財團法人全國認證基金會
Taiwan Accreditation Foundation

Certification Accreditation

(Certificate No: L0133-230228)

This is to certify that

Tektronix Taiwan, Ltd.

Calibration Laboratory

3F, No. 89, Sec. 2, Ti Ding Avenue, Taipe City 11493, Taiwan (R.O.C.)

is accredited in respect of laboratory

Accreditation Criteria	:	ISO/IEC 17025: 2017; CNS 17025: 2018
Accreditation Number	:	0133
Originally Accredited	:	January 01, 1994
Effective Period	:	February 28, 2023 to February 27, 2026
Accredited Scope	:	Calibration Field, see described in the Appendix

Scan to verify

Ching-Chang Lien

Ching-Chang Lien
President, Taiwan Accreditation Foundation
February 28, 2023

The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix

Accreditation Number : 0133
Laboratory Head : HSIEH, Yu-Hsuan

Electricity

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1001 DC volt source Calibrator DC volt meter (On-site Calibration Included)	Multimeter /Fluke/8508A Calibrator /Fluke /5720A/5725A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	1	mV	20	mV		0.21	mV/V
			>20	mV	200	mV		9.9	μV/V
			>0.2	V	2	V		5.3	μV/V
			>2	V	20	V		4.6	μV/V
			>20	V	200	V		6.2	μV/V
			>200	V	1000	V		8.4	μV/V
			0.001	V	0.001	V		0.21	mV/V
			0.01	V	0.01	V		20	μV/V
			0.019	V	0.019	V		13	μV/V
			0.03	V	0.03	V		9.9	μV/V
			0.1	V	0.1	V		6.1	μV/V
			0.19	V	0.19	V		6.6	μV/V
			0.3	V	0.3	V		5.3	μV/V
			1	V	1	V		3.6	μV/V
			1.9	V	1.9	V		3.4	μV/V
			3	V	3	V		4.5	μV/V
			10	V	10	V		3.5	μV/V
			19	V	19	V		3.3	μV/V
			30	V	30	V		6.2	μV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1001 DC volt source Calibrator DC volt meter (On-site Calibration Included)	Multimeter /Fluke/8508A Calibrator /Fluke /5720A/5725A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	100	V	100	V		5.0	μV/V
			190	V	190	V		4.8	μV/V
			300	V	300	V		8.1	μV/V
			700	V	700	V		6.2	μV/V
			1000	V	1000	V		5.7	μV/V
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									
KF1002 DC ampere source calibrator DC ampere meter (On-site Calibration Included)	Multimeter /Fluke/8508A Resistance standard /Fluke/742A-1/ -10/-1k/-10k/ -100k Precision current shunt /FLUKE A40B-2A/A40B-20A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	1	μA	1	μA		63	μA/A
			10	μA	10	μA		17	μA/A
			100	μA	100	μA		11	μA/A
			1	mA	1	mA		15	μA/A
			10	mA	10	mA		20	μA/A
			100	mA	100	mA		20	μA/A
			1	A	1	A		50	μA/A
			10	A	10	A		62	μA/A
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1002 DC current meter (On-site Calibration Included)	Calibrator Fluke/5720A Electrometer Calibration Standard Keithley/5156	Low current & high resistance calibration procedure (Document No.: TTL-0023)	1	µA	1	µA		0.24	mA/A
			100	nA	100	nA		0.24	mA/A
			10	nA	10	nA		0.24	mA/A
			1	nA	1	nA		0.59	mA/A
			100	pA	100	pA		0.59	mA/A
			10	pA	10	pA		0.94	mA/A
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									
KF1011 AC volt source Calibrator (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	2	mV	20	mV	@ 10 Hz to 20 Hz	1.3	mV/V
			2	mV	20	mV	@ 20 Hz to 40 Hz	0.81	mV/V
			2	mV	20	mV	@ 40 Hz to 20 kHz	0.65	mV/V
			2	mV	20	mV	@ 20 kHz to 50 kHz	1.1	mV/V
			2	mV	20	mV	@ 50 kHz to 100 kHz	1.5	mV/V
			2	mV	20	mV	@ 100 kHz to 300 kHz	2.6	mV/V
			2	mV	20	mV	@ 300 kHz to 500 kHz	4.1	mV/V
			2	mV	20	mV	@ 500 kHz to 1 MHz	6.3	mV/V
			>20	mV	200	mV	@ 10 Hz to 20 Hz	0.31	mV/V
			>20	mV	200	mV	@ 20 Hz to 40 Hz	0.20	mV/V
			>20	mV	200	mV	@ 40 Hz to 20 kHz	0.13	mV/V
			>20	mV	200	mV	@ 20 kHz to 50 kHz	0.21	mV/V
			>20	mV	200	mV	@ 50 kHz to 100 kHz	0.38	mV/V
			>20	mV	200	mV	@ 100 kHz to 300 kHz	0.72	mV/V
			>20	mV	200	mV	@ 300 kHz to 500 kHz	1.1	mV/V
			>20	mV	200	mV	@ 500 kHz to 1 MHz	1.7	mV/V
			>0.2	V	2	V	@ 10 Hz to 20 Hz	0.24	mV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt source Calibrator (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	>0.2	V	2	V	@ 20 Hz to 40 Hz	92	µV/V
			>0.2	V	2	V	@ 40 Hz to 20 kHz	45	µV/V
			>0.2	V	2	V	@ 20 kHz to 50 kHz	67	µV/V
			>0.2	V	2	V	@ 50 kHz to 100 kHz	96	µV/V
			>0.2	V	2	V	@ 100 kHz to 300 kHz	0.25	mV/V
			>0.2	V	2	V	@ 300 kHz to 500 kHz	0.47	mV/V
			>0.2	V	2	V	@ 500 kHz to 1 MHz	1.4	mV/V
			>2	V	20	V	@ 10 Hz to 20 Hz	0.22	mV/V
			>2	V	20	V	@ 20 Hz to 40 Hz	77	µV/V
			>2	V	20	V	@ 40 Hz to 20 kHz	34	µV/V
			>2	V	20	V	@ 20 kHz to 50 kHz	55	µV/V
			>2	V	20	V	@ 50 kHz to 100 kHz	90	µV/V
			>2	V	20	V	@ 100 kHz to 300 kHz	0.25	mV/V
			>2	V	20	V	@ 300 kHz to 500 kHz	0.49	mV/V
			>2	V	20	V	@ 500 kHz to 1 MHz	1.7	mV/V
			>20	V	200	V	@ 10 Hz to 20 Hz	0.22	mV/V
			>20	V	200	V	@ 20 Hz to 40 Hz	77	µV/V
			>20	V	200	V	@ 40 Hz to 20 kHz	43	µV/V
			>20	V	200	V	@ 20 kHz to 50 kHz	80	µV/V
			>20	V	200	V	@ 50 kHz to 100 kHz	0.13	mV/V
			>200	V	1000	V	@ 40 Hz to 1 kHz	54	µV/V
			>200	V	1000	V	@ 1 kHz to 20 kHz	73	µV/V
			>200	V	1000	V	@ 20 kHz to 30 kHz	0.16	mV/V
			0.001	V	0.001	V	@ 10 Hz	3.1	mV/V
			0.001	V	0.001	V	@ 20 Hz	2.1	mV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt source Calibrator (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	0.001	V	0.001	V	@ 40 Hz	1.8	mV/V
			0.001	V	0.001	V	@ 1 kHz	1.8	mV/V
			0.001	V	0.001	V	@ 10 kHz	1.8	mV/V
			0.001	V	0.001	V	@ 20 kHz	1.8	mV/V
			0.001	V	0.001	V	@ 50 kHz	2.9	mV/V
			0.001	V	0.001	V	@ 100 kHz	3.8	mV/V
			0.001	V	0.001	V	@ 300 kHz	6.4	mV/V
			0.001	V	0.001	V	@ 500 kHz	11	mV/V
			0.001	V	0.001	V	@ 1 MHz	14	mV/V
			0.002	V	0.002	V	@ 10 Hz	2.4	mV/V
			0.002	V	0.002	V	@ 20 Hz	1.4	mV/V
			0.002	V	0.002	V	@ 40 Hz	1.1	mV/V
			0.002	V	0.002	V	@ 1 KHz	1.1	mV/V
			0.002	V	0.002	V	@ 10 KHz	1.1	mV/V
			0.002	V	0.002	V	@ 20 KHz	1.1	mV/V
			0.002	V	0.002	V	@ 50 KHz	1.9	mV/V
			0.002	V	0.002	V	@ 100 KHz	2.5	mV/V
			0.002	V	0.002	V	@ 300 KHz	4.4	mV/V
			0.002	V	0.002	V	@ 500 KHz	6.7	mV/V
			0.002	V	0.002	V	@ 1 MHz	9.1	mV/V
			0.003	V	0.003	V	@ 10 Hz	1.3	mV/V
			0.003	V	0.003	V	@ 20 Hz	0.81	mV/V
			0.003	V	0.003	V	@ 40 Hz	0.65	mV/V
			0.003	V	0.003	V	@ 1 kHz	0.65	mV/V
			0.003	V	0.003	V	@ 10 kHz	0.65	mV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt source Calibrator (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	0.003	V	0.003	V	@ 20 kHz	0.65	mV/V
			0.003	V	0.003	V	@ 50 kHz	1.1	mV/V
			0.003	V	0.003	V	@ 100 kHz	1.5	mV/V
			0.003	V	0.003	V	@ 300 kHz	2.6	mV/V
			0.003	V	0.003	V	@ 500 kHz	4.1	mV/V
			0.003	V	0.003	V	@ 1 MHz	6.3	mV/V
			0.01	V	0.01	V	@ 10 Hz	0.43	mV/V
			0.01	V	0.01	V	@ 20 Hz	0.33	mV/V
			0.01	V	0.01	V	@ 40 Hz	0.25	mV/V
			0.01	V	0.01	V	@ 1 kHz	0.25	mV/V
			0.01	V	0.01	V	@ 10 kHz	0.25	mV/V
			0.01	V	0.01	V	@ 20 kHz	0.25	mV/V
			0.01	V	0.01	V	@ 50 kHz	0.42	mV/V
			0.01	V	0.01	V	@ 100 kHz	0.57	mV/V
			0.01	V	0.01	V	@ 200 kHz	1.3	mV/V
			0.01	V	0.01	V	@ 500 kHz	1.9	mV/V
			0.01	V	0.01	V	@ 1 MHz	3.5	mV/V
			0.019	V	0.019	V	@ 10 Hz	0.37	mV/V
			0.019	V	0.019	V	@ 20 Hz	0.27	mV/V
			0.019	V	0.019	V	@ 40 Hz	0.19	mV/V
			0.019	V	0.019	V	@ 1 kHz	0.19	mV/V
			0.019	V	0.019	V	@ 10 kHz	0.19	mV/V
			0.019	V	0.019	V	@ 20 kHz	0.19	mV/V
			0.019	V	0.019	V	@ 50 kHz	0.32	mV/V
			0.019	V	0.019	V	@ 100 kHz	0.45	mV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt source Calibrator (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	0.019	V	0.019	V	@ 300 kHz	1.1	mV/V
			0.019	V	0.019	V	@ 500 kHz	1.5	mV/V
			0.019	V	0.019	V	@ 1 MHz	3.1	mV/V
			0.03	V	0.03	V	@ 10 Hz	0.31	mV/V
			0.03	V	0.03	V	@ 20 Hz	0.20	mV/V
			0.03	V	0.03	V	@ 40 Hz	0.13	mV/V
			0.03	V	0.03	V	@ 1 kHz	0.13	mV/V
			0.03	V	0.03	V	@ 10 kHz	0.13	mV/V
			0.03	V	0.03	V	@ 20 Hz	0.13	mV/V
			0.03	V	0.03	V	@ 50 Hz	0.21	mV/V
			0.03	V	0.03	V	@ 100 kHz	0.38	mV/V
			0.03	V	0.03	V	@ 300 kHz	0.72	mV/V
			0.03	V	0.03	V	@ 500 kHz	1.1	mV/V
			0.03	V	0.03	V	@ 1 MHz	1.7	mV/V
			0.1	V	0.1	V	@ 10 Hz	0.23	mV/V
			0.1	V	0.1	V	@ 20 Hz	0.11	mV/V
			0.1	V	0.1	V	@ 40 Hz	62	µV/V
			0.1	V	0.1	V	@ 1 kHz	61	µV/V
			0.1	V	0.1	V	@ 10 kHz	61	µV/V
			0.1	V	0.1	V	@ 20 kHz	62	µV/V
			0.1	V	0.1	V	@ 50 kHz	0.11	mV/V
			0.1	V	0.1	V	@ 100 kHz	0.20	mV/V
			0.1	V	0.1	V	@ 300 kHz	0.35	mV/V
			0.1	V	0.1	V	@ 500 kHz	0.50	mV/V
			0.1	V	0.1	V	@ 1 MHz	1.3	mV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt source Calibrator (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	0.19	V	0.19	V	@ 10 Hz	0.23	mV/V
			0.19	V	0.19	V	@ 20 Hz	98	µV/V
			0.19	V	0.19	V	@ 40 Hz	55	µV/V
			0.19	V	0.19	V	@ 1 kHz	54	µV/V
			0.19	V	0.19	V	@ 10 kHz	54	µV/V
			0.19	V	0.19	V	@ 20 kHz	55	µV/V
			0.19	V	0.19	V	@ 50 kHz	93	µV/V
			0.19	V	0.19	V	@ 100 kHz	0.19	mV/V
			0.19	V	0.19	V	@ 300 kHz	0.33	mV/V
			0.19	V	0.19	V	@ 500 kHz	0.47	mV/V
			0.19	V	0.19	V	@ 1 MHz	1.3	mV/V
			0.3	V	0.3	V	@ 10 Hz	0.22	mV/V
			0.3	V	0.3	V	@ 20 Hz	91	µV/V
			0.3	V	0.3	V	@ 40 Hz	45	µV/V
			0.3	V	0.3	V	@ 1 kHz	45	µV/V
			0.3	V	0.3	V	@ 10 kHz	45	µV/V
			0.3	V	0.3	V	@ 20 kHz	45	µV/V
			0.3	V	0.3	V	@ 50 kHz	67	µV/V
			0.3	V	0.3	V	@ 100 kHz	96	µV/V
			0.3	V	0.3	V	@ 300 kHz	0.25	mV/V
			0.3	V	0.3	V	@ 500 kHz	0.38	mV/V
			0.3	V	0.3	V	@ 1 MHz	1.3	mV/V
			1	V	1	V	@ 10 Hz	0.22	mV/V
			1	V	1	V	@ 20 Hz	77	µV/V
			1	V	1	V	@ 40 Hz	31	µV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt source Calibrator (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	1	V	1	V	@ 1 kHz	31	µV/V
			1	V	1	V	@ 10 kHz	31	µV/V
			1	V	1	V	@ 20 kHz	31	µV/V
			1	V	1	V	@ 50 kHz	56	µV/V
			1	V	1	V	@ 100 kHz	77	µV/V
			1	V	1	V	@ 300 kHz	0.22	mV/V
			1	V	1	V	@ 500 kHz	0.33	mV/V
			1	V	1	V	@ 1 MHz	1.3	mV/V
			1.9	V	1.9	V	@ 10 Hz	0.21	mV/V
			1.9	V	1.9	V	@ 20 Hz	73	µV/V
			1.9	V	1.9	V	@ 40 Hz	31	µV/V
			1.9	V	1.9	V	@ 1 kHz	30	µV/V
			1.9	V	1.9	V	@ 10 kHz	30	µV/V
			1.9	V	1.9	V	@ 20 kHz	30	µV/V
			1.9	V	1.9	V	@ 50 kHz	54	µV/V
			1.9	V	1.9	V	@ 100 kHz	77	µV/V
			1.9	V	1.9	V	@ 300 kHz	0.22	mV/V
			1.9	V	1.9	V	@ 500 kHz	0.33	mV/V
			1.9	V	1.9	V	@ 1 MHz	1.3	mV/V
			3	V	3	V	@ 10 Hz	0.21	mV/V
			3	V	3	V	@ 20 Hz	74	µV/V
			3	V	3	V	@ 40 Hz	31	µV/V
			3	V	3	V	@ 1 kHz	30	µV/V
			3	V	3	V	@ 10 kHz	30	µV/V
			3	V	3	V	@ 20 kHz	30	µV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt source Calibrator (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	3	V	3	V	@ 50 kHz	55	µV/V
			3	V	3	V	@ 100 kHz	89	µV/V
			3	V	3	V	@ 300 kHz	0.24	mV/V
			3	V	3	V	@ 500 kHz	0.48	mV/V
			3	V	3	V	@ 1 MHz	1.6	mV/V
			10	V	10	V	@ 10 Hz	0.21	mV/V
			10	V	10	V	@ 20 Hz	74	µV/V
			10	V	10	V	@ 40 Hz	33	µV/V
			10	V	10	V	@ 1 kHz	33	µV/V
			10	V	10	V	@ 10 kHz	33	µV/V
			10	V	10	V	@ 20 kHz	33	µV/V
			10	V	10	V	@ 50 kHz	55	µV/V
			10	V	10	V	@ 100 kHz	87	µV/V
			10	V	10	V	@ 300 kHz	0.24	mV/V
			10	V	10	V	@ 500 kHz	0.48	mV/V
			10	V	10	V	@ 1 MHz	1.6	mV/V
			19	V	19	V	@ 10 Hz	0.21	mV/V
			19	V	19	V	@ 20 Hz	74	µV/V
			19	V	19	V	@ 40 Hz	33	µV/V
			19	V	19	V	@ 1 kHz	33	µV/V
			19	V	19	V	@ 10 kHz	33	µV/V
			19	V	19	V	@ 20 kHz	33	µV/V
			19	V	19	V	@ 50 kHz	55	µV/V
			19	V	19	V	@ 100 kHz	87	µV/V
			19	V	19	V	@ 300 kHz	0.24	mV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt source Calibrator (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	19	V	19	V	@ 500 kHz	0.48	mV/V
			19	V	19	V	@ 1 MHz	1.6	mV/V
			30	V	30	V	@ 10 Hz	0.21	mV/V
			30	V	30	V	@ 20 Hz	76	µV/V
			30	V	30	V	@ 40 Hz	41	µV/V
			30	V	30	V	@ 1 kHz	41	µV/V
			30	V	30	V	@ 10 kHz	41	µV/V
			30	V	30	V	@ 20 kHz	41	µV/V
			30	V	30	V	@ 50 kHz	71	µV/V
			30	V	30	V	@ 100 kHz	0.12	mV/V
			100	V	100	V	@ 10 Hz	0.21	mV/V
			100	V	100	V	@ 20 Hz	76	µV/V
			100	V	100	V	@ 40 Hz	43	µV/V
			100	V	100	V	@ 1 kHz	41	µV/V
			100	V	100	V	@ 10 kHz	41	µV/V
			100	V	100	V	@ 20 kHz	41	µV/V
			100	V	100	V	@ 50 kHz	79	µV/V
			100	V	100	V	@ 100 kHz	0.12	mV/V
			190	V	190	V	@ 10 Hz	0.21	mV/V
			190	V	190	V	@ 20 Hz	76	µV/V
			190	V	190	V	@ 40 Hz	43	µV/V
			190	V	190	V	@ 1 kHz	41	µV/V
			190	V	190	V	@ 10 kHz	41	µV/V
			190	V	190	V	@ 20 kHz	41	µV/V
			190	V	190	V	@ 50 kHz	79	µV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt source Calibrator (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	190	V	190	V	@ 100 kHz	0.12	mV/V
			300	V	300	V	@ 40 Hz	52	µV/V
			300	V	300	V	@ 1 kHz	54	µV/V
			300	V	300	V	@ 10 kHz	72	µV/V
			300	V	300	V	@ 20 kHz	71	µV/V
			300	V	300	V	@ 30 kHz	0.16	mV/V
			700	V	700	V	@ 40 Hz	52	µV/V
			700	V	700	V	@ 1 kHz	52	µV/V
			700	V	700	V	@ 10 kHz	52	µV/V
			700	V	700	V	@ 20 kHz	60	µV/V
			700	V	700	V	@ 30 kHz	0.16	mV/V
			1000	V	1000	V	@ 40 Hz	54	µV/V
			1000	V	1000	V	@ 1 kHz	53	µV/V
			1000	V	1000	V	@ 20 kHz	53	µV/V
			1000	V	1000	V	@ 20 kHz	55	µV/V
			1000	V	1000	V	@ 30 kHz	0.16	mV/V
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt meter (On-site Calibration Included)	Calibrator /Fluke/5720A/ 5725A AC Measurement Stanard /Fluke/5790A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	1	mV	20	mV	@ 40 Hz to 100 Hz	1.8	mV/V
			1	mV	20	mV	@ 100 Hz to 2 kHz	1.9	mV/V
			1	mV	20	mV	@ 2 kHz to 10 kHz	1.9	mV/V
			1	mV	20	mV	@ 10 kHz to 30 kHz	2.9	mV/V
			1	mV	20	mV	@ 40 Hz to 100 Hz	3.8	mV/V
			>20	mV	200	mV	@ 40 Hz to 100 Hz	0.13	mV/V
			>20	mV	200	mV	@ 100Hz to 2 kHz	0.13	mV/V
			>20	mV	200	mV	@ 2 kHz to 10 kHz	0.13	mV/V
			>20	mV	200	mV	@ 10 kHz to 30 kHz	0.21	mV/V
			>20	mV	200	mV	@ 30 kHz to 100 kHz	0.38	mV/V
			>0.2	V	2	V	@ 40 Hz to 100 Hz	47	µV/V
			>0.2	V	2	V	@ 100 Hz to 2 kHz	45	µV/V
			>0.2	V	2	V	@ 2 kHz to 10 kHz	45	µV/V
			>0.2	V	2	V	@ 10 kHz to 30 kHz	67	µV/V
			>0.2	V	2	V	@ 30 kHz to 100 kHz	96	µV/V
			>0.2	V	2	V	@ 100 kHz to 300 kHz	0.25	mV/V
			>0.2	V	2	V	@ 300 kHz to 1 MHz	1.4	mV/V
			>2	V	20	V	@ 40 Hz to 100 Hz	36	µV/V
			>2	V	20	V	@ 100Hz to 2 kHz	33	µV/V
			>2	V	20	V	@ 2 kHz to 10 kHz	33	µV/V
			>2	V	20	V	@ 10 kHz to 30 kHz	55	µV/V
			>2	V	20	V	@ 30 kHz to 100 kHz	90	µV/V
			>2	V	20	V	@ 100 kHz to 300 kHz	0.25	mV/V
			>2	V	20	V	@ 300 kHz to 1 MHz	1.6	mV/V
			>20	V	200	V	@ 40 Hz to 100 Hz	44	µV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt meter (On-site Calibration Included)	Calibrator /Fluke/5720A/ 5725A AC Measurement Stanard /Fluke/5790A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	>20	V	200	V	@ 100 Hz to 2 kHz	43	µV/V
			>20	V	200	V	@ 2 kHz to 10 kHz	42	µV/V
			>20	V	200	V	@ 10 kHz to 30 kHz	85	µV/V
			>20	V	200	V	@ 30 kHz to 100 kHz	0.12	mV/V
			>200	V	1000	V	@ 40 Hz to 1 kHz	65	µV/V
			>200	V	1000	V	@ 1 kHz to 10 kHz	80	µV/V
			>200	V	1000	V	@ 10 kHz to 30 kHz	0.22	mV/V
			0.001	V	0.001	V	@ 40 Hz	1.8	mV/V
			0.001	V	0.001	V	@ 100 Hz	1.8	mV/V
			0.001	V	0.001	V	@ 1 kHz	1.9	mV/V
			0.001	V	0.001	V	@ 2 kHz	1.9	mV/V
			0.001	V	0.001	V	@ 10 kHz	1.8	mV/V
			0.001	V	0.001	V	@ 30 kHz	2.9	mV/V
			0.001	V	0.001	V	@ 100 kHz	3.8	mV/V
			0.01	V	0.01	V	@ 40 Hz	0.25	mV/V
			0.01	V	0.01	V	@ 100 Hz	0.25	mV/V
			0.01	V	0.01	V	@ 1 kHz	0.25	mV/V
			0.01	V	0.01	V	@ 2 kHz	0.26	mV/V
			0.01	V	0.01	V	@ 10 kHz	0.25	mV/V
			0.01	V	0.01	V	@ 30 kHz	0.42	mV/V
			0.01	V	0.01	V	@ 100 kHz	0.57	mV/V
			0.019	V	0.019	V	@ 40 Hz	0.19	mV/V
			0.019	V	0.019	V	@ 100 Hz	0.19	mV/V
			0.019	V	0.019	V	@ 1 kHz	0.19	mV/V
			0.019	V	0.019	V	@ 2 kHz	0.19	mV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt meter (On-site Calibration Included)	Calibrator /Fluke/5720A/ 5725A AC Measurement Stanard /Fluke/5790A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	0.019	V	0.019	V	@ 10 kHz	0.19	mV/V
			0.019	V	0.019	V	@ 30 kHz	0.33	mV/V
			0.019	V	0.019	V	@ 100 kHz	0.45	mV/V
			0.03	V	0.03	V	@ 40 Hz	0.19	mV/V
			0.03	V	0.03	V	@ 100 Hz	0.19	mV/V
			0.03	V	0.03	V	@ 1 kHz	0.19	mV/V
			0.03	V	0.03	V	@ 2 kHz	0.19	mV/V
			0.03	V	0.03	V	@ 10 kHz	0.19	mV/V
			0.03	V	0.03	V	@ 30 kHz	0.33	mV/V
			0.03	V	0.03	V	@ 100 kHz	0.45	mV/V
			0.1	V	0.1	V	@ 40 Hz	62	µV/V
			0.1	V	0.1	V	@ 100 Hz	62	µV/V
			0.1	V	0.1	V	@ 1 kHz	61	µV/V
			0.1	V	0.1	V	@ 2 kHz	62	µV/V
			0.1	V	0.1	V	@ 10 kHz	62	µV/V
			0.1	V	0.1	V	@ 30 kHz	0.11	mV/V
			0.1	V	0.1	V	@ 100 kHz	0.20	mV/V
			0.19	V	0.19	V	@ 40 Hz	55	µV/V
			0.19	V	0.19	V	@ 100 Hz	55	µV/V
			0.19	V	0.19	V	@ 1 kHz	55	µV/V
			0.19	V	0.19	V	@ 2 kHz	54	µV/V
			0.19	V	0.19	V	@ 10 kHz	54	µV/V
			0.19	V	0.19	V	@ 30 kHz	94	µV/V
			0.19	V	0.19	V	@ 100 kHz	1.9	mV/V
			0.3	V	0.3	V	@ 40 Hz	47	µV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt meter (On-site Calibration Included)	Calibrator /Fluke/5720A/ 5725A AC Measurement Stanard /Fluke/5790A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	0.3	V	0.3	V	@ 100 Hz	45	µV/V
			0.3	V	0.3	V	@ 1 kHz	45	µV/V
			0.3	V	0.3	V	@ 2 kHz	45	µV/V
			0.3	V	0.3	V	@ 10 kHz	45	µV/V
			0.3	V	0.3	V	@ 30 kHz	67	µV/V
			0.3	V	0.3	V	@ 100 kHz	96	µV/V
			0.3	V	0.3	V	@ 300 kHz	0.25	mV/V
			0.3	V	0.3	V	@ 1 MHz	1.3	mV/V
			1	V	1	V	@ 40 Hz	31	µV/V
			1	V	1	V	@ 100 Hz	31	µV/V
			1	V	1	V	@ 1 kHz	31	µV/V
			1	V	1	V	@ 2 kHz	31	µV/V
			1	V	1	V	@ 10 kHz	32	µV/V
			1	V	1	V	@ 30 kHz	55	µV/V
			1	V	1	V	@ 100 kHz	77	µV/V
			1	V	1	V	@ 300 kHz	0.22	mV/V
			1	V	1	V	@ 1 MHz	1.3	mV/V
			1.9	V	1.9	V	@ 40 Hz	31	µV/V
			1.9	V	1.9	V	@ 100 Hz	31	µV/V
			1.9	V	1.9	V	@ 1 kHz	30	µV/V
			1.9	V	1.9	V	@ 2 kHz	30	µV/V
			1.9	V	1.9	V	@ 10 kHz	30	µV/V
			1.9	V	1.9	V	@ 30 kHz	54	µV/V
			1.9	V	1.9	V	@ 100 kHz	77	µV/V
			1.9	V	1.9	V	@ 300 kHz	0.22	mV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt meter (On-site Calibration Included)	Calibrator /Fluke/5720A/ 5725A AC Measurement Stanard /Fluke/5790A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	1.9	V	1.9	V	@ 1 MHz	1.3	mV/V
			3	V	3	V	@ 40 Hz	36	µV/V
			3	V	3	V	@ 100 Hz	31	µV/V
			3	V	3	V	@ 1 kHz	31	µV/V
			3	V	3	V	@ 2 kHz	30	µV/V
			3	V	3	V	@ 10 kHz	31	µV/V
			3	V	3	V	@ 30 kHz	55	µV/V
			3	V	3	V	@ 100 kHz	89	µV/V
			3	V	3	V	@ 300 kHz	0.24	mV/V
			3	V	3	V	@ 1 MHz	1.6	mV/V
			10	V	10	V	@ 40 Hz	33	µV/V
			10	V	10	V	@ 100 Hz	33	µV/V
			10	V	10	V	@ 1 kHz	33	µV/V
			10	V	10	V	@ 2 kHz	33	µV/V
			10	V	10	V	@ 10 kHz	33	µV/V
			10	V	10	V	@ 30 kHz	55	µV/V
			10	V	10	V	@ 100 kHz	87	µV/V
			10	V	10	V	@ 300 kHz	0.24	mV/V
			10	V	10	V	@ 1 MHz	1.6	mV/V
			19	V	19	V	@ 40 Hz	33	µV/V
			19	V	19	V	@ 100 Hz	33	µV/V
			19	V	19	V	@ 1 kHz	33	µV/V
			19	V	19	V	@ 2 kHz	33	µV/V
			19	V	19	V	@ 10 kHz	33	µV/V
			19	V	19	V	@ 30 kHz	55	µV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt meter (On-site Calibration Included)	Calibrator /Fluke/5720A/ 5725A AC Measurement Stanard /Fluke/5790A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	19	V	19	V	@ 100 kHz	87	µV/V
			19	V	19	V	@ 300 kHz	0.24	mV/V
			19	V	19	V	@ 1 MHz	1.6	mV/V
			30	V	30	V	@ 40 Hz	44	µV/V
			30	V	30	V	@ 100 Hz	42	µV/V
			30	V	30	V	@ 1 kHz	41	µV/V
			30	V	30	V	@ 2 kHz	42	µV/V
			30	V	30	V	@ 10 kHz	42	µV/V
			30	V	30	V	@ 30 kHz	71	µV/V
			30	V	30	V	@ 100 kHz	0.12	mV/V
			100	V	100	V	@ 40 Hz	43	µV/V
			100	V	100	V	@ 100Hz	43	µV/V
			100	V	100	V	@ 1 kHz	41	µV/V
			100	V	100	V	@ 2 kHz	41	µV/V
			100	V	100	V	@ 10 kHz	41	µV/V
			100	V	100	V	@ 30 kHz	79	µV/V
			100	V	100	V	@ 100 kHz	0.12	mV/V
			190	V	190	V	@ 40 Hz	43	µV/V
			190	V	190	V	@ 100 Hz	43	µV/V
			190	V	190	V	@ 1 kHz	41	µV/V
			190	V	190	V	@ 2 kHz	41	µV/V
			190	V	190	V	@ 10 kHz	41	µV/V
			190	V	190	V	@ 30 kHz	79	µV/V
			190	V	190	V	@ 100 kHz	0.12	mV/V
			300	V	300	V	@ 40 Hz	52	µV/V

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1011 AC volt meter (On-site Calibration Included)	Calibrator /Fluke/5720A/ 5725A AC Measurement Stanard /Fluke/5790A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	300	V	300	V	@ 1 kHz	51	µV/V
			300	V	300	V	@ 10 kHz	51	µV/V
			300	V	300	V	@ 30 kHz	0.16	mV/V
			700	V	700	V	@ 40 Hz	54	µV/V
			700	V	700	V	@ 1 kHz	52	µV/V
			700	V	700	V	@ 10 kHz	57	µV/V
			700	V	700	V	@ 30 kHz	0.18	mV/V
			1000	V	1000	V	@ 40 Hz	65	µV/V
			1000	V	1000	V	@ 1 kHz	60	µV/V
			1000	V	1000	V	@ 10 kHz	80	µV/V
			1000	V	1000	V	@ 30 kHz	0.22	mV/V
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									
KF1012 AC Current Source AC Current Meter (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A Fluke current shunt/Fluke /A40B-1mA /A40B-10mA /A40B-20mA /A40B-200mA /A40B-2A /A40B-20A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	30	µA	30	µA	@ 40 Hz	0.22	mA/A
			30	µA	30	µA	@ 1 kHz	0.22	mA/A
			100	µA	100	µA	@ 40 Hz	0.17	mA/A
			100	µA	100	µA	@ 1 kHz	0.17	mA/A
			190	µA	190	µA	@ 40 Hz	0.17	mA/A
			190	µA	190	µA	@ 1 kHz	0.16	mA/A
			0.3	mA	0.3	mA	@ 40 Hz	0.16	mA/A
			0.3	mA	0.3	mA	@ 1 kHz	0.15	mA/A
			1	mA	1	mA	@ 40 Hz	0.15	mA/A
			1	mA	1	mA	@ 1 kHz	0.15	mA/A
			1.9	mA	1.9	mA	@ 40 Hz	0.12	mA/A
			1.9	mA	1.9	mA	@ 1 kHz	0.11	mA/A

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF1012 AC Current Source AC Current Meter (On-site Calibration Included)	AC Measurement Standard /Fluke/5790A Fluke current shunt/Fluke /A40B-1mA /A40B-10mA /A40B-20mA /A40B-200mA /A40B-2A /A40B-20A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	3	mA	3	mA	@ 40 Hz	98	µA/A
			3	mA	3	mA	@ 1 kHz	97	µA/A
			10	mA	10	mA	@ 40 Hz	88	µA/A
			10	mA	10	mA	@ 1 kHz	87	µA/A
			19	mA	19	mA	@ 40 Hz	88	µA/A
			19	mA	19	mA	@ 1 kHz	87	µA/A
			30	mA	30	mA	@ 40 Hz	0.13	mA/A
			30	mA	30	mA	@ 1 kHz	0.12	mA/A
			100	mA	100	mA	@ 40 Hz	88	µA/A
			100	mA	100	mA	@ 1 kHz	87	µA/A
			190	mA	190	mA	@ 40 Hz	88	µA/A
			190	mA	190	mA	@ 1 kHz	87	µA/A
			0.3	A	0.3	A	@ 40 Hz	0.12	mA/A
			0.3	A	0.3	A	@ 1 kHz	0.12	mA/A
			1	A	1	A	@ 40 Hz	91	µA/A
			1	A	1	A	@ 1 kHz	90	µA/A
			1.9	A	1.9	A	@ 40 Hz	91	µA/A
			1.9	A	1.9	A	@ 1 kHz	90	µA/A
			3	A	3	A	@ 40 Hz	0.15	mA/A
			3	A	3	A	@ 1 kHz	0.14	mA/A
			5	A	5	A	@ 40 Hz	0.14	mA/A
			5	A	5	A	@ 1 kHz	0.14	mA/A
			10	A	10	A	@ 40 Hz	0.12	mA/A
			10	A	10	A	@ 1 kHz	0.12	mA/A
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF3001 Ohmmeter (On-site Calibration Included)	Electrometer Calibration Standard /Keithley/5156 DC Current Meter/Electrometer/High Resistance Meter/Keithely /6517A	Low current & high resistance calibration procedure (Document No.: TTL-0023)	100	MΩ	100	MΩ		24	kΩ
			1	GΩ	1	GΩ		0.58	MΩ
			10	GΩ	10	GΩ		5.9	MΩ
			100	GΩ	100	GΩ		94	MΩ
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF3001 resistor (On-site Calibration Included)	Multimeter /Fluke/8508A Calibrator /Fluke/5720A	Calibrator MET/CAL calibration procedure (Document No.: TTL-0017)	1	Ω	1	Ω		16	μΩ/Ω
			1.9	Ω	1.9	Ω		21	μΩ/Ω
			10	Ω	10	Ω		9.4	μΩ/Ω
			19	Ω	19	Ω		17	μΩ/Ω
			100	Ω	100	Ω		7.7	μΩ/Ω
			190	Ω	190	Ω		8.9	μΩ/Ω
			1	kΩ	1	kΩ		8.2	μΩ/Ω
			1.9	kΩ	1.9	kΩ		8.5	μΩ/Ω
			10	kΩ	10	kΩ		8.2	μΩ/Ω
			19	kΩ	19	kΩ		8.5	μΩ/Ω
			100	kΩ	100	kΩ		8.3	μΩ/Ω
			190	kΩ	190	kΩ		9.5	μΩ/Ω
			1	MΩ	1	MΩ		11	μΩ/Ω
			1.9	MΩ	1.9	MΩ		13	μΩ/Ω
			10	MΩ	10	MΩ		27	μΩ/Ω
			19	MΩ	19	MΩ		26	μΩ/Ω
			100	MΩ	100	MΩ		0.17	mΩ/Ω
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF3001 Ohmmeter (on-site Calibration Included)	Calibrator /Fluke5720A/ 5725A	Calibrator METCAL calibration procedure (Document No.: TTL-0017)	1	Ω	1	Ω		16	μΩ/Ω
			1.9	Ω	1.9	Ω		21	μΩ/Ω
			10	Ω	10	Ω		9.4	μΩ/Ω
			19	Ω	19	Ω		17	μΩ/Ω
			100	Ω	100	Ω		7.8	μΩ/Ω
			190	Ω	190	Ω		8.9	μΩ/Ω
			1	kΩ	1	kΩ		8.2	μΩ/Ω
			1.9	kΩ	1.9	kΩ		8.5	μΩ/Ω
			10	kΩ	10	kΩ		8.2	μΩ/Ω
			19	kΩ	19	kΩ		8.5	μΩ/Ω
			100	kΩ	100	kΩ		8.3	μΩ/Ω
			190	kΩ	190	kΩ		9.5	μΩ/Ω
			1	MΩ	1	MΩ		11	μΩ/Ω
			1.9	MΩ	1.9	MΩ		13	μΩ/Ω
			10	MΩ	10	MΩ		27	μΩ/Ω
			19	MΩ	19	MΩ		26	μΩ/Ω
			100	MΩ	100	MΩ		0.17	mΩ/Ω
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF4001 Digital oscilloscope (Digital Oscilloscope Bandwidth from DC to 3.2 GHz) (On-site Calibration Included)	Oscilloscope calibrator /Fluke 9500B Active head /Fluke 9530	Digital oscilloscope calibration procedure (Document No.: TTL-0016)	0	V	0	V	DC Volts- Generate 1 MΩ load, 50 Ω load	15	μV
			0	mV	100	mV	DC Volts- Generate 1 MΩ load, 50 Ω load	0.05 % × Reading+26	μV
			100	mV	1.0	V	DC Volts- Generate 1 MΩ load, 50 Ω load	0.022 % × Reading+65	μV
			1.0	V	5.6	V	DC Volts- Generate 1 MΩ load, 50 Ω load	0.026 % × Reading+50	μV
			5.6	V	222.4	V	DC Volts- Generate 1 MΩ load	0.03	%
			4.4	mV	5.6	V	Sinewave Flatness–Generate, 50 Ω load, 50 kHz to 10 MHz Reference, V (p-p) , @ 1 Hz to 100 MHz	0.22	dB
			4.4	mV	5.6	V	Sinewave Flatness–Generate, 50 Ω load, 50 kHz to 10 MHz Reference, V (p-p) , @ (100 to 550) MHz	0.27	dB
			4.4	mV	3.4	V	Sinewave Flatness–Generate, 50 Ω load, 50 kHz to 10 MHz Reference, V (p-p) , @ 550 MHz to 1.1 GHz	0.37	dB
			4.4	mV	3.4	V	Sinewave Flatness–Generate, 50 Ω load, 50 kHz to 10 MHz Reference, V (p-p) , @ (1.1 to 2.5) GHz	0.47	dB

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF4001 Digital oscilloscope (Digital Oscilloscope Bandwidth from DC to 3.2 GHz) (On-site Calibration Included)	Oscilloscope calibrator /Fluke 9500B Active head /Fluke 9530	Digital oscilloscope calibration procedure (Document No.: TTL-0016)	4.4	mV	2.2	V	Sinewave Flatness–Generate, 50 Ω load, 50 kHz to 10 MHz Reference, V (p-p) , @ (2.5 to 3.2) GHz	0.48	dB
			4.4	mV	5.6	V	AC Volts-Generate, 50 Ω, sinewave, V (p-p) , @ 1 Hz to 550 MHz	0.033	V/V
			4.4	mV	3.4	V	AC Volts-Generate, 50 Ω, sinewave, V (p-p) , @ 550 MHz to 2.5 GHz	0.063	V/V
			4.4	mV	2.2	V	AC Volts-Generate, 50 Ω, sinewave, V (p-p) , @ (2.5 to 3.2) GHz	0.11	V/V
			50	Ω	50	Ω	Resistance Measure	0.066	Ω
			1	MΩ	1	MΩ	Resistance Measure	1.2	kΩ
			12	kHz	3.2	GHz	Frequency and Period	2.7×10^{-7}	Hz/Hz
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF4099 Arbitrary Function Generator (On-site Calibration Included)	Frequency counter /HP/Agilent 53132A Digital multimeter /HP/Agilent 3458A Power meter & Power sensor /Rohde&Schwarz NRVS & NRV-Z5/ NPR & NRP-Z91 Digital phosphor oscilloscope /Tektronix DPO7254	Arbitrary Function Generator calibration procedure (Document No.: TTL-0040)	0.02	V	0.2	V	Voltage (Amplitude) /1 kHz	0.11	%
			0.2	V	2.5	V	Voltage (Amplitude) /1 kHz	0.30	%
			2.5	V	10	V	Voltage (Amplitude) /1 kHz	0.30	%
			0.001	V	0.1	V	Voltage (DC Offset)	0.19	%
			0.1	V	1	V	Voltage (DC Offset)	0.14	%
			1	V	10	V	Voltage (DC Offset)	0.12	%
			1	Hz	240	MHz	Frequency	2.5×10^{-8}	
			-20	dBm	10	dBm	Sine Flatness/ (0.1~240) MHz, Reference 100 kHz	0.2	dB
			10	dBm	20	dBm	Sine Flatness/ (0.1~100) MHz, Reference 100 kHz	0.2	dB
			10	dBm	20	dBm	Sine Flatness/ (100~240) MHz, Reference 100 kHz	0.4	dB
			2.5	ns	2.5	ns	Rise Time	0.11	ns
			5	ns	5	ns	Rise Time	0.28	ns
			13	ns	13	ns	Rise Time	0.53	ns
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KF4099 Voltage probe Current probe (On-site Calibration Included)	Oscilloscope calibrator/Active head /Fluke 9500B/9530 Probe Calibration System /Fluke 9100 Digital sampling oscilloscope/TDR sampling head /Tektronix TDS8200/80E04 Multifunction calibrator /Fluke 5700A Digital phosphor oscilloscope /Tektronix DPO7254	Voltage probe calibration procedure (Document No.: TTL-0019) Curent probe calibration procedure (Document No.: TTL-0021)	1	V	1000	V	DC attenuator accuracy (Voltage probe)	0.5	%
			5	mA	500	A	DC gain accuracy (Current probe)	0.5	%
			17.5	ps	7	ns	Rise time (Voltage probe)	1.5	%
			175	ps	7	μs	Rise time (Current probe)	1.0	%
			2.1	V	3	V	Frequency response (Voltage probe)	2.5	%
			2.1	V	3	V	Frequency response (Current probe)	2.1	%
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									

Time And Frequency

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand /model	document name /no.	minimum value	units	maximum value	units	explanation	value	units
KJ0200 frequency standard frequency counter (On-site Calibration Included)	Rubidium frequency standard /Fluke/910R Universal counter /Agilent/HP53132A	frequency standard calibration procedure (Document No.: TTL-0013) frequency counter calibration procedure (Document No.: TTL-0014)	10	MHz	10	MHz		5.6×10^{-8}	
			5	MHz	5	MHz		5.6×10^{-8}	
Approval Signatory: SHAO, Feng-Chuan; HSIEH, Yu-Hsuan									

Note: Smallest uncertainty represents an expanded uncertainty using a coverage factor approximately 95 % level of confidence.
(Null Below)