



HARMONIZED EUROPEAN STANDARD

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Short Range Devices (SRD);
Radio equipment in the frequency range
9 kHz to 25 MHz and inductive loop systems
in the frequency range 9 kHz to 30 MHz;
Part 2: Harmonized EN covering the essential requirements
of article 3.2 of the R&TTE Directive**

Reference

REN/ERM-TG28-0437

Keywords

radio, RFID, 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

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (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:

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2015.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are Trade Marks of ETSI 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
Modal verbs terminology.....	4
Introduction	5
1 Scope	6
2 References	7
2.1 Normative references	7
2.2 Informative references.....	7
3 Definitions, symbols and abbreviations	8
3.1 Definitions.....	8
3.2 Symbols.....	8
3.3 Abbreviations	8
4 Technical requirements specifications	8
4.1 Environmental conditions.....	8
4.1.1 Environmental profile	8
4.2 Conformance requirements	8
4.2.1 Transmitter requirements	8
4.2.1.1 Permitted range of operating frequencies.....	8
4.2.1.2 Limits for transmitters in the range from 9 kHz to 30 MHz.....	8
4.2.1.3 Limits for the permitted range of modulation bandwidth.....	8
4.2.1.4 Transmitter spurious and out-of-band emissions	9
4.2.2 Receiver requirements	9
4.2.2.1 Adjacent channel selectivity - in band (receiver category 1 only)	9
4.2.2.2 Blocking or desensitiation (receiver categories 1 or 2 only)	9
4.2.2.3 Receiver spurious emissions	9
5 Testing for compliance with technical requirements.....	9
5.1 Environmental conditions for testing	9
5.2 Essential radio test suites.....	9
5.2.1 Transmitter test suites	9
5.2.1.1 Permitted range of operating frequencies.....	9
5.2.1.2 Permitted range of the modulation bandwidth	9
5.2.1.3 Emission limits for transmitters in the range from 9 kHz to 30 MHz	9
5.2.1.4 Transmitter spurious and out-of-band emissions	9
5.2.2 Receiver test suites.....	9
5.2.2.1 Adjacent channel selectivity (receiver category 1 only)	9
5.2.2.2 Blocking or desensitiation (receiver categories 1 or 2 only)	9
5.2.2.3 Receiver spurious emissions	10
5.3 Interpretation of results and measurement uncertainty.....	10
Annex A (normative): HS Requirements and conformance Test specifications Table (HS-RTT).....	11
Annex B (informative): Void	13
Annex C (informative): Bibliography.....	14
History	15

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).

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 mandate M/284 issued from the European Commission under Directive 98/34/EC [i.1] as amended by Directive 98/48/EC [i.7].

The title and reference to the present document are intended to be 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 Harmonized 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 summarized 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 in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz, 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:	20 February 2015
Date of latest announcement of this EN (doa):	31 May 2015
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2015
Date of withdrawal of any conflicting National Standard (dow):	30 November 2016

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

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 ETSI EG 201 399 [i.3].

1 Scope

The present document applies to Short Range Devices (SRDs) transmitters and receivers as described in the scope of ETSI EN 300 330-1 [1].

The present document covers transmitters intended to operate in the frequency range as defined in the Commission Decision 2006/771/EC [i.4] on harmonization of the radio spectrum for use by short-range devices as amended by Commission Decision 2013/752/EU of 11 December 2013 [i.6] and the CEPT/ERC/REC 70-03 [i.5].

The document applies to:

- 1) Generic Short range Devices including transmitters operating in the range from 9 kHz to 25 MHz; and
- 2) inductive loop transmitters operating from 9 kHz to 30 MHz including Radio Frequency Identification (RFID) and EAS equipments operating in LF and HF ranges and for radio equipment including wireless power transfer (WPT) function in the same frequency range;
- 3) receivers of systems as defined by bullets 1 and 2;
- 4) these radio equipment types are capable of operating in the permitted frequency bands within the 9 kHz to 30 MHz 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;
 - with or without speech.

Table 1 shows a list of the frequency bands as designated to Short Range Devices by some European Commission Decisions and the CEPT/ERC/REC 70-03 [i.5] as known at the date of publication of the present document.

Table 1: Frequency bands designated to Short Range Devices within 9 kHz to 30 MHz

	Frequency Bands/frequencies	Applications
Transmit and Receive	9 kHz to 90 kHz	Inductive devices, Generic use
Transmit and Receive	90 kHz to 119 kHz	Inductive devices, Generic use
Transmit and Receive	119 kHz to 140 kHz	Inductive devices, Generic use
Transmit and Receive	140 kHz to 148,5 kHz	Inductive devices, Generic use
Transmit and Receive	148,5 kHz to 5 MHz	Inductive devices, Generic use
Transmit and Receive	400 kHz to 600 kHz	RFID only
Transmit and Receive	5 kHz to 30 MHz	Inductive devices, Generic use
Transmit and Receive	3 155 kHz to 3 400 kHz	Inductive devices, Generic use
Transmit and Receive	4 234 kHz	Inductive devices, Railway applications
Transmit and Receive	4 516 kHz	Inductive devices, Railway applications
Transmit and Receive	6 765 kHz to 6 795 kHz	Inductive devices, Generic use
Transmit and Receive	7 400 kHz to 8 800 kHz	Inductive devices, Generic use
Transmit and Receive	10 200 kHz to 11 000 kHz	Inductive devices, Generic use
Transmit and Receive	11 810 kHz to 15 310 kHz	RFID only
Transmit and Receive	12,5 MHz to 20 MHz	Inductive devices, Wireless healthcare
Transmit and Receive	13,553 MHz to 13,567 MHz	Inductive devices, Generic use
Transmit and Receive	26,957 MHz to 27,283 MHz	Inductive devices, Generic use
Transmit and Receive	27,095 MHz	Inductive devices, Railway applications

NOTE 1: It should be noted that table 1 represents the most widely implemented position within the European Union and the CEPT countries, but it should not be assumed that all designated bands are available in all countries.

NOTE 2: In addition, it should be noted that other frequency bands may be available in a country within the frequency range 9 kHz to 30 MHz covered by the present document.

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 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.

The present document is intended to cover the provisions of article 3.2 of Directive 1999/5/EC [i.2] (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".

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 [i.2] may apply to equipment within the scope of the present document.

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

2 References

2.1 Normative 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.

The following referenced documents are necessary for the application of the present document.

- [1] ETSI EN 300 330-1 (V1.8.1) (12-2014): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 1: Technical characteristics and test methods".

2.2 Informative 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.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

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] 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 2006/771/EC of 9 November 2006 on harmonisation of the radio spectrum for use by short-range devices as amended by Commission Decision 2008/432/EC.
- [i.5] CEPT/ERC/REC 70-03: "Relating to the use of Short Range Devices (SRD)".
- [i.6] Commission Decision 2013/752/EU of 11 December 2013 amending Decision 2006/771/EC on harmonisation of the radio spectrum for use by short-range devices.
- [i.7] Directive 98/48/EC of the European Parliament and of the Council of 20 July 1998 amending Directive 98/34/EC 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 Directive 1999/5/EC [i.2] and ETSI EN 300 330-1 [1] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI EN 300 330-1 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI EN 300 330-1 [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 Permitted range of operating frequencies

The permitted range of operating frequencies shall not exceed the limits specified in clause 7.3.3 of ETSI EN 300 330-1 [1].

4.2.1.2 Limits for transmitters in the range from 9 kHz to 30 MHz

The maximum radiated field strength and RF carrier current shall not exceed the limits specified in clause 7.2.1.3 of ETSI EN 300 330-1 [1].

The maximum RF carrier current shall not exceed the limits specified in clause 7.2.2.3 of ETSI EN 300 330-1 [1].

4.2.1.3 Limits for the permitted range of modulation bandwidth

The maximum range of modulation bandwidth shall not exceed the limits as specified in clause 7.4.3 of ETSI EN 300 330-1 [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 clauses 7.5.2.2, 7.5.2.4 or 7.5.3.2 and 7.5.4.2 of ETSI EN 300 330-1 [1].

4.2.2 Receiver requirements

4.2.2.1 Adjacent channel selectivity - in band (receiver category 1 only)

The maximum adjacent channel selectivity of the equipment shall not be less than as stated in clause 8.1.3 of ETSI EN 300 330-1 [1].

4.2.2.2 Blocking or desensitiation (receiver categories 1 or 2 only)

The maximum blocking limits of the equipment shall not be less than stated in clause 8.2.3 of ETSI EN 300 330-1 [1].

4.2.2.3 Receiver spurious emissions

The receiver spurious emissions shall not exceed the limits specified in clauses 8.3.3.1 or 8.3.3.2 of ETSI EN 300 330-1 [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 7.3.2 of ETSI EN 300 330-1 [1] shall be carried out.

5.2.1.2 Permitted range of the modulation bandwidth

The test defined in clause 7.4.2 of ETSI EN 300 330-1 [1] shall be carried out.

5.2.1.3 Emission limits for transmitters in the range from 9 kHz to 30 MHz

The tests defined in clauses 7.2.1.2, 7.2.2.2 or 7.2.3.2 of ETSI EN 300 330-1 [1] shall be carried out.

5.2.1.4 Transmitter spurious and out-of-band emissions

The tests defined in clauses 7.5.2.1, 7.5.2.3, 7.5.3.1 or 7.5.4.1 of ETSI EN 300 330-1 [1] shall be carried out.

5.2.2 Receiver test suites

5.2.2.1 Adjacent channel selectivity (receiver category 1 only)

The test defined in clause 8.1.2 of ETSI EN 300 330-1 [1] shall be carried out.

5.2.2.2 Blocking or desensitiation (receiver categories 1 or 2 only)

The test defined in clause 8.2.2 of ETSI EN 300 330-1 [1] shall be carried out.

5.2.2.3 Receiver spurious emissions

The test defined in clause 8.3.2 of ETSI EN 300 330-1 [1] shall be carried out.

5.3 Interpretation of results and measurement uncertainty

Clauses 9 and 10 of ETSI EN 300 330-1 [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 dependent 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 ETSI EN 300 330-2						
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	Permitted range of operating frequencies	4.2.1.1	U		E	5.2.1.1
2	Limits for transmitters	4.2.1.2	U		E	5.2.1.3
3	Limits for permitted range of modulation bandwidth	4.2.1.3	U		E	5.2.1.2
4	Transmitter spurious and out of band emissions	4.2.1.4	U		E	5.2.1.4
5	Receiver adjacent channel selectivity	4.2.2.1	C	Receiver category 1 only. This requirement does not apply for tagging systems.	E	5.2.2.1
6	Receiver blocking or desensitiation	4.2.2.2	C	Receiver categories 1 and 2 only. Blocking requirement does not apply for tagging systems.	E	5.2.2.2
7	Receiver spurious emissions	4.2.2.3	U		E	5.2.2.3

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 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):
Void

Annex C (informative): Bibliography

- 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).
- Council Directive 93/42/EEC concerning medical devices.
- Council Directive 90/385/EEC concerning active implantable medical devices.

History

Document history		
Edition 1	December 1994	Publication as ETSI ETSI I-ETS 300 330
Amendment 1	January 1997	Amendment 1 to 1 st Edition of ETSI I-ETS 300 330
V1.2.2	May 1999	Publication as ETSI EN 300 330
V1.1.1	June 2001	Publication
V1.3.1	April 2006	Publication
V1.5.1	February 2010	Publication
V1.6.0	June 2014	EN Approval Procedure AP 20141017: 2014-06-19 to 2014-10-17
V1.6.1	December 2014	Vote V 20150220: 2014-12-22 to 2015-02-20
V1.6.1	March 2015	Publication