

**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 the essential requirements
of article 3.2 of the R&TTE Directive**

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
<https://standards.iteh.ai/catalog/standards/sist/b46a6fe0-132b-4929-9463-0956e7196312/etsi-en-302-288-2-v1.3.2-2009-01>



Reference

REN/ERM-TG31B-050-2

Keywords

radar, radio, regulation, RTTT, SRD, testing

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Important notice

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaicor/ETSI_support.asp

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2008.
All rights reserved.

DECT™, PLUGTESTS™, UMTS™, TIPHON™, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

Contents

Intellectual Property Rights	4
Foreword.....	4
Introduction	4
1 Scope	5
2 References	5
2.1 Normative references	6
2.2 Informative references.....	6
3 Definitions, symbols and abbreviations	6
3.1 Definitions	6
3.2 Symbols.....	6
3.3 Abbreviations	7
4 Technical requirements specifications	7
4.1 Environmental conditions.....	7
4.1.1 Environmental profile	7
4.2 Conformance requirements	7
4.2.1 Transmitter requirements	7
4.2.1.1 Limits for transmitters in the range from 22,0 GHz to 26,65 GHz	7
4.2.1.1.1 Permitted range of operating frequencies	7
4.2.1.1.2 Maximum radiated average power density (e.i.r.p.)	7
4.2.1.1.3 Maximum radiated peak power density (e.i.r.p.)	7
4.2.1.2 Limits for transmitters in the range from 24,050 GHz to 24,250 GHz	7
4.2.1.2.1 Permitted range of operating frequencies	7
4.2.1.2.2 Equivalent isotropically radiated power (e.i.r.p.)	7
4.2.1.3 Vertical plane emission limits in the range from 23,6 GHz to 24,0 GHz.....	7
4.2.1.4 Transmitter spurious and out-of-band emissions.....	8
4.2.2 Receiver requirements	8
4.2.2.1 Receiver spurious emissions	8
4.2.3 Installation requirements.....	8
5 Testing for compliance with technical requirements.....	8
5.1 Environmental conditions for testing	8
5.2 Essential radio test suites.....	8
5.2.1 Transmitter test suites	8
5.2.1.1 Transmitters operating in the 22,0 GHz to 26,65 GHz band	8
5.2.1.1.1 Permitted range of frequencies	8
5.2.1.1.2 Maximum radiated average power density (e.i.r.p.)	8
5.2.1.1.3 Maximum radiated peak power density (e.i.r.p.)	8
5.2.1.2 Transmitters operating in the 24,050 GHz to 24,250 GHz band	8
5.2.1.2.1 Permitted range of frequencies	8
5.2.1.2.2 Equivalent isotropically radiated power (e.i.r.p.)	8
5.2.1.3 Vertical plane transmitter emissions	9
5.2.1.4 Transmitter spurious and out-of-band emissions	9
5.2.2 Receiver test suites.....	9
5.2.2.1 Receiver spurious emissions	9
5.2.3 Installation requirements.....	9
5.3 Interpretation of results and measurement uncertainty.....	9
Annex A (normative): HS Requirements and conformance Test specifications Table (HS-RTT).....	10
Annex B (informative): The EN title in the official languages	12
Annex C (informative): Bibliography.....	13
History	14

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This 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 ETSI standards One-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.1] (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 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") [i.2].

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 the essential requirements of article 3.2 of the R&TTE Directive**".

Technical specifications relevant to Directive 1999/5/EC [i.2] are given in annex <X>.

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 [i.2]. The modular structure is shown in EG 201 399 [i.3].

1 Scope

The present document applies to Short Range Devices (SRDs) in Road Transport and Traffic Telematics (RTTT) systems as described in the scope of EN 302 288-1 [1]:

- with an integral antenna;
- for ultra low power motion and distance monitoring radars for mobile applications only;
- operating in the 22 GHz to 26,65 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: Member States of the European Union are required to prohibit the taking into service of equipment covered by the present document after a date defined in Commission Decision 2005/50/EC [i.4].

The present document covers transmitters intended to operate in a temporary frequency designation under the 24 GHz ECC decision ECC/DEC/(04)10 [i.5]. The application is also subject to the EU Commission decision on 24 GHz SRR EC 2005/50/EC [i.4].

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

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

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.

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

For online referenced documents, information sufficient to identify and locate the source shall be provided. Preferably, the primary source of the referenced document should be cited, in order to ensure traceability. Furthermore, the reference should, as far as possible, remain valid for the expected life of the document. The reference shall include the method of access to the referenced document and the full network address, with the same punctuation and use of upper case and lower case letters.

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] ETSI EN 302 288-1 (V1.4.1): "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".
- [2] 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".

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.

- [i.1] 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.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).
- [i.3] 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".
- [i.4] Commission Decision 2005/50/EC of 17 January 2005 on the harmonization of the 24 GHz range radio spectrum band for the time-limited use by automotive short-range radar equipment in the Community.
- [i.5] CEPT/ECC/DEC(04)10: "ECC Decision of 12 November 2004 on the frequency bands to be designated for the temporary introduction of Automotive Short Range Radars", amended by Annex 1, July 2005.
- [i.6] M/329: "Harmonized standards covering Ultrawide band (UWB) applications".

NOTE: Available at <http://europa.eu.int/comm/enterprise/rtte/harstand.htm>.

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 [i.2], EN 302 288-1 [1] 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 [1] apply.

3.3 Abbreviations

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

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.

4.2 Conformance requirements

4.2.1 Transmitter requirements

4.2.1.1 Limits for transmitters in the range from 22 GHz to 26,65 GHz

4.2.1.1.1 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 [1].

4.2.1.1.2 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 [1].

4.2.1.1.3 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 7.1.3.4 of EN 302 288-1 [1].

4.2.1.2 Limits for transmitters in the range from 24,050 GHz to 24,250 GHz

4.2.1.2.1 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 [1].

4.2.1.2.2 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 7.1.4.1.3 of EN 302 288-1 [1], table 3.

4.2.1.3 Vertical plane emission limits in the range from 23,6 GHz to 24,0 GHz

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

4.2.1.4 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 [1], tables 5 and 6.

4.2.2 Receiver requirements

4.2.2.1 Receiver spurious emissions

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

4.2.3 Installation requirements

The installation requirements as defined in EN 302 288-1 [1], annex D, shall be applied.

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 test suites

5.2.1.1 Transmitters operating in the 22 GHz to 26,65 GHz band

5.2.1.1.1 Permitted range of frequencies

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

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

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

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

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

5.2.1.2 Transmitters operating in the 24,050 GHz to 24,250 GHz band

5.2.1.2.1 Permitted range of frequencies

The test defined in clause 7.1.4.2.2 or 7.1.4.2.3 respectively of EN 302 288-1 [1] shall be carried out.

5.2.1.2.2 Equivalent isotropically radiated power (e.i.r.p.)

The test defined in clause 7.1.4.1.2 of EN 302 288-1 [1].

5.2.1.3 Vertical plane transmitter emissions

The test defined in clause 7.1.5.2 of EN 302 288-1 [1] shall be carried out.

5.2.1.4 Transmitter spurious and out-of-band emissions

The tests defined in the clause 7.2.3 of EN 302 288-1 [1] shall be carried out.

5.2.2 Receiver test suites

5.2.2.1 Receiver spurious emissions

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

5.2.3 Installation requirements

The installation requirements as defined in EN 302 288-1 [1], annex D, shall be applied.

5.3 Interpretation of results and measurement uncertainty

Clause 4.4 of EN 302 288-1 [1] shall apply.

The interpretation of the results recorded in a test report for the measurements described in the present document shall be as follows:

- the measured value related to the corresponding limit will be used to decide whether an equipment meets the requirements of the present document;
- the value of the measurement uncertainty for the measurement of each parameter shall be included in the test report;
- the recorded value of the measurement uncertainty shall be, for each measurement, equal to or lower than the figures in table 1.

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR 100 028 [2] and shall correspond to an expansion factor (coverage factor) $k = 1,96$ or $k = 2$ (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Table 1 is based on such expansion factors.

Table 1: Maximum Measurement uncertainty

Parameter	Uncertainty
Radio Frequency (out of band)	$\pm 1 \times 10^{-7}$
Radiated Emission (valid to 100 GHz)	± 6 dB
Temperature	± 1 K
Humidity	± 10 %

For the test methods, according to the present document the uncertainty figures shall be calculated according to the methods described in the TR 100 028 [2] and shall correspond to an expansion factor (coverage factor) $k = 1,96$ or $k = 2$ (which provide confidence levels of respectively 95 % and 95,45 % in case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Table 1 is based on such expansion factors.

The particular expansion factor used for the evaluation of the measurement uncertainty shall be stated.