



# SLOVENSKI STANDARD

## PSIST TBR 027:1999

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Satellite Earth Stations and Systems (SES); Low data rate Land Mobile satellite Earth Stations (LMES) operating in the 11/12/14 GHz frequency bands

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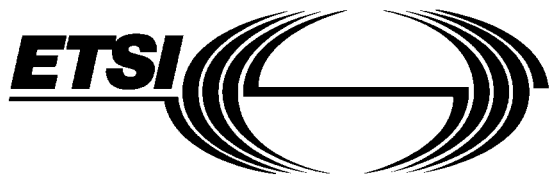
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## Foreword

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).

## Introduction

The Council Directive in respect of satellite earth station equipment (SES Directive [1]) which supplements the Council Directive on the approximation of the laws of the Member States concerning telecommunications terminal equipment, including the mutual recognition of their conformity (TTE Directive [2]) concerns the harmonization of conditions for the placing on the market of such equipment.

Two classes of standards are applicable to satellite earth station equipment. European Telecommunication Standards (ETSS) give the full technical specifications for this equipment, whereas Technical Bases for Regulation (TBRs) 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 is 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 300 255 (see Bibliography).

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## 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 Fixed Satellite Service (FSS):

- 10,70 GHz to 11,70 GHz (space to earth);
- 12,50 GHz to 12,75 GHz (space to earth);
- 14,00 GHz to 14,25 GHz (earth to space).

Because the transmissions from the LMES to the Satellite in the 14,00 GHz to 14,25 GHz band fall under a secondary allocation, the transmissions should not cause harmful interference to primary services (e.g. the Fixed Satellite Service (FSS)) and at the same time cannot claim protection from harmful interferences from those services.

- The LMES could be either vehicle mounted or portable equipment.
- The LMES could consist of a number of modules including a keyboard interface to the user.
- The LMES use linear polarization.
- The LMES operate through a geostationary satellite at least 3° away from any other geostationary satellite operating in the same frequency band and covering the same area.
- The antenna of the LMES may be omnidirectional or directional with a means of tracking the satellite.
- The LMES are operating as part of a satellite network used for the distribution and/or exchange of information between users.
- 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 with its ancillary equipment and its various terrestrial ports, and 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] Council Directive 93/97/EEC of 29 October 1993 supplementing Directive 91/263/EEC in respect of satellite earth station equipment. Called in the present document the "SES Directive".
- [2] 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. Called in the present document the "TTE Directive".
- [3] prETS 300 339 (1996): "Radio Equipment and Systems (RES); General Electro-Magnetic Compatibility (EMC) Standard for Radio-communications equipment".
- [4] CISPR 16-1, annex G (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.

## 3 Definitions and abbreviations

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### 3.1 Definitions

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

**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:** An 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 of their network.

**Externally Mounted Equipment (EME):** The EME consists of those of the modules of the Installable Equipment (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 IME.

**manufacturer:** The legal entity responsible under the terms of Council Directive 93/97/EEC (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 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 transmit frequency band within which the LMES operates.

**Portable Equipment (PE):** A PE is generally intended to be self-contained, free standing and portable. Normally, a PE would 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
ETS	European Telecommunication Standard
EUT	Equipment Under Test
FSS	Fixed Satellite Service
IE	Installable Equipment
IME	Internally Mounted Equipment
LMES	Land Mobile Earth Station
NCF	Network Control Facility
PE	Portable Equipment
RF	Radio Frequency
rms	root mean square
STE	Special Test Equipment

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## 4 Requirements

### 4.1 Unwanted emissions outside the band

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#### 4.1.1 Justification

Protection of terrestrial and satellite services from emissions caused by LMES outside the band 14,00 GHz to 14,25 GHz.

#### 4.1.2 Specification

The unwanted emissions in the measurement bandwidth and in all directions from the LMES outside the band 14,00 GHz to 14,25 GHz, within which the LMES is designed to operate, shall be below the following limits:

- 1) The LMES shall not exceed the limits for radiated interference field strength over the frequency range from 30 MHz to 1 000 MHz specified in table 1.

**Table 1: Limits of unwanted emissions up to 1 000 MHz at a measuring distance of 10 m in a 120 kHz bandwidth**

Frequency (MHz)	Quasi-peak limits (dB $\mu$ V/m)
30 to 230	30
230 to 1 000	37

The lower limit shall apply at the transition frequency.