

ETSI TS 136 307 V11.16.0 (2016-08)



LTE;
Evolved Universal Terrestrial Radio Access (E-UTRA);
Requirements on User Equipments (UEs)
supporting a release-independent frequency band
(3GPP TS 36.307 version 11.16.0 Release 11)



Reference

RTS/TSGR-0436307vbg0

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

Important notice

The present document can be downloaded from:
<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at
<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:
<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2016.
All rights reserved.

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

Intellectual Property Rights

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

Intellectual Property Rights	2
Foreword.....	2
Modal verbs terminology.....	2
Foreword.....	4
1 Scope	5
2 References	5
3 Definitions and Abbreviations.....	5
3.1 Definitions	5
3.2 Abbreviations	6
3A General	6
3A.1 Operating bands and CA	6
3A.2 Other features	7
4 – 292Void	7
Annex A (informative) : Frequency arrangement for overlapping operating bands	8
Annex B (normative): Common Requirements.....	9
B.1 Purpose of annex	9
B.2 Common RRM requirements	9
B.2.1 Common RRM requirements for a band independent of release.....	9
B.2.2 Common RRM requirements for an intra-band contiguous CA configuration	10
B.2.3 Common RRM requirements for an intra-band non-contiguous CA configuration	10
B.2.4 Common RRM requirements for an inter-band CA configuration.....	11
B.3 Common UE performance requirements.....	11
B.3.1 Void.....	11
B.3.2 Common UE performance requirements and tests for different CA configurations and combination sets	11
B.3.3 Void.....	12
B.3.4 Void.....	12
B.4 Common UE RF requirements	12
B.4.1 Common UE RF requirements for a band independent of release	12
B.4.2 Common UE RF requirements for an intra-band contiguous CA configuration	13
B.4.3 Common UE RF requirements for an inter-band CA configuration.....	14
B.4.4 Common UE RF requirements for an inter-band CA configuration including an operating band without uplink band.....	15
B.4.5 Common UE RF requirements for an intra-band non-contiguous CA configuration	15
Annex C (informative): Change history	17
History	21

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 and inter-band/intra-band CA configurations that are independent of release. The present document also defines requirements for 4RX antenna port requirements that are 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 12): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".
- [3] 3GPP TS 36.133 (Release 12): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".
- [4] 3GPP TS 36.307 (Release 12): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements on User Equipments (UEs) Supporting a release-independent frequency band".
- [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 11): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".
- [7] 3GPP TS 36.306 (Release 11): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities".
- [8] 3GPP TS 36.101 (Release 10): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".
- [9] 3GPP TS 36.101 (Release 13): "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) Radio Transmission and Reception".
- [10] 3GPP TS 36.133 (Release 13): "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for Support of Radio Resource Management".
- [11] 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:

3A General

3A.1 Operating bands and CA

TSG-RAN has agreed that the standardisation of new features listed in Tables 3A.1-1, 3A.1-2, 3A-3 and, 3A.1-4 are independent of a release. UE conforming earlier release than when the feature was introduced into the specifications shall comply with RRM-, demodulation- and RF-requirements as specified in the Annex-B2, Annex-B3 and, Annex-B4 of TS 36.307 in the release that the feature was introduced. [The applicable UE Categories are specified in TS 36.306 according to the release to which the UE conforms.](#)

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

Feature	Duplex-mode	Release independent from
Operating bands, band number ≤ 64 , Power Class 3	FDD, TDD	8
Operating bands, band number > 64 , Power Class 3	FDD, TDD	9
Asymmetric operating bands, Power Class 3	FDD	10
Operating bands, band number ≤ 64 , Power Class 1	FDD	10

Table 3A.1-2: Intra-band contiguous CA

CA feature	DL/UL	CA BW Class	Duplex-mode	Release independent from
Intra-band contiguous CA	DL	B	FDD	10
		C	FDD, TDD	10
		D	TDD	10
			TDD	11
	E	TDD	11	
	UL	B	FDD	10
		C	FDD, TDD	10

Table 3A.1-3: Inter-band CA

CAfeature	DL/UL	number of bands	CA BW Classes	Duplex-mode	Release independent from
Inter-band CA	DL	2	A, B, C	FDD, TDD	10
			A, B, C, D	FDD, TDD	11
		3	A	FDD, TDD	10
			A, B, C	FDD, TDD	11
		4	A, C	FDD, TDD	11
	UL	2	A, C	FDD, TDD	11

Table 3A.1-4: Intra-band non-contiguous CA

CA type	DL/UL	number of sub-blocks	CA BW Classes	Duplex-mode	Release independent from
Intra-band non-contiguous CA	Downlink	2	A, C, D	FDD, TDD	11
	Uplink	2	A	FDD	11

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.

For another example on carrier aggregations, CA configuration CA_1A-19A is contained in the Release 11 specifications. In order to implement a UE conforming to Release 10 but supporting the CA configuration CA_1A-19A, it is necessary for the UE to additionally conform to some parts of the Release 11 specifications, such as the radio frequency and radio resource management requirements for the CA configuration CA_1A-19A.

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 [6].

3A.2 Other features

Features other than frequency bands and CA configurations can also be implemented independent of release, as listed in Tables 3A.2-1.

4 Rx compliant Rel-10 UE that supports 4 Rx reception and declares compliance to 4 Rx requirements *shall* comply with RF requirements, UE demodulation and CSI requirements as specified in the Annex-C.1 and Annex-C.2 of TS 36.307 in the release that the feature was introduced.

Table 3A.2-1: Other feature

Feature	Release independent from
4RX	10

4 – 292 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 [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 band independent of release

The requirements and test cases listed in Table B.2.1-1 are specified in [5].

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

Section / Clause	Description
4 ^{Note 1}	E-UTRAN RRC_IDLE state mobility
5	E-UTRAN RRC_CONNECTED state mobility
6 ^{Note 2}	RRC Connection Mobility Control
7 ^{Note 3}	Timing and signalling characteristics
8 ^{Note 4}	UE Measurements Procedures in RRC_CONNECTED State
9 ^{Note 5}	Measurements performance requirements for UE
A.4 ^{Note 1}	E-UTRAN RRC_IDLE state
A.5	E-UTRAN RRC_CONNECTED Mode Mobility
A.6 ^{Note 2}	RRC Connection Control
A.7 ^{Note 3}	Timing and Signalling Characteristics
A.8 ^{Note 4}	UE Measurements Procedures
A.9 ^{Note 5}	Measurement Performance Requirements
<p>NOTE 1: All requirements and the corresponding test cases shall apply, except:</p> <ul style="list-style-type: none"> - for supporting the corresponding band in Rel-9 and below: clause 4.3 (Minimization of Drive Tests). <p>NOTE 2: All requirements and the corresponding test cases shall apply, except:</p> <ul style="list-style-type: none"> - 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>NOTE 3: All requirements and corresponding test cases shall apply, except those defined in sections 7.4 and 7.5.</p> <p>NOTE 4: All requirements and corresponding test cases shall apply, except:</p> <ul style="list-style-type: none"> - 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>NOTE 5: All requirements and corresponding test cases shall apply, except:</p> <ul style="list-style-type: none"> - 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>NOTE 6: All requirements and test cases in this table shall apply, except those defined for: carrier aggregation; measurements under time-domain measurement resource restriction with or without CRS assistance information, in addition to the exceptions listed above.</p>	

B.2.2 Common RRM requirements for an intra-band contiguous CA configuration

The requirements and test cases listed in Table B.2.2-1 are specified in [5].

Table B.2.2-1: Common RRM requirements for a single-band CA configuration independent of release

Section / Clause	Description
7.1	UE transmit timing
7.7	SCell Activation and Deactivation Delay for E-UTRA Carrier Aggregation
7.8	Interruptions with Carrier Aggregation
8.2	Capabilities for Support of Event Triggering and Reporting Criteria
8.3	Measurements for E-UTRA carrier aggregation
8.4	OTDOA RSTD Measurements for E-UTRAN carrier aggregation
9.1.11	Carrier aggregation measurement accuracy
9.1.12	Reference Signal Time Difference (RSTD) Measurement Accuracy Requirements for Carrier Aggregation
A.7	Timing and Signalling Characteristics
A.8	UE Measurements Procedures
A.9	Measurement Performance Requirements
NOTE: Only requirements and test cases defined for intra-band contiguous carrier aggregation shall apply.	

B.2.3 Common RRM requirements for an intra-band non-contiguous CA configuration

The requirements and test cases listed in Table B.2.3-1 are specified in [5].

Table B.2.3-1: Common RRM requirements for a single-band CA configuration independent of release

Section / Clause	Description
7.1	UE transmit timing
7.7	SCell Activation and Deactivation Delay for E-UTRA Carrier Aggregation
7.8	Interruptions with Carrier Aggregation
8.2	Capabilities for Support of Event Triggering and Reporting Criteria
8.3	Measurements for E-UTRA carrier aggregation
8.4	OTDOA RSTD Measurements for E-UTRAN carrier aggregation
9.1.11	Carrier aggregation measurement accuracy
9.1.12	Reference Signal Time Difference (RSTD) Measurement Accuracy Requirements for Carrier Aggregation
A.7	Timing and Signalling Characteristics
A.8	UE Measurements Procedures
A.9	Measurement Performance Requirements
NOTE: Only requirements and test cases defined for intra-band non-contiguous carrier aggregation shall apply.	

Editor's note: references to this section are to be revisited when intra-band non-contiguous CA requirements are finalized in TS 36.101.

B.2.4 Common RRM requirements for an inter-band CA configuration

The requirements and test cases listed in Table B.2.4-1 are specified in [5].

Table B.2.4-1: Common RRM requirements for a band-combination CA configuration

Section / Clause	Description
7.1	UE transmit timing
7.7	SCell Activation and Deactivation Delay for E-UTRA Carrier Aggregation
7.8	Interruptions with Carrier Aggregation
8.2	Capabilities for Support of Event Triggering and Reporting Criteria
8.3	Measurements for E-UTRA carrier aggregation
8.4	OTDOA RSTD Measurements for E-UTRAN carrier aggregation
9.1.11	Carrier aggregation measurement accuracy
9.1.12	Reference Signal Time Difference (RSTD) Measurement Accuracy Requirements for Carrier Aggregation
A.7	Timing and Signalling Characteristics
A.8	UE Measurements Procedures
A.9	Measurement Performance Requirements
NOTE: Only requirements and test cases defined for inter-band carrier aggregation shall apply.	

B.3 Common UE performance requirements

B.3.1 Void

Table B.3.1-1: Void

B.3.2 Common UE performance requirements and tests for different CA configurations and combination sets

The requirements and test cases listed in Table B.3.2-1 are specified in [6].

Table B.3.2-1: Common UE performance requirements and tests for different CA configurations and combination sets

Section / Clause	Description
8.2.1.1.1	Single-antenna port performance (FDD)
8.2.2.1.1	Single-antenna port performance (TDD)
8.2.1.3.1	Open-loop spatial multiplexing performance - Minimum Requirement 2 Tx Antenna Port (FDD)
8.2.2.3.1	Open-loop spatial multiplexing performance - Minimum Requirement 2 Tx Antenna Port (TDD)
8.2.1.3.1A	Open-loop spatial multiplexing performance - Soft buffer management test (FDD)
8.2.2.3.1A	Open-loop spatial multiplexing performance - Soft buffer management test (TDD)
8.2.1.4.3	Closed-loop spatial multiplexing performance - Minimum Requirement Multi-Layer Spatial Multiplexing 4 Tx Antenna Port (FDD)
8.2.2.4.3	Closed-loop spatial multiplexing performance - Minimum Requirement Multi-Layer Spatial Multiplexing 4 Tx Antenna Port (TDD)
8.2.1.7	Carrier aggregation with power imbalance (FDD)
8.2.2.7	Carrier aggregation with power imbalance (TDD)
8.2.1.8	Intra-band non-contiguous carrier aggregation with timing offset (FDD)
8.7.1	Sustained downlink data rate provided by lower layers (FDD)
8.7.2	Sustained downlink data rate provided by lower layers (TDD)
9.6.1.1	Additional requirements for carrier aggregation - Periodic reporting on multiple cells (Cell Specific Reference symbols) (FDD)
9.6.1.2	Additional requirements for carrier aggregation - Periodic reporting on multiple cells (Cell Specific Reference symbols) (TDD)
Note 1:	The applicability of requirements for different CA configurations and bandwidth combination sets is specified in Section 8.1.2.3 and 9.1.1.2 in [6].
Note 2:	The test coverage for different number of component carriers is defined in 8.1.2.4 in [2].

B.3.3 Void

Table B.3.3-1: Void

B.3.4 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 [6].

Table B.4.1-1: Common UE RF requirements for a band independent of releaseSection / 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 (NOTE)	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
NOTE: Requirements in section 6.5.2.2.1 and 6.5.2.3.1 as specified in [8] apply	

B.4.2 Common UE RF requirements for an intra-band contiguous CA configuration

The requirements and test cases listed in Table B.4.2-1 are specified in [6].

Table B.4.2-1: Common UE RF requirements for an intra-band contiguous CA configuration independent of release

Section / Clause	Description
5.5A	Operating bands for CA
5.6A	Channel bandwidths per operating band for CA
5.7.1A	Channel spacing for CA
5.7.2A	Channel raster for CA
5.7.4A	TX–RX frequency separation for CA
6.2.2A	UE maximum output power for CA
6.2.3A	UE maximum output power for modulation/channel bandwidth for CA
6.2.4A	UE maximum output power with additional requirements for CA
6.2.5A	Configured transmitted power for CA
6.3.2A	UE Minimum output power for CA
6.3.3A	UE Transmit OFF power for CA
6.3.4A	ON/OFF time mask for CA
6.3.5A	Power control for CA
6.5.1A	Frequency error for CA
6.5.2A	Transmit modulation quality for CA
6.6.1A	Occupied bandwidth for CA
6.6.2.1A	Spectrum emission mask for CA
6.6.2.2A	Additional Spectrum Emission mask for CA
6.6.2.3.2A	UTRA ACLR for CA
6.6.2.3.3A	E-UTRA ACLR for CA
6.6.3.1A	Minimum requirements for CA
6.6.3.2A	Spurious emission band UE co-existence for CA
6.6.3.3A	Additional spurious emissions for CA
6.7.1A	Minimum requirement for CA
7.3.1A	Reference sensitivity for CA
7.4.1A	Maximum input level for CA
7.5.1A	Adjacent Channel Selectivity (ACS) for CA
7.6.1.1A	In-band blocking for CA
7.6.2.1A	Out-of-band blocking for CA
7.6.3.1A	Narrow band blocking for CA
7.7.1A	Spurious response for CA
7.8.1A	Wideband intermodulation for CA
7.10.1A	Receiver response for CA

B.4.3 Common UE RF requirements for an inter-band CA configuration

The requirements and test cases listed in Table B.4.3-1 are specified in [6].

Table B.4.3-1: Common UE RF requirements for an inter-band CA configuration independent of release

Section / Clause	Description
5.5A	Operating bands for CA
5.6A.1	Channel bandwidths per operating band for CA
5.7.2A	Channel raster for CA
6.2.2A	UE maximum output power for CA
6.2.3A	UE maximum output power for modulation/channel bandwidth for CA
6.2.5	Configured transmitted power
7.3.1A	Reference sensitivity for CA
7.4.1A	Maximum input level for CA
7.5.1A	Adjacent Channel Selectivity (ACS) for CA
7.6.1.1A	In-band blocking for CA
7.6.2.1A	Out-of-band blocking for CA
7.6.3.1A	Narrow band blocking for CA
7.7.1A	Spurious response for CA
7.8.1A	Wideband intermodulation for CA

B.4.4 Common UE RF requirements for an inter-band CA configuration including an operating band without uplink band

The requirements and test cases listed in Table B.4.4-1 are specified in [6].

Table B.4.4-1: Common UE RF requirements for an inter-band CA configuration including an operating band without uplink band independent of release

Section / Clause	Description
5.5	Operating bands
5.5A	Operating bands for CA
5.6A.1	Channel bandwidths per operating band for CA
5.7	Channel arrangement
6.2.2A	UE maximum output power for CA
6.2.3A	UE maximum output power for modulation/channel bandwidth for CA
6.2.5	Configured transmitted power
7.3.1A	Reference sensitivity for CA
7.4.1A	Maximum input level for CA
7.5.1A	Adjacent Channel Selectivity (ACS) for CA
7.6.1.1A	In-band blocking for CA
7.6.2.1A	Out-of-band blocking for CA
7.6.3.1A	Narrow band blocking for CA
7.7.1A	Spurious response for CA
7.8.1A	Wideband intermodulation for CA

B.4.5 Common UE RF requirements for an intra-band non-contiguous CA configuration

The requirements and test cases listed in Table B.4.5-1 are specified in [6].

Table B.4.5-1: Common UE RF requirements for an intra-band non-contiguous CA configuration independent of release

Section / Clause	Description
5.5A	Operating bands for CA
5.6A1	Channel bandwidths per operating band for CA
5.7.2A	Channel raster for CA
6.2.2A	UE maximum output power for CA
6.2.3A	UE maximum output power for modulation/channel bandwidth for CA
7.3.1A	Reference sensitivity for CA
7.4.1A	Maximum input level for CA
7.5.1A	Adjacent Channel Selectivity (ACS) for CA
7.6.1.1A	In-band blocking for CA
7.6.2.1A	Out-of-band blocking for CA
7.6.3.1A	Narrow band blocking for CA
7.7.1A	Spurious response for CA
7.8.1A	Wideband intermodulation for CA

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
12-2010	RP-50	RP-101344	016			CR creating the rel-10 of the 36.307 specification	9.3.0
12-2010	RP-50	RP-101356	012			Band 42 and 43 parameters for UMTS/LTE 3500 (TDD) for TS 36.307	9.3.0
12-2010	RP-50					Raised to Rel-10 with no technical change	10.0.0
01-2011						Correction to history table	10.0.1
06-2011	RP-52	RP-110804	015			Add Expanded 1900 MHz Band (Band 25) in 36.307	10.1.0
06-2011	RP-52	RP-110812	022			Add 2GHz S-Band (Band 23) in 36.307 (Rel 10)	10.1.0
09-2011	RP-53	RP-111255	025			Add Band 22 for LTE/UMTS 3500 (FDD) to TS 36.307	10.2.0
03-2012	RP-55	RP-120305	029			Introduction of Band 26/XXVI to TS 36.307	11.0.0
2012-06	RP-56	RP-120789	043			Introduction of CA_1A-19A to TS 36.307	11.1.0
2012-06	RP-56	RP-120793	049			Introduction of APAC700(FDD) into TS 36.307 Rel-11	11.1.0
2012-06	RP-56	RP-120793	053			Introduction of APAC700(TDD) into TS 36.307 Rel-11	11.1.0
2012-06	RP-56	RP-120791	057			Introduction of e850_LB (Band 27) to TS 36.307	11.1.0
2012-09	RP-57	RP-121335	059			Introduction of CA_1A-21A to TS 36.307	11.2.0
2012-09	RP-57	RP-121295	070r1			Relation between EARFCN for overlapping bands with multiple FBI indication	11.2.0
2012-09	RP-57	RP-121338	072			36.307 CR for LTE_CA_B7	11.2.0
2012-09	RP-57	RP-121337	073			TS 36.307 CR for CA_38	11.2.0
2012-09	RP-57	RP-121327	074			Introduction of CA_B7_B20 in 36.307	11.2.0
2012-09	RP-57	RP-121329	075			Introduction of CA band combination Band3 + Band5 to TS 36.307	11.2.0
2012-09	RP-57	RP-121331	076			Introduction of CA_3A-20A to TS 36.307	11.2.0
2012-09	RP-57	RP-121334	077			Add requirements for inter-band CA of B_1-18 in TS36.307	11.2.0
2012-09	RP-57	RP-121333	078			Introduction of CA_8_20 RF requirements into TS36.307	11.2.0
2012-09	RP-57	RP-121324	079			Introduction of CA_B3_B7 in 36.307	11.2.0
2012-12	RP-58	RP-121890	086			Introduction of CA_4A-5A into 36.307	11.3.0
2012-12	RP-58	RP-121889	088			Introduction of CA band combination Band4 + Band13 to TS 36.307 (Rel-11)	11.3.0
2012-12	RP-58	RP-121896	091			Introduction of Band 5 + Band 17 inter-band CA configuration into 36.307	11.3.0
2012-12	RP-58	RP-121884	092			Introduction of CA_3A-8A to TS 36.307	11.3.0
2012-12	RP-58	RP-121894	093			Introduction of CA_B5_B12 in 36.307	11.3.0
2012-12	RP-58	RP-121887	095			Introduction of CA_4-12 into TS 36.307 (Rel-11)	11.3.0
2012-12	RP-58	RP-121882	097			[Rel-11] Introduction of inter-band CA_11-18 into TS36.307	11.3.0
2012-12	RP-58	RP-121861	099			Release-independent implementation of carrier aggregation configuration CA_4-7	11.3.0
2012-12	RP-58	RP-121901	101			Introduction of Band 29	11.3.0
2012-12	RP-58	RP-121718	0102			Introduction of CA band combination Band2 + Band17 to TS 36.307 (Rel-11)	11.3.0
2012-12	RP-58	RP-121720	0104			Introduction of CA band combination Band4 + Band17 to TS 36.307 (Rel-11)	11.3.0

2013-06	RP-60	RP-130771	107r1			Introduction of CA 1+8 into TS36.307(Rel-11)	11.4.0
2013-06	RP-60	RP-130782	110r1			Introduction of LTE Advanced inter-band Carrier Aggregation of Band 3 and Band 28 to TS 36.307 Rel-11	11.4.0
2013-06	RP-60	RP-130785	113			Introduction of LTE Advanced inter-band Carrier Aggregation of Band 23 and Band 29 to TS 36.307 (Rel-11)	11.4.0
2013-06	RP-60	RP-130779	116			Introduction of LTE Advanced inter-band Carrier Aggregation of Band 3 and Band 26 to TS 36.307 (Rel-11)	11.4.0
2013-06	RP-60	RP-130777	119			Introduction of CA_3A-19A to TS 36.307	11.4.0
2013-06	RP-60	RP-130783	122			Introduction of CA_19A-21A to TS 36.307	11.4.0
2013-06	RP-60	RP-130787	128			Introduction of CA_4A-4A into 36.307 Rel-11	11.4.0
2013-06	RP-60	RP-130775	130			Introduction of CA_2A-13A to TS 36.307	11.4.0
2013-06	RP-60	RP-130791	135r1			Introduction of Band 30	11.4.0
2013-06	RP-60	RP-130790	142			Introduction of LTE 450 into TS 36.307 R11	11.4.0
09-2013	RP-61	RP-131300	152			36.307 CR for LTE_CA_C_B3 (Rel-11)	11.5.0
09-2013	RP-61	RP-131303	155			Band 31 release independence for UE demodulation performance	11.5.0
09-2013	RP-61	RP-131285	158			[Rel-11] Modify requirements for CA_1A-18A in TS36.307	11.5.0
09-2013	RP-61	RP-131296	159			[Rel-11] Add requirements for CA_1A-26A into TS36.307	11.5.0
09-2013	RP-61	RP-131297	162			Introduction of CA_2A-4A to TS 36.307	11.5.0
09-2013	RP-61	RP-131298	166			Introduction of inter-band CA Band 2+5	11.5.0
12-2013	RP-62	RP-131965	174			Introduction of CA_23A-23A to TS 36.307	11.6.0
12-2013	RP-62	RP-131946	177r1			Introduction of CA band combination Band2 + Band12 to TS 36.307	11.6.0
12-2013	RP-62	RP-131954	180r1			Introduction of CA band combination Band12 + Band25 to TS 36.307	11.6.0
12-2013	RP-62	RP-131959	183			Introduction of LTE_CA_C_B27 to 36.307 (Rel-11)	11.6.0
12-2013	RP-62	RP-131939	189r1			Correction to release independent specification	11.6.0
12-2013	RP-62	RP-131957	191			Introduction of CA_23B to TS 36.307	11.6.0
12-2013	RP-62	RP-131961	193			Introduction of Intra-band non-contiguous CA in band 3 to TS 36.307	11.6.0
12-2013	RP-62	RP-131950	199			Introduction of CA band combination Band5 + Band25 to TS 36.307	11.6.0
12-2013	RP-62	RP-131948	203r1			Introduction of CA band combination B5 + B7 to TS 36.307	11.6.0
12-2013	RP-62	RP-131952	206			Introduction of CA band combination B7 + B28 to TS 36.307	11.6.0
12-2013	RP-62	RP-131925	215			UE performance requirements in release independent specification for CA	11.6.0
12-2013	RP-62	RP-131963	218			Introduction of CA_7A-7A to TS 36.307 Rel-11	11.6.0
12-2013	RP-62	RP-131924	223			Introducing 'General' clause with note referring to note in clause 4.4 in TS36.101, editorial corrections and modifications to Forward and Scope clauses	11.6.0
03-2014	RP-63	RP-140375	231r1			CR on UE performance requirements in release independent specification	11.7.0
03-2014	RP-63	RP-140371	234			Release independence of Band 14 HPUE	11.7.0
03-2014	RP-63	RP-140375	244r1			Correction to release independent specification	11.7.0
03-2014	RP-63	RP-140386	226r2			Introduction of CA band combination Band 3 and Band 27 to TS 36.307	11.7.0
03-2014	RP-63	RP-140188	247			Addition of bandwidth combination set for CA_2A-29A and CA_4A-29A	11.7.0
03-2014	RP-63	RP-140387	196r1			Introduction of CA_39A-41A to TS 36.307	11.7.0
03-2014	RP-63	RP-140388	209r2			Introduction of CA_39C to TS 36.307	11.7.0
06-2014	RP-64	RP-140911	258			Introduction of CA band combination Band 1 and Band 5 to TS 36.307	11.8.0
06-2014	RP-64	RP-140918	299			Correction of Common RRM requirements for CA in release independent specification (Rel-11)	11.8.0
06-2014	RP-64	RP-140926	279			Introduction of Band 20+32 CA	11.8.0
06-2014	RP-64	RP-140931	264			Introduction of CA 1+11 to 36.307 (Rel-11)	11.8.0
06-2014	RP-64	RP-140933	274			Introduction of CA band combination Band 4 and Band 27 to TS 36.307	11.8.0
06-2014	RP-64	RP-140935	277			Addition of bandwidth combination sets for CA_3A-5A, CA_4A-5A, and CA_4A-12A into 36.307	11.8.0

06-2014	RP-64	RP-140938	290		Introduction of CA_2A-2A to TS 36.307 Rel-11	11.8.0
06-2014	RP-64	RP-140940	318		Introduction of LTE_CA_NC_B42 into 36.307	11.8.0
06-2014	RP-64	RP-140942	339		Introduction of CA band combination Band 1 and Band 20 to TS 36.307	11.8.0
06-2014	RP-64	RP-140942	252		Introduction of CA band combination Band 1 and Band 20 to TS 36.307	11.8.0
06-2014	RP-64	RP-140943	346		Introduction of CA band combination CA_41D into TS 36.307 (Rel-11)	11.8.0
06-2014	RP-64	RP-140946	342		Introduction of CA_42C to TS 36.307	11.8.0
06-2014	RP-64	RP-140947	302		Introduction of Band 40D in release independent specification (Rel-11)	11.8.0
06-2014	RP-64	RP-140953	0308		Introduction of a new CA_7C bandwidth combination set into 36.307 (Rel-11)	11.8.0
09-2014	RP-65	RP-141111	0389r1		[Rel-11] Introduction of inter-band CA_18-28 into TS36.307	11.9.0
09-2014	RP-65	RP-141199	0365r1		Introduction of CA_B1_B3_B19 into TS 36.307 (Rel-11)	11.9.0
09-2014	RP-65	RP-141204	0362r1		Introduction of CA_B1_B3 into TS 36.307 (Rel-11)	11.9.0
09-2014	RP-65	RP-141330	0428r1		Introduction of CA_1A-7A into 36.307 (Rel-11)	11.9.0
09-2014	RP-65	RP-141339	0375r2		Introduction of CA_B1_B5_B7 into TS 36.307 (Rel-11)	11.9.0
09-2014	RP-65	RP-141466	0431		Introduction of 3 DL CA for Band 1+7+20	11.9.0
09-2014	RP-65	RP-141527	414r1		CR for 36.307 on CA UE performance requirement in Rel-11	11.9.0
09-2014	RP-65	RP-141538	342r2		Introduction of CA_42C to TS 36.307	11.9.0
09-2014	RP-65	RP-141540	302r2		Introduction of Band 40D in release independent specification (Rel-11)	11.9.0
09-2014	RP-65	RP-141541	412		CR on UE performance requirement for Band 31 for 36.307 Rel-11	11.9.0
09-2014	RP-65	RP-141551	359		Introduction of CA 8+11 to 36.307 (Rel-11)	11.9.0
09-2014	RP-65	RP-141552	378		Introduction of CA_41A-42A to TS 36.307	11.9.0
09-2014	RP-65	RP-141553	380		Introduction of a new bandwidth combination set for CA_25A-25A into 36.307	11.9.0
09-2014	RP-65	RP-141554	417r1		Introduction of requirements for 3DL inter-band carrier aggregation (FDD) and 2DL fallback	11.9.0
09-2014	RP-65	RP-141554	420r1		Introduction of requirements for 3DL inter-band carrier aggregation including Band 30 and 2DL fallback	11.9.0
09-2014	RP-65	RP-141555	383r1		Introduction of 3 Band Carrier Aggregation of Band 1, Band 3 and Band 5 to TS 36.307(Rel.11)	11.9.0
09-2014	RP-65	RP-141556	356r1		Introduction of 3 Band Carrier Aggregation (3DL/1UL) of Band 1, Band 3 and Band 8 to TS 36.307	11.9.0
09-2014	RP-65	RP-141558	401		Introduction of CA band combination Band 1, Band 3 and Band 20 to TS 36.307	11.9.0
09-2014	RP-65	RP-141560	351		Introduction of new CA_40C bandwidth combination set into 36.307	11.9.0
09-2014	RP-65	RP-141561	353r2		CR to 36.307 Rel-11: Introduction of CA_41C-41A and CA_41A-41C and New BW Combination Set for CA_41C	11.9.0
12-2014	RP-66	RP-142142	439r1		UE RF requirements in the release independent spec	11.10.0
12-2014	RP-66	RP-142184	442		Introduction of CA band combinations for dual uplink to TS 36.307 Rel-11	11.10.0
12-2014	RP-66	RP-142182	447		[Rel-11] Introduction of inter-band CA_1-28 into TS36.307	11.10.0
12-2014	RP-66	RP-142189	454		CR for TR 36.307: LTE_CA_B5_B13	11.10.0
12-2014	RP-66	RP-142190	457r2		Introduction of additional band combinations for 3DL inter-band CA	11.10.0
03-2015	RP-67	RP-150387	462		R4-73AH-0112: Correction of UE RF requirements for dual uplink to TS 36.307 Rel-11	11.11.0
03-2015	RP-67	RP-150392	467		CR for 36.307 on CA UE performance requirement in Rel-11	11.11.0
03-2015	RP-67	RP-150388	476r1		Release independent requirements for CA_42C	11.11.0
06-2015	RP-68	RP-151025	0472r3		Introduction of CA_42D to TS 36.307(Rel-11)	11.12.0
06-2015	RP-68	RP-150958	459r1		Introduction of dual uplink CA into 36.307	11.12.0
06-2015	RP-68	RP-150955	481r1		Clean up of requirements of band release independent	11.12.0
06-2015	RP-68	RP-150958	486		CR for CA UE performance tests in 36.307 in Rel-11	11.12.0
06-2015	RP-68	RP-150968	497r2		Release independence CR for 2DL inter-band CA Rel-11	11.12.0
06-2015	RP-68	RP-150972	501r1		Release independence CR for 3DL inter-band CA Rel-11	11.12.0
06-2015	RP-68	RP-150974	504r1		Release independence CR for 4DL inter-band CA Rel-11	11.12.0
06-2015	RP-68	RP-150975	507		Introduction of non-contiguous Carrier Aggregation (CA) in Band 42 for 3DL	11.12.0
09-2015	RP-69	RP-151505	515		Additional bandwidth combination set for LTE Advanced intra-band non-contiguous Carrier Aggregation in Band 4	11.13.0
09-2015	RP-69	RP-151501	518		Introduction of finished 4DL inter-band CAs to TS 36.307	11.13.0
09-2015	RP-69	RP-151476	521r1		Correction of TS 36.307 for release independent	11.13.0
09-2015	RP-69	RP-151498	532		Rel-13 2DL combinations	11.13.0
09-2015	RP-69	RP-151499	536		Rel-13 3DL combinations	11.13.0

09-2015	RP-69	RP-151504	540			Introduction of 3DL/2UL inter-band CA combinations without self-interference issues	11.13.0
12-2015	RP-70	RP-152158	0545aR1			Release independent requirements for CA_42E (Rel-11)	11.14.0
12-2015	RP-70	RP-152160	0547a			Introduction of 4DL NC CA in band42 in 36.307	11.14.0
12-2015	RP-70	RP-152157	0559			Introducing B20 + B67 CA into TS 36.307	11.14.0
12-2015	RP-70	RP-152168	0564			Introduction of intra-band CA_8B to TS 36.307	11.14.0
12-2015	RP-70	RP-152133	0566			[Rel-11] Introduction of dual uplink CA into 36.307	11.14.0
12-2015	RP-70	RP-152164	0567			Introduction of 3DL/2UL inter-band CA combinations with self-interference issues	11.14.0
12-2015	RP-70	RP-152171	0578			Introduction of Band 65	11.14.0
12-2015	RP-70	RP-152133	0591			[Rel-11] Introduction of dual uplink CA into 36.307	11.14.0
12-2015	RP-70	RP-152164	0593			Introduction of 3DL/2UL Inter-band CA for CA_39A-41C and CA_39C-41A	11.14.0
12-2015	RP-70	RP-152164	0599			Introduction of 3DL/2UL inter-band CA_3A-7A-28A in TS36.307 Rel-11	11.14.0
12-2015	RP-70	RP-152162	0602			Introduction of finished 4DL inter-band CAs to TS 36.307	11.14.0
12-2015	RP-70	RP-152170	0605			Introduction of CA_7A-7A BCS1 to TS 36.307	11.14.0
12-2015	RP-70	RP-152173	0610			Introduction of 1447-1467MHz Band into 36.307	11.14.0
12-2015	RP-70	RP-152161	0618			Rel-13 3DL combinations	11.14.0
12-2015	RP-70	RP-152172	0626			Introduction of Band 66	11.14.0
12-2015	RP-70	RP-152165	0629			Introduction of 2 UL and 3 DL mixed inter/intra cases without MSD into 36.307 Rel-11	11.14.0
12-2015	RP-70	RP-152159	0630			Introduction of intra-band non-contiguous CA in Band 41 for 4DL	11.14.0
12-2015	RP-70	RP-152167	0636			Introduction of intra-band CA_5B to TS 36.307	11.14.0
12-2015	RP-70	RP-152169	0638			Introduction of intra-band non-contiguous CA in Band 5	11.14.0
03/2016	RP-71	RP-160480	0653		B	Rel-13 3DL combinations	11.15.0
03/2016	RP-71	RP-160481	0640		B	Introduction of completed R13 4DL inter-band CA's to TS 36.307	11.15.0
03/2016	RP-71	RP-160482	0649		B	Introduction of 5DL/1UL CA combinations into TS 36.307 (Rel-11)	11.15.0
03/2016	RP-71	RP-160483	0645		B	Introduction of Band 68	11.15.0
2016/06	RP-72	RP-161140	680	1	F	CR TS 36.307 REL-11	11.16.0

History

Document history		
V11.2.0	November 2012	Publication
V11.3.0	February 2013	Publication
V11.4.0	July 2013	Publication
V11.5.0	October 2013	Publication
V11.6.0	January 2014	Publication
V11.7.0	April 2014	Publication
V11.8.0	July 2014	Publication
V11.9.0	October 2014	Publication
V11.10.0	February 2015	Publication
V11.11.0	April 2015	Publication
V11.12.0	July 2015	Publication
V11.13.0	October 2015	Publication
V11.14.0	January 2016	Publication
V11.15.0	April 2016	Publication
V11.16.0	August 2016	Publication