



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

3Dimensional Laboratorios S. de R.L. de C.V.

***Plaza España No 7320, Fraccionamiento Roma Poniente
Ciudad Juárez, Chihuahua, México. C.P. 32695***

*(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):

***Dimensional, Mass, Force and Weighing Devices, Mechanical, Thermodynamic,
Chemical, Acoustic and Electrical 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

Initial Accreditation Date:

September 12, 2016

Issue Date:

November 28, 2024

Expiration Date:

December 31, 2026

Accreditation No.:

84633

Certificate No.:

L24-906

*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.pjlabs.com*



Certificate of Accreditation: Supplement

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Plaza España No 7320, Fraccionamiento Roma Poniente

Ciudad Juárez, Chihuahua, México. C.P. 32695

Contact Name: Victor Manuel Martinez Sastré Phone: 656-679-0097

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

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Micrometers ^{FO}	0.5 mm to 500 mm	$(1.3 + 0.03L) \mu\text{m}$	Gage Blocks	UNE 82306 UNE 82317 UNE 82310
Calipers ^{FO}	0.5 mm to 500 mm	$(5.77 + 0.001L) \mu\text{m}$		
Indicators ^{FO}	0.001 mm to 60 mm	$(2.2 + 0.6L) \mu\text{m}$		
Protractor ^F	05 mm to 1 000 mm	0.014°	Angle Blocks	BS1685
Thread Plug Gages ^{FO}	0-80 TPI & 4-20 TPI	60 μin	Thread Wires & Bench Micrometer	Euramet-cg-10-01
Optical Comparator & Vision System Length (X axis Linearity) ^O (Y axis Linearity) (Z axis Linearity)	0.1 mm to 500 mm 0.1 mm to 400 mm 0.1 mm to 350 mm	$(3.86 + 0.025 4L) \mu\text{m}$	Master Glass Scale Angle Blocks	JIS B 7184
Optical Comparator ^O Angularity	0° to 90°	0.03°		
Optical Comparator & Vision Systems (Squareness) ^O	90°	0.11°		
Optical Comparator & Vision Systems ^O (Magnification)	10X 20X 50X	0.05 % Magnification 0.05 % Magnification 0.05 % Magnification		
Roughness Standard ^O	0.05 Ra to 6.3 Ra	12 % of reading	Surface Roughness	ISO 4288
Rules ^F	Up to 1 000 mm	$(0.289 + 3 \times 10^{-6}L) \mu\text{m}$	Vision System & Linear Scale	NMX-CH-148
Surface Plate ^{FO}	250 x 250 mm to 2 500 x 1 600 mm	0.7 μm	Repeat Reading Gage	JIS B 7513
Measure Tape ^F	Up to 50 m	$(0.87 + 2 \times 10^{-5}L) \text{mm}$	Vision System, Linear Scale	JIS B 7512
Pin Gages ^F	Up to 25.4 mm	$(1.7 + 5 \times 10^{-3}L) \mu\text{m}$	High-Accuracy Micrometer	Euramet_cg-6

Chemical

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pH Meters ^{FO}	4 pH	0.013 pH	pH Buffer Solutions	CENAM Technical Guide
	7 pH	0.013 pH		
	10 pH	0.013 pH		
Conductivity Meters ^{FO}	9.35 $\mu\text{S/cm}$	0.28 $\mu\text{S/cm}$	Conductivity Solutions	
	100 $\mu\text{S/cm}$	0.29 $\mu\text{S/cm}$		



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Chemical

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Conductivity Meters ^{FO}	1 413 μ S/cm	3 μ S/cm	Conductivity Solutions	CENAM Technical Guide
	9 985 μ S/cm	30 μ S/cm		

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Humidity Meters ^{FO}	10 % RH to 90 % RH	2.3 % of reading	Humidity Calibration Salt	CENAM Technical Guide
IR Thermometers ^{FO}	10 °C to 400 °C (20 °F to 752 °F)	1.4 °C (2.5 °F)	Omega Infrared Calibrator	

Mass, Force and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Force –Compression and Tension- Source and Measure ^{FO}	4.44 kN to 44.48 kN	1 % of reading	Load Cell	CENAM Technical Guide
	1.1 N to 2.5 N	0.24 % of reading	Test Weight Set F Class	
	2.6 N to 10 N	0.24 % of reading		
	10.1 N to 50 N	0.24 % of reading		
	51 N to 100 N	0.24 % of reading		
101 N to 250 N	0.24 % of reading			
251 N to 500 N	0.24 % of reading			
501 N to 1 000 N	0.24 % of reading			
1 001 N to 5 000 N	0.24 % of reading			
Scales and Balances Class III ^O	1 lb to 10 lb (Res.= 0.000 5 lb)	(1 x 10 ⁻⁴ + 1.8 x 10 ⁻⁴ Wt) lb		
	1 lb to 20 lb (Res.= 0.000 1 lb)	(1 x 10 ⁻⁴ + 2.34 x 10 ⁻⁴ Wt) lb		
	1 lb to 50 lb (Res.= 0.000 2 lb)	(2 x 10 ⁻⁴ + 1.12 x 10 ⁻⁴ Wt) lb		
	1 lb to 100 lb (Res. = 0.001 lb)	(1.1 x 10 ⁻³ + 1.08 x 10 ⁻⁴ Wt) lb		
Scales and Balances Class III ^O	50 lb to 500 lb (Res. = 0.05 lb)	(5.54 x 10 ⁻² + 5.25 x 10 ⁻⁵ Wt) lb		
Weights M1, M2, M3 ^{FO}	100 g	1.6 mg	Weight Set F1	OIML R111 CENAM Technical Guide ABBA
	200 g	1.8 mg		
	20 kg	170 mg		



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Mass, Force and Weighing Devices

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED
Weights M2, M3 ^{FO}	2 g	1.5 mg	Weight Set F1	OIML R111 CENAM Technical Guide ABBA
	5 g	1.5 mg		
	10 g	1.5 mg		
	20 g	1.5 mg		
	50 g	1.5 mg		
	5 kg	140 mg		
Weights M3 ^{FO}	1 g	1.5 mg	Weight Set F1 OIML R111	
	1 kg	140 mg		
	2 kg	140 mg		
Balances ^{FO} Class II	10 g to 300 g (Res.= 0.001 g)	$(1.18 \times 10^{-3} + 2 \times 10^{-6} \text{Wt}) \text{ g}$		
	30 g to 500 g (Res.= 0.01 g)	$(1.16 \times 10^{-2} + 1.5 \times 10^{-5} \text{Wt}) \text{ g}$		
	100 g to 2 000 g (Res.= 0.01 g)	$(1.16 \times 10^{-2} + 4 \times 10^{-6} \text{Wt}) \text{ g}$		
	500 g to 5 000 g (Res.= 0.1 g)	$(1.12 \times 10^{-1} + 1.6 \times 10^{-5} \text{Wt}) \text{ g}$		
	1 000 g to 20 000 g (Res.= 1 g)	$(1.17 + 3.2 \times 10^{-5} \text{Wt}) \text{ g}$		

Mechanical

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Indirect Verification of Machine Hardness Tester HRB ^O	40 HRB to 59 HRB	0.9 HRB	Hardness Standard Blocks	ASTM E18
	60 HRB to 79 HRB	0.7 HRB		
	80 HRB to 100 HRB	0.5 HRB		
Indirect Verification of Machine Hardness Tester HRC ^O	25 HRC to 39 HRC	0.6 HRC		
	40 HRC to 59 HRC	1 HRC		
	60 HRC to 70 HRC	0.5 HRC		
Torque Wrenches ^F	1 lbf·in to 50 lbf·in	0.7 % of reading	CDI Torque Tester	CENAM Technical Guide
	60 lbf·in to 600 lbf·in	0.7 % of reading		
Pressure - Pneumatic Gage ^O	12.5 psi to 10 000 psi	20 psi	Additel Hydraulic Press Test Pump & Digital Pressure	



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Electrical

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Equipment to Output RF Power ^{FO}	-30 dB to 20 dB	4 % of reading + 0.03 dB	437B Power Meter with 8482A Power Meter	CENAM Technical Guide
Equipment to Measure DC Current ^{FO}	0.3 A to 3 A	1.5 mA/A + 0.6 mA	HP 34401A	
Equipment to Measure AC Current (At the listed frequencies) ^{FO}				
3 Hz to 5 kHz	100 µA to 3A	1 mA/A + 1.2 mA		
5 kHz to 10 kHz	100 µA to 3A	2 mA/A + 1.2 mA		
Equipment to Output Capacitance (10 Hz to 2 MHz) ^{FO}	50 pF to 1.111 15 µF	0.5 % of reading + 5 pF	General Radio 1432-BC	
Equipment to Measure DC/AC High Voltage ^{FO}	0.4 kV to 40 kV	0.02 kV	Fluke 80K-40	
Equipment to Measure DC Voltage ^{FO}	Up to 104 mV	0.008 % of reading + 10 µV	Transmille Multiproduct Calibrator	
	0.104 V to 1.04 V	0.008 % of reading + 30 µV		
	1.04 V to 10.4 V	0.008 % of reading + 300 µV		
	10.4 V to 100.4 V	0.008 % of reading + 3 000 µV		
	104 V to 1 020 V	0.008 % of reading + 30 000 µV		
Equipment to Measure DC Current ^{FO}	Up to 104 µA	0.03 % of reading + 0.03 µA		
	0.104 mA to 1.04 mA	0.03 % of reading + 0.1µA		
	1.04 mA to 10.4 mA	0.03 % of reading + 1 µA		
	10.4 mA to 104 mA	0.03 % of reading + 10 µA		
	104 mA to 1 040 mA	0.03 % of reading + 150 µA		
	1.04 A to 10.2 A	0.03 % of reading + 2 000 µA		
Equipment to Measure AC Current 10 Hz to 2 kHz ^{FO}	10.4 µA to 104 µA	0.1 % of reading + 0.4 µA		
	0.104 mA to 1 mA	0.1 % of reading + 0.8 µA		
	1.04 mA to 10.4 mA	0.1 % of reading + 8 µA		
	10.4 mA to 104 mA	0.1 % of reading + 80 µA		
	104 mA to 1 040 mA	0.1 % of reading + 800 µA		
	1.04 mA to 10.4 A	0.1 % of reading + 15 000 µA		
Equipment to Measure AC Voltage (At the listed frequencies) ^{FO}				
10 Hz to 1.999 kHz	Up to 104 mV	0.08 % of reading + 0.03 mV		



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Equipment to Measure AC Voltage (At the listed frequencies) ^{FO}			Transmille Multiproduct Calibrator	CENAM Technical Guide
2 kHz to 20 kHz	Up to 104 mV	0.15 % of reading + 7 mV		
40 Hz to 1 kHz	10.4 V to 104 V	0.08 % of reading + 30 mV		
40 Hz to 1 kHz	104 V to 1 020 V	0.08 % of reading + 300 mV		
Equipment to Measure Frequency ^{FO}	10 Hz to 100 kHz	0.002 % of reading		
Equipment to Measure Resistance ^{FO}	Up to 10 Ω	0.2 % of reading		
	10 Ω to 50 Ω	0.2 % of reading		
	50 Ω to 100 Ω	0.2 % of reading		
	101 Ω to 1 k Ω	0.2 % of reading		
	1.01 k Ω to 10 k Ω	0.2 % of reading		
	10.1 k Ω to 100 k Ω	0.2 % of reading		
	101 k Ω to 1 M Ω	0.2 % of reading		
	1.01 M Ω to 10 M Ω	0.5 % of reading		
Equipment to Measure Capacitance ^{FO}	Up to 10 nF	0.8 % of reading	Electrical Simulation of Thermocouple Output Transmille Multiproduct Calibrator	
	10 nF to 100 nF	0.8 % of reading		
	100 nF to 1 μ F	0.8 % of reading		
Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type B ^{FO}	600 °C to 1 820 °C	1.5 °C		
Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type C ^{FO}	0 °C to 1 000 °C	0.6 °C		
	1 000 °C to 2 310 °C	1.4 °C		
Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type E ^{FO}	-250 °C to -100 °C	1 °C		
	-100 °C to 650 °C	0.24 °C		
	650 °C to 1 000 °C	0.3 °C		
Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type J ^{FO}	210 °C to -100 °C	0.46 °C		
	-100 °C to 150 °C	0.22 °C		
	150 °C to 760 °C	0.28 °C		
	760 °C to 1 200 °C	0.38 °C		
Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type K ^{FO}	200 °C to -100 °C	0.54 °C		
	-100 °C to 120 °C	0.3 °C		
	120 °C to 1 370 °C	0.52 °C		



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Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type L ^{FO}	-200 °C to 900 °C	0.68 °C	Electrical Simulation of Thermocouple Output Transmille Multiproduct Calibrator	CENAM Technical Guide
Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type N ^{FO}	-200 °C to -100 °C	0.84 °C		
	-100 °C to 410 °C	0.4 °C		
	410 °C to 1 300 °C	0.48 °C		
Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type R ^{FO}	0 °C to 250 °C	1.6 °C		
	250 °C to 1 760 °C	1.1 °C		
Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type S ^{FO}	0 °C to 250 °C	1.6 °C		
	250 °C to 1 760 °C	1.1 °C		
Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type T ^{FO}	-250 °C to -150 °C	1.2 °C		
	-150 °C to 400 °C	0.22 °C		
Temperature Calibration, Indication and Control Equipment Used with Thermocouple Type U ^{FO}	-200 °C to 600 °C	0.8 °C		

Acoustic

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Sound Level Meter Fixed Point ^{FO}	94 dB	0.5 dB	Acoustic Calibrator @ 1 kHz	CENAM Technical Guide
	114 dB	0.5 dB		

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.



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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 F means that the laboratory performs calibration of the indicated parameter at its fixed location.
4. The presence of a superscript O means that the laboratory performs calibration of the indicated parameter onsite at customer locations.
5. 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
6. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.
7. The term Wt represents weight in pounds or grams (including SI multiple and submultiple units) appropriate to the uncertainty statement.

