National Voluntary Laboratory Accreditation Program

CALIBRATION LABORATORIES **NVLAP LAB CODE 105007-0**

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

State of Virginia Metrology Lab	**Parameter(s) of Accreditation**
600 North 5th Street, Room 162 Richmond, VA 23219 Mr. Dale Saunders Phone: 804-786-1610 Fax: 804-371-0206 E-mail: dale.saunders@vdacs.virginia.gov	Time and Frequency, Mechanical

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) [Notes 1,2]

Measured Parameter or Device Calibrated	Range	Uncertainty (*k*=2) [Note 3]	Remarks
TIME & FREQUENCY			
NVLAP Code: 20/F01 **FREQUENCY DISSEMINATION** Tuning forks at frequencies used in law enforcement.	1 kHz to 10 kHz	0.028 %	
MECHANICAL			
NVLAP Code: 20/M08 **MASS** Metric	20 kg 10 kg 5 kg 3 kg 2 kg 1 kg 500 g 300 g 200 g 100 g 50 g 30 g 20 g 10 g 5 g 3 g 2 g 1 g 500 mg	16 mg 12 mg 1.8 mg 1.7 mg 0.70 mg 0.28 mg 0.27 mg 0.20 mg 0.19 mg 0.029 mg 0.018 mg 0.014 mg 0.013 mg 0.008 mg 0.003 mg 0.002 mg 0.002 mg 0.002 mg 0.0016 mg	Echelon II

2012-10-01 through 2013-09-30
Effective dates

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) [Notes 1,2]

Measured Parameter or Device Calibrated	Range	Uncertainty (k=2) [Note 3]	Remarks
	300 mg	0.0017 mg	
	200 mg	0.0018 mg	
	100 mg	0.0019 mg	
	50 mg	0.0016 mg	
	30 mg	0.0016 mg	
	20 mg	0.0016 mg	
	10 mg	0.0008 mg	
	5 mg	0.0007 mg	
	3 mg	0.0008 mg	
	2 mg	0.0007 mg	
	1 mg	0.0009 mg	
Metric	25 kg	100 mg	Echelon III
	20 kg	100 mg	
	10 kg	50 mg	
	5 kg	11 mg	
	3 kg	10 mg	
	2 kg	10 mg	
	1 kg	2.0 mg	
	500 g	2.0 mg	
	300 g	2.0 mg	
	200 g	0.5 mg	
	100 g	0.11 mg	
	50 g	0.11 mg	
	30 g	0.11 mg	
	20 g	0.11 mg	
	10 g	0.052 mg	
	5 g	0.051 mg	
	3 g	0.051 mg	
	2 g	0.051 mg	
	1 g	0.056 mg	
	500 mg	0.056 mg	
	300 mg	0.056 mg	
	200 mg	0.056 mg	
	100 mg	0.022 mg	
	50 mg	0.022 mg	
	30 mg	0.022 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
	20 mg	0.022 mg	
	10 mg	0.016 mg	
	5 mg	0.016 mg	
	3 mg	0.016 mg	
	2 mg	0.016 mg	
	1 mg	0.016 mg	
Avoirdupois			Echelon III
	6000 lb	0.46 lb	Weight carts
	5000 lb	0.32 lb	
	4000 lb	0.23 lb	
	3500 lb	0.23 lb	
	3000 lb	0.23 lb	
	2500 lb	0.051 lb	Weights
	2000 lb	0.050 lb	
	1500 lb	0.035 lb	
	1000 lb	0.016 lb	
	500 lb	0.0067 lb	
	100 lb	0.0024 lb	
	50 lb	110 mg	
	25 lb	69 mg	
	20 lb	67 mg	
	10 lb	18 mg	
	5 lb	11 mg	
	3 lb	10 mg	
	2 lb	4.4 mg	
	1 lb	4.4 mg	
	0.5 lb	2.0 mg	
	0.3 lb	0.5 mg	
	0.2 lb	0.25 mg	
	0.1 lb	0.09 mg	
	0.05 lb	0.10 mg	
	0.03 lb	0.07 mg	
	0.02 lb	0.07 mg	
	0.01 lb	0.06 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
	0.005 lb	0.07 mg	
	0.003 lb	0.06 mg	
	0.002 lb	0.057 mg	
	0.001 lb	0.055 mg	
	8 oz	2.00 mg	
	4 oz	0.32 mg	
	2 oz	0.22 mg	
	1 oz	0.22 mg	
	1/2 oz	0.10 mg	
	1/4 oz	0.07 mg	
	1/8 oz	0.12 mg	
	1/16 oz	0.05 mg	
	1/32 oz	0.05 mg	
NVLAP Code: 20/M12 **VOLUME and DENSITY** Volume Transfer Method	10 gal 5 gal	0.63 in^3 0.33 in^3	
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: Uncertainty 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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