Issue date: 06 April 2025
Valid Until: -

NO: SAMM 712

LABORATORY LOCATION/ CENTRAL OFFICE:	AdvanceCalLab, Advance Pact Sdn. Bhd. NO. 77, LEVEL 2, JALAN MH1, TAMAN MUZAFFAR HEIGHT, AYER KEROH, MUKIM BUKIT KATIL , 75450, MELAKA MALAYSIA
ACCREDITED SINCE :	06 APRIL 2025
FIELD(S) OF CALIBRATION:	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).

CENTRAL LOCATION	AdvanceCalLab, Advance Pact Sdn. Bhd. NO. 77, LEVEL 2, JALAN MH1, TAMAN MUZAFFAR HEIGHT, AYER KEROH, MUKIM BUKIT KATIL , 75450, Melaka
FIELD(S) OF CALIBRATION :	ELECTRICAL,

SCOPE OF CALIBRATION : ELECTRICAL

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Ac Current	100 to 600 pA	None	Generation using
	100 pA to 10 mA	None	Measurement
	2.5 mA to 0.4999 A	0.60 mA/A + 0.50	calibrator
	0 to 20.5A	See Matrix B	Fluke 5522A
	0 to 20.5A	See Matrix B	Fluke 5522A
	to 100A	See Matrix B	HP 3458A
	None		
	At 1 kHz	None	
	OAto1A	0.9 mA/A	
	1Ato3A	None	
	None	see Matrix F	Measurement

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	30A to 109.999A 45Hz to 1kHz 110A to 205A 45Hz to 1kHz	1.9mA/A+47mA	Measurement using Fluke 5522A and Fluke 5500A/Coil 50 Turn Coil
	205A to 549.995A	None	
	45Hz to 65Hz	4.7mA/A+0.78A	
	550A to 1025A	None	
	45Hz to 65Hz	4.8mA/A+0.69A	
	0.1Ato 100A	None	
	3 Hz to 5 Hz	1 mA/A + + 0.07 LA	
	5 Hz to 10 Hz	1.5 mA/A + + 0.07 HA	
	10 Hz to 5 kHz	None	
	1Ato3A	None	
	3 Hz to 5 Hz	1 mA/A + + 0.72 LA	
	5 Hz to 10 Hz	1.5 MAJA + + 1.17 PA	
	10 Hz to 5 kHz	None	
	to 10 mA 3 Hz to 5 kHz 5 kHz to 10 kHz	1mA/A++7.2 1.5 + + 11.7 PA	Direct measurement with 6 % digit
	10 mA to 100 mA	None	multimeter
	3 Hz to 5 kHz	1 mA/A + 0.07 mA	
	5 kHz to 10 kHz	1.5 + 0.12 mA	
	100 mA	None	
	3 Hz to 5 kHz	1 mA/A + 0.8 mA	
	5 kHz to 10 kHz	1.5 mA/A + 0.1 mA	
	1Ato3A	None	
	3 Hz to 5 kHz	1.5 + 2.3 mA	
	5 kHz to 10 kHz	1.5 + 2.4 mA	
	1Ato50A 10 Hz to 10 kHz	17 mA/A	Direct measurement with
	10 30 kHz to 300 kHz	21 mA/A	current probe and 6 % digit multimeter
	220 to 2.2A (see Matrix B)	(See Matrix B)	
	150 A to 1000 A	None	
	1000 Hz:	None	
	O0to10A 10Ato 100A	1.3 mA/A	Calibration using Valhalla 2575A
	5000 Hz:	None	
	O0to10A	1.3 mA/A	
	10Ato 100A	None	
	10000 Hz:	None	
	O0to10A	1.3 mA/A	
	10Ato 100A	None	
	See Matrix F	None	
	0 to 33 mA 0 to 330 mA 0to22A Oto11A	None	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	0.03 to 0.33 mA	None	
	10 Hz to 20 Hz	0.3 pA	
	20 Hz to 45 Hz	0.3 pA	
	45 Hz to 1 kHz	0.3 pA	
	1 kHz to 5 kHz 5 kHz to 10 kHz	0.3 pA 0.3 pA	
	0.33 to 3.3 mA	None	
	10 Hz to 45 Hz	3 yA	
	45 Hz to 1 kHz	3 yA	
	1 kHz to 5 kHz	3 yA	
	5 kHz to 10 kHz	3 yA	
	3.3 to 33 mA	None	
	10 Hz to 45 Hz	28	
	45 Hz to 1 kHz	28	Generation using
	1 kHz to 5 kHz	28	calibrator model
	5 kHz to 10 kHz	28	Fluke 5500A
	33 to 330 mA	None	
	10 Hz to 45 Hz	0.4mA	
	45 Hz to 1 kHz	0.4mA	
	1 kHz to 5 kHz	0.4mA	
	5 kHz to 10 kHz	0.4mA	
	0.33 to2.2A	None	
	10 Hz to 45 Hz	4mA	
	45 Hz to 1 kHz	4mA	
	1 kHz to 5 kHz	7mA	
	2.2to11A	None	
	45 Hz to 65 Hz	None	
	65 Hz to 500 Hz	13 mA	
	500 Hz to 1 KHz	14mA	
	10 Hz to 20 Hz 20 Hz to 45 Hz	None	
	45 Hz to 1 kHz	None	
	1 kHz to 5 kHz	None	
	5 kHz to 10 kHz	5 yA	
	0.33 to 3.3 mA	None	
	10 Hz to 45 Hz	5 yA	
	45 Hz to 1 kHz	5 yA	
	1 kHz to 5 kHz	None	
	5 kHz to 10 kHz	23	
	3.3 to 33 mA	None	
	10 Hz to 45 Hz	49 pA	
	45 Hz to 1 kHz 1 kHz to 5 kHz 5 kHz to 10 kHz	46 pA 83 0.2mA	Generation using calibrator model Fluke 5500A
	33 to 330 mA	None	
	10 Hz to 45 Hz	0.6 mA	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	45 Hz to 1 kHz	0.5mA	
	1 kHz to 5 kHz	0.9mA	
	5 kHz to 10 kHz	2.3mA	
	0.33 to 2.2A	None	
	10 Hz to 45 Hz	6mA	
	45 Hz to 1 kHz	5mA	
	1 kHz to 5 kHz	20 mA	
	2.2to11A	None	
	45 Hz to 65 Hz	None	
	65 Hz to 500 Hz	20 mA	
	500 Hz to 1	45 mA	
	33 UA to 10A	See Matrix B	reference to EURAMET cg-15, Version 3 (02/2015)
	290 to See Matrix B	See Matrix B	Calibrator Fluke 5520A
	0.1 20A See Matrix D	See Matrix D	Multimeter Fluke 8508A
	0.1 UA to 20A See Matrix H	See Matrix H	Multimeter Fluke 8508A
	See Matrix B	See Matrix B	Direct measurement using
	See Matrix D	See Matrix D	Direct Measurement using Fluke
	100 yA	None	
	10 Hz to 1 kHz 1 kHz to 5 kHz	0.0097 pA 0.016 pA	Direct measurement using Digital Multimeter Datron 1281
	2.2Ato11A 45 Hz to 65 Hz	1.00mA/A	Rev 01 using Direct Method
	65 Hz to 500 Hz	None	
	500 Hz to 1 kHz	None	
	11 A to 550 A (current coil) 45 Hz to 65 Hz 65 Hz to 440 Hz	3.4mA/A	Calibrated according to procedure LCP01705, Rev 01 using Direct Method
	100A	None	Calibrated according to
	1mAto3A	See Matrix D	procedure LCP01703, Rev 01 using Direct
	1mAto3A	None	Method
	3Ato 100A	None	Calibrated according to
	45 Hz to 65 Hz	2.4mA/A	procedure LCP01706,
	45 Hz to 65 Hz	None	Rev 02 using Method

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Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	50 to3A	None	Method
	3Ato 100A	None	Calibrated according to
	45 Hz to 65 Hz	2.5mA/A	procedure LCP01706,
	45 Hz to 65 Hz	None	Rev 04 using Direct
	45 Hz to 65 Hz	None	Method
Ac Voltage	3Vto6V	None	Generation using
	None	None	
	7.5 V to 14.999 V	0.21 mV/V - 0.20 mV	
	0 to 1020 V	See Matrix A	Fluke 5522A
	0 to 1020 V	See Matrix A	Fluke 5522A
	1 mV to 1000 V	See Matrix A	HP 3458A
	None		
	0 mV to 10 V (Refer The Matrix A)	(Refer The Matrix A)	
	10 V to 750 V	None	
	(Refer The Matrix B)	(Refer The Matrix B)	
	At 50 Hz 1 kV to 10 kV	13 mV/V	
	At 50 Hz 1 kV to 10 kV	16 mV/V	
	2.2 mV to 220 V	See Matrix E	Measurement
	330V to 1020V	None	using Fluke
	45Hz to 1kHz	0.24mV/V + 11mV	5522A
	1kHz to 5kHz	0.21mV/V + 8.6mV	
	5kHz to 10kHz	0.24mV/V +	
	0 mV to 750 V	Refer Matrix A	measurement with 6 % digit multimeter
	2.2 mV to 220 V (See Matrix A)	(See Matrix A)	
	220 V to 1100 V	None	
	15 Hz to 50 Hz	0.30 mV/V + 16 mV	
	220 V to 1100 V	None	
	50 Hz to 1 kHz	77 + 3.2 mV	
	See Matrix E	None	
	0.5 kV to 10 kV	12 mVIV + 13 mV	
	1.0 to 33 mV	None	
	10 Hz to 45 Hz	3.6	
	45 Hz to 10 kHz	43	
	10 kHz to 20	3.6 UV	
	20 kHz to 50 kHz	5.7	
	50 kHz to 100 kHz	11	
	100 kHz to 500 kHz	26	
	33 to 330 mV	None	
	10 Hz to 45 Hz	13	
	45 Hz to 10 kHz	77 uv	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	10 kHz to 20	13	
	20 kHz to 50 kHz	18	
	50 kHz to 100 kHz 100 kHz to 500 kHz	45 110	
	0.33 to 3.3 V	None	
	10 Hz to 45 Hz	0.1 mV	
	45 Hz to 10 kHz	0.1 mV	Generation using
	10 kHz to 20 kHz	0.1 mV	calibrator model
	20 kHz to 50 kHz	0.2 mV	Fluke 5500A
	50 kHz to 100 kHz	0.2 mV	
	100 kHz to 500 kHz	1.1 mV	
	3.3 to 33. V	None	
	10 Hz to 45 Hz	1.2mV	
	45 Hz to 10 kHz	None	
	10 kHz to 20 kHz	1.2mV	
	20 kHz to 50 kHz	2.1mV	
	50 kHz to 100 kHz	2.8 mV	
	33 to 330 V	None	
	10 Hz to 45 Hz	None	
	45 Hz to 10 kHz	14 mV	
	10 kHz to 20 kHz	14 mV	
	330 to 1020 V	None	
	45 Hz to 1 kHz	39 mV	
	1 kHz to 5 kHz	52 mV	
	-1 Ato -100 mA	None	HP 3458A
	10 mV rang	None	
	0 mV to 10 mV	None	
	100 mV rang	None	
	10 mV to 100 mV	None	
	1V rang	None	
	100 mV to 1 V	None	
	10 V range	(See Matrix A)	
	1Vto10V	None	
	100 V rang	None	
	10 V to 100 V	None	
	1000 V rang	None	
	100 V to 700 V	None	
	(See Matrix A)	None	
	10 Hz to 45 Hz	0.14 mV	
	45 Hz to 10 kHz	85	
	10 kHz to 20 kHz 20 kHz to 50 kHz	91 0.11 mV	
	50 kHz to 100 kHz	0.16 mV	
	100 kHz to 500 kHz	0.41 mV	
	33 to 330 mV	None	
	10 Hz to 45 Hz	0.9 mV	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	45 Hz to 10 kHz	0.2 mV	
	10 kHz to 20 kHz	None	
	20 kHz to 50 kHz	0.6 mV	
	50 kHz to 100 kHz	1.0 mV	
	100 kHz to 500 kHz	2.8 mV	
	0.33 to 3.3 V	None	
	10 Hz to 45 Hz	5.9 mV	Generation
	45 Hz to 10 kHz	1.2mV	using
	10 kHz to 20 kHz	3.1 mV	calibrator
	20 kHz to 50 kHz	5.6 mV	model
	50 kHz to 100 kHz	11 mV	Fluke 5500A
	100 kHz to 500 kHz	22 mV	
	3.3 to 33 V	None	
	10 Hz to 45 Hz	59 mV	
	45 Hz to 10 kHz	16 mV	
	10 kHz to 20 kHz	33 mV	
	20 kHz to 50 kHz	76 mV	
	50 kHz to 100 kHz	110 mV	
	33 to 330 V	None	
	10 Hz to 45 Hz	0.2	
	45 Hz to 10 kHz	0.3	
	10 kHz to 20 kHz	0.3	
	330 to 1020 V	None	
	45 Hz to 1 kHz	0.7	
	1 kHz to 5 kHz	2.3	
	- 1000 V to -100 V	None	HP 3458A
	10 mV rang	None	
	0 mV to 10 mV	None	
	100 mV range	None	
	10 mV to 100 mV	None	
	1V rang	None	
	100 mV to1V	None	
	10 V rang	(See Matrix B)	
	1Vto10V	None	
	100 V rang	None	
	10 V to 100 V	None	
	1000 V rang	None	
	100 V to 700 V	None	
	(See Matrix B)	None	
	33 mV to 750 V	See Matrix A	reference to EURAMET cg-15,
	33 mV to 750 V	None	Version 3 (02/2015)
	33 mV to 1020 V See Matrix A	See Matrix A	Calibrator Fluke 5520A
	100 to 1050 V See Matrix C	See Matrix C	Multimeter Fluke 8508A

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	33 mV to 1020 V See Matrix E	See Matrix E	Calibrator Fluke 5520A
	100 to 1050 V See Matrix G	See Matrix G	Multimeter Fluke 8508A
	See Matrix A	See Matrix A	Direct measurement using
	See Matrix C	See Matrix C	Direct Measurement using Fluke
	10 kHz to 20 kHz	1.0mV/V	Method
	330 V to 1020 V	None	
	45 Hz to 1 kHz	0.67	
	1 kHz to 5 kHz	2.3mV/V	
	5 kHz to 10 kHz	2.3mV/V	
	1 mV to 750 V	See Matrix C	Calibrated according to procedure LCP01703, Rev 01 using Direct Method
	750 V to 1000 V 45 Hz to 1 kHz 1 kHz to 10 kHz	9.2mV/V 9.2mV/V	Calibrated according to procedure LCP01703, Rev 01 using Direct Method
	45 Hz to 65 Hz	35	procedure LCP01707,
	45 Hz to 65 Hz	None	Rev 01 using Direct
	45 Hz to 65 Hz	None	Method
	1 mA to 10 mA	0.90 mA/A	Calibrated according to
	10 mA to 100 mA	0.77	procedure LCP01703 &
	0.045 kHz to 1 kHz	9.2mV/V	using Direct Method
	1 kHz to 10 kHz	9.2mV/V	
	to 40 kV 45 Hz to 65 Hz	62 mV/V	Calibrated according to procedure LCP01707, Rev 01
	to 40 kV 45 Hz to 65 Hz	None	using Direct Method
Capacitance	1 nF to 5 nF	0.4 mF/F + 5 pF	Generation using
	None	None	
	10 MQ to 100 MQ 100 pF to 900 pF 1 nF to 9nF	1.5 8.3 mF/F 7.2 mF/F	Using decade resistance, decade capacitance and decade inductance
	10 nF to 90 nF	6.1 mF/F	
	100 nF to 900 nF	6.1 mF/F	
	1 UF to 9 UF	8.9 mF/F	
	to	+ 9.0nF	
	to	2.9MF/F + 53nF	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	to 109.999UF	3.5mF/F + 98nF	
	to	3.3mF/F +	
	0.33mF to 1.09999mF	3.5mF/F +	Measurement
	1.1mF to 3.29999mF	3.4mE/F +	using Fluke
	3.3mF to 10.9999mF	3.5mF/F +	5522A
	11mF to 32.9999mF	6.1mF/F +	
	33mF to 110mF	+	
	0Q to	+	
	110 to 32.99990,	+ 1.2mQ	
	33Q to	+	
	110Q to 329.99990	+ 1.7mQ	
	3300 to 1.09999kQ	+ 2.0mQ	
	1.1kQ to	+ 17mQ	
	3.3kQ to 10.99999kO	+ 12mQ	
	11kQ to	+ 0.170	
	100 Hz & 120 Hz	None	
	200 pF to 2000 pF	2.7 pF	
	2 nF to 20 nF	20 pF	
	20 nF to 200 nF	0.13 nF	
	200 nF to 2000 nF	1.3 nF	
	1 kHz	None	
	20 pF to 200 pF	0.25 pF	
	200 pF to 2000 pF	2.2 pF	
	2 nF to 20 nF	13 pF	
	20 nF to 200 nF	0.13 nF	
	200 nF to 2000 nF	1.3 nF	
	0.4 nF (0.19 nF to 0.4 nF) 10 Hz to 10 kHz	5.7 mF/F + 0.01 nF	Calibrator Fluke 5520A
	1.1 nF (0.4 nF to 1.1 nF) 10 Hz to 10 kHz	5.7 mF/F + 0.01 nF	Calibrator Fluke 5520A
	3.3 nF (1.1 nF to 3.3 nF) 10 Hz to 3 kHz	5.8 mF/F + 0.01 nF	Calibrator Fluke 5520A
	11 nF (3.3 nF to 11 nF) 10 Hz to 1 kHz	2.9 mF/F + 0.01 nF	Calibrator Fluke 5520A
	33 nF (11 nF to 33 nF) 10 Hz to 1 kHz	2.8 mF/F + 0.01 nF	Calibrator Fluke 5520A
	110 nF (33 nF to 110 nF) 10 Hz to 1 kHz	2.9 mF/F + 0.1 nF	Calibrator Fluke 5520A
	330 nF (110 nF to 330 nF) 10 Hz to 1 kHz	2.9 mF/F + 0.3 nF	Calibrator Fluke 5520A
	1.1 uF 0.4 to 1.1 uF 10 Hz to 600 Hz	2.9 MF/F + 1 nF	Calibrator Fluke 5520A
	3.3 UF (1.1 uF to 3.3 uF) 10 Hz to 300 Hz	2.9 MF/F + 3 nF	Calibrator Fluke 5520A
	11 F (3.3 UF to 11 uF) 10 Hz to 150 Hz	2.9 + 12nF	Calibrator Fluke 5520A

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	OnF to 1 nF	2.3%of rdg+0.029nF	Direct measurement using
	0.1nF to 1 nF	rdg+0.014nF	Direct Measurement using Fluke
	110 nF to 0.330 uF 0.330 UF to 1.1 uF	4.0 4.0	
	1.1 uF to 3.3 UF	5.1	
	3.3 UF to 11	None	
	11 UF to 33 UF 33 UF to 110	5.7 mF /F 6.8 mF /F	
	110 UF to 330 UF	9.1	
	330 UF to 1.1 mF	12 mF/ F	
	0.01 Hz to 12 kHz	0.062 mHz / Hz	
Dc Voltage	to 60 V	50 + 0.0034 V	calibrator model
	3 V to 100 V	10 uV/V + 40 pV	Measurement
	3.3 V to 33 V	14 uV/V + 22	Fluke 5522A
	3.3 V to 33 V	14 uV/V + 22	Fluke 5522A
	1Vto10V	9.5 + 0.57	HP 3458 A
	None	None	
	100mV to 1V	+ 6.2UV	2010 and Keysight
	1V to 10V	+	34470A Multimeter
	10V to 100V	+ 1.2mV	
	100V to 300V	+ 24mV	
	0 mV to 220 mV	7.5 + 0.4	Measurement
	Omv to 329.9999mV	16uV/V+0.78uV	
	329.9999mV to 3.299999V	8.6uV/V+1.6uV	
	3.299999V to 32.99999V	9.3uV/V+16uV	
	32.99999V to 329.9999V	None	
	329.9999V to 1020.00V	14uV/V+1.2mV	
	329.9999V to 1020.00V	None	Measurment using Fluke
	QUA to 329.9999UA	0.12mA/A+16nA	5522A
	to 3.299999mA	None	
	3.299999mA to	78uA/A+0.20UA	
	0 mV to 100 mV 100 mV to1V 1 V to 10V 10 V to 100 V 100 V to 1000 V	0.03 mV/V + 3.5 pV 0.025 mV/V + 8.65 pV 0.025 mV/V + 0.08 mV 0.04 mV/V + 0.95 mV 0.04 mV/V + 10.6 mV	Direct measurement with 6 % digit multimeter

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	1 V to 250 V	0.1V	Generating using Calibrator (Fluke: 5522A)
	0 V to 220 mV	4.2	
	220 mV to 2.2 V	6.1 + 1.1	
	2.2Vto11V	5.1 + 2.0	
	11V 22 V to 220 V 220 V to 1100 V	5.0 uV/V + 3.2 7.4 + 28 8.9 + 0.31 mV	Generating Using Fluke 5720A Series 2 Multifunction Calibrator
	100 mV	None	HP3458A
	+ 100 to + 100 mV	1.8	
	-100 mV to - 100	1.8	
	iV	None	
	+100 mV to1V	None	
	-1 V to -100 mV	None	
	10 V	None	
	+1Vto+10V	0.1 mV	
	-10Vto-1V	0.1 mV	
	100 V	None	
	+10V to +100 V	None	
	-100 V to -10 V	1mvV	
	1000 V	None	
	+ 100 V to + 1000 V	12 mV	
	- 1000 V to -100 V	12 mV	
	0 to 330 mV 0to3.3V	30 0.2 mV	Generation using calibrator model
	0 to	2.2mV	Fluke 5500A
	33 to 330 V	24 mV	
	330 to 1000 V	110 mV	
	100 mV	None	
	+ 100 to + 100 mV	None	
	-100	None	
	1V	None	
	+100 mV to1V	0.12 mV	
	-1 V to -100 mV	0.12 mV	
	10V	None	
	+1Vto+10V	None	
	-10V to-1V	None	
	100 V	None	
	+10V to +100 V	None	
	-100 V to -10 V	None	
	1000 V	None	
	+ 100 V to + 1000 V	17 mV	
	- 1000 V to -100 V	17 mV	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	0 to 100 mV	0.004%of rdg+0.004mV	Direct measurement using
	0 to 50 mV	0.05%of rdg+0.005mV	Direct Measurement using Fluke
	30 V to 329 V	0.066 mv /V	
	329 V to 1020 V	0.066	Calibrated
	1 mV to 33 V	See Matrix A	Calibrated
	1 mV to 33 V	None	according to
	33 V to 330 V	None	procedure
	45 Hz to 1 kHz	0.6 mV/V	LCP01701, Rev 01
	1 kHz to 10 kHz	0.92 mV/V	using Direct
	1 mV to 100 mV 100 mV to 1V 1Vto10V 10 V to 100 V 100 V to 1000 V	0.098 mV /V 0.054 0.046 0.059 0.064 mV /V	Calibrated according to procedure LCP01703 & LCP01715, Rev 01 using Direct Method
	1 kV to 30 kV	23 mV/V	Calibrated according to
	1 kV to 30 kV	None	procedure LCP01707,
	1 kV to 30 kV	None	Rev 01 using Direct
	1 kV to 30 kV	None	Method
	0V to	0.58	Calibrated according to procedure
	1 mV to 100 mV 100 mV to 1 V 1Vto10V 10 V to 100 V 100 V to 1000 V 1 kV to 40 kV	0.17 mV/V 0.10 mV/V 0.096 mV /V 0.10 mV/V 0.11 mV/V 23 mV/V	Calibrated according to procedure LCP01703 & LCP01715, Rev 01 using Direct Method
	1 mV to 100 mV 100 mV to 1 V 1Vto10V 10 V to 100 V 100 V to 1000 V 1 kV to 40 kV	0.17 mV/V 0.10 mV/V 0.096 mV /V 0.10 mV/V 0.11 mV/V 23 mV/V	Calibrated according
	1 mV to 100 mV 100 mV to 1 V 1Vto10V 10 V to 100 V 100 V to 1000 V 1 kV to 40 kV	None	to procedure
	1 mV to 100 mV 100 mV to 1 V 1Vto10V 10 V to 100 V 100 V to 1000 V 1 kV to 40 kV	None	LCP01707, Rev 01
	1 mV to 100 mV 100 mV to 1 V 1Vto10V 10 V to 100 V 100 V to 1000 V 1 kV to 40 kV	None	using Direct Method
	10 mV to 750 V	See Matrix E	Calibrated according
	10 mV to 750 V	None	to procedure

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	750 V to 1000 V	None	LCP01703, Rev 01
Frequency	40 Hz to 200 Hz	0.0058 Hz	Generation using
	40 Hz to 100 Hz	9 - 0.4 mHz	Measurement
	10Hz to 100Hz	+	
	100Hz to 1000Hz	+	
	1kHz to 10kHz	+	
	10kHz to 100kHz	2.0uHz/Hz + 0.96mHz	
	100kHz to 1 MHz	+ 19mHz	
	0.4nF to 1.0999nF	4.0mF/F + 8.0pF	
	1.1nF to 3.2999nF	+ 9.3pF	
	3.3nF to 10.9999nF	2.2mE/F + 8.2pF	
	11nF to 32.9999nF	1.3mF/F + 58pF	
	33nF to 109.999nF	+ 27pF	
	110nF to 329.999nF	1.3mF/F + 0.51nF	
	330nF to	2.0mF/F + 0.9nF	
	to	1.8mF/F + 5.6nF	
	0.2 Hz to 250 kHz	0.022 mHz/Hz	clause 6.1.3
	100 uHz to 1 mHz 1 mHz to 10 mHz 10 mHz to 100 mHz 100 mHz to 1 Hz 1 Hz to 10 Hz 10 Hz to 100 Hz 100 Hz to 1 kHz to 10 kHz 10 kHz to 100 kHz 100 kHz to 1000 kHz 250 kHz to 1 MHz 1 MHz to 10 MHz 10 MHz to 100 MHz 100 MHz to 1 GHz 1 GHz to 3 GHz	0.21 + 0.06 pHz 0.21 + 0.06 pHz 0.21 + 0.65 pHz 0.21 + 6.48 pHz 0.21 + 64.8 pHz 0.21 wHz/Hz + 0.65 nHz 0.21 wHz/Hz + 6.48 nHz 0.21 wHz/Hz + 64.8 nHz 0.21 + 0.65 0.21 + 6.48 pHz 0.21 wHz/Hz + 1.3 mHz 0.21 + 0.02 Hz 0.21 wHz/Hz + 0.22 Hz 0.21 + 2.2 Hz 0.21 + 2.2 Hz	Agilent 33120A Agilent 4425 AP
	1 Hz to 12 GHz 9 kHz to 50 GHz	3.0 x 10° Hz 3.0 x 10° Hz	11722A HP 53132A
	1 Hz to 12 GHz 9 kHz to 50 GHz	None	E4448A
	1 Hz to 12 GHz 9 kHz to 50 GHz	None	(GPS-
	1 Hz to 12 GHz 9 kHz to 50 GHz	None	disciplined)
	-2 ENR to +20 ENR(dB)	None	Comparison
	ENR(dB)	None	
	- 2 ENR to +20	None	
	1 Hz to 12.4 GHz	0.6 mHz	w/11722A
	9 kHz to 50 GHz	4.2 Hz	HP 53132A
	9 kHz to 50 GHz	None	E4448A

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	-2 ENR to +20ENR(dB)	None	using
	ENR(dB)	None	
	-2 ENR to +20 ENR(dB)	None	
	1 Hz to 300 MHz	64 pHz/Hz + 11 uHz	Fluke PM6685R(Rubidium)
	100 MHz to 26.5 GHz	0.58 Hz	EIP 548A Referance to Fluke PM6685R (Rubidium)
	1 to 1 MHz (1 mVp-p to 10 Vp-p)	38	HP 3325B Referance to Rubidium Fluke PM6685R
	1 MHz to 20 MHz (1 mVp-p to 10 Vp-p)	0.58 mHz	HP 3325B Referance to Rubidium Fluke PM6685R
	10 MHz to 1 GHz (-110 dBm to 20 dBm)	58 mHz	Giga Tronics 2426B Referance to Rubidium Fluke PM6685R
	1 Hz to 300 MHz	64 pHz/Hz + 11 uHz	Fluke PM6685R(Rubidium)
	100 MHz to 26.5 GHz	0.58 Hz	EIP 548A Referance to Fluke PM6685R (Rubidium)
	3 5 Hz	rdg+0.00002Hz	
	1 Hz to 100 Hz	rdg+0.003Hz	Direct Measurement using Fluke
	12 kHz to 100 kHz	0.057 mHz / Hz	
	1 Hz to 40 Hz	0.62 mHz/ Hz	using Direct Method
	1 kHz to 10 kHz	1.4 mHz/Hz	to procedure LCP01701, Rev 01 using Direct Method
	5 Hz to 10Hz	0.58 mHz/ Hz	
Generating Instrument	None	None	
Measuring Instrument	3Vto6V	4 + 0.0006 V	Generation using
	Up to 1mm	Where = nominal	using Film
	Up to 1mm	thickness in mm	Thickness
	Up to 1mm	None	Standard with
	Up to 1mm	None	reference to AS
	Up to 1mm	None	3894.3 — 2002
	Up to 1mm	None	(Appendix D,
	Up to 1mm	None	except clause
	None	None	
	None	None	
	None	None	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Resistance	100.41 mQ to 498.0 mQ	0.58 mQ	Generation using
	100	30 + 0.1 mQ	Measurement
	100	13 pO/O + 0.12 pO	
	None	None	
	100 to 1 1 kQ to 10 kQ 10 kQ to 100 kQ	0.07 mA/Q 0.07 mA/Q 0.07 mA/Q	Direct measurement method
	100 kQ to 1 MQ	0.08 mA/Q	
	1 MQ to 10 MQ	0.3	
	10 MQ to 100 MQ	5 mA/Q	
	10	95	Measurement
	33kQ to 109.9999kO	+ 0.200	
	110kQ to	+ 5.30	
	to	+ 5.80	
	1.1MQ to	+ 400	
	3.3MQ to	+ 720	
	11MQ to 32.99999MQ	+ 2.2kO	
	33MQ to	+ 1.6kQ	
	110MQ to 329.9999MQ	2.5mQ/Q + 72kQ	
	to 1100MQ	None	
	00	40	
	0 to 100	24 pO/O + 87 pO	
	10 QO to 1000	20 + 0.7 ma	
	100 © to 1000	12 + 1.9 ma	
	1 kQ to 10	12 + 0.2 ma	
	10 kQ to 100 kQ	13	
	100 kQ to 1000 kQ	22 + 10.0	
	1000 kQ to 1 MQ	70 + 192.0	
	1 MQ to 10 MO	0.6 + 3.6	
	10 to 100	rdg+0.00350	Direct measurement using
	0.001 Q to 50 O	None	Direct Measurement using Fluke
	1 kQ to 10 kQ 10 kQ to 100 kQ	0.13 mQ/Q 0.13 mQ/Q	Calibrated according
	100 kQ to 1 MQ	0.13 mQ/Q	to procedure
	1 MQ to 10 MQ	0.51 mQ/Q	LCP01703, Rev 01
	10 MQ to 100 MQ	9.4mQ/Q	using Direct Method
	10 kQ to 100 kQ 100 kQ to 1 MQ	0.13mQ/Q	Calibrated according to
	1 MQ to 10 MQ	0.47 mQ/Q	procedure LCP01703,
	10 MQ to 100 MQ	9.4mQ/Q	Rev 01 using Direct Method
	3 Hz to 5 Hz	1.2 mHz/ Hz	Rev 01 using Direct Method

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