



SLOVENSKI STANDARD
oSIST prEN 300 338-1 V1.4.3:2019
01-februar-2019

Tehnične karakteristike in merilne metode za naprave, ki generirajo, oddajajo in sprejemajo digitalni selektivni klic (DSC) v pomorski mobilni storitvi, ki deluje v območju MF, MF/HF oziroma VHF - 1. del: Splošne zahteve

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

(standards.iteh.ai)

[SIST EN 300 338-1 V1.5.1:2019](https://standards.iteh.ai/catalog/standards/sist/104bc4ec-82bb-4b50-9733-bdabe88e46ce/sist-en-300-338-1-v1-5-1-2019)

<https://standards.iteh.ai/catalog/standards/sist/104bc4ec-82bb-4b50-9733-bdabe88e46ce/sist-en-300-338-1-v1-5-1-2019>

Ta slovenski standard je istoveten z: ETSI EN 300 338-1 V1.4.3 (2018-12)

ICS:

33.060.20	Sprejemna in oddajna oprema	Receiving and transmitting equipment
47.020.70	Navigacijska in krmilna oprema	Navigation and control equipment

oSIST prEN 300 338-1 V1.4.3:2019 **en**

Draft **ETSI EN 300 338-1** V1.4.3 (2018-12)



**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**

<https://standards.iteh.ai/catalog/standards/sist/104bc4ec-82bb-4b50-9733-bdabe88e46ce/sist-en-300-338-1-v1-5-1-2019>

Reference

REN/ERM-TG26-606

Keywords

DSC, GMDSS, maritime, radio

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

iTeh STANDARDS PREVIEW
(standards.iteh.ai)

Important notice

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the only prevailing document is the print of the Portable Document Format (PDF) version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

If you find errors in the present document, please send your comment to one of the following services:

<https://portal.etsi.org/People/CommiteeSupportStaff.aspx>

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2018.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members.

3GPP™ and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

oneM2M™ logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners.

GSM® and the GSM logo are trademarks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	7
Foreword.....	7
Modal verbs terminology.....	8
1 Scope	9
2 References	9
2.1 Normative references	9
2.2 Informative references.....	10
3 Definition of terms and abbreviations	11
3.1 Terms.....	11
3.2 Abbreviations	12
4 General requirements	13
4.1 General	13
4.2 Frequencies.....	14
4.3 Classes of emission	14
4.4 Accessibility	14
4.5 Calibration.....	14
4.6 Controls and indicators.....	15
4.6.1 General.....	15
4.6.2 Markings	15
4.7 Distress alert activation	15
4.8 Own MMSI	15
4.9 Group MMSI.....	16
4.10 Own position	16
4.11 Light sources	16
4.12 Operation.....	16
4.13 Routine testing.....	16
4.14 Safety precautions	17
4.14.1 Excessive current and voltage.....	17
4.14.2 Protection.....	17
4.14.3 Earthing	17
4.14.4 Access	17
4.15 Memory.....	17
4.16 Compass safe distance.....	17
4.17 Instructions	17
4.18 Warming-up period	18
4.18.1 Time.....	18
4.18.2 Heaters	18
4.18.3 Heating circuits.....	18
4.19 Selection of signal characteristics	18
4.20 Automatic/semi-automatic service	18
4.21 RF power used for DSC signalling.....	18
5 Test conditions	18
5.1 Test conditions, power sources, and ambient temperatures.....	18
5.1.1 Normal and extreme test conditions.....	18
5.1.2 Test power source	19
5.2 Normal test conditions.....	19
5.2.1 Normal temperature and humidity	19
5.2.2 Normal power sources	19
5.2.2.1 Battery power source.....	19
5.2.2.2 Other power sources.....	19
5.3 Extreme test conditions	19
5.3.0 General.....	19
5.3.1 Extreme temperatures	19
5.3.2 Extreme values of test power sources	19

5.3.2.1	Battery power source.....	19
5.3.2.2	Other power sources.....	20
5.3.3	Procedure for tests at extreme temperatures	20
5.4	Standard test signals	20
5.4.1	References to standard test signals	20
5.4.2	Standard test signal no. 1	20
5.4.3	Standard test signal no. 2	20
5.4.4	Standard test signal no. 3	20
5.4.5	Standard test signal no. 4	20
5.5	Determination of the symbol error rate in the output of the receiving part	21
5.6	Test Impedances	21
6	RF test or baseband test of DSC equipment.....	21
6.1	RF test of integrated DSC equipment.....	21
6.1.1	SOLAS VHF class A	21
6.1.2	Non-SOLAS VHF class D.....	21
6.1.3	SOLAS MF/HF class A	21
6.1.4	Non-SOLAS MF/HF class E	21
6.1.5	Non-SOLAS VHF class H.....	21
6.1.6	MoB class M.....	21
6.2	Baseband test of non integrated DSC equipment	22
6.2.1	VHF Encoder.....	22
6.2.1.1	Frequency error	22
6.2.1.1.1	Definition.....	22
6.2.1.1.2	Method of measurements.....	22
6.2.1.1.3	Limits	22
6.2.1.2	Output voltage.....	22
6.2.1.2.1	Definition.....	22
6.2.1.2.2	Method of measurement	22
6.2.1.2.3	Limits	22
6.2.1.3	Bit stream speed	22
6.2.1.3.1	Definition.....	22
6.2.1.3.2	Method of measurement	23
6.2.1.3.3	Limits	23
6.2.1.4	Unwanted spectral components of the output signal	23
6.2.1.4.1	Definition.....	23
6.2.1.4.2	Method of measurement	23
6.2.1.4.3	Limits	23
6.2.1.5	Residual frequency modulation.....	24
6.2.1.5.1	Definition.....	24
6.2.1.5.2	Method of measurement	24
6.2.1.5.3	Limits	24
6.2.2	VHF DSC decoder.....	24
6.2.2.1	Dynamic range	24
6.2.2.1.1	Definition.....	24
6.2.2.1.2	Method of measurement	24
6.2.2.1.3	Limits	25
6.2.2.2	Noise immunity.....	25
6.2.2.2.1	Definition.....	25
6.2.2.2.2	Method of test.....	25
6.2.2.2.3	Limits	25
6.2.3	MF/HF DSC encoder.....	25
6.2.3.1	Frequency error	25
6.2.3.1.1	Definition.....	25
6.2.3.1.2	Method of measurement	25
6.2.3.1.3	Limits	25
6.2.3.2	Output voltage.....	25
6.2.3.2.1	Definition.....	25
6.2.3.2.2	Method of measurement	25
6.2.3.2.3	Limits	26
6.2.3.3	Bit stream speed	26
6.2.3.3.1	Definition.....	26

6.2.3.3.2	Method of measurement	26
6.2.3.3.3	Limits	26
6.2.3.4	Unwanted spectral components of the output signal	26
6.2.3.4.1	Definition.....	26
6.2.3.4.2	Method of measurement	26
6.2.3.4.3	Limits	26
6.2.3.5	Residual frequency modulation.....	27
6.2.3.5.1	Definition.....	27
6.2.3.5.2	Method of measurement	27
6.2.3.5.3	Limits	27
6.2.4	MF/HF DSC decoder.....	28
6.2.4.1	Interface for scanning.....	28
6.2.4.2	Scanning efficiency	28
6.2.4.2.1	Definition.....	28
6.2.4.2.2	Method of measurement	28
6.2.4.2.3	Limits	28
6.2.4.3	Dynamic range	28
6.2.4.3.1	Definition.....	28
6.2.4.3.2	Method of measurement	29
6.2.4.4	Noise Immunity.....	29
6.2.4.4.1	Definition.....	29
6.2.4.4.2	Method of test.....	29
6.2.4.4.3	Limits	29
7	Environmental tests	29
7.1	Environmental tests	29
7.1.1	Introduction.....	29
7.1.2	Procedure	30
7.1.3	Performance check.....	30
7.1.4	Vibration test (all classes).....	30
7.1.4.1	Method of measurement.....	30
7.1.4.2	Requirement	31
7.1.5	Temperature tests.....	31
7.1.5.1	Dry heat for externally mounted equipment (all classes).....	31
7.1.5.1.1	Method of measurement	31
7.1.5.1.2	Requirement	31
7.1.5.2	Damp heat cycle (all classes)	31
7.1.5.2.1	Method of measurement	31
7.1.5.2.2	Requirement	31
7.1.5.3	Low temperature cycle.....	31
7.1.5.3.1	Method of measurement for externally mounted equipment (all classes)	31
7.1.5.3.2	Method of measurement for internally mounted equipment.....	32
7.1.5.3.3	Requirement	32
7.1.6	Corrosion test (class A).....	32
7.1.6.1	General	32
7.1.6.2	Method of measurement.....	32
7.1.6.3	Requirements	33
7.1.7	Rain test (externally mounted, class A)	33
7.1.7.1	General	33
7.1.7.2	Method of measurement.....	33
7.1.7.3	Requirements	33
8	Decoding and error correction.....	34
8.1	Reception of DSC messages.....	34
8.2	Error handling in the automated procedures.....	35
8.2.1	General.....	35
8.2.2	Distress automated procedures	35
8.2.3	Non distress automated procedures	36
9	Interfaces	36
9.1	DSC signals input/output: analogue signals	36
9.2	DSC signals input/output: digital signals	36
9.3	Entry of position information	36

9.4	Interfaces between DSC equipment and external circuits	37
9.4.1	Operational interfaces	37
9.4.2	Printer output	37
9.4.3	Other interfaces	37
10	Multiple operator positions	37
10.1	Priority	37
10.2	Alarms	37
10.3	Specific functionality	37
11	Multiple radio installations	38
12	Channel and frequency coding	38
12.1	Frequency information in DSC messages	38
13	Call set-up procedures	39
Annex A (normative):	DSC Message Detection and Decoding	41
History		42

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST EN 300 338-1 V1.5.1:2019

<https://standards.iteh.ai/catalog/standards/sist/104bc4ec-82bb-4b50-9733-bdabe88e46ce/sist-en-300-338-1-v1-5-1-2019>

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<https://ipr.etsi.org/>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

Foreword

This draft European Standard (EN) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document is part 1 of a multi-part deliverable covering Digital Selective Calling (DSC), as identified below:

- Part 1: "**Common requirements**";
- Part 2: "Class A DSC";
- Part 3: "Class D DSC";
- Part 4: "Class E DSC";
- Part 5: "Handheld VHF Class H DSC";
- Part 6: "Class M DSC";
- Part 7: "Interfacing DSC radio equipment to Bridge Alert Management systems (BAM)";
- Part 8: "Enabling DSC radio equipment with remote control capabilities".

The present document covers the common requirements for all classes of DSC equipment. Operator interfaces and operating system details are class specific and will be found in the appropriate part.

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
Date of withdrawal of any conflicting National Standard (dow):	18 months after doa

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).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 300 338-1 V1.5.1:2019

<https://standards.iteh.ai/catalog/standards/sist/104bc4ec-82bb-4b50-9733-bdabe88e46ce/sist-en-300-338-1-v1-5-1-2019>

1 Scope

The present document states the minimum requirements for equipment to be used for generation, transmission and reception of Digital Selective Calling (DSC) for use on board ships.

DSC is intended to be used in the Medium Frequency (MF), High Frequency (HF) and Very High Frequency (VHF) bands of the Maritime Mobile Service (MMS), for distress, urgency and safety communication and general communications.

The present document is part 1 of a multipart deliverable that covers the requirements to be fulfilled by:

- DSC equipment integrated with a transmitter and/or a receiver;
- DSC equipment not integrated with a transmitter and/or a receiver.

These requirements include the relevant provisions of the ITU Radio Regulations [i.17] and Recommendations ITU-R M.493-14 [2], M.541-10 [3], M.689-3 [4] and M.1082-1 [5], the International Convention for the Safety Of Life At Sea (SOLAS) [i.16], and the relevant resolutions of the International Maritime Organization (IMO).

Equipment for generation, transmission and reception of DSC designed according to the following equipment classes:

- Class A: includes all the facilities defined in annex 1 of Recommendation ITU-R M.493-14 [2] and complies with the IMO Global Maritime Distress and Safety System (GMDSS) carriage requirements for MF/HF installations and/or VHF installations.
- Class D: provides minimum facilities for VHF DSC distress, urgency and safety as well as routine calling and reception as recommended by IMO MSC/Circ.803 [i.2] for non-SOLAS vessels participating in the GMDSS.
- Class E: provides minimum facilities for MF and/or HF DSC distress, urgency and safety as well as routine calling and reception as recommended by IMO MSC/Circ.803 [i.2] for non-SOLAS vessels participating in the GMDSS.
- Class H: provides minimum facilities for handheld VHF DSC distress, urgency and safety as well as routine calling and reception as recommended by IMO MSC/Circ.803 [i.2] for non-SOLAS vessels participating in the GMDSS.
- Class M: provides minimum facilities for VHF Man Overboard devices as defined in Recommendation ITU-R M.493-14 [2].

NOTE 1: Class A equipment may support the optional semi-automatic/automatic service in accordance with Recommendations ITU-R M.689-3 [4], M.1082-1 [5] and M.493-14 [2], tables 4.10.1 and 4.10.2 and are encouraged to do so.

NOTE 2: Class D and Class E equipment may also support the optional semi-automatic/automatic service.

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 <https://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] Recommendation ITU-T E.161: "Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network".
- [2] Recommendation ITU-R M.493-14 (2015): "Digital selective-calling system for use in the maritime mobile service".
- [3] Recommendation ITU-R M.541-10 (2015): "Operational procedures for the use of digital selective-calling equipment in the maritime mobile service".
- [4] Recommendation ITU-R M.689-3 (2012): "International maritime VHF radiotelephone system with automatic facilities based on DSC signalling format".
- [5] Recommendation ITU-R M.1082-1 (1997): "International maritime MF/HF radiotelephone system with automatic facilities based on digital selective calling signalling format".
- [6] Recommendation ITU-T V.11 (1996): "Electrical characteristics for balanced double-current interchange circuits operating at data signalling rates up to 10 Mbit/s".
- [7] IEC 61162-1:2016: "Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 1: Single talker and multiple listeners".
- [8] IEC 61162-2:1998 (Ed. 1.0): "Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 2: Single talker and multiple listeners, high-speed transmission".
- [9] IEC 61162-3:2008+AMD1:2010+AMD2:2014 (Ed. 1.2): "Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 3: Serial data instrument network".
- [10] IEC 61162-450:2018: "Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 450: Multiple talkers and multiple listeners - Ethernet interconnection".
- [11] Recommendation ITU-R M.1080 (1994): "Digital selective calling system enhancement for multiple equipment installations".

<https://standards.iteh.ai/catalog/standards/sist/104bc4ec-82bb-4b50-9733-bd4b18e46ca/sist-en-300-338-1-v1-5-1-2019>

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] IEC 60529:2001 (Ed. 2.1): "Degrees of protection provided by enclosures (IP Code)".
- [i.2] IMO Circular MSC/Circ.803: "Participation of non-SOLAS ships in the Global Maritime Distress and Safety System (GMDSS)".
- [i.3] Report Recommendation ITU-R M.501: "Digital selective-calling system for future operational requirements of the maritime mobile service".
- [i.4] Void.
- [i.5] Recommendation ITU-R M.821-1 (1997): "Optional expansion of the digital selective-calling system for use in the maritime mobile service".
- [i.6] ETSI EN 301 925: "Radiotelephone transmitters and receivers for the maritime mobile service operating in VHF bands; Technical characteristics and methods of measurement".

- [i.7] ETSI EN 301 033: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics and methods of measurement for shipborne watchkeeping receivers for reception of Digital Selective Calling (DSC) in the maritime MF, MF/HF and VHF bands".
- [i.8] ETSI EN 301 025: "VHF radiotelephone equipment for general communications and associated equipment for Class "D" Digital Selective Calling (DSC); Harmonised Standard covering the essential requirements of articles 3.2 and 3.3(g) of Directive 2014/53/EU".
- [i.9] ETSI EN 300 373-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Maritime mobile transmitters and receivers for use in the MF and HF bands; Part 1: Technical characteristics and methods of measurement".
- [i.10] ETSI EN 303 402: "Maritime mobile transmitters and receivers for use in the MF and HF bands; Harmonised Standard covering the essential requirements of articles 3.2 and 3.3(g) of Directive 2014/53/EU".
- [i.11] ETSI EN 302 885: "Portable Very High Frequency (VHF) radiotelephone equipment for the maritime mobile service operating in the VHF bands with integrated handheld class H DSC; Harmonised Standard covering the essential requirements of articles 3.2 and 3.3(g) of Directive 2014/53/EU".
- [i.12] ISO 3791: "Office machines and data processing equipment - Keyboard layouts for numeric applications".
- [i.13] MSC 302(87): "Adoption of performance standards for bridge alert management".
- [i.14] IEC 61924-2 (Ed. 1): "Maritime navigation and radiocommunication equipment and systems - integrated navigation systems - Part 2: Modular structure for INS - operational and performance requirements, methods of testing and required test results" (including IEC 61924-2 Corrigendum 1 November 2013).
- [i.15] ETSI EN 303 132: "Maritime low power VHF personal locating beacons employing Digital Selective Calling (DSC); Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU".
- [i.16] [https://www.itsa.int/Portals/0/International Convention for the Safety of Life at Sea \(SOLAS\), 1974.](https://www.itsa.int/Portals/0/International%20Convention%20for%20the%20Safety%20of%20Life%20at%20Sea%20(SOLAS)%201974.pdf)
- [i.17] ITU Radio Regulations (2016).

3 Definition of terms and abbreviations

3.1 Terms

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

B-state: condition when transmitting the higher of the two Digital Selective Calling (DSC) frequencies

critical error: 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.

distress alert: single DSC sentence containing the distress format character and the distress information

distress alert attempt: complete set of distress alerts used during the transmission stage

NOTE: Usually an attempt consists of 5 distress alerts sent without a break.