

**SLOVENSKI STANDARD**  
**SIST EN 301 025-1 V1.1.2:2003**

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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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# ETSI EN 301 025-1 V1.1.2 (2000-08)

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*European Standard (Telecommunications series)*

**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 EN 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".

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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 [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.
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- [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 61162-1 (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] ETSI 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)".
  - [10] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility.

## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the following terms and 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:** 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 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
r.m.s.	root mean square
RF	Radio Frequency
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.

Initiation of a distress call shall automatically have priority over any other operation of the equipment. The equipment shall automatically select channel 70 and the maximum transmitter power.

Manual means shall be provided to discontinue transmission of a distress call.

The distress call shall automatically be transmitted five times in succession with no intervals between the individual calls so that bit synchronization between the transmitter and receiver of the call can be maintained. Each call shall include the appropriate dot pattern.

After the transmission of the distress call sequence the equipment shall automatically tune to channel 16 and select the maximum transmitter power.

#### 4.5.4 ALL SHIPS calls

It shall only be possible to transmit ALL SHIPS URGENCY and ALL SHIPS SAFETY calls by means of deliberate actions, such as two levels of menu instructions.

#### 4.5.5 Incoming calls

The DSC equipment shall be provided with suitable facilities for converting incoming calls with relevant address content to visual form in plain language. The contents of at least the last 10 received DSC calls shall be stored until read manually from the RECEIVED CALL menu.

The radiotelephone shall be capable of automatically switching to any channel identified in an incoming call. In the case of incoming distress and urgency calls the radiotelephone shall switch to channel 16 and shall automatically select the maximum transmitter power.

### 4.6 DSC display (standards.iteh.ai)

The equipment shall be provided with facilities which show the functions currently available, prompts the operator if an incorrect operation is attempted, displays error messages and displays incoming and logged calls. When the equipment is not in use for normal communications purposes, it should display the last entered position (subclause 5.5).

The equipment shall be provided with facilities for visual indication, and possible manual correction of the user programmable information content of the call before the call is sent.

There shall be an indication that unread incoming messages are present in memory. Indications shall be provided that a distress alert is in automatic retransmit mode.

### 4.7 Handset and loudspeaker

The equipment shall be fitted with a telephone handset or microphone, and an integral loudspeaker and/or a socket for an external loudspeaker. Where there are connections to external loudspeakers, these shall also relay acoustic alarms.

During transmission in simplex operation the receiver output shall be muted.

### 4.8 Safety precautions

Measures shall be taken to protect the equipment against the effects of excessive current or excessive voltage.

Measures shall be taken to prevent any damage that might arise from an accidental reversal of polarity of the electrical power source.

Means shall be provided for earthing exposed metallic parts of the equipment.