Issue date: 06 April 2025
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NO: SAMM 634

LABORATORY LOCATION/ CENTRAL OFFICE:	EM Test (M) Sdn. Bhd. 4th Floor, Wisma Samudra, 1, Jalan kontraktor U1/14, Hicom-Glenmarie Industrial Park, 40150 Shah Alam, Selangor , 40150, SELANGOR MALAYSIA
ACCREDITED SINCE :	06 APRIL 2025
FIELD(S) OF CALIBRATION:	ELECTRICAL ELECTRICAL - RF & MICROWAVE (50 Ohm SYSTEM)

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	EM Test (M) Sdn. Bhd. 4th Floor, Wisma Samudra, 1, Jalan kontraktor U1/14, Hicom-Glenmarie Industrial Park, 40150 Shah Alam, Selangor , 40150, Selangor
FIELD(S) OF CALIBRATION :	ELECTRICAL, ELECTRICAL

SCOPE OF CALIBRATION : ELECTRICAL

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
$12	31 dB to 40 dB	0.08 dB	Measurement Via
	41 dB to 50 dB	0.11 dB	Vector Network
	51 dB to 60 dB	0.12 dB	Analyzer
	61 dB to 70 dB	0.13 dB	ZNB8 and
	71 dB to 80 dB	0.20 dB	Calibration Kit
	81 dB to 90 dB	0.52 dB	ZV-Z270
(absolute)	PRF = 200 Hz to 2000 Hz	0.88 dB	
	Level 60 dBuV	None	Via IGUU 2918,

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	Band B	0.63 dB	SMA100B
	(0.15 MHz to 30 MHz) PRF: 0.1 Hz to 200 Hz Level 10 dBuV to 70 dBuV	None	PRF = pulse repetitive Frequency
	PRF = 200 Hz to 50 kHz Level 60 dBuV	0.88 dB	EMI receiver calibration with
	Band C/D (30 MHz to 1000 MHz)	0.63 dB	reference to CISPR 16-1-1
	PRF = 0.1 Hz to 200 Hz	None	
	Level 0 to 60	None	
	PRF = 200 Hz to 1000 kHz	0.88 dB	
	Level 40 dBuV	None	
(relative To Prf)	PRF = 200 Hz to 2000 Hz	None	
	Level 60 dBuV	None	Via IGUU 2918,
	Band B	None	SMA100B
	(0.15 MHz to 30 MHz) PRF: 0.1 Hz to 200 Hz Level 10 dBuV to 70 dBuV	0.17 dB	PRF = pulse repetitive Frequency
	PRF = 200 Hz to 50 kHz Level 60 dBuV	None	EMI receiver calibration with
	Band C/D (30 MHz to 1000 MHz)	None	reference to CISPR 16-1-1
	PRF = 0.1 Hz to 200 Hz	None	
	Level 0 to 60	None	
	PRF = 200 Hz to 1000 kHz	None	
	Level 40 dBuV	None	
Ac Current	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	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	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	
	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	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	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	
	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

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	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
	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	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	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	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	
	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	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	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	
	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	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	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
	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
Am Mod. Depth	(+23 dBm to -40 dBm)	None	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	fe : 100 kHz to 10 MHz fm : 20 Hz to 10 kHz Depth : 5 % to 99 %	0.015 %/%	Direct Measurement via FSMR26 Measuring
	fc : 10 MHz to 18 GHz	0.010 %/%	Receiver
	fm : 20 Hz to 50 kHz Depth : 5 % to 99 %	None	fc = Carrier Frequency
	fc : 10 MHz to 18 GHz fm : 50 kHz to 100 kHz	0.015% / %	fm = Modulation Rate
	Depth : 5 % to 99 %	None	
Attenuation/ Relative	(0 dB to 100 dB, 1 dB	None	
Average, Rms	Level 10 dBuV to 70 dBuV	None	
	Level 10 dBuV to 70 dBuV	None	
Burst Into 1000 Q	20 V to 8000 V 20 V to 8000 V to1 us 10 ns to 10 us 1 Hz to 1 MHz	None	
Burst Into 50 Q	500 ps to 1 us	None	
Capacitance	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

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	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
	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	
Coefficient, T (s21,	0 dB to 30 dB	0.07 dB	Direct
Current	Current @ 30 ns	35 mA/A	clause 6.3,
	Current @ 60 ns	37 mA/A	ISO 10605
	Current @ 60-800 ns	38 mA/A	clause A2
	5.3 A to 500 A	25 mA/A	ANSI C62.41
Current (100 Q Load)	10Ato50A	23	
Current Peak	OAto 120A	35 mA/A	IEC 61000-4-2
Dc Current	0 mA to 10 mA 10 mA to 100 mA 100 mA to1A 1Ato3A	0.45 + 5.8 nA 0.45 mA/A + 0.07 pA 0.2 mA/A + 0.66 0.2 + 8.52 0.4 + 0.08 mA	Direct measurement with 6 % digit multimeter
	0 mA to 10 mA 10 mA to 100 mA 100 mA to1A 1Ato3A	0.5 mAVA + 0.23 mA	
	0 mA to 10 mA 10 mA to 100 mA 100 mA to1A 1Ato3A	None	Direct
	0 mA to 10 mA 10 mA to 100 mA 100 mA to1A 1Ato3A	None	measurement with
	0.1Ato 100A	0.07 mA/A + 4.2 mA	DC current shunt
	0.1Ato 100A	None	and 6 % digit
	0.1Ato 100A	None	multimeter
	0 UA to 220 pA	0.94 nA/A + 7.8 nA	
	220 UA to 2.2 mA	8.6 nA/A + 24 nA	
	2.2 mA to 22 mA	87 + 0.21	
	22 mA to 220 mA	1.5 + 3.4	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	220 mA to 2.2A	18 + 48 LA	
	10 pA	0.2	
	10 to 100 pA	37 +	
	100 pA to 1mA	30 + 6 nA	
	1 mA to 10 mA	30 + 52 nA	
	10 mA to 100 mA	47 + 0.6	
	100 mAto1A	0.1 + 5 pA	
	0 to 3.3 mA	0.1 pA	
	0 to 33 mA 0 to 330 mA 0to22A Oto11A	2.1 0.1mA 1.2mA 7.8mA	Generation using calibrator model Fluke 5500A
	100 pA	None	
	+10 to +100 pA	16 nA	
	-100 pA 10 pA	16 nA	
	+100 to +1 mA	69 nA	
	-1 mA to -100 pA	69 nA	
	10 mA	None	
	+1 +10 mA	0.7	
	-10 mA to -1 mA	0.7 UA	
	100 mA	None	
	+10 mA to +100 mA	None	
	-100 mA to -10 mA	None	
	1A	None	
	+100 mAto+1A	0.1 mA	
	-1 Ato -100 mA	0.1 mA	
	110 to 330 MQ	(of reading)	
	0 to 3.3 mA mA 0 to 330 mA 0to22A	0.5 pA 0.1mA 1.4mA	Generation using calibrator model Fluke 5500A
	0 to 3.3 mA mA 0 to 330 mA 0to22A	11mA	
	+10 to +100 pA -100 pA 10 pA	16 nA 16 nA	
	1mA	None	
	+100 A to +1 mA	74nA	
	mA to -100 pA	74nA	
	10 mA	None	
	+1 mA to +10 mA	0.7 pA	
	-10 mA to -1 mA	0.7 pA	
	100 mA	None	
	+10mA to +100 mA	8 yA	
	-100 mA to -10 mA	8 yA	
	1A	None	
	+100 mMAto+1A	0.2mA	
	-1 Ato -100 mA	0.2mA	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	0 to 330 pA	170 + 23 nA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	330 UA to 3.3 mA	113 + 57 pA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	3.3 mA to 33 mA	113 + 0.29 PA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	33 mA to 330 mA	113 PA/A + 2.8 LA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	330 mA	227 + 45 pA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	1.1Ato3A	429 + 48 LA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	3Ato10A	567 + 562 PA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	3Ato10A	None	Fluke 5522A with
	330 A + (0 pA to 330 A)	+ 0.02	Calibrator Fluke 5520A
	3.3 mA mA to 3.3 mA)	0.12 + 0.05	Calibrator Fluke 5520A
	33 mA + (0 mA to 33 mA)	0.12 mA/A PA	Calibrator Fluke 5520A
	330 mA + (0 mA to 330 mA)	0.12	Calibrator Fluke 5520A
	1.1A +(0Ato	0.23 mA/A + 47 PA	Calibrator Fluke 5520A
	3A +(1.1Ato3A)	0.46 mAVA + 0.11 mA	Calibrator Fluke 5520A
	11A	0.58 mA/A + 0.58 mA	Calibrator Fluke 5520A
	20.5A +(11A to 20.5 A)	1.2 mA/A + 0.87 mA	Calibrator Fluke 5520A

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	200 (0.1 A to 199.99	13 + 0.6 nA	Multimeter Fluke 8508A
	2mA (0.2 mA to 199.99 mA)	13 + 0.006 pA	Multimeter Fluke 8508A
	20 mA (2 mA to 19.999 mA)	16 + 0.06	Multimeter Fluke 8508A
	200 mA (20 mA to 199.99 mA)	55 + 0.98	Multimeter Fluke 8508A
	2A (0.2 A to 1.9999 A)	0.21 mA/A + 18	Multimeter Fluke 8508A
	20A (2 A to 19.999 pA)	0.46 mAVA + 0.46 mA	Multimeter Fluke 8508A
	330 pA + (0 pA to 330 pA)	0.17 mMA/A + 0.02 pA	Calibrator Fluke 5520A
	3.3 mA mA to 3.3 mA)	0.12 + 0.05 pA	Calibrator Fluke 5520A
	33 mA + (0 mA to 33 mA)	0.12 0.3 pA	Calibrator Fluke 5520A
	330 mA + (0 mA to 330 mA)	0.12	Calibrator Fluke 5520A
	1.1A +(0Ato	0.23 mA/A + 47 pA	Calibrator Fluke 5520A
	3A	0.46 + 0.11 mA	Calibrator Fluke 5520A
	11A	0.58 mA/A + 0.58 mA	Calibrator Fluke 5520A
	20.5A +(11A to 20.5A)	+ 0.87 mA	Calibrator Fluke 5520A
	200 pA (0.1 pA to 199.99 yA)	13 nA	Multimeter Fluke 8508A
	2mA (0.2 mA to 199.99 mA)	13 + 0.006	Multimeter Fluke 8508A
	(2 mA to 19.999 mA)	16 + 0.06 pA	Multimeter Fluke 8508A
	200 mA (20 mA to 199.99 mA)	55 + 0.98	Multimeter Fluke 8508A
	2A (0.2 A to 1.9999 A)	0.21 18 pA	Multimeter Fluke 8508A
	20A (2 A to 19.999 pA)	0.46 mA/A + 0.46 mA	Multimeter Fluke 8508A
	0 to 100 pA 0.1 mAto1mA	0.058%of 0.035%of rdg+0.0004mA	Direct measurement using fluke 8846A
	50 to 500 pA	0.06%of rdg+0.21	Direct Measurement using Fluke

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	0 to 100 pV 0 to 0 to 10 mV 0 to 100 mV O0to1V 0 to 10 V 0 to 100 V 0 to 1000 V	None	Direct Measurement Method using Digital Multimeter Datron 1281 > Inoperative
	0 to 100 pA O0to1mA 0 to 10 mA 0 to 100 mA Oto1A	0.013 pA 0.00013 mA 0.0016 mA 0.028 mA 0.000028 A	\ Generation using calibrator model: > Inoperative Fluke 5700A
	0 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 0.330 A 0.330 A 2.2Ato11A	0.17 0.13 0.15 mA/A 0.37 mMA/A 0.71 mMA/A	Calibrated according to procedure LCP01701, Rev 01 using Direct Method
	0 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 0.330 A 0.330 A 2.2Ato11A	None	Calibrated according to
	11 A to 550 A (current coil)	None	procedure LCP01705, Rev 01 using Direct
	11 A to 550 A (current coil)	None	Method
	0.029 mA to 330 mA	See Matrix B	
	0.33 Ato 2.2A	None	
	10 Hz to 45 Hz	2.5mA/A	
	45 Hz to 1 kHz 1 kHz to 5 kHz	None	Calibrated according to procedure LCP01701,
	100 mA to1A 1Ato3A	1.3mA/A	LCP01715, Rev 01 using Direct Method
	100 mA to1A 1Ato3A	None	Calibrated according to
	100A	None	procedure LCP01706,
	100A	None	Rev 02 using V/I Method
	0 mA to 24 mA	0.95 mA/A	LCP01701, Rev 01
	0 mA to 24 mA	None	using Direct Method
	0 mA to 24 mA	12mQ/Q	
	10 Q to 100 Q	§.8mQ/Q	
	100 mAto1A 1Ato3A	1.3mA/A 1.6mA/A	using Direct Method
	100 mAto1A 1Ato3A	None	Calibrated according to
	100A	2.5mA/A	procedure LCP01706, Rev 04 using Direct
	100A	None	Method
	100A	None	Calibrated according to
	100A	None	procedure LCP01703,

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	50 to3A	See Matrix F	Rev 01 using Direct
Dc High Voltage	0V to 100 V	0.6 mV/V	Direct
	100 V to 1000 V	0.1 mV/V	measurement with
	1000 V to 8 kV 8 kV to 15 kV	0.4 mV/V 0.2 mV/V	High Voltage Probe and 6 2
	15 kV to 30 kV	0.1 mV/V	digit multimeter
	15 kV to 30 kV	None	Direct
Dc Voltage	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
	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	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	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	
	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

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	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
	750 V to 1000 V	None	LCP01703, Rev 01
Detectors	(9 kHz to 150 kHz)	0.63 dB	
	PRF = 0.1 Hz to 200 Hz	None	
	(9 kHz to 150 kHz)	None	
	PRF = 0.1 Hz to 200 Hz	None	
Equipment	None	None	
	None	None	
	None	0.45 + 7.6 nA	
	None	None	
	None	None	
Esd	None	None	
Fm Mod. Deviation	(+23 dBm to -40 dBm)	None	
	fe : 100 kHz to 10 MHz	9.8 mHz/Hz + 12 mHz	
	fm :20 Hz to 50 kHz	None	
	Af = 20 Hz to 50 kHz	None	Direct
	fc : 10 MHz to 1 GHz fm : 20 Hz to 100 kHz Af = 20 Hz to 5 MHz	9.8 mHz/Hz + 88 mHz	Measurement via Measuring Receiver FSMR26
	fe: 1 GHz to 18 GHz	9.8 mHz/Hz + 0.2 Hz	fc = Carrier
	fm : 20 Hz to 100 kHz Af = 20 Hz to 5 MHz	None	Frequency fm = Modulation
	fm : 20 Hz to 100 kHz Af = 20 Hz to 5 MHz	None	Rate
	fc : 10 MHz to 1 GHz	29 mHz/Hz + 1 Hz	Af = Peak
	fm : 100 KHz to 5 MHz	None	Deviation
	Af = 20 Hz to 5 MHz	None	
	fe: 1 GHz to 18 GHz	29 mHz/Hz + 1 Hz	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	fm : 100 KHz to 5 MHz	None	
	Af = 20 Hz to 5 MHz	None	
Frequency	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
	-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

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	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 & Sourcing	None	None	
	None	None	
	None	None	
	None	None	
Generating Instruments	None	None	
	None	None	
	None	None	
Harmonics Content	Fundamental Frequency	2.0 dB	
	0.1 MHz to 9 GHz	None	
	0 to 10 dBm	None	Direct
	0 to 10 dBm	None	Measurement via
	Harmonics Frequency	None	Measuring Receiver
	0.2 MHz to 18 GHz	None	FSMR26
	-100 dBm to 0 dBm	None	
Inductance	100 Hz & 120 Hz 200 pH to 2000 pH 2 MH to 20 mH	2.9 19	Direct measurement with LCR meter
	20 mH to 200 mH	0.18 mH	
	200 mH to 2000 mH	None	
	2Hto 20H	41 mH	
	1 kHz	None	
	20 to 200 pH	0.29	
	200 UH to 2000 pH	None	
	2 mH to 20 mH	15	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	20 mH to 200 mH	0.13 mH	
	200 mH to 2000 mH	1.3mH	
	2Hto 20H	44 mH	
	1000 Hz	None	
	100 uH to 1 mH 1 mH to 10 mH 10 mH to 100 mH 100 mH to1H	23 mHz/H + 22 nH 12 mH/H + 25 uH 6 mH/H + 0.1 mH 3 + 0.4 mH	Calibration using Decade Inductor 1491-G
	1Hto10H	3 mH/H + 0.3 mH	
	None	None	
Instrument	None	None	
	100 kHz to 26.5 GHz	None	
	None	None	
	None	None	
	None	None	
	0.03 to 0.33 mA	None	
	1.0 to 33 mV	None	
	None	None	
	100 yA	None	HP 3458A
	None	None	
	None	None	
	None	None	Measuring
Instruments	20 Hz to 18 GHz	None	
	None	None	
	None	None	
	None	None	
	10 KN to 50 KN	0.2 kN	
	None	None	
	1.2 MHz to 2.000 MHz	None	
Interruption	0.2 Hz to 250 kHz	None	
Load)	-20 V to 270 V 0.1 us to 10 us	None	
	50 ms/div to 5 s/div	None	
Peak Current (inrush)	200 A to 1000 A	27	
Peak, Quasi-peak,	Level 10 dBuV to 70 dBuV	None	
	Level 10 dBuV to 70 dBuV	None	
Phase	0° to 360 °	0.14 °	
	None	Input voltage :	
	None	Input voltage :	
Phase Mod. Deviation	(+23 dBm to -40 dBm)	None	Direct
	(+23 dBm to -40 dBm)	None	Measurement via
	fc : 200 kHz to 18 GHz	9.9 mrad/rad + 1 mrad	Measuring
	fm : 20 Hz to 5 MHz	None	Receiver

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	Ag = 0.001 rad to 100 rad	None	FSMR26
	Ag = 0.001 rad to 100 rad	None	fc = Carrier
	Ag = 0.001 rad to 100 rad	None	Frequency
	Ag = 0.001 rad to 100 rad	None	fm = Modulation
	Ag = 0.001 rad to 100 rad	None	Rate
	Ag = 0.001 rad to 100 rad	None	Ag = Peak
	Ag = 0.001 rad to 100 rad	None	Deviation
R ($11, $22)	9 kHz to 8.5 GHz	None	Direct
	9 kHz to 8.5 GHz	None	Measurement Via
	1 constrained by: Os	None	Vector Network
	1 constrained by: Os	None	Analyzer
	9 kHz to 100 kHz	None	ZNB8 and
	0 to 0.1	0.005	Calibration Kit
	0.1 to 0.2	0.005	ZV-Z270
	0.2 to 0.3	0.006	
	0.3 to 0.4	0.007	With reference to
	0.4 to 0.5	0.008	CISPR-16-1-1 /2/
	0.5 to 0.6	0.009	3, ANSI C63.4 and
	0.6 to 0.7	0.011	IEC 61000-4-6
	0.7 to 0.8	0.014	
	0.8 to 0.9	0.017	
	0.9 to 1	0.02	See note A
R (s11, $22)	0 to 0.1	0.006	
	0.1 to 0.2	0.006	
	0.2 to 0.3	0.007	Direct
	0.3 to 0.4	0.008	Measurement Via
	0.4 to 0.5	0.009	Vector Network
	0.5 to 0.6	0.011	Analyzer
	0.6 to 0.7	0.013	ZNB8 and
	0.7 to 0.8	0.02	Calibration Kit
	0.8 to 0.9	0.024	ZV-Z270
	0.9 to 1	0.028	
	4 GHz to 8.5 GHz	None	
	0 to 0.1	0.01	With reference to
	0.1 to 0.2	0.01	CISPR-16-1-1 /2/
	0.2 to 0.3	0.011	3, ANSI C63.4 and
	0.3 to 0.4	0.013	IEC 61000-4-6
	0.4 to 0.5	0.015	
	0.5 to 0.6	0.018	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	0.6 to 0.7	0.021	See note A
	0.7 to 0.8	0.026	
	0.8 to 0.9	0.03	
	0.9 to 1	0.036	
Reflection Coefficient,	9 kHz to 8.5 GHz	None	
	100 kHz to 4 GHz	None	
Relative	8 kHz to 1 GHz	None	
Response Of Emi	BandA	None	
	BandA	None	
Rf Frequency	20 Hz to 18 GHz	50 pHz/Hz + 56 mHz	Direct
	20 Hz to 18 GHz	None	Measurement via
	20 Hz to 18 GHz	None	Measuring Receiver
	20 Hz to 18 GHz	None	FSMR26 locked to
	20 Hz to 18 GHz	None	GPS Reference
	20 Hz to 18 GHz	None	Standard
	8 kHz to 12.75 GHz	50 pHz/Hz + 56 mHz	Sourcing via
	8 kHz to 12.75 GHz	None	SMA100B
	8 kHz to 12.75 GHz	None	Signal Generator
	8 kHz to 12.75 GHz	None	locked to
	8 kHz to 12.75 GHz	None	GPS Reference
	8 kHz to 12.75 GHz	None	Standard
	100 kHz to 26.5 GHz	9.1 pHZ/Hz + 70 mHz	Measuring using
	100 kHz to 26.5 GHz	None	Rohde & Schwarz
	100 kHz to 26.5 GHz	None	FSMR26 disciplined
	100 kHz to 26.5 GHz	None	by Fluke 910R GPS
	100 kHz to 26.5 GHz	None	Reference
Rf Level	DC to 18 GHz	None	
	+20 dBm to -30 dBm	None	
	DC to 100 MHz 100 MHz to 2 GHz 2 GHz to 8 GHz 8 GHz to 12 GHz	0.05 dB 0.05 dB 0.06 dB 0.07 dB	Direct measurement via NRP18T Power Sensor
	12 GHz to 18 GHz	0.10 dB	
	8 kHz t0 18 GHz	None	
	+20 dBm to -45 dBm	None	
	+20 dBm to -45 dBm	None	Direct
	8 kHz to 4 GHz	0.06 dB	measurement via
	4 GHz to 8 GHz	0.07 dB	NRP18A Power
	8 GHz to 12 GHz	0.08 dB	Sensor
	12 GHz to 18 GHz	0.11 dB	
	8 kHz to 12.75 GHz	None	
	10 dBm to -45dBm	None	
	8 kHz to 2 GHz	0.09 dB	SMA‘100B Signal
	2 GHz to 4 GHz	0.10 dB	Generator
	4 GHz to 7 GHz	0.13 dB	corrected Via
	7 GHz to 8 GHz	0.14 dB	Power Sensor

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	8 GHz to 8.5 GHz 8.5 GHz to 12.5 GHz	0.19 dB 0.21 dB	and Power Splitter
	12.5 GHz to 12.75 GHz	0.22 dB	
	step)	None	Sourcing via SMA‘100B Signal
	Attenuation 0 to 9 dB	0.09 dB	Generator
	Attenuation 10 dB to	0.07 dB	and Step Attenuator
	100 dB	None	
Rf Receiving	20 Hz to 18 GHz	None	
	None	None	
	None	None	
Rf Sourcing /	None	None	
	None	None	
Ring Wave	None	None	
Rise Time	500 ps to 1 us	84 ps	
	250 ps Nominal 1 kHz to 10 MHz	0.6 ns	
	250 mV to 2.5 V pp into 50 Ohm	None	
		0.3 ns	
Rise Time (current)	0.1 us to 5 us	2.4ns	IEC 61000-4-12
Rise Time (voltage)	0.1 us to 5 us	9.3 ns	clause 9.3.2
Scattering Parameter:	Level 40 dBuV	None	
	None	None	
Sourcing/generating	None	None	
Transmission	9 kHz to 8.5 GHz	None	
Tuned Rf Level	8 kHz to 18000 MHz	Refer Matrix B	Direct
	+20 dBm to -120 dBm	None	measurement via
	+20 dBm to -120 dBm	None	FSMR26
	+20 dBm to -120 dBm	None	Measuring
	+20 dBm to -120 dBm	None	Receiver and
	+20 dBm to -120 dBm	None	Power Sensor
Voltage	200 V to 6000 V	20 mV/V	With reference to
Voltage (cont.) (with Or	-400 V to 400 V	None	
Voltage (dc)	100 V to 30 kV	None	With reference to
Voltage (normal Mode) Voltage (common Mode) Rise Time Pulse Duration Repetition Frequency	20 V to 8000 V 20 V to 8000 V to1 us 10 ns to 10 us 1 Hz to 1 MHz	47 66 mV/V 0.12 ns 0.45 ns 0.10 mHz/Hz	With reference to IEC 61000-4-4 clause 6.1.2 & 6.2.2, ISO 7637-2 Annex C
	20 V to 8000 V 25 V to 1000 V us 10 ns to 10 us 1 Hz to 1 MHz	44 mv/V 66 mV/V 0.12 ns 0.94 ns 0.10 mHz/Hz	With reference to IEC 61000-4-4 clause 6.1.2, ISO 7637-2 Annex C
Voltage Dips &	0.2 Hz to 250 kHz	None	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
Without Load) Peak Voltage (overshoot) (100 Q Load) Rise Time/fall Time (100 Q	-20 V to 270 V 0.1 us to 10 us	20 mV/V	With reference to IEC 61000-4-11 clause 6.1.2

SCOPE OF CALIBRATION : ELECTRICAL - RF & MICROWAVE (50 Ohm SYSTEM)

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
$12	31 dB to 40 dB	0.08 dB	Measurement Via
	41 dB to 50 dB	0.11 dB	Vector Network
	51 dB to 60 dB	0.12 dB	Analyzer
	61 dB to 70 dB	0.13 dB	ZNB8 and
	71 dB to 80 dB	0.20 dB	Calibration Kit
	81 dB to 90 dB	0.52 dB	ZV-Z270
(absolute)	PRF = 200 Hz to 2000 Hz	0.88 dB	
	Level 60 dBuV	None	Via IGUU 2918,
	Band B	0.63 dB	SMA100B
	(0.15 MHz to 30 MHz) PRF: 0.1 Hz to 200 Hz Level 10 dBuV to 70 dBuV	None	PRF = pulse repetitive Frequency
	PRF = 200 Hz to 50 kHz Level 60 dBuV	0.88 dB	EMI receiver calibration with
	Band C/D (30 MHz to 1000 MHz)	0.63 dB	reference to CISPR 16-1-1
	PRF = 0.1 Hz to 200 Hz	None	
	Level 0 to 60	None	
	PRF = 200 Hz to 1000 kHz	0.88 dB	
	Level 40 dBuV	None	
(relative To Prf)	PRF = 200 Hz to 2000 Hz	None	
	Level 60 dBuV	None	Via IGUU 2918,
	Band B	None	SMA100B
	(0.15 MHz to 30 MHz) PRF: 0.1 Hz to 200 Hz Level 10 dBuV to 70 dBuV	0.17 dB	PRF = pulse repetitive Frequency

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	PRF = 200 Hz to 50 kHz Level 60 dBuV	None	EMI receiver calibration with
	Band C/D (30 MHz to 1000 MHz)	None	reference to CISPR 16-1-1
	PRF = 0.1 Hz to 200 Hz	None	
	Level 0 to 60	None	
	PRF = 200 Hz to 1000 kHz	None	
	Level 40 dBuV	None	
Ac Current	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	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	0 to 33 mA 0 to 330 mA 0to22A Oto11A	None	
	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

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	33 to 330 mA	None	
	10 Hz to 45 Hz	0.6 mA	
	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

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	45 Hz to 65 Hz	2.4mA/A	procedure LCP01706,
	45 Hz to 65 Hz	None	Rev 02 using Method
	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	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	
	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	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	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	
	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	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	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
	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

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	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
Am Mod. Depth	(+23 dBm to -40 dBm)	None	
	fe : 100 kHz to 10 MHz fm : 20 Hz to 10 kHz Depth : 5 % to 99 %	0.015 %/%	Direct Measurement via FSMR26 Measuring
	fc : 10 MHz to 18 GHz	0.010 %/%	Receiver
	fm : 20 Hz to 50 kHz Depth : 5 % to 99 %	None	fc = Carrier Frequency
	fc : 10 MHz to 18 GHz fm : 50 kHz to 100 kHz	0.015% / %	fm = Modulation Rate
	Depth : 5 % to 99 %	None	
Attenuation/ Relative	(0 dB to 100 dB, 1 dB	None	
Average, Rms	Level 10 dBuV to 70 dBuV	None	
	Level 10 dBuV to 70 dBuV	None	
Burst Into 1000 Q	20 V to 8000 V 20 V to 8000 V to1 us 10 ns to 10 us 1 Hz to 1 MHz	None	
Burst Into 50 Q	500 ps to 1 us	None	
Capacitance	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	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	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
	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	
Coefficient, T (s21,	0 dB to 30 dB	0.07 dB	Direct
Current	Current @ 30 ns	35 mA/A	clause 6.3,
	Current @ 60 ns	37 mA/A	ISO 10605
	Current @ 60-800 ns	38 mA/A	clause A2
	5.3 A to 500 A	25 mA/A	ANSI C62.41
Current (100 Q Load)	10Ato50A	23	
Current Peak	OAto 120A	35 mA/A	IEC 61000-4-2

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Dc Current	0 mA to 10 mA 10 mA to 100 mA 100 mA to1A 1Ato3A	0.45 + 5.8 nA 0.45 mA/A + 0.07 pA 0.2 mA/A + 0.66 0.2 + 8.52 0.4 + 0.08 mA	Direct measurement with 6 % digit multimeter
	0 mA to 10 mA 10 mA to 100 mA 100 mA to1A 1Ato3A	0.5 mAVA + 0.23 mA	
	0 mA to 10 mA 10 mA to 100 mA 100 mA to1A 1Ato3A	None	Direct
	0 mA to 10 mA 10 mA to 100 mA 100 mA to1A 1Ato3A	None	measurement with
	0.1Ato 100A	0.07 mA/A + 4.2 mA	DC current shunt
	0.1Ato 100A	None	and 6 % digit
	0.1Ato 100A	None	multimeter
	0 UA to 220 pA	0.94 nA/A + 7.8 nA	
	220 UA to 2.2 mA	8.6 nA/A + 24 nA	
	2.2 mA to 22 mA	87 + 0.21	
	22 mA to 220 mA	1.5 + 3.4	
	220 mA to 2.2A	18 + 48 LA	
	10 pA	0.2	
	10 to 100 pA	37 +	
	100 pA to 1mA	30 + 6 nA	
	1 mA to 10 mA	30 + 52 nA	
	10 mA to 100 mA	47 + 0.6	
	100 mAto1A	0.1 + 5 pA	
	0 to 3.3 mA	0.1 pA	
	0 to 33 mA 0 to 330 mA 0to22A Oto11A	2.1 0.1mA 1.2mA 7.8mA	Generation using calibrator model Fluke 5500A
	100 pA	None	
	+10 to +100 pA	16 nA	
	-100 pA 10 pA	16 nA	
	+100 to +1 mA	69 nA	
	-1 mA to -100 pA	69 nA	
	10 mA	None	
	+1 +10 mA	0.7	
	-10 mA to -1 mA	0.7 UA	
	100 mA	None	
	+10 mA to +100 mA	None	
	-100 mA to -10 mA	None	
	1A	None	
	+100 mAto+1A	0.1 mA	
	-1 Ato -100 mA	0.1 mA	
	110 to 330 MQ	(of reading)	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	0 to 3.3 mA mA 0 to 330 mA 0to22A	0.5 pA 0.1mA 1.4mA	Generation using calibrator model Fluke 5500A
	0 to 3.3 mA mA 0 to 330 mA 0to22A	11mA	
	+10 to +100 pA -100 pA 10 pA	16 nA 16 nA	
	1mA	None	
	+100 A to +1 mA	74nA	
	mA to -100 pA	74nA	
	10 mA	None	
	+1 mA to +10 mA	0.7 pA	
	-10 mA to -1 mA	0.7 pA	
	100 mA	None	
	+10mA to +100 mA	8 yA	
	-100 mA to -10 mA	8 yA	
	1A	None	
	+100 mMAto+1A	0.2mA	
	-1 Ato -100 mA	0.2mA	
	0 to 330 pA	170 + 23 nA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	330 UA to 3.3 mA	113 + 57 pA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	3.3 mA to 33 mA	113 + 0.29 PA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	33 mA to 330 mA	113 PA/A + 2.8 LA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	330 mA	227 + 45 pA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	1.1Ato3A	429 + 48 LA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	3Ato10A	567 + 562 PA	Fluke 5522A with reference to EURAMET cg-15, Version 3 (02/2015)
	3Ato10A	None	Fluke 5522A with
	330 A + (0 pA to 330 A)	+ 0.02	Calibrator Fluke 5520A
	3.3 mA mA to 3.3 mA)	0.12 + 0.05	Calibrator Fluke 5520A
	33 mA + (0 mA to 33 mA)	0.12 mA/A PA	Calibrator Fluke 5520A
	330 mA + (0 mA to 330 mA)	0.12	Calibrator Fluke 5520A
	1.1A +(0Ato	0.23 mA/A + 47 PA	Calibrator Fluke 5520A
	3A +(1.1Ato3A)	0.46 mAVA + 0.11 mA	Calibrator Fluke 5520A
	11A	0.58 mA/A + 0.58 mA	Calibrator Fluke 5520A
	20.5A +(11A to 20.5 A)	1.2 mA/A + 0.87 mA	Calibrator Fluke 5520A
	200 (0.1 A to 199.99	13 + 0.6 nA	Multimeter Fluke 8508A
	2mA (0.2 mA to 199.99 mA)	13 + 0.006 pA	Multimeter Fluke 8508A
	20 mA (2 mA to 19.999 mA)	16 + 0.06	Multimeter Fluke 8508A
	200 mA (20 mA to 199.99 mA)	55 + 0.98	Multimeter Fluke 8508A
	2A (0.2 A to 1.9999 A)	0.21 mA/A + 18	Multimeter Fluke 8508A
	20A (2 A to 19.999 pA)	0.46 mAVA + 0.46 mA	Multimeter Fluke 8508A
	330 pA + (0 pA to 330 pA)	0.17 mMA/A + 0.02 pA	Calibrator Fluke 5520A
	3.3 mA mA to 3.3 mA)	0.12 + 0.05 pA	Calibrator Fluke 5520A
	33 mA + (0 mA to 33 mA)	0.12 0.3 pA	Calibrator Fluke 5520A
	330 mA + (0 mA to 330 mA)	0.12	Calibrator Fluke 5520A
	1.1A +(0Ato	0.23 mA/A + 47 pA	Calibrator Fluke 5520A
	3A	0.46 + 0.11 mA	Calibrator Fluke 5520A

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	11A	0.58 mA/A + 0.58 mA	Calibrator Fluke 5520A
	20.5A +(11A to 20.5A)	+ 0.87 mA	Calibrator Fluke 5520A
	200 pA (0.1 pA to 199.99 yA)	13 nA	Multimeter Fluke 8508A
	2mA (0.2 mA to 199.99 mA)	13 + 0.006	Multimeter Fluke 8508A
	(2 mA to 19.999 mA)	16 + 0.06 pA	Multimeter Fluke 8508A
	200 mA (20 mA to 199.99 mA)	55 + 0.98	Multimeter Fluke 8508A
	2A (0.2 A to 1.9999 A)	0.21 18 pA	Multimeter Fluke 8508A
	20A (2 A to 19.999 pA)	0.46 mA/A + 0.46 mA	Multimeter Fluke 8508A
	0 to 100 pA 0.1 mAto1mA	0.058%of 0.035%of rdg+0.0004mA	Direct measurement using fluke 8846A
	50 to 500 pA	0.06%of rdg+0.21	Direct Measurement using Fluke
	0 to 100 pV 0 to 0 to 10 mV 0 to 100 mV O0to1V 0 to 10 V 0 to 100 V 0 to 1000 V	None	Direct Measurement Method using Digital Multimeter Datron 1281 > Inoperative
	0 to 100 pA O0to1mA 0 to 10 mA 0 to 100 mA Oto1A	0.013 pA 0.00013 mA 0.0016 mA 0.028 mA 0.000028 A	\ Generation using calibrator model: > Inoperative Fluke 5700A
	0 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 0.330 A 0.330 A 2.2Ato11A	0.17 0.13 0.15 mA/A 0.37 mMA/A 0.71 mMA/A	Calibrated according to procedure LCP01701, Rev 01 using Direct Method
	0 mA to 3.3 mA 3.3 mA to 33 mA 33 mA to 0.330 A 0.330 A 2.2Ato11A	None	Calibrated according to
	11 A to 550 A (current coil)	None	procedure LCP01705, Rev 01 using Direct
	11 A to 550 A (current coil)	None	Method
	0.029 mA to 330 mA	See Matrix B	
	0.33 Ato 2.2A	None	
	10 Hz to 45 Hz	2.5mA/A	
	45 Hz to 1 kHz 1 kHz to 5 kHz	None	Calibrated according to procedure LCP01701,

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	100 mA to1A 1Ato3A	1.3mA/A	LCP01715, Rev 01 using Direct Method
	100 mA to1A 1Ato3A	None	Calibrated according to
	100A	None	procedure LCP01706,
	100A	None	Rev 02 using V/I Method
	0 mA to 24 mA	0.95 mA/A	LCP01701, Rev 01
	0 mA to 24 mA	None	using Direct Method
	0 mA to 24 mA	12mQ/Q	
	10 Q to 100 Q	§.8mQ/Q	
	100 mAto1A 1Ato3A	1.3mA/A 1.6mA/A	using Direct Method
	100 mAto1A 1Ato3A	None	Calibrated according to
	100A	2.5mA/A	procedure LCP01706, Rev 04 using Direct
	100A	None	Method
	100A	None	Calibrated according to
	100A	None	procedure LCP01703,
	50 to3A	See Matrix F	Rev 01 using Direct
Dc High Voltage	0V to 100 V	0.6 mV/V	Direct
	100 V to 1000 V	0.1 mV/V	measurement with
	1000 V to 8 kV 8 kV to 15 kV	0.4 mV/V 0.2 mV/V	High Voltage Probe and 6 2
	15 kV to 30 kV	0.1 mV/V	digit multimeter
	15 kV to 30 kV	None	Direct
Dc Voltage	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
	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	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	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	
	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

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	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
	750 V to 1000 V	None	LCP01703, Rev 01
Detectors	(9 kHz to 150 kHz)	0.63 dB	
	PRF = 0.1 Hz to 200 Hz	None	
	(9 kHz to 150 kHz)	None	
	PRF = 0.1 Hz to 200 Hz	None	
Equipment	None	None	
	None	None	
	None	0.45 + 7.6 nA	
	None	None	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	None	None	
Esd	None	None	
Fm Mod. Deviation	(+23 dBm to -40 dBm)	None	
	fe : 100 kHz to 10 MHz	9.8 mHz/Hz + 12 mHz	
	fm :20 Hz to 50 kHz	None	
	Af = 20 Hz to 50 kHz	None	Direct
	fc : 10 MHz to 1 GHz fm : 20 Hz to 100 kHz Af = 20 Hz to 5 MHz	9.8 mHz/Hz + 88 mHz	Measurement via Measuring Receiver FSMR26
	fe: 1 GHz to 18 GHz	9.8 mHz/Hz + 0.2 Hz	fc = Carrier
	fm : 20 Hz to 100 kHz Af = 20 Hz to 5 MHz	None	Frequency fm = Modulation
	fm : 20 Hz to 100 kHz Af = 20 Hz to 5 MHz	None	Rate
	fc : 10 MHz to 1 GHz	29 mHz/Hz + 1 Hz	Af = Peak
	fm : 100 KHz to 5 MHz	None	Deviation
	Af = 20 Hz to 5 MHz	None	
	fe: 1 GHz to 18 GHz	29 mHz/Hz + 1 Hz	
	fm : 100 KHz to 5 MHz	None	
	Af = 20 Hz to 5 MHz	None	
Frequency	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)

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	-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
	-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 & Sourcing	None	None	
	None	None	
	None	None	
	None	None	
Generating Instruments	None	None	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	None	None	
	None	None	
Harmonics Content	Fundamental Frequency	2.0 dB	
	0.1 MHz to 9 GHz	None	
	0 to 10 dBm	None	Direct
	0 to 10 dBm	None	Measurement via
	Harmonics Frequency	None	Measuring Receiver
	0.2 MHz to 18 GHz	None	FSMR26
	-100 dBm to 0 dBm	None	
Inductance	100 Hz & 120 Hz 200 pH to 2000 pH 2 MH to 20 mH	2.9 19	Direct measurement with LCR meter
	20 mH to 200 mH	0.18 mH	
	200 mH to 2000 mH	None	
	2Hto 20H	41 mH	
	1 kHz	None	
	20 to 200 pH	0.29	
	200 UH to 2000 pH	None	
	2 mH to 20 mH	15	
	20 mH to 200 mH	0.13 mH	
	200 mH to 2000 mH	1.3mH	
	2Hto 20H	44 mH	
	1000 Hz	None	
	100 uH to 1 mH 1 mH to 10 mH 10 mH to 100 mH 100 mH to1H	23 mHz/H + 22 nH 12 mH/H + 25 uH 6 mH/H + 0.1 mH 3 + 0.4 mH	Calibration using Decade Inductor 1491-G
	1Hto10H	3 mH/H + 0.3 mH	
	None	None	
Instrument	None	None	
	100 kHz to 26.5 GHz	None	
	None	None	
	None	None	
	None	None	
	0.03 to 0.33 mA	None	
	1.0 to 33 mV	None	
	None	None	
	100 yA	None	HP 3458A
	None	None	
	None	None	
	None	None	Measuring
Instruments	20 Hz to 18 GHz	None	
	None	None	
	None	None	
	None	None	
	10 KN to 50 KN	0.2 kN	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	None	None	
	1.2 MHz to 2.000 MHz	None	
Interruption	0.2 Hz to 250 kHz	None	
Load)	-20 V to 270 V 0.1 us to 10 us	None	
	50 ms/div to 5 s/div	None	
Peak Current (inrush)	200 A to 1000 A	27	
Peak, Quasi-peak,	Level 10 dBuV to 70 dBuV	None	
	Level 10 dBuV to 70 dBuV	None	
Phase	0° to 360 °	0.14 °	
	None	Input voltage :	
	None	Input voltage :	
Phase Mod. Deviation	(+23 dBm to -40 dBm)	None	Direct
	(+23 dBm to -40 dBm)	None	Measurement via
	fc : 200 kHz to 18 GHz	9.9 mrad/rad + 1 mrad	Measuring
	fm : 20 Hz to 5 MHz	None	Receiver
	Ag = 0.001 rad to 100 rad	None	FSMR26
	Ag = 0.001 rad to 100 rad	None	fc = Carrier
	Ag = 0.001 rad to 100 rad	None	Frequency
	Ag = 0.001 rad to 100 rad	None	fm = Modulation
	Ag = 0.001 rad to 100 rad	None	Rate
	Ag = 0.001 rad to 100 rad	None	Ag = Peak
	Ag = 0.001 rad to 100 rad	None	Deviation
R ($11, $22)	9 kHz to 8.5 GHz	None	Direct
	9 kHz to 8.5 GHz	None	Measurement Via
	1 constrained by: Os	None	Vector Network
	1 constrained by: Os	None	Analyzer
	9 kHz to 100 kHz	None	ZNB8 and
	0 to 0.1	0.005	Calibration Kit
	0.1 to 0.2	0.005	ZV-Z270
	0.2 to 0.3	0.006	
	0.3 to 0.4	0.007	With reference to
	0.4 to 0.5	0.008	CISPR-16-1-1 /2/
	0.5 to 0.6	0.009	3, ANSI C63.4 and
	0.6 to 0.7	0.011	IEC 61000-4-6
	0.7 to 0.8	0.014	

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks
	0.8 to 0.9	0.017	
	0.9 to 1	0.02	See note A
R (s11, $22)	0 to 0.1	0.006	
	0.1 to 0.2	0.006	
	0.2 to 0.3	0.007	Direct
	0.3 to 0.4	0.008	Measurement Via
	0.4 to 0.5	0.009	Vector Network
	0.5 to 0.6	0.011	Analyzer
	0.6 to 0.7	0.013	ZNB8 and
	0.7 to 0.8	0.02	Calibration Kit
	0.8 to 0.9	0.024	ZV-Z270
	0.9 to 1	0.028	
	4 GHz to 8.5 GHz	None	
	0 to 0.1	0.01	With reference to
	0.1 to 0.2	0.01	CISPR-16-1-1 /2/
	0.2 to 0.3	0.011	3, ANSI C63.4 and
	0.3 to 0.4	0.013	IEC 61000-4-6
	0.4 to 0.5	0.015	
	0.5 to 0.6	0.018	
	0.6 to 0.7	0.021	See note A
	0.7 to 0.8	0.026	
	0.8 to 0.9	0.03	
	0.9 to 1	0.036	
Reflection Coefficient,	9 kHz to 8.5 GHz	None	
	100 kHz to 4 GHz	None	
Relative	8 kHz to 1 GHz	None	
Response Of Emi	BandA	None	
	BandA	None	
Rf Frequency	20 Hz to 18 GHz	50 pHz/Hz + 56 mHz	Direct
	20 Hz to 18 GHz	None	Measurement via
	20 Hz to 18 GHz	None	Measuring Receiver
	20 Hz to 18 GHz	None	FSMR26 locked to
	20 Hz to 18 GHz	None	GPS Reference
	20 Hz to 18 GHz	None	Standard
	8 kHz to 12.75 GHz	50 pHz/Hz + 56 mHz	Sourcing via
	8 kHz to 12.75 GHz	None	SMA100B
	8 kHz to 12.75 GHz	None	Signal Generator
	8 kHz to 12.75 GHz	None	locked to
	8 kHz to 12.75 GHz	None	GPS Reference
	8 kHz to 12.75 GHz	None	Standard
	100 kHz to 26.5 GHz	9.1 pHZ/Hz + 70 mHz	Measuring using
	100 kHz to 26.5 GHz	None	Rohde & Schwarz
	100 kHz to 26.5 GHz	None	FSMR26 disciplined
	100 kHz to 26.5 GHz	None	by Fluke 910R GPS
	100 kHz to 26.5 GHz	None	Reference
Rf Level	DC to 18 GHz	None	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
	+20 dBm to -30 dBm	None	
	DC to 100 MHz 100 MHz to 2 GHz 2 GHz to 8 GHz 8 GHz to 12 GHz	0.05 dB 0.05 dB 0.06 dB 0.07 dB	Direct measurement via NRP18T Power Sensor
	12 GHz to 18 GHz	0.10 dB	
	8 kHz t0 18 GHz	None	
	+20 dBm to -45 dBm	None	
	+20 dBm to -45 dBm	None	Direct
	8 kHz to 4 GHz	0.06 dB	measurement via
	4 GHz to 8 GHz	0.07 dB	NRP18A Power
	8 GHz to 12 GHz	0.08 dB	Sensor
	12 GHz to 18 GHz	0.11 dB	
	8 kHz to 12.75 GHz	None	
	10 dBm to -45dBm	None	
	8 kHz to 2 GHz	0.09 dB	SMA‘100B Signal
	2 GHz to 4 GHz	0.10 dB	Generator
	4 GHz to 7 GHz	0.13 dB	corrected Via
	7 GHz to 8 GHz	0.14 dB	Power Sensor
	8 GHz to 8.5 GHz 8.5 GHz to 12.5 GHz	0.19 dB 0.21 dB	and Power Splitter
	12.5 GHz to 12.75 GHz	0.22 dB	
	step)	None	Sourcing via SMA‘100B Signal
	Attenuation 0 to 9 dB	0.09 dB	Generator
	Attenuation 10 dB to	0.07 dB	and Step Attenuator
	100 dB	None	
Rf Receiving	20 Hz to 18 GHz	None	
	None	None	
	None	None	
Rf Sourcing /	None	None	
	None	None	
Ring Wave	None	None	
Rise Time	500 ps to 1 us	84 ps	
	250 ps Nominal 1 kHz to 10 MHz	0.6 ns	
	250 mV to 2.5 V pp into 50 Ohm	None	
		0.3 ns	
Rise Time (current)	0.1 us to 5 us	2.4ns	IEC 61000-4-12
Rise Time (voltage)	0.1 us to 5 us	9.3 ns	clause 9.3.2
Scattering Parameter:	Level 40 dBuV	None	
	None	None	
Sourcing/generating	None	None	
Transmission	9 kHz to 8.5 GHz	None	

Instrument Calibrated/Measurement Parameter	**Range**	**Calibration and Measurement Capability Expressed as an Uncertainty (±)***	**Remarks**
Tuned Rf Level	8 kHz to 18000 MHz	Refer Matrix B	Direct
	+20 dBm to -120 dBm	None	measurement via
	+20 dBm to -120 dBm	None	FSMR26
	+20 dBm to -120 dBm	None	Measuring
	+20 dBm to -120 dBm	None	Receiver and
	+20 dBm to -120 dBm	None	Power Sensor
Voltage	200 V to 6000 V	20 mV/V	With reference to
Voltage (cont.) (with Or	-400 V to 400 V	None	
Voltage (dc)	100 V to 30 kV	None	With reference to
Voltage (normal Mode) Voltage (common Mode) Rise Time Pulse Duration Repetition Frequency	20 V to 8000 V 20 V to 8000 V to1 us 10 ns to 10 us 1 Hz to 1 MHz	47 66 mV/V 0.12 ns 0.45 ns 0.10 mHz/Hz	With reference to IEC 61000-4-4 clause 6.1.2 & 6.2.2, ISO 7637-2 Annex C
	20 V to 8000 V 25 V to 1000 V us 10 ns to 10 us 1 Hz to 1 MHz	44 mv/V 66 mV/V 0.12 ns 0.94 ns 0.10 mHz/Hz	With reference to IEC 61000-4-4 clause 6.1.2, ISO 7637-2 Annex C
Voltage Dips &	0.2 Hz to 250 kHz	None	
Without Load) Peak Voltage (overshoot) (100 Q Load) Rise Time/fall Time (100 Q	-20 V to 270 V 0.1 us to 10 us	20 mV/V	With reference to IEC 61000-4-11 clause 6.1.2

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NO: SAMM 634

SCOPE OF CALIBRATION : ELECTRICAL

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks

SCOPE OF CALIBRATION : ELECTRICAL - RF & MICROWAVE (50 Ohm SYSTEM)

Instrument Calibrated/Measurement Parameter	Range	Calibration and Measurement Capability Expressed as an Uncertainty (±)*	Remarks