FCC Test Report

Part 15 subpart C

Client Information:

Applicant:	Hangzhou Bench Technology Co., Ltd.
Applicant add.:	No. 3490 Nanhuan Road Binjiang District Hangzhou, China

Product Information:

Product Name:	Remote Control
Model No.:	2.4G
Derivative model No.:	N/A
Brand Name:	N/A
Standards:	CFR 47 FCC PART 15 SUBPART C:2016 section 249

Prepared By:

Shenzhen Asia Test Technology Co.,Ltd.

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Date of Receipt:	Feb. 22, 2016	Date of Test:	Feb. 23~ Mar. 03, 2016
Date of Issue:	Mar. 03, 2016	Test Result:	Pass

This device described above has been tested by Dongguan Yaxu (AiT) Technology Limited, 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.
This test report must not be used by the client to claim product endorsement by any agency of the U.S. government.

Reviewed by: Jack Yu **Approved by:** Can Liu

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2 Test Summary

2.1 Compliance with FCC Part 15 subpart C

Test	Test Requirement	Standard Paragraph	Result
Field Strength of Fundamental	FCC PART 15 C section 15.249 (a)	ANSI C63.10: Clause 6.6	PASS
Field Strength of Unwanted Emissions	FCC PART 15 C section 15.249 (a) section 15.249 (d)	ANSI C63.10: Clause 6.4, 6.6 and 6.7	PASS
Band Edges	FCC PART 15 C section 15.249 (d)	ANSI C63.10: Clause 6.9.2	PASS
Occupied Bandwidth	FCC PART 15 C section 15.215(c)	ANSI C63.10: Clause 6.9.1	PASS
Conducted Emissions at Mains Terminals	FCC PART 15 C section 15.207	ANSI C63.10: Clause 6.2	PASS

Remark:
EUT: In this whole report EUT means Equipment Under Test.
Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radio Frequency.
ANSI C63.10: the detail version is ANSI C63.10:2009 in the whole report.

2.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, the maximum value of the uncertainty as below:

No.	Item	Uncertainty
1	Conducted Emission Test	1.20dB
2	Radiated Emission Test	3.30dB
3	RF power,conducted	0.16dB
4	RF power density,conducted	0.24dB
5	Spurious emissions,conducted	0.21dB
6	All emissions,radiated(<1G)	4.68dB
7	All emissions,radiated(>1G)	4.89dB

3 Test Facility

.FCC- Registration No: 248337

DongGuan Yaxu(AiT) Technology Limited
No. 22,JinQianLing Street 3, JiTiGang Village, Huang-Jiang Town, DongGuan, Guangdong, 523757 China.

3.1 Deviation from standard

None

3.2 Abnormalities from standard conditions

None

4 General Information

4.1 General Description of EUT

Manufacturer:	Hangzhou Bench Technology Co., Ltd.
Manufacturer Address:	No. 3490 Nanhuan Road Binjiang District Hangzhou,China
EUT Name:	Remote Control
Model No.:	2.4G
FCC ID:	2AHJPTX2400
Operation frequency:	2402 MHz to 2409 MHz
Number of channel:	4 channels
Modulation Type :	GFSK
Antenna Type:	PCB antenna
Antenna Gain:	0 dBi
HW:	MY_24L01_0055
SW:	V1.1
Brand Name:	N/A

Serial No:	N/A
Derivative model No.:	N/A
Power Supply Range:	DC 3.7V by Li-battery
Power Supply:	DC 3.7V by Li-battery
Power Cord:	N/A
Signal Cable:	N/A

Description of Channel:			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2402		
2	2404		
3	2406		
4	2409		

NOTE:
because the firmware limitation, this product only supports 1Mbps data rate. And users can not enable other data rate by themselves

5 Description of Test conditions

5.1 E.U.T. Operation

Test Voltage: DC 3.7V

Temperature: 20.0 -25.0 °C

Humidity: 38-50 % RH

Atmospheric Pressure: 1000 -1010 mbar

Test frequencies and frequency range: According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

According to the 15.33 (a) For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in the following table:

Number of fundamental frequencies to be tested in EUT transmit band

Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

Frequency range of radiated emission measurements

Lowest frequency generated in the device	Upper frequency range of measurement
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified

5.2 EUT Peripheral List

No.	Equipment	Manufacturer	Model No.	Shielding	Length
1	USB cable	Hangzhou Bench Technology Co., Ltd.	N/A	Yes	1m

5.3 Test Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	signal cable
1	adapter	HUIKE	HK-05001000F	N/A	N/A	N/A

this adapter is not marketed with EUT. Any taken from the test laboratory for test.(input:100-240V~, 50/60Hz, 0.5A,Output: DC 5V, 1A)

5.4 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH1
Mode 2	CH4

For Conducted Emission	
Final Test Mode	Description
/	/

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH1

Mode 2	CH4

Note:
(1) The measurements are performed at the highest, lowest available channels.

(2) The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.

6 Equipments List for All Test Items

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Spectrum Analyzer	ADVANTEST	R3182	150900201	2015.06.29	2016.06.28
2	EMI Measuring Receiver	R&S	ESR	101660	2015.12.12	2016.12.11
3	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2015.06.29	2016.06.28
4	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2015.12.02	2016.12.01
5	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2015.12.03	2016.12.02
6	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2015.12.03	2016.12.02
7	SHF-EHF Horn	SCHWARZBECK	BBHA9170	BBHA9170367	2015.12.03	2016.12.02
8	Loop Antenna	ARA	PLA-1030/B	1029	2015.03.20	2016.03.19
9	Radiated Cable 1#（30MHz-1GHz）	FUJIKURA	5D-2W	01	2015.01.04	2016.01.03
10	Radiated Cable 2#（1GHz -25GHz）	FUJIKURA	10D2W	02	2015.12.25	2016.12.24
11	Conducted Cable 1#(9KHz-30MHz)	FUJIKURA	1D-2W	01	2015.01.04	2016.01.03
12	SMA Antenna connector	Dosin	Dosin-SMA	N/A	N/A	N/A
Note: The SMA antenna connector is soldered on the PCB board in order to perform conducted tests and this SMA antenna connector is listed in the equipment list.						

AC power line conducted test

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	EMI Test Receiver	R&S	ESCI	100124	2015.06.29	2016.06.28
2	LISN	Kyoritsu	KNW-242	8-837-4	2015.06.29	2016.06.28
3	LISN	Kyoritsu	KNW-407	8-1789-3	2015.06.29	2016.06.28
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2015.06.29	2016.06.28

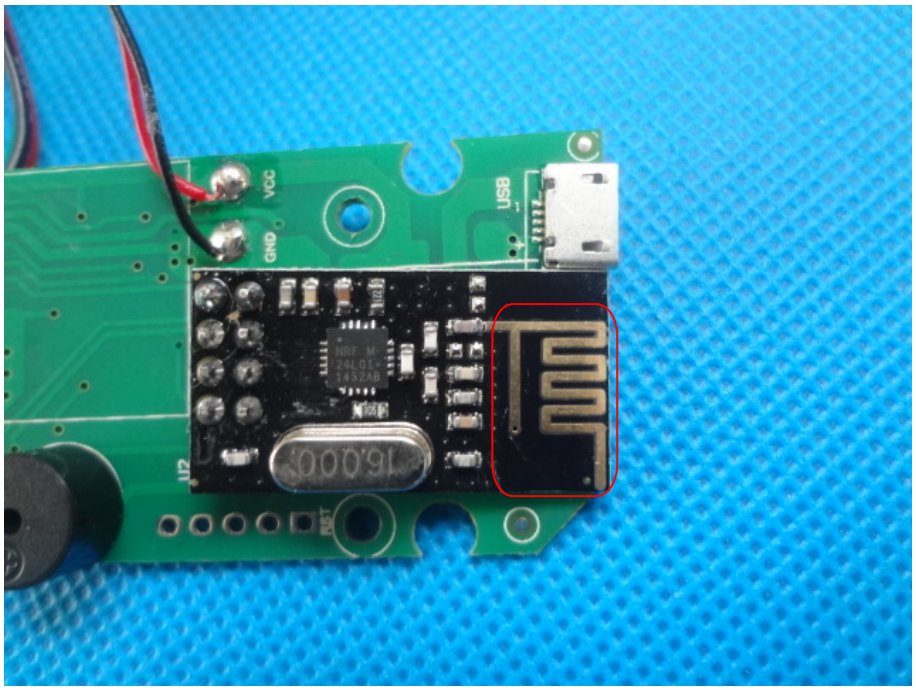
7 Test Result

7.1 Antenna Requirement

Standard requirement

EUT Antenna

The antenna is PCB antenna and no consideration of replacement. The maximum gain of the antenna is 0 dBi.



Test result: The unit does meet the FCC requirements.

7.2 Field Strength of Fundamental& Field Strength of Unwanted Emissions& Band Edge

Test Requirement: FCC Part15 C section 15.249

(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (dBμV/m @ 3m)	Field Strength of Harmonics (dBμV/m @ 3m)
902 to 928	94.0	54.0
2400 to 2483.5	94.0	54.0
5725 to 5875	94.0	54.0
24000 to 24250	108.0	68.0

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Limits: The fundamental frequency rang is in the frequency band of the EUT is 2402 MHz ~ 2409MHz.

The limit for AVG field strength dBμV/m for the fundamental frequency = 94.0 dBμV/m.

The limit for Peak field strength dBμV/m for the fundamental frequency = 114.0 dBμV/m.

No fundamental is allowed in the restricted bands.

The limit for AVG field strength dBμV/m for the harmonics and other above 1G frequencies = 54.0 dBμV/m.

The limit for Peak field strength dBμV/m for the harmonics and other above 1G frequencies = 74.0 dBμV/m.

Test Method: ANSI C63.10: Clause 6.4, 6.6 and 6.7 for Field Strength of Fundamental& Field Strength of Unwanted Emissions

ANSI C63.10: Clause 6.9.2 for Band Edge

Status: Pre-test the EUT in continuous transmitting mode with setup as stand-alone in X, Y, Z threes axes, found the worst case is X axes and report the data.

Measurement Distance: 3m (Semi-Anechoic Chamber)

Frequency range: 9 kHz – 25 GHz for transmitting mode.

Test instrumentation resolution bandwidth
9 kHz (9 kHz - 30 MHz), 120 kHz (30 MHz - 1000 MHz), 1 MHz (1000 MHz – 25 GHz)

Detector: For PK and QP value:

RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

For AV value:

RBW = 1 MHz for f ≥ 1 GHz,

VBW =10 Hz

Sweep = auto

Detector function = peak

Trace = max hold

Test Procedure:

1)9 kHz to 30 MHz emissions:

For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.10. The centre of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT, During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

2)30 MHz to 1 GHz emissions:

For testing performed with the bi-log type antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360º, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

3)1 GHz to 25 GHz emissions:

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2007 was used to perform radiated emission test above 1 GHz.

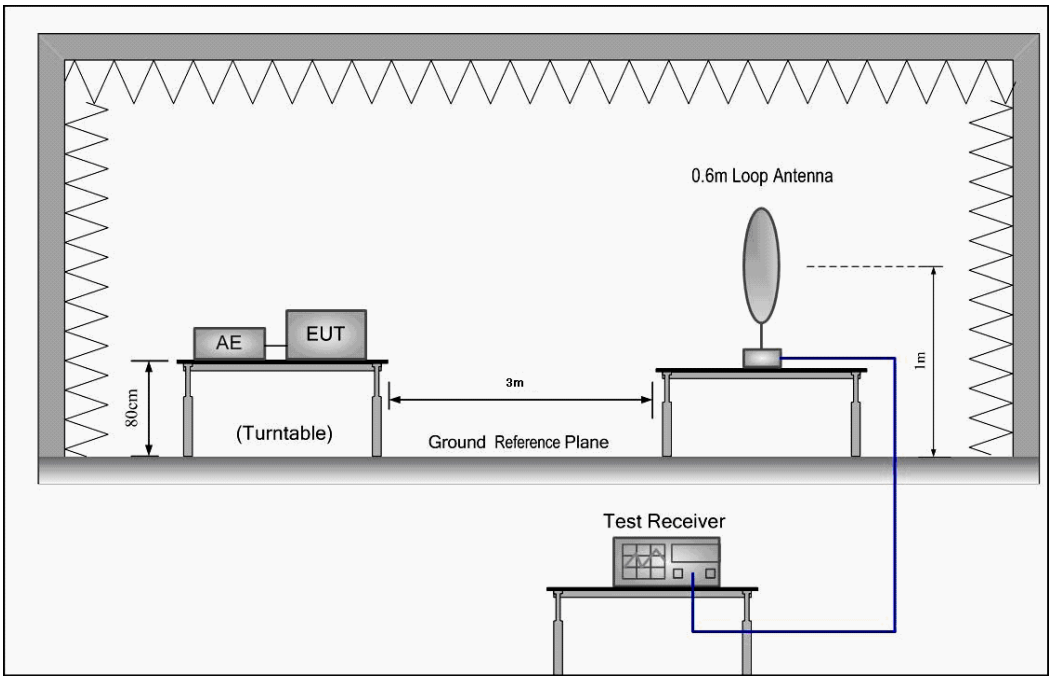
For testing performed with the horn antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360º, the antenna height scan between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

For the radiated emission test above 1GHz:

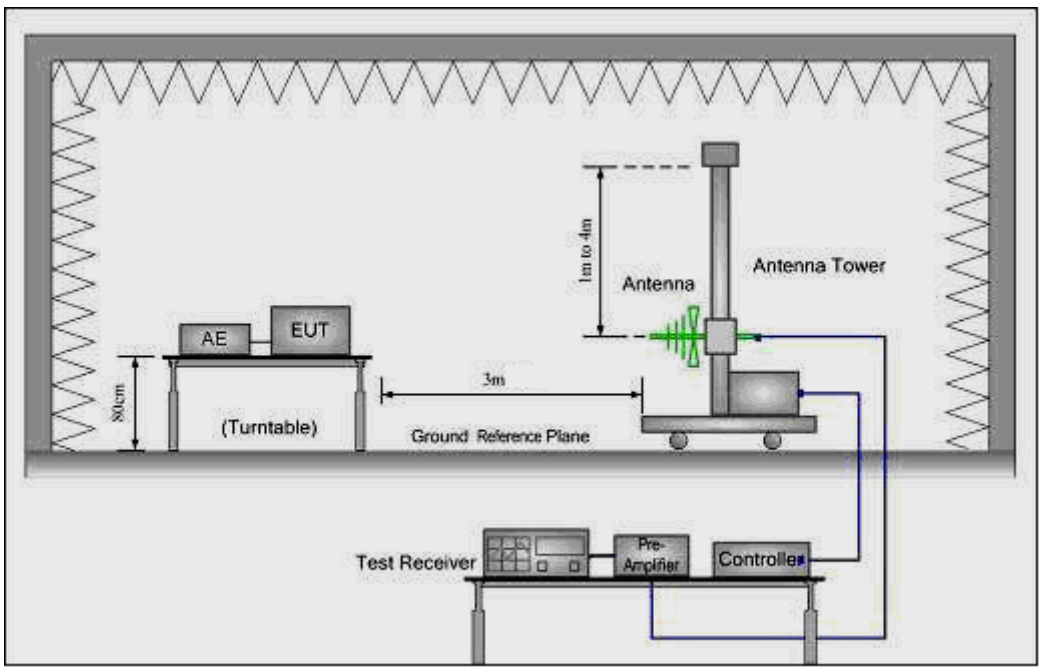
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

Test Configuration:

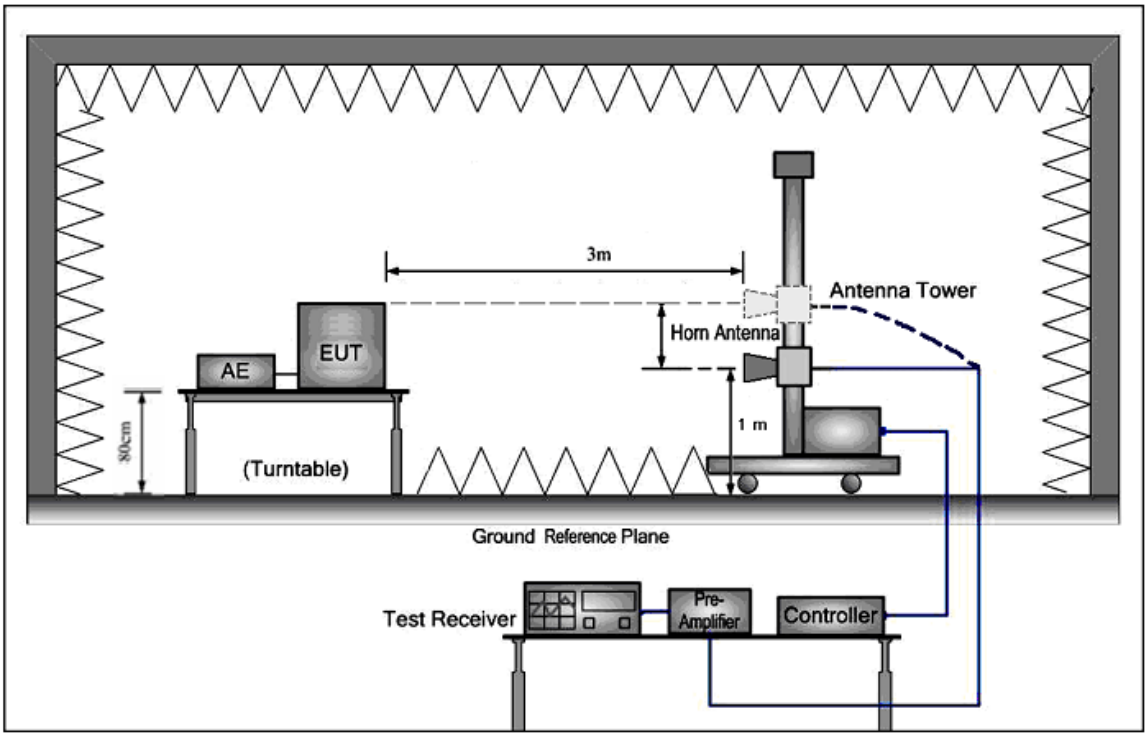
1) 9 kHz to 30 MHz emissions:



2) 30 MHz to 1 GHz emissions:



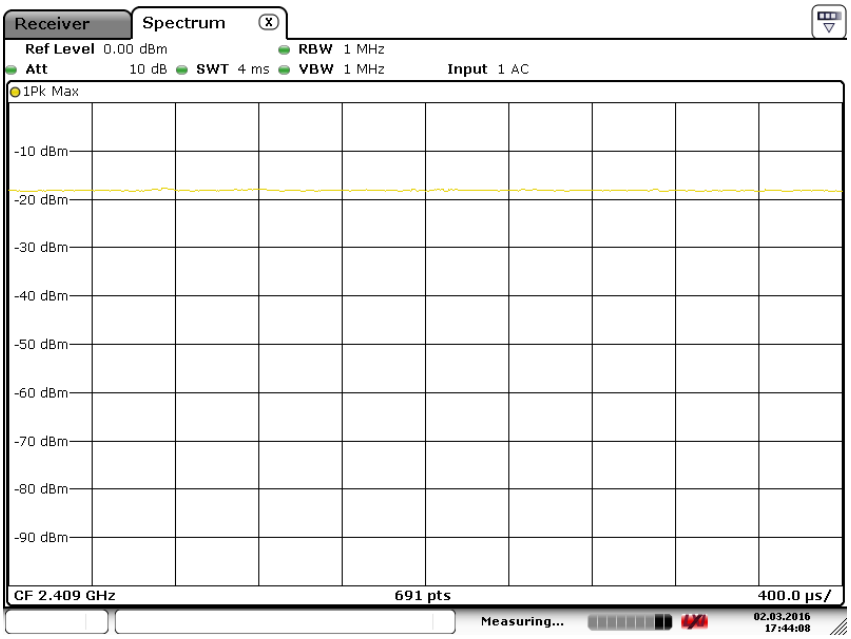
3) 1 GHz to 10 GHz emissions:



The field strength is calculated by adding the Antenna Factor, Cable Loss & Per-amplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Loss – Preamplifier Factor

7.2.1 Duty cycle measurement:



Up to 100%

7.2.2 Fundamental field strength measurement:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type	Antenna polarization
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
2402	87.26	-5.55	81.71	114	-32.29	Peak	V
2402	76.55	-5.55	71	94	-23	AVG	V
2402	85.16	-5.55	79.61	114	-34.39	Peak	H
2402	74.17	-5.55	68.62	94	-25.38	AVG	H
2406	82.14	-5.36	76.78	114	-37.22	Peak	V
2406	70.85	-5.36	65.49	94	-28.51	AVG	V
2406	83.37	-5.36	78.01	114	-35.99	Peak	H
2406	73.64	-5.36	68.28	94	-25.72	AVG	H
2409	80.67	-5.01	75.66	114	-38.34	Peak	V
2409	70.33	-5.01	65.32	94	-28.68	AVG	V
2409	81.06	-5.01	76.05	114	-37.95	Peak	H
2409	70.19	-5.01	65.18	94	-28.82	AVG	H

Note: Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss– Pre-amplifier.

7.2.3 Radiated Emissions Test Data

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

30 MHz~1 GHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

EUT：	Remote Control	Model Name ：	2.4G
Temperature：	25 ℃	Test Data	2016-02-28
Pressure：	1010 hPa	Relative Humidity：	60%
Test Mode ：	TX 2402 mode(worse-case)	Test Voltage ：	DC 3.7V by battery
Measurement Distance	3 m	Frenqucy Range	30MHz to 1GHz
RBW/VBW	100KHz / 300KHz for spectrum, RBW=120KHz for receiver.		

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
40.26	33.75	-12.24	21.51	40	-18.49	QUASI-PEAK
59.37	35.14	-17.47	17.67	40	-22.33	QUASI-PEAK
141.25	30.25	-14.78	15.47	43.5	-28.03	QUASI-PEAK
247.16	32.64	-13.87	18.77	46	-27.23	QUASI-PEAK
355.24	31.06	-9.72	21.34	46	-24.66	QUASI-PEAK
480.24	33.67	-6.17	27.5	46	-18.5	QUASI-PEAK

(b) Antenna polarization: Vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
55.14	31.28	-13.57	17.71	40	-22.29	QUASI-PEAK
112.14	35.75	-16.14	19.61	43.5	-23.89	QUASI-PEAK
187.35	33.2	-13.57	19.63	43.5	-23.87	QUASI-PEAK
225.42	27.68	-10.14	17.54	46	-28.46	QUASI-PEAK
300.87	30.85	-8.12	22.73	46	-23.27	QUASI-PEAK
512.05	30.75	-4.68	26.07	46	-19.93	QUASI-PEAK

Note:

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss– Pre-amplifier.

Above 1GHz Field Strength of Unwanted Emissions Measurement

EUT：	Remote Control	Model Name ：	2.4G
Temperature：	25 ℃	Test Data	2016-02-28
Pressure：	1010 hPa	Relative Humidity：	60%
Test Mode ：	TX mode	Test Voltage ：	DC 3.7V by battery
Measurement Distance	3 m	Frenqucy Range	1GHz to 25GHz
RBW/VBW	1MHz/1MHz for Peak, 1MHz/10Hz for Average. non-restricted band: 100KHz/300KHz for Peak.		

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4804	47.67	5.06	52.73	74	-21.27	PEAK
4804	38.24	5.06	43.3	54	-10.7	AVERAGE
7206	45.76	7.03	52.79	74	-21.21	PEAK
7206	33.15	7.03	40.18	54	-13.82	AVERAGE
9608	40.38	10.63	51.01	74	-22.99	PEAK
9608	30.87	10.63	41.5	54	-12.5	AVERAGE

(b) Antenna polarization: Vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4804	46.87	5.06	51.93	74	-22.07	PEAK
4804	37.11	5.06	42.17	54	-11.83	AVERAGE
7206	43.27	7.03	50.3	74	-23.7	PEAK
7206	30.55	7.03	37.58	54	-16.42	AVERAGE
9608	41.16	10.63	51.79	74	-22.21	PEAK
9608	29.85	10.63	40.48	54	-13.52	AVERAGE

Note:

10~25GHz at least have 20dB margin. No recording in the test report.

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss– Pre-amplifier.

Low Channel: 2402 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4818	47.15	5.06	52.21	74	-21.79	PEAK
4818	34.68	5.06	39.74	54	-14.26	AVERAGE
7227	44.75	7.03	51.78	74	-22.22	PEAK
7227	31.08	7.03	38.11	54	-15.89	AVERAGE
9636	37.62	10.63	48.25	74	-25.75	PEAK
9636	25.71	10.63	36.34	54	-17.66	AVERAGE

(b) Antenna polarization: Vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4818	45.11	5.06	50.17	74	-23.83	PEAK
4818	31.97	5.06	37.03	54	-16.97	AVERAGE
7227	42.91	7.03	49.94	74	-24.06	PEAK
7227	28.35	7.03	35.38	54	-18.62	AVERAGE
9636	39.39	10.63	50.02	74	-23.98	PEAK
9636	21.05	10.63	31.68	54	-22.32	AVERAGE

Note:

10~25GHz at least have 20dB margin. No recording in the test report.

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss– Pre-amplifier.

High Channel: 2409MHz

7.2.4 Band Edge Measurement:

Ant.Pol. H/V	Freq. (MHz)	Reading		Ant/CF CF(dB)	Act		Limit	
		Peak (dBuv)	AV (dBuv)		Peak (dBuv/m)	AV (dBuv/m)	Peak (dBuv/m)	AV (dBuv/m)
Lowest 2402 MHz								
V	2400	40.17	29.75	-5.72	34.45	24.03	74	54
H	2400	39.88	26.53	-5.72	34.16	20.81	74	54
Highest 2409MHz								
V	2483.5	36.75	24.12	-4.98	31.77	19.14	74	54
H	2483.5	34.28	23.65	-4.98	29.3	18.67	74	54

Remark:

1). The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Loss –Preamplifier Factor.

Test result: The unit does meet the FCC requirements.

7.2.5 Restricted Bands Measurement:

EUT：	Remote Control	Model Name ：	2.4G
Temperature：	25 ℃	Test Data	2016-02-28
Pressure：	1010 hPa	Relative Humidity：	60%
Test Mode ：	TX mode	Test Voltage ：	DC 3.7V by battery
Note：	1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz. 3. The data of 2390MHz and 2483.5MHz was the worst.		

Ant.Pol. H/V	Freq. (MHz)	Reading		Ant/CF CF(dB)	Act		Limit	
		Peak (dBuv)	AV (dBuv)		Peak (dBuv/m)	AV (dBuv/m)	Peak (dBuv/m)	AV (dBuv/m)
V	2390	40.25	28.47	-5.79	34.46	22.68	74	54
H	2390	38.74	26.35	-5.79	32.95	20.56	74	54
V	2483.5	37.11	24.11	-4.98	32.13	19.13	74	54
H	2483.5	35.39	22.37	-4.98	30.41	17.39	74	54

Remark：

(1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode.

(2) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

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

7.3 Occupied Bandwidth

Test Requirement: FCC Part 15 C section 15.215

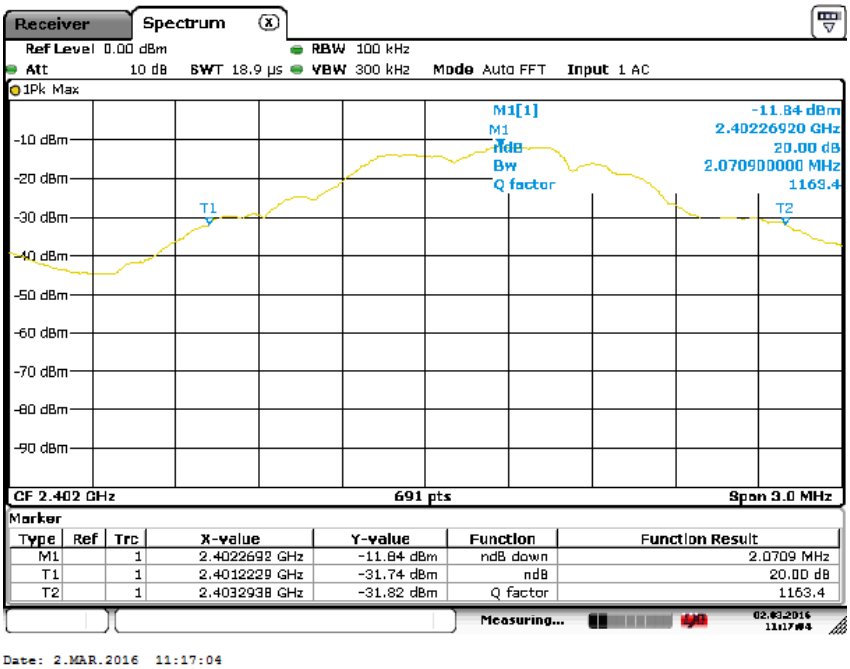
(c)Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

Test Method: ANSI C63.10: Clause 6.9.1

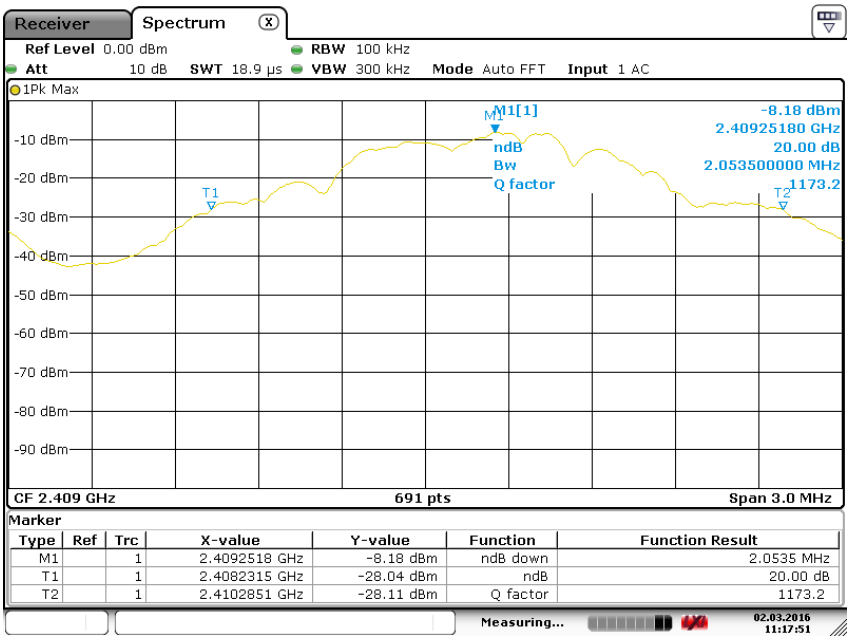
Operation within the band 2402 MHz to 2409MHz

Method of measurement: A small sample of the transmitter output was fed into the Spectrum Analyzer and the attached plot was taken.

Test in the frequency 2402 MHz (20 dB bandwidth)



Test in the frequency 2409 MHz (20 dB bandwidth)



Date: 2.MAR.2016 11:17:50

7.4 Conducted Emissions at Mains Terminals 150 kHz to 30 MHz

Test Requirement: FCC Part 15 C section 15.207

Test Method: ANSI C63.10: Clause 6.2

Frequency Range: 150 kHz to 30 MHz

Detector: Peak for pre-scan (9kHz Resolution Bandwidth)

Test Limit

Limits for conducted disturbance at the mains ports of class B

Frequency Range (MHz)	Class B Limit (dBuV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
NOTE 1 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		

EUT Operation: Test in normal operating mode. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. EUT keeps transmitting during charging process.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Test procedure

1. The mains terminal disturbance voltage test was conducted in a shielded room.

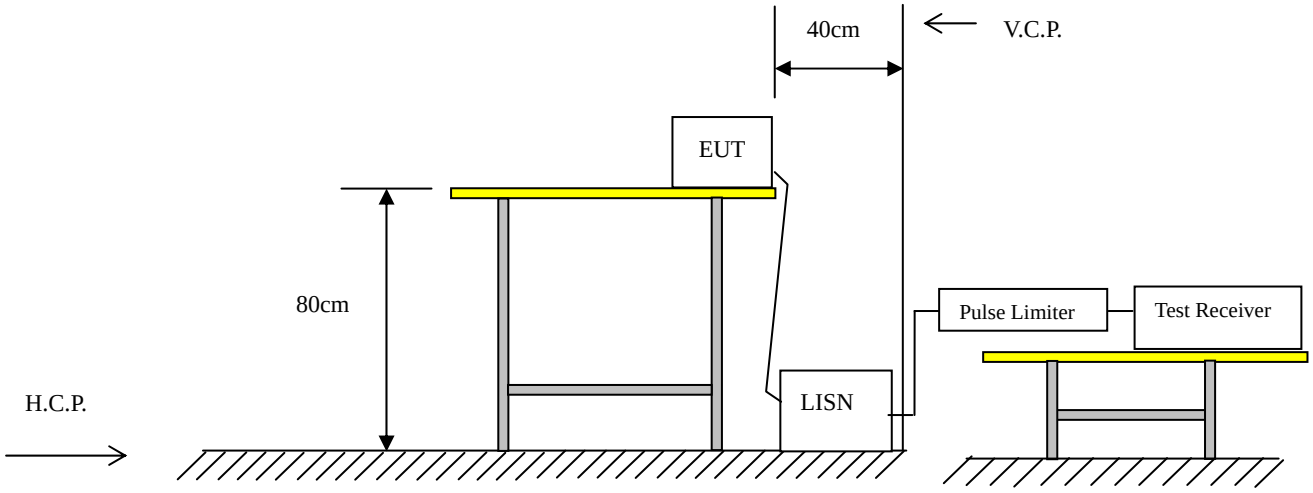
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and

associated equipment was at least 0,8 m from the LISN 2.

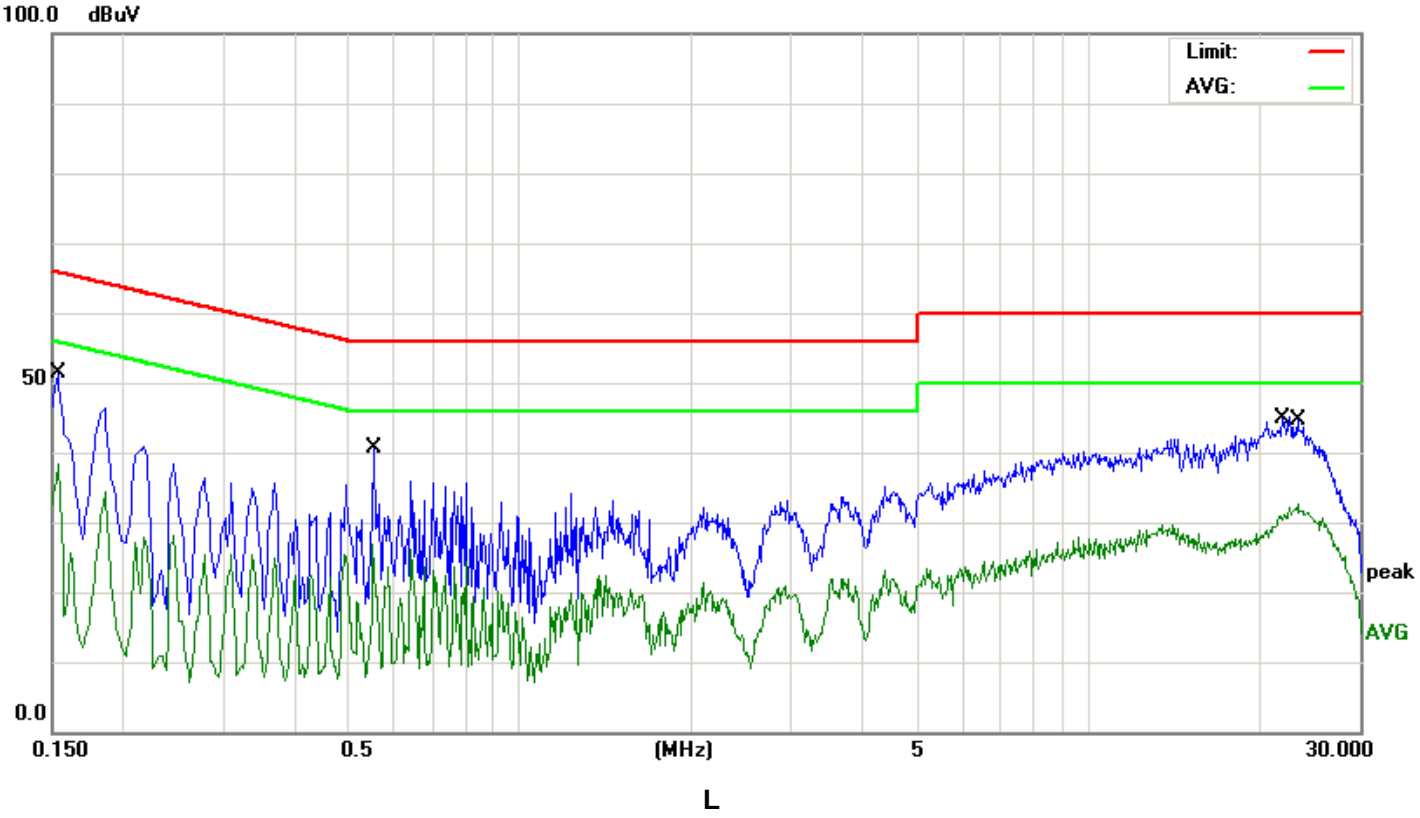
Test setup



7.4.1 Test results

Test Mode: normal operation mode

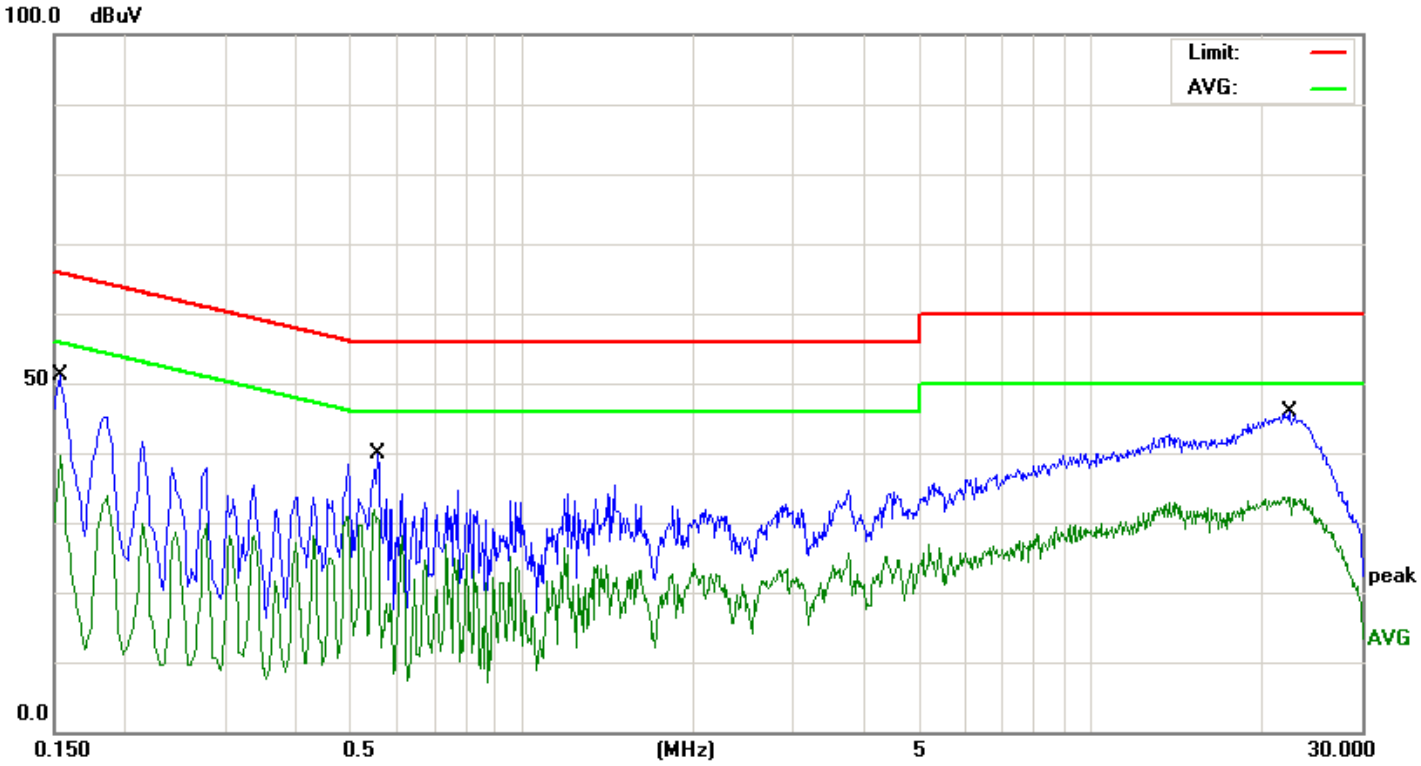
Test voltage: DC 5V by adapter AC 120V/60Hz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1539	39.63	11.84	51.47	65.78	-14.31	QP	
2		0.1539	26.62	11.84	38.46	55.78	-17.32	AVG	
3		0.5500	16.93	10.00	26.93	46.00	-19.07	AVG	
4		0.5540	30.55	10.00	40.55	56.00	-15.45	QP	
5		21.9140	42.78	2.07	44.85	60.00	-15.15	QP	
6		23.2939	30.42	2.09	32.51	50.00	-17.49	AVG	

Test Mode: normal operation mode

Test voltage: DC 5V by adapter AC 120V/60Hz



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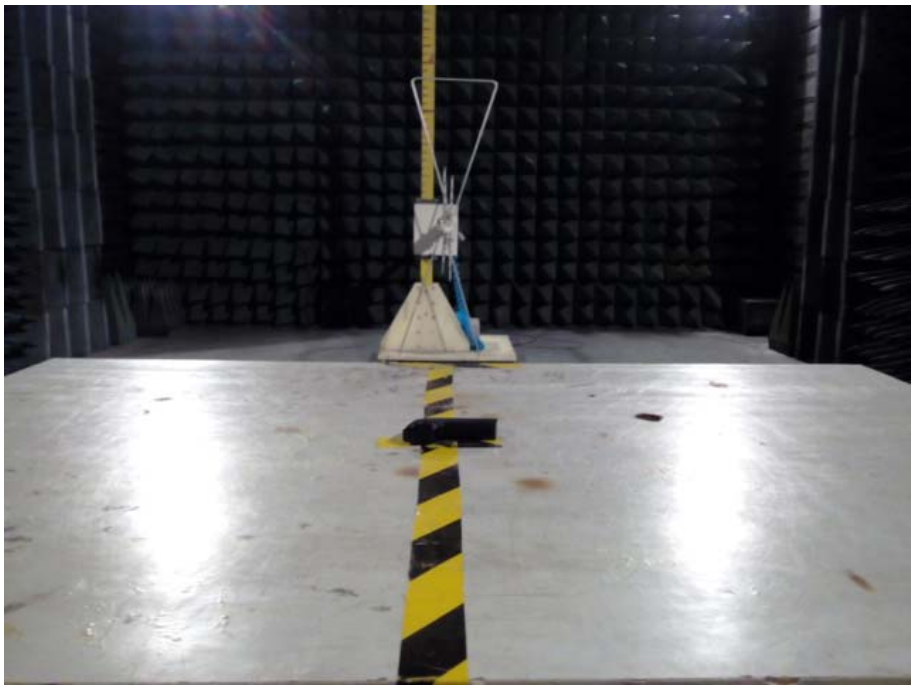
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1539	39.36	11.84	51.20	65.78	-14.58	QP	
2		0.1539	27.81	11.84	39.65	55.78	-16.13	AVG	
3		0.5500	21.79	10.00	31.79	46.00	-14.21	AVG	
4		0.5580	29.89	10.00	39.89	56.00	-16.11	QP	
5		22.2540	31.67	2.08	33.75	50.00	-16.25	AVG	
6	*	22.3380	43.73	2.08	45.81	60.00	-14.19	QP	

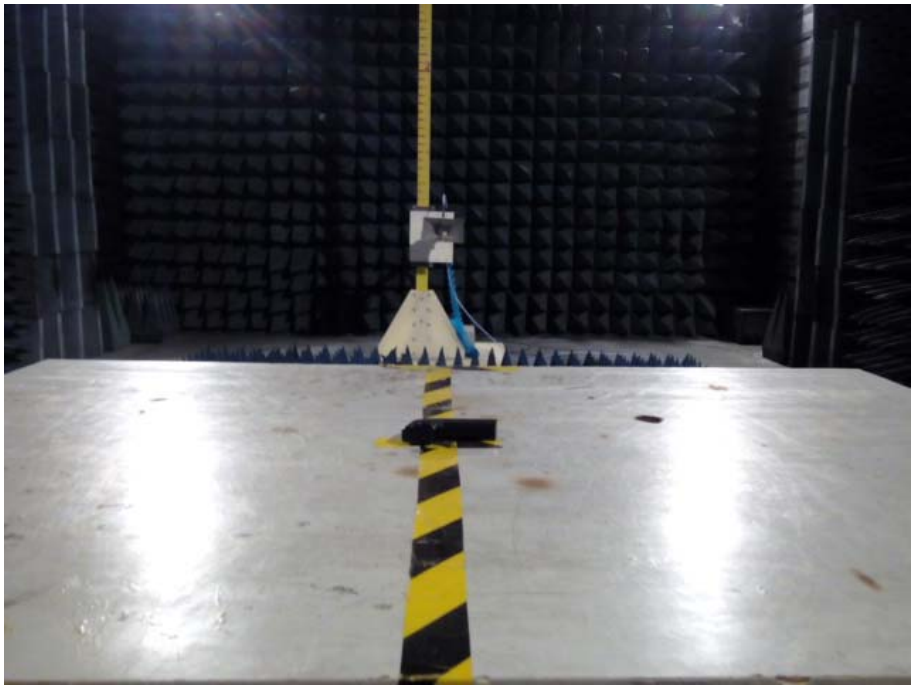
8 Photographs

8.1 Radiated Emission Test Setup

Below 1G

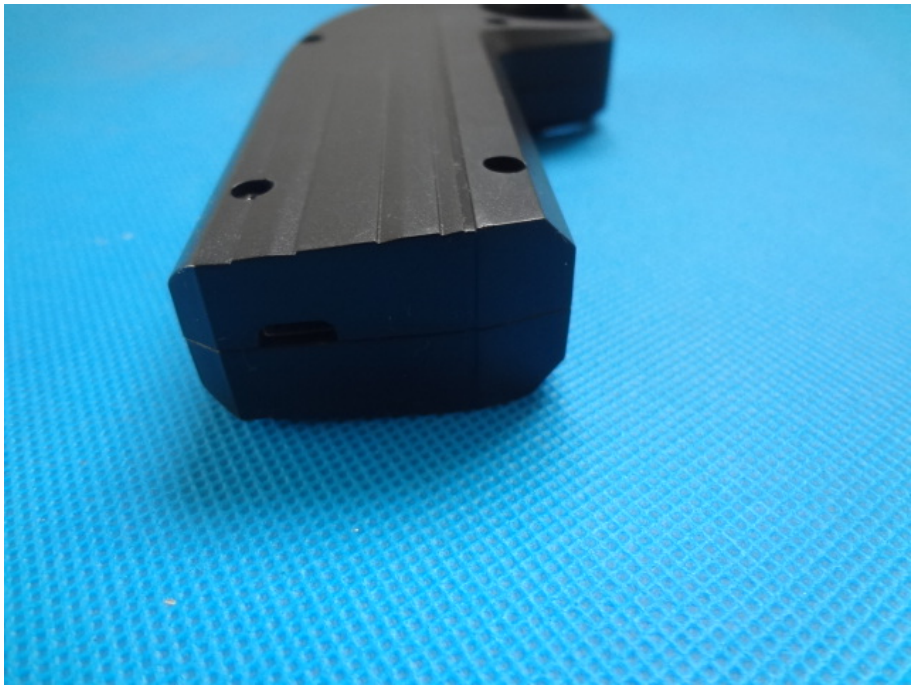


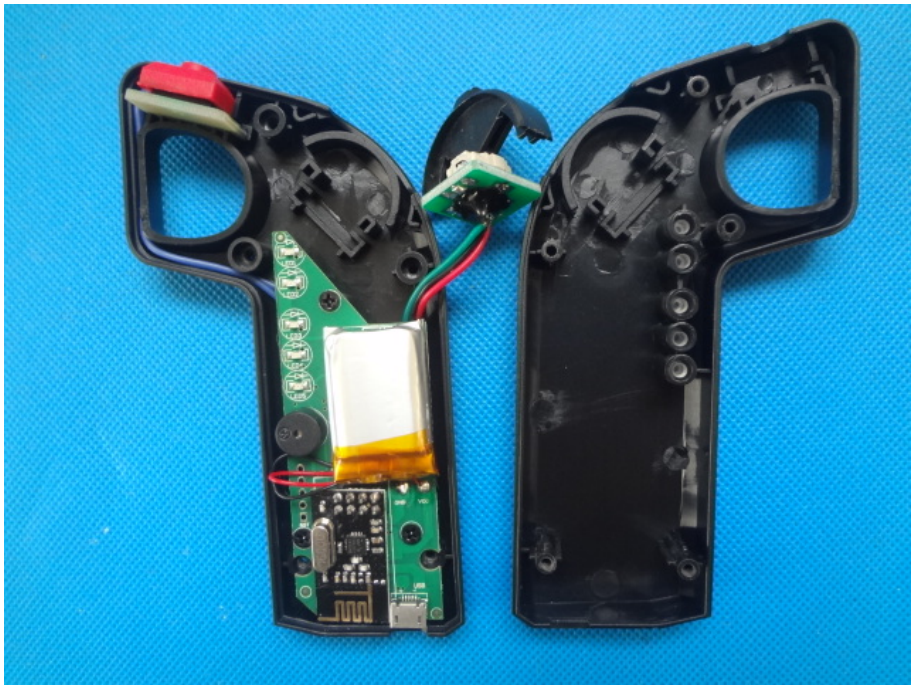
Above 1G

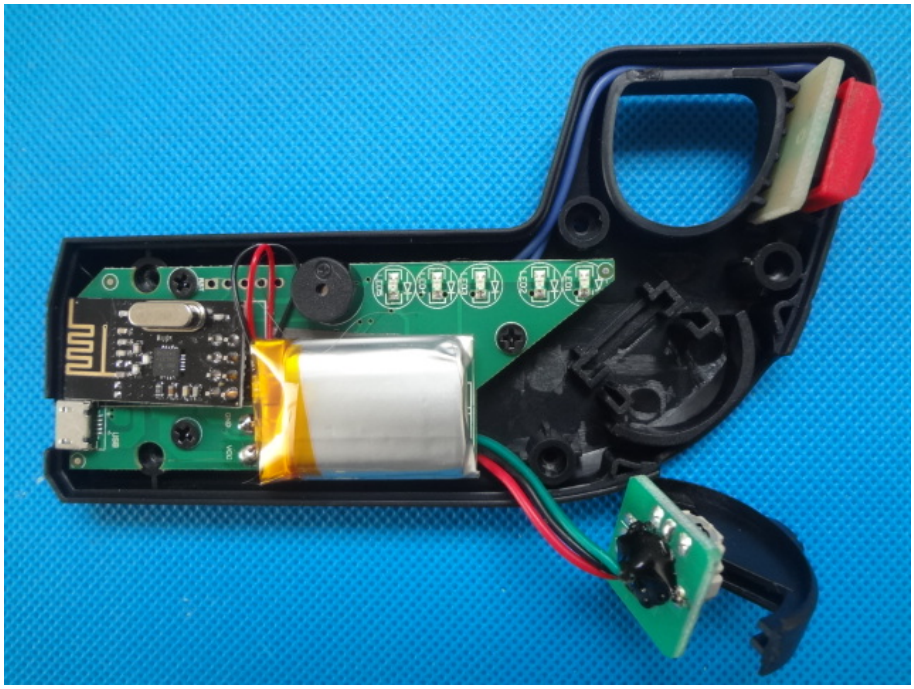


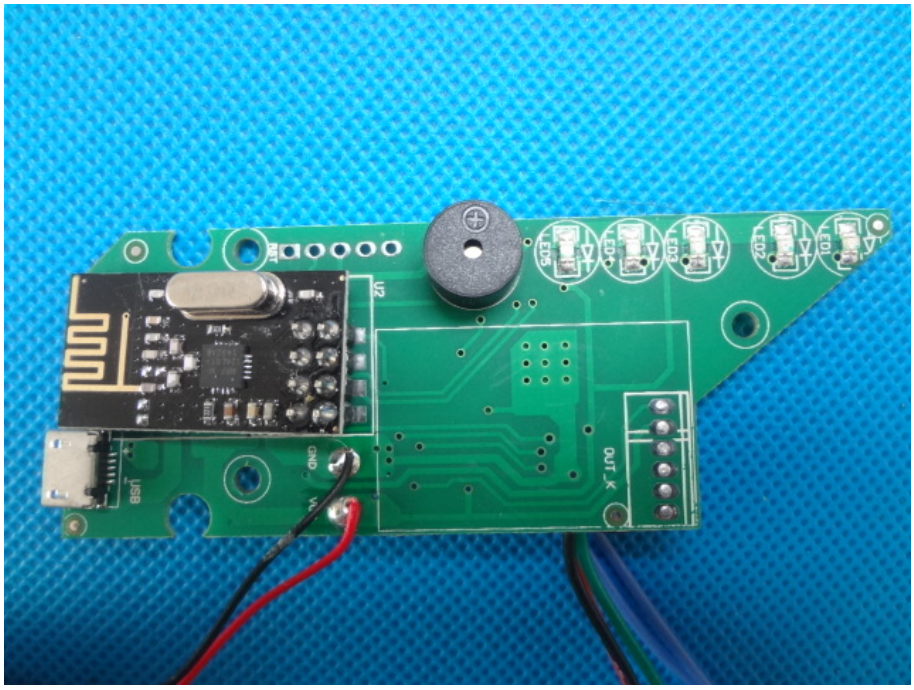
8.2 Conducted Emission Test Setup

9 EUT Constructional Details





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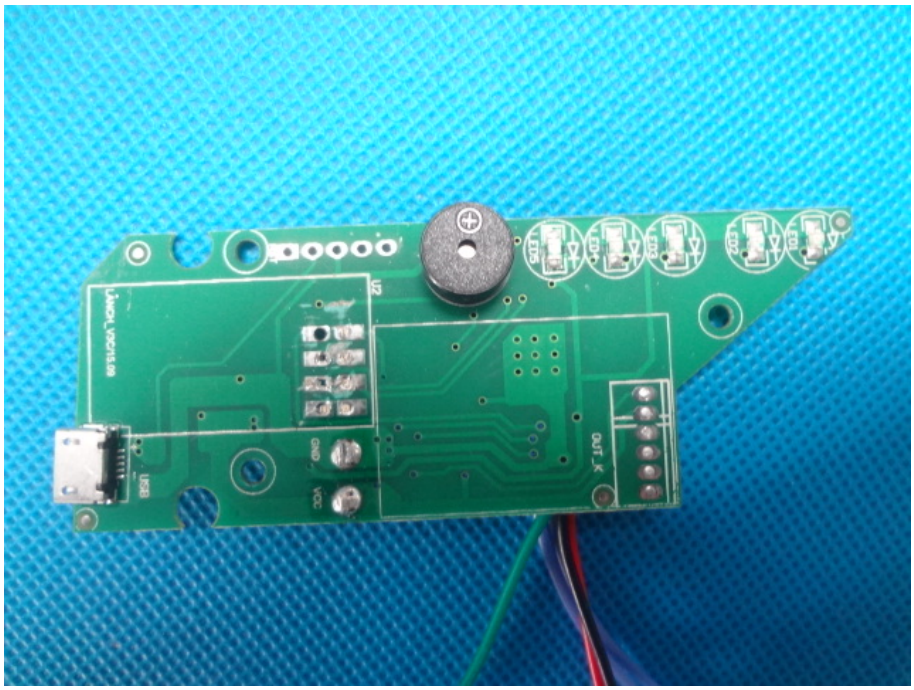
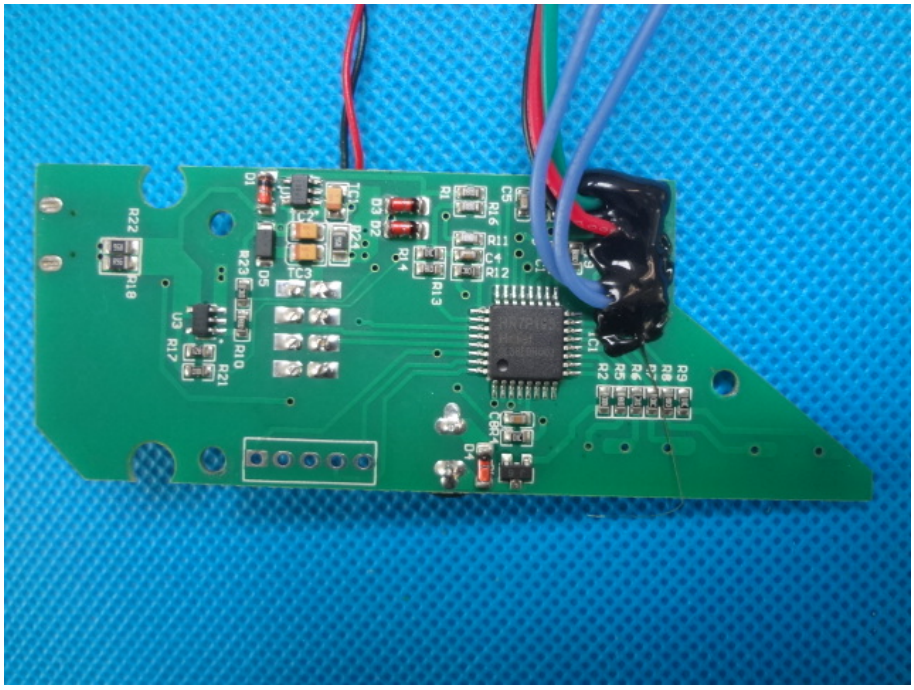
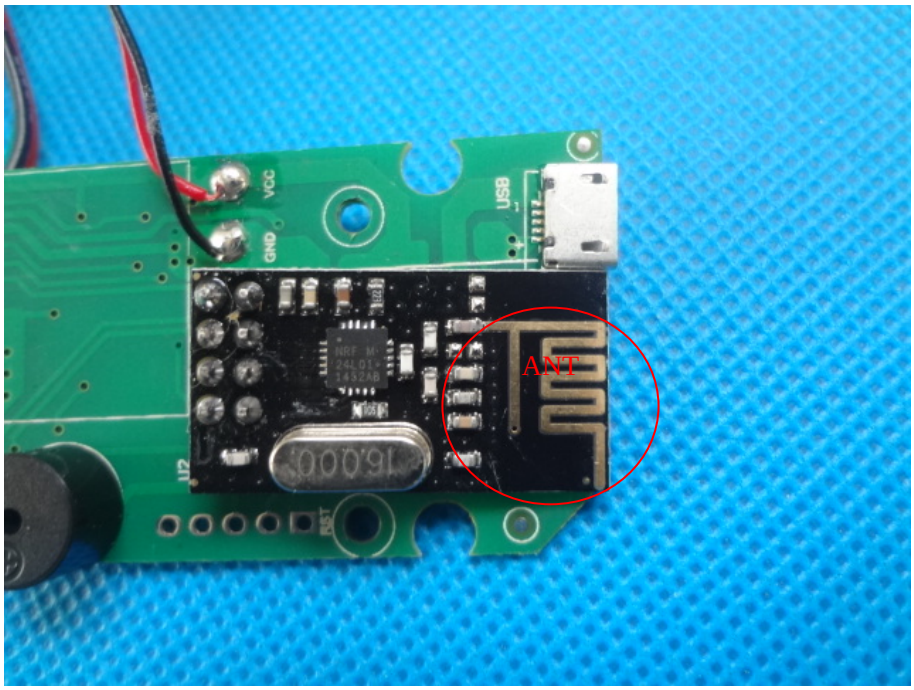
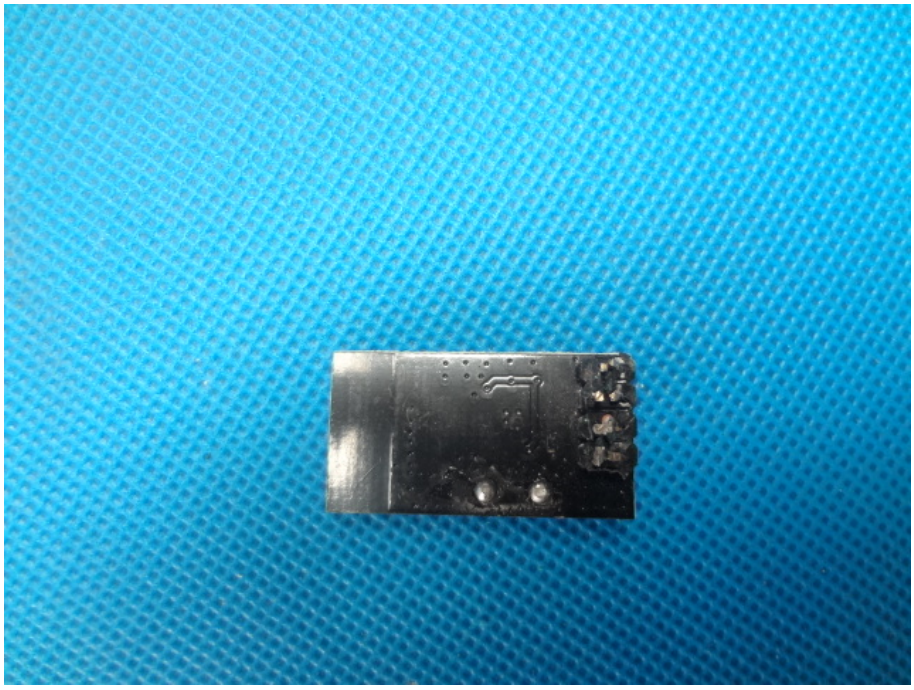
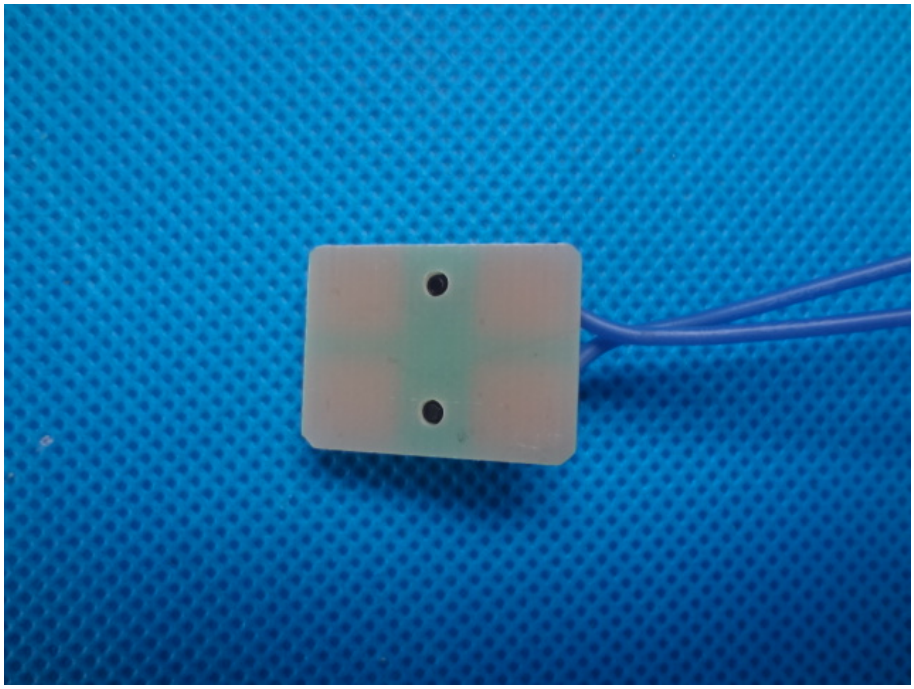
LED4
LED3
LED2
LED1
U2
USB
GND
VCC
OUT_K

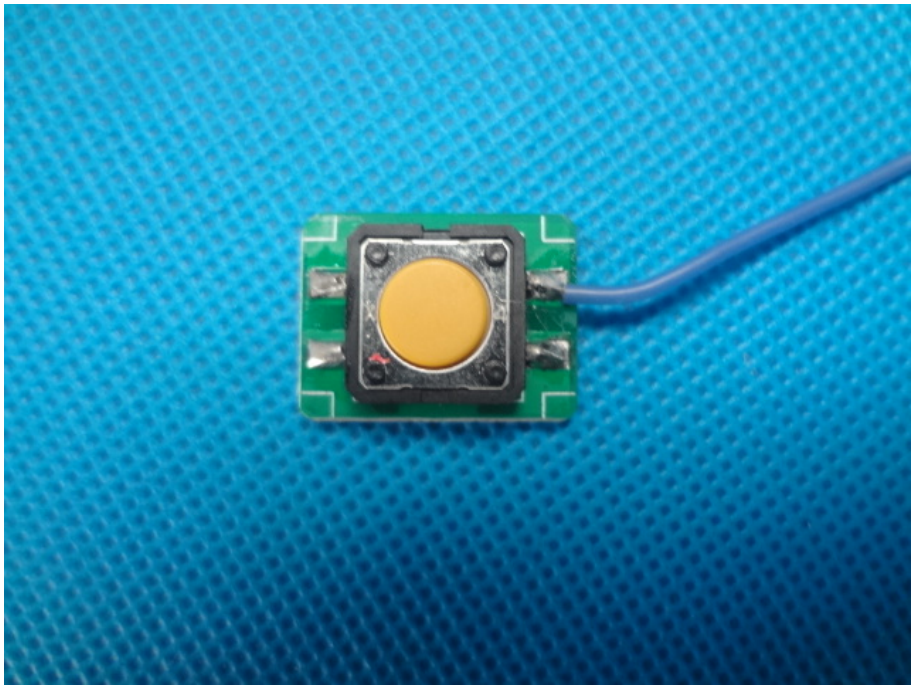

LED5
LED4
LED3
LED2
LED1
U2
USB
GND
VCC
OUT_K

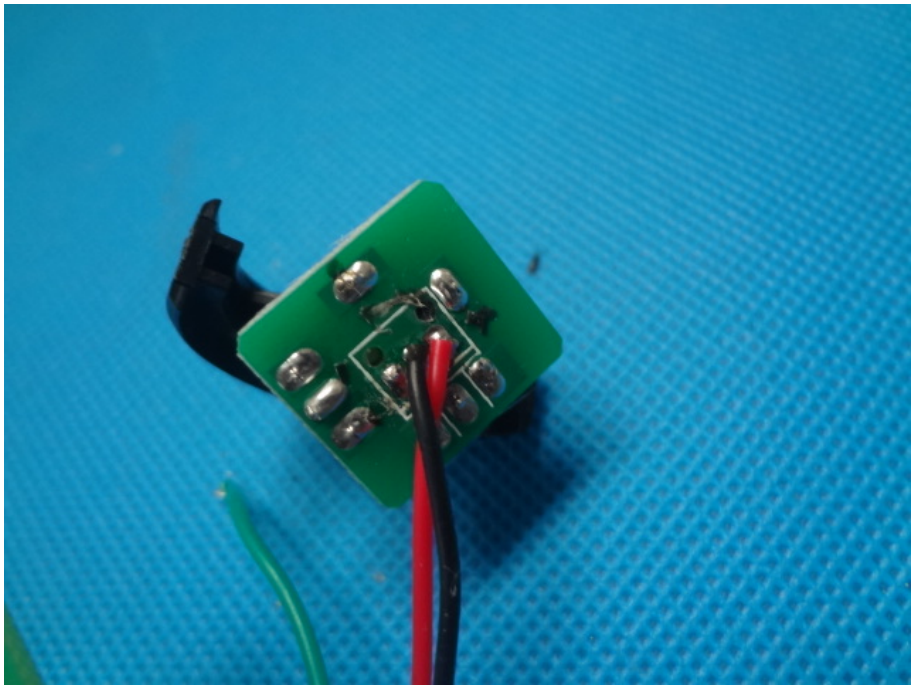


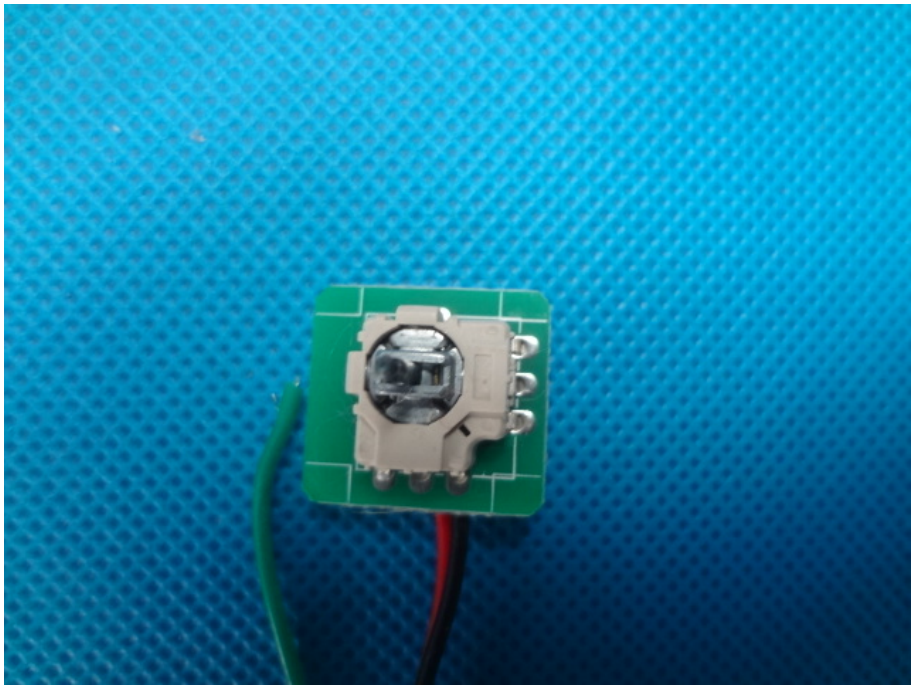

VCC
GND
USB
ANT











End of report