



**IMT cellular networks;
Harmonised EN covering the essential requirements
of article 3.2 of the R&TTE Directive;
Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA)
User Equipment (UE)**

PREVIEW
https://standards.iteh.ai/catalog/standards/etsi/301-908-13/2015-12-4a0b-ba65-6bb9-dacca6457e1-e1e1-9781-3-01-11-2015-12

Reference

REN/MSG-TFES-011-13

Keywords

3G, 3GPP, cellular, digital, E-UTRA, IMT, LTE, LTE-Advanced, mobile, radio, regulation, UMTS

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

<http://portal.etsi.org/tb/status/status.asp>

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 2015.

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.

Contents

Intellectual Property Rights	8
Foreword.....	8
Modal verbs terminology.....	8
Introduction	8
1 Scope	9
2 References	11
2.1 Normative references	11
2.2 Informative references.....	12
3 Definitions, symbols and abbreviations	13
3.1 Definitions.....	13
3.2 Symbols.....	15
3.3 Abbreviations	17
4 Technical requirements specifications	18
4.1 Environmental profile.....	18
4.2 Conformance requirements	18
4.2.1 Introduction.....	18
4.2.2 Transmitter Maximum Output Power	19
4.2.2.1 Transmitter maximum output power for Single Carrier	19
4.2.2.1.1 Definition.....	19
4.2.2.1.2 Limits	19
4.2.2.1.3 Conformance	19
4.2.2.2 Transmitter output power for intra-band contiguous Carrier Aggregation (DL CA and UL CA).....	19
4.2.2.2.1 Definition.....	19
4.2.2.2.2 Limits	20
4.2.2.2.3 Conformance	20
4.2.2.3 Transmitter output power for UL-MIMO	20
4.2.2.3.1 Definition.....	20
4.2.2.3.2 Limits	21
4.2.2.3.3 Conformance	21
4.2.3 Transmitter Spectrum Emission Mask.....	21
4.2.3.1 Transmitter spectrum emission mask for Single Carrier.....	21
4.2.3.1.1 Definition.....	21
4.2.3.1.2 Limits	21
4.2.3.1.3 Conformance	23
4.2.3.2 Transmitter spectrum emission mask for intra-band contiguous Carrier Aggregation (DL CA and UL CA)	23
4.2.3.2.1 Definition.....	23
4.2.3.2.2 Limits	23
4.2.3.2.3 Conformance	24
4.2.3.3 Transmitter spectrum emission mask for UL-MIMO	24
4.2.3.3.1 Definition.....	24
4.2.3.3.2 Limits	24
4.2.3.3.3 Conformance	24
4.2.3.4 Transmitter spectrum emission mask for Multi-Cluster PUSCH within a component carrier	24
4.2.3.4.1 Definition.....	24
4.2.3.4.2 Limits	24
4.2.3.4.3 Conformance	25
4.2.4 Transmitter Spurious Emissions	25
4.2.4.1 Transmitter spurious emissions for Single Carrier	25
4.2.4.1.1 Definition.....	25
4.2.4.1.2 Limits	25
4.2.4.1.3 Conformance	28
4.2.4.2 Transmitter spurious emissions for intra-band contiguous Carrier Aggregation (DL CA and UL CA).....	28

4.2.4.2.1	Definition.....	28
4.2.4.2.2	Limits	28
4.2.4.2.3	Conformance	30
4.2.4.3	Transmitter spurious emissions for UL-MIMO	30
4.2.4.3.1	Definition.....	30
4.2.4.3.2	Limits	31
4.2.4.3.3	Conformance	31
4.2.4.4	Transmitter spurious emissions for Multi-Cluster PUSCH within a component carrier.....	31
4.2.4.4.1	Definition.....	31
4.2.4.4.2	Limits	31
4.2.4.4.3	Conformance	31
4.2.5	Transmitter Minimum Output Power.....	31
4.2.5.1	Transmitter minimum output power for Single Carrier.....	31
4.2.5.1.1	Definition.....	31
4.2.5.1.2	Limits	31
4.2.5.1.3	Conformance	31
4.2.5.2	Transmitter minimum output power for intra-band contiguous Carrier Aggregation (DL CA and UL CA)	32
4.2.5.2.1	Definition.....	32
4.2.5.2.2	Limits	32
4.2.5.2.3	Conformance	32
4.2.5.3	Transmitter minimum output power for UL-MIMO	32
4.2.5.3.1	Definition.....	32
4.2.5.3.2	Limits	32
4.2.5.3.3	Conformance	32
4.2.6	Receiver Adjacent Channel Selectivity (ACS).....	33
4.2.6.1	Receiver Adjacent Channel Selectivity (ACS) for Single Carrier	33
4.2.6.1.1	Definition.....	33
4.2.6.1.2	Limits	33
4.2.6.1.3	Conformance	33
4.2.6.2	Receiver Adjacent Channel Selectivity (ACS) for Carrier Aggregation in DL-only bands.....	34
4.2.6.2.1	Definition.....	34
4.2.6.2.2	Limits	34
4.2.6.2.3	Conformance	34
4.2.7	Receiver Blocking Characteristics.....	34
4.2.7.1	Receiver Blocking Characteristics for Single Carrier	34
4.2.7.1.1	Definition.....	34
4.2.7.1.2	Limits	34
4.2.7.1.3	Conformance	36
4.2.7.2	Receiver Blocking Characteristics for Carrier Aggregation in DL-only bands.....	36
4.2.7.2.1	Definition.....	36
4.2.7.2.2	Limits	36
4.2.7.2.3	Conformance	37
4.2.8	Receiver Spurious Response.....	37
4.2.8.1	Receiver Spurious Response for Single Carrier	37
4.2.8.1.1	Definition.....	37
4.2.8.1.2	Limits	37
4.2.8.1.3	Conformance	38
4.2.8.2	Receiver Spurious Response for Carrier Aggregation in DL-only bands	38
4.2.8.2.1	Definition.....	38
4.2.8.2.2	Limits	38
4.2.8.2.3	Conformance	38
4.2.9	Receiver Intermodulation Characteristics.....	38
4.2.9.1	Receiver Intermodulation Characteristics for Single Carrier	38
4.2.9.1.1	Definition.....	38
4.2.9.1.2	Limits	38
4.2.9.1.3	Conformance	39
4.2.9.2	Receiver Intermodulation Characteristics for Carrier Aggregation in DL-only bands.....	39
4.2.9.2.1	Definition.....	39
4.2.9.2.2	Limits	39
4.2.9.2.3	Conformance	39
4.2.10	Receiver Spurious Emissions.....	39

4.2.10.1	Receiver Spurious Emissions for Single Carrier	39
4.2.10.1.1	Definition.....	39
4.2.10.1.2	Limits	39
4.2.10.1.3	Conformance	40
4.2.10.2	Receiver Spurious Emissions in DL-only bands	40
4.2.10.2.1	Definition.....	40
4.2.10.2.2	Limits	40
4.2.10.2.3	Conformance	40
4.2.11	Transmitter Adjacent Channel Leakage Power Ratio	40
4.2.11.1	Transmitter adjacent channel leakage power ratio for Single Carrier	40
4.2.11.1.1	Definition.....	40
4.2.11.1.2	Limits	40
4.2.11.1.3	Conformance	41
4.2.11.2	Transmitter adjacent channel leakage power ratio for intra-band contiguous Carrier Aggregation (DL CA and UL CA).....	41
4.2.11.2.1	Definition.....	41
4.2.11.2.2	Limits	42
4.2.11.2.3	Conformance	42
4.2.11.3	Transmitter adjacent channel leakage power ratio for UL-MIMO	43
4.2.11.3.1	Definition.....	43
4.2.11.3.2	Limits	43
4.2.11.3.3	Conformance	44
4.2.11.4	Transmitter adjacent channel leakage power ratio for Multi-Cluster PUSCH within a component carrier	44
4.2.11.4.1	Definition.....	44
4.2.11.4.2	Limits	44
4.2.11.4.3	Conformance	44
5	Testing for compliance with technical requirements.....	45
5.1	Environmental conditions for testing	45
5.2	Interpretation of the measurement results	45
5.3	Essential radio test suites.....	46
5.3.1	Transmitter Maximum Output Power	46
5.3.1.1	Transmitter maximum output power for Single Carrier	46
5.3.1.1.1	Method of test.....	46
5.3.1.1.2	Test requirements	47
5.3.1.2	Transmitter maximum output power for intra-band contiguous Carrier Aggregation (DL CA and UL CA)	47
5.3.1.2.1	Method of test.....	47
5.3.1.2.2	Test requirements	48
5.3.1.3	Transmitter maximum output power for UL-MIMO	48
5.3.1.3.1	Method of test.....	48
5.3.1.3.2	Test requirements	48
5.3.2	Transmitter Spectrum Emission Mask.....	49
5.3.2.1	Transmitter spectrum emission mask for Single Carrier.....	49
5.3.2.1.1	Method of test.....	49
5.3.2.1.2	Test requirements	49
5.3.2.2	Transmitter spectrum emission mask for intra-band contiguous Carrier Aggregation (DL CA and UL CA)	49
5.3.2.2.1	Method of test.....	49
5.3.2.2.2	Test requirements	50
5.3.2.3	Transmitter spectrum emission mask for UL-MIMO	50
5.3.2.3.1	Method of test.....	50
5.3.2.3.2	Test requirements	51
5.3.2.4	Transmitter spectrum emission mask for Multi-Cluster PUSCH within a component carrier	51
5.3.2.4.1	Method of test.....	51
5.3.2.4.2	Test requirements	52
5.3.3	Transmitter Spurious Emissions	52
5.3.3.1	Transmitter spurious emissions for Single Carrier	52
5.3.3.1.1	Method of test.....	52
5.3.3.1.2	Test requirements	53

5.3.3.2	Transmitter spurious emissions for intra-band contiguous Carrier Aggregation (DL CA and UL CA).....	53
5.3.3.2.1	Method of test.....	53
5.3.3.2.2	Test requirements	54
5.3.3.3	Transmitter spurious emissions for UL-MIMO	54
5.3.3.3.1	Method of test.....	54
5.3.3.3.2	Test requirements	54
5.3.3.4	Transmitter spurious emissions for Multi-Cluster PUSCH within a component carrier.....	55
5.3.3.4.1	Method of test.....	55
5.3.3.4.2	Test requirements.....	55
5.3.4	Transmitter Minimum Output Power.....	55
5.3.4.1	Transmitter minimum output power for Single Carrier.....	55
5.3.4.1.1	Method of test.....	55
5.3.4.1.2	Test requirements	56
5.3.4.2	Transmitter minimum output power for intra-band contiguous Carrier Aggregation (DL CA and UL CA)	56
5.3.4.2.1	Method of test.....	56
5.3.4.2.2	Test requirements	57
5.3.4.3	Transmitter minimum output power for UL-MIMO	57
5.3.4.3.1	Method of test.....	57
5.3.4.3.2	Test requirements	58
5.3.5	Receiver Adjacent Channel Selectivity (ACS).....	58
5.3.5.1	Receiver Adjacent Channel Selectivity (ACS) for Single Carrier	58
5.3.5.1.1	Method of test.....	58
5.3.5.1.2	Test requirements	59
5.3.5.2	Receiver Adjacent Channel Selectivity (ACS) for Carrier Aggregation in DL-only bands	59
5.3.5.2.1	Method of test.....	59
5.3.5.2.2	Test requirements	60
5.3.6	Receiver Blocking Characteristics.....	60
5.3.6.1	Receiver Blocking Characteristics for Single Carrier	60
5.3.6.1.1	Method of test.....	60
5.3.6.1.2	Test requirements	62
5.3.6.2	Receiver Blocking Characteristics for Carrier Aggregation in DL-only bands.....	62
5.3.6.2.1	Method of test.....	62
5.3.6.2.2	Test requirements	64
5.3.7	Receiver Spurious Response.....	64
5.3.7.1	Receiver Spurious Response for Single Carrier	64
5.3.7.1.1	Method of test.....	64
5.3.7.1.2	Test requirements	65
5.3.7.2	Receiver Spurious Response for Carrier Aggregation in DL-only bands	65
5.3.7.2.1	Method of test.....	65
5.3.7.2.2	Test requirements	65
5.3.8	Receiver Intermodulation Characteristics.....	66
5.3.8.1	Receiver Intermodulation Characteristics for Single Carrier	66
5.3.8.1.1	Method of test.....	66
5.3.8.1.2	Test requirements	66
5.3.8.2	Receiver Intermodulation Characteristics for Carrier Aggregation in DL-only bands.....	67
5.3.8.2.1	Method of test.....	67
5.3.8.2.2	Test requirements	67
5.3.9	Receiver Spurious Emissions.....	68
5.3.9.1	Receiver Spurious Emissions for Single Carrier	68
5.3.9.1.1	Method of test.....	68
5.3.9.1.2	Test requirements	68
5.3.9.2	Receiver Spurious Emissions in DL-only bands.....	68
5.3.9.2.1	Method of test.....	68
5.3.9.2.2	Test requirements	69
5.3.10	Transmitter Adjacent Channel Leakage Power Ratio.....	69
5.3.10.1	Transmitter adjacent channel leakage power ratio for Single Carrier	69
5.3.10.1.1	Method of test.....	69
5.3.10.1.2	Test requirements	70
5.3.10.2	Transmitter adjacent channel leakage power ratio for intra-band contiguous Carrier Aggregation (DL CA and UL CA).....	70

5.3.10.2.1	Method of test.....	70
5.3.10.2.2	Test requirements	71
5.3.10.3	Transmitter adjacent channel leakage power ratio for UL-MIMO.....	71
5.3.10.3.1	Method of test.....	71
5.3.10.3.2	Test requirements	72
5.3.10.4	Transmitter adjacent channel leakage power ratio for Multi-Cluster PUSCH within a component carrier.....	72
5.3.10.4.1	Method of test.....	72
5.3.10.4.2	Test requirements	73
Annex A (normative):	HS Requirements and conformance Test specifications Table (HS-RTT).....	74
Annex B (normative):	Environmental profile	76
B.1	General	76
B.1.1	Introduction	76
B.1.2	Temperature	76
B.1.3	Voltage	76
B.1.4	Test environment.....	77
Annex C:	Void	78
Annex D (informative):	Bibliography.....	79
History		80

PREVIEW
STANDARD
ETSI
 Full standard:
<https://standards.iteh.ai/catalog/standards/sist/fe96d250-ecce0-4a0b-ba65-6bb9dacc643/etsi-en-301-908-13-v7.1.1-2015-12>
 (standards.iteh.ai)

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 final draft Harmonised European Standard (EN) has been produced by ETSI Technical Committee Mobile Standards Group (MSG), and is now submitted for the Vote phase of the ETSI standards EN Approval Procedure.

The present document has been produced by ETSI in response to mandates M/284 and M/406 issued from the European Commission under Directive 98/34/EC [i.1] as amended by Directive 98/48/EC [i.10].

The title and reference to the present document are intended to be included in the publication in the Official Journal of the European Union of titles and references of Harmonised Standard under the Directive 1999/5/EC [i.2].

The requirements relevant to Directive 1999/5/EC [i.2] are summarized in annex A.

The present document is part 13 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.13].

National transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

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.

Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio and telecommunications terminal equipment within the scope of the R&TTE Directive [i.2]. The modular structure is shown in ETSI EG 201 399 [i.3].

1 Scope

The present document applies to the following radio equipment type:

- User Equipment for Evolved Universal Terrestrial Radio Access (E-UTRA).

This radio equipment type is capable of operating in all or any part of the frequency bands given in tables from 1-1 through 1-5.

Table 1-1: E-UTRA UE operating bands

E-UTRA Band	Direction of UE transmission	E-UTRA operating bands
1	Transmit	1 920 MHz to 1 980 MHz
	Receive	2 110 MHz to 2 170 MHz
3	Transmit	1 710 MHz to 1 785 MHz
	Receive	1 805 MHz to 1 880 MHz
7	Transmit	2 500 MHz to 2 570 MHz
	Receive	2 620 MHz to 2 690 MHz
8	Transmit	880 MHz to 915 MHz
	Receive	925 MHz to 960 MHz
20	Transmit	832 MHz to 862 MHz
	Receive	791 MHz to 821 MHz
22	Transmit	3 410 MHz to 3 490 MHz
	Receive	3 510 MHz to 3 590 MHz
28	Transmit	703 MHz to 748 MHz
	Receive	758 MHz to 803 MHz
32 (note)	Transmit	N/A
	Receive	1 452 MHz to 1 496 MHz
33	Transmit and Receive	1 900 MHz to 1 920 MHz
34	Transmit and Receive	2 010 MHz to 2 025 MHz
38	Transmit and Receive	2 570 MHz to 2 620 MHz
40	Transmit and Receive	2 300 MHz to 2 400 MHz
42	Transmit and Receive	3 400 MHz to 3 600 MHz
43	Transmit and Receive	3 600 MHz to 3 800 MHz

NOTE: Restricted to E-UTRA operation when carrier aggregation is configured. The downlink operating band is paired with the uplink operating band (external) of the carrier aggregation configuration that is supporting the configured Pcell.

Table 1-2: E-UTRA UE Intra-band contiguous CA operating bands

E-UTRA CA Band	E-UTRA Band	Direction of UE transmission	E-UTRA operating bands
CA_1	1	Transmit	1 920 MHz to 1 980 MHz
		Receive	2 110 MHz to 2 170 MHz
CA_3	3	Transmit	1 710 MHz to 1 785 MHz
		Receive	1 805 MHz to 1 880 MHz
CA_7	7	Transmit	2 500 MHz to 2 570 MHz
		Receive	2 620 MHz to 2 690 MHz
CA_38	38	Transmit and Receive	2 570 MHz to 2 620 MHz
CA_40	40	Transmit and Receive	2 300 MHz to 2 400 MHz
CA_42	42	Transmit and Receive	3 400 MHz to 3 600 MHz

Table 1-3: E-UTRA UE Inter-band CA operating bands (two bands)

E-UTRA CA Band	E-UTRA Band	UL operating band	DL operating band
		BS receive/UE transmit	BS transmit/UE receive
		$F_{UL_low} - F_{UL_high}$	$F_{DL_low} - F_{DL_high}$
CA_1-3	1	1 920 MHz to 1 980 MHz	2 110 MHz to 2 170 MHz
	3	1 710 MHz to 1 785 MHz	1 805 MHz to 1 880 MHz
CA_1-7	1	1 920 MHz to 1 980 MHz	2 110 MHz to 2 170 MHz
	7	2 500 MHz to 2 570 MHz	2 620 MHz to 2 690 MHz
CA_1-8	1	1 920 MHz to 1 980 MHz	2 110 MHz to 2 170 MHz
	8	880 MHz to 915 MHz	925 MHz to 960 MHz
CA_1-20	1	1 920 MHz to 1 980 MHz	2 110 MHz to 2 170 MHz
	20	832 MHz to 862 MHz	791 MHz to 821 MHz
CA_1-42	1	1 920 MHz to 1 980 MHz	2 110 MHz to 2 170 MHz
	42	3 400 MHz to 3 600 MHz	3 400 MHz to 3 600 MHz
CA_3-7	3	1 710 MHz to 1 785 MHz	1 805 MHz to 1 880 MHz
	7	2 500 MHz to 2 570 MHz	2 620 MHz to 2 690 MHz
CA_3-8	3	1 710 MHz to 1 785 MHz	1 805 MHz to 1 880 MHz
	8	880 MHz to 915 MHz	925 MHz to 960 MHz
CA_3-20	3	1 710 MHz to 1 785 MHz	1 805 MHz to 1 880 MHz
	20	832 MHz to 862 MHz	791 MHz to 821 MHz
CA_3-28	3	1 710 MHz to 1 785 MHz	1 805 MHz to 1 880 MHz
	28	703 MHz to 748 MHz	758 MHz to 803 MHz
CA_3-42	3	1 710 MHz to 1 785 MHz	1 805 MHz to 1 880 MHz
	42	3 400 MHz to 3 600 MHz	3 400 MHz to 3 600 MHz
CA_7-20	7	2 500 MHz to 2 570 MHz	2 620 MHz to 2 690 MHz
	20	832 MHz to 862 MHz	791 MHz to 821 MHz
CA_7-28	7	2 500 MHz to 2 570 MHz	2 620 MHz to 2 690 MHz
	28	703 MHz to 748 MHz	758 MHz to 803 MHz
CA_8-20	8	880 MHz to 915 MHz	925 MHz to 960 MHz
	20	832 MHz to 862 MHz	791 MHz to 821 MHz
CA_8-40	8	880 MHz to 915 MHz	925 MHz to 960 MHz
	40	2 300 MHz to 2 400 MHz	2 300 MHz to 2 400 MHz
CA_20-32	20	832 MHz to 862 MHz	791 MHz to 821 MHz
	32	N/A	1 452 MHz to 1 496 MHz

Table 1-4: E-UTRA UE Inter-band CA operating bands (three bands)

E-UTRA CA Band	E-UTRA Band	UL operating band	DL operating band
		BS receive/UE transmit	BS transmit/UE receive
		$F_{UL_low} - F_{UL_high}$	$F_{DL_low} - F_{DL_high}$
CA_1-3-8	1	1 920 MHz to 1 980 MHz	2 110 MHz to 2 170 MHz
	3	1 710 MHz to 1 785 MHz	1 805 MHz to 1 880 MHz
	8	880 MHz to 915 MHz	925 MHz to 960 MHz
CA_1-3-20	1	1 920 MHz to 1 980 MHz	2 110 MHz to 2 170 MHz
	3	1 710 MHz to 1 785 MHz	1 805 MHz to 1 880 MHz
	20	832 MHz to 862 MHz	791 MHz to 821 MHz
CA_1-7-20	1	1 920 MHz to 1 980 MHz	2 110 MHz to 2 170 MHz
	7	2 500 MHz to 2 570 MHz	2 620 MHz to 2 690 MHz
	20	832 MHz to 862 MHz	791 MHz to 821 MHz
CA_3-7-20	3	1 710 MHz to 1 785 MHz	1 805 MHz to 1 880 MHz
	7	2 500 MHz to 2 570 MHz	2 620 MHz to 2 690 MHz
	20	832 MHz to 862 MHz	791 MHz to 821 MHz

Table 1-5: Intra-band non-contiguous CA operating bands (with two sub-blocks)

E-UTRA CA Band	E-UTRA Band	Uplink (UL) operating band	Downlink (DL) operating band
		BS receive/UE transmit	BS transmit/UE receive
		$F_{UL_low} - F_{UL_high}$	$F_{DL_low} - F_{DL_high}$
CA_3-3	3	1 710 MHz to 1 785 MHz	1 805 MHz to 1 880 MHz
CA_7-7	7	2 500 MHz to 2 570 MHz	2 620 MHz to 2 690 MHz
CA_42-42	42	3 400 MHz to 3 600 MHz	3 400 MHz to 3 600 MHz

The present document covers requirements for E-UTRA FDD and E-UTRA TDD User Equipment from 3GPP Releases 8, 9, 10 and 11 defined in ETSI TS 136 101 [4]. This includes the requirements for E-UTRA UE operating bands and E-UTRA CA operating bands from 3GPP Release 12 defined in ETSI TS 136 101 [i.14].

NOTE 1: For Band 20:

- For user equipment designed to be mobile or nomadic, the requirements in the present document measured at the antenna port also show conformity to the corresponding requirement defined as TRP (total radiated power), as described in Commission Decision 2010/267/EU [i.7], ECC Decision (09)03 [i.8] and CEPT Report 30 [i.9].
- For user equipment designed to be fixed or installed, the present document does not address the requirements described in Commission Decision 2010/267/EU [i.7], ECC Decision (09)03 [i.8] and CEPT Report 30 [i.9].

The present document is intended to cover the provisions of Directive 1999/5/EC [i.2] (R&TTE Directive), article 3.2, which states that "..... radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of article 3 of the R&TTE Directive [i.2] may apply to equipment within the scope of the present document.

NOTE 2: A list of such ENs is included on the web site <http://www.newapproach.org>.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI TS 136 521-1 (V12.7.0) (10-2015): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Conformance testing (3GPP TS 36.521-1 version 12.7.0 Release 12)".
- [2] ETSI TS 136 508 (V12.7.0) (10-2015): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Common test environments for User Equipment (UE) conformance testing (3GPP TS 36.508 version 12.7.0 Release 12)".
- [3] Void.
- [4] ETSI TS 136 101 (V11.14.0) (09-2015): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception (3GPP TS 36.101 version 11.14.0 Release 11)".
- [5] Void.
- [6] Void.
- [7] ETSI EN 301 908-2 (V7.0.1) (09-2015): "IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 2: CDMA Direct Spread (UTRA FDD) User Equipment (UE)".
- [8] IEC 60068-2-1 (2007): "Environmental testing - Part 2-1: Tests - Test A: Cold".

- [9] IEC 60068-2-2 (2007): "Environmental testing - Part 2-2: Tests - Test B: Dry heat".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.
- [i.2] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).
- [i.3] ETSI EG 201 399 (V2.2.1) (08-2010): "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of Harmonized Standards for application under the R&TTE Directive".
- [i.4] Void.
- [i.5] Recommendation ITU-R SM.329-12 (2012): "Unwanted emissions in the spurious domain".
- [i.6] ETSI TR 100 028 (all parts) (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".
- [i.7] Commission Decision 2010/267/EU of 6 May 2010 on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union.
- [i.8] ECC Decision (09)03 of 30 October 2009 on harmonised conditions for mobile/fixed communications networks (MFCN) operating in the band 790 - 862 MHz.
- [i.9] CEPT Report 30 of 30 October 2009 to the European Commission in response to the Mandate on "The identification of common and minimal (least restrictive) technical conditions for 790 - 862 MHz for the digital dividend in the European Union".
- [i.10] Directive 98/48/EC of the European Parliament and of the Council of 20 July 1998 amending Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations.
- [i.11] ETSI TS 136 509 (V10.3.0) (09-2014): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Packet Core (EPC); Special conformance testing functions for User Equipment (UE) (3GPP TS 36.509 version 10.3.0 Release 10)".
- [i.12] ETSI TR 103 288 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Report of the CENELEC/ETSI Joint Working Group in response to the EC letter ENTRP/F5/DP/MM/entr.f5.(2013)43164 to the ESOs".
- [i.13] ETSI EN 301 908-1 (V7.1.1) (03-2015): "IMT cellular networks; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 1: Introduction and common requirements".
- [i.14] ETSI TS 136 101 (V12.9.0) (10-2015): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception (3GPP TS 36.101 version 12.9.0 Release 12)".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

aggregated Channel Bandwidth: RF bandwidth in which a UE transmits and receives multiple contiguously aggregated carriers

aggregated Transmission Bandwidth Configuration: number of resource block allocated within the aggregated channel bandwidth

carrier aggregation: aggregation of two or more component carriers in order to support wider transmission bandwidths

carrier aggregation band: set of one or more operating bands across which multiple carriers are aggregated with a specific set of technical requirements

carrier aggregation bandwidth class: class defined by the aggregated transmission bandwidth configuration and maximum number of component carriers supported by a UE

Table 3.1-1: CA bandwidth classes and corresponding nominal guard bands

CA Bandwidth Class	Aggregated Transmission Bandwidth Configuration	Number of contiguous CC	Nominal Guard Band BW_{GB}
A	$N_{RB,agg} \leq 100$	1	$a_1 \cdot BW_{Channel(1)} - 0,5\Delta f_1$ (note 2)
B	$N_{RB,agg} \leq 100$	2	$0,05 \max(BW_{Channel(1)}, BW_{Channel(2)}) - 0,5\Delta f_1$
C	$100 < N_{RB,agg} \leq 200$	2	$0,05 \max(BW_{Channel(1)}, BW_{Channel(2)}) - 0,5\Delta f_1$

NOTE 1: $BW_{Channel(j)}$, $j = 1, 2, 3$, is the channel bandwidth of an E-UTRA component carrier according to table 5.4.2-1 and $\Delta f_1 = \Delta f$ for the downlink with Δf the subcarrier spacing while $\Delta f_1 = 0$ for the uplink.

NOTE 2: $a_1 = 0,16/1,4$ for $BW_{Channel(1)} = 1,4$ MHz whereas $a_1 = 0,05$ for all other channel bandwidths.

carrier aggregation configuration: combination of CA operating band(s) and CA bandwidth class(es) supported by a UE

channel bandwidth: RF bandwidth supporting a single E-UTRA RF carrier with the transmission bandwidth configured in the uplink or downlink of a cell

NOTE 1: The channel bandwidth is measured in MHz and is used as a reference for transmitter and receiver RF requirements.

NOTE 2: Channel Bandwidth and Transmission Bandwidth Configuration for one E-UTRA carrier are described in figure 3.1-1 as in ETSI TS 136 101 [4].