



SLOVENSKI STANDARD

SIST EN 300 683:1998

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Radio Equipment and Systems (RES); ElectroMagnetic Compatibility (EMC) standard for Short Range Devices (SRD) operating on frequencies between 9 kHz and 25 GHz

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**Radio Equipment and Systems (RES);
ElectroMagnetic Compatibility (EMC) standard for
Short Range Devices (SRD)
operating on frequencies between 9 kHz and 25 GHz**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the European Telecommunications Standards Institute (ETSI) in response to a mandate from the European Commission issued under Council Directive 83/189/EEC (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations.

This ETS, together with ETS 300 220-1 [1] and ETS 300 220-2 [17] is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility ("the EMC Directive") (89/336/EEC as amended).

Technical specifications relevant to the EMC Directive are given in annex B.

Other standards cover radio communications equipment not listed in the scope.

This ETS is based on EN 50081-1 [4] and EN 50082-1 [5] and other standards where appropriate.

Transposition dates	
Date of adoption:	6 June 1997
Date of latest announcement of this ETS (doa):	30 September 1997
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 March 1998
Date of withdrawal of any conflicting National Standard (dow):	31 March 1998

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1 Scope

This European Telecommunication Standard (ETS) covers the assessment of the Short Range Devices (SRD) product family and ancillary equipment in respect of ElectroMagnetic Compatibility (EMC). Technical specifications related to the antenna port and emissions from the enclosure port of the radio equipment are not included in this ETS. Such technical specifications are found in related radio product standards.

This product family EMC Standard may be superseded by specific product EMC standards, covering a specific application.

This ETS specifies the applicable EMC tests, the method of measurements, the limits and the minimum performance criteria for Short Range Devices, as specified in ETS 300 220-1 [1], I-ETS 300 330 [2] and I-ETS 300 440 [3] depending on the used frequency band, and the associated ancillary equipment.

It might be determined from consideration of electrical characteristics of a particular apparatus that some tests are technically inappropriate. In such a case, it is required that the decision and justification not to test these parameters shall be recorded in the test report.

The environmental classification used in this ETS refers to the environment classification used in the Generic Standards EN 50081-1 [4], EN 50082-1 [5], except the vehicular environment class which refers to ISO 7637 [6], [7].

The EMC requirements have been selected to ensure an adequate level of compatibility for apparatus at residential, commercial, light industrial and vehicular environment. The levels however, do not cover extreme cases which may occur in any location but with low probability of occurrence.

This ETS may not cover those cases where a potential source of interference which is producing individually repeated transient phenomena or a continuous phenomena is permanently present, e.g. a radar or broadcast site in the near vicinity. In such a case it may be necessary to use special protection applied to either the source of interference or the interfered part or both.

Compliance of radio equipment to the requirements of this ETS, does not signify compliance to any requirements related to spectrum management or any requirement related to the use of the equipment (licensing requirements).

Compliance to this ETS does not signify compliance to any safety requirements. However, it is the responsibility of the assessor of the equipment that any observation regarding the equipment becoming dangerous or unsafe as a result of the application of the tests of this ETS should be recorded in the test report.

This ETS does not cover specific requirements for safety critical applications.

2 Normative references

This ETS incorporates by dated and undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- [1] ETS 300 220-1: "Radio Equipment and Systems (RES); 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 utilisation".
- [2] I-ETS 300 330: "Radio Equipment and Systems (RES); Short Range Devices (SRDs); Technical characteristics and test methods for radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz".

- [3] I-ETS 300 440: "Radio Equipment and Systems (RES); Short range devices; Technical characteristics and test methods for radio equipment to be used in the 1 GHz to 25 GHz frequency range".
- [4] EN 50081-1 (1992): "Electromagnetic compatibility - Generic emission standard. Part 1: Residential, commercial and light industry".
- [5] EN 50082-1 (1992): "Electromagnetic compatibility - Generic immunity standard. Part 1: Residential, commercial and light industry".
- [6] ISO 7637-1 (1990): "Road vehicles - Electrical disturbance by conducting and coupling - Part 1: Passenger cars and light commercial vehicles with nominal 12 V supply voltage - Electrical transient conduction along supply lines only".
- [7] ISO 7637-2 (1990): "Road vehicles - Electrical disturbance by conducting and coupling - Part 2: Commercial vehicles with nominal 24 V supply voltage - Electrical transient conduction along supply lines only".
- [8] EN 55022 (1994): "Limits and methods of measurement of radio disturbance characteristics of information technology equipment".
- [9] CISPR 16-1 (1993): "Specification for radio disturbance and immunity measuring apparatus and methods; Part 1: Radio disturbance and immunity measuring apparatus".
- [10] EN 61000-4-3: "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 3: Radiated, radio-frequency, electromagnetic field immunity test".
- [11] EN 61000-4-2 (1995): "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 2: Electrostatic discharge immunity test. Basic EMC publication".
- [12] EN 61000-4-4 (1995): "Electromagnetic Compatibility (EMC); Part 4: Testing and measurements techniques - Section 4: Electrical fast transient/burst immunity test. Basic EMC publication".
- [13] EN 61000-4-6 (1996): "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 6: Immunity to conducted disturbances induced by radio-frequency fields".
- [14] EN 61000-4-11 (1994): "Electromagnetic Compatibility (EMC); Part 4: Testing and measurements techniques - Section 11: Voltage dips, short interruptions and voltage variations immunity tests".
- [15] EN 61000-4-5: "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 5 Surge immunity test".
- [16] 89/336/EEC: "Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility".
- [17] ETS 300 220-2: "Radio Equipment and Systems (RES); 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 for specific applications".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply:

ancillary equipment: Equipment (apparatus), used in connection with a receiver, transmitter or transceiver, is considered as an ancillary equipment (apparatus):

- if the equipment is intended for use in conjunction with a receiver, transmitter or transceiver to provide additional operational and/or control features to the radio equipment (e.g. to extend control to another position or location); and
- if the equipment cannot be used on a stand alone basis to provide user functions independently of a receiver, transmitter or transceiver; and
- if the receiver, transmitter, transceiver to which it is connected, is capable of providing some intended operation such as transmitting and/or receiving without the ancillary equipment. (i.e. it is not a subunit of the main equipment essential to the main equipment basic functions).

enclosure port: The physical boundary of the apparatus through which electromagnetic fields may radiate or impinge.

manufacturer: The legal entity responsible under the terms of Council Directive 89/336/EEC [16] for placing the product on the market.

port: A particular interface of the specified equipment (apparatus) with the electromagnetic environment. (see figure 1).

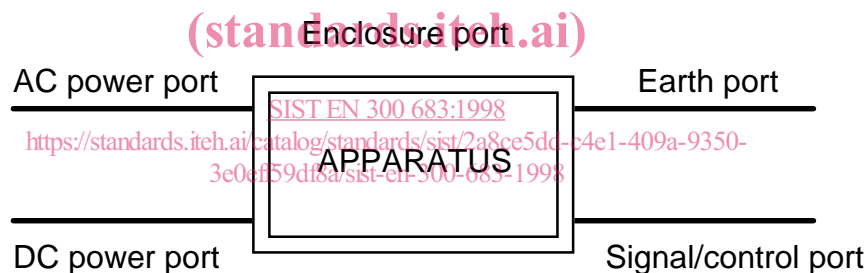


Figure 1: Examples of ports

receiver: A stand alone receiver or a receiver being part of a transceiver.

short range device: A piece of apparatus which includes a transmitter, and/or a receiver and or parts thereof, used in alarm-, telecommand- and telemetry applications etc., operating with analogue speech/music or data (analogue and/or digital) or with combined analogue speech/music and data, using any modulation type.

These devices can be used in a fixed, mobile or portable application.

transmitter: A stand alone transmitter or a transmitter being part of a transceiver.

3.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

CR	Continuous phenomena applied to Receivers
CT	Continuous phenomena applied to Transmitters
EMC	ElectroMagnetic Compatibility
EUT	Equipment Under Test
LISN	Line Impedance Stabilizing Network
RF	Radio Frequency

SRD	Short Range Device
TR	Transient phenomena applied to Receivers
TT	Transient phenomena applied to Transmitters

4 Test conditions

4.1 General

The equipment shall be tested under normal test conditions contained in the relevant product and basic standards or in the information accompanying the equipment, which are within the manufacturers declared range of humidity, temperature and supply voltage. The test conditions shall be recorded in the test report.

The test configuration shall be as close to normal intended use as possible and shall be recorded in the test report.

Whenever the Equipment Under Test (EUT) is provided with a detachable antenna, the EUT shall be tested with the antenna fitted in a manner typical of normal intended use, unless specified otherwise.

For the purpose of this ETS the short range radio devices are divided into three types of equipment, based on the technical nature of the primary function.

Table 1

Equipment Type	Technical nature of the primary function
I	Transfer of messages (digital or analogue signals)
II	Transfer of audio (speech or music)
III	Others

4.2 Normal test modulation

For equipment type I the carrier shall be modulated with a test signal, representing a practical selection of the usable selective messages/commands. The agreed test signal may be formatted and may contain error detection and correction. Where transmitters do not have a modulation input port, the internal equipment modulation is used.

For equipment type II (audio equipment):

- the wanted input signal of the receiver under test shall be set to the nominal frequency of the receiver, modulated with a sinusoidal audio frequency of 1 000 Hz having a modulation corresponding to 60 % of the peak system modulation;
- the transmitter under test shall be modulated with a sinusoidal audio frequency of 1 000 Hz having a modulation corresponding to 60 % of the system peak modulation.

For equipment type III the manufacturer shall specify the normal test modulation, if any.

4.3 Arrangements for test signals at the input of the transmitter

The transmitter shall be operated at its maximum rated output, modulated with normal test modulation as specified for that type of equipment (subclause 4.2).

If internal equipment modulation is not available, the signal generator to be used for the modulation signal shall be located outside the test environment and connected to the modulation input of the transmitter via appropriate means. Adequate measures shall be taken to protect the measuring equipment from the effect of all the radiated fields within the test environment.

4.4 Arrangements for test signals at the output of the transmitter

The measuring equipment used to monitor the output signal of the transmitter shall be located outside the test environment. Adequate measures shall be taken to protect the measuring equipment from the effect of all the radiated fields within the test environment.