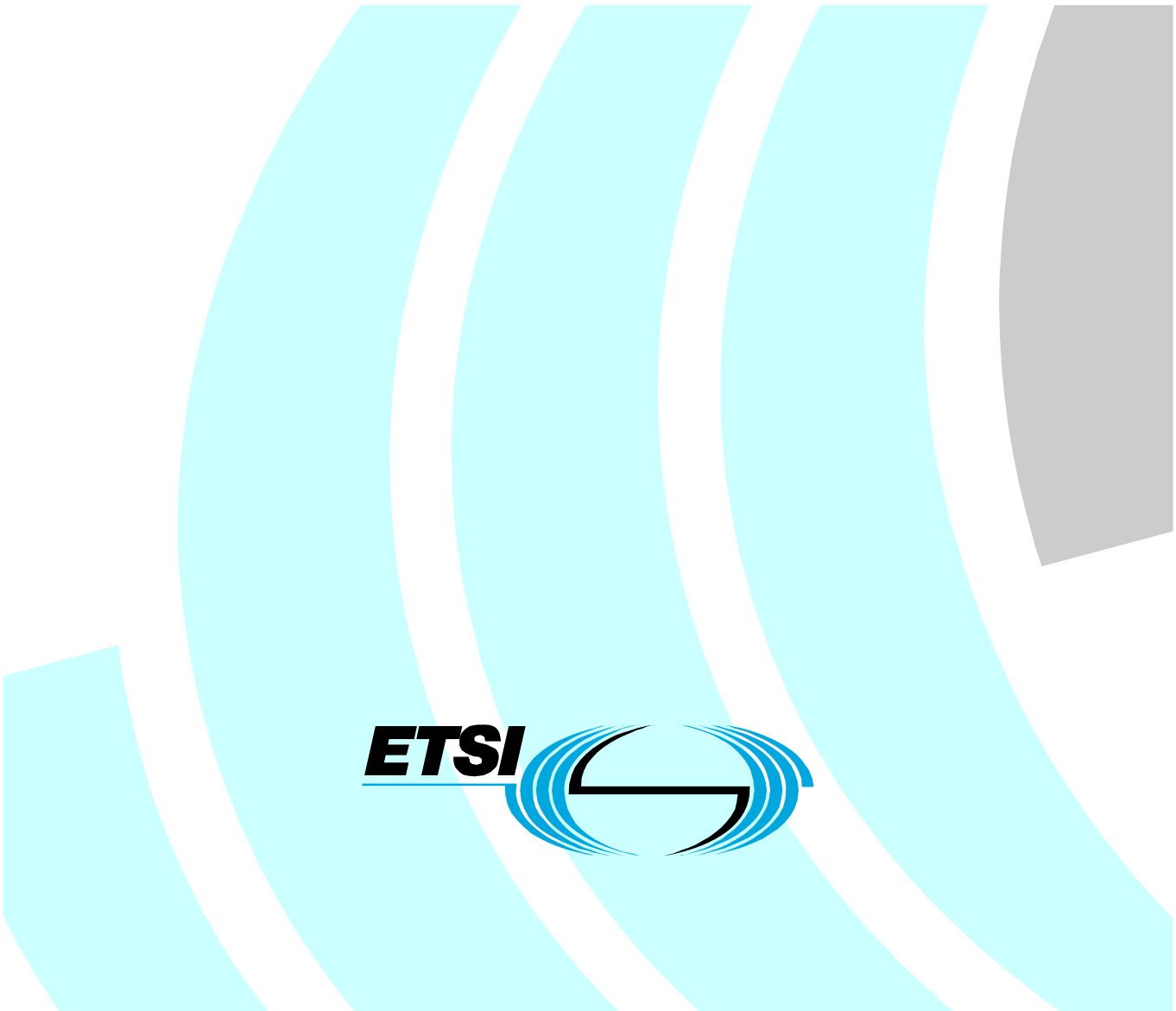
ETSI EN 305 550-2 V1.1.1 (2011-07)

Harmonized European Standard

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 40 GHz to 246 GHz frequency range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive



Reference
DEN/ERM-TG28-0421-2

Keywords
radio, regulation, 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/chaircor/ETSI_support.asp

Copyright Notification

Contents

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://ipr.etsi.org).

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 (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document is a new standard that takes advantage of technical developments within the SRD industry. In particular this includes the development in technologies which makes applications in the higher frequency range possible.

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) [i.1] laying down a procedure for the provision of information in the field of technical standards and regulations.

The title and reference to the present document are intended to included in the publication in the Official Journal of the European Union of titles and references of Harmonized Standard under the Directive 1999/5/EC [i.2].

See article 5.1 of Directive 1999/5/EC [i.2] for information on presumption of conformity and Harmonised Standards or parts thereof the references of which have been published in the Official Journal of the European Union.

The requirements relevant to Directive 1999/5/EC [i.2] are summarised 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 (SRD); Radio equipment to be used in the 40 GHz to 246 GHz frequency range, as identified below:

Part 1: "Technical characteristics and test methods";

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:	28 June 2011
Date of latest announcement of this EN (doa):	30 September 2011
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 March 2012
Date of withdrawal of any conflicting National Standard (dow):	31 March 2013

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.4].

1 Scope

The present document applies to the following Short Range Device major equipment types:

- Generic Short Range Devices, including alarms, telecommand, telemetry, data transmission in general, etc.

These radio equipment types are capable of operating in thefrequency bands within the 40 GHz to 246 GHz range as specified in table 1:

- either with a Radio Frequency (RF) output connection and dedicated antenna or with an integral antenna;
- for all types of modulation.

Table 1 shows a list of the frequency bands as designated in the CEPT/ERC Recommendation 70-03 [i.3] as known at the date of publication of the present document.

NOTE 1: Table 1 represents the most widely implemented position within the CEPT countries [i.3], but it should not be assumed that all designated bands are available in all countries. It is also foreseen that these frequencies may be implemented in [i.6], [i.7] and [i.8] in the future.

Table 1: Short Range Devices within the 40 GHz to 246 GHz frequency range

Frequency Bands	Applications	Notes
57 GHz to 66 GHz	Non-specific SRD	CEPT-ECC and European Commission regulatory implementation is under discussion.
61,0 GHz to 61,5 GHz	Non-specific SRD	
122 GHz to 123 GHz	Non-specific SRD	
244 GHz to 246 GHz	Non-specific SRD	

NOTE 2: In addition, it should be noted that other frequency bands may be available in a country within the frequency range 40 GHz to 246 GHz covered by the present document. the CEPT/ERC Recommendation 70-03 [i.3] as implemented through National Radio Interfaces (NRI) and additional NRI as relevant.

NOTE 3: On non-harmonized parameters, national administrations may impose certain conditions such as the type of modulation, frequency, channel/frequency separations, maximum transmitter radiated power, duty cycle, and the inclusion of an automatic transmitter shut-off facility, as a condition for the issue of an individual or general licence, or as a condition for the issuing of Individual Rights for use of spectrum or General Authorization, or as a condition for use "under licence exemption" as it is in most cases for Short Range Devices.

The present document covers fixed stations, mobile stations and portable stations.

NOTE 4: A list of such ENs is included on the web site http://www.newapproach.org.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the reference document (including any amendments) applies.

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 necessary for the application of the present document.

[1] ETSI EN 305 550-1 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 40 GHz to 246 GHz frequency range; Part 1: Technical characteristics and test methods".

2.2 Informative references

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[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] CEPT/ERC Recommendation 70-03: "Relating to the use of Short Range Devices (SRD)".

[i.4] 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.5] 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".

[i.6] European Commission Decision (2006/771/EC) of 9 November 2006 on harmonization of the radio spectrum for use by short-range devices.

[i.7] European Commission Decision (2008/432/EC) of 23 May 2008 (amending Decision 2006/771/EC) on harmonization of the radio spectrum for use by short-range devices.

[i.8] CEPT/ERC Recommendation 74-01: "Unwanted emissions in the spurious domain", Hradec Kralove, Cardiff 2011.

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] and EN 305 550-1 [1] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in EN 305 550-1 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 305 550-1 [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 supplier. 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 Spectral power density

The spectral power density, as defined in EN 305 550-1 [1], clause 7.1.1, shall not exceed the limits in EN 305 550-1 [1], clause 7.1.2, table 9.

This requirement applies to transmitters operating in the 57 GHz to 66 GHz frequency range.

4.2.1.2 RF output power

The RF output power, as defined in EN 305 550-1 [1], clause 7.2.1, shall not exceed the limits in EN 305 550-1 [1], clause 7.2.2, table 10.

4.2.1.3 Permitted range of operating frequencies

The permitted range of operating frequencies, as defined in EN 305 550-1 [1], clause 7.3.1, shall not exceed the limits in EN 305 550-1 [1], clause 7.3.4.

This requirement applies to all transmitters.

4.2.1.4 Unwanted emissions in the spurious domain

The unwanted emissions in the spurious domain, as defined in EN 305 550-1 [1], clause 7.4.1, shall not exceed the limits in EN 305 550-1 [1], clause 7.4.3, table 11.

This requirement applies to all transmitters.

4.2.2 Receiver requirements

4.2.2.1 Unwanted emissions

The unwanted emissions as defined in EN 305 550-1 [1], clause 8.1.1, shall not exceed the limits in EN 305 550-1 [1], clause 8.1.3.

5 Testing for compliance with technical requirements

5.1 Description of testing for compliance with technical requirements

5.1.1 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.

5.1.1.1 Normal and extreme test-conditions

The test procedures shall be as specified in EN 305 550-1 [1], clauses 5.2 to 5.4.

5.1.1.2 Test power source

The test power source shall meet the requirements of EN 305 550-1 [1], 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 305 550-1 [1], clause 4.2.1.

5.2 Interpretation of the measurement results

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 values in clause 4.8, table 4 of EN 305 550-1 [1].

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with the principles contained within TR 100 028 [i.5] 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)).

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

5.3 Essential transmitter test suites

5.3.1 Spectral power density

The test specified in EN 305 550-1 [1], clause 7.1.3 shall be carried out.

This test suite applies to all transmitters.

5.3.2 RF output power

The test specified in EN 305 550-1 [1], clause 7.2.3 shall be carried out.

This test suite applies to all transmitters.

5.3.3 Permitted range of operation frequencies

The test specified in EN 305 550-1 [1], clauses 7.3.2 or 7.3.3 shall be carried out.

This test suite applies to all transmitters.

5.3.4 Unwanted emissions in the spurious domain

The tests specified in EN 305 550-1 [1], clause 7.4.2 shall be carried out.

This test suite applies to all transmitters.

5.4 Essential receiver test suites

5.4.1 unwanted radiated components

The test specified in EN 305 550-1 [1], clause 8.1.2 shall be carried out.

This test suite applies to all receivers.

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 305 550-2 The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive [**i.2**]						
Requirement			**Requirement Conditionality**		**Test Specification**	
No	**Description**	**Reference: Clause No**	**U/C**	**Condition**	**E/O**	**Reference: Clause No**
1	Spectral power density	4.2.1.1	U		E	5.3.1
2	RF output power	4.2.1.2	U		E	5.3.2
3	Permitted range of operating frequencies	4.2.1.3	U		E	5.3.3
4	Transmitter unwanted emissions in the spurious domain	4.2.1.4	U		E	5.3.4
5	Receiver spurious components	4.2.2	U		E	5.4.1

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" 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

Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to ele ctromagnetic compatibility and repealing Directive 89/336/EEC (EMC Directive).

Directive 2006/95/EC of the European Parliament and of the Council of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (LV Directive).

History

Document history				
V1.1.1	June 2010	Public Enquiry	PE 20101002:	2010-06-04 to 2010-10-04
V1.1.1	April 2011	Vote	V 20110628:	2011-04-29 to 2011-06-28
V1.1.1	July 2011	Publication		