TEST REPORT

Product Name	:	T-BAT-SYS-HV-S2.5
Model Number	:	TBMS-MCS0800, TP-HS25, T-BAT HS5.0, T-BAT HS7.5, T-BAT HS10.0, T-BAT HS12.5, T-BAT HS15.0, T-BAT HS17.5, T-BAT HS20.0, T-BAT HS22.5, T-BAT HS25.0, T-BAT HS27.5, T-BAT HS30.0, T-BAT HS32.5

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, Ningbo Hi-Tech Zone, Ningbo, Zhejiang, China Tel: +86-574-27907998 Fax: +86-574-27721538

Report Number	:	ENB2302170089E00101R
Date(s) of Tests	:	February 17, 2023 to March 13, 2023
Date of issue	:	March 21, 2023

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APPENDIX I (Photos of EUT) (4 Pages)

TEST REPORT DESCRIPTION

Applicant	:	SOLAX POWER NETWORK TECHNOLOGY (ZHEJIANG) CO., LTD.
Manufacturer	:	SOLAX POWER NETWORK TECHNOLOGY (ZHEJIANG) CO., LTD.
Trade Mark	:	Triple Power
EUT	:	T-BAT-SYS-HV-S2.5
Model No.	:	TBMS-MCS0800, TP-HS25, T-BAT HS5.0, T-BAT HS7.5, T-BAT HS10.0, T-BAT HS12.5, T-BAT HS15.0, T-BAT HS17.5, T-BAT HS20.0, T-BAT HS22.5, T-BAT HS25.0, T-BAT HS27.5, T-BAT HS30.0, T-BAT HS32.5
Power Supply	:	DC 587-750V, 45A

Measurement Procedure Used:

EN 55011:2016/A2:2021
EN IEC 61000-6-3:2021, EN 61000-6-4:2019
EN IEC 61000-3-2:2019+A1:2021, EN 61000-3-3:2013/A2:2021
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 61000-4-11:2004)

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 55011, EN IEC 61000-6-1, EN IEC 61000-6-2, EN IEC 61000-6-3, EN 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 17, 2023 to March 13, 2023

Prepared by : June Gao/Engineer

Reviewer : Ade Wang/Supervisor

Approved & Authorized Signer : Tony Wei/Manager

Modified History

Version	Report No.	Revision date	Summary
	ENB2302170089E00101R	/	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 61000-6-4:2019	Table 4	Pass
	EN 55011:2016/A2:2021	Group 1, Class B	Pass
Conducted Emissions at DC power port	EN IEC 61000-6-3:2021	Table 5	N/A
	EN 61000-6-4:2019	Table A.1	N/A
	EN 55011:2016/A2:2021	Group 1, Class B	N/A
Conducted Emissions at wired ports	EN IEC 61000-6-3:2021	Table 6	N/A
	EN 61000-6-4:2019	Table 5	N/A
Radiated Emission (Up to 1 GHz)	EN IEC 61000-6-3:2021	Table 3	Pass
	EN 61000-6-4:2019		Pass
	EN 55011:2016/A2:2021	Group 1, Class B	Pass
Radiated Emission (Above 1 GHz)	EN IEC 61000-6-3:2021	Table 3	N/A
	EN 61000-6-4:2019		N/A
Harmonic Current Emission	EN IEC 61000-3-2:2019+A1:2021	Class A	N/A
	BS EN 61000-3-12:2011	Table 3	Pass
Voltage changes, voltage fluctuations and flicker	EN 61000-3-3:2013/A2:2021	Section 5	N/A
	BS 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 61000-4-11:2004	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	:	T-BAT-SYS-HV-S2.5
Model Number	:	TBMS-MCS0800, TP-HS25, T-BAT HS5.0, T-BAT HS7.5, T-BAT HS10.0, T-BAT HS12.5, T-BAT HS15.0, T-BAT HS17.5, T-BAT HS20.0, T-BAT HS22.5, T-BAT HS25.0, T-BAT HS27.5, T-BAT HS30.0, T-BAT HS32.5 (Note: All models are the same as the main control; the difference only increases the battery capacity. We prepared model T-BAT HS32.5 for EMC test.)
Test Voltage	:	AC 230V/50Hz
Highest frequency	:	Below 108 MHz
Sample number	:	ENB2302170089E001-1-1
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 17, 2023
Date of Test	:	February 17, 2023 to March 13, 2023

2.2. Input / Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	Enclosure	N/E	--	--	None
2	DC Line	DC	--	--	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. CHARGING
B. DISCHARGING

2.4. Test Manner

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

2.5. Description of Test Facility

Site Description

EMC Lab. A : **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: CN1302
Test Firm Registration Number: 436491

Accredited by A2LA
The certificate is valid until May 31, 2023

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, Ningbo Hi-Tech Zone, Ningbo, Zhejiang, China

2.6. Test Software

Item		Software
Conducted Emission	:	TS+ (Ver.4.0.0.0)
Radiated Emission	:	TS+ (Ver.4.0.0.0)

2.7. Description of Support Device

Hybrid Inverter : Provided by customer

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 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 Conducted Emission at AC Mains Port Measurement

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-002	EMI Test Receiver	Rohde & Schwarz	ESCI	101107	July 07, 2022	1 Year
ENE-158	L.I.S.N	Rohde & Schwarz	NNLK 8129	0373	Nov. 18, 2022	1 Year
ENE-004	L.I.S.N	Schwarzbeck	NSLK 8126	8126-462	July 07, 2022	1 Year
ENE-006	Pulse Limiter	MTS-systemtechnik	IMP-136	2611115-001-0033	July 07, 2022	1 Year
ENE-278	RF Switching unit	HTEC	HRSU	222101	August 22, 2022	1 Year
ENE-083	RF Cable	Hubber Suhner/Swiss	CBL-RE-3	/	April 07, 2022	1 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	May 18, 2022	1 Year
ENE-189	Antenna multiple	Schwarzbeck	VULB 9163	01498	May 21, 2022	2 Year
ENE-196	Pre-Amplifier	JS Denki	PA09K03-40	JSPA21020	May 18, 2022	1 Year
ENE-203	Low frequency notch filterRf switching	JS Denki	JSDSW-F	JSDSW2211D01	May 27, 2022	1 Year
ENE-280-1	RF cable	Rosenberger	L17-C001-7000	/	June 01, 2022	1 Year
ENE-280-2	RF cable	Rosenberger	L17-C001-3500	/	June 01, 2022	1 Year
ENE-280-3	RF cable	Rosenberger	L17-C001-1500	/	June 01, 2022	1 Year
ENE-280-4	RF cable	Rosenberger	/	/	June 01, 2022	1 Year
ENE-280-5	RF cable	Rosenberger	/	/	June 01, 2022	1 Year
ENE-280-6	RF cable	Rosenberger	L08-C446-1500	/	June 01, 2022	1 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. 18, 2022	1 Year
ENE-157-1	AC Power source	PACIFIC	330AZX-CE	140250014	Nov. 18, 2022	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. 30, 2022	1 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	April 28, 2022	1 Year
ENE-174	SW-RF	JS Denki	JSDSW-BS02	JSDSW2120D01	April 28, 2022	1 Year
ENE-175	Power Amplifier	Vectawave	VBA 1000-600c	132035	April 28, 2022	1 Year
ENE-176	Power Amplifier	Vectawave	VBA 1060-200	132120	April 28, 2022	1 Year
ENE-177	Directional couplers	Bonn	BDC 0810-50/1500	2129259-01	April 28, 2022	1 Year
ENE-178	Directional couplers	Bonn	BDC 1060-40/500	2129304-03	April 28, 2022	1 Year
ENE-179	Multilayer periodic antenna	Schwarzbeck	STLP9129-7/16	03043	April 28, 2022	1 Year
ENE-180	RF cable	Times	LMR600-UF-4M	611747-0001	April 28, 2022	1 Year
ENE-180-1	RF cable	Times	LMR600-UF-1.5M	/	April 28, 2022	1 Year
ENE-181	RF cable	Times	LMR600-UF-4M	611748-0001	April 28, 2022	1 Year
ENE-181-1	RF cable	Times	LMR600-UF-1.5M	/	April 28, 2022	1 Year
ENE-182	power meter	Lumiloop	LSPM	86	April 28, 2022	1 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 07, 2022	1 Year
ENE-012	Coupling Clamp	HAEFELY	IP-4A	147399	July 07, 2022	1 Year
ENE-168	Coupling and Decoupling Network Three Phase	HAEFELY	FP-EFT 32M	190170	Dec. 29, 2022	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. 18, 2022	1 Year
ENE-097-2	Three Phase Coupling/Decoupling Network	HTEC	HCOUPLER 30S	204103	Nov. 18, 2022	1 Year
ENE-097-3	High Pressure Option	HTEC	Options-10KDC	/	Nov. 18, 2022	1 Year
ENE-097-4	40 ohm Impedance	HTEC	Options-40ohm	/	Nov. 18, 2022	1 Year
ENE-097-5	10 ohm Impedance	HTEC	Options-10ohm	/	Nov. 18, 2022	1 Year
ENE-097-6	Combination Wave Generator	HTEC	HTSG 70	204304	Nov. 18, 2022	1 Year
ENE-097-7	Coupling Network	HTEC	HCN 8	204901	Nov. 18, 2022	1 Year
ENE-097-8	Decoupling Network	HTEC	HDEC 8	204902	Nov. 18, 2022	1 Year
ENE-097-9	Isolated Power Supply	HTEC	SBK-30KVA	/	Nov. 18, 2022	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 07, 2022	1 Year
ENE-058	CDN	SCHLODER	CDN-M2+3	A2210415/2016	July 07, 2022	1 Year
ENE-056	Attenuator	SCHLODER	6dB 100W	HA1615	July 07, 2022	1 Year
ENE-098	Current Injection Probe	SCHLODER	CDN BCI-P1	19102314-0101	Nov. 18, 2022	1 Year
ENE-099	EM-clamp	SCHLODER	CDN EMCL-20	20102817-0103	Nov. 18, 2022	1 Year
ENE-160	Three phase CDN	SCHLODER	CDN M3-L32 HV	10749-1	Nov. 18, 2022	1 Year
ENE-160-1	Three phase CDN	SCHLODER	CDN M5-N32 HV	10751-1	Nov. 18, 2022	1 Year
ENE-160-2	Three phase CDN	SCHLODER	CDN M4-32 HV	10750-1	Nov. 18, 2022	1 Year
ENE-160-3	Three phase CDN	SCHLODER	CDN M4-32A	10982-1	May 18, 2022	1 Year

3.9. For Magnetic Field Immunity Test

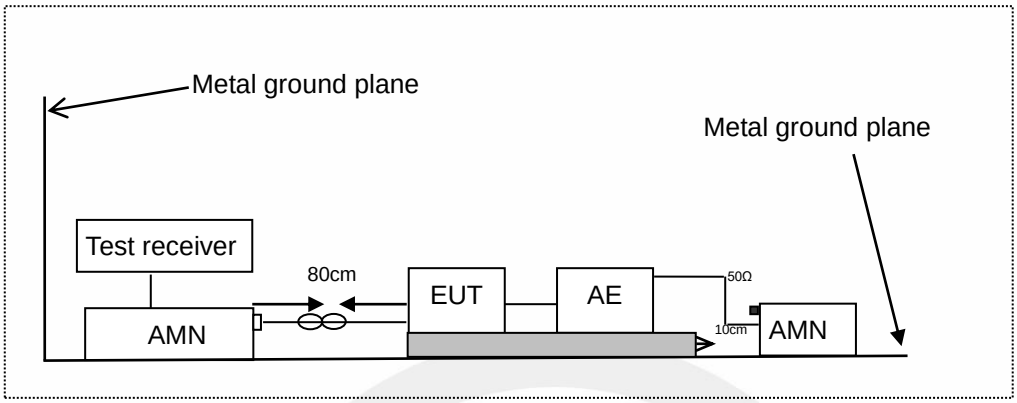
Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-161	Power frequency magnetic field disturbance rejection	HTEC	HMFG 1000	212204	Nov. 18, 2022	1 Year

3.10.For Voltage Dips and Interruption Immunity Test

Equ. No.	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
ENE-157	Harmonic/ flicker analyzer	PACIFIC	ECTS2-3300Z-M18012	550128	Nov. 18, 2022	1 Year
ENE-157-1	AC Power source	PACIFIC	330AZX-CE	140250014	Nov. 18, 2022	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

N IEC 61000-6-3:2021, Table 4
EN IEC 61000-6-4:2019, Table 4
EN 55011:2016/A2:2021, Group 1, Class B

4.3. Measurement Limits

For EN IEC 61000-6-3, EN 55011:

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 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 0.1 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.

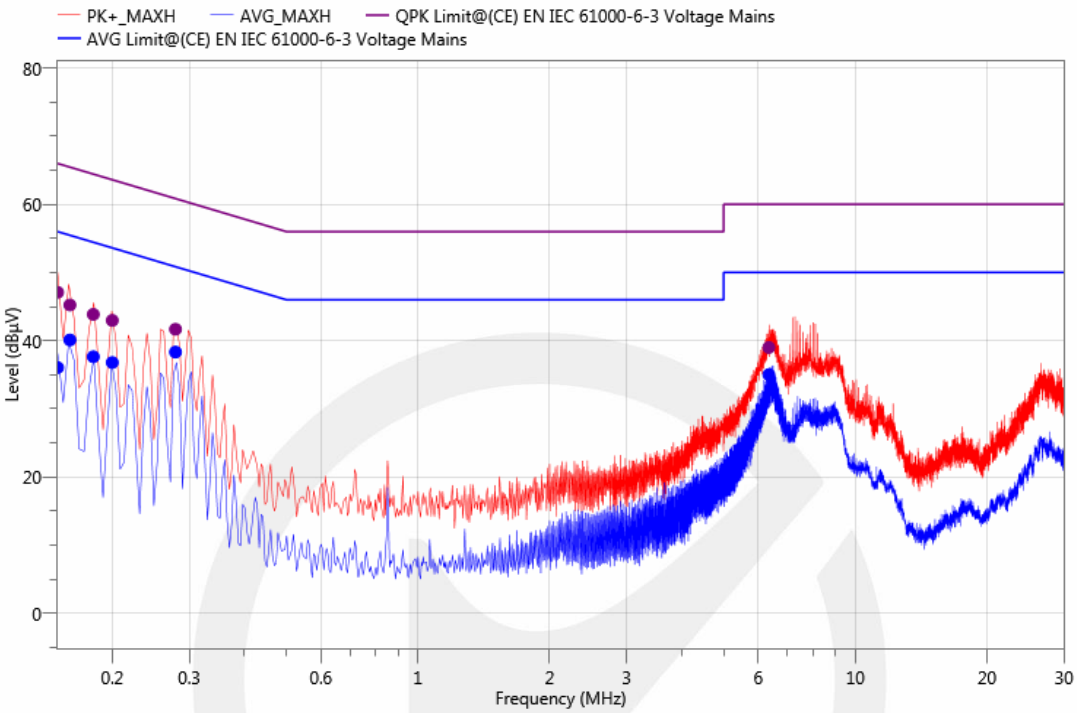
Test results were obtained from the following equation:
Measurement (dBμV) =Correct Factor (dB) + Reading (dBμV)
Over (dB) = Measurement (dBμV) - Limit (dBμV)

4.5. Measuring Results

Pass.

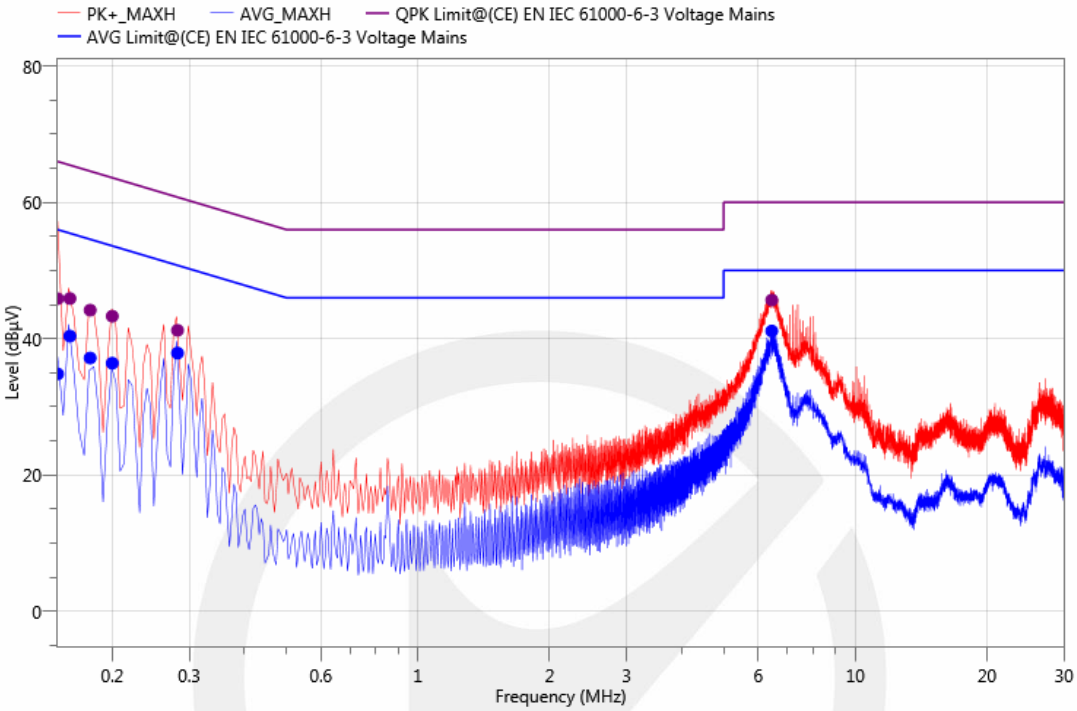
Please refer to the following pages.

Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



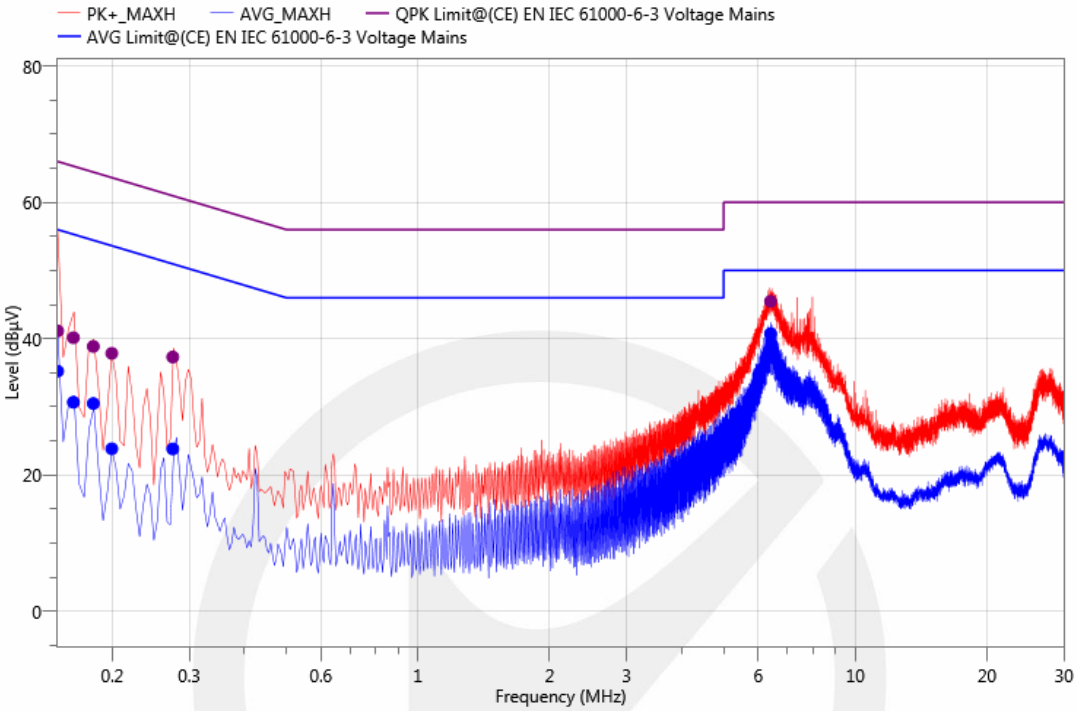
Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	37.05	47.09	66.00	18.91	QPK	L1	GND	10.04	Pass
0.15	26.01	36.05	56.00	19.95	AVG	L1	GND	10.04	Pass
0.16	35.17	45.23	65.46	20.23	QPK	L1	GND	10.06	Pass
0.16	30.04	40.10	55.46	15.36	AVG	L1	GND	10.06	Pass
0.18	33.75	43.85	64.44	20.59	QPK	L1	GND	10.1	Pass
0.18	27.54	37.64	54.44	16.8	AVG	L1	GND	10.1	Pass
0.20	32.84	42.97	63.61	20.64	QPK	L1	GND	10.13	Pass
0.20	26.66	36.79	53.61	16.82	AVG	L1	GND	10.13	Pass
0.28	31.55	41.67	60.85	19.18	QPK	L1	GND	10.12	Pass
0.28	28.20	38.32	50.85	12.53	AVG	L1	GND	10.12	Pass
6.34	28.55	39.00	60.00	21	QPK	L1	GND	10.45	Pass
6.34	24.56	35.01	50.00	14.99	AVG	L1	GND	10.45	Pass

Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



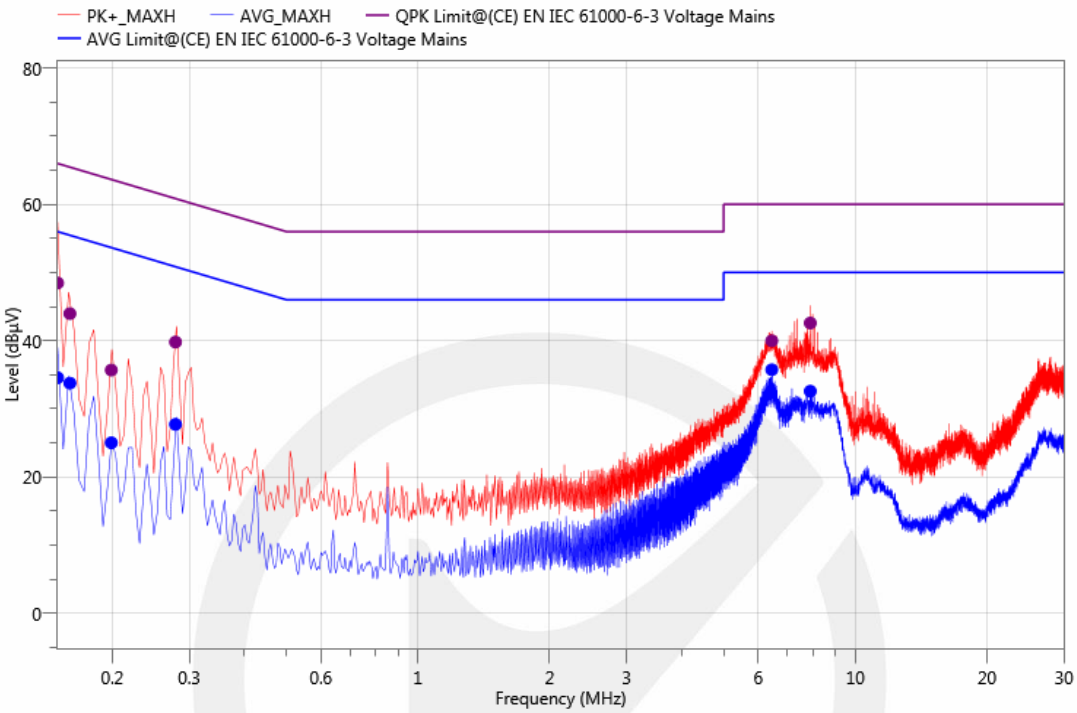
Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	35.79	45.86	66.00	20.14	QPK	N	GND	10.07	Pass
0.15	24.75	34.82	56.00	21.18	AVG	N	GND	10.07	Pass
0.16	35.81	45.89	65.46	19.57	QPK	N	GND	10.08	Pass
0.16	30.29	40.37	55.46	15.09	AVG	N	GND	10.08	Pass
0.18	34.08	44.18	64.58	20.4	QPK	N	GND	10.1	Pass
0.18	27.06	37.16	54.58	17.42	AVG	N	GND	10.1	Pass
0.20	33.17	43.29	63.61	20.32	QPK	N	GND	10.12	Pass
0.20	26.27	36.39	53.61	17.22	AVG	N	GND	10.12	Pass
0.28	31.07	41.22	60.76	19.54	QPK	N	GND	10.15	Pass
0.28	27.72	37.87	50.76	12.89	AVG	N	GND	10.15	Pass
6.44	35.22	45.66	60.00	14.34	QPK	N	GND	10.44	Pass
6.44	30.67	41.11	50.00	8.89	AVG	N	GND	10.44	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



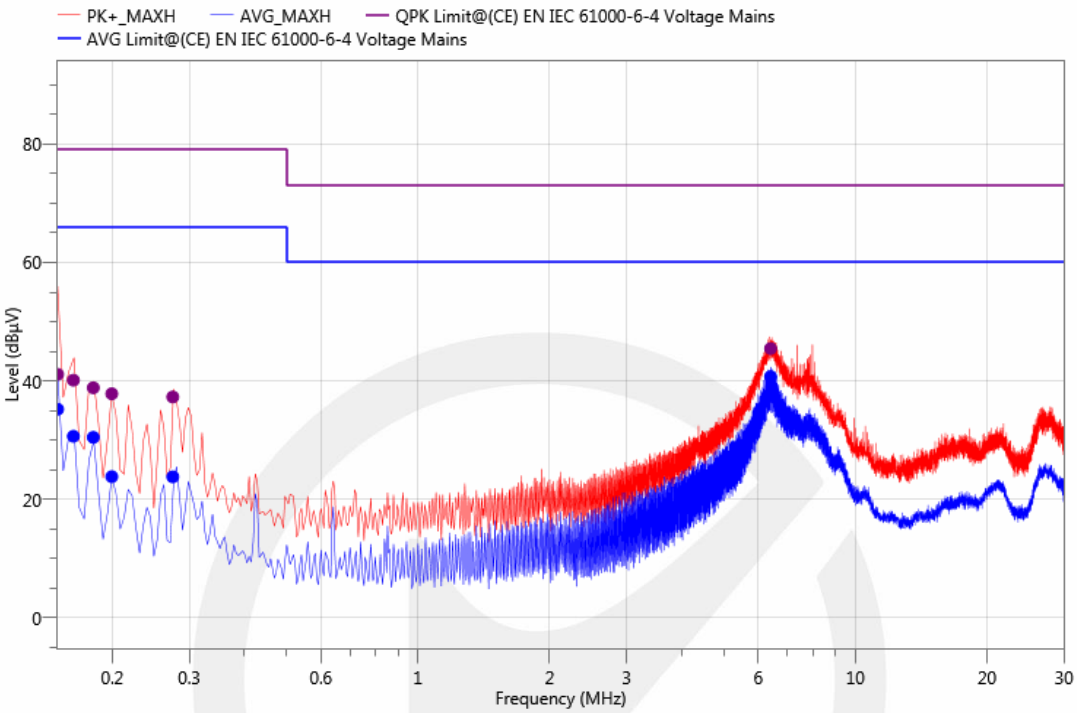
Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	31.06	41.13	66.00	24.87	QPK	N	GND	10.07	Pass
0.15	25.16	35.23	56.00	20.77	AVG	N	GND	10.07	Pass
0.16	30.04	40.13	65.31	25.18	QPK	N	GND	10.09	Pass
0.16	20.57	30.66	55.31	24.65	AVG	N	GND	10.09	Pass
0.18	28.75	38.85	64.44	25.59	QPK	N	GND	10.1	Pass
0.18	20.38	30.48	54.44	23.96	AVG	N	GND	10.1	Pass
0.20	27.72	37.84	63.63	25.79	QPK	N	GND	10.12	Pass
0.20	13.72	23.84	53.63	29.79	AVG	N	GND	10.12	Pass
0.28	27.15	37.30	60.97	23.67	QPK	N	GND	10.15	Pass
0.28	13.66	23.81	50.97	27.16	AVG	N	GND	10.15	Pass
6.40	35.04	45.48	60.00	14.52	QPK	N	GND	10.44	Pass
6.40	30.30	40.74	50.00	9.26	AVG	N	GND	10.44	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



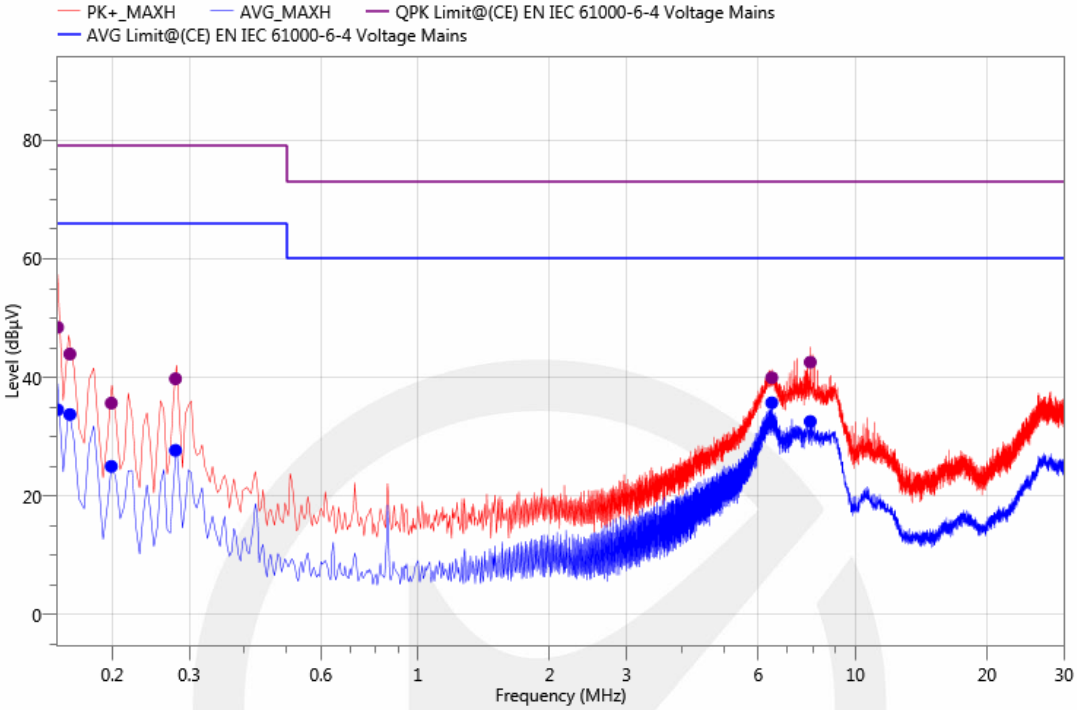
Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	38.42	48.46	66.00	17.54	QPK	L1	GND	10.04	Pass
0.15	24.51	34.55	56.00	21.45	AVG	L1	GND	10.04	Pass
0.16	33.90	43.96	65.46	21.5	QPK	L1	GND	10.06	Pass
0.16	23.70	33.76	55.46	21.7	AVG	L1	GND	10.06	Pass
0.20	25.55	35.68	63.65	27.97	QPK	L1	GND	10.13	Pass
0.20	14.88	25.01	53.65	28.64	AVG	L1	GND	10.13	Pass
0.28	29.67	39.79	60.85	21.06	QPK	L1	GND	10.12	Pass
0.28	17.59	27.71	50.85	23.14	AVG	L1	GND	10.12	Pass
6.44	29.51	39.97	60.00	20.03	QPK	L1	GND	10.46	Pass
6.44	25.27	35.73	50.00	14.27	AVG	L1	GND	10.46	Pass
7.89	31.99	42.58	60.00	17.42	QPK	L1	GND	10.59	Pass
7.89	21.99	32.58	50.00	17.42	AVG	L1	GND	10.59	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



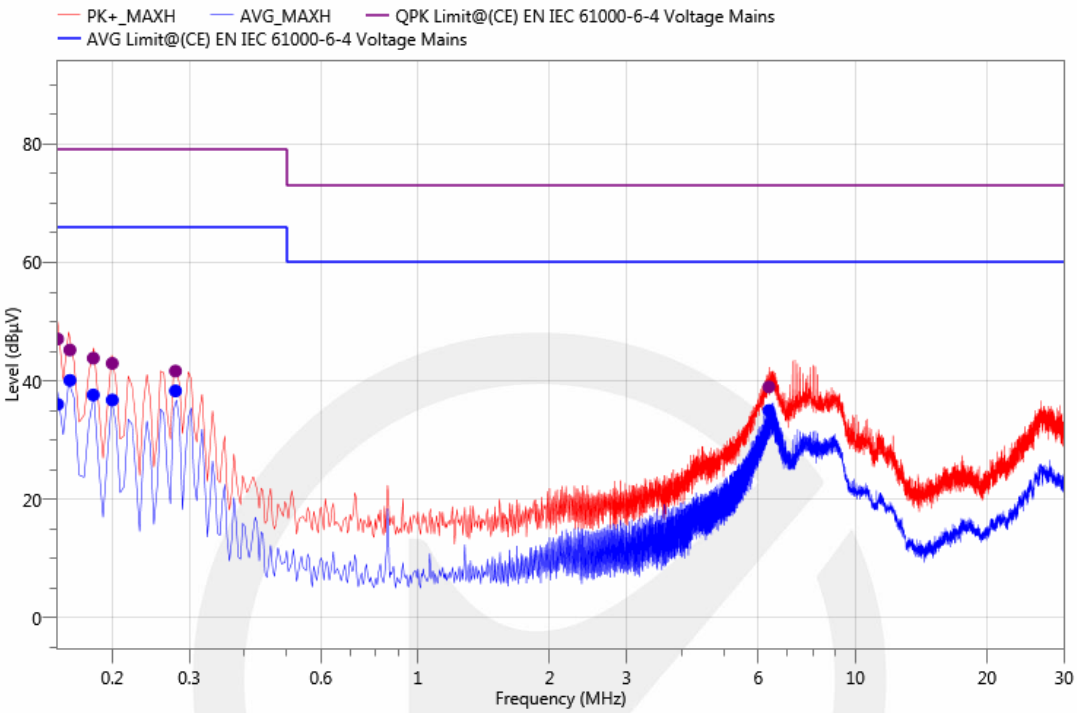
Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	31.06	41.13	79.00	37.87	QPK	N	GND	10.07	Pass
0.15	25.16	35.23	66.00	30.77	AVG	N	GND	10.07	Pass
0.16	30.04	40.13	79.00	38.87	QPK	N	GND	10.09	Pass
0.16	20.57	30.66	66.00	35.34	AVG	N	GND	10.09	Pass
0.18	28.75	38.85	79.00	40.15	QPK	N	GND	10.1	Pass
0.18	20.38	30.48	66.00	35.52	AVG	N	GND	10.1	Pass
0.20	27.72	37.84	79.00	41.16	QPK	N	GND	10.12	Pass
0.20	13.72	23.84	66.00	42.16	AVG	N	GND	10.12	Pass
0.28	27.15	37.30	79.00	41.7	QPK	N	GND	10.15	Pass
0.28	13.66	23.81	66.00	42.19	AVG	N	GND	10.15	Pass
6.40	35.04	45.48	73.00	27.52	QPK	N	GND	10.44	Pass
6.40	30.30	40.74	60.00	19.26	AVG	N	GND	10.44	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



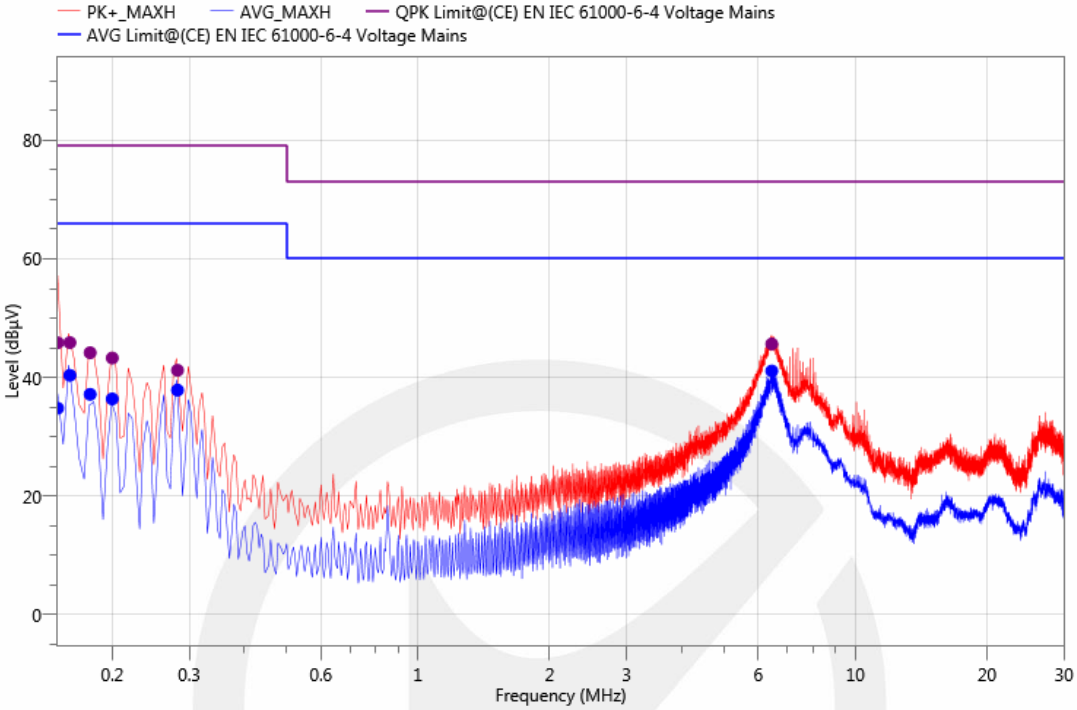
Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	38.42	48.46	79.00	30.54	QPK	L1	GND	10.04	Pass
0.15	24.51	34.55	66.00	31.45	AVG	L1	GND	10.04	Pass
0.16	33.90	43.96	79.00	35.04	QPK	L1	GND	10.06	Pass
0.16	23.70	33.76	66.00	32.24	AVG	L1	GND	10.06	Pass
0.20	25.55	35.68	79.00	43.32	QPK	L1	GND	10.13	Pass
0.20	14.88	25.01	66.00	40.99	AVG	L1	GND	10.13	Pass
0.28	29.67	39.79	79.00	39.21	QPK	L1	GND	10.12	Pass
0.28	17.59	27.71	66.00	38.29	AVG	L1	GND	10.12	Pass
6.44	29.51	39.97	73.00	33.03	QPK	L1	GND	10.46	Pass
6.44	25.27	35.73	60.00	24.27	AVG	L1	GND	10.46	Pass
7.89	31.99	42.58	73.00	30.42	QPK	L1	GND	10.59	Pass
7.89	21.99	32.58	60.00	27.42	AVG	L1	GND	10.59	Pass

Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



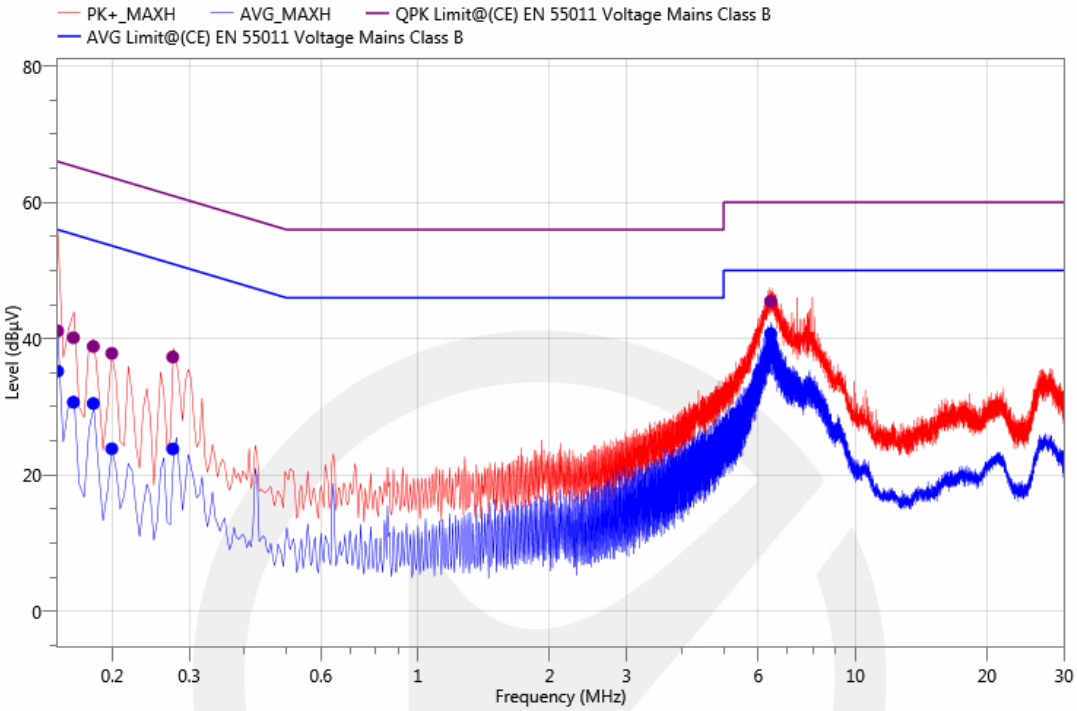
Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	37.05	47.09	79.00	31.91	QPK	L1	GND	10.04	Pass
0.15	26.01	36.05	66.00	29.95	AVG	L1	GND	10.04	Pass
0.16	35.17	45.23	79.00	33.77	QPK	L1	GND	10.06	Pass
0.16	30.04	40.10	66.00	25.9	AVG	L1	GND	10.06	Pass
0.18	33.75	43.85	79.00	35.15	QPK	L1	GND	10.1	Pass
0.18	27.54	37.64	66.00	28.36	AVG	L1	GND	10.1	Pass
0.20	32.84	42.97	79.00	36.03	QPK	L1	GND	10.13	Pass
0.20	26.66	36.79	66.00	29.21	AVG	L1	GND	10.13	Pass
0.28	31.55	41.67	79.00	37.33	QPK	L1	GND	10.12	Pass
0.28	28.20	38.32	66.00	27.68	AVG	L1	GND	10.12	Pass
6.34	28.55	39.00	73.00	34	QPK	L1	GND	10.45	Pass
6.34	24.56	35.01	60.00	24.99	AVG	L1	GND	10.45	Pass

Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



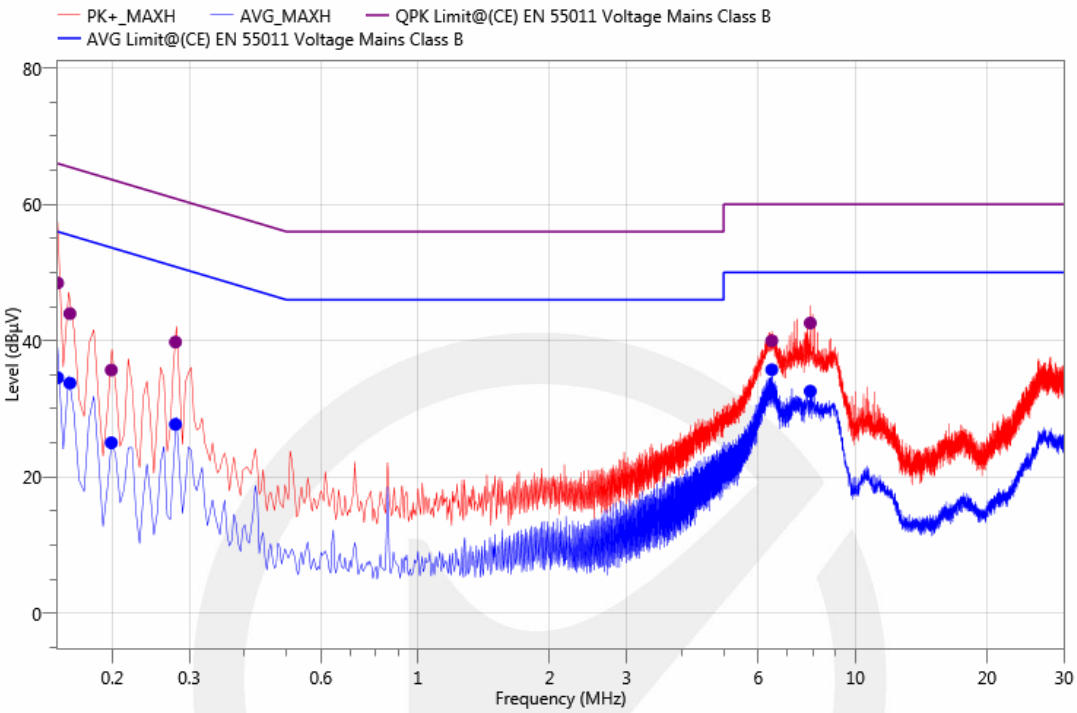
Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	35.79	45.86	79.00	33.14	QPK	N	GND	10.07	Pass
0.15	24.75	34.82	66.00	31.18	AVG	N	GND	10.07	Pass
0.16	35.81	45.89	79.00	33.11	QPK	N	GND	10.08	Pass
0.16	30.29	40.37	66.00	25.63	AVG	N	GND	10.08	Pass
0.18	34.08	44.18	79.00	34.82	QPK	N	GND	10.1	Pass
0.18	27.06	37.16	66.00	28.84	AVG	N	GND	10.1	Pass
0.20	33.17	43.29	79.00	35.71	QPK	N	GND	10.12	Pass
0.20	26.27	36.39	66.00	29.61	AVG	N	GND	10.12	Pass
0.28	31.07	41.22	79.00	37.78	QPK	N	GND	10.15	Pass
0.28	27.72	37.87	66.00	28.13	AVG	N	GND	10.15	Pass
6.44	35.22	45.66	73.00	27.34	QPK	N	GND	10.44	Pass
6.44	30.67	41.11	60.00	18.89	AVG	N	GND	10.44	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



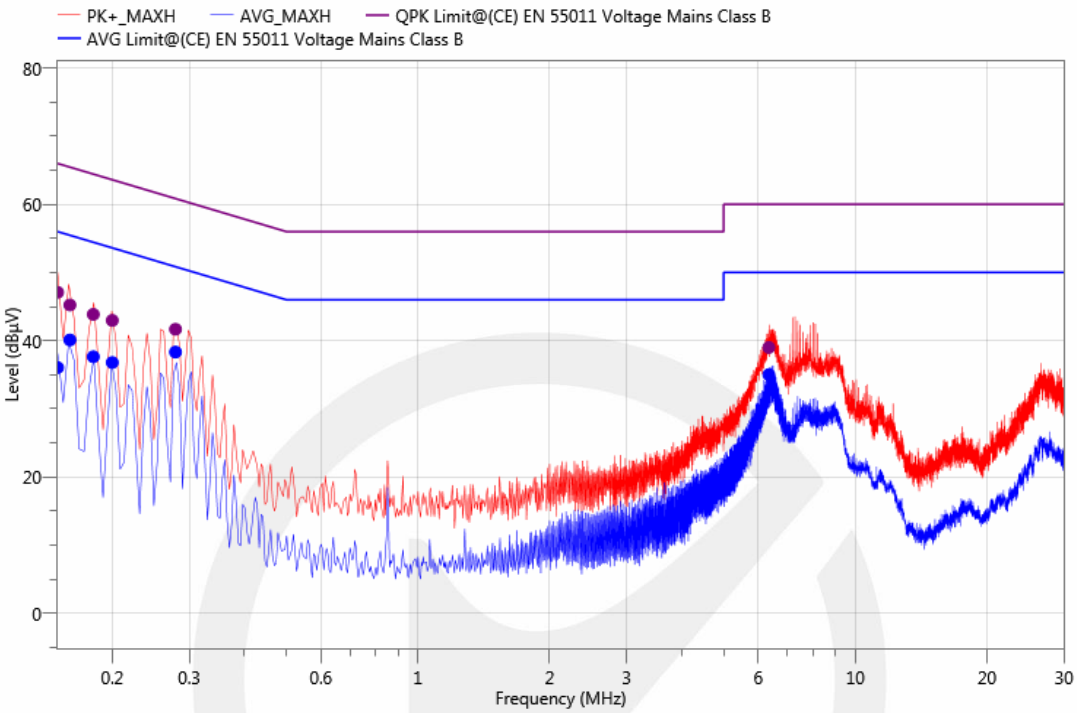
Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	31.06	41.13	66.00	24.87	QPK	N	GND	10.07	Pass
0.15	25.16	35.23	56.00	20.77	AVG	N	GND	10.07	Pass
0.16	30.04	40.13	65.31	25.18	QPK	N	GND	10.09	Pass
0.16	20.57	30.66	55.31	24.65	AVG	N	GND	10.09	Pass
0.18	28.75	38.85	64.44	25.59	QPK	N	GND	10.1	Pass
0.18	20.38	30.48	54.44	23.96	AVG	N	GND	10.1	Pass
0.20	27.72	37.84	63.63	25.79	QPK	N	GND	10.12	Pass
0.20	13.72	23.84	53.63	29.79	AVG	N	GND	10.12	Pass
0.28	27.15	37.30	60.97	23.67	QPK	N	GND	10.15	Pass
0.28	13.66	23.81	50.97	27.16	AVG	N	GND	10.15	Pass
6.40	35.04	45.48	60.00	14.52	QPK	N	GND	10.44	Pass
6.40	30.30	40.74	50.00	9.26	AVG	N	GND	10.44	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



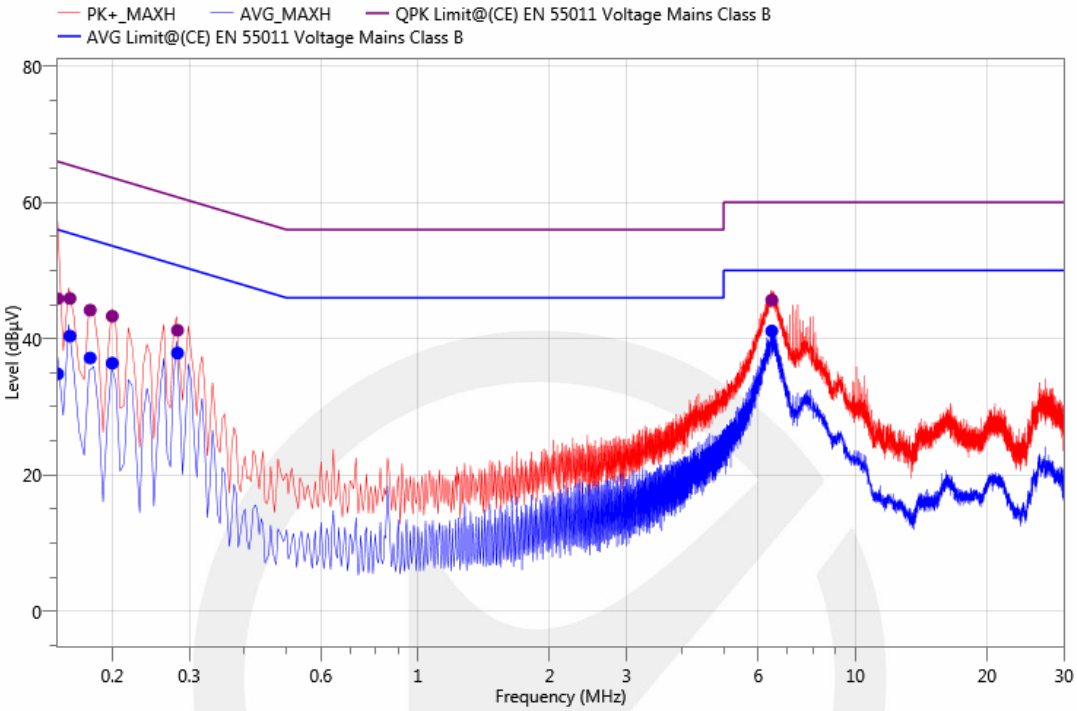
Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	38.42	48.46	66.00	17.54	QPK	L1	GND	10.04	Pass
0.15	24.51	34.55	56.00	21.45	AVG	L1	GND	10.04	Pass
0.16	33.90	43.96	65.46	21.5	QPK	L1	GND	10.06	Pass
0.16	23.70	33.76	55.46	21.7	AVG	L1	GND	10.06	Pass
0.20	25.55	35.68	63.65	27.97	QPK	L1	GND	10.13	Pass
0.20	14.88	25.01	53.65	28.64	AVG	L1	GND	10.13	Pass
0.28	29.67	39.79	60.85	21.06	QPK	L1	GND	10.12	Pass
0.28	17.59	27.71	50.85	23.14	AVG	L1	GND	10.12	Pass
6.44	29.51	39.97	60.00	20.03	QPK	L1	GND	10.46	Pass
6.44	25.27	35.73	50.00	14.27	AVG	L1	GND	10.46	Pass
7.89	31.99	42.58	60.00	17.42	QPK	L1	GND	10.59	Pass
7.89	21.99	32.58	50.00	17.42	AVG	L1	GND	10.59	Pass

Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	37.05	47.09	66.00	18.91	QPK	L1	GND	10.04	Pass
0.15	26.01	36.05	56.00	19.95	AVG	L1	GND	10.04	Pass
0.16	35.17	45.23	65.46	20.23	QPK	L1	GND	10.06	Pass
0.16	30.04	40.10	55.46	15.36	AVG	L1	GND	10.06	Pass
0.18	33.75	43.85	64.44	20.59	QPK	L1	GND	10.1	Pass
0.18	27.54	37.64	54.44	16.8	AVG	L1	GND	10.1	Pass
0.20	32.84	42.97	63.61	20.64	QPK	L1	GND	10.13	Pass
0.20	26.66	36.79	53.61	16.82	AVG	L1	GND	10.13	Pass
0.28	31.55	41.67	60.85	19.18	QPK	L1	GND	10.12	Pass
0.28	28.20	38.32	50.85	12.53	AVG	L1	GND	10.12	Pass
6.34	28.55	39.00	60.00	21	QPK	L1	GND	10.45	Pass
6.34	24.56	35.01	50.00	14.99	AVG	L1	GND	10.45	Pass

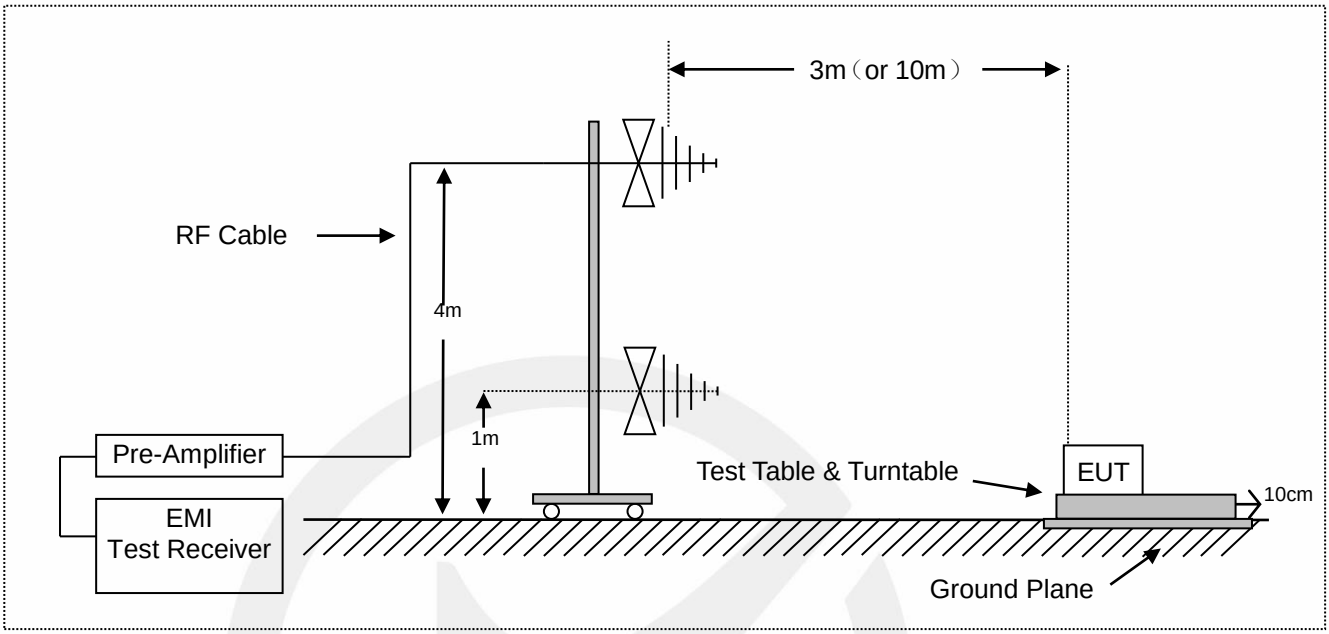
Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:52%	Engineer:	Allen Tang



Final Result (Margin=Limit-Meas. (Reading +Corr.))									
Freq. (MHz)	Reading (dBµV)	Meas. (dBµV)	Limit (dBµV)	Margin (dB)	Det.	Line	PE	Corr. (dB)	Verdict
0.15	35.79	45.86	66.00	20.14	QPK	N	GND	10.07	Pass
0.15	24.75	34.82	56.00	21.18	AVG	N	GND	10.07	Pass
0.16	35.81	45.89	65.46	19.57	QPK	N	GND	10.08	Pass
0.16	30.29	40.37	55.46	15.09	AVG	N	GND	10.08	Pass
0.18	34.08	44.18	64.58	20.4	QPK	N	GND	10.1	Pass
0.18	27.06	37.16	54.58	17.42	AVG	N	GND	10.1	Pass
0.20	33.17	43.29	63.61	20.32	QPK	N	GND	10.12	Pass
0.20	26.27	36.39	53.61	17.22	AVG	N	GND	10.12	Pass
0.28	31.07	41.22	60.76	19.54	QPK	N	GND	10.15	Pass
0.28	27.72	37.87	50.76	12.89	AVG	N	GND	10.15	Pass
6.44	35.22	45.66	60.00	14.34	QPK	N	GND	10.44	Pass
6.44	30.67	41.11	50.00	8.89	AVG	N	GND	10.44	Pass

5. RADIATED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup



5.2. Measuring Standard

EN IEC 61000-6-3:2021, Table 3
EN IEC 61000-6-4:2019, Table 3
EN 55011:2016/A2:2021, Group 1, Class B

5.3. 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.

5.4. Measurement Limits(For EN 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

5.5. Measurement Limits(For EN 55011)

Frequency range (MHz)	OATS or SAC	
	10 m measuring distance	3 m measuring distance
	Quasi-peak dB(μV/m)	Quasi-peak dB(μV/m)
30 to 230	30	40
230 to 1 000	37	47
On an OATS or in a SAC, class B equipment can be measured at a nominal distance of 3 m or 10 m. At the transition frequency, the more stringent limit shall apply.		

5.6. Test Procedure

The EUT is placed on a turntable which is 0.1 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.

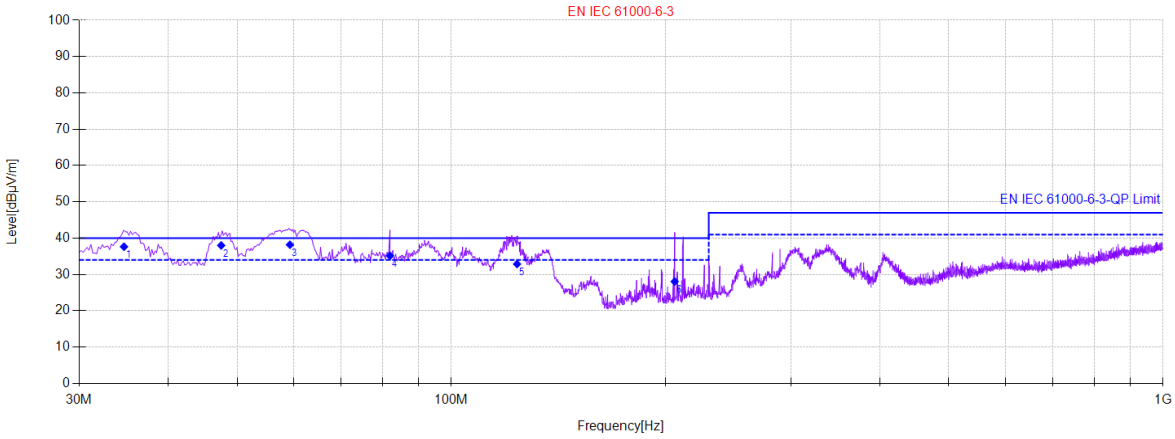
The bandwidth of the Receiver is set at 120 kHz. The frequency range from 30 MHz to 1000 MHz is investigated.
Test results were obtained from the following equation:
Measurement (dBμV) =Correct Factor (dB) + Reading (dBμV)
Over (dB) = Measurement (dBμV) - Limit (dBμV)

5.7. Measuring Results

Pass.

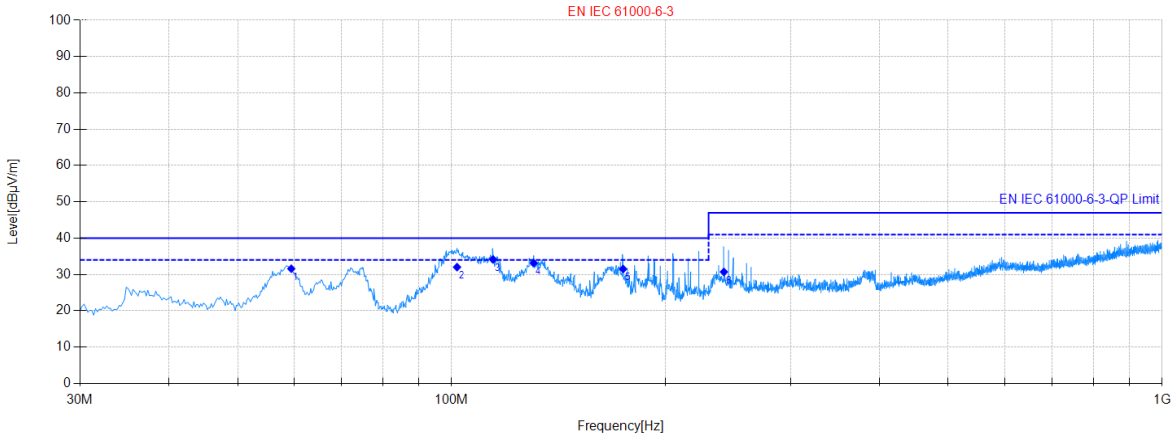
Please refer to the following pages.

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



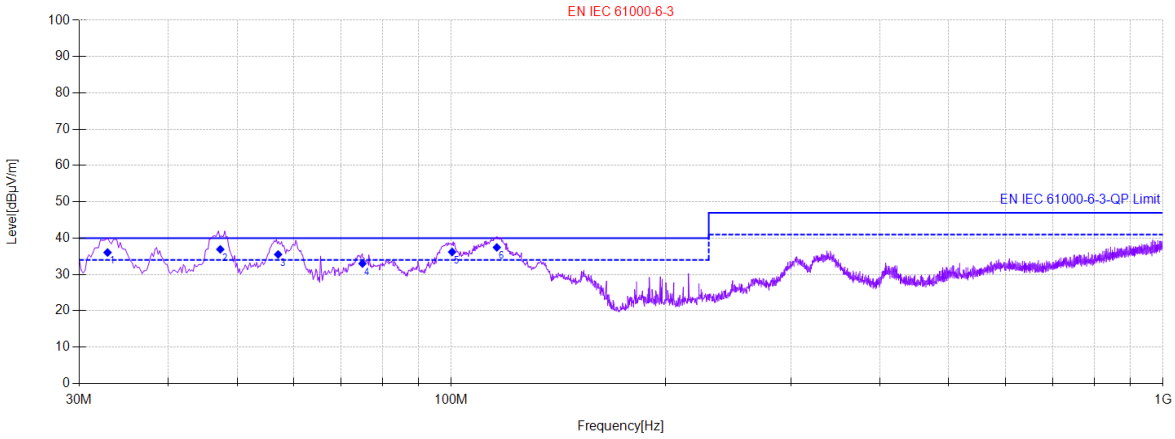
Final Data List										
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	34.683	25.03	12.61	37.64	40.00	2.36	100	168	Vertical	Pass
2	47.497	24.66	13.34	38.00	40.00	2.00	100	168	Vertical	Pass
3	59.333	26.56	11.63	38.19	40.00	1.81	100	168	Vertical	Pass
4	82.002	24.12	11.03	35.15	40.00	4.85	100	345	Vertical	Pass
5	123.705	22.18	10.68	32.86	40.00	7.14	100	204	Vertical	Pass
6	205.993	14.26	13.80	28.06	40.00	11.94	100	1	Vertical	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



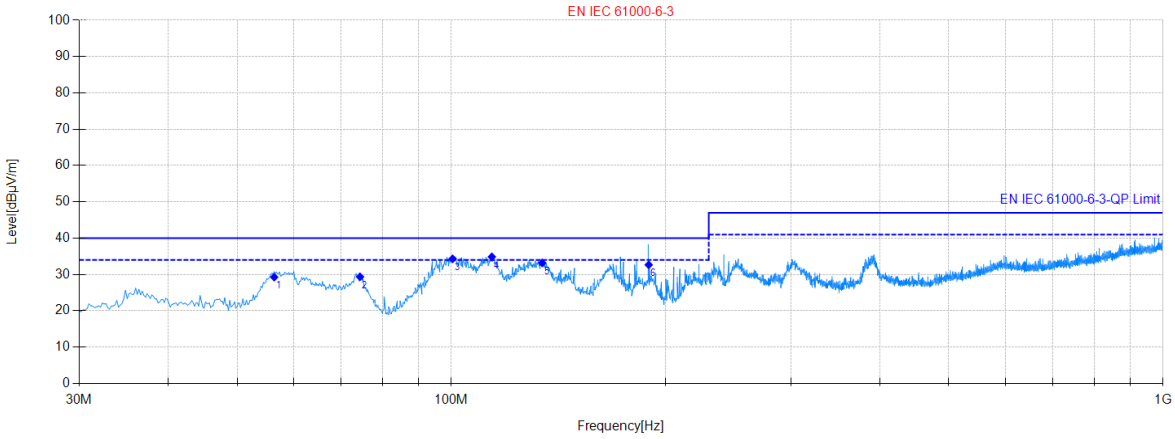
Final Data List										
NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	59.494	20.03	11.55	31.58	40.00	8.42	100	215	Horizontal	Pass
2	101.794	19.17	12.85	32.02	40.00	7.98	100	194	Horizontal	Pass
3	114.407	22.49	11.64	34.13	40.00	5.87	100	243	Horizontal	Pass
4	130.512	22.75	10.42	33.17	40.00	6.83	100	6	Horizontal	Pass
5	174.365	19.71	11.80	31.51	40.00	8.49	100	194	Horizontal	Pass
6	241.696	15.41	15.29	30.70	47.00	16.30	100	284	Horizontal	Pass

Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



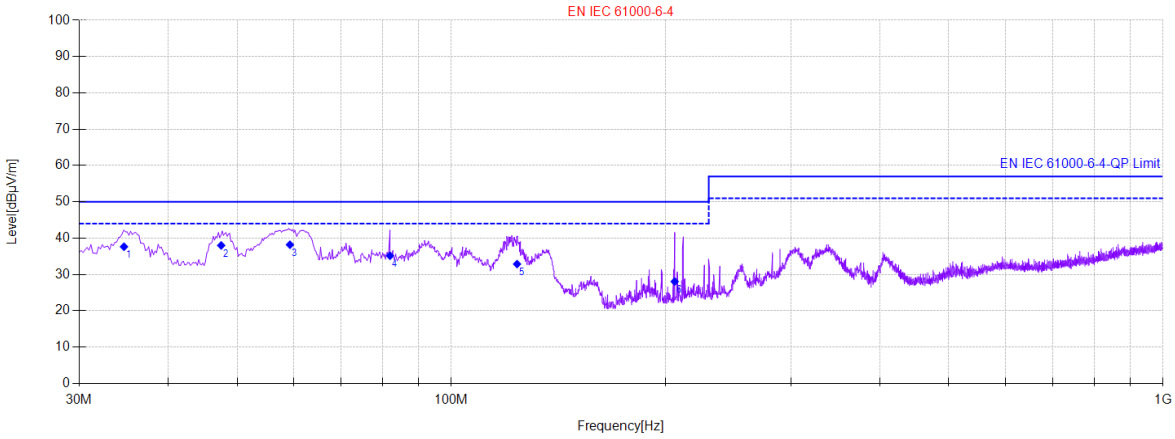
Final Data List										
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	32.885	23.88	12.17	36.05	40.00	3.95	100	15	Vertical	Pass
2	47.364	23.56	13.35	36.91	40.00	3.09	100	259	Vertical	Pass
3	57.105	23.46	12.05	35.51	40.00	4.49	100	88	Vertical	Pass
4	75.017	22.16	10.84	33.00	40.00	7.00	100	295	Vertical	Pass
5	100.268	23.26	12.94	36.20	40.00	3.80	100	249	Vertical	Pass
6	115.865	26.00	11.45	37.45	40.00	2.55	100	327	Vertical	Pass

Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



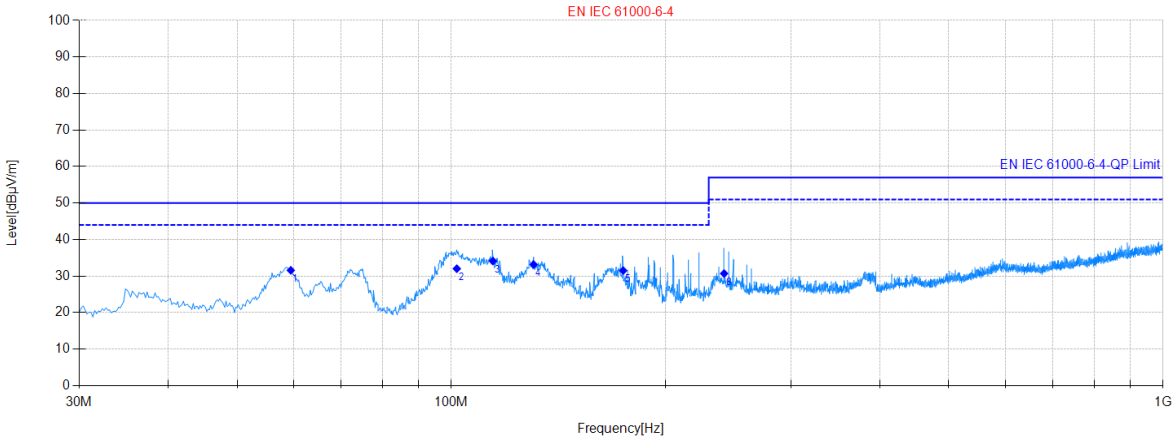
Final Data List										
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	56.389	17.12	12.13	29.25	40.00	10.75	100	209	Horizontal	Pass
2	74.435	18.5	10.86	29.36	40.00	10.64	100	237	Horizontal	Pass
3	100.436	21.36	12.95	34.31	40.00	5.69	100	209	Horizontal	Pass
4	114.019	23.16	11.70	34.86	40.00	5.14	100	237	Horizontal	Pass
5	134.199	22.85	10.31	33.16	40.00	6.84	100	310	Horizontal	Pass
6	189.388	20.05	12.60	32.65	40.00	7.35	100	118	Horizontal	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



Final Data List										
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	34.683	25.03	12.61	37.64	50.00	12.36	100	168	Vertical	Pass
2	47.497	24.66	13.34	38.00	50.00	12.00	100	168	Vertical	Pass
3	59.333	26.56	11.63	38.19	50.00	11.81	100	168	Vertical	Pass
4	82.002	24.12	11.03	35.15	50.00	14.85	100	345	Vertical	Pass
5	123.705	22.18	10.68	32.86	50.00	17.14	100	204	Vertical	Pass
6	205.993	14.26	13.80	28.06	50.00	21.94	100	1	Vertical	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



Final Data List										
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	59.494	20.03	11.55	31.58	50.00	18.42	100	215	Horizontal	Pass
2	101.794	19.17	12.85	32.02	50.00	17.98	100	194	Horizontal	Pass
3	114.407	22.49	11.64	34.13	50.00	15.87	100	243	Horizontal	Pass
4	130.512	22.75	10.42	33.17	50.00	16.83	100	6	Horizontal	Pass
5	174.365	19.71	11.80	31.51	50.00	18.49	100	194	Horizontal	Pass
6	241.696	15.41	15.29	30.70	57.00	26.30	100	284	Horizontal	Pass

Project Information			
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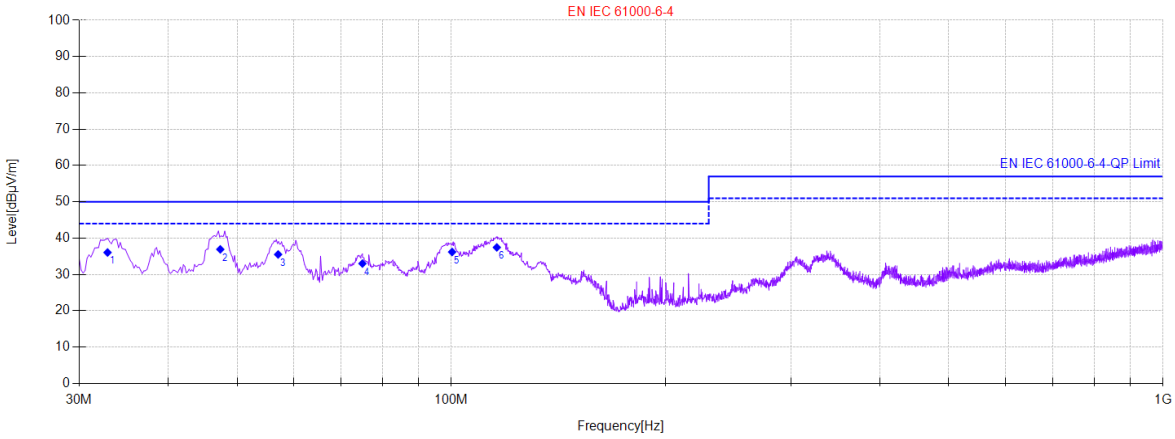
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



Final Data List										
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	32.885	23.88	12.17	36.05	50.00	13.95	100	15	Vertical	Pass
2	47.364	23.56	13.35	36.91	50.00	13.09	100	259	Vertical	Pass
3	57.105	23.46	12.05	35.51	50.00	14.49	100	88	Vertical	Pass
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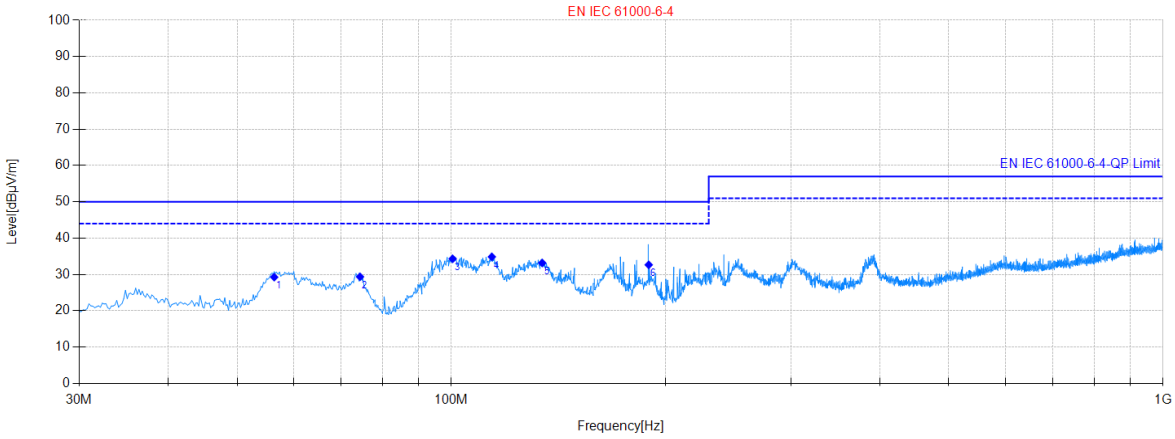
6	115.865	26.00	11.45	37.45	50.00	12.55	100	327	Vertical	Pass

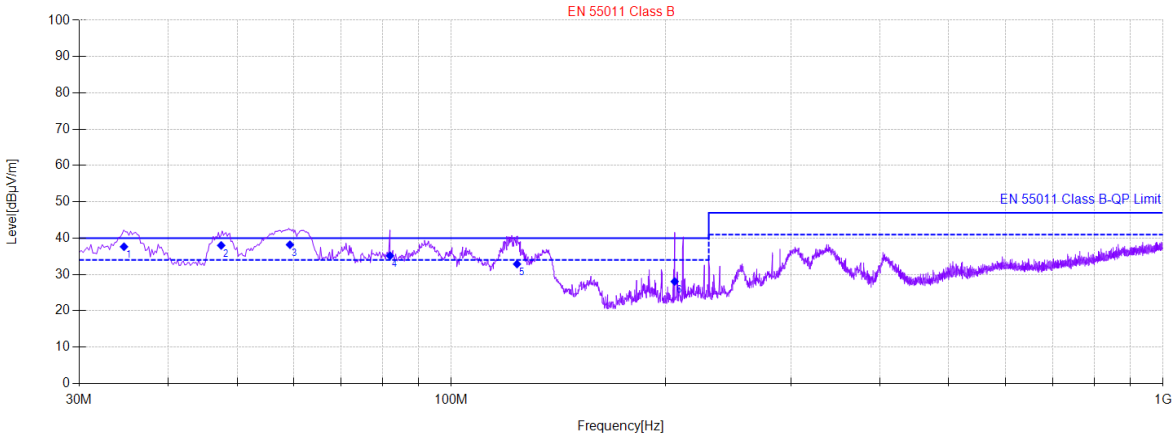
Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50Hz
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



Final Data List

NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	56.389	17.12	12.13	29.25	50.00	20.75	100	209	Horizontal	Pass
2	74.435	18.5	10.86	29.36	50.00	20.64	100	237	Horizontal	Pass
3	100.436	21.36	12.95	34.31	50.00	15.69	100	209	Horizontal	Pass
4	114.019	23.16	11.70	34.86	50.00	15.14	100	237	Horizontal	Pass
5	134.199	22.85	10.31	33.16	50.00	16.84	100	310	Horizontal	Pass
6	189.388	20.05	12.60	32.65	50.00	17.35	100	118	Horizontal	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50HZ
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



Final Data List										
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
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2	47.497	24.66	13.34	38.00	40.00	2.00	100	168	Vertical	Pass
3	59.333	26.56	11.63	38.19	40.00	1.81	100	168	Vertical	Pass
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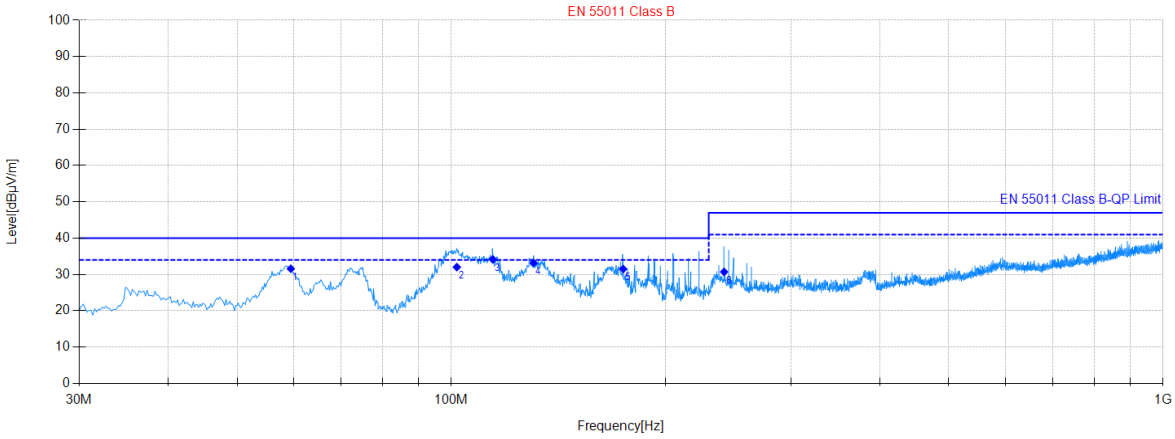
5	123.705	22.18	10.68	32.86	40.00	7.14	100	204	Vertical	Pass
6	205.993	14.26	13.80	28.06	40.00	11.94	100	1	Vertical	Pass

Project Information			
Mode:	DISCHARGING	Voltage:	AC 230V/50HZ
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



Final Data List										
NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
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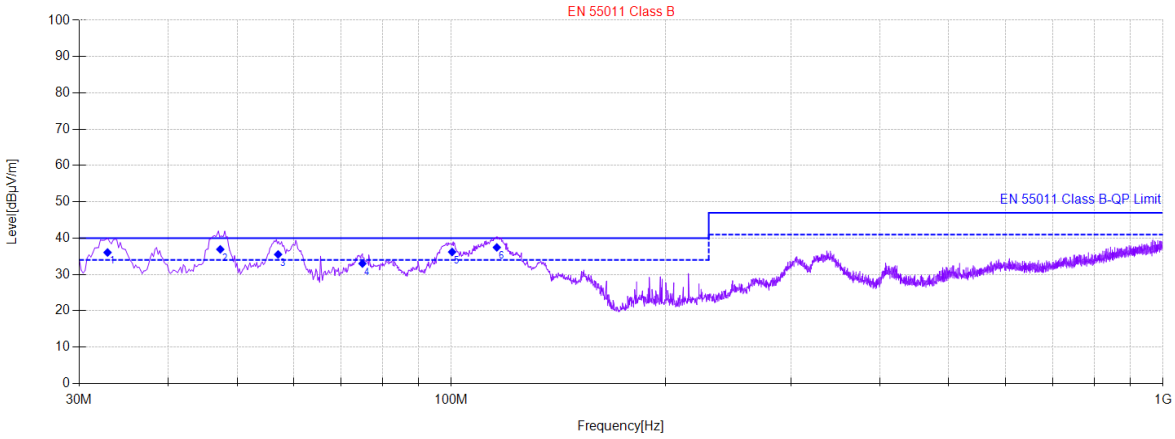
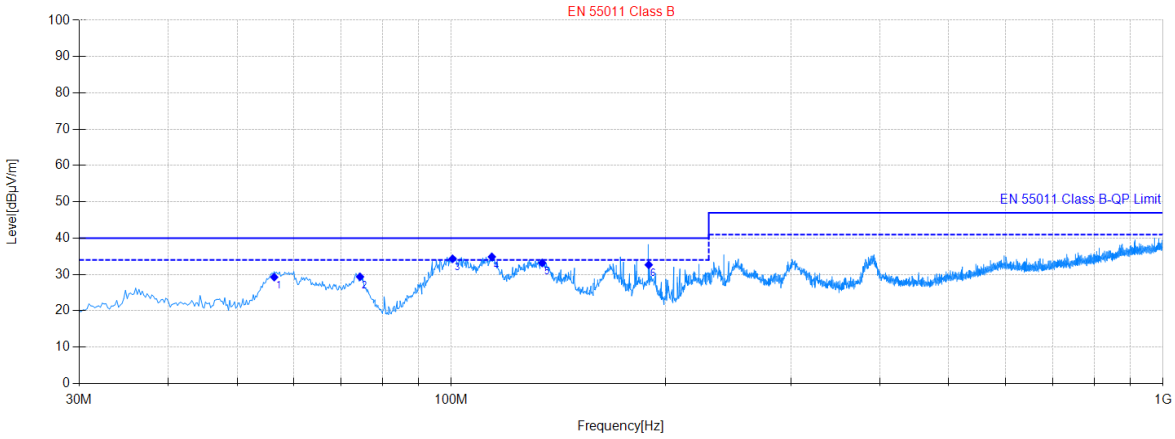
3	114.407	22.49	11.64	34.13	40.00	5.87	100	243	Horizontal	Pass
4	130.512	22.75	10.42	33.17	40.00	6.83	100	6	Horizontal	Pass
5	174.365	19.71	11.80	31.51	40.00	8.49	100	194	Horizontal	Pass
6	241.696	15.41	15.29	30.70	47.00	16.30	100	284	Horizontal	Pass

Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50HZ
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



Final Data List										
NO.	Freq. [MHz]	QP Reading [dBμV/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	32.885	23.88	12.17	36.05	40.00	3.95	100	15	Vertical	Fail
2	47.364	23.56	13.35	36.91	40.00	3.09	100	259	Vertical	Pass
3	57.105	23.46	12.05	35.51	40.00	4.49	100	88	Vertical	Pass
4	75.017	22.16	10.84	33.00	40.00	7.00	100	295	Vertical	Pass
5	100.268	23.26	12.94	36.20	40.00	3.80	100	249	Vertical	Pass
6	115.865	26.00	11.45	37.45	40.00	2.55	100	327	Vertical	Pass

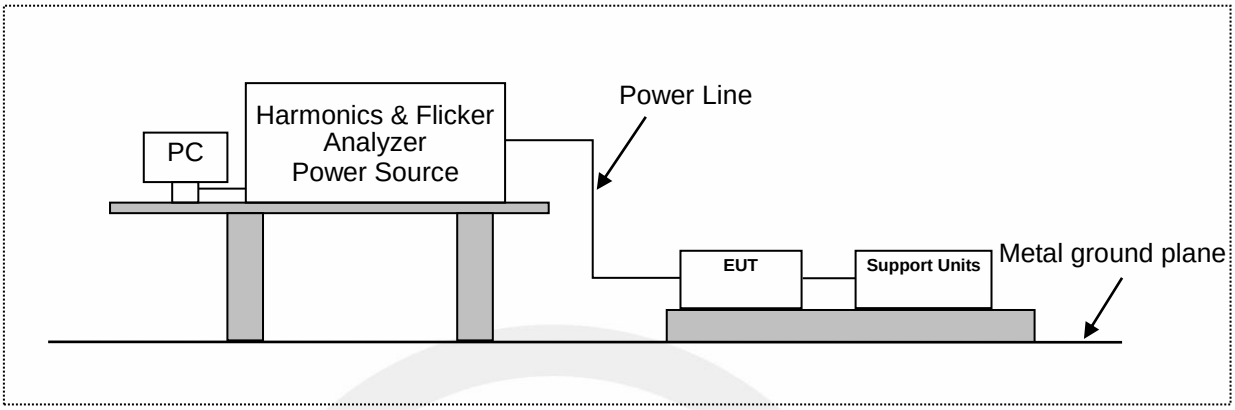
Project Information			
Mode:	CHARGING	Voltage:	AC 230V/50HZ
Environment:	Temp: 25℃; Humi:60%	Engineer:	Jackson Xue



Final Data List										
NO.	Freq. [MHz]	QP Reading [dBµV/m]	Factor [dB]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity	Verdict
1	56.389	17.12	12.13	29.25	40.00	10.75	100	209	Horizontal	Pass
2	74.435	18.5	10.86	29.36	40.00	10.64	100	237	Horizontal	Pass
3	100.436	21.36	12.95	34.31	40.00	5.69	100	209	Horizontal	Pass
4	114.019	23.16	11.70	34.86	40.00	5.14	100	237	Horizontal	Pass
5	134.199	22.85	10.31	33.16	40.00	6.84	100	310	Horizontal	Pass
6	189.388	20.05	12.60	32.65	40.00	7.35	100	118	Horizontal	Pass

6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. Measuring Standard

EN IEC 61000-3-2:2019+A1:2021, Class A, Table 1
EN 61000-3-12:2011, Table 3

6.3. 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
$15 \le n \le 39$	$0.15 \quad \frac{0.15}{n}$
Even harmonics	
2	1.08
4	0.43
6	0.30
$8 \le n \le 40$	$0.23 \quad \frac{8}{n}$

☒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 harmonicsabove 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.														

6.4. 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%.

6.5. Test Results

Pass.

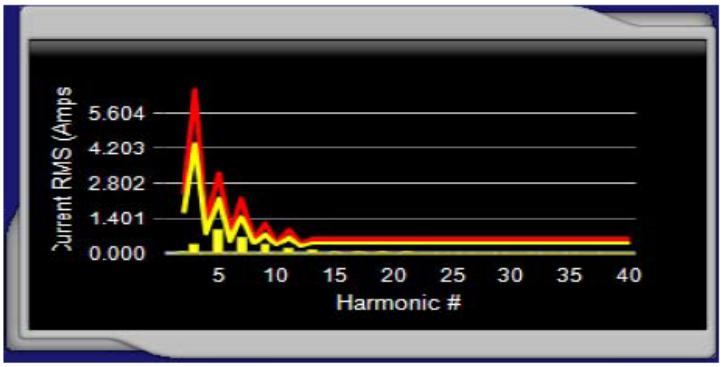
Please refer to the following pages.

EUT:	T-BAT-SYS -HV-S2.5(T-BAT HS32.5)
Test Class:	(Table 2: Rsce = 33 Test), IEC 61000-3-12 Ed. 2.0 2011
Test Result:	**PASS**
Test Date:	2023/3/7
Start Time:	14:23:55
Stop Time:	14:26:34
Test Duration (min):	2.5
Environment:	Temp: 21℃; Humi:40%
Source Qualification:	Compliance with IEC 61000-3-12 Ed. 2.0 2011
Power Source Distortion:	**OK**
Customer:	Customer
Test By:	Jo Liu
Comments:	CHARGING

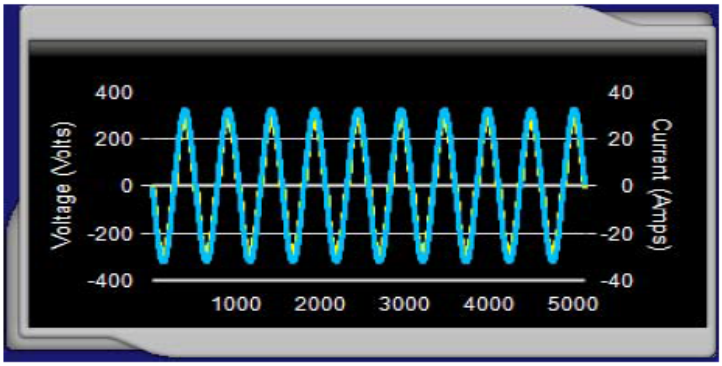
General Test Data: (Phase A)

Vrms (Volts)/V-pk/V-CF:	229.25 / 323.3 / 1.410	Frequency (Hz):	50.0001
I-ref (Amps):	20.143	Power (VA)/VAR:	4617.6 / 318.1
I_fund (Amps):	20.090	Power (W):	4606.7
I_peak (Amps)/I-CF:	29.424 / 1.434	Power Factor:	0.998
V-THD (%):	0.11	I-THD (%):	6.35
I-THC (%):	6.37	I-THC Limit (%):	23.00
PWHC (%):	2.93	PWHC Limit (%):	23.00
Measured I-Ref (A):	20.143	Measured I-Ref was used for this test.	
Phase angle of H5 (deg):	191.8		

Harmonic Spectrum



Voltage & Current Waveform



Current Harmonics (values at the end of test)

Harm No.	Harm. Ave.	Harm. Limit (100%)	% Of Limits	Result (Ave.)	Result (Max.)	Harm. Win.	Harm. Limit (150%)	% Of Max
2	0.0390	1.6114	2.4	PASS	PASS	0.0408	2.4171	1.7
3	0.3681	4.3508	8.5	PASS	PASS	0.3706	6.5262	5.7
4	0.0183	0.8057	2.3	PASS	PASS	0.0200	1.2086	1.7
5	0.9557	2.1553	44.3	PASS	PASS	0.9583	3.2329	29.6
6	0.0113	0.5372	2.1	PASS	PASS	0.0128	0.8058	1.6
7	0.6364	1.4503	43.9	PASS	PASS	0.6390	2.1754	29.4
8	0.0132	0.4029	3.3	PASS	PASS	0.0151	0.6043	2.5
9	0.3504	0.7654	45.8	PASS	PASS	0.3529	1.1481	30.7
10	0.0102	0.3223	3.2	PASS	PASS	0.0115	0.4834	2.4
11	0.1929	0.6244	30.9	PASS	PASS	0.1952	0.9366	20.8
12	0.0099	0.2685	3.7	PASS	PASS	0.0114	0.4028	2.8
13	0.1117	0.4029	27.7	PASS	PASS	0.1141	0.6043	18.9
14	0.0101	0.4029	0.0	PASS	PASS	0.0114	0.6043	0.0
15	0.0723	0.4029	0.0	PASS	PASS	0.0747	0.6043	0.0
16	0.0096	0.4029	0.0	PASS	PASS	0.0110	0.6043	0.0
17	0.0504	0.4029	0.0	PASS	PASS	0.0527	0.6043	0.0
18	0.0093	0.4029	0.0	PASS	PASS	0.0102	0.6043	0.0
19	0.0387	0.4029	0.0	PASS	PASS	0.0401	0.6043	0.0
20	0.0114	0.4029	0.0	PASS	PASS	0.0128	0.6043	0.0
21	0.0344	0.4029	0.0	PASS	PASS	0.0365	0.6043	0.0
22	0.0092	0.4029	0.0	PASS	PASS	0.0102	0.6043	0.0
23	0.0281	0.4029	0.0	PASS	PASS	0.0294	0.6043	0.0
24	0.0091	0.4029	0.0	PASS	PASS	0.0106	0.6043	0.0
25	0.0265	0.4029	0.0	PASS	PASS	0.0279	0.6043	0.0
26	0.0089	0.4029	0.0	PASS	PASS	0.0100	0.6043	0.0
27	0.0256	0.4029	0.0	PASS	PASS	0.0272	0.6043	0.0
28	0.0088	0.4029	0.0	PASS	PASS	0.0098	0.6043	0.0
29	0.0245	0.4029	0.0	PASS	PASS	0.0261	0.6043	0.0
30	0.0089	0.4029	0.0	PASS	PASS	0.0103	0.6043	0.0
31	0.0225	0.4029	0.0	PASS	PASS	0.0243	0.6043	0.0
32	0.0089	0.4029	0.0	PASS	PASS	0.0100	0.6043	0.0
33	0.0218	0.4029	0.0	PASS	PASS	0.0231	0.6043	0.0
34	0.0089	0.4029	0.0	PASS	PASS	0.0099	0.6043	0.0
35	0.0194	0.4029	0.0	PASS	PASS	0.0208	0.6043	0.0
36	0.0089	0.4029	0.0	PASS	PASS	0.0100	0.6043	0.0
37	0.0201	0.4029	0.0	PASS	PASS	0.0215	0.6043	0.0
38	0.0088	0.4029	0.0	PASS	PASS	0.0097	0.6043	0.0
39	0.0181	0.4029	0.0	PASS	PASS	0.0191	0.6043	0.0
40	0.0065	0.4029	0.0	PASS	PASS	0.0076	0.6043	0.0

Power Source Verification Data

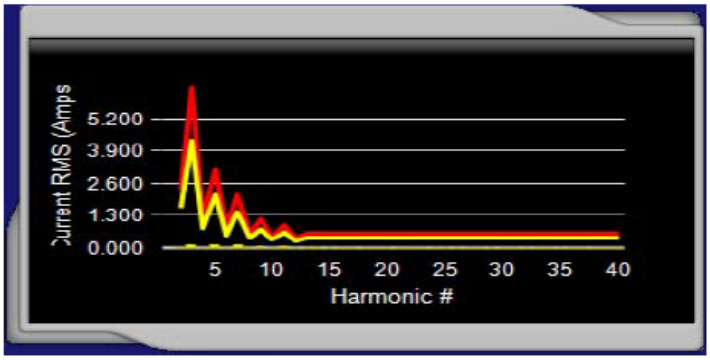
Harm No.	Harm. Value	Harm. Limit	% Of Limits	% Of Vfund	Result
2	0.032	0.920	3.508	0.014	OK
3	0.123	2.875	4.268	0.054	OK
4	0.017	0.920	1.877	0.008	OK
5	0.155	3.450	4.482	0.067	OK
6	0.027	0.920	2.894	0.012	OK
7	0.134	2.875	4.655	0.058	OK
8	0.047	0.920	5.160	0.021	OK
9	0.084	1.380	6.115	0.037	OK
10	0.031	0.920	3.319	0.013	OK
11	0.055	1.610	3.389	0.024	OK
12	0.027	0.690	3.873	0.012	OK
13	0.053	1.380	3.827	0.023	OK
14	0.034	0.690	4.995	0.015	OK
15	0.049	0.690	7.032	0.021	OK
16	0.014	0.690	2.012	0.006	OK
17	0.037	0.690	5.405	0.016	OK
18	0.015	0.690	2.151	0.006	OK
19	0.033	0.690	4.720	0.014	OK
20	0.019	0.690	2.816	0.008	OK
21	0.038	0.690	5.549	0.017	OK
22	0.018	0.690	2.610	0.008	OK
23	0.035	0.690	5.043	0.015	OK
24	0.019	0.690	2.712	0.008	OK
25	0.033	0.690	4.760	0.014	OK
26	0.018	0.690	2.665	0.008	OK
27	0.032	0.690	4.585	0.014	OK
28	0.016	0.690	2.306	0.007	OK
29	0.031	0.690	4.501	0.014	OK
30	0.021	0.690	3.043	0.009	OK
31	0.031	0.690	4.441	0.013	OK
32	0.022	0.690	3.235	0.010	OK
33	0.033	0.690	4.756	0.014	OK
34	0.023	0.690	3.364	0.010	OK
35	0.031	0.690	4.563	0.014	OK
36	0.021	0.690	3.084	0.009	OK
37	0.032	0.690	4.654	0.014	OK
38	0.017	0.690	2.513	0.008	OK
39	0.031	0.690	4.533	0.014	OK
40	0.018	0.690	2.659	0.008	OK

EUT:	T-BAT-SYS -HV-S2.5(T-BAT HS32.5)
Test Class:	(Table 2: Rsce = 33 Test), IEC 61000-3-12 Ed. 2.0 2011
Test Result:	**PASS**
Test Date:	2023/3/7
Start Time:	14:41:26
Stop Time:	14:44:07
Test Duration (min):	2.5
Environment:	Temp: 21℃; Humi:40%
Source Qualification:	Compliance with IEC 61000-3-12 Ed. 2.0 2011
Power Source Distortion:	**OK**
Customer:	Customer
Test By:	Jo Liu
Comments:	DISCHARGING

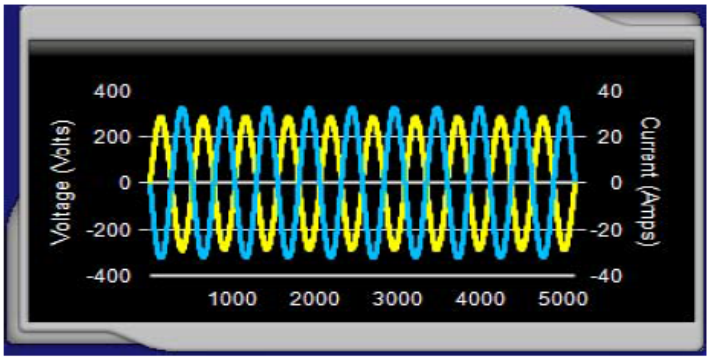
General Test Data: (Phase A)

Vrms (Volts)/V-pk/V-CF:	229.75 / 324.0 / 1.410	Frequency (Hz):	50.0001
I-ref (Amps):	19.908	Power (VA)/VAR:	4574.0 / 123.7
I_fund (Amps):	19.906	Power (W):	-4572.3
I_peak (Amps)/I-CF:	29.269 / 1.446	Power Factor:	-1.000
V-THD (%):	0.06	I-THD (%):	1.12
I-THC (%):	1.13	I-THC Limit (%):	23.00
PWHC (%):	1.70	PWHC Limit (%):	23.00
Measured I-Ref (A):	19.908	Measured I-Ref was used for this test.	
Phase angle of H5 (deg):	263.1		

Harmonic Spectrum



Voltage & Current Waveform



Current Harmonics (values at the end of test)

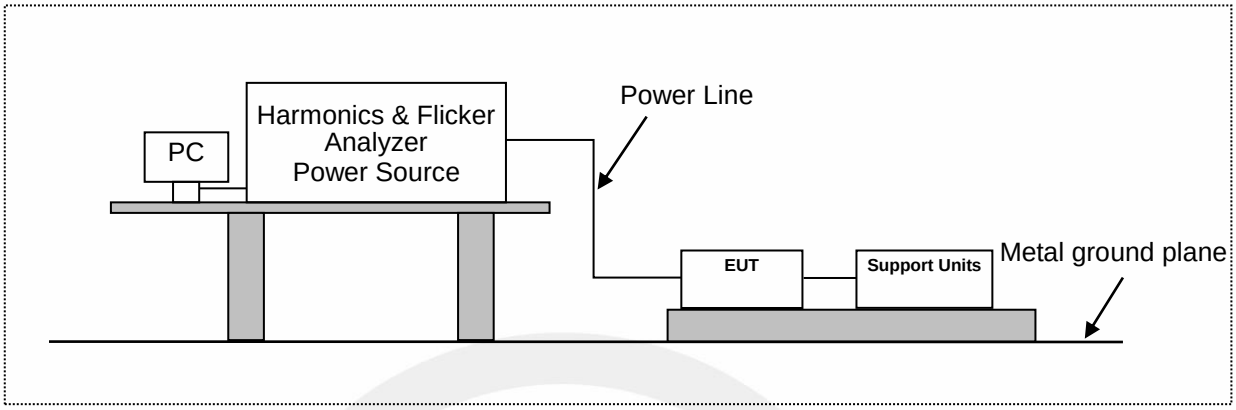
Harm No.	Harm. Ave.	Harm. Limit (100%)	% Of Limits	Result (Ave.)	Result (Max.)	Harm. Win.	Harm. Limit (150%)	% Of Max
2	0.0100	1.5927	0.6	PASS	PASS	0.0120	2.3890	0.5
3	0.1331	4.3002	3.1	PASS	PASS	0.1353	6.4504	2.1
4	0.0219	0.7963	2.7	PASS	PASS	0.0246	1.1945	2.1
5	0.1026	2.1302	4.8	PASS	PASS	0.1090	3.1953	3.4
6	0.0252	0.5310	4.7	PASS	PASS	0.0278	0.7964	3.5
7	0.0924	1.4334	6.4	PASS	PASS	0.0977	2.1501	4.5
8	0.0195	0.3982	4.9	PASS	PASS	0.0219	0.5973	3.7
9	0.0613	0.7565	8.1	PASS	PASS	0.0659	1.1348	5.8
10	0.0107	0.3185	3.4	PASS	PASS	0.0127	0.4778	2.7
11	0.0491	0.6172	8.0	PASS	PASS	0.0529	0.9257	5.7
12	0.0108	0.2654	4.1	PASS	PASS	0.0128	0.3981	3.2
13	0.0264	0.3982	6.6	PASS	PASS	0.0296	0.5973	5.0
14	0.0103	0.3982	0.0	PASS	PASS	0.0132	0.5973	0.0
15	0.0247	0.3982	0.0	PASS	PASS	0.0270	0.5973	0.0
16	0.0098	0.3982	0.0	PASS	PASS	0.0114	0.5973	0.0
17	0.0200	0.3982	0.0	PASS	PASS	0.0221	0.5973	0.0
18	0.0104	0.3982	0.0	PASS	PASS	0.0120	0.5973	0.0
19	0.0231	0.3982	0.0	PASS	PASS	0.0251	0.5973	0.0
20	0.0110	0.3982	0.0	PASS	PASS	0.0123	0.5973	0.0
21	0.0195	0.3982	0.0	PASS	PASS	0.0210	0.5973	0.0
22	0.0088	0.3982	0.0	PASS	PASS	0.0099	0.5973	0.0
23	0.0203	0.3982	0.0	PASS	PASS	0.0218	0.5973	0.0
24	0.0088	0.3982	0.0	PASS	PASS	0.0098	0.5973	0.0
25	0.0163	0.3982	0.0	PASS	PASS	0.0179	0.5973	0.0
26	0.0084	0.3982	0.0	PASS	PASS	0.0097	0.5973	0.0
27	0.0166	0.3982	0.0	PASS	PASS	0.0179	0.5973	0.0
28	0.0086	0.3982	0.0	PASS	PASS	0.0098	0.5973	0.0
29	0.0129	0.3982	0.0	PASS	PASS	0.0144	0.5973	0.0
30	0.0082	0.3982	0.0	PASS	PASS	0.0093	0.5973	0.0
31	0.0142	0.3982	0.0	PASS	PASS	0.0158	0.5973	0.0
32	0.0081	0.3982	0.0	PASS	PASS	0.0092	0.5973	0.0
33	0.0121	0.3982	0.0	PASS	PASS	0.0134	0.5973	0.0
34	0.0083	0.3982	0.0	PASS	PASS	0.0093	0.5973	0.0
35	0.0117	0.3982	0.0	PASS	PASS	0.0131	0.5973	0.0
36	0.0084	0.3982	0.0	PASS	PASS	0.0092	0.5973	0.0
37	0.0110	0.3982	0.0	PASS	PASS	0.0120	0.5973	0.0
38	0.0082	0.3982	0.0	PASS	PASS	0.0090	0.5973	0.0
39	0.0108	0.3982	0.0	PASS	PASS	0.0120	0.5973	0.0
40	0.0059	0.3982	0.0	PASS	PASS	0.0066	0.5973	0.0

Power Source Verification Data

Harm No.	Harm. Value	Harm. Limit	% Of Limits	% Of Vfund	Result
2	0.033	0.920	3.555	0.014	OK
3	0.109	2.875	3.802	0.048	OK
4	0.022	0.920	2.412	0.010	OK
5	0.071	3.450	2.057	0.031	OK
6	0.024	0.920	2.660	0.011	OK
7	0.049	2.875	1.701	0.021	OK
8	0.049	0.920	5.335	0.021	OK
9	0.038	1.380	2.739	0.016	OK
10	0.030	0.920	3.281	0.013	OK
11	0.035	1.610	2.204	0.015	OK
12	0.024	0.690	3.421	0.010	OK
13	0.025	1.380	1.824	0.011	OK
14	0.034	0.690	4.993	0.015	OK
15	0.026	0.690	3.738	0.011	OK
16	0.016	0.690	2.386	0.007	OK
17	0.024	0.690	3.497	0.011	OK
18	0.015	0.690	2.223	0.007	OK
19	0.028	0.690	3.995	0.012	OK
20	0.020	0.690	2.840	0.009	OK
21	0.029	0.690	4.187	0.013	OK
22	0.024	0.690	3.474	0.010	OK
23	0.029	0.690	4.228	0.013	OK
24	0.015	0.690	2.234	0.007	OK
25	0.026	0.690	3.706	0.011	OK
26	0.015	0.690	2.128	0.006	OK
27	0.028	0.690	4.048	0.012	OK
28	0.017	0.690	2.410	0.007	OK
29	0.021	0.690	3.108	0.009	OK
30	0.019	0.690	2.772	0.008	OK
31	0.025	0.690	3.625	0.011	OK
32	0.020	0.690	2.876	0.009	OK
33	0.021	0.690	3.086	0.009	OK
34	0.022	0.690	3.195	0.010	OK
35	0.021	0.690	3.088	0.009	OK
36	0.020	0.690	2.865	0.009	OK
37	0.022	0.690	3.125	0.009	OK
38	0.019	0.690	2.712	0.008	OK
39	0.020	0.690	2.949	0.009	OK
40	0.018	0.690	2.593	0.008	OK

7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Measuring Standard

EN 61000-3-3:2013/A2:2021
EN IEC 61000-3-11:2019

7.3. 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 %;

7.4. 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.

7.5. Test Results

Pass.

Please refer to the following pages.

EUT:	T-BAT-SYS -HV-S2.5(T-BAT HS32.5)
Test Standard:	Test per IEC 61000-3-11 Ed. 2.0 2017
Test Class:	Flicker Test, Pst-dc-dmax-Tmax
Test Result:	**PASS**
Test Date:	2023/3/7
Start Time:	14:12:55
Stop Time:	14:23:07
Test Duration (min):	10
Environment:	Temp: 21℃; Humi:40%
Source Qualification:	Product meets technical requirements of IEC61000-3-3
Customer:	Customer
Test By:	Jo Liu
Comments:	CHARGING

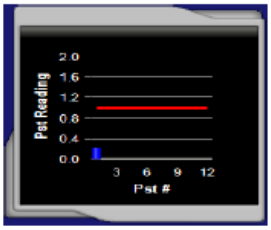
Phase A

Vrms (Volts):	224.41	Frequency (Hz):	50.00
I_rms (Amps):	20.582	Power (W):	4599.9
V-THD (%):	1.110	T-Max (ms):	0 (500)
dmax (%):	2.658 (4.000)	Hi dmax (%):	2.658 (4.000)
dc (%):	2.284 (3.300)	Hi dc (%):	2.284 (3.300)
Pst-1 :	0.213 (1.000)		
Plt :	0.093 (0.650)		

Z-Test :	0.150 + j0.150 Ohm
Calculated dmax (%) :	3.548
Calculated dc (%) :	3.048
Calculated Pst (%) :	0.284
Calculated Plt (%) :	0.124

The maximum permissible system impedance (Z) for Phase-A :
Z-Line = 0.260 Ohm + j0.162 Ohm, (0.260 Ohm + 516.858 uH)
Z-Neutral = 0.173 Ohm + j0.108 Ohm, (0.173 Ohm + 344.572 uH)

Pst Spectrum



Plt Spectrum

EUT:	T-BAT-SYS -HV-S2.5(T-BAT HS32.5)
Test Standard:	Test per IEC 61000-3-11 Ed. 2.0 2017
Test Class:	Flicker Test, Pst-dc-dmax-Tmax
Test Result:	**PASS**
Test Date:	2023/3/7
Start Time:	14:30:27
Stop Time:	14:40:38
Test Duration (min):	10
Environment:	Temp: 21℃; Humi:40%
Source Qualification:	Product meets technical requirements of IEC61000-3-3
Customer:	Customer
Test By:	Jo Liu
Comments:	DISCHARGING

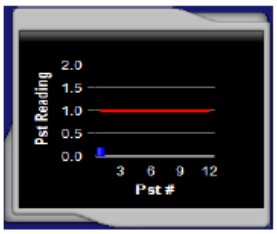
Phase A

Vrms (Volts):	234.21	Frequency (Hz):	50.00
I_rms (Amps):	19.511	Power (W):	-4559.2
V-THD (%):	0.223	T-Max (ms):	0 (500)
dmax (%):	-1.842 (4.000)	Hi dmax (%):	-1.842 (4.000)
dc (%):	-2.001 (3.300)	Hi dc (%):	-2.001 (3.300)
Pst-1 :	0.179 (1.000)		
Plt :	0.079 (0.650)		

Z-Test :	0.150 + j0.150 Ohm
Calculated dmax (%) :	-2.459
Calculated dc (%) :	-2.671
Calculated Pst (%) :	0.239
Calculated Plt (%) :	0.105

The maximum permissible system impedance (Z) for Phase-A :
Z-Line = 0.296 Ohm + j0.185 Ohm, (0.296 Ohm + 589.851 uH)
Z-Neutral = 0.198 Ohm + j0.124 Ohm, (0.198 Ohm + 393.234 uH)

Pst Spectrum



Plt Spectrum

8. 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.

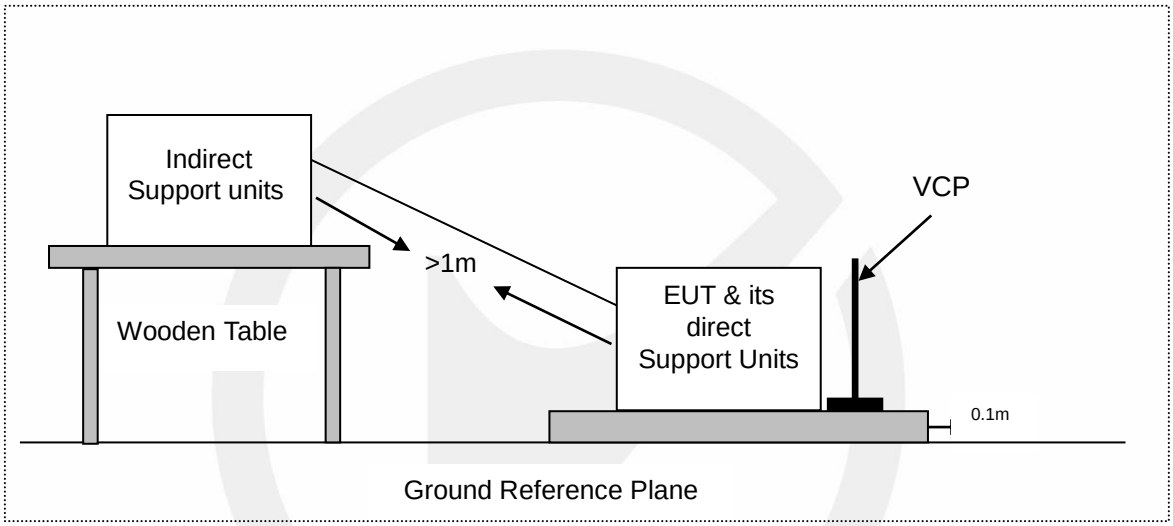
Performance criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

9. ELECTROSTATIC DISCHARGE IMMUNITY TEST

9.1. 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)

9.2. Block Diagram of Test Setup



9.3. 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.

9.4. Test Results

Pass.

Temperature	:	28 °C
Humidity	:	43 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jo Liu
Test Date	:	2023-03-08

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
±2; 4; 8 kV	Button	A	B	Pass
±2; 4; 8 kV	Switch	A	B	Pass

Contact Discharge

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

Indirect Discharge

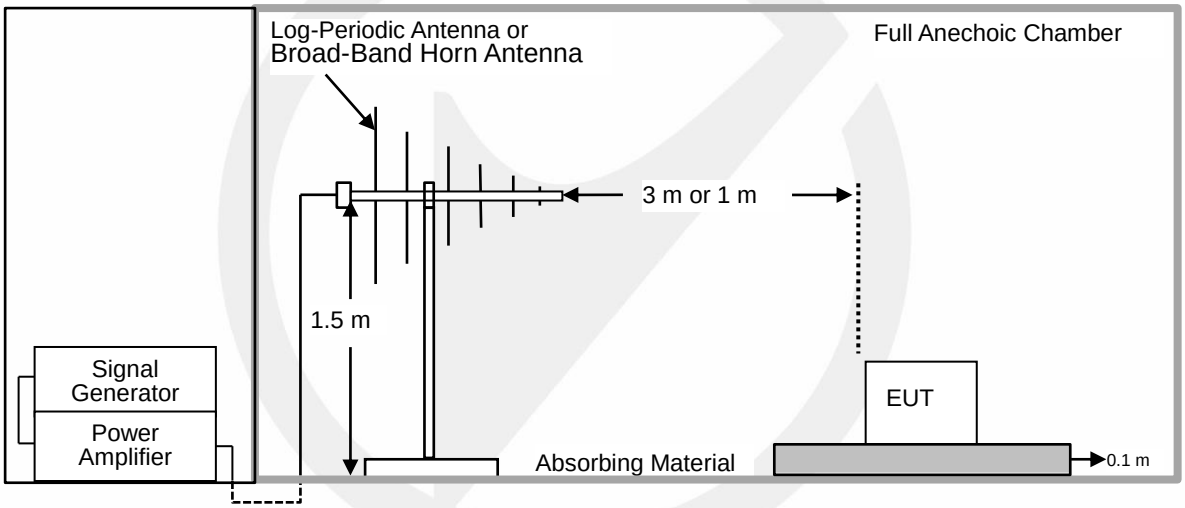
Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
±2; 4kV	HCP	A	B	Pass
±2; 4kV	VCP	A	B	Pass

10. RADIO-FREQUENCY ELECTROMAGNETIC FIELD IMMUNITY TEST

10.1. 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	

10.2. Block Diagram of Test Setup



10.3. 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.

10.4. Test results

Pass.

For EN IEC 61000-6-1

Temperature : 23 °C
Humidity : 46%
Atmospheric Pressure : 101kpa
Test Engineer : Jo Liu
Test Date : 2023-03-08

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 : 23 °C
Humidity : 46%
Atmospheric Pressure : 101kpa
Test Engineer : Jo Liu
Test Date : 2023-03-08

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

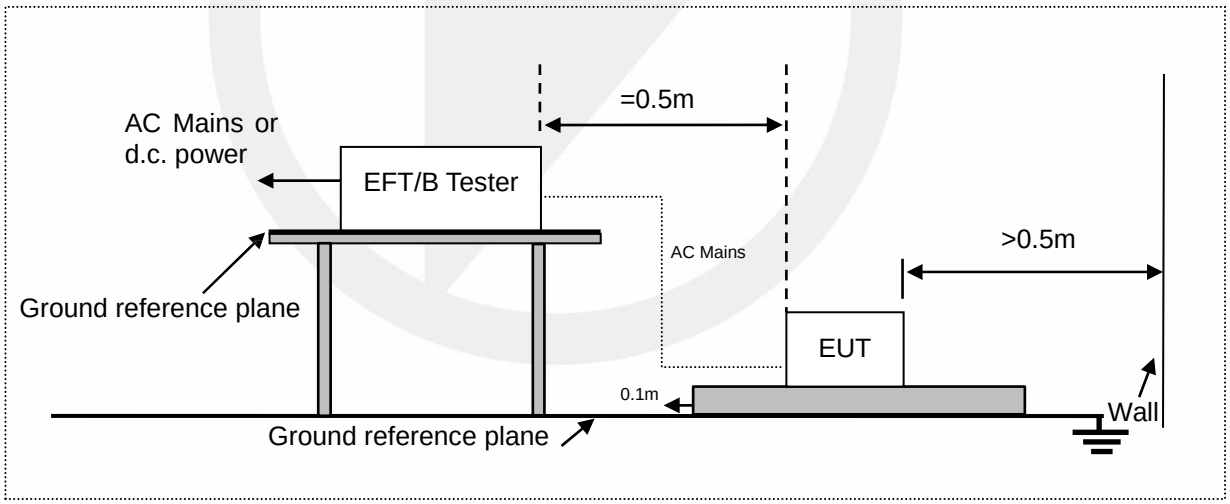
11. FAST TRANSIENTS/BURSTS IMMUNITY TEST

11.1. Test Specification

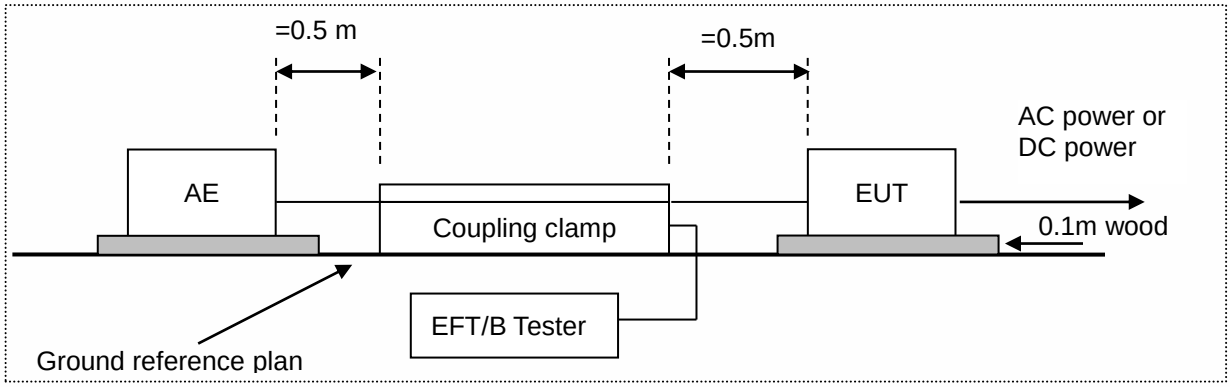
Test standard	:	EN IEC 61000-6-1, EN IEC 61000-6-2
Basic standard	:	IEC 61000-4-4
Performance criterion	:	B
Test level	:	☒±0.5kV, Signal ports (For EN IEC 61000-6-1)
		☒±1.0kV, Signal ports (For EN IEC 61000-6-2)
		☒±0.5kV, Input and Output DC power ports (For EN IEC 61000-6-1)
		☒±1.0kV, Input and Output 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

11.2. Block Diagram of Test Setup

Input and Output AC power or DC power ports:



Signal ports:



11.3. Test Procedure

The EUT is put on the table that is 0.1 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.

11.4. Test Results

Pass.

For EN IEC 61000-6-1

Temperature	:	21 °C
Humidity	:	53 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jo Liu
Test Date	:	2023-03-08

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

For EN IEC 61000-6-2

Temperature	:	21 °C
Humidity	:	53 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jo Liu
Test Date	:	2023-03-08

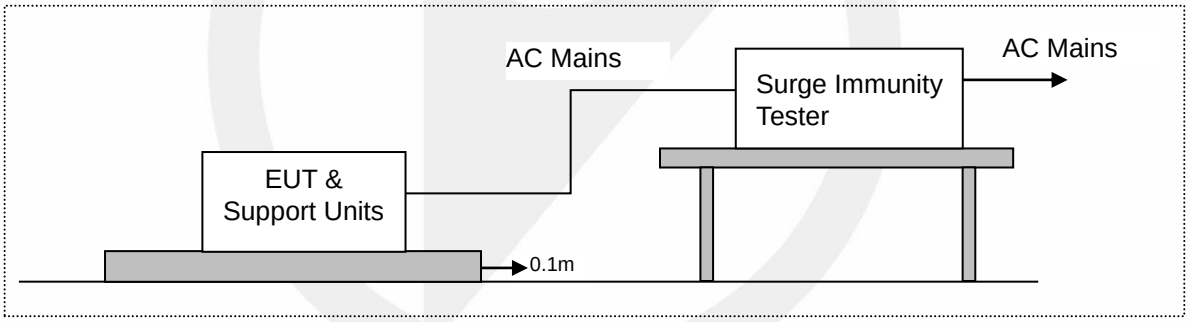
Injection Line	Voltage (kV)	Injected Method	Actual criterion	Required performance criterion	Result (Pass/Fail)
☒ Signal ports	☒± 1.0	☐ CDN ☐ Direct injection ☒ Capacitive coupling clamp	A	B	Pass
☒ Input and Output DC power ports	☒± 1.0	☐ CDN ☒ Direct injection ☐ Capacitive coupling clamp	A	B	Pass
☒ Input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

12. SURGES IMMUNITY TEST

12.1. 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:	:	0°, 90°, 180°, 270°

12.2. Block Diagram of Test Setup



12.3. 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 0°, 90°, 180°, 270° 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.

12.4. Test results

Pass.

Temperature	:	21 °C
Humidity	:	53 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jo Liu
Test Date	:	2023-03-08

☒ 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.	A	B	Pass

☒ Signal ports:

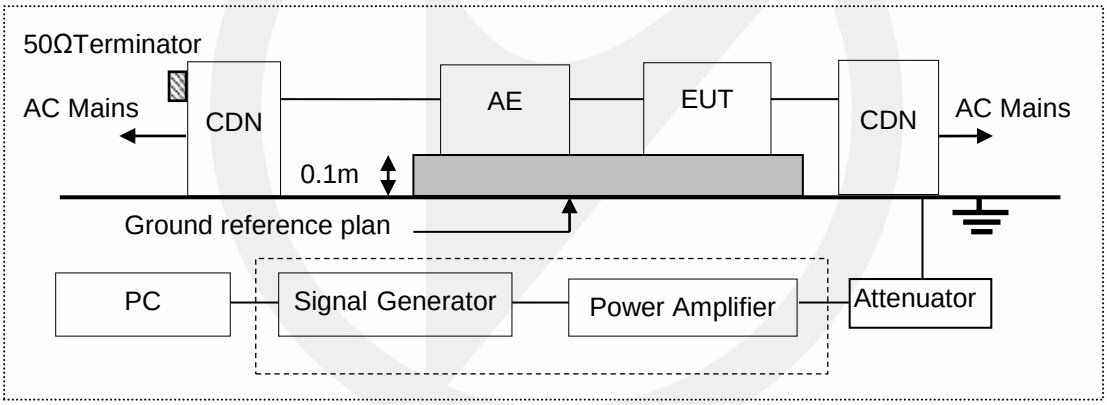
Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
☒ Line to earth	1	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass

13. RADIO-FREQUENCY COMMON MODE IMMUNITY TEST

13.1. 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

13.2. Block Diagram of Test Setup



13.3. 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.

13.4. Test results

Pass.

For EN IEC 61000-6-1

Temperature	:	21 °C
Humidity	:	53 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jo Liu
Test Date	:	2023-03-08

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	A	A	Pass
☒Input and Output DC power ports	0.15-80	3V	☒CDN ☐EM Clamp	A	A	Pass
☒Input and Output AC power ports	0.15-80	3V	☒CDN ☐EM Clamp	A	A	Pass

For EN IEC 61000-6-2

Temperature	:	21 °C
Humidity	:	53 %
Atmospheric Pressure	:	101kpa
Test Engineer	:	Jo Liu
Test Date	:	2023-03-08

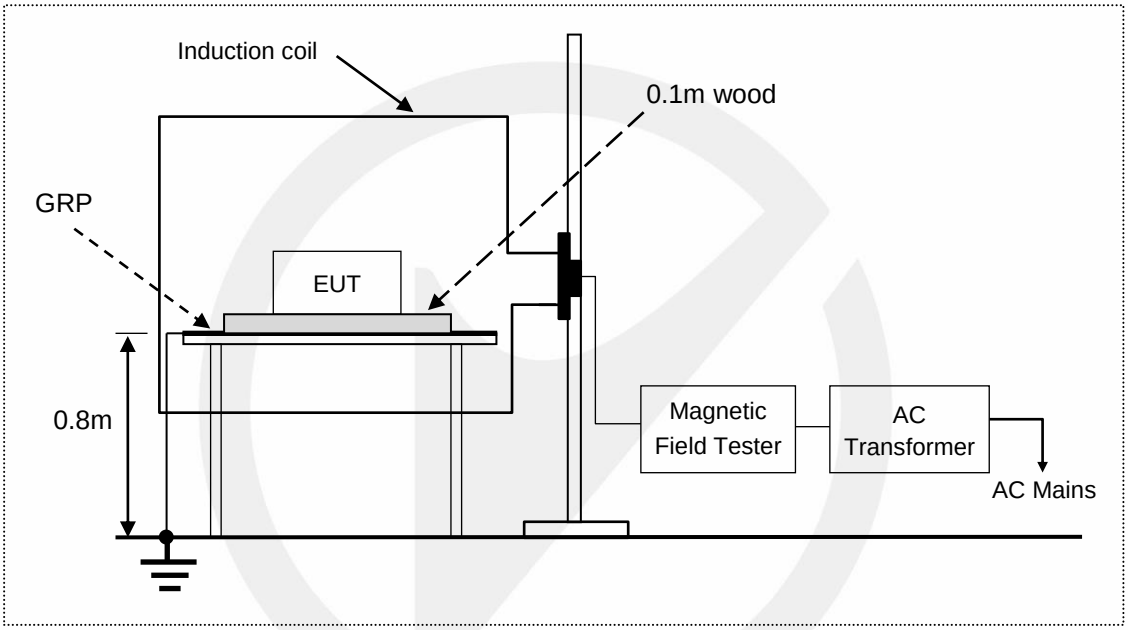
Injection port	Range (MHz)	Levers (V)	Coupling type	Actual criterion	Required performance criterion	Result (Pass/Fail)
☒Signal ports	0.15-80	10V	☐CDN ☒EM Clamp	A	A	Pass
☒Input and Output DC power ports	0.15-80	10V	☒CDN ☐EM Clamp	A	A	Pass
☒Input and Output AC power ports	0.15-80	10V	☒CDN ☐EM Clamp	A	A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

14. POWER FREQUENCY MAGNETIC FIELD

14.1. 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)

14.2. Block Diagram of Test Setup



GRP: Ground reference plane
EUT: Equipment under test

14.3. 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.

14.4. Test Results

Pass.

For EN IEC 61000-6-1

Temperature : 21 °C
Humidity : 53 %
Atmospheric Pressure : 101kpa
Test Engineer : Jo Liu
Test Date : 2023-03-08

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 : 21 °C
Humidity : 53 %
Atmospheric Pressure : 101kpa
Test Engineer : Jo Liu
Test Date : 2023-03-08

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

15. VOLTAGE DIPS AND VOLTAGE INTERRUPTIONS IMMUNITY TEST

15.1. Test Specification

Test standard : EN IEC 61000-6-1, EN IEC 61000-6-2

Basic standard : IEC 61000-4-11

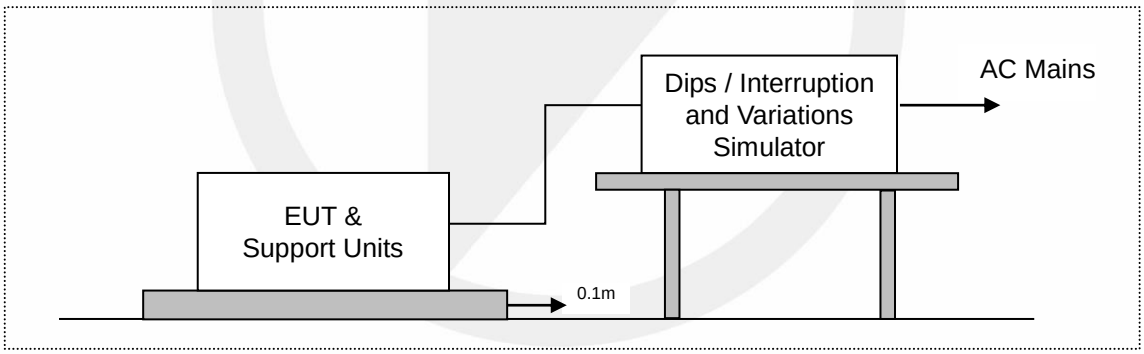
Test level : (For EN IEC 61000-6-1)

☒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

15.2. Block Diagram of Test Setup



15.3. 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.

15.4. Test results

Pass.

For EN IEC 61000-6-1

Temperature : 21 °C
Humidity : 53 %
Atmospheric Pressure : 101kpa
Test Engineer : Jo Liu
Test Date : 2023-03-08

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 : 21 °C
Humidity : 53 %
Atmospheric Pressure : 101kpa
Test Engineer : Jo Liu
Test Date : 2023-03-08

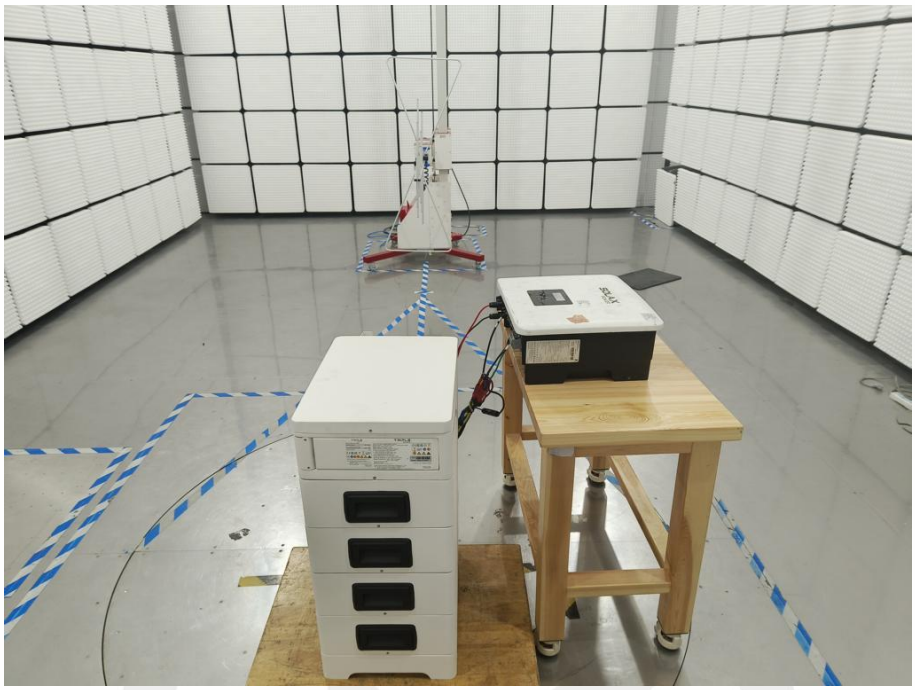
Item	Test Level (% UT)	Phase angle (°)	Input Voltage (V)	Freq (Hz)	Duration (periods)	Actual criterion	Required performance criterion	Result (Pass /Fail)
☒Voltage dips	0%	0º, 180º	AC 230V	50	1	A	B	Pass
☒Voltage dips	40%	0º, 180º	AC 230V	50	10	A	C	Pass
☐Voltage dips	40%	0º, 180º	AC 230V	60	12	N/A	C	N/A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

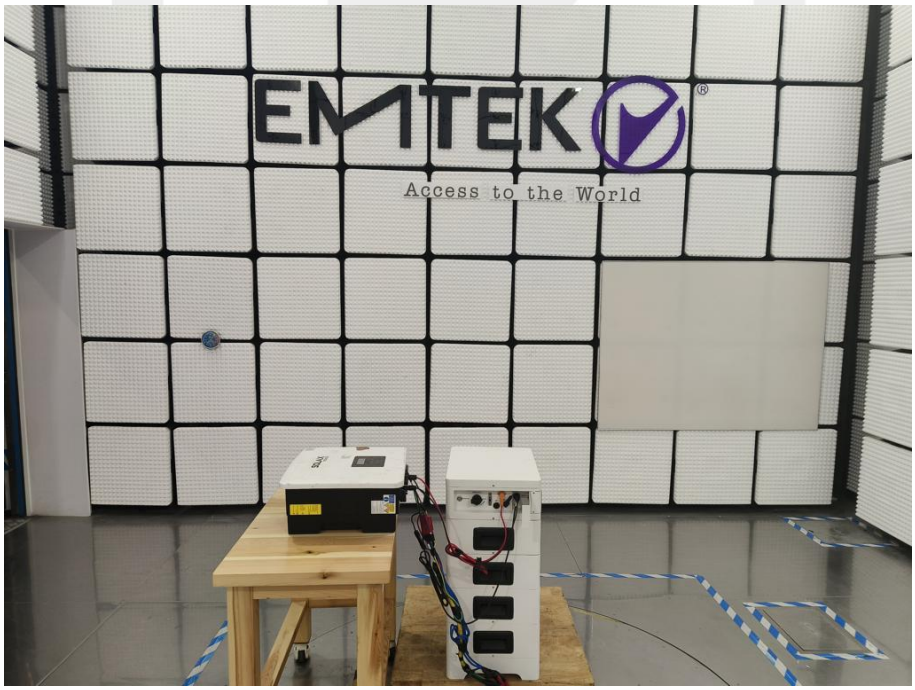
16. PHOTOGRAPH

16.1. Photo of Conducted Emission at Mains Measurement

16.2. Photo of Conducted Emission at wired ports

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

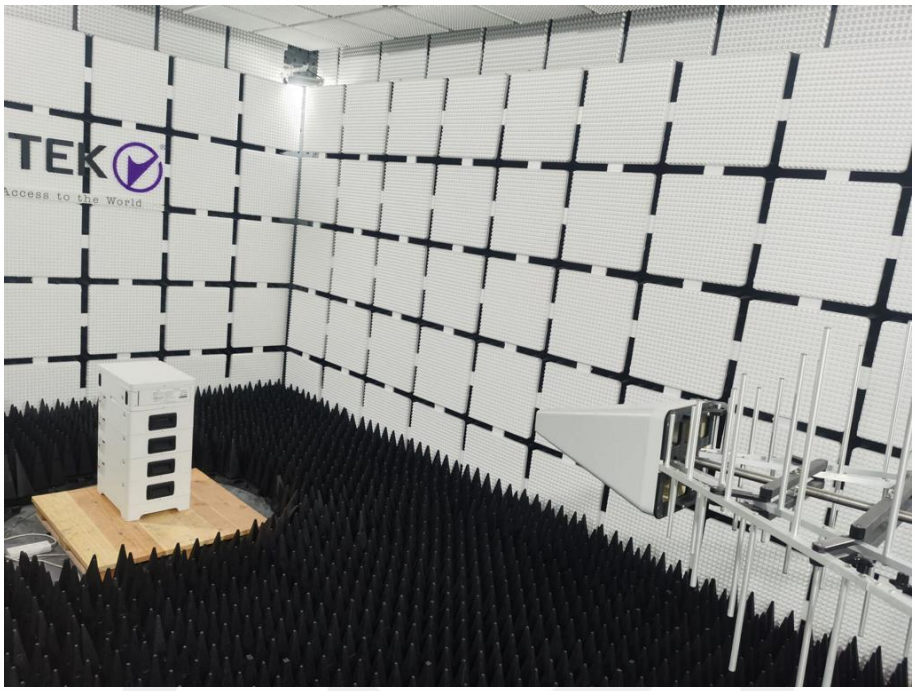




16.4.Photo of Harmonics and Flicker Test

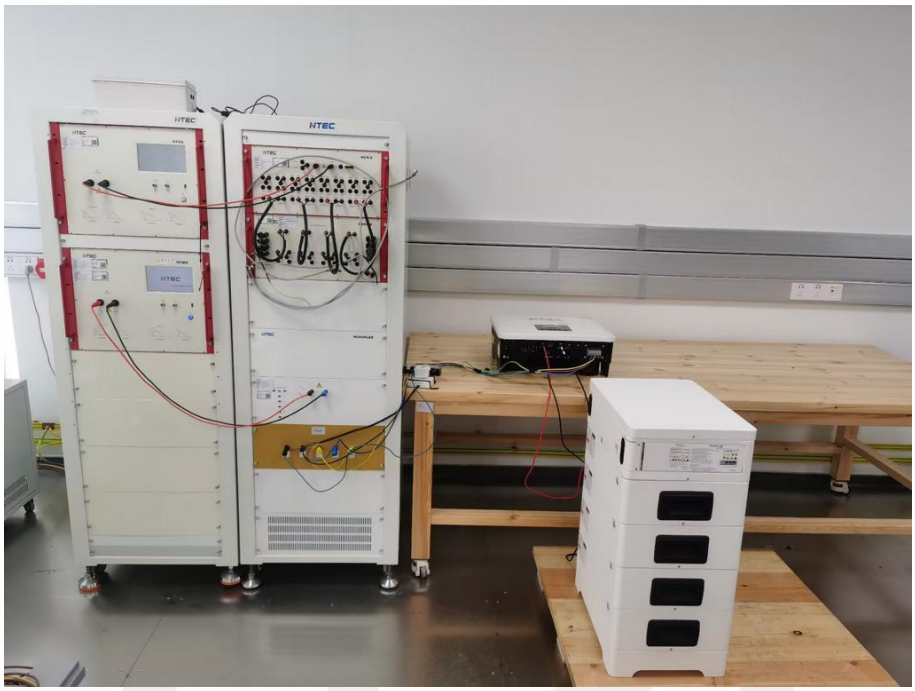
16.5.Photo of Electrostatic Discharge Immunity Test

16.6.Photo of Radio-Frequency Electromagnetic Field Immunity Test

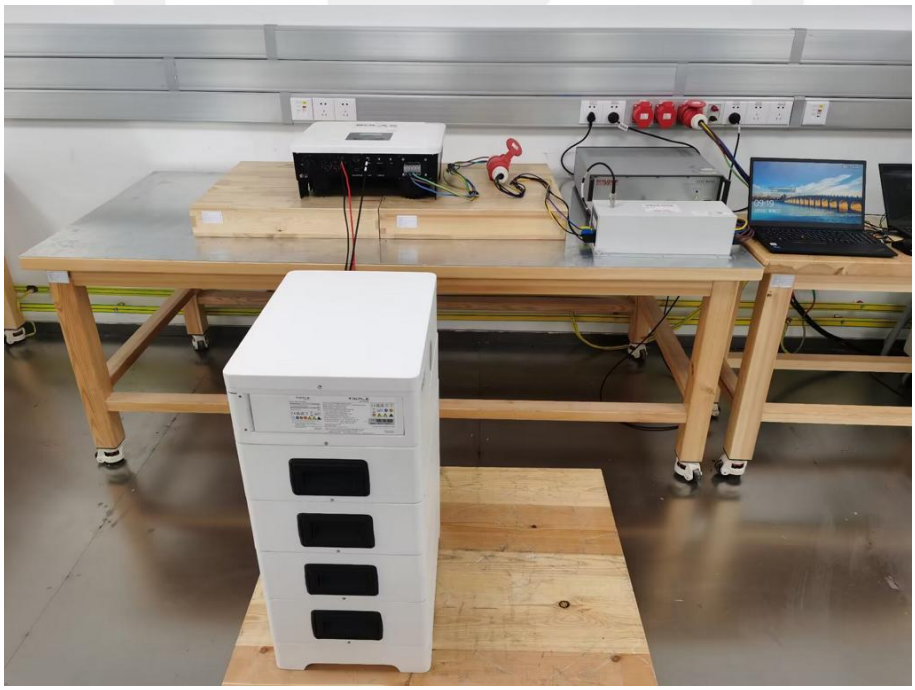


16.7.Photo of Electrical Fast Transient / Burst Test

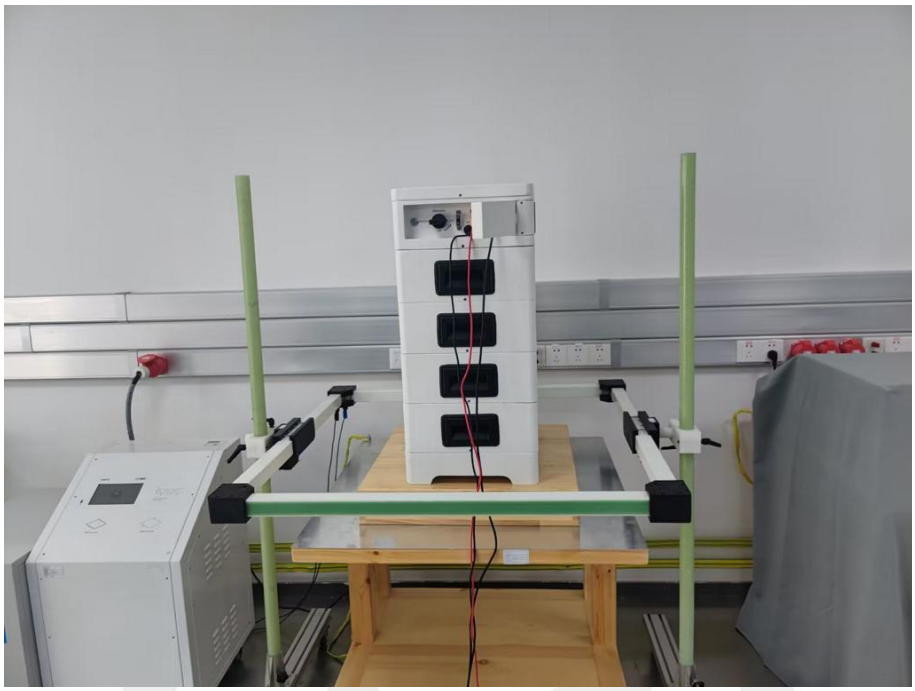
16.8.Photo of Surge Test



16.9.Photo of Injected Currents Susceptibility Test



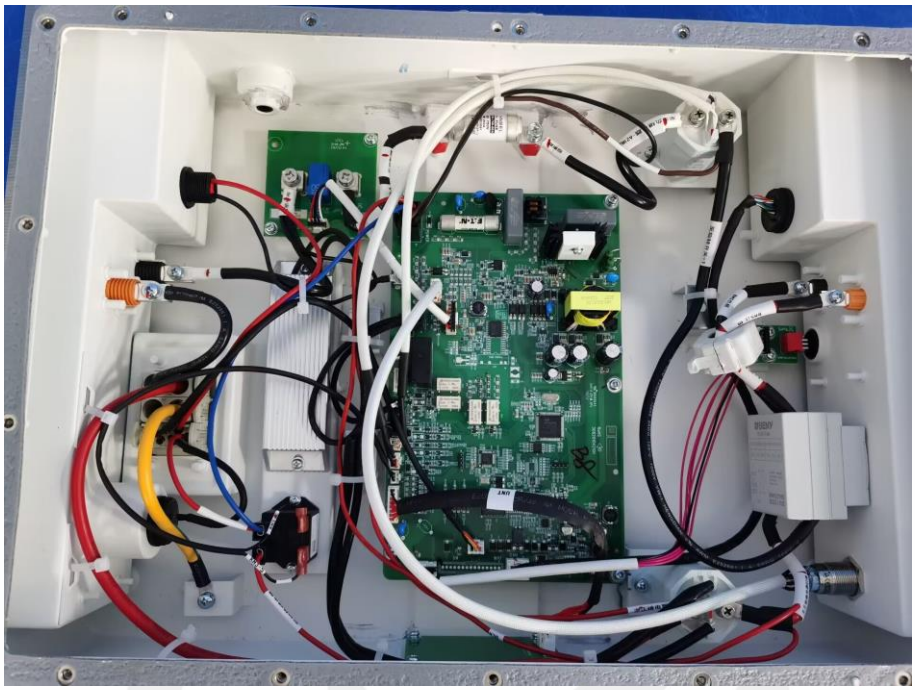
16.10.Photo of Power Frequency Magnetic Field Test

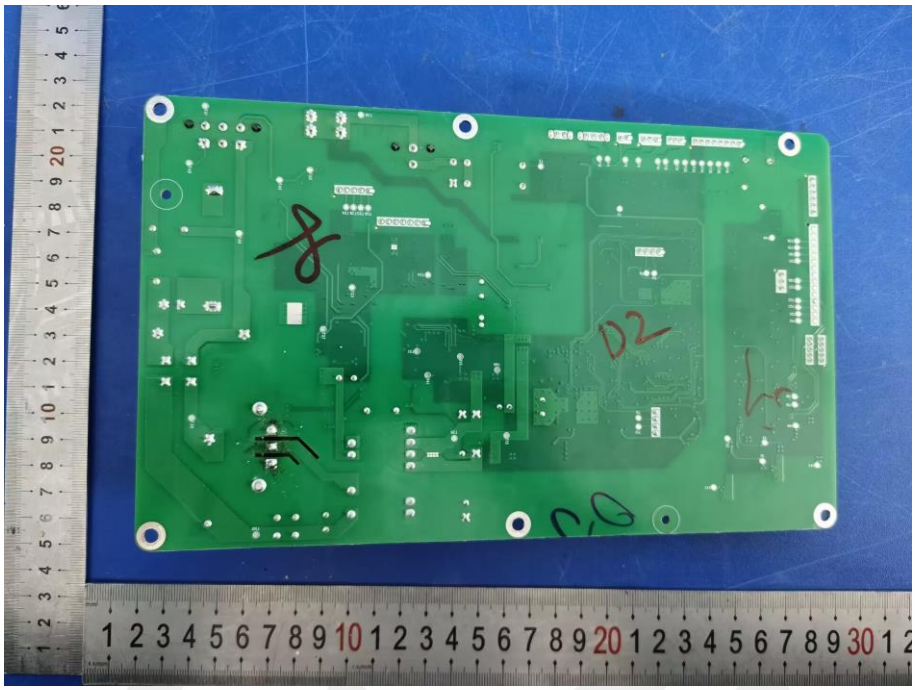


16.11.Photo of Voltage Dips and Interruption Immunity Test

APPENDIX I
(Photo of EUT)

TRIPLE
POWER





*** End of Report ***

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