FCC TEST REPORT
for
Shenzhen Lepow Creative Technology Co., Ltd.

Lepow-Hi
Model No.: B01

Prepared for	:	Shenzhen Lepow Creative Technology Co., Ltd.
Address	:	Room No.1622, Haosheng Business Center, East Shore Road, Nanshan District, Shenzhen, China

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	:	R011408011E
Date of Test	:	Aug. 01~ Sept. 02, 2014
Date of Report	:	Nov. 07, 2014

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TEST REPORT

Applicant	:	Shenzhen Lepow Creative Technology Co., Ltd.
Manufacturer	:	Shenzhen Lepow Creative Technology Co., Ltd.
EUT	:	Lepow-Hi
Model No.	:	B01
Serial No.	:	N.A.
Trade Mark	:	lepow
Rating	:	DC 5V±0.25V, 0.1A

Measurement Procedure Used:

FCC Part15 Subpart C, 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 : Aug. 01~ Sept. 02, 2014

Prepared by : (Tested Engineer / Kebo Zhang)

Reviewer : (Project Manager / Amy Ding)

Approved & Authorized Signer : (Manager / Tom Chen)

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	Lepow-Hi
Model Number	:	B01
Test Power Supply	:	DC 5V(With DC 3.7V Battery inside)
Frequency	:	2402~2480MHz
Antenna Specification	:	PCB Antenna: 0dBi
Modulation	:	GFSK, π/4DQPSK, 8DPSK
Applicant	:	Shenzhen Lepow Creative Technology Co., Ltd.
Address	:	Room No.1622, Haosheng Business Center, East Shore Road, Nanshan District, Shenzhen, China
Manufacturer	:	Shenzhen Lepow Creative Technology Co., Ltd.
Address	:	4/F, Bldg Y3, BanTian creative industrial park, YaYuan Road of BanTian Street, LongGang District, Shenzhen, 518100 China
Factory	:	Shenzhen Lepow Electronics Co.,Ltd.
Address	:	Second Floor,Building E,Northern Area NO.2 of Shangxue Tehnology Park,Bantian Longgang Area,Shenzhen
Date of receipt	:	Aug. 01, 2014
Date of Test	:	Aug. 01~ Sept. 02, 2014

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:

CNAS - LAB Code: L3503
Shenzhen Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

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 = 4.3dB
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 C63.4-2009 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 C63.4-2009 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

3.1.2. Test Limits (≥ 30 MHZ)

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

The EUT is placed on a turn table which is 0.8 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 30MHz to 1000MHz:
Set the spectrum analyzer as:
RBW = 120kHz, VBW =120kHz,
Detector= Quasi-Peak
Trace mode= Max hold.
Sweep- auto couple.

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

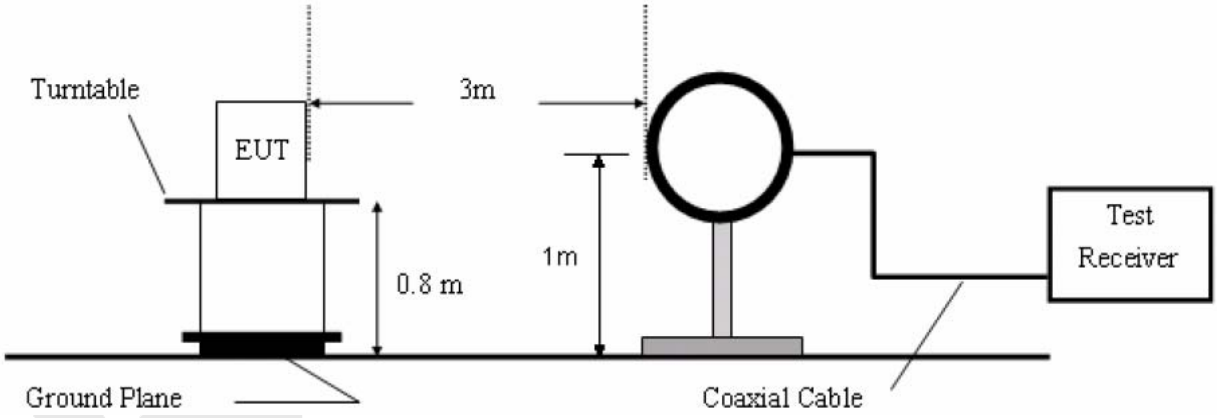
For Above 1GHz (Average Measurement):
Set the spectrum analyzer as:
RBW =1MHz, VBW =10Hz
Detector=Peak
Trace mode= Max hold.
Sweep- auto couple.

Test Equipment

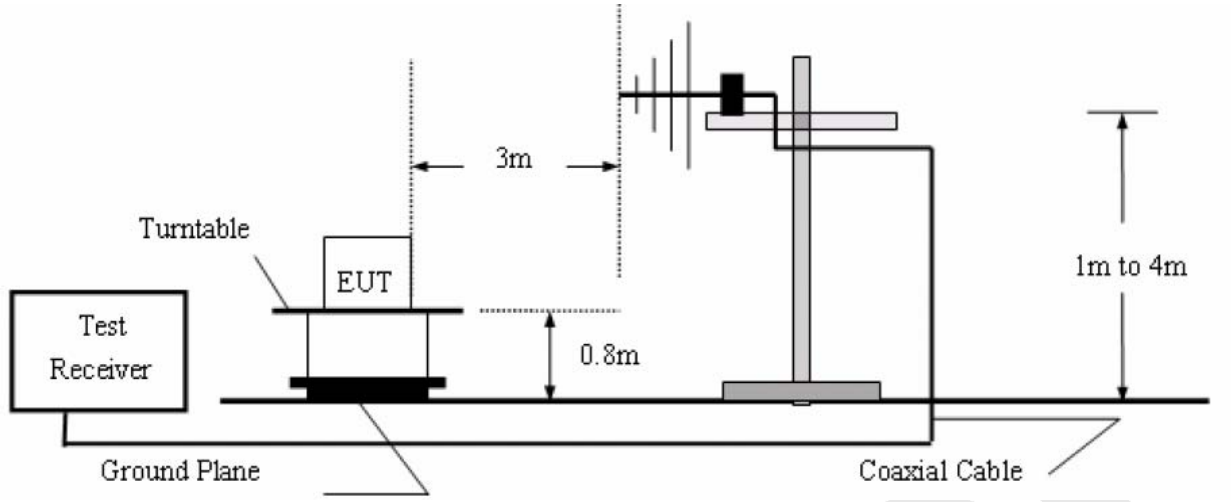
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 08, 2014	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 08, 2014	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 22, 2014	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 04, 2014	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 24, 2014	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Aug. 08, 2014	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

3.3 Test Configuration

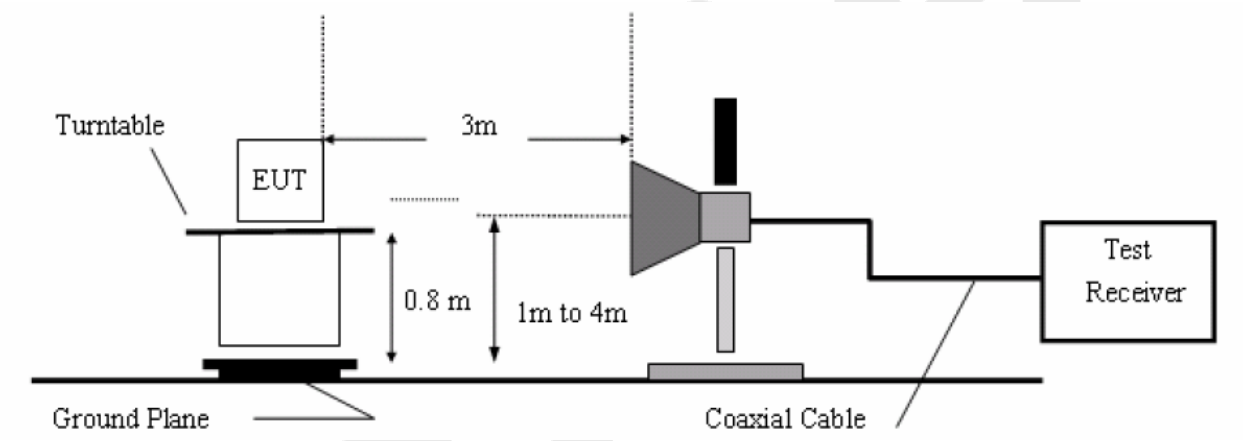
3.3.1. 9k to 30MHz emissions:



3.3.2. 30M to 1G emissions:



3.3.3. 1G to 40G emissions:

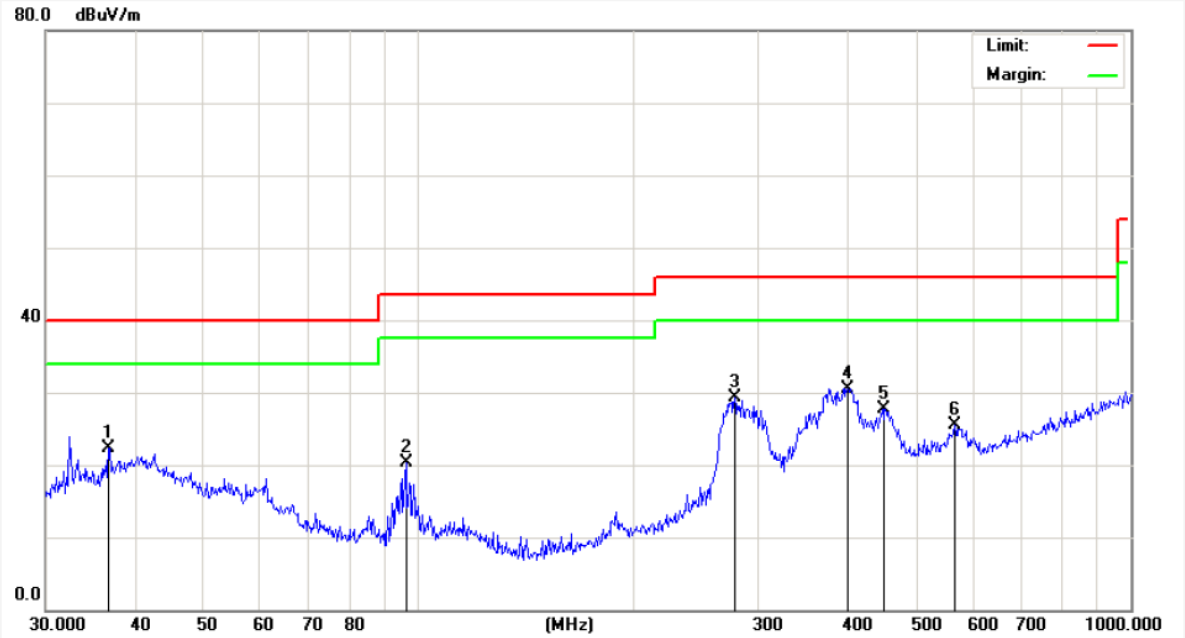


3.4 Test Results

PASS.

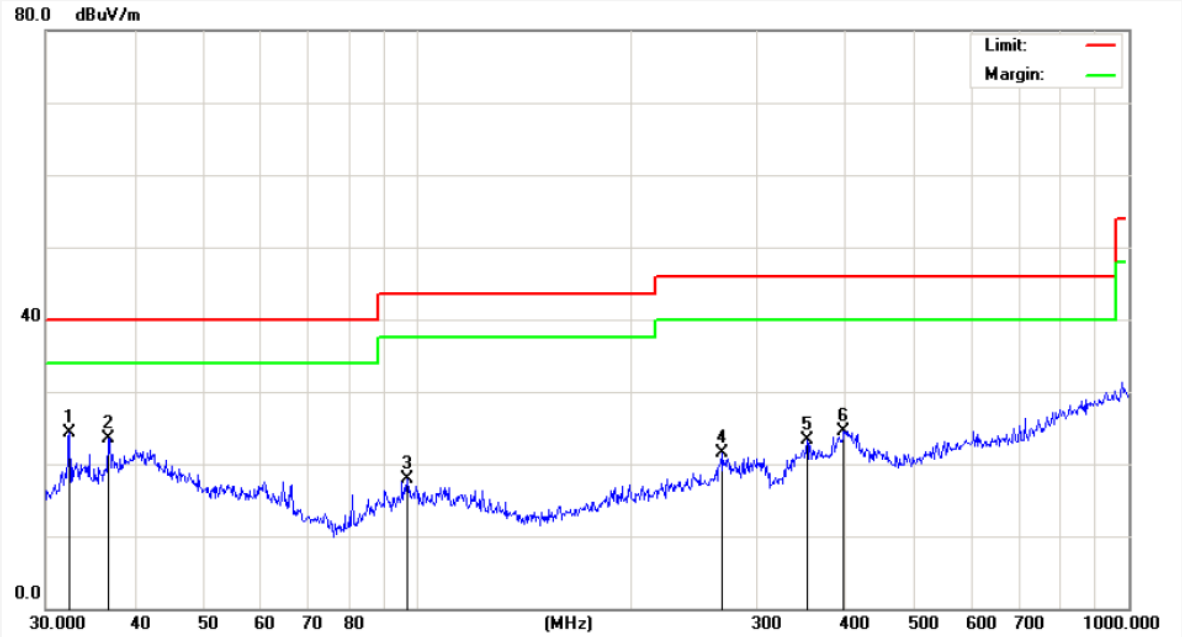
Please refer the following pages.

Job No.:	**011408011E**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART 15C _3m**	**Power Source:**	**DC 3.7V**
Test item:	**Radiation Test (30~1000MHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**On**	**Distance:**	**3m**



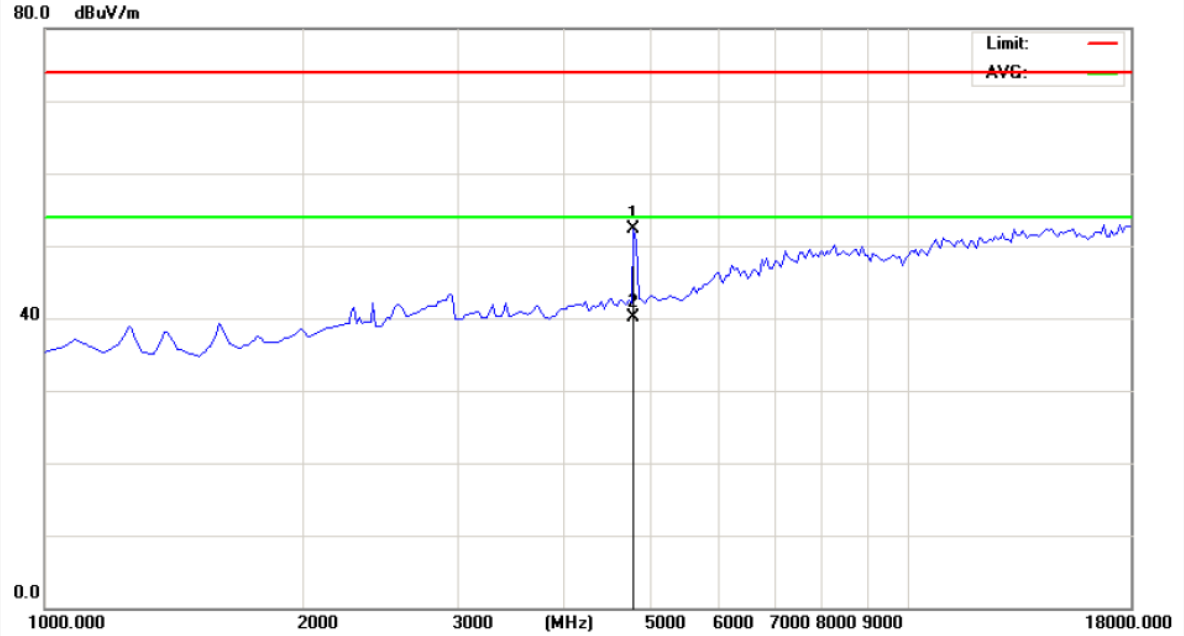
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	36.7662	35.28	-12.91	22.37	40.00	-17.63	peak			
2	96.0986	41.22	-20.97	20.25	43.50	-23.25	peak			
3	278.0668	47.58	-18.30	29.28	46.00	-16.72	peak			
4	400.4319	43.44	-12.86	30.58	46.00	-15.42	peak			
5	451.1350	39.91	-12.15	27.76	46.00	-18.24	peak			
6	566.6223	36.65	-11.15	25.50	46.00	-20.50	peak			

Job No.:	**011408011E**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART 15C _3m**	**Power Source:**	**DC 3.7V**
Test item:	**Radiation Test (30~1000MHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**On**	**Distance:**	**3m**



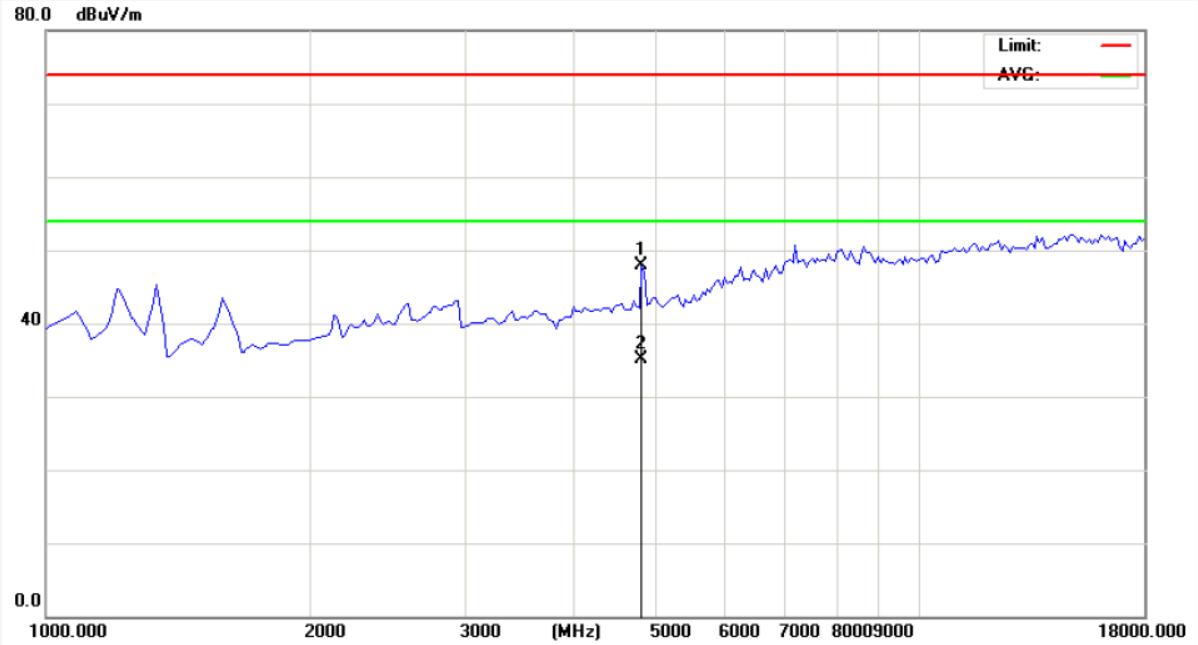
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	32.4059	39.94	-15.67	24.27	40.00	-15.73	peak			
2	36.7661	36.43	-12.91	23.52	40.00	-16.48	peak			
3	96.7749	33.80	-15.93	17.87	43.50	-25.63	peak			
4	267.5455	35.89	-14.46	21.43	46.00	-24.57	peak			
5	352.9433	36.24	-12.90	23.34	46.00	-22.66	peak			
6	397.6333	36.47	-11.92	24.55	46.00	-21.45	peak			

Job No.:	**011408011E**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3.7V**
Test item:	**Radiation Test (Above 1GHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**TX(2402 MHz)**	**Distance:**	**3m**



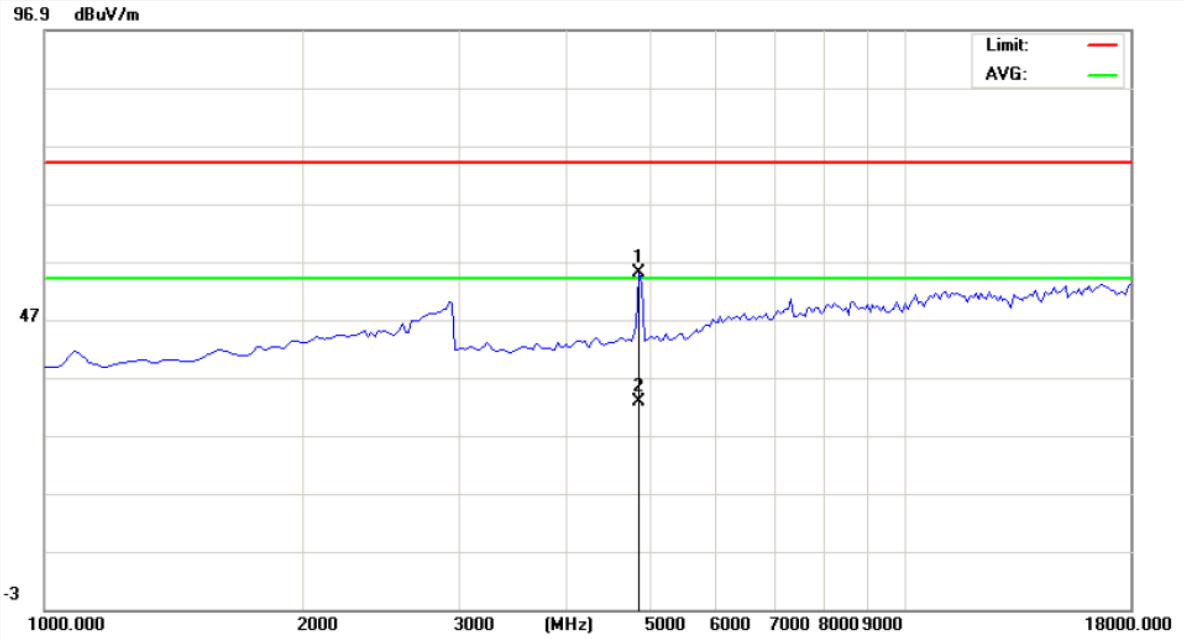
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4825.000	48.90	3.34	52.24	74.00	-21.76	peak			
2	4825.000	36.77	3.34	40.11	54.00	-13.89	AVG			

Job No.:	**011408011E**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3.7V**
Test item:	**Radiation Test (Above 1GHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**TX(2402 MHz)**	**Distance:**	**3m**



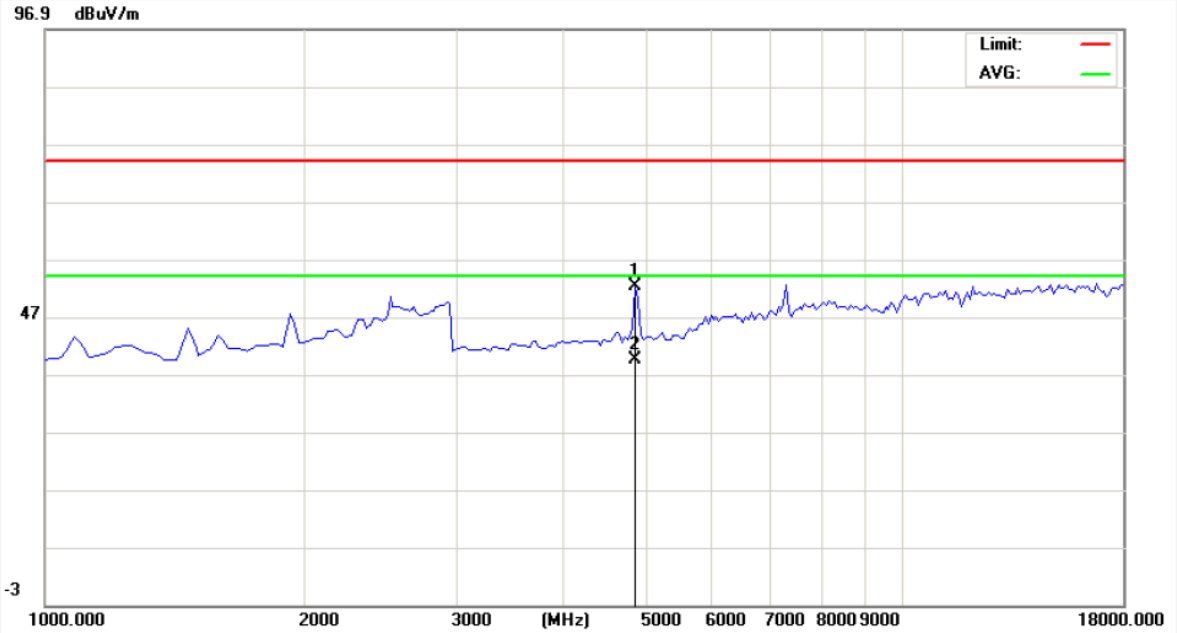
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4825.000	44.62	3.34	47.96	74.00	-26.04	peak			
2	4825.000	31.69	3.34	35.03	54.00	-18.97	AVG			

Job No.:	**011408011E**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3.7V**
Test item:	**Radiation Test (Above 1GHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**TX(2441 MHz)**	**Distance:**	**3m**



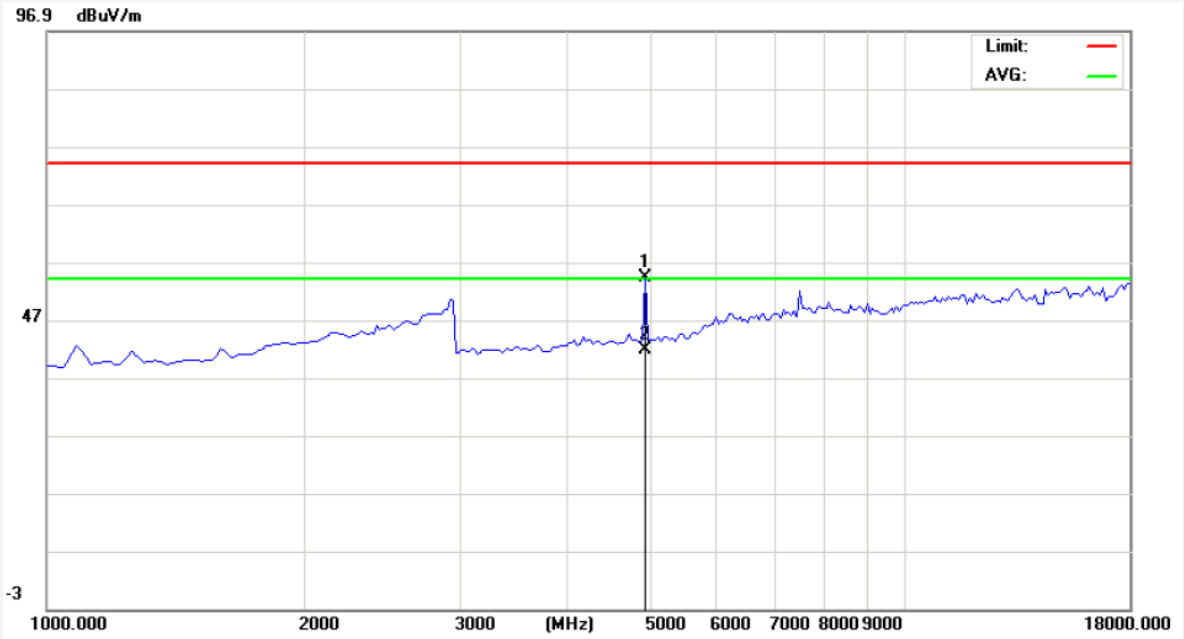
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4867.500	51.60	3.41	55.01	74.00	-18.99	peak			
2	4867.500	29.41	3.41	32.82	54.00	-21.18	AVG			

Job No.:	**011408011E**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3.7V**
Test item:	**Radiation Test (Above 1GHz)**	**Temp.(C)/Hum.(%RH):**	**24.3(C)/55%RH**
Test Mode:	**TX(2441 MHz)**	**Distance:**	**3m**



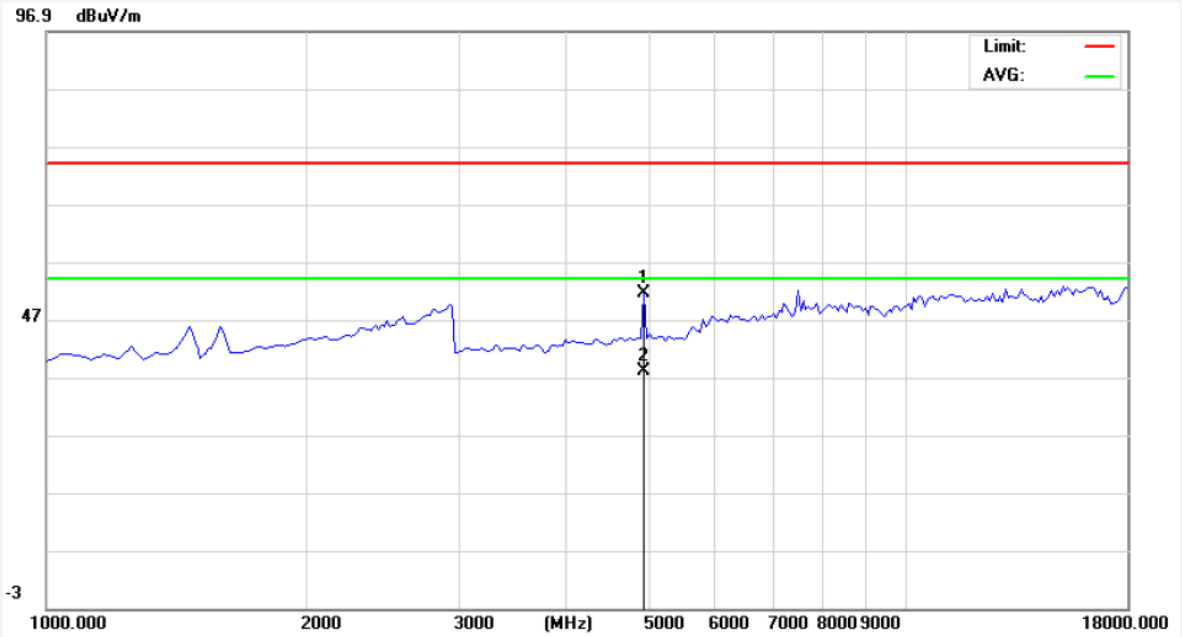
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	4867.500	48.97	3.41	52.38	74.00	-21.62	peak			
2	4867.500	36.21	3.41	39.62	54.00	-14.38	AVG			

Job No.:	**011408011E**	**Polarization:**	**Horizontal**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3.7V**
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	4952.500	50.74	3.57	54.31	74.00	-19.69	peak			
2	4952.500	38.26	3.57	41.83	54.00	-12.17	AVG			

Job No.:	**011408011E**	**Polarization:**	**Vertical**
Standard:	**(RE)FCC PART 15C_Class B_3m**	**Power Source:**	**DC 3.7V**
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	4952.500	47.94	3.57	51.51	74.00	-22.49	peak			
2	4952.500	34.39	3.57	37.96	54.00	-16.04	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 = 100 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

EUT —— Spectrum analyzer

4.3 Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 08, 2014	1 Year
2.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 08, 2014	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 22, 2014	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Apr. 04, 2014	1 Year
5.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 24, 2014	1 Year
6.	Pre-amplifier	SONOMA	310N	186860	Aug. 08, 2014	1 Year
7.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

4.4 Test Results

Test Item	:	Frequency Separation	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3.7V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

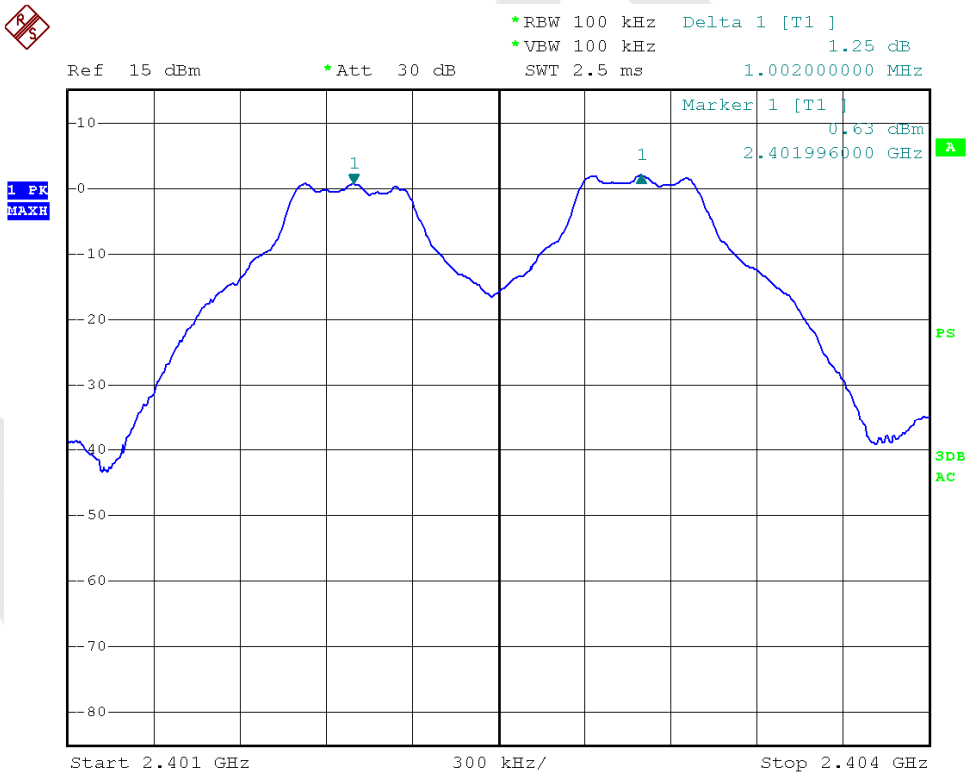
Channel	Frequency (MHz)	Separation Read Value (kHz)	Limit (kHz)	Modulation Mode
Low	2401	1002	882	GFSK
Mid	2441	1002	876	GFSK
High	2480	1002	870	GFSK
Low	2401	1002	820	π/4DQPSK
Mid	2441	1002	844	π/4DQPSK
High	2480	1008	844	π/4DQPSK
Low	2401	1002	820	8DPSK
Mid	2441	1008	844	8DPSK
High	2480	1002	844	8DPSK

Remark:

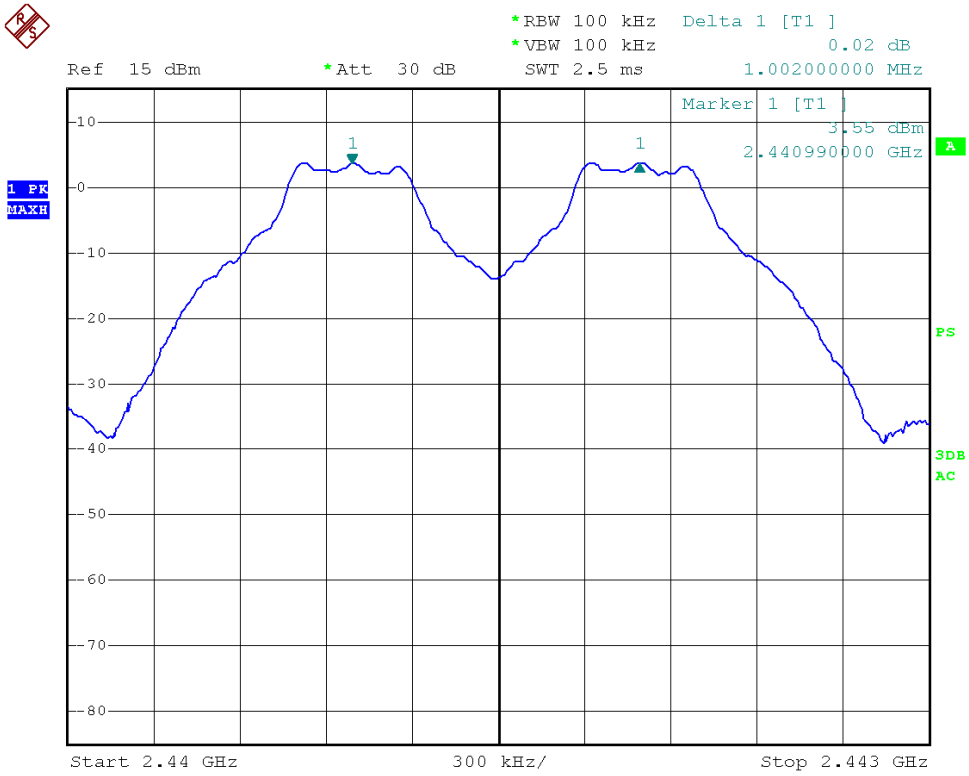
1. The limit of modulation (π/4DQPSK, 8DPSK) is 2/3 of 20dB BW;

Modulation Mode: GFSK

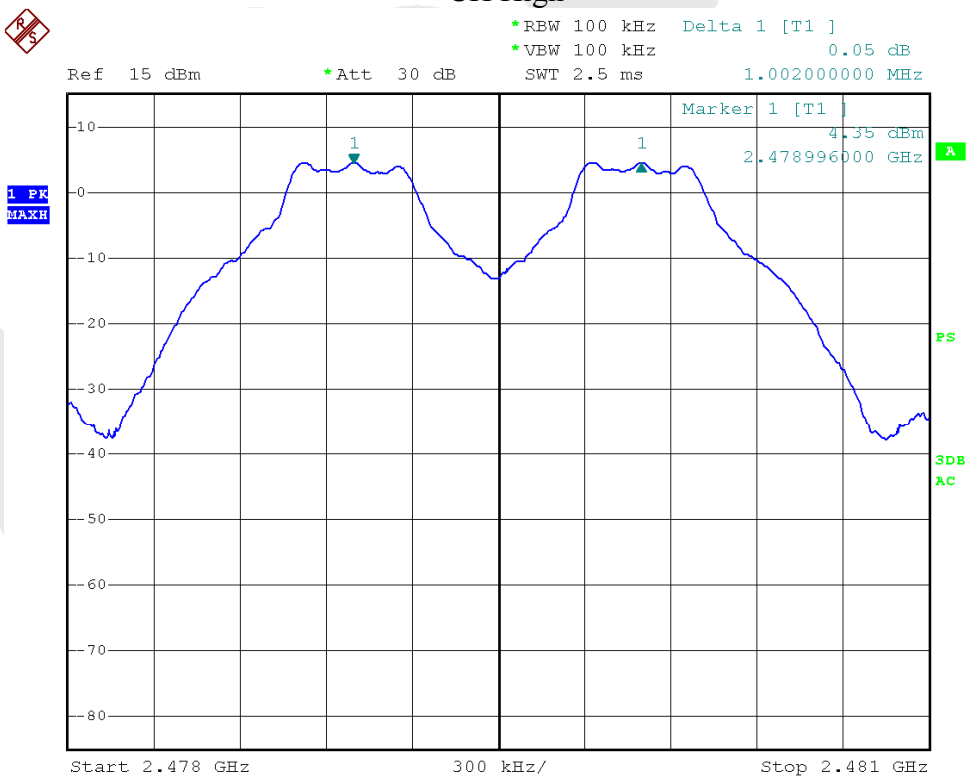
CH Low



CH Mid

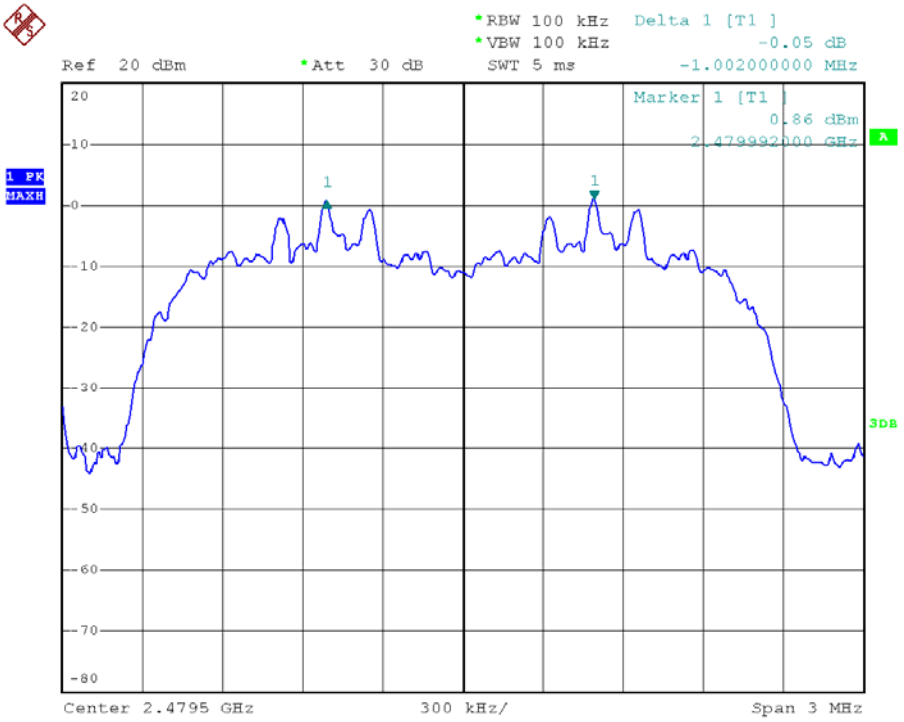


CH High

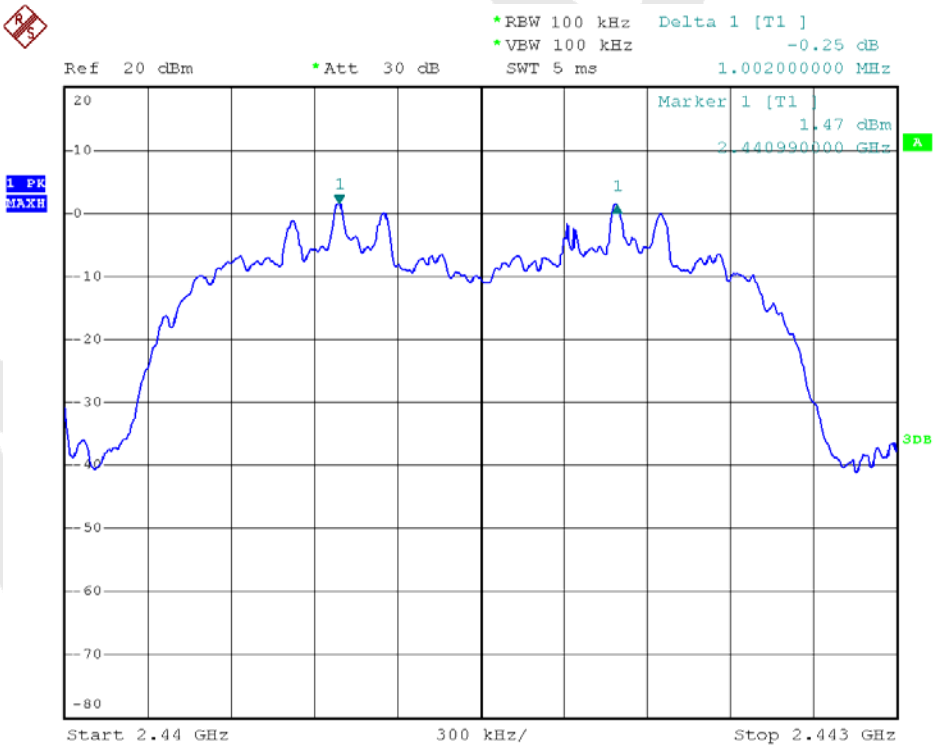


Modulation Mode: π /4DQPSK

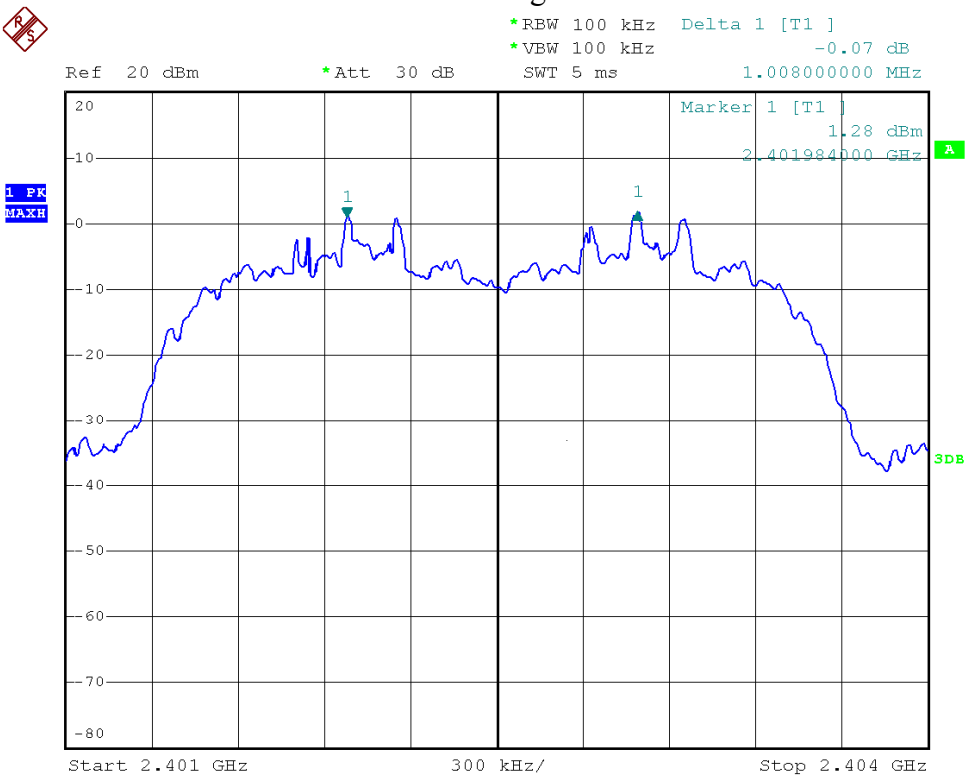
CH Low



CH Mid

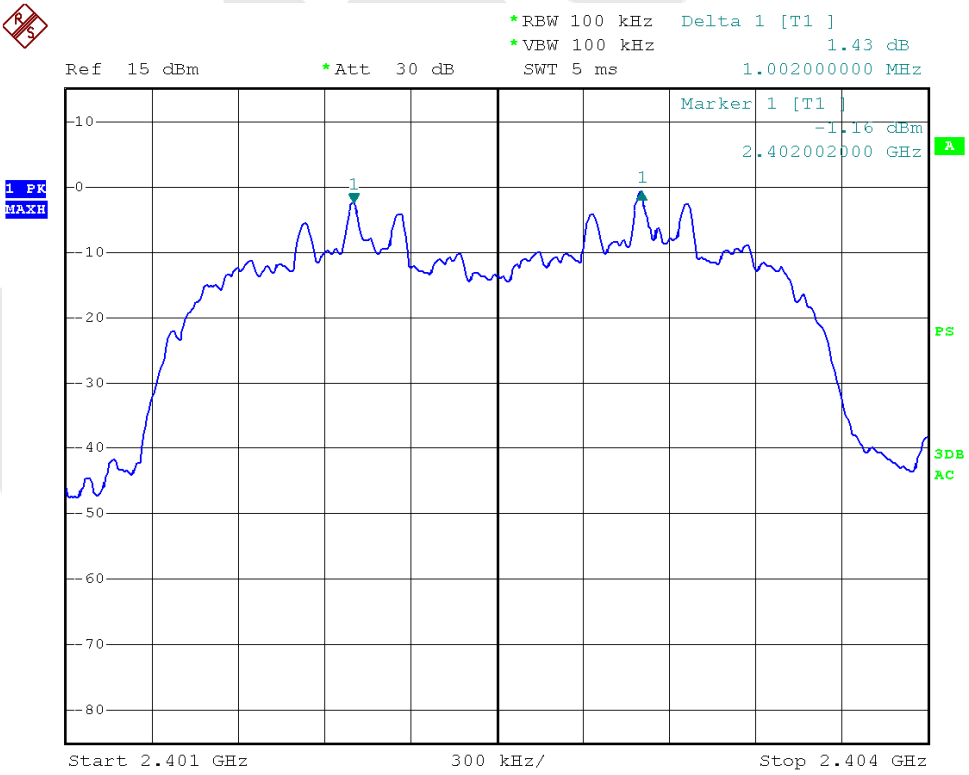


CH High

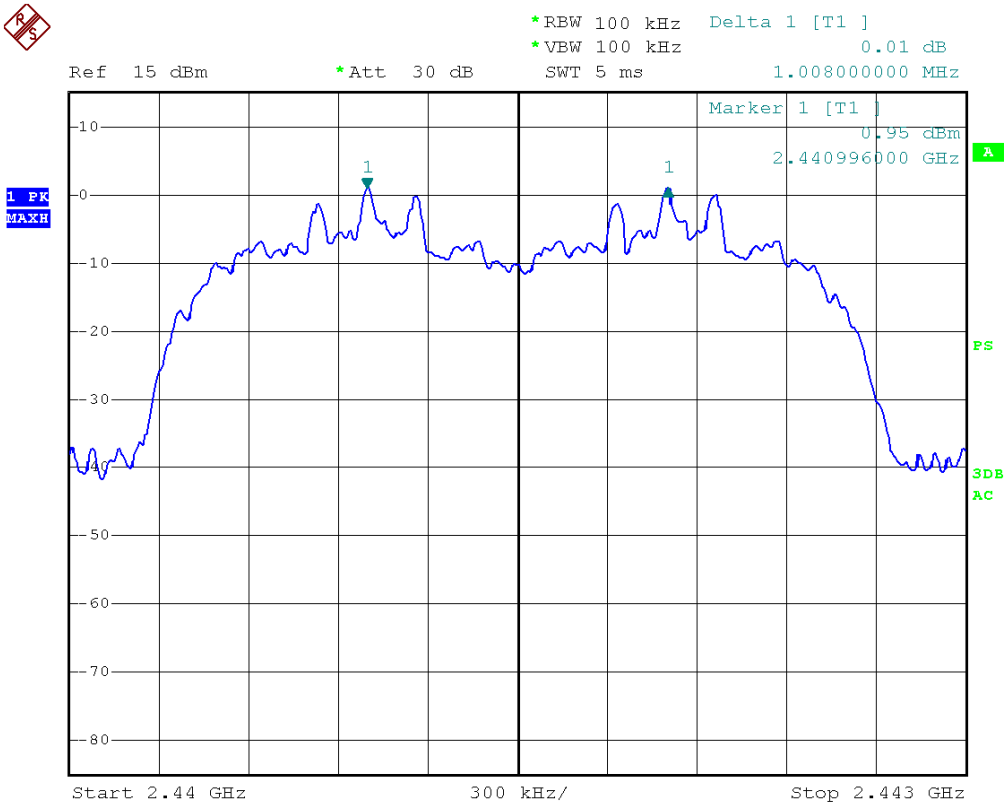


Modulation Mode: 8DPSK

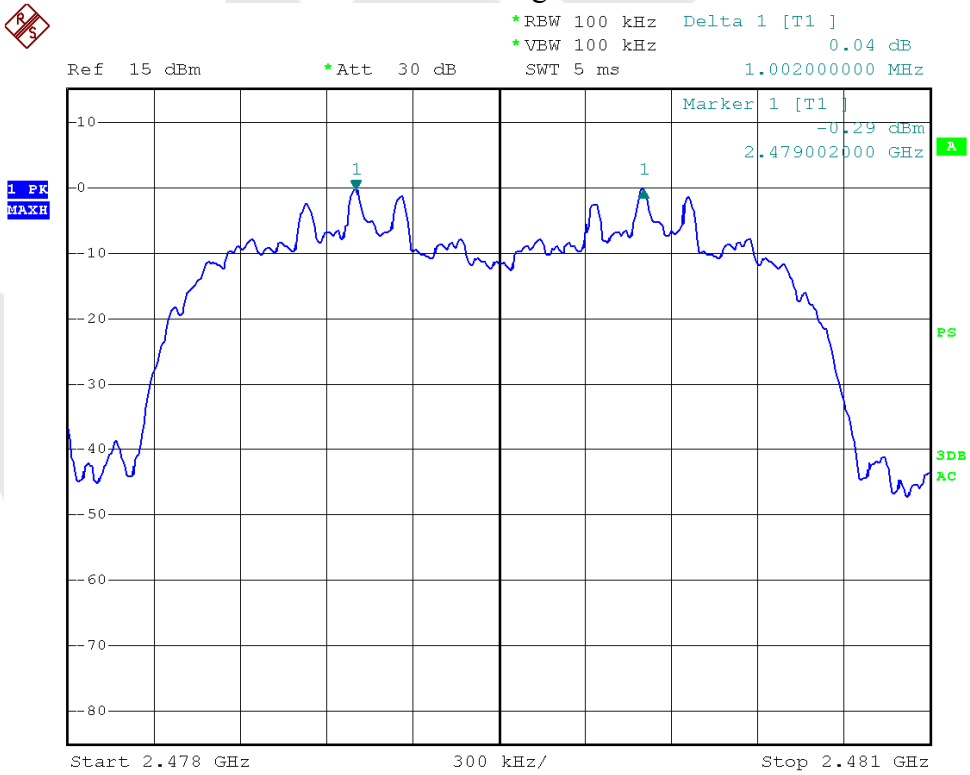
CH Low



CH Mid



CH 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

EUT —— Spectrum analyzer

5.3 Test Equipment

Same as the equipment listed in 4.3.

5.4 Test Results

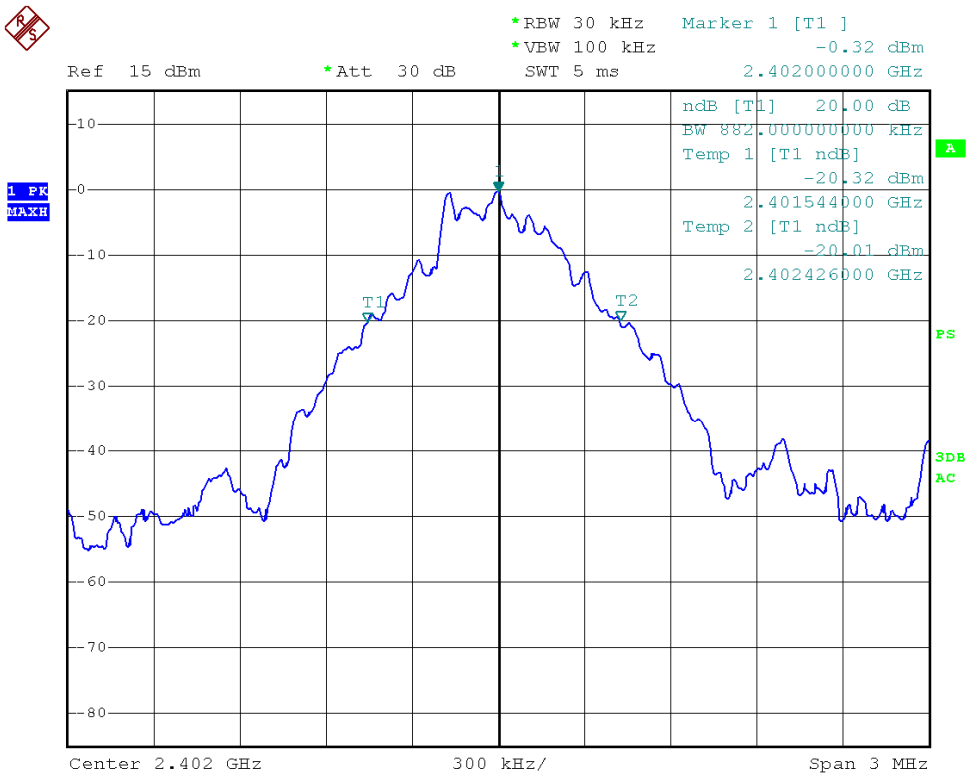
Test Item	:	20dB BW	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3.7V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

Channel	Frequency (MHz)	20dB Down BW(kHz)	Modulation Mode
Low	2401	882	GFSK
Mid	2441	876	GFSK
High	2480	870	GFSK
Low	2401	1230	π/4DQPSK
Mid	2441	1266	π/4DQPSK
High	2480	1266	π/4DQPSK
Low	2401	1230	8DPSK
Mid	2441	1266	8DPSK
High	2480	1266	8DPSK

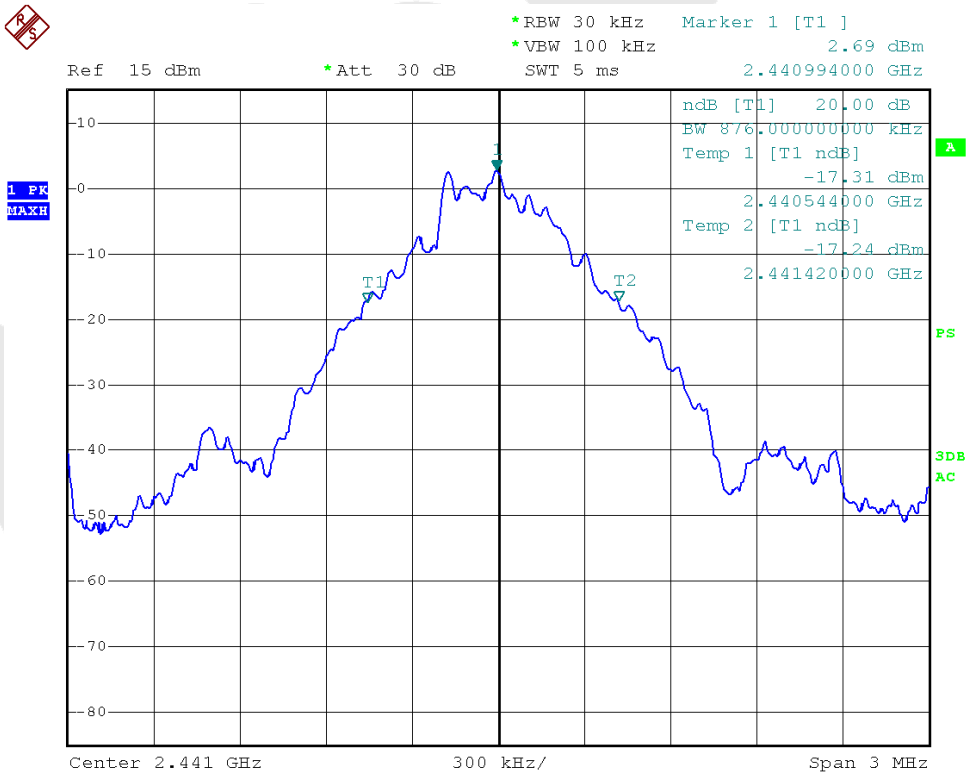
Remark: The results of modulationsπ/4DQPSK and 8DPSK are the same.

Modulation Mode: GFSK

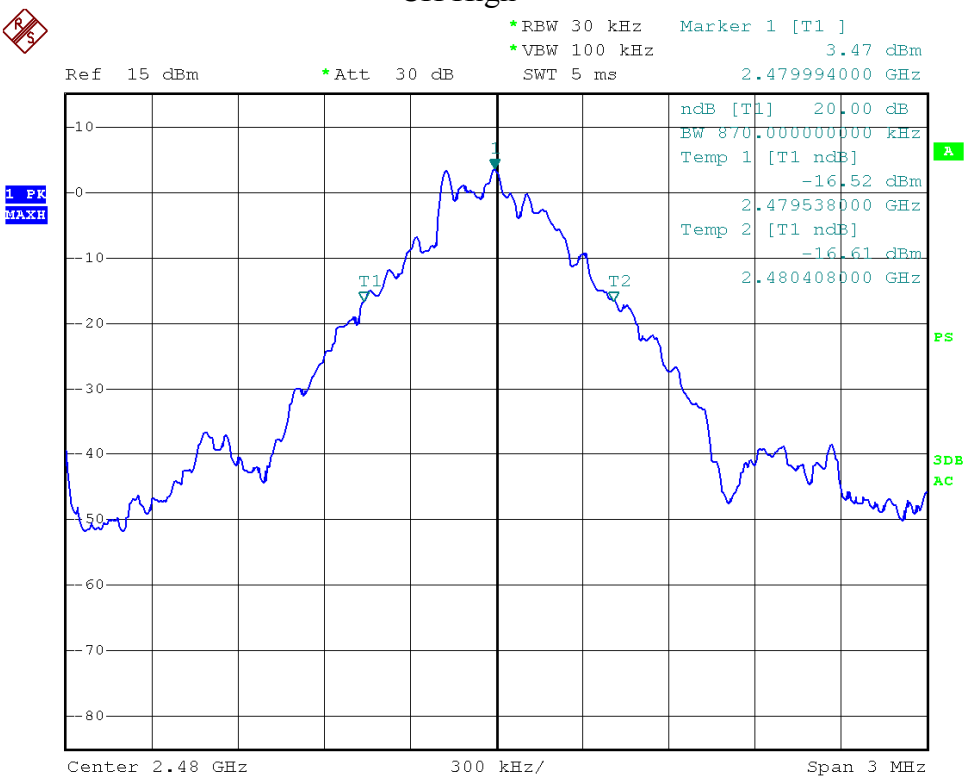
CH Low



CH Middle

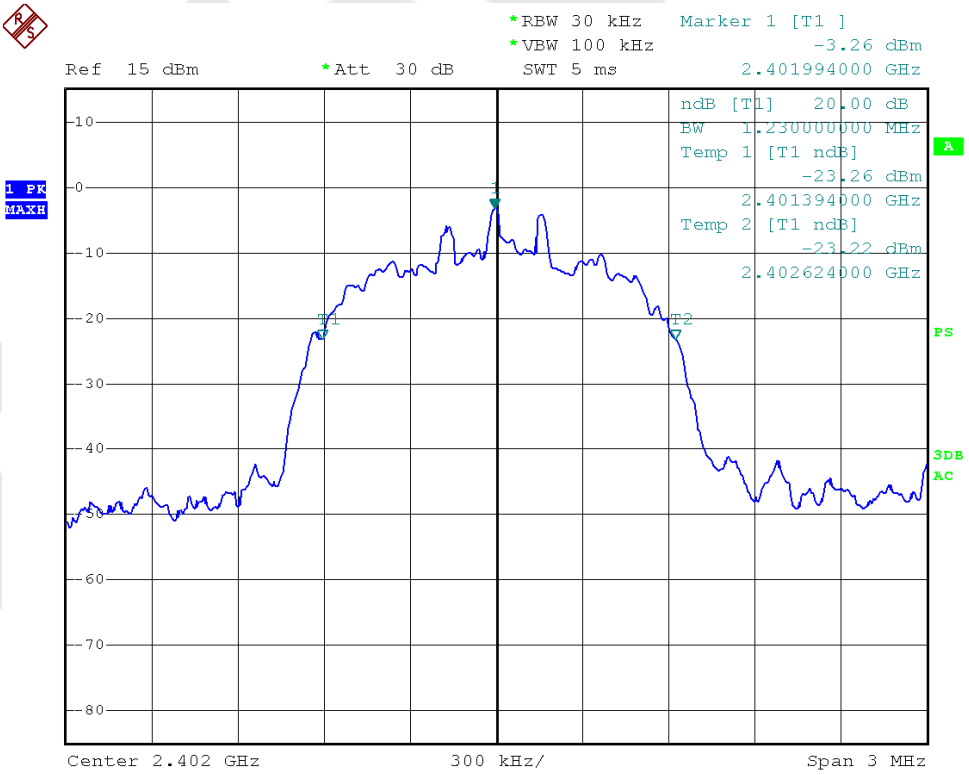


CH High

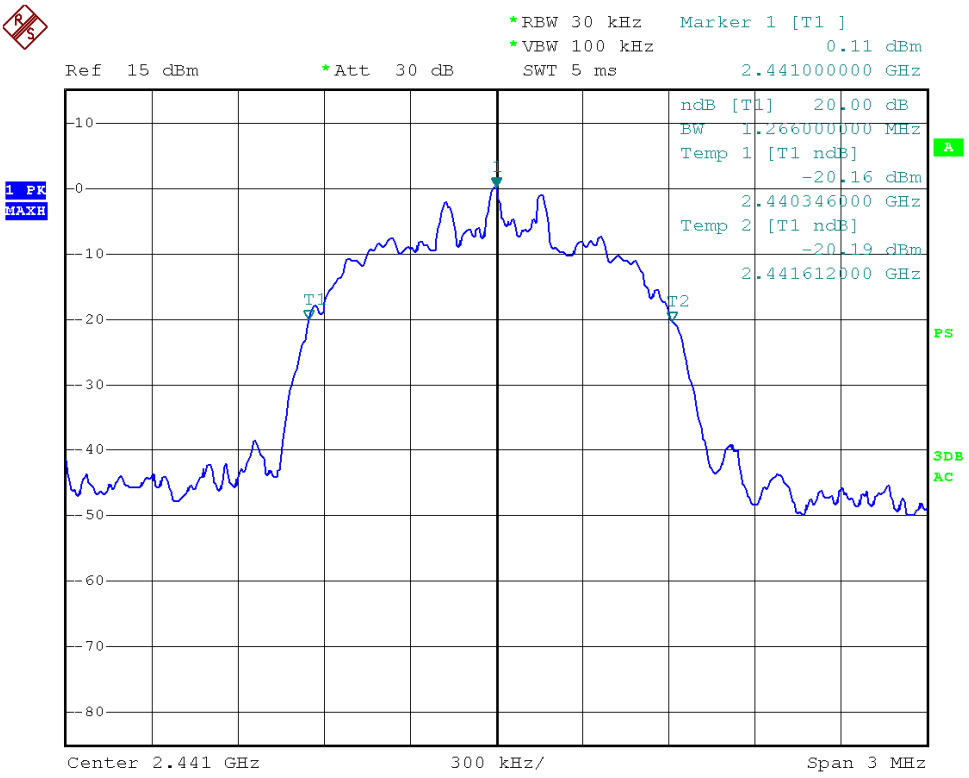


Modulation Mode: π /4DQPSK & 8DPSK

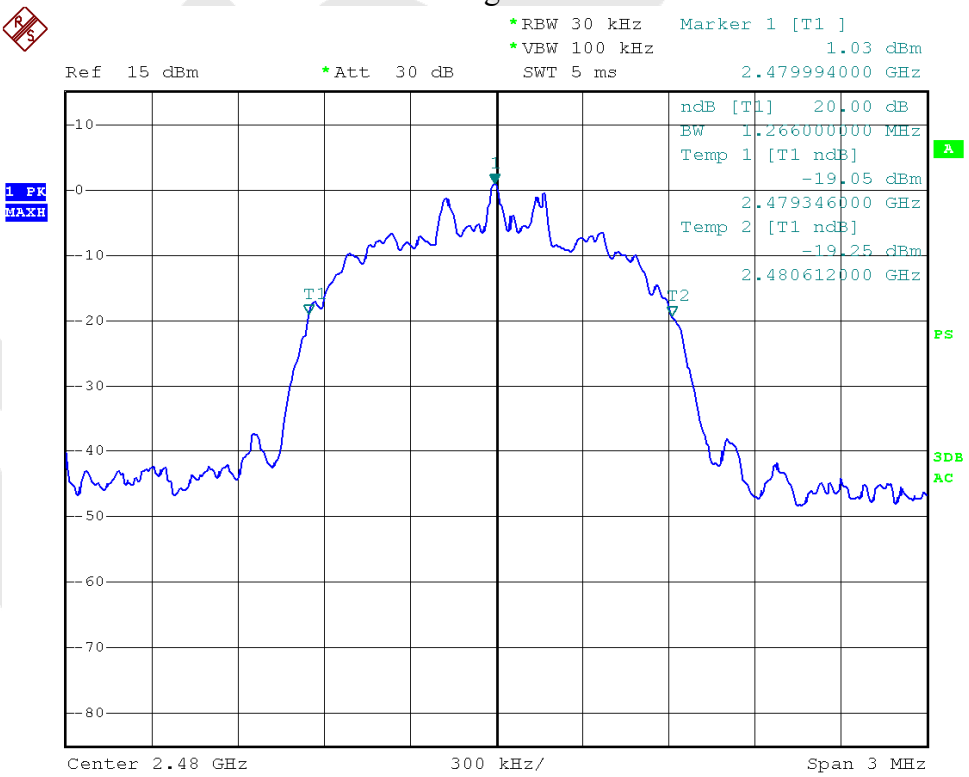
CH Low



CH Middle



CH High



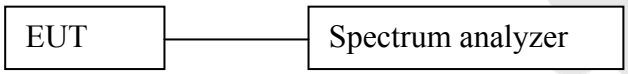
6. QUANTITY OF HOPPING CHANNEL TEST

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



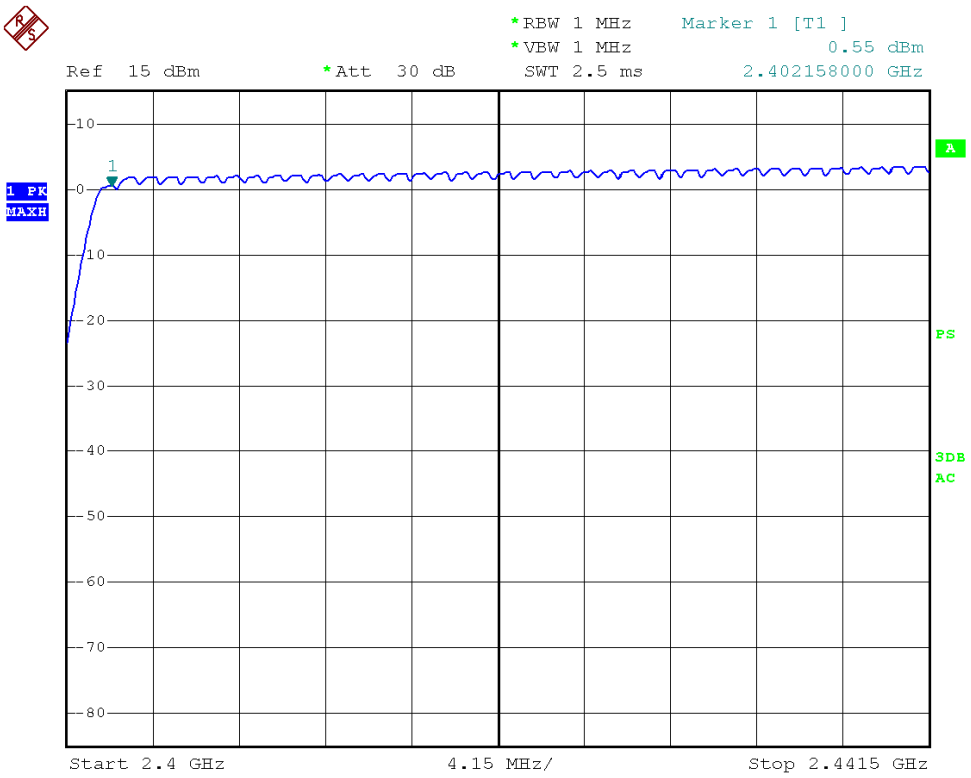
6.3 Test Equipment

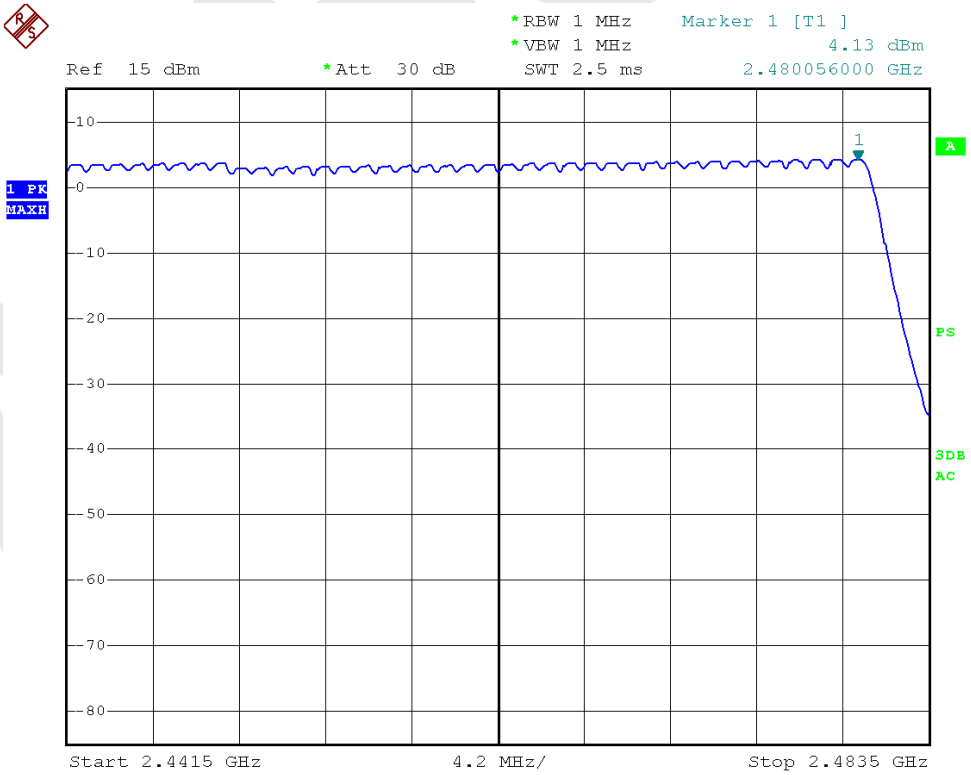
Same as the equipment listed in 4.3.

6.4 Test Results

Test Item	:	Number of Hopping Frequency	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3.7V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

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


*RBW 1 MHz
*VBW 1 MHz
Marker 1 [T1]
0.55 dBm
Ref 15 dBm
*Att 30 dB
SWT 2.5 ms
2.402158000 GHz
1 PK
MAXH
A
PS
3DB
AC
Start 2.4 GHz
4.15 MHz/
Stop 2.4415 GHz


*RBW 1 MHz
*VBW 1 MHz
Marker 1 [T1]
4.13 dBm
Ref 15 dBm
*Att 30 dB
SWT 2.5 ms
2.480056000 GHz
1 PK
MAXH
A
PS
3DB
AC
Start 2.4415 GHz
4.2 MHz/
Stop 2.4835 GHz

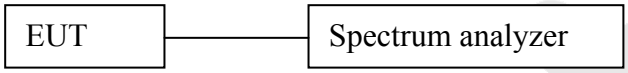
7. DWELL TIME TEST

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

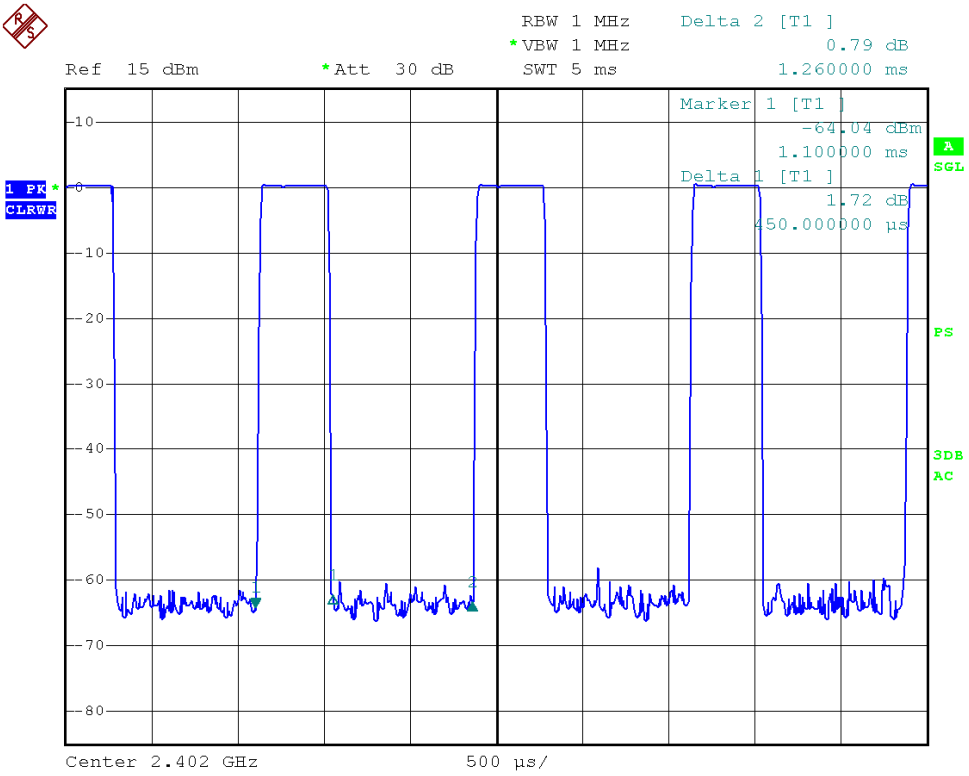
Same as the equipment listed in 4.3.

7.4 Test Results

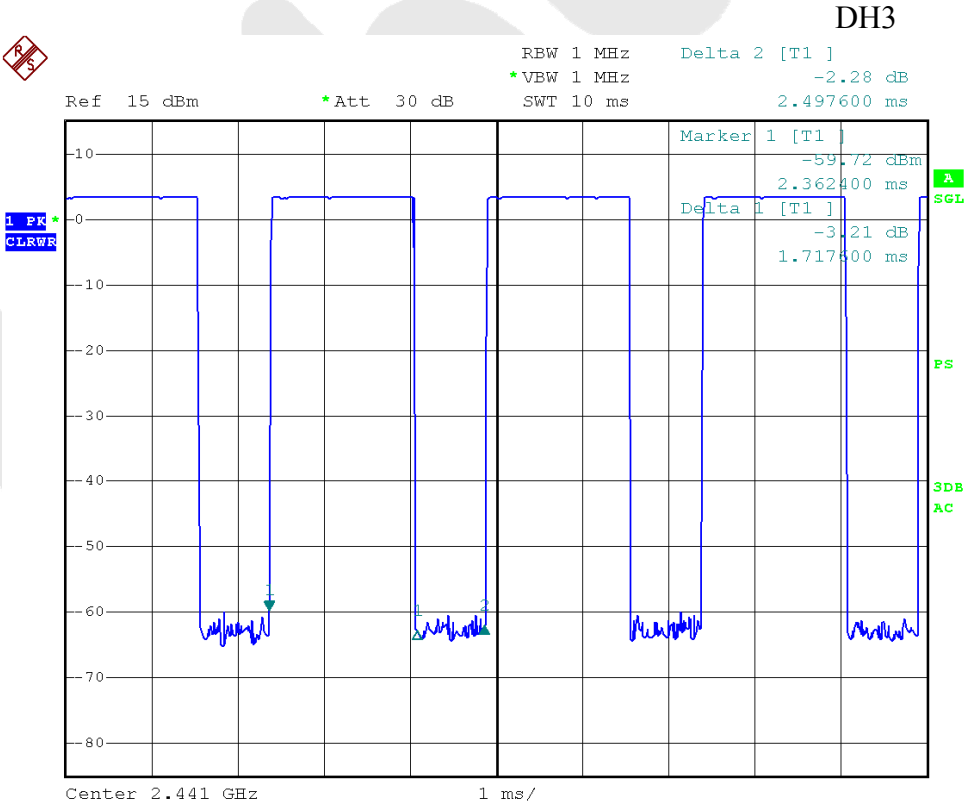
Test Item	:	Time of Occupancy	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3.7V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

Package Type	*Pulse width (ms)*	Time slot length(ms)	Dwell time (ms)	Limit (s)
DH1	0.4500	time slot length *1600/2 /79 * 31.6	144.00	0.4
DH3	1.7176	time slot length *1600/4 /79 * 31.6	274.82	0.4
DH5	2.9776	time slot length *1600/6 /79 * 31.6	317.61	0.4

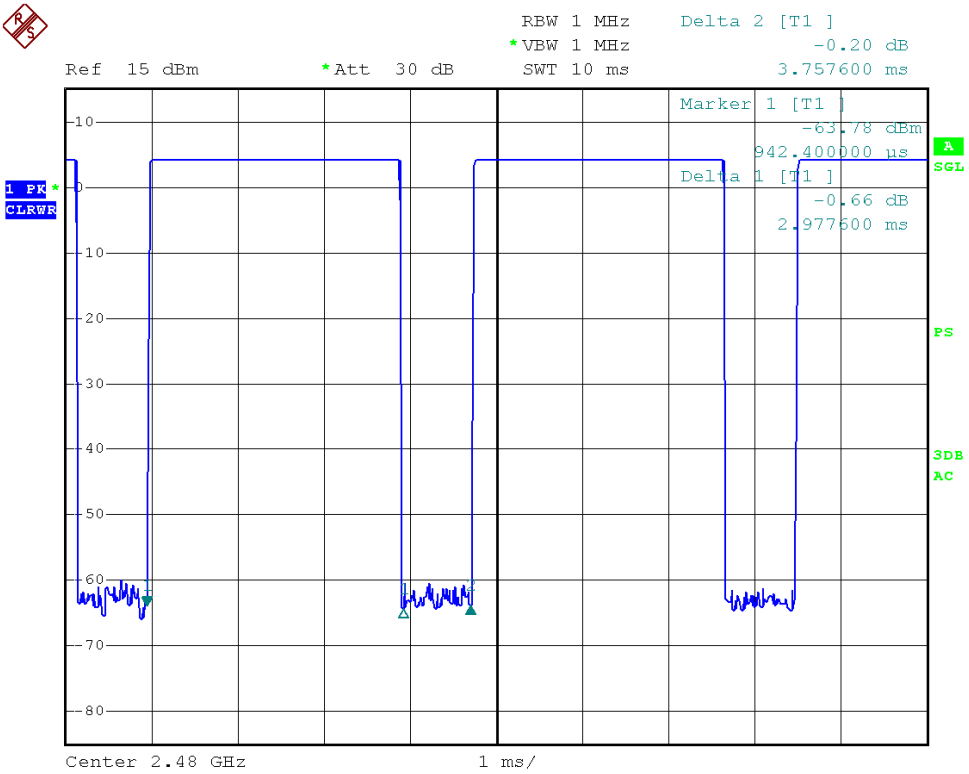
DH1


RBW 1 MHz
*VBW 1 MHz
SWT 5 ms
Delta 2 [T1]
0.79 dB
1.260000 ms
Ref 15 dBm
*Att 30 dB
Marker 1 [T1]
-64.04 dBm
1.100000 ms
Delta 1 [T1]
1.72 dB
450.000000 µs
1 PK
CLRWR
A
SGL
PS
3DB
AC
Center 2.402 GHz
500 µs/

DH3


RBW 1 MHz
*VBW 1 MHz
SWT 10 ms
Delta 2 [T1]
-2.28 dB
2.497600 ms
Ref 15 dBm
*Att 30 dB
Marker 1 [T1]
-59.72 dBm
2.362400 ms
Delta 1 [T1]
-3.21 dB
1.717600 ms
1 PK
CLRWR
A
SGL
PS
3DB
AC
Center 2.441 GHz
1 ms/

DH5


RBW 1 MHz
*VBW 1 MHz
SWT 10 ms
Delta 2 [T1]
-0.20 dB
3.757600 ms
Ref 15 dBm
*Att 30 dB
Marker 1 [T1]
-63.78 dBm
942.400000 µs
Delta 1 [T1]
-0.66 dB
2.977600 ms
1 PK
CLRWR
A
SGL
PS
3DB
AC
Center 2.48 GHz
1 ms/

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

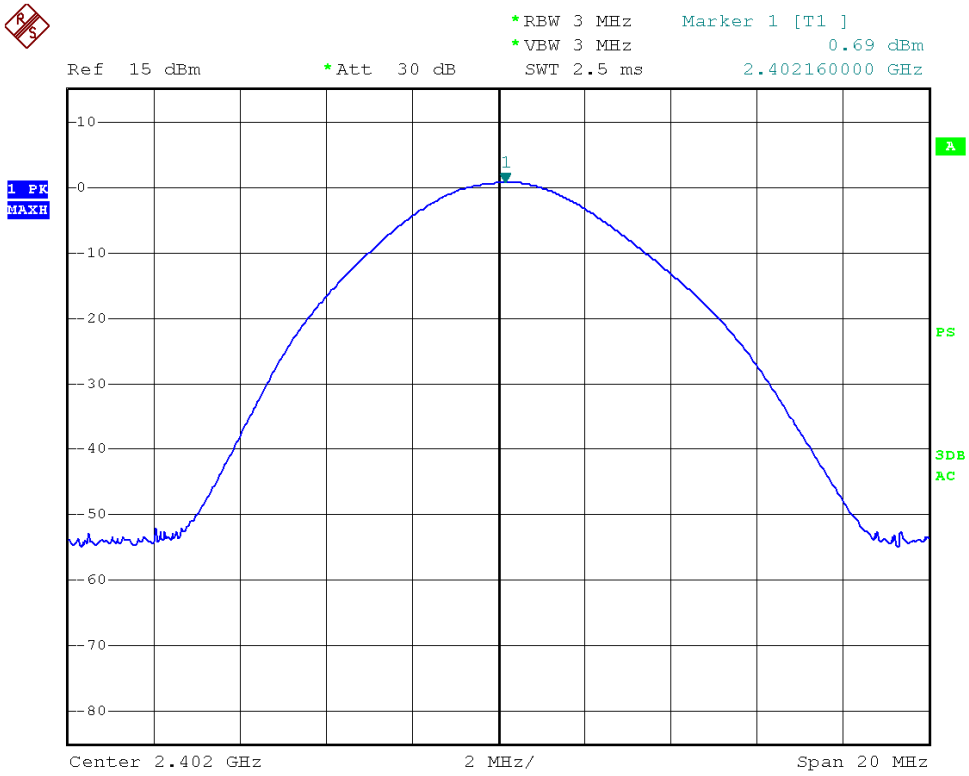
Test Item	:	Max. peak output power	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3.7V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

Channel Frequency (MHz)	Peak Power output(mW)	Peak Power output(dBm)	Peak Power Limit(mW)	Results	Modulation
2402	1.17	0.69	1000	PASS	GFSK
2441	2.30	3.62	1000	PASS	GFSK
2480	**2.77**	**4.42**	1000	PASS	GFSK
2402	0.81	-0.91	125	PASS	π/4DQPSK
2441	1.78	2.51	125	PASS	π/4DQPSK
2480	2.16	3.35	125	PASS	π/4DQPSK
2402	0.81	-0.91	125	PASS	8DPSK
2441	1.78	2.51	125	PASS	8DPSK
2480	2.16	3.35	125	PASS	8DPSK

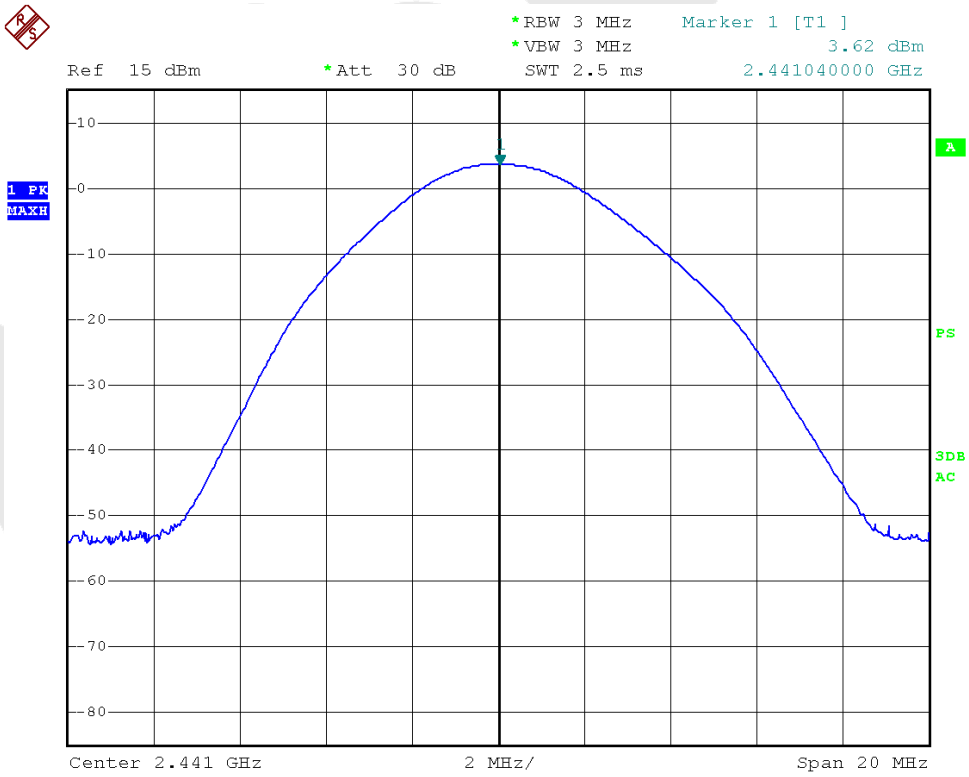
Remark: The results of modulationsπ/4DQPSK and 8DPSK are the same.

Modulation Mode: GFSK

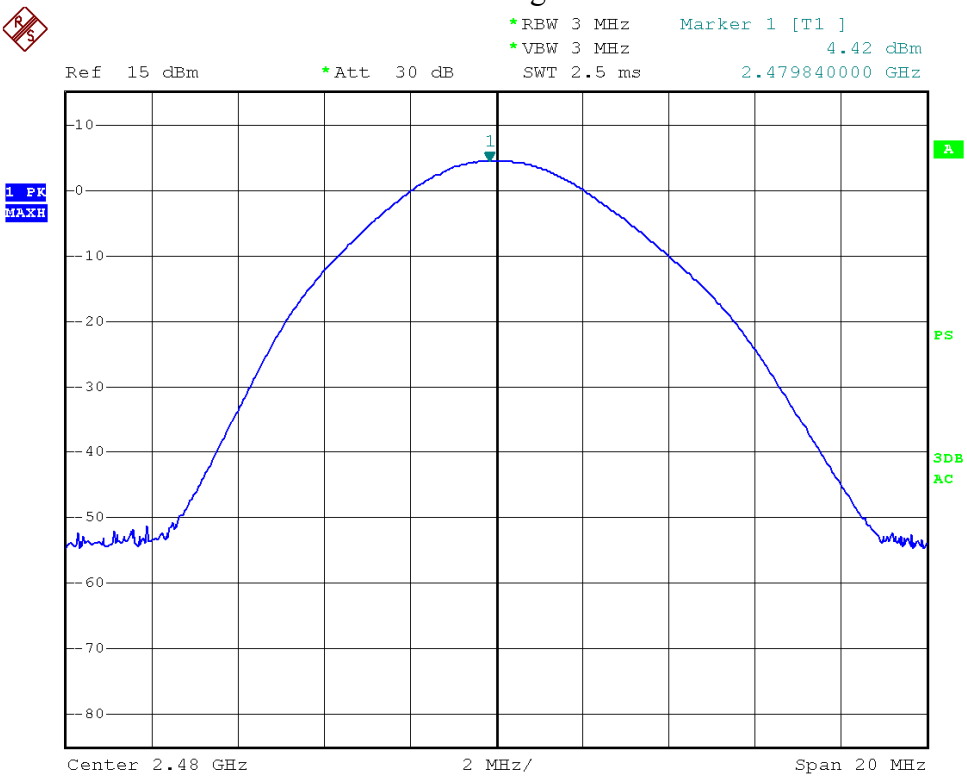
CH Low



CH Mid

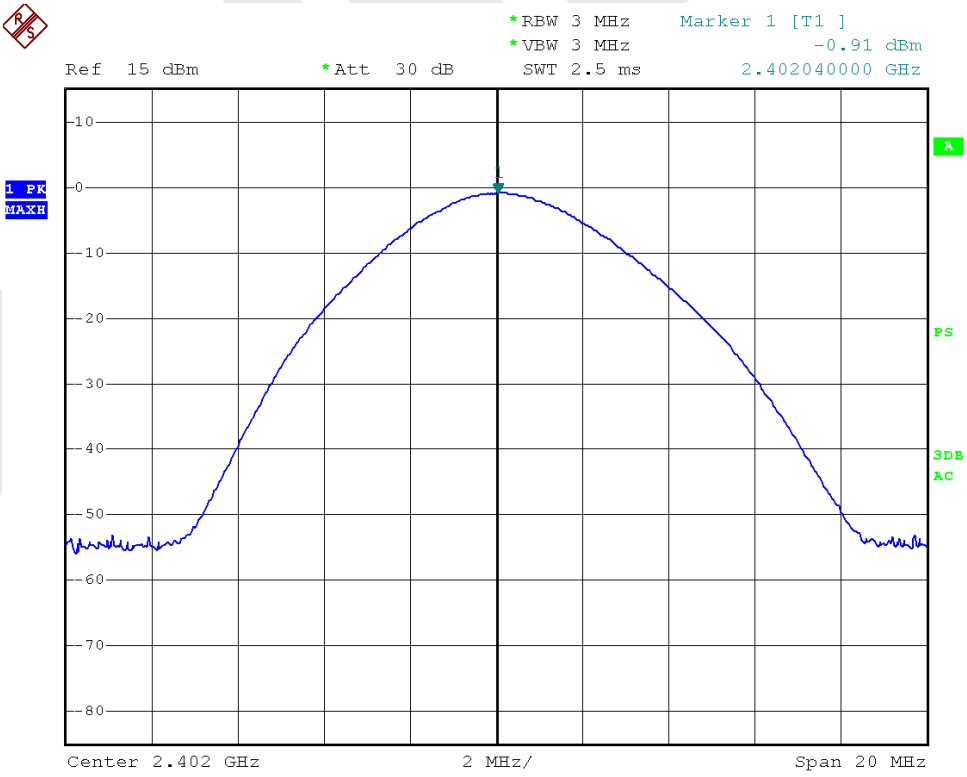


CH High

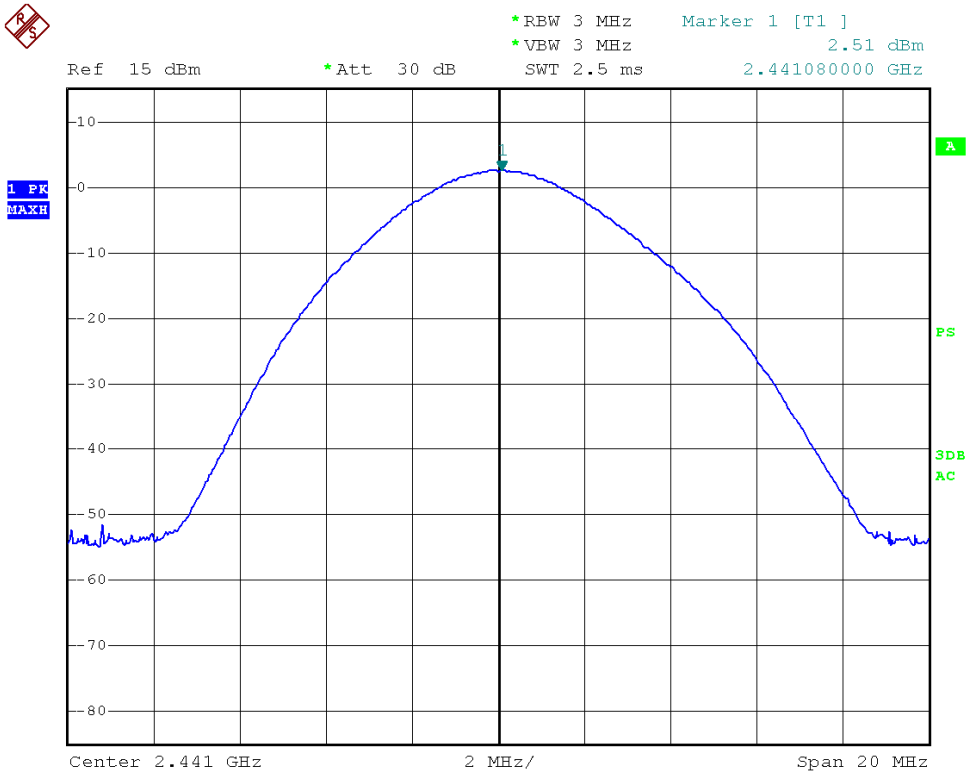


Modulation Mode: π/4DQPSK & 8DPSK

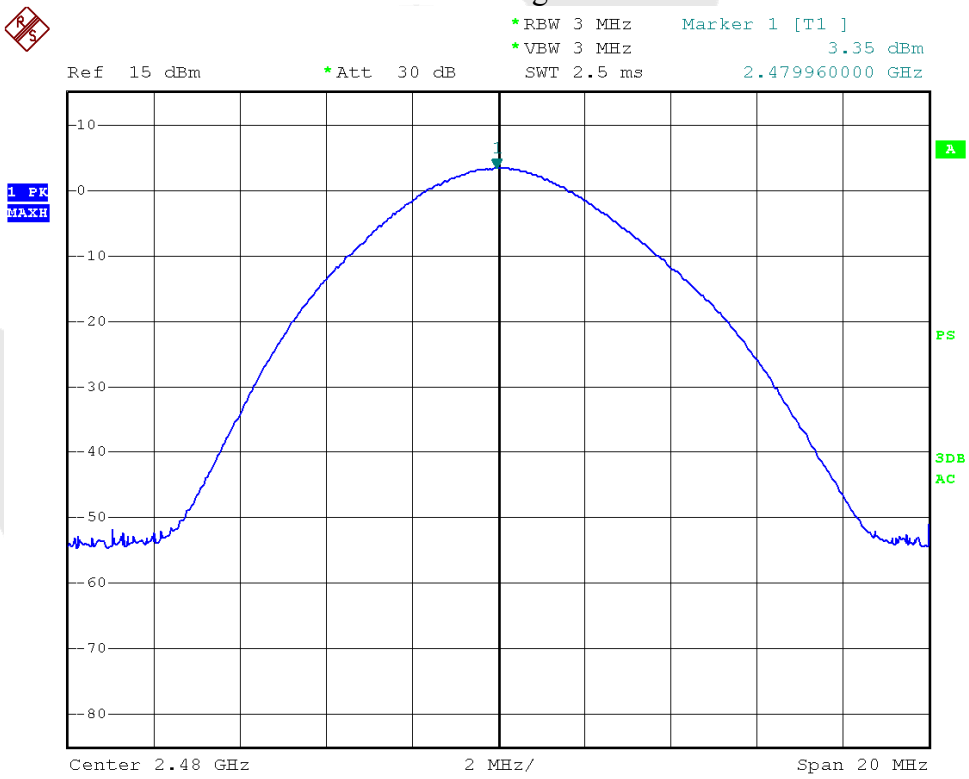
CH Low



CH Mid



CH High



9. BAND EDGE TEST

9.1 Measurement Procedure

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, for Radiated emissions restricted band RBW= 1 MHz, VBW= 3 MHz.
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.

9.2 Test SET-UP

EUT ——— Spectrum analyzer

9.3 Test Equipment

Same as the equipment listed in 4.3.

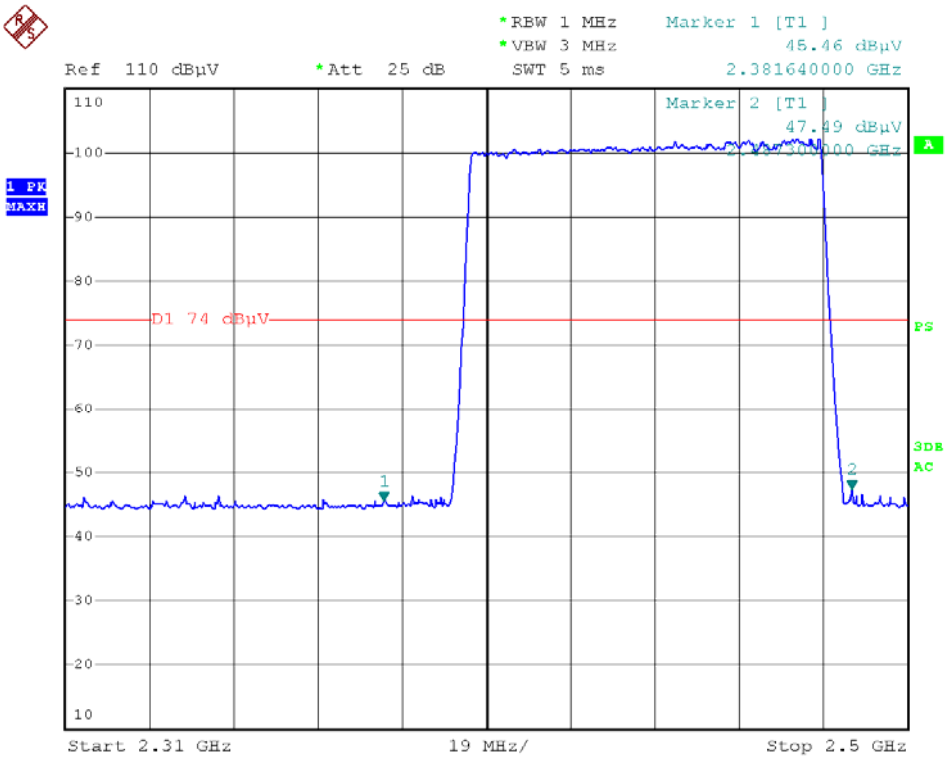
9.4 Test Results

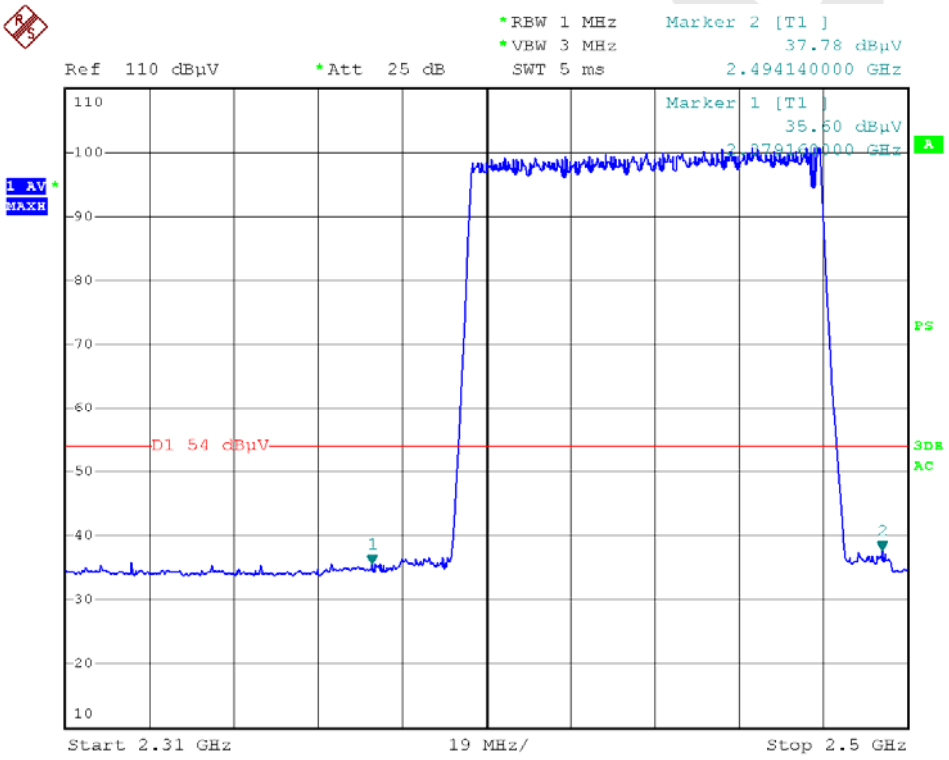
Pass.
Please refer the following data.

Test Item	:	Band eadge	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3.7V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

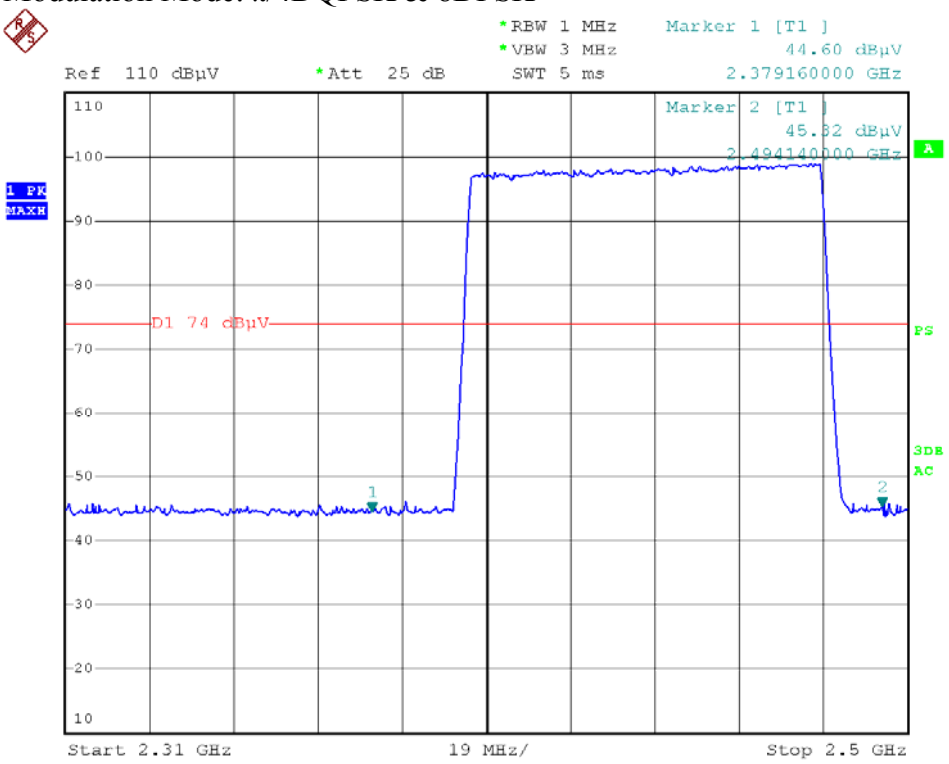
For Hopping Mode:

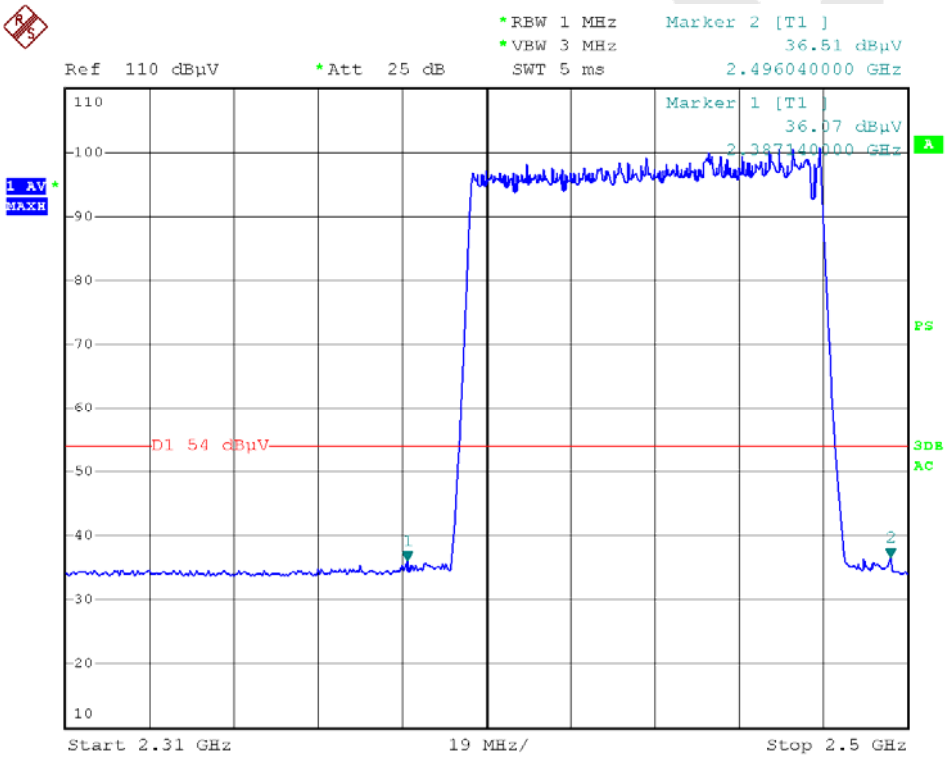
Modulation Mode: GFSK





Modulation Mode: π/4DQPSK & 8DPSK





Test Item	:	Band eadge	Test Mode	:	CH Low ~ CH High
Test Voltage	:	DC 3.7V	Temperature	:	24℃
Test Result	:	PASS	Humidity	:	55%RH

For Non-Hopping Mode:

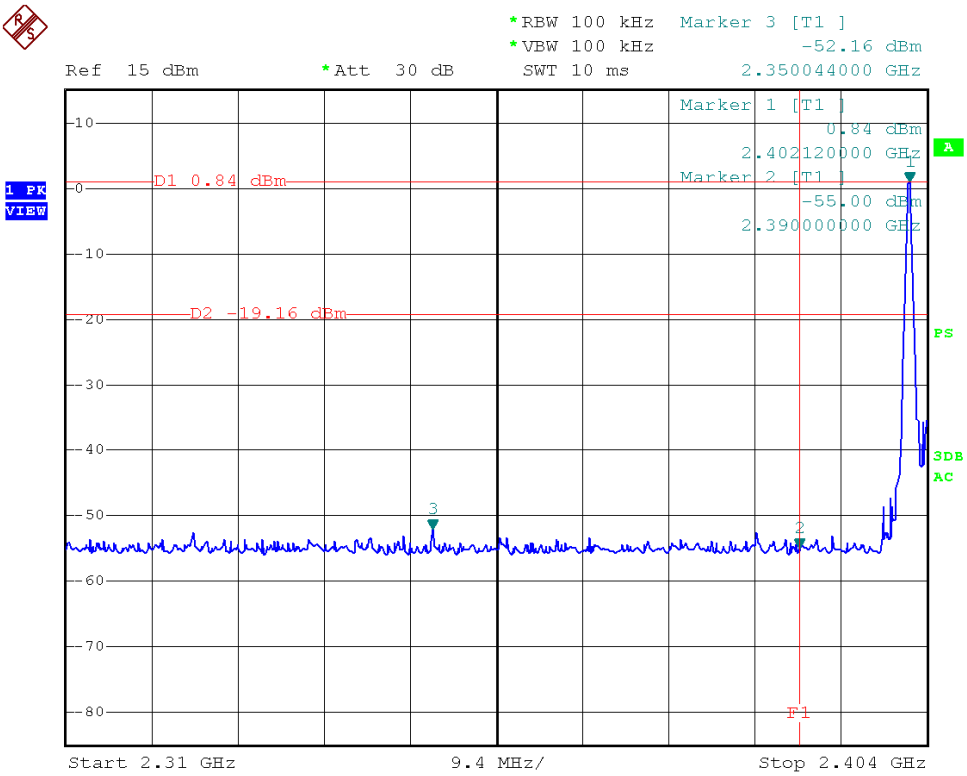
1. Conducted Test

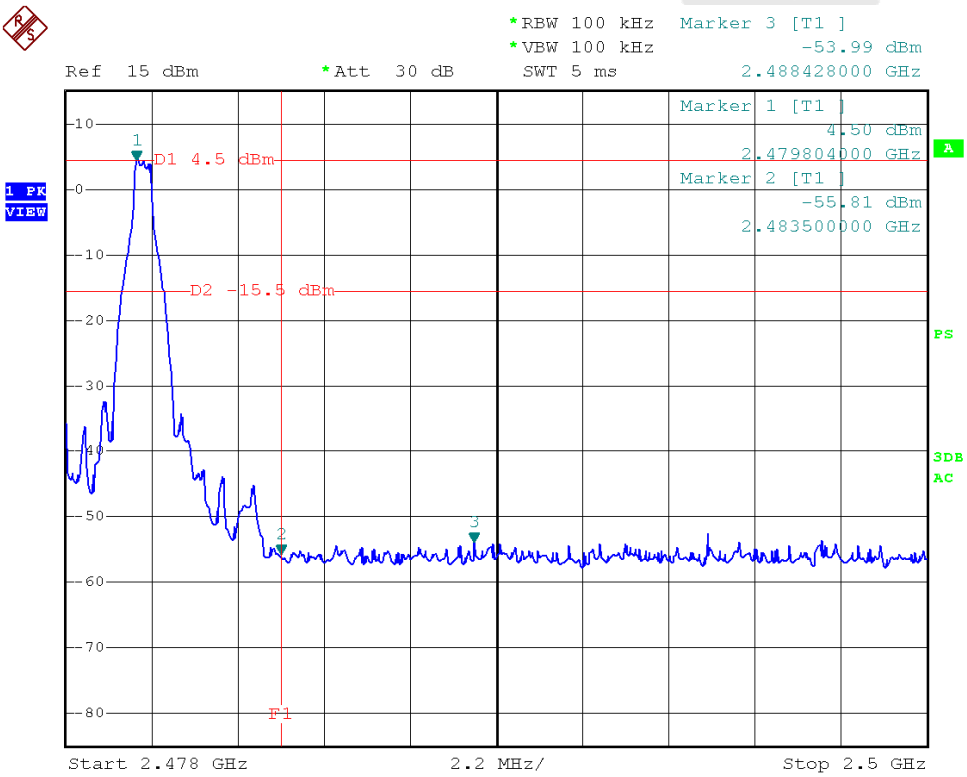
Frequency (MHz)	Peak Power Output(dBm)	Emission read Value(dBm)	Result of Band edge(dBc)	Band edge Limit(dBc)	Modulation
<2400	0.84	-52.16	53.00	>20dBc	GFSK
	-2.82	-53.37	50.55	>20dBc	π/4DQPSK
	-2.82	-53.37	50.55	>20dBc	8DPSK
>2483.5	4.50	-53.99	58.49	>20dBc	GFSK
	1.43	-52.83	54.26	>20dBc	π/4DQPSK
	1.43	-52.83	54.26	>20dBc	8DPSK

2. Radiated emission Test

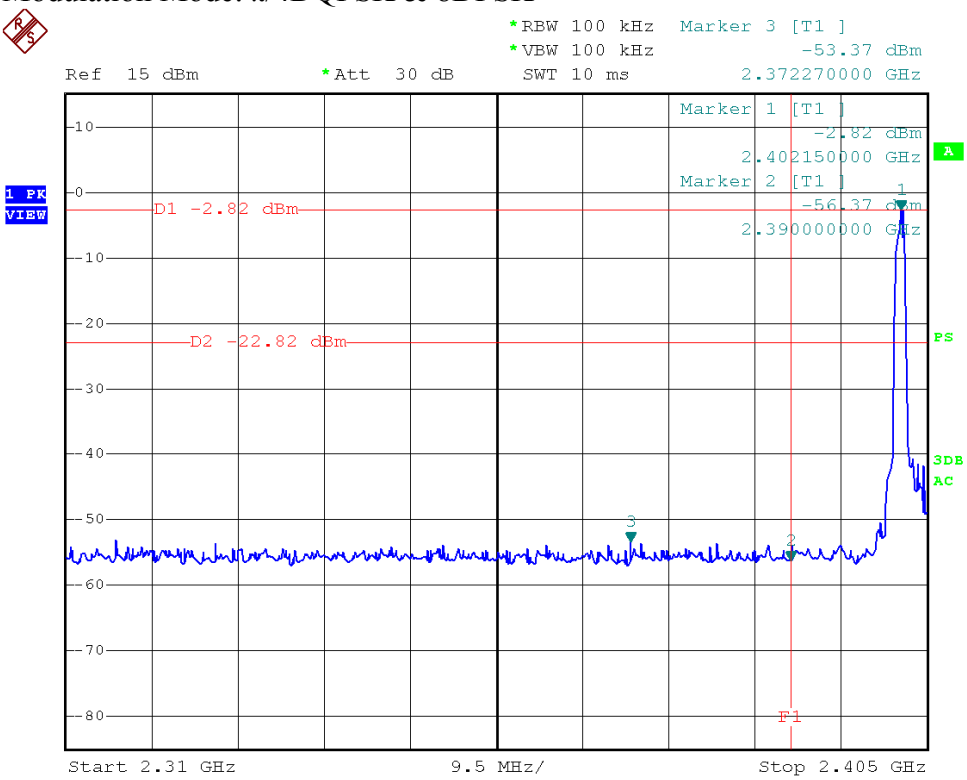
Frequency (MHz)	Antenna polarization (H/V)	Emission (dBuV/m)		Band edge Limit (dBuV/m)		Modulation
		PK	AV	PK	AV	
<2400	V	57.53	37.41	74.00	54.00	GFSK
	V	53.24	38.10	74.00	54.00	π/4DQPSK
	V	52.36	35.89	74.00	54.00	8DPSK
>2483.5	V	51.12	38.15	74.00	54.00	GFSK
	V	53.06	36.67	74.00	54.00	π/4DQPSK
	V	50.85	38.80	74.00	54.00	8DPSK

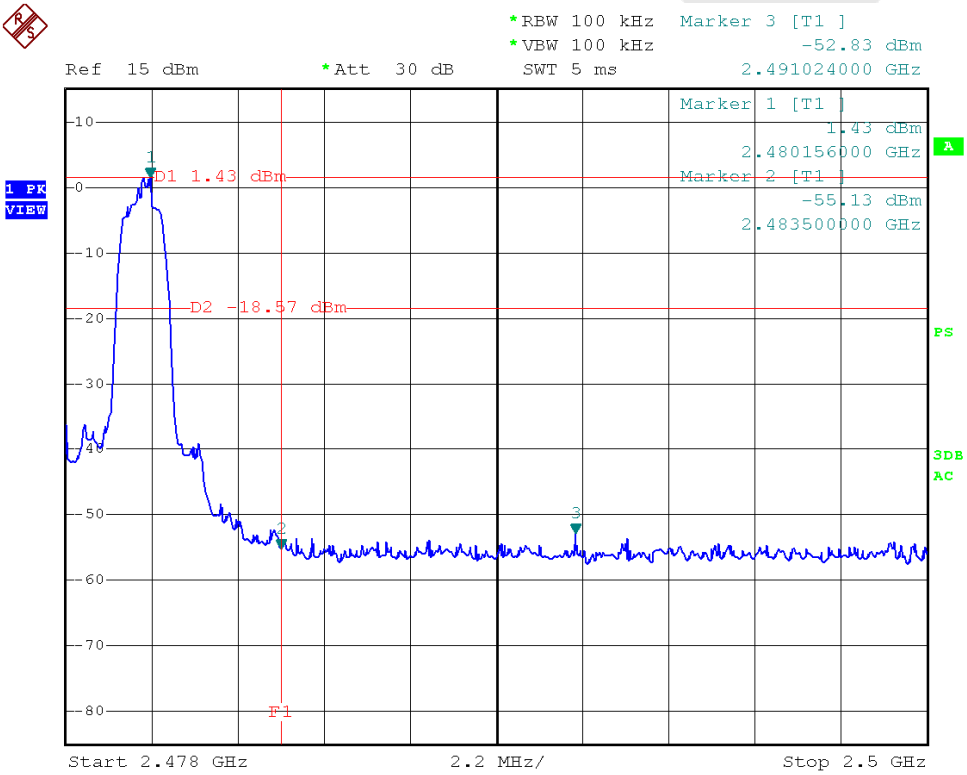
Modulation Mode: GFSK





Modulation Mode: π/4DQPSK & 8DPSK





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.

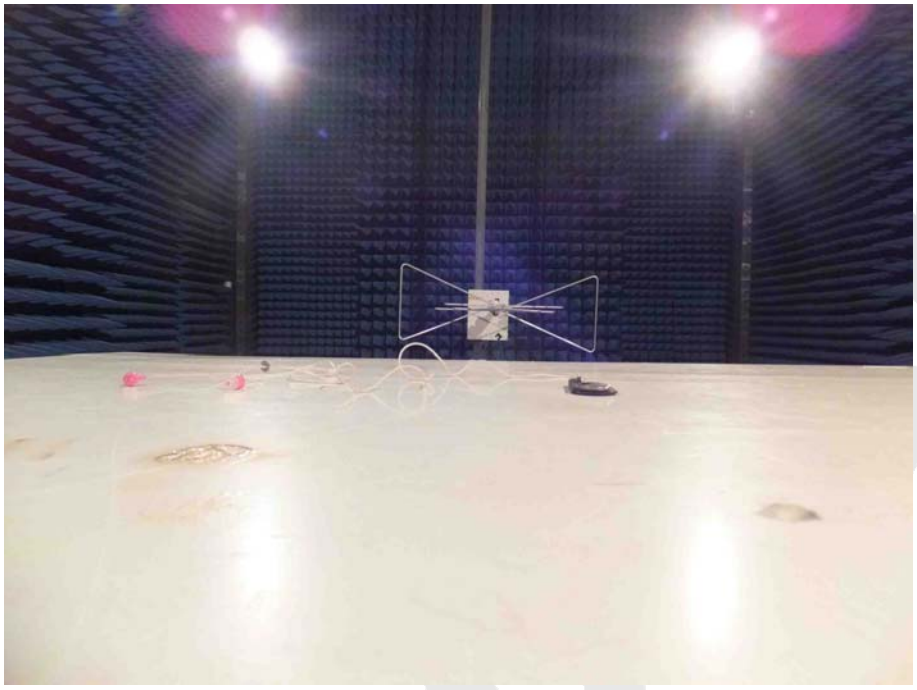
FCC part 15C section 15.247 requirements:
Systems operating in the 2402-2480MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by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

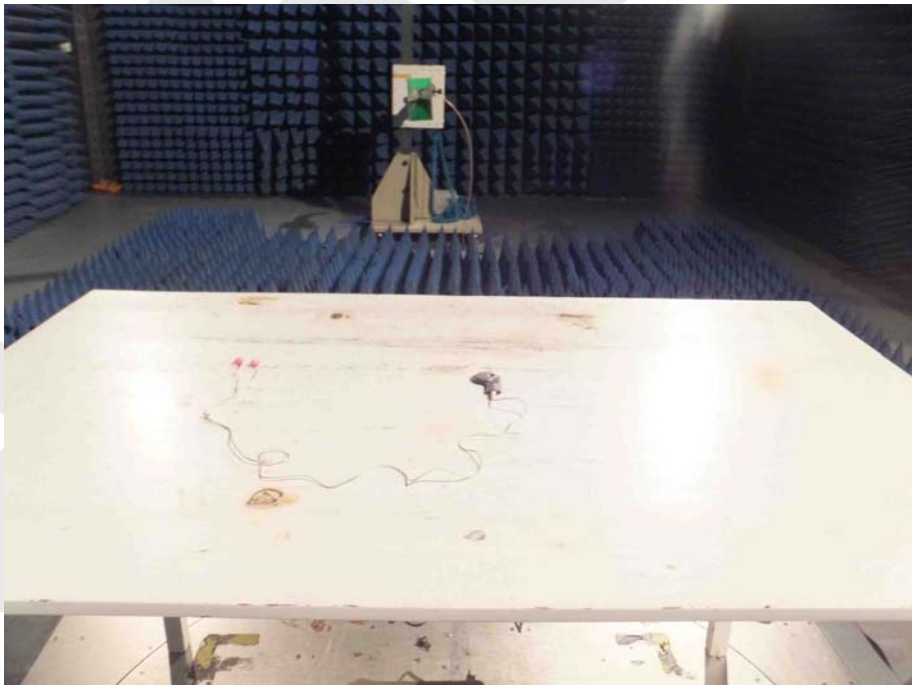
10.2 Result

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

11. PHOTOGRAPH

11.1 Photo of Radiation Emission Test





APPENDIX I (EXTERNAL PHOTOS)

Figure 1
The EUT-Top View

Figure 2
The EUT-Bottom View

Figure 3
The EUT-Front View

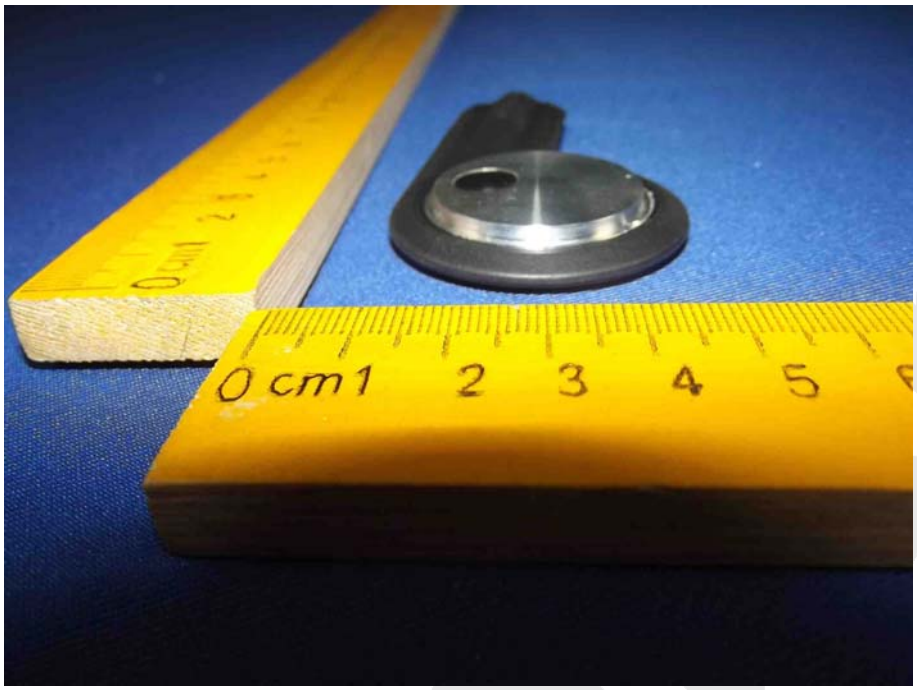


Figure 4
The EUT-Back View

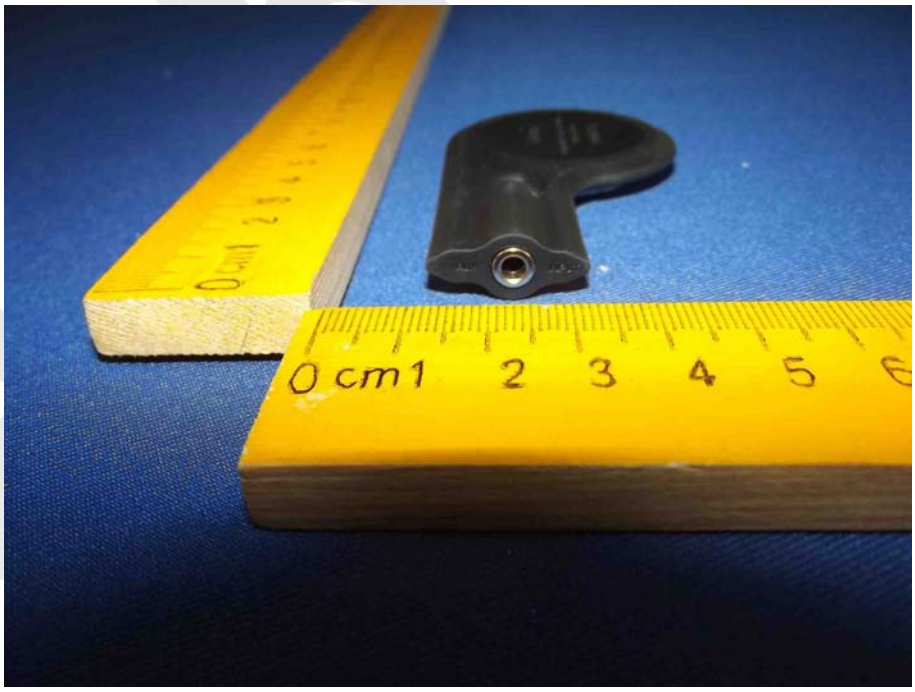


Figure 5
The EUT-Right View

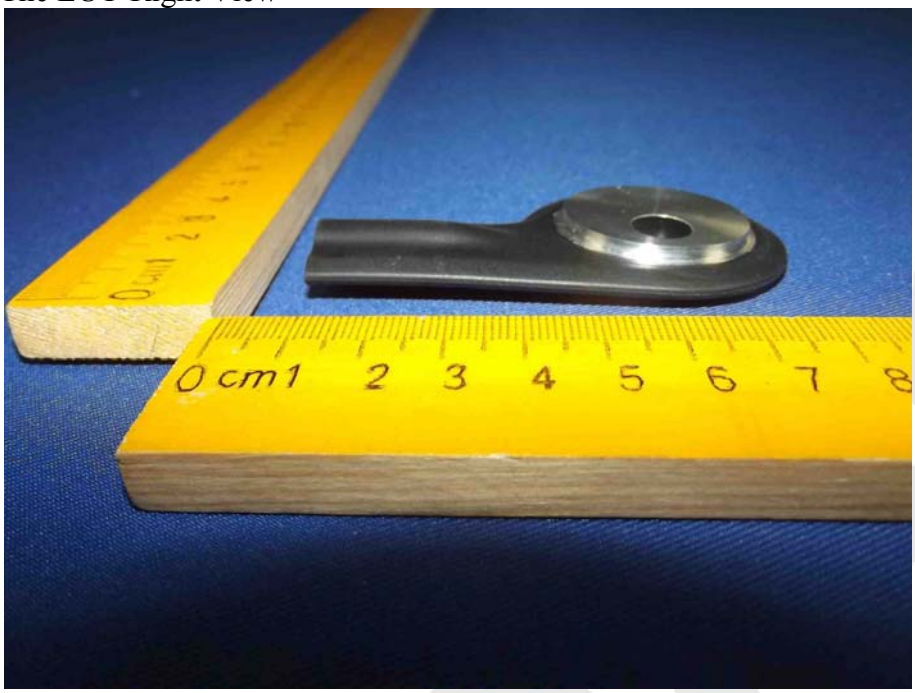
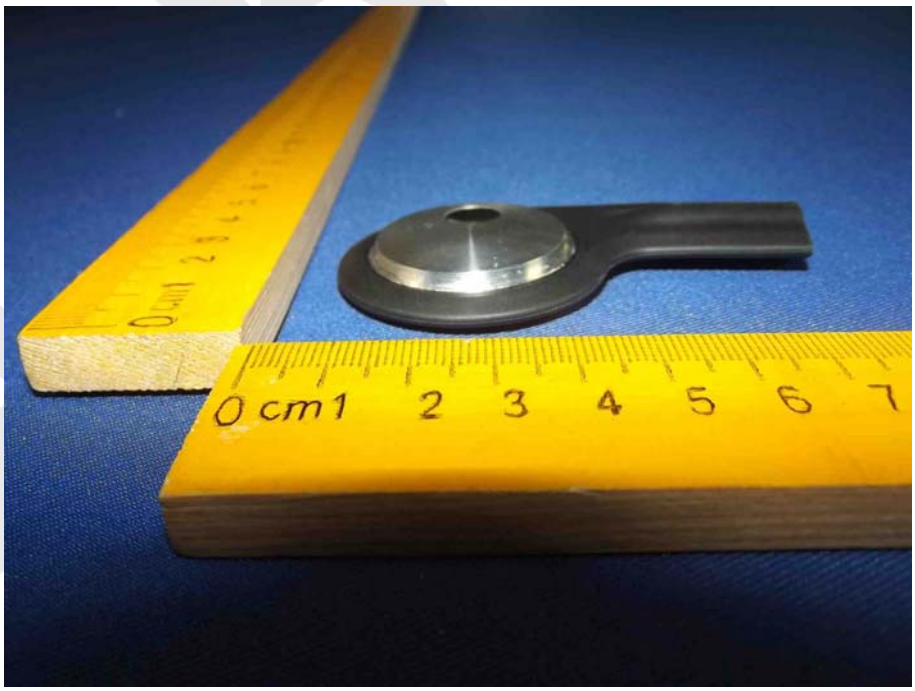


Figure 6
The EUT-Left View



APPENDIX Ⅱ(INTERNAL PHOTOS)

Figure 7
The EUT-Inside View

Figure 8
PCB of the EUT-Front View

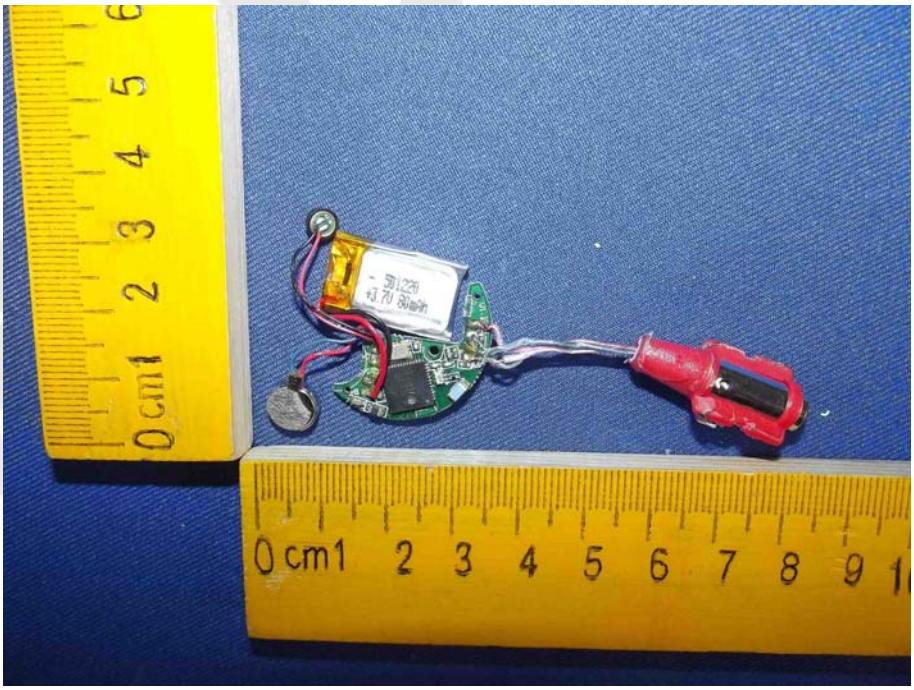


Figure 9
PCB of the EUT-Back View

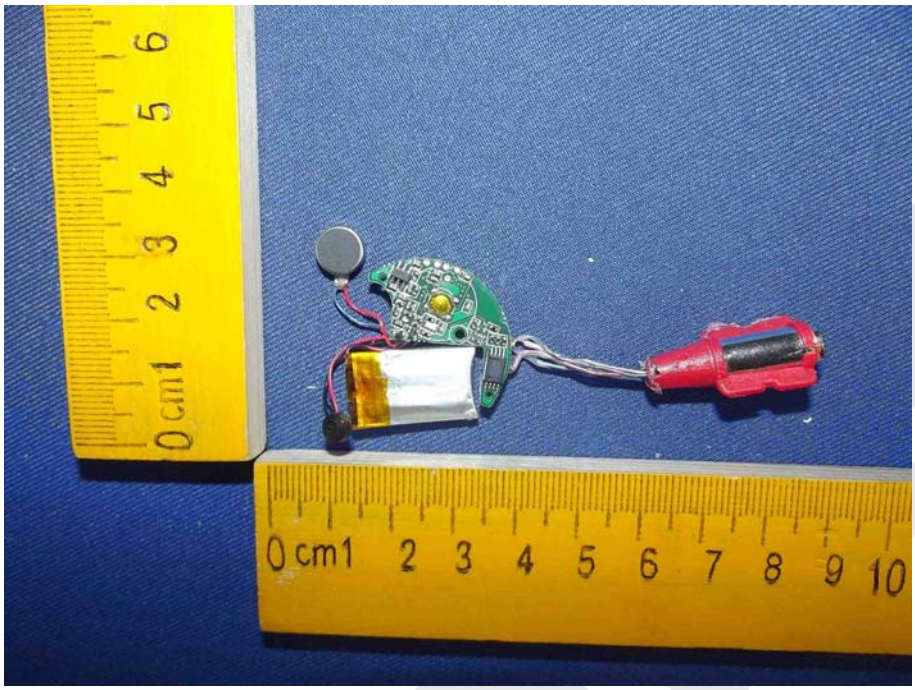


Figure 10
PCB of the EUT-Front View

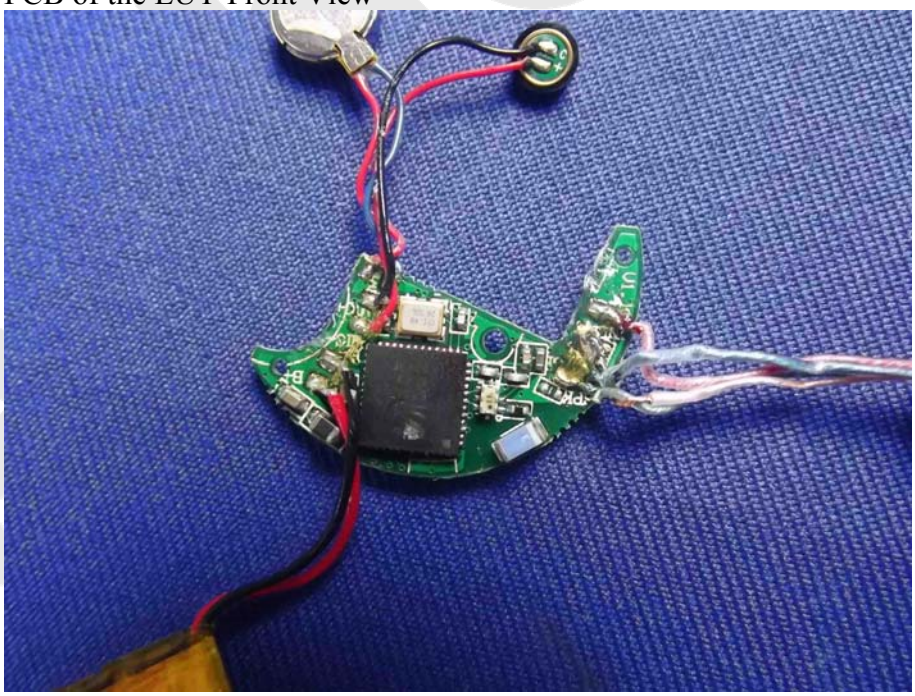
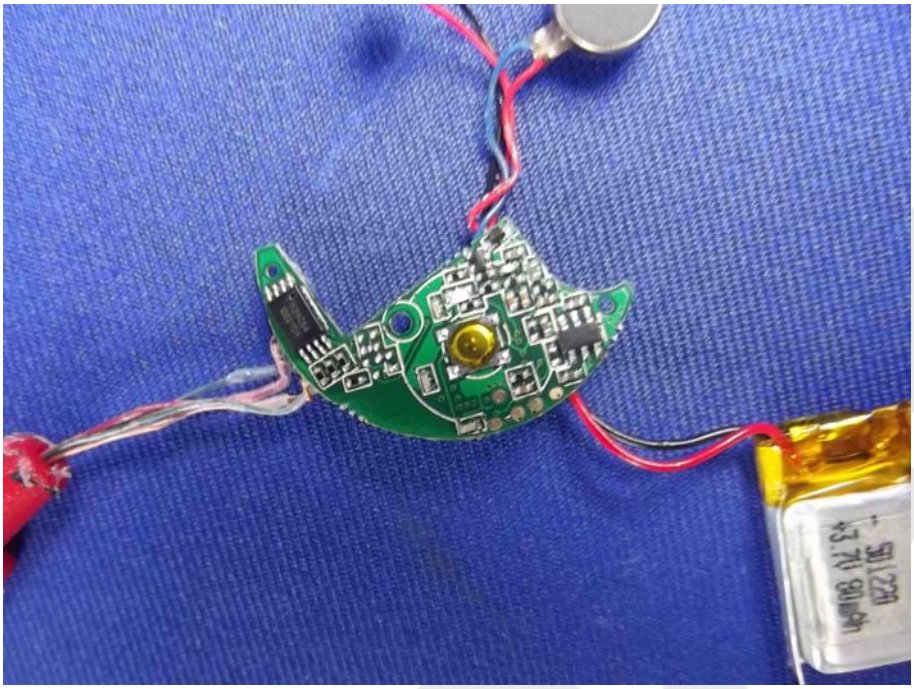



Figure 11
PCB of the EUT-Back View