



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

CONNECTICUT CALIBRATION LABS  
327 S. Main Street  
Newtown, CT 06470  
Joseph Zeolla Phone: 203 270 1263

CALIBRATION

Valid To: October 31, 2018

Certificate Number: 2010.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations<sup>1</sup>:

I. Acoustics

Parameter/Equipment	Range	CMC <sup>2, 5</sup> ( $\pm$ )	Comments
Sound – Measuring Equipment	110.0 dB @ 1kHz	0.45 dB + 0.6R	Quest CA-12B

II. Dimensional

Parameter/Equipment	Range	CMC <sup>2, 5</sup> ( $\pm$ )	Comments
Calipers <sup>3</sup>	Up to 48 in	(50 + 15L + 0.6R) $\mu$ in	Gage blocks
Height Gages <sup>3</sup>	Up to 12 in	(830 + 4.4L + 0.6R) $\mu$ in	Gage blocks
Indicators <sup>3</sup>	Up to 1 in Up to 25 mm	(170 + 0.6R) $\mu$ in (4.3 + 0.6R) $\mu$ m	Starrett 716, gage blocks
Steel Rulers & Tape Measures	Up to 36 in	(0.01 + 0.6R) in	Starrett C604R-36
Pins	(0.011 to 1) in	35 $\mu$ in	Laser micrometer, master pins
Crimpers <sup>3</sup>	(0.011 to 0.5) in	240 $\mu$ in	Meyer plus, Meyer minus

Parameter/Equipment	Range	CMC <sup>2,5</sup> (±)	Comments
Micrometers <sup>3</sup>	Up to 12.000 in	$(34 + 1.4L + 0.6R) \mu\text{in}$	Gage blocks
	Up to 100 mm	$(0.9 + 0.003L + 0.6R) \mu\text{m}$	
Fixture & Attribute Gages	Up to 6 in	$(76 + 18L) \mu\text{in}$	Micrometer

### III. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2,4,6</sup> (±)	Comments
DC Voltage – Generate	(0 to 330) mV 330 mV to 3.3 V (3.3 to 33) V (33 to 330) V (100 to 1000) V	35 $\mu\text{V/V} + 1 \mu\text{V}$ 17 $\mu\text{V/V} + 2 \mu\text{V}$ 20 $\mu\text{V/V} + 20 \mu\text{V}$ 25 $\mu\text{V/V} + 150 \mu\text{V}$ 20 $\mu\text{V/V} + 1500 \mu\text{V}$	Fluke 5520A
DC Voltage – Measure <sup>3</sup>	(0 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1100) V	29 $\mu\text{V/V} + 0.3 \mu\text{V}$ 13 $\mu\text{V/V} + 0.3 \mu\text{V}$ 15 $\mu\text{V/V} + 0.5 \mu\text{V}$ 18 $\mu\text{V/V} + 30 \mu\text{V}$ 10 $\mu\text{V/V} + 100\mu\text{V}$	HP 3458A opt 002
	(1 to 40) kV	2.5%	Fluke 80K-40
DC Current – Generate	(0 to 330) $\mu\text{A}$ 330 $\mu\text{A}$ 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	0.02 % + 0.02 $\mu\text{A}$ 0.01 % + 0.05 $\mu\text{A}$ 0.01 % + 0.25 $\mu\text{A}$ 0.011 % + 2.5 $\mu\text{A}$ 0.022 % + 40 $\mu\text{A}$ 0.039 % + 40 $\mu\text{A}$ 0.051 % + 500 $\mu\text{A}$ 0.1 % + 750 $\mu\text{A}$	Fluke 5520A
	Clamp-on Only	(20 to 500) A (500 to 1000) A	
			with 5500A coil

Parameter/Equipment	Range	CMC <sup>2,4,6</sup> (±)	Comments
DC Current – Measure <sup>3</sup>	(0 to 10) $\mu$ A (10 to 100) $\mu$ A 100 $\mu$ A to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A  (1 to 50) A	0.015 % + 40 pA 0.015 % + 100 pA 35 $\mu$ A/A + 800 pA 37 $\mu$ A/A + 5 nA 61 $\mu$ A/A + 50 nA 0.012 % + 500 nA  0.3 %	HP 3458A opt 002      Agilent 3458A with Empro 50-50
DC Resistance – Generate	(0 to 11) $\Omega$ (11 to 33) $\Omega$ (33 to 110) $\Omega$ (110 to 330) $\Omega$ (0.33 to 1.1) k $\Omega$ (1.1 to 3.3) k $\Omega$ (3.3 to 11) k $\Omega$ (11 to 33) k $\Omega$ (33 to 110) k $\Omega$ (110 to 330) k $\Omega$ (0.33 to 1.1) M $\Omega$ (1.1 to 3.3) M $\Omega$ (3.3 to 11) M $\Omega$ (11 to 33) M $\Omega$ (33 to 110) M $\Omega$ (110 to 330) M $\Omega$ (0.33 to 1.1) G $\Omega$	56 $\mu\Omega/\Omega$ + 0.01 $\Omega$ 51 $\mu\Omega/\Omega$ + 0.015 $\Omega$ 43 $\mu\Omega/\Omega$ + 0.015 $\Omega$ 32 $\mu\Omega/\Omega$ + 0.02 $\Omega$ 30 $\mu\Omega/\Omega$ + 0.02 $\Omega$ 30 $\mu\Omega/\Omega$ + 0.2 $\Omega$ 29 $\mu\Omega/\Omega$ + 0.1 $\Omega$ 30 $\mu\Omega/\Omega$ + 1 $\Omega$ 29 $\mu\Omega/\Omega$ + 1 $\Omega$ 37 $\mu\Omega/\Omega$ + 10 $\Omega$ 34 $\mu\Omega/\Omega$ + 10 $\Omega$ 154 $\mu\Omega/\Omega$ + 150 $\Omega$ 0.014 % + 250 $\Omega$ 0.047 % + 2.5 k $\Omega$ 0.45 % + 3 k $\Omega$ 0.46 % + 100 k $\Omega$ 1.5 % + 500 k $\Omega$	Dale ECN 250 Fluke 5520A
DC Resistance – Measure <sup>3</sup>	(0 to 10) $\Omega$ (10 to 100) $\Omega$ 100 $\Omega$ to 1 k $\Omega$ (1 to 10) k $\Omega$ (10 to 100) k $\Omega$ 100 k $\Omega$ to 1 M $\Omega$ (1 to 10) M $\Omega$ (10 to 100) M $\Omega$ 100 M $\Omega$ to 1 G $\Omega$	33 $\mu\Omega/\Omega$ + 50 $\mu\Omega$ 34 $\mu\Omega/\Omega$ + 500 $\mu\Omega$ 16 $\mu\Omega/\Omega$ + 500 $\mu\Omega$ 14 $\mu\Omega/\Omega$ + 5 m $\Omega$ 14 $\mu\Omega/\Omega$ + 50 m $\Omega$ 19 $\mu\Omega/\Omega$ + 2 $\Omega$ 57 $\mu\Omega/\Omega$ + 100 $\Omega$ 0.063 % + 1 k $\Omega$ 0.5 % + 10 k $\Omega$	HP 3458A opt 002

Parameter/Range	Frequency	CMC <sup>2,6</sup> (±)	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	0.092 % + 6 μV 0.048 % + 6 μV 0.026 % + 6 μV 0.10 % + 6 μV 0.35 % + 12 μV 0.80 % + 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	0.033 % + 8 μV 0.019 % + 8 μV 0.020 % + 8 μV 0.038 % + 8 μV 0.081 % + 32 μV 0.20 % + 70 μV	
(0.33 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 0.018 % + 60 μV 0.024 % + 60 μV 0.037 % + 50 μV 0.074 % + 125 μV 0.24 % + 600 μV	
(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	0.033 % + 650 μV 0.020 % + 600 μV 0.027 % + 600 μV 0.039 % + 600 μV 0.092 % + 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	0.027 % + 2 mV 0.028 % + 6 mV 0.031 % + 6 mV 0.037 % + 6 mV 0.20 % + 50 mV	
(330 to 1020) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.035 % + 10mV 0.029 % + 10 mV 0.034 % + 10 mV	

Parameter/Range	Frequency	CMC <sup>2,4,5,6</sup> (±)	Comments
AC Voltage – Measure <sup>3</sup>			
(1 to 10) mV	45 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.03 % + 1.1 μV 0.04 % + 1.1 μV 0.1 % + 1.1 μV 0.5 % + 1.1 μV 4 % + 2 μV	HP 3458A opt 002
(10 to 100) mV	45 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	0.019 % + 2 μV 0.022 % + 2 μV 0.04 % + 2 μV 0.08 % + 2 μV 0.3 % + 10 μV 1 % + 10 μV	
100 mV to 1 V	45 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	0.013 % + 0.2mV 0.021 % + 0.2mV 0.04 % + 0.2mV 0.08 % + 0.2mV 0.3 % + 1 mV 1 % + 1 mV	
(1 to 10) V	45 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	0.015 % + 0.2mV 0.02 % + 0.2mV 0.04 % + 0.2mV 0.09 % + 0.2mV 0.3 % + 11 mV 1 % + 1 mV	
(10 to 100) V	45 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.03 % + 2 mV 0.03 % + 2 mV 0.042 % + 2 mV 0.12 % + 10 mV 0.4 % + 10 mV	
(100 to 700) V	45 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz	0.06 % + 20 mV 0.08 % + 20 mV 0.13 % + 20 mV	
(1 to 40) kV	(60 to 400) Hz	6.4 %	Fluke 80K-40
(1 to 20) kV	400 Hz to 75 MHz	3.6 % + 0.6R	Tektronix P6015

Parameter/Range	Frequency	CMC <sup>2, 6</sup> (±)	Comments	
AC Current – 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	0.23 % + 0.1 µA 0.19 % + 0.1 µA 0.17 % + 0.1 µA 0.31 % + 0.15 µA 0.81 % + 0.2 µA 1.6 % + 0.4 µA	Fluke 5520A	
(0.33 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 0.15 % + 0.15µA 0.13 % + 0.15 µA 0.21 % + 0.2 µA 0.51 % + 0.30 µA 1.0 % + 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 % + 1.0 µA 0.09 % + 2.0 µA 0.08 % + 2.0 µA 0.11 % + 2.0 µA 0.22 % + 3.0 µA 0.41 % + 4.0 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	0.20 % + 20 µA 0.10 % + 20 µA 0.09 % + 20 µA 0.13 % + 50 µA 0.21 % + 100 µA 0.41 % + 200 µA		
(0.33 to 3.0) A	(10 to 45) Hz 45 Hz to 1.0 kHz (1 to 5) kHz (5 to 10) kHz	0.19 % + 100 µA 0.10 % + 100 µA 1.5 % + 1 mA 2.5 % + 5 mA		
(3 to 11) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	0.59 % + 2 mA 0.14 % + 2 mA 3.0 % + 2 mA		
(11 to 20.5) A	(45 to 100) Hz 100 Hz to 1 kHz (1 to 5) kHz	0.16 % + 5 mA 0.52 % + 5 mA 3.0 % + 5 mA		
Clamp-On Only (20 to 150) A (150 to 550) A (550 to 1000)A	@ 60 Hz @ 60 Hz @ 60 Hz	0.6 % + 1.5 A 0.83 % + 3 A 0.64 % + 4 A		with 5500A coil

Parameter/Range	Frequency	CMC <sup>2, 6</sup> (±)	Comments
AC Current – Measure <sup>3</sup>			
(5 to 100) μA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 100 Hz 100 Hz to 1 kHz	0.41 % + 30 nA 0.17 % + 30 nA 0.10 % + 30 nA 0.08 % + 30 nA	HP 3458A opt 002
100 μA to 1 mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz	0.40 % + 0.2μA 0.15 % + 0.2μA 0.062 % + 0.2μA 0.033 % + 0.2μA 0.071 % + 0.2μA 0.40 % + 0.4μA	
(1 to 10) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz	0.40 % + 20 μA 0.15 % + 20 μA 0.061 % + 20 μA 0.034 % + 20 μA 0.067 % + 20 μA 0.40 % + 40 μA	
(10 to 100) mA	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz	0.40 % + 20 μA 0.15 % + 20 μA 0.061 % + 20 μA 0.031 % + 20 μA 0.062 % + 20 μA 0.40 % + 40 μA	
100 mA to 1 A	(10 to 20) Hz (20 to 45) Hz (45 to 100) Hz 100 Hz to 5 kHz (5 to 20) kHz (20 to 50) kHz	0.40 % + 0.2 mA 0.16 % + 0.2 mA 0.081 % + 0.2mA 0.10 % + 0.2 mA 0.30 % + 0.2 mA 1.0 % + 0.4 mA	

Parameter/Range	Frequency	CMC <sup>2, 4, 6</sup> (±)	Comments
Capacitance – Generate  (0.19 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  (0.33 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  (0.33 to 1.1) mF (1.1 to 3.3) mF (3.3 to 11) mF (11 to 33) mF (33 to 110) mF	10 Hz to 10 kHz 10 Hz to 10 kHz 10 Hz to 3 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz 10 Hz to 1 kHz  (10 to 600) Hz (10 to 300) Hz (10 to 150) Hz (10 to 120) Hz Up to 80 Hz Up to 50 Hz  Up to 20 Hz Up to 6 Hz Up to 2 Hz Up to 0.6 Hz Up to 0.2 Hz	3.4 % + 0.01 nF 1.6 % + 0.01 nF 0.58 % + 0.01 nF 0.28 % + 0.01 nF 0.28 % + 0.1 nF 0.28 % + 0.1 nF 0.28 % + 0.1 nF 0.28 % + 0.3 nF  0.28 % + 1 nF 0.27 % + 3 nF 0.27 % + 10 nF 0.41 % + 30 nF 0.46 % + 100 nF 0.45 % + 300 nF  0.45 % + 1 nF 0.45 % + 3 nF 0.45 % + 10 nF 0.75 % + 30 nF 1.1 % + 100 nF	Fluke 5520A
Inductance – Generate <sup>3</sup> @ 100 mH	@ 1 kHz	0.1 mH	GenRad 1842L
Inductance – Measure @ 100 mH	@ 1 kHz	0.2 %	GenRad 1659
Capacitance – Measure @ 1 kHz	1 pF to 1 mF	0.2 %	Genrad 1659



Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments	
Electrical Calibration of Thermocouple Indicators <sup>3</sup> –				
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	0.55 °C 0.28 °C 0.27 °C 0.28 °C 0.32 °C	Fluke 5520A	
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	0.36 °C 0.28 °C 0.27 °C 0.29 °C 0.33 °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	0.40 °C 0.30 °C 0.28 °C 0.35 °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	0.67 °C 0.34 °C 0.28 °C 0.27 °C		
Electrical Calibration of RTDs –				
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	0.07 °C 0.07 °C 0.09 °C 0.10 °C 0.11 °C 0.13 °C 0.24 °C		Fluke 5520A

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Electrical Calibration of RTDs (cont) –			
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	0.08 °C 0.08 °C 0.08 °C 0.09 °C 0.14 °C 0.15 °C 0.16 °C 0.17 °C	Fluke 5520A
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	0.04 °C 0.04 °C 0.05 °C 0.05 °C 0.06 °C 0.07 °C 0.07 °C 0.23 °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	0.26 °C 0.06 °C 0.07 °C 0.08 °C 0.09 °C 0.09 °C 0.10 °C 0.11 °C 0.24 °C	
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	0.07 °C 0.07 °C 0.09 °C 0.10 °C 0.11 °C 0.13 °C	

Parameter/Equipment	Range	CMC <sup>2,6</sup> (±)	Comments
Oscilloscopes – Amplitude			
Square Wave Signal, 50 Ω @ 1 kHz	(0 to 6.6) V	0.26 % + 40μV	Fluke 5520A option SC1100 & Agilent 3458A opt 002
1 MΩ	1 mV to 130 V	0.10 % +40 μV	
Leveled Sine Wave Characteristics into 50 Ω	50 kHz (reference)	2 % + 300 μV	Fluke 5520A option SC1100
Square Wave Signal	50 kHz to 100MHz (100 to 300) MHz (300 to 600) MHz (600 to 1100) MHz	3.5 % + 300μV 4 % + 300 μV 6 % + 300 μV 7 % + 300 μV	
Frequency Accuracy	10 kHz to 100kHz	2.5 μHz/Hz	
Amplitude (Relative to 50 kHz)	50 kHz to 100 MHz (101 to 300) MHz (301 to 600) MHz (601 to 1100) MHz	1.5 % + 100 μV 2.0 % + 100 μV 4.0 % + 100 μV 5.0 % + 100 μV	
Time Marker into 50 Ω	5 s to 50 ms 20 ms to 10 ns (5 to 2) ns	25μs/s + <i>t</i> *1000 μs/s 3 μs/s 4 μs/s	<i>t</i> is the time in seconds
Rise Time 50 Ω Load	300 ps	0 ps/-100 ps	

#### IV. Mechanical

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Torque – Measuring Equipment	(5 to 50) in·lbf	0.89 in·lbf	Sturtevant- Richmont torque tester
	(>50 to 300) in·lbf	3.0 in·lbf	
	(10 to 600) ft·lbf	4.9 ft·lbf	Sargent torque tester

Parameter/Equipment	Range	CMC <sup>2,4,5</sup> (±)	Comments
Scales & Balances <sup>3</sup>	(1 to 1000) g	1 mg + 0.6R	Class 1 weights
	Up to 25 lb 25 to 50 lb	0.1 g + 0.6R 0.3 g + 0.6R	Class F weights
Mass	40 mg to 800 g	13 mg	Ohaus AV 812
	10 to 60 lb	0.4 g	Transcell
Pressure Gages	(1 to 300) psi	0.15 psi + 0.6R	Fluke 718
	(10 to 1000) psi	0.03 % + 0.6R	Ametek HK-1000
	(1000 to 10000) psi	8 psi + 0.6R	
Force <sup>3</sup> –	0.25 oz to 25 lbf	210 mg + 0.6R	Heusser Neweigh Class F weights
Fixed Points	25 lbf	1.7 mg + 0.6R	Rice Lake 1203
	50 lbf	3.6 mg + 0.6R	1207
	75 lbf	5.2 mg + 0.6R	1203 1207
	100 lbf	6.7 mg + 0.6R	1207 1208
	125 lbf	8.3 mg + 0.6R	1207 1208 1203
	150 lbf	9.7 mg + 0.6R	1207 1208 1203 1204
	200 lbf	12 mg + 0.6R	ALL

#### V. Thermodynamics

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Temperature – Measure (Ovens)	-200 °C to 1370 °C	0.61 °C	Fluke 714
	-328 °F to 2498 °F	1.1 °F	
Relative Humidity – Measure <sup>3</sup>	Up to 90 % RH (90 to 98) % RH	1.9 % 2.5 %	Vaisala MI70/HMP77

## VI. Time & Frequency

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Frequency – Measuring Equipment	10 MHz	0.13 Hz	Efratom frequency standard
Frequency – Measure <sup>3</sup>	1 Hz to 1.1 GHz	0.27 Hz	HP 5334B

<sup>1</sup> This laboratory offers commercial calibration service and field calibration service.

<sup>2</sup> Calibration and Measurement Capability Uncertainty (CMC) is the 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. CMCs 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.

<sup>3</sup> 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.

<sup>4</sup> In the statement of CMC percent refers to percent of reading unless otherwise noted.

<sup>5</sup>  $L$  is the length in inches/mm of the unit under test and  $R$  is the resolution in inches/mm.

<sup>6</sup> The stated measured values are determined using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure or generate the measured value in the ranges indicated. CMC are expressed as either a specific value that covers the full range or as a fraction of the reading plus a fixed floor specification.



## *Accredited Laboratory*

A2LA has accredited

# CONNECTICUT CALIBRATION LABS

*Newtown, CT*

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 R205 – Specific Requirements: Calibration Laboratory Accreditation Program. 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 24<sup>th</sup> day of April 2017.

A handwritten signature in black ink, written over a horizontal line.

President and CEO  
For the Accreditation Council  
Certificate Number 2010.01  
Valid to October 31, 2018

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