RADIO TEST REPORT

FCC ID:2ARL5-RC01

Product：	Remote control
Trade Name：	N/A
Model Name：	RC01
Serial Model：	N/A
Report No.：	UNIA2018102333FR-01

Prepared for

SHENZHEN AOME CO.,LTD

Room 506, Yiben building, NO.1063, Chaguang road, Xili,Nanshan,Shenzhen, China

Prepared by

Shenzhen United Testing Technology Co., Ltd.

2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang Community, XixiangStr, Bao'an District, Shenzhen, China

TEST RESULTCERTIFICATION

Applicant's name ..... :	SHENZHEN AOME CO.,LTD
Address ..... :	Room 506, Yiben building, NO.1063, Chaguang road, Xili,Nanshan,Shenzhen, China
Manufacture's Name ..... :	SHENZHEN AOME CO.,LTD
Address ..... :	Room 506, Yiben building, NO.1063, Chaguang road, Xili,Nanshan,Shenzhen, China

Product description

Product name ..... :	Remote control
Trade Mark ..... :	N/A
Model and/or type reference :	RC01
Standards ..... :	FCC Rules and Regulations Part 15 Subpart C Section 15.247 ANSI C63.10: 2013

This device described above has been tested by Shenzhen United Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Receive.....:	Oct. 17, 2018
Date (s) of performance of tests.....:	Oct. 17, 2018 – Nov. 02, 2018
Date of Issue .....:	Nov. 02, 2018
Test Result.....:	Pass

Prepared by: Kahn yang/Editor

Reviewer: Sherwin Qian/Supervisor

Approved & Authorized Signer: Liuze/Manager

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1 TEST SUMMARY

1.1 Environment conditions

During the measurement the environment condition were within the listed ranges：

Normal temperature	25℃
Relative humidity	55%
Air pressure	101KPa

1.2 SUMMARY of TEST RESULTS

FCC PART 15.247		
FCC Part 15.207	AC Power Conducted Emission	N/A
FCC Part 15.247(a)(2)	6dB Bandwidth	PASS
FCC Part 15.247(d)	Spurious RF Conducted Emission	PASS
FCC Part 15.247(b)	Maximum Conducted Output Power	PASS
FCC Part 15.247(e)	Power Spectral Density	PASS
FCC Part 15.109/ 15.205/ 15.209	Radiated Emissions	PASS
FCC Part 15.247(d)	Band Edge	PASS
FCC Part 15.203/15.247 (b)	Antenna Requirement	PASS

1.3 TEST FACILITY

Test Firm :Shenzhen United Testing Technology Co.,Ltd.

Address :2F, Annex Bldg, JiahuangyuanTech Park, #365 Baotian 1 Rd,Tiegang Community, Xixiang Str, Bao'an District, Shenzhen,China

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L6494

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of testing Laboratories.

Designation Number: CN1227

Test Firm Registration Number: 674885

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files.

1.4 MEASUREMENT UNCERTAINTY

Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Remote control
Trade Mark	N/A
Model Name	RC01
Serial No.	N/A
Model Difference	All models have the same functionality, software and electronics, only the color, front frame shape and model names may differ. Test sample model:RC01
FCC ID	2ARL5-RC01
Antenna Type	PCB Antenna
Antenna Gain	1.5dbi
Frequency Range	2427MHz
Number of Channels	1
Modulation Type	GFSK
Battery	3.0V from AAA*2 battery
Adapter Model	N/A

2.2 CARRIER FREQUENCY OF CHANNELS

Channel	Frequency (MHz)
00	**2427**

2.3 OPARATION OF EUT DURING TESTING

Operating Mode: Transmitting mode
Channel:2427MHz

2.4 DESCRIPTION OF TEST SETUP

EUT

2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
CONDUCTED EMISSIONS TEST					
1	AMN	Schwarzbeck	NNLK8121	8121370	2019.09.09
2	AMN	ETS	3810/2	00020199	2019.09.09
3	EMI TEST RECEIVER	Rohde&Schwarz	ESCI	101210	2019.09.09
4	AAN	TESEQ	T8-Cat6	38888	2019.09.09
RADIATED EMISSION TEST					
1	Horn Antenna	Sunol	DRH-118	A101415	2019.09.29
2	BicoNILog Antenna	Sunol	JB1 Antenna	A090215	2019.09.29
3	PREAMP	HP	8449B	3008A00160	2019.09.09
4	PREAMP	HP	8447D	2944A07999	2019.09.09
5	EMI TEST RECEIVER	Rohde&Schwarz	ESR3	101891	2019.09.09
6	VECTOR Signal Generator	Rohde&Schwarz	SMU200A	101521	2019.09.28
7	Signal Generator	Agilent	E4421B	MY4335105	2019.09.28
8	MXA Signal Analyzer	Agilent	N9020A	MY50510140	2019.09.28
9	MXA Signal Analyzer	Agilent	N9020A	MY51110104	2019.09.09
10	PXA Signal Analyzer	Agilent	E4408B	MY53311029	2019.09.09
11	ANT Tower&Turn table Controller	Champro	EM 1000	60764	2019.09.28
12	Anechoic Chamber	Taihe Maorui	9m*6m*6m	966A0001	2019.09.09
13	Shielding Room	Taihe Maorui	6.4m*4m*3m	643A0001	2019.09.09
14	RF Power sensor	DARE	RPR3006W	15I00041SNO88	2019.03.14
15	RF Power sensor	DARE	RPR3006W	15I00041SNO89	2019.03.14
16	RF power divider	Anritsu	K241B	992289	2019.09.28
17	Wideband radio communication tester	Rohde&Schwarz	CMW500	154987	2019.09.28
18	Biconical antenna	Schwarzbeck	VHA 9103	91032360	2019.09.08
19	Biconical antenna	Schwarzbeck	VHA 9103	91032361	2019.09.08
20	Broadband Hybrid Antennas	Schwarzbeck	VULB9163	VULB9163#958	2019.09.08

21	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1680	2019.01.12
22	Active Receive Loop Antenna	Schwarzbeck	FMZB 1919B	00023	2019.11.02
23	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170651	2019.03.14
24	Microwave Broadband Preamplifier	Schwarzbeck	BBV 9721	100472	2019.10.24
25	Active Loop Antenna	Com-Power	AL-130R	10160009	2019.05.10
26	Power Meter	KEYSIGHT	N1911A	MY50520168	2019.05.10

Note: The calibration interval was one year

2.6 Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
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3 TEST CONDITIONS AND RESULTS

3.1 CONDUCTED EMISSIONS TEST

Limit

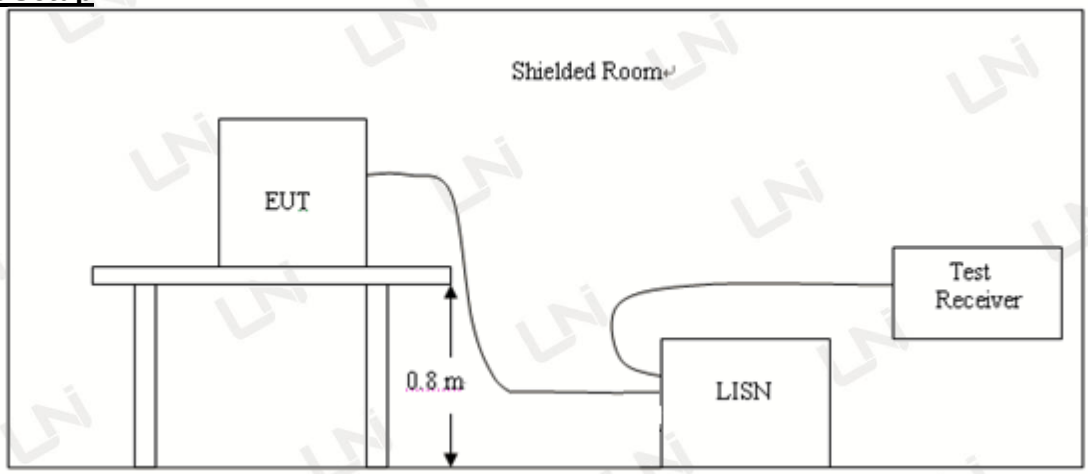
According to FCC CFR Title 47 Part 15 Subpart C Section 15.207 and RSS Gen 8.8, AC Power Line Conducted Emissions Limits for Licence-Exempt Radio Apparatus as below:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

Test Setup



Test Procedure

1,The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. A wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.

2, Support equipment, if needed, was placed as per ANSI C63.10.

3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.

5, All support equipments received AC power from a second LISN, if any.

6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.

7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

Test Result

Not applicable to this device, which is battery powered.

3.2 RADIATED EMISSION TEST

Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Except when the requirements applicable to a given device state otherwise, emissions from licence‑exempt transmitters shall comply with the field strength limits shown in table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission

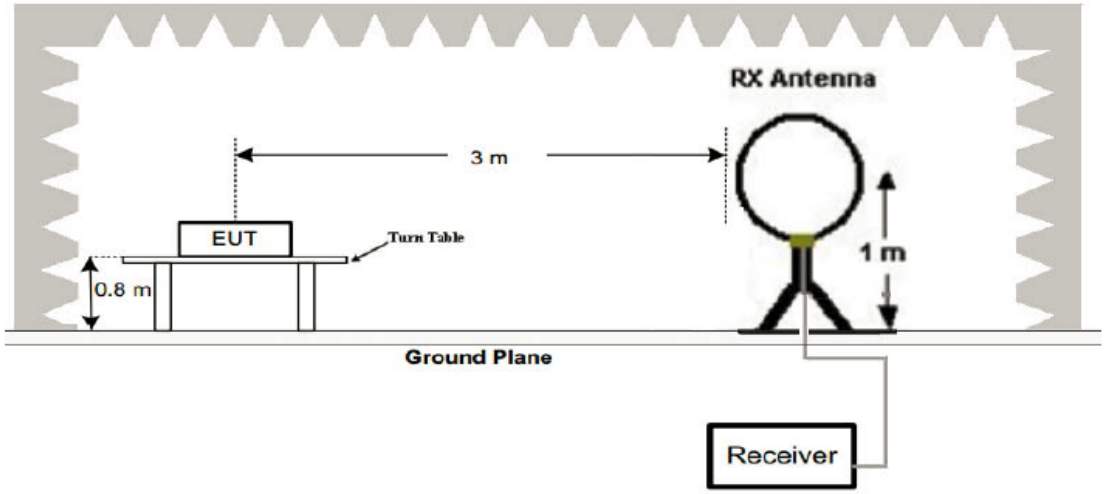
Unwanted emissions that fall into restricted bands shall comply with the limits specified in RSS-Gen; and Unwanted emissions that do not fall within the restricted frequency bands shall comply either with the limits specified in the applicable RSS or with those specified in this RSS-Gen.

Radiated emission limits

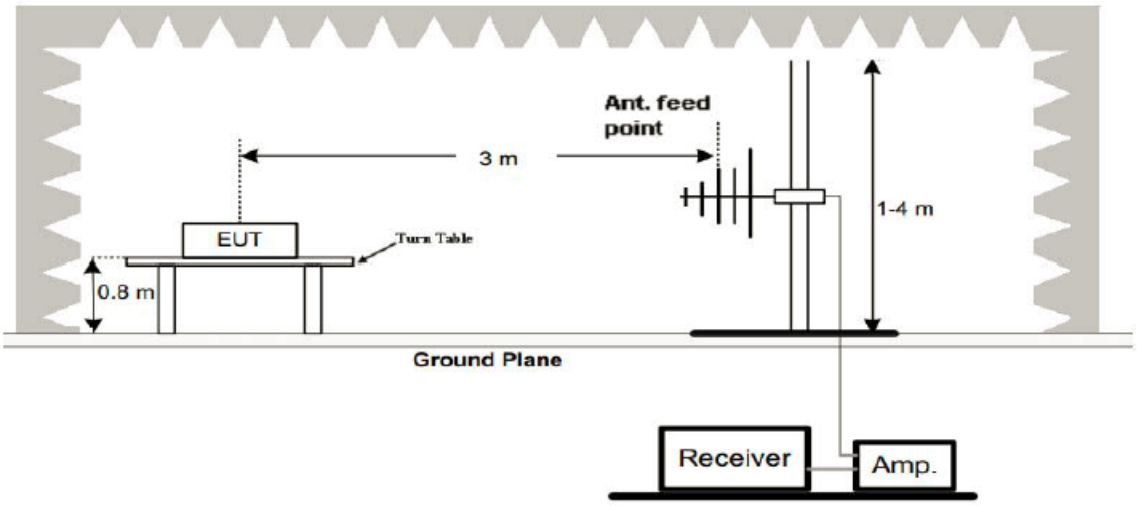
Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

Test Setup

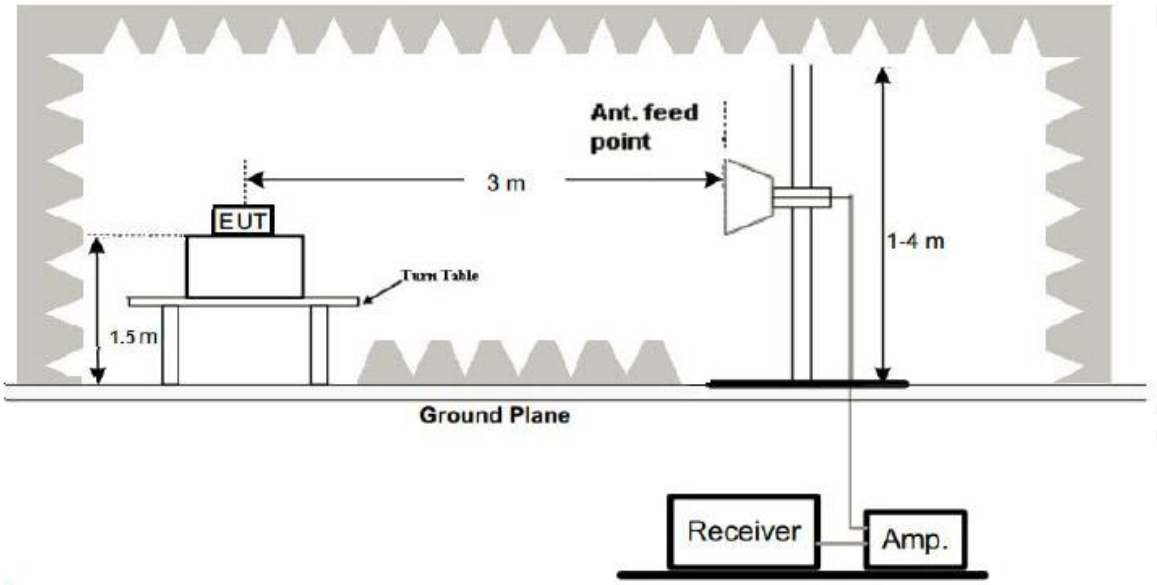
1. Radiated Emission Test-Up Frequency Below 30MHz



2. Radiated Emission Test-Up Frequency 30MHz~1GHz



3. Radiated Emission Test-Up Frequency Above 1GHz



Test Procedure

1. Below 1GHz measurement the EUT is placed on a turntable which is 0.8m above ground plane, and above 1GHz measurement EUT was placed on a low permittivity and low loss tangent turn table which is 1.5m above ground plane.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0℃ to 360℃ to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 9KHz to 25GHz.
6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Bilog Antenna	3
1GHz-18GHz	Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

TEST RESULTS

---PASS---

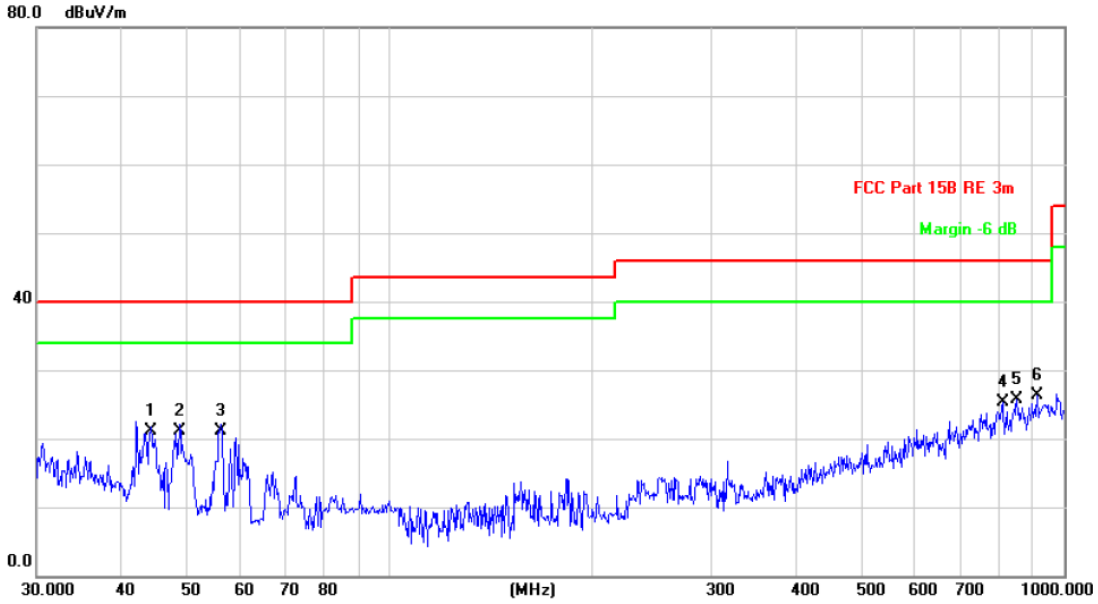
Remark:

1. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “Z axis” position was the worst, and test data recorded in this report.
2. Radiated emission test from 9KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9KHz to 30MHz and not recorded in this report.

Below 1GHz Test Results:

Temperature:	24℃	Relative Humidity:	48%
Test Date:	Oct. 27, 2018	Pressure:	1030hPa
Test Voltage:	DC 3.0V from battery	Polarization:	Horizontal and vertical

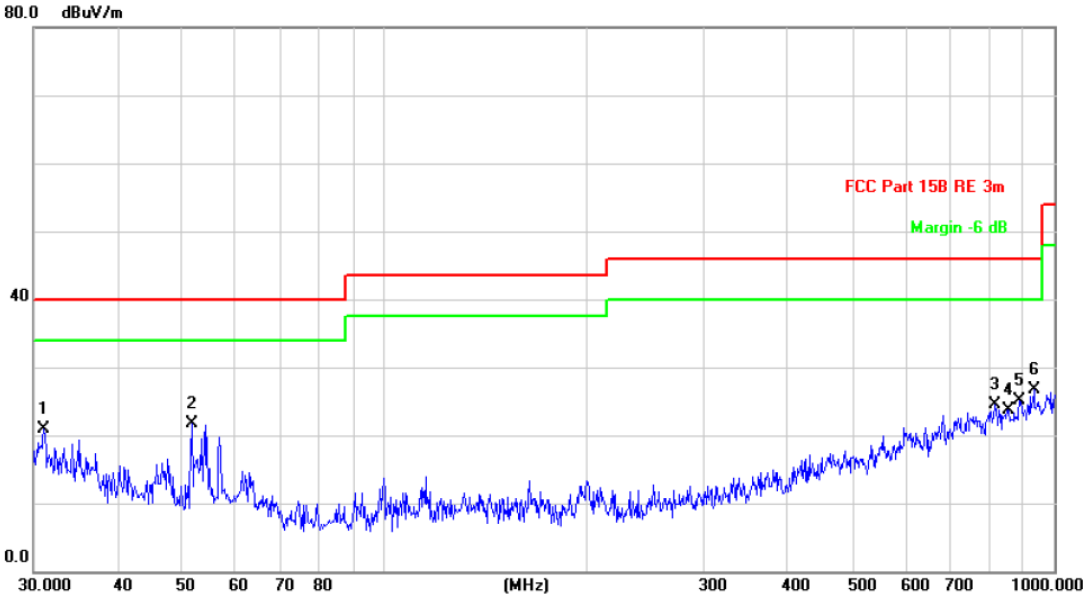
Polarization:	Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		44.2751	35.69	-14.53	21.16	40.00	-18.84	QP			
2	*	48.8429	38.23	-17.06	21.17	40.00	-18.83	QP			
3		56.1974	39.85	-18.73	21.12	40.00	-18.88	QP			
4		810.2653	26.43	-1.20	25.23	46.00	-20.77	QP			
5		851.0353	26.52	-0.75	25.77	46.00	-20.23	QP			
6		912.8619	25.91	0.42	26.33	46.00	-19.67	QP			

Remark: Absolute Level= Reading Level+ Factor, Margin= Absolute Level – Limit
Factor=Ant. Factor + Cable Loss – Pre-amplifier

Polarization:	Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.0706	26.38	-5.42	20.96	40.00	-19.04	QP			
2	*	51.6616	39.62	-17.98	21.64	40.00	-18.36	QP			
3		815.9678	25.64	-1.16	24.48	46.00	-21.52	QP			
4		854.0247	24.36	-0.72	23.64	46.00	-22.36	QP			
5		887.6099	25.44	-0.25	25.19	46.00	-20.81	QP			
6		932.2715	25.93	0.87	26.80	46.00	-19.20	QP			

Remark: Absolute Level= Reading Level+ Factor, Margin= Absolute Level – Limit
Factor=Ant. Factor + Cable Loss – Pre-amplifier

Remark：

(1) Measuring frequencies from 9 kHz to the 1 GHz, Radiated emission test from 9kHz to 30MHz was verified, and no any emission was found except system noise floor.

(2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

Above 1 GHz Test Results:

CH00 (2427MHz)

Horizontal:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4854	47.80	-3.55	44.25	74	29.75	PK
4854	--	--	--	54	--	AV
7281	48.37	-0.78	47.59	74	26.41	PK
7281	--	--	--	54	--	AV

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4854	49.18	-3.55	45.63	74	28.37	PK
4854	--	--	--	54	--	AV
7281	48.83	-0.78	48.05	74	25.95	PK
7281	--	--	--	54	--	AV

Remark：
(1) Measuring frequencies from 1 GHz to the 25 GHz.
(2) Factor = Antenna Factor + Cable Loss – Pre-amplifier.
(3) Margin= Limits –Emission Level
(4) -- Mean the PK detector measured value is below average limit.
(5) The other emission levels were very low against the limit.

Radiated Band Edge Test:

Operation Mode: TX CH 00 (2427MHz)

Horizontal (Worst case):

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2390.00	42.09	-5.84	36.25	74	37.75	PK
2390.00	--	--	--	54	--	AV
2400.00	43.05	-5.84	37.21	74	36.79	PK
2400.00	--	--	--	54	--	AV
2483.50	42.54	-5.65	36.89	74	37.11	PK
2483.50	--	--	--	54	--	AV
2500.00	41.84	-5.72	36.12	74	37.88	PK
2500.00	--	--	--	54	--	AV

Vertical:

Frequency (MHz)	Reading Result (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2390.00	41.32	-5.84	35.48	74	38.52	PK
2390.00	--	--	--	54	--	AV
2400.00	42.71	-5.84	36.87	74	37.13	PK
2400.00	--	--	--	54	--	AV
2483.50	41.90	-5.65	36.25	74	37.75	PK
2483.50	--	--	--	54	--	AV
2500.00	40.95	-5.72	35.23	74	38.77	PK
2500.00	--	--	--	54	--	AV

Remark：

(1) Factor = Antenna Factor + Cable Loss – Pre-amplifier.

(2) Margin= Limits –Emission Level

(3) -- Mean the PK detector measured value is below average limit.

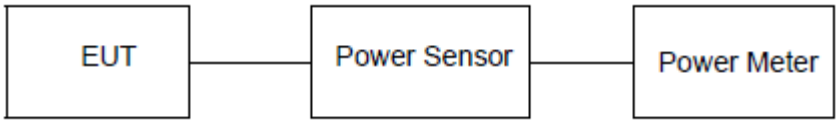
3.3 CONDUCTED OUTPUT POWER

Limit

The Maximum Peak Output Power Measurement is 30dBm.

Test Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power sensor.



Test Result

---PASS---

Type	Channel	Output power (dBm)	Limit (dBm)	Result
GFSK	00	-22.99	30.00	Pass

3.4 POWER SPECTRAL DENSITY

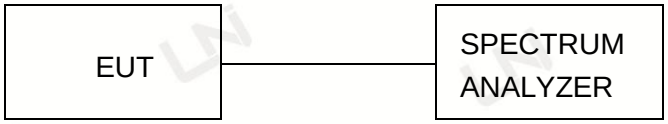
Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to theantenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW ≥ 3 kHz.
3. Set the VBW ≥ 3× RBW.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be 8dBm.

Test Configuration

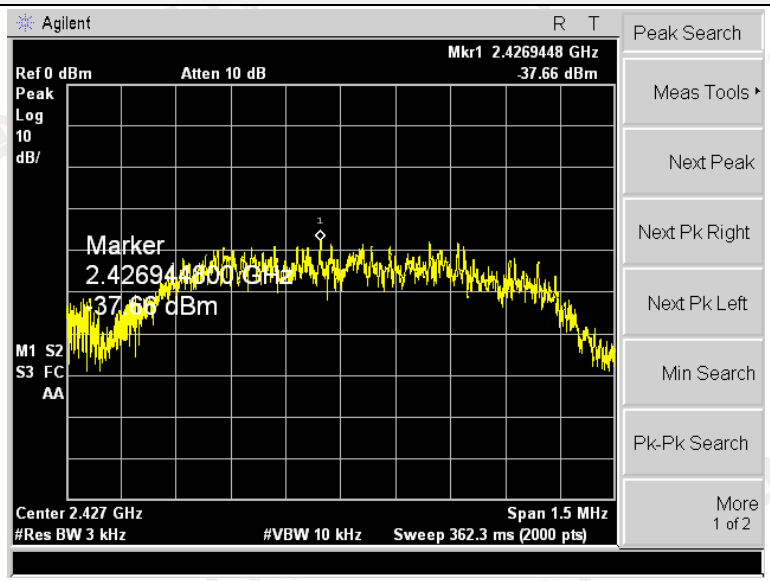


Test Results

Type	Channel	Power Spectral Density (dBm/3KHz)	Limit (dBm/3KHz)	Result
GFSK	00	-37.66	8.00	Pass

Test plot as follows:

GFSK



CH00

3.5 OCCUPIED BANDWIDTH MEASUREMENT

Limit

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300 KHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

Test Configuration

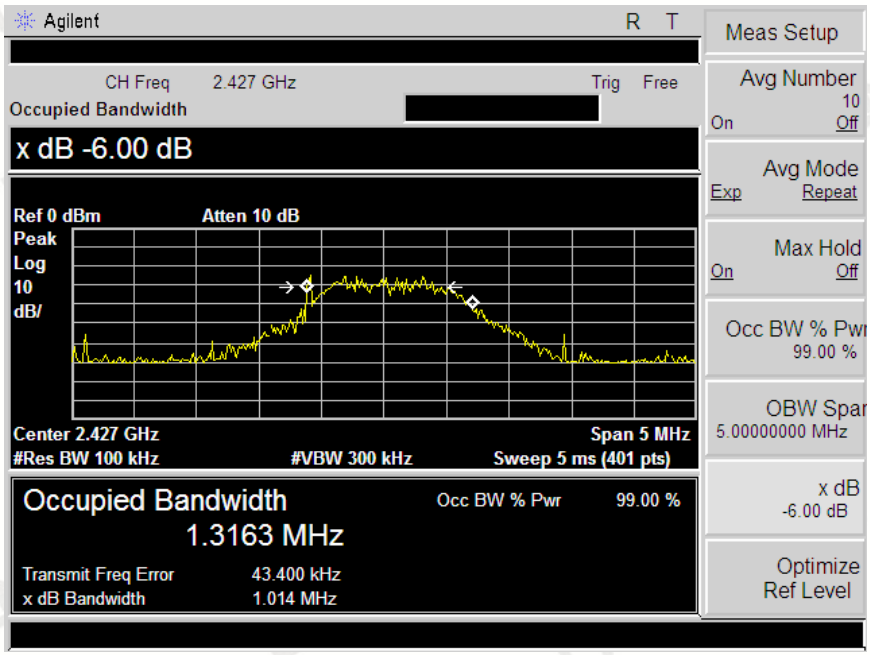
Test Results

---PASS---

Type	Channel	6dB Bandwidth (MHz)	99% OBW (MHz)	Limit (KHz)	Result
GFSK	00	1.014	1.3163	≥500	Pass

Test plot as follows:

GFSK



CH00

3.6 OUT-OF BAND EMISSIONS

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desiredpower, based on either an RF con-ducted or a radiated measurement, pro-vided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter com-plies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

Test Procedure

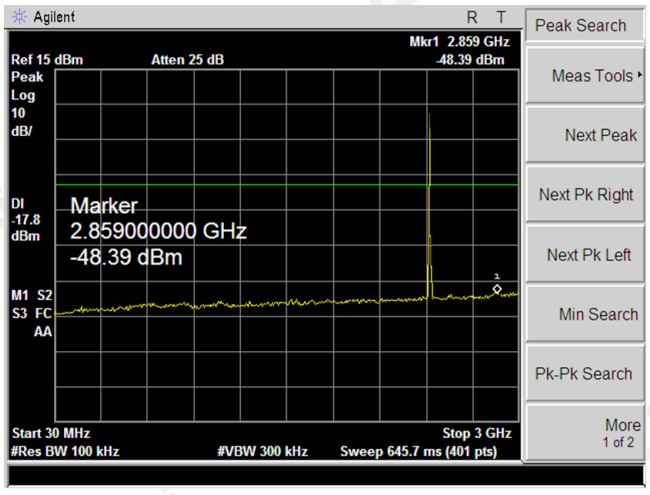
Connect the transmitter output to spectrumanalyzer using a low loss RF cable, and set the spectrumanalyzer to RBW=100 kHz, VBW= 300 kHz, peak detector , and max hold. Measurements utilizing these setting are made of the in-band reference level, bandedge and out-of-band emissions.

Test Configuration

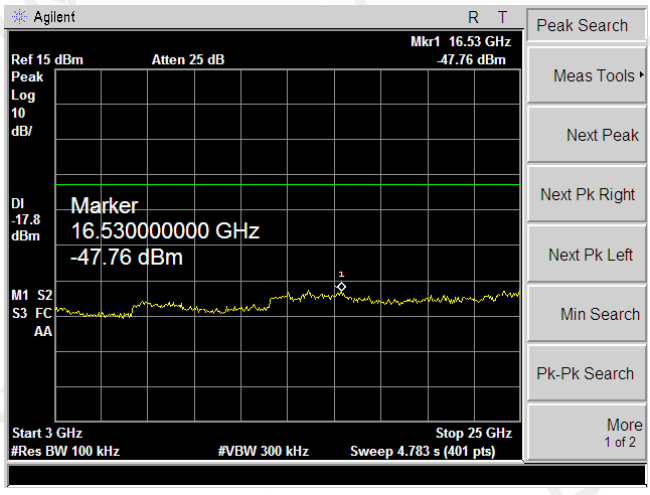
Test Results

Remark: The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions and bandage measurement data.

Test plot as follows:

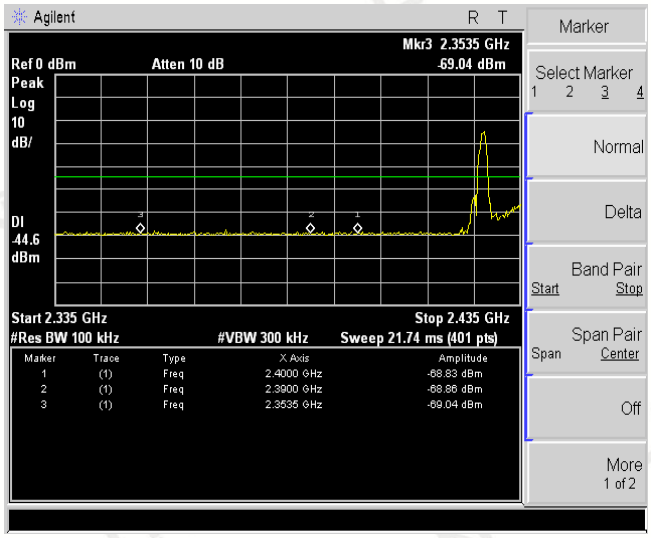
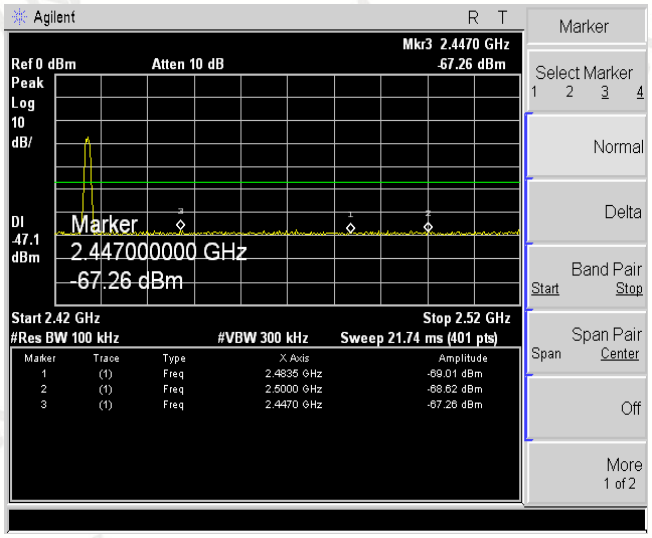


30MHz-3GHz



3GHz-25GHz

Band-edge Measurements for RF Conducted Emissions:

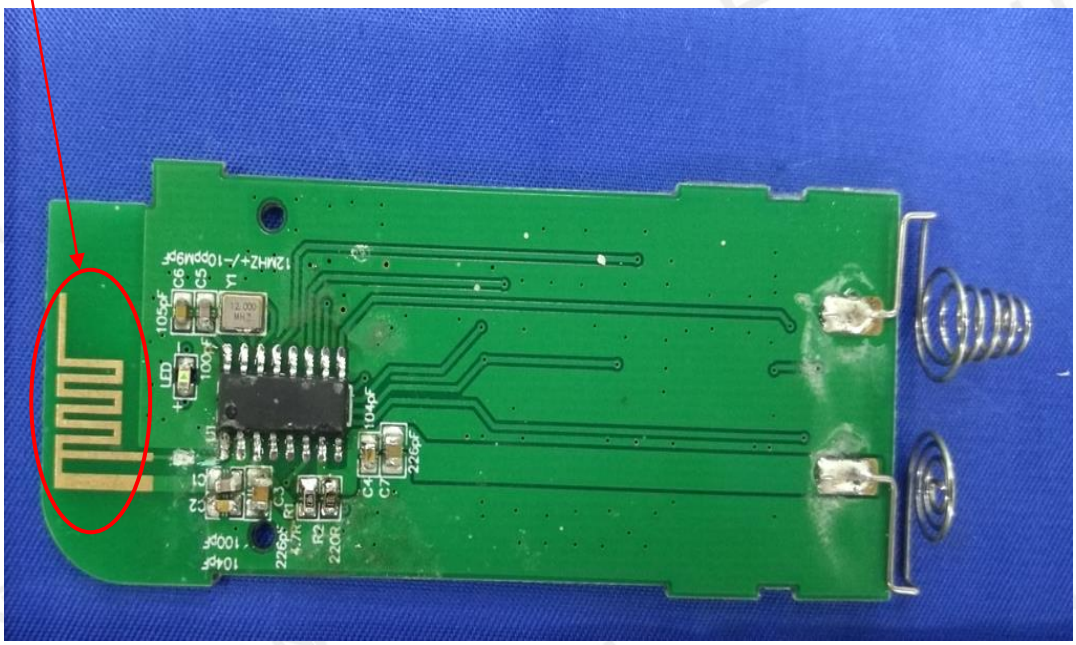
GFSK	
	
Left bandedge	Right bandedge

3.7 ANTENNA REQUIREMENT

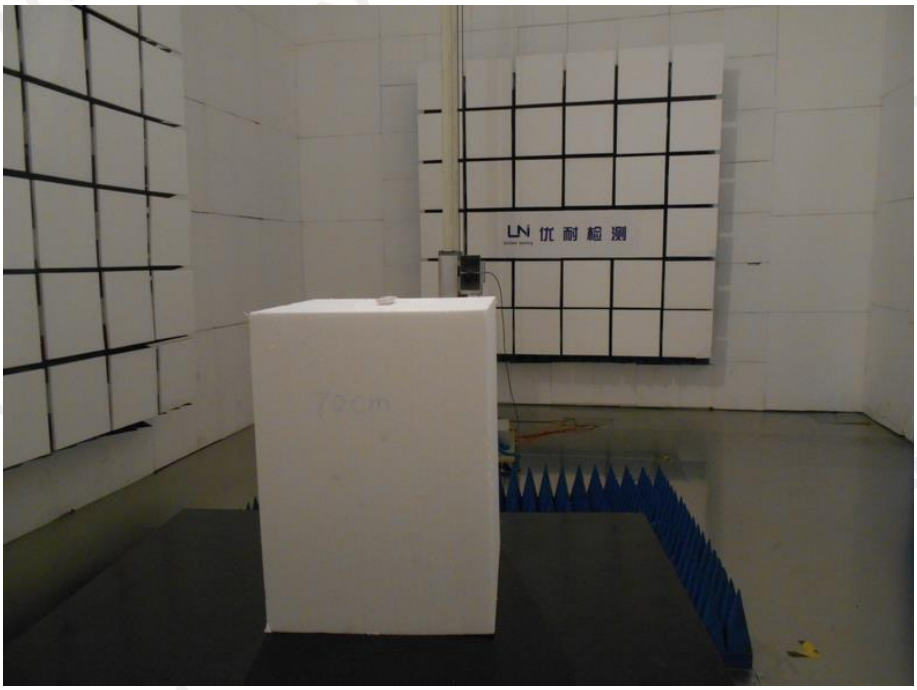
Standard Applicable:
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Connected Construction
The antenna used in this product is integral Antenna, the directional gains of antenna used for transmitting is 1.5dBi.

ANTENNA

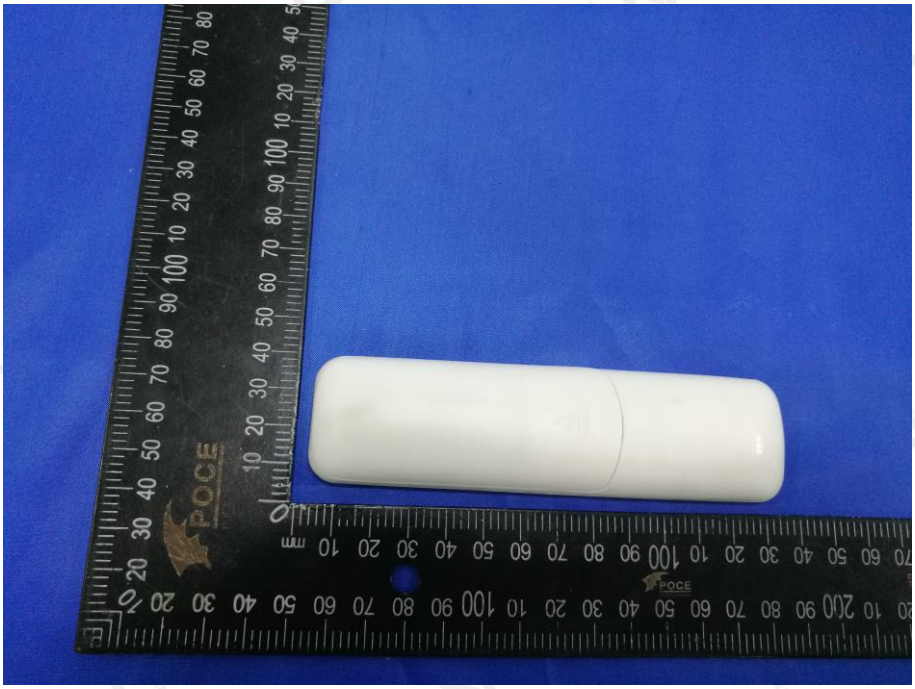


4 PHOTOGRAPH OF TEST

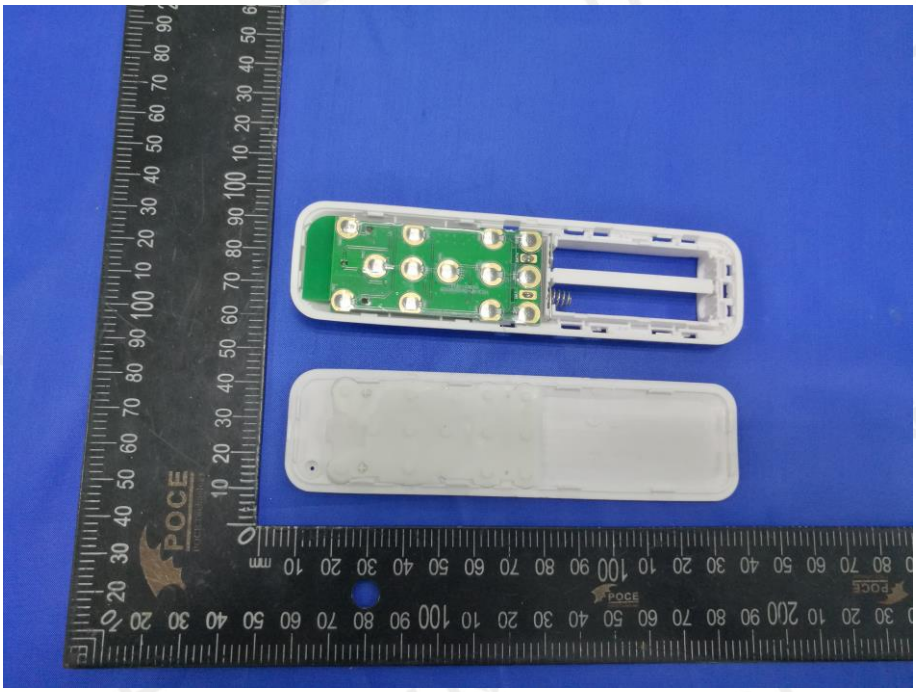


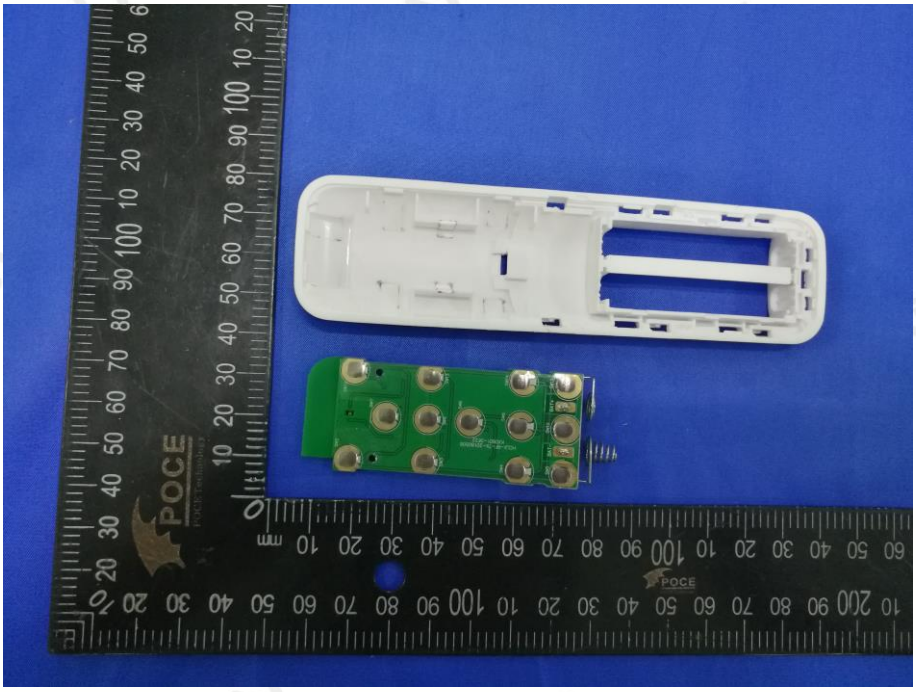
5 PHOTOGRAPH OF EUT

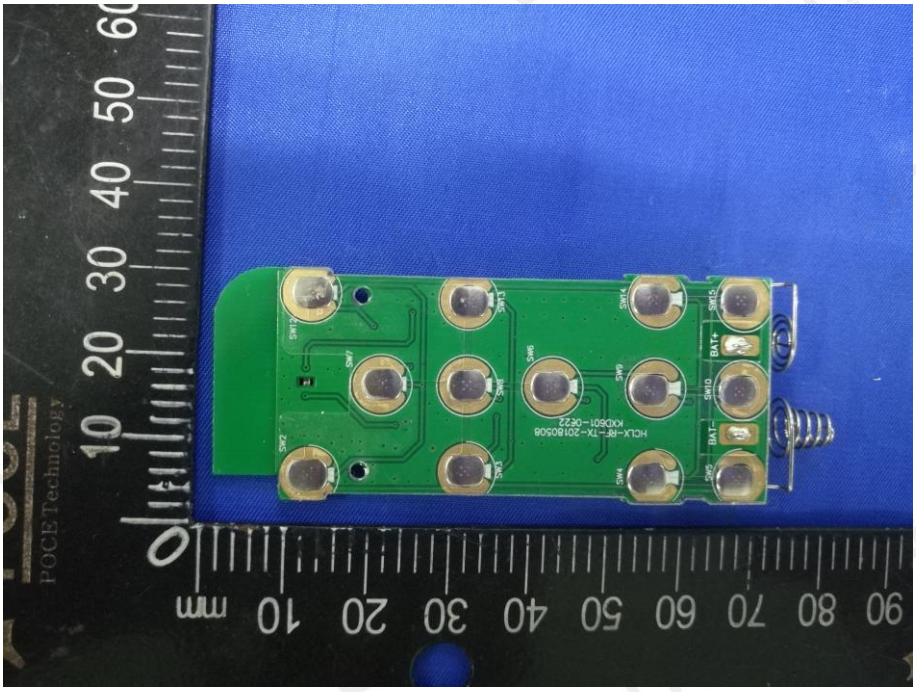
External Photos of EUT

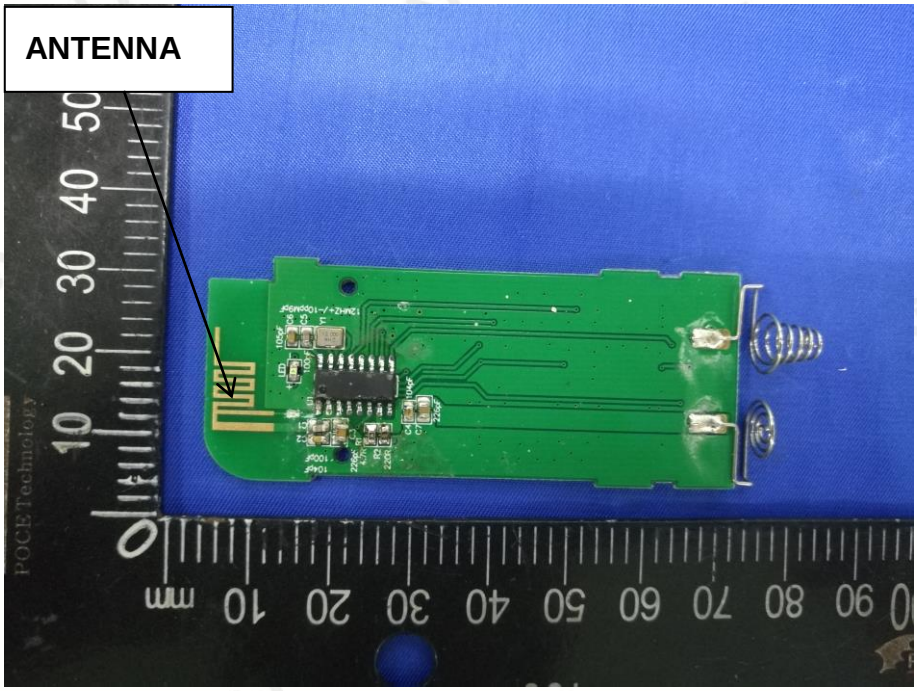


Internal Photos of EUT









**********End of Report**********