



INTERNATIONAL
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CERTIFICATE OF ACCREDITATION

This is to attest that

UL JAPAN, INC.
4383-326 ASAMA-CHO
ISE-SHI MIE-KEN, 5160021, JAPAN

Calibration Laboratory CL-236

has met the requirements of AC204, *IAS Accreditation Criteria for Calibration Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation.

Effective Date July 11, 2023

Expiration Date January 1, 2025



A handwritten signature in black ink that reads "Raj Nathan".

President

Visit www.iasonline.org for current accreditation information.

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

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Accredited to ISO/IEC 17025:2017

Effective Date July 11, 2023

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY ^{1,2} (\pm)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Dimensional			
Micrometer	2 mm 5 mm 10 mm	0.0009 mm 0.002 mm 0.002 mm	13-LO-W0852/ Block Gauge JIS B7506 - 2004 Grade 1
Caliper (Inside and Outside Vernier)	20 mm to 150 mm 150 mm to 300 mm	0.02 mm 0.075 mm	13-LO-W0852/ Mitutoyo Ceramic Caliper Checker CC-300C
Length Measurement (Test Fixtures, Depth Meter)	0.1 mm to 25 mm	0.004 mm	13-LO-W0852/ Mitutoyo Micrometer MDC- 25SX
	0.1 mm to 1 mm 1.01 mm to 10 mm	0.005 mm 0.02 mm	13-LO-W0852/ Mitutoyo Micrometer Head MHN1-25
	1 mm to 200 mm	0.07 mm	13-LO-W0852/ Mitutoyo Caliper CD-20AX
Length Measurement – Optical (Beam Profiler)	1 mm	0.015 mm	13-LO-W0852/ Glass Scale Astryda R-H1524
	1 mm to 3 mm	0.027 mm	
	3 mm to 6 mm	0.039 mm	
	6 mm to 10 mm	0.044 mm	
Mechanical			
Weights	50 g to 2000 g 2000 g to 4000 g	2.9 g 5.2 g	13-LO-W0852/ Weight Scale Yamato Koki USD-101
	4 kg to 60 kg 60 kg to 150 kg 150 kg to 220 kg	0.04 kg 0.1 kg 0.2 kg	13-LO-W0852/ Weight Scale A&D HV- 200KGV

* If information in this CMC is presented in non-SI units, the conversion factors stated in NIST Special Publication 811 "Guide for the Use of the International System of Units (SI)" apply.

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Weighing Scales	200 mg	0.05 mg	13-LO-W0852/ Standard Weight JIS Grade E2, 200 mg
	1 g	0.0001 g	13-LO-W0852/ Standard Weight JIS Grade E2, 1 g
	10 g	0.0004 g	13-LO-W0852/ Standard Weight JIS Grade F1, 10 g
	20 g	0.0005 g	13-LO-W0852/ Standard Weight JIS Grade F1, 20 g
	50 g	0.005 g	13-LO-W0852/ Standard Weight JIS Grade M1, 50 g
	100 g	0.008 g	13-LO-W0852/ Standard Weight JIS Grade M1, 100 g
	200 g	0.05 g	13-LO-W0852/ Standard Weight JIS Grade M1, 200 g
	500 g	0.2 g	13-LO-W0852/ Standard Weight JIS Grade M1, 500 g
	1 kg	0.0003 kg	13-LO-W0852/ Standard Weight JIS Grade M1, 1 kg
	2 kg	0.0003 kg	13-LO-W0852/ Standard Weight JIS Grade M1, 2 kg
	10 kg	0.004 kg	13-LO-W0852/ Standard Weight JIS Grade M1, 10 kg
	15 kg to 60 kg 60 kg to 150 kg	0.04 kg 0.11 kg	13-LO-W0852/ Weight Scale A&D HV-200 KGL
	Vibration Tester Acceleration	0.5 m/s ² to 500 m/s ²	6.5 %
0.03 mm to 10 mm		6.3 %	
3 Hz to 3000 Hz		4.7 %	13-LO-W0852/ Vibration Meter Rion VM-83 Pickup Sensor Rion PV-85 Universal Counter Iwatsu SC7205

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Shock Tester Acceleration (Peak)	100 m/s ² to 115 m/s ²	11 %	13-LO-W0852/ Oscilloscope Tektronix MSO54 350 MHz Vibration Meter Lion VM-83 Pickup Sensor Rion PV-90I
	115 m/s ² to 1500 m/s ²	12 %	
Duration	2 ms to 12 ms	1.6 %	13-LO-W0852/ Function Synthesizer NF 1941
Absolute Pressure Measure ³	7.5 kPa to 16 kPa	2 kPa	13-LO-W0852/ Okano Works MNV-104C11
Force Meter	100 N to 209 N	7 N	13-LO-W0852/ Compression Load Cell and Indicator Kyowa LCX-A-1KN-ID / WGA-670B-7
	210 N to 349 N	3 %	
	350 N to 1000 N	2 %	
	2 kN to 5.5 kN	0.1 kN	13-LO-W0852/ Compression Load Cell and Indicator, Kyowa LCX-A-20KN-ID / WGA-670B-7
	5.51 kN to 20 kN	2 %	
Atmospheric Meter	950 hPa to 1040 hPa	2 hPa	13-LO-W0852/ Sunoh Atmospheric Pressure Meter BR-55D
Thermal			
Temperature Sensor with Indicators/ Thermometer/ Temperature Gauges	10 °C to 40 °C	0.84 °C	13-LO-W0852/ Temperature and Humidity Meter Vaisala HM40/46 by comparison method
Temperature Chamber/Thermal Source/Recorder	-70 °C to 200 °C	0.93 °C	13-LO-W0852/ Digital Data Logger Yokogawa GP10/GX90XA with RTD JIS Class AA by Single Position Calibration (At Measuring location in DUC)
Humidity Meter	10 %RH to 85 %RH (at 20 °C to 40 °C)	2.5 %RH	13-LO-W0852/ Temperature and Humidity Meter Vaisala HM40 with HM46 by comparison method
Humidity Chamber / Recorder	10 %RH to 95 %RH (at 30 °C to 40 °C)	2.6 %RH	13-LO-W0852/ Digital Data Logger Yokogawa GP10/GX90XA Temperature and Humidity Sensor Vaisala HM337 by Single Position Calibration (At Measuring location in DUC)
	20 %RH to 95 %RH (at over 40 °C to 70 °C)	3.9% RH	

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MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY ^{1,2} (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Electrical – DC/LF			
DC Voltage Generate ³	0 mV to 329.9999 mV 330 mV to 3.299999 V 3.3 V to 32.99999 V 30 V to 329.9999 V 330 V to 1020 V	20 µV/V + 1 µV 11 µV/V + 2 µV 12 µV/V + 20 µV 18 µV/V + 150 µV 18 µV/V + 1500 µV	13-LO-W0852/ Using Multi-Function Calibrator Fluke 5522A by Direct method
DC Voltage Measure ⁴	2 mV to 40 mV 40 mV to 100 mV 0.1 V to 1 V 1 V to 10 V 10 V to 20 V 20 V to 100 V 100 V to 600 V 600 V to 1000 V 1.001 kV to 1.25 kV 1.251 kV to 6.1 kV 6.101 kV to 9.2 kV 9.201 kV to 10.5kV	0.01 mV 0.02 mV 0.00008 V 0.0005 V 0.002 V 0.007 V 0.05 V 0.1 V 0.03 kV 0.06 kV 1 % 2 %	13-LO-W0852/ Using Precision Multimeter Fluke 8845A & AC/DC High Voltage Meter JAPAN FINECHEM DHM-20A/MG1 by Direct method
AC Voltage Generate ³	1.0 mV to 32.999 mV (10 Hz to 45 Hz) (45 Hz to 10 kHz) 33 mV to 329.999 mV (10 Hz to 45 Hz) (45 Hz to 10 kHz) 0.33 V to 3.29999 V (10 Hz to 45 Hz) (45 Hz to 10 kHz) 3.3 V to 32.9999 V (10 Hz to 45 Hz) (45 Hz to 10 kHz) 33 V to 329.999 V (45 Hz to 1 kHz) 330 V to 1020 V (45 Hz to 1 kHz)	800 µV/V + 6 µV 150 µV/V + 6 µV 300 µV/V + 8 µV 150 µV/V + 8 µV 300 µV/V + 50 µV 150 µV/V + 60 µV 300 µV/V + 650 µV 150 µV/V + 600 µV 190 µV/V + 2 mV 300 µV/V + 10 mV	13-LO-W0852/ Using Multifunction Calibrator Fluke 5522A by Direct method
AC Voltage Measure ⁴	(10 Hz to 20 kHz) 10 mV to 20 mV 20 mV to 100 mV 0.1 V to 0.6 V 0.6 V to 1 V 1 V to 6 V 6 V to 20 V 20 V to 60 V 60 V to 100 V	0.09 mV 0.4 mV 0.002 V 0.004 V 0.02 V 0.08 V 0.2 V 0.4 V	13-LO-W0852/ Using Precision Multimeter Fluke 8845A & AC/DC High Voltage Meter JAPAN FINECHEM DHM-20A/MG1 by Direct method

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AC Voltage Measure ⁴ (continued)	100 V to 300 V 300 V to 750 V (50 Hz to 60 Hz) 0.751 kV to 1.5 kV 1.501 kV to 10.5 kV	1 V 2.5 V 0.04 kV 3 %	13-LO-W0852/ Using Precision Multimeter Fluke 8845A & AC/DC High Voltage Meter JAPAN FINECHEM DHM-20A/MG1 by Direct method
DC Current Generate ³	0 µA to 329.999 µA 329.999 µA to 3.29999 mA 3.29999 mA to 329.999 mA 329.999 mA to 1.09999 A 1.1 A to 2.99999 A 2.99999 A to 10.9999 A 11 A to 20.5 A 21 A to 1025 A	150 µA/A + 0.02 µA 100 µA/A + 0.05 µA 100 µA/A + 2.5 µA 200 µA/A + 40 µA 380 µA/A + 40 µA 500 µA/A + 500 µA 1000 µA/A + 1.5 mA 0.51 % + 0.6 A	13-LO-W0852/ Using Multifunction Calibrator Fluke 5522A and with current coil By Direct Method
DC Current Measure ⁴	10 µA to 100 µA 0.1 mA to 0.2 mA 0.2 mA to 1 mA 1 mA to 4 mA 4 mA to 20 mA 20 mA to 100 mA 0.1 A to 0.4 A 0.4 A to 1 A 1 A to 2 A 2 A to 3 A 3 A to 10 A 9.5 A to 100 A 9.5 A to 200 A	0.09 µA 0.0002 mA 0.0007 mA 0.005 mA 0.02 mA 0.07 mA 0.0005 A 0.001 A 0.003 A 0.005 A 0.02 A 0.39 % 0.42 %	13-LO-W0852/ Using Precision Multimeter Fluke 8845A By Direct Method 13-LO-W0852/ Resistive Divider Yokogawa 2215-13 & Precision Multimeter Fluke 8845A 13-LO-W0852/ Resistive Divider Yokogawa 2215-15 & Precision Multimeter Fluke 8845A
AC Current Generate ³	(45 Hz to 1 kHz) 29 µA to 329.99 µA 0.33 mA to 3.29999 mA 3.3 mA to 32.9999 mA 33 mA to 329.999 mA 0.33 A to 1.09999 A 1.1 A to 2.99999 A (45 Hz to 100 Hz) 3 A to 10.9999 A 11 A to 20.5 A	0.13 % + 0.1 µA 0.1 % + 0.15 µA 0.04 % + 2 µA 0.04 % + 20 µA 0.05 % + 100 µA 0.06 % + 100 µA 0.06 % + 2 mA 0.12 % + 5 mA	13-LO-W0852/ Using Multifunction Calibrator Fluke 5522A and with current coil By Direct Method

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MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY ^{1,2} (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
AC Current Generate ³ (continued)	(100 Hz to 1 kHz) 3 A to 10.9999 A 11 A to 20.5 A	0.1 % + 2 mA 0.15 % + 5 mA	13-LO-W0852/ Using Multifunction Calibrator Fluke 5522A and with current coil By Direct Method
	(45 Hz to 65 Hz) 21 A to 149.999 A 150 A to 550 A 550 A to 1025 A	0.58 % + 0.3 A 0.58 % + 0.9 A 0.58 % + 1 A	
	(100 Hz to 440 Hz) 21 A to 150 A 150 A to 1025 A	1.1 % + 0.3 A 1.5 % + 0.9 A	
AC Current Measure ⁴	(50 Hz to 60 Hz) 1 mA to 1.5 mA 1.5 mA to 10 mA 10 mA to 30 mA 30 mA to 100 mA 0.1 A to 0.3 A 0.3 A to 1 A 1 A to 3 A 3 A to 10 A	0.01 mA 0.03 mA 0.1 mA 0.25 mA 0.001 A 0.002 A 0.008 A 0.03 A	13-LO-W0852/ Using Precision Multimeter Fluke 8845A by Direct Method
DC Resistance Generate ³	0 Ω to 32.9999 Ω 33 Ω to 10.99999 kΩ 11 kΩ to 109.9999 kΩ 110 kΩ to 1.099999 MΩ 1.1 MΩ to 3.299999 MΩ 3.3 MΩ to 10.99999 MΩ 11 MΩ to 32.99999 MΩ 33 MΩ to 109.9999 MΩ 110 MΩ to 329.9999 MΩ	40 μΩ/Ω + 0.01 Ω 28 μΩ/Ω + 0.02 Ω 28 μΩ/Ω + 1 Ω 32 μΩ/Ω + 10 Ω 60 μΩ/Ω + 150 Ω 130 μΩ/Ω + 250 Ω 250 μΩ/Ω + 2.5 kΩ 500 μΩ/Ω + 3 kΩ 3000 μΩ/Ω + 100 kΩ	13-LO-W0852/ Using Multifunction Calibrator Fluke 5522A by Direct Method (By 2 Wire or 4 Wire)
	330 MΩ to 1100 MΩ	15000 μΩ/Ω + 500 kΩ	
	1 MΩ 10 MΩ 100 MΩ	0.013 MΩ 0.13 MΩ 1.3 MΩ	13-LO-W0852/ Using Standard Resister by Direct method, single value
DC Resistance Measure ⁴	1 Ω to 30 Ω 30 Ω to 100 Ω 0.1 kΩ to 0.2 kΩ 0.2 kΩ to 0.4 kΩ 0.4 kΩ to 1 kΩ 1 kΩ to 2 kΩ 2 kΩ to 5 kΩ 5 kΩ to 10 kΩ 10 kΩ to 20 kΩ 20 kΩ to 50 kΩ 50 kΩ to 100 kΩ	0.01 Ω 0.02 Ω 0.00005 kΩ 0.0001 kΩ 0.00015 kΩ 0.0005 kΩ 0.001 kΩ 0.0015 kΩ 0.005 kΩ 0.01 kΩ 0.02 kΩ	13-LO-W0852/ Using Precision Multimeter Fluke 8845A by Direct Method

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DC Power Generate ³ (at 33 mV to 1020 V)	0.01089 mW to 3058.98 W (0.33 mA to 2.9999 A)	0.023 %	13-LO-W0852/ Using Multifunction Calibrator Fluke5522A by Direct Method
	0.099 W to 20.91 kW (3 A to 20.5 A)	0.07 %	
	0.825 W to 1045.5 kW (0.5 A to 20.5 A)	0.8 %	
AC Power Generate ³ 1 phase, Unity PF	1.089 mW to 20.91 kW (0.33 A to 20.5 A, 3.3 V to 1020 V, 45 Hz to 65 Hz)	0.12 %	13-LO-W0852/ Using Multifunction Calibrator Fluke5522A by Direct Method
	1.089 W to 989.9937 W (0.33 mA to 20.5 A, 3.3 V to 329.999 V, 65 Hz to 1 kHz)	0.09 %	
	9.9 W to 6.7698 kW (3 A to 20.5 A, 3.3 V to 329.999 V, 65 Hz to 100 Hz)	0.17 %	
	9.9 W to 6.7698 kW (3 A to 20.5 A, 3.3 V to 329.999 V, 100 Hz to 1 kHz)	0.2 %	
	8.25 W to 1045 kW (25 A to 1025 A, 0.33 V to 1020 V, 45 Hz to 65 Hz)	1.2 %	
Voltage Generate ³ (for Voltage Probe)	0.8 V to 1000V DC Voltage	1.4 %	13-LO-W0852/ Using Multifunction Calibrator 5522A & Using Digital Oscilloscope Tektronix MSO54 350MHz
	AC Voltage (10 Hz to 500 kHz at 3 Vrms)	0.063 V	
DC Resistive Divider	19.5 mΩ to 20.5 mΩ (at 5 A)	0.09 mΩ	13-LO-W0852/ Using Multi-Function Calibrator 5522A & Precision Multimeter Fluke 8845A
Power Factor Generate ³	0.5 PF to 1 PF	0.0000016 PF	13-LO-W0852/ Using Multifunction Calibrator Fluke 5522A by Direct Method
Thermocouple Signal Generate ³	Type J -100 °C to 760 °C	0.17 °C	13-LO-W0852/ Using Multifunction Calibrator Fluke 5522A by Direct Method
	Type K -100 °C to 120 °C 120 °C to 1000 °C	0.18 °C 0.26 °C	

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Thermocouple Signal Generate ³ (continued) Type T	-150 °C to 0 °C 0 °C to 400 °C	0.24 °C 0.16 °C	13-LO-W0852/ Using Multifunction Calibrator Fluke 5522A by Direct Method
Time and Frequency			
Frequency Generate ³	0.01 Hz to 2.000 MHz	2.5 µHz/Hz + 5 µHz	13-LO-W0852/ Using Multifunction Calibrator 5522A By Direct Method
Frequency/ Time Duration Measure ⁴	0.08 µs to 8 s	0.21 %	13-LO-W0852/ Digital Oscilloscope Tektronix MSO54 350 MHz by comparison method
Time Duration Measure ⁴	5 s to 60 s 60 s to 1000 s 1000 s to 3600 s 1 h to 24 h	0.22 s 0.4 s 0.9 s 0.14 s	13-LO-W0852/ Using Stop Watch SEIKO S061-00A by comparison method and for 24 hr range by using Radio Synchronized Watch tester WT-2000 by Direct method
Frequency / Time Duration Measure ⁴	0.125 Hz to 0.16 Hz (8 s to 6.25 s) 0.16 Hz to 1 Hz (Less than 6.25 s to 1 s) 1 Hz to 12.5 MHz (Less than 1 s to 0.08 µs)	0.05 % 0.1 % 0.14 %	13-LO-W0852/ Digital Oscilloscope Tektronix MSO54 350 MHz by comparison method
Frequency Measure ⁴	40 Hz to 300 kHz	0.012 %	13-LO-W0852/ Using Precision Multimeter Fluke 8845A by Direct Method

¹The uncertainty covered by the Calibration and Measurement Capability (CMC) is expressed as the expanded uncertainty having a coverage probability of approximately 95 %. It is the smallest measurement uncertainty that a laboratory can achieve within its scope of accreditation when performing calibrations of a best existing device. The measurement uncertainty reported on a calibration certificate may be greater than that provided in the CMC due to the behavior of the calibration item and other factors that may contribute to the uncertainty of a specific calibration.

²When uncertainty is stated in relative terms (such as percent, a multiplier expressed as a decimal fraction or in scientific notation), it is in relation to instrument reading or instrument output, as appropriate, unless otherwise indicated.

³Capability is suitable for the calibration of measuring devices in the stated ranges.

⁴Capability is suitable for the calibration of devices intended to generate the indicated quantity in the stated ranges.

p-p = peak to peak
DUC = device under calibration
PF = power factor