

# TECHNICAL REPORT

# CISPR 16-4-4

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INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

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

### **Part 4-4: Uncertainties, statistics and limit modelling – Statistics of complaints and a model for the calculation of limits for the protection of radio services**



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

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## CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 Statistics of complaints and sources of interference .....	7
4.1 Introduction and history .....	7
4.2 Relationship between radio frequency interference and complaints .....	7
4.2.1 Radio frequency interference to a fixed radio receiver .....	7
4.2.2 Radio frequency interference to a mobile radio receiver .....	7
4.2.3 Consequences of the move from analogue to digital radio systems.....	7
4.3 Towards the loss of a precious indicator: interference complaints.....	8
4.4 CISPR recommendations for collation of statistical data on interference complaints and classification of interference sources .....	8
4.5 Forms for statistics of interference complaints.....	9
5 A model for the calculation of limits .....	14
5.1 Introduction .....	14
5.1.1 Generation of EM disturbances.....	14
5.1.2 Immunity from EM disturbances.....	14
5.1.3 Planning a radio service .....	14
5.2 Probability of interference.....	15
5.2.1 Derivation of probability of interference .....	15
5.3 Circumstances of interferences .....	16
5.3.1 Close coupling and remote coupling .....	17
5.3.2 Measuring methods .....	18
5.3.3 Disturbance signal waveforms and associated spectra .....	20
5.3.4 Characteristics of interfered radio services .....	21
5.3.5 Operational aspects.....	22
5.3.6 Criteria for the determination of limits .....	23
5.4 A mathematical basis for the calculation of CISPR limits .....	27
5.4.1 Generation of EM disturbances (source of disturbance).....	27
5.4.2 Immunity from EM disturbances (victim receiver).....	28
5.5 Application of the mathematical basis.....	29
5.5.1 Radiation coupling.....	29
5.5.2 Wire-line coupling.....	30
5.6 Another suitable method for equipment in the frequency range 150 kHz to 1 GHz.....	38
5.6.1 Introduction .....	38
5.6.2 Derivation of limits.....	38
5.6.3 Application of limits .....	43
5.6.4 Overview of proposals for determination of disturbance limits for a given type of equipment.....	43
5.7 Rational for determination of CISPR limits in the frequency range above 1 GHz.....	44
5.7.1 Introduction .....	44
5.7.2 Consideration and estimated values of $\mu_{P1}$ to $\mu_{P7}$ .....	45
5.7.3 Equivalent EMC environment below and above 1 GHz.....	51

5.7.4 Overview on parameters of radio communication services operating in the frequency range above 1 GHz and up to 16 GHz with effect to electromagnetic compatibility.....	52
Annex A Excerpt from CISPR Report No. 31 Values of mains decoupling factor in the range 0,1 MHz to 200 MHz .....	55
Bibliography.....	60
Figure 1a – Standard form for statistics on interference complaints recommended for radio services with analogue modulation and fixed or stationary radio reception .....	9
Figure 1b – Standard form for statistics on interference complaints recommended for radio services with analogue modulation and mobile or portable radio reception.....	10
Figure 1c – Standard form for statistics on interference complaints recommended for radio services with digital modulation and fixed or stationary radio reception .....	11
Figure 1d – Standard form for statistics on interference complaints recommended for radio services with digital modulation and mobile or portable radio reception.....	12
Figure 2 – Model for remote coupling situation derived disturbance field strength $e_{ir}$ at receiving distance $r$ .....	24
Figure 3 – Model for close coupling situations.....	26
Figure 4 – Example of conversion factors – field strength / common-mode voltage (in dB) – at feed point, found in practice .....	35
Figure 5 – Example of conversion factors – field strength generated by differential-mode voltage – at feed point, found in practice .....	36
Figure 6 – Example of conversion factors – field strength generated by differential-mode voltage – outside buildings and electrical substations, found in practice .....	37
Figure 7 – Example of conversion factors – field strength generated by differential-mode voltage – inside buildings, found in practice .....	38
Figure A.1 – Mains decoupling coefficient as measured by various authors .....	57
Figure A.2 – Median and minimum values of mains decoupling factor for the range 0,1 MHz to 200 MHz .....	58
Figure A.3 – Typical distributions of deviations from median value of decoupling factor as indicated in Figure A.2 .....	58
Figure A.4 – Measurement of the mains decoupling factor .....	59
Table 1 – Classification of sources of radio frequency interference and other causes of complaint.....	13
Table 2 – Guidance survey of RFI measuring methods .....	20
Table 3 – Tabulation of the method of determining limits for equipment in the frequency range 0,150 MHz to 960 MHz.....	40
Table 4 – Calculation of permissible limits for disturbances at about 1 800 MHz from existing CISPR limits in the frequency range of 900 MHz.....	52
Table 5 – List of radio services, typical parameters, and influence factors .....	53

INTERNATIONAL ELECTROTECHNICAL COMMISSION  
INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

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

**Part 4-4: Uncertainties, statistics and limit modelling –  
Statistics of complaints and a model for the calculation of limits  
for the protection of radio services**

FOREWORD

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The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

This second edition of CISPR 16-4-4, which is a technical report, has been prepared by CISPR subcommittee H: Limits for the protection of radio services.

This second edition of CISPR 16-4-4 contains two thoroughly updated Clauses 4 and 5, compared with its first edition. It also contains, in its new Annex A, values of the classical CISPR mains decoupling factor which were determined by measurements in real LV AC mains grids in the 1960s. It is deemed that these mains decoupling factors are still valid and representative also for modern and well maintained LV AC mains grids around the world.

The information in Clause 4 – Statistics of complaints and sources of interference – was accomplished by the history and evolution of the CISPR statistics on complaints about radio frequency interference (RFI) and by background information on evolution in radio-based communication technologies. Furthermore, the forms for collation of actual RFI cases were detailed and structured in a way allowing for more qualified assessment and evaluation of compiled annual data in regard to the interference situation, as e.g. fixed or mobile radio reception, or analogue or digital modulation of the interfered with radio service or application concerned.

The information in Clause 5 – A model for the calculation of limits – was accomplished in several ways. The model itself was accomplished in respect of the remote coupling situation as well as the close coupling one. Further supplements of this model were incorporated regarding certain aspects of the coupling path via induction and wave propagation (radiation) of classical telecommunication networks. Furthermore, the calculation model on statistics and probability underwent revision and was brought in line with a more modern mathematical approach. Eventually the present model was extended for a possible determination of CISPR limits in the frequency range above 1 GHz.

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

Enquiry draft	Report on voting
CISPR/H/147/DTR	CISPR/H/153/RVC

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

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

The committee has decided that the contents of this publication 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 4-4: Uncertainties, statistics and limit modelling – Statistics of complaints and a model for the calculation of limits for the protection of radio services**

#### **1 Scope**

This part of CISPR 16 contains a recommendation on how to deal with statistics of radio interference complaints. Furthermore it describes the calculation of limits for disturbance field strength and voltage for the measurement on a test site based on models for the distribution of disturbances by radiated and conducted coupling, respectively.

#### **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), *International Electrotechnical Vocabulary – Chapter 161: Electromagnetic compatibility*

CISPR 11, *Industrial, scientific and medical (ISM) radio-frequency equipment – Electromagnetic disturbance characteristics – Limits and methods of measurement*

CISPR 16-4-3, *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*