



CERTIFICATE OF ACCREDITATION

This is to attest that

CALIBRATION LABORATORY W.L.L.

SY46 – C101

BARWA COMMERCIAL COMPLEX, 3321, QATAR

Calibration Laboratory CL-224

has met the requirements of AC204, *IAS Accreditation Criteria for Calibration Laboratories*, and has demonstrated compliance with the 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 maintained on the IAS website (www.iasonline.org).

This certificate is valid up to August 1, 2023.

(See laboratory's scope of accreditation for fields of calibration and accredited calibration.)



This accreditation certificate supersedes any IAS accreditation bearing an earlier effective date. The certificate becomes invalid upon suspension, cancellation or revocation of accreditation. See www.iasonline.org for current accreditation information, or contact IAS at 562-364-8201.



Raj Nathan
President



SCOPE OF ACCREDITATION

IAS Accreditation Number	CL-224
Accredited Entity	Calibration Laboratory W.L.L.
Address	SY46 - C101 Barwa Commercial Complex, 3321 Qatar
Contact Name	Gari Lee Alfiler
Telephone	(+974) 4441-6735
Effective Date of Scope	July 3, 2019
Accreditation Standard	ISO/IEC 17025:2017

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)^{1,2}

CALIBRATION AREA	RANGE	EXPANDED UNCERTAINTY ³ (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
<i>Dimensional</i>			
Vernier Caliper	Up to 200 mm	6 µm	0 Grade Gauge Block Set as per IS 3651
External Micrometer	Up to 150 mm	7 µm	0 Grade Gauge Block Set as per IS 2967
Dial Gauge	Up to 25 mm	7 µm	Dial Gauge Calibrator as per IS 2092
Measuring Tape /Scales	Up to 50 m	6 µm	Tape-Scale Measuring Machine as per OIML R 35-1
<i>Mechanical</i>			
Hydraulic Pressure -PRESSURE GAUGE	0 bar to 700 bar	0.08% FS	Pressure Calibrator based on DKD R-6-1
Pneumatic Pressure - PRESSURE GAUGE	0 bar to 200 bar	0.03% FS	Pressure Calibrator based on DKD R-6-1
Weighing Balance	1mg to 50g 50g to 200g 200g to 1000g 1kg to 20kg	0.02 mg 0.07mg 0.10 g 2.1 g	E2 Class Weights OIML R-76
	20 to 200 kg	11 g	M1 Class Weights as per OIML R -76
Weights	1 mg	0.009 mg	Using E2 Class Weights & High Precision Balance as per OIML R 111
	2 mg	0.009 mg	
	5 mg	0.009 mg	
	10 mg	0.009 mg	
	20 mg	0.009 mg	
	50 mg	0.009 mg	
	100mg	0.009 mg	
	200 mg	0.01mg	
	500 mg	0.01mg	
	1 g	0.01mg	
2 g	0.01mg		



SCOPE OF ACCREDITATION

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)^{1,2}

CALIBRATION AREA	RANGE	EXPANDED UNCERTAINTY ³ (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Weights continued	5 g	0.01mg	Using E2 Class Weights & High Precision Balance as per OIML R 111
	10 g	0.015mg	
	20 g	0.02mg	
	50 g	0.04mg	
	100 g	0.08mg	
	200 g	0.15mg	
	500 g	4.5 mg	Using E2 Class Weights & High Precision Balance as per OIML R 111
	1 kg	4.5 mg	
	2 kg	7.6 mg	Using E2 & F Class Weights & Mass Comparator as per OIML R 111
5 kg	15 mg		
10 kg	0.48 g		
20 kg	0.81 g		
Thermal			
Contract Type Temperature Probes (RTD, THERMOCOUPLE WITH / WITHOUT INDICATOR, TEMPERATURE)	-30 °C to 150 °C	0.082 °C	COMPARISON WITH FLUKE REF RTD 5628 & Fluke 1524 Reference Thermometer with FLUKE METROLOGY WELL 9171/ Fluke 7013 micro-bath AS SOURCE as per Euramet cg-08
Contract Type Temperature Probes (RTD, THERMOCOUPLE WITH / WITHOUT INDICATOR)	150 °C to 1200 °C	3.1 °C	COMPARISON WITH FLUKE REF S type Thermocouple 5650 & Fluke 1524 Reference Thermometer with FLUKE 9150 Calibrator as per cg-08
DRYBLOCK / Temperature Bath / Furnace	-35 °C to 660 °C 660 °C to 1200 °C	0.03 °C 1.3 °C	USING REF. PRT 5628 / S type TCS 5650 WITH reference thermometer Fluke 1524 as per DKD-R-5-7 & Euramet Cg-20
Non-Contact Temperature Sensor (IR THERMOMETER)	35 °C to 500 °C	1.4 °C	USING FLUKE 4181 IR CALIBRATOR as per MSL Technical Guide 22 & Manufacturer Specification
Humidity Sensor/ Thermohygrometer /Loggers/ Recorders	10 %RH to 95 %RH @18 °C to 25 °C	0.73 %RH	Using Fluke 5128 A Humidity Generator as per Manufacturer Specification
Oven, Chiller, Freezer	-30 °C to 250 °C	1.8 °C	Using Fluke 2638A Hydra Series III Data Acquisition System with Multi point sensors



SCOPE OF ACCREDITATION

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)^{1,2}

CALIBRATION AREA	RANGE	EXPANDED UNCERTAINTY ³ (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
<i>Electrical/DC/Low Frequency</i>			
AC Voltage Source ⁴ @ 50 Hz to 10 kHz	1.0 mV to 32.999 mV 33 mV to 329.999 mV 0.33 V to 3.29999 V 3.3 V to 32.9999 V 33 V to 329.999 V 330 V to 1020 V	0.027 % 0.016 % 0.017 % 0.019 % 0.017 % 0.024 %	DIRECT METHOD WITH FLUKE 5522A
DC Voltage Source ⁴	0 V to 329.9999 mV 0.33 V to 3.299999 V 3.3 V to 32.99999 V 33 V to 329.9999 V 330 V to 1020 V	0.53 % +0.4 μV 0.0023 % 0.00038 % 0.0046 % 0.014 %	DIRECT METHOD WITH FLUKE 5522A
DC Current Source ⁴	0 A to 32.9999 mA 33 mA to 329.999 mA 330 mA to 1.09999 A 1.1 A to 2.99999 A 3 A to 10.9999 A 11 A to 20 A 20 A to 1000 A	0.0041 % +6.0 nA 0.026 % 0.0051 % 0.0038 % 0.015 % 0.28 % 0.29 %	DIRECT METHOD WITH FLUKE 5522A with Current Coil
AC Current Source ⁴ @ 60 Hz	29 μA to 329.99 μA 0.33 mA to 3.2999 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 3 A to 10.9999 A 11 A to 20 A 20 A to 1000 A	0.12 % 0.08 % 0.039 % 0.036 % 0.052 % 0.34 % 0.1 % 0.14 % 0.23 %	DIRECT METHOD WITH FLUKE 5522A with Current Coil
DC Resistance Source ⁴	0 Ω to 10.999 Ω 11 Ω to 32.999 Ω 33 Ω to 109.999 Ω 110 Ω to 329.999 Ω 330 kΩ to 1.09999 kΩ 1.1 kΩ to 3.29999 kΩ 3.3 kΩ to 10.9999 kΩ 11 kΩ to 32.9999 kΩ 33 kΩ to 109.999 kΩ 110 kΩ to 329.999 kΩ 0.33 MΩ to 1.09999 MΩ 1.1 MΩ to 3.29999 MΩ 3.3 MΩ to 10.9999 MΩ 11 MΩ to 32.9999 MΩ 33 MΩ to 109.999 MΩ 110 MΩ to 329.999 MΩ 330 MΩ to 1100.00 MΩ	0.079 % +73μΩ 0.037 % 0.013 % 0.0035 % 0.0039 % 0.0068 % 0.0029 % 0.0045 % 0.0031 % 0.0048 % 0.0035 % 0.0081 % 0.013 % 0.028 % 0.075 % 0.29 % 0.041 %	DIRECT METHOD WITH FLUKE 5522A



SCOPE OF ACCREDITATION

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)^{1,2}

CALIBRATION AREA	RANGE	EXPANDED UNCERTAINTY ³ (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
Capacitance Source ⁴ @ 1kHz	1.1 nF to 3.299 nF 3.3nF to 10.999 nF 31 nF to 109.999 nF 110 nF to 329.999 nF 0.33 µF to 1.0999 µF 1.1 µF to 3.2999 µF 3.3 µF to 10.999 µF 11 µF to 32.999 µF 33 µF to 109.999 µF 110 µF to 329.999 µF 0.33 mF to 1.0999 mF 1.1 mF to 3.2999 mF 3.3 mF to 10.999 mF 11 mF to 32.999 mF 33 mF to 110 mF	1.2 % 0.28 % 0.28 % 0.091 % 0.28 % 0.33 % 0.28 % 0.42 % 0.45 % 0.45 % 0.42 % 0.45 % 0.43 % 0.66 % 0.91 %	DIRECT METHOD WITH FLUKE 5522A
Temperature Simulation of RTD and Thermocouples Type K/N/R/S/T/J - Source	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.33 % 1.3 % 0.27 % 0.033 % 0.024 %	DIRECT METHOD WITH FLUKE 5522A CALIBRATOR
Temperature Simulation of RTD and Thermocouples Type K/N/R/S/T/J - Measure	-200 °C to -100 °C -100 °C to -25 °C -25 °C to 120 °C 120 °C to 1000 °C 1000 °C to 1372 °C	0.16 % 0.63 % 0.13 % 0.021 % 0.018 %	DIRECT METHOD WITH FLUKE 5522A CALIBRATOR
DC Voltage Measure ⁵	0 V to 100 mV 0.100 V to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	0.025 % + 2.0 µV 0.022 % 0.021 % 0.021 % 0.022 %	DIRECT METHOD WITH FLUKE 8846A 6 1/2 DIGIT DMM
AC Voltage Measure ⁵	(50 Hz) 0.100 V to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V (10 kHz) 0.100 V to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	0.055 % 0.055 % 0.056 % 0.056 % 0.055 % 0.055 % 0.055 % 0.055 %	DIRECT METHOD WITH FLUKE 8846A 6 1/2 DIGIT DMM
DC Current Measure ⁵	0.100 mA to 10 mA 10 mA to 100 mA 0.100 A to 1 A 1 A to 3 A 3 A to 10 A	0.045 % 0.027 % 0.046 % 0.044 % 0.033 %	DIRECT METHOD WITH FLUKE 8846A 6 1/2 DIGIT DMM



SCOPE OF ACCREDITATION

CALIBRATION AND MEASUREMENT CAPABILITY (CMC)^{1,2}

CALIBRATION AREA	RANGE	EXPANDED UNCERTAINTY ³ (±)	TECHNIQUE, REFERENCE STANDARD, EQUIPMENT
AC Current Measure ⁵	(50 Hz to 1 kHz)		DIRECT METHOD WITH FLUKE 8846A 6 1/2 DIGIT DMM
	0.100 mA to 10 mA	0.072 %	
	10 mA to 100 mA	0.072 %	
	100 mA to 1 A	0.072 %	
	1 A to 3 A	0.091 %	
	3 A to 10 A	0.089 %	
DC Resistance Measure ⁵	1 Ω to 100 Ω	0.025 %	DIRECT METHOD WITH FLUKE 8846A 6 1/2 DIGIT DMM
	0.100 kΩ to 1 kΩ	0.022 %	
	1 kΩ to 100 kΩ	0.022 %	
	0.100 MΩ to 1 MΩ	0.022 %	
	1 MΩ to 10 MΩ	0.027 %	
	10 MΩ to 100 MΩ	0.053 %	
	0.100 GΩ to 1 GΩ	0.57 %	
Capacitance Measure ⁵	1 nF to 100 nF	0.63 %	DIRECT METHOD WITH FLUKE 8846A 6 1/2 DIGIT DMM
	0.100 μF to 1 μF	0.63 %	
	1 μF to 100 μF	0.68 %	
	0.100 mF to 1 mF	0.69 %	
	1 mF to 100 mF	1 %	

¹The uncertainty covered by the Calibration and Measurement Capability (CMC) is expressed as the expanded uncertainty having a specific coverage probability of approximately 95 %. It is the smallest measurement uncertainty that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than that provided in the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

²If 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.

³When 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.

⁴Capability is suitable for the calibration of measuring devices in the stated ranges.

⁵Capability is suitable for the calibration of devices intended to generate the measurand in the stated ranges.

FS = Full Scale