

ETSI EN 300 440-2 V1.3.1 (2009-03)

Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Short range devices;
Radio equipment to be used
in the 1 GHz to 40 GHz frequency range;
Part 2: Harmonized EN covering 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/41de4fec-c1fc-4f39-89f9-ecc01bd999d2/etsi-en-300-440-2-v1.3.1-2009-03>



ReferenceREN/ERM-TG28-0426-2

Keywordsradio, 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/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	5
Foreword.....	5
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 profile.....	8
4.2 Conformance requirements	8
4.2.1 Transmitter requirements.....	8
4.2.1.1 Equivalent isotropically radiated power.....	8
4.2.1.2 Permitted range of operating frequencies.....	9
4.2.1.3 Unwanted emissions in the spurious domain	9
4.2.1.4 Duty cycle	9
4.2.2 Receiver requirements	9
4.2.2.1 Adjacent channel selectivity.....	9
4.2.2.2 Blocking or desensitization.....	9
4.2.2.3 Spurious radiations.....	9
4.2.3 2,45 GHz RFID systems	9
4.2.4 GBSAR systems	9
4.2.4.1 Effective radiated power	9
4.2.4.2 Permitted range of operating frequencies.....	10
4.2.4.3 DAA threshold	10
4.2.4.3.1 DAA timing parameters.....	10
4.2.4.4 Antenna pattern	10
4.2.4.5 Unwanted emissions in the spurious domain	10
5 Testing for compliance with technical requirements.....	10
5.1 Description of testing for compliance with technical requirements	10
5.1.1 Environmental conditions for testing	10
5.1.1.1 Normal and extreme test-conditions.....	11
5.1.1.2 Test power source	11
5.1.2 Choice of samples for test suites.....	11
5.2 Interpretation of the measurement results	11
5.3 Essential transmitter test suites.....	11
5.3.1 Equivalent isotropically radiated power	11
5.3.2 Permitted range of operation frequencies	11
5.3.3 Unwanted emissions in the spurious domain	12
5.4 Essential receiver test suites	12
5.4.1 Adjacent channel selectivity	12
5.4.2 Blocking or desensitization.....	12
5.4.3 Spurious radiations	12
5.5 Tests for RFID systems at 2,45 GHz.....	12
5.6 Tests for GBSAR systems.....	12
5.6.1 Effective radiated power	12
5.6.2 Permitted range of operating frequencies	12
5.6.3 DAA threshold.....	12
5.6.4 DAA timing parameters.....	13
5.6.4.1 Minimum listen time	13

5.6.4.2	Minimum listen time after detection	13
5.6.4.3	Maximum transmitter on-time	13
5.6.4.4	Minimum transmitter off-time	13
5.6.5	Antenna pattern	13
5.6.6	Unwanted emissions in the spurious domain	13
Annex A (normative):	HS Requirements and conformance Test specifications Table (HS-RTT).....	14
Annex B (informative):	The EN title in the official languages	16
History		17

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Full standard d:
<https://standards.iteh.ai/catalog/standards/sist/41de4fec-c1fe-4f39-8919-ecc01bd999d2/etsi-en-300-440-2-v1.3.1-2009-03>

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).

The present document includes improvements to the previous version of the standard that take advantage of technical developments within the SRD industry. In particular this includes optional features such as Listen Before Talk (LBT) and Detect And Avoid (DAA).

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 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.2] 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.2] 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; Radio equipment to be used in the 1 GHz to 40 GHz frequency range, as identified below:

Part 1: "Technical characteristics and test methods";

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

National transposition dates	
Date of adoption of this EN:	18 March 2009
Date of latest announcement of this EN (doa):	30 June 2009
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 December 2009
Date of withdrawal of any conflicting National Standard (dow):	31 December 2010

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:

- 1) Generic Short Range Devices, including alarms, telecommand, telemetry, data transmission in general, etc.;
- 2) Radio Frequency IDentification (RFID);
- 3) Radiodetermination, including detection, movement and alert applications.

These radio equipment types are capable of operating in the permitted frequency bands within the 1 GHz to 40 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;
- with or without speech.

Table 1 shows a list of the frequency bands as designated by the European Commission Decisions on Short Range Devices [i.6], [i.7] and the CEPT/ERC/REC 70-03 [i.3] as known at the date of publication of the present document.

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

	Frequency Bands	Applications	Notes
Transmit and Receive	2 400 MHz to 2 483,5 MHz	Generic use	
Transmit and Receive	2 400 MHz to 2 483,5 MHz	Detection, movement and alert applications	
Transmit and Receive	(a) 2 446 MHz to 2 454 MHz	RFID	See annex C of EN 300 440-1 [1]
Transmit and Receive	(b) 2 446 MHz to 2 454 MHz	RFID	See annex C of EN 300 440-1 [1]
Transmit and Receive	5 725 MHz to 5 875 MHz	Generic use	
Transmit and Receive	9 200 MHz to 9 500 MHz	Radiodetermination: radar, detection, movement and alert applications	
Transmit and Receive	9 500 MHz to 9 975 MHz	Radiodetermination: radar, detection, movement and alert applications	
Transmit and Receive	10,5 GHz to 10,6 GHz	Radiodetermination: radar, detection, movement and alert applications	
Transmit and Receive	13,4 GHz to 14,0 GHz	Radiodetermination: radar, detection, movement and alert applications	
Transmit and Receive	17,1 GHz to 17,3 GHz	Radiodetermination: GBSAR detection, movement and alert applications	See annex E of EN 300 440-1 [1]
Transmit and Receive	24,00 GHz to 24,25 GHz	Generic use and for Radiodetermination: radar, detection, movement and alert applications	

NOTE: (a) and (b) refer to two different operational restrictions for different power levels in the same frequency band.

NOTE 1: It should be noted that table 1 represents the most widely implemented position within the European Union [i.6], [i.7] and the CEPT countries [i.3], 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 1 GHz to 40 GHz covered by the present document. See the European Commission Decisions on Short Range Devices [i.6], [i.7] and 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 issuing 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.

Applications using Ultra Wide Band (UWB) technology are not covered by the present document.

The present document does not require measurements for radiated emissions below 25 MHz.

The present document is intended to cover the provisions of article 3.2 of Directive 1999/5/EC [i.2] (R&TTE Directive). The present document does not apply to radio equipment for which a specific Harmonized EN applies as such specific Harmonized EN may specify additional EN requirements relevant to the presumption of conformity under article 3.2 of the R&TTE Directive [i.2].

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 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 300 440-1 (V1.5.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Part 1: Technical characteristics and test methods".

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] 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.

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 300 440-1 [1] apply.

3.2 Symbols

For the purposes of the present document, the symbols given in EN 300 440-1 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 300 440-1 [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 Equivalent isotropically radiated power

The equivalent isotropically radiated power, as defined in EN 300 440-1 [1], clause 7.1.1, shall not exceed the limits in EN 300 440-1 [1], clause 7.1.3, table 4.

This requirement applies to transmitters with an integral or dedicated antenna.

4.2.1.2 Permitted range of operating frequencies

The permitted range of operation frequencies, as defined in EN 300 440-1 [1], clause 7.2.1, shall not exceed the limits in EN 300 440-1 [1], clause 7.2.4.

4.2.1.3 Unwanted emissions in the spurious domain

The unwanted emissions in the spurious domain, as defined in EN 300 440-1 [1], clause 7.3.1, shall not exceed the limits in EN 300 440-1 [1], clause 7.3.6, table 5.

This requirement applies to all transmitters.

4.2.1.4 Duty cycle

The duty cycle, as defined in EN 300 440-1 [1], clause 7.4.1, shall not exceed the limits in EN 300 440-1 [1], clause 7.4.3, table 6.

This requirement applies to RFID transmitters operating in 2 446 MHz to 2 454 MHz only.

4.2.2 Receiver requirements

4.2.2.1 Adjacent channel selectivity

The adjacent channel selectivity, as defined in EN 300 440-1 [1], clauses 8.1 and 8.1.1, shall not be less than the limits in EN 300 440-1 [1], clause 8.1.3, table 7.

This requirement applies to Equipment Category 1 receivers, when invoked, as defined in EN 300 440-1 [1], clause 4.1.1.

4.2.2.2 Blocking or desensitization

The blocking or desensitization, as defined in EN 300 440-1 [1], clause 8.2.1, shall not be less than the limits in EN 300 440-1 [1], clause 8.2.3, table 9.

This requirement applies to Equipment Category 1 and Category 2 receivers, when invoked, as defined in EN 300 440-1 [1], clause 4.1.1.

4.2.2.3 Spurious radiations

The spurious radiations, as defined in EN 300 440-1 [1], clause 8.3.1, shall not exceed the limits in EN 300 440-1 [1], clause 8.3.5.

This requirement applies to all receivers.

4.2.3 2,45 GHz RFID systems

2,45 GHz RFID systems as defined in EN 300 440-1 [1], annex C, shall not exceed the limits as defined in EN 300 440-1 [1], clauses C.1, C.1.1 and C.1.2.

4.2.4 GBSAR systems

4.2.4.1 Effective radiated power

The equivalent isotropically radiated power, as defined in EN 300 440-1 [1], clause E.2.1, shall not exceed the limits in EN 300 440-1 [1], clause E.2.1.3.