HOKLAS Supplementary Criteria No. 13

HOKLAS Policy on Evaluation of Measurement Uncertainty and Reporting of Measurement Result under the Test Category of "Calibration Services"

INTRODUCTION

The following is the HOKLAS policy on evaluation of measurement uncertainty and reporting of measurement results under the test category of "Calibration Services". Each laboratory applying for accreditation or accredited under this test category shall conform with the requirements of the ILAC Policy for Measurement Uncertainty in Calibration (ILAC-P14:09.2020), which forms part of the HOKLAS accreditation requirements, to evaluate and report measurement uncertainty.

"Explanatory Note" under each policy statement contains recommendation for meeting the stated policy.

HOKLAS POLICY

1. Each applicant or accredited laboratory shall evaluate the measurement uncertainty for all calibrations covered in its application form or scope of accreditation in compliance with the "Guide to the Expression of Uncertainty in Measurement" (the GUM) published jointly by BIPM, IEC, IFCC, ILAC, ISO, IUPAC, IUPAP and OIML.

2. The evaluation of each measurement uncertainty shall be documented with supporting evidence.

   Explanatory Note:

   For routine measurements performed in accordance with a validated procedure:

   a. The detailed calculation of the measurement uncertainty should be recorded in the raw data of the calibration.

   b. Where there is adequate justification that a pre-calculated measurement uncertainty or the measurement uncertainty for a previous measurement is applicable, such measurement uncertainty may be adopted for the current measurement. The justification should be clearly recorded in the raw data

record for the calibration.

3. Each accredited laboratory shall not report a measurement uncertainty which is smaller than the calibration and measurement capability (CMC) of a specific calibration shown in its scope of accreditation.

4. The complexity of the mathematical model shall be commensurate with the required degree of accuracy.

   Explanatory Note:

   a. If the input quantities are uncorrelated, it is usually unnecessary to include in the model those input quantities $|c_i|u(x_i)$ values (See equation 11b of the GUM) which are less than 1/10 of that of the other input quantities. However, the laboratory should state in the uncertainty calculation that their effects have been taken into consideration and their contributions to the overall measurement uncertainty are assessed to be negligible.

   b. Any correction which will be applied to the reported result should not be treated as a measurement uncertainty.

5. A calibration certificate should include at least the following information:

   a. an unambiguous definition of the measurand,
   b. the estimate of the measurand,
   c. the expanded uncertainty, be given to at most two significant digits,
   d. the coverage factor and the coverage probability corresponds to approximately 95 %,
   e. the unit of measurement for the estimate of the measurand and the expanded uncertainty, and
   f. an explanatory note about the coverage probability and coverage factor.

   The quoted uncertainties shall apply to the estimate of the measurand obtained by the calibration laboratory at the time of the calibration.

   For the process of rounding, the usual rules for rounding of numbers shall be used, subject to the guidance on rounding provided i.e. in Section 7 of the GUM.

   Explanatory Note:

   a. A calibration laboratory should, as far as possible, calibrate an instrument using the same measurement method under the same environmental condition in which the instrument will normally be used by the customer.

b. The reported estimate for the measurand should be rounded to a number of significant figures consistent with its measurement uncertainty. For example, if the measurand is estimated to be 7.08758 and the expanded uncertainty is 0.016, the reported estimate for the measurand should be rounded to 7.088.