

SLOVENSKI STANDARD
SIST EN 55016-4-2:2011/A2:2018
01-december-2018

Specifikacija za merilne naprave in metode za merjenje radijskih motenj in odpornosti - 4-2. del: Modeliranje negotovosti, statistike in mejnih vrednosti - Negotovost merilnih instrumentov - Dopolnilo A2

Specification for radio disturbance and immunity measuring apparatus and methods - Part 4-2: Uncertainties, statistics and limit modelling - Measurement instrumentation uncertainty - Conducted disturbance measurements

Anforderungen an Geräte und Einrichtungen sowie Festlegung der Verfahren zur Messung der hochfrequenten Störaussendung (Funkstörungen) und Störfestigkeit - Teil 4-2: Unsicherheiten, Statistik und Modelle zur Ableitung von Grenzwerten (Störmodell) - Messgeräte-Unsicherheit

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Spécifications des méthodes et des appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques - Partie 4-2: Incertitudes, statistiques et modélisation des limites - Incertitudes de mesure de l'instrumentation

Ta slovenski standard je istoveten z: EN 55016-4-2:2011/A2:2018

ICS:

17.220.20	Merjenje električnih in magnetnih veličin	Measurement of electrical and magnetic quantities
33.100.01	Elektromagnetna združljivost na splošno	Electromagnetic compatibility in general

SIST EN 55016-4-2:2011/A2:2018 **en**

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EUROPEAN STANDARD

EN 55016-4-2:2011/A2

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2018

ICS 33.100.10; 33.100.20

English Version

Specification for radio disturbance and immunity measuring apparatus and methods - Part 4-2: Uncertainties, statistics and limit modelling - Measurement instrumentation uncertainty (CISPR 16-4-2:2011/A2:2018)

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This amendment A2 modifies the European Standard EN 55016-4-2:2011; it was approved by CENELEC on 2018-09-19. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN 55016-4-2:2011/A2:2018 (E)**European foreword**

The text of document CISPR/A/1257/FDIS, future CISPR 16-4-2/A2, prepared by CISPR SC A "Radio-interference measurements and statistical methods" of CISPR "International special committee on radio interference" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 55016-4-2:2011/A2:2018.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2019-06-19
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2021-09-19

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

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[1c8a5b8b6147/sist-en-55016-4-2-2011-a2-2018](https://standards.iteh.ai/catalog/standards/sist/7b6ab05d-9758-48c6-823b-1c8a5b8b6147/sist-en-55016-4-2-2011-a2-2018)

The text of the International Standard CISPR 16-4-2:2011/A2:2018 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

CISPR 16-1-4:2010	NOTE	Harmonized as EN 55016-1-4:2010 (not modified)
CISPR 16-1-6:2014	NOTE	Harmonized as EN 55016-1-6:2015 (not modified)
CISPR 32:2015	NOTE	Harmonized as EN 55032:2015 (not modified)

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
CISPR 16-2-3	2016	Specification for radio disturbance and immunity measuring apparatus and methods - Part 2-3: Methods of measurement of disturbances and immunity - Radiated disturbance measurements	EN 55016-2-3	2017

[SIST EN 55016-4-2:2011/A2:2018](https://standards.iteh.ai/catalog/standards/sist/7b6ab05d-9758-48c6-823b-1cba5b8b6147/sist-en-55016-4-2-2011-a2-2018)

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE
COMITÉ INTERNATIONAL SPÉCIAL DES PERTURBATIONS RADIOÉLECTRIQUES

BASIC EMC PUBLICATION
PUBLICATION FONDAMENTALE EN CEM

AMENDMENT 2 **iTeh STANDARD PREVIEW**
AMENDEMENT 2 **(standards.iteh.ai)**

**Specification for radio disturbance and immunity measuring apparatus
and methods –**

**Part 4-2: Uncertainties, statistics and limit modelling – Measurement
instrumentation uncertainty**

**Spécifications des méthodes et des appareils de mesure des perturbations
radioélectriques et de l'immunité aux perturbations radioélectriques –
Partie 4-2: Incertitudes, statistiques et modélisation des limites – Incertitudes
de mesure de l'instrumentation**

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FOREWORD

This amendment has been prepared by subcommittee CISPR subcommittee A: Radio-interference measurements and statistical methods, of IEC CISPR committee: International special committee on radio interference.

The text of this amendment is based on the following documents:

FDIS	Report on voting
CISPR/A/1257/FDIS	CISPR/A/1259/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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2 Normative references

Replace the dated reference CISPR 16-2-3:2010, by the following new reference:

CISPR 16-2-3:2016, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-3: Methods of measurement of disturbances and immunity – Radiated disturbance measurements*

3.1 Terms and definitions

Add, after the existing term and definition 3.1.1, the following new term and definition:

3.1.2

small EUT

equipment, either positioned on a table top or standing on the floor that, including its cables, fits in a cylindrical test volume of 1,5 m in diameter and 1,5 m in height measured from the floor

3.3 Abbreviations

Add, to the existing list modified by Amendment 1, the following new abbreviations:

CISPR 16-4-2:2011/AMD2:2018
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– 3 –

AN	artificial network
Δ -AN	artificial Δ -network (' Δ ' is pronounced 'delta')
LLAS	large loop antenna system
LV	low voltage
V-AMN	artificial mains V-network

Table 1 – Values of U_{cispr}

Replace the first three lines of this table, modified by Amendment 1, by the following new lines:

Conducted disturbance at AC mains and other power ports using a V-AMN	(9 kHz to 150 kHz)	3,8 dB	B.1
	(150 kHz to 30 MHz)	3,4 dB	B.2
Conducted disturbance at AC mains ports using a voltage probe	(9 kHz to 30 MHz)	2,9 dB	B.3

Add, after the measurement method "Conducted disturbance at telecommunication port using CP", the following new line:

Conducted disturbance at telecommunication port using CP and CVP	(150 kHz to 30 MHz)	4,0 dB	B.5
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Add before "Radiated disturbance (electric field strength at an OATS or in a SAC)" the following new line:

Radiated disturbance (disturbance current in a LLAS)	(9 kHz to 30 MHz)	3,3 dB	F.1
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Add, after the existing NOTE 2, the following new notes:

NOTE 3 The value of U_{cispr} for conducted disturbances at telecommunication ports using CP and CVP is based on the expanded uncertainty in Table B.5 with consideration of additional uncertainties attributed to the CP transfer admittance Y_T and mismatch uncertainty CP-receiver δM ; see comment B18).

NOTE 4 The values of U_{cispr} for the OATS, SAC and FAR are based on a small EUT – an EUT fitting in a cylindrical test volume of 1,5 m in diameter and 1,5 m in height – for a 3 m measurement distance (per 3.1.2).

5.1 Conducted disturbance measurements at a mains port using an AMN

Replace, in the title, the phrase "an AMN" by the phrase "a V-AMN".

5.1.1 Measurand for measurements using an AMN

Replace, in the title, the phrase "an AMN" by the phrase "a V-AMN".

5.1.2 Symbols of input quantities specific to measurements using an AMN

Replace in the title the phrase "an AMN" by the phrase "a V-AMN".

Replace the line starting with δD_{mains} by the following new line:

δD_{mains} Correction for the error caused by AC mains and other power supply disturbances, in dB

5.1.3 Input quantities to be considered for conducted disturbance measurements at a mains port using an AMN

Replace, in the title, the phrase "an AMN" by the phrase "a V-AMN".

Replace the eighth dashed item by the following new text:

- Effect of disturbances originating from the laboratory AC mains or other power supply

Add, after the existing Subclause 5.6.3 added by Amendment 1, the following new Subclause 5.7:

5.7 Conducted disturbance measurements at AC mains and other power ports using a Δ -AN**5.7.1 Measurand for measurements using a Δ -AN**

V Asymmetric voltage in dB(μ V), measured at the EUT port of the Δ -AN relative to the reference ground plane, and also symmetric voltage between two terminals at the EUT port of the Δ -AN not including reference ground; optionally also the unsymmetric voltage in dB(μ V), measured at the EUT port of the Δ -AN relative to the reference ground plane, if the Δ -AN is furnished with a respective port for connection of the measuring receiver

5.7.2 Symbols of input quantities specific to measurements using a Δ -AN

F_{AN} Voltage division factor (asymmetric resp. symmetric) of the Δ -AN, in dB

$\delta F_{\text{AN}f}$ Correction for voltage division factor (VDF) frequency interpolation error, in dB

δD_{mains} Correction for the error caused by AC mains and other power supply disturbances, in dB

δV_{env} Correction for the effect of the environment, in dB

δZ_{AN} Correction for imperfect asymmetric or symmetric Δ -AN impedance, in dB

5.7.3 Input quantities to be considered for conducted disturbance measurements at AC mains and other power ports using a Δ -AN

- Receiver reading
- Attenuation of the connection between AN and receiver
- AN voltage division factor (asymmetric and symmetric)
- AN VDF frequency interpolation
- Receiver related input quantities:
 - Receiver sine-wave voltage accuracy
 - Receiver pulse amplitude response

- Receiver pulse response variation with repetition frequency
- Receiver noise floor
- Mismatch effects between the AN's receiver port and receiver
- AN impedance
- Effect of disturbances originating from the laboratory AC mains or other power supply
- Effect of environment

Add, after the existing Clause 8, the following new Clause 9:

9 Radiated disturbance measurements in the frequency range 9 kHz to 30 MHz

9.1 Magnetic field disturbance measurements using the LLAS in the frequency range 9 kHz to 30 MHz (see also Clause F.1)

9.1.1 Measurand for LLAS measurements

I Current in dB(μ A), measured in each of the three loops of the LLAS

9.1.2 Symbols of input quantities specific for LLAS measurements

δZ_{vf} Correction for validation factor deviation, in dB

δZ_{fi} Correction for validation factor frequency interpolation, in dB

9.1.3 Input quantities to be considered for LLAS measurements

- Receiver reading
- Attenuation of connecting cable between LLAS and receiver
- Validation factor deviation
- Validation factor frequency interpolation
- Receiver related input quantities:
 - Receiver sine-wave voltage accuracy
 - Receiver pulse amplitude response
 - Receiver pulse response variation with repetition frequency
 - Receiver noise floor
- Mismatch between LLAS and receiver

9.2 Magnetic field disturbance measurement in the frequency range 9 kHz to 30 MHz using a loop antenna at various distances from the EUT

(Void)

Annex A – Basis for U_{cispr} values in Table 1, general information and rationale for input quantities common to all measurement methods

A.2 Rationale for the estimates of input quantities common to all disturbance measurements (“A” comments)

Replace, in the existing item A2) modified by Amendment 1, the abbreviation “AMN” by the abbreviation “V-AMN”.