



SLOVENSKI STANDARD

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9`Y_lfca U[bYfbUnXfi y`1j cghf0A7L]b`nUXYj Yj`nj Yn]`n`fUX]`g_`ja`gdY_lfca`f0FAE!
GHUbXUfX`YY_lfca U[bYfbY`nXfi y`1j cgh]`f0A7L`nUdca cfg_c`fUX]`g_c`cdYa c`]b
glcf]hj Y!) "XY.`DcgYVb]`dc[c`]nUgfYXb`YZY_j Yb bY]b`j]gc_cZY_j Yb bYfA:#k: L
fUX]chY`YZ`bg_YcXXU`b]_Y]b`gdfY`Ya b]_Y

Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for marine radio equipment and services; Part 5: Specific conditions for MF/HF radiotelephone transmitters and receivers

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| 33.100.01 | Elektromagnetna združljivost na splošno | Electromagnetic compatibility in general |

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Candidate Harmonized European Standard (Telecommunications series)

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
ElectroMagnetic Compatibility (EMC)
standard for marine radio equipment and services;
Part 5: Specific conditions for MF/HF radiotelephone
transmitters and receivers**

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Foreword

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

The present document has been produced by ETSI in response to a mandate from the European Commission issued under the Council Directive 98/34/EC [6] (as amended) laying down a procedure for the provision of information in the field of technical standards and regulation.

The present document, together with EN 301 843-1 [1], is intended to become a Harmonized Standard, the reference of which will be published in the Official Journal of the European Communities referencing the Council Directive on the approximation of the laws of the Member States relating to electromagnetic compatibility ("the EMC Directive") (89/336/EEC [3] as amended), and 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 (the "R&TTE Directive" [2]).

The present document is part 5 of a multi-part deliverable. Full details of the entire series can be found in part 1 [1].

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1 Scope

The present document together with EN 301 843-1 [1], covers the assessment of MF/HF radiotelephone transmitters and receivers for the maritime mobile service, and ancillary equipment in respect of ElectroMagnetic Compatibility (EMC).

Technical specifications related to the antenna port and emissions from the enclosure port of marine radiotelephone transmitters and receivers are not included in the present document. Such technical specifications are found in the related product standards for the effective use of the radio spectrum.

The present document specifies the applicable test conditions, performance assessment, and performance criteria for radiotelephone transmitters and receivers for the maritime mobile service and the associated ancillary equipment.

Examples of types of MF/HF radiotelephone transmitters and receivers for the maritime mobile service covered by the present document are given in annex A.

In case of differences (for instance concerning special conditions, definitions, abbreviations) between the present document and EN 301 843-1 [1], the provisions of the present document take precedence.

The electromagnetic environment used in the present document to develop the technical specifications encompasses the electromagnetic environment onboard ships as identified in EN 60945 [5].

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] ETSI EN 301 843-1 (V1.2.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for marine radio equipment and services; Part 1: Common technical requirements".
- [2] Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications equipment and the mutual recognition of their conformity (R&TTE Directive).
- [3] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive).
- [4] ETSI EN 300 373-2 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Maritime mobile transmitters and receivers for use in the MF and HF bands; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE directive".
- [5] CENELEC EN 60945 (2002): "Maritime navigation and radiocommunication equipment and systems - General requirements - Methods of testing and required test results".
- [6] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations.
- [7] ETSI EN 300 373-3 (V1.1.1): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Maritime mobile transmitters and receivers for use in the MF and HF bands; Part 3: Harmonized EN covering essential requirements under article 3.3(e) of the R&TTE Directive".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EN 301 843-1 [1] and the following apply:

standard output power (audio): (of the receiver) is defined as:

- a) 1 mW for earphone reception;
- b) 500 mW for loudspeaker reception;
- c) 0 dBm (1mW) into 600 Ω for the audio line outputs.

3.2 Symbols

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

| | |
|-------|--|
| emf | electromotive force |
| rms | root mean square |
| SINAD | (Signal + Noise + Distortion) / (Noise + Distortion) |

3.3 Abbreviations

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

| | |
|-----|---|
| DSC | Digital Selective Calling |
| EMC | ElectroMagnetic Compatibility |
| EUT | Equipment Under Test |
| F1B | Frequency modulation, single channel containing quantized or digital information with the use of a modulating sub-carrier, telegraphy for automatic reception |
| HF | High Frequency |
| J3E | Single Sideband, suppressed carrier, single channel containing analogue information, telephony. |
| MF | Medium Frequency |
| RF | Radio Frequency |

4 Test conditions

For the purposes of the present document, the test conditions of EN 301 843-1 [1], clause 4, shall apply as appropriate. Further product related test conditions for marine radiotelephone transmitters and receivers are specified in the present document.

4.1 General

The provisions of EN 301 843-1 [1], clause 4.1 shall apply with the following modifications.

For emission and immunity tests the normal test modulation, test arrangements, etc., as specified in the present document, clauses 4.1 to 4.5, shall apply.

The test shall be carried out at a point within the specified normal operating environmental range of temperature and humidity with the equipment connected to the normal power supply voltage.

4.2 Arrangements for test signals

The provisions of EN 301 843-1 [1], clause 4.2 shall apply.

4.2.1 Arrangements for test signals at the input of the transmitter

The provisions of EN 301 843-1 [1], clause 4.2.1 shall apply.

4.2.2 Arrangements for test signals at the output of the transmitter

The provisions of EN 301 843-1 [1], clause 4.2.2 shall apply.

4.2.3 Arrangements for test signals at the input of the receiver

The provisions of EN 301 843-1 [1], clause 4.2.3 shall apply with the following modifications.

The wanted RF input signal, coupled to the receiver, shall be modulated with normal test modulation as specified for that type of equipment (see clause 4.5).

The level of the wanted signal shall be as follows:

MF (1 605 kHz to 4 000 kHz) J3E Mode: +56 dBuV F1B Mode: +45 dBuV

HF (4 MHz to 27,5 MHz) J3E Mode: +51 dBuV F1B Mode: +40 dBuV

NOTE: Measurements shall only be made in F1B mode where the EUT does not have J3E mode.

4.2.4 Arrangements for test signals at the output of the receiver

The provisions of EN 301 843-1 [1], clause 4.2.4 shall apply as appropriate.

4.2.5 Arrangements for testing transmitter and receiver together (as a system)

The provisions of EN 301 843-1 [1], clause 4.2.5 shall apply as appropriate.

4.3 Exclusion bands

The provisions of EN 301 843-1 [1], clause 4.3 shall apply as appropriate.

The emission measurement and immunity test exclusions are referred to as "exclusion bands" and are defined in the clauses 4.3.1 and 4.3.2.

4.3.1 Exclusion bands for receivers and receiver parts of transceivers

The exclusion band for marine radiotelephone receivers and receivers of transceivers is the frequency range determined by the switching range, as declared by the manufacturer, extended as follows:

- the lower frequency of the exclusion band is the lower frequency of the switching range, minus 5 % of the centre frequency of the switching range, or minus 10 MHz, whichever will result in the lowest frequency;
- the upper frequency of the exclusion band is the upper frequency of the switching range, plus 5 % of the centre frequency of the switching range, or plus 10 MHz, whichever will result in the highest frequency.

The switching range is the maximum frequency range over which the receiver can be operated without reprogramming or realignment.

4.3.2 Exclusion band for transmitters

The exclusion band for marine radiotelephone transmitters extends ± 50 kHz from the nominal operating frequency of the transmitter.