

# Accreditation Scope

**Emirates Calibration Services, NAL 130**  
**Calibration Laboratory, (ISO/IEC 17025:2017)**

**Mussafah Industrial Area, Abu Dhabi, UAE**

Issue Date: 11-07-2021

Expiry Date: 29-04-2022

Issue No: 04

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Radio Frequency Microwave	RF Power meter @ 0.1 MHz to 6 GHz	(-140 to 10) dBm	0.13 dB	ECS-GCP-RF-03:2019	P
	AM Modulation meters @ 0.010 GHz to 1.0 GHz	5 % to 25 %	1.1 %	ECS-GCP-RF-02:2019	
		25 % to 50 %	1.8 %		
		50 % to 75 %	2.6 %		
		75 % to 90 %	3.0 %		
	FM Modulation @ 20 Hz to 50 kHz	0.5 kHz to 1 kHz	12 Hz	ECS-GCP-RF-02:2019	
		1 kHz to 10 kHz	0.2 kHz		
		10 kHz to 50 kHz	0.9 kHz		
		50 kHz to 200 kHz	3.4 kHz		
	PM Modulation @ 20 Hz to 50 kHz	1 rad to 10 rad	0.08 rad	ECS-GCP-RF-02:2019	
10 rad to 25 rad		0.10 rad			
25 rad to 50 rad		0.15 rad			
Frequency	20 Hz to 20 GHz	$1.8 \cdot 10^{-7} \cdot f$	ECS-GCP-RF-01:2019		
Radio Frequency	Optical Power Meter, Laser Source	(-3 to -60) dBm	0.3 dB	ECS-GCP-FO-01:2020	P / S
Electrical Power	Single & 3 Phase AC Energy Power Meter	(3.0 to 510) V (0.02 to 115) A (-180 to 180) °	0.18 V 0.14 A 0.01 °	ECS-GCP-EM-01:2019	P / S
Time and Frequency	Stopwatch Timer Clock	1 s to 24 h	0.6 s	ECS-GCP-ST-01:2021	P / S
	Time Based Equipment / Oscilloscope / Rise time	10 ns to 5 s	0.02 %	ECS-GCP-OS-01: 2020	P / S
Electrical (Measure)	Pulse Width Rise Time	10 μs to 5 s	0.01 %	ECS-GCP-OS-01: 2020	P / S
	Overshoot	(1 to 100) mV	1.2 %		

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Electrical (Measure)	AC Voltage @ 40 Hz to 100 kHz	Up to 1 V	0.03 mV	ECS-GCP-EM-02:2020	P / S
		1 V to 10 V	0.30 mV		
		10 V to 100 V	2.5 mV		
		100 V to 1 kV	21 mV		
	DC voltage	Up to 100 mV	0.03 mV		
		100 mV to 10 V	0.30 mV		
		10 V to 100 V	3 mV		
		100 V to 1 kV	30 mV		
	AC Current @ 40 Hz to 1 kHz	Up to 100 mA	0.25 mA		
		100 mA to 3 A	0.45 mA		
		3 A to 600 A	2.0 A		
	DC Current	Up to 100 mA	0.25 mA		
		100 mA to 3 A	0.45 mA		
		3A to 600 A	2.0 A		
	Resistance	Up to 1 mΩ	0.01 mΩ		
		1 to 10 mΩ	0.03 mΩ		
		10 to 100 mΩ	0.25 mΩ		
		100 mΩ to 1 Ω	2.8 mΩ		
		1 Ω to 10 Ω	0.03 Ω		
		10 Ω to 100 Ω	0.25 Ω		
100 Ω to 1 kΩ		0.25 Ω			
1 kΩ to 10 kΩ		2.5 Ω			
10 kΩ to 100 kΩ		25 Ω			
100 kΩ to 1 MΩ		0.03 MΩ			
1 MΩ to 10 MΩ		0.25 MΩ			
10 MΩ to 100 MΩ		2.5 MΩ			
100 MΩ to 1 GΩ	0.03 GΩ				

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Electrical (Source)	AC Volt meter @ 40 Hz to 100 kHz	3 mV to 33 mV	0.01 mV	ECS-GCP-E-01:2019	P / S
		33 mV to 330 mV	0.06 mV		
		0.330 V to 3.3 V	0.60 mV		
		3.3 V to 33 V	5.9 mV		
		33 V to 330 V	0.07 V		
		330 V to 1020 V	0.37 V		
	DC Volt meter	3 mV to 33 mV	3.9 $\mu$ V		
		33 mV to 330 mV	8.8 $\mu$ V		
		0.330 V to 3.3 V	0.04 mV		
		3.3 V to 33 V	0.58 mV		
		33 V to 330 V	8.4 mV		
		330 V to 1020 V	0.02 V		
	DC Current meter/Clamp meter	3 $\mu$ A to 33 $\mu$ A	0.03 $\mu$ A		
		33 $\mu$ A to 330 $\mu$ A	0.08 $\mu$ A		
		0.330 mA to 3.3 mA	5.9 $\mu$ A		
		3.3 mA to 33 mA	0.06 mA		
		33 mA to 330 mA	0.58 mA		
		0.330 A to 3 A	6.0 mA		
		3 A to 20.5 A	0.06 A		
		20.5 A to 600 A	0.06 A		
	AC Current meter/clamp meter @ 40 Hz to 1 kHz	3 $\mu$ A to 33 $\mu$ A	0.16 $\mu$ A		
		33 $\mu$ A to 330 $\mu$ A	0.55 $\mu$ A		
		0.330 mA to 3.3 mA	3.8 $\mu$ A		
		3.3 mA to 33 mA	0.02 mA		
		33 mA to 330 mA	0.16 mA		
		0.330 A to 3 A	2.8 mA		
		3 A to 20.5 A	14 mA		
		20.5 A to 600 A	14 mA		

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Electrical (Source)	Frequency	0.1 Hz to 1 Hz	0.06 Hz	ECS-GCP-E-01:2019	P / S	
		1 Hz to 10 Hz	0.07 Hz			
		10 Hz to 100 Hz	0.09 Hz			
		100 Hz to 1000 Hz	0.58 Hz			
		1 kHz to 10 kHz	5.8 Hz			
		10 kHz to 100 kHz	0.06 kHz			
		100 kHz to 1000 kHz	0.58 kHz			
		1 MHz to 2 MHz	0.58 kHz			
	Resistance	Resistance	0.1 Ω to 11 Ω	0.50 mΩ	ECS-GCP-E-01:2019	P / S
			11 Ω to 33 Ω	0.68 mΩ		
			33 Ω to 110 Ω	1.3 mΩ		
			110 Ω to 330 Ω	10 mΩ		
			0.33 kΩ to 1.1 kΩ	0.06 Ω		
			1.1 kΩ to 3.3 kΩ	0.33 Ω		
			3.3 kΩ to 11 kΩ	0.46 Ω		
			11 kΩ to 33 kΩ	2.2 Ω		
			33 kΩ to 110 kΩ	4.6 Ω		
			110 kΩ to 330 kΩ	14 Ω		
			0.33 MΩ to 1 MΩ	0.05 kΩ		
			1.1 MΩ to 3.3 MΩ	0.42 kΩ		
			3.3 MΩ to 11 MΩ	1.8 kΩ		
			11 MΩ to 33 MΩ	19 kΩ		
			33 MΩ to 110 MΩ	0.06 MΩ		
			110 MΩ to 330 MΩ	1.4 MΩ		
			0.33 GΩ to 1.1 GΩ	0.02 GΩ		

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Electrical	Capacitance	0.35 nF to 1.1 nF	0.02 nF	ECS-GCP-E-01:2019	P / S
		1.1 nF to 3.3 nF	0.02 nF		
		3.3 nF to 11 nF	0.04 nF		
		11 nF to 33 nF	0.15 nF		
		33 nF to 109 nF	0.41 nF		
		109 nF to 300 nF	0.87 nF		
		0.300 $\mu$ F to 1.09 $\mu$ F	4.1 nF		
		1.09 $\mu$ F to 3 $\mu$ F	7 nF		
		3 $\mu$ F to 10.9 $\mu$ F	0.04 $\mu$ F		
		10.9 $\mu$ F to 30 $\mu$ F	0.09 $\mu$ F		
		30 $\mu$ F to 109 $\mu$ F	0.64 $\mu$ F		
		109 $\mu$ F to 300 $\mu$ F	0.93 $\mu$ F		
		0.300 mF to 1.09 mF	6.4 $\mu$ F		
		1.09 mF to 3 mF	8.7 $\mu$ F		
		3 mF to 10.9 mF	0.06 mF		
		10.9 mF to 30 mF	0.12 mF		
	30 mF to 109 mF	1.5 mF			
	Inductance	(1 to <10) $\mu$ H	12 %	ECS-GCP-E-01:2021	P / S
		(10 to <100) $\mu$ H	1.3 %		
		(0.1 to < 1) mH	0.2 %		
(0.001 to 1) H		0.06 %			

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Temperature Simulation	K - type	(-199 to 1370) °C	0.04 °C	ECS-GCP-T-01:2021	P / S
	N - type	(-199 to 1300) °C	0.04 °C		
	R - type	(0 to 1700) °C	0.09 °C		
	T – type	(-199 to 1370) °C	0.04 °C		
	J – type	(-199 to 1200) °C	0.03 °C		
	S – type	(10 to 1750) °C	0.1 °C		
	E – type	(-199 to 990) °C	0.2 °C		
	RTD-type: 385	(-189 to 660) °C	0.03 °C		
	Pt 100	(-189 to 660) °C	0.03 °C		
	RTD-type: 3916	(-180 to 550) °C	0.2 °C		
Temperature	Freezer Oven Refrigerator Incubator Furnace	(-60 to 100) °C	0.41 °C	ECS-GCP-T-01:2020	P / S
		(100 to 1000) °C	1.5 °C		
		(-200 to 100) °C	0.3 °C		
		(100 to 420) °C	0.5 °C		
	RTD Glass thermometer	(-40 to 200) °C	0.08 °C	ECS-GCP-T-01:2020	P
	Thermocouple Bimetallic	(-40 to 200) °C	0.4 °C	ECS-GCP-T-01:2020	P / S
	Thermometer Temperature Sensor	(30 to 100) °C	0.4 °C		
		(100 to 300) °C	0.6 °C		
(300 to 600) °C		1.5 °C			
Thermo-hygrometer Data loggers	(-20 to 60) °C	0.6 °C			
Dry Block Temperature Calibrator	(-40 to 600) °C	0.2 °C			

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Humidity & Air Temperature	Environment chambers/Rooms	(20 to 90) % RH (-20 to 60) °C	8 %RH 1.4 °C	ECS-GCP-T-01:2020	P / S
	Humidity Measuring Sensors/ Indicators	(25 to 75) %RH (7 to 90) °C	2.2 %RH 1.4 °C		P
		(25 to 75) %RH	4 %RH 1.4 °C		
Torque	Torque Wrench, Torque Transducer, Torque screwdriver, Torque Calibrator	(0.2 to 2) N.m	1.8 %	ECS-GCP-TW-01:2021	P / S
		(>2 to 40) N.m			
		(> 40 to 1500) N.m			
Force	Tension load cell Tension machine	(1 to 5000) kg	0.3 %	ECS-GCP-LC-01:2020	P / S
	Compression load cell Compression machine	(40 to 5000) kg	0.3 %		
		(10 to 100 000) kg	2.6 %		
Acoustic	Sound Level Meters / Calibrator	94.0 dB 114 dB	0.4 dB	ECS-GCP-SL-08:2019	P
Rotational Speed	Centrifuges	(0 to 100 000) RPM	1 RPM	ECS-GCP-E-09:2019	P / S
	Tachometer	(0 to 10 000) RPM	1 RPM		
Pressure	Pressure / Vacuum Pressure Meters, Pressure Sensors, Pressure Transducers	- 0.998 bar to 20 bar	4.2 mbar	ECS-GCP-P-01:2020	P / S
		0 bar to 700 bar	0.16 bar		
		-1 bar to 0 bar	1.8 mbar		
		0 bar to 30 bar	3.9 mbar		
		30 bar to 70 bar	0.05 bar		

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Mass	Balance	(0 to 200) g	0.65 mg	ECS-GCP-M-01:2019	P / S
		(0 to 1000) g	0.82 mg		
		(0 to 5000) g	7.2 mg		
		(0 to 20) kg	5.8 g		
		(0 to 1000) kg	0.06 kg		
	Weights	(1 to 500) mg	0.06 mg	ECS-GCP-M-02:2019	P / S
		(1 to 10) g	0.06 mg		
		20 g	0.07 mg		
		50 g	0.09 mg		
		100 g	0.16 mg		
		200 g	0.3 mg		
		(500 to 1000) g	5.8 mg		
		5 kg	5.8 mg		
		20 kg	0.58 g		
Volume	Micropipette	(10 to 100) µL	5 %	ECS-GCP-M-03:2020	P / S
		(> 100 to 1000) µL	1.5 %		
	Graduated Cylinder / Beaker / Flask	(50 to 220) mL	6 %		
Dimensional	Micrometer	(0 to 500) mm	(3 to 5) µm	ECS-GCP-D-01:2021	P / S
	Dial Gauge / Indicator	(0 to 150) mm	6 µm		
	Caliper	(0 to 500) mm	(12 – 30) µm		
	Inside diameter measurement	(0 to 300) mm	0.2 mm	ECS-GCP-D-02:2021	
	Outside Diameter and thickness measurements	(0 to 500) mm	40 µm		
	Depth measurement	(0 to 300) mm	0.2 mm		
	Angle blocks Protractor	0° – 180 °	1 °	ECS-GCP-D-01:2021	
<b>END</b>					