



CERTIFICATE OF ACCREDITATION

This is to attest that

ACCURATE MEASUREMENT ESTABLISHMENT

BUILD NO.3037, AS SINAIYAH DIST., UNIT NO 3256, DAMMAM 32443
DAMMAM, 9559, KINGDOM OF SAUDI ARABIA

Calibration Laboratory CL-276

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 24, 2023

Expiration Date August 1, 2024



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

President

SCOPE OF ACCREDITATION

International Accreditation Service, Inc.

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ACCURATE MEASUREMENT ESTABLISHMENT

Contact Name Nizar Alif

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Accredited to ISO/IEC 17025:2017

Effective Date July 24, 2023

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)*

MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY ^{1,2} (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
Dimensional			
Caliper	0 mm to 150 mm 150 mm to 600 mm 600 mm to 1000 mm	7.4 µm 8.4 µm 16 µm	Direct method by using Slip Gauge Set and Length Bar, Caliper checker.
External micrometer	0 mm to 25 mm 25 mm to 100 mm 100 mm to 600 mm	0.84 µm 0.86 µm 1.7 µm	Direct method by using Slip Gauge Set and Length Bar.
Depth Gauge	0 mm to 600 mm	8.1 µm	Direct method by using Slip Gauge Block, Length Bar and Caliper checker.
Depth Micrometer	0 mm to 300 mm	1.3 µm	
Dial Gauge (Plunger type)	0 mm to 25 mm	1.4 µm	Direct method by using Dial Calibration Tester.
	25 mm to 50 mm	1.6 µm	Direct method by using Dial Calibration Tester/Slip Gauge Set.
Dial Gauge (Lever Type)	0 mm to 1 mm	3.0 µm	Direct method using Dial Calibration Tester.
Bore Dial Gauge (Transmission)	0 mm to 2 mm	1.1 µm	
Height Gauge	0 mm to 1000 mm	5.1 µm	Direct method using Slip Gauge Block, Length Bar and Caliper checker.
Internal Micrometer	25 mm to 600 mm	7.4 µm	Direct method using Slip Gauge Block, Caliper Checker, Slip gauge Accessories.
Thickness Gauge	0 mm to 50 mm	0.74 µm	Direct method using Slip Gauge Block.
Thickness Foil	0.01 mm to 2 mm	1.3 µm	Direct method using Micrometer.

* 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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Coating thickness gauge	0 µm to 1500 µm	2.0 µm	Direct method using Thickness Foils.
Feeler Gauge	Up to 2 mm	1.3 µm	Direct method using Micrometer.
Surface Plate	2500 mm x 2500 mm	$1.5 \times \sqrt{\{(L+W)/100\}}$ µm where L is length in mm and W is width in mm	Direct method by using Plunger Dial and Bridge Level.
Steel scale	0 mm to 1000 mm	0.28 mm	Direct method by using Tape & Scale Calibrator.
Measuring Tape	0 mm to 5000 mm	0.42 mm	
Pie Tape	0 mm to 3000 mm	0.28 mm	
Setting rod	25 mm to 600 mm	2.1 µm	Comparison Method by using Plunger, Slip Gauge and Length Bar.
LVDT Probe with indicator	Up to 100 mm	1.4 µm	Direct method by using Slip Gauge Set.
Test sieves	4 mm to 100 mm	18 µm	Direct Method by using Vernier Caliper.
Profile projector	Up to 200 mm (X&Y) direction	3.8 µm	Direct method by using Glass Scale, Angle gauge, Slip Gauge and Vernier Caliper.
	Angular 0° to 360°	0.018°	
	Magnification (100x)	0.03 %	
Microscope	0 mm to 10 mm	2.6 µm	Direct method by using Glass Scale.
Combination Set/ Bevel Protector	0° to 180°	0.04°	Direct method using Angle Gauge.
Templates (Flakiness & Elongation)	Up to 63 mm	18 µm	Direct method using Digital Vernier Caliper.
Cube Mould	200 mm x 200 mm	19 µm	
Length measuring machine	0 mm to 100 mm	1.4 µm	Direct method using Slip gauge set, Length Bar.
	100 mm to 500 mm	9.2 µm	
	500 mm to 1000 mm	11 µm	
Mechanical			
Pressure indicating devices- (Pressure Gauge/ Pressure Transmitter/ Pressure Transducer/ Pressure Chart Recorder)	0 bar to 200 bar	0.083 bar	Comparison Method by using reference Pressure Gauge.
	200 bar to 700 bar	0.73 bar	
Vacuum Gauge	-0.99 bar to 0 bar	0.009 bar	

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Weighing Balance	Up to 50 g 50 g to 220 g 220 g to 6200 g 6.2 kg to 36 kg 36 kg to 150 kg 150 kg to 500 kg	0.06 mg 0.45 mg 0.094 g 0.32 g 20 g 31 g	Direct Method by using Standard Weights (Class E2, F1, M1).
Batching & Hooper Scale	20 kg to 500 kg 500 kg to 5000 kg	0.84 kg 1.24 kg	Substitution method by using M1 class standard weights.
Mass (Standard Weight) Class F1	1 mg 2 mg 5 mg 10 mg 20 mg 50 mg 100 mg 200 mg 500 mg 1 g 2 g 5 g 10 g 20 g 50 g 100 g 200 g 500 g 1 kg 2 kg	0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.23 mg 0.26 mg 0.27 mg 0.08 g 0.08 g 0.08 g	Comparison Method (ABBA), by using E2 Class reference weights and weighing balance.
Mass (Standard Weight) Class M1	5 kg 10 kg 20 kg	0.08 g 0.12 g 0.12 g	Comparison Method (ABBA), using F1 Class reference weights and weighing balance.
Micro-Pipette	10 µl to 100 µl 100 µl to 1000 µl	0.9 µl 0.64 µl	Direct method by using Weighing Balance & Distilled water.
Volumetric Measurement (single mark glass ware, burettes, cylinders, beakers, flasks)	1 ml to 100 ml 100 ml to 1000 ml	0.04 ml 0.05 ml	
Torque Screwdriver/ Torque Wrench	0.5 N·m Up to 5 N·m 5 N·m to 20 N·m	0.63 % 0.44 %	Direct method by using Rotary Screwdriver Calibrator.
Torque Wrench	10 N·m to 100 N·m 100 N·m Up to 500 N·m 500 N·m to 2000 N·m	0.38 % 0.52 % 0.31 %	Direct method by using Torque Wrench Calibrator.
Universal Testing Machine/ Compression Testing Machine	1 kN to 100 kN 100 kN to 1000 kN	0.4 % 1.7 %	Direct method by using Load cell with indicator.

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(Compression mode)			Direct method by using Load cell with indicator.
Universal Testing Machine/ Tensile Testing Machine (Tension Mode)	1 kN to 100 kN	0.4 %	
Thermal			
Infrared Thermometer	50 °C to 500 °C	3.3 °C	Direct method by using IR Calibrator
Humidity/Temperature meter, RH sensor with indicator/Data logger, Thermo-hygro meter	20 %RH to 90 %RH @ 25 °C	2.1 %RH	Direct method by using Temperature & Humidity Chamber.
	10 °C to 45 °C @ 50 %RH	0.92 °C	
Temperature sensors (with / without indicator), Thermometer, Liquid in Glass Thermometer	-20 °C to 600 °C	0.71 °C	By Comparison method using reference SSPRT with Indicator and Liquid Bath/ Dry block.
Dry Block, Liquid Bath, Furnace, Oven, Incubator, Autoclave, Deep Freezer, Chiller (Single Sensor Method)	-20 °C to 20 °C	0.28 °C	By Direct Method Using Temperature sensor with indicator.
	20 °C to 90 °C	0.73 °C	
	90 °C to 600 °C	1.7 °C	
Furnace, Oven, Incubator, Autoclave, Deep Freezer, Chiller (Mapping – Multi Sensor Method)	-20 °C to 20 °C	1.3 °C	By Direct Method Using Temperature sensors with Data logger (9 sensors – Mapping method)
	20 °C to 300 °C	1.6 °C	
Electrical – DC/LF			
DC Voltage-Generate ³	0 mV to 100 mV	0.73 mV	By Comparison method using Multi-Function Calibrator
	100 mV to 1 V	0.001 V	
	1 V to 10 V	0.009 V	
	10 V to 100 V	0.071 V	
	100 V to 1 kV	0.59 V	
AC Voltage- Generate ³	20 mV to 100 mV (10 Hz to 20 kHz)	0.14 mV	
	100 mV to 1 V (10 Hz to 20 kHz)	0.001 V	
	1 V to 10 V (10 Hz to 20 kHz)	0.015 V	
	10 V to 100 V (40 Hz to 1 kHz)	0.15 V	
	100 V to 1 kV (40 Hz to 1 kHz)	1.5 V	

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DC current – Generate ³	0 µA to 100 µA 100 µA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 10 A	0.070 µA 0.001 mA 0.008 mA 0.074 mA 0.001 A 0.012 A	
DC Current- Generate ³ (2 turn Coil)	10 A to 20 A	0.24 A	By Comparison method using Multi-Function Calibrator & Clamp meter Adaptor
DC Current- Generate ³ (10 turn Coil)	10 A to 100 A	0.88 A	
DC Current- Generate ³ (50 turn Coil)	10 A to 500 A	3.4 A	
AC Current- Generate ³	10 µA to 100 µA (10 Hz to 2 kHz) 100 µA to 1 mA (10 Hz to 2 kHz) 1 mA to 10 mA (10 Hz to 2 kHz) 10 mA to 100 mA (10 Hz to 2 kHz) 100 mA to 1 A (10 Hz to 2 kHz) 1 A to 10 A (10 Hz to 2 kHz)	0.58 µA 0.007 mA 0.023 mA 0.23 mA 0.018 A 0.029 A	By Comparison method using Multi-Function Calibrator.
AC Current-Generate ³ (2 turn Coil)	10 A to 20 A @ 50 Hz	0.26 A	By Comparison method using Multi-Function Calibrator & Clamp meter Adaptor.
AC Current (10 turn Coil)	10 A to 100 A @ 50 Hz	0.89 A	
AC Current (50 turn Coil)	10 A to 500 A @ 50 Hz	3.4 A	
Resistance- Generate ³	0 Ω to 10 Ω 10 Ω to 100 Ω 100 Ω to 1 kΩ 1 kΩ to 10 kΩ 10 kΩ to 100 kΩ 100 kΩ to 1 MΩ 1 MΩ to 10 MΩ	0.005 Ω 0.04 Ω 0.014 Ω 0.004 kΩ 0.04 kΩ 0.001 MΩ 0.008 MΩ	By Comparison method using Multi-Function Calibrator
Capacitance @ 1 kHz	10 nF to 1 µF	0.007 µF	

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Insulation Test @ 100 V	250 kΩ to 100 MΩ	1.09 MΩ	By Comparison method using Multi-Function Calibrator (cont'd.)
Insulation Test @ 250 V	250 kΩ to 250 MΩ	2.80 MΩ	
Insulation Test @ 500 V	500 kΩ to 500 MΩ	5.54 MΩ	
Insulation Test @ 1000 V	1 MΩ to 1 GΩ	6.1 MΩ	
Electrical Simulation of Thermocouples-Generate ³			By Comparison method using Multi -Function Calibrator & Hand-held Multi-Function Calibrator.
Type K	-200 °C to 1370 °C	0.58 °C	
Type J	-200 °C to 1200 °C	0.44 °C	
Type T	-250 °C to 400 °C	0.27 °C	
Type R	0 °C to 1750 °C	0.88 °C	
Type S	0 °C to 1750 °C	0.79 °C	
Type N	-200 °C to 1300 °C	0.43 °C	
Type B	450 °C to 1800 °C	0.71 °C	
Type E	-200 °C to 1000 °C	0.43 °C	
Type L	-200 °C to 900 °C	0.79 °C	
Type U	-200 °C to 600 °C	0.93 °C	
Type C	0 °C to 2310 °C	1.62 °C	
RTD-Pt 100	-200 °C to -100 °C -100 °C to 800 °C	0.86 °C 0.6 °C	
Electrical Measurement ⁴			Comparison method by using Hand-held Multi-function Calibrator.
DC Voltage	10 mV to 30 V	0.007 V	
DC Current	1 mA to 24 mA	0.007 mA	
Frequency	20 mHz to 10 Hz 10 Hz to 100 Hz	0.0003 Hz 0.002 Hz	
Thermocouples-Measure			By Comparison method using Hand-held Multi-function Calibrator.
Type E	-200 °C to 1000 °C	0.43 °C	
Type J	-200 °C to 1200 °C	0.45 °C	
Type K	-200 °C to 1370 °C	0.59 °C	
Type T	-200 °C to 400 °C	0.45 °C	
Type B	450 °C to 1800 °C	0.84 °C	
Type R	0 °C to 1750 °C	0.88 °C	
Type S	0 °C to 1750 °C	0.82 °C	
Type N	-200 °C to 1200 °C	0.48 °C	
Frequency (Generate) ³	0.5 Hz to 50 Hz 50 Hz to 500 Hz 500 Hz to 5 kHz 5 kHz to 10 kHz 10 kHz to 100 kHz 1 MHz to 10 MHz 10 MHz to 50 MHz	0.040 Hz 0.06 Hz 0.14 Hz 1.2 Hz 5 Hz 7 Hz 9 Hz	

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MEASURED QUANTITY or DEVICE TYPE CALIBRATED	RANGE	UNCERTAINTY ^{1,2} (±)	CALIBRATION METHOD OR PROCEDURE, STANDARD EQUIPMENT (OPTIONAL)
<i>Time and Frequency</i>			
Timer LC:10 msec	0 min to 30 min 30 min to 5 Hr	1.2 sec 50 sec	By Comparison method using Digital stopwatch.
Centrifuge/ RPM Source (Non-Contact)	10 rpm to 1000 rpm 1000 rpm to 10000 rpm 10000 rpm to 50000 rpm 50000 rpm to 90000 rpm	4 rpm 10 rpm 38 rpm 59 rpm	Direct method by using Digital Tachometer.

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.

