

# FINAL VERSION

# VERSION FINALE



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

BASIC EMC PUBLICATION  
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**Specification for radio disturbance and immunity measuring apparatus and methods –**

**Part 1-4: Radio disturbance and immunity measuring apparatus – Antennas and test sites for radiated disturbance measurements**

**Spécifications des méthodes et des appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques –**

**Partie 1-4: Appareils de mesure des perturbations radioélectriques et de l'immunité aux perturbations radioélectriques – Antennes et emplacements d'essai pour les mesures des perturbations rayonnées**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION  
INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

**SPECIFICATION FOR RADIO DISTURBANCE AND IMMUNITY  
MEASURING APPARATUS AND METHODS –**

**Part 1-4: Radio disturbance and immunity measuring apparatus –  
Antennas and test sites for radiated disturbance measurements**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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**This Consolidated version of CISPR 16-1-4 bears the edition number 3.2. It consists of the third edition (2010-04) [documents CISPR/A/885/FDIS and CISPR/A/891/RVD] and its corrigendum (2010-12), its amendment 1 (2012-07) [documents CISPR/A/995/FDIS and CISPR/A/1005/RVD] and its amendment 2 (2017-01) [documents CISPR/A/1994/FDIS and CISPR/A/1203/RVD]. The technical content is identical to the base edition and its amendments.**

**This Final version does not show where the technical content is modified by amendments 1 and 2. A separate Redline version with all changes highlighted is available in this publication.**

International Standard CISPR 16-1-4 has been prepared by CISPR subcommittee A: Radio-interference measurements and statistical methods.

This edition includes the following significant technical change with respect to the previous edition: provisions are added to address evaluation of a set-up table in the frequency range above 1 GHz.

It has the status of a basic EMC publication in accordance with IEC Guide 107, *Electromagnetic compatibility – Guide to the drafting of electromagnetic compatibility publications*.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of CISPR 16 series, under the general title *Specification for radio disturbance and immunity measuring apparatus and methods*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability date indicated on the IEC web site 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.

<p><b>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.</b></p>
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## INTRODUCTION (to Amendment 1)

This amendment introduces the Reference Site Method (RSM). In addition to introducing new content, Clause 5 is significantly restructured. To aid the reader in navigating this amendment, the following table provides a comparison of subclauses in the existing Edition 3.0 with those in this amendment. This introduction will be removed before the subsequent edition is published.

### Comparison of Clause 5 between original Edition 3.0 and Amendment 1

Original Edition 3.0		Amendment 1	
5	Test sites for the measurement of radio disturbance field strength for the frequency range of 30 MHz to 1 000 MHz	5	Test sites for the measurement of radio disturbance field strength for the frequency range of 30 MHz to 1000 MHz
5.1	General	5.1	General
5.2	OATS	5.2	OATS
5.2.1	General	5.2.1	General
5.2.2	Weather protection enclosure	5.2.2	Weather protection enclosure
5.2.3	Obstruction-free area	5.2.3	Obstruction-free area
5.2.4	Ambient radio frequency environment of a test site	5.2.4	Ambient radio frequency environment of a test site
5.2.5	Ground plane	5.2.5	Ground plane
5.2.6	OATS validation procedure		
5.3	Test site suitability for other ground-plane test sites	5.3	Suitability of other test sites
5.3.1	General	5.3.1	Other ground-plane test sites
5.3.2	Normalized site attenuation for alternative test sites	5.3.2	Test sites without ground plane (FAR)
5.3.3	Site attenuation		
5.3.4	Conducting ground plane		
5.4	Test site suitability without ground plane	5.4	Test site validation
5.4.1	Measurement considerations for free space test sites, as realized by fully-absorber-lined shielded enclosures	5.4.1	General
5.4.2	Site performance	5.4.2	Overview of test site validations
5.4.3	Site validation criteria	5.4.3	Principles and values of the NSA method for OATS and SAC
		5.4.4	Reference site method for OATS and SAC
		5.4.5	Validation of an OATS by the NSA method
		5.4.6	Validation of a weather-protection-enclosed OATS or a SAC
		5.4.7	Site validation for FARs
5.5	Evaluation of set-up table and antenna tower	5.5	Evaluation of set-up table and antenna tower
5.5.1	General	5.5.1	General
5.5.2	Evaluation procedure for set-up table influences	5.5.2	Evaluation procedure for set-up table influences

## **SPECIFICATION FOR RADIO DISTURBANCE AND IMMUNITY MEASURING APPARATUS AND METHODS –**

### **Part 1-4: Radio disturbance and immunity measuring apparatus – Antennas and test sites for radiated disturbance measurements**

#### **1 Scope**

This part of CISPR 16 specifies the characteristics and performance of equipment for the measurement of radiated disturbances in the frequency range 9 kHz to 18 GHz. Specifications for antennas and test sites are included.

NOTE In accordance with IEC Guide 107, CISPR 16-1-4 is a basic EMC publication for use by product committees of the IEC. As stated in Guide 107, product committees are responsible for determining the applicability of the EMC standard. CISPR and its sub-committees are prepared to co-operate with product committees in the evaluation of the value of particular EMC tests for specific products.

The requirements of this publication apply at all frequencies and for all levels of radiated disturbances within the CISPR indicating range of the measuring equipment.

Methods of measurement are covered in Part 2-3, and further information on radio disturbance is given in Part 3 of CISPR 16. Uncertainties, statistics and limit modelling are covered in Part 4 of CISPR 16.

#### **2 Normative references**

The following referenced documents are indispensable for the application 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.

CISPR 16-1-1, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring apparatus*

CISPR 16-1-5:2003, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-5: Radio disturbance and immunity measuring apparatus – Antenna calibration test sites for 30 MHz to 1 000 MHz*

CISPR 16-1-6:2014, *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/AMD1:2016

CISPR 16-2-3:2010, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 2-3: Methods of measurement of disturbances and immunity – Radiated disturbance measurements*

CISPR/TR 16-3, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 3: CISPR technical reports*

CISPR 16-4-2, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements*