SLOVENSKI STANDARD
SIST EN 301 681 V2.1.2:2017

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Satelitske zemeljske postaje in sistemi (SES) - Harmonizirani standard, ki zajema bistvene zahteve člena 3.2 direktive 2014/53/EU, za mobilne zemeljske postaje (MES) geostacionarnih mobilnih satelitskih sistemov, vključno z ročnimi zemeljskimi postajami, za satelitska osebna komunikacijska omrežja (S-PCN) pri mobilni satelitski storitvi (MSS), ki delujejo v frekvenčnih pasovih 1,5 GHz in 1,6 GHz

Satellite Earth Stations and Systems (SES) - Harmonised Standard for Mobile Earth Stations (MESs) of Geostationary mobile satellite systems, including handheld earth stations, for Satellite Personal Communications Networks (S-PCN) under the Mobile Satellite Service (MSS) operating in the 1,5 GHz and 1,6 GHz frequency bands covering the essential requirements of article 3.2 of the Directive 2014/53/EU

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Satellite Earth Stations and Systems (SES); Harmonised Standard for Mobile Earth Stations (MES) of Geostationary mobile satellite systems, including handheld earth stations, for Satellite Personal Communications Networks (S-PCN) under the Mobile Satellite Service (MSS), operating in the 1,5 GHz and 1,6 GHz frequency bands covering the essential requirements of article 3.2 of the Directive 2014/53/EU

Reference

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Keywords

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Foreword

This Harmonised European Standard (EN) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES).

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.3] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.5].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

National transposition dates	
Date of adoption of this EN:	12 September 2016
Date of latest announcement of this EN (doa):	31 December 2016
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 June 2017
Date of withdrawal of any conflicting National Standard (dow):	30 June 2018

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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Introduction

The present document is part of a set of standards developed by ETSI and is designed to fit in a modular structure to cover all radio equipment within the scope of the RE Directive [i.5]. The modular structure is shown in ETSI EG 201 399 [i.1]. 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.

Following the WRC-03 decision [i.4] to allocate to MSS the bands 1 518 MHz to 1 525 MHz (space to Earth) and 1 668 MHz to 1 675 MHz (Earth to space) and the conclusions of WRC-07, a new set of emission requirements for LMESs that are capable of transmitting in the frequency band from 1 668,0 MHz to 1 675,0 MHz were specified.

The two parts of the L-band frequency allocations are treated as two sub-bands which may be used separately or in any combination. The original L-band allocation is referenced in the present document as "sub-band 1" and the extended L-band is referenced as "sub-band 2".

Table 3a is applicable for MESs that are capable of transmitting in any combination of either or both of these sub-bands. Table 3a is recommended for all new MESs, including MESs that can only operate in sub-band 1.

The applicant may choose between table 3 and table 3a for new MESs that are capable of transmitting in only the sub-band 1: the applicant has to declare which alternative is used.

The present document specifies a new set of receiver performance requirements for LMESs under the new Radio Equipment Directive 2014/53/EU [i.5].

Figure 1: Void

Recital 10 of Directive 2014/53/EU [i.5] states that "*In order to ensure that radio equipment uses the radio spectrum effectively and supports the efficient use of radio spectrum, radio equipment should be constructed so that: in the case of a transmitter, when the transmitter is properly installed, maintained and used for its intended purpose it generates radio waves emissions that do not create harmful interference, while unwanted radio waves emissions generated by the transmitter (e.g. in adjacent channels) with a potential negative impact on the goals of radio spectrum policy should be limited to such a level that, according to the state of the art, harmful interference is avoided; and, in the case of a receiver, it has a level of performance that allows it to operate as intended and protects it against the risk of harmful interference, in particular from shared or adjacent channels, and, in so doing, supports improvements in the efficient use of shared or adjacent channels*."

Recital 11 of Directive 2014/53/EU [i.5] states that "*Although receivers do not themselves cause harmful interference, reception capabilities are an increasingly important factor in ensuring the efficient use of radio spectrum by way of an increased resilience of receivers against harmful interference and unwanted signals on the basis of the relevant essential requirements of Union harmonisation legislation*."

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 any combination of all or any part of the Mobile Satellite Service (MSS) frequency bands sub-band 1 and sub-band 2 defined in table 1.

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

Table 1: Mobile Satellite Service (MSS) frequency band

Sub-band	Transmission path	MSS frequency band
1	MESs transmit 1	1 626,5 MHz to 1 660,5 MHz
	MESs receive 1	1 525 MHz to 1 559 MHz
2	MESs transmit 2	1 668,0 MHz to 1 675,0 MHz
	MESs receive 2	1 518,0 MHz to 1 525,0 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 2014/53/EU [i.5] (RE Directive) article 3.2 which states that "*….radio equipment shall be so constructed that it both effectively uses and supports the efficient use of radio spectrum in order 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 Radio Equipment Directive (RED) [i.5] may apply to equipment within the scope of the present document.

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

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] Void.

[2] Void.

[3] Void.

[4] Recommendation ITU-T O.153 (1992): "Basic parameters for the measurement of error performance at bit rates below the primary rate".

[5] CISPR 16-1-4 (2010): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-4: Radio disturbance and immunity measuring apparatus - Antennas and test sites for radiated disturbance measurements".

[6] Void.

[7] Void.

[8] Void.

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI EG 201 399 (V3.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); A guide to the production of Harmonized Standards for application under the Radio & Telecommunication Terminal Equipment Directive 1999/5/EC (R&TTE) and a first guide on the impact of the Radio Equipment Directive 2014/53/EU (RED) on Harmonized Standards".

[i.2] Void.

[i.3] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

[i.4] WRC-03 decision.

NOTE: Available at http://www.itu.int/dms_pub/itu-s/oth/02/01/S020100002D4005PDFE.PDF.

[i.5] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in Directive 2014/53/EU [i.5] and the following apply:

3dB Bandwidth (B3dB): total width of the signal spectrum 3 dB below the maximum in-band density

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

carrier-off state: state in which the MES is not transmitting a carrier

carrier-on state: state in which the MES is transmitting a carrier

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.

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

in-band signals: signals which are located in the operating band plus an offset of 10 MHz outside this operating band

Installable Equipment (IE): equipment which is intended to be installed in a vehicle

NOTE: 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

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).

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

nominated bandwidth (Bn): bandwidth of the MES radio frequency transmission that is nominated by the applicant and that 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; also the nominated bandwidth is centred on the transmit frequency and does not exceed 180 % of the 3 dB bandwidth of the signal and is within the assigned part of the MSS transmit frequency band within which the MES operates

NOTE: The nominated bandwidth is wide enough to take account of the transmit carrier frequency stability.

operational frequency range(s): sub-portion(s) of the band 1 626,5 MHz to 1 660,5 MHz and 1 668,0 MHz to 1 675,0 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

sub-band: contiguous portion of the operating band

NOTE: Two sub-bands are defined (see table 1).

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
BW	Bandwidth
CDMA	Code Division Multiple Access
CISPR	International Special Committee on Radio Interference
CMF	Control and Monitoring Functions
EIRP	Equivalent Isotropically Radiated Power
EMC	Electro-Magnetic Compatibility
EME	Externally Mounted Equipment
EU	European Union
EUT	Equipment Under Test
IE	Installable Equipment
IEC	International Electrotechnical Commission/Committee
IME	Internally Mounted Equipment
ITU	International Telecommunications Union
ITU-T	ITU Telecommunication Standardization Sector
LTE	Laboratory Test Equipment
LTE	Long Term Evolution
MES	Mobile Earth Station
MIC	MES Identification Code
MSS	Mobile Satellite Service
NCF	Network Control Facility
PCN	Personal Communications Networks
PE	Portable Equipment
R&TTE	Radio and Telecommunications Terminal Equipment
RA	Radio Astronomy
RE	Radio Equipment
RED	Radio Equipment Directive
RF	Radio Frequency
S-PCN	Satellite Personal Communications Network
STE	Special Test Equipment
TDMA	Time Division Multiple Access
WRC	World Radiocommunication Conference