SLOVENSKI STANDARD
SIST EN 301 681:2001

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Satelitske zemeljske postaje in sistemi (SES) - Harmonizirani EN za mobilne zemeljske postaje (MES), vključno z roļnimi zemeljskimi postajami za S-PCN, ki delujejo v frekvenļnih pasovih 1,5/1,6 GHz, ki podpirata govorne in/ali podatkovne komunikacije pri mobilnih satelitskih storitvah

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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Candidate Harmonized European Standard (Telecommunications series)

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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 (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 [1] 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.

National transposition dates	
Date of adoption of this EN:	15 December 2000
Date of latest announcement of this EN (doa):	31 March 2001
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 September 2001
Date of withdrawal of any conflicting National Standard (dow):	30 September 2001

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.

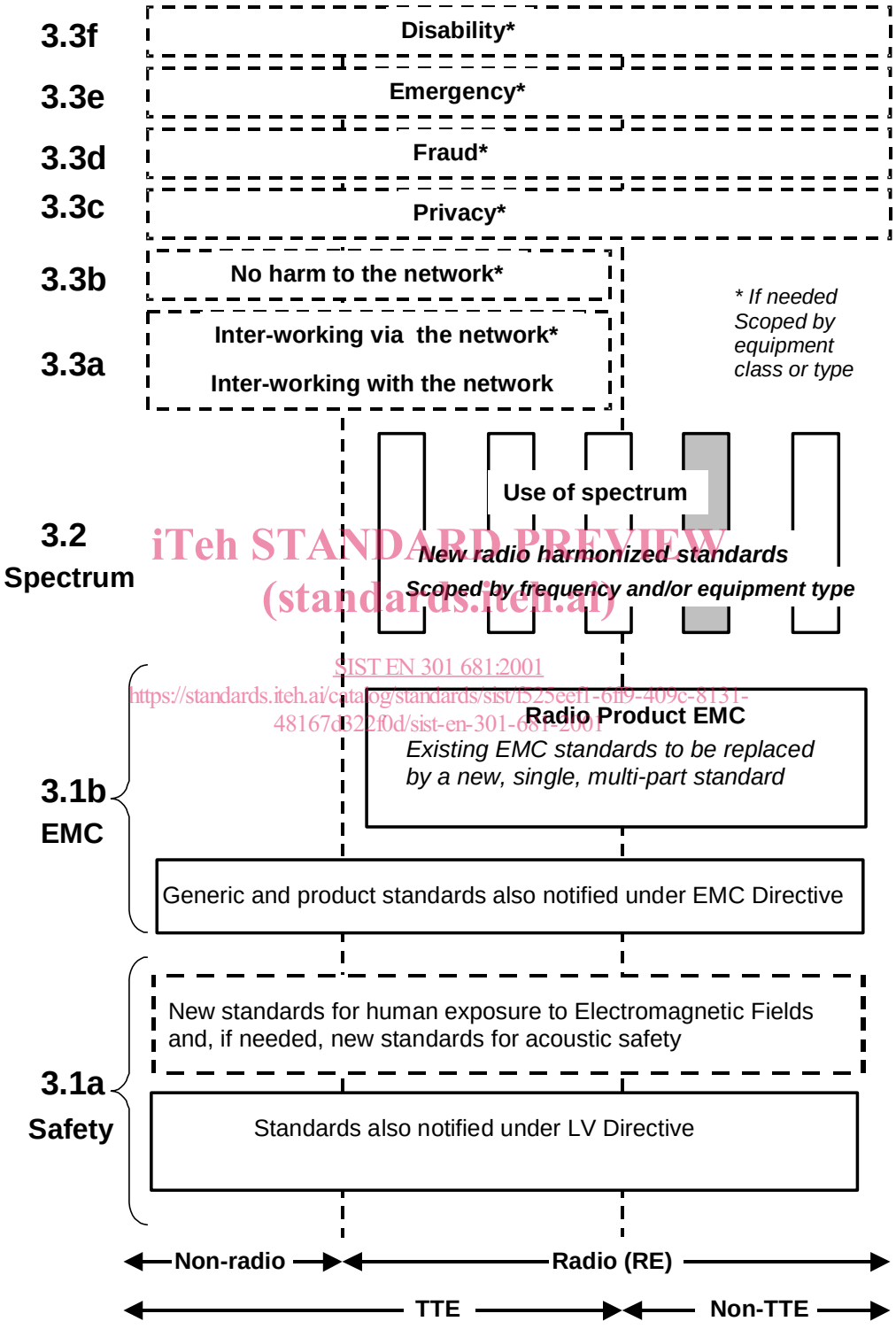

Figure 1: Modular structure for the various standards used under the R&TTE Directive

The left hand edge of the figure 1 shows the different subclauses 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 this standard 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 the new single multi-part product EMC standard for radio, and the existing collection of generic and product standards currently used under the EMC Directive [2]. The parts of this new standard will become available in the second half of 2000, and the existing separate product EMC standards will be used until it is available.

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 Articles 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 (see Bibliography).

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 one or more of the Mobile Satellite Service (MSS) frequency bands given in table 1.

Table 1: Mobile Satellite Service (MSS) frequency bands

Transmission path	MSS frequency bands
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 one or more of the MSS frequency bands 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, 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] 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.

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

[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.

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

[5] CISPR 16-1 (1993) and Amendment 1 (1997): "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).

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): carrier-on time is the period when an MES is transmitting a signal. 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 maximum antenna gain, equivalent 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 modules(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

narrow-band system: 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: 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. For test purposes NCF control messages may originate from Special Test Equipment (STE)

nominated bandwidth (Bn): Bn of the Mobile Earth Station (MES) radio frequency 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 Bn is defined relative to the MES actual carrier frequency f_c.

Bn 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:

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

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

3) 1 nominal carrier frequency for wideband systems.

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

NOTE: Explanation of nominated bandwidth is presented in annex B.

operational band: sub-portion of the band 1 626,5 MHz to 1 660,5 MHz which has been assigned in the earth-to-space direction to the MSS network, within which the MES is operating

Portable Equipment (PE): Portable Equipment (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: 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. The test laboratory may be the applicant's laboratory

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

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

wideband system: wideband 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:

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