



CALIBRATION LABORATORIES

NVLAP LAB CODE 200115-0

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Uncertainty (k=2) ^{Note 3,5}	Remarks
DIMENSIONAL			
<p>NVLAP Code: 20/D03 GAGE BLOCKS Master Set Calibration Steel</p>	<p>0.010 in to 0.09375 in 0.100 in to 1.000 in 2 in 3 in 4 in 5 in 6 in 7 in 8 in 10 in 12 in 16 in 20 in</p>	<p>3.4 µin 3.0 µin 3.0 µin 3.0 µin 3.6 µin 4.3 µin 4.5 µin 5.3 µin 5.3 µin 6.5 µin 7.4 µin 11 µin 12 µin</p>	
<p>Chrome Carbide</p>	<p>0.050 in to 0.09375 in 0.100 in to 1.000 in 2 in 3 in 4 in</p>	<p>3.0 µin 3.0 µin 3.0 µin 3.0 µin 3.3 µin</p>	

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Measured Parameter or Device Calibrated	Range	Uncertainty (k=2) <small>Note 3,5</small>	Remarks
Tungsten Carbide	0.050 in to 0.09375 in	3.0 μin	
	0.100 in to 1.000 in	3.0 μin	
	2 in	3.0 μin	
	3 in	3.0 μin	
	4 in	3.4 μin	
Master Set Calibration Steel	0.3 mm to 0.9 mm	0.08 μm	
	1.0 mm to 24.5 mm	0.08 μm	
	25 mm	0.08 μm	
	50 mm	0.08 μm	
	75 mm	0.08 μm	
	100 mm	0.09 μm	
	125 mm	0.10 μm	
	150 mm	0.10 μm	
	175 mm	0.12 μm	
	200 mm	0.14 μm	
	250 mm	0.17 μm	
	300 mm	0.19 μm	
400 mm	0.28 μm		
500 mm	0.37 μm		
ELECTROMAGNETICS – DC/LOW FREQUENCY			
NVLAP Code: 20/E05 DC RESISTANCE and CURRENT Resistance	1 Ω to ≥ 0.1 Ω	0.35 μΩ/Ω	MI 6010B Bridge
	1 Ω to 1 Ω	0.30 μΩ/Ω	
	1 Ω to ≤ 10 Ω	0.35 μΩ/Ω	
	10 Ω to ≤ 100 Ω	0.50 μΩ/Ω	
	100 Ω to ≤ 1 kΩ	0.60 μΩ/Ω	
	1 kΩ to ≤ 10 kΩ	0.70 μΩ/Ω	MI 6000B Bridge
	10 kΩ to 10 kΩ	0.50 μΩ/Ω	
	01 kΩ to ≤ 100 kΩ	1.0 μΩ/Ω	
	100 kΩ to ≤ 1 MΩ	2.0 μΩ/Ω	

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NVLAP Code: 20/E06 DC VOLTAGE			
Fixed Points			
Single Measurement	10 V	0.013 $\mu\text{V/V}$	Josephson Array
	1.018 V	0.11 $\mu\text{V/V}$	
Over Extended Time	10 V	0.06 $\mu\text{V/V}$	
	1.018 V	0.23 $\mu\text{V/V}$	Zener Reference Comparison
Over Extended Time	10 V	0.3 $\mu\text{V/V}$	
Variable Points			Zener and Divider
	Up to 100 mV	4.0 $\mu\text{V/V}$	
	100 mV to 1 V	0.8 $\mu\text{V/V}$	
	1 V to 10 V	0.5 $\mu\text{V/V}$	
	10 V to 100 V	0.8 $\mu\text{V/V}$	
	100 V to 1000 V	2.5 $\mu\text{V/V}$	
TIME and FREQUENCY			
NVLAP Code: 20/F01 FREQUENCY DISSEMINATION			
Frequency Dissemination			NIST FMS System
	100 kHz	1×10^{-12}	
	1 MHz	1×10^{-12}	
	5 MHz	1×10^{-12}	
	10 MHz	1×10^{-12}	
MECHANICAL			
NVLAP Code: 20/M06 FORCE			
Tension and Compression			
	10 lbf to 300 lbf	0.01 lbf	Dead Weight
	> 300 lbf to 600 lbf	0.02 lbf	
	> 600 lbf to 1000 lbf	0.04 lbf	
	100 lbf to 1000 lbf	0.20 lbf	Load Cells
	> 1000 lbf to 10 000 lbf	1.1 lbf	
	> 10 000 lbf to 100 000 lbf	10 lbf	

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) ^{Note 3,5}	Remarks
NVLAP Code: 20/M08 MASS Metric	1 kg	0.11 mg	Mass Dissemination
	500 g	51 µg	
	200 g	30 µg	
	100 g	26 µg	
	50 g	14 µg	
	20 g	6.2 µg	
	10 g	4.6 µg	
	5 g	4.1 µg	
	2 g	3.6 µg	
	1 g	3.5 µg	
	0.5 g	1.9 µg	
	0.2 g	1.1 µg	
	0.1 g	1.2 µg	
	0.05 g	1.2 µg	
	0.02 g	1.3 µg	
	0.01 g	0.90 µg	
	0.005 g	0.90 µg	
	0.002 g	0.90 µg	
	0.001 g	0.90 µg	
Balances	1 mg to 30 g	0.062 mg	Using ASTM Class 1 & 2 Weights
	> 30 g to 40 g	0.087 mg	
	> 40 g to 80 g	0.12 mg	
	> 80 g to 100 g	0.19 mg	
	> 100 g to 200 g	0.39 mg	
	> 200 g to 500 g	0.80 mg	
	> 500 g to 600 g	0.94 mg	
	> 600 g to 1 kg	4.0 mg	
> 1 kg to 6 kg	30 mg		
> 6 kg to 10.1 kg	40 mg		
> 10.1 kg to 32 kg	300 mg		

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) <small>Note 3,5</small>	Remarks
THERMODYNAMIC			
NVLAP Code: 20/T05 PRESSURE Deadweight Pressure Gauge – Direct Pressure Comparison	0.4 psi to 18 psi	0.0032 %	Air
	18 psi to 700 psi	0.0044 %	
	700 psi to 4000 psi	0.0037 %	Oil
	4000 psi to 40 000 psi	0.0078 %	
NVLAP Code: 20/T07 RESISTANCE THERMOMETRY Calibration of PRTs	0 °C	5.7 mK	Comparison to Reference SPRT
	232 °C	7.1 mK	
	420 °C	9.5 mK	
END			

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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.

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