TEST REPORT

Product Name	:	X1-Micro 2 in 1
Model Number	:	X1-Micro 800, X1-Micro 900, X1-Micro 1000, X1-Micro 1200

Prepared for	:	SolaX Power Network Technology (Zhejiang) Co. , Ltd.
Address	:	No.288, Shizhu Road, Tonglu Economic Development Zone, Tonglu City, Zhejiang Province 310000, P. R. CHINA
Prepared by	:	EMTEK (NINGBO) CO., LTD.
Address	:	No. 8, Building 8, Lane 216, Qingyi Road, Hi-Tech Zone, Ningbo, Zhejiang, China Tel: +86-574-27907998 Fax: +86-574-27721538
Report Number	:	ENB2402210004E00101R
Date of Test	:	February 21, 2024 to February 26, 2024
Date of Report	:	February 27, 2024

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APPENDIX I (Photos of EUT) (3 Pages)

TEST REPORT DESCRIPTION

Applicant	:	SolaX Power Network Technology (Zhejiang) Co. , Ltd.
Manufacturer	:	SolaX Power Network Technology (Zhejiang) Co. , Ltd.
Trade Mark	:	SolaX Power
EUT	:	X1-Micro 2 in 1
Model Number	:	X1-Micro 800, X1-Micro 900, X1-Micro 1000, X1-Micro 1200
Power supply	:	Input: DC 33V, 2*19.5A Output: AC 220V/AC 230V/ AC 240V/AC 180-264V, 50Hz/45–55Hz or 60Hz/55–65Hz, 1200W

Measurement Procedure Used:

EN IEC 61000-6-3:2021, EN IEC 61000-6-4:2019
EN IEC 61000-3-2:2019/A1:2021, EN 61000-3-3:2013/A2:2021/AC:2022-01
EN IEC 61000-3-11:2019, EN 61000-3-12:2011
EN IEC 61000-6-1:2019, EN IEC 61000-6-2:2019
(IEC 61000-4-2:2008, IEC 61000-4-3:2020, IEC 61000-4-4:2012, IEC 61000-4-5:2014/AMD1:2017, IEC 61000-4-6:2013, IEC 61000-4-8:2009, IEC 61000-4-11:2020)

The device described above is tested by EMTEK (NINGBO) CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK (NINGBO) CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment under Test) is technically compliant with the EN IEC 61000-6-1, EN IEC 61000-6-2, EN IEC 61000-6-3, EN IEC 61000-6-4, EN IEC 61000-3-2, EN 61000-3-3, EN IEC 61000-3-11, EN 61000-3-12 requirements

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK (NINGBO) CO., LTD.

Date of Test : February 21, 2024 to February 26, 2024

Prepared by : June Gao/Engineer

Reviewer : Ade Wang/Supervisor

Approved & Authorized Signer : Tony Wei/Manager

Modified History

Version	Report No.	Revision date	Summary
	ENB2402210004E00101R	/	Original Report

1. SUMMARY OF TEST RESULT

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted Emissions at Low voltage AC mains port	EN IEC 61000-6-3:2021	Table 4	Pass
	EN IEC 61000-6-4:2019	Table 4	Pass
Conducted Emissions at DC power port	EN IEC 61000-6-3:2021	Table 5	N/A
	EN IEC 61000-6-4:2019	Table A.1	N/A
Conducted Emissions at wired ports	EN IEC 61000-6-3:2021	Table 6	N/A
	EN IEC 61000-6-4:2019	Table 5	N/A
Radiated Emission (Up to 1 GHz)	EN IEC 61000-6-3:2021	Table 3	Pass
	EN IEC 61000-6-4:2019		Pass
Radiated Emission (Above 1 GHz)	EN IEC 61000-6-3:2021	Table 1	N/A
	EN IEC 61000-6-4:2019		N/A
Harmonic Current Emission	EN IEC 61000-3-2:2019/A1:2021	Class A	Pass
	EN 61000-3-12:2011	Table 2	Pass
Voltage changes, voltage fluctuations and flicker	EN 61000-3-3:2013/ A2:2021/AC:2022-01	Section 5	Pass
	EN IEC 61000-3-11:2019	Section 5	Pass
IMMUNITY (EN IEC 61000-6-1:2019, EN IEC 61000-6-2:2019)			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008	B	Pass
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3:2020	A	Pass
EFT/B Immunity	IEC 61000-4-4:2012	B	Pass
Surge Immunity	IEC 61000-4-5:2014/AMD1:2017	B	Pass
Conducted RF Immunity	IEC 61000-4-6:2013	A	Pass
Power Frequency Magnetic Field	IEC 61000-4-8:2009	A	Pass
Voltage dips	IEC 61000-4-11:2020	B&C	Pass
Voltage interruptions		C	Pass
Note: N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	X1-Micro 2 in 1
Model Number	:	X1-Micro 800, X1-Micro 900, X1-Micro 1000, X1-Micro 1200 (Note: All models arethe same except the power. We prepared model X1-Micro 1200 for EMC test.)
Test Voltage	:	AC 230V/50Hz
Highest frequency	:	Below108MHz
Sample number	:	ENB2402210004E001-1-1
Applicant	:	SolaX Power Network Technology (Zhejiang) Co. , Ltd.
Address	:	No.288, Shizhu Road, Tonglu Economic Development Zone, Tonglu City, Zhejiang Province 310000, P. R. CHINA
Manufacturer	:	SolaX Power Network Technology (Zhejiang) Co. , Ltd.
Address	:	No.288, Shizhu Road, Tonglu Economic Development Zone, Tonglu City, Zhejiang Province 310000, P. R. CHINA
Date of Received	:	February 21, 2024
Date of Test	:	February 21, 2024 to February 26, 2024

2.2. Input / Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	Enclosure	N/E	--	--	None
2	AC Port	AC	--	--	None
3	PV Port	DC	No	Unshielded	None

*Note: Use abbreviations:
AC= AC Power port
DC= DC Power port
N/E= Non-Electrical
A/D=Analogue/digital data port (signal/control port, antenna port, wired network port, broadcast receiver tuner port, optical fibre port)

2.3. Independent Operation Modes

A. PC-AC

2.4. Test Manner

Test Items	Test Voltage	Operation Modes	Worst case
Conducted Emissions at Low voltage AC mains port	AC 230V/50Hz	Mode A	Mode A
Radiated Emission	AC 230V/50Hz	Mode A	Mode A
Harmonics	AC 230V/50Hz	Mode A	Mode A
Voltage fluctuation and flicker	AC 230V/50Hz	Mode A	Mode A
Electrostatic Discharge	AC 230V/50Hz	Mode A	Mode A
Radio-Frequency, Continuous Radiated Disturbance	AC 230V/50Hz	Mode A	Mode A
EFT/B Immunity	AC 230V/50Hz	Mode A	Mode A
Surge Immunity	AC 230V/50Hz	Mode A	Mode A
Conducted RF Immunity	AC 230V/50Hz	Mode A	Mode A
Power Frequency Magnetic Field	AC 230V/50Hz	Mode A	Mode A
Voltage Dips	AC 230V/50Hz	Mode A	Mode A

2.5. Description of Test Facility

Site Description

EMC Lab. : **Accredited by CNAS**
The Certificate Registration Number is L6666.
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2018 (identical to ISO/IEC 17025:2017)

Designation by FCC
Designation Number: CN1354
Test Firm Registration Number: 427606

Accredited by A2LA
The Certificate Number is 4321.03.
The certificate isvalid until May 31, 2025

Designation by Industry Canada
The Conformity Assessment Body Identifier is CN0114

Name of Firm : EMTEK (NINGBO) CO., LTD.
Site Location : No. 8, Building 8, Lane 216, Qingyi Road, Hi-Tech Zone, Ningbo, Zhejiang, China

2.6. Test Software

Item		Software
Conducted Emission	:	JSDEMC-EMI(V 3.3)
Radiated Emission	:	JSDEMC-EMI(V 3.3)

2.7. Description of Support Device

N/A

2.8. Measurement Uncertainty

Test Item	Uncertainty
Conducted Emission Uncertainty	: 2.08dB (9 k-150 kHz) 2.40dB (150 k-30 MHz)
Radiated Emission Uncertainty (3m Chamber)	: 4.30dB (Polarize: H) (30 MHz-1000 MHz) 4.90dB (Polarize: V) (30 MHz-1000 MHz) 3.70dB (Polarize: H) (1~18 GHz) 3.60dB (Polarize: V) (1~18 GHz)
Uncertainty for Harmonic test	: 4.16% mA
Uncertainty for Flicker test	: 0.43% V
Uncertainty for ESD Test	: 6.00% kV
Uncertainty for EFT/B Test	: 3.84% kV
Uncertainty for Surge Test	: 0.53% kV
Uncertainty for C/S Test	: 1.45(Using CDN Test) 2.37(Using EM Clamp Test)
Uncertainty for M/S Test	: 1.19% A
Uncertainty for DIPS Test	: 2.12% V
Uncertainty for R/S Test	: 2.10dB(80 MHz-200 MHz) 2.36dB(200 MHz-1000 MHz) 2.57dB(1000 MHz-6000 MHz)

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Disturbance Voltage at the AC Power Port Measurement

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-001	EMI Test Receiver	R & S	ESCI	101108	Dec 14, 2023	1 Year
ENE-158	L.I.S.N	Schwarzbeck	NNLK 8129	0373	Nov 17, 2023	1 Year
ENE-004	L.I.S.N	Schwarzbeck	NSLK 8126	8126-462	July 06, 2023	1 Year
ENE-006	Pulse Limiter	MTS-systemtechnik	IMP-136	2611115-001-0033	July 06, 2023	1 Year
ENE-278	RF Switching Unit	HTEC	HRSU	222101	July 06, 2023	1 Year
ENE-083	RF Cable	Hubber Suhner/Swiss	CBL-RE-3	/	May 31, 2023	1 Year
ENE-162-2	RF Cable	TIMES	2M(N-N)	605236-0002	May 31, 2023	1 Year
ENE-149	Conduction Test Room 1#	SKET	11.5*5*4m	/	Dec 17, 2021	3 Year

3.2. For Radiated Emission Measurement (Up to 1 GHz)

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-184	EMI Test Receiver	R&S	ESR7	102479	Apr 28, 2023	1 Year
ENE-189	Antenna multiple	Schwarzbeck	VULB 9163	01498	May 21, 2022	2 Year
ENE-196	Pre-Amplifier	JS Denki	PA09K03-40	JSPA21020	Apr 28, 2023	1 Year
ENE-203	Low frequency notch filter RF switching	JS Denki	JSDSW-F	JSDSW2211D01	Apr 28, 2023	1 Year
ENE-252	6dB Attenuator	Mini-Circuits	UNAT-6+	11542	July 06, 2023	1 Year
ENE-280-1	RF Cable	Rosenberger	L17-C001-7000	/	May 31, 2023	1 Year
ENE-280-2	RF Cable	Rosenberger	L17-C001-3500	/	May 31, 2023	1 Year
ENE-280-3	RF Cable	Rosenberger	L17-C001-1500	/	May 31, 2023	1 Year
ENE-280-4	RF Cable	Rosenberger	/	/	May 31, 2023	1 Year
ENE-280-5	RF Cable	Rosenberger	/	/	May 31, 2023	1 Year
ENE-280-6	RF Cable	Rosenberger	L08-C446-1500	/	May 31, 2023	1 Year
ENE-142	3-Meter Anechoic Chamber 3#	SKET	9*6*6m	/	June 19, 2022	3 Year

3.3. For Harmonic Current / Voltage Fluctuation And Flicker Measurement

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-157	Harmonic/ flicker analyzer	PACIFIC	ECTS2-3300Z-M18012	550128	Nov 17, 2023	1 Year
ENE-157-1	AC Power source	PACIFIC	330AZX-CE	140250014	Nov 17, 2023	1 Year

3.4. For Electrostatic Discharge Immunity Test

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-139	ESD Tester	TESEQ	NSG 437	1732	Nov 17, 2023	1 Year
ENE-152	ESD test Room	SKET	5.5*4*3m	/	Apr 18, 2023	3 Year

3.5. For RF Strength Susceptibility Test

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-173	RF Signal generator	Keysight	N5171B	MY61252820	Apr 28, 2023	1 Year
ENE-174	SW-RF	JS Denki	JSDSW-BS02	JSDSW2120D01	Apr 28, 2023	1 Year
ENE-175	Power Amplifier	Vectawave	VBA 1000-600c	132035	Apr 28, 2023	1 Year
ENE-176	Power Amplifier	Vectawave	VBA 1060-200	132120	Apr 28, 2023	1 Year
ENE-177	Directional couplers	Bonn	BDC 0810-50/1500	2129259-01	Apr 28, 2023	1 Year
ENE-178	Directional couplers	Bonn	BDC 1060-40/500	2129304-03	Apr 28, 2023	1 Year
ENE-179	Multilayer periodic Antenna	Schwarzbeck	STLP9129-7/16	03043	Apr 28, 2023	1 Year
ENE-182	power meter	Lumiloop	LSPM	86	Apr 28, 2023	1 Year
ENE-153	RS anechoic chamber	SKET	7.6*5*4m	/	Dec 15, 2021	3 Year

3.6. For Electrical Fast Transient / Burst Immunity Test

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-011	Burst Tester	HAEFELY	PEFT4010	173964	July 06, 2023	1 Year
ENE-012	Coupling Clamp	HAEFELY	IP-4A	147399	July 06, 2023	1 Year
ENE-168	Coupling and Decoupling Network Three Phase	HAEFELY	FP-EFT 32M	190170	Dec 14, 2023	1 Year

3.7. For Surge Immunity Test

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-097-1	Combination Wave Generator	HTEC	HCWG 100	204303	Nov 17, 2023	1 Year
ENE-097-2	Three Phase Coupling/Decoupling Network	HTEC	HCOUPLER 30S	204103	Nov 17, 2023	1 Year
ENE-097-3	High Pressure Option	HTEC	Options-10KDC	/	Nov 17, 2023	1 Year
ENE-097-4	40 ohm Impedance	HTEC	Options-40ohm	/	Nov 17, 2023	1 Year
ENE-097-5	10 ohm Impedance	HTEC	Options-10ohm	/	Nov 17, 2023	1 Year
ENE-097-6	Combination Wave Generator	HTEC	HTSG 70	204304	Nov 17, 2023	1 Year
ENE-097-7	Coupling Network	HTEC	HCN 8	204901	Nov 17, 2023	1 Year
ENE-097-8	Decoupling Network	HTEC	HDEC 8	204902	Nov 17, 2023	1 Year
ENE-097-9	Isolated Power Supply	HTEC	SBK-30KVA	/	Nov 17, 2023	1 Year

3.8. For Injected Current Susceptibility Test

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-057	Simulator	SCHLODER	CDG-6000-75	126B1404/2016	July 06, 2023	1 Year
ENE-058	CDN	SCHLODER	CDN-M2+3	A2210415/2016	July 06, 2023	1 Year
ENE-056	Attenuator	SCHLODER	6dB 100W	HA1615	July 06, 2023	1 Year
ENE-098	Current Injection Probe	SCHLODER	CDN BCI-P1	19102314-0101	Nov 17, 2023	1 Year
ENE-099	EM-clamp	SCHLODER	CDN EMCL-20	20102817-0103	Nov 17, 2023	1 Year
ENE-160	Three phase CDN	SCHLODER	CDN M3-L32 HV	10749-1	Nov 17, 2023	1 Year
ENE-160-1	Three phase CDN	SCHLODER	CDN M5-N32 HV	10751-1	Nov 17, 2023	1 Year
ENE-160-2	Three phase CDN	SCHLODER	CDN M4-32 HV	10750-1	Nov 17, 2023	1 Year
ENE-160-3	Three phase CDN	SCHLODER	CDN M4-32A	10982-1	Apr 28, 2023	1 Year

3.9. For Power Frequency Magnetic Field Test

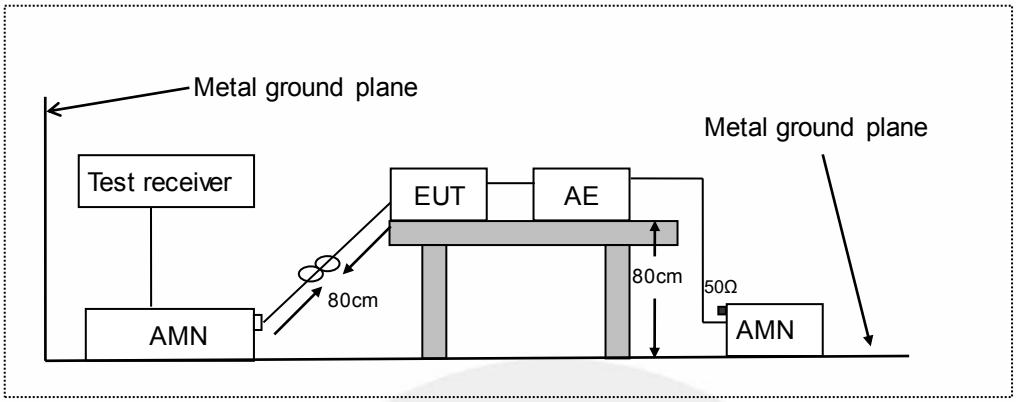
Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-161	Power frequency magnetic field disturbance rejection	HTEC	HMFG 1000	212204	Nov 17, 2023	1 Year

3.10. For Voltage Dips and Interruption Immunity Test

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-157-2	ICE VOLTAGE DIPS Module/ICE	PACIFIC	EPTS-75A-3	20027	Nov 17, 2023	1 Year
ENE-157-1	AC Power source	PACIFIC	330AZX-CE	140250014	Nov 17, 2023	1 Year

4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



AMN: Artificial mains network
AE: Associated equipment
EUT: Equipment under test

4.2. Measuring Standard

EN IEC 61000-6-3:2021, Table 4
EN IEC 61000-6-4:2019, Table 4

4.3. Measurement Limits

For EN IEC 61000-6-3:

Frequency range MHz	Limit (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

For EN IEC 61000-6-4:

Frequency range MHz	Limit (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	79	66
0.50 to 30	73	60
At transitional frequencies, the lower limit applies.		

4.4. Test Procedure

The EUT was placed on a desk 0.8 m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface. The size of the table will nominally be 1.5 m x1.0 m.

The rear of the arrangement shall be flush with the back of the supporting tabletop unless that would not be possible or typical of normal use.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the AC power port through a artificial mains network (AMN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other AMN.

The AMN provides 50 ohm coupling impedance for the measuring instrument.

The CISPR states that the AMN with 50 ohm and 5 microhenry should be used.

Both sides of AC mains port were checked for maximum conducted interference.

For frequency band 9 KHz to 150 KHz, the bandwidth of the test receiver is set at 200 Hz. For frequency band 150 KHz to 30 MHz, the bandwidth is set at 9 KHz. The frequency range from 9 kHz or 150 kHz to 30 MHz is investigated.

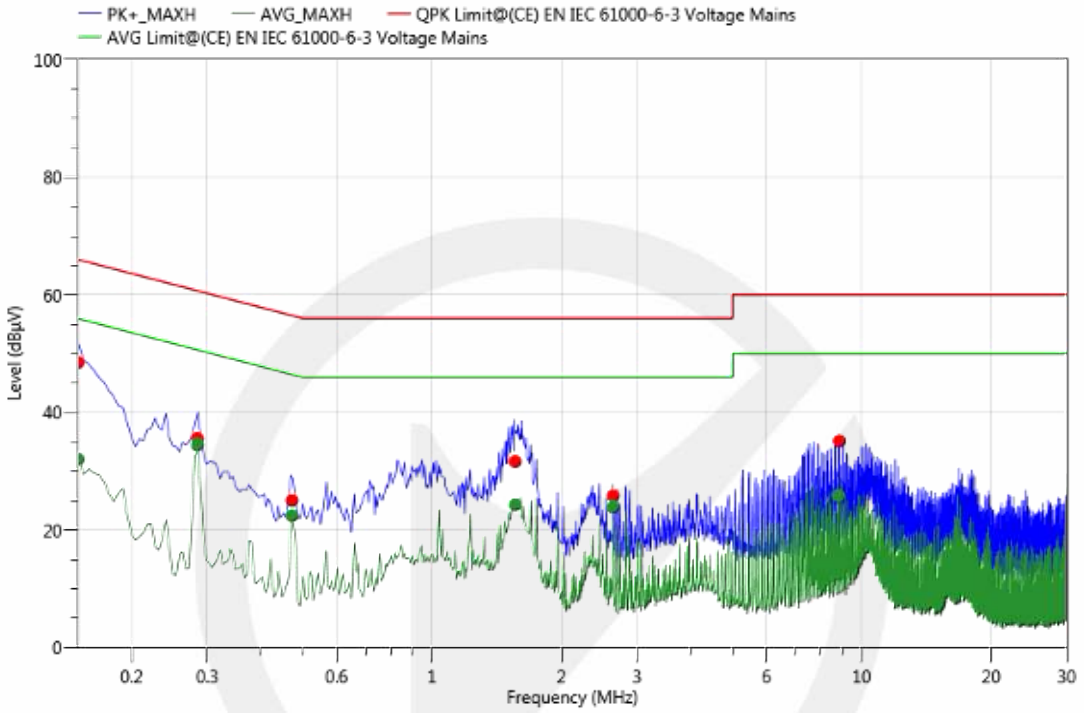
Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

4.5. Measuring Results

Pass.

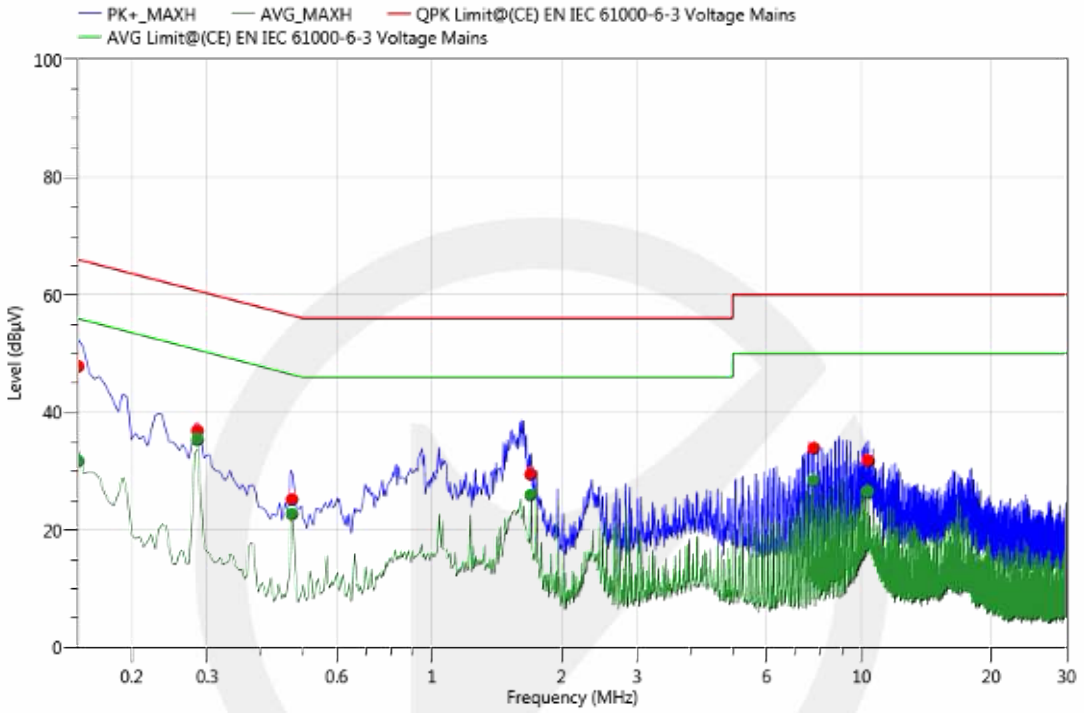
Please refer to the following pages.

Project Information			
Model：	X1-Micro 1200	Mode：	PV-AC
Voltage：	AC 230V/50Hz	Engineer：	WK Luo
Temp：	22℃	Humi：	35%



Final Result (Margin=Limit-Meas.(Reading +Corr.))										
No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.150	40.71	7.78	48.49	66.00	17.51	QPK	N	GND	Pass
2	0.150	24.31	7.78	32.09	56.00	23.91	AVG	N	GND	Pass
3	0.284	27.77	7.79	35.56	60.70	25.14	QPK	N	GND	Pass
4	0.284	26.67	7.79	34.46	50.70	16.24	AVG	N	GND	Pass
5	0.472	17.24	7.79	25.03	56.48	31.45	QPK	N	GND	Pass
6	0.472	14.65	7.79	22.44	46.48	24.04	AVG	N	GND	Pass
7	1.560	23.81	7.8	31.61	56.00	24.39	QPK	N	GND	Pass
8	1.560	16.51	7.8	24.31	46.00	21.69	AVG	N	GND	Pass
9	2.639	18.00	7.81	25.81	56.00	30.19	QPK	N	GND	Pass
10	2.639	16.07	7.81	23.88	46.00	22.12	AVG	N	GND	Pass
11	8.867	27.23	7.86	35.09	60.00	24.91	QPK	N	GND	Pass
12	8.867	17.78	7.86	25.64	50.00	24.36	AVG	N	GND	Pass

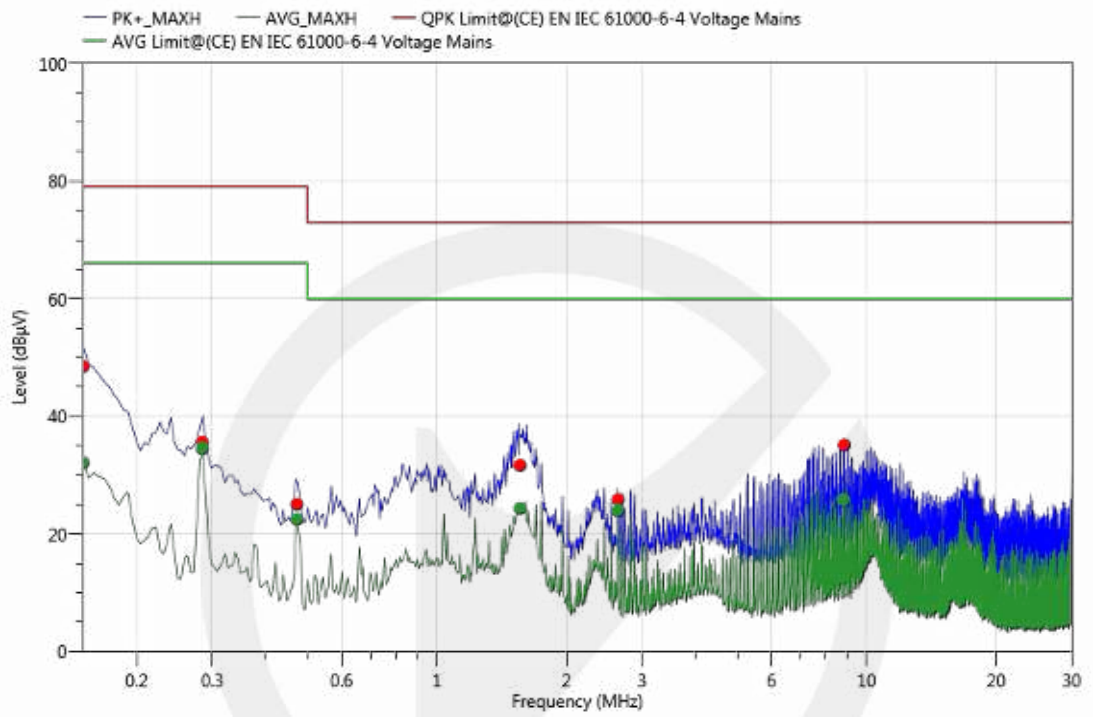
Project Information			
Model：	X1-Micro 1200	Mode：	PV-AC
Voltage：	AC 230V/50Hz	Engineer：	WK Luo
Temp：	22℃	Humi：	35%



Final Result (Margin=Limit-Meas.(Reading +Corr.))

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.150	39.66	8.16	47.82	66.00	18.18	QPK	L1	GND	Pass
2	0.150	23.56	8.16	31.72	56.00	24.28	AVG	L1	GND	Pass
3	0.284	28.77	8.07	36.84	60.70	23.86	QPK	L1	GND	Pass
4	0.284	27.27	8.07	35.34	50.70	15.36	AVG	L1	GND	Pass
5	0.472	17.14	8.02	25.16	56.48	31.32	QPK	L1	GND	Pass
6	0.472	14.67	8.02	22.69	46.48	23.79	AVG	L1	GND	Pass
7	1.694	21.43	8	29.43	56.00	26.57	QPK	L1	GND	Pass
8	1.694	17.94	8	25.94	46.00	20.06	AVG	L1	GND	Pass
9	7.734	25.86	7.98	33.84	60.00	26.16	QPK	L1	GND	Pass
10	7.734	20.34	7.98	28.32	50.00	21.68	AVG	L1	GND	Pass
11	10.376	23.74	7.93	31.67	60.00	28.33	QPK	L1	GND	Pass
12	10.376	18.40	7.93	26.33	50.00	23.67	AVG	L1	GND	Pass

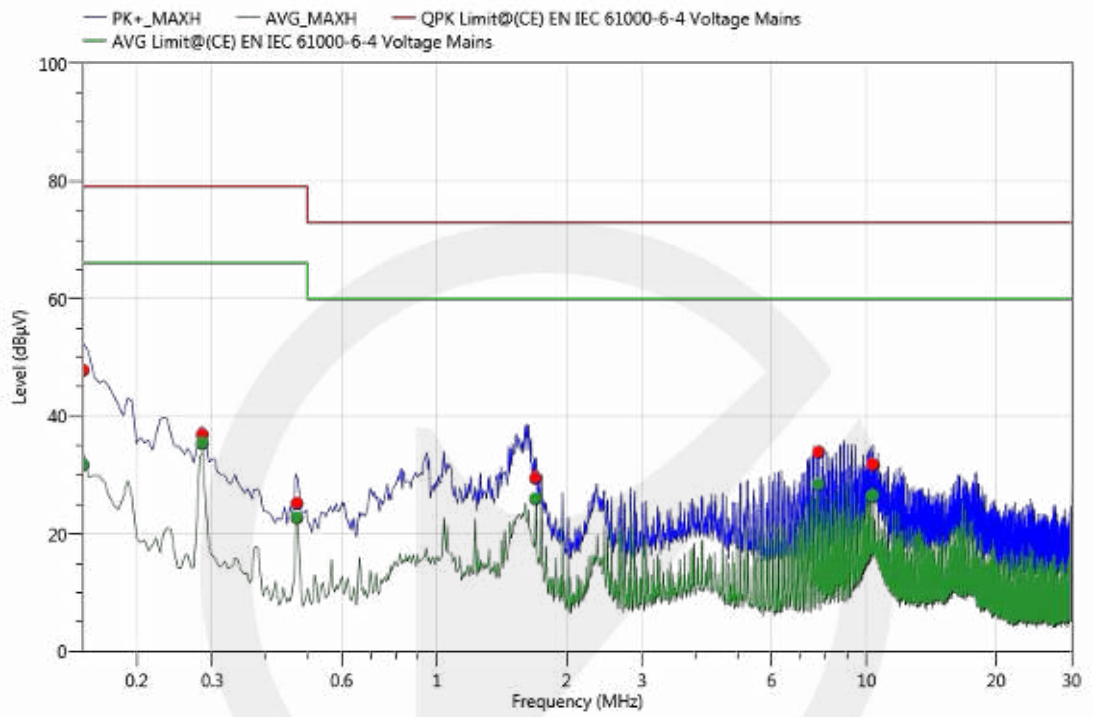
Project Information			
Model：	X1-Micro 1200	Mode：	PV-AC
Voltage：	AC 230V/50Hz	Engineer：	WK Luo
Temp：	22℃	Humi：	35%



Final Result (Margin=Limit-Meas.(Reading +Corr.))

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.150	40.71	7.78	48.49	79.00	30.51	QPK	N	GND	Pass
2	0.150	24.31	7.78	32.09	66.00	33.91	AVG	N	GND	Pass
3	0.284	27.77	7.79	35.56	79.00	43.44	QPK	N	GND	Pass
4	0.284	26.67	7.79	34.46	66.00	31.54	AVG	N	GND	Pass
5	0.472	17.24	7.79	25.03	79.00	53.97	QPK	N	GND	Pass
6	0.472	14.65	7.79	22.44	66.00	43.56	AVG	N	GND	Pass
7	1.560	23.81	7.8	31.61	73.00	41.39	QPK	N	GND	Pass
8	1.560	16.51	7.8	24.31	60.00	35.69	AVG	N	GND	Pass
9	2.639	18.00	7.81	25.81	73.00	47.19	QPK	N	GND	Pass
10	2.639	16.07	7.81	23.88	60.00	36.12	AVG	N	GND	Pass
11	8.867	27.23	7.86	35.09	73.00	37.91	QPK	N	GND	Pass
12	8.867	17.78	7.86	25.64	60.00	34.36	AVG	N	GND	Pass

Project Information			
Model：	X1-Micro 1200	Mode：	PV-AC
Voltage：	AC 230V/50Hz	Engineer：	WK Luo
Temp：	22℃	Humi：	35%

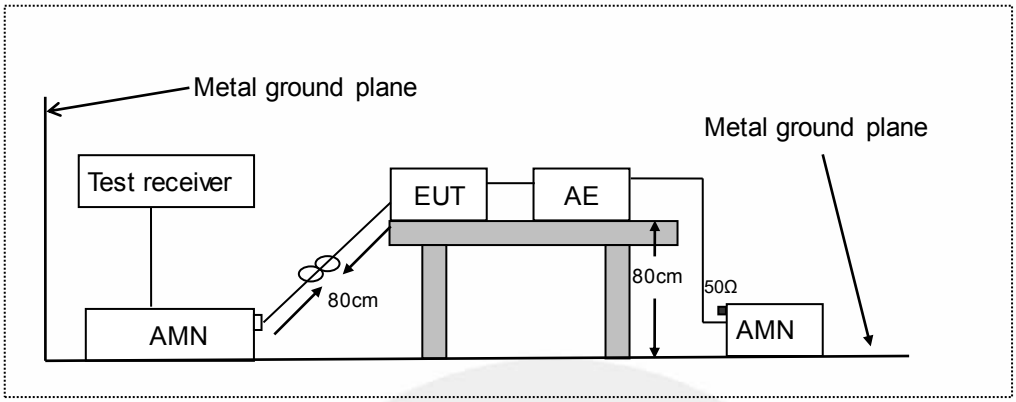


Final Result (Margin=Limit-Meas.(Reading +Corr.))

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Verdict
1	0.150	39.66	8.16	47.82	79.00	31.18	QPK	L1	GND	Pass
2	0.150	23.56	8.16	31.72	66.00	34.28	AVG	L1	GND	Pass
3	0.284	28.77	8.07	36.84	79.00	42.16	QPK	L1	GND	Pass
4	0.284	27.27	8.07	35.34	66.00	30.66	AVG	L1	GND	Pass
5	0.472	17.14	8.02	25.16	79.00	53.84	QPK	L1	GND	Pass
6	0.472	14.67	8.02	22.69	66.00	43.31	AVG	L1	GND	Pass
7	1.694	21.43	8	29.43	73.00	43.57	QPK	L1	GND	Pass
8	1.694	17.94	8	25.94	60.00	34.06	AVG	L1	GND	Pass
9	7.734	25.86	7.98	33.84	73.00	39.16	QPK	L1	GND	Pass
10	7.734	20.34	7.98	28.32	60.00	31.68	AVG	L1	GND	Pass
11	10.376	23.74	7.93	31.67	73.00	41.33	QPK	L1	GND	Pass
12	10.376	18.40	7.93	26.33	60.00	33.67	AVG	L1	GND	Pass

5. CONDUCTED EMISSION AT DC POWER PORT MEASUREMENT

5.1. Block Diagram of Test Setup



AMN: Artificial mains network
AE: Associated equipment
EUT: Equipment under test

5.2. Measurement Standard

EN IEC 61000-6-3:2021, Table 5
EN IEC 61000-6-4:2019, Table A.1

5.3. Measurement Limits

For EN IEC 61000-6-3

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	84 to 74	74 to 64
0.50 ~ 30.00	74	64
NOTE-The lower limit shall apply at the transition frequencies.		

For EN IEC 61000-6-4

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	89	76
0.50 ~ 30.00	83	70
NOTE-The lower limit shall apply at the transition frequencies.		

5.4. Test Procedure

The EUT was placed on a desk 0.1m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface. The size of the table will nominally be 1.5 m x1.0 m.

The rear of the arrangement shall be flush with the back of the supporting tabletop unless that would not be possible or typical of normal use.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the DC power port through a artificial mains network (AMN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other AMN.

The AMN provides 50 ohm coupling impedance for the measuring instrument.

The CISPR states that the AMN with 50 ohm and 5 microhenry should be used.

Both sides of DC power port were checked for maximum conducted interference.

For frequency band 150 kHz to 30 MHz, the bandwidth is set at 9 kHz. The frequency range from 150 kHz to 30 MHz is investigated.

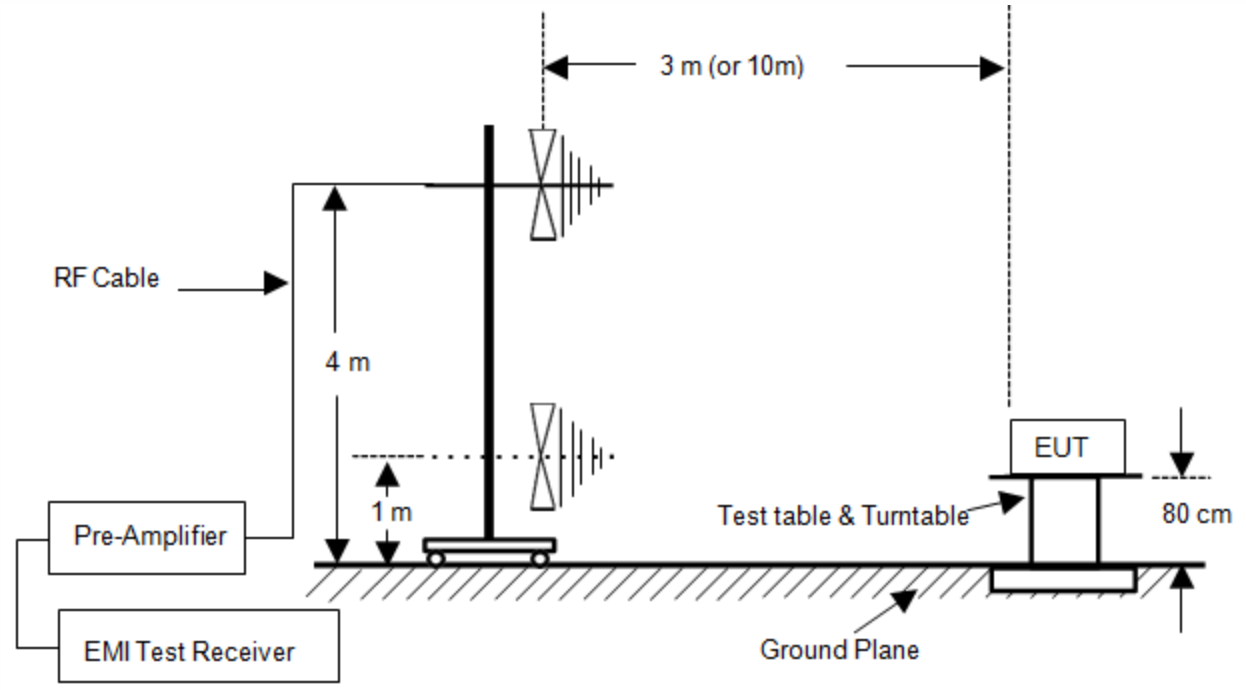
Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

5.5. Measuring Results

N/A.

6. RADIATED EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. Measuring Standard

EN IEC 61000-6-3:2021, Table 3
EN IEC 61000-6-4:2019, Table 3

6.3. Measurement Limits (For EN IEC 61000-6-3)

All emanations from devices or system shall not exceed the level of field strengths specified below:

Frequency range (MHz)	Measurement			Limits dB(μV/m)
	Facility	Distance (m)	Detector type / bandwidth	
30 to 230	OATS/SAC	10	Quasi Peak / 120 kHz	30
230 to 1000				37
30 to 230	OATS/SAC	3		40
230 to 1000				47
At transitional frequencies, the lower limit applies.				

Frequency range (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT	
		Average (dBμV/m)	Peak (dBμV/m)
1000~3000	3	50	70
3000~6000	3	54	74

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.
(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

6.4. Measurement Limits (For EN IEC 61000-6-4)

Frequency range (MHz)	Measurement			Limits dB(μV/m)
	Facility	Distance (m)	Detector type / bandwidth	
30 to 230	OATS/SAC	10	Quasi Peak / 120 kHz	40
230 to 1000				47
30 to 230	OATS/SAC	3		50
230 to 1000				57
At transitional frequencies, the lower limit applies.				

Frequency range (MHz)	Measurement			Limits dB(μV/m)
	Facility	Distance (m)	Detector type/ bandwidth	
1000 to 3000	OATS/SAC	3	Average / 1 MHz	56
3000 to 6000				60
1000 to 3000			Peak /1 MHz	76
3000 to 6000				80

6.5. Test Procedure

The EUT is placed on a turntable which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters or 10 meters away from the receiving antenna that is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

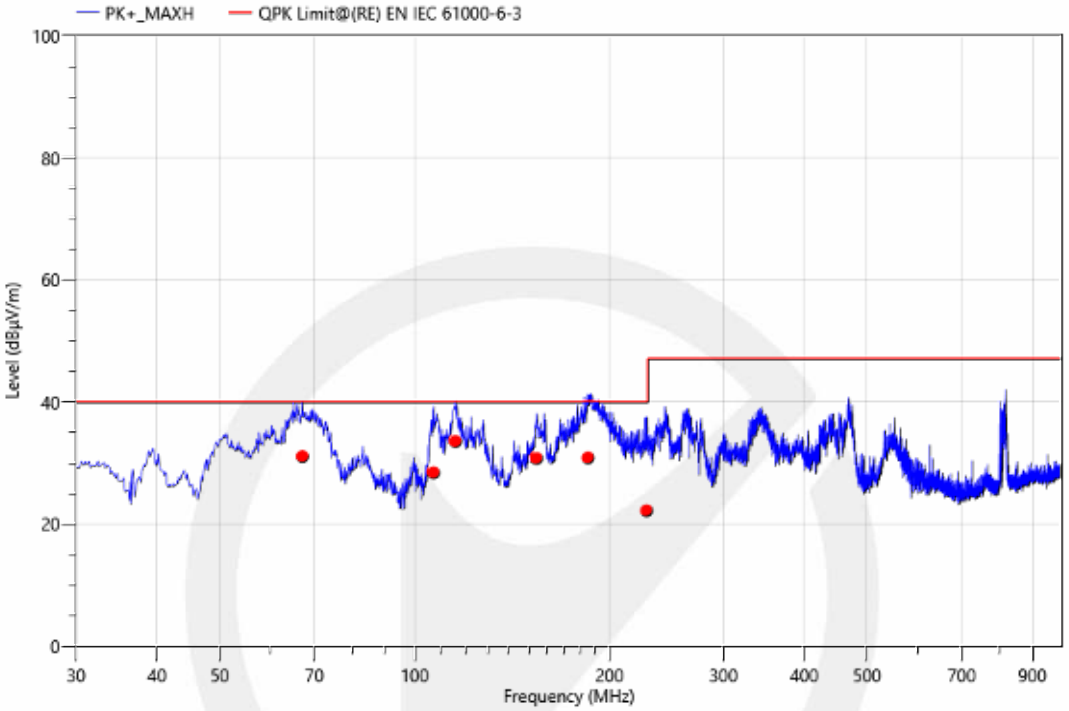
The bandwidth of the Receiver is set at 120 kHz. The frequency range from 30 MHz to 1000 MHz is investigated.

6.6. Measuring Results

Pass.

Please refer to the following pages.

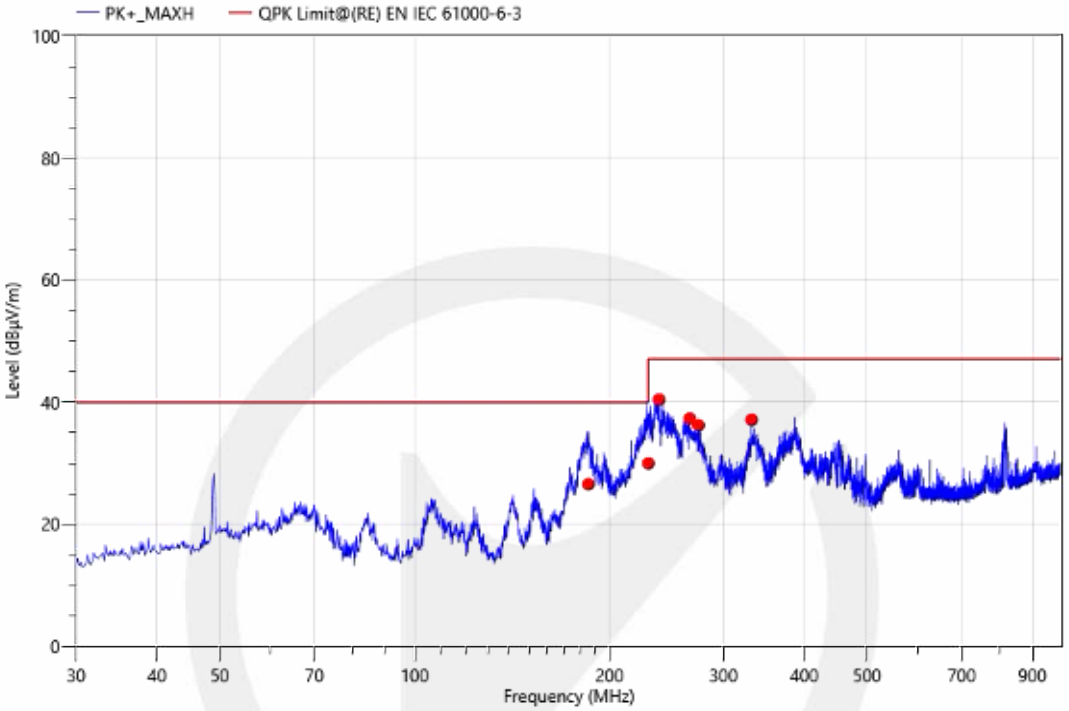
Project Information			
Model：	X1-Micro 1200	Mode：	PV-AC
Voltage：	AC 230V/50Hz	Engineer：	Elvis Xia
Temp：	20℃	Humi：	54%



Final Result (Margin=Limit-Meas.(Reading +Corr.))

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	67.106	57.77	-26.71	31.06	40.00	8.94	QPK	100.0	V	163.6	Pass
2	107.001	54.20	-25.81	28.39	40.00	11.61	QPK	100.0	V	75.6	Pass
3	115.663	60.15	-26.64	33.51	40.00	6.49	QPK	100.0	V	177.1	Pass
4	154.337	57.68	-26.94	30.74	40.00	9.26	QPK	100.0	V	112.1	Pass
5	185.331	56.51	-25.67	30.84	40.00	9.16	QPK	100.0	V	75.6	Pass
6	228.259	46.02	-23.82	22.20	40.00	17.80	QPK	100.0	V	55.6	Pass

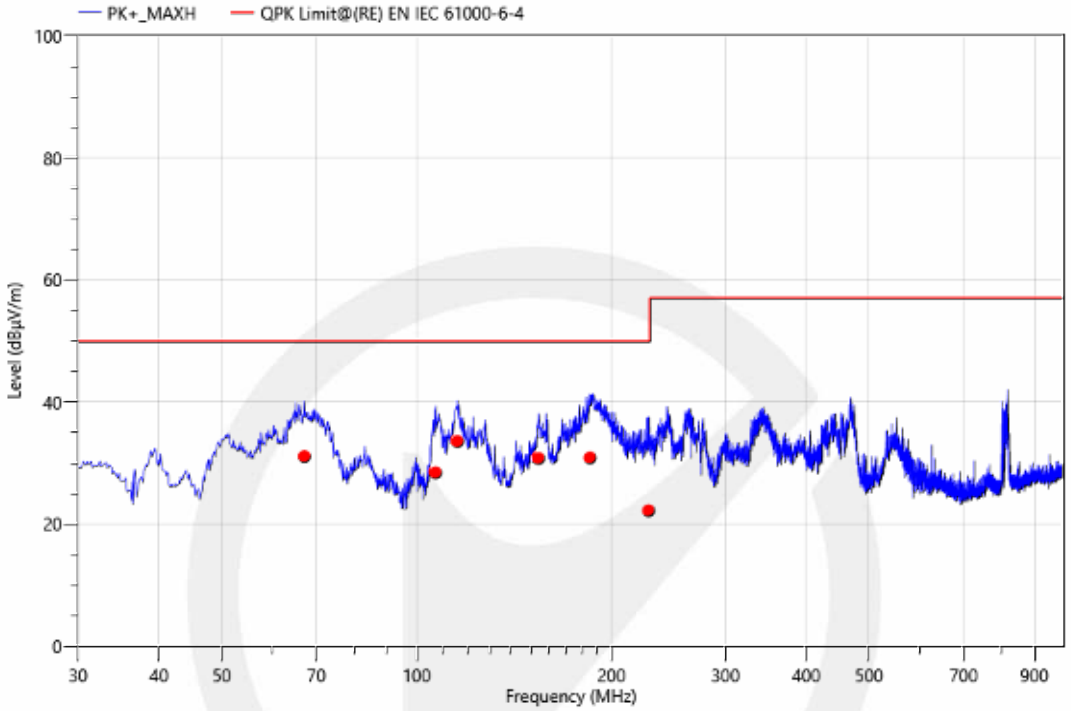
Project Information			
Model：	X1-Micro 1200	Mode：	PV-AC
Voltage：	AC 230V/50Hz	Engineer：	Elvis Xia
Temp：	20℃	Humi：	54%



Final Result (Margin=Limit-Meas.(Reading +Corr.))

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	185.546	52.19	-25.66	26.53	40.00	13.47	QPK	200.0	H	170.6	Pass
2	229.697	53.73	-23.76	29.97	40.00	10.03	QPK	100.0	H	177.4	Pass
3	238.529	63.73	-23.34	40.39	47.00	6.61	QPK	100	H	156.9	Pass
4	265.977	60.06	-22.77	37.29	47.00	9.71	QPK	100	H	0	Pass
5	274.416	59.00	-22.82	36.18	47.00	10.82	QPK	100	H	142.9	Pass
6	331.543	57.98	-20.89	37.09	47.00	9.91	QPK	100	H	207.4	Pass

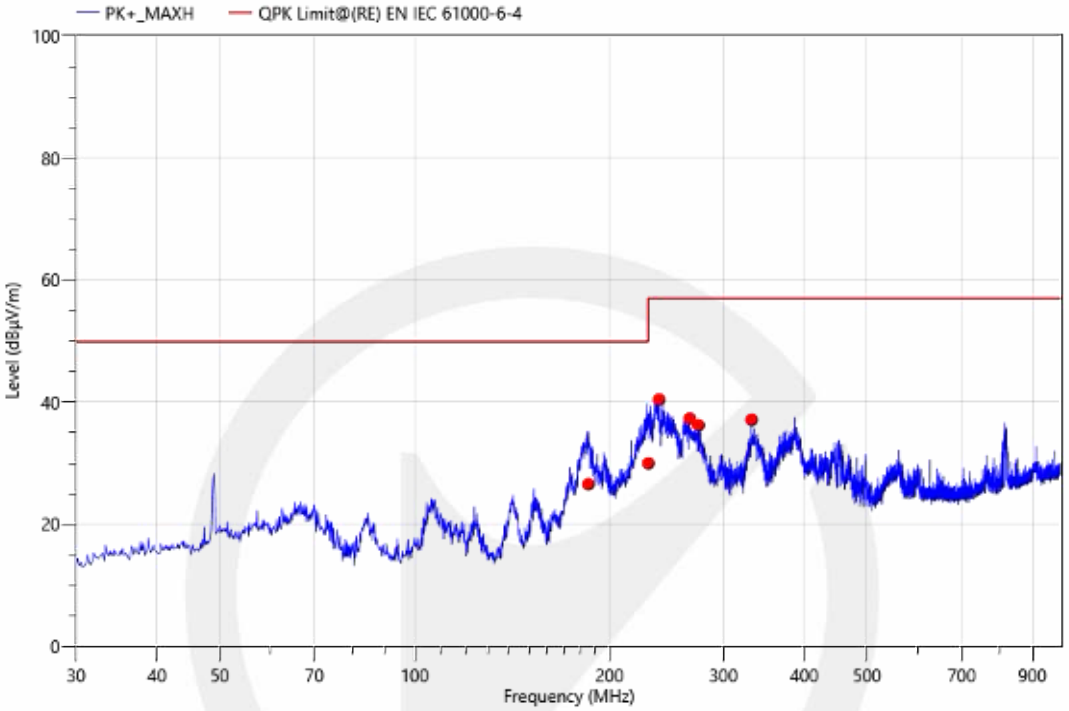
Project Information			
Model：	X1-Micro 1200	Mode：	PV-AC
Voltage：	AC 230V/50Hz	Engineer：	Elvis Xia
Temp：	20℃	Humi：	54%



Final Result (Margin=Limit-Meas.(Reading +Corr.))

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	67.106	57.77	-26.71	31.06	50.00	18.94	QPK	100.0	V	163.6	Pass
2	107.001	54.20	-25.81	28.39	50.00	21.61	QPK	100.0	V	75.6	Pass
3	115.663	60.15	-26.64	33.51	50.00	16.49	QPK	100.0	V	177.1	Pass
4	154.337	57.68	-26.94	30.74	50.00	19.26	QPK	100.0	V	112.1	Pass
5	185.331	56.51	-25.67	30.84	50.00	19.16	QPK	100.0	V	75.6	Pass
6	228.259	46.02	-23.82	22.20	50.00	27.80	QPK	100.0	V	55.6	Pass

Project Information			
Model：	X1-Micro 1200	Mode：	PV-AC
Voltage：	AC 230V/50Hz	Engineer：	Elvis Xia
Temp：	20℃	Humi：	54%

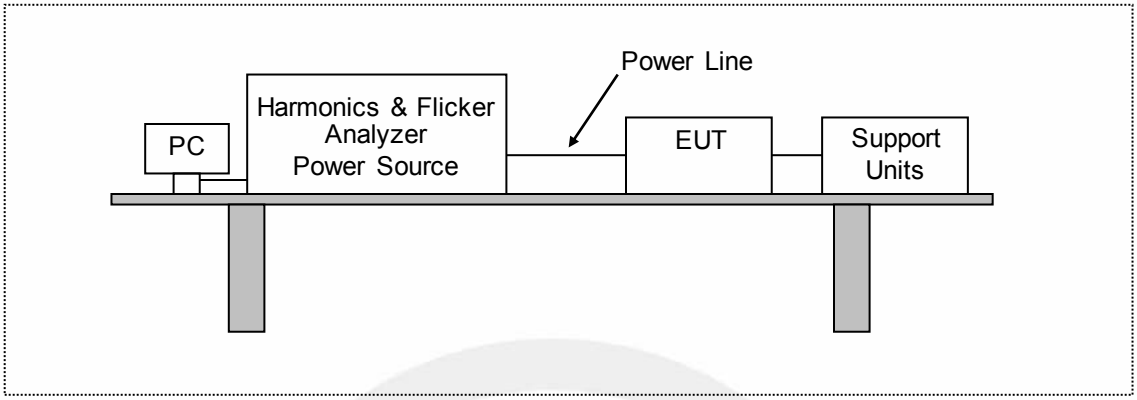


Final Result (Margin=Limit-Meas.(Reading +Corr.))

No.	Freq. (MHz)	Reading (dBµV)	Corr. (dB)	Meas. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Det.	Height (cm)	Pol.	Azimuth (deg)	Verdict
1	185.546	52.19	-25.66	26.53	50.00	23.47	QPK	200.0	H	170.6	Pass
2	229.697	53.73	-23.76	29.97	50.00	20.03	QPK	100.0	H	177.4	Pass
3	238.529	63.73	-23.34	40.39	57.00	16.61	QPK	100	H	156.9	Pass
4	265.977	60.06	-22.77	37.29	57.00	19.71	QPK	100	H	0	Pass
5	274.416	59.00	-22.82	36.18	57.00	20.82	QPK	100	H	142.9	Pass
6	331.543	57.98	-20.89	37.09	57.00	19.91	QPK	100	H	207.4	Pass

7. HARMONIC CURRENT EMISSION MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Measuring Standard

☒EN IEC 61000-3-2:2019/A1:2021,ClassA,Table1
☐EN 61000-3-12:2011, Table 3

7.3. Measurement Limits

☒Table 1 - Limits for Class A equipment

Harmonic order n	Maximum permissible harmonic current (A)
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \le n \le 39$	$0.15 \frac{0.15}{n}$
Even harmonics	
2	1.08
4	0.43
6	0.30
$8 \le n \le 40$	$0.23 \frac{8}{n}$

☐Table 2 – Current emission limits for equipment other than balanced three-phase equipment

Minimum R_{sce}	Admissible individual harmonic current I_h/I_{ref} [a] %						Admissible harmonic parameters %	
	I_3	I_5	I_7	I_9	I_{11}	I_{13}	THC/I_{ref}	$PWHC/I_{ref}$
33	21,6	10,7	7,2	3,8	3,1	2	23	23
66	24	13	8	5	4	3	26	26
120	27	15	10	6	5	4	30	30
250	35	20	13	9	8	6	40	40
≥350	41	24	15	12	10	8	47	47
The relative values of even harmonics up to order 12 shall not exceed 16/h %. Even harmonics above order 12 are taken into account in THC and $PWHC$ in the same way as odd order harmonics. Linear interpolation between successive R_{sce} values is permitted.								
[a] I_{ref} = reference current; I_h = harmonic current component.								

☐Table 3 – Current emission limits for balanced three-phase equipment

Minimum R_{sce}	Admissible individual harmonic current I_h/I_{ref} [a]				Admissible harmonic parameters %	
	I_5	I_7	I_{11}	I_{13}	THC/I_{ref}	$PWHC/I_{ref}$
33	10,7	7,2	3,1	2	13	22
66	14	9	5	3	16	25
120	19	12	7	4	22	28
250	31	20	12	7	37	38
≥350	40	25	15	10	48	46
The relative values of even harmonics up to order 12 shall not exceed 16/h %. Even harmonics above order 12 are taken into account in THC and $PWHC$ in the same way as odd order harmonics. Linear interpolation between successive R_{sce} values is permitted.						
[a] I_{ref} = reference current; I_h = harmonic current component.						

☐Table 4 –Current emission limits for balanced three-phase equipment under specified conditions (a, b, c)

Minimum R_{sce}	Admissible individual harmonic current I_h/I_{ref} [a] %				Admissible harmonic parameters %	
	I_5	I_7	I_{11}	I_{13}	THC/I_{ref}	$PWHC/I_{ref}$
33	10,7	7,2	3,1	2	13	22
≥120	40	25	15	10	48	46
The relative values of even harmonics up to order 12 shall not exceed 16/h %. Even harmonics above order 12 are taken into account in THC and $PWHC$ in the same way as odd order harmonics. Linear interpolation between both R_{sce} values is permitted.						
[a] I_{ref} = reference current; I_h = harmonic current component.						

☐Table 5 –Current emission limits for balanced three-phase equipment under specified conditions (d, e, f)

Minimum R_{sce}	Admissible individual harmonic current I_h/I_{ref} [a] %												Admissible harmonic parameters %	
	I_5	I_7	I_{11}	I_{13}	I_{17}	I_{19}	I_{23}	I_{25}	I_{29}	I_{31}	I_{35}	I_{37}	THC / I_{ref}	$PWHC/ I_{ref}$
33	10,7	7,2	3,1	2	2	1,5	1,5	1,5	1	1	1	1	13	22
≥250	25	17,3	12,1	10,7	8,4	7,8	6,8	6,5	5,4	5,2	4,9	4,7	35	70
For R_{sce} equal to 33, the relative values of even harmonics up to order 12 shall not exceed 16/h %. The relative values of all harmonics from I_{14} to I_{40} not listed above shall not exceed 1 % of I_{ref} For R_{sce}≥ 250, the relative values of even harmonics up to order 12 shall not exceed 16/h %. The relative values of all harmonics from I_{14} to I_{40} not listed above shall not exceed 3 % of I_{ref}. Linear interpolation between both R_{sce} values is permitted.														
a I_{ref} = reference current; I_h = harmonic current component.														

7.4. Test Procedure

The measurement of harmonic currents shall be performed as follows: i. For each harmonic order, measure the 1.5 s smoothed r.m.s. harmonic current in each DFT time window as defined in EN / IEC 61000-4-7:2009. ii. Calculate the arithmetic average of the measured values from the DFT time windows, over the entire observation period Short cyclic (T cycle≤2.5 min). Because of synchronisation to meet the requirements for repeatability in 5%.

7.5. Test Results

Pass.

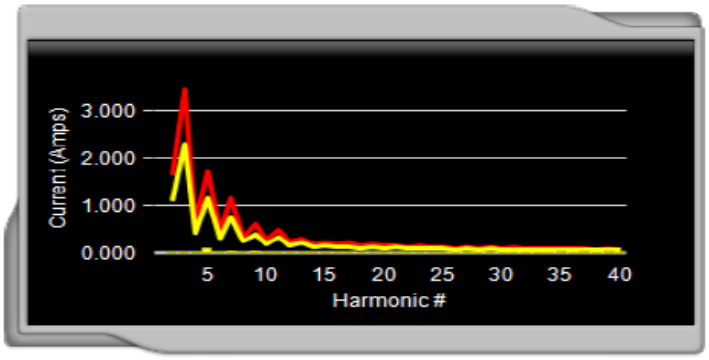
Please refer to the following pages.

EUT:	X1-Micro 2 in 1 (X1-Micro 1200)
Test Standard:	Test per IEC 61000-3-2
Test Class:	(Class A Test) - No inter-harmonics
Test Result:	**PASS**
Test Date:	2024/2/23
Start Time:	10:04:46
Stop Time:	10:07:26
Test Duration (min):	2.5
Source Qualification:	Compliance with IEC 61000-3-2
Power Source Distortion:	**OK**
Temp (°C) :	19.0
Hum. (% RH) :	54.0
Customer:	Customer
Test By:	Jackson Xue
Comments:	PV-AC

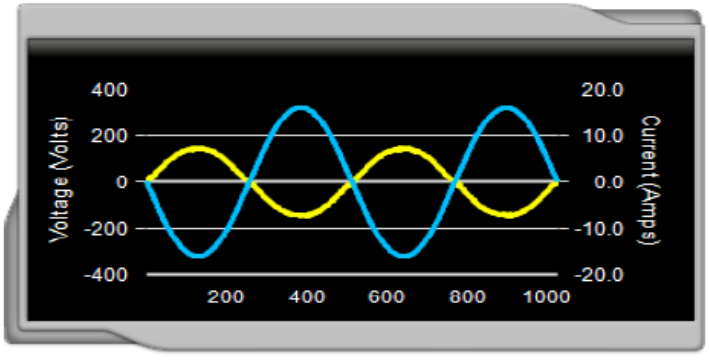
General Test Data: (Phase A)

Vrms (Volts)/V-pk/V-CF:	229.35 / 325.6 / 1.420	Frequency (Hz):	50.0001
I_rms (Amps):	5.139	Power (VA)/VAR:	1177.81 / 39.79
I_fund/I_ref (Amps):	5.135 / 5.138	Power (W):	-1177.99
I_peak (Amps)/I-CF:	7.749 / 1.468	Power Factor:	-0.999
V-THD (%):	0.05	I-THD (%):	2.13
POHC (A):	0.041 (method C.3)	POHC Limit (A):	0.250
I-THC (A):	0.109	Meas. Pwr (Min / Max)	-1179.57W/0.00W
Phase angle of H5 (deg):	17.17		

Harmonic Spectrum



Voltage & Current Waveform



Current Harmonics (values at the end of test)

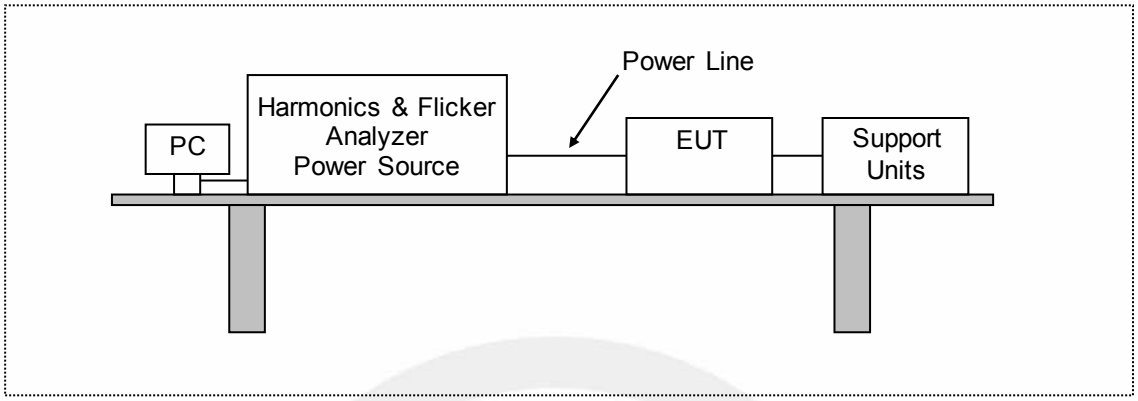
Harm No.	Harm. Ave.	Limit (100%)	% Of Limits	Result (Ave.)	Result (Max.)	Harm. Win.	Win. (150%)	% Of Max
2	0.0140	1.0800	1.3	PASS	PASS	0.0150	1.6200	0.9
3	0.0110	2.3000	0.5	PASS	PASS	0.0120	3.4500	0.3
4	0.0085	0.4300	2.0	PASS	PASS	0.0094	0.6450	1.5
5	0.0895	1.1400	7.8	PASS	PASS	0.0911	1.7100	5.3
6	0.0054	0.3000	1.8	PASS	PASS	0.0069	0.4500	1.5
7	0.0356	0.7700	4.6	PASS	PASS	0.0384	1.1550	3.3
8	0.0019	0.2300	0.8	PASS	PASS	0.0027	0.3450	0.8
9	0.0292	0.4000	7.3	PASS	PASS	0.0313	0.6000	5.2
10	0.0049	0.1840	2.7	PASS	PASS	0.0062	0.2760	2.2
11	0.0099	0.3300	3.0	PASS	PASS	0.0123	0.4950	2.5
12	0.0032	0.1530	2.1	PASS	PASS	0.0044	0.2295	1.9
13	0.0099	0.2100	4.7	PASS	PASS	0.0123	0.3150	3.9
14	0.0026	0.1310	2.0	PASS	PASS	0.0037	0.1965	1.9
15	0.0111	0.1500	7.4	PASS	PASS	0.0132	0.2250	5.8
16	0.0024	0.1150	2.1	PASS	PASS	0.0034	0.1725	2.0
17	0.0066	0.1320	5.0	PASS	PASS	0.0088	0.1980	4.4
18	0.0034	0.1020	3.3	PASS	PASS	0.0044	0.1530	2.9
19	0.0060	0.1180	5.1	PASS	PASS	0.0078	0.1770	4.4
20	0.0037	0.0920	4.1	PASS	PASS	0.0047	0.1380	3.4
21	0.0094	0.1070	8.8	PASS	PASS	0.0111	0.1605	6.9
22	0.0029	0.0830	3.5	PASS	PASS	0.0041	0.1245	3.3
23	0.0115	0.0970	11.8	PASS	PASS	0.0134	0.1455	9.2
24	0.0022	0.0760	2.9	PASS	PASS	0.0030	0.1140	2.7
25	0.0092	0.0900	10.3	PASS	PASS	0.0111	0.1350	8.3
26	0.0026	0.0700	3.8	PASS	PASS	0.0038	0.1050	3.6
27	0.0085	0.0830	10.3	PASS	PASS	0.0102	0.1245	8.2
28	0.0022	0.0650	3.3	PASS	PASS	0.0030	0.0975	3.0
29	0.0084	0.0770	10.8	PASS	PASS	0.0102	0.1155	8.8
30	0.0023	0.0610	3.8	PASS	PASS	0.0031	0.0915	3.4
31	0.0108	0.0720	15.0	PASS	PASS	0.0127	0.1080	11.8
32	0.0024	0.0570	4.2	PASS	PASS	0.0033	0.0855	3.8
33	0.0132	0.0680	19.4	PASS	PASS	0.0150	0.1020	14.7
34	0.0024	0.0540	4.5	PASS	PASS	0.0034	0.0810	4.2
35	0.0157	0.0640	24.5	PASS	PASS	0.0175	0.0960	18.2
36	0.0024	0.0510	4.7	PASS	PASS	0.0033	0.0765	4.3
37	0.0176	0.0600	29.3	PASS	PASS	0.0197	0.0900	21.9
38	0.0022	0.0480	4.6	PASS	PASS	0.0031	0.0720	4.2
39	0.0189	0.0570	33.2	PASS	PASS	0.0208	0.0855	24.3
40	0.0021	0.0460	4.6	PASS	PASS	0.0031	0.0690	4.4

Power Source Verification Data

Harm No.	Harm. Value	Harm. Limit	% Of Limits	% Of Vfund	Result
2	0.033	0.460	7.096	0.014	OK
3	0.096	2.070	4.643	0.042	OK
4	0.020	0.460	4.346	0.009	OK
5	0.073	0.920	7.961	0.032	OK
6	0.026	0.460	5.606	0.011	OK
7	0.033	0.690	4.825	0.015	OK
8	0.046	0.460	9.981	0.020	OK
9	0.021	0.460	4.531	0.009	OK
10	0.031	0.460	6.700	0.013	OK
11	0.028	0.230	12.136	0.012	OK
12	0.025	0.230	11.022	0.011	OK
13	0.024	0.230	10.276	0.010	OK
14	0.032	0.230	13.887	0.014	OK
15	0.021	0.230	9.004	0.009	OK
16	0.014	0.230	6.161	0.006	OK
17	0.016	0.230	6.990	0.007	OK
18	0.015	0.230	6.387	0.006	OK
19	0.015	0.230	6.310	0.006	OK
20	0.019	0.230	8.471	0.008	OK
21	0.020	0.230	8.684	0.009	OK
22	0.019	0.230	8.260	0.008	OK
23	0.027	0.230	11.560	0.012	OK
24	0.021	0.230	9.165	0.009	OK
25	0.022	0.230	9.655	0.010	OK
26	0.018	0.230	7.760	0.008	OK
27	0.019	0.230	8.384	0.008	OK
28	0.017	0.230	7.532	0.008	OK
29	0.020	0.230	8.654	0.009	OK
30	0.019	0.230	8.457	0.008	OK
31	0.023	0.230	10.042	0.010	OK
32	0.022	0.230	9.749	0.010	OK
33	0.027	0.230	11.549	0.012	OK
34	0.023	0.230	9.837	0.010	OK
35	0.033	0.230	14.341	0.014	OK
36	0.022	0.230	9.521	0.010	OK
37	0.037	0.230	16.250	0.016	OK
38	0.022	0.230	9.352	0.009	OK
39	0.037	0.230	16.021	0.016	OK
40	0.017	0.230	7.531	0.008	OK

8. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

8.1. Block Diagram of Test Setup



8.2. Measuring Standard

☒EN 61000-3-3:2013/A2:2021/AC:2022-01
☐EN IEC 61000-3-11:2019

8.3. Measurement Limits

The objective of voltage changes, voltage fluctuations and flicker in public low voltage supply systems during equipment with rated current≤16 A per phase, ensures that home appliances and certain other electrical equipment do not adversely affect lighting equipment when connected to the same power system.
Voltage Fluctuation and Flicker Limits:
— the value of Pst shall not be greater than 1.0;
— the value of Plt shall not be greater than 0.65;
— the value of d(t) during a voltage change shall not exceed 3.3 % for more than 500 ms;
— the relative steady-state voltage change, dc, shall not exceed 3.3 %;
— the maximum relative voltage change, dmax, shall not exceed 4.0 %;

8.4. Test Procedure

The total impedance of the test circuit, excluding the appliance under test, but including the internal impedance of the supply source, shall be equal to the reference impedance. The stability and tolerance of the reference impedance shall be adequate to ensure that the overall accuracy of 8% is achieved during the whole assessment procedure.

8.5. Test Results

Pass.

Please refer to the following pages.

EUT:	X1-Micro 2 in 1 (X1-Micro 1200)
Test Standard:	Test per IEC 61000-3-3
Test Class:	Flicker Test, Pst-dc-dmax-Tmax
Test Result:	**PASS**
Test Date:	2024/2/23
Start Time:	10:07:58
Stop Time:	10:18:17
Test Duration (min):	10
Source Qualification:	Compliance with IEC 61000-3-3
Temp (°C) :	19.0
Hum. (% RH) :	54.0
Customer:	Customer
Test By:	Jackson Xue
Comments:	PV-AC

Last Test Parameters:

Phase A

Vrms (Volts):	231.28	Frequency (Hz):	50.00
I_rms (Amps):	5.091	Power (W):	-1176.97
V-THD (%):	0.181	T-Max (ms):	0 (500)
dmax (%):	0.000 (4.000)	Hi dmax (%):	0.000 (4.000)
dc (%):	0.000 (3.300)	Hi dc (%):	0.000 (3.300)
Pst-001 :	0.093 (1.000)		
Plt :	0.041 (0.650)		

Pst Spectrum

Plt Spectrum

9. IMMUNITY PERFORMANCE CRITERIA DESCRIPTION

A functional description and a definition of performance criteria, during or as a consequence of the EMC testing, shall be provided by the manufacturer and noted in the test report, based on one of the following criteria:

Performance criterion A: The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

Performance criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.

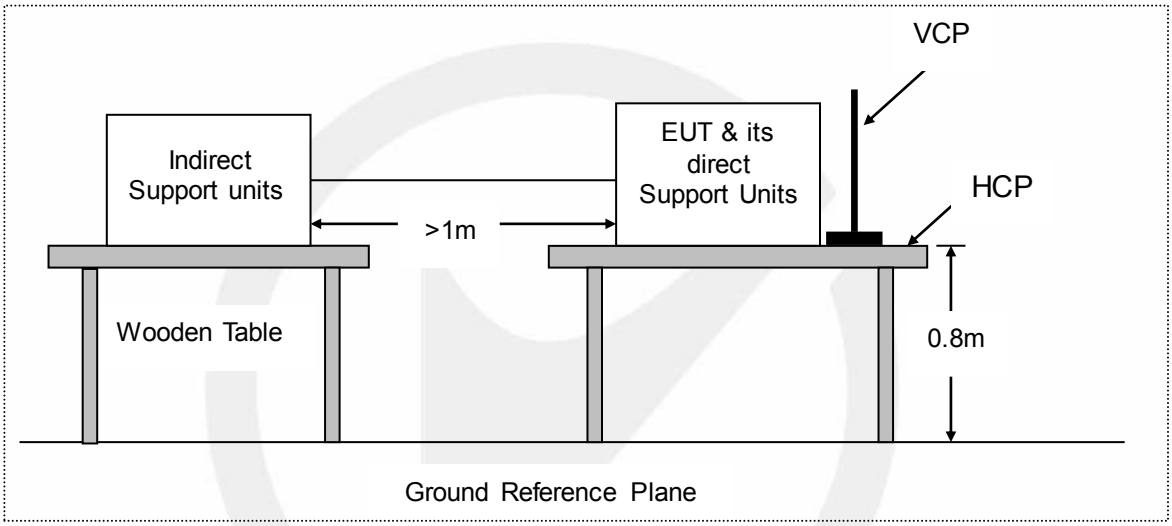
Performance criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

10.ELECTROSTATIC DISCHARGE IMMUNITY TEST

10.1.Test Specification

Test standard	:	EN IEC 61000-6-1, EN IEC 61000-6-2
Basic standard	:	IEC 61000-4-2
Performance criterion	:	B
Test level	:	±8.0kV (Air discharge)
		±4.0kV (Contact discharge)

10.2.Block Diagram of Test Setup



10.3.Test Procedure

a. In the case of air discharge testing, the climatic conditions shall be within the following ranges:
- ambient temperature: 15°C to 35°C;
- relative humidity : 30% to 60%;
- atmospheric pressure : 86 kPa (860 mbar) to 106 kPa (1060 mbar)

b. Test programs and software shall be chosen so as to exercise all normal modes of operation of the EUT. The use of special exercising software is encouraged, but permitted only where it can be shown that the EUT is being comprehensively exercised.

c. In the case of contact discharges, the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

d. In the case of painted surface covering a conducting substrate, the following procedure shall be adopted : - If the coating is not declared to be an insulating coating by the equipment manufacturer, then the pointed tip of the generator shall penetrate the coating so as to make contact with the conducting substrate. - Coating declared as insulating by the manufacturer shall only be submitted to the air discharge. - The contact discharge test shall not be applied to such surfaces.

e. In the case of air discharges, the round discharge tip of the discharge electrode shall be approached as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator (discharge electrode) shall be removed from the EUT. The generator is then retriggered for a new single discharge. This procedure shall be repeated until the discharges are completed. In the case of an air discharge test, the discharge switch, which is used for contact discharge, shall be closed.

f. The test voltage shall be increased from the minimum to the selected test severity level, in order to determine any threshold of failure. The final test level should not exceed the product specification value in order to avoid damage to the equipment.

g. The test shall be performed with both air discharge and contact discharge. The test shall be performed with single discharges. On each pre-selected point at least 10 single discharges (in the most sensitive polarity) shall be applied. For the time interval between successive single discharges an initial value of 1 s is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.
h. Ensure that the applied charge on the EUT has been dis-charged before next ESD pulse.

10.4. Test Results

Pass.

Temperature	:	23°C
Humidity	:	44%
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jackson Xue
Test Date	:	2024-02-23

Air Discharge:

Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
±2; 4; 8 kV	All slots of the EUT	A	B	Pass
±2; 4; 8 kV	Non-Conducted Enclosure	A	B	Pass

Contact Discharge

Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
±2; 4kV	Conducted Enclosure	A	B	Pass
±2; 4kV	Screw	A	B	Pass

Indirect Discharge

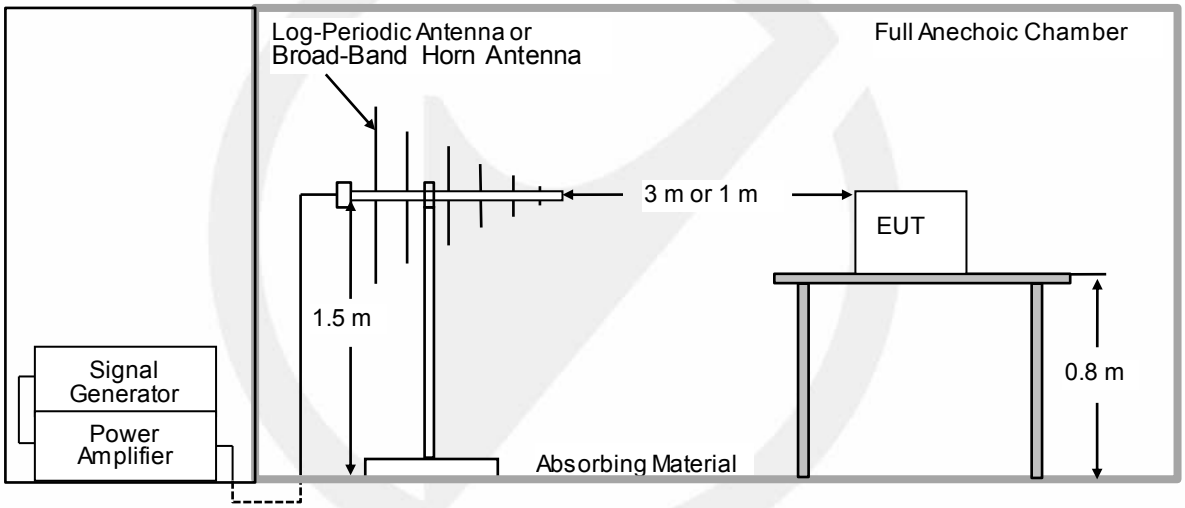
Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
±2; 4kV	HCP	A	B	Pass
±2; 4kV	VCP	A	B	Pass

11.RADIO-FREQUENCY ELECTROMAGNETIC FIELD IMMUNITY TEST

11.1.Test Specification

Test standard	:	EN IEC 61000-6-1, EN IEC 61000-6-2	
Basic standard	:	IEC 61000-4-3	
Performance criterion	:	A	
Frequency range & Test level	:	80M-1000MHz(For EN IEC 61000-6-1)	3V/m
		80M-1000MHz(For EN IEC 61000-6-2)	10V/m
		1400M-6000MHz	3V/m
Modulation	:	AM, 80%, 1kHz sine-wave	
Frequency Step	:	1% of fundamental	
Dwell Time	:	3 second	

11.2.Block Diagram of Test Setup



11.3.Test procedure

The procedure defined in this part requires the generation of electromagnetic fields within which the test sample is placed and its operation observed. To generate fields that are useful for simulation of actual (field) conditions may require significant antenna drive power and the resultant high field strength levels. To comply with local regulations and to prevent biological hazards to the testing personnel, it is recommended that these tests be carried out in a shielded enclosure or semi-anechoic chamber.

a. The antenna which is enabling the complete frequency range of 80-1000 MHz is placed 3m (or 1m) away from the equipment. The required field strength is determined by placing the field strength meter(s) on top of or directly alongside the equipment under test and monitoring the field strength meter via a remote field strength indicator outside the enclosure while adjusting the continuous-wave to the antenna.
b. The test is performed with the antenna facing the front and back sides of the EUT with. Both vertical and horizontal polarizations from antenna are tested.

11.4.Test results

Pass.

For EN IEC 61000-6-1

Temperature	:	21 °C
Humidity	:	60 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jackson Xue
Test Date	:	2024-02-23

Freq. Range (MHz)	Field	Modulation	Polarity	Position (°)	Actual criterion	Required performance criterion	Result
80-1000	3V/m	AM, 80%	H / V	0, 90,180, 270	A	A	Pass
1400-6000	3V/m				A	A	Pass

For EN IEC 61000-6-2

Temperature	:	21 °C
Humidity	:	60 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jackson Xue
Test Date	:	2024-02-23

Freq. Range (MHz)	Field	Modulation	Polarity	Position (°)	Actual criterion	Required performance criterion	Result
80-1000	10V/m	AM, 80%	H / V	0, 90,180, 270	A	A	Pass
1400-6000	3V/m				A	A	Pass

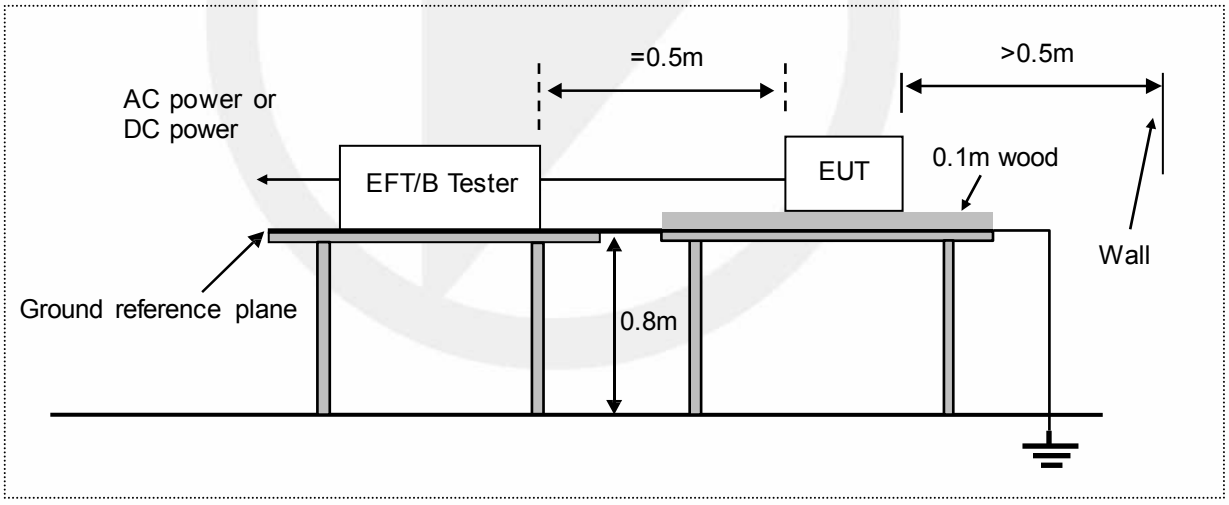
12.FAST TRANSIENTS/BURSTS IMMUNITY TEST

12.1.Test Specification

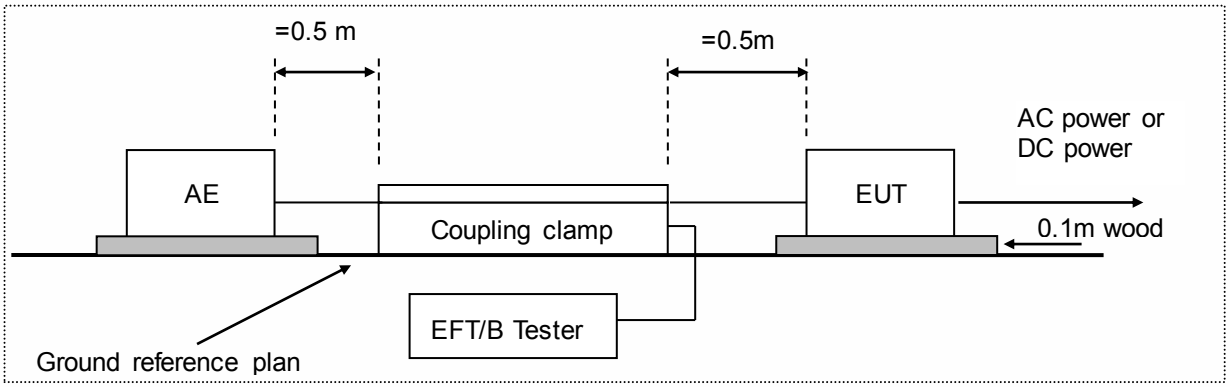
Test standard	:	EN IEC 61000-6-1, EN IEC 61000-6-2
Basic standard	:	IEC 61000-4-4
Performance criterion	:	B
Test level	:	☐±0.5kV, Signal ports (For EN IEC 61000-6-1)
		☐±1.0kV, Signal ports (For EN IEC 61000-6-2)
		☐±0.5kV, Input and Output DC power ports (For EN IEC 61000-6-1)
		☐±1.0kV, Input and Output DC power ports (For EN IEC 61000-6-2)
		☒±1kV, Input and Output AC power ports (For EN IEC 61000-6-1)
		☒±2kV, Input and Output AC power ports (For EN IEC 61000-6-2)
Repetition frequency	:	5kHz
Tr/Th:	:	5/50ns
Burst period	:	300ms
Test time :	:	120s

12.2.Block Diagram of Test Setup

Input and Output AC power or DC power ports:



Signal ports:



12.3. Test Procedure

The EUT is put on the table that is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

12.4. Test Results

Pass.

For EN IEC 61000-6-1

Temperature : 19 °C
Humidity : 54 %
Atmospheric Pressure : 101kpa
Test Engineer : Jackson Xue
Test Date : 2024-02-23

Injection Line	Voltage (kV)	Injected Method	Actual criterion	Required performance criterion	Result (Pass/Fail)
☐ Signal ports	☒± 0.5	☐ CDN ☐ Direct injection ☒ Capacitive coupling clamp	N/A	B	N/A
☐ nput and Output DC power ports	☒± 0.5	☐ CDN ☒ Direct injection ☐ Capacitive coupling clamp	N/A	B	N/A
☒ Input and Output AC power ports	☒± 1	☐ CDN ☒ Direct injection ☐ Capacitive coupling clamp	A	B	Pass

For EN IEC 61000-6-2

Temperature : 19 °C
Humidity : 54 %
Atmospheric Pressure : 101kpa
Test Engineer : Jackson Xue
Test Date : 2024-02-23

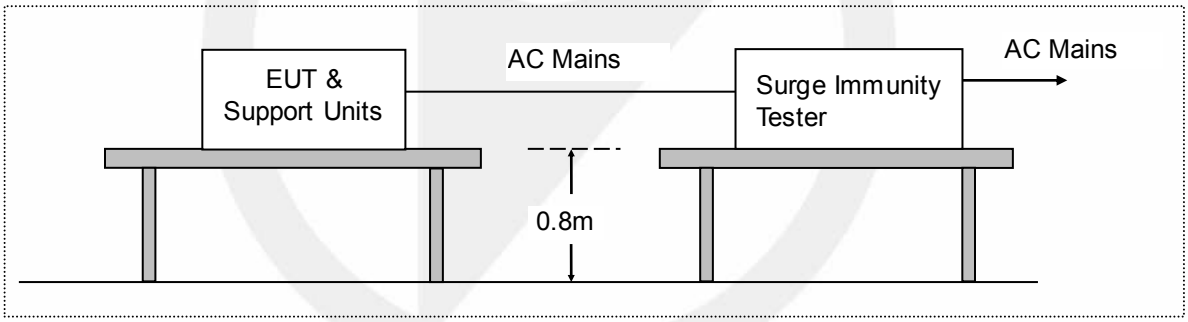
Injection Line	Voltage (kV)	Injected Method	Actual criterion	Required performance criterion	Result (Pass/Fail)
☐ Signal ports	☒± 1.0	☐ CDN ☐ Direct injection ☒ Capacitive coupling clamp	N/A	B	N/A
☐ Input and Output DC power ports	☒± 1.0	☐ CDN ☒ Direct injection ☐ Capacitive coupling clamp	N/A	B	N/A
☒ Input and Output AC power ports	☒± 2.0	☐ CDN ☒ Direct injection ☐ Capacitive coupling clamp	A	B	Pass

13.SURGES IMMUNITY TEST

13.1.Test Specification

Test standard	: EN IEC 61000-6-1, EN IEC 61000-6-2
Basic standard	: IEC 61000-4-5
Performance criterion	: B
Test level	: ☐±0.5kV, Input and Output DC power ports, line-to- line
	☐±1kV, Input and Output DC power ports, line-to- earth
	☒±1kV, Input and Output AC power ports, line-to- line
	☒±2kV, Input and Output AC power ports, line-to- earth
	☐±1kV, Signal ports, line-to- earth
Waveform (μs)	: 1.2/50 (8/20)
Number of surges	: 5 (for each combination of parameters)
Repetition rate	: 1 minute / time
Polarity:	: Positive / Negative
Phase angle:	: 0º, 90º, 180º, 270º

13.2.Block Diagram of Test Setup



13.3.Test Procedure

This test simulates a lightning event by inducing transients onto the AC/DC power supply lines in common mode (Line to Ground) and differential mode (Line to Line). Each device was tested in a total of two surge configurations: Line to Ground (L-G): Combination Wave, Line to Protective Earth with 9uF and 10ohm and Neutral to Protective Earth with 9uF and 10ohm, common mode, generator earthed.
Line to Line (L-L): Combination Wave,
Line to Neutral with 18uF, differential mode, generator floated.
2 ohm : the source impedance of the low-voltage power supply network.
12 ohm : the source impedance of the low-voltage power supply network and ground.
The pulses are applied 0º, 90º, 180º, 270º relative to the phase angle of the a.c. line voltage to the equipment under test.
a. If not otherwise specified the surges have to be applied synchronized to the voltage phase at the zero-crossing and the peak value of the a.c. voltage wave (positive and negative).
b. The surges have to be applied line to line and line to earth. When testing line to earth, the test voltage has to be applied successively between each of the lines and earth, if there is no other specification.
c. The test procedure shall also consider the non-linear current-voltage characteristics of the equipment under test. Therefore the test voltage has to be increased by steps up to the test level specified in the product standard or test plan. All lower levels including the selected test level shall be satisfied.

d. For testing the secondary protection, the output voltage of the generator shall be increased up to the worst-case voltage breakdown level (let-through level) of the primary protection.
e. Testing shall be performed according to a Test Plan, which shall be included in the test report.
f. To find all critical points of the duty cycle of the equipment, a sufficient number of positive and negative test pulses shall be applied.

13.4. Test results

Pass.

Temperature	:	19 °C
Humidity	:	54 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jackson Xue
Test Date	:	2024-02-23

☒ Input and output AC power ports:

Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
☒ Line to line	1	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
☒ Line to earth	2	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass

☐ Input and output DC power ports:

Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
☐ Line to line	0.5	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A
☐ Line to earth	1	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A

☐ Signal ports:

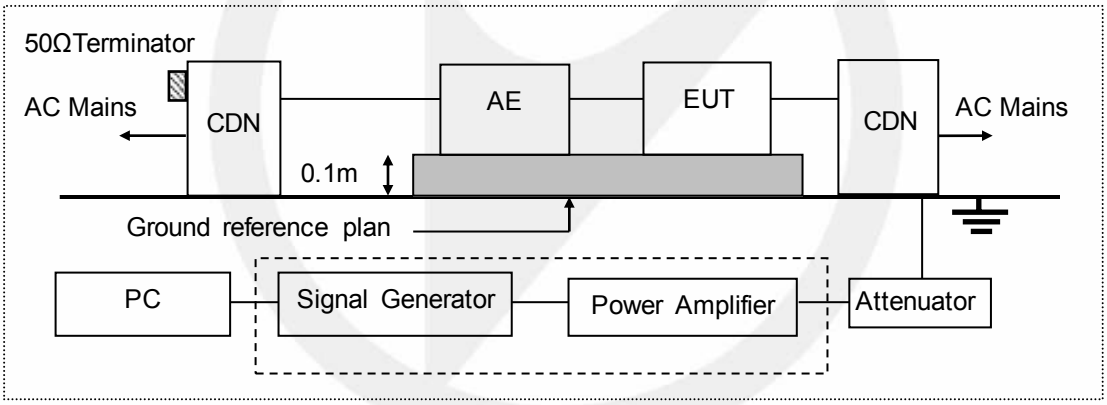
Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
☐ Line to earth	1	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A

14.RADIO-FREQUENCY COMMON MODE IMMUNITY TEST

14.1.Test Specification

Test standard	: EN IEC 61000-6-1, EN IEC 61000-6-2
Basic standard	: IEC 61000-4-6
Performance criterion	: A
Test level	: ☐0.15M to 80MHz, Signal ports, 3V ☐0.15M to 80MHz, Input and Output DC power ports, 3V ☒0.15M to 80MHz, Input and Output AC power ports, 3V (For EN IEC 61000-6-1) ☐0.15M to 80MHz, Signal ports, 10V ☐0.15M to 80MHz, Input and Output DC power ports, 10V ☒0.15M to 80MHz, Input and Output AC power ports, 10V (For EN IEC 61000-6-2)
Modulation	: AM 80%, 1kHz sine-wave
Frequency Step	: 1% of fundamental
Dwell Time	: 3 second

14.2.Block Diagram of Test Setup



14.3.Test Procedure

a. The EUT shall be operated within its intended climatic conditions. The temperature and relative humidity should be recorded.
b. The EUT is placed on a 0.1m high test table, and a well grounded cable is connected to metallic plane above the test table.
c. All cables/wires must be laid out on test plate (3cm in thickness),and the EUT is set up on test plate (10 cm in thickness) as shown in test setup photo, and the cables/wires must not be in mid-air, they should be touching the surface of test plate. Ensure that the EUT is properly connected to the accessory equipment.
d. The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF-input ports of the coupling devices are terminated by a 50 ohm load resistor.
e. The frequency range is swept from 150 kHz to 80 MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave, pausing to adjust the RF-signal level or to switch coupling devices as necessary. The rate of sweep shall no exceed 1.5 x 10-3 decades/s. Where the frequency is swept incrementally, the step size shall no exceed 1% of the start and thereafter 1% of the preceding frequency value.

f. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies e.g. clock frequency (ies) and harmonics or frequencies of dominant interest shall be analyzed separately.
g. Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility
h. Testing shall be performed according to a Test Plan, which shall be included in the test report.

14.4. Test results

Pass.

For EN IEC 61000-6-1
Temperature : 19 °C
Humidity : 54 %
Atmospheric Pressure : 101kpa
Test Engineer : Jackson Xue
Test Date : 2024-02-23

Injection port	Range (MHz)	Levers (V)	Coupling type	Actual criterion	Required performance criterion	Result (Pass/Fail)
☐Signal ports	0.15-80	3V	☐CDN ☒EM Clamp	N/A	A	N/A
☐Input and Output DC power ports	0.15-80	3V	☒CDN ☐EM Clamp	N/A	A	N/A
☒Input and Output AC power ports	0.15-80	3V	☒CDN ☐EM Clamp	A	A	Pass

For EN IEC 61000-6-2
Temperature : 19 °C
Humidity : 54 %
Atmospheric Pressure : 101kpa
Test Engineer : Jackson Xue
Test Date : 2024-02-23

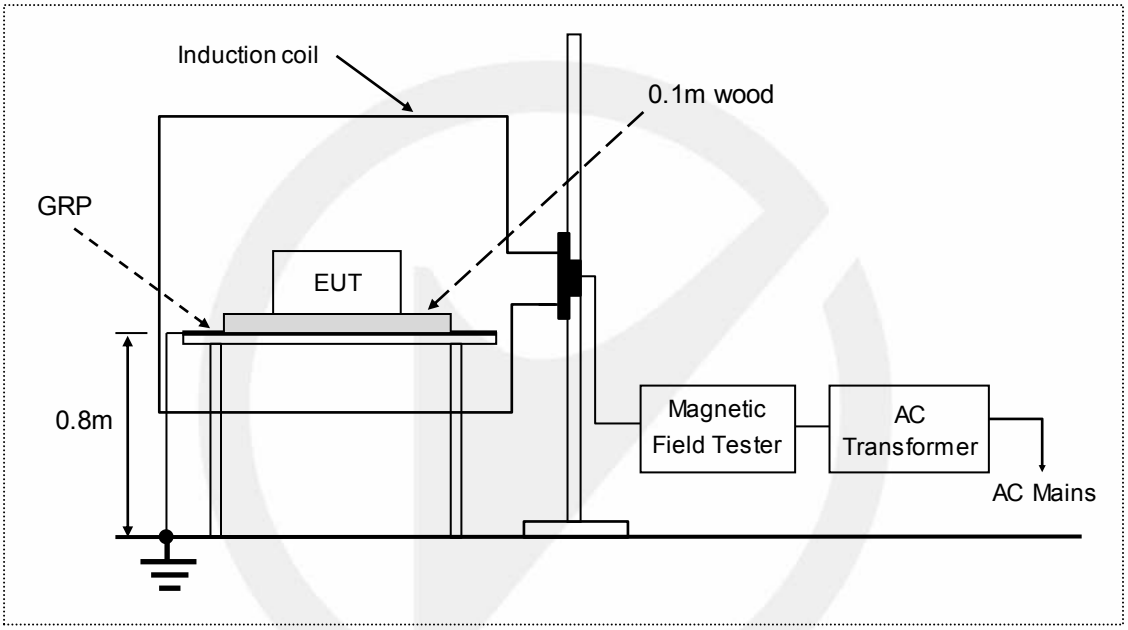
Injection port	Range (MHz)	Levers (V)	Coupling type	Actual criterion	Required performance criterion	Result (Pass/Fail)
☐Signal ports	0.15-80	10V	☐CDN ☒EM Clamp	N/A	A	N/A
☐Input and Output DC power ports	0.15-80	10V	☒CDN ☐EM Clamp	N/A	A	N/A
☒Input and Output AC power ports	0.15-80	10V	☒CDN ☐EM Clamp	A	A	Pass

15.POWER FREQUENCY MAGNETIC FIELD

15.1.Test Specification

Test Standard	:	EN IEC 61000-6-1, EN IEC 61000-6-2
Basic Standard	:	IEC 61000-4-8
Performance criterion	:	A
Test level	:	3 A/m (For EN IEC 61000-6-1) 30 A/m (For EN IEC 61000-6-2)

15.2.Block Diagram of Test Setup



GRP: Ground reference plane
EUT: Equipment under test

15.3.Test Procedure

The EUT is placed in the middle of induction coil (1*1m), under which is a 1*1*0.8m (high) table above the GRP. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

15.4.Test Results

Pass.

For EN IEC 61000-6-1

Temperature : 19 °C
Humidity : 54 %
Atmospheric Pressure : 101kpa
Test Engineer : Jackson Xue
Test Date : 2024-02-23

Test Level (A/m)	Frequency	Testing Duration	Coil Orientation	Actual criterion	Required performance criterion	Result (Pass/Fail)
3	☒ 50Hz ☐ 60Hz	5 mins	☒ x-axis ☒ y-axis ☒ z-axis	A	A	Pass

For EN IEC 61000-6-2

Temperature : 19 °C
Humidity : 54 %
Atmospheric Pressure : 101kpa
Test Engineer : Jackson Xue
Test Date : 2024-02-23

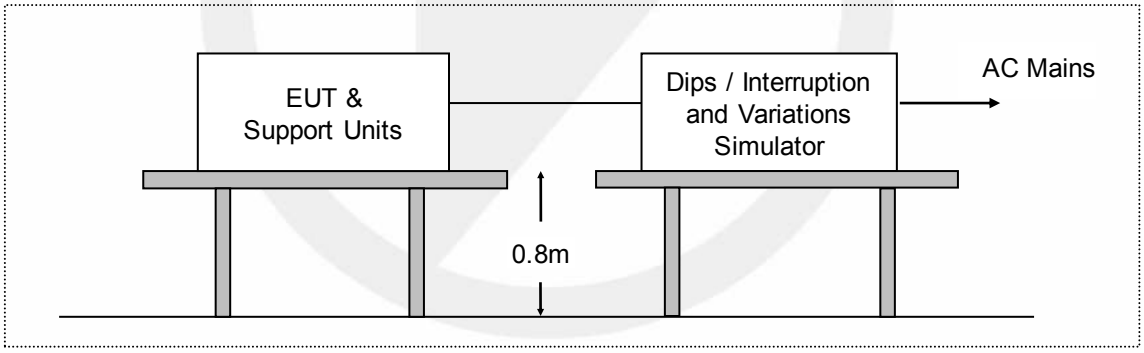
Test Level (A/m)	Frequency	Testing Duration	Coil Orientation	Actual criterion	Required performance criterion	Result (Pass/Fail)
30	☒ 50Hz ☐ 60Hz	5 mins	☒ x-axis ☒ y-axis ☒ z-axis	A	A	Pass

16.VOLTAGE DIPS AND VOLTAGE INTERRUPTIONS IMMUNITY TEST

16.1.Test Specification

Test standard	:	EN IEC 61000-6-1, EN IEC 61000-6-2
Basic standard	:	IEC 61000-4-11
Test level	:	(For EN IEC 61000-6-1) ☒0%, 0.5 periods, Criterion B ☒0%, 1 periods, Criterion B ☒70%, 25 periods for 50Hz, Criterion C ☐70%, 30 periods for 60Hz, Criterion C ☒0%, 250 periods for 50Hz, Criterion C ☐0%, 300 periods for 50Hz, Criterion C (For EN IEC 61000-6-2) ☒0%, 1 periods, Criterion B ☒40%, 10 periods for 50Hz, Criterion C ☐40%, 12 periods for 60Hz, Criterion C ☒70%, 25 periods for 50Hz, Criterion C ☐70%, 30 periods for 60Hz, Criterion C ☒0%, 250 periods for 50Hz, Criterion C ☐0%, 300 periods for 50Hz, Criterion C

16.2.Block Diagram of Test Setup



16.3.Test Procedure

a. Where the equipment has a rated voltage the following shall apply - If the voltage range does not exceed 20% of the lower voltage specified for the rated voltage range, a single voltage within that range may be specified as a basis for test level specification.
- In all other cases, the test procedure shall be applied for both the lowest and highest voltages declared in the voltage range.
b. Test Conditions
- Select operated voltage and frequency of EUT - Test of interval : 10 sec.
- Level and duration : Sequence of 3 dips/interrupts.
- Voltage rise (and fall) time : 1.5 μs.

16.4.Test results

Pass.

For EN IEC 61000-6-1

Temperature	:	19 °C
Humidity	:	54 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jackson Xue
Test Date	:	2024-02-23

Item	Test Level (% UT)	Phase angle (°)	Input Voltage (V)	Freq (Hz)	Duration (periods)	Actual criterion	Required performance criterion	Result (Pass /Fail)
☒Voltage dips	0%	0º, 180º	AC 230V	50	0.5	A	B	Pass
☒Voltage dips	0%	0º, 180º	AC 230V	50	1	A	B	Pass
☒Voltage dips	70%	0º, 180º	AC 230V	50	25	A	C	Pass
☐Voltage dips	70%	0º, 180º	AC 230V	60	30	N/A	C	N/A
☒Voltage dips	0%	0º, 180º	AC 230V	50	250	B	C	Pass
☐Voltage dips	0%	0º, 180º	AC 230V	60	300	N/A	C	N/A

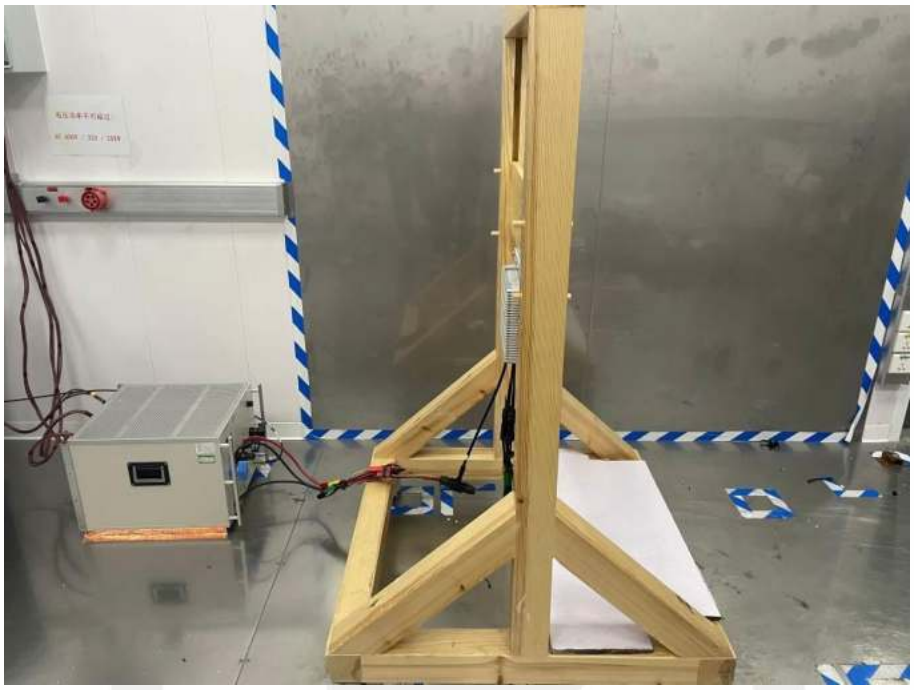
For EN IEC 61000-6-2

Temperature	:	19 °C
Humidity	:	54 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jackson Xue
Test Date	:	2024-02-23

Item	Test Level (% UT)	Phase angle (°)	Input Voltage (V)	Freq (Hz)	Duration (periods)	Actual criterion	Required performance criterion	Result (Pass /Fail)
☒Voltage dips	0%	0º, 180º	AC 230V	50	1	A	B	Pass
☒Voltage dips	40%	0º, 180º	AC 230V	50	10	A	C	Pass
☐Voltage dips	40%	0º, 180º	AC 230V	60	12	N/A	C	N/A
☒Voltage dips	70%	0º, 180º	AC 230V	50	25	A	C	Pass
☐Voltage dips	70%	0º, 180º	AC 230V	60	30	N/A	C	N/A
☒Voltage dips	0%	0º, 180º	AC 230V	50	250	B	C	Pass
☐Voltage dips	0%	0º, 180º	AC 400V	60	300	N/A	C	N/A

17.PHOTOGRAPH

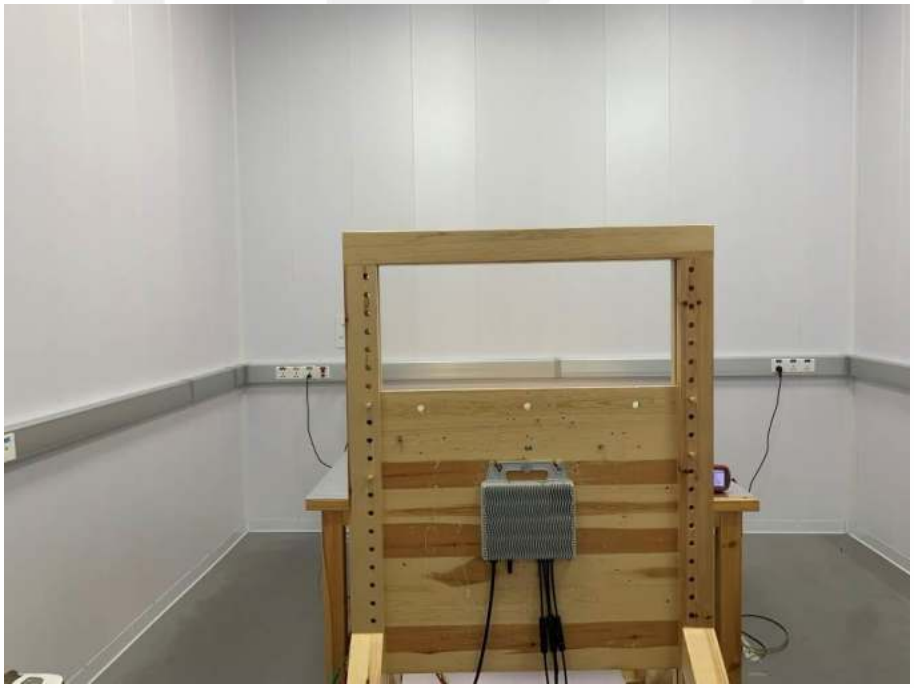
17.1.Photos of Disturbance Voltage Test



17.2.Photo of Radiation Emission Measurement (Up to 1 GHz)

17.3.Photo of Harmonics and Flicker Test

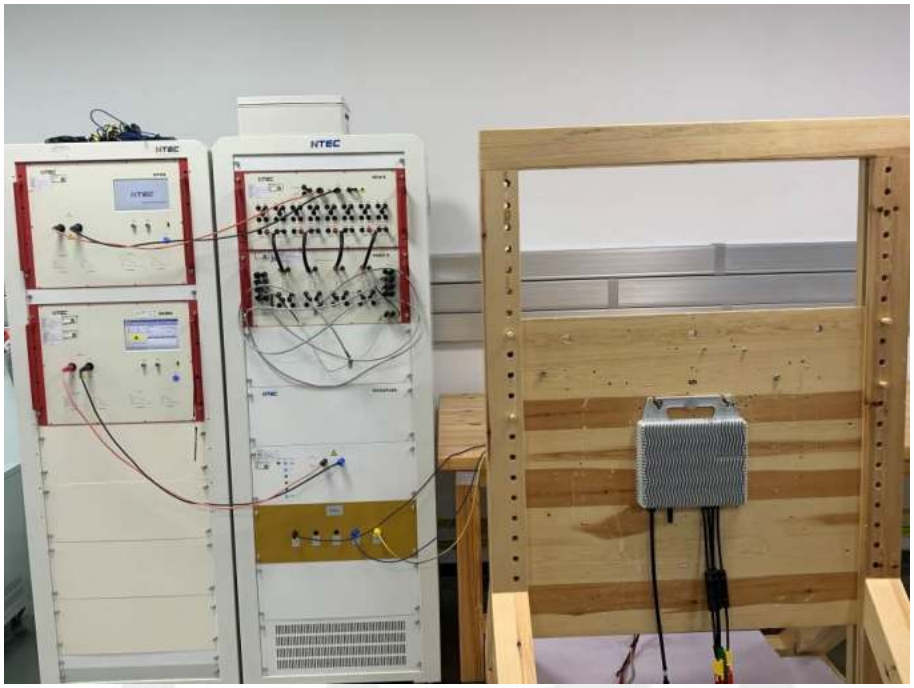
17.4.Photo of Electrostatic Discharge Immunity Test



17.5.Photo of Radio-Frequency Electromagnetic Field Immunity Test

17.6.Photo of Electrical Fast Transient / Burst Test

17.7.Photo of Surge Test

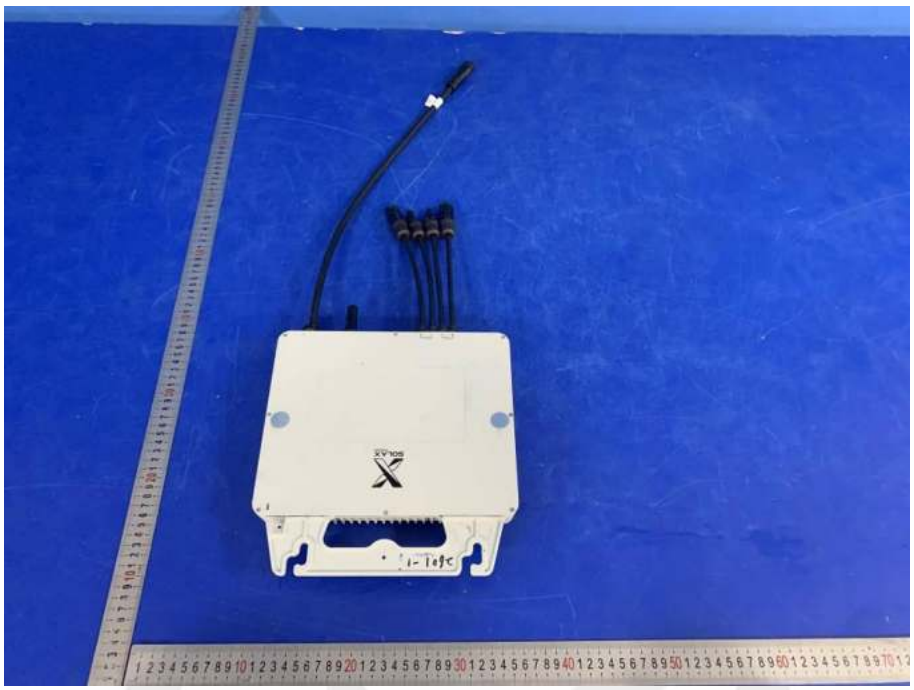


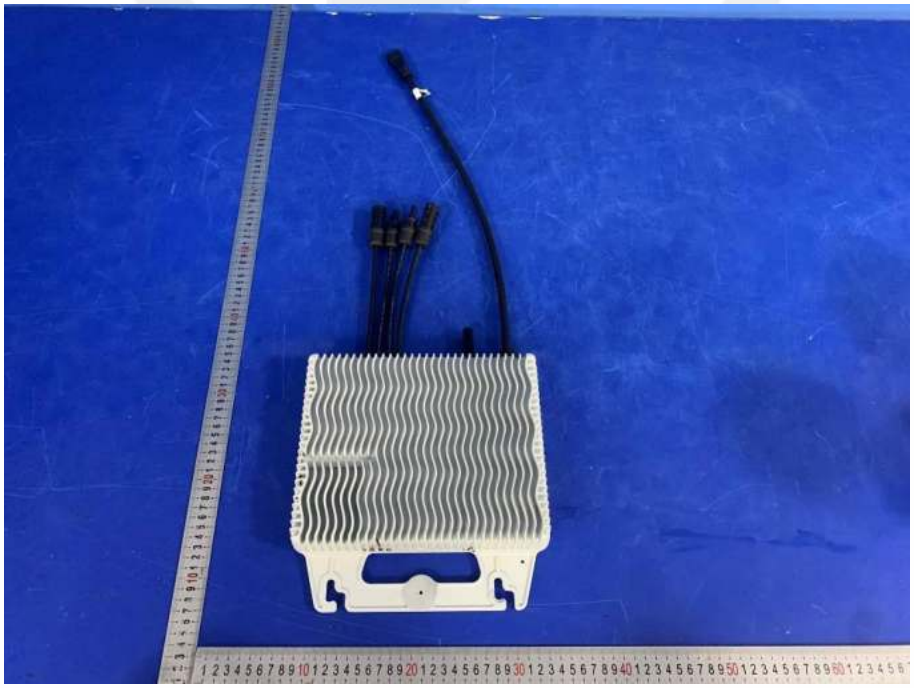
17.8.Photo of Injected Currents Susceptibility Test

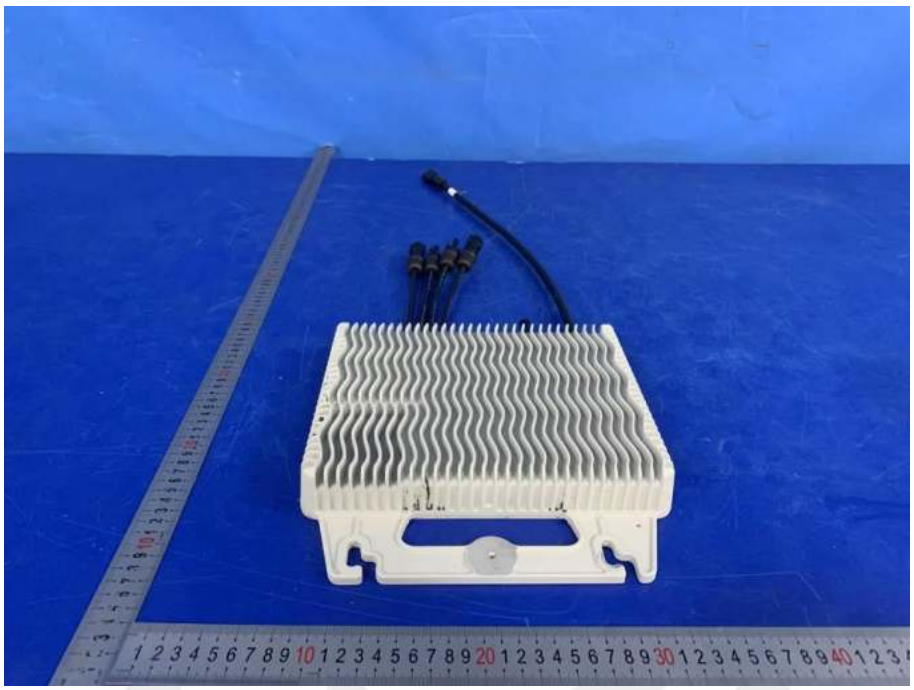
17.9.Photo of Power Frequency Magnetic Field Test

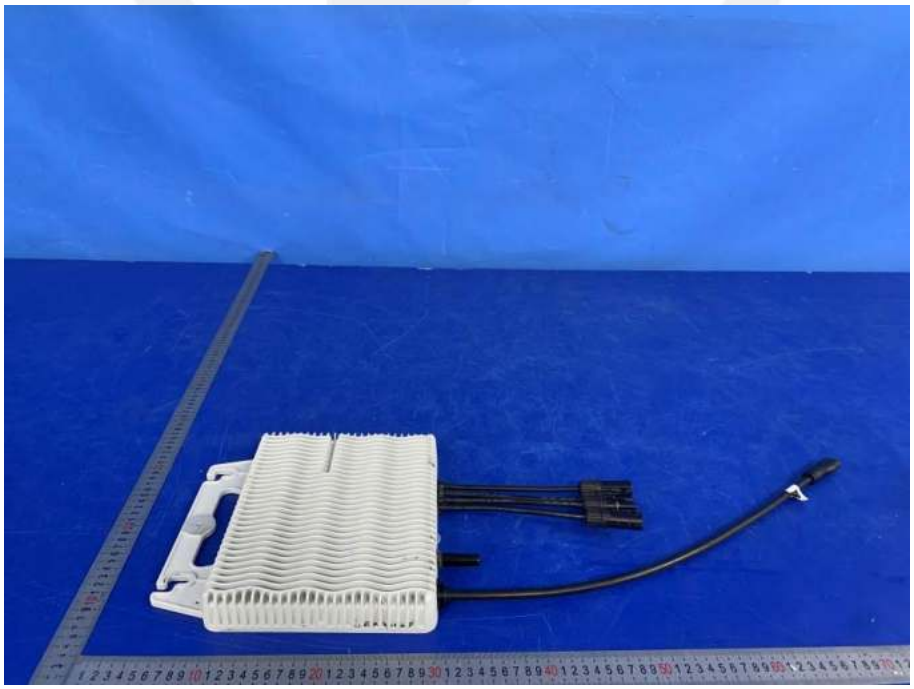
17.10.Photo of Injected Currents Susceptibility Test

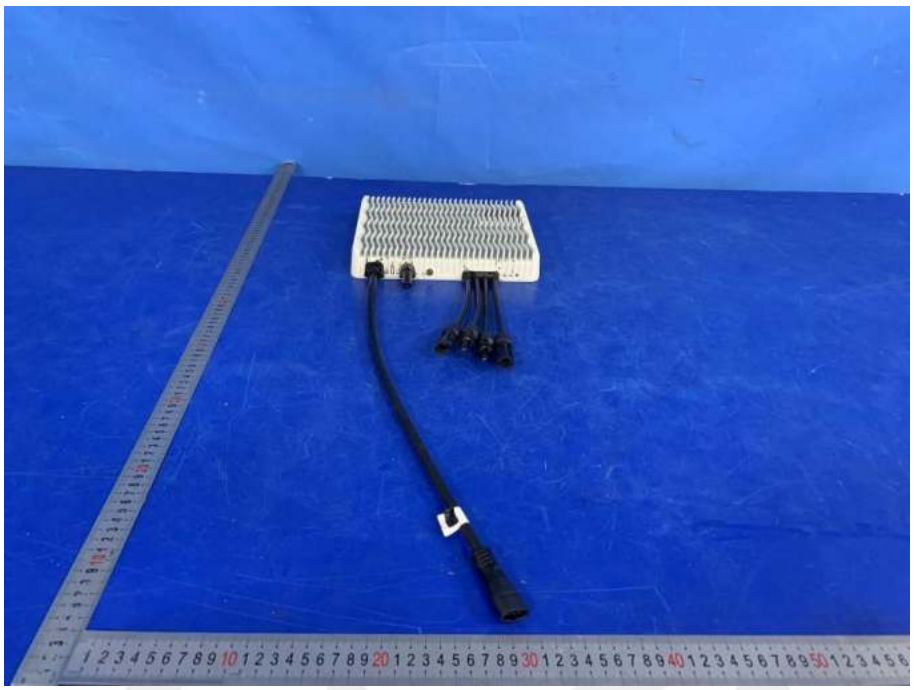
APPENDIX I
(Photo of EUT)

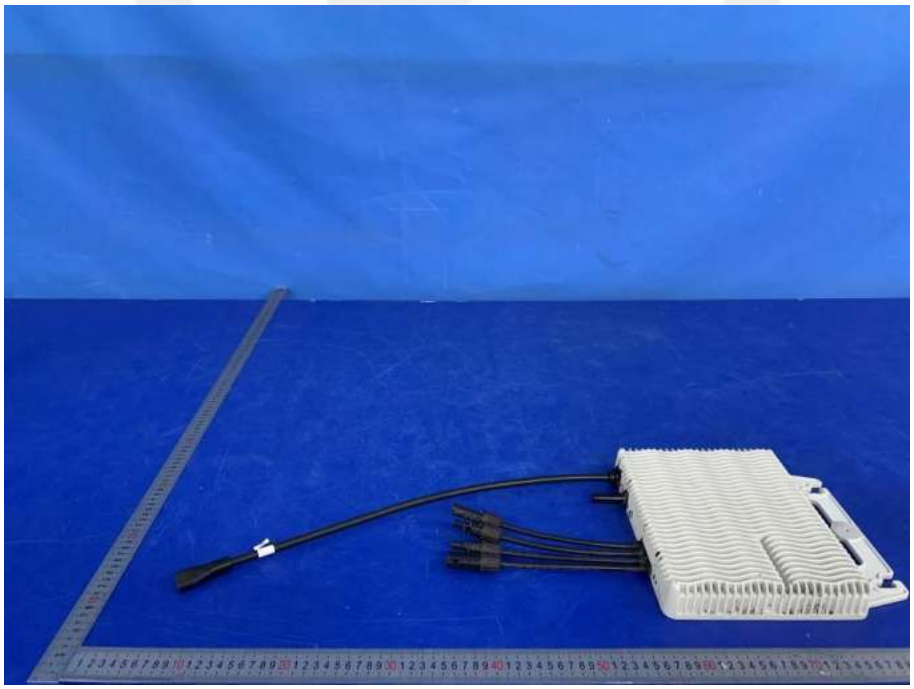












*** End of Report ***

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