

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT  
INTENTIONAL RADIATOR CERTIFICATION TO  
FCC PART 15 SUBPART C REQUIREMENTS**

**OF**

**SP-5050**

**MODEL No.: Siragon SP-5050**

**FCC ID: 2AC6BSP-5050**

**Trademark: N/A**

**REPORT NO.: ES140807080E1**

**ISSUE DATE: September 19, 2014**

*Prepared for*

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## VERIFICATION OF COMPLIANCE


Applicant:	Siragon Corporation. 8501 NW 17th Street Suite 128 Miami, Florida 33126.
Manufacturer:	Shenzhen Konka Telecommunications technology Co., Ltd. 9008, Shennan Avenue, Overseas Chinese Town, Shenzhen, China.
Product Description:	SP-5050
Model Number:	Siragon SP-5050
Trademark:	N/A
Serial Number:	N/A
File Number:	ES140807080E1
Date of Test:	August 08, 2014 to September 19, 2014

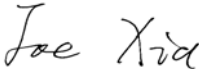
### We hereby certify that:


The above equipment was tested by SHENZHEN EMTEK CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2009) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.247 REQUIREMENTS

The test results of this report relate only to the tested sample identified in this report.

Date of Test : August 08, 2014 to September 19, 2014

Prepared by :   
Jack Li/Editor

Reviewer :   
Joe Xia/Supervisor

Approve & Authorized Signer :   
Lisa Wang/Manager

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## 1. GENERAL INFORMATION

### 1.1 Product Description

<b>Device Type:</b>	Mobile Device
<b>Exposure Category:</b>	Uncontrolled Environment/General Population
<b>Product Name:</b>	SP-5050
<b>Model Number:</b>	Siragon SP-5050
<b>Power supply:</b>	3.7V internal rechargeable lithium battery or DC 5V from AC adapter
<b>Adapter:</b>	Model: A31-501000 Input: 100-240V~, 50/60Hz, 0.2A Output: DC 5.0V, 1000mA
<b>IMEI1:</b>	351372098150251
<b>IMEI2:</b>	351372098150269
<b>Hardware Version:</b>	1405411548
<b>Software Version:</b>	Android 4.4.2
<b>Operating Mode(s) &amp; Operating Frequency Range(s):</b>	Bluetooth: 2402MHz ~ 2480MHz;
<b>Modulation:</b>	GFSK, $\pi/4$ -DQPSK, 8-DPSK for BT4.0 DSS;
<b>Number of Channels:</b>	79 Channels for Bluetooth 4.0 DSS;
<b>Type of Antenna:</b>	Ceramic Chip Antenna
<b>Antenna Gain:</b>	1dBi for Bluetooth;
<b>RF Output Power:</b>	Bluetooth 4.0 DSS: -0.748dBm MAX;

## **1.2 Related Submittal(s) / Grant (s)**

This submittal(s) (test report) is intended for FCC ID: 2AC6BSP-5050 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rule .

The composite system is compliance with Subpart B is authorized under a DOC procedure.

## **1.3 Test Methodology**

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4 (2009) and FCC Public Notice DA 00-705. Radiated testing was performed at an antenna to EUT distance 3 meters.

## **1.4 Special Accessories**

Not available for this EUT intended for grant.

## **1.5 Equipment Modifications**

Not available for this EUT intended for grant.

## 1.6 Test Facility

Site Description  
EMC Lab.

: Accredited by CNAS, 2013.10.29  
The certificate is valid until 2016.10.28  
The Laboratory has been assessed and proved to be in  
compliance with CNAS/CL01:2006(identical to ISO/IEC17025:  
2005)  
The Certificate Registration Number is L2291

Accredited by TUV Rheinland Shenzhen 2010.5.25  
The Laboratory has been assessed according to the  
requirements ISO/IEC 17025

Accredited by FCC, October 28, 2010  
The Certificate Registration Number is 406365.

Accredited by Industry Canada, March 5, 2010  
The Certificate Registration Number is 4480A-2.

Name of Firm  
Site Location

: SHENZHEN EMTEK CO., LTD  
: Bldg 69, Majialong Industry Zone,  
Nanshan District, Shenzhen, Guangdong, China

## 2. System Test Configuration

### 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

### 2.3 Test Procedure

#### 2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2009 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

#### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

### 2.4 Limitation

#### (1) Channel Separation test

FCC Part 15, Subpart C Section 15.247(a)(1) and RSS 210 A8.1(2) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20 Bandwidth of the hopping channel, whichever is greater.

Frequency Range (MHz)	Limit(kHz)
902-928	>25kHz
2400-2483.5	>25kHz
5725-5850	>25kHz



**(2) 20dB Bandwidth**

Frequency Range(MHz)	Quantity of Hopping Channel	Limit(kHz)			
		50	25	15	75
	902-928	<250	>250	NA	NA
	2400-2483.5	NA	NA	>1000	<1000

**(3) Quantity of Hopping Channel**

FCC Part 15, Subpart C Section 15.247 and RSS 210 A8.1(4)

Frequency Range (MHz)	Limit(Quantity of Hopping Channel)			
	20dB bandwidth <250kHz	20dB bandwidth >25 0kHz	20dB bandwidth <1MHz	20dB bandwidth >1 MHz
902-928	50	25	NA	NA
2400-2483.5	NA	NA	75	15
5725-5850	NA	NA	75	NA

**(4) Time of Occupancy(Dwell Time)**

FCC Part 15, Subpart C Section 15.247 and RSS 210 A8.1(4)

Frequency Range (MHz)	LIMIT(rms)		
	20dB bandwidth <250kHz(50Channel )	20dB bandwidth >250kHz (25Channel)	20dB bandwidth <1MHz(75Channel)
902-928	400(20S)	400(10S)	NA
2400-2483.5	NA	NA	400(30S)
5725-5850	NA	NA	400(30S)

**Note:** The “( )”is all channel’s average time of occupancy.

**(5) Maximum Peak Output Power**

FCC Part 15, Subpart C Section 15.247 and RSS 210 A8.4

Frequency Range (MHz)	Quantity of Hopping Channel	LIMIT(W)			
		50	25	15	75
902-928		1(30dBm)	0.125(21dBm)	NA	NA
2400-2483.5		NA	NA	0.125(21dB m)	1(30dBm)
5725-5850		NA	NA	NA	1(30dBm)

**(6) Band edge**

FCC Part15, Subpart C Section 15.247 and RSS 210 A8.5

Operating Frequency Range(MHz)	Spurious emission frequency	Limit Peak power ration to emission(dBc)	Emission level(dBuV/m)
902-928	<902	>20	NA

	>928	>20	NA
	960-1240	NA	54
2400-2483.5	<2400	>20	NA
	>2483.5-2500	NA	54
5725-5850	<5350-5460	NA	54
	<5725	>20	NA
	>5850	>20	NA

#### (7) Conducted Emission

FCC Part15, Subpart C Section 15.247 and RSS-GEN, Section 7.2.2

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	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 0.50MHz.

#### (8) Radiated Emission

FCC Part 15, Subpart C Section 15.209 and RSS 210 A8.5 limit of radiated emission for frequency below 1000GHz. The emissions from an intentional radiator shall not exceed the field strength level specified in the following table:

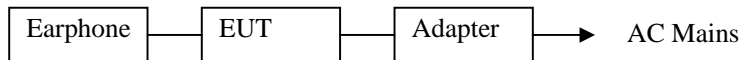
Frequency (MHz)	Field strength $\mu\text{V/m}$	Distance(m)	Field strength at 3m dB $\mu\text{V/m}$
0.009~0.490	2400/F(KHz)	300	
0.490~1.705	2400/F(KHz)	30	See the remark
1.705~30.0	30	30	
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Remark 1. Emission level in dB $\mu\text{V/m}$ =20 log (uV/m)

- :
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
  3. Distance extrapolation factor =40log(Specific distance/ test distance)( dB);  
Limit line=Specific limits(dBuV) + distance extrapolation factor.

## 2.5 Configuration of Tested System

**Fig. 2-1 Configuration of Tested System**



Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
SP-5050	N/A	Siragon SP-5050	2AC6BSP-5050	N/A	EUT
Adapter	N/A	A31-501000	N/A	N/A	

## 2.6 Description of test modes

The EUT has been tested under TX operating condition.

This EUT is a composite System, were conducted to determine the final configuration from all possible combinations. This Report Records BT4.0 DSS function test data ,We use software control the EUT, Let EUT hopping on and transmit with highest power, All the modes GFSK, 1/4Π-DQPSK, 8DPSK have been tested and the worst result was reported with modulation GFSK. 79 Channels are provided by EUT. The 3 channels of lower, medium and higher were chosen for test.

Channel	Frequency(MHz)
1	2402
40	2441
79	2480

### 3. Summary of Test Results

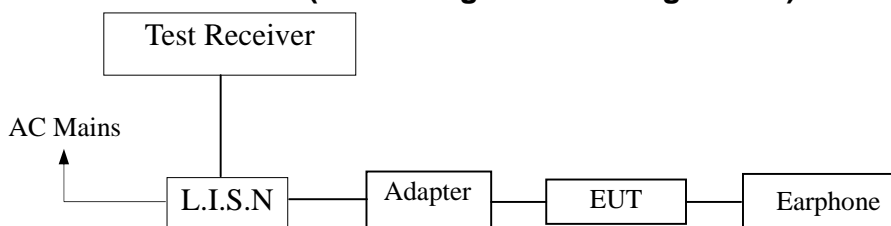
FCC Rule	Description Of Test	Result
15.247(a)(1)	Channel Separation test	Pass
15.247(a)(1)	20dB Bandwidth	Pass
15.247(a)(1)	Quantity of Hopping Channel	Pass
15.247(a)(1)	Time of Occupancy (Dwell Time)	Pass
15.247(b)(1)	Max Peak output Power test	Pass
15.247(d)	Band edge test	Pass
15.207	AC Power Conducted Emission	Pass
15.247(d)	Radiated Emission	Pass
§15.247(d)	Antenna Port Emission	Pass
15.203&15.247(b)	Antenna Application	Pass

## 4. Conducted Emissions Test

### 4.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

### 4.2 Test SET-UP (Block Diagram of Configuration)



### 4.3 Measurement Equipment Used:

Conducted Emission Test Site # 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/17/2014	05/16/2015
L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	05/17/2014	05/16/2015
50ΩCoaxial Switch	Anritsu	MP59B	M20531	05/17/2014	05/16/2015

### 4.4 Conducted Emission Limit

#### (7) Conducted Emission

##### Frequency(MHz)

0.15-0.5

0.5-5.0

5.0-30.0

##### Quasi-peak

66-56

56

60

##### Average

56-46

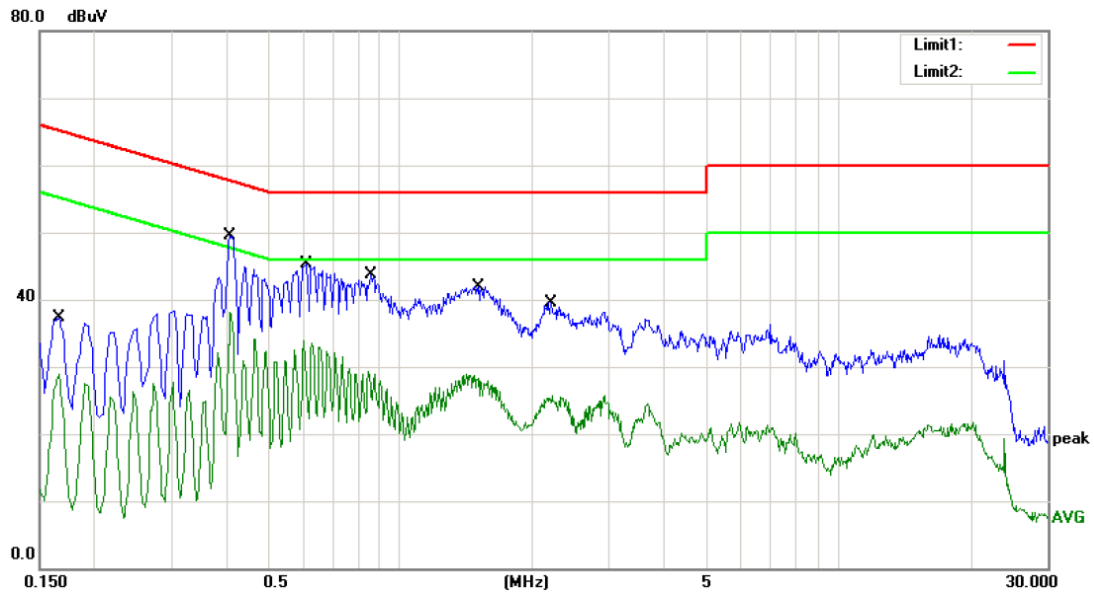
46

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 0.50MHz.

#### 4.5 Measurement Result:



Site Conduction #1

Phase: **L1**

Temperature: 26

Limit: (CE)FCC PART 15 class B\_QP

Power: AC 120V/60Hz

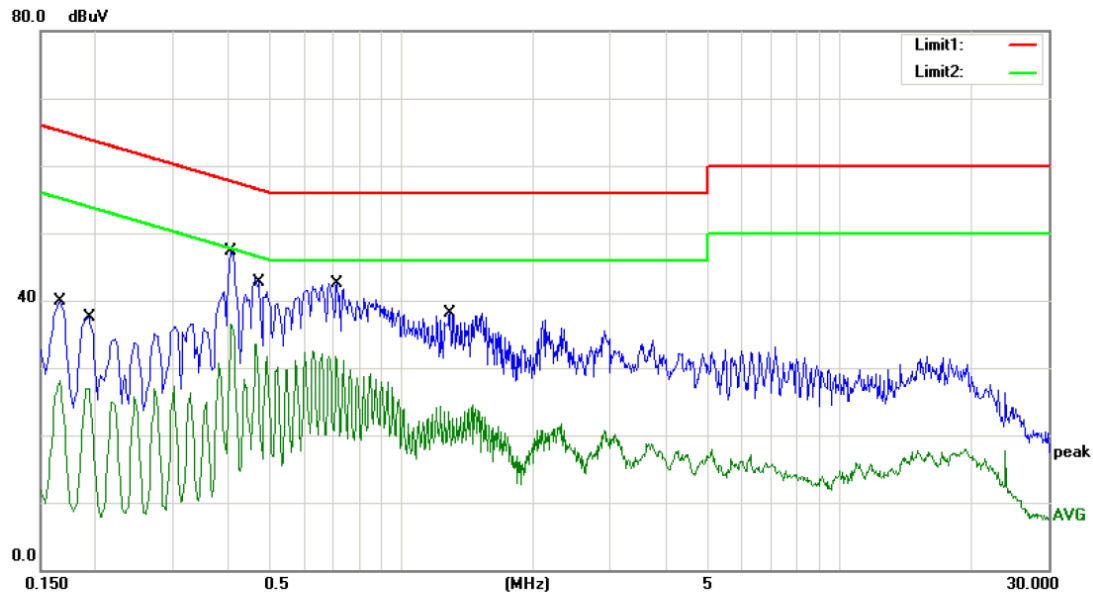
Humidity: 60 %

Mode: Bluetooth 4.0 DSS

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1660	37.24	0.00	37.24	65.16	-27.92	QP	
2		0.1660	28.96	0.00	28.96	55.16	-26.20	AVG	
3	*	0.4100	49.44	0.00	49.44	57.65	-8.21	QP	
4		0.4100	38.12	0.00	38.12	47.65	-9.53	AVG	
5		0.6100	45.33	0.00	45.33	56.00	-10.67	QP	
6		0.6100	33.97	0.00	33.97	46.00	-12.03	AVG	
7		0.8580	43.62	0.00	43.62	56.00	-12.38	QP	
8		0.8580	29.27	0.00	29.27	46.00	-16.73	AVG	
9		1.5060	41.87	0.00	41.87	56.00	-14.13	QP	
10		1.5060	28.90	0.00	28.90	46.00	-17.10	AVG	
11		2.2060	39.44	0.00	39.44	56.00	-16.56	QP	
12		2.2060	25.61	0.00	25.61	46.00	-20.39	AVG	

\*:Maximum data    x:Over limit    !:over margin    Comment: Factor build in receiver.    Operator: Cai



Site Conduction #1

Phase: **N**

Temperature: 26

Limit: (CE)FCC PART 15 class B\_QP

Power: AC 120V/60Hz

Humidity: 60 %

Mode: Bluetooth 4.0 DSS

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1660	39.83	0.00	39.83	65.16	-25.33	QP	
2		0.1660	28.15	0.00	28.15	55.16	-27.01	AVG	
3		0.1940	37.54	0.00	37.54	63.86	-26.32	QP	
4		0.1940	26.90	0.00	26.90	53.86	-26.96	AVG	
5	*	0.4100	47.40	0.00	47.40	57.65	-10.25	QP	
6		0.4100	36.53	0.00	36.53	47.65	-11.12	AVG	
7		0.4740	42.73	0.00	42.73	56.44	-13.71	QP	
8		0.4740	33.53	0.00	33.53	46.44	-12.91	AVG	
9		0.7140	42.59	0.00	42.59	56.00	-13.41	QP	
10		0.7140	32.55	0.00	32.55	46.00	-13.45	AVG	
11		1.2900	38.05	0.00	38.05	56.00	-17.95	QP	
12		1.2900	24.42	0.00	24.42	46.00	-21.58	AVG	

\*:Maximum data    x:Over limit    !:over margin    Comment: Factor build in receiver.    Operator: Cai

## 5. Radiated Emission Test

### 5.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured was complete.

When spectrum scanned from 30 MHz to 1GHz setting resolution bandwidth 120 kHz and video bandwidth 300kHz.

EMI Test Receiver	Setting
Attenuation	Auto
RB	120kHz
VB	300kHz
Detector	QP
Trace	Max hold

When spectrum scanned above 1GHz setting resolution bandwidth 1MHz, video bandwidth 3MHz.

EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	3MHz
Detector	Peak
Trace	Max hold

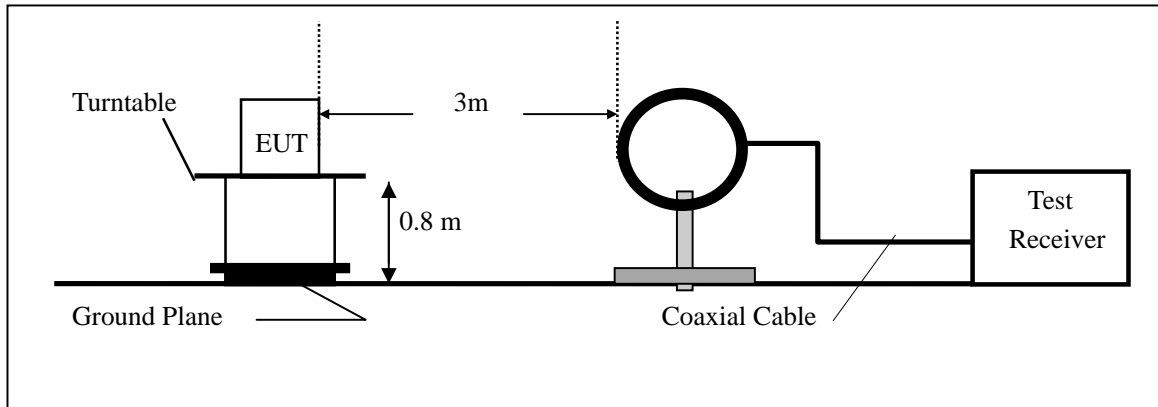
When spectrum scanned above 1GHz setting resolution bandwidth 1MHz, video bandwidth 10Hz.

EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	10Hz
Detector	AVG
Trace	Max hold

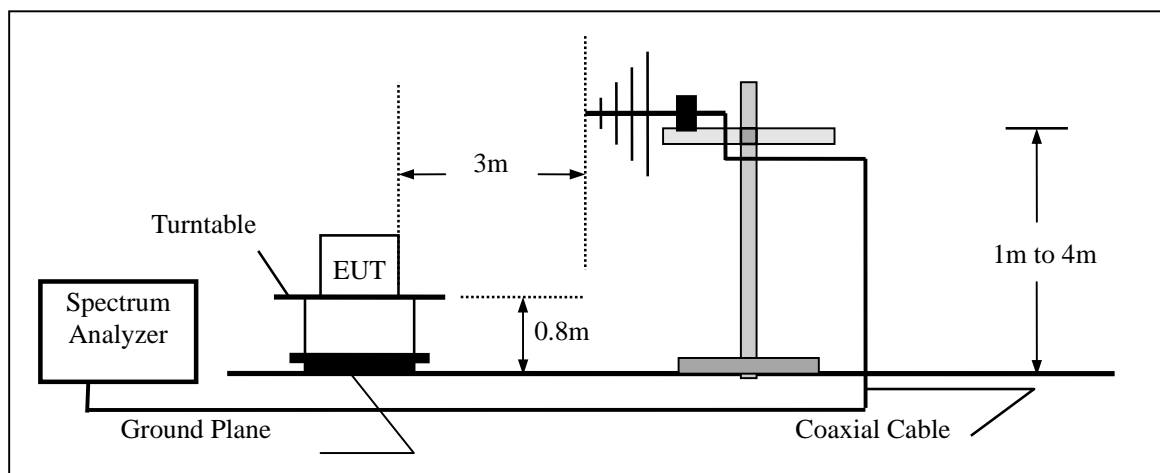


## 5.2 Test SET-UP (Block Diagram of Configuration)

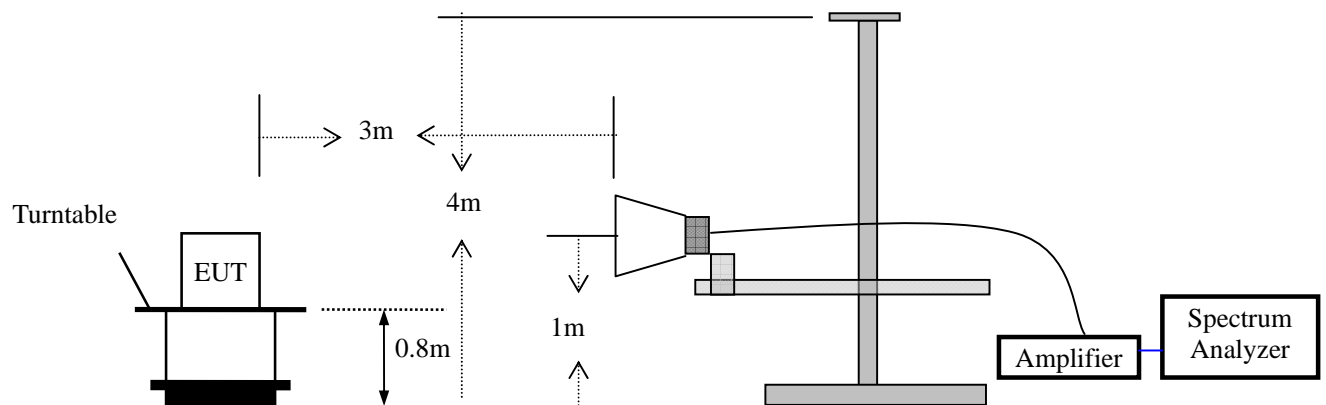
### (A) Radiated Emission Test Set-Up, Frequency Below 30MHz



### (B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



### (C) Radiated Emission Test Set-Up, Frequency above 1000MHz

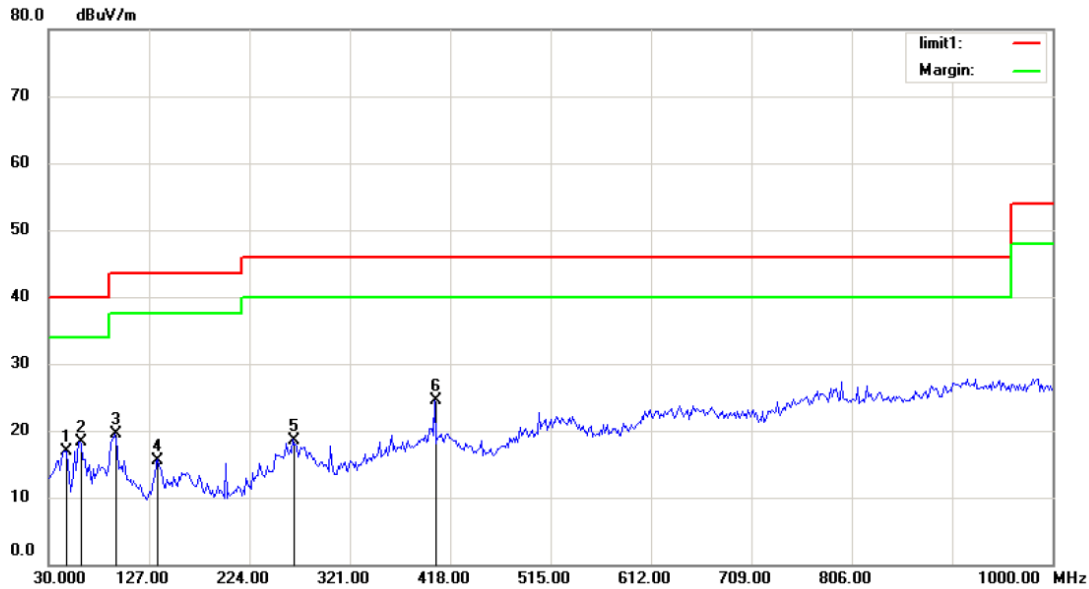


### 5.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Rohde & Schwarz	FSP7	839511/010	05/17/2014	05/16/2015
Spectrum Analyzer	HP	E4407B	839840481	05/17/2014	05/16/2015
EMI Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/17/2014	05/16/2015
Pre-Amplifier	HP	8447D	2944A07999	05/17/2014	05/16/2015
Bilog Antenna	Schwarzbeck	VULB9163	142	05/17/2014	05/16/2015
Loop Antenna	ARA	PLA-1030/B	1029	05/17/2014	05/16/2015
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/17/2014	05/16/2015
Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/17/2014	05/16/2015

## 5.4 Measurement Result

All the modulation modes were tested the data of the Worse result(GFSK) are recorded in the following pages and the others modulation methods do not exceed the limits.



Site 3m Chamber #1

Polarization: **Horizontal**

Temperature: 24

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

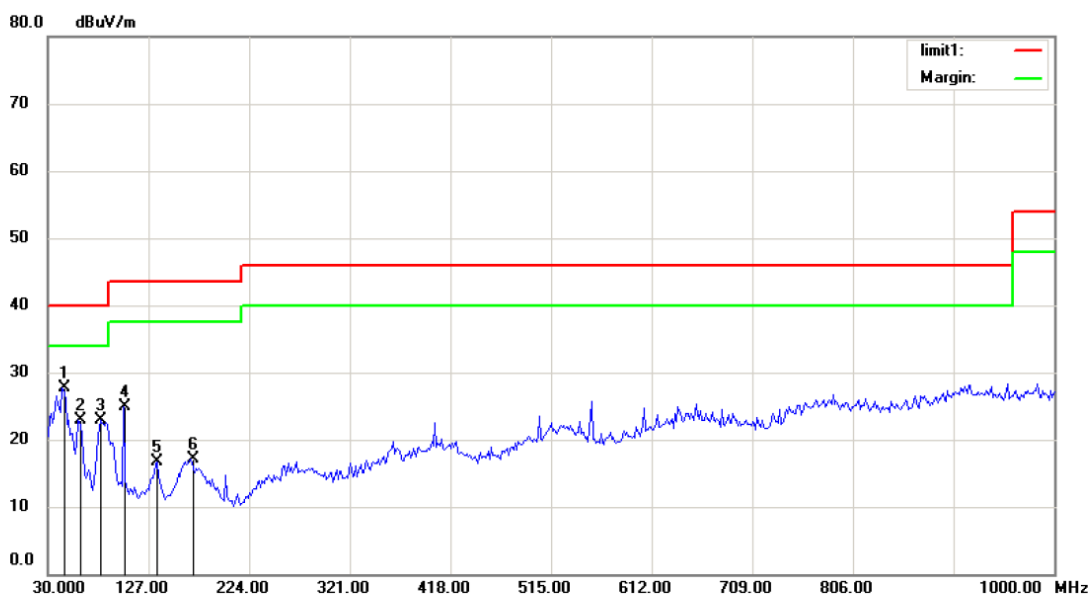
Mode:Bluetooth 4.0 DSS (Low)

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		45.5450	2.88	14.11	16.99	40.00	-23.01	QP		
2		59.5353	5.57	12.71	18.28	40.00	-21.72	QP		
3		93.7340	7.95	11.61	19.56	43.50	-23.94	QP		
4		135.7051	6.08	9.52	15.60	43.50	-27.90	QP		
5		266.2821	3.92	14.68	18.60	46.00	-27.40	QP		
6	*	403.0770	5.71	18.79	24.50	46.00	-21.50	QP		

\*:Maximum data    x:Over limit    !:over margin

Operator: ZHL



Site 3m Chamber #1

Polarization: **Vertical**

Temperature: 24

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

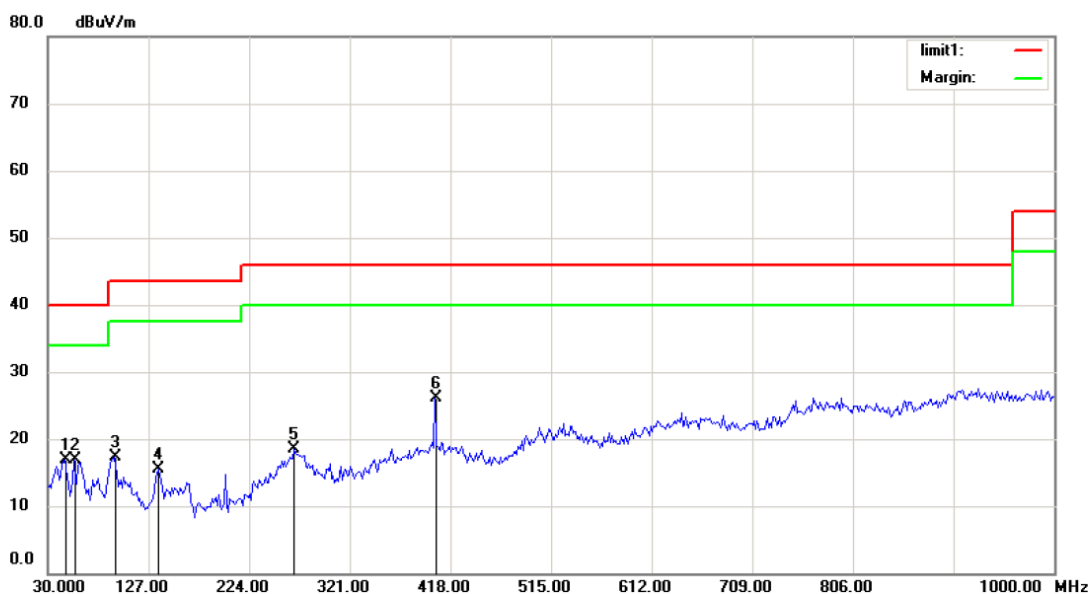
Mode:Bluetooth 4.0 DSS (Low)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	43.9904	12.52	15.18	27.70	40.00	-12.30	QP		
2		59.5353	10.18	12.71	22.89	40.00	-17.11	QP		
3		81.2980	15.27	7.66	22.93	40.00	-17.07	QP		
4		103.0610	12.04	12.87	24.91	43.50	-18.59	QP		
5		135.7051	7.27	9.52	16.79	43.50	-26.71	QP		
6		168.3494	9.14	7.87	17.01	43.50	-26.49	QP		

\*:Maximum data x:Over limit !:over margin

Operator: ZHL



Site 3m Chamber #1

Polarization: **Horizontal**

Temperature: 24

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

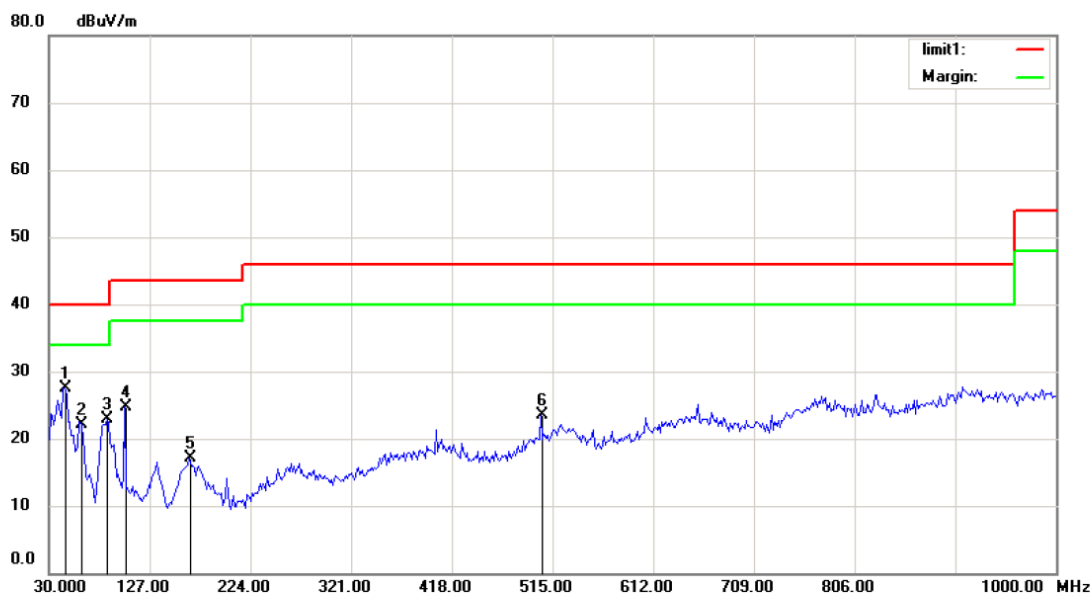
Mode:Bluetooth 4.0 DSS (Mid)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		45.5450	2.70	14.11	16.81	40.00	-23.19	QP		
2		54.8718	7.41	9.41	16.82	40.00	-23.18	QP		
3		93.7340	5.68	11.61	17.29	43.50	-26.21	QP		
4		137.2596	6.11	9.36	15.47	43.50	-28.03	QP		
5		267.8365	3.71	14.78	18.49	46.00	-27.51	QP		
6	*	403.0770	7.35	18.79	26.14	46.00	-19.86	QP		

\*:Maximum data x:Over limit !:over margin

Operator: ZHL



Site 3m Chamber #1

Polarization: **Vertical**

Temperature: 24

Limit: ( RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

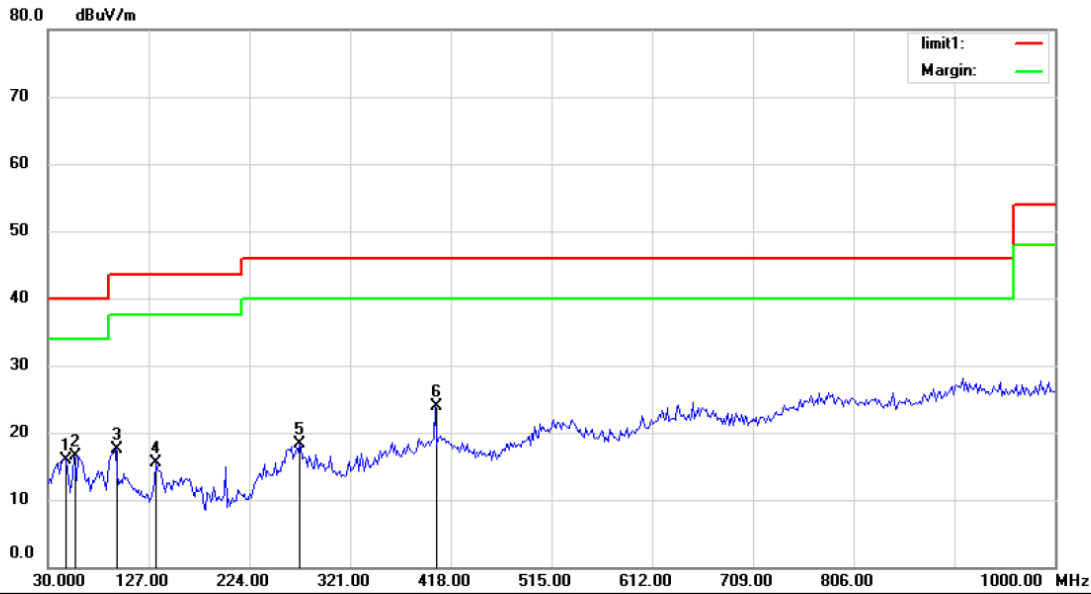
Mode:Bluetooth 4.0 DSS (Mid)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	43.9904	12.33	15.18	27.51	40.00	-12.49	QP		
2		61.0897	9.72	12.43	22.15	40.00	-17.85	QP		
3		85.9615	13.95	8.92	22.87	40.00	-17.13	QP		
4		103.0610	11.77	12.87	24.64	43.50	-18.86	QP		
5		165.2404	9.06	8.04	17.10	43.50	-26.40	QP		
6		504.1186	3.01	20.51	23.52	46.00	-22.48	QP		

\*:Maximum data x:Over limit !:over margin

Operator: ZHL



Site 3m Chamber #1

Polarization: **Horizontal**

Temperature: 24

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

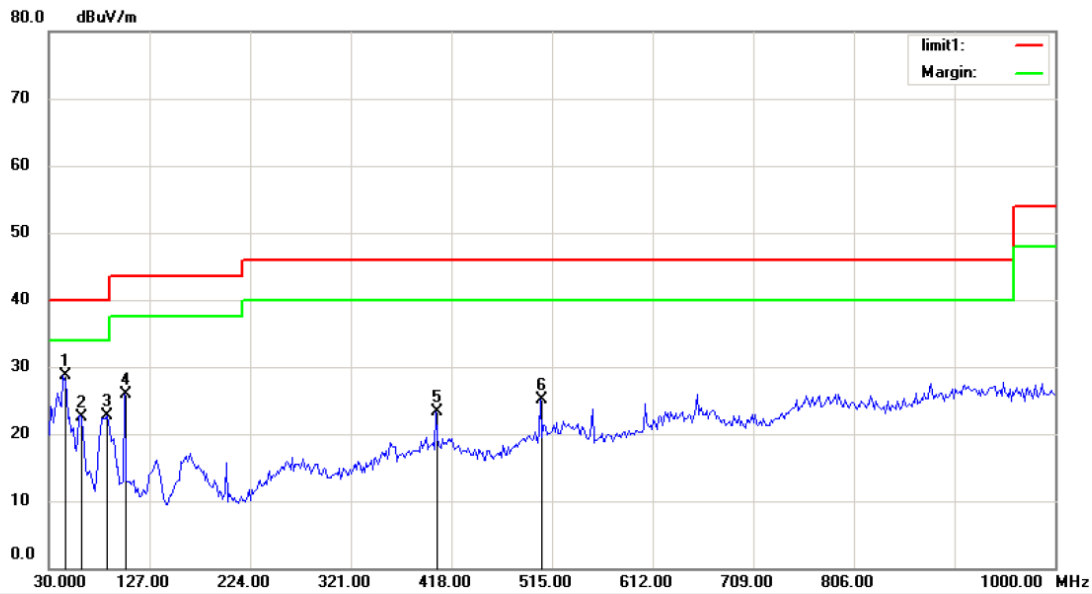
Mode:Bluetooth 4.0 DSS (High)

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		45.5450	1.89	14.11	16.00	40.00	-24.00	QP		
2		54.8718	7.17	9.41	16.58	40.00	-23.42	QP		
3		95.2885	5.45	12.10	17.55	43.50	-25.95	QP		
4		134.1506	5.93	9.61	15.54	43.50	-27.96	QP		
5		272.5000	3.33	15.04	18.37	46.00	-27.63	QP		
6	*	403.0770	5.07	18.79	23.86	46.00	-22.14	QP		

\*:Maximum data x:Over limit !:over margin

Operator: ZHL



Site 3m Chamber #1

Polarization: **Vertical**

Temperature: 24

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

Mode:Bluetooth 4.0 DSS (High)

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	43.9904	13.44	15.18	28.62	40.00	-11.38	QP		
2		61.0897	10.10	12.43	22.53	40.00	-17.47	QP		
3		85.9615	13.87	8.92	22.79	40.00	-17.21	QP		
4		103.0610	12.94	12.87	25.81	43.50	-17.69	QP		
5		403.0770	4.50	18.79	23.29	46.00	-22.71	QP		
6		504.1186	4.52	20.51	25.03	46.00	-20.97	QP		

\*:Maximum data x:Over limit !:over margin

Operator: ZHL



All the modulation modes were tested the data of the Worse result(GFSK) are recorded in the following pages and the others modulation methods do not exceed the limits.

Operation Mode: CH1: 2402MHz Test Date : August 09, 2014  
Frequency Range: 1-25GHz Temperature : 24℃  
Test Result: PASS Humidity : 53 %  
Measured Distance: 3m Test By: KK  
Test mode: GFSK

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4804.00	V	53.79	34.93	74.00	54.00	-20.21	-19.07
7206.00	V	54.21	35.37	74.00	54.00	-19.79	-18.63
9608.00	V	54.88	35.83	74.00	54.00	-19.12	-18.17
12010.00	V	54.28	34.48	74.00	54.00	-19.72	-19.52
14412.00	V	54.78	35.72	74.00	54.00	-19.22	-18.28
16814.00	V	56.26	37.14	74.00	54.00	-17.74	-16.86
4804.00	H	53.52	33.69	74.00	54.00	-20.48	-20.31
7206.00	H	53.61	34.28	74.00	54.00	-20.39	-19.72
9608.00	H	53.50	34.68	74.00	54.00	-20.50	-19.32
12010.00	H	54.49	35.03	74.00	54.00	-19.51	-18.97
14412.00	H	53.53	34.17	74.00	54.00	-20.47	-19.83
16814.00	H	54.27	35.19	74.00	54.00	-19.73	-18.81

**No others harmonics emissions are higher than 20dB below the limits of 47 CFR Part 15.247.**

**Note:** (1) All Readings are Peak Value and AV.

(2) Emission Level= Reading Level+Probe Factor +Cable Loss.

(3) Data of measurement within this frequency range shown “ -- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Operation Mode: CH40: 2441MHz Test Date : August 09, 2014  
Frequency Range: 1-25GHz Temperature : 24℃  
Test Result: PASS Humidity : 53 %  
Measured Distance: 3m Test By: KK  
Test mode: GFSK

Freq. (MHz)	Ant.Pol H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4882.00	V	52.50	33.86	74.00	54.00	-21.50	-20.14
7323.00	V	54.17	35.26	74.00	54.00	-19.83	-18.74
9764.00	V	54.51	35.63	74.00	54.00	-19.49	-18.37
12205.00	V	54.14	35.06	74.00	54.00	-19.86	-18.94
14646.00	V	54.40	35.14	74.00	54.00	-19.60	-18.86
17087.00	V	54.23	34.89	74.00	54.00	-19.77	-19.11
4882.00	H	52.75	33.25	74.00	54.00	-21.25	-20.75
7323.00	H	54.69	36.00	74.00	54.00	-19.31	-18.00
9764.00	H	55.64	35.63	74.00	54.00	-18.36	-18.37
12205.00	H	53.90	35.32	74.00	54.00	-20.10	-18.68
14646.00	H	53.93	34.48	74.00	54.00	-20.07	-19.52
17087.00	H	54.64	34.97	74.00	54.00	-19.36	-19.03

**No others harmonics emissions are higher than 20dB below the limits of 47 CFR Part 15.247.**

**Note:** (1) All Readings are Peak Value and AV.  
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.  
(3) Data of measurement within this frequency range shown “ -- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Operation Mode: CH79: 2480MHz Test Date : August 09, 2014  
Frequency Range: 1-25GHz Temperature : 24℃  
Test Result: PASS Humidity : 53 %  
Measured Distance: 3m Test By: KK  
Test mode: GFSK

Freq. (MHz)	Ant.Pol H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4960.00	V	53.39	34.27	74.00	54.00	-20.61	-19.73
7440.00	V	53.99	34.87	74.00	54.00	-20.01	-19.13
9920.00	V	55.19	35.65	74.00	54.00	-18.81	-18.35
12400.00	V	55.06	35.92	74.00	54.00	-18.94	-18.08
14880.00	V	54.47	34.77	74.00	54.00	-19.53	-19.23
17360.00	V	55.34	36.67	74.00	54.00	-18.66	-17.33
4960.00	H	53.60	34.57	74.00	54.00	-20.40	-19.43
7440.00	H	54.27	34.98	74.00	54.00	-19.73	-19.02
9920.00	H	55.24	35.16	74.00	54.00	-18.76	-18.84
12400.00	H	54.60	34.92	74.00	54.00	-19.40	-19.08
14880.00	H	56.33	36.05	74.00	54.00	-17.67	-17.95
17360.00	H	54.03	34.59	74.00	54.00	-19.97	-19.41

**No others harmonics emissions are higher than 20dB below the limits of 47 CFR Part 15.247.**

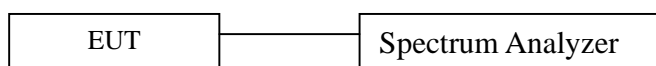
**Note:** (1) All Readings are Peak Value and AV.  
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.  
(3) Data of measurement within this frequency range shown “ -- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

## 6. Channel Separation test

### 6.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

### 6.2 Test SET-UP (Block Diagram of Configuration)



### 6.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/17/2014	05/16/2015

### 6.4 Measurement Results:

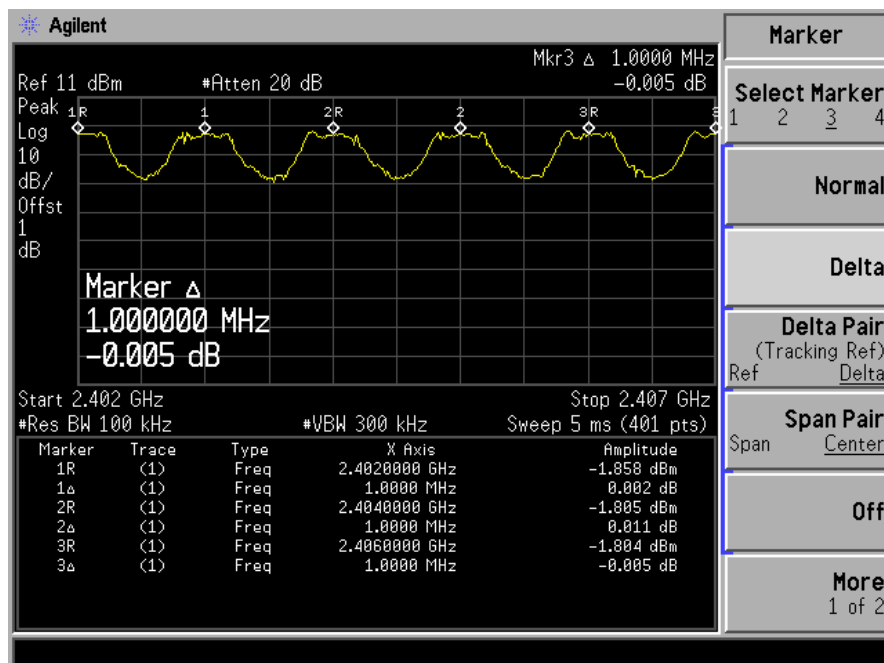
The following table is the setting of spectrum analyzer.

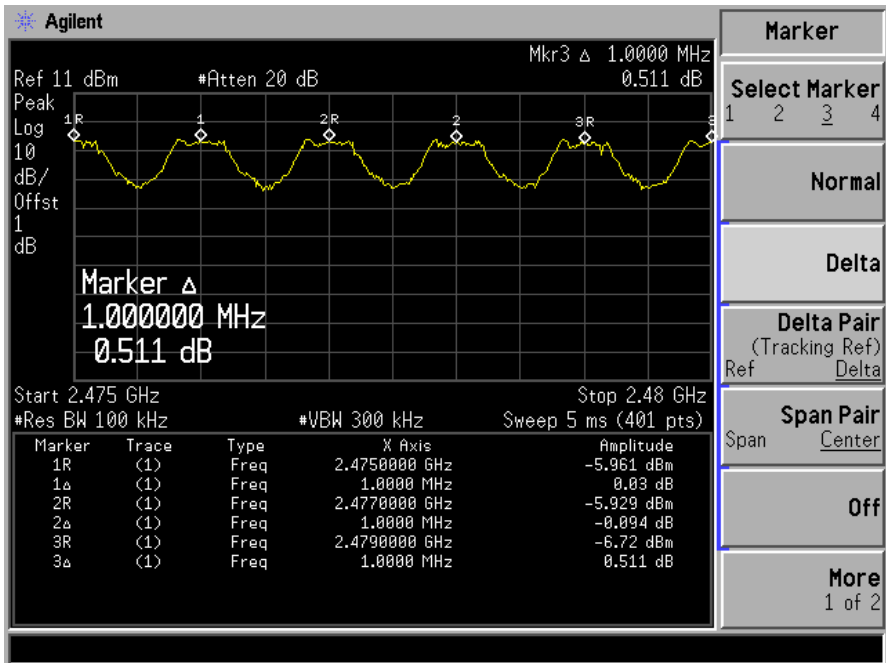
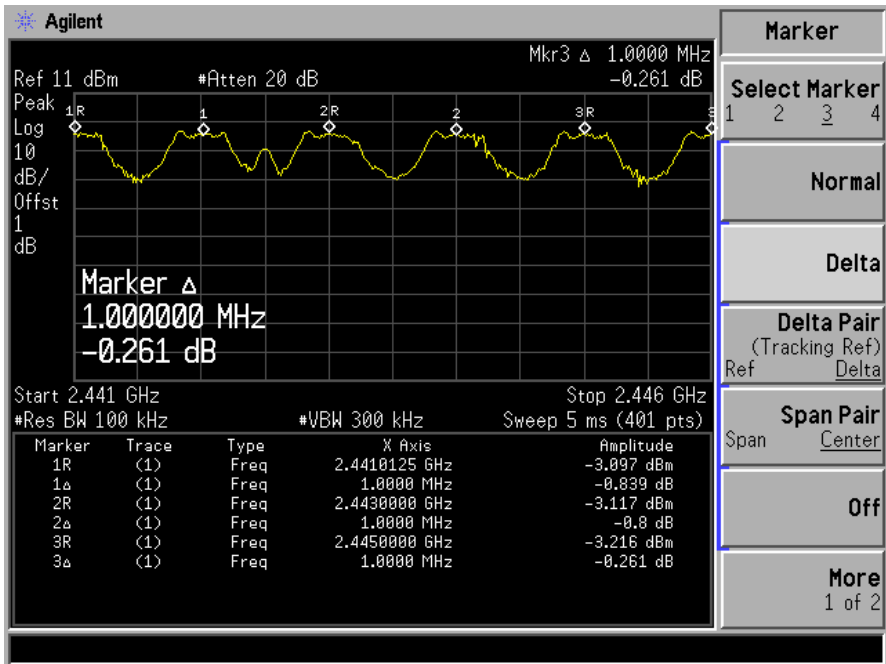
EMI Test Receiver	Setting
Attenuation	Auto
RB	100kHz
VB	300kHz
Detector	Peak
Trace	Max hold

Refer to attached data chart.

Spectrum Detector: PK Test Date : September 2, 2014  
Test By: KK Temperature : 24℃  
Test Result: PASS Humidity : 53 %  
Modulation: GFSK

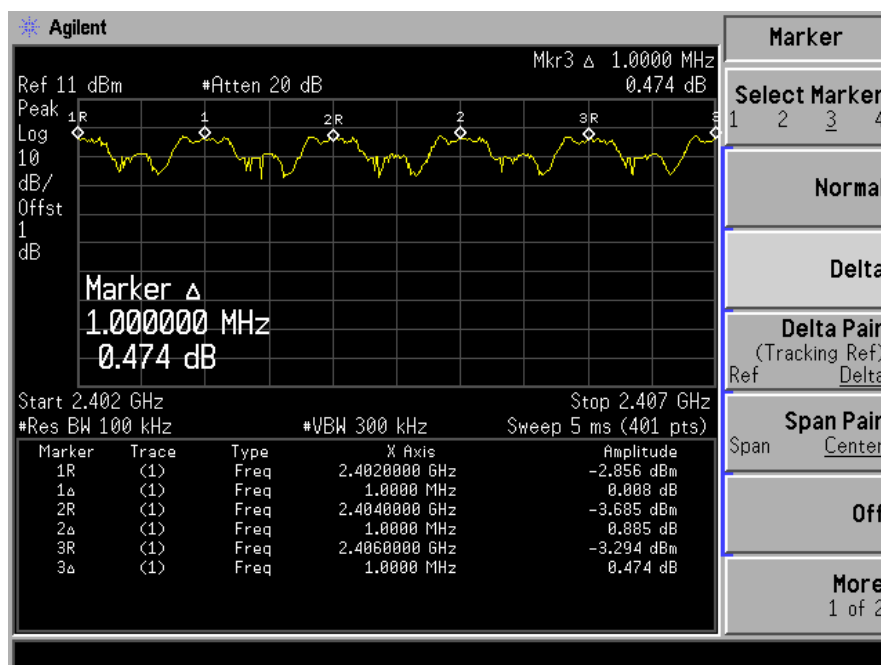
Channel number	Channel frequency (MHz)	Separation Read Value (kHz)	Separation Limit 20dB Down BW(kHz)
1	2402	1000.00	>840.681
40	2441	1000.00	>845.644
79	2480	1000.00	>832.192

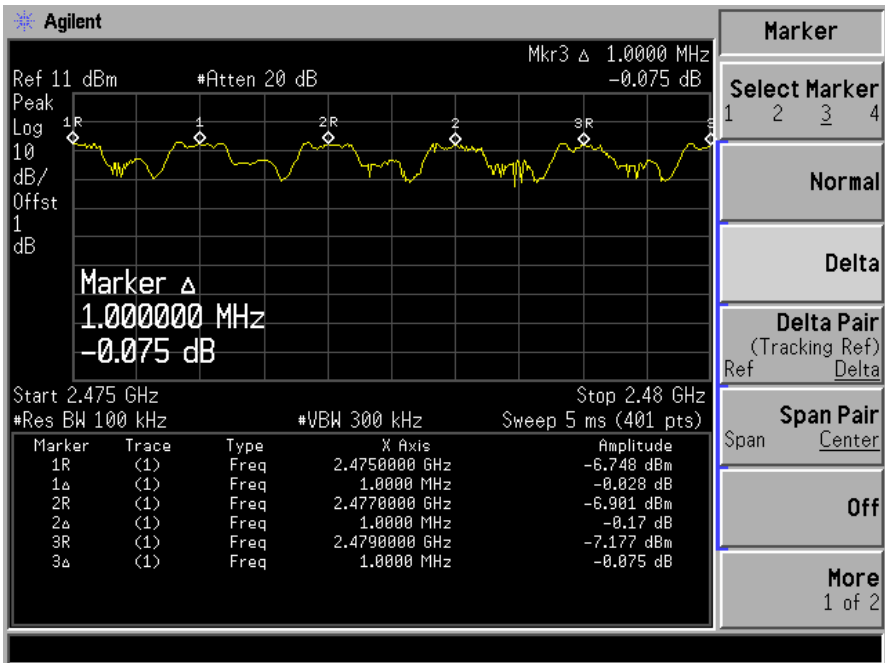
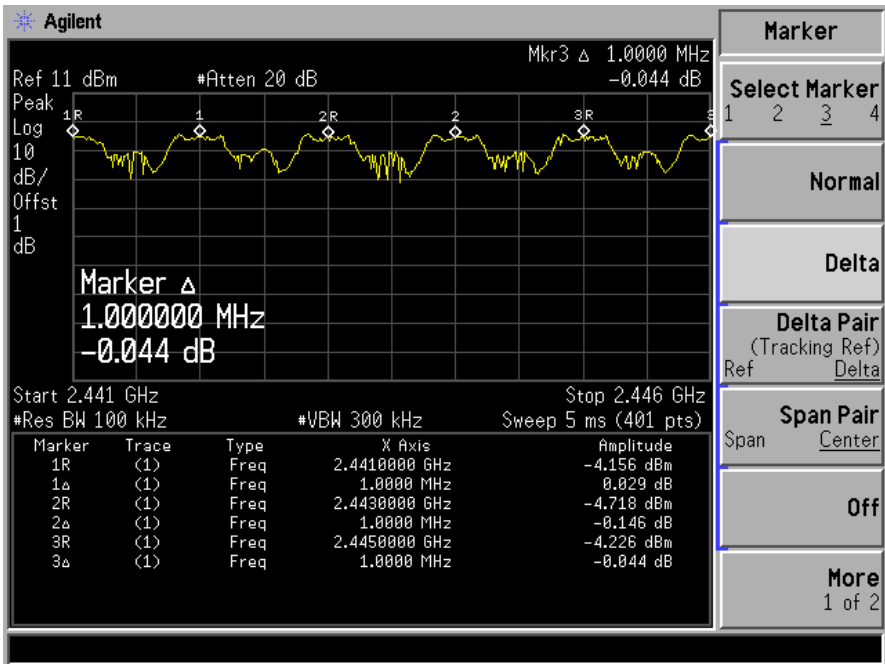




Spectrum Detector: PK Test Date : September 2, 2014  
 Test By: KK Temperature : 24℃  
 Test Result: PASS Humidity : 53 %  
 Modulation: 1/4πDQPSK

Channel number	Channel frequency (MHz)	Separation Read Value (kHz)	Separation Limit 2/3 20dB Down BW(kHz)
1	2402	1000.00	>746.667
40	2441	1000.00	>762.000
79	2480	1000.00	>731.333

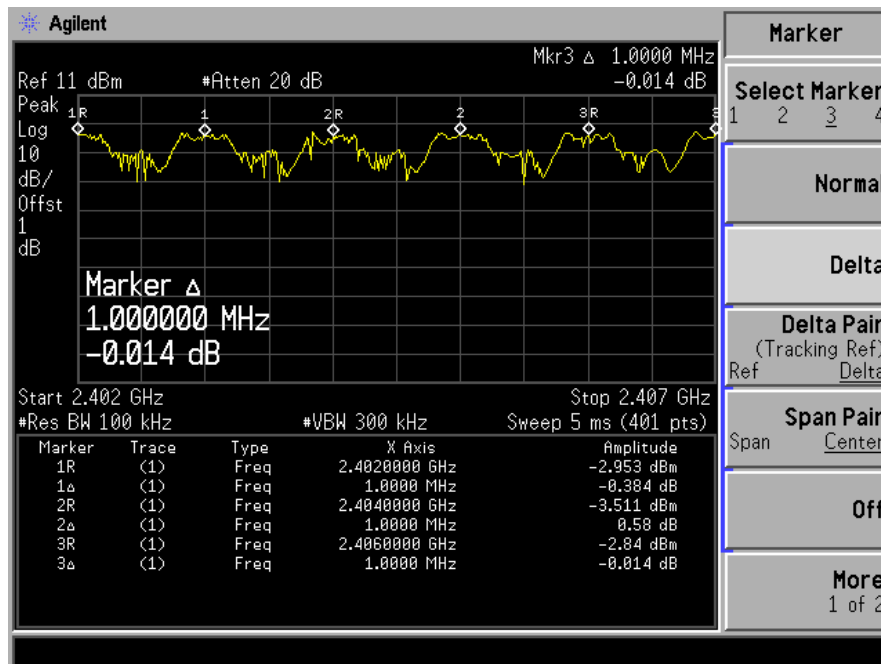


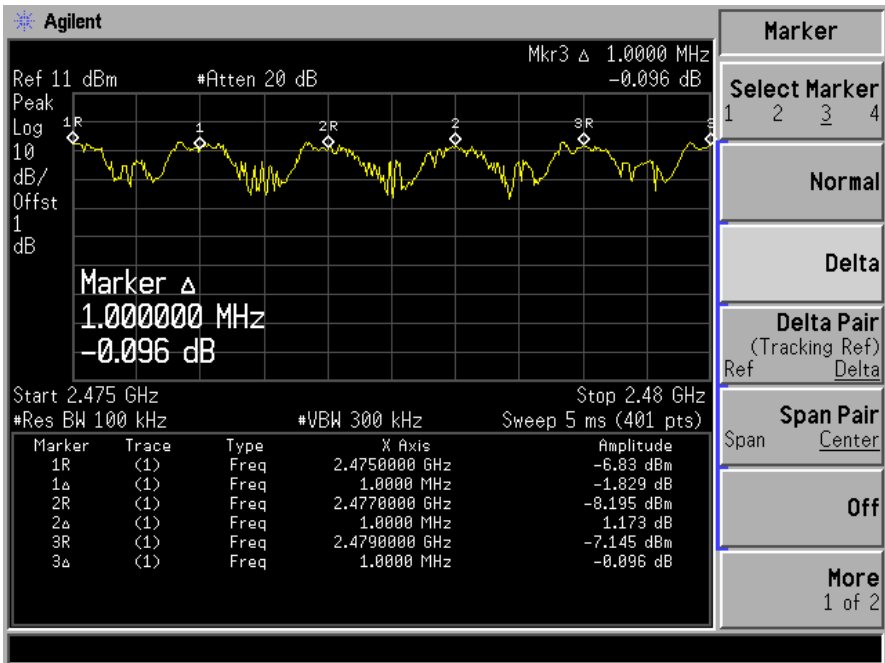
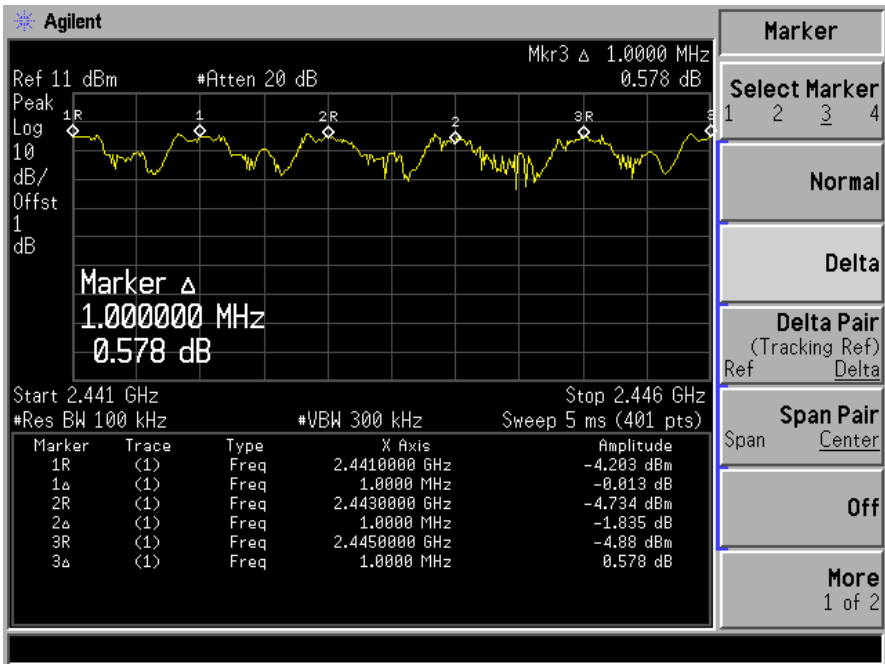




Spectrum Detector: PK                      Test Date : September 2, 2014  
 Test By: KK                                  Temperature : 24℃  
 Test Result: PASS                      Humidity : 53 %  
 Modulation: 8DPSK

Channel number	Channel frequency (MHz)	Separation Read Value (kHz)	Separation Limit 2/3 20dB Down BW(kHz)
1	2402	1000.00	>773.333
40	2441	1000.00	>774.667
79	2480	1000.00	>774.667



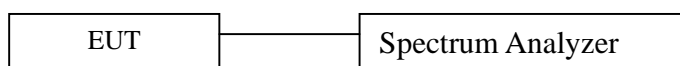


## 7. Bandwidth test

### 7.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

### 7.2 Test SET-UP (Block Diagram of Configuration)



### 7.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/17/2014	05/16/2015

### 7.4 Measurement Results:

The following table is the setting of spectrum analyzer.

EMI Test Receiver	Setting
Attenuation	Auto
Span	3MHz
RB	30kHz
VB	100kHz
Detector	Peak
Trace	Max hold

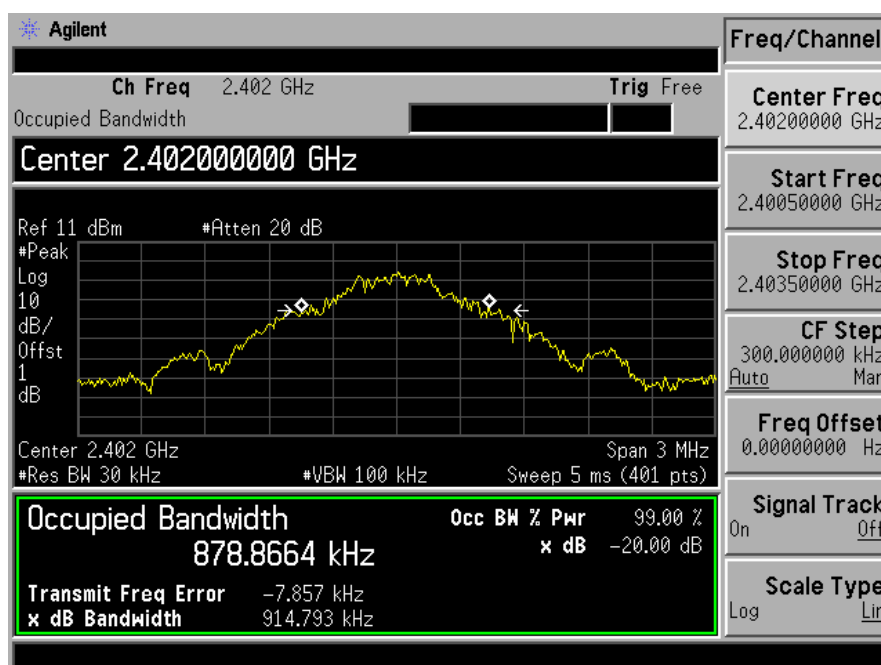
All the modes GFSK, 1/4Π-DQPSK, 8DPSK have been tested and the result recorded as below.

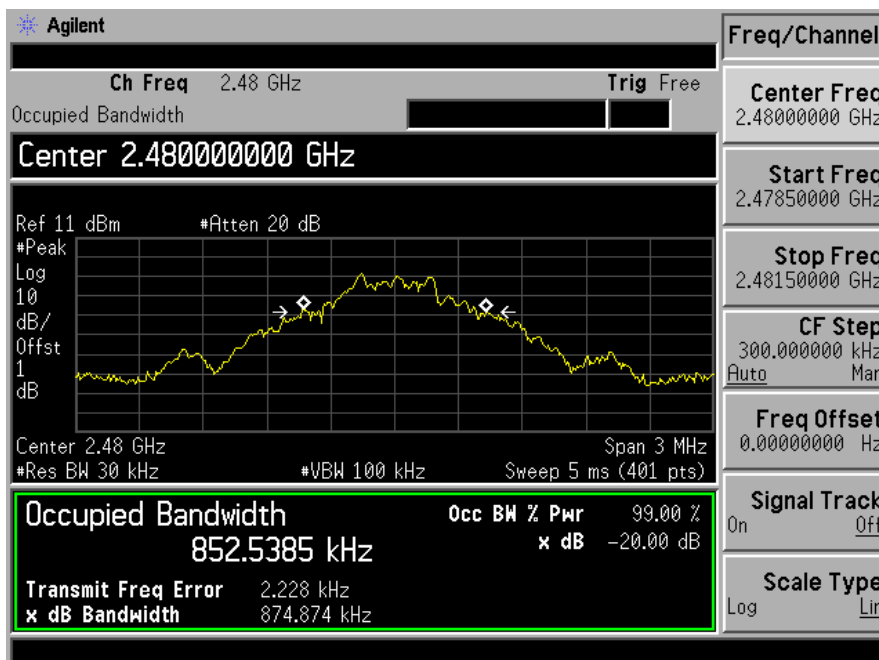
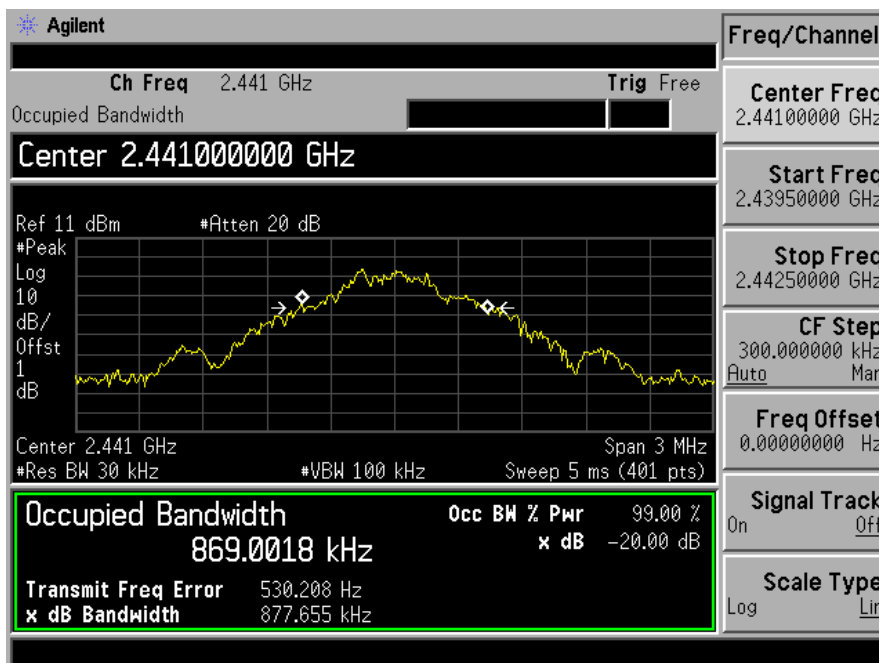
#### 7.4.1. 20dB Bandwidth and 99% Bandwidth test data Chart:

Refer to attached data chart.

Spectrum Detector:	PK	Test Date :	September 2, 2014
Test By:	KK	Temperature :	24 °C
Test Result:	PASS	Humidity :	53 %
Modulation:	GFSK		

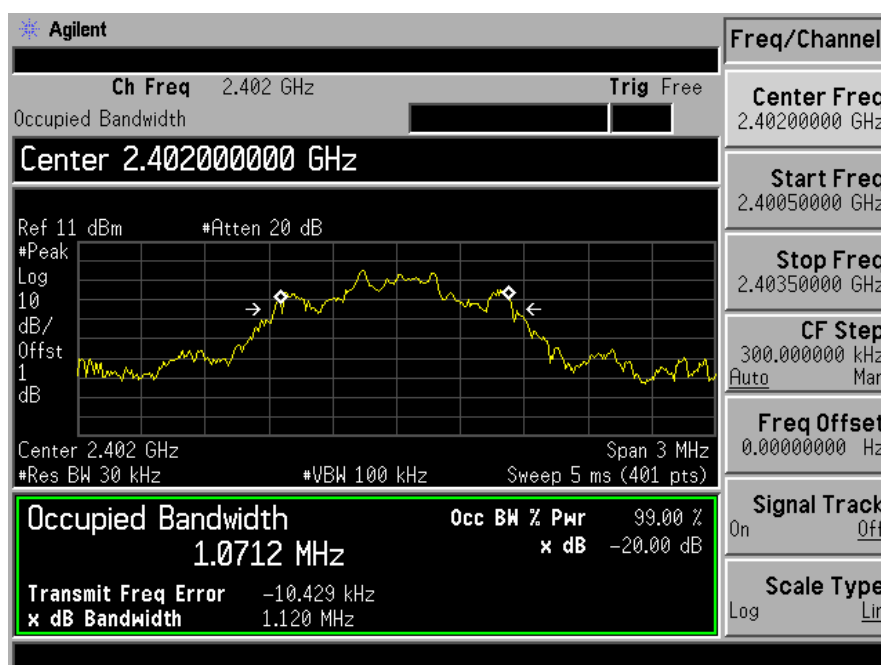
Channel number	Channel frequency (MHz)	20dB Down BW(kHz)
1	2402	914.793
40	2441	887.655
79	2480	874.874

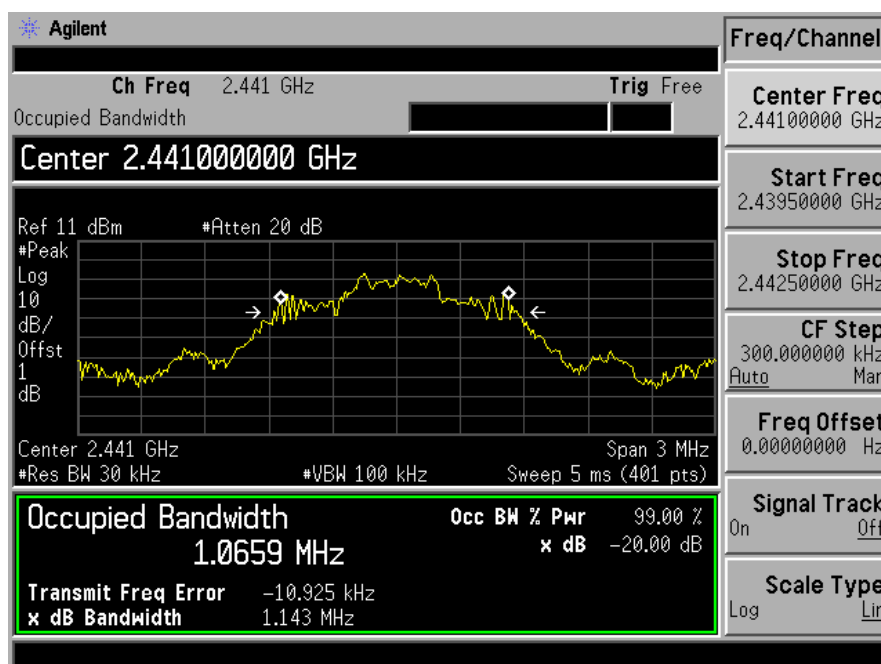




Spectrum Detector: PK Test Date : September 2, 2014  
Test By: KK Temperature : 24 °C  
Test Result: PASS Humidity : 53 %  
Modulation: 1/4Π-DQPSK

Channel number	Channel frequency (MHz)	20dB Down BW(kHz)
1	2402	1120.00
40	2441	1143.00
79	2480	1097.00



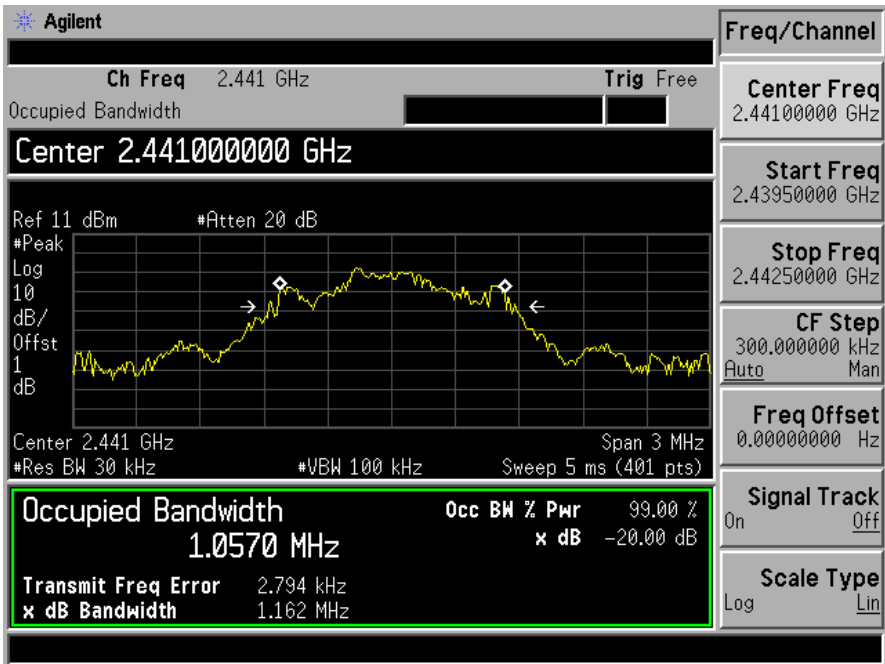


Spectrum Detector:	PK	Test Date :	September 2, 2014
Test By:	KK	Temperature :	24 °C
Test Result:	PASS	Humidity :	53 %
Modulation:	8DPSK		

Channel number	Channel frequency (MHz)	20dB Down BW(kHz)
1	2402	1160.00
40	2441	1162.00
79	2480	1162.00





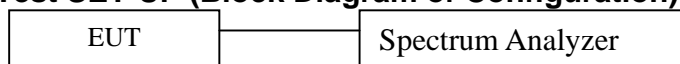


## 8. Quantity of Hopping Channel Test

### 8.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

### 8.2 Test SET-UP (Block Diagram of Configuration)



### 8.3 Measurement Equipment Used:

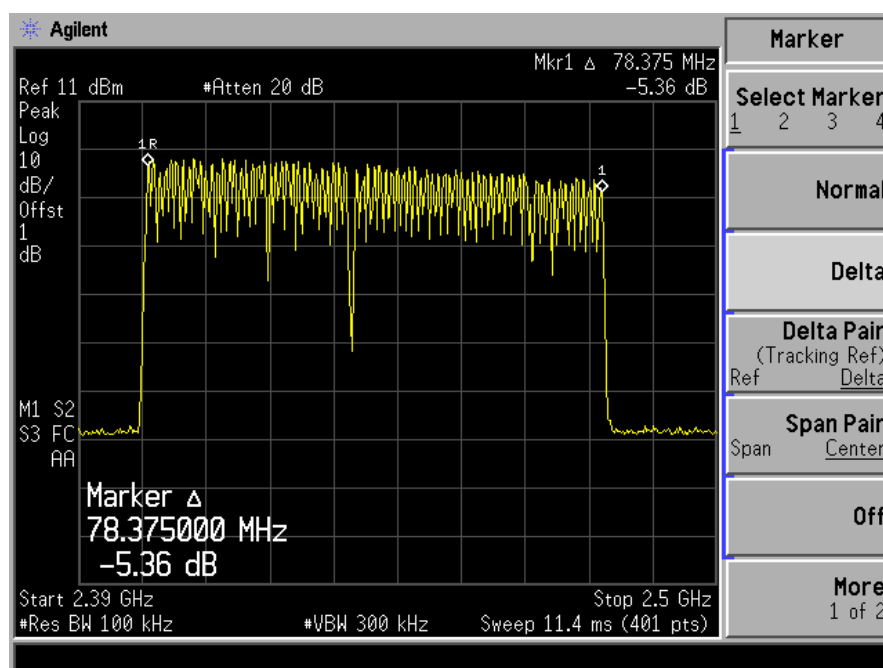
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/17/2014	05/16/2015

### 8.4 Measurement Results:

All the modulation modes were tested the data of the GFSK mode are recorded in the following pages.

Spectrum Detector: PK      Test Date : September 2, 2014  
Test By: KK      Temperature : 24°C  
Test Result: PASS      Humidity : 53 %

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

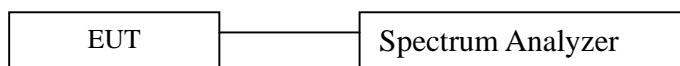


## 9. Time of Occupancy (Dwell Time) test

### 9.1 Measurement Procedure

- Check the calibration of the measuring instrument(SA) using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
- Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
- Repeat above procedures until all different time-slot modes have been completed.

### 9.2 Test SET-UP (Block Diagram of Configuration)



### 9.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/17/2014	05/16/2015

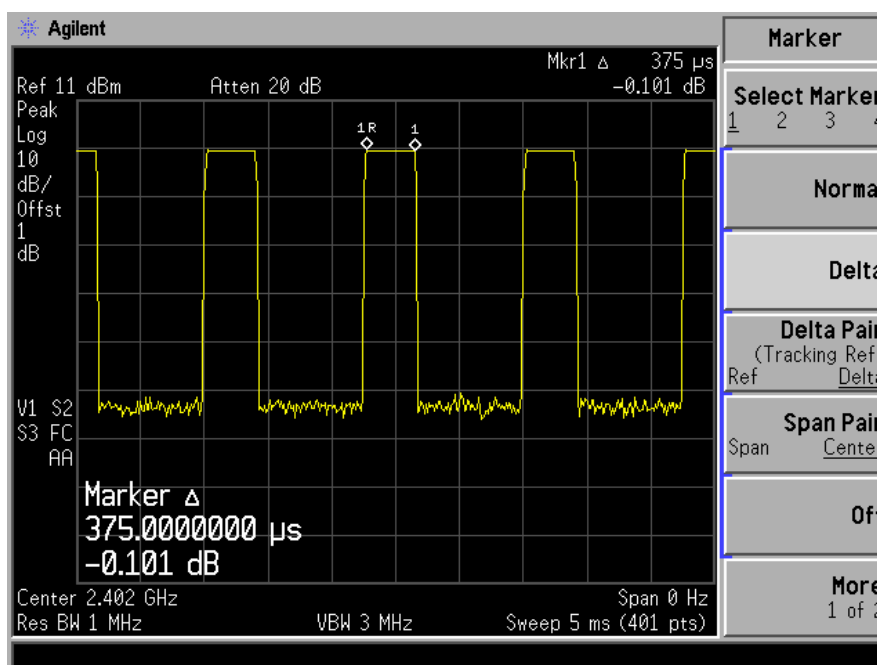
### 9.4 Measurement Results:

All the modulation modes were tested and the data of the GFSK mode are recorded in the following pages. Low, Middle and Highest channels have been tested, the worst test data channel 2402 were recorded in this report.

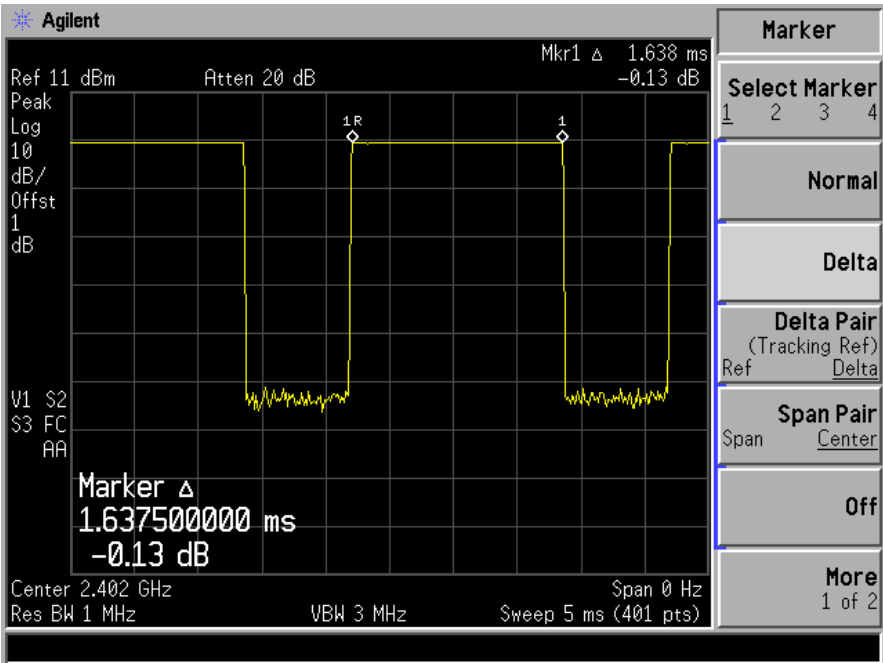
Spectrum Detector: PK                      Test Date :                      September 2, 2014  
 Test By:                      KK                      Temperature :                      24℃  
 Test Result:                      PASS                      Humidity :                      53 %

Mode	Number of transmission in a 31.6( 79 Hopping*0.4)	Length of transmissions time(msec)	Result (msec)	Limit (msec)
DH1	$1600/(2*79) \times 31.6 = 320$	0.375	120.00	400
DH3	$1600/(4*79) \times 31.6 = 160$	1.638	262.08	400
DH5	$1600/(6*79) \times 31.6 = 106.67$	2.887	307.95	400

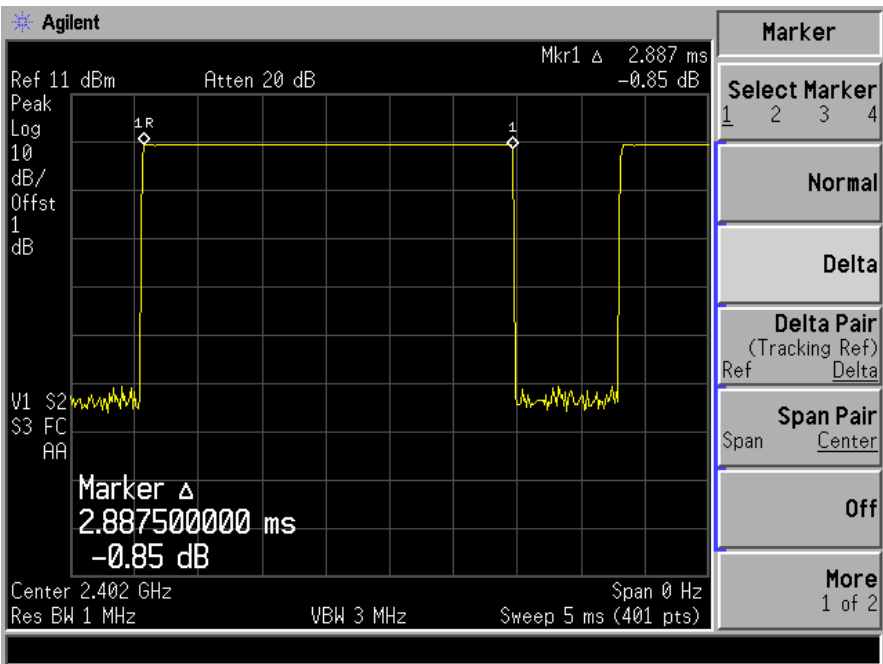
DH1



DH3



DH5

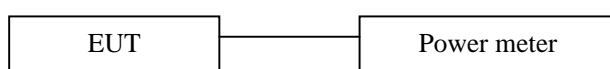


## 10. MAXIMUM PEAK OUTPUT POWER TEST

### 10.1 Measurement Procedure

- The testing follows FCC public Notice DA 00-705 Measurement Guidelines.
- The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
- Set to the maximum output power setting and enable the EUT transmit continuously.
- Measure the conducted output power with cable loss and record the results in the test report.
- Measure and record the results in the report.

### 10.2 Test SET-UP (Block Diagram of Configuration)



### 10.3 Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power meter	Boonton	4232A	29001	05/17/2014	05/16/2015
Power sensor	Boonton	51011-EMC	31184	05/17/2014	05/16/2015

### 10.4 Measurement Results:

All the modes GFSK, 1/4Π-DQPSK,8DPSK have been tested and the result recorded as below.

Spectrum Detector: PK                      Test Date : September 2, 2014  
Test By: KK                                      Temperature : 24℃  
Test Result: PASS                              Humidity : 53 %  
Modulation: GFSK

Channel number	Channel Frequency (MHz)	Peak Power output(dBm)	Peak Power Limit(mW)	Pass/Fail
1	2402.00	-0.748	1000mW	PASS
40	2441.00	-2.022	1000mW	PASS
79	2480.00	-2.240	1000mW	PASS

Spectrum Detector: PK Test Date : September 2, 2014  
Test By: KK Temperature : 24℃  
Test Result: PASS Humidity : 53 %  
Modulation: 1/4Π-DQPSK

Channel number	Channel Frequency (MHz)	Peak Power output(dBm)	Peak Power Limit(mW)	Pass/Fail
1	2402.00	-1.173	125mW	PASS
40	2441.00	-2.948	125mW	PASS
79	2480.00	-3.117	125mW	PASS

Spectrum Detector: PK Test Date : September 2, 2014  
Test By: KK Temperature : 24℃  
Test Result: PASS Humidity : 53 %  
Modulation: 8DPSK

Channel number	Channel Frequency (MHz)	Peak Power output(dBm)	Peak Power Limit(mW)	Pass/Fail
1	2402.00	-1.690	125mW	PASS
40	2441.00	-2.948	125mW	PASS
79	2480.00	-3.112	125mW	PASS

## 11. Band EDGE test

### 11.1 Measurement Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of FCC Public Notice DA00-705 Measurement Guidelines.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT was placed on a turntable with 0.8 meter above ground.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
6. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for  $f < 1$  GHz;  $VBW \geq RBW$ ; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.For average measurement:  
The RBW of test receiver/spectrum analyzer is 1MHz and the VBW for Average detection (AV) of test receiver/spectrum analyzer is 10Hz above 1GHz.

The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

### 11.2 Test SET-UP (Block Diagram of Configuration)

As 5.2 Test set up (B) and (C)

### 11.3 Measurement Equipment Used:

Same as 5.3 Radiated Emission Measurement.

### 11.4 Measurement Results:

All the modes GFSK, 1/4Π-DQPSK, 8DPSK and hopping mode have been tested and the result recorded as below.



Spectrum Detector: PK/AV      Test Date : September 2, 2014  
Test By: KK      Temperature : 24℃  
Test channel: 00      Humidity : 53 %  
Modulation: GFSK

Frequency (MHz)	Polarity	Reading (dBuV/m)	Correct Factor (dB)	Result (dBuV/m)	Limited (dBuV/m)	Margin (dB)	Remark (Detector)
2312.38	H	31.30	16.64	47.94	74.00	-26.06	PK
2312.38	H	18.60	16.64	35.24	54.00	-18.76	AV
2400.00	H	40.11	17.11	57.22	Delta=25.83dBc		AV
2402.00	H	65.93	17.12	83.05			AV
2385.66	V	30.20	16.83	47.03	74.00	-26.97	PK
2385.66	V	15.69	16.83	32.52	54.00	-21.48	AV
2400.00	V	39.55	17.11	56.66	Delta=24.10dBc		AV
2402.00	V	63.64	17.12	80.76			AV

Spectrum Detector: PK/AV      Test Date : September 2, 2014  
Test By: KK      Temperature : 24℃  
Test channel: 78      Humidity : 53 %  
Modulation: GFSK

Frequency (MHz)	Polarity	Reading (dBuV/m)	Correct Factor (dB)	Result (dBuV/m)	Limited (dBuV/m)	Margin (dB)	Remark (Detector)
2480.00	H	78.22	17.71	95.93	/	/	PK
2480.00	H	60.6	17.71	78.31	/	/	AV
2483.50	H	32.25	17.73	49.98	74.00	-24.02	PK
2483.50	H	22.98	17.73	40.71	54.00	-13.29	AV
2480.00	V	72.94	17.71	90.65	/	/	PK
2480.00	V	53.67	17.71	71.38	/	/	AV
2483.50	V	30.20	17.73	47.93	74.00	-26.07	PK
2483.50	V	15.69	17.73	33.42	54.00	-20.58	AV

Spectrum Detector: PK/AV Test Date : September 2, 2014  
Test By: KK Temperature : 24°C  
Test channel: 00 Humidity : 53 %  
Modulation: 1/4Π-DQPSK

Frequency (MHz)	Polarity	Reading (dBuV/m)	Correct Factor (dB)	Result (dBuV/m)	Limited (dBuV/m)	Margin (dB)	Remark (Detector)
2312.55	H	31.00	16.64	48.68	74.00	-25.32	PK
2312.55	H	20.07	16.64	36.71	54.00	-17.29	AV
2400.00	H	42.08	17.11	59.19	Delta=20.47dBc		AV
2402.00	H	62.54	17.12	79.66			AV
2343.28	V	29.51	16.75	46.26	74.00	-27.74	PK
2343.28	V	14.74	16.75	31.49	54.00	-22.51	AV
2400.00	V	39.31	17.11	56.42	Delta=21.99dBc		AV
2402.00	V	61.29	17.12	78.41			AV

Spectrum Detector: PK/AV Test Date : September 2, 2014  
Test By: KK Temperature : 24°C  
Test channel: 78 Humidity : 53 %  
Modulation: 1/4Π-DQPSK

Frequency (MHz)	Polarity	Reading (dBuV/m)	Correct Factor (dB)	Result (dBuV/m)	Limited (dBuV/m)	Margin (dB)	Remark (Detector)
2480.00	H	75.34	17.71	93.05	/	/	PK
2480.00	H	58.92	17.71	76.63	/	/	AV
2483.50	H	30.79	17.73	48.52	74.00	-25.48	PK
2483.50	H	21.11	17.73	38.84	54.00	-15.16	AV
2480.00	V	70.13	17.71	87.84	/	/	PK
2480.00	V	50.66	17.71	68.37	/	/	AV
2483.50	V	28.36	17.73	46.09	74.00	-27.91	PK
2483.50	V	14.09	17.73	31.82	54.00	-22.18	AV

Spectrum Detector: PK/AV Test Date : September 2, 2014  
Test By: KK Temperature : 24°C  
Test channel: 00 Humidity : 53 %  
Modulation: 8DPSK

Frequency (MHz)	Polarity	Reading (dBuV/m)	Correct Factor (dB)	Result (dBuV/m)	Limited (dBuV/m)	Margin (dB)	Remark (Detector)
2339.51	H	31.43	16.77	48.20	74.00	-25.80	PK
2339.51	H	19.67	16.77	36.44	54.00	-17.56	AV
2400.00	H	40.04	17.11	57.15	Delta=20.66dBc		AV
2402.00	H	60.69	17.12	77.81			AV
2372.26	V	28.56	16.84	45.40	74.00	-28.60	PK
2372.26	V	14.22	16.84	31.06	54.00	-22.94	AV
2400.00	V	38.65	17.11	55.76	Delta=22.02dBc		AV
2402.00	V	60.66	17.12	77.78			AV

Spectrum Detector: PK/AV Test Date : September 2, 2014  
Test By: KK Temperature : 24°C  
Test channel: 78 Humidity : 53 %  
Modulation: 8DPSK

Frequency (MHz)	Polarity	Reading (dBuV/m)	Correct Factor (dB)	Result (dBuV/m)	Limited (dBuV/m)	Margin (dB)	Remark (Detector)
2480.00	H	74.55	17.71	92.26	/	/	PK
2480.00	H	57.08	17.71	74.79	/	/	AV
2483.50	H	29.82	17.73	47.55	74.00	-26.45	PK
2483.50	H	20.53	17.73	38.26	54.00	-15.74	AV
2480.00	V	68.76	17.71	86.47	/	/	PK
2480.00	V	50.29	17.71	68.00	/	/	AV
2483.50	V	27.84	17.73	45.57	74.00	-28.43	PK
2483.50	V	13.77	17.73	31.50	54.00	-22.50	AV

Spectrum Detector: PK/AV Test Date : September 2, 2014  
Test By: KK Temperature : 24°C  
Modulation: Hopping mode Humidity : 53 %

Frequency (MHz)	Polarity	Level (dBuV/m)		Limited (dBuV/m)	
		PK	AV	PK	AV
2390.00	H	50.05	35.54	74	54
2390.00	V	48.71	34.2	74	54
2483.50	H	50.33	35.82	74	54
2483.50	V	48.99	34.48	74	54

## 12. Antenna Port Emission

### 12.1 Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/17/2014	05/16/2015

### 12.2 Measuring Instruments and setting

All the modulation modes were tested and the data of the GFSK mode are recorded in the following pages and the others modulation methods do not exceed the limits.

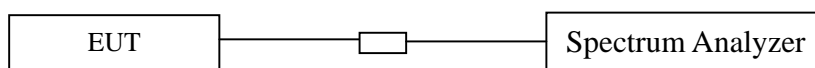
The following table is the setting of spectrum analyzer.

EMI Test Receiver	Setting
Attenuation	Auto
RB	100kHz
VB	300kHz
Detector	Peak
Trace	Max hold

### 12.3 Test Procedures

The conducted spurious emissions were measured conducted using a spectrum analyzer at low, mid, and hi channels, the limit was determined by attenuation 20dB of the RF peak power output.

### 12.4 Block Diagram of Test setup

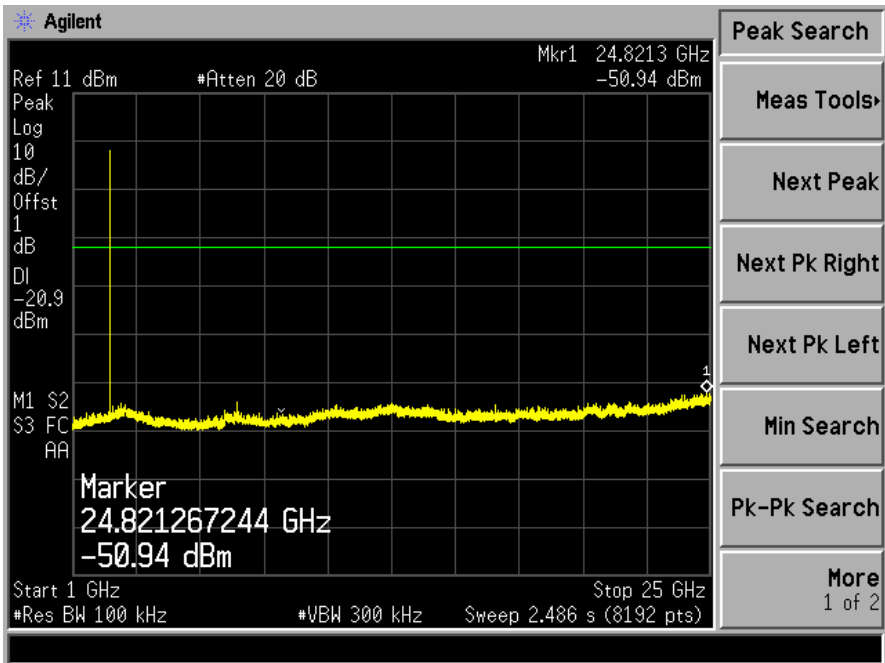
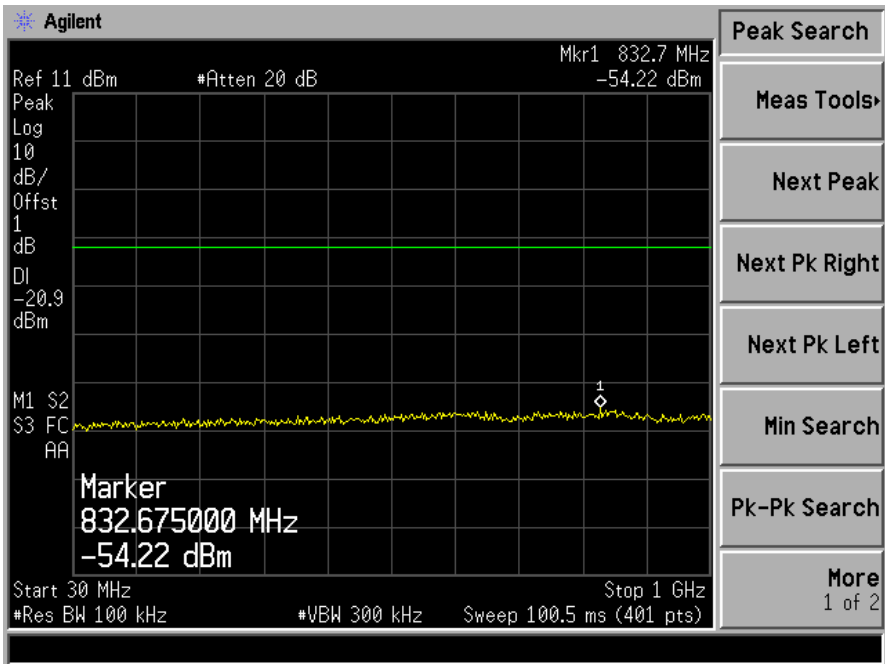


### 12.5 Test Result

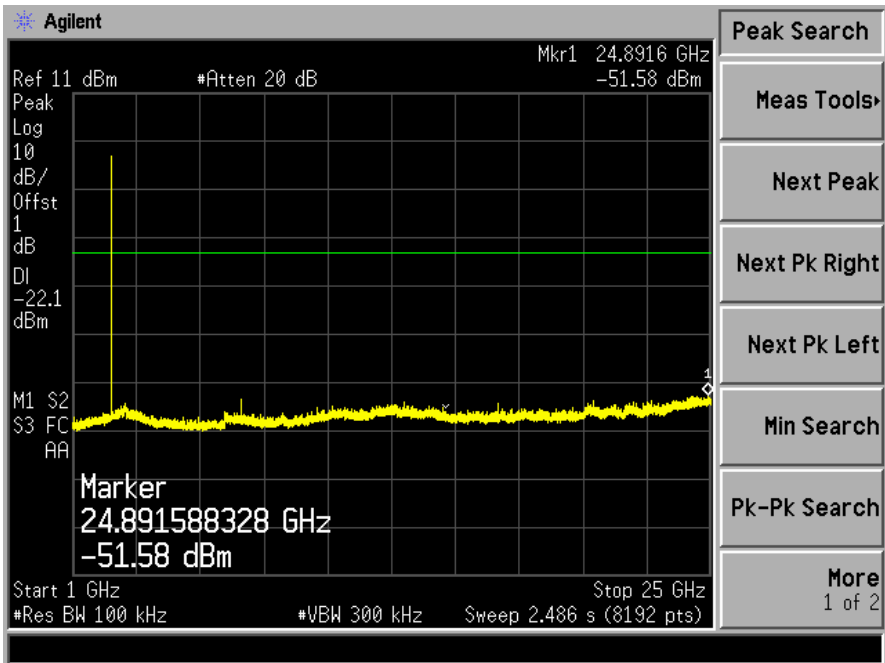
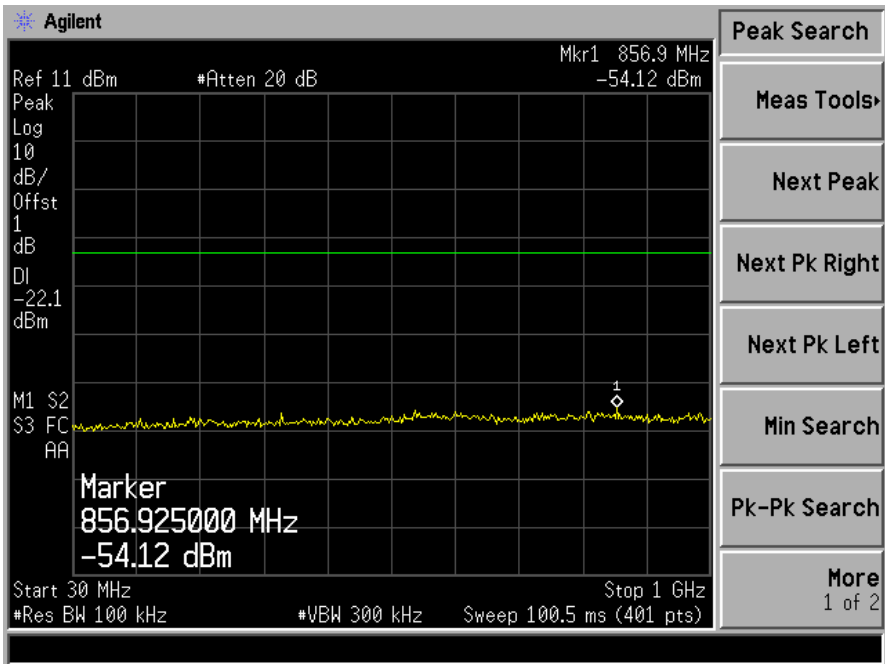
PASS.

All the modes GFSK, 1/4Π-DQPSK,8DPSK have been tested and the worst result (GFSK) recorded in the following pages and the others modulation methods do not exceed the limits.

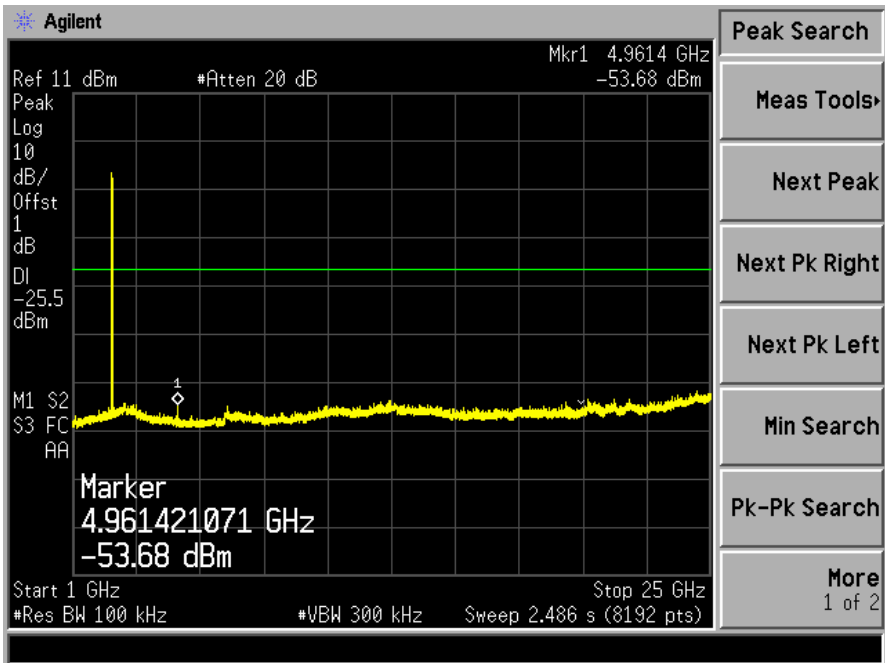
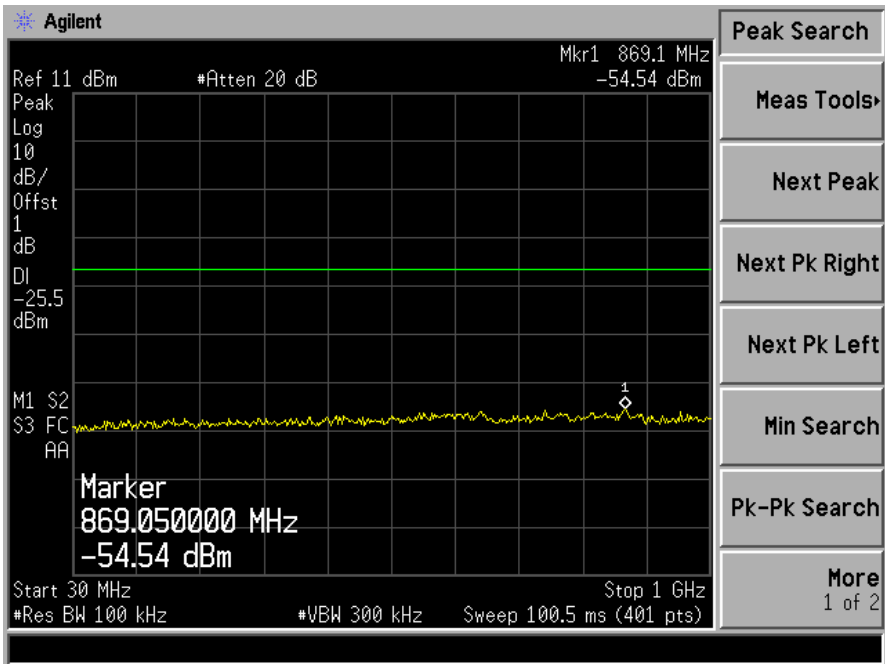
TX 2402MHz



TX 2441MHz



TX 2480MHz



## **13. Antenna Application**

### **13.1 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.

### **13.2 Result**

The EUT's antenna integrated on Ceramic, The antenna's gain is 1dBi and meets the requirement.