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Satelitske zemeljske postaje in sistemi (SES) - Oprema za sprejemanje satelitske radiodifuzije - Harmonizirani standard, ki zajema bistvene zahteve člena 3.2 direktive 2014/53/EU - 2. del: Notranja enota

Satellite Earth Stations and Systems (SES) - Satellite broadcast reception equipment - Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU - Part 2: Indoor unit

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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.5] 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.2].

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.

The present document is part 2 of a multi-part deliverable. Full details of the entire series can be found in ETSI EN 303 372-1 [i.1].

National transposition dates	
Date of adoption of this EN:	13 April 2016
Date of latest announcement of this EN (doa):	31 July 2016
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 2017
Date of withdrawal of any conflicting National Standard (dow):	31 January 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).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Introduction

See ETSI EN 303 372-1 [i.1].

1 Scope

The present document applies to indoor units (IDUs) for satellite broadcast reception. An indoor unit gets on an input interface the signal that has been received from satellite and processed by the outdoor unit (ODU). It performs carrier selection, demodulation, audio and video decoding.

Part of the IDU functionality may be integrated with the ODU. In that case the present document applies to this part of functionality as well as the remaining part in the IDU.

The indoor unit may be integrated with a domestic television receiver.

The present document contains requirements to demonstrate that radio equipment both effectively uses and supports the efficient use of radio spectrum in order to avoid harmful interference.

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.

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

Not applicable.

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 EN 303 372-1: "Satellite Earth Stations and Systems (SES); Satellite broadcast reception equipment; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part-1: Outdoor unit receiving in the 10,7 GHz to 12,75 GHz frequency band".

[i.2] 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.

[i.3] ETSI EG 203 336 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".

[i.4] CENELEC EN 50585:2014: "Communications protocol to transport satellite delivered signals over IP networks".

[i.5] 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.

3 Symbols and abbreviations

3.1 Symbols

For the purposes of the present document, the following symbols apply:

F	ideal signal occupied bandwidth
R_s	symbol rate
α	roll-off

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

EIRP	Equivalent Isotropically Radiated Power
IDU	InDoor Unit
ODU	OutDoor Unit

4 Technical requirements specifications

4.1 Environmental profile

The technical requirements of the present document apply under the environmental profile for operation of the equipment, which shall be declared by the supplier. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared operational environmental profile.

4.2 Equipment capabilities

The technical requirements of the present document apply under the capabilities of the equipment, which shall be declared by the supplier. The equipment shall comply with all the technical requirements of the present document at all times when operating within the boundary limits of the declared equipment capabilities.

Equipment capabilities comprise the following characteristics:

- Input frequency band
- Input level range
- Modulation and coding format

4.3 Conformance requirements

4.3.1 Adjacent signal selectivity

Purpose:

To enable reception of a wanted signal in presence of other signals on adjacent frequencies that are transmitted with high EIRP from near-by adjacent orbital positions.

NOTE 1: Signals transmitted from the same orbital position are under control of the satellite operator. Signals transmitted adjacent orbital position that is not near-by are suppressed by the antenna gain pattern.

Specification:

Adjacent signal selectivity is specified through an increase of the required signal to noise ratio caused by the adjacent signal.

The adjacent signal shall apply the same modulation as the wanted signal. Frequency offset and power level offset of the adjacent signal with regard to the wanted signal shall take the values given in table 1. *F* is the ideal signal occupied bandwidth.

Table 1: Adjacent signal frequency and level

Frequency offset from wanted signal	Power level offset from wanted signal
-*F* - 4 MHz	10 dB
-*F* - 2 MHz	4 dB
-*F*	0 dB
F	0 dB
F + 2 MHz	4 dB
F + 4 MHz	10 dB

The required signal to noise ratio in presence of an adjacent signal shall be less than 0,4 dB higher than in absence of adjacent signals.

NOTE 2: In case of amplitude or phase shift keying signals the occupied bandwidth of an ideal signal is $F = R_s \times (1 + \alpha)$, where R_s is the symbol rate and α is the roll-off.

NOTE 3: The case with frequency offset *F* represents carriers sharing a transponder, *F* + 2 MHz represents carriers on adjacent transponders of a satellite, *F* + 4 MHz represents carriers on different satellites. Frequency offset is meant between centre frequencies of carriers.

Verification:

The test method specified in clause 6.1 shall apply.

4.3.2 Dynamic range

Purpose:

To allow a wide range of satellite EIRP and of ODU antenna diameter.

NOTE 1: Besides satellite EIRP and ODU antenna diameter, the dynamic range covers the range of coaxial cable length and LNB gain.

Specification:

The IDU shall be able to process without degradation input signals at any level in a range of at least 40 dB.

Verification:

The test method specified in clause 6.2 shall apply.

NOTE 2: The absolute input level range appears in clause 4.2.

5 Testing for compliance with technical requirements

5.1 Environmental conditions for testing

Tests defined in the present document shall be carried out at representative points within the boundary limits of the declared operational environmental profile.

Where technical performance varies subject to environmental conditions, tests shall be carried out under a sufficient variety of environmental conditions (within the boundary limits of the declared operational environmental profile) to give confidence of compliance for the affected technical requirements.