SLOVENSKI STANDARD
SIST EN 300 720-1 V1.2.1:2003

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Elektromagnetna združljivost in zadeve v zvezi z radijskim spektrom (ERM) ï Komunikacijski sistemi in oprema UHF za uporabo na krovu ï 1. del: Tehniļne karakteristike in merilne metode

ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Ultra-High Frequency (UHF) on-board communications systems and equipment; Part 1: Technical characteristics and methods of measurement

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Foreword

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

The present document is part 1 of a multi-part European Standard, the titles of which are:

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

Part 2: "Harmonized EN under article 3.2 of the R&TTE Directive".

National transposition dates	
Date of adoption of this EN:	14 July 2000
Date of latest announcement of this EN (doa):	31 October 2000
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	30 April 2001
Date of withdrawal of any conflicting National Standard (dow):	30 April 2001

1 Scope

The present document specifies the minimum technical characteristics required for UHF radio equipment and systems operating on frequencies allocated to the maritime mobile services by the ITU Radio Regulations, appendix 20 [1].

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, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, subsequent revisions do apply.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] ITU Radio Regulations, appendix 20: "Characteristics of equipment used for on-board communication in the bands between 450 and 470 MHz".

[2] ETSI ETR 028: "Radio Equipment and Systems (RES); Uncertainties in the measurement of mobile radio equipment characteristics".

[3] ITU-T Recommendation P.53 (1988): "Psophometers (apparatus for the objective measurement of circuit noise)".

[4] ISO 694: "Positioning of magnetic compasses in ships".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following term and definition applies:

modulation index: ratio between the frequency deviation and the modulation frequency

3.2 Symbols

For the purposes of the present document, the following symbol applies:

dBA	acoustic level in dB relative to 2×10^{-5} Pa

3.3 Abbreviations

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

emf	Electro-Motive Force
RF	Radio Frequency
SINAD	signal + noise + distortion / noise + distortion
UHF	Ultra High Frequency

4 General requirements

4.1 Construction

The mechanical and electrical construction and finish of the equipment shall conform in all respects to good engineering practice and the equipment shall be suitable for use on board ships.

The equipment's colour shall be neither orange nor yellow.

4.2 Frequencies

The equipment shall operate either on single-frequency or two-frequency simplex channels on those frequencies specified in appendix 20 of the Radio Regulations [1].

Table 1: Single frequency simplex channels

Channel designator	Frequency
Channel A	467,525 MHz
Channel B	467,550 MHz
Channel C	467,575 MHz
Channel D	457,525 MHz
Channel E	457,550 MHz
Channel F	457,575 MHz

Table 2: Two-frequency simplex channels for use with repeater only

Channel designator	Transmit frequency	Receive frequency
Channel G	467,525 MHz	457,525 MHz
Channel H	467,550 MHz	457,550 MHz
Channel J	467,575 MHz	457,575 MHz

Independent selection of transmitting and receiving frequencies shall not be possible.

The equipment shall be fitted with at least one single-frequency simplex channel, the frequency of which shall be 457,525 MHz.

It shall not be possible to transmit during channel-switching operations.

4.3 Controls

The equipment shall have the following controls:

- a channel selector which shall indicate the designator of the channel to which the equipment is set;
- on/off switch for the equipment with visual indication that the equipment is switched on;
- a manual non-locking, push-to-talk switch to operate the transmitter;
- an audio-frequency power volume control.

The user shall not have access to any control which, if wrongly set, might impair the technical characteristics of the equipment.

4.4 Switching time

The channel switching arrangements shall be such that the time necessary to change over from using one of the channels to using any other channel does not exceed 5 seconds.

The time necessary to change over from transmission to reception and vice versa, shall not exceed 0,3 seconds.

4.5 Safety precautions

Provision shall be made for protecting equipment from the effects of excessive current or voltage. Means shall be incorporated to prevent reversal of polarity of the battery power supply.

Equipment with an antenna socket shall not be damaged by the effect of open-circuit or short-circuit of the antenna socket for a period of at least 5 minutes.

The manufacturer shall declare the compass safe distance according to ISO 694 [4], Method B.

4.6 Class of emission and modulation characteristics

The equipment shall use phase modulation, G3E (frequency modulation with a pre-emphasis of 6 dB/octave).

The equipment shall be designed to operate with a channel spacing of 25 kHz.

4.7 Battery

The battery may be an integral part of the equipment.

Primary and/or secondary batteries may be used.

Provisions shall be made for replacing the battery easily.

If the equipment is fitted with secondary batteries, a suitable battery charger shall be recommended by the manufacturer.

4.8 Loudspeaker and microphone

The equipment shall be provided with a microphone and a loudspeaker which may be combined.

In the transmit condition the output of the receiver shall be muted.

4.9 Labelling

All controls shall be clearly labelled. The labelling shall include:

- the name of the manufacturer and his trademark;
- the type number and serial number of the equipment; and
- the compass safe distance.

4.10 Equipment documentation

For the purpose of conformance testing in accordance with the present document, adequate technical and operational documentation shall be supplied with the equipment.

5 Test conditions, power sources and ambient temperatures

5.1 Normal end extreme test conditions

Tests shall be made under normal test conditions and also, where stated, under extreme test conditions.

5.2 Test power source

Unless otherwise stated, the battery of the equipment shall be replaced by a test power source capable of producing normal and extreme test voltages as specified in subclauses 5.3.2 and 5.4.2.

The voltage of the power source shall be measured at the input terminal of the equipment.

During testing, the power source voltage shall be maintained within a tolerance of ±3 % relative to the voltage level at the beginning of each test.

5.3 Normal test conditions

5.3.1 Normal temperature and humidity

The normal temperature and humidity conditions for tests shall be a combination of temperature and humidity within the following limits:

- temperature: +15°C to +35°C;
- relative humidity: 20 % to 75 %.

5.3.2 Normal test voltage

The normal test voltage shall be the nominal voltage of the battery as declared by the manufacturer.

5.4 Extreme test conditions

5.4.1 Extreme temperatures

5.4.1.1 Upper extreme temperature

Tests at the upper extreme temperature shall be made at +55°C.

5.4.1.2 Lower extreme temperature

Tests at the lower extreme temperature shall be made at -20 °C.