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Candidate Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Short Range Devices (SRD);
Equipement for Detection and Movement;
Tanks Level Probing Radar (TLPR)
operating in the frequency bands 5,8, 10, 25, 61 and 77 GHz;
Part 2: Harmonized EN under article 3.2
of the R&TTE Directive**



Reference

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Foreword

This Candidate Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the Public Enquiry 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 (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").

The present document is part 2 of a multi-part deliverable covering Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Equipment for Detection and Movement; Tanks Level Probing Radar (TLPR) operating in the frequency bands 5,8, 10, 25, 61 and 77 GHz; as identified below:

Part 1: "Technical characteristics and test methods";

Part 2: "Harmonized EN under article 3.2 of the R&TTE Directive".

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 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.

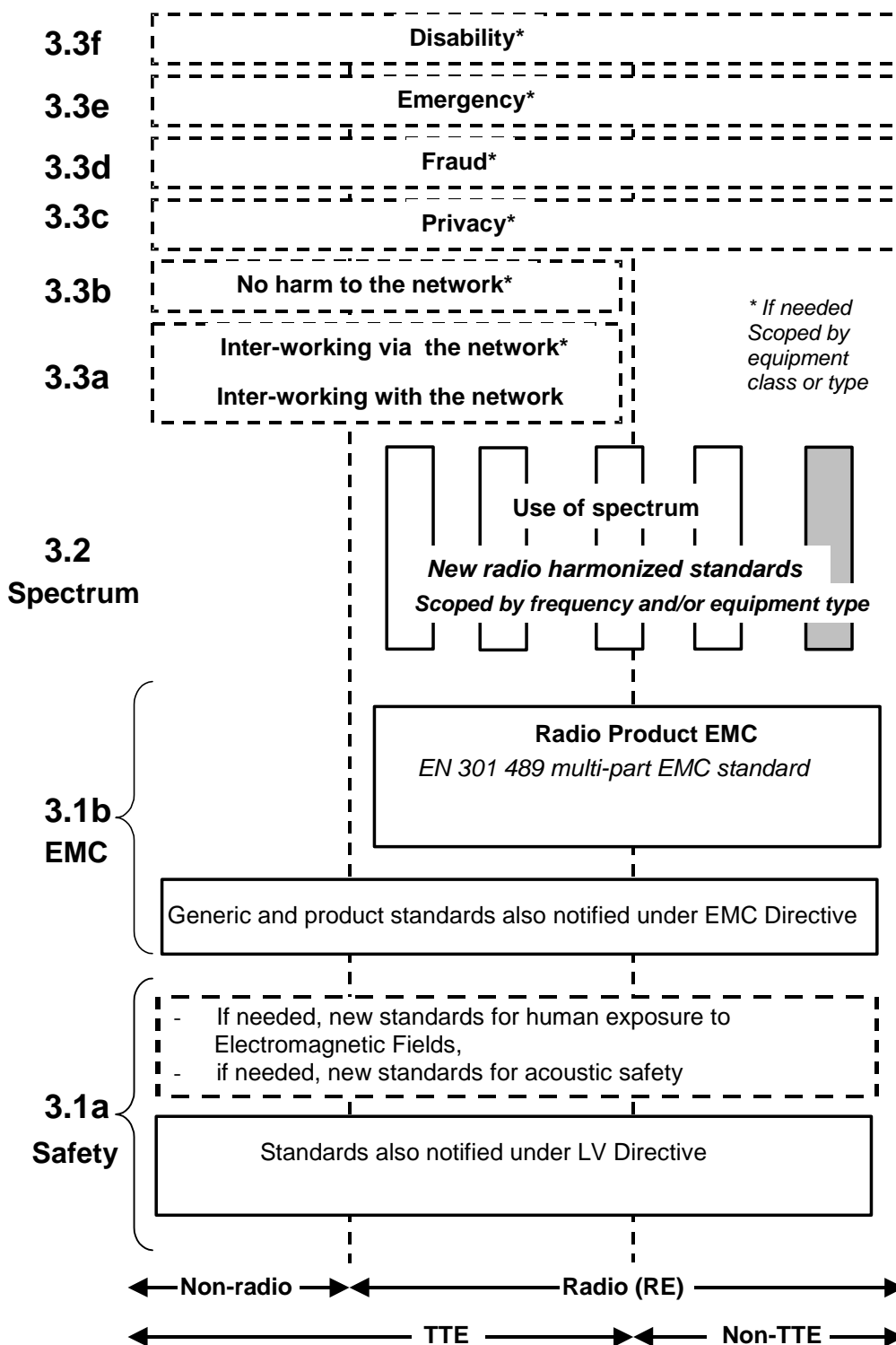


Figure 1: Modular structure for the various standards used under the R&TTE Directive [1]

The left hand edge of the figure shows the different subclauses 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 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.

For article 3.1a the diagram shows the existing safety standards currently used under the LV Directive 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 articles 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 specifies the requirements for Tank Level Probing Radar (TLPR) applications based on pulse RF, FMCW, or similar wideband techniques, operating in the following frequency bands or part hereof:

- 4,5 GHz to 7 GHz;
- 8,5 GHz to 11,5 GHz;
- 24,05 GHz to 27 GHz;
- 57 GHz to 64 GHz;
- 75 GHz to 85 GHz.

TLPRs are used for tank level measurement applications.

The scope is limited to TLPRs operating as short range devices, in which the devices are installed in closed metallic tanks or reinforced concrete tanks, or similar enclosure structures made of comparable attenuating material, holding a substance, liquid or powder.

The radar applications in the present document are not intended for communications purposes. Their intended usage excludes any intended radiation into free space.

The present document applies to TLPRs radiating RF signals directly from the tank top downwards to the surface of a substance contained in a closed tank. Any radiation outside of the tank is caused by leakage and is considered as unintentional emission. It applies only to TLPRs fitted with dedicated or integrated antennas. The document does not necessarily include all the characteristics which may be required by a user, nor does it necessarily represent the optimum performance achievable.

The present document contains the technical characteristics and test methods for TLPR applications and references CEPT/ERC Recommendation for SRDs (CEPT/ERC/REC 70-03 [2]).

ElectroMagnetic Compatibility (EMC) requirements are covered by EN 301 489-1 [3] and EN 301 489-3 [6].

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

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, edition number, version number, etc.) 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] CEPT/ERC Recommendation 70-03: "Relating to the use of Short Range Devices (SRD)".

- [3] ETSI EN 301 489-1: "Electromagnetic compatibility and Radio spectrum matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".
- [4] ETSI TR 102 215: "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".
- [5] ETSI EN 302 372-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Equipement for Detection and Movement; Tanks Level Probing Radar (TLPR) operating in the frequency bands 5,8, 10, 25, 61 and 77 GHz; Part 1: Technical characteristics and test methods".
- [6] ETSI EN 301 489-3: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz".

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 EN 302 372-1 [5] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in EN 302 372-1 [5] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 302 372-1 [5] apply.

4 Technical requirements specifications

4.1 General requirements

The provider shall declare that the equipment operates in accordance the general requirements defined in EN 302 372-1 [5], clause 4.

4.2 Transmitter requirements

4.2.1 Frequency band of operation

The frequency band of operation, as defined in EN 302 372-1 [5], clause 8.1.1, shall not exceed the limits in EN 302 372-1 [5], clause 8.1.3.

4.2.2 Duty cycle

The provider of the equipment shall declare the transmit duty cycle, as defined in EN 302 372-1 [5], clause 8.2 according to this clause.

The equipment shall not exceed the limits in EN 302 372-1 [5], clause 8.2 table 4 and 5 as declared by the provider.

4.2.3 Equivalent isotropically radiated power

The equivalent isotropically radiated power, as defined in EN 302 372-1 [5], clause 8.3.1, shall not exceed the limits in EN 302 372-1 [5], clause 8.3.3.

4.2.4 Emissions

The emissions, as defined in EN 302 372-1 [5] clause 8.4.1, shall not exceed the limits in EN 302 372-1 [5], clause 8.4.3.

4.2.5 Installation requirements

The installation requirements, as defined in EN 302 372-1 [5], annex B, shall apply.

5 Testing for compliance with technical requirements

5.1 Essential radio test suites

5.1.1 Environmental conditions for testing

5.1.1.1 Normal and extreme test-conditions

The test conditions shall be as declared by the manufacturer.

The test procedures shall be as specified in EN 302 372-1 [5], clauses 5.3, 5.4.1 and 5.4.2.

5.1.1.2 Test power source

The test power source shall meet the requirements of EN 302 372-1 [5], clause 5.2.

5.1.2 Choice of samples for test suites

Measurement shall be performed, according to the present document, on samples of equipment defined in EN 302 372-1 [5], clauses 4.2.

5.1.3 Transmitter test suites

5.1.3.1 Frequency band of operation

The test specified in EN 302 372-1 [5], clause 8.1.2 shall be carried out.

5.1.3.2 Equivalent radiated power

The test specified in EN 302 372-1 [5], clause 8.3.2 shall be carried out.

5.1.3.3 Emissions

The test specified in EN 302 372-1 [5], clause 8.4.2 shall be carried out.

5.2 Interpretation of the measurement results

The interpretation of the measurement results specified in EN 302 372-1 [5], clause 4.6 shall apply.

Annex A (normative): The EN Requirements Table (EN-RT)

Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the EN-RT proforma in this annex so that it can be used for its intended purposes and may further publish the completed EN-RT.

The EN Requirements Table (EN-RT) serves a number of purposes, as follows:

- it provides a tabular summary of all the requirements;
- it shows the status of each EN-R, whether it is essential to implement in all circumstances (Mandatory), or whether the requirement is dependent on the supplier having chosen to support a particular optional service or functionality (Optional). In particular it enables the EN-Rs associated with a particular optional service or functionality to be grouped and identified;
- when completed in respect of a particular equipment it provides a means to undertake the static assessment of conformity with the EN.

Table A.1: EN Requirements Table (EN-RT)

EN Reference		EN 302 372-2				Comment
No.	Reference	EN-R (see note 1)	Status			
1	4.1	General performance criteria	M			
2	4.2.1	Frequency band of operation	M			
3	4.2.4	Emissions	M			
4	4.2.5	Installation requirements (see note 2)	M			
NOTE 1: These EN-Rs are justified under article 3.2 of the R&TTE Directive.						
NOTE 2: It is required to inform users and installers of TLPR equipment about the installation requirements						

Key to columns:

No	Table entry number;
Reference	Clause reference number of conformance requirement within the present document;
EN-R	Title of conformance requirement within the present document;
Status	Status of the entry as follows:
M	Mandatory, shall be implemented under all circumstances;
O	Optional, may be provided, but if provided shall be implemented in accordance with the requirements;
O.n	this status is used for mutually exclusive or selectable options among a set. The integer "n" shall refer to a unique group of options within the EN-RT. A footnote to the EN-RT shall explicitly state what the requirement is for each numbered group. For example, "It is mandatory to support at least one of these options", or, "It is mandatory to support exactly one of these options".
Comments	To be completed as required.

Annex B (informative): The EN title in the official languages

Language	EN title
Czech	
Danish	
Dutch	
English	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Equipement for Detection and Movement; Tanks Level Probing Radar (TLPR) operating in the frequency bands 5,8, 10, 25, 61 and 77 GHz; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive
Estonian	
Finnish	
French	
German	
Greek	
Hungarian	
Icelandic	
Italian	
Latvian	
Lithuanian	
Maltese	
Norwegian	
Polish	
Portuguese	
Slovak	
Slovenian	
Spanish	
Swedish	

Annex C (informative): Bibliography

- Council Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations (EMC Directives).

History

Document history		
V1.1.1	June 2005	Public Enquiry PE 20051028: 2005-06-29 to 2005-10-28