



**Short Range Devices (SRD) operating
in the frequency range 25 MHz to 1 000 MHz;
Part 2: Harmonised Standard for access to radio spectrum
for non specific radio equipment**

Full Standard Preview
ETSI EN 300 220-2 V3.2.0 (2017-09)
https://standards.iteh.ai/catalog/standards/si/9722813-fa95-4193-a0be-146d119bcac4/etsi-en-300-220-2-v3.2.0-1708-06

ReferenceREN/ERM-TG28-535

Keywordsharmonised standard, radio, 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

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

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

<https://portal.etsi.org/People/CommiteeSupportStaff.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.

© ETSI 2017.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.

3GPP™ and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

oneM2M logo is protected for the benefit of its Members.

GSM® and the GSM logo are trademarks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	6
Foreword.....	6
Modal verbs terminology.....	7
Introduction	7
1 Scope.....	8
2 References	8
2.1 Normative references	8
2.2 Informative references.....	9
3 Definitions, symbols and abbreviations	9
3.1 Definitions.....	9
3.2 Symbols.....	10
3.3 Abbreviations	10
4 Technical requirements specifications	10
4.1 Environmental profile.....	10
4.2 All equipment conformance requirements	10
4.2.0 Compliance	10
4.2.1 Operating frequency	10
4.2.1.0 Applicability.....	10
4.2.1.1 Description.....	10
4.2.1.2 Limits	10
4.2.1.3 Conformance.....	10
4.2.2 Unwanted emissions in the spurious domain	11
4.2.2.0 Applicability.....	11
4.2.2.1 Description	11
4.2.2.2 Limits	11
4.2.2.3 Conformance.....	11
4.3 Transmitters conformance requirements	11
4.3.1 Effective Radiated Power	11
4.3.1.0 Applicability.....	11
4.3.1.1 Description.....	11
4.3.1.2 Limits	11
4.3.1.3 Conformance.....	11
4.3.2 Maximum e.r.p. spectral density.....	11
4.3.2.0 Applicability.....	11
4.3.2.1 Description	11
4.3.2.2 Limits	12
4.3.2.3 Conformance.....	12
4.3.3 Duty Cycle	12
4.3.3.0 Applicability.....	12
4.3.3.1 Description	12
4.3.3.2 Limits	12
4.3.3.3 Conformance.....	12
4.3.4 Occupied Bandwidth.....	12
4.3.4.0 Applicability.....	12
4.3.4.1 Description	12
4.3.4.2 Limits	12
4.3.4.3 Conformance.....	12
4.3.5 Tx Out of Band Emissions	12
4.3.5.0 Applicability.....	12
4.3.5.1 Description	13
4.3.5.2 Limits	13
4.3.5.3 Conformance.....	13
4.3.6 Transient power	13
4.3.6.0 Applicability.....	13

4.3.6.1	Description	13
4.3.6.2	Limits	13
4.3.6.3	Conformance	13
4.3.7	Adjacent Channel Power	13
4.3.7.0	Applicability	13
4.3.7.1	Description	13
4.3.7.2	Limits	13
4.3.7.3	Conformance	13
4.3.8	TX behaviour under Low Voltage Conditions	14
4.3.8.0	Applicability	14
4.3.8.1	Description	14
4.3.8.2	Limits	14
4.3.8.3	Conformance	14
4.3.9	Adaptive Power Control	14
4.3.9.0	Applicability	14
4.3.9.1	Description	14
4.3.9.2	Limits	14
4.3.9.3	Conformance	14
4.3.10	FHSS equipment	14
4.3.10.0	Applicability	14
4.3.10.1	Description	14
4.3.10.2	Limits	14
4.3.10.3	Conformance	15
4.3.11	Short term behaviour	15
4.3.11.0	Applicability	15
4.3.11.1	Description	15
4.3.11.2	Limits	15
4.3.11.3	Conformance	15
4.4	Receivers conformance requirements	16
4.4.1	RX sensitivity	16
4.4.1.0	Applicability	16
4.4.1.1	Description	16
4.4.1.2	Limits	16
4.4.1.3	Conformance	16
4.4.2	Blocking	16
4.4.2.0	Applicability	16
4.4.2.1	Description	16
4.4.2.2	Limits	16
4.4.2.3	Conformance	16
4.5	Polite spectrum access conformance requirement	16
4.5.1	Description	16
4.5.2	Clear Channel Assessment threshold	17
4.5.2.0	Applicability	17
4.5.2.1	Description	17
4.5.2.2	Limits	17
4.5.2.3	Conformance	17
4.5.3	Polite spectrum access timing parameters	17
4.5.3.1	Applicability	17
4.5.3.2	Limits	17
4.5.3.3	Conformance	17
4.5.4	Adaptive Frequency Agility	17
4.5.4.0	Applicability	17
4.5.4.1	Description	17
4.5.4.2	Limits	17
4.5.4.3	Conformance	17
Annex A (informative):	Relationship between the present document and the essential requirements of Directive 2014/53/EU	18
Annex B (normative):	EU wide harmonised national radio interfaces from 25 MHz to 1 000 MHz	20

Annex C (normative):	National Radio Interfaces not EU wide harmonised	23
Annex D (informative):	Application form for testing.....	28
D.1	Introduction	28
D.2	Information to declare according to ETSI EN 300 220-2	28
Annex E (informative):	Selection of technical parameters	30
E.1	Introduction	30
E.2	Receiver parameters	30
Annex F (informative):	Bibliography.....	31
Annex G (informative):	Change History	32
History		33

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Full standard:
<https://standards.iteh.ai/catalog/standards/sist/97a2c813-fa95-4193-a0be-146d119beac4/etsi-en-300-220-2-v3.2.1-2018-06>

Intellectual Property Rights

Essential patents

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 (<https://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.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

Foreword

This draft Harmonised European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.5] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.2].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

The present document is part 2 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1].

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

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

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 2 of a multi-part deliverable covering Short Range Devices (SRD) operating in the frequency range 25 MHz to 1 000 MHz. Full details of the entire series can be found in part 1 [1].

The present document is structured as follows:

Clause 2 provides references.

Clause 3 provides definitions of terms and abbreviations used.

Clause 4 provides technical requirements.

Annex A (informative) provides a relationship between the present document and essential requirements of Directive 2014/53/EU [i.2].

Annex B (normative): EU wide harmonised national radio interfaces from 25 MHz to 1 000 MHz.

Annex C (normative): National Radio Interfaces not EU wide harmonised.

Annex D (informative): Application form for testing.

Annex E (informative): Selection of parameters.

Annex F (informative): Bibliography.

Annex G (informative): Change History.

1 Scope

The present document specifies technical characteristics and methods of measurements for Non-specific Short Range Devices category equipment types.

Non specific SRDs category is defined by the EU Commission Decision 2013/752/EU [i.3] as:

"The non-specific short-range device category covers all kinds of radio devices, regardless of the application or the purpose, which fulfil the technical conditions as specified for a given frequency band. Typical uses include telemetry, telecommand, alarms, data transmissions in general and other applications".

The present document covers equipment intended for fixed, mobile or nomadic use, including:

- stand-alone radio equipment;
- plug-in radio devices intended for use with or within a variety of host systems;
- plug-in radio devices intended for use within combined equipment.

These radio equipment types are capable of operating in all or any part of the frequency bands given in table 1.

Table 1: SRDs frequency ranges

Short Range Devices frequency ranges	
Transmit and receive	26,957 MHz to 27,283 MHz
Transmit and receive	40,660 MHz to 40,700 MHz
Transmit and receive	138,2 MHz to 138,45 MHz
Transmit and receive	169,4 MHz to 169,8125 MHz
Transmit and receive	433,040 MHz to 434,790 MHz
Transmit and receive	863 MHz to 876 MHz
Transmit and receive	915 MHz to 921 MHz
NOTE:	It should be noted that not all frequency bands in table 1 are implemented in all European countries. Annex B provides an overview of radio interfaces which are harmonised in the European Union. Annex C provides an overview of national radio interfaces not harmonised in the European Union.

It is noted that in the European Commission Decision on Short Range Devices [i.3], some harmonised frequency bands may be subject to usage restrictions such as the exclusion of video or audio use.

Equipment transmitting voice with analog modulation are excluded from the present document.

NOTE: The relationship between the present document and essential requirements of article 3.2 of Directive 2014/53/EU [i.2] is given in annex A.

2 References

2.1 Normative references

References are specific, identified by date of publication and/or edition number or version number. Only the cited version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://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 300 220-1 (V3.1.1) (02-2017): "Short Range Devices (SRD) operating in the frequency range 25 MHz to 1 000 MHz; Part 1: Technical characteristics and methods of measurement".

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

NOTE: Available at <http://www.erodocdb.dk/docs/doc98/official/pdf/rec7003e.pdf>.

- [i.2] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.
- [i.3] Commission Decision 2013/752/EU on harmonisation of the radio spectrum for use by short-range devices as amended by subsequent Commission Decisions.
- [i.4] ETSI EG 203 336: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".
- [i.5] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.
- [i.6] ECC Report 200: "Co-existence studies for proposed SRD and RFID applications in the frequency band 870-876 MHz and 915-921 MHz". September 2013.
- [i.7] Commission Decision 2000/299/EU: "Commission Decision of 6 April 2000 establishing the initial classification of radio equipment and telecommunications terminal equipment and associated identifiers (notified under document number C(2000) 938) (Text with EEA relevance)".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in RE-Directive [i.2], ETSI EN 300 220-1 [1] and the following apply:

dwelt time: time period the equipment stays on channel before hopping to the next hop channel

epoch: value of 4 times the dwell time times the number of hop channels

non overlapping channels: hopping positions separated by channel bandwidth of 90 % or more below the maximum power as measured with a spectrum analyser

number of hop channels: number of non-overlapping channels used by an FHSS equipment

return time to a hop channel: maximum period of time within which a specific hop channel is reused

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI EN 300 220-1 [1] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI EN 300 220-1 [1] and the following apply:

NRI National Radio Interface

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 manufacturer. The equipment shall comply with all the technical requirements of the present document which are identified as applicable in annex A at all times when operating within the boundary limits of the declared operational environmental profile. Normal and extreme tests conditions are defined in ETSI EN 300 220-1 [1], clauses 4.3.3 and 4.3.4.

4.2 All equipment conformance requirements

4.2.0 Compliance

When an operational frequency band is selected from table B.1 in annex B or from table C.1 in annex C for the equipment under test, the equipment shall comply with all parameters, exclusions and notes from the row in table B.1 or table C.1 unless a different National Radio Interface applies.

The present document may be used to show conformance to any applicable National Radio Interface (NRI), provided the equipment under test complies with all parameters, exclusions and notes from that NRI.

4.2.1 Operating frequency

4.2.1.0 Applicability

Clause 4.2.1 applies to all equipment.

4.2.1.1 Description

For the purpose of the present document, the description in ETSI EN 300 220-1 [1], clause 5.1.1 applies.

4.2.1.2 Limits

The manufacturer may declare either one or more operating frequencies and operating channels.

Operating channel(s) shall be entirely within operational frequency bands allowed by annexes B, C or any NRI.

4.2.1.3 Conformance

The conformance for this requirement shall be as defined in ETSI EN 300 220-1 [1], clause 5.1.2.

4.2.2 Unwanted emissions in the spurious domain

4.2.2.0 Applicability

Clause 4.2.1 applies to all equipment.

4.2.2.1 Description

For the purpose of the present document, the description in ETSI EN 300 220-1 [1], clause 5.9.1 applies.

4.2.2.2 Limits

The EUT shall comply with reference limits defined in ETSI EN 300 220-1 [1], clause 5.9.2 under normal test condition.

4.2.2.3 Conformance

The conformance tests for this requirement shall be as defined in ETSI EN 300 220-1 [1], clause 5.9.3.

Conformance shall be established under normal test conditions.

4.3 Transmitters conformance requirements

4.3.1 Effective Radiated Power

4.3.1.0 Applicability

Effective radiated power applies only to transmitters.

4.3.1.1 Description

For the purpose of the present document, the description in ETSI EN 300 220-1 [1], clause 5.2.1 applies.

4.3.1.2 Limits

The effective radiated power shall not be greater than the value allowed in annexes B or C for the chosen operational frequency band(s).

4.3.1.3 Conformance

The conformance tests for this requirement shall be as defined in ETSI EN 300 220-1 [1], clause 5.2.2.

Conformance shall be established under normal and extreme test conditions.

4.3.2 Maximum e.r.p. spectral density

4.3.2.0 Applicability

Maximum e.r.p. spectral density applies to transmitters using annex B bands I, L.

Maximum e.r.p. spectral density applies to transmitters using DSSS or wideband techniques other than FHSS modulation, in annex C band X.

4.3.2.1 Description

For the purpose of the present document, the description in ETSI EN 300 220-1 [1], clause 5.3.1 applies.