SLOVENSKI STANDARD
SIST EN 301 403 V1.1.1:2003

01-december-2003

Elektromagnetna združljivost in zadeve v zvezi z radijskim spektrom (ERM) ï Pomorske mobilne zemeljske postaje (MMES), ki delujejo v frekvenļnih pasovih 1,5 GHz in 1,6 GHz ter zagotavljajo prenos govora in neposredno tiskanje za globalni pomorski nujnostni in varnostni sistem (GMDSS) ï Tehniļne karakteristike in merilne metode

Electromagnetic compatibility and Radio spectrum Matters (ERM); Maritime Mobile Earth Stations (MMES) operating in the 1,5 GHz and 1,6 GHz bands providing voice and direct printing for the Global Maritime Distress and Safety System (GMDSS); Technical characteristics and methods of measurement

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European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Maritime Mobile Earth Stations (MMES) operating in the 1,5 GHz and 1,6 GHz bands providing voice and direct printing for the Global Maritime Distress and Safety System (GMDSS); Technical characteristics and methods of measurement

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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

National transposition dates	
Date of adoption of this EN:	25 April 2003
Date of latest announcement of this EN (doa):	31 July 2003
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 January 2004
Date of withdrawal of any conflicting National Standard (dow):	31 January 2004

Introduction

The present document sets out the minimum operational and performance requirements, technical characteristics, methods of testing and required test results, for Maritime Mobile Earth Stations (MMES), capable of transmitting and receiving distress and safety communications using voice and direct-printing, as required by chapter IV, Regulations 8, 9, 10 and 14 of the 1988 amendments to the 1974 International Convention for the Safety of Life at Sea (SOLAS) [4], concerning radio communications for the Global Maritime Distress and Safety System (GMDSS).

NOTE 1: In order to meet the carriage requirements of the GMDSS in respect of receipt of the SafetyNET^{SM} broadcasts, it is necessary to install an additional EGC receiver. SafetyNET^{SM} is a service provided over a dedicated Inmarsat-C carrier, for the dissemination of maritime safety information, such as distress alerts, weather forecasts and coastal warnings.

NOTE 2: When a requirement of the present document is in conflict with one in the MMES System Definition Manual (SDM), reference shall be made to the most recent IMO and ITU applicable documents to resolve the difficulty.

NOTE 3: For the purpose of the present document, the term "MMES" is used in order to align the present document to ITU and IEC terminology. It is defined as a Maritime Mobile Earth Station (MMES) operating in the GMDSS.

The present document incorporates the performance standards of IMO Resolution A.808(19) [6]. It also incorporates the relevant ITU Radio Regulations [7].

The present document takes account of IMO Resolution A694(17) [5], to which EN 60945 [2] is associated. When a requirement in the present document is different from EN 60945 [2], the requirement in the present document shall take precedence.

Compliance to the present document does not signify compliance to any safety requirements. However, it is the responsibility of the assessor of the equipment that any observations regarding the given apparatus becoming dangerous or unsafe as a result of the application of the tests defined in the present document should be included in the test report.

1 Scope

The present document provides specifications for the standardization of transmit/receive Maritime Mobile Earth Stations (MMES) operating in the 1,5 GHz and 1,6 GHz bands under the Global Maritime Distress and Safety Systems (GMDSS) in order to ensure general safety and limit interference to radio communication systems.

NOTE: The present document is for MMES equipment that meets the requirements of IMO A.808(19) [6] based systems only.

The present document applies to MMES radio equipment, which have the following characteristics:

- the MMES is ship mounted;
- these MMES are controlled and monitored by a Network Control Facility (NCF). The NCF is outside the scope of the present document;
- the MMES operates through geostationary satellites as part of a network providing voice, direct printing and data communications;
- the MMES is capable of operating within the frequency ranges given in table 1.

Table 1: Mobile Satellite Service (MSS) frequency bands

Direction of Transmission	MSS frequency bands
Transmit (earth to space)	1 626,5 MHz to 1 660,5 MHz
Receive (space to earth)	1 525,0 MHz to 1 559,0 MHz

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

Referenced documents which are not found to be publicly available in the expected location might be found at http://docbox.etsi.org/Reference.

[1] CISPR 16-1: "Specification for radio disturbance and immunity measuring apparatus and methods - Part 1: Radio disturbance and immunity measuring apparatus" (Annex G: Validation of the open area test site for the frequency range of 30 MHz to 1 000 MHz).

[2] EN 60945 (1997): "Maritime navigation and radiocommunication equipment and systems; General requirements; Methods of testing and required test results".

[3] EN 61162-1 (2000): "Maritime navigation and radiocommunication equipment and systems; Digital interfaces; Part 1: Single talker and multiple listeners".

[4] IMO International Convention on Safety of Life at Sea (SOLAS) (1974).

NOTE: See http://www.imo.org/Conventions/contents.asp?topic_id=257&doc_id=647

[5] IMO Resolution A.694(17): "General requirements for shipborne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids".

[6] IMO Resolution A.808(19): "Performance standards for ship earth stations capable of two-way communications".

[7] ITU Radio Regulations.

[8] IMO MSC/Circular 862: "Clarification of certain requirements in IMO performance standards for GMDSS equipment 29.6.98".

[9] IEC 61097-10 (1999): "Global maritime distress and safety system (GMDSS) - Part 10: Inmarsat-B ship earth station equipment - Operational and performance requirements, methods of testing and required test results".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply.

applicant: manufacturer or his authorized representative within the European Community or the person responsible for placing the apparatus on the market

antenna gain: ratio, expressed in decibels, of the power that would have to be supplied to an isotropic radiator to the power supplied to the antenna being considered, so that they produce the same field strength at the same distance in the same direction

carrier-off state: state in which MMES is when either it is authorized by the Network Control Facility (NCF) to transmit but when it does not transmit any signal, or when it is not authorized by the NCF to transmit

carrier-on state: state in which MMES is when it is authorized by the NCF to transmit and when it transmits a signal

carrier to noise density ratio: ratio of un-modulated carrier power to noise power normalized to a 1 Hz bandwidth

conformance test: means whereby the equipment is proved to be in compliance with the specifications

Control Channel (CC): channel or channels by which MMES receive control information from the NCF for their network

environmental profile: range of environmental conditions under which equipment within the scope of EN 301 403 is required to comply with the provisions of EN 301 403

Equipment Under Test (EUT): for the purpose of EN 301 403 the EUT includes all units necessary for intended operation

NOTE: This includes:

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

Equivalent Isotropically Radiated Power (EIRP): product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna *(absolute or isotropic gain*)

Externally Mounted Equipment (EME): those of the modules of the Installable Equipment which are intended to be mounted externally to the ship as stated by the applicant

NOTE: This equipment is exposed to the weather.

Installable Equipment (IE): equipment which is intended to be fitted to a ship

NOTE: An IE may consist of one or several interconnected modules.

Internally Mounted Equipment (IME): those of the modules of the IE which are not declared by the applicant as EME are defined as Internally Mounted Equipment (IME)

NOTE: This equipment is protected from the weather.

L-band: frequency band in the range 1,4 GHz to 1,7 GHz allocated to the mobile satellite service and in which the EUT transmits and receives

nominated bandwidth: bandwidth of the MMES radio frequency transmission is nominated by the applicant

NOTE 1: The nominated bandwidth is wide enough to encompass all spectral elements of the transmission necessary for communication and which have a level greater than the specified unwanted emissions limits. The nominated bandwidth is wide enough to take account of the transmit carrier frequency stability.

NOTE 2: The nominated bandwidth is within the MSS transmit frequency band within which the MMES operates.

out-of-band emissions: emission on a frequency or frequencies immediately outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions

ship earth station: MMES on board a ship

Special Test Equipment (STE): specific equipment which enables the tests specified in EN 301 403 to be carried out

spurious emission: emission on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information

NOTE: Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products but exclude out of band emissions.

unwanted emissions: spurious emissions and out of band emissions falling outside the nominated bandwidth in the carrier-on state and those generated in the carrier-off state

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

CC	Control Channel
C/No	Carrier to noise density ratio in 1 Hz bandwidth
CMF	Control and Monitoring Functions
CR	Carriage Return
EGC	Enhanced Group Call
EIRP	Equivalent Isotropically Radiated Power
EMC	Electro Magnetic Compatibility
EME	Externally Mounted Equipment
EUT	Equipment Under Test
GMDSS	Global Maritime Distress and Safety System
IE	Installable Equipment
IEC	International Electrotechnical Commission
IME	Internally Mounted Equipment
IMO	International Maritime Organization
ISO	International Standards Organization
ITU	International Telecommunications Union
LES	Land Earth Station
LF	Line Feed
LMES	Land Mobile Earth Station
MMES	Maritime Mobile Earth Station
MSS	Mobile Satellite Service
NCF	Network Control Facility
RF	Radio Frequency
SES	Ship Earth Station
SOLAS	Safety Of Life At Sea