

DATA ACCEPTANCE PROGRAM

Calibration Certificate Analysis



Revision 8.0 – Updated document to ISO/IEC 17025:2017 and the OSHA Directive CPL 01-00-004 requirements, including the 2021 notice on accredited calibration. Clarified when nonaccredited calibration laboratories can be used

For Client Labs

Purpose

- This document specifies the general requirements for the calibrations performed on Test and Measurement Equipment.
- This document applies to all organizations performing testing, including third-party laboratories.

Why is this requirement important?

- Calibration of equipment (including calibration standards) must be traceable to the U.S. National Institute of Standards and Technology, or other national metrology institution, **and** to a calibration service provider accredited under ISO/IEC 17025. See “When calibration is authorized to be performed by a nonaccredited laboratory” on page 3.
- Exception: When the calibration of equipment is performed by the National Metrology Institute there is no requirement for the calibration laboratory to be accredited due to an International Memorandum of Understanding with NIST.

Note: Unless otherwise identified below, all ISO/IEC 17025 references in this document refer to the 2017 edition.

Requirements/ Procedures

Equipment calibration certificates

- Calibration certificates are required for all test and measurement equipment used to control critical test functions or acquire test data.
- Calibration certificates must contain specific information to assure compliance with ISO/IEC 17025.
- Each calibration certificate is to include at least the following information which is required by ISO/IEC 17025 7.8.2.1 unless the calibration laboratory has valid reasons for not including it. *Refer to Note 1 below.*
 1. A valid accreditation body endorsement for the calibrations performed (refer to example list of accreditation endorsements below) in the form of an accreditation body logo. As an alternative to the accreditation body logo being applied on the calibration certificate, the calibration certificate shall contain the following four elements on the first page of the calibration certificate:
 - a) A statement that the calibration meets requirements of ISO/IEC 17025,
 - b) The name of the accreditation body which accredited the calibration laboratory,
 - c) Reference to their accreditation certificate number, and
 - d) A statement that the calibration is within their scope of

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accreditation

2. a title (e.g., "Calibration Certificate").
3. the name and address of the laboratory.
4. the location of performance of the laboratory activities, including when performed at a customer facility or at sites away from the laboratory's permanent facilities, or in associated temporary or mobile facilities.
5. unique identification that all its components are recognized as a portion of a complete report and a clear identification of the end.
6. the name and contact information of the customer.
7. identification of the method used.
8. a description, unambiguous identification, and, when necessary, the condition of the item.
9. the date of receipt of the calibration item(s) if this is critical to the validity and application of the results.
10. the date(s) of performance of the calibration.
11. the date of issue of the calibration certificate
12. reference to the sampling plan and sampling method used by the laboratory or other bodies where these are relevant to the validity or application of the results.
13. a statement to the effect that the results relate only to the items calibrated.
14. the calibration results with the units of measurement, where appropriate.
15. additions to, deviations, or exclusions from the method.
16. identification of person(s) authorizing the calibration certificate.
17. the measurement uncertainty of the measurement result presented in the same unit as that of the measurand or in a term relative to the measurand (e.g., percent).
18. the conditions (e.g., environmental) under which the calibrations were made that have an influence on the measurement results.

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19. a statement identifying how the measurements are metrologically traceable.
 20. the results before and after any adjustment or repair, if available.
 21. where relevant, a statement of conformity with requirements or specifications.
 22. where appropriate, opinions and interpretations.
-

When calibration is performed by a nonaccredited laboratory.

If no calibration laboratory is accredited for a particular type of testing equipment, the client may use the equipment manufacturer, or use an unaccredited calibration laboratory, provided the calibration laboratory is qualified by the following:

I. Has a search for an accredited calibration provider been performed, but none is available?

A. If no, then the client needs to conduct an analysis to demonstrate the use of a nonaccredited vendor is appropriate. Refer to Appendix B in the document 00-OP-C0038: Requirements for use of Nonaccredited Calibration Service Providers.

B. If yes, then:

1. The client laboratory needs to ensure traceability is obtained from calibration laboratory through assessment (document review or an on-site visit).

2. The calibration report should be equivalent to an accredited calibration report, providing calibration data and measurement uncertainty.

II. Is calibration done by Original equipment Manufacturer (OEM)?

A. Client laboratory is required to demonstrate that only OEM can conduct calibration and/or no accredited vendor available.

B. The laboratory must ensure calibration is traceable to national standards per IB1 and IB2 above.

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When calibration is performed internal to a client laboratory.

Calibration that is performed internal to the client's organization must provide evidence of an assessment showing that it meets all applicable requirements in ISO/IEC 17025 as part of the accreditation of the laboratory of which it is part.

I. The client's internal calibration laboratory does not need to be accredited to calibrate its own equipment in two situations:

- A. equipment whose physical properties are unlikely to change and is not used for quantitative measurements (e.g., accessibility probes, impact spheres, rulers/measures, and containers used to measure or hold liquids); or
- B. equipment whose measurement parameters meet any of the following requirements:
 - a. mass above 0.5kg and where an accuracy of $\pm 2\%$ or greater is required; or
 - b. linear dimensions not less than 0.5mm and where an accuracy of $\pm 0.1\text{mm}$ or greater is required; or
 - c. time for periods of 60 seconds or more, unless the test standard requires a specific accuracy of measurement

Such equipment shall initially be calibrated by an accredited calibration laboratory, or if none, by the manufacturer or a qualified calibration laboratory, before being placed into service

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Records

Certificates, Approval Forms, and Other Documentation

Certificates and other related documentation associated with testing are to be processed in the following manner:

For WTDP -

- UL staff are to request copies of certificates and related documentation for the equipment used in testing. This information is to be placed in UL's document retention system.

For other DAP programs (CTDP / TPTDP) -

- Clients are to index and retain copies of certificates and related documentation for the equipment used in testing.
- In lieu of storage of paper copies of the documentation, these may be stored electronically.

Retention time for the records is in accordance with Client Test Data and TCP Laboratory agreement (L-56).

Records and procedures that clearly specify when the calibration of the instrument expires shall be available and shall be applied. A procedure shall be available and shall be applied to specify how recalibration dates are determined.

NOTE 1 – This information/practice is not allowed for WTDP participants

Section 7.8.1.3 of ISO/IEC 17025 allows for simplified reporting in cases where an calibration lab has an agreement with their customer. Any information listed in 7.8.2 to 7.8.7 that is not reported to the customer shall be readily available in the event that the information is ever needed. Record retention must meet the minimum durations stated in “*Certificates, Approval Forms, and Other Documentation*” above, or as required by the “*Client Test Data and TCP Laboratory agreement*” (L-56).

As an example, calibration data for instrument measurement ranges may be retained by the calibration laboratory and not included with the calibration report, at the customer's request, providing the data is accessible from the calibration laboratory for a defined period to support records and decisions of related activities by the internal customer (e.g., laboratory tests).

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2. CALIBRATION CERTIFICATE 1.

Certificate Number: XYZ-123 4.

CUSTOMER # 3. **ONSITE** 4.

**Accreditation
Endorsement
Logo**
Certificate No. XYZ-123

8. Calibration Date: 10/05/2006 4.
 Recommended Due: 10/31/2008

As Received: IN TOLERANCE 7.
 As Returned: IN TOLERANCE

6. Procedure: 33KB-4-14-1 7.
 Environment: 22 DEG C 43 % RH 13.

P.O. / Release: MEL-0000011674
 ID #: MM0027
 Barcode ID: MM0027
 Location:

3. Name

EQUIPMENT OWNER
 ATTN: OWNER REP.
 OWNER'S ADDRESS

Manufacturer: FLUKE
 Model: 8062A
 Description: DIGITAL MULTIMETER
 Size / Range:
 Serial Number: 3990313
 Asset Number: MM0027
 Department:
 Accessories: NO ACCESSORIES RECEIVED

This instrument has been processed and calibrated in accordance with the ^(Name) Quality Assurance Manual and is traceable to the National Institute of Standards and Technology (NIST). The ^(Name) quality system is registered to ISO 9001:2000, A2LA-accredited to ISO/IEC 17025 - 1999 & ANSI/NCSL Z540-1-1994, and compliant with ISO 10012-1, 10 CFR 50 App. B, 10 CFR 21, NQA-1, and MIL-STD-45662A. This report may not be reproduced, except in full, without the written approval of ^(Name). Unless stated otherwise, the expanded measurement uncertainty of the measurement process does not exceed 25% of the tolerance allowed for the individual characteristics measured, the measurement uncertainties for this calibration are based upon 95% (2 sigma) confidence limits, no sampling plan or other process was used for this calibration, the results reported herein apply only to the calibration of the item described above, and no limitations of use apply to the calibrated unit. Although the item calibrated meets the specifications and performance at the time of calibration, due to any number of factors, the recommended due date of the item calibrated does not imply continuing conformance to specifications during the recommended interval.

Calibration Accuracy MANUFACTURER'S SPECIFICATIONS.
 Conditions/Analysis
 DUE CALIBRATION
 3. CALIBRATED WITH DATA ONSITE.

		STANDARDS USED		
ID Number	Model Number	Cal Date	Due Date	Traceability Number
1690RC	5700A	12/08/2005	12/08/2006	2300047228

1148 **10.**
 CERTIFIED BY

Access your Calibration Records Online at Website 10.
 2. CALIBRATOR ADDRESS

INSPECTED BY 3.
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Calibrator Form No (05/05)

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3. **Name**

7. Manufacturer: Fluke
Model: 8062A
Description: Multimeter
Procedure #: 33K8-4-14-1

4. Certificate #: xyz-123
Serial #: 3990313
ID #: MM0027

7.

6.

8. DATE: 5-Oct-06

10.

Function / Range	Nominal Value	As Found	Result	As Left	Result	Min	Max
DC Voltage							
200 mV	190.00	189.99	P	SAME	P	189.89	190.11
	-190.00	-190.04	P	SAME	P	-190.11	-189.89
2 V	1.9000	1.9002	P	SAME	P	1.8989	1.9011
20 V	19.000	19.003	P	SAME	P	18.985	19.015
200 V	190.00	190.03	P	SAME	P	189.85	190.15
1000 V	1000.0	1000.0	P	SAME	P	999.1	1000.9
AC Voltage							
200 mV @ 200 Hz	100.00	100.07	P	SAME	P	99.40	100.60
20 kHz	100.00	100.12	P	SAME	P	98.60	101.40
2 V @ 20 Hz	1.0000	1.0002	P	SAME	P	0.9890	1.0110
200 Hz	1.0000	1.0012	P	SAME	P	0.9940	1.0060
1 kHz	1.0000	1.0002	P	SAME	P	0.9930	1.0070
10 kHz	1.0000	1.0033	P	SAME	P	0.9930	1.0070
30 kHz	1.0000	1.0046	P	SAME	P	0.9860	1.0140
200 Hz	0.1000	0.1000	P	SAME	P	0.0985	0.1015
30 kHz	0.1000	0.1041	P	SAME	P	0.0950	0.1050
20 V @ 200 Hz	10.000	10.025	P	SAME	P	9.940	10.060
10 kHz	10.000	10.034	P	SAME	P	9.480	10.520
30 kHz	10.000	10.037	P	SAME	P	9.460	10.540
200 V @ 200 Hz	100.00	100.28	P	SAME	P	99.40	100.60
10 kHz	100.00	100.46	P	SAME	P	94.80	105.20
30 kHz	100.00	100.44	P	SAME	P	94.60	105.40
750 V @ 400 Hz	750.0	752.60	P	SAME	P	734.0	766.0
750 V @ 1000 Hz	750.0	754.5	P	SAME	P	734.0	766.0
DC Current							
200 uA	190.00	190.05	P	SAME	P	189.41	190.59
	-190.00	-190.06	P	SAME	P	-190.59	-189.41
2 mA	1.9000	1.9007	P	SAME	P	1.8941	1.9059
20 mA	19.000	19.011	P	SAME	P	18.941	19.059
200 mA	190.00	190.49	P	SAME	P	188.65	191.35
2000 mA	1900.0	1900.2	P	SAME	P	1886.5	1913.5
	-1900.0	-1900.2	P	SAME	P	-1913.5	-1886.5
AC Current @ 1 KHz							
20 mA	19.000	19.053	P	SAME	P	18.847	19.153
Resistance in Ohms							
200	100.00	100.06	P	SAME	P	99.86	100.14
2 k	1.0000	0.9998	P	SAME	P	0.9988	1.0012
20 k	10.000	9.997	P	SAME	P	9.988	10.012
200 k	100.00	99.97	P	SAME	P	99.88	100.12
2 M	1.000	0.9999	P	SAME	P	0.9978	1.0022
20 M	10.00	10.00	P	SAME	P	9.95	10.05

FORM

11.

cm
10/18/06

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4.

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Client/Customer Support Guidance-ULID-000819 – Issue 8.0

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NOTE – THIS INFORMATION IS SUPPLEMENTAL. THIS LIST IS NOT ALL-INCLUSIVE.

Accreditation Endorsements

Since calibration certificates from accredited laboratories that conduct work within their scope of accreditation can bear an endorsement of accreditation, attention on identifying 1) a suitable endorsement **and 2)** the unique identifier in item 3 above is necessary. This satisfies the need to substantiate a certificate was provided by an accredited calibration laboratory.

- International Laboratory Accreditation Cooperation MRA signatories are acceptable accreditor endorsements. A full listing of ILAC MRA signatories can be found at the ILAC website. (look under the “About ILAC” and “Members by Categories” listings). The “Full Members” list includes Signatories to the ILAC MRA.
- Asian Pacific Laboratory Accreditation Council MRA signatories are acceptable accreditor endorsements. A full listing of APLAC MRA signatories can be found at the APLAC web site. Note that “Full Member” status does not include Signatory status. Full Members must apply separately for acceptance as Signatories.
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