SLOVENSKI STANDARD
SIST EN 301 357-1 V1.1.2:2003

01-december-2003

Elektromagnetna združljivost in zadeve v zvezi z radijskim spektrom (ERM) - Analogne brezvrvič ne širokopasovne avdio naprave, ki uporabljajo vgrajene antene in delujejo v frekvenčnem območju od 863 MHz do 865 MHz, ki ga je priporočila konferenca CEPT - 1. del: Tehnične karakteristike in preskusne metode

ElectroMagnetic Compatibility and Radio Spectrum Matters (ERM); Analogue cordless wideband audio devices using integral antennas operating in the CEPT recommended 863 MHz to 865 MHz frequency range; Part 1: Technical characteristics and test methods

Ta slovenski standard je istoveten z: **EN 301 357-1 Version 1.1.2**

ICS:

33.060.99	Druga oprema za radijske komunikacije	Other equipment for radiocommunications
33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

SIST EN 301 357-1 V1.1.2:2003 **en**

ETSI EN 301 357-1 V1.1.2 (2000-08)

European Standard (Telecommunications series)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Analogue cordless wideband audio devices using integral antennas operating in the CEPT recommended 863 MHz to 865 MHz frequency range; Part 1: Technical characteristics and test methods

Reference
REN/ERM-RP08-0309-1

Keywords
Radio, testing

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

Individual copies of the present document can be downloaded from:
http://www.etsi.org

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the 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 http://www.etsi.org/tb/status/

If you find errors in the present document, send your comment to:
editor@etsi.fr

Copyright Notification

Contents

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 (http://www.etsi.org/ipr).

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

Every EN prepared by ETSI is a voluntary standard. The present document may contain text concerning conformance testing of the equipment to which it relates. This text should be considered as guidance only and does not make the present document mandatory.

Annex A provides normative specifications concerning radiated measurements.

Annex B provides a graphic representation of the equipment and frequencies for the testing of single and multi frequency equipment.

Annex C provides informative parameters on the receiver part, which are intended to give guidance to manufacturers.

The present document is part 1 of a multi-part standard covering analogue cordless wideband audio devices using integral antennas operating in the CEPT recommended 863 MHz to 865 MHz frequency range, as identified below:

Part 1: "Technical characteristics and test methods";

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

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

Introduction

In preparing the present document, much attention has been given to assure a low interference probability, while at the same time allowing a maximum flexibility and service to the end-user.

The present document provides the necessary parameters for equipment to obtain common approval throughout Europe. Common technical specifications and harmonized frequency allocations are expected to reduce the present problems of interference and illegal use.

The present document is a type-testing standard based on spectrum utilization parameters and does not include performance characteristics that may be required by the user or requirements for interfacing equipment.

The present document is intended to specify the minimum performance and the methods of measurement of, wideband cordless audio equipment in the range 25 MHz to 2 000 MHz and Consumer Radiomicrophones & In ear monitoring equipment in the range 863 MHz to 865 MHz, as specified in the scope. Consumer radiomicrophones and in -ear monitoring equipment may be tested to either EN 300 422 [8] for equipment with maximum occupied bandwidth < 200 kHz or to the present document for equipment with maximum occupied bandwidth > 200 kHz with due consideration of power and operating frequency.

Type test measurements should be performed in one of the accredited test laboratories, accepted by the various national regulatory authorities in order to grant type approval, provided the national regulatory requirements are met. This is in compliance with CEPT/ERC/REC 01-06 [1] and CEPT/ERC/DEC(97)10 [2].

In addition, national administrations may accept a "certificate of conformity" based on a type test report. If equipment available on the market is required to be checked, it should be tested in accordance with the methods of measurement specified in the present document.

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 that may be required by a user, nor does it necessarily represent the optimum performance achievable.

Cordless audio devices covered within the present document are considered by definition short-range devices, the power limits for frequency bands will be found in the current version of CEPT/ERC/REC 70-03 [6] (or national regulations).

The present document applies to wideband cordless audio, consumer radiomicrophones and in-ear monitoring equipment using either 300 kHz bandwidth analogue modulation or 300 kHz, 600 kHz or 1 200 kHz digital FDMA modulation. The frequency bands for this equipment may differ from country to country as specified in their national regulations. All equipment is intended to be used with integral antennas.

Consumer audio equipment intended for audio and voice operating below 50 MHz and using narrow band modulation are considered and tested according to EN 300 220 [10].

Electromagnetic Compatibility (EMC) requirements are covered by EN 301 489-9 [7].

The types of equipment covered by the present document are as follows:

- cordless headphones;
- cordless loudspeakers;
- consumer radiomicrophones;
- in-ear monitoring;
- in-vehicle cordless;
- personal cordless;
- broadband multichannel audio systems.

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, 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/ERC/REC 01-06: "Procedure for mutual recognition of type testing and type approval for radio equipment".

[2] CEPT/ERC/DEC(97)10: "ERC Decision of 30 June 1997 on the mutual recognition of conformity assessment procedures including marking of radio equipment and radio terminal equipment".

[3] ITU-R Recommendation BS.559-2: "Objective measurement of radio-frequency protection ratios in LF, MF and HF broadcasting".

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

[5] IEC 60244: "Methods of measurement for radio transmitters".

[6] CEPT/ERC/REC 70-03: "Relating to the use of Short Range Devices (SRD)".

[7] ETSI EN 301 489-9: "ElectroMagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 9: Specific conditions for wireless microphones and similar Radio Frequency (RF) audio link equipment".

[8] ETSI EN 300 422 (V1.2): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics and test methods for wireless microphones in the 25 MHz to 3 GHz frequency range".

[9] ETSI ETR 027: "Radio Equipment and Systems (RES); Methods of measurement for private mobile radio equipment".

[10] ETSI EN 300 220: "Electromagnetic compatibility and Radio spectrum matters (ERM); Short-range devices; Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

integral antenna: antenna, with or without a connector, designed as, and declared as by the manufacturer, an indispensable part of the equipment

artificial antenna: tuned reduced-radiating dummy load equal to the nominal impedance specified by the applicant

radiated measurements: measurements that involve the absolute measurement of a radiated electromagnetic field

channel bandwidth: frequency band of defined width including safety margin for operation on adjacent channels, located symmetrically around the carrier frequency

port: any connection point on or within the Equipment Under Test (EUT) intended for the connection of cables to or from that equipment

necessary bandwidth: is, for a given class of emission, the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions. However, the necessary bandwidths of most digital modulation formats are presently not referred to ITU-R Recommendations of SM series

spurious emission limits: apply at frequencies above and below the fundamental transmitting frequency but separated from the centre frequency of the emission by 250 % of the necessary bandwidth. However, this frequency separation may be dependent on the type of modulation used, the maximum bit rate in the case of digital modulation, the type of transmitter, and frequency coordination factors. For example, where practical the ± 250 % of the relevant Channel Separation (CS) may be used

3.2 Symbols

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

λ	wavelength in metres
µF	microFarad
µW	microWatt
Ω	ohm
dBc	dB relative to the carrier level
E	field strength
E_o	reference field strength (see annex A)
fc	carrier frequency
fo	operating frequency
GHz	GigaHertz
kHz	kiloHertz
MHz	MegaHertz
mW	milliWatt
nW	nanoWatt
R	distance (see annex A)
R_o	reference distance (see annex A)

3.3 Abbreviations

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

ac	alternating current
B	Channel Bandwidth
BN	Necessary Bandwidth
CW	continuous wave
dc	direct current
erp	effective radiated power
EUT	Equipment Under Test
FDMA	Frequency division multiple access
HF	High Frequency
LF	Low Frequency
MF	Medium Frequency
RBW	Resolution Bandwidth
RF	Radio Frequency
SRD	Short Range Devices
TDMA	Time Division Multiple Access
Tx	Transmitter
VBW	Video BandWidth

4 Functional characteristics

4.1 Cordless wideband audio

Cordless wideband audio equipment encompasses radio linked headphones and loudspeakers. The transmitters may be installed in a building, fitted in a vehicle or body worn. The term cordless is also used to describe infra red and other non-RF "wireless" links, but in the context of the present document it is restricted to RF operating systems only. Stereo equipment can be designed for required channel bandwidths of 200 kHz or less but only with a high cost penalty, however consumer wideband (multichannel) audio equipment and stereo equipment using e.g. Zenith-GE pilot tone systems or digital modulation need to declare wider bandwidths as defined in the present document.

Other equipment that may be connected to cordless audio equipment shall fulfil the standards applicable to that equipment (if any).

4.2 Consumer radiomicrophones

Consumer radiomicrophones are intended for non-professional applications.

4.3 In-ear monitoring

In-ear monitoring equipment is used by stage and studio performers to receive personal fold back (monitoring) of the performance. This can be just their own voice or a complex mix of sources. This equipment is usually stereo or 2 channel audio.

Other equipment that may be connected to in-ear monitoring equipment shall fulfil the standards applicable to that equipment (if any).

4.4 In-vehicle cordless

In-vehicle systems are used for private listening in automobiles and other methods of transport (where permitted).

4.5 Personal cordless

Personal cordless transmitters are to enable the body worn personal stereo equipment to be wire free.

4.6 Broadband multichannel systems

Broadband multichannel systems are used for the transmission of high quality digital audio. These can be e.g. Dolby like 5,1 or 7,1 surround sound systems or uncompressed audio. They are intended to be used in spectrum above 1 GHz.

5 General

5.1 Presentation of equipment for testing purposes

Each equipment submitted for type testing shall fulfil the requirements of the present document on all channels over which it is intended to operate.

The applicant shall complete the appropriate application form when submitting equipment for type testing.

The applicant shall state the channel bandwidth(s) within which the equipment is designed to operate.

The applicant shall also supply all relevant interface information and any tools and test fixtures to allow:

- direct current (dc) power connection;
- analogue audio connection;
- the deviation limiting of the transmitter; and
- the setting of any input audio level controls and input signal level for normal operation, for a sinusoidal input signal of 500 Hz. The manufacturer shall specify the settings of any other controls necessary to avoid invalidating the test measurements.