

STN	Komunikačné systémy a zariadenia na palubách lodí pracujúce na ultravysokých frekvenciách (UHF) Harmonizovaná norma vzťahujúca sa na základné požiadavky podľa článku 3.2 smernice 2014/53/EÚ	STN EN 300 720 V2.1.1 87 0720
------------	--	---

Ultra-High Frequency (UHF) on-board vessels communications systems and equipment; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU

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. 01/18

Obsahuje: EN 300 720 V2.1.1:2017

126047

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2018
Podľa zákona č. 264/1999 Z. z. o technických požiadavkách na výrobky a o posudzovaní zhody a o zmene a doplnení niektorých zákonov v znení neskorších predpisov sa slovenská technická norma a časti slovenskej technickej normy môžu rozmnožovať alebo rozširovať len so súhlasom slovenského národného normalizačného orgánu.

ETSI EN 300 720 V2.1.1 (2017-01)



**Ultra-High Frequency (UHF) on-board vessels
communications systems and equipment;
Harmonised Standard covering the essential requirements
of article 3.2 of the Directive 2014/53/EU**

Reference

REN/ERM-TG26-136

Keywords

harmonised standard, maritime, radio, UHF

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/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.

© European Telecommunications Standards Institute 2017.
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
Modal verbs terminology.....	7
1 Scope	8
2 References	8
2.1 Normative references	8
2.2 Informative references.....	8
3 Definitions, symbols and abbreviations	9
3.1 Definitions	9
3.2 Symbols.....	10
3.3 Abbreviations	10
4 General requirements	10
4.1 Construction	10
4.2 Frequencies.....	10
4.3 Controls	11
4.4 Switching time.....	11
4.5 Safety precautions	12
4.6 Class of emission and modulation characteristics	12
4.7 Batteries for portable equipment	12
4.8 Loudspeaker and microphone.....	12
4.9 Labelling.....	12
5 Test conditions, power sources and ambient temperatures	12
5.1 Normal end extreme test conditions	12
5.2 Test power source.....	12
5.3 Normal test conditions.....	13
5.3.1 Normal temperature and humidity	13
5.3.2 Normal test voltage.....	13
5.3.2.1 Battery power source.....	13
5.3.2.2 Other power sources.....	13
5.4 Extreme test conditions	13
5.4.1 Extreme temperatures	13
5.4.1.1 Upper extreme temperature	13
5.4.1.2 Lower extreme temperature	13
5.4.2 Extreme test power supply values.....	13
5.4.2.1 Upper extreme test voltage - Portable equipment	13
5.4.2.2 Lower extreme test voltage - Portable equipment	13
5.4.2.3 Extreme test voltages - Other equipment	14
5.5 Procedure for tests at extreme temperatures.....	14
6 General conditions of measurement	14
6.1 Test connections	14
6.2 Arrangements for test signals	15
6.2.1 Test signals applied to the transmitter input	15
6.2.1.1 Analogue	15
6.2.1.2 Digital	15
6.2.2 Test signals applied to the antenna terminal	15
6.3 Receiver mute or squelch facility	15
6.4 Normal test modulation	15
6.4.1 Analogue.....	15
6.4.2 Digital	15
6.5 Artificial antenna.....	16
6.6 Test channels	16
6.7 Reference Bandwidths for emission measurements	16

7	Environmental tests	17
7.1	Procedure.....	17
7.2	Performance check	17
7.3	Drop test on to a hard surface - Portable equipment	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	General.....	18
7.4.2	Dry heat	18
7.4.2.1	Method of measurement.....	18
7.4.2.2	Requirement	18
7.4.3	Damp heat.....	18
7.4.3.1	Method of measurement.....	18
7.4.3.2	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.....	19
8.2	Maximum effective radiated power.....	19
8.2.1	Definition.....	19
8.2.2	Method of measurement	19
8.2.3	Limit	20
8.3	Frequency deviation - Analogue	20
8.3.1	Definition.....	20
8.3.2	Maximum frequency deviation.....	20
8.3.2.1	Method of measurement.....	20
8.3.2.2	Limit.....	21
8.3.3	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	Limitation characteristics of the modulator - Analogue	22
8.4.1	Definition.....	22
8.4.2	Method of measurement	22
8.4.3	Limit	22
8.5	Sensitivity of the modulator, including microphone (except for repeater equipment) - Analogue.....	23
8.5.1	Definition.....	23
8.5.2	Method of measurement	23
8.5.3	Limit	23
8.6	Audio frequency response - Analogue	23
8.6.1	Definition.....	23
8.6.2	Method of measurement	23
8.6.3	Limit	24
8.7	Audio frequency harmonic distortion of the emission - Analogue.....	24
8.7.1	Definition.....	24
8.7.2	Method of measurement	24
8.7.3	Limit	25
8.8	Adjacent channel power	25
8.8.1	Analogue.....	25
8.8.1.1	Definition	25
8.8.1.2	Method of measurement.....	25
8.8.1.3	Limit.....	25
8.8.2	Digital	26
8.8.2.1	Definition	26
8.8.2.2	Methods of measurement	26
8.8.2.3	Limit.....	27
8.9	Residual modulation of the transmitter - Analogue.....	27
8.9.1	Definition.....	27
8.9.2	Method of measurement	27
8.9.3	Limit	27

8.10	Transient frequency behaviour of the transmitter.....	28
8.10.1	Analogue.....	28
8.10.1.1	Definition.....	28
8.10.1.2	Method of measurement.....	28
8.10.1.3	Limits.....	30
8.10.2	Digital.....	31
8.10.2.1	Definition.....	31
8.10.2.2	Method of measurement.....	31
8.10.2.3	Limits.....	32
8.11	Conducted spurious emissions conveyed to the antenna.....	32
8.11.1	Definition.....	32
8.11.2	Method of measurement.....	32
8.11.3	Limit.....	32
8.12	Cabinet radiation and conducted spurious emissions other than those conveyed to the antenna.....	33
8.12.1	Definitions.....	33
8.12.2	Method of measurement.....	33
8.12.3	Limits.....	34
9	Receiver.....	34
9.1	Harmonic distortion and rated audio frequency output power - Analogue.....	34
9.1.1	Definition.....	34
9.1.2	Methods of measurement.....	34
9.1.3	Limits.....	35
9.2	Audio frequency response - Analogue.....	35
9.2.1	Definition.....	35
9.2.2	Method of measurement.....	35
9.2.3	Limits.....	35
9.3	Maximum usable sensitivity.....	36
9.3.1	Analogue.....	36
9.3.1.1	Definition.....	36
9.3.1.2	Method of measurement.....	37
9.3.1.3	Limits.....	37
9.3.2	Digital.....	37
9.3.2.1	Definiton.....	37
9.3.2.2	Methods of measurement.....	37
9.3.2.2.1	Method of measurement with continuous bit streams.....	37
9.3.2.2.2	Method of measurement with messages.....	38
9.3.2.3	Limits.....	38
9.4	Co-channel rejection - Analogue.....	38
9.4.1	Definition.....	38
9.4.2	Method of measurement.....	38
9.4.3	Limit.....	39
9.5	Adjacent channel selectivity.....	39
9.5.1	Analogue.....	39
9.5.1.1	Definition.....	39
9.5.1.2	Method of measurement.....	39
9.5.1.3	Limits.....	39
9.5.2	Digital.....	39
9.5.2.1	Definition.....	39
9.5.2.2	Method of measurement.....	40
9.5.2.2.1	Continuous bit stream method.....	40
9.5.2.2.2	Discontinuous (messages) method.....	40
9.5.2.3	Limits.....	41
9.6	Spurious response rejection.....	41
9.6.1	Analogue.....	41
9.6.1.1	Definition.....	41
9.6.1.2	Method of measurement.....	41
9.6.1.3	Limit.....	42
9.6.2	Digital.....	42
9.6.2.1	Definition.....	42
9.6.2.2	Method of measurement.....	42
9.6.2.2.1	Introduction to the method of measurement.....	42

9.6.2.2.2	Method of search over the "limited frequency range"	43
9.6.2.2.3	Method of measurement (continuous bit streams).....	44
9.6.2.2.4	Method of measurement (with messages)	44
9.6.2.3	Limits	45
9.7	Intermodulation response	45
9.7.1	Analogue.....	45
9.7.1.1	Definition	45
9.7.1.2	Method of measurement.....	46
9.7.1.3	Limit.....	46
9.7.2	Digital	46
9.7.2.1	Definition	46
9.7.2.2	Method of measurement.....	46
9.7.2.2.1	Method of measurement (continuous bit stream)	46
9.7.2.2.2	Method of measurement with messages	47
9.7.2.3	Limit.....	48
9.8	Blocking or desensitization	48
9.8.1	Analogue.....	48
9.8.1.1	Definition	48
9.8.1.2	Method of measurement.....	48
9.8.1.3	Limit.....	49
9.8.2	Digital	49
9.8.2.1	Definition	49
9.8.2.2	Method of measurement.....	49
9.8.2.2.1	Continuous bit streams	49
9.8.2.2.2	Method of measurement with messages	50
9.8.2.3	Limit.....	51
9.9	Conducted spurious emissions conveyed to the antenna	51
9.9.1	Definition.....	51
9.9.2	Method of measurement	51
9.9.3	Limit	51
9.10	Radiated spurious emissions.....	51
9.10.1	Definition.....	51
9.10.2	Method of measurements.....	51
9.10.3	Limit	52
10	Testing for compliance with technical requirements.....	52
10.1	Environmental conditions for testing	52
10.2	Interpretation of the measurement results	52
Annex A (normative):	Relationship between the present document and the essential requirements of Directive 2014/53/EU	54
Annex B (normative):	Measuring receiver for adjacent channel power measurement - Analogue	56
B.1	Power measuring receiver specification.....	56
B.1.0	General	56
B.1.1	IF filter	56
B.1.2	Attenuation indicator.....	57
B.1.3	rms value indicator	57
B.1.4	Oscillator and amplifier.....	57
History	58

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 (<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.

Foreword

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

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.7] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU 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.3].

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 table A.1 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.

National transposition dates	
Date of adoption of this EN:	24 January 2017
Date of latest announcement of this EN (doa):	30 April 2017
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 October 2017
Date of withdrawal of any conflicting National Standard (dow):	31 October 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).

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

1 Scope

The present document specifies the minimum technical characteristics required for UHF on board vessels radio equipment and systems operating on frequencies allocated to the maritime mobile services by the ITU Radio Regulations [i.1].

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].

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 Directive 2014/53/EU [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 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] Recommendation ITU-R M.1174-3 (2015): "Technical characteristics of equipment used for on-board vessel communications in the bands between 450 and 470 MHz".
- [2] Recommendation ITU-T O.41 (1994): "Psophometer for use on telephone-type circuits".
- [3] ISO 25862:2009: "Ships and marine technology -- Marine magnetic compasses, binnacles and azimuth reading devices".
- [4] 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".
- [5] Recommendation ITU-T O.153 (1992): "Basic parameters for the measurement of error performance at bit rates below the primary rate".

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] ITU Radio Regulations (2016).
- [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] ETSI TR 100 028-1 (V1.4.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1".
- [i.5] ETSI TR 100 028-2 (V1.4.1) (12-2001): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2".
- [i.6] ETSI TS 102 658: "Digital Private Mobile Radio (dPMR) using FDMA with a channel spacing of 6,25 kHz".
- [i.7] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.

koniec náhľadu – text ďalej pokračuje v platenej verzii STN