



**SLOVENSKI STANDARD**  
**SIST EN 302 774 V1.1.1:2011**

**01-julij-2011**

---

**Sistemi širokopasovnega brezžičnega dostopa v frekvenčnem pasu od 3400 MHz do 3800 MHz - Bazne postaje - Harmonizirani EN, ki zajema bistvene zahteve člena 3.2 direktive R&TTE**

Broadband Wireless Access Systems (BWA) in the 3 400 MHz to 3 800 MHz frequency band - Base Stations - Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 302 774 V1.1.1:2011](https://standards.iteh.ai/catalog/standards/sist/aa7035ce-3f83-43a9-8665-9af566b40938/sist-en-302-774-v1-1-1-2011)

<https://standards.iteh.ai/catalog/standards/sist/aa7035ce-3f83-43a9-8665-9af566b40938/sist-en-302-774-v1-1-1-2011>

**Ta slovenski standard je istoveten z: EN 302 774 Version 1.1.1**

---

**ICS:**

33.060.01	Radijske komunikacije na splošno	Radiocommunications in general
-----------	----------------------------------	--------------------------------

<b>SIST EN 302 774 V1.1.1:2011</b>	<b>en</b>
------------------------------------	-----------

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 302 774 V1.1.1:2011

<https://standards.iteh.ai/catalog/standards/sist/aa7035ce-3f83-43a9-8665-9af566b40938/sist-en-302-774-v1-1-1-2011>

# ETSI EN 302 774 V1.1.1 (2011-05)

---

*Harmonized European Standard*

**Broadband Wireless Access Systems (BWA) in the  
3 400 MHz to 3 800 MHz frequency band;  
Base Stations;  
Harmonized EN covering the essential requirements  
of article 3.2 of the R&TTE Directive**

---

**iTeh STANDARD PREVIEW  
(standards.iteh.ai)**

[SIST EN 302 774 V1.1.1:2011](https://standards.iteh.ai/catalog/standards/sist/aa7035ce-3f83-43a9-8665-9af566b40938/sist-en-302-774-v1-1-1-2011)

<https://standards.iteh.ai/catalog/standards/sist/aa7035ce-3f83-43a9-8665-9af566b40938/sist-en-302-774-v1-1-1-2011>



## Reference

DEN/BRAN-0060004

## Keywords

base station, radio

**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

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 302 774 V1.1.1:2011

<https://standards.iteh.ai/catalog/standards/sist/aa7035ce-3f83-43a9-8665-9af566b40272/sist-en-302-774-v1-1-1-2011>

**Important notice**

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the 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:

[http://portal.etsi.org/chaicor/ETSI\\_support.asp](http://portal.etsi.org/chaicor/ETSI_support.asp)

---

**Copyright Notification**

No part may be reproduced except as authorized by written permission.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2011.  
All rights reserved.

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

**3GPP™** is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

**LTE™** is a Trade Mark of ETSI currently being 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 .....	5
Foreword.....	5
Introduction .....	5
1 Scope .....	6
2 References .....	6
2.1 Normative references .....	6
2.2 Informative references.....	6
3 Definitions, symbols and abbreviations .....	7
3.1 Definitions .....	7
3.2 Symbols.....	7
3.3 Abbreviations .....	7
4 Essential requirements specification .....	8
4.1 Environmental profile.....	8
4.2 Conformance requirements .....	8
4.2.1 Introduction.....	8
4.2.2 Transmitter out of band emissions .....	8
4.2.2.1 Definition .....	8
4.2.2.2 Limits .....	8
4.2.3 Transmitter Adjacent Channel Leakage power Ratio (ACLR) .....	10
4.2.3.1 Definition .....	10
4.2.3.2 Limits .....	10
4.2.4 Transmitter spurious emissions.....	10
4.2.4.1 Definition .....	10
4.2.4.2 Limits .....	10
4.2.5 Maximum output power accuracy .....	11
4.2.5.1 Definition .....	11
4.2.5.2 Limits .....	11
4.2.6 Transmitter intermodulation attenuation.....	11
4.2.6.1 Definition .....	11
4.2.6.2 Limits .....	11
4.2.7 Receiver spurious emissions .....	11
4.2.7.1 Definition .....	11
4.2.7.2 Limits .....	11
4.2.8 Receiver adjacent channel rejection (ACR).....	11
4.2.8.1 Definition .....	11
4.2.8.2 Limits .....	12
4.2.9 Receiver blocking .....	12
4.2.9.1 Definition .....	12
4.2.9.2 Limits .....	12
4.2.10 Receiver intermodulation response rejection .....	12
4.2.10.1 Definition and applicability.....	12
4.2.10.2 Limits .....	12
5 Testing for compliance with technical requirements.....	13
5.1 Environmental conditions for testing .....	13
5.2 Product information.....	13
5.3 Interpretation of the measurement results .....	13
5.4 Essential radio test suites.....	14
5.4.1 Spectrum emission mask .....	14
5.4.1.1 Test Conditions .....	14
5.4.1.2 Test Setup.....	15
5.4.1.3 Test Procedure.....	15
5.4.2 Transmitter Adjacent Channel Leakage power Ratio (ACLR).....	15
5.4.2.1 Test Conditions .....	15

5.4.2.2	Test Setup.....	16
5.4.2.3	Test Procedure.....	16
5.4.3	Transmitter spurious emissions.....	17
5.4.3.1	Test Conditions .....	17
5.4.3.2	Test Setup.....	17
5.4.3.3	Test Procedure.....	17
5.4.4	Maximum output power accuracy .....	18
5.4.4.1	Test Conditions .....	18
5.4.4.2	Test Setup.....	18
5.4.4.3	Test Procedure.....	19
5.4.5	Transmitter Intermodulation attenuation .....	19
5.4.5.1	Test Conditions .....	19
5.4.5.2	Test Setup.....	20
5.4.5.3	Test Procedure.....	20
5.4.6	Receiver spurious emissions .....	20
5.4.6.1	Test Conditions .....	20
5.4.6.2	Test Setup.....	21
5.4.6.3	Test Procedure.....	21
5.4.7	Receiver adjacent channel rejection.....	22
5.4.7.1	Test Conditions .....	22
5.4.7.2	Test Setup.....	22
5.4.7.3	Test procedure.....	23
5.4.8	Receiver blocking .....	23
5.4.8.1	Test Conditions .....	23
5.4.8.2	Test Setup.....	24
5.4.8.3	Test Procedure.....	24
5.4.9	Receiver intermodulation response rejection.....	25
5.4.9.1	Test Conditions .....	25
5.4.9.2	Test Setup.....	25
5.4.9.3	Test Procedure.....	25
<b>Annex A (normative):</b>	<b>HS Requirements and conformance Test specifications Table</b>	
	<a href="https://standards.iteh.ai/catalog/standards/sist/aa7035ce-3f83-43a9-8665-9af566b40938/sist-en-302-774-v1-1-1-2011">https://standards.iteh.ai/catalog/standards/sist/aa7035ce-3f83-43a9-8665-9af566b40938/sist-en-302-774-v1-1-1-2011</a>	<b>27</b>
<b>Annex B (informative):</b>	<b>The EN title in the official languages .....</b>	<b>29</b>
<b>Annex C (informative):</b>	<b>Bibliography.....</b>	<b>30</b>
History .....		31

---

## 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://webapp.etsi.org/IPR/home.asp>).

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 Harmonized European Standard (EN) has been produced by ETSI Technical Committee Broadband Radio Access Networks (BRAN).

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC (as amended) [i.2] laying down a procedure for the provision of information in the field of technical standards and regulations.

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 Harmonized Standard under the Directive 1999/5/EC [i.1].

See article 5.1 of Directive 1999/5/EC [i.1] for information on presumption of conformity and Harmonised Standards or parts thereof the references of which have been published in the Official Journal of the European Union.

The requirements relevant to Directive 1999/5/EC [i.1] are summarised in annex A.

[SIST EN 302 774 V1.1.1:2011](https://standards.iteh.ai/catalog/standards/sist/aa7035ee-3f83-43a9-8665-9aff113011)

<https://standards.iteh.ai/catalog/standards/sist/aa7035ee-3f83-43a9-8665-9aff113011>

### National transposition dates

Date of adoption of this EN:	30 May 2011
Date of latest announcement of this EN (doa):	31 August 2011
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	29 February 2012
Date of withdrawal of any conflicting National Standard (dow):	28 February 2013

---

## 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.1]. The modular structure is shown in EG 201 399 [i.3].

The present document is intended to provide a smooth transition period for the introduction of BWA systems in this band, which shall end on 31 December 2013. Due to the fact that the sub-band 3 400 MHz to 3 600 MHz was also identified for IMT systems, it is expected that in version V1.2.1 of the present document the ACLR specification for this sub-band, because of its mobile use, will be aligned with the tighter ACLR value of -44,2 dB required for the mobile use, to be specified in EN 301 908 [i.9] for IMT Base Stations operating in the frequency range 3 400 MHz to 3 600 MHz. It is also expected that this first version will be withdrawn after 31 December 2013, being superseded by EN 302 774 (V1.2.1).

---

# 1 Scope

The present document is applicable to FDD and TDD Base Stations of Broadband Wireless Access Systems (BWA) operating in the Frequency Band 3 400 MHz to 3 800 MHz.

The present document covers the requirements for various channel bandwidths.

The present document is equally applicable to systems utilizing integral or non integral antennas.

Equipment complying with the present document falls within the scope of EC Decision 2008/411/EC [i.4].

The present document is intended to cover the provisions of Directive 1999/5/EC (R&TTE Directive) [i.1], 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.1] may apply to equipment within the scope of the present document.

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

---

# 2 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.

## 2.1 Normative references

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

Not applicable.

## 2.2 Informative references

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 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.2] 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.3] ETSI EG 201 399 (V2.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of Harmonized Standards for application under the R&TTE Directive".
- [i.4] Commission Decision 2008/411/EC of 21 May 2008 on the harmonisation of the 3 400 - 3 800 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community.



- [i.5] ETSI EN 300 019 (all parts): "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment".
- [i.6] ETSI TR 100 028-1 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1".
- [i.7] ETSI TR 100 028-2 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2".
- [i.8] ETSI TR 102 215 (V1.3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Recommended approach, and possible limits for measurement uncertainty for the measurement of radiated electromagnetic fields above 1 GHz".
- [i.9] ETSI EN 301 908 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks".

## 3 Definitions, symbols and abbreviations

### 3.1 Definitions

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

**Automatic Transmit Power Control (ATPC):** function implemented to offer a dynamic power control

**environmental profile:** declared range of environmental conditions under which equipment within the scope of the present document is required to be compliant

**maximum radiated output power:** maximum mean radiated output power (e.i.r.p.) declared by the manufacturer

**maximum radiated power density:** maximum mean radiated output power (e.i.r.p.) density, defined as dBm/MHz

### 3.2 Symbols

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

$A_{BS}$	Base Station Interface A
$A_{TS}$	Terminal Station Interface A
$A_{UUT}$	Unit Under Test Interface A
dB	deciBel
dBc	deciBel relative to carrier
dBm	deciBel relative to 1 mW
$f_c$	center frequency
GHz	GigaHertz
kHz	kiloHertz
MHz	MegaHertz

### 3.3 Abbreviations

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

ACLR	Adjacent Channel Leakage power Ratio
ATPC	Automatic Transmit Power Control
AWGN	Average White Gaussian Noise
BER	Bit Error Rate
BWA	Broadband Wireless Access
ChBW	Channel Bandwidth
e.i.r.p.	equivalent isotropically radiated power

FDD	Frequency Division Duplex
PER	Packet Error Rate
Pmax	Maximum Output Power
Pnom	Nominal Maximum Output Power
RMS	Root Mean Square
TDD	Time Division Duplex
UUT	Unit Under Test

## 4 Essential requirements specification

### 4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be declared by the manufacturer. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared operational environmental profile.

### 4.2 Conformance requirements

#### 4.2.1 Introduction

To meet the essential requirement under article 3.2 of the R&TTE Directive [i.1] six essential parameters have been identified. Table 1 provides a cross reference between these six essential parameters and the corresponding seven technical requirements for equipment within the scope of the present document. To fulfil an essential parameter the compliance with all the corresponding technical requirements in table 1 must be verified.

**Table 1: Cross references**

Essential parameter	Corresponding technical requirements
Spectrum emissions mask	4.2.2 Transmitter out of band emissions
	4.2.3 Transmitter adjacent channel leakage power ratio
Conducted spurious emissions from the transmitter antenna connector	4.2.4 Transmitter spurious emissions
Output power	4.2.4 Maximum output power accuracy
Intermodulation attenuation of the transmitter	4.2.6 Transmit Intermodulation attenuation
Conducted spurious emissions from the receiver antenna connector	4.2.7 Receiver spurious emissions
Impact of interference on receiver performance	4.2.8 Receiver adjacent channel rejection
	4.2.9 Receiver blocking
	4.2.10 Receiver intermodulation response rejection

#### 4.2.2 Transmitter out of band emissions

##### 4.2.2.1 Definition

Out of band emissions of the transmitter are unwanted emissions outside the channel bandwidth resulting from the modulation process and non-linearity in the transmitter but excluding spurious emissions.

##### 4.2.2.2 Limits

The average level of the transmitter out of band emissions shall not exceed the limits of the masks provided in figures 1 or 2 according to the declared Pnom. For a declared Pnom ≥ 33 dBm, the relative spectrum mask provided in figure 1 is applicable while for a declared Pnom < 33 dBm, the absolute spectrum mask provided in figure 2 is applicable.

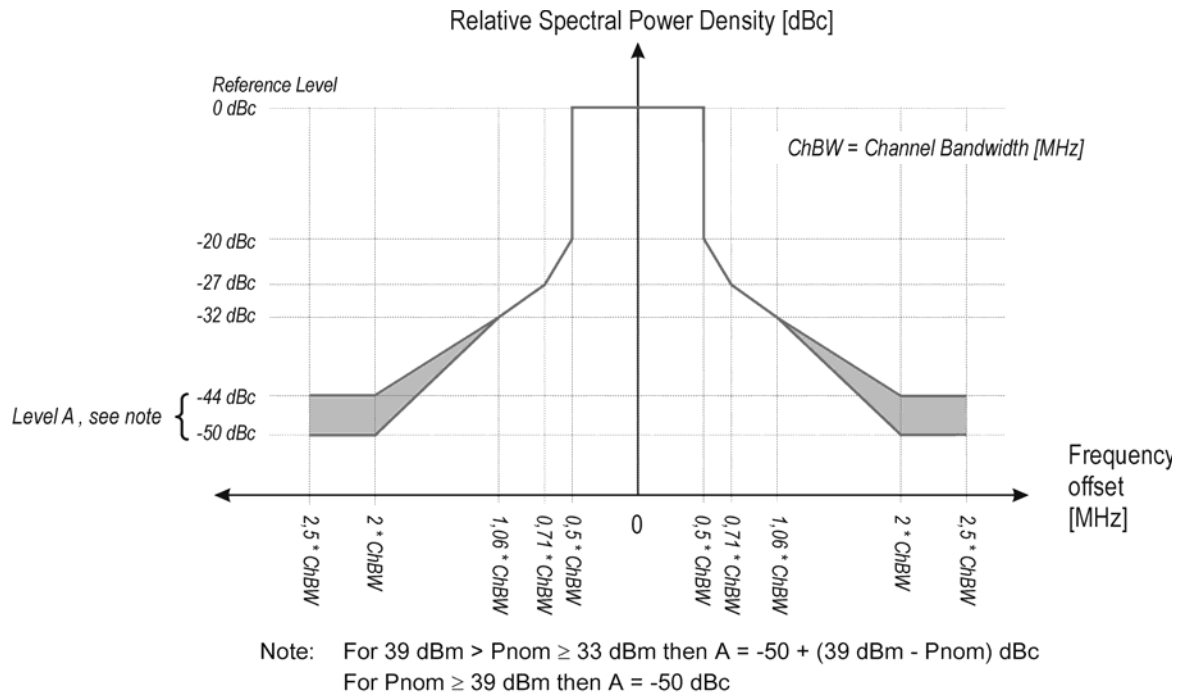


Figure 1: Transmit spectral power density mask for  $P_{\text{nom}} \geq 33 \text{ dBm}$

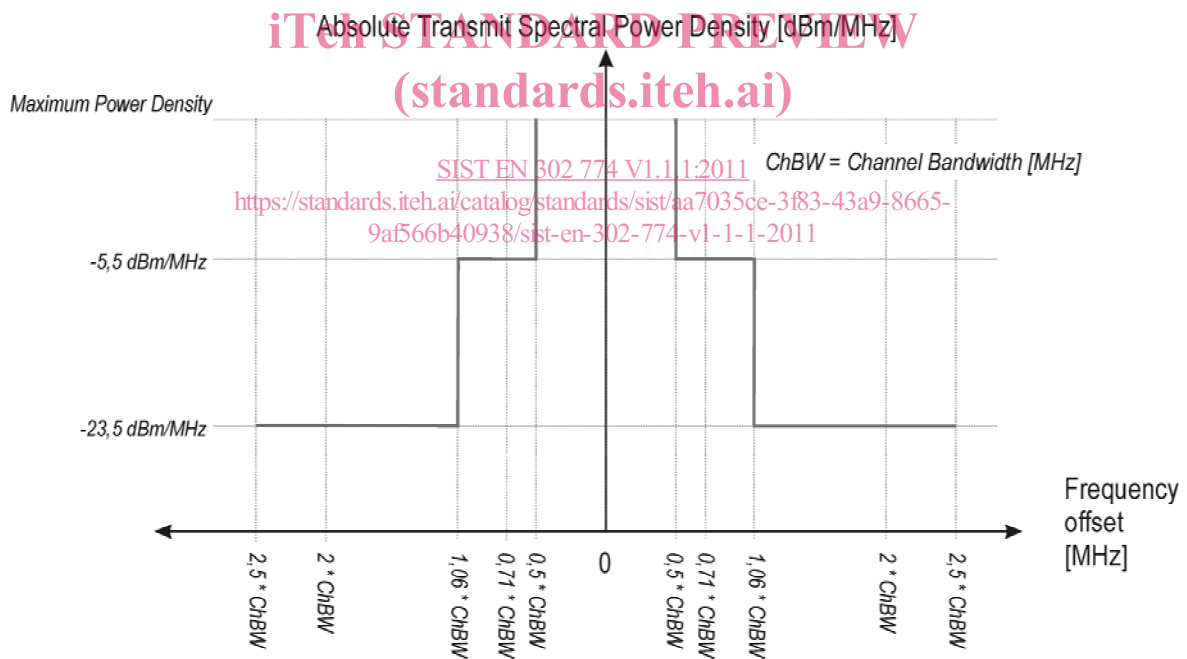


Figure 2: Transmit spectral power density mask for  $P_{\text{nom}} < 33 \text{ dBm}$

## 4.2.3 Transmitter Adjacent Channel Leakage power Ratio (ACLR)

### 4.2.3.1 Definition

Adjacent Channel Leakage power Ratio (ACLR) is the ratio of the mean power measured through a filter pass band centred on the centre frequency of the operating channel to the mean power measured through a filter pass band centred on the centre frequencies of the first or second adjacent channel.

### 4.2.3.2 Limits

The Adjacent Channel Leakage power Ratio (ACLR) shall be equal to or greater than the limits given in table 2.

The filter pass band for evaluating the level in the operating channel as well as the filter pass band for evaluating the levels in the adjacent channels shall have a width equal to 95 % of the Channel Bandwidth (ChBW).

**Table 2: Minimum ACLR values**

Adjacent channel	ACLR
$F_c \pm \text{ChBW}$	37 dB
$F_c \pm 2 \times \text{ChBW}$	48 dB

## 4.2.4 Transmitter spurious emissions

### 4.2.4.1 Definition

Transmitter spurious emissions are any of the transmitter unwanted emissions on frequencies which are more than 250 % of the channel bandwidth (ChBW) away from the centre frequency of the operating channel.

### 4.2.4.2 Limits

The transmitter spurious emissions shall not exceed the limits given in tables 3 and 4.

**Table 3: Transmitter spurious emissions limits**

Frequency range	Measurement bandwidth	Limit
9 kHz to 1 GHz	100 kHz	-36 dBm
1 GHz to 19 GHz	30 kHz If $2,5 \times \text{ChBW} \leq  f_c - f  < 10 \times \text{ChBW}$	-30 dBm
	300 kHz If $10 \times \text{ChBW} \leq  f_c - f  < 12 \times \text{ChBW}$	-30 dBm
	1 MHz If $12 \times \text{ChBW} \leq  f_c - f $	-30 dBm

**Table 4: Additional spurious emissions limits in specific bands**

Frequency range	Measurement bandwidth	Limit
876 MHz to 915 MHz	100 kHz	-61 dBm
921 MHz to 960 MHz	100 kHz	-57 dBm
1 710 MHz to 1 785 MHz	100 kHz	-61 dBm
1 805 MHz to 1 880 MHz	100 kHz	-47 dBm
1 900 MHz to 1 920 MHz	1 MHz	-44 dBm
1 920 MHz to 1 980 MHz	1 MHz	-49 dBm
2 010 MHz to 2 025 MHz	1 MHz	-44 dBm
2 110 MHz to 2 170 MHz	1 MHz	-52 dBm
2 500 MHz to 2 570 MHz	1 MHz	-49 dBm
2 570 MHz to 2 690 MHz	1 MHz	-52 dBm