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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 the Directive 2014/53/EU

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Foreword

This draft Harmonised 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 has been prepared to provide a means of conforming to the essential requirements of Directive 2014/53/EU [i.3] of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.

NOTE: The corresponding Commission's standardization request is expected shortly.

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in tables A.1 and A.2 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

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.

1 Scope

The present document covers the minimum requirements for general communication for shipborne fixed installations using a VHF radiotelephone operating in certain frequency bands allocated to the maritime mobile service using either 25 kHz or 25 kHz and 12,5 kHz channels and associated equipment for DSC - class D.

These requirements include the relevant provisions of the ITU Radio Regulations, appendix 18 [1], Recommendations ITU-R M.493-13 [3] (where class D is defined), M.825-3 [i.4] and incorporate the relevant guidelines of the IMO as detailed in IMO Circular MSC/Circ-803 [i.1].

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

The present document contains requirements to demonstrate that "... *Radio equipment shall be so constructed that it both effectively uses and supports the efficient use of radio spectrum in order to avoid harmful interference*" [i.3] and that *"....radio equipment supports certain features ensuring access to emergency services"* [i.3].

In addition to the present document, other ENs that specify technical requirements in respect of essential requirements under other parts of article 3 of the Radio Equipment Directive [i.3] may apply to equipment within the scope of the present document.

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 reference 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, appendix 18 (2012): "Table of transmitting frequencies in the VHF maritime mobile band".

[2] ETSI EN 300 338-3 (V1.1.1) (02-2010): "Electromagnetic compatibility and Radio spectrum Matters (ERM); 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 3: Class D DSC".

[3] Recommendation ITU-R M.493-13 (2009): "Digital selective-calling system for use in the maritime mobile service".

[4] Recommendation ITU-R M.1084-5 (2012): "Interim solutions for improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service".

[5] ETSI TS 103 052 (V1.1.1) (03-2011): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Radiated measurement methods and general arrangements for test sites up to 100 GHz".

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 reference document (including any amendments) applies.

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

[i.3] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.

[i.4] Recommendation ITU-R 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".

[i.5] Recommendation ITU-T O.41 (1994): "Psophometer for use on telephone-type circuits".

[i.6] ETSI TR 100 028 (all parts) (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics".

[i.7] ETSI TR 100 028-2 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2".

[i.8] ETSI TS 101 570-3 (V1.1.1) (06-2012): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Interoperability Testing for Maritime Digital Selective Calling (DSC) Radios; Part 3: Class D Test Descriptions".

3 Definitions, symbols and abbreviations

3.1 Definitions

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

block: inhibit a function by making it inaccessible from the user interface

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

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

NOTE: See Recommendation ITU-R M.493-13 [3].

environmental profile: range of environmental conditions under which equipment within the scope of the present document is required to comply with the provisions of the present document

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

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

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

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:

ad	amplitude difference
AIS	universal shipborne Automatic Identification System
d.c.	direct current
DSC	Digital Selective Calling
e.m.f.	electromotive force
EFTA	European Free Trade Association
EUT	Equipment Under Test
fd	frequency difference
FM	Frequency Modulation
FSK	Frequency Shift Keying
IF	Intermediate Frequency
IMO	International Maritime Organisation
ITU-R	International Telecommunication Union, Radiocommunications sector
ITU-T	International Telecommunication Union, Telecommunications sector
MPFD	Maximum Permissible Frequency Deviation
ppm	parts per million
r.m.s.	root mean square
RF	Radio Frequency
SINAD	Signal + Noise + Distortion to Noise + Distortion
SOLAS	Safety Of Life And Sea
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 transmitter;
- a VHF radiotelephone receiver; and

either:

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

or:

- a dedicated DSC controller interface.

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], noting in particular footnotes m) and e).

Additional VHF channels for maritime use outside those defined by appendix 18 to the Radio Regulations may also be provided where permitted by relevant administrations. These channels shall be clearly identified for use as relating to the relevant administration(s) and accessed through (a) positive action(s) for enabling use of this/these channel(s) but means shall be provided to block any or all of these additional channels if required by the relevant administration(s).

If 12,5 kHz channels are implemented in the equipment it shall be in accordance with Recommendation ITU-R M.1084-5 [4].

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:

- 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 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 4.6);
- controls for multiple watch facilities, if provided (see clause 5.4).

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.