SLOVENSKI STANDARD
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Širokopasovna radijska dostopovna omrežja (BRAN) - Večgigabitni 60 GHz sistemi WAS/RLAN - Harmonizirani EN, ki zajema bistvene zahteve člena 3.2 direktive R&TTE

Broadband Radio Access Networks (BRAN) - 60 GHz Multiple-Gigabit WAS/RLAN Systems - Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

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Foreword

This final draft Harmonized European Standard (EN) has been produced by ETSI Technical Committee Broadband Radio Access Networks (BRAN), and is now submitted for the Vote phase of the ETSI standards Two-step Approval Procedure.

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [i.2] (as amended) 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 [2].

See article 5.1 of Directive 1999/5/EC [2] 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 [2] are summarised in annex A.

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

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 [2]. The modular structure is shown in EG 201 399 [i.6].

1 Scope

The present document applies to radio equipment types for wireless access systems (WAS)/Radio Local Area Networks (RLAN) operating at multiple-gigabit data rates in the 60 GHz frequency range. These applications may also be referred to as Wireless Personal Area Network (WPAN) or Wireless Local Area Network (WLAN) systems and are intended for licence-exempt short-range devices. Economic benefits of this usage apply to a variety of markets including communications, computing, and consumer electronics by enabling the transfer of large amounts of information in a short amount of time (for example, from a kiosk to a mobile phone) or the continuous streaming of uncompressed data (for example, the external video interfaces of a computer or high definition disc player).

These networks operate over a short range with very wideband communications using a variety of directional medium and high gain antennas to enable a high degree of spectrum reuse, and may use a flexible bandwidth scheme under which they normally operate in a wideband mode, and periodically reduce their bandwidth (e.g. for antenna training and other activities).

The spectrum usage conditions for this equipment are set in Commission Decision 2006/771/EC [i.7] as amended by 2010/368/EU [i.8] and ERC Recommendation 70-03, annex 3 [i.5].

The technical characteristics of these applications are further described in TR 102 555 [i.1]. Equipment in this frequency range intended for outdoor Fixed Local Area Network Extension (FLANE) or Fixed Point-to-Point applications are not in the scope of the present document.

The present document is intended to support specifications such as those addressed in IEEE 802.15.3c [i.3], ECMA TC48 [i.4] and other international bodies.

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

Table 1: Radiocommunications service frequency bands

	Radiocommunications service frequency bands
Transmit	57 GHz to 66 GHz
Receive	57 GHz to 66 GHz

The present document is intended to cover the provisions of Directive 1999/5/EC [2] (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".

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 [2] 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.

[1] ERC Recommendation 74-01 (2011): "Unwanted Emissions in the Spurious Domain".

[2] 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).

[3] ETSI TR 100 028 (V1.4.1) - (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

[4] ITU-R Recommendation SM.1539-1 (2002): "Variation of the boundary between the out-of-band and spurious domains required for the application of Recommendations ITU-R SM.1541 and ITU-R SM.329".

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] ETSI TR 102 555: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics of multiple gigabit wireless systems in the 60 GHz range System Reference Document".

[i.2] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.

[i.3] IEEE 802.15.3c: "IEEE Standard for Information Technology - Specific Requirements - Part 15: Wireless Personal Area Networks with Millimeter Wave Alternative Physical Task Group 3c (TG3c)".

[i.4] ECMA TC48, High Rate Short Range Wireless Communications.

[i.5] ERC Recommendation 70-03 (Tromsø 1997 and subsequent amendments): "Related to the Use of Short Range Devices (SRD)".

[i.6] ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of Harmonized Standards for application under the R&TTE Directive".

[i.7] Commission Decision 2006/771/EC of 9 November 2006 on harmonisation of the radio spectrum for use by short-range devices.

[i.8] Commission Decision 2010/368/EU of 30 June 2010 amending Decision 2006/771/EC on harmonisation of the radio spectrum for use by short-range devices.

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in Directive 1999/5/EC [2] and the following apply:

60 GHz range or 60 GHz band: one of the variously permitted frequencies of operation, typically from 57 GHz to 66 GHz

activity factor: percentage over any one minute time period when equipment is operating under a given set of conditions

channel separation: minimum separation (in MHz) between the centre frequencies of two adjacent channels in the channel plan of the radio equipment

environmental profile: range of environmental conditions under which equipment within the scope of the present document is required to comply with the provisions of the present document

integral antenna: antenna which is declared to be part of the radio equipment by the supplier

NOTE 1: In some cases, it may not be possible to remove an integral antenna or expose an antenna connector without changing the output characteristics of the radio equipment.

NOTE 2: Even with an integral antenna, it might still be possible to separate the antenna from the equipment using a special tool.

mean power: when applied to a modulated signal, this is the power (transmitted or received) in a bandwidth

occupied bandwidth: frequency bandwidth of the signal power at the -6 dBc points

smart antenna systems: equipment that combines multiple transmit and/or receive antenna elements with a signal processing function to increase its radiation and/or reception capabilities

NOTE: This includes techniques such as spatial multiplexing, beam forming, cyclic delay diversity, etc.

3.2 Symbols

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

dBc	spectral density relative to the maximum spectral power density of the transmitted signal
dBm	decibel relative to one milliwatt
dBr	decibel relative to a given maximum power level
GHz	thousand millions of cycles
kHz	thousands of cycles
µs	millionths of seconds

3.3 Abbreviations

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

ChS	Channel Separation
EIRP	Equivalent Isotropically Radiated Power
FLANE	Fixed Local Area Network Extension
OBw	Occupied Bandwidth
PDL	spectral Power Density Limit
RBw	Resolution Bandwidth
RF	Radio Frequency
RLAN	Radio Local Area Network
R&TTE	Radio and Telecommunications Terminal Equipment
UUT	Unit Under Test
WAS	Wireless Access System
WLAN	Wireless Local Area Network
WPAN	Wireless Personal Area Network

4 Technical requirements specifications

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 supplier. 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 Spectral power density

4.2.1.1 Definition

The spectral power density is the mean Equivalent Isotropically Radiated Power (EIRP) density in Watts per Hertz during a transmission burst.

4.2.1.2 Limit

The maximum spectral power density is applicable to the system as a whole when operated at the highest stated power level. For a smart antenna system, the limit applies to the configuration that results in the highest EIRP.

The maximum spectral power density shall be as indicated in table 2.

Table 2: Spectral power density limit (PDL)

Usage	Maximum spectral power density (EIRP)
Indoor and Outdoor	13 dBm / MHz

4.2.1.3 Conformance

Conformance tests for this requirement are defined in clause 5.3.3.

4.2.2 RF output power

4.2.2.1 Definition

The RF output power is the mean equivalent isotropically radiated power (EIRP) for the equipment during a transmission burst.

4.2.2.2 Limit

The maximum RF output power is applicable to the system as a whole when operated at the highest stated power level. For a smart antenna system, the limit applies to the configuration that results in the highest EIRP.

The maximum RF output power in normal wideband operation shall be as indicated in table 3.

Table 3: RF output power limit

Usage	Maximum power level (EIRP)
Indoor and Outdoor	40 dBm

4.2.2.3 Conformance

Conformance tests for this requirement are defined in clause 5.3.4.

4.2.3 Transmitter unwanted emissions

4.2.3.1 Definition

These are unwanted emissions in the spurious domain as noted in ERC Recommendation 74-01 [1] while the equipment is transmitting. The boundary where the spurious domain begins as given by ITU-R Recommendation SM.1539-1 [4] is considered to be the offset from the nominal centre frequency of the transmission by ±250 % of the relevant occupied bandwidth (OBw) for OBw ≤ 500 MHz and ± (500 MHz + 1,5 × OBw) for OBw > 500 MHz.

4.2.3.2 Limit

The level of unwanted emissions in the spurious domain shall conform to the limits given in table 4.

NOTE: In line with ERC Recommendation 74-01 [1] these limits apply to the power levels conducted to the antenna connector.

Table 4: Transmitter spurious emissions

Frequency range	Emission Limit	Measurement Bandwidth
30 MHz to 47 MHz	-36 dBm	100 kHz
47 MHz to 74 MHz	-54 dBm	100 kHz
74 MHz to 87,5 MHz	-36 dBm	100 kHz
87,5 MHz to 118 MHz	-54 dBm	100 kHz
118 MHz to 174 MHz	-36 dBm	100 kHz
174 MHz to 230 MHz	-54 dBm	100 kHz
230 MHz to 470 MHz	-36 dBm	100 kHz
470 MHz to 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 132 GHz	-30 dBm	1 MHz

4.2.3.3 Conformance

Conformance tests for this requirement are defined in clause 5.3.5.

4.2.4 Receiver unwanted emissions

4.2.4.1 Definition

These are unwanted emissions in the spurious domain as noted in ERC Recommendation 74-01 [1] while the equipment is receiving a transmission.

4.2.4.2 Limit

The level of unwanted emissions in the spurious domain shall conform to the limits given in table 5.

NOTE: In line with ERC Recommendation 74-01 [1] these limits apply to the power levels conducted to the antenna connector.

Table 5: Receiver spurious emissions

Frequency band	Emission Limit	Measurement Bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 132 GHz	-47 dBm	1 MHz