SLOVENSKI STANDARD
SIST ETS 300 332 E1:2006

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Satelitske zemeljske postaje in sistemi (SES) - Oddajno-sprejemni satelitski terminali z zelo majhno antensko odprtino (VSATs), ki se uporabljajo za podatkovne komunikacije v frekvenļnih pasovih 6 GHz in 4 GHz fiksne satelitske storitve (FSS)

Satellite Earth Stations and Systems (SES); Transmit/receive Very Small Aperture Terminals (VSATs) used for data communications operating in the Fixed Satellite Service (FSS) 6 GHz and 4 GHz frequency bands

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Foreword

This European Telecommunication Standard (ETS) has been produced by the Satellite Earth Stations and Systems (SES) Technical Committee of the European Telecommunications Standards Institute (ETSI).

Transposition dates	
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1 Scope

This European Telecommunication Standard (ETS) provides specifications for the standardisation of the characteristics of transmit/receive Very Small Aperture Terminals (VSATs) operating as part of a satellite network used for the distribution and/or exchange of data between users.

In such a network a Centralised Control and Monitoring Function (CCMF) is responsible for the monitoring and control of remote VSATs.

These VSATs have the following characteristics:

- operating in the shared part of the C band allocated to the Fixed Services (FS) and to the Fixed Satellite Services (FSS), 5,850 to 6,425 GHz (Earth-Space), 3,625 to 4,200 GHz (Space-Earth);

- in these frequency bands circular polarisation is normally used and the system operates through satellites at 3° spacing;

- designed for unattended operation;

- limited to the reception and transmission of baseband digital signals;

- equipped with one, or several terrestrial ports but the total aggregate information bit rate transmitted towards the satellite through these ports shall be limited to 2 048 Mbit/s;

- antenna diameter not exceeding normally 7,3 m, or equivalent corresponding aperture.

The equipment considered in this ETS comprises both the "outdoor unit", usually composed of the antenna subsystem with the associated power amplifier and Low Noise Block (LNB), and the "indoor unit" composed of the remaining part of the communication chain, including the cable between these two units.

This ETS does not contain any requirement, recommendation or information about the installation of the VSATs, nor is this ETS intended to apply to VSAT network hub stations.

This ETS deals with two types of specification:

- specifications defined in order to protect other users of the frequency spectrum, both satellite and terrestrial, from unacceptable interference. In addition, these specifications are specified for the purposes of electrical safety, structural safety and solar radiation protection as well as protection from harmful interference;

- specifications related to characteristics which contribute to the quality of reception by providing the VSAT with minimum interference protection from other radio systems.

2 Normative references

This ETS incorporates, by dated or undated reference, provisions from other publications. These normative 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 ETS only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

[1] IEC 950 (1991): "Safety of information technology equipment including electrical business equipment".

[2] IEC 81 (Co) 6 (1981): "Standards for Lightning Protection of Structures".

[3] CISPR Publication No. 22 (1992): "Limits and methods of measurement of radio interference characteristics of information technology equipment".

[4] CISPR Publication No. 16 (1987): "Specifications for radio interference measuring apparatus and measurement methods".

[5] EN 55011 (1986): "Limits and methods of measurements of radio interference characteristics of industrial, scientific and medical (ISM) radio-frequency equipment".

[6] IEC 510-2-1 (1978): "Methods of measurement for radio equipment used in satellite earth stations Part 2".

[7] IEC 510-1-2 (1984): "Methods of measurement for radio equipment used in satellite earth station Part 1".

[8] IEC 801-3 (1984): "Electromagnetic compatibility for industrial process measurement and control equipment Part 3".

[9] ETS 300 160: "Satellite Earth Stations (SES) - Control and monitoring functions at a VSAT".

[10] ETS 300 161: "Satellite Earth Stations (SES) - Centralised control and monitoring functions for VSAT networks".

[11] ITU-R Recommendation 732 (1992): "Method for statistical processing of Earth station antenna side-lobe peaks".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of this ETS, the following definitions apply.

outdoor unit: Is the part of the terminal installed in a position within line of sight to the satellite and it is intended to be operated in outdoor environmental conditions.

It usually comprises three main parts:

1) the antenna sub-system which converts the incident radiation field into a guided wave and vice versa;

2) the LNB, 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;

3) the power amplifier which amplifies the low level RF signals for transmission through the antenna subsystem.

NOTE 1: The installation equipment (means of attachment) is not included in this ETS. 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 this ETS.

indoor unit: Is composed of the remaining part of the equipment. It is generally installed inside the buildings and is connected to the outdoor unit. The connection cable between the outdoor and indoor unit belongs to the indoor unit.

nominated bandwidth: The bandwidth of the VSAT 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 density greater than the specified spurious levels, and to take account of the transmit carrier frequency stability.

NOTE 2: This parameter is 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.

spurious radiation: Is any radiation outside the nominated bandwidth.

3.2 Abbreviations

For the purposes of this ETS, the following abbreviations apply:

CCMF	Centralised Control and Monitoring Functions
CISPR	Comité International Spécial des Perturbations Radioélectriques
CSPDN	Circuit Switched Public Data Network
EIRP	Equivalent Isotropically Radiated Power
EUT	Equipment Under Test
FS	Fixed Service
FSS	Fixed Satellite Service
IEC	International Electrotechnical Commission
ITU	International Telecommunication Union
ITU-R	ITU Radiocommunication Sector
LNB	Low Noise Block (low noise amplifier and down converter)
RF	Radio Frequency
VSAT	Very Small Aperture Terminal

4 Test report

The test report shall contain:

- the value of the nominated bandwidth declared by the manufacturer;

- the results of the tests.

5 Safety

5.1 Mechanical construction

Purpose:

Protection of operating personnel, the public and goods from insecure structures.

Specification:

This specification applies to the outdoor unit only.

The outdoor unit, including mounted and structural components, (but excluding the means of attachment) shall be designed to support the following main loads due to:

- the weight of the antenna and structural components;

- the wind speed.

Loading due to snow and ice is not considered.

At wind speeds up to 180 km/h, referred to standard atmosphere temperature and pressure (293 K and $1{,}013 \times 10^5$ Pa (1 013 mbar)), none of the components shall be torn away.

Verification:

Two alternative methods are given for verification.

a) Wind tunnel testing.

A wind tunnel shall be used for the purpose of conformance testing. The wind tunnel tests shall be performed on the outdoor unit, or alternatively on a scale-model of the outdoor unit. The data obtained for the scale-model shall be computed in order to obtain data for the true antenna size.