



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 calibrations¹:

I. Dimensional

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Micrometers – Inside, Outside, and Depth ³	(0 to 1) in (1 to 2) in (2 to 6) in	59 μin 59 μin (78 + 0.25L) μin	Gage blocks
Calipers – Inside & Outside ³	(0 to 6) in (6 to 10) in	390 μin (390 + 0.1L) μin	Gage blocks
Dial Indicators ³	(0 to 0.5) in (0.5 to 1) in (1 to 2) in	68 μin 68 μin 68 μin	Gage blocks
Height Gages	(0 to 18) in	(130 + 0.2L) μin	Gage blocks

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) 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	Fluke 5520A
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 °C to 800 °C 800 °C to 1000 °C 1000 °C to 1550 °C 1550 °C to 1820 °C	0.48 °C 0.38 °C 0.31 °C 0.37 °C	Fluke 5520A
Type C	0 °C to 150 °C 150 °C to 650 °C 650 °C to 1000 °C 1000 °C to 1800 °C 1800 °C to 2316 °C	0.35 °C 0.31 °C 0.35 °C 0.53 °C 0.86 °C	
Type E	-250 °C to -100 °C -100 °C to -25 °C -25 °C to 350 °C 350 °C to 650 °C 650 °C to 1000 °C	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 °C to -100 °C -100 °C to -30 °C -30 °C to 150 °C 150 °C to 760 °C 760 °C to 1200 °C	0.31 °C 0.23 °C 0.22 °C 0.24 °C 0.29 °C	Fluke 5520A
Type K	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.37 °C 0.25 °C 0.23 °C 0.31 °C 0.44 °C	
Type L	-200 °C to -100 °C -100 °C to 800 °C 800 °C to 900 °C	0.41 °C 0.31 °C 0.24 °C	
Type N	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 410 °C 410 °C to 1300 °C	0.44 °C 0.28 °C 0.25 °C 0.25 °C 0.32 °C	
Type R	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.6 °C 0.39 °C 0.39 °C 0.44 °C	
Type S	0 °C to 250 °C 250 °C to 1000 °C 1000 °C to 1400 °C 1400 °C to 1767 °C	0.5 °C 0.4 °C 0.4 °C 0.41 °C	
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.30 °C 0.29 °C 0.23 °C 0.20 °C	
Type U	-200 °C to 0 °C 0 °C to 600 °C	0.59 °C 0.32 °C	

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

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

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			Class 1 and Class F weights, Handbook 44
Small Capacity	1 kg	0.0002 kg	
	3 kg	0.00002 kg	
	6 kg	0.00004 kg	
	15 kg	0.001 kg	
	25 kg	0.005 kg	
	30 kg	0.005 kg	
	32 kg	0.0002 kg	
	35 kg	0.0002 kg	
Medium Capacity	60 kg	0.002 kg	
	75 kg	0.02 kg	
	100 kg	0.04 kg	
Large Capacity	150 kg	0.002 kg	
	250 kg	0.09 kg	
	300 kg	0.035 kg	
	500 kg	0.1 kg	
Extremely Large Capacity	1000 kg	0.12 kg	
	1500 kg	0.2 kg	
	3000 kg	0.4 kg	
	6000 kg	0.7 kg	
	15000 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 ₂ O	0.006 inH ₂ O	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 °C to -30 °C	0.015 °C	Comparison in liquid bath with SPRT
	-30 °C to 300 °C	0.008 °C	Comparison in liquid and metal block bath with SPRT
	300 °C to 600 °C	0.059 °C	SPRT with dry block
	660 °C to 1200 °C	1.6 °C	TC with dry block
Temperature – Measure, Fixed Points	-195.798 °C -38.8344 °C 0.01 °C 29.7646 °C 156.598 °C 231.928 °C 419.527 °C 660.323 °C	0.0037 °C 0.0019 °C 0.0016 °C 0.0021 °C 0.0031 °C 0.0030 °C 0.0038 °C 0.0071 °C	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.



World Class Accreditation

The American Association for Laboratory 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.





Peter Abney

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.