



**SLOVENSKI STANDARD**  
**SIST EN 301 893 V1.2.3:2004**  
**01-julij-2004**

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**Širokopasovna radijska dostopovna omrežja (BRAN) – Zelo zmogljivo radijsko lokalno omrežje (RLAN) na 5 GHz – Harmonizirani evropski standard (EN), ki zajema bistvene zahteve člena 3.2 direktive R&TTE**

Broadband Radio Access Networks (BRAN); 5 GHz high performance RLAN;  
Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

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# ETSI EN 301 893 V1.2.3 (2003-08)

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*Candidate Harmonized European Standard (Telecommunications series)*

**Broadband Radio Access Networks (BRAN);  
5 GHz high performance RLAN;  
Harmonized EN covering essential requirements  
of article 3.2 of the R&TTE Directive**

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# Contents

Intellectual Property Rights .....	6
Foreword.....	6
Introduction .....	7
1 Scope .....	9
2 References .....	10
3 Definitions, symbols and abbreviations .....	10
3.1 Definitions .....	10
3.2 Symbols.....	11
3.3 Abbreviations .....	11
4 Technical requirements specifications .....	12
4.1 Environmental profile.....	12
4.2 Carrier frequencies .....	12
4.2.1 Definition.....	12
4.2.2 Limits.....	12
4.2.3 Conformance.....	12
4.3 RF output power, Transmit Power Control (TPC) and power density .....	12
4.3.1 Definition.....	12
4.3.2 Limits.....	12
4.3.2.1 RF output power and power density at the highest power level.....	12
4.3.2.2 RF output power at the lowest power level.....	13
4.3.3 Conformance.....	13
4.4 Transmitter unwanted emissions .....	13
4.4.1 Transmitter unwanted emissions outside the 5 GHz RLAN bands .....	13
4.4.1.1 Definition .....	13
4.4.1.2 Limits .....	13
4.4.1.3 Conformance.....	13
4.4.2 Transmitter unwanted emissions within the 5 GHz RLAN bands .....	13
4.4.2.1 Definition .....	13
4.4.2.2 Limits .....	14
4.4.2.3 Conformance.....	14
4.5 Receiver spurious emissions.....	14
4.5.1 Definition.....	14
4.5.2 Limits.....	14
4.5.3 Conformance.....	14
4.6 Dynamic Frequency Selection (DFS).....	14
4.6.1 Interference Detection Threshold .....	16
4.6.1.1 Definition .....	16
4.6.1.2 Limit.....	16
4.6.1.3 Conformance.....	16
4.6.2 Channel Availability Check Time .....	16
4.6.2.1 Definition .....	16
4.6.2.2 Limit.....	16
4.6.2.3 Conformance.....	16
4.6.3 Channel Closing Transmission Time .....	16
4.6.3.1 Definition .....	16
4.6.3.2 Limit.....	16
4.6.3.3 Conformance.....	17
4.6.4 Channel Move Time .....	17
4.6.4.1 Definition .....	17
4.6.4.2 Limit.....	17
4.6.4.3 Conformance.....	17
4.6.5 Uniform Spreading .....	17
4.6.5.1 Definition .....	17

4.6.5.2	Limit.....	17
5	Testing for compliance with technical requirements.....	17
5.1	Conditions for testing.....	17
5.1.1	Environmental conditions for testing.....	17
5.1.2	Test sequences.....	18
5.1.2.1	General test transmission sequences.....	18
5.2	Interpretation of the measurement results.....	18
5.3	Essential radio test suites.....	19
5.3.1	Product information.....	19
5.3.2	Carrier frequencies.....	19
5.3.2.1	Test conditions.....	19
5.3.2.2	Test methods.....	19
5.3.2.2.1	Conducted measurement.....	19
5.3.2.2.2	Radiated measurement.....	20
5.3.3	RF output power, Transmit Power Control (TPC) and power density.....	20
5.3.3.1	Test conditions.....	20
5.3.3.2	Test method.....	20
5.3.3.2.1	Conducted measurement.....	20
5.3.3.2.2	Radiated measurement.....	22
5.3.4	Transmitter unwanted emissions outside the 5 GHz RLAN bands.....	23
5.3.4.1	Test conditions.....	23
5.3.4.2	Test method.....	23
5.3.4.2.1	Conducted measurement.....	23
5.3.4.2.2	Radiated measurement.....	24
5.3.5	Transmitter unwanted emissions within the 5 GHz RLAN bands.....	24
5.3.5.1	Test conditions.....	24
5.3.5.2	Test method.....	25
5.3.5.2.1	Conducted measurement.....	25
5.3.5.2.2	Radiated measurement.....	25
5.3.6	Receiver spurious emissions.....	25
5.3.6.1	Test conditions.....	25
5.3.6.2	Test method.....	26
5.3.6.2.1	Conducted measurement.....	26
5.3.6.2.2	Radiated measurement.....	26
5.3.7	Dynamic Frequency Selection (DFS).....	26
5.3.7.1	Test conditions.....	26
5.3.7.2	Test method.....	27
5.3.7.2.1	Conducted measurement.....	28
5.3.7.2.2	Radiated measurement.....	31
<b>Annex A (normative):</b>	<b>The EN Requirements Table (EN-RT).....</b>	<b>32</b>
<b>Annex B (normative):</b>	<b>Test sites and arrangements for radiated measurements.....</b>	<b>33</b>
B.1	Test sites.....	33
B.1.1	Open air test sites.....	33
B.1.2	Anechoic chamber.....	34
B.1.2.1	General.....	34
B.1.2.2	Description.....	34
B.1.2.3	Influence of parasitic reflections.....	34
B.1.2.4	Calibration and mode of use.....	35
B.2	Test antenna.....	36
B.3	Substitution antenna.....	37
<b>Annex C (normative):</b>	<b>General description of measurement.....</b>	<b>38</b>
C.1	Conducted measurements.....	38
C.2	Radiated measurements.....	38
C.3	Substitution measurement.....	39

<b>Annex D (normative):</b>	<b>DFS parameters .....</b>	<b>40</b>
<b>Annex E (informative):</b>	<b>The EN title in the official languages .....</b>	<b>41</b>
<b>Annex F (informative):</b>	<b>Bibliography .....</b>	<b>42</b>
<b>History .....</b>		<b>43</b>

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## Foreword

This Candidate Harmonized European Standard (Telecommunications series) has been produced by ETSI Project 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").

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National transposition dates	
Date of adoption of this EN:	1 August 2003
Date of latest announcement of this EN (doa):	30 November 2003
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2004
Date of withdrawal of any conflicting National Standard (dow):	31 May 2005



## Introduction

The present document is part of a set of standards designed to fit in a modular structure to cover all radio and telecommunications terminal equipment under the R&TTE Directive [1]. Each standard is a module in the structure. The modular structure is shown in figure 1.

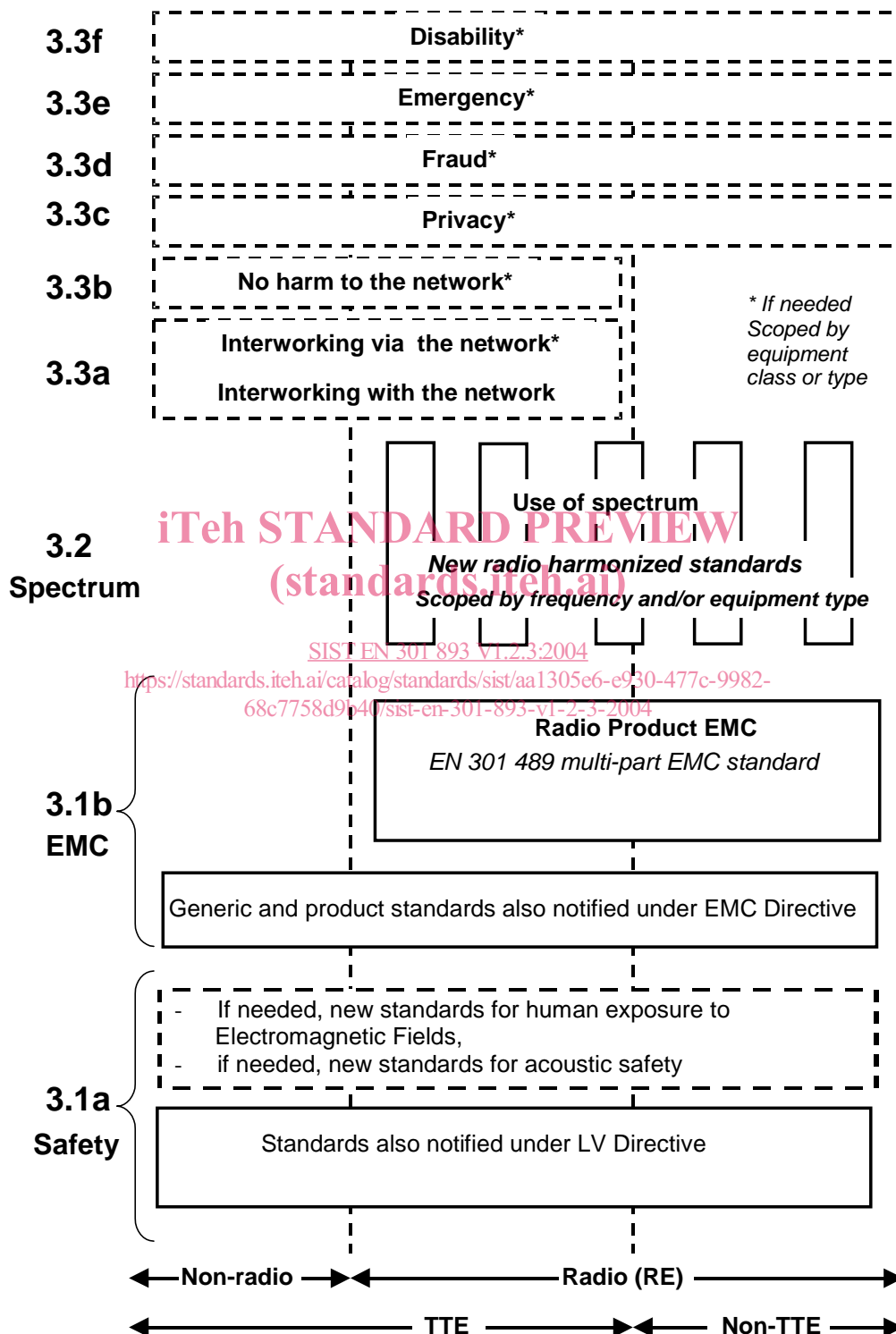


Figure 1: Modular structure for the various standards used under the R&TTE Directive [1]

The left hand edge of the figure 1 shows the different clauses of Article 3 of the R&TTE Directive [1].

For article 3.3 various horizontal boxes are shown. Dotted lines indicate that at the time of publication of the present document essential requirements in these areas have to be adopted by the Commission. If such essential requirements are adopted, and as far and as long as they are applicable, they will justify individual standards whose scope is likely to be specified by function or interface type.

The vertical boxes show the standards under article 3.2 for the use of the radio spectrum by radio equipment. The scopes of these standards are specified either by frequency (normally in the case where frequency bands are harmonized) or by radio equipment type.

For article 3.1b the diagram shows EN 301 489, the multi-part product EMC standard for radio used under the EMC Directive [2].

For article 3.1a the diagram shows the existing safety standards currently used under the LV Directive [3] and new standards covering human exposure to electromagnetic fields. New standards covering acoustic safety may also be required.

The bottom of the figure shows the relationship of the standards to radio equipment and telecommunications terminal equipment. A particular equipment may be radio equipment, telecommunications terminal equipment or both. A radio spectrum standard will apply if it is radio equipment. An article 3.3 standard will apply as well only if the relevant essential requirement under the R&TTE Directive [1] is adopted by the Commission and if the equipment in question is covered by the scope of the corresponding standard. Thus, depending on the nature of the equipment, the essential requirements under the R&TTE Directive [1] may be covered in a set of standards.

The modularity principle has been taken because:

- it minimizes the number of standards needed. Because equipment may, in fact, have multiple interfaces and functions it is not practicable to produce a single standard for each possible combination of functions that may occur in an equipment;
- it provides scope for standards to be added:
  - under article 3.2 when new frequency bands are agreed; or
  - under article 3.3 should the Commission take the necessary decisions without requiring alteration of standards that are already published;
- it clarifies, simplifies and promotes the usage of Harmonized Standards as the relevant means of conformity assessment.

# 1 Scope

The present document applies to 5 GHz high performance RLAN equipment that is intended to operate in the frequency bands 5 150 MHz to 5 350 MHz and 5 470 MHz to 5 725 MHz on any of the carrier frequencies as per table 1. Specific requirements are described for (equipment having the capability of) avoiding occupied channels by employing a Dynamic Frequency Selection mechanism and implementing Transmit Power Control, as required in ERC DEC(99)23.

NOTE: This mechanism is also required and described in ITU-R Recommendation M.1652.

**Table 1: Nominal carrier frequency allocations**

Carrier centre frequency $f_c$ (MHz)
5 180
5 200
5 220
5 240
5 260
5 280
5 300
5 320
5 500
5 520
5 540
5 560
5 580
5 600
5 620
5 640
5 660
5 680
5 700

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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".

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 [1] will 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

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- 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.
- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

- [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] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive).
- [3] Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (LV Directive).
- [4] ETSI TR 100 028-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1".
- [5] ETSI TR 100 028-2: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2".
- [6] CISPR 16-1: "Specification for radio disturbance and immunity measuring apparatus and methods- Part 1: Radio disturbance and immunity measuring apparatus".

## 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:

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

**channel:** amount of spectrum used by a single RLAN device operating on one of the carrier frequencies listed in table 1 of EN 301 893

**environmental profile:** range of environmental conditions under which equipment within the scope of EN 301 893 is required to comply with the provisions of EN 301 893

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

**Master mode:** operating mode in which the RLAN device has the capability to transmit without receiving an enabling signal

NOTE: In this mode it is able to select a channel and initiate a network by sending enabling signals to other RLAN devices. An RLAN network shall always have at least one RLAN device operating in Master mode. An RLAN device operating in Master mode shall use a Radar Interface Detection Function.

**simulated radar burst:** series of periodic radio wave pulses, separated by an interburst period during which no pulses are transmitted.

**Slave mode:** operating mode in which the transmissions of the RLAN are under control of the Master

NOTE: An RLAN device in Slave mode may use a Radar Interference Detection Function

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

**5 GHz RLAN bands:** frequency ranges: 5 150 MHz to 5 350 MHz and 5 470 MHz to 5 725 MHz.

## 3.2 Symbols

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

A	Measured power output (dBm)
B	Radar burst period
Ch <sub>f</sub>	Channel free from radars
Ch <sub>r</sub>	Channel occupied by a radar
D	Measured power density
E	Field strength
E <sub>o</sub>	Reference field strength
f <sub>c</sub>	Carrier frequency
G	Antenna gain (dBi)
L	Radar burst length
n	Number of channels
P <sub>H</sub>	Calculated EIRP at highest power level
P <sub>L</sub>	Calculated EIRP at lowest power level
PD	Calculated power density
R	Distance
R <sub>o</sub>	Reference distance
S <sub>0</sub>	Signal power
T <sub>0</sub>	Time instant
T <sub>1</sub>	Time instant
T <sub>2</sub>	Time instant
T <sub>3</sub>	Time instant
W	Radar pulse width
x	Observed duty cycle

## 3.3 Abbreviations

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

DFS	Dynamic Frequency Selection
EIRP	Equivalent Isotropically Radiated Power
EMC	Electro-Magnetic Compatibility
ERP	Effective Radiated Power
LV	Low Voltage
PHY	Physical
ppm	parts per million
PRF	Pulse Repetition Frequency
R&TTE	Radio and Telecommunications Terminal Equipment
RE	Radio Equipment
TPC	Transmit Power Control
Tx	Transmit, Transmitter
UUT	Unit Under Test