SLOVENSKI STANDARD
SIST ETS 300 740 E1:2006

01-februar-2006

Satelitske zemeljske postaje in sistemi (SES) ï Pomorske mobilne zemeljske postaje (MMES), ki delujejo v frekvenļ nih pasovih 1,5/1,6 GHz in zagotavljajo podatkovne komunikacije z nizkimi bitnimi hitrostmi (LBRDC) v pomorski mobilni satelitski storitvi (MMSS), ki ni namenjena nujnostnim in varnostnim komunikacijam

Satellite Earth Stations and Systems (SES); Maritime Mobile Earth Stations (MMES) operating in the 1,5/1,6 GHz bands providing Low Bit Rate Data Communications (LBRDC) in the Maritime Mobile Satellite Service (MMSS), not intended for distress and safety communications

Ta slovenski standard je istoveten z: **ETS 300 740 Edition 1**

ICS:

33.060.30	Radiorelejni in fiksni satelitski komunikacijski sistemi	Radio relay and fixed satellite communications systems
47.020.70	Navigacijska in krmilna oprema	Navigation and control equipment

SIST ETS 300 740 E1:2006 **en**

EUROPEAN TELECOMMUNICATION STANDARD

ETS 300 740

April 1997

Source: ETSI TC-SES

Reference: DE/SES-05003

ICS: 33.020

Key words: Maritime, mobile, satellite, service, MMSS, earth station, MES, data, LBRDC

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Satellite Earth Stations and Systems (SES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

Transposition dates	
Date of adoption:	7 March 1997
Date of latest announcement of this ETS (doa):	31 July 1997
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 January 1998
Date of withdrawal of any conflicting National Standard (dow):	31 January 1998

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1 Scope

This European Telecommunication Standard (ETS) provides specifications for the standardization of the characteristics of Maritime Mobile Earth Stations (MMESs) not providing those distress and safety functions required by the International Maritime Organization (IMO) with both transmit and receive capabilities in order to limit interference to radio communications services.

The geostationary satellite networks referred to in this ETS operate under the Maritime Mobile Satellite Service (MMSS). The MMESs operate as part of a geostationary satellite network providing Low Bit-Rate Data Communications (LBRDC). The frequency bands allocated by the Radio Regulations [5] to the MMSS are as follows:

	MMSS
Transmit frequencies	1 626,5 to 1 645,5 MHz
Receive frequencies	1 525,0 to 1 545,0 MHz

The MMESs could consist of a number of modules including a keyboard interface to the user.

The main specifications are contained in three categories related to:

- **safety:** to protect persons from potentially dangerous RF power densities;

- **unwanted emissions:** to protect terrestrial and satellite radio services from harmful interference;

- **MMES control and monitoring:** to specify a minimum set of Control and Monitoring Functions (CMF) to be implemented on each MMES in order to minimize the probability that they originate unwanted transmissions that may give rise to harmful interference to other systems.

Additionally to these specifications the satellite operator may require other specifications or different limits.

2 Normative references

This ETS incorporates, by dated or undated references, 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] CISPR Publication No. 16 (1987): "CISPR specification for radio interference measuring apparatus and measurement methods".

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

[3] IEC 510-2-1 (1978): "Methods of measurement for radio equipment used in satellite earth stations, Part 2: Measurement for sub systems".

[4] ETS 300 459: "Satellite Earth Stations and Systems (SES); Network Control Facilities (NCF) for Maritime Mobile Earth Stations (MMES) operating in the 1,5/1,6 GHz and 11/12/14 GHz bands providing Low Bit Rate Data Communications (LBRDC)".

[5] ITU Radio Regulations (1994).

3 Definitions and abbreviations

3.1 Definitions

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

Internally Mounted Equipment (IME): Equipment or units designed to be protected from the weather.

Externally Mounted Equipment (EME): Equipment or units designed to be exposed to the weather.

nominated bandwidth: The bandwidth of the MMES radio frequency transmission is nominated by the manufacturer. The nominated bandwidth encompasses all spectral elements of the transmission which have a level greater than the specified spurious levels. The nominated bandwidth is wide enough to take account of the transmit carrier frequency stability. The nominated bandwidth is within the MMSS transmit frequency band within which the MMES operates.

unwanted emissions: Unwanted emissions are emissions falling outside the nominated bandwidth.

Special Test Equipment (STE): Specific equipment which enables the tests specified in this ETS to be carried out.

Equipment Under Test (EUT): For the purpose of this ETS the EUT includes all units necessary for intended operation.

This includes:

- the Externally Mounted Equipment (EME);
- the Internally Mounted Equipment (IME) including the data terminal equipment such as keyboard, Video Display Units (VDU), printer, etc.;
- all interconnecting cables and power supply leads.

3.2 Abbreviations

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

ac	alternating current
CMF	Control and Monitoring Function
EIRP	Equivalent Isotropically Radiated Power
EME	Externally Mounted Equipment
EUT	Equipment Under Test
IME	Internally Mounted Equipment
IMO	International Maritime Organization
LBRDC	Low Bit Rate Data Communication
MES	Mobile Earth Station
MMES	Maritime Mobile Earth Station
MMSS	Maritime Mobile Satellite Service
NCF	Network Control Facilities
RF	Radio Frequency
STE	Special Test Equipment

4 Tests

4.1 Special Test Equipment (STE)

The STE shall be supplied by the manufacturer or system provider. Since the STE will be specific for the particular system, it is not possible to provide detailed specifications in this ETS. However, the following baseline is provided:

- special test arrangements are required to simulate the satellite signal, thus enabling the MMES to transmit, to allow measurement of transmission parameters;

- any specification of these special test arrangements which may have direct or indirect effects on any specification of this ETS shall be clearly stated by the manufacturer;

- when using the STE it shall be ensured that no transmission to the satellite occurs.

4.2 Test report

The test report shall contain:

- the value of the nominated bandwidth declared by the manufacturer;

- the results of the tests;

- all parameters and operational conditions.

5 Radio Frequency (RF)

In this clause, whenever a change of limit between adjacent frequency bands occurs, the lower of the two limits shall apply at the transition frequency.

5.1 Radio frequency radiation protection

Purpose:

To ensure the protection of persons from potentially dangerous RF power densities.

Specification:

The radiating part of the equipment (which includes the exterior of any radome or other antenna enclosure where fitted) shall be labelled with a warning notice which shall be clearly visible when the equipment is in its normal operating configuration. This notice shall indicate the closest distances to the radiating part within which a person may approach the equipment without experiencing radio frequency power density levels in excess of 8, 10, 25 and 100 W/m^2, when under worst case conditions (e.g. maximum power, maximum on/off ratio), averaged over a 6 minute period. This notice shall also state that before approaching the radiating part within any distance closer than that indicated, the MMES equipment shall be switched-off or otherwise disabled so that it shall not transmit.

Where the radiating part is mounted in a position where it is not normally visible, further warning notices shall be provided to be attached to the ship so as to be clearly visible to anyone attempting to reach the radiating part of the equipment.

In the case where the antenna is enclosed in a radome, or other antenna enclosure, and when no RF power density greater than 8 W/m^2, when under worst case conditions (e.g. maximum power, maximum on/off ratio), averaged over a 6 minute period, is produced outside of this radome, or antenna enclosure, then it is not necessary to label the radiating part or provide labels for the ship in the manner indicated above. Instead, the external surface of the radome or the antenna enclosure shall be clearly labelled with a warning that the MMES equipment shall be switched-off, or otherwise disabled, so that it shall not transmit before any work requiring the removal of the radome or antenna enclosure takes place.

Verification:

Verification of the distances below which exist RF power densities in excess of 8, 10, 25 and 100 W/m^2, when under worst case conditions (e.g. maximum power, maximum on/off ratio) averaged over a 6 minute period, shall be demonstrated by documentary evidence. The manufacturer shall quantify the worst case conditions.

Conformance with the labelling requirements of this subclause shall be demonstrated by visual inspection of the radiating part and, if relevant, an examination of the notices provided by the manufacturer.