



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION

Valid To: August 31, 2026

Certificate Number: 2789.02

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^{1,5}:

I. Electrical – DC / Low Frequency

Parameter/Range	Frequency	CMC ^{2,6,7} (±)	Comments
AC Voltage – Measure			
(1 to 100) mV 100 mV to 1 V (1 to 750) V	10 Hz to 20 kHz	0.14 % + 0.02 mV 0.09 % + 0.2 mV 0.064 % + 0.04 V	Keysight 34465A direct read
(10 to 30) V (30 to 100) V (100 to 300) V (300 to 1000) V	(40 to 1000) Hz	0.17 % + 0.03 V 0.09 % + 0.1 V 0.08 % + 0.3 V 0.01 % + 1 V	N4L PPA530 direct read
(10 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V	(40 to 1000) Hz	0.01 % + 2.0 µV 0.018 % + 20 µV 0.018 % + 0.2 mV 0.024 % + 2.0 mV	HP 3458A direct read for wideband leakage
(10 to 100) mV 100 mV to 1 V (1 to 10) V	(1 to 20) kHz	0.018 % + 2.0 µV 0.018 % + 20 µV 0.018 % + 0.2 mV	
(10 to 100) mV 100 mV to 1 V (1 to 10) V	(20 to 50) kHz	0.036 % + 2.0 µV 0.037 % + 20 µV 0.037 % + 0.2 mV	

Parameter/Range	Frequency	CMC ^{2, 6, 7} (\pm)	Comments
AC Voltage – Measure (cont)			
(10 to 100) mV 100 mV to 1 V (1 to 10) V	(50 to 100) kHz	0.093 % + 2.0 μ V 0.093 % + 20 μ V 0.093 % + 0.2 mV	HP 3458A direct read for wideband leakage
(10 to 100) mV 100 mV to 1 V (1 to 10) V	(100 to 300) kHz	0.34 % + 10 μ V 0.35 % + 0.1 mV 0.35 % + 1 mV	
(10 to 100) mV 100 mV to 1 V (1 to 10) V	300 kHz to 1 MHz	1.2 % + 10 μ V 1.2 % + 0.1 mV 1.2 % + 1.0 mV	
AC High Voltage – Measure			
(1 to 2) kV (2 to 19.5) kV	(50, 60) Hz (50, 60) Hz	0.58 % + 0.4 V 0.56 % + 20 V	Keysight 34465A & HV Dividers
AC Current – Measure			
10 to 100 μ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA	(45 to 1000) Hz (45 to 5000) Hz (45 to 5000) Hz (45 to 5000) Hz	0.11 % 0.12 % 0.094 % 0.14 %	HP 3458A
(0.1 to 1) mA (1 to 10) mA	(5 to 20) kHz (5 to 20) kHz	0.099 % 0.077 %	
(0.1 to 1) mA (1 to 10) mA	(20 to 50) kHz (20 to 50) kHz	0.51 % 0.29 %	
(0.1 to 1) mA (1 to 10) mA	(50 to 100) kHz (50 to 100) kHz	0.82 % 0.56 %	
(30 to 300) mA	(50 to 60) Hz	0.6 % + 0.3 mA	Gossen 249A
(0 to 300) μ A (0.3 to 20) mA (20 to 100) mA	(65 to 800) Hz (65 to 800) Hz (65 to 800) Hz	0.6 % + 0.03 μ A 0.59 % + 3 μ A 2.7 % + 0.3 mA	Gossen 249A

Parameter/Range	Frequency	CMC ^{2,6,7} (±)	Comments
AC Current – Measure (cont)			
(0.3 to 1) A	(50, 60) Hz	0.24 % + 1 mA	Line test with N4L PPA530 direct read
(1 to 3) A	(50, 60) Hz	0.17 % + 3 mA	
(3 to 10) A	(50, 60) Hz	0.09 % + 10 mA	
(10 to 20) A	(50, 60) Hz	0.2 % + 20 mA	
(20 to 60) A	(50, 60) Hz	110 mA	N4L PPA530 with Voltech CT1000 Current Transformer
(1 to 60) A	(50, 60) Hz	0.13 A	Ground bond test with Keysight 34465A & Reidon 100 A Shunt

Parameter/Equipment	Range	CMC ^{2,6,7} (±)	Comments
DC Voltage – Measure	(1 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1000) V	0.025 % + 3.5 μV 0.026 % + 4 μV 0.096 % + 40 μV 0.043 % + 600 μV 0.02 % + 60 mV	Keysight 34465A direct read
	(10 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V	0.0015 % 0.0011 % 0.0011 % 0.0013 %	HP 3458A direct read for DC line leakage test
DC High Voltage – Measure	(1 to 6) kV (6 to 19.5) kV	0.012 kV 0.049 kV	Keysight 34465A & HV Dividers
DC Current – Measure	Up to 100 nA (0.1 to 1) μA (1 to 10) μA	0.17 mA/A + 0.04 nA 55 μA/A + 0.04 nA 56 μA/A + 0.1 nA	HP 3458A

Parameter/Equipment	Range	CMC ^{2,6,7} (\pm)	Comments
DC Current – Measure (cont)	(10 to 100) μ A (0.1 to 1) mA (1 to 10) mA (10 to 100) mA (30 to 300) mA (1 to 40) A	33 μ A/A + 0.8 nA 48 μ A/A + 5.0 nA 0.25 mA/A + 50 nA 0.031 % + 0.5 μ A 0.072 % + 35 μ A 0.3 %	HP 3458A Gossen 249A Ground bond test with HP 3458A & Reidon 100 A Shunt
Resistance – Generate	(10 to 600) m Ω (0.01 to 0.1) Ω (0.1 to 100) Ω (100 to 1000) Ω (1 to 10) k Ω (10 to 100) k Ω 100 k Ω to 1 M Ω (1 to 10) M Ω (10 to 1000) M Ω	0.12 % 3.0 % + 15 m Ω 0.31 % + 15 m Ω 0.12 % + 15 m Ω 0.10 % 0.12 % 0.12 % 0.12 % 1.2 %	Custom load fixture Decade Resistance Box Decade Resistance Box Custom built resistance load fixture
Resistance – Measure	(0.010 to 10) Ω (10 to 100) Ω (100 to 1000) Ω (1 to 10) k Ω (10 to 100) k Ω (100 to 1000) k Ω (1 to 10) M Ω (10 to 100) M Ω	64 $\mu\Omega/\Omega$ + 50 $\mu\Omega$ 14 $\mu\Omega/\Omega$ + 0.5 m Ω 18 $\mu\Omega/\Omega$ + 0.5 m Ω 18 $\mu\Omega/\Omega$ + 5.0 m Ω 19 $\mu\Omega/\Omega$ + 50 m Ω 78 $\mu\Omega/\Omega$ + 2.0 Ω 0.018 % + 100 Ω 0.59 % + 1.0 k Ω	HP 3458A
Power ³ – Measure (10 to 4000) W Power Factor 0.250 0.700 1.000	(50, 60) Hz (50, 60) Hz	1.4 % 0.0026 0.0023 0.0023	N4L PPA530 Power factor is computed based on measured real power divided by apparent power. Pf = W/VA

II. Time & Frequency

Parameter/Equipment	Range	CMC ^{2, 4, 7} (\pm)	Comments
Frequency – Measure 100 mV to 750 V	20 Hz to 300 kHz	0.02 %	Keysight 34465A

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. 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 CMC is computed based on direct reading in W.

⁴ 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.

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

⁶ 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.

⁷ In the statement of CMC, percentages are percentage of reading, unless otherwise indicated.



Accredited Laboratory

A2LA has accredited

IKONIX ASIA SDN. BHD.

Selangor, MALAYSIA

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 21st day of August 2024.

A blue ink signature of Trace McInturff.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2789.02
Valid to August 31, 2026

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