PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

MSS, Metrology Solutions Specialist, S.A. de C.V.

Almendro No. 10, Col. Naranjos
Ciudad Reynosa, Tamaulipas, México. C.P. 88640

0 *(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, Time and Frequency, Mechanical, Electrical, Thermodynamic, Chemical, Mass, Force and Weighing Devices, Acoustic and Optical 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:*
October 6, 2013	May 14, 2022	May 31, 2024

Accreditation No.:	*Certificate No.:*
76602	L22-366

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

MSS, Metrology Solutions Specialist, S.A. de C.V.
Almendro No. 10, Col. Naranjos
Ciudad Reynosa, Tamaulipas, México. CP. 88640
Contact Name: Hugo Geron García Phone: 899-141-9098

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

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
Micrometer[FO]	0.05 mm to 100 mm (Res.= 0.001 mm)	(0.74 + 3.3 x 10^{-3}L) µm	Grade 1 Block DI-005
	100 mm to 450 mm	(1.724 + 0.026 9L) µm	
Dial Length Gage[F]	0.001 mm to 1 mm (Res.= 0.000 1 mm)	(0.19 + 0.104L) µm	Grade 1 Block ASME B89.1.10M
Digital Indicator[FO]	1 mm to 25 mm (Res.= 0.001 mm)	(0.974 + 3.4 x 10^{-3}L) µm	Grade 1 Block ASMEB89.1.10M
Dial Indicator[FO]	0.0001 in to 0.005 in (Res.= 0.000 1 in)	(85 + 1.8L) µin	
Calipers[FO]	0.5 mm to 300 mm (Res.= 0.01 mm)	(14.5 + 3 x 10^{-3}L) µm	
	12 in to 24 in (Res.= 0.000 5 in)	(583.8 + 4.51L) µin	Grade 3 Block DI-008
Roughness Tester[FO]	1.06 µm Ra (Res.= 0.001 µm)	0.09 µm	Roughness Standard Mahr PGN-3 DKD-R 4-2
	6.07 µm Ra (Res.= 0.001 µm)	0.21µm	
Master Height Gage[F]	12 mm to 450 mm	(1.2 + 0.012L) µm	Grade 1 Block Comparator (Res.= 0.000 01) ASME B89.1.9
Caliper Checker[F]	25 mm to 150 mm	(1.1 + 0.011L) µm	
Z Step Gage[F]	10 mm to 150 mm	(1.4 + 0.002L) µm	
Laser Micrometer[FO]	0.1 in to 0.8 in	(24 + 0.37L) µin	Master Pin Gage Class XX" DI-005
	1.2 in to 1.9 in	(15.6 + 17L) µin	
Thickness Gage[F]	23.7 µm to 966 µm	(2.7 + 0.25L) µm	Thickness Specimens Set Internal Calibration Procedure/ Reference standard: I7.2-35L / SE-797
Optical Comparator X axis Linearity Y axis Linearity[O]	0.5 mm to 50 mm	(1.6 + 0.038L) µm	Glass Scale JIS B 7184
	0.5 mm to 300 mm	(5.39 + 0.004L) µm	
Squareness[O]	90°	0.12°	Angles Block & Quick Check 8 in JIS B 7184
Optical Comparator Angularity[O]	1° to 90°	0.12°	
Vision System Axis Linearity (X, Y)[O]	X: 180 mm	(3.3 + 1.2 x 10^{-2}L) µm	Glass Grid Scale DI-001
	Y: 180 mm	(3.3 + 1.2 x 10^{-2}L) µm	
Surface Plate Repeat Measurement[O]	0.002 in	54 µin	Repeat Gage with Precision Indicator ASME B89.3.7

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Block Gage Steel[F]	0.5 mm to 100 mm	(0.3 + 0.003L) µm	Stand Block Comparator with Length Gage 1& Grade 1 Block (Res.= 0.000 01) ASME B89.1.9
	110 mm to 254 mm	(0.3 + 0.005L) µm	
Plain Plug Gage[F]	1 mm to 50 mm	(0.61 + 0.001L) µm	Laser Micrometer ASME B89.1.5
	2.54 mm to 100 mm	(0.26 + 0.004L) µm	Stand Block with Length Gage MT25 (Res.= 0.000 01) ASME B89.1.5
Plain Ring Gage[F]	14.7 mm to 100 mm	(0.68 + 0.013L) µm	Grade 1 Block with Webber Accessories (Res.= 0.001) ASME B89.1.6
Thread Plug Gage[F]	0.1 in to 1 in	(64.5 + 1.54L) µin	Thread Wire Set Class XX (Res.= 0.000 05) ASME B1.2 ASME B1.16M
Thread Ring Gage[FO]	0.6 in to 4 in	(55 + 7.6L) µin	Grade 1 Block with Webber Accessories (Res.= 0.000 1) ASME B1.2 ASME B1.16M
CMM Repeatability[FO]	8 in	68 µin	GSG Quick Check ISO 10360-2
CMM Linearity[FO]	5 in to 20 in	(36.3 + 11.89L) µin	Ball Bar Gage ISO 10360-2
CMM Probing Error[FO]	1 in	19 µin	Master Ball ISO 10360-2

Time and Frequency

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Stopwatch[F]	86 400 sec	590 mS	Direct Comparison with Cenam NIST 960-12
Angular Velocity Tachometer[FO]	10 Rad/s to 4 187 Rad/s	1 % of reading	Stroboscope-Tachometer DT2240B

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Mechanical

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Dynamic Torque[FO]	10 lbf·in to 100 lbf·in	0.12 % of reading	PTT2000 Mountz with Transducer CENAM Technical Guide
	120 lbf·in to 1 200 lbf·in	0.09 % of reading	

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 Reaction[FO]	60 lbf·in to 200 lbf·in	0.42 % of reading	S-50 Mountz ASME B107.300
Pressure Gage[FO]	15 psi to 150 psi	$(0.07 + 1 \times 10^{-6}P)$ psi	Druk 615, Accu. 0.025 % ASME B40.1
	30 psi to 300 psi	$(0.07 + 1 \times 10^{-6}P)$ psi	Digital Pressure Test Gages, Accu. 0.025 % ASME B40.1
	500 psi to 2 000 psi	$(0.25 + 2 \times 10^{-5}P)$ psi	
	2 000 to 20 000 psi	$(12 + 3 \times 10^{-4}P)$ psi	Digital Pressure Test Gages, Accuracy 0.1 % ASME B40.1
Air Velocity Meter[F]	0.5 m/s to 15 m/s	1.1 % of reading	Thermo Anemometer (Res.= 0.01) Extech 407 113 NIST 250-79
Rockwell Hardness Indirect Verification[FO]	20 HRB to 50 HRB	0.4 HRB	Hardness Test Block ASTM E18
	51 HRB to 80 HRB	0.33 HRB	
	81 HRB to 100 HRB	0.38 HRB	
	20 HRC to 30 HRC	0.44 HRC	
	31 HRC to 55 HRC	0.35 HRC	
	56 HRC to 70 HRC	0.34 HRC	

Chemical

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
pH Meter[FO]	4 pH	0.02 pH	Hanna Buffer Solutions CENAM Technical Guide
	7 pH	0.02 pH	
	10 pH	0.02 pH	
Conductivity Meter[FO]	1 411 µs/cm	6.2 µs/cm	Hanna Buffer Solutions NMX-AA-093-SCFI
	12.88 ms/cm	0.07 ms/cm	

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Thermodynamic

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Humidity Hygrometer[FO]	20 % RH to 80 % RH	2.3 % RH	Hygrometer AW WS-HT350 CENAM Technical Guide

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
Tension and Compression[FO]	0.5 kgf to 40 kgf	$(8 \times 10^{-3} + 8 \times 10^{-4}\text{Wt})$ kg·f	Class F1 Weight and Class F Weight ME-013
	250 N to 2 250 N	(0.56 + 3 x 10-3Wt) N	Daytronic Load Cell ME-013
	500 kgf to 4 500 kgf	$(25.981 + 2 \times 10^{-6}\text{Wt})$ kg·f	Chatillon Load Cell ME-013
Scales and Balances[O]	1 g to 200 g (Res= 0.000 1 g)	$(2.8 \times 10^{-4} + 1.1 \times 10^{-6}\text{Wt})$ g	Class F1 Weights CENAM Technical Guide
	201 g to 400 g (Res= 0.001 g)	$(22 \times 10^{-4} + 24 \times 10^{-7}\text{Wt})$ g	
	401 g to 4 000 g (Res.= 0.01 g)	$(26 \times 10^{-3} + 29 \times 10^{-7}\text{Wt})$ g	
	4.1 kg to 30 kg (Res= 0.1 g)	$(0.22 + 57 \times 10^{-7}\text{Wt})$ g	
	1 lb to 100 lb (Res.= 0.002 lb)	$(37 \times 10^{-4} + 25 \times 10^{-6}\text{Wt})$ lb	Class M2 Weights CENAM Technical Guide
Scales Balances[O] DMS 1	20 kg to 800 kg (Res.= 1 kg)	$(1.7 + 22 \times 10^{-5}\text{Wt})$ kg	
Mass Calibration Class, M2 and M3[F]	1 kg	16 mg	Double Substitution Class F 1 Weights Set OIML R 111-1
	2 kg	30 mg	
	5 kg	73 mg	
	10 kg	160 mg	
	20 kg	310 mg	
	30 kg	730 mg	
	500 g	8 mg	

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Electrical

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Equipment to Output DC Voltage[FO]	1 mV to 200 mV	6.7 µV	Multimeter 8 1/2 Digit Keithley Procedure El-005
	201 mV to 2 V	0.41 µV	
	2.1 mV to 20 V	24 µV	
	20.1 V to 200 V	5.6 mV	
	200.1 V to 1 000 V	26 mV	
Equipment to Output AC Voltage At the listed frequencies[FO]			
1 Hz to10 Hz	1 mV to 200 mV	0.36 mV	
10 Hz to 50 Hz	1 mV to 200 mV	0.17 mV	
50 Hz to100 Hz	1 mV to 200 mV	0.12 mV	
0.1 KHz to 2 KHz	1 mV to 200 mV	0.12 mV	
2 kHz to 10 kHz	1 mV to 200 mV	0.09 mV	
10 kHz to 30 kHz	1 mV to 200 mV	0.11 mV	
30 kHz to 50 kHz	1 mV to 200 mV	0.19 mV	
50 kHz to 100 kHz	1 mV to 200 mV	0.7 mV	
100 kHz to 200 kHz	1 mV to 200 mV	1.8 mV	
0.2 MHz to 1 MHz	1 mV to 200 mV	4.9 mV	
1 MHz to 2 MHz	1 mV to 200 mV	12 mV	
Equipment to Output AC Voltage At the listed frequencies[FO]			
1 Hz to 10 Hz	0.2 V to 2 V	6 mV	
10 Hz to 50 Hz	0.2 V to 2 V	1.2 mV	
50 Hz to 100 Hz	0.2 V to 2 V	0.93 mV	
0.1 Hz to 2 kHz	0.2 V to 2 V	0.93 mV	
2 kHz to10 kHz	0.2 V to 2 V	0.93 mV	
10 kHz to 30 kHz	0.2 V to 2 V	1 mV	
30 kHz to 50 kHz	0.2 V to 2 V	1.6 mV	
50 kHz to 100 kHz	0.2 V to 2 V	7.3 mV	
100 kHz to 200 kHz	0.2 V to 2 V	21 mV	
0.2 MHz to 1 MHz	0.2 V to 2 V	48 mV	
1 MHz to 2 MHz	0.2 V to 2 V	120 mV	

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Equipment to Output AC Voltage At the listed frequencies[FO]			Multimeter 8 1/2 Digit Keithley Procedure El-005
1Hz to 10 Hz	2 V to 20 V	29 mV	
10 Hz to50 Hz	2 V to 20 V	17 mV	
50 Hz to100 Hz	2 V to 20 V	11 mV	
0.1 kHz to 2 kHz	2 V to 20 V	72 mV	
2 kHz to 10 kHz	2 V to 20 V	12 mV	
10 kHz to 30 kHz	2 V to 20 V	15 mV	
30 kHz to 50 kHz	2 V to 20 V	25 mV	
50 kHz to 100 kHz	2 V to 20 V	73 mV	
100 kHz to 200 kHz	2 V to 20 V	180 mV	
0.2 MHz to 1 MHz	2 V to 20 V	970 mV	
1 MHz to 2 MHz	2 V to 20 V	1.7 mV	
Equipment to Output AC Voltage At the listed frequencies[FO]			
1 Hz to 10 Hz	20 V to 200 V	270 mV	
10 Hz to 50 Hz	20 V to 200 V	150 mV	
50 Hz to 100 Hz	20 V to 200 V	110 mV	
0.1 kHz to 2 kHz	20 V to 200 V	120 mV	
2 kHz to 10 kHz	20 V to 200 V	130 mV	
10 kHz to 30 kHz	20 V to 200 V	150 mV	
30 kHz to 50 kHz	20 V to 200 V	200 mV	
50 kHz to 100 kHz	20 V to 200 V	750 mV	
100 kHz to 200 kHz	20 V to 200 V	1.8 mV	
0.2 MHz to 1 MHz	20 V to 200 V	9.7 mV	
Equipment to Output AC Voltage At the listed frequencies[FO]			
1 Hz to 10 Hz	200 V to 750 V	1.3 V	
10 Hz to 50 Hz	200 V to 750 V	0.91 V	
50 Hz to 100 Hz	200 V to 750 V	0.57 V	
0.1 kHz to 2 kHz	200 V to 750 V	0.57 V	
2 kHz to 10 kHz	200 V to 750 V	0.67 V	

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Equipment to Output AC Voltage At the listed frequencies[FO]			Multimeter 8 1/2 Digit Keithley 2002 Procedure El-005
10 kHz to 30 kHz	200 V to 750 V	0.92 V	
30 kHz to 50 kHz	200 V to 750 V	1.1 V	
50 kHz to 100 kHz	200 V to 750 V	4.5 mV	
Equipment to Output Resistance - Two Wire[FO]	1 Ω to 20 Ω	1 mΩ	
	20 Ω to 200 Ω	7.2 mΩ	
	0.2 kΩ to 2 kΩ	29 mΩ	
	2 kΩ to 20 kΩ	320 mΩ	
	20 kΩ to 200 kΩ	9.6 Ω	
	0.2 MΩ to 2 MΩ	190 Ω	
	2 MΩ to 20 MΩ	6.4 kΩ	
	20 MΩ to 200 MΩ	140 kΩ	
	0.2 Ω to 1 GΩ	3 MΩ	
Equipment to Output Resistance - Four Wire[FO]	1 Ω to 20 Ω	2.2 mΩ	
	20 Ω to 200 Ω	5 mΩ	
	0.2 kΩ to 2 kΩ	24 mΩ	
	2 kΩ to 20 kΩ	230 mΩ	
	20 kΩ to 200 kΩ	8.3 Ω	
	0.2 MΩ to 2 MΩ	160 Ω	
	2 MΩ to 20 MΩ	5.8 kΩ	
	20 MΩ to 200 MΩ	59 kΩ	
	0.2 GΩ to 1 GΩ	300 kΩ	
Equipment to Output DC Current[FO]	1 µA to 200 µA	90 nA	
	0.2 mA to 2 mA	860 nA	
	2 mA to 20 mA	8.5 µA	
	20 mA to 200 mA	91 µA	
	0.2 A to 2 A	1.8 mA	
	2 A to 10 A	190 mA	Multimeter Fluke 189 Procedure El-005

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Equipment to Output AC Current At the listed frequencies[FO]			Multimeter 8 1/2 Digit Keithley Procedure El-005
50 Hz to 200 Hz	1 µA to 200 µA	500 µA	
0.2 Hz to 1 kHz	1 µA to 200 µA	960 µA	
1 Hz to 10 kHz	1 µA to 200 µA	1.2 µA	
Equipment to Output AC Current At the listed frequencies[FO]			
20 Hz to 50 Hz	0.2 mA to 2 mA	7.3 µA	
50 Hz to 200 Hz	0.2 mA to 2 mA	3.8 µA	
0.2 Hz to 1 kHz	0.2 mA to 2 mA	3.1 µA	
1 kHz to 10 kHz	0.2 mA to 2 mA	3.9 µA	
10 kHz to 30 kHz	0.2 mA to 2 mA	6.5 µA	
30 kHz to 50 kHz	0.2 mA to 2 mA	7.6 µA	
50 kHz to100 kHz	0.2 mA to 2 mA	12 µA	
Equipment to Measure AC Current At the listed frequencies[FO]			
20 Hz to 50 Hz	2 mA to 20 mA	7.3 µA	
50 Hz to 200 Hz	2 mA to 20 mA	38 µA	
0.2 kHz to 1 kHz	2 mA to 20 mA	31 µA	
1 kHz to 10 kHz	2 mA to 20 mA	38 µA	
10 kHz to 30 kHz	2 mA to 20 mA	65 µA	
30 kHz to 50 kHz	2 mA to 20 mA	76 µA	
50 kHz to 100 kHz	2 mA to 20 mA	120 µA	
Equipment to Measure AC Current At the listed frequencies[FO]			
20 Hz to 50 Hz	20 mA to 200 mA	730 µA	
50 Hz to 200 Hz	20 mA to 200 mA	390 µA	
0.2 KHz to 1 KHz	20 mA to 200 mA	320 µA	
1 kHz to 10 kHz	20 mA to 200 mA	420 µA	
10 kHz to 30 kHz	20 mA to 200 mA	1.2 mA	

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Equipment to Measure AC Current At the listed frequencies[FO]			Multimeter 8 1/2 Digit Keithley Procedure El-005
30 kHz to 50 kHz	20 mA to 200 mA	2.3 mA	
50 kHz to100 kHz	20 mA to 200 mA	7 mA	
Equipment to Output AC Current At the listed frequencies[FO]			Multimeter 8 1/2 Digit Keithley 2002 Procedure El-005
20 Hz to 50 Hz	0.2 mA to 2 A	8.4 mA	
50 Hz to 200 Hz	0.2 mA to 2 A	5 mA	
0.2 kHz to 1 kHz	0.2 mA to 2 A	7.3 mA	
1 kHz to 10 kHz	0.2 mA to 2 A	16 mA	
10 kHz to 30 kHz	0.2 mA to 2 A	37 mA	
30 kHz to 50 kHz	0.2 mA to 2 A	94 mA	
Equipment to Output AC Voltage At the listed frequencies[FO]			
5 mA	1 Hz to 15 MHz	5.3 kHz	
Equipment to Output AC Current At the listed frequencies[FO]			
200 mA	1 Hz to 1 MHz	360 Hz	
Equipment to Output frequency[FO]	10 Hz to 500 MHz	500 Hz	HP 5343A Procedure El-005
	500 MHz to 26.5 GHz	800 Hz	
Equipment to Output High DC Voltage[FO]	6 kV	70 V	Fluke 189 / Fluke 80K - 6 HV Procedure El-005
Equipment to Output High AC Voltage[FO]	6 kV	70 V	
Equipment to Output Capacitance[FO]	2 nF	6 pF	Standard Capacitor GRD Procedure El-020
	0.2 µF	140 pF	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K[FO]	-200 ºC to 0 ºC	0.39 ºC	Calibrator Omega CL511 Electrical Simulation of Thermocouple Output Procedure El-020
	0 ºC to 100 ºC	0.82 ºC	
	100 ºC to 1 000 ºC	2.7 ºC	

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Equipment to Measure DC Voltage[FO]	1 mV to 330 mV	3.8 µV	Fluke 5500A Procedure El-020
	0.33 V to 3.3 V	17 µV	
	3.3 V to 33 V	180 µV	
	33 V to 330 V	12 mV	
	330 V to 1 020 V	5 mV	
Equipment to Measure AC Voltage At the listed frequencies[FO]			
1 Hz to 45 Hz	1 mV to 33 mV	17 µV	
45 Hz to 1 kHz	1 mV to 33 mV	17 µV	
1 kHz to 10 kHz	1 mV to 33 mV	17 µV	
10 kHz to 20 kHz	1 mV to 33 mV	17 µV	
20 kHz to 50 kHz	1 mV to 33 mV	17 µV	
50 kHz to 100 kHz	1 mV to 33 mV	17 µV	
100 kHz to 450 kHz	1 mV to 33 mV	17 µV	
Equipment to Measure AC Voltage At the listed frequencies[FO]			
1 Hz to 45 Hz	33 mV to 330 mV	120 µV	
45 Hz to 1 kHz	33 mV to 330 mV	130 µV	
1 kHz to 10 kHz	33 mV to 330 mV	130 µV	
10 kHz to 20 kHz	33 mV to 330 mV	0.9 mV	
20 kHz to 50 kHz	33 mV to 330 mV	0.9 mV	
50 kHz to 100 kHz	33 mV to 330 mV	0.9 mV	
100 kHz to 450 kHz	33 mV to 330 mV	0.9 mV	
Equipment to Measure AC Voltage At the listed frequencies[FO]			
1 Hz to 45 Hz	0.33 V to 3.3 V	130 mV	
45 Hz to 1 kHz	0.33 V to 3.3 V	220 mV	
1 kHz to 10 kHz	0.33 V to 3.3 V	220 mV	
10 kHz to 20 kHz	0.33 V to 3.3 V	220 mV	

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MSS, Metrology Solutions Specialist, S.A. de C.V.
Almendro No. 10, Col. Naranjos
Ciudad Reynosa, Tamaulipas, México. C.P. 88640
Contact Name: Hugo Geron García Phone: 899-141-9098

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

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
Equipment to Measure AC Voltage At the listed frequencies[FO]			Fluke 5500A Procedure El-020
1 Hz to 45 Hz	3.3 V to 330 V	130 mV	
45 Hz to 1 kHz	3.3 V to 330 V	220 mV	
1 kHz to 10 kHz	3.3 V to 330 V	220 mV	
10 kHz to 20 kHz	3.3 V to 330 V	220 mV	
Equipment to Measure AC Voltage At the listed frequencies[FO]			
1 Hz to 45 Hz	330 V to 1 020 V	380 mV	
45 Hz to 1 kHz	330 V to 1 020 V	450 mV	
1 kHz to 5 kHz	330 V to 1 020 V	450 mV	
5 kHz to 10 kHz	330 V to 1 020 V	450 mV	
Equipment to Measure DC Current[FO]	50 µA to 330 µA	41 nA	
	0.33 mA to 3.3 mA	400 nA	
	3.3 mA to 33 mA	4.6 µA	
	33 mA to 330 mA	90 µA	
	0.33 A to 2.2 A	500 µA	
	2.2 A to 11 A	4.3 mA	
Equipment to Measure AC Current At the listed frequencies[FO]			
1 Hz to 10 Hz	29 µA to 330 µA	410 nA	
10 Hz to 45 Hz	29 µA to 330 µA	350 nA	
45 Hz to 1 kHz	29 µA to 330 µA	350 nA	
1 kHz to 5 kHz	29 µA to 330 µA	350 nA	
5 kHz to 10 kHz	29 µA to 330 µA	350 nA	
Equipment to Measure AC Current At the listed frequencies[FO]			
1 Hz to 10 Hz	0.33 mA to 3.3 mA	2.9 µA	
10 Hz to 45 Hz	0.33 mA to 3.3 mA	2.5 µA	
45 Hz to 1 kHz	0.33 mA to 3.3 mA	2.5 µA	

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Equipment to Measure AC Current At the listed frequencies[FO]			Fluke 5500A Procedure El-020
1 kHz to 5 kHz	0.33 mA to 3.3 mA	2.5 µA	
5 kHz to 10 kHz	0.33 mA to 3.3 mA	2.5 µA	
Equipment to Measure AC Current At the listed frequencies[FO]			
1 Hz to 10 Hz	3.3 mA to 33 mA	31 µA	
10 Hz to 45 Hz	3.3 mA to 33 mA	460 µA	
45 Hz to 1 kHz	3.3 mA to 33 mA	24 µA	
1 kHz to 5 kHz	3.3 mA to 33 mA	24 µA	
5 kHz to 10 kHz	3.3 mA to 33 mA	24 µA	
Equipment to Measure AC Current At the listed frequencies[FO]			
1 Hz to 10 Hz	33 mA to 330 mA	250 µA	
10 Hz to 45 Hz	33 mA to 330 mA	240 µA	
45 Hz to 1 kHz	33 mA to 330 mA	240 µA	
1 kHz to 5 kHz	33 mA to 330 mA	240 µA	
5 kHz to 10 kHz	33 mA to 330 mA	240 µA	
Equipment to Measure AC Current At the listed frequencies[FO]			
1 Hz to 45 Hz	0.33 A to 2.2 A	2 mA	
45 Hz to 1 kHz	0.33 A to 2.2 A	2.1 mA	
1 kHz to 5 kHz	0.33 A to 2.2 A	2.1 mA	
Equipment to Measure AC Current At the listed frequencies[FO]			
1 Hz to 45 Hz	2.2 A to 11 A	12 mA	
45 Hz to 500 Hz	2.2 A to 11 A	12 mA	
500 Hz to 1 kHz	2.2 A to 11 A	12 mA	
Equipment to Measure Resistance[FO]	0.001 Ω to 11 Ω	1.2 mΩ	
	11 Ω to 33 Ω	3.6 mΩ	
	33 Ω to 110 Ω	12 mΩ	

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Equipment to Measure Resistance[FO]	110 Ω to 330 Ω	35 mΩ	Fluke 5500A Procedure El-020
	033 kΩ to 1.1 kΩ	1.3 Ω	
	1.1 kΩ to 3.3 kΩ	810 mΩ	
	3.3 kΩ to 11 kΩ	1.2 Ω	
	11 kΩ to 33 kΩ	3.5 Ω	
	33 kΩ to 110 kΩ	12 Ω	
	110 kΩ to 330 kΩ	35 Ω	
	0.33 MΩ to 1.1 MΩ	120 Ω	
	1.1 MΩ to 3.3 MΩ	400 Ω	
	3.3 MΩ to 11 MΩ	1.2 kΩ	
	11 MΩ to 33 MΩ	17 kΩ	
	33 MΩ to 110 MΩ	22 kΩ	
	110 MΩ to 330 MΩ	39 kΩ	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type B[FO]	600 °C to 800 °C	0.84 °C	Calibrator Fluke 5500A Electrical Simulation of Thermocouple Output Procedure El-020
	800 °C to 1 000 °C	0.63 °C	
	1 000 °C to 1 400 °C	0.52 °C	
	1 400 °C to 1 800 °C	0.57 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type C[FO]	0 °C to 600 °C	0.45 °C	
	600 °C to 1 000 °C	0.42 °C	
	1 000 °C to 1 800 °C	0.61 °C	
	1 800 °C to 2 300 °C	0.63 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type E[FO]	-250 °C to -200 °C	0.69 °C	
	-200 °C to -100 °C	0.34 °C	
	-100 °C to 100 °C	0.27 °C	
	100 °C to 1 000 °C	0.33 °C	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type J[FO]	-210 °C to -100 °C	0.39 °C	
	-100 °C to 800 °C	0.3 °C	
	800 °C to 1 000 °C	0.33 °C	
	1 000 °C to 1 200 °C	0.36 °C	

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Temperature Calibration, Indication and Control Equipment used with Thermocouple Type K[FO]	-250 ºC to -200 ºC	0.87 ºC	Calibrator Fluke 5500A Electrical Simulation of Thermocouple Output Procedure El-020
	-200 ºC to -100 ºC	0.42 ºC	
	-100 ºC to 100 ºC	0.3 ºC	
	100 ºC to 600 ºC	0.36 ºC	
	600 ºC to 1 372 ºC	0.42 ºC	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type L[FO]	-200 ºC to -50 ºC	0.4 ºC	
	-50 ºC to 200 ºC	0.28 ºC	
	200 ºC to 700 ºC	0.31 ºC	
	700 ºC to 900 ºC	0.36 ºC	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type N[FO]	-200 ºC to -100 ºC	0.51 ºC	
	-100 ºC to 900 ºC	0.36 ºC	
	900 ºC to 1 100 ºC	0.34 ºC	
	1 100 ºC to 1 300 ºC	0.37 ºC	
Temperature Calibration, Indication and Control Equipment used with Thermocouple Type T[FO]	-250 ºC to -200 ºC	0.9 ºC	
	-200 ºC to -100 ºC	0.42 ºC	
	-100 ºC to 0 ºC	0.34 ºC	
	0 ºC to 400 ºC	0.27 ºC	
Temperature Calibration, Indication and Control Equipment used with RTD, Type Pt 385, 1 kΩ[FO]	-200 ºC to -100 ºC	0.27 ºC	Calibrator Fluke 5500A Electrical Simulation of RTD Output Procedure El-020
	-100 ºC to 100 ºC	0.19 ºC	
	100 ºC to 630 ºC	0.36 ºC	
	630 ºC to 850 ºC	0.53 ºC	
Temperature Calibration, Indication and Control Equipment used with RTD, Type Pt 395, 100 Ω[FO]	-200 ºC to -100 ºC	0.27 ºC	
	-100 ºC to 200 ºC	0.19 ºC	
	200 ºC to 500 ºC	0.36 ºC	
	500 ºC to 800 ºC	0.53 ºC	

Acoustic

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
Sound Level[F]	94 dB	0.3 dB	Sound Level Calibrator EXTECH 407766 ANSI S1.4

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Optical

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Light Meter^{FO}	11 lux to 5 393 lux	4.9 % of reading	Light Master EXTECH 407026 Comparison Method IS 15485

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.
7. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.
8. The term P represents pressure in units appropriate to the uncertainty statement.
9. The term Wt represents weight in pounds or grams (including SI multiple and submultiple units) appropriate to the uncertainty statement
10. The term F represents Force in units appropriate to the uncertainty statement.