



National Voluntary Laboratory Accreditation Program



CALIBRATION LABORATORIES

NVLAP LAB CODE 200717-0

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Eli Lilly and Company Corporate Standards Lab 1402 South Dakota Street Indianapolis, IN 46225 Mr. Sylvester Smith Jr. Phone: 317-276-0497 Fax: 317-651-0281 E-mail: smith_sylvester_jr@lilly.com URL: http://www.lilly.com	Parameter(s) of Accreditation Electromagnetics – DC/Low Frequency Time and Frequency Mechanical Optical Radiation Thermodynamic
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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
ELECTROMAGNETICS – DC/LOW FREQUENCY				
NVLAP Code: 20/E02 AC RESISTORS and CURRENT AC Current – Measure	0 μ A to 200 μ A	1 Hz to 10 Hz 10 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	500 μ A/A + 20 nA 500 μ A/A + 20 nA 720 μ A/A + 20 nA 4 ma/A + 20 nA	8508A
	200 μ A to 2 mA	1 Hz to 10 Hz 10 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	310 μ A/A + 200 nA 300 μ A/A + 200 nA 710 μ A/A + 200 nA 4 ma/A + 200 nA	
	2 mA to 20 mA	1 Hz to 10 Hz 10 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	310 μ A/A + 2 μ A 300 μ A/A + 2 μ A 710 μ A/A + 2 μ A 4 ma/A + 2 μ A	
	20 mA to 200 mA	10 Hz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	500 μ A/A + 20 μ A 710 μ A/A + 20 μ A 4 ma/A + 20 μ A	
	200 mA to 2 A	10 Hz to 2 kHz 2 kHz to 10 kHz 10 kHz to 30 kHz	620 μ A/A + 200 μ A 730 μ A/A + 200 μ A 3 mA/A + 200 μ A	
	2 A to 20 A	10 Hz to 2 kHz 2 kHz to 10 kHz	830 μ A/A + 2 mA 2.5 mA/A + 2 mA	

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Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
AC Current – Source	29.00 μ A to 329.99 μ A	10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz 10 kHz to 30 kHz	0.15 % + 0.08 μ A 0.12 % + 0.08 μ A 0.10 % + 0.08 μ A 0.23 % + 0.12 μ A 0.62 % + 0.16 μ A 1.2 % + 0.31 μ A	5520A
	330 μ A to 3.2999 mA	10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz 10 kHz to 30 kHz	0.15 % + 0.12 μ A 0.10 % + 0.12 μ A 0.08 % + 0.12 μ A 0.15 % + 0.15 μ A 0.39 % + 0.23 μ A 0.77 % + 0.46 μ A	
	3.3 mA to 32.999 mA	10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz 10 kHz to 30 kHz	0.14 % + 1.6 μ A 0.07 % + 1.6 μ A 0.03 % + 1.6 μ A 0.06 % + 1.6 μ A 0.15 % + 2.3 μ A 0.31 % + 3.1 μ A	
	33 mA to 329.99 mA	10 Hz to 20 Hz 20 Hz to 45 Hz 45 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz 10 kHz to 30 kHz	0.14 % + 16 μ A 0.07 % + 16 μ A 0.03 % + 16 μ A 0.08 % + 39 μ A 0.15 % + 78 μ A 0.31 % + 160 μ A	
	330 mA to 1.09999 A	10 Hz to 45 Hz 45 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	0.14 % + 78 μ A 0.04 % + 78 μ A 0.46 % + 780 μ A 1.9 % + 3.9 mA	
	1.1 A to 2.99999 A	10 Hz to 45 Hz 45 Hz to 1 kHz	0.14 % + 78 μ A 0.05 % + 78 μ A	

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Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
	3 A to 10.9999 A 11 A to 20.5 A 20 A to 150 A 150 A to 1000 A	1 kHz to 5 kHz 5 kHz to 10 kHz 45 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 5 kHz 45 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 5 kHz 50 Hz to 400 Hz 50 Hz to 400 Hz	0.46 % + 780 μ A 1.9 % + 3.9 mA 0.05 % + 1.5 mA 0.08 % + 1.5 mA 2.3 % + 1.5 mA 0.09 % + 3.9 mA 0.12 % + 3.9 mA 2.3 % + 3.9 mA 0.5 % + 120 mA 0.4 % + 130 mA	5520A/5500A Coil

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
NVLAP Code: 20/E05 DC RESISTANCE and CURRENT DC Current – Measure	0 μ A to 200 μ A 200 μ A to 2 mA 2 mA to 20 mA 20 mA to 200 mA 200 mA to 2 A 2 A to 20 A	12 μ A/A + 0.4 nA 12 μ A/A + 4.2 nA 14 μ A/A + 41 nA 49 μ A/A + 810 nA 180 μ A/A + 16 μ A 400 μ A/A + 0.4 mA	8508A
DC Current – Source	0 to 329.999 μ A 330 μ A to 3.29999 mA 3.3 mA to 32.9999 mA 33 mA to 329.999 mA 330 mA to 1.09999 A 1.1 A to 2.99999 A 3 A to 10.9999 A 11 A to 20.5 A	110 μ A/A + 0.02 μ A 77 μ A/A + 0.04 μ A 77 μ A/A + 0.2 μ A 77 μ A/A + 1.9 μ A 150 μ A/A + 31 μ A 290 μ A/A + 31 μ A 380 μ A/A + 390 μ A 770 μ A/A + 580 μ A	5520A

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
Resistance Measure	0 Ω to 2 Ω	28 μΩ/Ω + 4.0 μΩ	8508A
	2 Ω to 20 Ω	16 μΩ/Ω + 14 μΩ	
	20 Ω to 200 Ω	8 μΩ/Ω + 51 μΩ	
	200 Ω to 2 kΩ	8 μΩ/Ω + 0.5 mΩ	
	2 kΩ to 20 kΩ	8 μΩ/Ω + 5.2 mΩ	
	20 kΩ to 200 kΩ	9 μΩ/Ω + 52 mΩ	
	200 kΩ to 2 MΩ	7 μΩ/Ω + 1 Ω	
	2 MΩ to 20 MΩ	410 μΩ/Ω + 100 Ω	
	20 MΩ to 200 MΩ	0.21 % + 10 kΩ	
	200 MΩ to 2 GΩ	0.5 % + 1 MΩ	
Resistance Source	0 Ω to 10.9999 Ω	36 μΩ/Ω + 0.7 mΩ	5520A
	11 Ω to 32.9999 Ω	23 μΩ/Ω + 1.2 mΩ	
	33 Ω to 109.9999 Ω	22 μΩ/Ω + 1.1 mΩ	
	110 Ω to 329.9999 Ω	22 μΩ/Ω + 1.6 mΩ	
	330 Ω to 1.099999 kΩ	22 μΩ/Ω + 1.6 mΩ	
	1.1 kΩ to 3.299999 kΩ	22 μΩ/Ω + 16 mΩ	
	3.3 kΩ to 10.99999 kΩ	22 μΩ/Ω + 16 mΩ	
	11 kΩ to 32.99999 kΩ	22 μΩ/Ω + 0.15 Ω	
	33 kΩ to 109.9999 kΩ	22 μΩ/Ω + 0.15 Ω	
	110 kΩ to 329.9999 kΩ	26 μΩ/Ω + 1.5 Ω	
	330 kΩ to 1.099999 MΩ	27 μΩ/Ω + 1.5 Ω	
	1.1 MΩ to 3.299999 MΩ	80 μΩ/Ω + 23 Ω	
	3.3 MΩ to 10.99999 MΩ	100 μΩ/Ω + 39 Ω	
	11 MΩ to 32.99999 MΩ	400 μΩ/Ω + 1.9 kΩ	
	33 MΩ to 109.9999 MΩ	510 μΩ/Ω + 2.3 kΩ	
	110 MΩ to 329.9999 MΩ	0.23 % + 78 kΩ	
	330 MΩ to 1100 MΩ	1.1 % + 390 kΩ	
Electrical Substitution of RTDs; Source using 5520A	-200 °C to -80°C	0.04 °C	PT 385 (100 Ω)
	-80 °C to 0°C	0.04°C	
	0 °C to 100°C	0.06°C	
	100 °C to 300°C	0.07°C	
	300 °C to 400°C	0.08°C	
	400 °C to 630°C	0.09°C	

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
	630 °C to 800°C	0.18°C	
NVLAP Code: 20/E06 DC VOLTAGE DC Voltage – Measure	0 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	38 µV/V + 0.1 µV 4.6 µV/V + 0.4 µV 3.6 µV/V + 4 µV 5.6 µV/V + 41 µV 5.6 µV/V + 510 µV	8508A
DC Voltage Source	0 mV to 329.9999 mV 330 mV to 3.299999 V 3.3 V to 32.99999 V 33 V to 329.9999 V 330 V to 1000.000 V	18 µV/V + 1 µV 10 µV/V + 2 µV 9 µV/V + 16 µV 14 µV/V + 120 µV 14 µV/V + 1.2 mV	5520A
Electrical Simulation of Thermocouple Devices; Source and Measure using 5520A			
Type J	-100 °C to -30 °C -30 °C to 150 °C 150 °C to 760 °C 760 °C to 1200 °C	0.15 °C 0.12 °C 0.16 °C 0.32 °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	0.26 °C 0.20 °C 0.22 °C 0.21 °C 0.34 °C	
Type T	-250 °C to -150 °C -150 °C to 0 °C 0 °C to 120 °C 120 °C to 400 °C	0.50 °C 0.20 °C 0.44 °C 0.14 °C	

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Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
NVLAP Code: 20/E09 LF AC VOLTAGE AC Voltage – Measure	0 mV to 200 mV	1 Hz to 10 Hz 10 Hz to 40 Hz 40 Hz to 100 Hz 100 Hz to 2 kHz 2 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	160 μ V/V + 14 μ V 140 μ V/V + 4.0 μ V 110 μ V/V + 4.0 μ V 110 μ V/V + 2.0 μ V 130 μ V/V + 4.0 μ V 340 μ V/V + 8.0 μ V 770 μ V/V + 20 μ V	8508A
	200 mV to 2 V	1 Hz to 10 Hz 10 Hz to 40 Hz 40 Hz to 100 Hz 100 Hz to 2 kHz 2 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	150 μ V/V + 120 μ V 120 μ V/V + 20 μ V 97 μ V/V + 20 μ V 84 μ V/V + 20 μ V 110 μ V/V + 20 μ V 220 μ V/V + 41 μ V 570 μ V/V + 200 μ V	
	2 V to 20 V	100 kHz to 300 kHz 1 Hz to 10 Hz 10 Hz to 40 Hz 40 Hz to 100 Hz 100 Hz to 2 kHz 2 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	0.3 % + 2.0 mV 150 μ V/V + 1.2 mV 120 μ V/V + 0.2 mV 92 μ V/V + 0.2 mV 80 μ V/V + 0.2 mV 110 μ V/V + 0.2 mV 220 μ V/V + 0.4 mV 570 μ V/V + 2.0 mV	
	20 V to 200 V	100 kHz to 300 kHz 40 Hz to 100 Hz 100 Hz to 2 kHz 2 kHz to 10 kHz 10 kHz to 30 kHz 30 kHz to 100 kHz	0.3 % + 20 mV 91 μ V/V + 2.0 mV 77 μ V/V + 2.0 mV 110 μ V/V + 2.0 mV 220 μ V/V + 4.0 mV 570 μ V/V + 20 mV	
	200 V to 1000 V	100 kHz to 300 kHz 40 Hz to 10 kHz 10 kHz to 30 kHz	0.3 % + 0.2 V 110 μ V/V + 20 mV 220 μ V/V + 41 mV	
AC Voltage – Source	1.0 mV to 32.999 mV	10 Hz to 45 Hz	610 μ V/V + 5 μ V	5520A

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Measured Parameter or Device Calibrated	Range	Frequency Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
	33 mV to 329.999 mV	45 Hz to 10 kHz 10 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 500 kHz	130 μ V/V + 5 μ V 170 μ V/V + 5 μ V 770 μ V/V + 5 μ V 0.26 % + 9 μ V 0.61 % + 39 μ V	
	0.33 mV to 3.29999 V	10 Hz to 45 Hz 45 Hz to 10 kHz 10 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 500 kHz	230 μ V/V + 6 μ V 110 μ V/V + 6 μ V 120 μ V/V + 6 μ V 270 μ V/V + 6 μ V 610 μ V/V + 25 μ V 0.15 % + 54 μ V	
	3.3 V to 32.9999 V	10 Hz to 45 Hz 45 Hz to 10 kHz 10 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz 100 kHz to 500 kHz	230 μ V/V + 39 μ V 220 μ V/V + 47 μ V 140 μ V/V + 47 μ V 230 μ V/V + 39 μ V 530 μ V/V + 97 μ V 0.18 % + 460 μ V	
	33 V to 329.999 V	10 Hz to 45 Hz 45 Hz to 10 kHz 10 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz	230 μ V/V + 500 μ V 110 μ V/V + 460 μ V 180 μ V/V + 460 μ V 270 μ V/V + 460 μ V 690 μ V/V + 1.2 mV	
	330 V to 1020 V	10 Hz to 45 Hz 45 Hz to 10 kHz 10 kHz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz	140 μ V/V + 1.6 mV 150 μ V/V + 4.7 mV 190 μ V/V + 4.7 mV 230 μ V/V + 4.7 mV 0.15 % + 39 mV	
		45 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	230 μ V/V + 7.8 mV 190 μ V/V + 7.8 mV 230 μ V/V + 7.8 mV	

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
NVLAP Code: 20/E10 LF CAPACITANCE Capacitance Source	3.3 nF to 10.9999 nF 11 nF to 32.9999 nF 33 nF to 109.999 nF 110 nF to 329.999 nF 330 nF to 1.09999 μ F 1.1 μ F to 3.29999 μ F 3.3 μ F to 10.9999 μ F	0.21 % + 0.01 nF 0.39 % + 0.14 nF 0.21 % + 0.14 nF 0.19 % + 1.2 nF 0.21 % + 1.4 nF 0.19 % + 11 nF 0.22 % + 13 nF	5520A
TIME and FREQUENCY			
NVLAP Code: 20/F01 FREQUENCY DISSEMINATION			
Tachometers	> 0 RPM to 20.00 RPM 20.01 RPM to 999.99 RPM 1000.0 RPM to 9999.9 RPM 10000 RPM to 20000 RPM	0.02 % + 0.001 RPM 0.015 % + 0.01 RPM 0.015 % + 0.1 RPM 0.015 % + 1 RPM	Ametek 1965 Strobe Standard
Frequency Measure – Source	5 Hz to 10 MHz	0.74 μ Hz/Hz	PM 6681
NVLAP Code: 20/F05 STOPWATCHES and TIMERS			
Stopwatches and Timers	1.5, 3, 24 Hour Test	1 s	True Time XL-DC
MECHANICAL			
NVLAP Code: 20/M05 FLOW RATE Measure of Flow of Gases	5 sccm to 20 sccm 20 sccm to 250 slm	0.05 sccm 0.25 %	DHI molbloc/molbox DHI molbloc/molbox
NVLAP Code: 20/M08 MASS Metric	25 kg 20 kg	9.0 mg 7.0 mg	Echelon I

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
	10 kg	1.5 mg	
	5 kg	0.69 mg	
	3 kg	0.45 mg	
	2 kg	0.34 mg	
	1 kg	0.049 mg	
	500 g	0.032 mg	
	300 g	0.030 mg	
	200 g	0.0250 mg	
	100 g	0.0320 mg	
	50 g	0.0160 mg	
	30 g	0.0105 mg	
	20 g	0.0080 mg	
	10 g	0.0070 mg	
	5 g	0.00350 mg	
	3 g	0.00300 mg	
	2 g	0.00250 mg	
	1 g	0.00220 mg	
	500 mg	0.00100 mg	
	300 mg	0.00070 mg	
	200 mg	0.00060 mg	
	100 mg	0.00070 mg	
	50 mg	0.00060 mg	
	30 mg	0.00063 mg	
	20 mg	0.00055 mg	
	10 mg	0.00062 mg	
	5 mg	0.00050 mg	
	3 mg	0.00046 mg	
	2 mg	0.00041 mg	
	1 mg	0.00057 mg	
	20 kg	7.0 mg	Echelon II
	10 kg	3.2 mg	
	5 kg	2.9 mg	
	3 kg	2.8 mg	
	2 kg	2.8 mg	
	1 kg	0.14 mg	

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
	500 g	0.080 mg	
	300 g	0.096 mg	
	200 g	0.073 mg	
	100 g	0.062 mg	
	50 g	0.031 mg	
	30 g	0.019 mg	
	20 g	0.013 mg	
	10 g	0.0083 mg	
	5 g	0.0043 mg	
	3 g	0.0028 mg	
	2 g	0.0021 mg	
	1 g	0.0018 mg	
	500 mg	0.0012 mg	
	300 mg	0.00098 mg	
	200 mg	0.00091 mg	
	100 mg	0.00094 mg	
	50 mg	0.00085 mg	
	30 mg	0.00080 mg	
	20 mg	0.00079 mg	
	10 mg	0.00083 mg	
	5 mg	0.00076 mg	
	3 mg	0.00073 mg	
	2 mg	0.00073 mg	
	1 mg	0.00075 mg	
	500 kg	1.0 g	Echelon III
	250 kg	1.0 g	
	200kg	0.70 g	
	100kg	0.70 g	
	50 kg	0.50 g	
	30kg	0.50 g	
	25 kg	0.016 g	
	20 kg	0.007 g	
	10 kg	0.003 g	
	5 kg	0.002 g	
	3 kg	0.0015 g	

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
Avoirdupois	2 kg	0.0015 g	Echelon III
	1000 lb	1.0 g	
	500 lb	1.0 g	
	250 lb	0.7 g	
	200 lb	0.6 g	
	100 lb	400 mg	
	50 lb	15 mg	
	25 lb	11 mg	
	20lb	9.0 mg	
	10 lb	5.0 mg	
	5 lb	4.0 mg	
	3 lb	2.0 mg	
	2 lb	0.10 mg	
	1 lb	0.084 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 Field calibrations Available <small>Note 4</small>	0.001 g to 50 g	1 µg	1.9 µg	ASTM Class 2
	0.001 g to 100 g	10 µg	12 µg	
	0.01 g to 400 g	100 µg	120 µg	
	0.1 g to 1200 g	1 mg	1.2 mg	
	1 g to 8 kg	10 mg	12 mg	
	10 g to 64 kg	100 mg	0.12 g	
	100 g to 165 kg	1 g	1.2 g	
	1 kg to 250 kg	10 g	12 g	
	10 kg to 1000 kg	100 g	120 g	

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OPTICAL RADIATION			
NVLAP Code: 20/O04 SPECTROPHOTOMETRIC Absorbance 250 nm to 440 nm 440 nm to 635 nm	0.03 to 1.00 0.5 to 1.00	0.005 0.004	Spectrophotometer
Wavelength	201 nm to 241 nm 241 nm to 640 nm	0.42 nm 0.38 nm	Spectrophotometer
THERMODYNAMIC			
NVLAP Code: 20/T02 HUMIDITY Humidity Calibration of Digital Thermo-Hygrometers	0.05 % RH to 95 % RH	1 % RH	3900 and 2500 Humidity Generators
Dew/Frost Point	-80 °C to 65 °C	0.5 °C	3900 and 2500 Humidity Generators
NVLAP Code: 20/T03 LABORATORY THEMOMETERS, DIGITAL and ANALOG Temperature Calibration of Digital Thermo-Hygrometers	0 °C to 70 °C	0.25 °C	2500 Humidity Generator
Laboratory Thermometers	-196 °C to 180 °C 180 °C to 420 °C	0.013 °C 0.020 °C	SPRT/1590 Liquid Nitrogen Dewar/Ice Bath/Stirred Bath/ SPRT/1590/ Stirred Bath

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NVLAP Code: 20/T05 PRESSURE			
Secondary Pressure Standards	± 15 kPa 103.4 kPa 689.5 kPa 6 894.8 kPa 103 421 kPa ± 15 kPa	100 mPa/kPa of reading, 30 mPa/kPa of test span, or 2.7×10^{-1} Pa, whichever is greater 100 mPa/kPa of reading, 30 mPa/kPa of test span, or 9.3×10^{-1} Pa, whichever is greater 100 mPa/kPa of reading, 30 mPa/kPa of test span, or 6.2×10^0 Pa, whichever is greater 100 mPa/kPa of reading, 30 mPa/kPa of test span, or 6.2×10^1 Pa, whichever is greater 150 Pa/MPa of reading or 4.7×10^3 Pa, whichever is greater 30 mPa/kPa of reading + 13 mPa	Unless otherwise noted, the pressure medium used in testing is nitrogen (99 % pure); DHI, PPCH uses a hydraulic fluid (PF-5080) as its pressure medium. Gauge and Differential Modes Gauge Mode Absolute, Gauge, and Differential Gauge Modes Absolute and Gauge Modes Absolute, Absolute Differential, and Gauge Modes
Primary Pressure Standards			

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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