SLOVENSKI STANDARD
SIST ETS 300 332:2000

01-maj-2000

Satelitske zemeljske postaje in sistemi (SES) - Oddajni ali oddajno-sprejemni satelitski terminali z manjġo anteno (VSATs) za komunikacije v frekvenļ nih pasovih fiksnih satelitskih storitev (FSS) 6 in 4 GHz

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) 6 GHz and 4 GHz frequency bands

Ta slovenski standard je istoveten z: **ETS 300 332 Edition 2**

ICS:

33.060.30	Radiorelejni in fiksni satelitski komunikacijski sistemi	Radio relay and fixed satellite communications systems

SIST ETS 300 332:2000 **en**

EUROPEAN TELECOMMUNICATION STANDARD

ETS 300 332

July 1997

Second Edition

Source: ETSI TC-SES

Reference: RE/SES-00012

ICS: 33.020

Key words: Satellite, earth station, VSAT, FSS

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) 6 GHz and 4 GHz frequency bands

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE
Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE
X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

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

Contents

Blank page

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:	4 July 1997
Date of latest announcement of this ETS (doa):	31 October 1997
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	30 April 1998
Date of withdrawal of any conflicting National Standard (dow):	30 April 1998

Blank page

1 Scope

This European Telecommunication Standard (ETS) provides specifications for the standardization 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 transmit-only and transmit-and-receive 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 GHz to 6,650 GHz (earth-to-space), 3,400 GHz to 4,200 GHz (space-to-earth);

- in these frequency bands circular and linear polarization are normally used;

- the VSAT operates through geostationary satellites at least 3° away from any other geostationary satellite operating in the same frequency band and covering the same area;

- designed usually for unattended operation;

- antenna diameter not exceeding 7,3 m, or equivalent corresponding effective area.

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.

There are no EMC specifications under this ETS, however ETS 300 673 [3] contains the EMC specifications for VSATs.

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-R Recommendation 732 (1992): "Method for statistical processing of earth station antenna side-lobe peaks".

[2] EN 50083-1 (1993): "Cabled distribution systems for television and sound signals - Part 1: Safety requirements".

[3] ETS 300 673 (1996): "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".

3 Definitions and abbreviations

3.1 Definitions

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

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

a) the equipment is intended for use in conjunction with the 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 the VSAT; and

c) the absence of the equipment does not inhibit the operation of the VSAT.

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

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

NOTE 1: 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.

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.

indoor unit: Is composed of that part of the VSAT which is not part of the outdoor unit. It is generally installed inside a building and is connected to the outdoor unit. The connection cable between the outdoor and indoor unit is considered part of the indoor unit.

nominated bandwidth: The bandwidth of the VSAT radio frequency transmission is nominated by the manufacturer. 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: For a digital modulation scheme - the width of the signal spectrum 10 dB below the maximum inband density. For an analogue modulation scheme - the width of a frequency band such that, below the lower and above the upper frequency limits, the mean power emitted is equal to 0,5 % of the total mean power of the emission.

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 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 from the intermediate frequency to RF and amplify the low level signals for transmission through the antenna subsystem.

NOTE 3: 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.

spurious radiation: Any radiation outside the nominated bandwidth.

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

voltage axial ratio: The voltage axial ratio of an antenna at a transmit or a receive frequency is the ratio r equal to (x + 1)/(x - 1) where x is the square root of the cross-polarization discrimination (not expressed in dB).

3.2 Abbreviations

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

CCMF	Centralised Control and Monitoring Functions
EIRP	Equivalent Isotropically Radiated Power
EMC	ElectroMagnetic Compatibility
FS	Fixed Service
FSS	Fixed Satellite Service
LNB	Low Noise Block (low noise amplifier and down converter)
RF	Radio Frequency
VSAT	Very Small Aperture Terminal