



# TECHNICAL REPORT

INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

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

**Part 4-3: Uncertainties, statistics and limit modelling – Statistical considerations in the determination of EMC compliance of mass-produced products**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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FOREWORD

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CISPR 16-4-3, which is a technical report, has been prepared by CISPR subcommittee A: Radio interference measurements and statistical methods.

This second edition of CISPR 16-4-3 cancels and replaces the first edition published in 2003 and constitutes a technical revision. It includes a new mathematical approach for the application of the 80%/80% rule, based on a method involving an additional acceptance limit. The mathematical basis for this new method is also provided. Furthermore, an additional test approach, based on the non-central *t*-distribution and using frequency sub-ranges has been added as well, along with a description of the properties of all methods which are available at this point in time.

This consolidated version of CISPR 16-4-3 consists of the second edition (2004) [documents CISPR/A/491/DTR + CISPR/A/492/DTR and CISPR/A/507/RVC + CISPR/A/508/RVC] and its amendment 1 (2006) [documents CISPR/A/666/DTR and CISPR/A/691/RVC].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 2.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

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

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result 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- withdrawn,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.

A bilingual version of this publication may be issued at a later date.

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

### **Part 4-3: Uncertainties, statistics and limit modelling – Statistical considerations in the determination of EMC compliance of mass-produced products**

#### **1 Scope**

This part of CISPR 16 deals with statistical considerations in the determination of EMC compliance of mass-produced products.

The reasons for such statistical considerations are:

- a) that the abatement of interference aims that the majority of the appliances to be approved shall not cause interference;
- b) that the CISPR limits should be suitable for the purpose of type approval of mass-produced appliances as well as approval of single-produced appliances;
- c) that to ensure compliance of mass-produced appliances with the CISPR limits, statistical techniques have to be applied;
- d) that it is important for international trade that the limits shall be interpreted in the same way in every country;
- e) that the National Committees of the IEC which collaborate in the work of the CISPR should seek to secure the agreement of the competent authorities in their countries.

Therefore, this part of CISPR 16 specifies requirements and provides guidance based on statistical techniques. EMC compliance of mass-produced appliances should be based on the application of statistical techniques that must reassure the consumer, with an 80 % degree of confidence, that 80 % of the appliances of a type being investigated comply with the emission or immunity requirements. Clause 4 gives some general requirements for this so-called 80 %/80 % rule. Clause 5 gives more specific requirements for the application of the 80 %/80 % rule to emission tests. Clause 6 gives guidance on the application of the CISPR 80 %/80 % rule to immunity tests. The 80 %/80 % rule protects the consumer from non-compliant appliances, but it says hardly anything about the probability that a batch of appliances from which the sample has been taken will be accepted. This acceptance probability is very important to the manufacturer. In Annex A, more information is given on acceptance probability (manufacturer's risk).

#### **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.

IEC 60050-161:1990, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*  
Amendment 1 (1997)  
Amendment 2 (1998)

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*