Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	DC Voltage - Source	(0 to 329.9999) mV	16×10^{-6} U + 0.77 µV	GMES-LAB-ECP-01:2018	P/S
		(330 mV to 3.299999) V	8.5×10^{-6} U + 6.6 µV		
		(3.3 to 32.99999) V	9.3×10^{-6} U + 21 µV		
		(33 to 329.9999) V	14×10^{-6} U + 0.12 mV		
		(330 to 1020) V	14×10^{-6} U + 1.2 mV		
	DC Current - Source	(0 to 329.999) µA	0.12×10^{-3} I + 16 nA	GMES-LAB-ECP-02:2018	P/S
		(330 µA to 3.29999 mA	78×10^{-6} I + 39 nA		
		(3.3 to 32.9999) mA	78×10^{-6} I + 0.19 µA		
		(33 to 329.999) mA	78×10^{-6} I + 1.9 µA		
		(330 mA to 1.09999) A	0.15×10^{-3} I + 31 µA		
		(1.1 to 2.99999) A	0.29×10^{-3} I + 31 µA		
		(3 to 10.9999) A	0.39×10^{-3} I + 0.39 mA		
		(11 to 20.5) A	0.78×10^{-3} I + 0.58 mA		
	Resistance - Source	(0 to 10.9999) Ω	31×10^{-6} R + 7.8 mΩ	GMES-LAB-ECP-03:2018	P/S
		(11 to 32.9999) Ω	23×10^{-6} R + 12 mΩ		
		(33 to 109.9999) Ω	22×10^{-6} R + 12 mΩ		
		(110 to 329.9999) Ω	22×10^{-6} R + 16 mΩ		
		(330 Ω to 1.099999) kΩ	22×10^{-6} R + 16 mΩ		
		(1.1 to 3.299999) kΩ	22×10^{-6} R + 0.16 Ω		
		(3.3 to 10.99999) kΩ	22×10^{-6} R + 78 mΩ		
		(11 to 32.99999) kΩ	22×10^{-6} R + 0.78 Ω		
		(33 to 109.9999) kΩ	22×10^{-6} R + 0.78 Ω		
		(110 to 329.99999) kΩ	25×10^{-6} R + 7.8 Ω		
		(330 to 1.099999) MΩ	25×10^{-6} R + 7.8 Ω		
		(1.1 to 3.299999) MΩ	47×10^{-6} R + 0.12 kΩ		
		(3.3 to 10.99999) MΩ	11×10^{-3} R + 0.19 kΩ		
		(11 to 32.99999) MΩ	0.19×10^{-3} R + 1.9 kΩ		
		(33 to 109.9999) MΩ	0.39×10^{-3} R + 2.3 kΩ		
		(110 to 329.9999) MΩ	2.3×10^{-3} R + 78 kΩ		
		(330 to 1100) MΩ	12×10^{-3} R + 0.39 MΩ		

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	AC Voltage - Source	(1.0 to 32.999) mV		GMES-LAB-ECP-01:2018	P/S
		(10 to 45) Hz	0.62×10^{-3} U + 10 µV		
		> 45 Hz to 10 kHz	0.12×10^{-3} U + 10 µV		
		(> 10 to 20) kHz	0.16×10^{-3} U + 10 µV		
		(> 20 to 50) kHz	0.78×10^{-3} U + 10 µV		
		(> 50 to 100) kHz	2.7×10^{-3} U + 14 µV		
		(> 100 to 500) kHz	6.2×10^{-3} U + 44 µV		
		(33 to 329.999) mV		GMES-LAB-ECP-01:2018	P/S
		(10 to 45) Hz	0.23×10^{-3} U + 11 µV		
		> 45 Hz to 10 kHz	0.11×10^{-3} U + 11 µV		
		(> 10 to 20) kHz	0.12×10^{-3} U + 11 µV		
		(> 20 to 50) kHz	0.27×10^{-3} U + 11 µV		
		(> 50 to 100) kHz	0.62×10^{-3} U + 30 µV		
		(> 100 to 500) kHz	1.6×10^{-3} U + 59 µV		
		(0.33 to 3.29999) V			
		(10 to 45) Hz	0.23×10^{-3} U + 44 µV		
		> 45 Hz to 10 kHz	0.12×10^{-3} U + 52 µV		
		(> 10 to 20) kHz	0.15×10^{-3} U + 52 µV		
		(> 20 to 50) kHz	0.23×10^{-3} U + 44 µV		
		(> 50 to 100) kHz	0.54×10^{-3} U + 0.11 mV		
		(> 100 to 500) kHz	1.9×10^{-3} U + 0.51 mV		
		(3.3 to 32.9999) V			
		(10 to 45) Hz	0.23×10^{-3} U + 0.51 mV		
		> 45 Hz to 10 kHz	0.12×10^{-3} U + 0.51 mV		
		(> 10 to 20) kHz	0.19×10^{-3} U + 0.51 mV		
		(> 20 to 50) kHz	0.27×10^{-3} U + 0.51 mV		
		(> 50 to 100) kHz	0.69×10^{-3} U + 1.2 mV		

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	AC Voltage - Source	(33 to 329.999) V		GMES-LAB-ECP-01:2018	P/S
		45 Hz to 1 kHz	0.15×10^{-3} U + 1.6 mV		
		(> 1 to 10) kHz	0.16×10^{-3} U + 4.6 mV		
		(> 10 to 20) kHz	0.19×10^{-3} U + 4.6 mV		
		(> 20 to 50) kHz	0.23×10^{-3} U + 4.6 mV		
		(> 50 to 100) kHz	1.6×10^{-3} U + 39 mV		
		(330 to 1020) V			
		45 Hz to 1 kHz	0.23×10^{-3} U + 7.8 mV		
		(> 1 to 5) kHz	0.19×10^{-3} U + 7.8 mV		
		(> 5 to 10) kHz	0.23×10^{-3} U +7.8 mV		
	AC Current - Source	(29 to 329.99) µA		GMES-LAB-ECP-02:2018	P/S
		(10 to 20) Hz	1.6×10^{-3} I + 78 nA		
		(> 20 to 45) Hz	1.2×10^{-3} I + 78 nA		
		> 45 Hz to 1 kHz	0.97×10^{-3} I + 78 nA		
		(> 1 to 5) kHz	2.3×10^{-3} I + 0.12 µA		
		(> 5 to 10) kHz	6.2×10^{-3} I + 0.16 µA		
		(> 10 to 30) kHz	12×10^{-3} I + 0.31 µA		
		(0.33 to 3.29999) mA			
		(10 to 20) Hz	1.6×10^{-3} I + 0.12 µA		
		(> 20 to 45) Hz	0.96×10^{-3} I + 0.12 µA		
		> 45 Hz to 1 kHz	0.77×10^{-3} I + 0.12 µA		
		(> 1 to 5) kHz	1.6×10^{-3} I + 0.16 µA		
		(> 5 to 10) kHz	3.9×10^{-3} I + 0.23 µA		
		(> 10 to 30) kHz	7.8×10^{-3} I + 0.46 µA		

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	AC Current - Source	(3.3 to 32.9999) mA		GMES-LAB-ECP-02:2018	P/S
		(10 to 20) Hz	1.4×10^{-3} I + 1.6 µA		
		(> 20 to 45) Hz	0.69×10^{-3} I + 1.6 µA		
		> 45 Hz to 1 kHz	0.31×10^{-3} I + 1.6 µA		
		(> 1 to 5) kHz	0.62×10^{-3} I + 1.6 µA		
		(> 5 to 10) kHz	1.6×10^{-3} I + 2.3 µA		
		(> 10 to 30) kHz	3.1×10^{-3} I + 3.1 µA		
		(33 to 329.999) mA		GMES-LAB-ECP-02:2018	P/S
		(10 to 20) Hz	1.4×10^{-3} I + 16 µA		
		(> 20 to 45) Hz	0.69×10^{-3} I + 16 µA		
		> 45 Hz to 1 kHz	0.31×10^{-3} I + 16 µA		
		(> 1 to 5) kHz	0.78×10^{-3} I + 39 µA		
		(> 5 to 10) kHz	1.6×10^{-3} I + 78 µA		
		(> 10 to 30) kHz	3.1×10^{-3} I + 0.15 mA		
		(0.33 to 1.09999) A			
		(10 to 45) Hz	1.4×10^{-3} I + 78 µA		
		> 45 Hz to 1 kHz	0.39×10^{-3} I + 78 µA		
		(> 1 to 5) kHz	4.6×10^{-3} I + 0.78 mA		
		(> 5 to 10) kHz	19×10^{-3} I + 39 mA		
		(1.1 to 2.99999) A			
		(10 to 45) Hz	1.4×10^{-3} I + 78 µA		
		> 45 Hz to 1 kHz	0.46×10^{-3} I + 78 µA		
		(> 1 to 5) kHz	4.6×10^{-3} I + 0.78 mA		
		(> 5 to 10) kHz	19×10^{-3} I + 3.9 mA		
		(3 to 10.9999) A			
		(45 to 100) Hz	0.46×10^{-3} I + 1.6 mA		
		>100 Hz to 1 kHz	0.78×10^{-3} I + 1.6 mA		
		(>1 to 5) kHz	23×10^{-3} I + 1.6 mA		

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	AC Current - Source	(11 to 20.5) A		GMES-LAB-ECP-02:2018	P/S
		(45 to 100) Hz	0.93×10^{-3} I + 3.9 mA		
		> 100 Hz to 1 kHz	1.2×10^{-3} I + 3.9 mA		
		(> 1 to 5) kHz	23×10^{-3} I + 3.9 mA		
	Capacitance - Source	(0.22 to 0.3999) nF	3.9×10^{-3} C + 7.8 pF	GMES-LAB-ECP-07:2018	P/S
		(0.4 to 1.0999) nF	3.9×10^{-3} C + 7.8 pF		
		(1.1 to 3.2999) nF	3.9×10^{-3} C + 7.8 pF		
		(3.3 to 10.9999) nF	1.9×10^{-3} C + 7.8 pF		
		(11 to 32.9999) nF	1.9×10^{-3} C + 7.8 pF		
		(33 to 109.999) nF	1.9×10^{-3} C + 7.8 pF		
		(110 to 329.999) nF	1.9×10^{-3} C + 23 pF		
		(0.33 to 1.09999) µF	1.9×10^{-3} C + 0.78 nF		
		(1.1 to 3.29999) µF	1.9×10^{-3} C + 2.3 nF		
		(3.3 to 10.9999) µF	1.9×10^{-3} C + 7.8 nF		
		(11 to 32.9999) µF	3.1×10^{-3} C + 23 nF		
		(33 to 109.999) µF	3.5×10^{-3} C + 78 nF		
		(110 to 329.999) µF	3.5×10^{-3} C + 0.23 µF		
		(0.33 to 1.09999) mF	3.5×10^{-3} C + 0.78 µF		
		(1.1 to 3.29999) mF	3.5×10^{-3} C + 2.3 µF		
		(3.3 to 10.9999) mF	3.5×10^{-3} C + 7.8 µF		
		(11 to 32.9999) mF	5.8×10^{-3} C + 23 µF		
		(33 to 110) mF	8.5×10^{-3} C + 80 µF		
	Frequency - Source	(0.01 to 119.99) Hz	1.9×10^{-6} + 3.9 µHz	GMES-LAB-ECP-07:2018	P/S
		(120.0 to 1199.9) Hz	1.9×10^{-6} + 3.9 µHz		
		(1.200 to 11.999) kHz	1.9×10^{-6} + 3.9 µHz		
		(12.00 to 119.99) kHz	1.9×10^{-6} + 3.9 µHz		
		(120.0 to 1199.9) kHz	1.9×10^{-6} + 3.9 µHz		
		(1.200 to 2.000 MHz	1.9×10^{-6} + 3.9 µHz		

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	DC Current / Clamp Meters	(0 to 54.9995) A	2.5×10^{-3} I + 50 mA	GMES-LAB-ECP-05:2018	P/S
		(55 to 149.9995) A	2.5×10^{-3} I + 50 mA		
		(150 to 549.995) A	2.5×10^{-3} I + 60 mA		
		(550 to 1025) A	2.7×10^{-3} I + 60 mA		
	AC Current / Clamp Meters	Frequency: (45 to 65) Hz		GMES-LAB-ECP-05 :2018	P/S
		(0 to 54.9995) A	2.5×10^{-3} I + 50 mA		
		(55 to 149.9995) A	2.6×10^{-3} I + 50 mA		
		(150 to 549.995) A	2.6×10^{-3} I + 0.11 A		
		(550 to 1025) A	2.8×10^{-3} I + 0.25 A		
	DC Voltage - Measure	(0 to 100) mV	40×10^{-6} U + 8.7 µV	GMES-LAB-ECP-04 :2018	P/S
		> 100 mV to 1 V	20×10^{-6} U + 9.1 µV		
		(> 1 to 10) V	16×10^{-6} U + 25 µV		
		(> 10 to 100) V	38×10^{-6} U + 0.61 mV		
		> 100 V to 1 kV	38×10^{-6} U + 6.1 mV		
		(> 1 to 20) kv	38×10^{-6} U + 6.1 mV		
	DC Current - Measure	(0 to 1) µA	0.51×10^{-3} I + 0.11 nA	GMES-LAB-ECP-05:2018	P/S
		(> 1 to 10) µA	0.51×10^{-3} I + 0.21 nA		
		(> 10 to 100) µA	0.51×10^{-3} I + 1.1 nA		
		> 100 µA to 1 mA	0.51×10^{-3} I + 0.11 µA		
		(> 1 to 10) mA	0.51×10^{-3} I + 2.1 µA		
		(> 10 to 100) mA	0.51×10^{-3} I + 5.1 µA		
		> 100 mA to 1 A	0.82×10^{-3} I + 0.12 mA		
		(> 1 to 3) A	2.1×10^{-3} I + 0.63 mA		
		(> 3 to 10) A	1.2 × I + 1 mA		
		> 10 to 2 kA	1.2 × I + 1 mA		

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	Resistance - Measure	(0 to 100) Ω	60 × 10 $^{-6}$ R + 42 mΩ	GMES-LAB-ECP-06:2018	P/S
		> 100 Ω to 1 kΩ	40 × 10 $^{-6}$ R + 52 mΩ		
		(> 1 to 10) kΩ	40 × 10 $^{-6}$ R + 50 mΩ		
		(> 10 to 100) kΩ	40 × 10 $^{-6}$ R + 0.51 Ω		
		> 100 kΩ to 1 MΩ	70 × 10 $^{-6}$ R + 5.1 Ω		
		(> 1 to 10) MΩ	0.31 × 10 $^{-3}$ R + 0.12 kΩ		
		(> 10 to 100) MΩ	3.1 × 10 $^{-3}$ R + 1.2 kΩ		
	AC Voltage - Measure	(> 1 to 20) kv @50Hz to 1kHz	0.71 × 10 $^{-3}$ U + 0.21 V	GMES-LAB-ECP-04:2018	P/S
		(1 to 100) mV			
		(3 to 5) Hz	5.1 × 10 $^{-3}$ U + 20 µV		
		(> 5 to 10) Hz	1.1 × 10 $^{-3}$ U + 20 µv		
		> 10 Hz to 20 kHz	0.51 × 10 $^{-3}$ U + 20 µV		
		(> 20 to 50) kHz	0.71 × 10 $^{-3}$ U + 40 µV		
		(> 50 to 100) kHz	1.5 × 10 $^{-3}$ U + 60 µV		
		(> 100 to 300) kHz	10 × 10 $^{-3}$ U + 0.11 mV		
		> 100 mV to 1 V			
		(3 to 5) Hz	5.1 × 10 $^{-3}$ U + 0.21 mV		
		(> 5 to 10) Hz	1.1 × 10 $^{-3}$ U + 0.21 mV		
		> 10 Hz to 20 kHz	0.51 × 10 $^{-3}$ U + 0.21 mV		
		(> 20 to 50) kHz	0.71 × 10 $^{-3}$ U + 0.31 mV		
		(> 50 to 100) kHz	1.5 × 10 $^{-3}$ U + 0.51 mV		
		(> 100 to 300) kHz	10 × 10 $^{-3}$ U + 11 mV		
		(> 1 to 10) V			
		(3 to 5) Hz	5.1 × 10 $^{-3}$ U + 21 mV		
		(> 5 to 10) Hz	1.1 × 10 $^{-3}$ U + 21 mV		
		> 10 Hz to 20 kHz	0.51 × 10 $^{-3}$ U + 21 mV		
		(> 20 to 50) kHz	0.71 × 10 $^{-3}$ U + 31 mV		
		(> 50 to 100) kHz	1.5 × 10 $^{-3}$ U + 51 mV		
		(> 100 to 300) kHz	10 × 10 $^{-3}$ U + 11 mV		

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	AC Voltage - Measure	(> 10 to 100) V		GMES-LAB-ECP-04:2018	P/S
		(3 to 5) Hz	5.1×10^{-3} U + 21 mV		
		(> 5 to 10) Hz	1.1×10^{-3} U + 21 mV		
		> 10 Hz to 20 kHz	0.51×10^{-3} U + 21 mV		
		(> 20 to 50) kHz	0.71×10^{-3} U + 31 mV		
		(> 50 to 100) kHz	1.5×10^{-3} U + 51 mV		
		(> 100 to 300) kHz	10×10^{-3} U + 0.11 V		
		> 100 V to 1 kV			
		(3 to 5) Hz	5.1×10^{-3} U + 0.21 V		
		(> 5 to 10) Hz	1.1×10^{-3} U + 0.21 V		
		> 10 Hz to 20 kHz	0.51×10^{-3} U + 0.21 V		
		(> 20 to 50) kHz	0.71×10^{-3} U + 0.21 V		
		(> 50 to 100) kHz	1.5×10^{-3} U + 0.38 V		
		(> 100 to 300) kHz	10×10^{-3} U + 0.75 V		
	AC Current - Measure	(0 to 100) µA		GMES-LAB-ECP-05:2018	P/S
		3 Hz to 5 kHz	1.1×10^{-3} I + 40 nA		
		(> 5 to 10) kHz	1.1×10^{-3} I + 40 nA		
		> 100 µA to 1 mA			
		3 Hz to 5 kHz	1.1×10^{-3} I + 0.41 µA		
		(> 5 to 10) kHz	1.1×10^{-3} I + 0.41 µA		
		(> 1 to 10) mA			
		3 Hz to 5 kHz	1.1 × I + 4.1 µA		
		(> 1 to 10) mA			
		(> 5 to 10) kHz	1.1 × I + 4.1 µA		
		(> 10 to 100) mA			
		3 Hz to 5 kHz	1.1×10^{-3} I + 41 µA		
		(> 5 to 10) kHz	1.1×10^{-3} I + 41 µA		
		> 100 mA to 1 A			
		3 Hz to 5 kHz	1.1×10^{-3} I + 0.41 mA		
		(> 5 to 10) kHz	1.1×10^{-3} I + 0.41 mA		

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	AC Current - Measure	(> 1 to 3) A		GMES-LAB-ECP-05:2018	P/S
		3 Hz to 5 kHz	2.3×10^{-3} I + 1.2 mA		
		(> 5 to 10) kHz	2.3×10^{-3} I + 1.2 mA		
		(> 3 to 10) A			
		3 Hz to 5 kHz	1.5 × I + 4.1 mA		
		(> 5 to 10) kHz	1.5 × I + 4.1 mA		
		> 10 A to 2 kA			
		(50 to 1) kHz	1.5 × I + 4.1 mA		
	Capacitance - Measure	(0 to 1) nF	5.1×10^{-3} C + 51 pF	GMES-LAB-ECP-07:2018	P/S
		(> 1 to 10) nF	4.1×10^{-3} C + 10 pF		
		(> 10 to 100) nF	4.1×10^{-3} C + 0.11 pF		
		> 100 to 1) µF	4.1×10^{-3} C + 11 nF		
		(> 1 to 10) µF	4.1×10^{-3} C + 10 nF		
		(> 10 to 100) µF	4.1×10^{-3} C + 0.11 µF		
	Frequency - Measure	(3 to 40) Hz	0.71×10^{-3} f	GMES-LAB-ECP-07:2018	P/S
		(> 40 to 100) Hz	0.31×10^{-3} f		
		(> 100 to 1) kHz	0.11×10^{-3} f		
		(> 1 to 300) kHz	0.11×10^{-3} f		
	DC Power - Source	(0 to 336.5) W	0.18×10^{-3} P	GMES-LAB-ECP-10:2018	P/S
		> 336.5 W to 3.06 kW	0.17×10^{-3} P		
		(> 3.06 to 20.9) kW	0.54×10^{-3} P		
	Defibrillator	(0 to 360) J	0.5%* J	GMES-LAB-ECP-17:2018	P/S

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	AC Power - Source	Frequency: (45 to 65) Hz, PF =1		GMES-LAB-ECP-10:2018	P/S
		(0 to 2.97) mW	1.1×10^{-3} P		
		(> 2.97 to 10.89) mW	0.81×10^{-3} P		
		(> 10.89 to 29.69) mW	1.1×10^{-3} P		
		(> 29.69 to 108.89) mW	0.81×10^{-3} P		
		(> 108.89 to 296.97) mW	1.1×10^{-3} P		
		(> 296.97 to 725.96) mW	0.81×10^{-3} P		
		> 725.96 mW to 1.48 W	1.1×10^{-3} P		
		(> 1.48 to 6.76) W	0.81×10^{-3} P		
		(> 6.76 to 9.17) W	0.92×10^{-3} P		
		(> 9.17 to 33.66) W	0.63×10^{-3} P		
		(> 33.66 to 91.79) W	0.92×10^{-3} P		
		(> 91.79 to 336.59) W	0.63×10^{-3} P		
		(> 336.59 to 917.90) W	0.82×10^{-3} P		
		> 917.90 W to 2.24 kW	0.75×10^{-3} P		
		(> 2.24 to 4.59) kW	0.92×10^{-3} P		
		(> 4.59 to 20.9) kW	0.82×10^{-3} P		
	Thermocouple – Simulation (source / Measurement)	B Type	0.5 ˚C	GMES-LAB-ECP-13:2018 GMES-LAB-ECP-14:2018	P/S
		(600 to 1820) ˚C			
		C Type	0.5 ˚C		
		0 to 2316 ˚C			
		E Type	0.5 ˚C		
		(-250 to 1000) ˚C			
		J Type			
		(-210 to -100) ˚C	0.21 ˚C		
		(> -100 to -30) ˚C	0.12 ˚C		
		(> -30 to 150) ˚C	0.11 ˚C		
		(> 150 to 760) ˚C	0.13 ˚C		
		(> 760 to 1200) ˚C	0.18 ˚C		

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	Thermocouple – Simulation (source / Measurement)	K Type (-200 to 1372) ˚C	0.5 ˚C	GMES-LAB-ECP-13:2018 GMES-LAB-ECP-14:2018	P/S
		L Type (-200 to 900) ˚C	0.5 ˚C		
		N Type (-200 to 1300) ˚C	0.5 ˚C		
		R Type (0 to 1767) ˚C	0.5 ˚C		
		S Type (0 to 1767) ˚C	0.5 ˚C		
		T Type (-250 to 400) ˚C	0.5 ˚C		
		U Type (-200 to 600) ˚C	0.43 ˚C		
	RTD - Simulation	Pt 385, 100 Ω (-200 to 800) ˚C	0.5 ˚C	GMES-LAB-ECP-13:2018 GMES-LAB-ECP-14:2018	P/S
		Pt 3926, 100 Ω (-200 to 630) ˚C	0.04 ˚C		
		Pt 3916, 100 Ω (-200 to 630) ˚C	0.5 ˚C		
		Pt 385, 200 Ω (-200 to 630) ˚C	0.5 ˚C		
		Pt 385, 500 Ω (-200 to 630) ˚C	0.5 ˚C		
		Pt 385, 1000 Ω (-200 to 630) ˚C	0.5 ˚C		
		Pt-Ni 385, 120 Ω (Ni120) (-80 to 260) ˚C	0.5 ˚C		
		Cu 427, 10 Ω (-100 to 260) ˚C	0.5 ˚C		

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Electrical	Oscilloscope	(0 to 100) V 10 ns to 5 s (0 to 600) MHz	0.6%	GMES-LAB-ECP-01:2018 GMES-LAB-ECP-07:2018	P/S
Time	Timer / stopwatch	(60 to 36000) s	0.6 s	GMES-LAB-ECP-16:2018	P/S
Rotational speed	Tachometer/ Rotation instrument speed (non-contact)	(60 to 99000) rpm	1 rpm + 1 digit	GMES-LAB-ECP-15:2018	P/S
Dimensional	Calipers	(0 – 300) mm	0.02 mm	GMES-LAB-DCP-02:2018	P
	External Micrometer	(0 – 25) mm	3.5 µm	GMES-LAB-DCP-01:2018	P
	Dial Gauge	(0 – 25) mm	3.5 µm	GMES-LAB-DCP-03:2018	P
Pressure - Pneumatic	Pressure gauges Transducers Calibrators Switches	(0 to 28) bar	1.0 * 10-4 * Pe + 0.5 mbar	DKD-R-6-1:2014	P
		(0 to 350) bar	0.02 %		P/S
Pressure - Hydraulic		(1 to 60) bar	2.0 * 10-4 * Pe + 2.0 mbar		P
		(> 60 to 1200) bar	3.5 * 10-4 * Pe + 15 mbar		
		(0 to 350) bar	0.02 %		P/S
Pressure - Vacuum		(-0.9 to 0) bar	0.02 %	DKD-R-6-2:2014	P/S
Flow	Gas Flow	(0 to 1) L/min (> 1 to 20) L/min (> 20 to 500) L/min	0.5 %	GMES-LAB-FCP-02:2018	P/S

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Temperature	Dry Block Calibrators	(-40 to 150) °C	0.08 °C	GMES-LAB-TCP-02:2018	P/S
		(> 150 to 400) °C	0.15 °C		
		(> 400 to 500) °C	0.25 °C		
		(> 500 to 660) °C	0.5 °C		
	Calibration of Thermocouple / RTD with indicator	(-40 to 300) °C	0.08 °C	GMES-LAB-TCP-06:2018	P/S
		(> 300 to 660) °C	0.15 °C		
	IR Thermometer	(35 to 120) °C	1.5 °C	GMES-LAB-TCP-04:2018	P
		(> 120 to 500) °C	3.5 °C		
	Air Temperature Sensors	(-40 to 150) °C	0.20 °C	GMES-LAB-TCP-07:2018	P
	(single point measurement) Liquid bath	(-30 to 250) °C	0.10 °C	GMES-LAB-TCP-01:2018	P/S
	(16 points measurements) Freezers, Refrigerator, Incubator, cold room, cold storage box, Autoclave, Oven, dryer, chamber	(-40 to 50) °C	0.3 °C	GMES-LAB-TCP-01:2018	P/S
		(> 50 to 400) °C	0.6 °C	GMES-LAB-TCP-01:2018	P/S

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae

Accreditation Scope

Gray Mackenzie Engineering Services L.L.C, NAL 148
Calibration Laboratory, (ISO/IEC 17025:2017)

118 Al Jadaf, Dubai, UAE

Issue Date: 10-01-2021 **Expiry Date: 09-01-2024**
Issue No: 01

Calibration Field / Quantity / Property	Measurand / Equipment	Measuring Range	CMC (k=2)	Calibration Method (Standard/ Internal Procedure)	Permanent lab (P) / Client-site (S)
Humidity	Relative Humidity Sensors	Air Temperature: (20 to 30) °C (10 to 90) %RH	2 % RH	GMES-LAB-TCP-07:2018	P
Mass	Weighing Balance	(0 to 50) g	0.3 mg	GMES-LAB-WCP-01:2018	S
		(> 50 to 200) g	1 mg		
		(> 200 to 500) g	2.5 mg		
		> 500 g to 1 kg	5 mg		
		(> 1 to 20) kg	3 g		
		(> 20 to 50) kg	8 g		
		(> 50 to 100) kg	16 g		
		(> 100 to 200) kg	30 g		
		(> 200 to 300) kg	46 g		
Volume	Micropipette Glass wares Pipettes Burettes Flasks Beakers Measuring Cylinder Measuring Jar	(10 to 100) µl	4 µl	GMES-LAB-VCP-01:2018	P
		> 100 µl to 1 ml	6 µl		
		(> 1 to 10) ml	6 µl		
		(> 10 to 20) ml	6 µl		
		(> 20 to 50) ml	6 µl		
		(> 50 to 100) ml	6 µl		
End					

ABU DHABI, UNITED ARAB EMIRATES أبوظبي، الإمارات العربية المتحدة - P.O.BOX 2166 ص.ب
DUBAI, UNITED ARAB EMIRATES دبي، الإمارات العربية المتحدة - P.O.BOX 48666 ص.ب
CALL CENTER 600 5655554 مركز الإتصال
www.enas.gov.ae