DATA ACCEPTANCE PROGRAM

Calibration Certificate Analysis

Revision 6.0 – Updated UL internal document approvers only. No other document changes.

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 Standard 17025. See "When calibration is performed by a non-accredited laboratory" on page 3.
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 5.10 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 accreditation 2. a title (e.g. "Calibration Certificate"); 3. the name and address of the laboratory, and the location where the calibrations were carried out, if different from the address of the laboratory;

4. Unique identification of the calibration certificate (such as the serial number). Each page of supporting data requires an identification to ensure that the page is recognized as a part of the calibration certificate package. A clearly identified end of the calibration certificate package must be labeled;

5. the name and address of the customer;

6. identification of the method used;

7. a description of the condition of and unambiguous identification of the item(s) tested or calibrated;

8. the date of receipt of the calibration item(s) if this is critical to the validity and application of the results and the date(s) of performance of the calibration;

9. reference to the sampling plan and procedures used by the laboratory or other bodies if these are relevant to the validity or application of the results;

10. the calibration results with the units of measurement, where appropriate,;

11. the name(s), functions(s) and signature(s) or equivalent identification of person(s) authorizing the calibration certificate;

12. where relevant, a statement to the effect that the results relate only to the items calibrated;

13. the conditions (e.g. environmental) under which the calibrations were made that have an influence on the measurement results;

14. the uncertainty of measurement and/or a statement of compliance with an identified metrological specification or clauses;

15. evidence that the measurements are traceable (to national standards)

When calibration is performed by a non-accredited laboratory.	If the calibration certificate does not provide evidence of being an accredited calibration then the following shall be confirmed: I. Is the calibration being performed in-house by the testing laboratory? A. If yes, then the client needs to demonstrate compliance with the requirements within the document 00-OP-C0038: In-house calibration requirements (and use of Non-Accredited Calibration Service Providers).

B. If no, go to Items II and III below.

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

A. If no, then the client needs to conduct an analysis to demonstrate the use of a non-accredited vendor is appropriate. Refer to Appendix B in the document 00-OP-C0038: In-house calibration requirements (and use of Non-Accredited 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.

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

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

B. The lab must ensure calibration is traceable to national standards per IIB1 and IIB2 above.

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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** - o 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, TCP, TPTDP, etc) - o Clients are to index and retain copies of certificates and related documentation for the equipment used in testing. o 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 5.10.1 of ISO/IEC 17025 allows for simplified reporting in cases where an *internal* calibration laboratory provides services to a department within the same organization. Not all of the elements of 5.10.2 through 5.10.4 need be included in the "report" or supporting records that are provided to the *internal customer*, as long as the results are reported accurately, clearly, unambiguously and objectively. However, the calibration laboratory is required to maintain records to satisfy the requirements of 5.10.2 through 5.10.4 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).

Calibration Certificate Analysis

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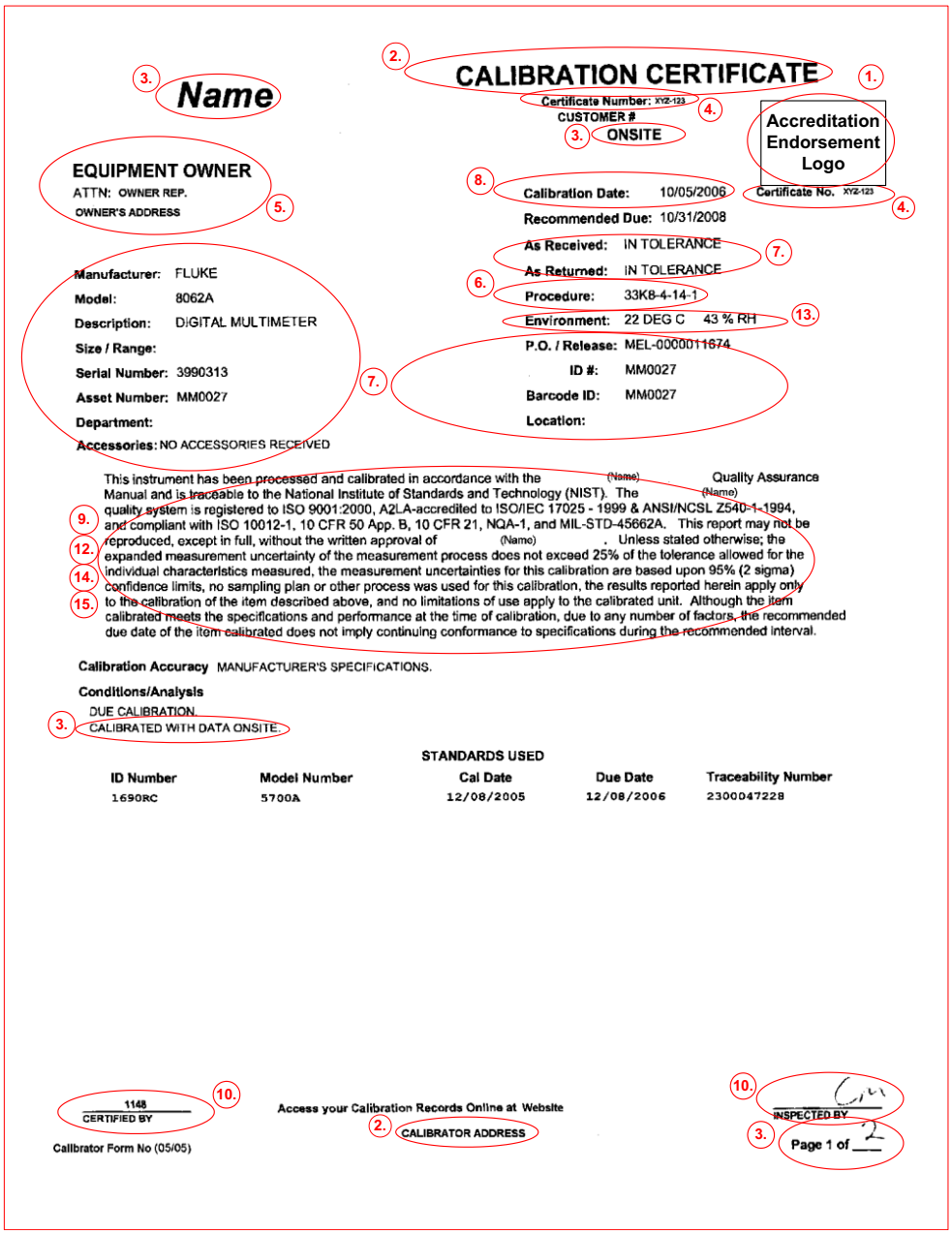
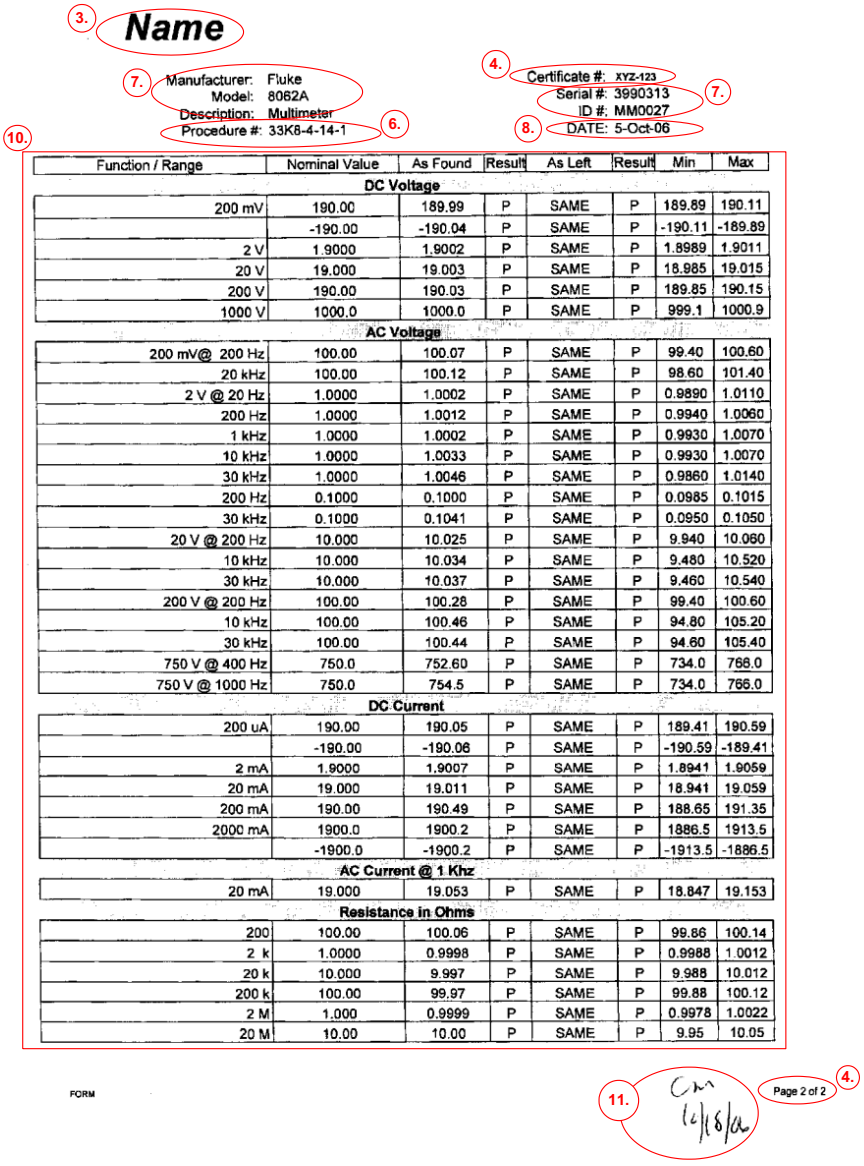


Calibration Certificate Analysis



3. **Name**

7. Manufacturer: Fluke
Model: 8062A
Description: Multimeter
Procedure #: 33K8-4-14-1 6.

4. Certificate #: XYZ-123
Serial #: 3990313 7.
ID #: MM0027
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 4/18/a Page 2 of 2 4.

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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.

- European Accreditation Cooperation MRA signatories are acceptable accreditor endorsements. A full listing of EAC MRA signatories can be found at the European co-operation for Accreditation web site.