PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

IBC Metrology, S.A. de C.V.

Calle Luis Ortega 169A, Fraccionamiento Jardines del Valle
Irapuato, Guanajuato, México. C.P. 36611

(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, Thermodynamic, Mechanical, Optical, Electrical and Time and Frequency 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:	*Issue Date:*	*Expiration Date:*
April 12, 2021	May 11, 2023	July 31, 2025

Accreditation No.:	*Certificate No.:*
112685	L23-397

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

IBC Metrology, S.A. de C.V.
Calle Luis Ortega 169A, Fraccionamiento Jardines del Valle
Irapuato, Guanajuato, México. C.P. 36611
Contact Name: Raúl Alejandro Solís Fuerte Phone: 462-255-1319

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

Dimensional

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Outside Micrometer[FO]	1 mm to 1 000 mm	0.6 µm	Metrology Gage Block GB-9047-0 Grade 0 Metrology Gage Block GB-908M-0 Grade 0 JIS B 7502
Inside Micrometer Inside Gauge[FO]	1 mm to 300 mm	0.6 µm	
Depth Micrometer Depth Gauge[FO]	1 mm to 300 mm	0.6 µm	
Height Gauge[FO]	1 mm to 1 000 mm	9.2 µm	Metrology Gage Block GB-9047-0 Grade 0 Metrology Gage Block GB-908M-0 Grade 0 JIS B 7517
Caliper Linear Scale[FO]	1 mm to 1 000 mm	9.3 µm	Metrology Gage Block GB-9047-0 Grade 0 Metrology Gage Block GB-908M-0 Grade 0 JIS B 7507
Pin Gage[FO]	0.01 mm to 25 mm	3.1 µm	Metrology Outside Micrometer EM-9001WF ASME B89.1.5
Dial Indicator [FO]	1 mm to 60 mm	5.8 µm	Metrology Gage Block GB-9047-0 Grade 0 JIS B 7503 JIS B 7533
Indicator (Lever Type)[FO]	1 mm to 2 mm	5.8 µm	
Thickness Gages with Indicator[FO]	1 mm to 100 mm	6.5 µm	Metrology Gage Block GB-9047-0 Grade 0 CENAM Technical Guide
Feeler Gage[FO]	0.01 mm to 10 mm	3.1 µm	Metrology Outside Micrometer EM-9001WF JIS B 7524
Length Meter Counter - Odometer[FO]	0.1 m to 1 000 m (Res. = 0.01m)	0.01 m	Odometer Brand: Shimpo Model: DT-205LR NMX-CH-74

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 (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Analytical Balance[FO]	0.001 g to 500 g (Res.= 0.0001 g)	$(9.50 \times 10^{-5} + 5.8 \times 10^{-5}\text{Wt})$ g	OIML Class F1 Weights CENAM Technical Guide
	0.1 g to 5 000 g (Res.= 0.001 g)	$(9.11 \times 10^{-4} + 7 \times 10^{-6}\text{Wt})$ g	
Precision Balance[FO]	1 g to 35 000g (Res.= 0.01 g)	$(4.08 \times 10^{-3} + 7 \times 10^{-6}\text{Wt})$ g	

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Mass, Force and Weighing Devices

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Precision Balance[FO]	1 kg to 100 kg (Res.= 0.1 g)	$(8.6 \times 10^{-5} + 6 \times 10^{-6}Wt)$ kg	OIML Class F1 and Class M1 Weights CENAM Technical Guide
Scale[FO]	50 kg to 1 000 kg (Res.= 1 g)	$(5.71 \times 10^{-1} + 4 \times 10^{-6}Wt)$ kg	OIML Class M1 Weights CENAM Technical Guide NOM-010-SCFI
Floor Scale[O]	100 kg to 10 000 kg (Res.= 10 g)	$(4.55 + 2 \times 10^{-6}Wt)$ kg	
Mass Class M1 Weights[FO]	2 kg	0.033 g	Class F1 Mass RADWAG Precision Balance WLC-20-A2 OIML R 111-1
	5 kg	0.083 g	
	10 kg	0.16 g	
	20 kg	0.33 g	
Mass Class M2 Weights[FO]	1 kg	0.053 g	
	2 kg	0.1 g	
	5 kg	0.26 g	
	10 kg	0.53 g	
	20 kg	1 g	
Mass Class M3 Weights[FO]	200 g	0.033 g	
	500 g	0.083 g	
	1 kg	0.16 g	
	2 kg	0.33 g	
	5 kg	0.83 g	
	10 kg	1.6 g	
	20 kg	3.3 g	

Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Infrared Thermometer[FO]	50 °C to 500°C	0.61 °C	Comparation with Fluke 62max Infrared Blackbody CENAM Technical Guide
Temperature Output "System Accuracy" Ovens, Furnaces, Muffles, Incubators, Thermobalances, Plastometer and Welder[FO]	0 °C to 1 100 °C	0.43 °C	Process Multicalibrator Fluke 754 with TC Type K, J Temperature Calibration CENAM Technical Guide

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Thermodynamic

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Refrigerating (Freezer)[FO]	-80 °C to 20 °C	0.43 °C	Process Multicalibrator Fluke 754 with TC Type K, J Temperature Calibration CENAM Technical Guide
Temperature and Humidity Output Climatic Chambers Controlled Enclosures[FO]	0 °C to 200 °C	0.43 °C	Process Multicalibrator Fluke 754 with TC Type K, J, HTI Hygrometer HT-350 Temperature and Humidity Calibration Euramet_cg-20
	20 % RH to 90 % RH	1.7 % RH	
Thermo Hygrometer with Temperature Sensor Humidity Sensor [FO]	15 °C to 50 °C	0.16 °C	Process Multicalibrator Fluke 754 with RTD 100 Ω HTI Hygrometer HT-350 Humidity Chamber Complete Calibrator ASTM E879 CENAM Technical Guide
	20 % RH to 90 % RH	1.7 % RH	
Direct Reading Thermometer used Thermistor RTD, Thermocouple[FO]	-20 °C to 420 °C	0.16 °C	Process Multicalibrator Fluke 754 with RTD 100 Ω Reference Temperature Dry Block Calibrator CEM TH-001 ASTM E1137/ E1137M ASTM E 220-19

Mechanical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Torque Meter Clockwise and Counter Clockwise[FO]	0.2 N·m to 67 N·m	0.017 N·m	Crane Torque Tester 89339 ISO 6789 Part 2
	1 N·m to 542 N·m	0.037 N·m	Crane Torque Tester 39570 ISO 6789 Part 2
Torque Tools, Electrical and Pneumatic Screwdriver[FO]	0.2 N·m to 25 N·m	0.042 N·m	A-BF Torque Analyzer HP-100 with Joint Simulator ISO 5393

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Mechanical

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Pressure Gages and Pressure Transducer and Leak Gauges[FO]	-14.18 psi to -0.01 psi (-97.767 kPa to -0.068 9 kPa)	0.026 psi (0.17 kPa)	Process Multicalibrator Fluke 754 with Vacuum Transducer Fluke PV350 Manual Vacuum Pressure Pump NOM-013-SCFI
	0.01 psi to 500 psi (0.068 9 kPa to 3 447.38 kPa)	0.069 psi (0.47 kPa)	Process Multicalibrator Fluke 754 with Pressure Transducer Fluke PV350 Hand Pressure Pump NOM-013-SCFI
	1 psi to 1 000 psi (6.894 kPa to 6 894.76 kPa)	0.16 psi (1.1 kPa)	Process Multicalibrator Fluke 754 with Pressure Module Fluke 700P08 Pneumatic Pressure Pump NOM-013-SCFI
	100 psi to 5 000 psi (689.47 kPa to 34 473.79 kPa)	0.35 psi (2.4 kPa)	Process Multicalibrator Fluke 754 with Pressure Module Fluke 700P30 Pneumatic Pressure Pump NOM-013-SCFI
Testing Machines Tension and Compression[FO]	1 N to 5 000 N (0.001 kN to 5 kN)	0.006 2 N	Interface Force Transducer 1210AF-5KN-B NMX-CH-7500-1-INMC
	2 500 N to 49 870 N (2.5 kN to 49.87 kN)	3.7 N	Interface Force Transducer 1210AF-50KN-B NMX-CH-7500-1-INMC

Optical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
ρ (λ) Spectral Reflectance[FO]	Color values:		Color Ceramic NPL Guide No. 96
CIE L:	0 to 100	0.72 units	
CIE a*:	-28 to 36	0.41 units	
CIE b*:	-26 to 63	0.71 units	
Spectrophotometer Transmittance[FO]	τ: 1 % to 95 %	0.27 % of T	Neutral Density Filters Holmium Oxide Glass CENAM Technical Guide
	λ:230 nm to 700 nm	0.5 nm	

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Optical

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Gloss/Specular Reflectance Angle of Incline[FO]	20° to 92.1 60° to 94.9 85° to 99.8	0.15 Gloss Units 0.15 Gloss Units 0.18 Gloss Units	Ceram Research Gloss and Semi-Gloss Standards ASTM D523
Ev Illuminance[FO]	50 lux to 6 000 lux	0.98 % of reading	OPPLE Luxometer LIGHT-MASTER-III ASTM D1729
Ev Light Color[FO]	2 856 K	0.78 % of reading	
Ev Light Meters[F]	50 lux to 6 000 lux	0.7 % of reading	OPPLE Luxometer LIGHT-MASTER-III CENAM Technical Guide CNM-MFO-PT-004

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type C[FO]	0 °C to 150 °C	0.3°C	Process Multicalibrator Fluke 754 Electrical Simulation of Thermocouple Output Euramet_ cg-11 ASTM E230/E230M
	150 °C to 650 °C	0.26 °C	
	650 °C to 1 000 °C	0.31 °C	
	1 000 °C to 1 800 °C	0.5 °C	
	1 800 °C to 2 316 °C	0.84 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type E[FO]	-250 °C to -100 °C	0.5°C	
	-100 °C to -25 °C	0.16 °C	
	-25 °C to 350 °C	0.14 °C	
	350 °C to 650 °C	0.16 °C	
	650 °C to 1 000 °C	0.21 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J[FO]	-210 °C to -100 °C	0.27 °C	
	-100 °C to -30 °C	0.16 °C	
	-30 °C to 150 °C	0.14 °C	
	150 °C to 760 °C	0.17 °C	
	760 °C to 1 200 °C	0.23 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K[FO]	-200 °C to -100 °C	0.33 °C	
	-100 °C to -25 °C	0.18 °C	
	-25 °C to 120 °C	0.16 °C	
	120 °C to 1 000 °C	0.26 °C	
	1 000 °C to 1 372 °C	0.4 °C	

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Electrical

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Temperature Calibration, Indication and Control Equipment used with Thermocouple Type L[FO]	-200 °C to -100 °C	0.37 °C	Process Multicalibrator Fluke 754 Electrical Simulation of Thermocouple Output Euramet_ cg-11 ASTM E230/E230M
	-100 °C to 800 °C	0.26 °C	
	800 °C to 900 °C	0.17 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type N[FO]	-200 °C to -100 °C	0.4 °C	
	-100 °C to -25 °C	0.22 °C	
	-25 °C to 120 °C	0.19 °C	
	120 °C to 410 °C	0.18 °C	
	410 °C to 1 300 °C	0.27 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type R[FO]	0 °C to 250 °C	0.57 °C	
	250 °C to 400 °C	0.35 °C	
	400 °C to 1 000 °C	0.33 °C	
	1 000 °C to 1 767 °C	0.4 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T[FO]	-250 °C to -150 °C	0.63 °C	
	-150 °C to 0 °C	0.24 °C	
	0 °C to 120 °C	0.16 °C	
	120 °C to 400 °C	0.14°C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type U[FO]	-200 °C to 0 °C	0.56 °C	
	0 °C to 600 °C	0.27 °C	

Time and Frequency

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Tachometers[FO] Contact and Not Contact	6 rpm to 9 999 rpm	0.01 rpm	Photo Tachometer Brand: Shimpo Model: DT-205LR ASTM-F2046-00

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. Example: Outside Micrometer^{F} would mean that the laboratory performs this calibration 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. Example: Outside Micrometer^{O} would mean that the laboratory performs this calibration onsite at the customer's location.

5. 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.

6. 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.

7. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.

8. The term Wt represents weight in pounds or grams (including SI multiple and submultiple units) appropriate to the uncertainty statement.