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Ġirokopasovna radijska dostopovna omreġja (BRAN) - Fiksni ġirokopasovni sistemi za prenos podatkov na frekvenci 5,8 GHz - Harmonizirani EN, ki zajema bistvene zahteve ļ lena 3.2 direktive R&TTE

Broadband Radio Access Networks (BRAN) - 5,8 GHz fixed broadband data transmitting systems - Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

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Foreword

This Harmonized European Standard (Telecommunications series) 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) laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Directive 1999/5/EC [1] 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 ("the R&TTE Directive").

Technical specifications relevant to Directive 1999/5/EC [1] are given in annex A.

National transposition dates	
Date of adoption of this EN:	20 June 2008
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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. The modular structure is shown in EG 201 399 [9].

1 Scope

The present document is applicable to radio equipment for Fixed Broadband Data Transmitting Systems intended to operate in the 5,8 GHz band (5 725 MHz to 5 875 MHz). The document is equally applicable to systems utilizing integral or dedicated antennas.

The present document is intended to cover the provisions of Directive 1999/5/EC [1] (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".

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

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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 indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

[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).

[2] ETSI EN 300 019-1-0 (V2.1.2): "Environmental Engineering (EE); Environmental conditions and environmental tests for telecommunications equipment; Part 1-0: Classification of environmental conditions; Introduction".

[3] 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".

[4] 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".

[5] CISPR 16-1-1 (second edition 2006-03): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus".

[6] CISPR 16-2-1 (edition 1.1 2005-09): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-1: Methods of measurement of disturbances and immunity - Conducted disturbance measurements".

[7] CISPR/TR 16-3 (second edition 2003-11): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 3: CISPR technical reports".

[8] CEPT/ECC Report 68 (Riga, June 2005): "Compatibility studies in the band 5725-5875 MHz between Fixed Wireless Access (FWA) systems and other systems".

[9] ETSI EG 201 399 (V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".

[10] CEPT/ERC Recommendation 74-01: "Unwanted Emissions in the Spurious Domain" (Siófok 98, Nice 99, Sesimbra 02, Hradec Kralove 05).

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area**.** For non-specific references, the latest version of the referenced document (including any amendments) applies.

Not applicable.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in the R&TTE Directive [1] and the following apply:

antenna assembly: combination of the antenna (integral or dedicated), its coaxial cable and if applicable, its antenna connector and associated switching components

available channel: channel identified as usable as an *Operating Channel*

burst: period during which radio waves are intentionally transmitted, preceded and succeeded by periods during which no intentional transmission is made

dedicated antenna: antenna external to the equipment, using an antenna connector with a cable or a wave-guide

NOTE: The antenna has been designed or developed for one or more specific types of equipment. It is the combination of dedicated antenna and radio equipment that is expected to be compliant with the regulations.

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

in-service monitoring: mechanism to check a channel in use by the device for the presence of a radar signal with a level above the Interference Detection Threshold

integral antenna: antenna designed as a fixed part of the equipment, without the use of an external connector and as such which can not be disconnected from the equipment by a user with the intend to connect another antenna

NOTE 1: An integral antenna may be fitted internally or externally. In the case where the antenna is external, a non-detachable cable or wave-guide can be used.

NOTE 2: Even when equipment with an integral antenna is concerned, it might still be possible to separate the antenna from the equipment using a special tool. In such cases the assessment of the radio equipment and of the antenna against requirements of the present document may be done separately.

manufacturer: manufacturer or his authorized representative established in the Community

NOTE 1: See R&TTE Directive [1], annex II.

NOTE 2: Or the person responsible for placing the apparatus on the market (R&TTE Directive [1], article 6.3)**.**

operating channel: *Available Channel* on which the FWA device has started transmissions

NOTE: An *Operating Channel* becomes again an *Available Channel* if the FWA device stopped all transmissions on that channel and no radar signal was detected by the *In-Service Monitoring.*

operating nominal RF channel width: nominal amount of spectrum used by a single device operating on an identified centre frequency

Transmit Power Control (TPC): technique in which the transmitter output power is controlled resulting in reduced interference to other systems

Transmit Power Control Range: power range over which the TPC is able to control the transmitter output power

Unavailable Channel: channel which can not be considered by the FWA device for a certain period of time *(Non-Occupancy Period)* after a radar signal was detected on that channel

3.2 Symbols

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

A	Measured power output (dBm)
B	Radar burst period
Ch_f	Channel free from radars
Ch_r	Channel occupied by a radar
ChS	Nominal occupied channel bandwidth
D	Measured power density
E	Field strength
E_o	Reference field strength
f_c	Carrier frequency
G	Antenna gain (dBi)
L	Radar burst length
n	Number of channels
P_{cond}	The conducted power level of the equipment
P_{cond_1}	The maximum useable conducted power level from the equipment
P_{cond_2}	The maximum conducted power level from the power range associated with the highest useable antenna assembly gain
P_{cond_3}	The minimum conducted power level from the equipment
P_{EIRP}	The EIRP of the equipment
R	Distance
R_o	Reference distance
S0	Signal power
T0	Time instant
T1	Time instant
T2	Time instant
T3	Time instant
W	Radar pulse width
x	Observed duty cycle

3.3 Abbreviations

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

CW	Continuous Wave
DFS	Dynamic Frequency Selection
EIRP	Equivalent Isotropically Radiated Power
EMC	Electro-Magnetic Compatibility
ERP	Effective Radiated Power
FWA	Fixed Wireless Access
IF	Intermediate Frequencies
PD	mean Power Density EIRP
ppm	parts per million
pps	pulses per second
PRF	Pulse Repetition Frequency
R&TTE	Radio and Telecommunications Terminal Equipment
RF	Radio Frequency
TPC	Transmit Power Control
Tx	Transmit, Transmitter
UUT	Unit Under Test

4 Technical requirements specification

With reference to article 3.2 of Directive 1999/5/EC [1] the technical requirements in this clause have been identified as relevant to presume compliance with the essential requirements.

4.1 Designation of centre frequencies and frequency error

4.1.1 Definition

The nominal channel centre frequencies f_c, identified by the following expression:

5 725 + (n × 2,5) MHz, where n = 2 to 58 for ChS = 10 MHz;

where n = 4 to 56 for ChS = 20 MHz.

Frequency error is the difference between the nominal channel centre frequency and the actual channel centre frequency.

4.1.2 Limits

The manufacturer shall declare the centre frequencies on which the equipment can operate. The equipment shall only operate in channels centred on any of those frequencies identified in clause 4.1.1.

The actual carrier centre frequency shall be maintained within the range f_c ±20 ppm of the nominal channel centre frequency.

4.1.3 Conformance

Conformance tests as defined in clause 5.3.2 shall be carried out.

4.2 Transmitter RF output power, EIRP and EIRP spectral density

4.2.1 Definition

The RF output power is the mean conducted power applied to the antenna assembly, during a transmission burst.

The EIRP is the maximum radiated power of the equipment relative to an isotropic antenna.

The EIRP spectral density is the mean EIRP evaluated within a specified measurement bandwidth during a transmission burst.

4.2.2 Limits

The mean EIRP, RF power and EIRP spectral density when configured to operate at the highest stated power level (P_{cond_1}) shall not exceed the limits in table 1.

Table 1: Mean RF output power, EIRP and power density limits at the highest power level

Channel Width (MHz) ChS	Mean RF power into antenna (dBm)	mean EIRP (dBm)	Mean EIRP spectral density (dBm/MHz)
10	27	33	23
20	30	36	23

4.2.3 Conformance

Conformance tests as defined in clause 5.3.3 shall be carried out.

4.3 Transmitter unwanted emissions

Equipment that, in addition to a transmit mode, has also a standby or idle mode, shall in this mode meet the requirements defined in clause 4.5.

4.3.1 Transmitter unwanted emissions outside the 5 725 MHz to 5 875 MHz band

4.3.1.1 Definition

These are radio frequency emissions outside the band 5 725 MHz to 5 875 MHz.