



SLOVENSKI STANDARD

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iTeh STANDARD PREVIEW

Satellite Earth Stations and Systems (SES); Harmonized EN for Mobile Earth Stations (MESS) of Geostationary mobile satellite systems, including handheld earth stations, for Satellite Personal Communications Networks (S-PCN) in the 1,5/1,6 GHz bands under the Mobile Satellite Service (MSS) covering essential requirements under article 3.2 of the R&TTE Directive

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ETSI EN 301 681 V1.3.2 (2003-01)

Candidate Harmonized European Standard (Telecommunications series)

**Satellite Earth Stations and Systems (SES);
Harmonized EN for Mobile Earth Stations (MESs) of
Geostationary mobile satellite systems, including handheld
earth stations, for Satellite Personal Communications
Networks (S-PCN) in the 1,5/1,6 GHz bands under the Mobile
Satellite Service (MSS) covering essential requirements
under article 3.2 of the R&TTE Directive**

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Foreword

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

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 98/34/EC [7] (as amended) laying down a procedure for the provision of information in the field of technical standards and regulations.

The present document is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity ("the R&TTE Directive") [1].

Technical specifications relevant to Directive 1999/5/EC [1] are given in annex A.

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Introduction

ETSI has designed a modular structure for the standards. Each standard is a module in the structure. The modular structure is shown in figure 1.

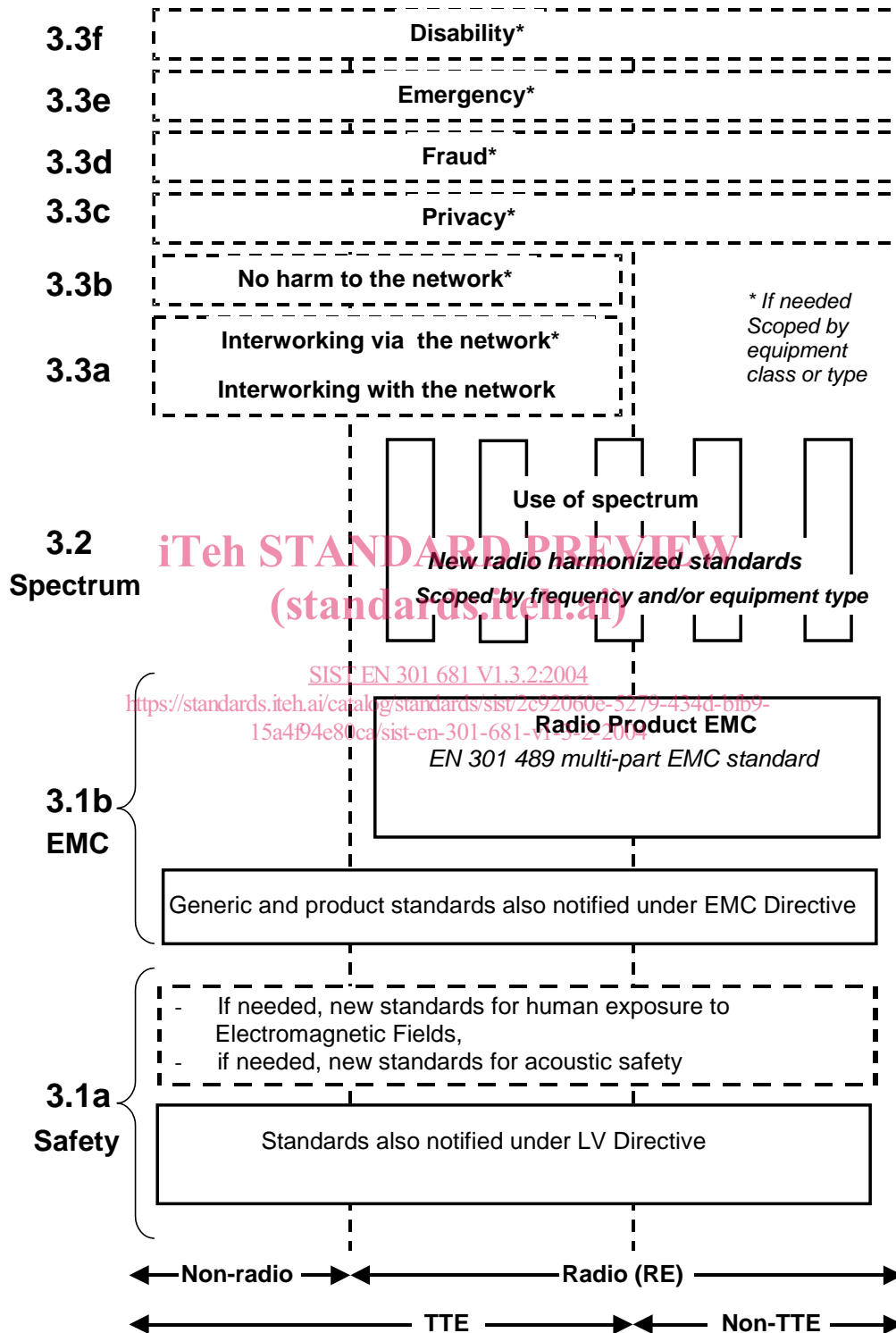


Figure 1: Modular structure for the various standards used under the R&TTE Directive

The left hand edge of the figure 1 shows the different clauses of article 3 of the R&TTE Directive [1].

For article 3.3 various horizontal boxes are shown. Dotted lines indicate that at the time of publication of the present document essential requirements in these areas have to be adopted by the Commission. If such essential requirements are adopted, and as far and as long as they are applicable, they will justify individual standards whose scope is likely to be specified by function or interface type.

The vertical boxes show the standards under article 3.2 for the use of the radio spectrum by radio equipment. The scopes of these standards are specified either by frequency (normally in the case where frequency bands are harmonized) or by radio equipment type.

For article 3.1b the diagram shows EN 301 489, the multi-part product EMC standard for radio used under the EMC Directive [2].

For article 3.1a the diagram shows the existing safety standards currently used under the LV Directive [3] and new standards covering human exposure to electromagnetic fields. New standards covering acoustic safety may also be required.

The bottom of the figure shows the relationship of the standards to radio equipment and telecommunications terminal equipment. A particular equipment may be radio equipment, telecommunications terminal equipment or both. A radio spectrum standard will apply if it is radio equipment. An article 3.3 standard will apply as well only if the relevant essential requirement under the R&TTE Directive [1] is adopted by the Commission and if the equipment in question is covered by the scope of the corresponding standard. Thus, depending on the nature of the equipment, the essential requirements under the R&TTE Directive [1] may be covered in a set of standards.

The modularity principle has been taken because:

- it minimizes the number of standards needed. Because equipment may, in fact, have multiple interfaces and functions it is not practicable to produce a single standard for each possible combination of functions that may occur in an equipment;
- it provides scope for standards to be added:
 - under article 3.2 when new frequency bands are agreed; or
 - under article 3.3 should the Commission take the necessary decisions;
 without requiring alteration of standards that are already published;
- it clarifies, simplifies and promotes the usage of Harmonized Standards as the relevant means of conformity assessment.

The technical requirements in the present document are applied under article 3.2 of the R&TTE Directive, concerning the effective uses of the spectrum allocated to terrestrial/space radio communication and orbital resources so as to avoid harmful interference. These requirements are in two major categories:

emissions 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 Network Control Facilities (NCF) for S-PCN are contained in EN 301 682 [6].

The determination of the parameters of the user earth stations using a given satellite for the protection of the spectrum allocated to that satellite, is considered to be under the responsibility of the satellite operator or the satellite network operators.

1 Scope

The present document applies to S-PCN MES for Geostationary mobile satellite systems with an EIRP less than or equal to 15 dBW.

The present document sets out the minimum performance requirements and technical characteristics of Mobile Earth Stations (MES) with both transmit and receive capabilities for operation in a Satellite Personal Communication Network (S-PCN) in the Mobile Satellite Service (MSS) frequency band given in table 1.

Table 1: Mobile Satellite Service (MSS) frequency band

Transmission path	MSS frequency band
MESs transmit	1 626,5 MHz to 1 660,5 MHz
MESs receive	1 525 MHz to 1 559 MHz

An S-PCN MES may be handheld, portable, vehicle-mounted, host connected, semi-fixed or fixed equipment, or may be an element in a multimode 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 multimode terminal, unless otherwise stated in the present document, its requirements apply only to the S-PCN MES element of the terminal operating in the MSS frequency band given in table 1.

The present document is intended to cover the provisions of Directive 1999/5/EC [1] (R&TTE Directive) article 3.2 which states that "...radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of article 3 of the R&TTE Directive [1] may apply to equipment within the scope of the present document.

NOTE 1: A list of such ENs is included on the web site <http://www.newapproach.org/>.

NOTE 2: These MESs are controlled and monitored by a Network Control Facility (NCF). The NCF is outside the scope of the present document.

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 and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

- [1] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).
- [2] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive).
- [3] Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits (LV Directive).
- [4] ITU-T Recommendation O.153 (1992): "Basic parameters for the measurement of error performance at bit rates below the primary rate".

- [5] CISPR 16-1 Second edition: "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1: Radio disturbance and immunity measuring apparatus" (annex G: Validation of the open area test site for the frequency range of 30 MHz to 1 000 MHz).
- [6] ETSI EN 301 682: "Satellite Personal Communications Networks (S-PCN); Network Control Facilities (NCF) for Mobile Earth Stations (MESs), including handheld earth stations, for S-PCN in the 1,5/1,6 GHz bands, providing voice and/or data communications under the Mobile Satellite Service (MSS)".
- [7] 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.

3 Definitions and abbreviations

3.1 Definitions

For the purpose of the present document, the terms and definitions given in the R&TTE Directive [1], and the following apply:

applicant: manufacturer or his authorized representative within the European Community or the person responsible for placing the apparatus on the market

carrier-on time (initial bursts): period when an MES is transmitting a signal

NOTE: For MESs that transmit in a non-continuous mode, the carrier-on time only includes the times when the MES is transmitting a signal.

carrier-on state: MES is in this state when it is authorized by the NCF to transmit and when it transmits a signal.

carrier-off state: MES is in this state when either it is authorized by the Network Control Facility (NCF) to transmit but when it does not transmit any signal, or when it is not authorized by the NCF to transmit.

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

environmental profile: range of environmental conditions under which equipment within the scope of the present document is required to comply with the provisions of the present document

Equivalent Isotropically Radiated Power (EIRP): product of transmitter power and the antenna gain in the direction considered, relative to an isotropic source radiating uniformly in all directions

fellow radio station: one of the (other) modes of a multimode MES

handheld: indicates an 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: 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): Installable Equipment (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 Externally Mounted Equipment (EME) and the remaining module(s) as Internally Mounted Equipment (IME).

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

MSS band: continuous range of frequencies allocated by the ITU to the MSS

multimode: indicates equipment that accommodates radio stations of different radio networks

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

NCF control message: 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

NOTE: For test purposes NCF control messages may originate from Special Test Equipment (STE).

nominated bandwidth (B_n): The nominated bandwidth of the MES radio frequency transmission is nominated by the applicant. The nominated bandwidth is wide enough to encompass all spectral elements of the transmission necessary for communication and which have a level greater than the specified unwanted emissions limits. The nominated bandwidth is wide enough to take account of the transmit carrier frequency stability. The nominated bandwidth is centred on the transmit frequency and does not exceed 180 % of the 3dB bandwidth of the signal. The nominated bandwidth is within the assigned part of the MSS transmit frequency band within which the MES operates.

3dB Bandwidth (B_{3dB}): total width of the signal spectrum 3 dB below the maximum in-band density

operational frequency range(s): sub-portion(s) of the band 1 626,5 MHz to 1 660,5 MHz in the earth-to-space direction to the MSS network, for which the equipment has been designed as declared by the applicant

Portable Equipment (PE): equipment generally intended to be self-contained, free standing and portable

NOTE: A PE would normally consist of a single module, but may consist of several interconnected modules.

radiated measurement: measurement of an actual radiated field

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

test laboratory: laboratory which performs the conformance testing of the MES against the present document

NOTE: The test laboratory may be the applicant's laboratory.

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

transmission format: physical characteristics of the signal that is transmitted by an MES

NOTE: An MES may use more than one transmission format within a single S-PCN.

unwanted emissions: emissions falling outside the nominated bandwidth in the carrier-on state and those generated in the carrier-off state

3.2 Abbreviations

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

B _{3dB}	3dB Bandwidth
B _n	Nominated Bandwidth
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
LV	Low Voltage
MES	Mobile Earth Station

MIC	MES Identification Code
MSS	Mobile Satellite Service
NCF	Network Control Facility
PE	Portable Equipment
R&TTE	Radio and Telecommunications Terminal Equipment
RF	Radio Frequency
S-PCN	Satellite Personal Communications Network
STE	Special Test Equipment
TDMA	Time Division Multiple Access

4 Technical requirement specifications

4.1 Environment profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be declared by the applicant. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared operational environmental profile.

The environmental profile for operation of the equipment shall include the ranges of humidity, temperature and supply voltage.

Table 2: Void

4.2 Conformance requirements

4.2.1 Unwanted emissions outside the band 1 626,5 MHz to 1 660,5 MHz (carrier-on state)

4.2.1.1 Justification

Protection of other radio services operating outside the band 1 626,5 MHz to 1 660,5 MHz from emissions caused by S-PCN MESs operating within the band 1 626,5 MHz to 1 660,5 MHz.