

**Electromagnetic compatibility
and Radio spectrum Matters (ERM);
Wireless microphones
in the 25 MHz to 3 GHz frequency range;
Part 1: Technical characteristics and
methods of measurement**

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ETSI EN 300 422-1 V1.4.2 \(2011-08\)](https://standards.iteh.ai/catalog/standards/etsi/ca07bef9-2545-4111-9888-7048cede4bb2/etsi-en-300-422-1-v1-4-2-2011-08)

<https://standards.iteh.ai/catalog/standards/etsi/ca07bef9-2545-4111-9888-7048cede4bb2/etsi-en-300-422-1-v1-4-2-2011-08>



Reference

REN/ERM-TG17WG3-014-1

Keywords

audio, radio, radio MIC, 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

(<https://standards.iteh.ai>)
Document Preview

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://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaicor/ETSI_support.asp

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2011.
All rights reserved.

DECT™, **PLUGTESTS™**, **UMTS™**, **TIPHON™**, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

LTE™ is a Trade Mark of ETSI currently being registered

for the benefit of its Members and of the 3GPP Organizational Partners.

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	7
Foreword.....	7
Introduction	8
1 Scope	9
2 References	10
2.1 Normative references	10
2.2 Informative references.....	10
3 Definitions, symbols and abbreviations	11
3.1 Definitions.....	11
3.2 Symbols.....	13
3.3 Abbreviations	13
Part I: Radio microphones	14
4 Functional characteristics	14
4.1 Radio microphone descriptions	14
4.2 In ear monitoring.....	14
4.3 Tour Guide systems.....	14
5 General	14
5.1 Presentation of equipment for testing purposes.....	14
5.1.1 Choice of model for testing	15
5.1.2 Definitions of alignment and switching ranges.....	15
5.1.3 Choice of frequencies	15
5.1.4 Testing of single channel equipment	16
5.1.5 Testing of two channel equipment.....	16
5.1.6 Testing of multi-channel equipment (more than two channels).....	16
5.1.7 Testing of equipment without a permanent external RF port.....	16
5.1.7.1 Equipment with a permanent internal RF port	16
5.1.7.2 Equipment with a temporary RF port.....	16
5.2 Mechanical and electrical design.....	16
5.2.1 General.....	16
5.2.2 Controls	16
5.2.3 Performance testing with Integral antenna.....	16
5.2.4 Marking (equipment identification).....	17
5.3 Interpretation of the measurement results	17
6 Test conditions, power sources and ambient conditions	17
6.1 Normal and extreme test-conditions.....	17
6.2 Test power source.....	17
6.3 Normal test conditions.....	18
6.3.1 Normal temperature and humidity	18
6.3.2 Normal test power source voltage.....	18
6.3.2.1 Mains voltage	18
6.3.2.2 Other power sources.....	18
6.4 Extreme test conditions	18
6.4.1 Extreme temperatures	18
6.4.1.1 Procedures for tests at extreme temperatures	18
6.4.2 Extreme test power source voltages.....	19
6.4.2.1 Mains voltage.....	19
6.4.2.2 Other power sources.....	19
7 General conditions.....	19
7.1 Normal test modulation.....	19
7.1.1 Analogue systems	19
7.1.2 Digital systems.....	20

7.2	Artificial antenna.....	21
7.3	Test fixture	21
7.4	Test site and general arrangements for radiated measurements.....	21
7.5	Modes of operation of the transmitter	21
7.6	Arrangement for test signals at the input of the transmitter	21
8	Methods of measurement and limits for transmitter parameters	22
8.1	Frequency stability	22
8.1.1	Method of measurement (analogue)	22
8.1.2	Method of measurement (digital).....	22
8.1.3	Limit	22
8.2	Rated output power	22
8.2.1	Method of measurement for equipment without integral antenna	22
8.2.2	Method of measurement for equipment with integral antenna.....	22
8.2.2.1	Method of measurement under normal test conditions	22
8.2.3	Limit	23
8.3	Necessary bandwidth.....	23
8.3.1	Necessary Bandwidth (BN) for Analogue Systems	23
8.3.1.1	Method of Measurement	23
8.3.1.2	Limits	24
8.3.2	Necessary Bandwidth (BN) for Digital Systems	24
8.3.2.1	Method of Measurement	24
8.3.2.2	Limits	26
8.4	Spurious emissions	27
8.4.1	Definition.....	27
8.4.2	Method of measurement	27
8.4.3	Limits.....	28
8.4.4	Measuring receiver	28
9	Receiver.....	28
9.1	Spurious emissions	28
9.1.1	Definitions	28
9.1.2	Method of measuring the power level in a specified load.....	28
9.1.3	Method of measuring the effective radiated power of the enclosure	29
9.1.4	Method of measuring the effective radiated power.....	29
9.1.5	Limits.....	29
Part II:	Assistive listening devices.....	30
10	Functional characteristics	30
10.1	Assistive Listening Devices (Aids for the handicapped).....	30
11	General	30
11.1	Presentation of equipment for testing purposes.....	30
11.1.1	Choice of model for testing	31
11.1.2	Definitions of alignment and switching ranges.....	31
11.1.3	Choice of frequencies	31
11.1.4	Testing of single channel equipment	32
11.1.5	Testing of two channel equipment.....	32
11.1.6	Testing of multi-channel equipment (more than two channels).....	32
11.1.7	Testing of equipment without a permanent external RF port.....	32
11.1.7.1	Equipment with a permanent internal RF port	32
11.1.7.2	Equipment with a temporary RF port.....	32
11.2	Mechanical and electrical design.....	32
11.2.1	General.....	32
11.2.2	Controls	32
11.2.3	Performance testing with Integral antenna.....	32
11.2.4	Marking (equipment identification)	33
11.3	Interpretation of the measurement results	33
12	Test conditions, power sources and ambient conditions	33
12.1	Normal and extreme test-conditions.....	33
12.2	Test power source.....	33
12.3	Normal test conditions.....	34

12.3.1	Normal temperature and humidity	34
12.3.2	Normal test power source voltage.....	34
12.3.2.1	Mains voltage	34
12.3.2.2	Other power sources.....	34
12.4	Extreme test conditions	34
12.4.1	Extreme temperatures	34
12.4.1.1	Procedures for tests at extreme temperatures	34
12.4.2	Extreme test power source voltages.....	35
12.4.2.1	Mains voltage	35
12.4.2.2	Other power sources.....	35
13	General conditions.....	35
13.1	Normal test modulation	35
13.1.1	Analogue systems	35
13.1.2	Digital systems.....	35
13.2	Artificial antenna.....	36
13.3	Test fixture	36
13.4	Test site and general arrangements for radiated measurements.....	36
13.5	Modes of operation of the transmitter	36
13.6	Arrangement for test signals at the input of the transmitter	36
14	Methods of measurement and limits for transmitter parameters	37
14.1	Frequency stability	37
14.1.1	Method of measurement (analogue)	37
14.1.2	Method of measurement (digital).....	37
14.1.3	Limit	37
14.2	Rated output power	37
14.2.1	Method of measurement for equipment without integral antenna	37
14.2.2	Method of measurement for equipment with integral antenna	37
14.2.2.1	Method of measurement under normal test conditions	37
14.2.3	Limit	38
14.3	Necessary bandwidth.....	38
14.3.1	Necessary Bandwidth (BN) for Analogue Systems	38
14.3.1.1	Method of Measurement	38
14.3.1.2	Limits	39
14.3.2	Necessary Bandwidth (BN) for Digital Systems	40
14.3.2.1	Method of Measurement	40
14.3.2.2	Limits	41
14.4	Spurious emissions	41
14.4.1	Definition.....	41
14.4.2	Method of measurement	41
14.4.3	Limits.....	41
14.4.4	Measuring receiver	42
15	Receiver.....	42
15.1	Spurious emissions	42
15.1.1	Definitions	42
15.1.2	Method of measuring the power level in a specified load.....	42
15.1.3	Method of measuring the effective radiated power of the enclosure	42
15.1.4	Method of measuring the effective radiated power.....	43
15.1.5	Limits.....	43
16	Measurement uncertainty	43
Annex A (normative):	Radiated measurement.....	45
A.1	Test sites and general arrangements for measurements involving the use of radiated fields	45
A.1.1	Anechoic Chamber	45
A.1.2	Anechoic Chamber with a conductive ground plane	46
A.1.3	Open Area Test Site (OATS)	47
A.1.4	Test antenna.....	48
A.1.5	Substitution antenna	48
A.1.6	Measuring antenna	49
A.1.7	Stripline arrangement	49

A.1.7.1	General.....	49
A.1.7.2	Description.....	49
A.1.7.3	Calibration	49
A.1.7.4	Mode of use	49
A.2	Guidance on the use of radiation test sites	49
A.2.1	Verification of the test site	49
A.2.2	Preparation of the EUT.....	49
A.2.3	Power supplies to the EUT	50
A.2.4	Volume control setting for analogue speech tests	50
A.2.5	Range length.....	50
A.2.6	Site preparation	51
A.3	Coupling of signals.....	51
A.3.1	General	51
A.3.2	Data Signals.....	51
A.3.3	Speech and analogue signals	51
A.3.3.1	Acoustic coupler description.....	52
A.3.3.2	Calibration	52
A.4	Standard test position	52
A.5	Test fixture	53
A.5.1	Description	53
A.5.2	Calibration.....	53
A.5.3	Mode of use	54
Annex B (normative):	Measurement of Necessary Bandwidth (BN) for analogue systems	55
Annex C (informative):	Bibliography.....	56
History		57

Document Preview

[ETSI EN 300 422-1 V1.4.2 \(2011-08\)](https://standards.iteh.ai/catalog/standards/etsi/ca07bef9-2545-4111-9888-7048cede4bb2/etsi-en-300-422-1-v1-4-2-2011-08)

<https://standards.iteh.ai/catalog/standards/etsi/ca07bef9-2545-4111-9888-7048cede4bb2/etsi-en-300-422-1-v1-4-2-2011-08>

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://webapp.etsi.org/IPR/home.asp>).

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 (EN) 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 has been updated in line with the advances in radio microphone technology in the digital field and the increased use of wireless applications for Assistive listening Devices, also with changes generated within CEPT and the EC in the former ERMES band for aids for the handicapped.

The present document is part 1 of a multi-part deliverable covering the Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range, as identified below:

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

Part 2: "Harmonized EN covering the 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):	6 months after doa