



**Technical characteristics and methods of measurement
for equipment for generation, transmission
and reception of Digital Selective Calling (DSC)
in the maritime MF, MF/HF and/or VHF mobile service;
Part 5: Handheld VHF Class H DSC**

ETSI STANDARDS PREVIEW
<https://standards.iteh.ai/catalog/standards/si/41a2-95e8-b81190264905-41a2-95e8-b81190264905/etsi-en-300-338-5-v1-2-1-2017-02>

Reference

REN/ERM-TG26-087-5

Keywords

DSC, GMDSS, maritime, radio

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Foreword

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

The present document is part 5 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.2].

National transposition dates	
Date of adoption of this EN:	8 February 2017
Date of latest announcement of this EN (doa):	31 May 2017
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2017
Date of withdrawal of any conflicting National Standard (dow):	30 November 2018

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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1 Scope

The present document states the minimum requirements for general communication for handheld VHF radios using the handheld class H DSC for shipborne use.

Class H DSC may be used in the Very High Frequency (VHF) Maritime Mobile Service (MMS), for distress, urgency and safety communication and general communications using telephony for subsequent communications.

The present document is part 5 of a multi-part deliverable that covers the requirements to be fulfilled by equipment that is integrated with a handheld transceiver.

These requirements include the relevant provisions and the guidelines of the IMO as detailed in MSC/Circ.803 [i.1] for non-SOLAS vessels participating in the GMDSS.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

- [1] ITU Radio Regulations (2016).
- [2] Recommendation ITU-R M.493-14 (2015): "Digital selective-calling system for use in the maritime mobile service".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] IMO Circular MSC/Circ-803: "Participation of non-SOLAS ships in the Global Maritime Distress and Safety System (GMDSS)".
- [i.2] ETSI EN 300 338-1: "Technical characteristics and methods of measurement for equipment for generation, transmission and reception of Digital Selective Calling (DSC) in the maritime MF, MF/HF and/or VHF mobile service; Part 1: Common requirements".

3 Definitions and abbreviations

3.1 Definitions

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

acknowledged: automated procedure it indicates that the objective of the initial DSC message has been achieved

active: automated procedure which has control of the receiver and transmitter and is thus able to engage in subsequent communications and receive DSC messages

automated procedure: set of actions necessary to complete the objective of an initiating DSC message or non DSC communication event

NOTE 1: Four DSC automated procedures are designed to process these. They are the receiving of distress DSC messages, the receiving of non-distress DSC messages, the sending of distress DSC alert attempts and the sending of non-distress DSC messages. In addition a fifth procedure is designed to handle non DSC communication events.

NOTE 2: These automated procedures are called:

- Received distress automated procedure.
- Sending distress automated procedure.
- Received non-distress automated procedure.
- Sending non-distress automated procedure.
- Communications automated procedure.

class H: handheld class 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

NOTE: For handheld Class H VHF a reduced functionality is permitted compared to a fixed VHF class D.

critical errors: set of information characters obtained from one or more received DSC messages is considered to have critical errors if the automated procedure needs information characters from that set in order to proceed or perform any task, but the required information characters are in error

EXAMPLE: An acknowledgement cannot be composed to an individual DSC message that has errors in the sender's MMSI.

default: value selected or an action taken by the equipment software in the absence of any operator input

distress alert: name given to the single distress DSC message with the format symbol 112

distress alert attempt: set of distress alerts sent by a vessel when in distress

NOTE: A distress alert DSC message by itself is never intentionally sent by a vessel in distress. For example, the single frequency distress alert attempt consists of five consecutive distress alerts with no break in between each distress alert.

distress DSC message: DSC message or acknowledgement containing the distress information

distress event: unique distress situation identified by two parameters of the distress information; the MMSI of the vessel in distress and the nature of distress

distress information: symbols within a DSC message describing a distress situation consisting of the MMSI of the vessel in distress, the nature of distress, the position of the vessel in distress, the UTC time of that position and the mode of subsequent communication

engaged: equipment that is busy handling an automated procedure

factory default: default value that is set by the manufacturer such that the field or behaviour is defined prior to any operator intervention

information characters: set of symbols in a DSC message that contains the items of interest for the recipient and is used to compute the ECC symbol that terminates the message

NOTE: These symbols are repeated in the DX/RX time diversity pattern.

initial DSC message: DSC message that starts an automated procedure

non-distress DSC message: DSC messages or acknowledgements that do not have the format specifier or category of "distress"

objective: intent of the DSC message either to establish subsequent communications or request information

operator options: any choices the operator can make while the automated procedure is engaged

pertinent to the automated procedure: DSC messages that have something to do with the procedure and are therefore 'handled' by the procedure

NOTE: A DSC message is pertinent to an automated procedure if the set of information characters in the DSC message has the correct values.

pertinent to the station: any DSC message that would start an automated procedure if the transceiver were in standby

self-terminating alarm: short alarm that stops by itself without operator intervention

NOTE: The purpose of this alarm is to inform the operator that a DSC message is received but it does not require his immediate attention.

standby: state of the operational unit when it is not in one of the procedures but is still able to receive DSC calls

symbol (as part of the DSC sentence): 7 binary bits of a 10 bit DSC word that have the information content

top level: items, buttons, or functions are present and visible without requiring any action by the operator (such as scrolling, opening up menus, or removing any obscuring covers, etc.)

two-tone alarm: alarm consisting of a repetition of the 2 200 Hz frequency for 250 ms followed by a 1 300 Hz frequency for 250 ms

NOTE: This alarm is used for the initiation of the received distress DSC automated procedure. The characteristics of this alarm are fixed.

urgency alarm: alarm consisting of a repetition of the 2 200 Hz frequency for 250 ms followed by 250 ms period of silence

NOTE: This alarm is used for the initiation of the received non-distress DSC automated procedure when the category of the initiating DSC message is "urgency". The characteristics of this alarm are fixed.

word (as part of the DSC sentence): 10 binary bits that make up the coded entities of a transmitted DSC message

NOTE: The 10 bits consist of a 7 bit "symbol" that gives the information content and 3 bit error check that gives the number of 0 binary bits in the 7 bit symbol.

3.2 Abbreviations

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

ACK	ACKnowledgement
CH	Channel
DSC	Digital Selective Calling
ECC	Error Check Character
EPIRB	Emergency Position Indicating Radio Beacon

EUT	Equipment Under Test
GMDSS	Global Maritime Distress and Safety System
GNSS	Global Navigation Satellite System
HF	High Frequency
ITU	International Telecommunications Union
ITU-R	ITU - Radiocommunications Sector
MF	Medium Frequency
MMS	Maritime Mobile Service
MMSI	Maritime Mobile Service Identity
RT	Radio Telephony
TX	Transmit
UTC	Universal Time Co-ordinated
VHF	Very High Frequency

4 Controls and Indicators in handheld Class H DSC Equipment

4.1 Visual indication

4.1.0 General

Any visual display of the information content shall be clearly legible under all ambient light conditions.

4.1.1 Primary DSC alphanumeric display

4.1.1.0 General Requirements

The display characters shall have a minimum height of 2 mm, and a nominal character width/height ratio of 0,7.

The display shall have a minimum of 12 characters per line and a minimum of 32 characters total.

Any displayed information shall be static. Horizontal scrolling techniques are not permitted (see clause 4.1.2).

The display shall be capable of:

- prompting the operator if an incorrect operation is attempted;
- displaying error messages;
- displaying incoming and logged calls in plain language;
- displaying all the user programmable information content of a DSC call.

4.1.1.1 Additional display information

Additional display characters or symbols shall be capable of:

- showing the functions and options currently available;
- displaying that unread received DSC calls are present in memory;
- displaying other visual alarms;
- displaying whether the position and time information is automatically entered or manually entered.

There shall be additional display characters and symbols as required for displaying channel designator and other radio parameters.

Where logic flows and procedural guidance, expressed by graphical symbols, have an advantage over text, this shall be allowed. Any graphical symbols shall be clearly defined in the operation manual.

4.1.2 Handling visual information

In case all information, or user options, required for the active automated procedure, cannot be contained on a single screen, means shall be available to inform the user:

- a) that more information is available;
- b) how to select the relevant information not yet displayed, e.g. by means of a next button or info key.

5 Technical requirements

5.1 Facilities for DSC transmission and reception

5.1.1 GNSS receiver

A GNSS receiver shall be integrated into the equipment.

5.1.2 CH:70 receiver

The equipment shall be able to continuously monitor CH:70 at any time the transmitter is not active.

5.2 Facilities for coding and decoding of DSC

5.2.1 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 clause 5.2.4.

The CALL functions 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.
- **ALL SHIPS**: for making all ships calls where this option is available.
- **RECEIVED CALLS**: for retrieving stored incoming DSC calls.
- **OTHER**: for equipment housekeeping functions.

If **INDIVIDUAL** is selected, either a **MANUAL** call (see clause 5.2.2) or a **DIRECTORY** call shall be selected. The **DIRECTORY** list shall have a facility for at least 10 entries. Their MMSIs shall be programmable.

5.2.2 INDIVIDUAL calls

The **INDIVIDUAL** call facility shall permit either the **MANUAL** entry of a MMSI or the selection of a station from the **DIRECTORY** list. 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 as defined in appendix 18 of the Radio Regulations [1] (see also annex B).

5.2.3 ALL SHIPS calls

Where the option to transmit ALL SHIPS is available then it shall only be able to select ALL SHIPS calls by means of deliberate actions, such as two levels of menu instructions.

The operator shall be able to select either Urgency or Safety category and the equipment shall propose the default subsequent working channel of 16 (the operator shall have the option to change the working channel).

5.2.4 DSC call functionality

The following DSC calls shall be available in the equipment.

Table 1

CALL TYPE	Tx	Rx	Format specifier	Notes
Distress alert	Y	Y	112	TX: All natures of distress except "EPIRB"
Distress acknowledgement	#	Y	116	
Distress relay ACK DROBOSE to Group	#	Y	114	
All ships RT call	N	Y	116	Urgency (110) and Safety (108) only
All ships Duplex RT call	#	O	116	These are FULL duplex calls. Urgency (110) and Safety (108) only
Individual RT call	N	Y	120	Urgency (110) and Safety (108) only
Individual RT call acknowledgement	Y	N	120	Urgency (110) and Safety (108) only
Individual RT call acknowledgement "unable to comply"	Y	N	120	Urgency (110) and Safety (108) only
Individual test call	Y	Y	120	Safety (108) only
Individual test call acknowledgement	Y	Y	120	Safety (108) only
Routine group call RT	Y	Y	114	
Routine individual RT call	Y	Y	120	
Routine individual RT ACK	Y	Y	120	
Position request	N	Y	120	Safety (108) only
Position request ACK	Y	N	120	Safety (108) only
Distress Alert Cancel	Y	Y	112	This is the "self addressed" distress ACK

If any other calls, not listed in table 1, are implemented in the device, they shall comply with tables 4.1 to 4.10.2 of Recommendation ITU-R M.493-14 [2]. Individual routine category polling and position calls from previous versions of Recommendation ITU-R M.493 may be implemented for the sake of reverse compatibility.

- Call types marked Y shall be available in the equipment.
- Call types marked N are not required.
- Call types marked # shall not be available in the equipment.
- Call types marked opt are optional.
- Call types marked o.1 are optional but if used then all calls marked o.1 shall be available.

6 Automated and Non-Automated Procedure Requirements in handheld Class H DSC Equipment

6.1 Introduction

This clause covers the minimum level of software automation, operational simplicity, and interface consistency requirements for handheld class H Digital Selective Calling equipment.