SLOVENSKI STANDARD
SIST EN 300 220-2 V1.2.1:2003

01-december-2003

Elektromagnetna združljivost in zadeve v zvezi z radijskim spektrom (ERM) ï Naprave kratkega dosega (SRDs) ï Tehniļne karakteristike in preskusne metode za radijsko opremo za uporabo v frekvenļnem območju od 25 MHz do 1000 MHz z moļnostnimi nivoji do 500 mW ï 2. del: Dopolnilni parametri, ki niso za namene regulative

ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Short range devices; Technical characteristics and test methods for 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: Supplementary parameters not intended for regulatory purposes

Ta slovenski standard je istoveten z: **EN 300 220-2 Version 1.2.1**

ICS:

33.060.20	Sprejemna in oddajna oprema	Receiving and transmitting equipment
33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

SIST EN 300 220-2 V1.2.1:2003 **en**

EN 300 220-2 V1.2.1 (1997-11)

European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short range devices; Technical characteristics and test methods for 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: Supplementary parameters not intended for regulatory purposes

European Telecommunications Standards Institute

Reference
REN/ERM-RP08-0107-2 (21ci0ioo.PDF)
formerly REN/RES-08-0107-2

Keywords
Radio, testing, SRD

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Contents

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Foreword

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

The technical parameters which are relevant to the EMC Directive are listed in annex B.

The present document consists of two parts as follows:

Part 1: "Parameters intended for regulatory purposes";

Part 2: "Supplementary parameters not intended for regulatory purposes".

This part specifies supplementary parameters for specific applications not related to effective use of the spectrum.

Annex A provides specifications concerning social alarm systems.

National transposition dates	
Date of adoption of this EN:	24 October 1997
Date of latest announcement of this EN (doa):	28 February 1998
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 August 1998
Date of withdrawal of any conflicting National Standard (dow):	31 August 1998

1 Scope

The present document covers the minimum characteristics considered necessary for Short Range Devices (SRD) in order to make the best use of the available frequencies. The term "The present document" refers to EN 300 220-2 only.

These parameters specified in this part are not intended to be measured for regulatory purposes. However, they are provided to give guidance to manufacturers and users regarding reasonable reliability of the radio link and performance of the receiver.

The present document contains the technical characteristics for radio equipment referencing relevant CEPT/ERC Decisions and Recommendation CEPT ERC/Recommendation 70-03 [1].

The present document does not necessarily include all the characteristics which may be required by a user, nor does it necessarily represent the optimum performance achievable. It is a product family standard which may be completely or partially superseded by specific standards covering specific applications.

The present document applies to short range devices:

- either with a Radio Frequency (RF) output connection and/or with an integral antenna;
- for alarms, identification, telecommand, telemetry, etc., applications;
- with or without speech;
- operating on radio frequencies between 25 MHz and 1 000 MHz, with power levels up to 500 mW, radiated or conducted.

The present document covers fixed stations, mobile stations and portable stations. In the present document basic requirements are given for the different frequency bands, channel separation etc., where appropriate.

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

Additional standards or specifications may be required for equipment such as that intended for connection to the Public Switched Telephone Network (PSTN).

2 Normative references

References may be made to:

a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or

b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or

c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or

d) publications without mention of a specific version, in which case the latest version applies.

A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] Draft CEPT/ERC Recommendation 70-03: "Relating to the use of Short Range Devices (SRD)".

[2] ETS 300 113: "Radio Equipment and Systems (RES); Land mobile service; Technical characteristics and test conditions for radio equipment intended for the transmission of data (and speech) and having an antenna connector".

[3] ETS 300 390: "Radio Equipment and Systems (RES); Land mobile service; Technical characteristics and test conditions for radio equipment intended for the transmission of data (and speech) and using an integral antenna".

[4] ITU-T Recommendation Blue Book 0.41 (1988): "Psophometer for use on telephone-type circuits".

[5] EN 300 220-1 (1997): "Electromagnetic compatibility and Radio spectrum matters (ERM); Short range devices; Technical characteristics and test methods for 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: Requirements related to spectrum utilization".

3 Definitions, symbol and abbreviations

3.1 Definitions

For the purposes of the present document, the following definitions apply:

alarm: The use of radio communication for indicating an alarm condition at a distant location.

conducted measurements: Measurements which are made using a direct 50 Ω connection to the equipment under test.

dedicated antenna: A removable antenna supplied and type tested with the radio equipment, designed as an indispensable part of the equipment.

fixed station: Equipment intended for use in a fixed location.

integral antenna: A permanent fixed antenna, which may be built-in, designed as an indispensable part of the equipment.

mobile station: Equipment normally fixed in a vehicle.

portable station: Equipment intended to be carried, attached or implanted.

radiated measurements: Measurements which involve the absolute measurement of a radiated field.

telecommand: The use of radio communication for the transmission of signals to initiate, modify or terminate functions of equipment at a distance.

telemetry: The use of radio communication for indicating or recording data at a distance.

3.2 Symbol

For the purposes of the present document, the following symbol applies:

SND/ND	Signal + Noise + Distortion / Noise + Distortion

3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

emf	electromotive force
EMC	ElectroMagnetic Compatibility
ERP	Effective Radiated Power
PSTN	Public Switched Telephone Network
RF	Radio Frequency
SRD	Short Range Device

4 Receiver parameters

For the method of measurement of the receiver parameters, reference should be made to the appropriate subclauses in ETS 300 113 [2] or ETS 300 390 [3].

4.1 Maximum usable sensitivity (conducted)

4.1.1 Definition

The maximum usable sensitivity is minimum level of signal (electromotive force (emf)) at the receiver input, produced by a carrier at the nominal frequency of the receiver, modulated with the normal test signal modulation, which produces:

- a SND/ND ratio of 20 dB, measured at the receiver output through a telephone psophometric weighting network as described in ITU-T Recommendation 0.41 [4]; or
- after demodulation, a data signal with a bit error ratio of 10^{-2}; or
- after demodulation, a message acceptance ratio of 80 %.

4.1.2 Limits

The maximum usable sensitivity shall not exceed an emf of +6 dBµV under normal test conditions.

4.2 Average usable sensitivity (field strength)

This measurement only applies to equipment with an integral or dedicated antenna.

The average, E_{mean}, is calculated from eight measurements of field strength, where the receiver is rotated in 45° increments, starting at an arbitrary orientation.

$$E_{mean} = 20 \log_{10} \sqrt{\frac{8}{\sum_{i=1}^{i=8} \frac{1}{x_i^2}}}$$

Where x_i represents the eight field strengths in µV/m.

4.2.1 Definition

The average usable sensitivity of the receiver is the average field strength, expressed in dBµV/m, produced by a carrier at the nominal frequency of the receiver, modulated with the normal test signal which produces:

- a SND/ND ratio of 20 dB, measured at the receiver output through a telephone psophometric weighting network as described in ITU-T Recommendation 0.41 [4]; or
- after demodulation, a data signal with a bit error ratio of 10^{-2}; or
- after demodulation, a message acceptance ratio of 80 %.

4.2.2 Limits

The average radiated usable sensitivity is given in table 1.