The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

Q.C. SERVICES, INC.

Harrison, ME

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 16th day of March 2010.

President & CEO
For the Accreditation Council
Certificate Number 2398.01
Valid to February 29, 2012

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: February 29, 2012 Certificate Number: 2398.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations[1]:

I. Chemical

Parameter/Equipment	Range	CMC[2, 3] (±)	Comments
pH Meter	± 177.48 mVdc 0 mVdc	0.037 mV 0.0095 mV	Fluke 8842A

II. Dimensional

Parameter/Equipment	Range	CMC[2,5] (±)	Comments
Calipers	(0 to 30) in	370 µin + 10*L*	Caliper master/gage blocks/length standards
Dial Indicators	(0 to 4) in	16 µin	Gage blocks
Digital Indicators	(0 to 4) in	31 µin + 0.6*R*	Gage blocks

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Parameter/Equipment	Range	CMC[2,5] (±)	Comments
Optical Comparators – Measuring Scopes	(0 to 30) in	180 µin (4.8 microns)	Glass scale
Height Gages & Linear Scales	(0 to 40) in	44 µin + 14*L*	Gage blocks & length standards
Micrometers	(0 to 12) in	50 µin + 10*L*	Gage blocks & length standards

III. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
AC Voltage – Measure, 60 Hz only	(0 to 2) mV (0 to 200) mV (0 to 1) V (1 to 2) V (2 to 20) V (20 to 200) V (200 to 700) V	0.13 mV 1.1 mV 0.006 mV 0.011 V 0.11 V 1.1 V 1.4 V	Fluke 8842A
AC Current – Measure, 60 Hz only	(0 to 200) mA 200 mA to 2 A	1.2 mA 12 mA	Fluke 8842A
DC Voltage – Measure	(0 to 20) mV (20 to 200) mV 200 mV to 2 V (2 to 20) V (20 to 200) V (200 to 1000) V	0.0058 mV 0.020 mV 0.0001 V 0.0011 V 0.011 V 0.075 V	Fluke 8842A
DC Current – Measure	(0 to 200) mA 200 mA to 2 A	0.17 mA 2.4 mA	Fluke 8842A

Parameter/Equipment	Range	CMC[2] (±)	Comments
Resistance – Generate & Source			
Fixed Values	1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ	0.0034 Ω 0.00067 Ω 0.067 Ω 0.67 Ω 0.0067 kΩ 0.067 kΩ 0.00067 MΩ	YSI 3166 Resistance calibration set
Electrical Simulation of Thermocouples and RTD's[3]			
Type K, J, and T	-210 °C (0 to 1371) °C	0.7 °C 0.4 °C	Micromite II temperature simulator (ITS-90)
RTD	(-195 to 815) °C	0.4 °C	

IV. Mechanical

Parameter/Equipment	Range	CMC[2] (±)	Comments
Pressure[3] – Pneumatic	(0 to 100) psi (100 to 200) psi (200 to 300) psi (300 to 400) psi (400 to 500) psi	0.13 psi 0.24 psi 0.36 psi 0.47 psi 0.56 psi	Pressure calibrator

Parameter/Equipment	Range	CMC[2] (±)	Comments
Mass –	(1 to 50) mg (100 to 500) mg	0.0038 mg 0.0043 mg	ASTM E617 Class 2 to 7, OIML Class F1, F2, M1 & M2
Fixed Points	1 g 2 g 3 g 5 g 10 g 20 g 30 g 50 g 100 g 200 g 300 g 500 g 1 kg	0.0043 mg 0.0048 mg 0.011 mg 0.0087 mg 0.015 mg 0.017 mg 0.042 mg 0.075 mg 0.091 mg 0.18 mg 0.35 mg 1.3 mg 1.3 mg	direct comparison using NIST double substitution weighing design
	2 kg 5 kg 10 kg 20 kg 25 kg 25 lb 50 lb	20 mg 150 mg 210 mg 220 mg 220 mg 0.0056 oz (160 mg) 0.0074 oz (210 mg)	NIST 105-1 Class F, HB44 acceptance & maintenance
Vacuum[3] – Pneumatic Measure	0.09 mm·Hg 0.19 mm·Hg 0.47 mm·Hg 0.93 mm·Hg 1.87 mm·Hg 46.66 mm·Hg 93.32 mm·Hg 186.65 mm·Hg 373.29 mm·Hg 400.0 mm·Hg 800.0 mm·Hg 1500.0 mm·Hg 2000.0 mm·Hg 3000.0 mm·Hg 4000.0 mm·Hg	0.073 mm·Hg 0.086 mm·Hg 0.084 mm·Hg 0.11 mm·Hg 0.11 mm·Hg 0.10 mm·Hg 0.32 mm·Hg 0.38 mm·Hg 0.82 mm·Hg 2.8 mm·Hg 4.0 mm·Hg 5.2 mm·Hg 5.7 mm·Hg 6.6 mm·Hg 7.3 mm·Hg	Vacuum/pressure calibrator

Parameter/Equipment	Range	CMC[2,5] (±)	Comments
Balances & Scales[3] –	(1 to 200) mg	0.003 mg	Class 1 weights direct comparison
Fixed Points	500 mg	0.005 mg	
	1 g	0.006 mg	
	2 g	0.005 mg	
	5 g	0.008 mg	
	10 g	0.010 mg	
	20 g	0.019 mg	
	50 g	0.037 mg	
	100 g	0.071 mg	
	120 g	0.090 mg	
	150 g	0.11 mg	
	180 g	0.14 mg	
	200 g	0.15 mg	
	300 g	0.19 mg	
	400 g	0.29 mg	
	500 g	0.18 mg	
	600 g	0.23 mg	
	700 g	0.29 mg	
	800 g	0.39 mg	
	900 g	0.60 mg	
	1 kg	0.91 mg	
	2 kg	2.5 mg	
	4 kg	5.4 mg	
	5 kg	6.3 mg	
	6 kg	8.4 mg	
	10 kg	580 mg	
	20 kg	580 mg	
	30 kg	580 mg	
	50 lb	0.11 oz (2.9 g)	Class F weights direct comparison HB44
	100 lb	0.20 oz (5.6 g)	
	200 lb	0.43 oz (12 g)	
	300 lb	0.60 oz (17 g)	
	400 lb	0.82 oz (23 g)	
	500 lb	0.99 oz (28 g)	
	600 lb	1.2 oz (34 g)	
	700 lb	1.4 oz (39 g)	
	800 lb	1.6 oz (45 g)	
	900 lb	1.8 oz (50 g)	
	1000 lb	2.0 oz (56 g)	
	1500 lb	2.3 oz (64 g)	
	2000 lb	3.4 oz (94 g)	
	≥ 2000 lb	94 g + 0.6*R*	By substitution with class F weights per HB44

V. Thermodynamic

Parameter/Equipment	Range	CMC[2] (±)	Comments
Temperature – Measuring Equipment			
Ice Point	0 °C	0.014 °C	ASTM E563-97
Generate	-20 °C to 130°C 200 °C 300 °C 400 °C 500 °C	0.049 °C 0.21 °C 0.44 °C 0.52 °C 0.70 °C	By comparison NIST SP250-23 with temperature baths and dry well temperature standards
Fixed Point	-78°C	0.049 °C	

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

[2] Calibration and Measurement Capability (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. Calibration and Measurement Capabilities 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 measurands stated are generated with the Fluke 8842A series of instruments. This capability is suitable for the calibration of the devices intended to measure the stated measurand in the ranges indicated. CMCs are expressed as either a specific value that covers the full range or as a fraction of the reading plus a fixed floor specification.

[5] In the statement of CMC, *L* is the numerical value of the nominal length of the device measured in inches. In the statement of CMC, *R* is the numerical value of the resolution of the device in microinches.