ETSI TS 136 307 V8.13.0 (2015-02)

LTE;
Evolved Universal Terrestrial Radio Access (E-UTRA);
Requirements on User Equipments (UEs)
supporting a release-independent frequency band
(3GPP TS 36.307 version 8.13.0 Release 8)

Reference
RTS/TSGR-0436307v8d0

Keywords
LTE

ETSI

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

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

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

Intellectual Property Rights

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

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

Foreword

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

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

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

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**may not**", "**need**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

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:

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

1 Scope

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

[3] 3GPP TS 36.133 (Release 9): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".

[4] 3GPP TS 36.101 (Release 10): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".

[5] 3GPP TS 36.133 (Release 10): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".

[6] 3GPP TS 36.101 (Release 11): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".

[7] 3GPP TS 36.133 (Release 11): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".

[8] 3GPP TS 36.101 (Release 12): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".

[9] 3GPP TS 36.133 (Release 12): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".

[10] 3GPP TS 36.307 (Release 9): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) Supporting a release-independent frequency band".

[11] 3GPP TS 36.307 (Release 10): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) Supporting a release-independent frequency band".

[12] 3GPP TS 36.307 (Release 11): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) Supporting a release-independent frequency band".

[13] 3GPP TS 36.307 (Release 12): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) Supporting a release-independent frequency band".

[14] 3GPP TS 36.101 (Release 8): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".

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 [14].

4 Band 18 Independent of Release

Band 18 is specified in Release 9 but is defined as a release-independent frequency band. This approach aligns the Band 18 with other frequency bands when considering features that have to be supported in different releases.

4.1 Band 18 UE

UEs that conform to Release 8 and support band 18 shall support the following requirements in Release 9.

4.1.1 RF Requirements

The UE shall comply with the RF requirements for band 18 specified in [2] which are listed in Table B.4.1-1 of [10].

Table 4.1.1-1: Void

4.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 18 specified in [3] which are listed in Table B.2.1-1 of [10].

Table 4.1.2-1: Void

4.1.3 Void

5 Band 19 Independent of Release

Band 19 is specified in Release 9 but is defined as a release-independent frequency band. This approach aligns the Band 19 with other frequency bands when considering features that have to be supported in different releases.

5.1 Band 19 UE

UEs that conform to Release 8 and support band 19 shall support the following requirements in Release 9.

5.1.1 RF Requirements

The UE shall comply with the RF requirements for band 19 specified in [2] which are listed in Table B.4.1-1 of [10].

Table 5.1.1-1: Void

5.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 19 specified in [3] which are listed in Table B.2.1-1 of [10].

Table 5.1.2-1: Void

5.1.3 Void

6 Band 20 Independent of Release

Band 20 is specified in Release 9 but is defined as a release-independent frequency band. This approach aligns the Band 20 with other frequency bands when considering features that have to be supported in different releases.

6.1 Band 20 UE

UEs that conform to Release 8 and support band 20 shall support the following requirements in Release 9.

6.1.1 RF Requirements

The UE shall comply with the RF requirements for band 20 specified in [2] which are listed in Table B.4.1-1 of [10].

Table 6.1.1-1: Void

6.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 20 specified in [3] which are listed in Table B.2.1-1 of [10].

Table 6.1.2-1: Void

6.1.3 Void

7 Band 21 Independent of Release

Band 21 is specified in Release 9 but is defined as a release-independent frequency band. This approach aligns the Band 21 with other frequency bands when considering features that have to be supported in different releases.

7.1 Band 21 UE

UEs that conform to Release 8 and support band 21 shall support the following requirements in Release 9.

7.1.1 RF Requirements

The UE shall comply with the RF requirements for band 21 specified in [2] which are listed in Table B.4.1-1 of [10].

Table 7.1.1-1: Void

7.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 21 specified in [3] which are listed in Table B.2.1-1 of [10].

Table 7.1.2-1: Void

7.1.3 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 8 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 [4] which are listed in Table B.4.1-1 of [11].

Table 8.1.1-1: Void

8.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 41 specified in [5] which are listed in Table B.2.1-1 of [11].

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 8 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 [4] which are listed in Table B.4.1-1 of [11].

Table 9.1.1-1: Void

9.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 42 specified in [5] which are listed in Table B.2.1-1 of [11].

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 8 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 [4] which are listed in Table B.4.1-1 of [11].

Table 10.1.1-1: Void

10.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 43 specified in [5] which are listed in Table B.2.1-1 of [11].

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 8 and support Band 24 shall support the following requirements in Release 10.

11.1.1 RF Requirements

The UE shall comply with the Release 10 RF requirements for Band 24 specified [4] which are listed in Table B.4.1-1 of [11].

Table 11.1.1-1: Void

11.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 24 specified in [5] which are listed in Table B.2.1-1 of [11].

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 8 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 [4] which are listed in Table B.4.1-1 of [11].

Table 12.1.1-1: Void

12.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 23 specified in [5] which are listed in Table B.2.1-1 of [11].

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 8 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 [4] which are listed in Table B.4.1-1 of [11].

Table 13.1.1-1: Void

13.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 25 specified in [5] which are listed in Table B.2.1-1 of [11].

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 8 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 [4] which are listed in Table B.4.1-1 of [11].

Table 14.1.1-1: Void

14.1.2 RRM Requirements

The UE shall comply with the RRM requirements for band 22 specified in [5] which are listed in Table B.2.1-1 of [11].

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 8 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 in [6] which are listed in Table B.4.1-1 of [12].

Table 15.1.1-1: Void

15.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 26 specified in [7] which are listed in Table B.2.1-1 of [12].

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 8 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 in [6] which are listed in Table B.4.1-1 of [12].

Table 16.1.1-1: Void

16.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 27 specified in [7] which are listed in Table B.2.1-1 of [12].

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 8 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 in [6] which are listed in Table B.4.1-1 of [12].

Table 17.1.1-1: Void

17.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 28 specified in [7] which are listed in Table B.2.1-1 of [12].

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 8 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 in [6] which are listed in Table B.4.1-1 of [12].

Table 18.1.1-1: Void

18.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 44 specified in [7] which are listed in Table B.2.1-1 of [12].

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 8 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 in [8] which are listed in Table B.4.1-1 of [13].

Table 42.1.1-1: Void

42.1.2 RRM Requirements

The UE shall comply with the RRM requirements for Band 30 specified in [9] which are listed in Table B.2.1-1 of [13].

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 8 and support Band 31 shall support the following requirements in Release 12.

43.1.1 RF Requirements

The UE shall comply with the Release 12 RF requirements for Band 31 specified in [8] which are listed in Table B.4.1-1 of [13].

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 [9] which are listed in Table B.2.1-1 of [13].

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 [8] 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

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 (informative): Change history

Table B.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
03-2010	RP#47	RP-100163	1	Introduction of Band 18, 19, 20 and 21 in 36.307	9.0.0	8.0.0
09-2010	RP-49	RP-100927	3	CR LTE_TDD_2600_US spectrum band definition additions to TS 36.307 V800	8.0.0	8.1.0
12-2010	RP-50	RP-101356	007	Band 42 and 43 parameters for UMTS/LTE 3500 (TDD) for TS 36.307	8.1.0	8.2.0
12-2010	RP-50	RP-101361	004	Introduction of L-band in TS 36.307	8.1.0	8.2.0
06-2011	RP-52	RP-110804	013r2	Add Expanded 1900 MHz Band (Band 25) in 36.307	8.2.0	8.3.0
06-2011	RP-52	RP-110812	020r1	Add 2GHz S-Band (Band 23) in 36.307 (Rel 8)	8.2.0	8.3.0
09-2011	RP-53	RP-111255	023	Add Band 22 for LTE/UMTS 3500 (FDD) to TS 36.307	8.3.0	8.4.0
03-2012	RP-55	RP-120305	026	Introduction of Band 26/XXVI to TS 36.307	8.4.0	8.5.0
2012-06	RP-56	RP-120767	034r1	Correction of references	8.5.0	8.6.0
2012-06	RP-56	RP-120793	046	Introduction of APAC700(FDD) into TS 36.307 Rel-8	8.5.0	8.6.0
2012-06	RP-56	RP-120793	050	Introduction of APAC700(TDD) into TS 36.307 Rel-8	8.5.0	8.6.0
2012-06	RP-56	RP-120791	054	Introduction of e850_LB (Band 27) to TS 36.307	8.5.0	8.6.0
2012-09	RP-57	RP-121295	067r2	Relation between EARFCN for overlapping bands with multiple FBI indication	8.6.0	8.7.0
2013-06	RP-60	RP-130791	132r1	Introduction of Band 30	8.7.0	8.8.0
2013-06	RP-60	RP-130790	139	Introduction of LTE 450 into TS 36.307 R8	8.7.0	8.8.0
09-2013	RP-61	RP-131303	171	Band 31 release independence for UE demodulation performance	8.8.0	8.9.0
12-2013	RP-62	RP-131924	186r2	Correction to release independent specification	8.9.0	8.10.0
12-2013	RP-62	RP-131924	212r1	UE performance requirements in release independent specification for CA	8.9.0	8.10.0
12-2013	RP-62	RP-131924	220	Introducing 'General' clause with note referring to note in clause 4.4 in TS25.101, editorial modifications to Scope clause	8.9.0	8.10.0
03-2014	RP-63	RP-140366	228r1	CR on UE performance requirements in release independent specification	8.10.0	8.11.0
03-2014	RP-63	RP-140366	241r1	Correction to release independent specification	8.10.0	8.11.0
09-2014	RP-65	RP-141541	409	CR on UE performance requirement for Band 31 for 36.307 Rel-8	8.11.0	8.12.0
12-2014	RP-66	RP-142142	436	UE RF requirements in the release independent spec	8.12.0	8.13.0

History

Document history		
V8.0.0	April 2010	Publication
V8.1.0	October 2010	Publication
V8.2.0	January 2011	Publication
V8.3.0	June 2011	Publication
V8.4.0	November 2011	Publication
V8.5.0	April 2012	Publication
V8.6.0	July 2012	Publication
V8.7.0	November 2012	Publication
V8.8.0	July 2013	Publication
V8.9.0	October 2013	Publication
V8.10.0	January 2014	Publication
V8.11.0	April 2014	Publication
V8.12.0	October 2014	Publication
V8.13.0	February 2015	Publication