SLOVENSKI STANDARD
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Elektromagnetna združljivost in zadeve v zvezi z radijskim spektrom (ERM) ï Radiotelefonska oprema za območje VHF za splošne komunikacije in pripadajoča oprema za digitalni selektivni klic (DSC) razreda "D" ï 1. del: Tehnične karakteristike in merilne metode

Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF radiotelephone equipment for general communications and associated equipment for Class D Digital Selective Calling (DSC); Part 1: 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).

The present document is part 1 of a multi-part deliverable covering the Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF radiotelephone equipment for general communications and associated equipment for Class "D" Digital Selective Calling (DSC), as identified below:

Part 1: "Technical characteristics and methods of measurement";

Part 2: "Harmonized EN under article 3.2 of the R&TTE Directive";

Part 3: "Harmonized EN under article 3.3 (e) of the R&TTE Directive".

National transposition dates	
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1 Scope

The present document covers the minimum requirements for general communication for shipborne fixed installations using a VHF radiotelephone with associated equipment for DSC - class D.

These requirements include the relevant provisions of the ITU Radio Regulations, appendix 18 [1], ITU-R Recommendation M.493-10 [5] where class D is defined, M.825-3 [8] and incorporate the relevant guidelines of the IMO as detailed in MSC/Circ.803 [9].

The present document also specifies technical characteristics, methods of measurement and required test results.

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] ITU Radio Regulations, Appendix 18 (2001): "Table of transmitting frequencies in the VHF maritime mobile band".

[2] ITU-T Recommendation E.161 (2001): "Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network".

[3] ITU-T Recommendation O.41 (1994): "Psophometer for use on telephone-type circuits".

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

[5] ITU-R Recommendation M.493-10 (2000): "Digital selective-calling system for use in the maritime mobile service".

[6] ETSI TR 100 028: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

[7] ITU-R Recommendation SM 332-4: "Selectivity of receivers".

[8] ITU-R Recommendation M.825-3 (1998): "Characteristics of a transponder system using digital selective calling techniques for use with vessel traffic services and ship-to-ship identification".

[9] MSC/Circ.803: "Participation of non-SOLAS ships in the Global Maritime Distress and Safety System (GMDSS)".

[10] ITU-R Recommendation M.821-1 (1997): "Optional expansion of the digital selective-calling system for use in the maritime mobile service".

[11] ITU-R Recommendation M.1371-1 (2001): "Technical characteristics for a universal shipborne automatic identification system using time division multiple access in the VHF maritime mobile band".

[12] ETSI EN 301 843-2 (V1.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for marine radio equipment and services; Part 2: Specific conditions for VHF radiotelephone transmitters and receivers".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

class D: intended to provide minimum facilities for VHF DSC distress, urgency and safety as well as routine calling and reception, not necessarily in full accordance with IMO GMDSS carriage requirements for VHF installations (ITU-R Recommendation M.493-10 [5])

carrier frequency: frequency to which the transmitter or receiver is tuned

frequency deviation: difference between the instantaneous frequency of the modulated RF signal and the carrier frequency

G3E: phase-modulation (Frequency modulation with a pre-emphasis of 6 dB/octave) for speech

G2B: phase-modulation with digital information, with a sub-carrier for DSC operation

modulation index: ratio between the frequency deviation and the frequency of the modulation signal

3.2 Symbols

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

λ	lambda (wavelength)

3.3 Abbreviations

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

ac	alternating current
ad	amplitude difference
dc	direct current
AIS	universal shipborne Automatic Identification System
DSC	Digital Selective Calling
e.m.f.	electromotive force
EPIRB	Emergency Position Indicating Radio Beacon
EUT	Equipment Under Test
fd	frequency difference
FM	Frequency Modulation
IF	Intermediate Frequency
GGA	Global positioning system fixed data
GLL	Geographic position Latitude/Longitude
GNS	Global Navigation System
GPS	Global Positioning System
MMSI	Maritime Mobile Service Identity
ppm	parts per million
RMC	Recommended Minimum specific GPS/transit data
r.m.s.	root mean square
RF	Radio Frequency
SINAD	Signal + Noise + Distortion to Noise + Distortion
VHF	Very High Frequency
VTS	Vessel Traffic System

4 General and operational requirements

4.1 General

The manufacturer shall declare that compliance to the requirements of clause 4 is achieved and shall provide relevant documentation.

4.2 Composition

The equipment shall, as a minimum, include:

- a VHF radiotelephone transmitter;
- a VHF radiotelephone receiver;
- a dedicated channel 70 watchkeeping receiver for DSC decoder;
- a DSC encoder; and
- a DSC decoder.

4.3 Construction

All controls shall be of sufficient size to enable the usual control functions to be easily performed and the number of controls should be the minimum necessary for simple and satisfactory operation.

Adequately detailed operating instructions shall be provided with the equipment.

The equipment shall be capable of operating on single frequency and two-frequency channels with manual control (simplex).

The equipment shall be able to operate on all channels defined in appendix 18 to the Radio Regulations [1].

Additional VHF channels outside those defined by appendix 18 to the Radio Regulations [1] may also be provided, but means shall be provided to block any or all of these additional channels, as may be required by the licence before installation on board vessels. It shall not be possible for the user to unblock any blocked channels.

The equipment shall be so designed that use of channel 70 for purposes other than DSC is prevented, and that use of channels AIS1 and AIS2 for purposes other than AIS is prevented.

It shall not be possible to transmit while any frequency synthesizer used within the transmitter is out of lock.

It shall not be possible to transmit during channel switching operations.

4.4 Controls and indicators

The user shall not have access to any control which, if wrongly set, might impair the technical characteristics of the equipment.

If the equipment can be operated from more than one position, the control unit provided at the position from where the vessel is normally navigated shall have priority and the individual control units shall be provided with an indicator showing whether the equipment is in operation.

The following controls or functions shall be provided:

- DISTRESS BUTTON (see clause 4.5.3): The default shall be an undesignated distress message;
- CALL (see clause 4.5.1): The default (initial display) shall be an individual call;
- CANCEL: to revert to the initial display or to silence the aural alarm and visual indication used to indicate receipt of a DSC alert. The cancel function shall take place automatically after a maximum of 5 min of inactivity;
- ENTER/Accept/OK: for accepting a menu item;
- a means of easily entering MMSI for calling and manual position information. If a numeric key pad is provided this shall conform to ITU-T Recommendation E.161 [2];
- ALPHA - NUMERIC DISPLAY (see clause 4.5);
- on/off switch for the entire installation with a visual indication that the installation is in operation:
- a manual non-locking push-to-talk switch to operate the transmitter with a visual indication that the transmitter is activated and facilities to limit the transmission time to a maximum of 5 min. A short audible alarm and a visual indication may be provided to show when the transmission will be automatically terminated within the next 10 s. It shall be possible to reoperate the push to talk switch and reactivate the transmitter after a 10 s period;
- a switch for reducing transmitter output power to no more than 1 W, on both telephony and DSC, with a visual indication that low power is selected;
- an audio-frequency power volume control;
- a squelch control;
- a control for dimming to extinction the equipment illumination with the exception of a visual indicator (see clause 4.5.3);
- controls for multiple watch facilities, if provided (see clause 5.7).

The equipment shall have means to select manually a channel and shall indicate the designator (where applicable), as shown in appendix 18 to the Radio Regulations [1], of the channel at which the installation is set. The channel designator shall be legible irrespective of the external lighting conditions.

channel 16 shall be distinctively marked. Selection of channel 16, shall be preferably by readily accessible means (e.g. a distinctively marked key). Selection of channel 16 by any means shall automatically set the transmitter output power to maximum. This power level may subsequently be reduced by manual user control if required.

Where the capability for automatically switching a radiotelephone channel on receipt of a DSC call exists, a means for disabling that capability should be provided. This capability should be provided for all calls other than individual station calls of category distress or urgency.

4.5 Facilities for coding and decoding of DSC

4.5.1 Call functions

The facilities for coding and composition of calls shall be so arranged that it is possible for the operator quickly and precisely to enter a call. The types of DSC calls provided in this equipment are specified in annex A.

The CALL functions (see clause 4.4) shall permit selection of the following functions:

- INDIVIDUAL: for making a call to a specific MMSI;
- GROUP: for making a call to a specific Group MMSI (see clause 5.4);
- ALL SHIPS URGENCY/SAFETY: for making all ships calls;
- RECEIVED CALLS: for retrieving stored incoming DSC calls;