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GUIDE

GUIDE

Application of measurement uncertainty to conformity assessment activities in the electrotechnical sector

Application de l'incertitude de mesure aux activités d'évaluation de la conformité dans le secteur électrotechnique

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IEC GUIDE 115:2023 (en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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APPLICATION OF MEASUREMENT UNCERTAINTY TO CONFORMITY ASSESSMENT ACTIVITIES IN THE ELECTROTECHNICAL SECTOR

FOREWORD

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This third edition of IEC Guide 115 has been prepared, in accordance with ISO/IEC Directives, Part 1, Annex A, by IECEE/CTL.

This third edition cancels and replaces the second edition published in 2021.

The main changes with respect to the previous edition are as follows:

a) document was rewritten to align with ISO/IEC 17025:2017;
b) content has been added to replace "accuracy method" with "simple acceptance" and added "decision rule";
c) modified document title to state "measurement uncertainty";
d) removed statement of document applicability to only IECEE CB Scheme;
e) removed list of IEC technical committees to indicate document can be used by other committees and industries;
f) added content for reporting statements of conformity.

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

Draft	Report on voting
SMBNC/30/DV	SMBNC/34/RV

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

The language used for the development of this Guide is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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INTRODUCTION

This document has been prepared by the IECEE Committee of Testing Laboratories (CTL) to provide guidance on the practical application of the measurement uncertainty requirements of ISO/IEC 17025:2017 to the electrical safety testing conducted within the electrotechnical sector.

The aim of the CTL is, among other tasks, to define a common understanding of the test methodology with regard to the IEC standards as well as to ensure and continually improve the repeatability and reproducibility of test results among the member laboratories.

The practical approach to measurement uncertainty outlined in this document has been adopted for use in the IECEE Schemes, and is also extensively used around the world by testing laboratories engaged in testing electrical products to national safety standards.

ISO/IEC 17025 was written as a general use document, for all industries. Measurement uncertainty principles are applied to laboratory measurements and presentation of results to provide a degree of assurance that decisions made about conformance of the products tested, in accordance with the relevant requirements, are valid. Procedures and techniques for measurement uncertainty calculations are well established. This document is written to provide more specific guidance on the application of measurement uncertainty principles and applying the decision rule to conformance statements when reporting test results.

This document is of particular interest to IEC technical committees, which can decide to make use of it if necessary.

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APPLICATION OF MEASUREMENT UNCERTAINTY TO CONFORMITY ASSESSMENT ACTIVITIES IN THE ELECTROTECHNICAL SECTOR

1 Scope

This document presents a practical approach to the application of measurement uncertainty to electrical safety testing conducted within the electrotechnical sector. It is specifically conceived for use in IECEE Schemes as well as by testing laboratories engaged in testing electrical products to national safety standards. It describes the application of measurement uncertainty principles.

This document provides guidance on making measurement uncertainty calculations and gives some examples relating to measurement uncertainty calculations for product conformity assessment testing.

NOTE The IEC Standardization Management Board (SMB) has decided that Guides such as this one can have mandatory requirements which shall be followed by all IEC committees developing technical work that falls within the scope of the Guide, as well as guidance which may or may not be followed. The mandatory requirements in this Guide are identified by the use of "shall". Statements that are only for guidance are identified by using the verb "should". (See ISO/IEC Directives, IEC Supplement:2021, A.1.1.)

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO/IEC 17025:2017, *General requirements for the competence of testing and calibration laboratories*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO online browsing platform: available at https://www.iso.org/obp

3.1.1
measurand
quantity intended to be measured

[SOURCE: ISO/IEC Guide 99:2007, 2.3, modified – NOTES and EXAMPLES have been deleted.]

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