SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION

Valid To: April 30, 2027 Certificate Number: 2039.01

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[1, 8]:

I. Dimensional

Parameter/Equipment	Range	CMC[2, 6] (±)	Comments
Calipers[3]	Up to 12 in	740 µin	Gage blocks
Outside Micrometers[3]	Up to 3 in	72 µin	Gage blocks
Gage Blocks	Up to 1 in (1 to 4) in	0.3*L* + 4.4 µin 0.7*L* + 4.1 µin	Labmaster Universal 175 w/ gage blocks

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
DC Voltage – Generate	(0 to 330) mV (0.33 to 3.3) V (3.3 to 33) V (33 to 330) V (330 to 1000) V	0.0020 % + 1 µV 0.0011 % + 2 µV 0.0012 % + 20 µV 0.0018 % + 0.15 mV 0.0018 % + 1.5 mV	Fluke 5522A

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Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
DC Voltage – Measure	(0 to 200) mV (0.2 to 2) V (2 to 20) V (20 to 200) V (200 to 1000) V	0.26 µV 1.5 µV 14 µV 0.19 mV 1.3 mV	Fluke 8508A
DC Current – Generate	(0 to 330) µA (0.33 to 3.3) mA (3.3 to 33) mA (33 to 330) mA (0.33 to 1.1) A (1.1 to 3) A (3 to 11) A (11 to 20) A	0.015 % + 0.02 µA 0.010 % + 0.05 µA 0.010 % + 0.25 µA 0.010 % + 2.5 µA 0.020 % + 40 µA 0.038 % + 40 µA 0.050 % + 0.5 mA 0.10 % + 0.75 mA	Fluke 5522A
Clamp-On Meters	(20 to 150) A (150 to 550) A (550 to 1000) A	0.038 % + 0.005 mA 0.050 % + 25 mA 0.10 % + 38 mA	Fluke 5522A w/ 50 turn coil
DC Current – Measure	(0 to 200) µA (0.2 to 2) mA (2 to 20) mA (20 to 200) mA (0.2 to 2) A (2 to 20) A	0.73 nA 7.3 nA 76 nA 6.0 µA 61 µA 1.4 mA	Fluke 8508A
Resistance – Generate	(0 to 11) Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω (330 to 1100) Ω (1.1 to 3.3) kΩ (3.3 to 11) kΩ (11 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ (0.33 to 1.1) MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ (0.33 to 1.1) GΩ	0.0040 % + 0.01 Ω 0.0030 % + 0.015 Ω 0.0028 % + 0.015 Ω 0.0028 % + 0.020 Ω 0.0028 % + 0.020 Ω 0.0028 % + 0.20 Ω 0.0028 % + 0.10 Ω 0.0028 % + 1.0 Ω 0.0028 % + 1.0 Ω 0.0032 % + 10 Ω 0.0032 % + 10 Ω 0.0061 % + 0.15 kΩ 0.013 % + 0.25 kΩ 0.026 % + 2.4 kΩ 0.051 % + 3.0 kΩ 0.30 % + 0.1 MΩ 1.5 % + 0.5 MΩ	Fluke 5522A

Parameter/Equipment	Range	CMC[2, 4, 5] (±)	Comments
Resistance – Measure	Up to 2 Ω (2 to 20) Ω (20 to 200) Ω (0.2 to 2) kΩ (2 to 20) kΩ (20 to 200) kΩ (0.2 to 2) MΩ (2 to 20) MΩ (20 to 200) MΩ (0.2 to 2) GΩ	0.0018 % + 3.9 µΩ 0.000 95 % + 14 µΩ 0.000 83 % + 48 µΩ 0.000 82 % + 49 µΩ 0.000 81 % + 4.9 mΩ 0.000 84 % + 48 mΩ 0.0010 % + 94 mΩ 0.0023 % + 96 Ω 0.013 % + 9.9 kΩ 0.15 % + 1.0 MΩ	Fluke 8508A
RTD Indicators[3] –			
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	0.050 °C 0.050 °C 0.070 °C 0.090 °C 0.10 °C 0.12 °C 0.23 °C	Fluke 5522A
Pt 385, 200 Ω	(-200 to 100) °C (100 to 260) °C (260 to 300) °C (300 to 400) °C (400 to 600) °C (600 to 630) °C	0.040 °C 0.050 °C 0.12 °C 0.13 °C 0.14 °C 0.16 °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	0.040 °C 0.050 °C 0.060 °C 0.080 °C 0.090 °C 0.11 °C	
Pt 385, 1000 Ω	(-200 to 0) °C (0 to 100) °C (100 to 260) °C (260 to 400) °C (400 to 600) °C (600 to 630) °C	0.030 °C 0.040 °C 0.050 °C 0.060 °C 0.070 °C 0.23 °C	

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
RTD Indicators[3] – (cont)			
Pt 3926, 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	0.050 °C 0.050 °C 0.070 °C 0.090 °C 0.10 °C 0.12 °C	Fluke 5522A
Pt 3916, 100 Ω	(-200 to -190) °C (-190 to -80) °C (-80 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	0.25 °C 0.040 °C 0.050 °C 0.060 °C 0.070 °C 0.080 °C 0.090 °C 0.10 °C 0.23 °C	
Cu 427, 10 Ω	(-100 to 260) °C	0.030 °C	
Thermocouple Indicators[3] –			
Type B	(600 to 800) °C (800 to 1000) °C (1000 to 1550) °C (1550 to 1820) °C	0.44 °C 0.34 °C 0.30 °C 0.33 °C	Fluke 5522A
Type C	(0 to 150) °C (150 to 650) °C (650 to 1000) °C (1000 to 1800) °C (1800 to 2316) °C	0.30 °C 0.26 °C 0.31 °C 0.50 °C 0.84 °C	
Type E	(-250 to -100) °C (-100 to -25) °C (-25 to 350) °C (350 to 650) °C (650 to 1000) °C	0.50 °C 0.16 °C 0.14 °C 0.16 °C 0.21 °C	
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 760) °C (760 to 1200) °C	0.27 °C 0.16 °C 0.14 °C 0.17 °C 0.23 °C	

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Thermocouple Indicators[3] – (cont)			
Type K	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 1000) °C (1000 to 1372) °C	0.33 °C 0.18 °C 0.16 °C 0.26 °C 0.40 °C	Fluke 5522A
Type N	(-200 to -100) °C (-100 to -25) °C (-25 to 120) °C (120 to 410) °C (410 to 1300) °C	0.40 °C 0.22 °C 0.19 °C 0.18 °C 0.27 °C	
Type R	(0 to 250) °C (250 to 400) °C (400 to 1000) °C (1000 to 1767) °C	0.57 °C 0.35 °C 0.33 °C 0.40 °C	
Type S	(0 to 250) °C (250 to 400) °C (400 to 1000) °C (1000 to 1767) °C	0.47 °C 0.36 °C 0.37 °C 0.46 °C	
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.63 °C 0.24 °C 0.16 °C 0.14 °C	
Type U	(-200 to 0) °C (0 to 600) °C	0.56 °C 0.27 °C	

Parameter/Range	Frequency	CMC[2, 5] (±)	Comments
AC Voltage – Generate			
(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 500) kHz	0.074 % + 8.5 µV 0.014 % + 6.7 µV 0.019 % + 6.7 µV 0.095 % + 8.0 µV 0.35 % + 13 µV 0.79 % + 53 µV	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 500) kHz	0.030 % + 8.1 µV 0.014 % + 8.0 µV 0.016 % + 8.0 µV 0.035 % + 8.0 µV 0.080 % + 32 µV 0.20 % + 70 µV	
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 500) kHz	0.022 % + 420 µV 0.014 % + 96 µV 0.018 % + 92 µV 0.029 % + 90 µV 0.069 % + 180 µV 0.23 % + 910 µV	
(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	0.029 % + 910 µV 0.015 % + 600 µV 0.009 % + 12 mV 0.018 % + 11 mV 0.053 % + 21 mV	
(33 to 330) V	45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.019 % + 2.1 mV 0.020 % + 6.1 mV 0.025 % + 6.0 mV 0.030 % + 7.0 mV 0.020 % + 52 mV	
(330 to 1020) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.030 % + 13 mV 0.024 % + 22 mV 0.030 % + 13 mv	

Parameter/Range	Frequency	CMC[2, 4, 5] (±)	Comments
AC Voltage – Measure			
Up to 200 mV	(1 to 10) Hz	0.018 % + 14 µV	Fluke 8508A
	(10 to 40) Hz	0.015 % + 3.9 µV	
	(40 to 100) Hz	0.012 % + 3.9 µV	
	100 Hz to 2 kHz	0.012 % + 1.9 µV	
	(2 to 10) kHz	0.014 % + 3.9 µV	
	(10 to 30) kHz	0.036 % + 7.8 µV	
	(30 to 100) kHz	0.077 % + 20 µV	
200 mV to 2 V	(1 to 10) Hz	0.015 % + 130 µV	
	(10 to 40) Hz	0.011 % + 50 µV	
	(40 to 100) Hz	0.0087 % + 52 µV	
	100 Hz to 2 kHz	0.0065 % + 55 µV	
	(2 to 10) kHz	0.010 % + 52 µV	
	(10 to 30) kHz	0.023 % + 58 µV	
	(30 to 100) kHz	0.058 % + 200 µV	
	(100 to 300) kHz	0.30 % + 2.0 mV	
	300 kHz to 1 MHz	1.0 % + 20 mV	
(2 to 20) V	(1 to 10) Hz	0.015 % + 1.2 mV	
	(10 to 40) Hz	0.01 % + 190 µV	
	(40 to 100) Hz	0.0094 % + 200 µV	
	100 Hz to 2 kHz	0.0084 % + 190 µV	
	(2 to 10) kHz	0.011 % + 200 µV	
	(10 to 30) kHz	0.022 % + 400 µV	
	(30 to 100) kHz	0.057 % + 2.0 mV	
	(100 to 300) kHz	0.30 % + 20 mV	
	300 kHz to 1 MHz	1.0 % + 200 mV	
(20 to 200) V	(1 to 10) Hz	0.015 % + 12 mV	
	(10 to 40) Hz	0.013 % + 1.9 mV	
	(40 to 100) Hz	0.0098 % + 1.9 mV	
	100 Hz to 2 kHz	0.0082 % + 1.9 mV	
	(2 to 10) kHz	0.012 % + 1.9 mV	
	(10 to 30) kHz	0.022 % + 4.0 mV	
	(30 to 100) kHz	0.057 % + 20 mV	
	(100 to 300) kHz	0.30 % + 200 mV	
	300 kHz to 1 MHz	1.0 % + 2.0 V	
(200 to 1000) V	1 Hz to 10 kHz	0.015 % + 60 mV	
	(10 to 30) kHz	0.064 % + 20 mV	

Parameter/Range	Frequency	CMC[2, 4, 5] (±)	Comments
AC Current – Generate			
(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	0.20 % + 0.10 µA 0.15 % + 0.10 µA 0.13 % + 0.1 µA 0.30 % + 0.15 µA 0.80 % + 0.20 µA 1.6 % + 0.40 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	0.20 % + 0.15 µA 0.13 % + 0.15 µA 0.10 % + 0.15 µA 0.20 % + 0.20 µA 0.50 % + 0.30 µA 1.0 % + 0.60 µA	
(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	0.18 % + 2.0 µA 0.090 % + 2.0 µA 0.040 % + 2.0 µA 0.080 % + 2.0 µA 0.20 % + 3.0 µA 0.40 % + 4.0 µA	
(33 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	0.18 % + 20 µA 0.090 % + 20 µA 0.040 % + 20 µA 0.080 % + 50 µA 0.20 % + 100 µA 0.40 % + 200 µA	
330 mA to 3 A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.18 % + 100 µA 0.050 % + 100 µA 0.60 % + 1.0 mA 2.5 % + 5.0 mA	
(3 to 11) A	(45 to 100) Hz 45 Hz to 1 kHz (1 to 5) kHz	0.06 % + 2.0 mA 0.10 % + 2.0 mA 3.0 % + 2.0 mA	
(11 to 20.5) A	(45 to 100) Hz 45 Hz to 1 kHz (1 to 5) kHz	0.12 % + 5 mA 0.15 % + 5 mA 3.0 % + 5 mA	

Parameter/Range	Frequency	CMC[2, 4, 5] (±)	Comments
AC Current – Generate			
Clamp-On Meters			
(1.65 to 16.5) A	(10 to 100) Hz 100 Hz to 1 kHz	0.08 % + 2.0 mA 0.20 % + 5.0 mA	Fluke 5522A w/ 50-turn coil
(16.5 to 150) A	(10 to 100) Hz 100 Hz to 1 kHz	0.12 % + 10 mA 0.30 % + 50 mA	
(150 to 1025) A	(10 to 100) Hz 100 Hz to 1 kHz	0.12 % + 0.10 A 1.0 % + 0.25 A	
AC Current – Measure			
Up to 200 µA	(1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz	0.040 % + 22 nA 0.040 % + 22 nA 0.061 % + 22 nA 0.39 % + 22 nA	Fluke 8508A
200 µA to 2 mA	(1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz	0.022 % + 220 nA 0.021 % + 220 nA 0.061 % + 220 nA 0.39 % + 220 nA	
(2 to 20) mA	(1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz (30 to 100) kHz	0.022 % + 2.2 µA 0.021 % + 2.2 µA 0.061 % + 2.2 µA 0.39 % + 2.2 µA	
(20 to 200) mA	(1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz	0.022 % + 22 µA 0.021 % + 22 µA 0.053 % + 22 µA	
200 mA to 2 A	(1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz	0.053 % + 220 µA 0.066 % + 220 µA 0.29 % + 220 µA	
(2 to 20) A	10 Hz to 2 kHz (2 to 10) kHz	0.073 % + 2.2 mA 0.25 % + 2.2 mA	

Parameter/Equipment	Range	CMC[2, 4, 5] (±)	Comments
Capacitance – Generate	(0.19 to 3.2999) nF (3.3 to 10.9999) nF (11 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 3.2999) mF (3.3 to 10.9999) mF (11 to 32.9999) mF (33 to 110) mF	0.50 % + 0.01 nF 0.25 % + 0.01 nF 0.25 % + 0.10 nF 0.25 % + 0.30 nF 0.25 % + 1.0 nF 0.25 % + 3.0 nF 0.25 % + 10 nF 0.40 % + 30 nF 0.45 % + 0.10 µF 0.45 % + 0.30 µF 0.45 % + 1.0 µF 0.45 % + 3.0 µF 0.45 % + 10 µF 0.75 % + 30 µF 1.1 % + 0.1 mF	Fluke 5522A

III. Fluid Quantities

Parameter/Equipment	Range	CMC[2, 4, 7] (±)	Comments
Air Flow[3] – Measure Air Velocity	(40 to 120) fpm (120 to 200) fpm	6.4 fpm 8.5 fpm	TSI 9565P anemometer
Anemometers	(20 to 200) fpm	3.9 fpm	Wind tunnel, standard anemometer
Burettes[3]	(1 to 20) mL (20 to 200) mL 200 mL to 1 L	0.73 µL 0.15 % of rdg + 0.70 µL 0.063 % of rdg + 3.3 µL	Gravimetric method
Pipettes[3]	0.1 µL ≤ 0.2 µL ≤ 0.5 µL ≤ 1.0 µL ≤ 2.0 µL ≤ 5.0 µL ≤ 10 µL ≤ 20 µL	0.033 µL 0.039 µL 0.047 µL 0.045 µL 0.053 µL 0.081 µL 0.058 µL 0.14 µL	Gravimetric method

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Pipettes[3] (cont)	≤ 50 µL ≤ 100 µL ≤ 200 µL ≤ 500 µL ≤ 1000 µL ≤ 2000 µL ≤ 5000 µL ≤ 10 000 µL	0.13 µL 0.36 µL 0.81 µL 0.6 µL 0.9 µL 3 µL 8 µL 20 µL	Gravimetric method

IV. Mechanical

Parameter/Equipment	Range	CMC[2, 6, 7] (±)	Comments
Weighing Scales, Fixed Points[3]	100 g 200 g 500 g 1 kg 2 kg 5 kg 10 kg 25 kg 50 kg 100 kg 200 kg	700 µg 1.0 mg 1.9 mg 3.5 mg 6.6 mg 16 mg 34 mg 82 mg 160 mg 330 mg 67 mg	ASTM Class 1 weights
Pressure – Measuring Equipment			
Barometric	(600 to 1100) hPa	0.098 hPa	Vaisala PTB 330
Low	(-0.5 to 0.5) inH_2O (-30 to 30) inH_2O (-30 to 0) inHg	0.0012 in H_2O 0.035 in H_2O 0.013 % of rdg + 0.0009 inHg	ADT760 w/ DP5 ADT760 w/ DP30 Fluke P3025
Medium	(5 to 500) psig	0.013 % of rdg + 0.012 psi	Fluke P3025
High	(200 to 10 000) psig	0.015 % of rdg + 0.6*R*	Fluke P3124

Parameter/Equipment	Range	CMC[2] (±)	Comments
Precision Scales and Balances[3]	(1 to 500) mg	12 µg	ASTM Class 1 weights
Fixed Points	1 g 2 g 5 g 10 g 20 g 50 g 100 g 150 g 200 g 300 g 400 g 500 g 600 g 800 g 1 kg 2 kg 5 kg 10 kg	41 µg 43 µg 44 µg 60 µg 89 µg 180 µg 340 µg 470 µg 620 µg 6.3 mg 6.2 mg 6.4 mg 6.6 mg 7.0 mg 7.4 mg 8.3 mg 16 mg 78 mg	
Mass	1 mg 2 mg 3 mg 5 mg 10 mg 20 mg 30 mg 50 mg 100 mg 200 mg 300 mg 500 mg 1 g 2 g 3 g 5 g 10 g 20 g 30 g 50 g 100 g 200 g 300 g 500 g 1 kg 2 kg 3 kg 5 kg 10 kg	1.5 µg 1.7 µg 2.9 µg 1.7 µg 1.2 µg 2.3 µg 1.8 µg 1.2 µg 1.3 µg 1.3 µg 1.4 µg 2.4 µg 3.5 µg 3.4 µg 5.1 µg 5.0 µg 7.7 µg 11 µg 7.6 µg 21 µg 43 µg 35 µg 0.17 mg 0.16 mg 0.21 mg 0.30 mg 0.80 mg 2.2 mg 4.3 mg	ASTM Class 000 weights

Parameter/Equipment	Range	CMC[2] (±)	Comments
Extrusion Plastometers[3] – Dimensional Measurements			
Cylinder Bore Diameter	Up to 10 mm	5.8 µm	Laboratory procedure Doc. No.5-4WI05
Die Diameter	Up to 3 mm	0.64 µm	
Piston Rod and Land Diameter, Land Length	Up to 10 mm	3.7 µm	
Temperature	(116 to 300) °C (240 to 572) °F	0.047 °C (47 mK) 0.085 °F	
	(301 to 650) °C (573 to 1202) °F	0.076 °C (76 mK) 0.14 °F	
Load	100 g to 31.6 kg	0.1 % of nominal value	
Rotational Speed – Measure[3]	(30 to 100 000) RPM	120 parts in 10^6 + 0.6*R*	Omega HHT12, Monarch PT200
Rotational Speed – Generate	(30 to 99) RPM (100 to 300 000) RPM	2 parts in 10^6 + 1.0*R* 2 parts in 10^6 + 0.6*R*	Fluke 5522A w/ strobe
Torque – Torque Tools (Wrenches, Screwdrivers)	(5 to 50) lbf·in (40 to 400) lbf·in (100 to 1000) lbf·in (25 to 250) lbf·ft (60 to 600) lbf·ft	0.24 % + 0.19 lbf·in 0.24 % + 0.34 lbf·in 0.27 % + 0.31 lbf·in 0.19 % + 0.37 lbf·ft 0.25 % + 0.27 lbf·ft	CDI torque calibration system

V. Optical Quantities

Parameter/Equipment	Range	CMC[2] (±)	Comments
Optical Transmission Density[3] –			
Densitometer	(0 to 3) g/cm^3	0.0001 g/cm^3	CRM

VI. Thermodynamics

Parameter/Equipment	Range	CMC[2, 5, 7] (±)	Comments
Temperature[3] – Measuring Equipment	(-200 to 115) °C (-328 to 239) °F (116 to 300) °C (240 to 572) °F (301 to 650) °C (573 to 1202) °F (650 to 1000) °C (1201 to 1832) °F	0.032 °C (32 mK) 0.058 °F 0.047 °C (47 mK) 0.085 °F 0.076 °C (76 mK) 0.14 °F 0.085 °C (85 mK) 0.15 ° F	PRT and indicator
IR Thermometer	(0 to <50) °C (50 to 500) °C	0.35 °C (0.11 % + 0.75) °C	Environmental chamber w/PRT Fluke 9132
Humidity[3] – Measure	(20 to 70) % RH	2.1 % RH	Fluke 2626-S

VII. Time & Frequency

Parameter/Equipment	Range	CMC[2, 4, 7] (±)	Comments
Frequency – Generate	0.01 Hz to 2.0 MHz	2.5 parts in 10^6 + 5 µHz	Fluke 5522A
Frequency – Measure	DC to 225 MHz	0.10 Hz	Agilent 53132A
Time – Measure	Up to 86 400 s Up to 36 000 s	6.1 parts in 10^6 per s 10 parts in 10^6 + 120 ms	Witschi HT74 Control Company 1048

MECHANICAL TESTING

Measurements in the Field: Biological Safety Cabinets (BSC), Chemical Fume Hoods (CFH), Laminar Air Flow Workbenches (LAFW), Unidirectional Flow Clean-Air Devices (UCAD), Cleanrooms, HEPA and ULPA filters

Test/Equipment	In-house Method	Reference Method
Air Velocity[3]		
BSC	QWI-CE03	NSF/ANSI 49 Annex N-5
CFH	QWI-CE04	ANSI/ASHRAE 110
LAFW /UCAD	QWI-CE07	IEST-RP-C002.4
Gloveboxes (CAI/CACI)	QWI-CE01/05	CAG-002
Air Flow[3]		
BSC	QWI-CE03	ISO 14644-3 B.2
Cleanroom Air Changes / Hour (ACPH)	QWI-CE02	IEST-RP-CC006.3
Differential/Static Pressure[3]		
Cleanroom	QWI-CE02	CAG-003
BSC/LAFW	QWI-CE07	IEST-RP-CC002.4
CAI	QWI-CE05	CAG-002
CACI	QWI-CE01	CAG-002
Particle Concentration[3]		
Cleanroom, Primary Engineering Controls		ISO 14644-3, CAG-003
CAI/CACI	QWI-CE01/05	CAG-002
HEPA and ULPA[3]		IEST-RP-CC034.5

[1] This laboratory offers commercial calibration service and field calibration service.

[2] 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.

[3] 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.

[4] The contributions from the "best existing device" are not included in the CMC claim.

[5] The stated measured values are determined using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure or generate the measured value in the ranges indicated. CMCs are expressed as either a specific value that covers the full range or as a percent or fraction of the reading plus a fixed floor specification.

[6] In the statement of CMC, *R* stands for the resolution of the unit under test, *L* is the numerical value of the nominal length of the device measured.

[7] 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.

[8] This scope meets A2LA's *P112 Flexible Scope Policy*.

Accredited Laboratory

A2LA has accredited

ALLOMETRICS, INC.

Webster, TX

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 3rd day of March 2025.

Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2039.01
Valid to April 30, 2027

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