



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

CARMEL-ENVIRONMENTAL TESTS LTD.
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CALIBRATION

Valid To: March 31, 2020

Certificate Number: 2881.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Dimensional

Parameter/Equipment	Range	CMC ² (±)	Comments
Micrometer	Up to 100 mm (100 to 500) mm	3.5 μm 6.0 μm	Gage blocks
Dial Indicator	Up to 50 mm	6.2 μm	Indicator calibrator and gage blocks
Calipers – Vernier	Up to 300 mm	48 μm	Gage blocks
Electronic	Up to 200 mm (200 to 1000) mm	31 μm 68 μm	Gage blocks

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
DC Voltage – Generate	(200 to 1000) V (20 to 200) V (2 to 20) V (0.2 to 2) V (0 to 200) mV	87 mV 15 mV 6.9 mV 1.1 mV 1.4 mV	Fluke 5100B
DC Current – Generate	(0.2 to 2) A (20 to 200) mA (2 to 20) mA (0.2 to 2) mA	0.23 mA 0.38 mA 0.32 mA 0.21 mA	Fluke 5100B
DC Voltage – Measure	Up to 100 mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1000) V	1.3 mV 0.24 mV 0.29 mV 6.0 mV 6.0 mV	6½ digit multi meter
DC Current – Measure	Up to 10 mA (10 to 100) mA (100 to 1000) mA (1000 to 3000) mA	0.92 mA 0.27 mA 3.8 mA 56 mA	6½ digit multi meter
Resistance – Generate, Fixed Points	1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ	2.0 mΩ 1.5 mΩ 2.2 mΩ 21 mΩ 0.18 Ω 1.9 Ω 120 Ω 3.6 kΩ	Fluke 5100B
Resistance – Measure, Fixed Points	Up to 100.0000 Ω 1000.000000 Ω 10.00000 kΩ 100.0000 kΩ 1.000000 MΩ 10.00000 MΩ 100.0000 MΩ	17 mΩ 0.13 Ω 1.3 Ω 13 Ω 130 Ω 4900 Ω 190 000 Ω	6½ digit multi meter

Parameter/Range	Frequency	CMC ^{2,4} (±)	Comments
AC Voltage – Generate (1 to 20) mV (20 to 200) mV (0.2 to 2) V (2 to 20) V (20 to 200) V (200 to 1000) V	 (10 to 50) kHz (10 to 50) kHz (10 to 50) kHz (10 to 50) kHz (10 to 50) kHz (10 to 50) kHz	 0.96 mV 0.96 mV 2.5 mV 11 mV 100 mV 0.50 V	 Fluke 5100B
AC Current – Generate (0.2 to 2) mA (2 to 20) mA (20 to 200) mA (0.2 to 1.9) A	 50 Hz to 1 kHz 50 Hz to 1 kHz 50 Hz to 1 kHz 50 Hz to 1 kHz	 2.5 mA 2.6 mA 24 mA 3.6 mA	 Fluke 5100B
AC Current – Measure Up to 1.0000 A (1.0 to 3.0) A	 1 kHz 1 kHz	 1.7 mA 6.0 mA	 6 ½ digit multi meter
AC Voltage – Measure 100.0000 mV 100.0000 mV 1.000000 V 1.000000 V 10.00000 V 10.00000 V 100.0000 V 100.0000 V 700.000 V 220.000 V	 1 kHz 50 kHz 1 kHz 50 kHz 1 kHz 50 kHz 1 kHz 50 kHz 1 kHz 50 kHz	 0.82 mV 1.3 mV 1.1 mV 7.9 mV 11 mV 79 mV 110 mV 200 mV 730 mV 1800 mV	 6½ digit multi meter



III. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Accelerometer	(5 to 4000) Hz	2.1 % of reading	Endevco 2270 primary comparison calibration standard
Mass	(1 to 600) g	0.025 % of reading	Measure with balance
Scales and Balances ³	(1 to 6000) g	0.016 % of reading	Class 1 weights
Pressure ³ –	(0 to 10) bar (10 to 100) bar (100 to 250) bar (250 to 1000) bar	0.10 bar 0.89 bar 1.9 bar 7.2 bar	DRUCK pressure calibrator
	(1 to 211) bar	1.9 bar	CRYSTAL nVision
	(211 to 700) bar	6.4 bar	
Low Pressure	(1200 to 10) mbar	1.8 mbar	VD85M
	(10 to 0.010) mbar	6.1 mbar	
Torque	(5 to 25) Nm (25 to 50) Nm (25 to 250) Nm	0.11 Nm 0.78 Nm 6.2 Nm	STAHLWILLE torque calibrator Torqueleader capture calibrator



IV. Thermodynamics

Parameter/Equipment	Range	CMC ² (±)	Comments
Environmental Chambers	(-50 to 80) °C (80 to 140) °C Up to 200 °C (10 to 95) % RH	1.4 °C 1.9 °C 1.9 °C 2.3 % RH	Data logger Hydra 2635a Measured through Rotronic HydroPalm
Temperature – Measure	(-40 to 140) °C	2.0 °C	Fluke Hydra 2635A
Thermocouple or Thermal Couple with Data Logger	(-40 to 140) °C	2.0 °C	Thermocouple calibration ISOTECH Europa-6 temperature calibrator

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 Field calibration service is available for this calibration and this laboratory meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. 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 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

CARMEL-ENVIRONMENTAL TESTS LTD.

Petach Tikva, ISRAEL

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *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 12th day of July 2018.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 2881.02
Valid to March 31, 2020

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