Issue date: 05 June 2025
Valid Until: -

NO: SAMM 218
(Issue 2, 05 June 2025 replacement
of SAMM 218 dated 05 June 2025)

LABORATORY LOCATION/ CENTRAL OFFICE:	Procal Services Sdn Bhd 2, Lorong Perda Utama 12 Bandar Perda 14000 Bukit Mertajam, Pulau Pinang , 14000, PULAU PINANG MALAYSIA
ACCREDITED SINCE :	05 JUNE 2025
FIELD(S) OF CALIBRATION:	DIMENSIONAL MASS FORCE TORQUE HEAT & TEMPERATURE ELECTRICAL

This laboratory has demonstrated its technical competence to operate in accordance with MS ISO/IEC 17025:2017 (ISO/IEC 17025:2017).

This laboratory's fulfillment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001 (see Joint ISO-ILAC-IAF Communiqué dated April 2017).

*** The uncertainty covered by the CMC is expressed as the expanded uncertainty corresponding to a coverage probability of approximately 95 % and have a coverage factor of k=2 unless stated otherwise.**

CENTRAL LOCATION	Procal Services Sdn Bhd 2, Lorong Perda Utama 12 Bandar Perda 14000 Bukit Mertajam, Pulau Pinang , 14000, Pulau Pinang
FIELD(S) OF CALIBRATION :	DIMENSIONAL, MASS, FORCE, TORQUE, HEAT & TEMPERATURE, ELECTRICAL

SCOPE OF CALIBRATION : DIMENSIONAL

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Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Caliper External	0 mm to 600 mm	0.015 mm	Calibrated using gauge block as based on ISO 13385:2019
External Micrometer Up To 25mm		1.3 µm	Calibrated using gauge block as based on ISO3611:2010
External Micrometer 50mm Frame	25mm tranverse	1.4 µm	Calibrated using gauge block as based on ISO3611:2010
External Micrometer 75mm Frame	25mm tranverse	1.5 µm	Calibrated using gauge block as based on ISO3611:2010
External Micrometer 100mm Frame	25mm tranverse	1.5 µm	Calibrated using gauge block as based on ISO3611:2010
External Micrometer 150mm Frame	25mm tranverse	2.0 µm	Calibrated using gauge block as based on ISO3611:2010
External Micrometer 200mm Frame	25mm tranverse	2.2 µm	Calibrated using gauge block as based on ISO3611:2010
External Micrometer 300mm Frame	25mm tranverse	2.5 µm	Calibrated using gauge block as based on ISO3611:2010
Height Gauge	0 mm to 300 mm 300 to 600 mm	4 µm 6 µm	Calibrated using gauge block as standards based on ISO 13225:2012
Dial Test Indicator	0 mm to 5 mm	2 µm	Calibrated usingdial gauge calibrator as standards based on BS2795:1981
Dial Gauge	0 mm to 25 mm	2 µm	Calibrated using dial gauge calibrator as standards based on BS907:2008
Digital Indicator	0 mm to 50 mm	2 µm	Calibrated using dial gauge Calibrator as standards according to BS907:2008
Feeler Gauge	0 mm to 3 mm	0.3 µm	Contact method using SLYVAC digital linear gauge according to JIS B7524:2008

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Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Coating Thickness Film	0 mm to 2 mm	0.3 µm	SLYVAC digital linear gauge according to BS5411:1980
Diameter Pin Gauge (diameter Only)	0 mm to 25 mm	0.7 µm	Calibrated by using UMM
Diameter Plain Plug Gauge (diameter Only)	25 mm to 100 mm	1.1 µm	Calibrated by using ULM
Plain Ring Gauge (diameter Only)	0 mm to 50 mm 50 mm to 100 mm	3.1 µm 2.0 µm	Calibrated by using UMM Calibrated using ULM
Gauge Block Set Grade '0' And Lower	0 mm to 25 mm Above 25 mm to 50 mm Above 50 mm to 75 mm Above 75 mm to 100 mm	0.08 µm 0.09 µm 0.10 µm 0.12 µm	Calibrated using gauge block comparison method according to ISO3650:1998
Thread Plug Gauge (major Diameter And Simple Pitch Diameter)	0 mm to 70 mm	0.001 mm	Calibrated using ULM
Thread Ring Gauge (minor Diameter And Simple Pitch Diameter)	3mm to 70mm	0.0025 mm	Calibrated using ULM
Radius Gauge	0.5 mm to 100 mm	0.008 mm	Calibrated using Profile Projector
Dial/digital Thickness Gauge	0 mm to 25 mm	0.002 mm	Calibrated using Gauge Blocks
Setting Rod	0 to 25 mm 25 mm to 100 mm 100 mm to 200 mm 200 mm to 300 mm	0.0005 mm 0.001 mm 0.002 mm 0.0028 mm	Calibrated using ULM

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SCOPE OF CALIBRATION : MASS

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Standard Weights	1mg 2mg 5mg 10mg 20mg 50mg 100mg 200mg 500mg 1g 2g 5g 10g 20g 50g 100g 200g 500g 1kg 2kg 5kg 10kg 20kg	6 µg 10 µg 10 µg 10 µg 10 µg 10 µg 10 µg 10 µg 20 µg 20 µg 20 µg 30 µg 30 µg 50 µg 0.2 mg 0.2mg 0.3mg 2mg 5mg 10mg 20mg 0.5g 0.20g	Calibrated using standard weights and balances as comparator using ABA Weighing Scheme

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SCOPE OF CALIBRATION : FORCE

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Force Tension Measuring Device	0kgf to 20kgf 20kgf to 50kgf 50kgf to 100kgf	0.002kgf 0.02kgf 0.2kgf	Calibrated using poise weights

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SCOPE OF CALIBRATION : TORQUE

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Torque Torque Measuring Device	0kgf.cm to 10kgf.cm 10kgf.cm to 100kgf.cm	0.016kgf.cm 0.13kgf.cm	Calibrated using poise weights as standards with reference to BS7882:2017
Torque Torque Tools	0N.m to 1N.m 1N.m to 10N.m 10N.m to 50N.m 50N.m to 100N.m 100N.m to 300N.m	0.003N.m 0.03N.m 0.1N.m 0.2N.m 0.4N.m	Calibrated using Torque Tester with reference to ISO6789-1:2017

SCOPE OF CALIBRATION : HEAT & TEMPERATURE

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Humidity Liquid In Glass Thermometer total Immersion partial Immersion	-20°C to 200°C -10 to 110°C	0.5°C 0.5°C	Comparison with PT100 as reference
Humidity Temperature Sensor thermocouple	-20°C to 200°C 200°C to 400°C 400°C to 600°C 600°C to 800°C 800°C to 1000°C 1000°C to 1200°C	0.5°C 1.9°C 1.9°C 2.9°C 3.3°C 4.2°C	Comparison with standard thermocouple/PT100 as reference
Humidity Prt	-20°C to 200°C	0.5°C	Comparison with SPRT as reference
Humidity Temperature Indicating Device k-type j-type t-type e-type r-type pt100	-100°C to 1300°C -100°C to 1200°C -100°C to 400°C -100°C to 950°C 0°C to 1700°C -100°C to 800°C	1.0°C 0.8°C 1.0°C 0.6°C 2.0°C 0.4°C	Calibration by electrical simulation
Humidity Temperature Measuring Devices	-20°C to 60°C	0.7°C	Calibrated by comparison with PT100 in Humidity Chambe
Humidity Thermohygro Measuring Device	15°C to 35°C 30% rh to 95%rh @ 23°C	0.7°C 5% rh	Calibrated by comparison with standard thermohygrometer in humidity chamber based on BS1339:2004

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SCOPE OF CALIBRATION : ELECTRICAL

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Measuring Instrument 1. Dc Voltage	0 mV to 330 mV 330 mV to 3.3 V 3.3 V to 33 V 33 V to 330 V 330 V to 1020 V	23 µV/V + 1.3 µV 13 µV/V + 2.4 µV 14 µV/V + 22 µV 21 µV/V + 0.13 mV 24 µV/V + 0.67 mV	Comparison with multiproduct calibrator
Measuring Instrument 2. Ac Voltage	0 to 1020 V	See Matrix A	Comparison with multiproduct calibrator
Measuring Instrument 3. Dc Current	0 µA to 330 µA 330 µA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 1.1 A 1.1 A to 3 A 3 A to 11 A 11 A to 20.5 A	0.17 mA/A + 24 nA 0.11 mA/A + 57 nA 0.12 mA/A + 0.29 µA 0.12 mA/A + 2.9 µA 0.23 mA/A + 45 µA 0.43 mA/A + 46 µA 0.58 mA/A + 0.57 mA 1.1 mA/A + 1.2 mA	Comparison with multiproduct calibrator
Measuring Instrument 4. Dc Current Clamp a. Hall Effect Clamps	10 A to 40 A 40 A to 200 A 200 A to 1000 A	5.6 mA/A + 78 mA 6.8 mA/A + 0.13 A 5.3 mA/A + 0.42 A	Comparison with multiproduct calibrator & Current Coil
Measuring Instrument 5. Ac Current	0 to 20.5 A	See Matrix B	Comparison with multiproduct calibrator
Measuring Instrument 6. Ac Current Clamp a. Hall Effect Clamps B. Wound Clamps	45 to 60 Hz 10 A to 40 A 40 A to 200 A 200 A to 1000 A 10 A to 40 A 40 A to 200 A 200 A to 1000 A	5.6 mA/A + 79 mA 6.8 mA/A + 0.13 A 5.4 mA/A + 0.46 A 4.2 mA/A + 11 mA 4.8 mA/A + 30 mA 2.8 mA/A + 0.43 A	Comparison with multiproduct calibrator & Current Coil

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Measuring Instrument 7. Resistance	0 ? to 11 ? 11 ? to 33 ? 33 ? to 110 ? 110 ? to 330 ? 330 ? to 1.1 k? 1.1 k? to 3.3 k? 3.3 k? to 11 k? 11 k? to 33 k? 33 k? to 110 k? 110 k? to 330 k? 330 k? to 1.1 M? 1.1 M? to 3.3 M? 3.3 M? to 11 M? 11 M? to 33 M? 33 M? to 110 M? 110 M? to 330 M? 330 M? to 1100 M?	46 µ?/? + 1.1 m? 34 µ?/? + 1.7 m? 33 µ?/? + 1.5 m? 32 µ?/? + 2.3 m? 33 µ?/? + 2.0 m? 32 µ?/? + 23 m? 33 µ?/? + 21 m? 32 µ?/? + 0.23 ? 33 µ?/? + 0.20 ? 37 µ?/? + 2.3 ? 38 µ?/? + 1.8 ? 69 µ?/? + 35 ? 0.15 m?/? + 56 ? 0.29 m?/? + 2.8 k? 0.58 m?/? + 3.6 k? 3.4 m?/? + 0.11 M? 17 m?/? + 0.54 M?	Comparison with multiproduct calibrator
Measuring Instrument 8. Capacitance	220 pF to 400 pF 400 pF to 1100 pF 1.1 nF to 3.3 nF 3.3 nF to 11 nF 11 nF to 33 nF 33 nF to 110 nF 110 nF to 330 nF 0.33 µF to 1.1 µF 1.1 µF to 3.3 µF 3.3 µF to 11 µF 11 µF to 33 µF 33 µF to 110 µF 110 µF to 330 µF 330 µF to 1.1 mF 1.1 mF to 3.3 mF	5.1 mF/F + 12 pF 5.5 mF/F + 12 pF 6.1 mF/F + 11 pF 2.9 mF/F + 11 pF 2.9 mF/F + 11 pF 2.9 mF/F + 11 pF 2.9 mF/F + 41 pF 2.9 mF/F + 1.1 nF 2.9 mF/F + 3.4 nF 2.9 mF/F + 11 nF 4.6 mF/F + 34 nF 5.3 mF/F + 0.11 µF 5.1 mF/F + 0.35 µF 5.1 mF/F + 1.1 µF 4.4 mF/F + 6.9 µF	Comparison with multiproduct calibrator
Measuring Instrument 9. Frequency	10 Hz to 120 Hz 120 Hz to 1200 Hz 1.2 kHz to 12 kHz 12 kHz to 120 kHz 120 kHz to 1200 kHz	2.5 µHz/Hz + 51 µHz 2.5 µHz/Hz + 0.49 mHz 2.4 µHz/Hz + 5.2 mHz 2.4 µHz/Hz + 52 mHz 2.4 µHz/Hz + 0.47 Hz	Comparison with multiproduct calibrator
Measuring Instrument 10. Dc Power	9 W to 20 kW	See Matrix C	Comparison with multiproduct calibrator
Measuring Instrument 11. Ac Power	9 W to 20 kW	See Matrix D	Comparison with multiproduct calibrator
Sourcing/generating Instrument 1. Dc Voltage	1 kV to 10 kV	5.7 mV/V + 3.4 V	Comparison with Precision High Voltage Meter

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Sourcing/generating Instrument 2. Ac Voltage	1 kV to 10 kV (50Hz)	11 mV/V + 10 V	Comparison with Precision High Voltage Meter
Sourcing/generating Instrument 3. Dc Voltage	0 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	6.6 µV/V + 1.0 µV 6.6 µV/V + 3.5 µV 7.3 µV/V + 21 µV 9.0 µV/V + 0.31 mV 8.2 µV/V + 4.0 mV	Direct measure with precision multimeter
Sourcing/generating Instrument 4. Dc Current	0 mA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A	20 mA/A + 9.3 nA 21 mA/A + 75 nA 38 mA/A + 0.72 µA 87 mA/A + 64 µA	Direct measure with precision multimeter
Measuring Instrument (Dc/ac & Low Frequency) Insulation Resistance	1 k? to 10 k? 10 ? to 100 k? 100 k? to 1 M? 1 M? to 10 M? 10 M? to 100 M? 100 M? to 1 G? 1 G? to 10 G? 10 G? to 100 G? 100 G? to 1 T?	0.58 m?/? 1.2 m?/? 2.5 m?/? 2.3 m?/? 2.3 m?/? 2.5 m?/? 5.7 m?/? 12 m?/? 12 m?/?	Comparison with Decade Resistance Box
Measuring Instrument (Dc/ac & Low Frequency) Fixed Lo Resistance (dc)	1 m? 10 m? 100 m? 1 ? 10 ?	0.28 µ? 2.0 µ? 17 µ? 0.15 m?/? 1.5 m?/?	Comparison with Precision Resistance Standard
Measuring Instrument (Dc/ac & Low Frequency) Fixed Lo Resistance (ac) (50 To 60) Hz	1 m? 10 m? 100 m? 1 ? 10 ?	1.2 µ? 13 µ? 0.12 m? 1.2 m?/? 12 m?/?	Comparison with Precision Resistance Standard
Generating Instruments (Dc/ac & Low Frequency) Dc Voltage	0 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	14 µV/V + 0.34 µV 10 µV/V + 0.34 µV 9.5 µV/V + 0.57 µV 12 µV/V + 34 µV 12 µV/V + 0.11 mV	Direct measure with precision multimeter
Generating Instruments (Dc/ac & Low Frequency) Ac Voltage	1 mV to 1000 V	See Matrix E	Direct measure with precision multimeter

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Generating Instruments (Dc/ac & Low Frequency) Dc Current	0 nA to 100 nA 100 nA to 1 µA 1 µA to 10 µA 10 µA to 100 µA 100 µA to 1 mA 1 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A	35 µA/A + 45 pA 23 µA/A + 45 pA 23 µA/A + 0.11 nA 23 µA/A + 0.91 nA 23 µA/A + 5.7 nA 23 µA/A + 57 nA 40 µA/A + 0.57 µA 0.14 mA/A + 11 µA	Direct measure with precision multimeter
	1 A to 2 A 2 A to 20 A 20 A to 100 A	0.15 mA/A 0.19 mA/A 0.28 mA/A	Comparison with Precision Resistance Standard
Generating Instruments (Dc/ac & Low Frequency) Ac Current	1 mA to 100 A	See Matrix F	Direct measure with precision multimeter
Generating Instruments (Dc/ac & Low Frequency) Resistance	0 ? to 10 ? 10 ? to 100 ? 100 ? to 1 k? 1 k? to 10 k? 10 k? to 100 k? 100 k? to 1 M? 1 M? to 10 M? 10 M? to 100 M? 100 M? to 1 G?	13 µ?/? + 0.12 µ? 11 µ?/? + 1.0 m? 6.3 µ?/? + 8.6 m? 6.3 µ?/? + 86 m? 6.3 µ?/? + 0.86 ? 12 µ?/? + 9.8 ? 43 µ?/? + 0.32 k? 0.56 m?/? + 1.8 k? 5.6 m?/? + 23 k?	Direct measure with precision multimeter

SITE LOCATION (HQ)	1. Category I
FIELD(S) OF CALIBRATION :	DIMENSIONAL,ELECTRICAL,HEAT & TEMPERATURE,MASS,PRESSURE

SCOPE OF CALIBRATION : DIMENSIONAL

Material / Product Tested	**Type Of Test / Properties Measured / Range Of Measurement**	**Standard Test Methods / Equipment / Techniques**	**Remarks**
Profile Projector	0mm to 300mm	3.9µm	Calibrated using standard glass scale according to JIS7184:2021

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SCOPE OF CALIBRATION : MASS

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Weighing Instruments	Up to 200g Up to 500g Up to 1kg Up to 2kg Up to 5kg Up to 10kg Up to 20kg Up to 50kg Up to 100kg Up to 200kg Up to 300kg Up to 500kg Up to 1000kg	1mg 5mg 6mg 0.01g 0.05g 0.5g 0.7g 3g 7g 13g 22g 28g 80g	Calibrated usingstandard weightwith reference to ASTM E898- 20

SCOPE OF CALIBRATION : HEAT & TEMPERATURE

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Humidity Temperature Indicating Device k-type j-type t-type e-type r-type pt100	-100°C to 1300°C -100°C to 1200°C -100°C to 400°C -100°C to 950°C 0°C to 1700°C -100°C to 800°C	1.0°C 0.8°C 1.0°C 0.6°C 2.0°C 0.4°C	Calibration by electrical simulationby using temperature calibrator
Temperature Controlled Enclosure	-50°C to -20°C -20°C to 200°C 200°C to 500°C	1.0°C 1.1°C 1.6°C	With reference to TLAS G-20 by using temperature recorder with thermocouple sensors
	500°C to 600°C 600°C to 800°C 800°C to 1000°C	1.6°C 3.0°C 3.4°C	With reference to AS2853:1986 by using temperature recorder with thermocouple sensors
Temperature Sensor	-30 to 600°C 600°C to 1000°C 1000°C to 1200°C	0.5°C 2.0°C 3.0°C	Comparison with standard thermocouple/PT100 as reference

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SCOPE OF CALIBRATION : ELECTRICAL

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Measuring Instrument 1. Dc Voltage	0 mV to 330 mV 330 mV to 3.3 V 3.3 V to 33 V 33 V to 330 V 330 V to 1020 V	23 µV/V + 1.3 µV 13 µV/V + 2.4 µV 14 µV/V + 22 µV 21 µV/V + 0.13 mV 24 µV/V + 0.67 mV	Comparison with multiproduct calibrator
Measuring Instrument 2. Ac Voltage	0 to 1020 V	See Matrix G	Comparison with multiproduct calibrator
Measuring Instrument 3. Dc Current	0 µA to 330 µA 330 µA to 3.3 mA 3.3 mA to 33 mA 33 mA to 330 mA 330 mA to 1.1 A 1.1 A to 3 A 3 A to 11 A 11 A to 20.5 A	0.17 mA/A + 24 nA 0.11 mA/A + 57 nA 0.12 mA/A + 0.29 µA 0.12 mA/A + 2.9 µA 0.23 mA/A + 45 µA 0.43 mA/A + 46 µA 0.58 mA/A + 0.57 mA 1.1 mA/A + 1.2 mA	Comparison with multiproduct calibrator
Measuring Instrument 4. Dc Current Clamp a. Hall Effect Clamps	10 A to 40 A 40 A to 200 A 200 A to 1000 A	5.6 mA/A + 78 mA 6.8 mA/A + 0.13 A 5.3 mA/A + 0.42 A	Comparison with multiproduct calibrator &Current Coil
Measuring Instrument 5. Ac Current	0 to 20.5 A	See Matrix H	Comparison with multiproduct calibrator
Measuring Instrument 6. Ac Current Clamp a. Hall Effect Clamps B. Wound Clamps	45 to 60 Hz 10 A to 40 A 40 A to 200 A 200 A to 1000 A	5.6 mA/A + 79 mA 6.8 mA/A + 0.13 A 5.4 mA/A + 0.46 A	Comparison with multiproduct calibrator &Current Coil
	10 A to 40 A b40 A to 200 A 200 A to 1000 A	4.2 mA/A + 11 mA 4.8 mA/A + 30 mA 2.8 mA/A + 0.43 A	Comparison with multiproduct calibrator &Current Coil

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Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Measuring Instrument 7. Resistance	0 ? to 11 ? 11 ? to 33 ? 33 ? to 110 ? 110 ? to 330 ? 330 ? to 1.1 k? 1.1 k? to 3.3 k? 3.3 k? to 11 k? 11 k? to 33 k? 33 k? to 110 k? 110 k? to 330 k? 330 k? to 1.1 M? 1.1 M? to 3.3 M? 3.3 M? to 11 M? 11 M? to 33 M? 33 M? to 110 M? 110 M? to 330 M? 330 M? to 1100 M?	46 µ?/? + 1.1 m? 34 µ?/? + 1.7 m? 33 µ?/? + 1.5 m? 32 µ?/? + 2.3 m? 33 µ?/? + 2.0 m? 32 µ?/? + 23 m? 33 µ?/? + 21 m? 32 µ?/? + 0.23 ? 33 µ?/? + 0.20 ? 37 µ?/? + 2.3 ? 38 µ?/? + 1.8 ? 69 µ?/? + 35 ? 0.15 m?/? + 56 ? 0.29 m?/? + 2.8 k? 0.58 m?/? + 3.6 k? 3.4 m?/? + 0.11 M? 17 m?/? + 0.54 M?	Comparison with multiproduct calibrator
Measuring Instrument 8. Capacitance	220 pF to 400 pF 400 pF to 1100 pF 1.1 nF to 3.3 nF 3.3 nF to 11 nF 11 nF to 33 nF 33 nF to 110 nF 110 nF to 330 nF 0.33 µF to 1.1 µF 1.1 µF to 3.3 µF 3.3 µF to 11 µF 11 µF to 33 µF 33 µF to 110 µF 110 µF to 330 µF 330 µF to 1.1 mF 1.1 mF to 3.3 mF	5.1 mF/F + 12 pF 5.5 mF/F + 12 pF 6.1 mF/F + 11 pF 2.9 mF/F + 11 pF 2.9 mF/F + 11 pF 2.9 mF/F + 11 pF 2.9 mF/F + 41 pF 2.9 mF/F + 1.1 nF 2.9 mF/F + 3.4 nF 2.9 mF/F + 11 nF 4.6 mF/F + 34 nF 5.3 mF/F + 0.11 µF 5.1 mF/F + 0.35 µF 5.1 mF/F + 1.1 µF 4.4 mF/F + 6.9 µF	Comparison with multiproduct calibrator
Measuring Instrument 9. Frequency	10 Hz to 120 Hz 120 Hz to 1200 Hz 1.2 kHz to 12 kHz 12 kHz to 120 kHz 120 kHz to 1200 kHz	2.5 µHz/Hz + 51 µHz 2.5 µHz/Hz + 0.49 mHz 2.4 µHz/Hz + 5.2 mHz 2.4 µHz/Hz + 52 mHz 2.4 µHz/Hz + 0.47 Hz	Comparison with multiproduct calibrator
Measuring Instrument 10. Dc Power	9 W to 20 kW	See Matrix I	Comparison with multiproduct calibrator
Measuring Instrument 11. Ac Power	9 W to 20 kW	See Matrix J	Comparison with multiproduct calibrator
Sourcing/generating Instrument 1. Dc Voltage	1 kV to 10 kV	5.7 mV/V + 3.4 V	Comparison with Precision High Voltage Meter

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Sourcing/generating Instrument 2. Ac Voltage	1 kV to 10 kV (50Hz)	11 mV/V + 10 V	Comparison with Precision High Voltage Meter
Sourcing/generating Instrument 3. Dc Voltage	0 mV to 100 mV 100 mV to 1 V 1 V to 10 V 10 V to 100 V 100 V to 1000 V	55 µV/V + 4.2 µV 44 µV/V + 10 µV 39 µV/V + 65 µV 49 µV/V + 0.87 mV 49 µV/V + 14 mV	Direct measure with precision multimeter
Sourcing/generating Instrument 4. Dc Current	0 mA to 10 mA 10 mA to 100 mA 100 mA to 1 A 1 A to 3 A	0.56 mA/A + 2.3 mA 0.55 mA/A + 7.0 mA 1.1 mA/A + 0.72 µA 1.4 mA/A + 0.69 mA	Direct measure with precision multimeter

SCOPE OF CALIBRATION : PRESSURE

Material / Product Tested	Type Of Test / Properties Measured / Range Of Measurement	Standard Test Methods / Equipment / Techniques	Remarks
Pressure Measuring Device Vacuum	-0.9bar to 0bar	0.03bar	Calibrated with reference to AS 1349:1986 (R2018) using Pressure Tester
Pressure Measuring Device Pneumatic	0bar to 0.35bar 0.35bar to 6bar 6bar to 20bar	0.0012bar 0.004bar 0.03bar	Calibrated with reference to AS 1349:1986 (R2018) using Pressure Tester
Pressure Measuring Device Hydraulic	0bar to 350bar	0.5 bar	Calibrated with reference to AS 1349:1986 (R2018) using Pressure Tester