximum consecutive out-of-sync indications from lower layers
N311	N311		1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	3000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Inf	ormation	-	Not Sent	No additional delays in random access procedure.
PRACH configuration index			4	As specified in table 5.7.1-2 in TS 36.211
Time offset betwee	en cells	ms	3	Asynchronous cells
T1	Τ1		5	-
T2		ms	200	
Т3		S	3	

Table A.6.1.1.1-1: General test parameters for E-UTRAN FDD intra-frequency RRC Re-establishment test case

Table A.6.1.1.1-2: Cell specific test parameters for E-UTRAN FDD intra-frequency RRC Reestablishment test case

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD
defined in A.3.2.1.1		FDD	FDD	FDD			
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB						
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						

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$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	1.54	-Infinity	-Infinity	-3.79	4	4
N _{oc} Note 2	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	7	-Infinity	-Infinity	4	4	4
RSRP Note 3	dBm/15 KHz	-91	-Infinity	-Infinity	-94	-94	-94
Propagation Condition					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 levels have been derived from other parameters for information purposes. They are not settable parameters themselves.							

A.6.1.1.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the *RRCConnectionReestablishmentRequest* message to cell 2.

The RRC re-establishment delay to a known E-UTRA FDD intra frequency cell shall be less than 1.5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

$$T_{re-establish_delay} = T_{UL_grant} + T_{UE_re-establish_delay}$$
.

Where:

 $T_{UL_{grant}}$ = It is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence $T_{UL_{grant}}$ is not used.

 $T_{UE_re-establish_delay} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$

 $N_{\text{freq}} = 1$

 $T_{search} = 100 \text{ ms}$

 $T_{SI} = 1280$ ms; it is the time required for receiving all the relevant system information as defined in 3GPP TS 36.331 for the target E-UTRAN FDD cell.

 $T_{PRACH} = 15$ ms; it is the additional delay caused by the random access procedure.

This gives a total of 1445 ms, allow 1.5 s in the test case.

A.6.1.2 E-UTRAN FDD Inter-frequency RRC Re-establishment

A.6.1.2.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA FDD inter-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

The test parameters are given in table A.6.1.1.2-1 and table A.6.1.1.2-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of radio link failure. At the start of time period T3, cell 2, which is the neighbour cell, is activated.

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/P	HICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chann	el Number (cell 1)		1	
E-UTRA RF Chann	el Number (cell 2)		2	
E-UTRA FDD inter- size	frequency carrier list		1	2 E-UTRA FDD carrier frequencies in total: 1 intra- frequency and 1 inter-frequency
Channel Bandwidth	(BW _{channel})	MHz	10	
N310	<u> </u>	-	1	Maximum consecutive out-of-sync indications from lower layers
N311		-	1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	5000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Info	ormation	-	Not Sent	No additional delays in random access procedure.
PRACH configuration index			4	As specified in table 5.7.1-2 in TS 36.211
Time offset between	n cells	ms	3	Asynchronous cells
T1		s	5	
T2		ms	200	
Т3		s	5	

Table A.6.1.2.1-1: General test parameters for E-UTRAN FDD inter-frequency RRC Re-establishment test case

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel			1	•		2	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD
defined in A.3.2.1.1		FDD	FDD	FDD			
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0			0	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
${ m \hat{E}_s}/{ m I_{ot}}$	dB	4	-Infinity	-Infinity	-Infinity	-Infinity	7
$N_{_{oc}}$ Note 2	dBm/15 KHz	-98					
\hat{E}_{s}/N_{oc}	dB	4	-Infinity	-Infinity	- Infinity	- Infinity	7
RSRP Note 3	dBm/15 KHz	-94	-Infinity	-Infinity	- Infinity	-Infinity	-91
Propagation Condition	AWGN						
Note 1: OCNG shall be u			fully allocate	d and a cons	stant total trans	mitted power s	pectral
	ved for all OFDM		-			-	
Note 2: Interference from	n other cells and i	noise sourc	es not specif	ed in the tes	st is assumed to	be constant o	ver

Table A.6.1.2.1-2: Cell specific test parameters for E-UTRAN FDD inter-frequency RRC Re-
establishment test case

te 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 levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.1.2.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the *RRCConnectionReestablishmentRequest* message to cell 2.

The RRC re-establishment delay to an unknown E-UTRA FDD inter frequency cell shall be less than 3 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

 $T_{re\text{-establish_delay}} = T_{UL_grant} + T_{UE_re\text{-establish_delay}}.$

Where:

 T_{UL_grant} = It is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence T_{UL_grant} is not used.

 $T_{UE_re-establish_delay} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$

 $N_{\text{freq}} = 2$

 $T_{search} = 800 \text{ ms}$

 $T_{SI} = 1280$ ms; it is the time required for receiving all the relevant system information as defined in 3GPP TS 36.331 for the target E-UTRAN FDD cell.

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 $T_{PRACH} = 15$ ms; it is the additional delay caused by the random access procedure.

This gives a total of 2945 ms, allow 3 s in the test case.

A.6.1.3 E-UTRAN TDD Intra-frequency RRC Re-establishment

A.6.1.3.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA TDD intra-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

The test parameters are given in table A.6.1.3.1-1 and table A.6.1.3.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of the radio link failure.

Table A.6.1.3.1-1: General test parameters for E-UTRAN TDD intra-frequency RRC Re-establishment test case

Parameter		Unit	Value	Comment
PDSCH parameter	PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chanr	nel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidtl	n (BW _{channel})	MHz	10	
N310		-	1	Maximum consecutive out-of-sync indications from lower layers
N311		-	1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	3000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Info	ormation	-	Not Sent	No additional delays in random access procedure.
Special subframe of	configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink co	Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211
PRACH configurat	ion index		53	As specified in table 5.7.1-3 in TS 36.211
Time offset betwee	en cells	us	3	Synchronous cells
T1		S	5	
T2		ms	200	
Т3		S	3	

Parameter	Unit	Cell 1			Cell 2			
		T1	T2	T3	T1	T2	Т3	
E-UTRA RF Channel			1	•		1		
Number								
BW _{channel}	MHz		10			10		
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD	
defined in A.3.2.2.1		TDD	TDD	TDD				
(OP.1 TDD) and in								
A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB							
PDCCH_RA	dB		0			0		
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	1.54	-Infinity	-Infinity	-3.79	4	4	
$N_{oc}^{}$ Note 2	dBm/15 KHz				-98			
\hat{E}_s/N_{oc}	dB	7	-Infinity	-Infinity	4	4	4	
RSRP Note 3	dBm/15 KHz	-91	-Infinity	-Infinity	-94	-94	-94	
Propagation Condition			· · · · · · · · · · · · · · · · · · ·	· · · · · ·	AWGN			
Note 1: OCNG shall be u density is achieve			fully allocate	d and a cons	stant total trans	mitted power s	spectral	

Table A.6.1.3.1-2: Cell specific test parameters for E-UTRAN TDD intra-frequency RRC Reestablishment test case

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 levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.1.3.2 **Test Requirements**

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the RRCConnectionReestablishmentRequest message to cell 2.

The RRC re-establishment delay to a known E-UTRA TDD intra frequency cell shall be less than 1.5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

 $T_{re-establish_delay} = T_{UL_grant} + T_{UE_re-establish_delay}$.

Where:

 $T_{UL_{grant}} = It$ is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence T_{UL grant} is not used.

 $T_{UE_re-establish_delay} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$

 $N_{\text{freq}} = 1$

 $T_{search} = 100 \text{ ms}$

 $T_{SI} = 1280$ ms; it is the time required for receiving all the relevant system information as defined in 3GPP TS 36.331 for the target E-UTRAN TDD cell.

 $T_{PRACH} = 15$ ms; it is the additional delay caused by the random access procedure.

This gives a total of 1445 ms, allow 1.5 s in the test case.

A.6.1.4 E-UTRAN TDD Inter-frequency RRC Re-establishment

A.6.1.4.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA TDD inter-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in section 6.1.2.

The test parameters are given in table A.6.1.4.1-1 and table A.6.1.4.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of radio link failure. At the start of time period T3, cell 2, which is the neighbour cell, is activated.

Table A.6.1.4.1-1: General test parameters for E-UTRAN TDD inter-frequency RRC Re-establishment test case

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement	As specified in section A.3.1.1.2
			Channel R.0 TDD	
PCFICH/PDCCH/I	PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.2
			Channel R.6 TDD	
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chan	nel Number (cell 1)		1	
E-UTRA RF Chan	nel Number (cell 2)		2	
E-UTRA TDD inte	r-frequency carrier list		1	2 E-UTRA TDD carrier
size				frequencies in total: 1 intra-
				frequency and 1 inter-frequency
Channel Bandwidt	th (BW _{channel})	MHz	10	
N310		-	1	Maximum consecutive out-of-sync
				indications from lower layers
N311		-	1	Minimum consecutive in-sync
				indications from lower layers
T310		ms	0	Radio link failure timer; T310 is
				disabled
T311		ms	5000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Inf	formation	-	Not Sent	No additional delays in random
				access procedure.
Special subframe	configuration		6	As specified in table 4.2-1 in TS
				36.211
Uplink-downlink co	onfiguration		1	As specified in table 4.2-2 in TS
				36.211
PRACH configuration index			53	As specified in table 5.7.1-3 in TS
				36.211
Time offset betwee	en cells	μs	3	Synchronous cells
T1		s	5	
T2		ms	200	
Т3		s	5	

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel			1	•		2	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD
defined in A.3.2.2.1		TDD	TDD	TDD			
(OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB					-	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-Infinity	-Infinity	-Infinity	-Infinity	7
$N_{oc}^{\rm Note 2}$	dBm/15 KHz				-98	•	
\hat{E}_s/N_{oc}	dB	4	-Infinity	-Infinity	- Infinity	- Infinity	7
RSRP Note 3	dBm/15 KHz	-94	-Infinity	-Infinity	- Infinity	-Infinity	-91
Propagation Condition			•		AWGN	• •	
Note 1: OCNG shall be u density is achieve			fully allocate	d and a cons	stant total trans	mitted power s	pectral

Table A.6.1.4.1-2: Cell specific test parameters for E-UTRAN TDD inter-frequency RRC Reestablishment test case

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 $N_{\it oc}$ to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.1.4.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the *RRCConnectionReestablishmentRequest* message to cell 2.

The RRC re-establishment delay to an unknown E-UTRA TDD inter frequency cell shall be less than 3 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

 $T_{re\text{-establish_delay}} = T_{UL_grant} + T_{UE_re\text{-establish_delay}}.$

Where:

 T_{UL_grant} = It is the time required to acquire and process uplink grant from the target cell. The PRACH reception at the system simulator is used as a trigger for the completion of the test; hence T_{UL_grant} is not used.

 $T_{UE_re-establish_delay} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$

$$N_{\text{freq}} = 2$$

 $T_{search} = 800 \text{ ms}$

 $T_{SI} = 1280$ ms; it is the time required for receiving all the relevant system information as defined in 3GPP TS 36.331 for the target E-UTRAN TDD cell.

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 $T_{PRACH} = 15$ ms; it is the additional delay caused by the random access procedure.

This gives a total of 2945 ms, allow 3 s in the test case.

A.6.2 Random Access

A.6.2.1 E-UTRAN FDD – Contention Based Random Access Test

A.6.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior 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 6.2.2 and Section 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.1.1-1 and A.6.2.1.1-2.

Parameter	Unit	Value	Comments	
E-UTRA RF Channel Number		1		
BW _{channel}	MHz	10		
OCNG Pattern Note 1		OP.1/2 FDD Note 1	As defined in A.3.2.1.1/2.	
PDSCH parameters Note 4		DL Reference Measurement Channel R.0 FDD Note 4	As defined in A.3.1.1.1.	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As defined in A.3.1.2.1.	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH RB	dB	0		
PDCCH_RA	dB			
PDCCH RB	dB			
PDSCH RA	dB			
PDSCH RB	dB			
OCNG_RA Note 1	dB			
OCNG_RB ^{Note 1}	dB			
\hat{E}_{s}/I_{ot}	dB	3		
N _{oc}	dBm/15 KHz	-98		
\hat{E}_s/N_{oc}	dB	3		
lo Note 2	dBm/9 MHz	-65.5		
RSRP ^{Note 3}	dBm/15 KHz	-95		
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in 3GPP TS 36.331.	
Configured UE transmitted	dBm	23	As defined in clause 6.2.5	
power ($P_{\rm CMAX}$)			in 3GPP TS 36.101.	
PRACH Configuration Index	-	4	As defined in table 5.7.1-2 in 3GPP TS 36.211.	
Backoff Parameter Index	-	2	As defined in table 7.2-1 in 3GPP TS 36.321.	
Propagation Condition	-	AWGN		
Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. The OCNG pattern is chosen during the test according to the presence of a DL reference measurement channel. Note 2: Io level has been derived from other parameters for information purpose. It is not a settable parameter.				
Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.				
Note 4: The DL PDSCH reference measurement channel is used in the test only when a downlink transmission dedicated to the UE under test is required.				

Table A.6.2.1.1-1: General test parameters for FDD contention based random access test

Field	Value	Comment			
powerRampingStep	dB2				
preambleInitialReceivedTargetPower	dBm-120				
preambleTransMax	n6				
ra-ResponseWindowSize	sf10	10 sub-frames			
mac-ContentionResolutionTimer	sf48	48 sub-frames			
maxHARQ-Msg3Tx	4				
Note: For further information see Section 6.3.2 in 3GPP TS 36.331.					

Table A.6.2.1.1-2: RACH-Configuration parameters for FDD contention based random access test

A.6.2.1.2 Test Requirements

Contention based random access is triggered by *not* explicitly assigning a random access preamble via dedicated signalling in the downlink.

A.6.2.1.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.1.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) and shall transmit the msg3 if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.1.2.2 No Random Access Response Reception

To test the UE behavior specified in subclause 6.2.2.1.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if no Random Access Response is received within the RA Response window.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.1.2.3 Receiving a NACK on msg3

To test the UE behavior specified in subclause 6.2.2.1.3 the System Simulator shall NACK *all* UE msg3 following a successful Random Access Response.

The UE shall re-transmit the msg3 upon the reception of a NACK on msg3 until the maximum number of HARQ re-transmissions is reached.

A.6.2.1.2.4 Reception of an Incorrect Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element *not* matching the CCCH SDU transmitted in msg3 uplink message.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires unless the received message includes a UE Contention Resolution Identity MAC control element and the UE Contention Resolution Identity included in the MAC control element matches the CCCH SDU transmitted in the uplink message.

A.6.2.1.2.5 Reception of a Correct Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element matching the CCCH SDU transmitted in the msg3 uplink message.

The UE shall send ACK if the Contention Resolution is successful.

A.6.2.1.2.6 Contention Resolution Timer expiry

To test the UE behavior specified in Subclause 6.2.2.1.6 the System Simulator shall not send a response to a msg3.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if the Contention Resolution Timer expires.

A.6.2.2 E-UTRAN FDD – Non-Contention Based Random Access Test

A.6.2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior 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 6.2.2 and Section 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.2.1-1 and A.6.2.2.1-2.

Parameter	Unit	Value	Comments
E-UTRA RF Channel Number		1	
BWchannel	MHz	10	
OCNG Pattern		OP.1 FDD	As defined in A.3.2.1.1.
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As defined in A.3.1.1.1.
PCFICH/PDCCH/PHICH		DL Reference Measurement	As defined in A.3.1.2.1.
parameters PBCH_RA	٩D	Channel R.6 FDD	
	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB	0	
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	3	
N_{oc}	dBm/15 KHz	-98	
\hat{E}_s/N_{oc}	dB	3	
lo Note 2	dBm/9 MHz	-65.5	
RSRP ^{Note 3}	dBm/15 KHz	-95	
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in 3GPP TS 36.331.
Configured UE transmitted power ($P_{ m CMAX}$)	dBm	23	As defined in clause 6.2.5 in 3GPP TS 36.101.
PRACH Configuration Index	-	4	As defined in table 5.7.1-2 in 3GPP TS 36.211.
Backoff Parameter Index	-	2	As defined in table 7.2-1 in 3GPP TS 36.321.
Propagation Condition	-	AWGN	
Note 1: OCNG shall be used su spectral density is achieved for	all OFDM symb	s fully allocated and a constant	-

Table A.6.2.2.1-1: General test parameters for FDD non-contention based random access test

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Table A.6.2.2.1-2: RACH-Configuration parameters for FDD non-contention based random access test

Field	Value	Comment		
powerRampingStep	dB2			
preambleInitialReceivedTargetPower	dBm-120			
preambleTransMax	n6			
ra-ResponseWindowSize	sf10	10 sub-frames		
Note: For further information see Section 6.3.2 in 3GPP TS 36.331.				

A.6.2.2.2 Test Requirements

Non-Contention based random access is triggered by explicitly assigning a random access preamble via dedicated signalling in the downlink.

A.6.2.2.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.2.2.2 No Random Access Response Reception

To test the UE behavior specified in subclause 6.2.2.2.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.3 E-UTRAN TDD – Contention Based Random Access Test

A.6.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior 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 6.2.2 and Section 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.3.1-1 and A.6.2.3.1-2.

Parameter	Unit	Value	Comments
E-UTRA RF Channel Number	-	1	
BW _{channel}	MHz	10	
OCNG Pattern Note 1	-	OP.1/2 TDD Note 1	As defined in A.3.2.2.1/2.
PDSCH parameters Note 4	-	DL Reference Measurement	As defined in A.3.1.1.2.
-		Channel R.0 TDD Note 4	
PCFICH/PDCCH/PHICH	-	DL Reference Measurement	As defined in A.3.1.2.2.
parameters		Channel R.6 TDD	
Special subframe	-	6	As specified in table 4.2-1
configuration			in 3GPP TS 36.211.
Uplink-downlink configuration	-	1	As specified in table 4.2-2 in 3GPP TS 36.211.
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB	_	
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB]	
PDSCH_RB	dB		
OCNG_RA Note 1	dB]	
OCNG_RB Note 1	dB		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	3	
N _{oc}	dBm/15 KHz	-98	
\hat{E}_{s}/N_{oc}	dB	3	
lo Note 2	dBm/9 MHz	-65.5	
RSRP ^{Note 3}	dBm/15 KHz	-95	
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in 3GPP TS 36.331.
Configured UE transmitted	dBm	23	As defined in clause 6.2.5
power ($P_{\rm CMAX}$)			in 3GPP TS 36.101.
PRACH Configuration Index	-	53	As defined in table 5.7.1-3 in 3GPP TS 36.211.
Backoff Parameter Index	-	2	As defined in table 7.2-1 in 3GPP TS 36.321.
Propagation Condition	-	AWGN	
Note 1: OCNG shall be used spectral density is a according to the pre-	chieved for all Ol sence of a DL re	ell is fully allocated and a consta FDM symbols. The OCNG patte ference measurement channel.	rn is chosen during the test

Table A.6.2.3.1-1: General test parameters for TDD contention based random access test

Note 2: Io level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Note 4: The DL PDSCH reference measurement channel is used in the test only when a downlink transmission dedicated to the UE under test is required.

Field	Value	Comment				
numberOfRA-Preambles	n52					
sizeOfRA-PreamblesGroupA	n52	No group B.				
powerRampingStep	dB2					
preambleInitialReceivedTargetPower	dBm-120					
preambleTransMax	n6					
ra-ResponseWindowSize	sf10	10 sub-frames				
mac-ContentionResolutionTimer	sf48	48 sub-frames				
maxHARQ-Msg3Tx	4					
Note: For further information see Section 6.	3.2 in 3GPP TS 36.331	Note: For further information see Section 6.3.2 in 3GPP TS 36.331.				

Table A.6.2.3.1-2: RACH-Configuration parameters for TDD contention based random access test

A.6.2.3.2 Test Requirements

Contention based random access is triggered by *not* explicitly assigning a random access preamble via dedicated signalling in the downlink.

A.6.2.3.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.1.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) and shall transmit the msg3 if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.3.2.2 No Random Access Response reception

To test the UE behavior specified in Subclause 6.2.2.1.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if no Random Access Response is received within the RA Response window.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.3.2.3 Receiving a NACK on msg3

To test the UE behavior specified in Subclause 6.2.2.1.3 the System Simulator shall NACK *all* UE msg3 following a successful Random Access Response.

The UE shall re-transmit the msg3 upon the reception of a NACK on msg3 until the maximum number of HARQ re-transmissions is reached.

A.6.2.3.2.4 Reception of an Incorrect Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element *not* matching the CCCH SDU transmitted in msg3 uplink message.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires unless the received message includes a UE Contention Resolution Identity MAC control element and the UE Contention Resolution Identity included in the MAC control element matches the CCCH SDU transmitted in the uplink message.

A.6.2.3.2.5 Reception of a Correct Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element matching the CCCH SDU transmitted in the msg3 uplink message.

The UE shall send ACK if the Contention Resolution is successful.

A.6.2.3.2.6 Contention Resolution Timer expiry

To test the UE behavior specified in Subclause 6.2.2.1.6 the System Simulator shall not send a response to a msg3.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if the Contention Resolution Timer expires.

A.6.2.4 E-UTRAN TDD – Non-Contention Based Random Access Test

A.6.2.4.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior 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 6.2.2 and Section 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.4.1-1 and A.6.2.4.1-2.

Parameter	Unit	Value	Comments
E-UTRA RF Channel Number	-	1	
BW _{channel}	MHz	10	
OCNG Pattern	-	OP.1 TDD	As defined in A.3.2.2.1.
PDSCH parameters	-	DL Reference Measurement	As defined in A.3.1.1.2.
·		Channel R.0 TDD	
PCFICH/PDCCH/PHICH	-	DL Reference Measurement	As defined in A.3.1.2.2.
parameters		Channel R.6 TDD	
Special subframe	-	6	As specified in table 4.2-1
configuration			in 3GPP TS 36.211.
Uplink-downlink configuration	-	1	As specified in table 4.2-2 in 3GPP TS 36.211.
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB		
\hat{E}_{s}/I_{ot}	dB	3	
N _{oc}	dBm/15 KHz	-98	
\hat{E}_s/N_{oc}	dB	3	
lo Note 2	dBm/9 MHz	-65.5	
RSRP ^{Note 3}	dBm/15 KHz	-95	
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in 3GPP TS 36.331.
Configured UE transmitted	dBm	23	As defined in clause 6.2.5
power ($P_{\rm CMAX}$)			in 3GPP TS 36.101.
PRACH Configuration Index	-	53	As defined in table 5.7.1-3 in 3GPP TS 36.211.
Backoff Parameter Index	-	2	As defined in table 7.2-1 in 3GPP TS 36.321.
Propagation Condition	-	AWGN	
Note 1: OCNG shall be used si	ich that the cell i	is fully allocated and a constant	total transmitted power

Table A.6.2.4.1-1: General test parameters for TDD non-contention based random access test

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Field	Value	Comment			
powerRampingStep	dB2				
preambleInitialReceivedTargetPower	dBm-120				
preambleTransMax	n6				
ra-ResponseWindowSize	sf10	10 sub-frames			
Note: For further information see Section 6.3.2 in 3GPP TS 36.331.					

Table A.6.2.4.1-2: RACH-Configuration parameters for TDD non-contention based random access test

A.6.2.4.2 Test Requirements

Non-Contention based random access is triggered by explicitly assigning a random access preamble via dedicated signalling in the downlink.

A.6.2.4.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.4.2.2 No Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in section 6.3.5.1.1 of 3GPP TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in section 6.3.5.2.1 of 3GPP TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.3 RRC Connection Release with Redirection

A.6.3.1 Redirection from E-UTRAN FDD to UTRAN FDD

A.6.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct performing the RRC connection release with redirection to the target UTRAN FDD cell. This test will partly verify the RRC connection release with redirection to UTRAN FDD cell requirements in section 6.3.2.1.

The test parameters are given in Tables A.6.3.1.1-1, A.6.3.1.1-2 and A.6.3.1.1-3 below. The test consists of two successive time periods, with time duration of T1, and T2 respectively. The "*RRCConnectionRelease*" message containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message is sent to the UE. Prior to time duration T2, the UE shall not have any timing information of Cell 2. Cell 2 is powered up at the beginning of the T2.

Table A.6.3.1.1-1: General test parameters for RRC Connection Release with Redirection from E-UTRAN FDD to UTRAN FDD under AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD) measurement quantity		CPICH Ec/lo	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	Ť
UTRA FDD cell list size		16	UTRA cells on UTRA RF channel 1 provided in the " <i>RRCConnectionRelease</i> " message from the E-UTRAN
T1	S	≤5	
T2	S	1	

Parameter	Unit	Cell 1 T1 T2				
E-UTRA RF Channel Number		1				
BW _{channel}	V _{channel} MHz		10			
OCNG Pattern defined in						
A.3.2.1.1 (OP.1 FDD)		OP.1 F	DD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
$N_{_{oc}}$ Note 3	dBm/15 kHz	-98	}			
\hat{E}_s/N_{oc}	dB	4	4			
RSRP ^{Note 4}	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWG	3N			
Note 1: OCNG shall be used spectral density is ac Note 2: The resources for up	 OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. The resources for uplink transmission are assigned to the UE prior to the start of time period T2. 					
	over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be					
 fulfilled. Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. 						

Table A.6.3.1.1-2: Cell specific test parameters for cell #1 E-UTRAN FDD to UTRAN FDD RRC release with redirection under AWGN propagation conditions

Table A.6.3.1.1-3: Cell specific test parameters for cell #2 E-UTRAN FDD to UTRAN FDD RRC release with redirection under AWGN propagation conditions

Parameter	Unit	t Cell 2		
		T1	T1	
UTRA RF Channel Number		1		
CPICH_Ec/lor	dB	-10		
PCCPCH_Ec/lor	dB	-12		
SCH_Ec/lor	dB	-12		
PICH_Ec/lor	dB	-15		
DPCH_Ec/lor	dB	N/A		
OCNS		-0.941		
\hat{I}_{or}/I_{oc}	dB	- ∞	0.02	
I _{oc}	dBm/3.84 MHz	-70		
CPICH_Ec/Io ^{Note 3}	dB	-∞	-13	
Propagation Condition		AWGN		
Note 1: The DPCH level is c				
Note 2: The power of the OC	CNS channel that is added shall make the total power from the cell to be equal			
to I _{or} .				
Note 3: This gives an SCH E	Ec/lo of -15dB			

A.6.3.1.2 Test Requirements

The UE shall start to transmit random access to Cell 2 less than 650 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRAN FDD observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay in this case can be expressed as

 $T_{connection_release_redirect_UTRA~FDD} = T_{RRC_procedure_delay} + T_{identify_UTRA~FDD} + T_{SI_UTRA~FDD} + T_{RA}$

where

 $T_{RRC_{procedure_{delay}}} = 110 \text{ ms}$

 $T_{identify-UTRA FDD} = 500 \text{ ms}$

 $T_{SI-UTRA FDD}$ = the time required for acquiring all the relevant system information of the target UTRA FDD cell. This time depends upon whether the UE is provided with the relevant system information of the target UTRA FDD cell or not by the E-UTRAN before the RRC connection is released. 0 ms is assumed in this test case.

 T_{RA} = The additional delay caused by the random access procedure. 40 ms is assumed in this test case.

This gives a total of 650 ms.

A.6.3.2 Redirection from E-UTRAN TDD to UTRAN FDD

A.6.3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct performing the RRC connection release with redirection to the target UTRAN FDD cell. This test will partly verify the RRC connection release with redirection to UTRAN TDD cell requirements in section 6.3.2.1.

The test parameters are given in Tables A.6.3.2.1-1, A.6.3.2.1-2 and A.6.3.2.1-3 below. The test consists of two successive time periods, with time duration of T1, and T2 respectively. The "*RRCConnectionRelease*" message containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message is sent to the UE. Prior to time duration T2, the UE shall not have any timing information of cell 2. Cell 2 is powered up at the beginning of the T2,

Table A.6.3.2.1-1: General test parameters for RRC Connection Release with Redirection from E-UTRAN TDD to UTRAN FDD under AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
UTRA FDD cell list size		16	UTRA cells on UTRA RF channel 1 provided in the " <i>RRCConnectionRelease</i> " message from the E-UTRAN
T1	S	≤5	
T2	S	1	

Parameter	Unit	Cell	1		
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10			
OCNG Pattern defined in					
A.3.2.1.1 (OP.1 FDD)		OP.1 7	rdd		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4		
Note 3	dBm/15 kHz	-98	3		
\hat{E}_{s}/N_{oc}	dB	4	4		
RSRP ^{Note 4}	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWG			
Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant					
		e modelled as AWGN of appropri			
 fulfilled. Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. 					

Table A.6.3.2.1-2: Cell specific test parameters for cell #1 E-UTRAN TDD to UTRAN FDD RRC release with redirection under AWGN propagation conditions

Table A.6.3.2.1-3: Cell specific test parameters for cell #2 E-UTRAN TDD to UTRAN FDD RRC release with redirection under AWGN propagation conditions

Parameter	Unit	Cell 2			
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.941			
\hat{I}_{or}/I_{oc}	dB	- ∞	0.02		
I _{oc}	dBm/3.84 MHz	-/()			
CPICH_Ec/Io ^{Note 3}	dB	- ∞	-13		
Propagation Condition	AWGN				
Note 1: The DPCH level is c					
Note 2: The power of the OC	lote 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: This gives an SCH Ec/lo of -15dB					

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A.6.3.2.2 Test Requirements

The UE shall start to transmit random access to Cell 2 less than 650 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRA FDD observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay in this case can be expressed as

 $T_{connection_release_redirect_UTRA~FDD} = T_{RRC_procedure_delay} + T_{identify_UTRA~FDD} + T_{SI_UTRA~FDD} + T_{RA}$

where

 $T_{RRC_procedure_delay} = 110 \text{ ms}$

 $T_{identify-UTRA FDD} = 500 \text{ ms}$

 $T_{SI-UTRA FDD}$ = the time required for acquiring all the relevant system information of the target UTRA FDD cell. This time depends upon whether the UE is provided with the relevant system information of the target UTRA FDD cell or not by the E-UTRAN before the RRC connection is released. 0 ms is assumed in this test case.

 T_{RA} = The additional delay caused by the random access procedure. 40 ms is assumed in this test case.

This gives a total of 650 ms.

A.6.3.3 Redirection from E-UTRAN FDD to GERAN when System Information is provided

A.6.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA FDD to the target GERAN cell within $T_{connection_release_redirect_GERAN}$. This test will partly verify the RRC connection release with redirection to GERAN requirements in section 6.3.2.2.

The test parameters are given in Tables A.6.3.3.1-1, A.6.3.3.1-2 and A.6.3.3.1-3 below. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The start of T2 is the instant when the last TTI containing the RRC message, "*RRCConnectionRelease*", is received by the UE from cell 1. The "*RRCConnectionRelease*" message shall contain all the relevant system information of cell 2.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbour including ARFCN 1	GSM cells are provided in the "RRCConnectionRelease" message.
T1	S	5	
T2	S	2	

Table A.6.3.3.1-1: General test parameters for RRC connection release with redirection from
E-UTRAN FDD to GERAN in AWGN

Parameter	Unit	Cell	1			
		T1	T2			
E-UTRA RF Channel Number		1				
BWchannel	MHz	10				
OCNG Pattern defined in						
A.3.2.1.1 (OP.1 FDD)		OP.1 FDD				
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB	0				
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RANote 1	dB					
OCNG_RBNote 1	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
\hat{E}_s/N_{oc}	dB	4	4			
N _{oc}	dBm/15 kHz	-98	3			
RSRP	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWC				
Note 1: OCNG shall be used	OCNG shall be used such that the cell is fully allocated and a constant total transmitted power					
	al density is achieved for all OFDM symbols. rence 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_{ac} to be					
fulfilled. Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

Table A.6.3.3.1-2: Cell specific test parameters for E-UTRA FDD cell (cell #1) for RRC connection release with redirection from E-UTRAN FDD to GERAN in AWGN

Table A.6.3.3.1-3: Cell specific test parameters for GERAN cell (cell #2) for RRC connection release with redirection from E-UTRAN FDD to GERAN in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

A.6.3.3.2 Test Requirements

The UE shall begin to send access bursts on RACH of the target GERAN cell (cell #2) less than 1120 ms from the beginning of time period T2.

The rate of correct "RRC connection release with redirection to GERAN" observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{connection_release_redirect_} GERAN = T_{RRC_procedure_delay} + T_{identify_GERAN} + T_{SI_GERAN} + T_{RA}$

 $T_{RRC_procedure_delay} = 110$ ms, which is the time for processing the received message "*RRCConnectionRelease*.

 $T_{identify-GERAN} = 1000$ ms, which is the time for identifying the target GERAN cell.

 $T_{SI-GERAN} = 0$; UE does not have to read the system information of the GERAN cell since all relevant SI is provided to the UE in the "*RRCConnectionRelease*" message.

 $T_{RA} = 10$ ms, which is about 2 GSM frames (2*4.65 ms) to account for the GSM timing uncertainty.

A.6.3.4 Redirection from E-UTRAN TDD to GERAN when System Information is provided

A.6.3.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA TDD to the target GERAN cell within $T_{connection_release_redirect_GERAN}$. This test will partly verify the RRC connection release with redirection to GERAN requirements in section 6.3.2.2.

The test parameters are given in Tables A.6.3.4.1-1, A.6.3.4.1-2 and A.6.3.4.1-3 below. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The start of T2 is the instant when the last TTI containing the RRC message, "*RRCConnectionRelease*", is received by the UE from cell 1. The "*RRCConnectionRelease*" message shall contain all the relevant system information of cell 2.

Table A.6.3.4.1-1: General test parameters for RRC connection release with redirection from E-UTRAN TDD to GERAN in AWGN

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2.
Active		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
CP length		Normal	Applicable to cell 1
Special subframe configuration		6	As specified in table 4.2.1 in TS 36.211. The same configuration applies to all cells.
Uplink-downlink configuration		1	
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbour including ARFCN 1	GSM cells provided in the "RRCConnectionRelease" message.
T1	S	5	
T2	S	2	

Parameter	Unit	Cell	1			
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Pattern defined in						
A.3.2.2.1 (OP.1 TDD)		OP.1 TDD				
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	0				
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
\hat{E}_s/N_{oc}	dB	4	4			
N _{oc}	dBm/15 kHz	-98	3			
RSRP	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWG				
	OCNG shall be used such that the cell is fully allocated and a constant total transmitted power					
	spectral density is achieved for all OFDM symbols.					
Note 2: Interference from othe	er cells and nois	e sources not specified in the tes	t is assumed to be constant			
over subcarriers and	over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be					
fulfilled.						
	RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

Table A.6.3.4.1-2: Cell specific test parameters for E-UTRA TDD cell (cell #1) for RRC connection release with redirection from E-UTRAN TDD to GERAN in AWGN

Table A.6.3.4.1-3: Cell specific test parameters for GERAN cell (cell #2) for RRC connection release with redirection from E-UTRAN TDD to GERAN in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

A.6.3.4.2 Test Requirements

The UE shall begin to send access bursts on RACH of the target GERAN cell (cell #2) less than 1120 ms from the beginning of time period T2.

The rate of correct "RRC connection release with redirection to GERAN" observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{connection_release_redirect_} GERAN = T_{RRC_procedure_delay} + T_{identify_GERAN} + T_{SI_GERAN} + T_{RA}$

 $T_{RRC_procedure_delay} = 110$ ms, which is the time for processing the received message "*RRCConnectionRelease*.

 $T_{identify-GERAN} = 1000$ ms, which is the time for identifying the target GERAN cell.

A.6.3.5 E-UTRA TDD RRC connection release redirection to UTRA TDD

A.6.3.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA TDD to the target UTRA TDD cell within $T_{connection_release_redirect_UTRA TDD}$. This test will partly verify the RRC connection release with redirection to UTRA TDD requirements in section 6.3.2.3.

The test parameters are given in table A.6.3.5.1-1, table A.6.3.5.1-2, and table A.6.3.5.1-3. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The "*RRCConnectionRelease*" message containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message, "*RRCConnectionRelease*", is received by the UE from cell 1. The "*RRCConnectionRelease*" message shall contain all the relevant system information of Cell 2.

Table A.6.3.5.1-1: General test parameters for E-UTRA TDD RRC connection release redirection to UTRA TDD

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Time offset between cells	ms	3	Asynchronous cells
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	Applicable to cell 1
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		16	UTRA cells on UTRA RF channel 1 provided in the " <i>RRCConnectionRelease</i> " message from the E-UTRAN
T1	S	5	
T2	S	1	

Para	ameter	Unit		Cell	1	
			T1		T2	
E-UTRA RF C	hannel Number			1		
BW _{channel}		MHz		10		
OCNG Pattern	defined in					
A.3.2.2.1 (OP.	1 TDD)		OP.1 TDD			
PBCH_RA		dB				
PBCH_RB		dB				
PSS_RA		dB				
SSS_RA		dB				
PCFICH_RB		dB				
PHICH_RA		dB		•		
PHICH_RB		dB		0		
PDCCH_RA		dB				
PDCCH_RB		dB				
PDSCH_RA		dB				
PDSCH_RB		dB				
OCNG_RA ^{Note}		dB				
	DCNG_RB ^{Note 1}					
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	Z _s /I _{ot} dB		4		4	
$N_{_{oc}}$ Note 3		dBm/15 kHz		-98	5	
\hat{E}_{s}/N_{oc}		dB	4		4	
RSRP Note 4		dBm/15 kHz	-94		-94	
SCH_RP		dBm/15 kHz	-94		-94	
Propagation C	ondition			AWG	3N	
Note 1: OC spe	NG shall be used ctral density is acl	nieved for all OF				
			are assigned to the UE prior			
Note 3: Inte	ote 3: Interference from other cells and noise sources not specified in the test is assumed to be constant					
ove	r subcarriers and	time and shall be	e modelled as AWGN of app	ropri	ate power for $N_{_{oc}}$ to be	
fulfi	lled.					
Note 4: RSI			other parameters for informa	ation	purposes. They are not	

Table A.6.3.5.1-2: Cell specific test parameters for cell 1 in E-UTRA TDD RRC connection release redirection to UTRA TDD test

Table A.6.3.5.1-3: Cell specific test parameters for cell 2 in E-UTRA TDD RRC connection release redirection to UTRA TDD test

Parameter	Unit	Cell 2 (UTRA TDD)				
Timeslot Number		0		DwPTS		
		T1	T2	T1	T2	
UTRA RF Channel Number ^{Note1}		Channel 1				
PCCPCH_Ec/lor	dB	-4.77	-4.77			
DwPCH_Ec/lor	dB			0	0	
OCNS_Ec/lor ^{Note2}	dB	-1.76	-1.76			
\hat{I}_{or}/I_{oc}	dB	-inf	8	-inf	8	
I _{oc}	dBm/1.28 MHz	-80				
PCCPCH RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.	
PCCPCH_Ec/Io Note3	dB	-inf	-5.41	n.a.	n.a.	
DwPCH_Ec/lo	dB	n.a.	n.a.	-inf	-0.64	
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: The power of the OCNS channel that is added shall make the total power from the						
cell to be equal to I _{or} .	cell to be equal to I _{or} .					
Note 3: P-CCPCH RSRP, PCCPCH_Ec/lo and DwPCH_Ec/lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

A.6.3.5.2 Test Requirements

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 650 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRA TDD observed during repeated tests shall be at least 90%.

NOTE: The time delay can be expressed as: $T_{RRC_{procedure_{delay}}} + T_{identify-UTRA TDD} + T_{SI-UTRA TDD} + T_{RA}$, where:

 $T_{RRC_{procedure_{delay}}} = 110 \text{ ms}$, which is specified in section 6.3.2.3.

 $T_{identify-UTRA TDD} = 500 \text{ ms}$; which is defined in section 6.3.2.3.

 $T_{SI-UTRA TDD} = 0$ ms, UE does not have to read the system information of the UTRAN TDD since all relevant SI is provided to the UE in the "*RRCConnectionRelease*" message.

 $T_{RA} = 40$ ms. This is the additional delay caused by the random access procedure

It gives a total delay of 650 ms.

A.6.3.6 E-UTRA FDD RRC connection release redirection to UTRA TDD

A.6.3.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA FDD to the target UTRA TDD cell within $T_{connection_release_redirect_UTRA TDD}$. This test will partly verify the RRC connection release with redirection to UTRA TDD requirements in section 6.3.2.3.

The test parameters are given in table A.6.3.6.1-1, table A.6.3.6.1-2, and table A.6.3.6.1-3. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The "*RRCConnectionRelease*" message containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message, "*RRCConnectionRelease*", is received by the UE from cell 1. The "*RRCConnectionRelease*" message shall contain all the relevant system information of Cell 2.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN		DL Reference Measurement	As specified in section A.3.1.1.1.
FDD)		Channel R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1.
parameters (E-UTRAN FDD)		Channel R.6 FDD	
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number
			1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
Time offset between cells	ms	3	Asynchronous cells
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is
			used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		16	UTRA cells on UTRA RF channel 1
			provided in the "RRCConnectionRelease"
			message from the E-UTRAN
T1	S	5	
T2	S	1	

Table A.6.3.6.1-1: General test parameters for E-UTRA FDD RRC connection release redirection to UTRA TDD

Table A.6.3.6.1-2: Cell specific test parameters for cell 1 in E-UTRA FDD RRC connection release redirection to UTRA TDD test

Parameter	Unit	Cell 1				
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Patterns defined in		OP.1 F	חח:			
A.3.2.1.1 (OP.1 FDD)		OF.1 P	00			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
$N_{_{oc}}$ Note 3	dBm/15 kHz	-98				
\hat{E}_{s}/N_{oc}	dB	4	4			
RSRP ^{Note 4}	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWGN				
Note 1: OCNG shall be used spectral density is act	nieved for all OF		-			
		are assigned to the UE prior to the				
	Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant					
over subcarriers and	time and shall be	e modelled as AWGN of appropria	ate power for $N_{_{oc}}$ to be			
fulfilled. Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

Table A.6.3.6.1-3: Cell specific test parameters for cell 2 in E-UTRA FDD RRC connection release redirection to UTRA TDD test

Parameter	Unit	Cell 2 (UTRA TDD)				
Timeslot Number		0		DwPTS		
		T1	T2	T1	T2	
UTRA RF Channel Number ^{Note1}		Channel 1				
PCCPCH_Ec/lor	dB	-4.77	-4.77			
DwPCH_Ec/lor	dB			0	0	
OCNS_Ec/lor ^{Note2}	dB	-1.76	-1.76			
\hat{I}_{or}/I_{oc}	dB	-inf	8	-inf	8	
I _{oc}	dBm/1.28 MHz	-80				
PCCPCH RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.	
PCCPCH_Ec/Io Note3	dB	-inf	-5.41	n.a.	n.a.	
DwPCH_Ec/lo	dB	n.a.	n.a.	-inf	-0.64	
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: The power of the OCNS channel that is added shall make the total power from the						
cell to be equal to I _{or} .	cell to be equal to I _{or} .					
Note 3: P-CCPCH RSRP, PCCPCH_Ec/lo and DwPCH_Ec/lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

A. 6.3.6.2 Test Requirements

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 650 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRA TDD observed during repeated tests shall be at least 90%.

NOTE: The time delay can be expressed as: $T_{RRC procedure delay} + T_{identify-UTRA TDD} + T_{SI-UTRA TDD} + T_{RA}$, where:

 $T_{RRC_{procedure_{delay}}} = 110 \text{ ms}$, which is specified in section 6.3.2.3.

 $T_{identify-UTRA TDD} = 500 \text{ ms}$; which is defined in section 6.3.2.3.

 $T_{SI-UTRA TDD} = 0$ ms, UE does not have to read the system information of the UTRAN TDD since all relevant SI is provided to the UE in the "*RRCConnectionRelease*" message.

 $T_{RA} = 40$ ms. This is the additional delay caused by the random access procedure.

This gives a total delay of 650 ms.

A.6.3.7 E-UTRA TDD RRC connection release redirection to UTRA TDD without SI provided

A.6.3.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA TDD to the target UTRA TDD cell within $T_{connection_release_redirect_UTRA TDD}$. This test will partly verify the RRC connection release with redirection to UTRA TDD requirements in section 6.3.2.3.

The test parameters are given in table A.6.3.7.1-1, table A.6.3.7.1-2, and table A.6.3.7.1-3. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The "*RRCConnectionRelease*" message not containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message, "*RRCConnectionRelease*", is received by the UE from Cell 1.

Table A.6.3.7.1-1: General test parameters for E-UTRA TDD RRC connection release redirection to UTRA TDD without SI provided

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN		DL Reference Measurement	As specified in section A.3.1.1.2.
TDD)		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2.
parameters (E-UTRAN TDD)		Channel R.6 TDD	
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number
			1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Time offset between cells	ms	3	Asynchronous cells
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is
			used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
CP length		Normal	Applicable to cell 1
Uplink-downlink configuration of		1	As specified in table 4.2.2 in TS 36.211
cell 1			
Special subframe configuration of		6	As specified in table 4.2.1 in TS 36.211
cell 1			
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is
			used.
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		none	No explicit neighbour list is provided to
			the UE
T1	S	5	
T2	S	2	

Parameter	Unit	Cell	1
		T1	T2
E-UTRA RF Channel Number		1	
BW _{channel}	MHz	10	
OCNG Pattern defined in			
A.3.2.2.1 (OP.1 TDD)		OP.1	TDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB	_	
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98	3
\hat{E}_s/N_{oc}	dB	4	4
RSRP Note 4	dBm/15 kHz	-94	-94
SCH_RP	dBm/15 kHz	-94	-94
Propagation Condition		AWC	
Note 1: OCNG shall be used spectral density is acl	nieved for all OF		
		are assigned to the UE prior to t	
Note 3: Interference from othe	er cells and nois	e sources not specified in the tes	t is assumed to be constant
over subcarriers and	time and shall be	e modelled as AWGN of appropri	iate power for N_{oc} to be
fulfilled.			
Note 4: RSRP levels have be		other parameters for information	purposes. They are not
settable parameters t	nemseives.		

Table A.6.3.7.1-2: Cell specific test parameters for cell 1 in E-UTRA TDD RRC connection release redirection to UTRA TDD test without SI provided

Table A.6.3.7.1-3: Cell specific test parameters for cell 2 in E-UTRA TDD RRC connection release
redirection to UTRA TDD test without SI provided

	Parameter	Unit	Cell 2 (UTRA TDD)			
Timeslot N	Number		0 DwPTS			PTS
			T1	T2	T1	T2
UTRA RF	Channel Number ^{Note1}			Char	nnel 1	
PCCPCH	_Ec/lor	dB	-4.77	-4.77		
DwPCH_E		dB			0	0
OCNS_Ed	c/lor ^{Note2}	dB	-1.76	-1.76		
\hat{I}_{or}/I_{oc}		dB	-inf	8	-inf	8
I _{oc}		dBm/1.28 MHz	-80			
	RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.
PCCPCH	_Ec/lo ^{Note3}	dB	-inf	-5.41	n.a.	n.a.
DwPCH_E	Ec/lo ^{Note3}	dB	n.a.	n.a.	-inf	-0.64
Propagati	on Condition				'GN	
Note 1:	In the case of multi-frequ frequency's channel num	ber.			-	-
Note 2:	The power of the OCNS	S channel that is added shall make the total power from the				om the
	cell to be equal to I _{or} .					
Note 3:						

A.6.3.7.2 Test Requirements

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 1930 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRA TDD observed during repeated tests shall be at least 90%.

NOTE: The time delay can be expressed as: $T_{RRC_procedure_delay} + T_{identify-UTRA TDD} + T_{SI-UTRA TDD} + T_{RA}$, where:

 $T_{RRC_{procedure_{delay}}} = 110 \text{ ms}$, which is specified in section 6.3.2.3.

 $T_{identify-UTRA TDD} = 500 \text{ ms}$; which is defined in section 6.3.2.3.

T_{SI-UTRA TDD}: Maximum repetition period of relevant system info blocks that need to be received by the UE during RRC connection release redirection to UTRA TDD cell. 1280 ms is assumed in this test case.

 T_{RA} = 40ms, this is the additional delay caused by the random access procedure.

This gives a total delay of 1930 ms.

A.6.3.8 E-UTRA FDD RRC connection release redirection to UTRA TDD without SI provided

A.6.3.8.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA FDD to the target UTRA TDD cell within $T_{connection_release_redirect_UTRA TDD}$. This test will partly verify the RRC connection release with redirection to UTRA TDD requirements in section 6.3.2.3.

The test parameters are given in table A.6.3.8.1-1, table A.6.3.8.1-2, and table A.6.3.8.1-3. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The "*RRCConnectionRelease*" message not containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message, "*RRCConnectionRelease*", is received by the UE from Cell 1.

Table A.6.3.8.1-1: General test parameters for E-UTRA FDD RRC connection release redirection to UTRA TDD without SI provided

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Time offset between cells	ms	3	Asynchronous cells
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	Applicable to cell 1
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		none	No explicit neighbour list is provided to the UE
T1	S	5	
T2	S	2	

ETSI

Parameter	Unit	Cell	1
		T1	T2
E-UTRA RF Channel Number		1	
BW _{channel}	MHz	10	
OCNG Patterns defined in		OP.1 F	FDD
A.3.2.1.1 (OP.1 FDD)			
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{NOTE 1}	dB		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98	3
\hat{E}_s/N_{oc}	dB	4	4
RSRP Note 4	dBm/15 kHz	-94	-94
SCH_RP	dBm/15 kHz	-94	-94
Propagation Condition		AWO	GN
Note 1: OCNG shall be used spectral density is ac	hieved for all OF	ells are fully allocated and a cons DM symbols.	stant total transmitted power
		are assigned to the UE prior to t	
Note 3: Interference from oth	er cells and nois	e sources not specified in the tes	t is assumed to be constant
over subcarriers and	time and shall be	e modelled as AWGN of appropri	ate power for $N_{_{ m oc}}$ to be
fulfilled.			
	en derived from	other parameters for information	purposes. They are not
settable parameters t			

Table A.6.3.8.1-2: Cell specific test parameters for cell 1 in E-UTRA FDD RRC connection release redirection to UTRA TDD test without SI provided

	Parameter	Unit	Cell 2 (UTRA TDD)			
Timeslot	Number		0		DwPTS	
			T1	T2	T1	T2
UTRA R	- Channel Number ^{Note1}			Chan	nel 1	
PCCPCH		dB	-4.77	-4.77		
DwPCH_		dB			0	0
OCNS_E	c/lor ^{Note2}	dB	-1.76	-1.76		
\hat{I}_{or}/I_{oc}		dB	-inf	8	-inf	8
I _{oc}		dBm/1.28 MHz	-80			
PCCPCH	I RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.
PCCPCH	I_Ec/Io ^{Note3}	dB	-inf	-5.41	n.a.	n.a.
DwPCH_	_Ec/lo ^{Note3}	dB	n.a.	n.a.	-inf	-0.64
Propaga	tion Condition			AW	GN	
Note 1:	In the case of multi-frequency's channel num	nber.			•	•
Note 2:	The power of the OCNS	channel that is ad	dded shall r	nake the tot	al power fr	om the
Note 3:	cell to be equal to I _{or} . P-CCPCH RSRP, PCCP other parameters for info					

Table A.6.3.8.1-3: Cell specific test parameters for cell 2 in E-UTRA FDD RRC connection release redirection to UTRA TDD test without SI provided

A.6.3.8.2 Test Requirements

themselves.

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 1930 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRA TDD observed during repeated tests shall be at least 90%.

NOTE: The time delay can be expressed as: $T_{RRC_procedure_delay} + T_{identify-UTRA TDD} + T_{SI-UTRA TDD} + T_{RA}$, where:

 $T_{RRC_{procedure_{delay}}} = 110 \text{ ms}$, which is specified in section 6.3.2.3.

 $T_{identify-UTRA TDD} = 500 \text{ ms}$; which is defined in section 6.3.2.3.

T_{SI-UTRA TDD}: Maximum repetition period of relevant system info blocks that need to be received by the UE during RRC connection release redirection to UTRA TDD cell. 1280 ms is assumed in this test case.

 $T_{RA} = 40$ ms, this is the additional delay caused by the random access procedure.

This gives a total delay of 1930 ms.

A.7 Timing and Signalling Characteristics

A.7.1 UE Transmit Timing

A.7.1.1 E-UTRAN FDD – UE Transmit Timing Accuracy Tests

A.7.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE is capable of following the frame timing change of the connected eNode B and that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in section 7.1.2.

For this test a single cell is used. Table A.7.1.1.1-1 defines the strength of the transmitted signals and the propagation condition. The transmit timing is verified by the UE transmitting sounding reference symbols using the configuration defined in Table A.7.1.1.1-2.

Table A.7.1.1.1-1: Te	est Parameters for UE	Transmit Timing A	Accuracy Tests for	E-UTRAN FDD
		rianonii inniing /	loouraby rooto ior	

D		Value			
Parameter	Unit	Test 1	Test 2	Test 3	
E-UTRA RF Channel Number		1	1	1	
Channel Bandwidth (BW _{channel})	MHz	10	10	1.4	
DRX cycle	ms	OFF	80 ^{Note5}	OFF	
PDCCH/PCFICH/PHICH					
Reference measurement		R.6 FDD	R.6 FDD	R.8 FDD	
channel ^{Note1}					
OCNG Pattern ^{Note2}		OP.2 FDD	OP.2 FDD	OP.4 FDD	
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA	dB	0	0	0	
PHICH_RB		-	-	-	
PDCCH RA					
PDCCH_RB	_				
OCNG_RA ^{Note3}	_				
OCNG_RB ^{Note3}					
N _{oc}	dBm/15 kHz	-98	-98	-98	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	3	3	3	
\hat{E}_s/N_{oc}	dB	3	3	3	
lo ^{Note4}	dBm/9 MHz	-65.5	-65.5	N/A	
10	dBm/1.08 MHz	N/A	N/A	-74.7	
Propagation condition	-	AWGN	AWGN	AWGN	

Note 3: 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 4: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 5: DRX related parameters are defined in Table A.7.1.1.1-3.

Table A.7.1.1.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for E-UTRAN FDD

Field	Test 1	Test 2	Test 3	Comment	
Field		Value			
srsBandwidthConfiguration	bw5	bw5	bw7		
srsSubframeConfiguration	sc1	sc3	sc1		
ackNackSrsSimultaneousTransmission	FALSE	FALSE	FALSE		
srsMaxUpPTS	N/A	N/A	N/A	Not applicable for FDD	
srsBandwidth	0	0	0	No hopping	
srsHoppingBandwidth	hbw0	hbw0	hbw0		
frequencyDomainPosition	0	0	0		
duration	TRUE	TRUE	TRUE	Indefinite duration	
Srs-ConfigurationIndex	0	77	0	SRS periodicity of 2ms and 80 ms for Test 1 and 2, respectively.	
transmissionComb	0	0	0		
cyclicShift	cs0	cs0	cs0	No cyclic shift	
Note: For further information see section 6.3.2 in 3GPP TS 36.331.					

Table A.7.1.1.1-3: drx-Configuration to be used in UE Transmit Timing Accuracy Test 2 for E-UTRANFDD

	Test2	Comment
Field	Value	
onDurationTimer	psf1	
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf80	
shortDRX	disable	
Note: For further information see se	ection 6.3.2 in 3GPP TS	36.331.

A.7.1.1.2 Test Requirements

For parameters specified in Tables A.7.1.1.1-1 and A.7.1.1.1-2, the initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate shall be within the limits defined in section 7.1.2.

The following sequence of events shall be used to verify that the requirements are met.

For the 10MHz channel bandwith, the test sequence shall be carried out in RRC_CONNECTED for both non-DRX and DRX with a cycle length of 80 ms (Tests 1 and 2, respectively):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by $+64 \times T_s$ (approximately $+2\mu s$) compared to that in (a).
- c) The test system shall verify that for Test 1 the adjustment step size and the adjustment rate shall be according to the requirements in section 7.1.2 until the UE transmit timing offset is within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1. Skip this step for Test 2.
- d) The test system shall verify that the UE transmit timing offset stays within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

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For the 1.4MHz channel bandwith, the test sequence shall be carried out in RRC_CONNECTED for non-DRX (Tests 3):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within $N_{TA} \times T_S \pm 24 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by $+128 \times T_s$ (approximately $+4\mu s$) compared to that in (a).
- c) The test system shall verify that the adjustment step size and the adjustment rate shall be according to the requirements in section 7.1.2 until the UE transmit timing offset is within $N_{TA} \times T_S \pm 24 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- d) The test system shall verify that the UE transmit timing offset stays within $N_{TA} \times T_S \pm 24 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

A.7.1.2 E-UTRAN TDD - UE Transmit Timing Accuracy Tests

A.7.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE is capable of following the frame timing change of the connected eNode B and that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in section 7.1.2.

For this test a single cell is used. Table A.7.1.2.1-1 defines the strength of the transmitted signals and the propagation condition. The transmit timing is verified by the UE transmitting sounding reference symbols using the configuration defined in Table A.7.1.2.1-2.

Parameter	Unit	Value				
		Test 1	Test 2	Test 3		
E-UTRA RF Channel Number		1	1	1		
Channel Bandwidth (BW _{channel})	MHz	10	10	1.4		
Special subframe configuration ^{Note1}		6	6	6		
Uplink-downlink configuration ^{Note2}		1	1	1		
DRX cycle	ms	OFF	80 ^{Note7}	OFF		
PDCCH/PCFICH/PHICH						
Reference measurement channel ^{Note3}		R.6 TDD	R.6 TDD	R.8 TDD		
OCNG Pattern ^{Note4}		OP.2 TDD	OP.2 TDD	OP.4 TDD		
PBCH_RA	dB	0	0	0		
$\begin{array}{c} \mbox{PBCH_RB} \\ \mbox{PSS_RA} \\ \mbox{SSS_RA} \\ \mbox{PCFICH_RB} \\ \mbox{PHICH_RA} \\ \mbox{PHICH_RB} \\ \mbox{PDCCH_RA} \\ \mbox{PDCCH_RB} \\ \mbox{OCNG_RA}^{Note5} \\ \mbox{OCNG_RB}^{Note5} \\ \mbox{OCNG_RB}^{Note5} \\ \mbox{N}_{oc} \\ \hline \mbox{\hat{E}}_{s} / \mbox{I}_{ot} \\ \mbox{\hat{E}}_{s} / N_{oc} \end{array}$	dBm/1 5 kHz dB dB	0 -98 3 3	0 -98 3 3	0 -98 3 3		
lo ^{Note6}	dBm/9 MHz dBm/1 .08	-65.5 N/A	-65.5 N/A	N/A -74.7		
Dropogation condition	MHz					
Propagation condition - AWGN AWGN AWGN Note 1: For the special subframe configuration see table 4.2-1 in 3GPP TS 36.211. Note 2: For the uplink-downlink configuration see table 4.2-2 in 3GPP TS 36.211. Note 3: For the reference measurement channels, see section A.3.1. Note 4: For the OCNG pattern, see section A.3.2. Note 5: 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 6: Io level has been derived from other parameters for information purpose. It is not a settable parameter It is not a						

Table A.7.1.2.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for E-UTRAN TDD

settable parameter.

Note 7: DRX related parameters are defined in Table A.7.1.2.1-3.

F :-1-1	Test 1	Test 2	Tset3	0	
Field		Value		Comment	
srsBandwidthConfiguration	bw5	bw5	bw7		
srsSubframeConfiguration	sc3	sc3	sc3	Once every 5 subframes	
ackNackSrsSimultaneousTra nsmission	FALSE	FALSE	FALSE		
srsMaxUpPTS	FALSE	FALSE	FALSE		
srsBandwidth	0	0	0	No hopping	
srsHoppingBandwidth	hbw0	hbw0	hbw0		
frequencyDomainPosition	0	0	0		
duration	TRUE	TRUE	TRUE	Indefinite duration	
Srs-ConfigurationIndex	15	85	15	SRS periodicity of 10 and 80 ms for Test 1 and 2, respectively.	
transmissionComb	0	0	0		
cyclicShift	cs0	cs0	cs0	No cyclic shift	

Table A.7.1.2.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for E-UTRAN TDD

Table A.7.1.2.1-3: DRX Configuration to be used in UE Transmit Timing Accuracy Test 2 for E-UTRANTDD

Field	Test2	Comment
Fleid	Value	
onDurationTimer	psf1	
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf80	
shortDRX	disable	
Note: For further information see section	n 6.3.2 in 3GP	PP TS 36.331.

A.7.1.2.2 Test Requirements

For parameters specified in Tables A.7.1.2.1-1 and A.7.1.2.1-2, the initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate shall be within the limits defined in section 7.1.2.

The following sequence of events shall be used to verify that the requirements are met.

For the 10MHz channel bandwith, the test sequence shall be carried out in RRC_CONNECTED for both non-DRX and DRX with a cycle length of 80 ms (Tests 1 and 2, respectively):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within $(N_{TA} + 624) \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by $+64 \times T_s$ (approximately $+2\mu s$) compared to that in (a).
- c) The test system shall verify that for test 1 the adjustment step size and the adjustment rate shall be according to the requirements in section 7.1.2 until the UE transmit timing offset is within $(N_{TA} + 624) \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1. Skip this step for test 2.
- d) The test system shall verify that the UE transmit timing offset stays within $(N_{TA} + 624) \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

For the 1.4MHz channel bandwith, the test sequence shall be carried out in RRC_CONNECTED for non-DRX (Tests 3):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within $(N_{TA} + 624) \times T_S \pm 24 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by $+128 \times T_s$ (approximately $+4\mu s$) compared to that in (a).
- c) The test system shall verify that the adjustment step size and the adjustment rate shall be according to the requirements in section 7.1.2 until the UE transmit timing offset is within $(N_{TA}+624)\times T_S \pm 24\times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- d) The test system shall verify that the UE transmit timing offset stays within $(N_{TA} + 624) \times T_S \pm 24 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

A.7.2 UE Timing Advance

A.7.2.1 E-UTRAN FDD – UE Timing Advance Adjustment Accuracy Test

A.7.2.1.1 Test Purpose and Environment

The purpose of the test is to verify E-UTRAN FDD Timing Advance adjustment accuracy requirements, defined in section 7.3.2.2, in an AWGN model.

The test parameters are given in tables A.7.2.1.1-1, A.7.2.1.1-2, and A.7.2.1.1-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. In each time period, timing advance commands are sent to the UE and Sounding Reference Signals (SRS), as specified in table A.7.2.1.1-3, are sent from the UE and received by the test equipment. By measuring the reception of the SRS, the transmit timing, and hence the timing advance adjustment accuracy, can be measured.

During time period T1, the test equipment shall send one message with a Timing Advance Command MAC Control Element, as specified in Section 6.1.3.5 in TS 36.321. The Timing Advance Command value shall be set to 31, which according to Section 4.2.3 in TS 36.213 results in zero adjustment of the Timing Advance. In this way, a reference value for the timing advance used by the UE is established.

During time period T2, the test equipment shall send a sequence of messages with Timing Advance Command MAC Control Elements, with Timing Advance Command value specified in table A.7.2.1.1-2. This value shall result in changes of the timing advance used by the UE, and the accuracy of the change shall then be measured, using the SRS sent from the UE.

As specified in Section 7.3.2.1, the UE adjusts its uplink timing at sub-frame n+6 for a timing advance command received in sub-frame n. This delay must be taken into account when measuring the timing advance adjustment accuracy, via the SRS sent from the UE.

The UE Time Alignment Timer, described in Section 5.2 in TS 36.321, shall be configured so that it does not expire in the duration of the test.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Timing Advance Command (<i>T_A</i>) value during T1		31	N_{TA} = 0 for the purpose of establishing a reference value from which the timing advance adjustment accuracy can be measured during T2
Timing Advance Command (T_A) value during T2		[39]	N _{TA} = [128]
DRX		OFF	
T1	S	5	
T2	S	5	

Table A.7.2.1.1-1: General Test Parameters for E-UTRAN FDD Timing Advance Accuracy Test

Parameter	Unit		Value		
		T1	T2		
E-UTRA RF Channel Number			1		
BW _{channel}	MHz		10		
OCNG Patterns defined in A.3.2.1.1			OP.1 FDD		
(OP.1 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB				
PDCCH_RA	dB		0		
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note1}	dB				
OCNG_RB ^{Note1}	dB				
Timing Advance Command (T _A)		31	[39]		
\hat{E}_{s}/I_{ot}	dB		3		
N _{oc}	dBm/15 KHz		-98		
\hat{E}_s/N_{oc}	dB		3		
Io ^{Note2}	dBm/9 MHz		-65.5		
Propagation Condition			AWGN		
Note 1: OCNG shall be used such that spectral density is achieved for Note 2: lo level has been deri parameter.	or all OFDM sym	bols.			

Table A.7.2.1.1-2: Cell specific Test Parameters for E-UTRAN FDD Timing Advance Accuracy Test

Table A.7.2.1.1-3: Sounding Reference Symbol Configuration for E-UTRAN FDD Transmit Timing Accuracy Test

Field	Value	Comment
srsBandwidthConfiguration	bw5	
srsSubframeConfiguration	sc3	Once every 5 subframes
ackNackSrsSimultaneousTransmission	FALSE	
srsMaxUpPTS	N/A	Not applicable for E-UTRAN FDD
srsBandwidth	0	No hopping
srsHoppingBandwidth	hbw0	
frequencyDomainPosition	0	
Duration	TRUE	Indefinite duration
Srs-ConfigurationIndex	7	SRS periodicity of 10.
transmissionComb	0	
cyclicShift	cs0	No cyclic shift
Note: For further information see section	6.3.2 in 3GPP T	S 36.331.

A.7.2.1.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the transmission timing at the designated activation time i.e. 6 sub frames after the reception of the timing advance command.

The Timing Advance adjustment accuracy shall be within the limits specified in section 7.3.2.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

A.7.2.2 E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test

A.7.2.2.1 Test Purpose and Environment

The purpose of the test is to verify E-UTRAN TDD Timing Advance adjustment accuracy requirements, defined in section 7.3.2.2, in an AWGN model.

The test parameters are given in tables A.7.2.2.1-1, A.7.2.2.1-2, and A.7.2.2.1-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. In each time period, timing advance commands are sent to the UE and Sounding Reference Signals (SRS), as specified in table A.7.2.2.1-3, are sent from the UE and received by the test equipment. By measuring the reception of the SRS, the transmit timing, and hence the timing advance adjustment accuracy, can be measured.

During time period T1, the test equipment shall send one message with a Timing Advance Command MAC Control Element, as specified in Section 6.1.3.5 in TS 36.321. The Timing Advance Command value shall be set to 31, which according to Section 4.2.3 in TS 36.213 results in zero adjustment of the Timing Advance. In this way, a reference value for the timing advance used by the UE is established.

During time period T2, the test equipment shall send a sequence of messages with Timing Advance Command MAC Control Elements, with Timing Advance Command value specified in table A.7.2.1.1-2. This value shall result in changes of the timing advance used by the UE, and the accuracy of the change shall then be measured, using the SRS sent from the UE.

As specified in Section 7.3.2.1, the UE adjusts its uplink timing at sub-frame n+6 for a timing advance command received in sub-frame n. This delay must be taken into account when measuring the timing advance adjustment accuracy, via the SRS sent from the UE.

The UE Time Alignment Timer, described in Section 5.2 in TS 36.321, shall be configured so that it does not expire in the duration of the test.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Timing Advance Command (<i>T_A</i>) value during T1		31	$N_{TA} = 0$ for the purpose of establishing a reference value from which the timing advance adjustment accuracy can be measured during T2
Timing Advance Command (T_A) value during T2		39	N _{TA} = 128
DRX		OFF	
T1	S	5	
T2	S	5	

Table A.7.2.2.1-1: General Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test

Parameter	Unit		Value		
		T1	T2		
E-UTRA RF Channel Number			1		
BW _{channel}	MHz	10			
Special subframe configuration ^{Note1}			6		
Uplink-downlink configuration ^{Note2}			1		
OCNG Patterns defined in A.3.2.2.1			OP.1 TDD		
(OP.1 TDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB		0		
PDCCH_RA	dB		0		
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note3}	dB				
OCNG_RB ^{Note3}	dB				
Timing Advance Command (T _A)		31	[39]		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB		3		
N _{oc}	dBm/15 KHz		-98		
\hat{E}_s/N_{oc}	dB		3		
Io ^{Note4}	dBm/9 MHz		-65.5		
Propagation Condition			AWGN		
Note 1: For the special subframe con Note 2: For the uplink-downlink config Note 3: OCNG shall be used such the spectral density is achieved for	guration see table 4 at both cells are fully or all OFDM symbol	.2-2 in 3GPP TS 36.2 / allocated and a con s.	211.		
parameter.					

Table A.7.2.2.1-2: Cell specific Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test

 Table A.7.2.2.1-3: Sounding Reference Symbol Configuration for E-UTRAN TDD Transmit Timing

 Accuracy Test

Field	Value	Comment
srsBandwidthConfiguration	bw5	
srsSubframeConfiguration	sc3	Once every 5 subframes
ackNackSrsSimultaneousTransmission	FALSE	
srsMaxUpPTS	N/A	
srsBandwidth	bw0	No hopping
srsHoppingBandwidth	hbw0	
frequencyDomainPosition	0	
Duration	TRUE	Indefinite duration
Srs-ConfigurationIndex	15	SRS periodicity of 10ms.
transmissionComb	0	
cyclicShift	cs0	No cyclic shift
Note: For further information see section	6.3.2 in 3GPP T	S 36.331.

A.7.2.2.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the transmission timing at the designated activation time i.e. 6 sub frames after the reception of the timing advance command.

The Timing Advance adjustment accuracy shall be within the limits specified in section 7.3.2.2.

A.7.3 Radio Link Monitoring

In the following section, any uplink signal transmitted by the UE is used for detecting the In-/Out-of-Sync state of the UE. In terms of measurement, the uplink signal is verified on the basis of the UE output power:

For intra-band contiguous carrier aggregation, transmit OFF power is measured as the mean power per component carrier.

For UE with multiple transmit antennas, transmit OFF power is measured as the mean power at each transmit connector.

- UE output power higher than Transmit OFF power -50 dBm (as defined in TS 36.101 [5] clause 6.3.3.1x) means uplink signal
- UE output power equal to or less than Transmit OFF power -50 dBm (as defined in TS 36.101 [5] clause 6.3.3.1x) means no uplink signal.

A.7.3.1 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync

A.7.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.1.1-1, A.7.3.1.1-2 and A.7.3.1.1-3 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.1.1-4 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

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Parameter		Unit		Va		Comment	
			Test 1	Test 2	Test 3	Test 4	1
PCFICH/PDC0 parameters	CH/PHICH		R.6 FDD	R.7 FDD	R.6 FDD	R.7 FDD	As specified in section A.3.1.2.1. None of the PDCCH are intended for the UE under test
OCNG parame	CNG parameters		OP.2 FDD	OP.2 FDD	OP.2 FDD	OP.2 FDD	As specified in section A.3.2.1.2.
Active cell			Cell 1	Cell 1	Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	Normal	Normal	Normal	
E-UTRA RF C	hannel Number		1	1	1	1	One E-UTRA FDD carrier frequency is used.
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	10	10	10	
	atrix and Antenna		1x2 Low	2x2 Low	1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	DCI format		1A	1A	1A	1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmission	Number of Control OFDM symbols		2	2	2	2	Out of sync threshold Q _{out} and the
parameters	Aggregation level	CCE	8	8	8	8	corresponding
(Note 1)	ρ _A , ρ _B		0	-3	0	-3	hypothetical
	Ratio of PDCCH to RS EPRE	dB	4	1	4	1	PDCCH/PCFICH transmission
	Ratio of PCFICH to RS EPRE	dB	4	1	4	1	parameters are as specified in section 7.6.1 and Table 7.6.1-1 respectively.
DRX			OFF	OFF	OFF	OFF	
Layer 3 filterin	9		Enabled	Enabled	Enabled	Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	0	0	0	0	T310 is disabled
T311 timer		ms	1000	1000	1000	1000	T311 is enabled
Periodic CQI r	eporting mode		PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting	periodicity	ms	2	2	2	2	Minimum CQI reporting periodicity
Propagation cl	hannel		AWGN	AWGN	ETU 70 Hz	ETU 70 Hz	
T1		S	1	1	1	1	
T2		S	0.4	0.4	0.4	0.4	
T3		S	0.5	0.5	0.5	0.5	

Table A.7.3.1.1-1: General test parameters for E-UTRAN FDD out-of-sync testing

Parameter	Unit	Test 1			Test 2		
		T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
Correlation Matrix			1x2 Low			2x2 Low	
and Antenna							
Configuration							
OCNG Pattern							
defined in A.3.2.1			OP.2 FDD			OP.2 FDD	
(FDD)						-	
ρ _A , ρ _B			0			-3	
PCFICH_RB	dB		4			1	
PDCCH_RA	dB		0			-3	
PDCCH_RB	dB		0			-3	
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB	0			-3		
PHICH_RA	dB						
PHICH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB OCNG_RA ^{Note 1}	dB						
OCNG_RA	dB dB						
SNR ^{Note 6}	dB	-4.7	0.5	10 5	-4.7	0.5	-13.5
	dBm/15	-4.7	-9.5 -98	-13.5	-4.7	-9.5 -98	-13.5
N _{oc}	kHz		-90			-90	
Propagation condition	KI IZ		AWGN			AWGN	
					fully alload		
	be used such t tted power spe						constant
	esources for C						ftime
period T1.		arieporun	y are assign			ine start o	i unie
	nd layer 3 filter	ring related	l narameter	s are conf	iaured prio	r to the sta	rt of time
period T1.	nu layer 5 liller	ing related	parameter	3 816 0011	igureu prio		
	ontains PDCCI	H for UEs o	other than t	he device	under test	as part of (DCNG.
	correspond to t						
REs.							
	me periods T1	, T2 and T3	3 is denote	d as SNR1	, SNR2 an	d SNR3	
	in figure A.7.3.				-		

Table A.7.3.1.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2

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Parameter	rameter Unit Test 3			Test 4			
		T1 T2 T3		T1	T2	Т3	
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
Correlation Matrix			1x2 Low			2x2 Low	
and Antenna							
Configuration							
OCNG Pattern							
defined in A.3.2.1			OP.2 FDD			OP.2 FDD	
(FDD)							
ρ _A , ρ _B			0			-3	
PCFICH_RB	dB		4			1	
PDCCH_RA	dB		0			-3	
PDCCH_RB	dB		0			-3	
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB	0		-3			
PHICH_RA	dB						
PHICH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB					1	
SNR Note 6	dB	-1.4	-5.5	-11.5	-2.3	-6.2	-12.2
N _{oc}	dBm/15		-98			-98	
	kHz						
Propagation condition			ETU 70 Hz			ETU 70 Hz	
	be used such t						constant
	tted power spe						
	esources for CO	QI reportin	g are assigi	ned to the	UE prior to	the start o	f time
period T1.						_	
period T1.	nd layer 3 filter	U U	•		•		
	ontains PDCC						
Note 5: SNR levels o REs.	correspond to t	he signal t	o noise ratio	o over the	cell-specifi	c reference	signal
	time periods T [,] in figure A.7.3.		T3 is denote	ed as SNR	1, SNR2 a	nd SNR3	

Table A.7.3.1.1-3: Cell specific test parameters for E-UTRAN FDD (cell # 1) for out-of-sync radio link monitoring tests # 3 and # 4

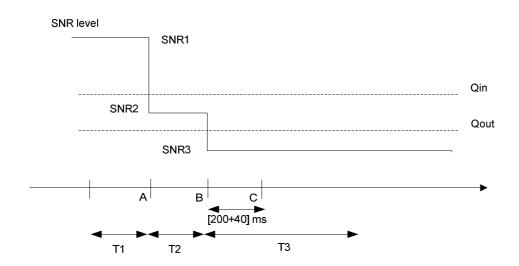


Figure A.7.3.1.1-1 SNR variation for out-of-sync testing

A.7.3.1.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.2 E-UTRAN FDD Radio Link Monitoring Test for In-sync

A.7.3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.2.1-1 and A.7.3.2.1-2 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.2.1-3 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

CH Number ndwidth d Antenna	MHz	Test 1 R.6 FDD OP.2 FDD Cell 1 Normal 1	Test 2 R.7 FDD OP.2 FDD Cell 1 Normal	As specified in section A.3.1.2.1. None of the PDCCH are intended for the UE under test As specified in section A.3.2.1.2. Cell 1 is on E-UTRA RF channel number 1	
Number	MHz	OP.2 FDD Cell 1 Normal	OP.2 FDD Cell 1	A.3.1.2.1. None of the PDCCH are intended for the UE under test As specified in section A.3.2.1.2. Cell 1 is on E-UTRA RF	
ndwidth	MHz	Cell 1 Normal	Cell 1	A.3.2.1.2. Cell 1 is on E-UTRA RF	
ndwidth	MHz	Normal		Cell 1 is on E-UTRA RF	
ndwidth	MHz		Normal		
ndwidth	MHz	1	INUITIAL		
	MHz		1	One E-UTRA FDD carrier frequency is used.	
d Antenna	1	10	10		
		1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2	
format		1C	1C	As defined in section 5.3.3.1.4 in TS 36.212	
ber of Control M symbols		2	2	In sync threshold Q _{in} and the corresponding hypothetical	
egation level	CCE	4	4		
В		0	-3	PDCCH/PCFICH	
o of PDCCH S EPRE		0	-3	transmission parameters are as specified in section	
o of PCFICH S EPRE		4	1	and Table 7.6.1-2 respectively.	
format		1A	1A	As defined in section 5.3.3.1.3 in TS 36.212	
ber of Control M symbols		2	2	Out of sync threshold Qout and the corresponding	
egation level	CCE	8	8	hypothetical	
В		0	-3	PDCCH/PCFICH transmission parameters	
o of PDCCH S EPRE	dB	4	1	are as specified in section 7.6.1 and Table 7.6.1-1	
o of PCFICH S EPRE	dB	4	1	respectively.	
		OFF	OFF		
		Enabled	Enabled	Counters: N310 = 1; N311 = 1	
	ms	2000	2000	T310 is enabled	
	ms	1000	1000	T311 is enabled	
g mode		PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.	
city	ms	2	2	Minimum CQI reporting periodicity	
		ETU 70 Hz	ETU 70 Hz		
	S				
	S				
	S				
	S	0.4	0.4		
	S	•	•	I	
		s s s CFICH correspond	s 0.5 s 0.4 s 1.46 s 0.4 s 1	s 0.5 0.5 s 0.4 0.4 s 1.46 1.46 s 0.4 0.4 cFICH corresponding to the in-sync and out of 1	

Table A.7.3.2.1-1: General test parameters for E-UTRAN FDD in-sync testing

Parameter	Unit			Tes	st 1					Т	est 2		
		T1	T2	T3	T4	1	T5	T1	T2	T3	Т	4	T5
E-UTRA RF Channel		1				1							
Number													
BW _{channel}	MHz		10				10						
Correlation Matrix				1x2	Low			2x2 Low					
and Antenna													
Configuration													
OCNG Pattern				~ ~ ~						~ -		_	
defined in A.3.2.1				OP.2	FDD)				OF	.2 FC	D	
(FDD)													
ρ _A , ρ _B				0							-3		
PCFICH_RB	dB			4							1		
PDCCH_RA	dB			0							-3		
PDCCH_RB	dB			0)						-3		
PBCH_RA	dB												
PBCH_RB	dB												
PSS_RA	dB												
SSS_RA	dB			0				-3					
PHICH_RA	dB			U	,			-5					
PHICH_RB	dB												
PDSCH_RA	dB												
PDSCH_RB	dB												
OCNG_RA ^{Note 1}	dB												
OCNG_RB ^{Note 1} SNR ^{Note 6}	dB			1							40.0	1 7 0	
SNR	dB	-1.4	-5.5	-11		-6.4	-1.4	-2.3	-6.2	2	12.2	-7.3	-2.3
N_{oc}	dBm/15			-9	8						-98		
	kHz												
Propagation condition			E	ETU 7	70 H	Z				ET	J 70	Ηz	
	be used such						fully allo	cated a	nd a c	onsta	ant to	al trans	mitted
	ral density is a												
		QI reporting are assigned to the UE prior to the start of time period T1.											
	nd layer 3 filter											eriod T1	
	8												
													_
		I, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5							5				
respectively	in figure A.7.3.	2.1-3.											

Table A.7.3.2.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for in-sync radio link monitoring tests # 1 and # 2

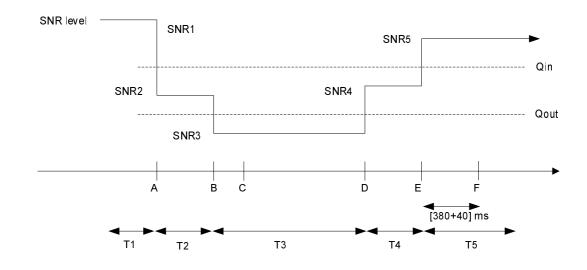


Figure A.7.3.2.1-1 SNR variation for in-sync testing

A.7.3.2.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.3 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync

A.7.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.3.1-1, A.7.3.3.1-2 and A.7.3.3.1-3 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.3.1-4 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Pa	arameter	Unit		Va	Comment		
			Test 1	Test 2	Test 3	Test 4	
PCFICH/PDC0 parameters	CH/PHICH		R.6 TDD	R.7 TDD	R.6 TDD	R.7 TDD	As specified in section A.3.1.2.2. None of the PDCCH are intended for the UE under test
OCNG parame	eters		OP.2 TDD	OP.2 TDD	OP.2 TDD	OP.2 TDD	As specified in section A.3.2.2.2.
Active cell			Cell 1	Cell 1	Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	Normal	Normal	Normal	
	hannel Number		1	1	1	1	One E-UTRA TDD carrier frequency is used.
E-UTRA Chan (BW _{channel})		MHz	10	10	10	10	
Correlation Ma Configuration	trix and Antenna		1x2 Low	2x2 Low	1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	DCI format		1A	1A	1A	1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmission	Number of Control OFDM symbols		2	2	2	2	Out of sync threshold Q _{out} and the corresponding
parameters	Aggregation level	CCE	8	8	8	8	hypothetical
(Note 1)	ρ _Α , ρ _Β		0	-3	0	-3	PDCCH/PCFICH
	Ratio of PDCCH to RS EPRE	dB	4	1	4	1	transmission parameters are as specified in section
	Ratio of PCFICH to RS EPRE	dB	4	1	4	1	7.6.1 and Table 7.6.1-1 respectively.
DRX			OFF	OFF	OFF	OFF	
Layer 3 filterin	g		Enabled	Enabled	Enabled	Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	0	0	0	0	T310 is disabled
T311 timer		ms	1000	1000	1000	1000	T311 is enabled
Periodic CQI r			PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting		ms	1	1	1	1	Minimum CQI reporting periodicity
Propagation cl	nannel		AWGN	AWGN	ETU 70 Hz	ETU 70 Hz	· ·
T1		S	1	1	1	1	
T2		S	0.4	0.4	0.4	0.4	
Т3		S	0.5	0.5	0.5	0.5	
Note 1: PI	DCCH/PCFICH corr eference Measurem	espond	ing to the out				be included in the

Table A.7.3.3.1-1: General test parameters for E-UTRAN TDD out-of-sync testing

Parameter	Unit		Test 1		Test 2				
		T1	T2	T3	T1	T2	Т3		
E-UTRA RF Channel			1			1			
Number									
BW _{channel}	MHz		10		10				
Correlation Matrix			1x2 Low			2x2 Low			
and Antenna									
Configuration									
Special subframe			6			6			
configuration ^{Note1}									
Uplink-downlink			1			1			
configuration ^{Note2}									
OCNG Pattern									
defined in A.3.2.2			OP.2 TDD			OP.2 TDD			
(TDD)									
ρ _A , ρ _B			0			-3			
PCFICH_RB	dB		4			1			
PDCCH_RA	dB	0			-3				
PDCCH_RB	dB		0			-3			
PBCH_RA	dB	-							
PBCH_RB	dB	-							
PSS_RA	dB								
SSS_RA	dB				<u>^</u>				
PHICH_RA	dB	-	0			-3			
PHICH_RB	dB	-							
PDSCH_RA	dB	-							
PDSCH_RB	dB	-							
OCNG_RA ^{Note 3}	dB	-							
OCNG_RB ^{Note 3}	dB				ļ				
SNR ^{Note 8}	dB	-5.1	-9.1	-13.1	-5.2	-9.2	-13.2		
N_{oc}	dBm/15		-98			-98			
	kHz								
Propagation condition			AWGN			AWGN			
	cial subframe c								
	nk-downlink cor								
	be used such						constant		
	nsmitted power spectral density is achieved for all OFDM symbols.								
	esources for C	ces for CQI reporting are assigned to the UE prior to the start of tin							
period T1.									
	and layer 3 filte	ring related	i paramete	rs are conf	igured prio	r to the sta	rt of time		
period T1.	ontaine DDCC		thar than t	ha davias	undor tost	oo nort of (
	contains PDCC correspond to t								
Note 7: SNR levels REs.	correspond to t	ne signal to	undise rati	o over the	cen-specifi	c reletence	signal		
Note 8: The SNR in t A.7.3.3.1-4.	ime periods T1, T	2 and T3 is	denoted as	SNR1, SNR	2 and SNR3	respectivel	y in figure		

Table A.7.3.3.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2

Parameter	Unit		Test 3			Test 4		
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz		10		10			
Correlation Matrix		1x2 Low				2x2 Low		
and Antenna								
Configuration								
Special subframe			6			6		
configuration ^{Note1}								
Uplink-downlink			1			1		
configuration ^{Note2}								
OCNG Pattern								
defined in A.3.2.2			OP.2 TDD			OP.2 TDD		
(TDD)								
ρ _A , ρ _B			0			-3		
PCFICH_RB	dB		4			1		
PDCCH_RA	dB	0				-3		
PDCCH_RB	dB		0			-3		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PHICH_RA	dB		0			-3		
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 3}	dB							
OCNG_RB ^{Note 3}	dB							
SNR ^{Note 8}	dB	-1.4	-5.3	-11.3	-2.3	-5.9	-11.9	
N _{oc}	dBm/15		-98			-98		
1 voc	kHz							
Propagation condition			ETU 70 Hz	<u>-</u>		ETU 70 Hz		
Note 1: For the spec	cial subframe co	onfiguration	n see table	4.2-1 in 30	GPP TS 36	.211.		
Note 2: For the uplin	k-downlink cor	nfiguration	see table 4	.2-2 in 3GI	PP TS 36.2	211.		
							constant	
	Il be used such that the resources in cell # 1 are fully allocated and a consta nitted power spectral density is achieved for all OFDM symbols.							
	resources for CQI reporting are assigned to the UE prior to the start of time							
period T1.								
Note 5: The timers a	and layer 3 filter	ring related	l paramete	rs are conf	igured prio	r to the sta	rt of time	
period T1.	-	-						
	ontains PDCCI							
Note 7: SNR levels of REs.	correspond to t	he signal to	o noise rati	o over the	cell-specifi	c reference	signal	
	me periods T1, T	2 and T3 is	denoted as	SNR1, SNR	2 and SNR3	respectively	/ in figure	

Table A.7.3.3.1-3: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio link monitoring tests # 3 and # 4

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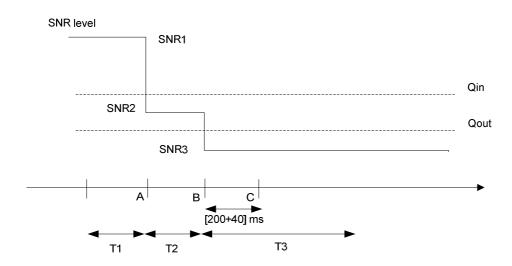


Figure A.7.3.3.1-1. SNR variation for out-of-sync testing

A.7.3.3.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of the time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.4 E-UTRAN TDD Radio Link Monitoring Test for In-sync

A.7.3.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.4.1-1 and A.7.3.4.1-2 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.4.1-3 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Pa	rameter	Unit	Va	lue	Comment	
			Test 1	Test 2		
PCFICH/PDCCH/PHICH parameters			R.6 TDD	R.7 TDD	As specified in section A.3.1.2.2. None of the PDCCH are intended for the UE under test	
OCNG parame	eters		OP.2 TDD	OP.2 TDD	As specified in section A.3.2.2.2.	
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1	
CP length			Normal	Normal		
E-UTRA RF C	hannel Number		1	1	One E-UTRA FDD carrier frequency is used.	
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	10		
Correlation Ma Configuration	trix and Antenna		1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2	
	DCI format		1C	1C	As defined in section 5.3.3.1.4 in TS 36.212	
In sync transmission	Number of Control OFDM symbols		2	2	In sync threshold Q _{in} and the corresponding	
parameters	Aggregation level	CCE	4	4	hypothetical	
(Note 1)	ρ _A , ρ _B		0	-3	PDCCH/PCFICH	
	Ratio of PDCCH to RS EPRE		0	-3	transmission parameters are as specified in section	
	Ratio of PCFICH to RS EPRE		4	1	and Table 7.6.1-2 respectively.	
	DCI format		1A	1A	As defined in section 5.3.3.1.3 in TS 36.212	
Out of sync transmission	Number of Control OFDM symbols		2	2	Out of sync threshold Q and the corresponding	
parameters	Aggregation level	CCE	8	8	hypothetical	
(Note 1)	ρ _Α , ρ _Β		0	-3	PDCCH/PCFICH transmission parameters	
	Ratio of PDCCH to RS EPRE	dB	4	1	are as specified in section 7.6.1 and Table 7.6.1-1	
	Ratio of PCFICH to RS EPRE	dB	4	1	respectively.	
DRX			OFF	OFF		
Layer 3 filtering	g		Enabled	Enabled	Counters: N310 = 1; N311 = 1	
T310 timer		ms	2000	2000	T310 is enabled	
T311 timer		ms	1000	1000	T311 is enabled	
Periodic CQI r			PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.	
CQI reporting	•	ms	1	1	Minimum CQI reporting periodicity	
Propagation channel			ETU 70 Hz	ETU 70 Hz		
T1		S	0.5	0.5		
T2		S	0.4	0.4		
T3		S	1.46	1.46		
T4		S	0.4	0.4		
T5		S	1	1		
	DCCH/PCFICH corr					

Table A.7.3.4.1-1: General test parameters for E-UTRAN TDD in-sync testing

Parameter	Unit		Test 1			Test 2					
		T1 T2	T1 T2 T3 T4 T5			T1	T2	T3	T4		T5
E-UTRA RF Channel Number		1				1					
BW _{channel}	MHz		10			10					
Correlation Matrix			1x2 Low					2x2	Low		
and Antenna											
Configuration											
Special subframe		6							6		
configuration ^{Note1}			4								
Uplink-downlink configuration ^{Note2}			1						1		
OCNG Pattern											
defined in A.3.2.2			OP.2 TDD	,					2 TDD	`	
(TDD)			JF.Z IDL	,)	
ρ _Α , ρ _Β			0						-3		
PCFICH_RB	dB		4						1		
PDCCH_RA	dB		0				-3				
PDCCH_RB	dB		0			-3					
PBCH_RA	dB		`								
PBCH_RB	dB										
PSS_RA	dB					-3					
SSS_RA	dB		0								
PHICH_RA	dB		0								
PHICH_RB	dB										
PDSCH_RA PDSCH_RB	dB dB										
OCNG_RA ^{Note 3}	dB										
OCNG_RA	dB										
SNR Note 8	dB	-1.4 -5.3	-11.3	-6.4	-1.4	-2.3	-5.	۵ _1	1.9	-7.3	-2.3
	dBm/15	-1.4 -5.5	-98	-0.4	-1.4	-2.5	-5.		98	-7.5	-2.5
N _{oc}	kHz		-90					-	90		
Propagation condition		E	TU 70 H	Z		ETU 70 Hz					
Note 1: For the spec	ial subframe co	onfiguration see	table 4.2	-1 in 3G	PP TS 3	36.211.					
		figuration see ta									
		that the resource					nd a c	onstan	it tota	l transı	mitted
	power spectral density is achieved for all OFDM symbols.										
		CQI reporting are assigned to the UE prior to the start of time period T1.									
		l layer 3 filtering related parameters are configured prior to the start of time period T1.									
Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG. Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.											
											_
	Note 8: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5								5		
respectively	respectively in figure A.7.3.4.1-3.										

Table A.7.3.4.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for in-sync radio linkmonitoring tests # 1 and # 2

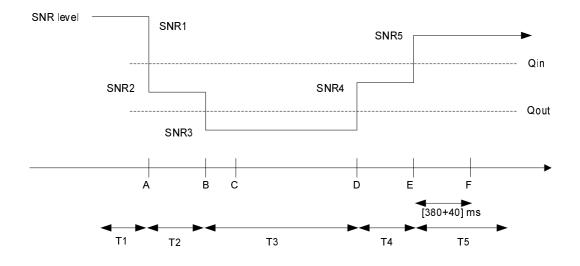


Figure A.7.3.4.1-1. SNR variation for in-sync testing

A.7.3.4.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.5 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync in DRX

A.7.3.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.5.1-1, A.7.3.5.1-2, A.7.3.5.1-3 and A.7.3.5.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.5.1-5 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Parameter		Unit	Va	lue	Comment		
			Test 1	Test 2			
PCFICH/PDC0	CH/PHICH		R.7 FDD	R.6 FDD	As specified in section		
parameters					A.3.1.2.1.		
					None of the PDCCH are		
				OP.2 FDD	intended for the UE under test		
OCNG parame	eters		OP.2 FDD		As specified in section A.3.2.1.2.		
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1		
CP length			Normal	Normal			
E-UTRA RF C	hannel Number		1	1	One E-UTRA FDD carrier frequency is used.		
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	10			
	trix and Antenna		2x2 Low	1x2 Low	Correlation Matrix and		
Configuration					Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2		
	DCI format	<u> </u>	1A	1A	As defined in section 5.3.3.1.3		
	Dorionna				in TS 36.212		
Out of sync	Number of		2	2	Out of sync threshold Qout and		
transmission	Control OFDM				the corresponding hypothetical		
parameters	symbols				PDCCH/PCFICH transmission		
(Note 1)	Aggregation level	CCE	8	8	parameters are as specified in section 7.6.1 and Table 7.6.1-		
	ρ _A , ρ _B		-3	0	1 respectively.		
	Ratio of PDCCH to RS EPRE	dB	1	4			
	Ratio of PCFICH to RS EPRE	dB	1	4			
DRX cycle		ms	40	1280	See Table A.7.3.5.1-3		
Layer 3 filtering	g		Enabled	Enabled	Counters:		
					N310 = 1; N311 = 1		
T310 timer		ms	0	0	T310 is disabled		
T311 timer		ms	1000	1000	T311 is enabled		
Periodic CQI r	eporting mode		PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.		
CQI reporting	periodicity	ms	2	2	Minimum CQI reporting periodicity		
Propagation channel			ETU 70 Hz	AWGN			
T1	T1		4	32			
T2	T2		1.6	12.8			
Т3		S	1.8	13			
	CCH/PCFICH cor included in the R				ission parameters need not		
DE							

Table A.7.3.5.1-1: General test parameters for E-UTRAN FDD out-of-sync tests in DRX

Parameter	Unit		Test 1			Test 2				
		T1	T2	T3	T1	T2	T3			
E-UTRA RF Channel			1			1				
Number										
BW _{channel}	MHz		10		10					
Correlation Matrix		2x2 Low				1x2 Low				
and Antenna										
Configuration										
OCNG Pattern			OP.2 FDD			OP.2 FDD				
defined in A.3.2.1			OF.2 FDD			OF.2 FDD				
(FDD)			-3			0				
ρ _A , ρ _B	15									
PCFICH_RB	dB		1			4				
PDCCH_RA	dB		-3			0				
PDCCH_RB	dB		-3			0				
PBCH_RA	dB									
PBCH_RB	dB									
PSS_RA	dB									
SSS_RA	dB		-3		0					
PHICH_RA	dB									
PHICH_RB PDSCH RA	dB									
—	dB									
PDSCH_RB OCNG RA ^{Note1}	dB									
OCNG_RA	dB dB									
SNR Note 6	dB dB	-2.3	-6.2	-12.2	-4.7	-9.5	-13.5			
	dBm/15 kHz	-2.3	-0.2 -98	-12.2	-4.7	-9.5	-13.5			
N _{oc}			-90			-90				
Propagation condition			ETU 70 Hz			AWGN				
Note 1: OCNG shall	be used such t	that the res	sources in c	ell # 1 are	fully alloca	ated and a	constant			
	tted power spe									
	esources for C						f time			
period T1.										
Note 3: The timers a	and layer 3 filtering related parameters are configured prior to the start of time									
period T1.										
		ins PDCCH for UEs other than the device under test as part of OCNG.								
	correspond to t	the signal to noise ratio over the cell-specific reference signal								
REs.	ime periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3									
	•		13 is denote	ed as SNR	1, SNR2 a	nd SNR3				
respectively	respectively in figure A.7.3.5.1-5.									

Table A.7.3.5.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2 in DRX

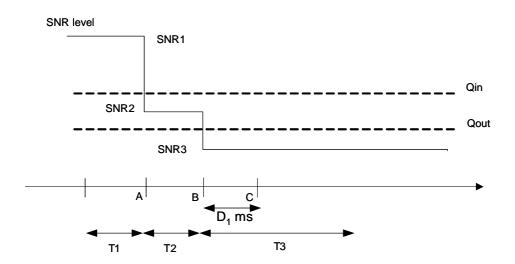
Table A.7.3.5.1-3: DRX-Configuration for E-UTRAN FDD out-of-sync tests

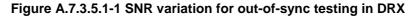
Field	Test1 Value	Test2 Value	Comment
onDurationTimer	psf2	psf2	As specified in section 6.3.2 in 3GPP
drx-InactivityTimer	psf1	psf1	TS 36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.7.3.5.1-4: TimeAlignmentTimer -Configuration for E-UTRAN FDD out-of-sync testing

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	infinity	infinity	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

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A.7.3.5.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

In test 1 and test 2 during the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

In test 1 the UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 900$ ms after the start of time duration T3).

In test 2 the UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 6500$ ms after the start of time duration T3.

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.6 E-UTRAN FDD Radio Link Monitoring Test for In-sync in DRX

A.7.3.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.6.1-1, A.7.3.6.1-2, A.7.3.6.1-3 and A.7.3.6.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.6.1-5 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Param	neter	Unit	Value	Comment
PCFICH/PDCCH/PHIC	CH parameters		R.6 FDD	As specified in section A.3.1.2.1. None of the PDCCH are intended for the UE under test
OCNG parameters			OP.2 FDD	As specified in section A.3.2.1.2.
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	
E-UTRA RF Channel N			1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Ban		MHz	10	
Correlation Matrix and Configuration	Antenna		1x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	DCI format		1C	As defined in section 5.3.3.1.4 in TS 36.212
In sync transmission parameters	Number of Control OFDM symbols		2	In sync threshold Q _{in} and the corresponding hypothetical
(Note 1)	Aggregation level	CCE	4	PDCCH/PCFICH transmission
	ρ _A , ρ _B		0	parameters are as specified in
	Ratio of PDCCH to RS EPRE		0	section and Table 7.6.1-2 respectively.
	Ratio of PCFICH to RS EPRE		4	
	DCI format		1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmission	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding hypothetical
parameters	Aggregation level	CCE	8	PDCCH/PCFICH transmission
(Note 1)	ρ _Α , ρ _Β		0	parameters are as specified in section 7.6.1 and Table 7.6.1-1
	Ratio of PDCCH to RS EPRE	dB	4	respectively.
	Ratio of PCFICH to RS EPRE	dB	4	
DRX cycle		ms	40	See Table A.7.3.6.1-3
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	Minimum CQI reporting periodicity
Propagation channel			AWGN	
T1		S	4	
T2		S	1.6	
T3		S	1.46	
T4	S	0.4		
T5	<u> </u>	S	4	
				out of sync transmission Measurement Channel.

Table A.7.3.6.1-1: General test parameters for E-UTRAN FDD in-sync test in DRX

Parameter	Unit	Test 1					
		T1	T1 T2 T3 T4				
E-UTRA RF Channel Number		1					
BW _{channel}	MHz	10					
Correlation Matrix and		1x2 Low					
Antenna Configuration							
OCNG Pattern defined in							
A.3.2.1 (FDD)		OP.2 FDD					
ρ _Α , ρ _Β				0			
PCFICH_RB	dB			4			
PDCCH_RA	dB			0			
PDCCH_RB	dB			0			
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PHICH_RA	dB	0					
PHICH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note1} OCNG_RB ^{Note1}	dB	4					
SNR ^{Note 8}	dB	-4.7	0.5	10.5	0.7	47	
	dB	-4.7	-9.5	-13.5	-8.7	-4.7	
N _{oc}	dBm/15			-98			
Propagation condition	kHz	AWGN					
	transmitted power spectral density is achieved for all OFDM symbols. Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.						
		billering related parameters are configured prior to the start of time period 11.					
Note 4: The signal contains	PDCCH for UF	Es other than	the device ur	nder test as n	art of OCNG		
Note 5: SNR levels correspo							
Note 6: The SNR in time per SNR5 respectively ir	iods T1, T2, T	3, T4 and T5					

Table A.7.3.6.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for in-sync radio link monitoring test # 1 in DRX

Table A.7.3.6.1-3: DRX-Configuration for E-UTRAN FDD out-of-sync tests

Field	Value	Comment
onDurationTimer	psf2	As specified in section 6.3.2 in 3GPP
drx-InactivityTimer	psf1	TS 36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf40	
shortDRX	disable	

Table A.7.3.6.1-4: TimeAlignme	ntTimer -Configuration for	or E-UTRAN FDD out-of-sync testing

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

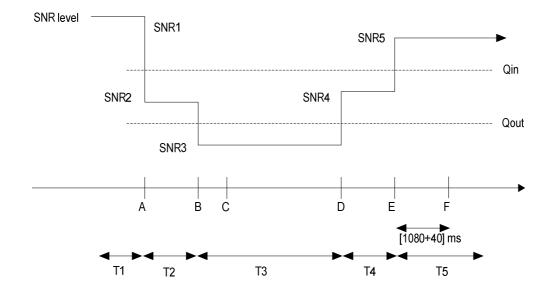


Figure A.7.3.6.1-1 SNR variation for in-sync testing in DRX

A.7.3.6.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.7 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync in DRX

A.7.3.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.7.1-1, A.7.3.7.1-2, A.7.3.7.1-3 and A.7.3.7.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.7.1-5 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Test 1Test 2PCFICH/PDCCH/PHICH parametersR.7 TDDR.6 TDDAs specified in section A.3.1.2.2. None of the PDCCH are intended for the UE under testOCNG parametersOP.2 TDDOP.2 TDDOP.2 TDDAs specified in section A.3.2.2.Active cellCell 1Cell 1Cell 1Section A.3.2.2.Active cellImage: cell 1Cell 1Cell 1 is on E-UTRA RF channel number 1CP lengthNormalNormalOne E-UTRA TDD carrier frequency is used.E-UTRA Channel Bandwidth (BW/awwe)MHz10InCorrelation Matrix and Antenna Configuration2x2 Low1x2 LowCorrelation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2Out of sync transmission parameters (Note 1)In C format1.41AAs defined in section 5.3.3.1.3 in TS 36.212Out of sync transmission parametersNumber of Control OFDM symbolsCCE88Ratio of PDCCH to RS EPREB14DRX cyclems401280See Table A.7.3.7.1-3Layer 3 filteringEnabled to RS EPREEnabled msCourters: N311 = 1T310 timer rosing periodicityms11Price Current perioding periodicityms11Price Current periodicityms11Price Current periodicityms11Price Current periodicityms11Ratio of PDCCH to RS EPRES	Parameter		Unit	Va	lue	Comment
parameters A.3.1.2.2. Intended for the UE under test None of the PDCCH are intended for the UE under test OCNG parameters OP.2 TDD OP.2 TDD As specified in section A.3.2.2.2. Active cell Cell 1 Cell 1 Cell 1 Cell 1 is on E-UTRA RF channel number 1 CP length Normal Normal Normal E-UTRA RF Channel Number 1 1 One E-UTRA TDD carrier frequency is used. Correlation Matrix and Antenna Configuration MHz 10 10 Correlation Matrix and Antenna Configuration MHz 12 Low Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.32 Out of sync transmission parameters (Note 1) DCI format 1A 1A As defined in section 5.3.3.1.3 in East of PDCH Muter of Level CCE 8 8 Section 7.6.1 and Table 7.6.1-1 respectively. Ratio of PDCHH to RS EPRE Table of PCFICH to RS EPRE ms 40 1280 See Table A.7.3.7.1-3 Layer 3 filtering Enabled Enabled Counters: N310 = 1; N311 = 1 N310 = 1; N311 = 1 T310 timer ms 0 0 T311 is enabled 75.3.6.213 CQI reporting mode PUCCH 1-0 PUCCH 1-0 As defined in table 7.2.2-1 in TS 36.213 TS 36.213 CQI reporting periodicity ms						
Parameters OP.2 TDD None of the PDCCH are intended for the UE under test intended for the UE under test intended for the UE under test of A.3.2.2.2. Active cell Cell 1 Septimization of the PDCCH are intended for the UE under test of A.3.2.2.2. Active cell Cell 1		CH/PHICH		R.7 TDD	R.6 TDD	
OCNG parametersImage: constraint of the uncent end of the UE under testOCNG parametersOP.2 TDDOP.2 TDDAs specified in section A, 3.2.2.2,Active cellCell 1Cell 1Cell 1Cell 1 is on E-UTRA RF channel number 1CP lengthImage: constraint of the UE under testNormalNormalE-UTRA RF Channel Number11One E-UTRA TDD carrier frequency is used.E-UTRA Channel Bandwidth (BWowned)MHz1010Correlation Matrix and Antenna Configuration2x2 Low1x2 LowCorrelation Matrix and Antenna Configuration are defined in TS 36.101 [5] annex B.2.3.2Out of sync transmission parameters (Note 1)DCI format11AAs defined in section 5.3.3.1.3 in TS 36.212Out of sync transmission symbolsCCE889PA: Pa-30111Parameters (Note 1)Ratio of PDCCH to RS EPREdB14DRX cyclems401280See Table A.7.3.7.1-3Layer 3 filteringms01310 is disabled1311 isT310 timerms10001000T311 is disabledT311 timerms011Minimum CQI reporting periodicityPropagation channelETU TO HzAWGN.T1s432.T3s1.81313Note 1:PDCCH/PCFICH corresponding to the out of sync transmission periodicitys1.8 <td>parameters</td> <td></td> <td></td> <td></td> <td></td> <td></td>	parameters					
OCNG parameters OP.2 TDD OP.2 TDD As specified in section A.3.2.2.2. Active cell Cell 1 Cell 1 Cell 1 is on E-UTRA RF channel number 1 CP length Normal Normal One E-UTRA TDD carrier frequency is used. E-UTRA Channel Bandwidth (BW_samme) MHz 10 One E-UTRA TDD carrier frequency is used. Correlation Matrix and Antenna Configuration MHz 10 10 Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2 Out of sync transmission parameters (Note 1) DCI format 1A 1A As defined in section 5.3.3.1.3 in TS 36.212 Out of sync transmission parameters (Note 1) Number of Control OFDM symbols 2 2 Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCHCH transmission parameters are as specified in section 7.6.1 and Table 7.6.1-1 1 respectively. Ratio of PDCCH/ (Note 1) Ratio of PDCFICH to RS EPRE B 1 4 DRX cycle ms 40 1280 See Table A.7.3.7.1-3 Layer 3 filtering Enabled time Enabled POC H/PCFICH Counters: N310 = 1; N311 = 1 T310 timer ms 0 T310 is disabled <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td></td<>						
Active cellA.3.2.2.2Active cellCell 1Cell 1<	OCNG parame	otore				
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CP length Normal Normal Normal E-UTRA RF Channel Number 1 1 One E-UTRA TDD carrier frequency is used. E-UTRA Channel Bandwidth (BW _{channel}) MHz 10 10 Correlation Matrix and Antenna Configuration 2x2 Low 1x2 Low Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2 Out of sync transmission parameters (Note 1) DCI format 1A 1A A defined in section 5.3.3.1.3 in TS 36.212 Qut of sync transmission parameters (Note 1) DCI format 1A 1A A defined in section 5.3.3.1.3 in TS 36.212 Qut of sync transmission parameters (Note 1) DCI format 1A 1A 1A Number of Control OFDM symbols 2 2 Out of sync threshold O _{out} and the corresponding hypothetical PDCCH/PCFICH transmission parameters are as specified in section 7.6.1 and Table 7.6.1-1 Ratio of PDCCH to RS EPRE dB 1 4 DRX cycle ms 40 1280 See Table A.7.3.7.1-3 Layer 3 filtering Enabled Enabled Counters: N310 = 1; N311 = 1 1000 T310 timer ms 1000 1	Active cell			Cell 1	Cell 1	
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parameters (Note 1)symbolsCCE8PDCCH/PCFICH transmission parameters are as specified in section 7.6.1 and Table 7.6.1- 1 respectively. $PA. PB$ CCE88 $PA. PB$ -301 respectively.Ratio of PDCCH to RS EPREdB14 $Ratio of PDCFICHto RS EPREdB14DRX cyclems401280See Table A.7.3.7.1-3Layer 3 filteringms00T310 is disabledT310 timerms00T310 is disabledT311 timerms10001000T311 is enabledPeriodic CQI reporting modePUCCH 1-0PUCCH 1-0As defined in table 7.2.2-1 inTS 36.213.CQI reporting periodicityms11Propagation channels432T2s1.612.8T3s1.813Note 1:PDCCH/PCFICH corresponding to the out of sync transmission parameters need not$	Out of sync	Number of		2	2	
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Propagation channelETU 70 HzAWGNT1s432T2s1.612.8T3s1.813Note 1:PDCCH/PCFICH corresponding to the out of sync transmission parameters need not		1 0			PUCCH 1-0	TS 36.213.
Propagation channelETU 70 HzAWGNT1s432T2s1.612.8T3s1.813Note 1:PDCCH/PCFICH corresponding to the out of sync transmission parameters need not	CQI reporting	periodicity	ms	1	1	
T2s1.612.8T3s1.813Note 1:PDCCH/PCFICH corresponding to the out of sync transmission parameters need not	Propagation channel			ETU 70 Hz	AWGN	
T3 s 1.8 13 Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not	T1		s	4	32	
Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not	T2		S	1.6	12.8	
	Т3		s	1.8	13	
						ission parameters need not

Table A.7.3.7.1-1: General test parameters for E-UTRAN TDD out-of-sync tests in DRX

T1T2T3T1T2E-UTRA RF Channel Number111BW_channelMHz1010Correlation Matrix and Antenna Configuration2x2 Low1x2 LowSpecial subframe configuration66Configuration11Uplink-downlink configuration11OCNG Pattern defined in A.3.2.2OP.2 TDDOP.2 TDDOCNG Pattern defined in A.3.2.2OP.2 TDDOP.2 TDDPA. PB-30PCFICH_RBdB14PDCCH_RAdB-30PBCH_RAdB-30PBCH_RAdB-30PHICH_RAdB-30PHICH_RAdB-30PDSCH_RAdB-30PDSCH_RAdB-30PDSCH_RBdB-30PHICH_RBdB-30PHICH_RBdB-30PDSCH_RAdB-30PDSCH_RAdB-30	T3					
NumberMHz10BW_{channel}MHz1010Correlation Matrix and Antenna Configuration2x2 Low1x2 LowSpecial subframe configuration66Ocnfiguration11Uplink-downlink configuration11OCNG Pattern defined in A.3.2.2OP.2 TDDOP.2 TDD(TDD)-30PA, PB-30PCFICH_RBdB14PDCCH_RAdB-30PBCH_RBdB-30PBCH_RAdB-30PHICH_RAdB-30PHICH_RAdB-30PDSCH_RAdB-30PDSCH_RAdB-30						
BW channelMHz1010Correlation Matrix and Antenna Configuration2x2 Low1x2 LowSpecial subframe configuration66Offiguration11Uplink-downlink configuration11OCNG Pattern defined in A.3.2.2OP.2 TDDOP.2 TDD(TDD)-30PAr. ρB-30PCFICH_RBdB14B-30PDCCH_RAdB-3PBCH_RAdBPBCH_RAdBPHICH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdB						
Correlation Matrix and Antenna Configuration2x2 Low1x2 LowSpecial subframe configuration66Uplink-downlink configuration11OCNG Pattern defined in A.3.2.2OP.2 TDDOP.2 TDDPA, PB-30PCFICH_RBdB1PDCCH_RAdB-3PBCH_RAdB-3PSS_RAdBPSS_RAdBPHICH_RAdBPDSCH_RAdB						
and Antenna Configuration6Special subframe configuration Note16Uplink-downlink configuration Note21OCNG Pattern defined in A.3.2.2OP.2 TDDOP.2 TDDOP.2 TDD(TDD)-3\$\rho_A, \rho_B\$-3OCCH_RBdBHDCCH_RAdBPBCH_RAdBPSS_RAdBPSS_RAdBPHICH_RAdBPHICH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdB						
Configuration6Special subframe configuration Note16Uplink-downlink configuration Note21OCNG Pattern defined in A.3.2.2OP.2 TDDOP.2 TDDOP.2 TDD(TDD)-3PA. ρB-3PCFICH_RBdBdB-3PDCCH_RAdBPBCH_RAdBPSS_RAdBPSS_RAdBPHICH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RBdBPDSCH_RBdBPDSCH_RBdBPDSCH_RBdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdB						
Special subframe configuration Note166Uplink-downlink configuration Note211OCNG Pattern defined in A.3.2.2OP.2 TDDOP.2 TDDPA, ρB-30PCFICH_RBdB14PDCCH_RAdB-30PBCH_RAdB-30PBCH_RAdB-30PBCH_RBdB-30PHICH_RAdB-30PHICH_RBdB-30PDSCH_RAdB-30PDSCH_RAdB-30						
configurationNote1Uplink-downlink configuration11OCNG Pattern defined in A.3.2.2OP.2 TDDOP.2 TDD(TDD)OP.2 TDDOP.2 TDDpA, ρB-30PCFICH_RBdB14PDCCH_RAdBPDCCH_RBdB-3OPBCH_RAdBPBCH_RAdB-3PBCH_RAdB-3PBCH_RBdB-3PBCH_RBdB-3PBCH_RBdBPSS_RAdBPHICH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdBPDSCH_RAdB						
Uplink-downlink configuration Note211OCNG Pattern defined in A.3.2.2OP.2 TDDOP.2 TDD(TDD)-30ρA, ρB-30PCFICH_RBdB14PDCCH_RAdB-30PBCH_RAdB-30PBCH_RBdB-30PBCH_RBdB-30PBCH_RBdB-30PBCH_RBdB-30PBCH_RBdB-30PSS_RAdB-30PHICH_RAdB-30PHICH_RBdB-30PDSCH_RAdB-30						
configurationNote2OCNG Pattern defined in A.3.2.2OP.2 TDD(TDD)OP.2 TDDρA, ρB-3PCFICH_RBdB14PDCCH_RAdBPBCH_RAdBPBCH_RBdBPSS_RAdBPHICH_RAdBPDSCH_RAdBO-3OOOOPSS_RACOOPHICH_RBCOOPDSCH_RACOOPHICH_RBCOOPDSCH_RACCOOO<						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $						
$ \begin{array}{c c c c c c c c } & OP.2 \ TDD & OP.2 \ TDD \\ \hline PA, \rho_B & -3 & 0 \\ \hline PCFICH_RB & dB & 1 & 4 \\ \hline PDCCH_RA & dB & -3 & 0 \\ \hline PDCCH_RB & dB & -3 & 0 \\ \hline PDCCH_RB & dB & -3 & 0 \\ \hline PBCH_RA & dB & 0 \\ \hline PBCH_RB & dB & -3 & 0 \\ \hline PBCH_RB & dB & -3 & 0 \\ \hline PBCH_RB & dB & -3 & 0 \\ \hline PBCH_RB & dB & -3 & 0 \\ \hline PBCH_RB & dB & -3 & 0 \\ \hline PBCH_RB & dB & -3 & 0 \\ \hline PBCH_RB & dB & -3 & 0 \\ \hline PBCH_RB & dB & -3 & 0 \\ \hline PSS_RA & 0 & 0 \\ \hline PSS_RA & 0 & 0 \\ \hline PSS_RA & 0 & 0 \\ \hline PHICH_RB & 0 & 0 \\ \hline PDSCH_RB & 0 & 0 \\ \hline PDSCH_RA & 0 & 0 \\ \hline \end{array} $						
$\begin{array}{c c c c c c c } (TDD) & & & & & & & & & & & & & & & & & & $						
pA1 pB-30PCFICH_RBdB14PDCCH_RAdB-30PDCCH_RBdB-30PBCH_RAdB-30PBCH_RBdB-30PSS_RAdB-30PHICH_RAdB-30PHICH_RAdB-30PHICH_RAdB-30PHICH_RBdB-30PDSCH_RAdB-30						
PCFICH_RBdB14PDCCH_RAdB-30PDCCH_RBdB-30PBCH_RAdB-30PBCH_RBdB-30PSS_RAdB-30PHICH_RAdB-30PHICH_RBdB-30PHICH_RBdB-30PDSCH_RAdB-30PDSCH_RAdB-30						
PDCCH_RAdB-30PDCCH_RBdB-30PBCH_RAdB-30PBCH_RBdB-30PSS_RAdB-30PHICH_RAdB-30PHICH_RBdB-30PDSCH_RAdB-30PDSCH_RAdB-30						
PDCCH_RBdB-30PBCH_RAdB-30PBCH_RBdB-30PSS_RAdB-30PHICH_RAdB-30PHICH_RBdB-30PDSCH_RAdB-30PDSCH_RAdB-30						
PBCH_RAdBPBCH_RBdBPSS_RAdBSSS_RAdBPHICH_RAdB-30PHICH_RBdBPDSCH_RAdBPDSCH RBdB						
PBCH_RBdBPSS_RAdBSSS_RAdBPHICH_RAdB-30PHICH_RBdBPDSCH_RAdBPDSCH RBdB	0					
PSS_RAdBSSS_RAdBPHICH_RAdB-30PHICH_RBdBPDSCH_RAdBPDSCH RBdB						
SSS_RAdBPHICH_RAdBPHICH_RBdBPDSCH_RAdBPDSCH RBdB	0					
PHICH_RAdB-30PHICH_RBdB-30PDSCH_RAdB-30PDSCH RBdB-30						
PHICH_RB dB PDSCH_RA dB PDSCH RB dB						
PDSCH_RA dB PDSCH_RB dB						
PDSCH RB dB						
PDSCH_RB dB						
OCNG_RA ^{Note3} dB						
OCNG_RB ^{Note3} dB						
	-13.1					
N _{oc} dBm/15 -98 -98						
КПД						
	ETU 70 Hz AWGN					
Note 1: For the special subframe configuration see table 4.2-1 in 3GPP TS 36.211.						
Note 2: For the uplink-downlink configuration see table 4.2-2 in 3GPP TS 36.211.						
Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant						
total transmitted power spectral density is achieved for all OFDM symbols.						
Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time						
period T1.						
Note 5: The timers and layer 3 filtering related parameters are configured prior to the start or period T1.						
Note 6: The signal contains PDCCH for UEs other than the device under test as part of OC						
Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference si	of time					
REs.	of time					
Note 8: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3	of time					
respectively in figure A.7.3.7.1-5.	of time					

Table A.7.3.7.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2 in DRX

Table A.7.3.7.1-3: DRX-Configuration for E-UTRAN TDD out-of-sync tests

Field	Test1	Test2	Comment
T ICIG	Value	Value	
onDurationTimer	psf2	psf2	As specified in section 6.3.2 in 3GPP
drx-InactivityTimer	psf1	psf1	TS 36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Field	Test1	Test2	Comment
T ICIU	Value Valu		
TimeAlignmentTimer	infinity	infinity	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

Table A.7.3.7.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD out-of-sync testing

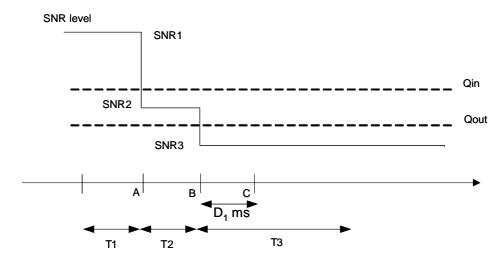


Figure A.7.3.7.1-1 SNR variation for out-of-sync testing in DRX

A.7.3.7.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

In test 1 and test 2 during the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the uplink subframe according to the configured CQI reporting mode (PUCCH 1-0).

In test 1 the UE shall stop transmitting uplink signal no later than time point C ($D_1 = 900$ ms after the start of time duration T3).

In test 2 the UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 6500$ ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.8 E-UTRAN TDD Radio Link Monitoring Test for In-sync in DRX

A.7.3.8.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.8.1-1, A.7.3.8.1-2, A.7.3.8.1-3 and A.7.3.8.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.8.1-5 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Parameter		Unit	Value	Comment	
PCFICH/PDCCH/PHICH parameters			R.6 TDD	As specified in section A.3.1.2.2. None of the PDCCH are intended for the UE under test	
OCNG parameters			OP.2 TDD	As specified in section A.3.2.2.2.	
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1	
CP length			Normal		
E-UTRA RF Channel N	Number		1	One E-UTRA TDD carrier frequency is used.	
E-UTRA Channel Ban	dwidth (BW _{channel})	MHz	10		
Correlation Matrix and Configuration	Antenna		1x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2	
	DCI format		1C	As defined in section 5.3.3.1.4 in TS 36.212	
In sync transmission parameters	Number of Control OFDM symbols		2	In sync threshold Q _{in} and the corresponding hypothetical	
(Note 1)	Aggregation level	CCE	4	PDCCH/PCFICH transmission	
	ρ _A , ρ _B		0	parameters are as specified in	
	Ratio of PDCCH to RS EPRE		0	section and Table 7.6.1-2 respectively.	
	Ratio of PCFICH to RS EPRE		4		
	DCI format		1A	As defined in section 5.3.3.1.3 in TS 36.212	
Out of sync transmission	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding hypothetical	
parameters	Aggregation level	CCE	8	PDCCH/PCFICH transmission	
(Note 1)	ρ _Α , ρ _Β		0	parameters are as specified in section 7.6.1 and Table 7.6.1-1	
	Ratio of PDCCH to RS EPRE	dB	4	respectively.	
	Ratio of PCFICH to RS EPRE	dB	4		
DRX cycle		ms	40	See Table A.7.3.8.1-3	
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1	
T310 timer		ms	2000	T310 is enabled	
T311 timer		ms	1000	T311 is enabled	
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.	
CQI reporting periodicity		ms	1	Minimum CQI reporting periodicity	
Propagation channel			AWGN		
T1		S	4		
T2		S	1.6		
Т3		S	1.46		
T4		S	0.4		
T5		S	4		
				out of sync transmission Measurement Channel.	

Table A.7.3.8.1-1: General test parameters for E-UTRAN TDD in-sync test in DRX

Parameter	Unit	Test 1					
		T1 T2 T3 T4				T5	
E-UTRA RF Channel Number		1					
BW _{channel}	MHz	10					
Correlation Matrix and				1x2 Low			
Antenna Configuration							
Special subframe				6			
configuration ^{Note1}							
Uplink-downlink				1			
configuration ^{Note2}							
OCNG Pattern defined in							
A.3.2.2 (TDD)				OP.2 TDD			
ρа, ρв				0			
PCFICH_RB	dB			4			
PDCCH_RA	dB			0			
PDCCH_RB	dB	0					
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB			_			
PHICH_RA	dB	0					
PHICH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note3}	dB						
OCNG_RB ^{Note3}	dB						
SNR Note 8	dB	-5.1	-9.1	-13.1	-9.1	-5.1	
N _{oc}	dBm/15			-98	•	•	
1 oc	kHz						
Propagation condition				AWGN			
Note 1: For the special subfr							
Note 2: For the uplink-downl	ink configurati	on see table 4	4.2-2 in 3GPI	P TS 36.211.			
Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total							
transmitted power spectral density is achieved for all OFDM symbols.							
	4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.						
Note 5: The timers and layer	3 filtering relation	ited paramete	ers are config	ured prior to	the start of tir	ne period	
T1.							
Note 6: The signal contains							
Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs. Note 8: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and							
			is denoted as	S SNR1, SNF	K2, SNR3, SN	IR4 and	
SNR5 respectively in	n figure A.7.3.8	3.1-5.					

Table A.7.3.8.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for in-sync radio link monitoring test # 1 in DRX

Table A.7.3.8.1-3: DRX-Configuration for E-UTRAN TDD out-of-sync tests

Field	Value	Comment
onDurationTimer	psf2	As specified in section 6.3.2 in 3GPP
drx-InactivityTimer	psf1	TS 36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf40	
shortDRX	disable	

Table A.7.3.8.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD out-of-sync testing

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

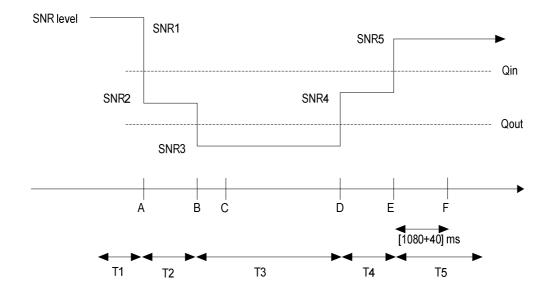


Figure A.7.3.8.1-1 SNR variation for in-sync testing in DRX

A.7.3.8.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the uplink subframe according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.9 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement Resource Restriction and Non-MBSFN ABS

A.7.3.9.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.9.1-1 and A.7.3.9.1-2 below. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.9.1-3 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

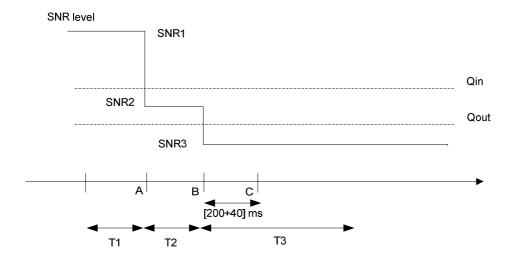
Non-MBSFN ABS pattern is configured in the aggressor Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Table A.7.3.9.1-1: General test parameters for E-UTRAN FDD out-of-sync testing under time domain measurement resource restriction with non-MBSFN ABS

Para	meter	Unit	Value	Comment
PCFICH/PDC	CH/PHICH		R.9.FDD	As specified in section A.3.1.2.1.
parameters				None of the PDCCH are intended for the UE
				under test
OCNG param	eters		OP.2 FDD	As specified in section A.3.2.1.2.
Serving cell (F			Cell 1	Cell 1 is on E-UTRA RF channel number 1
Neighbor cell	·		Cell 2	Aggressor cell on E-UTRA RF channel number
Neighbor cell	ABS		Non-MBSFN ABS	1
configuration	AD0		NOI-MIDSI N ADS	
CP length			Normal	
E-UTRA RF C	hannel		1	One E-UTRA FDD carrier frequency is used.
Number				
	nel Bandwidth	MHz	10	
(BW _{channel})				
Correlation Ma	atrix and		2x2 Low	Correlation Matrix and Antenna Configuration
Antenna Conf			-	are defined in TS 36.101 [5] Annex B.2.3.2
Out of sync	DCI format	t	1A	As defined in section 5.3.3.1.3 in TS 36.212
transmission	Number of	1	3	Out of sync threshold Q _{out} and the
parameters	Control			corresponding hypothetical PDCCH/PCFICH
(Note 1)	OFDM			transmission parameters are as specified in
. ,	symbols			section 7.6.1 and Table 7.6.1-1 respectively.
	Aggregation	CCE	8	
	level		-3	-
	ρ _A , ρ _B	dB	-3	-
	Ratio of PDCCH to	aв	-3	
	RS EPRE			
	Ratio of	dB	1	-
	PCFICH to	uБ		
	RS EPRE			
DRX	NO LI NE		OFF	
Layer 3 filterin	a		Enabled	Counters:: N310 = 1; N311 = 1
T310 timer	9	ms	0	T310 is disabled
T311 timer		ms	1000	T311 is enabled
	eporting mode	1110	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting	-	ms	2	Minimum CQI reporting periodicity
Time offset be			3 μs	Synchronous cells
T1		s	1	
T2		s	0.4	
T3		s	0.5	
Physical cell II	ר פרו	+		Cell IDs are chosen such that CRS from cells 1
r nysical cell li			(PCI _{cell1} -PCI _{cell2})mod3 != 0	and 2 do not overlap in frequency
ABS pattern			⁽¹⁰⁰⁰⁰⁰⁰¹⁰⁰⁰⁰⁰¹⁰⁰⁰	FDD ABS Pattern Info IE, as defined in TS
			000010000001000000'	36.423, clause 9.2.54. Configured in Cell 2.
				The first/leftmost bit corresponds to the PCell
				subframe #0 SFN 0. No MBSFN subframes are
				cofigured in the ABS subframes.
Time domain	measurement		'100000010000001000	Time domain measurement resource restriction
resource restr	iction pattern		000010000001000000'	pattern for serving cell measurement signalled
				to the UE in message measSubframePattern-
		1		Serv-r10 as defined in TS 36.331, clause 6.3.2.

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1		1		
Number							
BW _{channel}	MHz		10			10	
Correlation Matrix			2x2 Low			2x2 Low	
and Antenna							
Configuration							
OCNG Pattern							
defined in A.3.2.1			OP.2 FDD			OP.2 FDD	
(FDD) Note 7							
ρ _Α , ρ _Β			-3			-3	
PCFICH_RB	dB		1			1	
PDCCH_RA	dB		-3			-3	
PDCCH_RB	dB		-3			-3	
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB				-3		
SSS_RA	dB		2				
PHICH_RA	dB		-3		-3		
PHICH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note1}	dB						
OCNG_RB ^{Note1}	dB						
SNR ^{Note 6}	dB	-1.3	-5.4	-12.4		[5]	
N_{oc}	dBm/15		-98			-98	
	kHz						
Propagation condition			ETU 30 Hz			ETU 30 Hz	
	be used such						
	tted power spe			ed for all C	OFDM sym	bols. There	is no
	cated in ABS s						
	esources for Co	u reporting	g are assig	ned to the	UE prior to	o the start of	time
period T1.	nd lover 2 filter	ring related	Inoromoto	a ara acaf	aurod prio	r to the ctor	t of time
Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of tim period T1.							t of time
	ontains PDCCI	H for LIEs o	ther than t	ha davica	under test	as part of C	CNG
	correspond to t						
CRS REs.		ne signal q	painty, sign		cronce-più		5, 511 116
Note 6: The SNR in the restricted measurement subframes during time periods T1, T2 and T3							d T3 is

Table A.7.3.9.1-2: Cell specific test parameters for E-UTRAN FDD for out-of-sync radio link monitoring under time domain measurement resource restriction with non-MBSFN ABS



denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.5.1-5.



A.7.3.9.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.10 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement Resource Restriction with Non-MBSFN ABS

A.7.3.10.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.10.1-1 and A.7.3.10.1-2 below. There are two cells, cell 1 is the serving cell and cell 2 is the neighbor aggressor cell. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.10.1-3 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Non-MBSFN ABS pattern is configured in Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Table A.7.3.10.1-1: General test parameters for E-UTRAN TDD out-of-sync testing under time domain measurement resource restriction with non-MBSFN ABS

PCFICH/PDC0 parameters	CH/PHICH		R.9 TDD	As specified in section A.3.1.2.2.
parameters				
parameters				None of the PDCCH are intended for
				the UE under test
OCNG parameters			OP.2 TDD	As specified in section A.3.2.2.2.
Serving cell			Cell 1	Cell 1 is on E-UTRA RF channel
				number 1
Neighbor cell			Cell 2	Cell 2 is the aggressor cell on E-UTRA
<u>CD</u> lare with			Nerreal	RF channel number 1
CP length	hannel Number		Normal 1	One F LITRA TOD corrier frequency is
E-UTRA RF C	nannel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Chan	nel Randwidth	MHz	10	
(BW _{channel})		111112	10	
Correlation Ma	atrix and		2x2 Low	Correlation Matrix and Antenna
Antenna Confi				Configuration are defined in TS 36.101
	0			[5] Annex B.2.3.2
	DCI format		1A	As defined in section 5.3.3.1.3 in TS
				36.212
Out of sync	Number of		3	Out of sync threshold Q _{out} and the
transmission	Control OFDM			corresponding hypothetical
parameters	symbols			PDCCH/PCFICH transmission
(Note 1)	Aggregation	CCE	8	parameters are as specified in section
-	level			7.6.1 and Table 7.6.1-1 respectively.
-	ρ_A, ρ_B		-3	
	Ratio of	dB	1	
	PDCCH to RS EPRE			
-	Ratio of	dB	1	
	PCFICH to RS	uВ	1	
	EPRE			
Physical cell ID			(PCI _{cell1} -PCI _{cell2})mod3 !=	Cell IDs are chosen such that CRS from
,			0	cells 1 and 2 do not overalp in
				frequency.
ABS pattern			[10000000010000000]	TDD ABS Pattern Info IE is configured
				in Cell 2 as defined in section 9.2.54 in
				TS 36.423.
				No MBSFN subframes are cofigured in
<u></u>				the ABS subframes.
Time domain n			[100000000100000000]	MeasSubframePattern IE is configured
resource restri	cuon pattern			in UE for serving cell measurement as defined in section 6.3.6 in TS 36.331.
DRX			OFF	
Layer 3 filtering	n		Enabled	Counters:
Layor o monng	9		Enabled	N310 = 1; N311 = 1
T310 timer		ms	0	T310 is disabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI re	eporting mode		PUCCH 1-0	As defined in table 7.2.2-1 in TS
				36.213.
CQI reporting		ms	1	Minimum CQI reporting periodicity
Time offset be		μs	3	
Propagation ch	nannel		ETU30	
T1		S	1	
T2		S	0.4	
T3		S	0.5	ion parameters need not be included in

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
Correlation Matrix			2x2 Low			2x2 Low	
and Antenna							
Configuration			0				
Special subframe configuration			6			6	
Uplink-downlink configuration ^{Note2}			1			1	
OCNG Pattern							
defined in A.3.2.2			OP.2 TDD			OP.2 TDD	
(TDD)							
ρ _A , ρ _B			-3			-3	
PCFICH_RB	dB		1			1	
PDCCH_RA	dB		-3			-3	
PDCCH_RB	dB		-3			-3	
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB		-3		-3		
PHICH_RA PHICH_RB	dB dB		-5		-0		
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 3}	dB						
OCNG_RB ^{Note 3}	dB						
SNR Note 8	dB	-1.3	-5.4	-12.4		[5]	
	dBm/15	1.0	-98	12.1	-98		
N_{oc}	kHz		00			00	
Propagation condition			ETU30			ETU30	
Note 1: For the spec	ial subframe co	onfiguratio	n see table	4.2-1 in 30	GPP TS 36	6.211.	
Note 2: For the uplin	k-downlink cor	figuration	see table 4	.2-2 in 3Gl	PP TS 36.	211.	
	be used such						
total transmi	tted power spe	ctral densi	ty is achiev	ed for all C	OFDM sym	bols. There	is no
	cated in ABS s						
Note 4: The uplink reperiod T1.	esources for Co	QI reporting	g are assig	ned to the	UE prior to	o the start o	ftime
Note 5: The timers a period T1.	nd layer 3 filter	ring related	d paramete	rs are conf	igured pric	or to the star	t of time
	ontains PDCCI	H for UEs of	other than t	he device	under test	as part of C	CNG.
Note 7: SNR levels of REs.	correspond to t	he signal t	o noise rati	o over the	cell-specif	ic reference	signal
Note 8: The SNR in	time periods T ^r ctively in figure			cell is der	noted as Sl	NR1, SNR2	and

Table A.7.3.10.1-2: Cell specific test parameters for E-UTRAN TDD for out-of-sync radio link monitoring under time domain measurement resource restriction with non-MBSFN ABS

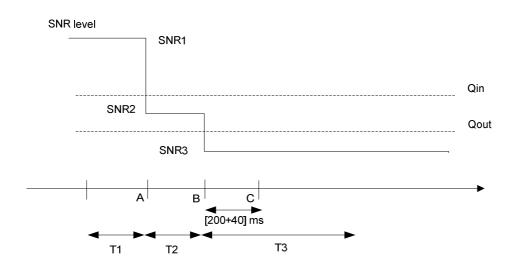


Figure A.7.3.10.1-1 SNR variation in active cell for out-of-sync testing under time domain measurement resource restriction with non-MBSFN ABS

A.7.3.10.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of the time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.11 E-UTRAN FDD Radio Link Monitoring Test for In-sync for Non-MBSFN ABS

A.7.3.11.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.11.1-1 and A.7.3.11.1-2 below. There are two cells in the test: Cell 1 is the Active cell and Cell 2 is the Neighbor cell. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.11.1-3 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Non-MBSFN ABS pattern is configured in Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Par	Parameter		Value	Comment
PCFICH/PD	PCFICH/PDCCH/PHICH		R.9 FDD	As specified in section A.3.1.2.1.
parameters				None of the PDCCH are
OCNG para	meters		OP.2 FDD	intended for the UE under test As specified in section A.3.2.1.2.
Active cell	illeters		Cell 1	Cell 1 is on E-UTRA RF channel
				number 1
Neighbor ce	II		Cell 2	Cell 2 is on E-UTRA RF channel
				number 1; Cell 2 generates interference over restricted
				resources.
Neighbor ce			Non-	
configuration	1		MBSFN ABS	
CP length			Normal	
E-UTRA RF	Channel		1	One E-UTRA FDD carrier
Number			10	frequency is used.
E-UTRA Cha (BWchannel	annel Bandwidth	MH z	10	
Correlation N	Matrix and	1	2x2 Low	Correlation Matrix and Antenna
Antenna Cor	nfiguration			Configuration are defined in TS
	DCI format		1C	36.101 [5] Annex B.2.3.2 As defined in section 5.3.3.1.4 in
				TS 36.212
In sync	Number of		3	In sync threshold Qin and the
transmissi on	Control OFDM symbols			corresponding hypothetical PDCCH/PCFICH transmission
parameter	Aggregation	CC	4	parameters are as specified in
s for the	level	E		section and Table 7.6.1-2
active cell (Note 1)	ρΑ, ρΒ		-3	respectively.
	Ratio of PDCCH to RS	dB	-3	
	EPRE			
	Ratio of	dB	1	
	PCFICH to RS			
	DCI format		1A	As defined in section 5.3.3.1.3 in
- ·				TS 36.212
Out of sync	Number of Control OFDM		3	Out of sync threshold Qout and
transmissi	symbols			the corresponding hypothetical PDCCH/PCFICH transmission
on	Aggregation	CC	8	parameters are as specified in
parameter	level	E		section 7.6.1 and Table 7.6.1-1
s for active cell (Note	ρΑ, ρΒ Ratio of	dB	-3 1	respectively.
1)	PDCCH to RS	uв		
	EPRE			1
	Ratio of	dB	1	
	PCFICH to RS EPRE			
DRX			OFF	
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1
T310 timer			2000	T310 is enabled
T311 timer Periodic CQI reporting mode		ms	1000 PUCCH 1-	T311 is enabled As defined in table 7.2.2-1 in TS
	Periodic CQI reporting mode		0	36.213.
CQI reportin	g periodicity	ms	2	Minimum CQI reporting periodicity
Time offset b	between cells	μs	3	
Propagation			ETU30	
T1		S	0.5	
T2		S	0.4	

Table A.7.3.11.1-1: General test parameters for E-UTRAN FDD in-sync testing under time domain measurement resource restriction

T3	S	1.46	
T4	S	0.4	
T5	S	1	
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod3 != 0	Cell IDs are chosen such that CRS from cells 1 and 2 do not overalp in frequency
ABS pattern		'100000001 000000010 000000100 000001000 00000'	FDD ABS Pattern Info IE, as defined in TS 36.423, clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 SFN0. No MBSFN subframes are cofigured in the ABS subframes.
Time domain measurement resource restriction pattern		'100000001 000000010 00000100 000001000 00000'	TDM pattern for serving cell measurement signalled to the UE in message measSubframePattern-Serv-r10 as defined in TS 36.331, clause 6.3.6.

Parameter	Unit	Cell 1				Cell 2					
		T1	T2	T3	T4	T5	T1	T2	Т3	T4	T5
E-UTRA RF Channel				1					1		
Number											
BW _{channel}	MHz			10					10		
Correlation Matrix				2x2 Lo	W				2x2 Lo	w	
and Antenna											
Configuration											
PCFICH/PDCCH/PHI				R.9 FD	D				R.9 FD	D	
CH parameters											
Number of Control				3					3		
OFDM symbols											
OCNG Pattern											
defined in A.3.2.1				OP.2 FI	D			(0P.2 F	DD	
(FDD)											
ρ _Α , ρ _Β				-3					-3		
PCFICH_RB	dB			1					1		
PDCCH_RA	dB			-3			-3				
PDCCH_RB	dB			-3			-3				
PBCH_RA	dB										
PBCH_RB	dB										
PSS_RA	dB										
SSS_RA	dB										
PHICH_RA	dB			-3			-3				
PHICH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB										
OCNG RB ^{Note 1}	dB										
SNR Note 6	dB	-1.3	-5.4	-12.4	-7.3	-1.3			[5]		
Ν	dBm/15			-98		1			-98		
N_{oc}	kHz										
Propagation condition		ETU30							ETU3	0	
	be used such	that the	resource	es in cell	# 1 are ful	lv allocate	ed and	a const	tant tota	al transr	nitted
	al density is a					,					
	sources for C					prior to t	he start	t of time	e period	1 T1.	
	nd layer 3 filte										
	ontains PDCC										
	orrespond to t										
	ime periods T										SNR4
	spectively in f							,		,	

Table A.7.3.11.1-2: Cell specific test parameters for E-UTRAN FDD for in-sync radio link monitoring under time domain measurement resource restriction

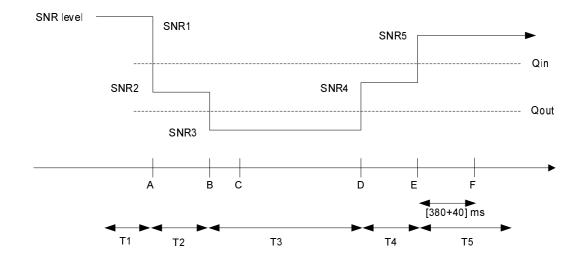


Figure A.7.3.11.1-1 SNR variation in the active cell for in-sync testing under time domain measurement resource restriction

A.7.3.11.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.12 E-UTRAN TDD Radio Link Monitoring Test for In-sync for Non-MBSFN ABS

A.7.3.12.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.12.1-1 and A.7.3.12.1-2 below. There are two cells in the test: Cell 1 is the Active cell and Cell 2 is the Neighbor cell. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.12.1-3 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Non-MBSFN ABS pattern is configured in the aggressor Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Par	ameter	Uni t	Value	Comment
PCFICH/PD parameters	PCFICH/PDCCH/PHICH parameters		R.9 TDD	As specified in section A.3.1.2.2. None of the PDCCH are intended for the UE under test
OCNG para	meters		OP.2 TDD	As specified in section A.3.2.2.2.
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1
Neighbor ce	II		Cell 2	Cell 2 is on E-UTRA RF channel number 1; Cell 2 generates interference over restricted resources.
Neighbor ce configuratior			Non-MBSFN ABS	
CP length			Normal	
E-UTRA RF Number	Channel		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Cha (BWchannel	annel Bandwidth)	MH z	10	
Correlation M Antenna Cor	nfiguration		2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	DCI format		1C	As defined in section 5.3.3.1.4 in TS 36.212
In sync transmissi on	Number of Control OFDM symbols		3	In sync threshold Qin and the corresponding hypothetical PDCCH/PCFICH transmission
parameter s for the	Aggregation level	CC E	4	parameters are as specified in section and Table 7.6.1-2
active cell	ρΑ, ρΒ		-3	respectively.
(Note 1)	Ratio of PDCCH to RS EPRE	dB	-3	
	Ratio of PCFICH to RS EPRE	dB	1	
	DCI format		1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmissi	Number of Control OFDM symbols		3	Out of sync threshold Qout and the corresponding hypothetical PDCCH/PCFICH
on parameter	Aggregation level	CC E	8	transmission parameters are as specified in section 7.6.1
s for active	ρΑ, ρΒ	ſ	-3	and Table 7.6.1-1
cell (Note 1)	Ratio of PDCCH to RS EPRE	dB	1	respectively.
	Ratio of PCFICH to RS EPRE	dB	1	
DRX		1	OFF	
Layer 3 filter	ing		Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer	I reporting mode	ms	1000 PUCCH 1-0	T311 is enabled As defined in table 7.2.2-1 in TS 36.213.
CQI reportin	g periodicity	ms	2	Minimum CQI reporting periodicity
Time offset b	petween cells	μs	3	
Propagation	channel		ETU30	

Table A.7.3.12.1-1: General test parameters for E-UTRAN TDD in-sync testing under time domain measurement resource restriction

T1	S	0.5	
T2	S	0.4	
Т3	S	1.46	
T4	S	0.4	
T5	S	1	
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod3 != 0	Cell IDs are chosen such that CRS from cells 1 and 2 do not overalp in frequency
ABS pattern		[1000000000 10000000000]	TDD ABS Pattern Info IE, as defined in TS 36.423, clause 9.2.54. Configured in Cell 2. No MBSFN subframes are cofigured in the ABS subframes.
Time domain measurement resource restriction pattern		[100000000 1000000000]	TDM pattern for serving cell measurement signalled to the UE in message measSubframePattern-Serv- r10 as defined in TS 36.331, clause 6.3.6. Configured in Cell 1.

Parameter	Unit		Cell 1			Cell 2			
		T1 T2	T3	T4	T5	T1 T2 T3 T4 T			
E-UTRA RF Channel			1			1			
Number									
BW _{channel}	MHz		10			10			
Correlation Matrix			2x2 Low	1		2x2 Low			
and Antenna									
Configuration									
Special subframe configuration			6			6			
Uplink-downlink			1			1			
configuration ^{Note2}									
PCFICH/PDCCH/PHI			R.9 TDD			R.9 TDD			
CH parameters									
Number of Control			3			3			
OFDM symbols									
OCNG Pattern				_					
defined in A.3.2.2			OP.2 TD	J		OP.2 TDD			
(TDD)			-3			2			
ρ _Α , ρ _Β PCFICH_RB	dB		<u>-3</u> 1			-3			
PDCCH_RA	dB dB								
PDCCH_RA	dB		-3 -3			-3			
PBCH_RA	dB		-3			-3			
PBCH_RB	dB	-							
PSS_RA	dB	-							
SSS_RA	dB	-							
PHICH_RA	dB	_	-3			-3			
PHICH_RB	dB	_	•			_			
PDSCH_RA	dB	-							
PDSCH_RB	dB	-							
OCNG_RA ^{Note 3}	dB	-							
OCNG_RB ^{Note 3}	dB	-							
SNR Note 8	dB	-1.3 -5.4	-12.4	-7.3	-1.3	[5]			
	dBm/15	1.0 0.4	-98	1.0		-98			
N_{oc}	kHz		-90			-90			
Propagation condition			ETU30		ETU30				
Note 1: For the spec	ial subframe c	onfiguration see	table 4.2-	l in 3GPF	P TS 36.2	211.			
		nfiguration see ta							
Note 3: OCNG shall	be used such	that the resource	es in cell #	1 are full	y allocate	ed and a constant total transmitted			
power spect	al density is a	chieved for all C	FDM symb	ols.	-				
						he start of time period T1.			
						to the start of time period T1.			
		H for UEs other							
Note 7: SNR levels c	correspond to	the signal to nois	se ratio ove	er the cell	-specific	reference signal REs.			
			d T5 of act	ive cell is	denoted	l as SNR1, SNR2, SNR3, SNR4 a			
SNR5 respective	ctively in figure	e A.7.3.12.1-3.							

Table A.7.3.12.1-2: Cell specific test parameters for E-UTRAN TDD for in-sync radio link monitoring under time domain measurement resource restriction

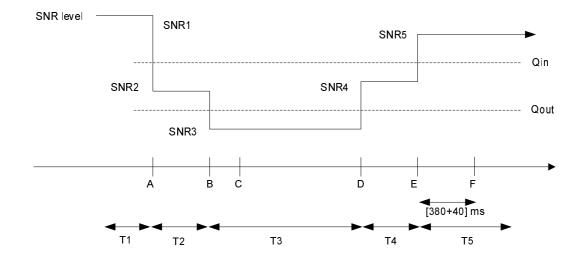


Figure A.7.3.12.1-1 SNR variation in active cell for in-sync testing under time domain measurement resource restriction

A.7.3.12.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.8 UE Measurements Procedures

The reference channels in this section assume transmission of PDSCH with a maximum number of 5 HARQ transmissions unless otherwise specified.

A.8.1 E-UTRAN FDD Intra-frequency Measurements

A.8.1.1 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

A.8.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD intra-frequency cell search requirements in section 8.1.2.2.1.1.

The test parameters are given in Table A.8.1.1.1-1 and A.8.1.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1.1.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel		1	One FDD carrier frequency is used.
Number			
Channel Bandwidth	MHz	10	
(BW _{channel})			
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Parameter	Unit	Ce	ll 1		Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel			1		1		
Number							
BW _{channel}	MHz	1	0		10		
OCNG Patterns							
defined in A.3.2.1.1		OP.1	FDD	OF	P.2 FDD		
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB		2		0		
PHICH_RA	dB	0 0					
PHICH_PB	dB						
PDCCH_RA	dB						
PDCCH_PB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	-1.46	-Infinity	-1.46		
$N_{oc}^{ m Note 3}$	dBm/15 KHz			-98			
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4		
RSRP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94		
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94		
Propagation Condition			E	TU70			
Note 1: OCNG shall be used			ted and a consta	nt total transmitte	d power spectral		
density is achieved					1.70		
Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over							
subcarriers and time	e and shall be mo	delled as AWGN of	of appropriate pov	wer for $N_{_{oc}}$ to be	e fulfilled.		
Note 4: RSRP and SCH_RP settable parameters		derived from othe	er parameters for	information purpo	oses. They are not		

Table A.8.1.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

A.8.1.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.1.2 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

A.8.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD intra-frequency cell search requirements in section 8.1.2.2.1.1

ETSI

The test parameters are given in Table A.8.1.2.1-1 and A.8.1.2.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. PDCCHs indicating new transmissions or retransmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1.2.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel		1	One FDD carrier frequency is used.
Number			
Channel Bandwidth	MHz	10	
(BW _{channel})			
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		DRX_L	As specified in section A.3.3
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	5	

Parameter	Unit	Ce	ell 1	(Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel			1		1		
Number							
BW _{channel}	MHz	1	0		10		
OCNG Patterns							
defined in A.3.2.1.1		OP.1	FDD	OP	.2 FDD		
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB		-				
PHICH_RA	dB		0		0		
PHICH_RB	dB						
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46		
$N_{_{oc}}$ Note 3	dBm/15 KHz			-98			
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	4		
RSRP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94		
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94		
Propagation Condition			E	TU70			
Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers							

Table A.8.1.2.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

and time and shall be modelled as AWGN of appropriate power for $\,N_{_{O\!C}}\,$ to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.2.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.1.3 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX

A.8.1.3.1 Test Purpose and Environment

The purpose of the two tests is to verify that the UE makes correct reporting of an event in DRX. The tests will partly verify the FDD-FDD intra-frequency cell search in DRX requirements in section 8.1.2.2.1.2.

The test parameters are given in Tables A.8.1.3.1-1, A.8.1.3.1-2, A.8.1.3.1-3 and A.8.1.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

In Test 2 the uplink time alignent is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Parameter	Unit	Va	lue	Comment
		Test 1	Test 2	
PDSCH parameters		DL Reference Me Channel R.0 FDI		As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD		As specified in section A.3.1.2.1
Active cell		Cell 1		
Neighbour cell		Cell 2		Cell to be identified.
E-UTRA RF Channel Number		1		One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10		
A3-Offset	dB	-6		
CP length		Normal		
Hysteresis	dB	0		
Time To Trigger	S	0		
Filter coefficient		0		L3 filtering is not used
DRX		ON		DRX related parameters are defined in Table A.8.1.3.1-3
Time offset between cells		3 μs		Synchronous cells
T1	S	5		
T2	S	5	30	

Table A.8.1.3.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Table A.8.1.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Ce	1	0	Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel			1	1			
Number							
BW _{channel}	MHz	1	0		10		
OCNG Patterns							
defined in A.3.2.1.1		OP.1	FDD	OP	.2 FDD		
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB						
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	-1.46	-Infinity	-1.46		
$N_{_{oc}}$ Note 2	dBm/15 KHz			-98			
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	4		
RSRP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94		
SCH_RP ^{Note 3}	dBm/15 KHz	-94	-94	-Infinity	-94		
Propagation Condition		ETU70					
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	and time and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be fulfilled.						
Note 3: RSRP and SCH_RF	Plevels have been de	rived from other pa	rameters for info	rmation purposes.	They are not settable		
parameters themse		·			-		

Table A.8.1.3.1-3: DRX-Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	As specified in section 6.3.2 in
drx-InactivityTimer	psf1	psf1	3GPP TS 36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

 Table A.8.1.3.1-4: TimeAlignmentTimer -Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

A.8.1.3.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

In Test 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 25600 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

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 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.
- A.8.1.4 Void

A.8.1.5 E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.1.5.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in section 8.1.2.2.3.

The test scenario comprises of one E-UTRA FDD carrier and two cells as given in tables A.8.1.5.1-1 and A.8.1.5.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

Table A.8.1.5.1-1: General test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331.
Time offset between cells	ms	3	Asynchronous cells
T1	S	5	
T2	S	≤10	
Т3	S	5	

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel		1			1		
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.1.1 (OP.1 FDD) and		FDD	FDD	FDD	FDD	FDD	FDD
in A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB		_				
PHICH_RA	dB		0			0	
PHICH_PB	dB						
PDCCH_RA	dB						
PDCCH_PB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
$N_{oc}^{\rm Note 2}$	dBm/15 KHz			-9	8		
\hat{E}_s / N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP ^{Note 3}	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
SCH_RP ^{Note3}	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
Propagation Condition			•	AW	GN	-	
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 a		•					

Table A.8.1.5.1-2: Cell specific test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.5.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within [170] milliseconds from the start of T3.

 $Test \ requirement = RRC \ Procedure \ delay + \ T_{identify_CGI, intra} + reporting \ delay$

= 15 + [150] + 2ms from the start of T3

= [167] ms, allow [170] ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until [170] ms at least [80] ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall [80] ACK/NACK number is caused by two parts. Firstly, at least [60] ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Section 8.1.2.2.3.1. Secondly, given that continuous DL data allocation, additional [20] ACK/NACK shall be sent from the start of T3 until [170] ms excludes [150] ms for identifying the cell global identifier of cell 2.

A.8.1.6 E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

A.8.1.6.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in section 8.1.2.2.3. The requirement is verified in a DRX configuration.

The test scenario comprises of one E-UTRA FDD carrier and two cells as given in tables A.8.1.6.1-1, A.8.1.6.1-2, A.8.1.6.1-3 and A.8.1.6.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Table A.8.1.6.1-1: General test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.1
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1
		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one FDD carrier frequency is
			used.
Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	s	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are
			defined in Table A.8.1.6.1-3
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in
			TS 36.331.
Time offset between cells	ms	3	Asynchronous cells
T1	S	5	
T2	S	≤30	UE should report cell within 25.6s
			(20 DRX cycles)
Т3	S	5	

Table A.8.1.6.1-2: Cell specific test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel		1				1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.1.1 (OP.1 FDD) and		FDD	FDD	FDD	FDD	FDD	FDD
in A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0			0	
PHICH_PB	dB						
PDCCH_RA	dB						
PDCCH_PB	dB						
PDSCH_RA	dB						
PDSCH RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
N_{oc} Note 2	dBm/15 KHz			-9	8		
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP ^{Note 3}	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
SCH_RP ^{Note3}	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
Propagation Condition				AW	GN		•
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 $N_{_{ m oc}}$ to be fulfilled.							
Note 3: RSRP and SCH_RP lev parameters themselves	els have been derive				urposes. The	y are not setta	able

Table A.8.1.6.1-3: DRX configuration for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
onDurationTimer	psf1	As specified in section 6.3.2 in
drx-InactivityTimer	psf1	3GPP TS 36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.1.6.1-4: TimeAlignmentTimer -Configuration for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
TimeAlignmentTimer	sf1280	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

A.8.1.6.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within [170] milliseconds from the start of T3.

 $Test \ requirement \ = RRC \ Procedure \ delay + \ T_{identify_CGI, intra} + reporting \ delay$

= 15 + [150] + 2ms from the start of T3

= [167] ms, allow [170] ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.1.7 E-UTRAN FDD-FDD Intra-Frequency Event-Triggered Reporting under Time Domain Measurement Resource Restriction with Non-MBSFN ABS

A.8.1.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects and reports Event A3 (Neighbour becomes offset better than PCell) defined in [2] within the requirements specified in Section 8.1.2.8.1.1 under a time domain measurement resource restriction and non-MBSFN ABS configured in the aggressor cell.

The test parameters are given in Tables A.8.1.7.1-1 and A.8.1.7.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Event A3 is used. In the test there are two synchronous cells, Cell 1 and Cell 2, on the same RF channel. Cell 1 is the PCell, and it is also the aggressor cell to Cell 2. Cell 2 is the cell to be identified. The test consists of two successive time periods with time duration of T1 and T2, respectively. During time duration T1, the UE shall not have any timing information on Cell 2.

Non-MBSFN ABS pattern is configured for Cell 1 during the test. The UE is configured by higher layers via Cell 1 with a time domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells. The UE is also configured with a time domain measurement resource restriction pattern for the PCell measurements. The information for both measurement patterns shall be provided to the UE via higher layers during T1.

Table A.8.1.7.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under time domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Value	Comment
PDSCH parameters ^{Note 1}		DL Reference	As specified in section A.3.1.1.1
		Measurement Channel	
		R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference	As specified in section A.3.1.2.1
parameters Note 1		Measurement Channel	
D0-II		R.6 FDD	Also the engranges call Active in T4 and T2
PCell		Cell 1	Also the aggressor cell. Active in T1 and T2
Neighbour cell		Cell 2	Cell to be identified. Active only in T2.
E-UTRA RF Channel Number	N 41 I	1	One FDD carrier frequency is used
Channel Bandwidth (BW _{channel})	MHz	10	For all cells in the test
A3-Offset	dB	[-11]	
Event A3 measurement quantity		RSRP	
CP length	dB	Normal	
Hysteresis		0	
Time To Trigger Filter coefficient	S	0	
DRX		0	L3 filtering is not used OFF
Time offset between cells			0
		<u>3 μs</u>	Synchronous cells
<u>T1</u>	S	5	
T2	S	5	Oall DOIs and a last address that the same differs is
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6 !=0	Cell PCIs are selected so that the condition is
ABC nottorn		!=0	FDD ABS Pattern Info IE, as defined in TS
ABS pattern		100000010000001000	36.423, clause 9.2.54. Configured in Cell 1
		000010000001000000000000000000000000000	during T1.
		000010000001000000	The first/leftmost bit corresponds to the
			subframe #0 of the radio frame satisfying SFN
			mod 40 = 0. No MBSFN subframes are
			cofigured in the ABS subframes.
Time domain measurement			Time domain measurement resource restriction
resource restriction pattern for		'100000010000001000	pattern for neighbor cell measurement signalled
neighbour cell measurements on		000010000001000000'	to the UE in measSubframePattern-Neigh IE in
RF Channel 1			measSubframePatternConfig-Neigh, as defined
			in TS 36.331, clause 6.3.5.
			Configured during T1 for Cell 2 measurements.
Time domain measurement		'010000001000000100	Configured during T1 for Cell 1 measurements
resource restriction pattern for		0000010000001000000'	
PCell measurements			
Note 1: These channels are no	t transmit	ted in Cell 1 during ABS subf	frames.

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel			1		1		
Number							
BW _{channel}	MHz	10		10			
OCNG Patterns							
defined in A.3.2.1.1		OP.1	FDD	OF	.2 FDD		
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB	()		0		
PHICH_RB	dB						
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
	dBm/15 kHz			-98			
$N_{_{oc}}$ Note 3							
$(\hat{E}_{s}/N_{oc})_{meas}$ Note 5	dB	1	1	-Infinity	-4		
(\hat{E}_{s}/N_{oc})abs	dB	1	1	N/A	N/A		
RSRP Note 4	dBm/15 kHz	-97	-97	-Infinity	-102		
SCH_RP Note 4	dBm/15 kHz	-97	-97	-Infinity	-102		
CRS $\hat{E}_{_{s}}/I_{_{ot}}$	dB	1	-0.5	-Infinity	-4		
SCH $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	1	-0.5	-Infinity	-7.5		
Propagation Condition			E	TU30			
Note 1: OCNG shall b	be used such that	t both cells are f			tal transmitted		
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. There is no PDSCH allocated in Cell 1 during ABS subframes.Note 2:The resources for uplink transmission are assigned to the UE prior to the start of time period							
Τ2.							
Note 3: 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							
$N_{\scriptscriptstyle oc}$ to be fu	lfilled.						
They are not	CH_RP levels ha settable paramet	ers themselves.					
	nated for Cell 2 c nated for Cell 1 c				or neighbour cells		

Table A.8.1.7.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under time domain measurement resource restriction with non-MBSFN ABS

A.8.1.7.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for Cell 2, with a measurement reporting delay less than 1000 ms 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% for the tested Event A3.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.2 E-UTRAN TDD Intra-frequency Measurements

A.8.2.1 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

A.8.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD intra-frequency cell search requirements in section 8.1.2.2.2.1.

The test parameters are given in Table A.8.2.1.1-1 and A.8.2.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. PDCCHs indicating new transmissions or retransmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.2.1.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One TDD carrier frequency is used.
Channel Bandwidth (BWchannel)	MHz	10	
A3-Offset	dB	-6	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		DRX_L	As specified in section A.3.3
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	5	

Parameter	Unit	Ce	ell 1	Ce	ell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1		1	
Number						
BW _{channel}	MHz		10		10	
OCNG Pattern defined						
in A.3.2.2.1 (OP.1		OP.	1 TDD	OP.2	2 TDD	
TDD) and in A.3.2.2.2						
(OP.2)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		-		_	
PHICH_RB	dB		0		0	
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94	
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	4	
Propagation Condition		ETU70				
Note 1: OCNG shall be used achieved for all OF Note 2: The resources for up Note 3: Interference from otl	DM symbols. olink transmission are a	ssigned to the L	and a constant to IE prior to the star	tal transmitted power		
and time and shall	be modelled as AWGN	of appropriate p	ower for $N_{_{oc}}$ to	be fulfilled.		
Note 4 RSRP and SCH RE	levels have been deriv	ed from other o	arameters for info	rmation nurnoses Th	nov are not settable	

Table A.8.2.1.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.2.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.2.2 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX

A.8.2.2.1 Test Purpose and Environment

The purpose of the two tests is to verify that the UE makes correct reporting of an event in DRX. The tests will partly verify the TDD-TDD intra-frequency cell search in DRX requirements in section 8.1.2.2.1.2.

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The test parameters are given in Tables A.8.1.3.1-1, A.8.1.3.1-2, A.8.1.3.1-3 and A.8.1.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

In Test 2 the uplink time alignent is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Parameter	Unit	Unit Value		Comment		
		Test 1	Test 2			
		DL Reference	Measurement			
PDSCH parameters		Channel R.0 T	DD	As specified in section A.3.1.1.2		
		DL Reference	Measurement			
PCFICH/PDCCH/PHICH		Channel R.6 T	DD	As specified in section A.3.1.2.2		
parameters						
Active cell		Cell 1				
Neighbour cell		Cell 2		Cell to be identified.		
E-UTRA RF Channel Number		1		One TDD carrier frequency is used.		
Channel Bandwidth (BW _{channel})	MHz	10				
A3-Offset	dB	-6				
CP length		Normal				
Special subframe configuration		6		As specified in table 4.2-1 in TS 36.211.		
				The same configuration in both cells		
Uplink-downlink configuration		1		As specified in table 4.2-2 in TS 36.211.		
				The same configuration in both cells		
Hysteresis	dB	0				
Time To Trigger	S	0				
Filter coefficient		0		L3 filtering is not used		
DRX		ON		ON		DRX related parameters are defined in
				Table A.8.2.2.1-3		
Time offset between cells		3 μs		Synchronous cells		
T1	S	5				
T2	S	5	30			

Table A.8.2.2.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Table A.8.2.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Cell 1		C	Cell 2
		T1	T2	T1	T2
E-UTRA RF Channel			1	1	
Number					
BW _{channel}	MHz	1	0		10
OCNG Pattern defined					
in A.3.2.2.1 (OP.1		OP.1	TDD	OP	.2 TDD
TDD) and in A.3.2.2.2					
(OP.2)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB		-		-
PHICH_RB	dB	0 0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$N_{_{oc}}$ Note 2	dBm/15 kHz			-98	
RSRP ^{Note 3}	dBm/15 kHz	-94	-94	-Infinity	-94
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	-1.46	-Infinity	-1.46
SCH_RP ^{Note 3}	dBm/15 kHz	-94	-94	-Infinity	-94
\hat{E}_s / N_{oc}	dB	4	4	-Infinity	4
Propagation Condition				ETU70	
Note 1: OCNG shall be used achieved for all OF Note 2: Interference from ot	DM symbols.				
	be modelled as AWGN				
Note 3: RSRP and SCH_RF	Plevels have been der		00		They are not settable

 Table A.8.2.2.1-3: DRX-Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1 Value	Test2 Value	Comment
onDurationTimer	psf1	psf1	As specified in section 6.3.2 in
drx-InactivityTimer	psf1	psf1	3GPP TS 36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section 10.1 in 3GPP TS 36.213.

 Table A.8.2.2.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

A.8.2.2.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

In Test 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 25600 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

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 one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.

NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.2.3 E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.2.3.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in section 8.1.2.2.4.

The test scenario comprises of one E-UTRA TDD carrier and two cells as given in tables A.8.2.3.1-1 and A.8.2.3.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

Table A.8.2.3.1-1: General test parameters for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidth (BWchannel)	MHz	10	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331.
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
T2	S	≤10	
Т3	S	5	

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			1	•
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.2.1 (OP.1 TDD) and		TDD	TDD	TDD	TDD	TDD	TDD
in A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0			0	
PHICH_RB	dB						
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
N_{oc} Note 2	dBm/15 KHz		•	-6	98		
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP ^{Note 3}	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
SCH_RP ^{Note3}	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
Propagation Condition			1	AW	GN		
Note 1: OCNG shall be us density is achieve Note 2: Interference from	sed such that both ed for all OFDM syr other cells and noi me and shall be mo	nbols. se sources	not specified	and a consta in the test is	nt total trans assumed to	be constar	t over
Note 3: RSRP and SCH_	RP levels have been neters themselves.	en derived fr					

Table A.8.2.3.1-2: Cell specific test parameters for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.2.3.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within [170] milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify_CGI, intra}$ + reporting delay

= 15 + [150] + 2ms from the start of T3

= [167] ms, allow [170] ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until [170] ms at least [47] ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall [47] ACK/NACK number is caused by two parts. Firstly, at least [35] ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement for UL/DL configuration #1 in Table 8.1.2.2.4.1-1 of Section 8.1.2.2.4.1. Secondly, given that continuous DL data allocation, additional [12] ACK/NACK shall be sent from the start of T3 until [170] ms excludes [150] ms for identifying the cell global identifier of cell 2.

A.8.2.4 E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

A.8.2.4.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in section 8.1.2.2.4. The requirement is verified in a DRX configuration.

The test scenario comprises of one E-UTRA TDD carrier and two cells as given in tables A.8.2.4.1-1, A.8.2.4.1-2, A.8.2.4.1-3 and A.8.2.4.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Table A.8.2.4.1-1: General test parameters for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidth (BWchannel)	MHz	10	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.2.4.1-3
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331.
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
Τ2	S	≤30	UE should report cell within 25.6s (20 DRX cycles)
ТЗ	S	5	

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.2.1 (OP.1 TDD) and		TDD	TDD	TDD	TDD	TDD	TDD
in A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0			0	
PHICH_RB	dB						
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
$N_{_{oc}}$ Note 2	dBm/15 KHz			-9	98		
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP ^{Note 3}	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
SCH RP Note3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
Propagation Condition				AW	'GN		
	ed such that both	cells are full	v allocated a		-	mitted powe	r spectral
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 $N_{ac}^{}$ to be fulfilled.							
	RP levels have been neters themselves.		om other pa	rameters for	information	purposes. T	hey are

Table A.8.2.4.1-2: Cell specific test parameters for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

 Table A.8.2.4.1-3: DRX configuration for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
onDurationTimer	psf1	As specified in section 6.3.2 in
drx-InactivityTimer	psf1	3GPP TS 36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.2.4.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN TDD - TDD Intra frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
TimeAlignmentTimer	sf1280	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

A.8.2.4.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within [170] milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify CGI, intra}$ + reporting delay

= 15 + [150] + 2ms from the start of T3

= [167] ms, allow [170] ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.2.5 E-UTRAN TDD-TDD Intra-Frequency Event-Triggered Reporting under Time Domain Measurement Resource Restriction with Non-MBSFN ABS

A.8.2.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects and reports Event A3 (Neighbour becomes offset better than PCell) defined in [2] within the requirements specified in Section 8.1.2.8.2.1 under a time domain measurement resource restriction and non-MBSFN ABS configured in the aggressor cell.

The test parameters are given in Tables A.8.2.5.1-1 and A.8.2.5.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Event A3 is used. In the test there are two synchronous cells, Cell 1 and Cell 2, on the same RF channel. Cell 1 is the PCell, and it is also the aggressor cell to Cell 2. Cell 2 is the cell to be identified. The test consists of two successive time periods with time duration of T1 and T2, respectively. During time duration T1, the UE shall not have any timing information on Cell 2.

Non-MBSFN ABS pattern is configured for Cell 1 during the test. The UE is configured by higher layers via Cell 1 with a time domain measurement resource restriction pattern for performing E-UTRAN TDD intra-frequency measurements on neighbour cells. The UE is also configured with a time domain measurement resource restriction pattern for the PCell measurements. The information for both measurement patterns shall be provided to the UE via higher layers during T1.

Table A.8.2.5.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under time domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Value	Comment
		DL Reference Measurement	
PDSCH parameters		Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters Note 1		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
PCell		Cell 1	Also the aggressor cell. Active in T1 and T2
Neighbour cell		Cell 2	Cell to be identified. Active only in T2.
E-UTRA RF Channel Number		1	One TDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
A3-Offset	dB	[-11]	
Event A3 measurement quantity	üD	RSRP	
CP length		Normal	
Special subframe configuration		6	As specified in Table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in Table 4.2-2 in TS 36.211. The same configuration in both cells
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	5	
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6 != 0	Cell PCIs are selected so that the condition is met
ABS pattern		'000000001000000001'	TDD ABS Pattern Info IE, as defined in TS 36.423, clause 9.2.54. Configured in Cell 1 during T1. The first/leftmost bit corresponds to the subframe #0 of the radio frame satisfying SFN mod 20 = 0. No MBSFN subframes are cofigured in the ABS subframes.
Time domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1		'000000001000000001'	Time domain measurement resource restriction pattern for neighbor cell measurement signalled to the UE in measSubframePattern-Neigh IE in measSubframePatternConfig-Neigh, as defined in TS 36.331, clause 6.3.5. Configured during T1 for Cell 2 measurements.
Time domain measurement resource restriction pattern for PCell measurements		'100000000100000000'	Configured during T1 for Cell 1 measurements

Table A.8.2.5.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered
reporting under time domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Cell 1		Cell 2		
		T1	T2	T1	T2	
E-UTRA RF Channel			1		1	
Number						
BW _{channel}	MHz	1	0		10	
OCNG Pattern defined						
in A.3.2.2.1 (OP.1		OP.1	TDD	OP.	2 TDD	
TDD) and in A.3.2.2.2						
(OP.2)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	()		0	
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{}$ Note 3	dBm/15 kHz			-98		
$(\hat{E}_s / N_{oc})_{meas}$ Note 5	dB	1	1	-Infinity	-4	
$(\hat{E}_{s}/N_{oc})_{ABS}$	dB	1	1	N/A	N/A	
RSRP ^{Note 4}	dBm/15 kHz	-97	-97	-Infinity	-102	
SCH_RP ^{Note 4}	dBm/15 kHz	-97	-97	-Infinity	-102	
CRS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	1	-0.5	-Infinity	-7.5	
SCH $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	1	1	-Infinity	-4	
Propagation Condition			E	TU30		
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. There is no PDSCH allocated in Cell 1 during ABS subframes. Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: 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 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Note 5: RSPP is estimated for Cell 2 during the restricted measurement subframes for neighbour cells. RSPP is estimated for Cell 1 during the PCell restricted subframes.						

A.8.2.5.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for Cell 2, with a measurement reporting delay less than 1000 ms 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% for the tested Event A3.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.3 E-UTRAN FDD - FDD Inter-frequency Measurements

A.8.3.1 E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

A.8.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD-FDD inter-frequency cell search requirements in section 8.1.2.3.

The test parameters are given in Tables A.8.3.1.1-1 and A.8.3.1.1-2. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.3.1.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
E-UTRA RF Channel		1, 2	Two FDD carrier frequencies are used.
Number			
Channel Bandwidth	MHz	10	
(BW _{channel})			
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Parameter	Unit	Cell 1		C	ell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1		2	
Number						
BW _{channel}	MHz	1	0		10	
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OP.	2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB			0		
PHICH_RB	dB)			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_{s}/I_{ot}	dB	4	4	-Infinity	7	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	7	
Propagation Condition				ETU70		
Note 1: OCNG shall be used achieved for all OF Note 2: The resources for up	DM symbols. plink transmission are	assigned to the U	E prior to the sta	rt of time period T2.		
Note 3: Interference from ot	her cells and noise sou	•			t over subcarriers	

Table A.8.3.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

and time and shall be modelled as AWGN of appropriate power for $\,N_{_{oc}}\,$ to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.3.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.3.2 E-UTRAN FDD-FDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

A.8.3.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These test will partly verify the FDD-FDD inter-frequency cell search requirements when DRX is used in section 8.1.2.3.

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The common test parameters are given in Tables A.8.3.2.1-1 and A.8.3.2.1-2. DRX configuration for Test1 and Test2 are given in Table A.8.3.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.3.2.1-4. In this tests, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The tests consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Test 1	Test 2	Comment	
		Value			
PDSCH parameters		DL Reference Measurement		As specified in section A.3.1.1.1 Note that	
		Channel R.0 FDD)	UE may only be allocated at On Duration	
PCFICH/PDCCH/PHICH		DL Reference Me	easurement	As specified in section A.3.1.2.1.	
parameters		Channel R.6 FDD)		
E-UTRA RF Channel		1,	2	Two FDD carrier frequencies are used.	
Number					
Channel Bandwidth	MHz	1	0		
(BW _{channel})					
Active cell		Ce	1	Cell 1 is on RF channel number 1	
Neighbour cell		Ce	2	Cell 2 is on RF channel number 2	
Gap Pattern Id		0		As specified in 3GPP TS 36.133 section 8.1.2.1.	
A3-Offset	dB	-6			
Hysteresis	dB	()		
CP length		Nor	mal		
TimeToTrigger	S	()		
Filter coefficient		()	L3 filtering is not used	
PRACH configuration		4	1	As specified in table 5.7.1-2 in TS 36.211	
Access Barring Information	-	Not	Sent	No additional delays in random access	
, i i i i i i i i i i i i i i i i i i i				procedure.	
DRX		ON		DRX related parameters are defined in	
				Table A.8.3.2.1-3	
Time offset between cells		3 ו	ns	Asynchronous cells	
T1	S	Ļ	5		
T2	S	5	30		

Table A.8.3.2.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Parameter	Unit	Ce	Cell 1		Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel			1		2		
Number							
BW _{channel}	MHz	1	0		10		
OCNG Patterns							
defined in A.3.2.1.1		OP.1	FDD	OF	2.2 FDD		
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		-				
PHICH_RB	dB		0		0		
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{\rm Note \; 2}$	dBm/15 kHz			-98			
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	7		
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91		
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	7		
Propagation Condition	ETU70						
Note 1: OCNG shall be used		are fully allocated	and a constant to	tal transmitted pow	er 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 AWGI	N of appropriate po	ower for N_{ac} to	be fulfilled.			
Note 3: RSRP and SCH_RF	and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.						

Table A.8.3.2.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Table A.8.3.2.1-3: drx-Configuration to be used in E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.8.3.2.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* -Configuration to be used in E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213

A.8.3.2.2 Test Requirements

In Test1 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 20*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

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 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report

A.8.3.3 E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

A.8.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in DRX when L3 filtering is used. This test will partly verify the FDD-FDD inter-frequency cell search in DRX requirements in section 8.1.2.3.1.2 and the UE behaviour with the *filterCoefficent* defined in [2].

The test parameters are given in Tables A.8.3.3.1-1, A.8.3.3.1-2, A.8.3.3.1-3 and A.8.3.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and the filter coefficient is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 1 as defined in Table 8.1.2.1-1 is provided.

The uplink time aligment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Table A.8.3.3.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1, 2	Two FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Neighbour A3-Offset Ofn	dB	-14	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		9	L3 filtering is used
DRX		ON	DRX related parameters are defined in Table A.8.3.3.1-3
Time offset between cells		3 ms	Asynchronous cells
T1	S	30	
T2	S	7	

Table A.8.3.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Parameter	Unit	Ce	Cell 1		Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel			2				
Number							
BW _{channel}	MHz	1	0		10		
OCNG Patterns							
defined in A.3.2.1.1			FDD		.2 FDD		
(OP.1 FDD) and in		01.1			.2100		
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	()		0		
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	4	4	4	24		
$N_{oc}^{ m Note 2}$	dBm/15 KHz			-98			
\hat{E}_s/N_{oc}	dB	4	4	4	24		
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-74		
SCH_RP ^{Note 3}	dBm/15 KHz	-94	-94	-94	-74		
Propagation Condition		AWGN					
Note 1: OCNG shall be used achieved for all OF Note 2: Interference from ot	DM symbols.	-					
and time and shall	be modelled as AWGI	N of appropriate po	ower for $N_{\rm c}$ to	be fulfilled.			
Note 3: RSRP and SCH_RF parameters themse	P levels have been der		00		They are not settable		

Table A.8.3.3.1-3: DRX-Configuration for E-UTRAN FDD-FDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Field	Value	Comment
onDurationTimer	psf1	As specified in section 6.3.2 in
drx-InactivityTimer	psf1	3GPP TS 36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.3.3.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

A.8.3.3.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 6400 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

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 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.3.4 E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in section 8.1.2.3.5.

The test scenario comprises of two E-UTRA FDD carriers and one cell on each carrier as given in tables A.8.3.4.1-1 and A.8.3.4.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE. Measurement gaps shall be deconfigured before the start of T3.

Table A.8.3.4.1-1: General test parameters for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
E-UTRA RF channel number		1, 2	Two FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1.
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2.
CP length		Normal	
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331.
Time offset between cells	ms	3	Asynchronous cells
T1	S	5	
T2	S	≤10	
Т3	S	5	

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel			1	•		2	
Number							
BW _{channel}	MHz		10	-		10	
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.1.1 (OP.1 FDD) and		FDD	FDD	FDD	FDD	FDD	FDD
in A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0			0	
PHICH_PB	dB						
PDCCH_RA	dB						
PDCCH_PB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB		-	-			
\hat{E}_{s}/I_{ot}	dB	4	4	4	-Infinity	7	7
$N_{_{oc}}$ Note 2	dBm/15 KHz			-9	8		
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7
RSRP ^{Note 3}	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
SCH_RP ^{Note3}	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
Propagation Condition							
Note 1: OCNG shall be used suc achieved for all OFDM Note 2: Interference from other of	symbols.	-					
and shall be modelled a							
Note 3: RSRP and SCH_RP lev	els have been derive	d from other p	parameters for	information p	urposes. The	y are not setta	ble

Table A.8.3.4.1-2: Cell specific test parameters for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.3.4.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within [170] milliseconds from the start of T3.

 $Test \ requirement = RRC \ Procedure \ delay + \ T_{identify_CGI, inter} + reporting \ delay$

= 15 + [150] + 2ms from the start of T3

= [167] ms, allow [170] ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until [170] ms at least [80] ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall [80] ACK/NACK number is caused by two parts. Firstly, at least [60] ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Section 8.1.2.3.5.1. Secondly, given that continuous DL data allocation, and the measurement gaps have been deconfigured before the start of T3, additional [20] ACK/NACK shall be sent from the start of T3 until [170] ms excludes [150] ms for identifying the cell global identifier of cell 2.

A.8.3.5 E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in section 8.1.2.3.5. The requirement is verified in a DRX configuration.

The test scenario comprises of two E-UTRA FDD carriers and one cell on each carrier as given in tables A.8.3.5.1-1, A.8.3.5.1-2, A.8.3.5.1-3 and A.8.3.5.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE. Measurement gaps shall be deconfigured before the start of T3.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Table A.8.3.5.1-1: General test parameters for E-UTRAN FDD - FDD Inter-frequency identification of a
new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
E-UTRA RF channel number		1, 2	Two FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1.
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2.
CP length		Normal	
Gap Pattern Id		0	As specified in 3GPP TS 36.133
			section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.3.5.1-3
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331.
Time offset between cells	ms	3	Asynchronous cells
T1	S	5	
Τ2	S	≤30	UE should report cell within 25.6s (20 DRX cycles)
ТЗ	S	5	

Table A.8.3.5.1-2: Cell specific test parameters for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel			1		2		
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.1.1 (OP.1 FDD) and		FDD	FDD	FDD	FDD	FDD	FDD
in A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0			0	
PHICH_PB	dB						
PDCCH_RA	dB						
PDCCH_PB	dB						
PDSCH_RA	dB						
PDSCH RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	4	4	4	-Infinity	7	7
N_{oc} Note 2	dBm/15 KHz		•	-9	8		
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7
RSRP ^{Note 3}	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
SCH_RP ^{Note3}	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
Propagation Condition				AW	GN		
Note 1: OCNG shall be used suc achieved for all OFDM Note 2: Interference from other of	symbols.	-					
and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be fulfilled.							
Note 3: RSRP and SCH_RP lev parameters themselves	els have been derive				urposes. The	y are not setta	able

Table A.8.3.5.1-3: DRX configuration for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
onDurationTimer	psf1	As specified in section 6.3.2 in
drx-InactivityTimer	psf1	3GPP TS 36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.3.5.1-4: TimeAlignmentTimer -Configuration for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
TimeAlignmentTimer	sf1280	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

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A.8.3.5.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within [170] milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify CGI, inter}$ + reporting delay

= 15 + [150] + 2ms from the start of T3

= [167] ms, allow [170] ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.4 E-UTRAN TDD - TDD Inter-frequency Measurements

A.8.4.1 E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

A.8.4.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD-TDD inter-frequency cell search requirements in section 8.1.2.3.4.

The test parameters are given in Table A.8.4.1.1-1 and A.8.4.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.4.1.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
		DL Reference Measurement	
PDSCH parameters		Channel R.0 TDD	As specified in section A.3.1.1.2
		DL Reference Measurement	
PCFICH/PDCCH/PHICH		Channel R.6 TDD	As specified in section A.3.1.2.2
parameters			
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in 3GPP TS 36.211 section 4.2 Table 4.2-2
CP length		Normal	
E-UTRA RF Channel Number		1, 2	Two TDD carrier frequencies are used.
Channel Bandwidth (BWchannel)	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	10	

Parameter	Unit	Ce	Cell 1 T1 T2		ll 2		
		T1			T2		
E-UTRA RF Channel				2			
Number							
BW _{channel}	MHz	1	0	1	0		
OCNG Pattern defined							
in A.3.2.2.1 (OP.1		OP.1	TDD	OP.2	TDD		
TDD) and in A.3.2.2.2							
(OP.2)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB				^		
PHICH_RB	dB	0 0)		
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7		
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98			
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91		
SCH_RP ^{Note 4}	dBm/15 kHz	-94	-94	-infinity	-91		
\hat{E}_{s}/N_{oc}	dB	-94 -94 -infinity -91 4 4 -Infinity 7					
Propagation Condition				ETU70			
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: The resources for uplink transmission are assigned to the UE priori to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers							
	her cells and holse sol be modelled as AWGN				over subcarriers		

Table A.8.4.1.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.4.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.4.2 E-UTRAN TDD-TDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in synchronous cells

A.8.4.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These test will partly verify the TDD-TDD inter-frequency cell search requirements when DRX is used in section 8.1.2.3.

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The common test parameters are given in Tables A.8.4.2.1-1 and A.8.4.2.1-2. DRX configuration for Test1 and Test2 are given in Table A.8.4.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.4.2.1-4. In these tests, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignent timer to keep UE uplink time alignend. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignent is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The tests consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Test 1	Test 2	Comment	
		Value			
PDSCH parameters		DL Reference Measurement		As specified in section A.3.1.1.2. Note that	
		Channel R.0 TDD)	UE may only be allocated at On Duration	
PCFICH/PDCCH/PHICH		DL Reference Me	asurement	As specified in section A.3.1.2.2.	
parameters		Channel R.6 TDD			
E-UTRA RF Channel		1,	2	Two TDD carrier frequencies are used.	
Number					
Channel Bandwidth	MHz	1	0		
(BW _{channel})					
Active cell		Ce	∥1	Cell 1 is on RF channel number 1	
Neighbour cell		Ce	2	Cell 2 is on RF channel number 2	
Gap Pattern Id		()	As specified in 3GPP TS 36.133 section	
-				8.1.2.1.	
Uplink-downlink		1		As specified in 3GPP TS 36.211 section	
configuration				4.2 Table 4.2-2	
Special subframe		6		As specified in table 4.2-1 in TS 36.211.	
configuration				The same configuration in both cells	
A3-Offset	dB	-6			
Hysteresis	dB	0			
CP length		Nor	mal		
TimeToTrigger	S	()		
Filter coefficient		()	L3 filtering is not used	
PRACH configuration		4	1	As specified in table 5.7.1-3 in TS 36.211	
Access Barring Information	-	Not Sent		No additional delays in random access	
				procedure.	
DRX		ON		DRX related parameters are defined in	
				Table A.8.4.2.1-3	
Time offset between cells		3 μs		Synchronous cells	
T1	S	5	5		
T2	S	5	30		

Table A.8.4.2.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Parameter	Unit	Ce	1	0	Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel					2		
Number							
BW _{channel}	MHz	1	0		10		
OCNG Patterns							
defined in A.3.2.1.1		OP.1	TDD	OP	.2 TDD		
(OP.1 TDD) and in							
A.3.2.1.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB	-					
PSS_RA	dB	-					
SSS_RA	dB	-					
PCFICH_RB	dB	-					
PHICH_RA	dB		`				
PHICH_RB	dB	(0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB	-					
OCNG_RB ^{Note 1}	dB						
$N_{_{oc}}$ Note 2	dBm/15 kHz			-98			
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91		
\hat{E}_{s}/I_{ot}	dB	4	4	-Infinity	7		
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91		
\hat{E}_s / N_{oc}	dB	4	4	-Infinity	7		
Propagation Condition		ETU70					
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 SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.							

Table A.8.4.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Table A.8.4.2.1-3: drx-Configuration to be used in E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1 Value	Test2 Value	Comment
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.8.4.2.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* -Configuration to be used in E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1 Value	Test2 Value	Comment		
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.		
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and 10.1 in 3GPP TS 36.213.		

A.8.4.2.2 Test Requirements

In Test1 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 20*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

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 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report

A.8.4.3 E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions in synchronous cells with DRX when L3 filtering is used

A.8.4.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in DRX when L3 filtering is used. This test will partly verify the TDD-TDD inter-frequency cell search in DRX requirements in section 8.1.2.3.2.2 and the UE behaviour with the filterCoefficent defined in [2].

The test parameters are given in Tables A.8.4.3.1-1, A.8.4.3.1-2, A.8.4.3.1-3 and A.8.4.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and the filter coefficient is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 1 as defined in Table 8.1.2.1-1 is provided.

The uplink time aligment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Table A.8.4.3.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.2
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2
parameters		Channel R.6 TDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1, 2	Two TDD carrier frequencies are
			used.
Channel Bandwidth (BW _{channel})	MHz	10	
Time offset between cells	μs	3	synchronous cells
Gap Pattern Id		1	As specified in 3GPP TS 36.133
			section 8.1.2.1.
Uplink-downlink configuration		1	As specified in table 4.2.2 in TS
of cells			36.211
Special subframe configuration		6	As specified in table 4.2.1 in TS
of cells			36.211
Neighbour A3-Offset Ofn	dB	-14	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		9	L3 filtering is used
DRX		ON	DRX related parameters are
			defined in Table A.8.4.3.1-3
T1	S	30	
T2	S	7	

	Parameter	Unit	(Cell 1	C	ell 2	
			T1	T2	T1	T2	
E-UT	RA RF Channel Number		1		2		
BW _{cha}	annel	MHz	1	0	1	0	
OCN	G Patterns defined in A.3.2.2.1		OP.1 TDD		OP.2 TDD		
	DP.1 TDD) and in A.3.2.2.2 (OP.2 DD)						
PBCH	H_RA	dB					
PBCH	H_RB	dB					
PSS_	RA	dB					
SSS_	RA	dB					
PCFI	CH_RB	dB					
PHIC	H_RA	dB					
PHIC	H_RB	dB		0	()	
PDCC	CH_RA	dB					
PDCC	CH_RB	dB					
PDSC	CH_RA	dB	-				
PDSC	CH_RB	dB					
OCN	G_RA ^{Note 1}	dB					
OCN	G_RB ^{Note 1}	dB	7				
\hat{E}_{s}/I	ot	dB	4	4	4	24	
N _{oc}	Note 2	dBm/15 KHz		-{	98		
\hat{E}_s/L		dB	4	4	4	24	
RSRF	Note 3	dBm/15 KHz	-94	-94	-94	-74	
SCH	RP ^{Note 3}	dBm/15 KHz	-94	-94	-94	-74	
Propa	agation Condition			AW	/GN		
Note 1:	OCNG shall be used such that bo	th cells are fully all	ocated and	a constant to	tal transmitte	d power	
	spectral density is achieved for all						
Note 2:	Interference from other cells and r		specified in t	he test is as	sumed to be	constant	
	over subcarriers and time and sha		-				
	fulfilled.						
Note 3:	RSRP and SCH_RP levels have b		other param	eters for info	rmation purp	oses. They	
	are not settable parameters thems	Seives.					

Table A.8.4.3.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used

Table A.8.4.3.1-3: DRX-Configuration for E-UTRAN TDD-TDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions with DRX when L3 filtering is used

Field	Value	Comment
onDurationTimer	psf1	As specified in section 6.3.2 in 3GPP TS 36.331
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	sf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.4.3.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD-TDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions with DRX when L3 filtering is used

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

A.8.4.3.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 6400 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of

time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

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 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report

A.8.4.4 E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.4.4.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in section 8.1.2.3.7.

The test scenario comprises of two E-UTRA TDD carriers and one cell on each carrier as given in tables A.8.4.4.1-1 and A.8.4.4.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE. Measurement gaps shall be deconfigured before the start of T3.

Table A.8.4.4.1-1: General test parameters for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters		Channel R.0 TDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.1
E-UTRA RF channel number		1, 2	Two TDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1.
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2.
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331.
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
T2	S	≤10	
Т3	S	5	

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			2	•
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.2.1 (OP.1 TDD) and		TDD	TDD	TDD	TDD	TDD	TDD
in A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0			0	
PHICH_RB	dB						
PDCCH RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB	1					
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	4	4	4	-Infinity	7	7
$N_{oc}^{}$ Note 2	dBm/15 KHz			-9	8		
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7
RSRP ^{Note 3}	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
SCH_RP ^{Note3}	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
Propagation Condition			•	AW	GN		•
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 til	me and shall be me	odelled as A	WGN of app	ropriate pow	ver for N_{oc}	to be fulfilled	Ι.
	RP levels have been neters themselves.		om other pai	rameters for	information	purposes. T	hey are

Table A.8.4.4.1-2: Cell specific test parameters for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.4.4.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within [170] milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify_CGI, inter}$ + reporting delay

= 15 + [150] + 2ms from the start of T3

= [167] ms, allow [170] ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until [170] ms at least [42] ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall [42] ACK/NACK number is caused by two parts. Firstly, at least [30] ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Section 8.1.2.3.7.1. Secondly, given that continuous DL data allocation, and the measurement gaps have been deconfigured before the start of T3, additional [12] ACK/NACK shall be sent from the start of T3 until [170] ms excludes [150] ms for identifying the cell global identifier of cell 2.

A.8.4.5 E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

A.8.4.5.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in section 8.1.2.3.7. The requirement is verified in a DRX configuration.

The test scenario comprises of two E-UTRA TDD carriers and one cell on each carrier as given in tables A.8.4.5.1-1, A.8.4.5.1-2, A.8.4.5.1-3 and A.8.4.5.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE. Measurement gaps shall be deconfigured before the start of T3.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.1
E-UTRA RF channel number		1, 2	Two TDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1.
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2.
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.4.5.1-3
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331.
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
Τ2	S	≤30	UE should report cell within 25.6s (20 DRX cycles)
T3	S	5	

Table A.8.4.5.1-1: General test parameters for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			2	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.2.1 (OP.1 TDD) and		TDD	TDD	TDD	TDD	TDD	TDD
in A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0			0	
PHICH_RB	dB						
PDCCH_RA	dB						
PDCCH RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	4	4	4	-Infinity	7	7
$N_{_{oc}}$ Note 2	dBm/15 KHz			-9	98		•
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7
RSRP ^{Note 3}	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
SCH RP ^{Note3}	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
Propagation Condition		0.	•	AW		0.	0.
	ed such that both	cells are full	v allocated a			mitted powe	r spectral
density is achieve Note 2: Interference from	d for all OFDM syr other cells and noi me and shall be me	nbols. se sources	not specified	in the test is	assumed to	be constan	t over
Note 3: RSRP and SCH_I	RP levels have been neters themselves	en derived fr			00		

Table A.8.4.5.1-2: Cell specific test parameters for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

 Table A.8.4.5.1-3: DRX configuration for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
onDurationTimer	psf1	As specified in section 6.3.2 in
drx-InactivityTimer	psf1	3GPP TS 36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

 Table A.8.4.5.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
TimeAlignmentTimer	sf1280	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

A.8.4.5.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within [170] milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify CGI, inter}$ + reporting delay

= 15 + [150] + 2ms from the start of T3

= [167] ms, allow [170] ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.5 E-UTRAN FDD - UTRAN FDD Measurements

A.8.5.1 E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions

A.8.5.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN FDD- UTRAN FDD cell search requirements in section 8.1.2.4.1.

The test parameters are given in Tables A.8.5.1.1-1, A.8.5.1.1-2 and A.8.5.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.5.1.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in section A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided
			in the cell list.
T1	S	5	
T2	S	6	

Parameter	Unit	Cell 1				
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Pattern defined in						
A.3.2.1.1 (OP.1 FDD)		OP.1 F	DD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
\hat{E}_s/N_{oc}	dB	4	4			
N _{oc}	dBm/15 kHz	-98				
RSRP	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		ETU	70			
Note 1: OCNG shall be used	such that both ce	ells are fully allocated and a cons	tant total transmitted power			
spectral density is ac	hieved for all OF	DM symbols.				
Note 2: The resources for up	ink transmission	are assigned to the UE prior to the	he start of time period T2.			

Table A.8.5.1.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Table A.8.5.1.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell 2			
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.941			
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8		
I _{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-Infinity	-14		
Propagation Condition	Case 5 (Note 3)				
Note 1: The DPCH level is c					
Note 2: The power of the OC	NS channel that	is added shall make the total power	er from the cell to be equal		
to l _{or} .					
Note 3: Case 5 propagation	conditions are de	efined in Annex A of 3GPP TS 25.1	01.		

A.8.5.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 4800 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.5.2 E-UTRAN FDD - UTRAN FDD SON ANR cell search reporting under AWGN propagation conditions

A.8.5.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of the strongest UTRAN cell for SON automatic neighbour relations. This test will partly verify the E-UTRAN FDD - UTRAN FDD cell search requirements for identification of a new UTRA FDD cell for SON given in section 8.1.2.4.7.1.

The test parameters are given in Tables A.8.5.2.1-1, A.8.5.2.1-2 and A.8.5.2.1-3 below. In the measurement control information it is indicated to the UE that periodical reporting with the purpose 'reportStrongestCellsForSON' is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. Prior to the start of time period T1, an interRATperiodic measurement reporting configuration with purpose reportStrongestCellsForSON is configured, and linked to a UTRA measurement object corresponding to channel UARFCN 1. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.5.2.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD cell search reporting for SON ANR in AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in section A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		None	No explicit neighbour list is provided to the UE
T1	S	>5	During T1, cell 2 shall be powered off, and
			during the off time the primary scrambling
			code 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	6	

Parameter	Unit	Cell 1			
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10			
OCNG Pattern defined in					
A.3.2.1.1 (OP.1 FDD)		OP.1 FDD			
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB	7			
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB	1			
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{NOTE 1}	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4		
$N_{_{oc}}$ Note 3	dBm/15 kHz	-98	3		
\hat{E}_s/N_{oc}	dB	4	4		
RSRP ^{Note 4}	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWGN			
Note 1: OCNG shall be used spectral density is acl Note 2: The resources for upl	nieved for all OF ink transmission	ells are fully allocated and a cons DM symbols. are assigned to the UE prior to t sources not specified in the tes	he start of time period T2.		
		e modelled as AWGN of appropri			
fulfilled.	en derived from	other parameters for information			

Table A.8.5.2.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for UTRAN FDD cell search for SON ANR under AWGN propagation conditions

Table A.8.5.2.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for UTRAN FDD cell search for SON ANR under AWGN propagation conditions

Parameter	Unit	Unit Cell 2			
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.941			
\hat{I}_{or}/I_{oc}	dB	-Infinity	-3.35		
I _{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-Infinity	-15		
Propagation Condition		AWGN			
Note 1: The DPCH level is co					
Note 2: The power of the OC	NS channel that	is added shall make the total powe	r from the cell to be equal		
to I _{or} .					

A.8.5.2.2 Test Requirements

The UE shall send the first measurement report containing the primary scrambling code of cell 2, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The rate of correct measurement reports observed with this delay during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.5.3 E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

A.8.5.3.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN FDD-UTRAN FDD cell search requirements when DRX is used in section 8.1.2.4.1.2.

In these tests, there are two cells, one E-UTRAN cell and one UTRAN cell, and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The common test parameters are given in Table A.8.5.3.1-1. Cell specific test parameters are given in Table A.8.5.3.1-2 for E-UTRAN and in Table A.8.5.3.1-5 for UTRAN. DRX configuration for Test1 and Test2 are given in Table A.8.5.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.5.2.1-4.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.5.3.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used in fading propagation conditions

Parameter	Unit	Test 1	Test 2	Comment
		Va	lue	
PDSCH parameters (E-		DL Reference Me	easurement	As specified in section A.3.1.1.1 Note that
UTRAN FDD)		Channel R.0 FDD		UE may only be allocated at On Duration
PCFICH/PDCCH/PHICH		DL Reference Measurement		As specified in section A.3.1.2.1.
parameters (E-UTRAN FDD)		Channel R.6 FDD)	
Gap Pattern Id		()	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Ce	1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Ce	2	Cell 2 is on UTRA RF channel number 1.
CP length		Nor	mal	Applicable to cell 1
E-UTRA RF Channel				One E-UTRA FDD carrier frequency is
Number				used.
E-UTRA Channel Bandwidth	MHz	10		
(BW _{channel})				
UTRA RF Channel Number		1		One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH	I Ec/lo	
measurement quantity				
b1-Threshold-UTRA	dB	-1	-	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	(
TimeToTrigger	S	(
Filter coefficient		(L3 filtering is not used
PRACH configuration		4		As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	-	Not Sent		No additional delays in random access procedure.
DRX		ON		DRX related parameters are defined in Table A.8.5.3.1-3
Monitored UTRA FDD cell		1	2	UTRA cells on UTRA RF channel 1
list size				provided in the cell list.
T1	S	Ę	5	
T2	S	6	30	

Table A.8.5.3.1-2: Cell specific test parameters for E-UTRAN FDD (cell #1) event triggered reporting of UTRAN FDD cell when DRX is used under fading propagation conditions

Parameter	Unit	Cell	1		
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10			
OCNG Pattern defined in					
A.3.2.1.1 (OP.1 FDD)		OP.1 FDD			
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4		
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98	3		
RSRP ^{Note 3}	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
\hat{E}_s/N_{oc}	dB	4	4		
Propagation Condition		ETU	70		
Note 1: OCNG shall be used		ells are fully allocated and a cons	stant total transmitted power		
spectral density is ac	nieved for all OF	DM symbols.			
		e sources not specified in the tes			
over subcarriers and	time and shall be	e modelled as AWGN of appropr	iate power for N_{oc} to be		
fulfilled.					
	levels have beer	n derived from other parameters	for information purposes.		
They are not settable					

Table A.8.5.3.1-3: drx-Configuration to be used in E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	Disable	Disable	

Table A.8.5.3.1-4: TimeAlignmentTimer and sr-ConfigIndex -Configuration to be used in E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used in fading propagation conditions

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

Table A.8.5.3.1-5: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell when DRX is used under fading propagation conditions

Parameter	Unit	Cell 2	2			
		T1	T2			
UTRA RF Channel Number		1				
CPICH_Ec/lor	dB	-10				
PCCPCH_Ec/lor	dB	-12				
SCH_Ec/lor	dB	-12				
PICH_Ec/lor	dB	-15				
DPCH_Ec/lor	dB	N/A				
OCNS		-0.941				
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8			
I _{oc}	dBm/3.84 MHz	-70				
CPICH_Ec/lo	dB	-Infinity	-14			
Propagation Condition		Case 5 (Note 3)				
	The DPCH level is controlled by the power control loop.					
Note 2: The power of the OC	CNS channel that is added shall make the total power from the cell to be equal					
to I _{or} .	to I _{or} .					
Note 3: Case 5 propagation conditions are defined in Annex A of 3GPP TS 25.101.						

A.8.5.3.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 2400 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE sends the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 20*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

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 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

A.8.5.4 E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

A.8.5.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct enhanced reporting of UTRAN cells. This test will partly verify the Enhanced UTRA FDD cell identification requirements in section 8.1.2.4.1.1.1a.

The test parameters are given in Tables A.8.5.4.1-1, A.8.5.4.1-2 and A.8.5.4.1-3 below. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time period T1, gaps are activated and an interRAT measurement reporting configuration is configured, and linked to a UTRA measurement object corresponding to channel UARFCN 1. Prior to time duration T2, the UE shall not have any timing information of cell 2. Cell 2 is powered up at the beginning of the T2,

Table A.8.5.4.1-1: General test parameters for E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in section A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		None	No explicit neighbour list is provided to the UE
T1	S	5	
T2	S	2	

Parameter	Unit	Cell 1 T1 T2				
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Pattern defined in						
A.3.2.1.1 (OP.1 FDD)		OP.1 FDD				
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
$N_{_{oc}}$ Note 3	dBm/15 kHz	-98				
\hat{E}_s/N_{oc}	dB	4	4			
RSRP ^{Note 4}	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWO	3N			
Note 1: OCNG shall be used spectral density is ac Note 2: The resources for upl	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. The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Interference from other cells and noise sources not specified in the test is assumed to be constant					
over subcarriers and	time and shall be	e modelled as AWGN of appropri	ate power for $N_{_{oc}}$ to be			

Table A.8.5.4.1-2: Cell specific test parameters for cell #1 E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

Table A.8.5.4.1-3: Cell specific test parameters for cell #2 E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit	Cell 2				
		T1	T2			
UTRA RF Channel Number		1				
CPICH_Ec/lor	dB	-10				
PCCPCH_Ec/lor	dB	-12				
SCH_Ec/lor	dB	-12				
PICH_Ec/lor	dB	-15				
DPCH_Ec/lor	dB	N/A				
OCNS		-0.941				
\hat{I}_{or}/I_{oc}	dB	- ∞	0.02			
I _{oc}	dBm/3.84 MHz	-70				
CPICH_Ec/Io ^{Note 3}	dB	-∞	-13			
Propagation Condition		AWGN				
Note 1: The DPCH level is c	ontrolled by the p	ower control loop.				
Note 2: The power of the OC	CNS channel that	is added shall make the total power	from the cell to be equal			
to I _{or} .						
Note 3: This gives an SCH E	Ec/lo of -15dB					

A.8.5.4.2 Test Requirements

The UE shall send the first measurement report containing the primary scrambling code of cell 2, with a measurement reporting delay less than [960] ms from the beginning of time period T2. The rate of correct measurement reports observed with this delay during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH

A.8.6 E-UTRAN TDD - UTRAN FDD Measurements

A.8.6.1 E-UTRAN TDD - UTRAN FDD event triggered reporting under fading propagation conditions

A.8.6.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN TDD- UTRAN FDD cell search requirements in section 8.1.2.4.2.

The test parameters are given in Tables A.8.6.1.1-1, A.8.6.1.1-2 and A.8.6.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2.
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Special subframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211. Applicable to cell 1.
Uplink-downlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211. Applicable to cell 1.
CP length		Normal	Applicable to cell 1.
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD) measurement quantity		CPICH Ec/lo	
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
T1	S	5	
T2	S	6	

Table A.8.6.1.1-1: General test parameters for E-UTRAN TDD-UTRAN FDD event triggered reporting in fading propagation conditions

Parameter	Unit	Cell 1				
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Pattern defined in						
A.3.2.2.1 (OP.1 TDD)		OP.1 T	DD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
\hat{E}_s/N_{oc}	dB	4	4			
N _{oc}	dBm/15 kHz	-98				
RSRP	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		ETU	70			
Note 1: OCNG shall be used	such that both ce	ells are fully allocated and a cons	tant total transmitted power			
spectral density is achieved for all OFDM symbols.						
Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.						

Table A.8.6.1.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Table A.8.6.1.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell 2	2		
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.941			
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8		
I _{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-Infinity	-14		
Propagation Condition		Case 5 (Note 3)			
Note 1: The DPCH level is co	controlled by the power control loop.				
Note 2: The power of the OC	CNS channel that is added shall make the total power from the cell to be equal				
to I _{or} .					
Note 3: Case 5 propagation conditions are defined in Annex A of 3GPP TS 25.101.					

A.8.6.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 4800 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.7 E-UTRAN TDD – UTRAN TDD Measurements

A.8.7.1 E-UTRAN TDD to UTRAN TDD cell search under fading propagation conditions

- A.8.7.1.1 Test Purpose and Environment
- A.8.7.1.1.1 3.84 Mcps TDD option
- A.8.7.1.1.2 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRA TDD to UTRA TDD cell search requirements in section 8.1.2.4.3 under fading propagation conditions.

This test scenario comprised of 1 E-UTRA TDD PCell, and 1 UTRA TDD cell to be searched. Test parameters are given in Table A.8.7.1.1.2-1, A.8.7.1.1.2-2, and A.8.7.1.1.2-3. Gap pattern configuration #0 as defined in table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.2
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2
parameters		Channel R.6 TDD	
Active cell		Cell 1	E-UTRA TDD cell
Neighbour cell		Cell 2	UTRA 1.28Mcps TDD Cell
Gap Pattern Id		0	As specified in 3GPP TS 36.133
			section 8.1.2.1.
Uplink-downlink configuration of		1	As specified in table 4.2.2 in TS
cell 1			36.211
Special subframe configuration		6	As specified in table 4.2.1 in TS
of cell 1			36.211
CP length of cell 1		normal	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells		3 ms	Asynchronous cells
Ofn	dB	0	
Thresh	dBm	-87	
T1	S	5	
T2	S	10	

Table A.8.7.1.1.2-1: General test parameters for E-UTRA TDD to UTRA(1.28 Mcps TDD OPTION) cell search in fading propagation conditions

Table A.8.7.1.1.2-2: Cell specific test parameters for cell search E-UTRA TDD to UTRA TDD test case (cell 1)

Parameter	Unit	Cell 1	
		T1	T2
E-UTRA RF Channel			1
Number			
BW _{channel}	MHz	1	0
OCNG Pattern defined in			TDD
A.3.2.2.1 (OP.1 TDD)		01.1	שטו
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB]	
PDSCH_RB	dB]	
OCNG_RA ^{Note1}	dB]	
OCNG_RB ^{Note1}	dB		

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$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	9	9		
\hat{E}_{s}/N_{oc}	dB	9	9		
N _{oc}	dBm/15kHz	-98			
RSRP	dBm/15kHz	-89	-89		
SCH_RP	dBm/15kHz	-89	-89		
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: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.					

Table A.8.7.1.1.2-3: Cell specific test parameters for cell search E-UTRA TDD to UTRA TDD test case (cell 2)

Parameter	Unit	Cell 2 (UTRA)				
Timeslot Number		0		Dwl	PTS	
		T1	T2	T1	T2	
UTRA RF Channel Number ^{NOTE1}		Channel 2				
PCCPCH_Ec/lor	dB	-3	-3			
DwPCH_Ec/lor	dB			0	0	
OCNS_Ec/lor ^{NOTE2}	dB	-3	-3			
\hat{I}_{or}/I_{oc}	dB	-inf	5	-inf	5	
I _{oc}	dBm/1.28 MHz	-80				
PCCPCH RSCP	dBm	-inf	-78	n.a.	n.a.	
Propagation Condition		Case 3 ^{NOTE3}				
Note 1: In the case of m Number is the p					nel	
Number is the primary frequency's channel number. 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: Case 3 propagation conditions are defined in Annex B of 3GPP TS 25.102						

- A.8.7.1.1.3 7.68 Mcps TDD option
- A.8.7.1.2 Test Requirements
- A.8.7.1.2.1 3.84 Mcps TDD option
- A.8.7.1.2.2 1.28 Mcps TDD option

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 6400 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

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A.8.7.1.2.3 7.68 Mcps TDD option

A.8.7.2 E-UTRAN TDD-UTRAN TDD cell search when DRX is used under fading propagation conditions

A.8.7.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN TDD to UTRAN TDD inter-RAT cell search requirements when DRX is used in section 8.1.2.4.3.2 under fading propagation conditions.

The common test parameters are given in Tables A.8.7.2.1-1, A.8.7.2.1-2 and A.8.7.2.1-3. DRX configuration for Test1 and Test2 are given in Table A.8.7.2.1-4 and time alignment timer and scheduling request related parameters in Table A.8.7.2.1-5. In these tests, there are two cells, 1 E-UTRAN TDD PCell and 1 UTRAN TDD cell to be searched, Gap pattern configuration # 0 as defined in table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignent timer to keep UE uplink time alignend. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignent is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Test 1	Test 2	Comment		
		Va	lue			
PDSCH parameters		DL Reference Measurement		DL Reference Measurement Channel R.0 TDD		As specified in section A.3.1.1.2. Note that UE may only be allocated at On Duration
PCFICH/PDCCH/PHICH parameters		DL Reference Me Channel R.6 TDD		As specified in section A.3.1.2.2.		
Active cell		Cell 1		E-UTRAN TDD cell		
Neighbour cell		Cell 2		UTRAN 1.28Mcps TDD cell		
Gap Pattern Id		0		As specified in 3GPP TS 36.133 section 8.1.2.1.		
Uplink-downlink configuration		1		As specified in 3GPP TS 36.211 section 4.2 Table 4.2-2		
Special subframe configuration		6		As specified in table 4.2-1 in TS 36.211. The same configuration in both cells		
PRACH configuration		53		As specified in table 5.7.1-3 in 3GPP TS 36.211		
CP length of cell 1		Normal				
Ofn	dB	0				
Thresh	dBm	-83		Absolute P-CCPCH RSCP threshold for event B1		
Hysteresis	dB	0				
TimeToTrigger	S	0				
Filter coefficient		0		L3 filtering is not used		
Access Barring Information	-	Not Sent		No additional delays in random access procedure.		
DRX		ON		DRX related parameters are defined in Table A.8.4.2.1-3		
Time offset between cells		3 ms		Asynchronous cells		
T1	S	5				
T2	S	8	30			

Table A.8.7.2.1-1: General test parameters for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions

Pa	arameter	Unit	Ce	II 1	
			T1	T2	
E-UTRA	RF Channel			1	
Number					
BWchan	-	MHz		0	
	atterns defined		OP.1	TDD	
	.1 (OP.1 TDD)				
PBCH_R		dB	-		
PBCH_R		dB	-		
PSS_RA		dB	-		
SSS_RA		dB	-		
PCFICH_		dB	-		
PHICH_F		dB	-		
PHICH_F		dB	0	0	
PDCCH_		dB	-		
PDCCH_		dB			
PDSCH_		dB			
PDSCH_		dB	-		
OCNG_R		dB			
OCNG_R	BNote1	dB			
\hat{E}_{s}/I_{ot}		dB	4	4	
\hat{E}_s / N_{oc}		dB	4	4	
N _{oc} Note	e 2	dBm/15kHz	-98		
RSRP		dBm/15kHz	-94	-94	
SCH_RP	Note 3	dBm/15kHz	-94	-94	
Propagat	ion Condition		ET	U70	
Note 1:		used such that cel	I is fully allocat	ted and a	
Note 2:	for all OFDM syr	onstant total transmitted power spectral density is achie or all OFDM symbols. hterference from other cells and noise sources not spec			
	in the test is assumed to be constant over subcarriers a				
Note 3:	time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.				

Table A.8.7.2.1-2: Cell specific test parameters for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions(cell 1)

Table A.8.7.2.1-3: Cell specific test parameters for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions(cell 2)

Pa	arameter	Unit		Cell 2 (l	JTRA)		
Timeslot	Number		0		Dw	PTS	
			T1	T2	T1	T2	
UTRA RF Number N	Channel NOTE1			Chanr	nel 2		
PCCPCH	L_Ec/lor	dB	-3	-3			
DwPCH_		dB			0	0	
OCNS_E	c/lor ^{NOTE2}	dB	-3	-3			
\hat{I}_{or}/I_{oc}		dB	-inf 9		-inf	9	
I _{oc}	I _{oc} dBm/1.28 MHz			-80			
PCCPCH	RSCP	dBm	-inf	-74	n.a.	n.a.	
Propagat Condition			Case 3 ^{NOTE3}				
Note 1:		of multi-frequency cell, the UTRA RF Channel he primary frequency's channel number.					
Note 2:		of the OCNS channel that is added shall make the from the cell to be equal to lor.					
Note 3:		agation condition			nex B of	3GPP	

Table A.8.7.2.1-4: drx-Configuration to be used in E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.8.7.2.1-5: TimeAlignmentTimer and sr-ConfigIndex -Configuration to be used in E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
Field	Value Value		
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and 10.1 in 3GPP TS 36.213.

A.8.7.2.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 6400ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 25.6s from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

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 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

A.8.7.3 E-UTRAN TDD - UTRAN TDD SON ANR cell search reporting in AWGN propagation conditions

A.8.7.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of the strongest UTRAN TDD cell for SON automatic neighbour relations. This test will partly verify the E-UTRAN TDD - UTRAN TDD cell search requirements for identification of a new UTRA TDD cell for SON given in section 8.1.2.4.13.

In the measurement control information it is indicated to the UE that periodical reporting with the purpose 'reportStrongestCellsForSON' is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. Prior to the start of time period T1, an interRATperiodic measurement reporting configuration with purpose reportStrongestCellsForSON is configured, and linked to a UTRA measurement object corresponding to channel UARFCN 1. During time duration T1, the UE shall not have any timing information of cell 2.

A.8.7.3.2 Test Parameters

The test parameters are given in Tables A.8.7.3.1-1, A.8.7.3.1-2 and A.8.7.3.1-3.

Table A.8.7.3.1-1: General test parameters for E-UTRAN TDD-UTRAN TDD cell search reporting for SON ANR in AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
Inter-RAT (UTRA TDD) measurement quantity		P-CCPCH RSCP	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		None	No explicit neighbour list is provided to the UE
T1	S	>5	During T1, cell 2 shall be powered off, and during the off time the primary scrambling code 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	14	

Parameter	Unit	Ce	1		
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	1	0		
OCNG Patterns defined in		OP.1	חחד		
A.3.2.2.1 (OP.1 TDD)		UF.1	סטו		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	C)		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4		
$N_{_{oc}}$ Note 3	dBm/15 kHz	-9	8		
\hat{E}_{s}/N_{oc}	dB	4	4		
RSRP Note 4	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AW	GN		
Note 1: OCNG shall be used total transmitted power Note 2: The resources for upl of time period T2. Note 3: Interference from other	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. The resources for uplink transmission are assigned to the UE prior to the start				
	AWGN of appropriate power for N_{oc} to be fulfilled.				
Note 4: RSRP levels have bee purposes. They are n			nformation		

Table A.8.7.3.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for UTRAN TDD cell search for SON ANR under AWGN propagation conditions

Table A.8.7.3.1-3: Cell specific test parameters for UTRAN TDD (cell # 2) for UTRAN TDD cell search for SON ANR under AWGN propagation conditions

Parameter	Unit		Ce	ll 2	
		Т	1	T	2
UTRA RF Channel number Note2			Chan	nel 2	
DL timeslot number		0	DwPTS	0	DwPTS
PCCPCH_Ec/lor	dB	-3		-3	
DwPCH_Ec/lor	dB		0		0
OCNS_Ec/lor	dB	-3		-3	
Îor/loc	dB	-Infinity		5	
PCCPCH RSCP Note1	dBm	-Infinity	n.a.	-73	n.a.
Io Note1	dBm/1.28MHz	-Infinity -70.88).88
loc	dBm/1.28MHz		-7	' 5	
Propagation condition			AW	'GN	
Note 1: PCCPCH RSCP and lo le	CPCH 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					annel
Number can be set for the	e primary frequenc	cy in this te	st.		

A.8.7.3.3 Test Requirements

The UE shall send the first measurement report containing the physical cell identity of cell 2, with a measurement reporting delay less than 12800 ms from the beginning of time period T2.

The rate of correct measurement reports observed with this delay during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.7.4 E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

A.8.7.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct enhanced reporting of UTRAN TDD cells. This test will partly verify the Enhanced UTRA TDD cell identification requirements in section 8.1.2.4.3.1.1a under AWGN propagation conditions.

The test parameters are given in Tables A.8.7.4.1-1, A.8.7.4.1-2 and A.8.7.4.1-3 below. The test consists of two successive time periods of T1 and T2 respectively. During time period T1, measurement gaps are activated and an inter-RAT measurement reporting configuration is configured with linkage to a UTRA measurement object corresponding to UARFCN channel number 1. Prior to time duration T2, the UE shall not have any timing information of cell 2. Cell 2 is powered up at the beginning of T2.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E- UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2.
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Time offset between cells	ms	3	Asynchronous cells
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier
			frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	Applicable to cell 1
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
Inter-RAT (UTRA TDD) measurement quantity		P-CCPCH RSCP	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	-
Monitored UTRA TDD cell list size		None	No explicit neighbour list is provided to the UE
T1	s	5	
T2	S	2	

Table A.8.7.4.1-1: General test parameters for E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit	Cell	1			
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10)			
OCNG Pattern defined in						
A.3.2.2.1 (OP.1 TDD)		OP.1	TDD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
Noc Note 3	dBm/15 kHz	-98	8			
\hat{E}_{s}/N_{oc}	dB	4	4			
RSRP ^{Note 4}	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWO	GN			
Note 1: OCNG shall be used spectral density is acl		ells are fully allocated and a cons	stant total transmitted power			
Note 2: The resources for upl	ink transmission	ransmission are assigned to the UE prior to the start of time period T2.				
Note 3: Interference from othe	other cells and noise sources not specified in the test is assumed to be constant					
over subcarriers and	ers and time and shall be modelled as AWGN of appropriate power for $N_{_{oc}}$ to be					
fulfilled.	fulfilled.					
Note 4: RSRP levels have be settable parameters t		other parameters for information	purposes. They are not			

Table A.8.7.4.1-2: Cell specific test parameters for cell 1 in E-UTRAN TDD - UTRAN TDD enhanced cell identification test under AWGN propagation conditions

 Table A.8.7.4.1-3: Cell specific test parameters for cell 2 in E-UTRAN TDD - UTRAN TDD enhanced cell identification test under AWGN propagation conditions

Parameter	Unit		Cell 2 (U	FRA TDD)	
Timeslot Number		()	Dw	PTS
		T1	T2	T1	T2
UTRA RF Channel Number ^{Note1}			Char	nnel 1	
P-CCPCH_Ec/lor	dB	-4.77	-4.77		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor ^{Note2}	dB	-1.76	-1.76		
\hat{I}_{or}/I_{oc}	dB	-inf	8	-inf	8
I _{oc}	dBm/1.28 MHz		-8	30	
P-CCPCH RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.
P-CCPCH_Ec/Io Note3	dB	-inf	-5.41	n.a.	n.a.
DwPCH_Ec/Io Note3	dB	n.a.	n.a.	-inf	-0.64
Propagation Condition			AW	'GN	
Note 1: In the case of multi-frequence channel number.	In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's				
Note 2: The power of the OCNS cha	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: P-CCPCH RSRP. PCCPCH	to I _{or} . P-CCPCH RSRP, PCCPCH_Ec/Io and DwPCH_Ec/Io levels have been derived from other				
parameters for information p					

A.8.7.4.2 Test Requirements

The UE shall send the first measurement report containing the primary scrambling code of cell 2, with a measurement reporting delay less than 1120 ms 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 measurement reports observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH

A.8.8 E-UTRAN FDD – GSM Measurements

A.8.8.1 E-UTRAN FDD – GSM event triggered reporting in AWGN

A.8.8.1.1 Test Purpose and Environment

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 E-UTRAN FDD - GSM cell search requirements in section 8.1.2.4.5.

The test parameters are given in Tables A.8.8.1.1-1, A.8.8.1.1-2 and A.8.8.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1.
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
Inter-RAT (GSM) measurement quantity		GSM Carrier RSSI	
b1-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1	List of GSM cells provided before T2 starts.
T1	S	5	
T2	S	5	

Table A.8.8.1.1-1: General test parameters for E-UTRAN FDD-GSM event triggered reporting in AWGN

Parameter	Unit	Cell 1			
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10			
OCNG Pattern defined in					
A.3.2.1.1 (OP.1 FDD)		OP.1 F	-DD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4		
\hat{E}_s/N_{oc}	dB	4	4		
N _{oc}	dBm/15 kHz	-98			
RSRP	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWO			
Note 1: OCNG shall be used	such that both co	ells are fully allocated and a cons	stant total transmitted power		
spectral density is ac	nieved for all OF	DM symbols.			
Note 2: The resources for upl	ink transmission	are assigned to the UE prior to t	he start of time period T2.		

Table A.8.8.1.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for event triggered reporting of GSM cell in AWGN

Table A.8.8.1.1-3: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

A.8.8.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report including BSIC of cell # 2, with a measurement reporting delay less than 3120 ms 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 1: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

NOTE 2: The delay for GSM cell identification with BSIC verified is equal to 3120 ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay = $2*T_{\text{Measurement Period, GSM}} = 2*480\text{ms} = 960\text{ms}$.

Initial BSIC identification delay = 2160 ms.

A.8.8.2 E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

A.8.8.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN FDD-GSM cell search requirements when DRX is used in section 8.1.2.4.5.2.

In these tests, there are two cells, one E-UTRAN cell and one GSM cell, and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The common test parameters are given in Table A.8.8.2.1-1. Cell specific test parameters are given in Table A.8.8.2.1-2 for E-UTRAN and in Table A.8.8.2.1-5 for GSM. DRX configuration for Test1 and Test2 are given in Table A.8.8.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.8.2.1-4.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Test 1	Test 2	Comment
		Value		
PDSCH parameters (E-		DL Reference Measurement		As specified in section A.3.1.1.1.
UTRAN FDD)		Channel R.0 FDD		
PCFICH/PDCCH/PHICH		DL Reference Me		As specified in section A.3.1.2.1.
parameters (E-UTRAN FDD)		Channel R.6 FDD		
Gap Pattern Id)	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Ce	1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Ce	2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
CP length		Nor	mal	Applicable to cell 1
E-UTRA RF Channel				One E-UTRA FDD carrier frequency is
Number				used.
E-UTRA Channel Bandwidth	MHz	1	0	
(BW _{channel})				
Inter-RAT (GSM)		GSM Car	rier RSSI	
measurement quantity				
B1-Threshold-GERAN	dBm	-8	80	GSM Carrier RSSI threshold for event B1.
Hysteresis	dB	(
TimeToTrigger	S	()	
Filter coefficient		()	L3 filtering is not used
PRACH configuration		4	1	As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	-	Not Sent		No additional delays in random access procedure.
DRX		ON		DRX related parameters are defined in Table A.8.8.2.1-3
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1		List of GSM cells provided before T2 starts.
T1	S	Ę		
T2	S	5	45	

Table A.8.8.2.1-1: General test parameters for E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

Parameter	Unit	Cell 1				
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Pattern defined in						
A.3.2.1.1 (OP.1 FDD)		OP.1 F	DD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{NOTE 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
$N_{oc}^{\rm Note 2}$	dBm/15 kHz	-98				
RSRP ^{Note 3}	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
\hat{E}_s/N_{oc}	dB	4	4			
Propagation Condition		AWG	SN			
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 SCH_RP They are not settable		n derived from other parameters f mselves.	or information purposes.			

Table A.8.8.2.1-2: Cell specific test parameters for E-UTRAN FDD (cell #1) event triggered reporting of GSM cell when DRX is used in AWGN

Table A.8.8.2.1-3: drx-Configuration to be used in E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1	Test2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	Disable	Disable	

Note: For further information see section 6.3.2 in 3GPP TS 36.331.

Table A.8.8.2.1-4: TimeAlignmentTimer and sr-ConfigIndex -Configuration to be used in E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section 10.1 in 3GPP TS 36.213.

Table A.8.8.2.1-5: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell when DRX is used in AWGN

Parameter	Unit	Cell 2	
		T1	T2
Absolute RF Channel Number		ARFNC 1	
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

A.8.8.2.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report including BSIC of cell # 2, with a measurement reporting delay less than 3120 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 42.8 seconds from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

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 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

A.8.8.3 E-UTRAN FDD – GSM event triggered reporting in AWGN with enhanced BSIC identification

A.8.8.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter-RAT (GSM) measurements with enhanced BSIC identification. This test will partly verify the E-UTRAN FDD - GSM cell search requirements in section 8.1.2.4.5.1.2a

The test parameters are given in Tables A.8.8.3.1-1, A.8.8.1.1-2 and A.8.8.3.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. Prior time duration T1, the UE shall not have any timing information of cell 2. During time period T1, gaps are activated and an interRAT measurement reporting configuration is configured, and linked to a GSM measurement object including channel ARFCN 1. Cell 2 is powered up at the beginning of T2.

Table A.8.8.3.1-1: General test parameters for E-UTRAN FDD-GSM event triggered reporting in AWGN with enhanced BSIC identification

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1.
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
Inter-RAT (GSM) measurement quantity		GSM Carrier RSSI	
b1-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1	List of GSM cells provided before T2 starts.
T1	S	5	T1 ends at the end of the last TTI where the measurement configuration is given
T2	S	3	

Parameter	Unit	Cell 1			
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10			
OCNG Pattern defined in					
A.3.2.1.1 (OP.1 FDD)		OP.1 F	-DD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4		
\hat{E}_s/N_{oc}	dB	4	4		
N _{oc}	dBm/15 kHz	-98			
RSRP	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWO			
	such that both ce	ells are fully allocated and a cons	stant total transmitted power		
spectral density is acl	nieved for all OF	DM symbols.			
Note 2: The resources for upl	resources for uplink transmission are assigned to the UE prior to the start of time period T2.				

Table A.8.8.3.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for event triggered reporting of GSM cell in AWGN with enhanced BSIC identification

 Table A.8.8.3.1-3: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell in AWGN with enhanced BSIC identification

Parameter	Unit	Cell 2	
		T1	T2
Absolute RF Channel Number		ARFCN 1	
RXLEV	dBm	-∞	-75
GSM BSIC		N/A	Valid

A.8.8.3.2 Test Requirements

The UE shall send one Event B1 triggered measurement report including BSIC of cell # 2, with a measurement reporting delay less than [2280] ms 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 1: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.
- NOTE 2: The delay for GSM cell identification with BSIC verified is equal to 2280 ms, which is the sum of the event triggered measurement reporting delay and the enhanced initial BSIC identification delay.

The event triggered measurement reporting delay = $2*T_{\text{Measurement Period, GSM}} = 2*480 \text{ms} = 960 \text{ms}.$

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Initial BSIC identification delay = 1320 ms.

A.8.9 E-UTRAN FDD - UTRAN TDD measurements

A.8.9.1 E-UTRAN FDD - UTRAN TDD event triggered reporting in fading propagation conditions

A.8.9.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. The test will partly verify the E-UTRAN FDD - UTRAN TDD cell search requirements in section 8.1.2.4.4 in fading environment.

The test parameters are given in Table A.8.9.1.1-1, A.8.9.1.1-2 and A.8.9.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.9.1.1-1: General test parameters for Event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel TBD	As specified in TS 36.101 section TBD
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	E-UTRA FDD Cell 1
Neighbour cell		Cell 2	UTRA TDD Cell 2 is to be identified.
Gap Pattern Id		1	As specified in TS 36.133 section8.1.2.1. Measurement Gap Repetition Period = 80ms
Inter-RAT measurement quantity		UTRA TDD PCCPCH RSCP	
Threshold other system	dBm	-75	UTRA TDD PCCPCH RSCP threshold for event B1.
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
T1	S	5	
T2	S	15	

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel		1		
Number				
BW _{channel}	MHz	1(C	
OCNG Patterns defined		OP.1	FDD	
in A.3.2.1.1 (OP.1 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
N_{oc}	dBm/15KH	-9	8	
	Z		-	
RSRP	dBm	-94	-94	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	
P-SCH_RP	dBm	-9	4	
S-SCH_RP	dBm	-9	4	
Propagation Condition		ETU		
Note 1: OCNG shall be use				
constant total transmitted p	power spectral	density is achieved	d for all OFDM	
symbols.				
Note 2: The resources for		ssion are assigned	to the UE prior	
to the start of time period 1	2.			

Table A.8.9.1.1-2: Cell specific test parameters for Event triggered reporting of UTRA TDD neighbours in fading propagation conditions (cell1)

 Table A.8.9.1.1-3: Cell specific test parameters for Event triggered reporting of UTRA TDD neighbours in fading propagation conditions (cell2)

Parameter	Unit	Cell 2				
		T1		T2		
Timeslot Number		0 DwPTS		0	DwPTS	
UTRA RF Channel		Channel1				
Number (NOTE1)						
PCCPCH_Ec/lor	dB	-Infinity		-3		
DwPCH_Ec/lor	dB	-Infinity			0	
OCNS_Ec/lor		-Infinity		-3		
\hat{I}_{or}/I_{oc}	dB	-In	finity	9		
I _{oc}	dBm/1.28 MHz	-70				
PCCPCH_RSCP Note 3	dB	-Infinity		-64		
IO Note 3	dBm/1.28 MHz	-70.00		-60.49		
Propagation	Case			3 (NOTE2)		
Condition						
NOTE1: The DPCH of the cell is located in a timeslot other than 0.						
NOTE2: Case 3 propagation conditions are specified in TS25.102 Annex B						
NOTE3: PCCPCH_RSRP and lo levels have been derived from other parameters						
for information purposes. They are not settable parameters themselves				mselves		

A.8.9.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 12800 ms 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] x TTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.9.2 E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

A.8.9.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct enhanced reporting of UTRAN cells. This test will partly verify the enhanced UTRA TDD cell identification requirements in section 8.1.2.4.4 under AWGN propagation conditions.

This test scenario comprised of 1 E-UTRA FDD serving cell, and 1 UTRA TDD cell to be searched. Test parameters are given in Table A.8.9.2.1-1, A.8.9.2.1-2, and A.8.9.2.1-3. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time period T1, gaps are activated and an interRAT measurement reporting configuration is configured, and linked to a UTRA measurement object corresponding to channel UARFCN 1. Prior to time duration T2, the UE shall not have any timing information of cell 2. Cell 2 is powered up at the beginning of the T2.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1.
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
Inter-RAT (UTRA TDD) measurement quantity		P-CCPCH RSCP	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		None	No explicit neighbour list is provided to the UE
Time offset between cells	ms	3	
T1	S	5	
T2	S	2	

Table A.8.9.2.1-1: General test parameters for E-UTRAN FDD- UTRAN TDD cell search in AWGN propagation conditions

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel Number		1		
BW _{channel}	MHz	1	0	
OCNG Patterns defined in		OP.1	FDD	
A.3.2.1.1 (OP.1 FDD)		01.1		
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB		`	
PHICH_RB	dB	C)	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{NOTE 1}	dB			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	
N_{oc} Note 3	dBm/15 kHz	-98		
\hat{E}_s/N_{oc}	dB	4	4	
RSRP Note 4	dBm/15 kHz	-94	-94	
SCH_RP	dBm/15 kHz	-94	-94	
Propagation Condition		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: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.				
Note 3: 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 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.				

Table A.8.9.2.1-2: Cell specific test parameters for cell #1 E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Table A.8.9.2.1-3: Cell specific test parameters for cell #2 E-UTRAN FDD - UTRAN TDD enhanced cell
identification under AWGN propagation conditions

Parameter	Unit Cell 2 (UTRA TDD)				
Timeslot Number		0		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number ^{Note1}		Channel 1			
P-CCPCH_Ec/lor	dB	-4.77	-4.77		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor ^{Note2}	dB	-1.76	-1.76		
\hat{I}_{or}/I_{oc}	dB	-inf	8	-inf	8
I _{oc}	dBm/1.28 MHz	-80			
P-CCPCH RSCP Note3	dBm	-inf -76.77 n.a. r		n.a.	
P-CCPCH_Ec/lo Note3	dB	-inf -5.41 n.a.		n.a.	
DwPCH_Ec/Io Note3	dB	n.a. n.ainf		-0.64	
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: 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: P-CCPCH RSRP, PCCPCH_Ec/Io and DwPCH_Ec/Io levels have been derived from other					
parameters for information purposes. They are not settable parameters themselves.					

A.8.9.2.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 1120 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.10 E-UTRAN TDD – GSM Measurements

A.8.10.1 E-UTRAN TDD – GSM event triggered reporting in AWGN

A.8.10.1.1 Test Purpose and Environment

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 E-UTRAN TDD - GSM cell search requirements in section 8.1.2.4.6.

The test parameters are given in Tables A.8.10.1.1-1, A.8.8.1.1-2 and A.8.10.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement	As specified in section A.3.1.1.2.
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.2.
(E-UTRAN TDD)		Channel R.6 TDD	
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1
			(GSM cell)
Special subframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-downlink configuration		1	As specified in table 4.2-2 in 3GPP TS 36.211
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
Inter-RAT (GSM) measurement		GSM Carrier RSSI	
quantity			
b1-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1	List of GSM cells provided before T2 starts.
T1	S	5	
T2	S	5	

Table A.8.10.1.1-1: General test parameters for E-UTRAN TDD-GSM event triggered reporting in AWGN

Parameter	Unit	Cell	1			
		T1	T2			
E-UTRA RF Channel Number	UTRA RF Channel Number					
BW _{channel}	MHz	10				
OCNG Pattern defined in						
A.3.2.2.1 (OP.1 TDD)		OP.1	rdd			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
$N_{_{oc}}$ Note 3	dBm/15 kHz	-98	3			
\hat{E}_s/N_{oc}	dB	4	4			
RSRP ^{Note 4}	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWO				
Note 1: OCNG shall be used spectral density is ac Note 2: The resources for up	d such that both cells are fully allocated and a constant total transmitted power achieved for all OFDM symbols. plink transmission are assigned to the UE prior to the start of time period T2. her cells and noise sources not specified in the test is assumed to be constant					
over subcarriers and	er subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{oc}^{}$ to be					
fulfilled.	nave been derived from other parameters for information purposes. They are not					

Table A.8.10.1.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for event triggered reporting of GSM cell in AWGN

Table A.8.10.1.1-3: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell in AWGN

Parameter	Unit	Cell 2	
		T1	T2
Absolute RF Channel Number		AF	RFNC 1
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid
Propagation Condition		A	WGN

A.8.10.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report including the valid BSIC of cell # 2, with a measurement reporting delay less than 3120 ms 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 1: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

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NOTE 2: The delay for GSM cell identification with BSIC verified is equal to 3120 ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay = $2*T_{Measurement Period, GSM} = 2*480ms = 960ms$.

Initial BSIC identification delay = 2160 ms.

A.8.10.2 E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

A.8.10.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN TDD-GSM cell search requirements when DRX is used in section 8.1.2.4.6.

In these tests, there are two cells, one E-UTRAN cell and one GSM cell, and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The common test parameters are given in Table A.8.10.2.1-1. Cell specific test parameters are given in Table A.8.10.2.1-2 for E-UTRAN and in Table A.8.10.2.1-5 for GSM. DRX configuration for Test1 and Test2 are given in Table A.8.10.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.10.2.1-4.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Parameter	Unit	Test 1	Test 2	Comment		
		Va	lue			
PDSCH parameters (E-		DL Reference Measurement		As specified in section A.3.1.1.2. Note that		
UTRAN TDD)		Channel R.0 TDD		UE may only be allocated at On Duration		
PCFICH/PDCCH/PHICH		DL Reference Me	easurement	As specified in section A.3.1.2.2.		
parameters (E-UTRAN TDD)		Channel R.6 TDD)			
Gap Pattern Id		()	As specified in 3GPP TS 36.133 section		
				8.1.2.1.		
Active cell		Ce	1	Cell 1 is on E-UTRA RF channel number		
				1.		
Neighbour cell		Ce	ll 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)		
Special subframe		6	6	As specified in table 4.2-1 in TS 36.211.		
configuration						
Uplink-downlink				As specified in 3GPP TS 36.211 section		
configuration				4.2 Table 4.2-2		
CP length		Nor	mal	Applicable to cell 1		
E-UTRA RF Channel				One E-UTRA TDD carrier frequency is		
Number				used.		
E-UTRA Channel Bandwidth	MHz	1	0			
(BW _{channel})						
Inter-RAT (GSM)		GSM Car	rier RSSI			
measurement quantity						
B1-Threshold-GERAN	dBm	-8	80	GSM Carrier RSSI threshold for event B1.		
Hysteresis	dB	()			
TimeToTrigger	S	()			
Filter coefficient		()	L3 filtering is not used		
PRACH configuration		4	•	As specified in table 5.7.1-2 in TS 36.211		
Access Barring Information	-	Not	Sent	No additional delays in random access		
_				procedure.		
DRX		ON		DRX related parameters are defined in Table A.8.10.2.1-3		
Monitored GSM cell list size		6 GSM neighbours including		6 GSM neighbours including		List of GSM cells provided before T2
		ARFCN 1		starts.		
T1	S	5				
T2	s	5	45			
<u> </u>		, v		1		

Table A.8.10.2.1-1: General test parameters for E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Parameter	Unit	Cell	1			
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Patterns defined in						
A.3.2.2.1 (OP.1 TDD)		OP.1 T	DD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{NOTE 1}	dB					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4			
N_{oc} Note 2	dBm/15 kHz	-98				
RSRP Note 3	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
\hat{E}_s/N_{oc}	dB	4	4			
Propagation Condition		AWG	N .			
Note 1: OCNG shall be used	such that both co	ells are fully allocated and a cons	tant total transmitted power			
spectral density is acl	nieved for all OF	DM symbols.	-			
		e sources not specified in the tes				
over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes.						
They are not settable						

Table A.8.10.2.1-2: Cell specific test parameters for E-UTRAN TDD (cell #1) event triggered reporting of GSM cell when DRX is used in AWGN

Table A.8.10.2.1-3: drx-Configuration to be used in E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1	Test2	Comment
Tield	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	Disable	Disable	
Note: For further information see section	on 6.3.2 in 3GF	PTS 36.331	

 Table A.8.10.2.1-4: TimeAlignmentTimer and sr-ConfigIndex -Configuration to be used in E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1 Value	Test2 Value	Comment
	value	value	
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section 10.1 in 3GPP TS 36.213.

Table A.8.10.2.1-5: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell when DRX is used in AWGN

Parameter	Unit	Cell 2	
		T1	T2
Absolute RF Channel Number		AF	RFNC 1
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

A.8.10.2.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report including BSIC of cell # 2, with a measurement reporting delay less than 3120 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 42.8 seconds from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

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 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

A. 8.11 Monitoring of Multiple Layers

A. 8.11.1 Multiple E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions

A. 8.11.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of multiple events. This test will partly verify the FDD-FDD inter-frequency cell search requirements in section 8.1.2.3.

The test parameters are given in Tables A.8.11.1.1.1-1 and A.8.11.1.1.1-2. In this test, there are three cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 or cell 3.

Table A. 8.11.1.1-1: General test parameters for Inter-frequency E-UTRA FDD – E-UTRA FDD and E-
UTRA FDD cell search under fading

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
E-UTRA RF Channel Number		1, 2, 3	Three FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2 and cell 3	Cell 2 is on RF channel number 2 and cell 3 is on RF channel number 3
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between E- UTRAN FDD cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	10	

Parameter	Unit	C	ell 1	Cel	2	Cell 3	
		T1	T2	T1	T2	T1	T2
E-UTRA RF			1	2		3	
Channel Number							
BW _{channel}	MHz		10	1()	10	
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in		OP.	1 FDD	OP.2	FDD	OP.2 FDD	1
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0	0		0	
PHICH_RB	dB		-	Ŭ		Ĭ	
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note}	dB						
N_{oc} Note 3	dBm/15 kHz				-98		
RSRP Note 4	dBm/15 kHz	-98	-98	-Infinity	-95	-Infinity	-95
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	0	0	-Infinity	3	-Infinity	3
SCH_RP Note 4	dBm/15 kHz	-98	-98	-Infinity	-95	-Infinity	-95
$\hat{E}_{_{s}}/N_{_{oc}}$	dB	0	0	-Infinity	3	-Infinity	3
Propagation Condition		AV	AWGN ETU70		ETU70		
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total							
Note 2: The resour	transmitted power spectral density is achieved for all OFDM symbols.						
Note 3: Interference						med	
appropriate power for $N_{ m ac}$ to be fulfilled.							
Note 4: RSRP and							

Table A. 8.11.1.1-2: Cell specific test parameters for Inter-frequency E-UTRA FDD – E-UTRA FDD and E-UTRA FDD cell search under fading

A. 8.11.1.2 Test Requirements

The UE shall send Event A3 triggered measurement reports for both cell 2 and cell 3, with a measurement reporting delay less than 7680 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.11.2 E-UTRAN TDD – E-UTRAN TDD and E-UTRAN TDD Interfrequency event triggered reporting under fading propagation conditions

A.8.11.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of two events. This test will partly verify the TDD-TDD inter-frequency cell search requirements in section 8.1.2.3.

The test parameters are given in Tables A.8.11.2.1-1 and A.8.11.2.1-2. In this test, there are three cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

Table A.8.11.2.1-1: General test parameters for E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter-frequency event triggered reporting under fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in 3GPP TS 36.211 section 4.2 Table 4.2-2
E-UTRA RF Channel Number		1, 2, 3	Three TDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbor cells		Cell 2 and Cell 3	Cell 2 and 3 are on RF channel numbers 2 and 3 respectively
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	10	

Table A.8.11.2.1-2: Cell specific test parameters for E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter-frequency event triggered reporting under fading propagation conditions cells

Parameter	Unit	Ce	ell 1	Cel	2	Cell 3	
		T1	T2	T1	T2	T1	T2
E-UTRA RF Channel Number			1	2		3	
BW _{channel}	MHz		10	10)	10)
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and in A.3.2.2.2 (OP.2 TDD)		OP.1 TDD		OP.2 TDD		OP.2 TDD	
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB	1					
PCFICH_RB	dB						
PHICH_RA	dB					0	
PHICH_RB	dB		0	0			
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
N_{oc} Note 3	dBm/15 kHz			-98			
RSRP Note 4	dBm/15 kHz	-98	-98	-inf	-95	-inf	-95
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	0	0	-inf	3	-inf	3
SCH_RP Note 4	dBm/15 kHz	-98	-98	-inf	-95	-inf	-95
\hat{E}_{s}/N_{oc}	dB	0	0	-inf 3		-inf	3
Propagation Condition		AWGN ETU70 ETU70					
spectral densit Note 2: The resources Note 3: Interference fro	te used such that all cells are fully allocated and a constant total transmitted power ty is achieved for all OFDM symbols. s for uplink transmission are assigned to the UE prior to the start of time period T2. rom 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 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.							

A.8.11.2.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2 with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event A3 triggered measurement report for cell 3 with a measurement reporting delay less than 7680 ms 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 1: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.11.3 E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

A.8.11.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency and UTRAN FDD measurements. This test will partly verify the FDD-FDD inter-frequency cell search requirements in section 8.1.2.3 and the E-UTRAN FDD- UTRAN FDD cell search requirements in section 8.1.2.4.1.

The test parameters are given in Tables A.8.11.3.1-1, A.8.11.3.1-2 and A.8.11.3.1-3. In this test, there are two cells on different carrier frequencies and one cell on UTRAN carrier frequency and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and B2 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

Table A.8.11.3.1-1: General test parameters for Combined inter-frequency and UTRAN event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in section A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in section A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cells		Cell 2, 3	Cell 2 is on E-UTRA RF channel number 2.
			Cell 3 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1, 2	Two FDD carrier frequencies are used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
E-UTRAN FDD measurement		RSRP	
quantity			
Inter-RAT (UTRA FDD)		CPICH Ec/N0	
measurement quantity			
A3-Offset	dB	-6	
b2-Threshold-E-UTRA	dB	-86	RSRP threshold for event B2.
b2-Threshold-UTRA	dB	-18	CPICH Ec/N0 threshold for event B2.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
Time offect between cells		2 m2	
Time offset between cells		3 ms 5	Asynchronous cells
	S		
T2	S	8	

Parameter	Unit	Ce	ll 1	Cel	2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1	2		
Number						
BW _{channel}	MHz	1	0	1()	
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OP.2	FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		_	0		
PHICH_RB	dB	()			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note 3}$	dBm/15 kHz			-98		
RSRP ^{Note 4}	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	7	
Propagation Condition		AW	GN	ETU	70	
	e used such that bo	th cells are fully	allocated and a	constant total trans	smitted power	
	ty is achieved for all				·	
	for uplink transmiss					
Note 3: Interference fr	om other cells and r	noise sources no	ot specified in th	ne test is assumed t	o be constant	
fulfilled.	rs and time and sha					
	H_RP levels have b ettable parameters		m other parame	eters for information	purposes.	

Table A.8.11.3.1-2: Cell specific test parameters for Combined inter-frequency and UTRAN event triggered reporting in fading propagation conditions

Parameter	Unit	Cell 3			
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.94	1		
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8		
I _{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-Infinity	-14		
Propagation Condition		Case 5 (Note 3)			
	ontrolled by the powe				
Note 2: The power of the O	2: The power of the OCNS channel that is added shall make the total power from the cell to be equal				
to I _{or} .	to I _{or} .				
Note 3: Case 5 propagation	conditions are define	d in Annex A of 3GPP TS 25.1	01.		

Table A.8.11.3.1-3: Cell specific test parameters for UTRAN FDD (cell # 3) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

A.8.11.3.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than 4800 ms 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 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.11.4 InterRAT E-UTRA TDD to E-UTRA TDD and UTRA TDD cell search test case

A.8.11.4.1 Test Purpose and Environment

This test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements and UTRA TDD measurements. The test will partly verify the requirements in section 8.1.2.3.2 combined 8.1.2.4.3 under fading propagation conditions.

This test scenario comprised of 2 E-UTRA TDD cells operating on different frequency, and 1 UTRA TDD cell. Test parameters are given in table A.8.11.4.1-1, A.8.11.4.1-2, and A.8.11.4.1-3. Gap pattern configuration #0 as defined in section 8.1.2.1 is provided.

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 A3 and B2 shall be used.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference	As specified in section A.3.1.1.2
		Measurement	
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference	As specified in section A.3.1.2.2
parameters		Measurement	
		Channel R.6 TDD	
Active cell		Cell 1	E-UTRA TDD cell is on RF channel number 1
Neighbour cell		Cell 2	E-UTRA TDD cell is on RF channel number 2
		Cell 3	1.28Mcps TDD cell
CP length of cell1 and cell2		Normal	
Uplink-downlink configuration		1	As specified in Table 4.2-2 in TS 36.211. The
of cell1 and cell2			same configuration in both cells
Special subframe		6	As specified in table 4.2-1 in TS 36.211. The
configuration of cell1 and			same configuration in both cells
cell2			
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section
			8.1.2.1.
E-UTRAN TDD		RSRP	
measurement quantity		D00D	
UTRAN TDD measurement		RSCP	
quantity		OFF	
DRX Ofn	dB	0	Parameter for A3 and B2 event
Om	dB	0	Parameter for A3 event
	dB	0	Parameter for A3 and B2 event
Hysteresis Ofs	dB	0	Parameter for A3 event
Ocs	dВ	0	Parameter for A3 event
A3-Offset	dВ	-6	Parameter for A3 event
Thresh1	dВm	-86	Absolute E-UTRAN RSRP threshold for event
Inresni	abm	-80	B2
Thresh2	dBm	-84	Absolute UTRAN RSCP threshold for event B2
TimeToTrigger	S	0	
Filter coefficient	3	0	L3 filtering is not used
T1	S	>5	During T1, cell 2 and cell 3 shall be powered
	3	-0	off. During the off time the physical layer cell
			identity of cell 2 shall be changed, and the
			primary scrambling code of cell 3 shall be
			changed.
T2	s	15	
·-			

Table A.8.11.4.1-1: General test parameters for combined E-UTRA TDD inter-frequency and UTRA TDD cells search under fading propagation conditions

Parameter	Unit	Ce	ll 1	Ce	2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1	2	2	
Number						
BWchannel	MHz	1	0	1	0	
OCNG Pattern defined						
in A.3.2.2.1 (OP.1		OP.1	TDD	OP.2	TDD	
TDD) and in A.3.2.2.2						
(OP.2)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB			0		
PHICH_RB	dB)	()	
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RANote 1	dB					
OCNG_RBNote 1	dB					
\hat{E}_s/I_{ot}	dB	4	4	-Infinity	7	
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	7	
N _{oc}	dBm/15 kHz		-(98		
RSRP	dBm/15 kHz	-94	-94	-Infinity	-91	
SCH_RP	dBm/15 kHz	-94	-94	-infinity	-91	
Propagation Condition		AWGN ETU70				
 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: The resources for uplink transmission are assigned to the UE priori to the start of time period T2. 						
Note 3: RSRP and SC	CH_RP levels have ey are not settable			arameters for i	nformation	

Table A.8.11.4.1-2: Cell specific test parameters for combined E-UTRAN TDD inter-frequency and UTRA TDD cell search under fading propagation conditions(cell1 and cell2)

Table A.8.11.4.1-3: Cell specific test parameters for combined E-UTRA TDD inter-frequency and UTRA TDD cell search under fading propagation conditions(cell3)

Pa	Parameter Unit		Cell 3 (UTRA)			
Timeslot	Number		C)	DwPTS	
			T1	T2	T1	T2
UTRA RE	- Channel			Char	nnel 3	
Number*						
PCCPCH	I_Ec/lor	dB	1	3		
DwPCH_	Ec/lor	dB			C)
OCNS_E	c/lor	dB	-3			
\hat{I}_{or}/I_{oc}		dB	-Infinity	9	-Infinity	9
I_{oc}		dBm/1.28 MHz	-80			
PCCPCH	I RSCP	dBm	-Infinity	-74	n.a	a.
Propagat	tion Condition		Case 3			
Note1:	The DPCH of	all cells are located in a timeslot other than 0.				
Note2:		f multi-frequency network, the UTRA RF Channel Number				
Note3:	can be set for the primary frequency in this test. Note3: P-CCPCH RSCP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

A.8.11.4.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than 12.8s 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.11.5 Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

A.8.11.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of multiple events when doing inter frequency and GSM measurements. This test will partly verify the E-UTRAN FDD-FDD inter-frequency cell search requirements in section 8.1.2.3.1 and simultaneously the E-UTRAN FDD- GSM cell search requirements in section 8.1.2.4.5.

The test parameters are given in Tables A.8.11.5.1-1, A.8.11.5.1-2 and A.8.11.5.1-3. In this test, there are two cells on different carrier frequencies and one GSM cell. Gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and B2 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

Table A.8.11.5.1-1: General test parameters for combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E- UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1.
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cells		Cell 2, 3	Cell 2 is on E-UTRA RF channel number 2. Cell 3 is on Absolute RF Channel Number 3 (GSM cell).
CP length		Normal	Applicable to cell 1 and cell 2
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
E-UTRAN FDD measurement quantity		RSRP	
Ofn	dB	0	Parameter for A3 and B2 event
Ocn	dB	0	Parameter for A3 event
Hysteresis	dB	0	Parameter for A3 and B2 event
Ofs	dB	0	Parameter for A3 event
Ocs	dB	0	Parameter for A3 event
A3-Offset	dB	-6	
TimeToTrigger	s	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between E- UTRAN FDD cells	ms	3 ms	Asynchronous cells
Inter-RAT (GSM) measurement quantity		GSM Carrier RSSI	
A3-Offset	dB	-6	
b2-Threshold-E-UTRA	dBm	-83	RSRP threshold for event B2. This is the threshold for E-UTRA in the B2 configuration. E- UTRA PCell RSRP is below this throughout the test to account for measurement accuracy and fading
b2-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B2.
Monitored GSM cell list size		6 GSM neighbours including ARFCN 3	List of GSM cells provided before T2 starts.
T1	S	5	
T2	S	10	

Table A.8.11.5.1-2: Cell specific test parameters for E-UTRAN FDD cells for combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Ce	ll 1	Ce	2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1		2	
Number						
BW _{channel}	MHz	1	0	1	0	
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OP.2	FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB	-				
PSS_RA	dB	-				
SSS_RA	dB	-				
PCFICH_RB	dB	-				
PHICH_RA	dB		-			
PHICH_RB	dB		0	0		
PDCCH_RA	dB	-				
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	7	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_s / N_{oc}	dB	4	4	-Infinity	7	
Propagation Condition		ET	J70	ETU	J70	
Note 1: OCNG shall be used						
achieved for all OFDM symbols.						
Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers						
	Note 3: 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 4: RSRP and SCH_RF parameters themse	Plevels have been der				ey are not settable	

Table A.8.11.5.1-3: Cell specific test parameters for GSM (cell # 3) for combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Cell 3	
		T1	T2
Absolute RF Channel Number		AF	RFCN3
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

A.8.11.5.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report including BSIC of cell 3, with a measurement reporting delay less than [7200] ms 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%.

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- NOTE 1: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.
- NOTE 2: The delay for GSM cell identification with BSIC verified is equal to [7200] ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay = $2*T_{\text{Measurement Period, GSM}} = 2*N_{\text{freq}}*480\text{ms} = 1920\text{ms}.$

Initial BSIC identification delay = [5280] ms, when one carrier frequency other than GSM is monitored in the gaps.

A.8.11.6 Combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

A.8.11.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of multiple events when doing inter frequency and GSM measurements. This test will partly verify the E-UTRAN TDD-TDD inter-frequency cell search requirements in section 8.1.2.3.2 and simultaneously the E-UTRAN TDD- GSM cell search requirements in section 8.1.2.4.6.

The test parameters are given in Tables A.8.11.6.1-1, A.8.11.6.1-2 and A.8.11.6.1-3. In this test, there are two cells on different carrier frequencies and one GSM cell. Gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and B2 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

Table A.8.11.6.1-1: General test parameters for combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-		DL Reference Measurement	As specified in section A.3.1.1.2.
UTRAN TDD)		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2.
parameters		Channel R.6 TDD	
(E-UTRAN TDD)			
Special subframe		6	As specified in table 4.2-1 in TS 36.211. The
configuration of cell1 and			same configuration in both cells
cell2			
Uplink-downlink configuration		1	As specified in 3GPP TS 36.211 section 4.2
of cell1 and cell2			Table 4.2-2
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cells		Cell 2, 3	Cell 2 is on E-UTRA RF channel number 2.
			Cell 3 is on Absolute RF Channel Number 3
			(GSM cell).
CP length		Normal	Applicable to cell 1 and cell 2
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
E-UTRAN TDD measurement		RSRP	
quantity			
Ofn	dB	0	Parameter for A3 and B2 event
Ocn	dB	0	Parameter for A3 event
Hysteresis	dB	0	Parameter for A3 and B2 event
-			
Ofs	dB	0	Parameter for A3 event
Ocs	dB	0	Parameter for A3 event
A3-Offset	dB	-6	
	-		
TimeToTrigger	S	0	
Filter coefficient		0	1.2 filtering is not used
Fliter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
BIO			
Time offset between E-	ms	3 ms	Asynchronous cells
UTRAN TDD cells	inio		
Inter-RAT (GSM)		GSM Carrier RSSI	
measurement quantity			
b2-Threshold-E-UTRA	dBm	-83	RSRP threshold for event B2. This is the
			threshold for E-UTRA in the B2 configuration. E-
			UTRA PCell RSRP is below this throughout the
			test to account for measurement accuracy and
			fading
b2-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B2.
Monitored GSM cell list size		6 GSM neighbours including	List of GSM cells provided before T2 starts.
		ARFCN 3	
T1	S	5	
T2	S	10	

Table A.8.11.6.1-2: Cell specific test parameters for E-UTRAN TDD cells for combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Ce	ll 1	Ce	2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1		2	
Number						
BW _{channel}	MHz	1	0	1	0	
OCNG Patterns						
defined in A.3.2.2.1		OP.1	TDD	OP.2	TDD	
(OP.1 TDD) and in						
A.3.2.2.2 (OP.2 TDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		_			
PHICH_RB	dB	(0	0		
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	7	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7	
Propagation Condition		ET	J70	ETU	J70	
Note 1: OCNG shall be used	d such that both cells a					
achieved for all OFDM symbols.						
Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.						
Note 3: 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 AWG	N of appropriate po	ower for $N_{_{oc}}$ to b	e fulfilled.		
Note 4: RSRP and SCH_RF parameters themse	Plevels have been der				ey are not settable	

Table A.8.11.6.1-3: Cell specific test parameters for GSM (cell # 3) for combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Cell 3	
		T1	T2
Absolute RF Channel Number		AF	RFCN3
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

A.8.11.6.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report including BSIC of cell 3, with a measurement reporting delay less than [7200] ms 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%.

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- NOTE 1: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.
- NOTE 2: The delay for GSM cell identification with BSIC verified is equal to [7200] ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay = $2*T_{\text{Measurement Period, GSM}} = 2*N_{\text{freq}}*480\text{ms} = 1920\text{ms}$.

Initial BSIC identification delay = [5280] ms, when one carrier frequency other than GSM is monitored in the gaps.

A.8.12 RSTD Intra-frequency Measurements

A.8.12.1 E-UTRAN FDD intra-frequency RSTD measurement reporting delay test case

A.8.12.1.1 Test Purpose and Environment

The purpose of the test is to verify that the RSTD measurement meets the requirements specified in Section 8.1.2.5.1 in an environment with fading propagation conditions.

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the reference as well as the PCell. Cell 2 and Cell 3 are the neighbour cells. All cells are on the same RF channel.

The test consists of three consecutive time intervals, with duration of T1, T2 and T3. Cell 1 is active in T1, T2 and T3, whilst Cell 2 and Cell 3 are activated only in the beginning of T2. Cell 2 is active until the end of T3, and Cell 3 is active until the end of T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the reference cell, where the PRS positioning occasion is as defined in Section 8.1.2.5.1. Cell 1 transmits PRS in T2, while Cell 2 transmits PRS only in T3, and Cell 3 transmits PRS only in T2. Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Section 6.5.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data.

The test parameters are as given in Table A.8.12.1.1-1, Table A.8.12.1.1-2, Table A.8.12.1.1-3 and Table A.8.12.1.1-4.

Parameter	Unit	Value	Comment
Reference cell		Cell 1	Reference cell is the cell in the OTDOA assistance data with respect to which the RSTD measurement is defined, as specified in 3GPP TS 36.214 [4] and 3GPP TS 36.355 [24]. The reference cell is the PCell in this test case.
Neighbor cells		Cell 2 and Cell 3	Cell 2 and Cell 3 appear at random places in the neighbour cell list in the OTDOA assistance data, but Cell 2 always appears in the first half of the list, whilst Cell 3 appears in the second half of the list.
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Channel Bandwidth (BW _{channel})	MHz	10	
PRS Transmission Bandwidth	RB	50	PRS are transmitted over the system bandwidth
PRS configuration index I_{PRS}		1131	This corresponds to periodicity of 1280 ms and PRS subframe offset of I_{PRS} -1120 DL subframes, as defined in 3GPP
Number of consecutive downlink positioning subframes $N_{\rm PRS}$		1	TS 36.211 [16], Table 6.10.4.3-1 As defined in 3GPP TS 36.211 [16]. The number of subframes in a positioning occasion
Physical cell ID PCI		(PCI of Cell 1 – PCI of Cell 2)mod6=0 and (PCI of Cell 1 – PCI of Cell 3)mod6=0	The cell PCIs are selected such that the relative shifts of PRS patterns among cells are as given by the test parameters
CP length		Normal	
DRX		ON	DRX parameters are further specified in Table A.8.12.1.1-3
Maximum radio frame transmit time offset between the cells at the UE antenna connector ^{Note 1}	μs	3	Synchronous cells
Expected RSTD Note 1	μs	3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
Expected RSTD uncertainty ^{Note 2}	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index
Number of cells provided in OTDOA assistance data		16	Including the reference cell
PRS muting info		Cell 1: '11110000' Cell 2: '00001111' Cell 3: '11110000'	Correponds to prs-MutingInfo defined in TS 36.355 [24]
T1	s	3	The length of the time interval from the beginning of each test
Т2	s	5	The length of the time interval that follows immediately after time interval T1
ТЗ	S	5	The length of the time interval that follows immediately after time interval T2

Table A.8.12.1.1-1: General test parameters for E-UTRAN FDD intra-frequency RSTD measurement reporting delay under fading propagation conditions

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- Note 1: The true RSTD, which is the receive time difference for frame 0 between each two cells as seen at the UE antenna connector, shall be within expected RSTD uncertainty. The true RSTD for Cell 2 and Cell 1 shall be different from the true RSTD for Cell 3 and Cell 1. The parameters of expected RSTD of all neighbour cells in the OTDOA assistance data are identical in the test.
- Note 2: The parameters of expected RSTD uncertainty of all neighbour cells in the OTDOA assistance data are identical in the test.

Table A.8.12.1.1-2: Cell-specific test parameters for E-UTRAN FDD intra-frequency RSTD measurement reporting delay under fading propagation conditions during T1

Parameter	Unit	Cell 1	Cell 2	Cell 3				
E-UTRA RF		1	1	1				
Channel Number		1	1	1				
OCNG patterns		OP.5 FDD	N/A	N/A				
defined in A.3.2.1	_	01.01.00	10/7	10/1				
PBCH_RA	_							
PBCH_RB	_							
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA	dB	0	N/A	N/A				
PHICH_RB								
PDCCH_RA								
PDCCH_RB								
OCNG_RA ^{Note 1}								
OCNG_RB ^{Note 1}								
$N_{_{oc}}$ Note 3	dBm/	-95						
I V oc	15 kHz							
PRS $\hat{ ext{E}}_{ ext{s}}/N_{oc}$	dB	-Infinity	-Infinity	-Infinity				
lo	dBm/ 9 MHz	-64.21	N/A	N/A				
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}$	dB	0	-Infinity	-Infinity				
Propagation Condition		ETU30						
Note 1:OCNG shall be used such that active cell (Cell 1) is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 2:The resources for uplink transmission are assigned to the UE prior to the start of time period T2.Note 3:Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.								

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T2	T3	T2	Т3	T2	Т3
E-UTRA RF			1	1			1
Channel Number			1	'			
OCNG patterns		OP.	5 FDD	OP.6	FDD	OP.6	N/A
defined in A.3.2.1		•		0.10		FDD	
PBCH_RA	+						
PBCH_RB	4						
PSS_RA							
SSS_RA							
PCFICH_RB							
PHICH_RA	dB		0	0		0	N/A
PHICH_RB							
PDCCH_RA							
PDCCH_RB							
OCNG_RA ^{Note 1}							
OCNG_RB ^{Note 1}							
PRS_RA	dB	0	N/A	N/A	0	0	N/A
$N_{\scriptscriptstyle oc}$ Note 3,4	dBm/ 15 kHz	-98	-95	-98	-95	-98	-95
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$ Note 4	dB	-4	-Infinity	-Infinity	-10	-10	-Infinity
PRS $\hat{E}_{_{s}} \big/ I_{_{ot}}^{_{}}$ Note 4	dB	-4.41	-Infinity	-Infinity	-10	-11.46	-Infinity
Io Note 4	dBm/ 9 MHz	-69.87	N/A	N/A	-67.15	-69.87	N/A
PRP ^{Note 4}	dBm/ 15 kHz	-102	-Infinity	-Infinity	-105	-108	-Infinity
RSRP	dBm/ 15 kHz	-102	-102	-105	-105	-108	-Infinity
Propagation Condition				ETU	30		
$\begin{array}{c} \text{constant tota}\\ \text{those in the}\\ \text{transmitted}\\ \text{Note 2:} & \text{The resourc}\\ \text{Note 3:} & \text{Interference}\\ \text{constant ove}\\ N_{oc} & \text{to be}\\ \text{Note 4:} & \text{PRS} \ \hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}\\ \text{information} \end{array}$	 OCNG shall be used such that active cells (all, except Cell 3 in T3) are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols other than those in the subframes with transmitted PRS. There is no PDSCH allocated in the subframes with transmitted PRS. The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. 						

Table A.8.12.1.1-3: Cell-specific test parameters for E-UTRAN FDD intra-frequency RSTD measurement reporting delay under fading propagation conditions during T2 and T3

 Table A.8.12.1.1-4: DRX parameters for the test of E-UTRAN FDD intra-frequency RSTD measurement reporting delay under fading propagation conditions

Field	Value	Comment		
onDurationTimer	psf1			
Drx-InactivityTimer	psf1			
drx-RetransmissionTimer	sf1	As specified in 3GPP TS 36.331 [2], Section 6.3.2		
longDRX-CycleStartOffset	sf320	30.331 [2], Section 0.3.2		
shortDRX	Disable			

A.8.12.1.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Section 8.1.2.5.1.

The UE shall perform and report the RSTD measurements for Cell 2 and Cell 3 with respect to the reference cell in the OTDOA assistance data, Cell 1, within 9280 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Section 9.1.10.3, i.e., between RSTD_0000 and RSTD_12711.

NOTE: The RSTD measurement time in the test is derived from the following expression,

$$T_{PRS}(M-1)+160\left|\frac{n}{M}\right|$$
, where $M=8$ and $n=16$ are the parameters specified in Section 8.1.2.5.1,

Table 8.1.2.5.1-1, under Note 1. This gives the total RSTD measurement time of 9280 ms for Cell 2 and Cell 3 with respect to the reference cell Cell 1.

A.8.12.2 E-UTRAN TDD intra-frequency RSTD measurement reporting delay test case

A.8.12.2.1 Test Purpose and Environment

The purpose of the test is to verify that the RSTD measurement meets the requirements specified in Section 8.1.2.5.2 in an environment with fading propagation conditions.

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the reference as well as the PCell. Cell 2 and Cell 3 are the neighbour cells. All cells are on the same RF channel.

The test consists of three consecutive time intervals, with duration of T1 and T2. Cell 1 is active in T1, T2 and T3, whilst Cell 2 and Cell 3 are activated only in the beginning of T2. Cell 2 is active until the end of T3, and Cell 3 is active until the end of T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the reference cell, where the PRS positioning occasion is as defined in Section 8.1.2.5.1. Cell 1 transmits PRS in T2, while Cell 2 transmits PRS only in T3, and Cell 3 transmits PRS only in T2. Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Section 6.5.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data.

The test parameters are as given in Table A.8.12.2.1-1, Table A.8.12.2.1-2, Table A.8.12.2.1-3, and Table A.8.12.2.1-4.

Table A.8.12.2.1-1: General test parameters for E-UTRAN TDD intra-frequency RSTD measurement reporting delay under fading propagation conditions

Parameter	Unit	Value	Comment
Reference cell		Cell 1	Reference is the cell in the OTDOA assistance data with respect to which the RSTD measurement is defined, as specified in 3GPP TS 36.214 [4] and 3GPP TS 36.355 [24]. The reference cell is the PCell in this test case.
Neighbor cells		Cell 2 and Cell 3	Cell 2 and Cell 3 appear at random places in the neighbour cell list in the OTDOA assistance data, but Cell 2 always appears in the first half of the list, whilst Cell 3 appears in the second half of the list.
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Channel Bandwidth (BW _{channel})	MHz	10	
PRS Transmission Bandwidth	RB	50	PRS are transmitted over the system bandwidth
PRS configuration index I_{PRS}		1134	This corresponds to periodicity of 1280 ms and PRS subframe offset of I_{PRS} –1120 DL subframes, as defined in 3GPP TS 36.211 [16], Table 6.10.4.3-1
Number of consecutive downlink positioning subframes $N_{\rm PRS}$		1	As defined in 3GPP TS 36.211 [16]. The number of subframes in a positioning occasion
Physical cell ID PCI		(PCI of Cell 1 – PCI of Cell 2)mod6=0 and (PCI of Cell 1 – PCI of Cell 3)mod6=0	The cell PCIs are selected such that the relative shifts of PRS patterns among cells are as given by the test parameters
TDD uplink-downlink configuration		1	As specified in TS 36.211 [16], Section 4.2; corresponds to a configuration with 5 ms switch-point periodicity and two downlink consecutive subframes
TDD special subframe configuration		6	As specified in TS 36.211 [16], Section 4.2; corresponds to DwPTS of $19760 \cdot T_s$ and UpPTS of $4384 \cdot T_s$
CP length		Normal	The same CP length applies for DL and UL
DRX		ON	DRX parameters are further specified in Table A.8.12.2.1-3
Maximum radio frame transmit time offset between the cells at the UE antenna connector ^{Note 1}	μs	3	Synchronous cells
Expected RSTD Note 1	μs	3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
Expected RSTD uncertainty Note 2	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD- Uncertainty index
Number of cells provided in OTDOA assistance data		16	Including the reference cell
PRS muting info		Cell 1: '11110000' Cell 2: '00001111' Cell 3: '11110000'	Correponds to prs-MutingInfo defined in TS 36.355 [24]
Т1	S	3	The length of the time interval from the beginning of each test
Т2	S	5	The length of the time interval that follows immediately after time interval T1

Т3		S	5	The length of the time interval that follows immediately after time interval T2	
Note 1:	,		e receive time difference for frame 0 betw e within expected RSTD uncertainty. The		
	antenna connector, shall be within expected RSTD uncertainty. The true RSTD for Cell 2 and Cell 1 shall be different from the true RSTD for Cell 3 and Cell 1. The parameters of expected RSTD of all neighbour cells in the OTDOA assistance data are identical in the test.				
Note 2:	The parameters of identical in the test		d RSTD uncertainty of all neighbour cells	s in the OTDOA assistance data are	

Table A.8.12.2.1-2: Cell-specific test parameters for E-UTRAN TDD intra-frequency RSTD measurement reporting delay under fading propagation conditions during T1

Parameter	Unit	Cell 1	Cell 2	Cell 3				
E-UTRA RF		1	1	1				
Channel Number		Ι	I	I				
OCNG patterns		OP.1 TDD	N/A	N/A				
defined in A.3.2.2		0111100						
PBCH_RA Note 6								
PBCH_RB ^{Note 6}								
PSS_RA Note 6	-							
SSS_RA Note 6	-							
PCFICH_RB								
PHICH_RA	dB	0	N/A	N/A				
PHICH_RB	uD	v						
PDCCH_RA								
PDCCH_RB								
OCNG_RA ^{Note 1}								
OCNG_RB ^{Note 1}								
PRS_RA								
$N_{_{oc}}$ Note 3,5	dBm/		-95					
-	15 kHz							
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}$ Note 5	dB	-Infinity	-Infinity	-Infinity				
Io Note 4	dBm/ 9 MHz	-64.21	N/A	N/A				
$\hat{E}_{_{s}}/I_{_{ot}}$ Note 4	dB	0	-Infinity	-Infinity				
Propagation Condition		ETU30						
Note 1:OCNG shall be used such that active cell (Cell 1) is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.Note 2:The resources for uplink transmission are assigned to the UE prior to the start of time period T2.Note 3:Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.								

Parameter	Unit	Ce	ll 1	Cel	2	Cell 3	
		T2	T3	T2	Т3	T2	T3
E-UTRA RF			1	1			1
Channel Number				-			
OCNG patterns		OP.1	ТОО	OP.2	ТОО	OP.2	N/A
defined in A.3.2.2		01.1		01.2		TDD	1.077
PBCH_RA Note 6	+						
PBCH_RB Note 6							
PSS_RA Note 6							
SSS_RA Note 6							
PCFICH_RB							
PHICH_RA	dB	()	0		0	N/A
PHICH_RB	Ī						
PDCCH RA	•						
PDCCH_RB	+						
OCNG_RA ^{Note 1}							
OCNG_RB ^{Note 1}							
PRS_RA	dB	0	N/A	N/A	0	0	N/A
$N_{oc}^{ m Note 3,4}$	dBm/ 15 kHz	-98	-95	-98	-95	-98	-95
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$ Note 5	dB	-4	-Infinity	-Infinity	-10	-10	-Infinity
PRS $\hat{E}_{_{s}}/I_{_{ot}}$ Note 4	dB	-4.41	-Infinity	-Infinity	-10	-11.46	-Infinity
Io Note 4	dBm/ 9 MHz	-69.87	N/A	N/A	-67.15	-69.87	N/A
PRP Note 4	dBm/ 15 kHz	-102	-Infinity	-Infinity	-105	-108	-Infinity
RSRP	dBm/ 15 kHz	-102	-102	-105	-105	-108	-Infinity
Propagation Condition				ETU	30		
$\begin{array}{c} \text{constant tota}\\ \text{those in the}\\ \text{transmitted F}\\ \text{Note 2:} \text{The resource}\\ \text{Note 3:} \text{Interference}\\ \text{constant ove}\\ N_{oc} \text{ to be f}\\ \text{Note 4:} \text{PRS } \hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}} \end{array}$	es for uplink transmission are assigned to the UE prior to the start of time period T2. from other cells and noise sources not specified in the test and assumed to be er subcarriers and time and shall be modelled as AWGN of appropriate power for						
applied to al					ilerrerence (conditions st	nali de

Table A.8.12.2.1-3: Cell-specific test parameters for E-UTRAN TDD intra-frequency RSTD measurement reporting delay under fading propagation conditions

 Table A.8.12.2.1-4: DRX parameters for the test of E-UTRAN TDD intra-frequency RSTD measurement reporting delay under fading propagation conditions

Field	Value	Comment			
onDurationTimer	psf1				
drx-InactivityTimer	psf1	As apparitized in 2000 TS			
drx-RetransmissionTimer	sf1	 As specified in 3GPP TS 36.331 [2], Section 6.3.2. 			
longDRX-CycleStartOffset	sf320	30.331 [2], Section 0.3.2.			
shortDRX	disable				

A.8.12.2.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Section 8.1.2.5.2.

The UE shall perform and report the RSTD measurements for Cell 2 and Cell 3 with respect to the reference cell in the OTDOA assistance data, Cell 1, within 9280 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Section 9.1.10.3, i.e., between RSTD_0000 and RSTD_12711.

NOTE: The RSTD measurement time in the test is derived from the following expression,

 $T_{PRS}(M-1)+160\left|\frac{n}{M}\right|$, where M=8 and n=16 are the parameters specified for this test case in

Section 8.1.2.5.2, Table 8.1.2.5.2-1, under Note 1. This gives the total RSTD measurement time of 9280 ms for Cell 2 and Cell 3 with respect to the reference cell Cell 1.

A.8.13 RSTD Inter-frequency Measurements

A.8.13.1 E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay test case with the reference cell on the serving carrier frequency

A.8.13.1.1 Test Purpose and Environment

The purpose of the test is to verify that the FDD-FDD inter-frequency RSTD measurement meets the requirements specified in Section 8.1.2.6.1, specifically for Note 2 in Table 8.1.2.6.1-1, in an environment with fading propagation conditions.

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the reference as well as the PCell. Cell 2 and Cell 3 are the neighbour cells. Cell 1 is on FDD RF channel 1. Cell 2 and Cell 3 are on a FDD RF channel 2.

The UE requires measurement gaps to perform inter-frequency measurements. Gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided and configured to not overlap with PRS subframes of Cell 1.

The test consists of three consecutive time intervals, with duration of T1, T2 and T3. Cell 1 is active in T1, T2 and T3, whilst Cell 2 and Cell 3 are activated only in the beginning of T2. Cell 2 is active until the end of T3, and Cell 3 is active until the end of T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the Cell 3, where the PRS positioning occasion is as defined in Section 8.1.2.5.1. Cell 1 and Cell 3 transmit PRS only in T2. Cell 2 transmits PRS only in T3. Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Section 6.5.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap configuration is known and configured in the UE at the start of T1. DRX is configured before T2.

The test parameters are as given in Table A.8.13.1.1-1, Table A.8.13.1.1-2, Table A.8.13.1.1-3 and Table A.8.13.1.1-4.

Table A.8.13.1.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay under fading propagation conditions

Parameter	Unit	Value	Comment		
Reference cell		Cell 1	Reference cell is the cell with respect to which the RSTD measurement is defined, as specified in 3GPP TS 36.214 [4]. The reference cell is the PCell on RF channel 1 in this test case.		
Neighbor cells		Cell 2 and Cell 3	Cells on RF channel 2. The cells appear at random places in the neighbour cell list in the OTDOA assistance data, but Cell 2 always appears in the first half of the list, whilst Cell 3 appears in the second half of the list.		
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1		
Channel Bandwidth (BW _{channel})	MHz	10			
PRS Bandwidth	RB	50	PRS bandwidth is as indicated in prs-Bandwidth in the OTDOA assistance data defined in [24]. Here, PRS are transmitted over the system bandwidth		
Gap pattern Id		0	As specified in Table 8.1.2.1-1. Applies for measurements on Cell 2 and Cell 3		
Gap offset		9	As specified in 36.331 [2], Section 6.3.5		
PRS configuration index $I_{\rm PRS}$		Cell 1: 1231, Cell 2, Cell 3: 1131	This corresponds to periodicity of 1280 ms and PRS subframe offset of I_{PRS} –1120 DL subframes, as defined in 3GPP TS 36.211 [16], Table 6.10.4.3-1		
Number of consecutive downlink positioning subframes $N_{\rm PRS}$		1	As defined in TS 36.211 [16]. The number of subframes in a positioning occasion		
Physical cell ID PCI		(PCI of Cell 1 – PCI of Cell 2)mod6=0 and (PCI of Cell 1 – PCI of Cell 3)mod6=0	The cell PCIs are selected such that the relative shifts of PRS patterns among cells are as given by the test parameters		
CP length		Normal			
DRX		ON	DRX parameters are further specified in Table A.8.13.1.1-3.		
PRS subframe offset		1180	Number of subframes rounded to the closest integer. The corresponding parameter in the OTDOA assistance data is prs- SubframeOffset specified in TS 36.355 [24]		
Maximum subframe shift between the cells at the UE antenna connector ^{Note 1}	μs	3			
Expected RSTD Note 1	μs	3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator		
Expected RSTD uncertainty ^{Note 2}	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index		

Number of cells provided in OTDOA assistance data		16	The list includes the reference cell (received in OTDOA- ReferenceCellInfo [24]) on RF channel 1 and 15 other cells on RF channel 2, all received in OTDOA- ProvideAssistanceData [24].			
PRS muting info		Cell 1: '111111100000000' Cell 2: '0000000011111111' Cell 3: '111111100000000'	Correponds to prs-MutingInfo defined in TS 36.355 [24]			
T1	s	3	The length of the time interval from the beginning of each test			
Т2	S	10	The length of the time interval that follows immediately after time interval T1			
ТЗ	s 10		The length of the time interval that follows immediately after time interval T2			
Note 1: The true RSTD, which is the receive time difference for frame 0 between each two cells as seen at the UE antenna connector, shall be within the expected RSTD uncertainty window centered at expectedRSTD after subtracting the PRS subframe offset. The true RSTD for Cell 2 and Cell 1 shall be different from the true RSTD for Cell 3 and Cell 1. The parameters of expected RSTD of all neighbour cells in the OTDOA assistance data are identical in the test. Note 2: The parameters of expected RSTD uncertainty of all neighbour cells in the test.						

Table A.8.13.1.1-2: Cell-specific test parameters for E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay under fading propagation conditions during T1

Parameter	Unit	Cell 1	Cell 2	Cell 3				
E-UTRA RF		1	N/A	N/A				
Channel Number OCNG patterns								
defined in A.3.2.1		OP.5 FDD	N/A	N/A				
PBCH RA								
PBCH_RB								
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA	dB	0	N/A	N/A				
PHICH_RB								
PDCCH_RA								
PDCCH_RB								
OCNG_RA ^{Note 1}								
OCNG_RB ^{Note 1}								
$N_{_{oc}}$ Note 3	dBm/ 15 kHz	-95	N/A	N/A				
PRS $\hat{ ext{E}}_{ ext{s}}/N_{oc}$	dB	-Infinity	-Infinity	-Infinity				
lo	dBm/ 9 MHz	-66.03	N/A	N/A				
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}$	dB	-5	-Infinity	-Infinity				
Propagation Condition			ETU30					
		such that the active cell						
		er spectral density is acl						
Note 2: The resour period T2.								
Note 3: Interference from other cells and noise sources not specified in the test are assumed								
	to be constant over subcarriers and time and shall be modelled as AWGN of							
appropriate	power for	$N_{_{oc}}$ to be fulfilled.						

Para	meter	Unit	C	ell 1	Cell 2		Cell 3	
			T2	T3	T2	T3	T2	T3
E-UTRA I				1	2		2	N/A
Channel I					2		-	14/74
OCNG pa			OP.	5 FDD	OP.6	FDD	OP.6 FDD	N/A
defined in				-				-
PBCH_R								
PBCH_R	В							
PSS_RA								
SSS_RA								
PCFICH_								
PHICH_R	RA	dB		0	0		0	N/A
PHICH_F	RB							
PDCCH_	RA							
PDCCH_	RB							
OCNG_R	A ^{Note 1}							
OCNG_R	B ^{Note 1}							
PRS_RA		dB	0	N/A	N/A	0	0	N/A
$N_{\scriptscriptstyle oc}$ Note 3	N _{oc} Note 3,4 dE		-98	-98	-98	-95	-98	N/A
PRS \hat{E}_{s}	\hat{E}_{s}/N_{oc} Note 4 dB		-4	-Infinity	-Infinity	-10	-11	-Infinity
prs \hat{E}_{s}	$\rm I_{ot}$ Note 4	dB	-4	-Infinity	-Infinity	-10	-11	-Infinity
lo ^{Note 4}		dBm/ 9 MHz	-69.94	N/A	N/A	-67.15	-70.16	N/A
PRP Note 4	Ļ	dBm/ 15 kHz	-102	-Infinity	-Infinity	-105	-109	-Infinity
RSRP		dBm/ 15 kHz	-102	-102	-105	-105	-109	-Infinity
Propagat Condition					ETU	30		
Note 1:								
Note 2:		The resources for uplink transmission are assigned to the UE prior to the start of time						
Note 3:	Interferenc	Interference from other cells and noise sources not specified in the test are assumed be constant over subcarriers and time and shall be modelled as AWGN of						
	appropriate	priate power for $N_{_{oc}}$ to be fulfilled.						
Note 4:				have been				
				hese are no	t settable te			rence

Table A.8.13.1.1-3: Cell-specific test parameters for E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay under fading propagation conditions during T2 and T3

Table A.8.13.1.1-4: DRX parameters for the test of E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay under fading propagation conditions

conditions shall be applied to all PRS symbols of DL positioning subframes

Field	Value	Comment	
onDurationTimer	psf1		
Drx-InactivityTimer	psf1	As aposified in 2CDD TS	
drx-RetransmissionTimer	sf1	As specified in 3GPP TS 36.331 [2], Section 6.3.2	
longDRX-CycleStartOffset	sf320	30.331 [2], Section 0.3.2	
shortDRX	Disable		

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A.8.13.1.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Section 8.1.2.6.1.

The UE shall perform and report the RSTD measurements for Cell 2 and Cell 3 with respect to the reference cell Cell 1 within 19360 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Section 9.1.10.3, i.e., between RSTD_0000 and RSTD_12711.

NOTE: The RSTD measurement time in the test is derived from the following expression,

 $T_{PRS}(M-1)+160\left|\frac{n}{M}\right|$, where M=16 and n=16 are the parameters specified in Section 8.1.2.6.1,

Table 8.1.2.6.1-1, under Note 2. This gives the total RSTD measurement time of 19360 ms for Cell 2 and Cell 3 with respect to the reference cell Cell 1.

A.8.13.2 E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay test case with the reference cell on the serving carrier frequency

A.8.13.2.1 Test Purpose and Environment

The purpose of the test is to verify that the TDD-TDD inter-frequency RSTD measurement meets the requirements specified in Section 8.1.2.6.3, specifically for Note 2 in Table 8.1.2.6.3-1, in an environment with fading propagation conditions.

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the reference as well as the PCell. Cell 2 and Cell 3 are the neighbour cells. Cell 1 is on TDD RF channel 1. Cell 2 and Cell 3 are on TDD RF channel 2.

The UE requires measurement gaps to perform inter-frequency measurements. Gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided and configured to not overlap with PRS subframes of Cell 1.

The test consists of three consecutive time intervals, with duration of T1 and T2. Cell 1 is active in T1, T2 and T3, whilst Cell 2 and Cell 3 are activated only in the beginning of T2. Cell 2 is active until the end of T3, and Cell 3 is active until the end of T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the Cell 3, where the PRS positioning occasion is as defined in Section 8.1.2.5.1. Cell 1 and Cell 3 transmit PRS only in T2. Cell 2 transmits PRS only in T3. Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Section 6.5.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap configuration is known and configured in the UE at the start of T1. DRX is configured before T2.

The test parameters are as given in Table A.8.13.2.1-1, Table A.8.13.2.1-2, Table A.8.13.2.1-3, and Table A.8.13.2.1-4.

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Table A.8.13.2.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay under fading propagation conditions

Parameter	Unit	Value	Comment
Reference cell		Cell 1	Reference cell is the cell with respect to which the RSTD measurement is defined, as specified in 3GPP TS 36.214 [4]. The reference cell is the PCell on RF channel 1 in this test case.
Neighbor cells		Cell 2 and Cell 3	Cells on RF channel 2. The cells appear at random places in the neighbour cell list in the OTDOA assistance data, but Cell 2 always appears in the first half of the list, whilst Cell 3 appears in the second half of the list.
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Channel Bandwidth (BW _{channel})	MHz	10	
PRS Bandwidth	RB	50	PRS bandwidth is as indicated in prs- Bandwidth in the OTDOA assistance data defined in [24]. Here, PRS are transmitted over the system bandwidth
Gap pattern Id		0	As specified in Table 8.1.2.1-1. Applies for measurements on Cell 2 and Cell 3
Gap offset		12	As specified in 36.331 [2], Section 6.3.5
PRS configuration index I _{PRS}		Cell 1: 1234, Cell 2, Cell 3: 1134	This corresponds to periodicity of 1280 ms and PRS subframe offset of I_{PRS} –1120 DL subframes, as defined in 3GPP TS 36.211 [16], Table 6.10.4.3-1
Number of consecutive downlink positioning subframes $N_{\rm PRS}$		1	As defined in 3GPP TS 36.211 [16]. The number of subframes in a positioning occasion
Physical cell ID PCI		(PCI of Cell 1 – PCI of Cell 2)mod6=0 and (PCI of Cell 1 – PCI of Cell 3)mod6=0	The cell PCIs are selected such that the relative shifts of PRS patterns among cells are as given by the test parameters
TDD uplink-downlink configuration		1	As specified in TS 36.211 [16], Section 4.2; corresponds to a configuration with 5 ms switch-point periodicity and two downlink consecutive subframes
TDD special subframe configuration		6	As specified in TS 36.211 [16], Section 4.2; corresponds to DwPTS of $19760 \cdot T_s$ and UpPTS of $4384 \cdot T_s$
CP length		Normal	The same CP length for DL and UL
DRX		ON	DRX parameters are further specified in Table A.8.13.2.1-3.
PRS subframe offset		1180	Number of subframes rounded to the closest integer. The corresponding parameter in the OTDOA assistance data is prs-SubframeOffset specified in TS 36.355 [24]
Maximum subframe shift between the cells at the UE antenna connector ^{Note 1}	μs	3	
Expected RSTD Note 1	μs	3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
Expected RSTD uncertainty Note 2	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD- Uncertainty index

Number of cells provided in OTDOA assistance data		16	The list includes the reference cell (received in OTDOA-ReferenceCellInfo [24]) on RF channel 1 and 15 other cells on RF channel 2, all received in OTDOA- ProvideAssistanceData [24].	
PRS muting info		Cell 1: '111111100000000' Cell 2: '0000000011111111' Cell 3: '111111100000000'	Correponds to prs-MutingInfo defined in TS 36.355 [24]	
T1	s	3	The length of the time interval from the beginning of each test	
T2	s	10	The length of the time interval that follows immediately after time interval T1	
ТЗ	s	10	The length of the time interval that follows immediately after time interval T2	
 Note 1: The true RSTD, which is the receive time difference for frame 0 between each two cells as seen at the UE antenna connector, shall be within the expected RSTD uncertainty window centered at expectedRSTD after subtracting the PRS subframe offset. The true RSTD for Cell 2 and Cell 1 shall be different from the true RSTD for Cell 3 and Cell 1. The parameters of expected RSTD of all neighbour cells in the OTDOA assistance data are identical in the test. Note 2: The parameters of expected RSTD uncertainty of all neighbour cells in the OTDOA assistance data are identical in the test. 				

Parameter	Unit	Cell 1	Cell 2	Cell 3				
E-UTRA RF		1	N/A	N/A				
Channel Number		•						
OCNG patterns		OP.1 TDD	N/A	N/A				
defined in A.3.2.2								
PBCH_RA PBCH RB	-							
PSS_RA								
SSS_RA								
PCFICH RB								
PHICH_RA								
PHICH_RB	dB	0	N/A	N/A				
PDCCH_RA	-							
PDCCH_RB	-							
OCNG_RA ^{Note 1}								
OCNG_RB ^{Note 1}								
PRS_RA								
N_{oc} Note 3	dBm/ 15 kHz	-95	-95 N/A					
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-Infinity	-Infinity	-Infinity				
lo	dBm/ 9 MHz	-66.03	N/A	N/A				
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	-5	-Infinity	-Infinity				
Propagation Condition			ETU30					
			ell (Cell 1) is fully alloca					
			chieved for all OFDM s					
Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time								
Note 3: Interferenc to be const	period T2. Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.							
appropriate								

Table A.8.13.2.1-2: Cell-specific test parameters for E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay under fading propagation conditions during T1

Table A.8.13.2.1-3: Cell-specific test parameters for E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay under fading propagation conditions

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T2	T3	T2	T3	T2	T3
E-UTRA RF			1		2	2	N/A
Channel Number			1	4	<u> </u>	2	
OCNG patterns		OP ·	1 TDD	OP 2	TDD	OP.2 TDD	N/A
defined in A.3.2.2		01.	TIDE	01.2			11/7
PBCH_RA							
PBCH_RB							
PSS_RA							
SSS_RA							
PCFICH_RB							
PHICH_RA	dB		0	()	0	N/A
PHICH_RB							
PDCCH_RA							
PDCCH_RB							
OCNG_RA ^{Note 1}							
OCNG_RB ^{Note 1}							
PRS_RA	dB	0 N/A		N/A	0	0	N/A
N_{oc} Note 3,4	dBm/ 15 kHz	-98	-98	-98	-95	-98	N/A

PRS \hat{E}_{s}	N_{oc} Note 4	dB	-4	-Infinity	-Infinity	-10	-11	-Infinity	
PRS \hat{E}_s/I_{ot} Note 4 dB -4 -Infinity -Infinity						-10	-11	-Infinity	
lo Note 4		dBm/ 9 MHz	-69.94	N/A	N/A	-67.15	-70.16	N/A	
PRP Note 4	P ^{Note 4} dBm/ 15 kHz -102 -Infinity -Infinity -105 -109					-109	-Infinity		
RSRP		dBm/ 15 kHz							
Propagat Condition					ETU	30			
Note 1: Note 2:	and a cons symbols of allocated in	tant total tr her than the the subfra	ansmitted ose in the s mes with t	ctive cells (a power specti subframes w ransmitted P ssion are ass	ral density i ith transmit RS.	s achieved ted PRS. 1	l for all ÓFI There is no	DM PDSCH	
Note 3:	Interferenc to be const	ant over su	er cells and noise sources not specified in the test and assumed ubcarriers and time and shall be modelled as AWGN of N_{ac} to be fulfilled.						
Note 4:	given for in	formation p	ourpose. Th	have been d nese are not PRS symbol	settable te	st paramet	ers. Interfe		

Table A.8.13.2.1-4: DRX parameters for the test of E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay under fading propagation conditions

Field	Value	Comment
onDurationTimer	psf1	
drx-InactivityTimer	psf1	As appointed in 2CDD TS
drx-RetransmissionTimer	sf1	As specified in 3GPP TS 36.331 [2], Section 6.3.2.
longDRX-CycleStartOffset	sf320	30.331 [2], Section 0.3.2.
shortDRX	disable	

A.8.13.2.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Section 8.1.2.6.3.

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The UE shall perform and report the RSTD measurements for Cell 2 and Cell 3 with respect to the reference cell Cell 1 within 19360 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Section 9.1.10.3, i.e., between RSTD_0000 and RSTD_12711.

NOTE: The RSTD measurement time in the test is derived from the following expression,

$$T_{PRS}(M-1)+160\left|\frac{n}{M}\right|$$
, where M =16 and n =16 are the parameters specified in Section 8.1.2.6.3,

Table 8.1.2.6.3-1, under Note 2. This gives the total RSTD measurement time of 19360 ms for Cell 2 and Cell 3 with respect to the reference cell Cell 1.

A.8.14 E-UTRAN TDD - FDD Inter-frequency Measurements

A.8.14.1 E-UTRAN TDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

A.8.14.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD-FDD inter-frequency cell search requirements in section 8.1.2.3.3.

The test parameters are given in Tables A.8.14.1.1-1 and A.8.14.1.1-2. In this test, there are two cells on different carrier frequencies and gap pattern configuration #0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.14.1.1-1: General test parameters for E-UTRAN TDD-FDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
Cell 1 PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
Cell 1		DL Reference Measurement	As specified in section A.3.1.2.2
PCFICH/PDCCH/PHICH		Channel R.6 TDD	
parameters			
Cell1 Special subframe		6	As specified in table 4.2-1 in TS 36.211.
configuration			
Cell1 Uplink-downlink		1	As specified in TS 36.211 section 4.2
configuration			Table 4.2-2.
Cell 2 PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
Cell 2		DL Reference Measurement	As specified in section A.3.1.2.1
PCFICH/PDCCH/PHICH		Channel R.6 FDD	
parameters			
Cell 1 E-UTRA TDD RF		1	One TDD carrier frequency is used.
Channel Number			
Cell 2 E-UTRA FDD RF		2	One FDD carrier frequency is used.
Channel Number			
Channel Bandwidth	MHz	10	
(BW _{channel})			
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
Gap Pattern Id		0	As specified in TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Table A.8.14.1.1-2: Cell specific test parameters for E-UTRAN TDD-FDD inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

T1T2T1T2E-UTRA RF Channel12Number110BW obtainedMHz10OCNG Patternsdefined in A.3.2.2.1OP.1 TDD(OP.1 TDD) and inA.3.2.1.2 (OP.2 FDD)PBCH_RAdBPBCH_RAdBPSS, RAdBPSS, RAdBPCFICH_RBdBPHICH_RAdBPDCCH, RAdBPDCCH, RAdBPDCCH, RAdBPDCCH, RAdBPDSCH_RAdBOCNG_RA ^{NOIDE1} dBOCNG_RA ^{NOIDE1} dBOCNG_RA ^{NOIDE1} dBOCNG_RA ^{NOIDE3} dBm/15 KHz-94-94-1nfinity7SCH_RPdBA44-Infinity7SCH_RAPropagation ConditionETU70Note 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 3: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_{ac} to be fulfilled.Note 4:RSRP and SCH_RP levels have been derived from other parameters for information purposes.	Parameter	Unit	Ce	ll 1	(Cell 2		
NumberMHz1010BW-bannelMHz1010OCNG Patterns defined in A.3.2.2.1OP.1 TDDOP.2 FDD(OP.1 TDD) and in A.3.2.1.2 (OP.2 FDD)OP.1 TDDOP.2 FDDPBCH_RAdBBPSCH_RAdBBPSS_RAdBOOPCFICH_RBdBOOPDCCH_RAdBOOPDCCH_RAdBOOPDCCH_RAdBOOPDSCH_RAdBOOPDSCH_RAdBOOPDSCH_RBdBOOOCNG_RANore 1dBOOCNG_RANore 1dBOOCNG_RANore 1dBOOCNG_RANore 3dBm/15 kHz-94-Infinity-91 \hat{E}_s/N_{ac} CH_RP Nore 4dBm/15 kHz-94-94-Infinity7CH_RP Nore 4dBm/15 kHzOCNG_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:The resources for uplink transmission are assigned to the UE prior to the start of time period T2.Note 3: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_{ac} to be fulfilled.			T1	T2	T1	T2		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	E-UTRA RF Channel			1		2		
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Number							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	BW _{channel}	MHz	1	0		10		
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	OCNG Patterns							
A.3.2.1.2 (OP.2 FDD) B PBCH_RA dB PBCH_RB dB PSS_RA dB SSS_RA dB PCFICH_RB dB PHICH_RA dB PHICH_RB dB PDCCH_RA dB PDCCH_RA dB PDCCH_RB dB PDSCH_RA dB OCNG_RA ^{Note 1} dB OCNG_RB ^{Note 1} dB OCNG_RA ^{Note 1} dB OCNG_RA ^{Note 1} dB OCNG_RA ^{Note 1} dB OCNG_RA ^{Note 3} dBm/15 kHz -94 -94 -1nfinity 7 SCH_RP ^{Note 4} dBm/15 kHz -94 -94 -1nfinity 7 SCH_RP ^{Note 4} dBm/15 kHz -94 -94 -1nfinity 7 SCH_RP ^{Note 4} dBm/15 kHz -94 -94 -1nfinity 7 SCH_RP ^{Note 4} dBm/15 kHz -94 -94 -107 Note 1:			OP.1	TDD	OP	.2 FDD		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $								
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				`		0		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				J		0		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $								
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$								
$\begin{tabular}{ c c c c c c } \hline OCNG_RB^{Note 1} & dB & & & & & & & & & & & & & & & & & $	PDSCH_RB							
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	OCNG_RA							
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		*						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$N_{_{oc}}$ Note 3				-98			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			-94	-94	-Infinity			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	7		
Propagation Condition ETU70 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: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: 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.	SCH_RP ^{Note 4}	dBm/15 kHz	-94	-94	-Infinity	-91		
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:The resources for uplink transmission are assigned to the UE prior to the start of time period T2.Note 3: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.	\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	7		
spectral density is achieved for all OFDM symbols. Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: 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.	Propagation Condition			E	TU70	•		
Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: 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.					constant total tra	ansmitted power		
Note 3: 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.					r to the start of t	ime period T2		
fulfilled.								
	over subcarri	ers and time and sha	all be modelled a	s AWGN of app	ropriate power f	or $N_{_{oc}}$ to be		
Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes								
They are not settable parameters themselves.				m other parame	ters for informati	on purposes.		

A.8.14.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.15 E-UTRAN FDD - TDD Inter-frequency Measurements

A.8.15.1 E-UTRAN FDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

A.8.15.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD-TDD inter-frequency cell search requirements in section 8.1.2.3.4.

The test parameters are given in Table A.8.15.1.1-1 and A.8.15.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.15.1.1-1: General test parameters for E-UTRAN FDD-TDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
Cell 1 PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
Cell 1 PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
Cell 2 PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
Cell 2 PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Gap Pattern Id		1	As specified in TS 36.133 section 8.1.2.1.
Cell2 Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. Applicable to Cell 2.
Cell2 Uplink-downlink configuration		1	As specified in TS 36.211 section 4.2 Table 4.2-2. Applicable to Cell 2.
CP length		Normal	
Cell 1 E-UTRA FDD RF Channel Number		1	One TDD carrier frequency is used.
Cell 2 E-UTRA TDD RF Channel Number		2	One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	10	

Table A.8.15.1.1-2: Cell specific test parameters for E-UTRAN FDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Ce	ll 1	Ce	ell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel		1	1		2		
Number							
BW _{channel}	MHz	1	0	1	10		
OCNG Pattern defined							
in A.3.2.1.1 (OP.1		OP.1	FDD	OP.2	2 TDD		
FDD) and in A.3.2.2.2							
(OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		_		•		
PHICH_RB	dB	()		0		
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4	4	-Infinity	7		
$N_{_{oc}}$ Note 3	dBm/15 kHz			-98			
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91		
SCH_RP ^{Note 4}	dBm/15 kHz	-94	-94	-infinity	-91		
\hat{E}_{s}/N_{oc}	dB	4	4	-Infinity	7		
Propagation Condition			E	ETU70			
Note 1: OCNG shall b spectral densi	e used such that bo ty is achieved for all	OFDM symbols	allocated and a	a constant total trai			
	s for uplink transmist om other cells and r						
over subcarrie	ers and time and sha	all be modelled a	s AWGN of ap	propriate power for	r N_{ac} to be		
fulfilled. Note 4: RSRP and SC	CH_RP levels have the settable parameters	been derived from					

A.8.15.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680 ms 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 $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCC

A.8.16 E-UTRAN Carrier Aggregation Measurements

A.8.16.1 E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX

A.8.16.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects events A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in [2] within the requirements stated in section 8.3.3.2.1.

The test parameters are given in Tables A.8.16.1.1-1 and A.8.16.1.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A2 (PCell and SCell) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. At beginning of T3 the transmission powers of cells 1, 2 and 3 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell, respectively.

Table A.8.16.1.1-1: General test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

	Parameter	Unit	Value	Comment
	CH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
	ICH/PDCCH/PHICH meters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
	FRA RF Channel		1, 2	Two radio channels are used for this test
	ve PCell		Cell 1	Primary cell on RF channel number 1.
Configured deactivated SCell			Cell 2	Configured deactivated secondary cell on RF channel number 2.
Neig	hbour cell		Cell 3	Neighbor cell to be identified on RF channel number 2.
	nnel Bandwidth _{channel})	MHz	10	Channel bandwidth for cells on primary and secondary component carriers
	ength		Normal	
DRX			OFF	Continuous monitoring of primary cell
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
	Threshold RSRP	dBm	-90	Actual RSRP threshold for event A2. Needs to take absolute accuracy tolerance in section 9.1.11.1 into account plus margin.
	Time To Trigger	S	0	
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
A6	Offset	dB	6	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in section 9.1.11.2 into account plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	individual offset for cells F channel number 1	dB	0	Individual offset for cells on primary component carrier.
	individual offset for cells F channel number 2	dB	0	Individual offset for cells on secondary component carrier.
Filter	r coefficient		0	L3 filtering is not used
SCell measurement cycle (measCycleSCell)		ms	320	
Τ1		S	5	During this time the UE shall be aware of cells 1 and 2 but not cell 3.
T2		S	≤12	UE should report Event A6 within 6.4s (20×scellMeasCycle)
Т3		S	5	UE should report Event A2 within 200 ms and 1.6s for cells 1 and 2, respectively.

Parameter	Unit		Cell 1		Cell 2				Cell 3		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel					2						
Number		1				2			2		
BW _{channel}	MHz		10			10			10		
Timing offset to Cell 1	μs		-			1.3			3		
OCNG Patterns											
defined in A.3.2.1.1		(OP.1 FDD		(OP.2 FDD		C	P.2 FDD		
(OP.1 FDD) and in											
A.3.2.1.2 (OP.2 FDD)											
PBCH_RA	dB										
PBCH_RB	dB										
PSS_RA	dB										
SSS_RA	dB										
PCFICH_RB	dB										
PHICH_RA	dB										
PHICH_RB	dB		0			0			0		
PDCCH_RA	dB										
PDCCH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB										
OCNG_RB ^{Note 1}	dB										
Note 2	dBm/15 kHz		-98				-9	8			
RSRP ^{Note 3}	dBm/15 kHz	-82	-82	-98	-82	-82	-98	-infinity	-82	-98	
Ê _s /I _{ot}	dB	16	16	0	16	-0.11	-3	-infinity	-0.11	-3	
SCH_RP Note 3	dBm/15 kHz	-82	-82	-98	-82	-82	-98	-infinity	-82	-98	
Ê _s /N _{oc}	dB	16	16	0	16	16	0	-infinity	16	0	
Propagation Condition						ETU70					
achieved for a	e used such that II OFDM symbols	s.	-				-			-	

Table A.8.16.1.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

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 SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 4:

A.8.16.1.2 **Test Requirements**

The UE shall send one Event A6 triggered measurement report with a measurement reporting delay of less than 6.4s (20×measCycleSCell) from the beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 200 ms from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 1.6s ($5 \times$ measCycleSCell) from beginning of time T3.

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% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.2 E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX

A.8.16.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects events A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in [2] within the requirements stated in section 8.3.3.2.1.

The test parameters are given in Tables A.8.16.2.1-1 and A.8.16.2.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A2 (PCell and SCell) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. At beginning of T3 the transmission powers of cells 1, 2 and 3 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell, respectively.

Table A.8.16.2.1-1: General test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

	Parameter	Unit	Value	Comment
PDS	CH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
para	CH/PDCCH/PHICH meters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
E-UT Num	RA RF Channel ber		1, 2	Two radio channels are used for this test
Activ	e PCell		Cell 1	Primary cell on RF channel number 1.
SCel			Cell 2	Configured deactivated secondary cell on RF channel number 2.
	hbour cell		Cell 3	Neighbor cell to be identified on RF channel number 2.
	nnel Bandwidth	MHz	10	Channel bandwidth for cells on primary and secondary component carriers
	ength		Normal	
	cial subframe guration		6	As specified in table 4.2.1 in TS 36.211. The same configuration applies to all cells.
Uplin	ik-downlink guration		1	¥
DRX			OFF	Continuous monitoring of primary cell
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
	Threshold RSRP	dBm	-90	Actual RSRP threshold for event A2. Needs to take absolute accuracy tolerance in section 9.1.11.1 into account plus margin.
	Time To Trigger	S	0	
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB	6	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in section 9.1.11.2 into account plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
on R	individual offset for cells F channel number 1	dB	0	Individual offset for cells on primary component carrier.
	individual offset for cells F channel number 2	dB	0	Individual offset for cells on secondary component carrier.
Filter	· coefficient		0	L3 filtering is not used
	l measurement cycle scycleSCell)	ms	320	
Ť1		S	5	During this time the UE shall be aware of cells 1 and 2 but not cell 3.
T2		S	≤12	UE should report Event A6 within 6.4s (20×scellMeasCycle)
Т3		S	5	UE should report Event A2 within 200 ms and 1.6s for cells 1 and 2, respectively.

Parameter	Unit		Cell 1			Cell 2			Cell 3		
		T1	T2	T3	T1	T2	T3	T1	T2	Т3	
E-UTRA RF Channel		1						2			
Number		-			2				Z		
BW _{channel}	MHz		10			10			10		
Timing offset to Cell 1	μs		-			1.3			3		
OCNG Patterns											
defined in A.3.2.2.1			OP.1 TDD		(OP.2 TDD		C	P.2 TDD		
(OP.1 TDD) and in											
A.3.2.2.2 (OP.2 TDD)											
PBCH_RA	dB										
PBCH_RB	dB										
PSS_RA	dB										
SSS_RA	dB										
PCFICH_RB	dB										
PHICH_RA	dB										
PHICH_RB	dB		0			0		0			
PDCCH_RA	dB										
PDCCH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB										
OCNG_RB ^{Note 1}	dB										
Noc Note 2	dBm/15 kHz		-98				-9	8			
RSRP Note 3	dBm/15 kHz	-82	-82	-98	-82	-82	-98	-infinity	-82	-98	
Ê _s /I _{ot}	dB	16	16	0	16	-0.11	-3	-infinity	-0.11	-3	
SCH_RP Note 3	dBm/15 kHz	-82	-82	-98	-82	-82	-98	-infinity	-82	-98	
Ê _s /N _{oc}	dB	16	16	0	16	16	0	-infinity	16	0	
Propagation Condition						ETU70					
	e used such that II OFDM symbols	s.									

Table A.8.16.2.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

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 SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

A.8.16.2.2 Test Requirements

The UE shall send one Event A6 triggered measurement report with a measurement reporting delay of less than 6.4s ($20 \times$ measCycleSCell) from the beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 200 ms from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 1.6s ($5 \times$ measCycleSCell) from beginning of time T3.

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% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.9 Measurement Performance Requirements

Unless explicitly stated otherwise:

- Reported measurements shall be within defined range of accuracy limits defined in Section 9 for at least 90 % of the reported cases. If multiple measurement performance requirements are verified in the same test, the reported measurements for each requirement shall be within defined range of accuracy limits of the corresponding requirement defined in Section 9 for at least 90% of the reported cases.
- Cell 1 is the PCell.
- Measurements are performed in RRC_CONNECTED state.
- The reference channels assume transmission of PDSCH with a maximum number of 5 HARQ transmissions unless otherwise specified.

A.9.1 RSRP

A.9.1.1 FDD Intra frequency case

A.9.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.2 for FDD intra frequency measurements.

A.9.1.1.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.1.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

P	arameter	Unit	Tes			st 2		st 3
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
	Channel Number	MHz	1			1 0		1 0
BW _{channel}				-		-		-
Measurement		n _{PRB}		-27	22—27		22—27	
	ence measurement		R.0	-	R.0	-	R.0	-
	ed in A.3.1.1.1		FDD		FDD		FDD	
PDSCH alloca		n _{PRB}	13—36	-	13—36	-	13—36	-
	CH/PHICH Reference							
A.3.1.2.1	channel defined in		R.6	FDD	K.0	FDD	R.0	FDD
	ns defined in A.3.2.1.1		0.0.4		0.0.4		0.0.4	0.0.0
· /	nd A.3.2.1.2 (OP.2		OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD
FDD)			100	TUU		TUU	100	100
	PBCH_RA							
<u>PBCH_RB</u> PSS_RA		4						
SSS_RA		1						
PCFICH_RB]						
PHICH_RA								
PHICH_RB		dB	0	0	0	0	0	0
_	PDCCH_RA PDCCH_RB PDSCH_RA							
PDSCH_RA								
PDSCH_RB		j						
OCNG_RB ^{Note}								
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24	dBm/15 kHz	z -106 -106		-88		-116	
$N_{_{oc}}^{_{ m Note2}}$	Bands 2, 5 and 7			400		00	-114 -112.5	
00	Band 25			-106		-88		
	Bands 3, 8, 12, 13,					-113		
	14, 17, 20 and 22 Band 9	-					-115	
Ê/I	Balla 9	٦D	25	0	25	<u>^</u>		
\hat{E}_{s}/I_{ot}		dB	2.5	-6	2.5	-6	0.46	-5.76
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24						-113	-117
RSRP ^{Note3}	Bands 2, 5 and 7		100	105	00	07	-111	-115
KORP	Band 25	dBm/15 kHz	-100	-105	-82	-87	-109.5	-113.
	Bands 3, 8, 12, 13,						-110	-114
	14, 17, 20 and 22 Band 9	1					-112	-116
	Bands 1, 4, 6, 10,						-112	-110
	11, 18, 19, 21, 23						-82	.43
	and 24							40
Io ^{Note3}	Bands 2, 5 and 7	dBm/9 MHz	-70.27	-70.27	-52.27	-52.27		0.43
	Band 25 Bands 3, 8, 12, 13,	1						9.93
	14, 17, 20 and 22						-79	.43
	Band 9						-81	.43
\hat{E}_{s}/N_{oc}		dB	6	1	6	1	3	-1
Propagation c	ondition	-	AW	GN	AW	'GN	AW	'GN
Note 1: OCNG	shall be used such that bot	h cells are fully all						
	ed for all OFDM symbols.		nonified in 4	no toot in	ourmod to be	oonstant -	vor oubco-	oro cod
	ence from other cells and n					e constant o	wer subcarri	ers and
	nd shall be modelled as AW			00		Thousan		oro
Note 3: RSRP a	and lo levels have been der	ived from other pa	arameters fo	r informatio	n purposes.	They are no	ot settable p	aramete

Table A.9.1.1.2-1: RSRP\ FDD Intra frequency test parameters

Note 3: RSRP and lo 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.9.1.1.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in section 9.1.2.

A.9.1.2 TDD Intra frequency case

A.9.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.2 for TDD intra frequency measurements.

A.9.1.2.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.2.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Dr	arameter	Unit	Tes		-	st 2		st 3
		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell
E-UTRA RF Channel Number						1		1
BW _{channel}		MHz	1	0	1	0	10	
Special subfra	ame		e	3	6		6	
configuration ^N	Note1							-
Uplink/downlir	nk configuration ^{Note1}			1		1		1
Measurement		n_{PRB}		-27		-27		-27
	ence measurement		R.0	-	R.0	-	R.0	-
channel define	ed in A.3.1.1.2		TDD		TDD		TDD	
PDSCH alloca	ation	n_{PRB}	13—36	-	13—36	-	13—36	-
PDCCH/PCFI	CH/PHICH							
Reference me	easurement channel		R.6	TDD	R.6	TDD	R.6	TDD
defined in A.3								1
OCNG Patterr			OP.1	OP.2	OP.1	OP.2	OP.1	OP.2
A.3.2.2.1 (OP			TDD	TDD	TDD	TDD	TDD	TDD
A.3.2.2.2 (OP) PBCH_RA	.2 100)							
PBCH_RB								
PSS_RA								
SSS_RA								
PHICH_RA								
PHICH_RB			0	0	0	0	0	0
PDCCH_RA		dB	Ū	U	Ū	Ū	Ŭ	Ŭ
PDCCH_RB								
PDSCH_RA								
PDSCH_RB								
OCNG_RA ^{Note}	92							
OCNG_RB ^{Note}								
	Bands 33, 34, 35,						1	16
$N_{_{oc}}^{_{ m Note3}}$	36, 37, 38, 39, 40	dBm/15 kHz	-106	106	00	00	-1	16
60	Band 42, 43		-100	-100	-106 -88	-88 -88	-115	
	Band 41						-1	14
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	2.5	-6	2.5	-6	0.5	-5.76
	Bands 33, 34, 35,						-113	-117
RSRP ^{Note4}	36, 37, 38, 39, 40 Band 42, 43	dBm/15 kHz	-100	-105	-82	-87	-112	-116
	Band 42, 43 Band 41						-112	-115
	Bands 33, 34, 35,		1		<u> </u>			
lo ^{Note4}	36, 37, 38, 39, 40					Fa a -	-82	2.43
10.1010-1	Band 42, 43	dBm/9 MHz	-70.27	-70.27	-52.27	-52.27	-81	.43
	Band 41						-80).43
\hat{E}_{s}/N_{oc}		dB	6	1	6	1	3	-1
Propagation c		-	AW			'GN		/GN
Note 2: OCNG s achieve	cial subframe and uplink- shall be used such that bo ed for all OFDM symbols. ence from other cells and	oth cells are fully all	ocated and a	a constant t	otal transmit	ted power s	pectral dens	-

Table A.9.1.2.2-1: RSRP TDD Intra frequency test parameters

time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Note 4: RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

A.9.1.2.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in section 9.1.2.

A.9.1.3 FDD—FDD Inter frequency case

A.9.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.3 for FDD—FDD inter frequency measurements.

A.9.1.3.2 Test parameters

In this set of test cases the cells are on different carrier frequencies. Both absolute and relative accuracy of RSRP interfrequency measurements are tested by using the parameters in Table A.9.1.3.2-1 In all test cases, Cell 1 is the PCell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap.

			·		-	
Pa	rameter	Unit	Cell 1	st 1 Cell 2	Cell 1	st 2 Cell 2
E-UTRA RF Cha	nnel Number			2		2
BW _{channel}		MHz	10	10	10	10
Gap Pattern Id			0	-	0	-
Measurement ba	ndwidth	n _{PRB}	22-	27	22-	-27
PDSCH Reference	ce measurement		R.0		R.0	
channel defined i			FDD	-	FDD	-
PDSCH allocatio		n _{PRB}	13—36	-	13—36	-
PDCCH/PCFICH measurement ch A.3.1.2.1	/PHICH Reference annel defined in		R.6	FDD	R.6	FDD
	defined in A.3.2.1.1		OP.1	OP.2	OP.1	OP.2
	A.3.2.1.2 (OP.2 FDD)		FDD	FDD	FDD	FDD
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_RB PHICH_RA		1		0		
PHICH_RA		dB	0		0	0
PDCCH RA			Ŭ			0
PDCCH RB		•				
PDSCH RA						
PDSCH_RB						
OCNG_RANote1						
OCNG_RBNote						
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24				-109	-117
$N_{_{oc}}$ Note2	Bands 2, 5 and 7 Band 25	dBm/15 kHz	-88.65	-88.65	-107 -105.5	-115 -113.5
	Bands 3, 8, 12, 13,	-			-106	-114
	14, 17, 20 and 22 Band 9				-108	-116
\hat{E}_{s}/I_{ot}	Dana o	dB	10	10	13	-4
$\mathbf{L}_{s}/\mathbf{I}_{ot}$	Bands 1, 4, 6, 10,	UD	10	10	15	-4
	11, 18 , 19, 21, 23 and 24				-96	-121
RSRP ^{Note3}	Bands 2, 5 and 7		70.65	70.05	-94	-119
RORP	Band 25	dBm/15 kHz	-78.65	-78.65	-92.5	-117.5
	Bands 3, 8, 12, 13,				-93	-118
	14, 17, 20 and 22					
	Band 9				-95	-120
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24				-68.01	-87.76
Io ^{Note3}	Bands 2, 5 and 7		E0.45	E0 45	-66.01	-85.76
10	Band 25	dBm/9 MHz	-50.45	-50.45	-64.51	-84.26
	Bands 3, 8, 12, 13,				-65.01	-84.76
	14, 17, 20 and 22 Band 9	ł			-67.01	-86.76
\hat{E}_s/N_{oc}		dB	10	10	13	-4
	dition					
Propagation cond		that both calls =		/GN	AW a constant	
trans Note 2: Inter	NG shall be used such smitted power spectra ference from other ca e constant over subca	al density is achie ells and noise sou	ved for all (irces not sp	OFDM sym	nbols. the test is a	assumed
			IU SHAIL DE	modelled		
Note 3: RSR purp	Topriate power for N_{c} RP and Io levels have poses. They are not so	been derived fror ettable parameter	s themselv	es.		
	P minimum requirem e at each receiver an		d assuming	independ	ent interfer	ence and

Table A.9.1.3.2-1: RSRP FDD—FDD Inter frequency test parameters

A.9.1.3.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in section 9.1.3.

A.9.1.4 TDD—TDD Inter frequency case

A.9.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.3 for TDD—TDD inter frequency measurements.

A.9.1.4.2 Test parameters

In this set of test cases the cells are on different carrier frequencies. Both absolute and relative accuracy of RSRP interfrequency measurements are tested by using the parameters in Table A.9.1.4.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap.

		1	-		-	<u> </u>
Pa	rameter	Unit	-	st 1 Cell 2		st 2 Cell 2
E-UTRA RF Cha	nnel Number		Cell 1	2	Cell 1	2
BW _{channel}		MHz	10	10	10	10
Special subframe	e configuration ^{Note1}		(6	6	6
Uplink-downlink	configuration ^{Note1}			1		1
Gap Pattern Id			0	-	0	-
Measurement ba		n _{PRB}		27		-27
PDSCH Reference channel defined i			R.0 TDD	-	R.0 TDD	-
PDSCH allocatio	n	n _{PRB}	13—36	-	13—36	-
	PDCCH/PCFICH/PHICH Reference measurement channel defined in		R.6	TDD	R.6	TDD
OCNG Patterns defined in A.3.2.2.1			OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD
PBCH RA	(OP.1 TDD) and A.3.2.2.2 (OP.2 TDD) PBCH_RA			TDD	TDD	
PBCH_RB						
PSS_RA						
SSS_RA		-				
PCFICH_RB						
PHICH_RA PHICH_RB			0	0	0	0
PDCCH_RA		dB	0	0	0	0
PDCCH_RB						
PDSCH_RA						
PDSCH_RB						
OCNG_RA ^{Note2}						
OCNG_RB ^{Note2}	OCNG_RB ^{Note2}					
	Bands 33, 34, 35, 36, 37, 38, 39, 40				-109	-117
$N_{_{oc}}$ Note3	Band 42, 43		-88.65	-88.65	-108	-116
	Band 41					-115
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$		dB	10	10	13	-4
	Bands 33, 34, 35, 36, 37, 38, 39, 40				-96	-121
RSRP ^{Note4}	Band 42, 43	dBm/15 kHz	-78.65	-78.65	05	-120
	Band 41				-95	-119
	Bands 33, 34, 35, 36, 37, 38, 39, 40				-68.01	-87.76
Io ^{Note4}	Band 42, 43	dBm/9 MHz	-50.45	-50.45	-67.01	-86.76
	Band 41				01.01	-85.76
\hat{E}_s/N_{oc}		dB	10	10	13	-4
Propagation cond		-		/GN		'GN
	special subframe and	l uplink-downlink o	configuratio	ons see Ta	bles 4.2-1	and 4.2-
	3GPP TS 36.211. IG shall be used sucl	h that both cells a	re fullv allo	cated and	a constant	total
	smitted power spectra					
Note 3: Inter	ference from other ce e constant over subca	ells and noise sou	rces not sp	ecified in t	the test is a	assumed
						. .
appropriate power for N_{oc} to be fulfilled.						
	P and lo levels have		n other par	ameters fo	or informati	on
purp	oses. They are not s	ettable parameters	s themselv	es.		
	P minimum requirem		assuming	independe	ent interfer	ence and
noise at each receiver antenna port.						

Table A.9.1.4.2-1: RSRP TDD—TDD Inter frequency test parameters

A.9.1.4.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in section 9.1.3.

A.9.1.5 FDD—TDD Inter frequency case

A.9.1.5.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.3 for FDD—TDD inter frequency measurements.

A.9.1.5.2 Test parameters

In this set of test cases the cells are on different carrier frequencies. Both absolute and relative accuracy of RSRP inter frequency measurements are tested by using the parameters in Table A.9.1.5.2-1 and Table A.9.1.5.2-2. In all test cases, Cell 1 is the serving cell and Cell 2 the target cell. Cell 1 is FDD cell and Cell 2 is TDD cell. The inter frequency measurements are supported by a measurement gap.

Pa	arameter	Unit		st 1 1	Tes Ce	st 2 1
E-UTRA RF C	Channel Number			<u>n i</u>	1	
BW _{channel}		MHz	1	0	1	0
Gap Pattern I	d		()	0)
Measurement		n _{PRB}	22-	-27	22–	-27
	rence measurement ed in A.3.1.1.1		R.0	FDD	R.0 FDD	
PDSCH alloca	ation	n _{PRB}	13—36		13–	-36
Reference me defined in A.3	PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1		R.6	FDD	R.6 I	FDD
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and A.3.2.1.2 (OP.2 FDD)			OP.1	FDD	OP.1	FDD
PBCH_RA PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_RB						
PHICH_RA			0	0	0	0
PHICH_RB PDCCH_RA		dB	0	0	U	0
	PDCCH_RB					
PDSCH_RA						
PDSCH_RB						
	DCNG_RANote1					
OCNG RBNo						
N _{oc} Note2	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24				-109	
	Bands 2, 5 and 7 Band 25	dBm/15 kHz	-88	.65	-10 -10	-
	Bands 3, 8, 12, 13, 14, 17, 20 and 22				-106	
•	Band 9				-108	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	1	0	1	4
	Bands 1, 4, 6, 10, 11, 18 , 19, 21, 23 and 24				-95	
	Bands 2, 5 and 7				-9	3
RSRP ^{Note3}	Band 25	dBm/15 kHz	-78	.65	-91	1.5
	Bands 3, 8, 12, 13, 14, 17, 20 and 22				-9	2
	Band 9				-9	94
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24				-67	.05
NetaC	Bands 2, 5 and 7				-65	
lo ^{Note3}	Band 25	dBm/9 MHz		-50.45	-63	.55
	Bands 3, 8, 12, 13, 14, 17, 20 and 22				-64.05	
	Band 9				-66	.05
\hat{E}_{s}/N_{oc}		dB	1	0	1	4
Propagation c	condition	-	AW	'GN	AW	GN
Note 1: OC trai Note 2: Inte	CNG shall be used such nsmitted power spectra erference from other ca be constant over subca	al density is achievells and noise sour	e fully allo ved for all (rces not sp	cated and OFDM sym ecified in t	a constant ibols. he test is a	total issumed

Table A.9.1.5.2-1: RSRP FDD—TDD Inter frequency test parameters (FDD Cell1)

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	appropriate power for N_{oc} to be fulfilled.
Note 3:	RSRP and lo levels have been derived from other parameters for information
Note 4:	purposes. They are not settable parameters themselves. RSRP minimum requirements are specified assuming independent interference and
	noise at each receiver antenna port.

			Test 1	Test 2
Pa	rameter	Unit	Cell 2	Cell 2
	nannel Number		2	2
BW _{channel}		MHz	10	10
Special subfrar configuration ^{No}	ne te1		6	6
Uplink-downlin	k configuration ^{Note1}		1	1
Gap Pattern Id			-	-
Measurement I	pandwidth	n_{PRB}	22—27	22—27
PDSCH Refere channel define	ence measurement d in A.3.1.1.2		-	-
PDSCH allocat	tion	n _{PRB}	-	-
PDCCH/PCFIC				
	Reference measurement channel defined in A.3.1.2.2		R.6 TDD	R.6 TDD
OCNG Pattern				
A.3.2.2.1 (OP.			OP.2 TDD	OP.2 TDD
A.3.2.2.2 (OP.2	2 TDD)			
PBCH_RA				
PBCH_RB PSS_RA				
SSS RA				
PCFICH_RB				
PHICH_RA				
PHICH_RB		dB	0	0
PDCCH_RA PDCCH RB				
PDSCH_RA				
PDSCH_RB				
OCNG_RA ^{Note2}				
OCNG_RB ^{Note2}				
$N_{oc}^{\rm Note3}$	Bands 33, 34, 35, 36, 37, 38, 39, 40		00.05	-117
00	Band 42, 43	dBm/15 kHz	-88.65	-115
	Band 41			-114
\hat{E}_{s}/I_{ot}	-	dB	10	-4
Note 4	Bands 33, 34, 35, 36, 37, 38, 39, 40			-121
RSRP ^{Note4}	Band 42, 43	dBm/15 kHz	-78.65	-119
	Band 41			-118
lo ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39, 40		50.45	-87.76
10	Band 42, 43	dBm/9 MHz	-50.45	-85.76
	Band 41			-84.76
\hat{E}_s/N_{oc}		dB	10	-4
Propagation co Note 1: For	ndition special subframe and	- uplink downlink -	AWGN	AWGN
2 in Note 2: OCN trans Note 3: Inter	Special subframe and 3GPP TS 36.211. NG shall be used such smitted power spectra ference from other ce e constant over subca	n that both cells ar al density is achiev ells and noise sour	re fully allocated and ved for all OFDM sym rces not specified in t	a constant total ibols. he test is assumed
Note 4: RSF purp	ropriate power for N_c RP and lo levels have poses. They are not so	been derived fron ettable parameters	s themselves.	
	P minimum requirem e at each receiver an		assuming independe	ent interference and

Table A.9.1.5.2-2: RSRP FDD—TDD Inter frequency test parameters (TDD cell2)

A.9.1.5.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in section 9.1.3.

A.9.1.6 FDD RSRP for E-UTRAN Carrier Aggregation

A.9.1.6.1 Test Purpose and Environment

The purpose of this test is to verify that the FDD RSRP absolute and relative accuracy requirements in carrier aggregation are within the specified limits. This test will verify the abosulte RSRP accuracy requirements of the primary component carrier defined in section 9.1.11.1, the abosulte RSRP accuracy requirements of the secondary component carrier defined in section 9.1.11.2, and the relative RSRP accuracy requirements of the secondary component carrier defined in section 9.1.11.2. The test will also verify the primary and secondary component carrier relative RSRP accuracy requirement defined in Section 9.1.11.3.

A.9.1.6.2 Test parameters

In this set of cases cell1 is PCell on the primary component carrier, cell2 is SCell on the secondary component carrier and activated, and cell3 is the neighboring cell on the secondary component carrier. The test parameters are given in Table A.9.1.6.2-1.

			1	Toot 1		
Pa	rameter	Unit	Cell 1	Test 1 Cell 2	Cell3	
E-UTRA RF Ch	nannel Number		1	2	2	
BW _{channel}		MHz	10	10	10	
Timing offset to	o cell1	μs	-	1.3	3	
Measurement b	pandwidth	n _{PRB}		22—27		
PDSCH Refere	ence measurement d in A.3.1.1.1		R.0 FDD	R.0 FDD	-	
PDSCH allocat	ion	n_{PRB}	13—36	13—36	-	
PDCCH/PCFIC Reference mea defined in A.3.*	asurement channel			R.6 FDD		
A.3.2.1.1 (OP.1 A.3.2.1.2 (OP.2	OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.1 FDD	OP.2 FDD	
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PUICH_RB						
PHICH_RB PDCCH_RA PDCCH_RB	PDCCH_RA		0	0	0	
PDSCH_RA PDSCH_RB OCNG_RANote1						
	CNG_RBNote					
	Bands 1, 4, 6, 10, 11, 18, 19, 21,23 and 24		-117	-1	16	
$N_{\scriptscriptstyle oc}$ Note2	Bands 2, 5 and 7	,dBm/15 kHz	-115		14	
<i>b</i> t	Bands 25 Bands 3, 8, 12, 13, 14, 17, 20 and 22		- <u>113.5</u> -114	-112.5 -113		
	Band 9		-116 -115		15	
\hat{E}_{s}/I_{ot}		dB	-4	0.46	-5.76	
37 01	Bands 1, 4, 6, 10, 11, 18 , 19, 21, 23 and 24		-121	-113	-117	
Netro	Bands 2, 5 and 7		-119	-111	-115	
RSRP ^{Note3}	Bands 25	dBm/15 kHz	-117.5	-109.5	-113.5	
	Bands 3, 8, 12, 13, 14, 17, 20 and 22		-118	-110	-114	
	Band 9		-120	-112	-116	
	Bands 1, 4, 6, 10, 11, 18, 19, 21,23 and 24		-87.76		2.43	
	Bands 2, 5 and 7		-85.76	-80	0.43	
lo ^{Note3}	Bands 25	dBm/9 MHz	-84.26	-78.93		
	Bands 3, 8, 12, 13, 14, 17, 20 and 22		-84.76	-79	9.43	
	Band 9		-86.76	-8	1.43	
\hat{E}_s / N_{oc}		dB	-4	3	-1	
Propagation co	ndition	-		AWGN	I	
Note 1: OCN trans	IG shall be used such smitted power spectra ference from other ce	I density is achie	ved for all OF	ed and a cons DM symbols.		

Table A.9.1.6.2-1: RSRP FDD carrier aggreagation test parameters

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	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.
Note 5:	The selection of the bands for testing depends on the configuration of the carrier aggressions supported by the UEs.

Note: The impact of insertion loss on RSRP tests is FFS.

A.9.1.6.3 Test Requirements

In the test, the performance of RSRP measurements is verified from following four perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for the primary component carrier shall fulfil the requirements defined in section 9.1.11.1.
- The absolute accuracy of intra-frequency RSRP measurements for the secondary component carrier shall fulfil the requirements defined in section 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for the secondary component carrier shall fulfil the requirements defined in section 9.1.11.2.
- The relative accuracy of inter-frequency RSRP measurements between the primary and secondary component carriers carrier shall fulfil the requirements defined in section 9.1.11.3.

A.9.1.7 TDD RSRP for E-UTRAN Carrier Aggregation

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.1.7.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the absolute RSRP accuracy on PCell defined in section 9.1.11.1, the absolute RSRP accuracy on Scell defined in section 9.1.11.2, the relative RSRP accuracy between SCell and Cell 3 defined in section 9.1.11.2, and the relative RSRP accuracy between PCell and SCell defined in section 9.1.11.3.

A.9.1.7.2 Test parameters

In this set of test cases there are three cells on two carrier frequencies. Cell 1 is PCell on channel 1, Cell 2 is activated SCell on channel 2, and Cell 3 is neighbour cell which is also on channel 2. The parameters for the test are listed in Table A.9.1.7.2-1.

				Test 1	
	Parameter	Unit	Cell 1	Cell 2	Cell 3
E-UTRA RF Cha	nnel Number		1		2
BW _{channel}		MHz		10	
Special subframe	e configuration ^{Note1}			6	
Uplink/downlink c				1	r
Timing offset to C	Cell 1	μs	-	1.3	3
Measurement ba		n _{PRB}		22—27	1
PDSCH Referend defined in A.3.1.1	ce measurement channel		R.0 TDD	R.0 TDD	-
PDSCH allocation	n	n_{PRB}	13—36	13—36	-
	/PHICH Reference			R.6 TDD	
	annel defined in A.3.1.2.2 defined in A.3.2.2.1 (OP.1			-	
TDD) and A.3.2.2			OP.1 TDD	OP.1 TDD	OP.2 TDD
PBCH_RA					
PBCH_RB		_			
PSS_RA					
SSS_RA					
PCFICH_RB		_			
PHICH_RA PHICH_RB			0	0	0
PDCCH RA		dB	0	0	0
PDCCH_RB		_			
PDSCH_RA		_			
PDSCH_RB					
OCNG_RA ^{Note2}					
OCNG_RB ^{Note2}					
	Bands 33, 34, 35, 36,		-117	-116	-116
$N_{oc}^{ m Note3}$	37, 38, 39, 40	dBm/15 kHz			
UC .	Bands 42, 43 Band 41	_	-115	-115	-115 -114
Ê /I	Dand H	15			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$		dB	-4	0.5	-5.76
	Bands 33, 34, 35, 36,		-121	-113	-117
RSRP ^{Note4}	37, 38, 39, 40 Bands 42, 43	dBm/15 kHz			-116
	Band 41	_	-120	-112	-115
	Bands 33, 34, 35, 36,				
lo ^{Note4}	37, 38, 39, 40		-87.76	-82	.43
10	Bands 42, 43	dBm/9 MHz	-86.03		.43
	Band 41		00.00	-80.43	
\hat{E}_{s}/N_{oc}		dB	-4	3	-1
Propagation cond		-		AWGN	
	ecial subframe and uplink-do	wnlink configurati	ons see Table	es 4.2-1 and 4	l.2-2 in
	TS 36.211.		poptod and c	ponotant tatal	transmitted
	shall be used such that both spectral density is achieved f			Jonstant total	uansmitted
Note 3: Interfe	rence from other cells and no	ise sources not s	pecified in the		
	int over subcarriers and time	and shall be mod	elled as AWG	N of appropri	ate power
for N	pc to be fulfilled.				
Note 4: RSRP	and lo levels have been derivare not settable parameters th		arameters for i	nformation pu	irposes.
Note 5: RSRP	minimum requirements are s		g independen	t interference	and noise
	h receiver antenna port. election of the bands for testin	ng depends on the	e configuration	n of the carrie	r
	sions supported by the UEs.	3			

Table A.9.1.7.2-1: Carrier aggregation RSRP test parameters for TDD

Note: The impact of insertion loss on RSRP tests is FFS.

A.9.1.7.3 Test Requirements

In the test, the performance of RSRP measurements is verified form following four perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for the primary component carrier shall fulfil the requirements defined in section 9.1.11.1.
- The absolute accuracy of intra-frequency RSRP measurements for the secondary component carrier shall fulfil the requirements defined in section 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for the secondary component carrier shall fulfil the requirements defined in section 9.1.11.2.
- The relative accuracy of inter-frequency RSRP measurements between the primary and secondary component carriers carrier shall fulfil the requirements defined in section 9.1.11.3

A.9.2 RSRQ

A.9.2.1 FDD Intra frequency case

A.9.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.5.

A.9.2.1.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement is tested by using the parameters in Table A.9.2.1.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

	aramatar	11	Tes	st 1	Tes	st 2	Test 3	
	arameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Ch	annel Number			1		1		1
BW _{channel}		MHz		0	10		10	
Measurement b		n_{PRB}		27	22—27		22—27	
channel defined	nce measurement d in A.3.1.1.1		R.0 FDD	-	R.0 FDD	-	R.0 FDD	-
PDSCH allocat	ion	n _{PRB}	13—36	-	13—36	-	13—36	-
	H/PHICH Reference channel defined in		R.6	FDD	R.6	FDD	R.6	FDD
OCNG Patterns	s defined in A.3.2.1.1 d A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA PBCH_RB								
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA			_	_	-	-	-	
PHICH_RB PDCCH_RA		dB	0	0	0	0	0	0
PDCCH_RA								
PDSCH_RA								
PDSCH_RB								
OCNG_RA ^{Note1}								
OCNG_RB ^{Note1}								
Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24							-1	16
N_{oc} Note2	Bands 2, 5 and 7	dBm/15 kHz	-84.76	-84.76	-103.85	-103.85		14
	Band 25		-04.70	-04.70	-103.05	-103.05	-112.5	
	Bands 3, 8, 12, 13,						-1	13
	14, 17, 20 and 22 Band 9						-1	15
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	Dana J	dB	-1.76	-1.76	-4.7	-4.7	-5.46	-5.46
L _s /L _{ot}	Pondo 1 4 6 10							
	Bands 1, 4, 6, 10, 11, 18, 19, 21 , 23and 24						-120	-120
RSRP ^{Note3}	Bands 2, 5 and 7 Band 25	dBm/15 kHz	-81.76	-81.76	-106.75	-106.75	-118 -116.5	-118 -116.5
	Bands 3, 8, 12, 13, 14, 17, 20 and 22						-117	-117
	Band 9						-119	-119
RSRQ ^{Note3}	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24 Bands 2, 5, 7 and		44.77	44.77	16.70	16.70	17.00	17.00
KOKU	25 Bands 3, 8, 12, 13, 14, 17, 20 and 22 Band 9	dB	-14.77	-14.77	-16.76	-16.76	-17.33	-17.33
Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24 Bands 2, 5 and 7 Band 25							-85.67	
		dBm/9 MHz	-50	-50	-73	-73		8.67
			-50	-50	-73	-73	-82	.17
	Bands 3, 8, 12, 13, 14, 17, 20 and 22							2.67
<u> </u>	Band 9							.67
\hat{E}_{s}/N_{oc}		dB	3	3	-2.9	-2.9	-4	-4
Propagation co	ndition	-	AW	/GN	AW	/GN	AW	'GN

Table A.9.2.1.2-1: RSRQ FDD Intra frequency test parameters

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: RSRQ, RSRP and lo 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.9.2.1.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Section 9.1.5.

A.9.2.2 TDD Intra frequency case

A.9.2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.5.

A.9.2.2.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement is tested by using the parameters in Table A.9.2.2.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

D	arameter	Unit		st 1	Te	st 2	Те	st 3	
		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2	
E-UTRA RF Cha	annel Number			1		1		1	
BW _{channel}	n Noto1	MHz		0		0		0	
	e configuration ^{Note1}			6		6		6	
Uplink-downlink	configuration ^{Note1}			1	1		1		
Measurement ba		n _{PRB}		22—27		27		27	
PDSCH Referer channel defined	nce measurement in A.3.1.1.2		R.0 TDD	-	R.0 TDD	-	R.0 TDD	-	
PDSCH allocation	วท	n_{PRB}	13—36	-	13—36	-	13—36	-	
	H/PHICH Reference nannel defined in		R.6	TDD	R.6	TDD	R.6	TDD	
	defined in A.3.2.2.1 A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	
PBCH_RA									
PBCH_RB									
PSS_RA									
SSS_RA									
PCFICH_RB									
PHICH_RA									
PHICH_RB		م لہ	_	0	0	0	0	0	
PDCCH RA		dB	0	0	0	0	0	0	
PDCCH_RB									
PDSCH_RA									
PDSCH_RB									
OCNG_RA ^{Note2}									
OCNG_RB ^{Note2}									
	Bands 33, 34, 35,		-84.76 -		4.76 -103.85	-103.85 -103.85	-1	-116	
$N_{_{oc}}$ Note3	Band 42, 43	dBm/15 kHz		-84.76			-115		
	Band 41						-114		
\hat{E}_{s}/I_{ot}		dB	-1.76	-1.76	-4.7	-4.7	-5.46	-5.46	
s / ot	Bands 33, 34, 35,						-120	-120	
RSRP ^{Note4}	36, 37, 38, 39, 40 Band 42, 43	dBm/15 kHz	-81.76	-81.76	-106.75	-106.75	-119	-119	
	Band 41						-118	-118	
	Banu 41						-110	-110	
RSRQ ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43	dB	-14.77	-14.77	-16.76	-16.76	-17.33	-17.33	
Bands 33, 34, 35, 36, 37, 38, 39, 40, 42, 43							-85	5.67	
lo ^{Note4}	Band 42, 43	dBm/9 MHz	-50	-50	-73	-73	-84	1.67	
	Band 41							3.67	
\hat{E}_s/N_{oc}	-	dB	3	3	-2.9	-2.9	-4	-4	
	dition					/GN	۸۱۸		
Propagation cor	cial subframe and uplink-	-		/GN				/GN	

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in 3GPP TS 36.211. Note 2: 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 3: 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 4: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

A.9.2.2.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Sections 9.1.5.

A.9.2.3 FDD—FDD Inter frequency case

A.9.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.6.

A.9.2.3.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.3.2-1. In all tests, Cell 1 is the PCell and Cell 2 the target cell.

Parameter		Unit	Test 1		Test 2		Test 3	
	Parameter		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Channel Number			1	2	1	2	1	2
BW _{channel}	1	MHz	10	10	10	10	10	10
Gap Pattern Id			0	-	0	-	0	
Measurement bandwidth PDSCH Reference measurement		n _{PRB}	22—27		22—27		22—27	
channel define			R.0 FDD	-	R.0 FDD	-	R.0 FDD	-
PDSCH alloca		n _{PRB}	13—36	-	13—36	-	13—36	-
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1			R.6 FDD		R.6 FDD		R.6 FDD	
	ns defined in A.3.2.1.1 nd A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA								
PBCH_RB PSS_RA								
SSS RA		-						
PCFICH_RB		1						l
PHICH_RA		1						
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA]	Ű	0	J	0	Ŭ	0
PDCCH_RB								
PDSCH_RA								
PDSCH_RB								
OCNG_RA ^{Note®}								
OCNG_RB ^{Note}	1							
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24	dBm/15 kHz	-80	-80	-104.70	-104.70	-119.50	-119.50
$N_{_{oc}}$ Note2	Bands 2, 5 and 7						-117.50	-117.50
l v oc	Band 25						-116	-116
	Bands 3, 8, 12, 13,						-116.50	-116.50
	14, 17, 20 and 22							
-	Band 9						-118.50	-118.50
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$		dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
	Bands 1, 4, 6, 10, 11, 18 ,19, 21, 23 and 24	dBm/15 kHz	-81.75	-81.75	-108.70	-108.70	-123.50	-123.50
RSRP ^{Note3}	Bands 2, 5 and 7						-121.50	-121.50
	Band 25 Bands 3, 8, 12, 13,						-120.0	-120.0
	14, 17, 20 and 22						-120.50	-120.50
	Band 9 Bands 1, 4, 6, 10,						-122.50	-122.50
	11, 18 ,19, 21, 23 and 24	dB	-14.76			-16.25	-16.25	-16.25
RSRQ ^{Note3}	Bands 2, 5, 7 and 25			-14.76	-16.25			
	Bands 3, 8, 12, 13,							
	14, 17, 20 and 22							
	Band 9							
lo ^{Note3}	Bands 1, 4, 6, 10, 11, 18 ,19, 21, 23 and 24	dBm/9 MHz	-50	-50	-75.46	-75.46	-90.26	-90.26
	Bands 2, 5 and 7						-88.26	-88.26
	Band 25						-86.76	-86.76
	Bands 3, 8, 12, 13, 14, 17, 20 and 22						-87.26	-87.26
	Band 9						-89.26	-89.26
\hat{E}_s/N_{oc}		dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
	ondition	-	۵۱۸	'GN	۵۱۸	/GN	۵۱۸/۵	I SN
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
Note 3:	subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. RSRQ, RSRP and lo 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.9.2.3.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Section 9.1.6.

A.9.2.4 TDD—TDD Inter frequency case

A.9.2.4.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.6.

A.9.2.4.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.4.2-1. In all tests, Cell 1 is the PCell and Cell 2 the target cell.

Parameter E-UTRA RF Channel Number		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
			1	2	1	2	1	2
BW _{channel}		MHz	10	10	10	10	10	10
Gap Pattern Id			0	-	0	-	0	-
Special subfrar	me configuration Note1			6	6			6
Uplink-downlink configuration Note1			1		1		1	
Measurement bandwidth		n _{PRB}	22—27		22—27		22—27	
PDSCH Reference measurement channel defined in A.3.1.1.2			R.0 TDD	-	R.0 TDD	-	R.0 TDD	-
PDSCH allocat		n _{PRB}	13—36	-	13—36	-	13—36	-
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2			R.6 TDD		R.6 TDD		R.6 TDD	
	s defined in A.3.2.2.1 Id A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD
PBCH RA			100	100	100	100	100	100
PBCH_RB								
PSS_RA								
SSS_RA		1						
PCFICH_RB					0	0	0	0
PHICH_RA								
PHICH_RB		dB	0	0				
PDCCH_RA			Ũ	Ŭ				
PDCCH_RB								
PDSCH_RA								
PDSCH_RB								
OCNG_RA ^{Note2}								
OCNG_RB ^{Note2}								
$N_{_{oc}}$ Note3	Bands 33, 34, 35, 36, 37, 38, 39, 40	dBm/15 kHz	-80	-80	-104.70	104.70	-119.50	-119.50
	Band 42, 43						-118.50	-118.50
	Band 41						-117.50	-117.50
\hat{E}_{s}/I_{ot}		dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
	Bands 33, 34, 35, 36, 37, 38, 39, 40	dBm/15 kHz	-81.75	-81.75	-108.70	108.70	-123.50	-123.50
RSRP ^{Note4}	Band 42, 43						-122.50	-122.50
	Band 41						-121.50	-121.50
RSRQ ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43	dB	-14.76	-14.76	-16.25	-16.25	-16.25	-16.25
lo ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39, 40	dBm/9 MHz	-50	-50	-75.46	-75.46	-90.26	-90.26
	Band 42, 43						-89.26	-89.26
	Band 41						-88.26	-88.26
\hat{E}_s/N_{oc}		dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
Propagation co	ndition	_	۵۱۸	GN	AWO	2N	۵۱۸	/GN

Table A 9.2.4.2-1: RSRQ TDD—TDD Inter frequency test parameters

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in 3GPP TS 36.211. Note 2: 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 3: 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 4: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

A.9.2.4.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Section 9.1.6.

A.9.2.4A FDD—TDD Inter frequency case

A.9.2.4A.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.6 for FDD—TDD inter frequency measurements.

A.9.2.4A.2 Test parameters

In this set of test cases the two cells are on different carrier frequencies. Both absolute and relative accuracy of RSRQ inter frequency measurements are tested by using the parameters in Table A.9.2.4A.2-1 and Table A.9.2.4A.2-2. In all test cases, Cell 1 is the PCell and Cell 2 the target cell. Cell 1 is FDD cell and Cell 2 is TDD cell. The inter frequency measurements are supported by a measurement gap.

Table A.9.2.4A.2-1: RSRQ FDD—TDD Inter frequency test parameters (FDD Cell1)

Pa	arameter	Unit	Test 1	Test 2	Test 3
			Cell 1	Cell 1	Cell 1
E-UIRARFC BW _{channel}	Channel Number	MHz	<u> </u>	1 10	1 10
Gap Pattern Io	d		0	0	0
Measurement		n _{PRB}	22—27	22—27	22—27
	rence measurement ed in A.3.1.1.1		R.0 FDD	R.0 FDD	R.0 FDD
PDSCH alloca		n _{PRB}	13—36	13—36	13—36
defined in A.3	easurement channel .1.2.1		R.6 FDD	R.6 FDD	R.6 FDD
OCNG Pattern A.3.2.1.1 (OP A.3.2.1.2 (OP	.1 FDD) and		OP.1 FDD	OP.1 FDD	OP.1 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA					
PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RB OCNG_RA ^{Note1}		dB	0	0	0
OCNG_RB ^{Note}					
$N_{_{oc}}$ Note2	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24 Bands 2, 5 and 7 Band 25 Bands 3, 8, 12, 13, 14, 17, 20 and 22	dBm/15 kHz	-80	-104.70	-119.50 -117.50 -116 -116.50
<u>^</u> /-	Band 9				-118.50
\hat{E}_{s}/I_{ot}		dB	-1.75	-4.0	-4.0
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24 Bands 2, 5 and 7				-123.50
RSRP ^{Note3}	Band 25 Bands 3, 8, 12, 13, 14, 17, 20 and 22	dBm/15 kHz	-81.75	-108.70	-120.0 -120.50
	Band 9				-122.50
RSRQ ^{Note3}	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24 Bands 2, 5, 7 and 25 Bands 3, 8, 12, 13, 14, 17, 20 and 22 Band 9	dB	-14.76	-16.25	-16.25
lo ^{Note3}	Bands 1, 4, 6, 10, 11, 18 ,19, 21, 23 and 24	dBm/9 MHz	-50	-75.46	-90.26
	Bands 2, 5 and 7	1711 12			-88.26
	Band 25			<u> </u>	-86.76

	Bands 3, 8, 12, 13, 14, 17, 20				-87.26
	and 22 Band 9				-89.26
\hat{E}_s / N_{oc}		dB	-1.75	-4.0	-4.0
Propagat	ion condition	-	AWGN	AWGN	AWGN
Note 1:	te 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:	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: RSRQ, RSRP and lo 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.				

P	Parameter	Unit	Test 1 Cell 2	Test 2 Cell 2	Test 3 Cell 2
E-UTRA RF Channel Number			2	2	2
BW _{channel}		MHz	10	10	10
Gap Pattern Id			-	-	-
Special subfran	ne configuration Note1		6	6	6
Uplink-downlink	< configuration Note1		1	1	1
Measurement b	bandwidth	n _{PRB}	22—27	22—27	22—27
PDSCH Refere	nce measurement d in A.3.1.1.2		-	-	-
PDSCH allocat	ion	n _{PRB}	-	-	-
	H/PHICH Reference channel defined in		R.6 TDD	R.6 TDD	R.6 TDD
OCNG Patterns	s defined in A.3.2.2.1 d A.3.2.2.2 (OP.2 TDD)		OP.2 TDD	OP.2 TDD	OP.2 TDD
PBCH_RA					
PBCH_RB		_			
PSS_RA					0
SSS_RA PCFICH_RB		4			
PHICH RA					
PHICH_RB		dB	0	0	
PDCCH_RA		ub	0	0	U
PDCCH_RB		1			
PDSCH_RA					
PDSCH_RB					
OCNG_RA ^{Note2}					
OCNG_RB ^{Note2}					
$N_{\scriptscriptstyle oc}$ Note3	Bands 33, 34, 35, 36, 37, 38, 39, 40	dBm/15 kHz	-80	-104.70	-119.50
	Band 41, 42, 43			10 11 0	-118.50
\hat{E}_{s}/I_{ot}		dB	-1.75	-4.0	-4.0
	Bands 33, 34, 35,				-123.50
RSRP ^{Note4}	36, 37, 38, 39, 40	dBm/15 kHz	-81.75	-108.70	
	Band 41, 42, 43				-122.50
RSRQ ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43	dB	-14.76	-16.25	-16.25
lo ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39, 40	dBm/9 MHz	-50	-75.46	-90.26
iu	Band 41, 42, 43		-50	-70.40	-89.26
\hat{E}_s/N_{oc}		dB	-1.75	-4.0	-4.0
Propagation condition		-	AWGN	AWGN	AWGN
36. Note 2: OC spe	r special subframe and 211. CNG shall be used suc ectral density is achiev	h that both cells are ed for all OFDM sy	e fully allocated and a mbols.	a constant total trans	smitted power
	erference from other co ocarriers and time and		-		
Note 4: RS	RQ, RSRP and lo leve	els have been deriv		00	
	e not settable paramete RP and RSRQ minimu		e specified assumin	a independent interf	erence and noise

Table A.9.2.4A.2-2: RSRQ FDD—TDD Inter frequency test parameters (TDD cell2)

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

A.9.2.4A.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in section 9.1.6.

A.9.2.5 FDD RSRQ for E-UTRA Carrier Aggregation

A.9.2.5.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy in carrier aggregation is within the specified limits under AWGN propagation conditions. This test will verify the absolute RSRQ accuracy requirements of the primary component carrier specified in section 9.1.11.1. The test will also verify the absolute RSRQ accuracy requirements of the secondary component carrier specified in section 9.1.11.2 and the relative RSRQ accuracy requirements of the secondary component carrier specified in section 9.1.11.2. Furthermore, the test will verify the primary and secondary component carrier relative RSRQ accuracy requirements specified in section 9.1.11.3.

A.9.2.5.2 Test parameters

In this test case the PCell and the SCell are on different carrier frequencies. There are three cells used in this test case. Both RSRQ absolute and relative accuracy requirements of the primary and secondary component carrier are tested by using test parameters specified in Table A.9.2.5.2-1. In the test, Cell 1 is the PCell, Cell 2 is the SCell on the Secondary Component Carrier (SCC) and Cell 3 is the neighbouring cell on the SCC. The SCC is configured and activated. The time offset to Cell 1 is $1.3 \,\mu$ s and $3 \,\mu$ s. 509

		Test 1				
Parameters		Units	Cell 1	Cell 2	Cell 3	
E-UTRA RF Channel Number		Child	1	2	2	
BW _{channel_CA}		MHz	10	10	10	
Time offset to Ce	ell 1	μs	-	1.3	3	
Measurement ba		n _{PRB}	22—27	22—27	22—27	
PDSCH Reference measurement ch defined in A.3.1. ²	annel		R.0 FDD	R.0 FDD	-	
PDSCH allocatio	n	n _{PRB}	13—36	13—36	-	
PDCCH/PCFICH Reference meas channel defined A.3.1.2.1	urement	The	R.6 FDD	R.6FDD	R.6 FDD	
OCNG Patterns (A.3.2.1.1 (OP.1 F A.3.2.1.2 (OP.2 F	DD) and		OP.1 FDD	OP.1 FDD	OP.2 FDD	
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RA PDCCH_RA PDCCH_RA PDCCH_RA PDSCH_RA PDSCH_RB OCNG_RA ^{Note1} OCNG_RB ^{Note1}		dB	0	0	0	
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24		-119.5	-116	-116	
$N_{_{oc}}$ Note2	Bands 2, 5 and 7	dBm/15	-117.5	-114	-114	
	Band 25	kHz	-116	-112.5	-112.5	
	Bands 3, 8, 12, 13, 14, 17, 20 and 22		-116.5	-113	-113	
<u> </u>	Band 9		-118.5	-115	-115	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$		dB	-4.0	-5.46	-5.46	
	Bands 1, 4, 6, 10, 11, 18 ,19, 21, 23 and 24		-123.5	-120	-120	
RSRP ^{Note3}	Bands 2, 5 and 7	dBm/15	-121.5	-118	-118	
	Band 25	kHz	-120	-116.5	-116.5	
	Bands 3, 8, 12, 13, 14, 17, 20 and 22		-120.5	-117	-117	
	Band 9		-122.5	-119	-119	

Table A.9.2.5.2-1: FDD RSRQ Carrier Aggregation test parameters

RSRQ ^{Note3}		Bands 1, 4, 6, 10, 11, 18 ,19, 21, 23 and 24 Bands 2, 5, 7 and 25 Bands 3, 8, 12, 13, 14, 17, 20 and 22 Band 9	dB	-16.25	-17.33	-17.33
				-90.26	-85.67	-85.67
lo ^{Note3}		Bands 2, 5 and 7	dBm/9 MHz	-88.26	-83.67	-83.67
10		Band 25		-86.76	-82.17	-82.17
				-87.26	-82.67	-82.67
		and 22 Band 9		-89.26	-84.67	-84.67
\hat{E}_{s}/N_{oc}			dB	-4.0	-4.0	-4.0
Propagatio			- AWGN			
Note 1:					are fully allo	
Note 2:	and a constant total transmitted power spectral density is achieved for all OFDM symbols. Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time				pecified in	
Note 3:	parameters for information purposes. They are not settable parameters themselves.					other ettable
Note 4:	 RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port. 					
Note 5:	The se	election of th			ends on the	

NOTE: The impact of insertion loss on RSRQ tests is FFS.

A.9.2.5.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in section 9.1.11.1, 9.1.11.2, and 91.11.3.

- The absolute accuracy of intra-frequency RSRQ measurements of the primary component carrier shall fulfil the requirements specified in section 9.1.11.1.
- The absolute accuracy of intra-frequency RSRQ measurements of the secondary component carrier shall fulfil the requirements specified in section 9.1.11.2
- The relative accuracy of intra-frequency RSRQ measurements of the secondary component carrier shall fulfil the requirements specified in section 9.1.11.2.
- The relative accuracy of inter-frequency RSRQ measurements between the primary and secondary component carrier shall fulfil the requirements specified in section 9.1.11.3.

A.9.2.6 TDD RSRQ for E-UTRA Carrier Aggregation

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.2.6.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD RSRQ measurement accuracy is within the specified limits in a synchronized network environment with AWGN propagation conditions. This test will verify the absolute accuracy of intra-frequency RSRQ measurements for the primary component carrier defined in Section 9.1.11.1, the absolute and relative accuracy of intra-frequency RSRQ measurements for the secondary component carrier defined in Section 9.1.11.2, and also the relative inter-frequency RSRQ accuracy requirement between primary and secondary component carriers defined in Section 9.1.11.3.

A.9.2.6.2 Test parameters

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is PCell, Cell 2 is SCell, and Cell 3 is the target cell. PCell and SCell are in different RF channels. Cell 3 is in the same RF channel as Cell 2. The parameters for the test are listed in Table A.9.2.6.2-1.

D	motor	11:::*		Test 1		
	meter	Unit	Cell 1	Cell 2	Cell 3	
E-UTRA RF Char	nnel Number		1	2 2		
BW _{channel}	r r Note1	MHz		10		
Special subframe Uplink-downlink c	configuration ^{Note1}			6		
				1		
Measurement bar		n _{PRB}	D.	22—27		
PDSCH Reference channel defined in			R.0 TDD	R.0 TDD	-	
PDSCH allocation	١	n _{PRB}	13—36	13—36	-	
PDCCH/PCFICH/ measurement cha A.3.1.2.2	PHICH Reference Annel defined in		R.6 TDD	R.6 TDD	R.6 TDD	
	lefined in A.3.2.2.1 A.3.2.2.2 (OP.2		OP.1 TDD	OP.1 TDD	OP.2 TDD	
PBCH_RA						
PBCH_RB						
PSS_RA		-				
SSS_RA PCFICH_RB		-			0	
PHICH_RA		-				
PHICH_RB		dB	0	0		
PDCCH_RA						
PDCCH_RB		-				
PDSCH_RA		-				
PDSCH_RB		-				
OCNG_RA ^{Note2} OCNG_RB ^{Note2}		-				
	Bands 33, 34,					
$N_{_{oc}\ { m Note3}}$	35, 36, 37, 38, 39, 40	dBm/15 kHz	-119.5	-116		
	Band 42, 43		-118.5	-115		
	Band 41	-	-117.5	-11	14	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$		dB	-4.0	-5.46	-5.46	
RSRP ^{Note4}	Bands 33, 34, 35, 36, 37, 38, 39, 40	dBm/15 kHz	-123.50	-120	-120	
	Band 42, 43		-122.50	-119	-119	
	Band 41	-	-121.50	-118	-118	
RSRQ ^{Note4} Bands 33, 34, 35, 36, 37, 38, 39, 40 Band 41, 42, 43		dB	-16.25	-17.34		
Bands 33, 34, 35, 36, 37, 38, 39, 40			-90.26	-85.67		
	Band 42, 43	dBm/9 MHz	-89.26	-84.67		
Band 41		1	-88.26	-83	.67	
\hat{E}_s/N_{oc}	•	dB	-4.0	-4.0	-4.0	
Maximum downlin	et relative to Cell 1	μs	-	1.3	3	
Propagation cond		-		AWGN		

Table A.9.2.6.2-1: TDD RSRQ test parameters

Note 1:	For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in 3GPP TS 36.211.
Note 2:	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 3:	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
	Ν
	as AWGN of appropriate power for ${}^{\!\!\!\!\!\!N_{oc}}$ to be fulfilled.
Note 4:	RSRQ, RSRP and Io levels have been derived from other parameters for
	information purposes. They are not settable parameters themselves.
Note 5:	RSRP and RSRQ minimum requirements are specified assuming
	independent interference and noise at each receiver antenna port.
Note 6:	The selection of the bands for testing depends on the configuration of the
11010 0.	carrier aggressions supported by the UEs.

Note: The impact of insertion loss on RSRQ tests is FFS.

A.9.2.6.3 Test Requirements

In the test, the performance of RSRQ measurements is verified from following four perspectives:

- The absolute accuracy of intra-frequency RSRQ measurements for the primary component carrier shall fulfil the requirements defined in section 9.1.11.1.
- The absolute accuracy of intra-frequency RSRQ measurements for the secondary component carrier shall fulfil the requirements defined in section 9.1.11.2.
- The relative accuracy of intra-frequency RSRQ measurements for the secondary component carrier shall fulfil the requirements defined in section 9.1.11.2.
- The relative accuracy of inter-frequency RSRQ measurements between the primary and secondary component carriers carrier shall fulfil the requirements defined in section 9.1.11.3.

A.9.3 UTRAN FDD CPICH RSCP

A.9.3.1 E-UTRAN FDD

A.9.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP absolute measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.2.1. There are two different test setups with different UTRAN parameters.

A.9.3.1.2 Parameters

The test parameters are given in Tables A.9.3.1.2-1, A.9.3.1.2-2 and A.9.3.1.2-3 below.

Table A.9.3.1.2-1: General test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
E-UTRAN RF Channel Number		1	One E-UTRAN FDD carrier frequency is used.
UTRAN RF Channel Number		1	One UTRAN FDD carrier frequency is used.
E-UTRAN Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Inter-RAT (UTRAN FDD) measurement quantity		CPICH RSCP	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

ETSI

Parameter	Unit	Test 1	Test 2		
E-UTRAN RF Channel			1		
Number					
BW _{channel}	MHz	1	0		
OCNG Patterns defined in		OP.1	FDD		
A.3.2.1.1 (OP.1 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB		0		
PHICH_RB	dB		0		
PDCCH_RA	dB				
PDCCH_RB PDSCH_RA	dB dB				
PDSCH_RA PDSCH RB	dB				
OCNG_RA ^{Note 1}	dB dB				
OCNG_RB ^{Note 1}	dB				
IV _{oc}	dBm/15 kHz	-98			
RSRP ^{Note 3}	dBm/15 kHz	-94			
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4			
SCH_RP ^{Note 3}	dBm/15 kHz	-(94		
\hat{E}_{s}/N_{oc}	dB		4		
Propagation Condition		AM	/GN		
		lls are fully allocated and			
		achieved for all OFDM s			
	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 modeled as AWGN of				
appropriate power fo	appropriate power for $N_{_{oc}}$ to be fulfilled.				

Table A.9.3.1.2-2: E-UTRAN FDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD

	Parameter	Unit	Test 1	Test 2
			Cell 2	Cell 2
CPICH_Ec/lor		dB	-10	-10
	PCCPCH_Ec/lor	dB	-12	-12
	SCH_Ec/lor	dB	-12	-12
	PICH_Ec/lor	dB	-15	-15
	DPCH_Ec/lor	dB	-	-
	OCNS_Ec/lor	dB	-0.94	-0.94
loc	Band I, IV, VI, X, XI, XIX, XXI	dBm/3.84 MHz		-94.46
	Band II, V, VII			-92.46
	Band XXV		-60.00	-90.96
	Band III, VIII, XII, XIII, XIV, XX, XXII			-91.46
	Band IX (Note 2)			-93.46
	Îor/loc	dB	9.54	-9.54
CPICH RSCP,	Band I, IV, VI, X, XI, XIX, XXI	dBm		-114.0
Note 1	Band II, V, VII			-112.0
	Band XXV		-60.46	-110.5
	Band III, VIII, XII, XIII, XIV, XX, XXII			-111.0
	Band IX (Note 2)			-113.0
Io, Note 1	Band I, IV, VI, X, XI, XIX, XXI	dBm/3.84 MHz		-94.0
	Band II, V, VII			-92.0
	Band XXV		-50.00	-90.5
	Band III, VIII, XII, XIII, XIV, XX, XXII			-91.0
	Band IX (Note 2)			-93.0
	opagation condition	-	AWGN	AWGN
NOTE 1: C NOTE 2: F	CPICH RSCP and Io levels have They are not settable parameters For the UE which supports both E performance requirements for Ba	themselves. Band III and B nd III shall ap	and IX operating frequencies, ply to the multi-band UE.	the measurement
Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for test 2 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.				

Table A.9.3.1.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD

A.9.3.1.3 Test Requirements

The CPICH RSCP measurement absolute accuracy shall meet the requirements in Section 9.2.1.

A.9.3.2 E-UTRAN TDD

A.9.3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP absolute measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.2.1. There are three different test setups with different UTRAN parameters.

A.9.3.2.2 Parameters

The test parameters are given in Tables A.9.3.2.2-1, A.9.3.2.2-2 and A.9.3.2.2-3 below.

Table A.9.3.2.2-1: General test parameters for UTRAN FDD CPICH RSCP absolute measurement
accuracy test in E-UTRAN TDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2
parameters		Channel R.6 TDD	
E-UTRAN RF Channel		1	One E-UTRAN TDD carrier frequency is
Number			used.
UTRAN RF Channel		1	One UTRAN FDD carrier frequency is
Number			used.
E-UTRAN Channel	MHz	10	
Bandwidth (BW _{channel})			
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Inter-RAT (UTRAN FDD)		CPICH RSCP	
measurement quantity			
Monitored UTRA FDD cell		12	UTRA cells on UTRA RF channel 1
list size			provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

Table A.9.3.2.2-2: E-UTRAN TDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN TDD

Parameter	Unit	Test 1	Test 2	
E-UTRAN RF Channel Number			1	
BW _{channel}	MHz	10		
Special subframe configuration ^{Note1}		6		
Uplink-downlink configuration ^{Note1}			1	
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD)		OP.	1 TDD	

PBCH_R	A	dB			
PBCH_R	В	dB			
PSS_RA		dB			
SSS_RA		dB			
PCFICH_	_RB	dB			
PHICH_F	RA	dB			
PHICH_F	RB	dB	0		
PDCCH_		dB			
PDCCH_		dB			
PDSCH_		dB			
PDSCH_		dB			
OCNG_F	RANote 2	dB			
OCNG_F		dB			
N_{oc} Note		dBm/15 kHz	-98		
RSRP ^{Not}	RSRP ^{Note 4}		-94		
\hat{E}_{s}/I_{ot}		dB	4		
SCH_RP	Note 4	dBm/15 kHz	-94		
\hat{E}_s / N_{oc}		dB	4		
Propagat	ion Condition		AWGN		
Note 1:	in 3GPP TS 36.211.	-	configurations see Tables 4.2-1 and 4.2-2		
Note 2:			fully allocated and a constant total ved for all OFDM symbols.		
Note 3:	Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of				
	appropriate power for $N_{_{oc}}$ to be fulfilled.				
Note 4:					

Parameter		Unit	Test 1	Test 2
			Cell 2	Cell 2
	CPICH_Ec/lor	dB	-10	-10
PCCPCH_Ec/lor		dB	-12	-12
	SCH_Ec/lor	dB	-12	-12
	PICH_Ec/lor	dB	-15	-15
	DPCH_Ec/lor	dB	-	-
	OCNS_Ec/lor	dB	-0.94	-0.94
loc	Band I, IV, VI, X, XI, XIX, XXI	dBm/3.84 MHz		-94.46
	Band II, V, VII			-92.46
	Band XXV		-60.00	-90.96
	Band III, VIII, XII, XIII, XIV, XX, XXII			-91.46
	Band IX (Note 2)	-		-93.46
Îor/loc		dB	9.54	-9.54
CPICH RSCP,	CPICH Band I, IV, VI, X, XI, XIX,			-114.0
Note 1	Band II, V, VII	-		-112.0
	Band XXV		-60.46	-110.5
	Band III, VIII, XII, XIII, XIV, XX, XXII			-111.0
	Band IX (Note 2)			-113.0
Io, Note 1	Band I, IV, VI, X, XI, XIX, XXI	dBm/3.84 MHz		-94.0
	Band II, V, VII			-92.0
	Band XXV	1	-50.00	-90.5
	Band III, VIII, XII, XIII, XIV, XX, XXII			-91.0
	Band IX (Note 2)			-93.0
Pr	opagation condition	-	AWGN	AWGN
NOTE 1: 0 NOTE 2: F	CPICH RSCP and Io levels have They are not settable parameters For the UE which supports both E performance requirements for Ba	themselves. Band III and B nd III shall ap	ted from other parameters for and IX operating frequencies ply to the multi-band UE.	r information purposes.
	e done sequentially. Test 1 shall 2 shall be set within 5 seconds so			

Table A.9.3.2.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN TDD

A.9.3.2.3 Test Requirements

The CPICH RSCP measurement absolute accuracy shall meet the requirements in Section 9.2.1.

A.9.4 UTRAN FDD CPICH Ec/No

A.9.4.1 E-UTRAN FDD

A.9.4.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH Ec/No absolute measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.2.3. There are three different test setups with different UTRAN parameters.

A.9.4.1.2 Parameters

The test parameters are given in Tables A.9.4.1.2-1, A.9.4.1.2-2 and A.9.4.1.2-3 below.

Table A.9.4.1.2-1: General test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD	
E-UTRAN RF Channel		1	One E-UTRAN FDD carrier frequency is
Number			used.
UTRAN RF Channel		1	One UTRAN FDD carrier frequency is
Number			used.
E-UTRAN Channel	MHz	10	
Bandwidth (BW _{channel})			
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section
			8.1.2.1.
Inter-RAT (UTRAN FDD)		CPICH Ec/N0	
measurement quantity			
Monitored UTRA FDD cell		12	UTRA cells on UTRA RF channel 1
list size			provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

Parameter	Unit	Test 1	Test 2	Test 3		
E-UTRAN RF Channel Number			1			
BW _{channel}	MHz		10			
OCNG Patterns defined in			OP.1 FDD			
A.3.2.1.1 (OP.1 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB		0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{}$ Note 2	dBm/15 kHz	-98				
RSRP ^{Note 3}	dBm/15 kHz	-94				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB		4			
SCH_RP ^{Note 3}	dBm/15 kHz		-94			
\hat{E}_s/N_{oc}	dB		4			
Propagation Condition			AWGN			
Note 1: OCNG shall be used s				t total		
transmitted power spec						
	Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of					
appropriate power for	appropriate power for $N_{_{oc}}$ to be fulfilled.					
Note 3: RSRP and SCH_RP le purposes. They are no			parameters fo	or information		

Table A.9.4.1.2-2: E-UTRAN FDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD

	Parameter	Unit	Test 1	Test 2	Test 3
			Cell 2	Cell 2	Cell 2
	CPICH_Ec/lor		-10	-10	-10
F	PCCPCH_Ec/lor	dB	-12	-12	-12
	SCH_Ec/lor	dB	-12	-12	-12
	PICH_Ec/lor	dB	-15	-15	-15
	DPCH_Ec/lor	dB	-	-	-
	OCNS_Ec/lor	dB	-0.94	-0.94	-0.94
	Band I, IV, VI, X, XI, XIX, XXI				-94.46
	Band II, V, VII	dBm/			-92.46
loc	Band XXV	3.84	-52.22	-87.27	-90.96
	Band III, VIII, XII, XIII, XIV, XX, XXII	MHz			-91.46
	Band IX (Note 2)				-93.46
	Îor/loc	dB	-1.75	-4.7	-9.54
CP	PICH Ec/Io, Note 1	dBm	-14.0	-16.0	-20.0
	Band I, IV, VI, X, XI, XIX, XXI				-94
lo,	Band II, V, VII	dBm/			-92.0
Note	Band XXV	3.84	-50	-86	-90.5
1	Band III, VIII, XII, XIII, XIV, XX, XXII	MHz			-91.0
	Band IX (Note 2)				-93
Pro	pagation condition	-	AWGN	AWGN	AWGN
NOTE NOTE	2: For the UE which s requirements for B	rs themselve supports both and III shall	n Band III and Band IX operat apply to the multi-band UE.	ng frequencies, the measur	ement performance
Iests			all be done first. After test 1 h UE does not loose the Cell 2		neters for tests 2 and 3 shall

Table A.9.4.1.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD

A.9.4.1.3 Test Requirements

The CPICH Ec/No measurement absolute accuracy shall meet the requirements in Section 9.2.3.

A.9.4.2 E-UTRAN TDD

A.9.4.2.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH Ec/No absolute measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.2.3. There are three different test setups with different UTRAN parameters.

A.9.4.2.2 Parameters

The test parameters are given in Tables A.9.4.2.2-1, A.9.4.2.2-2 and A.9.4.2.2-3 below.

ETSI

Table A.9.4.2.2-1: General test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN TDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.2
parameters		Channel R.6 TDD	
E-UTRAN RF Channel		1	One E-UTRAN TDD carrier frequency is
Number			used.
UTRAN RF Channel		1	One UTRAN FDD carrier frequency is
Number			used.
E-UTRAN Channel	MHz	10	
Bandwidth (BW _{channel})			
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Inter-RAT (UTRAN FDD)		CPICH Ec/N0	
measurement quantity			
Monitored UTRA FDD cell		12	UTRA cells on UTRA RF channel 1
list size			provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

ETSI

Parameter	Unit	Test 1	Test 2	Test 3		
E-UTRAN RF Channel Number			1			
BW _{channel}	MHz		10			
Special subframe configuration ^{Note1}			6			
Uplink-downlink configuration ^{Note1}		1				
OCNG Patterns defined in		OP.1 TDD				
A.3.2.1.2 (OP.1 TDD)			OF.I IDD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	1				
PHICH_RB	dB		0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 2}	dB					
OCNG_RB ^{Note 2}	dB	1				
N _{oc} Note 3	dBm/15	-				
	kHz	-98				
RSRP ^{Note 4}	dBm/15		-94			
	kHz					
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	4				
SCH_RP ^{Note 4}	dBm/15 kHz	-94				
\hat{E}_s/N_{oc}	dB		4			
Propagation Condition			AWGN			
Note 1: For special subframe and	uplink-downl	ink configurations	-	1 and 4.2-2		
 in 3GPP TS 36.211. Note 2: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 3: Interference from other cells and noise sources not specified in the test is assumed 						
to be constant over subca			deled as AWG	N of		
appropriate power for $N_{_{ol}}$						
Note 4: RSRP and SCH_RP level purposes. They are not se			parameters for	information		

Table A.9.4.2.2-2: E-UTRAN TDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN TDD

	Parameter	Unit	Test 1	Test 2	Test 3
			Cell 2	Cell 2	Cell 2
	CPICH_Ec/lor		-10	-10	-10
P	PCCPCH_Ec/lor	dB	-12	-12	-12
	SCH_Ec/lor	dB	-12	-12	-12
	PICH_Ec/lor	dB	-15	-15	-15
	DPCH_Ec/lor	dB	-	-	-
	OCNS_Ec/lor	dB	-0.94	-0.94	-0.94
	Band I, IV, VI, X,				-94.46
	XI, XIX, XXI				
	Band II, V, VII	dBm/			-92.46
loc	Band XXV	3.84	-52.22	-87.27	-90.96
	Band III, VIII, XII, XIII, XIV, XX, XXII	MHz			-91.46
	Band IX (Note 2)				-93.46
	Îor/loc	dB	-1.75	-4.7	-9.54
CP	ICH Ec/lo, Note 1	dBm	-14.0	-16.0	-20.0
	Band I, IV, VI, X,				-94
	XI, XIX, XXI				
lo,	Band II, V, VII	dBm/			-92.0
Note	Band XXV	3.84	-50	-86	-90.5
1	Band III, VIII, XII, XIII, XIV, XX, XXII	MHz			-91.0
	Band IX (Note 2)				-93
Pro	pagation condition	-	AWGN	AWGN	AWGN
NOTE	1: CPICH Ec/lo and lo settable parameter	s themselve	e been calculated from other p	parameters for information p	urposes. They are not
			apply to the multi-band UE.		
Tests	shall be done sequential	ly. Test 1 sh	all be done first. After test 1 h UE does not loose the Cell 2		neters for tests 2 and 3 shall

Table A.9.4.2.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN TDD

A.9.4.2.3 Test Requirements

The CPICH Ec/No measurement absolute accuracy shall meet the requirements in Section 9.2.3.

A.9.5 UTRAN TDD measurement

A.9.5.1 P-CCPCH RSCP absolute accuracy for E-UTRAN FDD

A.9.5.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRAN TDD P-CCPCH RSCP measurement absolute accuracy is within the specified limits. This test will verify the requirements in section 9.3.1 and applies to UE supporting this capability.

Gap pattern configuration with id #1 as specified in Table 8.1.2.1-1 is provided. In the measurement control information it is indicated to the UE that periodic reporting of the UTRA TDD P-CCPCH RSRP measurement is used.

A.9.5.1.2 Test parameters

In this set of test cases there are two cells. Cell 1 is a E-UTRA FDD cell and cell 2 is a UTRA TDD cell. The absolute accuracy of P-CCPCH RSCP measurements are tested by using test parameters in Table A.9.5.1-1, Table A.9.5.1-2, and Table A.9.5.1-3. In all test cases, Cell 1 is the PCell and Cell 2 is the target cell.

Table A.9.5.1-1: General test parameters for UTRA TDD P-CCPCH RSCP measurement absolute accuracy in E-UTRAN FDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
E-UTRAN RF Channel Number		1	One E-UTRAN FDD carrier frequency is used.
UTRAN RF Channel Number		2	One UTRAN TDD carrier frequency is used.
E-UTRAN Channel Bandwidth (BWchannel)	MHz	10	
Active cell		Cell 1	E-UTRAN FDD cell 1 on RF channel number 1
Neighbor cells		Cell 2	1.28Mcps UTRA TDD cell 2 on RF channel number 2
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
CP length of cell 1		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Inter-RAT (UTRAN TDD) measurement quantity		P-CCPCH RSRP	

Table A.9.5.1-2: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 1)

Parameter	Unit	Test 1	Test 2	Test 3
E-UTRA RF Channel Number			1	
BWchannel	MHz		10	
OCNG Patterns defined in A.3.2.1.1 (OP.1			OP.1 FDD	`
FDD)			JF.IFDL)
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB				
PHICH_RA				
PHICH_RB	dB		0	
PDCCH_RA				
PDCCH_RB				
PDSCH_RA				
PDSCH_RB				
OCNG_RA ^{Note1}				
OCNG_RB ^{Note1}				
N _{oc} Note2	dBm/15 kHz	-98		
\hat{E}_s / I_{ot}	dB		4	
RSRP ^{Note3}	dBm/15 kHz		-94	
Io ^{Note3}	dBm/9 MHz		-64.76	
\hat{E}_s / N_{oc}	dB		4	
Propagation condition	-		AWGN	
Note 1: OCNG shall be used such that both	cells are fully all	ocated ar	nd a const	ant
total transmitted power spectral de	ensity is achieve	d for all C	FDM sym	nbols.
Note 2: Interference from other cells and noi				
assumed to be constant over subc	arriers and time	and shal	l be mode	elled as
1	V.			
AWGN of appropriate power for	to be fulfille	d.	6	
Note 3: RSRP and lo levels have been deriv			s for inform	nation
purposes. They are not settable pa			adananda	nt
Note 4: RSRP minimum requirements				T IL
interference and noise at ea	active anti	enna port		

	Parameter	Unit	Test 1		Test 2		Test 3	
DL timesle	ot number		0		DwPTS		0	DwPTS
UTRA RF	Channel number Note2		Chan	nel 2	Chan	nel 2	Char	nnel 2
PCCPCH	_Ec/lor	dB	-3		-3		-3	
DwPCH_B	Ec/lor	dB		0		0		0
OCNS_E	c/lor	dB	-3		-3		-3	
loc		dBm/1.28MHz	-54.1		-75	5.2	-97	
Îor/loc		dB	2	2	5			0
PCCPCH	RSCP Note1	dBm	-55.1		-73.2		-100	
lo Note1		dBm/1.28MHz	-5	50	-6	69	-9	94
Propagati	on condition				AW	GN		
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-freque the primary frequency in t	•	28 Mcps II	DD, the U	IRA RF Ch	annel Num	iber can be	e set for

Table A.9.5.1-3: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 2)

A.9.5.1.3 Test Requirements

The UTRA TDD P-CCPCH RSCP measurement accuracy shall meet the requirements in section 9.3.1.

A.9.5.2 P-CCPCH RSCP absolute accuracy for E-UTRAN TDD

A.9.5.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRAN TDD P-CCPCH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in section 9.3.1 and applies to UE supporting this capability.

Gap pattern configuration with id #1 as specified in Table 8.1.2.1-1 is provided. In the measurement control information it is indicated to the UE that periodic reporting of the UTRA TDD P-CCPCH RSRP measurement is used.

A.9.5.2.2 Test parameters

In this set of test cases there are two cells. Cell 1 is a E-UTRA TDD cell and cell 2 is a UTRA TDD cell. The absolute accuracy of P-CCPCH RSCP measurements are tested by using test parameters in Table A.9.5.2-1, Table A.9.5.2-2, and Table A.9.5.2-3. In all test cases, Cell 1 is the PCell and Cell 2 is the target cell.

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
E-UTRAN RF Channel Number		1	One E-UTRAN TDD carrier frequency is used.
UTRAN RF Channel Number		2	One UTRAN TDD carrier frequency is used.
E-UTRAN Channel Bandwidth (BWchannel)	MHz	10	
Active cell		Cell 1	E-UTRA TDD cell1 on RF channel number 1
Neighbour cell		Cell 2	1.28Mcps UTRA TDD Cell2 on RF channel number 2
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
CP length of cell 1		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells	ms	3	Asynchronous cells
Inter-RAT (UTRAN TDD) measurement quantity		P-CCPCH RSCP	

Table A.9.5.2-1: General test parameters for UTRA TDD P-CCPCH RSCP measurement

Parameter	Unit	Test 1 Test 2 Test 3			
E-UTRA RF Channel Number		1			
BWchannel	MHz	10			
OCNG Patterns defined in A.3.2.2.1 (OP.1		OP.1 TDD			
TDD)		OP.I IDD			
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA					
PHICH_RB	dB	0			
PDCCH_RA					
PDCCH_RB					
PDSCH_RA					
PDSCH_RB					
OCNG_RA ^{Note1}					
OCNG_RB ^{Note1}					
$N_{oc}^{ m Note2}$	dBm/15 kHz	-98			
\hat{E}_s / I_{ot}	dB	4			
RSRP ^{Note3}	dBm/15 kHz	-94			
Io ^{Note3}	dBm/9 MHz	-64.76			
\hat{E}_s / N_{oc}	dB	4			
Propagation condition	-	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 lo 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.					

Table A.9.5.2-2: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 1)

Table A.9.5.2-3: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 2)

Parameter	Unit	Tes	st 1	Tes	st 2	Te	st 3
DL timeslot number		0		DwPTS		0	DwPTS
UTRA RF Channel number Note2		Char	nel 2	Chan	nel 2	Char	nel 2
PCCPCH_Ec/lor	dB	-3		-3		-3	
DwPCH_Ec/lor	dB		0		0		0
OCNS_Ec/lor	dB	-3		-3		-3	
loc	dBm/1.28MHz	-54	4.1	-75	5.2	-(97
Îor/loc	dB	1	2	Ę	5		0
PCCPCH RSCP Note1	dBm	-55.1		-73.2		-100	
lo ^{Note1}	dBm/1.28MHz	-5	50	-6	69	-(94
Propagation condition	opagation 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							

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.

A.9.5.2.3 Test Requirements

The UTRA TDD P-CCPCH RSCP measurement accuracy shall meet the requirements in section 9.3.1.

A.9.6 GSM Carrier RSSI

A.9.6.1 E-UTRAN FDD

A.9.6.1.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits when the active cell is E-UTRAN FDD. This test will verify the requirements in section 9.4.1. There are 12 different test setups with different signal levels for the GSM cells.

Measurement gaps are configured to measure on the GSM cells. Table A.9.6.1.1-2 defines the cell specific test parameters for the E-UTRAN FDD cell. In the measurement control information it is indicated to the UE that periodic reporting of the GSM RSSI measurement is used. The limits of the GSM test parameters in terms of GSM BCCH received level at the receiver inputs are defined in Table A.9.6.1.1-3.

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1.
Active cell	-	Cell 1	
DRX	-	OFF	
Gap pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Filtering coefficient	-	0	L3 filtering is not used.
Inter-RAT measurement quantity		GSM Carrier RSSI	
Monitored cell list size		6 GSM neighbours including ARFCN 1	Included in the Measurement control information

Table A.9.6.1.1.-2: E-UTRAN FDD Cell specific test parameters for GSM Carrier RSSI accuracy test in E-UTRAN FDD

Parameter	Unit	Tests 1-12
E-UTRAN RF Channel Number		1
BW _{channel}	MHz	10
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD)		OP.1 FDD

PBCH RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
$N_{_{oc}}$ Note 2	dBm/15 kHz	-98		
RSRP ^{Note 3}	dBm/15 kHz	-94		
\hat{E}_{s}/I_{ot}	dB	4		
SCH_RP ^{Note 3}	dBm/15 kHz	-94		
\hat{E}_s / N_{oc}	dB	4		
Propagation Condition		AWGN		
Note 1: OCNG shall be used such that all 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 modeled as AWGN of appropriate power for $N_{oc}^{}$ to be fulfilled.				
Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.				

Step	BCCH1	BCCH2	BCCH3	BCCH4	BCCH5	BCCH6
1	-38.5	-38.5	NA	NA	NA	NA
2	-48.5	-48.5	NA	NA	NA	NA
3	-70.5	-70.5	NA	NA	NA	NA
4	-109.5	-109.5	NA	NA	NA	NA
5	-57.5	NA	-54.5	NA	NA	NA
6	-64.5	NA	-59.5	NA	NA	NA
7	-71.5	NA	NA	-64.5	NA	NA
8	-78.5	NA	NA	-69.5	NA	NA
9	-85.5	NA	NA	NA	-74.5	NA
10	-92.5	NA	NA	NA	-79.5	NA
11	-99.5	NA	NA	NA	NA	-84.5
12	-106.5	NA	NA	NA	NA	-89.5

A.9.6.1.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.4.1.

A.9.6.2 E-UTRAN TDD

A.9.6.2.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits when the active cell is E-UTRAN TDD. This test will verify the requirements in section 9.4.1. There are 12 different test setups with different signal levels for the GSM cells.

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Measurement gaps are configured to measure on the GSM cells. Table A.9.6.2.1-2 defines the cell specific test parameters for the E-UTRAN TDD cell. In the measurement control information it is indicated to the UE that periodic reporting of the GSM RSSI measurement is used. The limits of the GSM test parameters in terms of GSM BCCH received level at the receiver inputs are defined in Table A.9.6.2.1-3.

Table A.9.6.2.1-1: Genera	I GSM Carrier	RSSI test	parameters
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Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2.
Active cell	-	Cell 1	
DRX	-	OFF	
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
Gap pattern Id		1	As specified in 3GPP TS 36.133 section 8.1.2.1.
Filtering coefficient	-	0	L3 filtering is not used.
Inter-RAT measurement quantity		GSM Carrier RSSI	
Monitored cell list size		6 GSM neighbours including ARFCN 1	Included in the Measurement control information

Table A.9.6.2.1-2: E-UTRAN TDD Cell specific test parameters for GSM Carrier RSSI accuracy test in E-UTRAN TDD

Parameter	Unit	Tests 1 - 12
E-UTRAN RF Channel Number		1
BW _{channel}	MHz	10
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD)		OP.1 TDD

PBCH_RA	dB	
PBCH_RB	dB	
PSS_RA	dB	
SSS_RA	dB]
PCFICH_RB	dB	
PHICH_RA	dB	
PHICH_RB	dB	0
PDCCH_RA	dB	
PDCCH_RB	dB	
PDSCH_RA	dB	
PDSCH_RB	dB	
OCNG_RA ^{Note 1}	dB	
OCNG_RB ^{Note 1}	dB	
$N_{oc}^{ m Note 2}$	dBm/15 kHz	-98
RSRP Note 3	dBm/15 kHz	-94
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4
SCH_RP Note 3	dBm/15 kHz	-94
\hat{E}_{s}/N_{oc}	dB	4
Propagation Condition		AWGN
Note 1: OCNG shall be used si	ich that all cells are full	v allocated and a constant total transmitted power spectral

Note 1: OCNG shall be used such that all 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 modeled as AWGN of appropriate power for $\,N_{oc}\,$ to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Step	BCCH1	BCCH2	BCCH3	BCCH4	BCCH5	BCCH6
1	-38.5	-38.5	NA	NA	NA	NA
2	-48.5	-48.5	NA	NA	NA	NA
3	-70.5	-70.5	NA	NA	NA	NA
4	-109.5	-109.5	NA	NA	NA	NA
5	-57.5	NA	-54.5	NA	NA	NA
6	-64.5	NA	-59.5	NA	NA	NA
7	-71.5	NA	NA	-64.5	NA	NA
8	-78.5	NA	NA	-69.5	NA	NA
9	-85.5	NA	NA	NA	-74.5	NA
10	-92.5	NA	NA	NA	-79.5	NA
11	-99.5	NA	NA	NA	NA	-84.5
12	-106.5	NA	NA	NA	NA	-89.5

Table A.9.6.2.1-3: BCCH signal levels at receiver input in dBm

A.9.6.2.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in section 9.4.1.

A.9.7 UE Rx – Tx Time Difference

A.9.7.1 E-UTRAN FDD UE Rx – Tx time difference case

A.9.7.1.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRAN FDD UE Rx - Tx time difference measurement accuracy is within the specified limits in Section 9.1.9.

There is only one active cell in the test. The tested UE is connected with the PCell, configured to transmit SRS signals periodically, and signaled to report UE Rx - Tx time difference measurement. The test equipment measures the transmit timing of the UE using the transmitted SRS, and measures the receive timing using the downlink CRS. The test equipment then compares the difference of these two timings to the UE Rx-Tx measurement reported by the UE.

A.9.7.1.2 Test parameters

The parameters for this test case are defined in Table A.9.7.1.2-1, and the SRS configuration used is defined in Table A.9.7.1.2-2.

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Parameter	Unit	Test 1	Test 2	
E-UTRAN RF Channel Number		1	1	
BW _{channel}	MHz	1.4	10	
DRX		0	FF	
PDSCH Reference measurement channel defined in A.3.1.1.1		R.2 FDD	R.0 FDD	
PDSCH allocation	n _{PRB}	2—3	13—36	
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1		R.8 FDD	R.6 FDD	
OCNG Patterns defined in A.3.2.1.4(OP.4 FDD) and A.3.2.1.2(OP.2 FDD)		OP.4 FDD	OP.2 FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0	0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB	-		
OCNG_RA ^{Note1}	dB			
OCNG_RB ^{Note1}	dB	-		
Noc Note2	dBm/15 kHz	-98	-98	
RSRP Note3	dBm/15 kHz	-101	-101	
\hat{E}_s/N_{oc}	dB	-3	-3	
lo Note3	dBm/1.08 MHz	-77.66	N/A	
	dBm/9 MHz	N/A	-68.45	
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	-3	-3	
Propagation Condition AWGN				
 Note 1: OCNG shall be used such that the resources in the active cell 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 modeled 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.				

Table A.9.7.1.2-1: FDD UE Rx – Tx time difference test parameters

Table A.9.7.1.2-2: Sounding Reference Symbol Configuration to be used in FDD UE Rx – Tx time difference test

Field	Test 1	Test 2	Comment		
Field	Value		Comment		
srsBandwidthConfiguration	bw7	bw5			
srsSubframeConfiguration	S	c1			
ackNackSrsSimultaneousTransmission	FA	LSE			
srsMaxUpPTS	N	/A	Not applicable for FDD		
srsBandwidth	0		No hopping		
srsHoppingBandwidth	hbw0				
frequencyDomainPosition	0				
Duration	TRUE		Indefinite duration		
Srs-ConfigurationIndex	0		SRS periodicity of 2ms for all		
			Tests.		
transmissionComb	0				
cyclicShift	cs0		No cyclic shift		
Note: For further information see section 6.3.2 in 3GPP TS 36.331.					

A.9.7.1.3 Test Requirements

The UE Rx – Tx time difference measurement accuracy shall fulfill the requirements in Section 9.1.9.

A.9.7.2 E-UTRA TDD

A.9.7.2.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRAN TDD UE Rx-Tx time difference measurement accuracy is within the specified limits in section 9.1.9.

There is only one cell in the test. The tested UE is connected with the PCell, configured to transmit SRS signals periodcally, and signaled to report UE Rx - Tx time difference measurement. The test equipment measures the transmit timing of the UE using the transmitted SRS, and measures the receive timing using the downlink CRS. The test equipment then compares the difference of these two timings to the UE Rx - Tx measurement reported by the UE.

A.9.7.2.2 Test parameters

The parameters for this test case are defined in Table A.9.7.2.2-1, and the SRS configuration used is defined in Table A.9.7.2.2-2.

Parameter	Unit	Tests 1	Tests 2		
E-UTRAN RF Channel Number	-	1	1		
BW _{channel}	MHz	1.4	10		
Uplink-downlink configuration of cell Note1		1	1		
Special subframe configuration of cell Note1		6	6		
PDSCH Reference measurement channel defined in	-	R.2 TDD	R.0 TDD		
A.3.1.1.2					
PDSCH allocation	n _{PRB}	2-3	13-36		
PDCCH/PCFICH/PHICH Reference measurement	-	R.8 TDD	R.6 TDD		
channel defined in A.3.1.2.2					
OCNG Patterns defined in A.3.2.2.4 (OP.4 TDD) and	-	OP.4 TDD	OP.2 TDD		
A.3.2.2.2 (OP.2 TDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0	0		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
CNG_RA ^{Note2} dB					
CNG_RB ^{Note2} dB					
N _{oc} Note 3	dBm/15 kHz	-98	-98		
RSRP ^{Note 4}	dBm/15 kHz	-101	-101		
\hat{E}_s/N_{oc}	dB	-3	-3		
lo Note 4	dBm/1.08 MHz	-77.66	N/A		
	dBm/9 MHz	N/A	-68.45		
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$	dB	-3	-3		
Propagation Condition AWGN					
Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in					
3GPP TS 36.211.					
Note 2: OCNG shall be used such that the cell is fully allocated and a constant total transmitted					
power spectral density is achieved for all OFDM symbols.					
Note 3: Interference from other cells and noise sources not specified in the test is assumed to					
be constant over subcarriers and time and shall be modeled as AWGN of appropriate					
power for N_{oc} to be fulfilled.					
Note 4: RSRP and lo levels have been derived from other parameters for information purposes.					
They are not settable parameters themselves.					

Table A.9.7.2.2-2: Sounding Reference Symbol Configuration to be used in TDD UE Rx – Tx time difference test

Field	Test 1	Test 2	Comment	
Field	Value		Comment	
srsBandwidthConfiguration	bw7 bw5			
srsSubframeConfiguration	SC	:1		
ackNackSrsSimultaneousTransmission	FAL	SE		
srsMaxUpPTS	TR	UE		
srsBandwidth	0		No hopping	
srsHoppingBandwidth	hbw0			
frequencyDomainPosition	0			
Duration	TRUE		Indefinite duration	
Srs-ConfigurationIndex	10		SRS periodicity of 10ms for all Tests.	
transmissionComb	0			
cyclicShift	cs0		No cyclic shift	
Note: For further information see section	on 6.3.2 in 3GPF	TS 36.331.		

A.9.7.2.3 Test Requirements

The UE Rx – Tx time difference measurement accuracy shall fulfill the requirements in section 9.1.9.

A.9.8 RSTD

A.9.8.1 E-UTRAN FDD RSTD intra frequency case

A.9.8.1.1 Test Purpose and Environment

The purpose of this test is to verify that the RSTD intra-frequency measurement accuracy is within the specified limits in section 9.1.10.1 in AWGN channels.

In the test, there are two synchronous cells, Cell 1 as the reference cell and Cell 2 as the neighbour cell on the same frequency.

The OTDOA assistance data as defined in TS 36.355, Section 6.5.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE Δ T ms before the start of measurement period, where Δ T = 150 ms is the maximum processing time of the OTDOA assistance data.

A time span of $T_{RSTD IntraFreqFDD, E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Tables A.9.8.1.1-1 and A.9.8.1.1-2 during this time.

The test parameters are given in Table A.9.8.1.1-1 and Table A.9.8.1.1-2.

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Table A.9.8.1.1-1: General Test Parameters for intra frequency RSTD Tests for E-UTRAN FDD

Parameter	Unit	Value			Comment	
		Test1	Test2	Test3 Test4		
PCFICH/PDCCH/PHICH parameters		R.8	FDD	R.6 FDD		As specified in section A.3.1.2.1
OCNG Patterns defined in A.3.2.1		OP.7		OP.6 FDD		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 (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.
Reference cell				<u> 1</u>		
Neighbour cell				1 2		One FDD environ for succession
E-UTRA RF Channel Number				1		One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	1.	.4	1	0	
PRS Bandwidth	RB	e	3	50		PRS bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].
PRS configuration Index I _{PRS}		2	2		2	As defined in 3GPP TS 36.211
Number of consecutive positioning downlink subframes $N_{\rm PRS}$		6 1		As defined in 3GPP TS 36.211		
prs-MutingInfo				1110000' 1110000'		See section 6.5.1.2 in 3GPP TS 36.355 for more information
Cell ID		(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 0	(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 1	(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 0	(Cell ID of cell 1 - Cell ID of cell 2) mod 6 = 3	
expectedRSTD ^{Note4}	us	3	0	0	-3	
expectedRSTDUncertainty Notes	us	5	5	5	5	
CP length		Normal				
DRX		OFF				
Radio frame transmit time difference between cells (cell 2 TX time – cell 1 TX time) ^{Note4}		3 us			Synchronous cells	
Number of cells provided in OTDOA assistance data		16			The number of cells includes the reference cell	
T _{RSTD} IntraFreqFDD, E-UTRAN	ms	2560			Derived according to the RSTD measurement requirements specified in Section 8.1.2.5.1	

Demonstration	l la lí	Те	st1	Test2		Te	st3	Test4	
Parameter	Unit	Cell1	Cell2	Cell1	Cell2	Cell1	Cell2	Cell1	Cell2
E-UTRA RF					. 1				•
Channel Number					Į				
PBCH_RA									
PBCH_RB									
PSS_RA									
SSS_RA									
PCFICH_RB									
PHICH_RA	D۲	0	0	0	<u> </u>	0	0	~	•
PHICH_RB	dB	0	0	0	0	0	0	0	0
PDCCH_RA									
PDCCH_RB									
OCNG_RA ^{Note1}									
OCNG_RB ^{Note1}									
PRS_RA									
$N_{oc}^{\rm Note2}$	dBm/15 kHz	-98	-98	-98	-98	-98	-98	-98	-98
					50		50	50	50
PRS $\hat{ extbf{E}}_{ extsf{s}}/ extbf{I}_{ extsf{ot}}$	dB	-3	-10	-6	-13	-3	-10	-6	-13
lo ^{Note3}	dBm/1.08 MHz	-78.92	-78.92	-79.21	-79.21	N/A	N/A	N/A	N/A
	dBm/9 MHz	N/A	N/A	N/A	N/A	-69.72	-69.72	-70	-70
PRP Note3	dBm/15kHz	-100.373	-106.016	-104	-111	-100.373	-106.016	-104	-111
Propagation condition					AW	GN			
Note 1: OCNG sh density is allocated	all be used such achieved for all (in the subframe t ce from other cel	OFDM symbor ransmitting I	ols (other the PRS.	an those i	in the PR	S subframes). There is n	o PDSCI	4
subcarrier	s and time and s	hall be mode	elled as AW	GN of app	propriate p	bower for N	$_{oc}$ to be fulfi	lled.	
subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Note 3: Io and PRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS									
 Note 4: The test equipment shall ensure that the receive time difference between the two cells radio frame 0 start at the UE antenna connector is equal to expectedRSTD. The parameters of expected RSTD of all neighbour cells in the OTDOA assistance data are identical in the test. Note 5: The parameters of expected RSTD uncertainty of all neighbour cells in the OTDOA assistance data are 									
identical ir	•								

Table A.9.8.1.1-2: Cell Specific Test Parameters for intra frequency RSTD Tests for E-UTRAN FDD

A.9.8.1.2 Test Requirements

The RSTD measurement accuracy shall fulfill the requirements in section 9.1.10.1.

A.9.8.2 E-UTRAN TDD RSTD intra frequency case

A.9.8.2.1 Test Purpose and Environment

The purpose of this test is to verify that the RSTD intra-frequency measurement accuracy is within the specified limits in section 9.1.10.1 in AWGN channels.

In the test, there are two synchronous cells, Cell 1 as the reference cell and Cell 2 as the neighbour cell on the same frequency.

The OTDOA assistance data as defined in TS 36.355, Section 6.5.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE Δ T ms before the start of measurement period, where Δ T = 150 ms is the maximum processing time of the OTDOA assistance data.

A time span of $T_{RSTD IntraFreqTDD, E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Tables A.9.8.2.1-1 and A.9.8.2.1-2 during this time.

The test parameters are given in Table A.9.8.2.1-1 and Table A.9.8.2.1-2.

Table A.9.8.2.1-1: General Test Parameters for intra frequency RSTD Tests for E-UTRAN TDD

Parameter	Unit		Va	lue	Comment		
		Test1	Test2	Test3	Test4		
PCFICH/PDCCH/PHICH parameters		R.8 TDD		R.6 TDD		As specified in section A.3.1.2.2	
OCNG Patterns defined in A.3.2.2		OP.4 TDD		OP.2 TDD		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 (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.	
Reference cell		Cell 1					
Neighbour cell		Cell 2				0 700	
E-UTRA RF Channel Number		1				One TDD carrier frequency is used.	
Channel Bandwidth (BW _{channel})	MHz	1.4		10			
PRS Bandwidth	RB	6		50		PRS bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].	
Special subframe configuration		6		6		As specified in table 4.2-1 in TS 36.211. The same configuration in both cells.	
Uplink-downlink configuration		3		1		As specified in table 4.2-2 in TS 36.211 and table 8.1.2.5.2-2. The same configuration in both cells.	
PRS configuration Index I _{PRS}		9		14		As defined in 3GPP TS 36.211	
Number of consecutive positioning downlink subframes $N_{\rm PRS}$		6		1		As defined in 3GPP TS 36.211	
prs-MutingInfo				1110000' 1110000'		See section 6.5.1.2 in 3GPP TS 36.355 for more information	
Cell ID		(Cell ID of cell 1 - Cell ID of cell 2) mod 6 = 0	(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 1	(Cell ID of cell 1 - Cell ID of cell 2) mod 6 = 0	(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 3		
expectedRSTD ^{Note4}	us	3	0	0	-3		
expectedRSTDUncertainty Note5	us	5	5	5	5		
CP length		Normal					
DRX		OFF					
Radio frame transmit time difference between cells (cell 2 TX time – cell 1 TX time) ^{Note4}		3 us		Synchronous cells			
Number of cells provided in OTDOA assistance data		16			The number of cells includes the reference cell		
T _{RSTD IntraFreqFDD, E-UTRAN}	ms		25	60		Derived according to the RSTD measurement requirements specified in Section 8.1.2.5.1	

D		Te	st1	Те	st2	Те	st3	Test4	
Parameter	Unit	Cell1	Cell2	Cell1	Cell2	Cell1	Cell2	Cell1	Cell2
E-UTRA RF			•		1		•		
Channel Number					I				
PBCH_RA									
PBCH_RB									
PSS_RA									
SSS_RA									
PCFICH_RB									
PHICH_RA	dB	0	0	0	0	0	0	0	0
PHICH_RB	uБ	0	0	0	0	0	0	0	0
PDCCH_RA									
PDCCH_RB									
OCNG_RA ^{Note1}									
OCNG_RB ^{Note1}									
PRS_RA									
$N_{_{oc}}^{_{ m Note2}}$	dBm/15 kHz	-98	-98	-98	-98	-98	-98	-98	-98
PRS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	-3	-10	-6	-13	-3	-10	-6	-13
lo ^{Note3}	dBm/1.08 MHz	-78.92	-78.92	-79.21	-79.21	N/A	N/A	N/A	N/A
	dBm/9 MHz	N/A	N/A	N/A	N/A	-69.72	-69.72	-70	-70
PRP ^{Note3}	dBm/15kHz	-100.373	-106.016	-104	-111	-100.373	-106.016	-104	-111
Propagation condition					AW	GN			
Note 1: OCNG s density is allocated	hall be used such s achieved for all (l in the subframe t nce from other cel	OFDM symb ransmitting I	ols (other the PRS.	an those i	in the PR	S subframes). There is n	o PDSCI	H
subcarrie	ers and time and s	hall be mod	elled as AW	GN of app	propriate p	bower for N	\int_{oc} to be fulfi	lled.	
paramete	subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Ite 3: Io and PRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS.								
Note 4: The test the UE a	equipment shall e ntenna connector ne OTDOA assista	is equal to e	expectedRS	TD. The p					
Note 5: The para	in the test.				our cells i	n the OTDO	A assistance	e data are	e

Table A.9.8.2.1-2: Cell Specific Test Parameters for intra frequency RSTD Tests for E-UTRAN TDD

A.9.8.2.2 Test Requirements

The RSTD measurement accuracy shall fulfill the requirements in section 9.1.10.1.

A.9.8.3 E-UTRAN FDD-FDD RSTD inter frequency case

A.9.8.3.1 Test Purpose and Environment

The purpose of these tests is to verify that the RSTD inter-frequency measurement accuracy is within the specified limits in section 9.1.10.2 in AWGN channels.

There are two synchronous cells on different carrier frequencies in the test. In all test cases, Cell 1 is the reference cell as well as the PCell and Cell 2 the neighbor cell. The inter frequency measurements on Cell 2 are supported by measurement gaps. PCIs of the two cells are selected randomly.

The OTDOA assistance data as defined in TS 36.355, Section 6.5.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of measurement period, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap configuration is known and configured in the UE before the measurements start.

There is no PDSCH allocated in the subframe transmitting PRS. A time span of $T_{RSTD InterFreqFDD, E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Table A.9.8.3.1-1 and Table A.9.8.3.1-2 for each of the two cells during this time.

The test parameters are given in Table A.9.8.3.1-1 and Table A.9.8.3.1-2.

Parameter	Unit	Value		Comment		
		Test1	Test2			
PCFICH/PDCCH/PHICH parameters		R.8 FDD	R.6 FDD	As specified in section A.3.1.2.1		
OCNG Patterns defined in A.3.2.1		OP.7 FDD	OP.6 FDD	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 (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.		
Reference cell		Cell 1		Cell 1 on RF channel number 1		
Neighbour cell		Cell 2		Cell 2 on RF channel number 2		
E-UTRA RF Channel Number		1,2		Two FDD carrier frequencies are used.		
Channel Bandwidth (BW _{channel})	MHz	1.4	10			
PRS Bandwidth	RB	6	50	PRS bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].		
Number of consecutive positioning downlink subframes $N_{\rm PRS}$		6	1	As defined in 3GPP TS 36.211		
prs-MutingInfo		Cell1:'11 Cell2:'11		See section 6.5.1.2 in 3GPP TS 36.355 for more information		
expectedRSTD ^{Note4}	μs	3		The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator		
expectedRSTDUncertainty Note5	μs	5		The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index		
CP length		Normal				
DRX		OFF				
Radio frame transmit time difference between cells (cell 2 TX time – cell 1 TX time) ^{Note4}	μs	3		Synchronous cells		
Number of cells provided in OTDOA assistance data		16		16		The list includes the reference cell (received in OTDOA-ReferenceCellInfo [24]) on RF channel 1 and 15 other cells on RF channel 2, all received in OTDOA- ProvideAssistanceData [24].
T _{RSTD} InterFreqFDD, E-UTRAN	ms	5120		Derived according to the RSTD measurement requirements specified in Section 8.1.2.6.1		

E-UTRA GapOffse	Parameter	Unit					
			Cell1	Cell2	Cell1	Cell2	
GapOffse	RF Channel Number		1	2	1	2	
	et		14	N/A	11	N/A	
Gap Patt			0	N/A	0	N/A	
PRS con	figuration Index I _{PRS}		2	15	2	12	
PRS sub	frame offset		N/A	13	N/A	10	
PBCH_R	A						
PBCH_R	В						
PSS_RA							
SSS_RA							
PCFICH_	RB						
PHICH_F	RA	٩D	0	0	0		
PHICH_F		dB	0	0	0	0	
PDCCH_							
PDCCH_							
OCNG_F	RA ^{Note1}						
OCNG_F	RB ^{Note1}						
PRS_RA							
N_{oc} Note2		dBm/15 kHz	z -98				
PRS $\hat{\mathrm{E}}_{_{\mathrm{s}}}$		dB	-6	-13	-6	-13	
o Note3		dBm/1.08 MHz	-79.25	-79.39	N/A	N/A	
		dBm/9 MHz	N/A	N/A	-70.04	-70.18	
PRP Note3		dBm/15kHz	-104	-111	-104	-111	
Propagat	ion condition			AW			
Note 1: Note 2:	OCNG shall be used such th density is achieved for all OF allocated in the subframe tra Interference from other cells	DM symbols (other than t nsmitting PRS.	hose in the PR	S subframes).	There is no P	DSCH	
	subcarriers and time and sha	II be modelled as AWGN	of appropriate	power for N_{oc}	to be fulfilled		
Note 3: Note 4:	Io and PRP levels have been parameters themselves. Io va symbols carrying PRS The test equipment shall ens the UE antenna connector is	alues are derived in the ca	ase that there is difference betw	s no PBCH, PS een the two ce	SS or SSS in the	he OFDM e 0 start at	

Table A.9.8.3.1-2: Cell Specific Test Parameters for inter frequency RSTD Tests for E-UTRAN FDD

assistance data are identical in the test. Note 5: The parameters of expected RSTD uncertainty of all neighbour cells in the OTDOA assistance data are identical in the test.

A.9.8.3.2 Test Requirements

The RSTD measurement accuracy shall fulfill the requirements in section 9.1.10.2.

A.9.8.4 E-UTRAN TDD-TDD RSTD inter frequency case

A.9.8.4.1 Test Purpose and Environment

The purpose of this test is to verify that the RSTD inter-frequency measurement accuracy is within the specified limits in section 9.1.10.2 in AWGN channels.

There are two synchronous cells on different carrier frequencies in the test. In all test cases, Cell 1 is the reference cell as well as the PCell and Cell 2 is the neighbour cell. The inter frequency measurements on Cell 2 are supported by a measurement gap. PCIs of the two cells are selected randomly.

The OTDOA assistance data as defined in TS 36.355, Section 6.5.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE Δ T ms before the

start of measurement period, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap configuration is known and configured in the UE before the measurements start.

There is no PDSCH allocated in the subframe transmitting PRS. A time span of $T_{RSTD InterFreqTDD, E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Table A.9.8.4.1-1 and Table A.9.8.4.1-2 for each of the two cells during this time.

The test parameters are given in Table A.9.8.4.1-1 and Table A.9.8.4.1-2.

Table A.9.8.4.1-1: General Test Parameters for inter frequency RSTD Tests for E-UTRAN TDD

Parameter	Unit	Value		Comment				
		Test1	Test2					
PCFICH/PDCCH/PHICH		R.8 TDD	R.6 TDD	As specified in section A.3.1.2.2				
OCNG Patterns defined in A.3.2.2		OP.4 OP.2 TDD TDD		OP.4 OP.2		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 (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.		
Reference cell		Cell 1		Cell 1 on RF channel number 1				
Neighbour cell		Cell 2		Cell 2 on RF channel number 2				
E-UTRA RF Channel Number		1,2		Two TDD carrier frequencies are used.				
Channel Bandwidth (BW _{channel})	MHz	1.4	10					
PRS Bandwidth	RB	6	50	PRS bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].				
Special subframe configuration		6		As specified in table 4.2-1 in TS 36.211. The same configuration in both cells.				
Uplink-downlink configuration		3	1	As specified in table 4.2-2 in TS 36.211 and table 8.1.2.5.2-2.				
Number of consecutive positioning downlink subframes $N_{\rm PRS}$		6	1	As defined in 3GPP TS 36.211				
prs-MutingInfo		Cell1:'11 Cell2:'11		PRS muting is not used. See section 6.5.1.2 in 3GPP TS 36.355 for more information				
expectedRSTD ^{Note4}	μs	3		The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator				
expectedRSTDUncertainty Note5	μs	5	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index				
CP length		Normal						
DRX		OFF						
Radio frame transmit time difference between cells (cell 2 TX time – cell 1 TX time) ^{Note4}	μs	3		Synchronous cells				
Number of cells provided in OTDOA assistance data		16		16		16		The list includes the reference cell (received in <i>OTDOA-ReferenceCellInfo</i> [24]) on RF channel 1 and 15 other cells on RF channel 2, all received in <i>OTDOA-</i> <i>ProvideAssistanceData</i> [24].
$T_{RSTD \ InterFreqTDD, \ E-UTRAN}$	ms	5120		Derived according to the RSTD measurement requirements specified in Section 8.1.2.6.3				

Parameter	Unit	Те	st1	Test2	
	Onit	Cell1	Cell2	Cell1	Cell2
E-UTRA RF Channel Number		1	2	1	2
Gap pattern ID		0	N/A	0	N/A
Gapoffset		15	N/A	14	N/A
PRS configuration Index I _{PRS}		5	15	5	15
PRS subframe offset		N/A	10	N/A	10
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA	dB			0	
PHICH_RB	UD			0	
PDCCH_RA					
PDCCH_RB					
OCNG_RA ^{Note1}					
OCNG_RB ^{Note1}					
PRS_RA					
$N_{oc}^{ m Note2}$	dBm/15 kHz -98				
PRS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	-6	-13	-6	-13
Io Note3	dBm/1.08 MHz	-79.25	-79.39	N/A	N/A
	dBm/9 MHz	N/A	N/A	-70.04	-70.18
PRP ^{Note3}	dBm/15kHz	-104	-111	-104	-111
Propagation condition			AM	/GN	
density is achieved for allocated in the subfr	such that both cells are fully allo or all OFDM symbols (other than ame transmitting PRS. er cells and noise sources not s	those in the PF	RS subframes).	. There is no F	DSCH
subcarriers and time	and shall be modelled as AWG	N of appropriate	power for N_{o}	$_{c}$ to be fulfilled	ł.
parameters themselv symbols carrying PR Note 4: The test equipment s the UE antenna conn	ave been derived from other para ves. Io values are derived in the S. shall ensure that the receive time nector is within the expectedRST subframe offset. The parameter	case that there i e difference betw DUncertainty w	s no PBCH, P veen the two co indow centered	SS or SSS in t ells radio fram d at expectedF	the OFDM e 0 start at RSTD after
assistance data are i	dentical in the test.	neighbour cells	in the OTDOA	accistanco de	ta ara

Table A.9.8.4.1-2: Cell Specific Test Parameters for inter frequency RSTD Tests for E-UTRAN TDD

Note 5: The parameters of expected RSTD uncertainty of all neighbour cells in the OTDOA assistance data are identical in the test.

A.9.8.4.2 Test Requirements

The RSTD measurement accuracy shall fulfill the requirements in section 9.1.10.2.

A.9.9 RSRP and RSRQ on the serving cell

A.9.9.1 FDD Intra frequency serving cell case

A.9.9.1.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP/ RSRQ absolute measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.2.1 and 9.1.2.5 for FDD intra frequency measurements.

A.9.9.1.2 Test parameters

In this set of test case there is only the serving cell. Absolute accuracy of RSRP/ RSRQ intra frequency measurements for the serving cell is tested by using the parameters in Table A.9.9.1.2-1. In the test case, Cell 1 is the serving cell.

Pa	rameter	Unit	Test Cell 1				
E-UTRA RF Ch	annel Number		1				
BW _{channel}		MHz	10				
Measurement b	andwidth	n _{PRB}	22—27				
PDSCH Refere channel defined	nce measurement I in A.3.1.1.1		R.0 FDD				
PDSCH allocati	on	n _{PRB}	13—36				
	H/PHICH Reference hannel defined in		R.6 FDD				
A.3.1.2.1	s defined in A.3.2.1.1		11.01.00				
(OP.1 FDD)			OP.1 FDD				
PBCH_RA PBCH_RB							
PSS_RA							
SSS_RA							
PCFICH_RB							
PHICH_RA							
PHICH_RB		dB	0				
PDCCH_RA							
PDCCH_RB							
PDSCH_RA							
PDSCH_RB OCNG_RA ^{Note1}							
OCNG_RA							
UCING_KD	Danda 1 4 6 10						
$N_{\it oc}$ Note2	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24		-122				
	Bands 2, 5 and 7	dBm/15 kHz	-120				
	Band 25		-118.5				
	Bands 3, 8, 12, 13, 14, 17, 20 and 22		-119				
	Band 9		-121				
$\hat{\mathbf{E}}_{s}/\mathbf{I}_{ot}$		dB	-4				
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24		-126				
	Bands 2, 5 and 7		-124				
RSRP ^{Note3}	Band 25	dBm/15 kHz	-122.5				
	Bands 3, 8, 12, 13, 14, 17, 20 and 22		-123				
	Band 9		-125				
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24 Bands 2, 5 and 7						
RSRQ ^{Note3}	Bands 2, 5 and 7 Band 25 Bands 3, 8, 12, 13, 14, 17, 20 and 22 Band 9	dB	-14.93				
	Bands 1, 4, 6, 10, 11, 18, 19, 21, 23 and 24		-92.76				
lo ^{Note3}	Bands 2, 5 and 7	dBm/9 MHz	-90.76				
	Band 25		-89.26				
	Bands 3, 8, 12, 13, 14, 17, 20 and 22		-89.76				
	Band 9		-91.76				

Table A.9.9.1.2-1: RSRP FDD Intra frequency test parameters

\hat{E}_s / N_{oc}		dB	-4				
Propagat	tion condition	-	AWGN				
Note 1:	OCNG shall be used such t						
	and a constant total transm		ctral density is				
	achieved for all OFDM sym	bols.					
Note 2:	Interference from other cell	s and noise soui	rces not specified in				
	the test is assumed to be c						
	and shall be modelled as A	WGN of approp	riate power for				
	$N_{\scriptscriptstyle oc}$ to be fulfilled.						
Note 3:	RSRP, RSRQ and lo levels	have been deriv	ved from other				
	parameters for information						
	parameters themselves.						
Note 4: RSRP minimum requirements are specified assuming							
	independent interference a	nd noise at each	receiver antenna				
	port.						

A.9.9.1.3 Test Requirements

The absolute RSRP and RSRQ measurement accuracy shall fulfil the requirements in section 9.1.2.1 and 9.1.5.1 respectively.

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

B.1 Conditions for E-UTRAN RRC_IDLE state mobility

B.1.1 Conditions for measurements of intra-frequency E-UTRAN cells for cell re-selection

This section defines the E-UTRAN intra-frequency RSRP, RSRP $\hat{E}s/Iot$, SCH_RP and SCH $\hat{E}s/Iot$ applicable for a corresponding operating band.

The conditions for measurements of intra-frequency E-UTRAN cells for cell re-selection are defined in Table B.1.1-1

Parameter			Conditions		
	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, 41	3, 8, 12, 13, 14, 17, 20, 22	25
RSRP _{dBm} ≥	-124 dBm	-123 dBm	-122 dBm	-121 dBm	-120.5
SCH_RP _{dBm} ≥	-124 dBm	-123 dBm	-122 dBm	-121 dBm	-120.5dBm
RSRP Ês/lot≥			-4 dB	•	•
SCH Ês/lot ≥			-4 dB		

Table B.1.1-1. Conditions for measurements of intra-frequency E-UTRAN cells for cell re-selection

B.1.2 Conditions for measurements of inter-frequency E-UTRAN cells for cell re-selection

This section defines the E-UTRAN inter-frequency RSRP, RSRP Ês/Iot, SCH_RP and SCH Ês/Iot applicable for a corresponding operating band.

The conditions for measurements of intra-frequency E-UTRAN cells for cell re-selection defined in Table B.1.1-1 also apply for inter-frequency E-UTRAN cells in this section.

B.2 Conditions for UE Measurements Procedures in RRC_CONNECTED State

B.2.1 Conditions for E-UTRAN intra-frequency measurements

This section defines the E-UTRAN intra-frequency SCH_RP and SCH $\hat{\rm E}s/{\rm Iot}$ applicable for a corresponding operating band

The conditions for intra-frequency E-UTRAN measurements are defined in Table B.2.1-1

Parameter	Conditions								
	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, 41	3, 8, 12, 13, 14, 17, 20, 22	25				
SCH_RP _{dBm} ≥	-127 dBm	-126 dBm	-125 dBm	-124 dBm	-123.5dBm				
SCH Ês/lot ≥			- 6 dB						

Table B.2.1-1. E-UTRAN intra-frequency measurements

B.2.2 Conditions for E-UTRAN intra-frequency measurements with autonomous gaps

This section defines the E-UTRAN intra-frequency SCH_RP and SCH $\hat{E}s$ /Iot applicable for a corresponding operating band.

The conditions for intra-frequency E-UTRAN measurements with autonomous gap are as in Table B.2.1-1.

Table B.2.2-1. Void

B.2.3 Conditions for E-UTRAN inter-frequency measurements

This section defines the E-UTRAN inter-frequency SCH_RP, SCH $\hat{E}s/Iot$, RSRP and RSRP $\hat{E}s/Iot$ applicable for a corresponding operating band

The conditions for inter-frequency E-UTRAN measurements with autonomous gap are defined in Table B.2.3-1

Parameter			Conditions				
	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, 41	3, 8, 12, 13, 14, 17, 20, 22	25		
RSRP _{dBm} ≥	-125 dBm	-124 dBm	-123 dBm	-122 dBm	-121.5dBm		
SCH_RP _{dBm} ≥	-125 dBm	-124 dBm	-123 dBm	-122 dBm	-121.5dBm		
RSRP Ês/lot≥			-4 dB				
SCH Ês/lot ≥			-4 dB				

Table B.2.3-1. E-UTRAN inter-frequency measurements

B.2.4 Conditions for E-UTRAN inter-frequency measurements with autonomous gaps

This section defines the E-UTRAN inter-frequency SCH_RP and SCH $\hat{E}s/Iot$ applicable for a corresponding operating band

The conditions for inter-frequency E-UTRAN measurements with autonomous gap are defined in Table B.2.4-1

Table B.2.4-1. E-UTRAN inter-frequency measurements with autonomous gaps

Parameter			Conditions		
	Bands	Bands	Bands	Bands	Bands
	1, 4, 6, 10, 11, 18, 19, 21, 24, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43	9	2, 5, 7, 41	3, 8, 12, 13, 14, 17, 20	25
SCH_RP _{dBm} ≥	-125 dBm	-124 dBm	-123 dBm	-122 dBm	-121.5dBm
SCH Ês/lot ≥		-	-4 dB	•	

B.2.5 Conditions for E-UTRAN OTDOA intra-frequency RSTD Measurements

This section defines the E-UTRAN intra-frequency PRP1,2 applicable for a corresponding operating band The conditions for E-UTRAN OTDOA intra-frequency RSTD measurements are defined in Table B.2.5-1

Table B.2.5-1 E-UTRAN OTDOA intra-frequency RSTD measurements

Parameter		Conditions										
	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, 41	3, 8, 12, 13, 14, 17, 20, 22	25							
PRP_1,2 _{dBm} ≥	-127 dBm	-126 dBm	-125 dBm	-124 dBm	-123.5dBm							

B.2.6 Conditions for E-UTRAN OTDOA inter-frequency RSTD Measurements

This section defines the E-UTRAN inter-frequency PRP1,2 applicable for a corresponding operating band

The conditions for E-UTRAN OTDOA inter-frequency RSTD measurements are defined in Table B.2.5-1

B.2.7 Conditions for Measurements of the secondary component carrier with deactivated SCell

This section defines the SCH_RP and SCH Ês/Iot for measurements in the secondary component carrier applicable for a corresponding operating band

The conditions for measurements of the secondary component carrier with deactivated SCell are defined in Table B.2.7-1

Parameter		Conditions										
	Bands	Bands	Bands	Bands	Bands							
	1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 33, 34, 35, 36, 37, 38,	9, 42, 43	2, 5, 7, 41	3, 8, 12, 13, 14, 17, 20, 22	25							
	39, 40											
SCH_RP _{dBm} ≥	-127 dBm	-126 dBm	-125 dBm	-124 dBm	-123.5dBm							
SCH Ês/lot ≥			- 6 dB	•	•							

Table B.2.7-1. Measurements of the secondary component carrier with deactivated SCell

B.2.8 Conditions for E-UTRAN Intra-Frequency Measurements under Time Domain Measurement Resource Restriction

This section defines the E-UTRAN intra-frequency SCH_RP and SCH Ês/Iot applicable for a corresponding operating band.

The conditions for intra-frequency E-UTRAN measurements under time domain measurement resource restriction are defined in Table B.2.8-1.

Table B.2.8-1 E-UTRAN intra-frequency measurements under time domain measurement resource restriction

Parameter	Conditions										
	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, 41	3, 8, 12, 13, 14, 17, 20, 22	25						
SCH_RP _{dBm} ≥	-127 dBm	-126 dBm	-125 dBm	-124 dBm	-123.5dBm						
SCH Ês/lot ≥			- 7.5 dB								

B.3 Conditions for measurements performance requirements for UE

B.3.1 Conditions for intra-frequency RSRP and RSRQ Accuracy Requirements

This section defines the E-UTRAN intra-frequency RSRP applicable for a corresponding operating band The conditions for intra-frequency absolute RSRP and RSRQ accuracy requirements are defined in Table B.3.1-1

Table B.3.1-1 Intra-frequency absolute RSRP and RSRQ Accuracy Requirements

Parameter		Conditions										
	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, 41	3, 8, 12, 13, 14, 17, 20, 22	25							
RSRP _{dBm} ≥	-127 dBm	-126 dBm	-125 dBm	-124 dBm	-123.5dBm							

B.3.2 Void

Table B.3.2-1 Void

B.3.3 Conditions for inter-frequency RSRP and RSRQ Accuracy Requirements

This section defines the E-UTRAN inter-frequency RSRP applicable for a corresponding operating band

The conditions for inter-frequency absolute RSRP and RSRQ accuracy requirements are defined in Table B.3.1-1

B.3.4 Conditions for inter-frequency relative RSRP and RSRQ Accuracy Requirements

This section defines the E-UTRAN inter-frequency RSRP1,2 applicable for a corresponding operating band

The conditions for inter-frequency relative RSRP and RSRQ accuracy requirements are defined in Table B.3.8-1

B.3.5 Conditions for UE Rx – Tx time difference

This section defines the E-UTRAN RSRP applicable for a corresponding operating band

The conditions for UE Rx-Tx time difference are defined in Table B.3.1-1

B.3.6 Conditions for intra-frequency Reference Signal Time Difference (RSTD) measurements

This sections defines the E-UTRAN intra-frequency PRP applicable for a corresponding operating band

The conditions for intra-frequency RSTD measurements are defined in Table B.2.5-1

B.3.7 Conditions for inter-frequency RSTD measurements

This sections defines the E-UTRAN inter-frequency PRP applicable for a corresponding operating band

The conditions for inter-frequency RSTD measurements are defined in Table B.2.5-1.

B.3.8 Conditions for Intra-Frequency Relative RSRP Accuracy Requirements

This section defines the E-UTRAN intra-frequency RSRP1,2 applicable for a corresponding operating band.

The conditions for intra-frequency relative RSRP accuracy requirements are specified in Table B.3.8-1.

 Table B.3.8-1 Intra-frequency relative RSRP accuracy requirements

Parameter	Condition											
	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, 41	3, 8, 12, 13, 14, 17, 20, 22	25							
RSRP1,2 _{dBm} ≥	-127 dBm	-126 dBm	-125 dBm	-124 dBm	-123.5dBm							

B.3.9 Conditions for Intra-Frequency Absolute RSRP and RSRQ Accuracy Requirements under Time Domain Measurement Resource Restriction

This section defines the E-UTRAN intra-frequency RSRP applicable for a corresponding operating band.

The conditions for intra-frequency absolute RSRP and RSRQ accuracy requirements under time domain measurement resource restriction are as specified in Table B.3.1-1.

B.3.10 Conditions for Intra-Frequency Relative RSRP Accuracy Requirements under Time Domain Measurement Resource Restriction

This section defines the E-UTRAN intra-frequency RSRP1,2 applicable for a corresponding operating band.

The conditions for intra-frequency relative RSRP accuracy requirements under time domain measurement resource restriction are defined in Table B.3.8-1.

Annex C (informative): Change history:

Change Hi	, ,				• • • •		
Date	TSG#	TSG Doc.	CR	Rev	Subject	Old	New
2007-12	RP#38	RP-071037			Approved version in TSG RAN#38	-	8.0.0
2008-03	RP#39	RP-080123	2		Updates of TS36.133	8.0.0	8.1.0
2008-05	RP#40	RP-080325	3		Updates of TS36.133	8.1.0	8.2.0
2008-09	RP#41	RP-080644	006	1	E-UTRAN TDD intra frequency measurements when DRX is used	8.2.0	8.3.0
2008-09	RP#41	RP-080644	800	1	E-UTRAN TDD - UTRAN TDD measurements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	012		RSRQ reporting Range	8.2.0	8.3.0
2008-09	RP#41	RP-080644	018	1	Interfrequency and UTRA interRAT DRX peformance requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	020	1	Additions to UE transmit timing requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	043		Received interference power measurement performance requirement	8.2.0	8.3.0
2008-09	RP#41	RP-080644	044		Cell Synchronization requirement for E-UTRA TDD	8.2.0	8.3.0
2008-09	RP#41	RP-080644	047		Power Headroom Requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	048		Event Triggering and Reporting Criteria Capability Requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080642	004		Correction of E-UTRAN to UTRAN TDD handover	8.2.0	8.3.0
2008-09	RP#41	RP-080642	016	1	Definition of Symbols	8.2.0	8.3.0
2008-09	RP#41	RP-080642	019	1	Idle mode requirements updates	8.2.0	8.3.0
2008-09	RP#41	RP-080642	021	1	General updates to 36.133	8.2.0	8.3.0
2008-09	RP#41	RP-080642	023	1	Handover requirements for E-UTRAN to cdma200 HRPD/1x	8.2.0	8.3.0
2008-09	RP#41	RP-080642	024		Inter-frequency and inter-RAT measurement requirements for multiple layer monitoring	8.2.0	8.3.0
2008-09	RP#41	RP-080642	025		Side conditions for UE measurement procedures and measurement performance requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080642	026		Correction to cell reselection Requirement from E-UTRAN to HRPD/cdma200 1x	8.2.0	8.3.0
2008-09	RP#41	RP-080642	027		IRAT Measurement requirements in TS 36.133	8.2.0	8.3.0
2008-09	RP#41	RP-080713	022	1	Corrections to Handover requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	022		Measurement reporting requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	020	2	RRC re-establishment requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	023	2	Correction to UE measurement requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	033		Correction for the definition of interruption time	8.2.0	8.3.0
2008-09	RP#41	RP-080713	033	1	Correction to idle mode higher priority search requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	040	1	E-UTRAN TDD inter frequency measurement requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	045		Updates of the Measurement procedures in RRC_Connected state from RAN 4#47bis and RAN 4#48	8.2.0	8.3.0
2008-12	RP#42	RP-080919	53		Introduction of 700MHz Bands 12, 14 and 17	8.3.0	8.4.0
2008-12	RP#42	RP-080928	88	1	CR to 36.133 on Radio Link Failure Monitoring	8.3.0	8.4.0
2008-12	RP#42 RP#42	RP-080928 RP-080929	51		Correction to idle mode requirements	8.3.0	8.4.0
			52	-		8.3.0	8.4.0
2008-12 2008-12	RP#42 RP#42	RP-080929 RP-080929	52 54		Definition of out of service area Measurement requirements for UTRAN TDD cells in idle	8.3.0	8.4.0
2008-12	RP#42	RP-080929	69	2	state Correction of Inter-RAT UTRA cell reselection requirement	8.3.0	8.4.0
	RP#42	RP-080929	55	2	Correction of E_UTRAN cell measurement requirements in idle state	8.3.0	8.4.0
2008-12	RP#42	RP-080930	76	1	Correction to HO Requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080931	70	1	Random access requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080932	85	<u> </u>	Cell phase synchronization error for large cell	8.3.0	8.4.0
2008-12	RP#42	RP-080932	63	4	Synchronization Requirements for E-UTRAN to 1xRTT and HRPD Handovers	8.3.0	8.4.0
2008-12	RP#42	RP-080933	49		E-UTRAN TDD-TDD intra/inter frequency measurement reporting requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080933	50		E-UTRAN FDD – UTRAN FDD Measurement reporting requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080933	58		Measurement requirement for E-UTRAN TDD to UTRAN TDD/FDD when DRX is used	8.3.0	8.4.0
2008-12	RP#42	RP-080933	60		Interfrequency and GSM measurement performance requirements in large DRX	8.3.0	8.4.0
2008-12	RP#42	RP-080933	62	1	Correction of implementation margin for transmission gap.	8.3.0	8.4.0
2008-12	RP#42	RP-080933	72		Alignement of DRX cycle dependent requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080933	73	1	Alignment of side conditions for mobility measurements	8.3.0	8.4.0
2008-12	RP#42	RP-080933	66	1	Measurement models in RRC_CONNECTED	8.3.0	8.4.0
2008-12	RP#42	RP-080933	78	1	Limitation of maximum number of layers for multiple	8.3.0	8.4.0
			-		monitoring		

							1
2008-12	RP#42	RP-080933	83	1	GSM Cell identification requirements for parallel monitoring	8.3.0	8.4.0
2008-12	RP#42	RP-080933	87		UE transmit timing requirement	8.3.0	8.4.0
2008-12	RP#42	RP-080933	56		Correction of TS 36.133 section 8.1.2.1.1.	8.3.0	8.4.0
2008-12	RP#42 RP#42	RP-080934	77		Correction to RSRQ Report Mapping	8.3.0	8.4.0
2008-12		DD 000005	86	4	Missing side conditions for RSRP and RSRQ Phase I RRM Test Cases	8.3.0	8.4.0
2008-12 2008-12	RP#42	RP-080935	81	1		8.3.0	8.4.0
2006-12	RP#42		80	1	Test Configuration for RRM Tests: Measurement Reference Channels and OCNG	8.3.0	8.4.0
2008-12	RP#42	RP-080936	75		Cdma200 1xRTT Measurement Requirements	8.3.0	8.4.0
		RP-080936 RP-080937	75 74	1			
2008-12 2009-03	RP#42 RP#43	RP-080937 RP-090182	101	1	E-UTRA to UTRA cell search requirements for SON Correction of A3-offset parameter in RRM test case	8.3.0 8.4.0	8.4.0 8.5.0
2009-03	RP#43	RP-090182 RP-090182	101	1	Some Editorial Corrections	8.4.0	8.5.0
2009-03	RP#43	RP-090182	145		Clarifications for the DRX state	8.4.0	8.5.0
	RP#43 RP#43		145 89				
2009-03 2009-03	RP#43	RP-090183 RP-090183	09 91		Modification on measurements of UTRAN TDD cells Clarification of the correct behavior when Treselection is not	8.4.0 8.4.0	8.5.0 8.5.0
2009-03	KF#43	KF-090103	91		a multiple of idle mode reselection evaluation period	0.4.0	0.5.0
2009-03	RP#43	RP-090183	98		Clarification of 'Out of Service Area' Concept and Definition	8.4.0	8.5.0
2009-03	RP#43	RP-090183	118		Radio link monitoring	8.4.0	8.5.0
2009-03	NF #43	KF-090103	110			0.4.0	0.5.0
2009-03	RP#43	RP-090183	142	1	Update of RRC_IDLE state mobility side conditions	8.4.0	8.5.0
2003-03	NI # 4 5	11-030103	142	'	opuale of MNC_IDEE state mobility side conditions	0.4.0	0.5.0
2009-03	RP#43	RP-090183	150		UE measurement capability in Idle mode	8.4.0	8.5.0
2000 00			100			0.1.0	0.0.0
2009-03	RP#43	RP-090184	133		Removal of RRC re-establishment procedure delay	8.4.0	8.5.0
					······································		
2009-03	RP#43	RP-090184	138	1	Correction for the UE Re-establishment delay requirement	8.4.0	8.5.0
2009-03	RP#43	RP-090185	92	2	Cell phase synchronization accuracy	8.4.0	8.5.0
2009-03	RP#43	RP-090185	97		Radio link monitoring in DRX	8.4.0	8.5.0
2009-03	RP#43	RP-090185	120		UE Transmit Timing	8.4.0	8.5.0
2009-03	RP#43	RP-090185	137	1	Clarification of the reference point for the UE initial	8.4.0	8.5.0
					transmission timing control requirement		
2009-03	RP#43	RP-090186	90		Correction of section 8.1.2.2.2.2 in TS36.133	8.4.0	8.5.0
2009-03	RP#43	RP-090186	93	1	cdma2000 1xRTT and HRPD Measurement Requirements	8.4.0	8.5.0
2009-03	RP#43	RP-090186	94		Event Triggered Periodic Reporting Requirements for IRAT	8.4.0	8.5.0
					Measurements		
2009-03	RP#43	RP-090186	95		Measurement Reporting Requirements for E-UTRAN TDD –	8.4.0	8.5.0
					UTRAN TDD Measurements		
2009-03	RP#43	RP-090186	99	1	Clarification of UE behavior when measurement gap is used	8.4.0	8.5.0
2009-03	RP#43	RP-090186	100		E-UTRA to UTRA cell search requirements in DRX for SON	8.4.0	8.5.0
	DD#40	DD 000400	110			0.4.0	0.5.0
2009-03	RP#43	RP-090186	110	1	Correction to GSM BSIC Requirements for Parallel	8.4.0	8.5.0
0000.00	DD#40	DD 000400	447		Monitoring	0.4.0	0.5.0
2009-03	RP#43	RP-090186	117		Alignment of terminology for GAP	8.4.0	8.5.0
2009-03	RP#43	RP-090186	134		Inter frequency and Inter RAT cell search requirement when	8.4.0	8.5.0
2009-03	NF#43	KF-090100	134		DRX is used	0.4.0	0.3.0
2009-03	RP#43	RP-090186	139		Correction of E-UTRAN FDD – UTRAN FDD measurements	8.4.0	8.5.0
2003-03	111 #43	11.030100	100		when no DRX	0.4.0	0.0.0
2009-03	RP#43	RP-090186	146	1	Addition of the definition of "when DRX is used"	8.4.0	8.5.0
						00	0.0.0
2009-03	RP#43	RP-090186	147	1	Corrections to E-UTRAN inter-frequency side conditions	8.4.0	8.5.0
				1			2.0.0
2009-03	RP#43	RP-090187	96	1	Correction to Intra-frequency RSRP Accuracy Requirements	8.4.0	8.5.0
						č	
2009-03	RP#43	RP-090187	136	1	Power Headroom reporting delay	8.4.0	8.5.0
2009-03	RP#43	RP-090370	103	1	E-UTRAN -GSM Handover Test Case	8.4.0	8.5.0
2009-03	RP#43	RP-090370	104	1	E-UTRAN FDD - UTRAN TDD Cell Search Test Cases in	8.4.0	8.5.0
					Fading		
2009-03	RP#43	RP-090370	106	1	E-UTRA FDD to UTRA FDD Handover Test Case	8.4.0	8.5.0
2009-03	RP#43	RP-090370	107	1	Correction of E-UTRA FDD-FDD Intra-frequency cell	8.4.0	8.5.0
					reselection test case		
2009-03	RP#43	RP-090370	108	1	Correction of E-UTRA FDD-FDD priority based Inter-	8.4.0	8.5.0
					frequency cell reselection test case		
2009-03	RP#43	RP-090370	111		E-UTRAN TDD - UTRAN FDD Handover Test Case	8.4.0	8.5.0
2009-03	RP#43	RP-090370	112	1	E-UTRAN FDD - GSM Cell Search Test Case in AWGN	8.4.0	8.5.0
2009-03	RP#43	RP-090370	113		E-UTRAN - UTRAN FDD Cell Search Test Cases in Fading	8.4.0	8.5.0

2009-03	RP#43	RP-090370	114	1	E-UTRAN UE Timing Accuracy Related Test Cases	8.4.0	8.5.0
2009-03 2009-03	RP#43 RP#43	RP-090370 RP-090370	115 116	1	Inclusion of MBSFN Configurations for RRM Test Cases E-UTRAN FDD HRPD Cell Reselection Test Case; HRPD of	8.4.0 8.4.0	8.5.0 8.5.0
			_		Low Priority		
2009-03	RP#43	RP-090370	122	1	Clarification on Annex A.9: Measurement performance requirements	8.4.0	8.5.0
2009-03	RP#43	RP-090370	125		E-UTRA TDD – UTRA TDD cell reselection: UTRA is of higher priority	8.4.0	8.5.0
2009-03	RP#43	RP-090370	126		E-UTRA TDD – UTRA TDD cell reselection: UTRA is of lower priority	8.4.0	8.5.0
2009-03	RP#43	RP-090370	127		E-UTRA FDD – UTRA TDD cell reselection	8.4.0	8.5.0
2009-03	RP#43	RP-090370	128	1	E-UTRA TDD-UTRA TDD cell search (fading)	8.4.0	8.5.0
2009-03	RP#43	RP-090370	129	1	E-UTRA TDD-UTRA TDD handover	8.4.0	8.5.0
2009-03	RP#43	RP-090370	132	1	Addition of E-UTRA FDD to UTRA FDD reselection test cases	8.4.0	8.5.0
2009-03	RP#43	RP-090370	141	1	Correction and introduction of some test related parameters	8.4.0	8.5.0
2009-03	RP#43	RP-090370	143		Description of Annex A in TS 36.133	8.4.0	8.5.0
2009-03	RP#43	RP-090370	148		Reselection from E-UTRA to GSM cell test case	8.4.0	8.5.0
2009-03	RP#43	RP-090370	149		Radio Link Monitoring Test Cases	8.4.0	8.5.0
2009-05	RP#44	RP-090546	151		E-UTRA FDD UTRA TDD HO delay test case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	153		Correction of CQI reporting periodicity for TDD RLM test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	157		Correction to inter RAT reselection requirements to exclude equal priority. (Technically Endorsed CR in R4-50bis - R4- 091092)	8.5.0	8.6.0
2009-05	RP#44	RP-090546	167		Clarification of the number of monitoring carriers in idle mode. (Technically Endorsed CR in R4-50bis - R4-091394)	8.5.0	8.6.0
2009-05	RP#44	RP-090546	180		Correction of Core spec references in A.9 Measurements performance test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	984		UTRA FDD-E-UTRA FDD/ TDD handover test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	184		SON ANR UTRAN FDD Cell Search Test Case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	187		E-UTRAN FDD cdma2000 1x RTT Cell Reselection Test Case; Cdma2000 1X of Low Priority	8.5.0	8.6.0
2009-05	RP#44	RP-090546	188		E-UTRAN FDD cdma2000 HO Test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	190		E-UTRAN Random Access Test Cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	191		E-UTRAN RRC Re-establishment Test Cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	192		E-UTRAN TDD - GSM Cell Search Test Case in AWGN	8.5.0	8.6.0
2009-05	RP#44	RP-090546	197		Correction to E-UTRAN FDD - GSM Handover Test case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	173	1	Correction of cell reselection test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	179	1	Test cases of E-UTRA TDD intra-frequency cell search in fading environment when DRX is used	8.5.0	8.6.0
2009-05	RP#44	RP-090546	152	1	E-UTRA TDD GSM handover test case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	178	1	Test cases of E-UTRA FDD intra-frequency cell search in fading environment when DRX is used	8.5.0	8.6.0
2009-05	RP#44	RP-090546	201	1	Test case for E-UTRA FDD E-UTRA FDD inter frequency cell search when DRX is used in fading conditions	8.5.0	8.6.0
2009-05	RP#44	RP-090546	185	1	Correction to Radio Link Monitoring Tests	8.5.0	8.6.0
2009-05	RP#44	RP-090546	203		Correction to E-UTRAN FDD to HRPD Cell Reselection Test Case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	177	1	Introduction of New Reference Channels and OCNG Patterns for 1.4MHz Bandwidth	8.5.0	8.6.0
2009-05	RP#44	RP-090546	200	2	Test case for E-UTRA TDD E-UTRA TDD inter frequency cell search when DRX is used in fading conditions	8.5.0	8.6.0
2009-05	RP#44	RP-090547	158		Alignment of inter frequency and inter RAT RRM reselection testcases with core requirements. (Technically Endorsed CR in R4-50bis - R4-091094)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	160		Correction relating E-UTRAN TDD - UE Transmit Timing Accuracy Tests. (Technically Endorsed CR in R4-50bis - R4- 091198)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	165		Modifications of T3 and the verification point for in-sync test cases. (Technically Endorsed CR in R4-50bis - R4-091386)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	172		E-UTRAN UE Timing Accuracy Related Test Cases. (Technically Endorsed CR in R4-50bis - R4-091517)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	171	1	Reference measurement Channels for Radio Link Monitoring Tests with 2 Antennas. (Technically Endorsed CR in R4- 50bis - R4-091508)	8.5.0	8.6.0
2009-05	RP#44	RP-090548	170		Misalignment between TS36.133 and TS36.321. (Technically Endorsed CR in R4-50bis - R4-091457)	8.5.0	8.6.0
2009-05	RP#44	RP-090548	193	<u> </u>	Correction to Inter-RAT HO Interruption Time Definition	8.5.0	8.6.0
2009-05	RP#44	RP-090548	195	L	CR c2k RRC delay	8.5.0	8.6.0
2009-05	RP#44	RP-090548	196		CR c2k interruption time	8.5.0	8.6.0
2009-05	RP#44	RP-090548	162		Clarifications to UE UL timing requirements. (Technically Endorsed CR in R4-50bis - R4-091357)	8.5.0	8.6.0
2009-05	RP#44	RP-090548	176		Corrections of Random Access Requirements	8.5.0	8.6.0
2009-05	RP#44	RP-090548	154	1	Correction of TGRP in clause 8.1.2.1.1	8.5.0	8.6.0

2009-05 RP#44 RP-000549 161 (E-UTRAN UTRAN HÖ Command Processing Delay. E.5.0 8.6.0 2009-05 RP#44 RP-000549 175 Corrections of Cell Reselection Requirements in Idle Mode 8.5.0 8.6.0 2009-05 RP#44 RP-000550 156 Correction on the T0D-T0D inter frequency measurements. 8.5.0 8.6.0 2009-05 RP#44 RP-000551 156 Correction on the T0D-T0D inter frequency measurements. 8.5.0 8.6.0 2009-05 RP#44 RP-000551 166 Further clarification of DR-Non-DRX state. (Technically Call N-450bis -R-409139) 8.5.0 8.6.0 2009-05 RP#44 RP-000551 169 Correction on reference 13 GPP2 specification 8.5.0 8.6.0 2009-05 RP#44 RP-000551 169 Correction to TDD RM references in RUM set cases 9.0.0 9.1.0 2009-05 RP#44 RP-000571 116 Correction to TDD RM references IN KM set cases 9.0.0 9.1.0 2009-05 RP#44 RP-000580 225 Correction to TDD RM references in RLAP00503 9.0	2009-05	RP#44	RP-090548	168		Clarifications for the Relative RSRP and RSRQ measurement requirements. (Technically Endorsed CR in R4-50bis - R4-091407)	8.5.0	8.6.0
2009-05 RP44 RP-000549 If 31 Correction on the TDD-TDD inter frequency measurements. 65.00 8.6.00 8.6.00 0209-05 RP44 RP-000550 159 Correction on the TDD-TDD inter frequency measurements. 8.5.00 8.6.0 0209-05 RP444 RP-000550 159 Correction on the Referenced Section Number for Timer 1. 8.5.00 8.6.0 0209-05 RP444 RP-000551 166 Endmade CR in Re-50bis - R-4001153) 8.5.0 8.6.0 0209-05 RP444 RP-000551 169 Correction on reference 0.3CPP2 specification 8.5.0 8.6.0 8.6.0 0209-05 RP444 RP-000551 169 Correction on reference 0.3CPP2 specification 8.5.0 8.6.0 9.0.0 0209-05 RP444 RP-000551 169 Correction on DR Reference 3 decrements. (Technically 8.6.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.0 9.0.	2009-05	RP#44	RP-090549	161		E-UTRAN UTRAN HO Command Processing Delay.	8.5.0	8.6.0
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Pp4 Product RP-400550 Figs Creation to the Referenced Sciento Number for Tinter 1. 8.5.0 8.6.0 2009-05 RP444 RP-000551 166 Further claffication of DRXNon-DRX state. (Technically 8.5.0 8.6.0 9.6.0 9.0.0 9.1.1 8.6.4 9.0.0 9.1.1 8.6.4 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0 9.0.0 9.1.0<	2009-05	RP#44	RP-090549	181	2	Removal of [] from ranking criteria in Idle mode cell	8.5.0	8.6.0
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Rev R4-091410) R-09055 R-09055 Standard R-09140 Standard S	2009-05			-		Correction on reference to 3GPP2 specification		8.6.0
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2009-05 RP#45 RP-090836 279 E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test Cases 9.0.0 9.1.0 2009-05 RP#45 RP-090836 281 E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter- frequency Cell Search Test Cases 9.0.0 9.1.0 2009-05 RP#45 RP-090836 283 E-UTRAN FDD Cdm2000 Blind HO Test Cases 9.0.0 9.1.0 2009-05 RP#45 RP-090836 302 RRM Test case for multiple E-UTRAN FDD-FDD Inter- frequency event triggered reporting under fading propagation conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090836 304 Fading reselection test case between E-UTRA and UTRA 9.0.0 9.1.0 2009-05 RP#45 RP-0908379 215 1 Corrections to Measurements of HRPD cells and cdma2000 9.0.0 9.1.0 2009-05 RP#45 RP-090879 235 1 Corrections to Measurements of GSM cells in RRC_IDLE 9.0.0 9.1.0 2009-05 RP#45 RP-090879 243 Range of Ide Mode Es/lot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 <td>2009-05</td> <td>RP#45</td> <td>RP-090836</td> <td>271</td> <td></td> <td></td> <td>9.0.0</td> <td>9.1.0</td>	2009-05	RP#45	RP-090836	271			9.0.0	9.1.0
cm frequency Cell Search Test Case 9.0.0 9.1.0 2009-05 RP#45 RP-090836 283 E-UTRAN FGD Cofma2000 Blind HO Test cases 9.0.0 9.1.0 2009-05 RP#45 RP-090836 302 RRM Test case for multiple E-UTRAN FDD FDD Inter- frequency event triggered reporting under fading propagation conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090836 304 Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority 9.0.0 9.1.0 2009-05 RP#45 RP-090879 215 1 Corrections to Measurements of HRPD cells and cdma2000 9.0.0 9.1.0 2009-05 RP#45 RP-090879 231 C R reference correction 9.0.0 9.1.0 2009-05 RP#45 RP-090879 231 C Creference correction 9.0.0 9.1.0 2009-05 RP#45 RP-090879 231 C Creference correction 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/Iot side conditions 9.0.0 9.1.0 2009-05 RP#45	2009-05	RP#45	RP-090836	279		Cases	9.0.0	9.1.0
2009-05 RP#45 RP-090836 287 E-UTRAN FDD cdma2000 Blind HO Test cases 9.0.0 9.1.0 2009-05 RP#45 RP-090836 302 RRM Test case for multiple E-UTRAN FDD-FDD Inter- frequency event triggered reporting under fading propagation conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090836 304 Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority 9.0.0 9.1.0 2009-05 RP#45 RP-090828 233 CR SI HRPD correction 9.0.0 9.1.0 2009-05 RP#45 RP-090879 215 1 Corrections to Measurements of HRPD cells and cdma2000 9.0.0 9.1.0 2009-05 RP#45 RP-090879 235 1 Corrections to Measurements of GSM cells in RRC_IDLE 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Exlot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Exlot side conditions in Idle 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Carif	2009-05	RP#45	RP-090836	281			9.0.0	9.1.0
2009-05 RP#45 RP-090836 302 RRM Test case for multiple E-UTRAN FDD-FDD Inter- frequency event triggered reporting under fading propagation conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090836 304 Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority 9.0.0 9.1.0 2009-05 RP#45 RP-090828 233 CR SI HRPD correction 9.0.0 9.1.0 2009-05 RP#45 RP-090879 215 1 Corrections to Measurements of HRPD cells and cdma2000 9.0.0 9.1.0 2009-05 RP#45 RP-090879 231 CR reference correction 9.0.0 9.1.0 2009-05 RP#45 RP-090879 235 1 Corrections to Measurements of GSM cells in RRC_IDLE 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 245 1 Clarification to applicability of RSRP side conditions in Idle 9.0.0 9.1.0 2009-05 RP#45 RP-090879 317		RP#45	RP-090836	283		E-UTRAN GSM Blind Handover Test Cases	9.0.0	9.1.0
Image: Second								9.1.0
Cline (UTRÅ of lower priority (UTRÅ of lower priority 2009-05 RP#45 RP-090828 233 CR SI HRPD correction 9.0.0 9.1.0 2009-05 RP#45 RP-090879 215 1 Corrections to Measurements of HRPD cells and cdma2000 9.0.0 9.1.0 2009-05 RP#45 RP-090879 231 CR reference correction 9.0.0 9.1.0 2009-05 RP#45 RP-090879 235 1 Corrections to Measurements of GSM cells in RRC_IDLE 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 245 1 Clarification to applicability of RSRP side conditions in Idle 9.0.0 9.1.0 2009-05 RP#45 RP-090879 317 CR Idle mode IF measurement condition 9.0.0 9.1.0 2009-05 RP#45 RP-090879 217<	2009-05	RP#45	RP-090836	302		frequency event triggered reporting under fading propagation conditions	9.0.0	9.1.0
2009-05 RP#45 RP-090879 215 1 Corrections to Measurements of HRPD cells and cdma2000 9.0.0 9.1.0 2009-05 RP#45 RP-090879 231 CR reference correction 9.0.0 9.1.0 2009-05 RP#45 RP-090879 235 1 Corrections to Measurements of GSM cells in RRC_IDLE 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 249 Removal of [] from Tdetect, Tmeasure and Tevaluate 9.0.0 9.1.0 2009-05 RP#45 RP-090879 317 CR Idle mode IF measurement condition 9.0.0 9.1.0 2009-05 RP#45 RP-090879 217 2 Corrections to E-UTRAN RRC_IDLE state mobility 9.0.0 9.1.0 2009-05 RP#45 RP-090816 221 E-UTRAN TDD-TDD inter frequency cell 9.0.0 9.1.0 </td <td>2009-05</td> <td>RP#45</td> <td>RP-090836</td> <td>304</td> <td></td> <td></td> <td>9.0.0</td> <td>9.1.0</td>	2009-05	RP#45	RP-090836	304			9.0.0	9.1.0
1X 1X 2009-05 RP#45 RP-090879 231 CR reference correction 9.0.0 9.1.0 2009-05 RP#45 RP-090879 235 1 Corrections to Measurements of GSM cells in RRC_IDLE 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 249 Removal of [] from Tdetect, Tmeasure and Tevaluate 9.0.0 9.1.0 2009-05 RP#45 RP-090879 317 CR Idle mode IF measurement condition 9.0.0 9.1.0 2009-05 RP#45 RP-090879 317 CR Idle mode IF measurement period 9.0.0 9.1.0 2009-05 RP#45 RP-090879 217 2 Correction to Random Access 9.0.0 9.1.0 2009-05 RP#45 RP-090816 221 E-UTRAN TDD-TDD inter frequency cell search/measurement requirements 9.0.0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
2009-05 RP#45 RP-090879 235 1 Corrections to Measurements of GSM cells in RRC_IDLE 9.0.0 9.1.0 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 249 Removal of [] from Tdetect, Tmeasure and Tevaluate 9.0.0 9.1.0 2009-05 RP#45 RP-090879 245 1 Clarification to applicability of RSRP side conditions in Idle mode 9.0.0 9.1.0 2009-05 RP#45 RP-090879 317 CR Idle mode IF measurement condition 9.0.0 9.1.0 2009-05 RP#45 RP-090879 318 CR Idle mode IF measurement period 9.0.0 9.1.0 2009-05 RP#45 RP-090879 217 2 Corrections to E-UTRAN RRC_IDLE state mobility 9.0.0 9.1.0 2009-05 RP#45 RP-090816 221 E-UTRAN TDD-TDD inter frequency cell 9.0.0 9.1.0 2009-05 RP#45 RP-090816 223 E-UTRAN Inter RAT measurement requirements 9.0.0					1	1X		
2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/Iot side conditions 9.0.0 9.1.0 2009-05 RP#45 RP-090879 249 Removal of [] from Tdetect, Tmeasure and Tevaluate 9.0.0 9.1.0 2009-05 RP#45 RP-090879 245 1 Clarification to applicability of RSRP side conditions in Idle 9.0.0 9.1.0 2009-05 RP#45 RP-090879 317 CR Idle mode IF measurement condition 9.0.0 9.1.0 2009-05 RP#45 RP-090879 318 CR Idle mode IF measurement period 9.0.0 9.1.0 2009-05 RP#45 RP-090879 217 2 Corrections to E-UTRAN RRC_IDLE state mobility 9.0.0 9.1.0 2009-05 RP#45 RP-090814 265 1 Correction to Random Access 9.0.0 9.1.0 2009-05 RP#45 RP-090816 221 E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used 9.0.0 9.1.0 2009-05 RP#45 RP-090816 223 E-UTRAN TDD-FDD inter frequency measurements when DRX is					<u> </u>			
2009-05 RP#45 RP-090879 249 Removal of [] from Tdetect, Tmeasure and Tevaluate 9.0.0 9.1.0 2009-05 RP#45 RP-090879 245 1 Clarification to applicability of RSRP side conditions in Idle mode 9.0.0 9.1.0 2009-05 RP#45 RP-090879 317 CR Idle mode IF measurement condition 9.0.0 9.1.0 2009-05 RP#45 RP-090879 318 CR Idle mode IF measurement period 9.0.0 9.1.0 2009-05 RP#45 RP-090879 217 2 Corrections to E-UTRAN RRC_IDLE state mobility requirements 9.0.0 9.1.0 2009-05 RP#45 RP-090814 265 1 Correction to Random Access 9.0.0 9.1.0 2009-05 RP#45 RP-090816 221 E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used 9.0.0 9.1.0 2009-05 RP#45 RP-090816 223 E-UTRAN inter RAT measurement requirements 9.0.0 9.1.0 2009-05 RP#45 RP-090816 229 Correction to Monitoring of Multiple					1			
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2009-05 RP#45 RP-090879 317 CR Idle mode IF measurement condition 9.0.0 9.1.0 2009-05 RP#45 RP-090879 318 CR Idle mode IF measurement period 9.0.0 9.1.0 2009-05 RP#45 RP-090879 318 CR Idle mode IF measurement period 9.0.0 9.1.0 2009-05 RP#45 RP-090879 217 2 Corrections to E-UTRAN RRC_IDLE state mobility 9.0.0 9.1.0 2009-05 RP#45 RP-090814 265 1 Correction to Random Access 9.0.0 9.1.0 2009-05 RP#45 RP-090816 221 E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used 9.0.0 9.1.0 2009-05 RP#45 RP-090816 223 E-UTRAN inter RAT measurement requirements 9.0.0 9.1.0 2009-05 RP#45 RP-090816 229 Correction to Monitoring of Multiple Layers Using Gaps 9.0.0 9.1.0 2009-05 RP#45 RP-090816 219 1 E-UTRAN FDD-FDD inter frequency measurements when DRX is used					1	Clarification to applicability of RSRP side conditions in Idle		9.1.0
2009-05 RP#45 RP-090879 318 CR Idle mode IF measurement period 9.0.0 9.1.0 2009-05 RP#45 RP-090879 217 2 Corrections to E-UTRAN RRC_IDLE state mobility 9.0.0 9.1.0 2009-05 RP#45 RP-090814 265 1 Correction to Random Access 9.0.0 9.1.0 2009-05 RP#45 RP-090816 221 E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used 9.0.0 9.1.0 2009-05 RP#45 RP-090816 223 E-UTRAN inter RAT measurement requirements 9.0.0 9.1.0 2009-05 RP#45 RP-090816 229 Correction to Monitoring of Multiple Layers Using Gaps 9.0.0 9.1.0 2009-05 RP#45 RP-090816 219 1 E-UTRAN FDD-FDD inter frequency measurements when DRX is used 9.0.0 9.1.0 2009-05 RP#45 RP-090816 219 1 E-UTRAN FDD-FDD inter frequency measurements when DRX is used 9.0.0 9.1.0 2009-05 RP#45 RP-090816 322 CR GSM me	2009-05	RP#45	RP-090879	317	<u> </u>		9.0.0	910
2009-05RP#45RP-0908792172Corrections to E-UTRAN RRC_IDLE state mobility requirements9.0.09.1.02009-05RP#45RP-0908142651Correction to Random Access9.0.09.1.02009-05RP#45RP-090816221E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used9.0.09.1.02009-05RP#45RP-090816223E-UTRAN inter RAT measurement requirements9.0.09.1.02009-05RP#45RP-090816229Correction to Monitoring of Multiple Layers Using Gaps9.0.09.1.02009-05RP#45RP-0908162191E-UTRAN FDD-FDD inter frequency measurements when DRX is used9.0.09.1.02009-05RP#45RP-0908162191E-UTRAN FDD-FDD inter frequency measurements when DRX is used9.0.09.1.02009-05RP#45RP-090816322CR GSM measurement period9.0.09.1.0					<u> </u>			
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2009-05RP#45RP-090816221E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used9.0.09.1.02009-05RP#45RP-090816223E-UTRAN inter RAT measurement requirements9.0.09.1.02009-05RP#45RP-090816229Correction to Monitoring of Multiple Layers Using Gaps9.0.09.1.02009-05RP#45RP-0908162191E-UTRAN FDD-FDD inter frequency measurements when DRX is used9.0.09.1.02009-05RP#45RP-090816322CR GSM measurement period9.0.09.1.0	2009-05			265	1		9.0.0	9.1.0
2009-05 RP#45 RP-090816 223 E-UTRAN inter RAT measurement requirements 9.0.0 9.1.0 2009-05 RP#45 RP-090816 229 Correction to Monitoring of Multiple Layers Using Gaps 9.0.0 9.1.0 2009-05 RP#45 RP-090816 219 1 E-UTRAN FDD-FDD inter frequency measurements when DRX is used 9.0.0 9.1.0 2009-05 RP#45 RP-090816 322 CR GSM measurement period 9.0.0 9.1.0	2009-05 2009-05		RP-090814			E-LITRAN TOD-TOD inter frequency cell		
2009-05 RP#45 RP-090816 229 Correction to Monitoring of Multiple Layers Using Gaps 9.0.0 9.1.0 2009-05 RP#45 RP-090816 219 1 E-UTRAN FDD-FDD inter frequency measurements when DRX is used 9.0.0 9.1.0 2009-05 RP#45 RP-090816 322 CR GSM measurement period 9.0.0 9.1.0	2009-05 2009-05 2009-05	RP#45					9.0.0	9.1.0
2009-05 RP#45 RP-090816 219 1 E-UTRAN FDD-FDD inter frequency measurements when DRX is used 9.0.0 9.1.0 2009-05 RP#45 RP-090816 322 CR GSM measurement period 9.0.0 9.1.0	2009-05 2009-05 2009-05 2009-05	RP#45 RP#45	RP-090816	221		search/measurement requirements when DRX is used		9.1.0
	2009-05 2009-05 2009-05 2009-05 2009-05 2009-05	RP#45 RP#45 RP#45 RP#45	RP-090816 RP-090816 RP-090816	221 223 229		search/measurement requirements when DRX is used E-UTRAN inter RAT measurement requirements Correction to Monitoring of Multiple Layers Using Gaps	9.0.0 9.0.0	9.1.0 9.1.0
	2009-05 2009-05 2009-05 2009-05 2009-05 2009-05 2009-05	RP#45 RP#45 RP#45 RP#45 RP#45 RP#45	RP-090816 RP-090816 RP-090816 RP-090816	221 223 229 219	1	search/measurement requirements when DRX is used E-UTRAN inter RAT measurement requirements Correction to Monitoring of Multiple Layers Using Gaps E-UTRAN FDD-FDD inter frequency measurements when DRX is used	9.0.0 9.0.0 9.0.0	9.1.0 9.1.0 9.1.0

2009-05	RP#45	RP-090816	213	1	Editorial correction on E-UTRAN inter frequency measurements	9.0.0	9.1.0
2009-05	RP#45	RP-090816	261	1	E-UTRAN TDD intra frequency measurements	9.0.0	9.1.0
2009-05	RP#45	RP-090816	319	1	Clarification of the number of monitoring cells for intra frequency measurements	9.0.0	9.1.0
2009-05	RP#45	RP-090815	237		Correction of timing advance adjustment accuracy test case	9.0.0	9.1.0
2009-05	RP#45	RP-090815	291		Correction to UE Transmit Timing Requirements	9.0.0	9.1.0
2009-12	RP-46	RP-091275	329		Defining requirements for UTRA TDD measurements for	9.1.0	9.2.0
					SON (Technically endorsed at RAN 4 52bis in R4-093512)		
2009-12	RP-46	RP-091272	332		Modification of test case of E-UTRA TDD intra frequency cell reselection (Technically endorsed at RAN 4 52bis in R4-093552)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	333		Modification of test case of E-UTRA TDD inter frequency cell reselection (Technically endorsed at RAN 4 52bis in R4-093553)	9.1.0	9.2.0
2009-12	RP-46	RP-091286	334		Introduction of Extended LTE1500 requirements for TS36.133 (Technically endorsed at RAN 4 52bis in R4- 093636)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	336		Addition of E-UTRA TDD to UTRA FDD reselection test cases (Technically endorsed at RAN 4 52bis in R4-093686)	9.1.0	9.2.0
2009-12	RP-46	RP-091271	338		Correction of missing accuracy requirements for UTRAN FDD (Technically endorsed at RAN 4 52bis in R4-093689)	9.1.0	9.2.0
2009-12	RP-46	RP-091275	340		CR cdma2000 HRPD measurement period (Technically endorsed at RAN 4 52bis in R4-093720)	9.1.0	9.2.0
2009-12	RP-46	RP-091275	342		CR cdma2000 1x measurement period (Technically endorsed at RAN 4 52bis in R4-093720)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	344		Correction for E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test Cases (Technically endorsed at RAN 4 52bis in R4-093890)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	346		Revise geometry factors for Intra freq Reselection Test Cases	9.1.0	9.2.0
2009-12	RP-46	RP-091271	348	1	Corrections on RRM parameters for Bands 12, 14, 17	9.1.0	9.2.0
2009-12	RP-46	RP-091271	351	1	Corrections to PDSCH RMC-s	9.1.0	9.2.0
2009-12	RP-46	RP-091271	353		Corrections of TS36.133	9.1.0	9.2.0
2009-12	RP-46	RP-091275	356	1	UTRA TDD P-CCPCH RSCP absolute accuracy measurement in E-UTRAN	9.1.0	9.2.0
2009-12	RP-46	RP-091275	358	1	E-UTRAN TDD - UTRAN TDD cell search for SON	9.1.0	9.2.0
2009-12	RP-46	RP-091275	361		Cell Search Requirements for Intra-LTE Handover to Unknown Target Cell	9.1.0	9.2.0
2009-12	RP-46	RP-091273	365		Combined E-UTRAN interfrequency and GSM cell search test cases (Scenario set 3.2)	9.1.0	9.2.0
2009-12	RP-46	RP-091271	367	1	Correction in UE UTRA TDD P-CCPCH RSCP measurement capability for R9	9.1.0	9.2.0
2009-12	RP-46	RP-091273	374		E-UTRAN GSM RSSI Measurement Accuracy Tests	9.1.0	9.2.0
2009-12	RP-46	RP-091273	375		E-UTRAN UTRAN FDD CPICH RSCP Measurement Accuracy Tests	9.1.0	9.2.0
2009-12	RP-46	RP-091273	376		E-UTRAN UTRAN FDD CPICH Ec/No Measurement Accuracy Tests	9.1.0	9.2.0
2009-12	RP-46	RP-091275	378		Cell Timing Change Requirements for Event Triggered Reporting	9.1.0	9.2.0
2009-12	RP-46	RP-091271	380		Correction to Power Headroom Requirements	9.1.0	9.2.0
2009-12	RP-46	RP-091271	382		Editorial corrections to 36.133	9.1.0	9.2.0
2009-12	RP-46	RP-091271	387		Editorial corrections to the time units for RRC Re- establishment test cases	9.1.0	9.2.0
2009-12	RP-46	RP-091272	389	1	Introduction of cell search test case in DRX to verify L3 filtering	9.1.0	9.2.0
2009-12	RP-46	RP-091271	391		Correction to ONCG Patterns	9.1.0	9.2.0
2009-12	RP-46	RP-091275	329		Defining requirements for UTRA TDD measurements for SON (Technically endorsed at RAN 4 52bis in R4-093512)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	332		Modification of test case of E-UTRA TDD intra frequency cell reselection (Technically endorsed at RAN 4 52bis in R4- 093552)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	333		Modification of test case of E-UTRA TDD inter frequency cell reselection (Technically endorsed at RAN 4 52bis in R4-093553)	9.1.0	9.2.0
2010-03	RP-47	RP-100254	410		Idle mode corrections	9.2.0	9.3.0
2010-03	RP-47	RP-100254	405	1	UE measurement capability requirements in Idle and Connected	9.2.0	9.3.0
2010-03	RP-47	RP-100254	423		Correction to UE Measurement Capability Requirements in Idle Mode	9.2.0	9.3.0
2010-03	RP-47	RP-100254	412		Removal of activation time from interRAT handover requirements	9.2.0	9.3.0
							1
2010-03	RP-47	RP-100254	417	1	Correction to UE Transmit Timing Requirements	9.2.0	9.3.0

2010-03	RP-47	RP-100254	414	1	measurements_R9 Enhanced GSM Requirements for CSFB	9.2.0	9.3.0
2010-03	RP-47	RP-100254	415	1	Enhanced UTRA FDD Requirements for CSFB	9.2.0	9.3.0
2010-03	RP-47	RP-100255	399	•	Correction of RSRP value in E-UTRAN FDDFDD Inter	9.2.0	9.3.0
			000		frequency reselection test		
2010-03	RP-47	RP-100255	397		Addition of missing Es/Noc parameters in RRM test	9.2.0	9.3.0
			001		cases		
2010-03	RP-47	RP-100255	421		Correction to RRC Re-establishment Test Case	9.2.0	9.3.0
2010-03	RP-47	RP-100255	427	1	Correction of UE transmit timing test case	9.2.0	9.3.0
2010-03	RP-47	RP-100255	419	1	Correction to RLM Test Cases	9.2.0	9.3.0
2010-03	RP-47	RP-100262	407	- '	Editorial Corrections in TS36.133(Rel-9)	9.2.0	9.3.0
2010-03	RP-47	RP-100263	413		Introduction of LTE in 800 MHz for Europe	9.2.0	9.3.0
					requirements in TS 36.133		
2010-03	RP-47	RP-100264	395		Corrections for Extended UMTS1500 in TS36.133(Rel- 9)	9.2.0	9.3.0
2010-03	RP-47	RP-100269	393		AOA and TA measurement report mappings	9.2.0	9.3.0
2010-03	RP-47	RP-100269	403	2	Mapping of UE RxTx time difference measurement	9.2.0	9.3.0
2010-03	RP-47	RP-100266	425	2	Home eNode B synchronization requirement	9.2.0	9.3.0
2010-03	RP-47	RP-100266	424	-	Minimum requirements on SI reading for HeNB	9.2.0	9.3.0
				2	inbound mobility		
2010-06	RP-48	RP-100622	473	-	Clarification on radio link monitoring	9.3.0	9.4.0
2010-00	111-40	111 100022	-110		Corrections of section numbering on the test case of E-	9.3.0	9.4.0
_010.00					UTRAN FDD-FDD inter-frequency cell search requirements	0.0.0	5.4.0
	RP-48	RP-100622	472		for L3 fitering		
2010-06	RP-48	RP-100622	466	1	Correction to RRM Test Cases	9.3.0	9.4.0
2010-06	RP-48	RP-100622	464	t	Correction to RRM Requirements	9.3.0	9.4.0
2010-06	RP-48	RP-100622	462	1	Correction to Absolute RSRP/RSRQ Definitions	9.3.0	9.4.0
2010-06	RP-48	RP-100622	457		UE Measurement Capability Requirements for CDMA2000	9.3.0	9.4.0
2010-06					Correction of E-UTRAN Inter-frequency Cell Re-selection	9.3.0	9.4.0
	RP-48	RP-100622	455	1	Requirements		
2010-06	RP-48	RP-100622	451	1	Correction to idle mode requirements(Rel-9)	9.3.0	9.4.0
2010-06	RP-48	RP-100622	449	1	Editorial corrections to 36.133(Rel-9)	9.3.0	9.4.0
2010-06	RP-48	RP-100622	447		Correction to TDD intrafrequency accuracy test case	9.3.0	9.4.0
2010-06	RP-48	RP-100622	441	1	Correction of Io value in E-UTRAN FDD and TDD Inter frequency RSRP tests	9.3.0	9.4.0
2010-06	RP-48	RP-100627	444	2	Corrections to CSG SI reading core requirement	9.3.0	9.4.0
2010-06	RP-48	RP-100627	445	1	RSRQ idle mode requirements	9.3.0	9.4.0
2010-06	RP-48	RP-100630	470	1	Test cases for R9 cell reselection enhancements	9.3.0	9.4.0
2010-06	RP-48	RP-100630	460		Missing E-UTRA - UTRA FDD DRX Requirements	9.3.0	9.4.0
2010-06	RP-48	RP-100631	442	2	Corrections to enhanced cell identification core requirement	9.3.0	9.4.0
2010-06	RP-48	RP-100632	469		Applicability of mobility requirements with inter-frequency RSTD measurements	9.3.0	9.4.0
2010-06	RP-48	RP-100632	439		UE Rx-Tx Time Difference Measurement Requirements for E-CID	9.3.0	9.4.0
2010-06	RP-48	RP-100632	438	2	CR UE RX-TX time-difference measurement requirement	9.3.0	9.4.0
2010-06	RP-48	RP-100632	433	5	RSTD Measurement Requirements for OTDOA	9.3.0	9.4.0
2010-06	RP-48	RP-100632	432	5	RSTD Accuracy Requirements for OTDOA	9.3.0	9.4.0
2010-09	RP-49	RP-100914	477	1	Cell identity change time in RRM Test cases	9.4.0	9.5.0
2010-09	RP-49	RP-100919	537		A clarification text in the RSTD intra-frequency accuracy	9.4.0	9.5.0
0040.00		DD 400000	500		requirements	0.4.0	0
2010-09	RP-49	RP-100920	506		Correction of drx-RetransmissionTimer parameters	9.4.0	9.5.0
2010-09	RP-49	RP-100915	508		Correction of lo value in RSRP FDD and TDD Intra frequency test	9.4.0	9.5.0
2010-09	RP-49	RP-100920	521	1	Editorial corrections to 36.133 (R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100914	523		Alignment of REFSENS between 36.101 and 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100920	525	1	Correction of Time to Trigger unit for 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100915	505	1	Corrections to 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100920	528	1	E-UTRAN FDD Intra Frequency RSTD Measurement Accuracy test case	9.4.0	9.5.0
2010-09	RP-49	RP-100919	538	1	Correction to Enhanced BSIC Verification Requirements	9.4.0	9.5.0
2010-09	RP-49	RP-100919	539		Enhanced CSFB Requirements with DRX	9.4.0	9.5.0
2010-09	RP-49	RP-100919	540		Correction to E-CID Requirements	9.4.0	9.5.0
2010-09	RP-49	RP-100920	544	1	Addition of UTRA and GSM enhanced cell identification test cases	9.4.0	9.5.0
2010-09	RP-49	RP-100920	547	1	E-UTRAN FDD UE Rx – Tx Time Difference Measurement Accuracy test case	9.4.0	9.5.0
2010-09	RP-49	RP-100914	479	1	Scrambling code change time in RRM Test cases	9.4.0	9.5.0
2010-09	RP-49	RP-100914	549	İ	Introduction of CSG cell reselection requirements	9.4.0	9.5.0
2010-09	RP-49	RP-100920	527	İ	correction of redundant Hysteresis(Hys) for 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100920	488	2	Test case for TDD UE Rx-Tx time difference measurement	9.4.0	9.5.0
	RP-49	RP-100914	483		Clarification of Radio link monitoring test cases	9.4.0	9.5.0
2010-09 2010-09	KF-49	RP-100915	405		Test case for E-UTRA TDD event triggered reporting when	5.4.0	9.5.0

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2010-12 2010-12	RP-50 RP-50	RP-101331 RP-101332 RP-101332 RP-101332 RP-101332 RP-101332 RP-101333 RP-101343 RP-101343	592 563 571 580 585 643 568 589 604 632 640 645 621	2	Corrections and Clarifications to TS36.133 Correction to Radio link monitoring test cases PDCCH Aggregation Level for RRM Tests MIMO correlation scenario for RLM test cases Removal of [] from PDSCH and PCFICH/PDCCH/PHICH Measurement Channel references in Annex A. Enabling HARQ for RRM Tests Completion of CSG cell reselection requirements Clarification of measurements requirements for HRPD and cdma2000 1x Addition of Band 18, 19 and 21 into UE Rx - Tx time difference requirements Correction to Enhanced GSM Cell Identification Requirement Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0	10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0
2010-12 2010-12	RP-50 RP-50	RP-101331 RP-101332 RP-101332 RP-101332 RP-101332 RP-101332 RP-101333 RP-101343 RP-101343	592 563 571 580 585 643 568 589 604 632 640 645 621	2	Correction to Radio link monitoring test cases PDCCH Aggregation Level for RRM Tests MIMO correlation scenario for RLM test cases Removal of [] from PDSCH and PCFICH/PDCCH/PHICH Measurement Channel references in Annex A. Enabling HARQ for RRM Tests Completion of CSG cell reselection requirements Clarification of measurements requirements for HRPD and cdma2000 1x Addition of Band 18, 19 and 21 into UE Rx - Tx time difference requirements Correction to Enhanced GSM Cell Identification Requirement Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0	10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0
2010-12 2010-12	RP-50 RP-50	RP-101332 RP-101332 RP-101332 RP-101332 RP-101333 RP-101343 RP-101343	563 571 580 585 643 568 589 604 632 640 645 621		PDCCH Aggregation Level for RRM Tests MIMO correlation scenario for RLM test cases Removal of [] from PDSCH and PCFICH/PDCCH/PHICH Measurement Channel references in Annex A. Enabling HARQ for RRM Tests Completion of CSG cell reselection requirements Clarification of measurements requirements for HRPD and cdma2000 1x Addition of Band 18, 19 and 21 into UE Rx - Tx time difference requirements Correction to Enhanced GSM Cell Identification Requirement Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0	10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0
2010-12 2010-12	RP-50 RP-50	RP-101332 RP-101332 RP-101332 RP-101335 RP-101343	571 580 585 643 568 589 604 632 640 645 645	1	MIMO correlation scenario for RLM test cases Removal of [] from PDSCH and PCFICH/PDCCH/PHICH Measurement Channel references in Annex A. Enabling HARQ for RRM Tests Completion of CSG cell reselection requirements Clarification of measurements requirements for HRPD and cdma2000 1x Addition of Band 18, 19 and 21 into UE Rx - Tx time difference requirements Correction to Enhanced GSM Cell Identification Requirement Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0	10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0
2010-12 2010-12	RP-50 RP-50	RP-101332 RP-101332 RP-101335 RP-101343	580 585 643 568 589 604 632 640 645 645	1	Removal of [] from PDSCH and PCFICH/PDCCH/PHICH Measurement Channel references in Annex A. Enabling HARQ for RRM Tests Completion of CSG cell reselection requirements Clarification of measurements requirements for HRPD and cdma2000 1x Addition of Band 18, 19 and 21 into UE Rx - Tx time difference requirements Correction to Enhanced GSM Cell Identification Requirement Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0	10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0
2010-12 2010-12	RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50	RP-101332 RP-101335 RP-101343 RP-101343 RP-101343 RP-101343 RP-101343 RP-101343 RP-101343	585 643 568 589 604 632 640 645 621	1	Measurement Channel references in Annex A. Enabling HARQ for RRM Tests Completion of CSG cell reselection requirements Clarification of measurements requirements for HRPD and cdma2000 1x Addition of Band 18, 19 and 21 into UE Rx - Tx time difference requirements Correction to Enhanced GSM Cell Identification Requirement Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0 10.0.0 10.0.0 10.0.0 10.0.0 10.0.0	10.1.0 10.1.0 10.1.0 10.1.0 10.1.0 10.1.0
2010-12 2010-12	RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50	RP-101335 RP-101343	643 568 589 604 632 640 645 621	1	Completion of CSG cell reselection requirements Clarification of measurements requirements for HRPD and cdma2000 1x Addition of Band 18, 19 and 21 into UE Rx - Tx time difference requirements Correction to Enhanced GSM Cell Identification Requirement Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0 10.0.0 10.0.0 10.0.0 10.0.0	10.1.0 10.1.0 10.1.0 10.1.0 10.1.0
2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12	RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50	RP-101343 RP-101343 RP-101343 RP-101343 RP-101343 RP-101343 RP-101343 RP-101343	568 589 604 632 640 645 621		Clarification of measurements requirements for HRPD and cdma2000 1x Addition of Band 18, 19 and 21 into UE Rx - Tx time difference requirements Correction to Enhanced GSM Cell Identification Requirement Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0 10.0.0 10.0.0 10.0.0	10.1.0 10.1.0 10.1.0 10.1.0
2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12	RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50	RP-101343 RP-101343 RP-101343 RP-101343 RP-101343 RP-101343 RP-101343	589 604 632 640 645 621		cdma2000 1x Addition of Band 18, 19 and 21 into UE Rx - Tx time difference requirements Correction to Enhanced GSM Cell Identification Requirement Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0 10.0.0 10.0.0	10.1.0 10.1.0 10.1.0
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2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12	RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50	RP-101343 RP-101343 RP-101343 RP-101343 RP-101343 RP-101343	632 640 645 621		Correction to Enhanced GSM Cell Identification Requirement Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0	10.1.0
2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12	RP-50 RP-50 RP-50 RP-50 RP-50 RP-50 RP-50	RP-101343 RP-101343 RP-101343 RP-101343 RP-101343 RP-101343	632 640 645 621		Correction of reselection requirement for UTRAN FDD cells Correction to Enhanced UTRA FDD Cell Identification	10.0.0	10.1.0
2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12	RP-50 RP-50 RP-50 RP-50 RP-50	RP-101343 RP-101343 RP-101343	640 645 621		Correction to Enhanced UTRA FDD Cell Identification	10.0.0	
2010-12 2010-12 2010-12 2010-12 2010-12 2010-12 2010-12	RP-50 RP-50 RP-50 RP-50	RP-101343 RP-101343	621		Requirements		10.1.0
2010-12 2010-12 2010-12 2010-12 2010-12	RP-50 RP-50 RP-50	RP-101343			Requirements E-UTRAN TDD Intra Frequency RSTD Measurement	10.0.0	10.1.0
2010-12 2010-12 2010-12 2010-12 2010-12	RP-50 RP-50 RP-50	RP-101343		1	Accuracy test case	10.0.0	10.4.0
2010-12 2010-12 2010-12 2010-12	RP-50 RP-50		600	1	Correction for Measurements of inter-RAT cells	10.0.0	10.1.0 10.1.0
2010-12 2010-12 2010-12	RP-50	DD 101040	598		E-UTRAN FDD intra-frequency RSTD measurement reporting delay test case		
2010-12 2010-12		RF-101343	600	2	E-UTRAN TDD intra-frequency RSTD measurement reporting delay test case	10.0.0	10.1.0
2010-12		RP-101356	644		Band 42 and 43 parameters for UMTS/LTE 3500 (TDD) for TS 36.133	10.0.0	10.1.0
		RP-101361	552		Introduction of L-band in TS36.133	10.0.0	10.1.0
2011-04	RP-50	RP-101388	648		Removal of square brackets from scope of TS36.133	10.0.0	10.1.0
	RP-51	RP-110359	0658	-	Addition of UE RRM capabilities for CA	10.1.0	10.2.0
2011-04	RP-51	RP-110340	0663	-	Correction to E-UTRAN TDD in-sync test requirements	10.1.0	10.2.0
2011-04	RP-51	RP-110348	0665	1	RSTD requirements, RMC and OCNG patterns	10.1.0	10.2.0
	RP-51	RP-110350	0669	-	CR to 36.133: Aligning relavant RRM requirements for Band	10.1.0	10.2.0
	RP-51	RP-110339	0676	-	41 with the reference sensitivity values in 36.101 Modification on test case of E-UTRA TDD to UTRA TDD cell	10.1.0	10.2.0
					reselection(R10)		
	RP-51	RP-110339	0681	1	Value of MS_TXPWR_MAX_CCH for EUTRA-GSM reselection test cases A.4.4.x	10.1.0	10.2.0
2011-04	RP-51	RP-110339	0687	1	Rearrangement of Time periods for EUTRA-UTRA reselection test case A.4.3.1.1	10.1.0	10.2.0
	RP-51	RP-110339	0690	1	Removal of "Force to Cell 2" during initialisation for EUTRA- UTRA reselection test case A.4.3.1.2	10.1.0	10.2.0
2011-04	RP-51	RP-110340	0693	1	SNR for RRM A.8.x test cases using ETU70	10.1.0	10.2.0
	RP-51 RP-51	RP-110408 RP-110339	0697 0703	1-	Requirements for Minimaztion of Drive Tests (MDT) in LTE Correction to test cases of E-UTRA to UTRA cell reselection	10.1.0 10.1.0	10.2.0
2011-04	RP-51	RP-110359	0706	2	when UE is in idle state Introduction of measurement requirements for carrier	10.1.0	10.2.0
2011-04	RP-51	RP-110347	0709	1	aggregation Addition of test cases for FDD intra-frequency SI reading	10.1.0	10.2.0
	-				using autonomous gaps with both non DRX and DRX for Rel- 10		
2011-04	RP-51	RP-110347	0711	1	Addition of test cases for FDD inter-frequency SI reading using autonomous gaps with both non DRX and DRX for Rel- 10	10.1.0	10.2.0
2011-04	RP-51	RP-110359	0713	1	Introduction of core requirements of radio link monitoring in CA	10.1.0	10.2.0
2011-04	RP-51	RP-110339	0719	1	Modification on Test Requirements in E-UTRA - UTRA TDD SON Test Case (A.8.7.3) (R10)	10.1.0	10.2.0
2011-04	RP-51	RP-110348	0727	2	Requirements for reporting criteria with positioning measurements	10.1.0	10.2.0
2011-04	RP-51	RP-110340	0736	-	Correction of RLM evaluation period in DRX	10.1.0	10.2.0
	RP-51	RP-110340	0739	-	Correction of inter-frequency measurement accuracy test	10.1.0	10.2.0
2011-04	RP-51	RP-110339	0744	-	cases Modification on Test Requirements in E-UTRA GSM cell reselection Test Case (A.4.4) (R10)	10.1.0	10.2.0
2011-04	RP-51	RP-110348	0747	1	Corrections to RSTD measurement for Rel-9	10.1.0	10.2.0
	RP-51	RP-110348	0747	-	Correction on FDD Intra Frequency RSTD Measurement	10.1.0	10.2.0
2011.04	DD 51	RP-110348	0754	1	Accuracy test case	10.1.0	10.0.0
	RP-51 RP-51	RP-110348 RP-110344	0751 0753	1 -	RSTD test case corrections Correction of serving cell performance requirements for	10.1.0 10.1.0	10.2.0 10.2.0
2011-06	RP-52	RP-110753	0785	1	autonomous SI acquisition Simplification of frequency dependent requirements in 36.133 (Table B.2.2-1 contains erroneous values. These wrong	10.2.0	10.3.0

2011-06	RP-52	RP-110793	754		E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay test case with the reference cell on the serving carrier frequency	10.2.0	10.3.0
2011-06	RP-52	RP-110793	755		E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay test case with the reference cell on the serving carrier frequency	10.2.0	10.3.0
2011-06	RP-52	RP-110807	757		Core requirements on RRC connection mobility control in CA	10.2.0	10.3.0
2011-06	RP-52	RP-110807	758		Timing core requirements in CA	10.2.0	10.3.0
2011-06	RP-52	RP-110807	759		Introduction of Handover Requirements for Carrier	10.2.0	10.3.0
2011-06	RP-52	RP-110793	760		Aggregation E-UTRAN FDD Inter Frequency RSTD Measurement	10.2.0	10.3.0
					Accuracy test case		
2011-06	RP-52	RP-110793	761		E-UTRAN TDD Inter Frequency RSTD Measurement Accuracy test case	10.2.0	10.3.0
2011-06	RP-52	RP-110786	765		Rearrangement of Time periods for EUTRA-UTRA reselection test case A.4.3.4.1	10.2.0	10.3.0
2011-06	RP-52	RP-110786	768		Removal of "Force to Cell 2" during initialisation for EUTRA - UTRA reselection test cases	10.2.0	10.3.0
2011-06	RP-52	RP-110807	776		Introduction of UE interruption requirements in SCC measurements with de-activated SCell	10.2.0	10.3.0
2011-06	RP-52	RP-110794	797		Editorial Correction to Cell Re-selection Requirements	10.2.0	10.3.0
2011-06	RP-52	RP-110789	808		Correction to side conditions for TDD inter-frequency CGI identification for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110786	814		Correction to inter-RAT cell identificiation time in DRX for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110787	817		Correction to identification time of UTRA FDD cell for SON in DRX for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110787	822		Correction to requirements of E-UTRAN TDDUTRAN TDD measurements for SON when DRX is used for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110807	829		Correction to the side condition for measurements for E- UTRA carrier aggregation	10.2.0	10.3.0
2011-06	RP-52	RP-110803	850		CR Timestamp accuracy requirements for MDT	10.2.0	10.3.0
2011-00	RP-52	RP-110812	778	1	Add 2GHz S-Band (Band 23) in 36.133	10.2.0	10.3.0
2011-00	RP-52	RP-110796	787	1	Clarification on inter-frequency layers for RSTD	10.2.0	10.3.0
2011-06	RP-52	RP-110794	780	1	Correction to RSTD measurement for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110807	852	1	Pcmax,c mapping	10.2.0	10.3.0
2011-06	RP-52	RP-110787	771	1	Clarification of Radio link monitoring test requirements (The CR was not implemented as it is not based on the latest version of the specification)	10.2.0	10.3.0
2011-06	RP-52	RP-110807	793	1	E-CID Measurement Requirements under Pcell Switching	10.2.0	10.3.0
2011-06	RP-52	RP-110807	775	1	Removal of undefined intra-freq RSRQ relative accuracy requirements in CA	10.2.0	10.3.0
2011-06	RP-52	RP-110789	856		Correction on E-UTRAN FDD RSTD intra frequency case	10.2.0	10.3.0
2011-06	RP-52	RP-110796	800	1	Addition of E-UTRAN FDD/TDD cdma2000 1xRTT	10.2.0	10.3.0
2011-06	RP-52	RP-110790	804	1	Measurements requirement for SON for Rel-10 Addition of test cases for TDD intra-frequency SI reading	10.2.0	10.3.0
2011-06	RP-52	RP-110790	806	1	using autonomous gaps with both non DRX and DRX for Rel- 10 Addition of test cases for TDD inter-frequency SI reading	10.2.0	10.3.0
2011 00	11 02		000		using autonomous gaps with both non DRX and DRX for Rel- 10	10.2.0	10.0.0
2011-06	RP-52	RP-110787	828	1	Addition of missing EsNoc parameters in E-UTRAN TDD UTRAN TDD Measurements test cases for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110807	835	1	Clarification of UE Rx-Tx time difference measurement requirement for carrier aggregation	10.2.0	10.3.0
2011-06	RP-52	RP-110804	859		Expanded 1900 MHz addition to 36.133	10.2.0	10.3.0
2011-06	RP-52	RP-110811	860		Introduction of RLM requirement for eICIC	10.2.0	10.3.0
2011-06	RP-52	RP-110796	794	1	E-CID Measurement Requirements under Handover	10.2.0	10.3.0
2011-06	RP-52	RP-110811	762	1	CR on RLM requirements for eICIC	10.2.0	10.3.0
2011-06	RP-52	RP-110811	788	2	RSRP and RSRQ measurement requirements for eICIC	10.2.0	10.3.0
2011-06	RP-52	RP-110811	851	1	CR on RSRP and RSRQ measurement accuracy requirements for eICIC	10.2.0	10.3.0
2011-06	RP-52	RP-110807	802	2	Addition of OTDOA measurement requirement for E-UTRAN carrier aggregation	10.2.0	10.3.0
2011-09	RP-53	RP-111246	863		Thresholds and margins for reporting of neighbour cells in RRM test A.8.9.1	10.3.0	10.4.0
2011-09	RP-53	RP-111246	902		Thresholds and margins for RRM tests A.5.2.1 and A.5.2.2	10.3.0	10.4.0
2011-09	RP-53	RP-111246	905	ľ	Thresholds and margins for RRM tests A.5.2.4 and A.5.2.5	10.3.0	10.4.0
2011-09	RP-53	RP-111247	889	ľ	Removing [] in section 8.1.2.2.2.2 for Rel-10	10.3.0	10.4.0
2011-09	RP-53	RP-111247	915		Adding condition of UTRA TDD measurement report delay requirements applied	10.3.0	10.4.0
2011-09	RP-53	RP-111247	930	1	Clarify time points and time duration for RLM tests A.7.3.x	10.3.0	10.4.0
2011-09	RP-53	RP-111251	926	1	Adding enhanced UTRA TDD cell identification requirements	10.3.0	10.4.0
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2011-09	RP-53 RP-53	RP-111252 RP-111252	960 965	1	Missing RSRQ in Intra-frequency measurement requirements Requirements for RRC Connection Release with Redirection	10.3.0 10.3.0	10.4.0
2011-09	NF-33	KF-111232	905	I	for TDD in R10	10.3.0	10.4.0
2011-09	RP-53	RP-111255	946		Introduction of Band 22	10.3.0	10.4.0
2011-09	RP-53	RP-111255	979	1	Modifications of Band 42 and 43	10.3.0	10.4.0
2011-09	RP-53	RP-111263	879	1	Correction to RRC connection mobility control in CA	10.3.0	10.4.0
2011-09	RP-53	RP-111263	895	2	RSTD Measurement Requirements under Handover	10.3.0	10.4.0
2011-09	RP-53	RP-111263	896	2	RSTD Measurement Requirements under Pcell Switching	10.3.0	10.4.0
2011-09	RP-53	RP-111263	920	1	Editorial corrections for 36.133 (Rel-10)	10.3.0	10.4.0
2011-09	RP-53	RP-111263	924	1	Correction to RRC connection mobility control in CA	10.3.0	10.4.0
2011-09	RP-53	RP-111263	927		Modifications on TDD inter frequency measurements with autonomous gaps	10.3.0	10.4.0
2011-09	RP-53	RP-111263	945	1	Frequency band related requirements to 36.133	10.3.0	10.4.0
2011-09	RP-53	RP-111263	949	1	Correction of references	10.3.0	10.4.0
2011-09	RP-53	RP-111263	950		Alignment of the carrier aggregation terminology	10.3.0	10.4.0
2011-09	RP-53	RP-111263	951		Band simplification for core requirements	10.3.0	10.4.0
2011-09	RP-53	RP-111263	952		Clarification in inter-frequency RSTD accuracy tests	10.3.0	10.4.0
2011-09	RP-53	RP-111263	953	1	Editorial corrections for RRM requirements	10.3.0	10.4.0
2011-09	RP-53	RP-111263	961		Missing RSRQ in E-UTRA carrier aggregation measurement requirements	10.3.0	10.4.0
2011-09	RP-53	RP-111265	874	1	Clarification of TDD uplink-downlink subframe configurations	10.3.0	10.4.0
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2011-09	RP-53	RP-111265	875	3	CR on UE interruption requirements in SCC measurements with de-activated SCell when common DRX is used	10.3.0	10.4.0
2011-09	RP-53	RP-111265	883	1	Alignment of terminology for SCell measurement cycle	10.3.0	10.4.0
2011-09	RP-53	RP-111265	921	1	Introduction of Pcmax,c reporting requirements for carrier aggregation	10.3.0	10.4.0
2011-09	RP-53	RP-111266	849	3	RSTD Accuracy Requirements for Carrier Aggregation	10.3.0	10.4.0
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2011-12	RP-54	RP-111682	984		Removing [] in CSFB requirement for Rel-10	10.4.0	10.5.0
2011-12	RP-54	RP-111693	985		Reference channel for RLM testing with eICIC	10.4.0	10.5.0
2011-12	RP-54	RP-111683	987		Clarification on RSTD test cases	10.4.0	10.5.0
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2011-12	RP-54	RP-111690	1003		Test case for RRC connection release redirection to UTRA TDD for R10	10.4.0	10.5.0
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2011-12	RP-54	RP-111687	1023		Addtion of E-UTRAN TDD - FDD Inter frequency cell reselection test case	10.4.0	10.5.0
2011-12	RP-54	RP-111687	1024		Addtion of E-UTRAN FDD - TDD Inter frequency handover	10.4.0	10.5.0
2011-12	RP-54	RP-111687	1025		test case Addtion of E-UTRAN TDD - FDD Inter frequency handover	10.4.0	10.5.0
2011-12	RP-54	RP-111687	1026		test case Addtion of E-UTRAN TDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in	10.4.0	10.5.0

2011-12	RP-54	RP-111687	1027	1	Addtion of E-UTRAN FDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells test case	10.4.0	10.5.0
2011-12	RP-54	RP-111687	1028		Addition of E-UTRAN FDD - TDD inter frequency measurement accuracy test case	10.4.0	10.5.0
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2011-12	RP-54	RP-111681	1039	1	Correction of E-UTRAN TDD-TDD inter frequency handover test case in R10	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1041		Clarification of Expected RSTD and Expected RSTD uncertainty in RSTD test cases in R10	10.4.0	10.5.0
2011-12	RP-54	RP-111680	1043		Thresholds and margins for RRM tests A.8.11.3 and A.8.11.4	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1046		Thresholds and margins for RRM tests A.8.11.5 and A.8.11.6	10.4.0	10.5.0
2011-12	RP-54	RP-111693	1047	2	RLM Out of Sync Detection Test for eICIC	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1049		RRC Connection Release with Redirection from E-UTRAN FDD to GERAN	10.4.0	10.5.0
2011-12	RP-54	RP-111693	1051		Colliding CRS in non-MBSFN ABS	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1052		RRC Connection Release with Redirection from E-UTRAN TDD to GERAN	10.4.0	10.5.0
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2011-12	RP-54	RP-111693	1054	1	RLM In Sync Detection Test for FDD eICIC	10.4.0	10.5.0
2011-12	RP-54	RP-111691	1055	1	FDD Event triggered reporting on deactivated Scell in non- DRX	10.4.0	10.5.0
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2011-12	RP-54	RP-111690	1061	1	Optional faster higher priority reselection	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1064	1	Addition of a test case at lower RSRP level for the serving cell measurement accuracy	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1066		Test cases for RRC connection release with redirection to UTRAN FDD	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1072		CA definition alignment in test cases	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1074		Applicable PRS BW for RSTD accuracy requirements	10.4.0	10.5.0
2012-03	RP-55	RP-120304	1077	1	RSTD signalling modifications	10.5.0	10.6.0
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2012-03	RP-55	RP-120294	1081	1	Test case for E-UTRA FDD RRC connection release redirection to UTRA TDD without SI provided for R10	10.5.0	10.6.0
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2012-03	RP-55	RP-120293	1089		Addition of E-UTRAN TDD-cdma2000 1X Cell Reselection: cdma2000 1X is of Lower Priority test case R10	10.5.0	10.6.0
2012-03	RP-55	RP-120293	1091		Addition of E-UTRAN TDD-HRPD Handover test case R10	10.5.0	10.6.0
2012-03	RP-55	RP-120294	1093		Addition of E-UTRAN TDD-cdma2000 1X Handover test case R10	10.5.0	10.6.0 10.6.0
2012-03	RP-55	RP-120294	1099		Addition of E-UTRAN FDD-TDD inter frequency RSRQ measurement accuracy test case R10	10.5.0	10.6.0
2012-03	RP-55	RP-120300	1112	1	RLM test cases with SNRs for OOS and INS for E-UTRAN TDD in eICIC	10.5.0	10.6.0
2012-03	RP-55	RP-120304	1115		lo difference band-independent in Inter-frequency RSRP TDD TC A.9.1.4	10.5.0	10.6.0
2012-03	RP-55	RP-120292	1118	1	Thresholds and margins in RRM test case A.8.11.4	10.5.0	10.6.0
2012-03	RP-55	RP-120292	1121		TDD PRACH Test cases value of PRACH Configuration Index and first preamble power	10.5.0	10.6.0
2012-03	RP-55	RP-120292	1124	1	PDSCH and OCNG pattern in PRACH Test cases A.6.2.1 and A.6.2.3	10.5.0	10.6.0
2012-03	RP-55	RP-120300	1134	1	Clarification of colliding CRS in MBSFN ABS	10.5.0	10.6.0
2012-03	RP-55	RP-120304	1135		Editorial corrections on the test cases of RRC connection release with redirection to UTRAN FDD	10.5.0	10.6.0
2012-03	RP-55	RP-120304	1139	1	Corrections on test case of Event triggered reporting on deactivated Scell in non-DRX CR not implemented as it is based on the wrong version of the spec	10.5.0	10.6.0
2012-03	RP-55	RP-120304	1140		Core requirements for E-UTRAN TDD inter-RAT UTRAN FDD SI acquisition using autonomous gaps	10.5.0	10.6.0
2012-03	RP-55	RP-120304	1143	1	Editorial corrections	10.5.0	10.6.0
2012-03	RP-55	RP-120300	1145	1	Side condition clarification for eICIC with MBSFN	10.5.0	10.6.0
2012-03	RP-55	RP-120300	1146		Clarification on reported cells with eICIC	10.5.0	10.6.0
		RP-120294	1148	1	Correction of RSTD accuracy test cases for TDD	10.5.0	10.6.0
2012-03	RP-55		1140			10.5.0	
2012-03 2012-03 2012-03	RP-55 RP-55 RP-55	RP-120300 RP-120300	1140 1151 1152	2	RLM requirements with autonomous gaps SNR levels in out-of-sync RLM test cases for eICIC	10.5.0 10.5.0 10.5.0	10.6.0

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2012-0	3 RP-55	RP-120303	1156	1	CR for 36.133: B41 REFSENS and MOP changes to	10.5.0	10.6.0
					accommodate single filter architecture		
2012-0	3 RP-55	RP-120300	1157		elCIC measurement accuracy	10.5.0	10.6.0

History

	Document history								
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V10.3.0	June 2011	Publication							
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V10.5.0	January 2012	Publication							
V10.6.0	April 2012	Publication							