



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

<b>Savannah River National Laboratory – Savannah River Standards Lab</b> Building 736-A Aiken, SC 29808-0001 Mr. Edward J. Polz Phone: 803-725-0955 Fax: 803-725-2130 E-mail: <a href="mailto:edward.polz@srnl.doe.gov">edward.polz@srnl.doe.gov</a>	<b>Parameter(s) of Accreditation</b> Dimensional Electromagnetics – DC/Low Frequency Time and Frequency Mechanical Thermodynamic  This laboratory is compliant to ANSI/NCSL Z540-1-1994; Part 1. (NVLAP Code: 20/A01)
---	---

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC)<sup>Notes 1,2</sup>

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <sup>Note 3</sup>	Remarks
<b>ELECTROMAGNETICS – DC/LOW FREQUENCY</b>			
<b>NVLAP Code: 20/E05</b> <b>DC RESISTANCE and CURRENT</b>	220 μA 2.2 mA 22 mA 220 mA 2.2 A 11 A	35 μA/A + 0.006 μA 30 μA/A + 0.007 μA 32 μA/A + 0.04 μA 40 μA/A + 0.7 μA 60 μA/A + 12 μA 340 μA/A + 480 μA	5700A/EP 5700A/EP 5700A/EP 5700A/EP 5700A/EP 5700A/EP with 5725A Amp
DC Current – Measure	100 μA 1.0 mA 10 mA 100 mA 1.0 A	12 μA/A + 0.0004 μA 12 μA/A + 0.004 μA 14 μA/A + 0.04 μA 48 μA/A + 0.8 μA 190 μA/A + 16 μA	Fluke 8508A Fluke 8508A Fluke 8508A Fluke 8508A Fluke 8508A
DC Resistance – Fixed by direct comparison	0.1 Ω to 0.01 Ω 0.1 Ω to 1 Ω 1 Ω to 1 Ω 1 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 kΩ	36 μΩ/Ω 5.6 μΩ/Ω 0.4 μΩ/Ω 0.52 μΩ/Ω 0.59 μΩ/Ω 0.64 μΩ/Ω	MI 6010B System Time of Test

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
	1 kΩ to 10 kΩ	0.68 μΩ/Ω	
	10 kΩ to 100 kΩ	0.7 μΩ/Ω	
DC Resistance – Fixed Source	1 Ω	80 μΩ/Ω	
	1.9 Ω	81 μΩ/Ω	
	10 Ω	21 μΩ/Ω	
	19 Ω	21 μΩ/Ω	
	100 Ω	10 μΩ/Ω	
	190 Ω	10 μΩ/Ω	
	1 kΩ	8.5 μΩ/Ω	
	1.9 kΩ	8.0 μΩ/Ω	
	10 kΩ	8.0 μΩ/Ω	
	19 kΩ	9.5 μΩ/Ω	
	100 kΩ	9.5 μΩ/Ω	
	190 kΩ	9.5 μΩ/Ω	
	1 MΩ	15 μΩ/Ω	
	1.9 MΩ	14 μΩ/Ω	
	10 MΩ	33 μΩ/Ω	
	19 MΩ	56 μΩ/Ω	
	100 MΩ	190 μΩ/Ω	
DC Resistance – Measure	0 Ω to 10 Ω	15 μΩ/Ω + 81 μΩ	
	10 Ω to 100 Ω	11 μΩ/Ω + 810 μΩ	
	100 Ω to 1 kΩ	8.7 μΩ/Ω + 810 μΩ	
	1 kΩ to 10 kΩ	8.7 μΩ/Ω + 8.1 mΩ	
	10 kΩ to 100 kΩ	8.7 μΩ/Ω + 70.6 mΩ	
	100 kΩ to 1 MΩ	12 μΩ/Ω + 2.3 Ω	
	1 MΩ to 10 MΩ	50 μΩ/Ω + 104 Ω	
	10 MΩ to 100 MΩ	500 μΩ/Ω + 3163 Ω	
	100 MΩ to 1 GΩ	5000 μΩ/Ω + 226 kΩ	
<b>NVLAP Code: 20/E06</b> <b>DC VOLTAGE</b>			
DC Voltage – Fixed Source	10.0 V	0.33 μV/V	Direct comparison, 4 solid state standards, individual temperature control; Fluke 732B

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
DC Voltage – Variable Source	220 mV 2.2 V 11 V 22 V 220 V 1100 V	6.1 $\mu$ V/V + 0.4 $\mu$ V 3.6 $\mu$ V/V + 0.7 $\mu$ V 2.6 $\mu$ V/V + 2.5 $\mu$ V 2.7 $\mu$ V/V + 4 $\mu$ V 3.6 $\mu$ V/V + 40 $\mu$ V 4.6 $\mu$ V/V + 400 $\mu$ V	5700A/EP Console
DC Voltage – Variable Measure	100 mV 1 V 10 V 100 V 1000 V	5.1 $\mu$ V/V + 0.3 $\mu$ V 4.0 $\mu$ V/V + 0.3 $\mu$ V 4.1 $\mu$ V/V + 0.5 $\mu$ V 6.1 $\mu$ V/V + 30 $\mu$ V 6.1 $\mu$ V/V + 100 $\mu$ V	3458A (002 Option)

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
<b>NVLAP Code: 20/E09</b> <b>LF AC VOLTAGE</b> AC Voltage – Generate; Variable Source	2.2 mV  22 mV	10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz  10 Hz to 20 Hz	220 $\mu$ V/V + 4 $\mu$ V 85 $\mu$ V/V + 4 $\mu$ V 76 $\mu$ V/V + 4 $\mu$ V 180 $\mu$ V/V + 4 $\mu$ V 460 $\mu$ V/V + 5 $\mu$ V 900 $\mu$ V/V + 10 $\mu$ V 1200 $\mu$ V/V + 20 $\mu$ V 2500 $\mu$ V/V + 20 $\mu$ V  220 $\mu$ V/V + 4 $\mu$ V	Fluke 5700A/EP Calibrator

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
		20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz	85 $\mu$ V/V + 4 $\mu$ V 75 $\mu$ V/V + 4 $\mu$ V 180 $\mu$ V/V + 4 $\mu$ V 460 $\mu$ V/V + 5 $\mu$ V 900 $\mu$ V/V + 10 $\mu$ V 1200 $\mu$ V/V + 20 $\mu$ V 2500 $\mu$ V/V + 20 $\mu$ V	
	220 mV	10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz	220 $\mu$ V/V + 12 $\mu$ V 85 $\mu$ V/V + 7 $\mu$ V 75 $\mu$ V/V + 7 $\mu$ V 180 $\mu$ V/V + 7 $\mu$ V 420 $\mu$ V/V + 17 $\mu$ V 750 $\mu$ V/V + 20 $\mu$ V 1200 $\mu$ V/V + 25 $\mu$ V 2500 $\mu$ V/V + 45 $\mu$ V	
	2.2 V	10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz	220 $\mu$ V/V + 40 $\mu$ V 80 $\mu$ V/V + 15 $\mu$ V 40 $\mu$ V/V + 8 $\mu$ V 70 $\mu$ V/V + 10 $\mu$ V 105 $\mu$ V/V + 30 $\mu$ V 340 $\mu$ V/V + 80 $\mu$ V 900 $\mu$ V/V + 200 $\mu$ V 1500 $\mu$ V/V + 300 $\mu$ V	
	22 V	10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz	220 $\mu$ V/V + 400 $\mu$ V 80 $\mu$ V/V + 150 $\mu$ V 40 $\mu$ V/V + 50 $\mu$ V 70 $\mu$ V/V + 100 $\mu$ V 95 $\mu$ V/V + 200 $\mu$ V 260 $\mu$ V/V + 600 $\mu$ V 900 $\mu$ V/V + 200 $\mu$ V 1300 $\mu$ V/V + 3200 $\mu$ V	

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
	220 V	10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz	220 $\mu$ V/V + 4 mV 80 $\mu$ V/V + 1.5 mV 47 $\mu$ V/V + 0.6 mV 75 $\mu$ V/V + 1 mV 130 $\mu$ V/V + 2.5 mV 900 $\mu$ V/V + 16 mV 4400 $\mu$ V/V + 40 mV 7800 $\mu$ V/V + 80 mV	
	1100 V	15 Hz to 50 Hz 50 Hz to 1 kHz	300 $\mu$ V/V + 16 mV 70 $\mu$ V/V + 3.5 mV	Maximum output voltage in this frequency range is 250 VAC.
	1100 V	40 Hz to 1 kHz 1 kHz to 20 kHz 20 kHz to 30 kHz 30 kHz to 50 kHz 50 kHz to 100 kHz	80 $\mu$ V/V + 4 mV 125 $\mu$ V/V + 6 mV 360 $\mu$ V/V + 11 mV 600 $\mu$ V/V + 11 mV 2300 $\mu$ V/V + 45 mV	Fluke 5700A/EP Calibrator with 5725A Amplifier  Maximum output voltage in this frequency range is 750 VAC.  Maximum output voltage in this frequency range is 750 VAC.
			For ranges 2.2 V and above, no floor value is given. Any measurement utilizing these ranges will not be below the level of the previous	

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
AC Voltage – Variable Measure	2.2 mV	10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz	1700 $\mu$ V/V + 1.3 $\mu$ V 740 $\mu$ V/V + 1.3 $\mu$ V 420 $\mu$ V/V + 1.3 $\mu$ V 810 $\mu$ V/V + 2.0 $\mu$ V 1200 $\mu$ V/V + 2.5 $\mu$ V 2300 $\mu$ V/V + 4.0 $\mu$ V 2400 $\mu$ V/V + 8.0 $\mu$ V 3500 $\mu$ V/V + 8.0 $\mu$ V	range. Fluke 5700A
	7 mV	10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz	850 $\mu$ V/V + 1.3 $\mu$ V 370 $\mu$ V/V + 1.3 $\mu$ V 210 $\mu$ V/V + 1.3 $\mu$ V 400 $\mu$ V/V + 2.0 $\mu$ V 600 $\mu$ V/V + 2.5 $\mu$ V 1200 $\mu$ V/V + 4.0 $\mu$ V 1300 $\mu$ V/V + 8.0 $\mu$ V 2300 $\mu$ V/V + 8.0 $\mu$ V	
	22 mV	10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz 500 kHz to 1 MHz	290 $\mu$ V/V + 1.3 $\mu$ V 190 $\mu$ V/V + 1.3 $\mu$ V 110 $\mu$ V/V + 1.3 $\mu$ V 210 $\mu$ V/V + 2.0 $\mu$ V 310 $\mu$ V/V + 2.5 $\mu$ V 810 $\mu$ V/V + 4.0 $\mu$ V 890 $\mu$ V/V + 8.0 $\mu$ V 1700 $\mu$ V/V + 8.0 $\mu$ V	
	70 mV	10 Hz to 20 Hz 20 Hz to 40 Hz 40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 300 kHz 300 kHz to 500 kHz	240 $\mu$ V/V + 1.5 $\mu$ V 120 $\mu$ V/V + 1.5 $\mu$ V 65 $\mu$ V/V + 1.5 $\mu$ V 130 $\mu$ V/V + 2.0 $\mu$ V 260 $\mu$ V/V + 2.5 $\mu$ V 510 $\mu$ V/V + 4.0 $\mu$ V 670 $\mu$ V/V + 8.0 $\mu$ V	

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
		500 kHz to 1 MHz	1100 $\mu$ V/V + 8.0 $\mu$ V	
	220 mV	10 Hz to 20 Hz	210 $\mu$ V/V + 1.5 $\mu$ V	
	220 mV	20 Hz to 40 Hz	85 $\mu$ V/V + 1.5 $\mu$ V	
	220 mV	40 Hz to 20 kHz	38 $\mu$ V/V + 1.5 $\mu$ V	
	220 mV	20 kHz to 50 kHz	69 $\mu$ V/V + 2.0 $\mu$ V	
	220 mV	50 kHz to 100 kHz	160 $\mu$ V/V + 2.5 $\mu$ V	
	220 mV	100 kHz to 300 kHz	250 $\mu$ V/V + 4.0 $\mu$ V	
	220 mV	300 kHz to 500 kHz	380 $\mu$ V/V + 8.0 $\mu$ V	
	220 mV	500 kHz to 1 MHz	1200 $\mu$ V/V + 8.0 $\mu$ V	
	700 mV	10 Hz to 20 Hz	210 $\mu$ V/V + 1.5 $\mu$ V	
	700 mV	20 Hz to 40 Hz	76 $\mu$ V/V + 1.5 $\mu$ V	
	700 mV	40 Hz to 20 kHz	33 $\mu$ V/V + 1.5 $\mu$ V	
	700 mV	20 kHz to 50 kHz	51 $\mu$ V/V + 2.0 $\mu$ V	
	700 mV	50 kHz to 100 kHz	79 $\mu$ V/V + 2.5 $\mu$ V	
	700 mV	100 kHz to 300 kHz	180 $\mu$ V/V + 4.0 $\mu$ V	
	700 mV	300 kHz to 500 kHz	300 $\mu$ V/V + 8.0 $\mu$ V	
	700 mV	500 kHz to 1 MHz	960 $\mu$ V/V + 8.0 $\mu$ V	
	2.2 V	10 Hz to 20 Hz	200 $\mu$ V/V	
	2.2 V	20 Hz to 40 Hz	66 $\mu$ V/V	
	2.2 V	40 Hz to 20 kHz	24 $\mu$ V/V	
	2.2 V	20 kHz to 50 kHz	46 $\mu$ V/V	
	2.2 V	50 kHz to 100 kHz	71 $\mu$ V/V	
	2.2 V	100 kHz to 300 kHz	160 $\mu$ V/V	
	2.2 V	300 kHz to 500 kHz	260 $\mu$ V/V	
	2.2 V	500 kHz to 1 MHz	900 $\mu$ V/V	
	7 V	10 Hz to 20 Hz	200 $\mu$ V/V	
	7 V	20 Hz to 40 Hz	67 $\mu$ V/V	
	7 V	40 Hz to 20 kHz	24 $\mu$ V/V	
	7 V	20 kHz to 50 kHz	48 $\mu$ V/V	
	7 V	50 kHz to 100 kHz	81 $\mu$ V/V	
	7 V	100 kHz to 300 kHz	190 $\mu$ V/V	
	7 V	300 kHz to 500 kHz	400 $\mu$ V/V	

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
		500 kHz to 1 MHz	1200 $\mu$ V/V	
	22 V	10 Hz to 20 Hz	200 $\mu$ V/V	
		20 Hz to 40 Hz	67 $\mu$ V/V	
		40 Hz to 20 kHz	27 $\mu$ V/V	
		20 kHz to 50 kHz	48 $\mu$ V/V	
		50 kHz to 100 kHz	81 $\mu$ V/V	
		100 kHz to 300 kHz	190 $\mu$ V/V	
		300 kHz to 500 kHz	400 $\mu$ V/V	
		500 kHz to 1 MHz	1200 $\mu$ V/V	
	70 V	10 Hz to 20 Hz	200 $\mu$ V/V	
		20 Hz to 40 Hz	68 $\mu$ V/V	
		40 Hz to 20 kHz	32 $\mu$ V/V	
		20 kHz to 50 kHz	57 $\mu$ V/V	
		50 kHz to 100 kHz	94 $\mu$ V/V	
		100 kHz to 300 kHz	200 $\mu$ V/V	
		300 kHz to 500 kHz	410 $\mu$ V/V	
		500 kHz to 1 MHz	1200 $\mu$ V/V	
	220 V	10 Hz to 20 Hz	200 $\mu$ V/V	
		20 Hz to 40 Hz	68 $\mu$ V/V	
		40 Hz to 20 kHz	31 $\mu$ V/V	
		20 kHz to 50 kHz	69 $\mu$ V/V	
		50 kHz to 100 kHz	98 $\mu$ V/V	
		100 kHz to 300 kHz	210 $\mu$ V/V	
		300 kHz to 500 kHz	500 $\mu$ V/V	
	700 V	10 Hz to 20 Hz	200 $\mu$ V/V	
		20 Hz to 40 Hz	99 $\mu$ V/V	
		40 Hz to 20 kHz	41 $\mu$ V/V	
		20 kHz to 50 kHz	130 $\mu$ V/V	
		50 kHz to 100 kHz	500 $\mu$ V/V	
	1000 V	10 Hz to 20 Hz	200 $\mu$ V/V	
		20 Hz to 40 Hz	99 $\mu$ V/V	

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
		40 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz	38 $\mu$ V/V 130 $\mu$ V/V 500 $\mu$ V/V	

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
<b>NVLAP Code: 20/E10</b> <b>LF CAPACITANCE</b> LF AC Capacitance – Measure at 1 kHz	10 pF to 1 $\mu$ F	10 $\mu$ F/F	AH2500
<b>TIME and FREQUENCY</b>			
<b>NVLAP Code: 20/F01</b> <b>FREQUENCY</b> <b>DISSEMINATION</b> Frequency Transfer	5 MHz 10 MHz	5 parts in $10^{10}$ 5 parts in $10^{10}$	Fluke 910R
<b>NVLAP Code: 20/F05</b> <b>STOPWATCHES and TIMERS</b> Stopwatches and Timers	1 s to 24 h	0.05 s	HK TH-4500
<b>MECHANICAL</b>			
<b>NVLAP Code: 20/M06</b> <b>FORCE</b> Force	1000 lbf to 100 000 lbf	0.05% FS	Load Cells
<b>NVLAP Code: 20/M08</b> <b>MASS</b> Metric	20 kg 10 kg 5 kg 3 kg 2 kg 1 kg	8.5 mg 3.5 mg 2.0 mg 1.2 mg 0.5 mg 0.14 mg	Echelon I

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
	500 g	0.13 mg	
	300 g	0.09 mg	
	200 g	0.06 mg	
	100 g	0.056 mg	
	50 g	0.023 mg	
	30 g	0.015 mg	
	20 g	0.012 mg	
	10 g	0.012 mg	
	5 g	0.0045 mg	
	3 g	0.0045 mg	
	2 g	0.0045 mg	
	1 g	0.0037 mg	
	500 mg	0.0030 mg	
	300 mg	0.0030 mg	
	200 mg	0.0030 mg	
	100 mg	0.0030 mg	
	50 mg	0.0030 mg	
	30 mg	0.0030 mg	
	20 mg	0.0030 mg	
	10 mg	0.0030 mg	
	5 mg	0.0030 mg	
	3 mg	0.0030 mg	
	2 mg	0.0030 mg	
	1 mg	0.0030 mg	
Avoirdupois	25 lb	10 mg	Echelon II
	20 lb	10 mg	
	10 lb	4.9 mg	
	5 lb	4.6 mg	
	4 lb	0.87 mg	
	3 lb	0.86 mg	
	2 lb	0.33 mg	
	1 lb	0.27 mg	
	0.5 lb	0.27 mg	
	0.2 lb	0.26 mg	
	0.1 lb	0.085 mg	

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
	0.05 lb	0.082 mg	
	0.02 lb	0.082 mg	
	0.01 lb	0.016 mg	
	0.005 lb	0.013 mg	
	4 oz	0.26 mg	
	2 oz	0.086 mg	
	1 oz	0.082 mg	
	0.5 oz	0.082 mg	
	0.25 oz	0.023 mg	
	0.125 oz	0.013 mg	
	0.0625 oz	0.012 mg	
	0.0312 oz	0.005 mg	

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Readability	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
Balances	5 g to 30 kg	0.0001 mg	0.0040 mg	
Field calibrations Available <small>Note 4</small>		0.001 mg	0.0073 mg	
		0.01 mg	0.049 mg	
		0.1 mg	0.41 mg	
		1.0 mg	6.9 mg	
		10 mg	42 mg	
		100 mg	410 mg	

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
<b>NVLAP Code: 20/M12 VOLUMS and DENSITY</b>			
Pipettes	10 $\mu$ L 50 $\mu$ L	0.22 $\mu$ L 0.24 $\mu$ L	Gravimetric Method

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
	100 µL 500 µL 1000 µL 5 mL 10 mL	0.40 µL 0.9 µL 1.4 µL 5.7 µL 2.7 µL	
<b>THERMODYNAMIC</b>			
<b>NVLAP Code: 20/T02</b> <b>HUMIDITY</b>  Relative Humidity	10 % RH to 90 % RH	0.8 % RH	Two Pressure Humidity Generator
<b>NVLAP Code: 20/T03</b> <b>LABORATORY</b> <b>THERMOMETERS,</b> <b>DIGITAL and ANALOG</b> Temperature – Measuring Equipment	-80 °C to 20 °C 0 °C to 100 °C 100 °C to 300 °C 200 °C to 550 °C 550 °C to 660 °C	0.01 °C 0.01 °C 0.02 °C 0.03 °C 0.06 °C	RTD/IPRT/PRT
<b>NVLAP Code: 20/T05</b> <b>PRESSURE</b>  Pneumatic Deadweight Piston Gages – Absolute Mode	0.75 psi to 25 psi 5 psi to 100 psi 25 psi to 1000 psi	0.0038 % 0.0053 % 0.0057 %	Direct Pressure Comparison; Nitrogen; ≈ 5 kPa to 172 kPa ≈ 34.5 kPa to 690 kPa ≈ 690 kPa to 6.9 MPa
Pneumatic Deadweight Piston Gages – Gage Mode	0.75 psi to 25 psi 5 psi to 100 psi 25 psi to 1000 psi	0.0038 % 0.0053 % 0.0057 %	Direct Pressure Comparison; Nitrogen; ≈ 5 kPa to 172 kPa ≈ 34.5 kPa to 690 kPa ≈ 690 kPa to 6.9 MPa

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
<b>NVLAP Code: 20/T07</b> <b>RESISTANCE</b> <b>THERMOMETRY</b> Standard Platinum Resistance Thermometer Calibrations	-38.8344 °C 0.01 °C 29.7646 °C 156.5985 °C 231.928 °C 419.527 °C 660.323 °C	3.4 mK 0.6 mK 1.8 mK 4.2 mK 3.6 mK 4.0 mK 8.6 mK	Hg/Triple Point H <sub>2</sub> O/Triple Point Ga/Melting Point In/Freezing Point Sn/Freezing Point Zn/Freezing Point A1/Freezing Point
<b>NVLAP Code: 20/T08</b> <b>TEMPERATURE INDICATORS</b> Thermocouple Readout Methods	ITS- 90 - 240 °C to 1000 °C - 200 °C to 1200 °C - 200 °C to 1370 °C - 240 °C to 400 °C 0 °C to 1750 °C 0 °C to 1750 °C	Without CJC 0.92 °C 0.11 °C 0.11 °C 0.68 °C 0.16 °C 0.16 °C	Fluke 5520A
Thermocouple Simulator Methods	ITS- 90 - 240 °C to 1000 °C - 200 °C to 1200 °C - 200 °C to 1370 °C - 240 °C to 400 °C 0 °C to 1750 °C 0 °C to 1750 °C	Without CJC 0.084 °C 0.099 °C 0.084 °C 0.063 °C 0.085 °C 0.10 °C	Fluke 8508A
RTD Readout Methods	-200 °C to 0 °C 0 °C to 100 °C 100 °C to 300 °C 300 °C to 400 °C	0.059 °C 0.082 °C 0.10 °C 0.12 °C	5520A, Pt385, 100 ohm

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ( $k=2$ ) <small>Note 3</small>	Remarks
RTD Simulator Methods	400 °C to 630 °C 630 °C to 800 °C  0 Ω to 2000 Ω	0.14 °C 0.27 °C  0.016 °C	Fluke 8508A
<b>NVLAP Code: 20/T09 VACUUM and LOW PRESSURE GAGES</b>	1 X 10 <sup>-6</sup> Torr to 1 X 10 <sup>-2</sup> Torr	11 %	Comparison to spinning rotor gauge; MKS Model SRG-2CE
<b>NVLAP Code: 20/T10 VACUUM and LOW PRESSURE TRANSDUCERS</b>	0.0004 Torr to 0.01 Torr 0.01 Torr to 0.0225 Torr 0.0225 Torr to 0.1 Torr 0.1 Torr to 1 Torr 1 Torr to 10 Torr 10 Torr to 100 Torr	0.76 % + 9 μTorr 0.76 % + 13 μTorr 0.58 % + 48 μTorr 0.58 % + 100 μTorr 0.58 % + 644 μTorr 0.58 % + 4950 μTorr	Comparison to Variable Capacitance Diaphragm Sensor; MKS Baratron Model 690A
<b>NVLAP Code: 20/T11 THERMOCOUPLES</b>	-80 °C to 200 °C 200°C to 420 °C  400°C to 700 °C 700°C to 1100 °C	0.11 °C 0.11 °C  0.42 °C 0.73 °C	SPRT standard with Fluke 8508A  S Thermocouple standard with Fluke 8508A

END

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology



# National Voluntary Laboratory Accreditation Program



## CALIBRATION LABORATORIES

NVLAP LAB CODE 200843-0

### Notes

**Note 1:** A Calibration and Measurement Capability (CMC) is a description of the best result of a calibration or measurement (result with the smallest uncertainty of measurement) that is available to the laboratory's customers under normal conditions, when performing more or less routine calibrations of nearly ideal measurement standards or instruments. The CMC is described in the laboratory's scope of accreditation by: the measurement parameter/device being calibrated, the measurement range, the uncertainty associated with that range (see note 3), and remarks on additional parameters, if applicable.

**Note 2:** Calibration and Measurement Capabilities are traceable to the national measurement standards of the U.S. or to the national measurement standards of other countries and are thus traceable to the internationally accepted representation of the appropriate SI (Système International) unit.

**Note 3:** The uncertainty associated with a measurement in a CMC is an expanded uncertainty using a coverage factor,  $k = 2$ , with a level of confidence of approximately 95 %. Units for the measurand and its uncertainty are to match. Exceptions to this occur when marketplace practice employs mixed units, such as when the artifact to be measured is labeled in non-SI units and the uncertainty is given in SI units (Example: 5 lb weight with uncertainty given in mg).

**Note 3a:** The uncertainty of a specific calibration by the laboratory may be greater than the uncertainty in the CMC due to the condition and behavior of the customer's device and specific circumstances of the calibration. The uncertainties quoted do not include possible effects on the calibrated device of transportation, long term stability, or intended use.

**Note 3b:** As the CMC represents the best measurement results achievable under normal conditions, the accredited calibration laboratory shall not report smaller uncertainty of measurement than that given in a CMC for calibrations or measurements covered by that CMC.

**Note 3c:** As described in Note 1, CMCs cover calibrations and measurements that are available to the laboratory's customers under *normal conditions*. However, the laboratory may have the capability to offer special tests, employing special conditions, which yield calibration or measurement results with lower uncertainties. Such special tests are not covered by the CMCs and are outside the laboratory's scope of accreditation. In this case, NVLAP requirements for the labeling, on calibration reports, of results outside the laboratory's scope of accreditation apply. These requirements are set out in Annex A.1.h. of NIST Handbook 150, Procedures and General Requirements.

**Note 4:** Uncertainties associated with field service calibration may be greater as they incorporate on-site environmental contributions, transportation effects, or other factors that affect the measurements. (This note applies only if marked in the body of the scope.)

**Note 5:** Values listed with percent (%) are percent of reading or generated value unless otherwise noted.

**Note 6:** NVLAP accreditation is the formal recognition of specific calibration capabilities. Neither NVLAP nor NIST guarantee the accuracy of individual calibrations made by accredited laboratories.

**Note 7:** See [NIST Handbook 150](#) for further explanation of these notes.

2012-04-01 through 2013-03-31

Effective dates

For the National Institute of Standards and Technology