



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

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CALIBRATION

Valid To: April 30, 2012

Certificate Number: 1894.01

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 (±)	Comments
Ring Gages ⁵	Up to 8 in	(17 + 2.2L) μin	Universal testing machines
Micrometers ^{3,5}	Up to 4 in (4 to 24) in (24 to 60) in	(30 + 1.5L) μin (65 + 3L) μin (310 + 2.5L) μin	Gage blocks
Calipers ^{3,5}	Up to 4 in (4 to 24) in (24 to 60) in	(290 + 0.1L) μin (290 + 0.9L) μin (310 + 2.5L) μin	Gage blocks
Gage Blocks ⁵	(0.01 to 4) in	(4.6 + 0.7L) μin	Gage block comparator
Dial Indicators ^{3,5}	Up to 1 in	(10 + 6.1L) μin	Universal measuring machine
Thread Plugs – Pitch Diameter	Up to 6 in	79 μin	Universal measuring machine with thread wires

Parameter/Equipment	Range	CMC ² (±)	Comments
Plain Plugs, Disks, Thread Wires ⁵	Up to 8 in	$(9 + 2.8D) \mu\text{in}$	Universal measuring machine
End Rods ⁵	Up to 11 in (11 to 21) in	$(9 + 2.9L) \mu\text{in}$ $(48 + 3.4L) \mu\text{in}$	Universal measuring machine

II. Electrical – DC & Low Frequency

Parameter/Equipment	Range	CMC ^{2,4,6} (±)	Comments
DC Voltage ³ – Generate	(0 to 330) mV (0 to 3.3) V (0 to 33) V (30 to 330) V (100 to 1000) V	20 $\mu\text{V/V} + 1 \mu\text{V}$ 11 $\mu\text{V/V} + 2 \mu\text{V}$ 12 $\mu\text{V/V} + 20 \mu\text{V}$ 18 $\mu\text{V/V} + 150 \mu\text{V}$ 18 $\mu\text{V/V} + 1.5 \text{ mV}$	Fluke 5520A
DC Voltage – Generate Fixed Point	10 V	0.5 $\mu\text{V/V}$	Fluke 732A
DC Voltage ³ – Measure	(0 to 120) mV (0 to 1.2) V (0 to 12) V (0 to 120) V (0 to 1050) V	7 $\mu\text{V/V} + 0.36 \mu\text{V}$ 6 $\mu\text{V/V} + 0.36 \mu\text{V}$ 6 $\mu\text{V/V} + 0.6 \mu\text{V}$ 8 $\mu\text{V/V} + 36 \mu\text{V}$ 20 $\mu\text{V/V} + 0.11 \text{ mV}$	HP 3458A with Option 002
Fixed Point	(1 to 40) kV	2.0 % of reading	Fluke 80K-40 with DMM
DC Voltage – Measure Fixed Point	10 V	0.3 $\mu\text{V/V}$	Fluke 732A

Parameter/Equipment	Range	CMC ^{2,4,6} (±)	Comments
DC Current ³ – Generate	(0 to 330) μ A (0 to 3.3) mA (0 to 33) mA (0 to 330) mA (0 to 1.1) A (1.1 to 3) A (0 to 11) A (11 to 20.5) A	0.015 % + 0.02 μ A 100 μ A/A + 0.05 μ A 100 μ A/A + 0.25 μ A 100 μ A/A + 2.5 μ A 0.020 % + 40 μ A 0.038 % + 40 μ A 0.050 % + 500 μ A 0.1 % + 750 μ A	Fluke 5520A
	(20 to 1000) A	0.26 %	Fluke 5520A with 5500/coil
DC Current ³ – Measure	(0 to 120) μ A (0 to 1.2) mA (0 to 12) mA (0 to 120) mA (0 to 1.1) A	25 μ A/A + 0.8 nA 25 μ A/A + 5 nA 25 μ A/A + 50 nA 40 μ A/A + 0.5 μ A 0.012 % + 10 μ A	HP 3458A
Resistance ³ – Generate	(0 to 11) Ω (11 to 33) Ω (33 to 110) Ω 110 Ω to 1.1 k Ω (1.1 to 11) k Ω (11 to 110) k Ω 110 k Ω to 1.1 M Ω (1.1 to 3.3) M Ω (3.3 to 11) M Ω (11 to 33) M Ω (33 to 110) M Ω (110 to 330) M Ω (330 to 1100) M Ω	40 $\mu\Omega/\Omega$ + 1 m Ω 30 $\mu\Omega/\Omega$ + 1.5 m Ω 28 $\mu\Omega/\Omega$ + 1.4 m Ω 28 $\mu\Omega/\Omega$ + 2 m Ω 28 $\mu\Omega/\Omega$ + 20 m Ω 28 $\mu\Omega/\Omega$ + 200 m Ω 32 $\mu\Omega/\Omega$ + 2 Ω 60 $\mu\Omega/\Omega$ + 30 Ω 0.013 % + 50 Ω 0.025 % + 2.5 k Ω 0.050 % + 3 k Ω 0.3 % + 100 k Ω 1.5 % + 500 k Ω	Fluke 5520A

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Resistance – Measure	(0.0001 to 0.001) Ω (0.001 to 0.01) Ω (0.01 to 0.1) Ω (0.1 to 1) Ω	1.5 μΩ/Ω 1.1 μΩ/Ω 0.7 μΩ/Ω 0.4 μΩ/Ω	MIL 6010B/6011A or 6000B
Fixed Point	1 Ω (1 to 10) Ω (10 to 100) Ω 100 Ω to 1 kΩ	0.13 μΩ/Ω 0.17 μΩ/Ω 0.24 μΩ/Ω 0.28 μΩ/Ω	Thomas-type resistors
Fixed Point	10 kΩ (1 to 13) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ	0.15 μΩ/Ω 0.33 μΩ/Ω 0.45 μΩ/Ω 0.56 μΩ/Ω	Evanohm-type resistors Guarded active-arm bridge
	(1 to 10) MΩ (10 to 100) MΩ 100 MΩ 1 GΩ (1 to 10) GΩ (10 to 100) GΩ 100 GΩ to 1 TΩ (1 to 10) TΩ	3.8 μΩ/Ω 5 μΩ/Ω 10 μΩ/Ω 20 μΩ/Ω 50 μΩ/Ω 100 μΩ/Ω 350 μΩ/Ω	
Resistance ³ – Measure			
Fixed Point	(0 to 12) Ω (12 to 120) Ω 120 Ω to 1.2 kΩ (1.2 to 12) kΩ (12 to 120) kΩ 120 kΩ to 1.2 MΩ (1.2 to 12) MΩ (12 to 120) MΩ 120 MΩ to 1.2 GΩ	18 μΩ/Ω + 60 μΩ 15 μΩ/Ω + 0.6 mΩ 13 μΩ/Ω + 0.6 mΩ 13 μΩ/Ω + 6 mΩ 13 μΩ/Ω + 60 mΩ 18 μΩ/Ω + 2.4 Ω 53 μΩ/Ω + 120 Ω 0.050 % + 1 kΩ 0.5 % + 10 kΩ	HP 3458A
Electrical Calibration of RTD Indicators & Indicating Systems ³ –			
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	0.05 °C 0.05 °C 0.07 °C 0.09 °C 0.10 °C 0.12 °C 0.23 °C	Fluke 5520A

Parameter/Equipment	Range	CMC ^{2,6} (±)	Comments
Electrical Calibration of RTD Indicators & Indicating Systems ³ – (cont)			
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	0.05 °C 0.05 °C 0.07 °C 0.09 °C 0.10 °C 0.12 °C	Fluke 5520A
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	0.25 °C 0.04 °C 0.05 °C 0.06 °C 0.07 °C 0.08 °C 0.09 °C 0.10 °C 0.23 °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	0.04 °C 0.04 °C 0.04 °C 0.05 °C 0.12 °C 0.13 °C 0.14 °C 0.16 °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	0.04 °C 0.05 °C 0.05 °C 0.06 °C 0.08 °C 0.08 °C 0.09 °C 0.11 °C	
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	0.03 °C 0.03 °C 0.04 °C 0.05 °C 0.06 °C 0.07 °C 0.07 °C 0.23 °C	

Parameter/Equipment	Range	CMC ^{2,6} (±)	Comments
Electrical Calibration of RTD Indicators & Indicating Systems ³ – (cont)			
PtNi 385, 120 Ω (Ni120)	-80 °C to 0 °C 0 °C to 100 °C 100 °C to 260 °C	0.08 °C 0.08 °C 0.14 °C	Fluke 5520A
Cu 427, 10 Ω	-100 °C to 260 °C	0.30 °C	
Electrical Calibration of Thermocouple Indicators & Indicating Systems ³ –			
Type B	600 °C to 800 °C 800 °C to 1000 °C 1000 °C to 1550 °C 1550 °C to 1820 °C	0.44 °C 0.34 °C 0.30 °C 0.33 °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	0.30 °C 0.26 °C 0.31 °C 0.50 °C 0.84 °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	0.50 °C 0.16 °C 0.14 °C 0.16 °C 0.21 °C	
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	0.27 °C 0.16 °C 0.14 °C 0.17 °C 0.23 °C	
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	0.33 °C 0.18 °C 0.16 °C 0.26 °C 0.40 °C	

Parameter/Equipment	Range	CMC ^{2,6} (±)	Comments
Electrical Calibration of Thermocouple Indicators & Indicating Systems ³ (cont) –			
Type L	-200 °C to -100 °C -100 °C to 800 °C 800 °C to 900 °C	0.37 °C 0.26 °C 0.17 °C	Fluke 5520A
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	0.40 °C 0.22 °C 0.19 °C 0.18 °C 0.27 °C	
Type R	0 °C to 250 °C 250 °C to 400 °C 400 °C to 1000 °C 1000 °C to 1767 °C	0.57 °C 0.35 °C 0.33 °C 0.40 °C	
Type S	0 °C to 250 °C 250 °C to 1000 °C 1000 °C to 1400 °C 1400 °C to 1767 °C	0.47 °C 0.36 °C 0.37 °C 0.46 °C	
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.63 °C 0.24 °C 0.16 °C 0.14 °C	
Type U	-200 °C to 0 °C 0 °C to 600 °C	0.56 °C 0.27 °C	
AC Power ³ – (45 to 65) Hz: (3.3 to 330) mA 330 mA to 11 A (11 to 20.5) A	33 mV to 1020 V	0.05 % 0.06 % 0.15 %	Fluke 5520A

Parameter/Range	Frequency	CMC ^{2, 4, 6} (\pm)	Comments
AC Voltage ³ – Generate (cont)			
(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	0.030 % + 650 μ V 0.015 % + 600 μ V 0.024 % + 600 μ V 0.035 % + 600 μ V 0.090 % + 1.6 mV	Fluke 5520A
(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	0.019 % + 2 mV 0.020 % + 6 mV 0.025 % + 6 mV 0.030 % + 6 mV 0.20 % + 50 mV	
(330 to 1020) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.030 % + 10 mV 0.025 % + 10 mV 0.030 % + 10 mV	
AC Voltage ³ – Measure			
(1.2 to 12) mV	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.03 % + 0.03 % 0.02 % + 0.011 % 0.03 % + 0.011 % 0.10 % + 0.011 % 0.50 % + 0.011 % 4.0 % + 0.02 %	HP 3458A
(0.012 to 0.12, 1.2, 12) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz (1 to 2) MHz	0.007 % + 0.004 % 0.007 % + 0.002 % 0.014 % + 0.002 % 0.03 % + 0.002 % 0.08 % + 0.002 % 0.30 % + 0.01 % 1 % + 0.01 % 1.5 % + 0.01 %	
(12 to 120) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	0.02 % + 0.004 % 0.02 % + 0.002 % 0.02 % + 0.002 % 0.035 % + 0.002 % 0.12 % + 0.002 % 0.40 % + 0.01 % 1.5 % + 0.01 %	

Parameter/Range	Frequency	CMC ^{2,6} (±)	Comments
AC Voltage ³ – Measure (cont)			
(70 to 700) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz	0.04 % + 0.004 % 0.04 % + 0.002 % 0.06 % + 0.002 % 0.12 % + 0.002 % 0.30 % + 0.002 %	HP 3458A
(1 to 40) kV	60 Hz	5.1 % of reading	Fluke 80K-40 w/ DMM
AC Current ³ – Generate			
(29 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	0.20 % + 0.1 µA 0.15 % + 0.1 µA 0.13 % + 0.1 µA 0.3 % + 0.15 µA 0.8 % + 0.2 µA 1.6 % + 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	0.2 % + 0.2 µA 0.13 % + 0.2 µA 0.1 % + 0.2 µA 0.2 % + 0.2 µA 0.5 % + 0.3 µA 1 % + 0.6 µA	
(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	0.18 % + 2 µA 0.09 % + 2 µA 0.04 % + 2 µA 0.08 % + 2 µA 0.20 % + 3 µA 0.4 % + 4 µA	
(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	0.18 % + 20 µA 0.09 % + 20 µA 0.04 % + 20 µA 0.10 % + 50 µA 0.20 % + 100 µA 0.40 % + 200 µA	
330 mA to 1.1 A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.18 % + 100 µA 0.05 % + 100 µA 0.6 % + 1 mA 2.5 % + 5 mA	
(1.1 to 3) A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.18 % + 100 µA 0.06 % + 100 µA 0.6 % + 1 mA 2.5 % + 5 mA	

Parameter/Range	Frequency	CMC ^{2,4,6} (\pm)	Comments
AC Current – Generate ³ (cont)			
(3 to 11) A	45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	0.06 % + 2 mA 0.1 % + 2 mA 3 % + 2 mA	Fluke 5520A
(11 to 20.5) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	0.12 % + 5 mA 0.15 % + 5 mA 3 % + 5 mA	
(20 to 1000) A Clamp Meters	(45 to 65) Hz (65 to 440) Hz	0.3 % 0.81 %	Fluke 5520A w/5500A coil
AC Current ³ – Measure			
(6 to 120) μ A	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 1 kHz	0.40 % + 0.03 % 0.15 % + 0.03 % 0.06 % + 0.03 % 0.06 % + 0.03 %	HP 3458A
(7.2 to 1.2, 12, 120) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	0.40 % + 0.02 % 0.15 % + 0.02 % 0.06 % + 0.02 % 0.03 % + 0.02 %	
(0.05 to 1.1) A	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz	0.40 % + 0.02 % 0.16 % + 0.02 % 0.08 % + 0.02 % 0.10 % + 0.02 %	
Oscilloscope ³ – Leveled Sine Wave			
Absolute 5 mV to 5.5 V	50 kHz reference 50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz (600 to 1100) MHz	2 % + 300 μ V 3.5 % + 300 μ V 4 % + 300 μ V 6 % + 300 μ V 7 % + 300 μ V	Fluke 5520A with SC1100 option. Uncertainties do not include loading effect of UUT.
Flatness (Relative to 50 kHz) 5 mV to 5.5 V	50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz (600 to 1100) MHz	1.5 % + 100 μ V 2 % + 100 μ V 4 % + 100 μ V 5 % + 100 μ V	

Parameter/Equipment	Range	CMC ^{2,6} (±)	Comments
Amplitude ³ – DC Signal 50 Ω load 1 MΩ load	(-6.6 to 6.6) V (-130 to 130) V	0.25 % + 40 μV 0.05 % + 40 μV	Fluke 5520A with SC1100
Time Marker, 50 Ω Load	5 s to 50 ms 20 ms to 100 ns (50 to 20) ns 10 ns (5 to 1) ns	(25 +1000 <i>t</i>) μs 2.5 μs 2.5 μs 2.5 μs	<i>t</i> is the time in seconds Markers in a 5-2-1 sequence
Edge – Rise Time 50 Ω load	≤ 300 ps	+0 ps/-100 ps	
≤ 2 MHz	≤ 300 ps	+0 ps/-100 ps	
> 2 MHz	> 350 ps		

III. Fluid Quantities

Parameter/Equipment	Range	CMC ² (±)	Comments
Gas Flow ³	(0 to 100) slm	0.20 % of rdg	DHI molbox1/molbloccs

IV. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Torque – Wrenches, Screwdrivers, Watches	(15 to 200) in·oz (4 to 1000) in·lb (20 to 2000) ft·lb	0.25 % of rdg 0.25 % of rdg 0.25 % of rdg	CDI 2000-610-2
Analyzers, Transducers	Up to 200 in·oz Up to 1000 in·lb Up to 2000 ft·lb	0.05 % of rdg 0.05 % of rdg 0.05 % of rdg	Torque arms with Class F weights

Parameter/Equipment	Range	CMC ² (±)	Comments
Pressure ³ – Measuring Equipment & Measure	(0 to 2) inH ₂ O	0.0005 inH ₂ O	Dwyer 1430
	(0 to 600) inH ₂ O (0 to 300) psig (0 to 15) psia (-15 to 0) psig (0 to 30) psia (-15 to 15) psig (0 to 50) psia (-15 to 35) psia (0 to 300) psia/psig (0 to 600) psia/psig (0 to 1000) psia/psig	0.015 % of rdg 0.015 % of rdg 0.0015 psia 0.0015 psig 0.003 psia 0.003 psig 0.005 psia 0.005 psig 0.03 psia/psig 0.06 psia/psig 0.10 psia/psig	Ametek RK-600WC Ametek RK-300 DHI PPC2 AF
	(0 to 15 000) psig	0.03 % of rdg	Ametek TQ-155
Pressure – Measuring Equipment & Measure	(0 to 1000) psig (0 to 1000) psia	25 parts in 10 ⁶ 25 parts in 10 ⁶ + 0.0002 psia	Ruska 2465 Ruska 2465
	(0 to 4000) psig (0 to 40 000) psig	39 parts in 10 ⁶ 77 parts in 10 ⁶	Ruska 2450 Ruska 2450

V. Thermodynamics

Parameter/Equipment	Range	CMC ² (±)	Comments
Infrared Pyrometry ³	-30 °C to 140 °C	1.1 °C	Isotech Venus 2140
	150 °C to 1200 °C	1.7 °C	Isotech Pegasus R
Infrared Pyrometry	100 °C to 1300 °C	1.4 °C	Isotech Cyclops
	300 °C to 1700 °C	2.7 °C	Mikron M330
Optical Pyrometry	800 °C to 1100 °C	1.8 °C	Tungsten ribbon filament lamp
	1100 °C to 1500 °C	1.9 °C	
	1500 °C to 1900 °C	2 °C	
	1900 °C to 2300 °C	3 °C	

Parameter/Equipment	Range	CMC ² (±)	Comments
Humidity	11.3 %, 43.2 %, 75.3 %	1.1 % RH	Saturated aqueous salt solutions
Temperature – Measuring Equipment & Measure	-80 °C to 0 °C	0.009 °C	Comparison to SPRT in liquid bath
	0 °C to 300 °C	0.006 °C	
	300 °C to 500 °C	0.011 °C	Salt bath
	-196 °C	0.004 °C	Liquid Nitrogen comparison
	273.16 K	0.5 mK	Triple point of water
	302.9146 K	1 mK	Melting point of Gallium
	429.7485 K	2 mK	Freezing point of Indium
	505.078 K	2 mK	Freezing point of Tin
692.677 K	3 mK	Freezing point of Zinc	
0 °C to 1250 °C	0.8 °C	Comparison to noble metal thermocouple	
Temperature – Measuring Equipment & Measure ³	-30 °C to 140 °C 100 °C to 650 °C	0.14 °C 1.0 °C	Dry block

VI. Time and Frequency

Parameter/Equipment	Range	CMC ² (±)	Comments
Frequency – Counters, Generators	0.1 Hz to 10 MHz (0.01 to 225) MHz	1 part in 10 ¹¹ 1 part in 10 ¹⁰	Fluke 901B Fluke PM6680B externally clocked to SRS FS700
Timers	6 ns to 1 x 10 ⁶ s	1 part in 10 ¹⁰	

Parameter/Equipment	Range	CMC ² (±)	Comments
Frequency Counters, Generators ³ –	(0.01 to 225) MHz	1 part in 10 ⁷	SRS FS700 Fluke PM6680B externally clocked to SRS FS700
Time Intervals, Timers	6 ns to 1 x 10 ⁶ s	1 part in 10 ⁷	

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 Based on using the standard at the temperature the HP 3458A was calibrated ($t_{cal} \pm 5$ °C) and an auto-calibration (ACAL) was performed within the previous 24 hours (± 1 °C of ambient temperature). CMC is based upon 1-year specifications and is read as ppm or percent output plus floor specification or as ppm or percent of reading plus ppm or percent of range.

⁵ In the statement of CMC, L is the numerical value of the nominal length of the device measured in inches.

⁶ Based on using the standard at the temperature the Fluke 5520A was calibrated ($t_{cal} \pm 5$ °C) and assuming the instrument is zeroed at least every seven days or when the ambient temperature changes more than 5 °C. For resistance, a zero calibration is performed at least every 12 hours within ± 1 °C of use. For AC Current, CMCs are determined with LCOMP Off. CMC is based upon 1-year specifications and is read as ppm or percent output plus floor specification.



The American Association for Laboratory Accreditation

World Class Accreditation

Accredited Laboratory

A2LA has accredited

PROCESS INSTRUMENTS INC.

Pittsburgh, PA

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 21st day of September 2010.





Peter Abney

President & CEO
For the Accreditation Council
Certificate Number 1894.01
Valid to April 30, 2012

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