



SLOVENSKI STANDARD

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Elektromagnetna združljivost (EMC) in zadeve v zvezi z radijskim spektrom (ERM) - Standard elektromagnetne združljivosti (EMC) za širokopasovne prenosne sisteme na 2,4 GHz in oprema za zelo zmogljivo radijsko lokalno omrežje (HIPERLAN)

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for 2,4 GHz wideband transmission systems and High Performance Radio Local Area Network (HIPERLAN) equipment

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2,4 GHz wideband transmission systems and
High Performance Radio Local Area Network (HIPERLAN)
equipment**

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Electromagnetic compatibility and Radio spectrum Matters (ERM) Technical Committee of the European Telecommunications Standards Institute (ETSI).

This ETS has been produced by 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 300 328 [1] or ETS 300 836-1 (see bibliography), 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 A.

Transposition dates	
Date of adoption:	24 October 1997
Date of latest announcement of this ETS (doa):	28 February 1998
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 August 1998
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1 Scope

This European Telecommunication Standard (ETS) covers the assessment of the 2,4 GHz wideband transmission systems and High Performance Radio Local Area Network (HIPERLAN) equipment in respect of ElectroMagnetic Compatibility (EMC).

This ETS specifies the applicable EMC tests, the method of measurements, the limits and the minimum performance criteria for wideband data communication systems, such as plug-in radio devices, hand-portable equipment, mobile and fixed stations, as specified in ETS 300 328 [1], HIPERLAN Type 1 as specified in ETS 300 652 [2].

In addition to the technical specifications of this ETS, there may be published in the Official Journal of the European Commission references to other Harmonized EMC Standards that apply to the products covered by this ETS in their own right.

The environmental classification used in this ETS refers to the environment classification used in the generic Standards EN 50081-1 [3], EN 50082-1 [4], except the vehicular environment class which refers to ISO 7637, Parts 1 [5] and 2 [6].

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.

Technical specifications related to the antenna port and emissions for the enclosure port of the equipment are not included in this ETS. Such specific technical specifications are found in the relevant product standard.

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. Any observations of equipment becoming dangerous or unsafe as a result of the application of the tests defined in this ETS shall be recorded in the test report.

This ETS is based on the considerations and guidance given in ETR 238 [15].

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 300 328: "Radio Equipment and Systems (RES); Wideband transmission systems; Technical characteristics and test conditions for data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques".
- [2] ETS 300 652: "Radio Equipment and Systems (RES); High Performance Radio Local Area Network (HIPERLAN) Type 1; Functional specification".
- [3] EN 50081-1 (1992): "Electromagnetic compatibility - Generic emission standard - Part 1: Residential, commercial and light industry".

- [4] EN 50082-1 (1992): "Electromagnetic compatibility - Generic immunity standard - Part 1: Residential, commercial and light industry".
- [5] ISO 7637-1 (1990): "Road vehicles - Electrical disturbance by conduction and coupling - Part 1: Passenger cars and light commercial vehicles with nominal 12 V supply voltage - Electrical transient conduction along supply lines only".
- [6] ISO 7637-2 (1990): "Road vehicles - Electrical disturbance by conduction and coupling - Part 2: Commercial vehicles with nominal 24 V supply voltage - Electrical transient conduction along supply lines only".
- [7] EN 55022 (1994): "Limits and methods of measurement of radio disturbance characteristics of information technology equipment".
- [8] CISPR 16-1 (1993): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1: Radio disturbance and immunity measuring apparatus".
- [9] EN 61000-4-3: "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 3: Radiated, radio-frequency, electromagnetic field immunity test".
- [10] EN 61000-4-2 (1995): "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 2: Electrostatic discharge immunity test".
- [11] EN 61000-4-4: "Electromagnetic Compatibility (EMC); Part 4: Testing and measurements techniques - Section 4: Electrical fast transient/burst immunity test".
- [12] EN 61000-4-6: "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 6: Immunity to conducted disturbances induced by radio-frequency fields". <https://standards.iteh.ai/catalog/standards/sist/7f936c35-17ed-45f6-a714-cd1e6c30-3062>
- [13] EN 61000-4-11: "Electromagnetic Compatibility (EMC); Part 4: Testing and measurements techniques - Section 11: Voltage dips, short interruptions and voltage variations immunity tests".
- [14] EN 61000-4-5: "Electromagnetic Compatibility (EMC) - Part 4: Testing and measurements techniques - Section 5: Surge immunity test".
- [15] ETR 238: "ETSI/CENELEC standardization programme for the development of Harmonized Standards related to Electro-Magnetic Compatibility (EMC) in the field of telecommunications".

3 Definitions and abbreviations

3.1 Definitions

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

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

Equipment Under Test (EUT): Equipment under test and subject to the performance requirements of this ETS.

fixed station: Equipment intended for use in a fixed location and fitted with one or more antennas. The equipment may be fitted with either antenna socket(s) or integral antenna(s) or both.

frequency range: The range of operating frequencies over which the equipment can be adjusted.

hand-portable station: Equipment normally used on a stand-alone basis and to be carried by a person. The equipment may be fitted with one or more antennas. The equipment may be fitted with either antenna socket(s) or integral antenna(s) or both.

host: Any equipment which has complete user functionality when not connected to the radio equipment part and to which the radio equipment part provides additional functionality and to which connection is necessary for the radio equipment part to offer functionality.

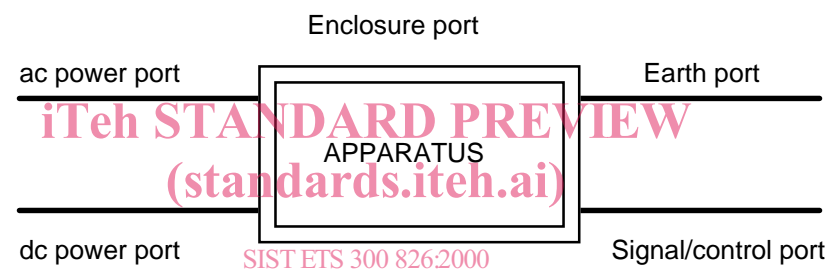
manufacturer: The legal entity responsible under the terms of Council Directive 89/336/EEC for placing the product on the market.

mobile station: Equipment normally used in a vehicle or as a transportable station. The equipment may be fitted with one or more antennas. The equipment may be fitted with either antenna socket(s) or integral antenna(s) or both.

operating frequency (operating centre frequency): The nominal frequency at which the equipment can be operated. Equipment may be adjustable for operation at more than one operating frequency.

plug-in radio device: Equipment, including slide-in radio cards, intended to be used with or within a variety of host systems, using their control functions and power supply.

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



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Figure 1: Examples of ports

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

stand-alone radio equipment: Equipment that is intended primarily as communications equipment and that is normally used on a stand-alone basis.

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

3.2 Abbreviations

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

ac	alternating current
ACK	ACKnowledgement
ARQ	Automatic Retransmission reQuest
CR	Continuous phenomena applied to Receivers
CT	Continuous phenomena applied to Transmitters
dc	direct current
EMC	ElectroMagnetic Compatibility
EUT	Equipment Under Test
HIPERLAN	High PErformance Radio Local Area Network
LISN	Line Impedance Stabilizing Network
MUS	Maximum Usable Sensitivity
NACK	Not ACKnowledgement
RF	Radio Frequency
rms	root mean square
TR	Transient phenomena applied to Receivers
TT	Transient phenomena applied to Transmitters

4 Test conditions

4.1 General

The equipment shall be tested under conditions which are within the manufacturer's declared range of humidity, temperature, and supply voltage and the actual values of these parameters shall be recorded in the test report.

The radio equipment may take forms which may require special software and/or test fixtures. In all cases the EUT shall be exercised in a manner representative of normal intended use. The test configuration shall be recorded in the test report.

Equipment which requires connection to a host equipment to function shall use the test configuration as defined by the manufacturer.

4.2 Arrangements for test signals at the input of the receiver

4.2.1 General requirements

The test signals required to establish a communications link shall be defined by the manufacturer.

The level of the test signal at the input of the receiver shall be at least 30 dB above the declared Maximum Usable Sensitivity (MUS).

4.2.2 Normal test modulation

The modulated test signal shall represent normal intended use, and may contain data formatting, error detection and correction information.

4.3 Arrangements for test signals at the output of the receiver

It shall be possible to assess the performance of the equipment by appropriately monitoring the receiver output.

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4.4 Arrangements for test signals at the input of the transmitter

4.4.1 General requirements

The test signals and/or controls required to establish a communications link shall be defined by the manufacturer. The transmitter shall be operated at maximum rated power.

4.4.2 Normal test modulation

The modulated test signal shall represent normal intended use, and may contain data formatting, error detection and correction information.

4.5 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.

The manufacturer may provide a suitable companion receiver that can be used to receive messages or to set up a communication link.

Where the transmitter incorporates an external Radio Frequency (RF) antenna connector, the output signal of the transmitter, shall be coupled to the receiving/measuring equipment via a shielded transmission line such as a coaxial cable. Adequate measures shall be taken to minimize the effect of unwanted common mode currents on the external conductor of the transmission line at its point of entry to the transmitter.