SLOVENSKI STANDARD
SIST EN 301 025:2000

01-december-2000

Elektromagnetna združljivost (EMC) in zadeve v zvezi z radijskim spektrom (ERM) - Tehniļne karakteristike in merilne metode za radiotelefonsko telekomunikacijsko opremo VHF in s tem v zvezi z opremo za razred "D" DSC (digitalnega selektivnega klica)

ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Technical characteristics and methods of measurement for VHF radiotelephone equipment for general communications and associated equipment for Class D Digital Selective Calling (DSC)

Ta slovenski standard je istoveten z: EN 301 025 Version 1.1.1

ICS:

33.060.99	Druga oprema za radijske komunikacije	Other equipment for radiocommunications
33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

SIST EN 301 025:2000 en

EN 301 025 V1.1.1 (1998-08)

European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics and methods of measurement for VHF radiotelephone equipment for general communications and associated equipment for Class "D" Digital Selective Calling (DSC)

Reference
DEN/ERM-RP01-019 (9ho00ico.PDF)

Keywords
Maritime, radio, traffic

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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:	7 August 1998
Date of latest announcement of this EN (doa):	30 November 1998
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 1999
Date of withdrawal of any conflicting National Standard (dow):	31 May 1999

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 [1], ITU-R Recommendations M.493-9 [5] where class D is defined, M.825-1 [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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, subsequent revisions do apply.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ITU Radio Regulations, Appendix 18 (1994): "Table of transmitting frequencies in the band 156 - 174 MHz for stations in the Maritime Mobile Service".

[2] ITU-T Recommendation E.161 (1993): "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 P.53 (1994): "Psophometer for use on telephone-type circuits".

[4] IEC 1162-1 (1995): "Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 1: Single talker and multiple listeners".

[5] ITU-R Recommendation M.493-9 (1997): "Digital selective-calling system for use in the maritime mobile service".

[6] ETR 028: "Radio Equipment and Systems (RES); Uncertainties in the measurement of mobile radio equipment characteristics".

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

[8] ITU-R Recommendation M.825-1 (1995): "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)".

3 Definitions and abbreviations

3.1 Definitions

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

Class D: class D equipment is 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.493-9) [5].

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

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

3.2 Abbreviations

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

DSC	Digital Selective Calling
e.m.f.	electromotive force
EUT	Equipment Under Test
FM	Frequency Modulation
IF	Intermediate Frequency
IMO	International Maritime Organization
MMSI	Maritime Mobile Service Identity
ppm	parts per million
RF	Radio Frequency
r.m.s.	root mean square
SINAD	Signal + Noise + Distortion to Noise + Distortion
VHF	Very High Frequency

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;
- a VHF radiotelephone receiver;

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

4.3 Construction

The mechanical and electrical construction and finish of the equipment shall conform in all respects to good engineering practice, and the equipment shall be suitable for use on board vessels.

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].

Operation on channels 75 and 76 shall be prevented by appropriate means. 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.

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 (subclause 4.5.3): The default shall be an undesignated distress message;
- CALL (subclause 4.5.1): The default (initial display) shall be an individual call;
- CANCEL: to revert to the initial display. The cancel function shall take place automatically after a maximum of five minutes of inactivity;
- ENTER/Accept/OK: for accepting a menu item;
- NUMERIC KEY PAD: for instance for entering MMSI for calling and manual position information. This shall conform to ITU-T Recommendation E.161 [2];
- ALPHA - NUMERIC DISPLAY (subclause 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;

- a switch for reducing transmitter output power to no more than 1 W 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 (subclause 4.5.3);
- controls for multiple watch facilities, if provided (subclause 5.8).

The equipment shall have means to select manually a channel and shall indicate the designator, 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). The initial selection of channel 16 shall automatically select the maximum transmitter power.

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 (subclause 4.4) shall permit selection of the following functions:

- INDIVIDUAL: for making a call to a specific MMSI;
- ALL SHIPS URGENCY/SAFETY: for making all ships calls;
- RECEIVED CALLS: for retrieving stored incoming DSC calls;
- OTHER: for equipment housekeeping functions.

If INDIVIDUAL is selected, either a MANUAL call (subclause 4.5.2) or a DIRECTORY call shall be selected. The DIRECTORY list shall have a facility for at least 10 entries. Their MMSIs shall be programmable.

4.5.2 MANUAL calls

The MANUAL call facility shall permit the entry of a MMSI. If the called station is a coast station (i.e. MMSI commencing 00) no further information shall be requested from the operator. If the called station is a ship station the equipment shall request input of a channel number. The equipment shall assist the operator by suggesting a suitable inter-ship channel.

4.5.3 Distress calls

It shall only be possible to transmit distress DSC calls by means of a single dedicated button which is used for no other purpose. This button shall not be any key of ITU-T Recommendation E.161 [2] digital input panel or an ISO keyboard provided on the equipment. This button shall be clearly identified and protected against inadvertent operation with a spring loaded cover.

The distress alert initiation shall require at least two independent actions. A visual indication and an acoustic alarm (subclause 5.6.3) shall be provided to show that a distress alert has been initiated. There shall be a time delay of at least 3 s between initial operation of the button and the alert being activated.

It shall be possible to select the nature of distress prior to initiating the transmission of a distress call. The default nature of distress shall be the undesignated distress.