

EN 55032: 2015+A11: 2020
EN 55035: 2017+A11: 2020
EN IEC 61000-3-2: 2019
EN 61000-3-3: 2013+A1: 2019

Test Report For

Full Strike Ltd.

Room 16C Wenwei Building, No. 322 Fuhua Road Futian Dist., Shenzhen, 518026 PRC.

Product Name:	Digital to Stereo Audio Converter
Model/Type No.:	MD121CV
Prepared By:	Shenzhen Hongcai Testing Technology Co., Ltd. Building B, Tianji Industrial Park, Floor 1&2&3 No.30-9 Laiyin Road, Xinsheng Community, Longgang Street, Longgang District, Shenzhen, Guangdong, China. Tel: 0755-84616666 Service Tel: 400-0066-989
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1- GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

Client Information

Applicant:	Full Strike Ltd.
Address of applicant:	Room 16C Wenwei Building, No. 322 Fuhua Road Futian Dist., Shenzhen, 518026 PRC.
Manufacturer:	Full Strike Ltd.
Address of Manufacturer:	No. 123 Building A, Investment & Venture Center, Jinhui West Road, Yinzhou Dist., Ningbo City, Zhejiang Provice, China

General Description of E.U.T

EUT Name:	Digital to Stereo Audio Converter
Trade Mark:	N/A
Model No.:	MD121CV
Test Model No.:	MD121CV
Operating Mode:	Mode1: Wroking
Power Supply:	AC adaptor Input: 100-240V~, 50/60Hz, 0.3A Output: DC5.0V --- 1.0A Digital to Stereo Audio Converter Input: DC5.0V --- 0.6A
Product Class:	<input type="checkbox"/> Class A, apply to Class A limits <input checked="" type="checkbox"/> Class B, apply to Class B limits

Remark:

- * The test data gathered are from the production sample provided by the manufacturer.
- * Supplementary models have the same circuit, but with different appearance.

1.2 Test Standards

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

EN 55032: 2015+A11:2020

EN 55035: 2017+A11:2020

EN IEC 61000-3-2:2019

EN 61000-3-3:2013+A1:2019

Reference Standards:

EN 61000-4-2:2009

EN 61000-4-3:2006+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

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

1.3 Test Summary

For the EUT described above. The standards used were EN 55032 Class B for Emissions & EN 55035 for Immunity.

According to the “Table 1 – Required highest frequency for radiated measurement “ of EN 55032: 2015+A11: 2020

Table 1 – Required highest frequency for radiated measurement

Highest internal frequency (F_x)	Highest measured frequency
$F_x \leq 108$ MHz	1 GHz
108 MHz $< F_x \leq 500$ MHz	2 GHz
500 MHz $< F_x \leq 1$ GHz	5 GHz
$F_x > 1$ GHz	$5 \times F_x$ up to a maximum of 6 GHz

NOTE 1 For FM and TV broadcast receivers, F_x is determined from the highest frequency generated or used excluding the local oscillator and tuned frequencies.

NOTE 2 F_x is defined in 3.1.18.

NOTE 3 For outdoor units of home satellite receiving systems highest measured frequency shall be 18 GHz.

Where F_x is unknown, the radiated emission measurements shall be performed up to 6 GHz.

The Highest Internal Frequency Source of EUT is More than 108MHz, then:

Table 1: Tests Carried Out Under EN 55032: 2015+A11: 2020

Standard	Test Items	Status
EN 55032: 2015+A11: 2020	Conducted Disturbance at The Mains Terminals (150KHz to 30MHz)	☒
	Disturbance Voltage at The Antenna Terminal	☐
	Conducted Disturbance at The Telecommunication Ports	☐
	Radiated Disturbances (30MHz to 1000MHz)	☒
	Radiated Disturbances (1GHz to 6GHz)	☒

Table 2: Tests Carried Out Under EN IEC 61000-3-2: 2019/ EN 61000-3-3: 2013+A1: 2019

Standard	Test Items	Status
EN IEC 61000-3-2:2019	Harmonic Current Test	☒
EN 61000-3-3:2013+A1:2019	Voltage Fluctuations and Flicker Test	☒

Table 3: Tests Carried Out Under EN 55035: 2017+A11: 2020

Standard	Test Items	Status
EN 55035: 2017+A11: 2020	Test items as below listed	☒
EN 61000-4-2:2009	Electrostatic discharge Immunity	☒
EN 61000-4-3:2006+A2:2010*	Radiated Susceptibility (80~1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz)	☒
EN 61000-4-4:2012	Electrical Fast Transient/Burst Immunity	☒
EN 61000-4-5:2014+A1:2017	Surge Immunity	☒
EN 61000-4-6:2014+AC:2015	Conducted Susceptibility (150kHz to 80MHz)	☒
EN 61000-4-8:2010	Power Frequency Magnetic Field Immunity (50/60Hz)	☒
EN 61000-4-11:2004+A1:2017	Voltage Dips, Short Interruptions Immunity	☒
EN 61000-4-6	Broadband impulse noise disturbances, repetitive	N/A(1)
EN 61000-4-6	Broadband impulse noise disturbances, isolated	N/A(1)

Note: ☒ Indicates that the test is applicable, ☐ Indicates that the test is not applicable
(1) Not applicable, Applicable only to CPE xDSL ports.

1.4 Test Facility

The measurement Radiated Susceptibility (80~1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz) was performed at Waltek Testing Group (Shenzhen) Co., Ltd. at 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

Other measurement required was performed at Building B, Tianji Industrial Park, Floor 1&2&3 No.30-9 Laiyin Road, Xinsheng Community, Longgang Street, Longgang District, Shenzhen, Guangdong, China.

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 normal operation.

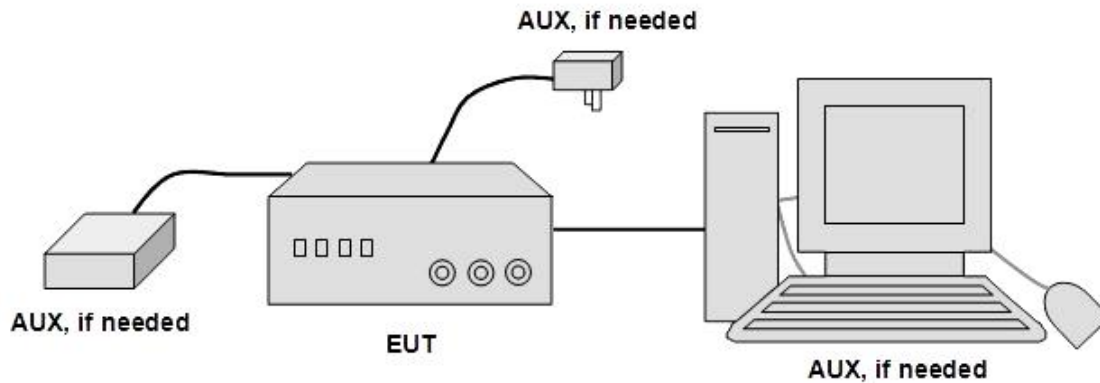
2.3 Equipment Modifications

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.



2.5 General Description of Test Auxiliary

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/
/	/	/	/

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
Loudspeaker box	/	/	/
DVD	SHENZHEN GIEC E	BDP-G4350	/

3- CONDUCTED DISTURBANCE AT THE MAINS TERMINALS

3.1 Measurement Uncertainty

Test Site: Shielding Room

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Measurement Uncertainty:

As shown in the table above our conducted emissions U_{lab} is less than the corresponding U_{CISPR} .

Measurement	Frequency Range	Expanded Uncertainty (k=2)	U _{cispr}
AC Line Conducted Emissions	150 kHz - 30 MHz	2.7 dB	3.4dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 32 and CISPR 11 (for 2006 and later revisions) Clause 11.

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	66~56	56~46
0.500~5.000	56	46
5.000~30.00	60	50

NOTE 1: The tighter limit shall apply at the edge between two frequency bands.

NOTE 2: The limits decrease linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

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 dB μ V of specification limits). Quasi-peak readings are distinguished with a "QP". Average readings are distinguished with a "AV".

3.6 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	LG/EMC-05-001	EMI Test Receiver	R&S	ESCI 3	100687	2021-03-30	2022-03-29
2	LG/EMC-05-003	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	8128249	2021-03-31	2022-03-30
3	LG/EMC-05-002	10dB attenuator	SCHWARZBECK	9561-F061	8360009	2021-03-30	2022-03-29
Software List							
Description		Manufacturer		Model		Version	
Test Software		Farad		EZ-EMC		EMEC-3A1	
*Remark: indicates software version used in the compliance certification testing							

3.7 Corrected Amplitude & Margin Calculation

Sample Calculations:

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where NF = Net Reading in dB μ V

RF = Reading from receiver in dB μ V

LF = LISN or ISN Correction Factor in dB

CF = Cable Correction Factor in dB

AF = Attenuator Loss Factor in dB

To convert from dB μ V to μ V or mV the following was used: $UF = 10(NF / 20)$

where UF = Net Reading in μ V

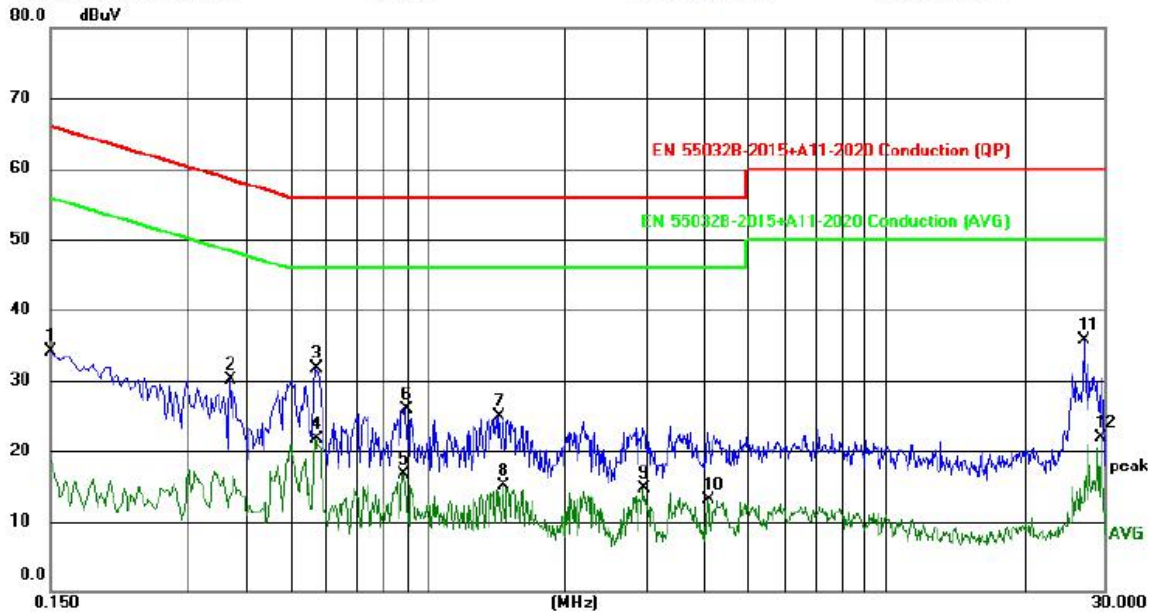
NF = Net Reading in dB μ V

3.8 Test Data And Test Result

Temperature:	24 (°C)
Humidity:	55(%RH)
Atmospheric pressure:	101 (kPa)
Operating Mode:	Mode1
Test Result:	Pass

Conducted Emission Test

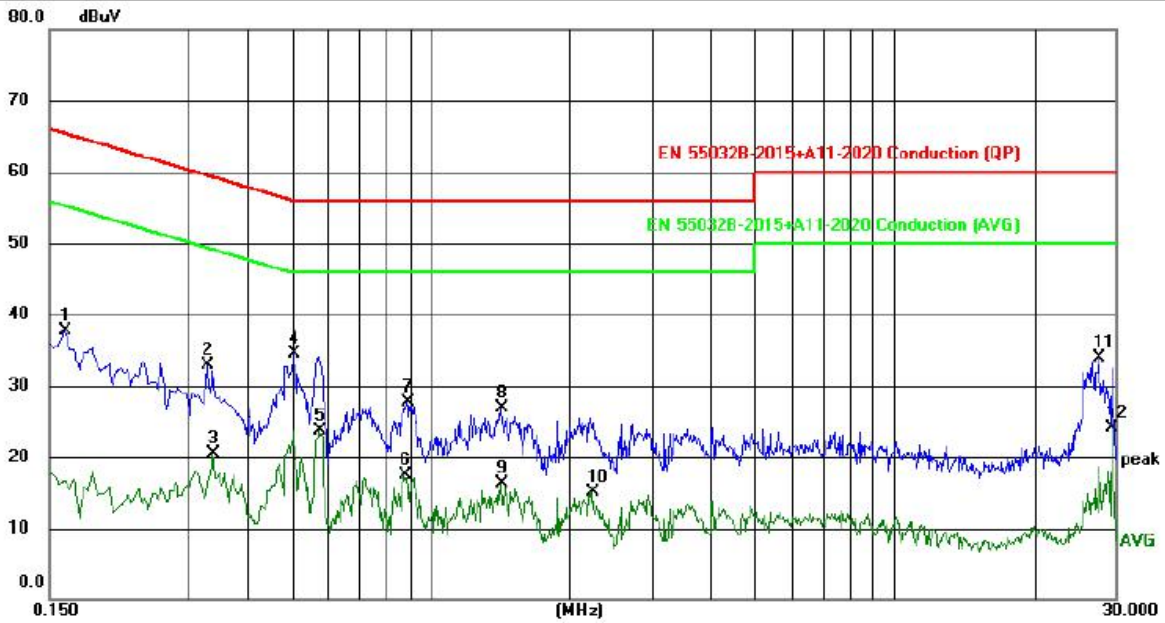
EUT:	Digital to Stereo Audio Converter
M/N:	MD121CV
Operating Mode:	Mode1
Test Site:	Shielded Room
Operator:	He ZhiJie
Test Voltage:	DC5V From Adapter
Comment:	Live Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1500	24.89	9.29	34.18	66.00	-31.82	QP	
2		0.3700	20.25	9.87	30.12	58.50	-28.38	QP	
3	*	0.5700	21.70	9.91	31.61	56.00	-24.39	QP	
4		0.5700	11.70	9.91	21.61	46.00	-24.39	AVG	
5		0.8820	6.68	10.05	16.73	46.00	-29.27	AVG	
6		0.8980	15.91	10.05	25.96	56.00	-30.04	QP	
7		1.4260	14.60	10.28	24.88	56.00	-31.12	QP	
8		1.4620	4.83	10.34	15.17	46.00	-30.83	AVG	
9		2.9500	4.15	10.50	14.65	46.00	-31.35	AVG	
10		4.0900	2.88	10.21	13.09	46.00	-32.91	AVG	
11		27.0460	24.58	11.03	35.61	60.00	-24.39	QP	
12		29.4860	10.77	11.05	21.82	50.00	-28.18	AVG	

Conducted Emission Test

EUT:	Digital to Stereo Audio Converter
M/N:	MD121CV
Operating Mode:	Mode1
Test Site:	Shielded Room
Operator:	He ZhiJie
Test Voltage:	DC5V From Adapter
Comment:	Neutral Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1620	28.04	9.67	37.71	65.36	-27.65	QP	
2		0.3300	22.77	10.13	32.90	59.45	-26.55	QP	
3		0.3379	10.33	10.11	20.44	49.25	-28.81	AVG	
4	*	0.5060	24.48	10.08	34.56	56.00	-21.44	QP	
5		0.5740	13.59	10.12	23.71	46.00	-22.29	AVG	
6		0.8780	7.30	10.25	17.55	46.00	-28.45	AVG	
7		0.8860	17.38	10.25	27.63	56.00	-28.37	QP	
8		1.4140	16.49	10.40	26.89	56.00	-29.11	QP	
9		1.4140	5.88	10.40	16.28	46.00	-29.72	AVG	
10		2.2260	4.78	10.41	15.19	46.00	-30.81	AVG	
11		27.6020	22.74	11.18	33.92	60.00	-26.08	QP	
12		29.4900	12.95	11.22	24.17	50.00	-25.83	AVG	

4- RADIATED DISTURBANCES

4.1 Measurement Uncertainty

Test Site: 3m SAC

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 as below table.

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucisprr
Radiated Emissions, 3m	30-1000MHz	4.5 dB	6.3 dB

As shown in the table above our radiated emissions U_{lab} is less than the corresponding U_{CISPR} reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 32 and CISPR 11 (for 2006 and later revisions) Clause 11.

4.2 Limit of Radiated Disturbances

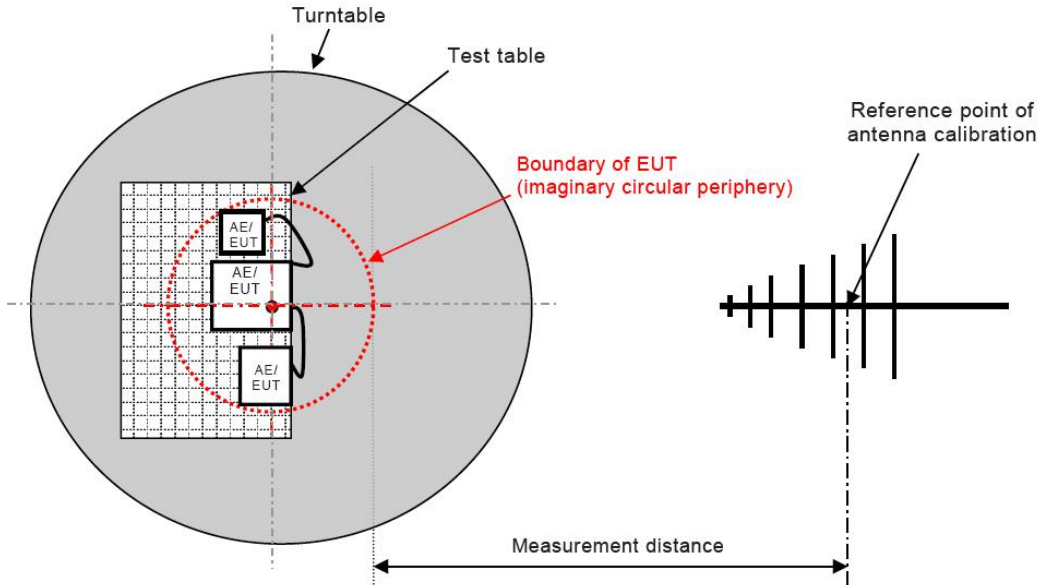
Below 1GHz Class B Equipment Limits		
Frequency (MHz)	Distance (Meters)	Quasi-Peak (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

NOTE 1: The lower limit shall apply at the transition frequency.
 NOTE 2 : Additional provisions may be required for cases where interference occurs.

Above 1GHz Class B Equipment Limits			
Frequency (GHz)	Distance (Meters)	Average (dB μ V/m)	Peak (dB μ V/m)
1 ~ 3	3	50	70
3 ~ 6	3	54	74

NOTE 1 The lower limit shall apply at the transition frequency.

4.3 EUT Setup



The Radiated Emission Test Data of Below 1GHz s were performed in the open area 3-meter test site, using the setup accordance with the CISPR 16-1-1: 2019, CISPR 16-2-3: 2016+A1:2019. The specification used was EN 55032 Class B 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

According to EN 55032:2015+A11:2020 rules, the frequency was investigated from 30 to 1000 MHz. During the Radiated Emission Test Data of Below 1GHz , the test receiver was set with the following configurations:

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 dB μ V of specification limits), and are distinguished with a "QP" in the data table.

4.6 Corrected Amplitude & Margin Calculation

Sample Calculation:

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where FS = Field Strength in dB μ V/m
 RA = Receiver Amplitude (including preamplifier) in dB μ V
 CF = Cable Attenuation Factor in dB
 AF = Antenna Factor in dB
 AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added.

The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in V/m.

RA = 52.0
 dB μ V AF = 7.4
 dB/m
 CF = 1.6 dB
 AG = 29.0 dB
 FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used: $UF = 10^{(NF / 20)}$
where $UF = \text{Net Reading in } \mu\text{V}$
 $NF = \text{Net Reading in dB}\mu\text{V}$

4.7 Test Equipment List and Details

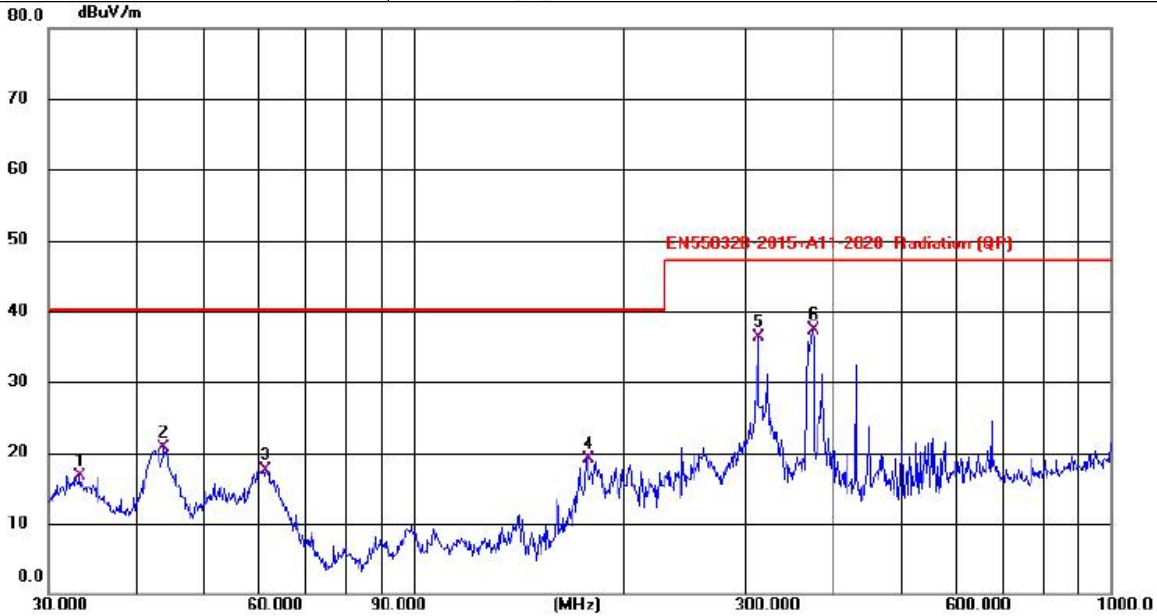
No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	LG/EMC-02-001	EMI Test Receiver	R&S	ESPI7	100097	2021-05-27	2022-05-26
2	LG/EMC-02-007	Broadband Logarithmic Period Antenna	SCHWARZBECK	VULB 9162	/	2019-08-08	2022-08-07
3	LG/EMC-02-004	Broadband preamplifier	SCHWARZBECK	9718-182	9718-182	2021-03-31	2022-03-30
4	LG/EMC-02-005	Preamplifier	Agilent	8447D	1937A02492	2021-05-28	2022-05-27
Software List							
Description		Manufacturer		Model		Version	
Test Software		Farad		EZ-EMC		EMEC-3A1	
*Remark: indicates software version used in the compliance certification testing							

4.8 Test Data And Test Result

Temperature:	24 (°C)
Humidity:	55(%RH)
Atmospheric pressure:	101 (kPa)
Operating Mode:	Mode1
Test Result:	Pass

Radiated Emission Test Data of Below 1GHz

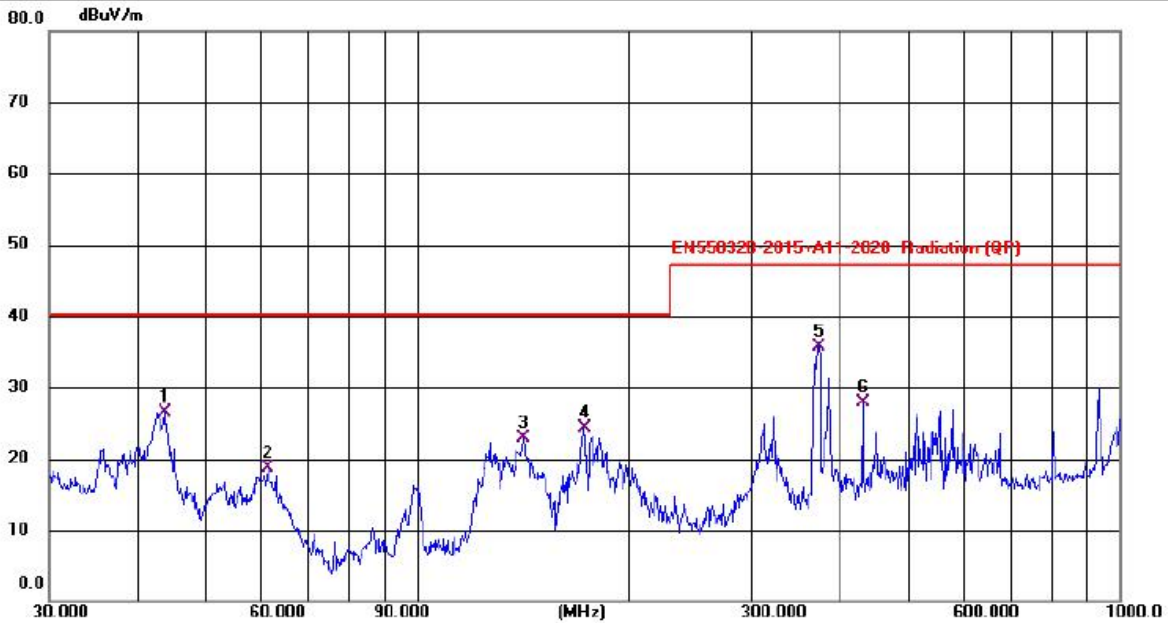
EUT:	Digital to Stereo Audio Converter
M/N:	MD121CV
Operating Mode:	Mode1
Test Site:	3m CHAMBER
Operator:	Su Xin
Test Voltage:	DC5V From Adapter
Comment:	Polarization: Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		33.2112	31.50	-14.86	16.64	40.00	23.36	QP	
2		43.9658	37.74	-16.97	20.77	40.00	19.23	QP	
3		61.3463	31.58	-13.98	17.60	40.00	22.40	QP	
4		177.5092	42.68	-23.64	19.04	40.00	20.96	QP	
5		312.1794	55.61	-19.35	36.26	47.00	10.74	QP	
6	*	373.3112	55.88	-18.48	37.40	47.00	9.60	QP	

Radiated Emission Test Data of Below 1GHz

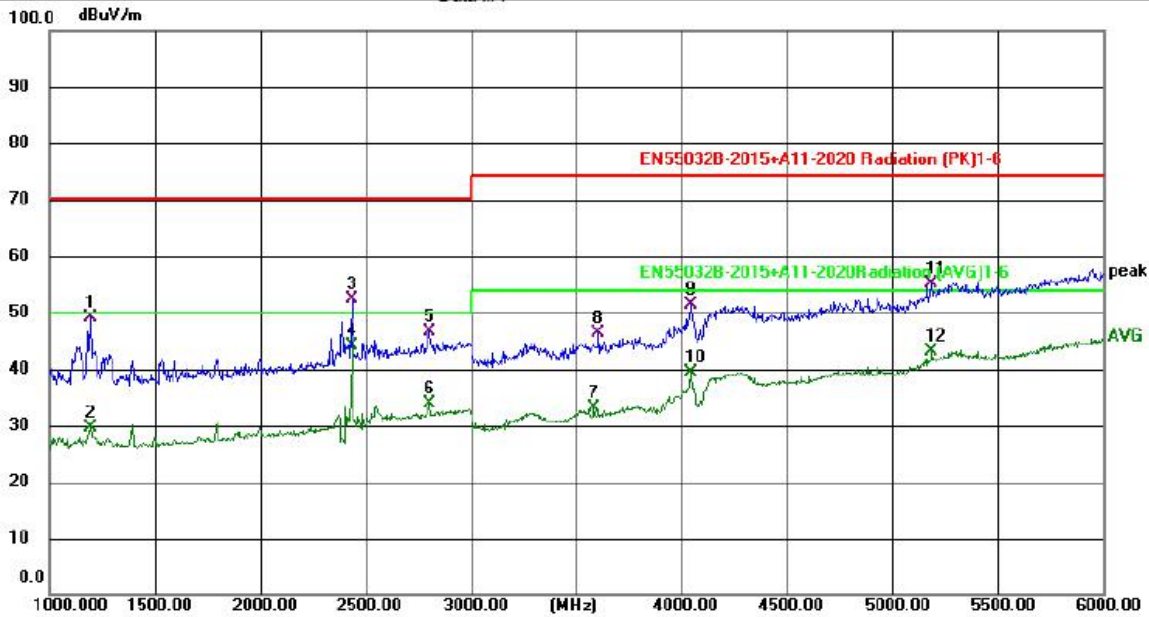
EUT:	Digital to Stereo Audio Converter
M/N:	MD121CV
Operating Mode:	Mode1
Test Site:	3m CHAMBER
Operator:	Su Xin
Test Voltage:	DC5V From Adapter
Comment:	Polarization: Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		43.8119	43.53	-16.98	26.55	40.00	13.45	QP	
2		61.3463	32.68	-13.98	18.70	40.00	21.30	QP	
3		141.8262	47.64	-24.68	22.96	40.00	17.04	QP	
4		172.5988	48.18	-23.90	24.28	40.00	15.72	QP	
5	*	373.3112	54.20	-18.48	35.72	47.00	11.28	QP	
6		431.0316	45.81	-17.81	28.00	47.00	19.00	QP	

Radiated Emission Test Data of Above 1GHz

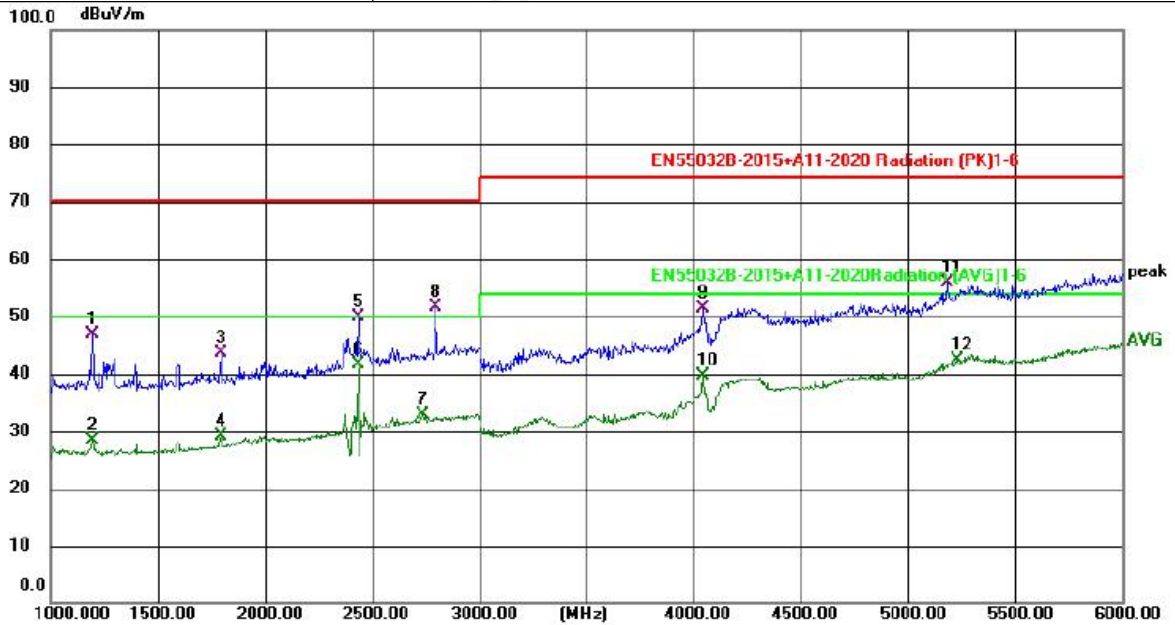
EUT:	Digital to Stereo Audio Converter
M/N:	MD121CV
Operating Mode:	Mode1
Test Site:	3m CHAMBER
Operator:	Su Xin
Test Voltage:	DC5V From Adapter
Comment:	Polarization: Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1195.000	64.00	-14.79	49.21	70.00	20.79	QP	
2		1195.000	44.33	-14.79	29.54	50.00	20.46	AVG	
3		2435.000	63.54	-11.17	52.37	70.00	17.63	QP	
4	*	2435.000	55.19	-11.17	44.02	50.00	5.98	AVG	
5		2800.000	54.72	-8.12	46.60	70.00	23.40	QP	
6		2800.000	42.00	-8.12	33.88	50.00	16.12	AVG	
7		3585.000	37.50	-4.48	33.02	54.00	20.98	AVG	
8		3605.000	50.70	-4.35	46.35	74.00	27.65	QP	
9		4040.000	46.81	4.60	51.41	74.00	22.59	QP	
10		4040.000	34.88	4.60	39.48	54.00	14.52	AVG	
11		5185.000	51.00	4.07	55.07	74.00	18.93	QP	
12		5185.000	38.95	4.07	43.02	54.00	10.98	AVG	

Radiated Emission Test Data of Above 1GHz

EUT:	Digital to Stereo Audio Converter
M/N:	MD121CV
Operating Mode:	Mode1
Test Site:	3m CHAMBER
Operator:	Su Xin
Test Voltage:	DC5V From Adapter
Comment:	Polarization: Vertical



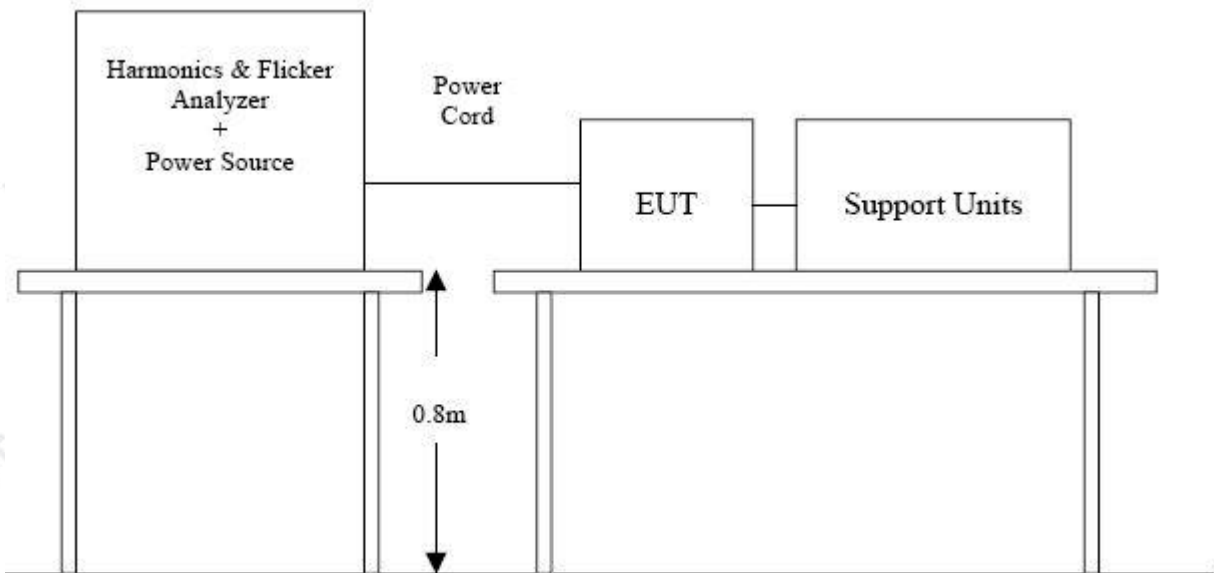
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		1195.000	61.71	-14.79	46.92	70.00	23.08	QP	
2		1195.000	43.18	-14.79	28.39	50.00	21.61	AVG	
3		1795.000	56.76	-13.06	43.70	70.00	26.30	QP	
4		1795.000	42.07	-13.06	29.01	50.00	20.99	AVG	
5		2435.000	61.01	-11.17	49.84	70.00	20.16	QP	
6	*	2435.000	52.80	-11.17	41.63	50.00	8.37	AVG	
7		2735.000	41.63	-8.75	32.88	50.00	17.12	AVG	
8		2795.000	59.88	-8.16	51.72	70.00	18.28	QP	
9		4040.000	46.68	4.60	51.28	74.00	22.72	QP	
10		4040.000	34.98	4.60	39.58	54.00	14.42	AVG	
11		5180.000	51.86	4.04	55.90	74.00	18.10	QP	
12		5230.000	38.03	4.28	42.31	54.00	11.69	AVG	

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.

5.4 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	LG/EMC-14-001	HARMONICS&FLICKER ANALYSER	VOLTECH	PM6000	20000670043 3	2021-05-28	2022-05-27
2	LG/EMC-14-002	Linear power supply	VOLTECH	AFC-150	/	2021-06-11	2022-06-10

5.5 Test Data And Test Result

Basic Standard:	EN IEC 61000-3-2:2019
Observation time	150s
Windows width:	10 periods - (EN 61000-4-7 Edition 2000)
Temperature:	23.6 (°C)
Humidity:	55 (%RH)
Atmospheric pressure:	101.1 (kPa)
Operating Mode:	Mode1
Operator:	Wu ZhiHan
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 EN IEC 61000-3-2:2019 without test.

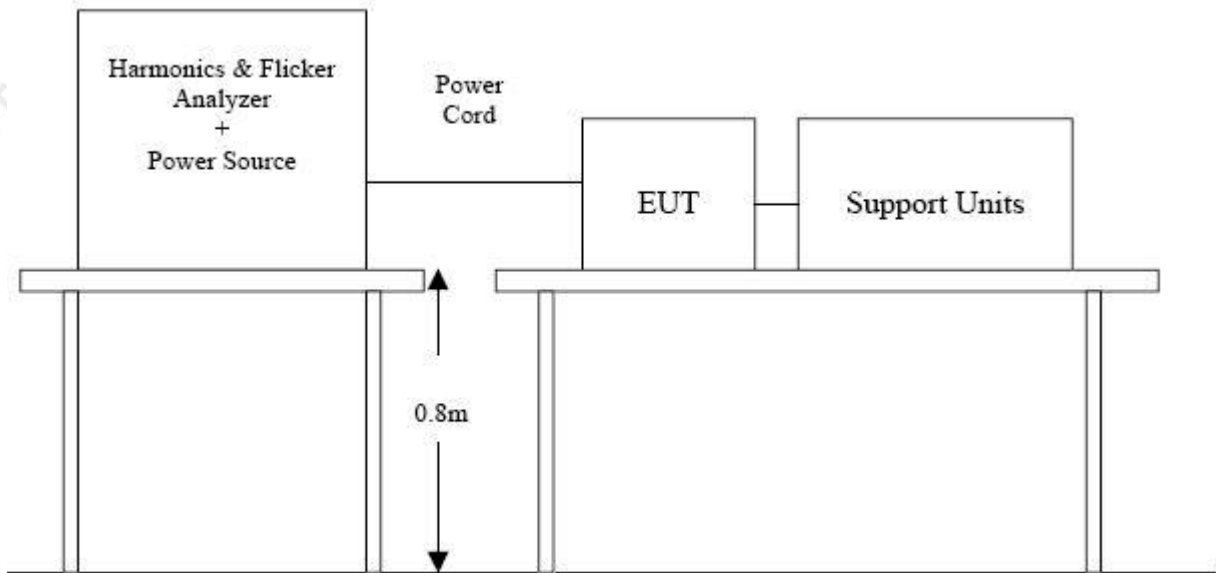
6 – VOLTAGE FLUCTUATIONS AND FLICKER TEST

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:



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	LG/EMC-14-001	HARMONICS&FLICKER ANALYSER	VOLTECH	PM6000	200006700433	2021-05-28	2022-05-27
2	LG/EMC-14-002	Linear power supply	VOLTECH	AFC-150	/	2021-06-11	2022-06-10

6.5 Test Data And Test Result

Basic Standard:	EN 61000-3-3:2013+A1:2019
Short time (Pst)	10 min
Observation time	10 min (1 Flicker measurement)
Temperature:	23.6(°C)
Humidity:	55 (%RH)
Atmospheric pressure:	101.1 (kPa)
Operating Mode:	Mode1
Operator:	Wu ZhiHan
Test Result:	Pass

Maximum Flicker results			
Test Item	EUT values	Limit	Result
Pst	0.087	1.000	PASS
dc [%]	0.005	3.300	PASS
dmax [%]	0.217	4.000	PASS
dt [ms]	0	500	PASS

7- IMMUNITY TEST DESCRIPTION

7.1 General Description

Product Standard	EN 55035	
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: 80~1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz, 3V/m, 80% AM (1kHz), Performance Criterion A
	EN 61000-4-4	Electrical Fast Transient/Burst - EFT, Power line: ±1kV, Signal line: ±0.5kV, 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: ±0.5kV, Performance Criterion B
	EN 61000-4-6	Conducted Radio Frequency Disturbances Test – CS: The frequency range is swept from 0.150MHz to 10MHz using 3V signal level; 10MHz to 30MHz using 3V to 1V signal level; 30MHz to 80MHz using 1V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave, Performance Criterion A
	EN 61000-4-8	Power Frequency Magnetic Field Tests: 1 A/m, 50/60Hz, X,Y,Z orientation, Performance Criterion A
	EN 61000-4-11	Voltage Dips: 1) 0% residual for 0.5 cycle, Performance Criterion B 2) 70% residual for 25/30 cycles for 50/60Hz, Performance Criterion C Voltage Interruptions: 0% residual for 250/300 cycles for 50/60Hz, Performance Criterion C

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 from the apparatus if used as intended.

7.3 Deviations from the standard

No deviations from EN 55032/EN 55035 were made when performing the tests described in this report.

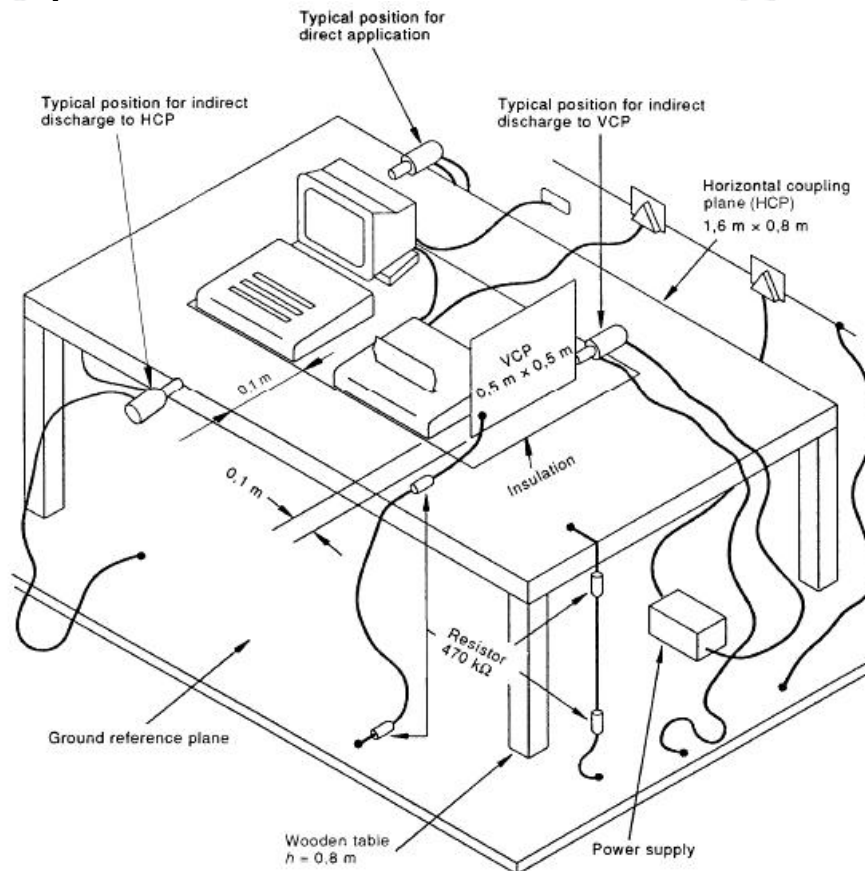
8- IMMUNITY TEST RESULTS

8.1 Electrostatic Discharge Immunity Test

8.1.1 Test Specification

Basic Standard:	EN 61000-4-2:2009
Test Level:	± 2, 4, 8 kV (Air Discharge) ± 4 kV (Contact Discharge) ± 4 kV (Indirect Contact HCP) ± 4 kV (Indirect Contact VCP)
Temperature:	23.6 (°C)
Humidity:	55 (%RH)
Atmospheric pressure:	101.1 (kPa)
Operating Mode:	Mode1
Operator:	Wu ZhiHan

8.1.2 Test Setup



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 normal operation.
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	LG/EMC-07-001	Electrostatic Discharge Simulator	TESEQ	NSG437	125	2021-05-20	2022-05-19

8.1.5 Performance Criterion Required & Test Result

Passed Not Applicable

Table 1: Electrostatic Discharge Immunity (Air Discharge)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SPDIF	A	B
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	DC Port	A	B

Table 2: Electrostatic Discharge Immunity (Direct Contact)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Shell	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Earphone	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Output(R/L)	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	COAXIAL	A	B

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Front Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Back Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Left Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Right Side	A	B

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

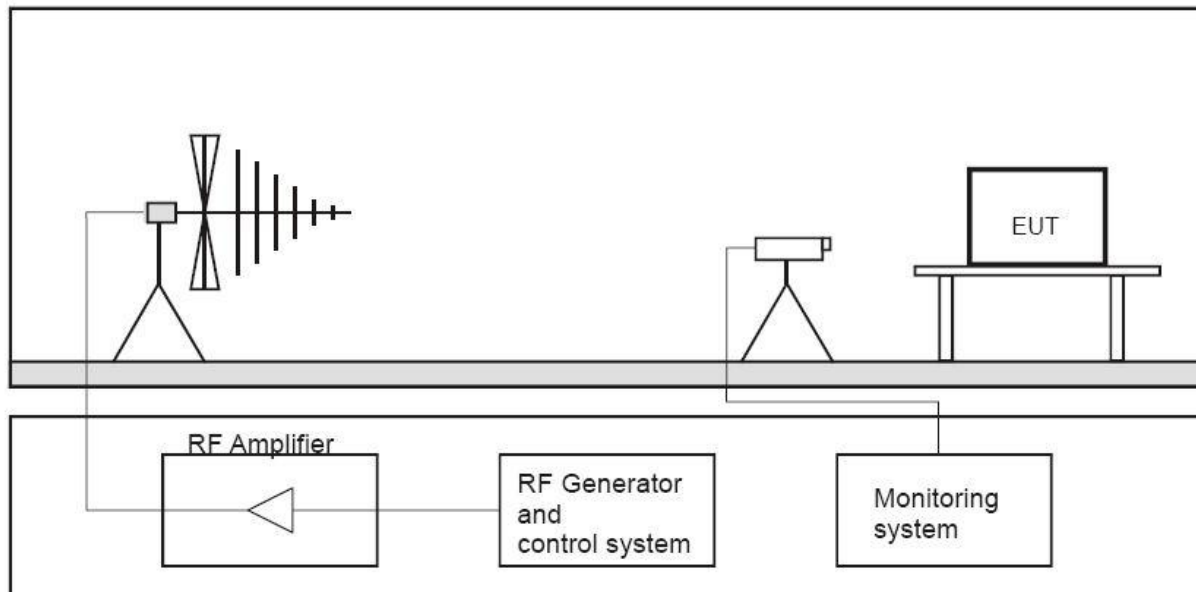
Test Level			Test Points	Observation Performance	Criterion Required
±2 kV	±4kV	±8kV			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Front Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Back Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Left Side	A	B
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Right Side	A	B

8.2 Radiated Susceptibility Test

8.2.1 Test Specification

Basic Standard:	EN 61000-4-3:2006+A2:2010
Frequency Range:	80~1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz
Modulation:	Amplitude 80%, 1kHz sinewave
Test Level:	3V/m
Temperature:	23.6 (°C)
Humidity:	55 (%RH)
Atmospheric pressure:	101.1 (kPa)
Operating Mode:	Mode1
Operator:	Harris Pan

9.2.2 Test Setup



8.2.3 Test Procedure

1. The testing was performed in a fully-anechoic chamber.
2. The frequency range is swept from 80~1000MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz, 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 3V/m.
5. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

8.2.4 Test Equipment List and Details

No.	Equipment	Manufacturer	Model No.	S/N	Calibration Date	Next Calibration Date
1	Signal Generator	HP	8688B	3438A00604	2021-03-30	2022-03-29
2	Power Meter	KEITHLEY	3500	1162591	2021-03-27	2022-03-26
3	Power Meter	KEITHLEY	3500	1121428	2021-03-27	2022-03-26
4	RF Power Amplifier	Mico Top	MPA-80-1000-250	MPA1906239	2021-03-27	2022-03-26
5	RF Power Amplifier	Mico Top	MPA-80-1000-100	MPA1906238	2021-03-27	2022-03-26
6	Antenna	SCHWARZBECK	STLP 9129	9129 114	N/A	N/A

8.2.5 Performance Criterion Required & Test Result

Passed Not Applicable

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

Frequency Band (MHz)	Test Level	Test Points	Observation Performance	Criterion Required
1800	3V/m	Front Side	A	A
1800	3V/m	Rear Side	A	A
1800	3V/m	Left Side	A	A
1800	3V/m	Right Side	A	A

Frequency Band (MHz)	Test Level	Test Points	Observation Performance	Criterion Required
2600	3V/m	Front Side	A	A
2600	3V/m	Rear Side	A	A
2600	3V/m	Left Side	A	A
2600	3V/m	Right Side	A	A

Frequency Band (MHz)	Test Level	Test Points	Observation Performance	Criterion Required
3500	3V/m	Front Side	A	A
3500	3V/m	Rear Side	A	A
3500	3V/m	Left Side	A	A
3500	3V/m	Right Side	A	A

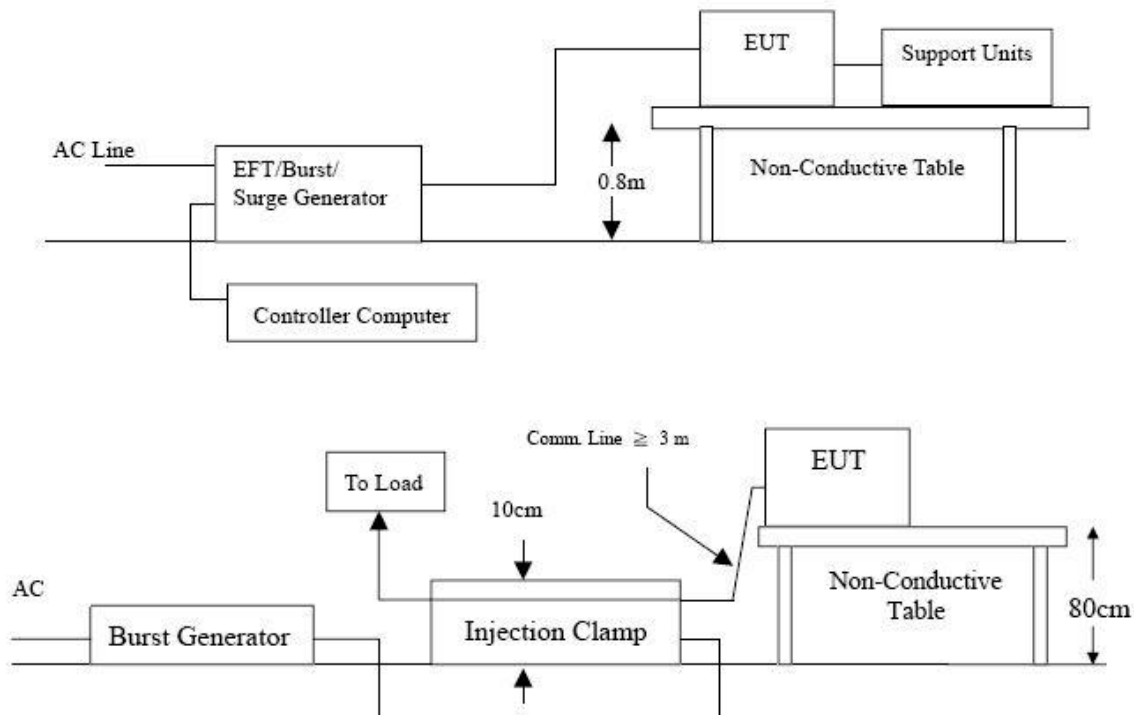
Frequency Band (MHz)	Test Level	Test Points	Observation Performance	Criterion Required
5000	3V/m	Front Side	A	A
5000	3V/m	Rear Side	A	A
5000	3V/m	Left Side	A	A
5000	3V/m	Right Side	A	A

8.3 Electrical Fast Transient/Burst Immunity Test

8.3.1 Test Specification

Basic Standard :	EN 61000-4-4:2012
Test Level:	±1 kV for AC Power Line ±0.5 kV for Communication Line (If applicable)
Impulse Frequency:	5kHz
Impulse Wave-shape:	5/50ns
Burst Duration:	15ms
Burst Period:	300ms
Test Duration:	1 min.
Temperature:	23.6 (°C)
Humidity:	55 (%RH)
Atmospheric pressure:	101 (kPa)
Operating Mode:	Mode1
Operator:	Wu ZhiHan

8.3.2 Test Setup



8.3.3 Test Procedure

- Both positive and negative polarity discharges were applied.
- The length of the “hot wire” from the coaxial output of the EFT generator to the terminals on the EUT should be 0.5m.
- 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	LG/EMC-08-001	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2021-05-28	2022-05-27
2	LG/EMC-08-002	Capacitive Coupling Clamp	/	CDN8014	25096	2021-05-28	2022-05-27

8.3.5 Performance Criterion Required & Test Result

Passed Not Applicable

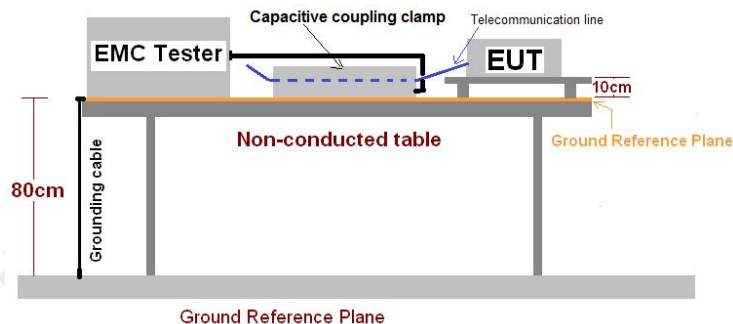
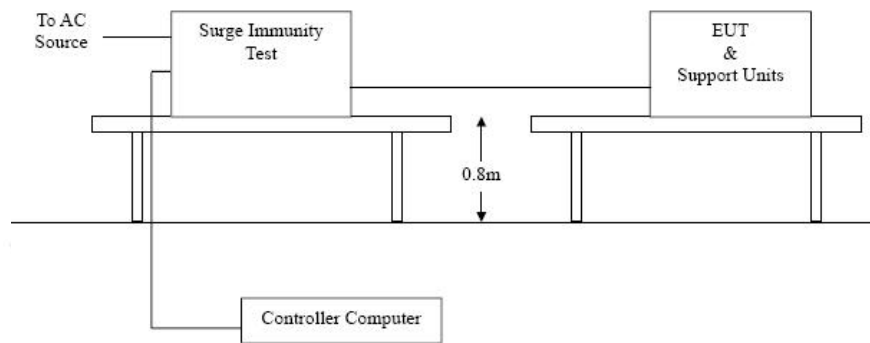
Voltage	Test Points	Observation Performance	Criterion Required
±1kV	L	A	B
±1kV	N	A	B
±1kV	Earth	/	/
±1kV	L+N	A	B
±1kV	L + Earth	/	/
±1kV	N + Earth	/	/
±1kV	L+N+Earth	/	/
±0.5kV	Control Line	/	/
±0.5kV	DSL (RJ11)	/	/
±0.5kV	LAN (RJ45)	/	/

8.4 Surge Immunity Test

8.4.1 Test Specification

Basic Standard :	EN 61000-4-5:2014+A1:2017
Test Level:	± 0.5, 1 kV (Line to Line) for AC Power Line ±0.5, 1, 2 kV (Line(s) to Ground) for AC Power Line ± 0.5 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:	90°/270°
Pulse Repetition Rate:	1 time / min
Number of Tests:	5 positive and 5 negative at selected points
Temperature:	23.6 (°C)
Humidity:	55 (%RH)
Atmospheric pressure:	101.1 (kPa)
Operating Mode:	Mode1
Operator:	Wu ZhiHan

8.4.2 Test Setup



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.

8.4.4 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	LG/EMC-12-001	10KV/Telecom Surge Generator	Lioncel	LSG-510CB	/	2021-03-30	2022-03-29
2	LG/EMC-12-002	10KV/Telecom Surge Generator	Lioncel	LSG-506CT	/	2021-03-30	2022-03-29
3	LG/EMC-12-003	Surge	Lioncel	FHR-T82	/	2021-03-30	2022-03-29
4	LG/EMC-12-004	Surge	Lioncel	CN533P	/	2021-03-30	2022-03-29

8.4.5 Performance Criterion Required & Test Result

- Passed Not Applicable

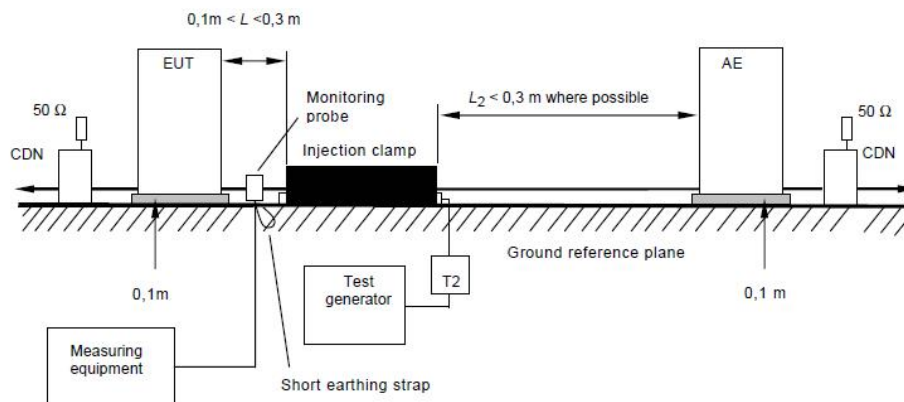
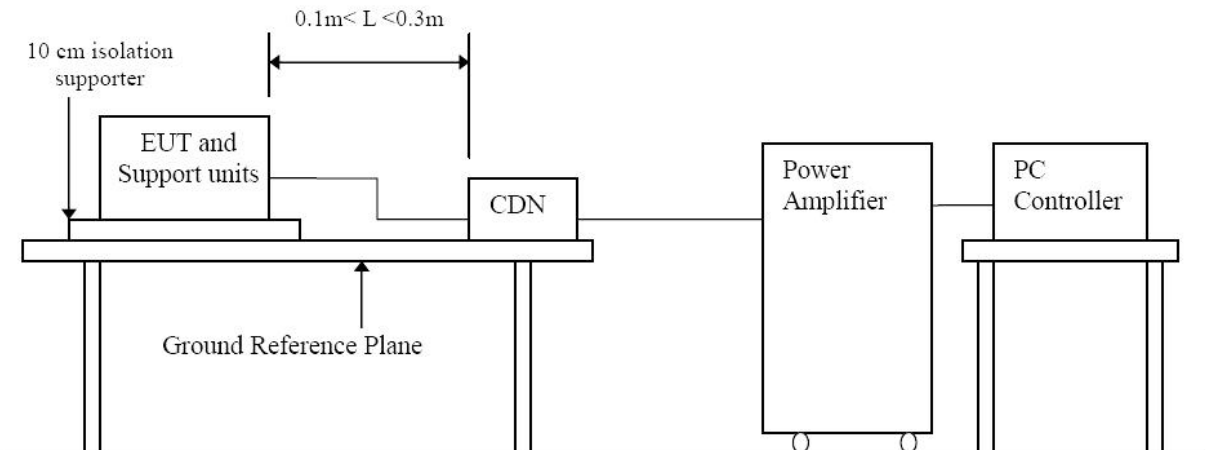
Voltage	Test Points	Observation Performance	Criterion Required
±0.5kV	L-N	/	/
±1kV	L-N	A	B
±2kV	L- Earth, N- Earth	/	/
±0.5kV	Control Line	/	/
±0.5kV	DSL (RJ11)	/	/
±0.5kV	LAN (RJ45)	/	/

8.5 Conducted Susceptibility Test

8.5.1 Test Specification

Basic Standard:	EN 61000-4-6:2014+AC:2015
Test Level:	0.15~10MHz:3Vr.m.s 10MHz~30MHz: 3Vr.m.s. to 1Vr.m.s. 30~80MHz: 1Vr.m.s
Frequency Range:	0.15~80MHz (MHz)
Modulation:	Amplitude 80%, 1kHz sinewave
Frequency Step:	1 % of preceding frequency value
Temperature:	23.6 (°C)
Humidity:	55 (%RH)
Atmospheric pressure:	101.1 (kPa)
Operating Mode:	Mode1
Operator:	Wu ZhiHan

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 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	LG/EMC-09-001	RF POWER AMPLIFIER	FRANKONIA	FLL-75	1020A1109	2021-05-28	2022-05-27
2	LG/EMC-09-002	CDN	FRANKONIA	CDN M2+M3	A3027019	2021-03-31	2022-03-30
3	LG/EMC-09-003	6DB Attenuator	FRANKONIA	\	1001698	2021-03-31	2022-03-30
4	LG/EMC-09-004	EM Injection clamp	FCC	F-203L-23mm	091536	2021-06-02	2022-06-01

8.5.5 Performance Criterion Required & Test Result

Passed Not Applicable

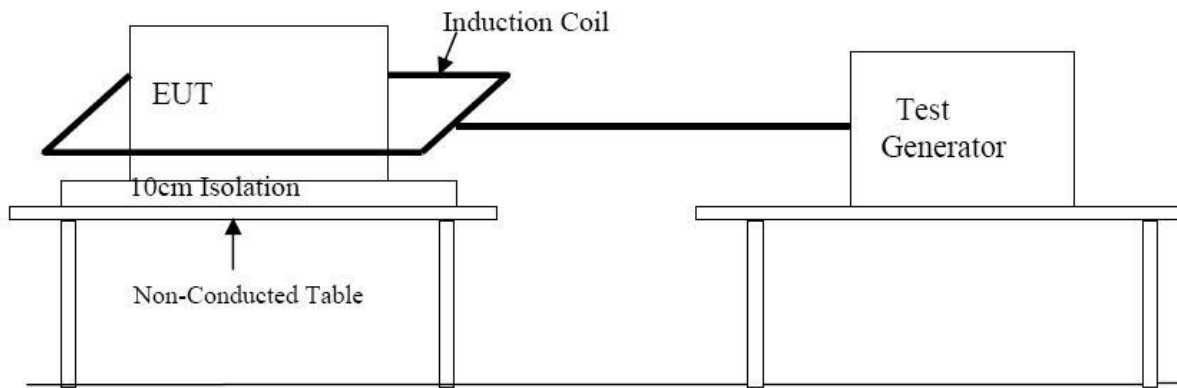
Frequency Band (MHz)	Voltage (Vrms)	Test Points	Observation Performance	Criterion Required
0.15-10	3	L-N	A	A
10-30	3 to 1	L-N	A	A
30-80	1	L-N	A	A
0.15-10	3	LAN (RJ45)	/	/
10-30	3 to 1	LAN (RJ45)	/	/
30-80	1	LAN (RJ45)	/	/
0.15-10	3	HDMI	/	/
10-30	3 to 1	HDMI	/	/
30-80	1	HDMI	/	/
0.15-10	3	USB	/	/
10-30	3 to 1	USB	/	/
30-80	1	USB	/	/

8.6 Power Frequency Magnetic Field Immunity Tests

8.6.1 Test Specification

Basic Standard:	EN 61000-4-8:2010
Test Level:	1 A/m
Orientation:	X,Y,Z
Temperature:	23.6 (°C)
Humidity:	55 (%RH)
Atmospheric pressure:	101.1 (kPa)
Operating Mode:	Mode1
Operator:	Wu ZhiHan

9.6.2 Test Setup



8.6.3 Test Procedure

1. The EUT and its load are placed on a table that is 0.8 meter above the metal ground plane dimension is at least 1 meter x 1 meter. The test magnetic field shall be placed at least than 3 meter distance from the induction coil.
2. The test magnetic field shall be applied by the immersion method to the EUT. The induction coil shall be rotated by 90° in order to expose the EUT to the test field with different orientation (X, Y, Z orientation).

8.6.4 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	LG/EMC-10-001	Power Frequency Magnetic Field Generator	EVERFINE	EMS61000-8K	608002	2021-03-29	2022-03-28

8.6.5 Performance Criterion Required & Test Result

Passed Not Applicable

Frequency (Hz)	Voltage (A/m)	Test Orientation	Observation Performance	Criterion Required
50	1	X	A	A
50	1	Y	A	A
50	1	Z	A	A

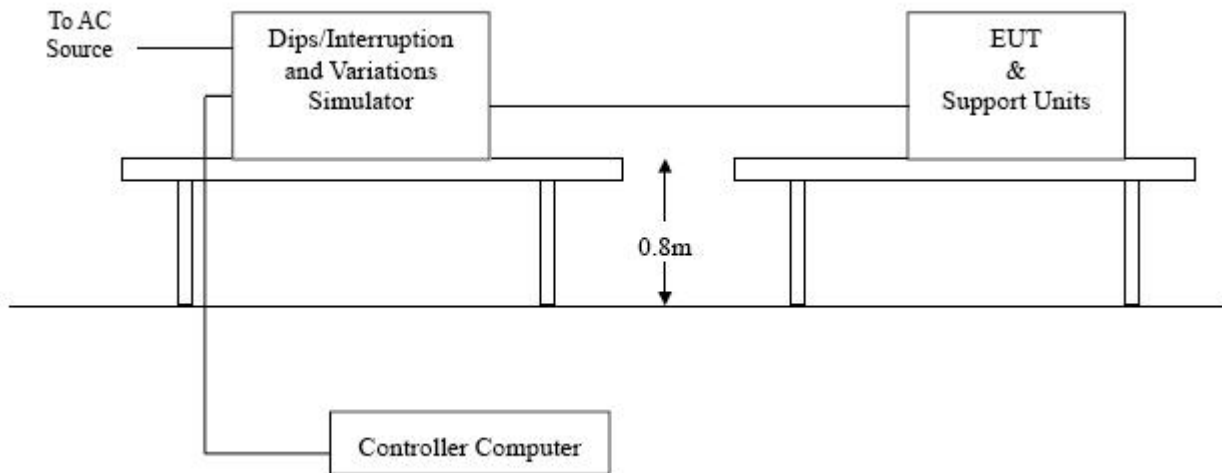
Frequency (Hz)	Voltage (A/m)	Test Orientation	Observation Performance	Criterion Required
60	1	X	A	A
60	1	Y	A	A
60	1	Z	A	A

8.7 Voltage Dips, Short Interruptions Immunity Tests

8.7.1 Test Specification

Basic Standard:	EN 61000-4-11:2004+A1:2017
Test Level:	Voltage Dips: 1) 0% residual voltage for 0.5 cycle, 2) 70% residual voltage for 25/30 cycles for 50/60Hz. Voltage Interruptions: 0% residual voltage for 250/300 cycles for 50/60Hz.
Interval between event:	10 seconds
Phase Angle:	0°/90°/270°
Test cycle:	3 times
Temperature:	23.6 (°C)
Humidity:	55 (%RH)
Atmospheric pressure:	101.1 (kPa)
Operating Mode:	Mode1
Operator:	Wu ZhiHan

8.7.2 Test Setup



8.7.3 Test Procedure

The EUT was tested for each selected combination of test levels and duration with a sequence of 3 dips/interruptions with intervals of 10s (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

8.7.4 Test Equipment List and Details

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	LG/EMC-15-001	Surge/Dips Generator	Thermo Scientific	TRA2000	0902262	2021-03-30	2022-03-29

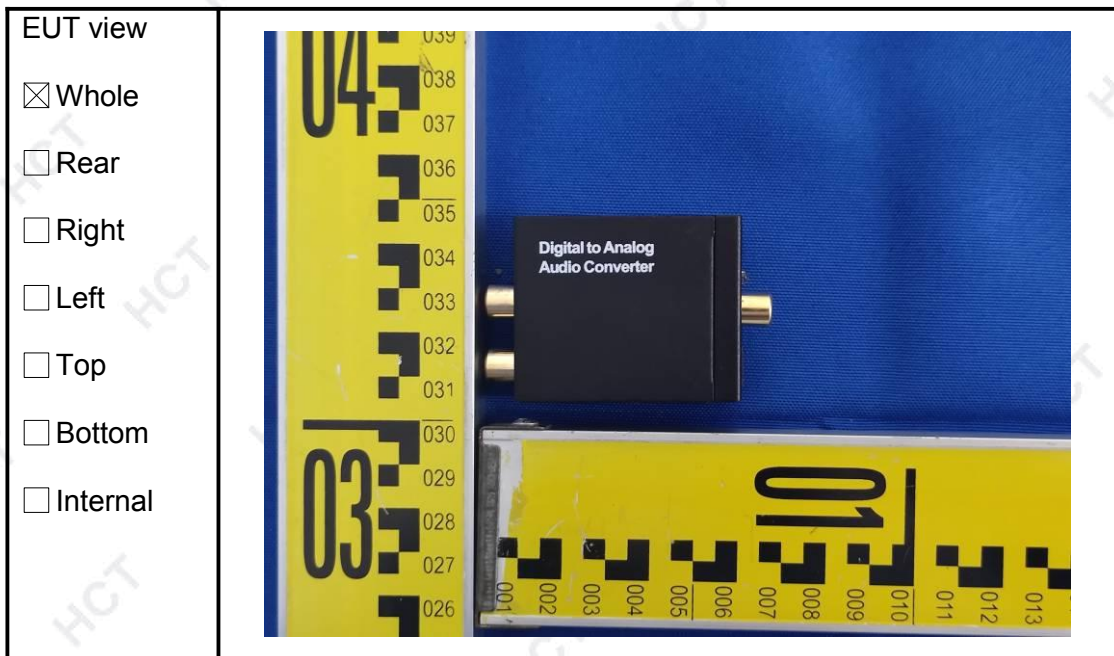
8.7.5 Performance Criterion Required & Test Result

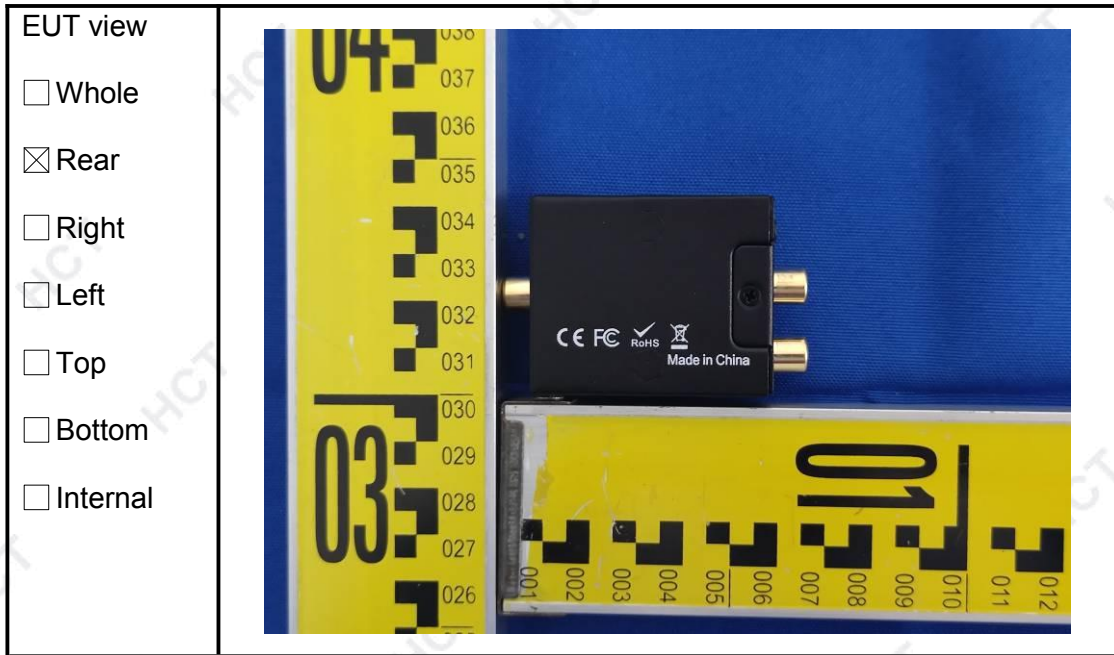
Passed Not Applicable

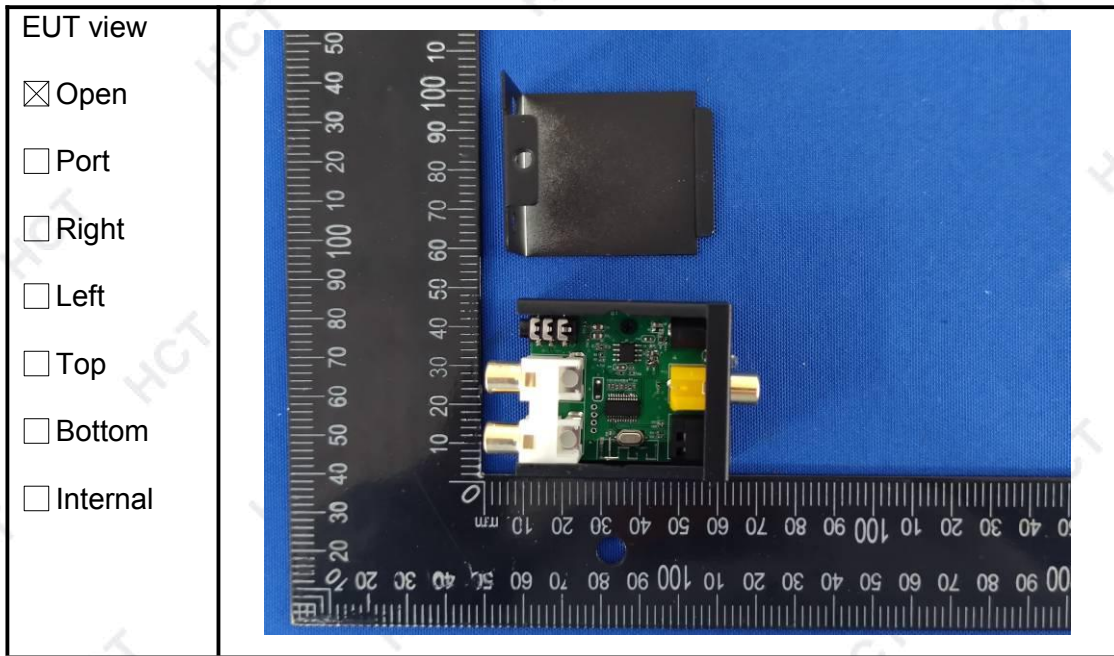
Ut: 230V AC, 50Hz			
Voltage (% Residual)	Duration (Period)	Observation Performance	Criterion Required
0	0.5	A	B
70	25	A	C
0	250	B	C

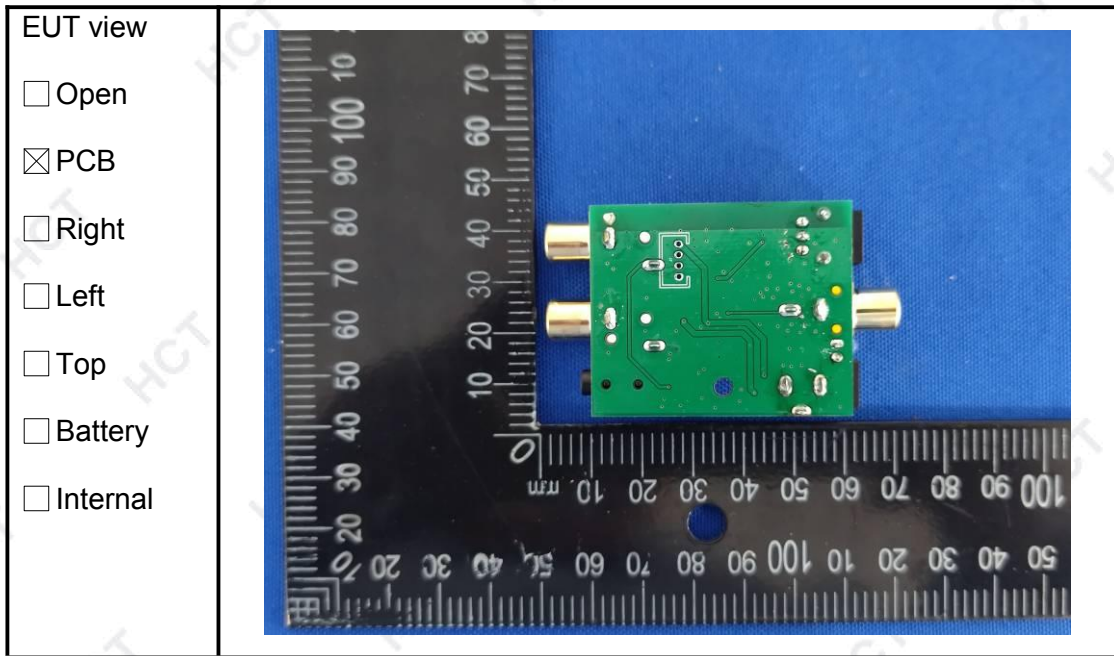
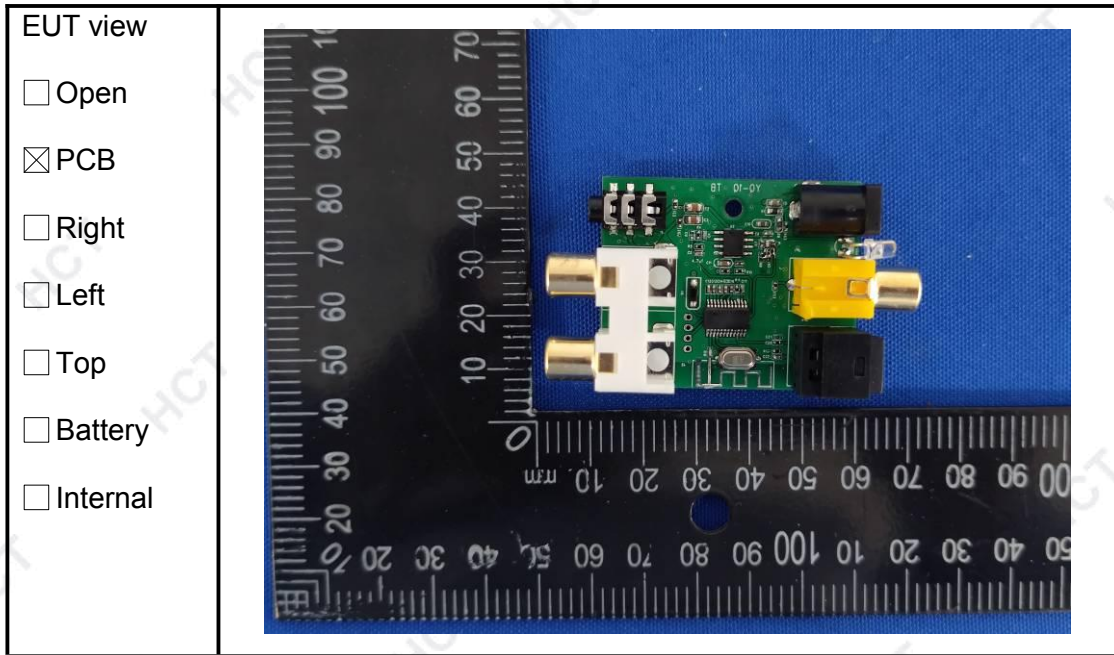
Ut: 230V AC, 60Hz			
Voltage (% Residual)	Duration (Period)	Observation Performance	Criterion Required
0	0.5	A	B
70	30	A	C
0	300	B	C

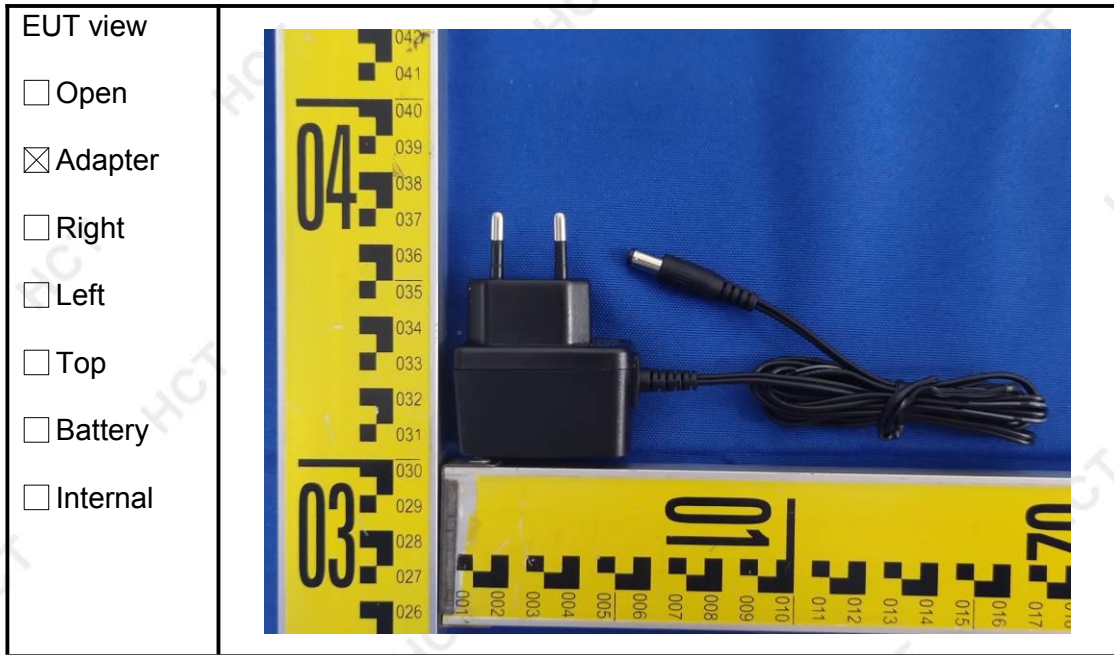
APPENDIX A - EUT PHOTOGRAPHS











APPENDIX B - TEST SETUP PHOTOGRAPHS

Conducted Disturbance at The Mains Terminals



Radiated Disturbance of Below 1G



Radiated Disturbance of Above 1G



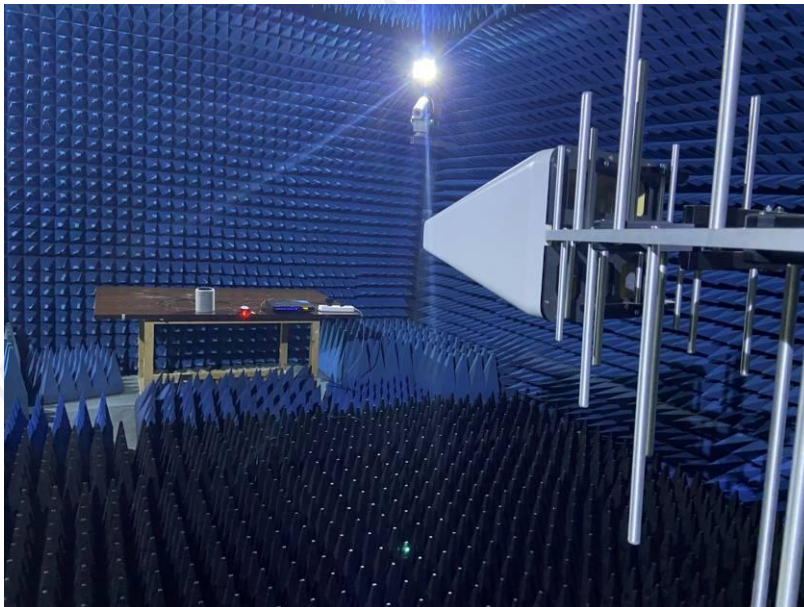
Harmonic Current / Voltage Fluctuations and Flicker Test



Electrostatic Discharge Immunity Test



Radiated Susceptibility



Electrical Fast Transient Immunity Test



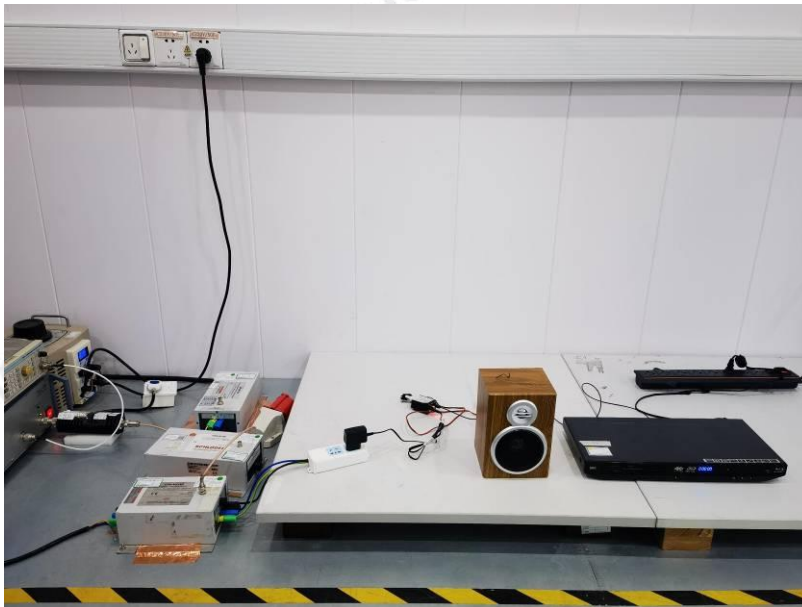
Voltage Dips and Interruptions Immunity Test



Surge Immunity Test



Conducted Susceptibility Test



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1. This report is considered invalid without approved signature and special;
2. The Applicant name and Address, the sample(s) and sample information was/were provided by the applicant who should be responsible for the authenticity which HCT hasn't verified;
3. The result(s) shown in this report refer(s) only to the sample(s) tested;
4. Without written approval of HCT, this report can't be reproduced except in full.

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