



World Standardization Certification & Testing CO., LTD  
World Standardization Safety and EMC Testing Centre

## FCC ID TEST REPORT

for

FM Transmitter

MODEL: F11A

FCC ID:W8D-F11A

Test Report Number: WSCT09090370E-2

Issued Date: October 17, 2009

Issued for

Shenzhen Onuoda Electronics Technology Co.LTD  
3F D Building Jingfu Industry Park Airway(west)Gushu Village  
Xixiang town Bao'an district Shenzhen city Guangdong China

Issued By:

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**World Standardization Certification & Testing CO.,LTD**  
**World Standardization Safety and EMC Testing Centre**

**Revision History Of Report**

Rev.	Issue No.	Revisions	Effect Page	Revised By
00	WSCT09090370E-2	Initial Issue	ALL	Kallen Wang



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## 1 TEST CERTIFICATION

<b>Product:</b>	FM Transmitter
<b>Model:</b>	F11A
<b>Applicant:</b>	<b>Shenzhen Onuoda Electronics Technology Co.LTD</b> 3F D Building Jingfu Industry Park Airway(west)Gushu Village Xixiang town Bao'an district Shenzhen city Guangdong China
<b>Factory:</b>	<b>Shenzhen Onuoda Electronics Technology Co.LTD</b> 3F D Building Jingfu Industry Park Airway(west)Gushu Village Xixiang town Bao'an district Shenzhen city Guangdong China
<b>Trade Mark:</b>	N/A
<b>Tested:</b>	September 10~ October 17, 2009
<b>Test Voltage:</b>	DC 12V
<b>Applicable Standards:</b>	FCC Part 15 Subpart C: 2007 ANSI C63.4:2003

### Deviation from Applicable Standard

None

The above equipment has been tested by World Standardization Certification & Testing Co., Ltd., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: Eric Yang  
(Eric Yang)

Date: 2009-10-17

Check By: Kelly Wu  
(Kelly Wu)

Date: 2009-10-17

Approved By: Kallen Wang  
(Kallen Wang)

Date: 2009-10-17



## 2 TEST RESULT SUMMARY

Standard	Item	Result
FCC Part 15 Subpart C: Clause 15.247	Conducted emission	N/A
	Maximum Peak Conducted Output Power	PASS
	20dB Occupied Bandwidth	PASS
	Dwell time	PASS
	Adjacent Channel Separation	PASS
	Channel number	PASS
	Radiation Emission	PASS
	Band Edge	PASS

**Note:** 1. The test result judgment is decided by the limit of test standard  
2. The information of measurement uncertainty is available upon the customer's request.



### 3 EUT DESCRIPTION

<b>Product</b>	FM Transmitter
<b>Brand Name</b>	N/A
<b>Model</b>	F11A
<b>Applicant</b>	Shenzhen Onuoda Electronics Technology Co.LTD
<b>Housing material</b>	Plastic/Metal
<b>EUT Type</b>	<input checked="" type="checkbox"/> Engineering Sample. <input type="checkbox"/> Product Sample, <input type="checkbox"/> Mass Product Sample.
<b>Serial Number</b>	N/A
<b>Antenna Type</b>	Integral Antenna
<b>EUT Power Rating</b>	DC12V-24V
<b>Temperature Range(Operating)</b>	+15 ~+ 35°C
<b>Type of the Equipment</b>	Combined Equipment
<b>Operating Frequency</b>	2402MHz to 2480MHz
<b>Number of Channels</b>	79 Channels
<b>Channel Separation</b>	1MHz
<b>Modulation type</b>	FHSS(Frequency Hopping Spread Spectrum); Adaptive Frequency Hopping(AFH) is used.
<b>Dwell time</b>	Each channel is less than 0.4S.

#### Model Differences

N/A

*Note: N/A stand for no applicable.*



**Bluetooth module channel form:**

Channel No.	Operation Frequency(MHz)	Channel No.	Operation frequency(MHz)
CH1	2402	CH41	2442
CH2	2403	CH42	2443
CH3	2404	CH43	2444
CH4	2405	CH44	2445
CH5	2406	CH45	2446
CH6	2407	CH46	2447
CH7	2408	CH47	2448
CH8	2409	CH48	2449
CH9	2410	CH49	2450
CH10	2411	CH50	2451
CH11	2412	CH51	2452
CH12	2413	CH52	2453
CH13	2414	CH53	2454
CH14	2415	CH54	2455
CH15	2416	CH55	2456
CH16	2417	CH56	2457
CH17	2418	CH57	2458
CH18	2419	CH58	2459
CH19	2420	CH59	2460
CH20	2421	CH60	2461
CH21	2422	CH61	2462
CH22	2423	CH62	2463
CH23	2424	CH63	2464
CH24	2425	CH64	2465
CH25	2426	CH65	2466
CH26	2427	CH66	2467
CH27	2428	CH67	2468
CH28	2429	CH68	2469
CH29	2430	CH69	2470
CH30	2431	CH70	2471
CH31	2432	CH71	2472
CH32	2433	CH72	2473
CH33	2434	CH73	2474
CH34	2435	CH74	2475
CH35	2436	CH75	2476
CH36	2437	CH76	2477
CH37	2438	CH77	2478
CH38	2439	CH78	2479
CH39	2440	CH79	2480
CH40	2441		

## 4 TEST METHODOLOGY

### 4.1. DECISION OF FINAL TEST MODE

The EUT was tested together with the below additional components, and configuration, which produced the worst emission levels, was selected and recorded in this report.

- 1) The measurement was performed at 3 axis for lie orientation, side orientation and stand orientation. The lie orientation is the worst mode, so only the worst mode test data was reported.
- 2) iPod player input EUT an audio signal, and iPod player were turned up the highest volume output.

the following test mode was recorder in this report.

<b>Test item</b>	<b>Test mode</b>
Maximum Peak Conducted Output Power	CH1, CH40, CH79,
20dB Occupied Bandwidth	CH1, CH40, CH79,
Dwell time	CH1, CH40, CH79,
Adjacent Channel Separation	CH1, CH40, CH79,
Channel number	All Tx Channels
Radiation Emission	CH1, CH40, CH79,
Band Edge	CH1, CH79,

### 4.2. EUT SYSTEM OPERATION

1. Set up EUT with the support equipments.
2. Make sure the EUT work normally during the test.

*Note: Test program is self-repeating throughout the test.*

## 5 SETUP OF EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF SUPPORT UNITS

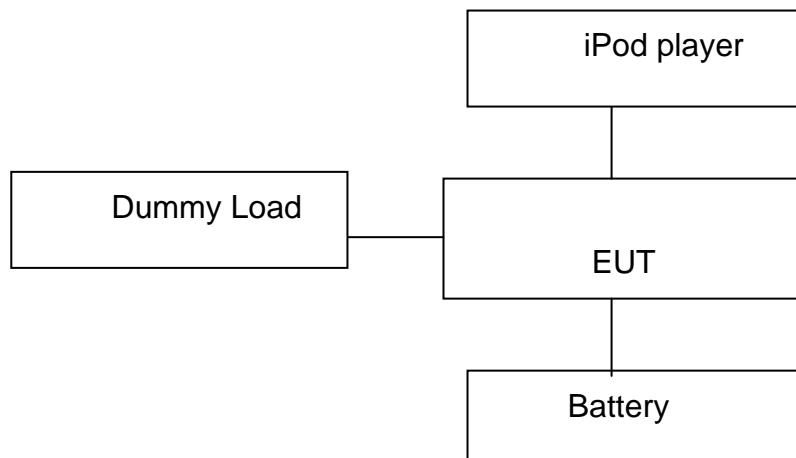
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1.	iPod	4GB	6U749DBEYOP	N/A	iPod	N/A	N/A

**Note:**

- 1) All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2) Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

### 5.2. CONFIGURATION OF SYSTEM UNDER TEST





## **6 FACILITIES AND ACCREDITATIONS**

### **6.1. FACILITIES**

All measurement facilities used to collect the measurement data are located at 1-2/F, DaChong Science&Technology Building, No.28 of Tonggu Road, Nanshan District, ShenZhen.PRC

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### **6.2. ACCREDITATIONS**

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

<b>USA</b>	FCC (certificate registration number is 276008)
	TIMCO (certificate registration number is Q2001)
<b>Japan</b>	VCCI
	(certificate registration number is C-2912, R-2662)
<b>Germany</b>	TUV Rheinland
<b>Canada</b>	INDUSTRY CANADA (certificated registration number is 46405-7700)

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.wsct.org.cn>

### **6.3. MEASUREMENT UNCERTAINTY**

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

<b>Measurement</b>	<b>Frequency</b>		<b>Uncertainty</b>
Conducted emissions	9kHz~30MHz		+/- 3.59dB
Radiated emissions	Horizontal	30MHz ~ 200MHz	+/- 4.77dB
		200MHz ~1000MHz	+/- 4.93dB
	Vertical	30MHz ~ 200MHz	+/- 5.04dB
		200MHz ~1000MHz	+/- 4.93dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



## 7 TEST REQUIREMENTS

### 7.1. CONDUCTED EMISSION MEASUREMENT

#### 7.1.1. LIMITS

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

**NOTE:**

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
- (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 7.1.2. TEST INSTRUMENTS

Conducted Emission Test Site G				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESCI	100005	06/23/2010
LISN	AFJ	LS16	16010222119	04/02/2010
LISN(EUT)	Meestec	AN3016	04/10040	04/02/2010

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).  
2. N.C.R = No Calibration Request.



### **7.1.3. TEST PROCEDURES**

#### **Procedure of Preliminary Test**

The EUT and Support equipment, if needed, was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in Item 3.1 were scanned during the preliminary test.

After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.

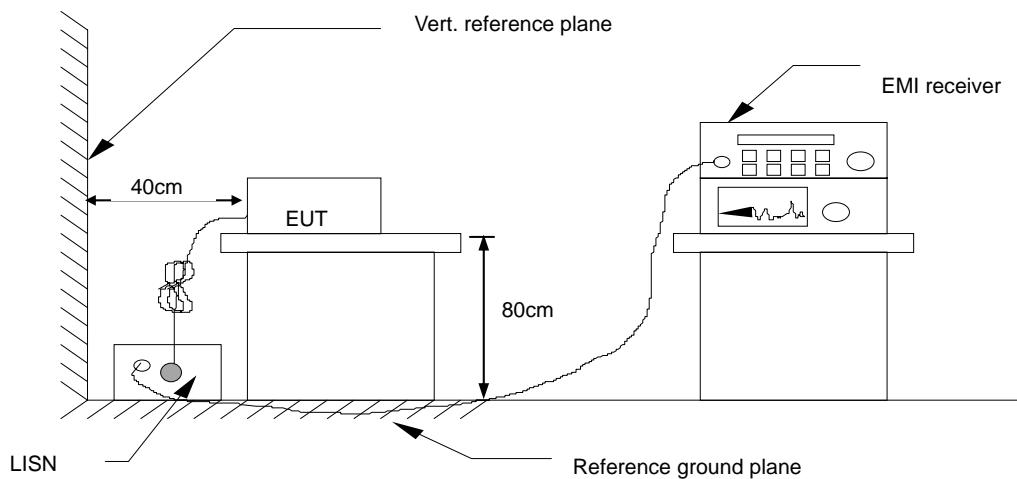
The EUT configuration and cable configuration of the above highest emission levels were recorded for reference of the final test.

#### **Procedure of Final Test**

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

**7.1.4. TEST SETUP**

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

**7.1.5. Test Result**

*Not applicable. Due to the EUT was powered by battery only.*

## 7.2. Maximum Peak Conducted Output Power

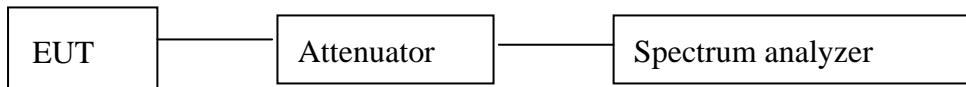
### 7.2.1. Limits

The maximum peak conducted output power shall less than 1W (30dBm).

### 7.2.2. Test procedure

- 1.The EUT was placed on a turntable which is 0.8m above ground plane.
- 2.Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT work on the CH1, CH40,CH79 individually.
4. Set SPA Center Frequency = Operation frequency, RBW=300kHz,VBW=1MHz.
5. Set SPA trace max hold, then view

### 7.2.3 Test setup diagram



### 7.2.4. Test result

Pass.

Test condition: Temp:22°C ; Humi:55% Test voltage: DC 12V

Operation frequency MHz	SA Power dBm	Cable loss dB	Peak Conducted Output Power dBm	Limit dBm
2402	-1.28	2.23	0.95	30
2441	-2.53	2.23	-0.30	
2480	-5.08	2.23	-2.85	
Measurement uncertainty		±6dB		

**Note:** Peak Conducted Output Power =SA+cable loss

### **7.3. 20dB Occupied Bandwidth**

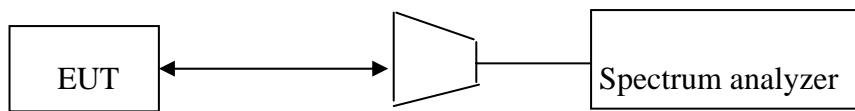
#### **7.3.1. Limits**

not requirement.

#### **7.3.2. Test procedure**

- 1.The EUT was placed on a turntable which is 0.8m above ground plane.
- 2.Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the EUT work on the CH1, CH40,CH79 individually.
4. Set SPA Center Frequency = Operation frequency, RBW=100kHz,VBW=300kHz.
5. Set SPA trace max hold, then view.

#### **7.3.3. Test setup diagram**



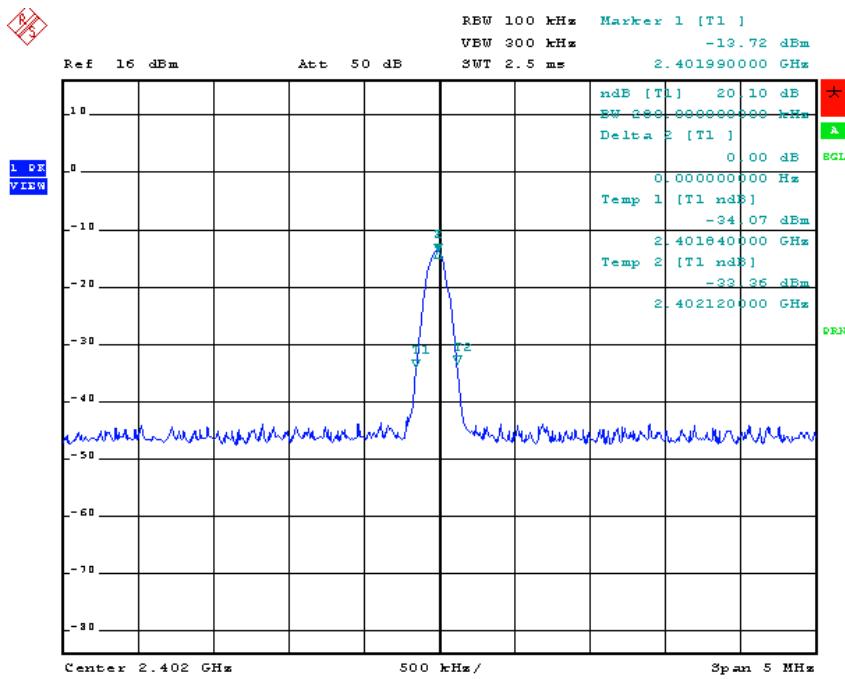
#### **7.3.4. Test result**

Pass

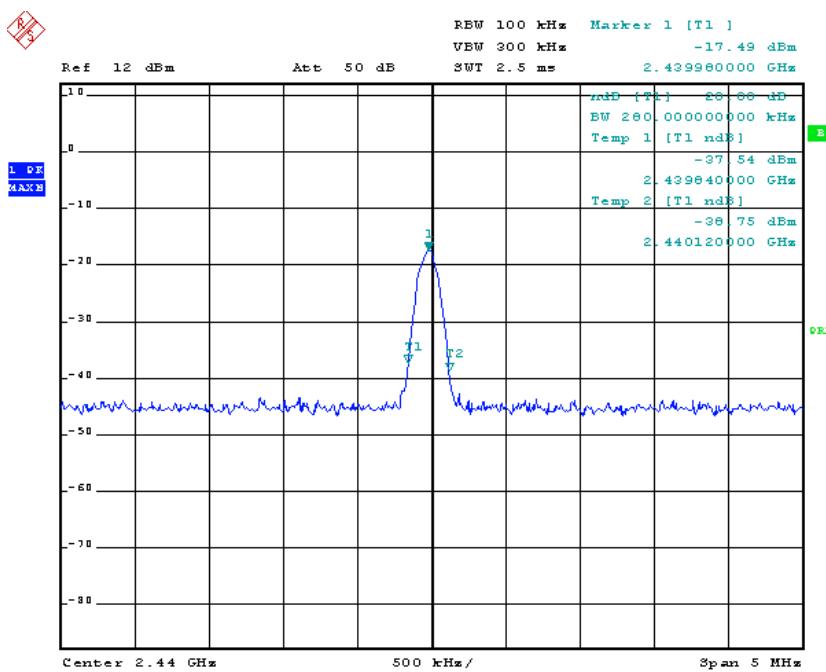
Test Channel	Frequency MHz	20dB Occupied bandwidth KHz
CH1	2402	280
CH40	2441	280
CH79	2480	270

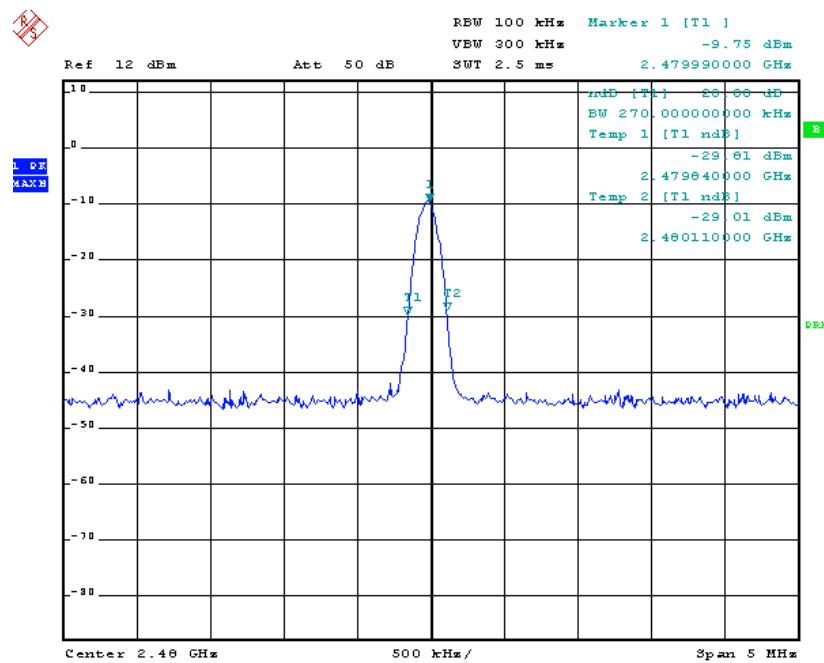
Test plot as following:

CH 1 test plot



CH 40 test plot



**CH79 test plot**

## 7.4. Dwell time

### 7.4.1. Limit

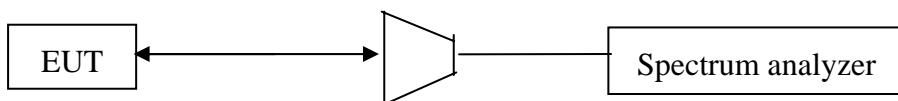
The maximum dwell time shall be 0.4s within a period of 0.4 seconds multiplied by the number of hopping channels employed..

### 7.4.2. Test procedure

Test was performed at normal test condition and test in the lowest frequency and the middle frequency and the high frequency.

RBW:300kHz; VBW:1MHz; Sweep time:2.5ms; SPAN:0Hz

### 7.4.3. Test setup diagram



### 7.4.4. Test result

The test period  $T=0.4s/\text{channel} \times 79 = 31.6s$

the lowest frequency: DH1 dwell time =  $168\mu\text{s} \times (1600/2 \times 79) \times 31.6s = 53.76\text{ms}$

DH3 dwell time =  $160\mu\text{s} \times (1600/4 \times 79) \times 31.6s = 25.60\text{ms}$

DH5 dwell time =  $160\mu\text{s} \times (1600/6 \times 79) \times 31.6s = 17.06\text{ms}$

the middle frequency: DH1 dwell time =  $164\mu\text{s} \times (1600/2 \times 79) \times 31.6s = 52.48\text{ms}$

DH3 dwell time =  $160\mu\text{s} \times (1600/4 \times 79) \times 31.6s = 25.60\text{ms}$

DH5 dwell time =  $164\mu\text{s} \times (1600/6 \times 79) \times 31.6s = 17.49\text{ms}$

the highest frequency: DH1 dwell time =  $160\mu\text{s} \times (1600/2 \times 79) \times 31.6s = 51.20\text{ms}$

DH3 dwell time =  $160\mu\text{s} \times (1600/4 \times 79) \times 31.6s = 25.60\text{ms}$

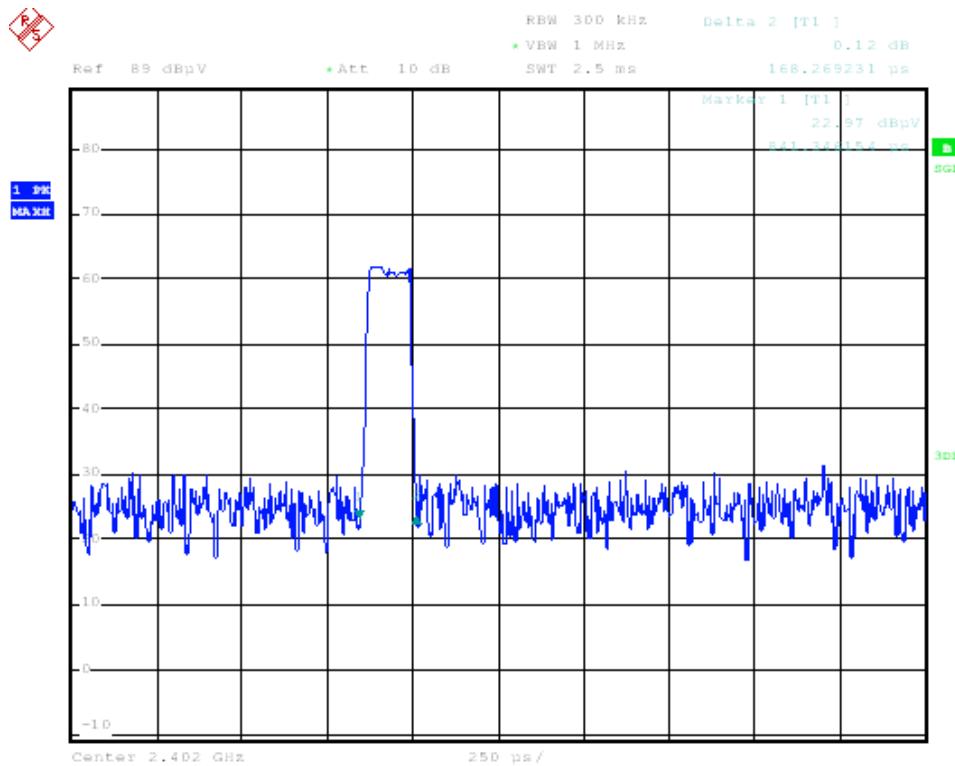
DH5 dwell time =  $156\mu\text{s} \times (1600/6 \times 79) \times 31.6s = 134.399\text{ms}$

the dwell time is lesser than 0.4s within a period of 0.4 seconds multiplied by the number of hopping channels employed.comply with standard requirement.

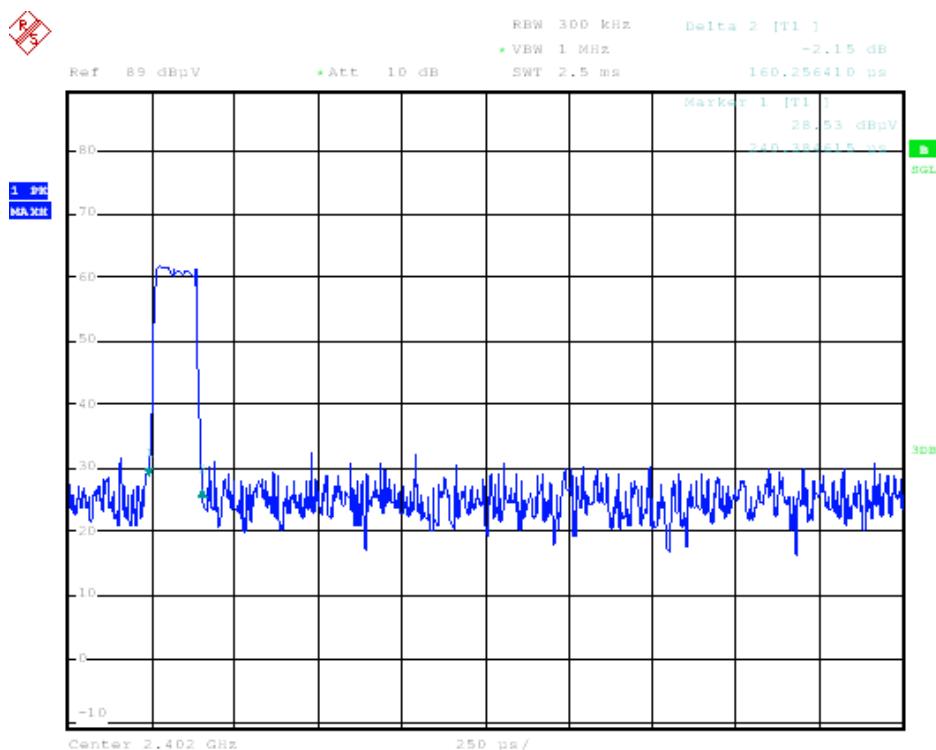
The test plots as following:

CH1 test plot

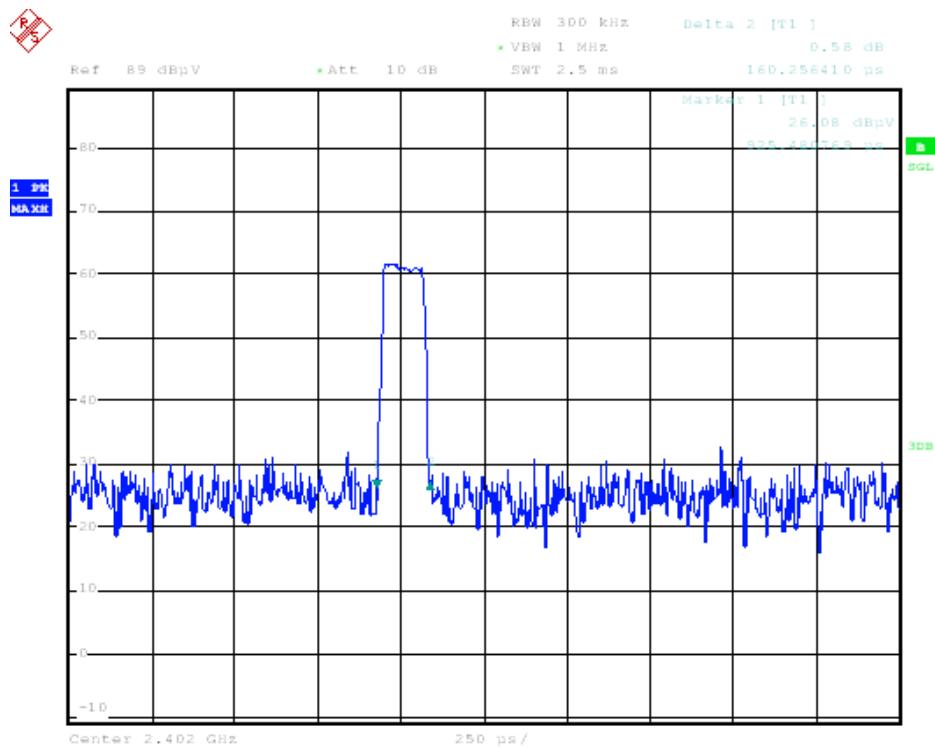
DH1



DH3

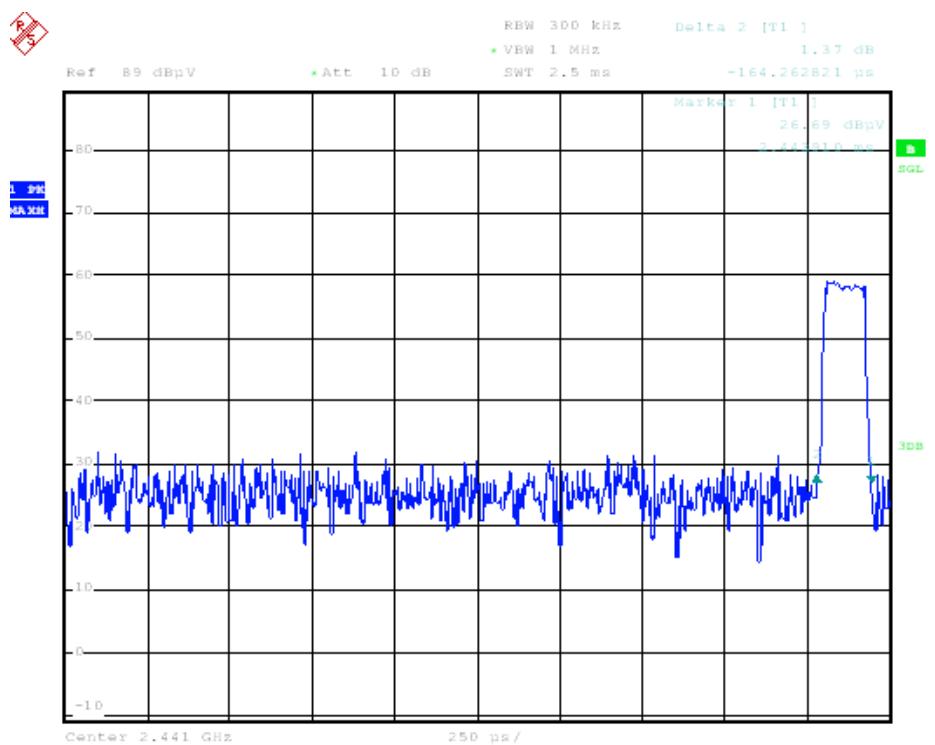


DH5

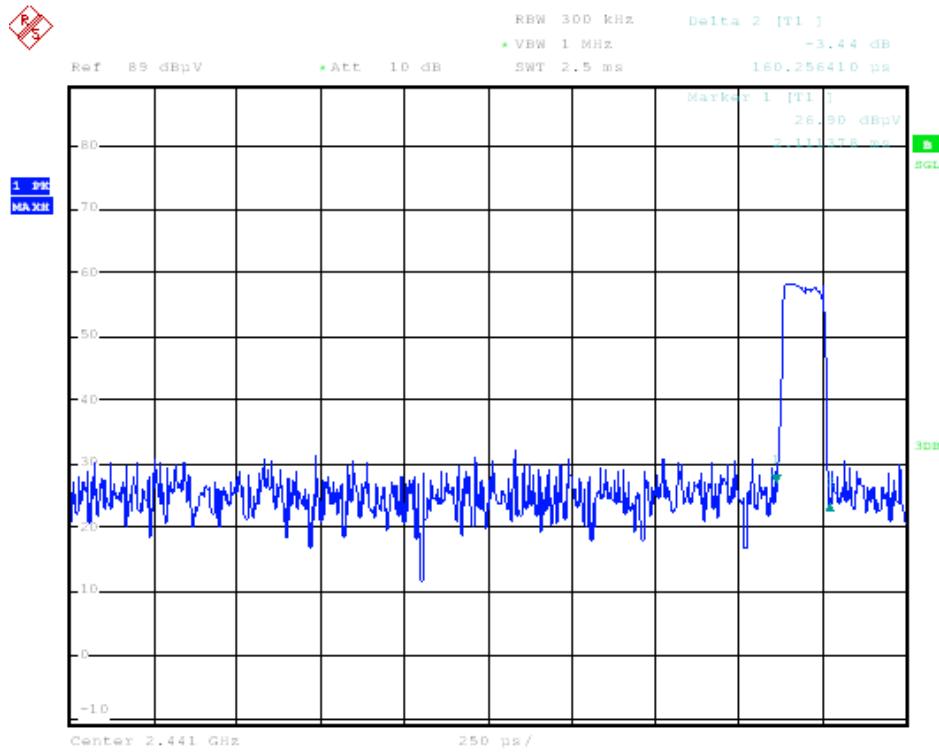


CH40 test plot

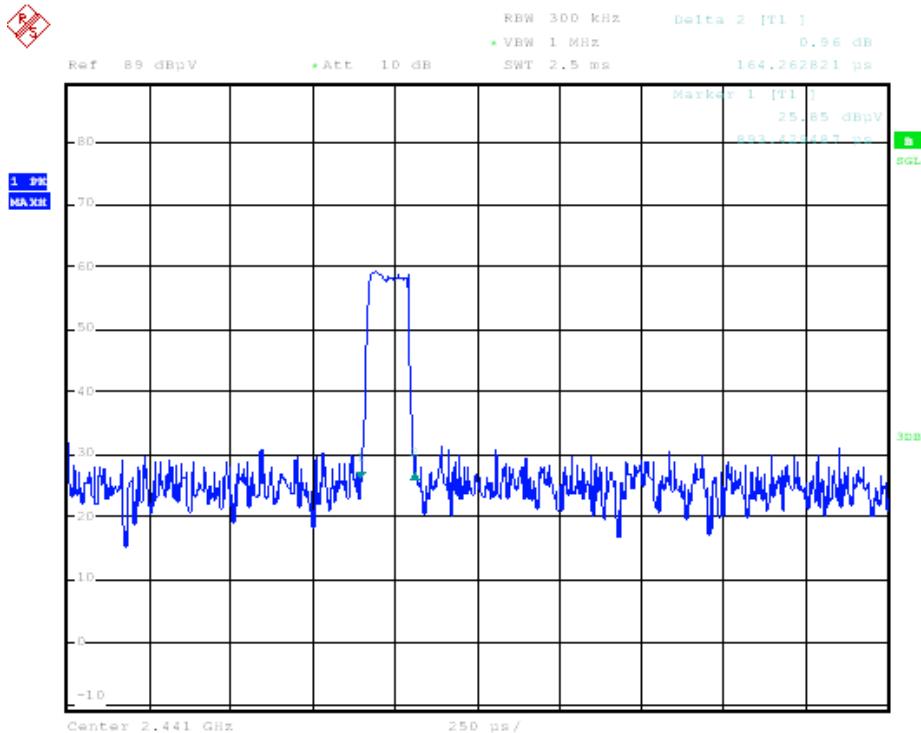
DH1



DH3

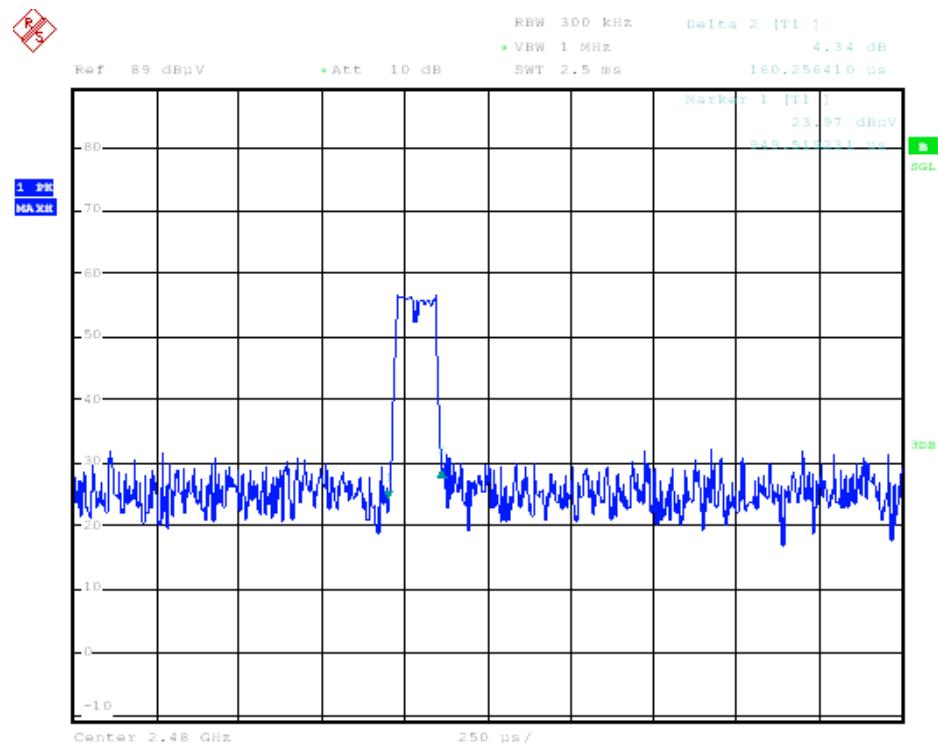


DH5

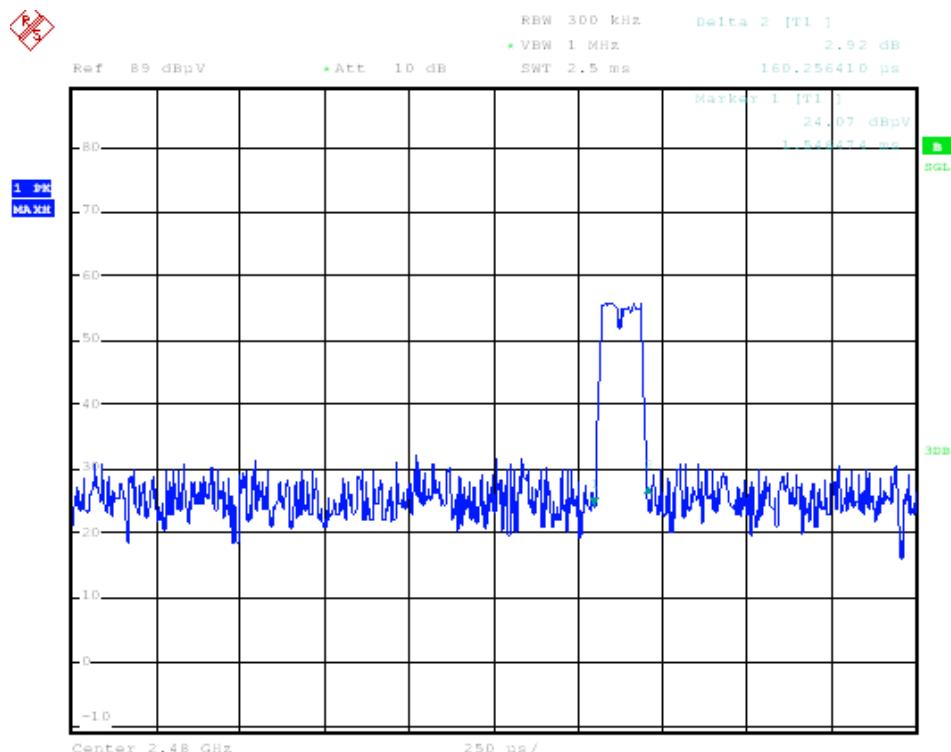


CH79 test plot

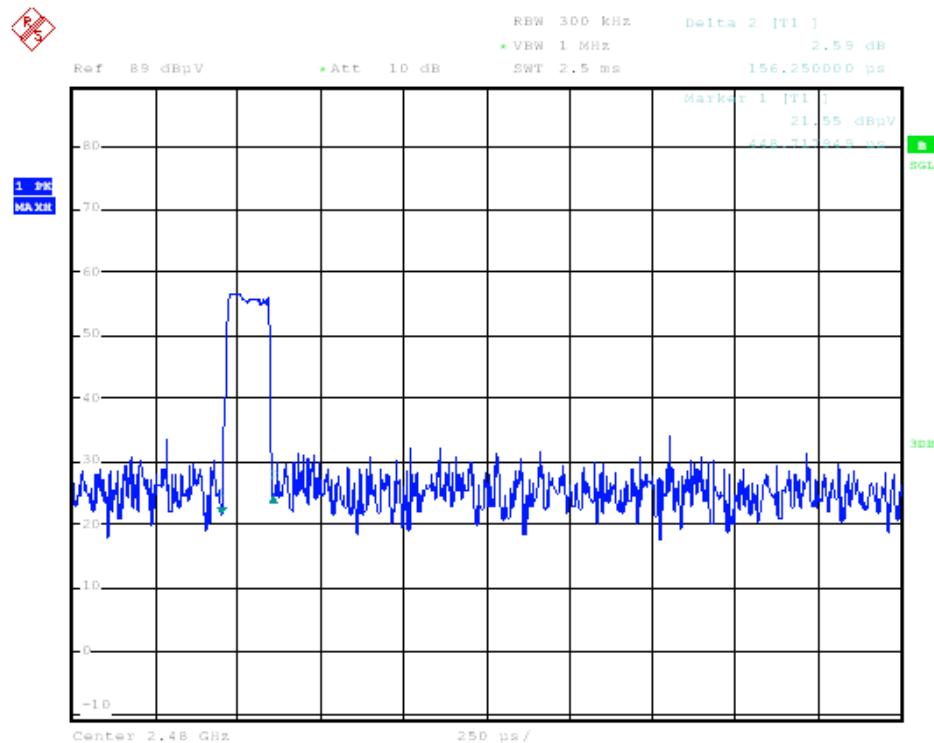
DH1



DH3



DH5



## 7.5. Adjacent channel separation

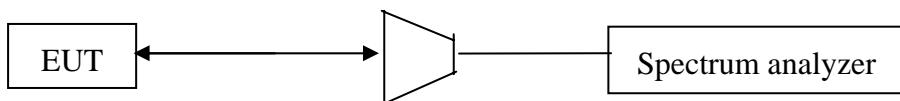
### 7.5.1. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hoping channel. whichever is greater.

### 7.5.2. Test procedure

Test was performed at normal test condition and test in the lowest frequency and the middle frequency and the highest frequency. RBW:300kHz; VBW:1MHz; Sweep time: 2.5ms;

### 7.5.3. Test setup diagram



### 7.5.4. Test result

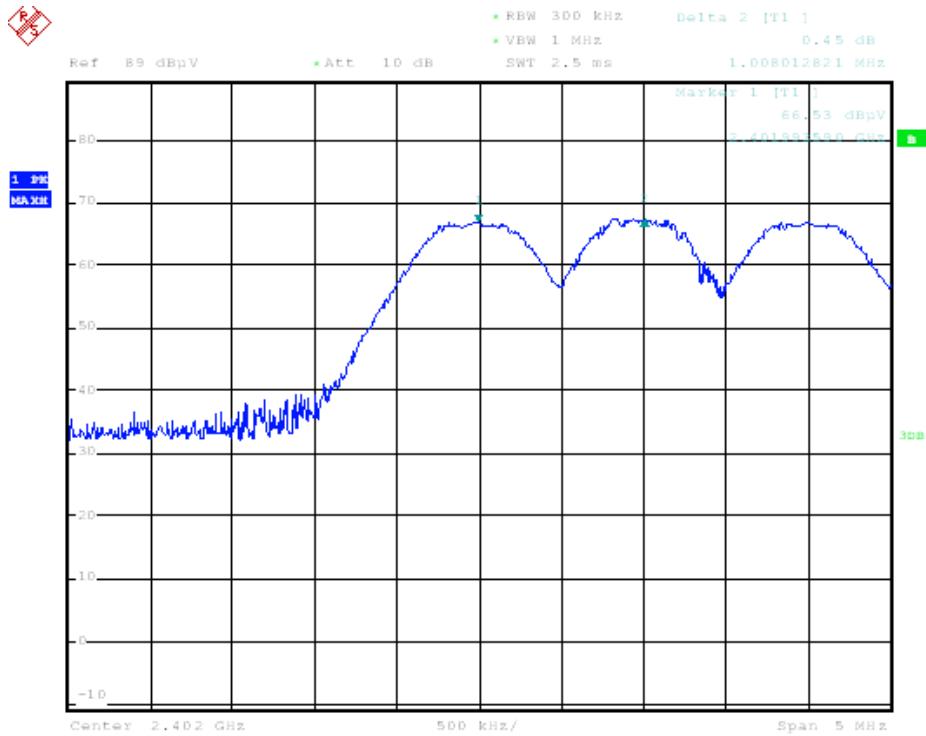
Pass.

Test condition: Temp:25°C ; Humi:55% Test voltage: DC 12V

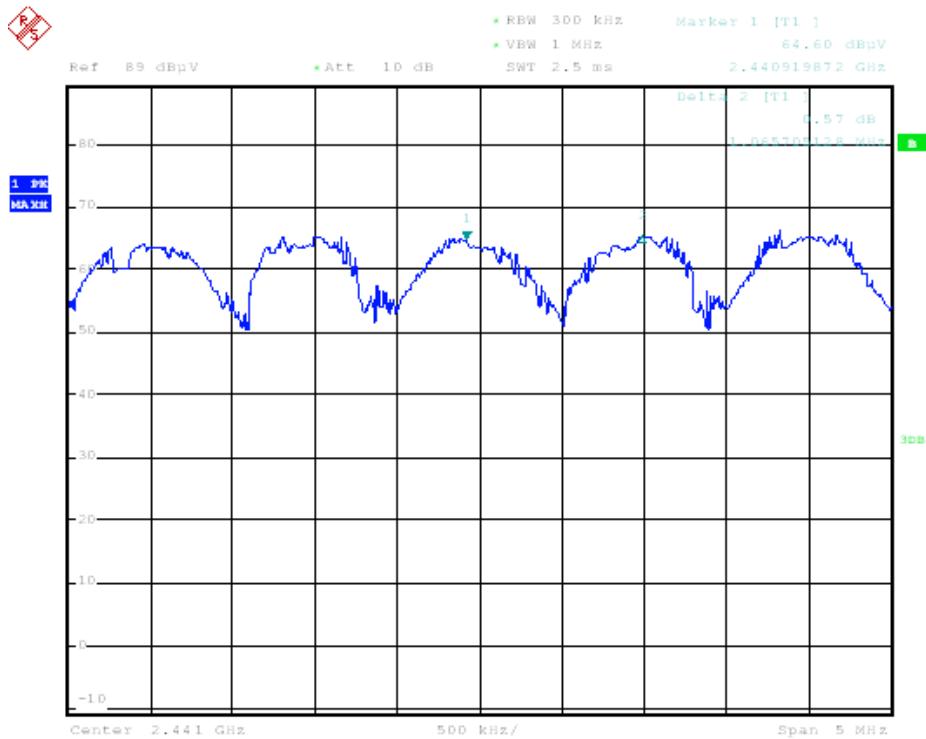
Test Channel MHz	test frequency MHz	Two Adjacent Channel spacing MHz	Limit kHz
CH1	2402	1.008	$\geq 20$ dB bandwidth
CH2	2403		
CH39	2439		
CH40	2440		
2478	2479		
2479	2480		

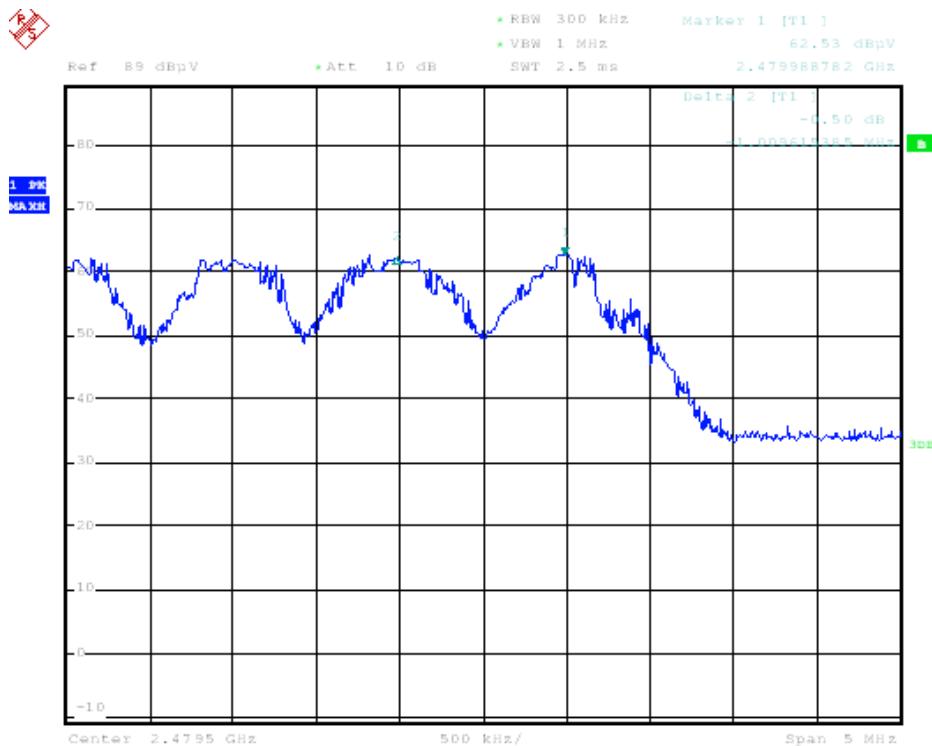
the two adjacent channel spacing is greater than 20dB bandwidth. comply with standard requirement. The test plots as following:

2402MHz test plot



2441MHz test plot



**2480MHz test plot**

## 7.6. Channel number

### 7.6.1. Limit

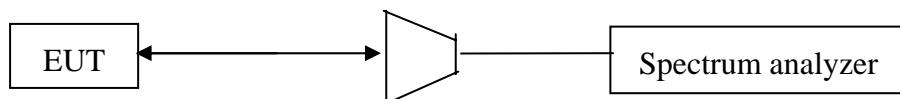
Receiver Frequency hopping systems in the 2400-2483.5MHz band shall use at least 15 channels.

### 7.6.2. Test procedure

Test was performed at normal test condition RBW:300kHz; VBW:1MHz;

Sweep time: 200ms;

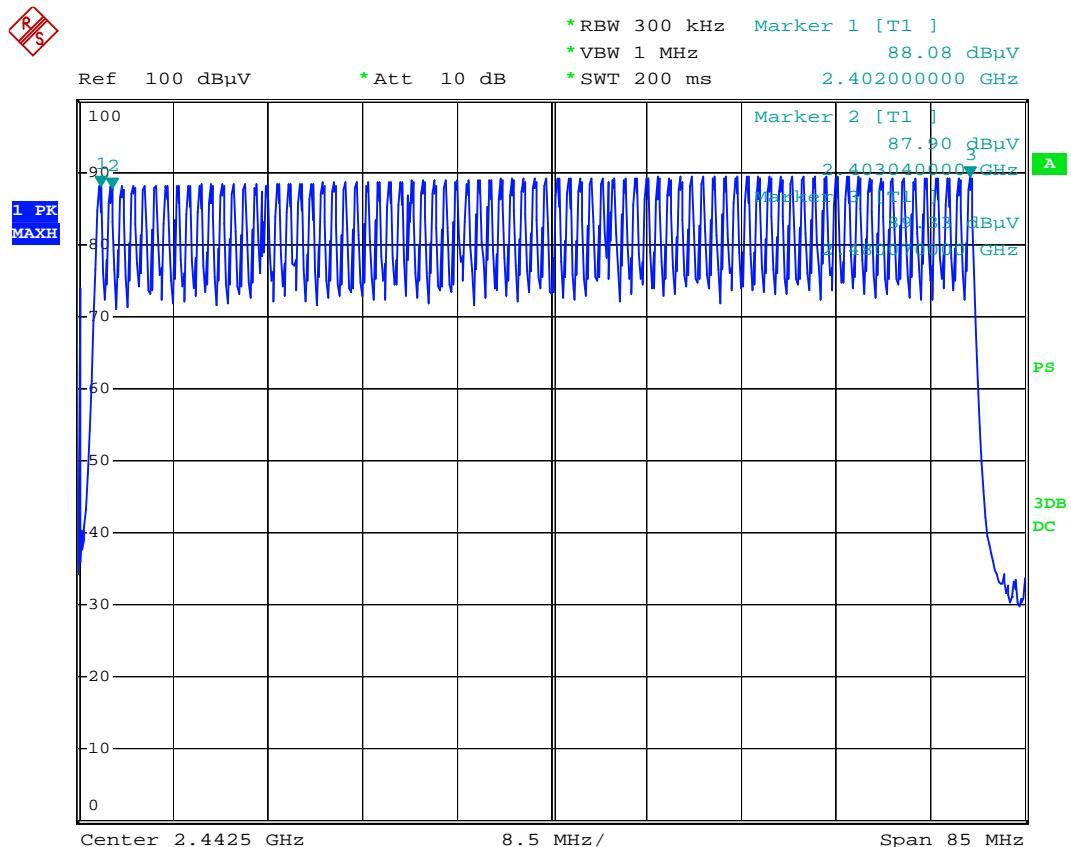
### 7.6.3. Test setup diagram



### 7.6.4. Test result

Total channel numbers are 79 .compliance with standard requirement.

The test plots as following:



Date: 8.OCT.2009 12:23:46

## **7.7. Radiated Emission**

### **7.7.1. Limits**

- 1)FCC part 15C section 15.209
- 2)FCC part 15C section 15.247(d)
- 3)FCC Part 15C section 15.205

### **7.7.2. Test procedure**

The EUT was placed on a turn table which was 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. At the frequency band of 30MHz to 1GHz,The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 to 4 m for horizontal and vertical polarizations. The broadband antenna (calibrated by dipole antenna) was used as a receiving antenna. At the frequency band of 1GHz to 25GHz,The measuring antenna moved from 1 to 4 m for horizontal and vertical polarization. The horn antenna was used as a receiving antenna.

The resolution bandwidth and video bandwidth of the test receiver was 120 KHz and 300KHz for Quasi-peak detection at frequency below 1GHz.

The resolution bandwidth and video bandwidth of the test receiver was 1MHz and 3MHz for Peak detection at frequency above 1GHz.

The resolution bandwidth of the test receiver was 1MHz and the video bandwidth are 10Hz for Average detection at frequency above 1GHz.

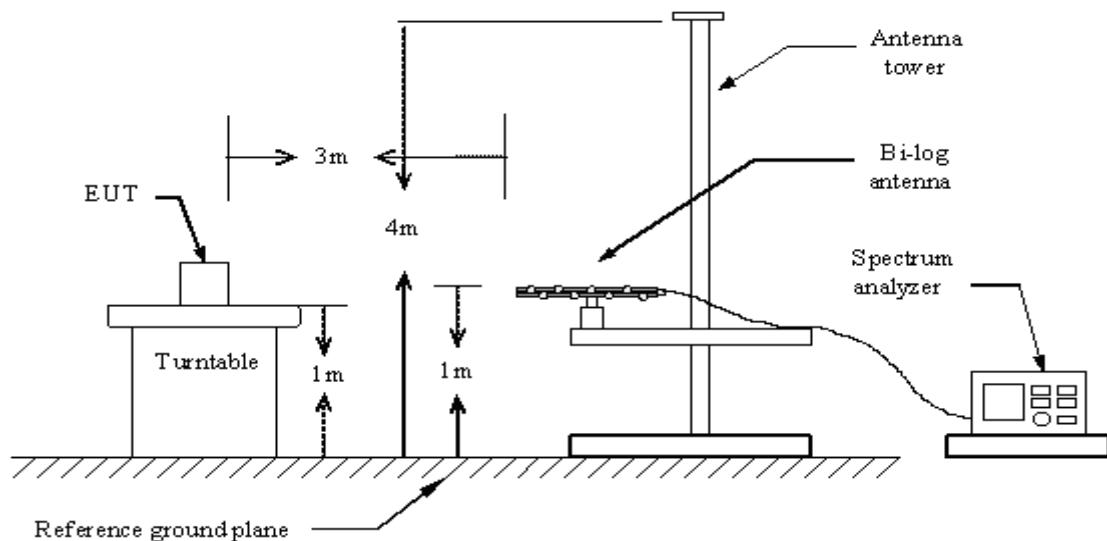
The EUT was tested in Chamber Site.

Audio input signal were turned up the highest volume output.

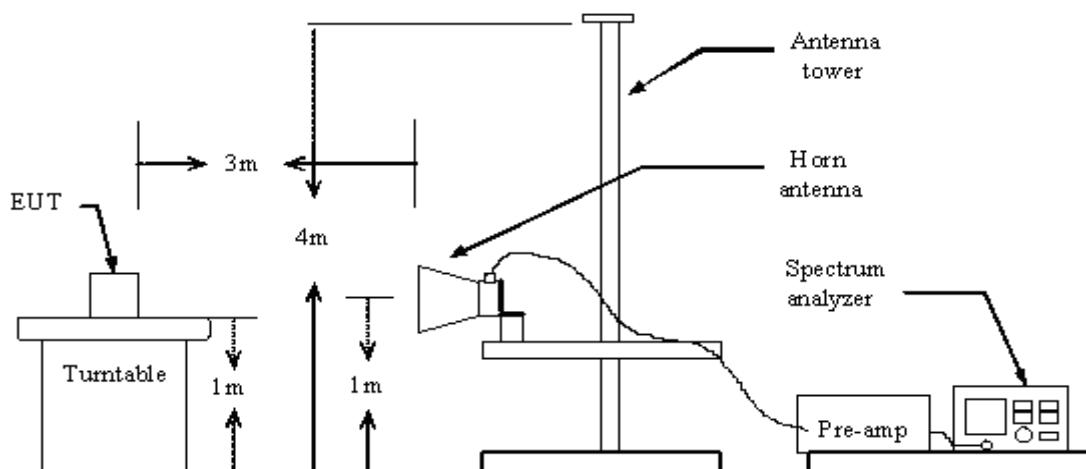
The test data of the worst case condition(s) was reported on the following pages.

### 7.7.3 Test Setup Diagram

Below 1GHz



Above 1GHz



#### 7.7.4. Test Result

##### CH1 2402MHz test data

Frequency	Antenna Factor	Cable Loss	Meter Reading	Emission Level	Over Limits	Limits	Detector	Polarity	Result
		dB	dB	dB $\mu$ V	dB $\mu$ V/m	dB			
MHz									
162.00	11.82	1.98	28.50	42.30	-1.20	43.50	QP	H	PASS
256.53	14.26	2.57	24.50	41.33	-4.67	46.00	QP	H	PASS
388.00	16.79	3.3	21.11	41.20	-4.8	46.00	QP	H	PASS
1508.00	27.81	2.15	25.21	55.17	-18.83	74.00	PK	H	PASS
1508.00	27.81	2.15	12.91	42.89	-11.11	54.00	AV	H	PASS
1602.00	28.48	2.16	27.54	58.18	-15.82	74.00	PK	H	PASS
1602.00	28.48	2.16	15.94	46.58	-7.42	54.00	AV	H	PASS
15468.5	41.67	3.03	21.0	65.70	-8.3	74.00	PK	H	PASS
15468.5	41.67	3.03	5.6	50.30	-3.7	54.00	AV	H	PASS
46.00	11.68	0.95	24.0	36.63	-3.37	40.00	QP	V	PASS
162.00	11.82	1.98	27.4	41.2	-2.3	43.50	QP	V	PASS
703.54	21.75	4.96	14.60	41.31	-4.69	43.50	QP	V	PASS
1602.00	28.48	2.16	26.57	57.21	-16.79	74.00	PK	V	PASS
1602.00	28.48	2.16	14.27	44.91	-9.09	54.00	AV	V	PASS
2499.70	31.60	2.23	20.96	54.79	-19.21	74.00	PK	V	PASS
2499.70	31.60	2.23	9.16	42.99	-11.01	54.00	AV	V	PASS
15514.2	41.73	3.03	20.44	65.20	-8.80	74.00	PK	V	PASS
15514.2	41.73	3.03	4.84	49.60	-4.4	54.00	AV	V	PASS

Notes: 1. The readings were Quasi-Peak values below 1GHz.

The readings were Peak values + Average values above 1GHz

2. Emission Level = Antenna Factor + Cable Loss + Meter Reading

3. Test uncertainty:  $\pm 5.04\text{dB}$  at a level of confidence of 95%.



CH40 2441MHz test data

Frequenc y	Antenn a	Cable Loss	Meter Reading	Emission Level	Over Limits	Limits	Detec tor	Polarity	Result
MHz	Factor	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m			
162.00	11.82	1.98	29.0	42.8	-0.70	43.50	QP	H	PASS
256.95	14.26	2.57	20.0	36.83	-9.17	46.00	QP	H	PASS
449.04	17.34	3.63	20.83	41.8	-4.20	46.00	QP	H	PASS
1598.5	28.46	2.16	23.98	54.60	-19.40	74.00	PK	H	PASS
1598.5	28.46	2.16	11.38	42.00	-12.00	54.00	AV	H	PASS
2669.5	31.71	2.24	20.03	53.98	-20.02	74.00	PK	H	PASS
2669.5	31.71	2.24	8.13	42.08	-11.92	54.00	AV	H	PASS
15468.5	41.67	3.03	20.08	64.78	-9.22	74.00	PK	H	PASS
15468.5	41.67	3.03	4.48	49.18	-4.82	54.00	AV	H	PASS
46.85	11.68	0.95	22.67	35.30	-4.70	40.00	QP	V	PASS
162.00	11.82	1.98	25.90	39.70	-3.80	43.50	QP	V	PASS
376.29	16.72	3.26	22.42	42.40	-3.60	43.50	QP	V	PASS
1094.00	27.30	2.11	27.50	56.91	-17.09	74.00	PK	V	PASS
1094.00	27.30	2.11	13.59	43.00	-11.00	54.00	AV	V	PASS
1602.00	28.48	2.16	23.86	54.50	-19.50	74.00	PK	V	PASS
1602.00	28.48	2.16	10.36	41.00	-13.00	54.00	AV	V	PASS
15438.0	41.62	3.03	20.75	65.40	-8.60	74.00	PK	V	PASS
15438.0	41.62	3.03	5.350	50.00	-4.00	54.00	AV	V	PASS

Notes: 1. The readings were Quasi-Peak values below 1GHz.

The readings were Peak values + Average values above 1GHz

2. Emission Level = Antenna Factor + Cable Loss + Meter Reading

3. Test uncertainty:  $\pm 5.04\text{dB}$  at a level of confidence of 95%.



CH79 2480MHz test data

Frequency MHz	Antenna Factor dB	Cable Loss dB	Meter Reading dB $\mu$ V	Emission Level dB $\mu$ V/m	Over Limits dB	Limits dB $\mu$ V/m	Detector	Polarity	Result
162.00	11.82	1.98	26.2	40.0	-3.5	43.50	QP	H	PASS
256.00	14.26	2.57	24.97	41.8	-4.2	46.00	QP	H	PASS
769.14	22.36	5.36	13.12	40.84	-5.16	46.00	QP	H	PASS
1600.00	28.48	2.16	26.16	56.80	-17.2	74.00	PK	H	PASS
1600.00	28.48	2.16	12.56	43.20	-10.8	54.00	AV	H	PASS
2127.00	31.23	2.21	18.86	52.3	-21.70	74.00	PK	H	PASS
2127.00	31.23	2.21	6.96	40.40	-13.60	54.00	AV	H	PASS
15468.5	41.67	3.03	20.08	64.78	-9.22	74.00	PK	H	PASS
15468.5	41.67	3.03	4.48	49.18	-4.82	54.00	AV	H	PASS
162.00	11.82	1.98	24.5	38.3	-5.2	40.00	QP	V	PASS
445.89	17.34	3.63	19.13	40.1	-5.9	43.50	QP	V	PASS
575.10	19.49	4.25	20.09	43.8	-2.2	43.50	QP	V	PASS
1089.00	27.3	2.11	26.31	55.72	-18.28	74.00	PK	V	PASS
1089.00	27.3	2.11	12.91	42.32	-11.68	54.00	AV	V	PASS
1598.50	28.46	2.16	24.78	55.40	-18.60	74.00	PK	V	PASS
1598.50	28.46	2.16	11.38	42.0	-12.00	54.00	AV	V	PASS
15438.0	41.62	3.03	20.75	65.40	-8.60	74.00	PK	V	PASS
15438.0	41.62	3.03	5.350	50.00	-4.00	54.00	AV	V	PASS

Notes: 1. The readings were Quasi-Peak values below 1GHz.

The readings were Peak values + Average values above 1GHz

2. Emission Level = Antenna Factor + Cable Loss + Meter Reading

3. Test uncertainty:  $\pm 5.04\text{dB}$  at a level of confidence of 95%.

## 7.8. Band edge test

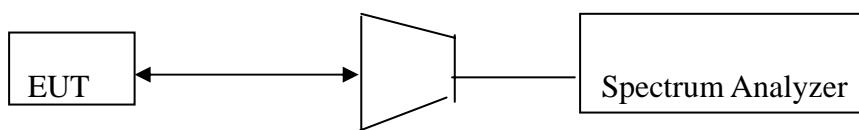
### 7.8.1. Limits

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in 100kHz bandwidth within the band that contains the highest level of the desired power.

### 7.8.2. Test procedure

1. The EUT was placed on a turntable which is 0.8m above ground plane.
2. Set EUT as continuous transmitting mode.
3. Set the EUT work on the CH1, CH79 individually.
4. Set SPA Frequency = Operation frequency, for PK: RBW =100kHz, VBW=100KHz
5. Set SPA trace max hold, then view.

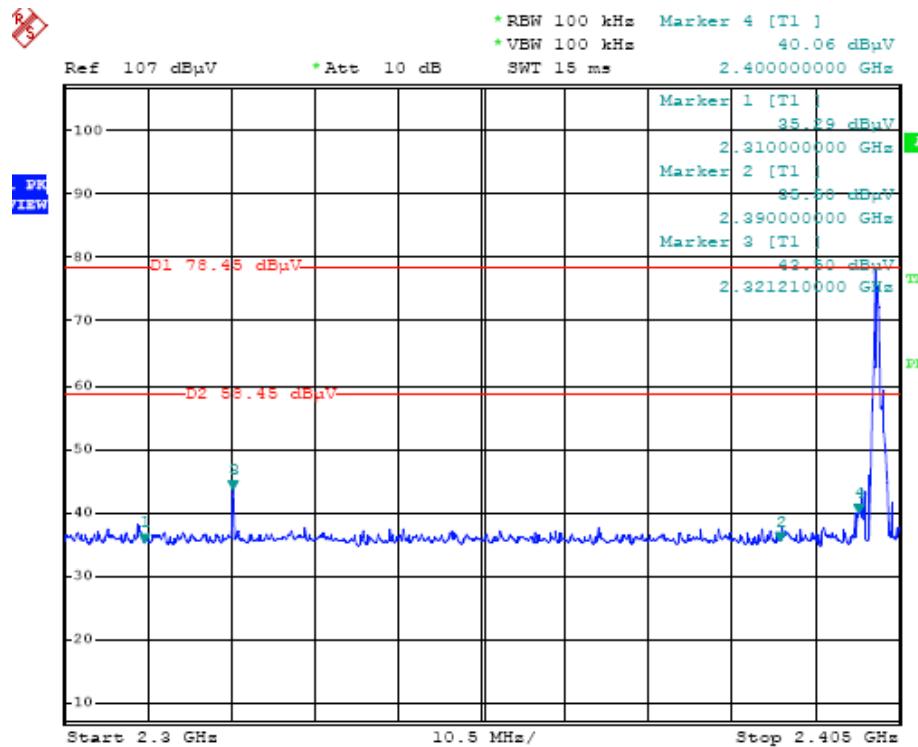
### 7.8.3. Test setup diagram



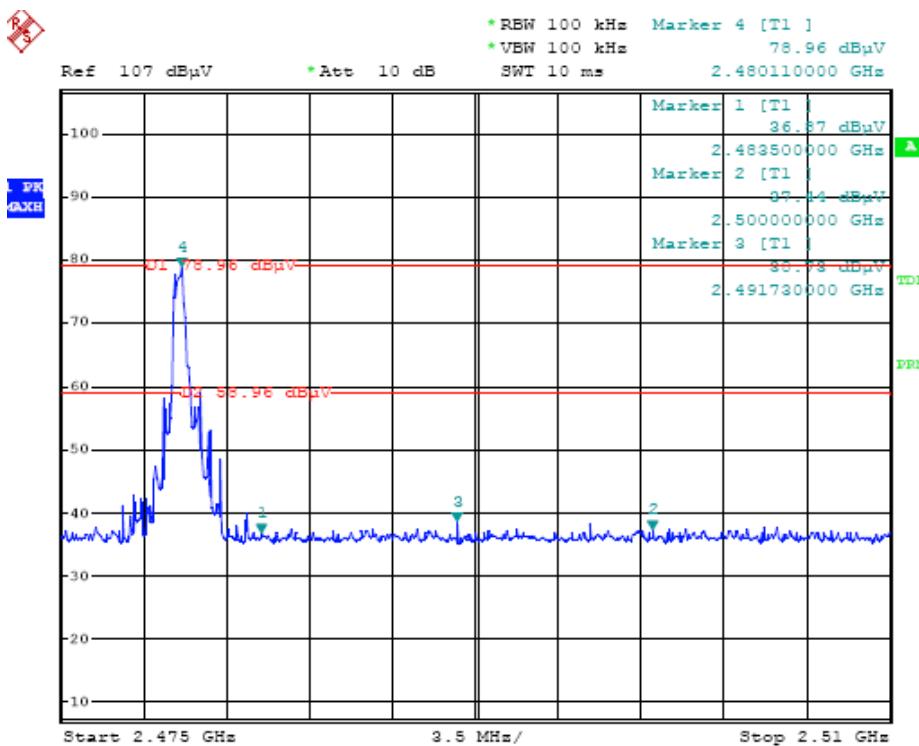
### 7.8.4. Test result

Pass.

CH1 2402MHz



CH79 2480MHz





## **7.9. Antenna requirement**

### **7.9.1. Standard applicable**

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247(b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### **7.9.2. Antenna connected construction**

The antenna used in this product is integrated antenna on the main PCB and no consideration of replacement.