
ETSI EN 302 264-2 V1.1.1 (2009-06)

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 77 GHz to 81 GHz band;
Part 2: Harmonized EN covering the essential requirements
of article 3.2 of the R&TTE Directive**



Reference

DEN/ERM-TG31B-001-2

Keywords

radar, radio, RTTT, testing, SRD, UWB

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 2009.
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.

LTE™ is a Trade Mark of ETSI currently being registered

for the benefit of its Members and of the 3GPP Organizational Partners.

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	4
Foreword.....	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	6
4 Technical requirements specifications	6
4.1 Environmental profile.....	6
4.2 Conformance requirements	7
4.2.1 Transmitter requirements	7
4.2.1.1 Permitted range of operating frequencies.....	7
4.2.1.2 Maximum radiated average power spectral density (e.i.r.p.)	7
4.2.1.3 Maximum radiated peak power (e.i.r.p.)	7
4.2.1.4 Radiated spurious and out-of-band emissions.....	7
4.2.2 Receiver requirements	7
4.2.2.1 Maximum receiver spurious emissions	7
4.3 Interference mitigation requirements.....	7
4.4 Installation requirements	7
5 Testing for compliance with technical requirements.....	7
5.1 Environmental conditions for testing	7
5.2 Essential radio test suites.....	8
5.2.1 Transmitter test suites	8
5.2.1.1 Permitted range of operating frequencies.....	8
5.2.1.2 Maximum radiated average power spectral density (e.i.r.p.)	8
5.2.1.3 Maximum radiated peak power (e.i.r.p.)	8
5.2.1.4 Maximum radiated spurious and out-of-band emissions.....	8
5.2.2 Receiver test suites.....	8
5.2.2.1 Maximum receiver spurious emissions	8
5.3 Interpretation of measurement results	8
Annex A (normative): HS Requirements and conformance Test specifications Table (HS-RTT).....	9
Annex B (informative): The EN title in the official languages	11
Annex C (informative): Bibliography.....	12
History	13

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).

For non EU countries the present document may be used for regulatory (Type Approval) purposes.

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.4] (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 [i.3] 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 [i.3] 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 77 GHz to 81 GHz band, 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".

National transposition dates	
Date of adoption of this EN:	16 June 2009
Date of latest announcement of this EN (doa):	30 September 2009
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 March 2010
Date of withdrawal of any conflicting National Standard (dow):	31 March 2011

1 Scope

The present document specifies the technical requirements and methods of measurement for Short Range Devices (SRD) working as broadband devices with at least 50 MHz occupied bandwidth in the 77 GHz to 81 GHz frequency range, hereinafter referred to as the 79 GHz range, intended for Road Transport and Traffic Telematics (RTTT) applications. Applications include e.g. Short Range Radar (SRR) for obstacle detection, stop&go, blind spot detection, parking aid, backup aid, precrash and other automotive applications. Applications that might interfere with automotive SRR systems, e.g. road infrastructure systems, are explicitly excluded.

The present document covers transmitters intended to operate in the frequency range as defined in the EC decision 2004/545/EC [i.2] and the ECC decision ECC/DEC/(04)03 [i.1].

The document applies to:

- a) transmitters in the 79 GHz range operating as broadband devices;
- b) receivers operating in the 79 GHz range;
- c) integrated transceivers in the 79 GHz range.

The present document:

- contains the technical characteristics and test methods for short range radar equipment fitted with integral antennas operating in the 79 GHz range;
- covers short range radar vehicle applications in the 79 GHz range. It covers integrated transceivers and separate transmit/receive modules.

The present document is intended to cover the provisions of Article 3.2 of Directive 1999/5/EC [i.3] (R&TTE Directive), 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

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>.

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 302 264-1 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Short Range Radar equipment operating in the 77 GHz to 81 GHz band; Part 1: Technical requirements and methods of measurement".

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] ECC decision ECC/DEC/(04)03 of 19 March 2004 on the frequency band 77 - 81 GHz to be designated for the use of Automotive Short Range Radars.
- [i.2] EC decision 2004/545/EC of 8 July 2004 on the harmonisation of radio spectrum in the 79 GHz range for the use of automotive short-range radar equipment in the Community.
- [i.3] 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.4] 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.

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 and EN 302 264-1 [1] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in EN 302 264-1 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 302 264-1 [1] apply.

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 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 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 302 264-1 [1].

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

The maximum radiated average power spectral density (e.i.r.p.) shall not exceed the limits specified in EN 302 264-1 [1], clause 7.1.2.3.

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

The radiated peak power (e.i.r.p.) shall not exceed the limits specified in clause 7.1.3.3 of EN 302 264-1 [1].

4.2.1.4 Radiated spurious and out-of-band emissions

The effective radiated power of any spurious and out-of-band emissions shall not exceed the limits specified in clause 7.2.4 of EN 302 264-1 [1].

4.2.2 Receiver requirements

4.2.2.1 Maximum receiver spurious emissions

The receiver spurious radiations as defined in EN 302 264-1 [1], clause 8.1.1, shall not exceed the limit specified in EN 302 264-1 [1], clause 8.1.3.

4.3 Interference mitigation requirements

The equipment shall comply with the additional interference mitigation requirements as defined in annex D of EN 302 264-1 [1].

4.4 Installation requirements

The equipment shall comply with the installation requirements as defined in annex E of EN 302 264-1 [1].

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 Permitted range of operating frequencies

The test defined in clause 7.1.1.2 of EN 302 264-1 [1] shall be carried out.

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

The test defined in clause 7.1.2.2 of EN 302 264-1 [1] shall be carried out.

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

The test defined in clause 7.1.3.2 of EN 302 264-1 [1] shall be carried out.

5.2.1.4 Maximum radiated spurious and out-of-band emissions

The test defined in clause 7.2.2 of EN 302 264-1 [1] shall be carried out.

5.2.2 Receiver test suites

5.2.2.1 Maximum receiver spurious emissions

The test defined in clause 8.1.2 of EN 302 264-1 [1], shall be carried out.

5.3 Interpretation of measurement results

Clause 9 of EN 302 264-1 [1] shall apply.

Annex A (normative): HS Requirements and conformance Test specifications Table (HS-RTT)

The HS Requirements and conformance Test specifications Table (HS-RTT) in table A.1 serves a number of purposes, as follows:

- it provides a statement of all the requirements in words and by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it provides a statement of all the test procedures corresponding to those requirements by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it qualifies each requirement to be either:
 - Unconditional: meaning that the requirement applies in all circumstances; or
 - Conditional: meaning that the requirement is dependant on the manufacturer having chosen to support optional functionality defined within the schedule.
- in the case of Conditional requirements, it associates the requirement with the particular optional service or functionality;
- it qualifies each test procedure to be either:
 - Essential: meaning that it is included with the Essential Radio Test Suite and therefore the requirement shall be demonstrated to be met in accordance with the referenced procedures;
 - Other: meaning that the test procedure is illustrative but other means of demonstrating compliance with the requirement are permitted.

Table A.1: HS Requirements and conformance Test specifications Table (HS-RTT)

Harmonized Standard EN 302 264-2						
The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive						
Requirement			Requirement Conditionality		Test Specification	
No	Description	Reference: Clause No	U/C	Condition	E/O	Reference: Clause No
1	Permitted range of operating frequencies	4.2.1.1	U		E	5.2.1.1
2	Maximum radiated average power spectral density (e.i.r.p.)	4.2.1.2	U		E	5.2.1.2
3	Maximum radiated peak power (e.i.r.p.)	4.2.1.3	U		E	5.2.1.3
4	Maximum radiated spurious and out-of-band emissions	4.2.1.4	U		E	5.2.1.4
5	Maximum receiver spurious radiations	4.2.2.1	U		E	5.2.2.1
6	Interference mitigation requirements	4.3	U		X	
7	Installation requirements	4.4	U		X	

Key to columns:**Requirement:**

No A unique identifier for one row of the table which may be used to identify a requirement or its test specification.

Description A textual reference to the requirement.

Clause Number Identification of clause(s) defining the requirement in the present document unless another document is referenced explicitly.

Requirement Conditionality:

U/C Indicates whether the requirement is to be *unconditionally* applicable (U) or is *conditional* upon the manufacturers claimed functionality of the equipment (C).

Condition Explains the conditions when the requirement shall or shall not be applicable for a technical requirement which is classified "conditional".

Test Specification:

E/O Indicates whether the test specification forms part of the Essential Radio Test Suite (E) or whether it is one of the Other Test Suite (O).

NOTE: All tests whether "E" or "O" are relevant to the requirements. Rows designated "E" collectively make up the Essential Radio Test Suite; those designated "O" make up the Other Test Suite; for those designated "X" there is no test specified corresponding to the requirement. The completion of all tests classified "E" as specified with satisfactory outcomes is a necessary condition for a presumption of conformity. Compliance with requirements associated with tests classified "O" or "X" is a necessary condition for presumption of conformity, although conformance with the requirement may be claimed by an equivalent test or by manufacturer's assertion supported by appropriate entries in the technical construction file.

Clause Number Identification of clause(s) defining the test specification in the present document unless another document is referenced explicitly. Where no test is specified (that is, where the previous field is "X") this field remains blank.

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

The enlargement of the European Union (EU) resulted in a requirement from the EU for a larger number of languages for the translation of the titles of Harmonized Standards and mandated ENs that are to be listed in the Official Journal to support the implementation of this legislation.

For this reason the title translation concerning the present document can be consulted via the [e-approval](#) application.

Annex C (informative): Bibliography

- Commission Directive 2004/104/EC of 14 October 2004 adapting to technical progress Council Directive 72/245/EEC relating to the radio interference (electromagnetic compatibility) of vehicles and amending Directive 70/156/EEC on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers.
- 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).
- 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).
- ETSI EG 201 399: "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive".

History

Document history			
V1.1.1	September 2008	Public Enquiry	PE 20090122: 2008-09-24 to 2009-01-22
V1.1.1	April 2009	Vote	V 20090616: 2009-04-17 to 2009-06-16
V1.1.1	June 2009	Publication	