



World Class Accreditation

The American Association for Laboratory Accreditation

Accredited Laboratory

A2LA has accredited

GUILDLINE INSTRUMENTS LIMITED

Smiths Falls, Ontario, Canada

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 the requirements of ANSI/NCSL Z540-1-1994 and any additional program requirements in the field of calibration. 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 8 January 2009*).

Presented this 17th day of August 2009.





Peter Abney

President & CEO
For the Accreditation Council
Certificate Number 2906.01
Valid to October 31, 2011

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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

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CALIBRATION

Valid To: October 31, 2011

Certificate Number: 2906.01

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

I. Electrical – DC/Low Frequency

Parameter/Equipment	Range ³	Best Uncertainty ² (±)	Comments
DC Resistance – Generate and Measure, Decade Points	1 μΩ 10 μΩ 100 μΩ 1 mΩ 10 mΩ 100 mΩ	300 μΩ/Ω 100 μΩ/Ω 15 μΩ/Ω 5 μΩ/Ω 3 μΩ/Ω 0.5 μΩ/Ω	DC comparator bridge, high current range extender, Guildline 9975, 9923, 93301 Ω resistance standard, oil, air bath
	1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ 100 MΩ	0.32 μΩ/Ω 0.35 μΩ/Ω 0.4 μΩ/Ω 0.35 μΩ/Ω 0.32 μΩ/Ω 0.47 μΩ/Ω 4 μΩ/Ω 5 μΩ/Ω 18 μΩ/Ω 18 μΩ/Ω	DC comparator bridge, Guildline 6622, 6675A, 6634, 6634TS, 9334A, 9330, oil, air bath

Parameter/Equipment	Range ³	Best Uncertainty ^{2,4} (±)	Comments
DC Resistance (cont.) – Generate and Measure, Decade Points	1 GΩ 10 GΩ 100 GΩ 1 TΩ 10 TΩ 100 TΩ 1 PΩ 10 PΩ	30 μΩ/Ω 60 μΩ/Ω 0.012 % 0.018 % 0.024 % 0.05 % 10 mΩ/Ω 100 mΩ/Ω	Resistance substitution method, Guildline 6520 Teraohmeter, 9336, 9337, oil, air bath
DC Resistance – Measure; Decade Ranges	(1 to 10) μΩ (10 to 100) μΩ 100 μΩ to 1 mΩ (1 to 10) mΩ (10 to 100) mΩ 100 mΩ to 1 Ω (1 to 10) Ω (10 to 100) Ω 100 Ω to 1 kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ 100 MΩ to 1 GΩ 100 MΩ to 1 GΩ (1 to 10) GΩ (10 to 100) GΩ 100 GΩ to 1 TΩ (1 to 10) TΩ (10 to 100) TΩ 100 TΩ to 1 PΩ	0.03 % 0.1 % 16 μΩ/Ω 5.5 μΩ/Ω 3.5 μΩ/Ω 0.6 μΩ/Ω 0.35 μΩ/Ω 0.35 μΩ/Ω 0.42 μΩ/Ω 0.42 μΩ/Ω 0.5 μΩ/Ω 3.5 μΩ/Ω 5 μΩ/Ω 18 μΩ/Ω 30 μΩ/Ω 60 μΩ/Ω 0.012 % 0.018 % 0.024 % 0.05 % 0.15 % 20 mΩ/Ω	DC comparator bridge, high current range extender, Guildline 9975, 9923, 9330, G, oil, air bath DC comparator bridge, Guildline 6622, 6675A, 6634, 6634TS, 9334A, 9330, oil, air bath Guildline 6520 Teraohmeter, 9336, 9337, air bath
DC Current – Generate	100 fA to 1 pA (1 to 10) pA (10 to 100) pA 100 pA to 1 nA (1 to 10) nA (10 to 100) nA 100 nA to 1 μA (1 to 10) μA	15 mA/A 3 mA/A 1.5 mA/A 1.5 mA/A 1.5 mA/A 0.06 % 0.03 % 0.02 %	Guildline 9336, 9337, Fluke 5700A, air bath

Parameter/Equipment	Range	Best Uncertainty ^{2,4} (±)	Comments
DC Current – Generate	(10 to 100) μ A 100 μ A to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	0.015 % 0.01 % 0.01 % 0.015 % 0.03 %	Fluke 5700A
DC Current – Measure	100 fA to 1 pA (1 to 10) pA (10 to 100) pA 100 pA to 1 η A (1 to 10) η A (10 to 100) η A 100 η A to 1 μ A (1 to 10) μ A (10 to 100) μ A 100 μ A to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	60 mA/A 15 m/A 1.5 mA/A 0.04 % 0.04 % 0.03 % 0.03 % 0.03 % 0.015 % 0.01 % 0.01 % 0.015 % 0.03 %	Guildline 6520 Teraohmeter, Guildline 9336, 9337, Fluke 5700A, air bath Datum 1271 DMM, Fluke 5700A
DC Voltage – Generate & Measure	(10 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1000) V	90 μ V/V 20 μ V/V 15 μ V/V 20 μ V/V 20 μ V/V	Datron 1271 DMM, Fluke 5700A

¹ This laboratory offers commercial calibration service.

² “Best Uncertainty” 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 of nearly ideal measuring equipment. Best uncertainties represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The best uncertainty of a specific calibration performed by the laboratory may be greater than the best uncertainty due to the behavior of the customer’s device and to influences from the circumstances of the specific calibration.

³ Where ranges are not specified, the best measurement uncertainty stated is for the cardinal points only.

⁴ In the statement of best uncertainty, the value is defined as the percentage of reading.