Accreditation Document
QATAR CALIBRATION SERVICES WII, NAL 019
Street 42, Industrial Area, Doha Qatar

SCOPE OF ACCREDITATION

#	Measurand	Measuring Range	CMC/ Best Measurement Capability (±)	Description of Method and Equipment Used
1	ELECTRICAL MEASUREMENT DC Voltage	0 – 330 mV	50.00 ppm	Fluke 8125003 Serial & 125003
		0 – 3.3 V	20.41 ppm	
		0 – 33 V	22.04 ppm	
		30 – 330 V	25.31 ppm	
		100 – 1000 V	24.18 ppm	
2	ELECTRICAL MEASUREMENT AC Voltage @ 50 Hz	0.33 – 3.3 V	306.12 ppm	Fluke 8125003 Serial & 125003
		3.3 – 33 V	316.33 ppm	
		33 – 330 V	372.86 ppm	
		330 – 1020 V	304.29 ppm	
3	ELECTRICAL MEASUREMENT DC Current	0 – 3.3 m A	292.88 ppm	Fluke 8125003 Serial & 125003
		3.3 – 33 m A	175.31 ppm	
		33 – 330 m A	175.51 ppm	
		0.33 - 1.1 A	326.53 ppm	
		1.1 – 11 A	455.17 ppm	
		11 – 20.5 A	0.1455 %	
4	ELECTRICAL MEASUREMENT AC Current @ 50 Hz	3.3 – 33 m A	541.38 ppm	Fluke 8125003 Serial & 125003
		33 – 330 m A	541.90 ppm	
		0.33 – 1.1 A	816.33 ppm	
		1.1 – 11 A	734.48 ppm	
		11 – 20.5 A	0.3724 %	
5	ELECTRICAL MEASUREMENT DC Resistance	0 - 11 Ohms	100.00 ppm	Fluke 8125003 Serial & 125003
		11 – 33 Ohms	56.00 ppm	
		33 – 110 Ohms	34.80 ppm	
		110 – 330 Ohms	54.70 ppm	
		330 – 1.1 K Ohms	30.00 ppm	
		1.1 – 3.3 K Ohms	45.00 ppm	
		3.3 – 11 K Ohms	33.00 ppm	
		11 – 33 K Ohms	43.50 ppm	
		33 – 110 K Ohms	32.80 ppm	
		110 – 330 K Ohms	46.90 ppm	
		330 K-1.1 M Ohms	44.46 ppm	
		1.1 – 3.3 M Ohms	115.50 ppm	

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		3.3 – 11 M Ohms	154.30 ppm	
6	ELECTRICAL MEASUREMENT DC Voltage	0.1 – 1 V	10.00 ppm	HP 3458 A, Serial 2323 A 18479
		1 – 10 V	8.89 ppm	
		10 – 100 V	12.00 ppm	
		100 – 1000 V	11.69 ppm	
7	ELECTRICAL MEASUREMENT AC Voltage @ 50 Hz	1.1 – 1 V	132.56 ppm	HP 3458 A, Serial 2323 A 18479
		2 – 10 V	132.22 ppm	
		10 – 100 V	282.56 ppm	
		100 – 700 V	528.01 ppm	
8	ELECTRICAL MEASUREMENT DC Current	1 µ A	644.44 ppm	HP 3458 A, Serial 2323 A 18479
		10 µ A	65.56 ppm	
		100 µ A	34.00 ppm	
		1 m A	30.00 ppm	
		10 m A	30.22 ppm	
		100 m A	47.27 ppm	
		1 A	140.00 ppm	
9	ELECTRICAL MEASUREMENT AC Current @ 50 Hz	100 µ A	0.1094 %	HP 3458 A, Serial 2323 A 18479
		1 m A	623.33 ppm	
		10 m A	603.22 ppm	
		100 m A	603.07 ppm	
		1 A	0.1411 %	
10	ELECTRICAL MEASUREMENT DC Resistance	10 Ohms	24.44 ppm	HP 3458 A, Serial 2323 A 18479 (4 – Wire Method)
		100 Ohms	20.33 ppm	
		1 K Ohms	11.11 ppm	
		10 K Ohms	12.22 ppm	
		100 K Ohms	12.22 ppm	
		1 M Ohms	22.22 ppm	HP 3458 A, Serial
		10 M Ohms	71.11 ppm	

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		100 M Ohms	594.89 ppm	2323 A 18479 (2 – Wire Method)
		1 G Ohms	700.00 ppm	
11	TEMPERATURE SOURCE Thermometers	-50 to 150 °C	0.036 °C	Calibration of thermometers by direct comparison with Isotech TTI-7 and Pt100 sensor P/N 935-14-61as a reference
		0 – 660 °C	0.07 °C	Calibration of thermometers by direct comparison with Isotech TTI-7 and Pt100 sensor P/N 935-14-95 as a reference
12	TEMPERATURE SOURCE Thermocouples	-50 to 150 °C	0.17 °C	Calibration of Thermocouples (Read out on Beamex MC5 Multifunction Calibrator) using Isotech TTI-7 and Pt100 sensor P/N 935-14-61 as Reference
		0 to 660 °C	0.20 °C	Calibration of Thermocouples (Read out on Beamex MC5 Multifunction Calibrator) using Isotech TTI-7 and Pt100 sensor P/N 935-14-95 as Reference

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#	Measurand	Measuring Range	CMC/ Best Measurement Capability (±)	Description of Method and Equipment Used
13	TEMPERATURE SOURCE RTD	-50 to 150 °C	0.07 °C	Calibration of RTD (Read out on Beamex MC5 Multifunction Calibrator) using Isotech TTI-7 and Pt100 sensor P/N 935-14-61 as Reference
		0 to 660 °C	0.09 °C	Calibration of RTD (Read out on Beamex MC5 Multifunction Calibrator) using Isotech TTI-7 and Pt100 sensor P/N 935-14-95 as Reference
14	PRESSURE Pneumatic pressure (gauge)	15 to 1000 mBar	175 ppm	Calibration of pressure measuring instruments using Budenberg 551 Dead Weight Tester Piston Cylinder unit 110K.
15	PRESSURE Pneumatic pressure (gauge)	0.5 - 30 Bar	52 ppm	Calibration of pressure measuring instruments using Budenberg 554 Dead Weight Tester. Piston Cylinder unit 085K.
16	PRESSURE Hydraulic Pressure(gauge)	6 – 60 Bar	99 ppm	Calibration of pressure measuring instruments using Budenberg 580VHX Dead Weight Tester. Piston Cylinder unit 866G.
		60 – 1400 Bar	137 ppm	Calibration of pressure measuring instruments using Budenberg 580VHX Dead Weight Tester. Piston Cylinder unit 110K.

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#	Measurand	Measuring Range	CMC/ Best Measurement Capability (±)	Description of Method and Equipment Used
17	PRESSURE Differential Pressure	10 – 1000 mBar	54 ppm	Bundenburg 5501 Serial No.: 9412 Mass set serial No.: 4360, 4361 and 9413
18	DIMENSION Orifice Plate as per ISO 5167-2: 2003		0.006 mm	Grade '0' metric guage block set Serial No.: 905218, Digimatic indicator, Serial No.: 9002348
	Orifice Bore Diameter			
	Bevel Angle	12 – 1000 mm	0.062°	Digital Protractor, Serial No.: 86953
	Orifice Edge Thickness		0.012 mm	Digital Depth Micrometer serial No.: 803760
	Plate Thickness		0.004 mm	Digital Micrometer Serial No.: 85073557
	Plate Flatness		0.026 mm	Tool makers straight edges, serial No.: MIT 15179, MIT 15180, MIT 15181, MIT 15182. Feeler Gauges, sl. No.: 100467/2
	Orifice Concentricity		0.03 mm	Vernier Caliper, sl. No.: 8394323, 1472
	Orifice Edge Sharpness / Radius		0.009 mm	Pin gauge, sl. No.: 54074/1, 54074/2, foil impression tool, microscope with still video camera
	Orifice Plate Surface Roughness		0.017 µm	Roughness standard, sl. No.: 32911 with surface roughness tester

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19	DIEMSION Length	0 – 25 mm	26.4 ppm	Grade '0' Metric Gauge Block set Grade '0' Serial No.: 905218
		25 – 100 mm	59.1 ppm	
		100 – 300 mm	23.06 ppm	
Best measurement capability expressed as uncertainty of a factor K=2 corresponding to a lever of confidence less than 95%				
END				
Program Manager's signature				