Schedule of Accreditation

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Eurofins Electrical & Electronic UK Limited

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Caddsdown Industrial Estate **Clovelly Road** **Bideford** **Devon** **EX39 3DX**	**Contact: Oliver Sanders** **Tel: +44 (0)1237 423388** **E-Mail: eeukcalibration@cpt.eurofinseu.com** **Website: www.eurofins.co.uk/ee**

Calibration performed by the Organisation at the locations specified

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
Address Caddsdown Industrial Estate Clovelly Road Bideford Devon EX39 3DX	**Local contact** Oliver Sanders Tel: +44 (0)1237 423388 E-Mail: eeukcalibration@cpt.eurofinseu.com	Electrical dc and lf Electrical rf Antennas	Bideford
Address Unit 5 Speedwell Road Castleford WF10 5PY	**Local contact** Oliver Sanders Tel: +44 (0)1237 423388 E-Mail: eeukcalibration@cpt.eurofinseu.com	Electrical rf (E-Field emitters only)	Castleford

Site activities performed away from the locations listed above:

Location details		Activity	Location code
Customers' sites or premises 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.	**Local contact** Oliver Sanders Tel: +44 (0)1237 423388 E-Mail: eeukcalibration@cpt.eurofinseu.com	Electrical dc and lf Electrical rf	Site

CALIBRATION AND MEASUREMENT CAPABILITY

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
DC RESISTANCE				Bideford
Measurement	*At 10 A:*			
	100 µΩ to 1 mΩ	130 µΩ/Ω	Other test currents may be used but with increased uncertainties.	
	1 mΩ to 10 mΩ	41 µΩ/Ω		
	At 1 A:			
	10 mΩ to 100 mΩ	37 µΩ/Ω		
	100 mΩ to 1 Ω	33 µΩ/Ω		
	From 10 V to 1 kV:		Using voltage and current method.	
	200 MΩ to 2 GΩ	0.031 %		
	2 GΩ to 20 GΩ	0.037 %		
	20 GΩ to 200 GΩ	0.042 %		
	200 GΩ to 2 TΩ	0.12 %		
	From 1 kV to 5 kV:		Using voltage and current method.	
	200 MΩ to 2 GΩ	0.15 %		
	2 GΩ to 20 GΩ	0.15 %		
	20 GΩ to 200 GΩ	0.16 %		
	200 GΩ to 2 TΩ	0.19 %		
Measurement and generation	0 Ω to 1 Ω	15 µΩ		
	1 Ω to 20 Ω	15 µΩ/Ω		
	20 Ω to 200 Ω	10 µΩ/Ω		
	200 Ω to 2 kΩ	10 µΩ/Ω		
	2 kΩ to 20 kΩ	10 µΩ/Ω		
	20 kΩ to 200 kΩ	15 µΩ/Ω		
	200 kΩ to 2 MΩ	19 µΩ/Ω		
	2 MΩ to 20 MΩ	21 µΩ/Ω		
	20 MΩ to 200 MΩ	190 µΩ/Ω		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
DC RESISTANCE (continued)				Bideford
Generation	100 µΩ to 2 mΩ 2 mΩ to 20 mΩ 20 mΩ to 200 mΩ 200 mΩ to 1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ 100 MΩ	160 µΩ/Ω 45 µΩ/Ω 41 µΩ/Ω 37 µΩ/Ω 6.7 µΩ/Ω 6.4 µΩ/Ω 6.4 µΩ/Ω 6.5 µΩ/Ω 6.7 µΩ/Ω 14 µΩ/Ω 15 µΩ/Ω 150 µΩ/Ω	Application of known resistance values for the calibration of resistance measuring instruments.	
	From 10 V to 1 kV: 200 MΩ to 2 GΩ 2 GΩ to 20 GΩ 20 GΩ to 200 GΩ 200 GΩ to 2 TΩ	 0.031 % 0.037 % 0.042 % 0.12 %		
	From 1 kV to 5 kV: 200 MΩ to 2 GΩ 2 GΩ to 20 GΩ 20 GΩ to 200 GΩ 200 GΩ to 2 TΩ	 0.15 % 0.15 % 0.16 % 0.19 %		
DC VOLTAGE				
Generation	0 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V 1 kV to 30 kV	14 µV/V + 0.12 µV 6.6 µV/V 6.3 µV/V 6.7 µV/V 7.2 µV/V 0.14 %	Application of known DC voltages for the calibration of voltage measuring instruments.	
Measurement	0 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V 1 kV to 40 kV	18 µV/V + 0.16 µV 8.6 µV/V 8.4 µV/V 9.0 µV/V 9.7 µV/V 0.14 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
DC CURRENT				
Generation	10 pA to 200 pA	0.056 %	Application of known DC currents for the calibration of current measuring instruments.	
	200 pA to 2 nA	0.034 %		
	2 nA to 20 nA	0.029 %		
	20 nA to 200 nA	0.023 %		
	200 nA to 2 µA	0.019 %		
	2 µA to 20 µA	0.014 %		
	20 µA to 200 µA	11 µA/A		
	200 µA to 2 mA	11 µA/A		
	2 mA to 20 mA	12 µA/A		
	20 mA to 200 mA	14 µA/A		
	200 mA to 1 A	22 µA/A		
	1 A to 20 A	46 µA/A		
	20 A to 100 A	0.10 %		
	100 A to 250 A	0.12 %		
	250 A to 375 A	0.32 %		
Current clamp calibration	0 A to 20 A	0.25 % + 10 µA	Using multi-turn coils: Single turn	
	0 A to 1000 A	0.34 % + 10 µA	10 or 50 turns	
	1000 A to 5000 A	0.36 %	10 or 50 turns	
Measurement	10 pA to 200 pA	0.056 %		Bideford
	200 pA to 2 nA	0.038 %		
	2 nA to 20 nA	0.034 %		
	20 nA to 200 nA	0.027 %		
	200 nA to 2 µA	0.023 %		
	2 µA to 20 µA	0.019 %		
	20 µA to 200 µA	14 µA/A		
	200 µA to 2 mA	14 µA/A		
	2 mA to 20 mA	16 µA/A		
	20 mA to 200 mA	27 µA/A		
	200 mA to 1 A	39 µA/A		
	1 A to 20 A	46 µA/A		
	20 A to 100 A	0.10 %		
	100 A to 250 A	0.12 %		
	250 A to 1000 A	0.32 %		
AC VOLTAGE				
Generation Specific Values	*10 Hz to 30 Hz*		Application of known AC voltages for the calibration of voltage measuring instruments.	
	1 V	75 µV/V		
	10 V	75 µV/V		
	100 V	78 µV/V		
	30 Hz to 300 Hz			
	10 mV	300 µV/V		
	100 mV	140 µV/V		
	1 V	73 µV/V		
	10 V	73 µV/V		
	100 V	78 µV/V		
	1000 V	84 µV/V	40 Hz minimum	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC VOLTAGE (continued)				Bideford
Generation (continued) Specific Values	*300 Hz to 1 kHz* 10 mV 100 mV 1 V 10 V 100 V 1000 V	 300 µV/V 120 µV/V 70 µV/V 70 µV/V 75 µV/V 84 µV/V		
	1 kHz to 10 kHz 10 mV 100 mV 1 V 10 V 100 V 1000 V	 310 µV/V 130 µV/V 76 µV/V 76 µV/V 81 µV/V 95 µV/V		
	10 kHz to 30 kHz 10 mV 100 mV 1 V 10 V 100 V 1000 V	 370 µV/V 220 µV/V 130 µV/V 130 µV/V 130 µV/V 170 µV/V		
	30 kHz to 100 kHz 10 mV 100 mV 1 V 10 V 100 V 700 V	 460 µV/V 360 µV/V 140 µV/V 150 µV/V 170 µV/V 470 µV/V		
	100 kHz to 300 kHz 1 V 10 V	 710 µV/V 710 µV/V		
	300 kHz to 1 MHz 1 V 10 V	 0.12 % 0.13 %		
Other Values	*100 mHz to 10 Hz* V_{rms} 2.5 mV to 707 V V_{pk} 1000 V maximum	 0.15 % + 5.0 µV	Using fast DC sampling techniques.	
	10 Hz to 30 Hz 200 mV to 2 V 2 V to 20 V 20 V to 200 V	 (190 to 83) µV/V (190 to 83) µV/V (190 to 85) µV/V	Application of known AC voltages for the calibration of voltage measuring instruments.	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC VOLTAGE (continued)				
Generation (continued) Other Values	*30 Hz to 300 Hz* 2 mV to 5 mV 5 mV to 10 mV 10 mV to 50 mV 50 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	 0.29 % to 0.12 % 0.12 % to 0.065 % (650 to 200) µV/V (200 to 160) µV/V (140 to 77) µV/V (140 to 77) µV/V (140 to 81) µV/V (100 to 87) µV/V	40 Hz minimum	Bideford
	300 Hz to 1 kHz 2 mV to 5 mV 5 mV to 10 mV 10 mV to 50 mV 50 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	 0.29 % to 0.12 % 0.12 % to 0.065 % (650 to 190) µV/V (190 to 140) µV/V (91 to 71) µV/V (91 to 71) µV/V (94 to 76) µV/V (100 to 87) µV/V		
	1 kHz to 10 kHz 2 mV to 5 mV 5 mV to 10 mV 10 mV to 50 mV 50 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	 0.29 % to 0.12 % 0.12 % to 0.066 % (660 to 200) µV/V (200 to 150) µV/V (96 to 77) µV/V (96 to 77) µV/V (99 to 82) µV/V (110 to 98) µV/V		
	10 kHz to 30 kHz 2 mV to 5 mV 5 mV to 10 mV 10 mV to 50 mV 50 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 1000 V	 0.29 % to 0.12 % 0.12 % to 0.069 % (690 to 270) µV/V (270 to 230) µV/V (140 to 130) µV/V (140 to 130) µV/V (180 to 140) µV/V (180 to 170) µV/V		
	30 kHz to 100 kHz 2 mV to 5 mV 5 mV to 10 mV 10 mV to 50 mV 50 mV to 200 mV 200 mV to 2 V 2 V to 20 V 20 V to 200 V 200 V to 700 V	 0.29 % to 0.12 % 0.12 % to 0.074 % (740 to 390) µV/V (390 to 370) µV/V (180 to 140) µV/V (190 to 160) µV/V (240 to 170) µV/V (480 to 470) µV/V		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC VOLTAGE (continued)				Bideford
	100 kHz to 300 kHz			
Generation (continued)	200 mV to 2 V	(840 to 730) µV/V		
Other Values	2 V to 20 V	(840 to 730) µV/V		
	300 kHz to 1 MHz			
	200 mV to 2 V	0.26 % to 0.13 %		
	2 V to 20 V	0.27 % to 0.14 %		
	At 50 Hz			
	1 kV to 7 kV	0.30 %		
Measurement	*10 Hz to 30 Hz*			
Specific Values	1 V	99 µV/V		
	10 V	99 µV/V		
	100 V	100 µV/V		
	30 Hz to 300 Hz			
	10 mV	320 µV/V		
	100 mV	150 µV/V		
	1 V	98 µV/V		
	10 V	98 µV/V		
	100 V	100 µV/V		
	1000 V	110 µV/V	40 Hz minimum	
	300 Hz to 1 kHz			
	10 mV	310 µV/V		
	100 mV	140 µV/V		
	1 V	95 µV/V		
	10 V	95 µV/V		
	100 V	99 µV/V		
	1000 V	110 µV/V		
	1 kHz to 10 kHz			
	10 mV	320 µV/V		
	100 mV	150 µV/V		
	1 V	110 µV/V		
	10 V	110 µV/V		
	100 V	110 µV/V		
	1000 V	120 µV/V		
	10 kHz to 30 kHz			
	10 mV	400 µV/V		
	100 mV	260 µV/V		
	1 V	190 µV/V		
	10 V	190 µV/V		
	100 V	190 µV/V		
	1000 V	220 µV/V		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC VOLTAGE (continued)				Bideford
Measurement (continued) Specific Values	*30 kHz to 100 kHz*			
	10 mV	500 µV/V		
	100 mV	410 µV/V		
	1 V	230 µV/V		
	10 V	240 µV/V		
	100 V	250 µV/V		
	700 V	500 µV/V		
	100 kHz to 300 kHz			
	1 V	930 µV/V		
	10 V	930 µV/V		
	300 kHz to 1 MHz			
	1 V	0.14 %		
	10 V	0.15 %		
Measurement; other values	2.5 mV to 707 V		Using fast DC sampling techniques.	
	0.1 Hz to 10 Hz	0.15 % + 5.0 µV		
	10 Hz to 30 Hz			
	200 mV to 2 V	(150 to 100) µV/V		
	2 V to 20 V	(150 to 100) µV/V		
	20 V to 200 V	(150 to 100) µV/V		
	30 Hz to 300 Hz			
	2 mV to 5 mV	0.23 % to 0.098 %		
	5 mV to 10 mV	(980 to 560) µV/V		
	10 mV to 50 mV	(560 to 180) µV/V		
	50 mV to 200 mV	(180 to 160) µV/V		
	200 mV to 2 V	(150 to 100) µV/V		
	2 V to 20 V	(150 to 100) µV/V		
	20 V to 200 V	(150 to 100) µV/V		
	200 V to 1000 V	(120 to 110) µV/V	40 Hz minimum	
	300 Hz to 1 kHz			
	2 mV to 5 mV	0.12 % to 0.056 %		
	5 mV to 10 mV	(560 to 380) µV/V		
	10 mV to 50 mV	(380 to 140) µV/V		
	50 mV to 200 mV	140 µV/V		
	200 mV to 2 V	(150 to 98) µV/V		
	2 V to 20 V	(150 to 98) µV/V		
	20 V to 200 V	(150 to 100) µV/V		
	200 V to 1000 V	(120 to 110) µV/V		
	1 kHz to 10 kHz			
	2 mV to 5 mV	0.23 % to 0.098 %		
	5 mV to 10 mV	(980 to 560) µV/V		
	10 mV to 50 mV	(560 to 180) µV/V		
	50 mV to 200 mV	(180 to 160) µV/V		
	200 mV to 2 V	(160 to 110) µV/V		
	2 V to 20 V	(160 to 110) µV/V		
	20 V to 200 V	(160 to 110) µV/V		
	200 V to 1000 V	(140 to 130) µV/V		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC VOLTAGE (continued)				Bideford
Measurement (continued) Other Values	*10 kHz to 30 kHz*			
	2 mV to 5 mV	0.46 % to 0.19 %		
	5 mV to 10 mV	0.19 % to 0.10 %		
	10 mV to 50 mV	0.10 % to 0.032 %		
	50 mV to 200 mV	(320 to 280) µV/V		
	200 mV to 2 V	(300 to 190) µV/V		
	2 V to 20 V	(300 to 190) µV/V		
	20 V to 200 V	(300 to 190) µV/V		
	200 V to 1000 V	(250 to 220) µV/V		
	30 kHz to 100 kHz			
	2 mV to 5 mV	1.2 % to 0.46 %		
	5 mV to 10 mV	0.46 % to 0.24 %		
	10 mV to 50 mV	0.24 % to 0.062 %		
	50 mV to 200 mV	(620 to 470) µV/V		
	200 mV to 2 V	0.12 % to 0.033 %		
	2 V to 20 V	0.12 % to 0.034 %		
	20 V to 200 V	0.12 % to 0.034 %		
	200 V to 700 V	(770 to 560) µV/V		
	100 kHz to 300 kHz			
	200 mV to 2 V	1.2 % to 0.25 %		
	2 V to 20 V	1.2 % to 0.25 %		
	300 kHz to 1 MHz			
	200 mV to 2 V	12 % to 2.3 %		
	2 V to 20 V	12 % to 2.3 %		
	1 kV to 28 kV, *40 Hz to 60 Hz*	0.30 %		
	1 kV to 4 kV, *60 Hz to 1 kHz*	1.0 %		
AC CURRENT				
Generation (specific values)	100 µA		Application of known AC currents for the calibration of current measuring instruments.	
	10 Hz to 55 Hz	170 µA/A		
	55 Hz to 1 kHz	170 µA/A		
	1 kHz to 5 kHz	240 µA/A		
	5 kHz to 10 kHz	610 µA/A		
	1 mA			
	10 Hz to 55 Hz	150 µA/A		
	55 Hz to 1 kHz	130 µA/A		
	1 kHz to 5 kHz	180 µA/A		
	5 kHz to 10 kHz	530 µA/A		
	10 mA			
	10 Hz to 55 Hz	150 µA/A		
	55 Hz to 1 kHz	75 µA/A		
	1 kHz to 5 kHz	75 µA/A		
	5 kHz to 10 kHz	92 µA/A		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC CURRENT (continued)				Bideford
Generation (specific values) (continued)	100 mA			
	10 Hz to 55 Hz	150 µA/A		
	55 Hz to 1 kHz	75 µA/A		
	1 kHz to 5 kHz	75 µA/A		
	5 kHz to 10 kHz	92 µA/A		
	1 A			
	10 Hz to 55 Hz	180 µA/A		
	55 Hz to 1 kHz	96 µA/A		
	1 kHz to 5 kHz	110 µA/A		
	5 kHz to 10 kHz	120 µA/A		
Generation (other values)	10 µA to 20 µA		Application of known AC currents for the calibration of current measuring instruments.	
	10 Hz to 55 Hz	290 µA/A		
	55 Hz to 1 kHz	290 µA/A		
	1 kHz to 5 kHz	340 µA/A		
	5 kHz to 10 kHz	650 µA/A		
	20 µA to 200 µA			
	10 Hz to 55 Hz	170 µA/A		
	55 Hz to 1 kHz	170 µA/A		
	1 kHz to 5 kHz	270 µA/A		
	5 kHz to 10 kHz	630 µA/A		
	200 µA to 2 mA			
	10 Hz to 55 Hz	160 µA/A		
	55 Hz to 1 kHz	140 µA/A		
	1 kHz to 5 kHz	210 µA/A		
	5 kHz to 10 kHz	560 µA/A		
	2 mA to 20 mA			
	10 Hz to 55 Hz	160 µA/A		
	55 Hz to 1 kHz	88 µA/A		
	1 kHz to 5 kHz	140 µA/A		
	5 kHz to 10 kHz	200 µA/A		
	20 mA to 200 mA			
	10 Hz to 55 Hz	160 µA/A		
	55 Hz to 1 kHz	88 µA/A		
	1 kHz to 5 kHz	140 µA/A		
	5 kHz to 10 kHz	200 µA/A		
	200 mA to 1 A			
	10 Hz to 55 Hz	190 µA/A		
	55 Hz to 1 kHz	120 µA/A		
	1 kHz to 5 kHz	360 µA/A		
	5 kHz to 10 kHz	480 µA/A		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC CURRENT (continued)				Bideford
Generation (other values, continued)	1 A to 20 A *30 Hz to 55 Hz* *55 Hz to 1 kHz* *1 kHz to 5 kHz*	 190 µA/A 120 µA/A 170 µA/A		
Current clamp calibration	*10 Hz to 5 kHz* 100 µA to 1 A	 0.26 %	Using multi-turn coils: Single turn	
	30 Hz to 5 kHz 1 A to 20 A	 0.26 %	Single turn	
	30 Hz to 100 Hz 3.2 A to 1000 A	 0.66 %	10 or 50 turns	
	100 Hz to 440 Hz 3.2 A to 1000 A	 1.8 %	10 or 50 turns	
Measurement (specific values)	100 µA *10 Hz to 55 Hz* *55 Hz to 1 kHz* *1 kHz to 5 kHz* *5 kHz to 10 kHz*	 180 µA/A 180 µA/A 250 µA/A 620 µA/A	Measurement of AC current using digital multimeter and current shunt.	
	1 mA *10 Hz to 55 Hz* *55 Hz to 1 kHz* *1 kHz to 5 kHz* *5 kHz to 10 kHz*	 170 µA/A 150 µA/A 190 µA/A 540 µA/A		
	10 mA *10 Hz to 55 Hz* *55 Hz to 1 kHz* *1 kHz to 5 kHz* *5 kHz to 10 kHz*	 170 µA/A 100 µA/A 100 µA/A 130 µA/A		
	100 mA *10 Hz to 55 Hz* *55 Hz to 1 kHz* *1 kHz to 5 kHz* *5 kHz to 10 kHz*	 170 µA/A 110 µA/A 110 µA/A 130 µA/A		
	1 A *10 Hz to 55 Hz* *55 Hz to 1 kHz* *1 kHz to 5 kHz* *5 kHz to 10 kHz*	 200 µA/A 120 µA/A 140 µA/A 160 µA/A		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC CURRENT (continued)				Bideford
Measurement (other values)	10 µA to 20 µA			
	10 Hz to 55 Hz	300 µA/A		
	55 Hz to 1 kHz	300 µA/A		
	1 kHz to 5 kHz	350 µA/A		
	5 kHz to 10 kHz	660 µA/A		
	20 µA to 200 µA			
	10 Hz to 55 Hz	190 µA/A		
	55 Hz to 1 kHz	190 µA/A		
	1 kHz to 5 kHz	280 µA/A		
	5 kHz to 10 kHz	640 µA/A		
	200 µA to 2 mA			
	10 Hz to 55 Hz	170 µA/A		
	55 Hz to 1 kHz	160 µA/A		
	1 kHz to 5 kHz	220 µA/A		
	5 kHz to 10 kHz	560 µA/A		
	2 mA to 20 mA			
	10 Hz to 55 Hz	170 µA/A		
	55 Hz to 1 kHz	110 µA/A		
	1 kHz to 5 kHz	160 µA/A		
	5 kHz to 10 kHz	220 µA/A		
	20 mA to 200 mA			
	10 Hz to 55 Hz	180 µA/A		
	55 Hz to 1 kHz	120 µA/A		
	1 kHz to 5 kHz	160 µA/A		
	5 kHz to 10 kHz	220 µA/A		
	200 mA to 1 A			
	10 Hz to 55 Hz	220 µA/A		
	55 Hz to 1 kHz	150 µA/A		
	1 kHz to 5 kHz	510 µA/A		
	5 kHz to 10 kHz	670 µA/A		
	1 A to 20 A			
	30 Hz to 55 Hz	190 µA/A		
	55 Hz to 1 kHz	120 µA/A		
	1 kHz to 5 kHz	170 µA/A		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC PHASE ANGLE			Using FFT Analyser	
Voltage : Voltage, square wave	0° to 360°			
	0.1 Hz to 10 kHz	0.0049°		
	10 kHz to 30 kHz	0.0077°		
	30 kHz to 100 kHz	0.022°		
Voltage : Voltage, sine wave	0° to 360°			
	10 mV to 30 V, 10 Hz to 1 kHz	0.0059°		
	10 mV to 30 V, 1 kHz to 5 kHz	0.0082°		
	30 V to 300 V, 10 Hz to 1 kHz	0.0084°		
	30 V to 300 V, 1 kHz to 5 kHz	0.011°		
Voltage : Current, sine wave	0° to 360° *10 mV to 300 V* *10 mA to 1.5 A* *10 Hz to 1 kHz*	0.0085°		
	0° to 360° *10 mV to 300 V* *10 mA to 1.5 A* *1 kHz to 5 kHz*	0.013°		
	0° to 360° *10 mV to 300 V* *1.5 A to 6 A* *10 Hz to 1 kHz*	0.0087°		Bideford
	0° to 360° *10 mV to 300 V* *1.5 A to 6 A* *1 kHz to 5 kHz*	0.016°		
	0° to 360° *10 mV to 300 V* *6 A to 20 A* *10 Hz to 1 kHz*	0.014°		
	0° to 360° *10 mV to 300 V* *6 A to 20 A* *1 kHz to 5 kHz*	0.059°		
Current : Current, sine wave	0° to 360° *10 mA to 1.5 A* *10 Hz to 1 kHz*	0.0062°		
	0° to 360° *10 mA to 1.5 A* *1 kHz to 5 kHz*	0.011°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC PHASE ANGLE (continued)			Using FFT Analyser	
Current: Current, sine wave (continued)	0° to 360° *1.5 A to 6 A* *10 Hz to 1 kHz*	0.0068°		
	0° to 360° *1.5 A to 6 A* *1 kHz to 5 kHz*	0.018°		
	0° to 360° *6 A to 20 A* *10 Hz to 1 kHz*	0.017°		
	0° to 360° *6 A to 20 A* *1 kHz to 5 kHz*	0.082°		
DC and AC POWER			Measurement and generation, using phantom load techniques	Bideford
	DC 0.1 nW to 100 kW (voltage 10 mV to 1 kV; current 10 pA to 100 A).	The RSS summation of the CMCs for voltage and current. See examples below for further details.		
	10 Hz to 5 kHz 0 W to 6 kW (voltage 10 mV to 300 V; current 10 mA to 20 A).	The RSS summation of the CMCs for voltage, current and power factor (cos(Φ)). See examples below for further details.		
Example DC power CMCs from 10 mV to 1 kV:	10 pA to 200 pA 200 pA to 2 nA 2 nA to 20 nA 20 nA to 200 nA 200 nA to 2 µA 2 µA to 20 µA 20 µA to 20 A 20 A to 100 A	560 µW/W 380 µW/W 340 µW/W 270 µW/W 230 µW/W 190 µW/W 47 µW/W 0.15 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
DC and AC POWER (continued) Example AC Power CMCs	Voltage 200 mV to 200 V Current 10 mA to 1 A Frequency 10 Hz to 30 Hz	Phase / µW/W / µW/VA 0° 220 220 45° 260 190 70° 460 160 90° 150		Bideford

Voltage Range	Phase	30 Hz to 55 Hz					
		10 mA to 1.6 A		1.6 A to 6 A		6 A to 20 A	
		µW/W	µW/VA	µW/W	µW/VA	µW/W	µW/VA
10 mV to 50 mV	0°	260	260	260	260	260	260
	45°	300	210	300	210	360	250
	70°	480	170	490	170	720	250
	90°		150		150		240
50 mV to 200 mV	0°	250	250	250	250	250	250
	45°	290	210	290	210	350	250
	70°	480	160	490	170	720	250
	90°		150		150		240
200 mV to 300 V	0°	220	220	220	220	220	220
	45°	270	190	270	190	330	230
	70°	460	160	470	160	710	240
	90°		150		150		240
		55 Hz to 1 kHz					
		10 mA to 1.6 A		1.6 A to 6 A		6 A to 20 A	
		µW/W	µW/VA	µW/W	µW/VA	µW/W	µW/VA
10 mV to 50 mV	0°	220	220	220	220	220	220
	45°	260	190	260	190	330	230
	70°	460	160	470	160	710	240
	90°		150		150		240
50 mV to 200 mV	0°	200	200	200	200	200	200
	45°	250	180	250	180	320	220
	70°	450	160	460	160	700	240
	90°		150		150		240
200 mV to 300 V	0°	160	160	160	160	160	160
	45°	220	160	220	160	290	210
	70°	440	150	450	150	690	240
	90°		150		150		240

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
DC and AC POWER (continued) Example AC Power CMCs (continued)				Bideford

Voltage Range	Phase	1 kHz to 5 kHz					
		10 mA to 1.6 A		1.6 A to 6 A		6 A to 20 A	
		µW/W	µW/VA	µW/W	µW/VA	µW/W	µW/VA
10 mV to 50 mV	0°	400	400	250	250	250	250
	45°	460	330	370	260	1100	750
	70°	740	250	810	280	2800	970
	90°		230		280		1000
50 mV to 200 mV	0°	390	390	230	230	230	230
	45°	460	320	360	260	1100	750
	70°	740	250	800	270	2800	970
	90°		230		280		1000
200 mV to 300 V	0°	380	380	210	210	210	210
	45°	450	320	350	250	1100	740
	70°	730	250	800	270	2800	970
	90°		230		280		1000

NOTE

The example CMCs for AC Power are shown both in terms of µW/W and µW/VA and may be expressed using either term for most of the phase (power factor) range. However, at low values of power factor, the uncertainties in µW/W terms approach infinity, so the µW/VA terminology will normally be used in these circumstances.

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC HARMONICS AND DISTORTION NOTE The total harmonic distortion of a repetitive waveform (THD) is often defined as the ratio of the RMS values of the harmonics with reference to that of the fundamental. This is referred to herein as THD_F. Certain types of distortion analyser use a broad band voltmeter in conjunction with a notch filter. The total signal (including harmonics) is used as a "100 % reference"; the notch filter is then used to remove the fundamental and the residue is displayed as the "THD". This is referred to herein as THD_R, the subscript R referring to the RMS value of the reference voltage. It should be noted that THD_R cannot exceed 100 % as the total signal is used as the reference, whereas THD_F can have any value. At relatively low values, the two converge, e.g., if THD_F = 10 % then THD_R = 9.5 %. At higher values of THD the differences between the two can be very significant indeed. For this reason, the capabilities described below distinguish clearly between the two definitions.				Bideford
Generation of Harmonic Distortion, THD_R and THD_F	THD_R 0.006 % to 100 % THD_F 0.006 % to 1000 % *30 Hz to 20 kHz* *20 kHz to 50 kHz* *50 kHz to 100 kHz*	 0.62 % to 5.7 % 0.85 % to 5.8 % 1.7 % to 6.4 %	Fundamental: 3 mV to 300 V, 30 Hz to 20 kHz. Harmonic(s): 3 µV to 300 V. Not all combinations of voltage and frequency may be available.	
Measurement of Harmonic Distortion, THD_R and THD_F	THD_R 0.00032 % to 100 % THD_F 0.00032 % to 1000 % *30 Hz to 100 kHz*	 0.73 % to 1.8 %	Fundamental: 3 mV to 300 V, 30 Hz to 20 kHz. Harmonic(s): 3 µV to 300 V	
Harmonic Amplitude Measurement and Generation	3 µV to 300 V *30 Hz to 100 kHz*	 0.90 % to 1.7 %		
Flicker Measurement and Generation	Pst values from 0.4 to 6, with 1 to 500 changes per minute.	0.37 %	In accordance with EN61000-4-15	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
CAPACITANCE				Bideford
Measurement and generation	*At 100 Hz:*			
	100 pF to 190 pF	0.60 %	Using standard capacitors and LCR meter.	
	190 pF to 350 pF	0.26 %		
	350 pF to 1 nF	0.17 %		
	1 nF to 1 µF	0.080 %		
	1 µF to 100 µF	0.10 %		
	At 1 kHz:			
	10 pF to 15 pF	0.62 %		
	15 pF to 25 pF	0.32 %		
	25 pF to 100 pF	0.24 %		
	100 pF to 1 µF	0.080 %		
	1 µF to 100 µF	0.10 %		
	At 10 kHz:			
	10 pF to 25 pF	0.32 %		
	25 pF to 70 pF	0.24 %		
	70 pF to 100 nF	0.080 %		
	100 nF to 1 µF	0.085 %		
INDUCTANCE				
Measurement and Generation	*At 100 Hz:*			
	100 µH to 250 µH	0.59 %	Using standard inductors and LCR meter.	
	250 µH to 600 µH	0.25 %		
	600 µH to 1 mH	0.15 %		
	1 mH to 100 mH	0.11 %		
	100 mH to 1 H	0.27 %		
	At 1 kHz:			
	10 µH to 25 µH	0.59 %		
	25 µH to 60 µH	0.25 %		
	60 µH to 100 µH	0.14 %		
	100 µH to 150 µH	0.14 %		
	150 µH to 1 H	0.092 %		
	At 10 kHz:			
	10 µH to 20 µH	0.14 %		
	20 µH to 1 mH	0.099 %		
	1 mH to 10 mH	0.092 %		
	10 mH to 100 mH	0.13 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
FREQUENCY MEASUREMENT			Can be expressed as average periodic time (1/f) for repetitive waveforms.	Bideford
Specific Value	10 MHz	1 in 10^{10}		
Other Values	1 Hz to 1 GHz	12 in 10^9		
	1 GHz to 40 GHz	1.3 in 10^9		
TIME INTERVAL	100 ps to 1 ns	3.3 %	Repetitive and Single Event	
	1 ns to 10 ns	0.36 %		
	10 ns to 100 ns	0.12 %		
	100 ns to 1 µs	120 µs/s		
	1 µs to 100 µs	15 µs/s		
	100 µs to 1 ms	4.0 µs/s		
	1 ms to 10 ms	400 in 10^9		
	10 ms to 100 ms	43 in 109		
	100 ms to 10^5 s	15 in 10^9 + 400 ps		
PULSE TRANSITION TIME				
Measurement	150 ps to 500 ps	1.3 %	Using fast rise oscilloscope; for the calibration of Waveform Generators	
	500 ps to 10 s	0.91 %		
Generation	500 ps to 10 s	1.6 %	Using fast rise pulse generator; for the calibration of oscilloscopes and other measurement devices	
ELECTRICAL SIMULATION OF TEMPERATURE				
Measurement and Generation				
Thermocouple Simulation				
Type K	-270 °C to +1372 °C	0.12 °C to 0.30 °C	By millivolt injection; excluding cold junction compensation	
Type J	-210 °C to +1200 °C	0.12 °C to 0.23 °C		
Type E	-270 °C to +1000 °C	0.12 °C to 0.22 °C		
Type N	-270 °C to +1300 °C	0.12 °C to 0.27 °C		
Type T	-270 °C to +400 °C	0.12 °C to 0.22 °C		
Type S	0 °C to 1768 °C	0.18 °C to 0.29 °C		
Type R	0 °C to 1768 °C	0.17 °C to 0.28 °C		
Type B	0 °C to 1820 °C	0.19 °C to 0.34 °C		
Thermocouple CJC	Ambient (23 °C)	0.13 °C		
PRT Simulation	-200 °C to 0 °C	0.027 °C to 0.049 °C	By application of equivalent DC resistance values.	
	0 °C to 400 °C	0.049 °C to 0.12 °C		
	400 °C to 850 °C	0.12 °C to 0.21 °C		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code

RF POWER

The CMCs below are for the measurement of RF Power in 50 Ω coaxial systems expressed in terms of % of the linearly expressed value for the stated frequency and power ranges. The capabilities are for the measurement of sources, such as signal generators and synthesisers.

Type N coaxial systems

Frequency range	-60 dBm to -50 dBm	-50 dBm to -40 dBm	-40 dBm to -20 dBm
9 kHz to 10 MHz	1.6 %	1.5 %	1.2 %

Frequency range	-62 dBm to -55 dBm	-55 dBm to -20 dBm	-20 dBm to +20 dBm	+20 dBm to +44 dBm	+44 dBm to +55 dBm
9 kHz to 10 MHz			1.3 %	2.2 %	2.7 %
10 MHz to 50 MHz	1.4 %	1.3 %	1.3 %	2.2 %	2.7 %
50 MHz to 1 GHz	1.5 %	1.4 %	1.3 %	2.0 %	2.3 %
1 GHz to 5 GHz	1.6 %	1.5 %	1.3 %	2.0 %	3.3 %
5 GHz to 10 GHz	2.0 %	1.9 %	1.4 %	2.1 %	3.8 %
10 GHz to 12.5 GHz	2.1 %	2.0 %	1.5 %	2.6 %	5.6 %
12.5 GHz to 15 GHz	2.1 %	2.0 %	1.5 %	2.7 %	
15 GHz to 18 GHz	2.3 %	2.3 %	1.6 %	2.7 %	

3.5 mm coaxial systems

Frequency range	-62 dBm to -55 dBm	-55 dBm to -20 dBm	-20 dBm to +20 dBm
50 MHz to 1 GHz	1.6 %	1.5 %	1.4 %
1 GHz to 5 GHz	1.6 %	1.5 %	1.4 %
5 GHz to 10 GHz	1.7 %	1.6 %	1.5 %
10 GHz to 15 GHz	2.0 %	1.9 %	1.6 %
15 GHz to 20 GHz	2.6 %	2.5 %	2.0 %
20 GHz to 26.5 GHz	3.4 %	3.3 %	2.3 %

2.92 mm coaxial systems

Frequency range	-62 dBm to -55 dBm	-55 dBm to -20 dBm	-20 dBm to +20 dBm
50 MHz to 1 GHz	1.7 %	1.7 %	1.4 %
1 GHz to 5 GHz	1.8 %	1.7 %	1.5 %
5 GHz to 10 GHz	1.9 %	1.9 %	1.7 %
10 GHz to 15 GHz	2.1 %	2.0 %	1.7 %
15 GHz to 20 GHz	2.4 %	2.4 %	2.0 %
20 GHz to 25 GHz	2.5 %	2.5 %	2.0 %
25 GHz to 30 GHz	3.1 %	3.1 %	2.3 %
30 GHz to 35 GHz	3.7 %	3.7 %	2.3 %
35 GHz to 40 GHz	4.8 %	4.8 %	2.3 %

Bideford

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code

RF POWER (continued)

The CMCs below are for the measurement of RF Power in 50 Ω coaxial systems expressed in terms of % of the linearly expressed value for the stated frequency and power ranges. The capabilities are for the measurement of sources, such as signal generators and synthesisers.

2.4 mm coaxial systems

Frequency range	-62 dBm to -55 dBm	-55 dBm to -20 dBm	-20 dBm to +20 dBm
50 MHz to 1 GHz	1.7 %	1.6 %	1.4 %
1 GHz to 5 GHz	1.8 %	1.7 %	1.4 %
5 GHz to 10 GHz	1.9 %	1.8 %	1.6 %
10 GHz to 15 GHz	2.0 %	2.0 %	1.7 %
15 GHz to 20 GHz	2.4 %	2.3 %	2.0 %
20 GHz to 25 GHz	2.6 %	2.6 %	2.0 %
25 GHz to 30 GHz	2.9 %	2.9 %	2.1 %
30 GHz to 35 GHz	3.2 %	3.1 %	2.3 %
35 GHz to 40 GHz	3.8 %	3.7 %	2.7 %

Specific value	*1 mW, 50 MHz* Type N coaxial systems 3.5 mm coaxial systems 2.92 mm coaxial systems 2.4 mm coaxial systems	 0.65 % 0.69 % 0.80 % 0.69 %	For the measurement of sources, including the calibrator output of RF power meters.	Bideford

The CMCs below are for the generation of RF Power in 50 Ω coaxial systems expressed in terms of % of the linearly expressed value for the stated frequency and power ranges. The capabilities are for the calibration of receivers, spectrum analysers and similar items.

Type N coaxial systems

Frequency range	-70 dBm to -50 dBm	-50 dBm to -20 dBm	-20 dBm to +20 dBm
9 kHz to 10 MHz	1.5 %	1.3 %	1.3 %
10 MHz to 50 MHz	1.5 %	1.3 %	1.3 %
50 MHz to 1 GHz	1.5 %	1.3 %	1.3 %
1 GHz to 5 GHz	1.5 %	1.4 %	1.3 %
5 GHz to 10 GHz	1.7 %	1.5 %	1.4 %
10 GHz to 15 GHz	1.7 %	1.5 %	1.4 %
15 GHz to 18 GHz	2.2 %	1.7 %	1.6 %

Frequency range	+20 dBm to +34 dBm	+20 dBm to +47 dBm	+47 dBm to +55 dBm
9 kHz to 10 MHz		2.1 %	4.7 %
10 MHz to 50 MHz		2.1 %	4.7 %
50 MHz to 1 GHz		2.1 %	4.7 %
1 GHz to 3 GHz	2.4 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
RF POWER (continued) The CMCs below are for the generation of RF Power in 50 Ω coaxial systems expressed in terms of % of the linearly expressed value for the stated frequency and power ranges. The capabilities are for the calibration of receivers, spectrum analysers and similar items.				Bideford
3.5 mm coaxial systems				
Frequency range	-70 dBm to -50 dBm	-50 dBm to -20 dBm	-20 dBm to +14 dBm	
50 MHz to 1 GHz 1 GHz to 5 GHz 5 GHz to 10 GHz 10 GHz to 15 GHz 15 GHz to 20 GHz 20 GHz to 26.5 GHz	1.7 % 1.6 % 1.7 % 2.0 % 2.5 % 2.9 %	1.4 % 1.5 % 1.6 % 1.9 % 2.4 % 2.9 %	1.4 % 1.4 % 1.5 % 1.9 % 2.2 % 2.4 %	
2.92 mm coaxial systems				
Frequency range	-70 dBm to -50 dBm	-50 dBm to -20 dBm	-20 dBm to +14 dBm	
50 MHz to 1 GHz 1 GHz to 5 GHz 5 GHz to 10 GHz 10 GHz to 15 GHz 15 GHz to 20 GHz 20 GHz to 25 GHz 25 GHz to 30 GHz 30 GHz to 35 GHz 35 GHz to 40 GHz	1.7 % 1.7 % 1.9 % 2.0 % 2.4 % 2.5 % 2.9 % 3.3 % 3.6 %	1.5 % 1.6 % 1.8 % 1.9 % 2.3 % 2.3 % 2.8 % 3.3 % 3.5 %	1.4 % 1.5 % 1.7 % 1.8 % 2.4 % 2.5 % 3.0 % 3.1 % 3.4 %	
2.4 mm coaxial systems				
Frequency range	-70 dBm to -50 dBm	-50 dBm to -20 dBm	-20 dBm to +14 dBm	
50 MHz to 1 GHz 1 GHz to 5 GHz 5 GHz to 10 GHz 10 GHz to 15 GHz 15 GHz to 20 GHz 20 GHz to 25 GHz 25 GHz to 30 GHz 30 GHz to 35 GHz 35 GHz to 40 GHz	1.6 % 1.7 % 1.8 % 1.9 % 2.3 % 2.6 % 2.9 % 3.1 % 4.0 %	1.4 % 1.5 % 1.6 % 1.8 % 2.2 % 2.4 % 2.8 % 3.0 % 3.9 %	1.4 % 1.6 % 1.7 % 1.8 % 2.2 % 2.7 % 2.9 % 3.0 % 4.1 %	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)		Remarks	Location code
RF CALIBRATION FACTOR				For calibration of RF power sensors by comparison with standard sensors. Values of calibration factor between 30 % and 140 % may be reported; these represent the percentage of the reported calibration factor.	Bideford
	Type N 50 Ω coaxial systems	Nominal level 0 dBm	Nominal level -30 dBm		
	9 kHz to 10 MHz	0.62 %	0.66 %		
	10 MHz to 50 MHz	0.62 %	0.65 %		
	50 MHz to 1 GHz	0.72 %	0.75 %		
	1 GHz to 5 GHz	0.75 %	0.85 %		
	5 GHz to 10 GHz	0.83 %	1.3 %		
	10 GHz to 15 GHz	0.98 %	1.4 %		
	15 GHz to 18 GHz	1.1 %	1.6 %		
	3.5 mm 50 Ω coaxial systems	Nominal level 0 dBm	Nominal level -30 dBm		
	50 MHz to 1 GHz	0.77 %	0.86 %		
	1 GHz to 5 GHz	0.82 %	0.93 %		
	5 GHz to 10 GHz	1.0%	1.1 %		
	10 GHz to 15 GHz	1.4 %	1.5 %		
	15 GHz to 20 GHz	1.9 %	2.2 %		
	20 GHz to 26.5 GHz	2.6 %	3.1 %		
	2.92 mm 50 Ω coaxial systems	Nominal level 0 dBm	Nominal level -30 dBm		
	50 MHz to 1 GHz	0.80 %	1.1 %		
	1 GHz to 5 GHz	0.96 %	1.2 %		
	5 GHz to 10 GHz	1.3 %	1.4 %		
	10 GHz to 15 GHz	1.5 %	1.6 %		
	15 GHz to 20 GHz	2.1 %	2.0 %		
	20 GHz to 25 GHz	2.3 %	2.1 %		
	25 GHz to 30 GHz	2.7 %	2.7 %		
	30 GHz to 35 GHz	3.2 %	3.4 %		
	35 GHz to 40 GHz	3.2 %	4.6 %		
	2.4 mm 50 Ω coaxial systems	Nominal level 0 dBm	Nominal level -30 dBm		
	50 MHz to 1 GHz	0.79 %	0.90 %		
	1 GHz to 5 GHz	0.91 %	1.0 %		
	5 GHz to 10 GHz	1.1 %	1.2 %		
	10 GHz to 15 GHz	1.3 %	1.4 %		
	15 GHz to 20 GHz	1.8 %	1.8 %		
	20 GHz to 25 GHz	2.1 %	2.1 %		
	25 GHz to 30 GHz	2.6 %	2.5 %		
	30 GHz to 35 GHz	2.8 %	2.8 %		
	35 GHz to 40 GHz	3.2 %	3.4 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
RF VOLTAGE	200 µV to 1 mV		50 Ω systems only	Bideford
	9 kHz to 100 kHz	1.1 %		
	100 kHz to 1 MHz	1.1 %	Derived from RF Power measurements.	
	1 MHz to 100 MHz	1.1 %		
	100 MHz to 1 GHz	1.4 %		
	1 GHz to 1.5 GHz	2.1 %		
	1 mV to 10 mV			
	9 kHz to 100 kHz	0.96 %		
	100 kHz to 1 MHz	0.96 %		
	1 MHz to 100 MHz	0.96 %		
	100 MHz to 1 GHz	1.3 %		
	1 GHz to 1.5 GHz	2.1 %		
	10 mV to 1 V			
	9 kHz to 20 kHz	0.80 %		
	20 kHz to 1 MHz	0.80 %		
	1 MHz to 100 MHz	0.80 %		
	100 MHz to 1 GHz	1.2 %		
	1 GHz to 1.5 GHz	2.1 %		
	1 V to 10 V			
	9 kHz to 20 kHz	0.74 %		
	20 kHz to 1 MHz	0.99 %		
	1 MHz to 100 MHz	0.99 %		
	100 MHz to 1 GHz	1.7 %		
	1 GHz to 1.5 GHz	2.8 %		
VOLTAGE REFLECTION COEFFICIENT	*5 MHz to 1 GHz*		50 Ω systems only. Reflection bridge method.	
	0.00 to 0.05	0.016		
	0.05 to 0.1	0.019		
	0.1 to 0.2	0.030		
	0.2 to 0.7	0.090		
	0.7 to 1.0	0.16		
	1 GHz to 2 GHz			
	0.00 to 0.05	0.022		
	0.05 to 0.1	0.023		
	0.1 to 0.2	0.029		
	0.2 to 0.7	0.077		
	0.7 to 1.0	0.11		
	2 GHz to 5 GHz			
	0.00 to 0.05	0.021		
	0.05 to 0.1	0.034		
	0.1 to 0.2	0.065		
	0.2 to 0.7	0.22		
	0.7 to 1.0	0.32		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
VOLTAGE REFLECTION COEFFICIENT (continued)				Bideford
	5 GHz to 10 GHz			
	0.00 to 0.05	0.026		
	0.05 to 0.1	0.028		
	0.1 to 0.2	0.038		
	0.2 to 0.7	0.11		
	0.7 to 1.0	0.14		
	10 GHz to 15 GHz			
	0.00 to 0.05	0.033		
	0.05 to 0.1	0.035		
	0.1 to 0.2	0.042		
	0.2 to 0.7	0.093		
	0.7 to 1.0	0.13		
	15 GHz to 18 GHz			
	0.00 to 0.05	0.035		
	0.05 to 0.1	0.038		
	0.1 to 0.2	0.050		
	0.2 to 0.7	0.13		
	0.7 to 1.0	0.18		
LF VECTOR NETWORK ANALYSIS				
This section of the Schedule presents the CMCs for a vector network analysis system. Measurements are made as complex quantities. Transmission magnitude capabilities are expressed in dB terms and reflection magnitude is expressed in terms of voltage reflection coefficient (VRC). These may also be reported in terms of voltage standing wave ratio (VSWR), return loss (dB) or Impedance magnitude and phase. Measurements are made in a 50 Ω coaxial system using an Agilent E5061B network analyser with appropriate test port leads in a 10 Hz bandwidth and 1 Hz bandwidth for transmission measurements greater than 70 dB.				
N Type 50 Ω system				
Reflection magnitude	VRC 0 to 0.1			
	1 kHz to 1 MHz	0.0017 to 0.0022		
	1 MHz to 100 MHz	0.0017 to 0.0019		
	100 MHz to 1 GHz	0.0017 to 0.0024		
	1 GHz to 3 GHz	0.0022 to 0.0034		
	VRC 0.1 to 0.5			
	1 kHz to 1 MHz	0.0017 to 0.0030		
	1 MHz to 100 MHz	0.0017 to 0.0029		
	100 MHz to 1 GHz	0.0017 to 0.0061		
	1 GHz to 3 GHz	0.0024 to 0.0084		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
Reflection magnitude (continued)	VRC 0.5 to 1.0			Bideford
	1 kHz to 1 MHz	0.0021 to 0.0048		
	1 MHz to 100 MHz	0.0021 to 0.0048		
	100 MHz to 1 GHz	0.0022 to 0.013		
	1 GHz to 3 GHz	0.0041 to 0.019		
Reflection phase	VRC 0 to 0.0004			
	1 kHz to 3 GHz	180°		
	VRC 0.0004 to 0.001			
	1 kHz to 3 GHz	100° to 180°		
	VRC 0.001 to 0.01			
	1 kHz to 3 GHz	20° to 170°		
	VRC 0.01 to 1			
	1 kHz to 3 GHz	0.12° to 34°		
Transmission magnitude	0 dB to 20 dB			
	1 kHz to 2 GHz	0.0032 dB to 0.055 dB		
	2 GHz to 3 GHz	0.029 dB to 0.090 dB		
	20 dB to 70 dB			
	1 kHz to 3 GHz	0.052 dB to 0.13 dB		
	70 dB to 80 dB			
	1 kHz to 3 GHz	0.10 dB to 0.17 dB		
	80 dB to 90 dB			
	1 kHz to 3 GHz	0.13 dB to 0.41 dB		
	90 dB to 100 dB			
	1 kHz to 3 GHz	0.33 dB to 1.8 dB		
Transmission phase	0° to ± 180°			
	1 kHz to 3 GHz			
	Transmission 0 dB to 20 dB	0.0030° to 0.84°		
	Transmission 20 dB to 70 dB	0.77° to 9.6°		
	Transmission 70 dB to 80 dB	10° to 12°		
	Transmission 80 dB to 90 dB	12° to 14°		
	Transmission 90 dB to 100 dB	14° to 18°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks

AUTOMATIC NETWORK ANALYSER SYSTEM; VOLTAGE TRANSMISSION COEFFICIENT MAGNITUDE AND PHASE: The CMCs are for 50Ω coaxial systems fitted with Type N, 3.5 mm, 2.92 mm or 2.4 mm connectors over the frequency ranges as specified below. The CMCs are presented in dB terms for magnitude and in degrees for phase.

Type N systems	0 dB	to	30 dB	30 dB	to	40 dB	40 dB	to	50 dB	50 dB	to	60 dB
10 MHz to 100 MHz												
Magnitude	0.032	to	0.067	0.032	to	0.19	0.035	to	0.59	0.054	to	1.9
Phase	0.57	to	0.71	0.60	to	1.4	0.60	to	3.9	0.66	to	12
100 MHz to 1 GHz												
Magnitude	0.032	to	0.032	0.032	to	0.033	0.032	to	0.044	0.032	to	0.10
Phase	0.57	to	0.60	0.60	to	0.60	0.60	to	0.63	0..60	to	0.88
1 GHz to 12 GHz												
Magnitude	0.032	to	0.042	0.032	to	0.042	0.032	to	0.042	0.032	to	0.043
Phase	0.57	to	0.98	0.60	to	0.98	0.60	to	0.98	0.60	to	0.98
12 GHz to 18 GHz												
Magnitude	0.042	to	0.049	0.042	to	0.049	0.042	to	0.049	0.042	to	0.050
Phase	0.97	to	1.3	0.99	to	1.3	0.99	to	1.3	0.99	to	1.3

Type N systems	60 dB	to	70 dB	70 dB	to	80 dB	80 dB	to	90 dB
10 MHz to 100 MHz									
Magnitude	0.14	to	1.9	0.44	to	4.1	14	to	13
Phase	1.1	to	12	2.9	to	27	9.1	to	85
100 MHz to 1 GHz									
Magnitude	0.034	to	0.31	0.048	to	0.97	0.12	to	3.1
Phase	0.60	to	2.1	0.64	to	0.64	0.96	to	20
1 GHz to 12 GHz									
Magnitude	0.033	to	0.050	0.045	to	0.12	0.095	to	0.36
Phase	0.60	to	1.0	0.63	to	1.1	0.89	to	2.5
12 GHz to 18 GHz									
Magnitude	0.043	to	0.056	0.050	to	0.090	0.096	to	0.27
Phase	0.99	to	1.3	1.0	to	1.4	1.1	to	2.2

3.5 mm systems	0 dB	to	30 dB	30 dB	to	40 dB	40 dB	to	50 dB	50 dB	to	60 dB
45 MHz to 100 MHz												
Magnitude	0.032	to	0.34	0.032	to	0.052	0.035	to	0.13	0.054	to	0.41
Phase	0.57	to	0.60	0.60	to	0.66	0.60	to	1.0	0.66	to	2.8
100 MHz to 1 GHz												
Magnitude	0.032	to	0.032	0.032	to	0.033	0.032	to	0.044	0.032	to	0.10
Phase	0.57	to	0.60	0.60	to	0.60	0.60	to	0.63	0.60	to	0.88
1 GHz to 12 GHz												
Magnitude	0.032	to	0.042	0.032	to	0.042	0.032	to	0.042	0.032	to	0.043
Phase	0.57	to	0.98	0.60	to	0.98	0.60	to	0.98	0.60	to	0.98
12 GHz to 26.5 GHz												
Magnitude	0.042	to	0.063	0.042	to	0.063	0.042	to	0.063	0.042	to	0.064
Phase	0.97	to	1.7	0.99	to	1.7	0.99	to	1.7	0.99	to	1.7

3.5 mm systems	60 dB	to	70 dB	70 dB	to	80 dB	80 dB	to	90 dB
45 MHz to 100 MHz									
Magnitude	0.14	to	1.3	0.044	to	4.1	1.4	to	13
Phase	1.1	to	8.6	2.9	to	27	9.1	to	85
100 MHz to 1 GHz									
Magnitude	0.034	to	0.31	0.048	to	0.97	0.12	to	3.1
Phase	0.60	to	5.1	0.64	to	6.4	0.96	to	20
1 GHz to 12 GHz									
Magnitude	0.033	to	0.050	0.045	to	0.12	0.095	to	0.36
Phase	0.60	to	1.0	0.63	to	1.1	0.89	to	2.5
12 GHz to 26.5 GHz									
Magnitude	0.043	to	0.069	0.050	to	0.11	0.096	to	0.28
Phase	0.99	to	1.7	1.0	to	1.8	1.5	to	2.5

2.92 mm systems	0 dB	to	30 dB	30 dB	to	40 dB	40 dB	to	50 dB	50 dB	to	60 dB
45 MHz to 100 MHz												
Magnitude	0.032	to	0.034	0.032	to	0.052	0.035	to	0.13	0.054	to	041
Phase	0.28	to	0.35	0.34	to	0.44	0.35	to	0.92	0.45	to	2.7
100 MHz to 1 GHz												
Magnitude	0.032	to	0.032	0.032	to	0.033	0.032	to	0.044	0.032	to	0.10
Phase	0.28	to	0.34	0.34	to	0.35	0.34	to	0.40	0.34	to	0.73
1 GHz to 26.5 GHz												
Magnitude	0.032	to	0.059	0.032	to	0.059	0.032	to	0.059	0.032	to	0.060
Phase	0.28	to	1.2	0.34	to	1.2	0.34	to	1.2	0.34	to	1.2
26.5 GHz to 40 GHz												
Magnitude	0.059	to	0.090	0.059	to	0.090	0.059	to	0.090	0.059	to	0.092
Phase	1.2	to	2.1	1.2	to	2.1	1.2	to	2.1	1.2	to	2.1
2.92 mm systems	60 dB	to	70 dB	70 dB	to	80 dB	80 dB	to	90 dB			
45 MHz to 100 MHz												
Magnitude	0.14	to	1.3	0.44	to	4.1	1.4	to	13			
Phase	0.97	to	8.5	2.9	to	27	9.1	to	85			
100 MHz to 1 GHz												
Magnitude	0.034	to	0.31	0.048	to	0.97	0.12	to	3.1			
Phase	0.35	to	2.1	0.42	to	6.4	0.83	to	20			
1 GHz to 26.5 GHz												
Magnitude	0.033	to	0.065	0.045	to	0.12	0.095	to	0.36			
Phase	0.35	to	1.2	0.40	to	1.4	0.75	to	2.4			
26.5 GHz to 40 GHz												
Magnitude	0.060	to	0.11	0.065	to	0.22	0.10	to	0.64			
Phase	1.2	to	2.2	1.3	to	2.5	1.4	to	4.7			
2.4 mm systems	0 dB	to	30 dB (50 dB)	30 dB (50 dB)	to	40 dB	40 dB	to	50 dB	50 dB	to	60 dB
50 MHz to 1 GHz												
Magnitude	0.032	to	0.034	0.032	to	0.052	0.035	to	0.13	0.054	to	0.41
Phase	0.28	to	0.35	0.34	to	0.44	0.35	to	0.92	0.45	to	2.7
1 GHz to 5 GHz												
Magnitude	0.032	to	0.032	0.032	to	0.033	0.032	to	0.044	0.032	to	0.10
Phase	0.28	to	0.34	0.34	to	0.35	0.34	to	0.40	0.34	to	0.73
5 GHz to 26.5 GHz												
Magnitude	0.032	to	0.059	0.032	to	0.059	0.032	to	0.059	0.032	to	0.060
Phase	0.28	to	1.2	0.34	to	1.2	0.34	to	1.2	0.34	to	1.2
26.5 GHz to 40 GHz												
Magnitude	0.059	to	0.090	0.059	to	0.090	0.059	to	0.090	0.059	to	0.092
Phase	1.2	to	2.1	1.2	to	2.1	1.2	to	2.1	1.2	to	2.1
2.4 mm systems	60 dB	to	70 dB (50 dB)	70 dB (50 dB)	to	80 dB	80 dB	to	90 dB			
50 MHz to 1 GHz												
Magnitude	0.14	to	1.3	0.44	to	4.1	1.4	to	13			
Phase	0.97	to	8.5	2.9	to	27	9.1	to	85			
1 GHz to 5 GHz												
Magnitude	0.034	to	0.31	0.048	to	0.97	0.12	to	3.1			
Phase	0.35	to	2.1	0.42	to	6.7	0.83	to	20			
5 GHz to 26.5 GHz												
Magnitude	0.033	to	0.065	0.045	to	0.12	0.095	to	0.36			
Phase	0.35	to	1.2	0.40	to	1.4	0.75	to	2.4			
26.5 GHz to 40 GHz												
Magnitude	0.060	to	0.11	0.065	to	0.22	0.10	to	0.64			
Phase	1.2	to	2.2	1.3	to	2.5	1.4	to	4.7			

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
AUTOMATIC NETWORK ANALYSER SYSTEM		Location Code: Bideford	

VOLTAGE REFLECTION COEFFICIENT MAGNITUDE: The CMCs are for 50Ω coaxial systems fitted with Type N, 3.5 mm, 2.92 mm or 2.4 mm connectors over the frequency ranges as specified below. The CMCs are presented in VRC terms.

Connector type	Frequency	VRC range 0.0 to 0.2			VRC range 0.2 to 1.0		
Type N	10 MHz to 1 GHz	0.0016	to	0.0021	0.0017	to	0.0040
	1 GHz to 12 GHz	0.0020	to	0.0032	0.0020	to	0.0051
	12 GHz to 18 GHz	0.0026	to	0.0041	0.0026	to	0.0052
3.5 mm	45 MHz to 1 GHz	0.0010	to	0.0015	0.0012	to	0.0037
	1 GHz to 12 GHz	0.0010	to	0.0021	0.0012	to	0.0046
	12 GHz to 26.5 GHz	0.0018	to	0.0032	0.0020	to	0.0063
2.92 mm	45 MHz to 1 GHz	0.0024	to	0.0031	0.0024	to	0.0042
	1 GHz to 26.5 GHz	0.0023	to	0.0044	0.0024	to	0.0070
	26.5 GHz to 40 GHz	0.0042	to	0.0047	0.0041	to	0.0075
2.4 mm	45 MHz to 1 GHz	0.0014	to	0.0023	0.0015	to	0.0039
	1 GHz to 26.5 GHz	0.0012	to	0.0027	0.0014	to	0.0059
	26.5 GHz to 40 GHz	0.0022	to	0.0033	0.0023	to	0.0087

VOLTAGE REFLECTION COEFFICIENT PHASE, 0° to ±180°				
Type N systems				
VRC 0.0000 to 0.0004	*10 MHz to 1 GHz*	180°		Location Code: Bideford
	1 GHz to 12 GHz	180°		
	12 GHz to 18 GHz	180°		
VRC 0.0004 to 0.0005	*10 MHz to 1 GHz*	96° to 180°		
	1 GHz to 12 GHz	120° to 180°		
	12 GHz to 18 GHz	150° to 180°		
VRC 0.0005 to 0.001	*10 MHz to 1 GHz*	96° to 120°		
	1 GHz to 12 GHz	120° to 180°		
	12 GHz to 18 GHz	150° to 180°		
VRC 0.001 to 0.01	*10 MHz to 1 GHz*	9.1° to 120°		
	1 GHz to 12 GHz	11° to 180°		
	12 GHz to 18 GHz	15° to 180°		
VRC 0.01 to 0.1	*10 MHz to 1 GHz*	0.92° to 11°		
	1 GHz to 12 GHz	1.1° to 18°		
	12 GHz to 18 GHz	1.5° to 22°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
VOLTAGE REFLECTION COEFFICIENT PHASE, 0° to ±180° (continued)				
Type N systems (continued)				
VRC 0.1 to 1	*10 MHz to 1 GHz* *1 GHz to 12 GHz* *12 GHz to 18 GHz*	0.13° to 1.1° 0.19° to 1.7° 0.29° to 2.1°		
3.5 mm systems				
VRC 0.0000 to 0.0004	*45 MHz to 1 GHz* *1 GHz to 12 GHz* *12 GHz to 26.5 GHz*	170° to 180° 167° to 180° 180°		
VRC 0.0004 to 0.0005	*45 MHz to 1 GHz* *1 GHz to 12 GHz* *12 GHz to 26.5 GHz*	63° to 180° 62° to 180° 110° to 180°		
VRC 0.0005 to 0.001	*45 MHz to 1 GHz* *1 GHz to 12 GHz* *12 GHz to 26.5 GHz*	63° to 77° 62° to 120° 110° to 180°		
VRC 0.001 to 0.01	*45 MHz to 1 GHz* *1 GHz to 12 GHz* *12 GHz to 26.5 GHz*	5.5° to 77° 5.3° to 110° 10° to 180°		
VRC 0.01 to 0.1	*45 MHz to 1 GHz* *1 GHz to 12 GHz* *12 GHz to 26.5 GHz*	0.56° to 7.0° 0.56° to 11° 1.1° to 18°		
VRC 0.1 to 1	*45 MHz to 1 GHz* *1 GHz to 12 GHz* *12 GHz to 26.5 GHz*	0.11° to 0.71° 0.18° to 1.1° 0.38° to 1.8°		
2.92 mm systems				
VRC 0.000 to 0.0004	*45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	180° 180° 180°		
VRC 0.0004 to 0.0005	*45 MHz to 1 GHz* *1 GHz to 5 GHz* *26.5 GHz to 40 GHz*	139° to 180° 135° to 180° 180°		
VRC 0.0005 to 0.001	*45 MHz to 1 GHz* *1 GHz to 26.55 GHz* *26.5 GHz to 40 GHz*	140° to 170° 140° to 180° 180°		
VRC 0.001 to 0.01	*45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	14° to 170° 13° to 180° 24° to 180°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
VOLTAGE REFLECTION COEFFICIENT PHASE, 0° to ±180° (continued)				
2.92 mm systems (continued)				
VRC 0.01 to 0.1	*45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	1.4° to 17° 1.3° to 24° 2.4° to 25°		
VRC 0.1 to 1	*45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	0.21° to 1.7° 0.21° to 2.4° 0.46° to 2.5°		
2.4 mm systems				
VRC 0.000 to 0.0004	*45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	180° 180° 180°		
VRC 0.0004 to 0.0005	*45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	84° to 180° 76° to 180° 130° to 180°		
VRC 0.0005 to 0.001	*45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	84° to 120° 76° to 150° 130° to 170°		
VRC 0.001 to 0.01	*45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	7.8° to 120° 6.9° to 150° 13° to 170°		
VRC 0.01 to 0.1	*45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	0.77° to 12° 0.68° to 15° 1.4° to 17°		
VRC 0.1 to 1	*45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	0.16° to 1.2° 0.19° to 1.6° 0.75° to 2.1°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
RF ATTENUATION			50 Ω systems only	Bideford
Tuned receiver method	0 dB to 30 dB			
	9 kHz to 100 kHz	0.032 dB		
	100 kHz to 10 MHz	0.032 dB		
	10 MHz to 50 MHz	0.032 dB		
	50 MHz to 1 GHz	0.051 dB		
	1 GHz to 5 GHz	0.055 dB		
	5 GHz to 10 GHz	0.087 dB		
	10 GHz to 15 GHz	0.12 dB		
	15 GHz to 18 GHz	0.13 dB		
	30 dB to 60 dB			
	9 kHz to 100 kHz	0.045 dB		
	100 kHz to 10 MHz	0.045 dB		
	10 MHz to 50 MHz	0.045 dB		
	50 MHz to 1 GHz	0.072 dB		
	1 GHz to 5 GHz	0.079 dB		
	5 GHz to 10 GHz	0.12 dB		
	10 GHz to 15 GHz	0.16 dB		
	15 GHz to 18 GHz	0.18 dB		
	60 dB to 70 dB			
	9 kHz to 100 kHz	0.055 dB		
	100 kHz to 10 MHz	0.055 dB		
	10 MHz to 50 MHz	0.055 dB		
	50 MHz to 1 GHz	0.088 dB		
	1 GHz to 5 GHz	0.097 dB		
	5 GHz to 10 GHz	0.14 dB		
	10 GHz to 15 GHz	0.20 dB		
	15 GHz to 18 GHz	0.22 dB		
	70 dB to 80 dB			
	9 kHz to 100 kHz	0.080 dB		
	100 kHz to 10 MHz	0.056 dB		
	10 MHz to 50 MHz	0.056 dB		
	50 MHz to 1 GHz	0.088 dB		
	1 GHz to 5 GHz	0.097 dB		
	5 GHz to 10 GHz	0.15 dB		
	10 GHz to 15 GHz	0.20 dB		
	15 GHz to 18 GHz	0.22 dB		
	80 dB to 90 dB			
	9 kHz to 100 kHz	0.13 dB		
	100 kHz to 10 MHz	0.067 dB		
	10 MHz to 50 MHz	0.063 dB		
	50 MHz to 1 GHz	0.093 dB		
	1 GHz to 5 GHz	0.10 dB		
	5 GHz to 10 GHz	0.15 dB		
	10 GHz to 15 GHz	0.23 dB		
	15 GHz to 18 GHz	0.24 dB		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
RF ATTENUATION (continued)			50 Ω systems only	Bideford
Tuned receiver method (continued)	90 dB to 100 dB			
	9 kHz to 100 kHz	0.29 dB		
	100 kHz to 10 MHz	0.14 dB		
	10 MHz to 50 MHz	0.12 dB		
	50 MHz to 1 GHz	0.15 dB		
	1 GHz to 5 GHz	0.16 dB		
	5 GHz to 10 GHz	0.22 dB		
	10 GHz to 15 GHz	0.35 dB		
	15 GHz to 18 GHz	0.37 dB		
	100 dB to 110 dB			
	9 kHz to 100 kHz	0.67 dB		
	100 kHz to 10 MHz	0.48 dB		
	10 MHz to 50 MHz	0.33 dB		
	50 MHz to 1 GHz	0.34 dB		
	1 GHz to 5 GHz	0.36 dB		
	5 GHz to 10 GHz	0.39 dB		
	10 GHz to 15 GHz	0.76 dB		
	15 GHz to 18 GHz	1.3 dB		
Power meter method	0 dB to 25 dB			
	9 kHz to 20 kHz	0.050 dB		
	20 kHz to 1 MHz	0.029 dB		
	1 MHz to 10 MHz	0.025 dB		
	10 MHz to 50 MHz	0.032 dB		
	50 MHz to 1 GHz	0.030 dB		
	1 GHz to 5 GHz	0.033 dB		
	5 GHz to 10 GHz	0.046 dB		
	10 GHz to 15 GHz	0.060 dB		
	15 GHz to 18 GHz	0.061 dB		
	25 dB to 60 dB			
	9 kHz to 20 kHz	0.053 dB		
	20 kHz to 1 MHz	0.035 dB		
	1 MHz to 10 MHz	0.032 dB		
	10 MHz to 50 MHz	0.032 dB		
	50 MHz to 1 GHz	0.031 dB		
	1 GHz to 5 GHz	0.035 dB		
	5 GHz to 10 GHz	0.054 dB		
	10 GHz to 15 GHz	0.078 dB		
	15 GHz to 18 GHz	0.078 dB		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
RF ATTENUATION (continued)			50 Ω systems only	Bideford
Power meter method (continued)	60 dB to 70 dB			
	9 kHz to 20 kHz	0.24 dB		
	20 kHz to 1 MHz	0.23 dB		
	1 MHz to 10 MHz	0.23 dB		
	10 MHz to 50 MHz	0.12 dB		
	50 MHz to 1 GHz	0.12 dB		
	1 GHz to 5 GHz	0.12 dB		
	5 GHz to 10 GHz	0.13 dB		
	10 GHz to 15 GHz	0.14 dB		
	15 GHz to 18 GHz	0.14 dB		
FREQUENCY MODULATION				
	0 Hz to 5 kHz	0.10 kHz	Using modulation meter. Carrier frequency range: 50 kHz to 1 GHz Modulation frequency range: 10 Hz to 200 kHz or 1/5 of carrier frequency (Distortion <0.5 %)	
	5 kHz to 20 kHz	0.11 kHz		
	20 kHz to 100 kHz	0.50 kHz		
	100 kHz to 700 kHz	3.4 kHz		
AMPLITUDE MODULATION				
	0 %AM to 20 %AM	0.16 %AM	Using modulation meter. Carrier frequency range: 50 kHz to 1 GHz Modulation frequency range: 30 Hz to 100 kHz or 1/5 of carrier frequency (Distortion <0.5 %)	
	20 %AM to 50 %AM	0.32 %AM		
	50 %AM to 80 %AM	0.53 %AM		
	80 %AM to 95 %AM	1.1 %AM		
RF INTERMODULATION PRODUCTS	0 dB to -80 dB		Spectrum analyser method.	
	10 kHz to 110 MHz	0.94 dB		
	110 MHz to 18 GHz	1.9 dB		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
ELECTROSTATIC VOLTAGE	0.1 kV to 30 kV	0.69 %	Field meters for measuring charged surfaces	Bideford
HIGH IMPEDANCE CONTACT VOLTAGE	0.1 kV to 30 kV	0.61 %	Electrostatic voltmeter and other high resistance voltmeters for measuring charged surfaces	
ELECTROSTATIC DISCHARGE GENERATORS				
Air discharge voltage	0.5 kV to 30 kV	0.73 %	EN61000-4-2:2025 EN61000-4-2:2009 ISO10605:2008 and 2023 EN61340-3-1:2007 MIL-STD-331C:2005 Corr 1:2009 EIA/JES22-A114-B June 2000 EIA/JES22-A115-A October 1997 The measurement bandwidth is the lowest specified by the associated standard.	
Pulse transition time	500 ps to 50 ns	2.2 %		
First peak current	0.1 A to 150 A	3.7 %		
Second peak current	0.1 A to 150 A	5.0 %		
Decay current	0.1 A to 150 A	5.0 %		
BULK CURRENT INJECTION PROBES	Insertion loss		Using vector network analyser.	
	1 kHz to 500 MHz			
	0 dB to 20 dB	0.063 dB		
	20 dB to 70 dB	0.13 dB		
	70 dB to 80 dB	0.17 dB		
	80 dB to 90 dB	0.41 dB		
	90 dB to 100 dB	1.8 dB		
RF CURRENT PROBES	Insertion loss			
	10 Hz to 10 kHz		Using FFT analyser.	
	0 dB to 90 dB	0.075 dB		
	90 dB to 100 dB	0.080 dB		
	100 dB to 110 dB	0.12 dB		
	110 dB to 120 dB	0.30 dB		
	1 kHz to 500 MHz		Using vector network analyser.	
	0 dB to 20 dB	0.084 dB		
	20 dB to 70 dB	0.15 dB		
	70 dB to 80 dB	0.20 dB		
	80 dB to 90 dB	0.51 dB		
	90 dB to 100 dB	1.8 dB		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
BURST TRANSIENT GENERATOR CHARACTERISTICS				
Peak voltage	0.1 kV to 5 kV	2.6 %	For the calibration of Electrical Fast Transient generators and CDNs to 61000-4-4	
Rise time	3.5 ns to 50 s	0.91 %		
Pulse width	10 ns to 100 ns	0.91 %		
Repetition Frequency	1 kHz to 1 MHz	0.91 %		
Burst duration	100 µs to 100 ms	0.91 %		
Burst period	1 ms to 1 s	0.14 %		
SURGE PULSE CHARACTERISTICS				
Voltage	0.25 kV to 6.6 kV	2.1 %	For the calibration of surge generators to 61000-4-5 61000-4-9 60255-22-5	
Current	0.2 kA to 3.3 kA	2.8 %		
Impedance	1 Ω to 100 Ω	4.6 %		
Front/Rise Time	0.1 µs to 50 µs	0.91 %		
Pulse Duration	1 µs to 1 ms	0.91 %		
Phase	0° to 360°	0.5° to 3.3°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
LISN MEASUREMENT				Bideford
This section of the Schedule presents the CMCs for the measurement of complex impedance of a Line Impedance Stabilisation Network (LISN) using a vector network analysis system. Measurements are made as complex quantities. Reflection magnitude is expressed in terms of Impedance with Magnitude and Phase. Measurements are made in a 50 Ω coaxial system using an Agilent E5061B network analyser with appropriate test port leads in a 10 Hz bandwidth. Actual uncertainties are calculated dynamically during the measurement and may be larger than indicated below.				
N Type 50 Ω system				
Impedance Magnitude	Magnitude 0 Ω to 150 Ω			
	1 kHz to 9 kHz	0.30 Ω		
	9 kHz to 150 kHz	0.30 Ω		
	150 kHz to 30 MHz	1.0 Ω		
	30 MHz to 300 MHz	3.0 Ω		
	300 MHz to 400 MHz	5.0 Ω		
Impedance Phase	Phase 0° to 180°			
	9 kHz to 108 MHz	1.0°		
Voltage Division	*1 kHz to 400 MHz*	0.25 dB		
Isolation	*9 kHz to 108 MHz*			
	0 dB to 60 dB	1.0 dB		
	60 dB to 100 dB	5.0 dB		
CDN MEASUREMENT				
This section of the Schedule presents the CMCs for the measurement of complex impedance of a CDN using a vector network analysis system. Measurements are made as complex quantities. Reflection magnitude is expressed in terms of Impedance with Magnitude and Phase. Measurements are made in a 50 Ω coaxial system using an Agilent E5061B network analyser with appropriate test port leads in a 10 Hz bandwidth. Actual uncertainties are calculated dynamically during the measurement and may be larger than indicated below.				
Impedance Magnitude	Magnitude 50 Ω to 250 Ω			
	10 kHz to 150 kHz	2.0 %		
	150 kHz to 80 MHz	1.0 %		
	80 MHz to 230 MHz	2.0 %		
	230 MHz to 300 MHz	3.0 %		
Impedance Phase	Phase 0° to 180°			
	10 kHz to 300 MHz	5.0°		
Coupling Factor	*10 kHz to 300 MHz*			
	0 dB to 30 dB	0.39 dB		
Isolation	*10 kHz to 300 MHz*			
	0 dB to 60 dB	1.0 dB		
	60 dB to 100 dB	5.0 dB		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
ISN MEASUREMENT				Bideford
This section of the Schedule presents the CMCs for the measurement of characteristics of Impedance Stabilisation Networks (ISNs) to the requirements of CISPR 16-1-2, CISPR 22 and CISPR 32 using a vector network analysis system. Measurements are made in a 50 Ω coaxial system using an Agilent E5061B network analyser with appropriate test port leads, adaptors and transitions in a 1 Hz bandwidth. Actual uncertainties are calculated dynamically during the measurement and may be larger than indicated below.				
Common Mode Impedance	*150 kHz to 30 MHz*			
Magnitude	50 Ω to 250 Ω	2.0 %		
Phase	0° to 180°	3.0°		
Voltage Division Factor	*150 kHz to 30 MHz*	0.20 dB		
Decoupling Attenuation	*150 kHz to 30 MHz*			
	0 dB to 80 dB	0.30 dB		
	80 dB to 90 dB	1.0 dB		
	90 dB to 100 dB	2.7 dB		
Longitudinal Conversion Loss	*150 kHz to 30 MHz*			
	30 dB to 85 dB			
	Cat. 3	0.25 dB		
	Cat. 5	0.35 dB		
	Cat. 6	0.65 dB		
Transmission Loss	*100 kHz to 300 MHz*			
	0 dB to 20 dB	0.10 dB		
SPECTRAL INTENSITY	50 dBµV/MHz to 150 dBµV/MHz		For the calibration of Impulse Generators	
	9 kHz to 10 MHz	0.45 dB		
	10 MHz to 50 MHz	0.42 dB		
	50 MHz to 1 GHz	0.41 dB		
IMPULSE MEASUREMENTS				
Detector Pulse Measurements	*9 kHz to 10 MHz*	0.57 dB	Absolute and relative CISPR detector response to pulses and response to varying repetition rates	
	10 MHz to 50 MHz	0.54 dB		
	50 MHz to 1 GHz	0.56 dB		
Detector response to narrowband interference	Band A to D	0.096 dB	Average and RMS CISPR detector response to any drifting narrow band interference	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
VOLTAGE DIPS, SHORT INTERRUPTIONS; VOLTAGE VARIATIONS GENERATORS				Bideford
Dip RMS Voltage	1 V to 500 V	0.58 % + 50 mV	For the calibration of Voltage Dips and Interrupts generators to EN61000-4-11	
Voltage Variations	1 V to 500 V	1.5 %		
Transition rise and fall time	0.1 µs to 1 s	0.91 %		
Interruptions Overshoot Voltage	25 % to 100 %	2.8 %		
Phase Angle	0° to 360°	2.9°		
Dip Variations timing	10 µs to 30 s	0.91 %		
Peak Inrush Current	1 A to 1000 A	1.9 %		
DISCONTINUOUS INTERFERENCE ANALYSERS	Pulse Timings - Period and Width	0.16 %	Application of Pulses 1 to 12 as given in Table 14, CISPR 16-1-1 and in Table F1, CISPR 16-1-1.	
	Pulse Level Step Measurement	0.19 dB		
DAMPED OSCILLATORY GENERATORS				
Voltage	100 V to 6.6 kV		For the calibration of Damped Oscillatory Wave Generators in accordance with EN 61000-4-10, EN 61000-4-12, EN 61000-4-18, ANSI C37.90.1	
	Frequency ≤1 MHz	2.1 %		
	Frequency 1 MHz to 50 MHz	2.9 %		
Ring Wave Current	1 A to 400 A	2.8 %		
DOW Current	1 A to 150 A	3.6 %		
Impedance	5 Ω to 500 Ω	4.6 %		
Rise time	1 ns to 10 µs	0.91 %		
Frequency	10 kHz to 100 MHz	0.91 %		
Repetition Rate	100 µs to 1 s	0.91 %		
Burst Duration	1 ms to 5 s	0.91 %		
Phase	0° to 360°	3.3°		
Burst Period	1 ms to 1 s	0.14 %		
IMMUNITY TEST GENERATORS			Calibration of immunity test generators designed to comply with EN 61000-4-16	
Voltage Ripple	0 V to 15 V	6.7 % + 5.0 mV		
DC Voltage	50 mV to 500 V	0.073 %		
AC Voltage	50 mV to 10 V			
	10 Hz to 200 kHz	0.20 %		
	10 V to 100 V			
	10 Hz to 100 kHz	0.20 %		
	100 kHz to 200 kHz	1.4 %		
	100 V to 500 V			
	10 Hz to 100 kHz	0.25 %		
	100 kHz to 200 kHz	1.4 %		
Impedance	25 Ω to 100 Ω		Supply voltage:	
	DC and 10 Hz to 200 kHz	0.35 %	50 mV to 10 V	
	DC and 10 Hz to 100 kHz	0.35 %	10 V to 100 V	
	100 kHz to 200 kHz	1.4 %	10 V to 100 V	
	DC and 10 Hz to 100 kHz	0.38 %	100 V to 500 V	
	100 kHz to 200 kHz	1.4 %	100 V to 500 V	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
IMMUNITY TEST GENERATORS (continued)				Bideford
Transition Time Frequency	0.5 µs to 10 µs 10 Hz to 300 kHz	0.93 % 0.035 %		
Distortion (THD)	Fundamental 10 Hz to 15 kHz Fundamental 15 kHz to 200 kHz	1.2 % of value + 0.10% absolute 5.1 % of value + 0.10% absolute		
On/off synchronised switching	0° to 180°	0.86 % + 0.16°		
ANTENNA MEASUREMENTS				
Monopole Antenna Antenna Factor	20 Hz to 30 MHz 30 MHz to 100 MHz	1.4 dB/m 1.6 dB/m	Equivalent capacitance method.	
Antenna Factor and Apparent Gain			Best capability using the three antenna method or by comparison with similar antennas using the standard antenna method.	
Biconical Antennas Broad Band Dipoles	20 MHz to 1 GHz 300 MHz to 1 GHz	1.5 dB (1.8 dB at 1 m) 1.5 dB (1.8 dB at 1 m)	Measurement distance 10 m, 3.0 m and 1.0 m.	
Log Periodic	80 MHz to 18 GHz	1.5 dB (1.6 dB at 1 m)	Measurement distances 3.0 m and 1.0 m; calculated results for 10 m and for Free Space.	
Bilog and hybrid antennas	20 MHz to 18 GHz	1.5 dB (1.8 dB at 1 m)	Measurement distances 3.0 m and 1.0 m; calculated results for 10 m and for Free Space.	
Horn Antennas	200 MHz to 1 GHz 1 GHz to 18 GHz	1.5 dB 1.5 dB	Horn measurement at 3 m and 1.0 m.	
Voltage Reflection Coefficient	18 GHz to 26.5 GHz 30 MHz to 1 GHz 1 GHz to 18 GHz	1.5 dB 0.090 0.13		
E-FIELD EMITTERS				
Noise sources, comparison noise emitters, comb generators and similar equipment.				Bideford/Castleford
Conducted measurements	30 Hz to 40 GHz	2.7 dB		
Radiated measurements	30 MHz to 1 GHz 1 GHz to 18 GHz 18 GHz to 40 GHz 30 MHz to 1 GHz 1 GHz to 40 GHz	4.9 dB 5.3 dB 4.8 dB 6.1 dB 5.2 dB	Fully Anechoic Room, 3 m Fully Anechoic Room, 3 m Fully Anechoic Room, 3 m Semi-Anechoic Chamber Semi-Anechoic Chamber	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
DC RESISTANCE				
Generation	0 Ω to 11 Ω 11 Ω to 20 Ω 20 Ω to 50 Ω 50 Ω to 100 kΩ 0.1 MΩ to 1 MΩ 1 MΩ to 3.3 MΩ 3.3 MΩ to 10 MΩ 10 MΩ to 33 MΩ 33 MΩ to 110 MΩ 110 MΩ to 330 MΩ	0.0075 % + 1.3 mΩ 0.018 % 0.013 % 0.0080 % 0.0096 % 0.011 % 0.036 % 0.080 % 0.32 % 0.38 %	Using multi-function calibrator.	
Measurement	0 Ω to 50 Ω 50 Ω to 100 Ω 100 Ω to 300 Ω 0.3 kΩ to 1 kΩ 1 kΩ to 3 kΩ 3 kΩ to 10 kΩ 10 kΩ to 30 kΩ 30 kΩ to 100 kΩ 100 kΩ to 300 kΩ 0.3 MΩ to 1 MΩ 1 MΩ to 10 MΩ 10 MΩ to 100 MΩ	0.0082 % + 4.1 mΩ 0.016 % 0.018 % 0.011 % 0.018 % 0.011 % 0.018 % 0.011 % 0.018 % 0.012 % 0.030 % 0.90 %	Using digital multimeter; test current ≤1 mA.	Site
DC VOLTAGE				
Generation	0 mV to 330 mV 330 mV to 3.3 V 3.3 V to 33 V 33 V to 330 V 330 V to 1000 V	55 µV/V + 2.5 µV 45 µV/V 45 µV/V 49 µV/V 41 µV/V	Using multi-function calibrator.	
Measurement	0 mV to 100 mV 100 mV to 200 mV 200 mV to 500 mV 0.5 V to 1 V 1 V to 2 V 2 V to 5 V 5 V to 10 V 10 V to 20 V 20 V to 50 V 50 V to 100 V 100 V to 200 V 200 V to 500 V 500 V to 1000 V	44 µV/V + 3.6 µV 100 µV/V 66 µV/V 46 µV/V 71 µV/V 47 µV/V 33 µV/V 130 µV/V 81 µV/V 55 µV/V 140 µV/V 86 µV/V 64 µV/V	Using digital multimeter. Test current ≤1 mA.	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
DC VOLTAGE (continued)				
Measurement	1 kV to 20 kV	0.14 %	Using high voltage divider and multimeter.	
DC CURRENT				
Generation	20 µA to 30 µA 30 µA to 50 µA 50 µA to 100 µA 100 µA to 200 µA 200 µA to 500 µA 0.5 mA to 5 mA 5 mA to 33 mA 33 mA to 100 mA 100 mA to 330 mA 0.33 A to 2.2 A 2.2 A to 11 A 11 A to 20 A	0.20 % 0.14 % 0.085 % 0.047 % 0.027 % 0.016 % 0.011 % 0.014 % 0.0098 % 0.029 % 0.041 % 0.073 %	Using multi-function calibrator.	Site
Measurement	20 µA to 30 µA 30 µA to 50 µA 50 µA to 200 µA 200 µA to 1000 µA 1 mA to 3 mA 3 mA to 10 mA 10 mA to 30 mA 30 mA to 100 mA 100 mA to 300 mA 300 mA to 1000 mA 1 A to 3 A 3 A to 10 A	0.17 % 0.12 % 0.090 % 0.060 % 0.23 % 0.097 % 0.080 % 0.047 % 0.18 % 0.11 % 0.26 % 0.15 %	Using digital multimeter.	
	100 mA to 1 A 1 A to 20 A	0.042 % 0.016 %	Using digital multimeter and current shunt.	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
DC CURRENT (continued)				
Generation and measurement	10 A to 100 A 100 A to 250 A 250 A to 1000 A	0.10 % 0.12 % 0.32 %	Using digital multimeter and current shunt. Generation limited to a maximum of 375 A.	
AC VOLTAGE				
Generation	2.5 mV to 7.07 V *0.1 Hz to 10 Hz*	0.15 % + 5.0 µV	Using fast DC sampling techniques.	
	10 Hz to 45 Hz 0.33 V to 1 V 1 V to 3.3 V 3.3 V to 10 V 10 V to 33 V	 0.14 % 0.11 % 0.14 % 0.11 %	Using multi-function calibrator.	
	30 Hz to 45 Hz 2 mV to 5 mV 5 mV to 10 mV 10 mV to 33 mV 33 mV to 100 mV 100 mV to 330 mV	 1.0 % 0.52 % 0.36 % 0.27 % 0.19 %		
	45 Hz to 10 kHz 2 mV to 5 mV 5 mV to 10 mV 10 mV to 33 mV 33 mV to 100 mV 100 mV to 330 mV 0.33 V to 1 V 1 V to 3.3 V 3.3 V to 10 V 10 V to 33 V	 0.89 % 0.41 % 0.37 % 0.080 % 0.049 % 0.038 % 0.027 % 0.040 % 0.031 %		Site

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC VOLTAGE (continued)				Site
Generation (continued)	*45 Hz to 1 kHz*			
	33 V to 100 V	0.048 %		
	100 V to 330 V	0.038 %		
	330 V to 1000 V	0.051 %		
	1 kHz to 20 kHz			
	33 V to 100 V	0.13 %		
	100 V to 330 V	0.084 %		
	300 V to 1000 V	0.24 %		
	10 kHz to 20 kHz			
	2 mV to 5 mV	1.0 %		
	5 mV to 10 mV	0.47 %		
	10 mV to 33 mV	0.28 %		
	33 mV to 100 mV	0.11 %		
	100 mV to 330 mV	0.083 %		
	0.33 V to 1 V	0.065 %		
	1 V to 3.3 V	0.056 %		
	3.3 V to 10 V	0.11 %		
	10 V to 33 V	0.070 %		
	20 kHz to 50 kHz			
	2 mV to 5 mV	1.5 %		
	5 mV to 10 mV	0.65 %		
	10 mV to 33 mV	0.33 %		
	33 mV to 100 mV	0.19 %		
	100 mV to 330 mV	0.13 %		
	0.33 V to 1 V	0.15 %		
	1 V to 3.3 V	0.10 %		
	3.3 V to 10 V	0.23 %		
	10 V to 33 V	0.15 %		
	33 V to 100 V	0.11 %		
	100 V to 330 V	0.097 %		
	50 kHz to 100 kHz			
	2 mV to 5 mV	1.5 %		
	5 mV to 10 mV	0.87 %		
	10 mV to 33 mV	0.50 %		
	33 mV to 100 mV	0.54 %		
	100 mV to 330 mV	0.27 %		
	0.33 V to 1 V	0.53 %		
	1 V to 3.3 V	0.26 %		
	3.3 V to 10 V	0.53 %		
	10 V to 33 V	0.27 %		
	33 V to 100 V	0.34 %		
	100 V to 330 V	0.22 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC VOLTAGE (continued)				
Measurement	2.5 mV to 707 V		Using fast DC sampling techniques.	
	0.1 Hz to 10 Hz	0.15 % + 5.0 µV		
	10 Hz to 20 kHz		Using digital multimeter.	
	0.3 V to 1 V	0.15 %		
	1 V to 3 V	0.35 %		
	3 V to 10 V	0.15 %		
	10 V to 30 V	0.35 %		
	30 V to 100 V	0.15 %		
	30 Hz to 20 kHz			
	2 mV to 10 mV	1.6 %		
	10 mV to 30 mV	0.36 %		
	30 mV to 100 mV	0.17 %		
	100 mV to 300 mV	0.35 %		
	40 Hz to 20 kHz			
	100 V to 300 V	0.28 %		
	300 V to 750 V	0.13 %		
	20 kHz to 50 kHz			
	2 mV to 10 mV	2.6 %		
	10 mV to 30 mV	0.61 %		
	30 mV to 100 mV	0.29 %		
	100 mV to 300 mV	0.61 %		
	0.3 V to 1 V	0.28 %		
	1 V to 3 V	0.61 %		
	3 V to 10 V	0.28 %		
	10 V to 30 V	0.61 %		
	30 V to 100 V	0.28 %		
	100 V to 300 V	0.49 %		
	300 V to 750 V	0.24 %		
	50 kHz to 100 kHz			
	2 mV to 10 mV	4.6 %		
	10 mV to 30 mV	1.4 %		
	30 mV to 100 mV	0.87 %		
	100 mV to 300 mV	1.4 %		
	0.3 V to 1 V	0.87 %		
	1 V to 3 V	1.4 %		
	3 V to 10 V	0.87 %		
	10 V to 30 V	1.4 %		
	30 V to 100 V	0.87 %		
	100 V to 300 V	1.2 %		
	300 V to 750 V	0.80 %		
	40 Hz to 60 Hz			
	0.75 kV to 20 kV	0.30 %	Using high voltage divider and multimeter.	

Site

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC CURRENT				
Generation	*10 Hz to 20 Hz*		Using multi-function calibrator.	Site
	30 µA to 50 µA	0.38 %		
	50 µA to 100 µA	0.28 %		
	100 µA to 200 µA	0.20 %		
	200 µA to 330 µA	0.16 %		
	330 µA to 1000 µA	0.16 %		
	1 mA to 3.3 mA	0.14 %		
	3.3 mA to 10 mA	0.16 %		
	10 mA to 33 mA	0.13 %		
	33 mA to 100 mA	0.16 %		
	100 mA to 330 mA	0.13 %		
	0.33 A to 1 A	0.14 %		
	20 Hz to 45 Hz			
	30 µA to 50 µA	0.35 %		
	50 µA to 100 µA	0.25 %		
	100 µA to 200 µA	0.17 %		
	200 µA to 330 µA	0.13 %		
	330 µA to 1000 µA	0.11 %		
	1 mA to 3.3 mA	0.091 %		
	3.3 mA to 10 mA	0.11 %		
	10 mA to 33 mA	0.077 %		
	33 mA to 100 mA	0.11 %		
	100 mA to 330 mA	0.078 %		
	0.33 A to 1 A	0.14 %		
	45 Hz to 1 kHz			
	30 µA to 50 µA	0.34 %		
	50 µA to 100 µA	0.23 %		
	100 µA to 200 µA	0.16 %		
	200 µA to 330 µA	0.12 %		
	330 µA to 1000 µA	0.099 %		
	1 mA to 3.3 mA	0.076 %		
	3.3 mA to 10 mA	0.077 %		
	10 mA to 33 mA	0.048 %		
	33 mA to 100 mA	0.077 %		
	100 mA to 330 mA	0.049 %		
	0.33 A to 1 A	0.057 %		
	45 Hz to 100 Hz			
	1 A to 3 A	0.052 %		
	3 A to 9 A	0.093 %		
	9 A to 11 A	0.060 %		
	11 A to 20 A	0.11 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC CURRENT (continued)				Site
Generation (continued)	*100 Hz to 1 kHz*			
	1 A to 3 A	0.42 %		
	3 A to 9 A	0.11 %		
	9 A to 11 A	0.081 %		
	11 A to 20 A	0.14 %		
	1 kHz to 5 kHz			
	30 µA to 50 µA	0.58 %		
	50 µA to 100 µA	0.43 %		
	100 µA to 200 µA	0.31 %		
	200 µA to 330 µA	0.25 %		
	330 µA to 1000 µA	0.17 %		
	1 mA to 3.3 mA	0.14 %		
	3.3 mA to 10 mA	0.099 %		
	10 mA to 33 mA	0.069 %		
	33 mA to 100 mA	0.18 %		
	100 mA to 330 mA	0.11 %		
	0.33 A to 1 A	0.41 %		
	1 A to 3 A	1.9 %		
	3 A to 9 A	0.41 %		
	9 A to 11 A	0.40 %		
	11 A to 20 A	2.0 %		
	5 kHz to 10 kHz			
	30 µA to 50 µA	0.98 %		
	50 µA to 100 µA	0.78 %		
	100 µA to 200 µA	0.62 %		
	200 µA to 330 µA	0.55 %		
	330 µA to 1000 µA	0.38 %		
	1 mA to 3.3 mA	0.34 %		
	3.3 mA to 10 mA	0.20 %		
	10 mA to 33 mA	0.15 %		
	33 mA to 100 mA	0.36 %		
	100 mA to 330 mA	0.21 %		
	0.33 A to 1 A	2.7 %		
Measurement	*10 Hz to 10 kHz*		Using digital multimeter.	
	10 µA to 50 µA	0.50 %		
	50 µA to 100 µA	0.19 %		
	100 µA to 500 µA	0.50 %		
	500 µA to 1000 µA	0.19 %		
	1 mA to 5 mA	0.50 %		
	5 mA to 10 mA	0.19 %		
	10 mA to 50 mA	0.50 %		
	50 mA to 100 mA	0.18 %		
	100 mA to 500 mA	0.50 %		
	0.5 A to 1 A	0.19 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC CURRENT (continued)				
Measurement (continued)	*30 Hz to 5 kHz* 1 A to 2 A 2 A to 8 A 8 A to 10 A	 0.35 % 0.29 % 0.20 %		
	30 Hz to 5 kHz 100 mA to 1 A 1 A to 10 A 10 A to 20 A	 0.37 % 0.18 % 0.36 %	Using digital multimeter and current shunt.	
CALIBRATION OF CURRENT CLAMPS			Using single or multi=turn coils.	
DC Current	0 A to 20 A 0 A to 1000 A 1 kA to 5 kA	0.25 % + 10 µA 0.34 % + 10 µA 0.36 %	Single turn 10 or 50 turns 50 turns	
AC Current	100 µA to 1 A *10 Hz to 5 kHz*	 0.26 %	 Single turn	
	1 A to 20 A *45 Hz to 5 kHz*	 0.26 %	 Single turn	
	3.2 A to 1000 A *45 Hz to 100 Hz* *100 Hz to 440 Hz*	 0.36 % 0.84 %	 10 or 50 turns 10 or 50 turns	Site
PHASE ANGLE			Using calibrated phase angle source, voltage to voltage or voltage to current, with the following restraints: **Ch1:** 30 Hz to 45 Hz, 10 mV to 330 mV. 10 Hz to 45 Hz, 330 mV to 33 V. 45 Hz to 5 kHz, 10 mV to 300 V. **Ch2:** 30 Hz to 45 Hz, 10 mV to 330 mV. 10 Hz to 5 kHz, 330 mV to 5 V. 10 Hz to 45 Hz, 10 mA to 1 A. 45 Hz to 5 kHz, 10 mA to 20 A. Uncertainties will increase when calibrating zero-crossing detector phase meters.	
Generation	0° to 360° *10 Hz to 65 Hz* *65 Hz to 500 Hz* *500 Hz to 1 kHz* *1 kHz to 5 kHz*	 0.12° 0.70° 1.6° 4.7°		

<table>
<tr><th>Measured Quantity
Instrument or Gauge</th><th>Range</th><th>Expanded Measurement Uncertainty (k = 2)</th><th>Remarks</th><th>Location code</th></tr>
<tr><td>DC AND AC POWER</td><td></td><td></td><td>Using phantom load techniques.</td><td rowspan="20"></td></tr>
<tr><td>DC Power</td><td>Voltage range 10 mV to 1 kV
Current range 20 µA to 375 A
Power range up to 375 kW</td><td>The RSS summation of the voltage and current uncertainties as stated above.</td><td></td></tr>
<tr><td>AC Power (10 Hz to 30 Hz)</td><td>Voltage range 330 mV to 33 V
Current range 10 mA to 1 A
Power range up to 33 W</td><td rowspan="3">The RSS summation of the voltage, current and phase uncertainties as stated above.</td><td rowspan="3">AC Power measurements may be made from zero to unity power factor, capacitive or inductive.</td></tr>
<tr><td>AC Power (30 Hz to 45 Hz)</td><td>Voltage range 10 mV to 33 V
Current range 10 mA to 1 A
Power range up to 33 W</td></tr>
<tr><td>AC Power (45 Hz to 5 kHz)</td><td>Voltage range 10 mV to 300 V
Current range 10 mA to 20 A
Power range up to 6 kW</td></tr>
<tr><td>Example Power CMCs</td><td></td><td></td><td></td></tr>
<tr><td>DC Power</td><td>Current

20 µA
100 µA
1 mA
10 mA
100 mA
1 A
20 A
100 A
375 A</td><td>10 mV to 330 mV (%)

0.20
0.090
0.034
0.032
0.032
0.042
0.079
0.12
0.28</td><td>330 mV to 1000V (%)

0.20
0.085
0.017
0.012
0.011
0.029
0.073
0.12
0.28</td><td></td></tr>
<tr><td>AC Power</td><td>Voltage

330 mV to 33 V</td><td>Phase

0°
5°
45°
90°</td><td>10 Hz to 30 Hz
10 mA to 1 A
Power
%

0.21
0.21
0.30
</td><td>

mW/VA

2.1
2.1
2.1
2.1</td><td></td></tr>
</table>

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
Example Power CMCs (continued)				Site

	Phase (°)	*30 Hz to 45 Hz*					
		10 mA to 33 mA Power		33 mA to 330 mA Power		330 mA to 1 A Power	
		%	mW/VA	%	mW/VA	%	mW/VA
10 mV to 33 mV	0	0.37	3.7	0.38	3.8	0.39	3.9
	5	0.37	3.7	0.38	3.8	0.39	3.9
	45	0.42	3.0	0.43	3.0	0.44	3.1
	90		2.1		2.1		2.1
33 mV to 330 mV	0	0.28	2.8	0.29	2.9	0.30	3.0
	5	0.28	2.8	0.29	2.9	0.30	3.0
	45	0.35	2.5	0.36	2.5	0.37	2.6
	90		2.1		2.1		2.1
330 mV to 33 V	0	0.20	2.0	0.18	1.8	0.20	2.0
	5	0.20	2.0	0.18	1.8	0.20	2.0
	45	0.29	2.0	0.28	1.9	0.29	2.0
	90		2.1		2.1		2.1

	Phase (°)	*45 Hz to 65 Hz*									
		10 mA to 33 mA Power		33 mA to 330 mA Power		330 mA to 1 A Power		1 A to 11 A Power		11 A to 20 A Power	
		%	mW/VA	%	mW/VA	%	mW/VA	%	mW/VA	%	mW/VA
10 mV to 33 mV	0	0.37	3.7	0.38	3.8	0.37	3.7	0.56	5.6	0.40	4.0
	5	0.37	3.7	0.38	3.8	0.37	3.7	0.56	5.6	0.40	3.9
	45	0.43	3.0	0.43	3.1	0.43	3.0	0.60	4.2	0.45	3.2
	90		2.1		2.1		2.1		2.1		2.1
33 mV to 330 mV	0	0.093	0.93	0.11	1.1	0.098	0.98	0.43	4.3	0.16	1.6
	5	0.095	0.95	0.11	1.1	0.10	1.0	0.43	4.3	0.16	1.6
	45	0.23	1.6	0.24	1.7	0.23	1.6	0.48	3.4	0.26	1.9
	90		2.1		2.1		2.1		2.1		2.1
330 mV to 33 V	0	0.062	0.62	0.087	0.87	0.070	0.70	0.42	4.2	0.15	1.5
	5	0.065	0.65	0.089	0.88	0.072	0.72	0.42	4.2	0.15	1.5
	45	0.22	1.5	0.23	1.6	0.22	1.6	0.47	3.3	0.26	1.8
	90		2.1		2.1		2.1		2.1		2.1
33 V to 300 V	0	0.068	0.68	0.091	0.91	0.075	0.75	0.42	4.2	0.15	1.5
	5	0.070	0.70	0.093	0.92	0.077	0.80	0.42	4.2	0.15	1.5
	45	0.22	1.6	0.23	1.6	0.22	1.6	0.47	3.3	0.26	1.8
	90		2.1		2.1		2.1		2.1		2.1

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
Example Power CMCs (continued)				Site

	Phase (°)	*65 Hz to 500 Hz*									
		10 mA to 33 mA Power		33 mA to 330 mA Power		330 mA to 1 A Power		1 A to 11 A Power		11 A to 20 A Power	
		%	mW/VA	%	mW/VA	%	mW/VA	%	mW/VA	%	mW/VA
10 mV to 33 mV	0	0.37	3.7	0.38	3.8	0.37	3.7	0.56	5.6	0.40	4.0
	5	0.39	3.9	0.39	3.9	0.39	3.9	0.57	5.7	0.41	4.1
	45	1.3	9.1	1.3	9.1	1.3	9.1	1.4	9.6	1.3	9.1
	90		12		12		12		12		12
33 mV to 330 mV	0	0.094	0.94	0.11	1.1	0.099	0.99	0.43	4.3	0.16	1.6
	5	0.15	1.5	0.16	1.6	0.15	1.5	0.44	4.4	0.20	2.0
	45	1.2	8.7	1.2	8.7	1.2	8.7	1.3	9.2	1.2	8.8
	90		12		12		12		12		12
330 mV to 33 V	0	0.063	0.63	0.087	0.87	0.070	0.70	0.42	4.2	0.15	1.5
	5	0.13	1.3	0.14	1.4	0.13	1.3	0.44	4.4	0.19	1.8
	45	1.2	8.7	1.2	8.7	1.2	8.7	1.3	9.2	1.2	8.8
	90		12		12		12		12		12
33 V to 300 V	0	0.068	0.68	0.091	0.91	0.075	0.75	0.42	4.2	0.15	1.5
	5	0.13	1.3	0.15	1.5	0.14	1.4	0.44	4.4	0.19	1.9
	45	1.2	8.7	1.2	8.7	1.2	8.7	1.3	9.2	1.2	8.8
	90		12		12		12		12		12

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
Example Power CMCs (continued)				Site

	Phase (°)	*500 Hz to 1 kHz*									
		10 mA to 33 mA Power		33 mA to 330 mA Power		330 mA to 1 A Power		1 A to 11 A Power		11 A to 20 A Power	
		%	mW/VA	%	mW/VA	%	mW/VA	%	mW/VA	%	mW/VA
10 mV to 33 mV	0	0.38	3.8	0.38	3.8	0.38	3.8	0.56	5.6	0.40	4.0
	5	0.47	4.7	0.47	4.7	0.47	4.7	0.63	6.2	0.49	4.8
	45	2.9	20	2.9	20	2.9	20	2.9	20	2.9	20
	90		28		28		28		28		28
33 mV to 330 mV	0	0.10	1.0	0.12	1.2	0.11	1.1	0.43	4.3	0.17	1.7
	5	0.30	3.0	0.30	3.0	0.30	3.0	0.51	5.1	0.33	3.2
	45	2.8	20	2.8	20	2.8	20	2.9	20	2.8	20
	90		28		28		28		28		28
330 mV to 33 V	0	0.074	0.74	0.095	1.0	0.080	0.80	0.42	4.2	0.15	1.5
	5	0.29	2.9	0.30	3.0	0.29	2.9	0.51	5.1	0.32	3.2
	45	2.8	20	2.8	20	2.8	20	2.9	20	2.8	20
	90		28		28		28		28		28
33 V to 300 V	0	0.078	0.78	0.099	0.99	0.084	0.84	0.42	4.2	0.15	1.5
	5	0.29	2.9	0.30	3.0	0.29	2.9	0.51	5.1	0.32	3.2
	45	2.8	20	2.8	20	2.8	20	2.9	20	2.8	20
	90		28		28		28		28		28

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
Example Power CMCs (continued)				Site

	Phase (°)	*1 kHz to 5 kHz*									
		10 mA to 33 mA Power		33 mA to 330 mA Power		330 mA to 1 A Power		1 A to 11 A Power		11 A to 20 A Power	
		%	mW/VA	%	mW/VA	%	mW/VA	%	mW/VA	%	mW/VA
10 mV to 33 mV	0	0.50	5.0	0.53	5.3	0.65	6.5	2.0	20	2.1	21
	5	1.1	11	1.1	11	1.2	12	2.2	22	2.3	23
	45	8.5	60	8.5	60	8.5	60	8.7	62	8.8	62
	90		82		82		82		82		82
33 mV to 330 mV	0	0.35	3.5	0.39	3.9	0.54	5.4	1.9	19	2.0	20
	5	1.1	11	1.1	11	1.1	11	2.2	22	2.3	23
	45	8.5	60	8.5	60	8.5	60	8.7	62	8.8	62
	90		82		82		82		82		82
330 mV to 33 V	0	0.35	3.5	0.38	3.8	0.53	5.3	1.9	19	2.0	20
	5	1.1	11	1.1	11	1.1	11	2.2	22	2.3	23
	45	8.5	60	8.5	60	8.5	60	8.7	62	8.8	62
	90		82		82		82		82		82
33 V to 300 V	0	0.37	3.7	0.40	4.0	0.55	5.5	1.9	19	2.0	20
	5	1.1	11	1.1	11	1.1	11	2.2	22	2.3	23
	45	8.5	60	8.5	60	8.5	60	8.7	62	8.8	62
	90		82		82		82		82		82

FREQUENCY AND TIME INTERVAL			Using GPS disciplined oscillator and counter timer.	
Frequency	10 MHz 1 Hz to 1 GHz 1 GHz to 40 GHz	1.0 in 10^{10} 12 in 10^{9} 1.3 in 10^{9}	May be expressed as average periodic time (1/f) for repetitive signals.	
Time Interval	1 ns to 10 ns 10 ns to 100 ns 100 ns to 1 µs 1 µs to 100 µs 100 µs to 1 ms 1 ms to 10 ms 10 ms to 100 ms 100 ms to 10^{5} s	1.2 % 0.17 % 170 µs/s 19 µs/s 0.21 µs/s 22 in 10^{9} 14 in 10^{9} 14 in 10^{9}	For signals with transition times ≤100 ns. For repetitive or single event 100 µs to 10^{5} s, where the start to stop signal slew variation are not equal but differ by less than 50 %, an additional contribution of 400 ps will to be included.	Site

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
CAPACITANCE Measurement and generation	*At 100 Hz* 100 pF to 300 pF 300 pF to 800 pF 800 pF to 1 nF 1 nF to 1 µF 1 µF to 100 µF	 0.62 % 0.51 % 0.26 % 0.15 % 0.16 %	Using LCR meter and transfer standard capacitors.	Site
	At 1 kHz 10 pF to 30 pF 30 pF to 80 pF 80 pF to 100 pF 100 pF to 1 µF 1 µF to 100 µF	 0.70 % 0.57 % 0.26 % 0.15 % 0.16 %		
	At 10 kHz 10 pF to 30 pF 30 pF to 80 pF 80 pF to 100 pF 100 pF to 1 µF	 0.36 % 0.31 % 0.19 % 0.15 %		
INDUCTANCE Measurement and generation	*At 100 Hz:* 100 µH to 250 µH 250 µH to 600 µH 600 µH to 100 mH 100 mH to 1 H	 0.62 % 0.32 % 0.24 % 0.30 %	Using LCR meter and transfer standard inductors.	
	At 1 kHz: 10 µH to 25 µH 25 µH to 60 µH 60 µH to 150 µH 150 µH to 1 H	 0.60 % 0.29 % 0.19 % 0.16 %		
	At 10 kHz: 10 µH to 20 µH 20 µH to 10 mH 10 mH to 100 mH	 0.20 % 0.16 % 0.18 %		
AC HARMONICS AND DISTORTION				
Harmonic distortion THD_R and THD_F				
Generation of a single significant harmonic	Fundamental Frequency 30 Hz to 20 kHz THD_R 0.003 % to 100 % THD_F 0.003 % to 1000 %		The fundamental voltage must lie in the range 30 mV to 8 V and the harmonic voltage in the range 3 µV to 3 V.	
	Harmonic frequency: 30 Hz to 20 kHz 20 kHz to 50 kHz 50 kHz to 100 kHz	 0.55 % to 5.7 % 0.74 % to 5.7 % 1.5 % to 6.0 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
AC HARMONICS AND DISTORTION (continued)				
Generation and measurement of multiple harmonics	Fundamental Frequency 30 Hz to 150 kHz THD_R 0.0003 % to 100 % THD_F 0.0003 % to 1000 % Harmonic frequency: 30 Hz to 90 kHz 30 Hz to 1.5 MHz	 0.41 % to 2.7 % 0.66 % to 10 %	Fundamental Voltage 3 mV to 300 V (frequency dependant). Harmonic Voltage 3 µV to 300 V (frequency dependant). Generation limits: Fundamental level 3mV to 300 V Harmonic levels 30 µV to 300 V, -60 dB to +20 dB. Fundamental Frequency 30 Hz to 20 kHz Harmonic Frequency 30 Hz to 100 kHz Narrow band configuration Wide band configuration	Site
RF VOLTAGE	200 µV to 1 mV *9 kHz to 100 kHz* *100 kHz to 1 MHz* *1 MHz to 100 MHz* *100 MHz to 1 GHz* *1 GHz to 1.5 GHz* 1 mV to 10 mV *9 kHz to 100 kHz* *100 kHz to 1 MHz* *1 MHz to 100 MHz* *100 MHz to 1 GHz* *1 GHz to 1.5 GHz* 10 mV to 1 V *9 kHz to 100 kHz* *100 kHz to 1 MHz* *1 MHz to 100 MHz* *100 MHz to 1 GHz* *1 GHz to 1.5 GHz* 1 V to 10 V *9 kHz to 100 kHz* *100 kHz to 1 MHz* *1 MHz to 100 MHz* *100 MHz to 1 GHz* *1 GHz to 1.5 GHz*	 1.1 % 1.0 % 1.0 % 1.3 % 2.1 % 0.96 % 0.96 % 0.96 % 1.3 % 2.1 % 0.80 % 0.80 % 0.80 % 1.2 % 2.0 % 0.74 % 0.99 % 0.99 % 1.7 % 2.8 %	Measurement and generation of RF Voltage by comparison with RF power meter.	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
RF POWER				Site

The CMCs below are for the measurement of RF Power in 50 Ω coaxial systems expressed in terms of % of the linearly expressed value for the stated frequency and power ranges. The capabilities are for the measurement of sources, such as signal generators and synthesisers.

Type N coaxial systems

In addition to those listed below, there is also a capability at 1 mW, 50 MHz, with a CMC of 0.87 %.

Frequency range	-60 dBm to -50 dBm	-50 dBm to -40 dBm	-40 dBm to -20 dBm
9 kHz to 10 MHz	1.6 %	1.5 %	1.2 %

Frequency range	-62 dBm to -55 dBm	-55 dBm to -20 dBm	-20 dBm to +20 dBm	+20 dBm to +44 dBm	+44 dBm to +55 dBm
9 kHz to 10 MHz			1.4 %	2.2 %	2.6 %
10 MHz to 50 MHz	1.5 %	1.4 %	1.4 %	2.2 %	2.6 %
50 MHz to 1 GHz	1.6 %	1.5 %	1.5 %	2.1 %	2.2 %
1 GHz to 5 GHz	1.7 %	1.6 %	1.5 %	2.0 %	2.6 %
5 GHz to 10 GHz	2.1 %	2.0 %	1.5 %	2.1 %	3.2 %
10 GHz to 12.5 GHz	2.2 %	2.1 %	1.7 %	2.7 %	5.1 %
12.5 GHz to 15 GHz	2.2 %	2.1 %	1.7 %	2.8 %	
15 GHz to 18 GHz	2.4 %	2.4 %	1.8 %	2.8 %	

3.5 mm coaxial systems

In addition to those listed below, there is also a capability at 1 mW, 50 MHz, with a CMC of 0.90 %

Frequency range	-62 dBm to -55 dBm	-55 dBm to -20 dBm	-20 dBm to +20 dBm
50 MHz to 1 GHz	1.7 %	1.6 %	1.5 %
1 GHz to 5 GHz	1.7 %	1.6 %	1.6 %
5 GHz to 10 GHz	1.8 %	1.7 %	1.6 %
10 GHz to 15 GHz	2.1 %	2.0 %	1.9 %
15 GHz to 20 GHz	2.6 %	2.6 %	2.4 %
20 GHz to 26.5 GHz	3.4 %	3.4 %	2.9 %

2.92 mm coaxial systems

In addition to those listed below, there is also a capability at 1 mW, 50 MHz, with a CMC of 0.99 %

Frequency range	-62 dBm to -55 dBm	-55 dBm to -20 dBm	-20 dBm to +20 dBm
50 MHz to 1 GHz	1.8 %	1.8 %	1.6 %
1 GHz to 5 GHz	1.9 %	1.8 %	1.7 %
5 GHz to 10 GHz	2.0 %	2.0 %	1.9 %
10 GHz to 15 GHz	2.2 %	2.1 %	2.0 %
15 GHz to 20 GHz	2.5 %	2.4 %	2.5 %
20 GHz to 25 GHz	2.6 %	2.6 %	2.7 %
25 GHz to 30 GHz	3.1 %	3.1 %	3,1 %
30 GHz to 35 GHz	3.8 %	3.7 %	3.5 %
35 GHz to 40 GHz	4.9 %	4.9 %	3.5 %

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
RF POWER (continued) The CMCs below are for the measurement of RF Power in 50 Ω coaxial systems expressed in terms of % of the linearly expressed value for the stated frequency and power ranges. The capabilities are for the measurement of sources, such as signal generators and synthesisers. 2.4 mm coaxial systems				Site
Frequency range	-62 dBm to -55 dBm	-55 dBm to -20 dBm	-20 dBm to +20 dBm	
50 MHz to 1 GHz 1 GHz to 5 GHz 5 GHz to 10 GHz 10 GHz to 15 GHz 15 GHz to 20 GHz 20 GHz to 25 GHz 25 GHz to 30 GHz 30 GHz to 35 GHz 35 GHz to 40 GHz	1.8 % 1.9 % 2.0 % 2.1 % 2.4 % 2.7 % 3.0 % 3.2 % 3.8 %	1.7 % 1.8 % 1.9 % 2.0 % 2.4 % 2.6 % 2.9 % 3.2 % 3.8 %	1.5 % 1.6 % 1.7 % 1.9 % 2.3 % 2.5 % 2.9 % 3.1 % 3.5 %	
Specific value	*1 mW, 50 MHz* Type N coaxial systems 3.5 mm coaxial systems 2.92 mm coaxial systems 2.4 mm coaxial systems	 0.87 % 0.90 % 0.99 % 0.90 %	For the measurement of sources, including the calibrator output of RF power meters.	
The CMCs below are for the generation of RF Power in 50 Ω coaxial systems expressed in terms of % of the linearly expressed value for the stated frequency and power ranges. The capabilities are for the calibration of receivers, spectrum analysers and similar items. Type N coaxial systems				
Frequency range	-70 dBm to -50 dBm	-50 dBm to -20 dBm	-20 dBm to +14 dBm	
9 kHz to 10 MHz 10 MHz to 50 MHz 50 MHz to 1 GHz 1 GHz to 5 GHz 5 GHz to 10 GHz 10 GHz to 15 GHz 15 GHz to 18 GHz	2.2 % 2.2 % 1.8 % 1.9 % 2.1 % 2.3 % 2.7 %	1.9 % 1.9 % 1.7 % 1.7 % 1.8 % 2.0 % 2.1 %	1.4 % 1.4 % 1.5 % 1.5 % 1.5 % 1.7 % 1.7 %	
Frequency range	+14 dBm to +47 dBm	+47 dBm to +53 dBm		
9 kHz to 10 MHz 10 MHz to 50 MHz 50 MHz to 1 GHz	2.4 % 2.3 % 2.2 %	4.9 % 4.9 % 4.8 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
RF POWER (continued) The CMCs below are for the generation of RF Power in 50 Ω coaxial systems expressed in terms of % of the linearly expressed value for the stated frequency and power ranges. The capabilities are for the calibration of receivers, spectrum analysers and similar items.				Site
3.5 mm coaxial systems				
Frequency range	-70 dBm to -50 dBm	-50 dBm to -20 dBm	-20 dBm to +5 dBm	+5 dBm to +14 dBm
50 MHz to 1 GHz	1.9 %	1.7 %	1.5 %	1.5 %
1 GHz to 5 GHz	1.9 %	1.7 %	1.6 %	1.6 %
5 GHz to 10 GHz	2.1 %	1.9 %	1.7 %	1.7 %
10 GHz to 15 GHz	2.6 %	2.4 %	2.1 %	2.1 %
15 GHz to 20 GHz	3.1 %	2.9 %	2.5 %	2.5 %
20 GHz to 26.5 GHz	3.9 %	3.6 %	2.9 %	
2.92 mm coaxial systems				
Frequency range	-70 dBm to -50 dBm	-50 dBm to -20 dBm	-20 dBm to +5 dBm	+5 dBm to +14 dBm
50 MHz to 1 GHz	2.0 %	1.8 %	1.6 %	1.6 %
1 GHz to 5 GHz	2.0 %	1.8 %	1.7 %	1.7 %
5 GHz to 10 GHz	2.4 %	2.2 %	2.0 %	2.0 %
10 GHz to 15 GHz	2.6 %	2.3 %	2.1 %	2.1 %
15 GHz to 20 GHz	3.2 %	3.0 %	2.9 %	2.9 %
20 GHz to 25 GHz	3.5 %	3.2 %	3.1 %	
25 GHz to 30 GHz	4.1 %	3.8 %	3.7 %	
30 GHz to 35 GHz	4.8 %	4.5 %	4.1 %	
35 GHz to 40 GHz	5.2 %	4.7 %	4.3 %	
2.4 mm coaxial systems				
Frequency range	-70 dBm to -50 dBm	-50 dBm to -20 dBm	-20 dBm to +5 dBm	+5 dBm to +14 dBm
50 MHz to 1 GHz	1.9 %	1.7 %	1.5 %	1.5 %
1 GHz to 5 GHz	1.9 %	1.8 %	1.6 %	1.6 %
5 GHz to 10 GHz	2.2 %	2.0 %	1.7 %	1.7 %
10 GHz to 15 GHz	2.4 %	2.2 %	1.9 %	1.9 %
15 GHz to 20 GHz	3.0 %	2.7 %	2.5 %	2.5 %
20 GHz to 25 GHz	3.5 %	3.1 %	3.1 %	
25 GHz to 30 GHz	4.0 %	3.7 %	3.6 %	
30 GHz to 35 GHz	4.4 %	4.0 %	3.7 %	
35 GHz to 40 GHz	5.3 %	4.9 %	4.7 %	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)		Remarks	Location code
RF CALIBRATION FACTOR				For calibration of RF power sensors by comparison with standard sensors. Values of calibration factor between 30 % and 140 % may be reported; these represent the percentage of the reported calibration factor	Site
	Type N 50 Ω coaxial systems	Nominal level 0 dBm	Nominal level -30 dBm		
	9 kHz to 10 MHz	0.73 %	1.4 %		
	10 MHz to 50 MHz	0.73 %	1.4 %		
	50 MHz to 1 GHz	0.82 %	1.1 %		
	1 GHz to 5 GHz	0.85 %	1.1 %		
	5 GHz to 10 GHz	0.93 %	1.6 %		
	10 GHz to 15 GHz	1.1 %	1.8 %		
	15 GHz to 18 GHz	1.3 %	1.9 %		
	3.5 mm 50 Ω coaxial systems	Nominal level 0 dBm	Nominal level -30 dBm		
	50 MHz to 1 GHz	0.86%	1.2 %		
	1 GHz to 5 GHz	0.93 %	1.2 %		
	5 GHz to 10 GHz	1.1 %	1.4 %		
	10 GHz to 15 GHz	1.6 %	2.0 %		
	15 GHz to 20 GHz	2.2 %	2.6 %		
	20 GHz to 26.5 GHz	3.1 %	3.9 %		
	2.92 mm 50 Ω coaxial systems	Nominal level 0 dBm	Nominal level -30 dBm		
	50 MHz to 1 GHz	0.92 %	1.2 %		
	1 GHz to 5 GHz	1.1 %	1.3 %		
	5 GHz to 10 GHz	1.4 %	1.7 %		
	10 GHz to 15 GHz	1.7 %	2.0 %		
	15 GHz to 20 GHz	2.5 %	2.7 %		
	20 GHz to 25 GHz	2.9 %	2.9 %		
	25 GHz to 30 GHz	3.4 %	3.6 %		
	30 GHz to 35 GHz	4.1 %	4.6 %		
	35 GHz to 40 GHz	4.1 %	5.6 %		
	2.4 mm 50 Ω coaxial systems	Nominal level 0 dBm	Nominal level -30 dBm		
	50 MHz to 1 GHz	0.90 %	1.2 %		
	1 GHz to 5 GHz	1.1%	1.2 %		
	5 GHz to 10 GHz	1.2 %	1.5 %		
	10 GHz to 15 GHz	1.4 %	1.8 %		
	15 GHz to 20 GHz	2.0 %	2.4 %		
	20 GHz to 25 GHz	2.5 %	2.9 %		
	25 GHz to 30 GHz	3.2 %	3.5 %		
	30 GHz to 35 GHz	3.4 %	3.8 %		
	35 GHz to 40 GHz	3.9 %	4.4 %		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
LF VECTOR NETWORK ANALYSIS				Site
This section of the Schedule presents the CMCs for a vector network analysis system. Measurements are made as complex quantities. Transmission magnitude capabilities are expressed in dB terms and reflection magnitude is expressed in terms of voltage reflection coefficient (VRC). These may also be reported in terms of voltage standing wave ratio (VSWR), return loss (dB) or Impedance magnitude and phase. Measurements are made in a Type N 50 Ω coaxial system using an E5061B network analyser with appropriate test port leads in a 10 Hz bandwidth (1 Hz bandwidth for transmission measurements greater than 70 dB).				
Reflection magnitude	VRC 0 to 0.1			
	1 kHz to 1 MHz	0.0017 to 0.0019		
	1 MHz to 100 MHz	0.0017 to 0.0019		
	100 MHz to 500 MHz	0.0017 to 0.0022		
	VRC 0.1 to 0.5			
	1 kHz to 1 MHz	0.0017 to 0.0030		
	1 MHz to 100 MHz	0.0017 to 0.0030		
	100 MHz to 500 MHz	0.0017 to 0.0032		
	VRC 0.5 to 1			
	1 kHz to 1 MHz	0.0021 to 0.0048		
	1 MHz to 100 MHz	0.0021 to 0.0048		
	100 MHz to 500 MHz	0.0022 to 0.0052		
Reflection phase	VRC 0 to 0.004			
	1 kHz to 500 MHz	180°		
	VRC 0.004 to 0.001			
	1 kHz to 500 MHz	100° to 180°		
	VRC 0.001 to 0.01			
	1 kHz to 500 MHz	20° to 120°		
	VRC 0.01 to 1			
	1 kHz to 500 MHz	0.12° to 23°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
LF VECTOR NETWORK ANALYSIS (continued)				Site
Transmission magnitude	Attenuation 0 dB to 20 dB *1 kHz to 500 MHz*	 0.0030 dB to 0.043 dB		
	20 dB to 70 dB *1 kHz to 500 MHz*	0.052 dB to 0.11 dB		
	70 dB to 80 dB *1 kHz to 500 MHz*	0.10 dB to 0.16 dB		
	80 dB to 90 dB *1 kHz to 500 MHz*	0.14 dB to 0.40 dB		
	90 dB to 100 dB *1 kHz to 500 MHz*	0.33 dB to 1.8 dB		
Transmission phase	0° to ± 180°			
	Attenuation 0 dB to 20 dB *1 kHz to 500 MHz*	 0.0050° to 0.81°		
	Attenuation 20 dB to 70 dB *1 kHz to 500 MHz*	 0.77° to 9.5°		
	Attenuation 70 dB to 80 dB *1 kHz to 500 MHz*	 9.5° to 12°		
	Attenuation 80 dB to 90 dB *1 kHz to 500 MHz*	 12° to 14°		
	Attenuation 90 dB to 100 dB *1 kHz to 500 MHz*	 14° to 17°		
MF VECTOR NETWORK ANALYSIS				
This section of the Schedule presents the CMCs for a vector network analysis system. Measurements are made as complex quantities. Transmission magnitude capabilities are expressed in dB terms and Reflection magnitude is expressed in terms of voltage reflection coefficient (VRC). These may also be reported in terms of voltage standing wave ratio (VSWR), return loss (dB) or Impedance magnitude and phase. Measurements are made in a 50 Ω coaxial system using an E5080B network analyser with appropriate test port leads in a 10 Hz bandwidth and 1 Hz bandwidth for transmission measurements greater than 70 dB.				
N Type 50 Ω system				
Reflection magnitude	VRC 0.0 to 0.1			
	9 kHz to 1 MHz *1 MHz to 100 MHz* *100 MHz to 1 GHz* *1 GHz to 10 GHz* *10 GHz to 18 GHz*	0.0017 to 0.0019 0.0016 to 0.0019 0.0016 to 0.0024 0.0021 to 0.0034 0.0027 to 0.0041		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
MF Vector Network Analysis (continued)				Site
Reflection Magnitude (continued)	VRC 0.1 to 0.5			
	9 kHz to 1 MHz	0.0017 to 0.0024		
	1 MHz to 100 MHz	0.0016 to 0.0024		
	100 MHz to 1 GHz	0.0016 to 0.0028		
	1 GHz to 10 GHz	0.0021 to 0.0036		
	10 GHz to 18 GHz	0.0027 to 0.0040		
	VRC 0.5 to 1.0			
	9 kHz to 1 MHz	0.0021 to 0.0035		
	1 MHz to 100 MHz	0.0021 to 0.0036		
	100 MHz to 1 GHz	0.0022 to 0.0043		
	1 GHz to 10 GHz	0.0027 to 0.0058		
	10 GHz to 18 GHz	0.0032 to 0.0059		
Reflection phase	VRC 0 to 0.0004			
	9 kHz to 1 MHz	180°		
	1 MHz to 100 MHz	180°		
	100 MHz to 1 GHz	180°		
	1 GHz to 10 GHz	180°		
	10 GHz to 18 GHz	180°		
	VRC 0.0004 to 0.001			
	9 kHz to 1 MHz	100° to 180°		
	1 MHz to 100 MHz	98° to 180°		
	100 MHz to 1 GHz	98° to 180°		
	1 GHz to 10 GHz	130° to 180°		
	10 GHz to 18 GHz	160° to 180°		
	VRC 0.001 to 0.01			
	9 kHz to 1 MHz	19° to 100°		
	1 MHz to 100 MHz	19° to 100°		
	100MHz to 1 GHz	19° to 130°		
	1 GHz to 10GHz	25° to 180°		
	10 GHz to 18GHz	31° to 180°		
	VRC 0.01 to 1			
	9 kHz to 1 MHz	0.12° to 20°		
	1 MHz to 100 MHz	0.12° to 19°		
	100 MHz to 1 GHz	0.18° to 25°		
	1 GHz to 10 GHz	0.19° to 37°		
	10 GHz to 18 GHz	0.31° to 45°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
MF Vector Network Analysis (continued)				Site
Transmission Magnitude	Attenuation 0 dB to 20 dB *9 kHz to 18 GHz*	0.029 dB to 0.031 dB		
	Attenuation 20 dB to 40 dB *9 kHz to 18 GHz*	0.029 dB to 0.034 dB		
	Attenuation 40 dB to 50 dB *9 kHz to 18 GHz*	0.033 dB to 0.042 dB		
	Attenuation 50 dB to 60 dB *9 kHz to 18 GHz*	0.040 dB to 0.098 dB		
	Attenuation 60 dB to 70 dB *9 kHz to 18 GHz*	0.092 dB to 0.13 dB		
	Attenuation 70 dB to 80 dB *9 kHz to 1 MHz* *1 MHz to 18 GHz*	 0.13 dB to 0.36 dB 0.13 dB to 0.19 dB		
	Attenuation 80 dB to 90 dB *9 kHz to 1 MHz* *1 MHz to 18 GHz*	 0.17 dB to 1.0 dB 0.17 dB to 0.31 dB		
	Attenuation 90 dB to 100 dB *9 kHz to 1 MHz* *1 MHz to 18 GHz*	 0.24 dB to 3.2 dB 0.23 dB to 0.76 dB		
Transmission phase	0° to ± 180°			
	Attenuation 0 dB to 20 dB			
	9 kHz to 1 MHz *1 MHz to 100 MHz* *100 MHz to 1 GHz* *1 GHz to 10 GHz* *10 GHz to 18 GHz*	0.21° to 0.27° 0.21° to 0.25° 0.21° to 0.26° 0.22° to 0.43° 0.34° to 0.72°		
	Attenuation 20 dB to 40 dB			
	9 kHz to 1 MHz *1 MHz to 100 MHz* *100 MHz to 1 GHz* *1 GHz to 10 GHz* *10 GHz to 18 GHz*	0.21° to 0.27° 0.21° to 0.25° 0.21° to 0.26° 0.22° to 0.43° 0.41° to 0.72°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
MF Vector Network Analysis (continued)				Site
Transmission phase (continued)	Attenuation 40 dB to 50 dB			
	9 kHz to 1 MHz	0.25° to 0.32°		
	1 MHz to 100 MHz	0.25° to 0.29°		
	100 MHz to 1 GHz	0.25° to 0.30°		
	1 GHz to 10 GHz	0.26° to 0.46°		
	10 GHz to 18 GHz	0.43° to 0.74°		
	Attenuation 50 dB to 60 dB			
	9 kHz to 1 MHz	0.29° to 0.57°		
	1 MHz to 100 MHz	0.29° to 0.52°		
	100 MHz to 1 GHz	0.29° to 0.53°		
	1 GHz to 10 GHz	0.30° to 0.63°		
	10 GHz to 18 GHz	0.46° to 0.86°		
	Attenuation 60 dB to 70 dB			
	9 kHz to 1 MHz	0.52° to 1.1°		
	1 MHz to 100 MHz	0.52° to 0.92°		
	100 MHz to 1 GHz	0.52° to 0.92°		
	1 GHz to 10 GHz	0.53° to 0.98°		
	10 GHz to 18 GHz	0.63° to 1.2°		
	Attenuation 70 dB to 80 dB			
	9 kHz to 1 MHz	0.92° to 2.6°		
	1 MHz to 100 MHz	0.91° to 1.5°		
	100 MHz to 1 GHz	0.92° to 1.5°		
	1 GHz to 10 GHz	0.92° to 1.6°		
	10 GHz to 18 GHz	0.98° to 1.7°		
	Attenuation 80 dB to 90 dB			
	9 kHz to 1 MHz	1.5° to 6.9°		
	1 MHz to 100 MHz	1.5° to 2.1°		
	100 MHz to 1 GHz	1.5° to 2.1°		
	1 GHz to 10 GHz	1.5° to 2.3°		
	10 GHz to 18 GHz	1.6° to 2.5°		
	Attenuation 90 dB to 100 dB			
	9 kHz to 1 MHz	2.1° to 21°		
	1 MHz to 100 MHz	2.1° to 3.4°		
	100 MHz to 1 GHz	2.1° to 3.4°		
	1 GHz to 10 GHz	2.1° to 4.1°		
	10 GHz to 18 GHz	2.3° to 5.3°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF VECTOR NETWORK ANALYSIS				Site
This section of the Schedule presents the CMCs for a vector network analysis system. Measurements are made as complex quantities. Transmission magnitude capabilities are expressed in dB terms and Reflection magnitude is expressed in terms of voltage reflection coefficient (VRC). These may also be reported in terms of voltage standing wave ratio (VSWR), return loss (dB) or Impedance magnitude and phase. Measurements are made in a 50 Ω coaxial system using an E5080B network analyser with appropriate test port leads in a 10 Hz bandwidth and 1 Hz bandwidth for transmission measurements greater than 70 dB.				
3.5 mm 50 Ω system				
Reflection magnitude	VRC 0.0 to 0.2			
	45 MHz to 1 GHz	0.0011 to 0.0017		
	1 GHz to 12 GHz	0.0010 to 0.0025		
	12 GHz to 26.5 GHz	0.0022 to 0.0036		
	VRC 0.2 to 1.0			
	45 MHz to 1 GHz	0.0013 to 0.0038		
	1 GHz to 12 GHz	0.0013 to 0.0050		
	12 GHz to 26.5 GHz	0.0022 to 0.0070		
Reflection phase	VRC 0 to 0.0004			
	45 MHz to 1 GHz	180°		
	1 GHz to 12 GHz	180°		
	12 GHz to 26.5 GHz	180°		
	VRC 0.0004 to 0.0005			
	45 MHz to 1 GHz	71° to 180°		
	1 GHz to 12 GHz	69° to 180°		
	12 GHz to 26.5 GHz	130° to 180°		
	VRC 0.0005 to 0.001			
	45 MHz to 1 GHz	71° to 89°		
	1 GHz to 12 GHz	69° to 140°		
	12 GHz to 26.5 GHz	130° to 180°		
	VRC 0.001 to 0.01			
	45 MHz to 1 GHz	6.4° to 89°		
	1 GHz to 12 GHz	6.1° to 140°		
	12 GHz to 26.5 GHz	13° to 180°		
	VRC 0.01 to 0.1			
	45 MHz to 1 GHz	0.61° to 8.3°		
	1 GHz to 12 GHz	0.59° to 13°		
	12 GHz to 26.5 GHz	1.3° to 20°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF Vector Network Analysis (continued)				Site
Reflection phase (continued)	VRC 0.1 to 1.0			
	45 MHz to 1 GHz	0.14° to 0.80°		
	1 GHz to 12 GHz	0.19° to 1.3°		
	12 GHz to 26.5 GHz	0.42° to 2.1°		
Transmission Magnitude	Attenuation 0 dB to 30 dB			
	45 MHz to 100 MHz	0.032 dB to 0.034 dB		
	100 MHz to 1 GHz	0.032 dB to 0.034 dB		
	1 GHz to 12 GHz	0.032 dB to 0.044 dB		
	12 GHz to 26.5 GHz	0.043 dB to 0.065 dB		
	Attenuation 30 dB to 40 dB			
	45 MHz to 100 MHz	0.033 dB to 0.036 dB		
	100 MHz to 1 GHz	0.033 dB to 0.036 dB		
	1 GHz to 12 GHz	0.033 dB to 0.046 dB		
	12 GHz to 26.5 GHz	0.043 dB to 0.066 dB		
	Attenuation 40 dB to 50 dB			
	45 MHz to 100 MHz	0.036 dB to 0.043 dB		
	100 MHz to 1 GHz	0.036 dB to 0.043 dB		
	1 GHz to 12 GHz	0.036 dB to 0.051 dB		
	12 GHz to 26.5 GHz	0.046 dB to 0.070 dB		
	Attenuation 50 dB to 60 dB			
	45 MHz to 100 MHz	0.043 dB to 0.093 dB		
	100 MHz to 1 GHz	0.043 dB to 0.093 dB		
	1 GHz to 12 GHz	0.043 dB to 0.098 dB		
	12 GHz to 26.5 GHz	0.051 dB to 0.11 dB		
	Attenuation 60 dB to 70 dB			
	45 MHz to 100 MHz	0.093 dB to 0.13 dB		
	100 MHz to 1 GHz	0.093 dB to 0.13 dB		
	1 GHz to 12 GHz	0.093 dB to 0.14 dB		
	12 GHz to 26.5 GHz	0.098 dB to 0.15 dB		
	Attenuation 70 dB to 80 dB			
	45 MHz to 100 MHz	0.13 dB to 0.18 dB		
	100 MHz to 1 GHz	0.13 dB to 0.18 dB		
	1 GHz to 12 GHz	0.13 dB to 0.18 dB		
	12 GHz to 26.5 GHz	0.14 dB to 0.19 dB		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF Vector Network Analysis (continued)				Site
Transmission Magnitude (continued)	Attenuation 80 dB to 90 dB			
	45 MHz to 100 MHz	0.17 dB to 0.25 dB		
	100 MHz to 1 GHz	0.17 dB to 0.25 dB		
	1 GHz to 12 GHz	0.17 dB to 0.27 dB		
	12 GHz to 26.5 GHz	0.18 dB to 0.32 dB		
	Attenuation 90 dB to 100 dB			
	45 MHz to 100 MHz	0.24 dB to 0.48 dB		
	100 MHz to 1 GHz	0.24 dB to 0.48 dB		
	1 GHz to 12 GHz	0.24 dB to 0.55 dB		
	12 GHz to 26.5 GHz	0.27 dB to 0.77 dB		
Transmission phase	0° to ± 180°			
	Attenuation 0 dB to 30 dB			
	45 MHz to 100 MHz	0.57° to 0.62°		
	100 MHz to 1 GHz	0.57° to 0.62°		
	1 GHz to 12 GHz	0.57° to 1.0°		
	12 GHz to 26.5 GHz	0.97° to 1.7°		
	Attenuation 30 dB to 40 dB			
	45 MHz to 100 MHz	0.61° to 0.62°		
	100 MHz to 1 GHz	0.61° to 0.62°		
	1 GHz to 12 GHz	0.61° to 1.0°		
	12 GHz to 26.5 GHz	1.0° to 1.7°		
	Attenuation 40 dB to 50 dB			
	5 MHz to 100 MHz	0.62° to 0.64°		
	100 MHz to 1GHz	0.62° to 0.64°		
	1 GHz to 12 GHz	0.62° to 1.0°		
	12 GHz to 26.5 GHz	1.0° to 1.7°		
	Attenuation 50 dB to 60 dB			
	45 MHz to 100 MHz	0.64° to 0.77°		
	100 MHz to 1 GHz	0.64° to 0.77°		
	1 GHz to 12 GHz	0.64° to 1.1°		
	12 GHz to 26.5 GHz	1.0° to 1.8°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF Vector Network Analysis (continued)				Site
Transmission phase (continued)	Attenuation 60 dB to 70 dB			
	45 MHz to 100 MHz	0.77° to 1.1°		
	100 MHz to 1 GHz	0.77° to 1.1°		
	1 GHz to 12 GHz	0.77° to 1.3°		
	12 GHz to 26.5 GHz	1.1° to 1.9°		
	Attenuation 70 dB to 80 dB			
	45 MHz to 100 MHz	1.1° to 1.6°		
	100 MHz to 1 GHz	1.1° to 1.6°		
	1 GHz to 12 GHz	1.1° to 1.8°		
	12 GHz to 26.5 GHz	1.3° to 2.3°		
	Attenuation 80 dB to 90 dB			
	45 MHz to 100 MHz	1.6° to 2.2°		
	100 MHz to 1 GHz	1.6° to 2.2°		
	1 GHz to 12 GHz	1.6° to 2.4°		
	12 GHz to 26.5 GHz	1.8° to 3.0°		
	Attenuation 90 dB to 100 dB			
	5 MHz to 100 MHz	2.2° to 3.6°		
	100 MHz to 1 GHz	2.2° to 3.6°		
	1 GHz to 12 GHz	2.2° to 4.1°		
	12 GHz to 26.5 GHz	2.4° to 5.6°		
2.92 mm 50 Ω system				
Reflection magnitude	VRC 0 to 0.2			
	45 MHz to 1 GHz	0.0026 to 0.0035		
	1 GHz to 26.5 GHz	0.0024 to 0.0061		
	26.5 GHz to 40 GHz	0.0051 to 0.0083		
	VRC 0.2 to 1.0			
	45 MHz to 1 GHz	0.0027 to 0.0050		
	1 GHz to 26.5 GHz	0.0025 to 0.0083		
	26.5 GHz to 40 GHz	0.0050 to 0.0089		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF Vector Network Analysis (continued) 2.92 mm 50 Ω system Reflection phase	VRC 0 to 0.0004 *45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz* VRC 0.0004 to 0.0005 *45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz* VRC 0.0005 to 0.001 *45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz* VRC 0.001 to 0.01 *45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz* VRC 0.01 to 0.1 *45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz* VRC 0.1000 to 1.0 *45 MHz to 1 GHz* *1 GHz to 26.5 GHz* *26.5 GHz to 40 GHz*	 180° 180° 180° 150° to 180° 140° to 180° 180° 150° to 180° 140° to 180° 180° 15° to 180° 14° to 180° 29° to 180° 1.4° to 19° 1.3° to 30° 2.9° to 31° 0.24° to 1.8° 0.25° to 3.0° 0.54° to 3.1°		Site

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF Vector Network Analysis (continued)				Site
2.92 mm 50 Ω system				
Transmission Magnitude	Attenuation 0 dB to 30 dB			
	45 MHz to 100 MHz	0.032 dB to 0.034 dB		
	100 MHz to 1 GHz	0.032 dB to 0.034 dB		
	1 GHz to 26.5 GHz	0.032 dB to 0.060 dB		
	26.5 GHz to 40 GHz	0.060 dB to 0.090 dB		
	Attenuation 30 dB to 40 dB			
	45 MHz to 100 MHz	0.033 dB to 0.036 dB		
	100 MHz to 1 GHz	0.033 dB to 0.036 dB		
	1 GHz to 26.5 GHz	0.033 dB to 0.061 dB		
	26.5 GHz to 40 GHz	0.060 dB to 0.091 dB		
	Attenuation 40 dB to 50 dB			
	45 MHz to 100 MHz	0.036 dB to 0.043 dB		
	100 MHz to 1 GHz	0.036 dB to 0.043 dB		
	1 GHz to 26.5 GHz	0.036 dB to 0.066 dB		
	26.5 GHz to 40 GHz	0.062 dB to 0.094 dB		
	Attenuation 50 dB to 60 dB			
	45 MHz to 100 MHz	0.043 dB to 0.093 dB		
	100 MHz to 1 GHz	0.043 dB to 0.093 dB		
	1 GHz to 26.5 GHz	0.043 dB to 0.11 dB		
	26.5 GHz to 40 GHz	0.066 dB to 0.13 dB		
	Attenuation 60 dB to 70 dB			
	45 MHz to 100 MHz	0.093 dB to 0.13 dB		
	100 MHz to 1 GHz	0.093 dB to 0.13 dB		
	1 GHz to 26.5 GHz	0.093 dB to 0.14 dB		
	26.5 GHz to 40 GHz	0.11 dB to 0.16 dB		
	Attenuation 70 dB to 80 dB			
	45 MHz to 100 MHz	0.13 dB to 0.18 dB		
	100 MHz to 1 GHz	0.13 dB to 0.18 dB		
	1 GHz to 26.5 GHz	0.13 dB to 0.19 dB		
	26.5 GHz to 40 GHz	0.14 dB to 0.23 dB		
	Attenuation 80 dB to 90 dB			
	45 MHz to 100 MHz	0.17 dB to 0.25 dB		
	100 MHz to 1GHz	0.17 dB to 0.25 dB		
	1 GHz to 26.5 GHz	0.17 dB to 0.32 dB		
	26.5 GHz to 40 GHz	0.19 dB to 0.45 dB		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF Vector Network Analysis (continued)				Site
2.92 mm 50 Ω system				
Transmission Magnitude (continued)	Attenuation 90 dB to 100 dB			
	45 MHz to 100 MHz	0.24 dB to 0.48 dB		
	100 MHz to 1 GHz	0.24 dB to 0.48 dB		
	1 GHz to 26.5 GHz	0.24 dB to 0.77 dB		
	26.5 GHz to 40 GHz	0.31 dB to 1.2 dB		
Transmission phase	0° to ± 180°			
	Attenuation 0 dB to 30 dB			
	45 MHz to 100 MHz	0.28° to 0.38°		
	100 MHz to 1 GHz	0.28° to 0.38°		
	1 GHz to 26.5 GHz	0.28° to 1.2°		
	26.5 GHz to 40 GHz	1.2° to 2.1°		
	Attenuation 30 dB to 40 dB			
	45 MHz to 100 MHz	0.36° to 0.38°		
	100 MHz to 1 GHz	0.36° to 0.38°		
	1 GHz to 26.5 GHz	0.36° to 1.3°		
	26.5 GHz to 40 GHz	1.3° to 2.1°		
	Attenuation 40 dB to 50 dB			
	45 MHz to 100 MHz	0.38° to 0.41°		
	100 MHz to 1 GHz	0.38° to 0.41°		
	1 GHz to 26.5 GHz	0.38° to 1.3°		
	26.5 GHz to 40 GHz	1.3° to 2.2°		
	Attenuation 50 dB to 60 dB			
	45 MHz to 100 MHz	0.41° to 0.60°		
	100 MHz to 1 GHz	0.41° to 0.60°		
	1 GHz to 26.5 GHz	0.41° to 1.3°		
	26.5 GHz to 40 GHz	1.3° to 2.2°		
	Attenuation 60 dB to 70 dB			
	45 MHz to 100 MHz	0.60° to 0.96°		
	100 MHz to 1 GHz	0.60° to 0.96°		
	1 GHz to 26.5 GHz	0.60° to 1.5°		
	26.5 GHz to 40 GHz	1.3° to 2.3°		
	Attenuation 70 dB to 80 dB			
	45 MHz to 100 MHz	0.96° to 1.6°		
	100 MHz to 1 GHz	0.96° to 1.6°		
	1 GHz to 26.5 GHz	0.96° to 2.0°		
	26.5 GHz to 40 GHz	1.5° to 2.7°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF Vector Network Analysis (continued)				Site
2.92 mm 50 Ω system				
Transmission phase (continued)	Attenuation 80 dB to 90 dB			
	45 MHz to 100 MHz	1.5° to 2.2°		
	100 MHz to 1 GHz	1.5° to 2.2°		
	1 GHz to 26.5 GHz	1.5° to 2.8°		
	26.5 GHz to 40 GHz	2.0° to 3.8°		
	Attenuation 90 dB to 100 dB			
	45 MHz to 100 MHz	2.1° to 3.5°		
	100 MHz to 1 GHz	2.1° to 3.5°		
	1 GHz to 26.5 GHz	2.1° to 5.4°		
	26.5 GHz to 40 GHz	2.8° to 8.6°		
2.4 mm 50 Ω system				
Reflection magnitude	VRC 0 to 0.2			
	45 MHz to 1 GHz	0.0016 to 0.0025		
	1 GHz to 26.5 GHz	0.0015 to 0.0032		
	26.5 GHz to 40 GHz	0.0024 to 0.0038		
	VRC 0.2 to 1.0			
	45 MHz to 1 GHz	0.0017 to 0.0041		
	1 GHz to 26.5 GHz	0.0017 to 0.0070		
	26.5 GHz to 40 GHz	0.0025 to 0.0095		
Reflection phase	VRC 0 to 0.0004			
	45 MHz to 1 GHz	180°		
	1 GHz to 26.5 GHz	180°		
	26.5 GHz to 40 GHz	180°		
	VRC 0.0004 to 0.0005			
	45 MHz to 1 GHz	97° to 180°		
	1 GHz to 26.5 GHz	95° to 180°		
	26.5 GHz to 40 GHz	140° to 180°		
	VRC 0.0005 to 0.001			
	45 MHz to 1 GHz	97° to 140°		
	1 GHz to 26.5 GHz	95° to 160°		
	26.5 GHz to 40 GHz	140° to 180°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF Vector Network Analysis (continued)				Site
2.4 mm 50 Ω system				
Reflection phase (continued)	VRC 0.001 to 0.01			
	45 MHz to 1 GHz	9.2° to 140°		
	1 GHz to 26.5 GHz	8.9° to 160°		
	26.5 GHz to 40 GHz	14° to 180°		
	VRC 0.01 to 0.1			
	45 MHz to 1 GHz	4.6° to 13°		
	1 GHz to 26.5 GHz	1.7° to 15°		
	26.5 GHz to 40 GHz	1.5° to 19°		
	VRC 0.1 to 1			
	45 MHz to 1 GHz	0.16° to 1.3°		
	1 GHz to 26.5 GHz	0.21° to 1.7°		
	26.5 GHz to 40 GHz	0.79° to 2.3°		
Transmission Magnitude	Attenuation 0 dB to 30 dB			
	45 MHz to 100 MHz	0.032 dB to 0.034 dB		
	100 MHz to 1 GHz	0.032 dB to 0.034 dB		
	1 GHz to 26.5 GHz	0.032 dB to 0.060 dB		
	26.5 GHz to 40 GHz	0.059 dB to 0.091 dB		
	Attenuation 30 dB to 40 dB			
	45 MHz to 100 MHz	0.033 dB to 0.036 dB		
	100 MHz to 1 GHz	0.033 dB to 0.036 dB		
	1 GHz to 26.5 GHz	0.033 dB to 0.061 dB		
	26.5 GHz to 40 GHz	0.060 dB to 0.091 dB		
	Attenuation 40 dB to 50 dB			
	45 MHz to 100 MHz	0.036 dB to 0.043 dB		
	100 MHz to 1 GHz	0.036 dB to 0.043 dB		
	1 GHz to 26.5 GHz	0.036 dB to 0.066 dB		
	26.5 GHz to 40 GHz	0.062 dB to 0.094 dB		
	Attenuation 50 dB to 60 dB			
	45 MHz to 100 MHz	0.043 dB to 0.093 dB		
	100 MHz to 1 GHz	0.043 dB to 0.093 dB		
	1 GHz to 26.5 GHz	0.043 dB to 0.11 dB		
	26.5 GHz to 40 GHz	0.066 dB to 0.13 dB		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF Vector Network Analysis (continued)				Site
2.4 mm 50 Ω system				
Transmission Magnitude (continued)	Attenuation 60 dB to 70 dB			
	45 MHz to 100 MHz	0.093 dB to 0.13 dB		
	100 MHz to 1 GHz	0.093 dB to 0.13 dB		
	1 GHz to 26.5 GHz	0.093 dB to 0.14 dB		
	26.5 GHz to 40 GHz	0.11 dB to 0.16 dB		
	Attenuation 70 dB to 80 dB			
	45 MHz to 100 MHz	0.13 dB to 0.18 dB		
	100 MHz to 1 GHz	0.13 dB to 0.18 dB		
	1 GHz to 26.5 GHz	0.13 dB to 0.19 dB		
	26.5 GHz to 40 GHz	0.14 dB to 0.23 dB		
	Attenuation 80 dB to 90 dB			
	5 MHz to 100 MHz	0.17 dB to 0.25 dB		
	100 MHz to 1 GHz	0.17 dB to 0.25 dB		
	1 GHz to 26.5 GHz	0.17 dB to 0.32 dB		
	26.5 GHz to 40 GHz	0.19 dB to 0.45 dB		
	Attenuation 90 dB to 100 dB			
	45 MHz to 100 MHz	0.24 dB to 0.48 dB		
	100 MHz to 1 GHz	0.24 dB to 0.48 dB		
	1 GHz to 26.5 GHz	0.24 dB to 0.77 dB		
	26.5 GHz to 40 GHz	0.31 dB to 1.2 dB		
Transmission phase	0° to ± 180°			
	Attenuation 0 dB to 30 dB			
	45 MHz to 100 MHz	0.28° to 0.38°		
	100 MHz to 1 GHz	0.28° to 0.38°		
	1 GHz to 26.5 GHz	0.28° to 1.2°		
	26.5 GHz to 40 GHz	1.2° to 2.1°		
	Attenuation 30 dB to 40 dB			
	45 MHz to 100 MHz	0.36° to 0.38°		
	100 MHz to 1 GHz	0.36° to 0.38°		
	1 GHz to 26.5 GHz	0.36° to 1.3°		
	26.5 GHz to 40 GHz	1.3° to 2.1°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
HF Vector Network Analysis (continued)				Site
2.4 mm 50 Ω system				
Transmission phase (continued)	Attenuation 40 dB to 50 dB			
	45 MHz to 100 MHz	0.38° to 0.41°		
	100 MHz to 1 GHz	0.38° to 0.41°		
	1 GHz to 26.5 GHz	0.38° to 1.3°		
	26.5 GHz to 40 GHz	1.3° to 2.2°		
	Attenuation 50 dB to 60 dB			
	45 MHz to 100 MHz	0.41° to 0.60°		
	100 MHz to 1 GHz	0.41° to 0.60°		
	1 GHz to 26.5 GHz	0.41° to 1.3°		
	26.5 GHz to 40 GHz	1.3° to 2.2°		
	Attenuation 60 dB to 70 dB			
	45 MHz to 100 MHz	0.60° to 1.0°		
	100 MHz to 1 GHz	0.60° to 1.0°		
	1 GHz to 26.5 GHz	0.60° to 1.5°		
	26.5 GHz to 40 GHz	1.3° to 2.3°		
	Attenuation 70 dB to 80 dB			
	45 MHz to 100 MHz	1.0° to 1.6°		
	100 MHz to 1 GHz	0.96° to 1.6°		
	1 GHz to 26.5 GHz	0.96° to 2.0°		
	26.5 GHz to 40 GHz	1.5° to 2.7°		
	Attenuation 80 dB to 90 dB			
	45 MHz to 100 MHz	1.5° to 2.2°		
	100 MHz to 1 GHz	1.5° to 2.2°		
	1 GHz to 26.5 GHz	1.5° to 2.8°		
	26.5 GHz to 40 GHz	2.0° to 3.9°		
	Attenuation 90 dB to 100 dB			
	45 MHz to 100 MHz	2.1° to 3.5°		
	100 MHz to 1GHz	2.1° to 3.5°		
	1 GHz to 26.5 GHz	2.1° to 5.4°		
	26.5 GHz to 40 GHz	2.8° to 8.6°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
RF MODULATION			Measurement and generation of amplitude and frequency modulated signals using spectrum analyser and audio analyser.	
Amplitude Modulation	Demodulated distortion less than or equal to 5 %			
	0 $\%_{AM}$ to 20 $\%_{AM}$ 20 $\%_{AM}$ to 50 $\%_{AM}$ 50 $\%_{AM}$ to 80 $\%_{AM}$ 80 $\%_{AM}$ to 95 $\%_{AM}$	0.30 $\%_{AM}$ 0.41 $\%_{AM}$ 0.81 $\%_{AM}$ 1.3 $\%_{AM}$	f_c 100 kHz to 1 GHz. f_{mod} 30 Hz to 50 kHz, or 0.2 x f_c.	
	Demodulated distortion 5 % to 10 %.			
	0 $\%_{AM}$ to 20 $\%_{AM}$ 20 $\%_{AM}$ to 50 $\%_{AM}$ 50 $\%_{AM}$ to 80 $\%_{AM}$ 80 $\%_{AM}$ to 95 $\%_{AM}$	0.65 $\%_{AM}$ 0.71 $\%_{AM}$ 0.99 $\%_{AM}$ 1.4 $\%_{AM}$	f_c 100 kHz to 1 GHz. f_{mod} 30 Hz to 50 kHz, or 0.2 x f_c.	
Frequency Modulation	Demodulated distortion less than or equal to 10 %.			
	0 Hz to 5 kHz 5 kHz to 20 kHz 20 kHz to 100 kHz 100 kHz to 700 kHz	0.17 kHz 0.18 kHz 0.79 kHz 3.6 kHz	f_c 100 kHz to 1 GHz. f_{mod} 30 Hz to 50 kHz, or 0.2 x f_c.	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
RF MODULATION (continued)				Site
Modulation distortion THD_R	0 % to 5 % *30 Hz to 20 kHz* *20 kHz to 50 kHz*	 0.078 % THD_R 0.090 % THD_R	f_c 100 kHz to 1 GHz.	
	5 % to 10 % *30 Hz to 20 kHz* *20 kHz to 50 kHz*	 0.12 % THD_R 0.15 % THD_R	f_c 100 kHz to 1 GHz.	
RF INTERMODULATION PRODUCTS	300 kHz to 18 GHz	0.48 dB		
TRANSITION TIME				
Measurement	300 ps to 600 ps 600 ps to 10 s	1.3 % 0.90 %	For the calibration of pulse generators and similar devices	
Generation	300 ps to 600 ps 600 ps to 10 s	1.5 % 1.2 %	For the calibration of oscilloscopes and other measurement devices with bandwidth up to 500 MHz.	
IMPULSE MEASUREMENTS				
Detector Pulse Measurements	*9 kHz to 10 MHz* *10 MHz to 50 MHz* *50 MHz to 1 GHz*	0.57 dB 0.55 dB 0.56 dB	Absolute and relative CISPR detector response to pulses and response to varying repetition rates	
Detector response to narrowband interference	Band A to D	0.096 dB	Average and RMS CISPR detector response to any drifting narrow band interference	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
ISN MEASUREMENTS				Site
This section of the Schedule presents the CMCs for the measurement of characteristics of Impedance Stabilisation Networks (ISNs) to the requirements of CISPR 16-1-2, CISPR 22 and CISPR 32 using a vector network analysis system. Measurements are made in a 50 Ω coaxial system using a network analyser with appropriate test port leads, adaptors and transitions in a 1 Hz bandwidth. Actual uncertainties are calculated dynamically during the measurement and may be larger than indicated below.				
Common Mode Impedance	*150 kHz to 30 MHz*			
Magnitude	50 Ω to 250 Ω	2.0 %		
Phase	0° to 180°	3.0°		
Voltage Division Factor	*150 kHz to 30 MHz*	0.20 dB		
Decoupling Attenuation	*150 kHz to 30 MHz*			
	0 dB to 80 dB	0.30 dB		
	80 dB to 90 dB	1.0 dB		
	90 dB to 100 dB	2.7 dB		
Longitudinal Conversion Loss	*150 kHz to 30 MHz*			
	30 dB to 85 dB			
	Cat. 3	0.25 dB		
	Cat. 5	0.35 dB		
	Cat. 6	0.65 dB		
Transmission Loss	*100 kHz to 300 MHz*			
	0 dB to 20 dB	0.10 dB		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
BULK CURRENT INJECTION PROBES	Insertion loss		Using vector network analyser.	Site
	1 kHz to 500 MHz			
	0 dB to 20 dB	0.053 dB		
	20 dB to 70 dB	0.11 dB		
	70 dB to 80 dB	0.16 dB		
	80 dB to 90 dB	0.40 dB		
	90 dB to 100 dB	1.8 dB		
RF CURRENT PROBES	Insertion loss			
	10 Hz to 10 kHz		Using FFT analyser.	
	0 dB to 90 dB	0.075 dB		
	90 dB to 100 dB	0.086 dB		
	100 dB to 110 dB	0.12 dB		
	110 dB to 120 dB	0.30 dB		
	1 kHz to 500 MHz		Using vector network analyser.	
	0 dB to 20 dB	0.084 dB		
	20 dB to 70 dB	0.15 dB		
	70 dB to 80 dB	0.20 dB		
	80 dB to 90 dB	0.51 dB		
	90 dB to 100 dB	1.8 dB		
BURST TRANSIENT GENERATOR CHARACTERISTICS				
Peak voltage	0.1 kV to 5 kV	2.6 %	For the calibration of Electrical Fast Transient generators, Coupling Clamps and CDNs to EN 61000-4-4	
Rise time	3.5 ns to 50 s	0.91 %		
Pulse width	10 ns to 100 ns	0.91 %		
Repetition Frequency	1 kHz to 1 MHz	0.91 %		
Burst duration	100 µs to 100 ms	0.91 %		
Burst period	1 ms to 1 s	0.14 %		
SURGE PULSE CHARACTERISTICS				
Voltage	0.25 kV to 6.6 kV	2.1 %	For the calibration of Surge generators and coupling Networks to EN 61000-4-5 EN61000-4-9 EN6255-22-5	
Current	0.2 kA to 3.3 kA	2.8 %		
Impedance	1 Ω to 100 Ω	4.6 %		
Front/Rise Time	0.1 µs to 50 µs	0.91 %		
Pulse Duration	1 µs to 1 ms	0.91 %		
Phase	0° to 360°	0.5° to 3.3°		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
VOLTAGE DIPS, SHORT INTERRUPTIONS, VOLTAGE VARIATIONS GENERATORS				
Dip RMS Voltage	1 V to 500 V	0.58 % + 50 mV	For the calibration	
Voltage Variations	1 V to 500 V	1.5 %	of Voltage Dips	
Transition rise and fall time	0.1 µs to 1 s	0.91 %	and Interrupts	
Interruptions Overshoot Voltage	25 % to 100 %	2.8 %	generators in	
Phase Angle	0° to 360°	2.9°	accordance with	
Dip Variations timing	10 µs to 30 s	0.91 %	EN 61000-4-11	
Peak Inrush Current	1 A to 1000 A	1.9 %		
DISCONTINUOUS INTERFERENCE ANALYSERS	Pulse Timings - Period and Width	0.16 %	Application of Pulses 1 to 12 as given in Table 14, CISPR 16-1-1 and in	
	Pulse Level Step Measurement	0.19 dB	Table F1, CISPR 16-1-1.	
DAMPED OSCILLATORY GENERATORS				
Voltage	100 V to 6.6 kV		For the calibration	
	Frequency ≤1 MHz	2.1 %	of Damped	
	Frequency 1 MHz to 50 MHz	2.9 %	Oscillatory Wave	
Ringwave Current	1 A to 400 A	2.8 %	Generators in	Site
DOW Current	1 A to 150 A	3.6 %	accordance with	
Impedance	5 Ω to 500 Ω	4.6 %	EN 61000-4-10,	
Rise time	1 ns to 10 µs	0.91 %	EN 61000-4-12,	
Frequency	10 kHz to 100 MHz	0.91 %	EN 61000-4-18,	
Repetition Rate	100 µs to 1 s	0.91 %	ANSI C37.90.1	
Burst Duration	1 ms to 5 s	0.91 %		
Phase	0° to 360°	3.3°		
Burst Period	1 ms to 1 s	0.14 %		
FLICKER				
Measurement and Generation	Pst values from 0.4 to 6, with 1 to 500 changes per minute.	0.37 %	In accordance with EN61000-4-15	
LISN MEASUREMENTS				
This section of the Schedule presents the CMCs for the measurement of complex impedance of a Line Impedance Stabilisation Network (LISN) using a vector network analysis system. Measurements are made as complex quantities. Reflection magnitude is expressed in terms of Impedance with Magnitude and Phase. Measurements are made in a 50 Ω coaxial system using an Agilent E5061B network analyser with appropriate test port leads in a 10 Hz bandwidth. Actual uncertainties are calculated dynamically during the measurement and may be larger than indicated below.				

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
LISN Measurements (continued)				Site
N Type 50 Ω system				
Impedance Magnitude	Magnitude 0 Ω to 150 Ω			
	1 kHz to 9 kHz	0.23 Ω		
	9 kHz to 150 kHz	0.27 Ω		
	150 kHz to 30 MHz	0.82 Ω		
	30 MHz to 300 MHz	2.3 Ω		
	300 MHz to 400 MHz	4.1 Ω		
Impedance Phase	Phase 0° to 180°			
	9 kHz to 108 MHz	0.87°		
Voltage Division	*1 kHz to 400 MHz*	0.18 dB		
Isolation	*9 kHz to 108 MHz*			
	0 dB to 70 dB	0.22 dB		
	60 dB to 100 dB	2.5 dB		
CDN MEASUREMENTS				
This section of the Schedule presents the CMCs for the measurement of complex impedance of a CDN using a vector network analysis system. Measurements are made as complex quantities. Reflection magnitude is expressed in terms of Impedance with Magnitude and Phase. Measurements are made in a 50 Ω coaxial system with appropriate test port leads in a 10 Hz bandwidth. Actual uncertainties are calculated dynamically during the measurement and may be larger than indicated below.				
Impedance Magnitude	Magnitude 50 Ω to 250 Ω			
	10 kHz to 80 MHz	1.6 %		
	80 MHz to 230 MHz	3.7 %		
	230 MHz to 300 MHz	4.2 %		
Impedance Phase	Phase 0° to 180°			
	10 kHz to 300 MHz	5.0°		
Coupling Factor	*10 kHz to 300 MHz*			
	0 dB to 30 dB	0.30 dB		
Isolation	*10 kHz to 300 MHz*			
	0 dB to 70 dB	0.22 dB		
	70 dB to 100 dB	2.5 dB		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location code
ELECTROSTATIC DISCHARGE GENERATORS				
Air discharge voltage	0.5 kV to 30 kV	0.73 %	EN61000-4-2:2025 EN61000-4-2:2009 ISO10605:2008 and 2023 EN61340-3-1:2007 MIL-STD-331C:2005 Corr 1:2009 EIA/JES22-A114-B June 2000 EIA/JES22-A115-A October 1997 The measurement bandwidth is the lowest specified by the associated standard.	Site
Pulse transition time	500 ps to 50 ns	2.2 %		
First peak current	0.1 A to 150 A	3.7 %		
Second peak current	0.1 A to 150 A	5.0 %		
Decay current	0.1 A to 150 A	5.0 %		
ELECTRICAL SIMULATION OF TEMPERATURE			For calibration of temperature indicators, recorders etc. Excluding cold junction compensation (CJC).	
Thermocouple simulation	Type K, -200 °C to +1372 °C	0.12 °C to 0.30 °C		
	Type J, -200 °C to +1200 °C	0.12 °C to 0.23 °C		
	Type E, -200 °C to +1000 °C	0.12 °C to 0.22 °C		
	Type N, -200 °C to +1300 °C	0.12 °C to 0.27 °C		
	Type T, -200 °C to +400 °C	0.12 °C to 0.22 °C		
	Type S, 0 °C to +1768 °C	0.18 °C to 0.29 °C		
	Type R, 0 °C to +1768 °C	0.17 °C to 0.28 °C		
	Type B, 0 °C to +1820 °C	0.19 °C to 0.34 °C		
	Thermocouple CJC at ambient	0.22 °C		
Pt100 simulation	-200 °C to 0 °C	0.027 °C to 0.049 °C		
	0 °C to +400 °C	0.049 °C to 0.12 °C		
	+400 °C to +850 °C	0.12 °C to 0.21 °C		
--- END ---				

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: $Q[a, b] = [a^2 + b^2]^{1/2}$