FCC TEST REPORT
for
JINAN AVANT-GARDE INDUSTRIAL PRODUCT DEVELOPMENT CO., LTD.

Bluetooth Remote Shutter
Model No.: BT V-3.0

Prepared for	:	JINAN AVANT-GARDE INDUSTRIAL PRODUCT DEVELOPMENT CO., LTD.
Address	:	ROOM #456, ZHENG-FENG BUILDING, #554, ZHENG-FENG RD., JINAN, SHANDONG, CHINA, 250101

Prepared By	:	Shenzhen Anbotek Compliance Laboratory Limited
Address	:	1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China Tel: (86) 755-26066544 Fax: (86) 755-26014772

Report Number	:	R0116011288I
Date of Test	:	Jan. 29~May 30, 2016
Date of Report	:	May 31, 2016

TABLE OF CONTENTS

Description

Page

Test Report

TEST REPORT

Applicant	:	JINAN AVANT-GARDE INDUSTRIAL PRODUCT DEVELOPMENT CO., LTD.
Manufacturer	:	JINAN AVANT-GARDE INDUSTRIAL PRODUCT DEVELOPMENT CO., LTD.
EUT	:	Bluetooth Remote Shutter
Model No.	:	BT V-3.0
Serial No.	:	N.A.
Trade Mark	:	AJAG
Rating	:	DC 3V, CR2032 X 1Cell

Measurement Procedure Used:

FCC Part15 Subpart C 2015, Paragraph 15.207, 15.247 & 15.209

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.
This report applies to above tested sample only and shall not be reproduced in part without
written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test : Jan. 29~May 30, 2016

Prepared by : Kebo Zhang
(Tested Engineer / Kebo Zhang)

Reviewer : Dolly Mo
(Project Manager / Dolly Mo)

Approved & Authorized Signer : Tom Chen
(Manager / Tom Chen)

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	Bluetooth Remote Shutter
Model Number	:	BT V-3.0
Test Power Supply	:	DC 3V
Frequency	:	2402~2480MHz
Antenna Specification	:	PCB Antenna: 0dBi
Modulation	:	GFSK, π/4DQPSK, 8DPSK
Applicant	:	JINAN AVANT-GARDE INDUSTRIAL PRODUCT DEVELOPMENT CO., LTD.
Address	:	ROOM #456, ZHENG-FENG BUILDING, #554, ZHENG-FENG RD., JINAN, SHANDONG, CHINA, 250101
Manufacturer	:	JINAN AVANT-GARDE INDUSTRIAL PRODUCT DEVELOPMENT CO., LTD.
Address	:	ROOM #456, ZHENG-FENG BUILDING, #554, ZHENG-FENG RD., JINAN, SHANDONG, CHINA, 250101
Factory	:	JINAN AVANT-GARDE INDUSTRIAL PRODUCT DEVELOPMENT CO., LTD.
Address	:	ROOM #456, ZHENG-FENG BUILDING, #554, ZHENG-FENG RD., JINAN, SHANDONG, CHINA, 250101
Date of receipt	:	Jan. 29, 2016
Date of Test	:	Jan. 29~May 30, 2016

1.2 Auxiliary Equipment Used during Test

N/A

1.3 Description of Test Facility

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

FCC-Registration No.: 752021
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registed and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, July 10, 2013.

IC-Registration No.: 8058A-1
Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A, February 22, 2013.

Test Location
All Emissions tests were performed at
Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

1.4 Measurement Uncertainty

Radiation Uncertainty	:	Ur = 4.1 dB (Horizontal) Ur = 4.3 dB (Vertical)
Conduction Uncertainty	:	Uc = 3.4dB

2. Test Procedure

GENERAL: This report shall NOT be reproduced except in full without the written approval of Shenzhen Anbotek Compliance Laboratory Limited. The EUT was transmitting a test signal during the testing.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.10-2013 using a spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz. The ambient temperature of the EUT was 74.3oF with a humidity of 69%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:
Freq (MHz) METER READING + ACF = FS
20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

ANSI STANDARD C63.10-2013 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.
When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

3. Radiation Interference

3.1 Requirements (15.247, 15.209):

3.1.1. Test Limits (< 30 MHZ)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30

4.1.2. Test Limits (≥ 30 MHZ)

FIELD STRENGTH of Fundamental: @3M	FIELD STRENGTH of Harmonics	S15.209 30 - 88 MHz	40 dBuV/m
902-928 MHZ		88 - 216 MHz	43.5
2.4-2.4835 GHz		216 - 960 MHz	46
94 dBμV/m @3m	54 dBμV/m @3m	ABOVE 960 MHz	54dBuV/m

For range 9KHz~30MHz, The measured value is really too low to be recorded.

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 15.209, whichever is the lesser attenuation.

3.2 Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.
For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.
The turn table can rotate 360 degrees to determine the position of the maximum emission level.
The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower.
The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

For 30MHz to 1000MHz:
Set the spectrum analyzer as:
RBW = 100kHz, VBW =300kHz,
Detector= Quasi-Peak
Trace mode= Max hold.
Sweep- auto couple.

For Above 1GHz:
Set the spectrum analyzer as:
RBW = 1MHz, VBW =3MHz,
Detector= Peak
Trace mode= Max hold.
Sweep- auto couple.

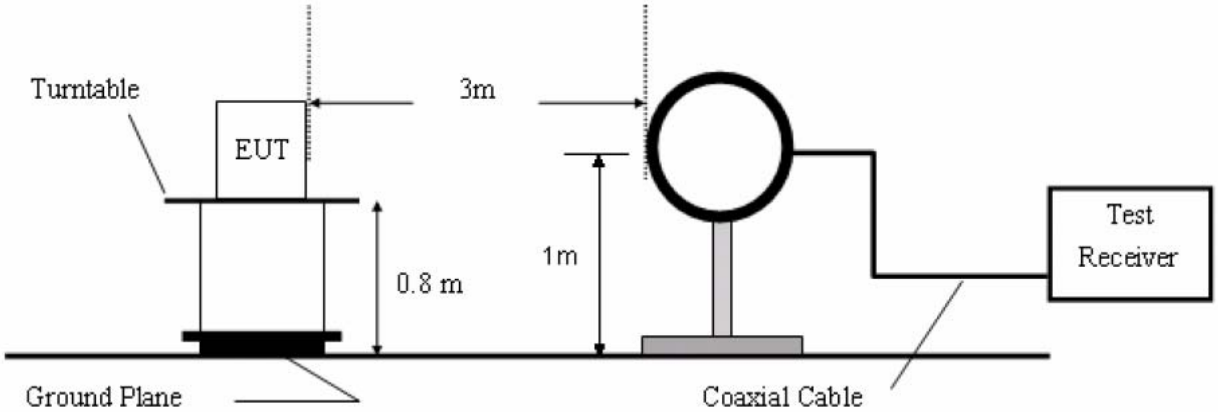
Set the spectrum analyzer as:
RBW =1MHz, VBW =10Hz
Detector= Average
Trace mode= Max hold.
Sweep- auto couple.

Test Equipment

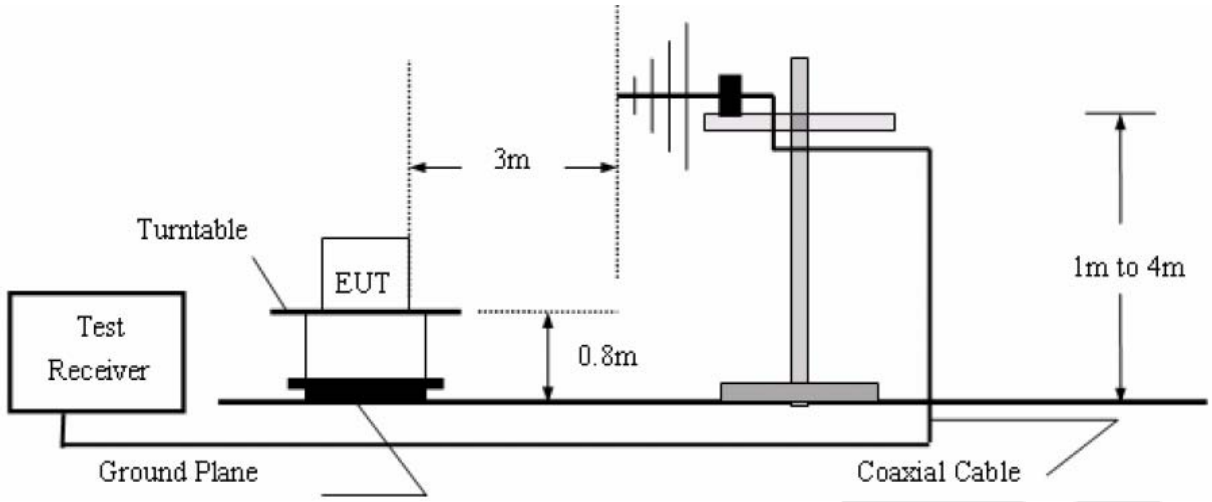
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Apr. 17, 2016	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Apr. 17, 2016	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 17, 2016	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 20, 2016	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 20, 2016	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 17, 2016	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8	Power Sensor	DAER	RPR3006W	15I00041SN046	Jun 30, 2015	1 Year
9	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Jun 30, 2015	1 Year
10	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Jun 30, 2015	1 Year
11	Signal Generator	Agilent	E4421B	MY41000743	Jun 30, 2015	1 Year
12	DC Power supply	IV	IV-8080	YQSB0096	Jun 30, 2015	1 Year
13	TEMP&HUMI PROGRAMMABLE CHAMBER	Bell Group	BE-THK-150M8	SE-0137	Mar 16, 2016	1 Year

3.3 Test Configuration

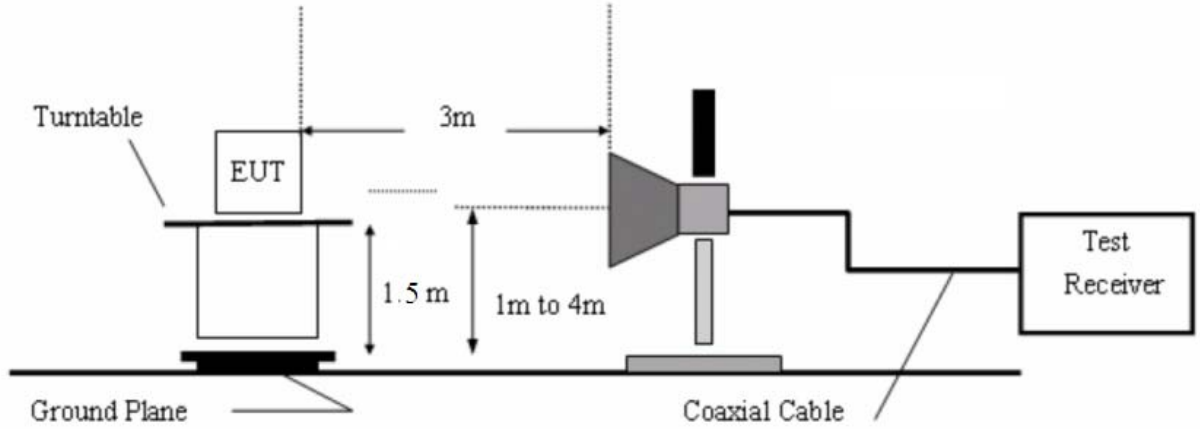
3.3.1. 9k to 30MHz emissions:



3.3.2. 30M to 1G emissions:



3.3.3. 1G to 40G emissions:



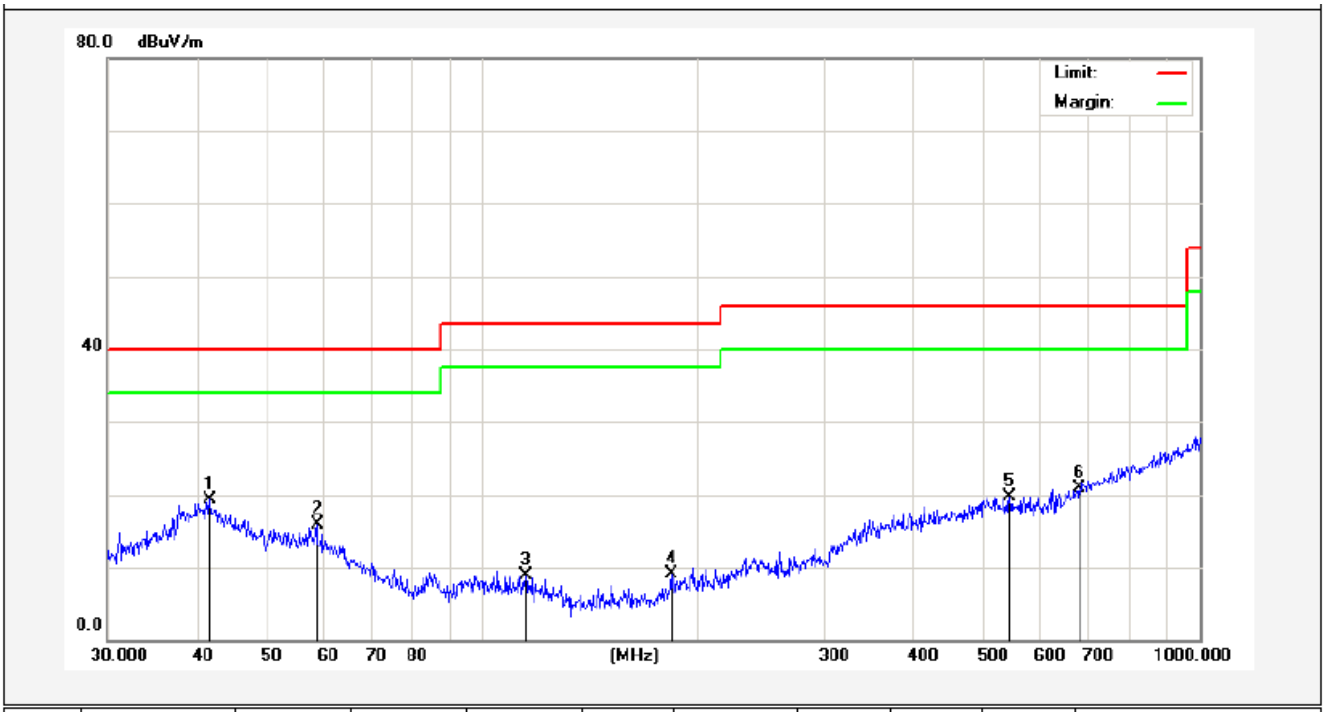
3.4 Test Results

PASS.

Please refer the following plot. Only the worst case (x orientation).

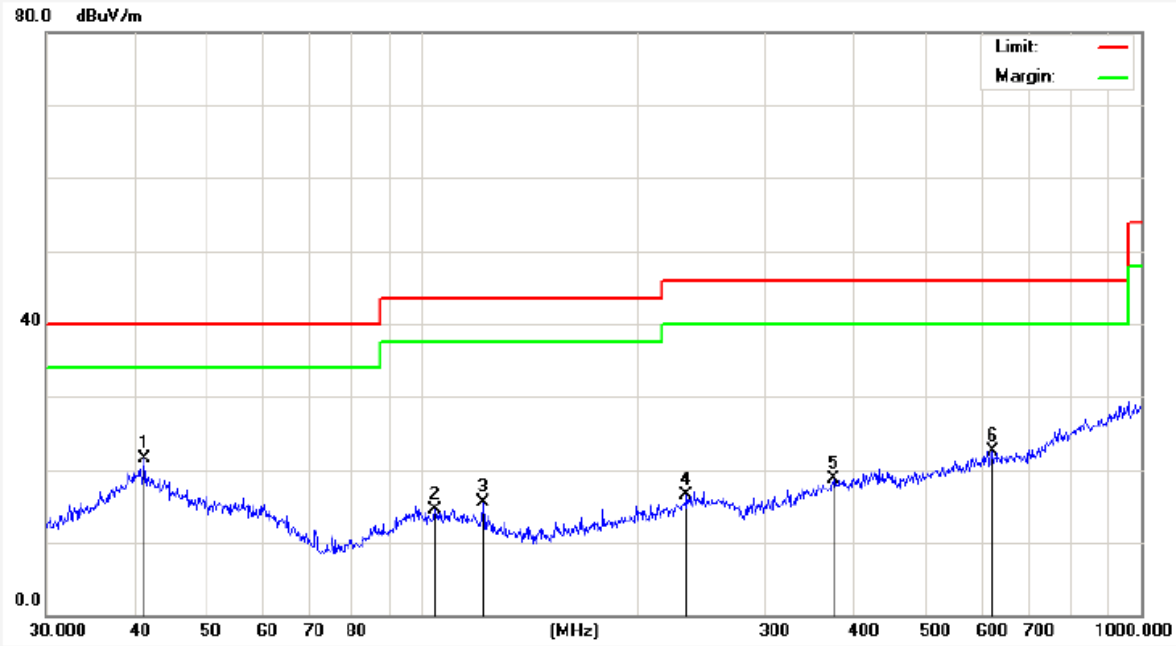
The test results of above 18000MHz are attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Job No.:	**0116011288I**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART 15C _3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test (30~1000MHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON**	**Distance:**	**3m**



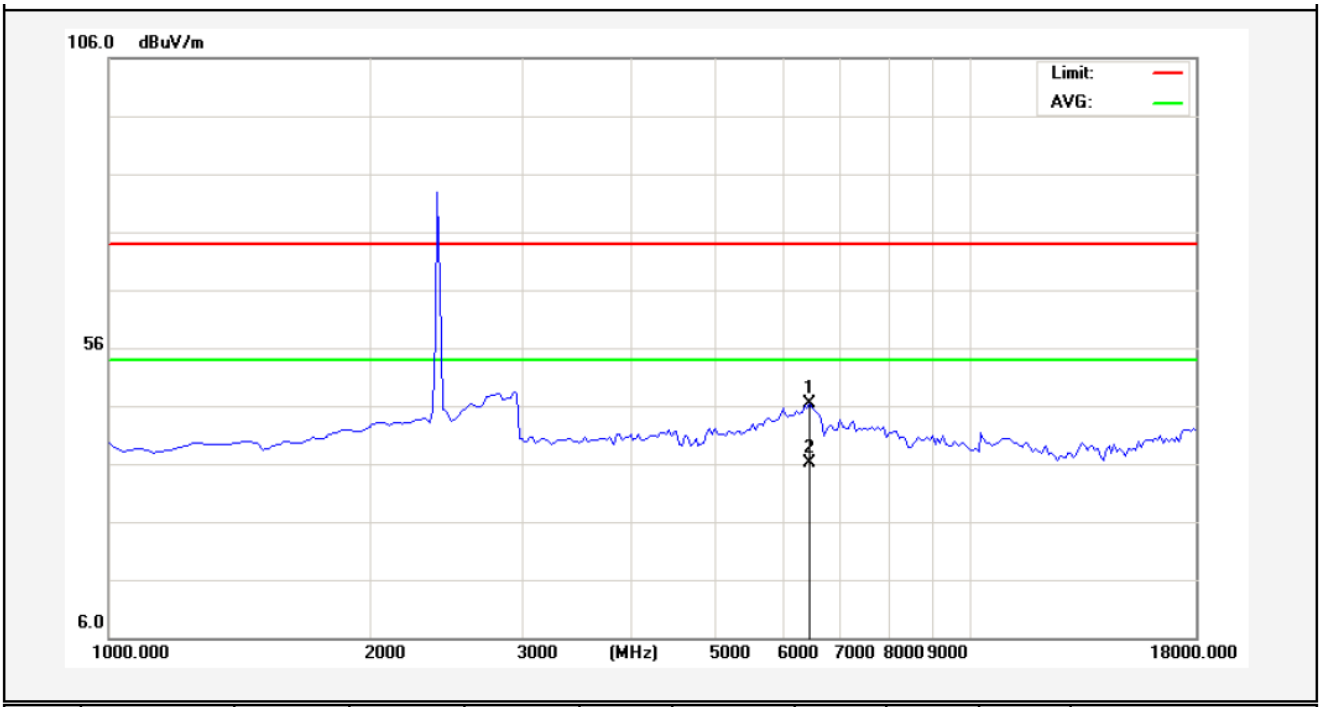
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	41.7129	30.40	-11.05	19.35	40.00	-20.65	peak			
2	58.8185	31.20	-15.28	15.92	40.00	-24.08	peak			
3	114.9169	29.90	-20.97	8.93	43.50	-34.57	peak			
4	183.2005	30.74	-21.55	9.19	43.50	-34.31	peak			
5	543.2742	30.68	-11.07	19.61	46.00	-26.39	peak			
6	679.9600	30.03	-9.03	21.00	46.00	-25.00	peak			

Job No.:	**0116011288I**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART 15C _3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test (30~1000MHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**ON**	**Distance:**	**3m**



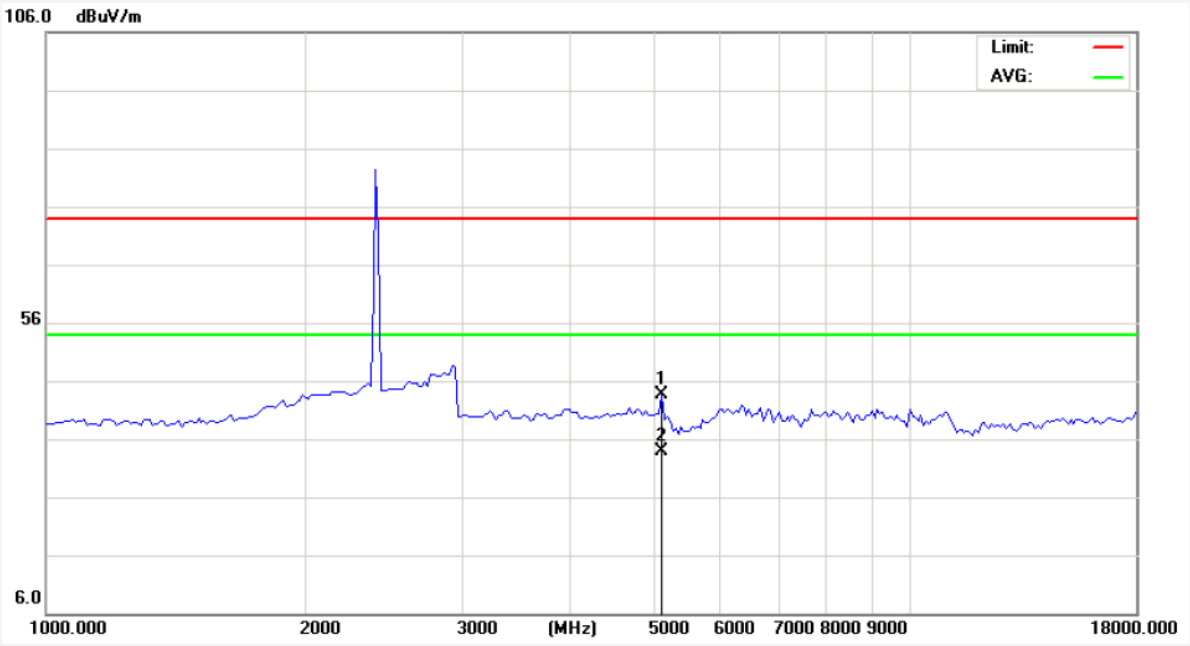
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	41.1320	32.38	-10.81	21.57	40.00	-18.43	peak			
2	104.1701	30.13	-15.70	14.43	43.50	-29.07	peak			
3	121.5486	32.01	-16.56	15.45	43.50	-28.05	peak			
4	233.3487	30.84	-14.43	16.41	46.00	-29.59	peak			
5	373.3112	31.06	-12.40	18.66	46.00	-27.34	peak			
6	622.8900	31.48	-9.06	22.42	46.00	-23.58	peak			

Job No.:	**0116011288I**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test (Above 1GHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**TX(2402 MHz)**	**Distance:**	**3m**



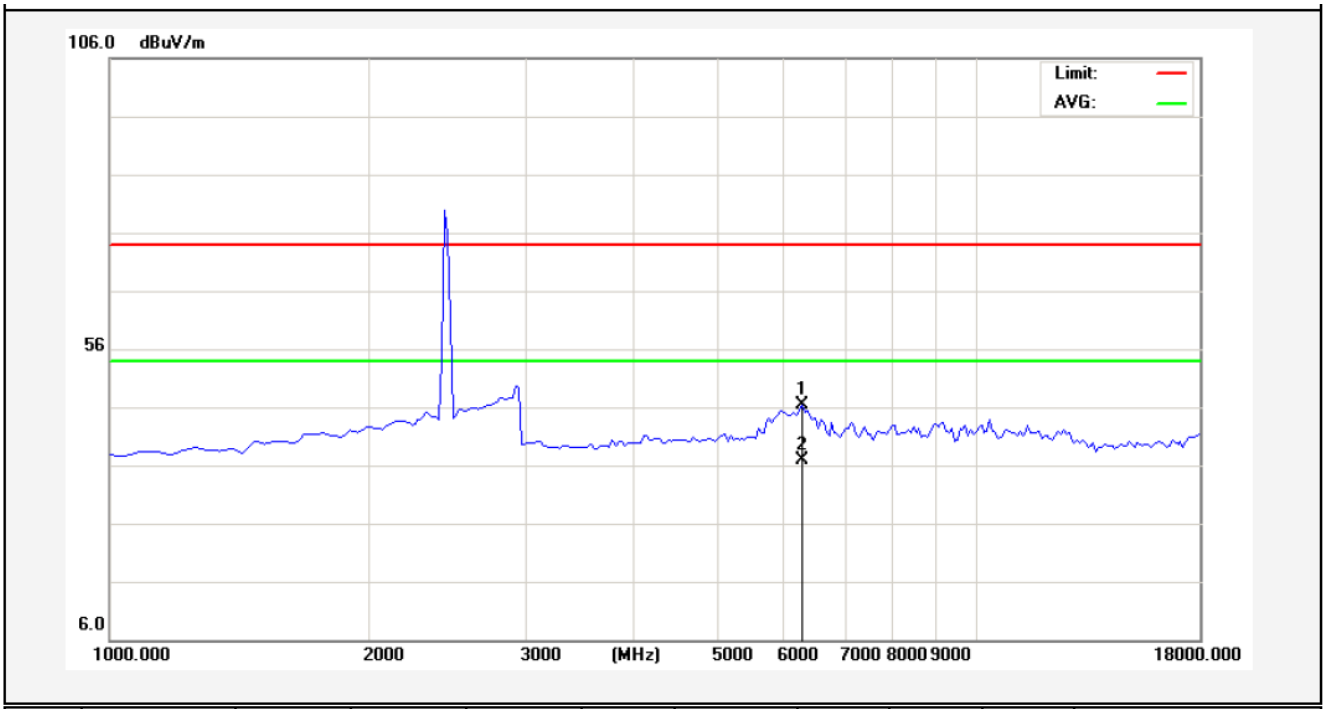
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	6482.500	38.72	7.58	46.30	74.00	-27.70	peak			
2	6482.500	28.55	7.58	36.13	54.00	-17.87	AVG			

Job No.:	**0116011288I**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test (Above 1GHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**TX(2402 MHz)**	**Distance:**	**3m**



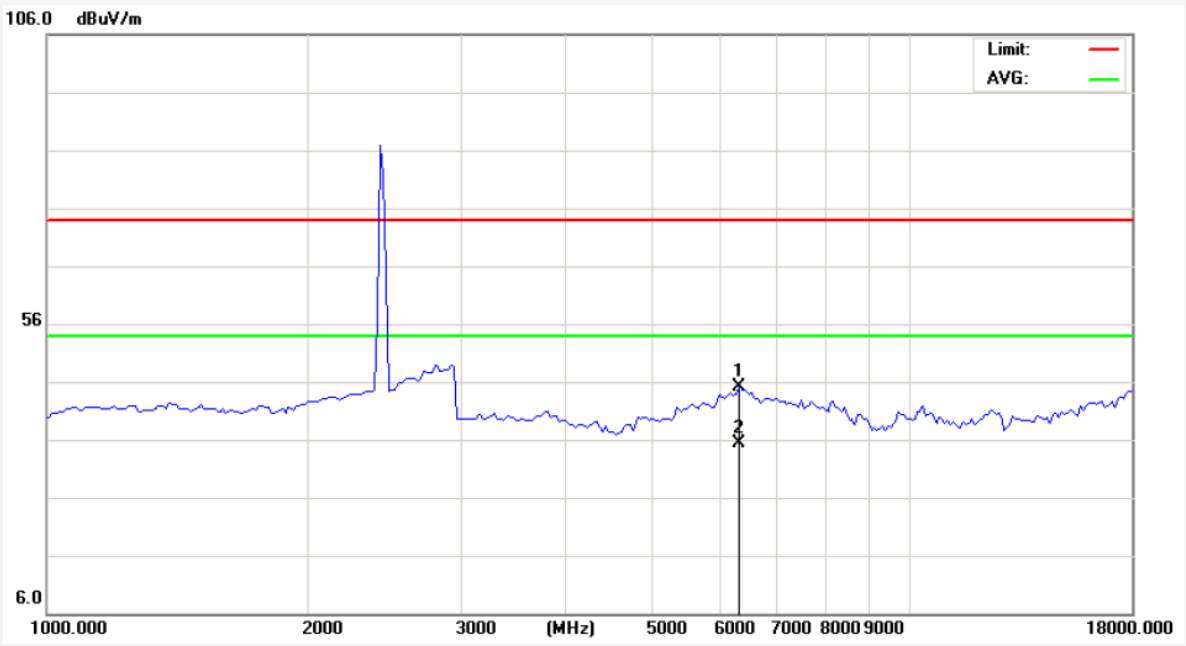
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	5122.500	39.91	3.73	43.64	74.00	-30.36	peak			
2	5122.500	30.11	3.73	33.84	54.00	-20.16	AVG			

Job No.:	**0116011288I**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test (Above 1GHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**TX(2441 MHz)**	**Distance:**	**3m**



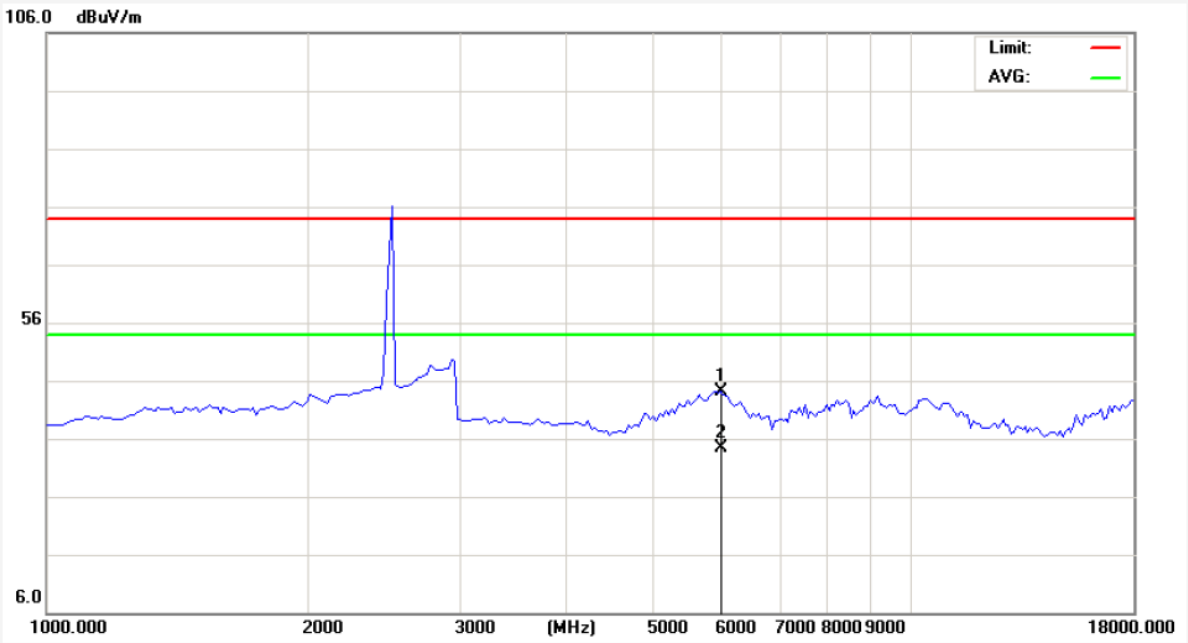
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	6312.500	39.01	7.42	46.43	74.00	-27.57	peak			
2	6312.500	29.51	7.42	36.93	54.00	-17.07	AVG			

Job No.:	**0116011288I**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test (Above 1GHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**TX(2441 MHz)**	**Distance:**	**3m**



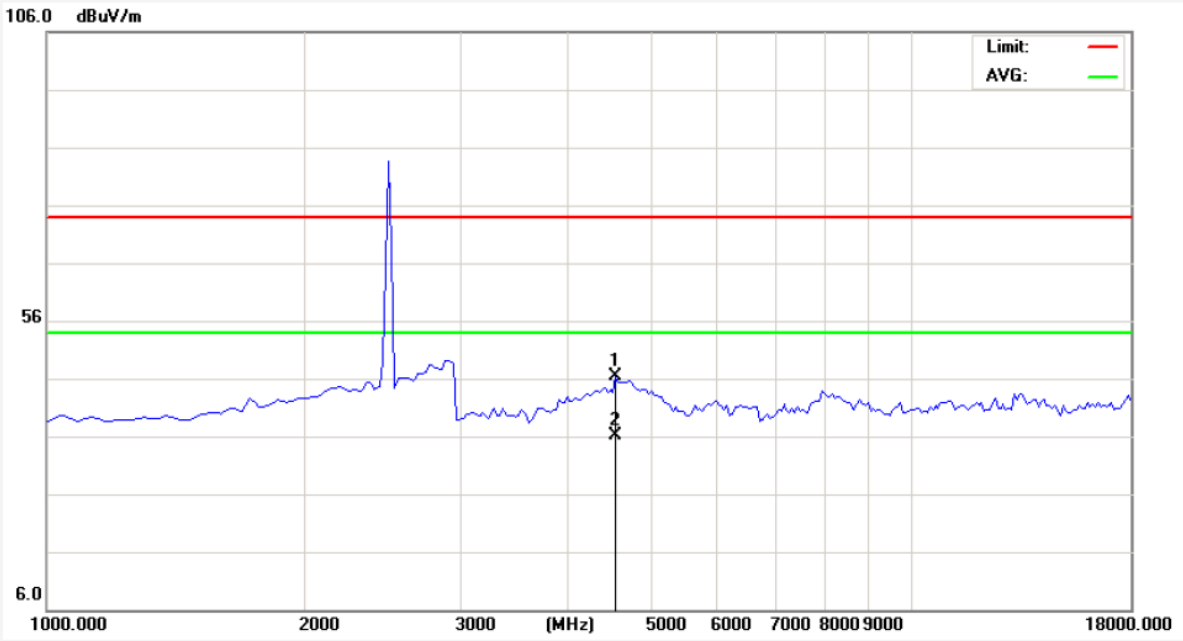
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	6355.000	37.64	7.46	45.10	74.00	-28.90	peak			
2	6355.000	28.00	7.46	35.46	54.00	-18.54	AVG			

Job No.:	**0116011288I**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test (Above 1GHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**TX(2480 MHz)**	**Distance:**	**3m**



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	6015.000	37.00	7.14	44.14	74.00	-29.86	peak			
2	6015.000	27.19	7.14	34.33	54.00	-19.67	AVG			

Job No.:	**0116011288I**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3V**
Test item:	**Radiation Test (Above 1GHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**TX(2480 MHz)**	**Distance:**	**3m**



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4570.000	43.46	2.88	46.34	74.00	-27.66	peak			
2	4570.000	33.22	2.88	36.10	54.00	-17.90	AVG			

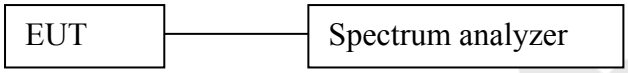
4. CHANNEL SEPARATION TEST

4.1 Measurement Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer settings:

1. Span= Wide enough to capture the peaks of two adjacent channels
2. Set the RBW = 30 kHz.
3. Set the VBW = 100 kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

4.2 Test SET-UP



4.3 Test Equipment

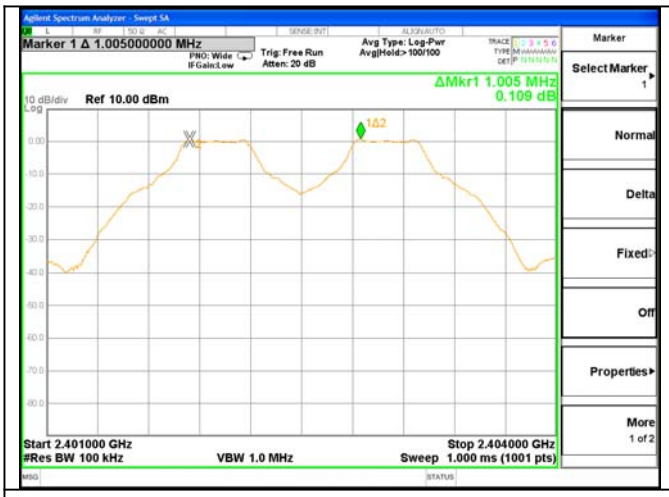
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Apr. 17, 2016	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Apr. 17, 2016	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 17, 2016	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 20, 2016	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 20, 2016	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 17, 2016	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
8	Power Sensor	DAER	RPR3006W	15I00041SN046	Jun 30, 2015	1 Year
9	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Jun 30, 2015	1 Year
10	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Jun 30, 2015	1 Year
11	Signal Generator	Agilent	E4421B	MY41000743	Jun 30, 2015	1 Year
12	DC Power supply	IV	IV-8080	YQSB0096	Jun 30, 2015	1 Year
13	TEMP&HUMI PROGRAMMABLE CHAMBER	Bell Group	BE-THK-150M8	SE-0137	Mar 16, 2016	1 Year

4.4 Test Results

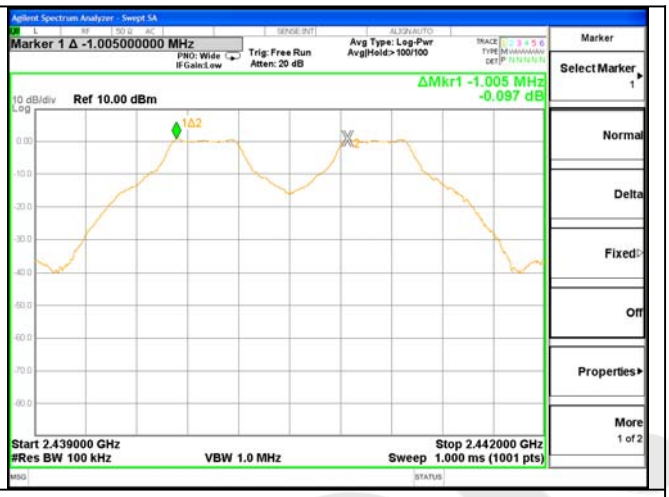
Test Item	:	Frequency Separation	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

Channel	Frequency (MHz)	Separation Read Value (kHz)	Limit (kHz)	Modulation Mode
Low	2401	1005	927.9	BDR
Mid	2441	1005	929.3	BDR
High	2480	1005	930.8	BDR
Low	2401	1005	842.7	EDR
Mid	2441	1005	840.7	EDR
High	2480	1005	840.0	EDR

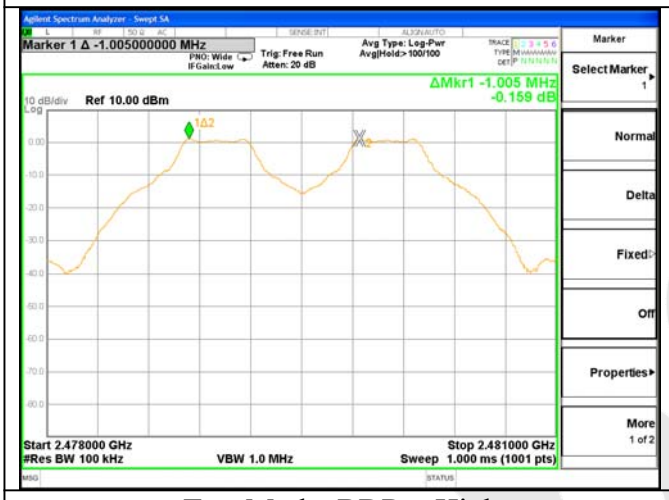
Remark:
1. The limit of mode (EDR) is 2/3 of 20dB BW;



Test Mode: BDR---Low

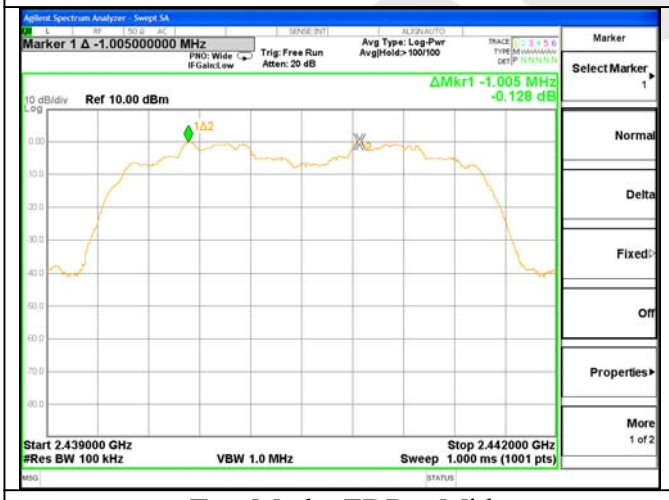


Test Mode: BDR---Mid

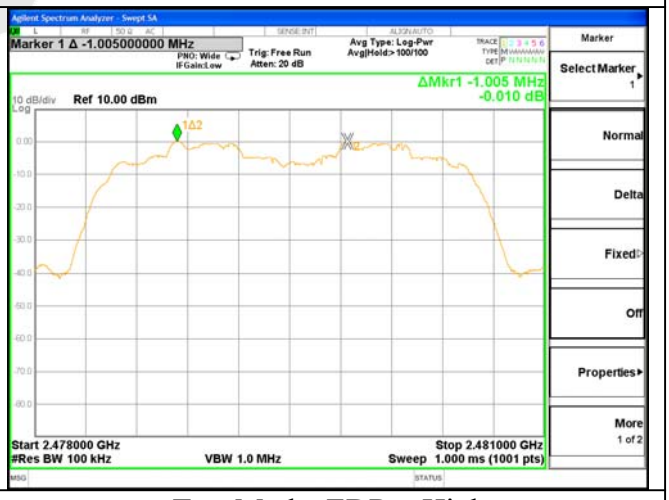


Test Mode: BDR---High

Test Mode: EDR---Low



Test Mode: EDR---Mid



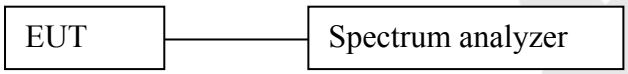
Test Mode: EDR---High

5. 20DB BANDWIDTH TEST

5.1 Measurement Procedure

Using the following spectrum analyzer settings:
1. Span= approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel.
2. Set the RBW = 30 kHz.
3. Set the VBW = 100 kHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

5.2 Test SET-UP



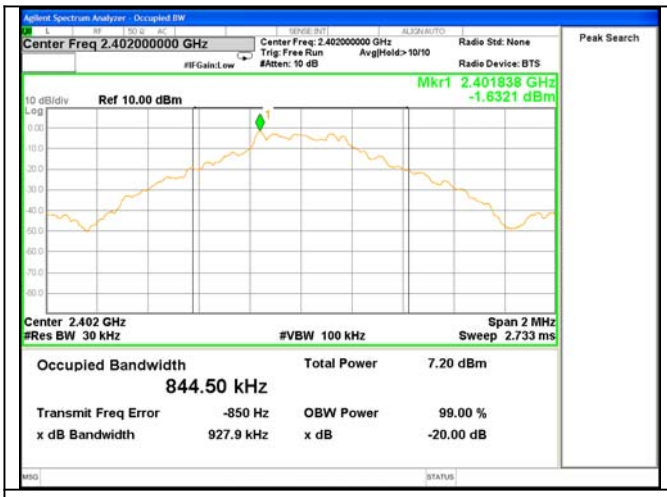
5.3 Test Equipment

Same as the equipment listed in 4.3.

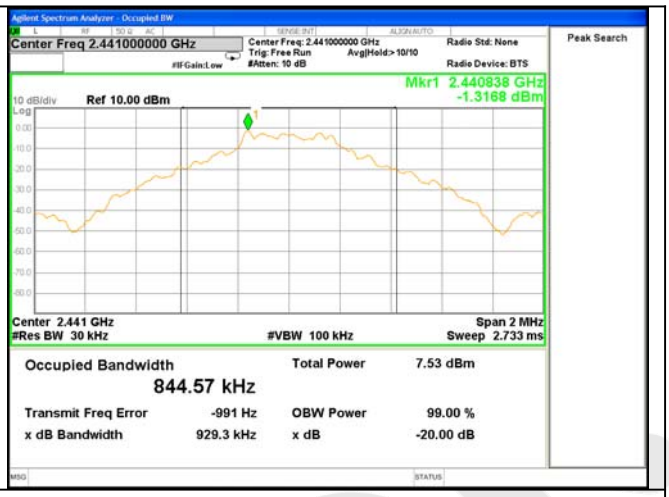
5.4 Test Results

Test Item	:	20dB BW	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

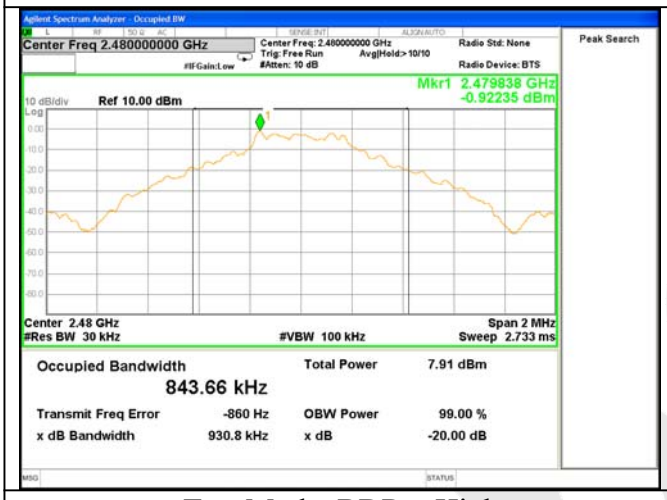
Channel	Frequency (MHz)	20dB Down BW(kHz)	Modulation Mode
Low	2401	927.9	BDR
Mid	2441	929.3	BDR
High	2480	930.8	BDR
Low	2401	1264.0	EDR
Mid	2441	1261.0	EDR
High	2480	1260.0	EDR



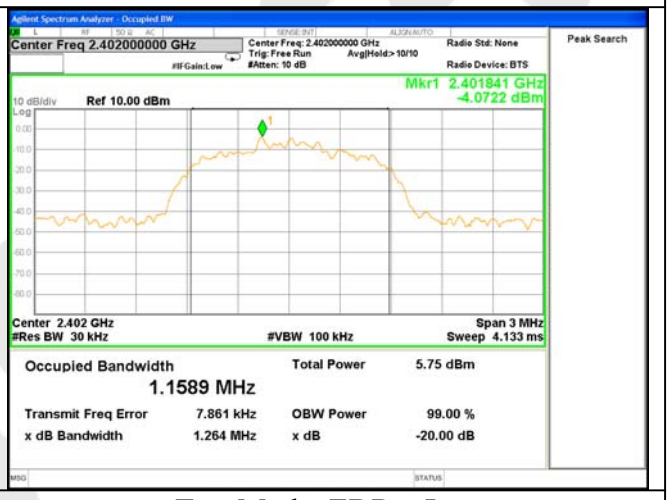
Test Mode: BDR---Low



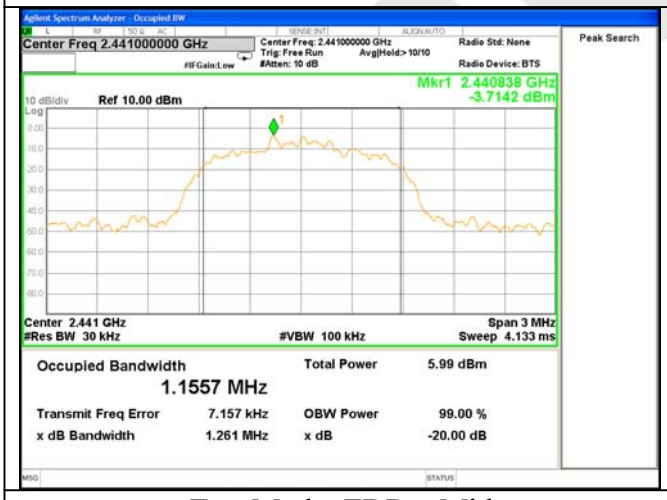
Test Mode: BDR---Mid



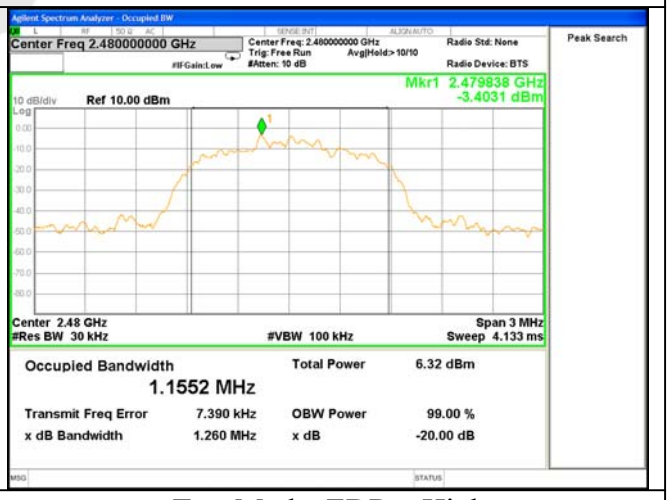
Test Mode: BDR---High



Test Mode: EDR---Low



Test Mode: EDR---Mid



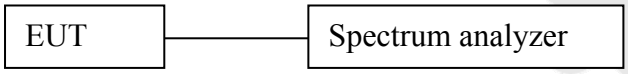
Test Mode: EDR---High

6. QUANTITY OF HOPPING CHANNEL TEST

6.1 Measurement Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer setting:
1. Span= the frequency band of operation
2. Set the RBW = 1 MHz.
3. Set the VBW = 1 MHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

6.2 Test SET-UP



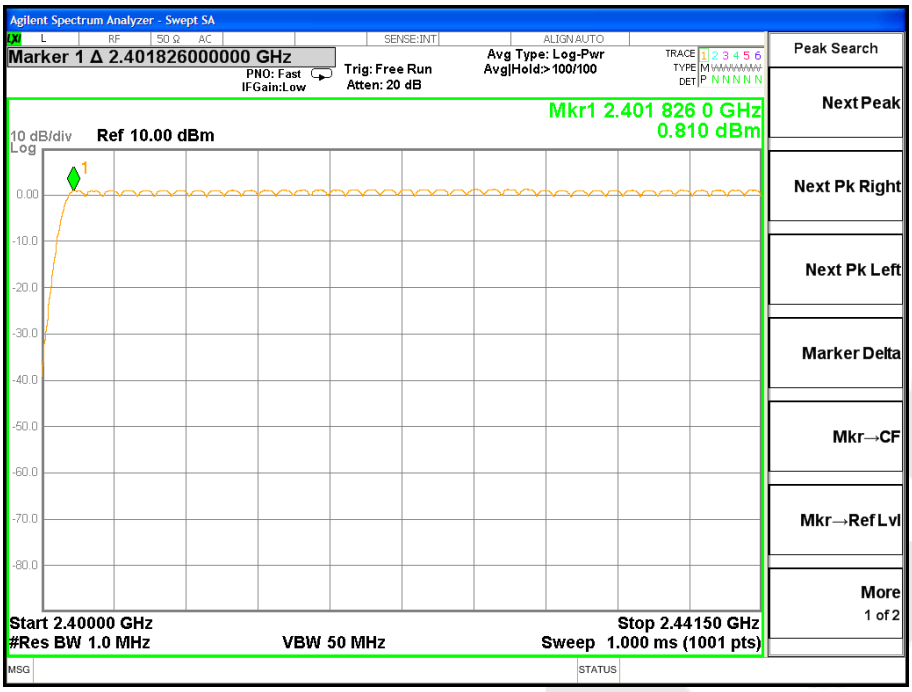
6.3 Test Equipment

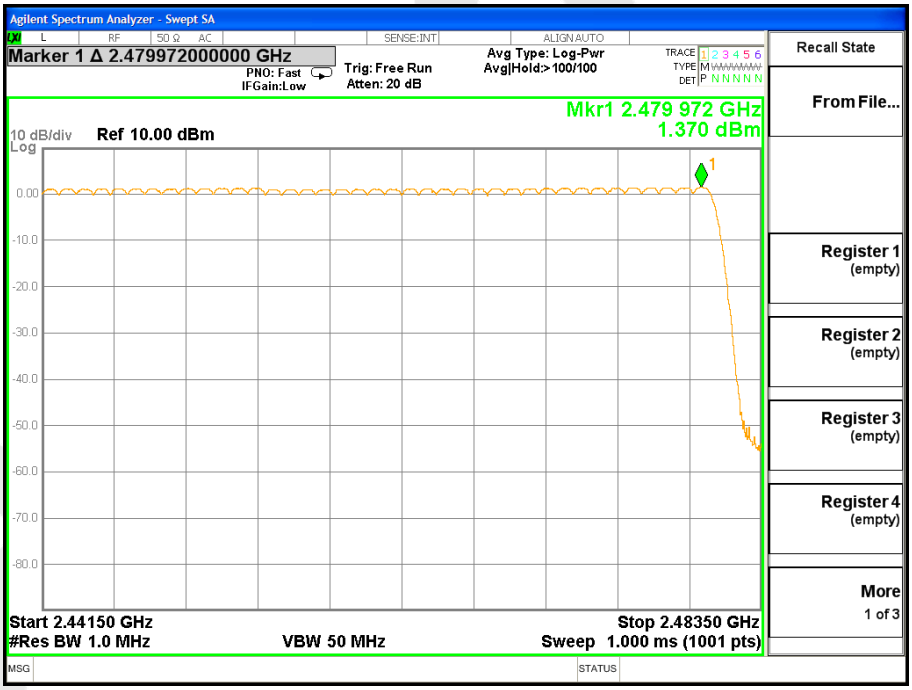
Same as the equipment listed in 4.3.

6.4 Test Results

Test Item	:	Number of Hopping Frequency	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

Hopping Channel Frequency Range	Quantity of Hopping Channel	Quantity of Hopping Channel
2402-2480	79	＞15


Agilent Spectrum Analyzer - Swept SA
Marker 1 Δ 2.401826000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 2.401 826 0 GHz
0.810 dBm
10 dB/div
Log
Ref 10.00 dBm
Start 2.40000 GHz
#Res BW 1.0 MHz
VBW 50 MHz
Stop 2.44150 GHz
Sweep 1.000 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2


Agilent Spectrum Analyzer - Swept SA
Marker 1 Δ 2.479972000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 20 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
Mkr1 2.479 972 GHz
1.370 dBm
10 dB/div
Log
Ref 10.00 dBm
Start 2.44150 GHz
#Res BW 1.0 MHz
VBW 50 MHz
Stop 2.48350 GHz
Sweep 1.000 ms (1001 pts)
Recall State
From File...
Register 1
(empty)
Register 2
(empty)
Register 3
(empty)
Register 4
(empty)
More
1 of 3

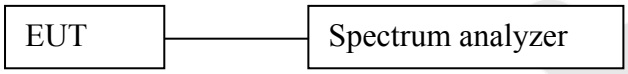
7. DWELL TIME TEST

7.1 Measurement Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

1. Span= zero span, centered on a hopping channel
2. Set the RBW = 1 MHz.
3. Set the VBW = 1 MHz.
4. Sweep time = as necessary to capture the entire dwell time per hopping channel.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

7.2 Test SET-UP



7.3 Test Equipment

Same as the equipment listed in 4.3.

7.4 Test Results

Test Item	:	Time of Occupancy	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

Package Type	*Pulse width (ms)*	Time slot length(ms)	Dwell time (ms)	Limit (s)	Modulation
DH1	0.368	time slot length *1600/2 /79 * 31.6	117.76	0.4	BDR
DH3	1.625	time slot length *1600/4 /79 * 31.6	260.00	0.4	BDR
DH5	2.870	time slot length *1600/6 /79 * 31.6	306.13	0.4	BDR
3DH1	0.386	time slot length *1600/2 /79 * 31.6	123.52	0.4	EDR
3DH3	1.615	time slot length *1600/4 /79 * 31.6	258.4	0.4	EDR
3DH5	2.878	time slot length *1600/6 /79 * 31.6	306.97	0.4	EDR

Test Mode: BDR---DH1

Test Mode: BDR---DH3

Test Mode: BDR---DH5

Test Mode: EDR---3DH1

Test Mode: EDR---3DH1

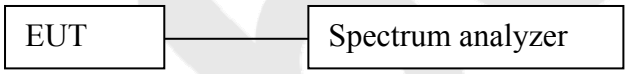
Test Mode: EDR---3DH3

8. MAX IMUM PEAK OUTPUT POWER TEST

8.1 Measurement Procedure

a. Check the calibration of the measuring instrument(SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
c. The center frequency of the spectrum analyzer is set to the fundamental frequency and using proper RBW and VBW setting.
d. Measure the captured power within the band and recording the plot.
e. Repeat above procedures until all frequencies required were complete.
Using the following spectrum analyzer settings:
1. Span= approximately 5 times the 20dB bandwidth, centered on a hopping channel
2. Set the RBW = 3 MHz.
3. Set the VBW = 3 MHz.
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.

8.2 Test SET-UP



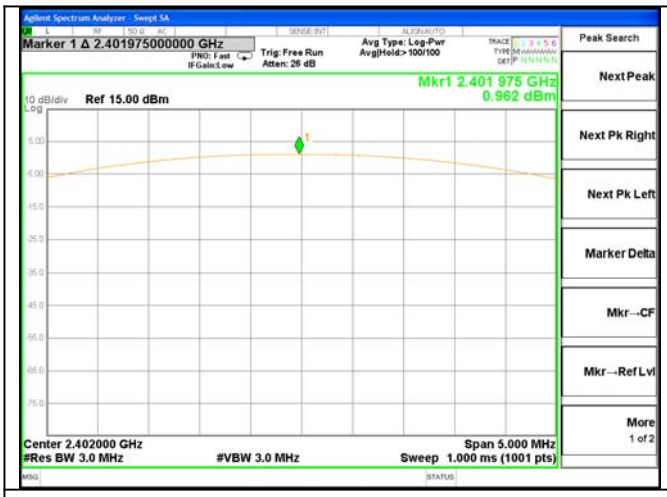
8.3 Test Equipment

Same as the equipment listed in 4.3.

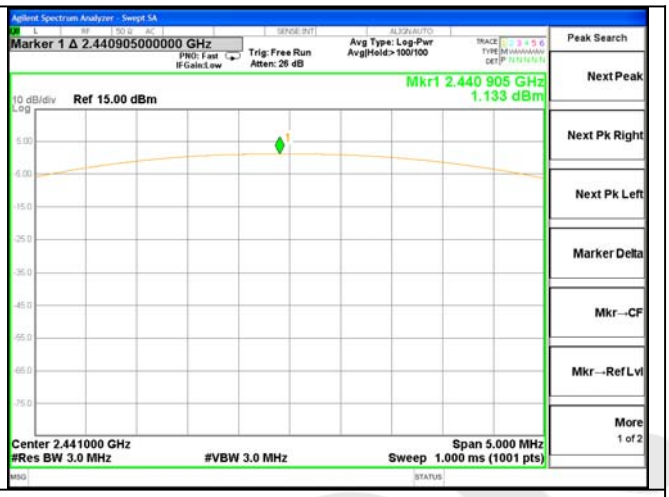
8.4 Test Results

Test Item	:	Max. peak output power	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

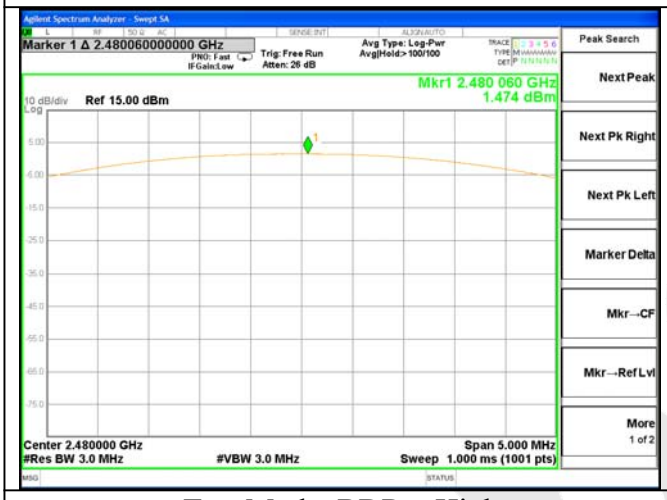
Channel Frequency (MHz)	Peak Power output(mW)	Peak Power output(dBm)	Peak Power Limit(mW)	Results	Modulation
2402	1.248	0.962	1000	PASS	BDR
2441	1.298	1.133	1000	PASS	BDR
2480	**1.404**	**1.474**	1000	PASS	BDR
2402	1.231	0.903	125	PASS	EDR
2441	1.287	1.097	125	PASS	EDR
2480	1.389	1.427	125	PASS	EDR



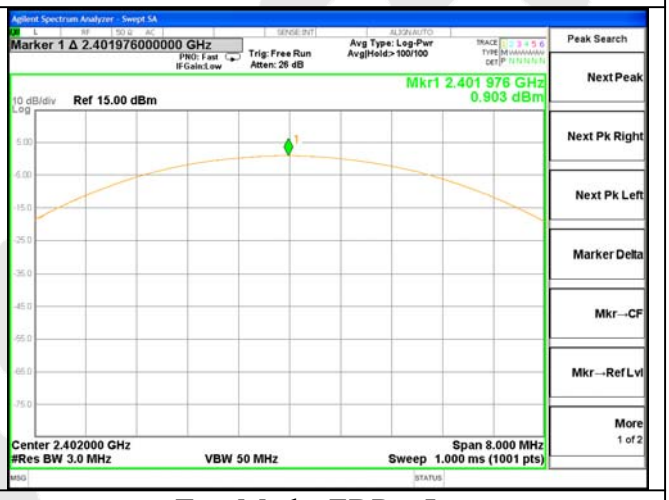
Test Mode: BDR---Low



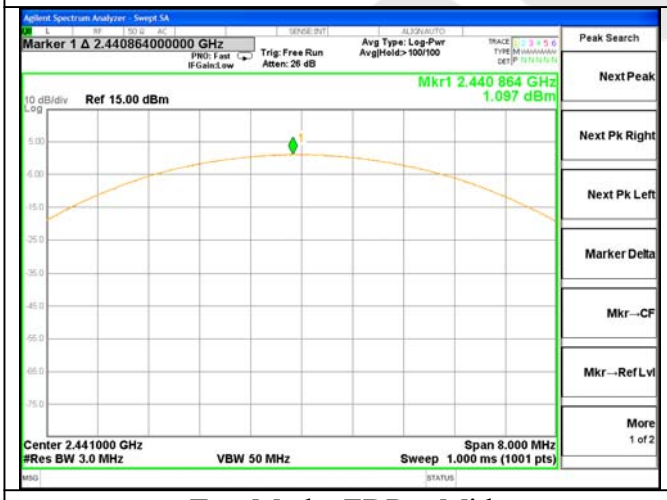
Test Mode: BDR---Mid



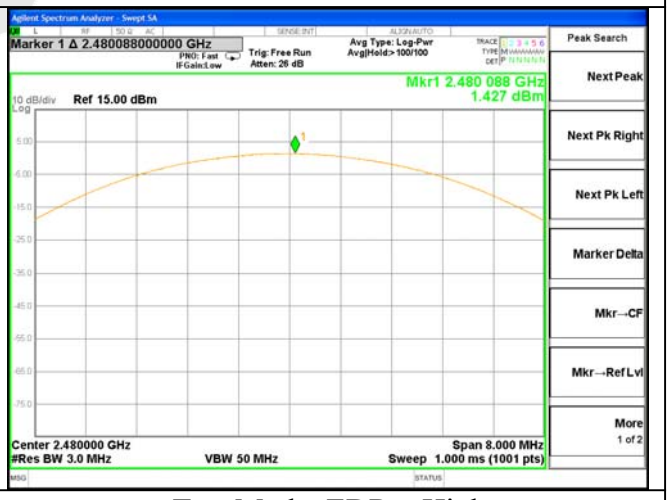
Test Mode: BDR---High



Test Mode: EDR---Low



Test Mode: EDR---Mid



Test Mode: EDR---High

9. BAND EDGE TEST

9.1 Measurement Procedure

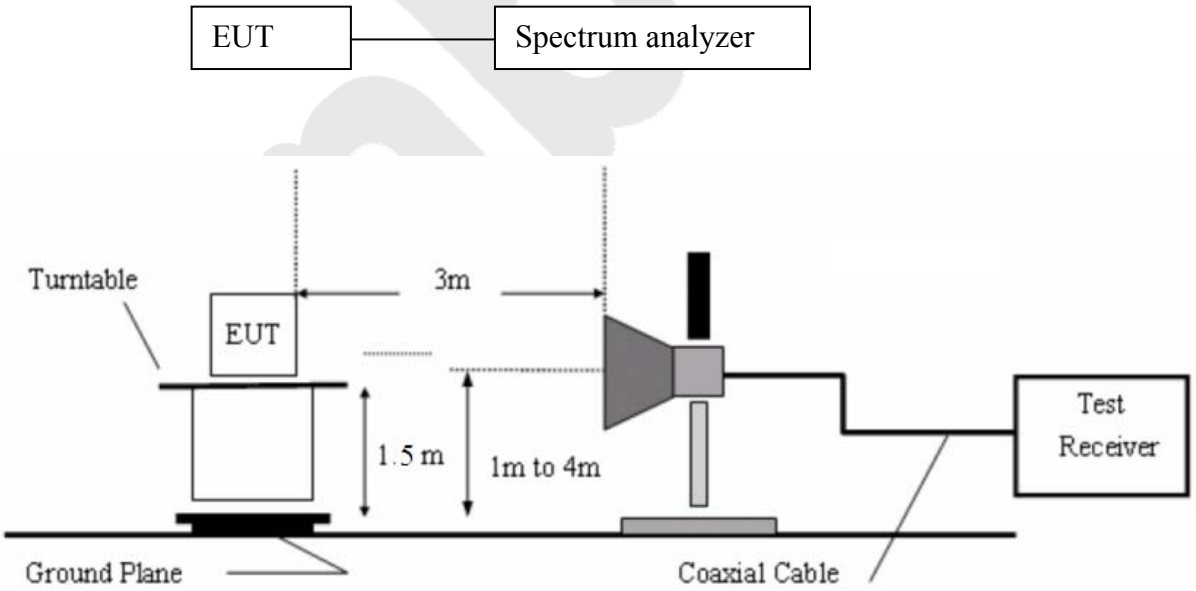
A) Conducted Emission method:

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Put it on the Rotated table and turn on the EUT and make it operate in transmitting mode. Then set it to low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100kHz with a convenient frequency span including 100kHz bandwidth from band edge,
4. Measurement the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Report above procedures until all measured frequencies were complete.

B) Radiated Emission method:

The EUT is placed on a turn table which is 1.5 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber.
for Radiated emissions restricted band RBW= 1 MHz, VBW= 3 MHz.

9.2 Test SET-UP



9.3 Test Equipment

Same as the equipment listed in 4.3.

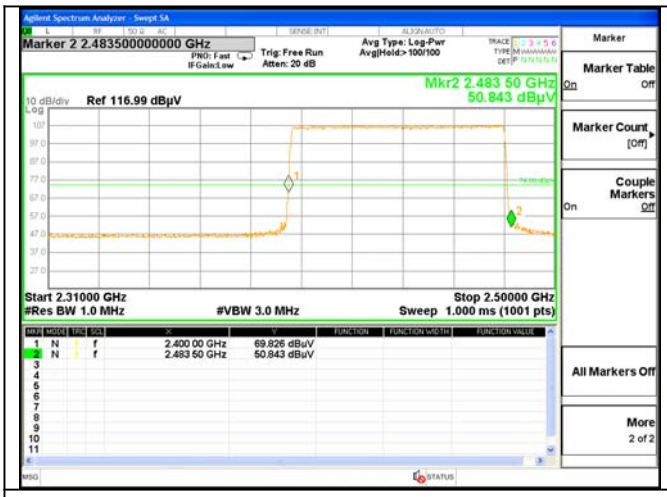
9.4 Test Results

Pass.

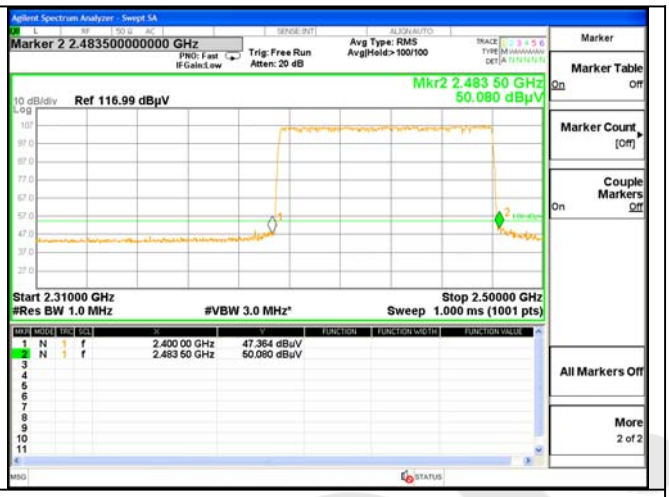
Please refer the following data.

Test Item	:	Band eadge	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

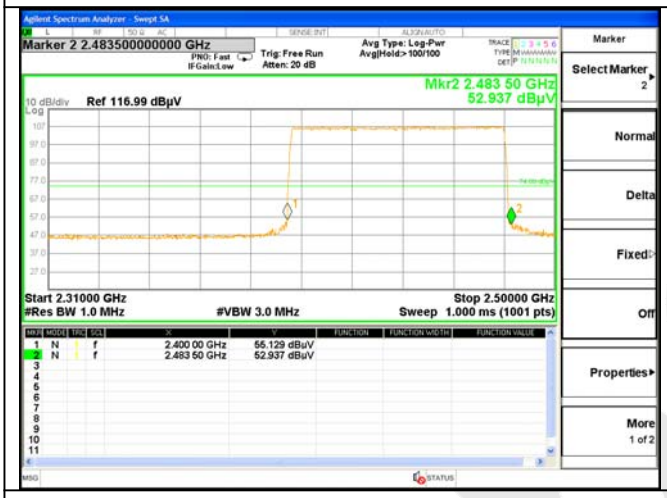
For Hopping Mode:



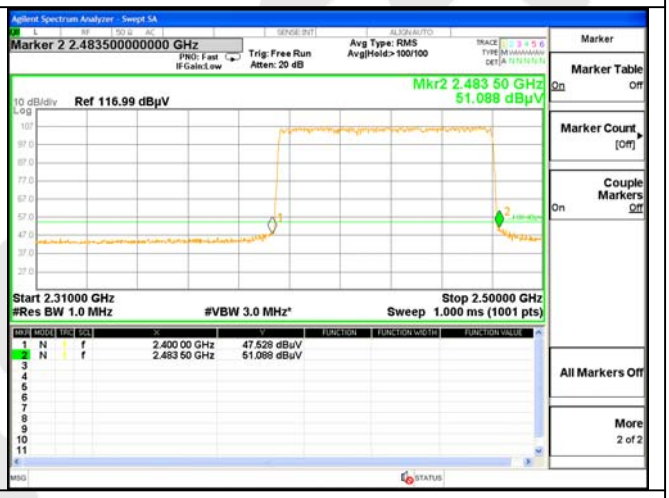
Test Mode: BDR



Test Mode: BDR



Test Mode: EDR



Test Mode: EDR

Test Item	:	Band eadge	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

For Non-Hopping Mode:

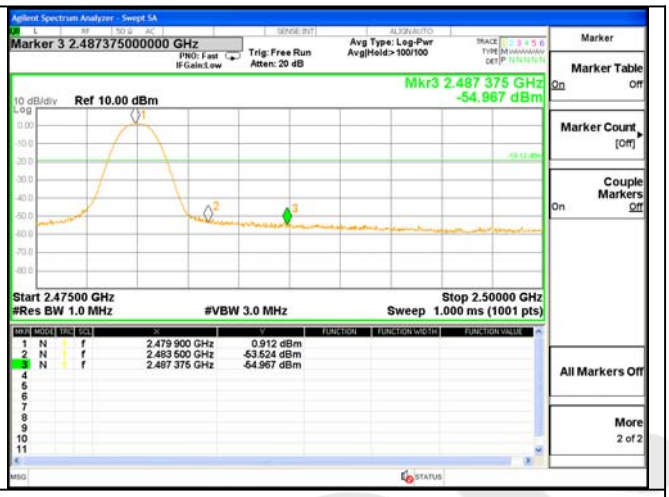
1. Conducted Test

Frequency (MHz)	Peak Power Output(dBm)	Emission read Value(dBm)	Result of Band edge(dBc)	Band edge Limit(dBc)	Modulation
<2400	0.892	-38.035	38.927	>20dBc	BDR
	0.294	-29.188	29.482	>20dBc	EDR
>2483.5	1.299	-52.660	53.959	>20dBc	BDR
	0.805	-50.664	51.469	>20dBc	EDR

2. Radiated emission Test

Frequency (MHz)	Antenna polarization (H/V)	Emission (dBuV/m)		Band edge Limit (dBuV/m)		Modulation
		PK	AV	PK	AV	
<2400	V	54.25	39.02	74.00	54.00	BDR
	V	51.89	37.58	74.00	54.00	EDR
>2483.5	V	53.32	35.43	74.00	54.00	BDR
	V	50.66	34.91	74.00	54.00	EDR

Test Mode: BDR



Test Mode: BDR

Test Mode: EDR

Test Mode: EDR

10. ANTENNA APPLICATION

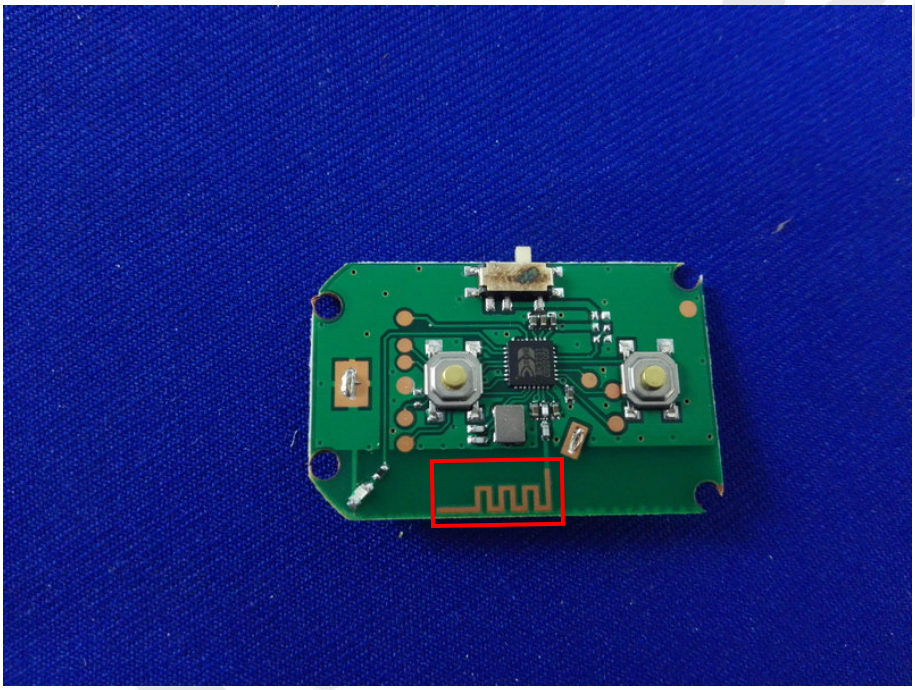
10.1 Antenna requirement

The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and 15.247.

FCC part 15C section 15.247 requirements:
Systems operating in the 2402-2480MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

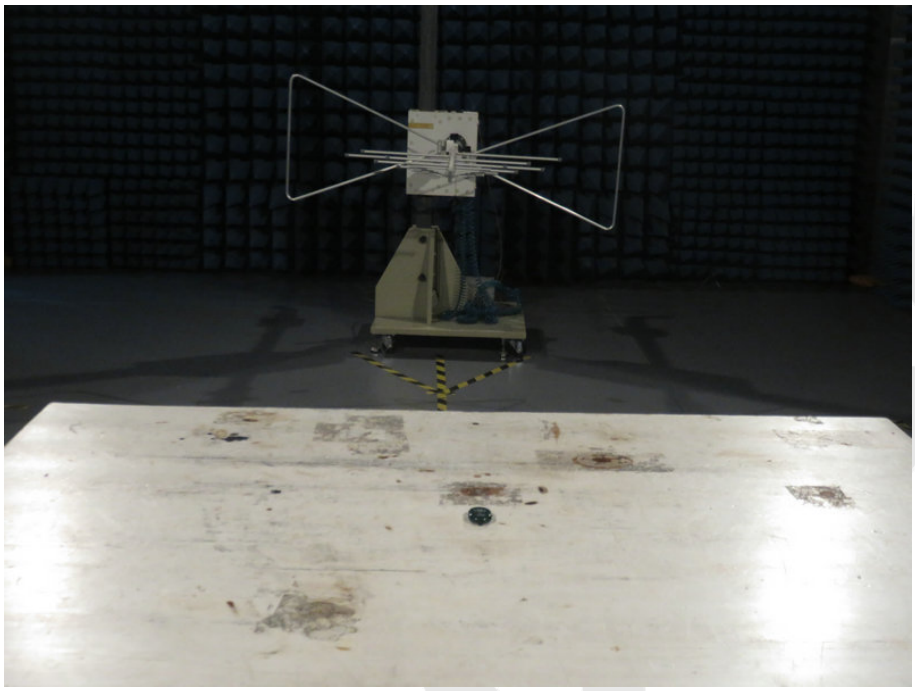
10.2 Result

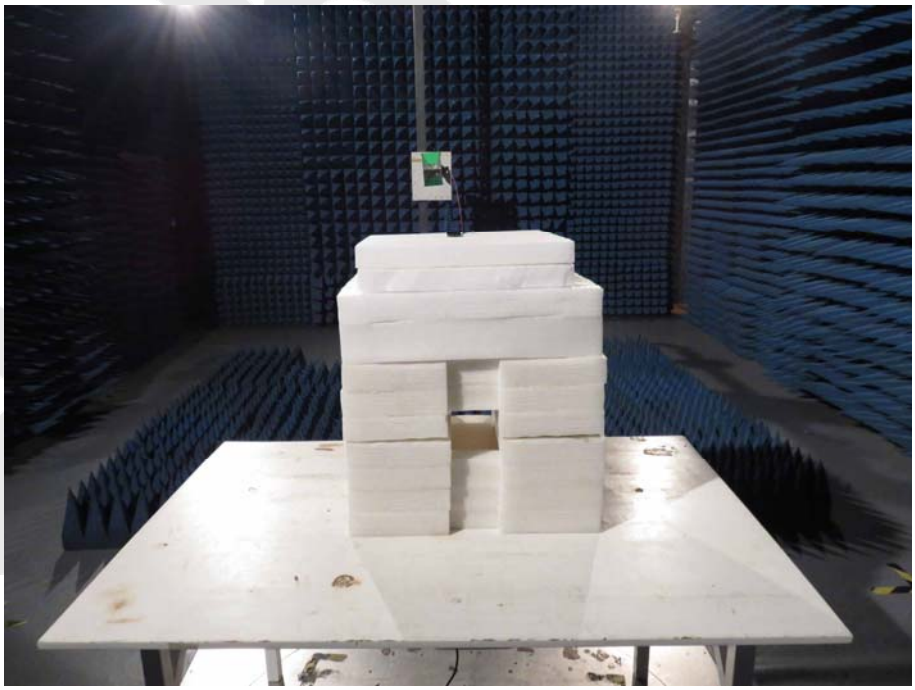
The EUT's antenna used a PCB Antenna, The antenna's gain is 0dBi and meets the requirement.



11. PHOTOGRAPH

11.1 Photo of Radiation Emission Test



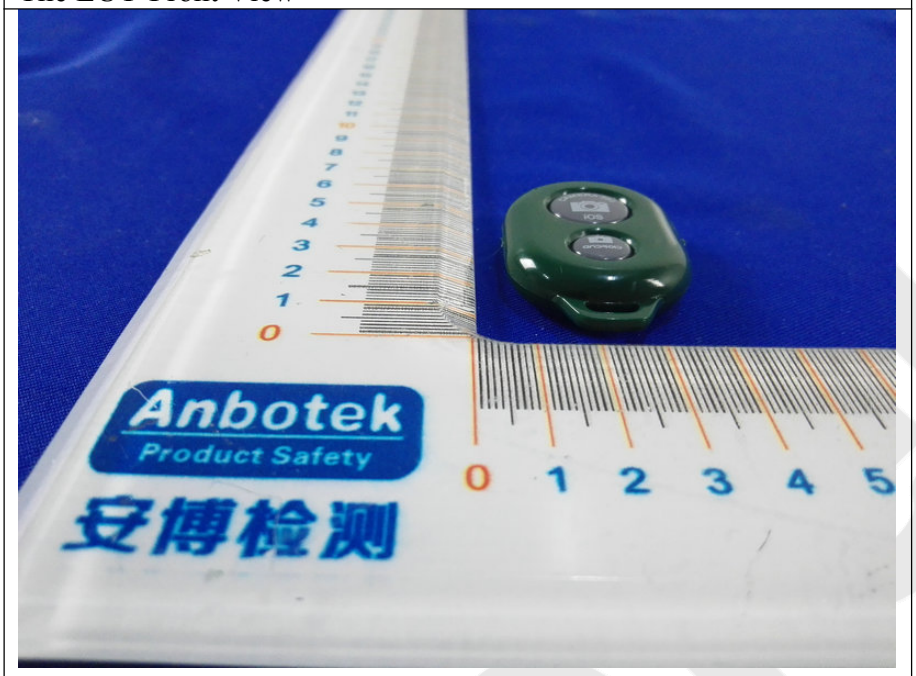


APPENDIX I (EXTERNAL PHOTOS)

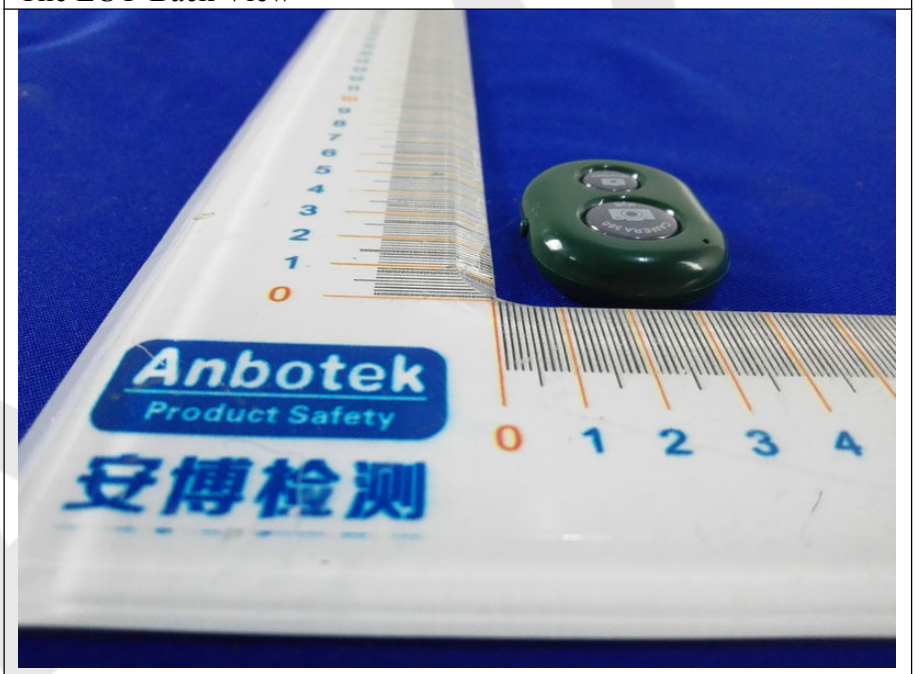
1. Figure
The EUT-Top View

2. Figure
The EUT-Bottom View

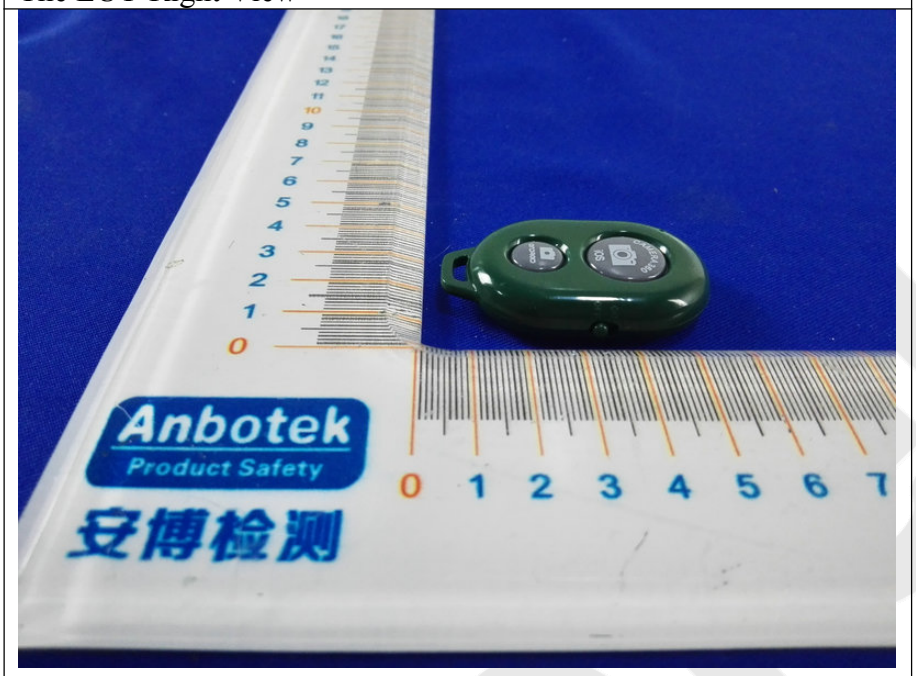
3. Figure
The EUT-Front View



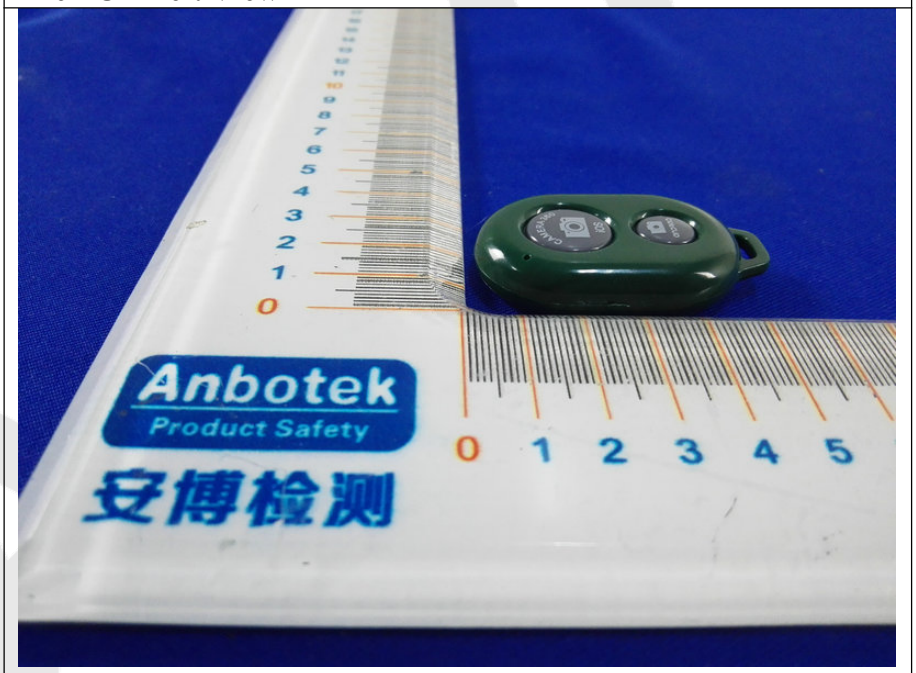
4. Figure
The EUT-Back View



5. Figure
The EUT-Right View



6. Figure
The EUT-Left View

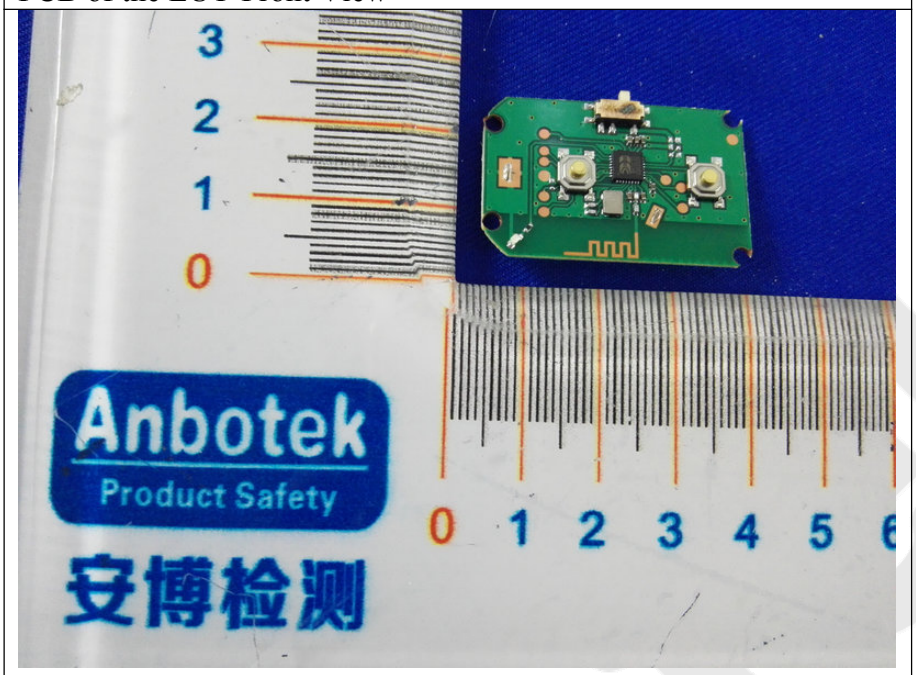


APPENDIX Ⅱ(INTERNAL PHOTOS)

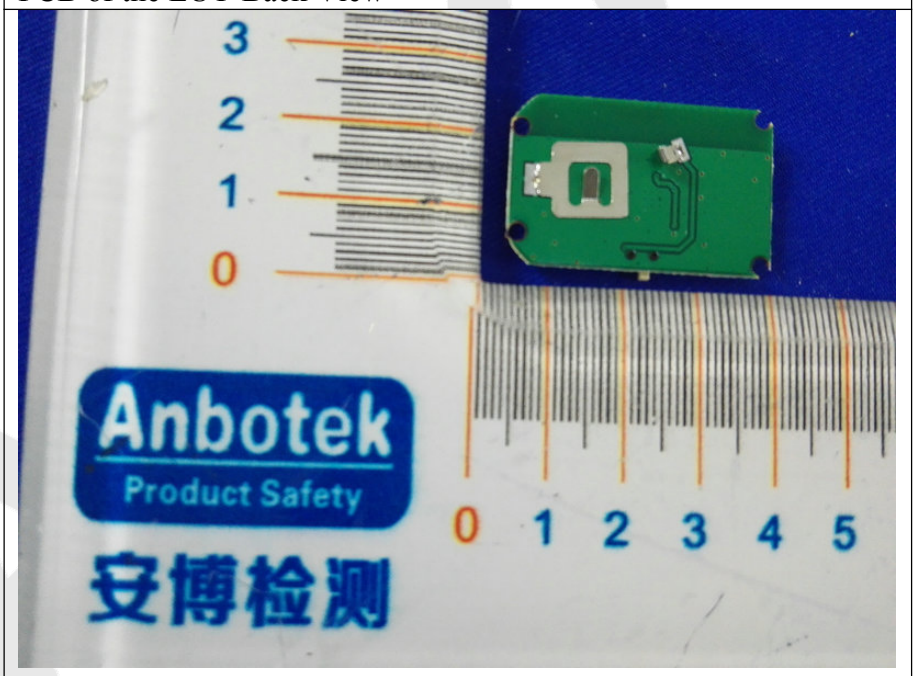
1. Figure
The EUT-Inside View

2. Figure
The EUT-Inside View

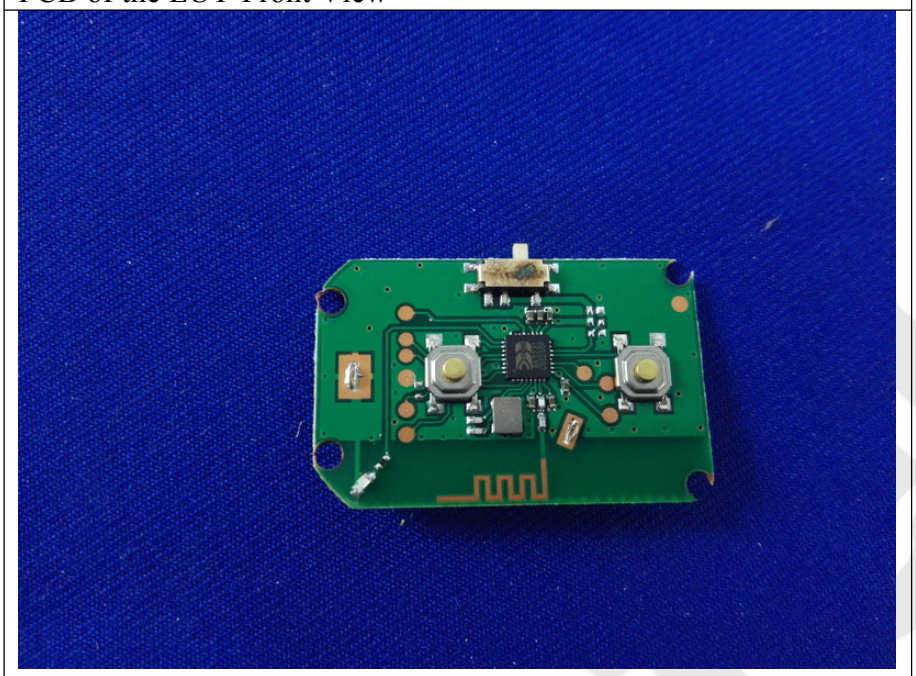
3. Figure
PCB of the EUT-Front View



4. Figure
PCB of the EUT-Back View



5. Figure
PCB of the EUT-Front View



6. Figure
PCB of the EUT-Back View