



Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 55016-1-6:2015/A1:2017

**Specification for radio disturbance and
immunity measuring apparatus and
methods - Part 1-6: Radio disturbance
and immunity measuring apparatus -**

Anforderungen an Geräte und
Einrichtungen sowie Festlegung der
Verfahren zur Messung der
hochfrequenten Störaussendung

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05/2017



National Foreword

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ILNAS-EN 55016-1-6:2015/A1:2017

EUROPEAN STANDARD **EN 55016-1-6:2015/A1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2017

ICS 33.100.10; 33.100.20

English Version

Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-6: Radio disturbance and immunity measuring apparatus - EMC antenna calibration (CISPR 16-1-6:2014/A1:2017)

Spécifications des méthodes et des appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques - Partie 1-6: Appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques - Étalonnage des antennes CEM
(CISPR 16-1-6:2014/A1:2017)

Anforderungen an Geräte und Einrichtungen sowie Festlegung der Verfahren zur Messung der hochfrequenten Störaussendung (Funkstörungen) und Störfestigkeit - Teil 1-6: Geräte und Einrichtungen zur Messung der hochfrequenten Störaussendung (Funkstörungen) und Störfestigkeit - Kalibrierung von Antennen für EMV-Messungen
(CISPR 16-1-6:2014/A1:2017)

This amendment A1 modifies the European Standard EN 55016-1-6:2015; it was approved by CENELEC on 2017-02-17. 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.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

The text of document CISPR/A/1195/FDIS, future CISPR 16-1-6:2014/A1, 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 55016-1-6:2015/A1:2017.

The following dates are fixed:

- latest date by which the document has to be implemented at (dop) 2017-11-26
national level by publication of an identical national
standard or by endorsement
- latest date by which the national standards conflicting with (dow) 2020-05-26
the document have to be withdrawn

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Endorsement notice

The text of the International Standard CISPR 16-1-6:2014/A1:2017 was approved by CENELEC as a European Standard without any modification.



INTERNATIONAL STANDARD

NORME INTERNATIONALE

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

BASIC EMC PUBLICATION
PUBLICATION FONDAMENTALE EN CEM

AMENDMENT 1
AMENDEMENT 1

**Specification for radio disturbance and immunity measuring apparatus and methods –
Part 1-6: Radio disturbance and immunity measuring apparatus – EMC antenna calibration**

**Spécifications des méthodes et des appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques –
Partie 1-6: Appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques – Étalonnage des antennes CEM**

FOREWORD

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

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

FDIS	Report on voting
CISPR/A/1195/FDIS	CISPR/A/1204/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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

6.3.4 Radiation patterns of an antenna

Add, after the last paragraph of this subclause, the following new paragraph:

Annex I introduces a method for antenna pattern measurement in the frequency range above 1 GHz.

Add, after the existing Annex H, the following new Annex I:

Annex I (normative)

Antenna pattern measurement method in the frequency range above 1 GHz, with measurement uncertainty budget

I.1 General

All measurement methods in the CISPR 16 series need an estimation of the measurement uncertainty. A common approach is to list all contributions and to determine the influence of each one. This works very well if the uncertainty contributions are independent from the EUT itself. In case of antenna pattern measurements above 1 GHz uncertainty contributions are NOT independent from the EUT.

The major uncertainty contributions are:

- a) reflections inside the antenna chamber;
- b) reflections from the transmit antenna mast and the receive antenna mast;
- c) positioning uncertainty of the turntable leading to azimuth drift;
- d) alignment of the antennas;
- e) reflections between antennas.

All of these contributions are dependent on the antenna pattern to be measured as follows:

- 1) The nature of the pattern of omnidirectional antennas will lead to stronger reflections from objects around the antenna and from all surfaces of the anechoic chamber.
- 2) Coupling with the antenna mast is more significant if omnidirectional antennas or directional antennas with a strong back lobe are measured.
- 3) Uncertainty of the turntable positioning can be seen if directional antennas with a high-gradient antenna pattern are measured.
- 4) Alignment is more critical if directive antennas are measured.
- 5) Unwanted coupling between measurement antennas exists if the dimensions of the antennas are electrically large.

To account for these effects on uncertainty this measurement method includes a statistical estimation of the measurement uncertainty. The following subclauses describe the set-up and test method. Because a combined method is used, the problem of separately performing site validation and antenna mast validation is solved. It is easy for calibration labs to implement, and the effort is reasonable because the procedure is applied for the following cases:

- a) for a new and/or modified chamber and/or turntable;
- b) if the receive antenna model is changed;
- c) for each manufacturer and model of AUC.

This method is similar to the method given in 5.3.3 of CISPR 16-1-5:2014.

I.2 Test set-up

In a typical test set-up, the receive or transmit antenna under test is mounted in front of a vertical mast placed on a turntable. A change between the E-plane and the H-plane is easily done by rotating the antenna by 90°.