



SLOVENSKI STANDARD

SIST ETS 300 159:2000

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Satellite Earth Stations and Systems (SES); Transmit-only or transmit-and-receive Very Small Aperture Terminals (VSATs) used for communications operating in the Fixed Satellite Service (FSS) 11/12/14 GHz frequency bands

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**Satellite Earth Stations and Systems (SES);
Transmit-only or transmit-and-receive
Very Small Aperture Terminals (VSATs)
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Foreword

This second edition 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	
Date of adoption of this ETS:	6 September 1996
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1 Scope

This European Telecommunication Standard (ETS) provides specifications for the standardisation of the characteristics of transmit-only or transmit-and-receive Very Small Aperture Terminals (VSATs) operating as part of a satellite network (e.g. star, mesh or point-to-point) used for the distribution and/or exchange of information between users.

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

These VSATs have the following characteristics:

- operating in the exclusive part of the Ku-band allocated to the Fixed Satellite Services (FSS), 14,00 to 14,25 GHz (Earth-Space), 12,50 to 12,75 GHz (Space-Earth), and/or in the shared parts of the Ku-band, allocated to the FSS and Fixed Services (FS), 14,25 to 14,50 GHz (Earth-Space) and/or 10,70 to 11,70 GHz (Space-Earth);
- in these frequency bands linear polarization is normally used and the system operates through satellites at 3° spacing;
- designed usually for unattended operation;
- antenna diameter not exceeding 3,8 m, or equivalent corresponding aperture.

The equipment considered in this ETS comprises both the "outdoor unit", usually composed of the antenna sub-system and 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 applies to the VSAT with its ancillary equipment and its various terrestrial ports, and operated under the conditions which are within the ranges of humidity, temperature and supply voltage declared by the manufacturer.

EMC specifications are contained in ETS 300 673 [3].

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This ETS does not contain any specification or information on the installation of the VSATs.

The specifications have been selected to ensure an adequate level of compatibility for VSATs. The levels, however, do not cover extreme cases which may occur in any location but with a low probability of occurrence. In such a case it may be necessary to use special protection supplied to either the source of interference, or the interfered part or both.

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 structural safety and lightning 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. These specifications apply if required by the manufacturer.

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] ITU Radio Regulations, Article 1.
- [2] EN 50083-1 (1993): "Cabled distribution systems for television and sound signals - Part 1: Safety requirements".
- [3] prETS 300 673: "Radio Equipment and Systems (RES); ElectroMagnetic Compatibility (EMC) standard for 4/6 GHz and 11/12/14 GHz Very Small Aperture Terminal (VSAT) equipment and 11/12/13/14 GHz Satellite News Gathering (SNG) Transportable Earth Station (TES) equipment".
- [4] ETS 300 456: "Satellite Earth Stations and Systems (SES); Test Methods for Very Small Aperture Terminals (VSATs) operating in the 11/12/14 GHz frequency bands".
- [5] ETS 300 160: "Satellite Earth Stations and Systems (SES); Control and monitoring functions at a Very Small Aperture Terminal (VSAT)".
- [6] ETS 300 161: "Satellite Earth Stations and Systems (SES); Centralised control and monitoring functions for VSAT networks".
- [7] ITU-R Recommendation 732 (1992): "Method for statistical processing of earth-station antenna side-lobe peaks".

3 Definitions and abbreviations

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3.1 Definitions

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

outdoor unit: The part of the VSAT intended to be installed outdoor, as declared by the manufacturer, or as indicated in the user documentation.

The outdoor unit usually comprises three main parts:

- a) the antenna sub-system which converts the incident radiation field into a guided wave and vice versa;
- b) 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;
- c) 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 outside the scope of 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 VSAT. 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.

ancillary equipment: Equipment used in connection with a VSAT is considered as ancillary if the three following conditions are met:

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

nominated bandwidth: The bandwidth of the VSAT radio frequency transmission 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 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.

spurious radiation: Any radiation outside the nominated bandwidth.

cross-polarization discrimination: The ratio of the on-axis co-polar gain to the cross-polar gain in a given direction, at a transmit or receive frequency. It is usually expressed in dB.

transmissions disabled state: A VSAT is in this state when it is not authorised by the CCMF to transmit.

carrier-on state: A VSAT is in this state when it is authorised by the CCMF to transmit and when it transmits a signal.

carrier-off state: A VSAT is in this state when it is authorised by the CCMF to transmit, but when it does not transmit any signal.

NOTE 3: The existence of a carrier-off state depends on the system of transmission used. For VSATs designed for continuous transmission mode there may be no carrier-off state.

3.2 Abbreviations

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

CCMF	Centralised Control and Monitoring Functions
EIRP	Equivalent Isotropically Radiated Power
FS	Fixed Service
FSS	Fixed Satellite Service
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 be as specified in ETS 300 456 [4] and shall contain:

- the value of the nominated bandwidth declared by the manufacturer;
- the value of the nominated bandwidth shall not exceed 5 times the "Occupied Bandwidth" [1];
- the results of the tests;
- all operational conditions and parameters.