International Accreditation Service

CERTIFICATE OF ACCREDITATION

This is to signify that

STANDARD CALIBRATIONS, INC.

908 VENTURES WAY
CHESAPEAKE, VIRGINIA 23320

Calibration Laboratory CL-120

has demonstrated compliance with the ANS/ISO/IEC Standard 17025:2005, *General criteria for the competence of testing and calibration laboratories*, and has been accredited commencing February 1, 2012, for the calibration discipline(s) listed in the approved scope of accreditation. The laboratory meets requirements of the IAS program requirements in the field of calibration. This certificate expires January 31, 2014.

Patrick V. McCullen
Vice President

C. P. Ramani, P.E.
President

(see attached scope of accreditation for fields of calibration and accredited calibration methods)

Print Date: 02/10/2012

11-04577

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

Standard Calibrations, Inc.
908 Ventures Way
Chesapeake, VA 23320

Louis Ruggeri
Metrology Director
757-549-6534

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Dimensional			
Gage Blocks	Up to 13 in.	12 *u* in.	P & W LabMaster, Gage Blocks Mechanical Comparison
Length Standards	Up to 36 in.	80 *u* in.	P & W Super Micrometer, Gage Blocks
Threaded Plugs	Up to 12 in.		P & W LabMaster, Gage Blocks
Major Diameter		15 *u* in.	
Pitch Diameter		20 *u* in.	
Plain Rings	0.125- 14 in.	15 *u* in.	P & W LabMaster, Gage Blocks
Pin & Plain Plug Gages	0-12 in.	16 *u* in.	P & W LabMaster, Gage Blocks
Micrometers	0-1 in./0.00005 in.	59 *u* in	
Inside, Outside, Depth	>1 to 72 in./0.0001 in.	(10*L* + 0.6*R*) *u* in.	Gage Blocks, Rod Standards

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

Print Date: 02/10/2012

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Dimensional (continued)			
Calipers & Verniers	0-12 in./0.001 in. >12 to 24 in./0.001 in. >24 to 48 in./0.001 in. >48 to 72 in./0.001 in.	1.40^{-3} in. 1.50^{-3} in. 1.60^{-3} in. 1.80^{-3} in.	Gage Blocks, Rod Standards P & W Super Micrometer
Dial & Test Indicators	0-8 in./0.0001 in.	(10*L* + 0.6) *u* in.	P & W Super Micrometer Federal Indicator , Gage Blocks
Height Gages	0-60 in./0.0001 in.	(58 + 8.8*L*) *u* in.	Gage Blocks, Mu Checker
Mechanical			
Torque Wrenches	0.5 to 400 in./oz. 5 to 750 lb. in. 12.5 to 1000 lb. ft.	(0.05% + 0.6*R)* in. oz. 1.04% in.lb. IR 1.04% ft.lb. IR	Class F weights, Arms CDI Torque Calibrator/Torque Cell
Torque Cells	2 in./oz. to 1000 lb./ft.	(0.05% + 0.6*R)* ft.lb.	Class F weights, Arms

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

Print Date: 02/10/2012

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Mechanical (continued)			
Pressure Gages/Transducers	-14.5 psi to 0 psi	(0.005% reading) + 0.0015 psi	Ruska 7250xi
	0 psi to 300 psi	0.005% reading	
	250 psi to 1000 psi	0.005% fs	Ruska 7050i
	0 to 985 psia	0.005% fs	
	500 to 10,000 psi	0.012% fs/range	RPM3
	10,000 to 30,000 psi	0.09% fs	Iomegadyne PX01S1-30KGI
Vacuum Gages/Transducers	0 to 30 In Hg	0.005% fs/range	Ruska 7250xi, 7050i, UPC5100
Tension/Compression Dynamometers/Load Cells	0 to 60,000 lb	0.05% reading	Morehouse Measuring Machine

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Thermal			
Temperature Probes	-40 to 1199°F	1.1°F	Oil Baths, Dry Blocks Reference PRT's w/ meters
Infrared	122 to 932°F	(0.9°F at 212°F, 1.4°F at 932°F) 0.06°F	Fluke 9132
Dry Block Calibrators	-40 to 1199°F	0.1°F	Fluke 9132, reference PRT
Thermometers	-40 to 1199°F	0.1°F	Fluke 9132, reference PRT
Time/Frequency			
Reference Frequency	10MHz	0.155Hz	Datum EB6000RB1 GPS Receiver
Frequency - Generate (Sine wave into 50Ω)	1µHz to 100kHz >100kHz to 10MHz >10MHz to 500MHz	0.0024Hz 0.15Hz 1.5Hz	HP 3325B signal generator HP 8642B

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

Print Date: 02/10/2012

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Time/Frequency (continued)			
Frequency – Measure	10Hz to 100MHz	0.15Hz	HP 5334A counter sync'd to GPS
(Sine wave into 50Ω)	>100MHz to 500MHz	1.8Hz	EIP 578B sync'd to GPS
Amplitude Modulation – Measure	250kHz to 10MHz		HP 8902A
5% to 99%)	(AM: 50Hz to 10kHz)	2% of reading plus 1 digit	
	(AM: 20Hz to 10kHz)	3% of reading plus 1 digit	
	>10MHz to 1.3GHz		
	(AM: 50Hz to 10kHz)	1% of reading plus 1 digit	
	(AM: 20Hz to 10kHz)	3% of reading plus 1 digit	
Frequency Modulation - Measure	250kHz to 10MHz	2% of reading plus 1 digit	HP 8902A
(Dev: ≤40kHz)	(FM: 50Hz to 10kHz)		
	>10MHz to 1.3GHz	1% of reading plus 1 digit	HP 8902A
(Dev: ≤400kHz)	(FM: 50Hz to 100kHz)	5% of reading plus 1 digit	
	(FM: 20Hz to 200kHz)		

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
RF/Microwave			
RF Power - Tuned (2.5MHz through 1.3GHz)	(0 to -10) dB (-10 to -20) dB (-20 to -30) dB (-30 to -40) dB	0.035 dB 0.062 dB 0.092 dB 0.120 dB	HP 8902A with 11722A sensor head
RF Power - Tuned (2.5MHz through 1.3GHz)	(-40 to -50) dB (-50 to -60) dB (-60 to -70) dB (-70 to -80) dB (-80 to -90) dB (-90 to -100) dB (-100 to -110) dB	0.150 dB 0.180 dB 0.210 dB 0.240 dB 0.270 dB 0.300 dB 0.340 dB	HP 8902A with 11722A sensor head

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
RF Power - Absolute (2.5MHz through 1.3GHz)	+20 to -30 dB	0.35dB	HP 8902A with 11722A sensor head
Microwave Frequency – Generate	500MHz to 2GHz >2 to 26GHz	1.5Hz 1500Hz	HP 8642B HP 8673B
Microwave Frequency – Measure	500MHz to 26.5GHz	1.8Hz	EIP 578B sync'd to GPS

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
RF/Microwave (continued)			
Sensor Head	Power at 1mW 10 to 40MHz 0.05 to 10GHz >10 to 18GHz	0.013mW 0.011mW 0.012mW	Tegam 1805/1807 System II
Wattmeter (Since wave into 50Ω)	Up to 400MHz 100W 50W 25W 10W 5W 2.5W 1W	0.55 mW 0.27 mW 0.14 mW 0.055 mW 0.027 mW 0.014 mW 0.006 mW	HP 436A, HP 8482A, and Premier Micro C1852-B-29
Humidity	10 to 95% RH	0.5%	Thunder Scientific Humidity Calibrator
Dew Point	-94 to 32°F 32 to 158°F	0.18°F 0.09°F	Thunder Scientific Humidity Calibrator

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical DC/LF			
DC Voltage – Generate	(0 to 330) mV (0.33 to 3.3) V (3.3 to 33) V (33 to 330) V (330 to 1000) V	20 µV/V+ 1 µV 11 µV/V + 2 µV 12 µV/V + 20 µV 18 µV/V + 150 µV 18 µV/V + 1.5 mV	Fluke 5520A/SC600
DC Voltage – Measure	(0 to 100) mV (0.1 to 1) V (1 to 10) V (10 to 100) V (100 to 1200) V	11 µV/V + 0.3 µV 10 µV/V + 0.3 µV 10 µV/V + 0.5 µV 12 µV/V + 30 µV 13 µV/V + 100 µV	Agilent 3458A
DC Current – Generate	(0 to 330) µA (0.33 to 3.3) mA (3.3 to 33) mA (33 to 330) mA (0.33 to 1.1) A (1.1 to 11) A	0.015 % + 0.02 µA 0.01 % + 0.05 µA 0.01 % + 0.25 µA 0.01 % + 2.5 µA 0.02 % + 40 µA [2] 0.05 % + 500 µA [2]	Fluke 5520A/SC600 [2] Floor specification doubled after 30 seconds

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical DC/LF (continued)			
DC Current – Measure	(0 to 120) µA	27 µA/A + 1 nA	Agilent 3458A
	(0.12 to 1.2) mA	26 µA/A + 6 nA	
	(1.2 to 12) mA	26 µA/A + 60 nA	
	(12 to 120) mA	42 µA/A + 600 nA	
	(0.120 to 1) A	0.013% iv + 10 µA	
Resistance – Generate	(0 to 11) Ω	40 µΩ/Ω+ 1 mΩ	Fluke 5520A/SC600
	(11 to 33) Ω	30 µΩ/Ω+ 1.5 mΩ	
	(33 to 110) Ω	28 µΩ/Ω+ 1.4 mΩ	Best uncertainties shown are based on 4-wire compensation only; for 2-wire and 2-wire compensation add 5µV per ampere stimulus current ($R_{floor} = E/I$)
	(110 to 330) Ω	28 µΩ/Ω+ 2 mΩ	
	(0.33 to 1.1) kΩ	28 µΩ/Ω+ 2 mΩ	
	(1.1 to 3.3) kΩ	28 µΩ/Ω+ 0.02 mΩ	
	(3.3 to 11) kΩ	28 µΩ/Ω+ 0.02 mΩ	
	(11 to 33) kΩ	28 µΩ/Ω+ 0.2 mΩ	
	(33 to 110) kΩ	28 µΩ/Ω+ 0.2 mΩ	
	(110 to 330) kΩ	32 µΩ/Ω+ 2 mΩ	
	(0.33 to 1.1) MΩ	32 µΩ/Ω+ 2 mΩ	
	(1.1 to 3.3) MΩ	60 µΩ/Ω+ 30 mΩ	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical DC/LF (continued)			
Resistance – Generate	(0 to 11) Ω (11 to 33) Ω (33 to 110) Ω (110 to 330) Ω (0.33 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 (0.33 to 1.1) MΩ (1.1 to 3.3) MΩ (3.3 to 11) MΩ (11 to 33) MΩ (33 to 110) MΩ (0.11 to 1.1) MΩ	40 μΩ/Ω+ 1 mΩ 30 μΩ/Ω+ 1.5 mΩ 28 μΩ/Ω+ 1.4 mΩ 28 μΩ/Ω+ 2 mΩ 28 μΩ/Ω+ 2 mΩ 28 μΩ/Ω+ 0.02 mΩ 28 μΩ/Ω+ 0.02 mΩ 28 μΩ/Ω+ 0.2 mΩ 28 μΩ/Ω+ 0.2 mΩ 32 μΩ/Ω+ 2 mΩ 32 μΩ/Ω+ 2 mΩ 60 μΩ/Ω+ 30 mΩ 0.13% + 50 Ω 0.025% + 2.5 kΩ 0.05% + 3 kΩ 1.5% + 500 kΩ	Fluke 5520A/SC600 Best uncertainties shown are based on 4-wire compensation only; for 2-wire and 2-wire compensation add 5μV per ampere stimulus current (Rfloor = E/I)

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical DC/LF (continued)			
Resistance – Measure	(0 to 12) Ω (12 to 120) Ω (0.12 to 1.2) kΩ (1.2 to 12) k Ω (12 to 120) kΩ (0.12 to 1.2) MΩ (1.2 to 12) MΩ (12 to 120) MΩ (0.12 to 1.2) MΩ	50 µΩ/Ω + 60 µΩ 60 µΩ/Ω + 0.6 mΩ 59 µΩ/Ω +0.6 mΩ 59 µΩ/Ω + 6 mΩ 59 µΩ/Ω + 60 mΩ 60 µΩ/Ω + 2.4 Ω 82 µΩ/Ω + 120 Ω 0.06% iv + 1,2 kΩ 0.58% iv + 12 kΩ	Agilent 3458A
Electrical Simulation of Thermocouple Generate			
Type B	600 °C to 800 °C 800 °C to 1000 °C 1,000 °C to 1,550 °C 1,550 °C to 1,850 °C	0.34 °C 0.26 °C 0.26 °C 0.20 °C	Fluke 5520A, HP 3458A

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical Simulation of Thermocouple Generate			
Type C	0 °C to 150 °C	0.33 °C	Fluke 5520A, HP 3458A
	150 °C to 650 °C	0.18 °C	
	650 °C to 1,000 °C	0.16 °C	
	1,000 °C to 1,800 °C	0.26 °C	
	1,800 °C to 2,316 °C	0.40 °C	
Type E	-250 °C to -100 °C	0.50 °C	
	-100 °C to -25 °C	0.16 °C	
	-25 °C to 350 °C	0.14 °C	
	350 °C to 650 °C	0.16 °C	
	650 °C to 1000 °C	0.21 °C	
Type J	-210 °C to -100 °C	0.27 °C	
	-100 °C to -30 °C	0.16 °C	
	-30 °C to 150 °C	0.14 °C	
	150 °C to 760 °C	0.17 °C	
	760 °C to 1200 °C	0.23 °C	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical Simulation of Thermocouple Generate(continued)			
Type K	-200 °C to -100 °C	0.33 °C	Fluke 5520A, HP 3458A
	-100 °C to -25 °C	0.18 °C	
	-25 °C to 120 °C	0.16 °C	
	120 °C to 1000 °C	0.26 °C	
	1000 °C to 1372 °C	0.40 °C	
Type T	-250 °C to -150 °C	0.63 °C	
	-150 °C to 0 °C	0.24 °C	
	0 °C to 120 °C	0.16 °C	
	120 °C to 400 °C	0.14 °C	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical Simulation of Thermocouple Generate(continued)			
AC Voltage – Generate			
(1 to 33) mV	(10 to 45) Hz	0.08 % + 6 µV	Fluke 5520A/SC600
	45 Hz to 10 kHz	0.015 % + 6 µV	
	(10 to 20) kHz	0.02 % + 6 µV	
	(20 to 50) kHz	0.1 % + 6 µV	
	(50 to 100) kHz	0.35 % + 12 µV	
	(100 to 500) kHz	8 % + 50 µV	
(33 to 330) mV	(10 to 45) Hz	0.03 % + 8 µV	
	45 Hz to 10 kHz	0.015 % + 8 µV	
	(10 to 20) kHz	0.016 % + 8 µV	
	(20 to 50) kHz	0.035 % + 8 µV	
	(50 to 100) kHz	0.08 % + 32 µV	
	(100 to 500) kHz	0.2 % + 70 µV	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical Simulation of Thermocouple Generate(continued)			
AC Voltage – Generate			
(0.33 to 3.3) V	(10 to 45) Hz	0.03 % + 8 µV	Fluke 5520A/SC600
	45 Hz to 10 kHz	0.015 % + 8 µV	
	(10 to 20) kHz	0.016 % + 8 µV	
	(20 to 50) kHz	0.035 % + 8 µV	
	(50 to 100) kHz	0.08 % + 32 µV	
	(100 to 500) kHz	0.2 % + 70 µV	
(3.3 to 33) V	(10 to 45) Hz	0.03 % + 0.65 mV	
	45 Hz to 10 kHz	0.015 % + 0.6 mV	
	(10 to 20) kHz	0.024 % + 0.6 mV	
	(20 to 50) kHz	0.035 % + 0.6 mV	
	(50 to 100) kHz	0.09 % + 1.6 mV	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical Simulation of Thermocouple Generate(continued)			
AC Voltage – Generate			
(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 0.02 % + 6 mV 0.025 % + 6 mV 0.03 % + 6 mV 0.2 % + 50 mV	Fluke 5520A/SC600
(330 to 1020) V	45 Hz to 1 kHz (1 to 5) kHz (5 to 10) kHz	0.03 % + 10 mV 0.025 % + 10 mV 0.03 % + 10 mV	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical Simulation of Thermocouple Generate(continued)		(% reading + % range)	Agilent 3458A
AC Voltage – Measure			
(0 to 10) mV	(1 to 40) Hz	0.03% + 0.03%	
	40 Hz to 1 kHz	0.02% + 0.011%	
	(1 to 20) kHz	0.03% + 0.011%	
	(20 to 50) kHz	0.1% + 0.011%	
	(50 to 100) kHz	0.5% + 0.011%	
	(100 to 300) kHz	0.4% + 0.02%	
(0.01 to 10) V	(1 to 40) Hz	0.007% + 0.004%	
	40 Hz to 1 kHz	0.007% + 0.002%	
	(1 to 20) kHz	0.014% + 0.002%	
	(20 to 50) kHz	0.03% + 0.002%	
	(50 to 100) kHz	0.08% + 0.002%	
	(100 to 300) kHz	0.3% + 0.01%	
	300 kHz to 1 MHz	1% + 0.01%	
	(1 to 2) MHz	1.5% + 0.01%	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical Simulation of Thermocouple Generate(continued)			
AC Voltage – Measure			
(10 to 100) V	(1 to 40) Hz	0.02% + 0.004%	Agilent 3458A
	40 Hz to 1 kHz	0.02% + 0.002%	
	(1 to 20) kHz	0.02% + 0.002%	
	(20 to 50) kHz	0.035% + 0.002%	
	(50 to 100) kHz	0.12% + 0.002%	
	(100 to 300) kHz	0.4% + 0.01%	
	300 kHz to 1 MHz	1.5% + 0.01%	
(100 to 700) V	(1 to 40) Hz	0.04% + 0.004%	
	40 Hz to 1 kHz	0.04% + 0.002%	
	(1 to 20) kHz	0.06% + 0.002%	
	(20 to 50) kHz	0.12% + 0.002%	
	(50 to 100) kHz	0.3% + 0.002%	
		(% reading + % range)	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

Print Date: 02/10/2012

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical Simulation of Thermocouple Generate(continued)			
AC Current – Measure	(10 to 20) Hz	0.4% + 0.03%	Agilent 3458A
(0 to 100) µA	(20 to 40) Hz	0.15% + 0.03%	
	45 Hz to 5 kHz	0.06% + 0.03%	
(0.1 to 100) mA	(10 to 20) Hz	0.4% + 0.02%	
	(20 to 45) Hz	0.15% + 0.02%	
	(45 to 100) Hz	0.06% + 0.02%	
	(0.1 to 5) kHz	0.03% + 0.02%	
	(5 to 20) kHz	0.06% + 0.02%	
	(20 to 50) kHz	0.4% + 0.04%	
	(50 to 100) kHz	0.55% + 0.15%	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical Simulation of Thermocouple Generate(continued)			
AC Current – Measure			
(0.1 to 100) mA	(10 to 20) Hz	0.4% + 0.02%	Agilent 3458A
	(20 to 45) Hz	0.16% + 0.02%	
	(45 to 100) Hz	0.08% + 0.02%	
	(0.1 to 5) kHz	0.1% + 0.02%	
	(5 to 20) kHz	0.3% + 0.02%	
	(20 to 50) kHz	1% + 0.04%	
AC Current – Generate	(30 to 330) µA	0.13 % + 0.1 µA	Fluke 5520A/SC600; LCOMP off
@ 1kHz	(0.33 to 3.3) mA	0.1 % + 0.15 µA	
	(3.3 to 33) mA	0.04 % + 2 µA	
	(33 to 330) mA	0.04 % + 20 µA	
	(0.33 to 1.1) A	0.05 % + 0.1 mA	
	(1.1 to 3) A	0.06 % + 0.1 mA	
	(3 to 11) A	0.1 % + 2 mA	
	(11 to 20.5) A	0.15 % + 5 mA	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

Print Date: 02/10/2012

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

MEASUREMENT AREA	RANGE & RESOLUTION	CALIBRATION & MEASUREMENT CAPABILITY[1] (CMC) (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Electrical Simulation of Thermocouple Generate(continued)			
Capacitance - Source	(0.19 to 0.4) nF	mF 0.01 nF + 0.4 nF/F	Fluke 5520A/SC600
	(0.4 to 1.1) nF	0.01 nF + 0.4 nF/F	
	(1.1 to 3.3) nF	0.01 nF + 0.4 nF/F	
	(3.3 to 11) nF	0.01 nF + 0.2 nF/F	
	(11 to 33) nF	0.08 nF + 0.2 nF/F	
	(33 to 110) nF	0.08 nF + 0.2 nF/F	
	(110 to 330) nF	0.2 nF + 0.2 nF/F	
	(0.33 to 1.1) µF	0.8 nF + 0.2 uF/F	
	(1.1 to 3.3) µF	2.3 nF + 0.2 nF/F	
	(3.3 to 11) µF	7.8 nF + 0.2 nF/F	
	(11 to 33) µF	23.3 nF + 3 µF/F	
	(33 to 110) µF	78 nF + 0.35 nF/F	
	(110 to 330) µF	233. nF + 0.35 nF/F	
	(0.33 to 1.1) mF	57.8 nF + 0.35 nF/F	
	(1.1 to 3.3) mF	57.8 nF + 0.35 nF/F	
	(3.3 to 11) mF	577 nF + 0.35 µF/F	
	(11 to 33) mF	578 nF + 0.58 nF/F	
	(33 to 110) mF	0.02 5 774 nF + 0.85 nF/F	

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

International Accreditation Service

SCOPE OF ACCREDITATION

Standard Calibrations, Inc. CL-120

[1] "Calibration Measurement Capability" 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 of nearly ideal measuring instruments. Calibration Measurement Capabilities are expressed as uncertainties at approximately the 95% level of confidence, usually using a coverage factor of k=2. The measurement uncertainty of a specific calibration performed by the laboratory may be greater than the least uncertainty due to the behavior of the customer's device, to the environment (if the calibration is performed in the field), and to influences from the circumstances of the specific calibration.

February 1, 2012
Commencement Date

ACCREDITED

C. P. Ramani, P.E.
President

Print Date: 02/10/2012