



Certificate No. : L0133-190103

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

Certificate of Accreditation

This is to certify that

Tektronix Taiwan, Ltd.
Calibration Laboratory

3F, No. 89, Sec. 2, Ti Ding Avenue, Taipei 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 : January 21, 2017 to January 20, 2020
Accredited Scope : Calibration Field, see described in the Appendix

Chung-Lin Wang
President, Taiwan Accreditation Foundation
Date : January 03, 2019



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Accreditation Number : 0133

Laboratory Head : HSU, Ming-Luh

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 DC volt meter Calibrator (On-site Calibration Included)	/Fluke /5720A /5725A /Fluke /8508A	Calibrator METCAL calibration procedure (Document No.: TTL-0017-00)	0.001	V	0.1	V		94	uV/V
			0.1	V	10	V		12	uV/V
			10	V	1000	V		12	uV/V
KF1002 DC current meter/ Electrometer (On-site Calibration Included)	Calibrator Fluke/ 5720A Electrometer Calibration Standard Keithly/ 5156 DC current meter/ Electrometer /High Resistance Meter Keithly/ 6517A	Low current & high resistance calibration procedure (Document No.: TTL-0023-01)	0.2	μA	2	μA		$2.4 \times 10^{-4} \times I$, Current I in μA	μA
			20	nA	200	nA		$2.4 \times 10^{-4} \times I$, Current I in nA	nA
			2	nA	20	nA		$2.4 \times 10^{-4} \times I + 2 \times 10^{-6}$, Current I in nA	nA
			0.2	nA	2	nA		$5.8 \times 10^{-4} \times I + 9 \times 10^{-7}$, Current I in nA	nA



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	brand / model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KF1002 DC current meter/ Electrometer (On-site Calibration Included)	Calibrator Fluke/ 5720A	Low current & high resistance calibration procedure (Document No.: TTL-0023-01)	20	pA	200	pA		$5.8 \times 10^{-4} \times I + 5 \times 10^{-5}$, Current I in pA	pA
	Electrometer Calibration Standard Keithley/ 5156		1	pA	20	pA		$9.3 \times 10^{-4} \times I + 8 \times 10^{-5}$, Current I in pA	pA
KF1002 DC ampere source DC ampere meter Calibrator (On-site Calibration Included)	/Fluke /5720A	Calibrator METCAL calibration procedure (Document No.: TTL-0017-00)	0.001	mA	1	mA		1.0	mA/A
	/Fluke /5725A		1	mA	100	mA		1.1	mA/A
	/Fluke /8508A		100	mA	10	A		2.2	mA/A
KF1011 AC volt source AC volt meter Calibrator (On-site Calibration Included)	/Fluke /5720A	Calibrator METCAL calibration procedure (Document No.: TTL-0017-00)	1	mV	20	mV	@ 40Hz to 20kHz	1.9	mV/V
	/5725A		20	mV	200	mV	@ 40Hz to 20kHz	2.4	mV/V
	/Fluke /5790A		0.2	V	2	V	@ 40Hz to 20kHz	1.8	mV/V
			2	V	20	V	@ 40Hz to 20kHz	1.8	mV/V
			20	V	200	V	@ 40Hz to 20kHz	1.9	mV/V
			200	V	1000	V	@ 40Hz to 20kHz	8.8	mV/V



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KF1012 AC ampere source AC ampere meter Calibrator (On-site Calibration Included)	/Fluke /5720A /5725A /Fluke /5790A	Calibrator METCAL calibration procedure (Document No.: TTL-0017-00)	10	μA	220	μA	@ 40Hz to 10kHz	3.3	mA/A
			220	μA	2.2	mA	@ 40Hz to 10kHz	0.84	mA/A
			2.2	mA	22	mA	@ 40Hz to 10kHz	1.4	mA/A
			22	mA	220	mA	@ 40Hz to 10kHz	1.3	mA/A
			220	mA	2.2	A	@ 40Hz to 10kHz	0.96	mA/A
			2.2	A	11	A	@ 40Hz to 10kHz	1.7	mA/A
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-0023-01)	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
KF3001 resistor ohmmeter Calibrator (On-site Calibration Included)	/Fluke /5720A /5725A /Fluke /8508A	Calibrator METCAL calibration procedure (Document No.: TTL-0017-00)	1	Ω	1	Ω		0.052	mΩ/Ω
			1.9	Ω	1.9	Ω		0.051	mΩ/Ω
			10	Ω	10	Ω		0.030	mΩ/Ω
			19	Ω	19	Ω		0.029	mΩ/Ω
			100	Ω	100	Ω		0.024	mΩ/Ω
			190	Ω	190	Ω		0.023	mΩ/Ω
			1	kΩ	1	kΩ		0.024	mΩ/Ω
			1.9	kΩ	1.9	kΩ		0.023	mΩ/Ω
			10	kΩ	10	kΩ		0.023	mΩ/Ω
			19	kΩ	19	kΩ		0.023	mΩ/Ω
			100	kΩ	100	kΩ		0.024	mΩ/Ω
			190	kΩ	190	kΩ		0.024	mΩ/Ω
			1	MΩ	1	MΩ		0.027	mΩ/Ω
1.9	MΩ	1.9	MΩ		0.029	mΩ/Ω			



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	brand / model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KF3001 resistor ohmmeter Calibrator (On-site Calibration Included)	/Fluke /5720A /5725A /Fluke /8508A	Calibrator METCAL calibration procedure (Document No.: TTL-0017-00)	10	MΩ	10	MΩ		0.070	mΩ/Ω
			19	MΩ	19	MΩ		0.062	mΩ/Ω
			100	MΩ	100	MΩ		0.44	mΩ/Ω
KF4001 Digital oscilloscope (Digital Oscilloscope Bandwidth from DC to 3.2 GHz) (On-site Calibration Included)	Fluke 9500B Fluke 9530	Digital oscilloscope calibration procedure (Document No.: TTL-0016-06)	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 % + 26	μV
			100	mV	1.0	V	DC Volts-Generate 1 MΩ load, 50 Ω load	0.022 % + 65	μV
			1.0	V	5.6	V	DC Volts-Generate 1 MΩ load, 50 Ω load	0.026 % + 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



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	brand / model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KF4001 Digital oscilloscope (Digital Oscilloscope Bandwidth from DC to 3.2 GHz) (On-site Calibration Included)	Fluke 9500B Fluke 9530	Digital oscilloscope calibration procedure (Document No.: TTL-0016-06)	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
			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



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	brand / model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KF4001 Digital oscilloscope (Digital Oscilloscope Bandwidth from DC to 3.2 GHz) (On-site Calibration Included)	Fluke 9500B Fluke 9530	Digital oscilloscope calibration procedure (Document No.: TTL-0016-06)	4.4	mV	5.6	V	AC Volts-Generate, 50 Ω, sinewave, V(p-p), @ 1 Hz to 50 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
			40	Ω	90	Ω	Resistance Measure	0.25 % - 0.059	Ω
			1	MΩ	1	MΩ	Resistance Measure	0.12	%
			12	kHz	3.2	GHz	Frequency and Period	2.7 E-07	Hz/Hz
KF4099 Voltage probe Current probe (On-site Calibration Included)	/Oscilloscope calibrator /Active head /Fluke 9500B /9530 /Digital sampling oscilloscope /TDR sampling head	TTL-0019-00 Voltage probe calibration procedure TTL-0021-00 Curent probe calibration procedure	100	mV	1000	V	DC attenuator accuracy (Voltage probe)	0.5	%
				mA	500	A	DC gain accuracy (Current probe)	0.5	%
			17.5	ps	7	ns	Rise time (Voltage probe)	1.5	%



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KF4099 Voltage probe Current probe (On-site Calibration Included)	/Tektronix TDS8200 /80E04 /Multifunction calibrator /Fluke 5700A Digital phosphor oscilloscope /Tektronix DPO7254	TTL-0019-00 Voltage probe calibration procedure TTL-0021-00 Curent probe calibration procedure	175	ps	17.5	ns	Rise time (Current probe)	1.0	%
			4.2	div	6.0	div	Frequency response (Voltage probe)	2.5	%
			4.2	div	6.0	div	Frequency response (Current probe)	2.1	%

Time And Frequency

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
	brand / model	document name /no.	mini mum value	units	maxi mum value	units	explanation	value	units
KJ0200 frequency standard frequency counter (On-site Calibration Included)	/Fluke /910R /Agilent /HP53132A	frequency standard calibration procedure frequency counter calibration procedure (Document No.: TTL-0013-07, TTL-0014-06)	10	MHz	10	MHz		3.2 E-09	

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



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Approval Signatory

Approval Signatory	Scope
SHAO, Feng-Chuan	KF1002, KF3001
HSU, Ming-Luh	KF1001, KF1002, KF1011, KF1012, KF3001, KF4001, KF4099, KJ0200
CHEN, Vincent	KF1002, KF3001

(Null Below)