SLOVENSKI STANDARD
SIST ETS 300 385:1998

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Radijska oprema in sistemi (RES) - Standard elektromagnetne združljivosti (EMC) digitalnih fiksnih radijskih povezav in pomožne opreme pri hitrosti podatkov okoli 2 Mbit/s in več

Radio Equipment and Systems (RES); ElectroMagnetic Compatibility (EMC) standard for digital fixed radio links and ancillary equipment with data rates at around 2 Mbit/s and above

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Radio Equipment and Systems (RES); ElectroMagnetic Compatibility (EMC) standard for digital fixed radio links and ancillary equipment with data rates at around 2 Mbit/s and above

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 92 94 42 00 - Fax: +33 93 65 47 16

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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 ETSs 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] and other standards where appropriate, to meet the essential requirements of the Council Directive 89/336/EEC "Council Directive of 3 May 1989 on the approximation of the laws of the Member States relating to Electromagnetic Compatibility" (Official Journal L139 of 23/5/89).

Transposition dates	
Date of adoption of this ETS:	14 February 1996
Date of latest announcement of this ETS (doa):	31 May 1996
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 November 1996
Date of withdrawal of any conflicting National Standard (dow):	30 November 1996

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1 Scope

This ETS covers the assessment of Digital Fixed Radio Links and ancillary equipment in respect of ElectroMagnetic Compatibility (EMC). Technical specifications related to the antenna port of the radio equipment are found in the related product standards for the effective use of the radio spectrum.

This ETS specifies the applicable EMC tests, the test methods, the limits and the minimum performance criteria for Digital Fixed Radio Links, operating as fixed point to point systems, with data rates at around 2 Mbit/s and above, in the frequency range 1 - 60 GHz, and the associated ancillary equipment.

The processing and protection switch, (de)modulator, transmitter, receiver, RF filters, branching networks, feeders are covered by this ETS. The multiplexing and/or de-multiplexing elements are covered if they form part of the transmitter, receiver and/or transceiver.

The environmental classification used in this ETS refers to the environment classification used in the Generic Standards EN 50081-1 [1], EN 50082-1 [2] or the telecommunications centre environment ETS 300 386-1 [14].

The EMC requirements have been selected to ensure an adequate level of compatibility for apparatus at residential, commercial, light industrial or telecommunications centre environment. The levels do not cover extreme cases which may occur in any location but have 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 requirements 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 observations regarding apparatus 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

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] 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] EN 55022 (1994): "Limits and methods of measurement of radio interference characteristics of information technology equipment".

[4] CISPR 16-1: "Specification for radio disturbance and immunity measuring apparatus and methods; Part 1: Radio disturbance and immunity measuring apparatus".

[5] ENV 50140: "Electromagnetic compatibility - Basic immunity standard - Radiated, radio frequency electromagnetic field; Immunity test".

[6] EN 60801-2 (1993): "Electromagnetic compatibility for industrial-process measurement and control equipment - Part 2: Electrostatic discharge requirements".

[7] IEC 801-4 (1988): "Electromagnetic compatibility for industrial-process measurement and control equipment - Part 4: Electrical fast transient / burst requirements".

[8] ENV 50141: " Electromagnetic compatibility - Basic immunity standard - Conducted disturbances induced by radio-frequency fields".

[9] EN 61000-4-11: "Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques - Section 11: Voltage dips, short interruptions and voltage variations immunity tests".

[10] ENV 50142: "Electromagnetic compatibility - Basic immunity standard - Surge immunity test".

[11] ITU-T Recommendation G.821: " Error performance of an international digital connection forming part of an integrated services digital network".

[12] ITU-T Recommendation. G.826: " Error performance parameters and objectives for international, constant bit rate digital paths at or above the primary rate ".

[13] IEC 50 (161): "International Electrotechnical Vocabulary - Chapter 161 Electromagetic compatibility".

[14] ETS 300 386-1: " Equipment Engineering (EE); Public telecommunication network equipment Electro-Magnetic Compatibility (EMC) requirements; Part 1: Product family overview, compliance criteria and test levels".

3. Definitions

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

- the equipment cannot be used on a stand alone basis to provide user functions independently of a receiver, transmitter or transceiver; and

- the receiver, transmitter or 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 sub unit of the main equipment essential to the main equipment basic functions).

continuous phenomena (continuous disturbance): Electromagnetic disturbance, the effects of which on a particular device or equipment cannot be resolved into a succession of distinct effects IEC 50 (161) [13].

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

enclosure port: The physical boundary of the apparatus onto which an electromagnetic field may radiate or impinge.

radio communications equipment: An apparatus that includes one or more transmitters and/or receivers and/or parts thereof. This type of equipment (apparatus) is used in a fixed application but may be used as transportable equipment (semi fixed) to provide for provisional links.

transient phenomena: Pertaining to or designating a phenomena or a quantity which varies between two consecutive steady states during a time interval short compared with the time-scale of interest IEC 50 (161) [13].

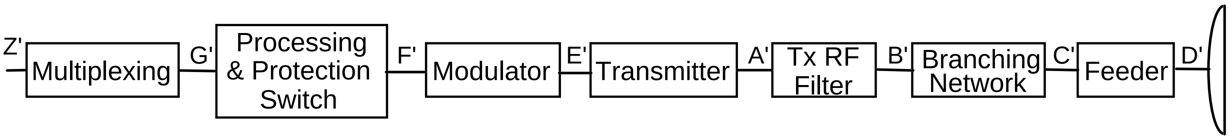
4 General test conditions

This clause defines the general test configuration and is relevant to clauses 8 and 9.

4.1 Test conditions and configurations

This subclause defines the test conditions and configurations for the emission and immunity tests as follows:

- a transmitter shall, as a minimum, comprise the element between E' and A' of figure 1. Additionally the transmitter may comprise any of the other elements from the transmitter chain shown in figure 1. If these additional elements are part of the transmitter or system they shall also meet the requirements of this ETS;

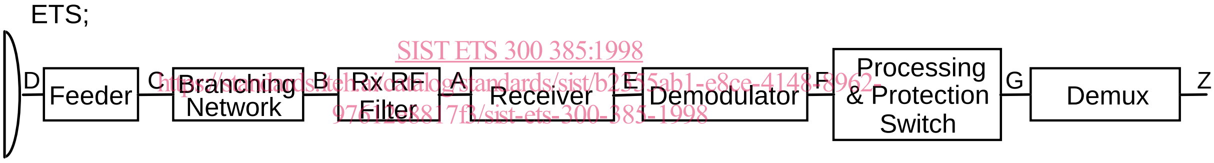


NOTE 1: For the purposes of defining the measurement points, the branching network (B' to C') does not include a hybrid.

NOTE 2: Points B' and C' may coincide, dependent on the equipment configuration.

Figure 1: Elements of a transmitter

- a receiver shall, as a minimum, comprise the element between A and E of figure 2. Additionally the receiver may comprise any of the other elements from the receiver chain shown in figure 2. If these additional elements are part of the receiver or system they shall also meet the requirements of this ETS;



NOTE 1: For the purposes of defining the measurement points, the branching network (B to C) does not include a hybrid.

NOTE 2: Points B and C may coincide, dependent on the equipment configuration.

Figure 2: Elements of a receiver

- a transceiver shall comprise as a minimum the elements E' to A' and A to E shown in figures 1 and 2, and additionally it may comprise any combinations of the other elements. If these additional elements are part of the transceiver they shall also meet the requirements of this ETS;

- the equipment shall be tested under conditions which are within the manufacturer's declared range of humidity, temperature and supply voltage;

- the test configuration shall be as close to normal intended use as possible;

- if the equipment is part of a system, or can be connected to ancillary equipment, then it shall be acceptable to test the equipment while connected to the minimum configuration of ancillary equipment necessary to exercise the ports;

- ports which in normal operation are connected shall be connected to an ancillary equipment or to a representative piece of cable correctly terminated to simulate the impedance of the ancillary equipment, RF input/output ports shall be correctly terminated;