

# ETSI EN 303 406 V1.1.1 (2017-02)



**Short Range Devices (SRD);  
Social Alarms Equipment operating  
in the frequency range 25 MHz to 1 000 MHz;  
Harmonised Standard covering the essential requirements  
of article 3.2 of Directive 2014/53/EU**

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## Foreword

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

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.10] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.2].

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

National transposition dates	
Date of adoption of this EN:	10 February 2017
Date of latest announcement of this EN (doa):	31 May 2017
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2017
Date of withdrawal of any conflicting National Standard (dow):	30 November 2018

## Modal verbs terminology

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

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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 equipment within the scope of the Radio Equipment Directive (RED) [i.2].

It is recognized that the radio communications link alone does not determine the overall operation of a system, but that a functioning radio communications link is an essential foundation upon which a system may be built.

The present document sets out various means and features by which the performance of a radio communications link may be improved. These include:

- 1) Spectrum Access Rules - with the aim of reducing the probability of collisions between transmissions from different equipment.
- 2) Receiver Parameters - with the aim of reducing the probability of interference from equipment on other frequencies.
- 3) Bi-Directional Communications - with the aim of reducing the time and number of transmissions required to achieve a given level of confidence in successful communication.
- 4) Frequency Agility - with the aim of enabling the equipment to change its operating frequency to avoid certain types of interference.

Application of these features, separately or in combination, does not necessarily ensure successful radio communication. In addition, there are other features that may be considered, such as listen before talk or error correction, that may improve overall performance.

Clauses 1 and 3 provide a general description on the types of equipment covered by the present document and the definitions and abbreviations used.

Clause 4 specifies technical requirements to be met by all equipment.

Clause 5 specifies technical requirements for receivers in equipment with uni-directional communications.

Clause 6 specifies technical requirements for equipment with bi-directional communications and frequency agility.

Clause 7 specifies the methods for testing for compliance with the technical requirements.

Annex A summarizes the requirements relevant to the RE-Directive [i.2].

# 1 Scope

The present document specifies technical characteristics and methods of measurements for social alarm systems operating on a range of frequencies that may be shared with other equipment types.

Social alarms are defined in Commission Decision 2013/752/EU [i.3] as:

*"Social alarm devices" are radio communications systems that allow reliable communication for a person in distress in a confined area to initiate a call for assistance. Typical uses of social alarm are to assist elderly or disabled people.*

These radio equipment types are capable of operating, for transmission or reception, in all or part of the frequency bands given in table 1.

**Table 1: Frequency bands and usage information**

Frequency band	Usage information
169,400 MHz to 169,8125 MHz	This band is shared with other SRD equipment
868,600 MHz to 868,700 MHz	This band is shared with other SRD alarm equipment
869,250 MHz to 869,400 MHz	This band is shared with other SRD alarm equipment
869,650 MHz to 869,700 MHz	This band is shared with other SRD alarm equipment
863,000 MHz to 870,000 MHz	This band is shared with other SRD equipment, except as noted above
870,000 MHz to 876,000 MHz	This band is shared with other SRD equipment
915,000 MHz to 921,000 MHz	This band is shared with other SRD equipment

NOTE 1: The probability of interference may be different when operating in bands shared with other short range devices compared to bands from which other short range devices are excluded.

NOTE 2: Social alarms operating in a designated band are covered in ETSI EN 300 220-3-1 [i.5].

The present document covers the essential requirements of article 3.2 of Directive 2014/53/EU [i.2] under the conditions identified in annex A.

## 2 References

### 2.1 Normative references

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

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

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

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

- [1] ETSI EN 300 220-1 (V3.1.1) (02-2017): "Short Range Devices (SRD) operating in the frequency range 25 MHz to 1 000 MHz; Part 1: Technical characteristics and methods of measurement".

### 2.2 Informative references

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

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



The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI EG 203 336: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".
  - [i.2] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC (the "RED").
  - [i.3] Commission Decision 2013/752/EU amending Decision 2006/771/EC on harmonisation of the radio spectrum for use by short-range devices and repealing Decision 2005/928/EC.
  - [i.4] ETSI TS 103 060: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Method for a harmonized definition of Duty Cycle Template (DCT) transmission as a passive mitigation technique used by short range devices and related conformance test methods".
  - [i.5] ETSI EN 300 220-3-1: "Short Range Devices (SRD) operating in the frequency range 25 MHz to 1 000 MHz; Part 3-1: Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU; Low duty cycle high reliability equipment, social alarms equipment operating on designated frequencies (869,200 MHz to 869,250 MHz)".
  - [i.6] CEPT/ERC/REC 70-03: "Relating to the use of Short Range Devices (SRD)".
  - [i.7] ECC Report 37: "Compatibility of planned SRD applications with currently existing radiocommunications applications in the frequency band 863 - 870 MHz".
  - [i.8] ECC Report 181: "Improving spectrum efficiency in the SRD bands".
  - [i.9] "Channel Access Rules for SRDs", study by IMST GmbH (November 2012).
- NOTE: Available at  
[http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Telekommunikation/Unternehmen\\_Institutionen/Koexistenzstudie\\_EN.pdf?\\_\\_blob=publicationFile&v=2](http://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Telekommunikation/Unternehmen_Institutionen/Koexistenzstudie_EN.pdf?__blob=publicationFile&v=2).
- [i.10] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

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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 Directive 2014/53/EU [i.2], ETSI EN 300 220-1 [1] and the following apply:

**mode A:** mode of operation with uni-directional communication (specified in clause 5)

**mode BN:** mode of operation with bi-directional communication and frequency agility (specified in clause 6)

### 3.2 Symbols

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

### 3.3 Abbreviations

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

ACK	ACKnowledgement
ER-GSM	Extended Railway Global System for Mobile communications
MI	Message Initiator
MR	Message Responder

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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 manufacturer. The equipment shall comply with all the technical requirements of the present document which are identified as applicable in annex A at all times when operating within the boundary limits of the declared operational environmental profile.

Normal and extreme test conditions are described in ETSI EN 300 220-1 [1], clauses 4.3.3 and 4.3.4.

### 4.2 Technical requirements for transmit mode

#### 4.2.1 Applicability

The requirements in clause 4.2 apply to all EUT when operating in transmit mode, except where stated.

#### 4.2.2 Operating Frequency and Channel

##### 4.2.2.1 Description

The nominal operating frequency is the centre of a channel of width OCW.

##### 4.2.2.2 Limits

The channel widths, OCW, shall comply with the limits given in annex B for the relevant band. The channels shall lie on a raster formed by the OCW and the edges of the bands.

##### 4.2.2.3 Conformance

There is no conformance test specified for this requirement.

The manufacturer shall details of the operating frequency.

NOTE: More than one operating frequency on one or more channels may be declared.

### 4.2.3 Effective Radiated Power

#### 4.2.3.1 Description

The effective radiated power (e.r.p) is the power radiated in the direction of the maximum field strength under specified conditions of measurements for any condition of modulation. For equipment with a permanent or temporary antenna connection it may be taken as the power delivered from that connector.

If the equipment is designed to operate with different carrier powers, the rated power for each level or range of levels shall be declared by the manufacturer.

#### 4.2.3.2 Limits

The effective radiated power shall comply with the limits given in annex B for the relevant band.

#### 4.2.3.3 Conformance

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

Compliance shall be established under normal and extreme conditions for conducted measurements and under normal conditions for radiated measurements.

### 4.2.4 Duty Cycle

#### 4.2.4.1 Description and Applicability

This requirement applies for operation in bands for which a duty cycle limit is given in annex B.

The present document applies to equipment operating with low duty cycle and transmissions of limited duration. Equipment may be triggered manually, by internal timing or by external stimulus. Depending on the method of triggering the timing may be predictable or random.

#### 4.2.4.2 Limits

The EUT shall comply with the limit given in annex B.

Unless otherwise stated in annex B, the observation period  $T_{\text{obs}}$  is 1 hour.

Unless otherwise stated in annex B, the observation bandwidth  $F_{\text{obs}}$  is the operating band.

An equipment may transmit on only one channel at a time in each of the bands.

An equipment may transmit sequentially in more than one of the bands.

#### 4.2.4.3 Conformance

The conformance tests for this requirement shall be as defined in ETSI EN 300 220-1 [1], clause 5.4.2.

Compliance shall be established under normal conditions.

### 4.2.5 Short term behaviour

#### 4.2.5.1 Description and applicability

This requirement applies for operation in bands for which an entry under **Other spectrum access requirements** are given in annex B.

Short term behaviour is expressed in terms of Duty Cycle Template (as described in ETSI EN 300 220-1 [1]).

The present document applies to equipment operating with low duty cycle and transmissions of limited duration. Equipment may be triggered manually, by internal timing or by external stimulus. Depending on the method of triggering the timing may be predictable or random.

Duty cycle template describes the behaviour of a device for a single or a small number of transmissions. Each transmission is limited in maximum duration (Tx-On-max) and is followed by a minimum interval of silence by the transmitting device (Tx-Off-min). Additional refinements include brief gaps (T-disregard) in a sequence of transmissions which may be ignored provided other limits are respected.

#### 4.2.5.2 Limits

The EUT shall comply with the limits in one of the appropriate rows in of table 2 for the requirement given in annex B.