

United States Department of Commerce
National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200508-0

Insko Metrology, Inc.
Miami, FL

*is accredited by the National Voluntary Laboratory Accreditation Program for specific services,
listed on the Scope of Accreditation, for:*

CALIBRATION LABORATORIES

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005.
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 January 2009).*

2015-04-01 through 2016-03-31

Effective dates



A handwritten signature in black ink, appearing to read 'William R. Mallard'.

For the National Institute of Standards and Technology



CALIBRATION LABORATORIES

NVLAP LAB CODE 200508-0

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

<p>InscO Metrology, Inc. 10434 N.W. 31st Terrace Miami, FL 33172 Ms. Mirtha Hernandez-Davila Phone: 305-994-8031 Fax: 305-994-7365 E-mail: mdavila@insco.us</p>	<p>Fields of Calibration Mechanical Thermodynamic</p> <p>This laboratory is compliant to ANSI/NCSL Z540-1-1994; Part 1. (NVLAP Code: 20/A01)</p>
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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) Notes 1,2

Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) <small>Note 3</small>	Remarks
MECHANICAL			
MASS (20/M08)			
Metric	50 kg	11 mg	Echelon I
	30 kg	6.5 mg	
	25 kg	5.7 mg	
	20 kg	4.2 mg	
	10 kg	0.65 mg	
	5 kg	0.33 mg	
	3 kg	0.19 mg	
	2 kg	0.18 mg	
	1 kg	0.052 mg	
	500 g	0.03 mg	
	300 g	0.027 mg	
	200 g	0.022 mg	
	100 g	0.016 mg	
	50 g	0.0065 mg	
	30 g	0.0046 mg	
	20 g	0.0041 mg	
	10 g	0.0034 mg	
	5 g	0.0013 mg	
	3 g	0.0013 mg	
	2 g	0.00076 mg	
	1 g	0.00074 mg	
	0.500 g	0.0011 mg	
	0.300 g	0.0011 mg	
	0.200 g	0.00075 mg	
	0.100 g	0.00063 mg	

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

Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) ^{Note 3}	Remarks
	0.050 g	0.00038 mg	Echelon II
	0.030 g	0.00057 mg	
	0.020 g	0.00059 mg	
	0.010 g	0.00067 mg	
	0.005 g	0.00053 mg	
	0.003 g	0.00053 mg	
	0.002 g	0.00047 mg	
	0.001 g	0.00036 mg	
	50 kg	15 mg	
	30 kg	9 mg	
	25 kg	7.9 mg	
	20 kg	6.5 mg	
	10 kg	0.69 mg	
	5 kg	0.35 mg	
	3 kg	0.22 mg	
	2 kg	0.22 mg	
	1 kg	0.053 mg	
	500 g	0.032 mg	
	300 g	0.029 mg	
	200 g	0.024 mg	
	100 g	0.018 mg	
	50 g	0.01 mg	
	30 g	0.0087 mg	
	20 g	0.0083 mg	
	10 g	0.0079 mg	
	5 g	0.0025 mg	
	3 g	0.0024 mg	
	2 g	0.002 mg	
	1 g	0.0013 mg	
	0.500 g	0.0018 mg	
	0.300 g	0.0013 mg	
	0.200 g	0.001 mg	
	0.100 g	0.00082 mg	
	0.050 g	0.00051 mg	
	0.030 g	0.00067 mg	

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	0.010 g	0.00069 mg	
	0.005 g	0.00079 mg	
	0.003 g	0.00068 mg	
	0.002 g	0.00058 mg	
	0.001 g	0.00056 mg	
THERMODYNAMIC			
LABORATORY THERMOMETERS, DIGITAL and ANALOG (20/T03)			
Digital/Electronic Thermometers ^{Note 8} With PRT System	-196 °C	10 mK	Direct Comparison to PRT
	-80 °C	26 mK	
	-40 °C	15 mK	
	-20 °C	15 mK	
	0 °C	3.0 mK	Ice Point
	50 °C	10 mK	
	100 °C	10 mK	
	150 °C	10 mK	
	200 °C	31 mK	
	400 °C	41 mK	
	600 °C	51 mK	
With Base-metal Thermocouple System	-196 °C	0.36 °C	Direct Comparison to PRT
	-80 °C	0.18 °C	
	-40 °C	0.081 °C	
	-20 °C	0.047 °C	
	0 °C	0.020 °C	Ice Point
	50 °C	0.061 °C	
	100 °C	0.10 °C	
	150 °C	0.14 °C	
	200 °C	0.18 °C	
	400 °C	0.37 °C	
	600 °C	0.57 °C	

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

Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) ^{Note 3}	Remarks
Liquid in Glass Thermometers	-80 °C -40 °C -20 °C 0 °C 50 °C 100 °C 150 °C 200 °C 400 °C 600 °C	0.059 °C 0.034 °C 0.033 °C 0.013 °C 0.020 °C 0.023 °C 0.026 °C 0.031 °C 0.25 °C 0.52 °C	Direct Comparison to PRT Ice Point
RESISTANCE THERMOMETRY (20/T07)			
ITS-90	-196 °C -38.8344 °C 0.01 °C 156.5985 °C 231.928 °C 419.527 °C	7.1 mK 1.3 mK 0.29 mK 1.2 mK 1.2 mK 2.1 mK	Direct Comparison; (LN ₂) (TP Ar Substitution) Fixed Point (TP Hg); The temperature of this point is defined by the SPRT. Fixed Point (TPW) Fixed Point (FP In) Fixed Point (FP Sn) Fixed Point (FP Zn)
Resistance Thermometry	-196 °C -40 °C 0.01 °C 30 °C 157 °C 232 °C 420 °C 660 °C	7.1 mK 26 mK 0.29 mK 11 mK 21 mK 31 mK 41 mK 42 mK	Direct Comparison to SPRT

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

Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) ^{Note 3}	Remarks
THERMOCOUPLES (20/T11)			
Thermocouples ^{Note 9} Noble Metal			Direct Comparison to Type S Thermocouple
Type S	0 °C	0.78 °C	
	50 °C	1.0 °C	
	100 °C	0.98 °C	
	150 °C	1.0 °C	
	200 °C	0.90 °C	
	400 °C	0.97 °C	
	600 °C	0.98 °C	
Type R	0 °C	0.79 °C	
	50 °C	1.0 °C	
	100 °C	0.96 °C	
	150 °C	0.97 °C	
	200 °C	0.93 °C	
	400 °C	0.90 °C	
	600 °C	0.88 °C	
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 with a level of confidence of approximately 95 %, typically using a coverage factor of $k = 2$. However, laboratories may report a coverage factor different than $k = 2$ to achieve the 95 % level of confidence. 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.

Note 8: Digital Readout Thermometers consisting of a thermometer probe and a measurement readout device are calibrated as a unit. The uncertainty of the digital readout device is unknown and must be included by the user of the device.

Note 9: Calibration of used thermocouples may result in larger uncertainties due to increased homogeneity.

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

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MASS (20/M08)			
Metric	50 kg	11 mg	Echelon I
	30 kg	6.5 mg	
	25 kg	5.7 mg	
	20 kg	4.2 mg	
	10 kg	0.65 mg	
	5 kg	0.33 mg	
	3 kg	0.19 mg	
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	30 g	0.0046 mg	
	20 g	0.0041 mg	
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	3 g	0.0013 mg	
	2 g	0.00076 mg	
	1 g	0.00074 mg	
	0.500 g	0.0011 mg	
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	0.003 g	0.00053 mg	
	0.002 g	0.00047 mg	
	0.001 g	0.00036 mg	
	50 kg	15 mg	
	30 kg	9 mg	
	25 kg	7.9 mg	
	20 kg	6.5 mg	
	10 kg	0.69 mg	
	5 kg	0.35 mg	
	3 kg	0.22 mg	
	2 kg	0.22 mg	
	1 kg	0.053 mg	
	500 g	0.032 mg	
	300 g	0.029 mg	
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	100 g	0.018 mg	
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	20 g	0.0083 mg	
	10 g	0.0079 mg	
	5 g	0.0025 mg	
	3 g	0.0024 mg	
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	1 g	0.0013 mg	
	0.500 g	0.0018 mg	
	0.300 g	0.0013 mg	
	0.200 g	0.001 mg	
	0.100 g	0.00082 mg	
	0.050 g	0.00051 mg	
	0.030 g	0.00067 mg	

W. R. M. L.

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	0.010 g	0.00069 mg	
	0.005 g	0.00079 mg	
	0.003 g	0.00068 mg	
	0.002 g	0.00058 mg	
	0.001 g	0.00056 mg	
THERMODYNAMIC			
LABORATORY THERMOMETERS, DIGITAL and ANALOG (20/T03)			
Digital/Electronic Thermometers ^{Note 8} With PRT System	-196 °C	10 mK	Direct Comparison to PRT
	-80 °C	26 mK	
	-40 °C	15 mK	
	-20 °C	15 mK	
	0 °C	3.0 mK	Ice Point
	50 °C	10 mK	
	100 °C	10 mK	
	150 °C	10 mK	
	200 °C	31 mK	
	400 °C	41 mK	
	600 °C	51 mK	
With Base-metal Thermocouple System	-196 °C	0.36 °C	Direct Comparison to PRT
	-80 °C	0.18 °C	
	-40 °C	0.081 °C	
	-20 °C	0.047 °C	
	0 °C	0.020 °C	Ice Point
	50 °C	0.061 °C	
	100 °C	0.10 °C	
	150 °C	0.14 °C	
	200 °C	0.18 °C	
	400 °C	0.37 °C	
	600 °C	0.57 °C	

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Measured Parameter or Device Calibrated	Range	Uncertainty ($k=2$) ^{Note 3}	Remarks
Liquid in Glass Thermometers	-80 °C	0.059 °C	Direct Comparison to PRT
	-40 °C	0.034 °C	
	-20 °C	0.033 °C	Ice Point
	0 °C	0.013 °C	
	50 °C	0.020 °C	
	100 °C	0.023 °C	
	150 °C	0.026 °C	
	200 °C	0.031 °C	
	400 °C	0.25 °C	
600 °C	0.52 °C		
RESISTANCE THERMOMETRY (20/T07)			
ITS-90	-196 °C	7.1 mK	Direct Comparison; (LN ₂) (TP Ar Substitution) Fixed Point (TP Hg); The temperature of this point is defined by the SPRT. Fixed Point (TPW) Fixed Point (FP In) Fixed Point (FP Sn) Fixed Point (FP Zn)
	-38.8344 °C	1.3 mK	
	0.01 °C	0.29 mK	
	156.5985 °C	1.2 mK	
	231.928 °C	1.2 mK	
	419.527 °C	2.1 mK	
Resistance Thermometry	-196 °C	7.1 mK	Direct Comparison to SPRT
	-40 °C	26 mK	
	0.01 °C	0.29 mK	
	30 °C	11 mK	
	157 °C	21 mK	
	232 °C	31 mK	
	420 °C	41 mK	
	660 °C	42 mK	

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Thermocouples ^{Note 9} Noble Metal			Direct Comparison to Type S Thermocouple
Type S	0 °C	0.78 °C	
	50 °C	1.0 °C	
	100 °C	0.98 °C	
	150 °C	1.0 °C	
	200 °C	0.90 °C	
	400 °C	0.97 °C	
	600 °C	0.98 °C	
Type R	0 °C	0.79 °C	
	50 °C	1.0 °C	
	100 °C	0.96 °C	
	150 °C	0.97 °C	
	200 °C	0.93 °C	
	400 °C	0.90 °C	
	600 °C	0.88 °C	
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