

# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK



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ISO/IEC 17025:2017

### Fluke Precision Measurement Ltd

Issue No: 063 Issue date: 18 February 2025

52 Hurricane Way  
Norwich  
Norfolk  
NR6 6JB

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Calibration performed by the Organisations at the locations specified below

#### Locations covered by the organisation and their relevant activities

##### Laboratory locations:

Location details	Activity
<b>Address</b> 52 Hurricane Way Norwich Norfolk NR6 6JB	Electrical

##### Site activities performed away from the locations listed above:

Location details	Activity	Location code
The customers' site or premises must be suitable for the nature of the particular calibrations undertaken and will be the subject of contract review arrangements between the laboratory and the customer.	Electrical	Site capabilities are listed at the end of the schedule, click on link



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Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>ELECTRICAL</b>			All calibrations are performed as a comparison against a reference standard unless otherwise stated in the remarks column.
DC RESISTANCE	6 mΩ 20 mΩ 0.1 Ω 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ 1 GΩ 10 GΩ 100 GΩ 1 TΩ 2 TΩ 5 TΩ 9 TΩ 10 TΩ	7.8 μΩ/Ω 3.6 μΩ/Ω 3.4 μΩ/Ω 0.69 μΩ/Ω 0.57 μΩ/Ω 0.32 μΩ/Ω 0.43 μΩ/Ω 0.39 μΩ/Ω 1.2 μΩ/Ω 3.4 μΩ/Ω 4.1 μΩ/Ω 8.2 μΩ/Ω 18 μΩ/Ω 87 μΩ/Ω 0.20 % 0.50 % 0.50 % 0.50 % 0.90 % 0.90 %	Sourcing resistance for measuring instruments
	100 GΩ 1 TΩ 10 TΩ	0.075 % 0.10 % 0.84 %	For calibrating 3 terminal guarded high resistance meters
	100 GΩ 1 TΩ 2 TΩ 5 TΩ 9 TΩ	0.42 % 0.44 % 0.74 % 0.81 % 1.4 %	For measuring 5320A calibrators
Other values	0 Ω to 20 mΩ 20 mΩ to 50 mΩ 50 mΩ to 0.2 Ω 0.2 Ω to 2.0 Ω 2.0 Ω to 20 Ω 20 Ω to 200 Ω 200 Ω to 2.0 kΩ 2.0 kΩ to 20 kΩ 20 kΩ to 200 kΩ 200 kΩ to 2.0 MΩ 2.0 MΩ to 20 MΩ 20 MΩ to 200 MΩ 200 MΩ to 2 GΩ 2 GΩ to 20 GΩ	38 nΩ 3.8 μΩ/Ω 3.7 μΩ/Ω 1.5 μΩ/Ω 1.4 μΩ/Ω 0.62 μΩ/Ω 0.68 μΩ/Ω 0.66 μΩ/Ω 1.3 μΩ/Ω 3.7 μΩ/Ω 7.2 μΩ/Ω 11 μΩ/Ω 28 μΩ/Ω 110 μΩ/Ω	Sourcing and measurement capability for the calibration of resistance instruments



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
RESISTANCE (continued) Earth Bonding Resistance 50Hz to 60 Hz	1 mΩ to 20 mΩ 20 mΩ to 100 mΩ	2.4 % 0.83 %	4-wire
	100 mΩ to 1 Ω 1 Ω to 100 Ω 100 Ω to 2 kΩ	0.32 % 0.44 % 0.091 %	2-wire & 4-wire
DC VOLTAGE			
Specific Values	100 mV 1 V 1.018 V 10 V 100 V 1000 V	1.8 μV/V 0.46 μV/V 0.46 μV/V 0.27 μV/V 0.56 μV/V 0.61 μV/V	Generation for voltage measuring instruments
Other Values	0 V to 10 mV 10 mV to 20 mV 20 mV to 100 mV 100 mV to 200 mV 200 mV to 20 V 20 V to 200 V 200 V to 1050 V	80 nV 6.5 μV/V 5.7 μV/V 4.9 μV/V 2.6 μV/V 2.5 μV/V 4.8 μV/V	Sourcing and measurement capability for the calibration of voltage instruments
DC Voltage Linearity			
2 V range	0 V to 0.5 V 0.5 V to 1 V At 1 V 1 V to 1.5 V 1.5 V to 2 V	0.26 uV 0.31 uV 0.25 uV 0.37 uV 0.45 uV	
20 V range	0 V to 5 V 5 V to 10 V At 10 V 10 V to 15 V 15 V to 20 V	2.6 uV 3.0 uV 0.75 uV 3.7 uV 4.4 uV	
200 V range	At 100 V	7.5 uV	
1 kV range	At 500 V	75 uV	
DC HIGH VOLTAGE	1 kV to 10 kV 10 kV to 40 kV	220 μV/V 500 μV/V	For the calibration of high voltage sources, meters and dividers.
DC CURRENT	0 A to 10 μA 10 μA to 200 μA 200 μA to 20 mA 20 mA to 200 mA 200 mA to 1 A 1 A to 20 A 20 A to 100 A	240 pA 2.4 μA/A 1.5 μA/A 1.9 μA/A 6.5 μA/A 6.8 μA/A 15 μA/A	Sourcing and measurement capability for the calibration of current instruments



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Measured Quantity Instrument or Gauge		Range							Expanded Measurement Uncertainty ( $k = 2$ )					Remarks				
AC HIGH VOLTAGE		50 Hz and 60 Hz: 1 kV to 10 kV 10 kV to 30 kV 1 kV to 10 kV 10 kV to 30 kV							0.17 % 0.23 % 0.19 % 0.25 %					For the calibration of high voltage meters and sources. For the calibration of high voltage dividers				
CURRENT																		
Absolute current measurement (( $\mu$ A/A)																		
Frequency kHz	2 $\mu$ A	10 $\mu$ A	100 $\mu$ A	1 mA	10 mA	20 mA	50 mA	100 mA	200 mA	500 mA	1 A	2 A	5 A	10 A	20 A	50 A	100 A	
DC	92	29	18	15	18	18	19	19	19	19	21	19	22	21	20	26	27	
0.01	670	260	55	42	25	25	31	31	32	30	30	30	40	40	40	40	50	
0.02	670	260	52	42	24	24	27	27	28	27	28	27	31	34	38	44	52	
0.04	670	220	50	41	24	24	24	24	25	25	26	25	30	33	37	44	52	
1	670	200	50	41	22	22	23	23	24	23	25	24	29	33	36	43	51	
10	670	200	50	41	23	23	24	23	24	23	25	24	29	33	36	43	51	
30	670	200	54	41	24	24	24	24	25	24	25	25	30	41	42	61	88	
70	670	200	55	43	29	28	25	25	26	24	26	29	38	68	79	110	140	
100	670	210	58	47	34	31	27	25	26	25	28	33	41	83	100	140	170	



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<b>TEMPERATURE SIMULATION</b>  Fluke 9100, 5500 and 525B series calibrators and Datapaq series calibrators  Temperature simulators, calibration by electrical simulation Base metal thermocouples	Internal reference junction	0.066 °C	Product specific; calibration of calibrator internal reference junction
Type E	-250 °C to -100 °C -100 °C to +1000 °C	0.100 °C 0.070 °C	Excluding reference junction compensation
Type J	-210 °C to -100 °C -100 °C to +1200 °C	0.076 °C 0.071 °C	
Type K	-200 °C to -100 °C -100 °C to +1372 °C	0.083 °C 0.076 °C	
Type N	-200 °C to -100 °C -100 °C to +1372 °C	0.100 °C 0.085 °C	
Type T	-250 °C to -150 °C -150 °C to +400 °C	0.130 °C 0.083 °C	
Noble metal thermocouples			
Type B	500 °C to 1550 °C 1550 °C to 1820 °C	0.15 °C 0.19 °C	
Type R	-50 °C to +100 °C 100 °C to 1000 °C 1000 °C to 1760 °C	0.19 °C 0.16 °C 0.27 °C	
Type S	0 °C to 1400 °C 1400 °C to 1750 °C	0.20 °C 0.24 °C	Including reference junction compensation
Temperature simulators, calibration by electrical simulation Base metal thermocouples			
Type E	-250 °C to -100 °C -100 °C to +1000 °C	0.170 °C 0.098 °C	
Type J	-210 °C to -100 °C -100 °C to +1200 °C	0.115 °C 0.100 °C	
Type K	-200 °C to -100 °C -100 °C to +1372 °C	0.130 °C 0.109 °C	
Type N	-200 °C to -100 °C -100 °C to +1372 °C	0.170 °C 0.125 °C	
Type T	-250 °C to -150 °C -150 °C to +400 °C	0.230 °C 0.130 °C	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
Temperature simulators, calibration by electrical simulation Noble metal thermocouples			Including reference junction compensation
Type B	500 °C to 600 °C 600 °C to 1820 °C	0.29 °C 0.24 °C	
Type R	-50 °C to +100 °C 100 °C to 1000 °C 1000 °C to 1760 °C	0.37 °C 0.22 °C 0.31 °C	
Type S	0 °C to 1400 °C 1400 °C to 1750 °C	0.27 °C 0.28 °C	
CAPACITANCE	At effective frequencies from 0.08 Hz to 6 Hz 0.2 nF to 2 nF 2 nF to 4 nF 4 nF to 20 nF 20 nF to 200 nF 0.2 µF to 2 µF 2 µF to 20 µF 20 µF to 200 mF  At 100 Hz: 0.3 µF 1.0 µF 2 µF 3 µF 10 µF  At 1 kHz: 350 pF 480 pF 600 pF 1 nF 2 nF 3 nF 10 nF 30 nF 100 nF 200 nF 300 nF	210 µF/F 480 µF/F 260 µF/F 130 µF/F 68 µF/F 91 µF/F 85 µF/F  0.26 % 0.075 % 0.073 % 0.13 % 0.13 %  0.26 % 0.16 % 0.13 % 0.070 % 0.080 % 0.080 % 0.080 % 0.061 % 0.061 % 0.068 % 0.065 %	Measurement of ground-isolated capacitors and capacitance calibrators



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>FREQUENCY</b>	10 MHz	6.2 parts in $10^{12}$	Generation and measurement for calibration of frequency instruments.
Measurement	10 Hz to 100 Hz 100 Hz to 1 kHz 1 kHz to 100 kHz 100 kHz to 1 MHz 1 MHz to 10 MHz 10 MHz to 30 MHz 30 MHz to 40 GHz	2.5 parts in $10^7$ 3.1 parts in $10^8$ 3.3 parts in $10^9$ 1.8 parts in $10^{10}$ 1.4 parts in $10^{11}$ 7.2 parts in $10^{12}$ 6.6 parts in $10^{12}$	May be reported as 1/f for time.
Time interval	50 ns to 1 s 1 s to 100 s 100 s to 1 000 s 1 000 s to 10 000 s 10 000 s to 100 000 s	0.82 ns 1.1 ns 6.3 ns 63 ns 630 ns	For the calibration of timers & stopwatches
<b>Wideband Voltage</b>	1 V into 50 Ω 1 MHz 10 MHz 20 MHz 30 MHz 40 MHz 50 MHz  3 V into 50 Ω 1 MHz 10 MHz 20 MHz 30 MHz 40 MHz 50 MHz	0.051 % 0.081 % 0.11 % 0.16 % 0.17 % 0.17 %  0.11 % 0.11 % 0.16 % 0.21 % 0.31 % 0.31 %	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks		
<b>Fluke 5790 Series AC Measurement Standard Calibration - AC/DC Voltage Difference</b>					
The table below shows the Calibration and Measurement Capability (CMC) for the calibration of Fluke 5790 Series AC Measurement Standards. The CMCs are in $\mu\text{V}/\text{V}$ of the nominal voltage and relate to the measured AC/DC voltage difference of these instruments.					
Frequenc y	2.2 mV range	7 mV range	22 mV range	70 mV range	
	2 mV	6 mV	10 mV	20 mV	20 mV
10 Hz	550	220	100	78	68
20 Hz	560	220	76	65	51
30 Hz	570	220	76	65	51
40 Hz	560	170	76	65	51
55 Hz	550	170	76	65	51
60 Hz	560	170	76	65	51
120 Hz	560	170	76	65	51
300 Hz	560	170	76	65	51
400 Hz	560	170	73	62	48
500 Hz	550	170	86	62	48
1 kHz	550	170	75	62	48
10 kHz	560	170	76	70	58
20 kHz	550	170	72	62	48
30 kHz	560	170	84	60	45
50 kHz	550	170	84	60	44
70 kHz	550	170	77	66	54
100 kHz	550	220	120	62	48
200 kHz	560	250	110	71	60
300 kHz	540	250	100	76	66
500 kHz	580	260	150	120	110
700 kHz	580	280	170	120	120
800 kHz	560	270	180	140	140
1 MHz	590	290	190	160	150



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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**Fluke 5790 Series AC Measurement Standard Calibration (continued) - AC/DC Voltage Difference**

The table below shows the Calibration and Measurement Capability (CMC) for the calibration of Fluke 5790 Series AC Measurement Standards. The CMCs are in  $\mu\text{V}/\text{V}$  of the nominal voltage and relate to the measured AC/DC voltage difference of these instruments.

Frequency	220 mV range			700 mV range					2.2 V range			
	60 mV	100 mV	200 mV	200 mV	300 mV	400 mV	500 mV	600 mV	700 mV	600 mV	1 V	2 V
10 Hz	41	28	21	19	31	20	20	21	21	16	12	9.0
20 Hz	30	18	15	15	16	16	16	15	15	16	12	7.3
30 Hz	27	17	15	15	17	17	15	15	15	16	11	6.7
40 Hz	27	15	14	14	14	14	13	13	13	14	6.1	6.7
55 Hz	27	15	14	13	14	14	13	13	13	13	6.1	8.4
60 Hz	29	15	14	13	14	14	13	13	13	13	6.1	6.9
120 Hz	29	16	14	13	14	14	13	13	13	13	6.1	6.5
300 Hz	29	15	14	13	14	14	13	13	13	13	6.4	6.7
400 Hz	27	12	11	9.0	11	11	9.5	6.9	6.9	7.6	6.1	6.1
500 Hz	27	12	11	9.0	11	11	9.5	7.2	7.2	7.6	6.1	6.1
1 kHz	27	16	11	12	12	14	9.5	7.7	7.7	7.6	6.1	6.2
10 kHz	27	13	11	12	11	11	9.5	8.1	8.1	12	7.6	7.6
20 kHz	27	19	11	9.1	11	11	9.5	7.5	7.5	12	7.6	7.6
30 kHz	30	14	11	11	14	11	9.5	7.5	7.5	12	7.6	7.6
50 kHz	28	14	11	11	11	11	9.8	7.9	7.9	12	7.6	7.7
70 kHz	31	20	11	14	11	11	11	9.0	9.0	12	8.6	8.4
100 kHz	47	14	13	13	12	13	11	11	11	14	8.6	8.5
200 kHz	50	24	24	24	21	21	21	21	21	23	14	12
300 kHz	45	28	24	24	23	21	22	25	25	25	19	16
500 kHz	81	44	37	37	38	36	37	44	44	38	24	23
700 kHz	84	51	54	54	54	50	50	58	58	48	27	24
800 kHz	98	55	58	58	54	54	57	73	73	49	31	26
1 MHz	130	75	75	75	66	66	89	92	92	54	35	28

Frequency	7 V range						22 V range			
	2 V	3 V	4 V	5 V	6 V	7 V	6 V	8 V	10 V	20 V
10 Hz	11	9.2	22	14	11	9.1	20	16	14	12
20 Hz	8.9	8.5	19	8.3	8.5	8.8	11	12	12	12
30 Hz	8.5	8.4	9.5	8.4	8.2	8.3	6.7	6.3	6.5	8.8
40 Hz	6.8	7.0	7.7	5.8	5.7	6.2	6.4	6.4	6.8	8.8
55 Hz	6.2	6.6	7.9	6.1	5.8	6.2	7.1	7.1	7.7	8.8
60 Hz	6.3	6.1	8.1	6.1	5.8	6.2	6.1	6.3	6.9	8.0
120 Hz	6.4	7.4	6.2	5.8	5.8	6.2	6.4	6.4	6.5	8.0
300 Hz	6.7	6.1	5.7	6.1	5.7	6.1	6.3	6.3	6.6	8.0
400 Hz	6.6	7.0	5.7	5.8	6.0	6.5	6.3	6.2	6.5	8.0
500 Hz	6.2	6.7	5.9	5.8	5.7	6.1	6.7	6.6	6.5	8.0
1 kHz	6.6	6.2	6.3	5.8	5.7	6.2	8.3	6.5	6.5	8.0
10 kHz	7.6	6.8	6.8	6.9	6.1	6.1	6.6	6.2	6.6	8.0
20 kHz	7.6	8.1	7.8	6.8	6.9	6.2	6.3	6.2	6.5	8.0
30 kHz	7.8	7.7	7.7	6.9	6.9	6.2	6.4	6.2	6.8	6.2
50 kHz	7.6	7.8	9.1	7.4	8.9	6.6	6.2	6.2	7.4	6.4
70 kHz	8.6	9.5	9.4	8.3	11	8.4	8.1	7.1	8.2	6.8
100 kHz	9.2	9.2	11	11	12	9.1	7.1	7.3	12	9.2
200 kHz	12	11	15	14	13	12	13	10	18	13
300 kHz	14	15	16	17	15	15	12	12	23	14
500 kHz	83	80	81	81	69	67	69	67	54	23
700 kHz	80	81	82	81	68	67	69	68	54	24
800 kHz	80	81	82	81	82	83	69	68	68	30
1 MHz	81	81	81	81	81	81	68	68	68	35



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Measured Quantity Instrument or Gauge	Range		Expanded Measurement Uncertainty ( $k = 2$ )		Remarks									
<b>Fluke 5790 Series AC Measurement Standard Calibration (continued) - AC/DC Voltage Difference</b>														
The table below shows the Calibration and Measurement Capability (CMC) for the calibration of Fluke 5790 Series AC Measurement Standards. The CMCs are in $\mu\text{V}/\text{V}$ of the nominal voltage and relate to the measured AC/DC voltage difference of these instruments.														
Frequency	20 V	30 V	40 V	50 V	60 V	70 V	220 V range							
	16	23	15	12	14	14	16							
10 Hz	16	23	15	12	14	14	17							
20 Hz	11	12	10	9.5	9.5	9.5	13							
30 Hz	8.2	8.8	12	9.5	9.5	9.5	16							
40 Hz	8.2	9.9	9.7	9.5	9.5	9.5	14							
55 Hz	11	12	9.8	9.5	9.5	9.5	12							
60 Hz	8.8	12	11	9.5	9.5	9.5	13							
120 Hz	8.8	8.8	11	9.5	9.5	9.5	13							
300 Hz	8.8	8.8	12	9.5	9.5	9.5	12							
400 Hz	8.8	11	11	9.8	8.8	8.8	16							
500 Hz	8.8	9.5	14	8.8	8.8	8.8	13							
1 kHz	8.8	9.5	9.6	8.8	8.8	8.8	12							
10 kHz	8.8	8.8	8.2	9.0	9.0	9.0	12							
20 kHz	8.8	8.8	8.4	8.8	9.0	9.0	13							
30 kHz	7.1	8.8	10	8.8	9.6	9.6	13							
50 kHz	7.3	9.5	9.0	8.8	9.2	9.2	14							
70 kHz	8.2	11	13	14	16	16	17							
100 kHz	9.5	12	14	14	16	16	25							
200 kHz	18	20												
300 kHz	19	20												
500 kHz	32	33												
700 kHz	34	38												
800 kHz	41													
1 MHz	36													

Frequency	700 V range				1000 V range		
	200 V	300 V	500 V	600 V	600 V	800 V	1000 V
10 Hz	36	23	24	21	21	22	23
20 Hz	15	14	14	14	14	14	14
30 Hz	15	14	14	14	14	14	14
40 Hz	15	13	13	14	14	14	14
55 Hz	15	13	13	13	13	13	13
60 Hz	15	13	13	13	13	13	13
120 Hz	15	13	13	13	13	13	13
300 Hz	14	13	13	13	13	13	13
400 Hz	13	13	13	13	13	13	13
500 Hz	14	13	14	13	13	13	13
1 kHz	14	13	14	14	14	13	13
10 kHz	14	13	14	14	14	13	13
20 kHz	15	14	14	14	14	13	13
30 kHz	14	14	15	16	16	14	14
50 kHz	16	17	18	21	21	17	19
70 kHz	23	24	24	24	24	23	23
100 kHz	33	38	38	41	41	46	43



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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**Fluke 5790 Series AC Measurement Standard Calibration - AC Voltage**

The table below shows the Calibration and Measurement Capability (CMC) for the calibration of Fluke 5790 Series AC Measurement Standards. The CMCs are in  $\mu\text{V}/\text{V}$  of the nominal voltage and relate to the AC voltage function of these instruments.

Frequency	2.2 mV range		7 mV range		22 mV range		70 mV range	
	2 mV	6 mV	10 mV	20 mV	20 mV	60 mV		
10 Hz	600	230	110	83	74	42		
20 Hz	620	230	100	71	59	32		
30 Hz	630	230	100	71	59	29		
40 Hz	620	190	100	71	59	29		
55 Hz	600	190	100	71	59	29		
60 Hz	610	190	100	71	59	30		
120 Hz	610	190	100	71	59	30		
300 Hz	610	190	100	71	59	30		
400 Hz	610	190	100	68	56	29		
500 Hz	620	180	110	68	56	29		
1 kHz	610	180	100	68	56	29		
10 kHz	610	190	100	75	65	29		
20 kHz	600	180	110	68	56	29		
30 kHz	620	180	100	66	54	31		
50 kHz	600	190	110	66	53	30		
70 kHz	610	190	100	72	61	32		
100 kHz	600	230	130	68	56	48		
200 kHz	620	250	120	77	67	51		
300 kHz	600	250	120	81	72	46		
500 kHz	600	270	160	120	110	81		
700 kHz	650	290	180	130	120	85		
800 kHz	620	280	190	150	140	98		
1 MHz	660	310	200	160	160	130		

Frequency	220 mV range			700 mV range						2.2 V range		
	60 mV	100 mV	200 mV	200 mV	300 mV	400 mV	500 mV	600 mV	700 mV	600 mV	1 V	2 V
10 Hz	42	28	22	20	31	20	20	21	21	16	12	9.1
20 Hz	32	19	15	16	16	16	15	15	15	16	12	7.3
30 Hz	29	18	15	16	18	17	15	15	15	16	11	6.8
40 Hz	29	16	14	14	14	14	13	13	13	14	6.3	6.7
55 Hz	29	16	14	14	14	14	13	13	13	13	6.3	8.5
60 Hz	30	16	14	14	14	14	13	13	13	13	6.3	7.0
120 Hz	30	17	14	14	14	13	13	13	13	13	6.3	6.5
300 Hz	30	16	14	14	14	14	13	13	13	13	6.6	6.7
400 Hz	29	13	11	10	12	11	9.7	7.1	7.1	8.0	6.3	6.2
500 Hz	29	14	11	10	11	11	9.7	7.4	7.3	8.0	6.3	6.2
1 kHz	29	17	11	13	13	14	9.7	7.9	7.9	8.0	6.3	6.3
10 kHz	29	14	11	12	12	11	9.7	8.2	8.2	12	7.8	8.0
20 kHz	29	20	11	11	12	9.7	7.7	7.7	12	7.8	7.7	
30 kHz	31	15	12	12	15	11	9.7	7.7	7.7	12	7.8	8.0
50 kHz	30	16	12	12	12	11	10	8.0	8.0	12	7.8	7.7
70 kHz	32	21	12	14	11	12	11	9.2	9.2	13	9.0	9.0
100 kHz	48	16	13	14	13	11	11	11	11	14	9.0	9.0
200 kHz	51	25	24	24	21	21	21	21	21	23	14	12
300 kHz	46	29	24	24	23	21	22	25	25	25	19	16
500 kHz	81	44	38	38	38	36	37	44	44	38	24	23
700 kHz	85	51	55	55	54	50	50	58	58	48	27	24
800 kHz	98	56	59	59	54	54	57	74	74	49	31	26
1 MHz	130	75	75	75	66	66	89	92	92	54	35	28



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**Fluke Precision Measurement Ltd**

Issue No: 063 Issue date: 18 February 2025

**Calibration performed by the Organisation at the locations specified**

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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**Fluke 5790 Series AC Measurement Standard Calibration - AC Voltage (Continued)**

The table below shows the Calibration and Measurement Capability (CMC) for the calibration of Fluke 5790 Series AC Measurement Standards. The CMCs are in  $\mu\text{V}/\text{V}$  of the nominal voltage and relate to the AC voltage function of these instruments.

Frequency	7 V range						22 V range			
	2 V	3 V	4 V	5 V	6 V	7 V	6 V	8 V	10 V	20 V
10 Hz	12	10	22	15	11	10	20	16	14	12
20 Hz	10	9.0	20	8.3	8.6	8.9	12	12	12	12
30 Hz	10	8.7	10	8.4	8.2	8.4	7.0	6.6	6.6	8.8
40 Hz	8.0	7.4	7.9	5.9	5.8	6.3	6.7	6.6	7.0	8.8
55 Hz	8.0	7.0	8.1	6.3	5.9	6.3	7.4	7.3	7.8	8.8
60 Hz	8.0	6.5	8.3	6.3	5.9	6.3	6.5	6.6	7.0	8.0
120 Hz	7.2	7.8	6.4	6.0	5.9	6.3	6.7	6.6	6.6	8.0
300 Hz	7.5	6.5	5.9	6.2	5.8	6.2	6.6	6.6	6.7	8.0
400 Hz	7.4	7.4	5.9	5.9	6.1	6.6	6.7	6.4	6.6	8.0
500 Hz	7.1	7.1	6.1	6.0	5.8	6.2	7.1	6.8	6.6	8.0
1 kHz	7.5	6.6	6.6	5.9	5.8	6.3	8.6	6.7	6.6	8.0
10 kHz	8.4	7.2	7.0	7.1	6.2	6.2	6.9	6.4	6.8	8.0
20 kHz	8.4	8.4	8.0	6.9	7.0	6.3	6.7	6.4	6.6	8.0
30 kHz	8.5	8.1	7.9	7.1	7.0	6.3	6.7	6.4	6.9	6.2
50 kHz	8.4	8.2	9.2	7.6	9.0	6.7	6.6	6.4	7.5	6.4
70 kHz	10	9.8	9.5	9.0	11	8.5	8.4	7.2	8.3	6.9
100 kHz	10	9.5	11	11	12	9.2	7.4	7.5	12	9.2
200 kHz	12	11	15	14	13	12	13	10	18	13
300 kHz	15	15	16	17	15	15	13	13	23	14
500 kHz	83	80	81	81	69	67	69	67	54	23
700 kHz	80	81	82	81	68	67	69	68	54	24
800 kHz	80	81	82	81	82	83	69	68	68	30
1 MHz	81	81	81	81	81	81	68	68	68	35

Frequency	70 V range						220 V range		
	20 V	30 V	40 V	50 V	60 V	70 V	60 V	100 V	200 V
10 Hz	17	24	16	12	14	14	16	17	14
20 Hz	12	12	10	9.7	9.6	9.6	13	13	14
30 Hz	10	10	12	9.7	9.6	9.6	16	13	14
40 Hz	10	11	10	9.7	9.6	9.6	14	13	14
55 Hz	12	12	10	9.7	9.6	9.6	12	13	14
60 Hz	10	13	11	9.7	9.6	9.6	13	13	14
120 Hz	10	9.3	11	9.7	9.6	9.6	13	13	14
300 Hz	10	9.3	12	9.7	9.6	9.6	13	13	14
400 Hz	10	11	11	10	8.9	8.9	16	13	13
500 Hz	10	10	14	9.0	8.9	8.9	14	13	13
1 kHz	10	10	9.9	9.0	8.9	8.9	13	13	13
10 kHz	10	9.3	8.6	9.2	9.1	9.1	13	13	13
20 kHz	10	10	8.8	9.0	9.1	9.1	13	13	13
30 kHz	9.0	10	10	9.0	9.8	9.7	13	13	13
50 kHz	9.0	10	9.3	9.0	9.4	9.4	14	13	13
70 kHz	10	12	13	15	16	16	17	20	20
100 kHz	11	13	15	15	16	16	25	31	32
200 kHz	18	20							
300 kHz	20	20							
500 kHz	32	33							
700 kHz	34	38							
800 kHz	41								
1 MHz	36								



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**Fluke Precision Measurement Ltd**

**Issue No: 063 Issue date: 18 February 2025**

**Calibration performed by the Organisation at the locations specified**

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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**Fluke 5790 Series AC Measurement Standard Calibration - AC Voltage (Continued)**

The table below shows the Calibration and Measurement Capability (CMC) for the calibration of Fluke 5790 Series AC Measurement Standards. The CMCs are in  $\mu\text{V}/\text{V}$  of the nominal voltage and relate to the AC voltage function of these instruments.

Frequency	700 V range				1000 V range		
	200 V	300 V	500 V	600 V	600 V	800 V	1000 V
10 Hz	36	23	24	21	21	22	23
20 Hz	15	14	14	14	14	14	14
30 Hz	15	14	14	14	14	14	14
40 Hz	15	13	13	14	14	14	14
55 Hz	15	13	13	13	13	13	13
60 Hz	15	13	13	13	13	13	13
120 Hz	15	13	13	13	13	13	13
300 Hz	14	13	13	13	13	13	13
400 Hz	14	13	13	13	13	13	13
500 Hz	14	13	14	13	13	13	13
1 kHz	15	13	14	14	14	13	13
10 kHz	15	13	14	14	14	13	13
20 kHz	15	14	15	14	14	13	13
30 kHz	15	14	15	16	16	14	15
50 kHz	17	17	19	21	21	17	19
70 kHz	23	24	25	24	24	23	23
100 kHz	34	38	38	41	41	46	43



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Measured Quantity Instrument or Gauge	Range				Expanded Measurement Uncertainty ( $k = 2$ )				Remarks							
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**MEASUREMENT CAPABILITIES FOR THE CALIBRATION OF FLUKE 792A AC/DC TRANSFER STANDARDS**

The table below shows the Calibration and Measurement Capability (CMC) for the calibration of Fluke 792A AC/DC transfer standards.

The CMCs are in  $\mu\text{V}/\text{V}$  of the nominal voltage and relate to the measured AC/DC voltage difference of these instruments.

Frequency	22 mV range				220 mV range				700 mV range						2.2 V range			7 V range				
	2 mV	6 mV	10 mV	20 mV	60 mV	100 mV	200 mV	200 mV	300 mV	400 mV	500 mV	600 mV	700 mV	600 mV	1 V	2 V	2 V	3 V	4 V	5 V	6 V	7 V
10 Hz	240	110	90	66	40	27	20	17	30	18	18	20	16	14	6.8	8.0	14	6.3	21.0	12.6	8.6	6.1
20 Hz	300	90	70	48	28	16	12	13	13	13	13	13	13	13	6.6	5.9	8.0	4.8	19.0	3.9	4.9	5.6
30 Hz	330	90	70	48	27	15	12	15	15	15	13	12	13	13	4.6	5.1	8.1	4.6	6.7	4.4	3.5	4.4
40 Hz	300	90	70	48	27	14	12	14	13	13	13	12	13	13	4.2	5.1	8.3	5.6	6.4	3.5	3.3	4.3
55 Hz	240	80	70	48	27	14	12	13	13	13	12	13	13	13	4.2	7.3	7.8	5.0	6.7	4.1	3.4	4.3
60 Hz	280	80	70	48	28	14	12	13	13	13	12	13	13	13	4.2	5.4	7.9	4.3	7.0	4.1	3.5	4.4
120 Hz	280	80	70	48	28	15	12	13	13	13	12	13	13	13	4.2	4.7	6.9	6.1	4.3	3.6	3.4	4.3
300 Hz	280	77	70	48	28	14	12	13	13	13	12	13	13	13	4.6	5.1	7.2	4.3	3.2	4.1	3.2	4.2
400 Hz	280	90	60	44	27	9.6	8.0	9.3	10	9.2	8.5	5.4	6.2	6.3	4.2	4.2	7.1	5.6	3.2	3.4	3.9	4.7
500 Hz	280	80	80	44	27	11	8.0	9.3	9.3	9.2	8.5	5.7	6.5	6.3	4.2	4.2	6.7	5.2	3.8	3.5	3.2	4.2
1 kHz	260	80	70	44	27	15	8.0	12	11	12.6	8.5	6.4	7.2	6.3	4.2	4.4	7.2	4.5	4.5	3.4	3.3	4.3
10 kHz	280	80	70	55	27	11	8.0	12	11	9.8	8.5	6.9	7.5	11	6.3	6.3	6.6	5.3	5.2	5.4	4.1	4.2
20 kHz	240	70	80	44	27	18	8.0	10	9.3	10	8.5	6.2	6.9	11	6.3	6.3	6.6	7.0	6.5	5.2	5.3	4.3
30 kHz	290	73	60	41	29	12	8.3	12	14	9.2	8.5	6.2	6.9	11	6.3	6.3	6.8	6.5	6.4	5.4	5.3	4.3
50 kHz	240	80	80	40	27	13	8.1	11	9.8	9.4	8.9	6.6	7.3	11	6.3	6.4	6.6	6.7	8.1	6.1	7.9	5.0
70 kHz	260	90	70	51	30	19	8.5	14	9.3	10	9.4	8.0	8.6	12	7.5	7.2	7.8	8.7	8.4	7.2	9.5	7.3
100 kHz	230	170	110	44	46	13	11	13	12	12	9.4	10	9.4	13	7.5	7.3	8.4	8.3	10.0	10	11	8.1
200 kHz	300	100	100	57	49	24	23	22	21	21	20	21	21	21	9	9	9.7	10	14	13	12	11
300 kHz	260	90	100	63	44	27	23	23	23	21	22	24	24	22	14	13	14	14	15	16	14	14
500 kHz	240	150	140	110	80	43	37	37	35	36	43	43	35	18	17	17	19	22	21	21	21	17
700 kHz	360	190	160	120	84	50	54	49	54	49	49	58	58	45	21	18	22	22	25	22	24	17
800 kHz	300	170	170	140	97	55	58	49	54	54	56	73	66	45	24	18	22	22	25	22	25	17
1 MHz	380	220	190	150	125	75	75	59	66	66	89	91	85	50	28	21	24	28	28	28	28	28

Frequency	22 V range				70 V range						220 V range			1 kV range					
	6 V	8 V	10 V	20 V	20 V	30 V	40 V	50 V	60 V	70 V	60 V	100 V	200 V	200 V	300 V	500 V	600 V	800 V	1000 V
10 Hz	18	14	10	8	16	23	15	11	13	13	15	17	13	35	20	21	18	20	20
20 Hz	5.3	6.1	5.7	7.7	9.4	11	9.1	8.5	8.5	8.5	12	13	13	15	13	13	13	13	13
30 Hz	5.2	4.7	4.7	7.7	7.1	7.7	10	8.5	8.5	8.5	15	13	13	15	13	13	13	13	13
40 Hz	4.7	4.7	5.3	7.7	7.1	9.0	8.8	8.5	8.5	8.5	14	13	13	15	12	12	13	13	13
55 Hz	5.7	5.6	6.4	7.7	9.4	11	8.8	8.5	8.5	8.5	12	13	13	15	12	12	13	13	12
60 Hz	4.3	4.5	5.4	6.8	7.8	11	9.3	8.6	8.5	8.5	13	13	13	15	12	12	13	13	12
120 Hz	4.7	4.6	4.7	6.8	7.8	7.7	10	8.5	8.5	8.5	12	13	13	15	12	13	13	13	12
300 Hz	4.6	4.5	4.9	6.8	7.8	7.7	10	8.5	8.5	8.5	12	13	13	14	12	13	13	13	12
400 Hz	4.7	4.3	4.7	6.8	7.8	9.5	9.7	8.8	7.7	7.7	15	13	12	13	13	13	13	13	12
500 Hz	5.3	5.0	4.7	6.8	7.8	8.6	13	7.7	7.7	7.7	12	13	12	13	13	13	13	13	12
1 kHz	7.2	4.8	4.7	6.8	7.8	8.5	8.7	7.7	7.7	7.7	11	13	12	14	13	13	13	13	12
10 kHz	5.0	4.3	5.0	6.8	7.8	7.7	7.1	8.0	7.9	7.9	11	13	13	14	13	13	13	13	12
20 kHz	4.6	4.3	4.7	6.8	7.8	7.7	7.3	7.7	7.9	7.9	11	13	13	15	14	14	13	13	13
30 kHz	4.7	4.5	5.2	4.3	5.8	7.7	9.1	7.7	8.7	8.7	11	13	13	14	14	14	16	14	14
50 kHz	4.5	4.5	6.1	4.6	6.0	8.5	7.9	7.7	8.3	8.3	12	13	13	15	16	17	20	16	18
70 kHz	7.0	5.7	7.2	5.3	7.1	10	13	14	15	15	16	19	19	22	24	24	23	22	23
100 kHz	5.8	6.0	11	8.2	8.6	11	14	14	16	16	16	31	31	33	38	40	45	43	
200 kHz	12	8.5	17	12	14	17													
300 kHz	11	11	22	13	15	17													
500 kHz	14	16	19	22	30	31													
700 kHz	21	20	24	23	32	37													
800 kHz	21	18	20	23	37														
1 MHz	25	20	20	29	31														



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**Fluke Precision Measurement Ltd**

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**Calibration performed by the Organisation at the locations specified**

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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**AC VOLTAGE MEASUREMENTS USING FLUKE 792A AC/DC TRANSFER STANDARD**

The CMCs shown relate to voltages and frequencies that lie within  $\pm 10\%$  of the specified values. For intermediate frequencies the CMC is that of the greater of the two adjacent frequencies.

Voltage	Calibration and Measurement Capability in The CMCs are in $\mu\text{V}/\text{V}$ of the nominal voltage expressed as an Expanded Uncertainty ( $k = 2$ )															
	22 mV Range				220 mV Range				700 mV Range		2 V Range		7 V Range		22 V Range	
	2 mV	6 mV	10 mV	20 mV	60 mV	100 mV	200 mV	400 mV	600 mV	1 V	2 V	4 V	6 V	10 V	20 V	
10 Hz	500	270	120	100	48	35	31	22	24	22	23	30	23	24	23	
20 Hz	530	260	85	66	34	22	20	16	14	14	13	23	14	14	15	
40 Hz	530	260	85	66	33	20	18	16	14	8	9	11	9	8	10	
55 Hz	500	260	85	66	33	20	18	16	14	8	10	11	9	9	10	
300 Hz	520	260	85	66	32	20	18	16	14	8	9	9	8	8	9	
500 Hz	520	260	93	63	32	18	15	12	9	8	8	9	8	8	9	
1 kHz	510	260	85	63	32	21	15	15	10	8	8	8	9	8	9	
10 kHz	520	260	85	71	32	18	15	13	10	10	9	10	9	8	9	
20 kHz	500	260	93	63	32	23	15	13	9	10	9	10	9	8	9	
30 kHz	530	260	77	61	33	19	15	12	9	10	9	10	9	8	7	
50 kHz	500	260	93	61	32	20	15	13	10	10	10	11	11	9	8	
70 kHz	510	260	85	68	34	24	16	13	11	10	10	12	12	10	8	
100 kHz	500	300	120	63	50	20	17	15	12	10	10	13	14	13	10	
200 kHz	530	270	111	73	53	28	27	23	23	12	12	16	15	19	15	
300 kHz	510	260	111	80	50	35	31	23	26	16	15	18	17	24	15	
500 kHz	500	290	150	121	90	51	43	40	45	24	23	27	27	21	24	
700 kHz	570	310	170	130	100	60	63	61	68	27	24	30	29	27	26	
1 MHz	810	650	200	170	140	90	110	85	106	37	32	37	37	24	32	

Voltage	Calibration and Measurement Capability in The CMCs are in $\mu\text{V}/\text{V}$ of the nominal voltage expressed as an Expanded Uncertainty ( $k = 2$ )																	
	70 V Range		220 V Range		1 kV Range													
	40 V	60 V	100 V	200 V	600 V	1 kV												
10 Hz	27	26	28	26	30	30												
20 Hz	16	16	18	18	18	18												
40 Hz	12	11	15	15	15	15												
55 Hz	12	11	15	15	15	14												
300 Hz	13	11	15	15	15	14												
500 Hz	15	11	15	14	15	14												
1 kHz	12	11	15	14	15	14												
10 kHz	10	11	15	15	15	14												
20 kHz	11	11	15	15	15	15												
30 kHz	12	11	15	15	18	16												
50 kHz	11	11	18	18	24	22												
70 kHz	15	17	23	23	26	26												
100 kHz	16	18	38	38	46	48												



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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**AC VOLTAGE MEASUREMENTS USING FLUKE 5790 Series AC MEASUREMENT STANDARD.**

The CMCs shown relate to voltages and frequencies that lie within  $\pm 10\%$  of the specified values. For intermediate frequencies the CMC will be increased. The CMCs are for the calibration of AC Voltage Sources and for AC Voltage measuring instruments simultaneously connected to the AC Voltage Source.

Range Amplitude	2.2 mV	7 mV	22 mV		70 mV	220 mV		700 mV
	2 mV	6 mV	10 mV	20 mV	60 mV	100 mV	200 mV	600 mV
10 Hz	1500	420	170	150	60	40	30	30
20 Hz	1500	420	160	140	49	25	22	23
40 Hz	1500	400	160	140	48	23	22	22
500 Hz	1500	400	170	140	48	22	20	18
1 kHz	1500	400	160	140	48	24	20	18
10 kHz	1500	400	160	140	48	22	20	20
20 kHz	1500	400	170	140	48	26	20	20
50 kHz	1500	400	170	140	130	23	20	20
100 kHz	1500	420	180	140	130	24	22	22
200 kHz	1500	440	170	150	130	32	31	31
500 kHz	1500	450	210	180	150	80	80	60
1 MHz	1500	490	260	230	610	260	150	150

Range Amplitude	2.2 V		7 V	22 V		70 V	220 V		700 V	1 kV
	1 V	2 V	6 V	10 V	20 V	60 V	100 V	200 V	600 V	1 kV
10 Hz	20	30	30	30	30	30	40	40	40	70
20 Hz	20	18	27	29	29	27	29	29	29	29
40 Hz	18	18	27	27	27	27	29	29	29	29
500 Hz	17	17	27	27	28	27	29	29	29	29
1 kHz	17	17	27	27	27	27	29	29	29	29
10 kHz	18	18	27	27	27	27	29	29	29	29
20 kHz	18	18	27	27	27	27	29	29	29	29
50 kHz	18	18	27	27	27	27	29	29	30	30
100 kHz	19	19	29	29	28	31	41	42	60	60
200 kHz	24	23	34	36	35					
500 kHz	50	50	90	70	50					
1 MHz	140	140	260	160	150					



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Measured Quantity Instrument or Gauge	Range							Expanded Measurement Uncertainty ( $k = 2$ )						Remarks				
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**AC/DC TRANSFER CURRENT DIFFERENCE**

Calibrations may be performed at intermediate frequencies with the larger of the adjacent uncertainties

Frequency kHz	AC/DC Current Transfer Difference ( $\mu\text{A}/\text{A}$ ) for A40B shunts without detector																	
	1 mA	5 mA	10 mA	20 mA	30 mA	50 mA	100 mA	200 mA	300 mA	500 mA	1 A	2 A	3 A	5 A	10 A	20 A	50 A	100 A
0.01	34	29	10	10	19	10	10	12	22	10	10	11	23	16	22	28	32	42
1	34	29	9	9	19	10	10	12	23	9	10	10	23	16	23	28	32	42
10	34	30	11	11	19	11	10	12	23	9	10	10	23	17	23	28	32	42
30	37	30	11	12	19	12	12	13	22	11	12	13	24	18	33	35	54	83
70	39	28	16	18	19	13	13	15	22	12	14	20	33	30	63	75	104	140
100	37	29	19	20	21	16	13	15	22	13	16	25	35	33	79	100	140	170

Frequency kHz	AC/DC Current Transfer Difference ( $\mu\text{A}/\text{A}$ ) for shunts with their own detector (Fluke 792A, 5790 Series or thermal converter)																	
	1 mA	5 mA	10 mA	20 mA	30 mA	50 mA	100 mA	200 mA	300 mA	500 mA	1 A	2 A	3 A	5 A	10 A	20 A	50 A	100 A
0.01	37	29	18	18	22	18	18	19	24	18	18	19	26	22	27	32	35	45
1	35	29	12	12	19	13	13	14	22	12	13	13	24	18	24	29	33	43
10	36	28	16	16	21	16	15	16	23	15	15	16	25	20	26	31	34	44
30	39	29	17	18	22	18	18	19	24	17	18	19	27	23	36	37	55	84
70	41	30	21	22	23	19	19	20	24	18	19	24	36	33	64	76	105	140
100	39	31	23	24	25	21	19	20	25	19	21	28	38	35	80	100	140	170

Frequency	Resistance at full rated current ( $\mu\text{A}/\text{A}$ )														
	1 mA	10 mA	20 mA	50 mA	100 mA	200 mA	500 mA	1 A	2 A	5 A	10 A	20 A	50 A	100 A	
DC	6.9	6.8	6.6	7.8	7.9	8.2	8.5	11.0	8.5	13.0	12.0	9.9	19.0	20.0	

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>PHASE ANGLE</b> Zero crossing phase meter			
Voltage/voltage 3 V : 1 V	0 °, 60 ° and 90 ° 60 Hz 400 Hz 1 kHz 5 kHz 10 kHz	0.11 ° 0.11 ° 0.13 ° 0.33 ° 0.59 °	
Voltage/current 33 V : 300 mA	0 ° 65 Hz	0.082 °	
33 V : 2 A	0 ° 65 Hz	0.12 °	
33 V : 5 A	0 ° 65 Hz 400 Hz	0.23 ° 0.36 °	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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**MEASUREMENT CAPABILITIES FOR THE CALIBRATION OF OSCILLOSCOPE CALIBRATORS**

<b>Voltage Amplitude</b>	DC Voltage 1 mV to 2 mV 2 mV to 6 mV 6 mV to 190 V	940 $\mu$ V/V 470 $\mu$ V/V 52 $\mu$ V/V	These voltages can be measured into either 50 $\Omega$ upto 5.56 V or 1 M $\Omega$ up to 190 V
	AC Squarewave 10 Hz to 100 kHz 1 mV to 2 mV 2 mV to 5 mV 5 mV to 19 mV 19 mV to 190 V	0.33 % 0.18 % 0.080 % 0.039 %	
	AC Sinewave Peak to peak value 10 mV to 5.56 V 10 Hz to 100 kHz 100 kHz to 200 MHz 200 MHz to 600 MHz 600 MHz to 2.02 GHz 2.02 GHz to 4 GHz 4 GHz to 6.4 GHz	0.23 % 0.97 % 1.3 % 1.3 % 2.0 % 2.3 %	Measurement of incident Voltage into Z <sub>0</sub> , BNC, SMA or PC3.5 mm Into 50 $\Omega$ or 1 M $\Omega$ Into 50 $\Omega$ Into 50 $\Omega$ Into 50 $\Omega$ Into 50 $\Omega$
	DC Current 0.1 mA to 100 mA	0.023 %	
	AC Squarewave 1 kHz 0.1 mA 1 mA to 10 mA	0.075 % 0.034 %	
	1 ns or greater, 25 mVpk-pk to 1 Vpk-pk 100 Hz to 10 MHz	22 ps	Into 50 $\Omega$
	25 ps nom 500 mV	3.0 ps	Into 50 $\Omega$
	70 ps 60 mV to 2 V	10 ps	Into 50 $\Omega$
	150 ps or greater, 5 mV to 3 V 10 kHz to 2 MHz	7 ps	Into 50 $\Omega$
	500 ps or greater, 5 mV to 3 V 10 kHz to 2 MHz 5 mV to 50 mV 50 mV to 3 V	22 ps 15 ps	Into 50 $\Omega$ Into 50 $\Omega$
<b>Current Amplitude</b>	Transition Amplitude 25 ps to 100 ns, 5 mV to 3 V	0.80 %	Into 50 $\Omega$ or 1 M $\Omega$
	50 mV to 3 V: 0.02 Hz to 10 Hz 10 Hz to 1 MHz 1 MHz to 4.2 GHz	0.060 $\mu$ Hz/Hz 0.030 $\mu$ Hz/Hz 0.010 $\mu$ Hz/Hz	
<b>Frequency and Markers</b>			



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>Input Characteristics</b>	Resistance 10 Ω to 12 MΩ	0.046 %	
	Capacitance 20 pF to 100 pF at 100 kHz	1.1 %	
<b>Pulse Width</b>	1 ns to 100 ns at 1 V	0.076 ns	



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Measured Quantity Instrument or Gauge		Range		Expanded Measurement Uncertainty ( $k = 2$ )				Remarks									
<b>MEASUREMENT CAPABILITIES FOR THE CALIBRATION OF FLUKE ELECTRICAL POWER STANDARDS</b>																	
Voltage Amplitude		<i>Calibration and Measurement Capability</i> in $\mu\text{V}/\text{V}$ expressed as an Expanded Uncertainty ( $k = 2$ ), from 10 % to 100 % of the stated voltage range. CMCs for intermediate frequencies may be provided upon request and will lie between the uncertainties at the adjacent points. The 2.4 V range is only accessible to drive the Fluke 52120A Transconductance Amplifier															
Voltage range:	0.8 V	1.5 V	2.4 V	10 V	23 V	45 V	90 V	180 V	360 V	1008 V							
Frequency							7 V	90 V									
DC	33	32	32	32	32	31	31	31	32	32							
16 Hz	26	25	28	23	23	21	54	23	26	28							
40 Hz	25	25	24	22	22	20	54	22	22	24							
50 Hz	25	25	24	22	23	21	54	22	22	24							
60 Hz	25	25	24	22	22	20	54	22	22	24							
120 Hz	25	25	24	22	22	20	54	22	22	24							
180 Hz	25	25	24	22	22	20	54	22	22	24							
450 Hz	23	22	24	22	22	20	54	22	22	24							
850 Hz	26	25	27	25	25	23	55	25	25	27							
1.2 kHz	36	35	35	34	34	33	58	34	34	35							
1.8 kHz	36	35	35	34	34	33	68	34	34	35							
2.4 kHz	36	35	35	34	34	33	68	34	34	35							
3.0 kHz	36	35	35	34	34	33	79	34	34	35							
3.6 kHz	36	35	35	34	34	33	79	34	34	35							
4.2 kHz	36	35	35	34	34	33	79	34	34	35							
4.8 kHz	36	35	35	34	34	33	79	34	34	35							
5.4 kHz	36	35	35	34	34	33	79	34	34	35							
6.0 kHz	36	35	35	34	34	33	79	34	34	35							



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Measured Quantity Instrument or Gauge		Range		Expanded Measurement Uncertainty ( $k = 2$ )			Remarks	
<b>Voltage Phase</b>		<i>Calibration and Measurement Capability</i> in millidegrees expressed as an Expanded Uncertainty ( $k = 2$ ), from 10 % to 100 % of the stated voltage range. The CMCs apply to the phase difference between the voltage channel and the master timing signal. Uncertainties for intermediate frequencies may be provided upon request and will lie between the uncertainties at the adjacent points. The 2.4 V range is only accessible to drive the Fluke 52120A Transconductance Amplifier.						
Voltage range:		0.8 V	1.5 V	2.4 V	10 V	23 V	45 V	90 V Range
Frequency							7 V	90 V
16 Hz	0.80	1.0	0.7	1.4	1.4	1.4	3.4	1.4
40 Hz	1.8	1.9	0.7	2.2	2.1	2.1	3.7	2.1
50 Hz	2.3	2.3	0.8	2.6	2.5	2.5	3.9	2.5
60 Hz	2.7	2.8	1.1	3.0	2.9	2.9	4.2	2.9
120 Hz	5.4	5.4	1.3	5.7	5.7	5.7	6.3	5.7
180 Hz	8.0	8.2	2.1	8.3	8.3	8.2	8.7	8.2
450 Hz	20	20	3.6	21	21	21	21	21
850 Hz	38	38	6.4	39	38	38	39	38
1.2 kHz	54	54	9.2	55	54	54	54	54
1.8 kHz	80	80	14	82	81	81	81	81
2.4 kHz	110	110	18	110	110	110	110	110
3.0 kHz	140	140	22	140	140	140	140	140
3.6 kHz	160	160	26	170	170	170	170	170
4.2 kHz	190	190	31	190	190	190	190	190
4.8 kHz	220	220	35	220	220	220	220	220
5.4 kHz	240	240	40	250	250	250	250	250
6.0 kHz	270	270	44	280	270	270	270	270
Voltage range:		180 V	360 V	1008 V				
Frequency								
16 Hz	1.4	1.4	1.5					
40 Hz	2.1	2.2	2.2					
50 Hz	2.5	2.6	2.6					
60 Hz	2.9	3.0	3.0					
120 Hz	5.7	5.7	5.7					
180 Hz	8.2	8.3	8.3					
450 Hz	21	21	21					
850 Hz	38	39	39					
1.2 kHz	54	55	54					
1.8 kHz	81	81	81					
2.4 kHz	110	110	110					
3.0 kHz	140	140	140					
3.6 kHz	170	170	170					
4.2 kHz	190	190	190					
4.8 kHz	220	220	220					
5.4 kHz	250	250	250					
6.0 kHz	270	270	270					



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Measured Quantity Instrument or Gauge		Range		Expanded Measurement Uncertainty ( $k = 2$ )				Remarks		
<b>Current Amplitude</b>	<i>Calibration and Measurement Capability</i> in $\mu\text{A}/\text{A}$ expressed as an Expanded Uncertainty ( $k = 2$ ), from 10 % to 100 % of the stated current range. CMCs for intermediate frequencies may be provided upon request and will lie between the uncertainties at the adjacent points.									
Current range:	0.1 A	0.5 A	1 A	2 A	5 A	0.5 A	10 A	20 A	50 A	100 A
Frequency										
DC	26	27	27	26	28	42	28	28	27	33
16 Hz	27	27	27	27	32	45	34	34	34	38
40 Hz	27	27	27	27	32	45	34	34	34	38
50 Hz	27	27	27	27	32	45	34	34	34	38
60 Hz	27	27	27	27	32	45	34	34	34	38
120 Hz	27	27	27	27	32	78	35	41	50	61
180 Hz	27	27	27	27	32	78	35	41	50	61
450 Hz	25	25	25	24	30	46	34	40	48	60
850 Hz	27	27	27	27	32	47	35	41	50	61
1.2 kHz	28	29	29	28	34	48	37	42	50	62
1.8 kHz	28	29	29	28	34	48	37	51	59	80
2.4 kHz	28	29	29	28	34	48	37	51	59	80
3.0 kHz	28	29	29	28	34	48	37	51	59	80
3.6 kHz	28	29	29	28	34	48	37	51	59	80
4.2 kHz	28	29	29	28	34	48	37	51	59	80
4.8 kHz	28	29	29	28	34	48	37	51	59	80
5.4 kHz	28	29	29	28	34	48	37	51	59	80
6.0 kHz	28	29	29	28	34	48	37	51	59	80

<b>Current Phase</b>	<i>Calibration and Measurement Capability</i> in millidegrees expressed as an Expanded Uncertainty ( $k = 2$ ), from 10 % to 100 % of the stated current range. The CMCs apply to the phase difference between the current channel and the master timing signal. CMCs for intermediate frequencies may be provided upon request and will lie between the uncertainties at the adjacent points. All uncertainties in m°									
Current Range	0.1 A	0.5 A	1 A	2 A	5 A	0.5 A	10 A	20 A	50 A	100 A
Frequency										
16 Hz	1.0	1.0	1.0	1.0	1.0	3.6	1.0	1.0	1.0	1.0
40 Hz	1.9	1.9	1.9	1.9	1.9	3.9	1.9	1.9	1.9	1.9
50 Hz	2.4	2.4	2.4	2.4	2.4	4.1	2.4	2.4	2.4	2.4
60 Hz	2.8	2.8	2.8	2.8	2.8	4.3	2.8	2.8	2.8	2.8
120 Hz	5.4	5.4	5.4	5.4	5.4	6.9	5.4	5.4	5.4	5.4
180 Hz	8.1	8.1	8.0	8.0	8.1	9.2	8.1	8.1	8.1	8.1
450 Hz	20	20	20	20	20	21	20	21	21	21
850 Hz	38	38	38	38	38	38	38	38	38	38
1.2 kHz	54	54	54	54	54	54	54	54	54	54
1.8 kHz	80	80	80	80	80	81	80	81	81	81
2.4 kHz	110	110	110	110	110	110	110	110	110	110
3.0 kHz	140	140	140	140	140	140	140	140	140	140
3.6 kHz	160	160	160	160	160	160	160	170	170	170
4.2 kHz	190	190	190	190	190	190	190	190	190	190
4.8 kHz	220	220	220	220	220	220	220	220	220	220
5.4 kHz	240	240	240	240	240	240	240	250	250	250
6.0 kHz	270	270	270	270	270	270	270	270	270	270



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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<b>Channel to channel phase difference</b>	<i>Calibration and Measurement Capability</i> in millidegrees expressed as an Expanded Uncertainty ( $k = 2$ ) from 10 % to 100 % of the stated range. CMCs for intermediate frequencies may be provided upon request and will lie between the uncertainties at the adjacent points.			
Frequency	Voltage Channel Relative to any other Voltage Channel	Voltage Channel Relative to any Current Channel (Percent of Range)	10 %	100 %
16 Hz	1.3	4.3	1.1	1.3
40 Hz	1.4	4.3	1.2	1.3
50 Hz	1.4	4.4	1.2	1.3
60 Hz	1.4	4.4	1.2	1.3
120 Hz	1.9	5.4	1.7	1.3
180 Hz	2.8	5.5	2.3	1.7
450 Hz	5.7	6.3	4.9	1.7
850 Hz	11	10	8.9	1.7
1.2 kHz	16	14	14	5.1
1.8 kHz	23	20	20	5.1
2.4 kHz	30	26	26	5.1
3.0 kHz	37	32	32	5.1
3.6 kHz	45	38	38	5.1
4.2 kHz	52	44	44	6.5
4.8 kHz	60	50	50	9.4
5.4 kHz	67	57	57	9.4
6.0 kHz	74	63	63	9.4
<b>DC and AC POWER (simulated)</b> Limiting voltage 1008 V Limiting current 120 A	DC and 16 Hz to 6 kHz: 0 W to 100.8 kW Power factor zero to unity, capacitive and inductive, single phase only	The RSS combination of the voltage, current and phase (expressed in terms of power factor) uncertainties as stated in calibration of Fluke Electrical Power Standards. At power factors approaching zero, the uncertainties will be stated in absolute terms.  Worked example of key values given in table below.		
Frequency 50 Hz and 60 Hz	Voltage	Current	Equivalent Power	Uncertainty $\mu\text{W}/\text{W}$
	115 V	0.250 A	29 W	PF 1.0 (0°)   PF 0.5 (60°)
	115 V	0.375 A	43 W	35   51
	115 V	1.5 A	173 W	35   51
	115 V	3.0 A	345 W	39   54
	115 V	15.0 A	1725 W	41   55
	115 V	30.0 A	3 450 W	41   55
	115 V	50.0 A	5 750 W	41   55
	230 V	0.250 A	58 W	36   51
	230 V	0.375 A	86 W	35   51
	230 V	1.5 A	345 W	35   51
	230 V	3.0 A	690 W	39   54
	230 V	15.0 A	3 450 W	41   55
	230 V	30.0 A	6 900 W	41   55
	230 V	50.0 A	11 500 W	41   55



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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**Power standards (continued)**

**Dips and Swells**

Frequency	Range	Voltage	Interval	Uncertainty $\mu\text{V/V}$
50 Hz and 60 Hz	90 V	7 V	0.5 s	190
		70 V	0.5 s	35
		90 V	0.5 s	34
		7 V	60.0 s	26
		70 V	60.0 s	26
		90 V	60.0 s	26
	180 V	12 V	0.5 s	290
		115 V	0.5 s	38
		180 V	0.5 s	38
		12 V	60.0 s	42
		115 V	60.0 s	22
		180 V	60.0 s	22
	360 V	23 V	0.5 s	290
		23 V	0.5 s	32
		360 V	0.5 s	32
		23 V	60.0 s	38
		23 V	60.0 s	24
		360 V	60.0 s	24
	10 A	0.5 A	0.5 s	340
		5.0 A	0.5 s	45
		10.0 A	0.5 s	38
		0.5 A	60.0 s	220
		5.0 A	60.0 s	220
		10.0 A	60.0 s	35



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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**MEASUREMENT CAPABILITIES FOR THE CALIBRATION OF FLUKE 52120A TRANSCONDUCTANCE AMPLIFIERS**

Frequency	2 A range				20 A range				120 A range			
	V <sub>IN</sub>		I <sub>IN</sub>		V <sub>IN</sub>		I <sub>IN</sub>		V <sub>IN</sub>		I <sub>IN</sub>	
	0.4 A	1.0 A	2.0 A	2.0 A	4 A	10 A	20 A	20 A	20 A	60 A	120 A	120 A
DC	51	34	28	30	73	73	50	51	37	37	33	37
10 Hz	160	110	100	99	160	91	82	83	160	84	86	73
20 Hz	160	110	100	99	160	90	80	81	160	84	86	73
40 Hz	160	110	100	99	160	90	80	81	160	84	86	73
50 Hz	160	110	100	99	160	90	80	81	160	84	86	73
60 Hz	160	110	100	99	160	90	80	81	160	84	86	73
120 Hz	160	110	100	99	160	90	80	81	160	84	86	73
180 Hz	160	110	100	99	160	90	80	81	160	84	86	73
450 Hz	160	110	100	99	160	90	80	81	160	84	86	73
850 Hz	160	110	100	99	160	90	80	81	160	84	86	73
1.0 kHz	160	110	100	99	160	90	80	81	160	84	86	73
1.2 kHz	210	470	480	480	490	200	190	190	210	200	210	200
1.8 kHz	210	470	480	480	490	200	190	190	210	200	210	200
2.4 kHz	210	470	480	480	490	200	190	190	210	200	210	200
3.0 kHz	210	480	490	490	490	200	190	190	210	200	210	200
3.6 kHz	210	480	490	490	490	200	200	200	210	220	220	210
4.2 kHz	210	480	490	490	490	200	200	200	210	220	220	210
4.8 kHz	270	480	490	490	490	200	200	200	230	220	220	210
5.4 kHz	270	480	500	500	490	200	200	200	250	240	240	230
6.0 kHz	290	830	830	830	490	200	210	210	290	260	270	260
8.0 kHz	750	1100	1100	1100	500	830	840	840	750	740	730	740
10.0 kHz	920	1500	1500	1500	1500	840	840	840	770	750	760	760



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**Fluke Precision Measurement Ltd**

Issue No: 063 Issue date: 18 February 2025

Calibration performed by the Organisation at the locations specified

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>MEASUREMENT CAPABILITIES FOR THE CALIBRATION OF FLUKE 52120A TRANSCONDUCTANCE AMPLIFIERS (continued)</b>			

*Calibration and Measurement Capability* expressed as an Expanded Uncertainty ( $k = 2$ ) when under 6105A control, expressed as All values in  $\mu\text{A}/\text{A}$  of output current.

Frequency	2 A range			20 A range			120 A range		
	0.4 A	1 A	2 A	4 A	10 A	20 A	20 A	60 A	120 A
DC	60	48	44	78	78	78	51	52	51
16 Hz	79	59	49	65	65	56	79	77	72
40 Hz	79	59	49	65	65	56	79	77	72
50 Hz	79	59	49	65	65	56	79	77	72
60 Hz	79	59	49	65	65	56	79	77	72
120 Hz	79	59	49	65	65	56	79	77	72
180 Hz	79	59	49	65	65	56	79	77	72
450 Hz	79	59	49	65	65	56	79	77	72
850 Hz	79	59	49	65	65	56	79	77	72
1.0 kHz	79	59	49	65	65	56	79	77	72
1.2 kHz	79	59	49	71	71	63	95	92	89
1.8 kHz	79	59	49	71	71	63	95	92	89
2.4 kHz	79	59	49	71	71	63	95	92	89
3.0 kHz	90	72	64	71	71	63	95	92	89
3.6 kHz	92	76	68	74	74	67	97	95	92
4.2 kHz	92	76	68	74	74	67	97	95	92
4.8 kHz	92	76	68	74	74	67	97	95	92
5.4 kHz	98	83	76	74	74	67	97	95	92
6.0 kHz	98	83	76	78	78	70	97	95	92

Phase angle when under 6105A control	0° to 360° 16 Hz 40 Hz 50 Hz 60 Hz 120 Hz 180 Hz 450 Hz 850 Hz 1 000 Hz 1 200 Hz 1 800 Hz 2 400 Hz 3 000 Hz 3 600 Hz 4 200 Hz 4 800 Hz 5 400 Hz 6 000 Hz	1.3 m° 1.8 m° 2.2 m° 2.5 m° 4.3 m° 6.4 m° 16 m° 30 m° 35 m° 58 m° 120 m° 130 m° 130 m° 150 m° 190 m° 220 m° 210 m° 240 m°	All ranges: 2 A, 20 A and 120 A
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Measured Quantity Instrument or Gauge	Range			Expanded Measurement Uncertainty ( $k = 2$ )			Remarks											
<hr/>																		
52120A PHASE: Uncertainty under 6105A Control as a system. Uncertainties in $\text{m}^\circ$																		
Freq	2 Amp Range			20 Amp Range			20 Amp Range											
	0.4 A	1.0 A	2.0 A	4 A	10 A	20 A	20 A	60 A	120 A									
16 Hz	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3									
40 Hz	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8									
50 Hz	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2									
60 Hz	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5									
120 Hz	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3									
180 Hz	6.3	6.3	6.3	6.4	6.4	6.4	6.4	6.4	6.4									
450 Hz	16	16	16	16	16	16	16	16	16									
850 Hz	30	30	30	30	30	30	30	30	30									
1 000 Hz	34	34	34	35	35	35	34	34	34									
1 200 Hz	57	57	57	58	58	58	57	57	57									
1 800 Hz	120	120	120	120	120	120	120	120	120									
2 400 Hz	130	130	130	130	130	130	130	130	130									
3 000 Hz	130	130	130	130	130	130	130	130	130									
3 600 Hz	150	150	150	150	150	150	150	150	150									
4 200 Hz	180	180	180	190	190	190	180	180	180									
4 800 Hz	220	220	220	220	220	220	220	220	220									
5 400 Hz	210	210	210	210	210	210	210	210	210									
6 000 Hz	240	240	240	240	240	240	240	240	240									
52120A PHASE: Uncertainty under 6105A Control as a separate system. Uncertainties in $\text{m}^\circ$																		
Freq	2 Amp Range			20 Amp Range			20 Amp Range											
	0.4 A	1.0 A	2.0 A	4 A	10 A	20 A	20 A	60 A	120 A									
16 Hz	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5									
40 Hz	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5									
50 Hz	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.2									
60 Hz	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.8	3.8									
120 Hz	6.9	6.9	6.9	7.0	7.0	7.0	6.9	6.9	6.9									
180 Hz	11	11	11	11	11	11	11	11	11									
450 Hz	26	26	26	27	27	27	27	27	27									
850 Hz	48	48	48	49	49	49	48	48	48									
1 000 Hz	57	57	57	58	58	58	57	57	57									
1 200 Hz	78	78	78	79	79	79	78	78	78									
1 800 Hz	140	140	140	140	140	140	140	140	140									
2 400 Hz	170	170	170	170	170	170	170	170	170									
3 000 Hz	190	190	190	190	190	190	190	190	190									
3 600 Hz	230	230	230	230	230	230	230	230	230									
4 200 Hz	260	260	260	270	270	270	260	260	260									
4 800 Hz	310	310	310	310	310	310	310	310	310									
5 400 Hz	330	330	330	330	330	330	330	330	330									
6 000 Hz	360	360	360	360	360	360	360	360	360									



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**Fluke Precision Measurement Ltd**

**Issue No: 063 Issue date: 18 February 2025**

Calibration performed by the Organisation at the locations specified

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>CALIBRATION OF CURRENT COILS</b>			
Effective current transfer ratio	50 Hz to 400 Hz  1 turn to 9 turn coils 10 turn to 25 turn coils 26 turn to 50 turn coils  26 turn to 50 turn coils	0.097 % of ratio 0.088 % of ratio 0.097 % of ratio  0.28 % of ratio	1000 A Maximum simulated current  6000 A maximum simulated current
<b>RF MEASUREMENTS</b>			
<b>RF POWER</b> <b>Calibration Factor</b>  50 Ω Sensors	1 mW to 10 mW  100 kHz to 100 MHz 100 MHz to 1 GHz 1 GHz to 3 GHz 3 GHz to 8 GHz 8 GHz to 12 GHz 12 GHz to 18 GHz 18 GHz to 22 GHz 22 GHz to 26.5 GHz 26.5 GHz to 40 GHz  100 kHz to 100 MHz 100 MHz to 1 GHz 1 GHz to 3 GHz 3 GHz to 8 GHz 8 GHz to 12 GHz 12 GHz to 18 GHz	0.72 % 0.99 % 1.1 % 1.2 % 1.3 % 1.9 % 1.7 % 2.0 % 3.0 %  0.45 % 0.55 % 0.75 % 0.82 % 1.1 % 1.7 %	For power sensors with PC2.92 or PC3.5 connectors in good condition with a VSWR not exceeding 1.2. Larger VSWRs can be accommodated but at larger uncertainties. PC3.5 connectors are limited to 26.5 GHz.  For power sensors with Type N connector in good condition with a VSWR not exceeding 1.2
<b>VSWR</b>	100 kHz to 100 MHz 100 MHz to 1 GHz 1 GHz to 3 GHz 3 GHz to 8 GHz 8 GHz to 12 GHz 12 GHz to 18 GHz 18 GHz to 22 GHz 22 GHz to 26.5 GHz 26.5 GHz to 40 GHz	0.015 0.021 0.025 0.026 0.033 0.032 0.041 0.044 0.055	For power sensors with PC2.92 or PC3.5 connectors in good condition with a VSWR not exceeding 1.2. Larger VSWRs can be accommodated but at larger uncertainties. PC3.5 connectors are limited to 26.5 GHz.



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
VSWR (continued)	100 kHz to 100 MHz 100 MHz to 1 GHz 1 GHz to 3 GHz 3 GHz to 8 GHz 8 GHz to 12 GHz 12 GHz to 18 GHz	0.014 0.015 0.018 0.018 0.022 0.024	For power sensors with Type N connectors in good condition with a VSWR not exceeding 1.2

**Measurement capabilities for the calibration of Fluke 9600 series rf reference sources**

Levelled sine wave output accuracy - 50 Ω system																
Calibration and Measurement Capability in dB expressed as an Expanded Uncertainty ( $k = 2$ ). For frequencies between those in the table the greater of the adjacent CMCs applies.																
Frequency MHz	Level (dBm)															
	+ 24 to + 20	+ 20 to 0	0 to - 10	- 10 to - 20	- 20 to - 30	- 30 to - 40	- 40 to - 48	- 48 to - 58	- 58 to - 68	- 68 to - 78	- 78 to - 88	- 88 to - 98	- 98 to - 108	- 108 to - 118	- 118 to - 128	
200 Hz	0.002 7	0.002 7	0.002 7	0.003 2	0.003 6	0.004 6	0.004 7									
1 kHz	0.002 5	0.002 5	0.002 5	0.002 7	0.003 2	0.004 2	0.004 4	0.024								
20 kHz	0.002 5	0.002 5	0.002 5	0.002 7	0.003 2	0.004 2	0.004 4									
75 kHz	0.002 5	0.002 5	0.002 5	0.003 2	0.003 2	0.004 2	0.004 4	0.024								
100 kHz	0.002 6	0.002 6	0.002 7	0.003 3	0.004 0	0.004 8	0.005 7	0.019	0.035	0.038	0.099	0.140	0.200	0.190	0.460	
300 kHz	0.026	0.022	0.026	0.026	0.022	0.022	0.026	0.032	0.044	0.040	0.100	0.100	0.130	0.190	0.470	
1 MHz	0.026	0.022	0.026	0.026	0.022	0.022	0.026	0.032	0.044	0.040	0.100	0.077	0.130	0.190	0.470	
10 MHz	0.026	0.022	0.026	0.026	0.022	0.022	0.026	0.032	0.037	0.040	0.093	0.062	0.110	0.170	0.210	
20 MHz	0.026	0.022	0.026	0.026	0.022	0.022	0.026	0.032	0.037	0.040	0.063	0.062	0.099	0.150	0.210	
100 MHz	0.026	0.022	0.026	0.026	0.026	0.026	0.026	0.032	0.037	0.040	0.063	0.062	0.099	0.150	0.210	
125 MHz	0.026	0.022	0.031	0.031	0.026	0.031	0.031	0.036	0.041	0.043	0.065	0.064	0.100	0.160	0.250	
300 MHz		0.031	0.031	0.031	0.031	0.031	0.031	0.036	0.041	0.043	0.065	0.064	0.200	0.390	0.470	
750 MHz		0.031	0.031	0.031	0.031	0.031	0.031	0.036	0.054	0.055	0.069	0.079	0.200	0.400	0.470	
1 GHz		0.031	0.035	0.035	0.031	0.031	0.031	0.036	0.071	0.072	0.094	0.096	0.210	0.410	0.470	
1.4 GHz		0.048	0.061	0.061	0.057	0.057	0.057	0.061	0.100	0.100	0.120	0.120	0.220	0.420	0.480	
2 GHz		0.048	0.066	0.066	0.061	0.061	0.061	0.066	0.130	0.130	0.150	0.140	0.240	0.430	0.490	
2.5 GHz		0.061	0.092	0.092	0.092	0.092	0.092	0.092	0.100	0.160	0.160	0.190	0.180	0.260	0.440	0.490
3 GHz		0.061	0.092	0.092	0.092	0.092	0.092	0.092	0.100	0.180	0.180	0.190	0.200	0.260	0.450	0.490
3.5 GHz		0.074	0.120	0.120	0.120	0.120	0.120	0.130	0.200	0.200	0.210	0.210	0.290	0.500	0.560	
4 GHz		0.074	0.140	0.140	0.130	0.130	0.130	0.140	0.210	0.210	0.210	0.220				



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**Fluke Precision Measurement Ltd**

Issue No: 063 Issue date: 18 February 2025

Calibration performed by the Organisation at the locations specified

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
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**Measurement capabilities for the calibration of Fluke 9600 series rf reference sources**  
(continued)

**Levelled sine wave output accuracy - 75 Ω system**

*Calibration and Measurement Capability in dB expressed as an Expanded Uncertainty ( $k = 2$ ). For frequencies between those in the table the greater of the adjacent CMCs applies.*

Frequency	Level (dBm)														
	+ 18 to + 11	+ 11 to 0	0 to - 10	- 10 to - 20	- 20 to - 30	- 30 to - 40	- 40 to - 43	- 43 to - 55	- 55 to - 65	- 65 to - 75	- 75 to - 85	- 85 to - 95	- 95 to - 105	- 105 to - 115	- 115 to - 125
200 Hz	0.002 7	0.002 7	0.002 7	0.003 2	0.003 6	0.004 6	0.004 6								
1 kHz	0.002 5	0.002 5	0.002 5	0.002 7	0.003 2	0.004 2	0.004 6	0.048	0.049						
20 kHz	0.002 5	0.002 5	0.002 5	0.002 7	0.003 2	0.004 2	0.004 6	0.048	0.049	0.050	0.074	0.076	0.130	0.270	0.270
75 kHz	0.002 6	0.002 6	0.002 6	0.003 3	0.003 3	0.004 3	0.004 6	0.048	0.049	0.078	0.094	0.096	0.150	0.270	0.270
100 kHz	0.002 6	0.002 6	0.002 7	0.003 3	0.004 0	0.004 8	0.004 6	0.048	0.049	0.075	0.091	0.094	0.140	0.270	0.270
300 kHz	0.064	0.061	0.061	0.061	0.061	0.048	0.076	0.077		0.075	0.091	0.094	0.140	0.270	0.270
1 MHz	0.055	0.052	0.052	0.052	0.057	0.057	0.044	0.073	0.074	0.075	0.091	0.094	0.140	0.270	0.270
10 MHz	0.055	0.052	0.052	0.052	0.057	0.057	0.044	0.073	0.074	0.075	0.091	0.094	0.140	0.270	0.270
20 MHz	0.059	0.057	0.057	0.057	0.057	0.057	0.048	0.073	0.074	0.075	0.091	0.094	0.140	0.270	0.270
100 MHz	0.059	0.057	0.057	0.057	0.057	0.057	0.048	0.073	0.074	0.075	0.091	0.094	0.140	0.270	0.270
125 MHz	0.064	0.061	0.061	0.061	0.061	0.061	0.048	0.076	0.077	0.078	0.094	0.096	0.150	0.270	0.270
300 MHz	0.064	0.061	0.061	0.061	0.061	0.061	0.048	0.076	0.077	0.078	0.094	0.096	0.220	0.450	0.450
750 MHz	0.077	0.074	0.074	0.074	0.074	0.074	0.066	0.088	0.089	0.090	0.100	0.110	0.230	0.450	0.450
1 GHz	0.087	0.083	0.083	0.083	0.083	0.083	0.074	0.096	0.097	0.098	0.110	0.110	0.230	0.450	0.450
1.4 GHz	0.120	0.110	0.110	0.110	0.110	0.110	0.130	0.140	0.140	0.160	0.160	0.250	0.470	0.470	
2 GHz		0.110	0.110	0.110	0.120	0.120	0.110	0.140	0.140	0.170	0.170	0.250	0.470	0.470	
2.5 GHz	0.120	0.120	0.120	0.120	0.120	0.120	0.140	0.140	0.140	0.170	0.170	0.250	0.470	0.470	
3 GHz	0.120	0.120	0.120	0.120	0.120	0.120	0.120	0.140	0.140	0.170	0.170	0.250	0.470	0.470	

**Note**

The above uncertainties are applicable to the source amplitude measurement of the Fluke 9500 and Fluke 96xxx series for the fundamental, specified harmonic frequencies and RF Reference Source using a dedicated measurement system.

Uncertainties may also be reported for differences in level reported as Attenuation, the attenuation uncertainty will be the combined uncertainties of the reference level and the uncertainty at the final level.



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Issue No: 063 Issue date: 18 February 2025

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Measured Quantity Instrument or Gauge	Range										Expanded Measurement Uncertainty ( $k = 2$ )			Remarks													
<b>Measurement capabilities for the calibration of Fluke 9600 series rf reference sources</b> (continued)																											
<b>50 Ω Level Sine Measurement Uncertainties Microwave Output 2.92 mm Front Panel Microwave Output</b>																											
<i>Calibration and Measurement Capability</i> in dB expressed as an Expanded Uncertainty ( $k = 2$ ). For frequencies between those in the table the greater of the adjacent CMCs applies.																											
Frequency	Level (dBm)																										
	24 to 18	18 to 0	0 to -10	-10 to -20	-20 to -30	-30 to -40	-40 to -50	-50 to -60	-60 to -70	-70 to -80	-80 to -90																
200 Hz	0.004 9	0.004 9	0.004 9	0.005 1	0.005 3	0.006 0	0.006 0																				
1 kHz	0.004 8	0.004 8	0.004 8	0.023 0	0.023 0	0.024 0	0.047 0	0.110	0.130	0.160	0.160																
20 kHz	0.004 8	0.004 8	0.004 8	0.023 0	0.023 0	0.024 0	0.047 0	0.080	0.082	0.160	0.160																
100 kHz	0.004 8	0.004 8	0.004 8	0.024 0	0.024 0	0.024 0	0.047 0	0.080	0.082	0.130	0.130																
300 kHz	0.094	0.087	0.094	0.095	0.096	0.097	0.110	0.110	0.120	0.130	0.130																
1 MHz	0.094	0.087	0.094	0.095	0.096	0.097	0.110	0.110	0.120	0.130	0.130																
10 MHz	0.094	0.087	0.094	0.095	0.096	0.097	0.110	0.110	0.120	0.130	0.130																
20 MHz	0.094	0.087	0.094	0.095	0.096	0.097	0.110	0.110	0.120	0.130	0.130																
100 MHz	0.099	0.092	0.098	0.099	0.100	0.100	0.120	0.120	0.120	0.130	0.130																
125 MHz	0.099	0.092	0.098	0.099	0.100	0.100	0.120	0.120	0.120	0.130	0.130																
300 MHz	0.110	0.095	0.110	0.110	0.110	0.110	0.120	0.120	0.120	0.130	0.130																
750 MHz	0.110	0.095	0.110	0.110	0.110	0.110	0.120	0.120	0.120	0.130	0.140																
1 GHz	0.110	0.096	0.110	0.110	0.110	0.110	0.120	0.120	0.120	0.130	0.140																
1.4 GHz	0.120	0.110	0.120	0.120	0.120	0.120	0.130	0.130	0.130	0.140	0.140																
2 GHz	0.120	0.110	0.120	0.120	0.120	0.120	0.130	0.130	0.130	0.140	0.150																
2.5 GHz	0.120	0.110	0.120	0.120	0.120	0.120	0.130	0.130	0.130	0.140	0.150																
3 GHz	0.120	0.110	0.120	0.120	0.120	0.120	0.130	0.130	0.130	0.140	0.150																
3.5 GHz	0.120	0.110	0.120	0.120	0.120	0.120	0.130	0.130	0.130	0.140	0.150																
4 GHz	0.120	0.110	0.120	0.120	0.120	0.120	0.130	0.130	0.130	0.140	0.150																
5 GHz	0.120	0.110	0.120	0.120	0.120	0.120	0.130	0.130	0.130	0.140	0.150																
6 GHz	0.120	0.110	0.120	0.120	0.120	0.120	0.130	0.150	0.150	0.140	0.150																
7 GHz	0.140	0.120	0.140	0.140	0.140	0.140	0.160	0.160	0.160	0.200	0.190																
8 GHz	0.140	0.120	0.140	0.140	0.140	0.140	0.160	0.160	0.160	0.200	0.200																
9 GHz	0.140	0.120	0.140	0.140	0.140	0.140	0.160	0.170	0.170	0.200	0.200																
10 GHz	0.140	0.120	0.140	0.150	0.150	0.150	0.170	0.170	0.170	0.200	0.200																
11 GHz	0.140	0.120	0.140	0.150	0.150	0.150	0.210	0.210	0.170	0.200	0.200																
12 GHz	0.140	0.120	0.140	0.160	0.160	0.160	0.210	0.210	0.180	0.200	0.200																
13 GHz	0.190	0.180	0.200	0.210	0.210	0.210	0.250	0.250	0.220	0.240	0.200																
14 GHz	0.190	0.180	0.200	0.210	0.210	0.210	0.250	0.250	0.280	0.240	0.240																
16 GHz	0.190	0.180	0.200	0.210	0.210	0.210	0.250	0.280	0.280	0.240	0.240																
17 GHz	0.200	0.180	0.200	0.220	0.220	0.220	0.280	0.280	0.300	0.270	0.270																
18 GHz	0.200	0.180	0.200	0.220	0.220	0.220	0.280	0.280	0.300	0.270	0.270																
19 GHz	0.200	0.180	0.210	0.220	0.220	0.220	0.460	0.320	0.300	0.300	0.300																
20 GHz	0.200	0.180	0.210	0.220	0.230	0.230	0.460	0.320	0.310	0.310	0.300																
21 GHz	0.200	0.180	0.210	0.230	0.230	0.230	0.460	0.330	0.540	0.370	0.370																
22 GHz	0.200	0.180	0.210	0.250	0.250	0.250	0.460	0.330	0.540	0.370	0.370																
23 GHz	0.200	0.180	0.210	0.250	0.250	0.250	0.460	0.330	0.540	0.370	0.370																
24 GHz	0.210	0.190	0.220	0.260	0.260	0.260	0.460	0.330	0.540	0.370	0.370																
25 GHz	0.210	0.190	0.220	0.270	0.270	0.270	0.460	0.440	0.620	0.540	0.540																
26 GHz	0.210	0.190	0.230	0.280	0.280	0.280	0.730	0.490	0.620	0.540	0.540																
26.5 GHz	0.220	0.200	0.240	0.280	0.280	0.280	0.730	0.490	0.700	0.910	0.910																

**Note**

The above uncertainties are applicable to the source amplitude measurement of the Fluke 9500 and Fluke 96xxx series for the fundamental, specified harmonic frequencies and RF Reference Source using a dedicated measurement system.  
Uncertainties may also be reported for differences in level reported as Attenuation, the attenuation uncertainty will be the combined uncertainties of the reference level and the uncertainty at the final level.



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**Fluke Precision Measurement Ltd**

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>Measurement capabilities for the calibration of Fluke 9600 series rf reference sources</b> (continued)			
<b>50 Ω Level Sine Measurement Uncertainties Sensor / splitter Levelled PC3.5 mm Splitter / Sensor Levelled output</b>			
<i>Calibration and Measurement Capability in dB expressed as an Expanded Uncertainty (<math>k = 2</math>). For frequencies between those in the table the greater of the adjacent CMCs applies.</i>			
Frequency	Level (dBm)		
	18 to 0	0 to -10	-10 to -20
200 Hz	0.004 9	0.004 9	0.005 1
1 kHz	0.004 8	0.004 8	0.023 4
20 kHz	0.004 8	0.004 8	0.023 4
100 kHz	0.004 8	0.004 8	0.023 5
300 kHz	0.031	0.033	0.044
1 MHz	0.031	0.033	0.044
10 MHz	0.031	0.033	0.044
20 MHz	0.031	0.033	0.044
100 MHz	0.031	0.033	0.044
125 MHz	0.033	0.034	0.045
300 MHz	0.033	0.034	0.045
750 MHz	0.033	0.035	0.046
1 GHz	0.033	0.035	0.046
1.4 GHz	0.036	0.037	0.047
2 GHz	0.038	0.040	0.049
2.5 GHz	0.038	0.040	0.049
3 GHz	0.038	0.040	0.049
3.5 GHz	0.038	0.040	0.049
4 GHz	0.039	0.040	0.049
5 GHz	0.040	0.041	0.051
6 GHz	0.041	0.042	0.051
7 GHz	0.044	0.045	0.054
8 GHz	0.044	0.045	0.054
9 GHz	0.047	0.048	0.057
10 GHz	0.047	0.048	0.057
11 GHz	0.048	0.049	0.057
12 GHz	0.048	0.049	0.057
13 GHz	0.062	0.063	0.069
14 GHz	0.062	0.063	0.069
15 GHz	0.062	0.063	0.069
16 GHz	0.064	0.065	0.071
17 GHz	0.064	0.065	0.071
18 GHz	0.064	0.065	0.071
19 GHz	0.076	0.077	0.083
20 GHz	0.077	0.077	0.083
21 GHz	0.077	0.077	0.083
22 GHz	0.077	0.077	0.083
23 GHz	0.087	0.088	0.092
24 GHz	0.087	0.088	0.092
25 GHz	0.087	0.088	0.092
26 GHz	0.106	0.107	0.110
26.5 GHz	0.106	0.107	0.110



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>Measurement capabilities for the calibration of Fluke 9600 series rf reference sources</b> (continued)			
<b>Output VSWR Fluke 9600 Series</b>			
	Results and uncertainties may also be reported in terms of VRC and return loss		
50Ω Type N connector	1.0 to 1.4 300 kHz to 0.99 MHz 1 MHz to 10 MHz 10 MHz to 1 GHz 1 GHz to 1.7 GHz  1.7 GHz to 2 GHz 2 GHz to 2.5 GHz 2.5 GHz to 3 GHz 3 GHz to 3.6 GHz 3.6 GHz to 4 GHz	0.057 0.037 0.028 0.037  0.047 0.064 0.102 0.180 0.210	
75Ω Type N connector	1.0 to 1.4 300 kHz to 0.99 MHz 1 MHz to 50 MHz 50 MHz to 1 GHz  1 GHz to 1.3 GHz 1.3 GHz to 2.0 GHz 2 GHz to 3 GHz	0.061 0.043 0.036  0.041 0.067 0.110	
Type K connector	1.0 to 1.4 2.5 GHz to 5 GHz 5 GHz to 11 GHz 11 GHz to 20 GHz 20 GHz to 27 GHz  1.4 to 2.4 2.5 GHz to 5 GHz 5 GHz to 11 GHz 11 GHz to 20 GHz 20 GHz to 27 GHz	0.260 0.420 0.420 0.650  0.280 0.450 0.520 0.760	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>Measurement capabilities for the calibration of phasor measurement unit calibrators</b>			
<b>Total Vector Error (TVE)</b>			
Steady State Tests	45 Hz to 65 Hz 16 V to 1008 V and 100 mA to 80 A	0.010 %	
Frequency Ramp Tests	16 V to 1008 V and 100 mA to 80 A 45 Hz to 55 Hz & 55 Hz to 65 Hz $\pm 0.1$ Hz/s to $\pm 2$ Hz/s	0.011 %	
Amplitude Modulation Tests	50 Hz & 60 Hz 16 V to 1008 V and 100 mA to 80 A Mod Factor 0.1 (10 %) Mod Freq: 0.1 Hz to 5 Hz	0.010 %	
Phase Modulation Tests	16 V to 1008 V and 100 mA to 80 A Mod Factor 0.1 radians Mod Freq: 0.1 Hz to 5 Hz	0.012 %	
<b>Frequency Error (FE)</b>			
Steady State Tests	45 Hz to 65 Hz 16 V to 1008 V and 100 mA to 80 A	1.8 $\mu$ Hz	
Frequency Ramp Tests	16 V to 1008 V and 100 mA to 80 A 45 Hz to 55 Hz & 55 Hz to 65 Hz $\pm 0.1$ Hz/s to $\pm 2$ Hz/s	5.2 $\mu$ Hz	
Amplitude Modulation Tests	16 V to 1008 V and 100 mA to 80 A Mod Factor 0.1 (10 %) Mod Freq: 0.1 Hz to 5 Hz	1.8 $\mu$ Hz	
Phase Modulation Tests	16 V to 1008 V and 100 mA to 80 A Mod Factor 0.1 radians Fundamental: 50 Hz Mod Freq: 0.1 Hz 0.5 Hz 1.0 Hz 2.0 Hz 5.0 Hz	5.2 $\mu$ Hz 16 $\mu$ Hz 30 $\mu$ Hz 62 $\mu$ Hz 140 $\mu$ Hz	
	Fundamental: 60 Hz Mod Freq: 0.1 Hz 0.5 Hz 1.0 Hz 2.0 Hz 5.0 Hz	5.7 $\mu$ Hz 16 $\mu$ Hz 33 $\mu$ Hz 73 $\mu$ Hz 170 $\mu$ Hz	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>Rate of Change of Frequency Error (RFE)</b>			
Steady State Tests	45 Hz to 65 Hz 16 V to 1008 V and 100 mA to 80 A	1.1 $\mu$ Hz	
Frequency Ramp Tests	16 V to 1008 V and 100 mA to 80 A 45 Hz to 55 Hz & 55 Hz to 65 Hz $\pm 0.1$ Hz/s to $\pm 2$ Hz/s	0.80 $\mu$ Hz	
Amplitude Modulation Tests	16 V to 1008 V and 100 mA to 80 A Mod Factor 0.1 (10 %) Mod Freq: 0.1 Hz to 5 Hz	1.0 $\mu$ Hz	
Phase Modulation Tests	16 V to 1008 V and 100 mA to 80 A Mod Factor 0.1 radians Fundamental: 50 Hz Mod Freq: 0.1 Hz 0.5 Hz 1.0 Hz 2.0 Hz 5.0 Hz	2.7 $\mu$ Hz 57 $\mu$ Hz 160 $\mu$ Hz 770 $\mu$ Hz 4 500 $\mu$ Hz	
	Fundamental: 60 Hz Mod Freq: 0.1 Hz 0.5 Hz 1.0 Hz 2.0 Hz 5.0 Hz	2.8 $\mu$ Hz 58 $\mu$ Hz 210 $\mu$ Hz 930 $\mu$ Hz 5 600 $\mu$ Hz	
<b>Amplitude &amp; Phase Step</b>			
Delay Time 10% or 0.1 radian Step Size	45 Hz to 65 Hz 16 V to 1008 V and 100 mA to 80 A	2.8 $\mu$ s	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
<b>Measurement capabilities for the calibration of rf and microwave spectrum analysers, signal analysers and other instruments with equivalent functionality.</b>			
For calibrations performed at the main address and at customer premises. Calibrations may be performed in suitable areas within the customers' premises that must be appropriate for the nature of the particular calibrations undertaken, and will be the subject of contract review arrangements between the laboratory and the customer.			Depending on environmental conditions, increased uncertainties may apply to calibrations performed at customer premises.
FREQUENCY REFERENCE ACCURACY	Frequency  10 MHz 50 MHz 100 MHz	0.15 Hz 0.73 Hz 1.47 Hz	
FREQUENCY READOUT AND COUNTER ACCURACY	10 Hz to 40 GHz	1.0 mHz	
FREQUENCY SPAN ACCURACY	10 Hz to 40 GHz Frequency Span settings, at 10 Hz to 40 GHz	0.026 %	
RESOLUTION BANDWIDTH (RBW) ACCURACY	1 Hz to 10 MHz RBW settings, at 50 MHz to 128 MHz.		
Bandwidth frequency accuracy	-3 dB BW response -60 dB BW response	0.29 % 0.30 %	
Level response accuracy at nominal BW frequency	-3 dB BW response -60 dB BW response	0.053 dB 0.10 dB	
POWER BANDWIDTH ACCURACY	1 Hz to 10 MHz RBW settings, at 50 MHz to 128 MHz.	0.0030 dB	
RESOLUTION BANDWIDTH (RBW) SWITCHING ACCURACY	1 Hz to 10 MHz RBW settings, at 50 MHz to 128 MHz.	0.049 dB	
ABSOLUTE LEVEL/AMPLITUDE ACCURACY	At 10 Hz to 128 MHz  -80 dBm to -70 dBm -70 dBm to -40 dBm -40 dBm to +10 dBm	0.51 dB 0.21 dB 0.053 dB	
FREQUENCY RESPONSE	-48 dBm to +24 dBm 10 Hz to 100 kHz 100 kHz to 128 MHz 128 MHz to 300 MHz 300 MHz to 1.4 GHz 1.4 GHz to 4 GHz	0.046 dB 0.062 dB 0.083 dB 0.022 dB 0.035 dB	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
FREQUENCY RESPONSE (continued)	-35 dBm to +18 dBm 1 kHz to 100 MHz 100 MHz to 2.4 GHz 2.4 GHz to 8 GHz 8 GHz to 12.4 GHz 12.4 GHz to 18 GHz 18 GHz to 26.5 GHz  -35 dBm to 0 dBm 26.5 GHz to 33 GHz 33 GHz to 40 GHz	0.081 dB 0.12 dB 0.24 dB 0.35 dB 0.41 dB 0.42 dB  0.83 dB 0.84 dB	
INPUT ATTENUATOR ACCURACY AND REFERENCE LEVEL SWITCHING ACCURACY	At 10 Hz to 128 MHz, relative to +10 dBm  0 to 49 dB 49 to 59 dB 59 to 69 dB 69 to 94 dB	0.025 dB 0.036 dB 0.060 dB 0.085 dB	
DISPLAY SCALE FIDELITY	At 10 Hz to 128 MHz, relative to +10 dBm 0 to 49 dB 49 to 59 dB 59 to 69 dB 69 to 94 dB	0.021 dB 0.031 dB 0.051 dB 0.071 dB	
NOISE FLOOR (DANL) SECOND HARMONIC DISTORTION	At $\leq 1$ GHz fundamental  Harmonic level Down to -55 dBc -55 to -65 dBc -65 to -95 dBc  At $> 1$ GHz fundamental Harmonic level Down to -55 dBc -55 to -95 dBc	1.8 dB  0.72 dB 0.73 dB 1.2 dB  1.1 dB 1.5 dB	
NOISE SIDEBANDS (PHASE NOISE)	At 500 MHz to 1GHz  Offset frequency 10 Hz 100 Hz 100 Hz to 1 MHz 1MHz to 10 MHz 10MHz to 100 MHz	2.3 dB 2.2 dB 2.9 dB 3.2 dB	



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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty ( $k = 2$ )	Remarks
INPUT VSWR	N Type connectors ( $50 \Omega$ ) 100 kHz to 1 GHz 1 GHz to 8 GHz 8 GHz to 12 GHz 12 GHz to 18 GHz  PC 3.5 connectors 100 kHz to 100 MHz 100 MHz to 8 GHz 8 GHz to 18 GHz 18 GHz to 26.5 GHz  PC 2.92 connectors 100 kHz to 100 MHz 100 MHz to 8 GHz 8 GHz to 18 GHz 18 GHz to 26.5 GHz 26.5 GHz to 40 GHz	0.015 0.018 0.022 0.024  0.015 0.026 0.033 0.044  0.015 0.026 0.033 0.044 0.055	The listed uncertainties apply to UUTs with input connectors in good condition and VSWRs not exceeding 1.2:1. Larger VSWRs can be accommodated, with increased uncertainties.

END



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### Appendix - Calibration and Measurement Capabilities

#### Introduction

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

#### Calibration and Measurement Capabilities (CMCs)

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest measurement uncertainty that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The measurement uncertainty is calculated according to the procedures given in the GUM and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of  $k = 2$ . An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published measurement uncertainty in certificates issued under its accreditation.

#### Expression of CMCs - symbols and units

It should be noted that the percentage symbol (%) represents the number 0.01. In cases where the measurement uncertainty is stated as a percentage, this is to be interpreted as meaning percentage of the measurand. Thus, for example, a measurement uncertainty of 1.5 % means  $1.5 \times 0.01 \times q$ , where  $q$  is the quantity value.

The notation  $Q[a, b]$  stands for the root-sum-square of the terms between brackets:  $Q[a, b] = [a^2 + b^2]^{1/2}$