

STN	Bezdrôtové mikrofóny Audio PMSE až do 3 GHz Časť 1: Audio PMSE vybavenie do 3 GHz Harmonizovaná norma pre prístup k rádiovému spektru	STN EN 300 422-1 V2.2.1 87 0422
------------	--	---

Wireless Microphones; Audio PMSE up to 3 GHz; Part 1: Audio PMSE Equipment up to 3 GHz; Harmonised Standard for access to radio spectrum

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 05/22

Obsahuje: EN 300 422-1 V2.2.1:2021

134787



ETSI EN 300 422-1 V2.2.1 (2021-11)



**Wireless Microphones;
Audio PMSE up to 3 GHz;
Part 1: Audio PMSE Equipment up to 3 GHz;
Harmonised Standard for access to radio spectrum**

ReferenceREN/ERM-TG17-157

Keywords

audio, audio-PMSE, C-PMSE, harmonised standard, radio, testing, wireless microphone, wireless microphone system

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 - APE 7112B
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° w061004871

Important notice

The present document can be downloaded from:

<http://www.etsi.org/standards-search>

The present document may be made available in electronic versions and/or in print. The content of any electronic and/or print versions of the present document shall not be modified without the prior written authorization of ETSI. In case of any existing or perceived difference in contents between such versions and/or in print, the prevailing version of an ETSI deliverable is the one made publicly available in PDF format at www.etsi.org/deliver.

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

<https://portal.etsi.org/TB/ETSIDeliverableStatus.aspx>

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

<https://portal.etsi.org/People/CommitteeSupportStaff.aspx>

Notice of disclaimer & limitation of liability

The information provided in the present deliverable is directed solely to professionals who have the appropriate degree of experience to understand and interpret its content in accordance with generally accepted engineering or other professional standard and applicable regulations.

No recommendation as to products and services or vendors is made or should be implied.

In no event shall ETSI be held liable for loss of profits or any other incidental or consequential damages.

Any software contained in this deliverable is provided "AS IS" with no warranties, express or implied, including but not limited to, the warranties of merchantability, fitness for a particular purpose and non-infringement of intellectual property rights and ETSI shall not be held liable in any event for any damages whatsoever (including, without limitation, damages for loss of profits, business interruption, loss of information, or any other pecuniary loss) arising out of or related to the use of or inability to use the software.

Copyright Notification

No part may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm except as authorized by written permission of ETSI.

The content of the PDF version shall not be modified without the written authorization of ETSI.

The copyright and the foregoing restriction extend to reproduction in all media.

© ETSI 2021.
All rights reserved.

Contents

Intellectual Property Rights	7
Foreword.....	7
Modal verbs terminology.....	8
Executive summary	8
Introduction	8
1 Scope	10
2 References	10
2.1 Normative references	10
2.2 Informative references.....	10
3 Definition of terms, symbols and abbreviations.....	12
3.1 Terms.....	12
3.2 Symbols.....	14
3.3 Abbreviations	15
4 Technical requirements specifications	15
4.1 Environmental profile.....	15
4.2 Conformance requirements	16
4.2.1 Transmitter RF Output Power.....	16
4.2.1.1 Definition	16
4.2.1.2 Limit.....	16
4.2.1.3 Conformance.....	16
4.2.2 Transmitter Frequency Stability	16
4.2.2.1 General	16
4.2.2.2 Definition	16
4.2.2.3 Limits	16
4.2.2.4 Conformance.....	16
4.2.3 Declared Channel Bandwidth and Occupied Channel Bandwidth.....	17
4.2.3.1 Definitions.....	17
4.2.3.2 Limits	17
4.2.3.3 Conformance	17
4.2.4 Transmitter unwanted emissions.....	18
4.2.4.1 Transmitter unwanted emissions in the spurious domain.....	18
4.2.4.1.1 Definition.....	18
4.2.4.1.2 Limits	18
4.2.4.1.3 Conformance	19
4.2.4.2 Transmitter unwanted emissions in the out of band domain	19
4.2.4.2.1 Definition.....	19
4.2.4.2.2 Limits	19
4.2.4.2.3 Conformance	21
4.2.5 Transmitter intermodulation attenuation.....	21
4.2.5.1 Definitions.....	21
4.2.5.2 Limits	21
4.2.5.3 Conformance.....	21
4.3 Conformance requirements for receivers	21
4.3.1 Minimum performance criterion.....	21
4.3.2 Receiver sensitivity.....	21
4.3.2.1 Definition	21
4.3.2.2 Limit.....	22
4.3.2.3 Conformance.....	22
4.3.3 Receiver adjacent channel selectivity	22
4.3.3.1 Definition	22
4.3.3.2 Limit.....	22
4.3.3.3 Conformance	23
4.3.4 Receiver blocking	23

4.3.4.1	Definition	23
4.3.4.2	Limit.....	23
4.3.4.3	Conformance.....	23
4.3.5	Receiver unwanted emissions in the spurious domain.....	23
4.3.5.1	Definition	23
4.3.5.2	Limit.....	24
4.3.5.3	Conformance.....	24
5	Testing for compliance with technical requirements.....	24
5.1	Environmental conditions for testing	24
5.1.1	Introduction.....	24
5.1.2	Normal test conditions	24
5.1.2.1	Normal temperature and humidity	24
5.1.2.2	Normal power source	24
5.1.3	Extreme test conditions.....	24
5.2	Interpretation of the measurement results	25
5.3	Definition of other test conditions.....	25
5.3.1	Product information for testing.....	25
5.3.2	Test signals	26
5.3.2.1	Audio test signal generation for equipment employing analogue modulation techniques	26
5.3.2.2	Audio test signal generation for equipment employing digital modulation techniques including WMAS	27
5.3.2.3	Wanted signal.....	28
5.3.2.4	Unwanted signal.....	28
5.3.2.5	Test signal for non-continuous transmitters	28
5.3.3	Test setup.....	28
5.3.4	Test operational modes	29
5.3.4.1	Receiver operational mode.....	29
5.3.4.2	Rx Diversity	29
5.3.5	Antennas	29
5.3.5.1	Integrated and dedicated antennas.....	29
5.3.6	Presentation of equipment	29
5.3.7	Conducted measurements, radiated measurements, relative measurements	29
5.4	Method of measurement for transmitters.....	29
5.4.1	Transmitter RF power.....	29
5.4.1.1	Test conditions	29
5.4.1.2	Test method.....	30
5.4.1.2.1	Conducted measurement.....	30
5.4.1.2.2	Radiated measurement.....	30
5.4.2	Transmitter frequency stability	30
5.4.2.1	Test conditions	30
5.4.2.2	Test method.....	30
5.4.2.2.1	Conducted measurement.....	30
5.4.2.2.2	Radiated measurement.....	31
5.4.3	Transmitter unwanted emissions in the out of band domain and occupied channel bandwidth.....	31
5.4.3.1	Test conditions	31
5.4.3.2	Test method.....	31
5.4.3.2.1	Conducted measurement.....	31
5.4.3.2.2	Radiated measurement.....	33
5.4.4	Transmitter unwanted emissions in the spurious domain	33
5.4.4.1	Test conditions	33
5.4.4.2	Test method.....	33
5.4.4.2.1	Segmentation in smaller frequency bands	33
5.4.4.2.2	Conducted measurement.....	33
5.4.4.2.3	Radiated measurement.....	34
5.4.5	Transmitter intermodulation attenuation.....	34
5.4.5.1	Test conditions	34
5.4.5.2	Test method.....	35
5.4.5.2.1	Conducted measurement.....	35
5.4.5.2.2	Radiated measurement.....	37
5.5	Method of measurement for receivers.....	37
5.5.1	Receiver sensitivity.....	37

5.5.1.1	Test conditions	37
5.5.1.2	Test method.....	37
5.5.1.2.1	Conducted measurement.....	37
5.5.1.2.2	Radiated measurement.....	38
5.5.2	Receiver adjacent channel selectivity	38
5.5.2.1	Test conditions	38
5.5.2.2	Test method.....	38
5.5.2.2.1	Conducted measurement.....	38
5.5.2.2.2	Radiated measurement.....	39
5.5.3	Receiver blocking	39
5.5.3.1	Test conditions	39
5.5.3.2	Test method.....	40
5.5.3.2.1	Conducted measurement.....	40
5.5.3.2.2	Radiated measurement.....	40
5.5.4	Receiver unwanted emissions in the spurious domain.....	41
5.5.4.1	Test conditions	41
5.5.4.2	Test method.....	41
5.5.4.2.1	Segmentation in smaller frequency bands	41
5.5.4.2.2	Conducted measurement.....	41
5.5.4.2.3	Radiated measurement.....	43
Annex A (informative):	Relationship between the present document and the essential requirements of Directive 2014/53/EU	44
Annex B (informative):	Maximum measurement uncertainty	46
Annex C (informative):	Measurement of Occupied Channel Bandwidth for analogue equipment	47
C.1	Test configuration for measurement of the Occupied Channel Bandwidth for analogue equipment.....	47
Annex D (normative):	Radiated measurement.....	48
D.1	Test sites and general arrangements for measurements involving the use of radiated fields	48
D.1.1	General	48
D.1.2	Anechoic chamber	48
D.1.3	Anechoic chamber with a conductive ground plane	49
D.1.4	Open Area Test Site (OATS)	50
D.1.5	Test antenna.....	51
D.1.6	Substitution antenna	51
D.1.7	Measuring antenna	52
D.1.8	Stripline arrangement	52
D.1.8.1	General.....	52
D.1.8.2	Description.....	52
D.1.8.3	Calibration	52
D.1.8.4	Mode of use	52
D.2	Guidance on the use of radiation test sites	52
D.2.1	General	52
D.2.2	Verification of the test site	52
D.2.3	Preparation of the DUT	53
D.2.4	Power supplies to the DUT.....	53
D.2.5	Volume control setting for analogue speech tests	53
D.2.6	Range length.....	53
D.2.7	Site preparation	54
D.3	Coupling of signals.....	54
D.3.1	General	54
D.3.2	Data signals	54
D.3.3	Speech and analogue signals	55
D.3.3.0	General.....	55
D.3.3.1	Acoustic coupler description.....	55
D.3.3.2	Calibration	55

D.4	Standard test position	55
D.5	Test fixture	56
D.5.1	General	56
D.5.2	Description	56
D.5.3	Calibration	57
D.5.4	Mode of use	57
Annex E (informative):	Additional parameters identified under article 3.2 of Directive 2014/53/EU.....	58
Annex F (informative):	Change history	59
History		60

Intellectual Property Rights

Essential patents

IPRs essential or potentially essential to normative deliverables may have been declared to ETSI. The declarations pertaining to these essential IPRs, if any, are 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 (<https://ipr.etsi.org/>).

Pursuant to the ETSI Directives including the ETSI IPR Policy, no investigation regarding the essentiality of IPRs, 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.

Trademarks

The present document may include trademarks and/or tradenames which are asserted and/or registered by their owners. ETSI claims no ownership of these except for any which are indicated as being the property of ETSI, and conveys no right to use or reproduce any trademark and/or tradename. Mention of those trademarks in the present document does not constitute an endorsement by ETSI of products, services or organizations associated with those trademarks.

DECT™, **PLUGTESTS™**, **UMTS™** and the ETSI logo are trademarks of ETSI registered for the benefit of its Members. **3GPP™** and **LTE™** are trademarks of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners. **oneM2M™** logo is a trademark of ETSI registered for the benefit of its Members and of the oneM2M Partners. **GSM®** and the GSM logo are trademarks registered and owned by the GSM Association.

Foreword

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

The present document has been prepared under the Commission's standardisation request C(2015) 5376 final [i.18] to provide one voluntary means of conforming to the essential requirements of Directive 2014/53/EU on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC [i.10].

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in table A.1 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

The present document is part 1 of a multi-part deliverable covering Wireless Microphones, Audio PMSE Equipment up to 3 GHz, as identified below:

Part 1: "Audio PMSE Equipment up to 3 GHz";

Part 2: "Class B Receivers" (see note);

Part 3: "Class C Receivers"(see note);

Part 4: "Assistive Listening Devices including personal sound amplifiers and inductive systems up to 3 GHz".

NOTE: Since the present document now covers Class A, B, and C receivers for audio PMSE, ETSI EN 300 422-2 and ETSI EN 300 422-3 will no longer be maintained.

National transposition dates	
Date of adoption of this EN:	18 November 2021
Date of latest announcement of this EN (doa):	28 February 2022
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 August 2022
Date of withdrawal of any conflicting National Standard (dow):	31 August 2023

Modal verbs terminology

In the present document "shall", "shall not", "should", "should not", "may", "need not", "will", "will not", "can" and "cannot" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

"must" and "must not" are **NOT** allowed in ETSI deliverables except when used in direct citation.

Executive summary

This update includes changes requested by the EC for terminology in Harmonised Standards in addition to changes of the technical requirements.

Introduction

Audio Programme Making and Special Events (Audio PMSE) equipment up to 3 GHz are used in wireless applications for audio transmission purposes.

Following publication by ETSI of version 2.1.2 of ETSI EN 300 422-1 and its subsequent publication in the Official Journal, the present document has been revised with information gained from those using that version. The previous four-parts deliverable has been reformatted into two parts to accommodate the different types of equipment represented. The present document (Part 1) now covers Class A, B, and C receivers for audio PMSE. To avoid confusion, the numbering for ETSI EN 300 422-4 [i.4] (ALDs) has been retained.

Spectrum, power limits, and technical requirements for audio PMSE are shown in the latest version of:

- EC Decision on Short Range Devices [i.14];
- CEPT/ERC Recommendation 70-03 [i.12], annex 10;
- National Interface regulations; and
- compatibility studies.

Further information is given in CEPT/ERC Recommendation 25-10 [i.13], annexes 2 and 4. Further information is available via the ECO website:

<https://cept.org/ecc/topics/programme-making-and-special-events-applications-pmse>

and the EFIS database:

<https://efis.cept.org/>.

Unless otherwise stated in the EC SRD Decision [i.14], EC Decision 2014/641/EU [i.11] or national regulations, the use of audio PMSE equipment can be subject to an individual licensing regime.

Although the present document covers a spectrum up to 3 GHz, it should be emphasized that multi-channel audio PMSE systems used in professional productions are best suited to a spectrum under 2 GHz for reasons of propagation and body interaction. Further information on audio PMSE is available in ECC Report 204 [i.16].

Additional standards or specifications may be required for equipment:

- 1) intended to interface to Public Networks, e.g. PSTN. This facility may be subjected to regulatory conditions;
or
- 2) other relevant radio standards.

1 Scope

The present document specifies technical characteristics and methods of measurements for audio PMSE equipment operating with up to 250 mW output power on radio frequencies up to 3 GHz (see note 1).

NOTE 1: For RF power levels above this, refer to ETSI EN 300 454-1 [i.3].

Audio Programme Making and Special Events (PMSE) equipment within the scope of the present document is used in wireless applications for audio transmission purposes including, but not limited to equipment such as wireless microphones, in-ear monitoring systems, conference systems, talkback systems, tour guide systems, Cognitive PMSE (C-PMSE), Wireless Multichannel Audio Systems (WMAS), and assistive listening devices.

Table 1: Radiocommunications service frequency bands

Radiocommunications service frequency bands	
Transmit	up to 3 000 MHz
Receive	up to 3 000 MHz

NOTE 2: The relationship between the present document and essential requirements of article 3.2 of Directive 2014/53/EU [i.10] is given in annex A.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

The following referenced documents are necessary for the application of the present document.

- [1] IEC 60244-13:1991: "Methods of measurement for radio transmitters - Part 13: Performance characteristics for FM sound broadcasting".
- [2] ERC Recommendation 74-01 (May 2019): "Unwanted emissions in the spurious domain".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long-term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI EG 203 336: "Guide for the selection of technical parameters for the production of Harmonised Standards covering article 3.1(b) and article 3.2 of Directive 2014/53/EU".
- [i.2] Void.

- [i.3] ETSI EN 300 454-1: "Electromagnetic compatibility and Radio spectrum Matters (ERM); Wide band audio links; Part 1: Technical characteristics and test methods".
- [i.4] ETSI EN 300 422-4: "Wireless Microphones; Audio PMSE up to 3 GHz; Part 4: Assistive Listening Devices including personal sound amplifiers and inductive systems up to 3 GHz; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU".
- [i.5] Void.
- [i.6] ETSI EG 203 367 (V1.1.1): "Guide to the application of harmonised standards covering articles 3.1b and 3.2 of the Directive 2014/53/EU (RED) to multi-radio and combined radio and non-radio equipment".
- [i.7] ETSI TR 102 273 (V1.2.1) (all parts): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Improvement on Radiated Methods of Measurement (using test site) and evaluation of the corresponding measurement uncertainties".
- [i.8] ETSI EN 301 489-9: "ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 9: Specific conditions for wireless microphones, similar Radio Frequency (RF) audio link equipment, cordless audio and in-ear monitoring devices; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU".
- [i.9] Void.
- [i.10] Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC.
- [i.11] Commission Implementing Decision 2014/641/EU of 01/09/2014 on harmonised technical conditions of radio spectrum use by wireless audio programme making and special events equipment in the Union (notified under document C(2014) 6011) (Text with EEA relevance).
- [i.12] CEPT/ERC Recommendation 70-03: "Annex 10: Radio microphone applications including assistive listening devices (ALD), wireless audio and multimedia streaming systems".
- [i.13] CEPT/ERC Recommendation 25-10: "Frequency Ranges for the Use of Terrestrial Audio and Video Programme Making and Special Events (PMSE) applications", Amended 18 October 2016.
- [i.14] Commission Decision 2013/752/EC on harmonization of the radio spectrum for use by short-range devices as amended by subsequent Commission Decisions.
- [i.15] Recommendation ITU-R BS.559-2: "Objective measurement of radio-frequency protection ratios in LF, MF, and HF broadcasting".
- [i.16] ECC Report 204: "Spectrum Use and future requirements for PMSE".
- NOTE: Available at <https://docdb.cept.org/download/1f1d1819-5ca2/ECCREP204.PDF>.
- [i.17] Report Recommendation ITU-R SM.2152 (09/2009): "Definitions of Software Defined Radio (SDR) and Cognitive Radio System (CRS)".
- [i.18] Commission Implementing Decision C(2015) 5376 final of 4.8.2015 on a standardisation request to the European Committee for Electrotechnical Standardisation and to the European Telecommunications Standards Institute as regards radio equipment in support of Directive 2014/53/EU of the European Parliament and of the Council.
- [i.19] ANSI C63.5: "American National Standard for Calibration of Antennas Used for Radiated Emission Measurements in Electro Magnetic Interference".

koniec náhľadu – text ďalej pokračuje v platenej verzii STN