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

ATLANTIC SCALE COMPANY, INC.
136 Washington Avenue
Nutley, NJ 07110
Vincent A. Benenati Phone: 973 661 7090 ext 35

CALIBRATION

Valid To: August 31, 2012 Certificate Number: 2736.01

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

I. Dimensional

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Micrometers – Inside, Outside, and Depth[3]	(0 to 2) in (2 to 6) in	37 µin (78 + 0.25*L*) µin	Gage blocks
Calipers – Inside & Outside[3]	(0 to 6) in (6 to 10) in	390 µin (390 + 0.1*L*) µin	Gage blocks
Dial Indicators[3]	(0 to 2) in	37 µin	Gage blocks
Height Gages	(0 to 18) in	(130 + 0.2*L*) µin	Gage blocks

5301 Buckeystown Pike, Suite 350 | Frederick, Maryland 21704-8373 | Phone: 301 644 3248 | Fax: 301 662 2974 | www.A2LA.org

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
DC Voltage – Generate	(0 to 330) mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V (330 to 1000) V	0.0022 % + 1 µV 0.0013 % + 2 µV 0.0014 % + 20 µV 0.0019 % + 150 µV 0.0019 % + 1.5 mV	Fluke 5520A
DC Voltage – Measure	(0 to 200) mV 200 mV to 2 V (2 to 20) V (20 to 200) V (200 to 1000) V	0.00086 % + 5.1 µV 0.0007 % + 5 µV 0.00073 % + 6.4 µV 0.00074 % + 64 µV 0.00053 % + 0.7 mV	Fluke 8508A
DC Current – Generate	(0 to 330) µA 330 µA to 3.3 mA (3.3 to 33) mA (33 to 330) mA 330 mA to 1.1 A (1.1 to 3) A (3 to 11) A (11 to 20) A	0.016 % + 0.02 µA 0.011 % + 0.01 µA 0.011 % + 0.25 µA 0.011 % + 2.5 µA 0.021 % + 40 µA 0.039 % + 40 µA 0.056 % + 500 µA 0.11 % + 750 µA	Fluke 5520A
DC Current – Measure	(0 to 200) µA 200 µA to 2 mA (2 to 20) mA (20 to 200) mA 200 mA to 2 A (2 to 20) A	0.0017 % + 5 nA 0.0018 % + 6.4 nA 0.0018 % + 57 nA 0.0051 % + 0.8 µA 0.019 % + 17 µA 0.042 % + 0.4 mA	Fluke 8508A
Resistance – Generate, Fixed Points	 14 Ω 25 Ω 62.5 Ω 100 Ω 200 Ω 250 Ω 350 Ω 400 Ω 500 Ω 4 kΩ 10 kΩ 20 kΩ	 0.76 µΩ/Ω 0.68 µΩ/Ω 0.66 µΩ/Ω 0.66 µΩ/Ω 0.80 µΩ/Ω 0.77 µΩ/Ω 0.77 µΩ/Ω 0.77 µΩ/Ω 0.76 µΩ/Ω 0.37 µΩ/Ω 0.34 µΩ/Ω 0.41 µΩ/Ω	Isotech RB802-18 Fluke 5520A

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Resistance – Generate (cont)			Fluke 5520A
Fixed Points	40 kΩ 100 kΩ 107 kΩ 300 kΩ 400 kΩ 500 kΩ (0 to 11) Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω 330 Ω to 1.1 kΩ (1.1 to 3.3) kΩ (3.3 to 11) kΩ (11 to 33) kΩ (33 to 110) kΩ (110 to 330) kΩ 330 kΩ to 1.1 MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (110 to 330) MΩ (330 to 1100) MΩ	0.40 μΩ/Ω 0.85 μΩ/Ω 2 μΩ/Ω 2.2 μΩ/Ω 7.3 μΩ/Ω 4.4 μΩ/Ω 0.0042 % + 0.01 Ω 0.0033 % + 0.015 Ω 0.0029 % + 0.015 Ω 0.0029 % + 0.02 Ω 0.0029 % + 0.02 Ω 0.003 % + 0.2 Ω 0.003 % + 0.11 Ω 0.003 % + 1 Ω 0.0031 % + 10 Ω 0.003 % + 10 Ω 0.0034 % + 10 Ω 0.0067 % + 150 Ω 0.014 % + 250 Ω 0.026 % + 2.5 Ω 0.051 % + 3 kΩ 0.31 % + 100 kΩ 1.6 % + 500 kΩ	
Resistance – Measure	(0 to 2) Ω (2 to 20) Ω (20 to 200) Ω 200 Ω to 2 kΩ (2 to 20) kΩ (20 to 200) kΩ 200 kΩ to 2 MΩ (2 to 20) MΩ (20 to 200) MΩ 200 MΩ to 2 GΩ	0.0023 % + 4 μΩ 0.0017 % + 14 μΩ 0.0015 % + 50 μΩ 0.0014 % + 0.5 mΩ 0.00084 % + 5 mΩ 0.00086 % + 50 mΩ 0.0013 % + 1 Ω 0.0091 % + 100 Ω 0.014 % + 10 kΩ 0.16 % + 1 kΩ	Fluke 8508A

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Capacitance – Generate, Frequency Range: 0.01 Hz to 1 kHz	(0.2 to 0.4) nF (0.4 to 1.1) nF (1.1 to 3.3) nF (3.3 to 11) nF (11 to 33) nF (33 to 110) nF (110 to 330) nF 330 nF to 1.1 µF (1.1 to 3.3) µF (3.3 to 11) µF (11 to 33) µF (33 to 110) µF (110 to 330) µF 330 µF to 1.1 mF (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF	23 % + 0.01 nF 21 % + 0.01 nF 17 % + 0.01 nF 0.27 % + 0.01 nF 0.26 % + 0.1 nF 0.26 % + 0.1 nF 0.26 % + 0.3 nF 0.27 % + 1 nF 0.26 % + 3 nF 0.26 % + 10 nF 0.41 % + 30 nF 0.47 % + 100 nF 0.47 % + 300 nF 0.46 % + 1 µF 0.46 % + 3 µF 0.46 % + 10 µF 0.76 % + 30 µF 1.2 % + 100 µF	Fluke 5520A
Electrical Calibration of Thermocouple Indicating Devices –			
Type B	600 ºC to 800 ºC 800 ºC to 1000 ºC 1000 ºC to 1550 ºC 1550 ºC to 1820 ºC	0.48 °C 0.38 °C 0.31 °C 0.37 °C	Fluke 5520A
Type C	0 ºC to 150 ºC 150 ºC to 650 ºC 650 ºC to 1000 ºC 1000 ºC to 1800 ºC 1800 ºC to 2316 ºC	0.35 °C 0.31 °C 0.35 °C 0.53 °C 0.86 °C	
Type E	-250 ºC to -100 ºC -100 ºC to -25 ºC -25 ºC to 350 ºC 350 ºC to 650 ºC 650 ºC to 1000 ºC	0.53 °C 0.23 °C 0.22 °C 0.23 °C 0.27 °C	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Electrical Calibration of Thermocouple Indicating Devices – (cont)			
Type J	-210 ºC to -100 ºC -100 ºC to -30 ºC -30 ºC to 150 ºC 150 ºC to 760 ºC 760 ºC to 1200 ºC	0.31 °C 0.23 °C 0.22 °C 0.24 °C 0.29 °C	Fluke 5520A
Type K	-200 ºC to -100 ºC -100 ºC to -25 ºC -25 ºC to 120 ºC 120 ºC to 1000 ºC 1000 ºC to 1372 ºC	0.37 °C 0.25 °C 0.23 °C 0.31 °C 0.44 °C	
Type L	-200 ºC to -100 ºC -100 ºC to 800 ºC 800 ºC to 900 ºC	0.41 °C 0.31 °C 0.24 °C	
Type N	-200 ºC to -100 ºC -100 ºC to -25 ºC -25 ºC to 120 ºC 120 ºC to 410 ºC 410 ºC to 1300 ºC	0.44 °C 0.28 °C 0.25 °C 0.25 °C 0.32 °C	
Type R	0 ºC to 250 ºC 250 ºC to 400 ºC 400 ºC to 1000 ºC 1000 ºC to 1767 ºC	0.6 °C 0.39 °C 0.39 °C 0.44 °C	
Type S	0 ºC to 250 ºC 250 ºC to 1000 ºC 1000 ºC to 1400 ºC 1400 ºC to 1767 ºC	0.5 °C 0.4 °C 0.4 °C 0.41 °C	
Type T	-250 ºC to -150 ºC -150 ºC to 0 ºC 0 ºC to 120 ºC 120 ºC to 400 ºC	0.30 °C 0.29 °C 0.23 °C 0.20 °C	
Type U	-200 ºC to 0 ºC 0 ºC to 600 ºC	0.59 °C 0.32 °C	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Electrical Calibration of RTD Indicating Devices –			
Pt 385, 100 Ω	-200 ºC to -80 ºC -80 ºC to 0 ºC 0 ºC to 100 ºC 100 ºC to 300 ºC 300 ºC to 400 ºC 400 ºC to 630 ºC 630 ºC to 800 ºC	0.04 ºC 0.04 ºC 0.06 ºC 0.07 ºC 0.08 ºC 0.09 ºC 0.18 ºC	Fluke 5520A
Pt 3926, 100 Ω	-200 ºC to -80 ºC -80 ºC to 0 ºC 0 ºC to 100 ºC 100 ºC to 300 ºC 300 ºC to 400 ºC 400 ºC to 630 ºC	0.04 ºC 0.04 ºC 0.06 ºC 0.07 ºC 0.08 ºC 0.09 ºC	
Pt 3916, 100 Ω	-200 ºC to -190 ºC -190 ºC to -80 ºC -80 ºC to 0 ºC 0 ºC to 100 ºC 100 ºC to 260 ºC 260 ºC to 300 ºC 300 ºC to 400 ºC 400 ºC to 600 ºC 600 ºC to 630 ºC	0.19 ºC 0.03 ºC 0.04 ºC 0.05 ºC 0.05 ºC 0.06 ºC 0.07 ºC 0.08 ºC 0.18 ºC	
Pt 385, 200 Ω	-200 ºC to -80 ºC -80 ºC to 0 ºC 0 ºC to 100 ºC 100 ºC to 260 ºC 260 ºC to 300 ºC 300 ºC to 400 ºC 400 ºC to 600 ºC 600 ºC to 630 ºC	0.05 ºC 0.04 ºC 0.05 ºC 0.06 ºC 0.10 ºC 0.11 ºC 0.12 ºC 0.13 ºC	
Pt 385, 500 Ω	-200 ºC to -80 ºC -80 ºC to 0 ºC 0 ºC to 100 ºC 100 ºC to 260 ºC 260 ºC to 300 ºC 300 ºC to 400 ºC 400 ºC to 600 ºC 600 ºC to 630 ºC	0.05 ºC 0.06 ºC 0.06 ºC 0.06 ºC 0.07 ºC 0.07 ºC 0.08 ºC 0.10 ºC	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Electrical Calibration of RTD Indicating Devices – (cont)			
Pt 385, 1000 Ω	-200 ºC to -80 ºC -80 ºC to 0 ºC 0 ºC to 100 ºC 100 ºC to 260 ºC 260 ºC to 300 ºC 300 ºC to 400 ºC 400 ºC to 600 ºC 600 ºC to 630 ºC	0.02 ºC 0.04 ºC 0.04 ºC 0.05 ºC 0.06 ºC 0.07 ºC 0.07 ºC 0.18 ºC	Fluke 5520A
PtNi 385, 120 Ω (Ni120)	-80 ºC to 0 ºC 0 ºC to 100 ºC 100 ºC to 260 ºC	0.07 ºC 0.07 ºC 0.12 ºC	
Cu 427, 10 Ω	-100 ºC to 260 ºC	0.23 ºC	

Parameter/Range	Frequency	CMC[2, 5] (±)	Comments
AC Voltage – Generate			
(1 to 33) mV	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	0.083 % + 6 µV 0.018 % + 6 µV 0.022 % + 6 µV 0.11 % + 6 µV 0.36 % + 12 µV 0.81 % + 50 µV	Fluke 5520A
(33 to 330) mV	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	0.034 % + 8 µV 0.016 % + 8 µV 0.017 % + 8 µV 0.036 % + 8 µV 0.081 % + 32 µV 0.084 % + 7 µV	

Parameter/Range	Frequency	CMC[2, 5] (±)	Comments
AC Voltage – Generate (cont)			
330 mV to 3.3 V	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 500) kHz	0.034 % + 50 µV 0.016 % + 60 µV 0.02 % + 60 µV 0.031 % + 50 µV 0.071 % + 125 µV 0.25 % + 600 µV	Fluke 5520A
(3.3 to 33) V	(10 to 45) Hz 45 Hz to 10 kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.034 % + 650 µV 0.016 % + 600 µV 0.025 % + 600 µV 0.036 % + 600 µV 0.091 % + 1.6 mV	
(33 to 330) V	45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.02 % + 2 mV 0.021 % + 6 mV 0.026 % + 6 mV 0.032 % + 6 mV 0.21 % + 6 mV	
(330 to 1020) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.031 % + 10 mV 0.026 % + 10 mV 0.031 % + 10 mV	
AC Voltage – Measure			
(0 to 200) mV	(1 to 10) Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz	0.02 % + 14 µV 0.017 % + 4 µV 0.012 % + 4 µV 0.015 % + 2 µV 0.014 % + 14 µV 0.035 % + 8 µV 0.078 % + 20 µV	Fluke 8508A
200 mV to 2 V	(1 to 10) Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	0.02 % + 120 µV 0.025 % + 20 µV 0.011 % + 20 µV 0.0079 % + 20 µV 0.012 % + 20 µV 0.023 % + 40 µV 0.059 % + 0.2 mV 0.31 % + 2 mV 1.1 % + 20 mV	

Parameter/Range	Frequency	CMC[2, 5] (±)	Comments
AC Voltage – Measure (cont)			
(2 to 20) V	(1 to 10) Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	0.02 % + 1.2 mV 0.013 % + 0.2 mV 0.0096 % + 0.2 mV 0.008 % + 0.2 mV 0.012 % + 0.2 mV 0.023 % + 0.4 mV 0.059 % + 2 mV 0.31 % + 2 mV 1.1 % + 20 mV	Fluke 8508A
(20 to 200) V	(1 to 10) Hz (10 to 40) Hz (40 to 100) Hz 100 Hz to 2 kHz (2 to 10) kHz (10 to 30) kHz (30 to 100) kHz (100 to 300) kHz	0.016 % + 12 mV 0.013 % + 2 mV 0.011 % + 2 mV 0.0086 % + 2 mV 0.012 % + 2 mV 0.023 % + 4 mV 0.058 % + 20 mV 0.31 % + 200 mV	
(200 to 1000) V	(1 to 10) Hz (10 to 40) Hz 40 Hz to 10 kHz	0.012 % + 20 mV 0.029 % + 40 mV 0.061 % + 200 mV	
AC Current – Generate			
(0 to 330) µA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.21 % + 0.1 µA 0.16 % + 0.1 µA 0.13 % + 0.1 µA 0.31 % + 0.15 µA 0.81 % + 0.2 µA 1.7 % + 0.4 µA	Fluke 5520A
330 µA to 3.3 mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.21 % + 0.15 µA 0.13 % + 0.15 µA 0.11 % + 0.15 µA 0.21 % + 0.2 µA 0.51 % + 0.3 µA 1.1 % + 0.6 µA	

Parameter/Range	Frequency	CMC[2, 5] (±)	Comments
AC Current – Generate (cont)			
(3.3 to 33) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.19 % + 2 µA 0.092 % + 2 µA 0.042 % + 2 µA 0.081 % + 2 µA 0.21 % + 3 µA 0.41 % + 4 µA	Fluke 5520A
(33 to 330) mA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz (10 to 30) kHz	0.19 % + 20 µA 0.091 % + 20 µA 0.041 % + 20 µA 0.081 % + 50 µA 0.21 % + 100 µA 0.41 % + 200 µA	
(0.33 to 3.3) A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.19 % + 100 µA 0.061 % + 100 µA 0.61 % + 1 mA 2.5 % + 5 mA	
(3.3 to 11) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	0.0062 % + 2 mA 0.11 % + 2 mA 3.1 % + 5 mA	
(11 to 20) A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz	0.13 % + 5 mA 0.16 % + 5 mA 3.1 % + 5 mA	
(20 to 1000) A	(45 to 440) Hz (65 to 440) Hz	0.5 % + 66 mA 0.71 % + 320 mA	with Fluke 50-turn coil
AC Current – Measure			
(0 to 220) µA	(1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz	0.036 % + 50 nA 0.037 % + 50 nA 0.074 % + 50 nA	Fluke 8508A
200 µA to 2 mA	(1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz	0.035 % + 0.2 µA 0.031 % + 0.2 µA 0.072 % + 2 µA	

Parameter/Range	Frequency	CMC[2, 5] (±)	Comments
AC Current – Measure (cont)			
(2 to 20) mA	(1 to 10) Hz 10 Hz to 10 kHz (10 to 30) kHz	0.034 % + 2 µA 0.031 % + 2 µA 0.072 % + 2 µA	Fluke 8508A
(20 to 200) mA	1 Hz to 10 kHz (10 to 30) kHz	0.03 % + 20 µA 0.063 % + 20 µA	
200 mA to 2 A	10 Hz to 2 kHz (2 to 10) kHz	0.063 % + 200 µA 0.073 % + 200 µA	
(2 to 20) A	10 Hz to 2 kHz (2 to 10) kHz	0.11 % + 2 mA 0.26 % + 2 mA	

III. Fluid Quantities

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Mass Flow Rate	(5 to 500) sccm (50 to 5000) sccm (5 to 50 000) sccm	0.25 % 0.17 % 0.19 %	Bios Drycal bench

IV. Mechanical

Parameter/Equipment	Range	CMC[2] (±)	Comments
Laboratory Balances[3] –			
Micro, 0.001 mg resolution	(0 to 1) mg (0 to 5) g	0.006 mg 0.02 mg	ASTM Class 0 weights
Analytical, 0.01 mg resolution	(0 to 10) g	0.11 mg	ASTM Class 1 weights
Analytical, 0.1 mg resolution	(0 to 200) g	0.6 mg	ASTM Class 1 weights

Parameter/Equipment	Range	CMC[2] (±)	Comments
Precision Balances[3] –			
1.0 mg Resolution	(0 to 1) kg	3 mg	ASTM Class 1 weights
10.0 mg Resolution	(0 to 4) kg (0 to 16) kg	18 mg 140 mg	
0.1 g Resolution	(0 to 32) kg	0.16 g	
1.0 g Resolution	(0 to 60) kg	1.3 g	
Industrial Scales[3] – Fixed Points			
Small Capacity	1 kg 3 kg 6 kg 15 kg 25 kg 30 kg 32 kg 35 kg	0.0002 kg 0.00002 kg 0.00004 kg 0.001 kg 0.005 kg 0.005 kg 0.0002 kg 0.0002 kg	Class 1 and Class F weights, Handbook 44
Medium Capacity	60 kg 75 kg 100 kg	0.002 kg 0.02 kg 0.04 kg	
Large Capacity	150 kg 250 kg 300 kg 500 kg	0.002 kg 0.09 kg 0.035 kg 0.1 kg	
Extremely Large Capacity	1000 kg 1500 kg 3000 kg 6000 kg 15000 kg	0.12 kg 0.2 kg 0.4 kg 0.7 kg 3 kg	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Mass	30 kg 25 kg 20 kg 10 kg 5 kg 4 kg 3 kg 2 kg 1 kg 500 g 300 g 200 g 100 g 50 g 30 g 20 g 10 g 5 g 3 g 2 g 1 g 500 mg 300 mg 200 mg 100 mg 50 mg 30 mg 20 mg 10 mg 5 mg 3 mg 2 mg 1 mg	11 mg 9.8 mg 8.6 mg 2.3 mg 1.2 mg 1 mg 1 mg 0.7 mg 0.1 mg 0.11 mg 0.07 mg 37 µg 23 µg 15 µg 9 µg 12 µg 9 µg 4.1 µg 2 µg 1.6 µg 1.3 µg 1.2 µg 1 µg 1 µg 0.9 µg 1.3 µg 1.1 µg 0.8 µg 0.8 µg 0.8 µg 0.8 µg 0.6 µg 0.6 µg	Performed in accordance with NISTIR 6969 SOP 5 & SOP 4 for Class 1 and 2 and NISTR 6969 SOP 7 for Class 3 and 4.
Calibration of Transfer Standards and Pressure Devices – Absolute and Gauge Pressure, Gas	(1 to 50) psia (50 to 1000) psia	$3.7E^{-05}$ psia + 13 parts in 10^6 $1.6E^{-03}$ psia + 20 parts in 10^6	PG7601
Calibration of Pressure Devices[3] – Gas	 (1 to 30) inH_2O	 0.006 inH_2O	 PPC3

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Calibration of Pressure Devices[3] – (cont)			
Gas, Absolute and Gauge	(1 to 30) psia (30 to 300) psia (300 to 500) psia (500 to 1000) psia	0.009 psia 0.015 psia 0.049 psia 0.085 psia	PPC3, RPM4
Oil, Absolute and Gauge	(1000 to 1500) psia (1500 to 5000) psia (5000 to 10 000) psia	0.41 psia 0.73 psia 1.2 psia	RPM4
Volume – Pipettes[3]	(0.1 to 1) µL (2 to 5) µL (6 to 20) µL	4.1 % 1.4 % 1.7 %	Photometric methods
6 digit balances	(1 to 5) µL (6 to 10) µL (11 to 20) µL	0.064 µL 0.074 µL 0.12 µL	Gravimetric methods
5 digit balances	(10 to 40) µL (41 to 100) µL (101 to 200) µL (201 to 500) µL (501 to 1000) µL (1001 to 2500) µL (2501 to 5000) µL (5001 to 10 000) µL	0.23 µL 0.18 µL 0.30 µL 0.91 µL 1.5 µL 5.8 µL 6.4 µL 5.5 µL	

V. Thermodynamics

Parameter/Equipment	Range	CMC[2] (±)	Comments
Relative Humidity – Measure and Measuring Equipment[3]	10 % RH 20 % RH 50 % RH 80 % RH 95 % RH	0.59 % RH 0.61 % RH 0.74 % RH 0.89 % RH 1.1 % RH	Thunder Scientific 2500ST-LT

Parameter/Equipment	Range	CMC[2] (±)	Comments
Temperature – Measure[3]	-80 ºC to -30 ºC	0.015 ºC	Comparison in liquid bath with SPRT
	-30 ºC to 300 ºC	0.008 ºC	Comparison in liquid and metal block bath with SPRT
	300 ºC to 600 ºC	0.059 ºC	SPRT with dry block
	660 ºC to 1200 ºC	1.6 ºC	TC with dry block
Temperature – Measure, Fixed Points	-195.798 ºC -38.8344 ºC 0.01 ºC 29.7646 ºC 156.598 ºC 231.928 ºC 419.527 ºC 660.323 ºC	0.0037 ºC 0.0019 ºC 0.0016 ºC 0.0021 ºC 0.0031 ºC 0.0030 ºC 0.0038 ºC 0.0071 ºC	Liquid N_2 comparison Mercury cell Water triple point cell Gallium cell Indium cell Tin cell Zinc cell Aluminum cell

VI. Time and Frequency

Parameter/Equipment	Range	CMC[2] (±)	Comments
Frequency – Measure	10 MHz	1.2 parts in 10^{11}	Spectracom GPS master oscillator
Frequency – Measuring Equipment	(0 to 2) MHz	1.2 parts in 10^{11} + 5 μHz	Fluke 5520A w/ext 10 MHz reference
Stopwatch	(0 to 86 400) s/day	0.057 s/day	Virograf timometer

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

[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] In the statement of CMC, *L* represents the length of the unit under test in inches.

[5] In the statement of CMC, the uncertainty is listed as a percent or portion of reading or a percent or portion of reading plus the floor specification.

The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

ATLANTIC SCALE COMPANY, INC.

Nutley, NJ

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 1st day of September 2010.

President & CEO
For the Accreditation Council
Certificate Number 2736.01
Valid to August 31, 2012

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