EN 62040-2:2006
EN 61000-3-3:2013
EN 61000-3-2:2014
Test Report For

Magnizon power systems FZE

JAFZA LB11, 1st floor, Office 32, Jebel Ali Free Zone, Dubai-U.A.E

Product Name:	**UPS1-3KVA**
Model/Type No.:	**MU1000RM2U, MU2000RM2U, MU3000RM2U**
Prepared By:	**Shenzhen Hongcai Testing Technology Co., Ltd.** 1-2/F., Building C, Shuanghuan Xinyidai Hi-Tech Industrial Park, No.8, Baoqing Road, Baolong Industrial Zone, Longgang District, Shenzhen, Guangdong, China. Tel: 86-755-86337020 Fax: 86-755-86337028
Report Number:	HCT18IR-5307E
Tested Date:	September 03~11, 2018
Issued Date:	September 11, 2018
Tested By:	Savitar Liu/

Reviewed By: Owen Yang
EMC Technical Supervisor

Approved By: Tony Wu
EMC Technical Manager

Note:This test report is limited to the above client company and the product model only.It may not be duplicated without prior written consent of Shenzhen Hongcai Testing Technology Co.,Ltd.

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1- GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

Client Information

Applicant:	Magnizon power systems FZE
Address of applicant:	JAFZA LB11, 1st floor, Office 32, Jebel Ali Free Zone, Dubai-U.A.E
Manufacturer:	Magnizon power systems FZE
Address of Manufacturer:	JAFZA LB11, 1st floor, Office 32, Jebel Ali Free Zone, Dubai-U.A.E

General Description of E.U.T

EUT Name:	UPS1-3KVA
Trade Mark:	MAGNIZON
Model No.:	MU1000RM2U, MU2000RM2U, MU3000RM2U
Test Model No.:	MU3000RM2U
Power Supply:	Input: AC 220-240V, 50/60Hz, 15A, 3000W Output: AC 220-240V, 50/60Hz, 13.6A, 2700W

Template Release Date

Version	Rev.01
Issued Date	June 12, 2017

Remark: * The test data gathered are from the production sample provided by the manufacturer.
* Supplementary models have the different output, others are the same.
* HCT18IR-5307E is produced on the basis of HCT18IR-1149E.

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1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

EN 62040-2: 2006

EN 61000-3-11: 2000

EN 61000-3-12: 2011

Reference Standards:

EN 61000-4-2: 2009

EN 61000-4-3: 2006+A2:2010

EN 61000-4-4: 2012

EN 61000-4-5: 2014

EN 61000-4-6: 2014

EN 61000-4-8: 2010

EN 61000-4-11: 2004

The objective of the manufacturer is to demonstrate compliance with the described standards above.

1.3 Test Summary

Table 1:

Standard	Test Items	Status
EN 62040-2:2006	Conducted Disturbance at The Mains Terminals (150KHz to 30MHz)	☒
	Conducted Disturbance at The Telecommunication Ports	☐
	Radiated Disturbances (30MHz to 1000MHz)	☒

Table 2:

Standard	Test Items	Status
EN 61000-3-12	Harmonic Current Test	☒
EN 61000-3-11	Voltage Fluctuations and Flicker Test	☒

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Table 3:

Standard	Test Items	Status
EN 62040:	Test items as below listed	☒
EN 61000-4-2	Electrostatic discharge Immunity	☒
EN 61000-4-3	Radiated Susceptibility (80MHz to 1GHz)	☒
EN 61000-4-4	Electrical Fast Transient/Burst Immunity	☒
EN 61000-4-5	Surge Immunity	☒
EN 61000-4-6	Conducted Susceptibility (150kHz to 80MHz)	☒
EN 61000-4-8	Power Frequency Magnetic Field Immunity (50/60Hz)	☐
EN 61000-4-11	Voltage Dips, Short Interruptions Immunity	☐

Note: ☒ Indicates that the test is applicable, ☐ Indicates that the test is not applicable

1.4 Test Methodology

All measurements contained in this report were conducted with CISPR 16-1-1: 2006, radio disturbance and immunity measuring apparatus, and CISPR16-2-3: 2010, Method of measurement of disturbances and immunity.
All measurement required was performed at Shenzhen Hongcai Testing Technology Co., Ltd. at 1-2/F., Building C, Shuanghuan Xinyidai Hi-Tech Industrial Park, No.8, Baoqing Road, Baolong Industrial Zone, Longgang District, Shenzhen, Guangdong, China.

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2- SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being Battery Mode/Line Mode.

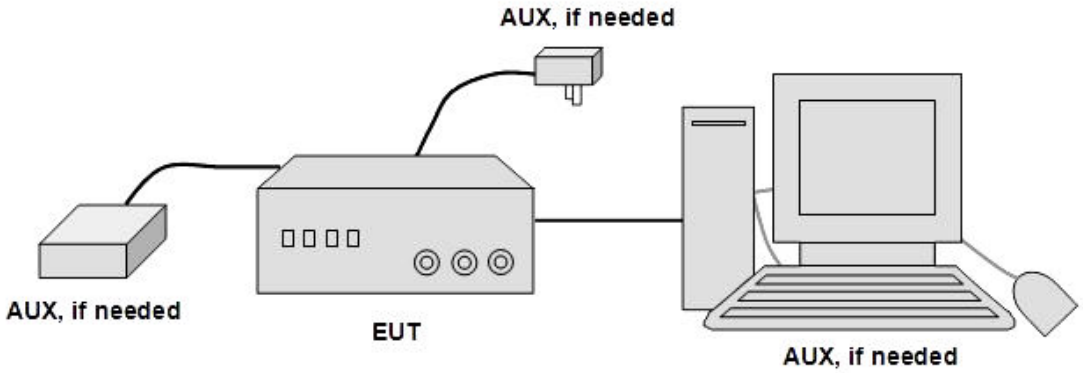
2.3 Equipment Modifications

The EUT tested was not modified by HCT.

2.4 Basic Configuration of Test System

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

Immunity: The equipment under test (EUT) was configured to the representative operating mode and conditions.



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3- CONDUCTED DISTURBANCE AT THE MAINS TERMINALS

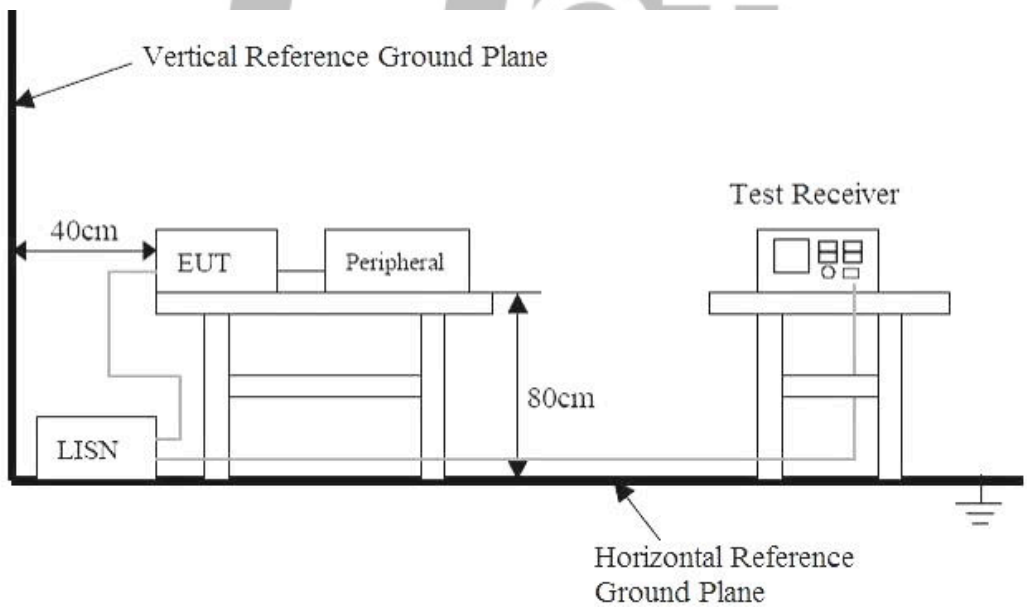
3.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ±3.4 dB.

3.2 Limit of Conducted Disturbance at The Mains Terminals

Frequency Range (MHz)	Class B Equipment Limits	
	Quasi-Peak (dBuV)	Average (dBuV)
0.150～0.500(2)	66~56(1)	56~46(1)
0.500～5.000(2)	56	46
5.000～30.00	60	50
NOTE 1: The limits decrease linearly with the logarithm of the frequency. NOTE 2: The lower limit shall apply at the transition frequency.		

3.3 EUT Setup



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The setup of EUT is according with CISPR 16-1-1: 2006, CISPR16-2-3: 2010 measurement procedure. The specification used was the EN62040-2 limits.

The EUT was placed center and the back edge of the test table.

The AV cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

3.4 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range……150 KHz to 30 MHz
Detector……..Peak & Quasi-Peak & Average
Sweep Speed……Auto
IF Band Width……..9 KHz

3.5 Test Procedure

1. During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.
2. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.
3. All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dBμV of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".

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3.6 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	HCT-EMC001	EMI Test Receiver	R&S	ESCI	100687	2018-08-13	2019-08-12
2	HCT-EMC020	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	8128247	2018-08-13	2019-08-12
3	HCT-EMC032	10dB attenuator	SCHWARZBECK	9510-F061	9510-F061234	2018-08-13	2019-08-12

3.7 Test Data

Temperature:	22~23 (℃)
Humidity:	50~54 (%RH)
Barometric Pressure:	950~1000 (mbar)
Operating Mode:	Charge
Test Result:	Pass

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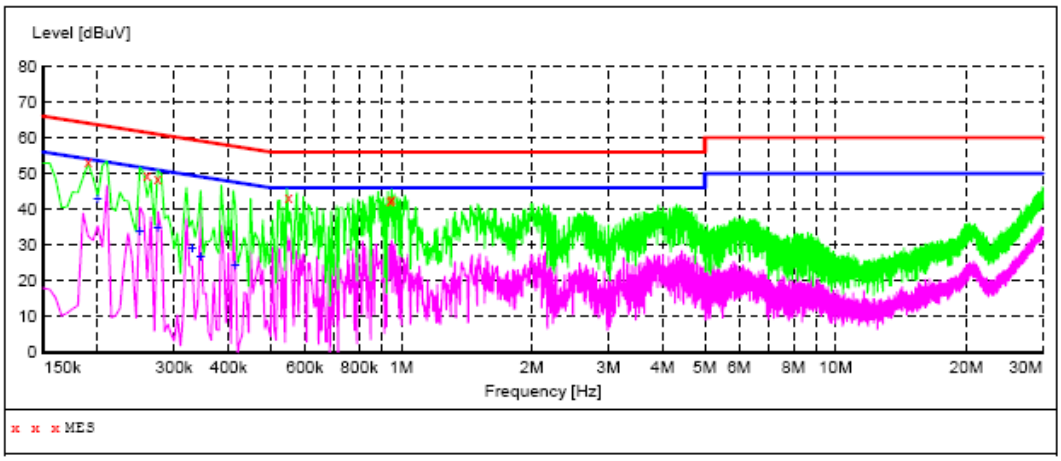
Conducted Emission Test Data

EUT:	UPS1-3KVA
M/N:	MU3000RM2U
Operating Condition:	Charge
Test Site:	Shielded Room
Operator:	LYM
Test Specification:	AC 230V 50Hz
Comment:	Live Line
Start of Test:	Tem:23℃ Hum:50%

SCAN TABLE: "Voltage(150K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.190000	53.30	14.0	64	10.7	QP	L1	GND
0.260000	49.70	12.5	61	11.7	QP	L1	GND
0.275000	48.70	11.9	61	12.3	QP	L1	GND
0.550000	43.40	10.4	56	12.6	QP	L1	GND
0.945000	42.30	10.4	56	13.7	QP	L1	GND
0.950000	43.00	10.4	56	13.0	QP	L1	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.200000	42.80	14.0	54	10.8	AV	L1	GND
0.250000	33.70	13.0	52	18.1	AV	L1	GND
0.275000	34.60	11.9	51	16.4	AV	L1	GND
0.330000	29.10	11.0	50	20.4	AV	L1	GND
0.345000	26.70	11.0	49	22.4	AV	L1	GND
0.415000	24.30	11.0	48	23.2	AV	L1	GND

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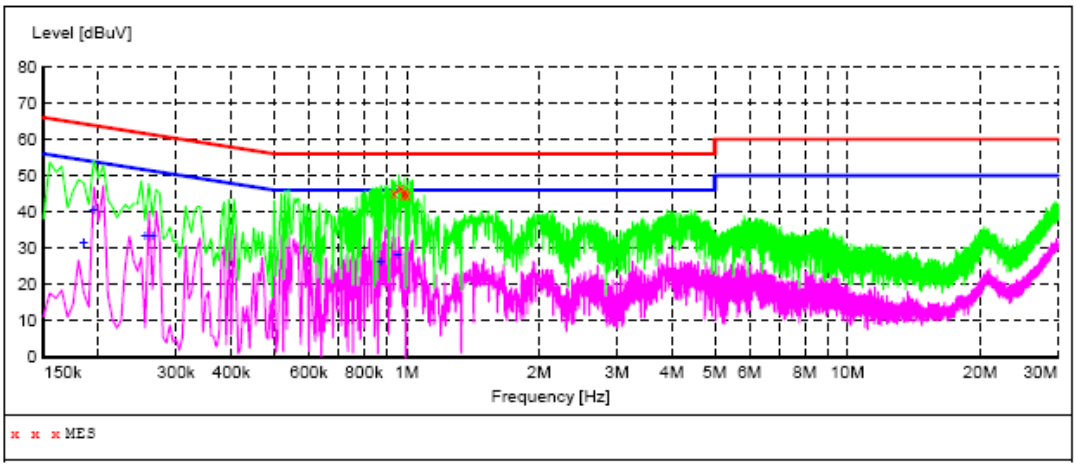
Conducted Emission Test Data

EUT:	UPS1-3KVA
M/N:	MU3000RM2U
Operating Condition:	Charge
Test Site:	Shielded Room
Operator:	LYM
Test Specification:	AC 230V 50Hz
Comment:	Neutral Line
Start of Test:	Tem:23℃ Hum:50%

SCAN TABLE: "Voltage(150K-30M)FIN"
Short Description: 150K-30M Voltage



MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.935000	45.10	10.3	56	10.9	QP	N	GND
0.965000	46.70	10.4	56	9.3	QP	N	GND
0.985000	44.90	10.4	56	11.1	QP	N	GND
0.990000	45.50	10.4	56	10.5	QP	N	GND
1.000000	44.90	10.4	56	11.1	QP	N	GND

MEASUREMENT RESULT:

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.185000	31.50	14.1	54	22.8	AV	N	GND
0.195000	40.30	14.0	54	13.5	AV	N	GND
0.255000	33.40	12.7	52	18.2	AV	N	GND
0.265000	33.50	12.3	51	17.8	AV	N	GND
0.875000	26.40	10.3	46	19.6	AV	N	GND
0.955000	28.20	10.4	46	17.8	AV	N	GND

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4- RADIATED DISTURBANCES

4.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

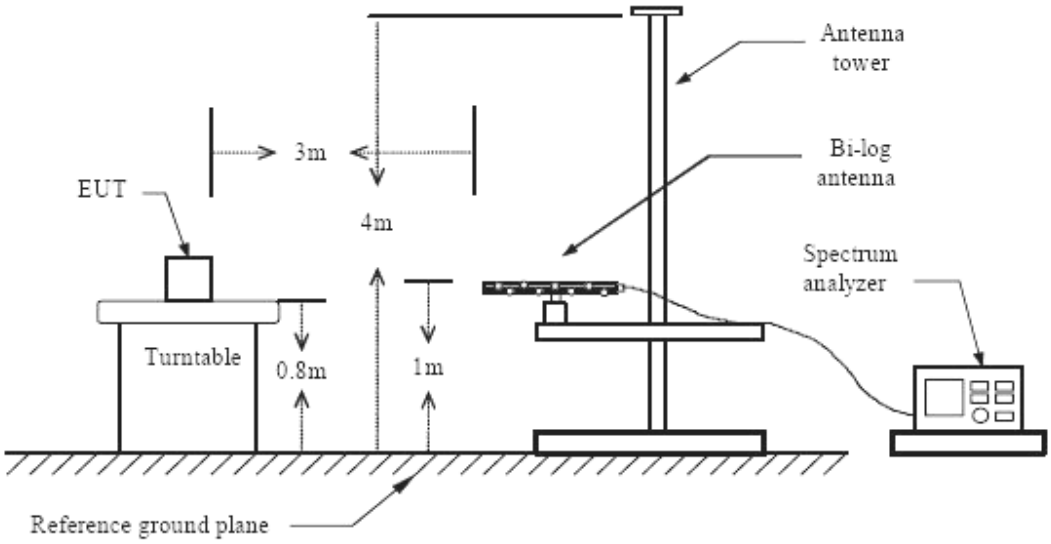
The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ±4.0 dB.

4.2 Limit of Radiated Disturbances

Frequency (MHz)	Distance (Meters)	Quasi-Peak (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47
NOTE 1: The lower limit shall apply at the transition frequency. NOTE 2 : Additional provisions may be required for cases where interference occurs.		

4.3 EUT Setup

Below 1 GHz



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The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the CISPR 16-1-1: 2006, CISPR16-2-3: 2010. The specification used was EN62040-2 Class 3 limits.

The EUT was placed on the center of the test table.
Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

4.4 Test Receiver Setup

The test receiver was set with the following configurations:

Test Receiver Setting below 1000MHz:

Detector……..Peak & Quasi-Peak
IF Band Width……..120KHz
Frequency Range……30MHz to 1000MHz
Turntable Rotated……0 to 360 degrees

Test Receiver Setting above 1000MHz:

Detector……..Peak & Average
IF Band Width……..1MHz
Frequency Range……1000MHz to 6000MHz
Turntable Rotated……0 to 360 degrees

Antenna Position:

Height……1m to 4m
Polarity……...Horizontal and Vertical

4.5 Test Procedure

1. Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.
2. All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -10 dBμV of specification limits), and are distinguished with a "QP" in the data table.

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4.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "Margin" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Limit – Corr. Ampl.

4.7 Test Data

Temperature:	22~23 (℃)
Humidity:	50~54 (%RH)
Barometric Pressure:	950~1000 (mbar)
Operating Mode:	Charge/Discharge
Test Result:	Pass

4.8 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	HCT-EMC001	EMI Test Receiver	R&S	ESCI	100687	2018-08-13	2019-08-12
2	HCT-EMC018	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2018-08-13	2019-08-12
3	HCT-EMC019	Horn Antenna	SCHWARZBECK	BBHA9120A	0499	2018-08-13	2019-08-12
4	HCT-EMC037	Broadband preamplifier	SCH WARZBECK	BBV9718	9718-182	2018-08-13	2019-08-12

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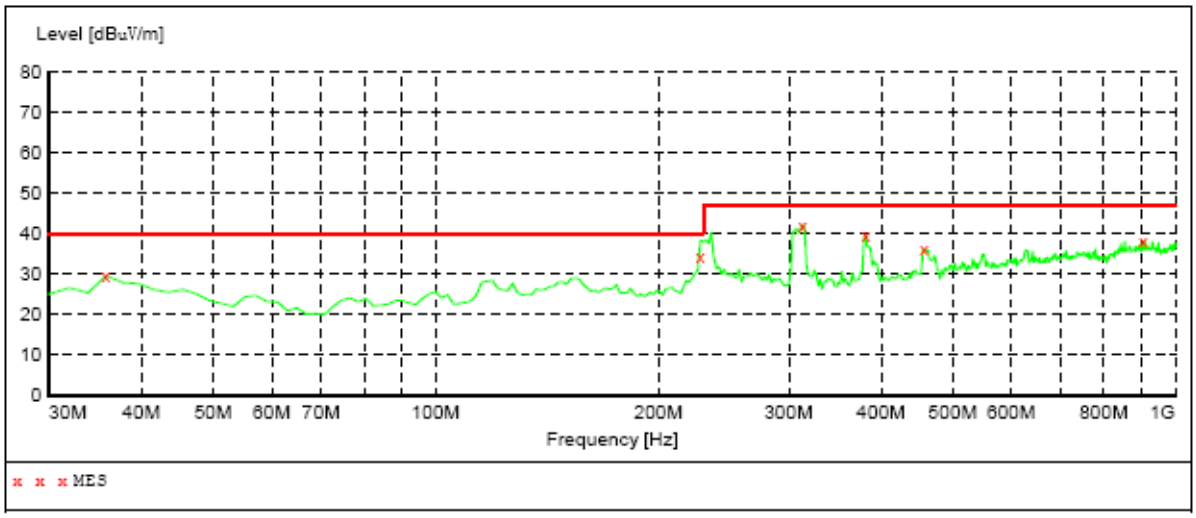
Radiated Emission Test Data of Below 1GHz

EUT:	UPS1-3KVA
M/N:	MU3000RM2U
Operating Condition:	Charge
Test Site:	CHAMBER
Operator:	ZHQ
Test Specification:	AC 230V 50Hz
Comment:	Polarization: Horizontal
Start of Test:	Tem:23℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	9163-2015



MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
35.820000	29.60	11.8	40.0	10.4	QP	100.0	0.00	HORIZONTAL
227.880000	34.40	13.1	40.0	5.6	QP	100.0	0.00	HORIZONTAL
313.240000	42.20	15.9	47.0	4.8	QP	100.0	0.00	HORIZONTAL
381.140000	39.40	17.1	47.0	7.6	QP	200.0	0.00	HORIZONTAL
456.800000	36.10	18.5	47.0	10.9	QP	200.0	0.00	HORIZONTAL
904.940000	38.20	24.8	47.0	8.8	QP	200.0	0.00	HORIZONTAL

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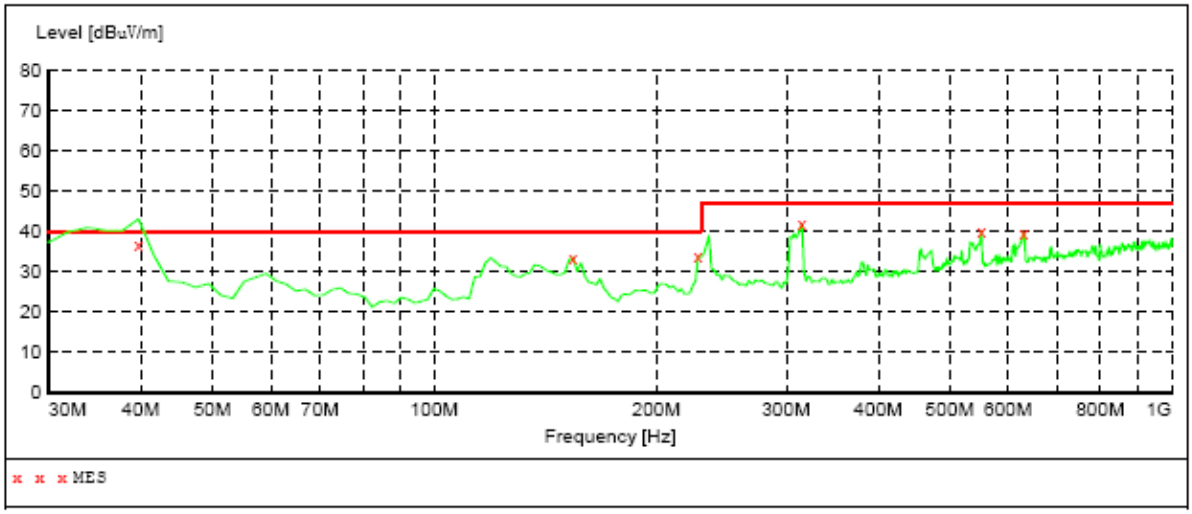
Radiated Emission Test Data of Below 1GHz

EUT:	UPS1-3KVA
M/N:	MU3000RM2U
Operating Condition:	Charge
Test Site:	CHAMBER
Operator:	ZHQ
Test Specification:	AC 230V 50Hz
Comment:	Polarization: Vertical
Start of Test:	Tem:23℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	9163-2015



MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
39.700000	36.90	13.9	40.0	3.1	QP	100.0	0.00	VERTICAL
154.160000	33.60	11.3	40.0	6.4	QP	100.0	0.00	VERTICAL
227.880000	33.90	13.1	40.0	6.1	QP	200.0	0.00	VERTICAL
315.180000	41.90	16.0	47.0	5.1	QP	200.0	0.00	VERTICAL
551.860000	40.00	20.5	47.0	7.0	QP	100.0	0.00	VERTICAL
629.460000	39.70	21.7	47.0	7.3	QP	100.0	0.00	VERTICAL

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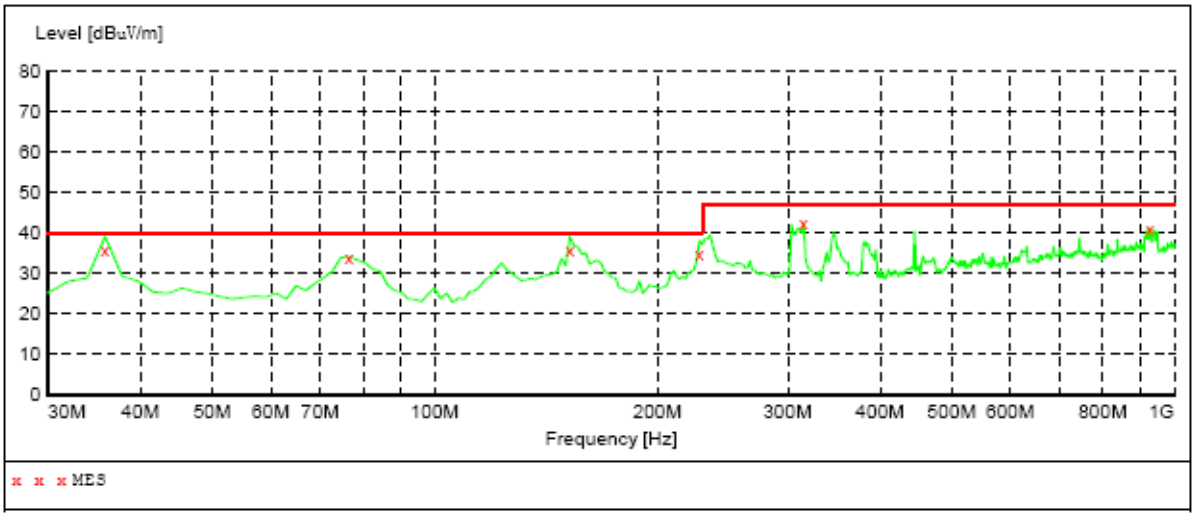
Radiated Emission Test Data of Below 1GHz

EUT:	UPS1-3KVA
M/N:	MU3000RM2U
Operating Condition:	Discharge
Test Site:	CHAMBER
Operator:	ZHQ
Test Specification:	AC 230V 50Hz
Comment:	Polarization: Horizontal
Start of Test:	Tem:23℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	9163-2015



MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
35.820000	35.70	11.8	40.0	4.3	QP	100.0	0.00	HORIZONTAL
76.560000	34.10	8.1	40.0	5.9	QP	200.0	0.00	HORIZONTAL
152.220000	35.60	11.4	40.0	4.4	QP	200.0	0.00	HORIZONTAL
227.880000	34.70	13.1	40.0	5.3	QP	200.0	0.00	HORIZONTAL
315.180000	42.60	16.0	47.0	4.4	QP	100.0	0.00	HORIZONTAL
926.280000	41.20	24.9	47.0	5.8	QP	200.0	0.00	HORIZONTAL

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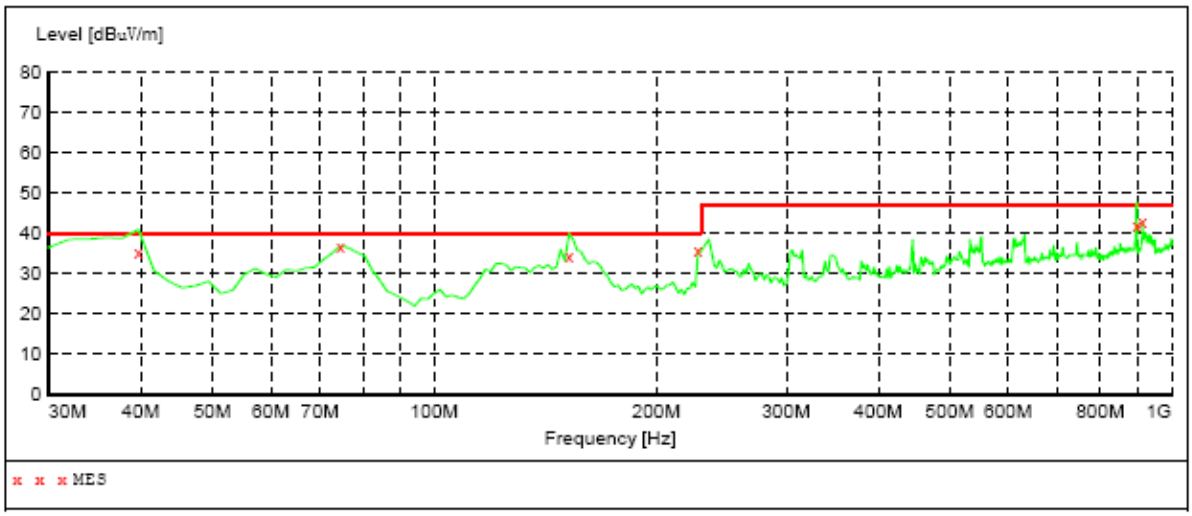
Radiated Emission Test Data of Below 1GHz

EUT:	UPS1-3KVA
M/N:	MU3000RM2U
Operating Condition:	Discharge
Test Site:	CHAMBER
Operator:	ZHQ
Test Specification:	AC 230V 50Hz
Comment:	Polarization: Vertical
Start of Test:	Tem:23℃ Hum:50%

SWEEP TABLE: "test (30M-1G)"

Short Description:			Field Strength		
Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
30.0 MHz	1.0 GHz	MaxPeak	Coupled	100 kHz	9163-2015



MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
39.700000	35.50	13.9	40.0	4.5	QP	100.0	0.00	VERTICAL
74.620000	37.00	8.0	40.0	3.0	QP	100.0	0.00	VERTICAL
152.220000	34.50	11.4	40.0	5.7	QP	100.0	0.00	VERTICAL
227.880000	35.90	13.1	40.0	4.1	QP	200.0	0.00	VERTICAL
895.240000	42.10	24.7	47.0	4.9	QP	100.0	0.00	VERTICAL
912.700000	42.70	24.8	47.0	4.3	QP	100.0	0.00	VERTICAL

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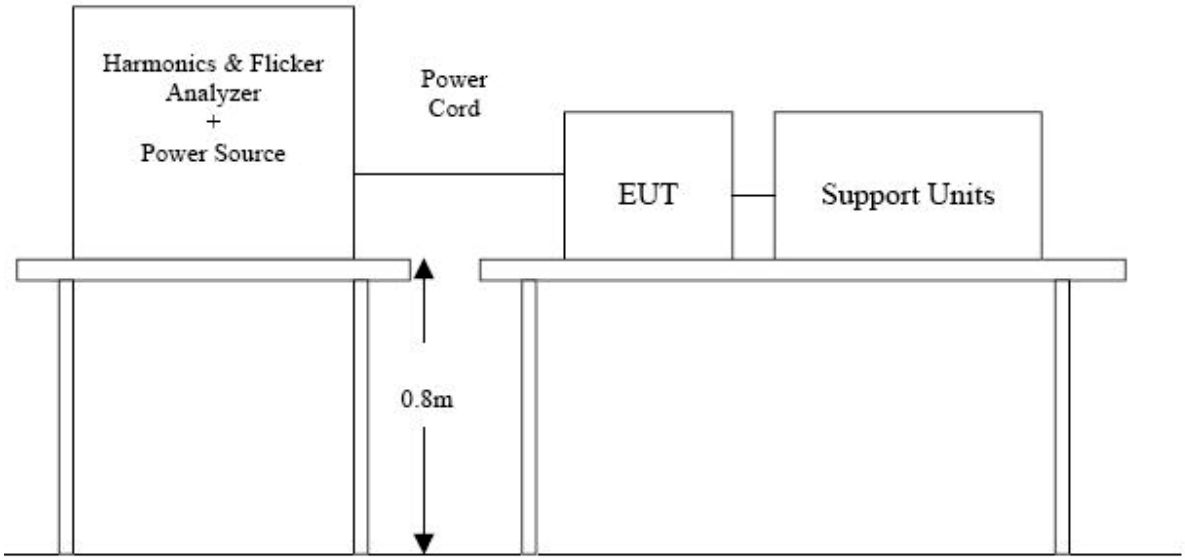
5- HARMONIC CURRENT TEST

5.1 Application of Harmonic Current Emission

Compliance to these standards ensures that tested equipment will not generate harmonic currents at levels that cause unacceptable degradation of the main environment. This directly contributes to meeting compatibility levels established in other EMC standards, which defines compatibility levels for low-frequency conducted disturbances in low-voltage supply systems.

5.2 Block Diagram of Test Setup:



5.3 Test Procedure:

1. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.
2. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

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5.4 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	HCT-EMC035	HRMONICS&FLICKR E ANALYSER	VOLTECH	PM6000	200006700433	2018-08-13	2019-08-12

5.5 Test Result

Basic Standard:	EN/IEC 61000-3-2：2014 Quasi-stationary
Observation time	150s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2000)
Temperature:	22~23 (℃)
Humidity:	50~54 (%RH)
Barometric Pressure:	950~1000 (mbar)
Operating Mode:	Inversion mode
Test Result:	Pass
Note:	The input power of the EUT is less than 75W, then this EUT could be deemed to comply with the requirements of EN61000-3-12 : 2011 without test.

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Product:	18IR-1149E H	2018 Sep 07 16:53
Serial no:	RT3K	Page 1 of 1
Description:	ON	
Test Date:	2018 Sep 07 16:50	
Result Name:	18IR-1149E H	

Type of Test:	EN61000:2006 Harmonics inc. interharmonics to EN61000-4-7:2002
Limits:	Class A
Power Analyzer:	Voltech PM6000 SN: 200006700433 Firmware version: v1.21.07RC2 Channel(s): 1. SN: 090015500321, 28 Adjusted Date: 8 JAN 2016. 2. SN:None Adjusted Date:None 3. SN:None Adjusted Date:None 4. SN:None Adjusted Date:None 5. SN:None Adjusted Date:None 6. SN:None Adjusted Date:None Shunt(s): 1. SN: 091024301317, 4 Adjusted Date: 8 JAN 2016. 2. SN:None Adjusted Date:None 3. SN:None Adjusted Date:None 4. SN:None Adjusted Date:None 5. SN:None Adjusted Date:None 6. SN:None Adjusted Date:None
AC Source:	Mains / Manual Source

Harmonic Results Against Chosen Limits:	**Notes:**
PASS	

Test Parameter Details	**User Entered**	**Measured**
Operating Frequency:	50	49.9840
Operating Voltage:	230	230.3888
Specified Power:	99.0000	2999.1198
Fundamental Current:	0.2800	0.4484
Power Factor:	0.9613	0.9568
Average Input Current:		0.4540
Maximum POHC:		0.0122
POHC Limit:		0.0426
Maximum THC:		0.1188
Minimum Power:	90	
Class Multiplier:	1.0000	
Test Duration:	00:02:30	

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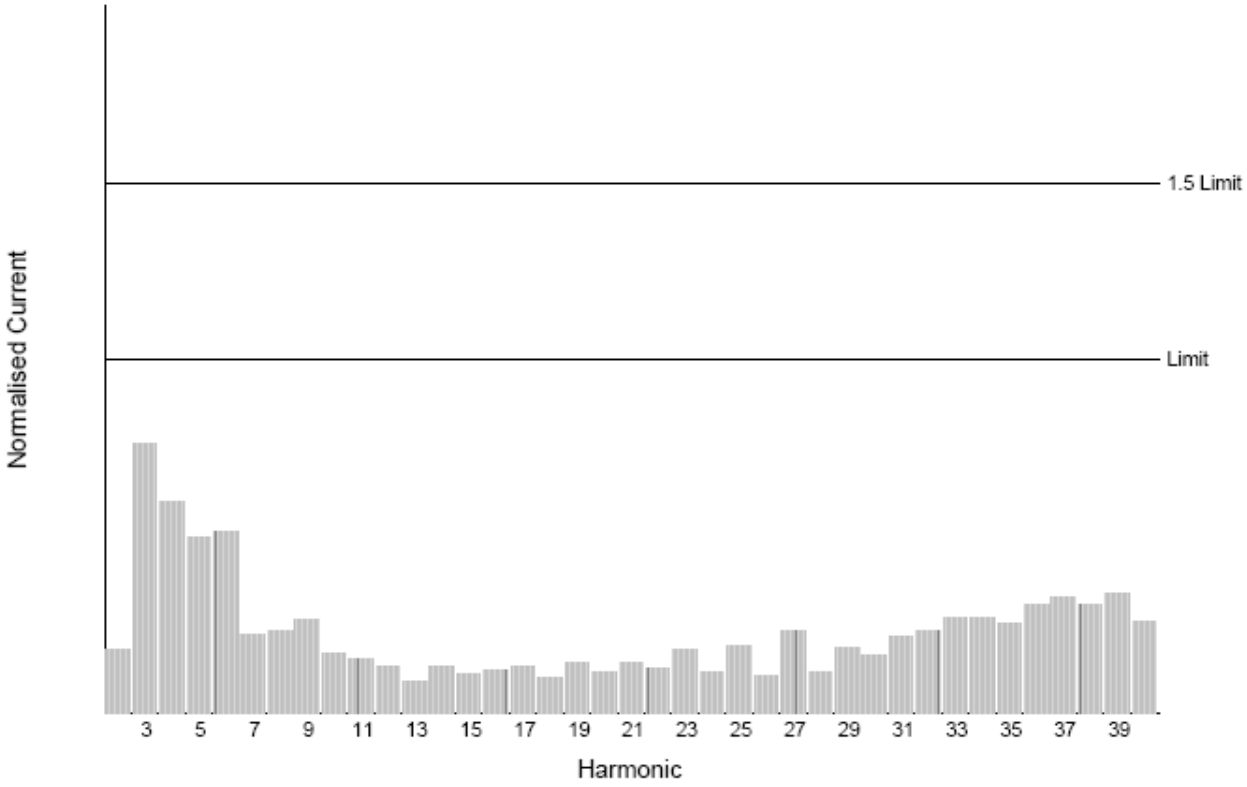
Class	Class A
Class Multiplier	1



Harm	Limit 1	Limit 2	Average Reading	<L1 <L2	Max Reading	<L2	Pass FAIL	Harm	Limit 1	Limit 2	Average Reading	<L1 <L2	Max Reading	<L2	Pass FAIL
2	1.0800A	1.6200A	191.0mA	✓ ✓	196.4mA	✓	Pass	3	2.3000A	3.4500A	1.7531A	✓ ✓	1.7604A	✓	Pass
4	430.0mA	645.0mA	251.6mA	✓ ✓	256.7mA	✓	Pass	5	1.1400A	1.7100A	557.6mA	✓ ✓	568.2mA	✓	Pass
6	300.0mA	450.0mA	150.3mA	✓ ✓	154.9mA	✓	Pass	7	770.0mA	1.1550A	167.9mA	✓ ✓	172.0mA	✓	Pass
8	230.0mA	345.0mA	38.05mA	N/A	54.32mA	✓	Pass	9	400.0mA	600.0mA	103.8mA	✓ ✓	105.3mA	✓	Pass
10	184.0mA	276.0mA	29.36mA	N/A	30.92mA	N/A	N/A	11	330.0mA	495.0mA	46.01mA	✓ ✓	50.15mA	✓	Pass
12	153.3mA	230.0mA	19.25mA	N/A	20.34mA	N/A	N/A	13	210.0mA	315.0mA	17.91mA	N/A	18.94mA	N/A	N/A
14	131.4mA	197.1mA	16.39mA	N/A	17.32mA	N/A	N/A	15	150.0mA	225.0mA	15.48mA	N/A	16.50mA	N/A	N/A
16	115.0mA	172.5mA	13.16mA	N/A	14.01mA	N/A	N/A	17	132.3mA	198.5mA	16.48mA	N/A	17.64mA	N/A	N/A
18	102.2mA	153.3mA	9.715mA	N/A	10.26mA	N/A	N/A	19	118.4mA	177.6mA	15.93mA	N/A	17.18mA	N/A	N/A
20	92.00mA	138.0mA	10.15mA	N/A	10.69mA	N/A	N/A	21	107.1mA	160.7mA	14.22mA	N/A	15.51mA	N/A	N/A
22	83.63mA	125.4mA	9.862mA	N/A	10.50mA	N/A	N/A	23	97.82mA	146.7mA	16.08mA	N/A	17.39mA	N/A	N/A
24	76.66mA	115.0mA	8.207mA	N/A	8.912mA	N/A	N/A	25	90.00mA	135.0mA	15.98mA	N/A	17.03mA	N/A	N/A
26	70.76mA	106.1mA	6.644mA	N/A	7.496mA	N/A	N/A	27	83.33mA	125.0mA	18.28mA	N/A	19.54mA	N/A	N/A
28	65.71mA	98.57mA	6.576mA	N/A	7.544mA	N/A	N/A	29	77.58mA	116.3mA	13.23mA	N/A	14.33mA	N/A	N/A
30	61.33mA	92.00mA	8.652mA	N/A	10.03mA	N/A	N/A	31	72.58mA	108.8mA	14.38mA	N/A	15.96mA	N/A	N/A
32	57.50mA	86.25mA	12.37mA	N/A	13.33mA	N/A	N/A	33	68.18mA	102.2mA	16.85mA	N/A	18.57mA	N/A	N/A
34	54.11mA	81.17mA	13.46mA	N/A	14.56mA	N/A	N/A	35	64.28mA	96.42mA	15.26mA	N/A	16.49mA	N/A	N/A
36	51.11mA	76.66mA	14.37mA	N/A	15.62mA	N/A	N/A	37	60.81mA	91.21mA	16.72mA	N/A	20.10mA	N/A	N/A
38	48.42mA	72.63mA	13.66mA	N/A	14.76mA	N/A	N/A	39	57.69mA	86.53mA	18.50mA	N/A	19.64mA	N/A	N/A
40	46.00mA	69.00mA	11.02mA	N/A	12.01mA	N/A	N/A								

<L1 : Reading is below limit 1.

<L2 : Reading is below limit 2.

N/A : Harmonic current below 0.6% of rated current or 5mA, whichever is greater, are disregarded.

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	Nominal	Measured	Deviation	Allowed Deviation	Result
Supply Voltage	230.00V	229.46V	0.54V	4.60V	Pass
Supply Frequency	50.00Hz	49.98Hz	0.02Hz	0.25Hz	Pass
Crest Factor	1.4100	1.4215	0.0115	+/- 0.01	Fail

Harmonic	Reading	Limit	Result	Harmonic	Reading	Limit	Result
2	0.15%	0.20%	Pass	3	0.41%	0.90%	Pass
4	0.10%	0.20%	Pass	5	0.22%	0.40%	Pass
6	0.08%	0.20%	Pass	7	0.11%	0.30%	Pass
8	0.04%	0.20%	Pass	9	0.06%	0.20%	Pass
10	0.03%	0.20%	Pass	11	0.03%	0.10%	Pass
12	0.03%	0.10%	Pass	13	0.03%	0.10%	Pass
14	0.03%	0.10%	Pass	15	0.04%	0.10%	Pass
16	0.03%	0.10%	Pass	17	0.02%	0.10%	Pass
18	0.02%	0.10%	Pass	19	0.03%	0.10%	Pass
20	0.01%	0.10%	Pass	21	0.02%	0.10%	Pass
22	0.02%	0.10%	Pass	23	0.03%	0.10%	Pass
24	0.01%	0.10%	Pass	25	0.03%	0.10%	Pass
26	0.01%	0.10%	Pass	27	0.04%	0.10%	Pass
28	0.01%	0.10%	Pass	29	0.02%	0.10%	Pass
30	0.02%	0.10%	Pass	31	0.03%	0.10%	Pass
32	0.02%	0.10%	Pass	33	0.03%	0.10%	Pass
34	0.03%	0.10%	Pass	35	0.03%	0.10%	Pass
36	0.03%	0.10%	Pass	37	0.04%	0.10%	Pass
38	0.03%	0.10%	Pass	39	0.04%	0.10%	Pass
40	0.02%	0.10%	Pass				

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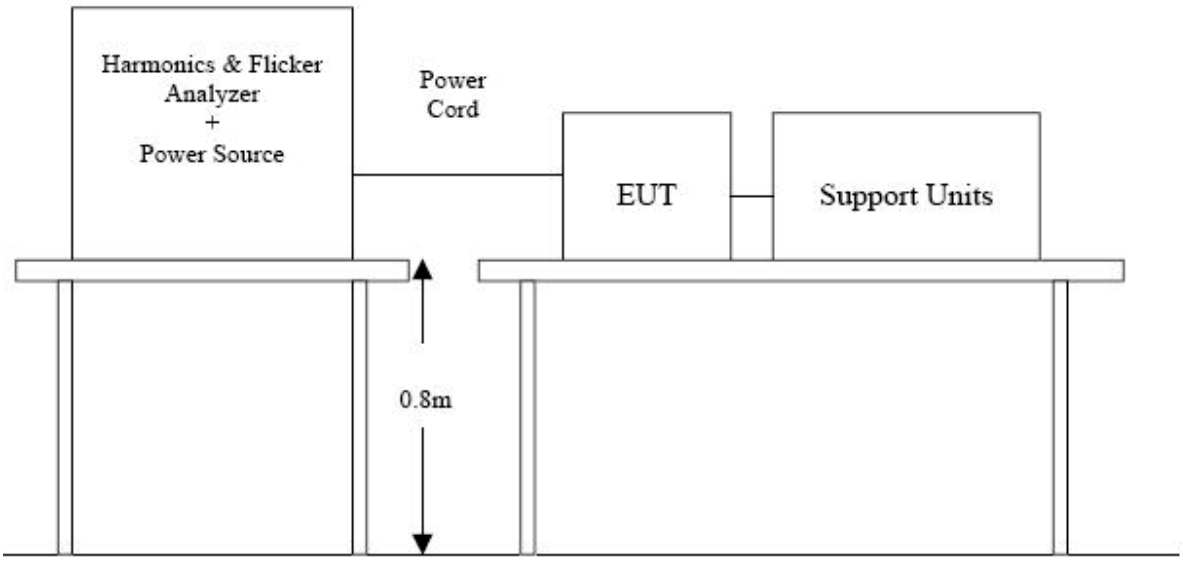
6- VOLTAGE FLUCTUATIONS AND FLICKER TEST

6.1 Application and Limit of Voltage Fluctuations and Flicker Test

Compliance to these standards ensures that tested equipment will not generate flickers and voltage change at levels that cause unacceptable degradation of the main environment. This directly contributes to meeting compatibility levels established in other EMC standards, which defines compatibility levels for low-frequency conducted disturbances in low-voltage supply systems.

Test Item	Limit	Remark
Pst	1.0	Pst means short-term flicker indicator.
Plt	0.65	Plt means long-term flicker indicator.
Tdt (ms)	500	Tdt means maximum time that dt exceeds 3 %.
dmax (%)	4%	dmax means maximum relative voltage change.
dc (%)	3.3%	dc means relative steady-state voltage change

6.2 Block Diagram of Test Setup:



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6.3 Test Procedure:

1. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.
2. During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

6.4 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	HCT-EMC035	HRMONICS&FLICKR E ANALYSER	VOLTECH	PM6000	200006700433	2018-08-13	2019-08-12

6.5 Test Result

Basic Standard:	EN/IEC 61000-3-11
Short time (Pst)	10 min
Observation time	10 min (1 Flicker measurement)
Temperature:	22~23 (℃)
Humidity:	50~54 (%RH)
Barometric Pressure:	950~1000 (mbar)
Operating Mode:	Inversion mode
Test Result:	Pass

	Pst	dc (%)	dmax (%)	d(t) > 3.3%(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.269	0.089	1.888	0

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7- IMMUNITY TEST DESCRIPTION

7.1 General Description

Product Standard	EN 62040-2:2006	
Basic Standard, Specification, and Performance Criterion required	EN 61000-4-2	Electrostatic Discharge – ESD: 8kV air discharge, 4kV Contact discharge, Performance Criterion B
	EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test – RS: 80 ~ 1000 MHz, 10V/m, 80% AM (1kHz), Performance Criterion A
	EN 61000-4-4	Electrical Fast Transient/Burst - EFT, Power line: 2kV, Signal line: 2kV, Performance Criterion B
	EN 61000-4-5	Surge Immunity Test: 1.2/50 us Open Circuit Voltage, 8 /20 us Short Circuit Current, Power Line: line to line 1 kV, line to ground 2 kV Signal line: line to ground: outdoor: 1kV indoor: 1kV Performance Criterion B
	EN 61000-4-6	Conducted Radio Frequency Disturbances Test – CS: 0.15 ~ 80 MHz, 10Vrms, 80% AM, 1kHz, Performance Criterion A

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7.2 The phenomena allowed during and after test in each criterion are clearly stated in the following table

Performance criteria		
Criteria	**During test**	**After test**
A	Shall operate as intended. May show degradation of performance (see note1). Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance (see note 2). Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
B	May show loss of function (one or more). May show degradation of performance (see note 1). No unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2). Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance (see note 2).

NOTE 1:
Degradation of performance during the test is understood as a degradation to a level not below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect from the apparatus if used as intended.

NOTE 2:
No degradation of performance after the test is understood as no degradation below a minimum performance level specified by the manufacturer for the use of the apparatus as intended. In some cases the specified minimum performance level may be replaced by a permissible degradation of performance. After the test no change of actual operating data or user retrievable data is allowed. If the minimum performance level or the permissible performance degradation is not specified by the manufacturer then either of these may be derived from the product description and documentation (including leaflets and advertising) and what the user may reasonably expect form the apparatus if used as intended.

7.3 Deviations from the standard

No deviations from EN 62040 were made when performing the tests described in this report.

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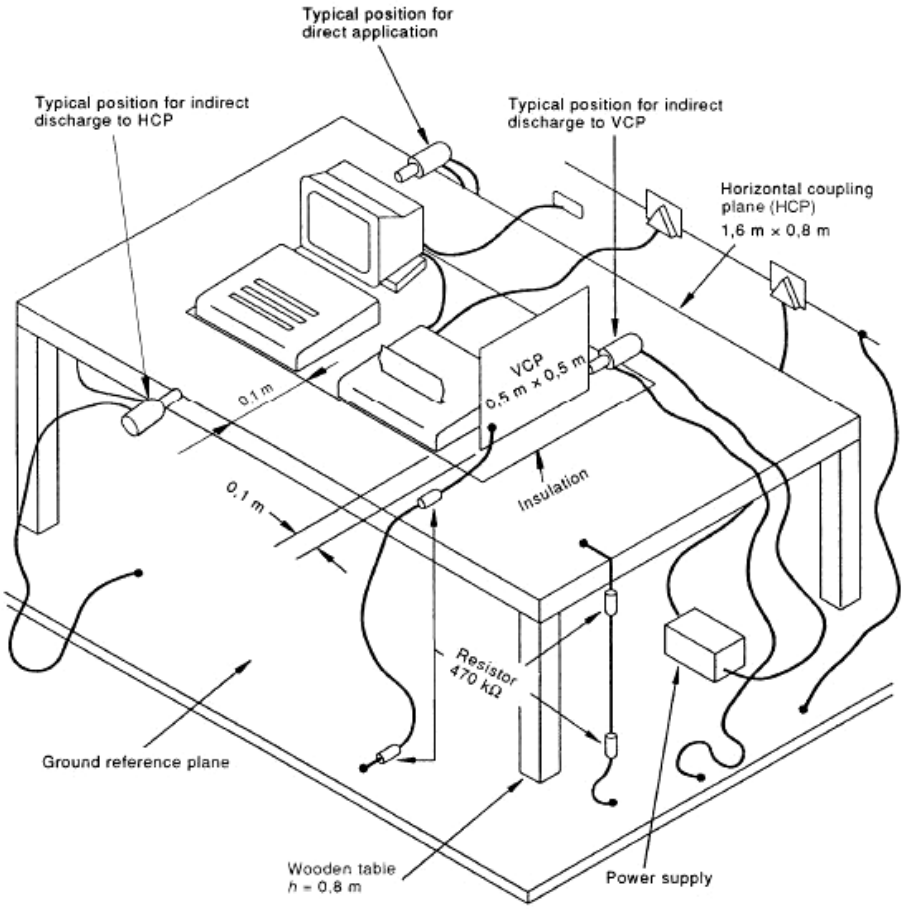
8- IMMUNITY TEST RESULTS

8.1 Electrostatic Discharge Immunity Test

8.1.1 Test Specification

Basic Standard:	IEC/EN 61000-4-2
Test Level:	± 2, 4, 8 kV (Air Discharge) ± 2, 4 kV (Contact Discharge) ± 2, 4 kV (Indirect Contact HCP) ± 2, 4 kV (Indirect Contact VCP)
Temperature:	22~23 (℃)
Humidity:	50~54 (%RH)
Barometric Pressure:	950~1000 (mbar)
Operating Mode:	Inversion mode

8.1.2 Test Setup



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8.1.3 Test Procedure

1. Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during Battery Mode/Line Mode.
2. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
3. The time interval between two successive single discharges was at least 1 second.
4. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the EUT.
5. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
6. Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
7. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the EUT. The ESD generator was positioned horizontally at a distance of 0.1 meters from the EUT with the discharge electrode touching the HCP.
8. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the EUT were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the EUT.

8.1.4 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	HCT-EMC008	Electrostatic Discharge Simulator	TESEQ	NSG437	125	2018-08-13	2019-08-12

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8.1.5 Performance Criterion Required & Test Result

Table 1: Electrostatic Discharge Immunity (Air Discharge)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
☒	☒	☒	Gap	A	B
☒	☒	☒	Button	A	B
☒	☒	☒	Indicator Light	A	B
☒	☒	☒	Other Points	A	B

Table 2: Electrostatic Discharge Immunity (Direct Contact)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
☒	☒	☐	Screw	A	B
☒	☒	☐	Shell	A	B
☒	☒	☐	Other Points	A	B

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
☒	☒	☐	Front Side	A	B
☒	☒	☐	Back Side	A	B
☒	☒	☐	Left Side	A	B
☒	☒	☐	Right Side	A	B

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
☒	☒	☐	Front Side	A	B
☒	☒	☐	Back Side	A	B
☒	☒	☐	Left Side	A	B
☒	☒	☐	Right Side	A	B

Test Result: Pass

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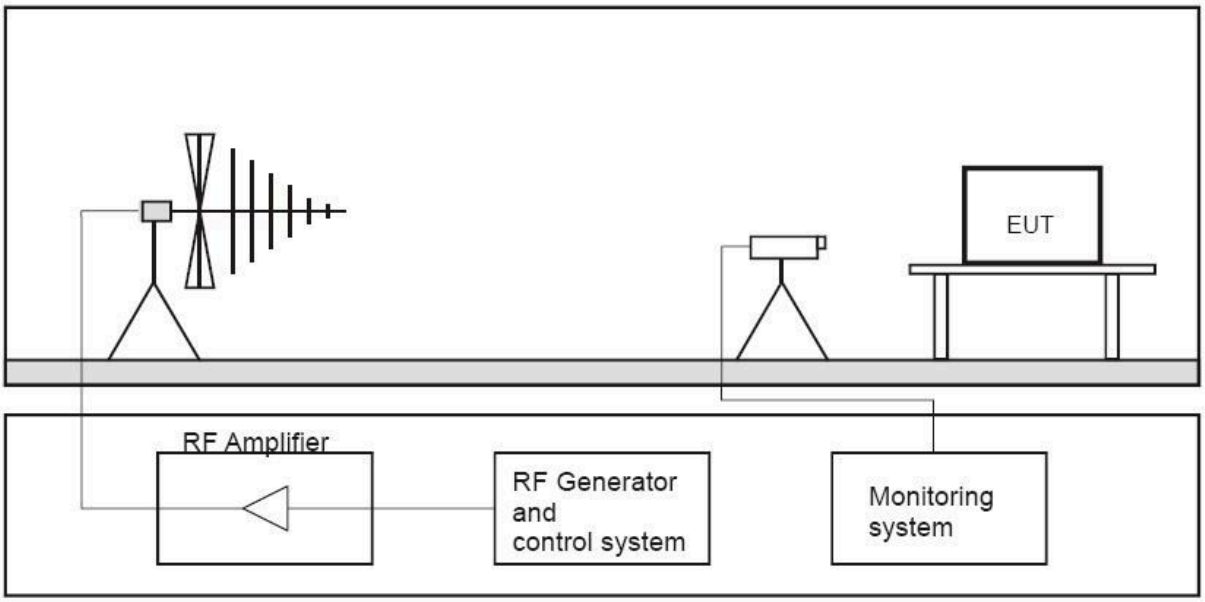
8.2 Radiated Susceptibility Test

8.2.1 Test Specification

Basic Standard:	IEC/EN 61000-4-3
Frequency Range:	80~1000MHz (MHz)
Modulation:	Amplitude 80%, 1kHz sinewave
Test Level:	10V/m
Temperature:	22~23 (℃)
Humidity:	50~54 (%RH)
Barometric Pressure:	950~1000 (mbar)
Operating Mode:	Inversion mode

8.2.2 Test Setup



8.2.3 Test Procedure

1. The testing was performed in a fully-anechoic chamber.
2. The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80% amplitude modulated with a 1kHz sine wave.
3. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised and to respond, but shall in no case be less than 0,5s.
4. The field strength level was 10V/m.
5. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

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8.2.4 Test Equipment List and Details

No.	Equipment	Manufacturer	Model No.	S/N	Calibration Date	Next Calibration Date
1	3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	2018-08-13	2019-08-12
2	ESG Vector signal generators	Agilent	E4438C	MY45095744	2018-08-13	2019-08-12
3	Power Amplifier	AR	150W1000	0322288	2018-08-13	2019-08-12
4	Power Amplifier	AR	25S1G4A	0321112	2018-08-13	2019-08-12
5	TRILOG Broadband Antenna	schwarzbeck	VULB 9136	401	2018-08-13	2019-08-12
6	Horn Antenna	ETS-LINGREN	3117	00057407	2018-08-13	2019-08-12
7	3M Chamber & Accessory Equipment	ETS-LINDGREN	FACT-3	3510	2018-08-13	2019-08-12
8	Spectrum Analyzer	Agilent	E4440A	MY46185649	2018-08-13	2019-08-12
9	TRILOG Broadband Antenna	schwarzbeck	VULB 9136	401	2018-08-13	2019-08-12
10	Multi device Controller	ETS-LINGREN	2090	00057230	N/A	N/A
11	Horn Antenna	ETS-LINGREN	3117	00057407	2018-08-13	2019-08-12
12	Microwave Preamplifier	Agilent	8449B	3008A02425	2018-08-13	2019-08-12

8.2.5 Performance Criterion Required & Test Result

Frequency Band (MHz)	Test Level	Test Points	Observation Performance	Criterion Required
80-1000	3V/m	Front Side	A	A
80-1000	3V/m	Rear Side	A	A
80-1000	3V/m	Left Side	A	A
80-1000	3V/m	Right Side	A	A

Test Result: Pass

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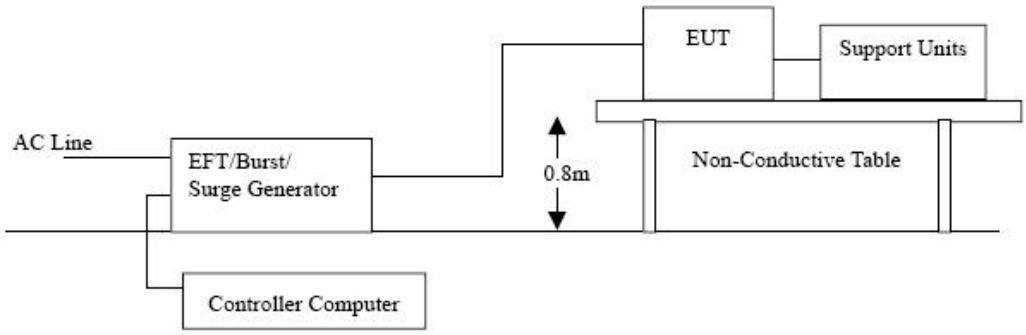
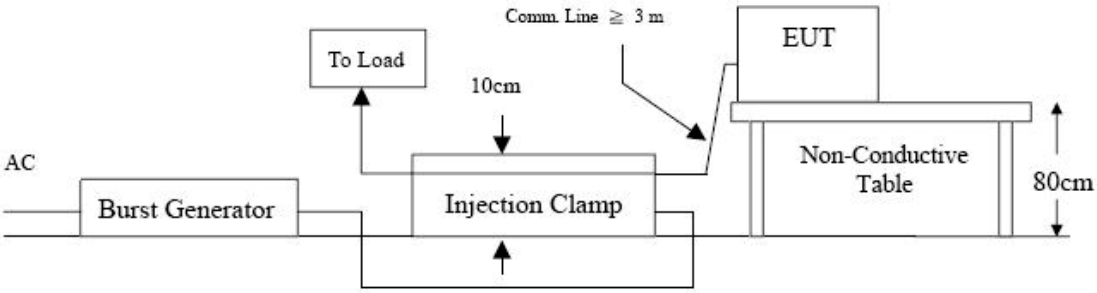
8.3 Electrical Fast Transient/Burst Immunity Test

8.3.1 Test Specification

Basic Standard :	IEC/EN 61000-4-4
Test Level:	±2 kV for AC Power Line ±2 kV for signal ports (If applicable)
Impulse Frequency:	5kHz
Impulse Wave-shape:	5/50ns
Burst Duration:	15ms
Burst Period:	300ms
Test Duration:	1 min.
Temperature:	22~23 (℃)
Humidity:	50~54 (%RH)
Barometric Pressure:	950~1000 (mbar)
Operating Mode:	Inversion mode

8.3.2 Test Setup





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8.3.3 Test Procedure

1. Both positive and negative polarity discharges were applied.
2. The length of the “hot wire” from the coaxial output of the EFT generator to the terminals on the EUT should be 0.5m.
3. The duration time of each test sequential was 1 minute.
4. The transient/burst waveform was in accordance with EN 61000-4-4, 5/50ns.

8.3.4 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	HCT-EMC009	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2018-08-13	2019-08-12

8.3.5 Performance Criterion Required & Test Result

Voltage	Test Points	Observation Performance	Criterion Required
±2kV	L	A	B
±2kV	N	A	B
±2kV	Earth	A	B
±2kV	L+N	A	B
±2kV	L + Earth	A	B
±2kV	N + Earth	A	B
±2kV	L+N+Earth	A	B
±2kV	Control Line	/	/
±2kV	DSL (RJ11)	/	/
±2kV	LAN (RJ45)	/	/

Test Result: Pass

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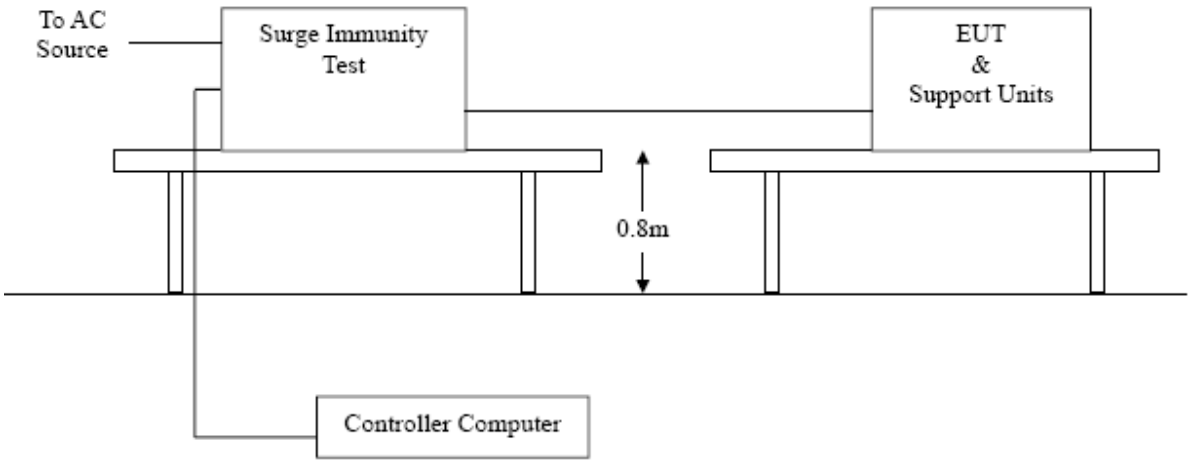
8.4 Surge Immunity Test

8.4.1 Test Specification

Basic Standard :	IEC/EN 61000-4-5
Test Level:	±1 kV (Line to Line) for AC Power Line ±2 kV (Line(s) to Ground) for AC Power Line ±1 kV for unshielded unsymmetrically operated interconnection lines (If applicable)
Wave-Shape:	Combination Wave 1.2/50 us Open Circuit Voltage 8/20 us Short Circuit Current
Generator Impedance:	42 ohm between signal line and ground 2 ohm between networks
Phase Angle:	0° /90°/180°/270°
Pulse Repetition Rate:	1 time / min
Number of Tests:	5 positive and 5 negative at selected points
Temperature:	22~23 (℃)
Humidity:	50~54 (%RH)
Barometric Pressure:	950~1000 (mbar)
Operating Mode:	Inversion mode

8.4.2 Test Setup



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8.4.3 Test Procedure

1. For EUT power supply:
   The surge is applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.
2. For test applied to unshielded unsymmetrically operated interconnection lines of EUT: (If applicable)
   The surge was applied to the lines via the capacitive coupling. The coupling / decoupling networks didn't influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

8.4.4Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	HCT-EMC009	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2018-08-13	2019-08-12

8.4.5 Performance Criterion Required & Test Result

Voltage	Test Points	Observation Performance	Criterion Required
±1kV	L-N	A	B
±1kV	L-N	A	B
±2kV	L-PE, N-PE	A	B
±4kV	L-N, L-PE, N-PE	A	B
±1kV	Control Line	/	/
±1kV	DSL (RJ11)	/	/
±1kV	LAN (RJ45)	/	/

Test Result: Pass

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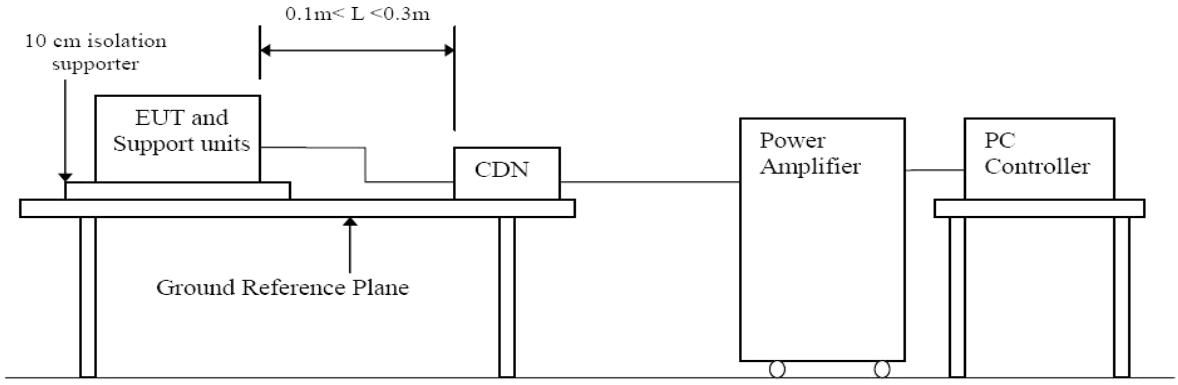
8.5 Conducted Susceptibility Test

8.5.1 Test Specification

Basic Standard:	IEC/EN 61000-4-6
Test Level:	10Vr.m.s
Frequency Range:	0.15~80MHz (MHz)
Modulation:	Amplitude 80%, 1kHz sinewave
Frequency Step:	1 % of preceding frequency value
Temperature:	22~23 (℃)
Humidity:	50~54 (%RH)
Barometric Pressure:	950~1000 (mbar)
Operating Mode:	Inversion mode

8.5.2 Test Setup



8.5.3 Test Procedure

1. The test was 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.
2. The frequency range was swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80 % amplitude. The signal was modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. The sweep rate was 1.5 x 10-3 decades/s. Where the frequency range is swept incrementally, the step size was 1 % of preceding frequency value from 150 kHz to 80 MHz.
3. The dwell time at each frequency was less than the time necessary for the EUT to be

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exercised, and able to respond. Sensitive frequencies such as clock frequency(ies) and harmonics or frequencies of dominant interest, was analyzed separately.

4. Attempts was made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility.

8.5.4 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	HCT-EMC026	RF POWER AMPLIFIER	FRANKONIA	FLL-75	1020A1109	2018-08-13	2019-08-12
2	HCT-EMC027	CDN	FRANKONIA	CDN M2+M3	A3027019	2018-08-13	2019-08-12
3	HCT-EMC029	6DB Attenuator	FRANKONIA	75-A-FFN-06	1001698	2018-08-13	2019-08-12
4	HCT-EMC030	EM Injection clamp	FCC	F-203I-23mm	091536	2018-08-13	2019-08-12

8.5.5 Performance Criterion Required & Test Result

Frequency Band (MHz)	Voltage (Vrms)	Test Points	Observation Performance	Criterion Required
0.15-80	10	AC Line	A	B

Test Result: Pass

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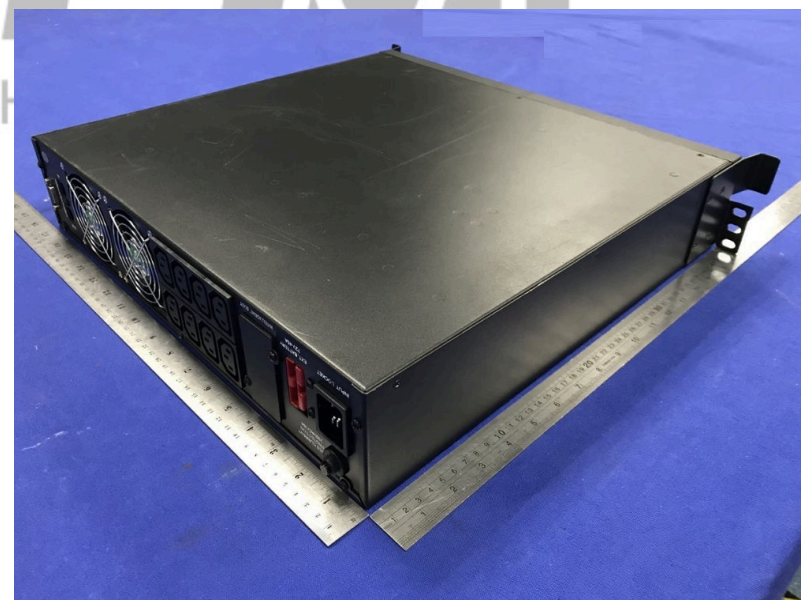
APPENDIX A - EUT PHOTOGRAPHS

EUT view	
☒Front ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

EUT view	
☐Whole ☒Rear ☐Right ☐Left ☐Top ☐Bottom	

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EUT view ☒Port ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

EUT view ☒Port ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

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EUT view ☐Whole ☒Port ☐Right ☐Left ☐Top ☐Bottom	

EUT view ☒Label ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

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EUT view ☒Label ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

EUT view ☒Open ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

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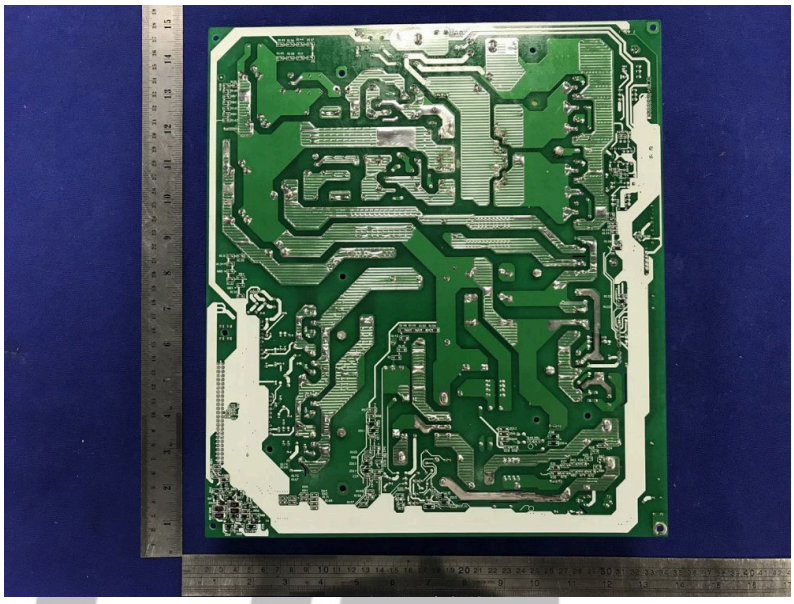
EUT view	
☒PCB	
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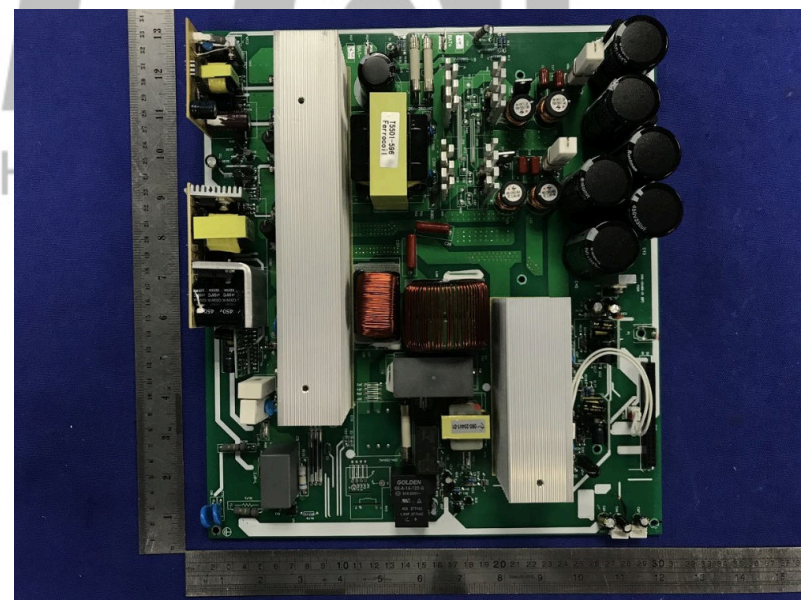
EUT view	
☒PCB	
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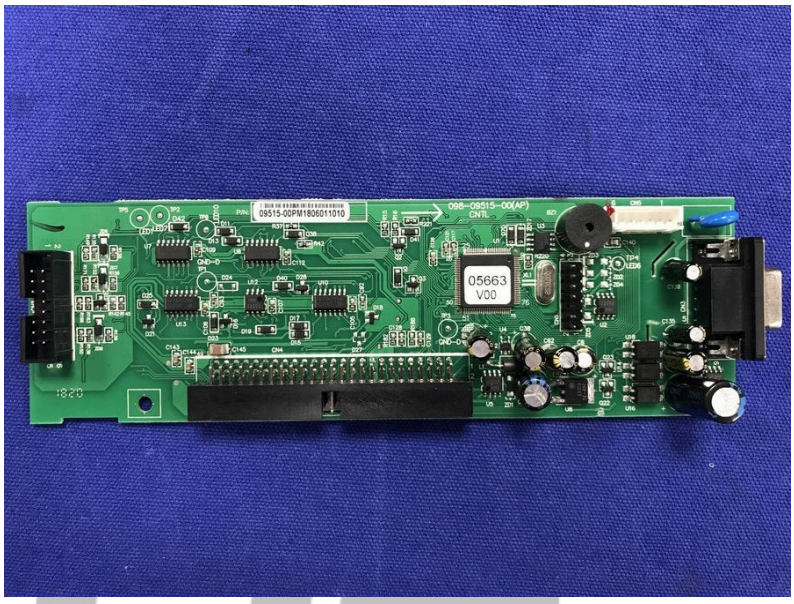
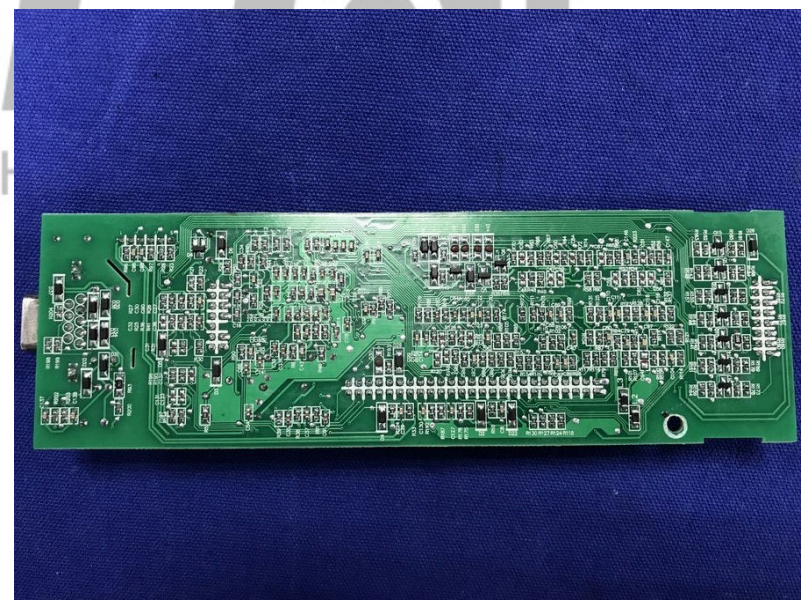
EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

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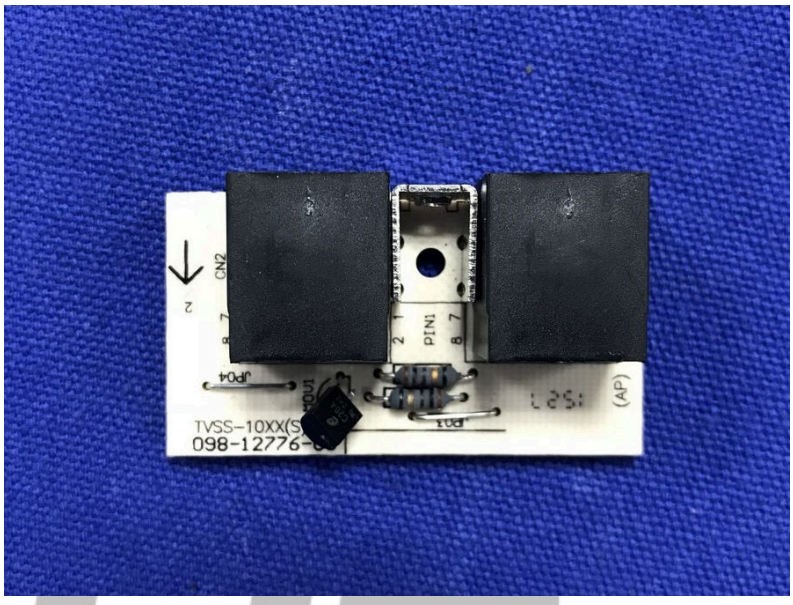
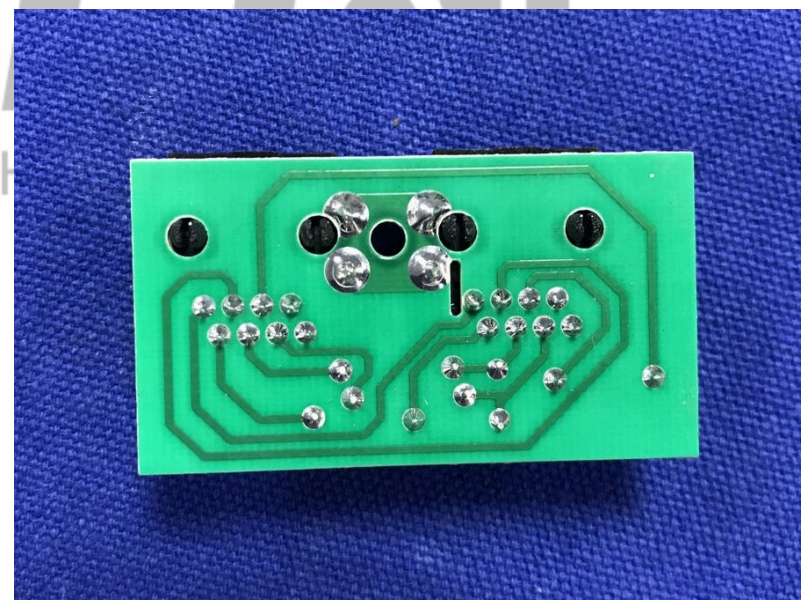
EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

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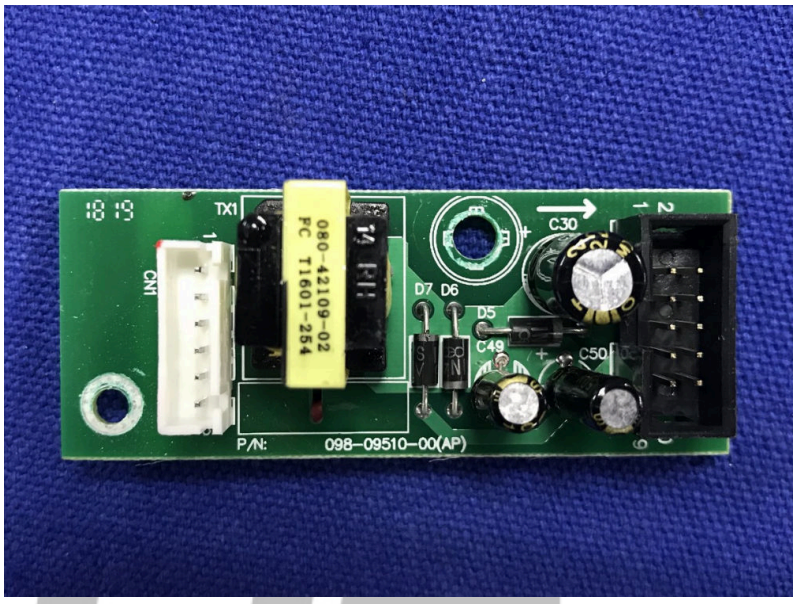
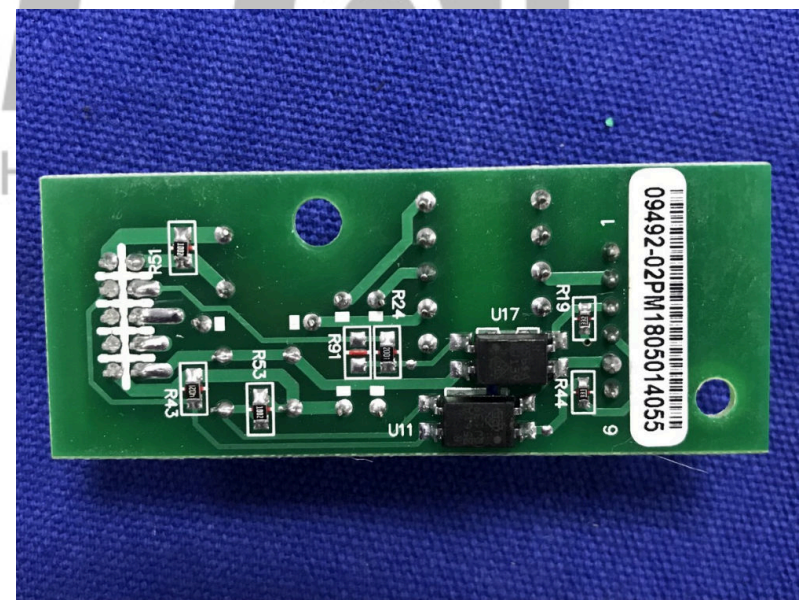
EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

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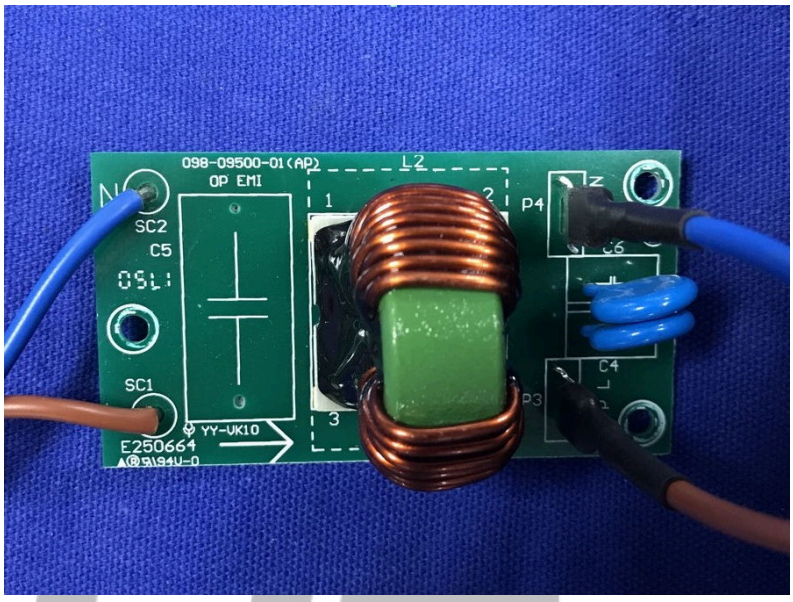
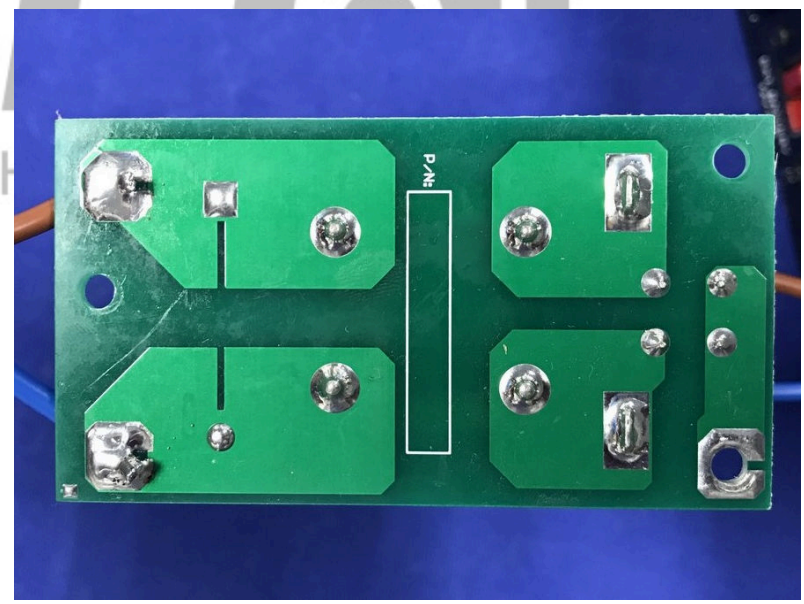
EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

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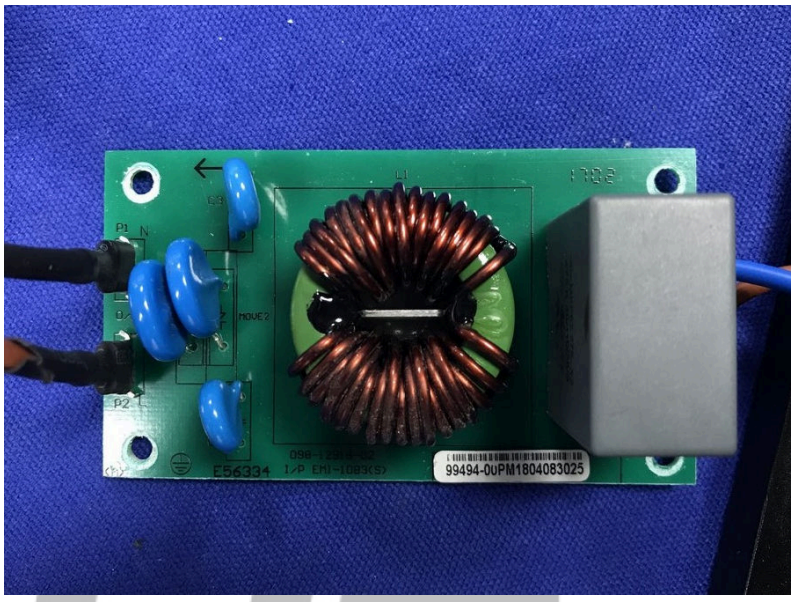
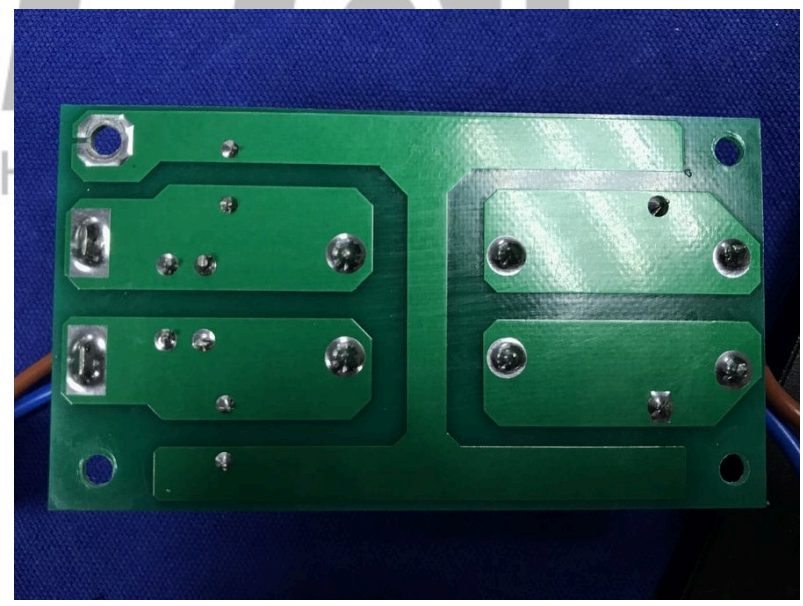
EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

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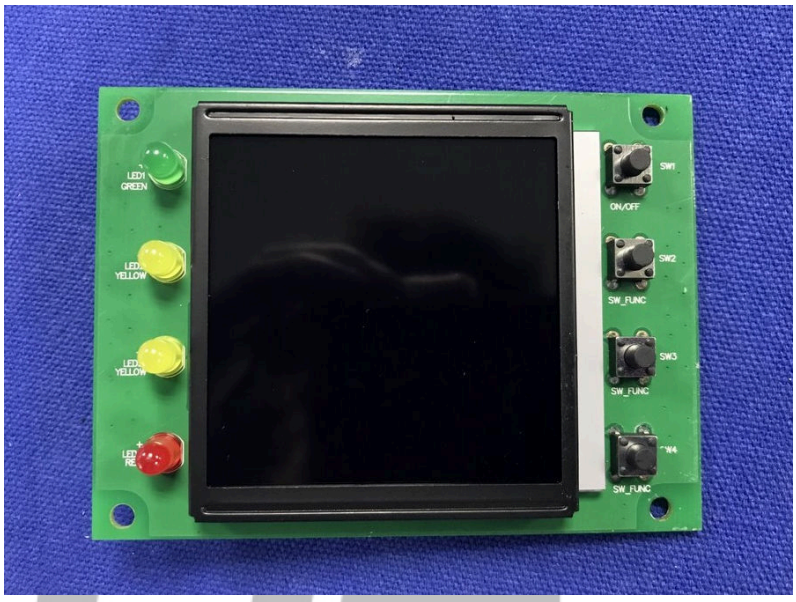
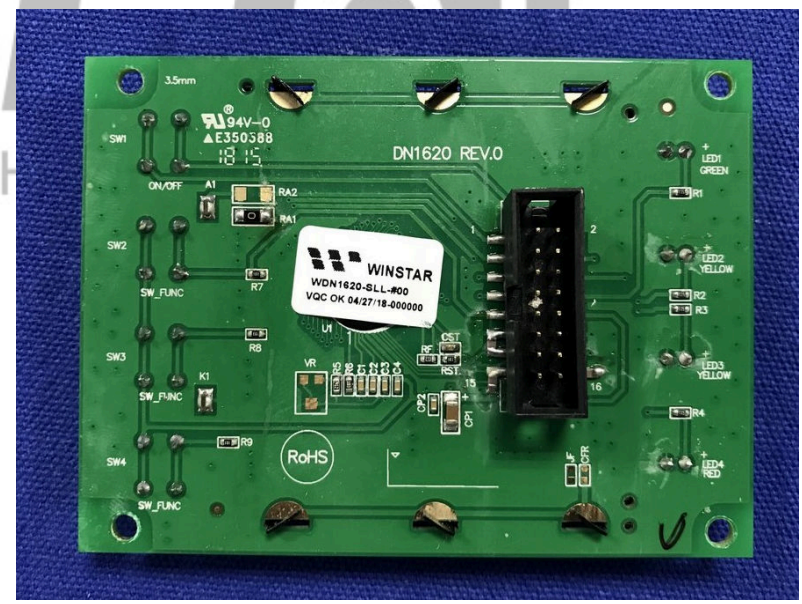
EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

EUT view ☒PCB ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

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EUT view ☒Fan ☐Rear ☐Right ☐Left ☐Top ☐Bottom	

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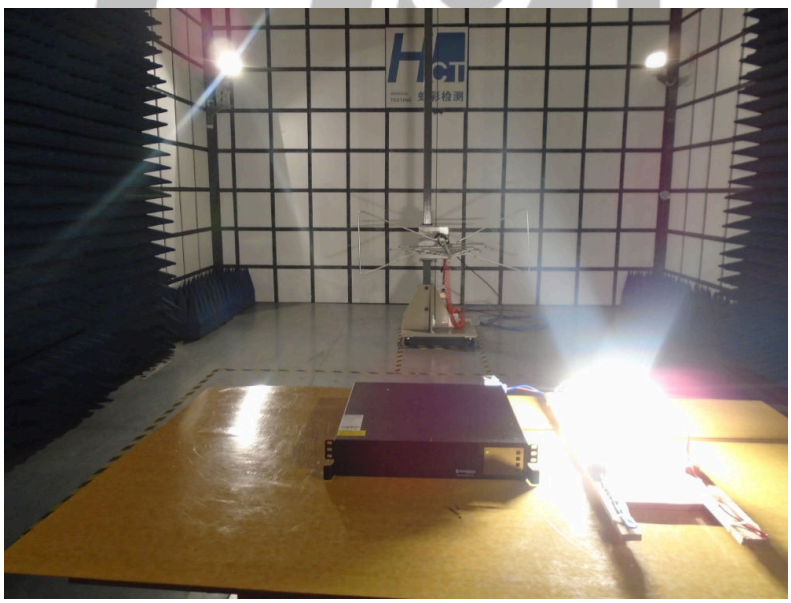
APPENDIX B - TEST SETUP PHOTOGRAPHS

Conducted Disturbance at The Mains Terminals

Radiated Emission



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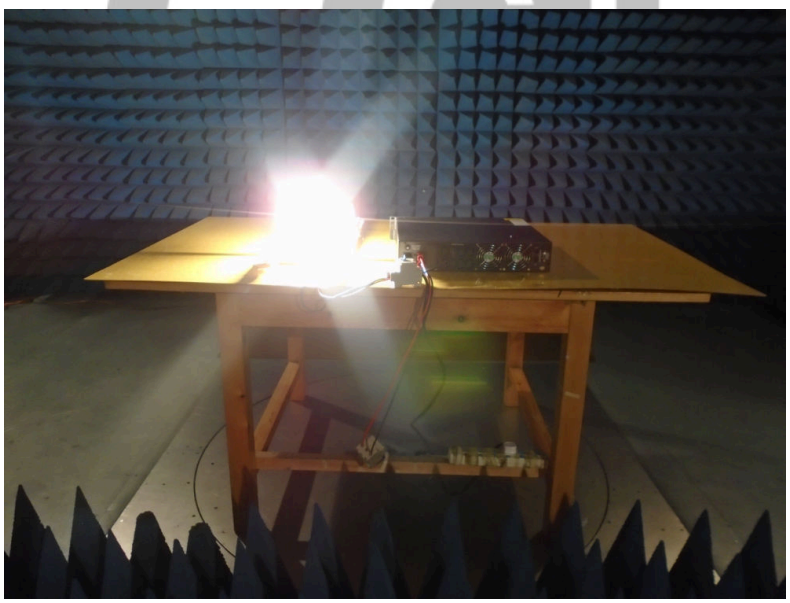
Harmonic Current Test / Voltage Fluctuations And Flicker Test

Radiated Susceptibility



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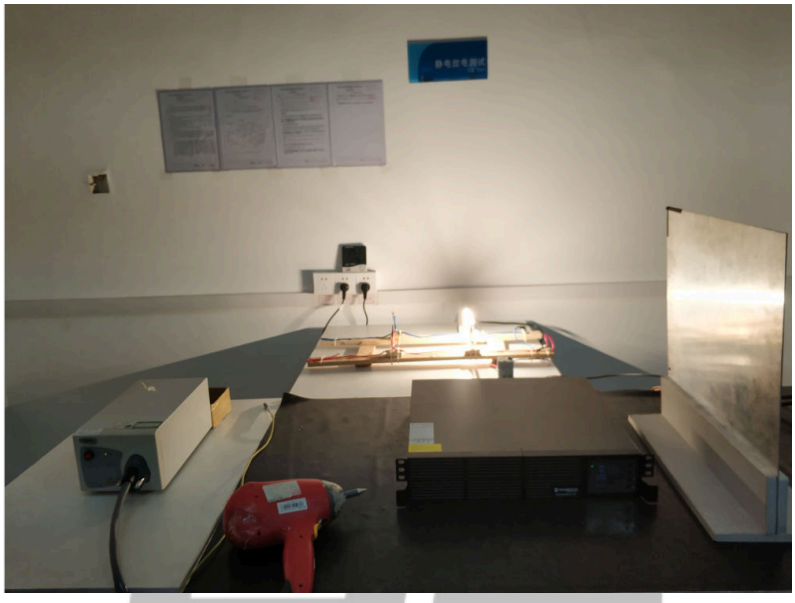
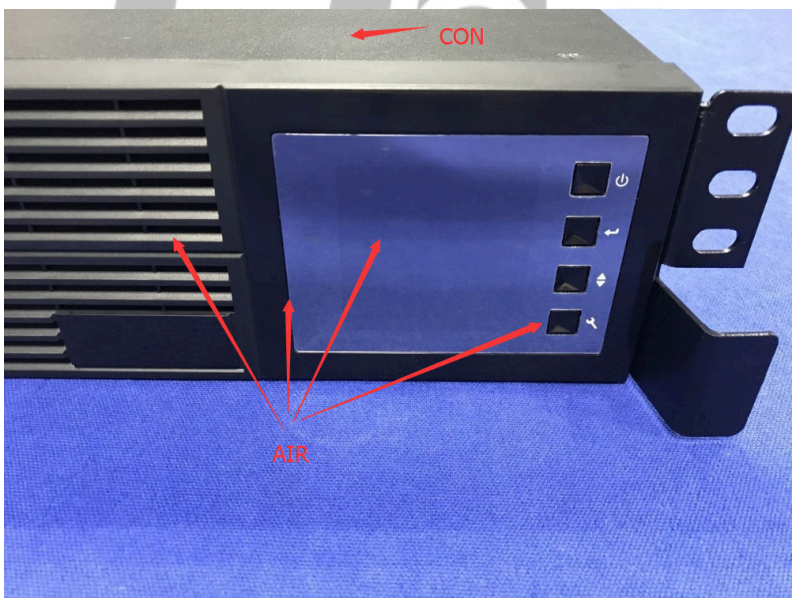
Electrostatic Discharge Immunity Test





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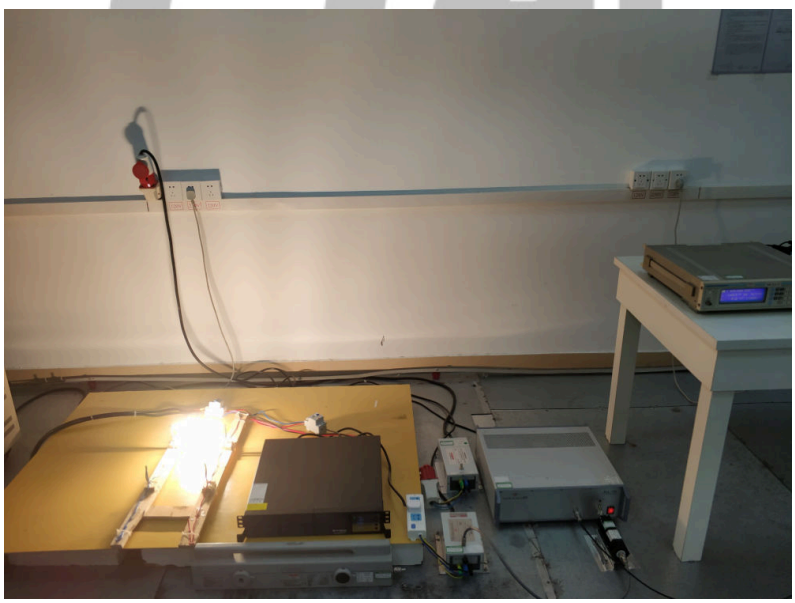
Electrical Fast Transient / Surge / Voltage Dips, Short Interruptions Immunity Test

Conducted Susceptibility Test for power port



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