NABL 164

National Accreditation Board for Testing and Calibration Laboratories (NABL)

Guidelines for Interlaboratory Comparison for Calibration Laboratories where Formal PT Programs are not available

ISSUE NO.: 04
ISSUE DATE: 06-Feb-2020

AMENDMENT NO.: 01
AMENDMENT DATE: 25-Oct-2021

AMENDMENT SHEET

S. No.	Page No.	Clause No.	Date of Amendment	Amendment	Reasons	Signature QA Team	Signature Competent Authority
1	5	Annexure A	25.10.2021	Two-year PT/ILC plan in place of four-year PT/ILC plan	Aligned with accreditation cycle (Policy decision)		
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1. INTRODUCTION

The procedure specified in this guideline is for the Calibration laboratories who are accredited and applicant to NABL. Calibration laboratories shall participate in Proficiency Testing Program of accredited Proficiency Testing Providers. This procedure is be used only as an alternative in the absence of formal Proficiency Testing programs to meet the requirements of NABL 163. The selection of reference laboratory, artifact and evaluation of performance etc. are critical as this procedure demands these activities from the participant laboratory.

2. PROCEDURE

2.1 The participating laboratory must prepare and communicate to NABL a program outline containing details of the artifact / parameters to be calibrated and reference laboratory selected in the reporting Format-A (Annexure A). The laboratory shall select the artifact and calibration points in a manner to cover the entire range of the accredited scope.

2.2 The participating laboratory has to select a reference laboratory which should be either NPL-India or another accredited laboratory having better CMC than the participating laboratory in that particular parameter. The laboratory shall ensure that the reference laboratory is preferably not under the same top management.

2.3 The artifacts used shall have excellent repeatability and stability to hold their calibration for the period of the activity. Further the artifacts shall have range as per scope, sufficient resolution, to allow the laboratory to report an uncertainty equal to their CMC as defined in their scope of accreditation/ application. The laboratory shall not report uncertainty better than their accredited / claimed CMC. The reported uncertainty for participating and reference laboratory shall be close to or equal to their CMCs.

2.4 The participating laboratory shall communicate the calibration results to NABL in Format A along with the calibration certificate for approval of the program before sending the artifact to Reference Laboratory.

2.5 After NABL approves the plan for program, participating laboratory should get the artifact calibrated from reference laboratory, analyze the results and calculate E_n ratio the as per the following and submit the results to NABL

$$E_n = \frac{x - X}{\sqrt{(U^2_{lab} + U^2_{ref.})}}$$

Where,

x is the participating laboratory's result

X is the Reference Laboratory's result

U_{lab} is the expanded uncertainty of the participant's result

U_{ref} is the expanded uncertainty of the reference laboratory's assigned value.

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$|E_n| \leq 1$ indicates the satisfactory performance of the laboratory

$|E_n| > 1$ indicates the unsatisfactory performance of the laboratory and requires root cause analysis followed by corrective actions.

Note:
a) *The formulae in equations are correct only if x and X are independent.*

b) *Measurement results and reported uncertainty shall be in same unit.*

c) *In cases where the reference laboratory has reported uncertainty coarser than the participating laboratory the purpose of ILC is defeated. Hence it shall not be considered as a valid inter laboratory comparison.*

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Interlaboratory Comparison

Laboratory 2-year PT and ILC plan to be submitted along with this format.

I.   Results of Participant

Details of artifact (name, least count and range): _____

Standard used for calibration: _____

Parameter(s) selected: _____

Calibration Points (at least five points)	Participating Laboratory (Name & Address)			Reference Laboratory (Name & Address)
	Result	Uncertainty Reported	Accredited / Claimed CMC	Accredited CMC

Name & Signature of Lab Representative

Date:

II.   Approval from NABL

Proceed further: Yes / No

Remarks (if any)

Name & Signature of NABL official

Date:

III.   Reference Laboratory Results

Calibration Points	Result	Uncertainty Reported

IV.   Performance Evaluation:

Parameter(s)	E_n ratio

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