SLOVENSKI STANDARD
SIST EN 301 489-12:2001

01-september-2001

Elektromagnetna združljivost (EMC) in zadeve v zvezi z radijskim spektrom (ERM) - Standard elektromagnetne združljivosti (EMC) za radijsko opremo in storitve - 12. del: Posebni pogoji za satelitske terminale z manjšo anteno in interaktivne zemeljske satelitske postaje, ki delujejo v fiksnih satelitskih storitvah (FSS) v frekvenčnih pasovih med 4 GHz in 30 GHz

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 12: Specific conditions for Very Small Aperture Terminal, Satellite Interactive Earth Stations operated in the frequency ranges between 4 GHz and 30 GHz in the Fixed Satellite Service (FSS)

Ta slovenski standard je istoveten z: **EN 301 489-12 Version 1.1.1**

ICS:

33.060.30	Radiorelejni in fiksni satelitski komunikacijski sistemi	Radio relay and fixed satellite communications systems
33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

SIST EN 301 489-12:2001 **en**

ETSI EN 301 489-12 V1.1.1 (2000-12)

Candidate Harmonized European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 12: Specific conditions for Very Small Aperture Terminal, Satellite Interactive Earth Stations operated in the frequency ranges between 4 GHz and 30 GHz in the Fixed Satellite Service (FSS)

Reference
DEN/ERM-EMC-219-12

Keywords
EMC, radio, earth station, regulation, satellite,
testing, FSS, VSAT, SNG

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Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

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

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [4] (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document, together with EN 301 489-1 [1], is intended to become a Harmonized EMC 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 [3] as amended), and the Council Directive on the approximation of the laws of the Member States relating to radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (the "R&TTE Directive" 1999/5/EC [2]).

The present document is part 12 of a multi-part deliverable covering the ElectroMagnetic Compatibility (EMC) standard for radio equipment and services, as identified below:

Part 1: "Common technical requirements";

Part 2: "Specific conditions for radio paging equipment";

Part 3: "Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz";

Part 4: "Specific conditions for fixed radio links and ancillary equipment and services";

Part 5: "Specific conditions for Private land Mobile Radio (PMR) and ancillary equipment (speech and non-speech)";

Part 6: "Specific conditions for Digital Enhanced Cordless Telecommunications (DECT) equipment";

Part 7: "Specific conditions for mobile and portable radio and ancillary equipment of digital cellular radio telecommunications systems (GSM and DCS)";

Part 8: "Specific conditions for GSM base stations";

Part 9: "Specific conditions for wireless microphones and similar Radio Frequency (RF) audio link equipment";

Part 10: "Specific conditions for First (CT1 and CT1+) and Second Generation Cordless Telephone (CT2) equipment";

Part 11: "Specific conditions for FM broadcasting transmitters";

Part 12: "Specific conditions for Earth Stations operated in the frequency ranges between 4 GHz and 30 GHz in the Fixed Satellite Service (FSS)";

Part 13: "Specific conditions for Citizens' Band (CB) radio and ancillary equipment (speech and non-speech)";

Part 15: "Specific conditions for commercially available amateur radio equipment";

Part 16: "Specific conditions for analogue cellular radio communications equipment, mobile and portable";

Part 17: "Specific conditions for Wideband data and HIPERLAN equipment";

Part 18: "Specific conditions for Terrestrial Trunked Radio (TETRA) equipment";

Part 19: "Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1,5 GHz band providing data communications";

Part 20: "Specific conditions for Mobile Earth Stations (MES) used in the Mobile Satellite Services (MSS)";

Part 22: "Specific conditions for ground based VHF aeronautical mobile and fixed radio equipment".

National transposition dates	
Date of adoption of this EN:	17 November 2000
Date of latest announcement of this EN (doa):	28 February 2001
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 August 2001
Date of withdrawal of any conflicting National Standard (dow):	31 August 2002

1 Scope

The present document, together with EN 301 489-1 [1], covers the assessment of Earth Stations (ES) operated in the frequency ranges between 4 GHz and 30 GHz in the Fixed Satellite Service (FSS) as defined in annex A in respect of Electromagnetic Compatibility (EMC).

Technical specifications related to the antenna port and emissions from the enclosure port of the Earth Stations (ES) are not included in the present document. Such technical specifications are found in the relevant product standards for the effective use of the radio spectrum.

The present document specifies the applicable test conditions, performance assessment and the performance criteria for the ESs, and associated ancillary equipment.

In case of differences (for instance concerning special conditions, definitions, abbreviations) between the present document and EN 301 489-1 [1], the provisions of the present document take precedence.

The environmental classification and the emission and immunity requirements used in the present document are as stated in EN 301 489-1 [1], except for any special conditions included in the present document. The applicable environments referred to in EN 301 489-1 [1] where equipment covered by the scope of the present document may be used, shall be declared by the manufacturer.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, 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] ETSI EN 301 489-1 (V1.2.1) (2000): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements".

[2] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications equipment and the mutual recognition of their conformity.

[3] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility.

[4] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.

[5] EN 55022: "Limits and methods of measurement of radio disturbance characteristics of information technology equipment".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 301 489-1 [1] and the following apply:

carrier-on state: transmit ES is in this state when it is authorized to transmit, and when it transmits a signal, either authorized by a Centralized Control and Monitoring Function (CCMF) or a Network Control Facility (NCF) when designed for unattended operation or by local control when designed for attended operation

carrier-off state: transmit ES is in this state when it is authorized to transmit, and when it does not transmit any signal, either authorized by a CCMF or a NCF when designed for unattended operation or by local control when designed for attended operation.

NOTE: The existence of a carrier-off state depends on the system of transmission used. For ES designed for continuous transmission mode there may be no carrier-off state.

transmission disabled state: transmit ES is in this state when it is not authorized to transmit either by a CCMF or a NCF respectively when designed for unattended operation or by local control when designed for attended operation

3.2 Abbreviations

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

CCMF	Centralized Control and Monitoring Functions
CMF	Control and Monitoring Functions
EIRP	Equivalent Isotropically Radiated Power
EMC	ElectroMagnetic Compatibility
ES	Earth Station
EUT	Equipment Under Test
FSS	Fixed Satellite Service
LNB	Low Noise Block converter
NCF	Network Control Facility
QTMA	Quality of Transmission Measurement Apparatus
RF	Radio Frequency
SIT	Satellite Interactive Terminals
SNG	Satellite News Gathering
SUT	Satellite User Terminals
TES	Transportable Earth Station
VSAT	Very Small Aperture Terminal

4 Test conditions

For the purposes of the present document, the test conditions of EN 301 489-1 [1], clause 4 shall apply as appropriate. Further product type related test conditions for Earth Stations are specified in the present document.

4.1 General

For Earth Stations with or without ancillary equipment, and/or various terrestrial ports, the number of test configurations shall be determined. The assessment shall include sufficient representative configurations of the ES to adequately exercise the equipment. These configurations shall be recorded in the test report.

In the following clauses, the Equipment Under Test (EUT) is an ES with the selected configuration of ancillary equipment.

4.2 Arrangements for test signals

The provisions of EN 301 489-1 [1], subclause 4.2 shall apply with the following modifications.

In order to measure the unwanted emissions and electromagnetic immunity under operational conditions, the following arrangements shall be provided by the manufacturer:

a) a special test equipment to put the ES terminal in its normal operating mode, and providing the ES with a receive signal to emulate the operational conditions of reception. This equipment shall control the EUT, when it is capable of transmission, so that it switches between the transmission disabled, carrier-on and carrier-off states;

b) the specific Quality of Transmission Measurement Apparatus (QTMA).

For the measurement of the quality of transmission a communications link shall be established and the wanted input signal shall be applied to the Radio Frequency (RF) input of the receiver via the antenna.

The special test equipment, the QTMA and the source of the wanted input signal shall be located outside the test environment. Adequate measures shall be taken to protect them from the effects of all the radiated fields within the test environment.

4.2.1 Arrangements for test signals at the input of transmitters

The provisions of EN 301 489-1 [1], subclause 4.2.1 shall apply.

4.2.2 Arrangements for test signals at the output of transmitters

The provisions of EN 301 489-1 [1], subclause 4.2.2 shall apply.

4.2.3 Arrangements for test signals at the input of receivers

The provisions of EN 301 489-1 [1], subclause 4.2.3 shall apply with the following modification.

For tests on the receiver, the level of the signal received from the test transmitter shall be as close as possible to the normal operation level of the EUT receiver.

4.2.4 Arrangements for test signals at the output of receivers

The provisions of EN 301 489-1 [1], subclause 4.2.4 shall apply.

4.2.5 Arrangements for testing transmitter and receiver together (as a system)

The provisions of EN 301 489-1 [1], subclause 4.2.5 shall apply.

4.3 Exclusion bands

There are no exclusion bands for ESs within in the scope of the present document.

4.4 Narrow band responses of receivers

Narrow band responses are not allowed for ESs within in the scope of the present document.

5 Performance assessment

5.1 General

The provision of EN 301 489-1 [1], subclause 5.1 shall apply.

In addition the manufacturer shall provide the following information to be recorded in the test report:

- the dedicated grade (A or B) for the ES in accordance with the information contained in the instructions accompanying the ES (see subclause 5.3);
- the ranges of the operational parameters, e.g. the power delivered to the antenna, the frequency ranges;
- the minimum quality of transmission, and the method to be used to assess it.

This information shall be in accordance with the documentation accompanying the equipment.

5.2 Equipment configuration(s)

For radiation measurements in carrier-on state, the ES shall be put in a continuous transmit mode or to the maximum burst rate where applicable. The ES shall be operated at the highest normal operating Equivalent Isotropically Radiated Power (EIRP) or, if that is the maximum attainable, then 3 dB below such maximum.

A suggested test configuration is shown in figure 1.

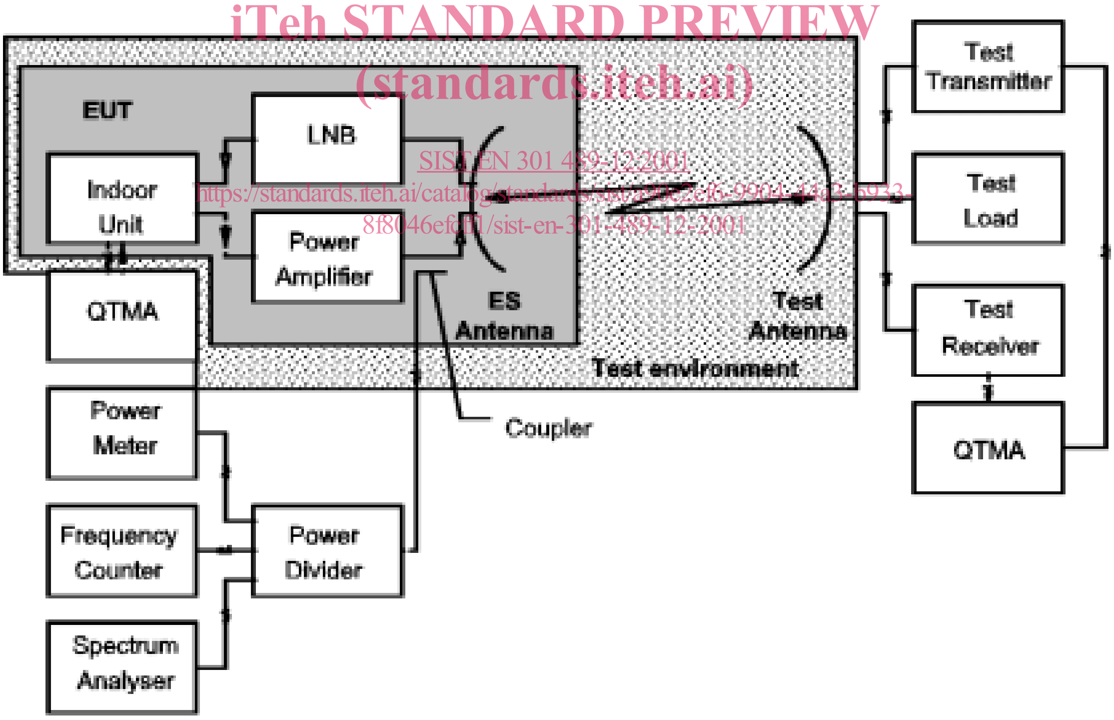

Figure 1: Suggested test configuration

For the tests, the ES antenna reflector and the test antenna may be removed at their flanges and be replaced by one direct wave guide connection.