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_ca i b]_UW'Y'n'b]n_c'V]hbc`]]fcghc'f@8 F7 L'nU[`cVU'b]dca cfg_]nUg]b]b
j Ufbcghb]g]ghYa 'f] A8 GGL!'HY b] bY_UfU_hf]gh_Y]b'a Yf]bY'a YfcXY

Satellite Earth Stations and Systems (SES); Maritime Mobile Earth Stations (MMES)
operating in the 1,5/1,6 GHz bands providing Low Bit Rate Data Communications
(LBRDC) for the Global Maritime Distress and Safety System (GMDSS); Technical
characteristics and methods of measurement

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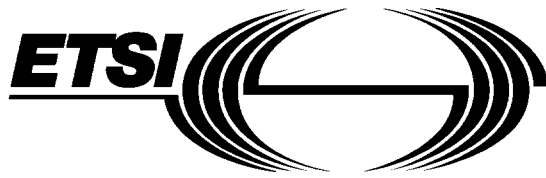
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Foreword

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	
Date of adoption of this ETS:	26 April 1996
Date of latest announcement of this ETS (doa):	31 August 1996
Date of latest publication of new National Standard or endorsement of this ETS (dop/e):	29 February 1997
Date of withdrawal of any conflicting National Standard (dow):	29 February 1997

Every ETS prepared by ETSI is a voluntary standard. This ETS may contain text concerning conformance testing of the equipment to which it relates. This text should be considered as guidance only and does not make this ETS mandatory.

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1 Scope

This European Telecommunication Standard (ETS) sets out the minimum performance requirements and technical characteristics for ship earth stations capable of transmitting and receiving direct-printing communications, and for Enhanced Group Call (EGC) equipment, as required by regulations IV/7, IV/8, IV/9 and IV/10 of the 1974 International Convention for Safety of Life at Sea (SOLAS) [5] as amended, concerning radio communications for the Global Maritime Distress and Safety System (GMDSS). Minimum performance requirements for the Network Control Facility (NCF) are contained in ETS 300 459 [3].

NOTE: The only satellite system accepted by the SOLAS convention to provide LBRDC in the GMDSS is INMARSAT-C at the date of publication.

For the purpose of this ETS the term "ship earth station" is used in order to align this ETS to ITU terminology. It is defined as a Maritime Mobile Earth Station (MMES) operating in the GMDSS.

This ETS is applicable to the following classes of equipment:

- Class 0:
 - a stand alone EGC receiver;
- Class 1:
 - a basic ship earth station providing shore-to-ship and ship-to-shore message transfer only;
- Class 2:
 - as for Class 1 but with EGC as an alternative to shore-to-ship transfer using a shared receiver;
- Class 3:
 - as for Class 1 but with EGC using an independent receiver.

This ETS covers equipment construction and performance testing. GMDSS requirements and tests are included where they are supplementary to those contained in the equipment certification required in subclause 5.1.

Frequency bands allocated by the Radio Regulations [1] to the Maritime Mobile Satellite Service (MMSS) are as follows:

	MMSS
Transmit frequencies	1 626,5 to 1 645,5 MHz
Receive frequencies	1 525,0 to 1 545,0 MHz

Requirements are specified in order to ensure the requirements of the GMDSS are met, to protect other users of the frequency spectrum from unacceptable interference, for the purposes of general safety and for the provision of protection of the ship earth station against electromagnetic interference from other 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] International Telecommunication Union, Radio Regulations, (WARC 1992).
- [2] IEC 510-2-1 (1978): "Methods of measurement for radio equipment used in satellite earth stations, Part 2: Measurement for sub-systems".
- [3] ETS 300 459: "Satellite Earth Stations and Systems (SES); Network Control Facilities (NCF) for Maritime Mobile Earth Stations (MMESs) operating in the 1,5/1,6 GHz and 11/12/14 GHz bands providing Low Bit Rate Data Communications (LBRDCs)".
- [4] CISPR 16-1 (First edition 1993-08): "Specification for radio disturbance and immunity measuring apparatus methods. Part 1: Radio disturbance and immunity measuring apparatus".
- [5] Regulations IV/7, IV/8, IV/9 and IV/10 of the 1988 Amendments to the 1974 SOLAS convention as amended.
- [6] NMEA 0183, version 2.01: "Standards for Interfacing Marine Electronic Devices".
- [7] IMO Resolution A.663(16): "Performance Standards for INMARSAT Standard-C Ship Earth Stations Capable of Transmitting and Receiving Direct-Printing Communications".
- [8] IMO Resolution A.664(16): "Performance Standards for Enhanced Group Call Equipment".
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- [9] IMO Resolution A.694(17): "General Requirements for Ship borne Radio Equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for Electronic Navigational Aids".
- [10] ISO/R694 (1968): "Recommendations for the positioning of compasses, Method B".
- [11] EN 55022 (1994): "Limits and methods of measurements of radio disturbance characteristics of information technology equipment".

3 Definitions and abbreviations

3.1 Definitions

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

ship earth station: A MMES on board a ship, (see clause 1).

nominated bandwidth: The nominated bandwidth encompasses all spectral elements of the transmission which have a level greater than the specified spurious levels. The nominated bandwidth is wide enough to take account of the transmit carrier frequency stability. The nominated bandwidth is within the MMSS transmit frequency band within which the ship earth station operates. The bandwidth of the ship earth station radio frequency transmission is nominated by the manufacturer and included in the data sheet of the test report.

unwanted emissions: For the purpose of this ETS unwanted emissions are those falling outside the nominated bandwidth.

performance check: A performance check consists of the following:

- for Class 0 equipment:
 - reception of a distress priority EGC message;
- for Class 1 equipment:
 - transmission of a distress message;
- for Class 2 and 3 equipment:
 - transmission of a distress message and reception of a distress priority EGC message.

The transmission of a distress message is considered to be successful when:

- the Special Test Equipment (STE) has received the distress message and correctly interpreted it; and
- the Equipment Under Test (EUT) has correctly indicated to the user, the acknowledgement of receipt of the transmission from the STE.

The reception of a distress priority EGC message is considered to be successful when the EUT has printed the message and the appropriate indications are provided to the user that a distress priority EGC message has been received.

Special Test Equipment (STE): Specific equipment which enables the tests specified in this ETS to be carried out.

Equipment Under Test (EUT): For the purposes of this ETS the EUT includes all units necessary for intended operation.

This includes:

- the Externally Mounted Equipment (EME);
- the Internally Mounted Equipment (IME) including the data terminal equipment such as keyboard, Visual Display Unit (VDU), printer, etc.;
- all interconnecting cables and power supply leads.

3.2 Abbreviations

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

CMF	Control and Monitoring Function
EGC	Enhanced Group Call
EIRP	Equivalent Isotropically Radiated Power
EMC	Electro-Magnetic Compatibility
EME	Externally Mounted Equipment
EUT	Equipment Under Test
FARI	Forward And Return Identity
GMDSS	Global Maritime Distress and Safety System
IME	Internally Mounted Equipment
IMO	International Maritime Organisation
MMSS	Maritime Mobile Satellite Service
NCF	Network Control Facility
MMSI	Maritime Mobile Service Identity
RF	Radio Frequency
SOLAS	Safety Of Life At Sea
STE	Special Test Equipment
VDU	Visual Display Unit

4 Tests

4.1 Special Test Equipment (STE)

The STE shall be supplied by the manufacturer or system provider. Since this test equipment will be specific for the particular system it is not possible to provide detailed specifications in this ETS. However, the following baseline is provided:

- special test arrangements are required to simulate the satellite signal, thus enabling the ship earth station to transmit, to allow measurement of transmission parameters;
- any specification of these special test arrangements which may have direct or indirect effects on any specification of this ETS shall be clearly stated by the manufacturer;
- the STE shall prevent any radiation of signals, and it shall be certified by the system operator to be suitable for such purpose;
- when using STE it shall be ensured that no transmission to the satellite occurs.

4.2 Test report

The test report shall contain:

- the value of the nominated bandwidth declared by the manufacturer;
- the results of the test;
- all parameters and operational conditions.