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~~ETSI EN 300 220-2~~ ~~V2.1.2~~ (2007-06)

~~Candidate~~ Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Short Range Devices (SRD);
Radio equipment to be used in the 25 MHz to 1 000 MHz
frequency range with power levels ranging up to 500 mW;
Part 2: Harmonized EN covering essential requirements
under article 3.2 of the R&TTE Directive**



ETSI EN 300 220-2 V2.3.1 (2010-02)

Harmonized European Standard (Telecommunications series)

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and Radio spectrum Matters (ERM);
Short Range Devices (SRD);
Radio equipment to be used in the 25 MHz to 1 000 MHz
frequency range with power levels ranging up to 500 mW;
Part 2: Harmonized EN covering essential requirements
under article 3.2 of the R&TTE Directive**



Reference

REN/ERM-TG28-~~0400-201~~

Keywords

radio, SRD, testing

ETSI

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Reference

REN/ERM-TG28-0420-2

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Foreword

This ~~Candidate~~ Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document is part 2 of a multi-part ~~deliverable~~, covering the Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW, as identified below:

Part 1: "Technical characteristics and test methods";

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

NOTE: ~~Version 2 of this multi-part deliverable consists of two parts. In contrast with earlier versions which consisted of three parts.~~

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) [3] 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 [4] 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 [1] are given in annex A.

National transposition dates	
Date of latest announcement of this EN (doa):	30 September 2007
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 March 2008
Date of withdrawal of any conflicting National Standard (dow):	31 March 2009

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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. It also serves the purpose of providing the requirements and associated measurement methods to improve the intra-SRD co-existence and promote efficient spectrum use.

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.2] (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 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") [i.1].

Technical specifications relevant to Directive 1999/5/EC [i.1] are given in annex A.

The present document is part 2 of a multi-part deliverable covering the Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW, as identified below:

Part 1: "Technical characteristics and test methods";

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

National transposition dates

Date of adoption of this EN:	<u>15 February 2010</u>
Date of latest announcement of this EN (doa):	<u>31 May 2010</u>
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	<u>30 November 2010</u>
Date of withdrawal of any conflicting National Standard (dow):	<u>31 May 2013</u>

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.1]. The modular structure is shown in EG 201 399 [i.5].

Introduction

The present document is part of a set of standards designed to fit in a modular structure to cover all radio and telecommunications terminal equipment under the R&TTE Directive [1]. Each standard is a module in the structure. The modular structure is shown in figure 1.

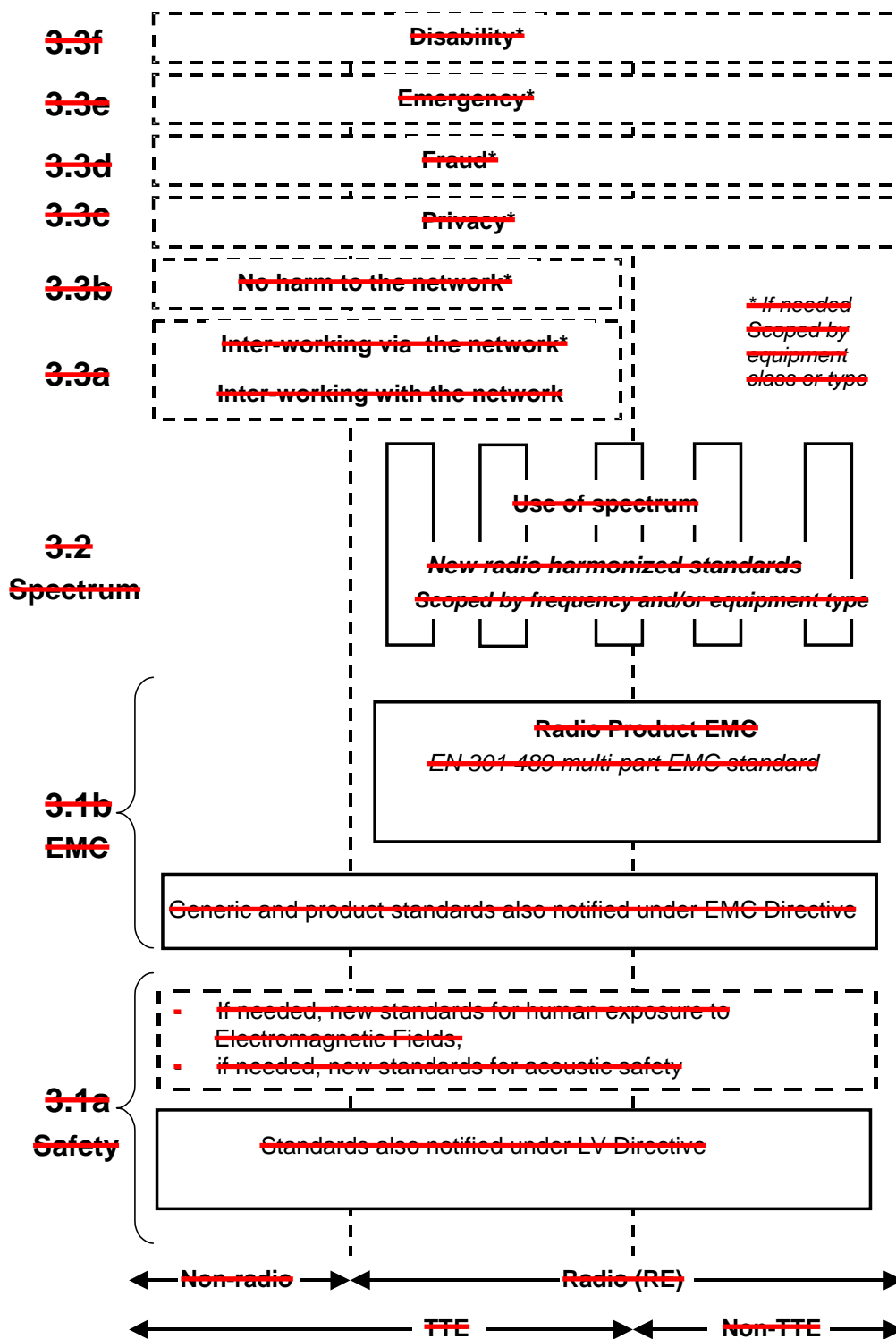


Figure 1. Modular structure for the various standards used under the R&TTE Directive [1]

1 Scope

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

- 1) Non-specific Short Range Devices
- 2) Alarms, identification systems, radio-determination, telecommand, telemetry, etc.
- 3) Radio Frequency Identification (RFID)
- 4) Detection, movement and alert applications.

These radio equipment types are capable of operating in the frequency bands within the 25 MHz to 1 000 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 [i 3] and [i 4] and the CEPT/ERC/REC 70-03 [i 6] as known at the date of publication of the present document.

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.

Table 1: Frequency bands commonly designated to Short Range Devices within 25 MHz to 1 000 MHz

	Frequency Bands/Frequencies	Applications
<u>Transmit and Receive</u>	<u>26 995 MHz, 27 045 MHz, 27 095 MHz, 27 145 MHz, 27 195 MHz, 34 995 MHz to 35 225 MHz, 40 665 MHz, 40 675 MHz, 40 685 MHz, 40 695 MHz</u>	<u>Model control</u>
<u>Transmit and Receive</u>	<u>26 957 MHz to 27 283 MHz</u>	<u>Non-specific use</u>
<u>Transmit and Receive</u>	<u>40 660 MHz to 40 700 MHz</u>	<u>Non-specific use</u>
<u>Transmit and Receive</u>	<u>138 200 MHz to 138 450 MHz</u>	<u>Non-specific use</u>
<u>Transmit and Receive</u>	<u>169 400 MHz to 169 475 MHz</u>	<u>Tracking, tracing and data acquisition and meter reading</u>
<u>Transmit and Receive</u>	<u>169 475 MHz to 169 4875 MHz</u>	<u>Social alarms</u>
<u>Transmit and Receive</u>	<u>169 5875 MHz to 169 6000 MHz</u>	<u>Social alarms</u>
<u>Transmit and Receive</u>	<u>433 050 MHz to 434 790 MHz</u>	<u>Non-specific use</u>
<u>Transmit and Receive</u>	<u>863 000 MHz to 870 000 MHz</u>	<u>Non-specific use</u>
<u>Transmit and Receive</u>	<u>864 800 MHz to 865 000 MHz</u>	<u>Wireless audio applications</u>
<u>Transmit and Receive</u>	<u>868 000 MHz to 868 600 MHz</u>	<u>Non-specific use</u>
<u>Transmit and Receive</u>	<u>868 600 MHz to 868 700 MHz</u>	<u>Alarms</u>
<u>Transmit and Receive</u>	<u>868 700 MHz to 869 200 MHz</u>	<u>Non-specific use</u>
<u>Transmit and Receive</u>	<u>869 200 MHz to 869 250 MHz</u>	<u>Social alarms</u>
<u>Transmit and Receive</u>	<u>869 250 MHz to 869 300 MHz</u>	<u>Alarms (0.1 % duty cycle)</u>
<u>Transmit and Receive</u>	<u>869 300 MHz to 869 400 MHz</u>	<u>Alarms (1 % duty cycle)</u>
<u>Transmit and Receive</u>	<u>869 400 MHz to 869 650 MHz</u>	<u>Non-specific use</u>
<u>Transmit and Receive</u>	<u>869 650 MHz to 869 700 MHz</u>	<u>Alarms</u>

NOTE 2: In addition, it should be noted that other frequency bands may be available in a country within the frequency range 25 MHz to 1 000 MHz for SRD covered by the present document. See European Commission Decisions on Short Range Devices [i 3] and [i 4] and CEPT/ERC/REC 70-03 [i 6] as implemented through National Radio Interfaces (NRI) or additional NRIs relevant.

~~The left hand edge of the figure 1 shows the different clauses of Article 3 of the R&TTE Directive [1].~~

~~For article 3.3 various horizontal boxes are shown. Dotted lines indicate that at the time of publication of the present document essential requirements in these areas have to be adopted by the Commission. If such essential requirements are adopted, and as far and as long as they are applicable, they will justify individual standards whose scope is likely to be specified by function or interface type.~~

~~The vertical boxes show the standards under article 3.2 for the use of the radio spectrum by radio equipment. The scopes of these standards are specified either by frequency (normally in the case where frequency bands are harmonized) or by radio equipment type.~~

~~For article 3.1b the diagram shows EN 301 489, the multi-part product EMC standard for radio used under the EMC Directive (see bibliography).~~

~~For article 3.1a the diagram shows the existing safety standards currently used under the LV Directive and new standards covering human exposure to electromagnetic fields. New standards covering acoustic safety may also be required.~~

~~The bottom of the figure shows the relationship of the standards to radio equipment and telecommunications terminal equipment. A particular equipment may be radio equipment, telecommunications terminal equipment or both. A radio spectrum standard will apply if it is radio equipment. An article 3.3 standard will apply as well only if the relevant essential requirement under the R&TTE Directive is adopted by the Commission and if the equipment in question is covered by the scope of the corresponding standard. Thus, depending on the nature of the equipment, the essential requirements under the R&TTE Directive may be covered in a set of standards.~~

~~The modularity principle has been taken because:~~

- ~~▪ it minimizes the number of standards needed. Because equipment may, in fact, have multiple interfaces and functions it is not practicable to produce a single standard for each possible combination of functions that may occur in an equipment;~~
 - ~~▪ it provides scope for standards to be added:
 - ~~▪ under article 3.2 when new frequency bands are agreed, or~~
 - ~~▪ under article 3.3 should the Commission take the necessary decisions~~~~
- ~~without requiring alteration of standards that are already published;~~
- ~~▪ it clarifies, simplifies and promotes the usage of Harmonized Standards as the relevant means of conformity assessment.~~

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 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.1] (R&TTE Directive). The present document does not apply to radio equipment for which a specific Harmonized EN applies as such Harmonized EN may specify additional EN requirements relevant to the presumption of conformity under article 3.2 of the R&TTE Directive [i.1].

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.

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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 300 220-1 (V2 3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; 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 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.2] 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.

1 ~~Scope~~

~~The present document applies to short range device radio transmitters and receivers as described in the scope of EN 300 220-1 [2].~~

The present document is intended to cover the provisions of ~~Article 3.2 of Directive 1999/5/EC [1] (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~~

~~The following documents contain provisions which, through reference in this text, constitute provisions of the present document.~~

- 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.
- ~~For a non-specific reference, the latest version applies.~~

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

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- [1] 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).
- [2] ~~ETSI EN 300 220-1 (V2.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods".~~
- ~~[3] 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 [1] and EN 300 220-1 ~~[2]~~ apply.

3.2 Symbols

For the purposes of the present document, the symbols given in EN 300 220-1 ~~[2]~~ apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 300 220-1 ~~[2]~~ apply.

- [i.3] [Commission Decision 2006/771/EC on harmonization of the radio spectrum for use by short-range devices as amended by subsequent Commission Decisions](#)
- [i.4] [Commission Decision 2005/928/EC on the harmonization of the 169,4-169,8125 MHz frequency band in the Community as amended by Commission Decision of 13 August 2008](#)
- [i.5] [ETSI EG 201 309: "Electromagnetic compatibility and Radio spectrum Matters \(ERM\): A guide to the production of candidate Harmonized Standards for application under the R&TTE Directive"](#)
- [i.6] [CEPT/ERC/REC 70-03: "Relating to the use of Short Range Devices \(SRD\)"](#)

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.1] and EN 300 220-1 [1] apply.

3.2 Symbols

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

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in EN 300 220-1 [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 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 Frequency error and frequency drift

One of the following shall be met:

- the frequency error or frequency drift, as defined in EN 300 220-1 [2], ~~clause 8.1.1~~, shall not exceed the limits in EN 300 220-1 [2], ~~clause 8.1.4, table 6a for narrow band or table 6b for wide band, or~~
- ~~for narrow band equipment not capable of producing an unmodulated carrier, the adjacent and alternate channel power, as defined in EN 300 220-1 [2], clause 8.6.1, shall not exceed the limits in EN 300 220-1 [2], clause 8.6.3 under extreme conditions.~~

This requirement applies to all transmitters.

4.2.1.2 ~~Carrier power (conducted)~~

~~The carrier power (conducted), as defined in EN 300 220-1 [2], clause 8.2.1, shall not exceed the limits in EN 300 220-1 [2], clause 8.2.3.~~

~~This requirement applies to transmitters which may be used without an integral or dedicated antenna.~~

4.2.1.3 Effective radiated power

The effective radiated power, as defined in EN 300 220-1 [2], ~~clause 8.3.1~~, shall not exceed the limits in EN 300 220-1 [2], ~~clause 8.3.3.~~

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

4.2.1.4 ~~Transient power~~

The transient power, as defined in EN 300 220-1 [2], ~~clause 8.5.1~~, shall not exceed the limits in EN 300 220-1 [2], ~~clause 8.5.4.~~

~~This requirement applies to all transmitters.~~

4.2.1.5 ~~Adjacent channel power~~

The adjacent channel power, as defined in EN 300 220-1 [2], ~~clause 8.6.1~~, shall not exceed the limits in EN 300 220-1 [2], ~~clause 8.6.3.~~

~~This requirement applies to transmitters with a channel spacing of 200 kHz or less.~~

4.2 Conformance requirements

4.2.1 Transmitter requirements

4.2.1.1 Frequency error and frequency drift

One of the following shall be met:

- 1) if the equipment can produce an unmodulated carrier then the frequency error or frequency drift, as defined in EN 300 220-1 [1], clause 7.1.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.1.3, table 4a for systems with channel spacing of less than or equal to 25 kHz or table 4b for all other systems; or
- 2) if the equipment is not able to produce an unmodulated carrier then either:
 - a) the adjacent channel power as defined in EN 300 220-1 [1], clause 7.6.1 for narrowband and channelized equipment shall not exceed the limits in EN 300 220-1 [1], clause 7.6.3 under extreme conditions; or
 - b) the modulation bandwidth as defined in EN 300 220-1 [1], clause 7.7.1 for all other equipment shall not exceed the limit in clause 7.7.4 under extreme conditions.

This requirement applies to all transmitters.

4.2.1.2 Average power (conducted)

The average power, as defined in EN 300 220-1 [1], clause 7.2.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.2.3, table 5.

4.2.1.3 Effective radiated power

The effective radiated power, as defined in EN 300 220-1 [1], clause 7.3.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.2.3, table 5.

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

4.2.1.4 Types of spread spectrum modulation

4.2.1.4.1 Frequency Hopping Spread Spectrum devices (FHSS)

Frequency hopping spread spectrum devices, as defined in EN 300 220-1 [1], clause 7.4.1.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.4.1.3 indent a) to i) and table 6.

The frequency hopping performance specified in EN 300 220-1 [1], clause 7.4.1.2 shall be declared by the provider.

This applies to all transmitters which employ FHSS.

4.2.1.4.2 Direct sequence or other spread spectrum than FHSS

Direct sequence or other spread spectrum than FHSS devices, as defined in EN 300 220-1 [1], clause 7.4.2.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.4.2.2 table 7.

Direct sequence or other spread spectrum than FHSS specified in EN 300 220-1 [1], clause 7.4.2.2 shall be declared by the provider.

This applies to all transmitters which employ DSSS and other spread spectrum than FHSS.

4.2.1.5 Transient Power

The transient power, as defined in EN 300 220-1 [1], clause 7.5.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.5.3.

This requirement applies to all transmitters.

~~4.2.1.6 Modulation bandwidth for wide band equipment (> 200 kHz)~~

~~The range of modulation bandwidth, as defined in EN 300 220-1 [2], clause 8.7.1, shall not exceed the limits in EN 300 220-1 [2], clause 8.7.3.~~

~~This requirement applies to transmitters using wide band as defined in EN 300 220-1 [2], clause 3.1.~~

~~4.2.1.7 Spurious emissions~~

~~The spurious emissions, as defined in EN 300 220-1 [2], clause 8.8.1, shall not exceed the limits in EN 300 220-1 [2], clause 8.8.5.~~

~~This requirement applies to all transmitters.~~

~~4.2.1.8 Frequency stability under low-voltage conditions~~

~~The frequency stability under low-voltage conditions, as defined in EN 300 220-1 [2], clause 8.9.1, shall not exceed the limits in EN 300 220-1 [2], clause 8.9.3.~~

~~This requirement applies to all battery-operated transmitters.~~

~~4.2.1.9 Duty cycle~~

~~The duty cycle, as defined in EN 300 220-1 [2], clause 8.10.1, shall not exceed the limits in EN 300 220-1 [2], clause 8.10.3.~~

~~This requirement applies to all transmitters excluding those with a listen before talk facility with AFA.~~

~~4.2.1.10 Listen Before Talk (LBT)~~

~~4.2.1.10.1 Minimum transmitter off-time~~

~~The minimum transmitter off-time, as defined in EN 300 220-1 [2], clause 8.11.1.1.1, shall not be less than the limits in EN 300 220-1 [2], clause 8.11.1.1.2.~~

~~This requirement applies to all transmitters using LBT.~~

~~4.2.1.10.2 Minimum listening time~~

~~The minimum listening time, as defined in EN 300 220-1 [2], clause 8.11.1.2.1 shall not shall not be less than the limits in EN 300 220-1 [2], clause 8.11.1.2.2.~~

~~This requirement applies to all transmitters using LBT.~~

~~4.2.1.10.3 Maximum transmitter on-time~~

~~The maximum transmitter on-time, as defined in EN 300 220-1 [2], clause 8.11.1.4.1 shall not exceed the limits in EN 300 220-1 [2], clause 8.11.1.4.2.~~

~~This requirement applies to all transmitters using LBT.~~

~~4.2.1.11 Types of spread spectrum modulation~~

~~4.2.1.11.1 Frequency hopping spread spectrum devices~~

~~The FHSS parameters, as declared in EN 300 220-1 [2], clause 8.4.1.1 shall not exceed the limits in EN 300 220-1 [2], clause 8.4.1.3 table 9 and indent a) to g).~~

~~This applies to all transmitters which employ FHSS.~~

4.2.1.6 Adjacent channel power

The adjacent channel power, as defined in EN 300 220-1 [1], clause 7.6.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.6.3.

This requirement applies to transmitters of narrowband systems.

4.2.1.7 Modulation bandwidth

The modulation bandwidth, as defined in EN 300 220-1 [1], clause 7.7.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.7.3.

This requirement applies to equipment not covered by EN 300 220-1 [1], clause 7.6.

4.2.1.8 Unwanted emissions in the spurious domain

The spurious emissions, as defined in EN 300 220-1 [1], clause 7.8.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.8.3, table 11.

This requirement applies to all transmitters.

4.2.1.9 Frequency stability under low-voltage conditions

The frequency stability under low-voltage conditions, as defined in EN 300 220-1 [1], clause 7.9.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.9.3.

This requirement applies to all battery-operated transmitters.

4.2.1.10 Duty cycle

The duty cycle, as defined in EN 300 220-1 [1], clause 7.10.1, shall not exceed the limits in EN 300 220-1 [1], clause 7.10.3.

The duty cycle shall be declared by the provider.

This requirement applies to all transmitters excluding those with a listen before talk facility with AFA or equivalent mitigation method and FHSS devices with LBT.

4.2.1.11 Listen Before Talk (LBT)

4.2.1.11.1 Minimum transmitter off-time

The minimum transmitter off-time, as defined in EN 300 220-1 [1], clause 9.2.1.1, shall not be less than the limits in EN 300 220-1 [1], clause 9.2.1.2.

The minimum transmitter off-time shall be declared by the provider.

This requirement applies to all transmitters using LBT.

4.2.1.11.2 Minimum listening time

The minimum listening time, as defined in EN 300 220-1 [1], clause 9.2.2.1 shall not shall not be less than the limits in EN 300 220-1 [1], clause 9.2.2.2.

The minimum listening time shall be declared by the provider.

This requirement applies to all transmitters using LBT.

4.2.1.11.3 Maximum dead time

The maximum dead time, as defined in EN 300 220-1 [1], clause 9.2.3.1 shall not shall not exceed the limit in EN 300 220-1 [1], clause 9.2.3.2.

~~4.2.1.11.2~~ ~~Direct sequence or other spread spectrum than FHSS~~

~~The power density, as defined in EN 300 220-1 [2], clause 8.4.2.1 shall not exceed the limits in EN 300 220-1 [2], clause 8.4.2.2, table 10.~~

~~This applies to all transmitters which employ DSSS and other spread spectrum than FHSS.~~

~~4.3~~ ~~Receiver requirements~~

~~4.3.1~~ ~~Maximum usable sensitivity (conducted)~~

~~The receiver sensitivity as defined in EN 300 220-1 [2], clauses 9.1.1 and F.2.1, shall be equal to or less than the limits in EN 300 220-1 [2], clauses 9.1.4 or F.2.2, as appropriate.~~

~~This requirement applies to all receivers with Listen Before Talk (LBT) facility.~~

~~4.3.2~~ ~~Receiver LBT threshold and transmitter max on time~~

- ~~a) The LBT threshold, as defined in EN 300 220-1 [2], clause 9.2.1, shall be equal to or less than the limits in EN 300 220-1 [2], clause 9.2.3, table 14.~~
- ~~b) The transmitter max on-time, as defined in EN 300 220-1 [2], clause 8.11.1.4.1, shall be equal to or less than the limits in EN 300 220-1 [2], clause 9.2.3, table 14.~~

~~This requirement applies to all receivers with listen before talk (LBT) facility.~~

~~4.3.3~~ ~~Adjacent channel selectivity~~

~~The adjacent channel selectivity as defined in EN 300 220-1 [2], clause 9.3.1, shall be equal to or greater than the limits in EN 300 220-1 [2], clauses 9.3.3.1, table 15 and clause 9.3.3.2, table 16.~~

~~This requirement applies only to all class 1 receivers, as defined in EN 300 220-1 [2], clause 4.1.1.~~

~~4.3.4~~ ~~Blocking or desensitization~~

~~The blocking or desensitization, as defined in EN 300 220-1 [2], clause 9.4.1, shall be equal to or greater than the limits in EN 300 220-1 [2], clause 9.4.3, table 17 and clause 9.4.3.3, table 18.~~

~~This requirement applies only to class 1 and class 2 receivers, as defined in EN 300 220-1 [2], clause 4.1.1.~~

~~The blocking or desensitization for receivers with listen before talk (LBT) facility, as defined in EN 300 220-1 [2], clause 9.4.1, shall be equal to or greater than the limits in EN 300 220-1 [2], clause 9.4.3.1.~~

~~Additionally, the blocking (saturation) for Class 1 receivers as defined in EN 300 220-1 [2], clause 9.4.1, shall be equal to or greater than the limits in EN 300 220-1 [2], clause 9.4.3.2.~~

~~4.3.5~~ ~~Intermodulation response rejection~~

~~The intermodulation response rejection, as defined in EN 300 220-1 [2], clause 9.5.1, shall be equal to or greater than the limits in EN 300 220-1 [2], clause 9.5.3.~~

~~This requirement applies only to class 1 receivers, as defined in EN 300 220-1 [2], clause 4.1.1.~~

~~4.3.6~~ ~~Spurious response rejection~~

~~The spurious response rejection, as defined in EN 300 220-1 [2], clause 9.6.1, shall be equal to or greater than the limits in EN 300 220-1 [2], clause 9.6.3.~~

~~This requirement applies only to class 1 receivers, as defined in EN 300 220-1 [2], clause 4.1.1.~~

The maximum dead time shall be declared by the provider.

This requirement applies to all transmitters using LBT.

4.2.1.11.4 Maximum transmitter on-time

The maximum transmitter on-time, as defined in EN 300 220-1 [1], clause 9.2.5.1 shall not exceed the limits in EN 300 220-1 [1], clause 9.2.5.2.

The maximum transmitter on-time shall be declared by the provider.

This requirement applies to all transmitters using LBT.

4.2.1.11.5 Time-out-timer

The time-out-timer, as defined in EN 300 220-1 [1], clause 7.11.1, shall not exceed the limit in EN 300 220-1 [1], clause 7.11.3.

The time-out-timer shall be declared by the provider.

This requirement applies to all transmitters supporting voice applications not employing duty cycle restriction and operating in the frequency bands 433.050 MHz to 434.790 MHz or 869.7 MHz to 870 MHz.

4.3 Receiver requirements

4.3.1 Receiver categories

The product family of short range radio devices is divided into three receiver categories, see table 2 in EN 300 220-1 [1], clause 4.1.1.

Each category having a set of relevant receiver requirements and minimum performance criteria. The set of receiver requirements depends on the choice of receiver category by the equipment provider.

Manufacturers when designing their SRD receivers shall choose one of the three receiver categories according to the grade of operational reliability they provide, therefore the provider shall specify the receiver category of his choice and this shall be declared in the product literature provided to the user. In particular where an SRD which may have an inherent safety of human life implications, manufacturers and users should pay particular attention to the potential for interference from other systems operating in the same or adjacent bands.

Manufacturers should provide advice to users on the risks of potential interference and its consequences.

4.3.2 Receiver sensitivity

The receiver sensitivity as defined in EN 300 220-1 [1], clauses 8.1.1 and E.2.1, shall be equal to or less than the limits in EN 300 220-1 [1], clauses 8.1.4 or E.2.2, as appropriate.

This requirement applies to all receivers with Listen Before Talk (LBT) facility.

4.3.3 Receiver LBT threshold

- a) The LBT threshold, as defined in EN 300 220-1 [1], clause 8.2.1, shall be equal to or less than the limits in EN 300 220-1 [1], clause 8.2.3, table 12.
- b) The transmitter max on-time, as defined in EN 300 220-1 [1], clause 9.2.5.1, shall be equal to or less than the limits in EN 300 220-1 [1], clause 8.2.3, table 12.

This requirement applies to all receivers with Listen Before Talk (LBT) facility.

4.3.7 Spurious radiations

The spurious radiations, as defined in EN 300 220-1 [2], ~~clause 9.7.1~~, shall not exceed the limits in EN 300 220-1 [2], ~~clause 9.7.5~~.

This requirement applies to all ~~classes~~ of receivers.

5 Testing for compliance with technical requirements

5.1 Description testing for compliance with technical requirements

5.1.1 Environmental conditions for testing

5.1.1.1 Normal and extreme test-conditions

Type tests shall be made under normal test conditions, and also, where stated, under extreme test conditions.

The test conditions shall be as specified in EN 300 220-1 [2], ~~clauses 5.3 to 5.4~~.

5.1.1.2 Test power source

The test power source shall meet the requirements of EN 300 220-1 [2], 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 300 220-1 [2], ~~clauses 4.2.1 to 4.2.13.2~~.

5.1.3 Transmitter test suites

5.1.3.1 Frequency error and drift

For ~~narrow band equipment~~, either:

- the test specified in EN 300 220-1 [2], ~~clause 8.1.2.1 shall be carried out~~; or
- ~~the test specified in EN 300 220-1 [2], clause 8.6.2 shall be carried out under extreme test conditions.~~

The test specified in EN 300 220-1 [2], ~~clause 8.1.3.1 shall be carried out on wide band equipment.~~

This test suite applies to all transmitters.

5.1.3.2 ~~Carrier~~ power (conducted)

The test specified in EN 300 220-1 [2], ~~clause 8.2.2~~ shall be carried out.

This test suite applies to transmitters which may be used without an integral or dedicated antenna.

5.1.3.3 Effective radiated power

The test specified in EN 300 220-1 [2], ~~clause 8.3.2~~ shall be carried out.

This test suite applies to transmitters with an integral or ~~dedicated antenna~~.

4.3.4 Adjacent channel selectivity

The adjacent channel selectivity as defined in EN 300 220-1 [1], [clause 8.3.1](#), shall be equal to or greater than the limits in EN 300 220-1 [1], [clause 8.3.3, table 13](#) and [clause 8.3.4.3, table 14](#).

[This requirement applies only to all category 1 receivers](#), as defined in EN 300 220-1 [1], [clause 4.1.1](#).

4.3.5 Blocking

The blocking, as defined in EN 300 220-1 [1], [clause 8.4.1](#), shall be equal to or greater than the limits in EN 300 220-1 [1], [clause 8.4.3, table 15](#).

[This requirement applies to all categories of receivers](#).

4.3.6 Spurious response rejection

The spurious response rejection, as defined in EN 300 220-1 [1], [clause 8.5.1](#), shall be equal to or greater than the limits in EN 300 220-1 [1], [clause 8.4.3, table 15](#).

[This requirement applies only to category 1](#) as defined in EN 300 220-1 [1], [clause 4.1.1](#).

4.3.7 Spurious radiations

The spurious radiations, as defined in EN 300 220-1 [1], [clause 8.6.1](#), shall not exceed the limits in EN 300 220-1 [1], [clause 8.6.5](#).

This requirement applies to all [categories](#) of receivers.

5 Testing for compliance with technical requirements

5.1 Description testing for compliance with technical requirements

5.1.1 Environmental conditions for testing

5.1.1.1 Normal and extreme test-conditions

Type tests shall be made under normal test conditions, and also, where stated, under extreme test conditions.

The test conditions shall be as specified in EN 300 220-1 [1], [clauses 5.3, 5.4.1 and 5.4.2](#).

5.1.1.2 Test power source

The test power source shall meet the requirements of EN 300 220-1 [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 300 220-1 [1], [clauses 4.2.1 to 4.2.3.2](#).

~~5.1.3.4~~ ~~Types of spread spectrum modulation~~

~~The declarations specified in EN 300 220-1 [2], clause 8.4.1.1 shall be carried out.~~

~~This applies to all transmitters employing FHSS modulation.~~

~~5.1.3.5~~ ~~Transient power~~

~~The tests specified in EN 300 220-1 [2], clause 8.5.2 shall be carried out.~~

~~This test suite applies to all transmitters used for data transmission.~~

~~5.1.3.6~~ ~~Adjacent channel power~~

~~The test specified in EN 300 220-1 [2], clause 8.6.2 shall be carried out.~~

~~This test suite applies to transmitters where a channel plan is used with a channel spacing of 200 kHz or less.~~

~~5.1.3.7~~ ~~Modulation bandwidth for wide band equipment~~

~~The test specified in EN 300 220-1 [2], clause 8.7.2 shall be carried out.~~

~~This test suite applies to transmitters using wide band as defined in EN 300 220-1 [2], clause 3.1.~~

~~5.1.3.8~~ ~~Spurious emissions~~

~~Either.~~

- ~~the tests specified in EN 300 220-1 [2], clause 8.8.2 and EN 300 220-1 [2], clause 8.8.3 shall be carried out, or~~
- ~~the test specified in EN 300 220-1 [2], clause 8.8.4 shall be carried out.~~

~~This test suite applies to all transmitters.~~

~~5.1.3.9~~ ~~Frequency stability under low-voltage conditions~~

~~The test specified in EN 300 220-1 [2], clause 8.9.2 shall be carried out.~~

~~This test suite applies to all battery-operated transmitters.~~

5.1.4 Receiver test suites

5.1.4.1 Receiver sensitivity

The test specified in EN 300 220-1 [2], clause 9.1.2 or 9.1.3 shall be carried out.

This test suite applies to all receivers with a ~~listen Before Talk Facility (LBT).~~

~~5.1.4.2~~ ~~Receiver LBT threshold and transmitter max on-time~~

The test specified in EN 300 220-1 [2], clause 9.2.2 shall be carried out.

This test suite applies to all receivers with a ~~listen Before Talk Facility (LBT).~~

5.1.4.3 Adjacent channel selectivity

The test specified in EN 300 220-1 [2], clause 9.3.2 shall be carried out.

This test suite applies to all ~~Class 1 receivers.~~

5.1.3 Transmitter test suites

5.1.3.1 Frequency error and drift

For ~~equipment able to provide an unmodulated carrier:~~

- ~~the test specified in EN 300 220-1 [1], clause 7.1.2 shall be carried out under extreme test conditions.~~

~~For equipment not able to provide an unmodulated carrier, either:~~

- ~~a) for equipment with channel spacing less than or equal to 25 kHz:
The test specified in EN 300 220-1 [1], clause 7.6.2 shall be carried out under extreme test conditions;~~
- ~~b) for all other equipment:
The test specified in EN 300 220-1 [1], clauses 7.7.3.1 or 7.7.3.2 shall be carried out.~~

This test suite applies to all transmitters.

5.1.3.2 Average power (conducted)

The test specified in EN 300 220-1 [1], clause 7.2.2 shall be carried out.

This test suite applies to transmitters which may be used without an integral or dedicated antenna.

5.1.3.3 Effective radiated power

The test specified in EN 300 220-1 [1], clause 7.3.2 shall be carried out.

This test suite applies to transmitters with an integral ~~antenna~~ or ~~transmitters supplied with a dedicated antenna.~~

5.1.3.4 Transient power

~~The test specified in EN 300 220-1 [1], clause 7.5.2 shall be carried out.~~

~~This test suite applies to all transmitters.~~

5.1.3.5 Adjacent channel power

~~The test specified in EN 300 220-1 [1], clause 7.6.2 shall be carried out under extreme test conditions for narrowband systems.~~

~~For all other, the test specified in EN 300 220-1 [1], clause 7.7.2 shall be carried.~~

~~This test suite applies to all narrowband system transmitters.~~

5.1.3.6 Modulation bandwidth

The test specified in EN 300 220-1 [1], clause 7.7.2 shall be carried out.

This test suite applies to transmitters ~~not covered by clause 5.1.3.5.~~

5.1.3.7 Unwanted emissions in the spurious domain

Either:

- the tests specified in EN 300 220-1 [1], clauses 7.8.2.1 and 7.8.2.2 shall be carried out; or
- the test specified in EN 300 220-1 [1], clause 7.8.2.3 shall be carried out.

This test suite applies to all transmitters.

~~5.1.4.4~~ ~~Blocking or desensitization~~

The test specified in EN 300 220-1 [~~2~~], ~~clause 9.4.2~~ shall be carried out.

This test suite applies to all ~~Class 1 and Class 2 receivers~~.

This test suite applies to all receivers with a ~~listen Before Talk Facility (LBT)~~.

~~5.1.4.5~~ ~~Intermodulation~~ response rejection

The test specified in EN 300 220-1 [~~2~~], ~~clause 9.5.2~~ shall be carried out.

This test suite applies to all ~~Class 1 receivers~~.

~~5.1.4.6~~ ~~Spurious response rejection~~

~~The test specified in EN 300 220-1 [~~2~~], ~~clause 9.6.2~~ shall be carried out.~~

~~This test suite applies to all Class 1 receivers.~~

~~5.1.4.7~~ ~~Spurious radiation~~

~~Either:~~

- ~~▪ the tests specified in EN 300 220-1 [~~2~~], ~~clause 9.7.2~~ and EN 300 220-1 [~~2~~], ~~clause 9.7.3~~ shall be carried out, or~~
- ~~▪ the test specified in EN 300 220-1 [~~2~~], ~~clause 9.7.4~~ shall be carried out.~~

This test suite applies to all receivers.

5.2 Interpretation of measurement results

The interpretation of the results recorded in the test report for the measurements described in the present document shall be as given in EN 300 220-1 [~~2~~] ~~clause 7~~.

5.1.3.8 Frequency stability under low-voltage conditions

The test specified in EN 300 220-1 [1], [clause 7.9.2](#) shall be carried out.

This test suite applies to all battery-operated transmitters.

5.1.4 Receiver test suites

5.1.4.1 Receiver sensitivity

The test specified in EN 300 220-1 [1], [clauses 8.1.2 or 8.1.3](#) shall be carried out.

This test suite applies to all receivers with a [Listen Before Talk facility \(LBT\)](#).

5.1.4.2 Receiver LBT threshold

The test specified in EN 300 220-1 [1], [clause 8.2.2](#) shall be carried out.

This test suite applies to all receivers with a [Listen Before Talk facility \(LBT\)](#).

5.1.4.3 Adjacent channel selectivity

The test specified in EN 300 220-1 [1], [clause 8.3.2](#) shall be carried out.

This test suite applies to all [Category 1 receivers](#).

5.1.4.4 Blocking

The test specified in EN 300 220-1 [1], [clause 8.4.2](#) shall be carried out.

This test suite applies to all [categories of receiver](#).

This test suite applies to all receivers with a [Listen Before Talk facility \(LBT\)](#).

5.1.4.5 Spurious response rejection

The test specified in EN 300 220-1 [1], [clause 8.5.2](#) shall be carried out.

This test suite applies to all [Category 1 receivers](#).

5.1.4.6 Receiver spurious radiation

Either:

- the tests specified in EN 300 220-1 [1], [clause 8.6.2](#) and EN 300 220-1 [1], [clause 8.6.3](#) shall be carried out; or
- the test specified in EN 300 220-1 [1], [clause 8.6.4](#) shall be carried out.

This test suite applies to all receivers.

5.2 Interpretation of measurement results

The interpretation of the results recorded in the test report for the measurements described in the present document shall be as given in EN 300 220-1 [1], [clause 10](#).

~~Annex A (normative):~~ ~~EN Requirements Table (EN-RT)~~

~~Notwithstanding the provisions of the copyright clause related to the text of the present document, ETSI grants that users of the present document may freely reproduce the EN-RT proforma in this annex so that it can be used for its intended purposes and may further publish the completed EN-RT.~~

~~The EN Requirements Table (EN-RT) in table A.1 below serves a number of purposes, as follows:~~

- ~~it provides a statement of all the essential requirements in words and by cross reference to a specific clause in the present document or to a specific clause in a specific referenced document;~~
- ~~it provides a statement of all the test procedure corresponding to those essential requirements by cross reference to specific clause(s) in the present document or to a specific clause(s) in 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 supplier 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;
- ~~when the schedule is completed in respect of a particular equipment including the testing outcomes, including a completed version of table A.1 it provides a means to assert the "presumption of conformity" with the HS.~~

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 EN 300 220-2						
The following requirements and test specifications are relevant to the presumption of conformity under <u>the article 3.2</u> of the R&TTE Directive						
Requirement			Requirement Conditionality		Test Specification	
No	Description	Reference: Clause No	U/C	Condition	E/O	Reference: Clause No
1	Frequency error or frequency drift	4.2.1.1	U		E	5.1.3.1
2	<u>Average power (conducted)</u>	4.2.1.2	C	Applies to transmitters <u>with permanent external antenna connector</u>	E	5.1.3.2
3	Effective radiated power	4.2.1.3	C	Applies to transmitters with an integral or dedicated antenna	E	5.1.3.3
4	<u>Frequency hopping spread spectrum devices</u>	<u>4.2.1.4.1</u>	<u>C</u>	<u>Applies to transmitters which employ FHSS</u>	<u>X</u>	
5	<u>Direct sequence or other spread spectrum than FHSS</u>	<u>4.2.1.4.2</u>	<u>C</u>	<u>Applies to transmitters which employ DSSS & other spread spectrum than FHSS</u>	<u>X</u>	
6	<u>Transient power</u>	<u>4.2.1.5</u>	<u>U</u>		<u>E</u>	<u>5.1.3.4</u>
7	<u>Adjacent channel power for channelized equipment</u>	<u>4.2.1.6</u>	<u>C</u>	<u>Applies to narrowband transmitters</u>	<u>E</u>	<u>5.1.3.5</u>
8	<u>Modulation bandwidth</u>	<u>4.2.1.7</u>	<u>C</u>	<u>Applies to all transmitters not covered by clause 4.2.1.6</u>	<u>E</u>	<u>5.1.3.6</u>
9	<u>Unwanted emissions in the spurious domain</u>	<u>4.2.1.8</u>	<u>U</u>		<u>E</u>	<u>5.1.3.7</u>
10	<u>Frequency stability under low-voltage conditions</u>	<u>4.2.1.9</u>	<u>C</u>	<u>Applies to battery-operated transmitters</u>	<u>E</u>	<u>5.1.3.8</u>

~~Table A.1: EN Requirements Table (EN-RT)~~

Harmonized Standard EN 300 220-2						
The following essential requirements and test specifications are relevant to the presumption of conformity under Article 3.2 of the R&TTE Directive						
Essential Requirement			Requirement Conditionality		Test Specification	
No	Description	Reference: Clause No	U/C	Condition	E/O	Reference: Clause No
1	Frequency error or frequency drift	4.2.1.1	U		E	5.1.3.1
2	Carrier power (conducted)	4.2.1.2	C	Applies to transmitters which may be used without integral or dedicated antenna	E	5.1.3.2
3	Effective radiated power	4.2.1.3	C	Applies to transmitters with an integral or dedicated antenna	E	5.1.3.3
4	Transient power	4.2.1.4	U		E	5.1.3.5
5	Adjacent channel power	4.2.1.5	U	Applies to transmitters with a channel spacing of 200 kHz or less	E	5.1.3.6
6	Modulation bandwidth for wide-band equipment (>200 kHz)	4.2.1.6	U	Applies to transmitters using wide band as defined in EN 300 220-1 [2], clause 3.4	E	5.1.3.7
7	Spurious emissions	4.2.1.7	U		E	5.1.3.8
8	Frequency stability under low voltage conditions	4.2.1.8	U	Applies to battery-operated transmitters	E	5.1.3.9
9	Duty cycle	4.2.1.9	C	Applies to transmitters excluding those with a listen before talk facility with AFA	X	
10	Minimum transmitter off time	4.2.1.10.1	U	Applies to transmitters using LBT	X	
11	Minimum listening time	4.2.1.10.2	U	Applies to transmitters using LBT	X	
12	Maximum transmitter on time	4.2.1.10.3	U	Applies to transmitters using LBT	X	
13	Frequency hopping spread spectrum devices	4.2.1.11.1	U	Applies to transmitters which employ FHSS	E	5.1.3.4
14	Direct sequence or other spread spectrum than FHSS	4.2.1.11.2	U	Applies to transmitters which employ DSSS & other spread spectrum than FHSS	X	
15	Maximum usable sensitivity (conducted)	4.3.1	C	Applies to receivers with LBT	E	5.1.4.1
16	Receiver LBT threshold & maximum TX on time	4.3.2	C	Applies to receivers with LBT	E	5.1.4.2
17	Adjacent channel selectivity	4.3.3	U	Applies to Class 1 receivers	E	5.1.4.3
18	Blocking or desensitization	4.3.4	U	Applies to class 1 and Class 2 receivers and receivers with LBT	E	5.1.4.4
19	Inter-modulation response rejection	4.3.5	U	Applies to class 1 receivers	E	5.1.4.5
20	Receiver spurious response rejection	4.3.6	U	Applies to class 1 receivers	E	5.1.4.6
21	Receiver spurious radiation	4.3.7	U		E	5.1.4.7

Harmonized Standard EN 300 220-2						
<u>The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive</u>						
Requirement			Requirement Conditionality		Test Specification	
No	Description	Reference: Clause No	U/C	Condition	E/O	Reference: Clause No
11	<u>Duty cycle</u>	<u>4.2.1.10</u>	C	Applies to transmitters excluding those with a listen before talk facility with AFA	X	
12	<u>Minimum transmitter off-time</u>	<u>4.2.1.11.1</u>	C	<u>Applies to transmitters using LBT</u>	X	
13	<u>Minimum listening time</u>	<u>4.2.1.11.2</u>	C	<u>Applies to transmitters using LBT</u>	X	
14	<u>Maximum dead time</u>	<u>4.2.1.11.3</u>	C	<u>Applies to transmitters using LBT</u>	X	
15	<u>Maximum transmitter on-time</u>	<u>4.2.1.11.4</u>	C	<u>Applies to transmitters using LBT</u>	X	
16	<u>Time-out-timer</u>	<u>4.2.1.11.5</u>	C	<u>Applies to transmitters operating in the frequency bands 433.050 MHz to 434.790 MHz or 869.7 MHz to 870 MHz and supporting voice applications not employing duty cycle restriction</u>	X	
17	<u>Receiver sensitivity</u>	<u>4.3.2</u>	C	Applies to receivers with LBT	E	5.1.4.1
18	<u>Receiver LBT threshold</u>	<u>4.3.3</u>	C	Applies to receivers with LBT	E	5.1.4.2
19	<u>Adjacent channel selectivity</u>	<u>4.3.4</u>	C	<u>Applies to Category 1 receivers</u>	E	<u>5.1.4.3</u>
20	<u>Blocking</u>	<u>4.3.5</u>	U		E	<u>5.1.4.4</u>
21	<u>Spurious response rejection</u>	<u>4.3.6</u>	C	<u>Applies to Category 1 receivers</u>	E	<u>5.1.4.5</u>
22	<u>Receiver spurious radiation</u>	<u>4.3.7</u>	U		E	<u>5.1.4.6</u>

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).

Key to columns:**~~Essential~~ 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.

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

Language	EN title
Bulgarian	Електромагнитна съвместимост и въпроси на радиоспектъра (ERM); Устройства с малък обхват на действие (SRD); Радиооборудвания, предназначени за използване в честотния обхват от 25 MHz до 1 000 MHz, с нива на излъчената мощност до 500 mW. Част 2: Хармонизиран европейски стандарт (EN), покриващ съществениите изисквания на чл.3.2 на Директивата за радиооборудвания и крайни далекосъобщителни устройства (R&TTE)
Czech	Elektromagnetická kompatibilita a rádiové spektrum (ERM); Přístroje krátkého dosahu (SRD); Rádiová zařízení pro použití v kmitočtovém rozsahu 25 MHz až 1 000 MHz s výkonem do 500 mW. Část 2: Harmonizovaná EN pokrývající základní požadavky podle článku 3.2. Směrnice R&TTE
Danish	Elektromagnetisk kompatibilitet og spektrumtilgængelse (ERM); Apparater med kort rækkevidde (SRD); Radioudstyr som benyttes af frekvenser mellem 25 MHz og 1 000 MHz med sendeeffekt under 500 mW. Del 2: Harmoniseret EN, som dækker de væsentlige krav i R&TTE direktivets artikel 3.2
Dutch	Elektromagnetische compatibiliteit en radiospectrumzaken (ERM); apparatuur ten behoeve van kortafstandscommunicatie (SRD); radioapparatuur te gebruiken in de frequentieband van 25 MHz tot 1 000 MHz en werkend met een vermogen tot hoogstens 500 mW, deel 2: Geharmoniseerde EN om te voldoen aan de essentiële vereisten onder artikel 3, lid 2, van Richtlijn 1999/5/EG
English	Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
Estonian	Elektromagnetilise ühilduvuse ja raadiospektri küsimused (ERM); Lähitelemiseadmed (SRD); Raadiosagedusvahemikus 25 MHz kuni 1 000 MHz kasutamiseks mõeldud võimsustasemetega kuni 500 mW raadioseadmed; Osa 2: Harmoniseeritud EN R&TTE direktiivi artikli 3.2 põhiolemuse alusel
Finnish	Öähkömagneettinen yhteensopivuus ja radiospektriasiat (ERM); Lyhyen kantaman radiolaitteet (SRD); Taajuusalueella 25 MHz - 1 000 MHz toimivat radiolaitteet, joiden teho on enintään 500 mW; Osa 2: Yhdenmukaistettu standardi (EN), joka kattaa R&TTE direktiivin artiklan 3.2 mukaiset olennaiset vaatimukset
French	Télécommunications - Compatibilité radioélectrique et spectre radioélectrique (ERM) Appareils à faible portée - Equipements radioélectriques fonctionnant dans la gamme de fréquences de 25 MHz à 1 000 MHz avec des niveaux de puissance ne dépassant pas 500 mW. Partie 2: paramètres non destinés à la procédure d'agrément
German	Elektromagnetische Verträglichkeit und Funk Spektrumangelegenheiten (ERM); Funkanlagen mit geringer Reichweite (SRD); Funkgeräte zur Verwendung im Frequenzbereich von 25 MHz bis 1 000 MHz mit Ausgangsleistungen bis 500 mW; Teil 2: Harmonisierte EN, die wesentliche Anforderungen nach Artikel 3.2 der R&TTE Richtlinie enthält
Greek	Ηλεκτρομαγνητική Συμβατότητα και Οφέματα Ραδιοφάσματος (ERM); Συσκευές μικρής εμβέλειας (SRD); Ραδιοεξοπλισμός που προορίζεται να χρησιμοποιείται στην περιοχή συχνοτήτων 25 MHz ως 1 000 MHz με στάθμες ισχύος μέχρι 500 mW. Μέρος 2: Εναρμονισμένο EN για την κάλυψη των ουσιαστών απαιτήσεων του Άρθρου 3.2 της Οδηγίας R&TTE
Hungarian	Elektromágneses öszeférhetőségi és rádióspektrumügyek (ERM); Kis hatótávolságú eszközök (SRD); A 25 MHz - 1 000 MHz frekvenciasávban használt, legfeljebb 500 mW teljesítményű rádióberendezések. 2. rész: Az R&TTE irányelv 3.2. cikkelyének alapvető követelményeit tartalmazó, harmonizált európai szabvány
Icelandic	Þættir sem varða rafsegulsviðssamhæfi og fjarskiptatíðni (ERM); Skammtdræg tæki (SRD); Fjarskiptabúnaður til nota á tíðnisviðinu 25 MHz til 1 000 MHz með styrk allt að 500 mW; Hluti 2: Samræmdur Evrópustaðall um grunnkröfur skv. 2. mgr. 3. gr. í tilskipun 1999/5/EC um fjarskiptabúnað og endabúnað til fjarkeipta
Italian	Compatibilità elettromagnetica e spettro radio (ERM); Apparecchiature per comunicazioni a corto raggio (SRD); Appareati radio operanti nella banda di frequenza da 25 MHz a 1 000 MHz con livelli di potenza fino a 500 mW. Parte 2: Norma europea armonizzata relativa ai requisiti essenziali di cui all'articolo 3.2 della direttiva R & TTE
Latvian	Elektromagnētiskā sadarbība un radiofrekvenču spektra lietas. Maza darbības attāluma iekārtas. Radioiekārtas, ko izmanto frekvenču joslā no 25 MHz līdz 1 000 MHz, ar jaudu līdz 500 Mw. 2. daļa: Harmonizēts Eiropas standarts (EN), kas atbilst R&TTE Direktīvas 3.2.punkta būtiskām prasībām
Lithuanian	Elektromagnetinio suderinamumo ir radijo dažnių spektro dalykai. Mažoji nuotolio įranga. Radijo ryšio įranga, kuri naudojama nuo 25 MHz iki 1 000 MHz dažnių juostoje ir kurios galia neviršija 500 mW. 2 dalis. Darinusio Europos standartas, apimantis esminius reikalavimus pagal 1999/5/EC* direktyvos 3.2 straipsnį

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.

Language	EN title
Maltese	Kompatibilità elettromanjetika u materji relatati ma' spettru radjofoniku (ERM); Apparati ta' medda qasira; Tagħmir radjofoniku biex jintużaw fil-medda ta' frekwenzi 25 MHz sa 1 000 MHz b'livelli ta' enerġija li jitlegħu sa 500 mW; Parti 2: EN armonizzata li jkopri rekwiżiti essenzjali taft i artiklu 3.2 tad-Direttiva R&TTE
Norwegian	Elektromagnetisk kompatibilitet og Radiospektrum spørsmål (ERM); Kort distanse enhet (GRD); Radioutstyr som brukes i 25 MHz til 1 000 MHz området med effektnivå opptil 500 mW; Del 2: Harmonisert EN som dekker de vesentligste krav i R&TTE direktivets artikkel 3.2
Polish	Kompatybilność elektromagnetyczna i zagadnienia widma radiowego (ERM); Urządzenia bliskiego zasięgu (GRD); Urządzenia radiowe pracujące w zakresie częstotliwości 25 MHz do 1 000 MHz z poziomami mocy do 500 mW; Część 2: Zharmonizowana EN zapewniająca spełnienie zasadniczych wymagań zgodnie z artykułem 3.2 dyrektywy R&TTE
Portuguese	Assuntos de Espectro Radioelétrico e Compatibilidade Electromagnética (ERM); Equipamento de curto alcance (GRD); Equipamento de rádio com níveis de potência até 500 mW, para a faixa de frequências de 25 MHz a 1 000 MHz; Parte 2: EN harmonizada cobrindo os requisitos essenciais no âmbito do artigo 3º, nº 2, da Directiva R&TTE
Romanian	Compatibilitate electromagnetica și probleme ale spectrului radio (ERM); Dispozitive pentru distanță mică (GRD); Echipamente radio destinate a fi utilizate în banda de frecvențe de la 25 MHz până la 1000 MHz cu un nivel de putere până la 500 mW. Partea 2: Parametrii suplimentari care nu sunt destinați evaluării conformității
Slovak	Elektromagnetická kompatibilita a záležitosti rádiového spektra (ERM); Zariadenia s krátkym dosahom (GRD); Radiové zariadenia používané vo frekvenčnom rozsahu od 25 MHz do 1 000 MHz s úrovňami výkonu do 500 mW. Časť 2: Harmonizovaná EN vzťahujúca sa na základné požiadavky podľa článku 3.2 smernice R&TTE
Slovenian	Elektromagnetna združljivost in zadeve v zvezi z radijskim spektrom (ERM); Naprave kratkega dosega (GRD); Radijska oprema, ki se uporablja v frekvenčnem območju od 25 MHz do 1 000 MHz z močnostnimi nivoji do največ 500 mW; 2. del: Harmonizirani EN, ki zajema bistvene zahteve člena 3.2 direktive R&TTE
Spanish	Compatibilidad electromagnética y cuestiones de espectro de radiofrecuencia (ERM); Dispositivos de Corto Alcance (GRD); Equipos radio para ser usados en el rango de frecuencia entre 25 MHz y 1000 MHz, con niveles de potencia hasta 500 mW; Parte 2: EN armonizada cubriendo los requisitos esenciales según el artículo 3.2 de la directiva de R&TTE
Swedish	Elektromagnetisk kompatibilitet och radiospektrumfrågor (ERM); Kortdistansutrustningar (GRD); Radioutrustning för användning i frekvensområdet 25 MHz till 1 000 MHz med effektnivåer upp till 500 mW; Del 2: Harmoniserad EN omfattande väsentliga krav enligt artikel 3.2 i R&TTE direktivet

Annex C (informative): Bibliography

ETSI TR 100 028 (Parts 1 and 2): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

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).

ETSI EN 301 489: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services".

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).

~~Annex C (informative): Bibliography~~

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

ETSI TR 100 028 (Parts 1 and 2): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

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).

ETSI EN 301 489: "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services".

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).

History

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