
	<i>The American Association for Laboratory Accreditation</i>	
	R218a – Annex A: General and Specific Editorial Considerations	Document Revised: July 13, 2010 Page 1 of 7

R218a - Annex A:
 General and Specific Editorial Considerations

July 2010


©2010 by A2LA. All rights reserved. No part of this document may be reproduced in any form or by any means without the prior written permission of A2LA.

	<i>The American Association for Laboratory Accreditation</i>	
	R218a – Annex A: General and Specific Editorial Considerations	Document Revised: July 13, 2010
	Page 2 of 7	

Scopes can be long and bewildering documents. There is not much we can do about their length, but bewilderment can be reduced by clear layouts, consistent spacing, consistent use of capitalization, and proper attention to grammar and clarity of expression (including consistent use of “like” measurement units), so that purely editorial considerations can help to alleviate this problem. Therefore, A2LA has established conventions common to all calibration scope layouts.


The following comments relate to the model scope presented later in this document:

- 1) The font used is “Times New Roman” and the font size is 11 points.
- 2) The pipe symbol “|” in the example scope is used only to indicate line breaks (they’re not shown on actual scopes). For example, there should be three lines between the top of the page and the “SCOPE OF ACCREDITATION ...” title. This title has to be in capital letters, as is the laboratory name. The title, lab information, and the word “CALIBRATION” are all centered. There should be two lines between the title of the document and the lab information, between the lab information and the word “CALIBRATION”, as well as between “CALIBRATION” and the Valid to date and Cert No.
- 3) Small dashes are used in the example scope to indicate spacing as in “Phone:--123 456 7890” and are not shown in actual scopes.
- 4) There are two spaces between the state and zip code (as in “MD--21704”). There are 10 spaces between the end of the lab contact name and the word “Phone”. There are two spaces between the colon after “Phone”, “Valid To”, and “Certificate Number” and the corresponding numbers.
- 5) Footer information gives (A2LA Cert. No. abce.fg), the date the scope was issued as mm/dd/yyyy and “Page x of y”. Since we have multi-page scopes, this information is needed on every page of the scope even if the scope is only one page long.
- 6) Scopes are subdivided by discipline using Roman numerals as in “I. Dimensional”, “II. Electrical”, etc. These disciplines should be listed in alphabetical order as they appear in the scope for the purpose of consistency and ease of finding the information in the scope.
- 7) The details of the accredited measurements are presented in tables. In MS Word, the table should be formatted as “Elegant” with “Font” and “Autofit” unselected. The left side of the table should be aligned with the “I” in the field heading (e.g., “I. Dimensional”) and the right side of the table should be in line with the right margin. The columns of the table are spaced equally whenever possible. All tables appearing on the same page must have the same horizontal spacing for the sake of appearance. Line breaks are used within the table to space things out a bit since scopes can be difficult to read when everything is cramped together. The “Parameter/Equipment”, “Range”, etc., table headings should be centered, all other subsequent rows should be set as left-justified.

	<i>The American Association for Laboratory Accreditation</i>	
	R218a – Annex A: General and Specific Editorial Considerations	Document Revised: July 13, 2010
	Page 3 of 7	

- 8) The units are to be listed using the same measurement system for the “Range” and the “Calibration and Measurement Capability” (CMC) listed on the scope. In those instances when a laboratory would like to list units of a different measurement system for one of the columns, both system units should be listed with the units of the different measurement system listed in parentheses.
- 9) There shall only be two significant figures listed for the CMC claim on a scope of accreditation. Presently, the A2LA policy for rounding is a conservative approach to always round up, for example: the uncertainty claim from the lab is 0.1234, it will be rounded up to 0.13.
- 10) If uncertainty claims are to be defined as a percentage this must be defined as a percent of range, or of full scale, or of indicated value, or of reading, etc. The definitions should be documented with the value listed in the CMC column or referenced in a footnote.
- 11) The CMCs are to be listed as specific values, not ranges of values. If applicable, any request for listing a range of values will be considered on a case-by-case basis.
- 12) All variables listed in the scope, for example: *L, D, R, etc...*, are to be defined. Normally, these definitions are found in a footnote.
- 13) Footnotes are used to:
 - a) Indicate the commercial status of the laboratory (as in “This laboratory offers commercial calibration service”, or “This laboratory is conditionally available for commercial calibration service”, or “This laboratory is not normally available for commercial calibration service.”)
 - b) Define “Calibration and Measurement Capability”. By convention, the Calibration and Measurement Capabilities are given at approximately the 95 % level of confidence usually with a coverage factor of $k = 2$. There would have to be extraordinary reasons to justify using a different confidence level and reporting best uncertainties at different confidence levels on a scope is strongly discouraged since there is enough confusion over uncertainties without multiplying reporting options on the scope. The note used to define “Calibration and Measurement Capability” on scopes reads as follows:

“Calibration and Measurement Capability” is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards of nearly ideal measuring equipment. Calibration and Measurement Capabilities represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the Calibration and Measurement Capability due to the behavior of the customer’s device and to influences from the circumstances of the specific calibration.

	<i>The American Association for Laboratory Accreditation</i>	
	R218a – Annex A: General and Specific Editorial Considerations	Document Revised: July 13, 2010
	Page 4 of 7	

- c) Indicate which calibrations (if any) can be performed in the field, including identification of mobile laboratory capabilities. Each and every calibration on the scope that can be performed in the field has to be specifically identified. If every calibration on the scope is performed in the field, then a blanket note to that effect can be made. The footnote identifying field calibrations reads as follows:

Field calibration service is available for this calibration and this laboratory meets A2LA *R104 – General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the Calibration and Measurement Capabilities (CMC) found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

The practice of including different CMC for calibrations undertaken at the permanent laboratory and field calibrations is noted on the scope if the uncertainties listed as being obtained in the laboratory cannot be obtained in the field.¹

- d) Indicate any other noteworthy item that cannot comfortably be fitted in the “Comments” cell.
- e) Indicate which parameters (if any) are approved for CMC claims smaller than the applicable NMI as investigated and approved by A2LA. The footnote identifying these claims reads as follows:

“The CMC claim is smaller than that of the expanded uncertainty claim for (insert name of NMI) as listed in the BIPM Key Comparison Database. A2LA has evaluated the laboratory's CMC claim and has verified this information to be correct and appropriate.”

- f) For Dimensional Testing scope and footnote presentation see *R205c: Annex - Specific Requirements: Dimensional Testing*.

- 14) The text in the “Comments” cell should be a Standard English sentence, e.g. only the first word of the sentence and proper nouns are capitalized, there is a subject, object and verb, and so on. Items in the “Parameter/Equipment” column should be capitalized as in “Gage Blocks”, “DC Volts”, “Isotropic E-Field Probe Sets”, and so on.

¹ The information contained in this policy document has been included in the revised document entitled *R104 – General Requirements: Accreditation of Field Testing and Field Calibration Laboratories*.



Model scope of accreditation

The following pages present a model scope of accreditation for a fictitious calibration laboratory. This model scope illustrates the principles of this document and also shows instances where it was necessary to compromise those principles (e.g., use of the inch-pound system of units) based on established practice in a particular industry. The best uncertainties on this example scope are not intended to be typical or representative or otherwise desirable uncertainties, they are shown merely for illustrative purposes.

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

SOME CALIBRATION LAB, INC.
Street Address
City, State—Zip
Contact Name-----Phone:--123 456 7890

CALIBRATION

Valid To:--Month xy, 200z

Certificate Number:--abce.fg

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I.--Dimensional

Parameter/Equipment	Range	CMC ^{2,3,4} (±)	Comments
Gage Blocks:	(0 to 4) in	(2 + L) μin	Master gage blocks
-----Error of -----Indication	(0 to 1) in	0.48R μin	Gage blocks



II.--Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ² (±)	Comments
DC Voltage – Measure	(0 to 10) V (10 to 300) V	16 μV/V + 1 μV 12 × 10 ⁻⁶ V	HP 3458A; V is the quality symbol for voltage.
DC Voltage – Generate	(0 to 330) mV (0 to 3.3) V	25 μV/V + 1 μV 15 μV/V + 2 μV	Fluke 5520A


III.--Thermodynamic

Parameter/Equipment	Range	CMC ² (±)	Comments
Temperature	Approx. -196 °C -80 °C -40 °C	0.025 °C (25 mK) 0.04 °C (40 mK) 0.04 °C (40 mK)	Liquid nitrogen

¹ This laboratory offers commercial and field calibration service.

² “Calibration and Measurement Capability” (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards of nearly ideal measuring equipment. CMC represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer’s device and to influences from the circumstances of the specific calibration.

³ Field calibration service is available for this calibration and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the uncertainty introduced by the item being calibrated, (e.g.

	<i>The American Association for Laboratory Accreditation</i>	
	R218a – Annex A: General and Specific Editorial Considerations	Document Revised: July 13, 2010
		Page 7 of 7

resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

- ⁴ In the statement of CMC, L is the numerical value of the nominal length of the gage block in inches, R is the numerical value of the resolution of the micrometer in micro inches, and D is the numerical value of the nominal diameter of the gage in inches.

Document Revision History

Date	Description
November 6, 2008	New document
June 13, 2010	Update the document with the revisions from <i>best uncertainty</i> to <i>Calibration Measurement Capabilities (CMC)</i> , with additions regarding <i>CMCs smaller than NIST and Dimensional Testing parameters</i> .