



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

Certification Accreditation

(Certificate No : L0245-220901)

This is to certify that

Chroma Ate Inc.

Electrical and Time and Frequency Calibration Laboratory

No. 88, Wenmao Rd., Guishan Dist., Taoyuan City , Taiwan

is accredited in respect of laboratory

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

Accreditation Number : 0245

Originally Accredited : November 01, 1995

Effective Period : November 01, 2022 to October 31, 2025

Accredited Scope : Calibration Field, see described in the Appendix



Scan to verify

Ching-Chang Lien

Ching-Chang Lien
President, Taiwan Accreditation Foundation
September 01, 2022

Accreditation Number : 0245
Laboratory Head : CHIANG, Ming-Yao

Electricity

calibration items	working standard brand /model	calibration method document name /no.	measurand level or range			measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value		units	value
KF1001 DC Voltage Source (on-site calibration included)	Multimeter Agilent/3458A	DC Voltage Calibration Procedure (Document No.: E-04-22-001)	10	mV	10	(on-site calibration included)	82	μ V/V
			100	mV	100	(on-site calibration included)	20	μ V/V
			1	V	1	(on-site calibration included)	11	μ V/V
			10	V	10	(on-site calibration included)	10	μ V/V
			100	V	100	(on-site calibration included)	13	μ V/V
			1000	V	1000	(on-site calibration included)	14	μ V/V
			10	mV	100	(on-site calibration included)	82	μ V/V
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu			>100	mV	1	(on-site calibration included)	11	μ V/V
			>1	V	10	(on-site calibration included)	15	μ V/V
			>10	V	100	(on-site calibration included)	13	μ V/V
			>100	V	1000	(on-site calibration included)	20	μ V/V

KF1001 DC Voltage Meter (on-site calibration included)	Calibrator Fluke/5700A	DC Voltage Calibration Procedure (Document No.: E-04-22-001)	10	mV	10	(on-site calibration included)	83	μ V/V
			100	mV	100	(on-site calibration included)	23	μ V/V
			1	V	1	(on-site calibration included)	15	μ V/V
			10	V	10	(on-site calibration included)	14	μ V/V
			100	V	100	(on-site calibration included)	17	μ V/V
			1000	V	1000	(on-site calibration included)	19	μ V/V



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range				measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KF1001 DC Voltage Meter (on-site calibration included)	Calibrator Fluke/5700A	DC Voltage Calibration Procedure (Document No.: E-04-22-001)	10	mV	100	mV	(on-site calibration included)	0.11	mV/V
			>100	mV	1	V	(on-site calibration included)	27	μ V/V
			>1	V	10	V	(on-site calibration included)	20	μ V/V
			>10	V	100	V	(on-site calibration included)	21	μ V/V
			>100	V	1000	V	(on-site calibration included)	24	μ V/V
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									
KF1002 DC Current Source (on-site calibration included)	Multimeter Agilent/3458A	DC Current Calibration Procedure (Document No.: E-04-22-003)	10	μ A	10	μ A	(on-site calibration included)	59	μ A/A
			100	μ A	100	μ A	(on-site calibration included)	50	μ A/A
			1	mA	1	mA	(on-site calibration included)	48	μ A/A
			10	mA	10	mA	(on-site calibration included)	48	μ A/A
			100	mA	100	mA	(on-site calibration included)	60	μ A/A
			1	A	1	A	(on-site calibration included)	0.15	mA/A
			0.01	mA	1	mA	(on-site calibration included)	71	μ A/A
>1	mA	10	mA	(on-site calibration included)	68	μ A/A			
>10	mA	100	mA	(on-site calibration included)	84	μ A/A			
>100	mA	1	A	(on-site calibration included)	0.27	mA/A			
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									





calibration items	working standard brand /model	calibration method document name /no.	measurand level or range				measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KF1002 DC Current Meter (on-site calibration included)	Calibrator Fluke/5700A	DC Current Calibration Procedure (Document No.: E-04-22-003)	10	μ A	10	μ A	(on-site calibration included)	0.17	mA/A
			100	μ A	100	μ A	(on-site calibration included)	0.17	mA/A
			1	mA	1	mA	(on-site calibration included)	87	μ A/A
			10	mA	10	mA	(on-site calibration included)	87	μ A/A
			100	mA	100	mA	(on-site calibration included)	0.11	mA/A
			1	A	1	A	(on-site calibration included)	0.20	mA/A
			0.01	mA	1	mA	(on-site calibration included)	0.69	mA/A
			>1	mA	10	mA	(on-site calibration included)	87	μ A/A
			>10	mA	100	mA	(on-site calibration included)	0.11	mA/A
			>100	mA	1	A	(on-site calibration included)	0.27	mA/A
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									
KF1003 DC High Voltage Source	High Voltage Voltmeter Zentech/900B	DC High Voltage Calibration Procedure (Document No.: E-04-22-073)	1	kV	4	kV		11	mV/V
			>4	kV	20	kV		13	mV/V
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									

calibration items	working standard brand /model	calibration method document name /no.	measurand level or range				measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KF1003 DC High Voltage Meter	High Voltage Source Spellman /SL-150	DC High Voltage Calibration Procedure (Document No.: E-04-22-073)	1	kV	4	kV	12	mV/V	
			>4	kV	20	kV	14	mV/V	
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									
KF1004 DC High Current Source (on-side calibration included)	Multimeter Agilent/3458A Current Shunt Prodigit/7550A Current Shunt Guildline /9230A	DC High Current Calibration Procedure (Document No.: E-04-22-130)	1	A	20	A	1.5	mA/A	
			>20	A	100	A	0.87	mA/A	
			>100	A	1000	A	8.7	mA/A	
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									
KF1004 DC High Current Meter (on-side calibration included)	Multimeter Agilent/3458A Current Shunt Prodigit/7550A Current Shunt Guildline/9230A	DC High Current Calibration Procedure (Document No.: E-04-22-130)	1	A	20	A	3.0	mA/A	
			>20	A	100	A	2.5	mA/A	
			>100	A	1000	A	8.7	mA/A	
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range				measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KF1011 AC Voltage Source (on-side calibration included)	Multimeter Agilent/3458A	AC Voltage Calibration Procedure (Document No.: E-04-22-002)	10	V	10	V	(on-side calibration included) (@ 50 Hz)	1.1	mV/V
			100	V	100	V	(on-side calibration included) (@ 50 Hz)	0.82	mV/V
			700	V	700	V	(on-side calibration included) (@ 50 Hz)	1.2	mV/V
			10	mV	10	mV	(on-side calibration included) (@ 60 Hz)	3.7	mV/V
			100	mV	100	mV	(on-side calibration included) (@ 60 Hz)	3.6	mV/V
			1	V	1	V	(on-side calibration included) (@ 60 Hz)	0.85	mV/V
			10	V	10	V	(on-side calibration included) (@ 60 Hz)	0.83	mV/V
			100	V	100	V	(on-side calibration included) (@ 60 Hz)	0.83	mV/V
			700	V	700	V	(on-side calibration included) (@ 60 Hz)	1.2	mV/V
			10	V	700	V	(on-side calibration included) (@ 50 Hz)	21	mV/V
			0.01	V	0.1	V	(on-side calibration included) (@ 60 Hz)	4.6	mV/V
			>0.1	V	1	V	(on-side calibration included) (@ 60 Hz)	2.2	mV/V



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range			measurement conditions /independent variable explanation	smallest uncertainty							
			minimum value	units	maximum value		units	value	units					
KF1011 AC Voltage Source (on-side calibration included)	Multimeter Agilent/3458A	AC Voltage Calibration Procedure (Document No.: E-04-22-002)	>1	V	10	(on-side calibration included) (@ 60 Hz)	2.5	mV/V						
			>10	V	100				(on-side calibration included) (@ 60 Hz)	2.1	mV/V			
			>100	V	700							(on-side calibration included) (@ 60 Hz)	1.8	mV/V
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu														
KF1011 AC Voltage Meter (on-side calibration included)	Calibrator Fluke/5700A	AC Voltage Calibration Procedure (Document No.: E-04-22-002)	10	V	10	(on-side calibration included) (@ 50 Hz)	1.1	mV/V						
			100	V	100				(on-side calibration included) (@ 50 Hz)	0.82	mV/V			
			700	V	700							(on-side calibration included) (@ 50 Hz)	1.2	mV/V
			10	mV	10				(on-side calibration included) (@ 60 Hz)	3.7	mV/V			
			100	mV	100							(on-side calibration included) (@ 60 Hz)	3.6	mV/V
			1	V	1									
			10	V	10				(on-side calibration included) (@ 60 Hz)	0.84	mV/V			
100	V	100	(on-side calibration included) (@ 60 Hz)	0.84	mV/V									
700	V	700				(on-side calibration included) (@ 60 Hz)	1.2	mV/V						



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range			measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value		units	value
KF1011 AC Voltage Meter (on-side calibration included)	Calibrator Fluke/5700A	AC Voltage Calibration Procedure (Document No.: E-04-22-002)	10	V	700	(on-side calibration included) (@ 50 Hz)	21	mV/V
			0.01	V	0.1	(on-side calibration included) (@ 60 Hz)	4.6	mV/V
			>0.1	V	1	(on-side calibration included) (@ 60 Hz)	2.2	mV/V
			>1	V	10	(on-side calibration included) (@ 60 Hz)	2.5	mV/V
			>10	V	100	(on-side calibration included) (@ 60 Hz)	2.1	mV/V
			>100	V	700	(on-side calibration included) (@ 60 Hz)	1.8	mV/V
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu								
KF1012 AC Current Source (on-side calibration included)	Multimeter Agilent/3458A	AC Current Calibration Procedure (Document No.: E-04-22-004)	100	uA	100	(on-side calibration included) (@ 60 Hz)	1.3	mA/A
			1	mA	1	(on-side calibration included) (@ 60 Hz)	0.95	mA/A
			10	mA	10	(on-side calibration included) (@ 60 Hz)	0.95	mA/A
			100	mA	100	(on-side calibration included) (@ 60 Hz)	0.95	mA/A
			1	A	1	A	1.2	mA/A



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range			measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value		units	value
KF1012 AC Current Source (on-side calibration included)	Multimeter Agilent/3458A	AC Current Calibration Procedure (Document No.: E-04-22-004)	0.1	mA	10	(on-side calibration included) (@ 60 Hz)	1.5	mA/A
			>10	mA	100		3.4	mA/A
			>100	mA	1		3.2	mA/A
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu								
KF1012 AC Current Meter (on-side calibration included)	Calibrator Fluke/5700A	AC Current Calibration Procedure (Document No.: E-04-22-004)	100	uA	100	(on-side calibration included) (@ 60 Hz)	1.3	mA/A
			1	mA	1		0.97	mA/A
			10	mA	10		0.97	mA/A
			100	mA	100		0.95	mA/A
			1	A	1		1.5	mA/A
			0.1	mA	10		2.2	mA/A
			>10	mA	100	(on-side calibration included) (@ 60 Hz)	3.4	mA/A
			>100	mA	1		3.2	mA/A
			Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu					



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range				measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KF1013 AC High Voltage Source	High Voltage Voltmeter Kikusui /149-10A	AC High Voltage Calibration Procedure (Document No.: E-04-22-077)	1	kV	10	kV	(@ 60 Hz)	20	mV/V
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									
KF1013 AC High Voltage Meter	HIPOT TESTER Chroma/9055	AC High Voltage Calibration Procedure (Document No.: E-04-22-077)	1	kV	10	kV	(@ 60 Hz)	39	mV/V
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									
KF1014 AC High Current Source (on-side calibration included)	Multimeter Agilent/3458A Current Shunt Prodigit/7550A	AC High Current Calibration Procedure (Document No.: E-04-22-131)	2	A	20	A	(on-side calibration included) (@ 60 Hz)	7.1	mA/A
			>20	A	40	A	(on-side calibration included) (@ 60 Hz)	1.7	mA/A
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range			measurement conditions /independent variable explanation	smallest uncertainty		
			minimum value	units	maximum value		units	value	units
KF1014 AC High Current Meter (on-side calibration included)	Multimeter Agilent/3458A Current Shunt Prodigit/7550A	AC High Current Calibration Procedure (Document No.: E-04-22-131)	2	A	20	A	(@ 60 Hz) (on-side calibration included)	9.0	mA/A
			>20	A	40	A	(@ 60 Hz) (on-side calibration included)	2.3	mA/A
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									
KF2001 AC Electrical Power Source	Digital Power Meter Chroma/66202	AC Electrical Power Calibration Procedure (Document No.: E-04-22-012)	120	W	120	W	120 V, 1 A, PF=1 (Single phase 60 Hz)	1.8	mW/W
			240	W	240	W	240 V, 1 A, PF=1 (Single phase 60 Hz)	1.8	mW/W
			1200	W	1200	W	120 V, 10 A, PF=1 (Single phase 60 Hz)	2.4	mW/W
			2400	W	2400	W	240 V, 10 A, PF=1 (Single phase 60 Hz)	2.4	mW/W
			60	W	60	W	120 V, 1 A, PF= 0.5 Lag (Single phase 60 Hz)	3.6	mW/W
			120	W	120	W	240 V, 1 A, PF= 0.5 Lag (Single phase 60 Hz)	3.6	mW/W
			600	W	600	W	120 V, 10 A, PF= 0.5 Lag (Single phase 60 Hz)	5.6	mW/W
			1200	W	1200	W	240 V, 10 A, PF= 0.5 Lag (Single phase 60 Hz)	5.6	mW/W
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range				measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value	units		value	units
KF2001 AC Electrical Power Meter	Calibrator Fluke/5500A	AC Electrical Power Calibration Procedure (Document No.: E-04-22-012)	120	W	120	W	120 V, 1 A, PF=1 (Single phase 60 Hz)	2.6	mW/W
			240	W	240	W	240 V, 1 A, PF=1 (Single phase 60 Hz)	2.6	mW/W
			1200	W	1200	W	120 V, 10 A, PF=1 (Single phase 60 Hz)	3.1	mW/W
			2400	W	2400	W	240 V, 10 A, PF=1 (Single phase 60 Hz)	3.1	mW/W
			60	W	60	W	120 V, 1 A, PF= 0.5 Lag (Single phase 60 Hz)	7.9	mW/W
			120	W	120	W	240 V, 1 A, PF= 0.5 Lag (Single phase 60 Hz)	7.9	mW/W
			600	W	600	W	120 V, 10 A, PF= 0.5 Lag (Single phase 60 Hz)	9.0	mW/W
			1200	W	1200	W	240 V, 10 A, PF= 0.5 Lag (Single phase 60 Hz)	9.0	mW/W

Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu

KF3001 Ground Bond Meter	Grounding Tester Standard Zentech/9002	Ground Bond Tester Calibration Procedure (Document No.: E-04-22-049)	10	mΩ	10	mΩ	(25 A, 60 Hz)	13	mΩ/Ω
			100	mΩ	100	mΩ	(25 A, 60 Hz)	11	mΩ/Ω

Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range			measurement conditions /independent variable explanation	smallest uncertainty		
			minimum value	units	maximum value		units	value	units
KF3001 DC Current Shunt (on-site calibration included)	Multimeter Agilent/3458A Current Shunt Prodigit/7550A Current Shunt Guildline/9230A	DC High Current Calibration Procedure (Document No.: E-04-22-130)	0.01	Ω	0.01	(1 A to 20 A) on-site calibration included	Ω	0.29	$m\Omega/\Omega$
			0.001	Ω	0.001			(>20 A to 100 A) on-site calibration included	0.29
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu			0.05	$m\Omega$	0.05	(>100 A to 1000 A) on-site calibration included	$m\Omega$	0.55	$m\Omega/\Omega$
KF3001 Resistor (on-site calibration included)	Multimeter Agilent/3458A	Resistance Calibration Procedure (Document No.: E-04-22-005)	10	Ω	10	(on-site calibration included)	Ω	31	$\mu\Omega/\Omega$
			100	Ω	100	(on-site calibration included)	Ω	28	$\mu\Omega/\Omega$
			1	$k\Omega$	1	(on-site calibration included)	$k\Omega$	17	$\mu\Omega/\Omega$
			10	$k\Omega$	10	(on-site calibration included)	$k\Omega$	16	$\mu\Omega/\Omega$
			100	$k\Omega$	100	(on-site calibration included)	$k\Omega$	17	$\mu\Omega/\Omega$
			1	$M\Omega$	1	(on-site calibration included)	$M\Omega$	29	$\mu\Omega/\Omega$
			10	$M\Omega$	10	(on-site calibration included)	$M\Omega$	96	$\mu\Omega/\Omega$
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu			100	$M\Omega$	100	(on-site calibration included)	$M\Omega$	0.64	$m\Omega/\Omega$
KF3001 Ohmmeter (on-site calibration included)	Calibrator Fluke/5700A	Resistance Calibration Procedure (Document No.: E-04-22-005)	10	Ω	10	(on-site calibration included)	Ω	49	$\mu\Omega/\Omega$
			100	Ω	100	(on-site calibration included)	Ω	40	$\mu\Omega/\Omega$
			1	$k\Omega$	1	(on-site calibration included)	$k\Omega$	29	$\mu\Omega/\Omega$
			10	$k\Omega$	10	(on-site calibration included)	$k\Omega$	29	$\mu\Omega/\Omega$
			100	$k\Omega$	100	(on-site calibration included)	$k\Omega$	31	$\mu\Omega/\Omega$



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range			measurement conditions /independent variable explanation	smallest uncertainty		
			minimum value	units	maximum value		units	value	units
KF3001 Ohmmeter (on-site calibration included)	Calibrator Fluke/5700A	Resistance Calibration Procedure (Document No.: E-04-22-005)	1	MΩ	1	MΩ	(on-site calibration included)	45	μΩ/Ω
			10	MΩ	10	MΩ	(on-site calibration included)	0.12	mΩ/Ω
			100	MΩ	100	MΩ	(on-site calibration included)	0.69	mΩ/Ω
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									
KF3002 Inductor	LCR Meter HP/4284A	Inductance Calibration Procedure (Document No.: E-04-22-072)	100	μH	100	μH	(@ 1 kHz)	1.8	mH/H
			1	mH	1	mH	(@ 1 kHz)	1.2	mH/H
			10	mH	10	mH	(@ 1 kHz)	1.2	mH/H
			100	mH	100	mH	(@ 1 kHz)	1.2	mH/H
			1	H	1	H	(@ 1 kHz)	1.3	mH/H
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									
KF3002 Inductance Meter	Standard Inductance Quadtech/1482B (100 μH) /1482E (1 mH) /1482H (10 mH) /1482L (100 mH) /1482P (1 H) /1482T (10 H)	Inductance Calibration Procedure (Document No.: E-04-22-072)	100	μH	100	μH	(@ 1 kHz)	1.9	mH/H
			1	mH	1	mH	(@ 1 kHz)	1.3	mH/H
			10	mH	10	mH	(@ 1 kHz)	1.3	mH/H
			100	mH	100	mH	(@ 1 kHz)	1.3	mH/H
			1	H	1	H	(@ 1 kHz)	1.4	mH/H
			10	H	10	H	(@ 1 kHz)	2.4	mH/H
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									



calibration items	working standard brand /model	calibration method document name /no.	measurand level or range			measurement conditions /independent variable		smallest uncertainty	
			minimum value	units	maximum value	units	explanation	value	units
KF3003 Capacitance	LCR Meter HP/4284A	Capacitance Calibration Procedure (Document No.: E-04-22-071)	100	pF	100	pF	(@ 1 kHz)	1.2	mF/F
			1	nF	1	nF	(@ 1 kHz)	1.2	mF/F
			10	nF	10	nF	(@ 1 kHz)	1.2	mF/F
			100	nF	100	nF	(@ 1 kHz)	1.2	mF/F
			1	μF	1	μF	(@ 1 kHz)	1.2	mF/F
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									
KF3003 Capacitance Meter	Standard Capacitor HP/16383A (100 pF) /16384A (1000 pF) /16385A (0.01 μF) /16386A (0.1 μF) /19387A (1 μF)	Capacitance Calibration Procedure (Document No.: E-04-22-071)	100	pF	100	pF	(@ 1 kHz)	1.6	mF/F
			1	nF	1	nF	(@ 1 kHz)	1.3	mF/F
			10	nF	10	nF	(@ 1 kHz)	1.2	mF/F
			100	nF	100	nF	(@ 1 kHz)	1.2	mF/F
			1	μF	1	μF	(@ 1 kHz)	1.2	mF/F
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu									



Time And Frequency

calibration items	working standard brand /model	calibration method document name /no.	measurand level or range			measurement conditions /independent variable explanation	smallest uncertainty	
			minimum value	units	maximum value		value	units
KJ0200 Frequency Counter	Rubidium Frequency Standard SRS/FS725	Frequency Calibration Procedure (Document No.: E-04-22-016)	100	kHz	100		9.70 E-08	Hz/Hz
			1	MHz	1		9.70 E-08	Hz/Hz
			5	MHz	5		9.70 E-08	Hz/Hz
			10	MHz	10		9.70 E-08	Hz/Hz
Approval Signatory: CHIANG, Ming-Yao; LEE, Wen-Yu								

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

(Null Below)

