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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 9.19.0 Release 9)

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Contents

Foreword

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

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

Version x.y.z

where:

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  - 1 presented to TSG for information;
  - 2 presented to TSG for approval;
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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 Rel-9 UEs supporting release independent features like:

- additional E-UTRA operating frequency bands on top of Rel-9 of TS 36.101 [2] and TS 36.133 [3].

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: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".

NOTE: The considered release is given in the text of the present document that uses [2].

[3] 3GPP TS 36.133: "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".

NOTE: The considered release is given in the text of the present document that uses [3].

[4] 3GPP TS 36.306: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities".

NOTE: The considered release is given in the text of the present document that uses [4].

[5] Void.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

release independent: applicable to some frozen releases, starting from a certain release Rel-M

NOTE 1: Normally, a feature is introduced only in the latest open release Rel-N and future releases are based on the previous one so that future releases inherit the requirements of this feature. Introducing a feature "in a release independent way from Rel-M onwards" (M<N) means it was decided by TSG RAN that this feature would be also beneficial in previous, already frozen releases starting with Rel-M until Rel-(N-1). In order to avoid touching TS 36.101 [2] or TS 36.133 [3] of these frozen releases, the corresponding requirements are captured in TS 36.307 via pointers to [2] or [3] of the release in which the feature was introduced.

NOTE 2: Release independent does not mean applicable to all releases.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

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

3.3 Symbols

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

N	Release in which a feature is introduced into TS 36.101 [2] or TS 36.133 [3]
M	Release from which onwards (including release M) a feature is release independent

3A Release independent features

3A.0 General

TSG-RAN has agreed for certain features (see the following clauses) to introduce them in a "release independent way".

This means for each feature:

- it is "introduced" in a release N, i.e. TS 36.101 [2] and TS 36.133 [3] of release N define certain UE requirements for this feature; the feature is indicated in the tables of the following clauses;

- it is "release independent" starting from a release M (M<N); M for the given feature is provided in the tables of the following clauses;

- UEs supporting this feature have to fulfill additional requirements in release M or higher which are specified in one or more Annexes of TS 36.307 of release N; the applicable Annexes for a given feature are provided in the tables of the following clauses.The applicable UE Categories are specified in TS 36.306 [4] according to the release to which the UE conforms.

3A.1 Additional E-UTRA operating bands

Requirements for a Rel-9 UE for additional E-UTRA operating bands compared to TS 36.101 Rel-9 [2] are introduced via this clause.

Table 3A.1-1: E-UTRA operating bands and UE power class

Feature	Duplex-mode	Release independent from	Requirements to be fulfilled (see TS 36.307 of the release in which the band was introduced)
Operating bands, band number <= 64, Power Class 3	FDD, TDD	Rel-8	Table B.2.1-1, Table B.4.1-1
Operating bands, band number > 64, Power Class 3	FDD, TDD	Rel-9	Table B.2.1-1, Table B.4.1-1

For example, Band 19 was introduced 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 (see corresponding Annexes of TS 36.307 Rel-9 which will point to the requirements in the Rel-9 of TS 36.101 [2] or TS 36.133 [3] to be fulfilled), such as the radio frequency and radio resource management requirements for the Band 19.

4 – 272 Void

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 TS 36.101 Rel-9 [2].

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 release independent band

The requirements and test cases listed in Table B.2.1-1 are specified in TS 36.133 Rel-9 [3].

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

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
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). NOTE 2: All requirements and corresponding test cases shall apply, except those defined in sections 7.4 and 7.5. 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). 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).	

B.3 Common UE performance requirements

B.3.1 Void

B.4 Common UE RF requirements

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

The requirements and test cases listed in Table B.4.1-1 are specified in TS 36.101 Rel-9 [2].

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

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	Meeting	TDoc	CR	Rev	Cat	Subject/Comment	New version
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.	0.2.0
03-2010	RP#47	RP-100162				TS36.307 v1.0.0 for approval	1.0.0
03-2010	RP#47	RP-100162				Approved by RAN	9.0.0
09-2010	RP-49	RP-100927	2			CR LTE_TDD_2600_US spectrum band definition additions to TS 36.307 V900	9.1.0
						Correction of section numbering	9.1.1
12-2010	RP-50	RP-101356	008			Band 42 and 43 parameters for UMTS/LTE 3500 (TDD) for TS 36.307	9.2.0
12-2010	RP-50	RP-101361	005			Introduction of L-band in TS 36.307	9.2.0
06-2011	RP-52	RP-110804	014r3			Add Expanded 1900 MHz Band (Band 25) in 36.307	9.3.0
06-2011	RP-52	RP-110812	021r1			Add 2GHz S-Band (Band 23) in 36.307 (Rel 9)	9.3.0
09-2011	RP-53	RP-111255	024			Add Band 22 for LTE/UMTS 3500 (FDD) to TS 36.307	9.4.0
03-2012	RP-55	RP-120305	027			Introduction of Band 26/XXVI to TS 36.307	9.5.0
2012-06	RP-56	RP-120769	035r1			Correction of references	9.6.0
2012-06	RP-56	RP-120793	047			Introduction of APAC700(FDD) into TS 36.307 Rel-9	9.6.0
2012-06	RP-56	RP-120793	051			Introduction of APAC700(TDD) into TS 36.307 Rel-9	9.6.0
2012-06	RP-56	RP-120791	055			Introduction of e850_LB (Band 27) to TS 36.307	9.6.0
2012-09	RP-57	RP-121295	068r1			Relation between EARFCN for overlapping bands with multiple FBI indication	9.7.0
2013-06	RP-60	RP-130791	133r1			Introduction of Band 30	9.8.0
2013-06	RP-60	RP-130790	140			Introduction of LTE 450 into TS 36.307 R9	9.8.0
2013-06	RP-60	RP-130763	144			Corrections to release independent specifications	9.8.0
09-2013	RP-61	RP-131303	172			Band 31 release independence for UE demodulation performance	9.9.0
12-2013	RP-62	RP-131925	187r1			Correction to release independent specification	9.10.0
12-2013	RP-62	RP-131925	213r1			UE performance requirements in release independent specification for CA	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	9.10.0
03-2014	RP-63	RP-140367	229r1			CR on UE performance requirements in release independent specification	9.11.0
03-2014	RP-63	RP-140367	242r1			Correction to release independent specification	9.11.0
06-2014	RP-64	RP-140910	269			CR on UE performance requirements in release independent specification	9.12.0
09-2014	RP-65	RP-141541	410			CR on UE performance requirement for Band 31 for 36.307 Rel-9	9.13.0
12-2014	RP-66	RP-142142	437			UE RF requirements in the release independent spec	9.14.0
12-2015	RP-70	RP-152171	0586r1			Introduction of Band 65	9.15.0
12-2015	RP-70	RP-152173	0608			Introduction of 1447-1467MHz Band into 36.307	9.15.0
12-2015	RP-70	RP-152172	0624			Introduction of Band 66	9.15.0
03/2016	RP-71	RP-160483	0643		B	Introduction of Band 68	9.16.0
06/2016	RP-72	RP-161138	678	-	F	CR TS 36.307 REL-9	9.17.0
09/2016	RP-73	RP-161631	699		F	Correction of REL-9 TS 36.307 references	9.18.0
06/2017	RP-76	RP-171293	0744	1	F	Cleanup of TS 36.307	9.19.0

History

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V9.5.0	April 2012	Publication
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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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