



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION

Valid To: September 30, 2026

Certificate Number: 1145.01

In recognition of the successful completion of the A2LA evaluation process, (including an assessment of the organization's compliance with A2LA's Calibration Program Requirements), accreditation is granted to this laboratory to perform the following calibrations<sup>1,7</sup>:

I. Dimensional

Parameter / Equipment	Range	CMC <sup>2,4</sup> (±)	Comments	Location <sup>8</sup>
Extensometer Calibrator	(0.0015 to 2) in	(5 + 2L) μin	Laser interferometer, ISO 9513 Annex B	North America
Extensometer – Displacement	(0.0015 to 2) in	0.2 % + 13 μin	MTS extensometer calibration system	North America
Laser Extensometer	Up to 5 in Up to 15 in	(400 + 2L) μin (1300 + 2L) μin	Laser interferometer, ASTM E83	
Extensometer <sup>3</sup> – Displacement	(0.0015 to 2) in (0.0015 to 36) in	0.1 % + 10 μin 0.13 % + 35 μin	ASTM E83, E399, ISO 9513 Extensometer calibrator Laser interferometer	North America, Japan
Gage Length	(0.2 to 2) in (≥ 2 to 4) in	(65 + 200L) μin (100 + 200L) μin	Optical & extensometer calibrator Caliper	



Parameter / Equipment	Range	CMC <sup>2,4</sup> (±)	Comments	Location <sup>8</sup>
MTS Length Standard – Vee Groove	(0.1, 0.5, 1, 2) in (6, 12,15, 25, 50) mm	180 μin 4 μm	Keyence vision system	North America
Linear Displacement – Linear Encoder	Up to 2.4 in Up to 4 in Up to 18 in	12 μin 150 μin 200 μin or 0.003 %	Gage blocks Whichever is greater	North America
Magnetostrictive Sensor (Temposonics)	Up to 48 in	400 μin	Laser interferometer & linear stage	
Interferometer/Doppler Laser Systems	Up to 60 in	25 μin	Laser interferometer & linear stage	
Linear Displacement <sup>3</sup> – Measure	(0.0015 to 2) in (0.0015 to 48) in Up to 2000 mm	(50 + 100L) μin (100 + 200L) μin 0.1 % IV	ASTM E2309 Extensometer calibrator Laser interferometer Extensometer calibrator & linear encoder	North America Japan
Angular Displacement – Measuring Equipment	(1 to 10)° (11 to 30)° (31 to 3600)°	0.0005° 0.001° 0.002°	Indexing rotary table	North America
Angular Displacement <sup>3</sup> – Measure	(1 to 3600)°	0.25 % + 0.005°	Rotary encoder	North America
Protractor	(0 to 360)°	0.03°	Gage blocks, sine bar	North America
Caliper	Up to 6 in (> 6 to 24) in	350 μin 500 μin	Gage blocks, ring gages, length standards	North America

II. Electrical – DC / Low Frequency

Parameter / Equipment	Range	CMC <sup>2,4,6</sup> (±)	Comments	Location <sup>8</sup>
DC Voltage – Generate	(10 to 220) mV 220 mV to 2.2 V (2.2 to 11) V (11 to 22) V (22 to 220) V (220 to 1100) V	6 µV/V + 0.4 µV 3.5 µV/V + 0.8 µV 2.5 µV/V + 3 µV 2.5 µV/V + 4 µV 3.5 µV/V + 41 µV 4.6 µV/V + 400 µV	Fluke 5730A	North America
Fixed Point	10 V	5 µV	Fluke 732B	
DC Voltage <sup>3</sup> – Generate	(0.004 to 20) V	0.025 %	Yokogawa GS200	North America
DC Voltage – Measure	(1 to 200) mV (0.2 to 2) V (2 to 20) V (20 to 200) V (200 to 1000) V	4.6 µV/V + 0.1 µV 3.1 µV/V + 0.4 µV 3 µV/V + 4 µV 4.5 µV/V + 40 µV 4.9 µV/V + 450 µV	Fluke 8508A	North America
Fixed Point	10 V	5 µV	Fluke 8508A, 732B (ratiometric)	
DC Voltage <sup>3</sup> – Measure	(4 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1000) V	38 µV/V + 0.9 µV 25 µV/V + 2 µV 24 µV/V + 40 µV 35 µV/V + 0.5 mV 41 µV/V + 6 mV	Keithley 2010	North America
DC Current – Generate	(10 to 220) µA 220 µA to 2.2 mA (2.2 to 22) mA (22 to 220) mA 220 mA to 2.2 A  (3 to < 11) A (11 to 20) A	35 µA/A + 6 nA 31 µA/A + 8 nA 31 µA/A + 41 nA 40 µA/A + 0.8 µA 61 µA/A + 12 µA  0.04 % + 600 µA 0.08 % + 1 mA	Fluke 5730A  Fluke 5522A	North America
DC Current – Measure	120 nA to 1.2 µA (1.2 to 12) µA (12 to 120) µA 120 µA to 1.2 mA (1.2 to 12) mA (12 to 120) mA 120 mA to 1.0 A	20 µA/A + 0.05 nA 21 µA/A + 0.1 nA 20 µA/A + 0.8 nA 20 µA/A + 5 nA 20 µA/A + 51 nA 35 µA/A + 510 nA 0.011 % + 10 µA	HP 3458A	North America

Parameter / Equipment	Range	CMC <sup>2,6</sup> (±)	Comments	Location <sup>8</sup>
Resistance – Generate Fixed Points	1 Ω	6 μΩ	Fluke 742A	North America
	10 kΩ	0.03 Ω		
	1 Ω	84 μΩ	Fluke 5730A	
	1.9 Ω	0.16 mΩ		
	10 Ω	0.21 mΩ		
	19 Ω	0.42 mΩ		
	100 Ω	1.0 mΩ		
	190 Ω	1.7 mΩ		
	1 kΩ	8.0 mΩ		
	1.9 kΩ	15 mΩ		
	10 kΩ	80 mΩ		
	19 kΩ	0.15 Ω		
	100 kΩ	0.9 Ω		
	190 kΩ	1.7 Ω		
	1 MΩ	16 Ω		
	1.9 MΩ	32 Ω		
	10 MΩ	320 Ω		
19 MΩ	780 Ω			
100 MΩ	9.8 kΩ			
Resistance – Measure	(1 to 12) Ω	15 μΩ/Ω + 0.06 mΩ	HP 3458A	North America
	(12 to 120) Ω	12 μΩ/Ω + 0.6 mΩ		
	120 Ω to 1.2 kΩ	10 μΩ/Ω + 0.6 mΩ		
	(1.2 to 12) kΩ	10 μΩ/Ω + 6.5 mΩ		
	(12 to 120) kΩ	10 μΩ/Ω + 63 mΩ		
	120 kΩ to 1.2 MΩ	15 μΩ/Ω + 2 Ω		
	(1.2 to 12) MΩ	51 μΩ/Ω + 110 Ω		
	(12 to 120) MΩ	0.050 % + 1 kΩ		
	120 MΩ to 1 GΩ	0.50 % + 12 kΩ		

Parameter / Range	Frequency	CMC <sup>2,6</sup> (±)	Comments	Location <sup>8</sup>
AC Voltage – Generate  (1 to 2.2) mV	(10 to 20) Hz	0.022 % + 4 μV	Fluke 5730A	North America
	(20 to 40) Hz	88 μV/V + 4 μV		
	40 Hz to 20 kHz	79 μV/V + 4 μV		
	(20 to 50) kHz	0.018 % + 4 μV		
	(50 to 100) kHz	0.048 % + 5 μV		
	(100 to 300) kHz	0.092 % + 10 μV		
	(300 to 500) kHz	0.12 % + 20 μV		
	500 kHz to 1 MHz	0.25 % + 20 μV		

Parameter / Range	Frequency	CMC <sup>2, 6</sup> (±)	Comments	Location <sup>8</sup>
AC Voltage – Generate (cont)				
(2.2 to 22) mV	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz	0.022 % + 4 μV 88 μV/V + 4 μV 79 μV/V + 4 μV 0.018 % + 4 μV 0.048 % + 5 μV 0.092 % + 10 μV 0.12 % + 20 μV 0.25 % + 20 μV	Fluke 5730A	North America
(22 to 220) mV	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz	0.022 % + 12 μV 88 μV/V + 7 μV 79 μV/V + 7 μV 0.018 % + 7 μV 0.044 % + 17 μV 0.076 % + 20 μV 0.12 % + 25 μV 0.25 % + 45 μV		
220 mV to 2.2 V	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz	0.022 % + 44 μV 83 μV/V + 16 μV 43 μV/V + 9 μV 72 μV/V + 12 μV 0.011 % + 31 μV 0.034 % + 81 μV 0.090 % + 210 μV 0.15 % + 310 μV		
(2.2 to 22) V	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz	0.022 % + 0.44 mV 83 μV/V + 0.16 mV 43 μV/V + 0.06 mV 72 μV/V + 0.12 mV 96 μV/V + 0.20 mV 0.026 % + 0.61 mV 0.090 % + 2.0 mV 0.13 % + 3.3 mV		
(22 to 220) V	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz (300 to 500) kHz 500 kHz to 1 MHz	0.022 % + 4.0 mV 86 μV/V + 1.5 mV 49 μV/V + 0.60 mV 76 μV/V + 1.0 mV 0.013 % + 3.0 mV 0.080 % + 17 mV 0.42 % + 40 mV 0.70 % + 80 mV		
(220 to 1100) V	50 Hz to 1 kHz	60 μV/V + 4 mV		

Parameter / Range	Frequency	CMC <sup>2, 6</sup> (±)	Comments	Location <sup>8</sup>
AC Voltage – Measure				
(1 to 10) mV	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.03 % + 3.2 μV 0.02 % + 1.1 μV 0.03 % + 1.1 μV 0.10 % + 1.1 μV 0.5 % + 1.1 μV 4 % + 2.1 μV	HP 3458A	North America
(10 to 100) mV	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 2) MHz	75 μV/V + 4.3 μV 71 μV/V + 2.2 μV 0.014 % + 2.2 μV 0.03 % + 2.1 μV 0.08 % + 2.1 μV 0.3 % + 11 μV 1 % + 11 μV 1.5 % + 10 μV		
100 mV to 1 V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 2) MHz	75 μV/V + 43 μV 71 μV/V + 22 μV 0.014 % + 22 μV 0.03 % + 21 μV 0.08 % + 21 μV 0.3 % + 110 μV 1 % + 110 μV 1.5 % + 100 μV		
(1 to 10) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 2) MHz	75 μV/V + 0.43 mV 71 μV/V + 0.22 mV 0.014 % + 0.22 mV 0.03 % + 0.21 mV 0.08 % + 0.21 mV 0.3 % + 1 mV 1 % + 1 mV 1.5 % + 1 mV		
(10 to 100) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	0.021 % + 4 mV 0.02 % + 22 mV 0.02 % + 22 mV 0.035 % + 21 mV 0.12 % + 21 mV 0.4 % + 110 mV 1.5 % + 110 mV		
(100 to 1000) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.04 % + 43 mV 0.04 % + 21 mV 0.06 % + 22 mV 0.12 % + 21 mV 0.3 % + 21 mV		

Parameter / Range	Frequency	CMC <sup>2,4,6</sup> (±)	Comments	Location <sup>8</sup>	
AC Voltage <sup>3</sup> – Measure (0.5 to 10) V	(1 to 10) kHz	0.05 %	Keithley 2010	North America	
AC Current – Generate (22 to 220) µA	(10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.024 % + 17 nA 0.015 % + 10 nA 0.011 % + 9 nA 0.026 % + 12 nA 0.091 % + 65 nA	Fluke 5730A	North America	
220 µA to 2.2 mA	(10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.024 % + 41 nA 0.015 % + 36 nA 0.011 % + 38 nA 0.019 % + 120 nA 0.091 % + 650 nA			
(2.2 to 22) mA	(10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.024 % + 0.42 µA 0.014 % + 0.36 µA 0.011 % + 0.36 µA 0.019 % + 0.55 µA 0.094 % + 5 µA			
(22 to 220) mA	(10 to 20) Hz (20 to 40) Hz 40 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.024 % + 4.2 µA 0.014 % + 3.6 µA 0.011 % + 2.5 µA 0.019 % + 3.5 µA 0.094 % + 10 µA			
250 mA to 2.2 A	20 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.025 % + 36 µA 0.040 % + 82 µA 0.60 % + 170 µA			
(3 to < 11) A	(45 to 100) Hz 100 Hz to 1 kHz	0.05 % + 2 mA 0.08 % + 2 mA			Fluke 5522A
(11 to 20) A	(45 to 100) Hz 100 Hz to 1 kHz	0.09 % + 5 mA 0.12 % + 5 mA			
AC Current – Measure (12 to 120) µA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz	0.41 % + 21 nA 0.16 % + 21 nA 0.06 % + 21 nA 0.06 % + 21 nA	HP 3458A	North America	

Parameter / Range	Frequency	CMC <sup>2, 6</sup> (±)	Comments	Location <sup>8</sup>
AC Current – Measure (continued)				
120 µA to 1.2 mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.41 % + 0.21 µA 0.16 % + 0.21 µA 0.06 % + 0.21 µA 0.03 % + 0.21 µA 0.06 % + 0.21 µA 0.41 % + 0.41 µA 0.57 % + 1.6 µA	HP 3458A	North America
(1.2 to 12) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.41 % + 2.1 µA 0.16 % + 2.1 µA 0.06 % + 2.1 µA 0.03 % + 2.1 µA 0.06 % + 2.1 µA 0.41 % + 4.1 µA 0.57 % + 16 µA		
(12 to 120) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.41 % + 21 µA 0.16 % + 21 µA 0.06 % + 21 µA 0.03 % + 21 µA 0.06 % + 21 µA 0.41 % + 41 µA 0.57 % + 160 µA		
120 mA to 1 A	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz	0.41 % + 0.21 mA 0.16 % + 0.21 mA 0.08 % + 0.21 mA 0.10 % + 0.21 mA 0.31 % + 0.21 mA 1 % + 0.41 mA		
Calibration of Thermocouple Devices by Electrical Simulation –				
Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1000) °C	0.38 °C 0.12 °C 0.11 °C 0.12 °C 0.16 °C	Fluke 5522A	North America



Parameter / Equipment	Range	CMC <sup>2</sup> (±)	Comments	Location <sup>8</sup>
Calibration of Thermocouple Devices by Electrical Simulation – (cont)				
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1200) °C	0.21 °C 0.12 °C 0.11 °C 0.13 °C 0.18 °C	Fluke 5522A	North America
Type K	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1372) °C	0.25 °C 0.14 °C 0.12 °C 0.20 °C 0.31 °C		
Type R	(0 to 250) °C (250 to 400) °C (400 to 1000) °C (1000 to 1767) °C	0.44 °C 0.27 °C 0.25 °C 0.31 °C		
Type S	(0 to 250) °C (250 to 1400) °C (1400 to 1760) °C	0.36 °C 0.28 °C 0.35 °C		
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.48 °C 0.19 °C 0.12 °C 0.11 °C		



Parameter / Equipment	Range	CMC <sup>2</sup> (±)	Comments	Location <sup>8</sup>
Calibration of Thermocouple Devices by Electrical Simulation <sup>3</sup> –				
Type J	(-210 to -0.0) °C (0.0 to 800) °C (800 to 1200) °C	0.72 °C 0.50 °C 0.62 °C	Fluke 714	North America
Type K	(-200 to 0.0) °C (0.0 to 1000) °C (1000 to 1372) °C	0.97 °C 0.62 °C 0.88 °C		
Type R & S	(-20 to 0.0) °C (0.0 to 1767) °C	2.4 °C 1.7 °C		
Type T	(-250 to 0.0) °C (0.0 to 400) °C	1.1 °C 0.49 °C		
Calibration of RTD Devices by Electrical Simulation –				
Pt 385, 100 Ω	(-200 to 0) °C (0 to 100) °C (100 to 400) °C (400 to 630) °C (630 to 800) °C	0.04 °C 0.06 °C 0.08 °C 0.09 °C 0.18 °C	Fluke 5522A	North America
Pt 3916, 100 Ω	(-200 to -190) °C (-190 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 600) °C (600 to 630) °C	0.19 °C 0.04 °C 0.05 °C 0.06 °C 0.08 °C 0.18 °C		
Pt 3926, 100 Ω	(-200 to 0) °C (0 to 100) °C (100 to 400) °C (400 to 630) °C	0.04 °C 0.06 °C 0.08 °C 0.09 °C		



Parameter / Equipment	Range	CMC <sup>2</sup> (±)	Comments	Location <sup>8</sup>
Calibration of RTD Devices by Electrical Simulation <sup>3</sup> –				
Pt 385, 100 Ω	(-200 to 100) °C (100 to 300) °C (300 to 600) °C (600 to 800) °C	0.27 °C 0.38 °C 0.49 °C 0.62 °C	Fluke 712	North America
Pt 3916 & 3926, 100 Ω	(-200 to 100) °C (100 to 300) °C (300 to 630) °C	0.27 °C 0.38 °C 0.49 °C		

### III. Mechanical

Parameter / Equipment	Range	CMC <sup>2, 4, 5</sup> (±)	Comments	Location <sup>8</sup>
Force – Measuring Equipment	(1 to 25 000) lbf (1000 to 240 000) lbf	0.01 % 0.05 %	Deadweight systems, transducer systems, ASTM E74, ISO 376, & EN10002-3	North America
Force <sup>3</sup> – Measure	(0.002 to 100) lbf (2 to 25 000) lbf (> 25 000 to 1 000 000) lbf	0.05 % 0.13 % 0.25 %	Deadweights, transducer systems, ASTM E4 & ISO 7500-1	North America, Japan
Creep Testing Machines <sup>3</sup> – Force Measuring (Onsite Only)	100 N to 30 kN	0.25 %	ISO 7500-2	Japan
Torque – Measuring Equipment	(5 to 2000) lbf·in (200 to 12 000) lbf·in  (400 to 100 000) lbf·in	0.06 % 0.06 %  0.05 %	Deadweight systems, ASTM E2428  Transducer systems, ASTM E2428	North America
Torque <sup>3</sup> – Measure & Measuring Equipment	(0.15 to 200) lbf·in  (4 to 750 000) lbf·in	0.1 %  0.25 %	Deadweight systems, ASTM E2624  Transducer systems, ASTM E2624	North America

Parameter / Equipment	Range	CMC <sup>2, 4, 5, 6</sup> ( $\pm$ )	Comments	Location <sup>8</sup>
Testing Machines <sup>3</sup> – Measure				
Static Alignment	Up to 50% bending	0.5 % + 2 micro-strain	Alignment transducer per ASTM E1012, NASM 1312	North America, Japan
Dynamic Force	(100 to 500000) lbf (0.1 Hz to 1 kHz)	0.5 % of maximum IV	Force transducer, ASTM E647, NASM 1312B	
Linear Speed (Crosshead)	(0.002 to 500) in/min	0.1 % or 0.0002 in/min	Whichever is greater, linear encoder, ASTM E2658	
Rotational Speed (RPM)	(5 to 10 000) RPM	0.033 %	Optical tachometer	North America
Pressure – Measuring Equipment				
Pneumatic	(4 to 500) psi	0.015 %	Deadweight system	North America
Hydraulic	(10 to 10 000) psi	0.02 %	Deadweight system	
	(> 10 000 to 15 000) psi	2 psi	Automated Pressure Calibrator	
Pressure <sup>3</sup> – Measure & Measuring Equipment				
Pneumatic	Up to 100 psi	0.02 psi	Additel 681 gage	North America
	Up to 300 psi	0.06 psi	Additel 681 gage	
	Up to 5 psi	0.1 % + 0.0001 psi	Additel 681 gage & pump kits	
	Up to 50 psi	0.1 % + 0.001 psi		
	Up to 500 psi	0.1 % + 0.01 psi		
Hydraulic	Up to 500 psi	0.1 % + 0.01 psi	Additel 681 gage & pump kits	
	Up to 5000 psi	0.1 % + 0.1 psi		
	Up to 20 000 psi	0.12 % + 1 psi	Additel 681 20k gage	
	Up to 30 000 psi	0.15 % + 1 psi	Additel 681 30k gage	
	Up to 50 000 psi	0.15 % + 1 psi	Additel 681 50k gage	
	(4 to 50 000) psi	0.25 %	mV/V transducers	

Parameter / Equipment	Range	CMC <sup>2, 4, 5, 6</sup> (±)	Comments	Location <sup>8</sup>
Vacuum – Measuring Equipment Pneumatic	(3 to 29) inHg	0.02 %	Deadweight system	North America
Vacuum <sup>3</sup> – Measure & Measuring Equipment Pneumatic	Up to 28 inHg	0.1 % + 0.001 inHg	Additel 681 gage & pump	North America
Mass – Measure Fixed Points	(1, 2, 5, 10, 20) g (50, 100) g (200, 500, 1000) g (2, 5) kg (10, 20) kg 50 kg  (0.1, 0.2) lb (0.25, 0.5, 1, 2) lb (5, 10) lb (20, 50) lb	0.3 mg 0.3 mg 3 mg 0.02 g 0.2 g 0.3 g  0.000 000 6 lb 0.000 01 lb 0.0001 lb 0.001 lb	Reference weights & comparator balances	North America

#### IV. Thermodynamics

Parameter / Equipment	Range	CMC <sup>2, 5</sup> (±)	Comments	Location <sup>8</sup>
Temperature – Measure	(-100 to 400) °C	0.04 °C	PRT & meter	North America
Measuring Equipment	0 °C (-5 to 250) °C (50 to 400) °C	0.01 °C 0.1 °C 0.25 °C	Ice bath PRT & fluid bath PRT & dry-well	

Parameter / Equipment	Range	CMC <sup>2, 5</sup> (±)	Comments	Location <sup>8</sup>
Temperature <sup>3</sup> –				
Measure	(-200 to 660) °C	0.05 °C	PRT & Fluke 1524 meter	North America
Measuring Equipment	(-5 to 660) °C	0.085 °C	PRT & Fluke 1524 meter with fluid bath or dry-well	
Relative Humidity –				
Measuring Equipment	(10 to 90) % RH	0.6 % RH	Thunder Scientific 1200	North America
Measure	11 % RH 33 % RH 75 % RH	1.4 % RH 1.3 % RH 1.6 % RH	Vaisala HMK 15	
	(10 to 75) % RH	2 % RH	Vaisala HMP75	

V. Time & Frequency

Parameter / Equipment	Range	CMC <sup>2, 5</sup> (±)	Comments	Location <sup>8</sup>
Frequency –				
Measuring Equipment	(5, 10) MHz 1 Hz to 20 MHz	1 x 10 <sup>-11</sup> Hz 1 x 10 <sup>-8</sup> Hz	Fluke 910 GPS Agilent 33220A	North America
Measure	1 Hz to 225 MHz	1 x 10 <sup>-10</sup> Hz	Agilent 53131A	

VI. Vibration

Parameter / Equipment	Range	CMC <sup>2, 4, 5</sup> (±)	Comments	Location <sup>8</sup>
Vibration – Measure & Measuring Equipment	(3 to < 100) Hz	1.5 %	LF accelerometer calibration system	North America
	≥ 100 Hz to 1 kHz	1.0 %		
	(5 to < 100) Hz	1.2 %	HF accelerometer calibration system	
	≥ 100 Hz to 1 kHz	1.0 %		
(> 1 to 5) kHz	1.4 %			
(> 5 to 10) kHz	1.9 %			
Vibration <sup>3</sup> – Measure & Measuring Equipment	(3 to < 100) Hz	1.6 %	LF accelerometer calibration system BK 3629	North America
	(100 to 500) Hz	1.3 %		
	3 Hz to 2 kHz	2.0 %	LF accelerometer calibration system TMS 9210D	
	10 Hz to 5 kHz	2.0 %	HF accelerometer calibration system TMS 9110D	
	(> 5 to 10) kHz	3.0 %		

<sup>1</sup> This laboratory offers limited commercial calibration service and field calibration service.

<sup>2</sup> Calibration and Measurement Capability Uncertainty (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 or nearly ideal measuring equipment. CMCs 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.

<sup>3</sup> Field calibration services are available for this calibration. 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 actual 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. MTS Systems team members, residing in the following countries, fall under the MTS systems ISO/IEC17025 scope of accreditation: North America and Japan.

<sup>4</sup> In the statement of CMC, the percent is defined as the percentage of reading unless otherwise noted, *L* represents the Length in inches; “IV” represents Indicated Value.



- <sup>5</sup> The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.
- <sup>6</sup> The measurands stated are generated using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure the measurand in the ranges indicated. CMCs are expressed as either a specific value that covers the full range or as a fraction of the reading plus a fixed floor specification.
- <sup>7</sup> This scope meets A2LA's *P112 Flexible Scope Policy*.
- <sup>8</sup> The locations of the laboratories that can perform the calibration are given by an abbreviated code with valid to dates given in the table below:

<b>Location Address</b>	<b>Location</b>	<b>Valid to Dates</b>
14000 Technology Dr, Eden Prairie, MN, 55344, USA	North America	9/30/2026
Raiden Building 3F, 3-22-6, Ryogoku, Sumida-ku, Tokyo, Japan, 130-0026	Japan	9/30/2026





## Accredited Laboratory

A2LA has accredited

### **MTS SYSTEMS CORPORATION MTS CALIBRATION ORGANIZATION**

*Eden Prairie, MN*

for technical competence in the field of

## Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets R205 – Specific Requirements: Calibration Laboratory Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system  
*(refer to joint ISO-ILAC-IAF Communiqué dated April 2017).*



Presented this 16<sup>th</sup> day of September 2024.

A blue ink signature of Trace McInturff, written in a cursive style.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 1145.01  
Valid to September 30, 2026

*For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.*