



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

Metrolab S.A de C.V

HQ - San Nicolás #118, Col. Arboledas de San Jorge
San Nicolas de los Garza, Nuevo León, México. CP. 66465

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
Chihuahua, Chihuahua, México. CP. 31136

*(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, Weighing Devices, Thermodynamic, Mechanical, Time and
Frequency 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

Initial Accreditation Date:

July 16, 2019

Issue Date:

October 08, 2020

Expiration Date:

October 31, 2022

Accreditation No.:

48521

Certificate No.:

L20-605-1

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325

*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

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
 Chihuahua, Chihuahua, México. C.P. 31136
 Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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 (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Calipers ^{FO}	Up to 1 016 mm	$(13 + 7 \times 10^{-3}L) \mu\text{m}$	Blocks Gages JIS B7507 NMX-CH-002-IMNC
Outside Micrometer ^{FO}	Up to 508 mm	$(1.4 + 1.4 \times 10^{-2}L) \mu\text{m}$	Blocks Gages JIS B7502 NMX-CH-099-IMNC
Optical Comparator ^O X axis Linearity Y axis Linearity	Up to 300 mm Up to 300 mm	$(6.2 + 1.3 \times 10^{-2}L) \mu\text{m}$	Glass Scales JIS B 7184
Optical Comparators Magnification ^O	5X 10X 20X 50X	0.05 % of reading	Standard and Reading Glass Scales JIS B 7184
Optical Comparators Angularity ^O	0° to 360°	0.05°	Angle Reticle JIS B 7184
Tape Measures ^F	Up to 50 m	$(67 + 0.012L) \mu\text{m}$	Steel Rules and Microscope JIS B7512 NOM-046-SCFI
Depth Micrometers ^{FO}	Up to 304.8 mm	$(0.26 + 0.4L) \mu\text{m}$	Blocks Standard JIS B7544
Rules ^F	Up to 2 m	$(67 + 1.2 \times 10^{-2}L) \mu\text{m}$	Semi-Flexible Rules Rule Standard JIS B7516
Angles Conveyers (Protactor) ^F	0° to 90°	0.048°	Angle Meter NMX-CH-151-IMNC
Surface Roughness Meters – Ra ^F	Up to 5.79 μm	$(0.012 + 24L) \mu\text{m}$	Precision Roughness Specimen JIS B0651
Height Gages ^F	Up to 1 016 mm	$(6.8 + 7 \times 10^{-3}L) \mu\text{m}$	Block Gages JIS B7517
Coatings Thickness Gauge ^F	Up to 1 500 μm	$(0.26 + 0.4L) \mu\text{m}$	Thickness Liners ISO 2178
Granite Surface Plates ^O Flatness	354 mm to 2 960 mm (in Diagonal)	$(5 + 1.46 \times 10^{-3}L) \mu\text{m}$	Electronic Levels NMX-CH-8512-2-IMNC
Digital Indicator ^F	0.001 mm to 25.4 mm	$(2 + 1.7 \times 10^{-2}L) \mu\text{m}$	Gauge Indicators JIS B7533 NMX-CH-463-IMNC



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
 Chihuahua, Chihuahua, México. C.P. 31136
 Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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
Pressure Gauges- Transducers and Transmitters	10.3 kPa to 103 kPa	0.28 kPa	Pressure Transducers Fluke Fluke 700 PV4 Fluke 700 PA4 Fluke 700 P05 Fluke 700 P06 Fluke 700 P07 Fluke 700 P08 Fluke 700 P31
	20.7 kPa to 207 kPa	0.18 kPa	
	207 kPa to 689 kPa	0.87 kPa	
	689 kPa to 3.44 MPa	1.9 kPa	
	3.44 MPa to 6.89 MPa	10 kPa	
	6.89 MPa to 69.8 MPa	80 kPa	
Vacuum Gauges, Transducers and Transmitters ^{FO}	-72.91 kPa to -7.2 kPa	0.17 kPa	Fluke 700 PV4 ASME B40.100
Torque Meters ^F	1.1 N·m to 5.63 N·m	0.13 % of reading	Standard Torque Transducer CDI ISO 6789
	5.6 N·m to 45 N·m	0.12 % of reading	
	45 N·m to 112.7 N·m	0.14 % of reading	
	112 N·m to 339 N·m	0.07 % of reading	

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
Force Gauges Tension ^F	5 N to 500 N	0.43 % of reading	ISO 7500-1, ASTM E4 Load Cells
	0.5 kN to 5 kN	0.43 % of reading	
Force Gauges Compression ^F	5 N to 500 N	0.22 % of reading	ISO 7500-1 ASTM E4 Load Cells
	0.5 kN to 5 kN	0.32 % of reading	
Universal Testing Force Machines Tension ^F	5 N to 500 N	0.43 % of reading	
	0.5 kN to 5 kN	0.43 % of reading	
	5 kN to 50 kN	0.43 % of reading	
	29.42 kN to 294.2 kN	0.35 % of reading	
Universal Testing Force Machines Compression ^F	5 N to 500 N	0.22 % of reading	
	0.5 kN to 5 kN	0.32 % of reading	
	5 kN to 50 kN	0.34 % of reading	
	29.42 kN to 294.2 kN	0.21 % of reading	



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
 Chihuahua, Chihuahua, México. C.P. 31136
 Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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

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
Weighing Devices ⁰	0.1 g to 220 g (Res.= 0.000 1 g)	0.19 mg	Mass Set Class E2 CENAM Technical Guide for Instrument Non-Automatic
	0.2 mg to 500 g (Res.= 0.000 2 g)	0.5 mg	Mass Set Class E2 OIML for Instrument Non-Automatic CENAM Technical Guide
	200 g to 5 kg (Res.= 0.01 g)	17 mg	Mass Set Class F1 OIML for Instrument Non-Automatic CENAM Technical Guide
	1 kg to 500 kg (Res.= 20 g)	22 g	Mass Set Class M1 OIML, for Instrument Non-Automatic CENAM Technical Guide
	10 g to 1 000 kg (Res.= 0.05 kg)	50 g	Mass Set Class M1 OIML, for Instrument Non-Automatic CENAM Technical Guide

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
Equipment to Measure DC Voltage ^{FO}	33 mV to 329.99 mV	0.006 % of reading + 3 μ V	Fluke 5500A Euramet_cg-15
	0.33 V to 3.299 V	0.005 % of reading + 5 μ V	
	3.3 V to 32.999 V	0.005 % of reading + 50 μ V	
	33 V to 329.99 V	0.005 5 % of reading + 500 μ V	
	330 V to 1 020 V	0.005 5 % of reading + 1 500 μ V	
Equipment to Measure DC Current ^{FO}	0.033 mA to 3.299 mA	0.013 % of reading + 0.05 μ A	Fluke 5500A Euramet_cg-15
	3.3 mA to 32.999 mA	0.01 % of reading + 0.25 μ A	
	33 mA to 329.999 mA	0.01 % of reading + 3.3 μ A	
	0.33 A to 2.199 A	0.03 % of reading + 44 μ A	
	2.2 A to 11 A	0.06 % of reading + 330 μ A	



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
 Chihuahua, Chihuahua, México. C.P. 31136
 Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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
Equipment to Measure DC Current ^{FO} Clamp-On Meters	11 A to 16.49 A	0.34 % of reading	Fluke 5500A/ 50 Turn Coil Euramet_cg-15
	16.49 A to 149.99 A	0.34 % of reading	
	149.99 A to 550 A	0.34 % of reading	
Equipment to Measure Resistant ^{FO}	1.1 Ω to 10.99 Ω	0.012 % of reading + 0.008 Ω	Fluke 5500A Euramet_cg-15
	11 Ω to 32.99 Ω	0.012 % of reading + 0.015 Ω	
	33 Ω to 109.99 Ω	0.009 % of reading + 0.015 Ω	
	110 Ω to 329 Ω	0.009 % of reading + 0.015 Ω	
	330 Ω to 1.099 k Ω	0.009 % of reading + 0.06 Ω	
	1.1 k Ω to 3.299 k Ω	0.009 % of reading + 0.06 Ω	
	3.3 k Ω to 10.999 k Ω	0.009 % of reading + 0.6 Ω	
	11 k Ω to 32.999 k Ω	0.009 % of reading + 0.6 Ω	
	33 k Ω to 109.99 k Ω	0.011 % of reading + 6 Ω	
	110 k Ω to 329.99 k Ω	0.012 % of reading + 6 Ω	
	330 k Ω to 1.099 M Ω	0.015 % of reading + 55 Ω	
	1.1 M Ω to 3.299 M Ω	0.015 % of reading + 55 Ω	
	3.3 M Ω to 10.999 M Ω	0.06 % of reading + 550 Ω	
	11 M Ω to 32.999 M Ω	0.1 % of reading + 550 Ω	
33 M Ω to 109.999 M Ω	0.5 % of reading + 5 500 Ω		
110 M Ω to 330 M Ω	0.5 % of reading + 16 500 Ω		
Equipment to Measure AC Voltage At the listed frequencies ^{FO}			
10 Hz to 45 Hz	3.3 mV to 32.999 mV	0.35 % of reading + 20 μ V	
45 kHz to 10 kHz	3.3 mV to 32.999 mV	0.15 % of reading + 20 μ V	
10 kHz to 20 kHz	3.3 mV to 32.999 mV	0.2 % of reading + 20 μ V	
20 kHz to 50 kHz	3.3 mV to 32.999 mV	0.25 % of reading + 20 μ V	
50 kHz to 100 kHz	3.3 mV to 32.999 mV	0.35 % of reading + 33 μ V	
100 kHz to 500 kHz	3.3 mV to 32.999 mv	1 % of reading + 60 μ V	
Equipment to Measure AC Voltage At the listed frequencies ^{FO}			
10 Hz to 45 Hz	33 mV to 329.999 mV	0.25 % of reading + 50 μ V	
45 kHz to 10 kHz	33 mV to 329.999 mV	0.05 % of reading + 20 μ V	
10 kHz to 20 kHz	33 mV to 329.999 mV	0.1 % of reading + 20 μ V	



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
 Chihuahua, Chihuahua, México. C.P. 31136
 Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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
Equipment to Measure AC Voltage At the listed frequencies ^{FO}			Fluke 5500A Euramet_cg-15
20 kHz to 50 kHz	33 mV to 329.999 mV	0.16 % of reading + 40 μ V	
50 kHz to 100 kHz	33 mV to 329.999 mV	0.24 % of reading + 170 μ V	
100 kHz to 500 kHz	33 mV to 329.999 mV	0.7 % of reading + 330 μ V	
Equipment to Measure AC Voltage At the listed frequencies ^{FO}			
10 Hz to 45 Hz	0.33 V to 3.299 V	0.15 % of reading + 250 μ V	
45 kHz to 10 kHz	0.33 V to 3.299 V	0.03 % of reading + 60 μ V	
10 kHz to 20 kHz	0.33 V to 3.299 V	0.08 % of reading + 60 μ V	
20 kHz to 50 kHz	0.33 V to 3.299 V	0.14 % of reading + 300 μ V	
50 kHz to 100 kHz	0.33 V to 3.299 V	0.24 % of reading + 1 700 μ V	
100 kHz to 500 kHz	0.33 V to 3.299 V	0.5 % of reading + 3 300 μ V	
Equipment to Measure AC Voltage At the listed frequencies ^{FO}			
10 Hz to 45 Hz	3.3 V to 32.999 V	0.15 % of reading + 2.5 μ V	
45 Hz to 10 kHz	3.3 V to 32.999 V	0.04 % of reading + 0.6 μ V	
10 Hz to 20 kHz	3.3 V to 32.999 V	0.08 % of reading + 2.6 μ V	
20 Hz to 50 kHz	3.3 V to 32.999 V	0.19 % of reading + 5 μ V	
50 Hz to 100 kHz	3.3 V to 32.999 V	0.24 % of reading + 17 μ V	
Equipment to Measure AC Voltage At the listed frequencies ^{FO}			
45 kHz to 1 kHz	33 V to 329.999 V	0.05 % of reading + 6.6 μ V	
1 kHz to 10 kHz	33 V to 329.999 V	0.08 % of reading + 15 μ V	
10 kHz to 20 kHz	33 V to 329.999 V	0.09 % of reading + 33 μ V	
Equipment to Measure AC Voltage At the listed frequencies ^{FO}			
45 Hz to 1 kHz	330 V to 1 020 V	0.05 % of reading + 80 μ V	
1 kHz to 5 kHz	330 V to 1 020 V	0.2 % of reading + 100 μ V	
5 kHz to 10 kHz	330 V to 1 020 V	0.2 % of reading + 500 μ V	



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
 Chihuahua, Chihuahua, México. C.P. 31136
 Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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
Equipment to Measure AC Current At the listed frequencies ^{FO}			Fluke 5500A Euramet_cg-15
10 Hz to 20 Hz	0.029 mA to 0.329 9 mA	0.25 % of reading + 0.15 μ A	
20 Hz to 45 Hz	0.029 mA to 0.329 9 mA	0.13 % of reading + 0.15 μ A	
45 Hz to 1 kHz	0.029 mA to 0.329 9 mA	0.13 % of reading + 0.25 μ A	
1 kHz to 5 kHz	0.029 mA to 0.329 9 mA	0.4 % of reading + 0.3 μ A	
5 kHz to 10 kHz	0.029 mA to 0.329 9 mA	1.3 % of reading + 0.15 μ A	
Equipment to Measure AC Current At the listed frequencies ^{FO}			
10 Hz to 20 Hz	0.33 mA to 3.299 mA	0.2 % of reading + 0.3 μ A	
20 Hz to 45 Hz	0.33 mA to 3.299 mA	0.1 % of reading + 0.3 μ A	
45 Hz to 1 kHz	0.33 mA to 3.299 mA	0.1 % of reading + 0.3 μ A	
1 kHz to 5 kHz	0.33 mA to 3.299 mA	0.2 % of reading + 0.3 μ A	
5 kHz to 10 kHz	0.33 mA to 3.299 mA	0.6 % of reading + 0.3 μ A	
Equipment to Measure AC Current At the listed frequencies ^{FO}			
10 Hz to 20 Hz	3.3 mA to 32.999 mA	0.2 % of reading + 3 μ A	
20 Hz to 45 Hz	3.3 mA to 32.999 mA	0.1 % of reading + 3 μ A	
45 Hz to 1 kHz	3.3 mA to 32.999 mA	0.09 % of reading + 3 μ A	
1 kHz to 5 kHz	3.3 mA to 32.999 mA	0.2 % of reading + 3 μ A	
5 kHz to 10 kHz	3.3 mA to 32.999 mA	0.6 % of reading + 3 μ A	
Equipment to Measure AC Current At the listed frequencies ^{FO}			
10 Hz to 20 Hz	33 mA to 329.999 mA	0.2 % of reading + 30 μ A	
20 Hz to 45 Hz	33 mA to 329.999 mA	0.1 % of reading + 30 μ A	
45 Hz to 1 kHz	33 mA to 329.999 mA	0.09 % of reading + 30 μ A	
1 kHz to 5 kHz	33 mA to 329.999 mA	0.2 % of reading + 30 μ A	
5 kHz to 10 kHz	33 mA to 329.999 mA	0.6 % of reading + 30 μ A	



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
 Chihuahua, Chihuahua, México. C.P. 31136
 Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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
Equipment to Measure AC Current At the listed frequencies ^{FO}			Fluke 5500A Euramet_cg-15
10 Hz to 45 Hz	0.33 A to 2.199 A	0.2 % of reading + 300 μ A	
45 Hz to 1 kHz	0.33 A to 2.199 A	0.1 % of reading + 300 μ A	
1 kHz to 5 kHz	0.33 A to 2.199 A	0.75 % of reading + 300 μ A	
Equipment to Measure AC Current At the listed frequencies ^{FO}			
45 Hz to 65 Hz	2.2 A to 11 A	0.06 % of reading + 2 000 μ A	
65 Hz to 500 Hz	2.2 A to 11 A	0.1 % of reading + 2 000 μ A	
500 Hz to 1 KHz	2.2 A to 11 A	0.33 % of reading + 2 000 μ A	
Equipment to Measure AC Current (Clamp-On Meters) At the listed frequencies ^{FO}			
45 Hz to 65 Hz	11 A to 16.5 A	0.47 % of reading	
45 Hz to 65 Hz	16.5 A to 150 A	0.47 % of reading	
45 Hz to 65 Hz	150 A to 550 A	0.47 % of reading	
Equipment to Measure Capacitance ^{FO}			
	0.33 nF to 0.499 9 nF	0.5 % of reading + 0.01 nF	
	0.5 nF to 1.099 9 nF	0.5 % of reading + 0.01 nF	
	1.1 nF to 3.299 9 nF	0.5 % of reading + 0.01 nF	
	3.3 nF to 10.999 nF	0.5 % of reading + 0.01 nF	
	11 nF to 32.999 nF	0.25 % of reading + 0.1 nF	
	33 nF to 109.99 nF	0.25 % of reading + 0.1 nF	
	110 nF to 329.99 nF	0.25 % of reading + 0.3 nF	
	0.33 μ F to 1.099 μ F	0.25 % of reading + 1 nF	
	1.1 μ F to 3.299 μ F	0.35 % of reading + 3 nF	
	3.3 μ F to 10.999 μ F	0.35 % of reading + 10 nF	
	11 μ F to 32.999 μ F	0.4 % of reading + 30 nF	
	33 μ F to 109.99 μ F	0.5 % of reading + 100 nF	
	110 μ F to 329.99 μ F	0.7 % of reading + 300 nF	
	330 μ F to 1.1 mF	1 % of reading + 300 nF	



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
 Chihuahua, Chihuahua, México. C.P. 31136
 Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type B ^F	600 °C to 800 °C	0.44 °C	Fluke 5500A Electrical Simulation of Thermocouples Output Euramet_cg-15
	800 °C to 1 000 °C	0.34 °C	
	1 000 °C to 1 550 °C	0.3 °C	
	1 550 °C to 1 820 °C	0.33 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type C ^F	0 °C to 150 °C	0.3 °C	
	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 ^F	-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 ^F	-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 ^F	-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	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type N ^F	-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 ^F	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	



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
 Chihuahua, Chihuahua, México. C.P. 31136
 Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type S ^F	0 °C to 250 °C	0.47 °C	Fluke 5500A Electrical Simulation of Thermocouples Output Euramet_cg-15	
	250 °C to 1 000 °C	0.36 °C		
	1 000 °C to 1 400 °C	0.37 °C		
	1 400 °C to 1 767 °C	0.46 °C		
Temperature Calibration Indication and Control Equipment used with Thermocouple Type T ^F	-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 ^F	-200 °C to 0 °C	0.56 °C		
	0 °C to 600 °C	0.27 °C		
Temperature Calibration Indication and Control Equipment used with RTD Pt 385, 100 Ω^F	-200 °C to -80 °C	0.05 °C		Fluke 5500A Electrical Simulation of RTD Output Euramet_cg-11
	-80 °C to 0 °C	0.05 °C		
	0 °C to 100 °C	0.07 °C		
	100 °C to 300 °C	0.09 °C		
	300 °C to 400 °C	0.1 °C		
	400 °C to 630 °C	0.12 °C		
	630 °C to 800 °C	0.23 °C		
Temperature Calibration Indication and Control Equipment used with RTD Pt 3926, 100 Ω^F	-200 °C to -80 °C	0.05 °C		
	-80 °C to 0 °C	0.05 °C		
	0 °C to 100 °C	0.07 °C		
	100 °C to 300 °C	0.09 °C		
	300 °C to 400 °C	0.1 °C		
Temperature Calibration Indication and Control Equipment used with RTD Pt 385 200 Ω^F	400 °C to 630 °C	0.12 °C		
	-200 °C to -80 °C	0.04 °C		
	-80 °C to 0 °C	0.04 °C		
	0 °C to 100 °C	0.04 °C		
	100 °C to 260 °C	0.05 °C		
	260 °C to 300 °C	0.12 °C		
	300 °C to 400 °C	0.13 °C		
	400 °C to 600 °C	0.14 °C		
600 °C to 630 °C	0.16 °C			



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
 Chihuahua, Chihuahua, México. C.P. 31136
 Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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
Temperature Calibration Indication and Control Equipment used with RTD Pt 3916, 100 Ω^F	-200 °C to -190 °C	0.25 °C	Fluke 5500A Electrical Simulation of RTD Output Euramet_cg-11
	-190 °C to -80 °C	0.04 °C	
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.06 °C	
	100 °C to 260 °C	0.07 °C	
	260 °C to 300 °C	0.08 °C	
	300 °C to 400 °C	0.09 °C	
	400 °C to 600 °C	0.1 °C	
	600 °C to 630 °C	0.23 °C	
Temperature Calibration, Indication and Control Equipment used with RTD Pt 385, 500 Ω^F	-200 °C to -80 °C	0.04 °C	
	-80 °C to 0 °C	0.05 °C	
	0 °C to 100 °C	0.05 °C	
	100 °C to 260 °C	0.06 °C	
	260 °C to 300 °C	0.08 °C	
	300 °C to 400 °C	0.08 °C	
	400 °C to 600 °C	0.09 °C	
Temperature Calibration, Indication and Control Equipment used with RTD Pt 385, 1 000 Ω^F	-200 °C to -80 °C	0.03 °C	
	-80 °C to 0 °C	0.03 °C	
	0 °C to 100 °C	0.04 °C	
	100 °C to 260 °C	0.05 °C	
	260 °C to 300 °C	0.06 °C	
	300 °C to 400 °C	0.07 °C	
	400 °C to 600 °C	0.07 °C	
Temperature Calibration, Indication and Control Equipment used with RTD Pt Ni 385, 120 Ω^F	-80 °C to 0 °C	0.08 °C	
	0 °C to 100 °C	0.08 °C	
	100 °C to 260 °C	0.14 °C	
Temperature Calibration, Indication and Control Equipment used with RTD Cu 427, 10 Ω^F	-100 °C to 260 °C	0.3 °C	



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
Chihuahua, Chihuahua, México. C.P. 31136
Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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
High Voltage Generator (HiPot) ^{FO}	1 kV to 35 kV DC	0.28 kV	Multimeter and High Low Voltage Euramet_cg-15 CENAM Technical Guide
	1 kV to 23 kV AC	0.64 kV	
Equipment to Output DC Voltage ^{FO}	10 mV to 1 000 V	0.012 % of reading	Multimeter 8845A Euramet_cg-15 CENAM Technical Guide
Equipment to Output AC Voltage ^{FO}	10 mV to 750 V	0.19 % of reading	
Equipment to Output DC Current ^{FO}	1 mA to 10 A	0.011 % of reading	Multimeter 8845A Euramet_cg-15 Euramet_cg-11
Equipment to Output AC Current ^{FO}	10 mA to 10 A	0.2 % of reading	
Equipment to Output DC-AC Resistance ^{FO} (Resistance Decade)	10 Ω to 100 M Ω	0.02 % of reading	

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
Digital Thermometer ^{FO}	50 °C to 650 °C	0.23 °C	PRT with Indicator Fluke 1523, TC Tipo S with Indicator Hart Scientific Dry Block ISOTECH Euramet_cg-8
Temperature Measurement Thermocouple Type K, J, T, N, E, R, S ^{FO}	50 °C to 650 °C	0.23 °C	
Temperature Measurement RTD Pt 385, Pt 3926, Pt 3916, 100 Ω ^{FO}	50 °C to 650 °C	0.23 °C	

Time and 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
Equipment to Measure Frequency ^{FO}	0.01 Hz to 20 MHz	4 x 10 ⁻⁶ Hz	Functions Generator CENAM Technical Guide
Tachometer Measurement ^{FO}	20 rpm to 30 000 rpm	0.1 % of reading	Tachometer CENAM Technical Guide
Equipment to Output Frequency ^{FO}	10 Hz to 200 MHz	4.26 x 10 ⁻⁷ Hz	Universal Counter CENAM Technical Guide
Stopwatches /Timer ^{FO}	1 s to 86 400 s	2.1 s/day	StopWatch 1/1000 CENAM Technical Guide



Certificate of Accreditation: Supplement

Metrolab S.A de C.V

Site - C. William Shakespeare # 159 A, Complejo Industrial Chihuahua
Chihuahua, Chihuahua, México. C.P. 31136
Contact Name: Tomás Antonio Vanegas Phone: (614) 414-8203

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

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.
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.