EMC - TEST REPORT

Report Number	: 64.760.18.01125.01	Date of Issue:	2018-06-15
Model	: CH50-050440-EU		
Product Type	: Power Supply		
Applicant	: Star Promotion		
Address	: SHENZHEN STAR PROMOTION LIMITED N2/F, Complex Building, Hongmen Hi-Tech Park, Jihua Road, Bantian, Longgang District, Shenzhen, China		
Production Facility	: Star Promotion		
Address	: SHENZHEN STAR PROMOTION LIMITED N2/F, Complex Building, Hongmen Hi-Tech Park, Jihua Road, Bantian, Longgang District, Shenzhen, China		
Test Result	: ■ Positive ☐ Negative		
Total pages including Appendices	: 40		

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1 Table of Contents

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2 Details about the Test Laboratory

Details about the Test Laboratory

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
Building 12&13, Zhiheng Wisdomland Business Park,
Nantou Checkpoint Road 2, Nanshan District,
518052 Shenzhen, CHINA

Telephone: 86 755 8828 6998
Fax: 86 755 8828 5299

3 Description of the Equipment Under Test

Description of the Equipment Under Test

Product:	Power Supply
Model No.:	CH50-050440-EU
Options and accessories:	NIL
Rated Input:	100-240VAC, 50/60Hz, 1.0A
Rated Output:	5VDC, total 4.4A max
Class of equipment:	Class II
Description of the EUT:	EUT is a USB adapter, maximum output of these two neighbouring USB ports is 2.0A, and the another USB port with type-C output is 2.4A.

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4 Summary of Test Standards

Test Standards	
EN 55032:2015	Electromagnetic compatibility of multimedia equipment – Emission requirements
EN 55035:2017	Electromagnetic compatibility of multimedia equipment – Immunity requirements
EN 61000-3-2: 2014	Electromagnetic compatibility (EMC) — Part 3-2: Limits — Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)
EN 61000-3-3: 2013	Electromagnetic compatibility (EMC) — Part 3-3: Limits — Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection

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5 Summary of Test Results

Emission Tests			
EN 55032:2015			
Test Condition	Test Result		
	Pass	Fail	N/A
Radiated Emission 30MHz to 1000MHz	☒	☐	☐
Radiated Emission 1GHz to 6GHz	☐	☐	☒
Conducted Emission on AC 150kHz to 30MHz	☒	☐	☐
EN 61000-3-2: 2014			
Harmonic Class A	☒	☐	☐
EN 61000-3-3: 2013			
Flicker	☒	☐	☐

Remark: Pretest EUT in mode with no/half/full load, report the worst data.

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Summary of Test Results

Immunity Tests			
EN 55035:2017			
Test Condition	Test Result		
	Pass	Fail	N/A
Electrostatic Discharge (IEC 61000-4-2) ±4kV ±8kV	☒	☐	☐
Radiated Immunity (IEC 61000-4-3) 80MHz to 1000MHz 3V/m (rms)	☒	☐	☐
Electrical Fast Transient (IEC 61000-4-4) ±1kV	☒	☐	☐
Surge (IEC 61000-4-5) ±1kV	☒	☐	☐
Conducted Immunity (IEC 61000-4-6) 150KHz to 80MHz 3Vrms	☒	☐	☐
Voltage Dips and Interruption (IEC 61000-4-11) 0%, 70%, 0% of U_T	☒	☐	☐
Power Frequency Magnetic Field (IEC 61000-4-8) 50Hz, 60Hz 1A/m	☐	☐	☒

System Measurement Uncertainty	
Test Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.99dB; Vertical: 4.97dB;
Uncertainty for Conducted Emission 150kHz-30MHz (for test using AMN ENV216 or ENV4200)	3.46dB
Uncertainty for Harmonic test	3.26%
Uncertainty for Flicker test	4.76%
Uncertainty for RS test	21%, K=2
Uncertainty for CS test	29%, K=2
Uncertainty for ESD test	The immunity measurement system uncertainty is within standard requirement and is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.
Uncertainty for EFT test	
Uncertainty for Surges test	
Uncertainty for Voltage Dips, Voltage Variations and Short Interruptions Test	

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6 General Remarks

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Testing Start Date: 2018-05-09

Testing End Date: 2018-05-22

- TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch -

Reviewed by: Prepared by:

Tony Liu Celia Xiang

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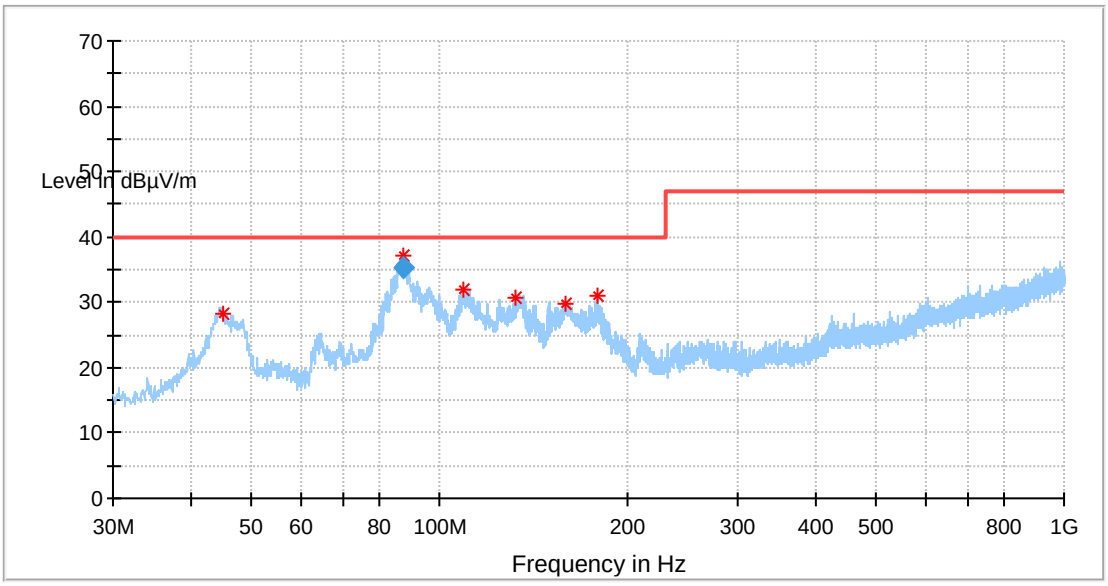
7 Emission Test Results

7.1 Radiated Emission Test 30MHz – 1000MHz

M/N	:	CH50-050440-EU
Operating Condition	:	Full Load
Test Specification	:	Horizontal
Comment	:	AC 230V/50Hz
Date of Test	:	2018-05-10

Temperature (°C): 23.1 Relative Humidity (%): 67.5 Atmospheric Pressure(mbar) : 1010



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
87.816250	35.16	40.00	4.84	393.0	H	312.0	13.2

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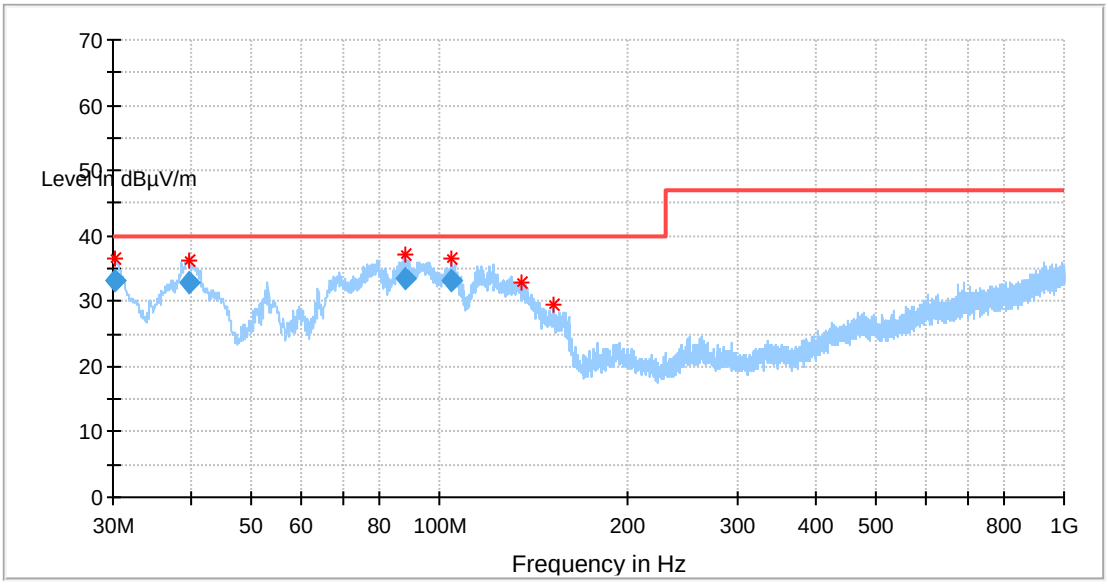
Radiated Emission Test 30MHz – 1000MHz

M/N	:	CH50-050440-EU
Operating Condition	:	Full Load
Test Specification	:	Vertical
Comment	:	AC 230V/50Hz
Date of Test	:	2018-05-10

Temperature (°C): 23.1 Relative Humidity (%): 67.5 Atmospheric Pressure(mbar) : 1010



Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.181875	33.14	40.00	6.84	100.0	V	0.0	15.1
39.700000	32.97	40.00	7.03	100.0	V	283.0	16.9
87.836250	33.48	40.00	6.52	100.0	V	201.0	13.4
104.386875	33.12	40.00	6.88	100.0	V	107.0	16.3

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Test Equipment List

Radiated Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2018-7-14
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2018-7-14
3m Semi-anechoic chamber	TDK	9X6X6	----	2019-5-29

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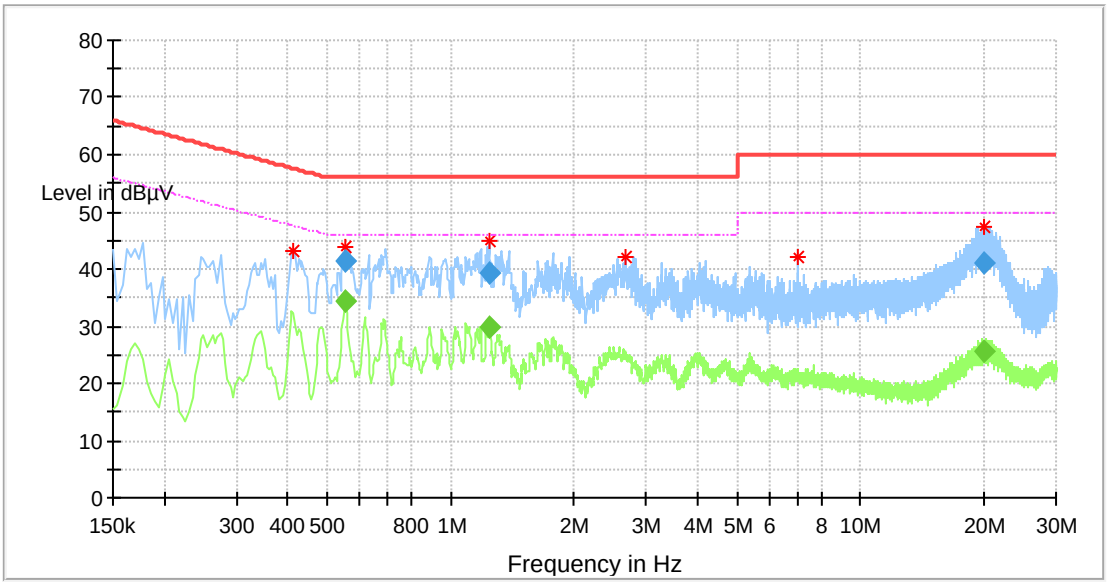
7.2 Conducted Emission Test 150kHz – 30MHz

M/N	:	CH50-050440-EU
Operating Condition	:	Full Load
Test Specification	:	Power Line, Live
Comment	:	AC 230V/50Hz
Date of Test	:	2018-05-09

Temperature (°C): 23.7 Relative Humidity (%): 53.3 Atmospheric Pressure(mbar) : 1012



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.553500	---	34.39	46.00	11.61	L1	10.2
0.553500	41.37	---	56.00	14.63	L1	10.2
1.245500	---	29.87	46.00	16.13	L1	10.2
1.245500	39.35	---	56.00	16.65	L1	10.2
20.093500	---	25.69	50.00	24.31	L1	11.0
20.093500	40.99	---	60.00	19.01	L1	11.0

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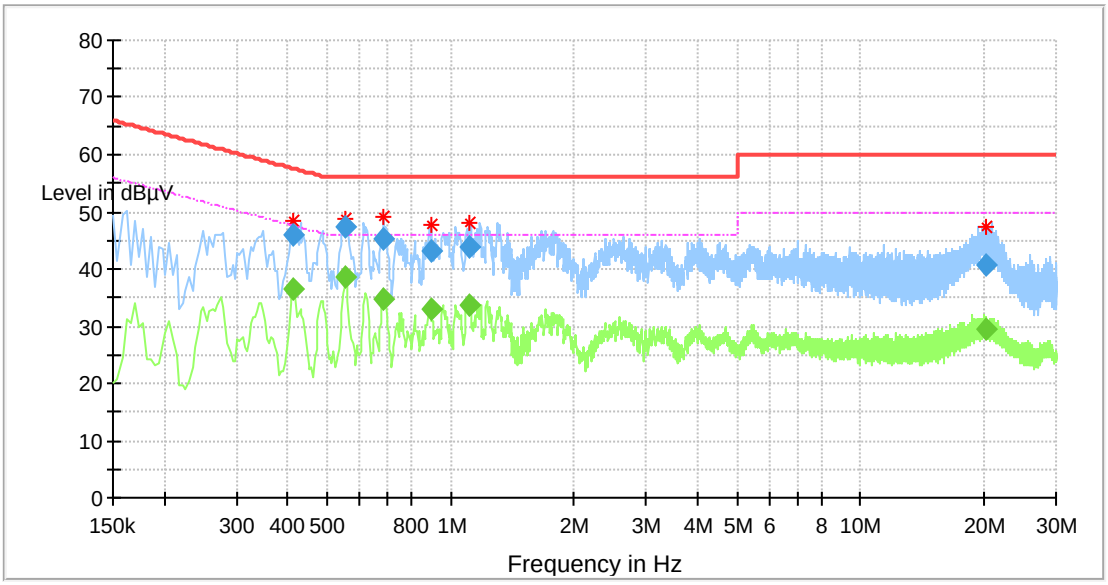
Conducted Emission Test 150kHz – 30MHz

M/N	:	CH50-050440-EU
Operating Condition	:	Full Load
Test Specification	:	Power Line, Neutral
Comment	:	AC 230V/50Hz
Date of Test	:	2018-05-09

Temperature (°C): 23.7 Relative Humidity (%): 53.3 Atmospheric Pressure(mbar) : 1012



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Corr. (dB)
0.413500	---	36.56	47.58	11.02	N	10.3
0.413500	45.98	---	57.58	11.60	N	10.3
0.553500	---	38.61	46.00	7.39	N	10.4
0.553500	47.47	---	56.00	8.53	N	10.4
0.681500	---	34.75	46.00	11.25	N	10.4
0.681500	45.24	---	56.00	10.76	N	10.4
0.893500	---	32.86	46.00	13.14	N	10.4
0.893500	43.33	---	56.00	12.67	N	10.4
1.113500	---	33.63	46.00	12.37	N	10.4
1.113500	43.72	---	56.00	12.28	N	10.4
20.241500	---	29.32	50.00	20.68	N	11.6
20.241500	40.83	---	60.00	19.17	N	11.6

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Test Equipment List

Conducted Emission Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2018-7-14
LISN	Rohde & Schwarz	ENV432	101318	2018-7-14

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7.3 Harmonics Test

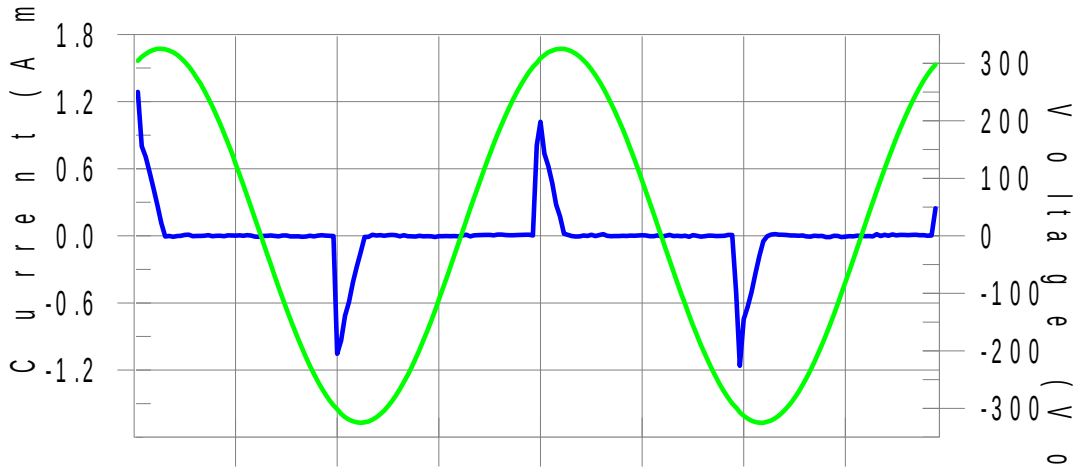
M/N	:	CH50-050440-EU			
Operating Condition	:	Full Load			
Comment	:	AC 230V/50Hz			
Date of Test	:	2018-05-15			
Temperature (°C):	23.7	Relative Humidity (%):	53.3	Atmospheric Pressure(mbar) :	1012

Harmonics – Class-A per Ed. 4.0 (2014)(Run time)

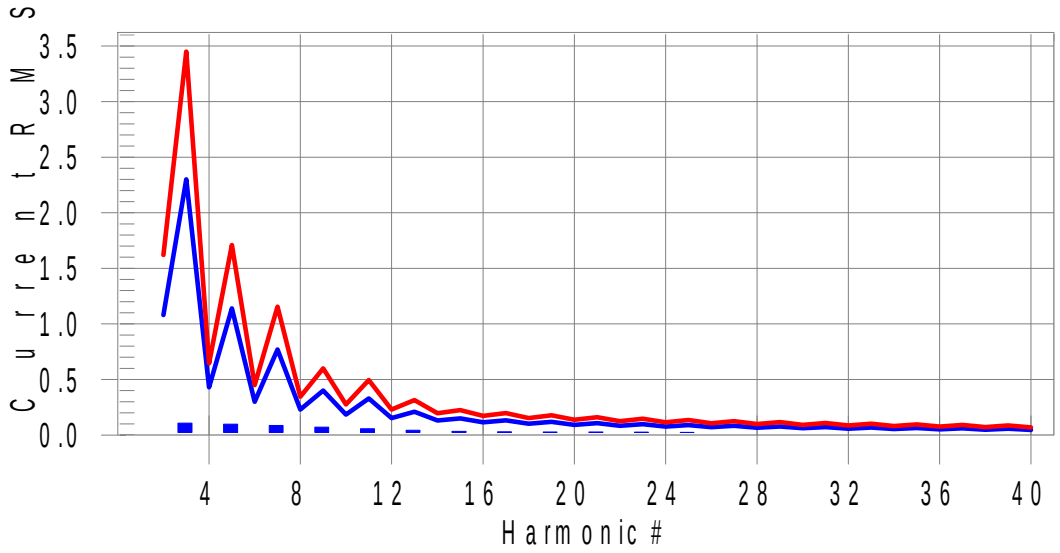
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2018/5/15 **Start time: 11:10:42** **End time: 11:13:35**
Test duration (min): 2.5

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass **Worst harmonic was #37 with 19.0% of the limit.**

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Current Test Result Summary (Run time)

Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100
Test date: 2018/5/15 Start time: 11:10:42 End time: 11:13:35
Test duration (min): 2.5

Test Result: Pass Source qualification: Normal
THC(A): 0.214 I-THD(%): 189.2 POHC(A): 0.067 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts):	229.958	Frequency(Hz):	50.00
I_Peak (Amps):	1.329	I_RMS (Amps):	0.247
I_Fund (Amps):	0.115	Crest Factor:	5.419
Power (Watts):	25.6	Power Factor:	0.452

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.002	1.080	N/A	0.002	1.620	N/A	Pass
3	0.108	2.300	4.7	0.110	3.450	3.2	Pass
4	0.001	0.430	N/A	0.001	0.645	N/A	Pass
5	0.099	1.140	8.6	0.100	1.710	5.8	Pass
6	0.000	0.300	N/A	0.001	0.450	N/A	Pass
7	0.086	0.770	11.1	0.087	1.155	7.5	Pass
8	0.001	0.230	N/A	0.001	0.345	N/A	Pass
9	0.071	0.400	17.7	0.072	0.600	12.0	Pass
10	0.000	0.184	N/A	0.001	0.276	N/A	Pass
11	0.056	0.330	16.9	0.056	0.495	11.4	Pass
12	0.000	0.153	N/A	0.001	0.230	N/A	Pass
13	0.043	0.210	20.3	0.043	0.315	13.7	Pass
14	0.000	0.131	N/A	0.001	0.197	N/A	Pass
15	0.033	0.150	22.2	0.034	0.225	15.0	Pass
16	0.000	0.115	N/A	0.001	0.173	N/A	Pass
17	0.029	0.132	21.7	0.029	0.198	14.7	Pass
18	0.000	0.102	N/A	0.001	0.153	N/A	Pass
19	0.027	0.118	23.2	0.028	0.178	15.7	Pass
20	0.000	0.092	N/A	0.001	0.138	N/A	Pass
21	0.027	0.107	25.5	0.028	0.161	17.2	Pass
22	0.000	0.084	N/A	0.001	0.125	N/A	Pass
23	0.026	0.098	27.0	0.027	0.147	18.3	Pass
24	0.000	0.077	N/A	0.001	0.115	N/A	Pass
25	0.025	0.090	27.4	0.025	0.135	18.5	Pass
26	0.000	0.071	N/A	0.001	0.107	N/A	Pass
27	0.022	0.083	26.8	0.023	0.125	18.2	Pass
28	0.000	0.066	N/A	0.001	0.099	N/A	Pass
29	0.020	0.078	26.0	0.020	0.116	17.6	Pass
30	0.000	0.061	N/A	0.001	0.092	N/A	Pass
31	0.019	0.073	25.7	0.019	0.109	17.4	Pass
32	0.000	0.058	N/A	0.001	0.086	N/A	Pass
33	0.018	0.068	26.2	0.018	0.102	17.9	Pass
34	0.000	0.054	N/A	0.001	0.081	N/A	Pass
35	0.017	0.064	27.1	0.018	0.096	18.6	Pass
36	0.001	0.051	N/A	0.001	0.077	N/A	Pass
37	0.017	0.061	27.8	0.017	0.091	19.0	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.016	0.058	27.7	0.016	0.087	18.9	Pass
40	0.001	0.046	N/A	0.001	0.069	N/A	Pass

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Test Equipment List

Harmonics Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Three Phase Harmonic flicker test system	CI	MX45-3PI-400-413-CTSHL-LF-SNK	1424A00547	2018-7-14

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7.4 Flicker Test

M/N	:	CH50-050440-EU
Operating Condition	:	Full Load
Comment	:	AC 230V/50Hz
Date of Test	:	2018-05-15

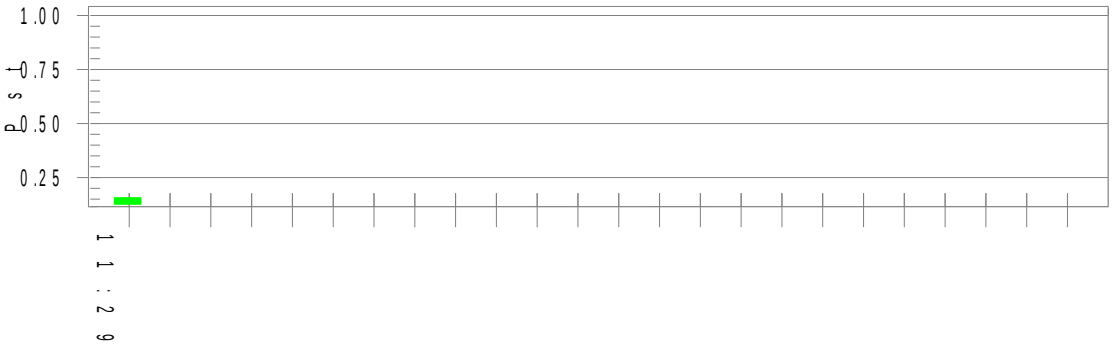
Temperature (°C): 23.7 Relative Humidity (%): 53.3 Atmospheric Pressure(mbar) : 1012

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

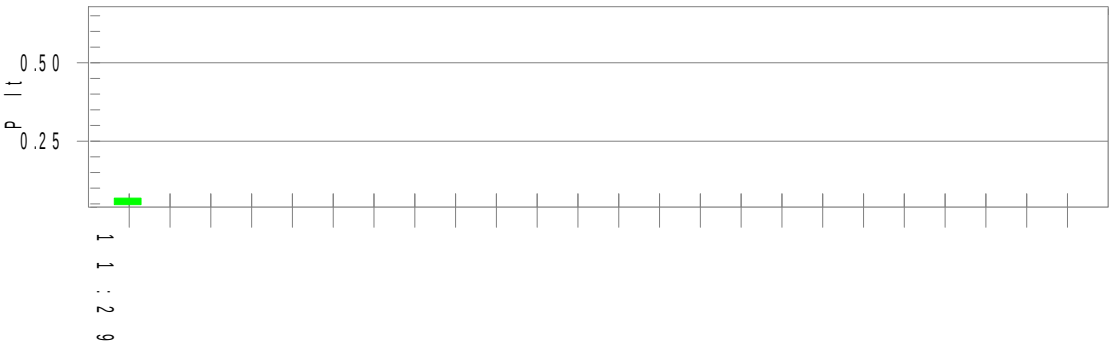
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2018/5/15 **Start time: 11:18:59** **End time: 11:29:30**
Test duration (min): 10

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.93**			
Highest dt (%):	**0.00**	**Test limit (%):**	**N/A**	**N/A**
T-max (mS):	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.06**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.157**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.069**	**Test limit:**	**0.650**	**Pass**

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Test Equipment List

Flicker Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Three Phase Harmonic flicker test system	CI	MX45-3PI-400-413-CTSHL-LF-SNK	1424A00547	2018-7-14

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8 Performance Criteria

A	The apparatus shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment 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, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the apparatus if used as intended.
B	After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed, however, no change of operating state or stored data is allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the apparatus if used as intended.
C	Loss of functions is allowed, provided the function is self-recoverable, or can be restored by the operation of the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

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9 Immunity Test Results

9.1 Electrostatic Discharge Test

Operating Mode : Full Load ☒Table Top ☐Floor Stand

Ambient Temperature (°C) : 22.3 Relative Humidity (%): 45.9 Atmospheric Pressure(mbar) : 1021

Test regulation :
☐EN 61000-6-1 ☐EN 55014-2 ☐EN 55013
☒EN 55035 ☐IEC 1000-4-2 ☐IEC 801-2
☐EN 61547 ☒IEC 61000-4-2 ☐EN 55020

Indirect discharge : ☐Draw points in the appendix

Point	Contact kV			Number and Polarity at each voltage level	
1: VCP-Front Side	☒..2	☐..3	☒..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☐..10 pos	☐..10 neg
2: VCP-Right Side	☒..2	☐..3	☒..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☐..10 pos	☐..10 neg
3: VCP-Rear Side	☒..2	☐..3	☒..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☐..10 pos	☐..10 neg
4: VCP-Left Side	☒..2	☐..3	☒..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☐..10 pos	☐..10 neg
5: HCP-Front Side	☒..2	☐..3	☒..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☐..10 pos	☐..10 neg
6: HCP-Right Side	☒..2	☐..3	☒..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☐..10 pos	☐..10 neg
7: HCP-Rear Side	☒..2	☐..3	☒..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☐..10 pos	☐..10 neg
8: HCP-Left Side	☒..2	☐..3	☒..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☐..10 pos	☐..10 neg
9:_____	☐..2	☐..3	☐..4	☐..25 pos	☐..25 neg
	☐..6	☐..8	☐..	☐..10 pos	☐..10 neg

Remarks: VCP = Vertical Coupling Plane; HCP = Horizontal Coupling Plane.

Result: ☒Complies ☐Does not comply ☐Photo done

Criterion Required : B Criterion Met : A

Date : 2018-05-21 Test Engineer : Celia Xiang

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5F, Communication Building,163 Pingyun Rd, Huangpu Ave. West Guangzhou, P.R.China TEL: +86 20 3832 0668 FAX: +86 20 3832 0478

Electrostatic Discharge Test

Operating Mode : Full Load ☒Table Top ☐Floor Stand

Ambient Temperature (°C) : 22.3 Relative Humidity (%): 45.9 Atmospheric Pressure(mbar) : 1021

Test regulation :
☐EN 61000-6-1 ☐EN 55014-2 ☐EN 55013
☒EN 55035 ☐IEC 1000-4-2 ☐IEC 801-2
☐EN 61547 ☒IEC 61000-4-2 ☐EN 55020

Indirect discharge : ☐Draw points in the appendix

Point	Contact kV			Air kV		Number and Polarity at each voltage level	
1. Each nonconductive location touchable by hand	☐..2	☐..3	☐..4	☐..2	☐..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☒..8	☐..	☐..10 pos	☐..10 neg
2.Gaps	☐..2	☐..3	☐..4	☐..2	☐..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☒..8	☐..	☐..10 pos	☐..10 neg
3. Metal	☐..2	☐..3	☒..4	☐..2	☐..4	☒..25 pos	☒..25 neg
	☐..6	☐..8	☐..	☐..8	☐..	☐..10 pos	☐..10 neg
4.	☐..2	☐..3	☐..4	☐..2	☐..4	☐..25 pos	☐..25 neg
	☐..6	☐..8	☐..	☐..8	☐..	☐..10 pos	☐..10 neg
5.	☐..2	☐..3	☐..4	☐..2	☐..4	☐..25 pos	☐..25 neg
	☐..6	☐..8	☐..	☐..8	☐..	☐..10 pos	☐..10 neg
6.	☐..2	☐..3	☐..4	☐..2	☐..4	☐..25 pos	☐..25 neg
	☐..6	☐..8	☐..	☐..8	☐..	☐..10 pos	☐..10 neg
7.	☐..2	☐..3	☐..4	☐..2	☐..4	☐..25 pos	☐..25 neg
	☐..6	☐..8	☐..	☐..8	☐..	☐..10 pos	☐..10 neg
8.	☐..2	☐..3	☐..4	☐..2	☐..4	☐..25 pos	☐..25 neg
	☐..6	☐..8	☐..	☐..8	☐..	☐..10 pos	☐..10 neg
9.	☐..2	☐..3	☐..4	☐..2	☐..4	☐..25 pos	☐..25 neg
	☐..6	☐..8	☐..	☐..8	☐..	☐..10 pos	☐..10 neg
10.	☐..2	☐..3	☐..4	☐..2	☐..4	☐..25 pos	☐..25 neg
	☐..6	☐..8	☐..	☐..8	☐..	☐..10 pos	☐..10 neg

Remarks:

Result: ☒Complies ☐Does not comply ☐Photo done

Criterion Required : B Criterion Met : A

Date : 2018-05-21 Test Engineer : Celia Xiang

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Test Equipment List

Electrostatic Discharge Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Electrostatic Discharge Simulator	Noiseken	ESS-2002	ESS0615075	2018-7-14

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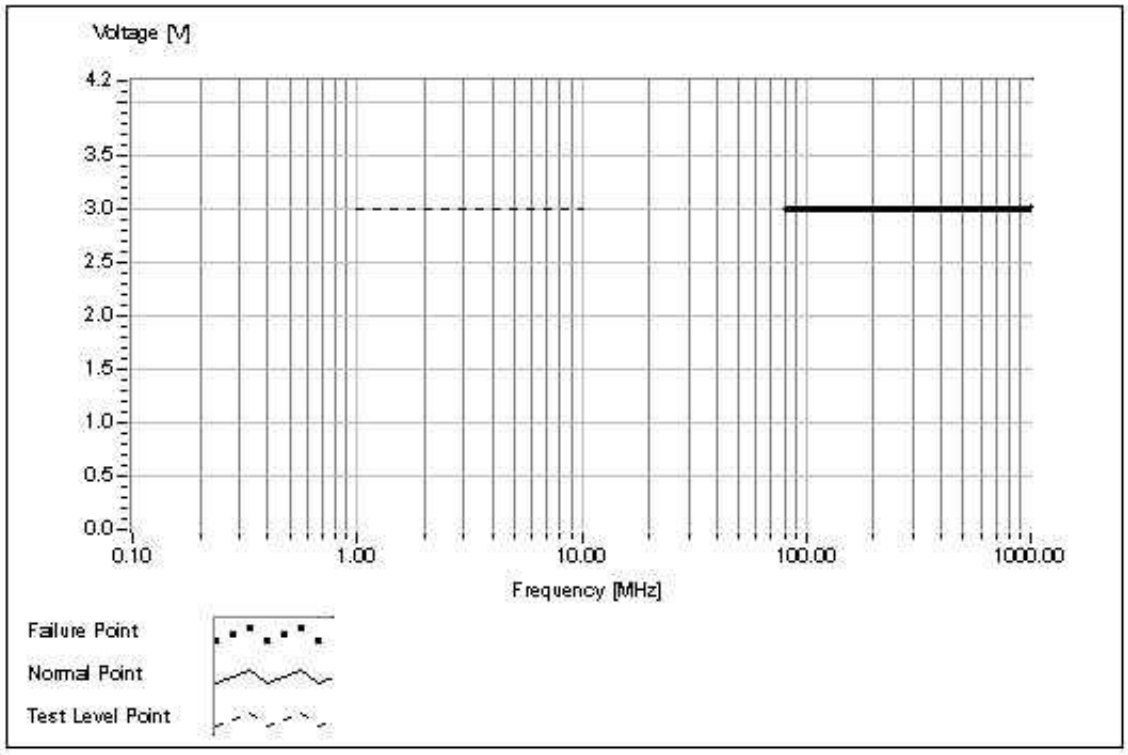
9.2 Radiated Immunity Test

Operating Mode : Full Load ☒Table Top ☐Floor Stand

Ambient Temperature (°C) : 23.9 Relative Humidity (%): 64.1 Atmospheric Pressure(mbar) : 1018

Test regulation :

☐EN 61000-6-1	☐EN 55014-2	☐EN 55013
☒EN 55035	☐IEC 1000-4-2	☐IEC 801-2
☐EN 61547	☒IEC 61000-4-3	☐EN 55020



Report number:

Remarks: Additional frequencies: 1800MHz, 2600MHz, 3500MHz, 5000MHz

Result: ☒Complies ☐Does not comply ☐Photo done

Criterion Required : A Criterion Met : A

Date : 2018-05-12 Test Engineer : Celia Xiang

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Test Equipment List

Radiated Immunity Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Generator	Rohde & Schwarz	SMB100A	177600	2018-7-7
Power Amplifier	Rohde & Schwarz	BBA100	101238	2018-7-7
Power Amplifier	Rohde & Schwarz	BBA150	101671	2018-7-7
Power Amplifier	Rohde & Schwarz	BBA150-E100	102640	2018-7-7
Log-Periodic Antenna	Rohde & Schwarz	HL046E	100160	N/A
Microwave Log-Periodic Antenna	Rohde & Schwarz	STLP 9149	9149-453	N/A
Power Meter	Rohde & Schwarz	NRP2	103497	2018-6-22
Average Power Sensor	Rohde & Schwarz	NRP-Z91	102538	2018-6-22
Average Power Sensor	Rohde & Schwarz	NRP-Z91	102539	2018-6-22
Starprobe Laser-Powered Probe	AMPLIFIER RESEARCH	FL7006/KIT	0433720	2018-7-14
Fully Anechoic Chamber	TDK	8X4X4	--	2020-7-14
Test software	Rohde & Schwarz	EMC32	Version 9.15.03	N/A

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9.3 Electrical Fast Transient Test

Operating Mode : Full Load ☒Table Top ☐Floor Stand

Ambient Temperature (°C) : 24.6 Relative Humidity (%): 65.9 Atmospheric Pressure(mbar) : 1012

Test regulation :
☐EN 61000-6-1 ☐EN 55014-2 ☐EN 55013
☒EN 55035 ☐IEC 1000-4-2 ☐IEC 801-2
☐EN 61547 ☒IEC 61000-4-4 ☐EN 55020

Coupling: ☒Network ☐Clamp

Repetition Rate: ☒5 kHz ☐___ kHz Coupling Time: ☐1 minute ☒2 minutes

Point	Test Voltage (kV)					Criteria		
L1 (pos) to Ref Gnd	☐..0.5	☒..1	☐..2	☐..4	☐..__	☐..A	☒..B	☐..C
L1 (neg) to Ref Gnd	☐..0.5	☒..1	☐..2	☐..4	☐..__	☐..A	☒..B	☐..C
N (pos) to Ref Gnd	☐..0.5	☒..1	☐..2	☐..4	☐..__	☐..A	☒..B	☐..C
N (neg) to Ref Gnd	☐..0.5	☒..1	☐..2	☐..4	☐..__	☐..A	☒..B	☐..C
PE (pos) to Ref Gnd	☐..0.5	☒..1	☐..2	☐..4	☐..__	☐..A	☐..B	☐..C
PE (neg) to Ref Gnd	☐..0.5	☒..1	☐..2	☐..4	☐..__	☐..A	☐..B	☐..C
L1+N (pos) to Ref Gnd	☐..0.5	☒..1	☐..2	☐..4	☐..__	☐..A	☒..B	☐..C
L1+N (neg) to Ref Gnd	☐..0.5	☒..1	☐..2	☐..4	☐..__	☐..A	☒..B	☐..C
L1+N+PE (pos) to Ref Gnd	☐..0.5	☒..1	☐..2	☐..4	☐..__	☐..A	☐..B	☐..C
L1+N+PE (neg) to Ref Gnd	☐..0.5	☒..1	☐..2	☐..4	☐..__	☐..A	☐..B	☐..C

Remarks:

Result: ☒Complies ☐Does not comply ☐Photo done

Criterion Required : B Criterion Met : A

Date : 2018-03-22 Test Engineer : Celia Xiang

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Test Equipment List

Electrical Fast Transients Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Immunity simulator	EMTEST	UCS 500N7	P1313116005	2018-7-14
7kV Coupling network 3-phase	EMTEST	CNI 503B5	P1425134991	2018-7-14
Capacitive Coupling Clamp	EMTEST	HFK	P1426135389	2018-7-14
Test software	EMTEST	iec.control	Version 5.3.1	N/A

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9.4 Surges Test

Operating Mode : Full Load ☒Table Top ☐Floor Stand

Ambient Temperature (°C) : 24.7 Relative Humidity (%): 65.8 Atmospheric Pressure(mbar) : 1012

Test regulation : ☐EN 61000-6-1 ☐EN 55014-2 ☐EN 55013
☒EN 55035 ☐IEC 1000-4-2 ☐IEC 801-2
☐EN 61547 ☒IEC 61000-4-5 ☐EN 55020

TEST LEVEL kV	PHASE ANGLE	# OF SURGES (+)	# OF SURGES (-)	SURGE L/PE	SURGE N/PE	SURGE L/N	EUT COMPLIES? YES	EUT COMPLIES? NO	Remarks
1	0°	5		☐	☐	☒	Y		
1	0°		5	☐	☐	☒	Y		
1	90°	5		☐	☐	☒	Y		
1	90°		5	☐	☐	☒	Y		
1	180°	5		☐	☐	☒	Y		
1	180°		5	☐	☐	☒	Y		
1	270°	5		☐	☐	☒	Y		
1	270°		5	☐	☐	☒	Y		
2	0°	5		☒	☐	☐	Y		
2	0°		5	☒	☐	☐	Y		
2	90°	5		☒	☐	☐	Y		
2	90°		5	☒	☐	☐	Y		
2	180°	5		☒	☐	☐	Y		
2	180°		5	☒	☐	☐	Y		
2	270°	5		☒	☐	☐	Y		
2	270°		5	☒	☐	☐	Y		
2	0°	5		☐	☒	☐	Y		
2	0°		5	☐	☒	☐	Y		
2	90°	5		☐	☒	☐	Y		
2	90°		5	☐	☒	☐	Y		
2	180°	5		☐	☒	☐	Y		
2	180°		5	☐	☒	☐	Y		
2	270°	5		☐	☒	☐	Y		
2	270°		5	☐	☒	☐	Y		

Remarks:

Result: ☒Complies ☐Does not comply ☐Photo done

Criterion Required : B Criterion Met : A

Date : 2018-05-22 Test Engineer : Celia Xiang

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Test Equipment List

Surges Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Immunity simulator	EMTEST	UCS 500N7	P1313116005	2018-7-14
7kV Coupling network 3-phase	EMTEST	CNI 503B5	P1425134991	2018-7-14
Telecom Surge Module	EMTEST	Tsurge 7	P1420134206	2018-7-14
4kV coupling/decoupling network	EMTEST	CNV 504 N1	P1420134192	2018-7-14
4kV CDN for 8 telecom lines	EMTEST	CNV 508 S1	P1431137565	2018-7-14
Test software	EMTEST	iec.control	Version 5.3.1	N/A

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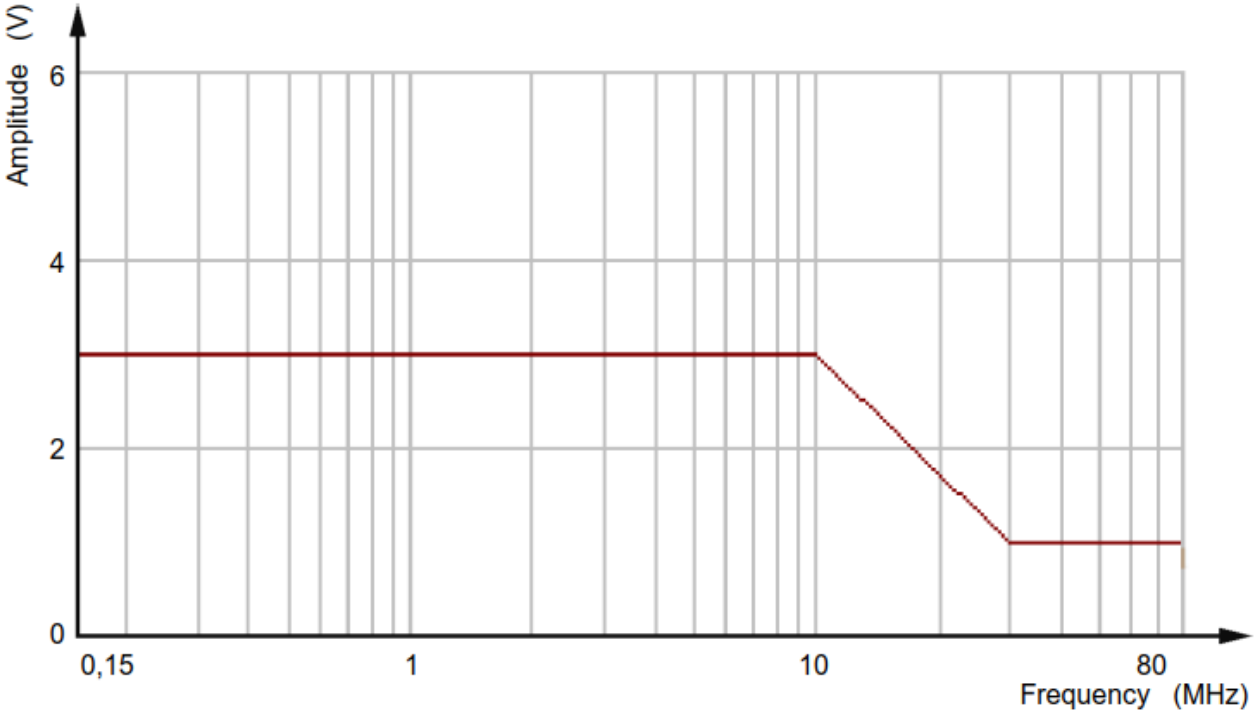
9.5 Conducted Immunity Test

Operating Mode : Full Load ☒Table Top ☐Floor Stand

Ambient Temperature (°C) : 24.8 Relative Humidity (%): 66.8 Atmospheric Pressure(mbar) : 1012

Test regulation :

☐EN 61000-6-1	☐EN 55014-2	☐EN 55013
☒EN 55035	☐IEC 1000-4-2	☐IEC 801-2
☐EN 61547	☒IEC 61000-4-6	☐EN 55020



Remarks:

Result: ☒Complies ☐Does not comply ☐Photo done

Criterion Required : A Criterion Met : A

Date : 2018-03-22 Test Engineer : Celia Xiang

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Test Equipment List

Conducted Immunity Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Continuous Wave Simulator	EMTEST	CWS 500N1	P1420134224	2018-7-14
Attenuator	EMTEST	ATT6/80	P1402129090	2018-7-14
CDN	EMTEST	CDN-M2/M3	P1420134163	2018-7-14
CDN	EMTEST	CDN-M4	P1346125919	2018-7-14
Electromagnetic Injection Clamp	EMTEST	EM101	P1411132453	2018-7-14
Test software	EMTEST	icd.control	Version 5.2.9	N/A

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9.6 Voltage Dips, Voltage Variations and Short Interruptions Test

Operating Mode : Full Load ☒Table Top ☐Floor Stand

Ambient Temperature (°C) : 22.4 Relative Humidity (%): 52.3 Atmospheric Pressure(mbar) : 1019

Test regulation :
☐EN 61000-6-1 ☐EN 55014-2 ☐EN 55013
☒EN 55035 ☐IEC 1000-4-2 ☐IEC 801-2
☐EN 61547 ☒IEC 61000-4-11 ☐EN 55020

U_T : 240Vac & 100Vac

Test Level %U_T	Dips & Interruptions %U_T	Duration (in period) / s	Criterion	Criterion meet	Remark
70	30	25 / 500 ms	C	A	50&60Hz
0	100	0.5 / 10 ms	B	A	50&60Hz
0	100	250 / 5 s	C	B	50&60Hz

Remarks: EUT shut off during test but can recover by itself after test.

Result: ☒Complies ☐Does not comply ☐Photo done

Date : 2018-03-22 Test Engineer : Celia Xiang

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Test Equipment List

Voltage Dips and Interruptions Test

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Immunity simulator	EMTEST	UCS 500N7	P1313116005	2018-7-14
Motorized Variac	EMTEST	MV2616	P1401128623	2018-7-14
Switch-Box for phase by phase	EMTEST	PFLS 32N1	P1251107106	N/A
Test software	EMTEST	iec.control	Version 5.3.1	N/A

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10 Appendix A – Photographs of Test Setup

Radiated Emission

Conducted Emission

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Harmonics and Flicker

Electrostatic Discharge

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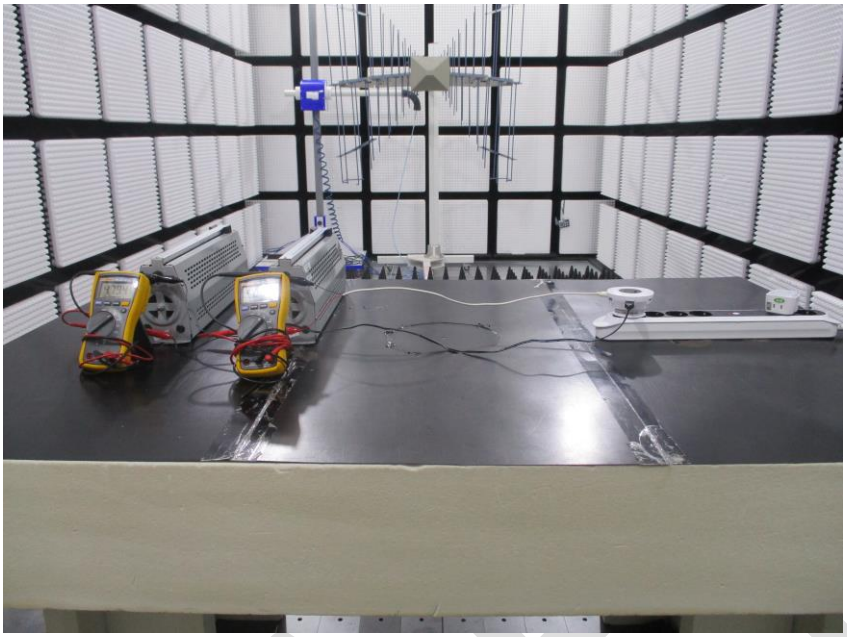
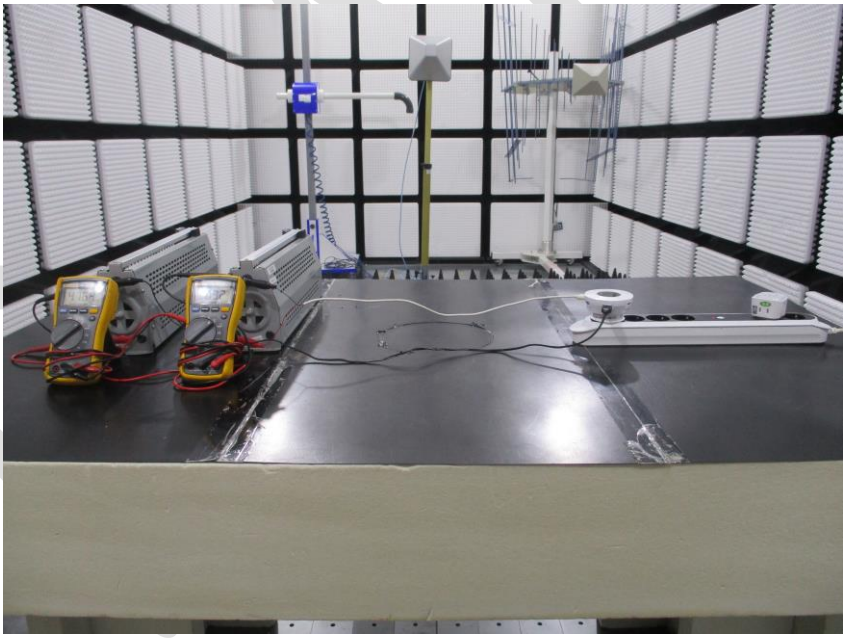
Radiated Immunity





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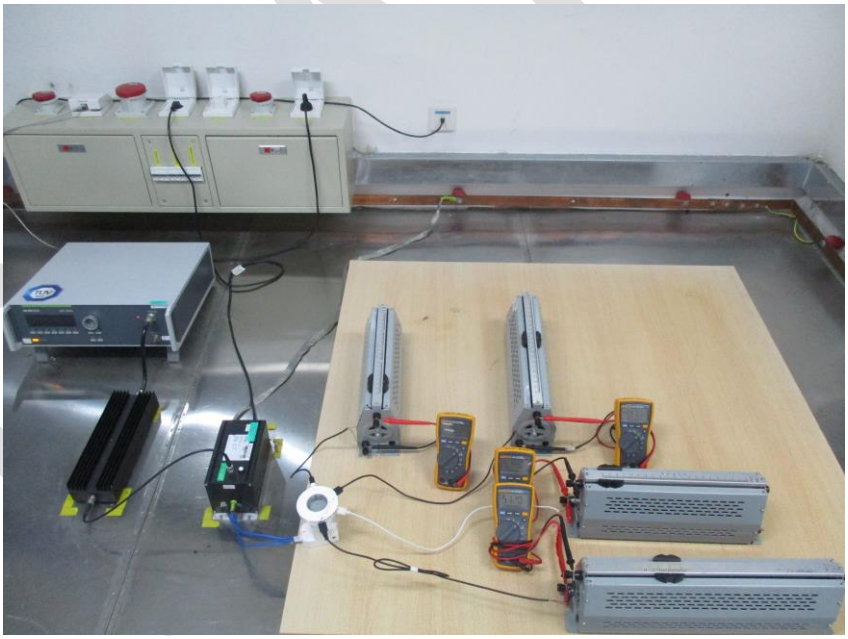
Electrical Fast Transients / Surge / V-dips

Conducted Immunity



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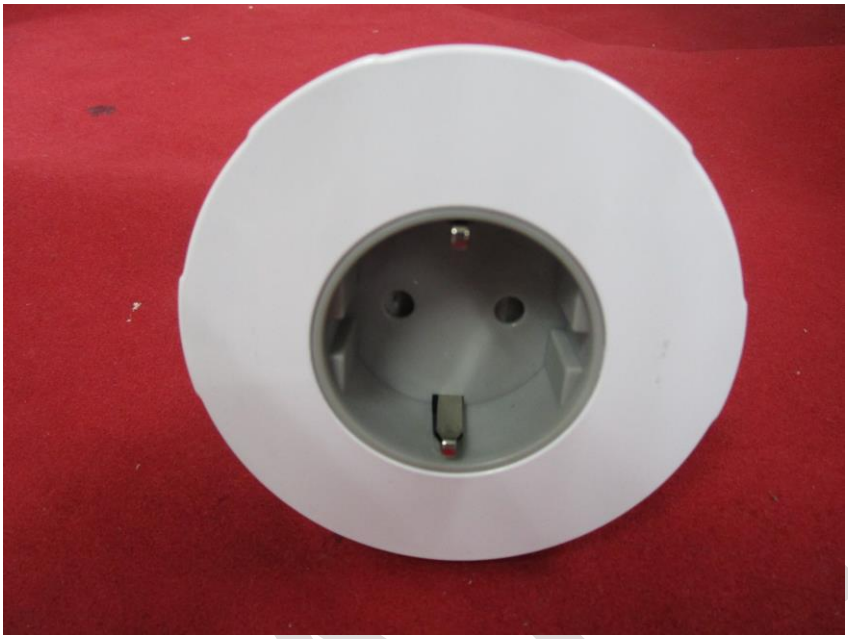
11 Appendix B – Photographs of EUT



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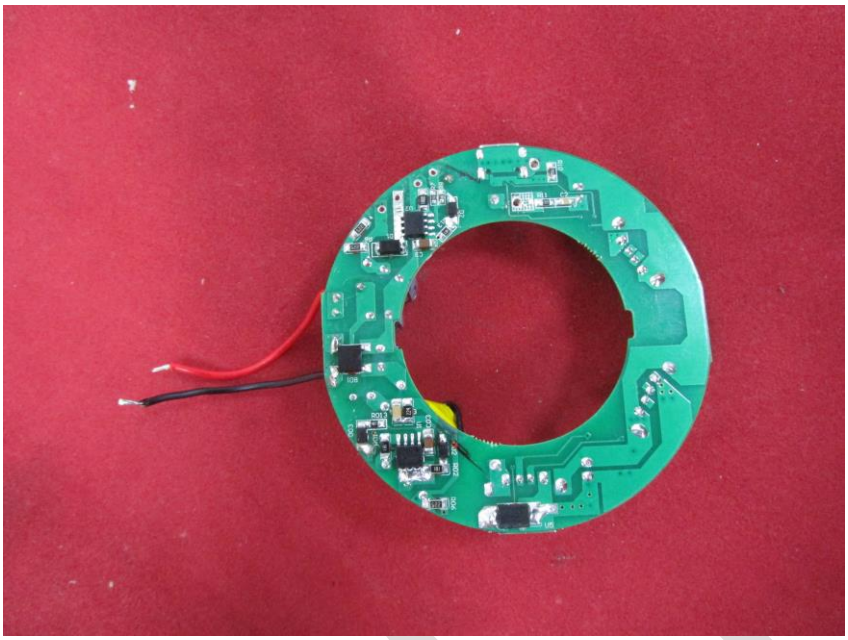

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