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

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee TE-003, Electromagnetic Interferences. It was approved on behalf of the Council of Standards Australia on 10 April 2006 and on behalf of the Council of Standards New Zealand on 19 May 2006.
This Standard was published on 2 June 2006.

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This Standard was issued in draft form for comment as DR 06048.

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Originated as AS/NZS CISPR 16.4.1:2004.
Second edition 2006.

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 7465 2

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee TE-003, Electromagnetic Interferences to supersede AS/NZS CISPR 16.4.1:2004.

This Standard is identical with, and has been reproduced from CISPR 16-4-1:2005, *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

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text ‘part of CISPR 16-4’ should read ‘this Australian/New Zealand Standard’.

(c) A full point should be substituted for a comma when referring to a decimal marker.

(d) Any French text on figures should be ignored.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		Australian/New Zealand Standard	
CISPR		AS/NZS CISPR	
16	Specification for radio disturbance and immunity measuring apparatus and methods	16	Specification for radio disturbance and immunity measuring apparatus and methods
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—Disturbance power	16.1.3	Part 1.3: Radio disturbance and immunity measuring apparatus—Disturbance power

CISPR		AS/NZS CISPR	
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
16-1-5	Part 1-5: Radio disturbance and immunity measuring apparatus—Antenna calibration test sites for 30 MHz to 1 000 MHz	16.1.5	Part 1.5: Radio disturbance and immunity measuring apparatus—Antenna calibration test sites for 30 MHz to 1 000 MHz
16-2-1	Part 2-1: Methods of measurement of disturbances and immunity—Conducted disturbance measurements	16.2.1	Part 2.1: Methods of measurement of disturbances and immunity—Conducted disturbance measurements
16-2-2	Part 2-2: Methods of measurement of immunity and disturbance—Measurement of disturbance power	16.2.1	Part 2.2: Methods of measurement of immunity and disturbance—Measurement of disturbance power
16-2-3	Part 2-3: Methods of measurement of immunity and disturbance—Radiated disturbance measurements	16.2.3	Part 2.3: Methods of measurement of immunity and disturbance—Radiated disturbance measurements
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
16-3	Part 3: CISPR technical reports	16.3	Part 3: CISPR technical reports
16-4-2	Part 4-2: Uncertainties, statistics and limit modeling—Measurement instrumentation uncertainty	16.4.2	Part 4.2: Uncertainties, statistics and limit modeling— Measurement instrumentation uncertainty
16-4-3	Part 4-3: Uncertainties, statistics and limit modeling—Statistical considerations in the determination of EMC compliance of mass-produced products	16.4.3	Part 4.3: Uncertainties, statistics and limit modeling— Statistical considerations in the determination of EMC compliance of mass-produced products
16-4-4	Part 4-4: Uncertainties, statistics and limit modeling—Statistics of complains and a model for the calculation of limits	16.4.4	Part 4.4: Uncertainties, statistics and limit modeling— Statistics of complains 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

Only international references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.

CONTENTS

AUSTRALIAN/NEW ZEALAND STANDARD

Specification for radio disturbance and immunity measuring apparatus and methods

Part 4.1:
Methods of measurement of disturbances and immunity—
Uncertainties in standardized EMC tests

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.

The structure of clauses related to the CISPR standards compliance uncertainty work is depicted in Table 1. Clause 3 deals with the basic considerations of standards compliance uncertainties in emission measurements. Clause 6 contains the uncertainty considerations