



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

Certificate of Accreditation

(Certificate No : L1721-241112)

This is to certify that

I Pao Electronics Co., Ltd.
Calibration Center(Electric/Time and Frequency Laboratory)
No. 2, Ln. 159, Jinxi Rd., Yangmei Dist., Taoyuan City 326, Taiwan

is accredited in respect of laboratory

Accreditation Criteria : ISO/IEC 17025:2017 ; CNS 17025:2018

Accreditation Number : 1721

Originally Accredited : November 16, 2006

Effective Period : November 16, 2024 to November 15, 2027

Accredited Scope : Calibration Field, see described in the Appendix



Scan to verify

Yi-Ling Chen

Yi-Ling Chen
President, Taiwan Accreditation Foundation
November 12, 2024

Accreditation Number : 1721

Laboratory Head : CHEN, Cain-Yi

Electricity

calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KF1001 DC Voltage meter DCV source	FLUKE 5700A/5725A FLUKE 8508A	In-house Method: DC Voltage Calibration Procedure (Document No.: ECP-024)	10	mV	100	mV	DC Voltage source	84	µV/V
			> 100	mV	1000	V	DC Voltage source	9.7	µV/V
			10	mV	10	mV	DC Voltage source	84	µV/V
			100	mV	100	mV	DC Voltage source	9.5	µV/V
			1	V	1	V	DC Voltage source	3.8	µV/V
			10	V	10	V	DC Voltage source	3.8	µV/V
			100	V	100	V	DC Voltage source	5.3	µV/V
			1000	V	1000	V	DC Voltage source	7.9	µV/V
			10	mV	100	mV	DC Voltage meter	0.11	mV/V
			>100	mV	1000	V	DC Voltage meter	14	µV/V
			10	mV	10	mV	DC Voltage meter	0.11	mV/V
			100	mV	100	mV	DC Voltage meter	11	µV/V
			1	V	1	V	DC Voltage meter	9.4	µV/V
			10	V	10	V	DC Voltage meter	6	µV/V
			100	V	100	V	DC Voltage meter	11	µV/V
			1000	V	1000	V	DC Voltage meter	14	µV/V

Approval Signatory: LIN, I-Hsien; CHEN, Cain-Yi; WEI, Wen-Chieh

KF1002 DC ampere meter DCA source	LUKE 5700A/5725A FLUKE 8508A	In house Method: DC Current Calibration Procedure (Document No.: ECP-025)	10	µA	200	µA	DCA source	0.13	mA/A
			> 0.2	mA	2	mA	DCA source	56	µA/A
			> 2	mA	20	mA	DCA source	62	µA/A
			> 20	mA	200	mA	DCA source	0.11	mA/A
			> 0.2	A	2	A	DCA source	0.17	mA/A



calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
			minimum value	units	maximum value	units		explanation	value
KF1002 DC ampere meter DCA source	LUKE 5700A/5725A FLUKE 8508A	In house Method: DC Current Calibration Procedure (Document No.: ECP-025)	> 2	A	19	A	DCA source	0.35	mA/A
			10	µA	10	µA	DCA source	0.11	mA/A
			100	µA	100	µA	DCA source	26	µA/A
			1	mA	1	mA	DCA source	26	µA/A
			10	mA	10	mA	DCA source	26	µA/A
			100	mA	100	mA	DCA source	35	µA/A
			1	A	1	A	DCA source	0.12	mA/A
			5	A	5	A	DCA source	0.27	mA/A
			10	A	10	A	DCA source	0.16	mA/A
			19	A	19	A	DCA source	0.24	mA/A
			10	µA	200	µA	DC ampere meter	0.18	mA/A
			>0.2	mA	2	mA	DC ampere meter	98	µA/A
			>2	mA	20	mA	DC ampere meter	0.11	mA/A
			>20	mA	200	mA	DC ampere meter	0.14	mA/A
			>0.2	A	2	A	DC ampere meter	0.21	mA/A
			>2	A	19	A	DC ampere meter	0.7	mA/A
			1	µA	1	µA	DC ampere meter	9.4	mA/A
			10	µA	10	µA	DC ampere meter	0.99	mA/A
			100	µA	100	µA	DC ampere meter	0.16	mA/A
			1	mA	1	mA	DC ampere meter	72	µA/A
			10	mA	10	mA	DC ampere meter	72	µA/A
			100	mA	100	mA	DC ampere meter	83	µA/A
			1	A	1	A	DC ampere meter	0.13	mA/A
			5	A	5	A	DC ampere meter	0.7	mA/A
			10	A	10	A	DC ampere meter	0.54	mA/A
			19	A	19	A	DC ampere meter	0.48	mA/A

Approval Signatory: LIN, I-Hsien; CHEN, Cain-Yi; WEI, Wen-Chieh



calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty		
			brand /model	document name /no.	minimum value	units		explanation	value	units
KF1003 DC HIGH VOLTAGE METER DC HIGH VOLTAGE METER	KIKUSUI/149-10A	In-house Method: DC High Voltage System Calibration Procedure (Document No.: ECP-006)			1	kV	10	kV		2 mV/V
Approval Signatory: LIN, I-Hsien; CHEN, Cain-Yi; WEI, Wen-Chieh										
KF1011 AC Voltage meter ACV source	FLUKE 5700A FLUKE 8508A	In-house Method: AC Voltage Calibration Procedure (Document No.: ECP-026)			10	mV	100	mV	ACV source @60 Hz	0.7 mV/V
					>100	mV	200	mV	ACV source @60 Hz	0.17 mV/V
					>200	mV	1000	V	ACV source @60 Hz	0.22 mV/V
					10	mV	10	mV	ACV source @60 Hz	0.7 mV/V
					100	mV	100	mV	ACV source @60 Hz	0.13 mV/V
					1	V	1	V	ACV source @60 Hz	97 μV/V
					10	V	10	V	ACV source @60 Hz	97 μV/V
					100	V	100	V	ACV source @60 Hz	0.11 mV/V
					1000	V	1000	V	ACV source @60 Hz	0.13 mV/V
					10	mV	100	mV	ACV meter @60 Hz	1.2 mV/V
					>100	mV	200	mV	ACV meter @60 Hz	0.25 mV/V
					>200	mV	1000	V	ACV meter @60 Hz	0.13 mV/V
					10	mV	10	mV	ACV meter @60 Hz	1.2 mV/V
					100	mV	100	mV	ACV meter @60 Hz	0.23 mV/V
					1	V	1	V	ACV meter @60 Hz	98 μV/V
					10	V	10	V	ACV meter @60 Hz	99 μV/V
					100	V	100	V	ACV meter @60 Hz	0.12 mV/V
					1000	V	1000	V	ACV meter @60 Hz	0.13 mV/V
					10	mV	100	mV	ACV source @1 kHz	0.54 mV/V
					>100	mV	200	mV	ACV source @1 kHz	0.13 mV/V
					>200	mV	1000	V	ACV source @1 kHz	0.22 mV/V

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

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calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KF1011 AC Voltage meter ACV source	FLUKE 5700A FLUKE 8508A	In-house Method: AC Voltage Calibration Procedure (Document No.: ECP-026)	10	mV	10	mV	ACV source @1 kHz	0.54	mV/V
			100	mV	100	mV	ACV source @1 kHz	0.13	mV/V
			1	V	1	V	ACV source @1 kHz	74	µV/V
			10	V	10	V	ACV source @1 kHz	75	µV/V
			100	V	100	V	ACV source @1 kHz	86	µV/V
			1000	V	1000	V	ACV source @1 kHz	0.13	mV/V
			10	mV	100	mV	ACV meter @1 kHz	1.2	mV/V
			>100	mV	200	mV	ACV meter @1 kHz	0.25	mV/V
			>200	mV	1000	V	ACV meter @1 kHz	0.13	mV/V
			10	mV	10	mV	ACV meter @1 kHz	1.2	mV/V
			100	mV	100	mV	ACV meter @1 kHz	0.22	mV/V
			1	V	1	V	ACV meter @1 kHz	98	µV/V
			10	V	10	V	ACV meter @1 kHz	99	µV/V
			100	V	100	V	ACV meter @1 kHz	0.12	mV/V
			1000	V	1000	V	ACV meter @1 kHz	0.13	mV/V
Approval Signatory: LIN, I-Hsien; CHEN, Cain-Yi; WEI, Wen-Chieh									
KF1012 AC ampere meter ACA source	FLUKE 5700A/5725A FLUKE 8508A	In-house Method: AC Current Calibration Procedure (Document No.: ECP-027)	10	µA	100	µA	ACA source @60 Hz	4.4	mA/A
			> 0.1	mA	0.2	A	ACA source @60 Hz	0.47	mA/A
			> 0.2	A	20	A	ACA source @60 Hz	0.94	mA/A
			10	µA	10	µA	ACA source @60 Hz	4.4	mA/A
			100	µA	100	µA	ACA source @60 Hz	0.27	mA/A
			1	mA	1	mA	ACA source @60 Hz	0.27	mA/A
			10	mA	10	mA	ACA source @60 Hz	0.27	mA/A
			100	mA	100	mA	ACA source @60 Hz	0.27	mA/A
			1	A	1	A	ACA source @60 Hz	0.47	mA/A
			5	A	5	A	ACA source @60 Hz	0.71	mA/A
			10	A	10	A	ACA source @60 Hz	0.6	mA/A
			19	A	19	A	ACA source @60 Hz	0.55	mA/A
			10	µA	100	µA	ACA meter @60 Hz	5.7	mA/A

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calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KF1012 AC ampere meter ACA source	FLUKE 5700A/5725A FLUKE 8508A	In-house Method: AC Current Calibration Procedure (Document No.: ECP-027)	>0.1	mA	0.2	A	ACA meter @60 Hz	0.2	mA/A
			>0.2	A	20	A	ACA meter @60 Hz	0.46	mA/A
			10	μA	10	μA	ACA meter @60 Hz	5.7	mA/A
			100	μA	100	μA	ACA meter @60 Hz	0.18	mA/A
			1	mA	1	mA	ACA meter @60 Hz	0.11	mA/A
			10	mA	10	mA	ACA meter @60 Hz	0.11	mA/A
			100	mA	100	mA	ACA meter @60 Hz	0.12	mA/A
			1	A	1	A	ACA meter @60 Hz	0.41	mA/A
			5	A	5	A	ACA meter @60 Hz	0.32	mA/A
			10	A	10	A	ACA meter @60 Hz	0.31	mA/A
			10	μA	100	μA	ACA source @1 kHz	1.5	mA/A
			>0.1	mA	0.2	A	ACA source @1 kHz	0.44	mA/A
			>0.2	A	20	A	ACA source @1 kHz	0.94	mA/A
			10	μA	10	μA	ACA source @1 kHz	1.5	mA/A
			100	μA	100	μA	ACA source @1 kHz	0.27	mA/A
			1	mA	1	mA	ACA source @1 kHz	0.27	mA/A
			10	mA	10	mA	ACA source @1 kHz	0.27	mA/A
			100	mA	100	mA	ACA source @1 kHz	0.27	mA/A
			1	A	1	A	ACA source @1 kHz	0.48	mA/A
			5	A	5	A	ACA source @1 kHz	0.72	mA/A
			10	A	10	A	ACA source @1 kHz	0.6	mA/A
			19	A	19	A	ACA source @1 kHz	0.55	mA/A
			10	μA	100	μA	ACA meter @1 kHz	1.2	mA/A
			>0.1	mA	0.2	A	ACA meter @1 kHz	0.2	mA/A
			>0.2	A	10	A	ACA meter @1 kHz	0.46	mA/A
			10	μA	10	μA	ACA meter @1 kHz	1.2	mA/A
			100	μA	100	μA	ACA meter @1 kHz	0.18	mA/A
			1	mA	1	mA	ACA meter @1 kHz	0.11	mA/A
			10	mA	10	mA	ACA meter @1 kHz	0.11	mA/A

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calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
			minimum value	units	maximum value	units			
brand /model	document name /no.						explanation	value	units
KF1012 AC ampere meter ACA source	FLUKE 5700A/5725A FLUKE 8508A	In-house Method: AC Current Calibration Procedure (Document No.: ECP-027)	100	mA	100	mA	ACA meter @1 kHz	0.12	mA/A
			1	A	1	A	ACA meter @1 kHz	0.41	mA/A
			5	A	5	A	ACA meter @1 kHz	0.33	mA/A
			10	A	10	A	ACA meter @1 kHz	0.31	mA/A
Approval Signatory: LIN, I-Hsien; CHEN, Cain-Yi; WEI, Wen-Chieh									
KF1013 AC HIGH VOLTAGE METER AC HIGH VOLTAGE SOURCE	KIKUSUI/149-10A	In-house Method: DC High Voltage System Calibration Procedure (Document No.: ECP-007)	1	kV	10	kV	@60 Hz	5	mV/V
Approval Signatory: LIN, I-Hsien; CHEN, Cain-Yi; WEI, Wen-Chieh									
KF3001 Resistor Ohmmeter	FLUKE 5700A FLUKE 8508A Time Electronics 5025C-S2 Standard Resistance ZIP/P321 0.1 Ω Standard Resistance ZIP/P310 0.01 Ω Standard Resistance ZIP/P310 0.001 Ω Standard Resistance CROPICO/RS3 0.1 mΩ	In-house Method: Resistance Calibration Procedure ECP-005	0.1	mΩ	0.1	mΩ	Ohmmeter	5.6	mΩ/Ω
			0.001	Ω	0.001	Ω	Ohmmeter	0.76	mΩ/Ω
			0.01	Ω	0.01	Ω	Ohmmeter	0.13	mΩ/Ω
			0.1	Ω	0.1	Ω	Ohmmeter	25	μΩ/Ω
			1	Ω	1	Ω	Ohmmeter	59	μΩ/Ω
			10	Ω	10	Ω	Ohmmeter	18	μΩ/Ω
			100	Ω	100	Ω	Ohmmeter	12	μΩ/Ω
			1	kΩ	1	kΩ	Ohmmeter	8.7	μΩ/Ω
			10	kΩ	10	kΩ	Ohmmeter	7.2	μΩ/Ω
			100	kΩ	100	kΩ	Ohmmeter	8.8	μΩ/Ω
			1	MΩ	1	MΩ	Ohmmeter	15	μΩ/Ω
			10	MΩ	10	MΩ	Ohmmeter	26	μΩ/Ω
			1	Ω	20	Ω	Ohmmeter	0.53	mΩ/Ω
			20	Ω	100	Ω	Ohmmeter	0.21	mΩ/Ω
			100	Ω	1	kΩ	Ohmmeter	0.13	mΩ/Ω

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calibration items	working standard	calibration method	measurand level or range				measurement conditions /independent variable	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KF3001 Resistor Ohmmeter	FLUKE 5700A FLUKE 8508A Time Electronics 5025C-S2 Standard Resistance ZIP/P321 0.1 Ω Standard Resistance ZIP/P310 0.01 Ω Standard Resistance ZIP/P310 0.001 Ω Standard Resistance CROPICO/RS3 0.1 mΩ	In-house Method: Resistance Calibration Procedure ECP-005	1	kΩ	10	kΩ	Ohmmeter	0.24	mΩ/Ω
			10	kΩ	100	kΩ	Ohmmeter	0.13	mΩ/Ω
			100	kΩ	1	MΩ	Ohmmeter	0.14	mΩ/Ω
			1	MΩ	10	MΩ	Ohmmeter	0.25	mΩ/Ω
			10	MΩ	100	MΩ	Ohmmeter	1.5	mΩ/Ω
			1	Ω	1	Ω	Resistor	21	μΩ/Ω
			10	Ω	10	Ω	Resistor	16	μΩ/Ω
			100	Ω	100	Ω	Resistor	11	μΩ/Ω
			1	kΩ	1	kΩ	Resistor	11	μΩ/Ω
			10	kΩ	10	kΩ	Resistor	7.4	μΩ/Ω
			100	kΩ	100	kΩ	Resistor	8.3	μΩ/Ω
			1	MΩ	1	MΩ	Resistor	16	μΩ/Ω
			10	MΩ	10	MΩ	Resistor	31	μΩ/Ω
Approval Signatory: LIN, I-Hsien; CHEN, Cain-Yi; WEI, Wen-Chieh									



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 counter & signal generator	Rubidium Frequency Standard/SRS FS725 Universal Counter Agilent 53132A	In-house method Frequency procedure (Document No.: FCP-001)	10	MHz	10	MHz		3.0 E-10	
Approval Signatory: LIN, I-Hsien; CHEN, Cain-Yi; WEI, Wen-Chieh									

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

