

Australian/New Zealand Standard™

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

**Part 4.1: Uncertainties, statistics and  
limit modelling—Uncertainties in  
standardized EMC tests**

#### **AS/NZS CISPR 16.4.1:2004**

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee TE-003, Electromagnetic Interference. It was approved on behalf of the Council of Standards Australia on 24 March 2004 and on behalf of the Council of Standards New Zealand on 16 April 2004. It was published on 2 June 2004.

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

### **Part 4.1: Uncertainties, statistics and limit modelling—Uncertainties in standardized EMC tests**

First published as AS/NZS CISPR 16.4.1:2004.

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Jointly published by Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7737 5994 7

## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee TE-003, Electromagnetic Interference.

This Standard is identical with, and has been reproduced from, CISPR 16-4-1:2003, *Specification for radio disturbance and immunity measuring apparatus and methods*, Part 4-1: *Uncertainties, statistics and limit modelling—Uncertainties in standardized EMC tests*.

The objective of this Standard is to specify guidance on the treatment of uncertainties to those who are involved in the development or modification of CISPR electromagnetic compatibility (EMC) standards.

This Standard is Part 4.1 of AS/NZS CISPR 16.4, *Specification for radio disturbance and immunity measuring apparatus and methods*, which consists of the following:

Part 4.1: Uncertainties, statistics and limit modelling—Uncertainties in standardized EMC tests (this Standard)

Part 4.2: Uncertainties, statistics and limit modelling—Uncertainty in EMC measurements

Part 4.3: Uncertainties, statistics and limit modelling—Statistical considerations in the determination of EMC compliance of mass-produced products

Part 4.4: Uncertainties, statistics and limit modelling—Statistics of complaints and a model for the calculation of limits

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16-1-1	Part 1-1: Radio disturbance and immunity measuring apparatus—Measuring apparatus	16.1.1	Part 1.1: Radio disturbance and immunity measuring apparatus—Measuring apparatus
16-1-2	Part 1-2: Radio disturbance and immunity measuring apparatus—Ancillary equipment—Conducted disturbances	16.1.2	Part 1.2: Radio disturbance and immunity measuring apparatus—Ancillary equipment—Conducted disturbances

16-1-3	Part 1-3: Radio disturbance and immunity measuring apparatus—Ancillary equipment—Disturbance power	16.1.3	Part 1.3: Radio disturbance and immunity measuring apparatus—Ancillary equipment—Disturbance power
16-1-4	Part 1-4: Radio disturbance and immunity measuring apparatus—Ancillary equipment—Radiated disturbances	16.1.4	Part 1.4: Radio disturbance and immunity measuring apparatus—Ancillary equipment—Radiated disturbances
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16-2-4	Part 2-4: Methods of measurement of immunity and disturbance—Immunity measurements	16.2.4	Part 2.4: Methods of measurement of immunity and disturbance—Immunity measurements
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16-4-2	Part 4-2: Uncertainties, statistics and limit modelling—Measurement instrumentation uncertainty	16.4.2	Part 4.2: Uncertainties, statistics and limit modelling—Measurement instrumentation uncertainty
16-4-3	Part 4-3: Uncertainties, statistics and limit modelling—Statistical considerations in the determination of EMC compliance of mass-produced products	16.4.3	Part 4.3: Uncertainties, statistics and limit modelling—Statistical considerations in the determination of EMC compliance of mass-produced products
16-4-4	Part 4-4: Uncertainties, statistics and limit modelling—Statistics of complaints and a model for the calculation of limits	16.4.4	Part 4.4: Uncertainties, statistics and limit modelling—Statistics of complaints and a model for the calculation of limits
ISO/IEC		AS ISO/IEC	
17025	General requirements for the competence of testing and calibration laboratories	17025	General requirements for the competence of testing and calibration laboratories

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**Australian/New Zealand Standard****Specification for radio disturbance and immunity measuring apparatus  
and methods****Part 4.1: Uncertainties, statistics and limit modelling—Uncertainties in  
standardized EMC tests**

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**1 General****1.1 Scope**

This part of CISPR 16-4 gives guidance on the treatment of uncertainties to those who are involved in the development or modification of CISPR electromagnetic compatibility (EMC) standards. In addition, this part provides useful background information for those who apply the standards and the uncertainty aspects in practice.

The objectives of this part are:

- a) to identify the parameters or sources governing the uncertainty associated with the statement that a given product complies with the requirement specified in a CISPR recommendation. This uncertainty will be called 'standards compliance uncertainty' (abbreviated as SCU, see 3.16);
- b) to give guidance on the estimation of the magnitude of the standards compliance uncertainty;
- c) to give guidance for the implementation of the standards compliance uncertainty into the compliance criterion of a CISPR standardised compliance test.

As such, this part can be considered as a handbook that can be used by standards writers to incorporate and harmonise uncertainty considerations in existing and future CISPR standards. This part also gives guidance to regulatory authorities, accreditation bodies and test engineers to judge the performance quality of an EMC test-laboratory carrying out CISPR standardised compliance tests. The uncertainty considerations given in this part can also be used as guidance when comparing test results (and its uncertainties) obtained by using different alternative test methods.

The uncertainty of a compliance test also relates to the probability of occurrence of an electromagnetic interference (EMI) problem in practice. This aspect is recognized and introduced briefly in this part. However, the problem of relating uncertainties of a compliance test to the occurrence of EMI in practice is not considered within the scope of this part.

The scope of this part is limited to all the relevant uncertainty considerations of a standardized EMC compliance test.

**1.2 Structure of clauses related to standards compliance uncertainties**

The result of the application of basic considerations (Clauses 4 and 5) in this part to existing or new CISPR standards will lead to proposals to improve and harmonise the uncertainty aspects of those CISPR standards. Such proposals will also be published as a report within this part and will give the background and rationale for improvement of certain CISPR standards. Clause 6 is an example of such a report.