



SLOVENSKI STANDARD SIST ETS 300 327 E1:2003

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**Satelitske zemeljske postaje in sistemi (SES) – Prenosljive zemeljske postaje (TES)
(13-14/11-12 GHz) za satelitsko novinarstvo**

Satellite Earth Stations and Systems (SES); Satellite News Gathering (SNG)
Transportable Earth Stations (TES) (13-14/11-12 GHz)

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**Satellite Earth Stations and Systems (SES);
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Transportable Earth Stations (TESs)
(13-14/11-12 GHz)**

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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).

Every ETS prepared by ETSI is a voluntary standard. This ETS contains text concerning type approval of the equipment to which it relates. This text does not make this ETS mandatory in its status as a standard. However, this ETS can be referenced, wholly or in part, for mandatory application by decisions of regulatory bodies.

Transposition dates	
Date of latest announcement of this ETS (doa):	31 December 1994
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	31 March 1995
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1 Scope

The scope of this European Telecommunication Standard (ETS) is to provide minimum specifications for the standardisation of the characteristics of Transportable Earth Stations (TESs) used for Satellite News Gathering (SNG) which can be either an unforeseen or pre-planned activity. The TES can be either vehicle mounted or packed for transportation. The TES can be capable of transmitting either video or audio or both simultaneously. The TESs considered in this ETS are those designed to operate whilst stationary as defined in subclause 3.2.

This earth station should include a capability to receive signals from the satellite for antenna pointing purposes and to monitor its own transmission where the satellite transmission beam permits. The receive equipment could also be used in the process of two-way communication to control and co-ordinate operation.

SNG earth stations have the following characteristics:

- operating in the Ku-band allocated to the Fixed Satellite Services (FSS), 12,75 - 13,25 GHz (Earth-Space), 13,75 - 14,50 GHz (Earth-Space), 10,70 - 11,70 GHz (Space-Earth) and 12,50 - 12,75 GHz (Space-Earth). Frequencies could be selected from throughout the entire frequency range or be restricted to a range completely enclosed within those bands. These bands are partly shared between FSS and Fixed Service (FS);
- in these frequency bands linear polarization is normally used and the system operates through satellites with 3 degree spacing;
- designed for attended operation;
- antenna diameter not exceeding 5,0 m or equivalent corresponding aperture.

NOTE: At present the Radio Regulations restrict the use of the 13,75 - 14,00 GHz band to earth stations having an antenna diameter of 4,5 m or greater and having a transmitting eirp between 68 dBW and 85 dBW.

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The equipment considered in this ETS comprises both the antenna sub-system and the associated transmit and receive sub-systems.

This ETS does not contain any requirement, recommendation or information about the method of modulation. Such modulation could result in the transmission being either analogue or digital, or both simultaneously.

This ETS does not contain any requirement, recommendation or information about the baseband signals used in the modulation process. Such baseband signals could be pure analogue, digital or a mixture of analogue and digital.

This ETS does not contain any requirement, recommendation or information about the operation of the equipment.

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, Radio Frequency (RF) radiation safety and solar radiation protection as well as protection from harmful interference.
- specifications related to characteristics which depend on operational conditions and which contribute mainly to the quality of reception of the two-way communication and monitoring paths by providing the SNG TES with minimum interference protection from other radio systems.

2 Normative references

This ETS incorporates, by dated or undated references, 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] EN 60950 (1992): "Safety of information technology equipment including electrical business equipment".
- [2] IEC 81(CO)6 (1981): "Standards for lightning protection of structures", Part 1 General principles.
- [3] IEC 510-2-1 (1978) with modification of 1989: Part 2 "Measurements for sub-systems" Section One "General" and Section Two "Antenna (including feed network)".
- [4] IEC 510-1-2 (1984): Part 1 "Measurements common to sub-systems and combinations of sub-systems" Section Two "Measurements in the RF range".
- [5] CISPR Publication 22 (1985) as amended by CISPR/G (Central Office 09) (1992): "Limits and methods of measurement of radio interference characteristics of information technology equipment".
- [6] ITU-R Recommendation 732 (1990): "Method for statistical processing of Earth station antenna side-lobe peaks".
- [7] IEC 801-3 (1984): "Electromagnetic compatibility for industrial-process measurement and control equipment" Part 3 "Radiated electromagnetic field requirements".
- [8] EN 55011 (1986): "Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio frequency equipment".
- [9] CISPR Publication 16 (1987): "CISPR specification for radio interference measuring apparatus and measurement methods".

3 Abbreviations and definitions

3.1 Abbreviations

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

ATIS	Automatic Transmitter Identification System
SNG	Satellite News Gathering
TES	Transportable Earth Station
ETS	European Telecommunication Standard
FSS	Fixed Satellite Services
IEC	International Electrotechnical Commission
CISPR	International Special Committee on Radio Interference
ITU-R	International Telecommunications Union - Radiocommunications Sector
EN	European Standard
eirp	equivalent isotropically radiated power
RF	Radio Frequency
EUT	Equipment Under Test
TEM	Transverse Electro-Magnetic
HPA	High Power Amplifier
LNB	Low Noise Block (low noise amplifier and down converter)
MSS	Mobile Satellite Services
rms	root mean square

IRPA/INIRC

International Non-Ionizing Radiation Committee of the International Radiation Protection Association

3.2 Definitions

For the purposes of this ETS the following definitions apply:

Transportable Earth Station (TES): an earth station that can be relocated at any time to a different fixed operating location but is not intended to operate during the relocation period.

A TES does not operate in any of the Mobile Satellite Services (MSS), e.g. LMSS (Land), AMSS (Aeronautical) and MMSS (Maritime). These are referred to as mobile earth stations.

Satellite News Gathering (SNG) TES: equipment capable of transmitting television signals and associated audio or programme audio only towards a satellite positioned on the geostationary orbit. The modulation method may be either analogue or digital. Such transmissions are point-to-point or point-to-multipoint but not for general broadcast reception.

The SNG TES usually comprises seven main parts, which are defined below, and all power, interconnecting and other cables required for proper operation of the equipment as follows:

- 1) the antenna sub-system, which converts the incident electromagnetic wave into a guided wave and vice versa and which includes any mounting that may be required;
- 2) the transmit sub-system, which is composed of the frequency translation equipment and the high power amplifier;
- 3) the receive sub-system which consists of the low noise amplifier and the frequency translation equipment;
- 4) the ground communications sub-system, which consists of user defined modulation and demodulation, either analogue or digital, and associated baseband equipment;
- 5) the monitoring and control sub-system which consists of user defined test equipment together with a transmitter identification system and a facility for two way communication for control purposes if required;
- 6) the power sub-system, which consists of any power generation equipment that may be required;
- 7) the transportation sub-system, which consists of either a vehicle for vehicle mounted SNG TES or flight cases for "flyaway" SNG TES.

Nominated bandwidth: 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 into account the transmit carrier frequency stability. The bandwidth of the SNG TES radio frequency transmission is nominated by the manufacturer.

NOTE: 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 assignment situation.

Spurious radiation: any radiation outside the nominated bandwidth of the transmitted carrier.

Carrier-off: that state where the equipment is electrically powered and the transmit sub-system is not switched to the antenna. The ground communications sub-system may or may not be driving the transmit sub-system.

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:

The antenna sub-system, including all structural and attached components, shall be designed to support the following main loads due to:

- the weight of the antenna and structural components;
- the wind speed;
- the weight of the expected snow and ice;
- the shock generated by transportation.

At the wind speeds stated the following criteria shall apply:

- up to 50 m/s (180 km/h) none of the components shall be torn away;
- up to 30 m/s (108 km/h) permanent distortion shall not occur.

Above the wind speed specified by the manufacturer at which the antenna is to be stowed, this stowage should have taken place.

Verification:

Conformance shall be determined by numerical analysis, possibly supported by practical tests. The effect of the maximum wind load on the antenna sub-system shall be first computed using a numerical analysis method, e.g. finite elements method by computer taking into account the intrinsic properties of the materials. In the second step, the computed loads shall be applied to the structure. This second step may be performed either by practical tests or by a recognised numerical analysis that can be proved to give the same results.

The purpose of the first numerical analysis is two-fold:

- 1) to show compliance with the specification under nominated conditions;
- 2) to compute equivalent static loads (force and torque) applied to the critical attachment points of the structure, e.g.:
 - reflector mounting legs fixing point;
 - reflector - struts;
 - struts - LNB and/or HPA.