

Draft **ETSI EN 302 288-2** V1.1.1 (2004-03)

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*Candidate Harmonized European Standard (Telecommunications series)*

**Electromagnetic compatibility  
and Radio spectrum Matters (ERM);  
Short Range Devices;  
Road Transport and Traffic Telematics (RTTT);  
Short range radar equipment operating in the 24 GHz range;  
Part 2: Harmonized EN covering essential requirements  
of article 3.2 of the R&TTE Directive**

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DEN/ERM-TG31B-002-2

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Keywords

radar, radio, regulation, RTTT, SRD, testing

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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 (M/329) 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 are given in annex A.

The present document is part 2 of a multi-part deliverable covering Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices, Road Transport and Traffic Telematics (RTTT); Short range radar equipment operating in the 24 GHz range, as identified below:

Part 1: "Technical requirements and methods of measurement";

**Part 2: "Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive".**

<b>Proposed national transposition dates</b>	
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.

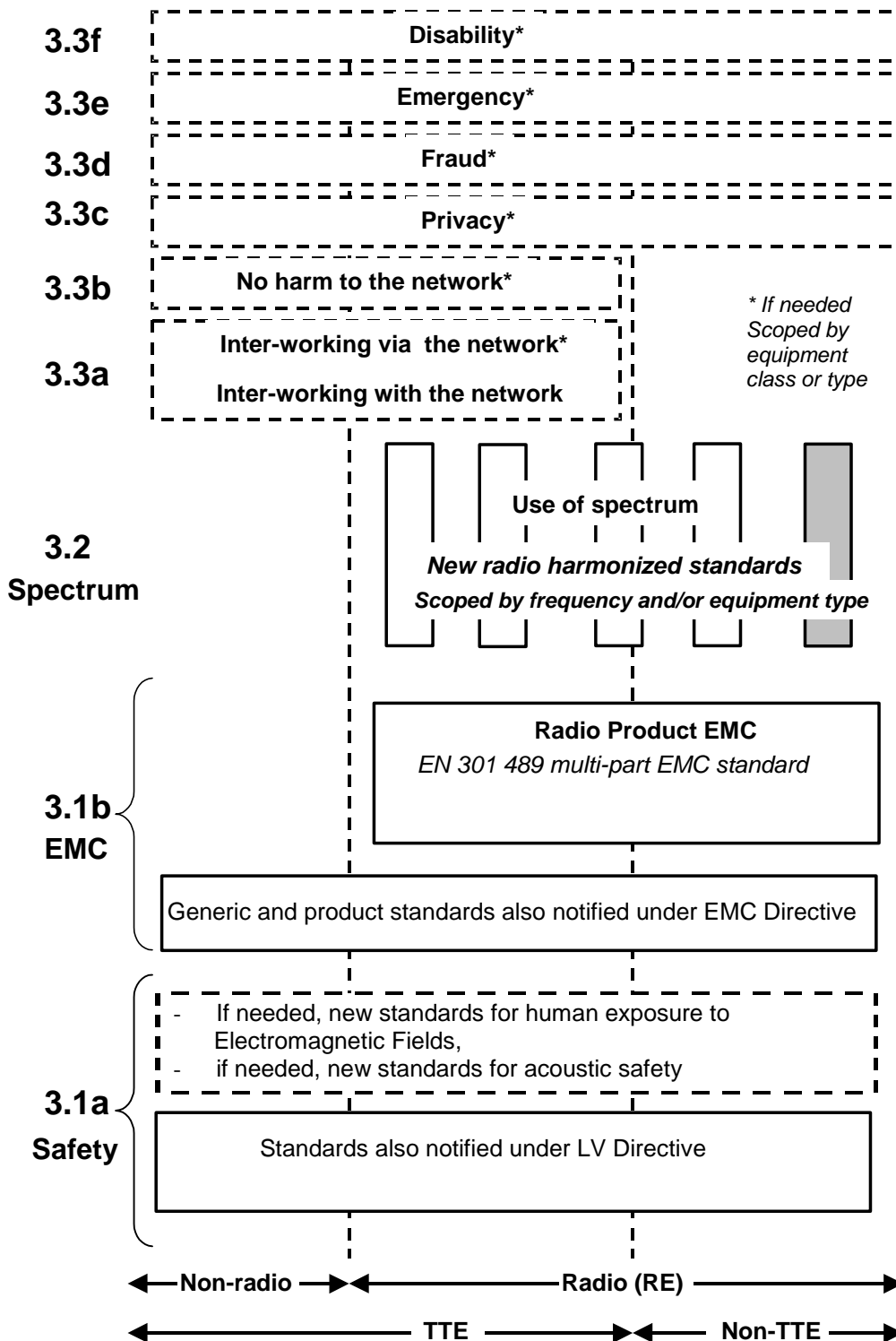


Figure 1: Modular structure for the various standards used under the R&TTE Directive

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.

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# 1 Scope

The present document applies to Road Transport Traffic and Telematics (RTTT) systems:

- with an integral antenna;
- for ultra low power motion and distance monitoring radars for mobile applications only;
- operating in the 21,625 GHz to 26,625 GHz frequency range.

The applicability of the present document covers only the 24 GHz Short Range Radar (SRR) for road vehicles. The present document does not necessarily include all the characteristics which may be required by a user, nor does it necessarily represent the optimum performance achievable.

NOTE 1: Member States of the European Union are required to prohibit the taking into service of equipment covered by the present document after [2014], see EU Commission decision [2004/xxx/EC] (see bibliography) and CEPT/ECC decision [tbd] (see bibliography) and CEPT/ERC Recommendation 70-03 [5].

NOTE 2: Member States are required to authorize the taking into service of equipment operating on 79 GHz covered by EN 302 264 (see bibliography) under conditions defined in EU Commission decision [2004/xxx/EC] (see bibliography), CEPT/ECC decision [tbd] (see bibliography) and CEPT/ERC Recommendation 70-03 [5].

The present document applies to radio equipment intended to operate in a temporary frequency designation as defined in CEPT/ECC/DEC [tbd] (see bibliography) in all or in part of the service frequency band from 21,625 GHz to 26,625 GHz.

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.

The present document responds to the EC mandate M/329 for Harmonized Standards covering Ultrawideband (UWB) applications [6].

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# 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 EN 302 088-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Short range radar equipment operating in the 24 GHz range; Part 1: Technical requirements and methods of measurement".
- [5] CEPT/ERC Recommendation 70-03 (Latest edition): "Relating to the use of Short Range Devices (SRD)".
- [6] EC Mandate, Standardization Mandate Forwarded To CEN/CENELEC/ETSI In The Field Of Information Technology And Telecommunication, M/329, Harmonized Standards, covering Ultra Wideband (UWB) Applications, <http://europa.eu.int/comm/enterprise/rte/harstand.htm>
- [7] ETSI EN 301 489 (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".

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## 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], EN 302 288-1 [4] and the following apply:

**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

### 3.2 Symbols

For the purposes of the present document, the symbols given in EN 302 288-1 [4] apply.

### 3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 302 288-1 [4] apply.

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## 4 Technical requirements specifications

### 4.1 Environmental conditions

#### 4.1.1 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 provider. 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.

#### 4.1.2 Power supply

All the characteristics and essential requirements applying to the equipment shall be fulfilled within the range of all declared operational conditions of the power supply.

Power supply may be e.g. an external battery or a stabilized power supply.



## 4.2 Conformance requirements

### 4.2.1 Transmitter

#### 4.2.1.1 Permitted range of operating frequencies

The permitted range of operating frequencies shall not exceed the limits specified in clause 7.1.1.3 of EN 302 288-1 [4].

#### 4.2.1.2 Maximum radiated average power density (e.i.r.p.)

The maximum radiated average power density (e.i.r.p.) shall not exceed the limits specified in clause 7.1.2.3 of EN 302 288-1 [4].

#### 4.2.1.3 Maximum radiated peak power density (e.i.r.p.)

The maximum radiated peak power density (e.i.r.p.) shall not exceed the limits specified in clause 7.1.3.2.2 of EN 302 088-1 [4].

#### 4.2.1.4 Methods of measurement and limits for transmitters in the 24,050 GHz to 24,250 GHz band

##### 4.2.1.4.1 Permitted range of operating frequencies

The permitted range of operating frequencies shall not exceed the limits specified in clause 7.1.4.2.4 of EN 302 288-1 [4].

##### 4.2.1.4.2 Equivalent isotropically radiated power (e.i.r.p.)

The equivalent isotropically radiated power (e.i.r.p.) shall not exceed the limits specified in clause 7.1.4.2.4 of EN 302 288-1 [4], table 4.

##### 4.2.1.5 Vertical plane emission limits

The vertical emission limits shall not exceed the limits specified in clause 7.1.5.3 of EN 302 288-1 [4].

##### 4.2.1.6 Transmitter spurious and out-of-band emissions

The transmitter unwanted emissions, i.e. spurious and out-of-band emissions, shall not exceed the limits specified in clause 7.2.4 of EN 302 288-1 [4], tables 5 and 6.

### 4.2.2 Receiver spurious emissions

The receiver spurious emissions shall not exceed the limits specified in clause 8.1.3 of EN 302 288-1 [4].

### 4.2.3 Installation Requirements

The installation requirements are defined in EN 302 288-1 [4], annex D.

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## 5 Testing for compliance with technical requirements

### 5.1 Environmental conditions for testing

Tests defined in the present document shall be carried out at representative points within the boundary limits of the declared operational environmental profile.

Where technical performance varies subject to environmental conditions, tests shall be carried out under a sufficient variety of environmental conditions (within the boundary limits of the declared operational environmental profile) to give confidence of compliance for the affected technical requirements.

### 5.2 Essential radio test suites

#### 5.2.1 Transmitter

##### 5.2.1.1 Permitted range of operating frequencies

The test defined in clause 7.1.1.2 of EN 302 288-1 [4] shall be carried out.

##### 5.2.1.2 Maximum radiated average power density (e.i.r.p.)

The test defined in clause 7.1.2.2 of EN 302 288-1 [4] shall be carried out.

##### 5.2.1.3 Maximum radiated peak power density (e.i.r.p.)

The test defined in clause 7.1.3.2 of EN 302 288-1 [4] shall be carried out.

##### 5.2.1.4 Methods of measurement and limits for transmitters in the 24,050 GHz to 24,250 GHz band

###### 5.2.1.4.1 Permitted range of operating frequencies

The test defined in clause 7.1.4.1.2 of EN 302 288-1 [4] shall be carried out.

###### 5.2.1.4.2 Equivalent isotropically radiated power (e.i.r.p.)

The test defined in clause 7.1.4.2.2 of EN 302 288-1 [4] shall be carried out.

###### 5.2.1.5 Vertical plane emission limits

The test defined in clause 7.1.5. of EN 302 288-1 [4] shall be carried out.

###### 5.2.1.6 Transmitter spurious and out-of-band emissions

The test defined in clause 7.2 of EN 302 288-1 [4] shall be carried out.

#### 5.2.2 Receiver spurious emissions

The test defined in clause 8.1.2 of EN 302 088-1 [4] shall be carried out.

### 5.3 Interpretation of results and measurement uncertainty

Clause 4.4 of EN 302 288-1 [4] 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 provider 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 302 288-2		Comment
No.	Reference	EN-R (see note 1)	Status	
<b>Transmitter</b>				
1	4.2.1.1	Permitted range of operating frequencies	M (see note 2)	
2	4.2.1.2	Maximum rated average power density	M (see note 2)	
3	4.2.1.3	Maximum rated peak power density	M (see note 2)	
4	4.2.1.4.1	Permitted range of operating frequencies	M (see note 2)	
5	4.2.1.6	Unwanted emissions	M (see note 2)	
6	4.2.1.4.2	e.i.r.p.	M (see note 2)	
7	4.2.1.5	Vertical emission limits	M (see note 2)	
<b>Receiver</b>				
8	4.2.2	Receiver spurious emissions	M (see note 3)	
<b>Installation</b>				
9	4.2.3	Installation requirements	M (see note 1)	
NOTE 1: These EN-Rs are justified under article 3.2 of the R&TTE Directive.				
NOTE 2: Mandatory for a transmitter.				
NOTE 3: Mandatory for a receiver.				

### 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; Road Transport and Traffic Telematics (RTTT); Short range radar equipment operating in the 24 GHz range; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive
Estonian	
Finnish	
French	
German	
Greek	
Hungarian	
Icelandic	
Italian	
Latvian	
Lithuanian	
Maltese	
Polish	
Portuguese	
Slovak	
Slovenian	
Spanish	
Swedish	

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## Annex C (informative): Bibliography

- EU Commission Decision [24 GHz, tbd]

NOTE: This reference is not yet publicly available but is included for information.

- CEPT/ECC/DEC [24 GHz, tbd].

NOTE: This reference is not yet publicly available but is included for information.

- CEPT/ECC/DEC [79 GHz, tbd].

NOTE: This reference is not yet publicly available but is included for information.

- 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.
- ETSI EN 302 264: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices, Road Transport and Traffic Telematics (RTTT); Ultra Wide Band Radar Equipment Operating above 60 GHz".

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## History

<b>Document history</b>		
V1.1.1	March 2004	Public Enquiry PE 20040730: 2004-03-31 to 2004-07-30