



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
& ANSI/NCSL Z540.3:2006

A.COM ELECTRONIC MEASUREMENT TECHNOLOGIES INC.
1705 S. Main Street
Milpitas CA 95035
Moshe Applebourn Phone: 408 560 7057

CALIBRATION

Valid To: September 30, 2025

Certificate Number: 4041.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1,5}:

I. Dimensional

Parameter/Equipment	Range	CMC ² (±)	Comments
Digital Caliper ³ –			
External	Up to 500 mm	0.013 mm	Gage blocks and setting rods
Internal	Up to 150 mm	0.015 mm	Master rings
Depth	Up to 150 mm	0.013 mm	Step gauge
Digital Micrometer ³ –	Up to 75 mm	1.5 µm	Gage blocks
Parallelism	Up to 50 mm	0.7 µm	Optical parallels
Dial Indicators ³	Up to 20 µm (>20 to 40) µm (>40 to 60) µm (>60 to 80) µm (>80 to 140) µm (>140 to 180) µm (>180 to 200) µm (>0.2 to 10) mm	0.49 µm 0.30 µm 0.35 µm 0.40 µm 0.45 µm 0.55 µm 0.65 µm 1.7 µm	Gage blocks

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2, 4} (±)	Comments
DC Voltage – Generate ³			
Fixed Points	0 mV 100 mV 1 V 10 V 100 V 1 kV	0.85 µV 1.8 µV 8.9 µV 60 µV 0.86 mV 32 mV	Fluke 5700A
Ranged	(0 to 100) mV 100 mV to 1 V (>1 to 10) V (>10 to 100) V >100 V to 1 kV	1.8 µV 8.9 µV 60 µV 0.86 mV 32 mV	
DC Current – Generate ³			
Fixed Points	10 µA 100 µA 1 mA 10 mA 100 mA 1 A	0.9 nA 7.9 nA 72 nA 0.36 µA 4.0 µA 74 µA	Fluke 5700A
Ranged	(0 to 10) µA (10 to 100) µA 100 µA to 1 mA (>1 to 10) mA (>10 to 100) mA >100 mA to 1 A (1 to 20) A (20 to 300) A (>300 to 500) A	0.9 nA 7.9 nA 91 nA 0.72 µA 8.3 µA 0.14 mA 2.7 mA 0.089 A 0.58 A	Fluke 5700A Fluke 5502A and coils

Parameter/Range	Frequency	CMC ^{2, 4} (±)	Comments
AC Voltage – Generate ³			
Up to 10 mV	40 Hz 1 kHz 20 kHz 100 kHz	9.1 µV 8.9 µV 9.0 µV 12 µV	Fluke 5700A
100 mV	40 Hz 1 kHz 20 kHz 100 kHz 300 kHz	17 µV 16 µV 21 µV 43 µV 110 µV	
1 V	40 Hz 1 kHz 20 kHz 100 kHz	0.1 mV 77 µV 0.14 mV 0.34 mV	
10 V	40 Hz 1 kHz 20 kHz 100 kHz	0.65 mV 0.57 mV 1.2 mV 3.0 mV	
100 V	40 Hz 1 kHz 20 kHz 100 kHz	7.5 mV 7.3 mV 11 mV 83 mV	
1 kV	50 Hz 1 kHz	0.19 V 0.17 V	
(2 to 10) mV	40 Hz to 20 kHz (20 to 100) kHz	9.0 µV 12 µV	
(10 to 100) mV	40 Hz to 1 kHz (>1 to 20) kHz (>20 to 100) kHz	0.028 mV 0.049 mV 0.12 mV	
>100 mV to 1 V	40 Hz to 20 kHz (>20 to 100) kHz	0.22 mV 0.48 mV	
(>1 to 10) V	40 Hz to 1 kHz (>1 to 20) kHz (>20 to 100) kHz	2.1 mV 1.0 mV 4.3 mV	
(>10 to 100) V	40 Hz to 1 kHz (>1 to 20) kHz (>20 to 100) kHz	0.022 V 0.22 V 0.48 V	
>100 V to 1 kV	50 Hz to 1 kHz	0.21 V	

Parameter/Range	Frequency	CMC ^{2, 4} (±)	Comments
AC Current – Generate ³			
1 mA	1 kHz	0.24 µA	Fluke 5700A
10 mA	1 kHz	2.5 µA	
100 mA	1 kHz	24 µA	
1 A	1 kHz	0.48 mA	
(20 µ to 10) mA	1 kHz	0.24 µA	
(1 to 10) mA	1 kHz	3.1 µA	
(>10 to 100) mA	1 kHz	3.0 µA	
>100 mA to 1 A	1 kHz	0.87 mA	
(1 to 20) A	50 Hz	0.006 A	Fluke 5502A and coils
(20 to 100) A	50 Hz	0.069 A	
(>100 to 300) A	50 Hz	0.14 A	
(>300 to 500) A	50 Hz	0.59 A	

Parameter/Equipment	Range	CMC ^{2, 4} (±)	Comments
Resistance – Generate ³			
Fixed Points	10 Ω	0.87 mΩ	Fluke 5700A
	100 Ω	4.9 mΩ	
	1 kΩ	37 mΩ	
	10 kΩ	0.33 Ω	
	100 kΩ	3.9 Ω	
	1 MΩ	57 Ω	
	10 MΩ	1.3 kΩ	
Ranged	(0 to 19) Ω	0.0018 Ω	Fluke 5502A
	(>19 to 190) Ω	0.13 Ω	
	>190 Ω to 1.9 kΩ	0.7 Ω	
	(>1.9 to 19) kΩ	8.8 Ω	
	(>19 to 190) kΩ	130 Ω	
	>190 kΩ to 1.9 MΩ	0.7 kΩ	
	(>1.9 to 19) MΩ	8.8 kΩ	
	(>19 to 119) MΩ	65 kΩ	
	(>119 to 400) MΩ	0.16 MΩ	
	(>400 to 640) MΩ	0.45 MΩ	
	(>640 to 1090) MΩ	1.2 MΩ	

Parameter/Equipment	Range	CMC ^{2, 4} (±)	Comments
Capacitance – Generate ³	400 pF to 20 nF (>20 to 100) nF (>100 to 300) nF >300 nF to 3 µF (>3 to 30) µF (>30 to 300) µF (>300 to 500) µF (>500 to 1000) µF	14 pF 0.065 nF 0.82 nF 6.0 nF 0.065 µF 0.72 µF 5.7 µF 20 µF	Fluke 5502A
DC Voltage – Measure ³	Fixed Points 100 mV 1 V 10 V 100 V 1 kV Ranged 0 V to 100 mV 100 mV to 1 V (>1 to 10) V (>10 to 100) V >100 V to 1 kV (1 to 10) kV (>10 to 17) kV (>17 to 25) kV	1.9 µV 20 µV 0.16 mV 0.59 mV 7.1 mV 1.9 µV 19 µV 0.16 mV 0.67 mV 7.6 mV 9 V 9.6 V 41 V	HP 3458A Fluke 187 DMM and 80K-40i high voltage probe
DC Current – Measure ³	Fixed Points 100 µA 1 mA 10 mA 100 mA 1 A Ranged 100 µA to 1 mA (>1 to 10) mA (>10 to 100) mA >100 mA to 1 A (1 to 10) A (10 to 100) A (100 to 300) A (300 to 500) A	11 nA 14 nA 0.52 µA 3.2 µA 64 µA 21 nA 0.4 µA 4.6 µA 0.14 mA 1 mA 10 mA 0.17 A 0.59 A	HP 3458A Fluke 8845A, Fluke 337

Parameter/Range	Frequency	CMC ^{2, 4} (±)	Comments
AC Voltage – Measure ³			
10 mV	40 Hz 1 kHz 20 kHz 100 kHz	0.14 mV 22 µV 11 µV 41 µV	HP 3458A
100 mV	40 Hz 1 kHz 20 kHz 100 kHz 300 kHz	19 µV 12 µV 23 µV 15 µV 15 µV	
1 V	40 Hz 1 kHz 20 kHz 100 kHz	90 µV 88 µV 0.17 mV 0.14 mV	
10 V	40 Hz 1 kHz 20 kHz 100 kHz	8.4 mV 0.69 mV 1.5 mV 1.3 mV	
100 V	40 Hz 1 kHz 20 kHz 100 kHz	8.8 mV 7.9 mV 0.44 V 0.013 V	
10 mV to 100 mV	40 Hz to 20 kHz (>20 to 100) kHz	0.071 mV 0.096 mV	
>100 mV to 1 V	40 Hz to 20 kHz (>20 to 100) kHz	0.24 mV 0.96 mV	
(>1 to 10) V	40 Hz to 20 kHz (20 to 100) kHz	2.9 mV 9.7 mV	
(>10 to 100) V	40 Hz to 1 kHz (>1 to 100) kHz	0.03 V 0.36 V	
(1 to 6) kV (>6 to 10) kV	60 Hz 60 Hz	8.1 V 21 V	
			Fluke 187 DMM and 80K-40 high voltage probe

Parameter/Range	Frequency	CMC ^{2, 4} (±)	Comments
AC Current – Measure ³			
1 mA	45 Hz to 5 kHz	0.3 µA	HP 3458A
10 mA	45 Hz to 5 kHz	0.37 µA	
100 mA	45 Hz to 5 kHz	30 µA	
1 A	45 Hz to 5 kHz	0.44 mA	
100 µA to 1 mA	45 Hz to 5 kHz	0.3 µA	
(1 to 10) mA	45 Hz to 5 kHz	20 µA	
(>10 to 100) mA	45 Hz to 5 kHz	0.2 mA	
>100 mA to 1 A	45 Hz to 5 kHz	2.1 mA	
(1 to 10) A	45 Hz to 5 kHz	6.5 mA	Fluke 8845A Fluke 337
(10 to 100) A	50 Hz	0.12 A	
(100 to 300) A	50 Hz	0.29 A	
(300 to 500) A	50 Hz	0.59 A	

Parameter/Equipment	Range	CMC ^{2, 4} (±)	Comments
Resistance – Measure ³			
	10 Ω	0.27 mΩ	HP 3458A
	100 Ω	1.3 mΩ	
	1 kΩ	9.2 mΩ	
	10 kΩ	0.19 Ω	
	100 kΩ	7.1 Ω	
	1 MΩ	25 Ω	
	10 MΩ	0.68 kΩ	

III. Electrical – RF/Microwave

Parameter/Range	Frequency	CMC ^{2, 6} (±)	Comments	
RF Power – Measure ³				
(-30 to +10) dBm	100 kHz to 13 GHz	0.10 dB	HP- EPM441 HP-8487A HP-8482A HP-ECP-E26A	
	13 GHz to 40 GHz	0.19 dB		
(-70 to -30) dBm	50 MHz to 26.5 GHz	0.15 dB		

IV. Mechanical

Parameter/Equipment	Range	CMC ² ($\pm$)	Comments
Torque Wrenches ³	Up to 28 N·cm 28 N·cm to 1 N·m (>1 to 20) N·m (>20 to 40) N·m (>40 to 200) N·m (>200 to 475) N·m	0.11 N·cm 0.45 N·cm 0.10 N·m 0.14 N·m 0.25 N·m 1.2 N·m	Torque testers
Scales & Balances ³	Up to 100 g (>100 to 200) g (>200 to 500) g >500 g to 10 kg (>10 to 50) kg (>50 to 150) kg (>150 to 500) kg	0.6 mg 0.95 mg 1.3 mg 90 mg 6 g 8 g 60 g	OIML Class F1, F2 and M2 weights
Pressure Gauge ³	-0.8 bar to 0 bar (0 to 20) bar (20 to 87.5) bar (>87.5 to 350) bar (>350 to 700) bar	0.022 bar 0.0075 bar 0.12 bar 0.27 bar 0.44 bar	Ashcroft - DG25 Fluke 700-RG31, Fluke 700 H-TP2

V. Optical Quantities

Parameter/Equipment	Range	CMC ^{2, 6} ($\pm$)	Comments
Optical Power ³ –			
850 nm Wavelength	Up to 700 μ W	21 μ W	Optical power meter EXFO: model PM 1100
1310 nm Wavelength	Up to 10 μ W (>10 to 100) μ W (>100 to 1000) μ W	0.38 μ W 0.79 μ W 2.1 μ W	
1550 nm Wavelength	Up to 10 μ W (>10 to 100) μ W (>100 to 1000) μ W	0.38 μ W 0.58 μ W 7.3 μ W	

VI. Thermodynamics

Parameter/Equipment	Range	CMC ^{2, 6} (±)	Comments
Temperature – Measuring Equipment ³	-80 °C to -0 °C >0 °C to 40 °C >40 °C to 600 °C	0.09 °C 0.1 °C 0.14 °C	Fluke 1523, 5628, temperature baths
Temperature – Measure ³	-80 °C to -0 °C >0 °C to 40 °C >40 °C to 600 °C	0.09 °C 0.1 °C 0.14 °C	Fluke 1523, 5628
Humidity – Measuring Equipment ³	10 to 95 % RH	1.1 % RH	Thomas Scientific 1235C76

VII. Time & Frequency

Parameter/Equipment	Range	CMC ^{2, 6} (±)	Comments
Frequency – Measure and Measuring Equipment ³	10 mHz to 10 Hz 10 Hz to 100 Hz >100 Hz to 1 GHz (1 to 22) GHz (>22 to 40) GHz 10 MHz	0.4 nHz 6 parts in 10 ⁷ 2.3 parts in 10 ¹⁰ 2.5 parts in 10 ¹⁰ 2.3 parts in 10 ¹⁰ 21 pHz/Hz	HP 58503A GPS receiver HP 58503A GPS receiver

¹ This laboratory offers commercial 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. CMC's 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 and this laboratory. 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 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 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.
- 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.



Accredited Laboratory

A2LA has accredited

A.COM ELECTRONIC MEASUREMENT TECHNOLOGIES INC.

Milpitas, CA

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/NCSL 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 25th day of May 2023.

A blue ink signature of Mr. Trace McInturff, written over a horizontal line.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 4041.02
Valid to September 30, 2025

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