SLOVENSKI STANDARD
SIST EN 300 734:2000

01-maj-2000

Satelitska osebna komunikacijska omrežja (S-PCN) - Mobilne zemeljske postaje (MES), vključno z ročnimi zemeljskimi postajami za S-PCN, ki delujejo v frekvenčnem pasu 2,0 GHz in omogočajo govorne in/ali podatkovne komunikacije pri mobilnih satelitskih storitvah (MSS)

Satellite Personal Communications Networks (S-PCN); Mobile Earth Stations (MES), including handheld earth stations, for S-PCN in the 2,0 GHz bands, providing voice and/or data communications under the Mobile Satellite Service (MSS)

Ta slovenski standard je istoveten z: **EN 300 734 Version 1.1.1**

ICS:

33.060.30	Radiorelejni in fiksni satelitski komunikacijski sistemi	Radio relay and fixed satellite communications systems

SIST EN 300 734:2000 **en**

EN 300 734 V1.1.1 (1998-05)

European Standard (Telecommunications series)

Satellite Personal Communications Networks (S-PCN); Mobile Earth Stations (MES), including handheld earth stations, for S-PCN in the 2,0 GHz bands, providing voice and/or data communications under the Mobile Satellite Service (MSS)

Reference
DEN/SES-05014 (6so00ico.PDF)

Keywords
S-PCN, mobile, satellite, service, MSS, earth station, MES, multimode

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES).

The maintenance of the present document and in particular the values of the table 2 will take into account the results of the studies undertaken in accordance with the ITU-R Recommendation M 8/BL/27.

National transposition dates	
Date of adoption of this EN:	1 May 1998
Date of latest announcement of this EN (doa):	31 August 1998
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	28 February 1999
Date of withdrawal of any conflicting National Standard (dow):	28 February 1999

1 Scope

The present document sets out the minimum performance requirements and technical characteristics of Mobile Earth Stations (MESs) with both transmit and receive capabilities for operation in a Satellite Personal Communication Network (S-PCN).

An S-PCN MES may be handheld, portable, vehicle-mounted, host connected, semi-fixed or fixed equipment, or may be an element in a multi-mode terminal; it may consist of a number of modules with associated connections and user interface, or may be a self contained single unit.

If the MES is an element in a multi-mode terminal, unless otherwise stated in the present document, its requirements apply only to the S-PCN MES element of the terminal operating in one or more of the Mobile Satellite Service (MSS) frequency bands given in table 1.

Table 1: MSS frequency bands

	MSS frequency bands
MESs transmit	1 980 - 2 010 MHz
MESs receive	2 170 - 2 200 MHz

The requirements of the present document are divided in two major categories:

- **unwanted emission limits:** to protect other radio services from harmful interference generated by the MES in normal use;
- **MES Control and Monitoring Functions (CMF):** to protect other radio services from unwanted transmissions from the MES. The CMF in each MES is capable of answering to commands from the Network Control Facilities (NCF) for its S-PCN.

NOTE: The requirements for NCF for S-PCN are contained in ETS 300 735 (see annex F).

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, subsequent revisions do apply.

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] CCITT Recommendation O.153 (1988): "Characteristics of distortion and error-rate measuring apparatus for data transmission".

3 Definitions and abbreviations

3.1 Definitions

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

applicant: A party seeking an approval, or to place an S-PCN MES on the European market, i.e. the manufacturer of the equipment, or his authorized representative, or an equipment supplier to the European market.

carrier-on state (allocated a channel): An MES is in this state when it is transmitting a signal in a continuous or non-continuous mode.

carrier-off state (idle mode): An MES is in this state when it is powered-on but not transmitting a signal, i.e. not in carrier-on state.

conducted measurement: A measurement of emissions from an antenna port of the MES made by direct wired connection to the port.

Equivalent Isotropically Radiated Power (EIRP): The product of transmitter power and maximum antenna gain, equivalent to an isotropic source radiating uniformly in all directions.

handheld: Indicates a Portable Equipment (PE) MES which is self-contained and is small enough and light enough to be carried and used during a call with one hand.

host-connected: Indicates an MES for which connection to or integration with host equipment is necessary to offer functionality.

host equipment: Is any equipment which has a complete user functionality when not connected to the MES, and to which the MES provides additional functionality, and to which connection is necessary for the MES to offer functionality.

Installable Equipment (IE), Internally Mounted Equipment (IME) and Externally Mounted Equipment (EME): An IE is an equipment which is intended to be installed in a vehicle. An IE may consist of one or several interconnected modules. The IE is composed of modules intended to be externally mounted as declared by the applicant, and defined as EME and the remaining modules(s) as IME.

Laboratory Test Equipment (LTE): A logical grouping that contains the standard test equipment provided by a test laboratory.

MSS band: A continuous range of frequencies allocated by the International Telecommunications Union (ITU) to the MSS.

multi-mode: Indicates equipment that accommodates radio stations of different radio networks.

narrow-band system: A narrow band system is one in which the nominal carrier frequency spacing for MESs in the earth-to-space direction is less than 300 kHz.

network control channel: A channel by which an MES receives general control information from the NCF of its S-PCN.

NCF control message: A message, normally originating from a network, to a specified terminal or set of terminals of the network which indicates to the terminal or set of terminals that it/they should carry out some specific action or should enter or maintain some specific state. For test purposes NCF control messages may originate from Special Test Equipment (STE).

nominated Bandwidth (B_n): The B_n of the MES Radio Frequency (RF) transmission is wide enough to encompass all spectral elements of the transmission which have a level greater than the specified levels of unwanted emissions. The B_n is defined relative to the MES actual carrier frequency f_c.

B_n is the width of the frequency interval (f_c - a, f_c + b), where a and b, which shall be specified by the applicant, may vary with f_c.

The frequency interval (f_c - a, f_c + b) shall not encompass more than either:

i) when a = b, 4 nominal carrier frequencies for narrow-band systems;

ii) when a ≠ b, 1 nominal carrier frequency for narrow-band systems; or

iii) 1 nominal carrier frequency for wide-band systems.

The frequency interval (f_c - a, f_c + b) shall be within the operational band of the MES.

operational band: The sub-portion of the band 1 980 to 2 010 MHz which has been assigned in the earth-to-space direction to the MSS network, within which the MES is operating.

Portable Equipment (PE): A PE is generally intended to be self-contained, free standing and portable. A PE would normally consist of a single module, but may consist of several interconnected modules.

radiated measurement: A measurement of an actual radiated field.

Special Test Equipment (STE): An equipment which allows a test laboratory to control the MES so that the tests required by the present document can be performed.

test laboratory: A laboratory authorized by an accreditation body, which performs conformance testing in accordance with the SES and Telecommunications Terminal Equipment (TTE) directives.

test load: The test load is a substantially non-reactive, non-radiating power attenuator which is capable of safely dissipating the power from the transmitter(s).

unwanted emissions: Unwanted emissions are those falling outside the Bn in the carrier-on state and those generated in the carrier-off state.

wide-band system: A wide-band system is one in which the nominal carrier frequency spacing for MESs in the earth-to-space direction is equal or greater than 300 kHz.

3.2 Abbreviations

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

ASD	Acceleration Spectral Density
B_n	nominated Bandwidth
CCITT	Comité Consultatif International Télégraphique et Téléphonique (now ITU-T)
CDMA	Code Division Multiple Access
CMF	Control and Monitoring Functions
dBW	deciBels relative to 1 Watt
EIRP	Equivalent Isotropically Radiated Power
EMC	Electro-Magnetic Compatibility
EME	Externally Mounted Equipment
IE	Installable Equipment
IEC	International Electrotechnical Commission/Committee
IME	Internally Mounted Equipment
ITU	International Telecommunications Union
LTE	Laboratory Test Equipment
MES	Mobile Earth Station
MSS	Mobile Satellite Service
MIC	MES unique Identification Code (within its S-PCN)
NCF	Network Control Facility
PE	Portable Equipment
RF	Radio Frequency
SES	Satellite Earth Stations and Systems or, in the case of the SES Directive, Satellite Earth Station
S-PCN	Satellite Personal Communications Network
STE	Special Test Equipment
TDMA	Time Division Multiple Access
TTE	Telecommunications Terminal Equipment

4 General

4.1 Presentation of equipment for testing purposes

The applicant may provide to a test laboratory one or more preliminary or production models of the MES equipment, as appropriate, for testing for conformance against the technical requirements of the present document.

If the MES is intended for use with an active antenna, this shall be provided as part of the MES.

If a statement of conformance with the present document is given by the test laboratory on the basis of tests on a preliminary model, then the statement of conformance shall apply to corresponding production models only if they are identical in all technical respects with the preliminary model tested.

4.2 Description of equipment

The applicant shall provide to the test laboratory a statement which contains all of the information related to the MES and its testing environment which will enable the test laboratory to run an appropriate test suite against the MES.

This shall include:

- self contained or host-connected;
- single-mode or multi-mode.

NOTE 1: in the case of a multi-mode MES, the other modes of operation shall be stated.

- Antenna:
  - active; or
  - passive, with an antenna port available; or
  - passive, no antenna port available.

NOTE 2: If the MES has an active antenna, the antenna is regarded as an integral part of the MES.

NOTE 3: If the MES is intended for use with a passive antenna, the maximum gain of any antenna intended to be used with the equipment is to be stated.

NOTE 4: If conducted emissions measurements are to be performed, at the choice of the applicant, the maximum antenna gain at the frequency of particular measured spurious emissions may be stated.

- the method by which the equipment can be switched into its test modes.

NOTE 5: If STE is required see annex A, clause A.2.

- the fault conditions which cause transmission shut-down;
- the nominal, the lower extreme and the higher extreme operational voltages.

in an information leaflet, for each S-PCN for which the MES is designed to operate:

1) the name of the S-PCN;
2) the maximum value of Bn for that S-PCN, as defined by the network operator;
3) the a and b values of the Bn for each nominal carrier frequency of the MES;
4) the operating frequency range(s) of the MES;
5) the frequency sub-bands and operating conditions for which the different EIRP density limits apply;
6) the maximum gross data rate at which the MES is designed to operate;

7) the agreement of the network operator to the above information.

4.3 Host-connected equipment

For testing of equipment for which connection to, or integration with, host equipment is required to offer functionality, the applicant shall supply a statement indicating which of the test configurations detailed in clause B.4 shall be used.

5 Unwanted emissions outside the band 1 980,1 MHz to 2 009,9 MHz (carrier-on)

5.1 Purpose

Protection of other radio services operating outside the band 1 980,0 to 2 010,0 MHz from emissions caused by S-PCN MESs operating within the band 1 980,1 to 2 009,9 MHz.

5.2 Conformance requirements

The maximum EIRP density of the unwanted emissions from the MES outside the band 1 980,1 to 2 009,9 MHz shall not exceed the limits in table 2.

In table 2, whenever a change of limit between adjacent frequency bands occurs, the lower of the two limits shall apply at the transition frequency.

Table 2: Unwanted emissions outside the band 1 980,1 to 2 009,9 MHz

Frequency (MHz)	Carrier - on		
	EIRP deciBels relative to 1 Watt (dBW)	Measurement bandwidth	Measurement method
0,1 - 30	-66	10 kHz	Peak hold
30 - 1 000	-66	100 kHz	Peak hold
1 000 - 1 559	-60	3 MHz	Average
1 559 - 1 626,5	-70	1 MHz	Average (over 20 ms)
1 626,5 - 1 950	-60	3 MHz	Average
1 950 - 1 960	-60	1 MHz	Average
1 960 - 1 970	-60	300 kHz	Average
1 970 - 1 975	-60	100 kHz	Average
1 975 - 1 978,1	-60	30 kHz	Average
1 978,1 - 1 980,1	The levels in table 4 for the frequency offset 0 to 2 MHz shall apply from 1 980,1 to 1 978,1 MHz		
1 980,1 - 2 009,9	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
2 009,9 - 2 011,9	The levels in table 4 for the frequency offset 0 to 2 MHz shall apply from 2 009,9 to 2 011,9 MHz		
2 011,9 - 2 015	-60	30 kHz	Average
2 015 - 2 020	-60	100 kHz	Average
2 020 - 2 030	-60	300 kHz	Average
2 030 - 2 040	-60	1 MHz	Average
2 040 - 2 600	-60	3 MHz	Average
2 600 - 12 750	-60	3 MHz	Peak hold

The conformance requirements apply for the full range of environmental conditions corresponding to the type of equipment as specified in clause B.2.