

Instructions for Proposed Scope of Accreditations – Dimensional Inspection

Introduction

The Scope of Accreditation is a formal document issued by L-A-B to accredited laboratories. The Scope is the expression of the calibration parameters, ranges, and an uncertainty for which accreditation has been granted.

The laboratory prepares the “Proposed Scope of Accreditation” as a part of its initial application and renewal application. The Proposed Scope is a working document and is not an indication of accreditation status. Therefore a proposed scope shall not be shared with any entity other than L-A-B or its authorized representatives.

The Proposed Scope of Accreditation, whether it is initial or renewal, shall not display any signature that would lead a reader to believe that the proposed scope has been approved by L-A-B. The signatures that appear on the proposed scope are to verify, at the time of the site assessment, that the assessor and client agree to the proposed scope and that the document will be sent to L-A-B for review.

Use of the Proposed Scope of Accreditation or alteration of the final Scope of Accreditation for the purpose of soliciting business may lead to suspension or termination of accreditation.

When accreditation has been granted, L-A-B will issue an approved final Scope of Accreditation. L-A-B is the final authority on the content of the Scope of Accreditation. This is an official document, which must be provided, in full, to any entity asking for a display of the laboratory's accredited scope. Per L-A-B SOP 306 a laboratory whose accreditation is suspended or terminated shall not use or display the Proposed Scope or the final Scope of Accreditation or the L-A-B name or logo in any way, including but not limited to business solicitations, advertising, correspondence, or web sites.

Purpose

The purpose of these guidelines is to assist L-A-B accreditation applicants (initial and renewal) and L-A-B assessors when filling out L-A-B Form 28 series (“Proposed Scope of Accreditation”). The applicant must fill out this form correctly and completely. It is the responsibility of the applicant to submit a properly completed client proposed scope of accreditation to L-A-B. Failure to submit a properly completed proposed scope of accreditation will delay the process for scheduling and granting accreditation. A properly completed form will assist L-A-B in developing the final Scope of Accreditation for the laboratory. The applicant and the assessors will agree to and sign off on a hard copy of the proposed scope at the time of the assessment. The lead assessor must submit the “Proposed Scope” in an electronic version to L-A-B Operations with the technical packet after the assessment. L-A-B staff will modify or edit the scope as appropriate after reviewing the technical packet submitted by the assessor.

Details

For each parameter/discipline and/or range of the parameter a separate line entry is made on the proposed scope. An example would be for a discipline that has four ranges; each line would define each range listed. See example table at the end of these instructions for additional insight.

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Inspection Parameter

Length – Dimensional Inspection

- **Dimensional Measurement 1D** with Precision Gages or artifact and standards utilized for reference such as Calipers, Micrometers, Height Gages, Indicators, Rulers, Go No-Go Gages, etc.
- **Dimensional Measurement 2D** with Hand Tools, Precision Gages, and/or artifacts utilized for reference such as Bevel Protractors, Clinometers, Levels, 2-Axis Linear Measuring Machines, 2-Axis Measuring Microscopes, Optical Comparators, Squareness Tester, Angle Blocks, Autocollimator, Cones, Cylindrical Squares, Granite Squares, etc.
- **Dimensional Measurement 3D** with Precision Gages such as Coordinate Measuring Machines (CMM's), 3-Axis Vision Systems, Scanning Systems, 3-Axis CNC's, etc.
- **Dimensional Measurement Other** utilizing Gears, Groove Depth Standards, Pitch Masters, Profilometers, Roughness Standards, Threaded Devices, Tip Condition, etc.

Range

Provide the lower and upper level of the parameter of the laboratory. Beware including 0 (zero) as the lower bound, especially when a percent or multiplier is used. The capabilities of the laboratory need to be fully expressed in an easy to understand format.

The units which define the measurement must comply with acceptable engineering units, please refer to NIST SP 811 for further definition of units. Assessors and L-A-B staff will treat the presentation of improper or improperly expressed units of measure on the Proposed Scope as a noncompliance. It is the responsibility of the applicant to insure proper presentation of expressed units.

The parameters should be grouped together to allow a smooth flow of the discipline(s) being defined.

Calibration and Measurement Capability

Calibration and measurement capability (always referring to a particular quantity, viz. the measurand) is defined as the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation, when performing more or less routine dimensional inspections under nearly ideal conditions. The assessment of Calibration and measurement capability of accredited laboratories is based on the method described in this document, and shall be supported or confirmed by experimental evidence.

- 1) L-A-B requires that dimensional inspection accredited laboratories state on their Scope of Accreditation an expanded uncertainty of measurement U, obtained by multiplying the standard uncertainty $u(y)$ of the output estimate by a coverage factor of k,

$$U = ku(y)$$

In cases where a normal (Gaussian) distribution can be attributed to the measurand and the standard uncertainty associated with the output estimate has sufficient reliability, the standard coverage factor $k=2$ shall be used. The assigned expanded uncertainty corresponds to a coverage probability of approximately 95%. These conditions are fulfilled in a majority of cases encountered in calibration work.

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- 2) Preferred Guidance documents, both based on the “Guide to the Expression of Uncertainty in Measurement, issued by BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, AND OIML, are downloadable free from the websites:
- EA-4/02-“Expression of the Uncertainty of Measurement in Calibration-EAL-R2”—Available at—<http://www.european-accreditation.org/>
 - NIST Technical Note 1297 “Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results.”—Available at—<http://physics.nist.gov/Pubs/guidelines/contents>

Note: The uncertainty budgets of the organization must support the CMC claimed by the applicant.

Remarks

The remarks entry is to be used to define any useful information in respect to the measurement being provided by the laboratory. Remarks should represent type of equipment used (can represent make and model) and/or other relevant information useful for understanding the measurement capability of the laboratory. Detailed and specific notes can and should be added comments under the table with footnote listed in the table if remarks column is not large enough to fully define any limitations associated with the parameter.

Format

The format of the example table must be followed. This includes font (Times New Roman), font size (11), column order, column headings, and placement of notes. Page numbers and the date of the draft must be displayed on each page.

The following table is an example of how a laboratory would fill out the table. The information listed in the table is only an example. The information required by the applicant needs to fit the services provided by the laboratory. The “Notes” at the bottom of the table are example notes only and the notes annotated in the proposed scope must be applicable to the proposed scope.

Length - Dimensional Inspection – Dimensional Measurement 1D

Inspection Parameter	Range	Calibration and Measurement Capability (+/-)	Remarks
Dimensional Measurement 1D	Up to 1 in	$(70 + 6L) \mu\text{in}$	Outside Micrometers utilized as Reference Standard for Dimensional Inspection
Dimensional Measurement 1D	Up to 6 in	$(340 + 12L) \mu\text{in}$	Calipers utilized as Reference Standard for Dimensional Inspection

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Length - Dimensional Inspection – Dimensional Measurement 2D

Inspection Parameter	Range	Calibration and Measurement Capability (+/-)	Remarks
Dimensional Measurement 2D	Up to 12 in	$(95 + 2.7L) \mu\text{in}$	Optical Comparator utilized as Reference Standard for Dimensional Inspection

Length - Dimensional Inspection – Dimensional Measurement 3D

Inspection Parameter	Range	Calibration and Measurement Capability (+/-)	Remarks
Dimensional Measurement 3D	X = Up to 1000 mm Y = Up to 1200 mm Z = Up to 1000 mm	$(3.5 + 2.6L) \mu\text{m}$	Coordinate Measuring Machine utilized as Reference Standard for Dimensional Inspection
	X = Up to 200 mm Y = Up to 120 mm Z = Up to 100 mm	$(5.5 + 2.3L) \mu\text{m}$	3-Axis Vision System utilized as Reference Standard for Dimensional Inspection

Calibration and Measurement Capabilities represent expanded uncertainties at approximately a 95% confidence level using a coverage factor of k=2

Notes:

- 1) This laboratory offers calibration services at the laboratory's own facilities and at the client's or other agreed upon facilities.

If you have any additional questions please contact the L-A-B Operations 260-637-2705.