

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

usCALIBRATION  
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CALIBRATION

Valid To: August 31, 2011

Certificate Number: 2092.01

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. Dimensional

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Calipers <sup>3</sup> –			
Digital	(0 to 1) in (1 to 4) in (4 to 12) in (12 to 36) in	290 μin 300 μin 360 μin 700 μin	Gage blocks
Vernier	(0 to 1) in (1 to 4) in (4 to 12) in (12 to 36) in	580 μin 580 μin 620 μin 860 μin	
Micrometers <sup>3</sup> –			
Digital	(0 to 1) in (1 to 4) in (4 to 12) in (12 to 36) in	76 μin 97 μin 220 μin 640 μin	Gage blocks
Vernier	(0 to 1) in (1 to 4) in (4 to 12) in (12 to 36) in	64 μin 96 μin 220 μin 640 μin	



Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Height Gages	(0 to 1) in (1 to 4) in (4 to 12) in (12 to 36) in	3300 μin 3300 μin 3300 μin 3300 μin	Gage blocks, surface plate
Depth Gages	(0 to 1) in (1 to 4) in (4 to 12) in (12 to 36) in	290 μin 300 μin 360 μin 700 μin	Gage blocks, surface plate
Dial Indicators	(0 to 1) in (1 to 4) in (4 to 6) in	590 μin 590 μin 600 μin	Gage blocks, surface plate, height gage
Thickness Gages <sup>3</sup>	(0 to 1) in	75 μin	Gage blocks
Pin Gauges	(0 to 1) in	43 μin	Super micrometer, gage blocks
Plain Plugs	(0 to 1) in (1 to 6) in (6 to 10) in	43 μin 120 μin 250 μin	Super micrometer, gage blocks
Protractors	0° to 90°	0.059°	Angle blocks, surface plate
Optical Comparators <sup>3</sup> Linearity	(0 to 20) in	210 μin	Gage blocks

II. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
DC Voltage <sup>3</sup> – Generate	(0 to 330) mV (0 to 3.3) V (0 to 33) V (30 to 330) V (100 to 1020) V	60 $\mu\text{V}/\text{V}$ + 3 $\mu\text{V}$ 50 $\mu\text{V}/\text{V}$ + 5 $\mu\text{V}$ 50 $\mu\text{V}/\text{V}$ + 50 $\mu\text{V}$ 55 $\mu\text{V}/\text{V}$ + 500 $\mu\text{V}$ 55 $\mu\text{V}/\text{V}$ + 1.5 mV	Fluke 5500A/6
DC Current <sup>3</sup> – Generate	(0 to 3.3) mA (0 to 33) mA (0 to 330) mA (0 to 2.2) A (0 to 11) A  (11 to 50) A	0.013 % of output + 0.05 $\mu\text{A}$ 0.01 % of output + 0.25 $\mu\text{A}$ 0.01 % of output + 3.3 $\mu\text{A}$ 0.03 % of output + 44 $\mu\text{A}$ 0.06 % of output + 330 $\mu\text{A}$  0.25 % of output + 0.001 A	Fluke 5500A/6      Sorenson DCS20-50E, agilent 34401A, deltec MKA C shunt
Clamp-On Only	(0 to 20) A  (20 to 550) A	0.5 % of output + 0.15 A  0.5 % of output + 0.5 A	Fluke 5500A/6  Fluke 5500A w/ 50 turn coil
Resistance <sup>3</sup> – Generate	(0 to 11) $\Omega$ (11 to 33) $\Omega$ (33 to 330) $\Omega$ 330 $\Omega$ to 3.3 k $\Omega$ (3.3 to 33) k $\Omega$ (33 to 110) k $\Omega$ (110 to 330) k $\Omega$ 330 k $\Omega$ 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 $\Omega$	0.012 % of output + 8 m $\Omega$ 0.012 % of output + 15 m $\Omega$ 90 $\mu\Omega/\Omega$ + 15 m $\Omega$ 90 $\mu\Omega/\Omega$ + 0.06 $\Omega$ 90 $\mu\Omega/\Omega$ + 0.6 $\Omega$ 0.011 % of output + 6 $\Omega$ 0.012 % of output + 6 $\Omega$ 0.015 % of output + 55 $\Omega$ 0.06 % of output + 550 $\Omega$ 0.1 % of output + 550 $\Omega$ 0.5 % of output + 5.5 k $\Omega$ 0.5 % of output + 17 k $\Omega$	Fluke 5500A/6

Parameter/Range	Frequency	CMC <sup>2,4</sup> (±)	Comments
AC Voltage <sup>3</sup> – 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	0.35 % of output + 20 µV 0.15 % of output + 20 µV 0.2 % of output + 20 µV 0.25 % of output + 20 µV 0.35 % of output + 33 µV 1 % of output + 60 µV	Fluke 5500A/6
(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	0.25 % of output + 50 µV 0.05 % of output + 20 µV 0.1 % of output + 20 µV 0.16 % of output + 40 µV 0.24 % of output + 170 µV 0.7 % of output + 330 µV	
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	0.15 % of output + 250 µV 0.03 % of output + 60 µV 0.08 % of output + 60 µV 0.14 % of output + 300 µV 0.24 % of output + 1.7 mV 0.5 % of output + 3.3 mV	
(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	0.15 % of output + 2.5 mV 0.04 % of output + 600 µV 0.08 % of output + 2.6 mV 0.19 % of output + 5 mV 0.24 % of output + 17 mV	
(33 to 330) V	45 Hz to 1 kHz (1 to 10) kHz (10 to 20) kHz	0.05 % of output + 6.6 mV 0.08 % of output + 15 µV 0.09 % of output + 33 µV	
(330 to 1020) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.05 % of output + 80 mV 0.2 % of output + 100 µV 0.2 % of output + 500 µV	

Parameter/Range	Frequency	CMC <sup>2,4</sup> (±)	Comments
AC Current <sup>3</sup> – Generate			
(30 to 330) µA	(10 to 20) Hz (20 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.25 % of output + 0.15 µA 0.13 % of output + 0.15 µA 0.13 % of output + 0.25 µA 0.4 % of output + 0.15 µA 1.3 % of output + 0.15 µA	Fluke 5500A/6
330 µA to 3.3 mA	(10 to 20) Hz 20 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.2 % of output + 0.3 µA 0.1 % of output + 0.3 µA 0.2 % of output + 0.3 µA 0.6 % of output + 0.3 µA	Fluke 5500A/6
(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	0.2 % of output + 3 µA 0.1 % of output + 3 µA 0.09 % of output + 3 µA 0.2 % of output + 3 µA 0.6 % of output + 3 µA	Fluke 5500A/6
(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	0.2 % of output + 30 µA 0.1 % of output + 30 µA 0.09 % of output + 30 µA 0.2 % of output + 30 µA 0.6 % of output + 30 µA	Fluke 5500A/6
330 mA to 2.2 A	(10 to 45) Hz 45 Hz to 1 kHz (1 to 5) kHz	0.2 % of output + 300 µA 0.1 % of output + 300 µA 0.75 % of output + 300 µA	Fluke 5500A/6
(2.2 to 11) A	(45 to 65) Hz (65 to 500) Hz 500 Hz to 1 kHz	0.06 % of output + 2 mA 0.1 % of output + 2 mA 0.33 % of output + 2 mA	Fluke 5500A/6
Clamp-On Only			
(0 to 20) A	(45 to 65) Hz  (65 to 440) Hz	0.56 % of output + 0.26 A  1 % of output + 0.9 A	Fluke 5500A/6  Fluke 5500A w/ 50 turn coil
(20 to 550) A	(45 to 65) Hz  (65 to 440) Hz	0.56 % of output + 0.9 A  1 % of output + 0.26 A	Fluke 5500A/6  Fluke 5500A w/ 50 turn coil

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Capacitance <sup>3</sup> – Generate	(0.33 to 0.4999) nF (0.5 to 1.0999) nF (1.1 to 3.2999) nF (3.3 to 10.999) nF (11 to 32.999) nF (33 to 109.99) nF (110 to 329.99) nF (0.33 to 1.0999) μF (1.1 to 3.2999) μF (3.3 to 10.999) μF (11 to 32.999) μF (33 to 109.99) μF (110 to 329.99) μF (330 to 1.1) mF	0.5 % of output + 0.01 nF 0.5 % of output + 0.01 nF 0.5 % of output + 0.01 nF 0.5 % of output + 0.01 nF 0.25 % of output + 0.1 nF 0.25 % of output + 0.1 nF 0.25 % of output + 0.3 nF 0.25 % of output + 1 nF 0.35 % of output + 3 nF 0.35 % of output + 10 nF 0.4 % of output + 30 nF 0.5 % of output + 100 nF 0.7 % of output + 300 nF 1 % of output + 300 nF	Fluke 5500A/6
DC Voltage <sup>3,5</sup> – Measure	100.0000 mV 1.000000 V 10.00000 V 100.0000 V 1000.000 V  (1 to 20) kV	0.005 % of reading + 3.5 μV 0.004 % of reading + 7 μV 0.0035 % of reading + 50 μV 0.0045 % of reading + 600 μV 0.0045 % of reading + 10 mV  2 % of reading	Agilent 34401A  Fluke 187 Fluke 80K-40
Electrical Simulation of Thermocouples – Generate <sup>3</sup>			
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 0.3 °C 0.33 °C	Fluke 5500A/6
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	0.3 °C 0.26 °C 0.31 °C 0.5 °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	0.5 °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	0.27 °C 0.16 °C 0.14 °C	

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Electrical Simulation of Thermocouples – Generate <sup>3</sup> (Cont.)			
Type J	150 °C to 760 °C 760 °C to 1200 °C	0.17 °C 0.23 °C	Fluke 5500A/6
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 0.4 °C	
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	
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	0.4 °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 0.4 °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	

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Electrical Calibration of Thermocouple Simulators <sup>3</sup> – Measure			
Type B	600 °C to 800 °C 800 °C to 1000 °C 1000 °C to 1550 °C 1550 °C to 1820 °C	1.1 °C 1.0 °C 1.0 °C 1.0 °C	Fluke 5500A/6  “Measure” refers to measurement of thermocouple simulators/source
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	0.81 °C 0.80 °C 0.81 °C 1.1 °C 1.2 °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	0.46 °C 0.27 °C 0.26 °C 0.27 °C 0.29 °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	0.32 °C 0.27 °C 0.26 °C 0.27 °C 0.65 °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	0.35 °C 0.28 °C 0.27 °C 0.31 °C 0.70 °C	
Type L	-200 °C to -100 °C -100 °C to 800 °C 800 °C to 900 °C	0.37 °C 0.31 °C 0.27 °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	0.39 °C 0.29 °C 0.28 °C 0.28 °C 0.32 °C	

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Electrical Calibration of Thermocouple Simulators <sup>3</sup> – Measure (cont)			
Type R	0 °C to 250 °C	0.76 °C	Fluke 5500A/6  “Measure” refers to measurement of thermocouple simulators/sources
	250 °C to 400 °C	0.68 °C	
	400 °C to 1000 °C	0.67 °C	
	1000 °C to 1767 °C	0.70 °C	
Type S	0 °C to 250 °C	0.72 °C	
	250 °C to 1000 °C	0.68 °C	
	1000 °C to 1400 °C	0.69 °C	
	1400 °C to 1767 °C	0.72 °C	
Type T	-250 °C to -150 °C	0.54 °C	
	-150 °C to 0 °C	0.30 °C	
	0 °C to 120 °C	0.27 °C	
	120 °C to 400 °C	0.26 °C	
Type U	-200 °C to 0 °C	0.89 °C	
	0 °C to 600 °C	0.81 °C	
Electrical Calibration of RTD Indicating Systems – Generate <sup>3</sup>			
Pt 385, 100 Ω	-200 °C to -0 °C	0.07 °C	Fluke 5500A/6
	0 °C to 100 °C	0.08 °C	
	100 °C to 400 °C	0.1 °C	
	400 °C to 630 °C	0.12 °C	
	630 °C to 800 °C	0.23 °C	
Pt 385, 200 Ω	-190 °C to -80 °C	0.06 °C	
	-80 °C to 260 °C	0.07 °C	
	260 °C to 300 °C	0.12 °C	
	300 °C to 400 °C	0.13 °C	
	400 °C to 600 °C	0.14 °C	
	600 °C to 630 °C	0.16 °C	
Pt 385, 500 Ω	-190 °C to -80 °C	0.06 °C	
	-80 °C to 100 °C	0.07 °C	
	100 °C to 260 °C	0.08 °C	
	260 °C to 400 °C	0.09 °C	
	400 °C to 600 °C	0.1 °C	
	600 °C to 630 °C	0.11 °C	

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments	
Electrical Calibration of RTD Indicating Systems – Generate <sup>3</sup> (cont)				
Pt 385, 1000 Ω	-190 °C to -80 °C -80 °C to 260 °C 260 °C to 600 °C 600 °C to 630 °C	0.06 °C 0.07 °C 0.08 °C 0.23 °C	Fluke 5500A/6	
Pt 3916, 100 Ω	-200 °C to -190 °C -190 °C to 0 °C 0 °C to 260 °C 260 °C to 300 °C 300 °C to 600 °C 600 °C to 630 °C	0.25 °C 0.07 °C 0.08 °C 0.09 °C 0.1 °C 0.23 °C		
Pt 3926, 100 Ω	-200 °C to -0 °C 0 °C to 100 °C 100 °C to 400 °C 400 °C to 630 °C	0.07 °C 0.08 °C 0.1 °C 0.12 °C		
PtNi 385, 120 Ω (Ni 120)	-80 °C to 100 °C 100 °C to 260 °C	0.09 °C 0.14 °C		
Cu 427, 10 Ω	-100 °C to 260 °C	0.3 °C		
Oscilloscope Calibration <sup>3</sup> – Generate				
Amplitude DC Signal 50 Ω Load 1 M Ω Load	(-6.6 to 6.6) V (-130 to 130) V	0.25 % of output + 40 μV 0.05 % of output + 40 μV	Fluke 5500A/6	
Amplitude Square Wave Signal 50 Ω Load 1 M Ω Load	±1mV to ±6.6 Vp-p ±1mV to ±130 Vp-p	0.25 % of output + 40 μV 0.25 % of output + 40 μV		
Leveled Sine Wave Flatness into 50 Ω, relative to 50KHz 5mVpp to 5.5Vpp	50 kHz to 100 MHz (100 to 300) MHz (300 to 600) MHz	1.5 % of output + 100 μV 2 % of output + 100 μV 4 % of output + 100 μV		
Time Marker into 50 Ω, Generate fixed markers in 5-2-1 sequence	5 s to 50 ms 20 ms to 2 ns	(25 + 1000t) μs/s 100 μs/s		<i>t</i> = time in seconds
Rise Time into 50 Ω Load	≤300 ps	(0 to 100) ps		

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
DC Current <sup>3,5</sup> – Measure, Fixed Points	10.00000 mA 100.0000 mA 1.000000 A 3.000000 A	0.05 % of reading + 2 µA 0.05 % of reading + 5 µA 0.1 % of reading + 100 µA 0.12 % of reading + 600 µA	Agilent 34401A
	(3 to 10) A (10 to 50) A (50 to 100) A	0.25 % of reading + 0.6 mA 0.25 % of reading + 1 mA 0.25 % of reading + 2 mA	Agilent 34401A, deltec MKA C shunt
Resistance <sup>3,5</sup> – Measure, Fixed Points	100.0000 Ω 1.000000 kΩ 10.00000 kΩ 100.0000 kΩ 1.000000 MΩ 10.00000 MΩ 100.0000 MΩ	0.01 % of reading + 4 mΩ 0.01 % of reading + 10 mΩ 0.01 % of reading + 100 mΩ 0.01 % of reading + 1 Ω 0.01 % of reading + 10 Ω 0.04 % of reading + 100 Ω 0.8 % of reading + 10 kΩ	Agilent 34401A

Parameter/Range	Frequency	CMC <sup>2</sup> (±)	Comments
AC Voltage <sup>3,5</sup> – Measure  100.0000 mV  (1.000000 to 750.000) V  (0.75 to 1) kV (1 to 10) kV	(3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	1 % of reading + 40 µV 0.35 % of reading + 40 µV 0.06 % of reading + 40 µV 0.12 % of reading + 50 µV 0.6 % of reading + 80 µV 4 % of reading + 500 µV	Agilent 34401A
	(3 to 5) Hz (5 to 10) Hz 10 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	1 % of reading + 230 mV 0.35 % of reading + 230 mV 0.06 % of reading + 230 mV 0.12 % of reading + 380 mV 0.6 % of reading + 600 mV 4 % of reading + 3.8 V	
	60 Hz 60 Hz	5 % of reading + 0.017 kV 5 % of reading + 0.006 kV	Fluke 187 Fluke 80K-40
AC Current <sup>3,5</sup> – Measure  1.000000 A  3.00000 A	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz	1 % of reading + 400 µA 0.3 % of reading + 400 µA 0.1 % of reading + 400 µA	Agilent 34401A
	(3 to 5) Hz (5 to 10) Hz 10 Hz to 5 kHz	1.1 % of reading + 1.8 mA 0.35 % of reading + 1.8 mA 0.15 % of reading + 1.8 mA	

### III. Mechanical

Parameter/Equipment	Range	CMC <sup>2,6</sup> (±)	Comments
Pressure Gages <sup>3</sup>	(0 to 1) inH <sub>2</sub> O (0 to 5) psi (5 to 500) psi (500 to 1500) psi (1500 to 10000) psi  (0 to 100) psia	0.04 inH <sub>2</sub> O 0.11 psi 0.72 psi 0.91 psi 17 psi  0.69 psia	Fluke pressure modules
Vacuum <sup>3</sup>	(0 to -30) inHg	1.2 inHg	Fluke 700PV4
Torque <sup>3</sup> – Wrenches, Screwdrivers	(5 to 40) in·lb (40 to 1000) in·lb (1000 to 3000) in·lb	1.1 % of range 0.78 % of range 0.78 % of range	Torque transducers
Weights <sup>3</sup>	(0.001 to 2) g (2 to 20) g (20 to 210) g	0.2 mg 0.26 mg 0.28 mg	Acculab ALC-210.4 Class 1 weights
Scales <sup>3</sup>	(0.001 to 1000) g  (5 to 235) lb  (0 to 1150) lb	0.58R + 0.0003 % of rdg  0.58R + 0.0007 % of rdg  1.3 lb	Class 1 weights  Class F weights  Class F weights bulk substitution weights

### IV. Thermodynamic

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Temperature – Measure <sup>3</sup>	(-200 to 0) °C (0 to 200) °C (200 to 500) °C	0.024 °C 0.032 °C 0.053 °C	Hart scientific 1523, 5608
Temperature – Measuring Equipment <sup>3</sup>	(-25 to 0) °C (0 to 150) °C	0.059 °C 0.063 °C	Hart scientific 1523, 5608, 9142

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Relative Humidity – Fixed Points	33 % RH 75 % RH	2 % RH 3 % RH	Dickson FH325 salt solutions

#### IV. Time and Frequency

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Timers & Stop Watches <sup>3</sup>	(0 to 10 000) s	0.053 s	Fluke 5500A HP 53131A
Frequency <sup>3,4</sup> – Generate  AC Voltage	(0.01 to 119.99) Hz (120.0 to 1199.9) Hz (1.200 to 9.999) kHz (10.000 to 11.999) kHz (12.00 to 119.99) kHz (120.0 to 1199.9) kHz (1.200 to 2.000) MHz	25 µHz/Hz +1 mHz 25 µHz/Hz +1 mHz 25 µHz/Hz +1 mHz 25 µHz/Hz +15 mHz 25 µHz/Hz +15 mHz 25 µHz/Hz +15 mHz 25 µHz/Hz +15 mHz	Fluke 5500A/6
SC600 Leveled Sine Wave	50 kHz to 600 MHz (10 kHz Resolution)	2.5 µHz/Hz	
Frequency <sup>3</sup> – Measure  100 mV to 750 V	(3 to 5) Hz (5 to 10) Hz (10 to 40) Hz 40 Hz to 300 kHz	0.1 % of reading 0.05 % of reading 0.03 % of reading 0.01 % of reading	Agilent 34401A

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

<sup>2</sup> 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.

- <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> The measurands stated are generated with the Fluke 5500A. This capability is suitable for the calibration of the devices intended to measure the stated measurand in the ranges indicated. CMC is expressed as either a specific value that covers the full range or as a fraction of the reading plus a fixed floor specification.
- <sup>5</sup> The measurands stated are measured with the Agilent 34401A. This capability is suitable for the calibration of the devices intended to generate the stated measurand in the ranges indicated. CMC is expressed as either a specific value that covers the full range or as a fraction of the reading plus a fixed floor specification.
- <sup>6</sup> *R* is the resolution of the unit under test.



World Class Accreditation

The American Association for Laboratory Accreditation

# Accredited Laboratory

A2LA has accredited

**usCALIBRATION INC.**

*Irvine, CA*

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 9<sup>th</sup> day of July 2009.



  
\_\_\_\_\_  
Peter Meyer

President & CEO  
For the Accreditation Council  
Certificate Number 2092.01  
Valid to August 31, 2011  
Revised: May 24, 2010

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