

<b>STN</b>	<b>Bunkové siete IMT</b> <b>Harmonizovaná norma pre prístup k rádiovému spektru</b> <b>Časť 18: Základňové stanice (BS) rádiových zariadení s viacerými štandardmi (MSR) E-UTRA, UTRA a GSM/EDGE</b>	<b>STN</b> <b>EN 301 908-18</b> <b>V13.1.1</b>  87 1908
------------	--	---

IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 18: E-UTRA, UTRA and GSM/EDGE Multi-Standard Radio (MSR) Base Station (BS)

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 04/20

Obsahuje: EN 301 908-18 V13.1.1:2019

**130344**

# ETSI EN 301 908-18 V13.1.1 (2019-09)



**IMT cellular networks;  
Harmonised Standard for access to radio spectrum;  
Part 18: E-UTRA, UTRA and GSM/EDGE  
Multi-Standard Radio (MSR) Base Station (BS)**

---

**Reference**

REN/MSG-TFES-13-18

---

**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 prevailing version of an ETSI deliverable is the one made publicly available in PDF format at [www.etsi.org/deliver](http://www.etsi.org/deliver).

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.

© ETSI 2019.

All rights reserved.

**DECT™**, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.

**3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

**oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners.

**GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

# Contents

Intellectual Property Rights .....	6
Foreword.....	6
Modal verbs terminology.....	7
Introduction .....	7
1 Scope .....	8
2 References .....	9
2.1 Normative references .....	9
2.2 Informative references.....	10
3 Definition of terms, symbols and abbreviations.....	10
3.1 Terms.....	10
3.2 Symbols.....	13
3.3 Abbreviations .....	14
4 Technical requirements specifications .....	15
4.1 Environmental profile.....	15
4.2 Conformance requirements .....	15
4.2.1 Introduction.....	15
4.2.2 Operating band unwanted emissions .....	21
4.2.2.1 Definition .....	21
4.2.2.2 Limits .....	21
4.2.2.2.1 Limits for Band Categories 1 and 3.....	21
4.2.2.2.2 Limits for Band Category 2.....	27
4.2.2.2.3 Limits for GSM/EDGE single-RAT operation.....	32
4.2.2.2.4 Additional limits for protection of DTT .....	33
4.2.2.2.5 Limits for co-existence with services in adjacent frequency bands.....	33
4.2.2.2.6 Additional limits for operation in band 32 .....	33
4.2.2.3 Conformance.....	33
4.2.3 Adjacent Channel Leakage power Ratio (ACLR) .....	33
4.2.3.1 Definition .....	33
4.2.3.2 Limits .....	33
4.2.3.2.1 E-UTRA limits .....	33
4.2.3.2.2 UTRA FDD limits .....	35
4.2.3.2.3 UTRA TDD limits.....	35
4.2.3.2.4 Cumulative ACLR requirement in non-contiguous spectrum .....	35
4.2.3.2.5 NB-IoT test requirement.....	36
4.2.3.3 Conformance.....	37
4.2.4 Transmitter spurious emissions.....	37
4.2.4.1 Definition .....	37
4.2.4.2 Limits .....	37
4.2.4.2.1 Spurious emissions .....	37
4.2.4.2.2 Additional spurious emissions requirement for BC2.....	38
4.2.4.2.3 Co-existence with other systems .....	38
4.2.4.2.4 Protection of the BS receiver of own or different BS .....	40
4.2.4.3 Conformance.....	40
4.2.5 Base station maximum output power.....	40
4.2.5.1 Definition .....	40
4.2.5.2 Limits .....	41
4.2.5.3 Conformance.....	41
4.2.6 Transmit intermodulation .....	41
4.2.6.1 Definition .....	41
4.2.6.2 Limits .....	41
4.2.6.2.1 General limits .....	41
4.2.6.2.2 Additional limits (BC1 and BC2).....	42
4.2.6.2.3 Additional limits (BC3).....	42
4.2.6.3 Conformance.....	43

4.2.7	Receiver spurious emissions .....	43
4.2.7.1	Definition .....	43
4.2.7.2	Limits .....	43
4.2.7.2.1	General limits .....	43
4.2.7.2.2	Additional limits for BC2 .....	44
4.2.7.3	Conformance .....	44
4.2.8	In-band blocking .....	44
4.2.8.1	Definition .....	44
4.2.8.2	Limits .....	45
4.2.8.2.1	General limits .....	45
4.2.8.2.2	Additional BC3 blocking limits .....	46
4.2.8.3	Conformance .....	47
4.2.9	Out-of-band blocking .....	47
4.2.9.1	Definition .....	47
4.2.9.2	Limits .....	47
4.2.9.3	Conformance .....	48
4.2.10	Receiver intermodulation characteristics .....	48
4.2.10.1	Definition .....	48
4.2.10.2	Limits .....	48
4.2.10.2.1	General intermodulation limits .....	48
4.2.10.2.2	General narrowband intermodulation limits .....	50
4.2.10.2.3	Additional narrowband intermodulation limits for GSM/EDGE .....	52
4.2.10.3	Conformance .....	52
4.2.11	Narrowband blocking .....	52
4.2.11.1	Definition .....	52
4.2.11.2	Limits .....	52
4.2.11.2.1	General limits .....	52
4.2.11.2.2	Additional limits for GSM/EDGE .....	53
4.2.11.2.3	GSM/EDGE limits for AM suppression .....	54
4.2.11.3	Conformance .....	54
4.2.12	Reference sensitivity level .....	54
4.2.12.1	Definition .....	54
4.2.12.2	Limits .....	54
4.2.12.3	Conformance .....	54
5	Testing for compliance with technical requirements .....	54
5.1	Environmental conditions for testing .....	54
5.2	Interpretation of the measurement results .....	55
5.3	Essential radio test suites .....	55
5.3.0	Introduction .....	55
5.3.1	Operating band unwanted emissions .....	55
5.3.1.0	General .....	55
5.3.1.1	Initial conditions .....	56
5.3.1.2	Procedure .....	56
5.3.1.3	Test requirement .....	56
5.3.2	Adjacent Channel Leakage power Ratio (ACLR) .....	57
5.3.2.0	General .....	57
5.3.2.1	Initial conditions .....	57
5.3.2.2	Procedure .....	57
5.3.2.3	Test requirement .....	58
5.3.3	Transmitter spurious emissions .....	58
5.3.3.1	Initial conditions .....	58
5.3.3.2	Procedure .....	58
5.3.3.3	Test requirement .....	58
5.3.4	Base station maximum output power .....	58
5.3.4.1	Initial conditions .....	58
5.3.4.2	Procedure .....	59
5.3.4.3	Test requirement .....	59
5.3.5	Transmit intermodulation .....	59
5.3.5.0	General .....	59
5.3.5.1	Initial conditions .....	59
5.3.5.2	Procedure .....	60

5.3.5.2.1	General minimum requirement test procedure .....	60
5.3.5.2.2	Additional minimum requirement (BC1 and BC2) test procedure .....	60
5.3.5.2.3	Additional minimum requirement (BC3) test procedure .....	61
5.3.5.3	Test requirement .....	62
5.3.6	Receiver spurious emissions .....	62
5.3.6.1	Initial conditions .....	62
5.3.6.2	Procedure .....	62
5.3.6.3	Test requirement .....	62
5.3.7	In-band blocking.....	63
5.3.7.1	Initial conditions .....	63
5.3.7.2	Procedure .....	63
5.3.7.2.1	Procedure for general blocking.....	63
5.3.7.2.2	Procedure for additional BC3 blocking requirement.....	63
5.3.7.3	Test requirement .....	64
5.3.8	Out-of-band blocking.....	64
5.3.8.1	Initial conditions .....	64
5.3.8.2	Procedure .....	64
5.3.8.3	Test requirement .....	65
5.3.9	Receiver intermodulation characteristics .....	65
5.3.9.1	Initial conditions .....	65
5.3.9.2	Procedure .....	65
5.3.9.2.1	Procedure for general and narrowband intermodulation .....	65
5.3.9.2.2	Procedure for additional narrowband intermodulation for GSM/EDGE .....	66
5.3.9.3	Test requirement .....	66
5.3.10	Narrowband blocking .....	66
5.3.10.1	Initial conditions .....	66
5.3.10.2	Procedure .....	67
5.3.10.2.1	Procedure for narrowband blocking .....	67
5.3.10.2.2	Procedure for additional narrowband blocking for GSM/EDGE.....	67
5.3.10.2.3	Procedure for GSM/EDGE AM suppression.....	68
5.3.10.3	Test requirement .....	69
5.3.11	Reference sensitivity level.....	69
5.3.11.1	General.....	69
5.3.11.1A	Initial conditions for GSM/EDGE reference sensitivity level for CS7 and CS15.....	69
5.3.11.1B	Procedure for GSM/EDGE reference sensitivity level for CS7 and CS15.....	69
5.3.11.2	Test requirement .....	70
<b>Annex A (informative):</b>	<b>Relationship between the present document and the essential requirements of Directive 2014/53/EU .....</b>	<b>71</b>
<b>Annex B (normative):</b>	<b>Base Station configurations.....</b>	<b>73</b>
B.1	Reception with multiple receiver antenna connectors and receiver diversity .....	73
B.2	Duplexers .....	73
B.3	Power supply options .....	73
B.4	Ancillary RF amplifiers.....	73
B.5	BS using antenna arrays .....	74
B.5.0	General .....	74
B.5.1	Receiver tests.....	74
B.5.2	Transmitter tests .....	75
B.6	Transmission with multiple transmitter antenna connectors .....	75
B.7	BS with integrated Iuant BS modem.....	75
<b>Annex C (informative):</b>	<b>Recommended maximum measurement uncertainty .....</b>	<b>76</b>
<b>Annex D (informative):</b>	<b>Bibliography.....</b>	<b>78</b>
<b>Annex E (informative):</b>	<b>Change history .....</b>	<b>79</b>
History .....		80

---

# Intellectual Property Rights

## Essential patents

IPRs essential or potentially essential to normative deliverables 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.

## Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

---

# 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:	23 September 2019
Date of latest announcement of this EN (doa):	31 December 2019
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 June 2020
Date of withdrawal of any conflicting National Standard (dow):	30 June 2021

---

## 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:

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

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) (note 3)	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) (note 3)	Transmit	3 510 MHz to 3 590 MHz
	Receive	3 410 MHz to 3 490 MHz
28 (BC1) (note 4)	Transmit	758 MHz to 803 MHz
	Receive	703 MHz to 748 MHz
31 (BC1) (note 2)	Transmit	462,5 MHz to 467,5 MHz
	Receive	452,5 MHz to 457,5 MHz
32 (BC1) (notes 1, 3 and 5)	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
65 (BC1) (note 2)	Transmit	2 110 MHz to 2 200 MHz
	Receive	1 920 MHz to 2 010 MHz
67 (BC1) (notes 1 and 2)	Transmit	738 MHz to 758 MHz
	Receive	N/A
68 (BC1) (note 2)	Transmit	753 MHz to 783 MHz
	Receive	698 MHz to 728 MHz
69 (BC1) (notes 1 and 2)	Transmit	2 570 MHz to 2 620 MHz
	Receive	N/A

NOTE 1: 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 2: The band is for E-UTRA only.

NOTE 3: The band is for E-UTRA and UTRA only.

NOTE 4: The band is for E-UTRA and NB-IoT only.

NOTE 5: Radio equipment in band 32 is only allowed to operate between 1 452 MHz and 1 492 MHz.

NOTE 6: Radio equipment in band 28 is only allowed to operate between 758 MHz to 791 MHz for the transmitter and between 703 MHz to 736 MHz for the receiver.

NOTE 1: For BS capable of multi-band operation, the supported operating bands may belong to different Band Categories.

The present document covers conducted requirements for multi-RAT capable E-UTRA, UTRA and GSM/EDGE MSR Base Stations for 3GPP™ Release 9, 10, 11, 12 and 13. This includes the requirements for E-UTRA Base Station operating bands and E-UTRA CA operating bands from 3GPP Release 14.

NOTE 2: The relationship between the present document and essential requirements of article 3.2 of Directive 2014/53/EU [i.1] is given in annex A.

---

## 2 References

### 2.1 Normative references

References are specific, identified by date of publication and/or edition number or version number. Only the cited version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://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 (V13.9.0) (01-2018): "Digital cellular telecommunications system (Phase 2+) (GSM); 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 13.9.0 Release 13)".
- [2] ETSI TS 125 104 (V13.4.0) (04-2017): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (FDD) (3GPP TS 25.104 version 13.4.0 Release 13)".
- [3] ETSI TS 125 105 (V13.2.0) (07-2017): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) radio transmission and reception (TDD) (3GPP TS 25.105 version 13.2.0 Release 13)".
- [4] ETSI TS 136 104 (V13.10.0) (01-2018): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception (3GPP TS 36.104 version 13.10.0 Release 13)".
- [5] ETSI TS 145 005 (V13.4.0) (04-2017): "Digital cellular telecommunications system (Phase 2+) (GSM); GSM/EDGE Radio transmission and reception (3GPP TS 45.005 version 13.4.0 Release 13)".
- [6] ETSI EN 301 908-3 (V13.1.1) (09-2019): "IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 3: CDMA Direct Spread (UTRA FDD) Base Stations (BS)".
- [7] ETSI EN 301 908-14 (V13.1.1) (09-2019): "IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 14: Evolved Universal Terrestrial Radio Access (E-UTRA) Base Stations (BS)".
- [8] Void.
- [9] ETSI EN 301 502 (V12.5.2) (03-2017): "Global System for Mobile communications (GSM); Base Station (BS) equipment; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU".
- [10] ETSI TS 137 104 (V13.8.0) (01-2018): "Digital cellular telecommunications system (Phase 2+) (GSM); 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 13.8.0 Release 13)".
- [11] ETSI TS 136 141 (V13.10.0) (01-2018): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) conformance testing (3GPP TS 36.141 version 13.10.0 Release 13)".

- [12] ETSI TS 125 141 (V13.4.0) (10-2017): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) conformance testing (FDD) (3GPP TS 25.141 version 13.4.0 Release 13)".
- [13] ETSI TS 125 142 (V13.1.0) (08-2016): "Universal Mobile Telecommunications System (UMTS); Base Station (BS) conformance testing (TDD) (3GPP TS 25.142 version 13.1.0 Release 13)".
- [14] ETSI TS 151 021 (V13.4.0) (08-2017): "Digital cellular telecommunications system (Phase 2+) (GSM); Base Station System (BSS) equipment specification; Radio aspects (3GPP TS 51.021 version 13.4.0 Release 13)".

## 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.

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**