PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

The Meter Shop

6934 Signat Drive, Houston Texas 77041

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system
(as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Electrical and Mechanical Calibration

(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President

Initial Accreditation Date:	*Issue Date:*	*Expiration Date:*
February 23, 2016	April 26, 2022	May 31, 2024

Accreditation No.:	*Certificate No.:*
83790	L22-329

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com

Certificate of Accreditation: Supplement

The Meter Shop

6934 Signat Drive, Houston Texas, 77041

Contact Name: Mr. John Brown Phone: 713-957-8586

Accreditation is granted to the facility to perform the following calibrations:

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Equipment to Output DC Voltage [F]	2 mV to 220 mV	9.5 µV/V + 0.4 µV	Fluke 5520A GIDEP/MET TRACK
	0.22 V to 2.2 V	6 µV/V + 0.7 µV	
	2.2 V to 11 V	4.8 µV/V + 2.5 µV	
	11 V to 22 V	6.8 µV/V + 4 µV	
	22 V to 220 V	5.9 µV/V + 40 µV	
	220 V to 1 100 V	8.7 µV/V + 0.4 mV	
Equipment to Measure DC Voltage [FO]	2 mV to 200 mV	9.4 µV/V + 0.1 µV	Fluke 8508A GIDEP/MET TRACK
	200 mV to 2 V	4.2 µV/V + 0.4 µV	
	2 V to 20 V	4.7 µV/V + 4 µV	
	20 V to 200 V	6.4 µV/V + 40 µV	
	200 V to 1 000 V	6.4 µV/V + 0.5 mV	
	1 kV to 40 kV	0.11 %	Direct measurements using Fluke 80K-40 Probe/Fluke 8508A
Equipment to Output DC Current [FO]	2 µA to 22 µA	52 µA/A + 6 mA	Fluke 5520A GIDEP/MET TRACK
	220 µA to 2.2 mA	45 µA/A + 7 mA	
	2.2 mA to 22 mA	46 µA/A + 40 mA	
	22 mA to 220 mA	0.39 mA/A + 0.5 mA	
	220 mA to 2.2 A	2 mA/A + 0.5 mA	
	2.2 A to 20 A	0.4 mA/A + 0.75 mA	
	20 A Turns to 150 A Turns	0.5 % + 0.15 A	Fluke 5520A w/coil GIDEP/MET TRACK
	150 A Turns to 1 000 A Turns	0.52 % + 0.55 A	
Equipment to Measure DC Current [FO]	20 µA to 200 µA	67 µA/A + 0.4 mA	Fluke 8508A GIDEP/MET TRACK
	200 µA to 2 mA	67 µA/A + 4 mA	
	2 mA to 20 mA	68 µA/A + 40 mA	
	2 mA to 200 mA	86 µA/A + 0.8 µA	
	200 mA to 2 000 mA	58 µA/A + 16 µA	
	2 A to 20 A	58 mA/A + 0.4 mA	
Equipment to Output DC Resistance [FO]	0.1 Ω to 1 Ω	13 µΩ/Ω + 40 µΩ	Fluke 5520A GIDEP/MET TRACK
	1 Ω to 1.9 Ω	14 µΩ/Ω + 40 µΩ	
	1.9 Ω to 10 Ω	30 µΩ/Ω + 40 µΩ	
	10 Ω to 19 Ω	43 µΩ/Ω + 40 µΩ	
	19 Ω to 100 Ω	14 µΩ/Ω + 40 µΩ	
	100 Ω to 190 Ω	18 µΩ/Ω + 40 µΩ	
	190 Ω to 1 000 Ω	13 µΩ/Ω + 40 µΩ	
	1 kΩ to 1.9 kΩ	14 µΩ/Ω + 40 µΩ	
	1.9 kΩ to 10 kΩ	13 µΩ/Ω + 40 µΩ	
	10 kΩ to 19 kΩ	14 µΩ/Ω + 40 µΩ	
	19 kΩ to 100 kΩ	15 µΩ/Ω + 40 µΩ	
	100 kΩ to 190 kΩ	14 µΩ/Ω + 40 µΩ	
	190 kΩ to 1 kΩ	25 µΩ/Ω + 40 µΩ	
	1 MΩ to 1.9 MΩ	28 µΩ/Ω + 40 µΩ	
	1.9 MΩ to 10 MΩ	48 µΩ/Ω + 40 µΩ	
	10 MΩ to 19 MΩ	62 µΩ/Ω + 40 µΩ	
	19 MΩ to 100 MΩ	14 µΩ/Ω + 40 µΩ	

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Equipment to Measure DC Resistance FO	0 Ω to 2 Ω	25 μΩ/Ω + 4 μΩ	Fluke 8508A GIDEP/MET TRACK
	2 Ω to 20 Ω	12 μΩ/Ω + 14 μΩ	
	20 Ω to 200 Ω	9.4 μΩ/Ω + 50 μΩ	
	200 Ω to 2 000 Ω	9.4 μΩ/Ω + 0.5 mΩ	
	2 kΩ to 20 kΩ	9.4 μΩ/Ω + 5 mΩ	
	20 kΩ to 200 kΩ	9.5 μΩ/Ω + 50 mΩ	
	0.2 MΩ to 2 MΩ	14 μΩ/Ω + 1 Ω	
	2 MΩ to 20 MΩ	57 μΩ/Ω + 0.1 kΩ	
	20 MΩ to 200 MΩ	92 μΩ/Ω + 10 kΩ	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type B FO	600 °C to 800 °C	0.35 °C	Fluke 5520A Electrical Simulation of Thermocouple Output GIDEP/MET TRACK
	800 °C to 1 000 °C	0.27 °C	
	1 000 °C to 1 550 °C	0.24 °C	
	1 550 °C to 1 820 °C	0.26 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type E FO	-250 °C to -100 °C	0.39 °C	
	-100 °C to -25 °C	0.14 °C	
	-25 °C to 350 °C	0.12 °C	
	350 °C to 650 °C	0.14 °C	
	650 °C to 1 000 °C	0.17 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J FO	-210 °C to -100 °C	0.22 °C	
	-100 °C to -30 °C	0.14 °C	
	-30 °C to 150 °C	0.12 °C	
	150 °C to 760 °C	0.14 °C	
	760 °C to 1 200 °C	0.19 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K FO	-200 °C to -100 °C	0.26 °C	
	-100 °C to -25 °C	0.15 °C	
	-25 °C to 120 °C	0.14 °C	
	120 °C to 1 000 °C	0.21 °C	
	1 000 °C to 1 372 °C	0.33 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type N FO	-200 °C to -100 °C	0.31 °C	
	-100 °C to -25 °C	0.18 °C	
	-25°C to 120 °C	0.16 °C	
	120 °C to 410 °C	0.15 °C	
	410 °C to 1 300 °C	0.22 °C	

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Electrical Calibration of Thermocouple Indicators FO			Fluke 5520A Electrical Simulation of Thermocouple Output GIDEP/MET TRACK
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type R FO	0 °C to 250 °C	0.45 °C	
	350 °C to 400 °C	0.28 °C	
	400 °C to 1 000 °C	0.26 °C	
	1 000 °C to 1 767 °C	0.31 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type S FO	0 °C to 250 °C	0.37 °C	
	250 °C to 1 000 °C	0.28 °C	
	1 000 °C to 1 400 °C	0.29 °C	
	1 400 °C to 1 767 °C	0.36 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T FO	-250 °C to -150 °C	0.49 °C	
	-150 °C to 0 °C	0.19 °C	
	0 °C to 120 °C	0.14 °C	
	120 °C to 400 °C	0.15 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type U FO	-200 °C to 0 °C	0.44 °C	
	0 °C to 600 °C	0.22 °C	
50 Ω Load FO	1 mV to 24.999 mV	1.3 % of output + 40 µV	Fluke 5520A/SC600 GIDEP/MET TRACK
	25 mV to 2.199 9 V	0.23 % of output + 40 µV	
	2.2 V to 130 V	2.1 % of output + 40 µV	
1 MΩ Load FO	1 mV to 24.999 mV	0.12 % of output + 40 µV	
	25 mV to 109.99 mV	0.09 % of output + 40 µV	
	110 mV to 2.199 9 V	0.31 % of output + 40 µV	
	2.2 V to 10.999 V	0.27 % of output + 40 µV	
	11 V to 130 V	2 % of output + 40 µV	
Level Sine Wave FO			
Amplitude (50 kHz Reference) FO	50 kHz	1.6 % + 300 µV	
	50 kHz to 100 MHz	2.8 % + 300 µV	
	100 MHz to 300 MHz	3.2 % + 300 µV	
	300 MHz to 600 MHz	4.7 % + 300 µV	
	600 MHz to 1 100 MHz	5.7 % + 300 µV	

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Flatness 50 kHz Reference [FO]	50 kHz to 100 MHz	1.4 % + 100 µHz	Fluke 5520A/SC600 GIDEP/MET TRACK
	100 MHz to 300 MHz	1.6 % + 100 µHz	
	300 MHz to 600 MHz	3.2 % + 100 µHz	
	600 MHz to 1 100 MHz	3.9 % + 100 µHz	
Time Markers: Source and Period into a 50 Ω Load [FO]	5 ms to 50 ms	160 µs + *t* parts in 106 s	
	20 ms to 2 ms	64 µs + *t* parts in 106 s	
Equipment to Measure Amplitude At the listed Frequencies [FO]			
1 MΩ	1.8 mV(pk – pk) to 55 V (pk – pk)	2.4 % + 100 µV	
50 Ω	1.8 mV(pk – pk) to 2.5 V (pk – pk)	2.4 % + 100 µV	
Frequency [FO]	10 kHz to 100 kHz	34 parts in 106 Hz + 15 mHz	
Equipment to Measure AC Voltage Output At the listed Frequencies [FO]			Fluke 5520A GIDEP/MET TRACK
45 kHz to 1 kHz	3.3 V to 32.999 9 V	0.054 % + 650 µV	
1 kHz 10 kHz	3.3 V to 32.999 9 V	0.026 % + 600 µV	
10 kHz to 20 kHz	3.3 V to 32.999 9 V	0.11 % + 600 µV	
20 kHz to 50 kHz	3.3 V to 32.999 9 V	0.16 % + 600 µV	
50 kHz to 100 kHz	3.3 V to 32.999 9 V	0.17 % + 1.6 mV	
Equipment to Measure AC Voltage Output At the listed Frequencies [FO]			
45 kHz to 1 kHz	33 V to 329.999 V	0.024 % + 2 mV	
1 kHz to 10 kHz	33 V to 329.999 V	0.24 % + 6 mV	
10 kHz to 20 kHz	33 V to 329.999 V	0.25 % + 6 mV	
20 kHz to 50 kHz	33 V to 329.999 V	0.4 % + 6 mV	
50 kHz to 100 kHz	33 V to 329.999 V	0.43 % + 50 mV	
Equipment to Measure AC Voltage Output At the listed Frequencies [FO]			
45 kHz to 1 kHz	330 V to 1 000 V	0.41 % + 10 mV	
1 kHz to 5 kHz	330 V to 1 000 V	0.41 % + 10 mV	
5 kHz to 10 kHz	330 V to 1 000 V	0.4 % + 10 mV	

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Equipment to Measure AC Voltage At the list Frequencies [FO]			Fluke 8508A GIDEP/MET TRACK
10 Hz to 40 Hz	1 mV to 10 mV	0.034 % + 3 µV	
40 Hz to 1 000 Hz	1 mV to 10 mV	0.023 % + 1.1 µV	
1 kHz to 20 kHz	1 mV to 10 mV	0.034 % + 1.1 µV	
Equipment to Measure AC Voltage At the list Frequencies [FO]			
20 kHz to 50 kHz	2 mV to 10 mV	0.12 % + 1.1 µV	
50 kHz to 100 kHz	2 mV to 10 mV	0.57 % + 1.1 µV	
100 kHz to 300 kHz	2 mV to 10 mV	4.6 % + 2 µV	
Equipment to Measure AC Voltage At the list Frequencies [FO]			
10 Hz to 40 Hz	10 mV to 100 mV	0.01 % + 4 µV	
40 Hz to 1 000 Hz	10 mV to 100 mV	0.01 % + 2 µV	
1 kHz to 30 kHz	10 mV to 100 mV	0.02 % + 2 µV	
20 kHz to 50 kHz	10 mV to 100 mV	0.034 % + 2 µV	
50 kHz to 100 kHz	10 mV to 100 mV	0.091 % + 2 µV	
Equipment to Measure AC Voltage At the list Frequencies [FO]			
100 kHz to 300 kHz	10 mV to 100 mV	0.34 % + 10 µV	
300 kHz to 1 MHz	10 mV to 100 mV	1.2 % + 10 µV	
1MHz to 2 MHz	10 mV to 100 mV	1.5 % + 10 µV	
Equipment to Measure AC Voltage At the list Frequencies [FO]			
1 Hz to 40 Hz	0.1 V to 1 V	0.007 % + 40 µV	
40 Hz to 1 kHz	0.1 V to 1 V	0.007 % + 20 µV	
1 kHz to 20 kHz	0.1 V to 1 V	0.014 % + 20 µV	
20 kHz to 50 kHz	0.1 V to 1 V	0.03 % + 20 µV	
50 kHz to 100 kHz	0.1 V to 1 V	0.08 % + 20 µV	
100 kHz to 300 kHz	0.1 V to 1 V	0.3 % + 100 µV	
0.3 MHz to 1 MHz	0.1 V to 1 V	1 % + 100 µV	
1 MHz to 2 MHz	0.1 V to 1 V	1.5 % + 100 µV	
Equipment to Measure AC Voltage At the list Frequencies [FO]			
1 Hz to 40 Hz	1 V to 10 V	0.01 % + 400 µV	
40 Hz to 1 kHz	1 V to 10 V	0.01 % + 200 µV	
1 kHz to 20 kHz	1 V to 10 V	0.02 % + 200 µV	
20 kHz to 50 kHz	1 V to 10 V	0.035 % + 200 µV	
50 kHz to 100 kHz	1 V to 10 V	0.091 % + 200 µV	
100 kHz to 300 kHz	1 V to 10 V	0.34 % + 1 mV	

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300 kHz to 1 MHz	1 V to 10 V	1.3 % + 1 mV	Fluke 8508A GIDEP/MET TRACK
1 MHz to 2 MHz	1 V to 10 V	1.7 % + 1 mV	
Equipment to Measure AC Voltage At the list Frequencies FO			
1Hz to 40 Hz	10 V to 100 V	0.063 % + 4 mV	
40 Hz to 1 kHz	10 V to 100 V	0.035 % + 2 mV	
1 kHz to 20 kHz	10 V to 100 V	0.023 % + 2 mV	
20 kHz to 50 kHz	10 V to 100 V	0.06 % + 2 mV	
50 kHz to 100 kHz	10 V to 100 V	0.14 % + 2 mV	
Equipment to Measure AC Voltage At the list Frequencies FO			Fluke 8508A GIDEP/MET TRACK
100 kHz to 300 kHz	10 V to 100 V	0.46 % + 10 mV	
300 kHz to 1 MHz	10 V to 100 V	1.7 % + 10 mV	
Equipment to Measure AC Voltage At the list Frequencies FO			
1Hz to 40 Hz	100 V to 1 000 V	0.07 % + 40 mV	
40 Hz to 1 kHz	100 V to 1 000 V	1.9 % + 20 mV	
1 kHz to 20 kHz	100 V to 1 000 V	2.6 % + 20 mV	
20 kHz to 50 kHz	100 V to 1 000 V	0.14 % + 20 mV	
50 kHz to 100 kHz	100 V to 1 000 V	0.36 % + 20 mV	
60 Hz	1 kV to 40 kV	0.68 %	Direct measurements using Fluke 80K-40 Probe/Fluke 8508A
Equipment to measure AC Current At the listed frequencies FO			Fluke 5520A GIDEP/MET TRACK
20 kHz to 1 kHz	220 mA to 2.2 A	0.033 % + 35 µA	
1 kHz to 5 kHz	220 mA to 2.2 A	0.053 % + 80 µA	
5 kHz to 10 kHz	220 mA to 2.2 A	0.8 % + 0.16 mA	
Equipment to measure AC Current At the listed frequencies FO			
10 Hz to 45 Hz	1.1 A to 2.999 99 A	0.18 % + 100 µA	
45 kHz to 1 kHz	1.1 A to 2.999 99 A	0.13 % + 100 µA	
1 kHz to 5 kHz	1.1 A to 2.999 99 A	0.14 % + 1 000 µA	
5 kHz to 10 kHz	1.1 A to 2.999 99 A	2 % + 5 000 µA	
Equipment to measure AC Current At the listed Frequencies FO			
45 kHz to 100 Hz	3 A to 10.999 9 A	0.12 % + 2 mA	
0.1 kHz to 1 kHz	3 A to 10.999 9 A	0.14 % + 2 mA	
1 kHz to 5 kHz	3 A to 10.999 9 A	2.4 % + 2 mA	

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Equipment to measure AC Current At the listed Frequencies [FO]			Fluke 5520A GIDEP/MET TRACK
45 kHz to 100 Hz	11 A to 20.5 A	0.42 % + 5 mA	
0.1 kHz to 1 kHz	11 A to 20.5 A	0.33 % + 5 mA	
1 kHz to 5 kHz	11 A to 20.5 A	2.4 % + 5 mA	
Equipment to measure AC Current At the listed Frequencies [FO]			Fluke 8508A GIDEP/MET TRACK
1 kHz to 10 kHz	2 µA to 200 µA	0.034 % + 20 nA	
10 kHz to 10 kHz	2 µA to 200 µA	0.03 % + 20 nA	
10 kHz to 30 kHz	2 µA to 200 µA	0.03 % + 20 nA	
Equipment to measure AC Current At the listed Frequencies [FO]			
1 kHz to 10 kHz	200 µA to 2 µA	0.04 % + 0.2 µA	
10 kHz to 10 kHz	200 µA to 2 µA	0.03 % + 0.2 µA	
10 kHz to 30 kHz	200 µA to 2 µA	0.03 % + 0.2 µA	
Equipment to measure AC Current At the listed Frequencies [FO]			Fluke 8508A GIDEP/MET TRACK
1 kHz to 10 kHz	2 mA to 20 mA	0.04 % + 2 µA	
10 kHz to 10 kHz	2 mA to 20 mA	0.04 % + 2 µA	
10 kHz to 30 kHz	2 mA to 20 mA	0.04 % + 2 µA	
Equipment to measure AC Current At the listed Frequencies [FO]			
1 kHz to 10 kHz	20 mA to 200 mA	0.04 % + 20 µA	
10 kHz to 10 kHz	20 mA to 200 mA	0.03 % + 20 µA	
10 kHz to 30 kHz	20 mA to 200 mA	0.07 % + 20 µA	
Equipment to measure AC Current At the listed Frequencies [FO]			
10 kHz to 2 kHz	200 mA to 2 mA	0.07 % + 0.2 mA	
2 kHz to 10 kHz	200 mA to 2 mA	0.08 % + 0.2 mA	
10 kHz to 30 kHz	200 mA to 2 mA	0.68 % + 0.2 mA	
Equipment to measure AC Current At the listed frequencies			
10 kHz to 2 kHz	2 mA to 20 mA	0.09 % + 0.2 mA	
2 kHz to 10 kHz	2 mA to 20 mA	0.57 % + 0.2 mA	
Equipment to measure AC Capacitance At the listed Frequencies [FO]			Fluke 5520A GIDEP/MET TRACK
10 Hz to 10 kHz	0.19 nF to 1.09 nF	0.55 % + 0.01 nF	
10 Hz to 3 kHz	1.1 nF to 3.29 nF	0.43 % + 0.01 nF	
10 Hz to 1 kHz	3.3 nF to 10.9 nF	0.19 % + 0.01 nF	
10 Hz to 1 kHz	11 nF to 109.9 nF	0.19 % + 0.1 nF	
10 Hz to 1 kHz	110 nF to 329.9 nF	0.19 % + 0.3 nF	

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Equipment to measure AC Capacitance At the listed Frequencies [FO]			Fluke 5520A GIDEP/MET TRACK
10 Hz to 600 Hz	0.33 µF to 1.09 µF	0.19 % + 1 nF	
10 Hz to 300 Hz	1.1 µF to 3.29 µF	0.19 % + 3 nF	
10 Hz to 150 Hz	3.29 µF to 10.9 µF	0.19 % + 10 nF	
10 Hz to 120 Hz	11 µF to 32.9 µF	0.31 % + 30 nF	
10 Hz to 80 Hz	33 µF to 109.9 µF	0.35 % + 100 nF	
10 Hz to 50 Hz	11 µF to 329.9 µF	0.35 % + 300 nF	
10 Hz to 20 Hz	0.33 µF to 1.09 µF	0.35 % + 1 µF	

Mechanical

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Pressure Gauges [FO]	1 500 psi to 15 000 psi	0.1 % of reading + 0.577 psi	Crystal Xp2i GIDEP
Torque Wrenches [FO]	4 in·lb to 50 in·lb	0.25 % of reading + 0.18 in·lb	CDI 2000-400-02 GIDEP
	30 in·lb to 400 in·lb	0.25 % of reading + 1.39 in·lb	
	80 in·lb to 1 000 in·lb	0.25% of reading + 3.01 in·lb	
	20 ft·lb to 250 ft·lb	0.25% of reading + 0.87 ft·lb	
	60 ft·lb to 600 ft·lb	0.25% of reading + 2.08 ft·lb	CDI 2000-12-02 GIDEP

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor *k* (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.

2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.

3. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer[FO] would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.

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4. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.