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**SIST EN 303 978 V2.2.1:2025**

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**Satelitske zemeljske postaje in sistemi (SES) - Zemeljske postaje na mobilnih platformah (ESOMP), ki komunicirajo s sateliti v geostacionarni orbiti in delujejo v frekvenčnih pasovih od 27,5 GHz do 30,0 GHz in od 17,3 GHz do 20,2 GHz - Harmonizirani standard za dostop do radijskega spektra**

Satellite Earth Stations and Systems (SES) - Earth Stations on Mobile Platforms (ESOMP) communicating with satellites in geostationary orbit, operating in the 27,5 GHz to 30,0 GHz and 17,3 GHz to 20,2 GHz frequency bands - Harmonised Standard for access to radio spectrum

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# ETSI EN 303 978 V2.2.1 (2024-12)



**Satellite Earth Stations and Systems (SES);  
Earth Stations on Mobile Platforms (ESOMP)  
communicating with satellites in geostationary orbit,  
operating in the 27,5 GHz to 30,0 GHz and  
17,3 GHz to 20,2 GHz frequency bands;  
Harmonised Standard for access to radio spectrum**

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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 is a revision of ETSI EN 303 978 (V2.1.2). Major changes concern the off-axis eirp density. Editorial clarifications have also been introduced.

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.9] 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.11].

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:   | 19 December 2024  |
| Date of latest announcement of this EN (doa):  | 31 March 2025     |
| Date of latest publication of new National Standard or endorsement of this EN (dop/e): | 30 September 2025 |
| Date of withdrawal of any conflicting National Standard (dow):                         | 30 September 2026 |

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## Introduction

The Earth Stations on Mobile Platforms (ESOMPs) system overview is given in figure 1 and has the following characteristics:

- The ESOMP operates as part of a satellite network (e.g. star, mesh or point-to-point) used for the distribution and/or exchange of information.
- The ESOMP is comprised of all the equipment, electrical and mechanical, from the antenna itself to the interface with other communications equipment on a mobile platform (usually referred to as the terrestrial interface).
- The ESOMP transmits in the frequency range from 27,50 GHz to 30,00 GHz, and receives in one or more frequencies within the range from 17,30 GHz to 20,20 GHz (FSS) which are bands allocated to the Fixed Satellite Services (FSS) (Earth-to-space) among other services.
- The ESOMP uses linear or circular polarization.
- The ESOMP is designed for unattended operation.
- The ESOMP is controlled and monitored by a Network Control Facility (NCF). This function may be performed centrally (e.g. for a network of ESOMPs with a central hub) or it could be performed within the ESOMP for autonomous control. The NCF is outside the scope of the present document.
- The ESOMP operates through a geostationary satellite (or a cluster of co-located geostationary satellites) that is at least 2° away from any other geostationary satellite operating in the same frequencies and over the same coverage area.
- The geostationary satellite network with which the ESOMP communicates is assumed to have completed coordination per ITU requirements with the neighbouring geostationary satellite networks.
- The coordination agreement or agreements above would allow the ESOMP to operate with the coordinated parameters, such as off-axis EIRP density and other parameters.

NOTE: ESOMPs may operate with satellites that are more closely spaced than 2° with additional operational constraints that are beyond the scope of the present document.

Enclosure / Radome

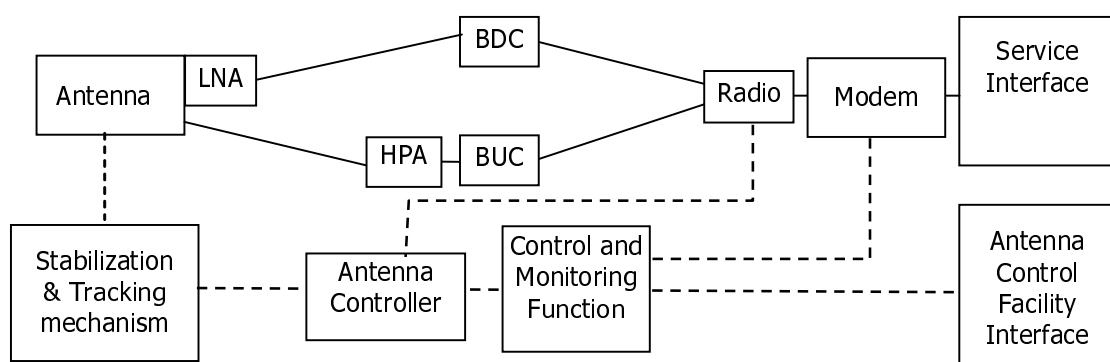


Figure 1: ESOMP System Overview

The present document may also be applicable to the frequency bands 30,0 GHz to 31,0 GHz (Earth-to-space) and 20,2 GHz to 21,2 GHz (space-to-Earth) subject to national regulation.

Annex A (informative) provides HS Requirements specifications.

Annex B is void.

Annex C (normative) provides specifications concerning radiated measurements.

Annex D (normative) provides specifications concerning conducted measurements.

Annex E (informative) provides general information concerning RF cables.

Annex F (informative) provides information concerning RF waveguides.

Annex G (informative) covers selection of receiver conformance parameters.

Annex H (informative) covers maximum measurement uncertainty.

Annex I (informative) provides bibliographical references.

Annex J (informative) change history.

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# 1 Scope

The present document specifies technical characteristics and methods of measurements for Earth Stations on Mobile Platforms (ESOMP) equipment with the following characteristics:

- The ESOMP is designed for both mobile and stationary operation.
- The ESOMP operates on various mobile platforms such as trains, maritime vessels, aircraft and other vehicles.
- The ESOMP is controlled and monitored by a Network Control Facility (NCF). This function may be performed centrally (e.g. for a network of ESOMPs with a central hub) or it could be performed within the ESOMP for autonomous control. The NCF is outside the scope of the present document.
- The ESOMP transmit and receive frequencies are shown in table 1.

**Table 1: Frequency bands**

|                           | Frequency Bands/frequencies (GHz) |
|---------------------------|-----------------------------------|
| Transmit (Earth-to-space) | 27,50 to 30,00                    |
| Receive (space-to-Earth)  | 17,30 to 20,20                    |

NOTE: The relationship between the present document and essential requirements of article 3.2 of Directive 2014/53/EU [i.11] 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](https://standards.iteh.ai/catalog/standards/sist/6984b605-70a0-4b4e-bac2-5e36ff654d83/sist-en-303-978-v2-2-1-2025).

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] [CISPR 16-1-1 \(2019\)](#): "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-1: Radio disturbance and immunity measuring apparatus - Measuring apparatus".
- [5] [CISPR 16-1-4:2019+AMD1:2020+AMD2:2023 CSV Consolidated version](#): "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] [ANSI C63.5-2006](#): "American National Standard for Calibration of Antennas Used for Radiated Emission Measurements in Electro Magnetic Interference".

## 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] Void.
- [i.2] Void.
- [i.3] Void.
- [i.4] ETSI TR 102 375: "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] Void.
- [i.6] Void.
- [i.7] Void.
- [i.8] Void.
- [i.9] [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.10] IEC 153 (all parts): "Hollow metallic waveguides".
- [i.11] [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.12] ETSI TR 103 896: "Satellite Earth Stations and Systems (SES); Considerations on off-axis EIRP density mask applicability for Ka band GSO ESOMPs in relation to potential revision to ETSI EN 303 978 (V2.1.2)".
- [i.13] ETSI EG 203 336 (V1.2.1) (05-2020): "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.14] ETSI TR 103 581 (V1.1.1) (11-2019): "Use of measurement detectors in radio measurement methods".
- [i.15] ETSI TR 102 273 (all parts) (V1.2.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement on Radiated Methods of Measurement (using test site) and evaluation of the corresponding measurement uncertainties".
- [i.16] ETSI TR 100 028: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".