



ISAB Policy for Measurement Uncertainty in Calibration

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0. PREAMBLE

0.1 Background

This document is based upon international standards and policies for measurement uncertainty in calibration. On the establishment of the International Standards & Accreditation Board (ISAB), the text has been adapted to form an ISAB policy document. ISAB members implement documents on measurement uncertainty based on the "Guide to the expression of uncertainty in measurement" (GUM).

0.2 Purpose

This policy sets out the requirements for the statement of Calibration and Measurement Capabilities (CMCs) and for the evaluation of measurement uncertainty in calibration certificates or reports.

0.3 Scope

In the context of this document, "calibration laboratory" implies all organisations performing calibration activities - i.e., testing, calibration and medical laboratories; inspection bodies; biobanks; reference material producers and proficiency testing providers. This policy has been developed in order to ensure a harmonised interpretation of the GUM and the consistent use of CMCs by ISAB member bodies to strengthen the credibility of the ISAB Arrangement.



1. INTRODUCTION

ISO/IEC 17025 requires laboratories to evaluate the measurement uncertainty for all calibration activities. Specific advice on the evaluation of measurement uncertainty can be found in the "Guide to the expression of uncertainty in measurement" (GUM).

2. TERMS AND DEFINITIONS

Calibration and Measurement Capability (CMC): A calibration and measurement capability available to customers under normal conditions:

- as described in the laboratory's scope of accreditation granted by a signatory to the ISAB Arrangement; or
- as published in the BIPM key comparison database (KCDB) of the CIPM MRA.

3. ISAB POLICY ON THE EVALUATION OF MEASUREMENT UNCERTAINTY

- **3.1** The Accreditation Body shall ensure that the accredited calibration laboratories evaluate measurement uncertainty in compliance with the GUM.
- **3.2** To ensure evaluation of the measurement uncertainty is aligned with the GUM, the Accreditation Body may use documents published by other organisations or publish its own document containing practical guidance and mandatory requirements.

4. ISAB POLICY ON SCOPES OF ACCREDITATION OF CALIBRATION LABORATORIES

4.1 The scope of accreditation of an accredited calibration laboratory shall include the calibration and measurement capability (CMC) expressed in terms of measurement, method, measurement range, and measurement uncertainty.

4.3 The uncertainty covered by the CMC shall be expressed as the expanded uncertainty having a coverage probability of approximately 95%. The unit of the uncertainty shall always be the same as that of the measurand or in a term relative to the measurand.



5. ISAB POLICY ON STATEMENT OF MEASUREMENT UNCERTAINTY ON CALIBRATION CERTIFICATES

- **5.1** The Accreditation Body shall ensure that an accredited calibration laboratory reports the measurement uncertainty in compliance with the GUM.
- **5.2** The measurement result shall include the measured quantity value y and the associated expanded uncertainty U .
- **5.3** The numerical value of the expanded uncertainty shall be given to, at most, two significant digits.
- **5.5** As the definition of CMC implies, accredited calibration laboratories shall not report a smaller measurement uncertainty than the uncertainty described by the CMC for which the laboratory is accredited.

6. REFERENCES

- ISO/IEC 17025:2017, General requirements for the competence of testing and calibration laboratories
- JCGM 100:2008, Evaluation of measurement data - Guide to the expression of uncertainty in measurement (GUM)
- JCGM 200:2012 International vocabulary of metrology - Basic and general concepts and associated terms (VIM)