EMC TEST REPORT

For

Wenzhou Zhaokang Electronic Technology Co., Ltd

Product Name	:	Multi functional cooking machine
Trademark	:	Jau Kang
Model Number	:	ZKL-001 ZKL-002,ZKL-003,ZKL-004,ZKL-005,ZKL-006, ZKL-007,ZKL-008
Prepared For	:	Wenzhou Zhaokang Electronic Technology Co., Ltd
Address	:	A05, Shuiting Industrial Zone, Kunshan Town, Pingyang County, Wenzhou City, Zhejiang Province, China
Report No.	:	LST240298014ER
Testing laboratory	:	Shenzhen LST Technology Co., Ltd.
Address	:	Huichao Building, Yintian Industry zone, Bao'an District, Shenzhen, Guangdong P.R. China

TABLE OF CONTENT

Applicant	:	Wenzhou Zhaokang Electronic Technology Co., Ltd
Address	:	A05, Shuiting Industrial Zone, Kunshan Town, Pingyang County, Wenzhou City, Zhejiang Province, China
Manufacturer	:	Wenzhou Zhaokang Electronic Technology Co., Ltd
Address	:	A05, Shuiting Industrial Zone, Kunshan Town, Pingyang County, Wenzhou City, Zhejiang Province, China
EUT	:	Multi functional cooking machine
Model Number	:	ZKL-001
Trademark:	:	Jau Kang
Test Date	:	Feb. 22, 2024 – Feb. 27, 2024
Date of Report	:	Feb. 27, 2024
Test Result:	:	The equipment under test was found to be compliance with the requirements of the standards applied.

Test Procedure Used:

EMI : EN IEC 55014-1:2021
EN IEC 61000-3-2:2019+A1:2021
EN 61000-3-3:2013+A1:2019+A2:2021

EMS : EN IEC 55014-2:2021
EN 61000-4-2:2009, EN IEC 61000-4-3:2020,
EN 61000-4-4:2012, EN 61000-4-5:2014+A1:2017,
EN IEC 61000-4-6:2023, EN IEC 61000-4-11:2020

Prepared by(Engineer):

Reviewer(Supervisor):

Approved(Manager):

SHENZHEN LST TECHNOLOGY CO.,LTD. LST

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 : Multi functional cooking machine

Trademark : Jau Kang

Model Number : ZKL-001

Power Supply : Input: 5V⎓ 1A
Battery: DC 3.7V

1.2. Tested System Details

N/A

1.3. Test Uncertainty

Conducted Emission Uncertainty : ±2.66dB

Radiated Emission Uncertainty : ±4.26dB

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

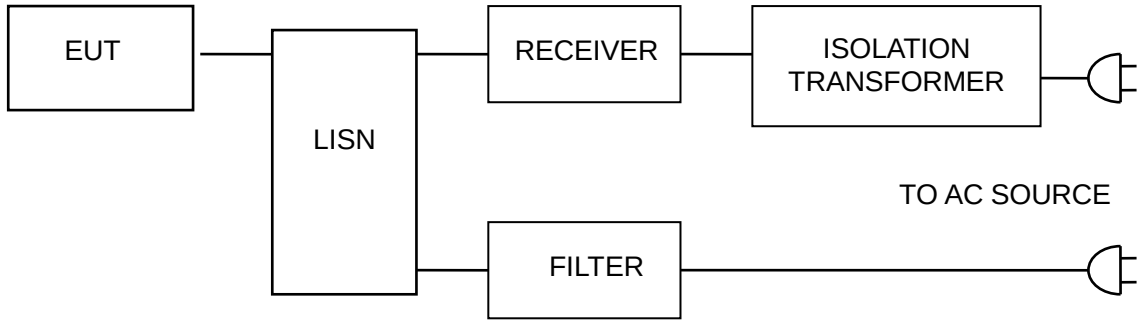
2. TEST INSTRUMENT USED

Conducted Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 22, 2023	Jul. 21, 2024
RF Switching Unit	Compliance Direction SystemsInc	RSU-A4	34403	Jul. 22, 2023	Jul. 21, 2024
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 22, 2023	Jul. 21, 2024
LISN	Rohde & Schwarz	ENV216	101131	Jul. 22, 2023	Jul. 21, 2024
Radiation Emission Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 22, 2023	Jul. 21, 2024
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 22, 2023	Jul. 21, 2024
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 20, 2023	Mar.19,2024
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 19, 2023	Mar.18,2024
Pre-amplifier	Sonoma	310N	185903	Mar. 20, 2023	Mar.19,2024
Pre-amplifier	HP	8449B	3008A00849	Mar. 26, 2023	Mar.25,2024
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 26, 2023	Mar.25,2024
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, 2023	Jul. 21, 2024
5K VA AC Power Source	CI	500liX	59468	Jul. 22, 2023	Jul. 21, 2024
Discharge Immunity Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
ESD Generator	HAFELY	PESD 1610	H808671	Mar.18, 2023	Mar.17,2024

Radiated Immunity Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
Signal Generator	Rohde & Schwarz	SMT03	200754	Mar. 26, 2023	Mar.25,2024
Power Meter	Rohde & Schwarz	NRVD	110562	Feb. 26, 2024	Feb.25,2025
Voltage Probe	Rohde & Schwarz	URV5-Z2	12056	Feb. 26, 2024	Feb.25,2025
Voltage Probe	Rohde & Schwarz	URV5-Z2	12074	Feb. 26, 2024	Feb.25,2025
RF Amplifier	AR	50S1G4A	326720	Feb. 26, 2024	Feb.25,2025
Bilog Antenna	ETS	3142C	00047662	Feb. 26, 2024	Feb.25,2025
Horn Antenna	ARA	DRG-118A	16554	Feb. 26, 2024	Feb.25,2025
Audio Analyzer	Rohde & Schwarz	UPL 16	SB2208	Feb. 26, 2024	Feb.25,2025
Sound Level Calibrator	B&K	4231	264516	Feb. 26, 2024	Feb.25,2025
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, 2023	Jul. 21, 2024
Auto-transformer	EMTEST	V4780S2	0109-41	Jul. 22, 2023	Jul. 21, 2024
Coupling Clamp	EMTEST	HFK	1109-04	Jul. 22, 2023	Jul. 21, 2024
Conducted Immunity Test					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Last Cal.**	**Cal.Due Date**
RF Generator	FRANKONIA	CIT-10/75	126B1126	Jul. 22, 2023	Jul. 21, 2024
6dB Attenuator	FRANKONIA	59-6-33	A413	Jul. 22, 2023	Jul. 21, 2024
M-CDN	LUTHI	L-801 M2/M3	2599	Jul. 22, 2023	Jul. 21, 2024
AF2-CDN	LUTHI	L-801:AF2	2538	Mar.19, 2023	Mar.18,2024
EM Injection Clamp	LUTHI	EM101	35958	Jul. 22, 2023	Jul. 21, 2024

3. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

3.1. Block Diagram Of Test Setup



3.2. Test Standard

EN IEC 55014-1:2021

3.3. Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	59 ~ 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 IEC 55014-1 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 IEC 55014-1 regulations during conducted emission test.

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

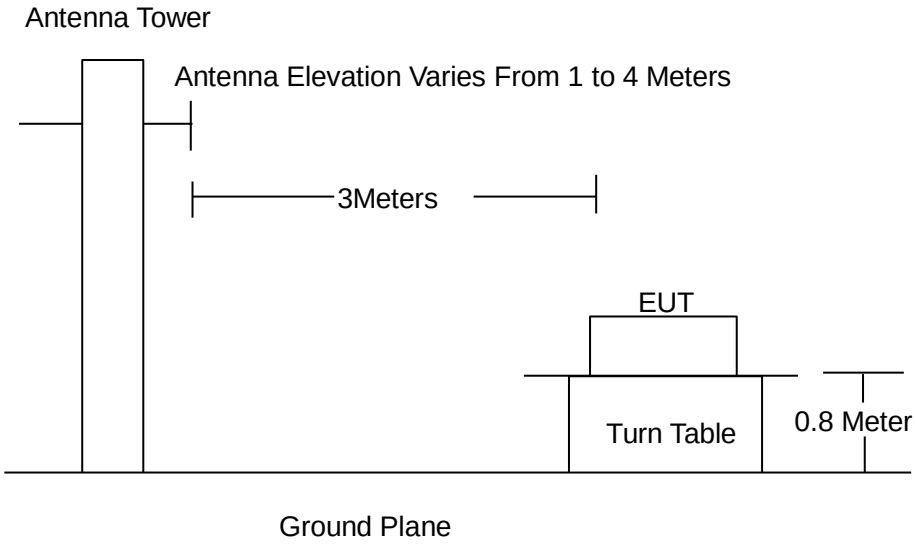
The frequency range from 150 KHz to 30 MHz is investigated.

3.7. Test Result

The EUT is powered by the DC only,the test item is not applicable.

4. RADIATION EMISSION TEST

4.1. Block Diagram of Test Setup



4.2. Test Standard

EN IEC 55014-1:2021

4.3. Radiation Limit

Frequency MHz	Distance (Meters)	Field Strengths Limits dB(μV)/m	Detector
30 ～ 230	3	40.0	QP
230 ～ 1000	3	47.0	QP

Remark:

(1) Emission level (dB(μV)/m) = 20 log Emission level (μV/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 IEC 55014-1 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 IEC 55014-1 on radiated emission test.
The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz below 1GHz.

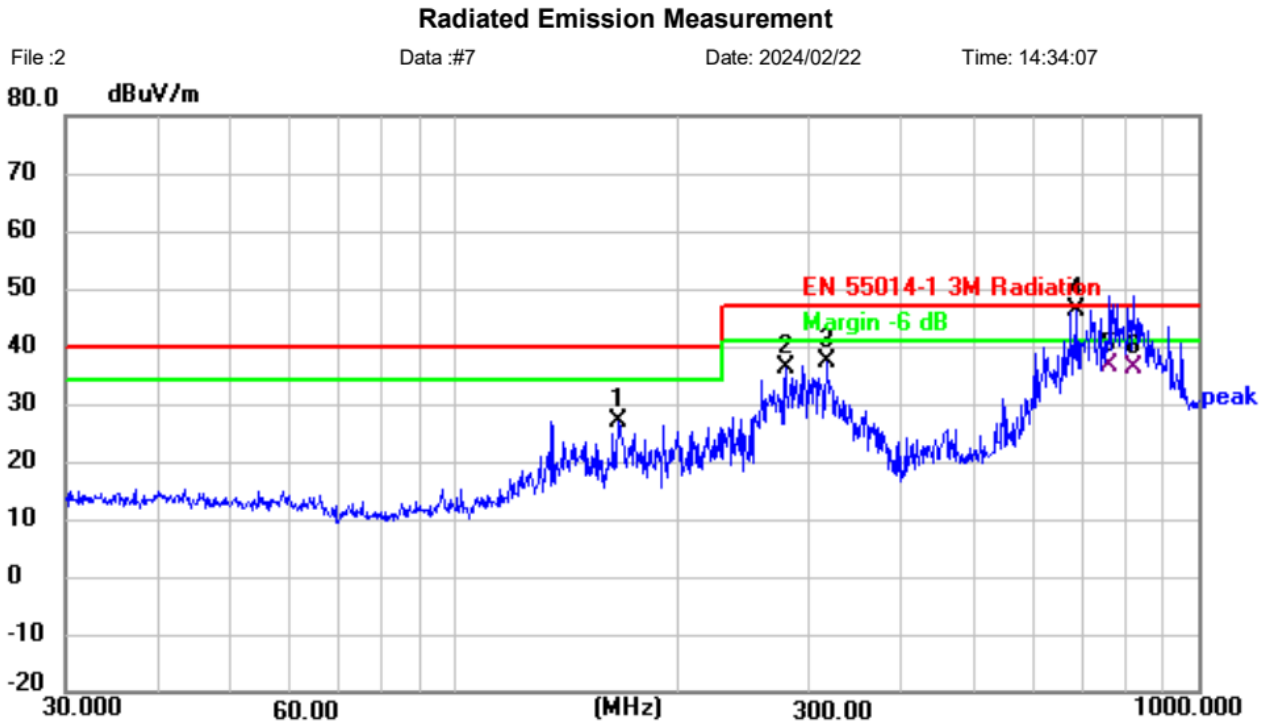
The highest frequency of the internal sources of the EUT was below 108MHz, so the measurement was only made up to 1GHz.

4.7. Test Result

PASS

Please refer to the following page.

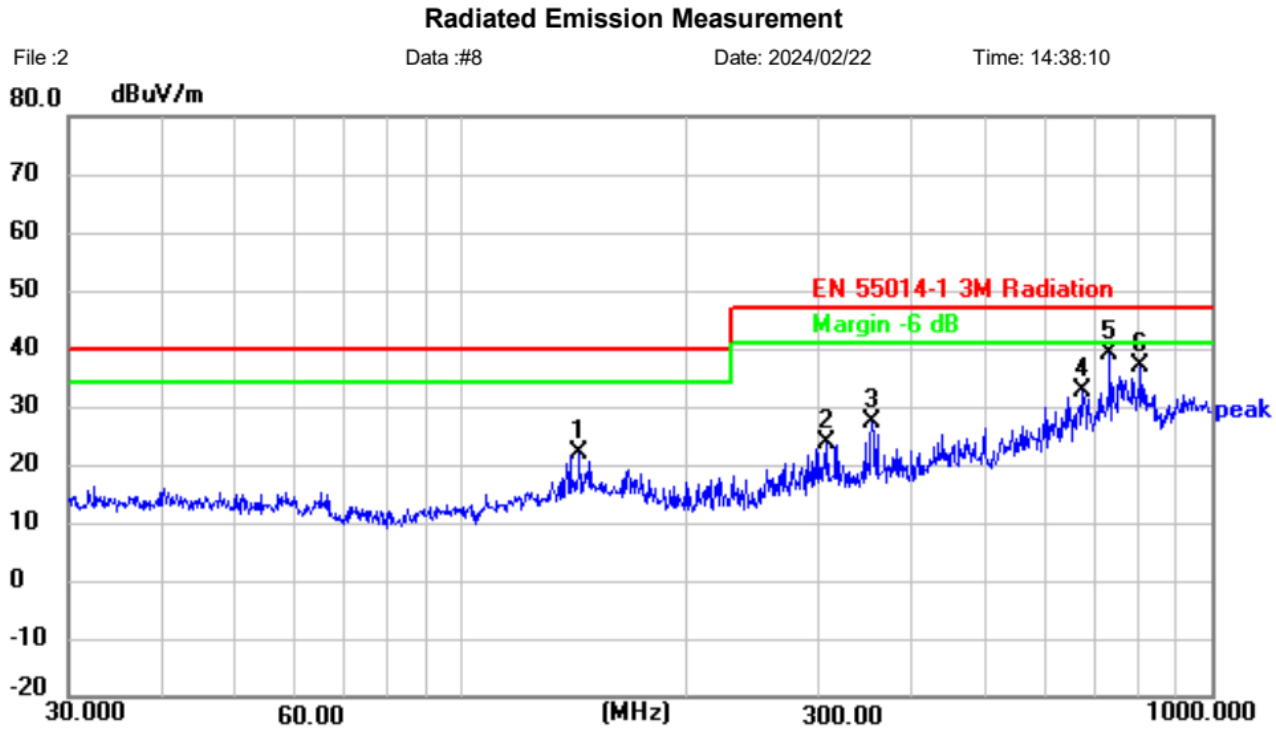
Radiation Emission Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Horizontal
Test Voltage :	DC 3.7V	Test Mode:	Normal Mode



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	166.6514	49.11	-22.12	26.99	40.00	-13.01	peak	P	
2	279.0436	58.37	-22.14	36.23	47.00	-10.77	peak	P	
3	316.5890	57.71	-20.46	37.25	47.00	-9.75	peak	P	
4 *	684.7454	56.85	-12.71	44.14	47.00	-2.86	peak	P	
5	760.7036	48.55	-11.85	36.70	47.00	-10.30	QP	P	
6	818.8341	46.08	-9.68	36.40	47.00	-10.60	QP	P	

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

Radiation Emission Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	DC 3.7V	Test Mode:	Normal Mode

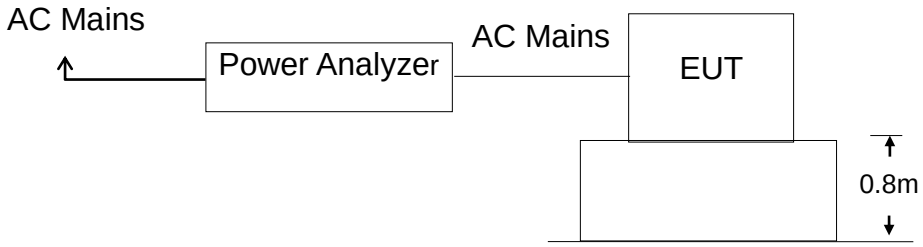


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	143.8295	44.11	-22.04	22.07	40.00	-17.93	peak	P	
2	307.8313	44.42	-20.81	23.61	47.00	-23.39	peak	P	
3	352.9433	46.88	-19.72	27.16	47.00	-19.84	peak	P	
4	675.2080	46.72	-14.10	32.62	47.00	-14.38	peak	P	
5 *	731.9203	51.22	-12.11	39.11	47.00	-7.89	peak	P	
6	804.6028	46.53	-9.73	36.80	47.00	-10.20	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 IEC 61000-3-2:2019+A1:2021

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

The EUT is powered by the DC only, the test item is not applicable.

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+A1:2019+A2:2021

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
Plt	0.65
dc	3.3%
dmax	4.0% / 6.0% /7.0%*
dt	Not exceed 3.3% for 500ms

Notes: * means

a) 4 % without additional conditions

b) 6 % for equipment which is:

- switched manually, or
- switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption

c) 7 % for equipment which is:

- attended whilst in use (for example : hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as mowers, portable tools such as electric drills), or
- switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

6.4. Test Procedure

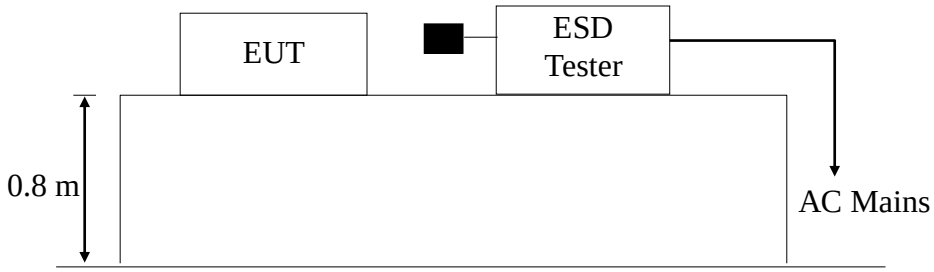
The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

6.5. Test Results

The EUT is powered by the DC only, the test item is not applicable.

7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

7.1. Block Diagram of Test Setup



7.2. Test Standard

EN IEC 55014-2:2021, EN 61000-4-2:2009

Severity Level: 3 / Air Discharge: ±8KV
Level: 2 / Contact Discharge: ±4KV

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 IEC 55014-2, EN 61000-4-2, 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

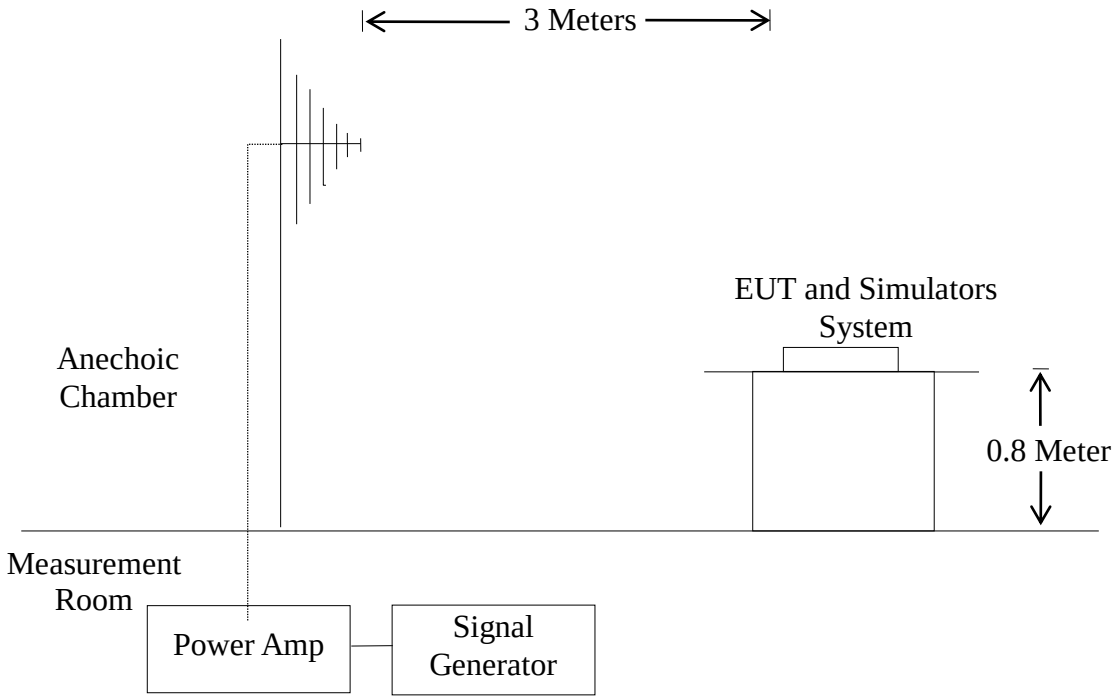
PASS

Please refer to the following page.

ESD Test Data				
Temperature:	24.5℃	Humidity:	53%	
Power Supply :	DC 3.7V	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
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 IEC 55014-2:2021, EN IEC 61000-4-3:2020
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 IEC 55014-2, EN IEC 61000-4-3, 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
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℃		Humidity : 53%	
Field Strength: 3 V/m		Criterion: A	
Power Supply: DC 3.7V		Frequency Range: 80 MHz to 1000 MHz	
Modulation: ☑ AM ☐ Pulse ☐none 1 KHz 80%			
Test Mode : Normal Mode			
	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 IEC 55014-2:2021, 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 ±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 IEC 55014-2, EN 61000-4-4, 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

The EUT is powered by the DC only, the test item is not applicable.

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10. SURGE TEST

10.1. Block Diagram of EUT Test Setup

10.2. Test Standard

EN IEC 55014-2:2021, EN 61000-4-5:2014+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 IEC 55014-2, EN 61000-4-5, 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.

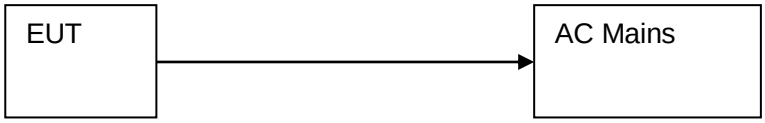
10.7. Test Result

The EUT is powered by the DC only, the test item is not applicable.

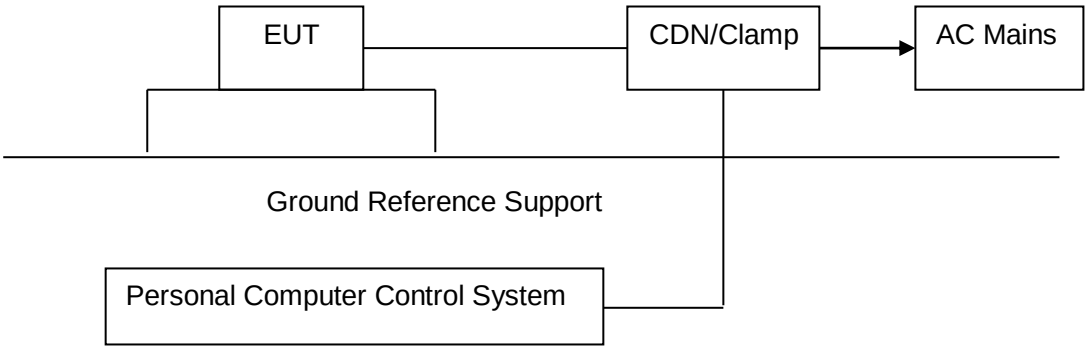
11. INJECTED CURRENTS SUSCEPTIBILITY TEST

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 IEC 55014-2:2021, EN IEC 61000-4-6:2023

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.

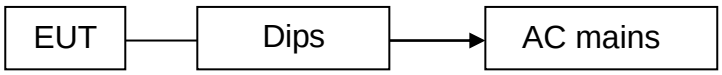
8) Recording the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

11.7. Test Result

The EUT is powered by the DC only, the test item is not applicable.

12. VOLTAGE DIPS AND INTERRUPTIONS TEST

12.1. Block Diagram of EUT Test Setup



12.2. Test Standard

EN IEC 55014-2:2021, EN IEC 61000-4-11:2020

12.3. 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

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 the same as used in conducted emission test. Please refer to Section 2.10.

12.5. 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.

12.6. 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.

12.7. Test Result

The EUT is powered by the DC only, the test item is not applicable.

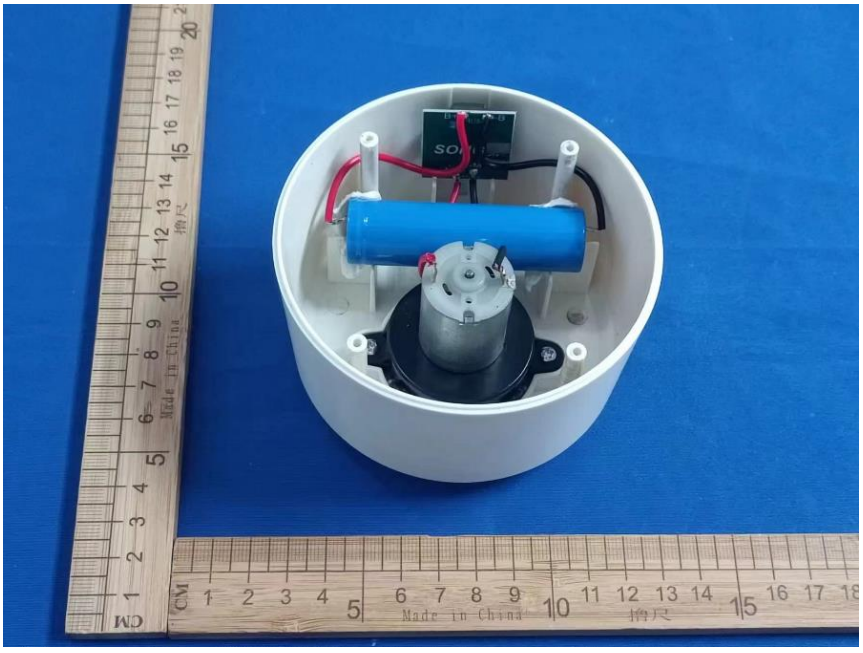
13. EUT PHOTOGRAPHS

EUT Photo 1

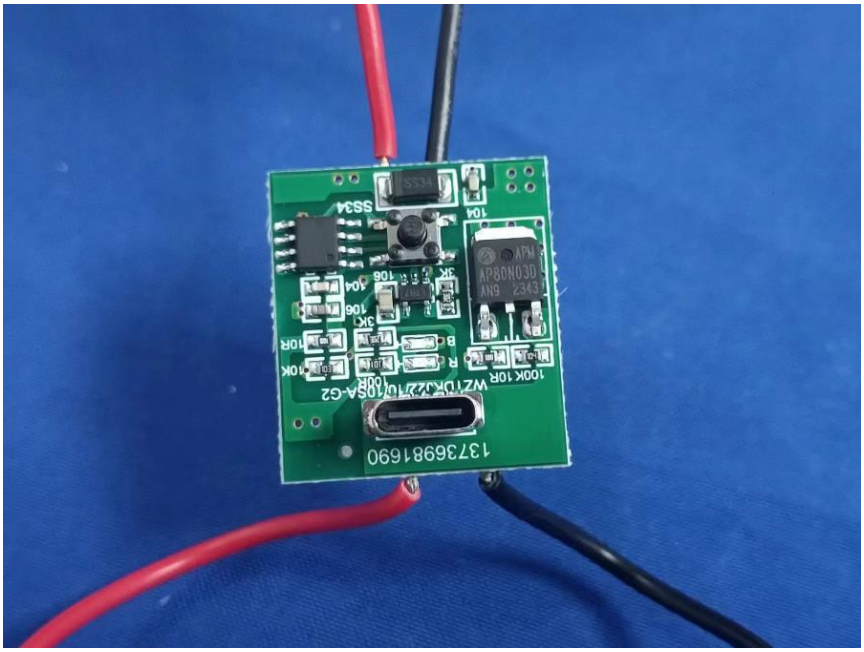
EUT Photo 2

EUT Photo 3

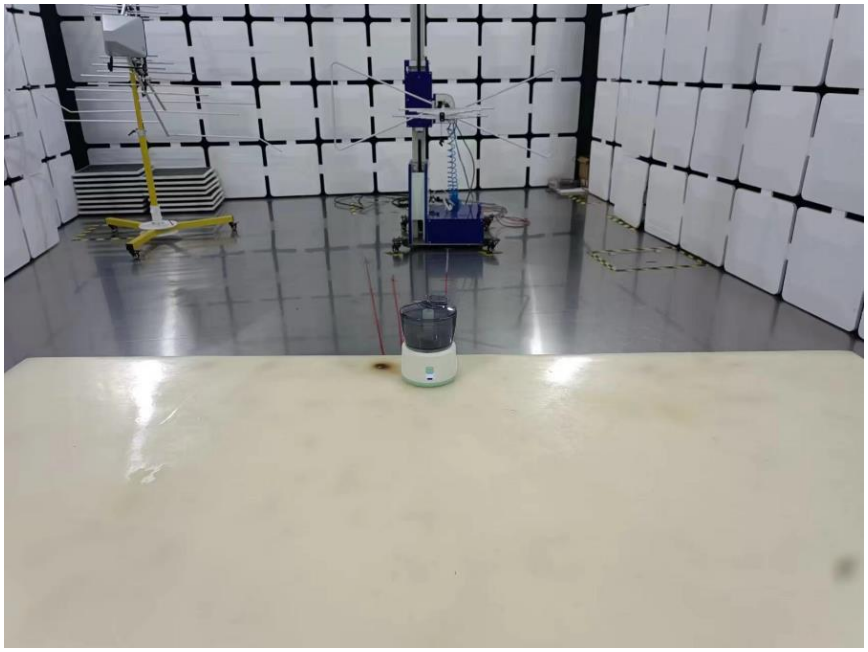
EUT Photo 4



EUT Photo 5



EUT Photo 6



EUT Photo 7

※※※※※ END OF REPORT ※※※※※