SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

THERMO FISHER SCIENTIFIC operating as UNITY LAB SERVICES[4]
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CALIBRATION

Valid to: April 30, 2027 Certificate Number: 4946.01

In recognition of the successful completion of the A2LA evaluation process (including an assessment of the organization's compliance with R205 – A2LA's Calibration Program Requirements), accreditation is granted to this laboratory to perform the following calibrations[1, 5]:

I. Chemical Quantities

Parameter/Equipment	Range	CMC[2, 6] (±)	Comments
CO_2 – Measure & Measuring Equipment	Up to 20 % CO_2	1.0 % CO_2	Certified gas analyzer

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC[2] (±)	Comments
Electrical Calibration of pH Meters[3]			
pH:			
14	-414.12 mV DC	0.17 mV DC	Using the Nerst equation giving 59.16 mV/pH at 25 °C with the isopotential point at 7.00 pH
13	-354.96 mV DC	0.17 mV DC	
12	-295.80 mV DC	0.17 mV DC	
11	-236.64 mV DC	0.17 mV DC	
10	-177.48 mV DC	0.17 mV DC	
9	-118.32 mV DC	0.17 mV DC	
8	-59.16 mV DC	0.17 mV DC	
7	0.00 mV DC	0.17 mV DC	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Electrical Calibration of pH Meters[3] (cont)			
pH:			
6	59.16 mV DC	0.17 mV DC	Using the Nerst equation giving 59.16 mV/pH at 25 °C with the isopotential point at 7.00 pH
5	118.32 mV DC	0.17 mV DC	
4	177.48 mV DC	0.17 mV DC	
3	236.64 mV DC	0.17 mV DC	
2	295.80 mV DC	0.17 mV DC	
1	354.96 mV DC	0.17 mV DC	
0	414.12 mV DC	0.17 mV DC	

Parameter/Range	Frequency	CMC[2, 7] (±)	Comments
AC Volts – Generate[4]			
(1.0 to 32.999) mV	(10 to 45) Hz	0.030 % + 8 µV	Fluke 5522A
	(0.045 to 10) kHz	0.015 % + 8 µV	
	(10 to 20) kHz	0.016 % + 8 µV	
	(20 to 50) kHz	0.035 % + 8 µV	
	(50 to 100) kHz	0.080 % + 32 µV	
	(100 to 500) kHz	0.20 % + 70 µV	
(33 to 329.999) mV	(10 to 45) Hz	0.030 % + 50 µV	
	(0.045 to 10) kHz	0.015 % + 60 µV	
	(10 to 20) kHz	0.019 % + 60 µV	
	(20 to 50) kHz	0.030 % + 50 µV	
	(50 to 100) kHz	0.070 % + 130 µV	

Parameter/Range	Frequency	CMC[2, 7] (±)	Comments
AC Volts – Generate[4] (cont)			
(0.33 to 3.299 99) V	(10 to 45) Hz (0.045 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.030 % + 0.65 mV 0.015 % + 0.60 mV 0.024 % + 0.60 mV 0.035 % + 0.60 mV 0.090 % + 1.6 mV	Fluke 5522A
(3.3 to 32.9999) V	(10 to 45) Hz (45 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.030 % + 0.65 mV 0.015 % + 0.60 mV 0.024 % + 0.60 mV 0.035 % + 0.60 mV 0.090 % + 1.6 mV	
(33 to 329.999)	(45 to 1000) Hz (1 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.019 % + 2.0 mV 0.020 % + 6.0 mV 0.025 % + 6.0 mV 0.030 % + 6.0 mV 0.20 % + 50 mV	
(300 to 1020) V	(45 to 1000) Hz (1 to 5) kHz (5 to 10) kHz	0.030 % + 10 mV 0.025 % + 10 mV 0.030 % + 10 mV	
AC Volts – Measure[4]			
(0 to 100) mV	(3 to 5) Hz (5 to 10) Hz (0.01 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	1.0 % + 0.04 mV 0.35 % + 0.04 mV 0.06 % + 0.04 mV 0.12 % + 0.05 mV 0.6 % + 0.08 mV 4.0 % + 0.05 mV	Fluke 8846A
(0.1 to 1) V	(3 to 5) Hz (5 to 10) Hz (0.01 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	1.0 % + 0.0003 V 0.35 % + 0.0003 V 0.06 % + 0.0003 V 0.12 % + 0.0005 V 0.60 % + 0.0008 V 4.0 % + 0.005 V	

Parameter/Range	Frequency	CMC[2, 7] (±)	Comments
AC Volts – Measure[4] (cont)			
(1 to 10) V	(3 to 5) Hz (5 to 10) Hz (0.01 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	1.0 % + 0.003 V 0.35 % + 0.003 V 0.06 % + 0.003 V 0.12 % + 0.005 V 0.60 % + 0.008 V 4.0 % + 0.05 V	Fluke 8846A
(10 to 100) V	(3 to 5) Hz (5 to 10) Hz (0.01 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	1.0 % + 0.03 V 0.35 % + 0.03 V 0.06 % + 0.03 V 0.12 % + 0.05 V 0.60 % + 0.08 V 4.0 % + 0.5 V	
(100 to 1000) V	(3 to 5) Hz (5 to 10) Hz (0.01 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	1.0 % + 0.23 V 0.35 % + 0.23 V 0.06 % + 0.23 V 0.12 % + 0.38 V 0.6 % + 0.6 V 4.0 % + 3.8 V	

Parameter/Equipment	Range	CMC[2, 7] (±)	Comments
DC Voltage – Generate[4]	(0 to 329.9999) mV (0.329 to 3.299 999) V (3.29 to 32.999 99) V (32.9 to 329.9999) V (329 to 1020.000) V	0.0023 % + 2.0 µV 0.0013 % + 3.5 µV 0.0014 % + 35 µV 0.0021 % + 250 µV 0.0021 % + 1.8 mV	Fluke 5522A
DC Volts – Measure[4]	(0 to 100) mV (0.001 to 1) V (1 to 10) V (10 to 100) V (100 to 1000) V	0.0037 % + 0.0035 mV 0.0025 % + 0.000 007 V 0.0024 % + 0.000 05 V 0.0038 % + 0.0006 V 0.0041 % + 0.01 V	Fluke 8846A

Parameter/Equipment	Range	CMC[2, 7] (±)	Comments
Resistance – Generate[4]	(0 to 10.9999) Ω (11 to 32.9999) Ω (33 to 109.9999) Ω (110 to 329.9999) Ω (0.33 to 1.099 999) kΩ (1.1 to 3.299 999) kΩ (3.3 to 10.999 99) kΩ (11 to 32.999 99) kΩ (33 to 109.9999) kΩ (110 to 329.999 99) kΩ (0.33 to 1.099 999) MΩ (1.1 to 3.299 99) MΩ (3.3 to 10.999 99) MΩ (11 to 32.999 99) MΩ (33 to 109.9999) MΩ (110 to 329.9999) MΩ (330 to 1100) MΩ	0.0040 % + 0.01 Ω 0.0030 % + 0.015 Ω 0.0028 % + 0.015 Ω 0.0028 % + 0.02 Ω 0.0028 % + 0.02 Ω 0.0028 % + 0.20 Ω 0.0028 % + 0.1 Ω 0.0028 % + 1.0 Ω 0.0028 % + 1.0 Ω 0.0032 % + 10 Ω 0.0032 % + 10 Ω 0.0060 % + 150 Ω 0.013 % + 250 Ω 0.025 % + 2.5 kΩ 0.050 % + 3.0 kΩ 0.30 % + 100 kΩ 1.5 % + 500 kΩ	Fluke 5522A
Resistance – Measure[4]	(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	0.01 % + 0.003 Ω 0.01 % + 0.004 Ω 0.01 % + 0.000 01 kΩ 0.01 % + 0.0001 kΩ 0.01 % + 0.001 kΩ 0.01 % + 0.000 01 MΩ 0.04 % + 0.0001 MΩ 0.8 % + 0.01 MΩ 2.0 % + 0.0001 GΩ	Fluke 8846A

Parameter/Range	Frequency	CMC[2, 7] (±)	Comments
AC Current – Generate[4] (29.00 to 329.99) µA	(10 to 20) Hz (20 to 45) Hz (0.045 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 % + 0.10 µA 0.30 % + 0.15 µA 0.80 % + 0.20 µA 1.6 % + 0.40 µA	Fluke 5522A

Parameter/Range	Frequency	CMC[2, 7] (±)	Comments
AC Current – Generate[4] (cont)			
(0.33 to 3.299 99) mA	(10 to 20) Hz (20 to 45) Hz (0.045 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	Fluke 5522A
(3.3 to 32.9999) mA	(10 to 20) Hz (20 to 45) Hz (0.045 to 1) kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.16 % + 2.0 µA 0.09 % + 2.0 µA 0.04 % + 2.0 µA 0.08 % + 2.0 µA 0.20 % + 3.0 µA 0.40 % + 4.0 µA	
(33 to 329.999) mA	(10 to 20) Hz (20 to 45) Hz (0.045 to 1) kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.10 % + 20 µA 0.090 % + 20 µA 0.040 % + 20 µA 0.10 % + 50 µA 0.20 % + 100 µA 0.40 % + 200 µA	
(0.33 o 1.099 99) A	(10 to 45) Hz (0.045 to 1) kHz (1 to 5) kHz (5 to 10) kHz	0.18 % + 0.10 mA 0.050 % + 0.10 mA 0.60 % + 1.0 mA 2.5 % + 5.0 mA	
(1.1 to 2.999 99) A	(10 to 45) Hz (0.045 to 1) kHz (1 to 5) kHz (5 to 10) kHz	0.18 % + 0.10 mA 0.060 % + 0.10 mA 0.60 % + 1.0 mA 2.5 % + 5.0 mA	
(3 to 10.9999) A	(45 to 100) Hz (0.1 to 1) kHz (1 to 5) kHz	0.060 % + 2.0 mA 0.10 % + 2.0 mA 3.0 % + 2.0 mA	
(11 to 20.5) A	(45 to 100) Hz (0.1 to 1) kHz (1 to 5) kHz	0.12 % + 5.0 mA 0.15 % + 5.0 mA 3.0 % + 5.0 mA	

Parameter/Range	Frequency	CMC[2, 7] (±)	Comments
AC Current – Measure[4]			
(0 to 100) µA	(3 to 5) Hz (5 to 10) Hz (0.01 to 5) kHz (5 to 10) kHz	1.0 % + 0.06 µA 0.35 % + 0.06 µA 0.15 % + 0.06 µA 0.35 % + 0.70 µA	Fluke 8846A
(0.1 to 1) mA	(3 to 5) Hz (5 to 10) Hz (0.01 to 5) kHz (5 to 10) kHz	1.0 % + 0.0004 mA 0.3 % + 0.0004 mA 0.1 % + 0.0004 mA 0.2 % + 0.0025 mA	
(1 to 10) mA	(3 to 5) Hz (5 to 10) Hz (0.01 to 5) kHz (5 to 10) kHz	1.1 % + 0.006 mA 0.35 % + 0.006 mA 0.15 % + 0.006 mA 0.35 % + 0.07 mA	
(10 to 100) mA	(3 to 5) Hz (5 to 10) Hz (0.01 to 5) kHz (5 to 10) kHz	1.0 % + 0.04 mA 0.3 % + 0.4 mA 0.1 % + 0.4 mA 0.2 % + 0.25 mA	
(100 to 400) mA	(3 to 5) Hz (5 to 10) Hz (0.01 to 5) kHz (5 to 10) kHz	1.0 % + 0.4 mA 0.3 % + 0.4 mA 0.1 % + 0.4 mA 0.2 % + 2.8 mA	
(0.4 to 1) A	(3 to 5) Hz (5 to 10) Hz (0.01 to 5) kHz (5 to 10) kHz	1.0 % + 0.0004 A 0.3 % + 0.0004 A 0.1 % + 0.0004 A 0.35 % + 0.007 A	
(1 to 3) A	(3 to 5) Hz (5 to 10) Hz (0.01 to 5) kHz (5 to 10) kHz	1.1 % + 0.0018 A 0.35 % + 0.0018 A 0.15 % + 0.0018 A 0.35 % + 0.021 A	
(3 to 10) A	(3 to 5) Hz (5 to 10) Hz (0.01 to 5) kHz (5 to 10) kHz	1.1 % + 0.006 A 0.35 % + 0.006 A 0.15 % + 0.006 A 0.35 % 0.07 A	

Parameter/Equipment	Range	CMC[2, 7] (±)	Comments
DC Current – Generate[4]	(0 to 329.999) µA (0.3 to 3.299 99) mA (3.3 to 32.9999) mA (33 to 329.999) mA (0.3 to 1.099 99) A (1.1 to 2.999 99) A (3 to 10.9999) A (11 to 20.5) A	0.015 % + 0.020 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 % + 500 µA 0.10 % + 750 µA	Fluke 5522A
DC Current – Measure[4]	(0 to 100) µA (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (100 to 400) mA (0.4 to 1) A (1 to 3) A (3 to 10) A	0.05 % + 0.025 µA 0.05 % + 0.000 05 mA 0.05 % + 0.002 mA 0.05 % + 0.005 mA 0.05 % + 0.02 mA 0.05 % + 0.0002 A 0.1 % + 0.0006 A 0.15 % + 0.0008 A	Fluke 8846A
Capacitance – Generate[4]	(220 to 339.9) pF (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 (33 to 110) mF	0.50 % + 10 pF 0.50 % + 0.01 nF 0.50 % + 0.01 nF 0.25 % + 0.01 nF 0.25 % + 0.01 nF 0.25 % + 0.01 nF 0.25 % + 0.03 nF 0.25 % + 1.0 nF 0.25 % + 3.0 nF 0.25 % + 10 nF 0.40 % + 30 nF 0.45 % + 100 nF 0.45 % + 300 nF 0.45 % + 1.0 µF 0.45 % + 3.0 µF 0.45 % + 10 µF 0.75 % + 30 µF 1.1 % + 100 µF	Fluke 5522A

Parameter/Equipment	Range	CMC[2, 7] (±)	Comments
Capacitance – Measure[4]	(0 to 1) nF (1 to 10) nF (10 to 100) nF (0.1 to 1) µF (1 to 10) µF (10 to 100) µF (0.1 to 1) mF (1 to 10) mF (10 to 100) mF	2.0 % + 0.025 nF 1.0 % + 0.05 nF 1.0 % + 0.5 nF 1.0 % + 0.005 µF 1.0 % + 0.05 µF 1.0 % + 0.5 µF 1.0 % + 0.005 mF 1.0 % + 0.05 mF 4.0 % + 0.2 mF	Fluke 8846A
Thermocouple – Generate			
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	Fluke 5522A
Type J	(-210 to -100) °C (-100 to -30) °C (-30 to 150) °C (150 to 750) °C (760 to 1200) °C	0.27 °C 0.16 °C 0.14 °C 0.17 °C 0.23 °C	
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	
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 1000) °C (1000 to 1400) °C (1400 to 1767) °C (120 to 400) °C	0.47 °C 0.36 °C 0.37 °C 0.46 °C 0.14 °C	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Thermocouple – Generate (cont)			
Type T	(-250 to -150) °C (-150 to 0) °C (0 to 120) °C (120 to 400) °C	0.63 °C 0.37 °C 0.16 °C 0.14 °C	Fluke 5522A
RTD – Generate			
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 640) °C (640 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 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 640) °C	0.050 °C 0.050 °C 0.070 °C 0.090 °C 0.10 °C 0.12 °C	
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	
Pt 3985 – 200 Ω	(-200 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	0.040 °C 0.040 °C 0.040 °C 0.050 °C 0.12 °C 0.13 °C 0.14 °C 0.16 °C	

III. Mechanical

Parameter/Equipment	Range	CMC[2] (±)	Comments
Mass –			
Fixed Points	1 mg	0.0020 mg	CMC relates to calibration of integral conventional standard weights
	2 mg	0.0020 mg	
	3 mg	0.0020 mg	
	5 mg	0.0020 mg	
	10 mg	0.0020 mg	
	20 mg	0.0020 mg	
	30 mg	0.0020 mg	
	50 mg	0.0020 mg	
	100 mg	0.0020 mg	
	200 mg	0.0020 mg	
	300 mg	0.0030 mg	
	500 mg	0.0040 mg	
	1 g	0.0068 mg	
	2 g	0.0068 mg	
	3 g	0.008 mg	
	5 g	0.010 mg	
	10 g	0.017 mg	
	20 g	0.033 mg	
	30 g	0.050 mg	
	50 g	0.040 mg	
	100 g	0.080 mg	
	200 g	0.10 mg	
	300 g	0.15 mg	
	500 g	0.24 mg	
	1 kg	0.5 mg	
	2 kg	1.0 mg	
	3 kg	1.5 mg	
	5 kg	2.4 mg	
	10 kg	9.6 mg	
	20 kg	20 mg	
	25 kg	30 mg	
	585 g	0.050 mg	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Mass (cont)	(1 to 200) mg (>200 to 300) mg (>300 to 500) mg >500 mg to 2 g (>2 to 3) g (>3 to 5) g (>5 to 10) g (>10 to 20) g (>20 to 30) g (>30 to 50) g (>50 to 100) g (>100 to 200) g (>200 to 300) g (>300 to 500) g >500 g to 1 kg (>1 to 2) kg (>2 to 3) kg (>3 to 5) kg (>5 to 10) kg (>10 to 20) kg (>20 to 25) kg	0.0020 mg 0.0030 mg 0.0040 mg 0.0068 mg 0.0080 mg 0.010 mg 0.017 mg 0.033 mg 0.050 mg 0.040 mg 0.080 mg 0.10 mg 0.15 mg 0.24 mg 0.50 mg 1.0 mg 1.5 mg 2.4 mg 9.6 mg 20 mg 30 mg	CMC relates to calibration of integral conventional standard weights
Balances (Electronic, Non-automatic)[3]	Up to 200 mg (>200 to 500) mg >500 mg to 2 g (>2 to 5) g (>5 to 10) g (>10 to 20) g (>20 to 50) g (>50 to 100) g (>100 to 200) g (>200 to 500) g >500 g to 1 kg (>1 to 2) kg (>2 to 5) kg (>5 to 10) kg (>10 to 30) kg	0.0025 mg 0.0045 mg 0.0070 mg 0.015 mg 0.020 mg 0.035 mg 0.075 mg 0.15 mg 0.20 mg 0.60 mg 3.0 mg 5.0 mg 10 mg 30 mg 270 mg	Class 1 weights
Centrifuges[3]	(1000 to 15 000) rpm (>15 000 to 80 000) rpm	10 rpm 43 rpm	Optical tachometer

Parameter/Equipment	Range	CMC[2] (±)	Comments
Piston Pipettes & Syringes	(0.2 to 10) µL (>10 to 20) µL (>20 to 50) µL (>50 to 100) µL (>100 to 200) µL (>200 to 500) µL (>500 to 1000) µL (>1000 to 5000) µL (>5000 to 10 000) µL	0.019 µL 0.022 µL 0.074 µL 0.20 µL 0.23 µL 0.56 µL 0.68 µL 5.5 µL 6.8 µL	Gravimetric Method
Piston Pipettes & Syringes[3]	(10 to 20) µL (>20 to 50) µL (>50 to 100) µL (>100 to 200) µL (>200 to 500) µL (>500 to 1000) µL (>1000 to 5000) µL (>5000 to 10 000) µL	0.022 µL 0.074 µL 0.20 µL 0.23 µL 0.56 µL 0.68 µL 5.5 µL 6.8 µL	Gravimetric method

IV. Optical Quantities

Parameter/Equipment	Range	CMC[2] (±)	Comments
Spectrophotometers –			
Absorbance[3]:			
Calibration at the Following Wavelengths in nm:			
440, 465, 546.1, 590, 635	0 to 1	0.006	Neutral density filters
240, 260, 280, 320	0 to 0.75 >0.75 to 1.5 >1.5 to 2.5	0.007 0.012 0.034	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Spectrophotometers – Wavelength Peak Position[3]	(279, 287, 360) nm (445, 453, 460) nm 536 nm	0.7 nm 0.7 nm 1.0 nm	Holmium oxide filters

V. Thermodynamics

Parameter/Equipment	Range	CMC[2, 6] (±)	Comments
Temperature – Measure[3]	(-80 to 105) °C (>105 to 150) °C (>150 to 200) °C (>200 to 250) °C (>250 to 300) °C (>300 to 350 °C (>350 to 450) °C (>450 to 1000) °C	0.13 °C 1 °C 2 °C 5 °C 7 °C 10 °C 12 °C 17 °C	Reference Thermometer
Thermocouple Thermometer System	-196 °C (-80 to 125) °C (125 to 400) °C (400 to 600) °C (600 to 1000) °C (1000 to 1200) °C	0.35 °C 0.21 °C 0.30 °C 0.90 °C 1.4 °C 2.3 °C	Liquid bath or dry block calibrator
Liquid-In-Glass Thermometers (Partial & Total Immersion)[3]	(-45 to 145) °C	0.020 °C	Liquid temperature bath
Platinum Resistance Thermometer System[3] Fixed Point	 -196 °C (-80 to 125) °C (>126 to 400) °C (>401 to 600) °C	 0.0073 °C 0.014 °C 0.15 °C 0.69 °C	 LN2 Cell w/SPRT Liquid bath or dry block calibrator
Thermistor Thermometer System[3]	(-10 to 105) °C	0.067 °C	Stirred liquid bath

Parameter/Equipment	Range	CMC[2, 6] (±)	Comments
Relative Humidity – Hygrometer Systems	(10 to 35) % RH (35 to 65) % RH (65 to 95) % RH 95 % RH	0.23 % RH 0.43 % RH 0.55 % RH 0.76 % RH	Rotronic Hygrogen H2-S
Relative Humidity – Measure	Up to 95 % RH	2.8 % RH	Reference hygrometer

VI. Time & Frequency

Parameter/Equipment	Range	CMC[2, 6] (±)	Comments
Frequency – Measure, Up to 1000 V	(3 to 5) Hz (5 to 10) Hz (10 to 40) Hz (0.04 to 300) kHz (0.3 to 1) MHz	0.1 % Hz 0.05 % Hz 0.03 % Hz 0.01 % kHz 0.01 % MHz	Fluke 8846A
Timers[3]	(1 to 24) hr	0.013 s/day	Timometer
Optical Tachometers	(0 to 1000) RPM (1000 to 10 000) RPM (10 000 to 25 000) RPM (25 000 to 100 000) RPM	0.15 RPM 0.20 RPM 0.65 RPM 1.5 RPM	Function generator & lamp

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

[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] Offices for administration of field technicians are located in 145 Renfrew Dr, Markham, Ontario, Canada;

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

[6] 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

[7] 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. CMC's 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.

Accredited Laboratory

A2LA has accredited

THERMO FISHER SCIENTIFIC operating as UNITY LAB SERVICES

Ottawa, CANADA

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 29TH day of April 2025.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 4946.01
Valid to April 30, 2027

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