



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Organization

Metrosmart, S.A. de C.V.
Alcatraz 23, Paseo del Pedregal Salitre
El Salitre, Querétaro, México. C.P. 76223

*and hereby declares that the Organization is accredited in accordance with
the recognized International Standard:*

ISO/IEC 17025:2017

Whereby, technical competence has been confirmed for the associated scope supplement, in the fields of:

***Time and Frequency, Dimensional, Mechanical, Mass, Force and Weighing
Devices, Fluid Quantities, Thermodynamic, Chemical, Optical and Electrical
Calibration
(As detailed in the supplement)***

Accreditation claims for conformity assessment activities shall only be made from the addresses referenced within this certificate and shall apply solely to those activities identified in the related scope. This Accreditation is granted subject to the Accreditation Body rules governing the Accreditation referred to above, and the Organization hereby commits to observing and complying with those rules in their entirety.

For PJLA:

Tracy Szerszen
President

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

Initial Accreditation Date:

June 26, 2018

Issue Date:

November 13, 2024

Expiration Date:

December 31, 2026

Revision Date:

December 01, 2025

Accreditation No.:

74050

Certificate No.:

L24-868-R1

*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.pjilabs.com*



Certificate of Accreditation: Supplement

Metrosmart, S.A. de C.V.

Alcatraz 23, Paseo del Pedregal Salitre
El Salitre, Querétaro, México. C.P. 76223
Contact Name: Efrain Calva. Phone: 442-220-7054

Accreditation is granted to the facility to perform the following conformity assessment activities:

FIELD OF CALIBRATION	MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	EXPANDED MEASUREMENT UNCERTAINTY ($\pm$) ¹	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED	FLEX CODE	LOCATION OF ACTIVITY
Time and Frequency	Melt Flow Index (Time)	1 min to 10 min	0.84 s	Stopwatch	ASTM D1238	F1, F2	F, O
Time and Frequency	Tachometer, Rotational Frequency Measuring Machines (Rate of Rotation)	30 rpm to 99 999 rpm	0.6 rpm	AS432-B Tachometer Mitutoyo Stroboscopic Lamp OMEGA Optical Tachometer Adapter TRANSMILLE	CENAM Technical Guide	F1, F2	F, O
Time and Frequency	Tachometer, Rotational Frequency Measuring Machines (Rate of Rotation)	0.01 rad/s to 10 472 rad/s	0.006 rad/s	AS432-B Tachometer Mitutoyo Stroboscopic Lamp OMEGA Optical Tachometer Adapter TRANSMILLE	CENAM Technical Guide	F1, F2	F, O
Time and Frequency	Stopwatch (Fixed Point)	15 s	0.072 s	Chronometer, Control Company Model: 1021	NIST SP 960-12	F1, F2	F, O
Time and Frequency	Stopwatch (Fixed Point)	86 400 s	3 s	Chronometer, Control Company Model: 1021	NIST SP 960-12	F1, F2	F, O
Dimensional	Force Test Machines (Displacement)	Up to 600 mm	0.011 mm	Digital Caliper 600 mm	ASTM E 2309/ ASTM E 2309M	F1, F2	O
Dimensional	Melt Flow Index (Plastometer)	Up to 25 mm	2 μ m	Micrometer (Piston Foot Diameter, Piston Foot Length) Gage Go -No Go (Capillary Diameter)	ASTM D 1238	F1, F2	F, O



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Dimensional	Laser Micrometer	Up to 25.4 mm	$(0.19 + 3 \times 10^{-3} L) \mu m$	Cylindric Patterns, Mahr;	NMX-CH-99-SCFI	F1, F2	F, O
Dimensional	Handheld Laser Distance Meters	Up to 100 m	$(0.61 + 0.012L) mm$	Measuring Tape, Lufkin Model: N250M	BS ISO 16331-1	F1, F2	F, O
Dimensional	Numerically Controlled Machine Tool (CNC) (X Linear Displacement Accuracy)	Up to 15 000 mm	$(0.25 + 8.4 \times 10^{-4} L) \mu m$	Laser Measurement System, Renishaw Model: XL-80	ISO 230-2	F1, F2	F, O
Dimensional	Numerically Controlled Machine Tool (CNC) (Y Linear Displacement Accuracy)	Up to 15 000 mm	$(0.25 + 8.4 \times 10^{-4} L) \mu m$	Laser Measurement System, Renishaw Model: XL-80	ISO 230-2	F1, F2	F, O
Dimensional	Numerically Controlled Machine Tool (CNC) (Z Linear Displacement Accuracy)	Up to 15 000 mm	$(0.25 + 8.4 \times 10^{-4} L) \mu m$	Laser Measurement System, Renishaw Model: XL-80	ISO 230-2	F1, F2	F, O
Dimensional	Digital Scale Ruler	Up to 3 000 mm (Res.= 0.01 mm)	15 μm	Gage Blocks Master Grade 0 and Grade 1	JIS B 7507 Direct Comparison	F1, F2	F, O
Dimensional	Welding Gauge (Angle)	Up to 360°	0.6°	Gage Block Set Angle Gage Block set Vision System	NMX-CH-002-IMNC NMX-CH-151-IMNC ASME Y 14.5	F1, F2	F, O
Dimensional	Welding Gauge (Distance, Ratio and Depth)	Up to 300 mm	60 μm	Gage Block Set Angle Gage Block set Vision System	NMX-CH-002-IMNC NMX-CH-151-	F1, F2	F, O



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					IMNC ASME Y 14.5		
Dimensional	PCMM Volumetric Performance	Up to 4 000 mm	(5 + 1L) μ m	2 000 mm Ball Bar	ISO ANSI/ ASME B89.422-R	F1, F2	O
Dimensional	PCMM (Effective Sphere Diameter) (Fixed Point)	25.4 mm	0.02 μ m	Calibrated Sphere	ISO 3290-1	F1, F2	O
Dimensional	Pi Tapes	50.8 mm to 3 048 mm (Res.= 0.01 mm)	(0.105 + 0.020 6L) mm	Linear Scale (Horizontal Measurement System) SINO SDS6-2V MTK-LAB-TEC-69 Pi tapes	SOP 23 NIST CENAM Technical Guide	F1, F2	F
Dimensional	Direct Verification of Durometer Hardness Tester (Types: A, B, C, D, E, O, OO & DO)	2.46 mm to 2.54 mm	1 μ m	Mahr, Mar Vision MM320 Vision Equipment	ASTM D2240	F1, F2	F
Dimensional	Direct Verification of Durometer Hardness Tester (Types: A, B, C, D, E, O, OO & DO) (Indenter Diameter)	2.46 mm to 2.54 mm	1 μ m	Mahr, Mar Vision MM320 Vision Equipment	ASTM D2240	F1, F2	F



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Dimensional	Direct Verification of Durometer Hardness Tester (Types: A, B, C, D, E, O, OO & DO) (Indenter Tip Diameter)	2.46 mm to 2.54 mm	1 μ m	Mahr, Mar Vision MM320 Vision Equipment	ASTM D2240	F1, F2	F
Dimensional	Direct Verification of Durometer Hardness Tester (Types: A, B, C, D, E, O, OO & DO) (Indenter Tip Radius)	2.46 mm to 2.54 mm	1 μ m	Mahr, Mar Vision MM320 Vision Equipment	ASTM D2240	F1, F2	F
Dimensional	Direct Verification of Durometer Hardness Tester (Types: A, B, C, D, E, O, OO & DO) (Indenter Tip Angle)	29.5 ° to 35.25 °	0.15 °	Mahr, Mar Vision MM320 Vision Equipment	ASTM D2240	F1, F2	F
Mechanical	Force Test Machines (Speed)	1 mm/min to 600 mm/min	0.002 mm/min	Stopwatch Height Caliper	ASTM E2658	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRA)	20 HRA to 65 HRA	0.36 HRA	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRA)	70 HRA to 78 HRA	0.35 HRA	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRA)	80 HRA to 84 HRA	0.23 HRA	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O



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Mechanical	Indirect Verification of Rockwell Hardness Tester (HRBW)	39 HRBW to 59 HRBW	0.61 HRBW	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRBW)	60 HRBW to 79 HRBW	0.56 HRBW	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRBW)	80 HRBW to 100 HRBW	0.59 HRBW	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRC)	20 HRC to 30 HRC	0.28 HRC	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRC)	35 HRC to 55 HRC	0.27 HRC	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRC)	60 HRC to 70 HRC	0.28 HRC	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HREW)	70 HREW to 79 HREW	0.64 HREW	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HREW)	84HREW to 90 HREW	0.64 HREW	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O



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Mechanical	Indirect Verification of Rockwell Hardness Tester (HREW)	93 HREW to 105 HREW	0.67 HREW	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRF)	57 HRF to 75 HRF	0.53 HRF	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRF)	80 HRF to 90 HRF	0.45 HRF	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HRF)	94 HRF to 100 HRF	0.52 HRF	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect verification of Rockwell hardness tester (HR15N)	70 HR15N to 77 HR15N	0.45 HR15N	Indirect Verification per using Hardness Test Blocks	ASTM E18	F1, F2	F, O
Mechanical	Indirect verification of Rockwell hardness tester (HR15N)	78 HRN15N to 88 HR15N	0.44 HR15N	Indirect Verification per using Hardness Test Blocks	ASTM E18	F1, F2	F, O
Mechanical	Indirect verification of Rockwell hardness tester (HR15N)	90 HRN15N to 95 HR15N	0.53 HR15N	Indirect Verification per using Hardness Test Blocks	ASTM E18	F1, F2	F, O
Mechanical	Indirect verification of Rockwell hardness tester (HR15TW)	74 HR15TW to 80 HR15TW	0.55 HR15TW	Indirect Verification per using Hardness Test Blocks	ASTM E18	F1, F2	F, O



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Mechanical	Indirect verification of Rockwell hardness tester (HR15TW)	81 HR15TW to 86 HR15TW	0.53 HR15TW	Indirect Verification per using Hardness Test Blocks	ASTM E18	F1, F2	F, O
Mechanical	Indirect verification of Rockwell hardness tester (HR15TW)	87 HR15TW to 93 HR15TW	0.63 HR15TW	Indirect Verification per using Hardness Test Blocks	ASTM E18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HR30N)	42 HR30N to 50 HR30N	0.45 HR30N	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HR30N)	55 HR30N to 73 HR30N	0.3 HR30N	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HR30N)	77 HR30N to 82 HR30N	0.2 HR30N	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HR30T)	43 HR30TW to 56 HR30TW	0.55 HR30T	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HR30T)	57 HR30TW to 69 HR30TW	0.65 HR30T	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HR30T)	70 HR30TW to 83 HR30TW	0.58 HR30T	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O



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Mechanical	Indirect Verification of Rockwell Hardness Tester (HR45N)	20 HR45N to 31 HR45N	0.31 HR45N	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HR45N)	37 HR45N to 61 HR45N	0.3 HR45N	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Rockwell Hardness Tester (HR45N)	66 HR45N to 72 HR45N	0.28 HR45N	Hardness Reference Test Block	ASTM E-18	F1, F2	F, O
Mechanical	Indirect Verification of Brinell Hardness tester (HBW 10/3 000)	95.5 HBW to 250 HBW	2.9 HBW	Hardness Reference Test Block	ASTM E-10 ASTM E-110	F1, F2	F, O
Mechanical	Indirect Verification of Brinell Hardness tester (HBW 10/3 000)	250 HBW to 450 HBW	6.8 HBW	Hardness Reference Test Block	ASTM E-10 ASTM E-110	F1, F2	F, O
Mechanical	Indirect Verification of Brinell Hardness tester (HBW 10/3 000)	450 HBW to 600 HBW	8.9 HBW	Hardness Reference Test Block	ASTM E-10 ASTM E-110	F1, F2	F, O
Mechanical	Indirect Verification of Brinell Hardness tester (HBW 2.5/187.5)	95.5 HBW to 250 HBW	2.3 HBW	Hardness Reference Test Block	ASTM E-10 ASTM E-110	F1, F2	F, O
Mechanical	Indirect Verification of Brinell Hardness tester (HBW 2.5/187.5)	250 HBW to 450 HBW	5.2 HBW	Hardness Reference Test Block	ASTM E-10 ASTM E-110	F1, F2	F, O



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Mechanical	Indirect Verification of Brinell Hardness tester (HBW 2.5/187.5)	450 HBW to 600 HBW	9.2 HBW	Hardness Reference Test Block	ASTM E-10 ASTM E-110	F1, F2	F, O
Mechanical	Indirect Verification of Vickers Micro Hardness Tester (HV 0.5)	100 HV to 240 HV	4.7 HV	Hardness Reference Test Block	ASTM E-384	F1, F2	F, O
Mechanical	Indirect Verification of Vickers Micro Hardness Tester (HV 0.5)	240 HV to 600 HV	5.9 HV	Hardness Reference Test Block	ASTM E-384	F1, F2	F, O
Mechanical	Indirect Verification of Vickers Micro Hardness Tester (HV 0.5)	600 HV to 800 HV	12 HV	Hardness Reference Test Block	ASTM E-384	F1, F2	F, O
Mechanical	Indirect Verification of Vickers Micro Hardness Tester (HV 1.0)	100 HV to 240 HV	3.5 HV	Hardness Reference Test Block	ASTM E-384	F1, F2	F, O
Mechanical	Indirect Verification of Vickers Micro Hardness Tester (HV 1.0)	240 HV to 600 HV	9.9 HV	Hardness Reference Test Block	ASTM E-384	F1, F2	F, O
Mechanical	Indirect Verification of Vickers Micro Hardness Tester (HV 10)	100 HV to 240 HV	3.3 HV	Hardness Reference Test Block	ASTM E-384	F1, F2	F, O
Mechanical	Indirect Verification of Vickers Micro Hardness Tester (HV 10)	240 HV to 600 HV	11 HV	Hardness Reference Test Block	ASTM E-384	F1, F2	F, O



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Mechanical	Torque Tools, Electrical and Pneumatic Screwdriver	0.5 N•m to 10 N•m	0.12 % of reading	Set Torque Transducer NORBAR 50673 Log Joint Simulator and Dynamic Transducer Desoutter RT5SQ75	ISO 5393 ISO-6789-2 NMX-CH-6789-IMNC	F1, F2	F, O
Mechanical	Torque Tools, Electrical and Pneumatic Screwdriver	2.5 N•m to 25 N•m	0.12 % of reading	Set Torque Transducer NORBAR 50673 Log Joint Simulator and Dynamic Transducer Desoutter RT5SQ75	ISO 5393 ISO-6789-2 NMX-CH-6789-IMNC	F1, F2	F, O
Mechanical	Torque Tools, Electrical and Pneumatic Screwdriver	20 N•m to 400 N•m	0.16 % of reading	Set Torque Transducer NORBAR 50675 Log Joint Simulator and Dynamic Transducer Desoutter, RT5SQ75	ISO 5393 ISO-6789-2 NMX-CH-6789-IMNC	F1, F2	F, O
Mechanical	Torque Tools, Electrical and Pneumatic Screwdriver	250 N•m to 2 500 N•m	0.19 % of reading	Set Torque Transducer NORBAR 50703 Log Joint Simulator and Dynamic Transducer Desoutter, RT5SQ75	ISO 5393 ISO-6789-2 NMX-CH-6789-IMNC	F1, F2	F, O



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Mechanical	Torque Transducer, Spring Tester Machines, Bottle Cap Torque tester, Analyzer of Torque	0.1 N•m to 100 N•m	0.1 % of reading	Lever Arm and Suspended Set Mass, Class F1 Weights.	Euramet_cg-14 CENAM Technical Guide	F1, F2	F, O
Mechanical	Liquid Flow Meters	450 L/h to 180 000 L/h	0.087 % of reading	Flow Meter Brand: Micro Motion Model: CMF050M322N2BASZZ Z Type: Coriolis, Flow Meter Brand: Micro Motion Model: CMF200M419NQBUEZZ Z Type: Coriolis Flow Meter Brand: Micro Motion Model: CMF300M426NABUSZZ Z Type: Coriolis	CENAM Technical Guide	F1, F2	F
Mechanical	Liquid Flow Meters	6 L/h to 3 000 L/h	0.054 % of reading	Graduated Neck Volumetric Measurement 5 L, 10 L, 20 L, 50 L Graduated Cylinder 100 ml	CENAM Technical Guide	F1, F2	F



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Mass, Force, and Weighing Devices	Direct Calibration of Testing Machines, Force Instruments and Force Transducer (Tension)	0.1 N to 588.39 kN	0.12 % of reading	Reference Force Transducer	NMX-CH-7500-1-INMC NMX-CH-376-INMC	F1, F2	F, O
Mass, Force, and Weighing Devices	Direct Calibration of Testing Machines, Force Instruments and Force Transducer (Compression)	0.1 N to 588.39 kN	0.12 % of reading	Reference Force Transducer	NMX-CH-7500-1-INMC NMX-CH-376-INMC	F1, F2	F, O
Mass, Force, and Weighing Devices	Direct Verification of Durometer Hardness Tester (Types A, B, E & O) (Durometers Indenter Spring)	0.55 N to 8.05 N	0.011 N	Load Cell Interfase (Res.= 0.001 N)	ASTM D2240	F1, F2	F
Mass, Force, and Weighing Devices	Direct Verification of Durometer Hardness Tester (Types C, D, & DO) (Durometers Indenter Spring)	4.445 N to 44.45 N	0.089 N	Load Cell Interfase (Res.= 0.001 N)	ASTM D2240	F1, F2	F
Fluid Quantities	Special Containers, Volumetric Containers, Volumetric Measurement of Graduated Neck	10 mL to 20 000 mL	0.025 % of reading	OHAUS, EX6202 Electronic Balance WA30IX, Master Volumetric Container OHAUS, EX6202	ISO 4787 NMX-CH-049-IMNC OIML R120 CENAM Technical Guide	F1, F2	F



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Contact Name: Efrain Calva. Phone: 442-220-7054

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Fluid Quantities	Volume Measurement Containers	200 L to 30 000 L (Res.= 0.01 L)	0.11 % of reading	Flow Meter, Brand: Micro Motion Model: CMF200M419NQBUEZ ZZ Type Coriolis	OIML R120	F1, F2	F
Thermodynamic	Furnaces– Mufflers	0 °C to 420 °C	0.077 °C	RTD Brand: Wika, Model: CTP 5000-450-B Calibrator with Indicator ASL/WIKA CTR2000-024 Brand: Isotech Model: 1600 Thermocouple Type S & Dry Block Additel	MTK-LAB-T-01 Internal Procedure CENAM Technical Guide	F1, F2, F3	O
Thermodynamic	Furnaces– Mufflers	420 °C to 900 °C	2.4 °C	RTD Brand: Wika, Model: CTP 5000-450-B Calibrator with Indicator ASL/WIKA CTR2000-024 Brand: Isotech Model: 1600 Thermocouple Type S & Dry Block Additel	MTK-LAB-T-01 Internal Procedure CENAM Technical Guide	F1, F2, F3	O



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Thermodynamic	Radiation Thermometer	35 °C to 400 °C	0.7 °C	Fluke Black Body	MTK-LAB-T-01 Internal Procedure CENAM Technical Guide	F1, F2, F3	F, O
Thermodynamic	Radiation Thermometer	400 °C to 500 °C	2.5 °C	Fluke Black Body	MTK-LAB-T-01 Internal Procedure CENAM Technical Guide	F1, F2, F3	F, O
Thermodynamic	Liquids in Glass Thermometer	-25 °C to 420 °C	0.062 °C	RTD Brand: Wika, Model: CTP 5000-450-B Calibrator with Indicator ASL/WIKA CTR2000-024 Liquid bath Calibrator Sika Model TPM165S Liquid bath Calibrator Isotech Model Drago Dryblock Calibrator Additel Model ADT875PC-660	Direct Comparison Method MTK-LAB-T-01 Procedure	F1, F3	F



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Thermodynamic	Thermometer Direct Reading	-50 °C to 350 °C	0.11 °C	RTD Brand: Bourns, Model: WPP0G1-12-5A/LT40 Calibrator with Indicator WIKA, CTH7000 Dry Block Sika TP37200E.2 Fluke 9140 Calibrator, Dry Block ADDITEL ADT875PC-660 Direct Comparison Method	Direct Comparison Method MTK-LAB-T-01 Procedure	F1, F3	F, O
Thermodynamic	Thermometer Direct Reading	350 °C to 420 °C	0.21 °C	RTD Brand: Bourns, Model: WPP0G1-12-5A/LT40 Calibrator with Indicator WIKA, CTH7000 Thermocouple Type S Brand: Isotech Model: 1600 Indicator Fluke 754 Dry Block Fluke 9140, Dry Block , Additel ADT875PC-660, Additel ADT875PC-1210	Direct Comparison Method MTK-LAB-T-01 Internal Procedure	F1, F3	F, O



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Thermodynamic	Thermometer Direct Reading	420 °C to 1 197 °C	2.3 °C	RTD Brand: Bourns, Model: WPP0G1-12-5A/LT40 Calibrator with Indicator WIKA, CTH7000 Thermocouple Type S Brand: Isotech Model: 1600 Indicator Fluke 754 Dry Block Fluke 9140, Dry Block , Additel ADT875PC-660, Additel ADT875PC-1210	Direct Comparison Method MTK-LAB-T-01 Internal Procedure	F1, F3	F, O
Thermodynamic	Oven Calibration / System Accuracy Test (SAT)	-50 °C to 420 °C	0.11 °C	Data Logger Brand: Panran Model: PR2038	AMS2750 CQI-9	F1, F2	O
Thermodynamic	Oven Calibration / System Accuracy Test (SAT)	420 °C to 1 197 °C	2.3 °C	Data Logger Brand: Panran Model: PR2038	AMS2750 CQI-9	F1, F2	O



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Thermodynamic	Climatic Chambers, Refrigerating (Freezer) Chambers, Sterilizer & Incubators	-50 °C to 420 °C	0.11 °C	RTD Brand: Bourns, Model: WPP0G1-12-5A/LT40 Calibrator with Indicator WIKA, CTH7000 Thermocouple Type S Brand: Isotech Model: 1600 Indicator Fluke 754 Dry Block Fluke 9140, Dry Block, Additel ADT875PC-660, Additel ADT875PC-1210	Direct Comparison Method CENAM Technical Guide MTK-LAB-T-01 Internal Procedure	F1, F2, F3	O
Thermodynamic	Climatic Chambers, Refrigerating (Freezer) Chambers, Sterilizer & Incubators	420 °C to 900 °C	2.4 °C	RTD Brand: Bourns, Model: WPP0G1-12-5A/LT40 Calibrator with Indicator WIKA, CTH7000 Thermocouple Type S Brand: Isotech Model: 1600 Indicator Fluke 754 Dry Block Fluke 9140, Dry Block, Additel ADT875PC-660, Additel ADT875PC-1210	Direct Comparison Method CENAM Technical Guide MTK-LAB-T-01 Internal Procedure	F1, F2, F3	O



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Thermodynamic	Bi-Metal Thermometer	-25 °C to 420 °C	0.29 °C	RTD Brand: Wika, Model: CTP 5000-450-B Calibrator with Indicator ASL/WIKA CTR2000-024 Liquid bath Calibrator Sika Model TPM165S Liquid bath Calibrator Isotech, Model Drago Dryblock Calibrator Additel Model ADT875PC-660	Direct Comparison Method CENAM Technical Guide MTK-LAB-T-01 Internal Procedure	F1, F2, F3	F, O
Thermodynamic	Melt Flow Index Chamber (Temperature)	20 °C to 400 °C	0.1 °C	Thermometer with RTD Pt 100 Industrial (Res.= 0.01 °C)	Direct Comparison Method ASTM D1238	F1, F2	F, O
Thermodynamic	Oven, Furnaces, Muffles Climatic Chambers, Refrigerating (Freezer) Chambers, Fridge, Saline Chamber, Stove, Warehouse, Autoclave, Centrifuge, Bain-Marie, Sterilizer, Autoclave, Incubators, Oven Calibration	-50 °C to 950 °C	0.27 °C	Datalogger and Thermocouples with a Data Acquisition System	DKD-R-5-7	F1, F2	F, O



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Thermodynamic	Water Baths, Temperature Calipers, Dry Block Calibrator	-50 °C to 950 °C	0.083 °C	RTD, Thermocouple Type S	CENAM Technical Guide	F1, F2	F, O
Thermodynamic	Climatic Chamber (Relative Humidity)	10 % RH to 95 % RH	1.5 % RH	Set Dataloggers	DKD-R-5-7	F1, F2	F, O
Thermodynamic	Humidity Meter	10 % RH to 95 % RH	1.2 % RH	Digital Hygrometer, Vaisala MI70 Chamber of Humidity and Salts	CENAM Technical Guide MTK-LAB-H-01 Procedure	F1, F2, F3	F, O
Thermodynamic	Humidity Meter	97 % RH	1.2 % RH	Digital Hygrometer Vaisala MI70 Salt Certified by Vaisala	CENAM Technical Guide MTK-LAB-H-01 Procedure	F1, F2, F3	F, O
Chemical	Refractometer	0 °Brix to 75 °Brix	0.022 °Brix	Reference Solution INIMET	CENAM Technical Guide	F1, F2	F, O
Chemical	pH Meters	4 pH	0.014 pH	Reference Solution Fermont	CENAM Technical Guide	F1, F2	F, O
Chemical	pH Meters	7 pH	0.011 pH	Reference Solution Fermont	CENAM Technical Guide	F1, F2	F, O
Chemical	pH Meters	10 pH	0.02 pH	Sodium Carbonate and Sodium Carbonate Salts Certified in Ph	CENAM Technical Guide	F1, F2	F, O



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Chemical	Conductivity Meter	5 μ S	1 μ S	Conductivity Solutions & Aliquot Cenam, Aqueous Solution of 0.0003 mol/kg CENAM Aqueous Solution of 0.001 mol/kg Analytical Scale Mettler Toledo AT201, Mettler Toledo XP1203S	CENAM Technical Guide	F1, F2	F, O
Chemical	Conductivity Meter	10 μ S	1 μ S	Conductivity Solutions & Aliquot Cenam, Aqueous Solution of 0.0003 mol/kg CENAM Aqueous Solution of 0.001 mol/kg Analytical Scale Mettler Toledo AT201, Mettler Toledo XP1203S	CENAM Technical Guide	F1, F2	F, O
Chemical	Conductivity Meter	84 μ S	1 μ S	Conductivity Solutions & Aliquot Cenam, Aqueous Solution of 0.0003 mol/kg CENAM Aqueous Solution of 0.001 mol/kg Analytical Scale Mettler Toledo AT201, Mettler Toledo XP1203S	CENAM Technical Guide	F1, F2	F, O



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Chemical	Conductivity Meter	1 413 μ S	5 μ S	Conductivity Solutions & Aliquot Cenam, Aqueous Solution of 0.0003 mol/kg CENAM Aqueous Solution of 0.001 mol/kg Analytical Scale Mettler Toledo AT201, Mettler Toledo XP1203S	CENAM Technical Guide	F1, F2	F, O
Chemical	Conductivity Meter	12 880 μ S	50 μ S	Conductivity Solutions & Aliquot Cenam, Aqueous Solution of 0.0003 mol/kg CENAM Aqueous Solution of 0.001 mol/kg Analytical Scale Mettler Toledo AT201, Mettler Toledo XP1203S	CENAM Technical Guide	F1, F2	F, O
Chemical	Gas Detector & Gas Analyzer Oxygen (O ₂)	0.21 cmol/mol to 21 cmol/mol	1 % of reading	Reference Material 21 cmol/mol of O ₂ Gas Divider (1 to 100) %	MTK-LAB-DG-01 Internal Procedure	F1, F3	F
Chemical	Gas Detector & Gas Analyzer Oxygen (O ₂)	0.1 cmol/mol to 10 cmol/mol	1 % of reading	Reference Material 10 cmol/mol of O ₂ Gas Divider (1 to 100) %	MTK-LAB-DG-01 Internal Procedure	F1, F3	F



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Chemical	Gas Detector & Gas Analyzer Carbon Monoxide (CO)	10 $\mu\text{mol/mol}$ to 1 000 $\mu\text{mol/mol}$	1 % of reading	Reference Material 1 000 $\mu\text{mol/mol}$ of CO Gas Divider (1 to 100) %	MTK-LAB-DG-01 Internal Procedure	F1, F3	F
Chemical	Gas Detector & Gas Analyzer Methane (CH ₄)	0.03 cmol/mol to 3 cmol/mol	1 % of reading	Reference Material 3 cmol/mol of CH ₄ Gas divider (1 to 100) %	MTK-LAB-DG-01 Internal Procedure	F1, F3	F
Chemical	Gas Detector & Gas Analyzer Hydrogen Sulfide H ₂ S)	0.3 $\mu\text{mol/mol}$ to 30 $\mu\text{mol/mol}$	2.8 % of reading	Reference Material 30 $\mu\text{mol/mol}$ of H ₂ S Gas Divider (1 to 100) %	MTK-LAB-DG-01 Internal Procedure	F1, F3	F
Chemical	Gas Detector & Gas Analyzer Carbon Dioxide (CO ₂)	20 $\mu\text{mol/mol}$ to 2 000 $\mu\text{mol/mol}$	1 % of reading	Reference Material 2 000 $\mu\text{mol/mol}$ of CO ₂ Gas divider (1 to 100) %	MTK-LAB-DG-01 Internal Procedure	F1, F3	F
Chemical	Gas Detector & Gas Analyzer Carbon Dioxide (CO ₂)	0.2 cmol/mol to 20 cmol/mol	1 % of reading	Reference Material 20 cmol/mol of CO ₂ Gas Divider (1 to 100) %	MTK-LAB-DG-01 Internal Procedure	F1, F3	F
Chemical	Gas Detector & Gas Analyzer Nitric Oxide (NO)	50 $\mu\text{mol/mol}$ to 5 000 $\mu\text{mol/mol}$	1 % of reading	Reference Material 5 000 $\mu\text{mol/mol}$ of NO Gas Divider (1 to 100) %	MTK-LAB-DG-01 Internal Procedure	F1, F3	F
Chemical	Gas Detector & Gas Analyzer Sulfur Dioxide (SO ₂)	30 $\mu\text{mol/mol}$ to 3 000 $\mu\text{mol/mol}$	1 % of reading	Reference Material 3 000 $\mu\text{mol/mol}$ of SO ₂ Gas Divider (1 to 100) %	MTK-LAB-DG-01 Internal Procedure	F1, F3	F



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Chemical	Dynamic Viscosity	90 Pa•s to 100 kPa•s	2 % of reading	Canon Certified Reference Standards Oil 25 °C	ASTM D445	F1, F2	F
Optical	Luxmeter	20.6 lux to 4 400 lux	2 % of reading	Luxmeter Lutron Comparison CNM-MFO-PT-004 MTK-LAB-MO-01	CENAM Technical Guide	F1, F2	F
Electrical	Temperature Calibration Indication and Control Equipment Used with Thermocouple Type J	-100 °C to 0 °C	0.19 °C	Electrical Simulation of Thermocouple Process Calibrator Fluke 754 Instrument	MTK-LAB-T-01 Internal Procedure Direct Comparison Method	F1, F3	F, O
Electrical	Temperature Calibration Indication and Control Equipment Used with Thermocouple Type J	0 °C to 1 100 °C	0.29 °C	Electrical Simulation of Thermocouple Process Calibrator Fluke 754 Instrument	MTK-LAB-T-01 Internal Procedure Direct Comparison Method	F1, F3	F, O
Electrical	Temperature Calibration Indication and Control Equipment Used with Thermocouple Type K	-100 °C to 0 °C	0.23 °C	Electrical Simulation of Thermocouple Process Calibrator Fluke 754 Instrument	MTK-LAB-T-01 Internal Procedure Direct Comparison Method	F1, F3	F, O
Electrical	Temperature Calibration Indication and Control Equipment Used with Thermocouple Type K	0 °C to 1 200 °C	0.34 °C	Electrical Simulation of Thermocouple Process Calibrator Fluke 754 Instrument	MTK-LAB-T-01 Internal Procedure Direct Comparison Method	F1, F3	F, O



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Electrical	Temperature Calibration Indication and Control Equipment Used with Thermocouple Type S	0 °C to 1 200 °C	0.72 °C	Electrical Simulation of Thermocouple Process Calibrator Fluke 754 Instrument	MTK-LAB-T-01 Internal Procedure Direct Comparison Method	F1, F3	F, O
Electrical	Temperature Calibration Indication and Control Equipment Used with Thermocouple Type T	-100 °C to 0 °C	0.3 °C	Electrical Simulation of Thermocouple Process Calibrator Fluke 754 Instrument	MTK-LAB-T-01 Internal Procedure Direct Comparison Method	F1, F3	F, O
Electrical	Temperature Calibration Indication and Control Equipment Used with Thermocouple Type T	0 °C to 400 °C	0.2 °C	Electrical Simulation of Thermocouple Process Calibrator Fluke 754 Instrument	MTK-LAB-T-01 Internal Procedure Direct Comparison Method	F1, F3	F, O
Electrical	Temperature Calibration Indication and Control Equipment Used with RTD, Type Pt 100385	-200 °C to 0 °C	0.096 °C	Electrical Simulation of Thermocouple Process Calibrator Fluke 754 Instrument	MTK-LAB-T-01 Internal Procedure Direct Comparison Method	F1, F3	F, O
Electrical	Temperature Calibration Indication and Control Equipment Used with RTD, Type Pt 100385	0 °C to 420 °C	0.14 °C	Electrical Simulation of Thermocouple Process Calibrator Fluke 754 Instrument	MTK-LAB-T-01 Internal Procedure Direct Comparison Method	F1, F3	F, O
Electrical	Equipment to Measure DC Voltage	1 mV to 100 mV	6.5 μ V/V	Multifunctional Calibrator 1 000A Transmille	Euramet-cg-15 EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure DC Voltage	0.1 V to 1 V	3.9 μ V/V	Multifunctional Calibrator 1 000A Transmille	Euramet-cg-15 E 10/15	F1, F2	F, O
Electrical	Equipment to Measure DC Voltage	1 V to 10 V	4 μ V/V	Multifunctional Calibrator 1 000A Transmille	Euramet-cg-15 EA 10/15	F1, F2	F, O



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Electrical	Equipment to Measure DC Voltage	10 V to 100 V	5.8 μ V/V	Multifunctional Calibrator 1 000A Transmille	Euramet-cg-15 EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure DC Voltage	100 V to 1 000 V	9.1 μ V/V	Multifunctional Calibrator 1 000A Transmille	Euramet-cg-15 EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure AC Voltage (@ 10 Hz to 2 kHz)	30 mV to 100 mV	0.02 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet-cg-15 EA 10/15	F1, F2	F, O F, O
Electrical	Equipment to Measure AC Voltage (@ 10 Hz to 2 kHz)	100 mV to 1 V	0.013 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet-cg-15 EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure AC Voltage (@ 10 Hz to 2 kHz)	1 V to 10 V	0.011 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet-cg-15 EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure AC Voltage (@ 10 Hz to 2 kHz)	10 V to 100 V	0.012 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet-cg-15 EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure AC Voltage (@ 10 Hz to 2 kHz)	100 V to 1 000 V	0.011 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet-cg-15 EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure DC Current	10 μ A to 1 mA	25 μ A/A	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet-cg-15 EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure DC Current	1 mA to 10 mA	26 μ A/A	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet-cg-15 EA 10/15	F1, F2	F, O



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Electrical	Equipment to Measure DC Current	10 mA to 100 mA	30 μ A/A	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure DC Current	100 mA to 1 A	33 μ A/A	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure DC Current	1 A to 10 A	85 μ A/A	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure DC Current	0.01 A to 60 A	0.2 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure DC Current	1 A to 500 A	1.2 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure DC Current	1 A to 1 500 A	1.5 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure AC Current (@ 10 Hz to 2 kHz)	0.1 mA to 1 mA	0.33 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure AC Current (@ 10 Hz to 2 kHz)	1 mA to 10 mA	0.18 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O



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Metrosmart, S.A. de C.V.

Alcatraz 23, Paseo del Pedregal Salitre
El Salitre, Querétaro, México. C.P. 76223
Contact Name: Efrain Calva. Phone: 442-220-7054

Accreditation is granted to the facility to perform the following conformity assessment activities:

FIELD OF CALIBRATION	MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	EXPANDED MEASUREMENT UNCERTAINTY ($\pm$) ¹	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED	CALIBRATION MEASUREMENT METHOD OR PROCEDURES USED	FLEX CODE	LOCATION OF ACTIVITY
Electrical	Equipment to Measure AC Current (@ 10 Hz to 2 kHz)	10 mA to 100 mA	0.18 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure AC Current (@ 10 Hz to 2 kHz)	100 mA to 1 000 mA	0.25 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure AC Current (@ 10 Hz to 2 kHz)	1 A to 10 A	0.22 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure AC Current (@ 10 Hz to 2 kHz)	0.001 A to 60 A	0.2 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure AC Current (@ 10 Hz to 2 kHz)	0.01 A to 500 A	1.2 % of reading	Multifunctional Calibrator 1 000A Transmille Turn Clamp Coil 2, 10, 50	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure Capacitance	11 μ F	0.83 % of reading	Multifunctional Calibrator 1 000 A Transmille	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure Capacitance	101 μ F	0.83 % of reading	Multifunctional Calibrator 1 000 A Transmille	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure Capacitance	1.1 μ F	0.2 % of reading	Multifunctional Calibrator 1 000 A Transmille	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure Resistance	0.01 Ω to 10 Ω	0.033 % of reading	Multifunctional Calibrator 1 000 A Transmille Resistance Decade Tinsley	Euramet cg-15, EA 10/15	F1, F2	F, O



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Electrical	Equipment to Measure Resistance	10 Ω to 100 Ω	0.013 % of reading	Multifunctional Calibrator 1 000 A Transmille Resistance Decade Tinsley	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure Resistance	101 Ω to 1 k Ω	0.002 1 % of reading	Multifunctional Calibrator 1 000 A Transmille Resistance Decade Tinsley	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure Resistance	1.01 k Ω to 10 k Ω	0.002 % of reading	Multifunctional Calibrator 1 000 A Transmille Resistance Decade Tinsley	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure Resistance	10.1 k Ω to 100 k Ω	0.001 9 % of reading	Multifunctional Calibrator 1 000 A Transmille Resistance Decade Tinsley	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure Resistance	101 k Ω to 1M Ω	0.002 2 % of reading	Multifunctional Calibrator 1 000 A Transmille Resistance Decade Tinsley	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Measure Resistance	1.01 M Ω to 10 M Ω	0.003 6 % of reading	Multifunctional Calibrator 1 000 A Transmille Resistance Decade Tinsley	Euramet cg-15, EA 10/15	F1, F2	F, O



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Electrical	Equipment to Measure Resistance	10.1 M Ω to 100 M Ω	0.002 1 % of reading	Multifunctional Calibrator 1 000 A Transmille Resistance Decade Tinsley	Euramet cg-15, EA 10/15	F1, F2	F, O
Electrical	Equipment to Output DC Voltage (Hipot)	0.5 kV to 40 kV	1.2 % of reading Multimeter	Fluke 754 High voltage Probe	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output AC Voltage (Hipot)	0.5 kV to 28 kV	1.2 % of reading Multimeter	Fluke 754 High voltage Probe	CENAM Technical Guide	F1, F2	F, O
Electrical	Wrist Strap	1 k Ω to 100 G Ω	0.68 Ω	Decade Box	ANSI ESD SP9.2	F1, F2	F, O
Electrical	Foot Wear	100 G Ω to 1 T Ω	1.5 Ω	Decade Box	ANSI ESD SP9.2	F1, F2	F, O
Electrical	Equipment to Output Resistance	0.01 Ω to 10 Ω	0.033 % of reading	Resistance Decade Tinsley Cropico	RH9A-5	F1, F2	F, O
Electrical	Equipment to Output Resistance	10 Ω to 100 Ω	0.013 % of reading	Resistance Decade Tinsley Cropico	RH9A-5	F1, F2	F, O
Electrical	Equipment to Output Resistance	1 k Ω to 100 G Ω	0.68 % of reading	Resistance Decade Tinsley Cropico	RH9A-5	F1, F2	F, O
Electrical	Equipment to Output Resistance	100 G Ω to 1 T Ω	1.5 % of reading	Resistance Decade Tinsley Cropico s	RH9A-5	F1, F2	F, O
Electrical	Equipment to Output DC Voltage	20 mV to 200 mV	0.001 6 % of reading	Keysight 34461A Fluke 754, Fluke 725	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output DC Voltage	200 mV to 1 V	0.002 % of reading	Keysight 34461A Fluke 754, Fluke 725	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output DC Voltage	1 V to 10 V	0.001 8 % of reading	Keysight 34461A Fluke 754, Fluke 725	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output DC Voltage	10 V to 200 V	0.0016 % of reading	Keysight 34461A Fluke 754, Fluke 725	CENAM Technical Guide	F1, F2	F, O



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Electrical	Equipment to Output DC Voltage	100 V to 1 000 V	0.002 2 % of reading	Keysight 34461A Fluke 754, Fluke 725	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output AC Voltage (@ 50 Hz to 1 kHz)	100 mV to 200 mV	0.002 6 % of reading	Keysight 34461A Fluke 754, Fluke 725	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output AC Voltage (@ 50 Hz to 1 kHz)	200 mV to 2 V	0.003 % of reading	Keysight 34461A Fluke 754, Fluke 725	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output AC Voltage (@ 50 Hz to 1 kHz)	2 V to 20 V	0.003 3 % of reading	Keysight 34461A Fluke 754, Fluke 725	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output AC Voltage (@ 50 Hz to 1 kHz)	20 V to 200 V	0.003 6 % of reading	Keysight 34461A Fluke 754, Fluke 725	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output AC Voltage (@ 50 Hz to 1 kHz)	200 V to 700 V	0.004 2 % of reading	Keysight 34461A Fluke 754, Fluke 725	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output DC Current	2 mA to 20 mA	0.004 8 % of reading	Fluke 754, Fluke 725 Shunt 10 A @ 100 mV Shunt 100 A @ 100 mV Keysight 34461A	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output DC Current	20 mA to 200 mA	0.007 2 % of reading	Fluke 754, Fluke 725 Shunt 10 A @ 100 mV Shunt 100 A @ 100 mV Keysight 34461A	CENAM Technical Guide	F1, F2	F, O



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Electrical	Equipment to Output DC Current	100 mA to 2 A	0.038 % of reading	Fluke 754, Fluke 725 Shunt 10 A @ 100 mV Shunt 100 A @ 100 mV Keysight 34461A	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output DC Current	1 A to 10 A	0.051 % of reading	Fluke 754, Fluke 725 Shunt 10 A @ 100 mV Shunt 100 A @ 100 mV Keysight 34461A	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output DC Current	10 A to 100 A	0.065 % of reading	Fluke 754, Fluke 725 Shunt 10 A @ 100 mV Shunt 100 A @ 100 mV Keysight 34461A	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output AC Current (@ 50 Hz to 1 kHz)	2 mA to 20 mA	0.039 % of reading	Fluke 754, Fluke 725 Shunt 10 A @ 100 mV Shunt 100 A @ 100 mV Keysight 34461A	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output AC Current (@ 50 Hz to 1 kHz)	20 mA to 200 mA	0.04 % of reading	Fluke 754, Fluke 725 Shunt 10 A @ 100 mV Shunt 100 A @ 100 mV Keysight 34461A	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output AC Current (@ 50 Hz to 1 kHz)	200 mA to 2 A	0.045 % of reading	Fluke 754, Fluke 725 Shunt 10 A @ 100 mV Shunt 100 A @ 100 mV Keysight 34461A	CENAM Technical Guide	F1, F2	F, O



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Electrical	Equipment to Output AC Current (@ 50 Hz to 1 kHz)	2 A to 10 A	0.058 % of reading	Fluke 754, Fluke 725 Shunt 10 A @ 100 mV Shunt 100 A @ 100 mV Keysight 34461A	CENAM Technical Guide	F1, F2	F, O
Electrical	Equipment to Output AC Current (@ 50 Hz to 1 kHz)	10 A to 100 A	0.075 % of reading	Fluke 754, Fluke 725 Shunt 10 A @ 100 mV Shunt 100 A @ 100 mV Keysight 34461A	CENAM Technical Guide	F1, F2	F, O

1. The CMC (Calibration and Measurement Capability) is expressed in terms of measurement instrument/aspect being calibrated, range, expanded measurement uncertainty, equipment, and method/procedure. The expanded measurement uncertainty 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 measurement uncertainty included on this scope 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 laboratory's range of calibration capability for all disciplines for which it is 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. Location of activity:

**Location
Code**

- F Conformity assessment activity is performed at the CAB's fixed facility
O Conformity assessment activity is performed onsite at the CAB's customer location

Location



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Accreditation is granted to the facility to perform the following conformity assessment activities:

4. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratory's 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 laboratory's fixed location.
5. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.
6. Flex Codes

F0: When no flexibility is identified. There are no changes to items calibrated, characteristics identified or versions of methods except for updating to the most recent version of a standard method after verification.

F1: The laboratory has the capability to introduce a new instrument, quantity, or gauge for an accredited calibration method.

F2: The laboratory has the capability to introduce the newest revision of an accredited authoritative standard method (with no modifications) identified on the scope

F3: The laboratory has the capability to introduce a new revision of an accredited non-standard method using the same technology or technique identified on the scope

F4: The laboratory has the capability to introduce a validated method that is equivalent to an accredited method (using the same Calibration Equipment or Reference Standards identified on the scope for the same parameter, component, or analyte identified on the line item of the scope.