



TEST REPORT

For
Shenzhen Yeniu Electronics Co., Ltd.

Product Name : Travel Adapter

Trademark : N/A

Model Number : HHT203
HHT204,HHT666,HHT606,HHT608,HHT609,
HHT101,HHT102,HHT902,HHT901,HHT904,HHT903

Prepared For : Shenzhen Yeniu Electronics Co., Ltd.

Address : 3rd Floor, Building F, Zhongxi Industrial Park, Tongfu
Industrial Park, Shajing Street, Baoan District,
Shenzhen

Report No. : LST201298031ER

Testing laboratory : Shenzhen LST Technology Co., Ltd.

Address : Huichao Building, Yintian Industry zone, Bao'an
District, Shenzhen, Guangdong P.R. China

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Applicant : Shenzhen Yeniu Electronics Co., Ltd.
Address : 3rd Floor, Building F, Zhongxi Industrial Park, Tongfu Industrial Park,
Shajing Street, Baoan District, Shenzhen
Manufacturer : Shenzhen Yeniu Electronics Co., Ltd.
Address : 3rd Floor, Building F, Zhongxi Industrial Park, Tongfu Industrial Park,
Shajing Street, Baoan District, Shenzhen
EUT : Travel Adapter
Model Number : HHT203
Trademark: : N/A
Test Date : Dec. 09, 2020 - Jan. 04, 2021
Date of Report : Jan. 04, 2021
Test Result: : The equipment under test was found to be compliance with the
requirements of the standards applied.

Test Procedure Used:

EMI : EN 55032:2015+AC:2016
EN 61000-3-2:2014, EN 61000-3-3:2013
EMS : EN 55035:2017
EN 61000-4-2:2009, EN 61000-4-3:2006+A1:2008+A2:2010,
EN 61000-4-4:2012, EN 61000-4-5:2014+A1:2017,
EN 61000-4-6:2014, EN 61000-4-8:2010, EN 61000-4-11:2004+A1:2017

Prepared by(Engineer):

Reviewer(Supervisor):

Approved(Manager):



This test report is based on a single evaluation of one sample of above mentioned products. The test results in the report only apply to the tested sample. It is not permitted to be duplicated in extracts without written approval of Shenzhen LST Technology Co., Ltd.

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : Travel Adapter
Trademark : N/A
Model Number : HHT203
Power Supply : Input: AC 110-240V~, 50/60Hz
Output: DC 5V, 4A(Total)

1.2. Tested System Details

N/A

1.3. Test Uncertainty

Conducted Emission : ± 2.66 dB
Uncertainty

Radiated Emission : ± 4.26 dB
Uncertainty

1.4. Test Facility

Site Description :

Name of Firm : Shenzhen LST Technology Co., Ltd.

Address : Huichao Building, Yintian Industry zone, Bao'an
District, Shenzhen, Guangdong P.R. China

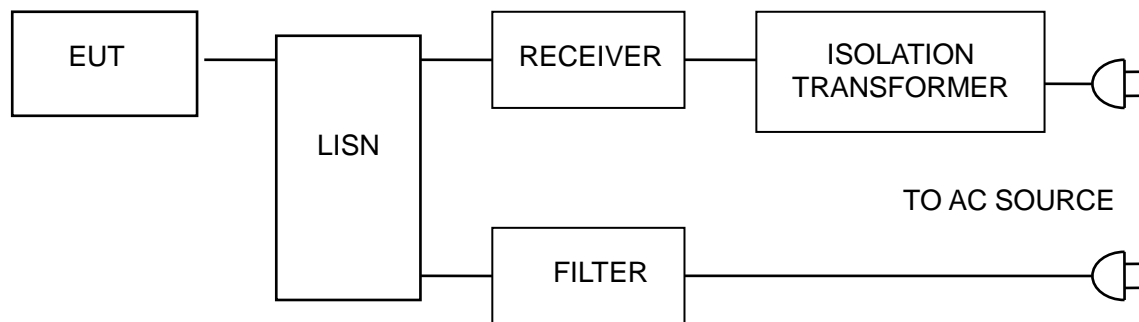
2. TEST INSTRUMENT USED

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 22, 2020	Jul. 21, 2021
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 22, 2020	Jul. 21, 2021
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 22, 2020	Jul. 21, 2021
LISN	Rohde & Schwarz	ENV216	101131	Jul. 22, 2020	Jul. 21, 2021
Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 22, 2020	Jul. 21, 2021
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 22, 2020	Jul. 21, 2021
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 20, 2020	Mar.19,2021
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 19, 2020	Mar.18,2021
Pre-amplifier	Sonoma	310N	185903	Mar. 20, 2020	Mar.19,2021
Pre-amplifier	HP	8449B	3008A00849	Mar. 26, 2020	Mar.25,2021
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 26, 2020	Mar.25,2021
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Harmonic Current and Voltage Fluctuation and Flicker Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
Harmonic Flicker Test System	CI	5001ix-CTS-400	100321	Jul. 22, 2020	Jul. 21, 2021
5K VA AC Power Source	CI	500liX	59468	Jul. 22, 2020	Jul. 21, 2021
Discharge Immunity Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
ESD Generator	HAFELY	PESD 1610	H808671	Mar.18, 2020	Mar.17,2021
Radiated Immunity Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
Signal Generator	Rohde & Schwarz	SMT03	200754	Mar.26, 2020	Mar.25,2021
Power Meter	Rohde & Schwarz	NRVD	110562	Feb. 16, 2020	Feb.15,2021
Voltage Probe	Rohde & Schwarz	URV5-Z2	12056	Feb. 16, 2020	Feb.15,2021
Voltage Probe	Rohde & Schwarz	URV5-Z2	12074	Feb. 16, 2020	Feb.15,2021

RF Amplifier	AR	50S1G4A	326720	Feb. 16, 2020	Feb.15,2021
Bilog Antenna	ETS	3142C	00047662	Feb. 16, 2020	Feb.15,2021
Horn Antenna	ARA	DRG-118A	16554	Feb. 16, 2020	Feb.15,2021
Audio Analyzer	Rohde & Schwarz	UPL 16	SB2208	Feb. 16, 2020	Feb.15,2021
Sound Level Calibrator	B&K	4231	264516	Feb. 16, 2020	Feb.15,2021
Electrical Fast Transient/ Surge/ Voltage Dip and Interruption Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
Simulator	EMTEST	UCS500N5	V0948105575	Jul. 22, 2020	Jul. 21, 2021
Auto-transformer	EMTEST	V4780S2	0109-41	Jul. 22, 2020	Jul. 21, 2021
Coupling Clamp	EMTEST	HFK	1109-04	Jul. 22, 2020	Jul. 21, 2021
Conducted Immunity Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
RF Generator	FRANKONIA	CIT-10/75	126B1126	Jul. 22, 2020	Jul. 21, 2021
6dB Attenuator	FRANKONIA	59-6-33	A413	Jul. 22, 2020	Jul. 21, 2021
M-CDN	LUTHI	L-801 M2/M3	2599	Jul. 22, 2020	Jul. 21, 2021
AF2-CDN	LUTHI	L-801:AF2	2538	Mar. 19, 2020	Mar.18,2021
EM Injection Clamp	LUTHI	EM101	35958	Jul. 22, 2020	Jul. 21, 2021

3. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

3.1. Block Diagram Of Test Setup



3.2. Test Standard

EN 55032:2015+AC:2016

3.3. Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet EN 55032 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5. Operating Condition of EUT

3.5.1 Setup the EUT and simulators as shown in Section 3.1.

3.5.2 Turn on the power of all equipments.

3.5.3 Let the EUT work in test modes and test it.

3.6. Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **EN 55032** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 10KHz.

The frequency range from 150 KHz to 30 MHz is investigated.

3.7. Test Result

PASS

Please refer to the following page.

Conducted Emission Test Data

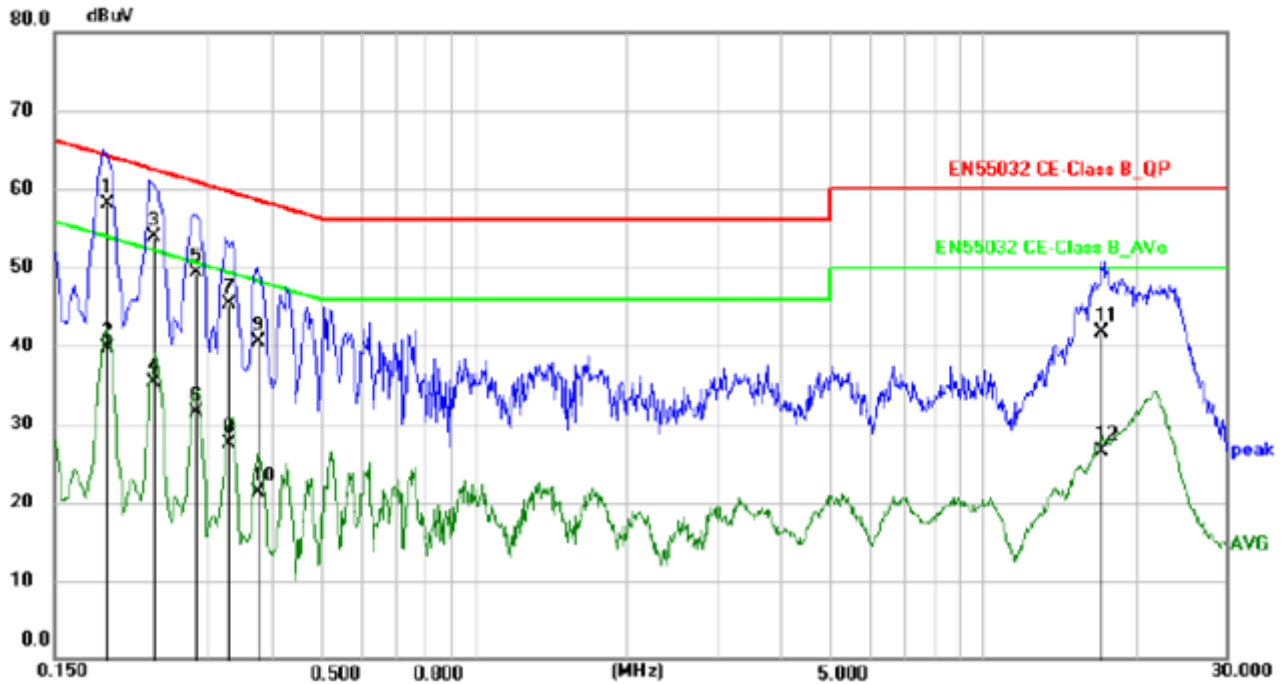
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	L
Test Voltage :	AC 230V	Test Mode:	Normal Mode

Conducted Emission Measurement

File:12

Data:#3

Time: 16:15:15



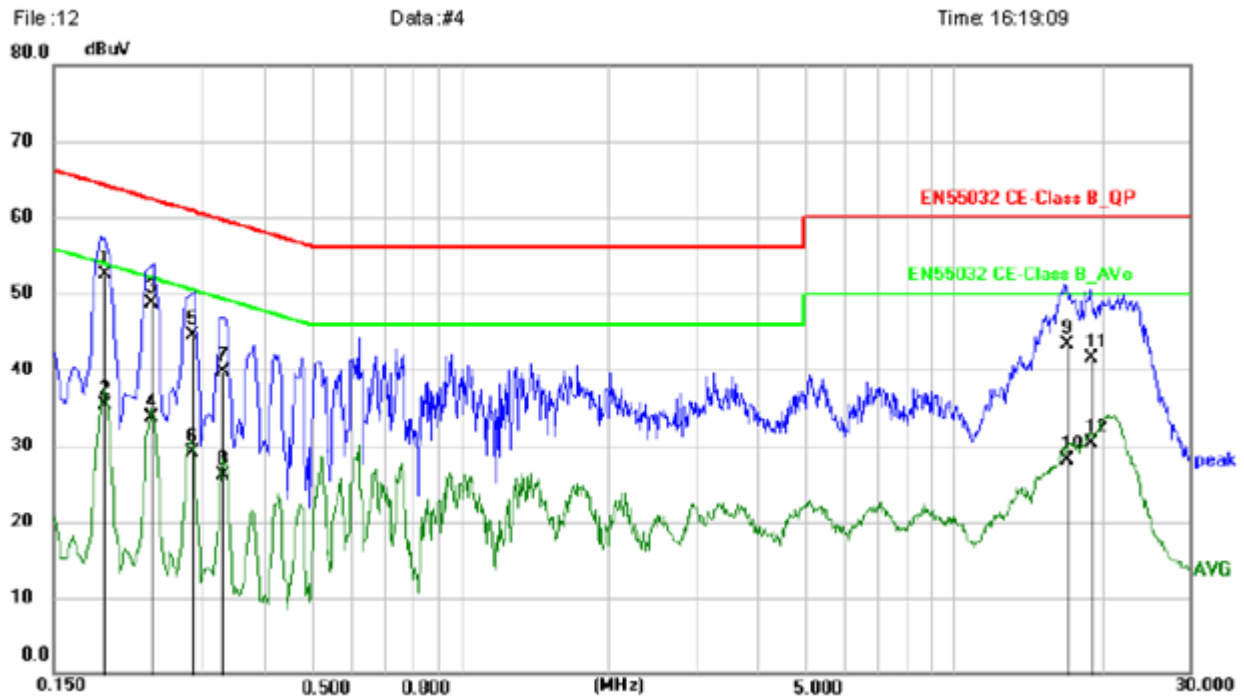
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.1900	47.97	10.18	58.15	64.04	-5.89	QP	P	
2	0.1900	29.51	10.18	39.69	54.04	-14.35	AVG	P	
3	0.2350	43.76	10.18	53.94	62.27	-8.33	QP	P	
4	0.2350	25.05	10.18	35.23	52.27	-17.04	AVG	P	
5	0.2840	39.12	10.18	49.30	60.70	-11.40	QP	P	
6	0.2840	21.33	10.18	31.51	50.70	-19.19	AVG	P	
7	0.3290	35.21	10.18	45.39	59.48	-14.09	QP	P	
8	0.3290	17.35	10.18	27.53	49.48	-21.95	AVG	P	
9	0.3769	30.30	10.18	40.48	58.35	-17.87	QP	P	
10	0.3769	11.21	10.18	21.39	48.35	-26.96	AVG	P	
11	17.0330	31.30	10.43	41.73	60.00	-18.27	QP	P	
12	17.0330	16.03	10.43	26.46	50.00	-23.54	AVG	P	

*:Maximum data x:Over limit !:over margin

Conducted Emission Test Data

Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	N
Test Voltage :	AC 230V	Test Mode:	Normal Mode

Conducted Emission Measurement

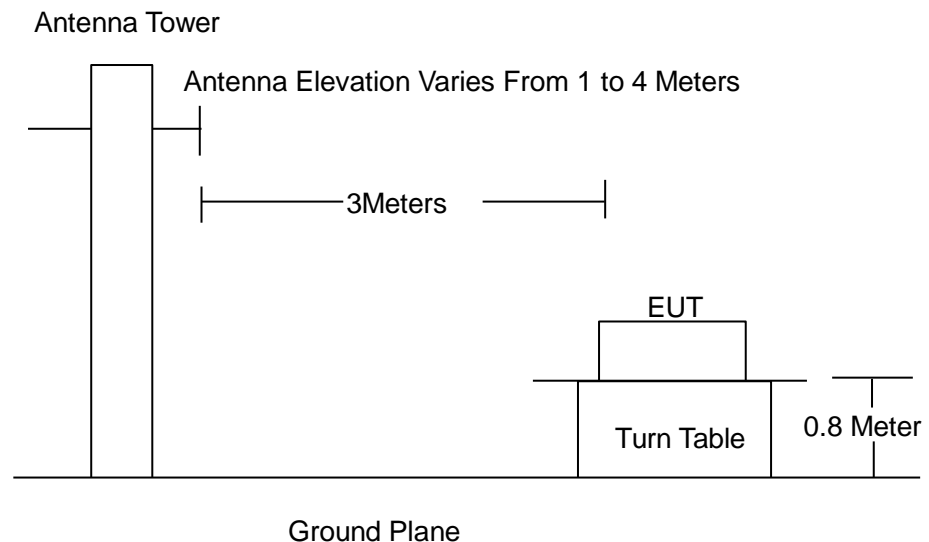


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.1900	42.33	10.19	52.52	64.04	-11.52	QP	P	
2	0.1900	25.21	10.19	35.40	54.04	-18.64	AVG	P	
3	0.2360	38.54	10.18	48.72	62.24	-13.52	QP	P	
4	0.2360	23.60	10.18	33.78	52.24	-18.46	AVG	P	
5	0.2860	34.27	10.18	44.45	60.64	-16.19	QP	P	
6	0.2860	18.97	10.18	29.15	50.64	-21.49	AVG	P	
7	0.3290	29.47	10.18	39.65	59.48	-19.83	QP	P	
8	0.3290	15.84	10.18	26.02	49.48	-23.46	AVG	P	
9	16.8389	32.82	10.45	43.27	60.00	-16.73	QP	P	
10	16.8389	17.72	10.45	28.17	50.00	-21.83	AVG	P	
11	18.9599	30.98	10.48	41.46	60.00	-18.54	QP	P	
12	18.9599	19.83	10.48	30.31	50.00	-19.69	AVG	P	

*:Maximum data x:Over limit !:over margin

4. RADIATION EMISSION TEST

4.1. Block Diagram of Test Setup



4.2. Test Standard

EN 55032:2015+AC:2016

4.3. Radiation Limit

Frequency MHz	Distance (Meters)	Field Strengths Limits dB(μ V)/m	Detector
30 ~ 230	3	40.0	QP
230 ~ 1000	3	47.0	QP
1000 ~ 3000	3	76.0	PEAK
1000 ~ 3000	3	56.0	AVERAGE
3000 ~ 6000	3	80.0	PEAK
3000 ~ 6000	3	60.0	AVERAGE

Remark:

- (1) Emission level (dB(μ V)/m) = 20 log Emission level (μ V/m)
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument, antenna and the closed point of any part of the device or system.

4.4.EUT Configuration on Test

The EN 55032 regulations test method must be used to find the maximum emission during radiated emission test.

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.2.

4.5.Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.2 except the test set up replaced as Section 4.1.

4.6.Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to EN 55032 on radiated emission test.

The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz below 1GHz, set at 1MHz above 1GHz

The frequency range from 30MHz to 1000MHz is checked.

The highest frequency of the internal sources of the EUT was 1.3GHz, so the measurement was only made up to 6GHz.

4.7.Test Result

PASS

Please refer to the following page.

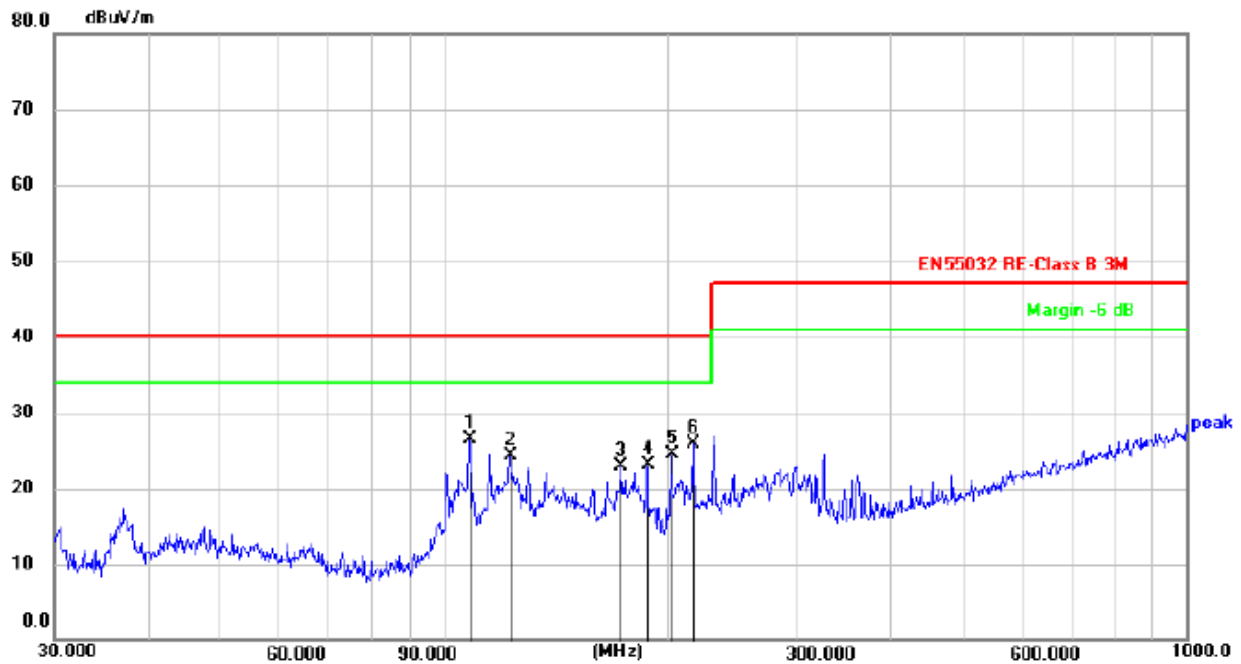
Radiation Emission Test Data			
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Horizontal
Test Voltage :	AC 230V	Test Mode:	Normal Mode

Radiated Emission Measurement

File :12

Data :#52

Time 18:25:21



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	108.2667	56.48	-29.91	26.57	40.00	-13.43	peak			P	
2	122.8340	56.67	-32.32	24.35	40.00	-15.65	peak			P	
3	173.8135	55.13	-32.13	23.00	40.00	-17.00	peak			P	
4	187.7530	53.88	-30.86	23.02	40.00	-16.98	peak			P	
5	202.8104	54.29	-29.72	24.57	40.00	-15.43	peak			P	
6	216.7828	55.57	-29.66	25.91	40.00	-14.09	peak			P	

*:Maximum data x:Over limit !:over margin

Radiation Emission Test Data

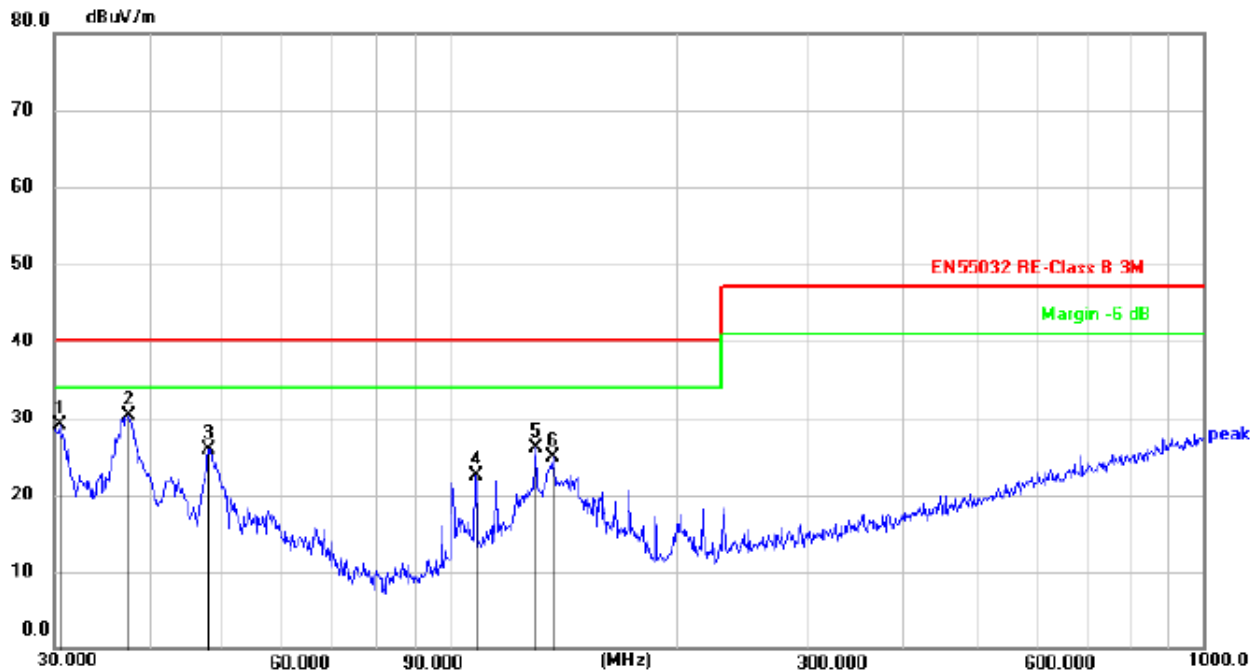
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	AC 230V	Test Mode:	Normal Mode

Radiated Emission Measurement

File :12

Data :#51

Time: 18:23:57

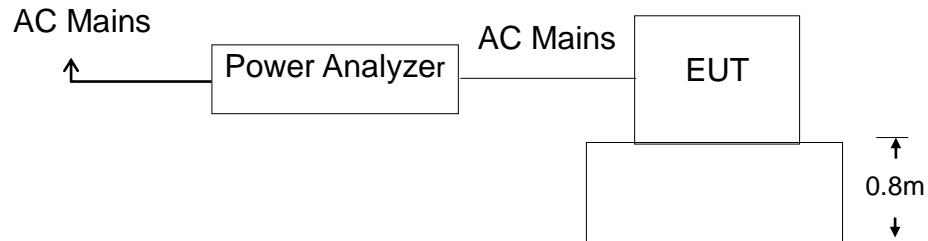


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	30.4238	60.18	-31.13	29.05	40.00	-10.95	peak			P	
2 *	37.5479	60.00	-29.67	30.33	40.00	-9.67	peak			P	
3	47.9940	54.00	-28.02	25.98	40.00	-14.02	peak			P	
4	108.2667	52.43	-29.91	22.52	40.00	-17.48	peak			P	
5	130.3789	59.42	-33.28	26.14	40.00	-13.86	peak			P	
6	137.4202	58.51	-33.55	24.96	40.00	-15.04	peak			P	

*:Maximum data x:Over limit !:over margin

5. HARMONIC CURRENT EMISSION TEST

5.1. Block Diagram of Test Setup



5.2. Test Standard

EN 61000-3-2:2014

5.3. Operating Condition of EUT

5.3.1 Setup the EUT as shown in Section 5.1.

5.3.2 Turn on the power of all equipments.

5.3.3 Let the EUT work in test mode and test it.

5.4. Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

5.5. Test Results

PASS

Please refer to the following page.

Current Test Result Summary (Run time)

Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100
 Test date: 2020-12-14 Start time: 15:26:13 End time: 15:29:11
 Test duration (min): 2.5 Data file name: H-000160.cts_data
 Comment: Lighting Temp.:25.5°C Humi.:55%
 Test Result: Pass Source qualification: Normal
 THC(A): 0.09 I-THD(%): 25.84 POHC(A): 0.000 POHC Limit(A): 0.034
 Highest parameter values during test:
 V_RMS (Volts): 230.01 Frequency(Hz): 50.00
 I_Peak (Amps): 0.666 I_RMS (Amps): 0.868
 I_Fund (Amps): 0.354 Crest Factor: 1.824

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	0.007	0.0	0.001	0.011	0.00	Pass
3	0.084	0.097	86.7	0.084	0.145	58.43	Pass
4	0.001						
5	0.032	0.035	90.8	0.032	0.053	61.35	Pass
6	0.000						
7	0.009	0.025	35.3	0.009	0.037	24.00	Pass
8	0.000						
9	0.007	0.018	38.8	0.007	0.027	26.86	Pass
10	0.000						
11	0.008	0.011	71.7	0.008	0.016	48.54	Pass
12	0.000						
13	0.006	0.011	56.0	0.006	0.016	38.62	Pass
14	0.000						
15	0.006	0.011	52.4	0.006	0.016	35.23	Pass
16	0.000						
17	0.003	0.011	0.0	0.003	0.000	0.00	Pass
18	0.000						
19	0.005	0.011	46.8	0.005	0.016	31.69	Pass
20	0.000						
21	0.004	0.011	0.0	0.004	0.016	0.00	Pass
22	0.000						
23	0.003	0.011	0.0	0.003	0.016	0.00	Pass
24	0.000						
25	0.003	0.011	0.0	0.003	0.016	0.00	Pass
26	0.000						
27	0.003	0.011	0.0	0.003	0.016	0.00	Pass
28	0.000						
29	0.003	0.011	0.0	0.003	0.016	0.00	Pass
30	0.000						
31	0.002	0.011	0.0	0.002	0.016	0.00	Pass
32	0.000						
33	0.003	0.011	0.0	0.003	0.016	0.00	Pass
34	0.000						
35	0.002	0.011	0.0	0.002	0.016	0.00	Pass
36	0.000						
37	0.002	0.011	0.0	0.002	0.016	0.00	Pass
38	0.000						
39	0.002	0.011	0.0	0.002	0.016	0.00	Pass
40	0.000						

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

6. VOLTAGE FLUCTUATIONS & FLICKER TEST

6.1. Block Diagram of Test Setup

Same as Section 6.1..

6.2. Test Standard

EN 61000-3-3:2013

6.3. Operating Condition of EUT

Same as Section 5.3.. The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

Flicker Test Limit

Test items	Limits
Pst	1.0
dc	3.3%
dmax	4.0%
dt	Not exceed 3.3% for 500ms

6.4. Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

6.5. Test Results

PASS

Please refer to the following page.

Flicker Test Summary

Test category: All parameters (European limits)

Test Margin: 100

Test date: 2020-12-14

Start time: 10:04:58

End time: 10:16:01

Test duration (min): 10

Data file name: F-000125.cts_data

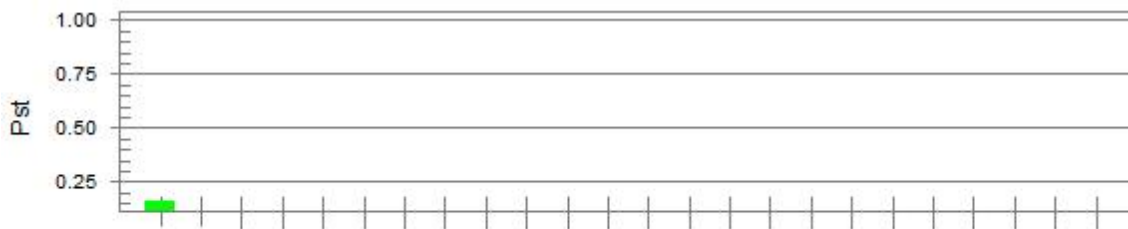
Comment: Lighting

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): 230.04

Highest dt (%): 0.13

Time(mS) > dt: 0.0

Highest dc (%): 0.00

Highest dmax (%): 0.11

Highest Pst (10 min. period): 0.160

Highest Plt (2 hr. period): 0.070

Test limit (%): 3.30 Pass

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

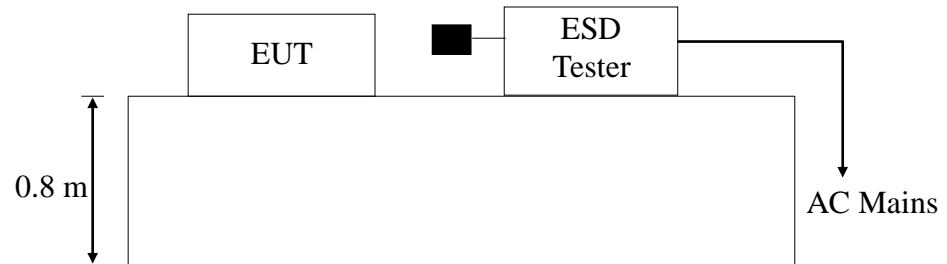
Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

Test limit: 0.650 Pass

7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

7.1. Block Diagram of Test Setup



7.2. Test Standard

EN 55035:2017, EN 61000-4-2:2009

Severity Level: 3 / Air Discharge: $\pm 8\text{KV}$

Level: 2 / Contact Discharge: $\pm 4\text{KV}$

7.3. Severity Levels and Performance Criterion

7.3.1 Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	± 2	± 2
2.	± 4	± 4
3.	± 6	± 8
4.	± 8	± 15
X	Special	Special

7.3.2 Performance criterion : B

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

7.4.EUT Configuration

The following equipments are installed on Electrostatic Discharge Immunity test to meet EN 55035:2017, EN 61000-4-2:2009, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test.

Please refer to Section 2.4.

7.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.5 except the test setup replaced by Section 7.1.2.

7.6.Test Procedure

7.6.1 Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

7.6.2 Contact Discharge:

All the procedure shall be same as Section 7.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

7.6.3 Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of

the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

7.6.4 Indirect discharge for vertical coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are complete illuminated.

7.7. Test Results

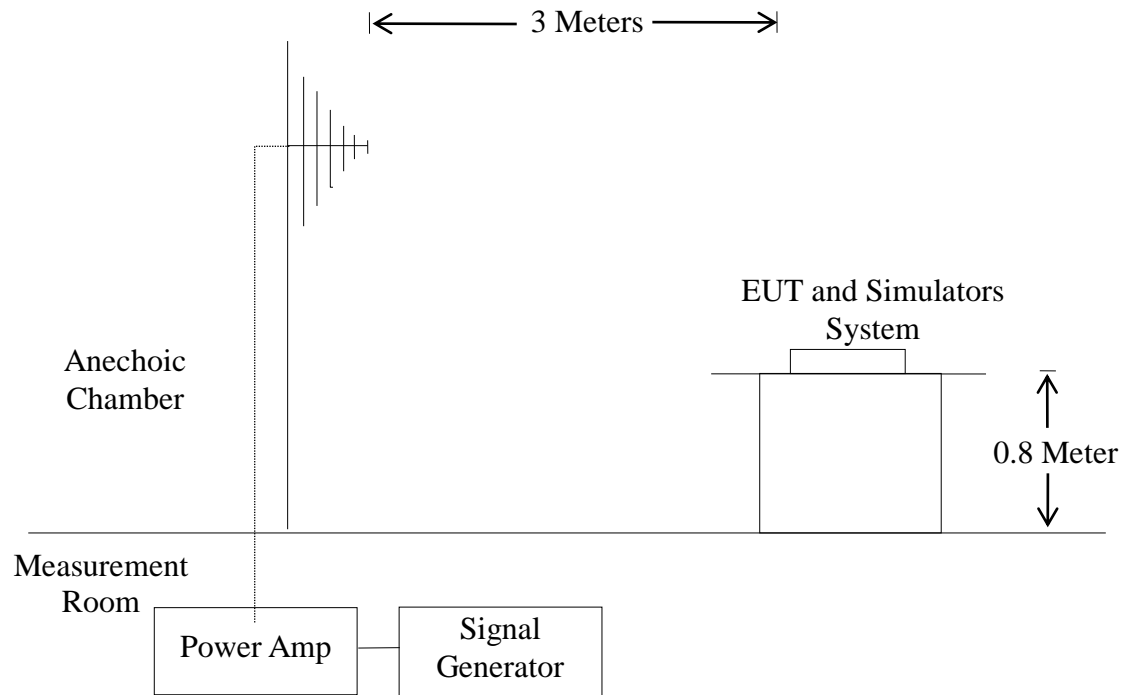
PASS

Please refer to the following page.

ESD Test Data				
Temperature:	24.5℃	Humidity:	53%	
Power Supply :	AC 230V	Test Mode:	Normal Mode	
Air Discharge: ± 8KV				
Contact Discharge: ± 4KV				
# For each point positive 25 times and negative 25 times discharge				
Test Points	Air Discharge	Contact Discharge	Performance Criterion	Result
Enclosure	±2,4,8KV	N/A	B	PASS
Slit	±2,4,8KV	N/A	B	PASS
Metal Part	N/A	±2,4 KV	B	PASS
VCP	N/A	±2,4 KV	B	PASS
HCP	N/A	±2,4 KV	B	PASS
Note: N/A				

8. RF FIELD STRENGTH SUSCEPTIBILITY TEST

8.1. Block Diagram of Test Setup



8.2. Test Standard

EN 55035:2017, EN 61000-4-3: 2006+A1:2008+A2:2010
Severity Level 2, 3V / m

8.3. Severity Levels and Performance Criterion

8.3.1. Severity level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

8.3.2. Performance criterion: A

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

8.4. EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet EN 55035:2017, EN 61000-4-4:2012, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test.

Please refer to Section 3.4.

8.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 2.5 except the test setup replaced by Section 8.1.

8.6. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.

All the scanning conditions are as follows :

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80 – 1000 MHz 2600 MHz, 3500 MHz, 5000 MHz
4. Dwell time of radiated	0.0015 decade/s
5. Waiting Time	1 Sec.

8.7. Test Results

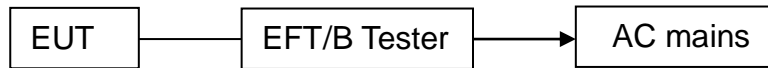
PASS

Please refer to the following page.

R/S Test Data			
Temperature : 25°C		Humidity : 53%	
Field Strength: 3 V/m		Criterion: A	
Power Supply: AC 230V		Frequency Range: 80 MHz to 1000 MHz	
Modulation: <input checked="" type="checkbox"/> AM <input type="checkbox"/> Pulse <input type="checkbox"/> none 1 KHz 80%			
Test Mode : Discharge			
	Frequency Range: 80 MHz to 1000 MHz		
Steps	1 %		
	Horizontal	Vertical	Result
Front	A	A	Pass
Right	A	A	Pass
Rear	A	A	Pass
Left	A	A	Pass
Note: N/A			

9. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

9.1. Block Diagram of EUT Test Setup



9.2. Test Standard

EN 55035:2017, EN 61000-4-4:2012

9.3. Severity Levels and Performance Criterion

Severity Level 2 at 1KV, Pulse Rise time & Duration: 5 nS / 50 nS

Severity Level:

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On power ports	On I/O(Input/Output) Signal data and control ports
1.	0.5KV	0.25KV
2.	1KV	0.5KV
3.	2KV	1KV
4.	4KV	2KV
X.	Special	Special

Performance criterion: B

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

9.4.EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet EN 55035:2017, EN 61000-4-4:2012, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application. The configuration of EUT is the same as used in conducted emission test.

Please refer to Section 3.4.

9.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 2.6 except the test setup replaced by Section 9.1.

9.6.Test Procedure

EUT shall be placed 0.8m high above the ground reference plane which is a min.1m*1m metallic sheet with 0.65mm minimum thickness. 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

9.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minutes.

9.7.Test Results

PASS

Please refer to the following page.

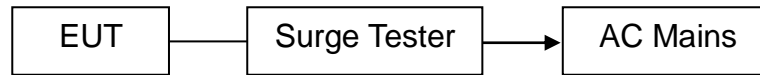
Test Point	Polarity	Test Level (kV)	Performance Criterion	Observation	Result
L	+/-	1	B	A	PASS
N	+/-	1	B	A	PASS
L – N	+/-	1	B	A	PASS
PE	--	--	--	--	N/A
L – PE	--	--	--	--	N/A
N – PE	--	--	--	--	N/A
L – N – PE	--	--	--	--	N/A
RJ45 UTP cable	--	--	--	--	N/A

NOTE: A. There was no change compared with initial operation during the test.

B. The loss of function of the EUT during the test and it was recovered by itself operation after the test.

10. SURGE TEST

10.1. Block Diagram of EUT Test Setup



10.2. Test Standard

EN 55035:2017, EN61000-4-5:2014+A1:2017

10.3. Severity Levels and Performance Criterion

Severity Level: Line to Line, Level 2 at 1KV;

Severity Level: Line to Earth, Level 3 at 2KV.

Severity Level	Open-Circuit Test Voltage (KV)
1.	0.5
2.	1.0
3.	2.0
4.	4.0
X.	Special

Performance criterion: B

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

10.4. EUT Configuration on Test

The following equipments are installed on Electrical Fast Transient/Burst Immunity test to meet EN 55035:2017, EN61000-4-5:2014, requirement and operating in a manner which tends to maximize its emission characteristics in a normal application

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.4.

10.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 2.7 except the test setup replaced by Section 10.1.

10.6. Test Procedure

- 1) Set up the EUT and test generator as shown on section 10.1
- 2) For line to line coupling mode, provide a 1KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Repeat procedure 2) to 4) except the open-circuit test voltage change from 1KV to 2KV for line to earth coupling mode test.
- 6) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

10.7. Test Result

PASS

Please refer to the following page.

Test Point	Polarity	Test Level (kV)	Performance Criterion	Observation	Result
L - N	+/-	1	B	A	PASS
L - PE	--	--	--	--	N/A
N - PE	--	--	--	--	N/A
R - Ground	--	--	--	--	N/A
T - Ground	--	--	--	--	N/A

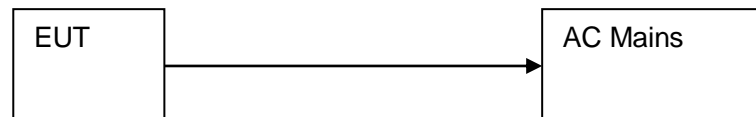
NOTE: A. There was no change compared with initial operation during the test.

B. The loss of function of the EUT during the test and it was recovered by itself operation after the test.

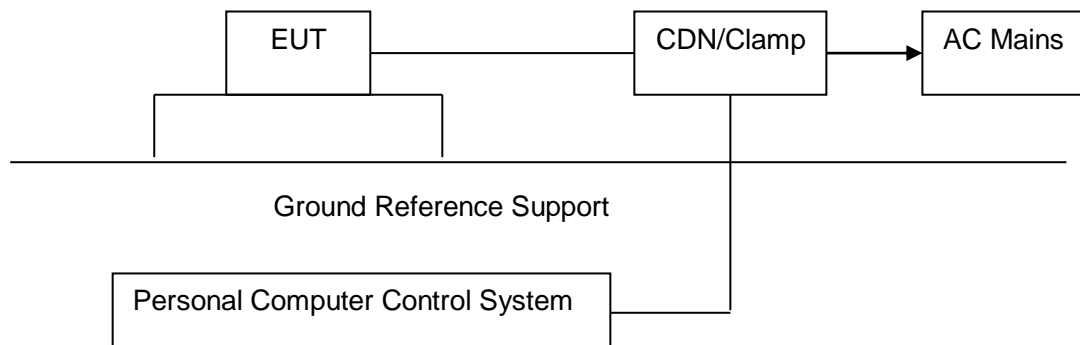
11. INJECTED CURRENTS SUSCEPTIBILITY TEST

11.1. Block Diagram of EUT Test Setup

11.1.1. Block Diagram of EUT Test Setup



11.1.2. Block Diagram of Test Setup



11.2. Test Standard

EN 55035:2017, EN61000-4-6:2014

11.3. Severity Levels and Performance Criterion

Severity Level 2: 3V(rms), 150KHz ~ 80MHz

Severity Level:

Level	Field Strength V
1.	1
2.	3
3.	10
X.	Special

Performance criterion: A

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

11.4. EUT Configuration on Test

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.8.

11.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.8 except the test set up replaced as Section 11.1.

11.6. Test Procedure

- 1) Set up the EUT, CDN and test generator as shown on section 11.1
- 2) Let EUT work in test mode and measure.
- 3) The EUT and supporting equipments are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane at above 0.1-0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave

- 7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

11.7. Test Result

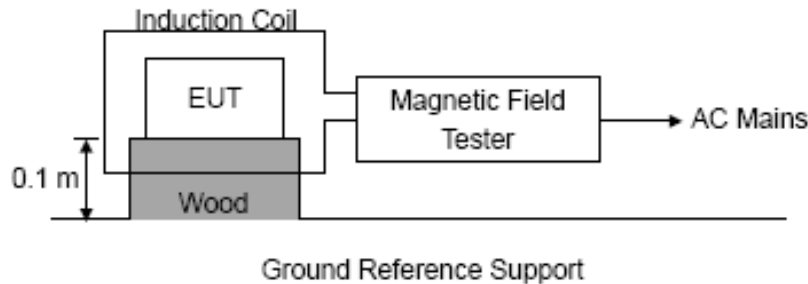
PASS

Please refer to the following page.

Port Type	Frequency (MHz)	Test Voltage	Performance Criterion	Criterion Required	Result
AC Mains	0.15 to 80	3 V (rms) AM Modulated 1000Hz, 80%	A	A	Pass

12. MAGNETIC FIELD IMMUNITY TEST

12.1. Block Diagram of Test Setup



12.2. Test Standard

EN 55035:2017, EN61000-4-8:2010
Severity Level 1 at 1A/m

12.3. Severity Levels and Performance Criterion

12.3.1 Severity level

Level	Magnetic Field Strength A/m
1.	1
2.	3
3.	10
4.	30
5.	100
X.	Special

12.3.2 Performance criterion: B

- 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.
- 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.
- C. Temporary loss of function is allowed, provided the function is

self-recoverable or can be restored by the operation of the controls.

12.4. EUT Configuration on Test

The configuration of EUT is listed in Section 2.9.

12.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.9 except the test set up replaced as Section 12.1.

12.6. Test Procedure

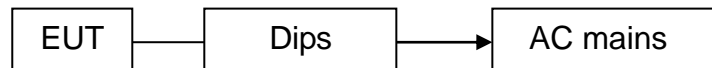
The EUT shall be subjected to the test magnetic field by using the induction coil of standard dimensions (1m*1m) and shown in Section 10.1. The induction coil shall then be rotated by 90° in order to expose the EUT to the test field with different orientations.

12.7. Test Results

The test item is not applicable.

13. VOLTAGE DIPS AND INTERRUPTIONS TEST

13.1. Block Diagram of EUT Test Setup



13.2. Test Standard

EN 55035:2017, EN61000-4-11:2004+A1:2017

13.3. Severity Levels and Performance Criterion

Severity Level:

Input and Output AC Power Ports.

☒ Voltage Dips.

☒ Voltage Interruptions.

Environmental Phenomena	Test Specification	Units	Performance Criterion
Voltage Dips	>95 0.5	% Reduction period	B
	30 25	% Reduction period	C
Voltage Interruptions	>95 250	% Reduction period	C

Performance criterion: B, C, C

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

13.4. EUT Configuration on Test

The configuration of EUT is the same as used in conducted emission test.
Please refer to Section 2.10.

13.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.10 except the test set up replaced as Section 13.1.

13.6. Test Procedure

- 1) Set up the EUT and test generator as shown on section 13.1
- 2) The interruption is introduced at selected phase angles with specified duration. There is a 3mins minimum interval between each test event.
- 3) After each test a full functional check is performed before the next test.
- 4) Repeat procedures 2 & 3 for voltage dips, only the level and duration is changed.
- 5) Record any degradation of performance.

13.7. Test Result

PASS

Please refer to the following page.

Test Power:AC 230V, 50Hz				
Voltage (% Reduction)	Duration (Period)	Performance Criterion	Observation	Test Result
0	0.5	B	B	PASS
70	25	C	C	PASS
0	250	C	C	PASS

NOTE: A. There was no change compared with initial operation during and after the test.

No unintentional response was found during the test.

B. The function stopped during the test, but can be recoverable by itself operation after the test.

C. The function stopped during the test, but can be recoverable manually after the test.

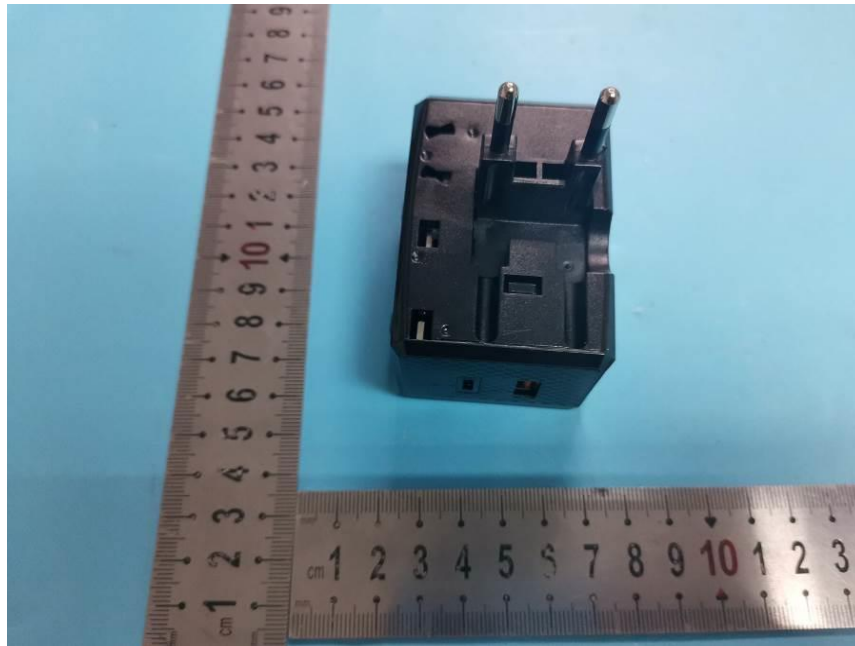
14. EUT PHOTOGRAPHS

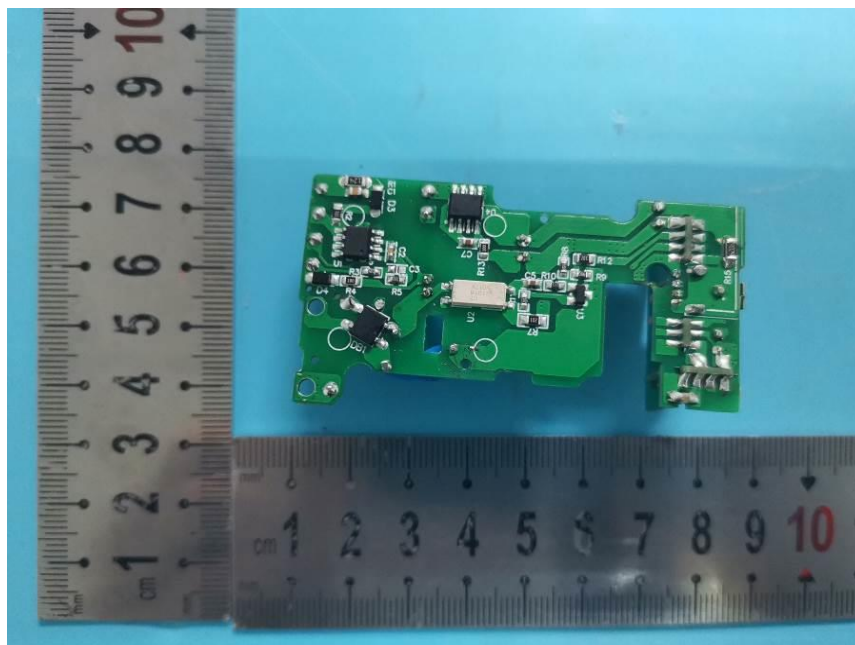
EUT Photo 1



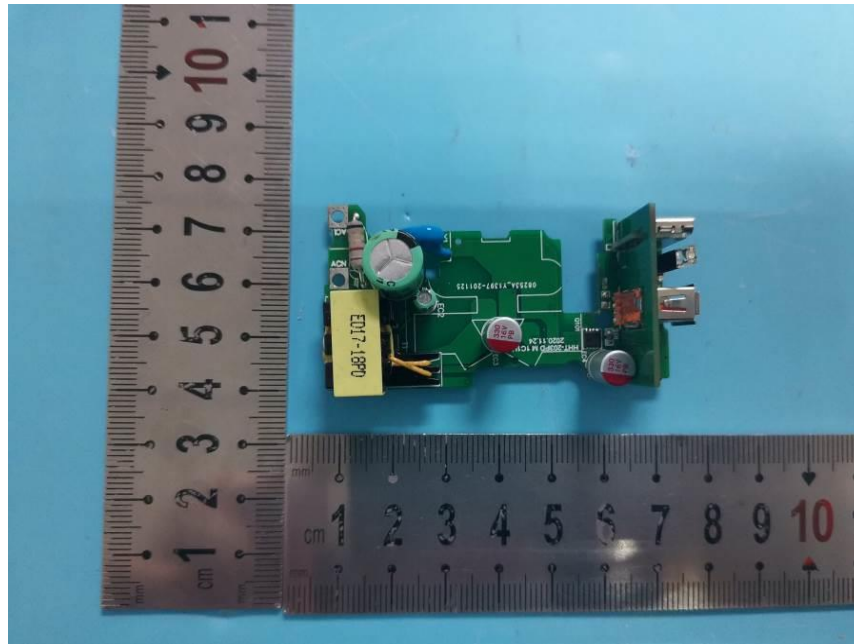
EUT Photo 2



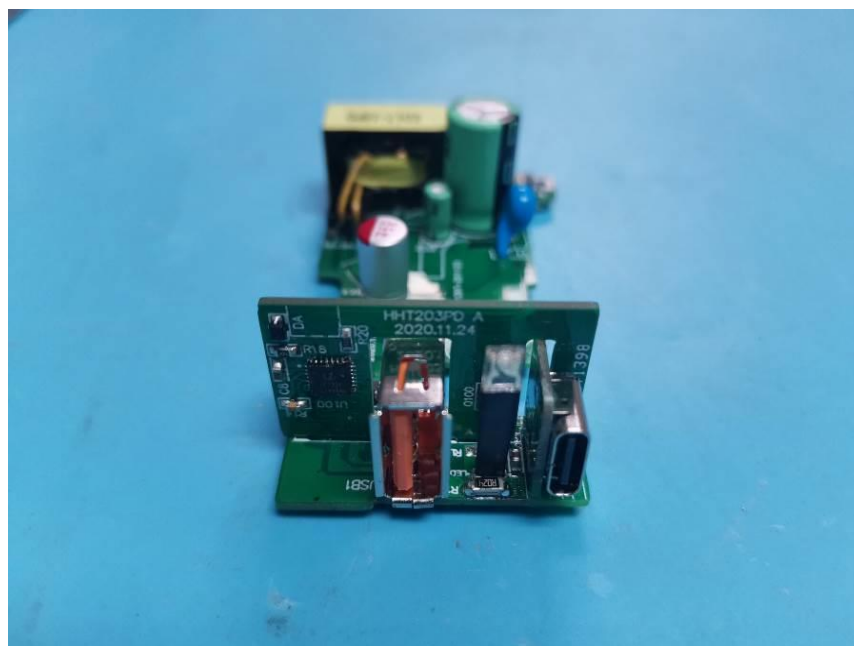
EUT Photo 3**EUT Photo 4**

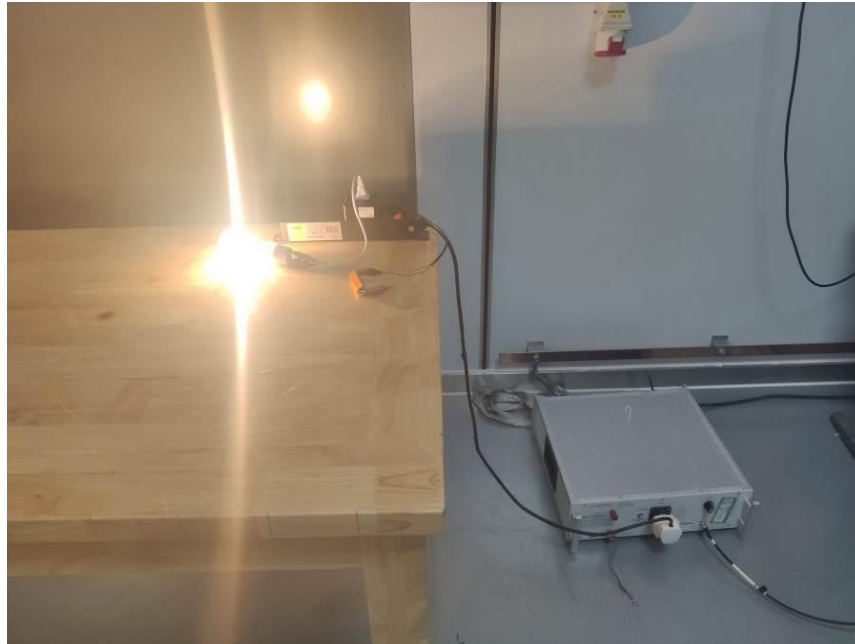
EUT Photo 5**EUT Photo 6**

EUT Photo 7



EUT Photo 8



EUT Photo 9**EUT Photo 10**

***** END OF REPORT *****