



# SLOVENSKI STANDARD

## SIST EN 301 441:2001

01-september-2001

GUHf]hg\_YnYa Y'g\_Y'dcghUfY]b'g]ghYa ]'fG9GL!'<Ufa cb]n]fUb]'9B'nUa cV]bY  
nYa Y'g\_Y'dcghUfY]fA9GLžj\_`f bc'n'fc b]a ]'nYa Y'g\_]a ]'dcghUfUa ]'nUG!D7Bž\_]  
XYi Y'c'j\_ZY\_j Yb b]`dUgcj]`%Ž #Bž'; <nždf]a cV]b]`gUfY]hg\_]`ghcf]hj U ž\_]  
nUfYa UV]ghj YbY'nU hfj Y'`YbUX]fY\_hj Y'`&F/ HH9

Satellite Earth Stations and Systems (SES); Harmonized EN for Mobile Earth Stations (MESS), including handheld earth stations, for Satellite Personal Communications Networks (S-PCN) in the 1,6/2,4 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 301 441 V1.1.1 (2000-05)

*Candidate Harmonized European Standard (Telecommunications series)*

**Satellite Earth Stations and Systems (SES);  
Harmonized EN for Mobile Earth Stations (MESs),  
including handheld earth stations, for Satellite Personal  
Communications Networks (S-PCN) in the 1,6/2,4 GHz bands  
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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 [3] (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").

### National transposition dates

Date of adoption of this EN:	28 April 2000
Date of latest announcement of this EN (doa):	31 July 2000
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 2001
Date of withdrawal of any conflicting National Standard (dow):	31 January 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.

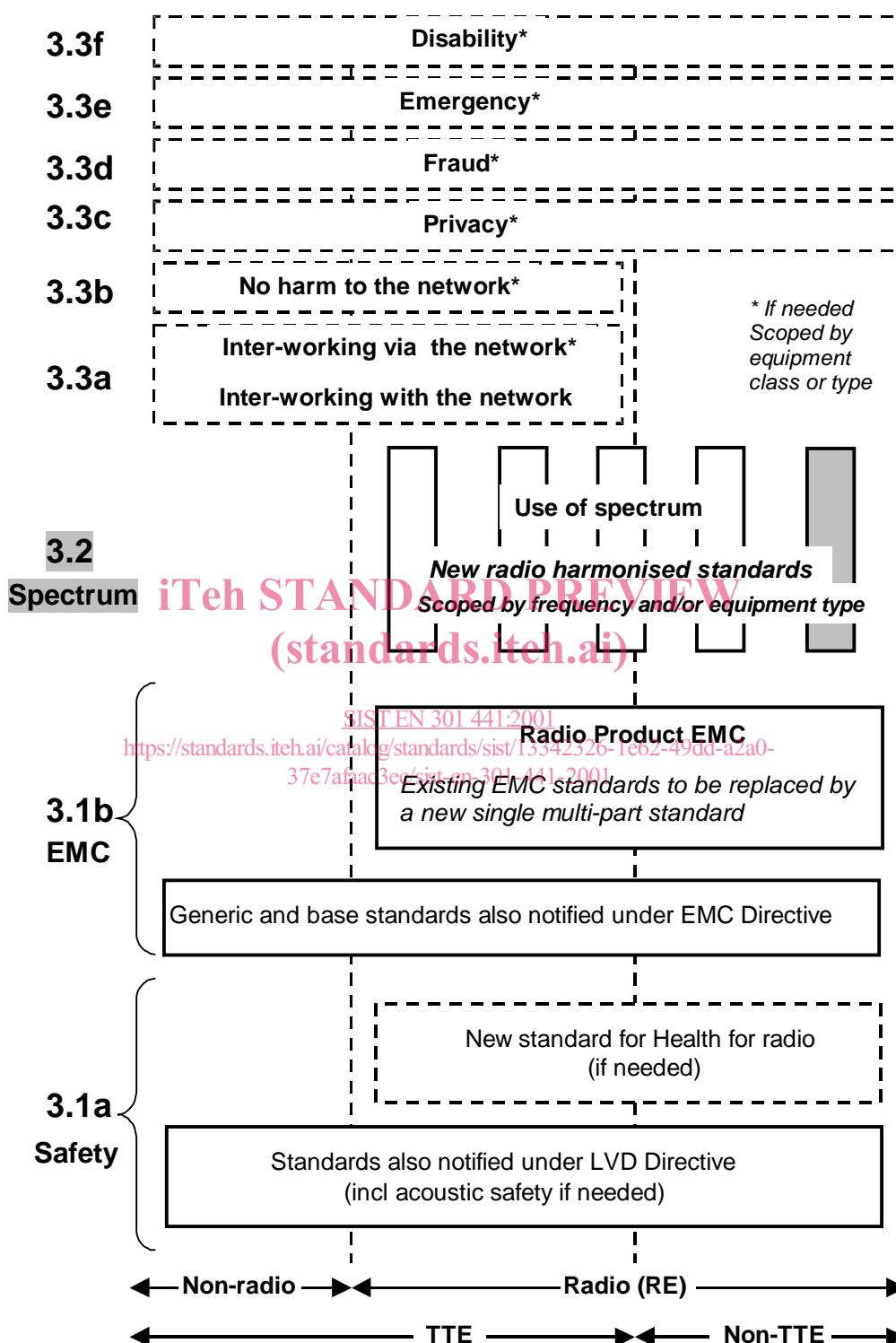


Figure 1: Modular structure for the various standards used under the R&TTE Directive

The left hand edge of the figure shows the different subclauses of Article 3 of the Directive.

For article 3.3 various horizontal boxes are shown. Their dotted lines indicate that no essential requirements in these areas have yet been adopted by the Commission. If such essential requirements are adopted, they will be elaborated in 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. 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 3.1(b), the diagram shows the new single multi-part product EMC standard for radio, and the existing collection of generic and base standards currently used under the EMC Directive. The parts of this new standard will become available in the second half of 2 000, and the existing separate EMC standards will be used until it is available.

For article 3.1(a) the diagram shows the existing safety standards currently used under the LVD Directive and the possibility of a new standard on health relating to radio emissions

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.

The modular approach has been taken because:

- it minimizes the number of standards needed. Because equipment may 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.

The present document has been produced by the Satellite Earth Stations and Systems (SES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

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The present document is based on TBR 041 [4].

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 ETS 300 735 [5].

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

# 1 Scope

The present document applies to Mobile Earth Station (MES) radio equipment which have the following characteristics:

- these MES have both transmit and receive capabilities and operate in a Satellite-Personal Communications Network (S-PCN). An S-PCN MES may be a 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;
- these MES are capable in operating in all or part of the frequency bands shown in table 1:

**Table 1: Mobile Satellite Service frequency bands**

MES	MSS frequency bands
Transmit	1 610 MHz to 1 626,5 MHz
Receive	1 613,8 MHz to 1 626,5 MHz
Receive	2 483,5 MHz to 2 500,0 MHz

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 ETSI web site.

NOTE 2: These LMESs 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 equipment and the mutual recognition of their conformity.
- [2] CCITT Recommendation O.153 (1988): "Basic parameters for the measurement of error performance at bit rates below the primary rate".
- [3] 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.

- [4] TBR 041: "Satellite Personal Communications Networks (S-PCN); Mobile Earth Stations (MES), including handheld earth stations, for S-PCN in the 1,6/2,4 GHz bands under the Mobile Satellite Service (MSS); Terminal essential requirements".
- [5] ETS 300 735: "Satellite Personal Communications Networks (S-PCN); Network Control Facilities (NCF) for Mobile Earth Stations (MES), including handheld earth stations, for S-PCN in the 1,6/2,4 GHz and the 2,0 GHz bands, providing voice and/or data communications under the Mobile Satellite Service (MSS)".
- [6] Final Acts of the World Radio Conference (WRC '95); Geneva 1995.
- [7] IEC Publication 68-2-1: "Environmental testing - Part 2: Tests. Tests A: Cold".
- [8] IEC Publication 68-2-2: "Environmental testing - Part 2: Tests. Tests B: Dry heat".
- [9] IEC Publication 68-2-36: "Environmental testing. Part 2: Tests. Test Fdb: Random vibration wide band - Reproducibility Medium".

## 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 terms and definitions apply .

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

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

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

**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.

**handheld:** indicates a 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):** 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.

**multi-mode:** 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:

- i) when  $a = b$ , 4 nominal carrier frequencies for narrow-band systems;
- ii) when  $a \neq b$ , 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.

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

**operational band:** sub-portion of the 1 610 MHz to 1 626,5 MHz band 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).

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

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