

# ETSI EN 301 908-18 V11.1.1 (2016-07)



**IMT cellular networks;**  
**Harmonised Standard covering the essential requirements**  
**of article 3.2 of the Directive 2014/53/EU;**  
**Part 18: E-UTRA, UTRA and GSM/EDGE**  
**Multi-Standard Radio (MSR) Base Station (BS)**

PREVIEW  
https://standards.iteh.ai/en/standards/etsi/etsi-en-301-908-18-v11-1-2016-07-421d-a38f-4b981b0eb3f6/

---

**Reference**

---

REN/MSG-TFES-11-18-RED

---

**Keywords**

---

3G, 3GPP, cellular, digital, EDGE, E-UTRA,  
GSM, IMT, IMT-2000, IMT-Advanced, LTE,  
mobile, MSR, radio, regulation, UMTS, UTRA,  
WCDMA**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.

# Contents

Intellectual Property Rights .....	6
Foreword.....	6
Modal verbs terminology.....	6
Introduction .....	6
1 Scope .....	7
2 References .....	7
2.1 Normative references .....	7
2.2 Informative references.....	9
3 Definitions, symbols and abbreviations .....	9
3.1 Definitions .....	9
3.2 Symbols.....	12
3.3 Abbreviations .....	12
4 Technical requirements specifications .....	14
4.1 Environmental profile.....	14
4.2 Conformance requirements .....	14
4.2.1 Introduction.....	14
4.2.2 Operating band unwanted emissions .....	17
4.2.2.1 Definition .....	17
4.2.2.2 Limits .....	17
4.2.2.2.1 Limits for Band Categories 1 and 3.....	17
4.2.2.2.2 Limits for Band Category 2.....	22
4.2.2.2.3 Limits for GSM/EDGE single-RAT operation.....	27
4.2.2.2.4 Limits for protection of DTT.....	28
4.2.2.2.5 Limits for co-existence with services in adjacent frequency bands.....	28
4.2.2.2.6 Limits for operation in Band 32 .....	28
4.2.2.3 Conformance.....	29
4.2.3 Adjacent Channel Leakage power Ratio (ACLR) .....	29
4.2.3.1 Definition .....	29
4.2.3.2 Limits .....	29
4.2.3.2.1 E-UTRA limits .....	29
4.2.3.2.2 UTRA FDD limits .....	29
4.2.3.2.3 UTRA TDD limits.....	30
4.2.3.2.4 Cumulative ACLR requirement in non-contiguous spectrum .....	30
4.2.3.3 Conformance.....	31
4.2.4 Transmitter spurious emissions.....	31
4.2.4.1 Definition .....	31
4.2.4.2 Limits .....	32
4.2.4.2.1 Spurious emissions .....	32
4.2.4.2.2 Additional spurious emissions requirement for BC2.....	32
4.2.4.2.3 Co-existence with other systems .....	32
4.2.4.2.4 Protection of the BS receiver of own or different BS.....	34
4.2.4.3 Conformance.....	34
4.2.5 Base station maximum output power.....	34
4.2.5.1 Definition .....	34
4.2.5.2 Limits .....	35
4.2.5.3 Conformance.....	35
4.2.6 Transmit intermodulation .....	35
4.2.6.1 Definition .....	35
4.2.6.2 Limits .....	35
4.2.6.2.1 General limits .....	35
4.2.6.2.2 Additional limits (BC1 and BC2).....	36
4.2.6.2.3 Additional limits (BC3).....	36
4.2.6.3 Conformance.....	37
4.2.7 Receiver spurious emissions .....	37

4.2.7.1	Definition .....	37
4.2.7.2	Limits .....	37
4.2.7.2.1	General limits .....	37
4.2.7.2.2	Additional limits for BC2 .....	38
4.2.7.3	Conformance .....	38
4.2.8	In-band blocking .....	38
4.2.8.1	Definition .....	38
4.2.8.2	Limits .....	38
4.2.8.2.1	General limits .....	38
4.2.8.2.2	Additional BC3 blocking limits .....	40
4.2.8.3	Conformance .....	40
4.2.9	Out-of-band blocking .....	40
4.2.9.1	Definition .....	40
4.2.9.2	Limits .....	40
4.2.9.3	Conformance .....	41
4.2.10	Receiver intermodulation characteristics .....	41
4.2.10.1	Definition .....	41
4.2.10.2	Limits .....	41
4.2.10.2.1	General intermodulation limits .....	41
4.2.10.2.2	General narrowband intermodulation limits .....	42
4.2.10.2.3	Additional narrowband intermodulation limits for GSM/EDGE .....	44
4.2.10.3	Conformance .....	44
4.2.11	Narrowband blocking .....	44
4.2.11.1	Definition .....	44
4.2.11.2	Limits .....	44
4.2.11.2.1	General limits .....	44
4.2.11.2.2	Additional limits for GSM/EDGE .....	45
4.2.11.2.3	GSM/EDGE limits for AM suppression .....	45
4.2.11.3	Conformance .....	45
4.2.12	Reference sensitivity level .....	45
4.2.12.1	Definition .....	45
4.2.12.2	Limits .....	45
4.2.12.3	Conformance .....	46
5	Testing for compliance with technical requirements .....	46
5.1	Environmental conditions for testing .....	46
5.2	Interpretation of the measurement results .....	46
5.3	Essential radio test suites .....	48
5.3.0	Introduction .....	48
5.3.1	Operating band unwanted emissions .....	48
5.3.1.0	General .....	48
5.3.1.1	Initial conditions .....	48
5.3.1.2	Procedure .....	49
5.3.1.3	Test requirement .....	49
5.3.2	Adjacent Channel Leakage power Ratio (ACLR) .....	49
5.3.2.0	General .....	49
5.3.2.1	Initial conditions .....	49
5.3.2.2	Procedure .....	50
5.3.2.3	Test requirement .....	50
5.3.3	Transmitter spurious emissions .....	50
5.3.3.1	Initial conditions .....	50
5.3.3.2	Procedure .....	50
5.3.3.3	Test requirement .....	51
5.3.4	Base station maximum output power .....	51
5.3.4.1	Initial conditions .....	51
5.3.4.2	Procedure .....	51
5.3.4.3	Test requirement .....	51
5.3.5	Transmit intermodulation .....	51
5.3.5.0	General .....	51
5.3.5.1	Initial conditions .....	52
5.3.5.2	Procedure .....	52
5.3.5.2.1	General minimum requirement test procedure .....	52

5.3.5.2.2	Additional minimum requirement (BC1 and BC2) test procedure .....	53
5.3.5.2.3	Additional minimum requirement (BC3) test procedure .....	54
5.3.5.3	Test requirement .....	54
5.3.6	Receiver spurious emissions .....	54
5.3.6.1	Initial conditions .....	54
5.3.6.2	Procedure .....	55
5.3.6.3	Test requirement .....	55
5.3.7	In-band blocking .....	55
5.3.7.1	Initial conditions .....	55
5.3.7.2	Procedure .....	55
5.3.7.2.1	Procedure for general blocking .....	55
5.3.7.2.2	Procedure for additional BC3 blocking requirement .....	56
5.3.7.3	Test requirement .....	56
5.3.8	Out-of-band blocking .....	56
5.3.8.1	Initial conditions .....	56
5.3.8.2	Procedure .....	57
5.3.8.3	Test requirement .....	57
5.3.9	Receiver intermodulation characteristics .....	57
5.3.9.1	Initial conditions .....	57
5.3.9.2	Procedure .....	58
5.3.9.2.1	Procedure for general and narrowband intermodulation .....	58
5.3.9.2.2	Procedure for additional narrowband intermodulation for GSM/EDGE .....	58
5.3.9.3	Test requirement .....	58
5.3.10	Narrowband blocking .....	58
5.3.10.1	Initial conditions .....	58
5.3.10.2	Procedure .....	59
5.3.10.2.1	Procedure for narrowband blocking .....	59
5.3.10.2.2	Procedure for additional narrowband blocking for GSM/EDGE .....	59
5.3.10.2.3	Procedure for GSM/EDGE AM suppression .....	59
5.3.10.3	Test requirement .....	59
5.3.11	Reference sensitivity level .....	60
5.3.11.1	General .....	60
5.3.11.2	Test requirement .....	60
<b>Annex A (normative):</b>	<b>Relationship between the present document and the essential requirements of Directive 2014/53/EU .....</b>	<b>61</b>
<b>Annex B (normative):</b>	<b>Base Station configurations .....</b>	<b>62</b>
B.1	Reception with multiple receiver antenna connectors and receiver diversity .....	62
B.2	Duplexers .....	62
B.3	Power supply options .....	62
B.4	Ancillary RF amplifiers .....	62
B.5	BS using antenna arrays .....	63
B.5.0	General .....	63
B.5.1	Receiver tests .....	63
B.5.2	Transmitter tests .....	64
B.6	Transmission with multiple transmitter antenna connectors .....	64
B.7	BS with integrated Iuant BS modem .....	64
<b>Annex C (informative):</b>	<b>Environmental profile specification .....</b>	<b>65</b>
<b>Annex D (informative):</b>	<b>Bibliography .....</b>	<b>66</b>
History	.....	67

## 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 Harmonised European Standard (EN) has been produced by ETSI Technical Committee Mobile Standards Group (MSG).

For non EU countries the present document may be used for regulatory (Type Approval) purposes.

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.6] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.1].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A-1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

The present document is part 18 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.4].

### National transposition dates

Date of adoption of this EN:	12 July 2016
Date of latest announcement of this EN (doa):	31 October 2016
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 April 2017
Date of withdrawal of any conflicting National Standard (dow):	30 April 2018

## 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 that are designed to fit in a modular structure to cover radio equipment within the scope of the Radio Equipment Directive [i.1]. The present document is produced following the guidance in ETSI EG 203 336 [i.2] as applicable.

# 1 Scope

The present document applies to the following equipment types:

- 1) Multi-Standard Radio capable Base stations (E-UTRA, UTRA, GSM/EDGE).

These radio equipment types are capable of operating in all or any part of the frequency bands given in table 1-1.

**Table 1-1: Base station operating bands**

Band designation and Band Category	Direction of transmission	MSR Base Station operating bands
1 (BC1)	Transmit	2 110 MHz to 2 170 MHz
	Receive	1 920 MHz to 1 980 MHz
3 (BC2)	Transmit	1 805 MHz to 1 880 MHz
	Receive	1 710 MHz to 1 785 MHz
7 (BC1)	Transmit	2 620 MHz to 2 690 MHz
	Receive	2 500 MHz to 2 570 MHz
8 (BC2)	Transmit	925 MHz to 960 MHz
	Receive	880 MHz to 915 MHz
20 (BC1)	Transmit	791 MHz to 821 MHz
	Receive	832 MHz to 862 MHz
22 (BC1)	Transmit	3 510 MHz to 3 590 MHz
	Receive	3 410 MHz to 3 490 MHz
28 (BC1)	Transmit	758 MHz to 803 MHz
	Receive	703 MHz to 748 MHz
32 (BC1) (note)	Transmit	1 452 MHz to 1 496 MHz
	Receive	N/A
33 (BC3)	Transmit and Receive	1 900 MHz to 1 920 MHz
34 (BC3)	Transmit and Receive	2 010 MHz to 2 025 MHz
38 (BC3)	Transmit and Receive	2 570 MHz to 2 620 MHz
40 (BC3)	Transmit and Receive	2 300 MHz to 2 400 MHz
42 (BC3)	Transmit and Receive	3 400 MHz to 3 600 MHz
43 (BC3)	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. Restricted to UTRA operation when dual band is configured (e.g. DB-DC-HSDPA or dual band 4C-HSDPA). The down link frequency(ies) of this band are paired with the uplink frequency(ies) of the other FDD band (external) of the dual band configuration.		

NOTE: For BS capable of multi-band operation, the supported operating bands may belong to different Band Categories.

The present document covers requirements for multi-RAT capable E-UTRA, UTRA and GSM/EDGE MSR Base Stations for 3GPP™ Release 9, 10 and 11. This includes the requirements for E UTRA Base Station operating bands and E-UTRA CA operating bands from 3GPP Release 12.

The present document contains requirements to demonstrate that Radio equipment both effectively uses and supports the efficient use of radio spectrum in order to avoid harmful interference.

## 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 referenced 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 137 141 (V11.13.0) (01-2016): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) conformance testing (3GPP TS 37.141 version 11.13.0 Release 11)".
- [2] ETSI TS 125 104 (V11.12.0) (01-2016): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (FDD) (3GPP TS 25.104 version 11.12.0 Release 11)".
- [3] ETSI TS 125 105 (V11.9.0) (01-2016): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (TDD) (3GPP TS 25.105 version 11.9.0 Release 11)".
- [4] ETSI TS 136 104 (V11.14.0) (01-2016): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception (3GPP TS 36.104 version 11.14.0 Release 11)".
- [5] ETSI TS 145 005 (V11.4.0) (01-2014): "Digital cellular telecommunications system (Phase 2+); Radio transmission and reception (3GPP TS 45.005 version 11.4.0 Release 11)".
- [6] ETSI EN 301 908-3 (V11.1.2) (07-2016): "IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 3: CDMA Direct Spread (UTRA FDD) Base Stations (BS)".
- [7] ETSI EN 301 908-14 (V11.1.1) (05-2016): "IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Radio Equipment Directive 2014/53/EU; Part 14: Evolved Universal Terrestrial Radio Access (E-UTRA) Base Stations (BS)".
- [8] ETSI TS 136 104 (V12.10.0) (01-2016): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception (3GPP TS 36.104 version 12.10.0 Release 12)".
- [9] ETSI EN 301 502 (V12.5.1) (07-2016): "Global System for Mobile communications (GSM); Base Station (BS) equipment; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU".
- [10] ETSI TS 137 104 (V11.13.0) (01-2016): "Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) radio transmission and reception (3GPP TS 37.104 version 11.13.0 Release 11)".
- [11] ETSI TS 136 141 (V11.14.0) (01-2016): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) conformance testing (3GPP TS 36.141 version 11.14.0 Release 11)".
- [12] ETSI TS 125 141 (V11.12.0) (01-2016): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) conformance testing (FDD) (3GPP TS 25.141 version 11.12.0 Release 11)".
- [13] ETSI TS 125 142 (V11.5.0) (01-2016): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) conformance testing (TDD) (3GPP TS 25.142 version 11.5.0 Release 11)".
- [14] ETSI TS 151 021 (V11.4.0) (10-2013): "Digital cellular telecommunications system (Phase 2+); Base Station System (BSS) equipment specification; Radio aspects (3GPP TS 51.021 version 11.4.0 Release 11)".



## 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 referenced 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 2014/53/EU of the European parliament and of the council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.
- [i.2] ETSI EG 203 336 (V1.1.1) (08-2015): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".
- [i.3] 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.4] ETSI EN 301 908-1 (V11.1.1): "IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 1: Introduction and common requirements".
- [i.5] Recommendation ITU-R SM.329-12 (09-2012): "Unwanted emissions in the spurious domain".
- [i.6] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

---

## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

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

**band category:** group of operating bands for which the same MSR scenarios apply

NOTE: The band categories for MSR BS are defined in clause 4.4 of ETSI TS 137 141 [1] and are listed in table 1-1.

**Base Station class:** wide area Base Station, medium range Base Station or local Area Base Station, as declared by the manufacturer

**Base Station RF bandwidth:** bandwidth in which a Base Station transmits and/or receives single or multiple carrier(s) and/or RATs simultaneously within a supported operating band

NOTE: In single carrier operation, the Base Station RF bandwidth is equal to the channel bandwidth.

**Base Station RF bandwidth edge:** frequency of one of the edges of the Base Station RF bandwidth

**carrier:** modulated waveform conveying the E-UTRA, UTRA or GSM/EDGE physical channels

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

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

NOTE: Carrier aggregation band(s) for an E-UTRA BS is declared by the manufacturer according to the designations in tables 4.2.1-2 to 4.2.1-5.

**carrier power:** power at the antenna connector in the channel bandwidth of the carrier averaged over at least one subframe for E-UTRA, at least one slot for UTRA and the useful part of the burst for GSM/EDGE

**channel bandwidth:** RF bandwidth supporting a single E-UTRA, UTRA or GSM/EDGE RF carrier

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

**configured carrier power:** target maximum power for a specific carrier for the operating mode set in the BS

**contiguous spectrum:** spectrum consisting of a contiguous block of spectrum with no sub-block gap(s)

**downlink operating band:** part of the operating band designated for downlink

**Inter RF bandwidth gap:** frequency gap between two consecutive Base Station RF bandwidths that are placed within two supported operating bands

**inter-band gap:** frequency gap between two supported consecutive operating bands

**intra-band contiguous carrier aggregation:** contiguous E-UTRA carriers aggregated in the same operating band

**local area Base Station:** Base Stations characterized by requirements derived from picocell scenarios with a BS to UE minimum coupling loss equal to 45 dB

**lower Base Station RF bandwidth edge:** frequency of the lower edge of the Base Station RF bandwidth, used as a frequency reference point for transmitter and receiver requirements

**lower sub-block edge:** frequency at the lower edge of one sub-block

NOTE: It is used as a frequency reference point for both transmitter and receiver requirements.

**maximum Base Station RF bandwidth:** maximum RF bandwidth supported by a Base Station within each supported operating band

NOTE: The Maximum Base Station RF bandwidth for BS configured for contiguous and non-contiguous operation within each supported operating band is declared separately.

**maximum carrier output power:** carrier power available at the antenna connector for a specified reference condition

**Maximum Radio Bandwidth:** maximum frequency difference between the upper edge of the highest used carrier and the lower edge of the lowest used carrier

**maximum throughput:** maximum achievable throughput for a reference measurement channel

**maximum total output power:** sum of the power of all carriers available at the antenna connector for a specified reference condition

**MB-MSR Base Station:** MSR Base Station characterized by the ability of its transmitter and/or receiver to process two or more carriers in common active RF components simultaneously, where at least one carrier is configured at a different non-overlapping operating band than the other carrier(s)

**mean power:** power measured in the bandwidth and period of measurement applicable for each RAT

NOTE: Mean power for an E-UTRA carrier is defined in ETSI TS 136 141 [11] and mean power for a UTRA carrier is defined in ETSI TS 125 141 [12]. In case of multiple carriers, the mean power is the sum of the mean power of all carriers.

**measurement bandwidth:** bandwidth in which an emission level is specified

**medium range Base Station:** Base Stations characterized by requirements derived from micro cell scenarios with a BS to UE minimum coupling loss equal to 53 dB

**MSR Base Station (BS):** Base Station characterized by the ability of its receiver and transmitter to process two or more carriers in common active RF components simultaneously in a declared Base Station RF bandwidth, where at least one carrier is of a different RAT than the other carrier(s)

**multi-band receiver:** receiver characterized by the ability to process two or more carriers in common active RF components simultaneously, where at least one carrier is configured at a different non-overlapping operating band than the other carrier(s)

**multi-band transmitter:** transmitter characterized by the ability to process two or more carriers in common active RF components simultaneously, where at least one carrier is configured at a different non-overlapping operating band than the other carrier(s)

**non-contiguous spectrum:** spectrum consisting of two or more sub-blocks separated by sub-block gap(s)

**operating band:** frequency range in which E-UTRA, UTRA or GSM/EDGE operates (paired or unpaired), that is defined with a specific set of technical requirements

NOTE: The operating band(s) for a Base Station is declared by the manufacturer. Operating bands have designations according to table 1-1.

**single-RAT operation:** operation of a Base Station in an operating band with only one RAT configured in that operating band

**sub-block:** contiguous allocated block of spectrum for use by the same Base Station

NOTE: There may be multiple instances of sub-blocks within a Base Station RF bandwidth.

**sub-block bandwidth:** bandwidth of one sub-block

**sub-block gap:** frequency gap between two consecutive sub-blocks within a Base Station RF bandwidth, where the RF requirements in the gap are based on co-existence for un-coordinated operation

**throughput:** number of payload bits successfully received per second for a reference measurement channel in a specified reference condition

**total RF bandwidth:** maximum sum of Base Station RF bandwidths in all supported operating bands

**transmission bandwidth:** bandwidth of an instantaneous E-UTRA transmission from a UE or BS, measured in Resource Block units

**transmitter OFF period:** time period during which the BS transmitter is not allowed to transmit

**transmitter ON period:** time period during which the BS transmitter is transmitting data and/or reference symbols, e.g. data subframes or DwPTS

**transmitter transient period:** time period during which the transmitter is changing from the OFF period to the ON period or vice versa

**uplink operating band:** part of the operating band designated for uplink

**upper Base Station RF bandwidth edge:** frequency of the upper edge of the Base Station RF bandwidth, used as a frequency reference point for transmitter and receiver requirements

**upper sub-block edge:** frequency at the upper edge of one sub-block

NOTE: It is used as a frequency reference point for both transmitter and receiver requirements.

**wide area Base Station:** Base Stations characterized by requirements derived from macro cell scenarios with a BS to UE minimum coupling loss equal to 70 dB

NOTE: This Base Station class has the same requirements as the general purpose Base Station in the sixth release version of the present document, corresponding to 3GPP Release 8.

## 3.2 Symbols

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

$BW_{RF}$	Base Station RF bandwidth, where $BW_{RF} = F_{BW\ RF,high} - F_{BW\ RF,low}$
$B_{RFBW}$	Maximum Base Station RF bandwidth located at the bottom of the supported frequency range in the operating band
CA_X	CA for band X where X is the applicable E-UTRA operating band
f	Frequency
$\Delta f$	Separation between the Base Station RF bandwidth edge frequency and the nominal -3 dB point of the measuring filter closest to the carrier frequency
$\Delta f_{max}$	The largest value of $\Delta f$ used for defining the requirement
$F_C$	Carrier centre frequency
$F_{filter}$	Filter centre frequency
$f_{offset}$	Separation between the Base Station RF bandwidth edge frequency and the centre of the measuring filter
$f_{offset_{max}}$	The maximum value of $f_{offset}$ used for defining the requirement
$F_{block,high}$	Upper sub-block edge, where $F_{block,high} = F_{C,block,high} + F_{offset, RAT}$
$F_{block,low}$	Lower sub-block edge, where $F_{block,low} = F_{C,block,low} - F_{offset, RAT}$
$F_{BW\ RF,high}$	Upper Base Station RF bandwidth edge, where $F_{BW\ RF,high} = F_{C,high} + F_{offset, RAT}$
$F_{BW\ RF,low}$	Lower Base Station RF bandwidth edge, where $F_{BW\ RF,low} = F_{C,low} - F_{offset, RAT}$
$F_{C,block, high}$	Center frequency of the highest transmitted/received carrier in a sub-block
$F_{C,block, low}$	Center frequency of the lowest transmitted/received carrier in a sub-block
$F_{C,high}$	Center frequency of the highest transmitted/received carrier
$F_{C,low}$	Center frequency of the lowest transmitted/received carrier
$F_{offset, RAT}$	Frequency offset from the centre frequency of the <i>highest</i> transmitted/received carrier to the <i>upper</i> Base Station RF bandwidth edge, sub-block edge or inter-RF bandwidth edge, or from the centre frequency of the <i>lowest</i> transmitted/received carrier to the <i>lower</i> Base Station RF bandwidth edge, sub-block edge or inter-RF bandwidth edge for a specific RAT
$F_{UL,low}$	The lowest frequency of the uplink operating band
$F_{UL,high}$	The highest frequency of the uplink operating band
$M_{RFBW}$	Maximum Base Station RF bandwidth located in the middle of the supported frequency range in the operating band
$P_{EM,B32,ind}$	Declared emission level (a) for Band 3, ind = a, b, c, d, e
$P_{EM,N}$	Declared emission level for channel N
$P_{GSMcarrier}$	Power level of the GSM/EDGE carrier adjacent to the RF bandwidth edge
$P_{max}$	Maximum total output power
$P_{max,c}$	Maximum carrier output power
$P_{REFSENS}$	Reference Sensitivity power level
$T_{RFBW}$	Maximum Base Station RF bandwidth located at the top of the supported frequency range in the operating band
$W_{gap}$	Sub-block gap size or Inter RF bandwidth gap size

## 3.3 Abbreviations

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

4C-HSDPA	Four-Carrier HSDPA
ACLR	Adjacent Channel Leakage Ratio
AM	Amplitude Modulation
ARFCN	Absolute Radio Frequency Channel Number
ATT	Attenuator
BC	Band Category
BER	Bit Error Ratio
BS	Base Station

BTS	Base Transceiver Station
BW	Bandwidth
CA	Carrier Aggregation
CACLR	Cumulative Adjacent Channel Leakage Ratio
CEPT	European Conference of Postal and Telecommunications Administrations
CS	Capability Set
CW	Continuous Wave
DB-DC-HSDPA	Dual Band Dual Cell HSDPA
DC	Direct Current
DTT	Digital Terrestrial Television
DwPTS	Downlink part of the special subframe (for E-UTRA TDD operation)
EC	European Communities
ECC	Electronic Communications Committee
EDGE	Enhanced Data rates for GSM Evolution
EFTA	European Free Trade Association
EU	European Union
EUT	Equipment Under Test
E-UTRA	Evolved Universal Terrestrial Radio Access
FDD	Frequency Division Duplex
FRC	Fixed Reference Channel

NOTE: The fixed reference channels for E-UTRA are detailed in annex A of ETSI TS 136 141 [11].

GMSK	Gaussian Minimum Shift Keying
GSM	Global System for Mobile communications
IMT	International Mobile Telecommunications
ITU-R	International Telecommunication Union Radiocommunication sector
LA	Local Area
MB-MSR	Multi-Band Multi-Standard Radio
MBT	Multi-Band Testing
MC-BTS	Multi-Carrier Base Transceiver Station
MR	Medium Range
MS	Mobile Station
MSR	Multi-Standard Radio
Pcell	Primary cell
RAT	Radio Access Technology
RB	Resource Block (for E-UTRA)
RF	Radio Frequency
RMS	Root Mean Square (value)
RRC	Root-Raised Cosine
RX	Receiver
SBT	Single Band Testing
TC	Test Configuration
TDD	Time Division Duplex
TX	Transmitter
UARFCN	UTRA Absolute Radio Frequency Channel Number
UE	User Equipment
UEM	operating band Unwanted Emissions Mask
UTRA	Universal Terrestrial Radio Access
WA	Wide Area