SLOVENSKI STANDARD
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Satelitske zemeljske postaje in sistemi (SES) - Kopenske mobilne zemeljske postaje (LMES), ki delujejo v pasovih 1,5 GHz in 1,6 GHz, za zagotavljanje govornih oziroma podatkovnih komunikacij

Satellite Earth Stations and Systems (SES); Land Mobile Earth Stations (LMES) operating in the 1,5 GHz and 1,6 GHz bands providing voice and/or data communications

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Satellite Earth Stations and Systems (SES); Land Mobile Earth Stations (LMES) operating in the 1,5 GHz and 1,6 GHz bands providing voice and/or data communications

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Foreword

This Technical Basis for Regulation (TBR) has been produced by the Satellite Earth Stations and Systems (SES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

The present document has been produced by ETSI in response to a mandate from the European Commission issued under Council Directive 83/189/EEC (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 Council Directive 91/97/EEC of 29 October 1993 supplementing Directive 91/263/EEC in respect of satellite earth station equipment (the "SES Directive").

A common technical regulation may be established by the European Commission in accordance with the Directive.

This TBR is based on ETS 300 423 which has been used for type approval purposes on a national basis for several years.

Due to a new requirement for the protection of the Aeronautical Radio Navigation Service based on the Global Navigation Satellite System (GNSS), scheduled to offer approach and landing operational services likely not before the year 2005, new limits for unwanted emissions will be necessary. These new limits may not be completely met by existing or presently marketed equipment that was developed on the basis of ETS 300 423. Consequently the following transitional arrangement is necessary.

This TBR incorporates two sets of limits. One set (table 2a) applicable up to 1 June 2002 and a more stringent set of limits (table 2b) applicable after this date for the protection of the Aeronautical Radio Navigation Service in the GNSS band.

This TBR is intended to be part of an Intermediate Common Technical Regulation (I-CTR), the applicability of which is expected to be limited to 1 June 2002. It is intended that the final CTR contains only table 2b as normative and table 2a as an informative historical annex.

A TBR is limited to being the basis for equipment type approval. This TBR therefore cannot contain regulations for the prevention of interference to GNSS operation after 2005 due to terminals type approved prior to 1 June 2002, on the basis of this TBR or on the basis of a past national regulation (e.g. based on ETS 300 423).

The protection of the GNSS band from the year 2005 onwards from harmful interference from LMESs approved before 1 June 2002 or already in service before the CTR enters into force may be obtained either by decisions of the national regulatory authorities to stop the operation of such equipment, or by operational restrictions agreed by the regulatory authority with satellite operators. It is recommended that such decisions should be harmonized at the European level. Such decisions are outside the scope of a TBR.

Introduction

The Satellite Earth Station (SES) Directive [1] which supplements the Telecommunications Terminal Equipment (TTE) Directive [2] concerns the harmonization of conditions for the placing on the market of such equipment.

Two classes of standards are applicable to SES equipment. European Telecommunication Standards (ETS) give the full technical specifications for this equipment, whereas Technical Bases for Regulation (TBR) give the essential requirements under the SES Directive [1] and the TTE Directive [2] for placing such equipment on the market. Receive-only equipment not intended for terrestrial connection to the public telecommunications network may be put into use. Nothing in this TBR shall be construed to prevent the use of Community internal production control procedures as set out in the annexes to the two Directives for such receive-only equipment. This TBR is based on ETS 300 423 (see annex B, Bibliography).

1 Scope

This Technical Basis for Regulation (TBR) specifies the technical requirements that apply to Land Mobile Earth Stations (LMES) for compliance with Articles 4.1 and 4.3 of the SES Directive [1].

These LMES have the following characteristics:

- the LMES are operating in one or more frequency ranges of the Land Mobile Satellite Service (LMSS):
    - 1 525,0 MHz to 1 544,0 MHz (space-to-earth);
    - 1 555,0 MHz to 1 559,0 MHz (space-to-earth);
    - 1 631,5 MHz to 1 634,5 MHz (earth-to-space);
    - 1 656,5 MHz to 1 660,5 MHz (earth-to-space);
- the LMES could be either vehicle mounted or portable equipment;
- the LMES operate through geostationary satellites as part of a network providing voice and/or data communications;
- the LMES are controlled and monitored by a Network Control Facility (NCF). The NCF is outside the scope of this TBR.

This TBR applies to the LMES operated under the conditions which are within the ranges of humidity, temperature and supply voltage declared by the manufacturer.

The requirements have been selected to ensure an adequate level of compatibility with other radio services. The levels, however, do not cover extreme cases which may occur in any location but with a low probability of occurrence.

This TBR may not cover those cases where a potential source of interference which is producing individually repeated transient phenomena or a continuous phenomenon is present, e.g. a radar or broadcast site in the near vicinity. In such a case it may be necessary to use special protection applied to either the source of interference, or the interfered part or both.

This TBR does not contain any requirement, recommendation or information about the installation of the LMES.

Compliance of a LMES to the requirements of this TBR does not imply compliance to any requirement related to the use of the LMES (e.g. licensing requirements).

2 Normative references

This TBR incorporates by dated or undated reference, provisions from other publications. These 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 TBR only when incorporated into it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] SES Directive: "Council Directive 93/97/EEC of 29 October 1993 supplementing Directive 91/263/EEC in respect of satellite earth station equipment".

[2] TTE Directive: "Council Directive 91/263/EEC of 29 April 1991 on the approximation of the laws of Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity".

[3] ETS 300 339 (1997): "Radio Equipment and Systems (RES); General electromagnetic compatibility (EMC) for radio communications equipment".

[4] CISPR N 16-1 (1993): "Specification for radio interference measuring apparatus and measurements methods; Part 1: Radio disturbance and immunity measuring apparatus; Annex G: Validation procedure of open area test site for the frequency range of 30 MHz to 1 000 MHz".

NOTE: This TBR also contains a number of informative references which have been included to indicate the sources from which various material has been derived, hence they do not have an associated normative reference number. Details of these publications are given in annex B (Bibliography).

3 Definitions and abbreviations

3.1 Definitions

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

antenna transmit gain: The ratio, expressed in decibels, of the power that would have to be supplied to an isotropic radiator to the power supplied to the antenna being considered, so that they produce the same field strength at the same distance in the same direction.

carrier-off state: A LMES 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.

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

Control Channel (CC): A channel or channels by which LMES receive control information from the NCF for their network.

Externally Mounted Equipment (EME): The EME consists of those of the modules of the IE which are intended to be mounted externally to the vehicle as stated by the manufacturer.

Installable Equipment (IE): An equipment which is intended to be fitted to a vehicle. An IE may consist of one or several interconnected modules.

Internally Mounted Equipment (IME): Those of the modules of the IE which are not declared by the manufacturer as EME are defined as Internally Mounted Equipment (IME).

manufacturer: The legal entity responsible under the terms of the SES Directive [1] for placing the product on the market in a member state.

nominated bandwidth: The bandwidth of the LMES radio frequency transmission is nominated by the manufacturer. 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 within the LMSS transmit frequency band within which the LMES operates.

Portable Equipment (PE): A portable equipment 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.

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

3.2 Abbreviations

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

CC	Control Channel
CMF	Control and Monitoring Functions
EIRP	Equivalent Isotropically Radiated Power
EMC	ElectroMagnetic Compatibility
EME	Externally Mounted Equipment
EUT	Equipment Under Test
IE	Installable Equipment
IME	Internally Mounted Equipment
LMES	Land Mobile Earth Station
LMSS	Land Mobile Satellite Service
MES	Mobile Earth Station
NCF	Network Control Facility
PE	Portable Equipment
RF	Radio Frequency
STE	Special Test Equipment

4 Requirements

4.1 Unwanted emissions outside the band 1 625,8 MHz to 1 661,2 MHz

4.1.1 Justification

Protection of terrestrial and satellite services from emissions caused by LMES outside the band 1 625,8 MHz to 1 661,2 MHz.

4.1.2 Specification

Unwanted emissions from Mobile Earth Stations (MESs) outside the band 1 625,8 MHz to 1 661,2 MHz shall be below the following limits.

1) The unwanted emissions over the frequency range 30 MHz to 1 000 MHz shall not exceed the limits in table 1.

Table 1: Limits of unwanted emissions up to 1 000 MHz at a measuring distance of 10 m

Frequency (MHz)	Quasi-peak limits (dB(µV/m))
30 to 230	30
230 to 1 000	37

The lower limit shall apply at the transition frequency.

2) The unwanted emissions Equivalent Isotropically Radiated Power (EIRP) above 1 000 MHz in the measurement bandwidth and in all directions shall not exceed:

- before 1 June 2002 the limits of table 2a;
- from 1 June 2002 the limits of table 2b.

Table 2a: Limits of unwanted emissions above 1 000 MHz and outside the bands 1 625,8 MHz to 1 661,2 MHz, applicable before 1 June 2002

Frequency range (MHz)	Carrier-on		Carrier-off	
	EIRP limit (dBpW)	Measurement bandwidth (kHz)	EIRP limit (dBpW)	Measurement bandwidth (kHz)
1 000,0 to 1 525,0	49	100	48	100
1 525,0 to 1 559,0	49	100	17	3
1 559,0 to 1 600,0	49	100	48	100
1 600,0 to 1 625,8	74	100	48	100
1 625,8 to 1 661,2	(note 1)	(note 1)	(note 1)	(note 1)
1 661,2 to 1 690,0	74	100	48	100
1 690,0 to 3 400,0	49 (note 2)	100	48	100
3 400 to 10 700	55 (notes 3 & 4)	100	48	100
10 700 to 21 200	61	100	54	100
21 200 to 40 000	67	100	60	100

NOTE 1: The unwanted emissions in that frequency range are limited by subclause 4.2.

NOTE 2: In the band 3 263,0 MHz to 3 321,0 MHz the maximum EIRP in one, and only one, 100 kHz measurement bandwidth shall not exceed 82 dBpW. Elsewhere in this band the power limit in table 2a shall be applied.

NOTE 3: In each of the bands 4 894,5 MHz to 4 981,5 MHz, 6 526,0 MHz to 6 642,0 MHz and 8 175,5 MHz to 8 302,5 MHz the maximum EIRP in one, and only one, 100 kHz measurement bandwidth shall not exceed 72 dBpW. Elsewhere in this band the power limit in table 2a shall be applied.

NOTE 4: In the band 9 789,0 MHz to 9 963,0 MHz the maximum power EIRP in one, and only one, 100 kHz measurement bandwidth shall not exceed 61 dBpW. Elsewhere in this band the power limit in table 2a shall be applied.