PD CISPR TR 16-4-5:2006+A2:2021

BSI Standards Publication

Specification for radio disturbance and immunity measuring apparatus and methods

Part 4-5: Uncertainties, statistics and limit modelling — Conditions for the use of alternative test methods

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National foreword

This Published Document is the UK implementation of CISPR TR 16-4-5:2006+A2:2021. It supersedes PD CISPR/TR 16-4-5:2006+A1:2014, which is withdrawn.

The text of CISPR amendment 2:2021 has been provided in its entirety at the end of this document. BSI's policy of providing consolidated content remains unchanged; however, in the interest of expediency, in this instance BSI have chosen to collate the relevant content at the end of this document.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CISPR text carry the number of the CISPR amendment. For example, text altered by CISPR amendment 1 is indicated by A1 A1.

Attention is drawn to the fact that during the development of CISPR/TR 16-4-5:2014+A1, the UK committee voted against its approval.

The concern is that in Annex C.3, the use of the coupling/decoupling network for emission – Mains (CDNE-M) in the conducted and radiated tests will have had the effect of making the round robin test (RRT) insensitive to both nominal values and tolerances of parameters of the CDNE-M. This is because such parameters will have affected the two measurements that are to be compared to the same extent.

The UK committee also noted that the amendment states that the calculated Standards Compliance Uncertainty of 5,5 dB is very low for the field strength measurement with a connected cable. The UK committee is concerned that this result is at least partly due to the CDNE-M's balanced absorption of Differential Mode (DM) emission which consequently cannot contribute to either conducted (clause C.2) or radiated (clause C.3) measurements. This lack of contribution will be a handicap and a cause of uncertainty if the CDNE-M is used in applications where the emission of the EUT in DM is comparable with or greater than the emission in Common Mode (CM).

Technical justification was presented at the Tokyo EMC conference in May 2014 in the paper: *"Measurement Method, Uncertainty and Cable Balance - with Implications for the CDNE-M" by D M Lauder & R C Marshall, Paper 14A-A3, 2014 International Symposium on Electromagnetic Compatibility.* This academic paper is available from the British Library.

The UK participation in its preparation was entrusted to Technical Committee GEL/210, EMC - Policy committee.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Amendments/corrigenda issued since publication

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31 October 2014	Implementation of CISPR amendment 1:2014. Additional national foreword text inserted
31 May 2022	CISPR amendment 2:2021 collated at end of document.

TECHNICAL REPORT

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INTERNATIONAL SPECIAL COMMITTEE ON RADIO INTERFERENCE

Specification for radio disturbance and immunity measuring apparatus and methods –

Part 4-5: Uncertainties, statistics and limit modelling – Conditions for the use of alternative test methods

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SPECIFICATION FOR RADIO DISTURBANCE AND IMMUNITY MEASURING APPARATUS AND METHODS –

Part 4-5: Uncertainties, statistics and limit modelling – Conditions for the use of alternative test methods

1 Scope

This part of CISPR 16-4 specifies a method to enable product committees to develop limits for alternative test methods, using conversions from established limits. This method is generally applicable for all kinds of disturbance measurements, but focuses on radiated disturbance measurements (i.e. field strength), for which several alternative methods are presently specified. These limits development methods are intended for use by product committees and other groups responsible for defining emissions limits in situations where it is decided to use alternative test methods and the associated limits in product standards.

2 Normative references

IEC 60050-161 〖A1〗:1990〖A1〗, *International Electrotechnical Vocabulary (IEV) – Chapter 161: Electromagnetic compatibility*

CISPR 16-4-1 〖A1〗*Text deleted*〖A1〗, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-1: Uncertainties, statistics and limit modelling – Uncertainty in standardized EMC tests*

CISPR 16-4-2:2003, *Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-161 and the following apply.

3.1
established test method
test method described in a basic standard with established emissions limits defined in corresponding product or generic standards. An established test method consists of a specific test procedure, a specific test set-up, a specific test facility or site, and an established emissions limit

〖A1〗 NOTE The following test methods have been considered to be established test methods in CISPR:

– conducted disturbance measurements at mains ports using an AMN in the frequency range 9 kHz to 30 MHz; this method is defined in CISPR 16-2-1;

– radiated disturbance measurements in the frequency range 30 MHz to 1 GHz at 10 m distance on an OATS or in a SAC; this method is defined in CISPR 16-2-3;

– radiated disturbance measurements in the frequency range 1 GHz to 18 GHz at 3 m distance on an FSOATS; this method is defined in CISPR 16-2-3. 〖A1〗

3.2
alternative test method
test method described in a basic standard without established emissions limits. The alternative test method is designed for the same purpose as the established test method. An alternative test method consists of a specific test procedure, a specific test set-up, a specific test facility or site, and a derived emissions limit that was determined by the application of the proposed method stated in this document