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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

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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 Directive 98/34/EC as amended by Directive 98/48/EC [i.2].

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.

National transposition dates	
Date of adoption of this EN:	15 February 2012
Date of latest announcement of this EN (doa):	31 May 2012
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2012
Date of withdrawal of any conflicting National Standard (dow):	31 December 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].

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 does not address those IMT systems which are considered in EN 301 908 [i.9].

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
f_o	operating frequency
f_{offset}	offset 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
ACR	Adjacent Channel Rejection
ATPC	Automatic Transmit Power Control
AWGN	Average White Gaussian Noise

BER	Bit Error Rate
BWA	Broadband Wireless Access
ChBW	Channel BandWidth
CW	Continuous Wave
e.i.r.p.	equivalent isotropically radiated power
FDD	Frequency Division Duplex
IMT	International Mobile Telecommunications
PER	Packet Error Rate
Pmax	Maximum Output Power
Pnom	Nominal Maximum Output Power
P_{SENS}	receiver sensitivity for a given ChBW, while decoding the signal using the most robust modulation declared by the equipment supplier
RF	Radio Frequency
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.

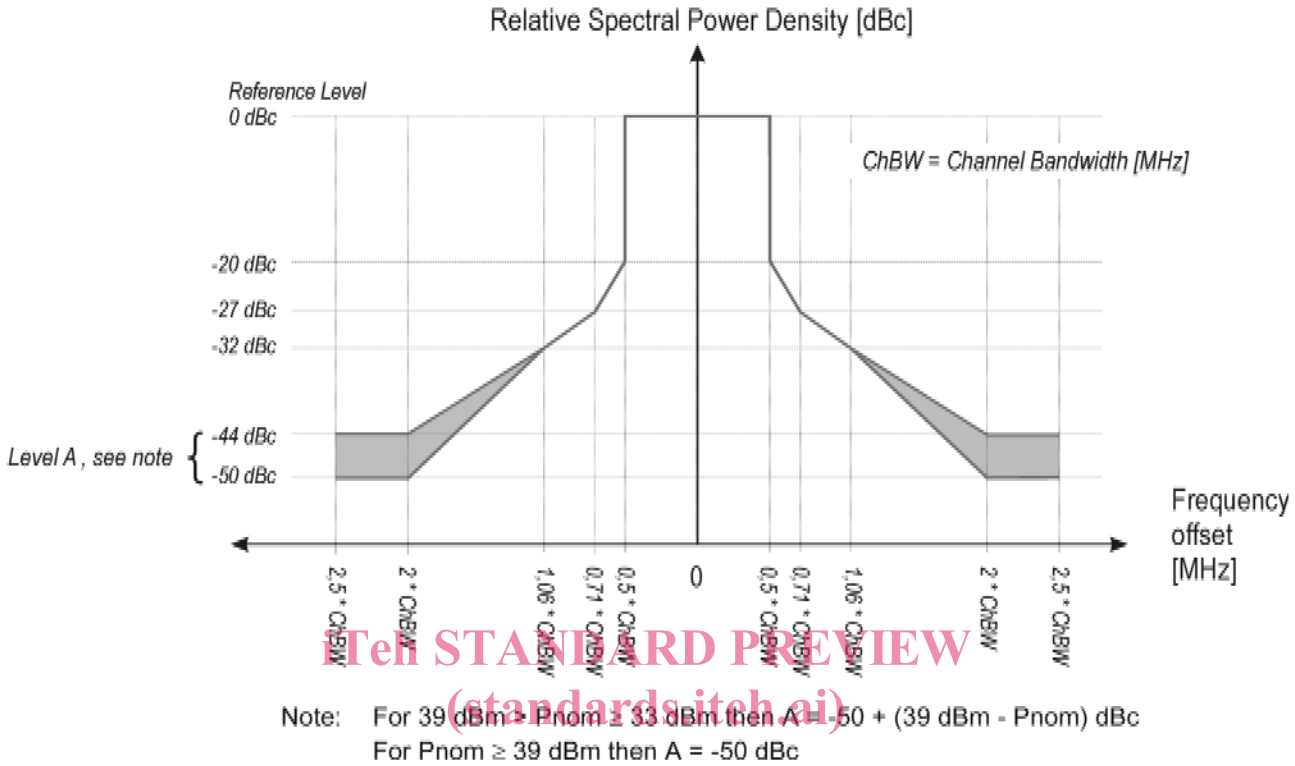

Figure 1: Transmit spectral power density mask for Pnom ≥ 33 dBm

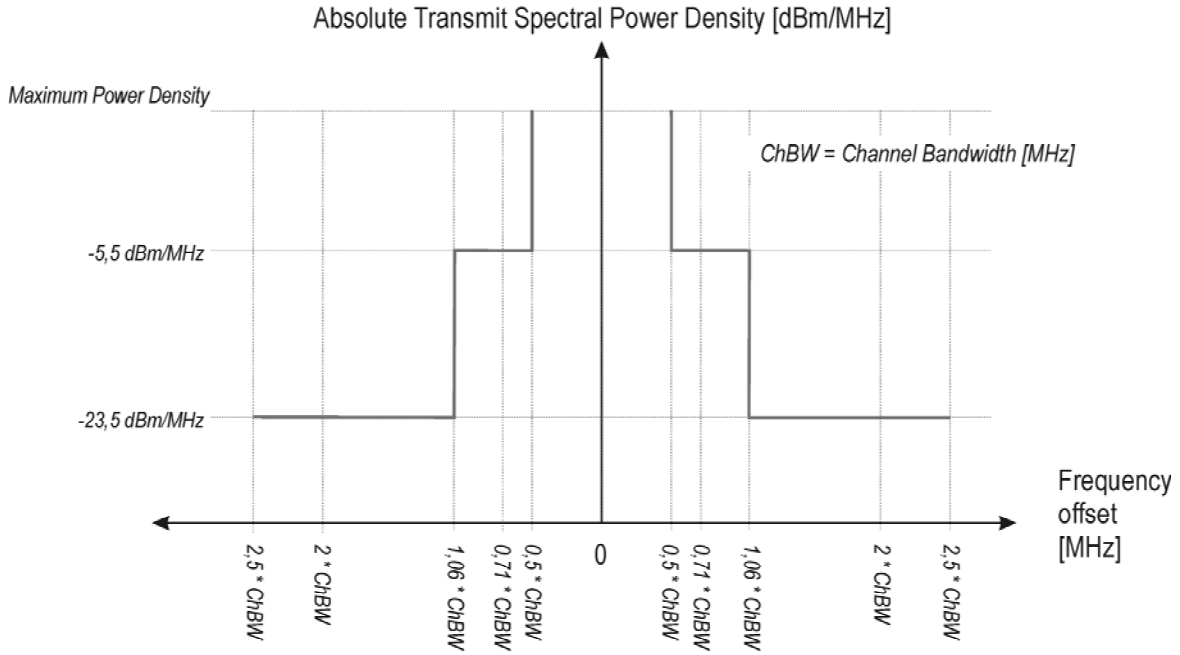

Figure 2: Transmit spectral power density mask for Pnom < 33 dBm

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 ± ChBW	44,2 dB
F_c ± 2 x 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 x ChBW ≤ $\lvert f_c - f \rvert$ < 10 x ChBW	-30 dBm
	300 kHz If 10 x ChBW ≤ $\lvert f_c - f \rvert$ < 12 x ChBW	-30 dBm
	1 MHz If 12 x ChBW ≤ $\lvert f_c - f \rvert$	-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