



SLOVENSKI STANDARD

SIST ETS 300 340:1998

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Radijska oprema in sistemi (RES) - Elektromagnetna združljivost (EMC) sprejemnikov osebne klica v evropskem sistemu za radijsko sporočanje (ERMES)

Radio Equipment and Systems (RES); ElectroMagnetic Compatibility (EMC) for European Radio Message System (ERMES) paging receivers

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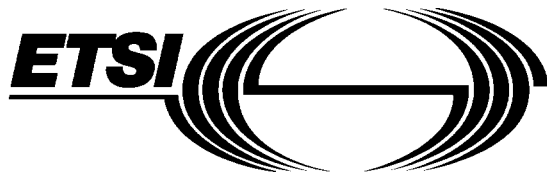
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European Radio Message System (ERMES) paging receivers

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Foreword

This European Telecommunication Standard (ETS) has been prepared by the Radio Equipment and Systems (RES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

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

This ETS is based upon the Generic Standards EN 50081-1 [1] and EN 50082-1 [2], ETS 300 339 [3], and other standards where appropriate, to meet the essential requirements of the Council Directive 89/336/EEC [4].

Every ETS prepared by ETSI is a voluntary standard. This ETS contains text which may be used for regulatory purposes. This text does not make this ETS mandatory in its status as a standard. However, the ETS can be referenced, wholly or in part, for mandatory application by decisions of regulatory bodies.

Transposition dates	
Date of latest announcement of this ETS (doa):	28 February 1995
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1 Scope

This ETS covers the requirements for the assessment of ERMES paging receivers and ancillary equipment in respect of Electro-Magnetic Compatibility (EMC) and may be used to demonstrate presumption of compliance with the protection requirements of Council Directive 89/336/EEC [4], Article 4 (EMC Directive).

This ETS specifies the applicable EMC tests, the method of measurements, the limits and the minimum performance criteria for ERMES paging receivers (as defined in ETS 300 133 [5]) and the associated ancillary equipment.

The environment classification used in this ETS refers to the environment classification used in the Generic Standards EN 50081-1 [1], EN 50082-1 [2], except the vehicular environment class which refers to the ISO 7637 [6].

The EMC requirements have been selected to ensure an adequate level of compatibility for apparatus at residential, commercial, light industrial and vehicular environments. The levels, however, do not cover extreme cases which may occur in any location but with a 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 requirement related to the use of the equipment (i.e. 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.

2 Normative references

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This ETS incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications 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] EN 50081-1 (1992): "Electromagnetic compatibility - Generic emission standard Part 1: Residential, commercial and light industry".
- [2] EN 50082-1 (1992): "Electromagnetic compatibility - Generic immunity standard Part 1: Residential, commercial and light industry".
- [3] Draft prETS 300 339: "Radio Equipment and Systems (RES) - General Electro-Magnetic Compatibility (EMC) for radio equipment".
- [4] 89/336/EEC: "Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility".
- [5] ETS 300 133 Parts 1 to 7: "Paging Systems (PS) - European Radio Message System (ERMES)".
- [6] ISO 7637 (1990): "Road vehicles-Electrical disturbance by conducting and coupling" Part 1: "Passenger cars and light commercial vehicles with nominal 12 V supply voltage".

ISO 7637 (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".

- [7] EN 55022 (1987): "Limits and methods of measurement of radio interference characteristics of information technology equipment".
- [8] CISPR Publication No. 16-1: "Specification for radio disturbance and immunity measuring apparatus and methods".
- [9] ENV 50140: "Basic immunity standard - Radiated, radio frequency, electromagnetic fields".
- [10] IEC 801-2 (second edition 1991) Part 2: "Electrostatic discharge requirements".
- [11] IEC 801-4 (1988) Part 4: "Electrical fast transients / burst requirements".
- [12] ENV 50141: "Basic immunity standard - Conducted disturbances induced by radio-frequency fields".
- [13] IEC 1000-4-11: "Voltage dips, short interruptions and voltage variations. Immunity tests".
- [14] IEC 1000-4-5: "Surge immunity requirements".

3 Definitions

For the purposes of this ETS the following definitions apply:

ancillary equipment: Equipment (apparatus), used in connection with a paging receiver is considered as an ancillary equipment (apparatus) if:

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

ERMES paging receiver: A receiver which operates in the ERMES paging system.

manufacturer: The legal entity responsible under the terms of the Council Directive 89/336/EEC [4] for placing the product on the market.

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

4 General test conditions

4.1 Test conditions

The equipment shall be tested under 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 an ERMES paging receiver is provided with a detachable antenna, the EUT shall be tested with the antenna fitted in a manner typical of normal intended use.

For the immunity tests of receivers, the wanted input signal (when called for), applied to the receiver, shall be modulated with normal test modulation, see subclauses 4.2 and 4.3. For all the immunity tests according to this ETS, except for the spot frequency test of the radio frequency immunity test, see subclause 9.1, a communication link shall be established and the memory shall be loaded with recognisable messages, see subclause 4.4.

For the spot frequency test of the radio frequency immunity test, see subclause 9.1, a communication link shall be established and repetitive calls shall be transmitted to the Equipment Under Test (EUT).

4.2 Normal test modulation

The wanted input signal shall be set to the nominal frequency selected for the EUT and modulated with normal test modulation, coded according to theERMES standard ETS 300 133-4 [5], enabling to test that a communication link is established.

4.3 Arrangements for test signals at the input of the receiver

The manufacturer shall at the time of submission supply a test fixture and a message generator to generate the wanted input signal according to theERMES standard, to check that the equipment is able to receive a call and store it in its memory before and after the test.

During the spot frequency test of radio frequency immunity, see subclause 9.1, the wanted signal, to establish a communication link and to check that the equipment is capable of receiving a call during the test, shall be presented to the equipment from an antenna located within the test environment. The level shall be approximately 60 dB above the level where the equipment just starts reacting on some of the calls transmitted. The signal generator providing the wanted input signal shall be located outside of the test environment.

4.4 Arrangements for test signals at the output of the receiver

From the performance check before and after the test it shall be possible to assess the performance of the equipment from the presented messages and/or from the call received alert signals of the equipment.

During the spot frequency test of radio frequency immunity, see subclause 9.1, the call received alert signal output of the equipment shall be coupled to the outside of the test environment via non-metallic means and it shall be possible to assess the performance of the equipment from this signal.

Adequate measures shall be taken to protect the measuring equipment from the effect of all interferences, e.g. radiated fields and conducted interferences.

4.5 Narrow band responses ofERMES receivers

Responses onERMES receivers occurring during the test at discrete frequencies which are narrow band responses (spurious responses), are identified by the following method.

If during the test the unwanted signal creates a degradation of the call received alert signal acceptance ratio below 4:5 (four out of five), it is necessary to establish whether the distortion is due to a narrow band response or to a wide band phenomena. Therefore, the unwanted signal frequency is increased by an amount equal to twice the nominal bandwidth of the receiver pre-demodulation filter, as declared by the manufacturer. The test shall be repeated with the frequency of the unwanted signal decreased by the same amount.

If the degradation disappears, then the response is considered as a narrow band response.

If the degradation does not disappear, this may be due to the fact that the offset has made the frequency of the unwanted signal correspond to the frequency of another narrow band response. Under these circumstances the procedure is repeated with the increase and decrease of the frequency of the unwanted signal adjusted to two and one half times the bandwidth previously referred to. If the degradation still does not disappear, the phenomena is considered wide band and therefore an EMC problem and the equipment fails the test.

Narrow band responses are disregarded.