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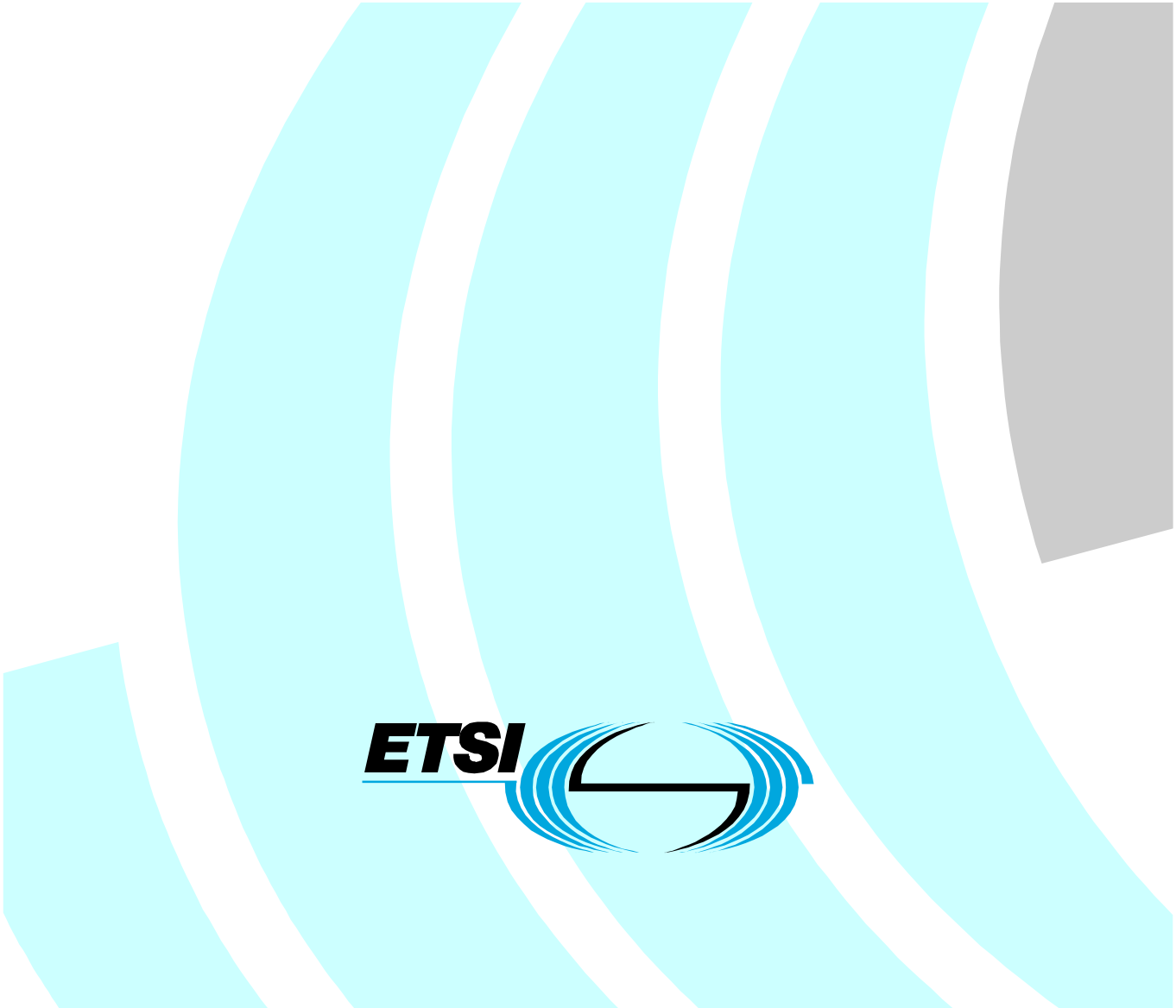
Harmonized European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Navigation radar used on inland waterways; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive



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Foreword

This Harmonized European Standard (Telecommunications series) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM), and is now submitted for the Public Enquiry phase of the ETSI standards Two-step Approval Procedure.

The present document is part 2 of a multi-part deliverable covering Navigation radar used on inland waterways, as identified below:

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

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

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

1 Scope

The present document states the minimum technical characteristics and methods of measurement required for navigation radar used on inland waterways.

The present document is intended to cover the provisions of Directive 1999/5/EC [1] (R&TTE Directive) Article 3.2, which states that "… radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communications and orbital resources so as to avoid harmful interference".

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 R&TTE Directive [1] may apply to equipment within the scope of the present.

This radar equipment operates in the frequency range of 9 300 MHz to 9 500 MHz allocated to the radio navigation service as defined in article 5 of the Radio Regulations [2].

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

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

[1] Directive 1999/5/EC of The European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).

[2] International Telecommunication Union (ITU), Radio Regulations (2004).

[3] ETSI EN 302 194-1 (V1.1.2): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Navigation radar used on inland waterways: Part 1: Technical characteristics and methods of measurement".

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

3 Definitions

For the purposes of the present document, the terms and definitions given in the R&TTE Directive [1] and the following apply:

environmental profile: range of environmental conditions under which equipment within the scope of EN 302 194-2 is required to comply with the provisions of EN 302 194-2

supplier: entity referred to in the R&TTE Directive responsible for the placing on the market of an equipment within the scope of the Directive

4 Technical requirements

4.1 Environmental profile

Tests defined in the present document shall be carried out at representative points within the boundary limits of the declared operational environmental profile which, as a minimum, shall be that specified in the test conditions contained in the present document.

As technical performance varies subject to environmental conditions, tests shall be carried out under a sufficient variety of environmental conditions as specified in the present document to give confidence of compliance for the affected technical requirements (which shall also be within the boundary limits of the declared operational environmental profile).

4.2 Conformance requirements

4.2.1 Radiated emissions

4.2.1.1 Definition

The radar radiated emissions shall be as defined in EN 302 194-1 [3], clause 7.8.3.1.

4.2.1.2 Limit

The radar radiated emissions limit shall be as stated in EN 302 194-1 [3], clause 7.8.3.3.

4.2.1.3 Conformance

Conformance tests as defined in clause 5.3.1 shall be carried out.

4.2.2 Operating frequency

4.2.2.1 Definition

The radar operating frequency shall be as defined in EN 302 194-1 [3], clause 7.9.2.1.

4.2.2.2 Limit

The radar operating frequency limit shall be as stated in EN 302 194-1 [3], clause 7.9.2.3.

4.2.2.3 Conformance

Conformance tests as defined in clause 5.3.2 shall be carried out.

4.2.3 Transmitter pulse power

4.2.3.1 Definition

The transmitter pulse power shall be as defined in EN 302 194-1 [3], clause 7.9.3.1.

4.2.3.2 Limit

The transmitter pulse power limit shall be as stated in EN 302 194-1 [3], clause 7.9.3.3.

4.2.3.3 Conformance

Conformance tests as defined in clause 5.3.3 shall be carried out.

4.2.4 Out of band emissions

4.2.4.1 Definition

The out of band emissions shall be as defined in EN 302 194-1 [3], clause 7.9.4.1.

4.2.4.2 Limit

The out of band emissions limit shall be as stated in EN 302 194-1 [3], clause 7.9.4.3.

4.2.4.3 Conformance

Conformance tests as defined in clause 5.3.4 shall be carried out.

4.2.5 Radiated spurious emissions

4.2.5.1 Definition

The transmitter frequency error shall be as defined in EN 302 194-1 [3], clause 7.9.5.1.

4.2.5.2 Limit

The transmitter frequency error limit shall be as stated in EN 302 194-1 [3], clause 7.9.5.3.

4.2.5.3 Conformance

Conformance tests as defined in clause 5.3.5 shall be carried out.

5 Testing for compliance with technical requirements

5.1 Test conditions, power supply and ambient temperatures

These shall be as stated in EN 302 194-1 [3], clause 5.2.

The standard operating mode shall be as defined in EN302 194-1 [3], clause 5.1.

5.2 Interpretation of the measurement results

The interpretation of the results recorded in a test report for the measurements described in the present document shall be as follows:

- the measured value related to the corresponding limit will be used to decide whether an equipment meets the requirements of the present document;
- the value of the measurement uncertainty for the measurement of each parameter shall be included in the test report;
- the recorded value of the measurement uncertainty shall be, for each measurement, equal to or lower than the figures in table 1.

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR100 028 [4] and shall correspond to an expansion factor (coverage factor) k = 1,96 or k = 2 (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Table 1 is based on such expansion factors.

Table 1: Absolute measurement uncertainties (maximum values)

Parameter	Maximum uncertainty
RF frequency	$\pm 1 \times 10^{-7}$
RF pulse power	±1,5 dB
Radiated emission of transmitter	±6 dB

5.3 Essential radio test suites

5.3.1 Radiated emissions

The test specified in EN 302 194-1 [3], clause 7.8.3.2 shall be carried out. The results obtained shall be compared to the limits in clause 4.2.1.2 in order to prove compliance with the requirement.

5.3.2 Operating frequency

The test specified in EN 302 194-1 [3], clause 7.9.2.2 shall be carried out. The results obtained shall be compared to the limits in clause 4.2.2.2 in order to prove compliance with the requirement.

5.3.3 Transmitter pulse power

The tests specified in EN 302 194-1 [3], clause 7.9.3.2 shall be carried out. The results obtained shall be compared to the limits in clause 4.2.3.2 in order to prove compliance with the requirement.

5.3.4 Out of band emissions

The test specified in EN 302 194-1 [3], clause 7.9.4.2 shall be carried out. The results obtained shall be compared to the limits in clause 4.2.4.2 in order to prove compliance with the requirement.

5.3.5 Radiated spurious emissions

The test specified in EN 302 194-1 [3], clause 7.9.5.2 shall be carried out. The results obtained shall be compared to the limits in clause 4.2.5.2 in order to prove compliance with the requirement.

5.4 Other test specifications

There are no tests under this clause.

Annex A (normative): HS Requirement and conformance Test specifications Table (HS-RTT)

The HS Requirements and conformance Test specifications Table (HS-RTT) in table A.1 serves a number of purposes, as follows:

- it provides a statement of all the essential requirements in words and by cross reference to a specific clause in the present document or to a specific clause in a specific referenced document;
- it provides a statement of all the test procedures corresponding to those essential requirements by cross reference to specific clause(s) in the present document or to a specific clause(s) in specific referenced document(s);
- it qualifies each requirement to be either:
  - Unconditional: meaning that the requirement applies in all circumstances, or
  - Conditional: meaning that the requirement is dependent on the manufacturer having chosen to support optional functionality defined within the schedule.
- in the case of Conditional requirements, it associates the requirement with the particular optional service or functionality;
- it qualifies each test procedure to be either:
  - Essential: meaning that it is included with the Essential Radio Test Suite and therefore the requirement shall be demonstrated to be met in accordance with the referenced procedures;
  - Other: meaning that the test procedure is illustrative but other means of demonstrating compliance with the requirement are permitted.

Table A.1: HS Requirements and conformance Test specifications Table (HS-RTT)

Harmonized Standard EN 302 194-2 The following essential requirements and test specifications are relevant to the presumption of conformity under Article 3.2 of the R&TTE Directive						
Essential Requirement			**Requirement Conditionality**		**Test Specification**	
No	**Description**	**Reference: Clause No**	**U/C**	**Condition**	**E/O**	**Reference: Clause No**
1	Radiated emissions	4.2.1	U		E	
2	Operating frequency	4.2.2	U		E	
3	Transmitter pulse power	4.2.3	U		E	
4	Out of band emissions	4.2.4	U		E	
5	Radiated spurious emissions	4.2.5	U		E	

Key to columns:

Essential Requirement:

No A unique identifier for one row of the table which may be used to identify an essential requirement or its test specification.

Description A textual reference to the Essential Requirement.

Clause Number Identification of clause(s) defining the essential requirement in the present document unless another document is referenced explicitly.

Conditionality:

U/C Indicates whether the requirement is to be *unconditionally* applicable (U) or is *conditional* upon the suppliers claimed functionality of the equipment (C).

Condition Explains the conditions when the requirement shall or shall not be applicable for a requirement which is classified "conditional".

Test Specification:

E/O Indicates whether the test specification forms part of the *Essential Radio Test Suite* (E) or whether it is one of the *Other Test Suite* (O).

NOTE: All tests whether "E" or "O" are relevant to essential requirements. Tests designated "E" collectively make up the Essential Radio Test Suite; those designated "O" make up the Other Test Suite. For those requirements for which no test specification applies are designated "X". All tests classified "E" shall be performed as specified with satisfactory outcomes in order to allow a presumption of conformity. Requirements associated with tests classifies "O" or "X" must be complied with although the requirement shall be complied with as demonstrated by an equivalent test or by assertion by the supplier and asserted to be complied with to allow presumption of conformity.

Clause Number Identification of clause(s) defining the test specification in the present, document unless another document is referenced explicitly. Where no test is specified (that is, where the previous field is "X") this field remains blank.

Annex B (informative): The EN title in the official languages

Language	EN title
Czech	
Danish	
Dutch	
English	Electromagnetic compatibility and Radio spectrum Matters (ERM); Navigation radar used on inland waterways; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive
Estonian	
Finnish	
French	
German	
Greek	
Hungarian	
Icelandic	
Italian	
Latvian	
Lithuanian	
Maltese	
Norwegian	
Polish	
Portuguese	
Slovak	
Slovenian	
Spanish	
Swedish	

Annex C (informative): Bibliography

- "Regional Arrangement concerning the Radiotelephone service on Inland Waterways; Basel, 6 April 2000".
- www.ccr-zkr.org
- ZKR 1989-II-33 1990: "Regulations regarding the minimum requirements and test conditions for radar equipment used for inland waterways navigation. (Vorschriften betreffend die Mindestanforderungen und Prüfbedingungen für Navigationsradaranlagen für die Binnenschifffahrt)".
- ZKR 1989-II-34 1990: "Regulations regarding the minimum requirements and test conditions for rate of turn indicators used for inland waterways navigation. (Vorschriften betreffend die Mindestanforderungen und Prüfbedingungen für Wendegeschwindigkeitsanzeiger für die Binnenschifffahrt)".
- ZKR 1989-II-35 1990: "Regulations regarding the installation and function test for radar equipment and rate of turn indicators used for inland waterways navigation. (Vorschriften betreffend den Einbau und die Funktionsprüfung von Navigationsradaranlagen und Wendegeschwindigkeitsanzeiger für die Binnenschifffahrt)".
- ZKR 2001-I-16 2001: "Inland ECDIS Standard".

History

Document history		
V1.1.1	May 2006	First draft
V1.1.2	August 2006	Public Enquiry PE 20061229: 2006-08-30 to 2006-12-29