

# Text Comparison

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

~~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 4 1 (2012-05)



Harmonized European Standard

**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**

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**Reference**

REN/ERM-TG28-~~0420-2~~

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**Keywords**

radio, SRD, testing

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Reference

REN/ERM-TG28-435

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Keywords

radio, SRD, testing

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

## 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].

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## Foreword

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

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Directive 98/34/EC [i.2] as amended by Directive 98/48/EC [i.7].

The title and reference to the present document are intended to be included in the publication in the Official Journal of the European Union of titles and references of Harmonized Standard under the Directive 1999/5/EC [i.1].

See article 5.1 of Directive 1999/5/EC [i.1] for information on presumption of conformity and Harmonised Standards or parts thereof the references of which have been published in the Official Journal of the European Union.

The 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".**

| <b>National transposition dates</b>  |                         |
|--|-------------------------|
| Date of adoption of this EN:   | <u>8 May 2012</u>       |
| Date of latest announcement of this EN (doa):  | 31 <u>August 2012</u>   |
| Date of latest publication of new National Standard or endorsement of this EN (dop/e): | <u>28 February 2013</u> |
| Date of withdrawal of any conflicting National Standard (dow):                         | <u>28 February 2014</u> |

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## 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].

# 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   |
|----------------------|--|--|
| Transmit and Receive | 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 | Model control  |
| Transmit and Receive | 26,957 MHz to 27,283 MHz   | Non-specific use   |
| Transmit and Receive | 40,660 MHz to 40,700 MHz   | Non-specific use   |
| Transmit and Receive | 138,200 MHz to 138,450 MHz   | Non-specific use   |
| Transmit and Receive | 169,400 MHz to 169,475 MHz   | Tracking, tracing and data acquisition and meter reading |
| Transmit and Receive | 169,475 MHz to 169,4875 MHz  | Social alarms  |
| Transmit and Receive | 169,5875 MHz to 169,6000 MHz   | Social alarms  |
| Transmit and Receive | 433,050 MHz to 434,790 MHz   | Non-specific use   |
| Transmit and Receive | 863,000 MHz to 870,000 MHz   | Non-specific use   |
| Transmit and Receive | 864,800 MHz to 865,000 MHz   | Wireless audio applications                              |
| Transmit and Receive | 868,000 MHz to 868,600 MHz   | Non-specific use   |
| Transmit and Receive | 868,600 MHz to 868,700 MHz   | Alarms   |
| Transmit and Receive | 868,700 MHz to 869,200 MHz   | Non-specific use   |
| Transmit and Receive | 869,200 MHz to 869,250 MHz   | Social alarms  |
| Transmit and Receive | 869,250 MHz to 869,300 MHz   | Alarms (0,1 % duty cycle)                                |
| Transmit and Receive | 869,300 MHz to 869,400 MHz   | Alarms (1 % duty cycle)                                  |
| Transmit and Receive | 869,400 MHz to 869,650 MHz   | Non-specific use   |
| Transmit and Receive | 869,650 MHz to 869,700 MHz   | Alarms   |

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 NRI as relevant.

# 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.

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- for all types of modulation;
- with or without speech.

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| Transmit and Receive | 40,660 MHz to 40,700 MHz   | Non-specific use   |
| Transmit and Receive | 138,200 MHz to 138,450 MHz   | Non-specific use   |
| Transmit and Receive | 169,400 MHz to 169,475 MHz   | Tracking, tracing and data acquisition and meter reading |
| Transmit and Receive | 169,475 MHz to 169,4875 MHz  | Social alarms  |
| Transmit and Receive | 169,5875 MHz to 169,6000 MHz   | Social alarms  |
| Transmit and Receive | 433,050 MHz to 434,790 MHz   | Non-specific use   |
| Transmit and Receive | 863,000 MHz to 870,000 MHz   | Non-specific use   |
| Transmit and Receive | 864,800 MHz to 865,000 MHz   | Wireless audio applications                              |
| Transmit and Receive | 868,000 MHz to 868,600 MHz   | Non-specific use   |
| Transmit and Receive | 868,600 MHz to 868,700 MHz   | Alarms   |
| Transmit and Receive | 868,700 MHz to 869,200 MHz   | Non-specific use   |
| Transmit and Receive | 869,200 MHz to 869,250 MHz   | Social alarms  |
| Transmit and Receive | 869,250 MHz to 869,300 MHz   | Alarms (0,1 % duty cycle)                                |
| Transmit and Receive | 869,300 MHz to 869,400 MHz   | Alarms (1 % duty cycle)                                  |
| Transmit and Receive | 869,400 MHz to 869,650 MHz   | Non-specific use   |
| Transmit and Receive | 869,650 MHz to 869,700 MHz   | Alarms   |

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 NRI as relevant.

NOTE 3: On non-harmonized parameters, national administrations may impose certain conditions such as the type of modulation, frequency, channel/frequency separations, maximum transmitter radiated power, duty cycle, and the inclusion of an automatic transmitter shut-off facility, as a condition for the issue of 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>.

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## 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 300 220-1 (~~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.

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>.

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## 2 References

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

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

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

### 2.1 Normative references

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

- [1] ETSI EN 300 220-1 (V2.4.1): "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 necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [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.
- [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 201 399: "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)".



- [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 201 399: "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)".

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## 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.

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## 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.

[i.7] [Directive 98/48/EC of the European Parliament and of the Council of 20 July 1998 amending Directive 98/34/EC laying down a procedure for the provision of information in the field of technical standards and regulations](#)

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## 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.

### 4.2 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 [7.7.3](#) under extreme conditions.

This requirement applies to all transmitters.

## 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.

#### 4.2.1.2 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 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.

#### 4.2.1.6 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 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 exceed the limit in EN 300 220-1 [1], clause 9.2.3.2.

#### 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.

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.

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.

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

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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.

### 4.3.4 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.



#### 4.3.4 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.

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## 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.

### 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.

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## 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 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 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.

### 5.1.3.3 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.

### 5.1.3.8 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).

### 5.1.3.8 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.

### 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): 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 the article 3.2 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   | Average power (conducted)                          | 4.2.1.2              | C                          | Applies to transmitters with permanent external antenna connector           | 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   | Frequency hopping spread spectrum devices          | 4.2.1.4.1            | C                          | Applies to transmitters which employ FHSS                                   | X                  |                      |
| 5   | Direct sequence or other spread spectrum than FHSS | 4.2.1.4.2            | C                          | Applies to transmitters which employ DSSS & other spread spectrum than FHSS | X                  |                      |
| 6   | Transient power                                    | 4.2.1.5              | U                          |   | E                  | 5.1.3.4              |
| 7   | Adjacent channel power for channelized equipment   | 4.2.1.6              | C                          | Applies to narrowband transmitters  | E                  | 5.1.3.5              |
| 8   | Modulation bandwidth                               | 4.2.1.7              | C                          | Applies to all transmitters not covered by clause 4.2.1.6                   | E                  | 5.1.3.6              |
| 9   | Unwanted emissions in the spurious domain          | 4.2.1.8              | U                          |   | E                  | 5.1.3.7              |
| 10  | Frequency stability under low-voltage conditions   | 4.2.1.9              | C                          | Applies to battery-operated transmitters                                    | E                  | 5.1.3.8              |

## Annex A (normative): HS Requirements and conformance Test specifications Table (HS-RTT)

The HS Requirements and conformance Test specifications Table (HS-RTT) in table A.1 serves a number of purposes, as follows:

- it provides a statement of all the requirements in words and by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it provides a statement of all the test procedures corresponding to those requirements by cross reference to (a) specific clause(s) in the present document or to (a) specific clause(s) in (a) specific referenced document(s);
- it qualifies each requirement to be either:
  - Unconditional: meaning that the requirement applies in all circumstances; or
  - Conditional: meaning that the requirement is dependant on the manufacturer having chosen to support optional functionality defined within the schedule.
- in the case of Conditional requirements, it associates the requirement with the particular optional service or functionality;
- it qualifies each test procedure to be either:
  - Essential: meaning that it is included with the Essential Radio Test Suite and therefore the requirement shall be demonstrated to be met in accordance with the referenced procedures;
  - Other: meaning that the test procedure is illustrative but other means of demonstrating compliance with the requirement are permitted.

**Table A.1: HS Requirements and conformance Test specifications Table (HS-RTT)**

| Harmonized Standard EN 300 220-2   |  |                      |                            |   |                    |                      |
|--|--|----------------------|----------------------------|---|--------------------|----------------------|
| The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive [17] |  |                      |                            |   |                    |                      |
| 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  | Average power (conducted)                          | 4.2.1.2              | C                          | Applies to transmitters with permanent external antenna connector           | 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  | Frequency hopping spread spectrum devices          | 4.2.1.4.1            | C                          | Applies to transmitters which employ FHSS                                   | X                  |                      |
| 5  | Direct sequence or other spread spectrum than FHSS | 4.2.1.4.2            | C                          | Applies to transmitters which employ DSSS & other spread spectrum than FHSS | X                  |                      |
| 6  | Transient power                                    | 4.2.1.5              | U                          |   | E                  | 5.1.3.4              |
| 7  | Adjacent channel power for channelized equipment   | 4.2.1.6              | C                          | Applies to narrowband transmitters  | E                  | 5.1.3.5              |
| 8  | Modulation bandwidth                               | 4.2.1.7              | C                          | Applies to all transmitters not covered by clause 4.2.1.6                   | E                  | 5.1.3.6              |
| 9  | Unwanted emissions in the spurious domain          | 4.2.1.8              | U                          |   | E                  | 5.1.3.7              |
| 10   | Frequency stability under low-voltage conditions   | 4.2.1.9              | C                          | Applies to battery-operated transmitters                                    | E                  | 5.1.3.8              |



| Harmonized Standard EN 300 220-2  |                              |                      |                            |  |                    |                      |
|---|------------------------------|----------------------|----------------------------|--|--------------------|----------------------|
| The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive |                              |                      |                            |  |                    |                      |
| Requirement   |                              |                      | Requirement Conditionality |  | Test Specification |                      |
| No  | Description                  | Reference: Clause No | U/C                        | Condition  | E/O                | Reference: Clause No |
| 11  | Duty cycle                   | 4.2.1.10             | C                          | Applies to transmitters excluding those with a listen before talk facility with AFA  | X                  |                      |
| 12  | Minimum transmitter off-time | 4.2.1.11.1           | C                          | Applies to transmitters using LBT  | X                  |                      |
| 13  | Minimum listening time       | 4.2.1.11.2           | C                          | Applies to transmitters using LBT  | X                  |                      |
| 14  | Maximum dead time            | 4.2.1.11.3           | C                          | Applies to transmitters using LBT  | X                  |                      |
| 15  | Maximum transmitter on-time  | 4.2.1.11.4           | C                          | Applies to transmitters using LBT  | X                  |                      |
| 16  | Time-out-timer               | 4.2.1.11.5           | C                          | 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 | X                  |                      |
| 17  | Receiver sensitivity         | 4.3.2                | C                          | Applies to receivers with LBT  | E                  | 5.1.4.1              |
| 18  | Receiver LBT threshold       | 4.3.3                | C                          | Applies to receivers with LBT  | E                  | 5.1.4.2              |
| 19  | Adjacent channel selectivity | 4.3.4                | C                          | Applies to Category 1 receivers  | E                  | 5.1.4.3              |
| 20  | Blocking                     | 4.3.5                | U                          |  | E                  | 5.1.4.4              |
| 21  | Spurious response rejection  | 4.3.6                | C                          | Applies to Category 1 receivers  | E                  | 5.1.4.5              |
| 22  | Receiver spurious radiation  | 4.3.7                | U                          |  | E                  | 5.1.4.6              |

**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).

| Harmonized Standard EN 300 220-2   |                              |                      |                            |  |                    |                      |
|--|------------------------------|----------------------|----------------------------|--|--------------------|----------------------|
| The following requirements and test specifications are relevant to the presumption of conformity under the article 3.2 of the R&TTE Directive [17] |                              |                      |                            |  |                    |                      |
| Requirement  |                              |                      | Requirement Conditionality |  | Test Specification |                      |
| No   | Description                  | Reference: Clause No | U/C                        | Condition  | E/O                | Reference: Clause No |
| 11   | Duty cycle                   | 4.2.1.10             | C                          | Applies to transmitters excluding those with a listen before talk facility with AFA  | X                  |                      |
| 12   | Minimum transmitter off-time | 4.2.1.11.1           | C                          | Applies to transmitters using LBT  | X                  |                      |
| 13   | Minimum listening time       | 4.2.1.11.2           | C                          | Applies to transmitters using LBT  | X                  |                      |
| 14   | Maximum dead time            | 4.2.1.11.3           | C                          | Applies to transmitters using LBT  | X                  |                      |
| 15   | Maximum transmitter on-time  | 4.2.1.11.4           | C                          | Applies to transmitters using LBT  | X                  |                      |
| 16   | Time-out-timer               | 4.2.1.11.5           | C                          | 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 | X                  |                      |
| 17   | Receiver sensitivity         | 4.3.2                | C                          | Applies to receivers with LBT  | E                  | 5.1.4.1              |
| 18   | Receiver LBT threshold       | 4.3.3                | C                          | Applies to receivers with LBT  | E                  | 5.1.4.2              |
| 19   | Adjacent channel selectivity | 4.3.4                | C                          | Applies to Category 1 receivers  | E                  | 5.1.4.3              |
| 20   | Blocking                     | 4.3.5                | U                          |  | E                  | 5.1.4.4              |
| 21   | Spurious response rejection  | 4.3.6                | C                          | Applies to Category 1 receivers  | E                  | 5.1.4.5              |
| 22   | Receiver spurious radiation  | 4.3.7                | U                          |  | E                  | 5.1.4.6              |

#### Key to columns:

##### Requirement:

**Clause Number** Identification of clause(s) defining the requirement in the present document unless another document is referenced explicitly.

**Description** A textual reference to the requirement.

**No** A unique identifier for one row of the table which may be used to identify a requirement or its test specification.

##### Requirement Conditionality:

**U/C** Indicates whether the requirement is to be *unconditionally* applicable (U) or is *conditional* upon the manufacturers claimed functionality of the equipment (C).

**Condition** Explains the conditions when the requirement shall or shall not be applicable for a technical requirement which is classified "conditional".

##### Test Specification:

**E/O** Indicates whether the test specification forms part of the Essential Radio Test Suite (E) or whether it is one of the Other Test Suite (O).

**NOTE:** All tests whether "E" or "O" are relevant to the requirements. Rows designated "E" collectively make up the Essential Radio Test Suite; those designated "O" make up the Other Test Suite; for those designated "X" there is no test specified corresponding to the requirement. The completion of all tests classified "E" as specified with satisfactory outcomes is a necessary condition for a presumption of conformity. Compliance with requirements associated with tests classified "O" is a necessary condition for presumption of conformity, although conformance with the requirement may be claimed by an equivalent test or by manufacturer's assertion supported by appropriate entries in the technical construction file.

**Clause Number** Identification of clause(s) defining the test specification in the present document unless another document is referenced explicitly. Where no test is specified (that is, where the previous field is "X") this field remains blank.

**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.

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## ~~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.~~

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Annex B (informative):  
Void

## 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).

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## 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).



## History

| Document history  |                          |                              |                         |                                     |
|-------------------|--------------------------|------------------------------|-------------------------|-------------------------------------|
| Edition 1         | October 1993             | Publication as I-ETS 300 220 |                         |                                     |
| V1.2.1            | November 1997            | Publication                  |                         |                                     |
| V1.3.1            | September 2000           | Publication                  |                         |                                     |
| V2.1.1            | April 2006               | Publication                  |                         |                                     |
| V2.1.2            | June 2007                | Publication                  |                         |                                     |
| <del>V2.2.1</del> | <del>April 2008</del>    | <del>Public Enquiry</del>    | <del>PE 20080829:</del> | <del>2008-04-30 to 2008-08-29</del> |
| <del>V2.3.1</del> | <del>April 2009</del>    | <del>Public Enquiry</del>    | <del>PE 20090730:</del> | <del>2009-04-01 to 2009-07-30</del> |
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| <del>V2.3.1</del> | <del>February 2010</del> | <del>Publication</del>       |                         |                                     |

## History

| <b>Document history</b> |                      |  |
|-------------------------|----------------------|--|
| Edition 1               | October 1993         | Publication as I-ETS 300 220   |
| V1.2.1                  | November 1997        | Publication  |
| V1.3.1                  | September 2000       | Publication  |
| V2.1.1                  | April 2006           | Publication  |
| V2.1.2                  | June 2007            | Publication  |
| <u>V2.3.1</u>           | <u>February 2010</u> | <u>Publication</u>   |
| <u>V2.4.1</u>           | <u>January 2012</u>  | <u>One-step Approval Procedure</u> <u>QAP 20120508: 2012-01-09 to 2012-05-08</u> |
| <u>V2.4.1</u>           | <u>May 2012</u>      | <u>Publication</u>   |