

EMC TEST REPORT

For

Shenzhen EBELONG Technology Co., Ltd

Single channel dimming controller

Model No.: ERC1201

Additional model: Please refer to page 8

Prepared for	:	Shenzhen EBELONG Technology Co., Ltd
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Date of receipt of test sample	:	November 05, 2020
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	November 05, 2020 ~ November 09, 2020
Date of Report	:	November 13, 2020

EMC TEST REPORT**EN 55015: 2013+A1: 2015**

Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment

EN 61547: 2009

Equipment for general lighting purposes - EMC immunity requirements

Report Reference No. : LCS200717110AE**Date Of Issue..... : November 13, 2020****Testing Laboratory Name.... : Shenzhen LCS Compliance Testing Laboratory Ltd.**

Address..... : Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China

Testing Location/ Procedure.. : Full application of Harmonised standards ■
Partial application of Harmonised standards □
Other standard testing method □**Applicant's Name..... : Shenzhen EBELONG Technology Co., Ltd**

Address..... : 4th Floor, Building 2, Hengmingzhu Shajing Industrial Park, Xiangxing Road, Baoan District, Shenzhen, Guangdong, China

Test Specification:Standard..... : EN 55015: 2013+A1: 2015
EN 61000-3-2: 2014
EN 61000-3-3: 2013
EN 61547: 2009

Test Report Form No..... : LCSEMC-1.0

TRF Originator..... : Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF..... : Dated 2011-03

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Test Item Description..... : Single channel dimming controller

Trade Mark..... : EBELONG

Test Model : ERC1201

Ratings..... : Input: 200-240V~
Output: LED 100W**Result : Positive****Compiled by:***Jayden Zhuo*

Jayden Zhuo/ Administrators

Supervised by:*Jason Deng*

Jason Deng / Technique principal

Approved by:

Gavin Liang/ Manager

EMC -- TEST REPORT**Test Report No. : LCS200717110AE**November 13, 2020
Date of issue

Type/Model..... : ERC1201

EUT..... : Single channel dimming controller

Applicant..... : Shenzhen EBELONG Technology Co., LtdAddress..... : 4th Floor, Building 2, Hengmingzhu Shajing Industrial
Park,Xiangxing Road, Baoan District, Shenzhen,
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Factory..... : Shenzhen EBELONG Technology Co., LtdAddress..... : 4th Floor, Building 2, Hengmingzhu Shajing Industrial
Park,Xiangxing Road, Baoan District, Shenzhen,
Guangdong, China

Telephone..... : /

Fax..... : /

Test Result according to the standards on page 8: **Positive**

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.

Revision History

Revision	Issue Date	Revisions	Revised By
000	November 13, 2020	Initial Issue	Gavin Liang

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1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION (EN 55015: 2013+A1: 2015)			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	EN 55015: 2013+A1: 2015	-----	PASS
Magnetic field emission	EN 55015: 2013+A1: 2015	-----	PASS
Radiated disturbance	EN 55015: 2013+A1: 2015	-----	PASS
Harmonic current emissions	EN 61000-3-2: 2014	Class C	PASS
Voltage fluctuations & flicker	EN 61000-3-3: 2013	-----	PASS
IMMUNITY (EN 61547: 2009)			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A2: 2010	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	PASS
Surge (Input a.c. power ports)	EN 61000-4-5: 2014+A1: 2017	B	PASS
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014	A	PASS
Power frequency magnetic field	EN 61000-4-8: 2010	A	PASS
Voltage dips, 30% reduction	EN 61000-4-11: 2004+A1: 2017	C	PASS
Voltage interruptions		B	PASS
N/A is an abbreviation for Not Applicable.			

Test mode:

Mode 1	Working	Record
--------	---------	--------

1.2. Description of Performance Criteria

General Performance Criteria

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

- essential operational modes and states;
- tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);
- quality of software execution;
- quality of data display and transmission;
- quality of speech transmission.

1.2.1. Performance criterion A

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacture when the equipment 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 deliver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.2. Performance 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 manufacture, when the equipment 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 operation 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 deliver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.3. Performance 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 manufacture's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be loss.

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : Single channel dimming controller

Trade Mark : N/A

Model Number : ERC1201

Additional Model No : Controller: ERC1203
S2 Series : ES2154, ES2254, ES2354, ES2111,
ES2211, ES2311, ES2100, ES2200, ES2300
S3 Series : ES3154-1R, ES3254-1R, ES3454-2R
E2 Series : EE2454-2R, EE2411-2R, EE2254-2R,
EE2211-2R
P1 Series : EP1454, EP1439
M1 Series: EM1350, EM1300, EM1310

Model Declaration : PCB board, structure and internal of these model(s) are
the same,
So no additional models were tested

Power Supply : Input: 200-240V~
Output: LED 100W

EUT Clock : $\leq 108\text{MHz}$

2.2. Description of Test Facility

Site Description

EMC Lab. : NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

2.3. 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 LCS quality system 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.

2.4.Measurement Uncertainty

Test Item	Parameters	Expanded uncertainty (Ulab)	Expanded uncertainty (Ucisp)
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 3.8 dB ± 3.4 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.60 dB	± 4.5 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	± 3.3 dB
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	N/A
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.3 dB
Mains Harmonic	Voltage	$\pm 0.510\%$	± 5.2 dB
Voltage Fluctuations & Flicker	Voltage	$\pm 0.510\%$	N/A

- (1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.
- (2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of $k=2$, which for a normal distribution corresponds to a coverage probability of approximately 95%.

3. MEASURING DEVICES AND TEST EQUIPMENT

3.1. Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Software	EZ	EZ-EMC	/	N/A
2	EMI Test Receiver	R&S	ESPI	101840	2020-06-22
3	Artificial Mains	R&S	ENV216	101288	2020-06-22
4	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-0032	2020-06-22
5	Impedance Stabilization Network	TESEQ	ISN T800	45130	2020-10-21

3.2. Radiated Electromagnetic Disturbance

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Large Loop Antenna	LAPLACE	LLA-2	9161	2018-06-16
2	10dB Attenuator	Mini-circuits	HAT-10	15542	2020-06-22
3	EMI Test Software	EZ	EZ-EMC	/	N/A
4	EMI Test Receiver	R&S	ESPI	101840	2020-06-22

3.3. Radiated Disturbance (Electric Field)

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Software	EZ	EZ-EMC	/	N/A
2	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2020-06-22
3	Positioning Controller	MF	MF-7082	/	2020-06-22
4	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2018-07-26
5	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2018-07-02
6	EMI Test Receiver	R&S	ESR 7	101181	2020-06-22
7	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2019-11-22
8	Broadband Preamplifier	/	BP-01M18G	P190501	2020-06-22
9	RF Cable-R03m	Jye Bao	RG142	CB021	2020-06-22
10	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2020-06-22

3.4. Harmonic Current

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Power Analyzer Test System	Voltech	PM6000	200006700523	2020-06-22

3.5. Voltage fluctuation and Flicker

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Power Analyzer Test System	Voltech	PM6000	200006700523	2020-06-22

3.6. Electrostatic Discharge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ESD Simulator	SCHLODER	SESD 230	604035	2020-06-22

3.7. RF Field Strength Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	RS Test Software	Tonscend	/	/	N/A
2	ESG Vector Signal Generator	Agilent	E4438C	MY42081396	2019-11-22
3	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2020-06-22

4	RF POWER AMPLIFIER	OPHIR	5225R	1052	NCR
5	RF POWER AMPLIFIER	OPHIR	5273F	1019	NCR
6	Stacked Broadband Log Periodic Antenna	SCHWARZBECK	STLP 9128	9128ES-145	NCR
7	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBECK	STLP 9149	9149-484	NCR
8	Electric field probe	Narda S.TS./PMM	EP601	611WX80208	2020-03-26

3.8. Electrical Fast Transient/Burst

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Immunity Simulative Generator	EM TEST	UCS500 M4	0101-34	2020-06-22

3.9. Surge

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Immunity Simulative Generator	EM TEST	UCS500 M4	0101-34	2020-06-22

3.10. Conducted Susceptibility

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Simulator	FRANKONIA	CIT-10/75	A126A1195	2020-06-22
2	CDN	FRANKONIA	CDN-M2+M3	A2210177	2020-06-22
3	6dB Attenuator	FRANKONIA	DAM25W	1172040	2020-06-22

3.11. Voltage Dips

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2020-06-22

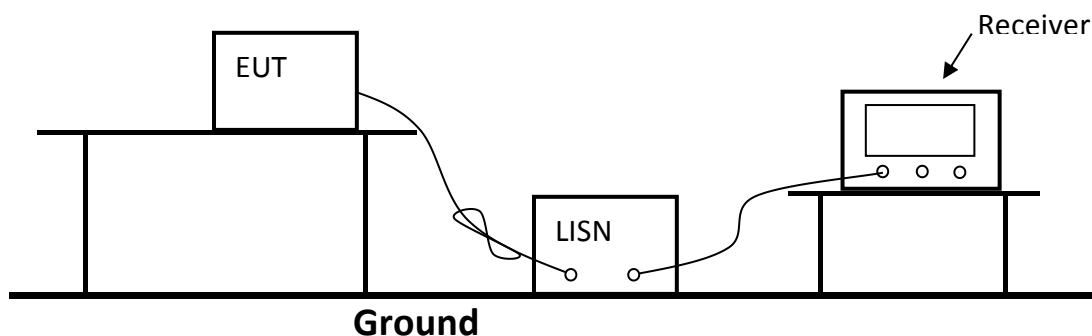
3.12. Voltage Short Interruptions

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2020-06-22

4. TEST RESULTS

4.1. POWER LINE CONDUCTED MEASUREMENT

4.1.1. Block Diagram of Test Setup



4.1.2. Conducted Power Line Emission Measurement Standard and Limits

4.1.2.1. Standard:

EN 55015: 2013+A1: 2015

4.1.2.2. Limits

Frequency	At mains terminals (dB μ V)	
	Quasi-peak Level	Average Level
9kHz ~ 50kHz	110	--
50kHz ~ 150kHz	90 ~ 80*	--
150kHz ~ 0.5MHz	66 ~ 56*	56 ~ 46*
0.5MHz ~ 5.0MHz	56	46
5.0MHz ~ 30MHz	60	50

1. At the transition frequency the lower limit applies.
2. * decreasing linearly with logarithm of the frequency.

4.1.3. EUT Configuration on Test

The configuration of the EUT is same as Section 3.1.

4.1.4. Operating Condition of EUT

4.1.4.1. Setup the EUT as shown in Section 4.1.1.

4.1.4.2. Turn on the power of all equipments.

4.1.4.3. Let the EUT work in test mode (1) and measure it.

4.1.5. Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground and connected to the AC mains through a Line Impedance Stabilization Network (L.I.S.N.). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission according to the EN 55015 regulations during conducted emission measurement. And the voltage probe had been used for the load terminals measurement according to the EN 55015 standard.

The bandwidth of the test receiver is set at 200Hz in 9k~150kHz range and 9kHz in 150k~30MHz range.

The frequency range from 9kHz to 30MHz is checked.

All the test results are listed in Section 4.1.6.

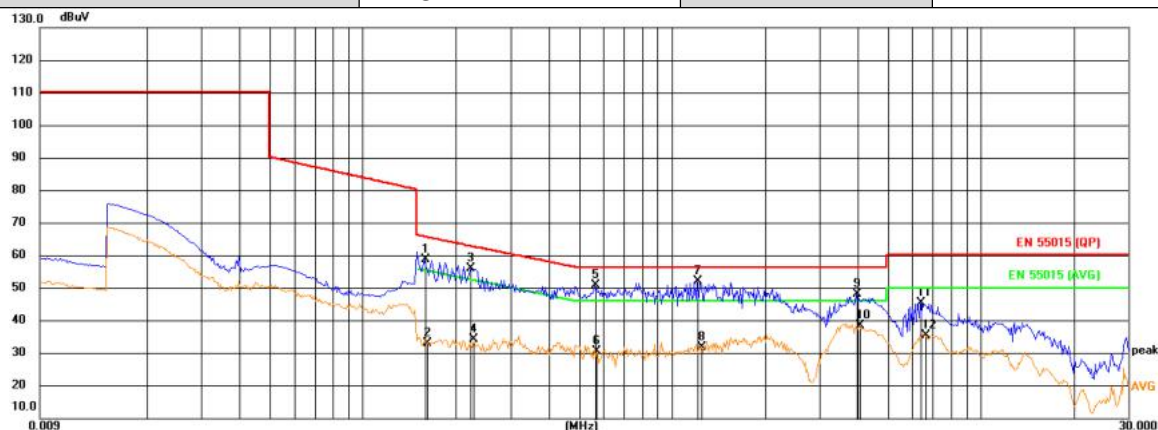
The frequency range from 9kHz to 30MHz is investigated.

4.1.6. Test Results

PASS.

The test result please refer to the next page.

Model No.	ERC1201	Test Mode	Mode 1
Environmental Conditions	23.3°C, 53.7% RH	Test Engineer	Jay Li
Pol	Line		



Temp.()/Hum.(%RH): 23.3 / 53.7

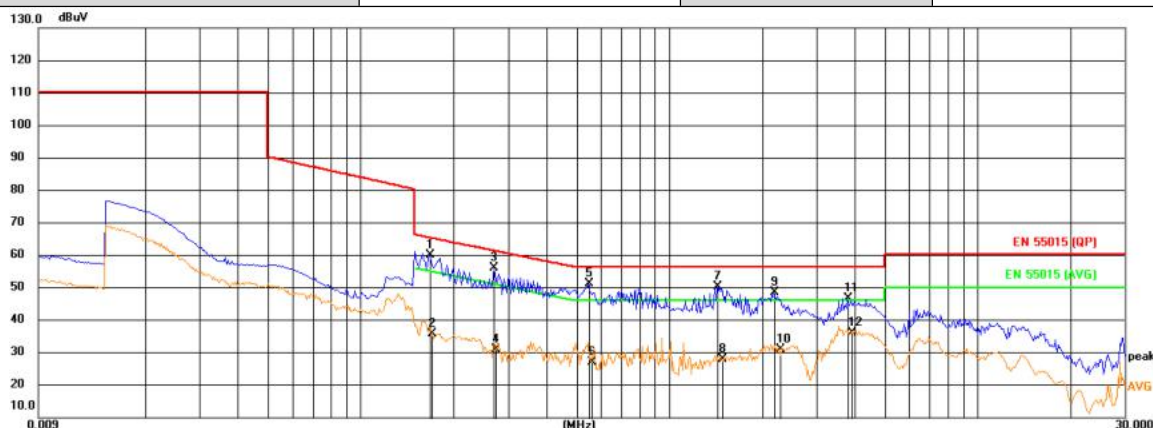
Time: 18:47:31

Standard: EN 55015 (QP)

Test By: JAY LI

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1590	39.32	19.39	58.71	65.52	-6.81	QP
2	0.1615	13.64	19.39	33.03	55.39	-22.36	AVG
3	0.2235	36.60	19.40	56.00	62.69	-6.69	QP
4	0.2290	14.84	19.41	34.25	52.49	-18.24	AVG
5	0.5637	31.64	19.25	50.89	56.00	-5.11	QP
6	0.5726	11.62	19.23	30.85	46.00	-15.15	AVG
7	1.2117	33.36	18.70	52.06	56.00	-3.94	QP
8	1.2435	13.15	18.70	31.85	46.00	-14.15	AVG
9	3.9571	29.18	18.92	48.10	56.00	-7.90	QP
10	4.0560	19.53	18.91	38.44	46.00	-7.56	AVG
11	6.3780	26.69	18.91	45.60	60.00	-14.40	QP
12	6.6211	16.41	19.01	35.42	50.00	-14.58	AVG

Model No.	ERC1201	Test Mode	Mode 1
Environmental Conditions	23.3°C, 53.7% RH	Test Engineer	Jay Li
Pol	Neutral		



Temp.()/Hum.(%RH): 23.3 / 53.7

Time: 18:41:45

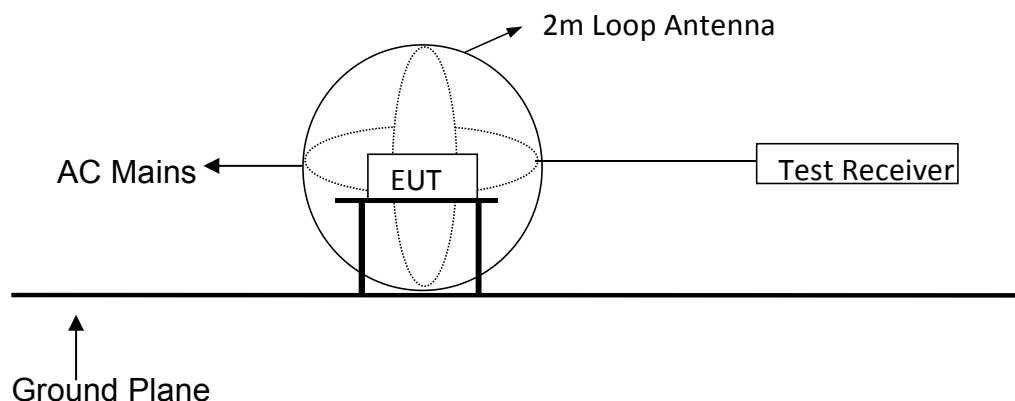
Standard: EN 55015 (QP)

Test By: JAY LI

No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1680	40.74	19.40	60.14	65.06	-4.92	QP
2	0.1710	16.47	19.40	35.87	54.91	-19.04	AVG
3	0.2714	36.55	19.42	55.97	61.07	-5.10	QP
4	0.2736	11.56	19.42	30.98	51.01	-20.03	AVG
5	0.5460	31.84	19.28	51.12	56.00	-4.88	QP
6	0.5594	7.84	19.26	27.10	46.00	-18.90	AVG
7	1.4370	31.66	18.73	50.39	56.00	-5.61	QP
8	1.4910	9.17	18.74	27.91	46.00	-18.09	AVG
9	2.1840	29.89	18.80	48.69	56.00	-7.31	QP
10	2.2785	12.22	18.81	31.03	46.00	-14.97	AVG
11	3.8041	27.79	18.91	46.70	56.00	-9.30	QP
12	3.9075	17.31	18.92	36.23	46.00	-9.77	AVG

4.2. MAGNETIC FIELD EMISSION MEASUREMENT

4.2.1. Block Diagram of Test Setup



4.2.2. Magnetic Field Emission Measurement Standard and Limits

4.2.2.1. Test Standard

EN 55015: 2013+A1: 2015

4.2.2.2. Test Limits

Frequency	Limits for loop diameter (dB μ A)
	2m
9kHz ~ 70kHz	88
70kHz ~ 150kHz	88 ~ 58*
150kHz ~ 3.0MHz	58 ~ 22*
3.0MHz ~ 30MHz	22

1. At the transition frequency the lower limit applies.
2. * decreasing linearly with logarithm of the frequency.

4.2.3. EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

4.2.4. Operating Condition of EUT

Same as conducted measurement which is listed in Section 4.1.4., except the test set up replaced by Section 4.2.1.

4.2.5. Test Procedure

The EUT is placed on a wood table in the center of a loop antenna. The induced current in the loop antenna is measured by means of a current probe and the test receiver.

Three field components are checked by means of a coaxial switch.

The frequency range from 9kHz to 30MHz is investigated. The receiver is measured with the quasi-peak detector. For frequency band 9kHz to 150kHz, the bandwidth of the field strength meter is set at 200Hz. For frequency band 150kHz to 30MHz, the bandwidth is set at 9kHz.

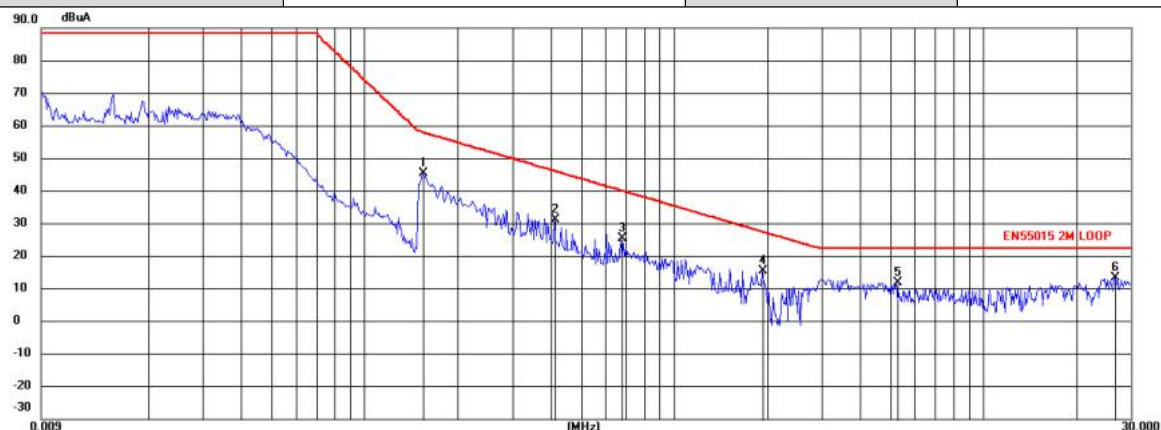
All the test results are listed in Section 4.2.6.

4.2.6. Test Results

PASS.

The frequency range from 9kHz to 30MHz is investigated.

Model No.	ERC1201	Test Mode	Mode 1
Environmental Conditions	23.3°C, 53.7% RH	Test Engineer	Jay Li
Pol	X		



Temp.()/Hum.(%RH): 23.3 / 53.7

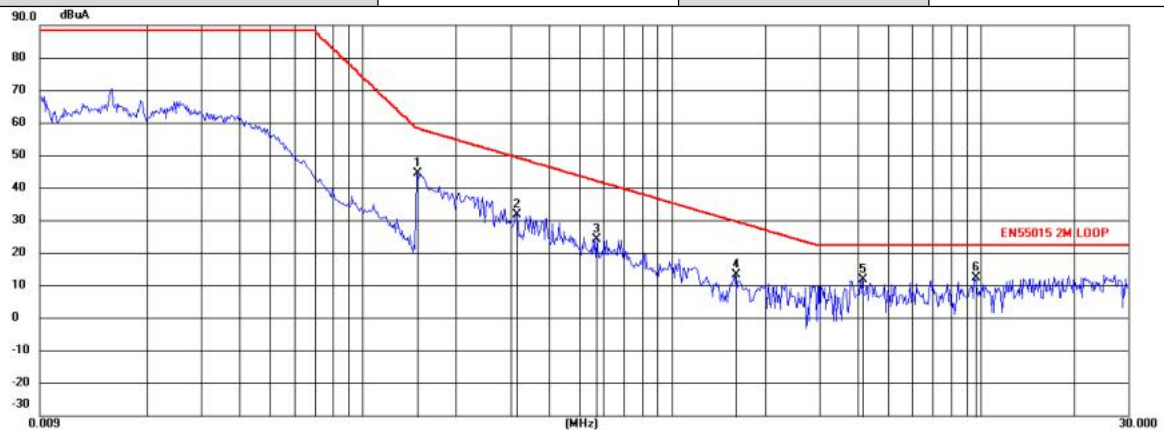
Time: 9:29:18

Standard: EN55015 2M LOOP

Test By: JAY LI

No.	Frequency (MHz)	Reading (dBuA)	Correct (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Remark
1	0.1544	34.97	10.38	45.35	57.65	-12.30	QP
2	0.4111	21.25	9.94	31.19	45.88	-14.69	QP
3	0.6764	16.26	9.28	25.54	39.90	-14.36	QP
4	1.9410	6.74	8.73	15.47	27.23	-11.76	QP
5	5.2621	7.47	4.29	11.76	22.00	-10.24	QP
6	26.6006	12.80	0.57	13.37	22.00	-8.63	QP

Model No.	ERC1201	Test Mode	Mode 1
Environmental Conditions	23.3°C, 53.7% RH	Test Engineer	Jay Li
Pol	Y		



Temp.()/Hum.(%RH): 23.3 / 53.7

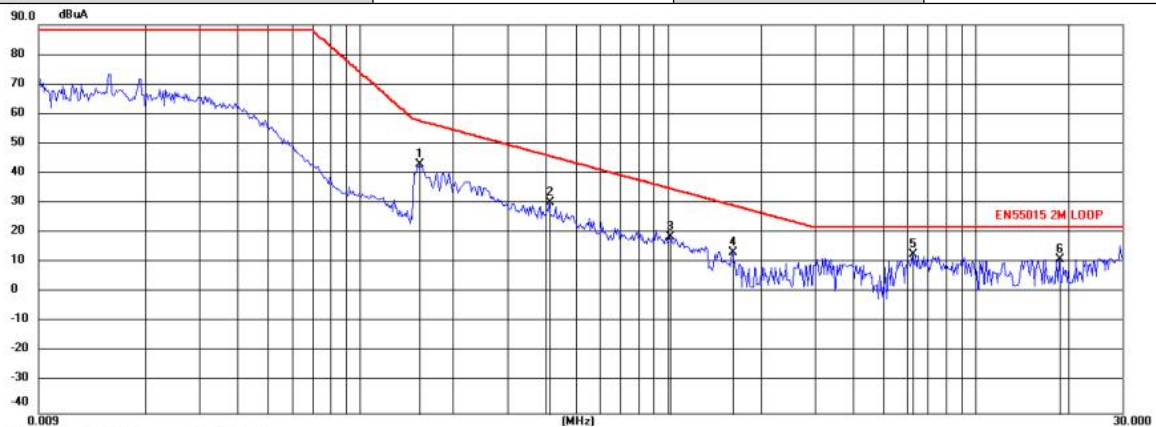
Time: 9:36:14

Standard: EN55015 2M LOOP

Test By: JAY LI

No.	Frequency (MHz)	Reading (dBuA)	Correct (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Remark
1	0.1500	34.19	10.35	44.54	58.00	-13.46	QP
2	0.3165	21.58	10.24	31.82	49.03	-17.21	QP
3	0.5725	14.95	9.29	24.24	41.90	-17.66	QP
4	1.6125	4.94	8.33	13.27	29.46	-16.19	QP
5	4.1774	6.07	5.76	11.83	22.00	-10.17	QP
6	9.6226	6.27	6.11	12.38	22.00	-9.62	QP

Model No.	ERC1201	Test Mode	Mode 1
Environmental Conditions	23.3°C, 53.7% RH	Test Engineer	Jay Li
Pol	Z		



Temp.()/Hum.(%RH): 23.3 / 53.7

Time: 9:44:18

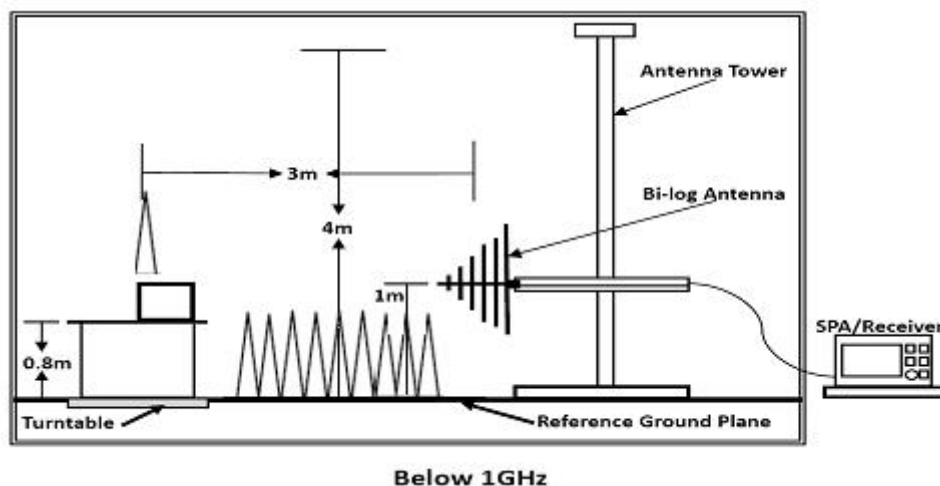
Standard: EN55015 2M LOOP

Test By: JAY LI

No.	Frequency (MHz)	Reading (dBuA)	Correct (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Remark
1	0.1564	32.84	10.39	43.23	57.50	-14.27	QP
2	0.4111	20.75	9.94	30.69	45.88	-15.19	QP
3	1.0181	11.44	7.62	19.06	34.99	-15.93	QP
4	1.6209	5.42	8.34	13.76	29.40	-15.64	QP
5	6.2385	9.10	3.95	13.05	22.00	-8.95	QP
6	18.8881	7.75	3.77	11.52	22.00	-10.48	QP

4.3. RADIATED EMISSION MEASUREMENT

4.3.1. Block Diagram of Test Setup



4.3.2. Test Standard

EN 55015: 2013+A1: 2015

4.3.3. Radiated Emission Limits

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dB μ V/m)
30 ~ 230	3	42-35
230 ~ 300	3	42

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

4.3.4. EUT Configuration on Test

The EN 55015 regulations test method must be used to find the maximum emission during radiated emission measurement.

4.3.5. Operating Condition of EUT

4.3.5.1 Turn on the power.

4.3.5.2 After that, let the EUT work in test mode (1) and measure it.

4.3.6. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz.

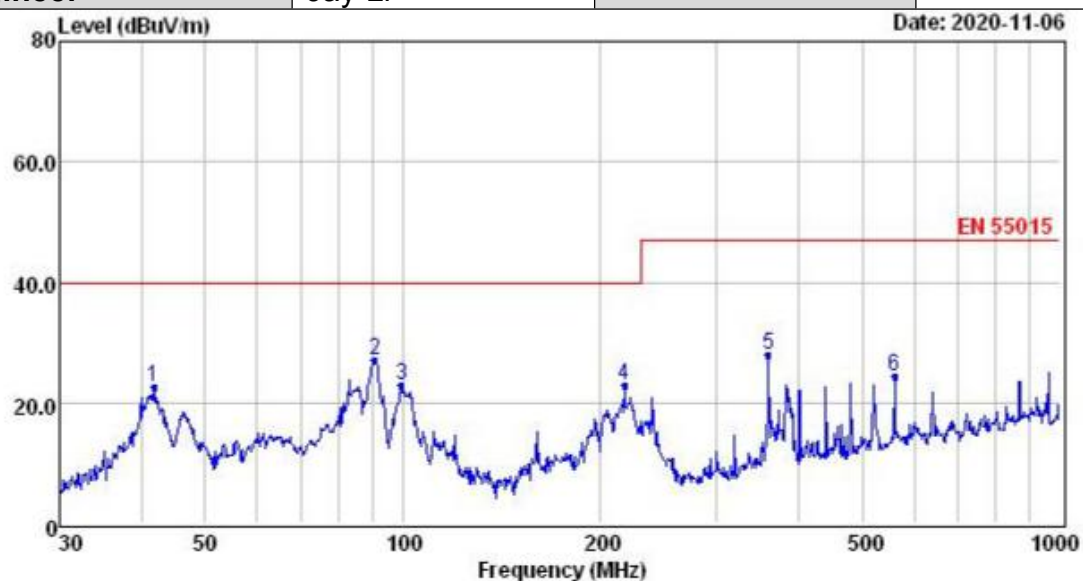
The frequency range from 30MHz to 300MHz is investigated.

4.3.7. Test Results

PASS.

The test result please refer to the next page.

Model No.	ERC1201	Test Mode	Mode 1
Environmental Conditions	22.3°C, 54.4% RH	Detector Function	Quasi-peak
Pol	Vertical	Distance	3m
Test Engineer	Jay Li		

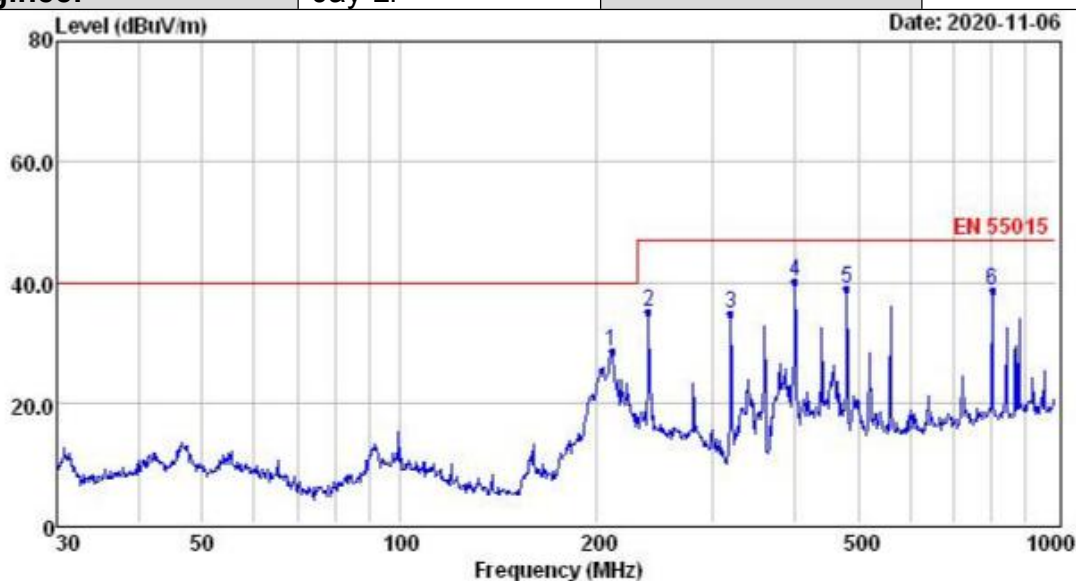


Env./Ins: 22.3°C/53.4%
 pol: VERTICAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	41.71	38.52	0.50	13.57	22.61	40.00	-17.39	QP
2	90.54	44.62	0.68	12.00	27.20	40.00	-12.80	QP
3	99.53	39.28	0.61	13.13	22.92	40.00	-17.08	QP
4	217.54	41.21	0.88	11.12	22.83	40.00	-17.17	QP
5	360.45	43.08	1.18	14.43	27.97	47.00	-19.03	QP
6	560.69	36.36	1.43	17.71	24.40	47.00	-22.60	QP

Note: 1. All readings are Quasi-peak values.
 2. Measured= Reading + Antenna Factor + Cable Loss
 3. The emission that are 20db below the official limit are not reported

Model No.	ERC1201	Test Mode	Mode 1
Environmental Conditions	22.3°C, 54.4% RH	Detector Function	Quasi-peak
Pol	Horizontal	Distance	3m
Test Engineer	Jay Li		



Env./Ins: 22.3°C/53.4%
 pol: HORIZONTAL

	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	210.79	47.19	0.93	10.91	28.66	40.00	-11.34	QP
2	239.99	52.39	1.01	12.09	35.07	47.00	-11.93	QP
3	319.94	50.75	1.16	13.33	34.66	47.00	-12.34	QP
4	400.43	54.73	1.20	15.07	40.16	47.00	-6.84	QP
5	480.53	52.50	1.31	16.08	38.84	47.00	-8.16	QP
6	801.79	47.85	1.72	20.08	38.55	47.00	-8.45	QP

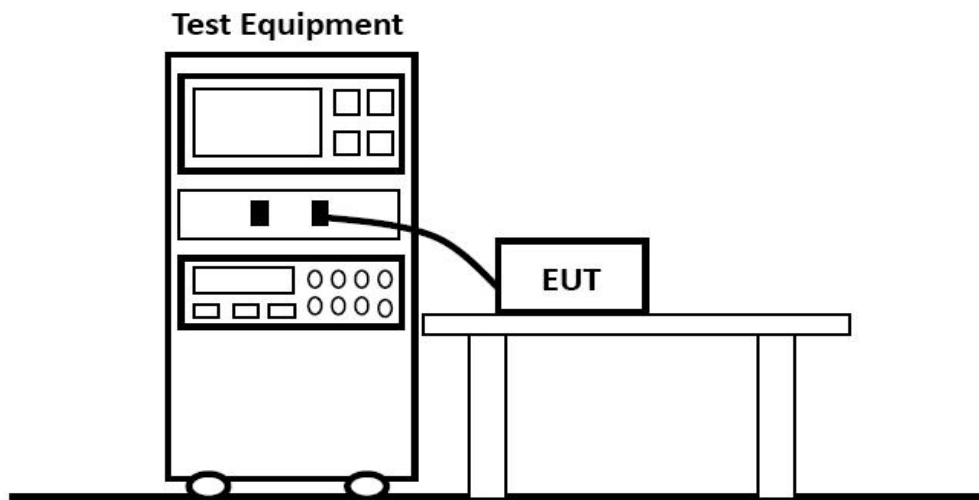
Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that are 20db below the official limit are not reported

4.4. HARMONIC CURRENT MEASUREMENT

4.4.1. Block Diagram of Test Setup



4.4.2. Test Standard

EN 61000-3-2: 2014

4.4.3. Operating Condition of EUT

Same as Section 4.1.4, except the test setup replaced by Section 4.4.1.

4.4.4. Test Results

Pass

The test result please refer to the next page.

Model No.	ERC1201		Test Engineer	Jay Li
	Harmonic Results Against Chosen Limits:	Notes: Supplied fundamental current not equal to measured		
	PASS			
Test Parameter Details		User Entered	Measured	
Operating Frequency:		50	49.9840	
Operating Voltage:		230	229.5680	
Specified Power:		0.0000	98.0856	
Fundamental Current:		0.5000	0.4272	
Power Factor:		0.9000	0.9998	
Average Input Current:			0.4272	
Maximum POHC:			0.0004	
POHC Limit:			0.0474	
Maximum THC:			0.0035	
Minimum Power:		75		
Class Multiplier:		1.0000		
Test Duration:		00:02:30		

Overall Result:

PASS

Notes:

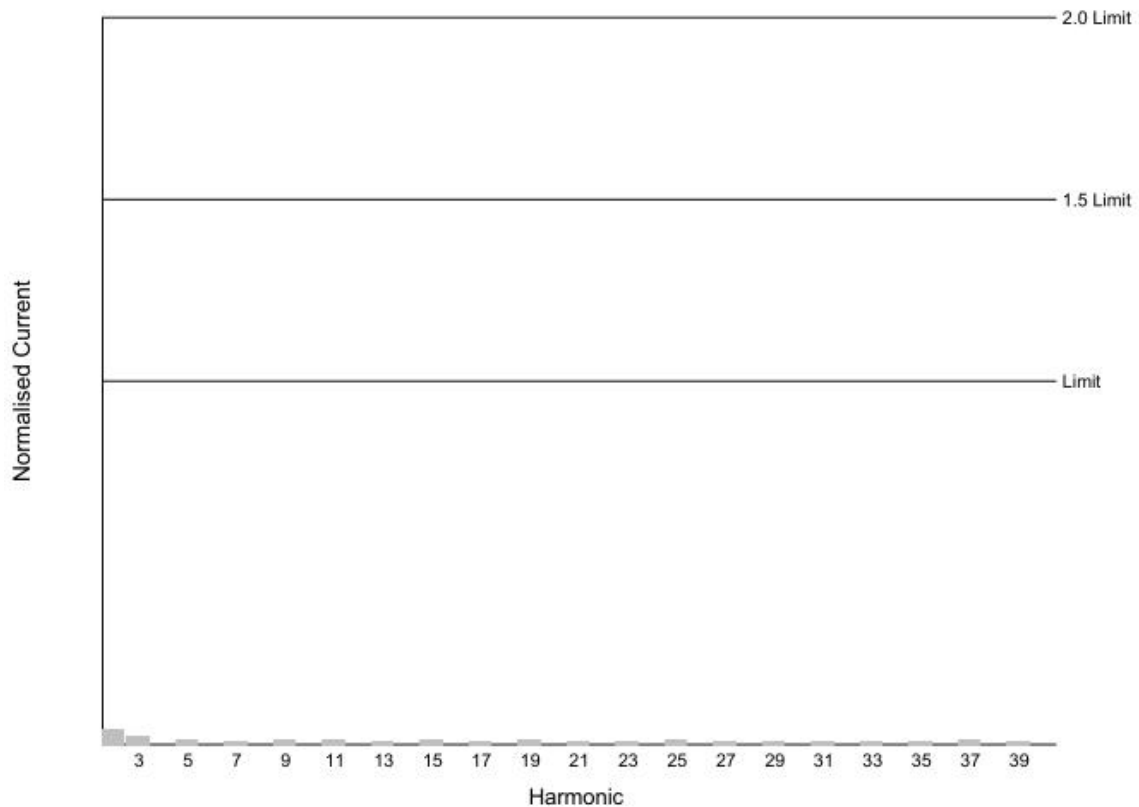
Supplied fundamental current not equal to measured

Class

Class C > 25W

Class Multiplier

1



Overall Result:

PASS

Notes:

Supplied fundamental current not equal to measured

	Nominal	Measured	Deviation	Allowed Deviation	Result
Supply Voltage	230.00V	229.57V	0.43V	4.60V	Pass
Supply Frequency	50.00Hz	49.98Hz	0.02Hz	0.25Hz	Pass
Crest Factor	1.4100	1.4184	0.0084	+/- 0.01	Pass

Harmonic	Reading	Limit	Result	Harmonic	Reading	Limit	Result
2	0.08%	0.20%	Pass	3	0.03%	0.90%	Pass
4	0.02%	0.20%	Pass	5	0.03%	0.40%	Pass
6	0.02%	0.20%	Pass	7	0.04%	0.30%	Pass
8	0.03%	0.20%	Pass	9	0.03%	0.20%	Pass
10	0.01%	0.20%	Pass	11	0.03%	0.10%	Pass
12	0.01%	0.10%	Pass	13	0.01%	0.10%	Pass
14	0.01%	0.10%	Pass	15	0.03%	0.10%	Pass
16	0.01%	0.10%	Pass	17	0.01%	0.10%	Pass
18	0.01%	0.10%	Pass	19	0.02%	0.10%	Pass
20	0.01%	0.10%	Pass	21	0.03%	0.10%	Pass
22	0.01%	0.10%	Pass	23	0.01%	0.10%	Pass
24	0.01%	0.10%	Pass	25	0.02%	0.10%	Pass
26	0.01%	0.10%	Pass	27	0.03%	0.10%	Pass
28	0.01%	0.10%	Pass	29	0.01%	0.10%	Pass
30	0.00%	0.10%	Pass	31	0.01%	0.10%	Pass
32	0.01%	0.10%	Pass	33	0.01%	0.10%	Pass
34	0.01%	0.10%	Pass	35	0.01%	0.10%	Pass
36	0.01%	0.10%	Pass	37	0.03%	0.10%	Pass
38	0.01%	0.10%	Pass	39	0.03%	0.10%	Pass
40	0.01%	0.10%	Pass				

Overall Result:

PASS

Notes:

Supplied fundamental current not equal to measured

Class

Class C > 25W

Class Multiplier

1

Harm	Limit 1	Limit 2	Average Reading	<L1 <L2	Max Reading	<L2	Pass FAIL	Harm	Limit 1	Limit 2	Average Reading	<L1 <L2	Max Reading	<L2	Pass FAIL
2	10.00mA	15.00mA	0.356mA	✓ ✓	0.391mA	✓	N/A	3	134.9mA	202.4mA	3.218mA	✓ ✓	3.260mA	✓	N/A
4	None	None	0.370mA		0.409mA		N/A	5	49.99mA	74.99mA	0.609mA	✓ ✓	0.634mA	✓	N/A
6	None	None	0.195mA		0.217mA		N/A	7	35.00mA	52.50mA	0.188mA	✓ ✓	0.230mA	✓	N/A
8	None	None	0.264mA		0.346mA		N/A	9	24.99mA	37.49mA	0.249mA	✓ ✓	0.296mA	✓	N/A
10	None	None	0.180mA		0.186mA		N/A	11	15.00mA	22.49mA	0.179mA	✓ ✓	0.195mA	✓	N/A
12	None	None	0.237mA		0.253mA		N/A	13	15.00mA	22.49mA	0.106mA	✓ ✓	0.123mA	✓	N/A
14	None	None	0.208mA		0.224mA		N/A	15	15.00mA	22.49mA	0.192mA	✓ ✓	0.208mA	✓	N/A
16	None	None	0.100mA		0.111mA		N/A	17	15.00mA	22.49mA	0.106mA	✓ ✓	0.118mA	✓	N/A
18	None	None	0.105mA		0.119mA		N/A	19	15.00mA	22.49mA	0.147mA	✓ ✓	0.162mA	✓	N/A
20	None	None	0.115mA		0.128mA		N/A	21	15.00mA	22.49mA	0.119mA	✓ ✓	0.135mA	✓	N/A
22	None	None	0.194mA		0.210mA		N/A	23	15.00mA	22.49mA	0.098mA	✓ ✓	0.108mA	✓	N/A
24	None	None	0.256mA		0.275mA		N/A	25	15.00mA	22.49mA	0.174mA	✓ ✓	0.188mA	✓	N/A
26	None	None	0.126mA		0.139mA		N/A	27	15.00mA	22.49mA	0.119mA	✓ ✓	0.131mA	✓	N/A
28	None	None	0.111mA		0.126mA		N/A	29	15.00mA	22.49mA	0.100mA	✓ ✓	0.115mA	✓	N/A
30	None	None	0.097mA		0.110mA		N/A	31	15.00mA	22.49mA	0.097mA	✓ ✓	0.108mA	✓	N/A
32	None	None	0.107mA		0.118mA		N/A	33	15.00mA	22.49mA	0.103mA	✓ ✓	0.117mA	✓	N/A
34	None	None	0.104mA		0.118mA		N/A	35	15.00mA	22.49mA	0.092mA	✓ ✓	0.104mA	✓	N/A
36	None	None	0.101mA		0.113mA		N/A	37	15.00mA	22.49mA	0.190mA	✓ ✓	0.203mA	✓	N/A
38	None	None	0.093mA		0.103mA		N/A	39	15.00mA	22.49mA	0.114mA	✓ ✓	0.126mA	✓	N/A
40	None	None	0.091mA		0.102mA		N/A								

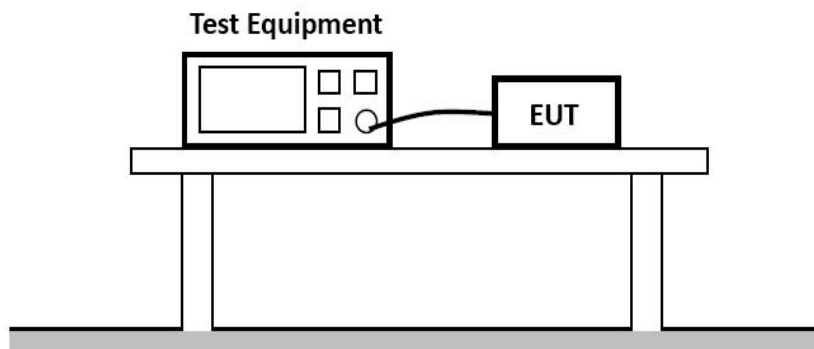
<L1 : Reading is below limit 1.

<L2 : Reading is below limit 2.

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

4.5. VOLTAGE FLUCTUATIONS & FLICKER MEASUREMENT

4.5.1. Block Diagram of Test Setup



4.5.2. Test Standard

EN 61000-3-3: 2013

4.5.3. Operating Condition of EUT

Same as Section 4.1.4, except the test setup replaced by Section 4.5.1.

4.5.4. Test Results

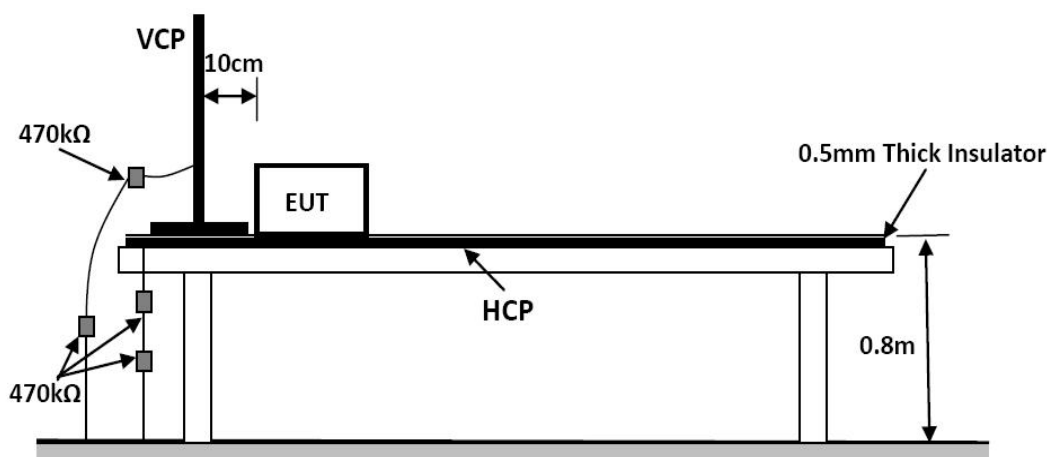
PASS.

The test result please refer to the next page.

Model No.	ERC1201		Test Engineer	Jay Li	
Overall Result: PASS	Notes: Measurement method - Voltage				
	Pst	dc (%)	dmax (%)	d(t) > 3.3%(ms)	
Limit	1.000	3.300	4.000	500	
Reading 1	0.069	0.078	0.372	0	

4.6. ELECTROSTATIC DISCHARGE TEST

4.6.1. Block Diagram of Test Setup



4.6.2. Test Standard

EN 61547: 2009 (EN 61000-4-2: 2009, Severity Level: Air Discharge: Level 3, $\pm 8\text{KV}$
Contact Discharge: Level 2, $\pm 4\text{KV}$)

4.6.3. Severity Levels and Performance Criterion

4.6.3.1. 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

4.6.3.2. Performance criterion: **B**

4.6.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.7

4.6.5. Operating Condition of EUT

4.6.5.1. Setup the EUT as shown in Section 4.6.1.

4.6.5.2. Turn on the power of all equipments.

4.6.5.3. Let the EUT work in test mode (1) and measure it.

4.6.6. Test Procedure

4.6.6.1.Air Discharge

This test is done on a non-conductive surfaces. 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.

Because the case of the EUT is metal surface, so it does not need to be tested.

4.6.6.2.Contact Discharge

All the procedure shall be same as Section 4.6.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

4.6.6.3.Indirect Discharge For Horizontal Coupling Plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

4.6.6.4.Indirect Discharge For Vertical Coupling Plane

At least 20 single discharge 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.

4.6.7.Test Results

PASS.

Please refer to the following page.

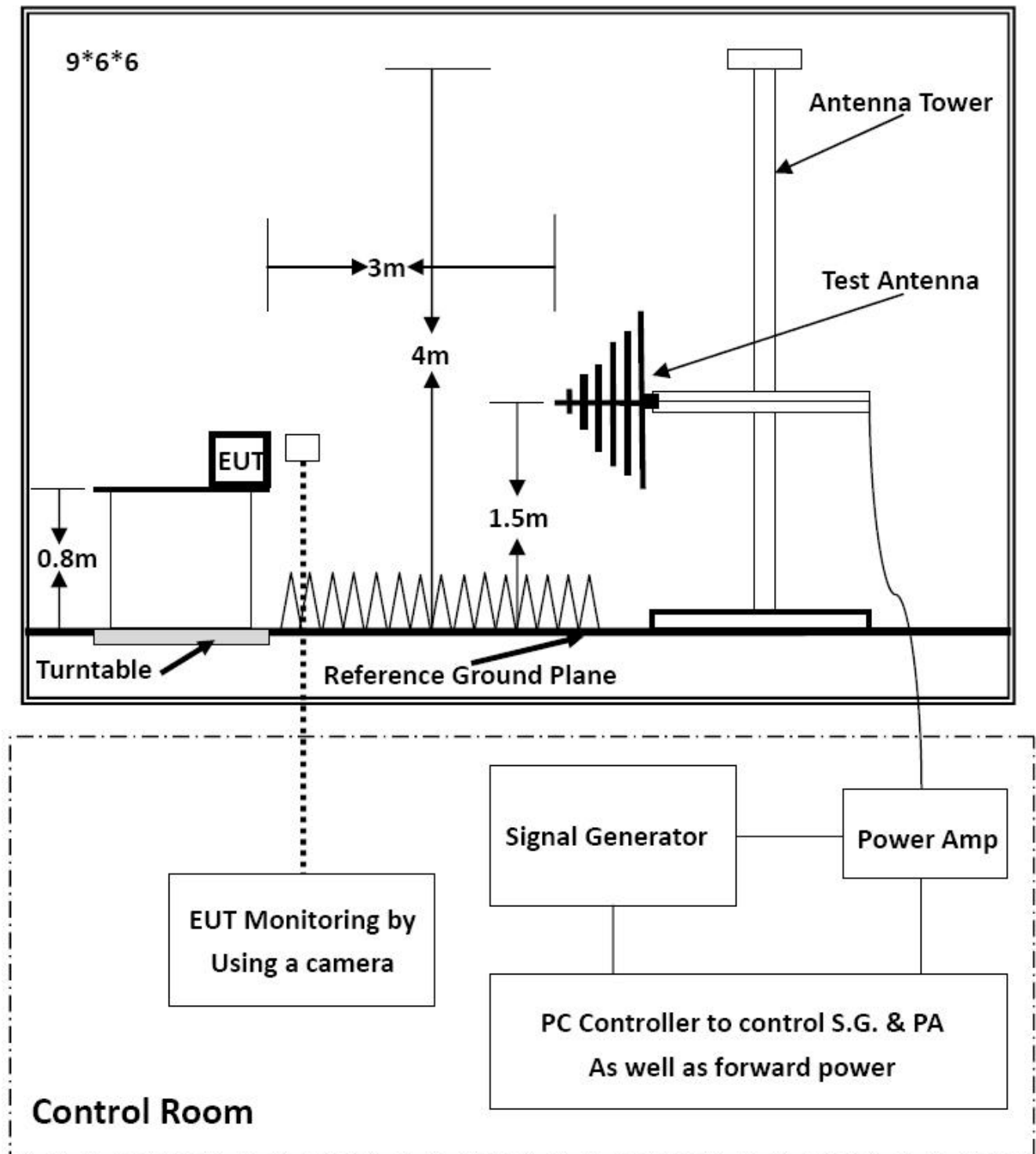
Electrostatic Discharge Test Results

Standard	<input type="checkbox"/> IEC 61000-4-2 <input checked="" type="checkbox"/> EN 61000-4-2		
Applicant	Shenzhen EBELONG Technology Co., Ltd		
EUT	Single channel dimming controller	Temperature	22.5°C
M/N	ERC1201	Humidity	53.2%
Criterion	B	Pressure	1021mbar
Test Mode	Mode 1	Test Engineer	Jay Li

Air Discharge						
Test Points	Test Levels			Results		
	± 2KV	± 4KV	± 8KV	Pass	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Contact Discharge						
Test Points	Test Levels		Results			
	± 2 KV	±4 KV	Pass	Fail	Performance Criterion	
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Discharge To Horizontal Coupling Plane						
Side of EUT	Test Levels		Results			
	± 2 KV	± 4 KV	Pass	Fail	Performance Criterion	
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Discharge To Vertical Coupling Plane						
Side of EUT	Test Levels		Results			
	± 2 KV	± 4 KV	Pass	Fail	Performance Criterion	
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A	<input checked="" type="checkbox"/> B

4.7. RF FIELD STRENGTH SUSCEPTIBILITY TEST

4.7.1. Block Diagram of Test Setup



4.7.2. Test Standard

EN 61547: 2009 (EN 61000-4-3: 2006+A2: 2010, Severity Level: 2, 3V / m)

4.7.3. Severity Levels and Performance Criterion

4.7.3.1. Severity level

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

4.7.3.2. Performance criterion: **A**

4.7.4. EUT Configuration on Test

The configuration of EUT are listed in Section 3.8.

4.7.5. Operating Condition of EUT

4.7.5.1. Setup the EUT as shown in Section 4.7.1.

4.7.5.2. Turn on the power of all equipments.

4.7.5.3. Let the EUT work in test mode (1) and measure it.

4.7.6. 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. In order to judge the EUT performance, a CCD camera is used to monitor EUT screen. All the scanning conditions are as follows:

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80 - 6000 MHz
4. Dwell time of radiated	0.0015 decade/s
5. Waiting Time	3 Sec.

4.7.7. Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

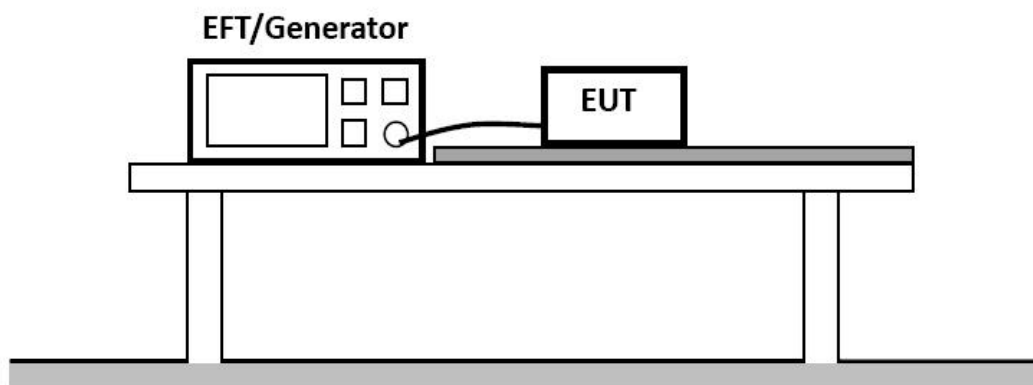
Standard	<input type="checkbox"/> IEC 61000-4-3 <input checked="" type="checkbox"/> EN 61000-4-3		
Applicant	Shenzhen EBELONG Technology Co., Ltd		
EUT	Single channel dimming controller	Temperature	22.5℃
M/N	ERC1201	Humidity	52.7%
Field Strength	3 V/m	Criterion	A
Test Mode	Mode 1	Test Engineer	Jay Li
Frequency Range	80 MHz to 6000 MHz		
Modulation	<input type="checkbox"/> None <input type="checkbox"/> Pulse <input checked="" type="checkbox"/> AM 1KHz 80%		
Steps	1%		

	Horizontal	Vertical
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

Note:

4.8. ELECTRICAL FAST TRANSIENT/BURST TEST

4.8.1. Block Diagram of Test Setup



4.8.2. Test Standard

EN 61547: 2009 (EN 61000-4-4: 2012, Severity Level: Level 2: 1KV)

4.8.3. Severity Levels and Performance Criterion

4.8.3.1. Severity level

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

4.8.3.2. Performance criterion: **B**

4.8.4. EUT Configuration on Test

The configuration of EUT are listed in Section 3.9.

4.8.5. Operating Condition of EUT

11.5.1. Setup the EUT as shown in Section 4.8.1.

11.5.2. Turn on the power of all equipments.

11.5.3. Let the EUT work in test mode (1) and measure it.

4.8.6. Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. 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.

4.8.6.1.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 mins.

4.8.6.2.For signal lines and control lines ports:

No I/O ports. It's unnecessary to test.

4.8.6.3.For DC output line ports:

It's unnecessary to test.

4.8.7.Test Results

PASS.

Please refer to the following page.

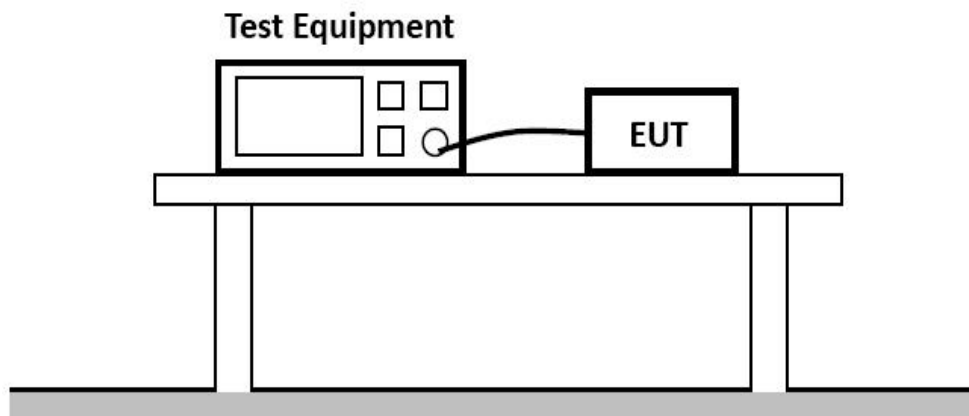
Electrical Fast Transient/Burst Test Results

Standard	<input type="checkbox"/> IEC 61000-4-4 <input checked="" type="checkbox"/> EN 61000-4-4		
Applicant	Shenzhen EBELONG Technology Co., Ltd		
EUT	Single channel dimming controller	Temperature	22.7℃
M/N	ERC1201	Humidity	53.5%
Test Mode	Mode 1	Criterion	B
Test Engineer	Jay Li		

Line	Test Voltage	Result (+)	Result (-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
PE			
L-N	1KV	PASS	PASS
L-PE			
N-PE			
L-N-PE			
Signal Line			
I/O Cable			
Note:			

4.9. SURGE IMMUNITY TEST

4.9.1. Block Diagram of Test Setup



4.9.2. Test Standard

EN 61547: 2009 (EN61000-4-5: 2014, Severity Level: Line to Line: Level 2, 1.0KV;
Line to Earth: Level 3, 2.0KV)

4.9.3. Severity Levels and Performance Criterion

4.9.3.1. Severity level

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

4.9.3.2. Performance criterion: **B**

4.9.4. EUT Configuration on Test

The configuration of EUT are listed in Section 3.10

4.9.5. Operating Condition of EUT

4.9.5.1. Setup the EUT as shown in Section 4.9.1.

4.9.5.2. Turn on the power of all equipments.

4.9.5.3. Let the EUT work in test mode (1) and measure it.

4.9.6. Test Procedure

4.9.6.1. Set up the EUT and test generator as shown on Section 4.9.1.

4.9.6.2. For line to line coupling mode, provide a 1.0KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.

4.9.6.3. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.

4.9.6.4. Different phase angles are done individually.

4.9.6.5. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

4.9.7. Test Results

PASS.

Please refer to the following page.

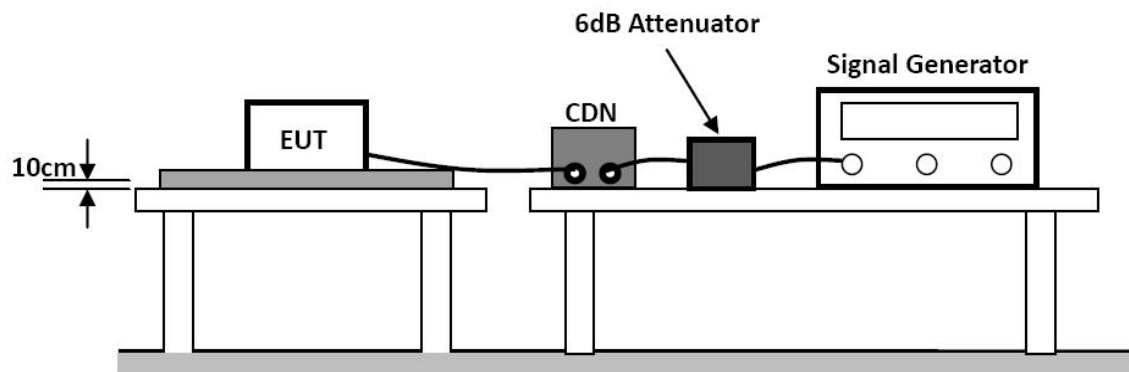
Surge Immunity Test Result

Standard	<input type="checkbox"/> IEC 61000-4-5 <input checked="" type="checkbox"/> EN 61000-4-5		
Applicant	Shenzhen EBELONG Technology Co., Ltd		
EUT	Single channel dimming controller	Temperature	23.4℃
M/N	ERC1201	Humidity	53.7%
Test Mode	Mode 1	Criterion	B
Test Engineer	Jay Li		

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	0°	5	1.0	PASS
	+	90°	5	1.0	PASS
	+	180°	5	1.0	PASS
	+	270°	5	1.0	PASS
	-	0°	5	1.0	PASS
	-	90°	5	1.0	PASS
	-	180°	5	1.0	PASS
	-	270°	5	1.0	PASS
L-PE					
N-PE					
Signal Line					
Note					

4.10. INJECTED CURRENTS SUSCEPTIBILITY TEST

4.10.1. Block Diagram of Test Setup



4.10.2. Test Standard

EN 61547: 2009 (EN 61000-4-6: 2014, Severity Level: 3V (rms), 0.15MHz ~ 80MHz)

4.10.3. Severity Levels and Performance Criterion

4.10.3.1. Severity level

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

4.10.3.2. Performance criterion: A

4.10.4. EUT Configuration on Test

The configuration of EUT are listed in Section 3.11.

4.10.5. Operating Condition of EUT

4.10.5.1. Setup the EUT as shown in Section 4.10.1.

4.10.5.2. Turn on the power of all equipments.

4.10.5.3. Let the EUT work in test mode (1) and measure it.

4.10.6.Test Procedure

4.10.6.1.Set up the EUT, CDN and test generators as shown on Section 4.10.1.

4.10.6.2.Let the EUT work in test mode and measure it.

4.10.6.3.The EUT 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 about 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).

4.10.6.4.The disturbance signal described below is injected to EUT through CDN.

4.10.6.5.The EUT operates within its operational mode(s) under intended climatic conditions after power on.

4.10.6.6.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.

4.10.6.7.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.

4.10.6.8.Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

4.10.7.Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

Standard	<input type="checkbox"/> IEC 61000-4-6 <input checked="" type="checkbox"/> EN 61000-4-6		
Applicant	Shenzhen EBELONG Technology Co., Ltd		
EUT	Single channel dimming controller	Temperature	23.5℃
M/N	ERC1201	Humidity	53.6%
Test Mode	Mode 1	Criterion	A
Test Engineer	Jay Li		

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	3V	A	PASS

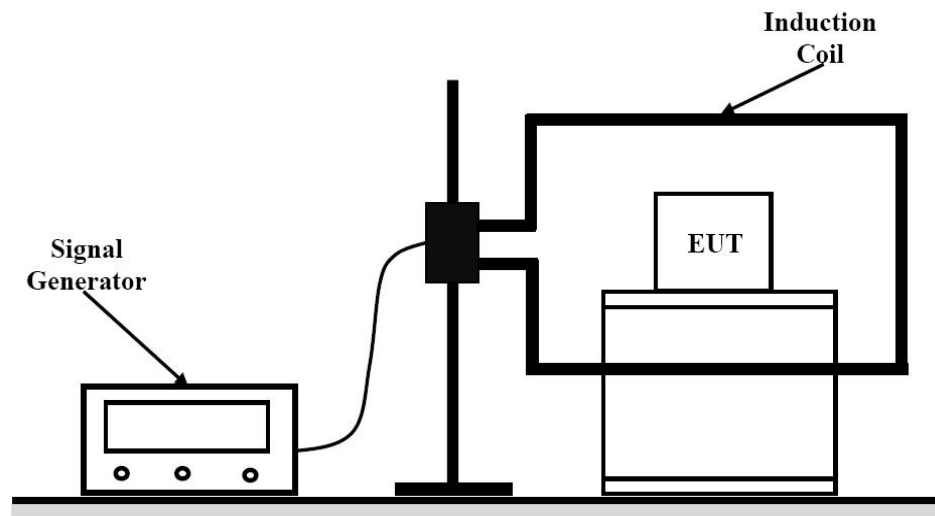
Remark:

1. Modulation Signal: 1kHz 80% AM
2. Measurement Equipment:
Simulator: CIT-10 (FRANKONIA)
CDN : ☐ CDN-M2 (FRANKONIA)
☒ CDN-M3 (FRANKONIA)

Note:

4.11. MAGNETIC FIELD IMMUNITY TEST

4.11.1. Block Diagram of Test Setup



4.11.2. Test Standard

EN 61547: 2009 (EN 61000-4-8: 2010, Severity Level 2: 3A/m)

4.11.3. Severity Levels and Performance Criterion

4.11.3.1. Severity level

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

4.11.3.2. Performance criterion: A

4.11.4. EUT Configuration on Test

The configuration of EUT are listed in Section 3.12.

4.11.5. Operating Condition of EUT

4.11.5.1. Setup the EUT as shown in Section 4.11.1.

4.11.5.2. Turn on the power of all equipments.

4.11.5.3. Let the EUT work in test mode (1) and measure it.

4.11.6.Test Procedure

4.11.6.1.Set up the EUT system as shown on Section 4.11.1.

4.11.6.2.The Induction coil is set up in horizontal or vertical.

4.11.6.3.Let the EUT work in test mode and measure it.

4.11.7.Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Result

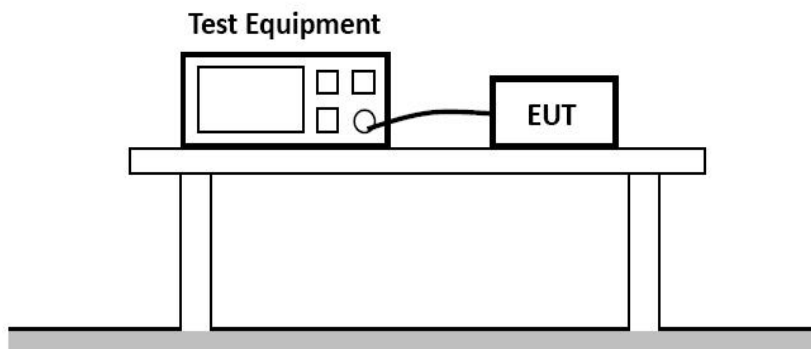
Standard	<input type="checkbox"/> IEC 61000-4-8 <input checked="" type="checkbox"/> EN 61000-4-8		
Applicant	Shenzhen EBELONG Technology Co., Ltd		
EUT	Single channel dimming controller	Temperature	23.9℃
M/N	ERC1201	Humidity	53.8%
Test Mode	Mode 1	Criterion	A
Test Engineer	Jay Li		

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
3	5 mins	X	A	PASS
3	5 mins	Y	A	PASS
3	5 mins	Z	A	PASS

Note:

4.12. VOLTAGE DIPS AND INTERRUPTIONS TEST

4.12.1. Block Diagram of Test Setup



4.12.2. Test Standard

EN 61547: 2009 (EN 61000-4-11: 2004+A1: 2017)

4.12.3. Severity Levels and Performance Criterion

4.12.3.1. Severity level

Test Level (%UT)	Voltage dip and short interruptions (%UT)	Duration (in period)
0	100	0.5
70	30	10

4.12.3.2. Performance criterion: B&C

4.12.4. EUT Configuration on Test

The configuration of EUT are listed in Section 3.13&3.14.

4.12.5. Operating Condition of EUT

4.12.5.1. Setup the EUT as shown in Section 4.12.1.

4.12.5.2. Turn on the power of all equipments.

4.12.5.3. Let the EUT work in test mode (1) and measure it.

4.12.6. Test Procedure

4.12.6.1. Set up the EUT and test generator as shown on Section 4.12.1.

4.12.6.2. The interruptions is introduced at selected phase angles with specified duration.

4.12.6.3. Record any degradation of performance.

4.12.7. Test Results

PASS.

Please refer to the following page.

Voltage Dips And Interruptions Test Results

Standard	<input type="checkbox"/> IEC 61000-4-11 <input checked="" type="checkbox"/> EN 61000-4-11		
Applicant	Shenzhen EBELONG Technology Co., Ltd		
EUT	Single channel dimming controller	Temperature	23.3℃
M/N	ERC1201	Humidity	53.5%
Test Mode	Mode 1	Criterion	B&C
Test Engineer	Jay Li		

Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Criterion	Result
0	100	0.5P	B	PASS
70	30	10P	C	PASS

Note:

5. PHOTOGRAPH

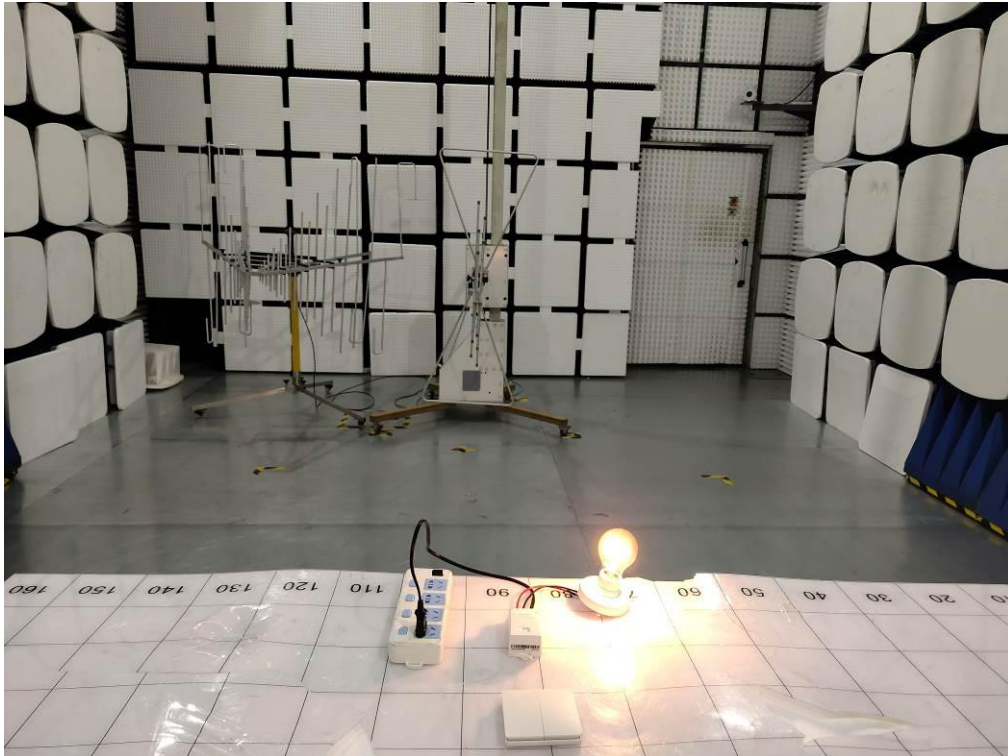
5.1. Photo of Power Line Conducted Measurement



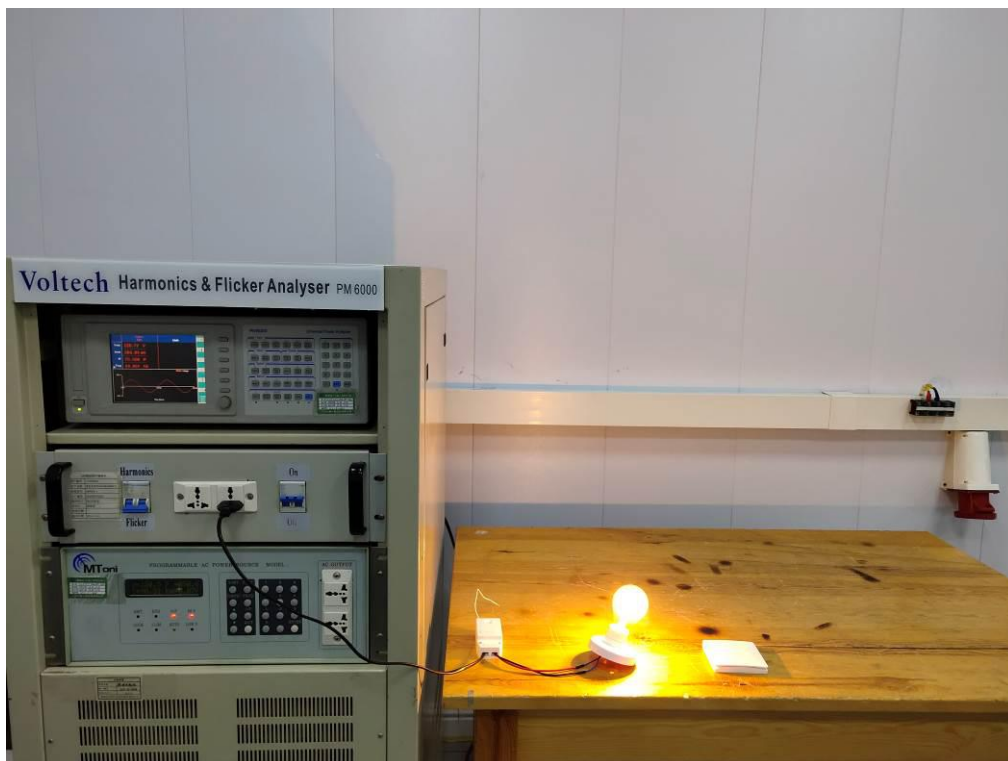
5.2. Photo of Radiated Electromagnetic Disturbance Measurement



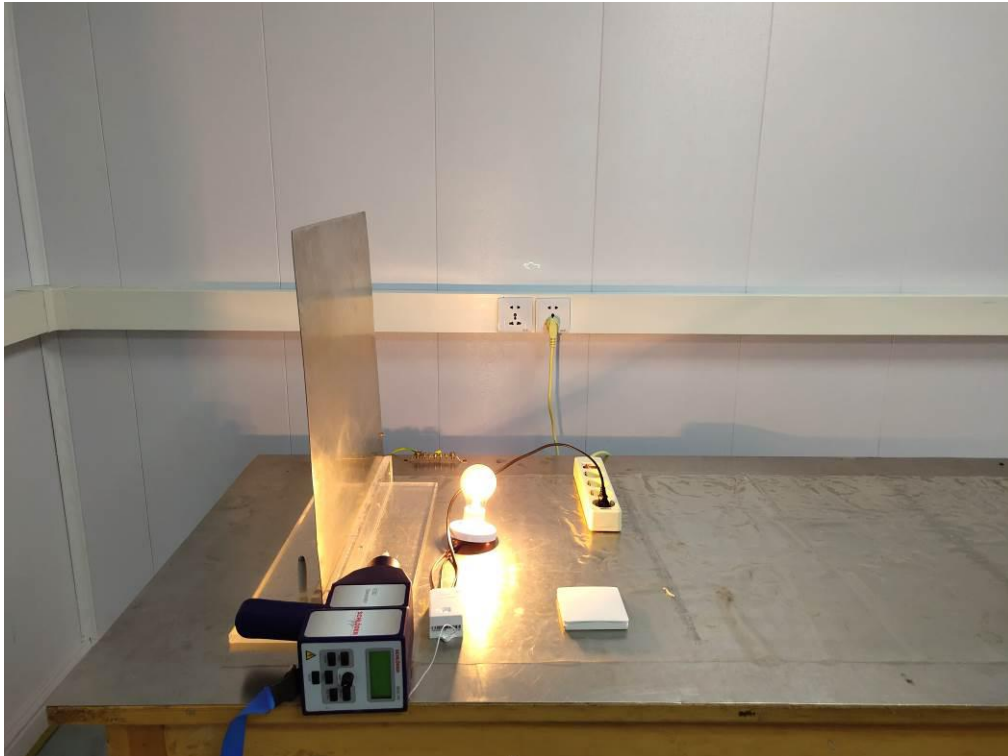
5.3. Photo of Radiated Measurement



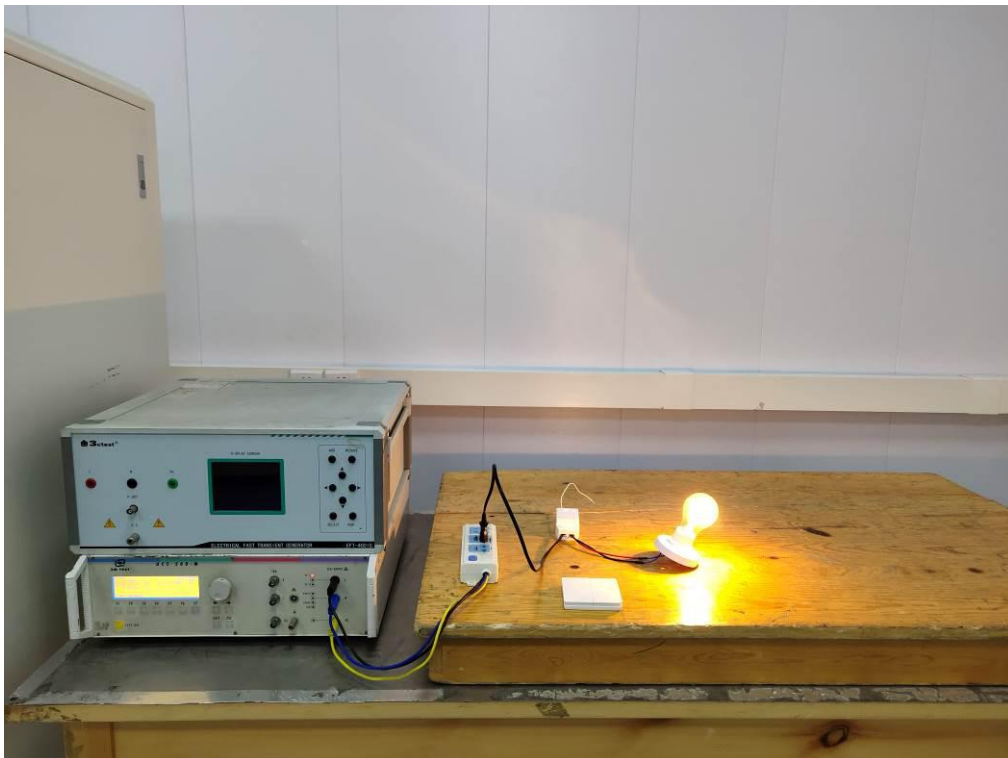
5.4. Photo of Harmonic & Flicker Measurement



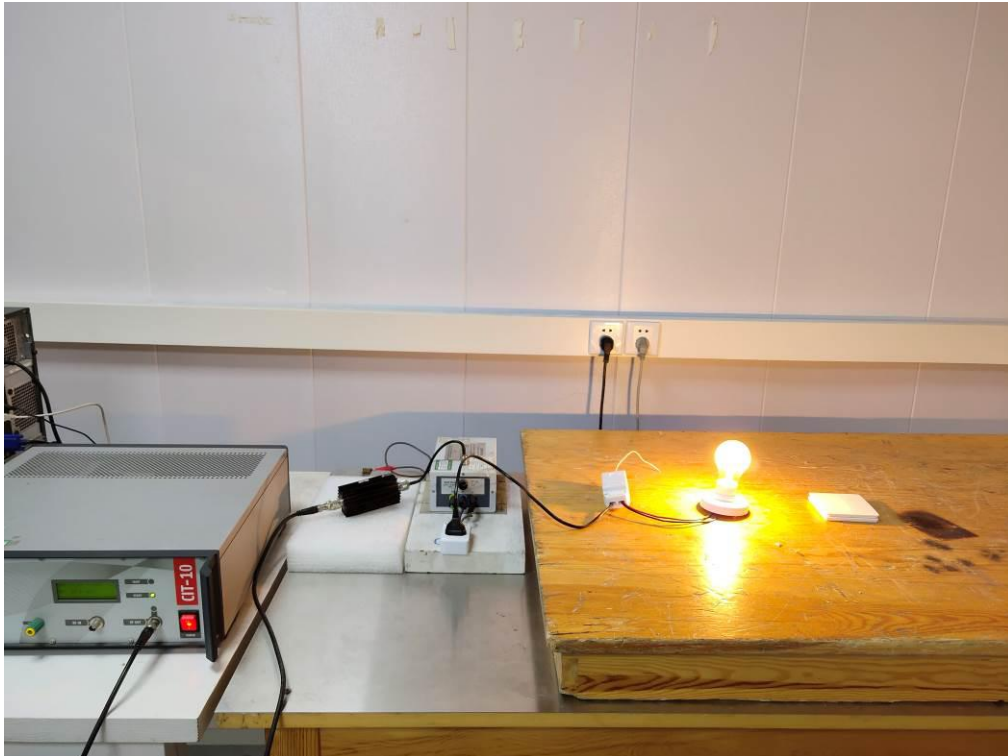
5.5. Photo of Electrostatic Discharge Test



5.6. Photo of Electrical Fast Transient/Burst Test & Surge Immunity Test



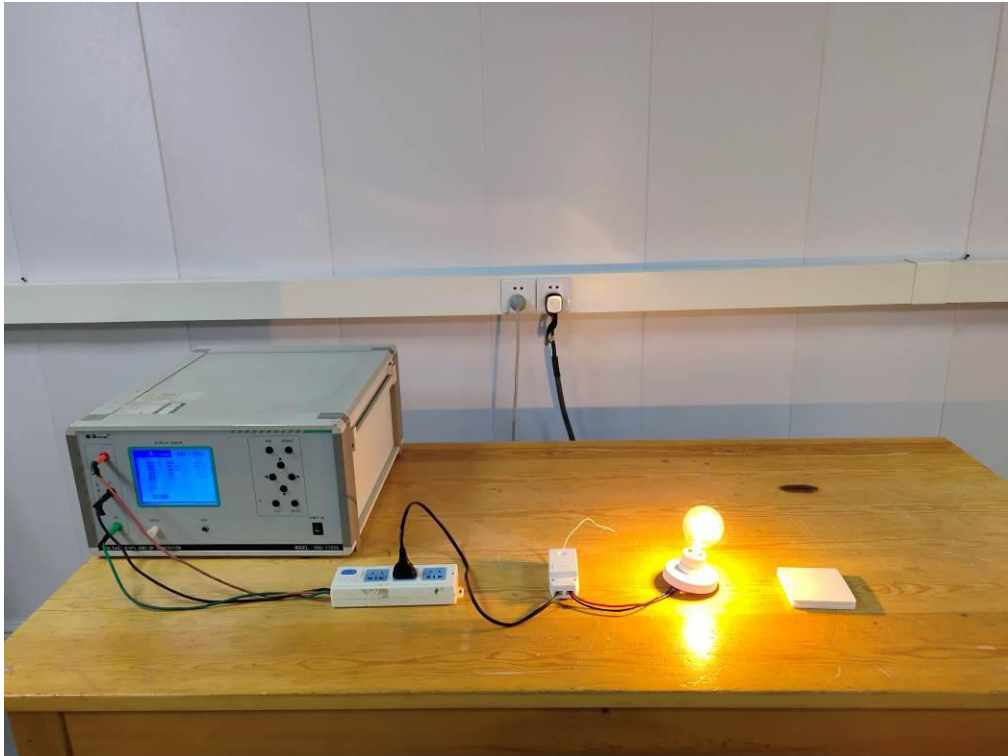
5.7. Photo of Injected Currents Susceptibility Test



5.8. Photo of Magnetic Field Immunity Test



5.9. Photo of Voltage Dips and Short Interruptions Immunity Test



6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

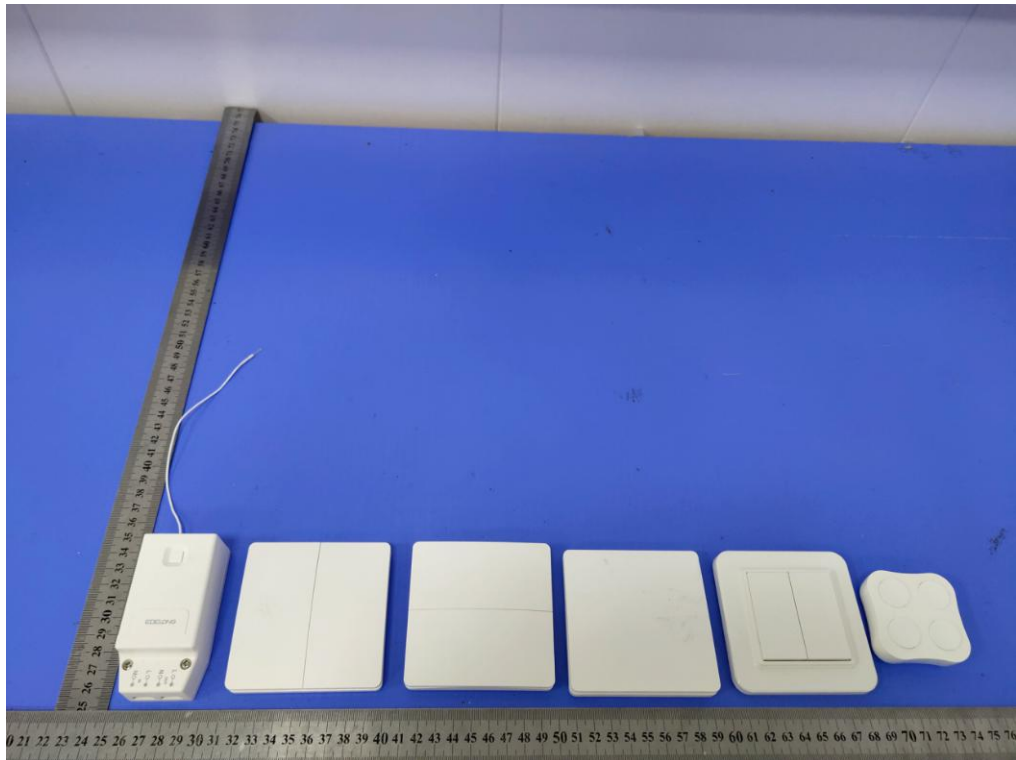


Fig.1



Fig.2

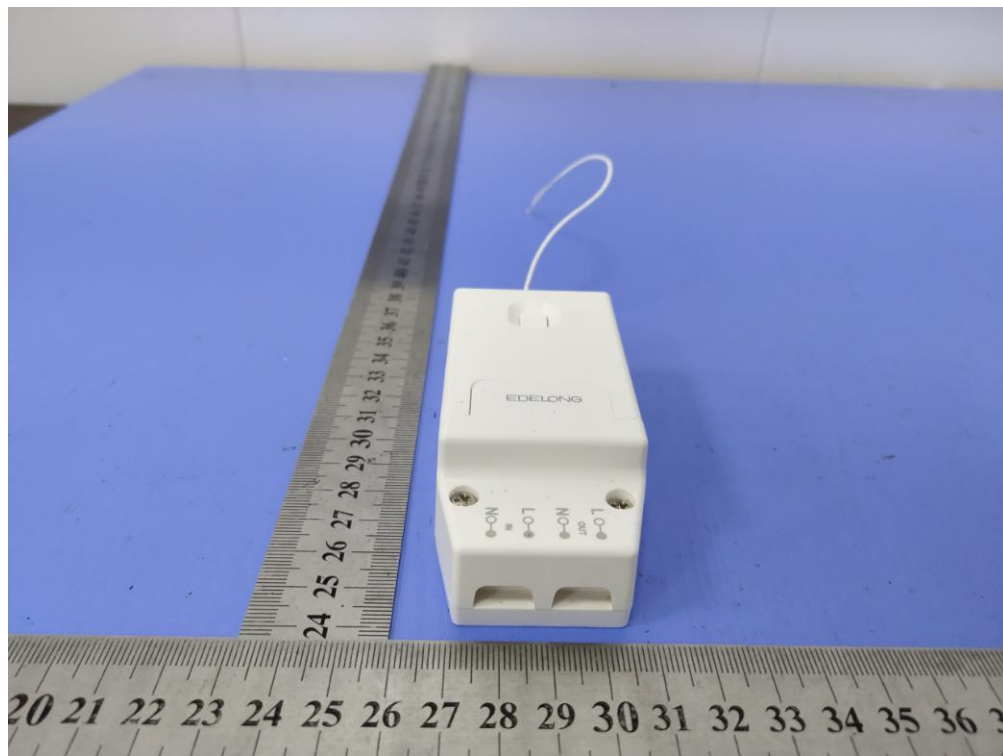


Fig.3

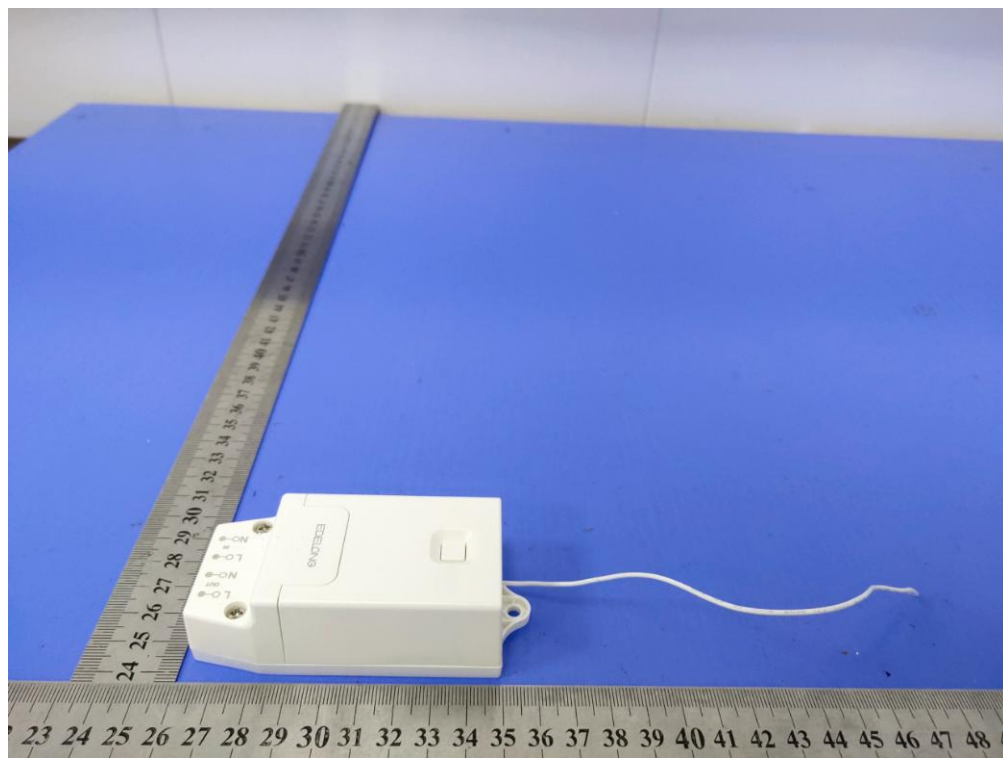


Fig.4

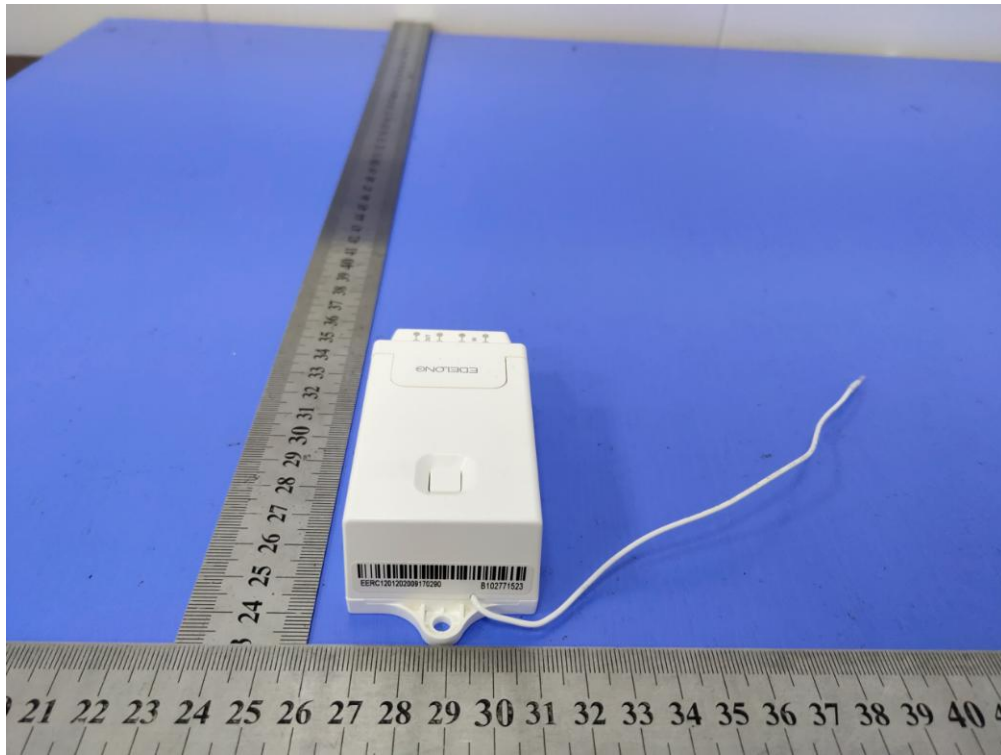


Fig.5



Fig.6



Fig.7

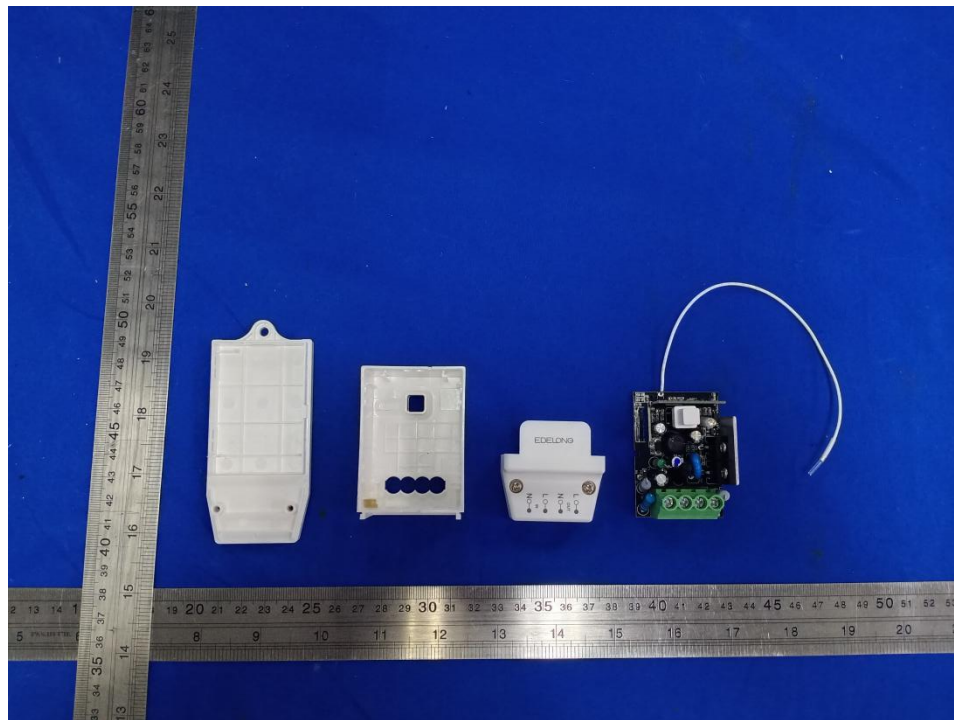


Fig.8

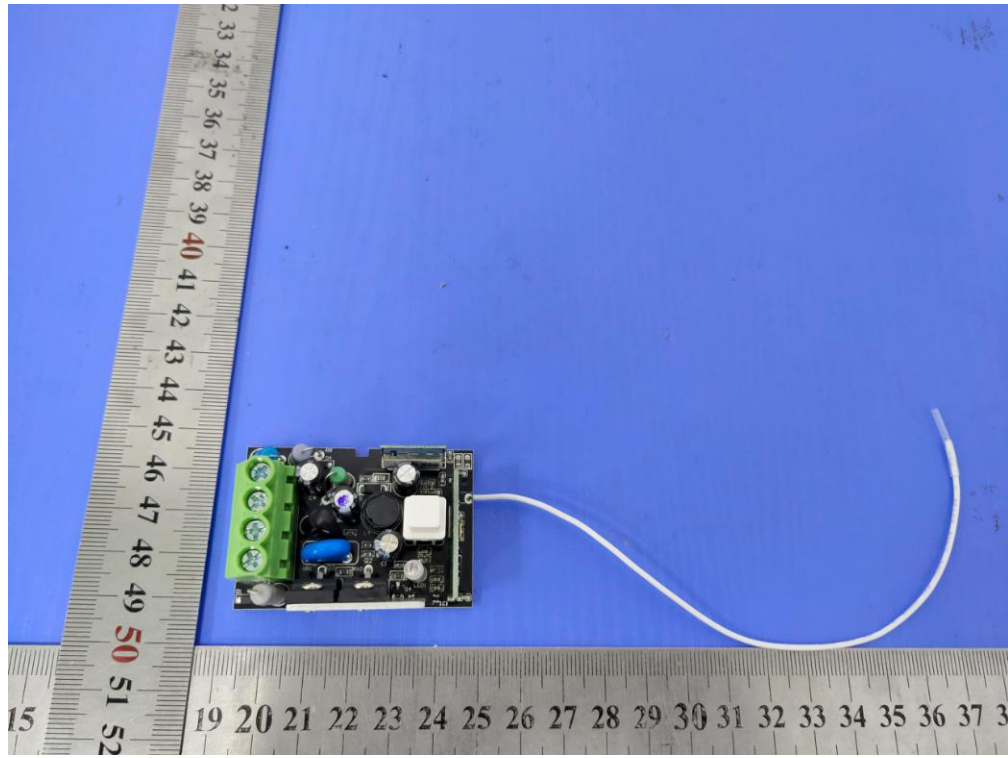


Fig.9

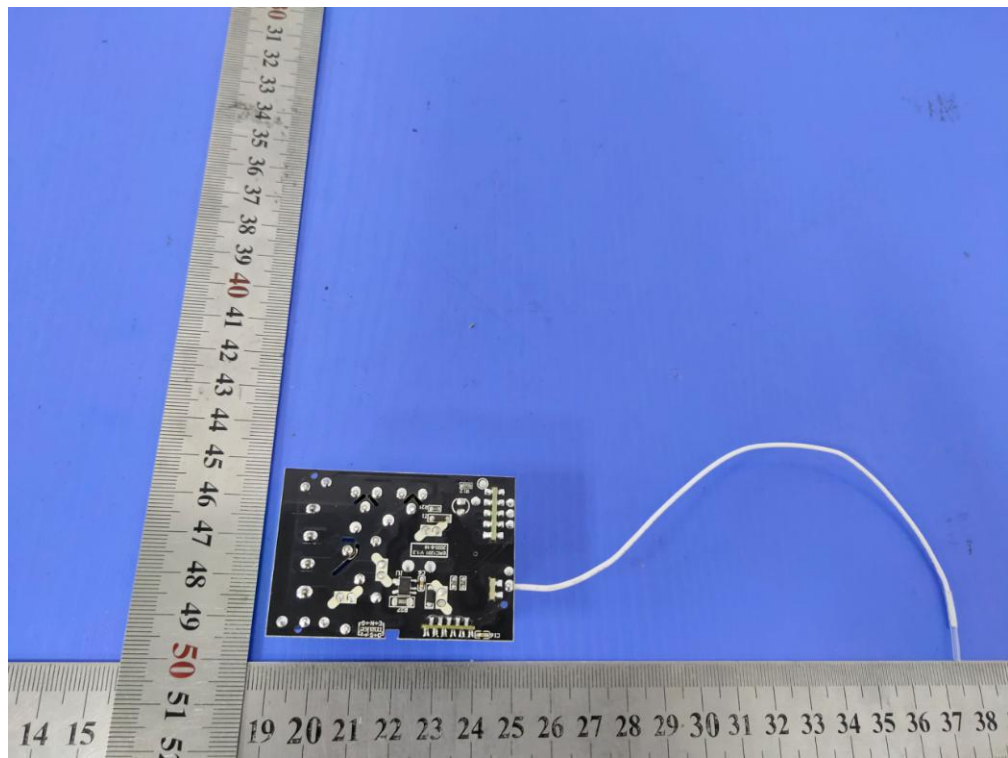


Fig.10

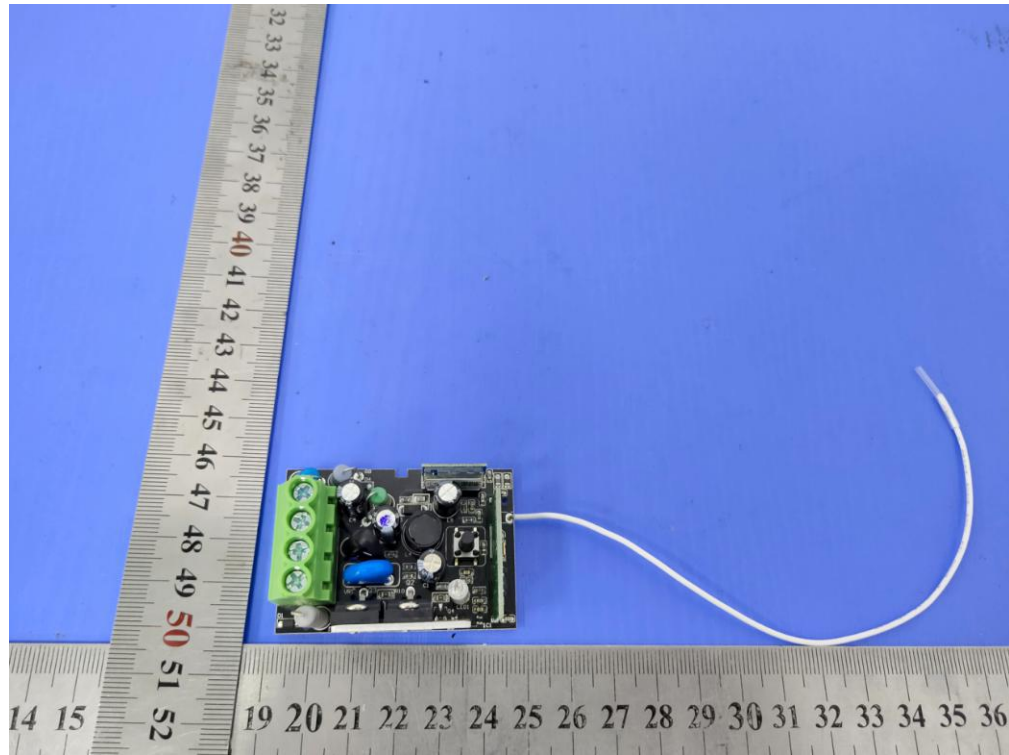


Fig.11

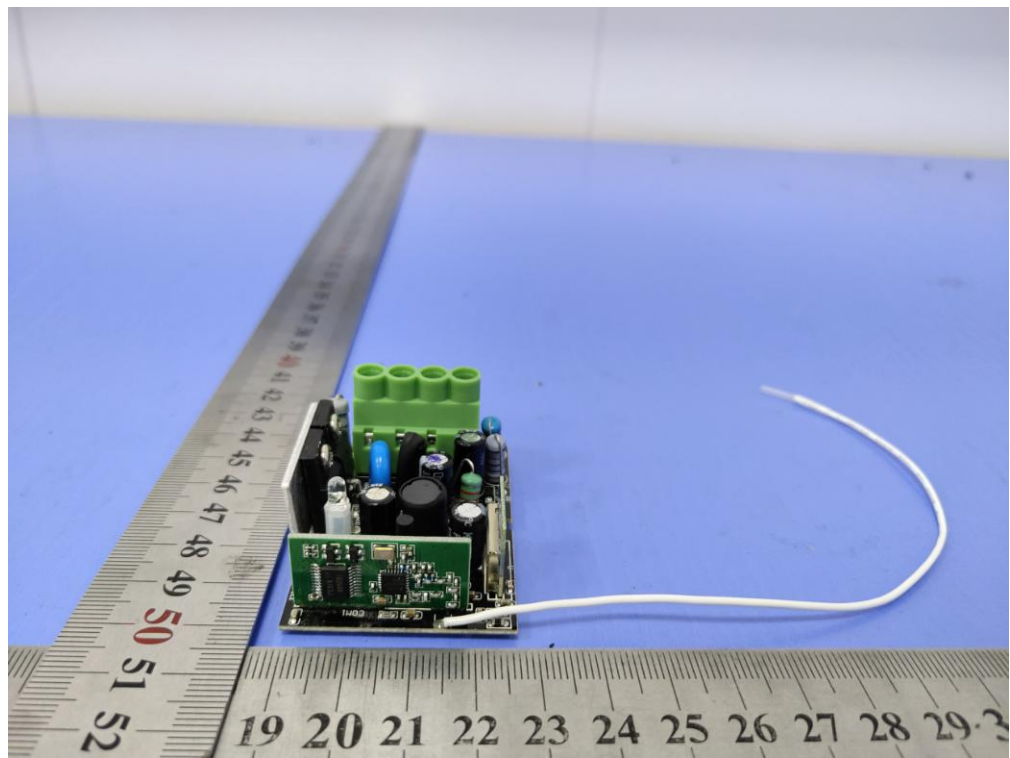


Fig.12

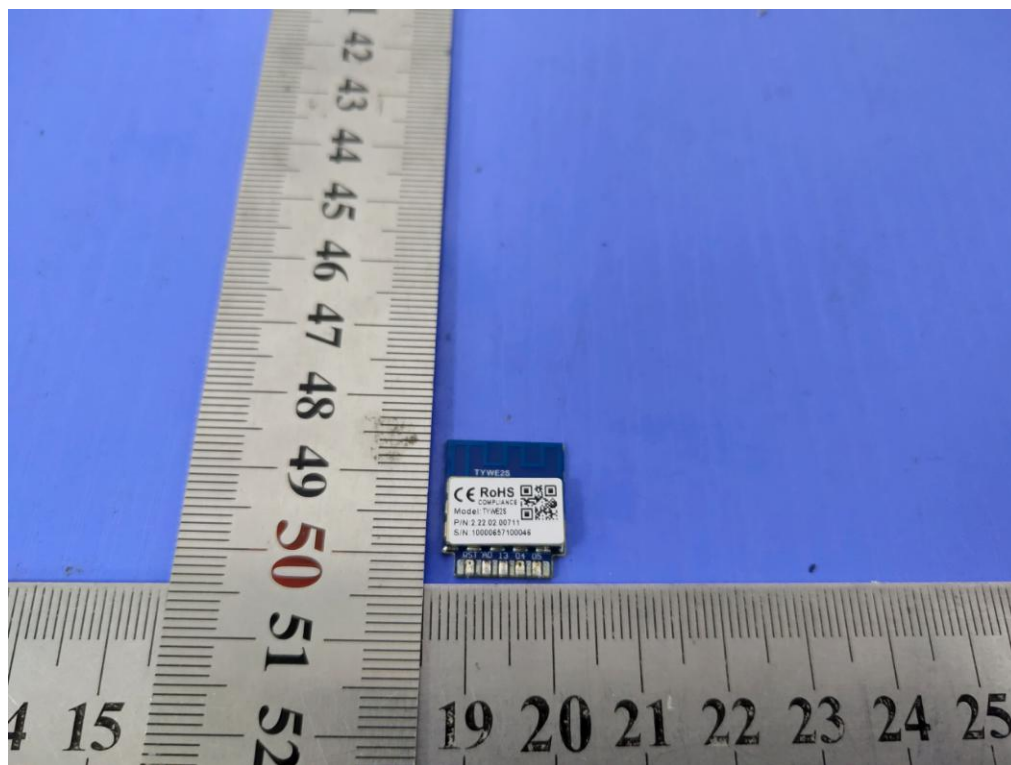


Fig.13

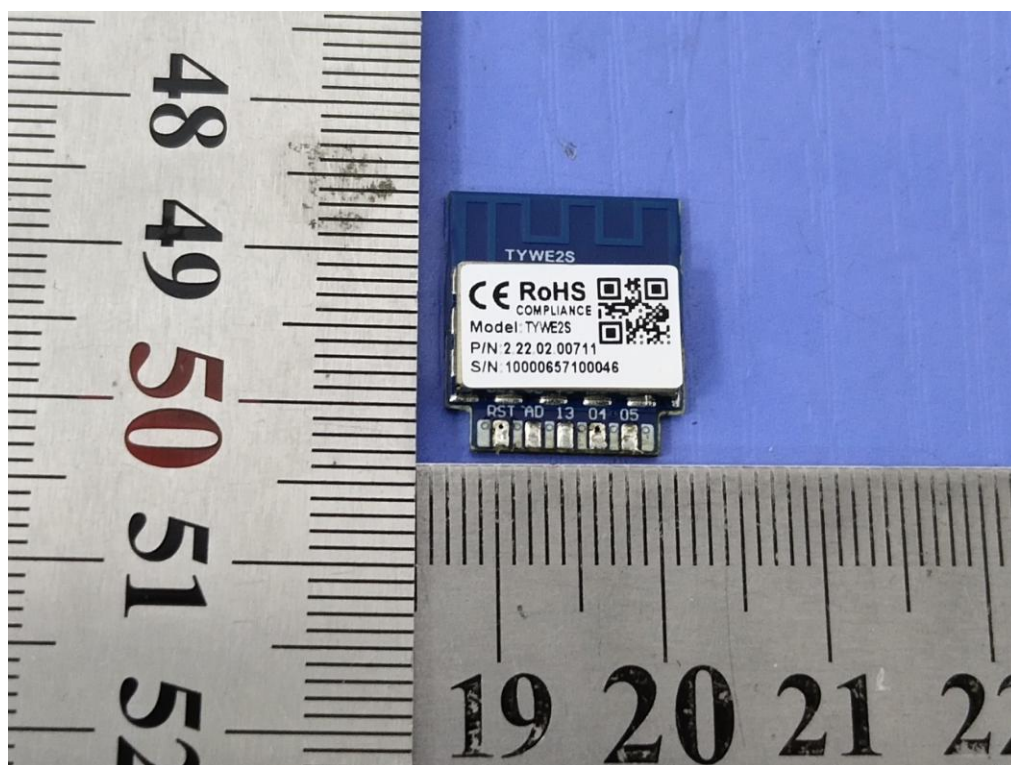


Fig.14

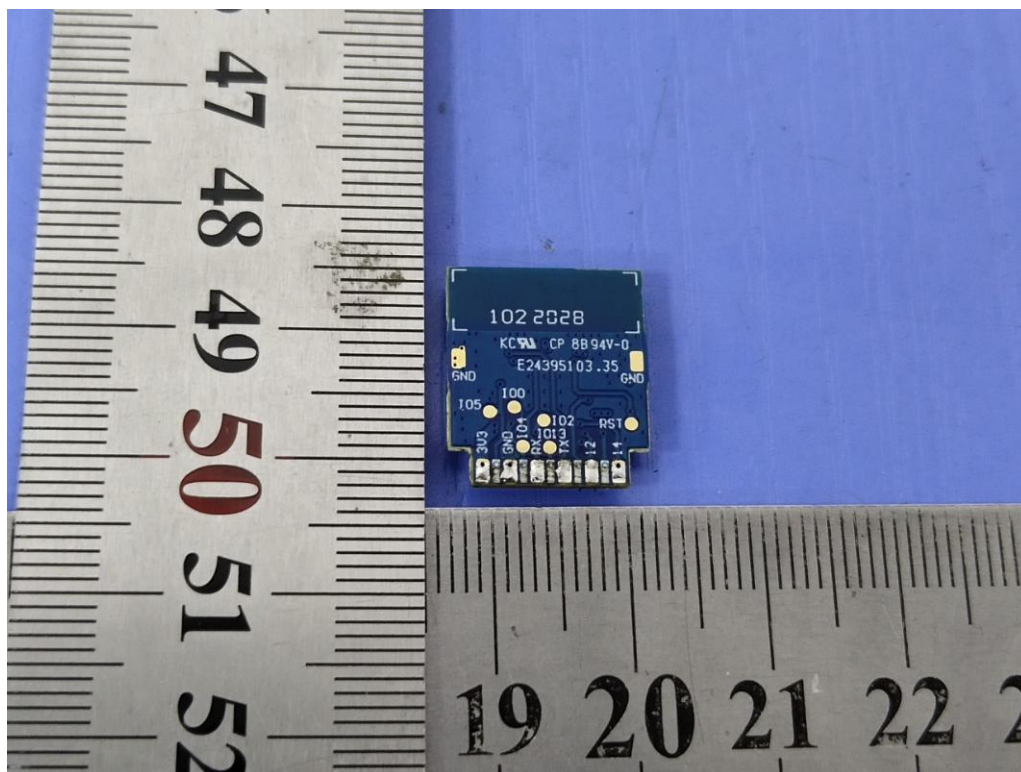


Fig.15

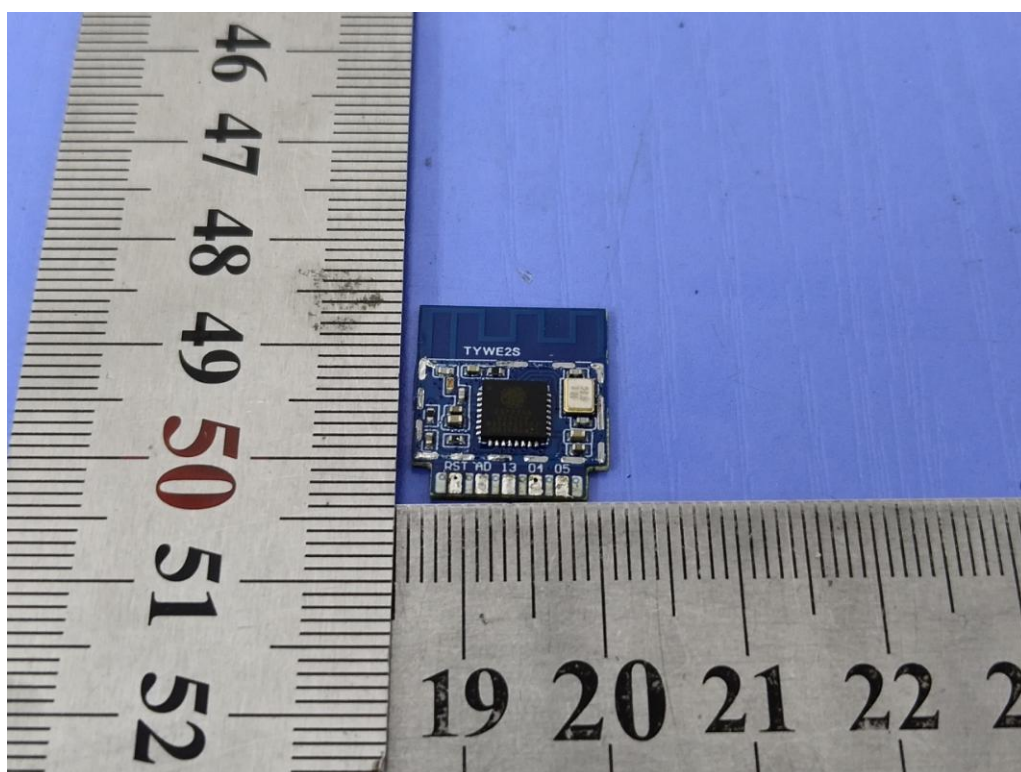


Fig.16



Fig.17

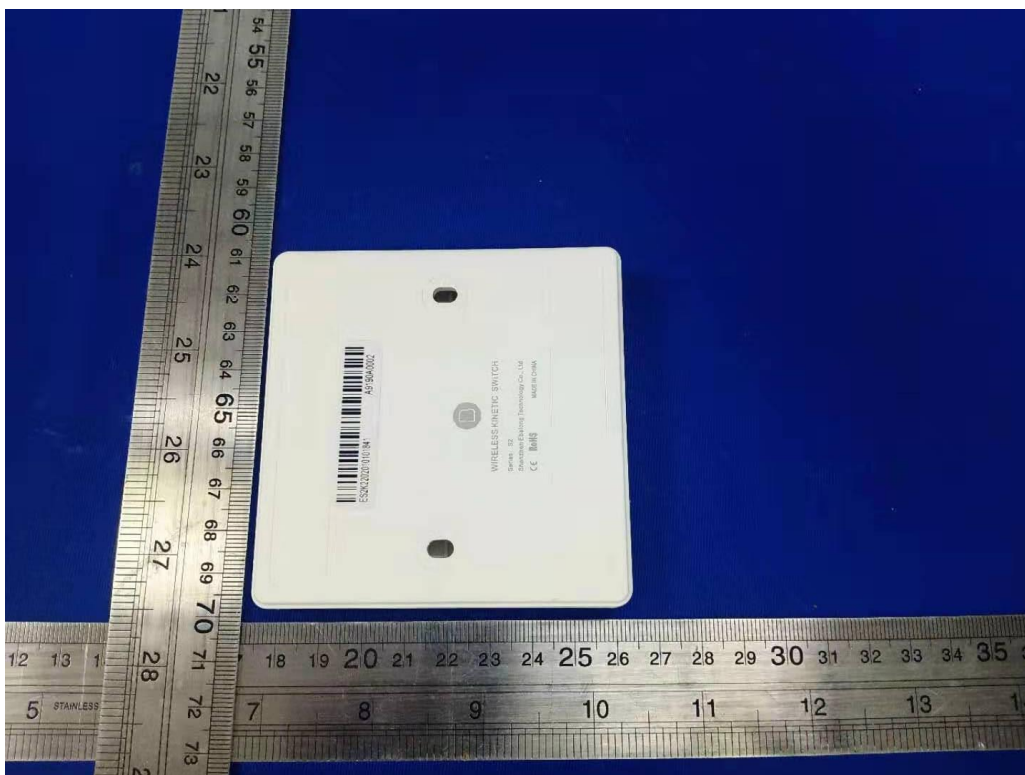


Fig.18

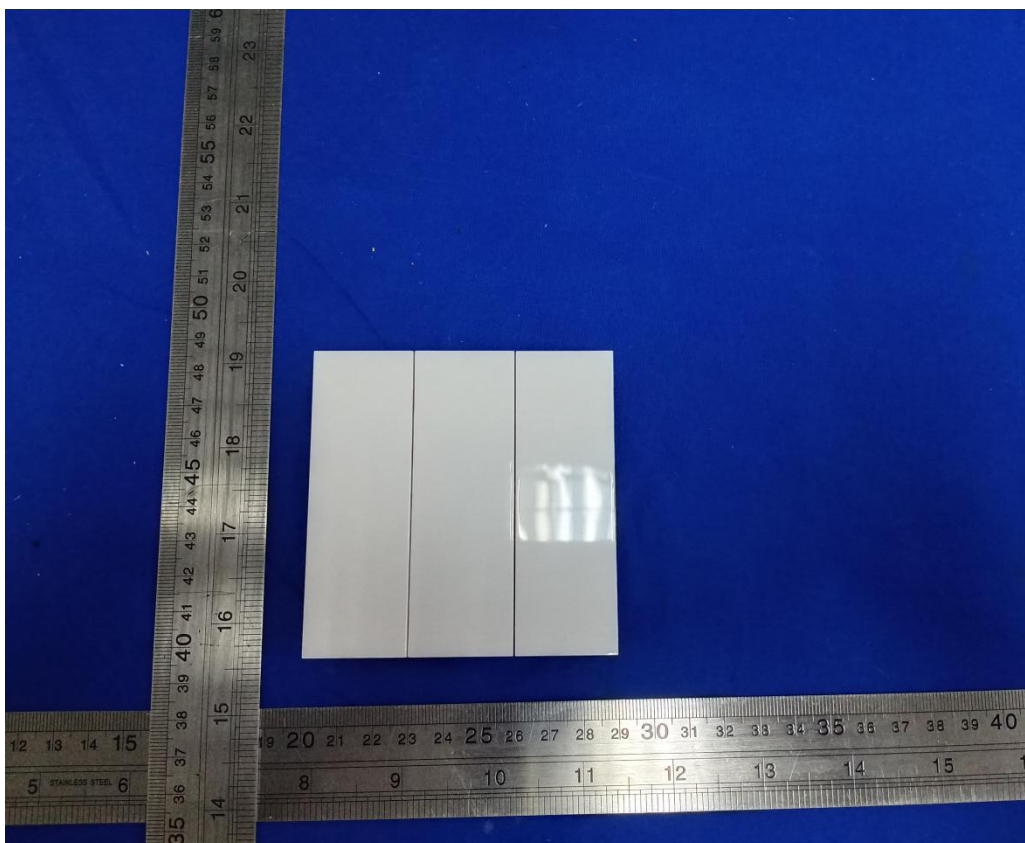


Fig.19



Fig.20

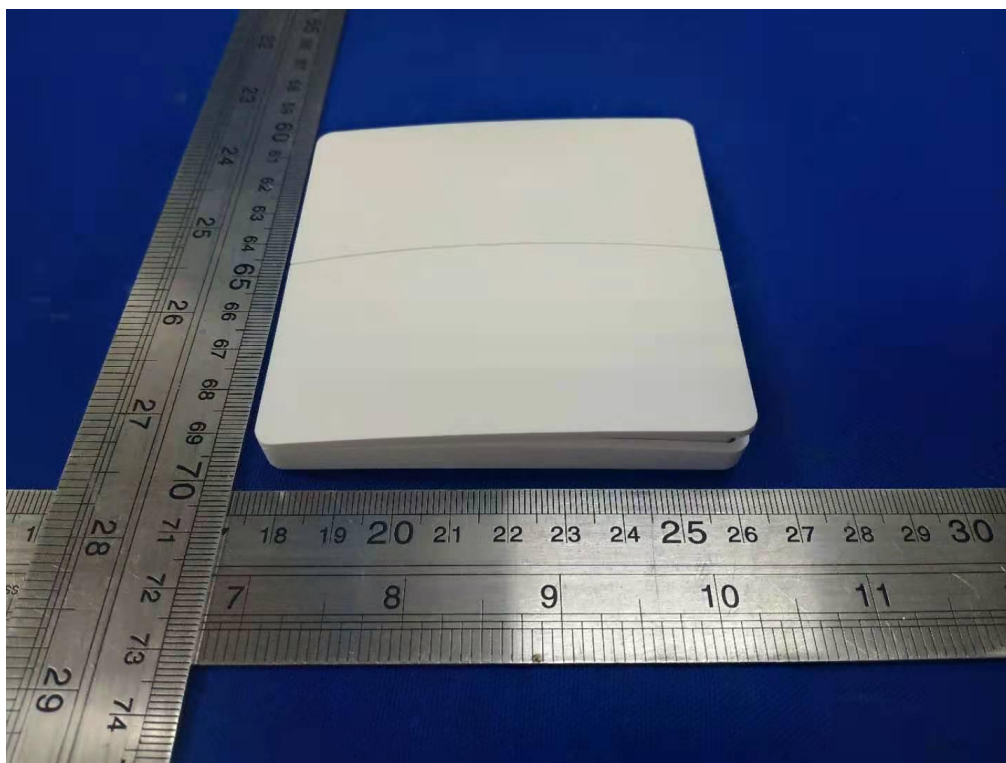


Fig.21

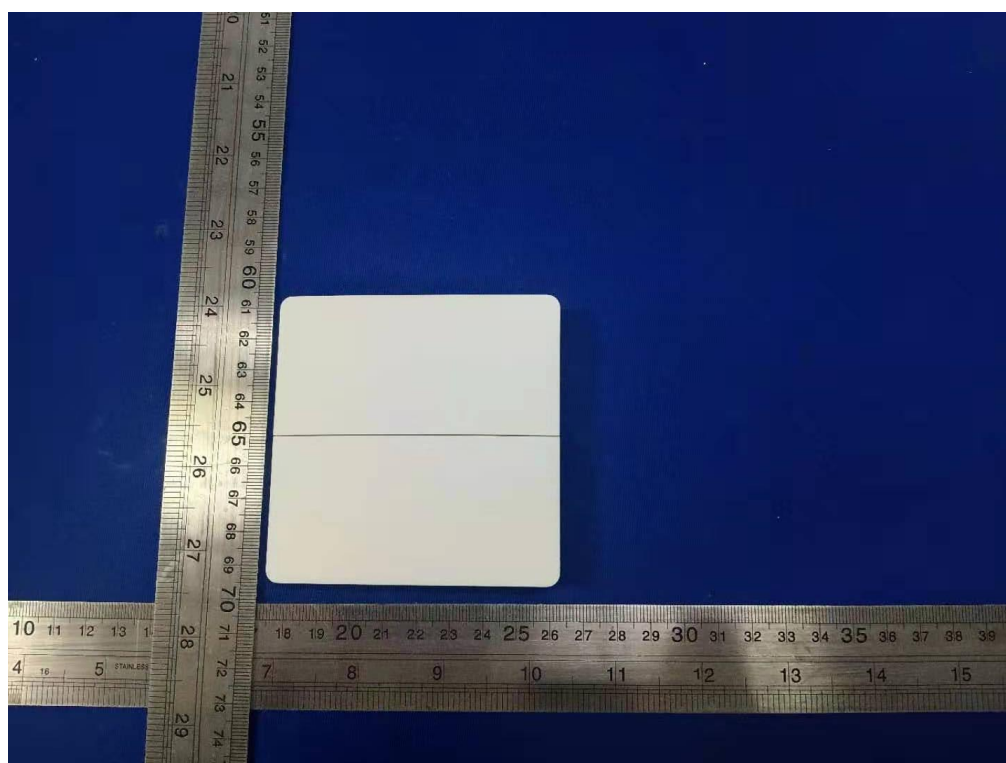


Fig.22

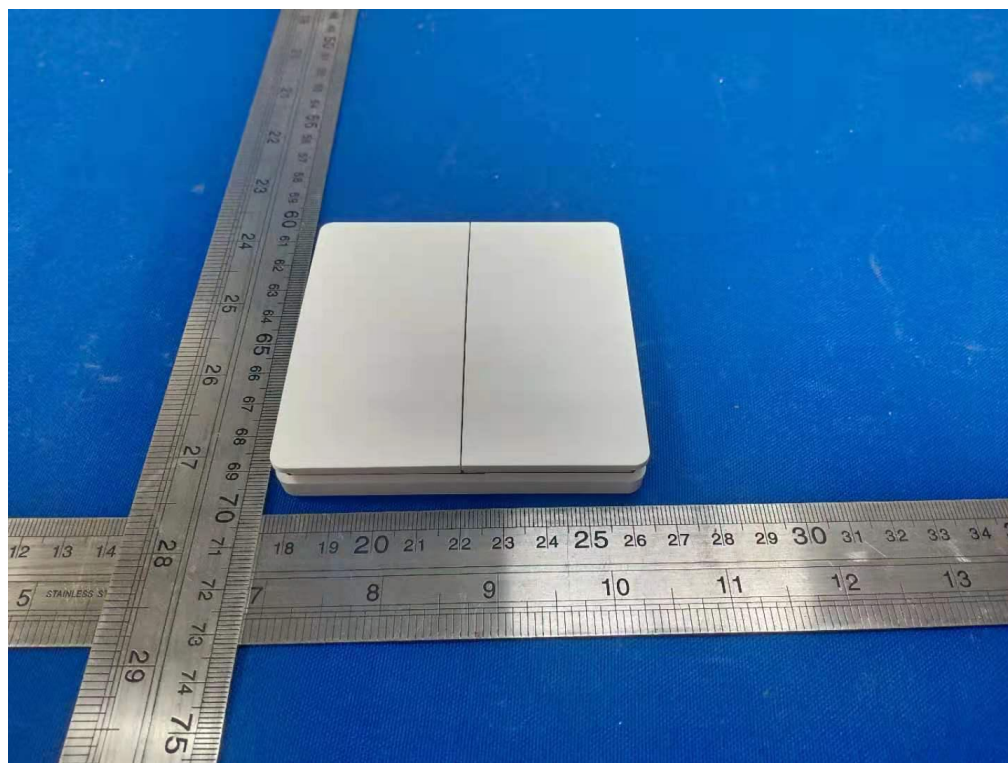


Fig.23



Fig.24

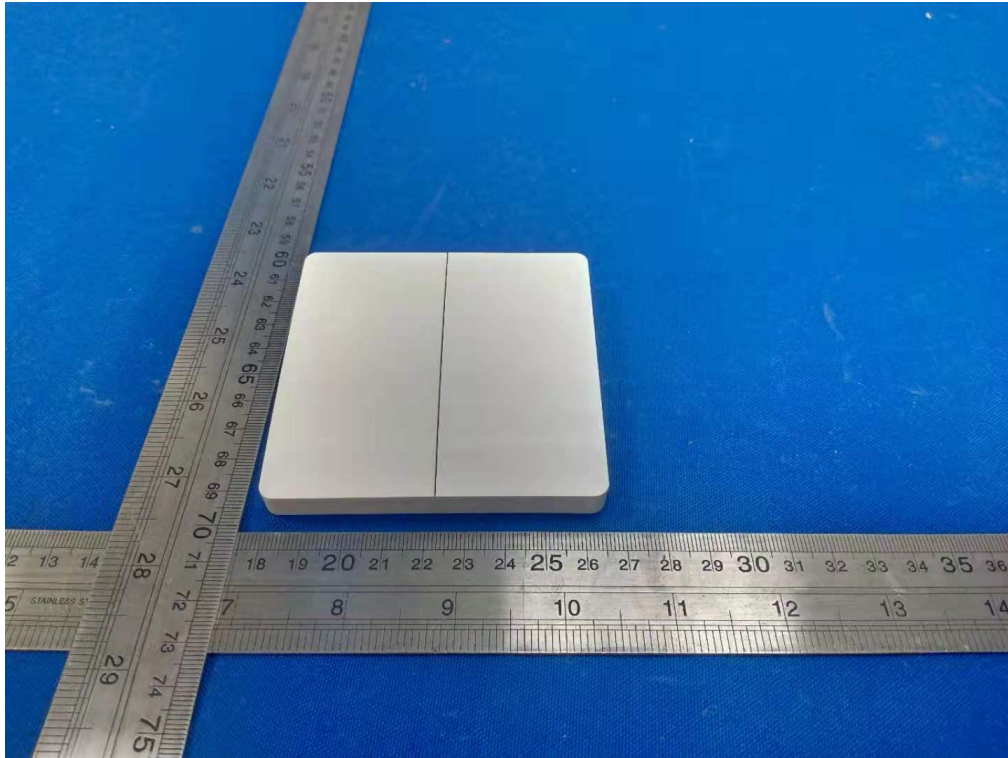


Fig.25

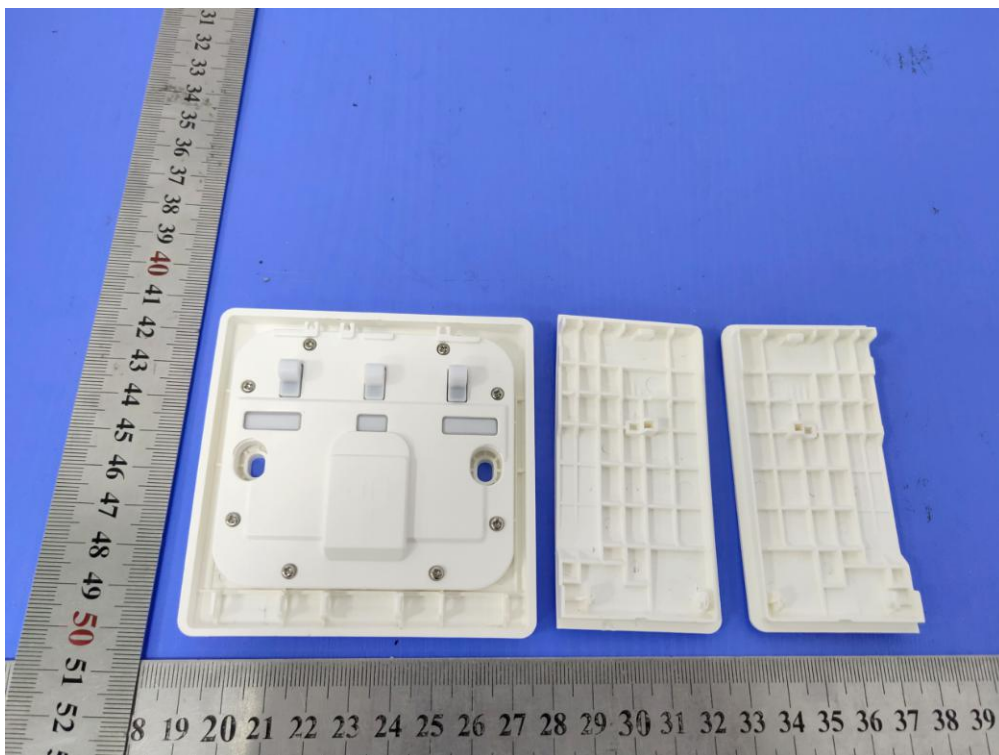


Fig.26

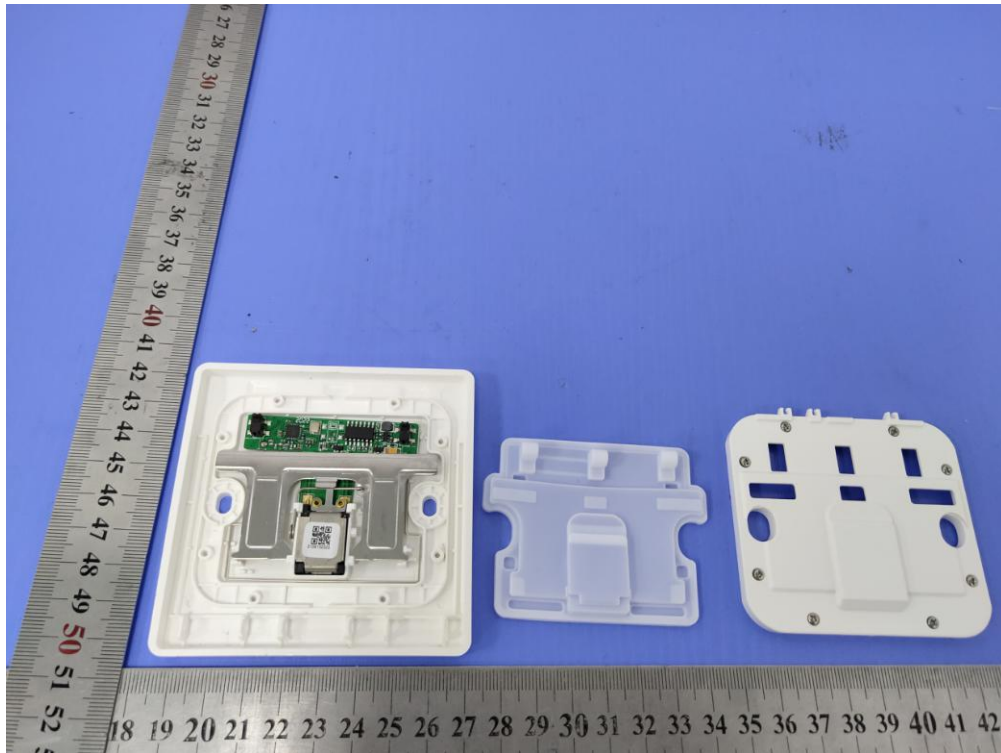


Fig.27

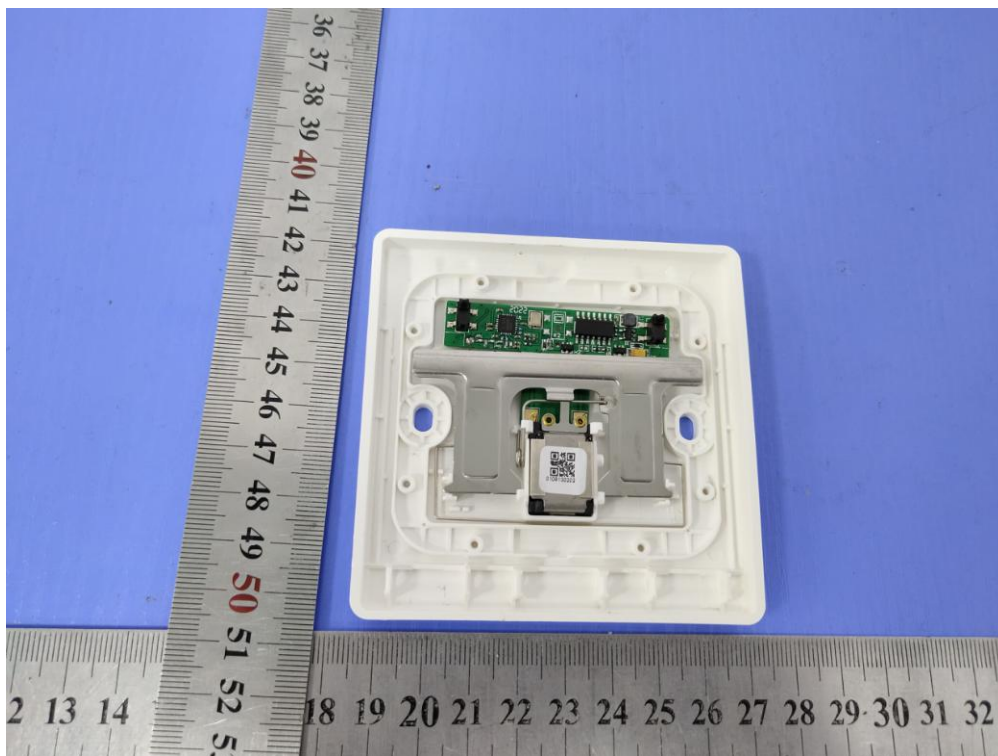


Fig.28

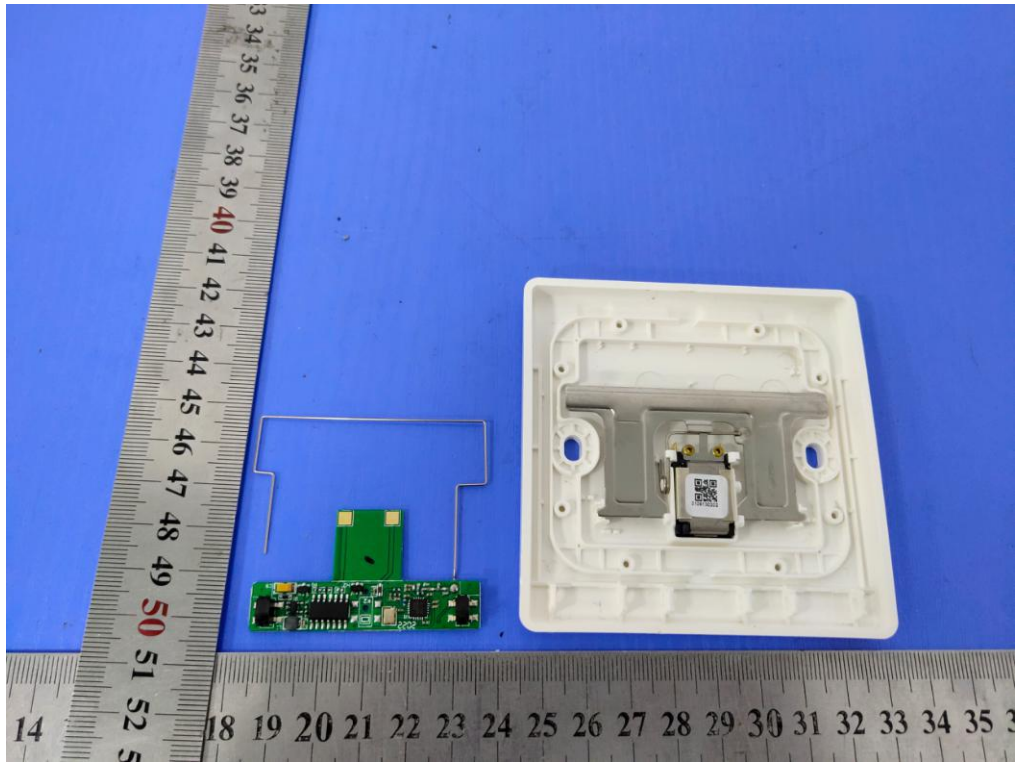


Fig.29

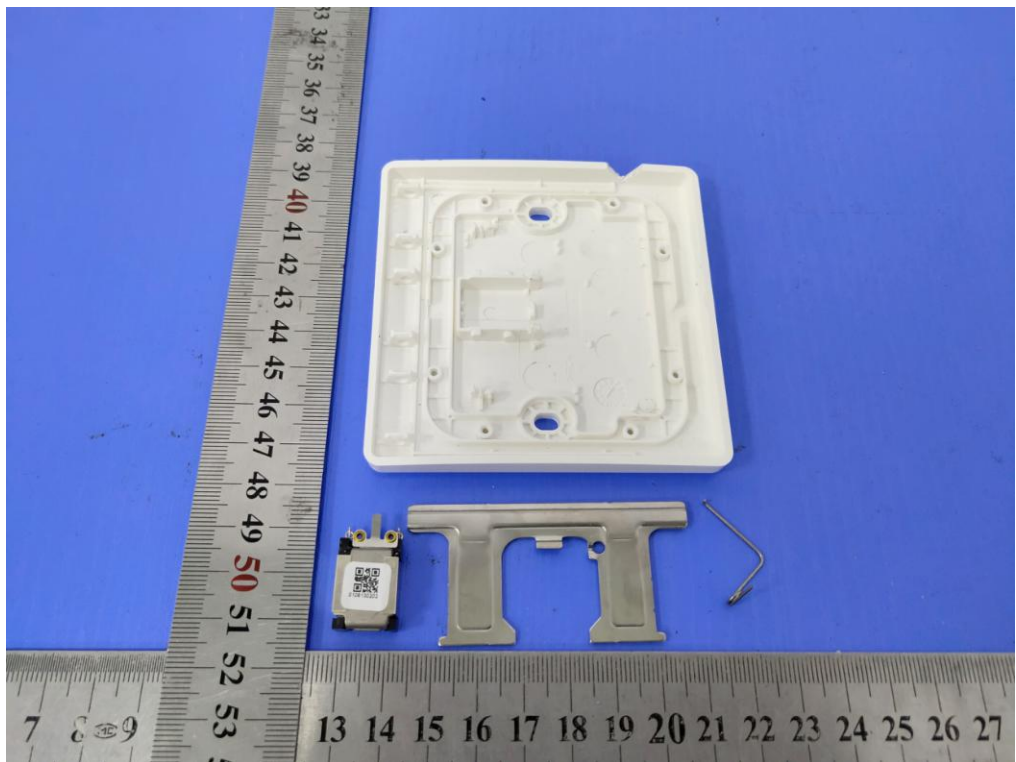


Fig.30

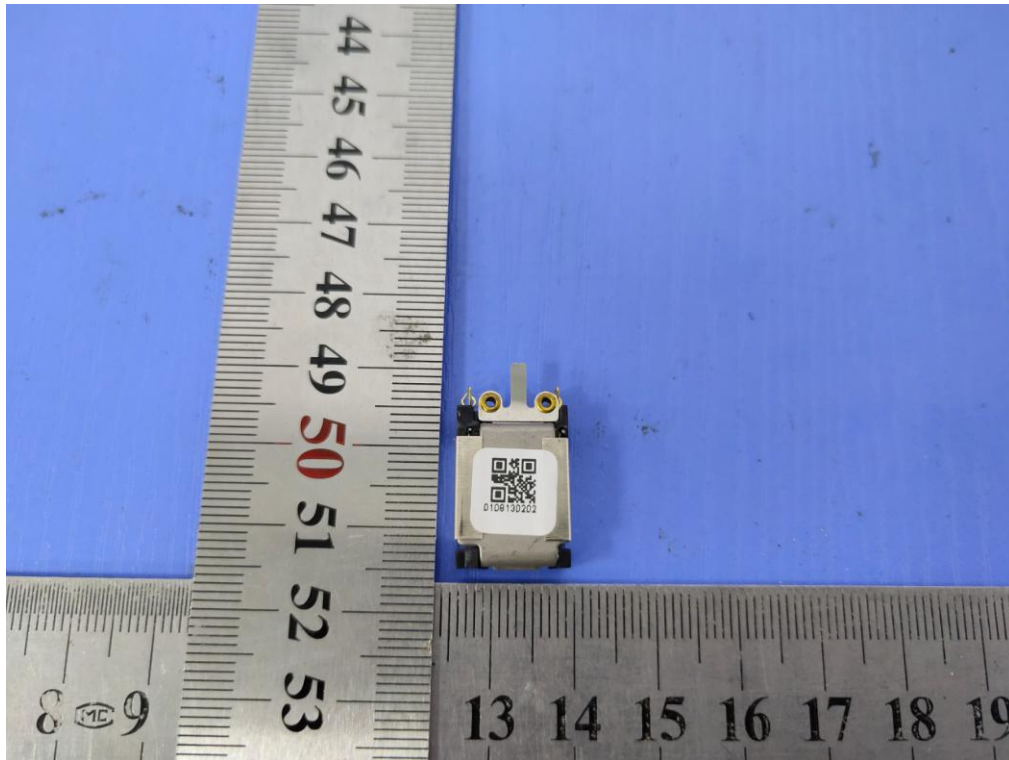


Fig.31

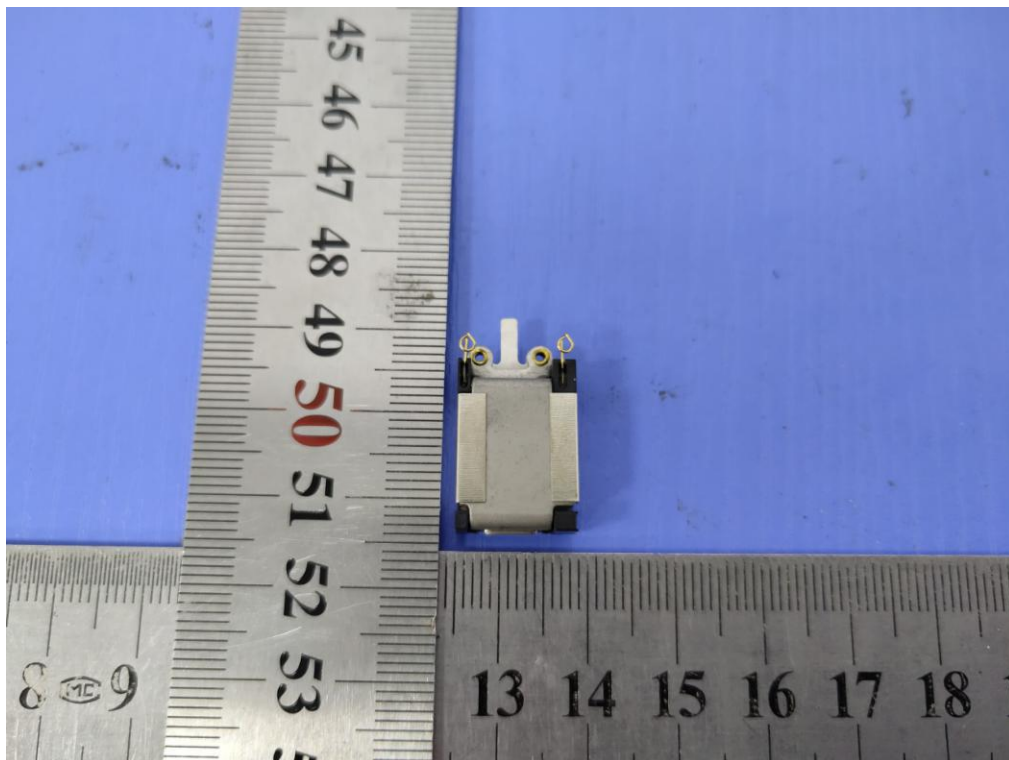


Fig.32

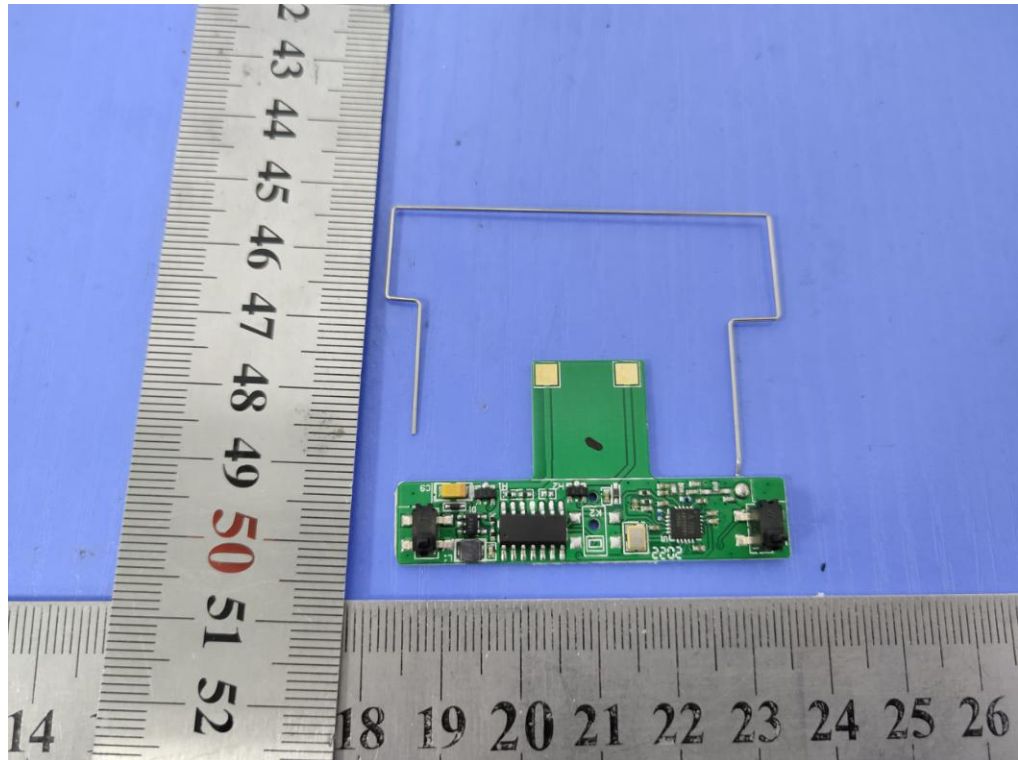


Fig.33

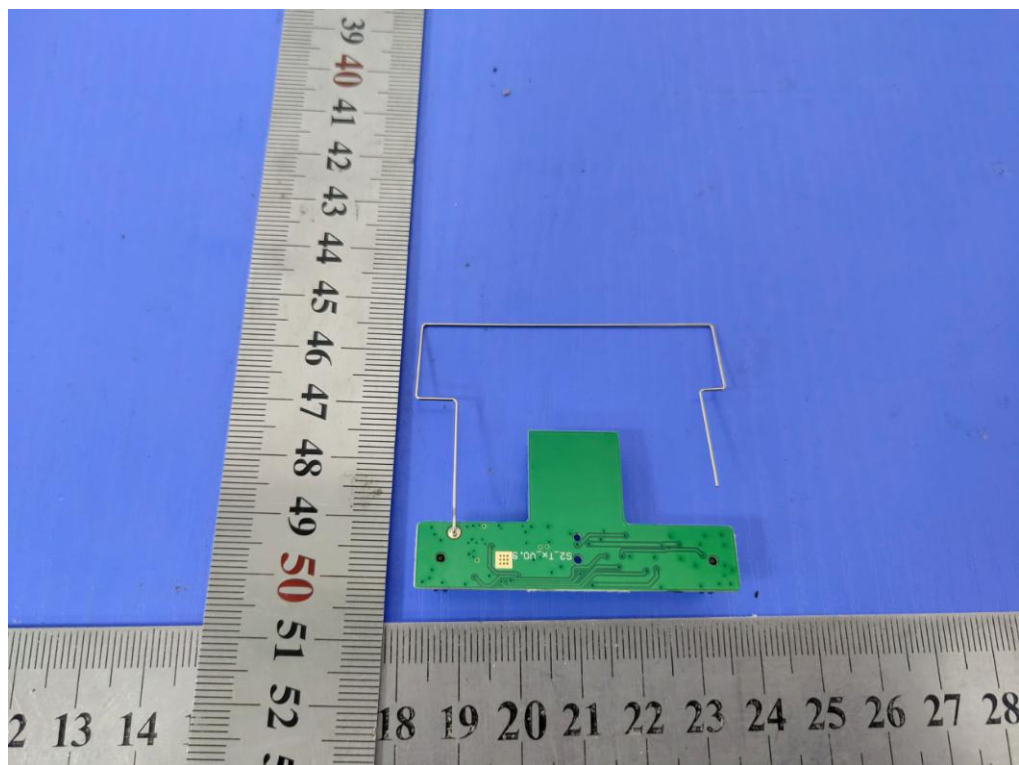


Fig.34

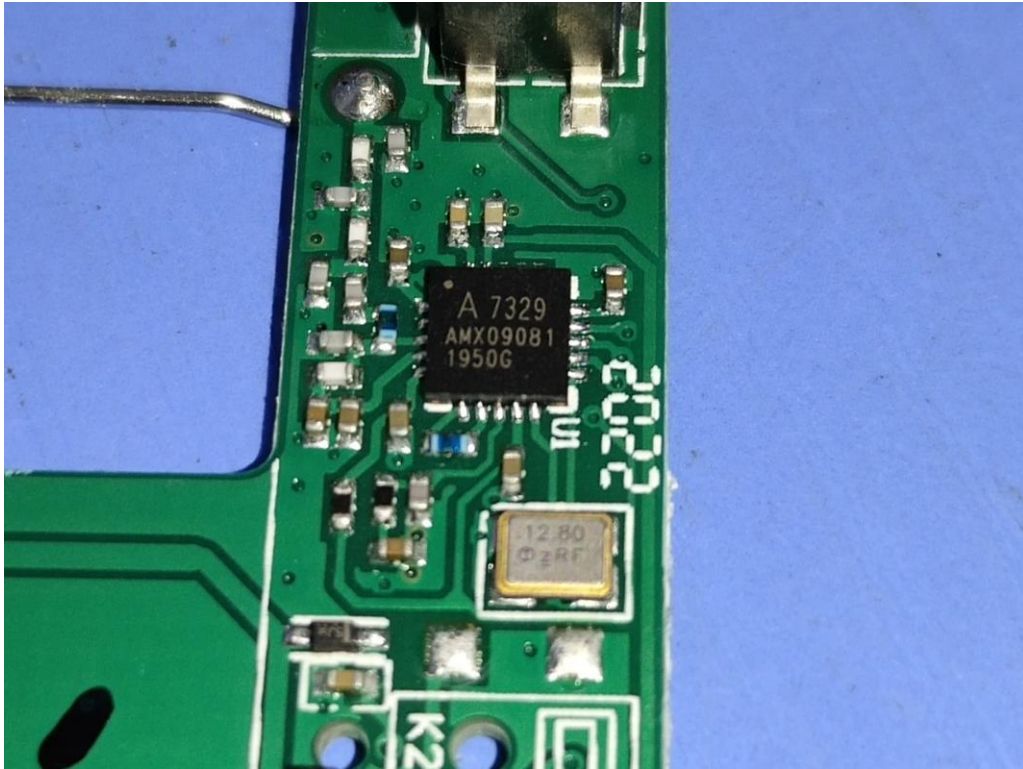


Fig.35

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