



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017  
& ANSI/NCSL Z540-1-1994

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CALIBRATION

Valid To: April 30, 2026

Certificate Number: 1486.02

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</sup> (±)	Comments
Micrometer <sup>3</sup> Linearity Parallelism	Up to 12 in Up to 50 µin	9.5 µin + 7.3 µin/in 11 µin	Gage blocks
Calipers <sup>3</sup> Outer Diameter Inner Diameter Step & Depth	Up to 12 in Up to 12 in Up to 12 in	9.5 µin + 7.3 µin/in 29 µin + 6 µin/in 30 µin + 5.9 µin/in	Gage blocks
Dial Indicators <sup>3</sup>	Up to 2 in	30 µin + 2 µin/in	Gage blocks

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2, 4, 5</sup> (±)	Comments
DC Voltage – Generate <sup>3</sup>	(0 to 330) mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V (330 to 1000) V	0.8 μV + 16 nV/mV 17 μV + 5 μV/V 88 μV + 7 μV/V 0.56 mV + 14 μV/V 2.7 mV + 14 μV/V	Fluke 5522A
DC Voltage – Measure <sup>3</sup>	Up to 100 mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1000) V  (1 to 20) kV (20 to 35) kV (35 to 40) kV	0.33 μV + 17 μV/V 0.52 μV + 8 μV/V 8.8 μV + 8.1 μV/V 35 μV + 10 μV/V 0.2 mV + 12 μV/V  2.3 % 1.2 % 2.3 %	HP 3458A  Fluke 80K-40 probe & HP 3458A
DC Current – Generate <sup>3</sup>	Up to 330 μA 330 μA to 3.3 mA (3.3 to 33) mA (33 to 330) mA 330 mA to 1.1 A (1.1 to 3) A (3 to 11) A (11 to 20.5) A	16 nA + 0.12 nA/μA 41 nA + 80 nA/mA 0.21 μA + 80 nA/mA 2.1 μA + 80 nA/mA 33 μA + 0.16 mA/A 0.37 mA + 0.13 mA/A 0.49 mA + 0.39 mA/A 9.4 mA + 0.8 mA/A	Fluke 5522A
Clamp-On Ammeters	(3.2 to 200) A (16 to 1000) A	7.5 mA + 2.6 mA/A 37 mA + 2.6 mA/A	5520A w/ 10-turn coil 50-turn coil
DC Current – Measure <sup>3</sup>	(0 to 100) nA (0.1 to 1) μA (1 to 10) μA (10 to 100) μA (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (0.1 to 1) A	41 pA + 89 μA/A 41 pA + 24 pA/μA 40 pA + 24 pA/μA 82 pA + 22 pA/μA 6 nA + 24 nA/mA 53 nA + 21 nA/mA 0.53 μA + 37 nA/mA 10 μA + 0.11 mA/A	HP 3458A

Parameter/Equipment	Range	CMC <sup>2, 4</sup> (±)	Comments
Capacitance – Generate <sup>3</sup>	(0.19 to 0.3999) nF (0.4 to 1.0999) nF (1.1 to 3.2999) nF (3.3 to 10.9999) nF (11 to 32.9999) nF (33 to 109.999) nF (110 to 329.999) nF (0.33 to 1.099 99) μF (1.1 to 3.299 99) μF (3.3 to 10.9999) μF (11 to 32.9999) μF (33 to 109.999) μF (110 to 329.999) μF (0.33 to 1.099 99) mF (1.1 to 3.299 99) mF (3.3 to 10.9999) mF (11 to 32.9999) mF	9 pF + 4 pF/nF 10 pF + 4 pF/nF 13 pF + 4 pF/nF 15 pF + 2 pF/nF 0.1 nF + 2 pF/nF 0.15 nF + 2 pF/nF 0.5 nF + 2 pF/nF 1.5 nF + 2 nF/μF 5 nF + 2 nF/μF 14 nF + 2 nF/μF 60 nF + 3 nF/μF 0.2 μF + 4 nF/μF 0.63 μF + 4 nF/μF 2 μF + 4 μF/mF 7 μF + 4 μF/mF 38 μF + 2.5 μF/mF 90 μF + 6 μF/mF	Fluke 5522A
DC Resistance – Generate <sup>3</sup>	(0 to 10.9999) Ω (11 to 32.9999) Ω (33 to 109.9999) Ω (110 to 329.9999) Ω (330 to 1099.999) Ω (1.1 to 3.299 999) kΩ (33 to 10.999 99) kΩ (1 to 32.999 99) kΩ (33 to 109.999) kΩ (110 to 329.999) kΩ (0.33 to 1.099 99) MΩ (1.1 to 3.299 00) MΩ (3.3 to 10.9999) MΩ (11 to 32.9999) MΩ (33 to 109.9999) MΩ (110 to 329.9999) MΩ (330 to 1100) MΩ	1.2 mΩ + 24 μΩ/Ω 1.5 mΩ + 24 μΩ/Ω 1.9 mΩ + 22 μΩ/Ω 4.1 mΩ + 22 μΩ/Ω 9.1 mΩ + 22 μΩ/Ω 41 mΩ + 22 μΩ/Ω 92 mΩ + 22 μΩ/Ω 0.41 Ω + 22 μΩ/Ω 0.9 Ω + 22 μΩ/Ω 8.4 Ω + 26 μΩ/Ω 14 Ω + 26 μΩ/Ω 93 Ω + 48 μΩ/Ω 0.4 kΩ + 0.1 mΩ/Ω 4.4 kΩ + 0.2 mΩ/Ω 16 kΩ + 0.4 mΩ/Ω 0.35 MΩ + 2.4 mΩ/Ω 4.4 MΩ + 12 mΩ/Ω	Fluke 5522A
Resistance – Measure <sup>3</sup>	(0 to 10) Ω (10 to 100) Ω (0.1 to 1) kΩ (1 to 10) kΩ (10 to 100) kΩ (0.1 to 1) MΩ (1 to 10) MΩ (10 to 100) MΩ (0.1 to 1) GΩ	55 μΩ + 15 μΩ/Ω 0.52 mΩ + 13 μΩ/Ω 0.53 mΩ + 10 μΩ/Ω 5.3 mΩ + 10 μΩ/Ω 53 mΩ + 11 μΩ/Ω 2.3 Ω + 17 μΩ/Ω 0.1 kΩ + 55 μΩ/Ω 1 kΩ + 0.52 mΩ/Ω 10 kΩ + 5.1 mΩ/Ω	HP 3458A

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Electrical Calibration of RTD Indicators <sup>3</sup> –			
Pt 385, 100 Ω	(-200 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C (630 to 800) °C	0.042 °C 0.041 °C 0.057 °C 0.073 °C 0.081 °C 0.097 °C 0.19 °C	Fluke 5522A
Field Calibration <sup>3</sup>	(-200 to 100) °C (100 to 300) °C (300 to 600) °C (600 to 800) °C	0.19 °C 0.31 °C 0.44 °C 0.57 °C	Fluke 726
Pt 3926, 100 Ω	(-190 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C	0.041 °C 0.041 °C 0.057 °C 0.073 °C 0.081 °C 0.097 °C	Fluke 5522A
Field Calibration <sup>3</sup>	(-200 to 100) °C (100 to 300) °C (300 to 630) °C	0.19 °C 0.31 °C 0.44 °C	Fluke 726
Pt 3916, 100 Ω	(-190 to -80) °C (-80 to 0) °C (0 to 100) °C (100 to 300) °C (300 to 400) °C (400 to 630) °C	0.033 °C 0.042 °C 0.049 °C 0.065 °C 0.073 °C 0.19 °C	Fluke 5522A
Pt 385, 200 Ω	(-200 to 0) °C (> 0 to 100) °C (> 100 to 260) °C (> 260 to 300) °C (> 300 to 400) °C (> 400 to 600) °C (> 600 to 630) °C	0.034 °C 0.033 °C 0.042 °C 0.097 °C 0.11 °C 0.11 °C 0.13 °C	
Pt 385, 500 Ω	(-200 to -80) °C (> -80 to 100) °C (> 100 to 260) °C (> 260 to 400) °C (> 400 to 600) °C (> 600 to 630) °C	0.034 °C 0.042 °C 0.05 °C 0.065 °C 0.073 °C 0.089 °C	

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Electrical Calibration of RTD Indicators <sup>3</sup> – (cont)			
Pt 385, 1 kΩ	(-200 to 0) °C (> 0 to 100) °C (> 100 to 260) °C (> 260 to 300) °C (> 300 to 600) °C (> 600 to 630) °C	0.026 °C 0.033 °C 0.042 °C 0.049 °C 0.057 °C 0.19 °C	Fluke 5522A
PtNi 385, 120 Ω	(-80 to 100) °C (> 100 to 260) °C	0.066 °C 0.11 °C	
Cu427.10 Ω	(-100 to 260) °C	0.24 °C	
Electrical Calibration of Thermocouple Indicators –			
Type E	(-200 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1000) °C	0.4 °C 0.13 °C 0.11 °C 0.13 °C 0.17 °C	Fluke 5522A
Field Calibration <sup>3</sup>	(-250 to -100) °C (-100 to 1000) °C	0.8 °C 0.53 °C	Fluke 726
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1200) °C	0.22 °C 0.13 °C 0.11 °C 0.14 °C 0.18 °C	Fluke 5522A
Field Calibration <sup>3</sup>	(-250 to -100) °C (-100 to 1000) °C (-100 to 1000) °C	0.53 °C 0.27 °C 0.4 °C	Fluke 726
Type K	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1372) °C	0.27 °C 0.14 °C 0.13 °C 0.21 °C 0.32 °C	Fluke 5522A
Field Calibration <sup>3</sup>	(-250 to 0) °C (0 to 1000) °C (1000 to 1372) °C	0.8 °C 0.4 °C 0.67 °C	Fluke 726
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.51 °C 0.21 °C 0.15 °C 0.13 °C	Fluke 5522A
Field Calibration <sup>3</sup>	(-250 to 0) °C (0 to 400) °C	0.8 °C 0.27 °C	Fluke 726

Parameter/Range	Frequency	CMC <sup>2,4</sup> (±)	Comments
AC Voltage – Generate <sup>3</sup>			
(1 to 33) mV	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 200) kHz (200 to 500) kHz	5.5 μV + 0.64 μV/mV 5 μV + 0.12 μV/mV 5 μV + 0.16 μV/mV 5.6 μV + 0.8 μV/mV 12 μV + 2.8 μV/mV 47 μV + 6.4 μV/mV 47 μV + 6.4 μV/mV	Fluke 5522A
(33 to 330) mV	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 200) kHz (200 to 500) kHz	14 μV + 0.24 μV/mV 24 μV + 87 nV/mV 11 μV + 0.13 μV/mV 35 μV + 0.28 μV/mV 47 μV + 0.64 μV/mV 0.11 mV + 1.6 μV/mV 0.11 mV + 1.6 μV/mV	
330 mV to 3.3 V	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 200) kHz (200 to 500) kHz	0.12 mV + 0.24 mV/V 88 μV + 0.12 mV/V 99 μV + 0.15 mV/V 0.12 mV + 0.24 mV/V 0.29 mV + 0.56 mV/V 1.1 mV + 1.9 mV/V 1.1 mV + 1.9 mV/V	
(3.3 to 33) V	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	1.3 mV + 0.24 mV/V 0.94 mV + 0.12 mV/V 1.6 mV + 0.18 mV/V 1.4 mV + 0.28 mV/V 3.7 mV + 0.72 mV/V	
(33 to 330) V	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	6.8 mV + 0.15 mV/V 10 mV + 0.16 mV/V 12 mV + 0.2 mV/V 13 mV + 0.24 mV/V 93 mV + 1.6 mV/V	
(330 to 1020) V	45 Hz to 10 kHz	88 mV + 0.24 mV/V	
AC Voltage – Measure <sup>3</sup>			
(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	6.1 μV + 0.0003 mV/mV 4.1 μV + 0.0002 mV/mV 4.2 μV + 0.0003 mV/mV 4.9 μV + 0.001 mV/mV 9 μV + 0.005 mV/mV 45 μV + 0.04 mV/mV	HP 3458A

Parameter/Range	Frequency	CMC <sup>2, 4, 5</sup> ( $\pm$ )	Comments
AC Voltage – Measure <sup>3</sup> (cont)			
(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	12 $\mu$ V + 0.000 07 mV/mV 2.7 $\mu$ V + 0.000 07 mV/mV 11 $\mu$ V + 0.000 14 mV/mV 12 $\mu$ V + 0.0003 mV/mV 17 $\mu$ V + 0.0008 mV/mV 47 $\mu$ V + 0.003 mV/mV 0.12 mV + 0.01 mV/mV 3.8 mV + 0.02 mV/mV	HP 3458A
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	0.12 mV + 0.000 07 V/V 0.1 mV + 0.000 07 V/V 0.11 mV + 0.000 14 V/V 0.12 mV + 0.0003 V/V 0.17 mV + 0.0008 V/V 0.47 mV + 0.003 V/V 1.2 mV + 0.01 V/V 38 mV + 0.015 V/V	
(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	1.2 mV + 0.000 07 V/V 1 mV + 0.000 07 V/V 1 mV + 0.000 14 V/V 1.2 mV + 0.0003 V/V 1.7 mV + 0.0008 V/V 4.7 mV + 0.003 V/V 12 mV + 0.01 V/V 0.38 V + 0.015 V/V	
(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 (0.3 to 1) MHz	13 mV + 0.0002 V/V 11 mV + 0.0002 V/V 11 mV + 0.0002 V/V 13 mV + 0.0004 V/V 21 mV + 0.001 V/V 57 mV + 0.004 V/V 0.17 V + 0.015 V/V	
(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	99 mV + 0.0004 V/V 85 mV + 0.0004 V/V 98 mV + 0.0006 V/V 0.14 V + 0.0012 V/V 0.27 V + 0.003 V/V	
(1 to 40) kV	60 Hz	5.8 %	Fluke 80K-40 probe & HP 3458A

Parameter/Range	Frequency	CMC <sup>2,4</sup> (±)	Comments
AC Current – Generate <sup>3</sup>			
(29 to 330) µA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.13 µA + 1.6 nA/µA 0.12 µA + 1.2 nA/µA 0.11 µA + 1 nA/µA 0.19 µA + 2.4 nA/µA 0.35 µA + 6.4 nA/µA 0.70 µA + 13 nA/µA	Fluke 5522A
330 µA to 3.3 mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.65 µA + 1.6 µA/mA 0.45 µA + 1 µA/mA 0.39 µA + 0.8 µA/mA 0.69 µA + 1.6 µA/mA 2.9 µA + 1.6 µA/mA 3.4 µA + 8 µA/mA	
(3.3 to 33) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	6.4 µA + 1.4 µA/mA 4 µA + 0.72 µA/mA 2.7 µA + 0.32 µA/mA 3.7 µA + 0.64 µA/mA 7.7 µA + 1.6 µA/mA 14 µA + 3.2 µA/mA	
(33 mA to 330) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	65 µA + 1.4 µA/mA 42 µA + 0.72 µA/mA 29 µA + 0.31 µA/mA 68 µA + 0.8 µA/mA 0.13 mA + 1.6 µA/mA 0.27 mA + 3.2 µA/mA	
330 mA to 1.1 A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.56 mA + 1.4 mA/A 0.22 mA + 0.4 mA/A 2.4 mA + 4.8 mA/A 11 mA + 20 mA/A	
(1.1 to 3) A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	1.7 mA + 1.4 mA/A 0.61 mA + 0.48 mA/A 6.1 mA + 4.8 mA/A 26 mA + 20 mA/A	
(3 to 11) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	3.1 mA + 0.48 mA/A 4 mA + 0.8 mA/A 74 mA + 24 mA/A	



Parameter/Range	Frequency	CMC <sup>2,4</sup> (±)	Comments
AC Current – Generate <sup>3</sup> (cont)			
(11 to 20.5) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	15 mA + 0.96 mA/A 17 mA + 1.2 mA/A 0.27 A + 24 mA/A	Fluke 5522A
Clamp-On Ammeters (3.2 to 200) A (16 to 1000) A	45 Hz to 1 kHz	7.6 mA + 3.1 mA/A 38 mA + 3.1 mA/A	5520A w/ 10-turn coil 50-turn coil
AC Current – Measure <sup>3</sup>			
Up to 100 µA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz	57 nA + 4 nA/µA 45 nA + 1.5 nA/µA 40 nA + 0.64 nA/µA	HP 3458A
100 µA to 1 mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz (0.1 to 5) kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.43 µA + 0.0041 mA/mA 0.31 µA + 0.0016 mA/mA 0.26 µA + 0.000 67 mA/mA 0.25 µA + 0.000 37 mA/mA 0.26 µA + 0.000 67 mA/mA 0.63 µA + 0.0042 mA/mA 1.8 µA + 0.0056 mA/mA	
(1 to 10) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz (0.1 to 5) kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	2.4 µA + 0.0041 mA/mA 2.3 µA + 0.0016 mA/mA 2.3 µA + 0.000 67 mA/mA 2.3 µA + 0.000 37 mA/mA 2.3 µA + 0.000 67 mA/mA 4.5 µA + 0.0041 mA/mA 16 µA + 0.0056 mA/mA	
(10 to 100) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz (0.1 to 5) kHz (5 to 20) kHz (20 to 50) kHz (50 to 100) kHz	2.4 µA + 0.0041 mA/mA 2.3 µA + 0.0016 mA/mA 2.3 µA + 0.000 67 mA/mA 2.3 µA + 0.000 37 mA/mA 2.3 µA + 0.000 67 mA/mA 4.5 µA + 0.0041 mA/mA 16 µA + 0.0056 mA/mA	
(0.1 to 1) A	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz (0.1 to 5) kHz (5 to 20) kHz (20 to 50) kHz	0.42 mA + 0.0041 A/A 0.3 mA + 0.0017 A/A 0.26 mA + 0.0009 A/A 0.27 mA + 0.0011 A/A 0.37 mA + 0.0031 A/A 0.92 mA + 0.01 A/A	

Parameter/Equipment	Range	CMC <sup>2, 4, 5</sup> (±)	Comments
Oscilloscopes <sup>3</sup> –			
DC 50 Ω 1 MΩ	± (0 to 6.6) V ± (0 to 130) V	33 μV + 2 mV/V 33 μV + 0.39 mV/V	Fluke 5522A/SC1100
Square Wave 50 Ω 1 MΩ	1 mV to 6 V <sub>p-p</sub> 1 mV to 130 V <sub>p-p</sub> 10 Hz to 1 kHz (1 to 100) kHz	91 μV + 4.3 mV/V 0.2 mV + 0.8 mV/V 0.24 mV + 2 mV/V	
Edge Into 50 Ω	(200 to 300) ps (100 kHz to 2 MHz)	82 ps	Fluke 5522A
	(200 to 350) ps (2 to 10) MHz	82 ps	
Leveled Sine Wave	5 mV to 5.5 V 50 kHz (reference) 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz	0.33 mV + 17 mV/V 0.4 mV + 31 mV/V 0.43 mV + 36 mV/V 0.53 mV + 57 mV/V	
	4 mV to 3.5 V (600 to 1100) MHz	0.58 mV + 67 mV/V	
Time Marker	5 s to 50 ms 50 ms to 1 ns	0.0021 % + (t / 1000) % 0.000 36 %	t = time in seconds
Wave Generator	1.8 mV to 2.8 V <sub>p-p</sub> (50 Ω) 10 Hz to 100 kHz	0.12 mV + 23 mV/V	
	1.8 mV to 55 V <sub>p-p</sub> (1 MΩ) 10 Hz to 100 kHz	0.12 mV + 23 mV/V	

### III. Fluid Quantities

Parameter/Equipment	Range	CMC <sup>2, 5</sup> (±)	Comments
Gas Flow – Air & N2			
Laminar Flow	(0.01 to 50) SLPM	0.41 %	Fluke Molbox standard
Sonic Flow	(10 to 120) SLPM	0.41 %	
Volumetric – Pipettes	Up to 31 mL (31 to 50) mL	0.023 µL 0.1 µL	Electronic balance, reference mass

### IV. Mechanical

Parameter/Equipment	Range	CMC <sup>2, 5, 6</sup> (±)	Comments
Pressure <sup>3</sup> – Measure & Measuring Equipment			
Hydraulic	(400 to 10 000) psig	0.17 psi + 0.000 17 psi/psi	Pressurements W2200/3HP
Pneumatic	(4 to 200) ins H <sub>2</sub> O @ 60 °F	0.008 in·H <sub>2</sub> O + 0.000 27 in·H <sub>2</sub> O/in·H <sub>2</sub> O	Ametek PK II
	(8 to 17) psia	0.01 %	Mensor CPC6050 with sensor range (8 to 17) psia
	(-15 to 15) psig	0.003 psig	Mensor CPC6050 with sensor range (-15 to 15) psig
	(-15 to 50) psig (> 50 to 150) psig	0.0044 psig 0.008 %	Mensor CPC6050 with sensor range (-15 to 150) psig
	(-15 to 100) psig (> 100 to 300) psig	0.0083 psi 0.008 %	Mensor CPC6050 with sensor range (-15 to 300) psig
	(-15 to 330) psig (> 330 to 1000) psig	0.027 psi 0.008 %	Mensor CPC6050 with sensor range (-15 to 1000) psig

Parameter/Equipment	Range	CMC <sup>2, 5, 6</sup> (±)	Comments
Torque – Measure <sup>3</sup>	(2 to 20) ozf·in (2.5 to 25) lbf·in (25 to 75) lbf·in	0.32 % 0.59 % 1.2 %	Mountz BMX20z Mountz BMX25i Jetco TED-75is-P
	(10 to 100) lbf·ft (25 to 250) lbf·ft (100 to 1000) lbf·ft	0.59 % 0.32 % 0.59 %	Mountz LTT-100F Mountz BMX250F Mountz BMX 1000F
Torque Transducers <sup>3</sup>	10 lbf·in to 250 lbf·ft	0.036 %	Torque arms, Class 6 weights
Scales <sup>3</sup>	Up to 4000 lb	0.82 x R	Class 6 weights  <i>R = Unit Under Test resolution</i>

#### V. Thermodynamic

Parameter/Equipment	Range	CMC <sup>2, 6</sup> (±)	Comments
Temperature – Measure & Measuring Equipment <sup>3</sup>	(-197 to 420) °C	0.026 °C + 0.000 018 x T <sub>Change from -197</sub>	2560 thermometer w/ 5614 PRT
	(420 to 1000) °C	0.012 °C + 0.000 092 x T <sub>Change from 420</sub>	5624 PRT
Temperature – Measure <sup>3</sup>	(-70 to 180) °C	0.23 °C	Vaisala M170 with HMP77B
	(10 to 60) °C	0.12 °C	Thunder Scientific 1200
Dewpoint – Measuring Equipment	(-80 to < -50) °C (-50 to < 0) °C (0 to 20) °C	1.1 °C 0.18 °C 0.13 °C	Mitchell S8000RS chilled mirror hygrometer
	(-20 to 20) °C	0.14 °C	Thunder Scientific 1200

Parameter/Equipment	Range	CMC <sup>2, 6</sup> ( $\pm$ )	Comments
Relative Humidity – Measuring Equipment	(10 to 95) % RH	0.67 % RH	Thunder Scientific 1200
Relative Humidity – Measure <sup>3</sup>	Up to 100 % RH	1.3 % RH	Vaisala M170 with HMP77B

## VI. Time & Frequency

Parameter/Equipment	Range	CMC <sup>2, 6</sup> ( $\pm$ )	Comments
Frequency – Measuring Equipment <sup>3</sup>	1 $\mu$ Hz to 21 MHz	0.58 $\mu$ Hz + 8.2 $\mu$ Hz/Hz	HP 3325B
Frequency – Measure <sup>3</sup>	1 mHz to 225 MHz	5.8 $\mu$ Hz + 4.1 $\mu$ Hz/Hz	Agilent 53132A

<sup>1</sup> This laboratory offers 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 service is 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.

<sup>4</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>5</sup> In the statement of CMC, the value is defined as the percentage of reading;  $L$  is the numerical value of the nominal length of the device measured in inches, unless otherwise noted.

<sup>6</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>7</sup> This scope meets A2LA's *P112 Flexible Scope Policy*.



# Accredited Laboratory

A2LA has accredited

**TRESCAL, INC.**

*Providence Forge, VA*

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 the requirements of ANSI/NCCL Z540-1-1994 and 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 26<sup>th</sup> day of April 2024.

A blue ink signature of Trace McInturff.

Mr. Trace McInturff, Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 1486.02  
Valid to April 30, 2026

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