



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

ECS Metrology
3947 West Lincoln Highway, Downingtown, PA 19335

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Mechanical: Volumetric Pipette and Mass Calibration
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President
Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084
Accreditation, Inc. (PJLA)

Initial Accreditation Date:

September 29, 2017

Issue Date:

November 3, 2021

Expiration Date:

November 30, 2023

Accreditation No.:

94034

Certificate No.:

L21-658

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjllabs.com



Certificate of Accreditation: Supplement

ECS Metrology

3947 West Lincoln Highway, Downingtown, PA 19335
 Contact Name: Scott French Phone: 610-880-4170

Accreditation is granted to the facility to perform the following calibrations:

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Pipettes ^{FO}	0.2 μ L	0.11 μ L	High Resolution Micro Balances, Liquid Thermometers, and Evaporation Traps; WI: ECS SOP-001 IAW ISO 8655
	1 μ L	0.11 μ L	
	2 μ L	0.11 μ L	
	5 μ L	0.11 μ L	
	10 μ L	0.13 μ L	
	20 μ L	0.15 μ L	
	50 μ L	0.15 μ L	
	100 μ L	0.17 μ L	
	200 μ L	0.22 μ L	
	500 μ L	2.5 μ L	
	1 000 μ L	5 μ L	
	2 500 μ L	13 μ L	
	5 000 μ L	25 μ L	
10 000 μ L	50 μ L		
Torque Driver Wrench ^{FO}	up to 90 (lbf-in)	0.14 (lbf-in)	Digital Torque Meter ECS_SOP_014

Mass, Force, and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Balances ^O	10 mg to 60 g	$(2.0 \times 10^{-4} + 1.86 \times 10^{-6} \text{ Wt})\text{g}$	Class 1 Test Weights ECS_SOP_003
	60 g to 200 g	$(1 \times 10^{-4} + 2.58 \times 10^{-6} \text{ Wt})\text{g}$	
	200 g to 5 kg	$(4.14 \times 10^{-3} + 2.03 \times 10^{-6} \text{ Wt})\text{g}$	
Mass ^F	Up to 5 g	.007 mg	AnD BM-22, Class 1 Weight ECS_SOP_009
	5 g to 22 g	.015 mg	AnD BM-22, Class 1 Weight ECS_SOP_009
	10 g to 60 g	.036 mg	Radwag AS 60/220.R2 ECS_SOP_009
	60 g to 220 g	0.14 mg	AnD GR-200 ECS_SOP_009
	220 g to 1 000 g	2 mg	Radwag PS 1000.R1 ECS_SOP_009



Certificate of Accreditation: Supplement

ECS Metrology

3947 West Lincoln Highway, Downingtown, PA 19335
 Contact: Scott French Phone: 610-880-4170

Accreditation is granted to the facility to perform the following calibrations:

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Thermometer/Sensor ^{FO}	-20 °C to 150 °C	0.08 °C	Platinum RTD Water baths ECS_SOP_005
	-200 °C to 0 °C	0.73 °C	Type K,T, J Thermocouples Martel Multifunction Calibrator MC-1210 Graphtec Calibrator GL240 Platinum RTD Water baths ECS_SOP_005
	0 °C to 300 °C	0.66 °C	
	300 °C to 600 °C	1.40 °C	
	600 °C to 1 000 °C	2.32 °C	
1 000 °C to 1 372 °C	3.20 °C		
Infrared Devices ^{FO}	-20 °C to 300 °C	0.88 °C	REED Instruments BX 500 Black Body Calibrator ECS_SOP_005

Chemical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
pH Meter ^{FO}	4.00 pH	.02 pH	pH Simulator ECS_SOP_006
	7.00 pH	.02 pH	
	10.00 pH	.02 pH	

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Caliper ^{FO}	Up to 6 in	(288.3 + 6.3 L) μ m	Gage Blocks, Surface Plate, SOP-011
Micrometer ^{FO}	Up to 1 in	(30.0 + 6.3 L) μ m	Gage Blocks, Procedure, SOP-011

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
DC Voltage Measure ^{FO}	2 mV to 30 V	.015 % +- 2 mv	Martel MC 1210 Calibrator ECS_SOP_010_Electrical
DC Current Measure ^{FO}	.002 mA to 24 mA	015 % +- .002 mA	
Resistance Measure ^{FO}	.05 Ω to 4 000 Ω	025 % +- .5 Ohms	



Certificate of Accreditation: Supplement

ECS Metrology

3947 West Lincoln Highway, Downingtown, PA 19335
Contact: Scott French Phone: 610-880-4170

Accreditation is granted to the facility to perform the following calibrations:

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Resistance Source ^{FO}	5 Ω to 4 000 Ω	.025 % +- .5 Ω	Martel MC 1210 Calibrator ECS_SOP_010_Electrical
Temperature Calibration Indication and Control	-200 °C to 0 °C	0.35 °C	
Equipment used with Thermocouple Type K ^{FO}	0 °C to 1 000 °C	0.18 °C	
Equipment used with Thermocouple Type J ^{FO}	1 000 °C to 1 372 °C	0.16 °C	
Temperature Calibration Indication and Control	-210 °C to 0 °C	0.24 °C	
Equipment used with Thermocouple Type J ^{FO}	0 °C to 800 °C	0.13 °C	
Temperature Calibration Indication and Control	800 °C to 1 200 °C	0.18 °C	pH Simulator ECS_SOP_006
Temperature Calibration Indication and Control	-200 °C to 0 °C	0.35 °C	
Equipment used with Thermocouple Type T ^{FO}	0 °C to 400 °C	0.13 °C	
DC Voltage Source ^{FO}	2 mV to 20 V	.015 % +- 2 mv	
DC Current Source ^{FO}	.002 mA to 24 mA	015 % +- .002 mA	
pH Meter Electrical Simulation ^{FO}	1 to 14 pH	0.02 pH	

Time & Frequency

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Tachometer ^{FO}	10 to 99 999 RPM	.17 % of reading	Multifunction Calibrator MC-1210 ECS_SOP_008
Timers ^{FO}	up to 24 hours	.19 s/day	Stopwatch/WWVB ECS_SOP_007
Centrifuge, Rate of Rotation ^{FO}	10 RPM to 999 999 RPM	17 % of reading	Photo tachometer ECS SOP 004
Frequency Measure ^{FO}	1 Hz to 10 kHz	0.05 % +.1 hz	Martel MC 1210 Calibrator ECS_SOP_008

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor k (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.



Certificate of Accreditation: Supplement

ECS Metrology

3947 West Lincoln Highway, Downingtown, PA 19335
Contact: Scott French Phone: 610-880-4170

Accreditation is granted to the facility to perform the following calibrations:

2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
3. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.
4. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.

