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Elektromagnetna združljivost in zadeve v zvezi z radijskim spektrom (ERM) ï Oprema za CB s kotno modulacijo (radijska oprema CEPT PR 27) ï 1. del: Tehniļne karakteristike in merilne metode

ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Angle-modulated Citizens Band radio equipment (CEPT PR 27 Radio 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 EN covering the Electromagnetic compatibility and Radio spectrum Matters (ERM); Angle-modulated Citizens Band radio equipment (CEPT PR 27 Radio Equipment), as identified below:

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

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

The present document concerns only angle modulation. The existing national Citizens' Band standards or specifications which also permit the use of other forms of modulation (including amplitude and single sideband) will not be affected by the adoption of the present document.

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The present document is based upon CEPT Recommendation T/R 20-02 [1], originally prepared by the CEPT R22 Committee for use by Citizens' Band (CB) radio equipment.

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Angle modulation shall be used for radio equipment covered by the present document, with an audio pre-emphasis characteristic for the transmitter, and audio de-emphasis for the receiver.

Administrative arrangements (e.g. for type approval, marking, antennas), and conditions for the use of CB angle modulated radio (CEPT PR 27) are to be found in CEPT Recommendations T/R 20-02 [1] and T/R 20-07 [2].

Every ETS prepared by ETSI is a voluntary standard. The present document contains text concerning type approval of the equipment to which it relates. This text should be considered only as guidance and does not make the present document mandatory.

The technical specifications relevant to the EMC Directive are listed in annex C.

National transposition dates	
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

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Introduction

The present document is intended to specify the minimum performance and the methods of measurement of Citizens' Band radio equipment (CEPT PR 27) as specified in the Scope.

Clause 5 provides the corresponding limits. These limits have been chosen to ensure an acceptable grade of service and to minimize harmful interference to other equipment and services.

The present document will also be used by European notified accredited test laboratories for the assessment of the performance of the equipment. In order to avoid any ambiguity in that assessment, the present document contains instructions for the presentation of equipment for type testing purposes (clause 4), measurement methods (clauses 8 and 9) and conditions (clauses 6 and 7).

The present document was drafted on the assumption that:

a) the type test measurements would be performed only once in one of the accredited test laboratories, and then accepted by the various authorities in order to obtain type approval;

b) if equipment available on the market is required to be checked it shall be tested in accordance with the methods specified in the present document. The present document covers base stations, mobile stations and two categories of hand-portable stations.

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1 Scope

The present document covers the minimum characteristics considered necessary in order to make the best use of the available frequencies. It does not necessarily include all the characteristics which may be required by a user, nor does it necessarily represent the optimum performance achievable. It applies to angle modulated Citizens' Band radio equipment (CEPT PR 27) operation in the frequency band 26,960 MHz to 27,410 MHz with channel separations of 10 kHz, and intended for analogue speech.

The present document applies to equipment with a socket for an external antenna and to equipment with an integral antenna.

In the case of equipment which is intended for use with either an integral antenna or an external antenna, the equipment shall be measured as equipment intended for use with an external antenna and shall meet the appropriate limits. In addition to this, the transmitter characteristics:

- transmitter carrier power;
- spurious emissions of the transmitter;

and the receiver characteristic:

- spurious radiations of the receiver;

shall be measured as for equipment for use with an integral antenna and the appropriate limits shall be met.

2 References

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

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- 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, the latest Version applies.
- 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] CEPT Recommendation T/R 20-02 (1972): "Low-Power Radio Transmitter-Receivers Intended to Provide Voice Radiocommunication in the 27 MHz Band (PR 27 Radio Equipment)".

[2] CEPT Recommendation T/R 20-07 (1982): "Free Circulation, for Use in Different Countries, of Low-Power Mobile and Portable Transmitter-Receivers in the 27 MHz Band (PR 27 Equipment, Recommendation T/R 20- 02)".

[3] ITU-T Recommendation O.41 (1994): "Psophometer for use on telephone-type circuits".

[4] CEPT Recommendation T/R 20-09 (1990): "PR 27 Radio Equipment Intended to Provide Short Range Voice Radiocommunication in the 27 MHz Band".

[5] ETSI ETS 300 680-1: "Radio Equipment and Systems (RES); ElectroMagnetic Compatibility (EMC) standard for Citizens Band (CB) radio and ancillary equipment (speech and/or non-speech); Part 1: Angle-modulated".

[6] 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).

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3 Definition, abbreviations and symbols

3.1 Definitions

For the purpose of the present document the following terms and definitions apply:

Base station: equipment fitted with an antenna socket, for use with an external antenna, and intended for use in a fixed location.

Mobile station: mobile equipment fitted with an antenna socket, for use with an external antenna, normally used in a vehicle or as a transportable station.

Handportable station: equipment either fitted with an antenna socket or an integral antenna, or both, normally used on a stand-alone basis, to be carried on a person or held in the hand.

Integral antenna: antenna designed to be connected to the equipment without the use of a 50 ohm external connector and considered to be part of the equipment. An integral antenna may be fitted internally or externally to the equipment.

Angle modulation: angle modulation with an audio pre-emphasis characteristic for the transmitter and an audio de-emphasis characteristic for the receiver.

3.2 Abbreviations

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

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IF	intermediate frequency
RF	radio frequency
SND/ND	(signal + noise + distortion)/(noise + distortion)
Tx	transmitter

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3.3 Symbols

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

Eo	reference field strength, annex A
Ro	reference distance, annex A

4 General

4.1 Presentation of equipment for testing purposes

a) The manufacturer shall provide a production model of the equipment for type approval testing. If type approval is given on the basis of tests on a preliminary model, the corresponding production models shall be identical in all respects with the preliminary model tested;

b) Tests shall be carried out on the highest and lowest channel within the switching range of the equipment and on a channel near the middle of the switching range. The switching range of the receiver and transmitter shall be declared by the manufacturer. The switching range is the maximum frequency range over which the receiver or the transmitter can be operated without reprogramming or realignment. In the case of equipment fitted with one channel only, all tests are carried out on that channel.

In the case of equipment fitted with two channels, all tests are carried out on both channels.

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4.2 Mechanical and electrical design

4.2.1 General

The equipment submitted by the manufacturer or his representative, shall be designed, constructed and manufactured in accordance with sound engineering practice, and with the aim to minimize harmful interference to other equipment and services.

4.2.2 Controls

Those controls which if maladjusted might increase the interfering potentialities of the equipment shall not be accessible to the user.

4.2.3 Marking

The equipment shall be marked in a visible place. This marking shall be legible, tamperproof and durable.

The marking shall include:

a) the name of the manufacturer or his trade mark;

b) the type number of designation and serial number;

c) the type approval number (when allocated by appropriate authorities);

d) the type approval mark as stated in CEPT Recommendations T/R 20-07 [2] and T/R 20-09 [4].

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4.3 Interpretation of the measurement results

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

a) the measured value related to the corresponding limit will be used to decide whether an equipment meets the minimum requirements of the standard;

b) the inclusion in the test report of the actual measurement uncertainty for each particular measurement is also required;

c) the values, of the actual measurement uncertainty shall be, for each measurement, equal to or lower than the figures in clause 10 (table of measurement uncertainty).

NOTE: This procedure for using the Maximum Acceptable Uncertainty Value is valid until superseded by other publications of ETSI covering this subject.

The use of the measured value for comparison with the limit value has been chosen because there is no definitive standard for specifying the measurement uncertainty agreed at the time of publication of the present document. Therefore the measurement uncertainty shall be used as a quality measure of the actual measurement. The use of the Measurement Uncertainty values shall be used by Accreditation Authorities during their accreditation procedures to ensure compliance/conformity with the requirements of type testing to ETSI Standards.

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5 Technical characteristics

5.1 Common characteristics

5.1.1 Frequency band

The maximum operating frequency band shall be from 26.960 MHz to 27.410 MHz. Equipment may operate on one or more channels up to a maximum of 40 channels.

5.1.2 Carrier frequencies and channel numbers.

The following carrier frequencies are available.

Carrier frequencies	Channel Number	Carrier frequencies	Channel Number
26,965 Mhz	1	27,215 MHz	21
26,975 Mhz	2	27,225 MHz	22
26,985 Mhz	3	27,235 MHz	24
27,005 Mhz	4	27,245 MHz	25
27,015 Mhz	5	27,255 MHz	23
27,025 Mhz	6	27,265 MHz	26
27,035 Mhz	7	27,275 MHz	27
27,055 Mhz	8	27,285 MHz	28
27,065 Mhz	9	27,295 MHz	29
27,075 Mhz	10	27,305 MHz	30
27,085 Mhz	11	27,315 MHz	31
27,105 Mhz	12	27,325 MHz	32
27,115 Mhz	13	27,335 MHz	33
27,125 Mhz	14	27,345 MHz	34
27,135 Mhz	15	27,355 MHz	35
27,155 Mhz	16	27,365 MHz	36
27,165 Mhz	17	27,375 MHz	37
27,175 Mhz	18	27,385 MHz	38
27,185 Mhz	19	27,395 MHz	39
27,205 Mhz	20	27,405 MHz	40

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Transmission and reception shall take place on the same channel (single frequency simplex mode).

5.1.3 Channel separation

The channel separation shall be 10 kHz.

5.1.4 Multi-channel equipment

Multi-channel equipment may be used, provided that such equipment is only designed for the channels indicated in subclause 5.1.2.

Precautions shall be taken against extension of the usable frequency range by the user. For instance the physical and electrical design of the channel switching system shall permit operation in not more than the channels indicated in subclause 5.1.2.

If for the determining of the transmitter frequency use is made of a synthesizer and/or of a phase locked loop (PLL) system, arbitrary input codes shall only lead to the channels indicated in subclause 5.1.2.

5.1.5 Type of modulation

Only angle modulation with appropriate pre-emphasis and de-emphasis shall be used.