TEST REPORT

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

Report Reference No..... :	**UTT202405010E**
Compiled by (position+printed name+signature).. :	File administrators Jowin Huang
Supervised by (position+printed name+signature).. :	Test Engineer Bill Wu
Approved by (position+printed name+signature).. :	Manager Aiden Zhang
Date of issue..... :	May 28, 2024
Representative Laboratory Name.. :	**Dongguan UTT Service Co., Ltd.**
Address..... :	Room 107, Building 2, No.3, Mu Lun The second road of entrepreneurship, Changping Town, Dongguan City, Guangdong
Applicant's name..... :	**K-Star Plastic Mold (shenzhen) co,LTD**
Address..... :	DONG WANG YANG INDUSTARL ESTATE, HUANGTIANSHEQU, HANGCHENGJIEDAO, BAOAN, SHENZHEN, CHINA
Test specification..... :	
Standard..... :	EN IEC 55014-1:2021 EN IEC 55014-2:2021 EN IEC 61000-3-2:2019+A1:2021 EN 61000-3-3:2013+A2:2021
TRF Originator..... :	Dongguan UTT Service Co., Ltd.
Master TRF..... :	Dated 2021

Product Name..... :	Aromatherapy diffuser
Trade Mark..... :	N/A
Manufacturer..... :	K-Star Plastic Mold (shenzhen) co,LTD
Address..... :	DONG WANG YANG INDUSTARL ESTATE, HUANGTIANSHEQU, HANGCHENGJIEDAO, BAOAN, SHENZHEN, CHINA
Model/Type reference..... :	KS2401x;KS2402x;KS2403x (The x is for appearance only, and the color is different)
Ratings..... :	5V⎓ 1.0A
Result..... :	PASS

TEST REPORT

Test Report No. :	UTT202405010E	May 28, 2024 Date of issue

Equipment under Test	:	Aromatherapy diffuser
Model /Type	:	KS2401x;KS2402x;KS2403x (The x is for appearance only, and the color is different)
Applicant	:	**K-Star Plastic Mold (shenzhen) co,LTD**
Address	:	DONG WANG YANG INDUSTARL ESTATE, HUANGTIANSHEQU, HANGCHENGJIEDAO, BAOAN, SHENZHEN, CHINA
Manufacturer	:	**K-Star Plastic Mold (shenzhen) co,LTD**
Address	:	DONG WANG YANG INDUSTARL ESTATE, HUANGTIANSHEQU, HANGCHENGJIEDAO, BAOAN, SHENZHEN, CHINA

Test Result	PASS

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

EN IEC 55014-1:2021 Electromagnetic compatibility- Requirements for household appliances, electric tools and similar apparatus. Part 1: Emission
EN IEC 55014-2:2021 Electromagnetic compatibility- Requirements for household appliances, electric tools and similar apparatus. Part 2: Immunity-Product family standard
EN IEC 61000-3-2:2019+A1:2021 Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)
EN 61000-3-3:2013+A2:2021 Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	May 21, 2024
Testing commenced on	:	May 21, 2024
Testing concluded on	:	May 28, 2024

2.2. Product Description

Product Name:	Aromatherapy diffuser
Trade Mark:	N/A
Model/Type reference:	KS2401x;KS2402x;KS2403x (The x is for appearance only, and the color is different)
Power supply:	5V⎓ 1.0A

2.3. EUT operation mode

Test mode	Description	Test voltage
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Note:
1. ■ is operation mode.
Pre-scan above all test mode, found below test mode which it was worse case mode.

Test item	Test mode (Worse case mode)
Conducted emission	Mode 1
Radiated emission	Mode 1
EMS	Mode 1

2.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

☐ - supplied by the manufacturer
■ - supplied by the lab

2.5. Test software

The Radiated Emission use software JS32-RE ersion:2.0.1.5
The Conducted Disturbance use software EMI measurement Software ES-K1 V1.71 Servicepack 2
The Harmonic Current and Voltage Fluctuation and Flicker use software HARCS,HARCS Version:4.21
The Conducted disturbances induced by radio-frequency fields use software EN61000-4-6,Application software 10KHz Version,Version 1.3.0(04.02.2014)

2.6. Modifications

No modifications were implemented to meet testing criteria.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Dongguan UTT Service Co., Ltd.
Room 107, Building 2, No.3, Mu Lun The second road of entrepreneurship , Changping Town, Dongguan City, Guangdong

3.2. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	15-35 ° C
Lative Humidity	30-60 %
Air Pressure	950-1050mbar

3.3. Test Description

Emission Measurement		
Conducted Emission(AC Mains)	EN IEC 55014-1:2021	PASS
Conducted Emission (the load and additional terminals)	EN IEC 55014-1:2021	N/A
Discontinuous Emission	EN IEC 55014-1:2021	N/A
Disturbance Power	EN IEC 55014-1:2021	N/A
Radiated Emission	EN IEC 55014-1:2021	PASS
Harmonic Current Emissions	EN IEC 61000-3-2:2019+A1:2021	PASS
Voltage Fluctuations and Flicker	EN 61000-3-3:2013+A2:2021	PASS
Immunity Measurement		
Electrostatic Discharge	EN IEC 55014-2:2021	PASS
RF Electromagnetic Field	EN IEC 55014-2:2021	PASS
Fast Transients Common Mode	EN IEC 55014-2:2021	PASS
RF Common Mode 0,15 MHz to 80 MHz	EN IEC 55014-2:2021	PASS
Voltage Dips and Interruptions	EN IEC 55014-2:2021	PASS
Surges	EN IEC 55014-2:2021	PASS

Remark: The measurement uncertainty is not included in the test result.

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“and is documented in the Universal Test Technology Service Co., Ltd. acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device. Hereafter the best measurement capability for UTT laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Conducted Disturbance	0.15~30MHz	3.12 dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.5. Equipments Used during the Test

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	101102	2023/9/16	2024/9/15
2	Artificial Mains	ROHDE & SCHWARZ	ESH2-Z5	893606/008	2023/9/16	2024/9/15
3	Pulse Limiter	Agilent	11947A	3107A04120	2023/9/16	2024/9/15

Radiated Emission						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	ULTRA-BROADBAND ANTENNA	Schwarzbeck	VULB9163	000976	2023/9/16	2024/9/15
2	EMI Test Receiver	Rohde&Schwarz	ESCI	101102	2023/9/16	2024/9/15
3	Horn Antenna	Schwarzbeck	BBHA 9120D	01622	2023/9/16	2024/9/15
4	Pre-Amplifier	Schwarzbeck	BBV 9743	#202	2023/9/16	2024/9/15
5	Pre-Amplifier	Chenyi	EMC051845B	980355	2023/9/16	2024/9/15

Harmonic Current/ Voltage Fluctuation and Flicker						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	Harmonic and Flicker Analyzer	EMC Partner	HARMONICS 1000	HAR1000-1P 230V-0221	2023/9/16	2024/9/15

Electrostatic Discharge						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	ESD Simulators	EMC Partner	ESD3000	ESD3000-1680	2023/9/16	2024/9/15

Electrical Fast Transient/Surge/Dips

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	Ultra Compact Simulator	EMC Partner	TRANSIENT3000	TRA3000 F5-S-D-V-1527	2023/9/16	2024/9/15

RF Field Strength Susceptibility						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	SIGNAL GENERATOR	IFR	2032	203002/100	2023/9/16	2024/9/15
2	AMPLIFIER	AR	150W1000	301584	2023/9/16	2024/9/15
3	DUAL DIRECTIONAL COUPLER	AR	DC6080	301508	2023/9/16	2024/9/15
4	POWER HEAD	AR	PH2000	301193	2023/9/16	2024/9/15
5	POWER METER	AR	PM2002	302799	2023/9/16	2024/9/15
6	Bilog Antenna	ETS-LINDGREN	3142D	00135452	2023/9/16	2024/9/15

Conducted Susceptibility						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	CS Test system	Frankonia	CIT-10-75	126B1333	2023/9/16	2024/9/15
2	6dB Attenuator	Frankonia	75-A-FFN-06	1509	2023/9/16	2024/9/15
3	CDN	Frankonia	M2+M3	A2210239	2023/9/16	2024/9/15

The calibration interval is 1 year.

4. TEST CONDITIONS AND RESULTS

4.1. EMISSION

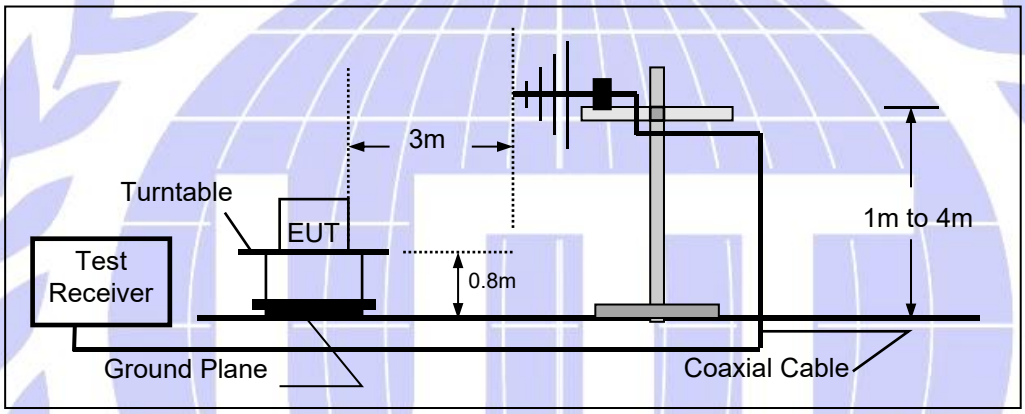
4.1.1. Radiated Emission

LIMIT

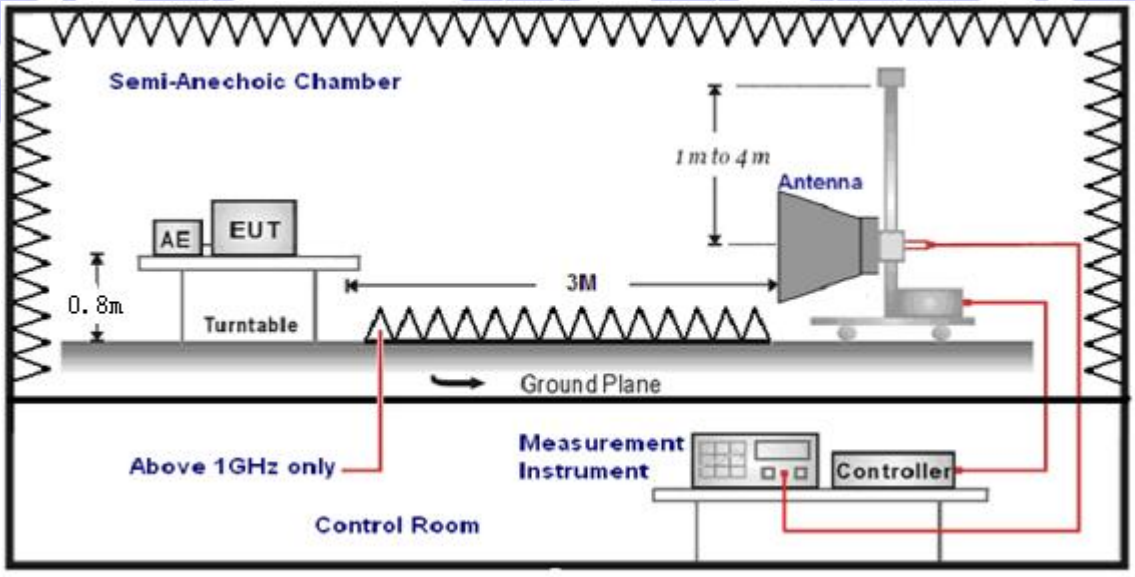
Please refer to EN 55014-1 Clause 4.3.4.5, Table 9

TEST CONFIGURATION

a) Radiated emission test set-up, frequency below 1000MHz:



b) Radiated emission test set-up, frequency above 1000MHz



TEST PROCEDURE

Please refer to EN55014-1 clause 5.3 for the measurement methods

TEST RESULTS

Passed

Please refer to the below test data:

Test mode:	Mode 1	Polarization	Vertical

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1		49.5328	43.77	-13.20	30.57	40.00	-9.43	peak			
2		90.5374	45.56	-15.11	30.45	40.00	-9.55	peak			
3	*	126.3286	43.09	-11.70	31.39	40.00	-8.61	peak			

Test mode:	Mode 1	Polarization	Horizontal

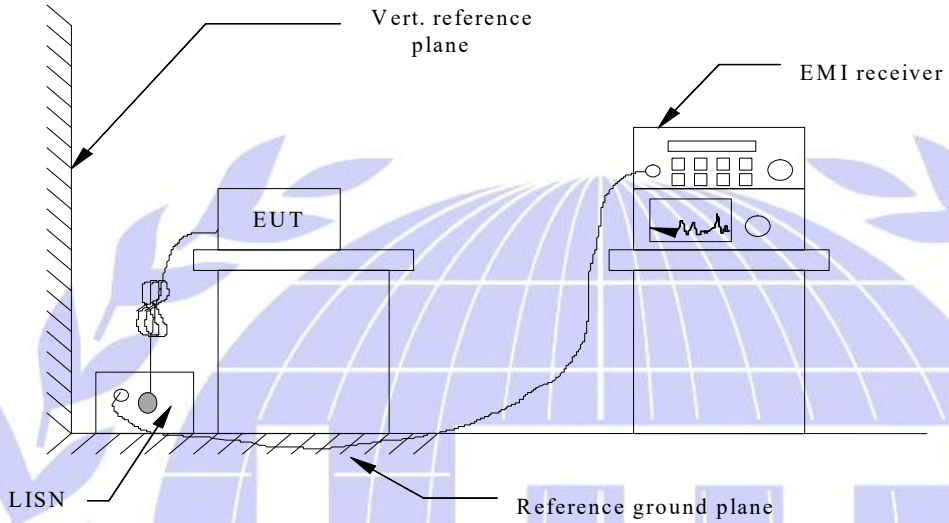
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1		116.1321	31.71	-14.37	17.34	40.00	-22.66	peak			
2	*	135.0319	36.34	-12.84	23.50	40.00	-16.50	peak			
3		264.7457	26.67	-4.72	21.95	47.00	-25.05	peak			

4.1.2. Conducted Emission (AC Mains)

LIMIT

Please refer to EN 55014-1 Clause 4.3.3.6, Table 5

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 55014-1 clause 5.2 for the measurement methods

TEST RESULTS

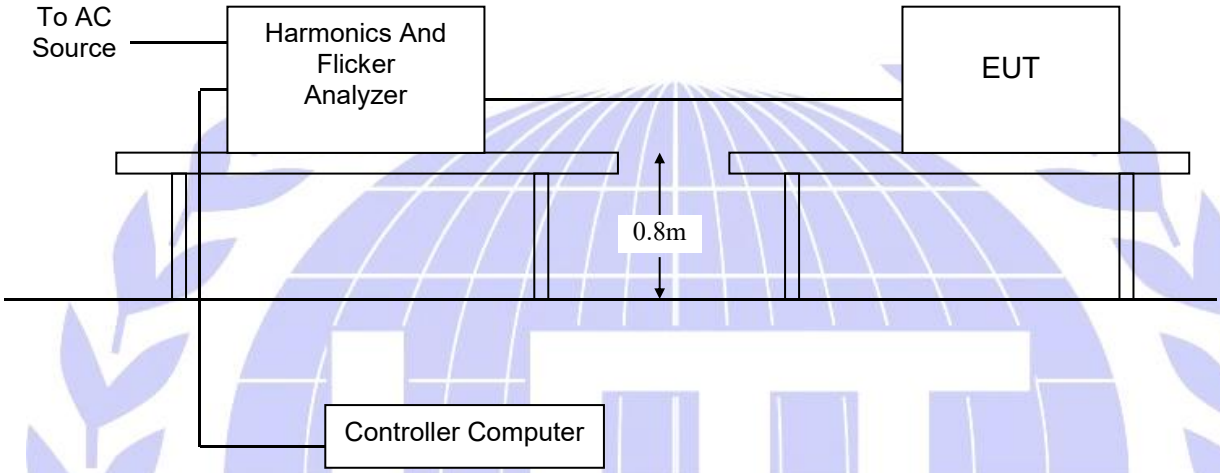
N/A

4.1.3. Harmonic Current Emission

LIMIT

Please refer to EN IEC 61000-3-2

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN IEC 61000-3-2 for the measurement methods.

TEST RESULTS

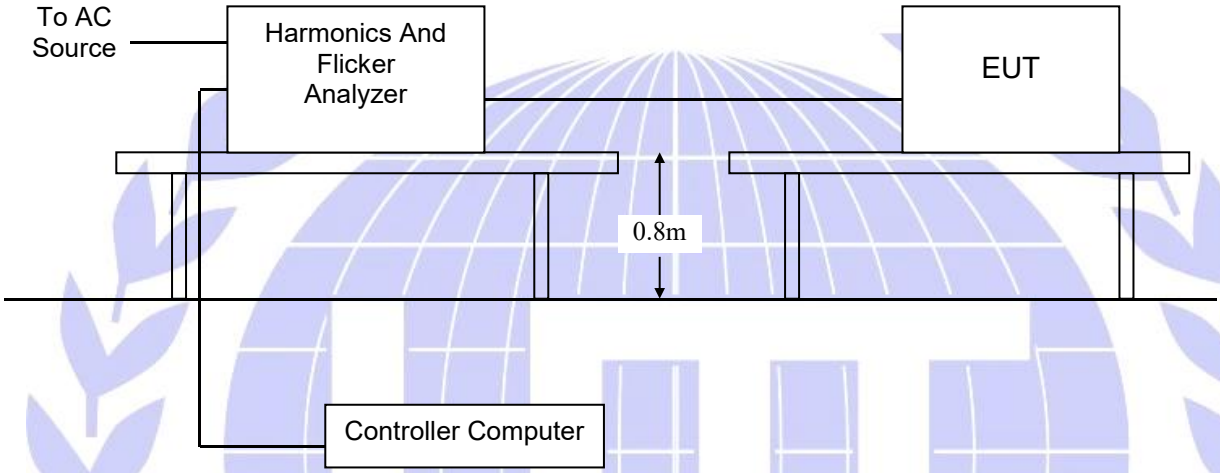
Pass

4.1.4. Voltage Fluctuation and Flicker

LIMIT

Please refer to EN 61000-3-3

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-3-3 for the measurement methods.

TEST RESULTS

Product	Aromatherapy diffuser	Tested by	Jowin Huang
Model	KS24	Observation Period (Tp)	10 mins
Test Mode	Full Load	Test Result	Pass
Environmental Conditions	24.2℃, 54.5 % RH, 101.32 kPa		

Please refer to the following test data:

Voltage Fluctuation	Limit	Value
Relative Voltage Change Characteristic Tmax （dc＞3%）	500 ms	0 ms
Maximum Relative Voltage	4%	0.00
	6%	/
Change dmax	7%	/
Relative Steady-state Voltage Change dc	3.3%	0.00

Flicker	Limit	Value
Short-term Flicker Indicator Pst	1.0	0.064
Long-term Flicker Indicator Plt	0.65	/

4.2. IMMUNITY

4.2.1. Performance criteria

■ **Performance Criterion of EN 55014-2**

Criterion A: The equipment shall continue to operate as intended without operator intervention. No degradation of performance of loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

Criterion B: After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended.

Criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

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

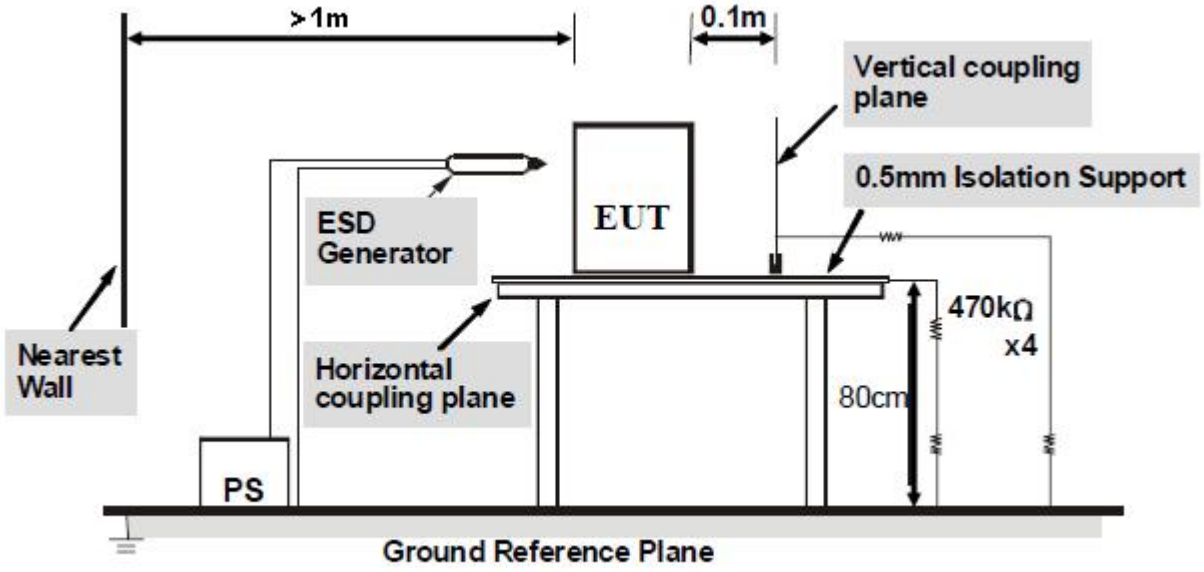
4.2.2. Electrostatic Discharge

LIMIT

SEVERITY LEVELS OF ELECTROSTATIC DISCHARGE

Test level: Contact Discharge at ±2KV, ±4KV Air Discharge at ±2KV, ±4KV, ±8KV

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-4-2 for the measurement methods.

Contact Discharge:

The ESD generator is held perpendicular to the surface to which the discharge is applied and the tip of the discharge electrode touch the surface of EUT. Then turn the discharge switch. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Air Discharge:

Air discharge is used where contact discharge can't be applied. 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 at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Indirect discharge for horizontal coupling plane:

At least 10 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT.

Indirect discharge for vertical coupling plane:

At least 10 single discharges 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 completely illuminated.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Pass

Air Discharge					
Test Points	Test Levels	Results			
	± 8 kV	***Pass***	***Fail***	***Observation***	**Performance Criterion**
Shell 4 Points	☒	☒	☐	Note ☐1☒2☐3	B

Contact Discharge					
Test Points	Test Levels	Results			
	± 4 kV	**Pass**	**Fail**	***Observation***	**Performance Criterion**
HCP 4 Points	☒	☒	☐	Note ☒1 ☐2 ☐3	B
VCP 4 Points	☒	☒	☐	Note ☒1 ☐2 ☐3	B
Positive pole 1 Point	☒	☒	☐	Note ☒1 ☐2 ☐3	B
Negative pole 1 Point	☒	☒	☐	Note ☒1 ☐2 ☐3	B

Note: 1) There was no change compared with initial operation during the test.
2) During the test and After the test, the EUT can resume to operate as intended without operator intervention.
3) During the test and After the test, During and after testing, the EUT needs to return to normal operation with operator intervention.

4.2.3. RF Electromagnetic Field

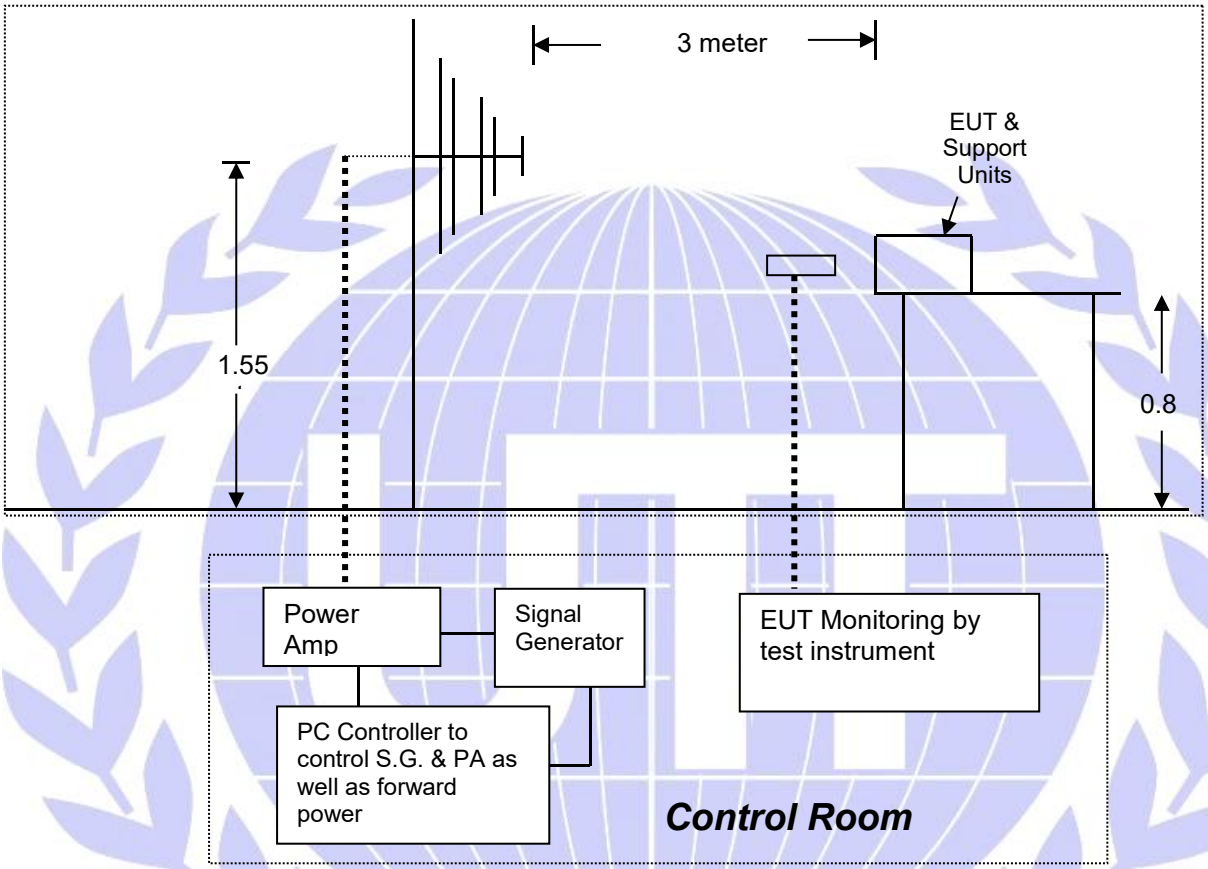
PERFORMANCE CRITERION

Criteria A

TEST LEVEL

3V/m (80%, 1kHz Amplitude Modulation)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to ETSI EN 61000-4-3 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Pass

Frequency	Level	Modulation	Antenna Polarization	EUT Face	Observations (Performance Criterion)	Result
80 MHz-1 GHz	3 V/m	1 kHz, 80 % Amp. Mod, 1 % increment, dwell time=3seconds	V	Front	A	Pass
			H		A	Pass
			V	Rear	A	Pass
			H		A	Pass
			V	Left	A	Pass
			H		A	Pass
			V	Right	A	Pass
			H		A	Pass
			V	Top	A	Pass
			H		A	Pass
			V	Bottom	A	Pass
			H		A	Pass

Note: 1) There was no change compared with initial operation during the test.
2) During the test and After the test, the EUT can resume to operate as intended without operator intervention.
3) During the test and After the test, During and after testing, the EUT needs to return to normal operation with operator intervention.

4.2.4. Surges

PERFORMANCE CRITERION

Criteria B

TEST LEVEL

Mains:1kV Line to Line: Differential mode

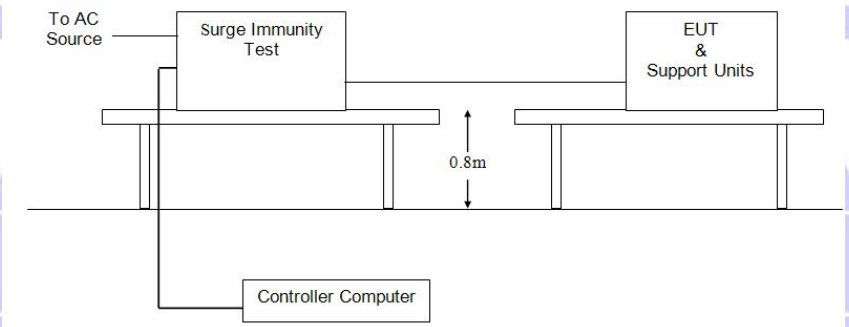
2kV Line to Ground: Common mode

(Voltage Waveform: 1.2/50 us; Current Waveform: 8/20 us)

Signal port:1kV Line to Ground: Common mode

(Voltage Waveform: 10/700 us; Current Waveform: 5/320 us)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-4-5 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Pass

Test Point	Polarity	Test Level (kV)	0°	90°	180°	270°	Observation	Performance Criterion
L - N	+	1	N/A	pass	N/A	N/A	Note ☒1 ☐2 ☐3	B
	-	1	N/A	N/A	N/A	pass	Note ☒1 ☐2 ☐3	B
L - PE	+	2	N/A	N/A	N/A	N/A	Note ☒1 ☐2 ☐3	N/A
	-	2	N/A	N/A	N/A	N/A	Note ☒1 ☐2 ☐3	N/A
N - PE	+	2	N/A	N/A	N/A	N/A	Note ☒1 ☐2 ☐3	N/A
	-	2	N/A	N/A	N/A	N/A	Note ☒1 ☐2 ☐3	N/A

Note: 1) There was no change compared with initial operation during the test.

2) During the test and After the test, the EUT can resume to operate as intended without operator intervention.

3) During the test and After the test, During and after testing, the EUT needs to return to normal operation with operator intervention.

4.2.5. RF- Common Mode 0.15MHz to 230MHz

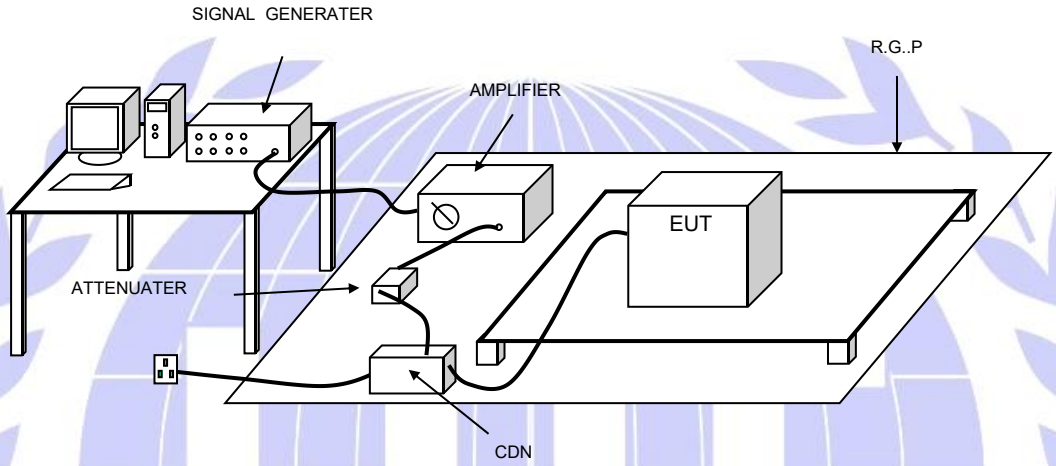
PERFORMANCE CRITERION

Criteria A

TEST LEVEL

3Vrms on AC main port (80%, 1kHz Amplitude Modulation)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-4-6 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Pass

Frequency (MHz)	Field Strength (Vrms)	Injected Position	Injection Method	Observation	Performance Criterion
0.15 –230MHz	3	AC Mains	CDN-M2/M3	Note ☒1☐2☐3	A

Note: 1) There was no change compared with initial operation during the test.
2) During the test and After the test, the EUT can resume to operate as intended without operator intervention.
3) During the test and After the test, During and after testing, the EUT needs to return to normal operation with operator intervention.

4.2.6. Fast Transients Common Mode

PERFORMANCE CRITERION

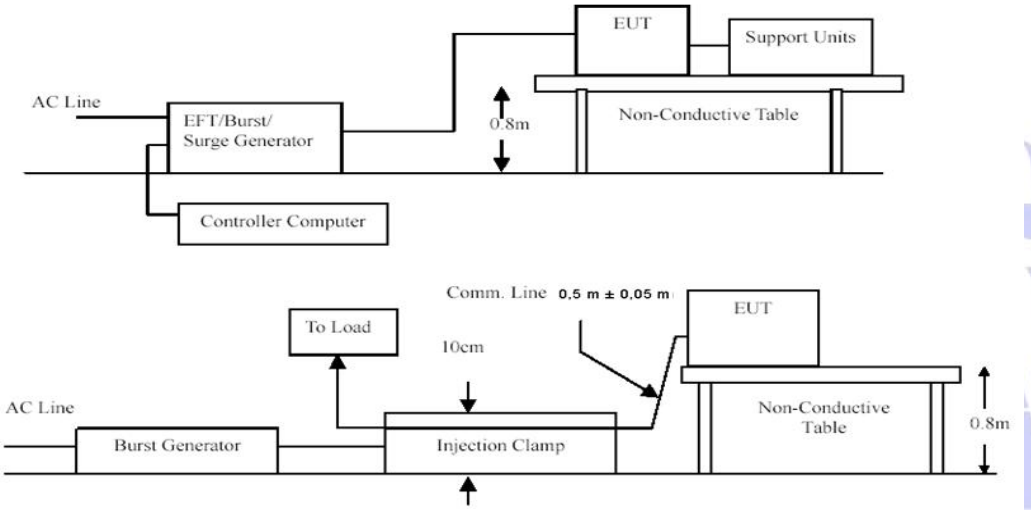
Criteria B

TEST LEVEL

1KV for AC main port

(Impulse Frequency: 5 kHz; Tr/Th: 5/50ns; Burst Duration: 15ms; Burst Period: 3Hz)

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-4-4 for the measurement methods.

TEST MODE

Please reference to the section 2.3

TEST RESULTS

Pass

Test Point	Polarity	Test Level (kV)	Observation	Performance Criterion
L	+/-	1	Note ☒1 ☐2 ☐3	B
N	+/-	1	Note ☒1 ☐2 ☐3	B
L – N	+/-	1	Note ☒1 ☐2 ☐3	B
PE	+/-	1	Note ☒1 ☐2 ☐3	N/A
L – PE	+/-	1	Note ☒1 ☐2 ☐3	N/A
N – PE	+/-	1	Note ☒1 ☐2 ☐3	N/A
L – N – PE	+/-	1	Note ☒1 ☐2 ☐3	N/A

Note: 1) There was no change compared with initial operation during the test.
2) During the test and After the test, the EUT can resume to operate as intended without operator intervention.
3) During the test and After the test, During and after testing, the EUT needs to return to normal operation with operator intervention.

4.2.7. Voltage Dips and Interruptions

PERFORMANCE CRITERION

Performance criterion: B&C

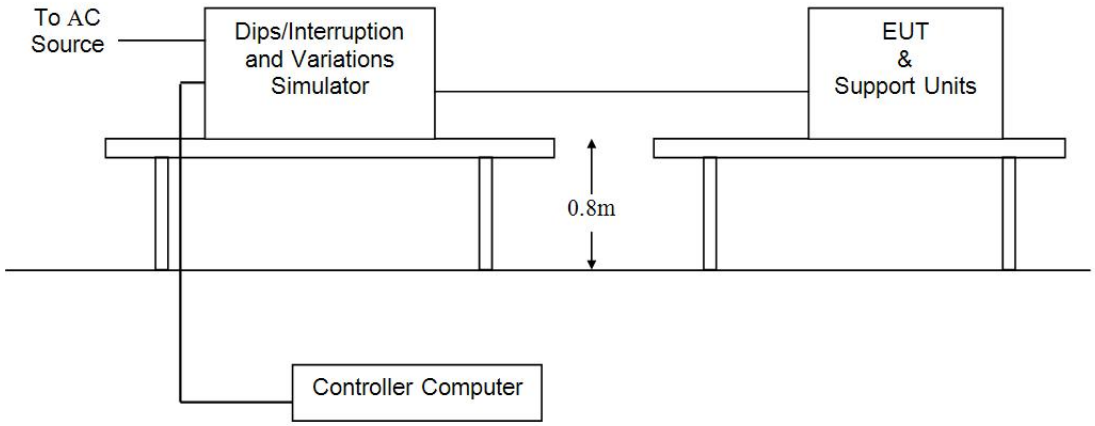
TEST LEVEL

0% of UT (Supply Voltage) for 0.5 Periods

40 % of UT (Supply Voltage) for 10 Periods

70 % of UT (Supply Voltage) for 25 Periods

TEST CONFIGURATION



TEST PROCEDURE

Please refer to EN 61000-4-11 for the measurement methods.

TEST MODE

Please reference to the section 2.3

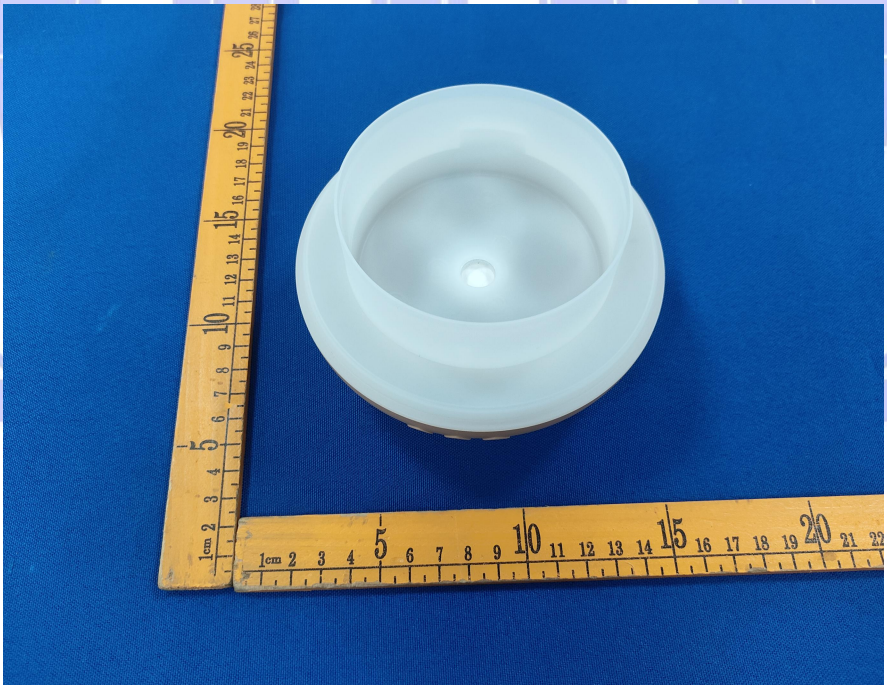
TEST RESULTS

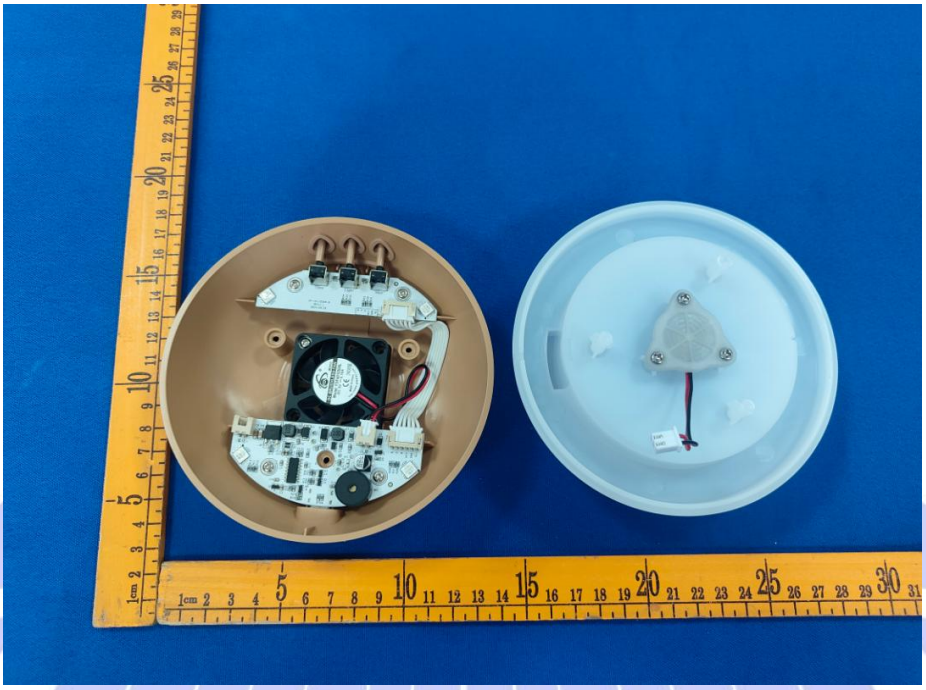
Pass

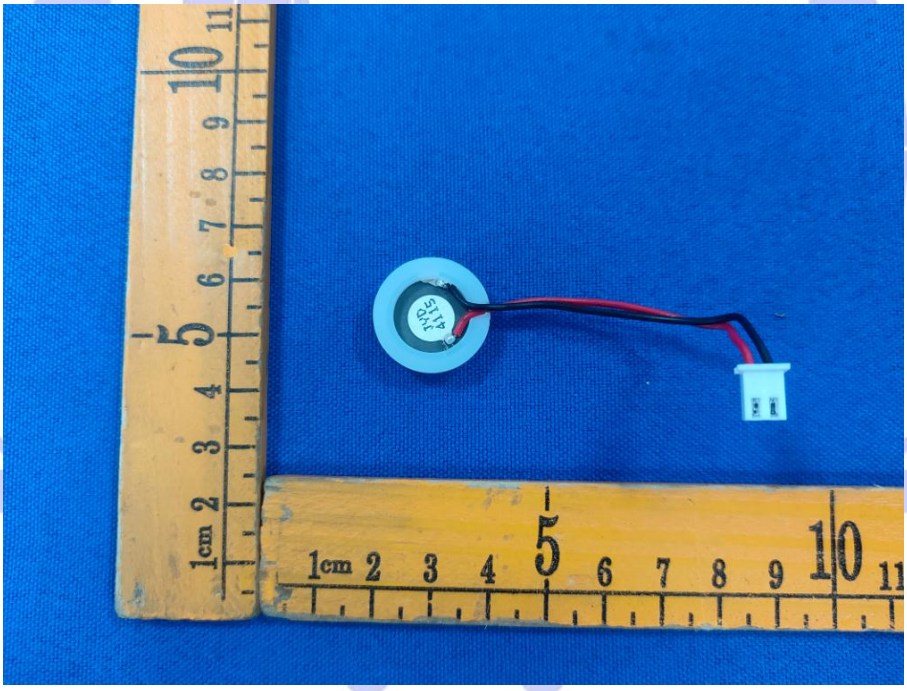
Test Level % Ut	Voltage dips &short interruptions % Ut	Duration(in period)	Phase Angle	Criterion	Result
100V/50Hz					
0	100	0.5P	0° - 360°	B	Pass
40	60	10P	0° - 360°	C	Pass
70	30	25P	0° - 360°	C	Pass
240V/60Hz					
0	100	0.5P	0° - 360°	B	Pass
40	60	12P	0° - 360°	C	Pass
70	30	30P	0° - 360°	C	Pass

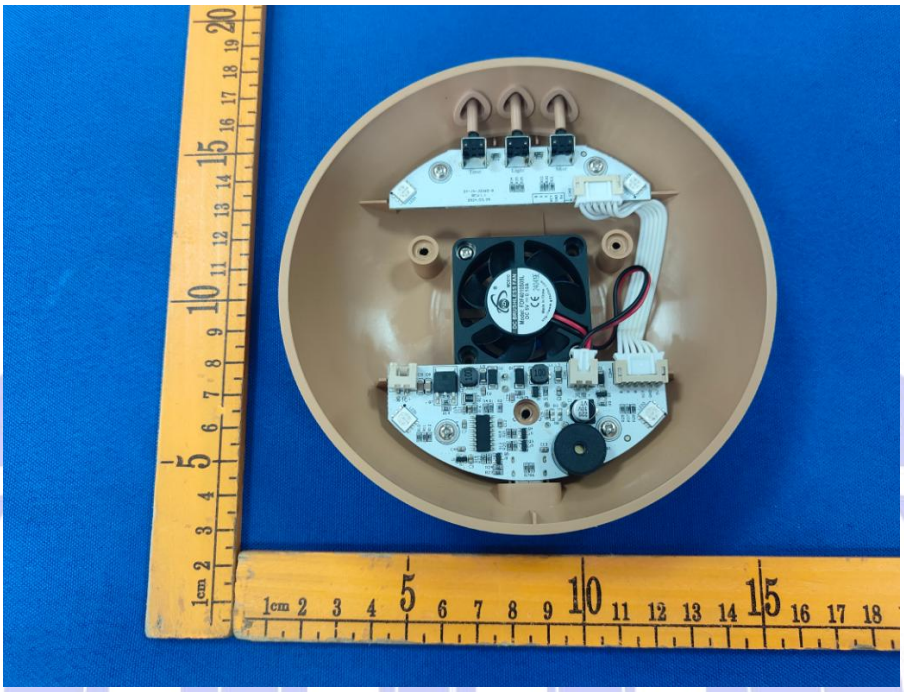
Note: 1) There was no change compared with initial operation during the test.
2) During the test and After the test, the EUT can resume to operate as intended without operator intervention.
3) During the test and After the test, During and after testing, the EUT needs to return to normal operation with operator intervention.

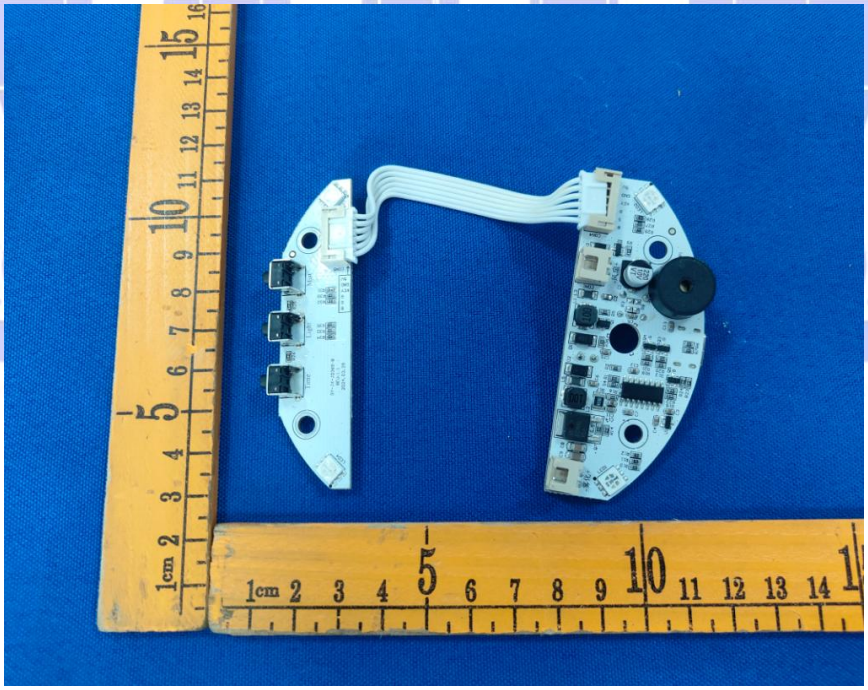
5. External and Internal Photos of the EUT

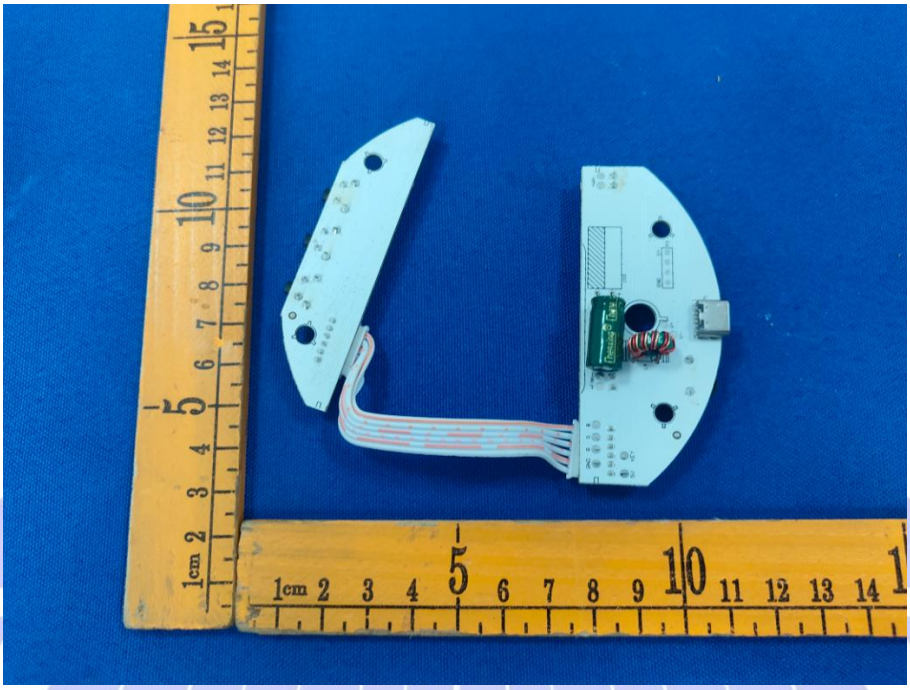


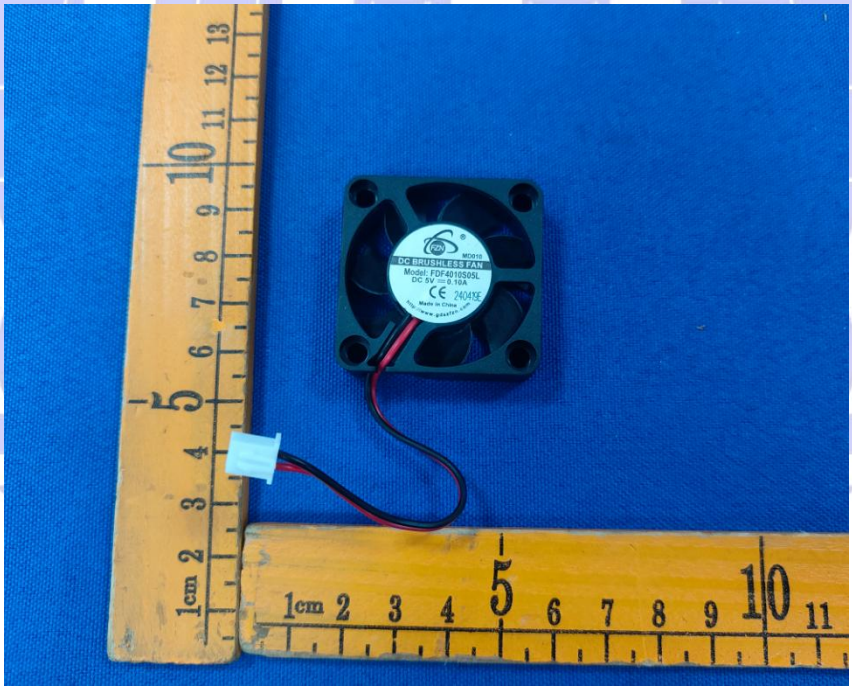












.....End of Report.....