
Satelitske zemeljske postaje in sistemi (SES) - Satelitske zemeljske postaje na ladjah, ki delujejo v frekvenčnih pasovih 4/6 GHz, dodeljenih za fiksne satelitske storitve (FSS) - Harmonizirani standard za dostop do radijskega spektra

Satellite Earth Stations and Systems (SES) - Satellite Earth Stations on board Vessels (ESVs) operating in the 4/6 GHz frequency bands allocated to the Fixed Satellite Service (FSS) - Harmonised Standard for access to radio spectrum

Sample Document

get full document from standards.iteh.ai

Ta slovenski standard je istoveten z: ETSI EN 301 447 V2.1.12 (2026-08)

ICS:

33.060.30	Radiorelejni in fiksni satelitski komunikacijski sistemi	Radio relay and fixed satellite communications systems
47.020.70	Navigacijska in krmilna oprema	Navigation and control equipment

oSIST prEN 301 447 V2.1.12:2026 **en**

Sample Document

get full document from standards.iteh.ai

Draft ETSI EN 301 447 V2.1.12 (2026-08)



**Satellite Earth Stations and Systems (SES);
Satellite Earth Stations on board
Vessels (ESVs) operating in the 4/6 GHz frequency bands
allocated to the Fixed Satellite Service (FSS);
Harmonised Standard for access to radio spectrum**

Reference

REN/SES-00433

Keywords

ESV, GSO, maritime, regulation, satellite

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from the
[ETSI Search & Browse Standards](#) application.

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format on [ETSI deliver](#) repository.

Users should be aware that the present document may be revised or have its status changed,
this information is available in the [Milestones listing](#).

If you find errors in the present document, please send your comments to
the relevant service listed under [Committee Support Staff](#).

If you find a security vulnerability in the present document, please report it through our
[Coordinated Vulnerability Disclosure \(CVD\)](#) program.

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.
In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part of this document may be reproduced in any form, by any means and in any media, without the prior written authorization of ETSI and except as expressly permitted below.

By way of exception and when the document is a normative deliverable (European Standard (EN), Technical Specification (TS), Group Specification (GS) or ETSI Standard (ES)), ETSI authorizes to reproduce and incorporate into products, services and technical documentation only those extracts (e.g. templates) that are strictly necessary for the technical implementation of the normative deliverable, to ensure compliance with the latter. Nothing in this notice shall be construed as limiting any mandatory exceptions to copyright provided by applicable law.

© ETSI 2026.
All rights reserved.

Contents

Intellectual Property Rights	7
Foreword.....	7
Modal verbs terminology.....	8
Introduction	8
1 Scope	9
2 References	10
2.1 Normative references	10
2.2 Informative references.....	10
3 Definition of terms, symbols and abbreviations.....	11
3.1 Terms.....	11
3.2 Symbols.....	13
3.3 Abbreviations	13
4 Technical requirements specifications	14
4.1 General	14
4.1.1 Environmental profile	14
4.1.2 Control and Monitoring Functions (CMF).....	15
4.1.3 Operational configurations	15
4.1.4 ESV states and radio states	15
4.2 Conformance requirements	16
4.2.1 On-axis emissions	16
4.2.1.1 Justification	16
4.2.1.2 Specification.....	16
4.2.1.3 Conformance tests	16
4.2.2 Transmit antenna on-axis gain and off-axis gain patterns.....	16
4.2.2.1 Justification	16
4.2.2.2 Specification.....	17
4.2.2.3 Conformance tests	17
4.2.3 Off-axis spurious radiation	17
4.2.3.1 Justification	17
4.2.3.2 Specification.....	17
4.2.3.3 Conformance tests	18
4.2.4 On-axis spurious radiation for ESV	18
4.2.4.1 Justification	18
4.2.4.2 Specification.....	18
4.2.4.2.1 "Carrier-on" radio state.....	18
4.2.4.2.2 "Carrier-off" and "Emissions disabled" radio states	19
4.2.4.3 Conformance tests	19
4.2.5 Maximum ESV emissions towards the horizon.....	19
4.2.5.1 Justification	19
4.2.5.2 Specification.....	19
4.2.5.2.1 Specification 1: Maximum e.i.r.p. spectral density towards the horizon.....	19
4.2.5.2.2 Specification 2: Maximum e.i.r.p. towards the horizon.....	19
4.2.5.3 Conformance tests	19
4.2.6 Off-axis e.i.r.p. emission density	20
4.2.6.0 General	20
4.2.6.1 Justification	20
4.2.6.2 Specification.....	20
4.2.6.3 Conformance tests	21
4.2.7 Carrier suppression	21
4.2.7.1 Justification	21
4.2.7.2 Specification.....	21
4.2.7.3 Conformance tests	22
4.2.8 Antenna Pointing and Polarization Alignment for ESVs.....	22
4.2.8.1 Justification	22

4.2.8.2	Specification.....	22
4.2.8.3	Conformance tests.....	23
4.2.9	Cessation of emissions of the ESV	23
4.2.9.1	Justification	23
4.2.9.2	Specification.....	23
4.2.9.2.1	Specification 1: Mode of cessation of emissions	23
4.2.9.2.2	Specification 2: Conditions under which the ESV shall cease emissions.....	24
4.2.9.2.3	Specification 3: Cessation of emissions	24
4.2.9.2.4	Specification 4: Fault conditions	24
4.2.9.3	Conformance tests.....	25
4.2.10	Identification of ESV	25
4.2.10.1	Justification	25
4.2.10.2	Specification.....	25
4.2.10.3	Conformance tests.....	25
4.2.11	Control and Monitoring Functions (CMFs)	25
4.2.11.1	CMF State Diagram	25
4.2.11.2	Processor monitoring	26
4.2.11.2.1	Justification	26
4.2.11.2.2	Specification	26
4.2.11.2.3	Conformance tests	27
4.2.11.3	Transmit subsystem monitoring.....	27
4.2.11.3.1	Justification	27
4.2.11.3.2	Specification.....	27
4.2.11.3.3	Conformance tests	27
4.2.11.4	Power-on/Reset	27
4.2.11.4.1	Justification	27
4.2.11.4.2	Specification.....	27
4.2.11.4.3	Conformance tests	27
4.2.11.5	Control Channel (CC) and Response Channel (RC)	27
4.2.11.5.1	Justification	27
4.2.11.5.2	Specification.....	28
4.2.11.5.3	Conformance tests	28
4.2.11.6	Network control commands	28
4.2.11.6.1	Justification	28
4.2.11.6.2	Specification.....	29
4.2.11.6.3	Conformance test.....	29
4.2.11.7	Initial burst transmission	29
4.2.11.7.1	Justification	29
4.2.11.7.2	Specification.....	29
4.2.11.7.3	Conformance tests	29
4.2.12	Receive antenna off-axis gain pattern.....	30
4.2.12.1	Justification	30
4.2.12.2	Specification.....	30
4.2.12.3	Conformance tests.....	30
4.2.13	Blocking performance.....	30
4.2.13.1	Justification	30
4.2.13.2	Specification.....	30
4.2.13.3	Conformance tests.....	31
4.2.14	Adjacent Signal Selectivity.....	31
4.2.14.1	Justification	31
4.2.14.2	Specification.....	31
4.2.14.3	Conformance tests.....	31
5	Testing for compliance with technical requirements.....	31
5.1	Environmental conditions for testing	31
6	Test methods for the complete ESV	32
6.1	General	32
6.2	On-axis emissions.....	32
6.2.1	Test method	32
6.2.1.1	Void.....	32
6.2.1.2	Method of measurement.....	32

6.2.1.2.1	General	32
6.2.1.2.2	Method of measurement at the antenna flange	32
6.2.1.2.3	Method of measurement with a test antenna	33
6.3	Transmit antenna on-axis gain and off-axis gain patterns	33
6.3.1	Method of measurement	33
6.4	Off-axis spurious radiation	34
6.4.0	Introduction.....	34
6.4.1	Test method	34
6.4.1.0	General	34
6.4.1.1	Void.....	34
6.4.1.2	Above 2 000 MHz.....	34
6.4.1.2.0	General	34
6.4.1.2.1	Identification of the frequencies of spurious radiation	35
6.4.1.2.2	Measurement of radiated power levels of identified spurious radiation	35
6.4.1.2.3	Measurement of conducted spurious radiation at the antenna flange	37
6.5	On-axis spurious radiation.....	37
6.5.1	Test method	37
6.5.1.1	Void.....	37
6.5.1.2	Method of measurement.....	37
6.5.1.2.1	General	37
6.5.1.2.2	Method of measurement at the antenna flange	38
6.5.1.2.3	Method of measurement with a test antenna	38
6.6	Maximum ESV emissions towards the horizon.....	39
6.6.1	Maximum e.i.r.p. towards the horizon.....	39
6.6.2	Maximum e.i.r.p. spectral density towards the horizon	40
6.7	Off-axis e.i.r.p. emission density.....	40
6.7.0	General.....	40
6.7.1	Test method	40
6.7.1.1	General	40
6.7.1.2	Transmit output power density.....	41
6.7.1.2.1	General	41
6.7.1.2.2	Test site.....	41
6.7.1.2.3	Method of measurement	41
6.7.1.3	Antenna transmit gain	42
6.7.1.3.1	General	42
6.7.1.3.2	Test site.....	42
6.7.1.3.3	Method of measurement	42
6.7.1.4	Antenna transmit radiation patterns	43
6.7.1.4.1	General	43
6.7.1.4.2	Test site.....	43
6.7.1.4.3	Test arrangement	44
6.7.1.4.4	Co-polar radiation pattern-azimuth.....	44
6.7.1.4.5	Co-polar radiation pattern-elevation.....	44
6.7.1.4.6	Cross-polar radiation pattern-azimuth	45
6.7.1.4.7	Cross-polar radiation pattern-elevation	46
6.7.2	Computation of results.....	47
6.8	Carrier suppression.....	47
6.8.1	Test method	47
6.9	Antenna pointing for ESV	47
6.9.1	General.....	47
6.9.2	Test method	48
6.10	Antenna mechanical stability	49
6.10.1	Test method	49
6.11	Polarization angle alignment capability	49
6.11.1	Test method	49
6.12	Cessation of emissions of the ESV	49
6.12.1	Test arrangement	49
6.12.2	Test method	50
6.12.2.1	General	50
6.12.2.2	Cessation of emissions from the "Transmission enabled" state	50
6.12.2.3	Cessation of emission from the "Transmission disabled" state	51
6.12.2.4	Cessation of emission from the "Initial Phase" state.....	51

6.12.2.4.1	EUTs transmitting initial bursts.....	51
6.12.2.4.2	EUTs not transmitting initial bursts.....	51
6.12.2.5	"Single action" means of cessation of emissions.....	52
6.12.2.6	Fault conditions.....	52
6.13	Identification of ESV.....	53
6.13.1	Test set up.....	53
6.13.2	Test method.....	53
6.14	Control and Monitoring Functions.....	53
6.14.0	General.....	53
6.14.1	Test set up.....	53
6.14.2	Processor monitoring - Test method.....	53
6.14.3	Transmit subsystem monitoring - Test method.....	54
6.14.4	Power-on/Reset - Test method.....	54
6.14.5	Control Channel and Response Channel - Test method.....	54
6.14.6	Network Control commands-Test method.....	55
6.14.7	Initial burst transmission-Test method.....	57
6.15	Receive antenna off-axis gain pattern.....	57
6.15.1	Test Method.....	57
6.15.1.1	Test site.....	57
6.15.1.2	Method of measurement.....	57
6.16	Blocking performance.....	58
6.16.1	Test method.....	58
6.17	Adjacent Signal Selectivity.....	58
6.17.1	Test method.....	58
Annex A (informative):	Relationship between the present document and the essential requirements of Directive 2014/53/EU.....	60
Annex B (normative):	Mechanical stability methodology.....	64
Annex C (informative):	Maximum measurement uncertainty.....	66
Annex D (informative):	Bibliography.....	67
Annex E (informative):	Change history.....	68
History.....		69

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables (European Standard (EN), Technical Specification (TS), Group Specification (GS) or ETSI Standard (ES)) may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the [ETSI IPR online database](#).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™**, **LTE™** and **5G™** logo are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Foreword

This draft Harmonised European Standard (EN) has been produced by ETSI Technical Committee Satellite Earth Stations and Systems (SES), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI Standardisation Request deliverable Approval Procedure (SRdAP).

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.7] 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.8].

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.

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

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

The determination of the parameters of the user earth stations using a given geo-stationary 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.

The present document is based on the application of ITU RR Resolution 902 (Rev WRC-23) [i.1]. The present document incorporates the technical limitations listed in annex 2 of ITU RR Resolution 902 (Rev. WRC-23) [i.1], ECC Report (05)69 [i.2], and ECC Report (06)91 [i.3].

NOTE: According to ITU RR Resolution 902 [i.1], any transmission from ESVs within the 300 km minimum distance of each country where the ESV transmit frequency band is used by the Fixed Service will be subject to the prior agreement of the concerned administration(s), which may specify additional operational requirements, or to ECC Decision. ECC/DEC/(05)09 [i.9]

The present document does 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 special protection applied to the source of interference, and the interfered part may be required.

The present document does not contain any requirement, recommendation or information about the installation of the ESV.

All parts of the below-deck unit related to reception, processing and presentation of the received information except the control channel are not within the scope of the present document. The syntax of the control channel messages is outside the scope of the present document.

The present document is based upon the standard for environmental conditions for marine navigational equipment, IEC EN 60945 [4]. In addition, attention should be paid to clause 11.1 (Acoustic noise and signals), and clause 11.2 (Compass safe distance) of IEC EN 60945 [4].

1 Scope

The present document specifies technical characteristics and methods of measurements for Earth Stations located on board Vessels (ESVs) which have the following characteristics:

- The ESV is comprised of all the equipment, electrical and mechanical, from the antenna itself to the interface with other communications equipment on board (usually referred to as the terrestrial interface).
- The ESV transmits in the frequency range from 5 925 MHz to 6 425 MHz allocated to the Fixed Satellite Services (FSS) (Earth-to-space).
- The ESV receives one or more frequencies within the range from 3 700 MHz to 4 200 MHz allocated to the Fixed Satellite Services (FSS) (space-to-Earth).
- The ESV transmits a single carrier.
- The ESV uses linear or circular polarization.
- The ESV operates through a geostationary satellite at least 2° away from any other geostationary satellite operating in the same frequency band and covering the same area.

The ESV transmits at elevations greater or equal to the minimum elevation angle defined for the intended use of the ESV:

- The ESV antenna diameter is not smaller than 2,4 m.
- The ESV is designed for transmission and reception of radio-communications signals in accordance with any of the frequency bands specified above.
- The ESV is designed for unattended operation.
- The ESV is operating within a satellite network (e.g. star, mesh or point-to-point) used for the distribution and/or exchange of information between users.
- The ESV is controlled and monitored by a Network Control Facility (NCF). The specifications associated to the NCF are outside the scope of the present document.

The present document applies to the ESV with its ancillary equipment and its various telecommunication ports, and when operated within the boundary limits of the operational environmental profile as defined for the intended use of the ESV including all equipment as brought to the market defined for the intended use of the ESV.

The present document is intended to cover the provisions of Directive 2014/53/EU [i.8] (RE Directive) article 3.2.

NOTE: The relationship between the present document and essential requirements of article 3.2 of the Directive 2014/53/EU [i.8] is given in Annex A.

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 in the [ETSI docbox](#).

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] [IEC EN 60945:2002](#): "Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results".
- [5] [ITU Radio Regulations \(edition of 2024\)](#).
- [6] Void.
- [7] [ERC/REC 74-01 \(1998\)](#): "Unwanted emissions in the spurious domain".

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 may be useful in implementing an ETSI deliverable or add to the reader's understanding, but are not required for conformance to the present document.

- [i.1] ITU RR Resolution 902 (Rev.WRC-23): "Provisions relating to earth stations located on board vessels which operate in fixed-satellite service networks in the uplink frequency bands 5 925-6 425 MHz and 14-14.5 GHz".
- [i.2] ECC Report 069 (2005): "Formats for submission of information from administrations to the Office on conditions for operation of earth stations aboard vessels within the separation distances identified in ITU RR Resolution 902".
- [i.3] ECC Report 091 (2006): "Compatibility of earth stations on board vessels transmitting within the gaps in the CEPT fixed service channel plan for the lower 6 GHz band (5 925-6 425 MHz)".
- [i.4] ETSI TR 102 375 (V1.2.1): "Satellite Earth Stations and Systems (SES); Guidelines for determining the parts of satellite earth station antenna radiation patterns concerned by the geostationary satellite orbit protection".
- [i.5] ETSI TR 102 215 (V1.3.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Recommended approach, and possible limits for measurement uncertainty for the measurement of radiated electromagnetic fields above 1 GHz".

- [i.6] Void.
- [i.7] [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.8] [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 (RE Directive).
- [i.9] ECC/DEC/(05)09 of 24 June 2005 (Amended on 8 March 2019) on the free circulation and use of Earth Stations on board Vessels (ESV) operating in Fixed Satellite service networks in the frequency bands 5925-6425 MHz (Earth-to-space) and 3700-4200 MHz (space-to-Earth).
- [i.10] ETSI EG 203 336: "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".

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

above-deck unit: part of the ESV intended to be installed above deck, as defined for the intended use of the ESV, and as indicated in the user documentation

The above-deck unit usually comprises the following main parts:

- a) the antenna sub-system which converts the radiation field into a guided wave and vice versa;
- b) the Low Noise Block (LNB) down converter, which is a device that amplifies, with very low internal noise, the received signals in the Radio Frequency (RF) band and converts them to intermediate frequencies;
- c) the up-converter and the power amplifier which convert the intermediate frequency to RF and amplify the low level RF signals for transmission through the antenna subsystem;
- d) the stabilization and tracking subsystems that ensure pointing of the antenna main beam towards the satellite within the required accuracy.

NOTE: The installation equipment (means of attachment) is outside the scope of the present document. However, the antenna structures and other components directly mounted on the antenna and forming an integral part of it, are subject to the specifications of the present document.

ancillary equipment: equipment used in connection with an ESV is considered as ancillary if the three following conditions are met:

- a) the equipment is intended for use in conjunction with the ESV to provide additional operational and/or control features (e.g. to extend control to another position or location)
- b) the equipment cannot be used on a stand alone basis, to provide user functions independently of the ESV
- c) the absence of the equipment does not inhibit the operation of the ESV

below-deck unit: part of the ESV equipment which is installed inside the vessel (i.e. below deck) and its connection cables with the above deck units

carrier-off radio state: radio state in which the ESV may transmit and does not transmit any carrier

NOTE 1: The phrase "the ESV may transmit" means that all the conditions for transmission are satisfied (e.g. in a state where transmissions are permitted, no failure detected, and the ESV is correctly pointed towards the satellite).

NOTE 2: The existence of a "Carrier-off" radio state depends on the system of transmission used. For ESVs designed for continuous transmission mode there may be no "Carrier-off" radio state.

carrier-on radio state: radio state in which the ESV may transmit and actually transmits a carrier

Control Channel (CC): channel or channels by which ESVs receive control information from the NCF

EIRP_{max}: maximum e.i.r.p. capability of the ESV as defined for the intended use of the ESV

ESV: complete ESV equipment, comprising the outdoor unit and the indoor unit including the connection cable(s) between the units, as brought to the market

EIRP_{Aggregate}: is the maximum on axis aggregate e.i.r.p. (Watts) within the nominated bandwidth of the ESV system towards the satellite

emissions disabled radio state: radio state in which the ESV is not emitting

NOTE: Examples of cases where the ESV is in this radio state: before system monitoring pass, before information of the control channel is correctly received, when a failure is detected, when the ESV is commanded to disable, and when the ESV is in a location requiring cessation of emissions.

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

external control channel: control channel which is either:

- i) carried by the ESV network via the same or another satellite, but not within the internal protocol of the ESV system; or
- ii) carried by any other radio communication system

external response channel: response channel which is either:

- i) carried by the ESV network via the same or another satellite, but not within the internal protocol of the ESV system; or
- ii) carried by any other radio communication system

H (in dB): maximum number of ESVs transmitting towards the same satellite on the same frequency and polarization which may transmit at EIRP_{max} in the same 4 kHz band as defined for the intended use of the ESV

integral antenna: antenna which may not be removed during the tests according to the defined intended use of the ESV

internal control channel: control channel which is carried by the ESV network via the same satellite as used for transmission of user data and within the internal protocol structure of the ESV system

internal response channel: response channel which is carried by the ESV network via the same satellite as used for transmission of user data and within the internal protocol structure of the ESV system

Internally Mounted Equipment (IME): modules of the equipment which are not defined for the intended use of the ESV as EME are defined as IME

K: factor that accounts for a reduction on the on-axis spurious radiation level in case of multiple ESVs transmitting simultaneously towards the same satellite on the same frequency and polarization

network: network is any network configuration with any topology (including star, mesh and point-to-point configurations) allowing communication from ESV to satellite and satellite to ESV

Network Control Facility (NCF): set of functional entities that, at system level, monitor and control the correct operation of all ESVs in a network

nominal antenna diameter: diameter of the antenna defined for the intended use of the ESV

NOTE 1: An antenna with a nominal antenna diameter D has the same technical characteristic as a circular aperture antenna of diameter D . For non circular aperture antenna, the nominal antenna diameter is defined for the intended use of the ESV.

NOTE 2: Network operators might request antennas of a certain diameter. Then an antenna that is compliant with the requirement for nominal antenna diameter equal to the requested antenna diameter can be used.

nominated bandwidth: bandwidth of the ESV radio frequency transmission nominated for the intended use of the ESV and which meets the following conditions of notes 1 and 2

NOTE 1: The nominated bandwidth is centred on the transmit frequency and does not exceed 5 times the occupied bandwidth.

NOTE 2: The nominated bandwidth is wide enough to encompass all spectral elements of the transmission which have a level greater than the specified spurious radiation limits. The nominated bandwidth is wide enough to take account of the transmit carrier frequency stability. This definition is chosen to allow flexibility regarding adjacent channel interference levels which will be taken into account by operational procedures depending on the exact transponder carrier assignment situation.

occupied bandwidth (BW): width of the signal spectrum between the points 10 dB below the maximum in-band density, for a digital modulation scheme

off-axis angle: angle between the direction of the axis of the antenna main beam and the considered direction

removable antenna: antenna which may be removed during the tests according to the intended use of the ESV and upon the EUT equipment capabilities

Response Channel (RC): channel by which the ESV transmits monitoring information to the NCF

spurious radiation: any radiation outside the nominated bandwidth

transmission disabled state: state of the ESV when it is not authorized by the NCF to transmit

transmission enabled state: state of the ESV when it is authorized by the NCF to transmit

$XP_{DES\vee}$: maximum cross polarization discrimination capability of the ESV antenna as defined for the intended use of the ESV

3.2 Symbols

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

dBc	Ratio expressed in decibels relative to the e.i.r.p. of the unmodulated carrier
dBi	Ratio of an antenna gain to the gain of an isotropic antenna, expressed in decibels
dBsd	Ratio expressed in decibels relative to the spectral density
dBW	Ratio of a power to 1 watt, expressed in decibels
dBpW	Ratio of a power to 1 pico watt, expressed in decibels
dB μ V/m	Ratio of an electric field to 1 μ V/m, expressed in decibels ($20 \log(\text{electric field} / 1 \mu\text{V/m})$)

3.3 Abbreviations

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

BDU	Below Deck Unit
BW	occupied BandWidth

NOTE: In the context of the present document.

CC	Control Channel
CCF	Control Channel reception Failure
CCR	Control Channel correctly Received