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**LTE;
Evolved Universal Terrestrial Radio Access (E-UTRA);
Requirements on User Equipments (UEs)
supporting a release-independent frequency band
(3GPP TS 36.307 version 9.15.0 Release 9)**



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Foreword

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- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
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1 Scope

The present document specifies requirements on UEs supporting a frequency band that is independent of release.

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 TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 36.101 (Release 10): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".
- [3] 3GPP TS 36.133 (Release 10): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".
- [4] 3GPP TS 36.101 (Release 11): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".
- [5] 3GPP TS 36.133 (Release 11): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".
- [6] 3GPP TS 36.101 (Release 12): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".
- [7] 3GPP TS 36.133 (Release 12): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".
- [8] 3GPP TS 36.307 (Release 10): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) Supporting a release-independent frequency band".
- [9] 3GPP TS 36.307 (Release 11): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) Supporting a release-independent frequency band".
- [10] 3GPP TS 36.307 (Release 12): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) Supporting a release-independent frequency band".
- [11] 3GPP TS 36.133 (Release 9): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".
- [12] 3GPP TS 36.101 (Release 9): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".
- [13] 3GPP TS 36.101 (Release 13): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".
- [14] 3GPP TS 36.133 (Release 13): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".
- [15] 3GPP TS 36.307 (Release 13): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) Supporting a release-independent frequency band".

3 Definitions and Abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in [1] apply.

3.2 Abbreviations

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

FDD	Frequency Division Duplex
TDD	Time Division Duplex
RRC	Radio Resource Control
RRM	Radio Resource Management
UE	User Equipment

3A General

TSG-RAN has agreed that the standardisation of new frequency bands may be independent of a release. However, in order to implement a UE that conforms to a particular release but supports a band of operation that is specified in a later release, it is necessary to specify some extra requirements.

For example, Band 19 is contained in the Release 9 specifications. In order to implement a UE conforming to Release 8 but supporting Band 19, it is necessary for the UE to additionally conform to some parts of the Release 9 specifications, such as the radio frequency and radio resource management requirements for the Band 19.

All frequency bands are fully specified in this release of the specifications. The present document does not contain any requirements for UEs supporting frequency bands independent of release.

NOTE: See NOTE in clause 4.4 in [12].

4 Void

5 Void

6 Void

Void

8 Band 41 Independent of Release

Band 41 is specified in Release 10 but is defined as a release-independent frequency band. This approach aligns the Band 41 with other frequency bands when considering features that have to be supported in different releases.

8.1 Band 41 UE

UEs that conform to Release 9 and support band 41 shall support the following requirements in Release 10.

8.1.1 RF Requirements

The UE shall comply with the RF requirements for band 41 specified in [2] which are listed in Table B.4.1-1 of [8].

Table 8.1.1-1: Void

8.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 41 specified in [3] which are listed in Table B.2.1-1 of [8].

Table 8.1.2-1: Void

8.1.3 Void

9 Band 42 Independent of Release

Band 42 is specified in Release 10 but is defined as a release-independent frequency band. This approach aligns the Band 42 with other frequency bands when considering features that have to be supported in different releases.

9.1 Band 42 UE

UEs that conform to Release 9 and support band 42 shall support the following requirements in Release 10.

9.1.1 RF Requirements

The UE shall comply with the RF requirements for band 42 specified in [2] which are listed in Table B.4.1-1 of [8].

Table 9.1.1-1: Void

9.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 42 specified in [3] which are listed in Table B.2.1-1 of [8].

Table 9.1.2-1: Void

9.1.3 Void

10 Band 43 Independent of Release

Band 43 is specified in Release 10 but is defined as a release-independent frequency band. This approach aligns the Band 43 with other frequency bands when considering features that have to be supported in different releases.

10.1 Band 43 UE

UEs that conform to Release 9 and support band 43 shall support the following requirements in Release 10.

10.1.1 RF Requirements

The UE shall comply with the RF requirements for band 43 specified in [2] which are listed in Table B.4.1-1 of [8].

Table 10.1.1-1: Void

10.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 43 specified in [3] which are listed in Table B.2.1-1 of [8].

Table 10.1.2-1: Void

10.1.3 Void

11 Band 24 Independent of Release

Band 24 is specified in Release 10 but is defined as a release-independent frequency band. This approach aligns the Band 24 with other frequency bands when considering features that have to be supported in different releases.

11.1 Band 24 UE

UEs that conform to Release 9 and support Band 24 shall support the following requirements in Release 10.

11.1.1 RF Requirements

The UE shall comply with the RF requirements for Band 24 specified in [2] which are listed in Table B.4.1-1 of [8].

Table 11.1.1-1: Void

11.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 24 specified in [3] which are listed in Table B.2.1-1 of [8].

Table 11.1.2-1: Void

11.1.3 Void

12 Band 23 Independent of Release

Band 23 is specified in Release 10 but is defined as a release-independent frequency band. This approach aligns the Band 23 with other frequency bands when considering features that have to be supported in different releases.

12.1 Band 23 UE

UEs that conform to Release 9 and support band 23 shall support the following requirements in Release 10.

12.1.1 RF Requirements

The UE shall comply with the RF requirements for band 23 specified in [2] which are listed in Table B.4.1-1 of [8].

Table 12.1.1-1: Void

12.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 23 specified in [3] which are listed in Table B.2.1-1 of [8].

Table 12.1.2-1: Void

12.1.3 Void

13 Band 25 Independent of Release

Band 25 is specified in Release 10 but is defined as a release-independent frequency band. This approach aligns the Band 25 with other frequency bands when considering features that have to be supported in different releases.

13.1 Band 25 UE

UEs that conform to Release 9 and support band 25 shall support the following requirements in Release 10.

13.1.1 RF Requirements

The UE shall comply with the RF requirements for band 25 specified in [2] which are listed in Table B.4.1-1 of [8].

Table 13.1.1-1: Void

13.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 25 specified in [3] which are listed in Table B.2.1-1 of [8].

Table 13.1.2-1: Void

13.1.3 Void

14 Band 22 Independent of Release

Band 22 is specified in Release 10 but is defined as a release-independent frequency band. This approach aligns the Band 22 with other frequency bands when considering features that have to be supported in different releases.

14.1 Band 22 UE

UEs that conform to Release 9 and support band 22 shall support the following requirements in Release 10.

14.1.1 RF Requirements

The UE shall comply with the RF requirements for band 22 specified in [2] which are listed in Table B.4.1-1 of [8].

Table 14.1.1-1: Void

14.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 22 specified in [3] which are listed in Table B.2.1-1 of [8].

Table 14.1.2-1: Void

14.1.3 Void

15 Band 26 Independent of Release

Band 26 is specified in Release 11 but is defined as a release-independent frequency band. This approach aligns the Band 26 with other frequency bands when considering features that have to be supported in different releases.

15.1 Band 26 UE

UEs that conform to Release 9 and support Band 26 shall support the following requirements in Release 11.

15.1.1 RF Requirements

The UE shall comply with the RF requirements for Band 26 specified [4] which are listed in Table B.4.1-1 of [9].

Table 15.1.1-1: Void

15.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 26 specified in [5] which are listed in Table B.2.1-1 of [9].

Table 15.1.2-1: Void

15.1.3 Void

16 Band 27 Independent of Release

Band 27 is specified in Release 11, but is defined as a release-independent frequency band. This approach aligns the Band 27 with other frequency bands when considering features that have to be supported in different releases.

16.1 Band 27 UE

UEs that conform to Release 9 and support Band 27 shall support the following requirements in Release 11.

16.1.1 RF Requirements

The UE shall comply with the Release 11 RF requirements for Band 27 specified [4] which are listed in Table B.4.1-1 of [9].

Table 16.1.1-1: Void

16.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 27 specified in [5] which are listed in Table B.2.1-1 of [9].

Table 16.1.2-1: Void

16.1.3 Void

17 Band 28 Independent of Release

Band 28 is specified in Release 11 but is defined as a release-independent frequency band. This approach aligns the Band 28 with other frequency bands when considering features that have to be supported in different releases.

17.1 Band 28 UE

UEs that conform to Release 9 and support Band 28 shall support the following requirements in Release 11.

17.1.1 RF Requirements

The UE shall comply with the RF requirements for Band 28 specified [4] which are listed in Table B.4.1-1 of [9].

Table 17.1.1-1: Void

17.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 28 specified in [5] which are listed in Table B.2.1-1 of [9].

Table 17.1.2-1: Void

17.1.3 Void

18 Band 44 Independent of Release

Band 44 is specified in Release 11 but is defined as a release-independent frequency band. This approach aligns the Band 44 with other frequency bands when considering features that have to be supported in different releases.

18.1 Band 44 UE

UEs that conform to Release 9 and support Band 44 shall support the following requirements in Release 11.

18.1.1 RF Requirements

The UE shall comply with the RF requirements for Band 44 specified [4] which are listed in Table B.4.1-1 of [9].

Table 18.1.1-1: Void

18.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 44 specified in [5] which are listed in Table B.2.1-1 of [9].

Table 18.1.2-1: Void

18.1.3 Void

19 Void

20 Void

21 Void

22 Void

23 Void

24 Void

25 Void

26 Void

27 Void

28 Void

29 Void

30 Void

31 Void

32 Void

33 Void

34 Void

35 Void

36 Void

37 Void

38 Void

39 Void

40 Void

41 Void

42 Band 30 Independent of Release

Band 30 is specified in Release 12 but is defined as a release-independent frequency band. This approach aligns the Band 30 with other frequency bands when considering features that have to be supported in different releases.

42.1 Band 30 UE

UEs that conform to Release 9 and support Band 30 shall support the following requirements in Release 12.

42.1.1 RF Requirements

The UE shall comply with the RF requirements for Band 30 specified [6] which are listed in Table B.4.1-1 of [10].

Table 42.1.1-1: Void

42.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 30 specified in [7] which are listed in Table B.2.1-1 of [10].

Table 42.1.2-1: Void

42.1.3 Void

43 Band 31 Independent of Release

Band 31 is specified in Release 12 but is defined as a release-independent frequency band. This approach aligns the Band 31 with other frequency bands when considering features that have to be supported in different releases.

43.1 Band 31 UE

UEs that conform to Release 9 and support Band 31 shall support the following requirements in Release 12.

43.1.1 RF Requirements

The UE shall comply with the RF requirements for Band 31 specified [6] which are listed in Table B.4.1-1 of [10].

Table 43.1.1-1: Void

43.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 31, for 5 MHz only, specified in [7] which are listed in Table B.2.1-1 of [10].

Table 43.1.2-1: Void

43.1.3 Demodulation performance and CSI reporting Requirements

The UE shall comply with the subset of demodulation performance and CSI reporting requirements specified in [6] which are listed in Table 43.1.3-2.

Table 43.1.3-1: Void**Table 43.1.3-2: Demodulation performance and CSI reporting requirements for Band 31 UE**

Section / Clause	Description	Test case
8.2.1.1.1	Single-antenna port performance	6, 7, 8
8.2.1.2.1	Transmit diversity performance	1
8.2.1.3.1	Open-loop spatial multiplexing performance	2
8.2.1.4.1	Closed-loop spatial multiplexing performance	1A
8.2.1.4.2	Closed-loop spatial multiplexing performance	2A
8.5.1.2.1	PHICH transmit diversity performance	1A
9.2.1.1	CQI reporting definition under AWGN conditions	Table 9.2.1.1-2
9.3.2.1.1	CQI reporting under fading conditions	Table 9.3.2.1.1-3

44 – 208 Void

209 Band 45 Independent of Release

Band 45 is specified in Release 13 but is defined as a release-independent frequency band. This approach aligns the Band 45 with other frequency bands when considering features that have to be supported in different releases.

209.1 Band 45 UE

UEs that conform to Release 9 and support Band 45 shall support the following requirements in Release 13.

209.1.1 RF Requirements

The UE shall comply with the RF requirements for Band 45 specified in [13] which are listed in Table B.4.1-1 of [15].

209.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 45, for 5 MHz only, specified in [14] which are listed in Table B.2.1-1 of [15].

210 Band 65 Independent of Release

Band 65 is specified in Release 13 but is defined as a release-independent frequency band. This approach aligns the Band 65 with other frequency bands when considering features that have to be supported in different releases.

210.1 Band 65 UE

UEs that conform to Release 9 and support Band 65 shall support the following requirements in Release 13.

210.1.1 RF Requirements

The UE shall comply with the RF requirements for Band 65 specified in [13] which are listed in Table B.4.1-1 of [15].

210.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 65 specified in [14] which are listed in Table B.2.1-1 of [15].

211 Band 66 Independent of Release

Band 66 is specified in Release 13 but is defined as a release-independent frequency band. This approach aligns the Band 66 with other frequency bands when considering features that have to be supported in different releases.

211.1 Band 66 UE

UEs that conform to Release 9 and support Band 66 shall support the following requirements in Release 13.

211.1.1 RF Requirements

The UE shall comply with the RF requirements for Band 66 specified in [13] which are listed in Table B.4.1-1 of [15].

211.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 66 specified in [14] which are listed in Table B.2.1-1 of [15].

Annex A (informative): Frequency arrangement for overlapping operating bands

The following information is provided in order to assist a UE derive the DL EARFCN and UL EARFCN in a multi-band environment, in which multiple overlapping operating bands may be indicated in the fields *freqBandIndicator* and *multiBandInfoList* of SIB1.

The overlapping bands, independent of release, which may be indicated in a cell are shown in Table A-1 for applicable E-UTRA bands. The DL EARFCN and UL EARFCN are derived according to [4].

Table A-1: Overlapping bands (multi-band environments) for each E-UTRA band

E-UTRA Operating Band	Overlapping E-UTRA operating bands	Duplex Mode
2	25	FDD
3	9	FDD
4	10	FDD
5	18, 19, 26	FDD
9	3	FDD
10	4	FDD
12	17	FDD
17	12	FDD
18	5, 26, 27	FDD
19	5, 26	FDD
25	2	FDD
26	5, 18, 19, 27	FDD
27	18, 26	FDD
33	39	TDD
38	41	TDD
39	33	TDD
41	38	TDD

Annex B (normative): Common Requirements

B.1 Purpose of annex

The purpose of Annex B is to group the requirements that are common for several bands or CA configurations in this specification and use the common tables as references.

B.2 Common RRM requirements

B.2.1 Common RRM requirements for a band independent of release

The requirements and test cases listed in Table B.2.1-1 are specified in [11].

Table B.2.1-1: Common RRM requirements for a band independent of release

Section / Clause	Description
4	E-UTRAN RRC_IDLE state mobility
5	E-UTRAN RRC_CONNECTED state mobility
6 ^{Note 1}	RRC Connection Mobility Control
7 ^{Note 2}	Timing and signalling characteristics
8 ^{Note 3}	UE Measurements Procedures in RRC_CONNECTED State
9 ^{Note 4}	Measurements performance requirements for UE
A.4	E-UTRAN RRC_IDLE state
A.5	E-UTRAN RRC CONNECTED Mode Mobility
A.6 ^{Note 1}	RRC Connection Control
A.7 ^{Note 2}	Timing and Signalling Characteristics
A.8 ^{Note 3}	UE Measurements Procedures
A.9 ^{Note 4}	Measurement Performance Requirements
<p>NOTE 1: All requirements and the corresponding test cases shall apply, except: - for supporting the corresponding band in Rel-8: clauses 6.3 (RRC Connection Release with Redirection), 6.4 (CSG Proximity Indication for E-UTRAN and UTRAN).</p> <p>NOTE 2: All requirements and corresponding test cases shall apply, except those defined in sections 7.4 and 7.5.</p> <p>NOTE 3: All requirements and corresponding test cases shall apply, except: - for supporting the corresponding band in Rel-8: clauses 8.1.2.5 (E-UTRAN OTDOA Intra-Frequency RSTD Measurements), 8.1.2.6 (E-UTRAN Inter-Frequency OTDOA Measurements), 8.1.2.7 (E-UTRAN E-CID Measurements).</p> <p>NOTE 4: All requirements and corresponding test cases shall apply, except: - for supporting the corresponding band in Rel-8: clauses 9.1.9 (UE Rx-Tx time difference), 9.1.10 (Reference Signal Time Difference).</p>	

B.3 Common UE performance requirements

B.3.1 Void

Table B.3.1-1: Void

B.4 Common UE RF requirements

B.4.1 Common UE RF requirements for a band independent of release

The requirements and test cases listed in Table B.4.1-1 are specified in [12].

Table B.4.1-1: Common UE RF requirements for a band independent of release

Section / Clause	Description
5.5	Operating bands
5.6	Channel bandwidth
5.7	Channel arrangement
6.2	Transmit power
6.3	Output power dynamics
6.5	Transmit signal quality
6.6	Output RF spectrum emissions
6.7	Transmit intermodulation
7.3	Reference sensitivity power level
7.4	Maximum input level
7.5	Adjacent Channel Selectivity (ACS)
7.6	Blocking characteristics
7.7	Spurious response
7.8	Intermodulation characteristics
7.9	RX spurious emissions

Annex C (informative): Change history

Table C.1: Change History

Date	TSG#	TSG Doc.	CR	Subject	Old	New
11-2009	RP#46	RP-091141		TS36.307 V0.1.0 approved by RAN (Originally in R4-095022)	-	0.1.0
02-2010	R4#54	R4-100419		For release 9 version, replace sections 4 to 6 as "Void" and add a new void section as section 7.	0.1.0	0.2.0
03-2010	RP#47	RP-100162		TS36.307 v1.0.0 for approval	0.2.0	1.0.0
03-2010	RP#47	RP-100162		Approved by RAN	1.0.0	9.0.0
09-2010	RP-49	RP-100927	2	CR LTE_TDD_2600_US spectrum band definition additions to TS 36.307 V900	9.0.0	9.1.0
				Correction of section numbering	9.1.0	9.1.1
12-2010	RP-50	RP-101356	008	Band 42 and 43 parameters for UMTS/LTE 3500 (TDD) for TS 36.307	9.1.1	9.2.0
12-2010	RP-50	RP-101361	005	Introduction of L-band in TS 36.307	9.1.1	9.2.0
06-2011	RP-52	RP-110804	014r3	Add Expanded 1900 MHz Band (Band 25) in 36.307	9.2.0	9.3.0
06-2011	RP-52	RP-110812	021r1	Add 2GHz S-Band (Band 23) in 36.307 (Rel 9)	9.2.0	9.3.0
09-2011	RP-53	RP-111255	024	Add Band 22 for LTE/UMTS 3500 (FDD) to TS 36.307	9.3.0	9.4.0
03-2012	RP-55	RP-120305	027	Introduction of Band 26/XXVI to TS 36.307	9.4.0	9.5.0
2012-06	RP-56	RP-120769	035r1	Correction of references	9.5.0	9.6.0
2012-06	RP-56	RP-120793	047	Introduction of APAC700(FDD) into TS 36.307 Rel-9	9.5.0	9.6.0
2012-06	RP-56	RP-120793	051	Introduction of APAC700(TDD) into TS 36.307 Rel-9	9.5.0	9.6.0
2012-06	RP-56	RP-120791	055	Introduction of e850_LB (Band 27) to TS 36.307	9.5.0	9.6.0
2012-09	RP-57	RP-121295	068r1	Relation between EARFCN for overlapping bands with multiple FBI indication	9.6.0	9.7.0
2013-06	RP-60	RP-130791	133r1	Introduction of Band 30	9.7.0	9.8.0
2013-06	RP-60	RP-130790	140	Introduction of LTE 450 into TS 36.307 R9	9.7.0	9.8.0
2013-06	RP-60	RP-130763	144	Corrections to release independent specifications	9.7.0	9.8.0
09-2013	RP-61	RP-131303	172	Band 31 release independence for UE demodulation performance	9.8.0	9.9.0
12-2013	RP-62	RP-131925	187r1	Correction to release independent specification	9.9.0	9.10.0
12-2013	RP-62	RP-131925	213r1	UE performance requirements in release independent specification for CA	9.9.0	9.10.0
12-2013	RP-62	RP-131924	221	Introducing 'General' clause with note referring to note in clause 4.4 in TS25.101, editorial modifications to Scope clause	9.9.0	9.10.0
03-2014	RP-63	RP-140367	229r1	CR on UE performance requirements in release independent specification	9.10.0	9.11.0
03-2014	RP-63	RP-140367	242r1	Correction to release independent specification	9.10.0	9.11.0
06-2014	RP-64	RP-140910	269	CR on UE performance requirements in release independent specification	9.11.0	9.12.0
09-2014	RP-65	RP-141541	410	CR on UE performance requirement for Band 31 for 36.307 Rel-9	9.12.0	9.13.0
12-2014	RP-66	RP-142142	437	UE RF requirements in the release independent spec	9.13.0	9.14.0
12-2015	RP-70	RP-152171	0586r1	Introduction of Band 65	9.14.0	9.15.0
12-2015	RP-70	RP-152173	0608	Introduction of 1447-1467MHz Band into 36.307	9.14.0	9.15.0
12-2015	RP-70	RP-152172	0624	Introduction of Band 66	9.14.0	9.15.0

History

Document history		
V9.0.0	April 2010	Publication
V9.1.1	October 2010	Publication
V9.2.0	January 2011	Publication
V9.3.0	June 2011	Publication
V9.4.0	November 2011	Publication
V9.5.0	April 2012	Publication
V9.6.0	July 2012	Publication
V9.7.0	November 2012	Publication
V9.8.0	July 2013	Publication
V9.9.0	October 2013	Publication
V9.10.0	January 2014	Publication
V9.11.0	April 2014	Publication
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V9.15.0	January 2016	Publication