

STN	Elektromagnetická kompatibilita a záležitosti rádiového spektra (ERM). Prenosné rádiotelefonné zariadenia s veľmi vysokou frekvenciou (VHF) pre plavebnú pohyblivú službu pracujúce v pásmach VHF s integrovaným ručným DSC triedy D. Časť 1: Technické charakteristiky a meracie metódy.	STN EN 302 885-1 V1.3.1 87 2885
------------	--	---

Electromagnetic compatibility and Radio spectrum Matters (ERM); Portable Very High Frequency (VHF) radiotelephone equipment for the maritime mobile service operating in the VHF bands with integrated handheld class D DSC; Part 1: Technical characteristics and methods of measurement

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/14

Obsahuje: EN 302 885-1 V1.3.1:2014

119482

Úrad pre normalizáciu, metrológiu a skúšobníctvo SR, odbor SÚTN, 2014
Podľa zákona č. 264/1999 Z. z. v znení neskorších predpisov sa môžu slovenské technické normy rozmnožovať a rozširovať iba so súhlasom Úradu pre normalizáciu, metrológiu a skúšobníctvo SR.

ETSI EN 302 885-1 V1.3.1 (2014-03)



**Electromagnetic compatibility and
Radio spectrum Matters (ERM);
Portable Very High Frequency (VHF) radiotelephone
equipment for the maritime mobile service operating
in the VHF bands with integrated handheld class D DSC;
Part 1: Technical characteristics and
methods of measurement**

Reference

REN/ERM-TG26-104-1

Keywords

DSC, maritime, radio, VHF

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

Important notice

The present document can be downloaded from:

<http://www.etsi.org>

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

<http://portal.etsi.org/tb/status/status.asp>

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

http://portal.etsi.org/chaicor/ETSI_support.asp

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.

© European Telecommunications Standards Institute 2014.

All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.
3GPP™ and **LTE™** are Trade Marks of ETSI registered for the benefit of its Members and
of the 3GPP Organizational Partners.
GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	7
Foreword.....	7
1 Scope	8
2 References	8
2.1 Normative references	8
2.2 Informative references.....	9
3 Definitions, symbols and abbreviations	9
3.1 Definitions.....	9
3.2 Symbols.....	9
3.3 Abbreviations	10
4 General and operational requirements.....	10
4.1 Construction	10
4.2 Controls and indicators.....	11
4.3 Microphone and loudspeaker	12
4.4 Safety precautions	12
4.5 Labelling.....	12
5 Technical requirements	12
5.1 Switching time.....	12
5.2 Class of emission and modulation characteristics	12
5.3 Battery capacity.....	13
5.4 DSC functionality.....	13
6 General conditions of measurement	13
6.1 Arrangements for RF connections to the equipment	13
6.1.1 RF connections to integral antenna equipment	13
6.1.2 RF connection to equipment with a detachable antenna	13
6.2 Arrangements for test signals applied to the receiver input.....	13
6.3 Squelch	13
6.4 Normal test modulation.....	14
6.5 Artificial antenna.....	14
6.6 Arrangements for test signals applied to the transmitter input	14
6.7 Test channels	14
6.8 Measurement uncertainty and interpretation of the measured results	15
6.8.1 Measurement uncertainty.....	15
6.8.2 Interpretation of the measurement results	15
6.9 Test conditions, power sources and ambient temperatures.....	15
6.9.1 Normal and extreme test conditions.....	15
6.9.2 Test power source	16
6.10 Normal test conditions.....	16
6.10.1 Normal temperature and humidity	16
6.10.2 Normal power sources	16
6.10.2.1 Battery power source.....	16
6.10.2.2 Other power sources.....	16
6.11 Extreme test conditions	16
6.11.1 Extreme temperatures	16
6.11.2 Extreme values of test power sources	16
6.11.2.1 Battery power source.....	16
6.11.2.2 Other power sources.....	17
6.12 Procedure for tests at extreme temperatures	17
7 Environmental tests	17
7.1 Procedure.....	17
7.2 Performance check	17
7.3 Drop test	17

7.3.1	Definition	17
7.3.2	Method of measurement	17
7.3.3	Requirement.....	18
7.4	Temperature tests	18
7.4.1	Definition	18
7.4.2	Dry heat	18
7.4.2.1	Definition	18
7.4.2.2	Method of measurement.....	18
7.4.2.3	Requirement	18
7.4.3	Damp heat.....	18
7.4.3.1	Definition	18
7.4.3.2	Method of measurement.....	19
7.4.3.3	Requirement	19
7.4.4	Low temperature cycle.....	19
7.4.4.1	Definition	19
7.4.4.2	Method of measurement.....	19
7.4.4.3	Requirement	19
8	Transmitter	19
8.1	Frequency error	19
8.1.1	Definition.....	19
8.1.2	Method of measurement	19
8.1.3	Limits.....	20
8.2	Carrier power.....	20
8.2.1	Definitions	20
8.2.2	Method of measurement	20
8.2.3	Limits, Normal and extreme test conditions	20
8.3	Frequency deviation	20
8.3.1	Definition.....	20
8.3.2	Maximum permissible frequency deviation.....	20
8.3.2.1	Method of measurement.....	20
8.3.2.2	Limits	20
8.3.3	Reduction of frequency deviation at modulation frequencies above 3 kHz.....	21
8.3.3.1	Method of measurement.....	21
8.3.3.2	Limits	21
8.4	Sensitivity of the modulator, including microphone	22
8.4.1	Definition.....	22
8.4.2	Method of measurement	22
8.4.3	Limits.....	22
8.5	Audio frequency response	22
8.5.1	Definition.....	22
8.5.2	Method of measurement	22
8.5.3	Limit	22
8.6	Audio frequency harmonic distortion of the emission.....	23
8.6.1	Definition.....	23
8.6.2	Method of measurement	23
8.6.2.1	Normal test conditions	23
8.6.2.2	Extreme test conditions	24
8.6.3	Limits.....	24
8.7	Adjacent channel power	24
8.7.1	Definition.....	24
8.7.2	Method of measurement	24
8.7.3	Limits.....	24
8.8	Conducted spurious emissions conveyed to the antenna	25
8.8.1	Definition.....	25
8.8.2	Method of measurement	25
8.8.3	Limit	25
8.9	Cabinet radiation and conducted spurious emissions other than those conveyed to the antenna	25
8.9.1	Definitions	25
8.9.2	Method of measurement	25
8.9.3	Limits.....	26
8.10	Residual modulation of the transmitter	26

8.10.1	Definition	26
8.10.2	Method of measurement	27
8.10.3	Limit	27
8.11	Transient frequency behaviour of the transmitter.....	27
8.11.1	Definitions	27
8.11.2	Method of measurement	28
8.11.3	Limits.....	29
8.12	Frequency error (demodulated DSC signal)	31
8.12.1	Definition.....	31
8.12.2	Method of measurement	31
8.12.3	Limits.....	31
8.13	Modulation index for DSC	31
8.13.1	Definition.....	31
8.13.2	Method of measurement	31
8.13.3	Limits.....	31
8.14	Modulation rate for DSC.....	31
8.14.1	Definition.....	31
8.14.2	Method of measurement	31
8.14.3	Limits.....	32
8.15	Testing of free channel transmission on DSC channel 70	32
8.15.1	Definition.....	32
8.15.2	Method of measurement	32
8.15.3	Requirement.....	32
8.16	Generated DSC call sequences.....	32
9	Receiver.....	33
9.1	Harmonic distortion and rated audio frequency output power	33
9.1.1	Definition.....	33
9.1.2	Methods of measurement.....	33
9.1.3	Limits.....	33
9.2	Audio frequency response	33
9.2.1	Definition.....	33
9.2.2	Method of measurement	33
9.2.3	Limits.....	34
9.3	Maximum usable sensitivity.....	34
9.3.1	Definition.....	34
9.3.2	Method of measurement	35
9.3.3	Limits.....	35
9.4	Co-channel rejection.....	35
9.4.1	Definition.....	35
9.4.2	Method of measurement	35
9.4.3	Limit	35
9.5	Adjacent channel selectivity.....	36
9.5.1	Definition.....	36
9.5.2	Method of measurement	36
9.5.3	Limits.....	36
9.6	Spurious response rejection.....	36
9.6.1	Definition.....	36
9.6.2	Method of measurement	36
9.6.3	Limit	37
9.7	Intermodulation response	37
9.7.1	Definition.....	37
9.7.2	Method of measurement	37
9.7.3	Limit	37
9.8	Blocking or desensitization	37
9.8.1	Definition.....	37
9.8.2	Method of measurement	38
9.8.3	Limit	38
9.9	Conducted spurious emissions	38
9.9.1	Definition.....	38
9.9.2	Method of measurement	38
9.9.3	Limit	38

9.10	Radiated spurious emissions.....	38
9.10.1	Definition	38
9.10.2	Method of measurements	39
9.10.3	Limit	39
9.11	Receiver noise and hum level.....	40
9.11.1	Definition	40
9.11.2	Method of measurement	40
9.11.3	Limit	40
9.12	Squelch operation	40
9.12.1	Definition	40
9.12.2	Method of measurement	40
9.12.3	Limits.....	41
9.13	Squelch hysteresis	41
9.13.1	Definition	41
9.13.2	Method of measurement	41
9.13.3	Limit	41
9.14	Receiver scanning efficiency.....	41
9.14.1	Definition	41
9.14.2	Method of measurement	41
9.14.3	Limit	41
Annex A (normative):	Measuring receiver for adjacent channel power measurement.....	42
A.1	Power measuring receiver specification.....	42
A.1.1	IF filter	42
A.1.2	Attenuation indicator	43
A.1.3	Rms value indicator.....	43
A.1.4	Oscillator and amplifier	43
Annex B (normative):	Radiated measurement.....	44
B.1	Test sites and general arrangements for measurements involving the use of radiated fields	44
B.1.1	Anechoic chamber	44
B.1.2	Anechoic chamber with a ground plane	45
B.1.3	OATS	46
B.1.4	Test antenna.....	47
B.1.5	Substitution antenna	47
B.1.6	Measuring antenna	48
B.2	Guidance on the use of radiation test sites	48
B.2.1	Verification of the test site	48
B.2.2	Preparation of the EUT.....	48
B.2.3	Power supplies to the EUT	48
B.2.4	Volume control setting for analogue speech tests	48
B.2.5	Range length.....	49
B.2.6	Site preparation	49
B.3	Coupling of signals.....	50
B.3.1	General	50
B.3.2	Data signals	50
B.3.3	Speech and analogue signals	50
B.3.3.1	Acoustic coupler description.....	50
B.3.3.2	Calibration	51
Annex C (informative):	DSC test calls.....	52
C.1	Interoperability tests	52
History		53

Intellectual Property Rights

IPRs essential or potentially essential to the present document 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 (<http://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.

Foreword

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

The present document is part 1 of a multi-part deliverable covering the Electromagnetic compatibility and Radio spectrum Matters (ERM); Portable Very High Frequency (VHF) radiotelephone equipment for the maritime mobile service operating in the VHF bands with integrated handheld class D DSC, as identified below:

Part 1: "Technical characteristics and methods of measurement";

Part 2: "Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive";

Part 3: "Harmonized EN covering the essential requirements of article 3.3(e) of the R&TTE Directive".

National transposition dates	
Date of adoption of this EN:	24 February 2014
Date of latest announcement of this EN (doa):	31 May 2014
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 November 2014
Date of withdrawal of any conflicting National Standard (dow):	30 November 2015

1 Scope

The present document states the minimum technical characteristics and methods of measurement required for portable Very High Frequency (VHF) radiotelephones with integrated handheld class D DSC operating in certain frequency bands allocated to the maritime mobile service using either 25 kHz channels or 25 KHz and 12,5 kHz channels.

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

2 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.

2.1 Normative references

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

- [1] ITU Radio Regulations (2012), appendix 18: "Table of transmitting frequencies in the VHF maritime mobile band".
- [2] Recommendation ITU-T E.161 (2001): "Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network".
- [3] Recommendation ITU-R M.493-13 (2009): "Digital selective-calling system for use in the maritime mobile service".
- [4] Void.
- [5] ETSI EN 300 225 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics and methods of measurement for survival craft portable VHF radiotelephone apparatus".
- [6] Void.
- [7] Void.
- [8] ETSI TR 100 028-1 (V1.4.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1".
- [9] 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".
- [10] ETSI EN 300 338-5 (V1.1.1): "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 5: Handheld VHF Class D DSC".
- [11] CENELEC EN 61108 (all parts): "Maritime navigation and radiocommunication equipment and systems - Global navigation satellite systems (GNSS)".
- [12] CENELEC EN 60529:1991/A1:2000: "Degrees of protection provided by enclosures (IP Code)".

2.2 Informative references

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] ETSI TS 101 570-5: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Interoperability Testing for Maritime Digital Selective Calling (DSC) Radios; Part 5: Handheld VHF Class D Test Descriptions".
- [i.2] Recommendation ITU-R M.541-9 (2004): "Operational procedures for the use of digital selective-calling equipment in the maritime mobile service".
- [i.3] Recommendation ITU-T O.41 (1994): "Psophometer for use on telephone-type circuits".
- [i.4] Recommendation ITU-R SM.332-4: "Selectivity of receivers".
- [i.5] ANSI C63.5 (2006): "American National Standard for Calibration of Antennas Used for Radiated Emission Measurements in Electro Magnetic Interference".
- [i.6] IEC 60489-3 (Second edition (1988) appendix F): "Methods of measurement for radio equipment used in the mobile services; Part 3: Receivers for A3E or F3E emissions".
- [i.7] ETSI TR 102 273 (V1.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement on Radiated Methods of Measurement (using test site) and evaluation of the corresponding measurement uncertainties Part 1: Uncertainties in the measurement of mobile radio equipment characteristics; Sub-part 1: Introduction".

koniec náhľadu – text ďalej pokračuje v platenej verzii STN