

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

OF

Flavor 10

MODEL No.: F10-Panel

FCC ID: 2ADJH-FLAVOR

Trade Mark: N/A

REPORT NO: ES141015072E2

ISSUE DATE: November 5, 2014

Prepared for

Flavor Burst Company

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Prepared by

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VERIFICATION OF COMPLIANCE

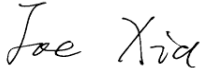
Applicant:	Flavor Burst Company 499 Commerce Drive Danville, IN 46122 USA
Manufacturer:	Flavor Burst Company 499 Commerce Drive Danville, IN 46122 USA
Product Description:	Flavor 10
Model Number:	F10-Panel
Trade Mark:	N/A
Serial Number:	N/A
File Number:	ES141015072E2
Date of Test:	October 23, 2014 to November 5, 2014

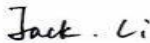
We hereby certify that:

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.

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

Date of Test : October 23, 2014 to November 5, 2014

Prepared by : 
Joe Xia/Editor

Reviewer : 
Jack Li/Supervisor

Approve & Authorized
Signer : 
Lisa Wang/Manager

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1. GENERAL INFORMATION

1.1 Product Description

A major technical descriptions of EUT is described as following:

A). Operation Frequency:

WIFI: 802.11b/g/n(HT20):2412MHz-2462MHz; 802.11n(HT40): 2422MHz-2452MHz

Bluetooth: 2402-2480MHz

B). Modulation: WIFI:OFDM with BPSK/QPSK/16QAM/64QAM for 802.11g/n,
DSSS with DBPSK/DQPSK/CCK for 802.11b;

Bluetooth: GFSK, 1/4 π DQPSK, 8DPSK

C). Number of Channel: WIFI: 2.4G 802.11b/g/n(HT20): 11channels;

802.11n(HT40): 7channels

Bluetooth: 79 channel

D). Max Peak Conducted Power: WIFI:19.42dBm, Bluetooth: 4.30dBm

E). Antenna Gain: 1.0dBi for 2.4G

F). Antenna Type: Chip antenna

G). Power Supply: DC 24V from POE Power

1.2 Related Submittal(s) / Grant (s)

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

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, April 17, 2013
The Certificate Registration Number is 406365.

Accredited by Industry Canada, March 5, 2012
The Certificate Registration Number is 4480A.

Name of Firm

: SHENZHEN EMTEK CO., LTD

Site Location

: 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 placed on a 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 placed on a 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) Frequency Range(MHz)	Quantity of Hopping Channel	20dB Bandwidth 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	See the remark
0.490~1.705	2400/F(KHz)	30	
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 ($\mu\text{V/m}$)
 : 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



Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.	Note
1.	Flavor 10	N/A	F10-Panel	2ADJH-FLAVOR	N/A	EUT
2.	POE	N/A	N/A	N/A	N/A	

Note:

- (1) Unless otherwise denoted as EUT in 『Remark』 column, device(s) used in tested system is a support equipment.

2.6 Description of test modes

The EUT has been tested under TX operating condition.

This EUT is a FHSS system, were conducted to determine the final configuration from all possible combinations. We use software control the EUT, Let EUT hopping on and transmit with highest power, all the modes GFSK, $1/4\pi$ 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)
0	2402
39	2441
78	2480

3. Summary of Test Results

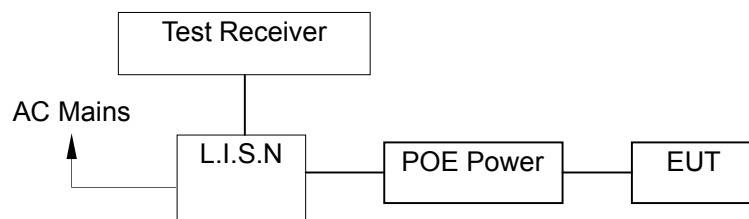
FCC Rule	Description Of Test	Result
15.247(a)(1)	Channel Separation test	Pass
15.247(a)(1)	20dB Bandwidth	Pass
15.247(a)(1)	Quantity of Hopping Channel	Pass
15.247(a)(1)	Time of Occupancy (Dwell Time)	Pass
15.247(b)(1)	Max Peak output Power test	Pass
15.247(d)	Band edge test	Pass
15.207	AC Power Conducted Emission	Pass
15.247(d)	Radiated Emission	Pass
§15.247(d)	Antenna Port Emission	Pass
15.203&15.247(b)	Antenna Application	Pass
N/A	99%dB Bandwidth	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 is complete.

4.2 Test SET-UP (Block Diagram of Configuration)



4.3 Measurement Equipment Used:

Conducted Emission Test Site # 4					
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

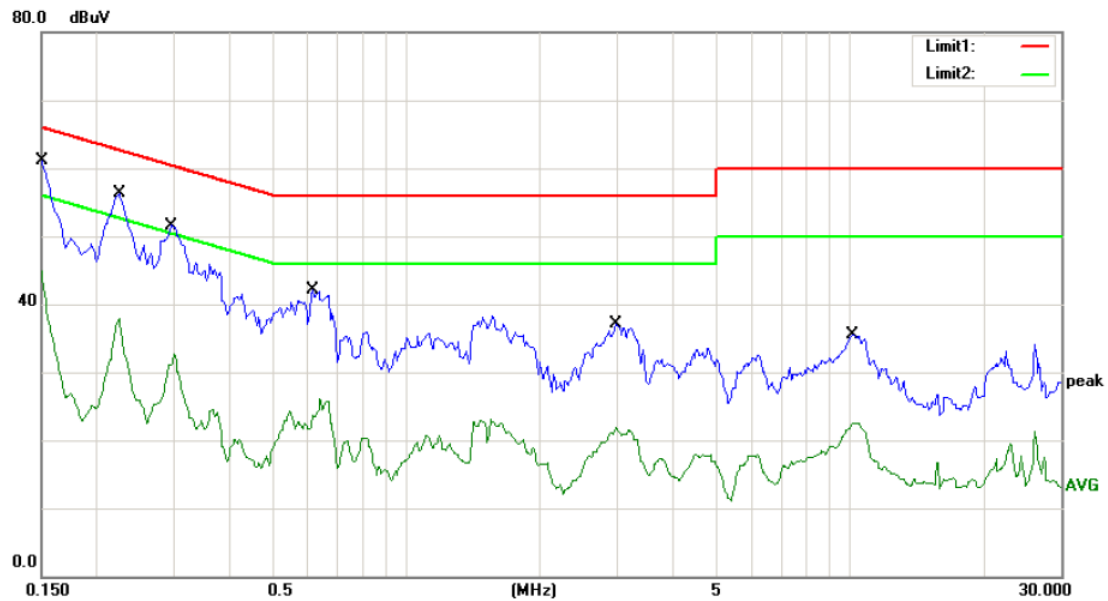
4.4 Conducted Emission Limit (7) Conducted Emission

Frequency(MHz)	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.

4.5 Measurement Result:



Site Conduction #1

Phase: **L1**

Temperature: 24

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

Humidity: 53 %

EUT: FLAVOR F10

M/N: F10-Panel

Mode: ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1	*	0.1500	61.09	0.00	61.09	66.00	-4.91	QP	
2		0.1500	44.92	0.00	44.92	56.00	-11.08	AVG	
3		0.2250	56.23	0.00	56.23	62.63	-6.40	QP	
4		0.2250	37.99	0.00	37.99	52.63	-14.64	AVG	
5		0.2950	51.60	0.00	51.60	60.38	-8.78	QP	
6		0.2950	32.67	0.00	32.67	50.38	-17.71	AVG	
7		0.6150	42.18	0.00	42.18	56.00	-13.82	QP	
8		0.6150	26.17	0.00	26.17	46.00	-19.83	AVG	
9		2.9700	37.04	0.00	37.04	56.00	-18.96	QP	
10		2.9700	21.83	0.00	21.83	46.00	-24.17	AVG	
11		10.1750	35.51	0.00	35.51	60.00	-24.49	QP	
12		10.1750	22.56	0.00	22.56	50.00	-27.44	AVG	

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



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1500	57.40	0.00	57.40	66.00	-8.60	QP	
2		0.1500	40.38	0.00	40.38	56.00	-15.62	AVG	
3		0.1950	55.05	0.00	55.05	63.82	-8.77	QP	
4		0.1950	36.14	0.00	36.14	53.82	-17.68	AVG	
5		0.2450	52.19	0.00	52.19	61.92	-9.73	QP	
6		0.2450	31.57	0.00	31.57	51.92	-20.35	AVG	
7		0.6150	42.96	0.00	42.96	56.00	-13.04	QP	
8		0.6150	24.06	0.00	24.06	46.00	-21.94	AVG	
9		3.0200	33.69	0.00	33.69	56.00	-22.31	QP	
10		3.0200	18.34	0.00	18.34	46.00	-27.66	AVG	
11		10.2250	39.94	0.00	39.94	60.00	-20.06	QP	
12		10.2250	25.31	0.00	25.31	50.00	-24.69	AVG	

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

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

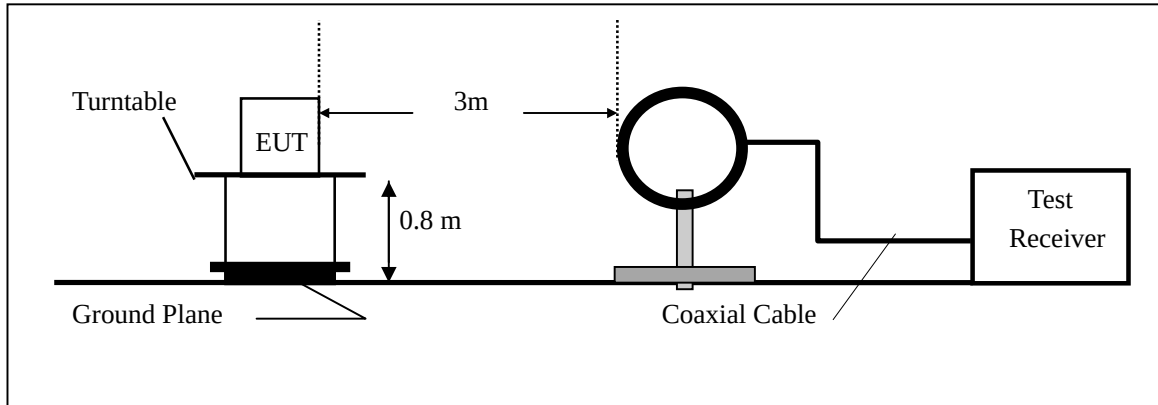
EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	3MHz
Detector	Peak
Trace	Max hold

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

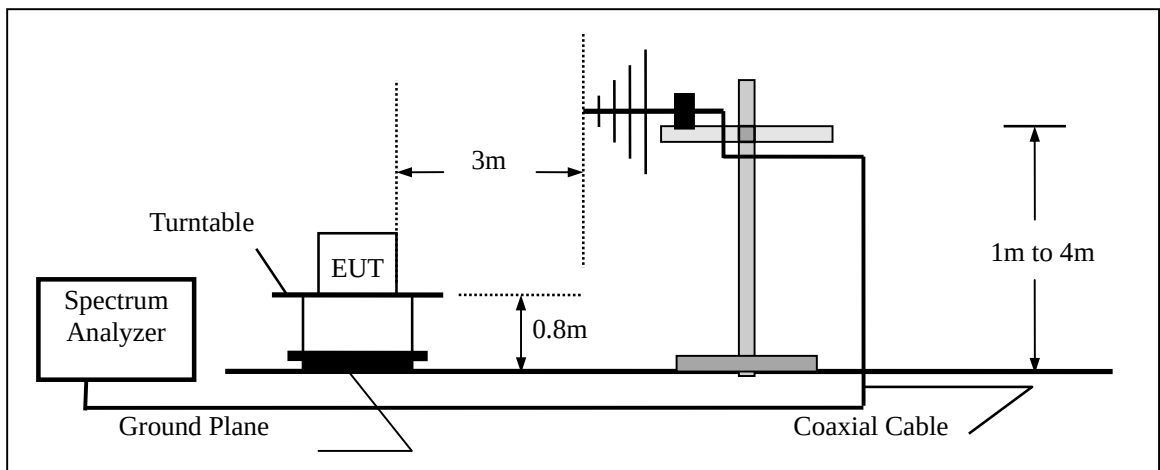
EMI Test Receiver	Setting
Attenuation	Auto
RB	1MHz
VB	10Hz
Detector	Peak
Trace	Max hold

5.2 Test SET-UP (Block Diagram of Configuration)

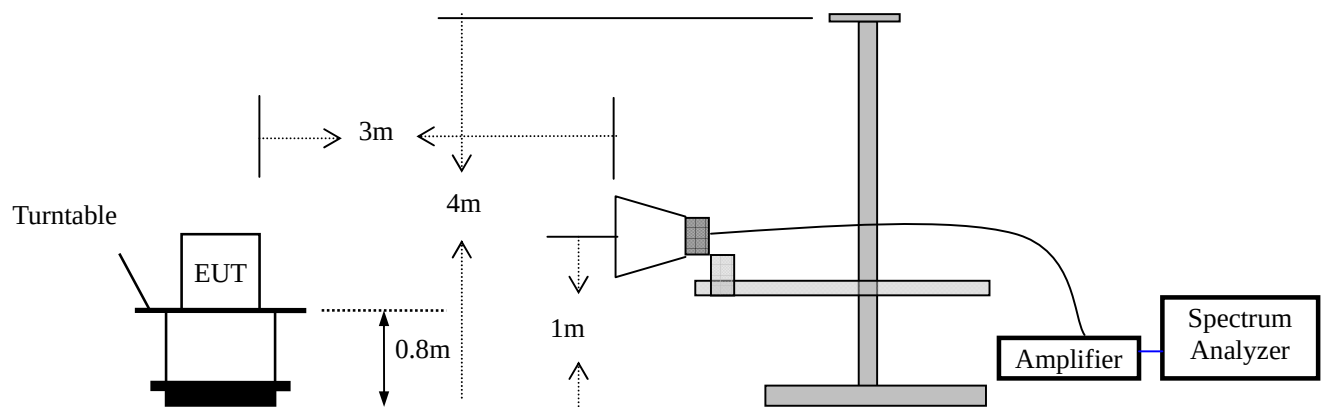
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



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



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

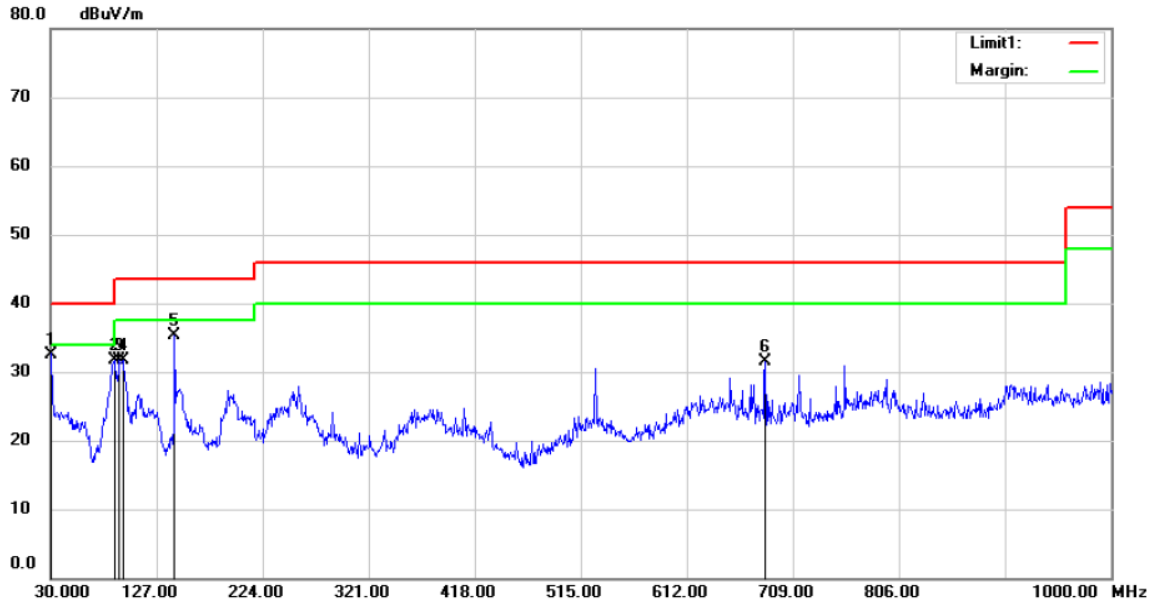


5.3 Measurement Equipment Used:

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 worst mode (GFSK) are recorded in the following pages and the others modulation methods do not exceed the limits.



Site 3m Chamber #3

Polarization: **Horizontal**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

EUT: FLAVOR F10

M/N: F10-Panel

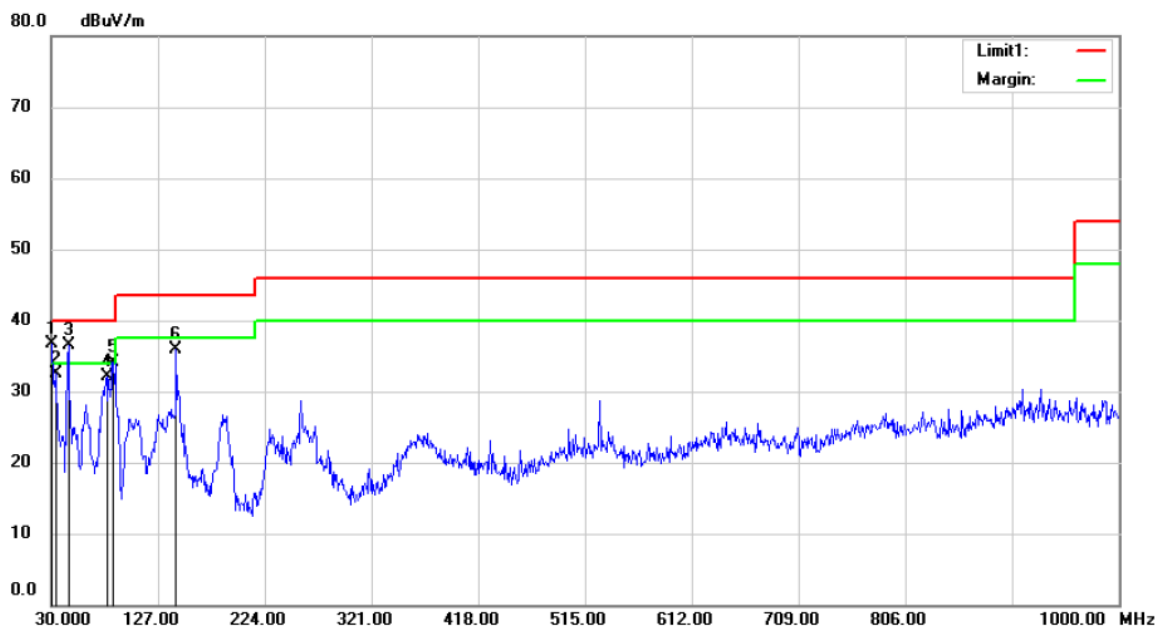
Mode:2402

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	*	30.0000	47.02	-14.42	32.60	40.00	-7.40	QP		
2		88.2000	48.40	-16.63	31.77	43.50	-11.73	QP		
3		93.0500	46.62	-14.93	31.69	43.50	-11.81	QP		
4		95.9600	45.82	-14.12	31.70	43.50	-11.80	QP		
5		143.4900	52.60	-17.25	35.35	43.50	-8.15	QP		
6		683.7800	36.51	-4.95	31.56	46.00	-14.44	QP		

*:Maximum data x:Over limit l:over margin

Operator: XLX



Site 3m Chamber #3

Polarization: **Vertical**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

EUT: FLAVOR F10

M/N: F10-Panel

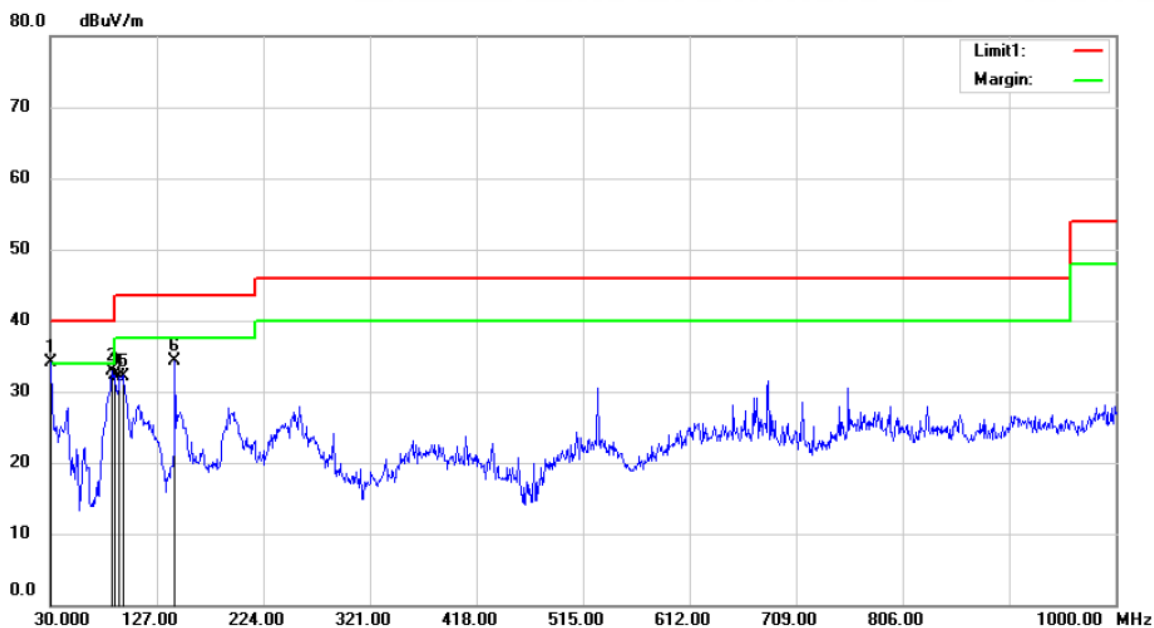
Mode:2402

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	*	30.0000	51.08	-14.42	36.66	40.00	-3.34	QP		
2		33.8800	45.90	-13.31	32.59	40.00	-7.41	QP		
3	!	45.5200	48.68	-12.25	36.43	40.00	-3.57	QP		
4		80.4400	50.90	-18.87	32.03	40.00	-7.97	QP		
5	!	86.2600	51.33	-17.30	34.03	40.00	-5.97	QP		
6		143.4900	53.13	-17.25	35.88	43.50	-7.62	QP		

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

Operator: XLX



Site 3m Chamber #3

Polarization: **Horizontal**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

EUT: FLAVOR F10

M/N: F10-Panel

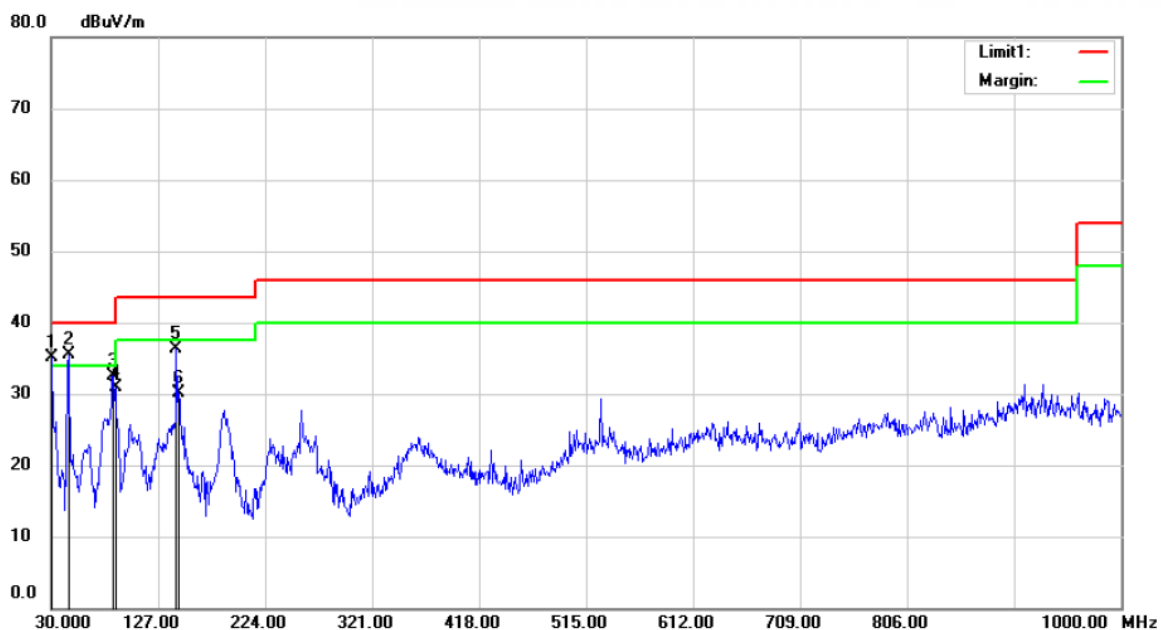
Mode:2441

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1	*	30.0000	48.52	-14.42	34.10	40.00	-5.90	QP		
2		86.2600	50.11	-17.30	32.81	40.00	-7.19	QP		
3		88.2000	48.90	-16.63	32.27	43.50	-11.23	QP		
4		93.0500	47.12	-14.93	32.19	43.50	-11.31	QP		
5		95.9600	46.32	-14.12	32.20	43.50	-11.30	QP		
6		143.4900	51.60	-17.25	34.35	43.50	-9.15	QP		

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

Operator: XLX



Site 3m Chamber #3

Polarization: **Vertical**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

EUT: FLAVOR F10

M/N: F10-Panel

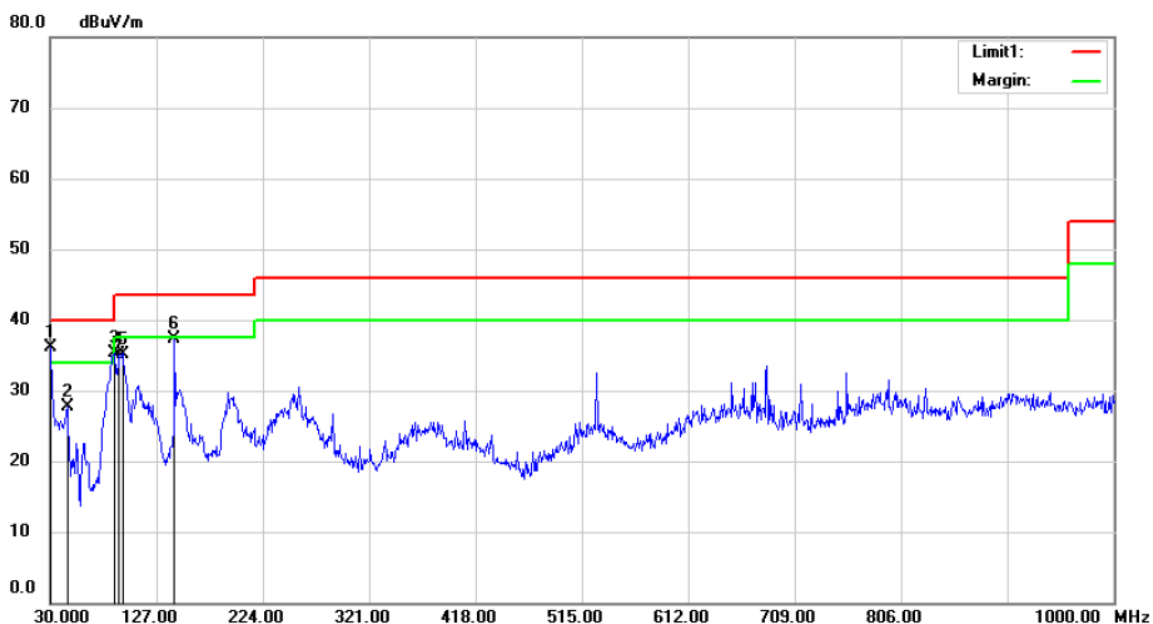
Mode:2441

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	I	30.0000	49.58	-14.42	35.16	40.00	-4.84	QP		
2	*	45.5200	47.68	-12.25	35.43	40.00	-4.57	QP		
3		86.2600	49.83	-17.30	32.53	40.00	-7.47	QP		
4		88.2000	47.58	-16.63	30.95	43.50	-12.55	QP		
5		143.4900	53.63	-17.25	36.38	43.50	-7.12	QP		
6		145.4300	47.40	-17.35	30.05	43.50	-13.45	QP		

*:Maximum data x:Over limit I:over margin

Operator: XLX



Site 3m Chamber #3

Polarization: **Horizontal**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

EUT: FLAVOR F10

M/N: F10-Panel

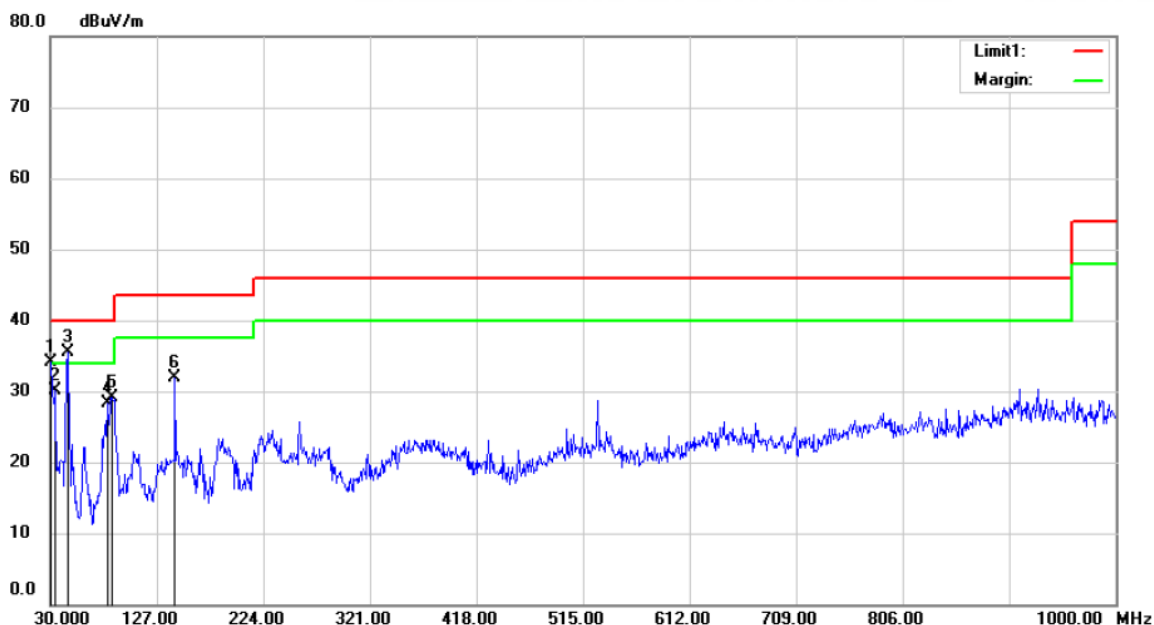
Mode:2480

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	*	30.0000	50.52	-14.42	36.10	40.00	-3.90	QP		
2		45.5200	39.95	-12.25	27.70	40.00	-12.30	QP		
3		88.2000	51.90	-16.63	35.27	43.50	-8.23	QP		
4		93.0500	50.12	-14.93	35.19	43.50	-8.31	QP		
5		95.9600	49.32	-14.12	35.20	43.50	-8.30	QP		
6		143.4900	54.60	-17.25	37.35	43.50	-6.15	QP		

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

Operator: XLX



Site 3m Chamber #3

Polarization: **Vertical**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power: AC 120V/60Hz

Humidity: 53 %

EUT: FLAVOR F10

M/N: F10-Panel

Mode:2480

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1	I	30.0000	48.58	-14.42	34.16	40.00	-5.84	QP		
2		33.8800	43.40	-13.31	30.09	40.00	-9.91	QP		
3	*	45.5200	47.68	-12.25	35.43	40.00	-4.57	QP		
4		82.3800	46.67	-18.40	28.27	40.00	-11.73	QP		
5		86.2600	46.33	-17.30	29.03	40.00	-10.97	QP		
6		143.4900	49.13	-17.25	31.88	43.50	-11.62	QP		

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

Operator: XLX

Operation Mode: 2402MHz Test Date : October 25, 2014
Frequency Range: 1-25GHz Temperature : 25°C
Test Result: PASS Humidity : 55 %
Measured Distance: 3m Test By: KL
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
5359.73	V	42.64	26.17	74.00	54.00	-31.36	-27.83
7791.63	V	46.04	28.79	74.00	54.00	-27.96	-25.21
7920.60	V	45.91	29.73	74.00	54.00	-28.09	-24.27
5359.78	H	44.10	26.94	74.00	54.00	-29.90	-27.06
7789.11	H	48.18	31.17	74.00	54.00	-25.82	-22.83
7920.54	H	48.53	30.47	74.00	54.00	-25.47	-23.53

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: 2441MHz Test Date : October 25, 2014
Frequency Range: 1-25GHz Temperature : 25°C
Test Result: PASS Humidity : 55 %
Measured Distance: 3m Test By: KL
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
5359.65	V	42.45	25.73	74.00	54.00	-31.55	-28.27
7791.51	V	45.93	28.54	74.00	54.00	-28.07	-25.46
7920.51	V	45.77	29.26	74.00	54.00	-28.23	-24.74
5359.64	H	44.02	26.72	74.00	54.00	-29.98	-27.28
7788.84	H	48.09	31.00	74.00	54.00	-25.91	-23.00
7920.38	H	48.48	30.18	74.00	54.00	-25.52	-23.82

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: 2480MHz Test Date : October 25, 2014
Frequency Range: 1-25GHz Temperature : 25°C
Test Result: PASS Humidity : 55 %
Measured Distance: 3m Test By: KL
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
5359.61	V	42.24	25.59	74.00	54.00	-31.76	-28.41
7791.52	V	45.87	28.35	74.00	54.00	-28.13	-25.65
7918.08	V	45.51	29.27	74.00	54.00	-28.49	-24.73
5359.68	H	43.81	26.55	74.00	54.00	-30.19	-27.45
7793.99	H	47.78	30.81	74.00	54.00	-26.22	-23.19
7915.60	H	48.21	29.96	74.00	54.00	-25.79	-24.04

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. Print 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:

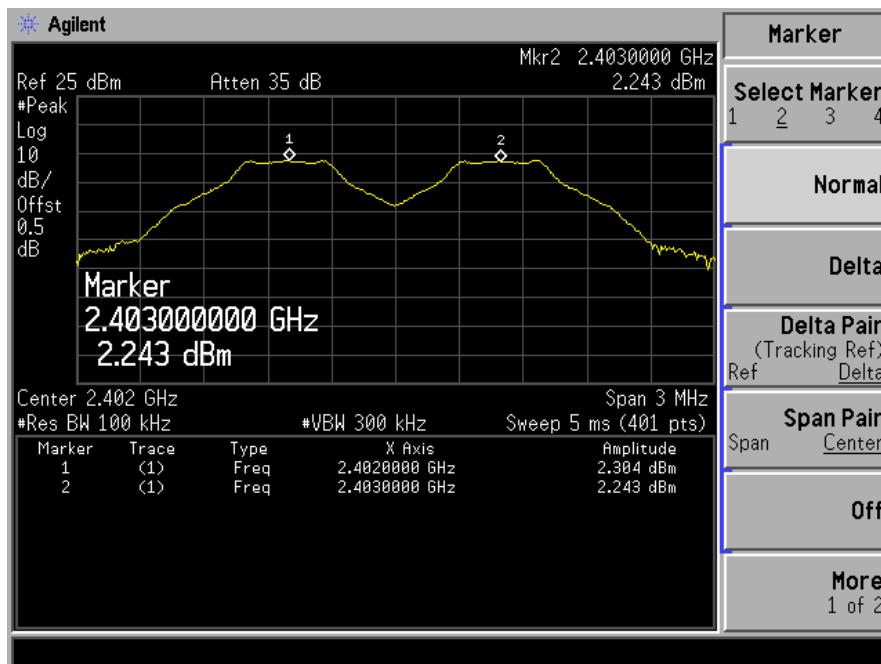
The following table is the setting of spectrum analyzer.

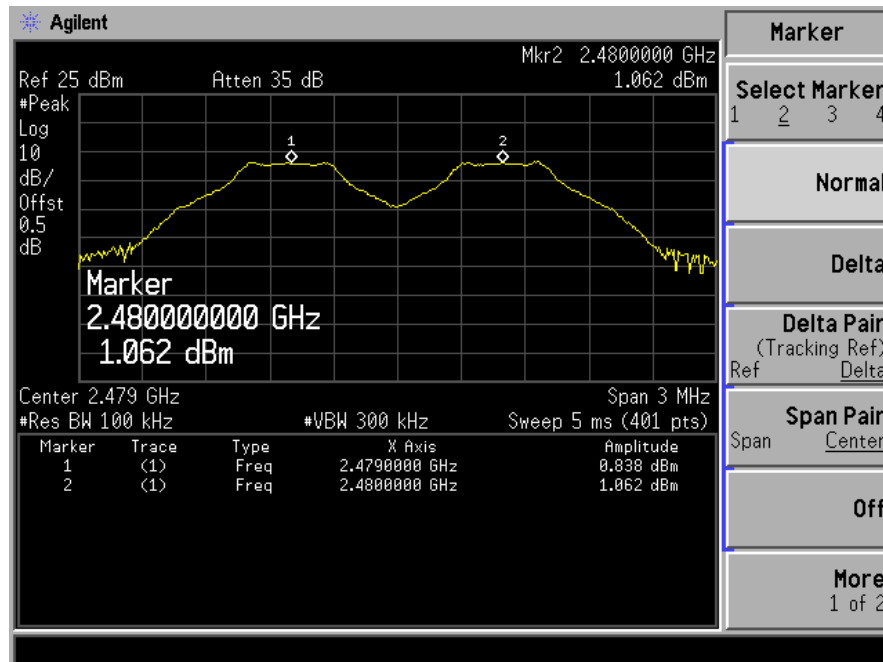
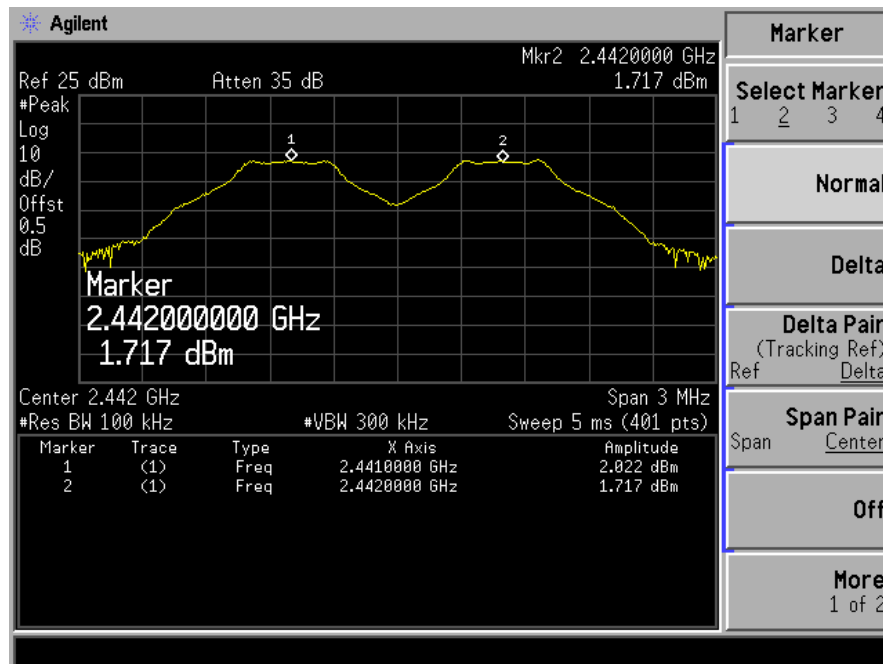
EMI Test Receiver	Setting
Attenuation	Auto
RB	100kHz
VB	300kHz
Detector	Peak
Trace	Max hold

Refer to attached data chart.

Spectrum Detector: PK Test Date : October 25, 2014
Test By: Andy Temperature : 28 °C
Test Result: PASS Humidity : 65 %
Modulation: GFSK

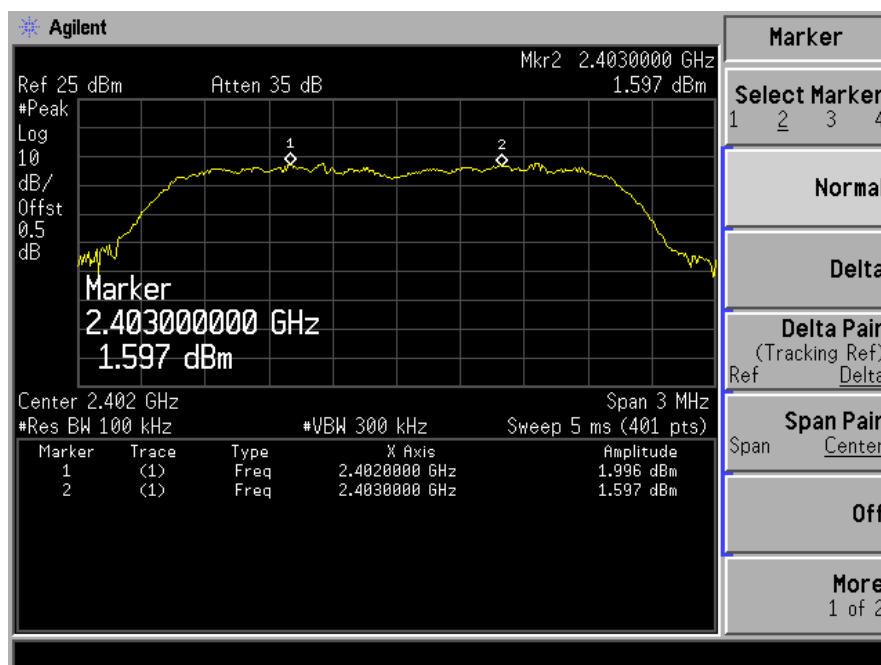
Channel number	Channel frequency (MHz)	Separation Read Value (kHz)	Separation Limit 2/3 20dB Down BW(kHz)
0	2402	1000.00	689.33
39	2441	1000.00	689.33
78	2480	1000.00	700.67

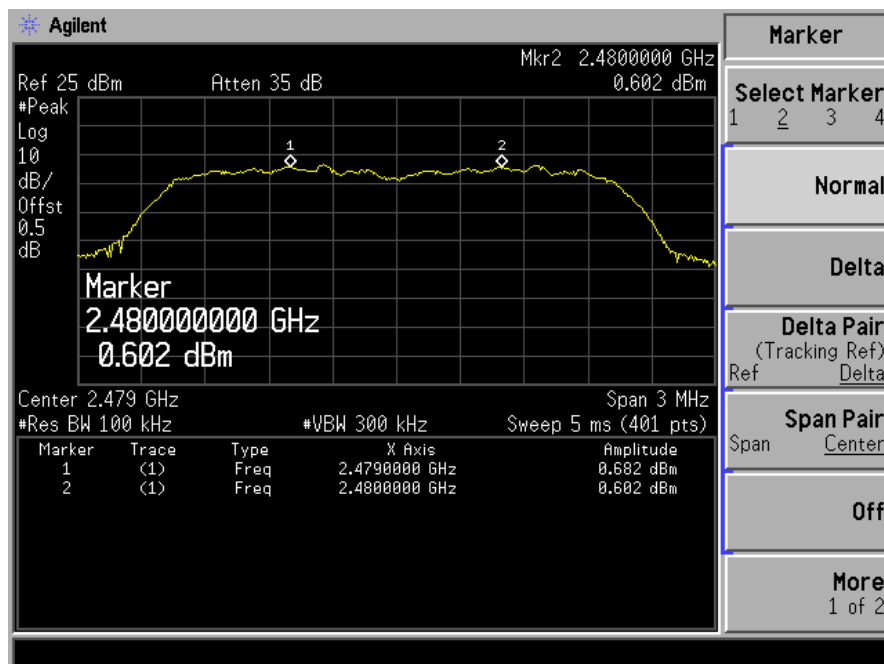
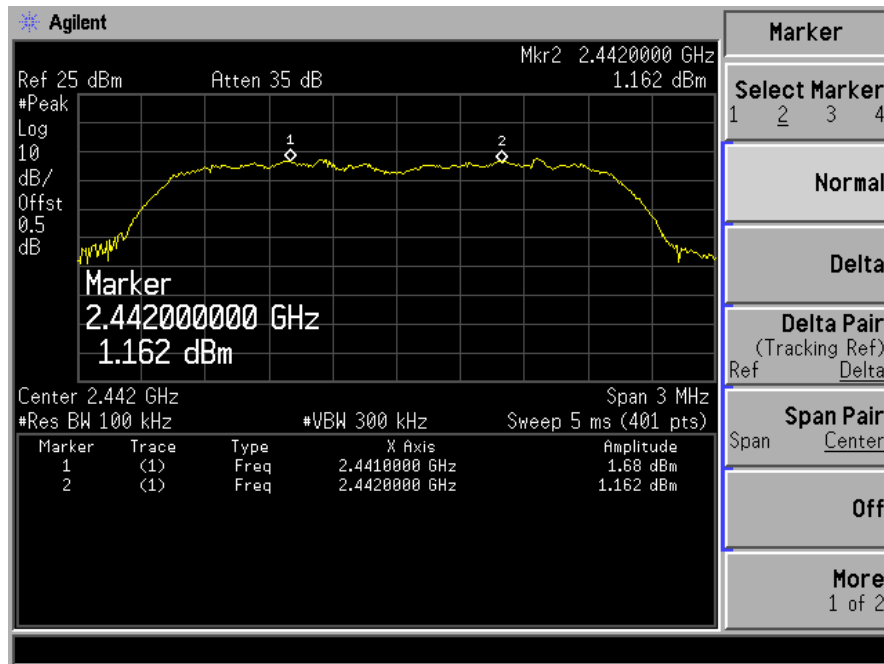




Spectrum Detector: PK Test Date : October 25, 2014
 Test By: Andy Temperature : 28 °C
 Test Result: PASS Humidity : 65 %
 Modulation: 1/4π DQPSK

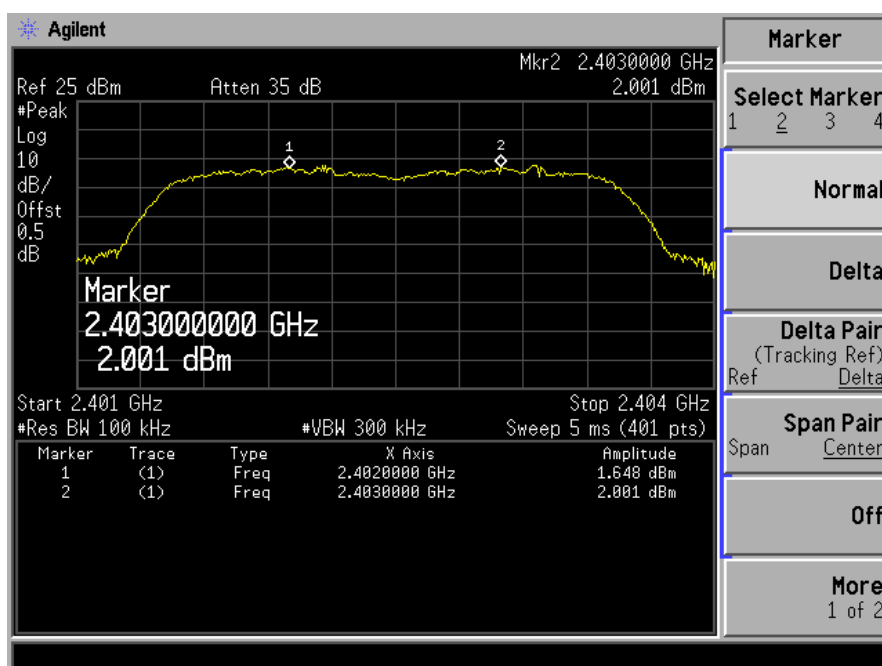
Channel number	Channel frequency (MHz)	Separation Read Value (kHz)	Separation Limit 2/3 20dB Down BW(kHz)
0	2402	1000.00	873.33
39	2441	1000.00	880.67
78	2480	1000.00	885.33

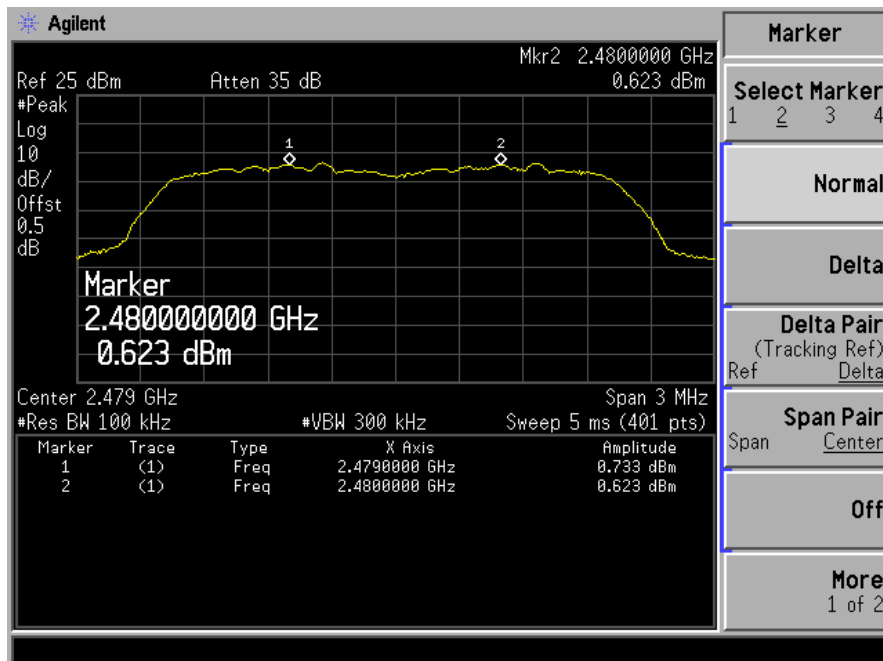
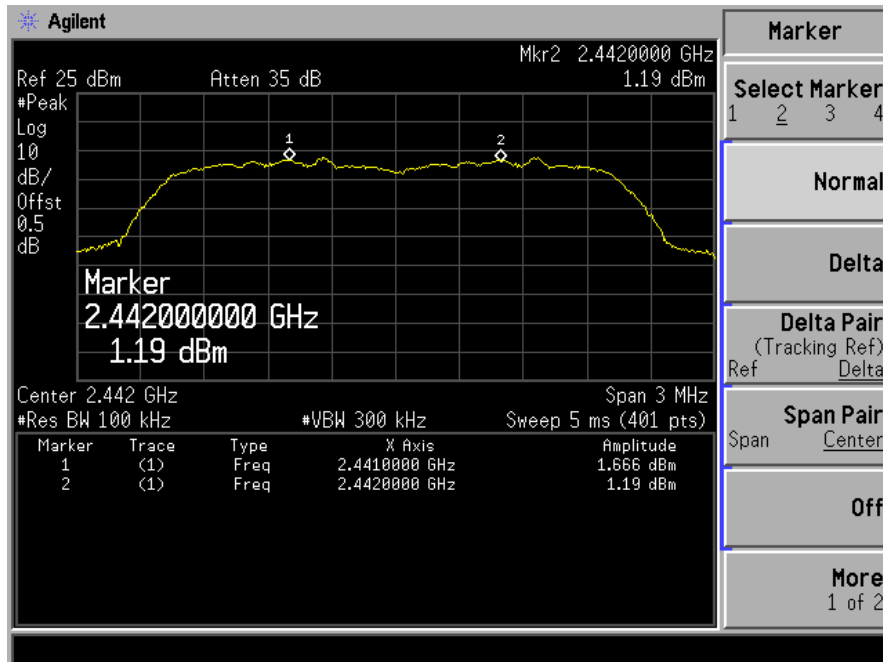




Spectrum Detector: PK Test Date : October 25, 2014
Test By: Andy Temperature : 28 °C
Test Result: PASS Humidity : 65 %
Modulation: 8DPSK

Channel number	Channel frequency (MHz)	Separation Read Value (kHz)	Separation Limit 2/3 20dB Down BW(kHz)
0	2402	1000.00	890.67
39	2441	1000.00	878.67
78	2480	1000.00	893.33



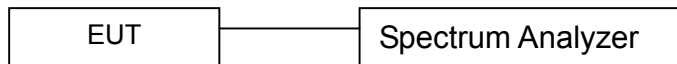


7. Bandwidth test

7.1 Measurement Procedure

1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 30 kHz. Set the Video bandwidth (VBW) = 100 kHz. In order to make an accurate measurement The 20dB bandwidth.
4. Measure and record the results in the test report.

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.

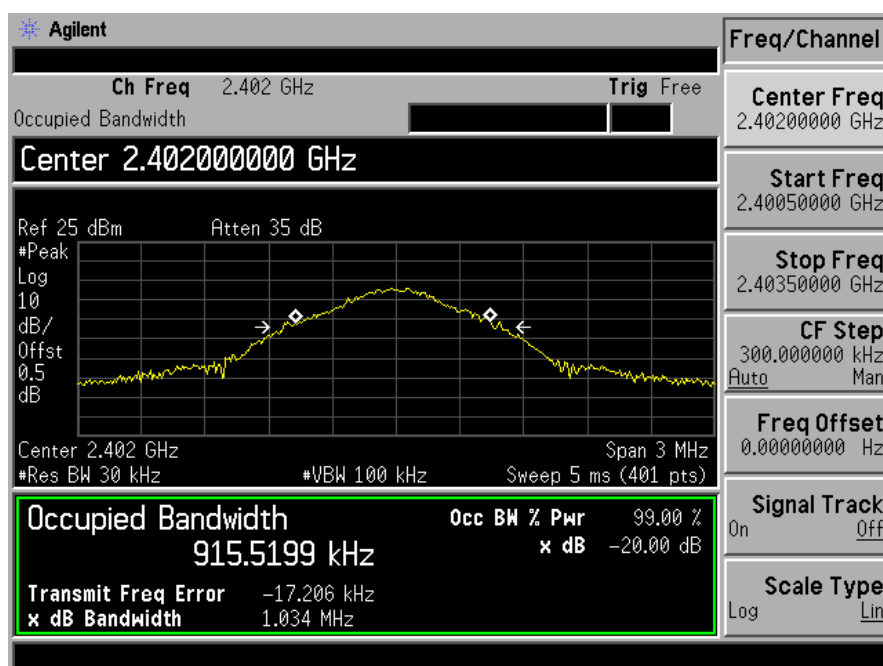
EMI Test Receiver	Setting
Attenuation	Auto
Span	3MHz
RB	30kHz
VB	100kHz
Detector	Peak
Trace	Max hold

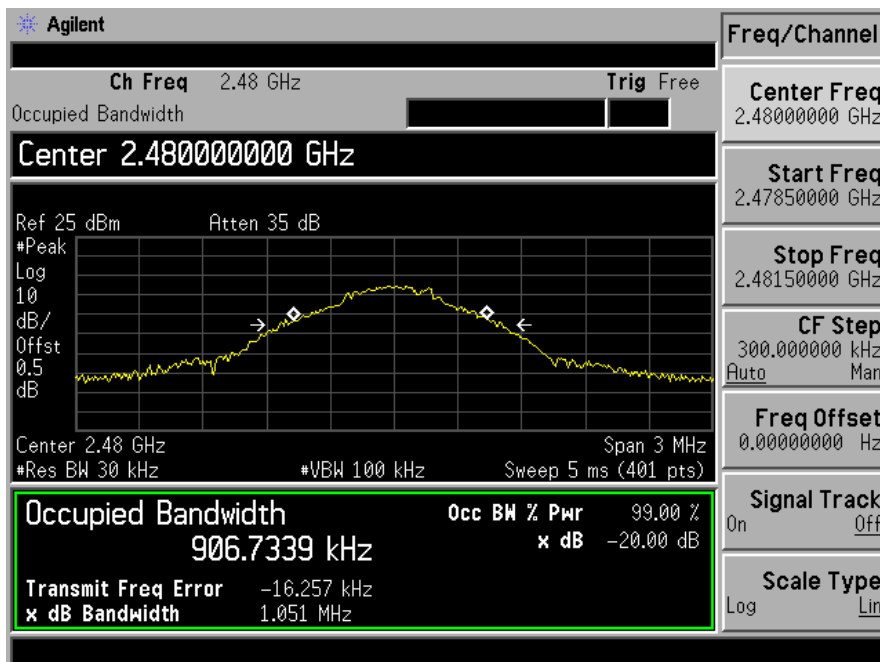
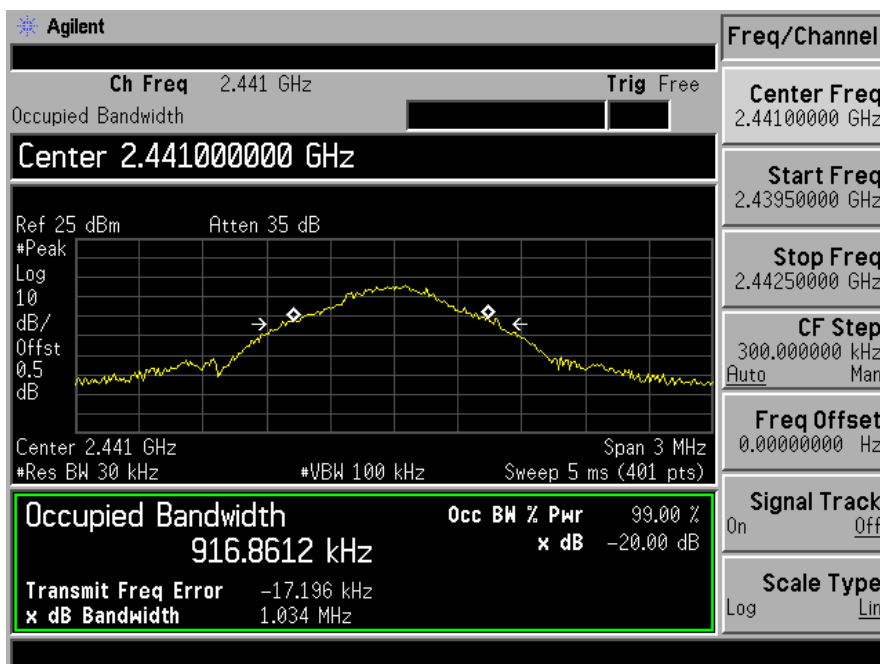
All the modes GFSK, $1/4\pi$ DQPSK, 8DPSK have been tested and the worst result recorded in the following pages.

7.4.1. 20dB Bandwidth test data Chart:
Refer to attached data chart.

Spectrum Detector:	PK	Test Date:	October 25, 2014
Test By:	Andy	Temperature:	28 °C
Test Result:	PASS	Humidity:	65 %
Modulation:	GFSK		

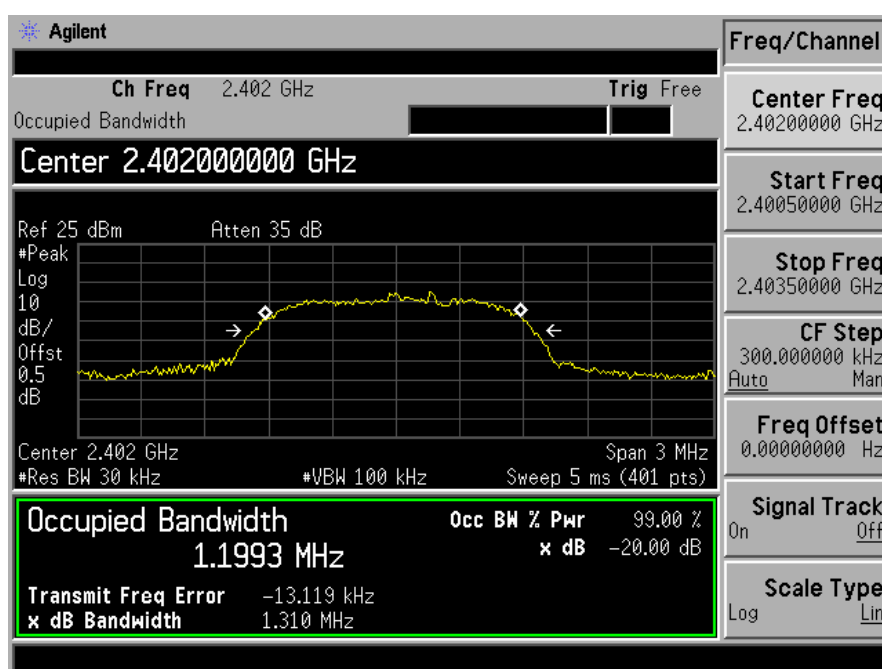
Channel number	Channel frequency (MHz)	20dB Down BW(kHz)
0	2402	1034.00
39	2441	1034.00
78	2480	1051.00

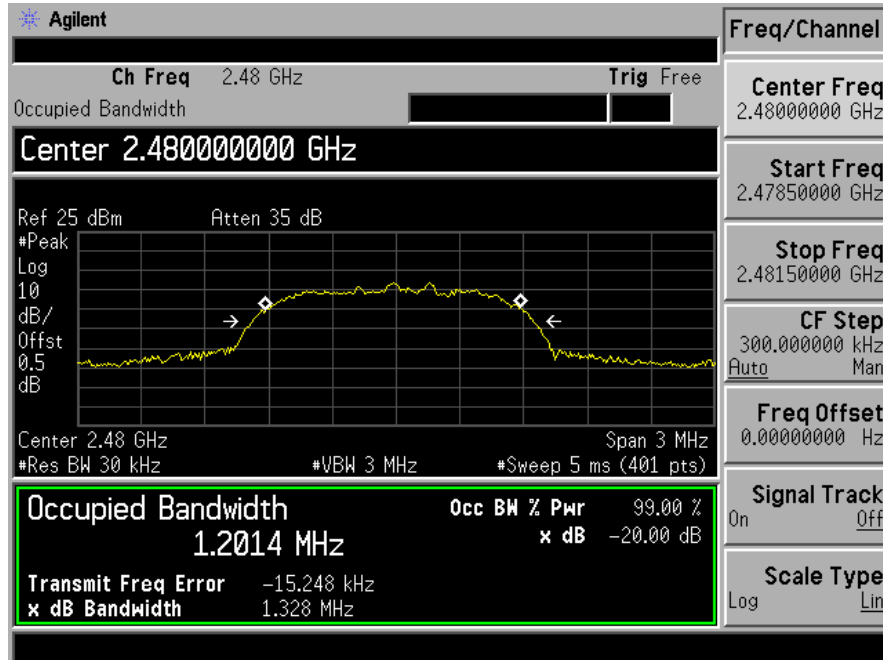
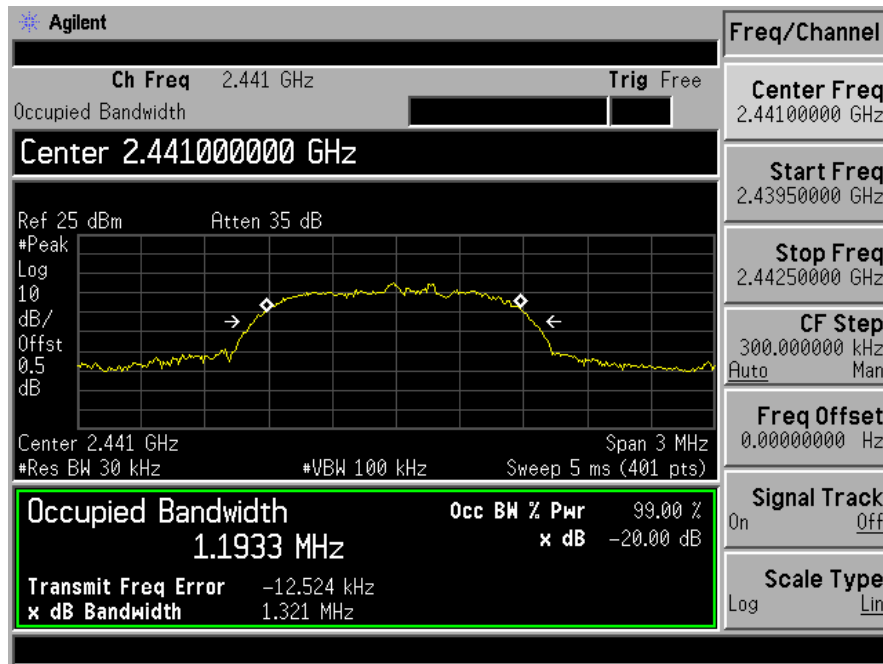




Spectrum Detector:	PK	Test Date:	October 25, 2014
Test By:	Andy	Temperature:	28 °C
Test Result:	PASS	Humidity:	65 %
Modulation:	1/4π DQPSK		

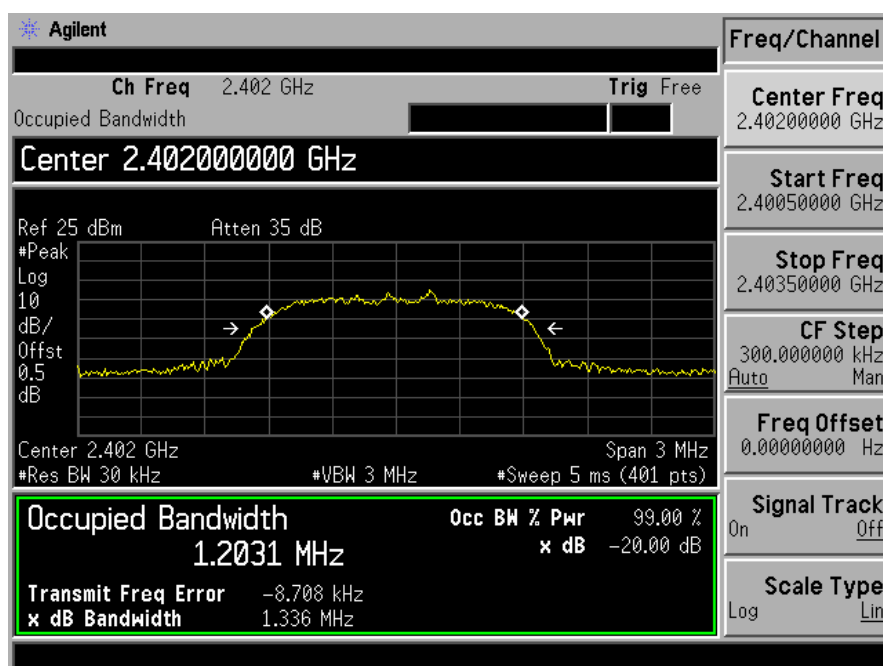
Channel number	Channel frequency (MHz)	20dB Down BW(kHz)
0	2402	1310.00
39	2441	1321.00
78	2480	1328.00

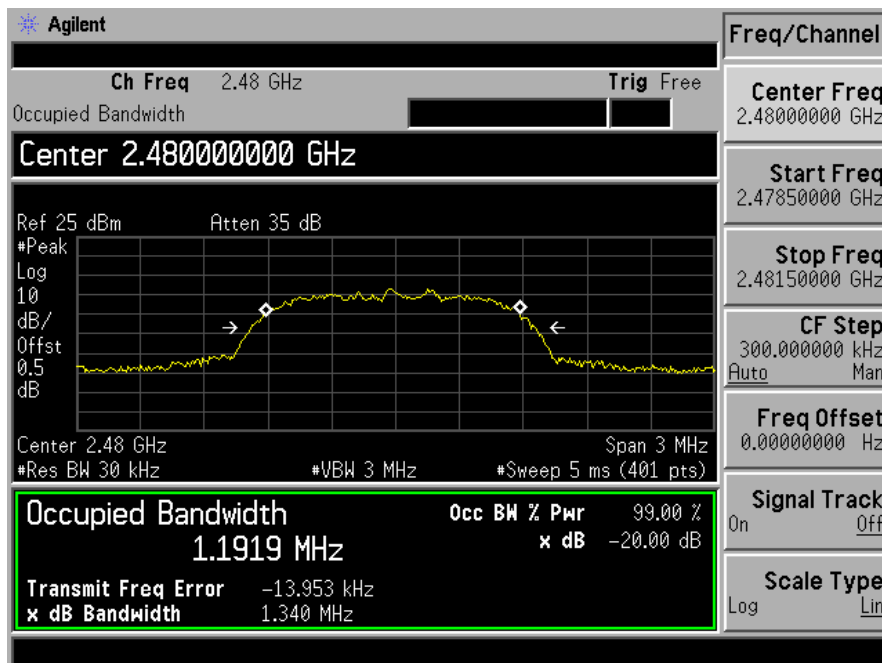
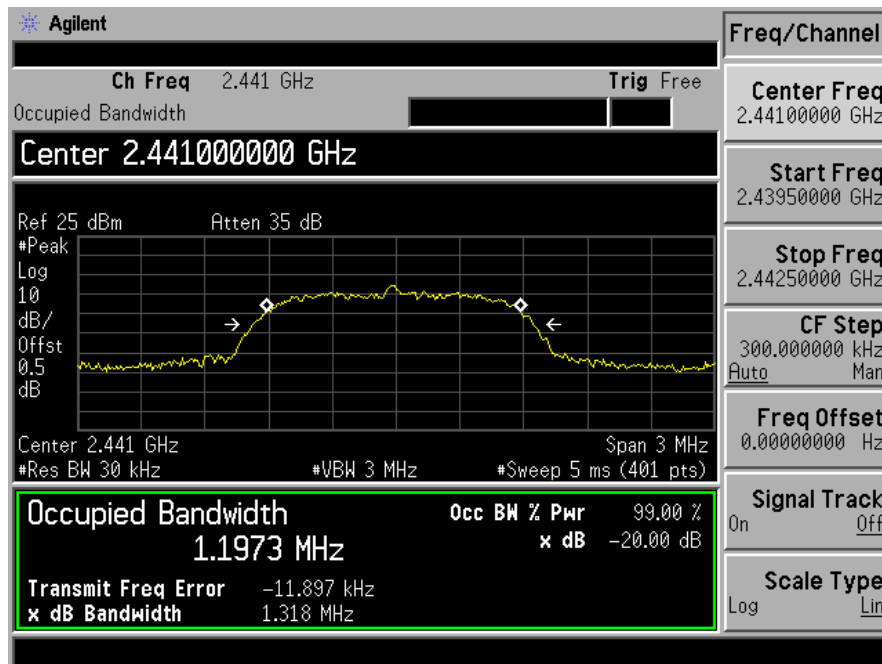




Spectrum Detector:	PK	Test Date:	October 25, 2014
Test By:	Andy	Temperature:	28 °C
Test Result:	PASS	Humidity:	65 %
Modulation:	8DPSK		

Channel number	Channel frequency (MHz)	20dB Down BW(kHz)
0	2402	1336.00
39	2441	1318.00
78	2480	1340.00





8. Quantity of Hopping Channel Test

8.1 Measurement Procedure

The EUT was operating in hopping mode or could be controlled its channel. Print 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:

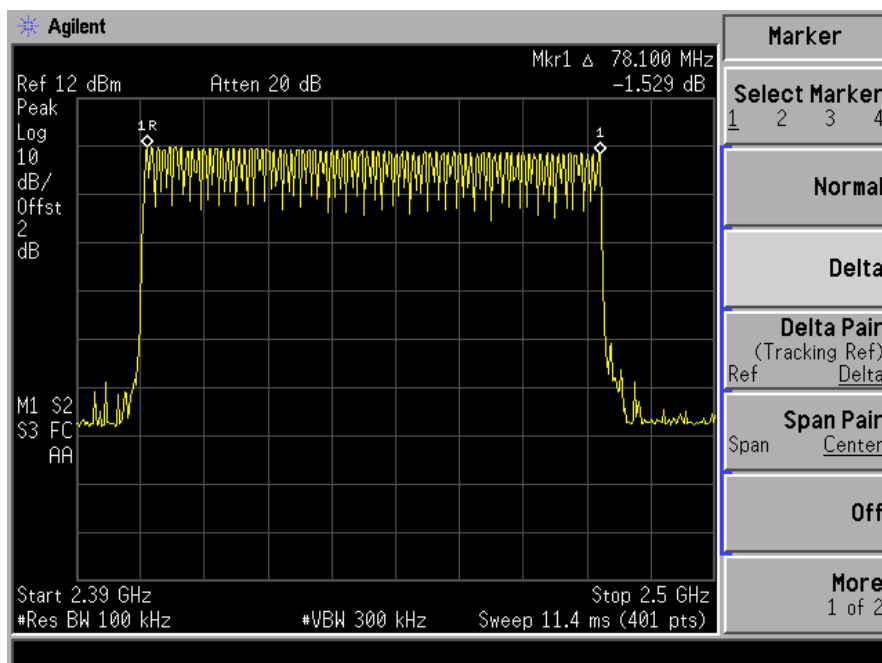
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/17/2014	05/16/2015

8.4 Measurement Results:

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

Spectrum Detector: PK Test Date : October 25, 2014
Test By: Andy Temperature : 28 °C
Test Result: PASS Humidity : 65 %

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

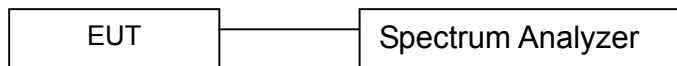


9. Time of Occupancy (Dwell Time) test

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

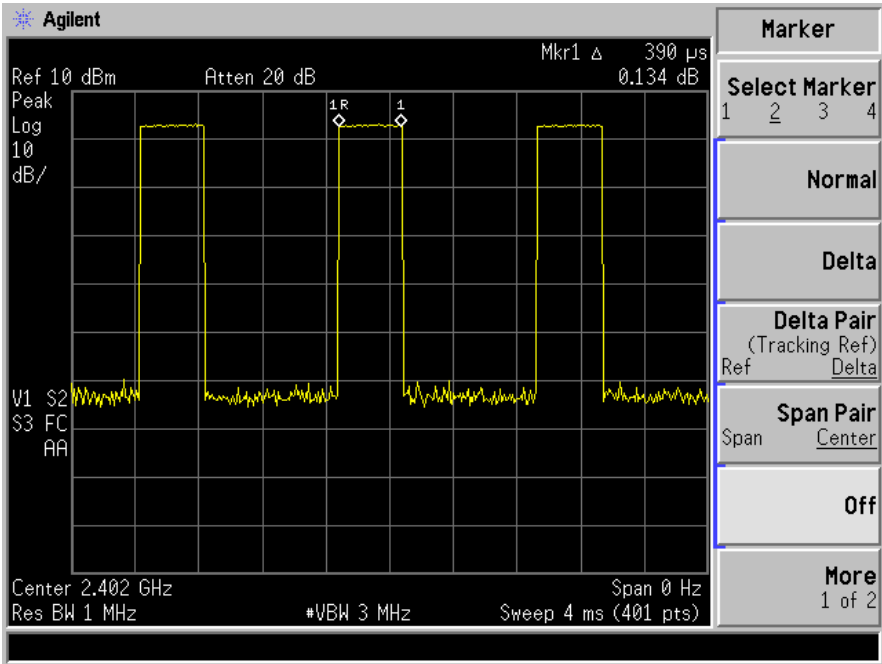
9.4 Measurement Results:

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 is recorded in this report, all modulation methods do not exceed the above mentioned limits.

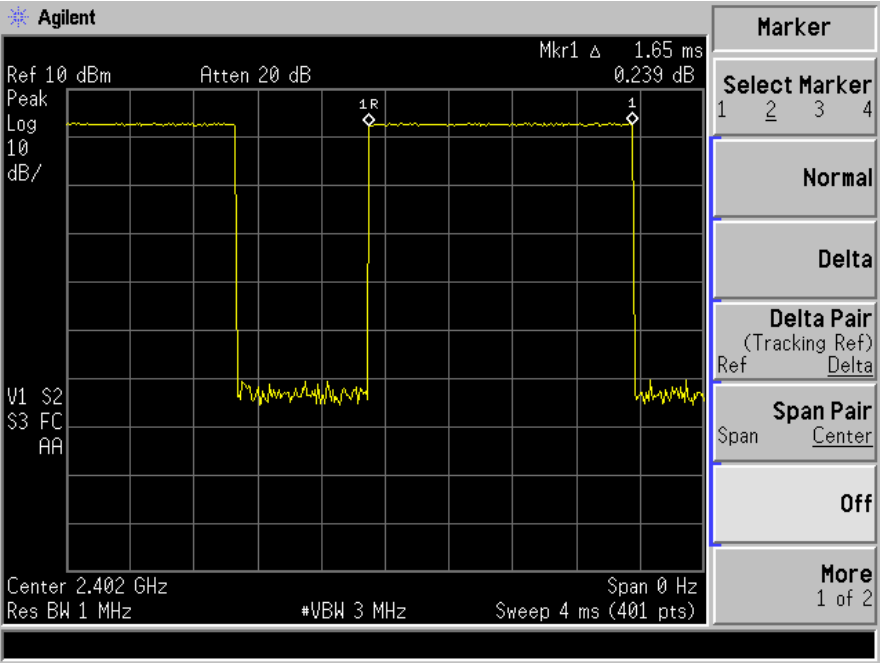
Spectrum Detector: PK Test Date : October 25, 2014
Test By: Andy Temperature : 28 °C
Test Result: PASS Humidity : 65 %

Mode	Number of transmission in a 31.6(79 Hopping*0.4)	Length of transmissions time(msec)	Result (msec)	Limit (msec)
DH1	$1600/(2*79) \times 31.6 = 320$	0.390	124.80	400
DH3	$1600/(4*79) \times 31.6 = 160$	1.650	264.00	400
DH5	$1600/(6*79) \times 31.6 = 106.67$	2.880	307.21	400

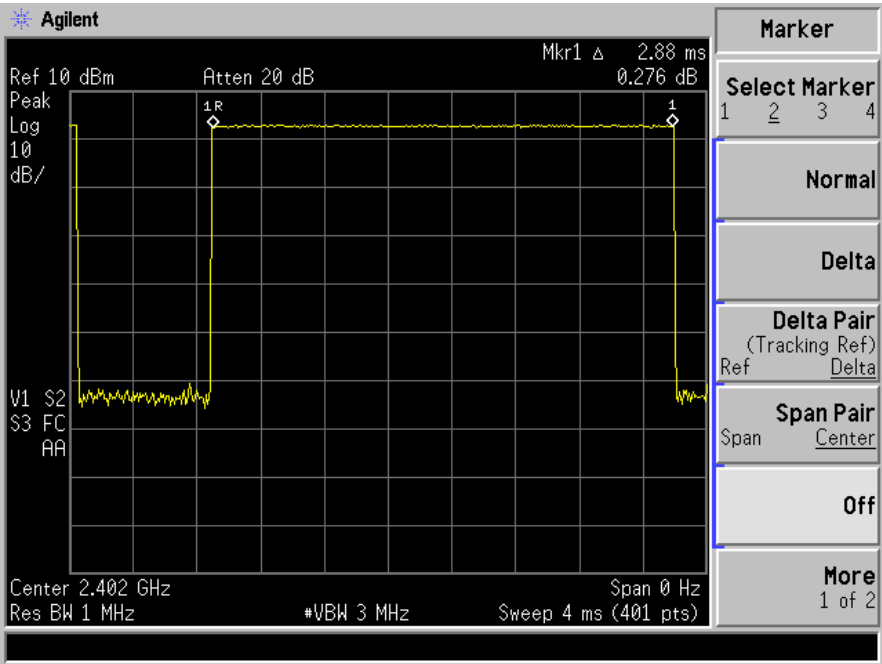
DH1



DH3



DH5

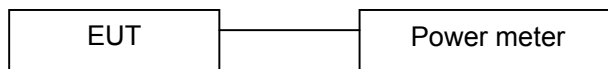


10. MAXIMUM PEAK OUTPUT POWER TEST

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, 1/4 π DQPSK, 8DPSK have been tested and the worst result recorded in the following pages and the others modulation methods do not exceed the limits.

Spectrum Detector: PK Test Date : October 25, 2014
Test By: Andy Temperature : 28 °C
Test Result: PASS Humidity : 65 %
Modulation: GFSK

Channel number	Channel Frequency (MHz)	Peak Power output(dBm)	Peak Power Limit(mW)	Pass/Fail
0	2402.00	3.05	125mW	PASS
39	2441.00	2.72	125mW	PASS
78	2480.00	1.72	125mW	PASS

Spectrum Detector: PK Test Date : October 25, 2014
Test By: Andy Temperature : 28 °C
Test Result: PASS Humidity : 65 %
Modulation: 1/4π DQPSK

Channel number	Channel Frequency (MHz)	Peak Power output(dBm)	Peak Power Limit(mW)	Pass/Fail
0	2402.00	3.90	125mW	PASS
39	2441.00	3.43	125mW	PASS
78	2480.00	2.70	125mW	PASS

Spectrum Detector: PK Test Date : October 25, 2014
Test By: Andy Temperature : 28 °C
Test Result: PASS Humidity : 65 %
Modulation: 8DPSK

Channel number	Channel Frequency (MHz)	Peak Power output(dBm)	Peak Power Limit(mW)	Pass/Fail
0	2402.00	4.30	125mW	PASS
39	2441.00	3.95	125mW	PASS
78	2480.00	2.97	125mW	PASS

11. Band EDGE test

11.1 Measurement Procedure

1. The EUT was Operating in hopping mode or could be controlled its channel. Printed out test result from the spectrum by hard copy function.
2. The EUT was placed on a turn table which is 0.8m above ground plane.
3. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
4. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
5. Repeat above procedures until all frequency measured were complete.

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	Peak
Trace	Max hold

11.2 Test SET-UP (Block Diagram of Configuration)

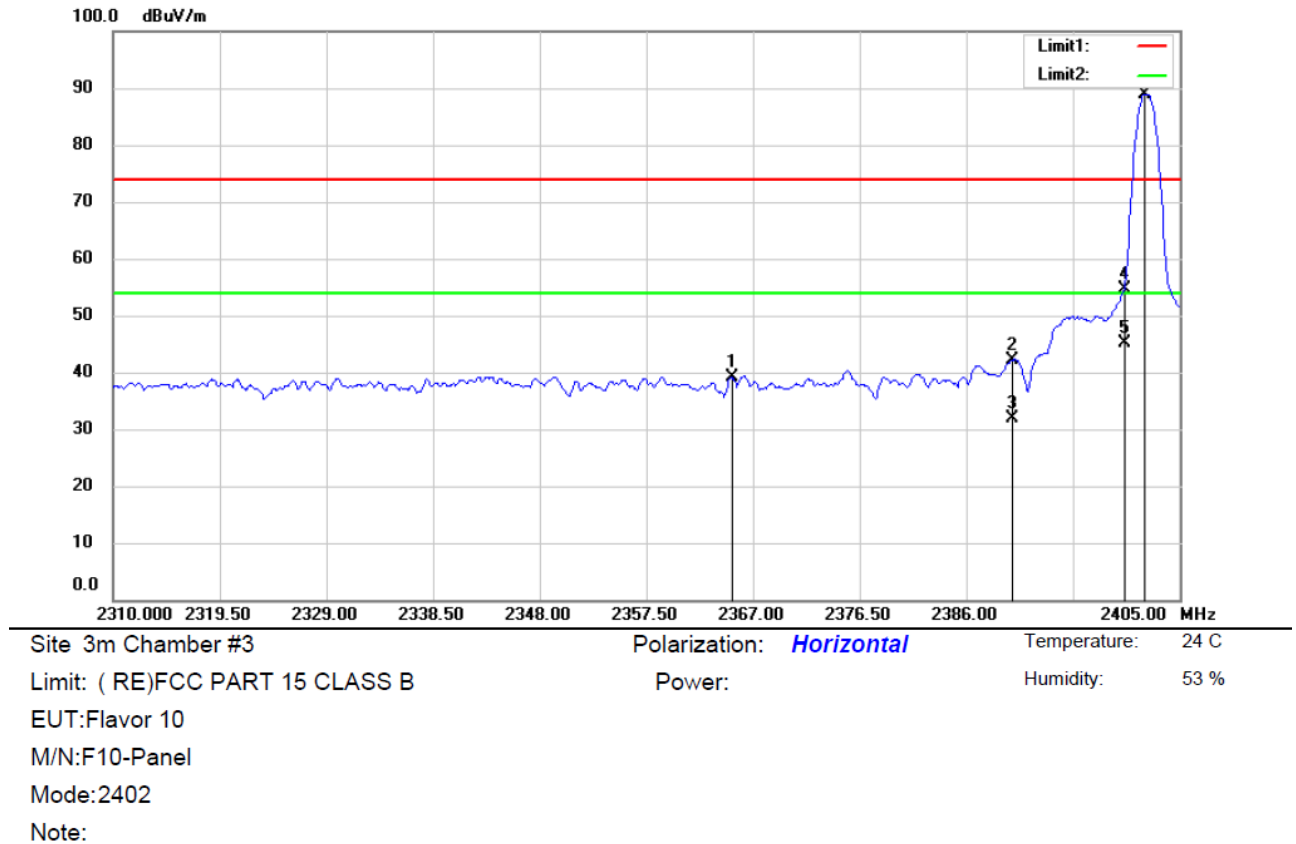
As 5.2 Test set up (B) and (C)

11.3 Measurement Equipment Used:

Same as 5.3 Radiated Emission Measurement.

11.4 Measurement Results:

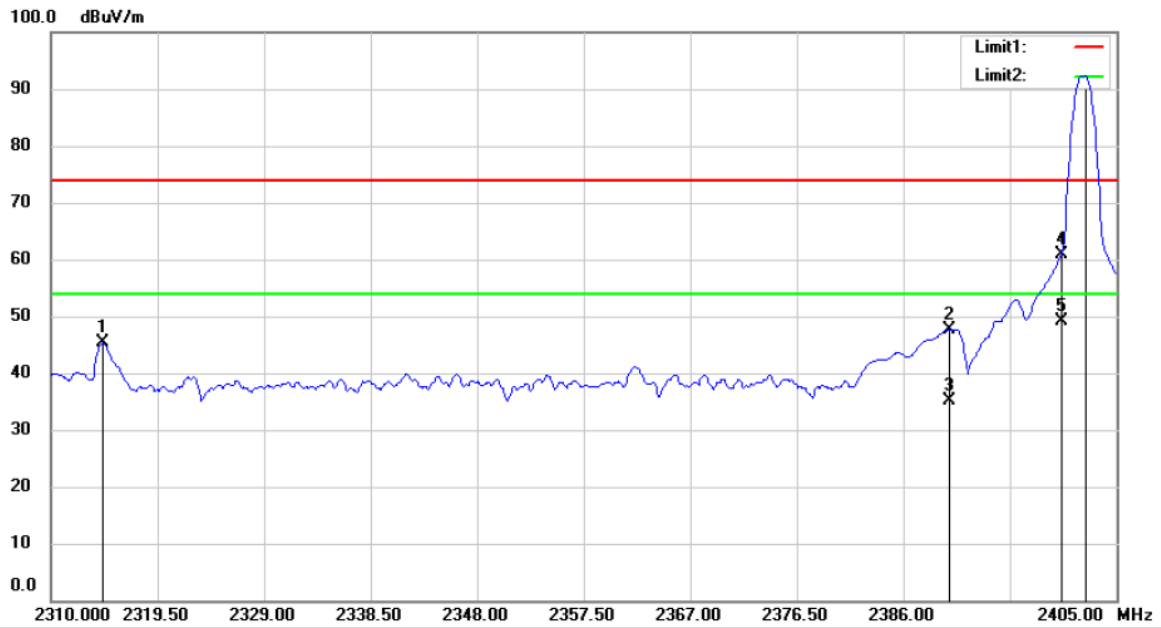
All the modes GFSK, $1/4\pi$ DQPSK, 8DPSK have been tested and the worst result recorded in the following pages and the others modulation methods do not exceed the limits.



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		2365.100	62.33	-23.24	39.09	74.00	-34.91	peak		
2		2390.000	65.29	-23.11	42.18	74.00	-31.82	peak		
3		2390.000	54.91	-23.11	31.80	54.00	-22.20	AVG		
4		2400.000	77.57	-23.06	54.51	74.00	-19.49	peak		
5		2400.000	68.08	-23.06	45.02	54.00	-8.98	AVG		
6	*	2401.865	111.99	-23.04	88.95	74.00	14.95	peak		

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

Operator: KK



Site 3m Chamber #3

Polarization: **Vertical**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power:

Humidity: 53 %

EUT:Flavor 10

M/N:F10-Panel

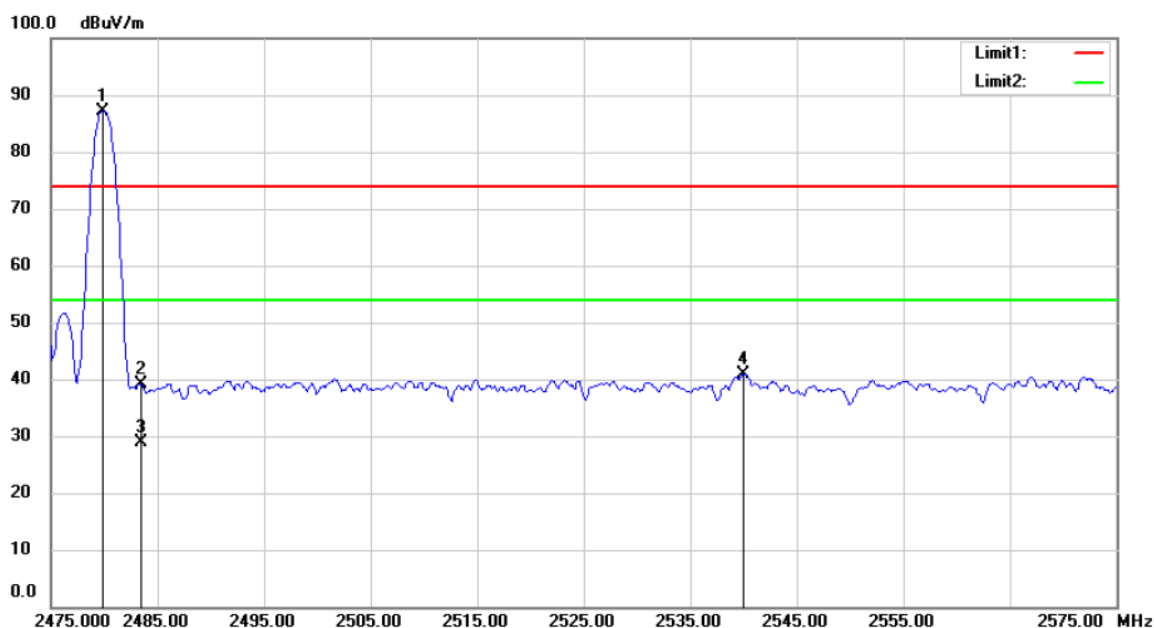
Mode:2402

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	Comment
1		2314.560	68.77	-23.51	45.26	74.00	-28.74			peak
2		2390.000	70.66	-23.11	47.55	74.00	-26.45			peak
3		2390.000	58.31	-23.11	35.20	54.00	-18.80			AVG
4		2400.000	84.02	-23.06	60.96	74.00	-13.04			peak
5		2400.000	72.31	-23.06	49.25	54.00	-4.75			AVG
6	*	2402.245	115.49	-23.04	92.45	74.00	18.45			peak

*:Maximum data x:Over limit l:over margin

Operator: KK



Site 3m Chamber #3

Polarization: **Horizontal**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power:

Humidity: 53 %

EUT:Flavor 10

M/N:F10-Panel

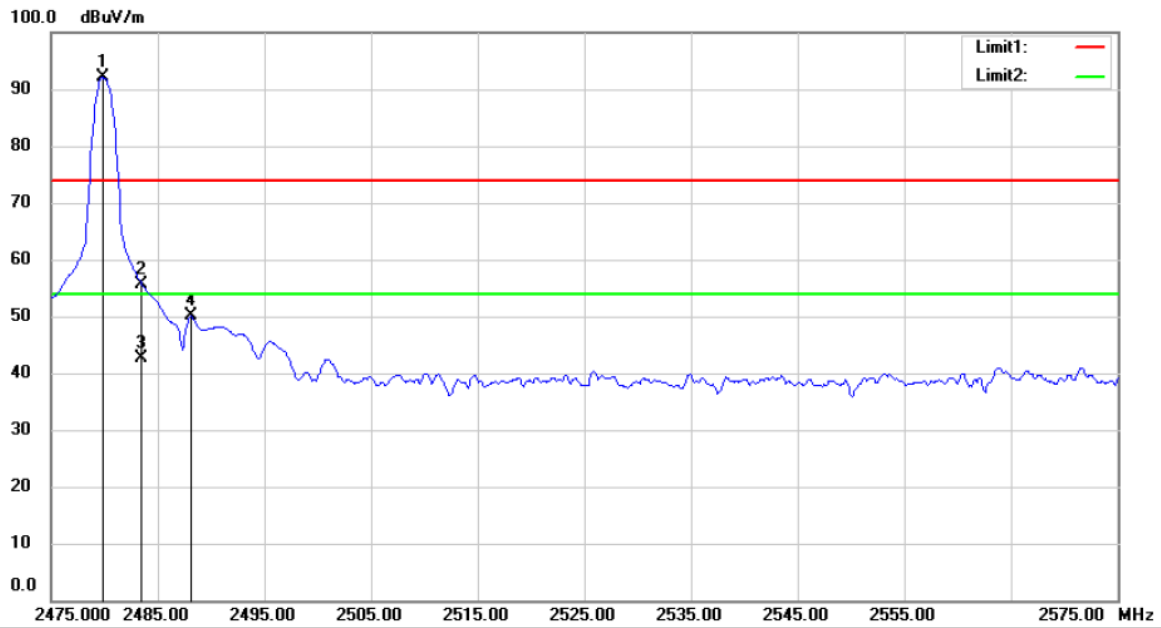
Mode:2480

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	Comment
1	*	2479.800	109.82	-22.63	87.19	74.00	13.19			peak
2		2483.500	61.74	-22.62	39.12	74.00	-34.88			peak
3		2483.500	51.52	-22.62	28.90	54.00	-25.10			AVG
4		2540.000	63.33	-22.40	40.93	74.00	-33.07			peak

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

Operator: KK



Site 3m Chamber #3

Polarization: **Vertical**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power:

Humidity: 53 %

EUT:Flavor 10

M/N:F10-Panel

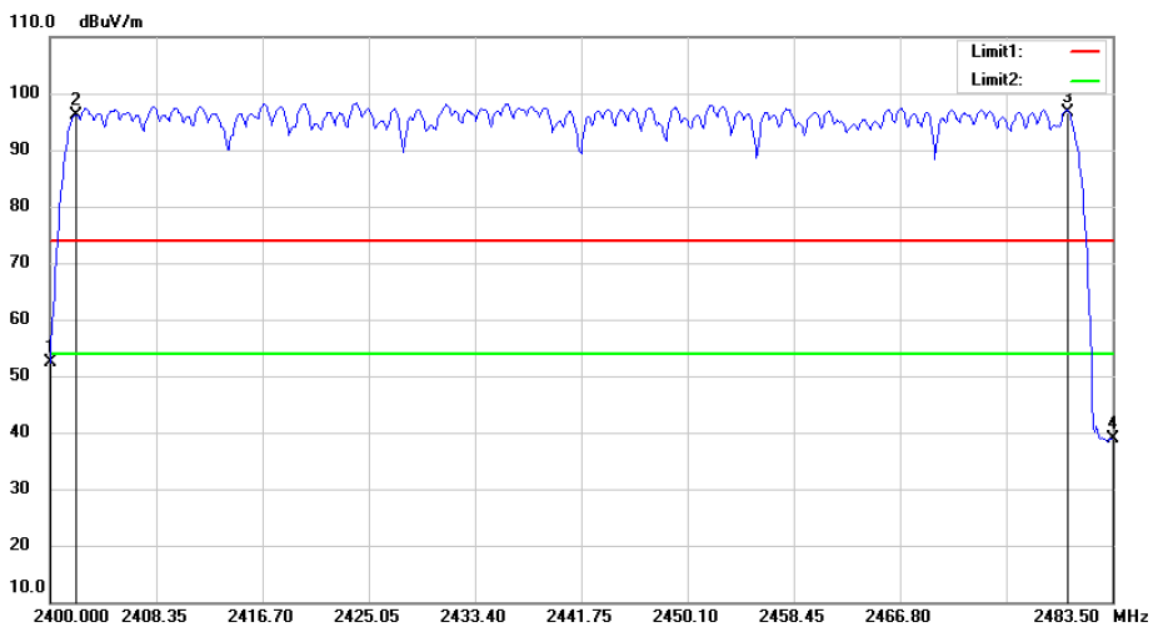
Mode:2480

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	*	2479.800	114.73	-22.63	92.10	74.00	18.10	peak		
2		2483.500	78.35	-22.62	55.73	74.00	-18.27	peak		
3		2483.500	65.22	-22.62	42.60	54.00	-11.40	AVG		
4		2488.100	72.65	-22.59	50.06	74.00	-23.94	peak		

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

Operator: KK



Site 3m Chamber #3

Polarization: **Horizontal**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power:

Humidity: 53 %

EUT:FLAVOR F10

M/N:F10-Panel

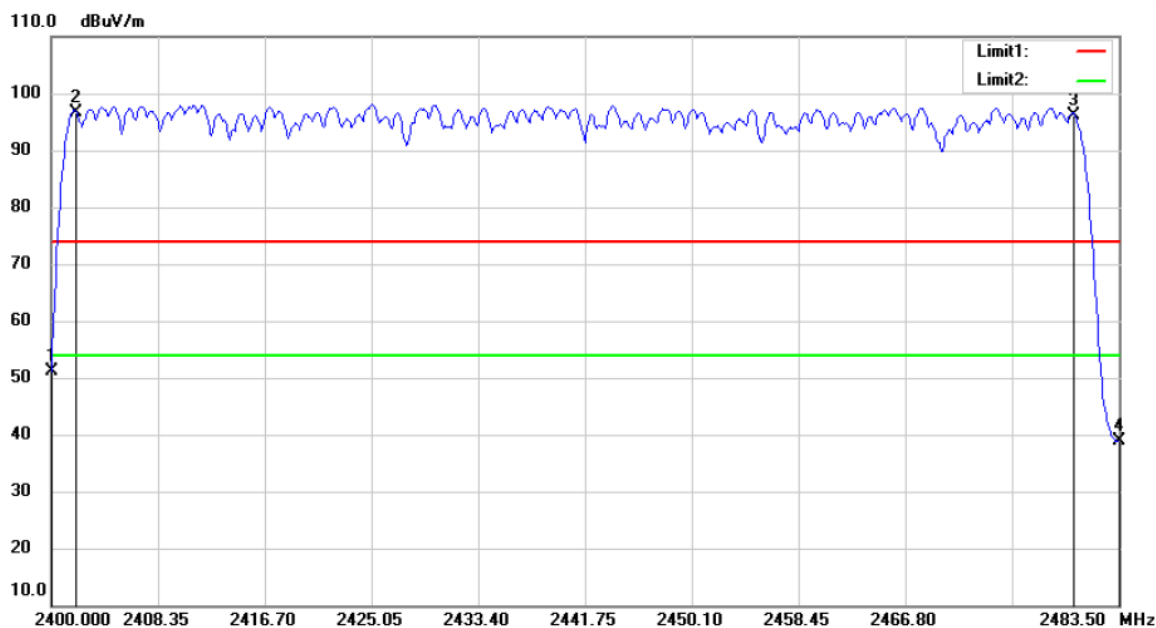
Mode:HOPPING

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	Comment
1		2400.000	75.55	-23.06	52.49	74.00	-21.51	peak		
2	X	2402.000	119.25	-23.04	96.21	74.00	22.21	peak		
3	*	2480.000	119.38	-22.63	96.75	74.00	22.75	peak		
4		2483.500	61.59	-22.62	38.97	74.00	-35.03	peak		

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

Operator: KK



Site 3m Chamber #3

Polarization: **Vertical**

Temperature: 24 C

Limit: (RE)FCC PART 15 CLASS B

Power:

Humidity: 53 %

EUT:FLAVOR F10

M/N:F10-Panel

Mode:HOPPING

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		2400.000	74.20	-23.06	51.14	74.00	-22.86	peak		
2	*	2402.000	119.61	-23.04	96.57	74.00	22.57	peak		
3	X	2480.000	118.85	-22.63	96.22	74.00	22.22	peak		
4		2483.500	61.59	-22.62	38.97	74.00	-35.03	peak		

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

Operator: KK

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.

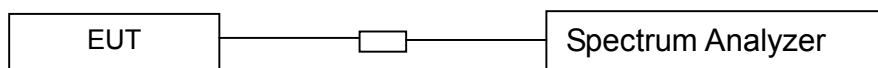
The following table is the setting of spectrum analyzer.

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.

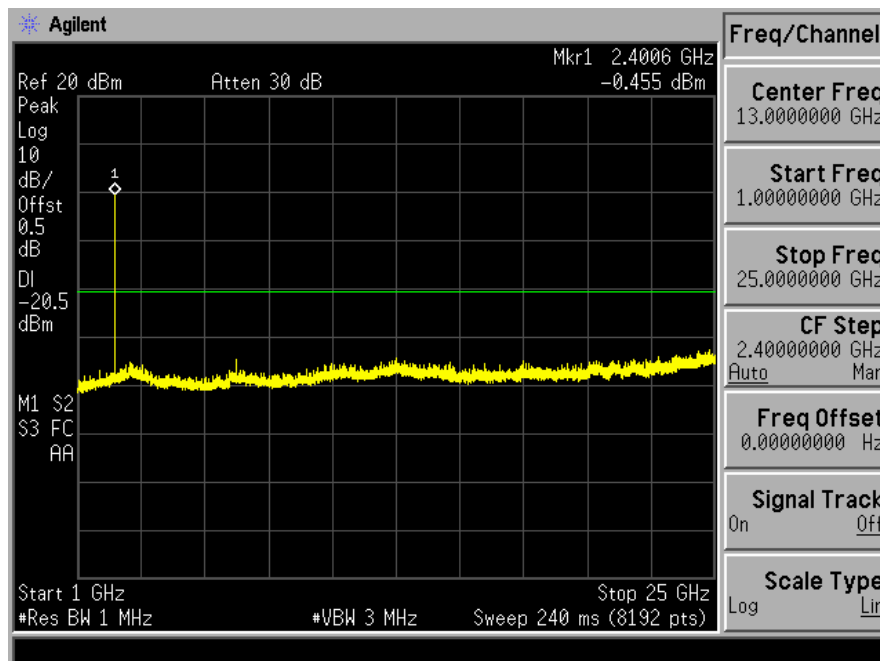
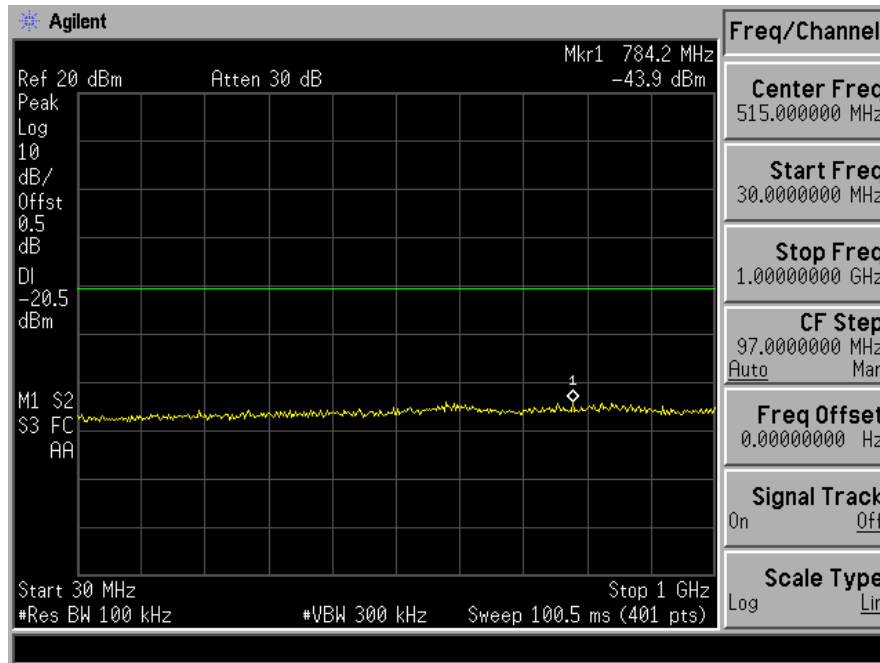
12.4 Block Diagram of Test setup



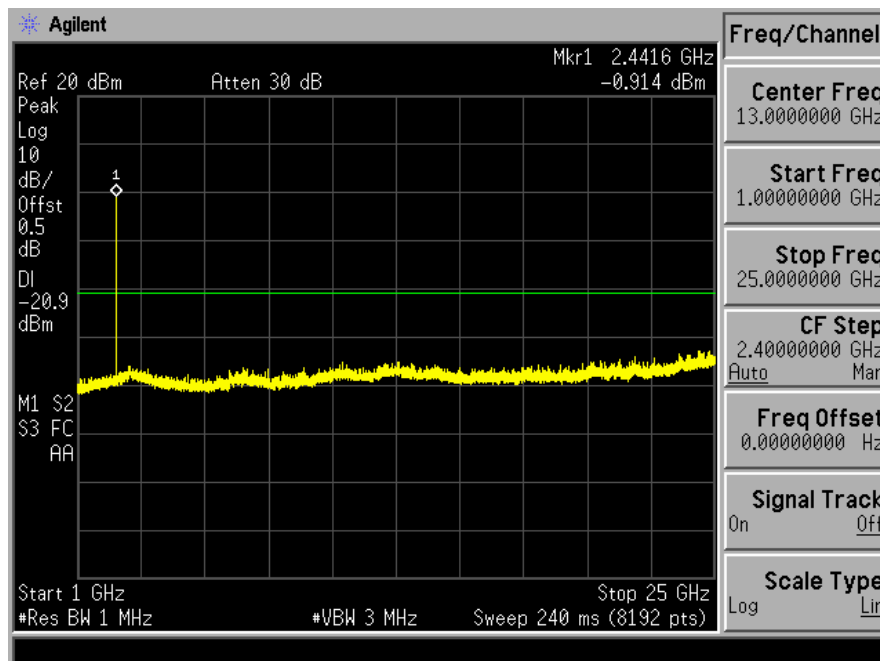
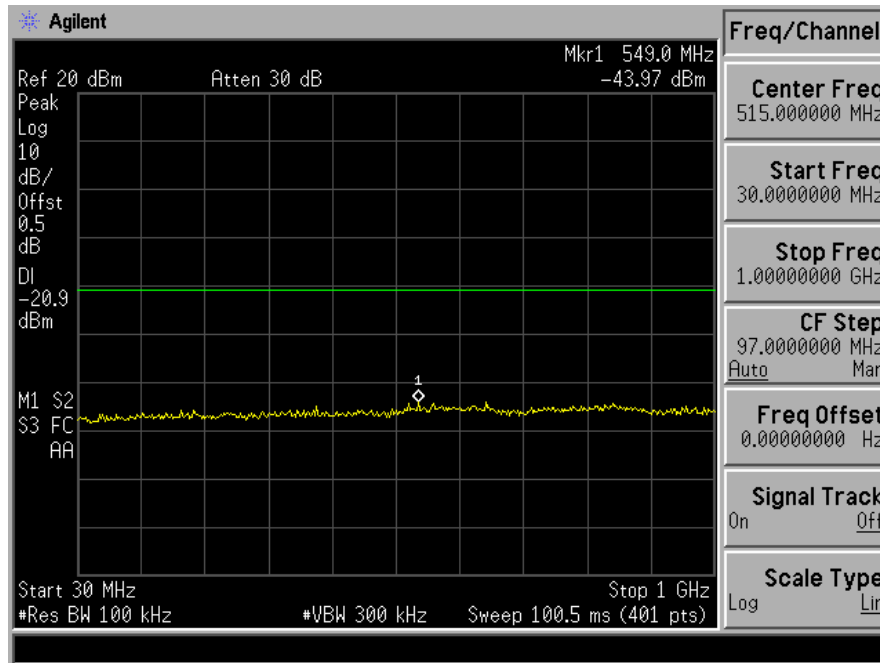
12.5 Test Result

PASS.

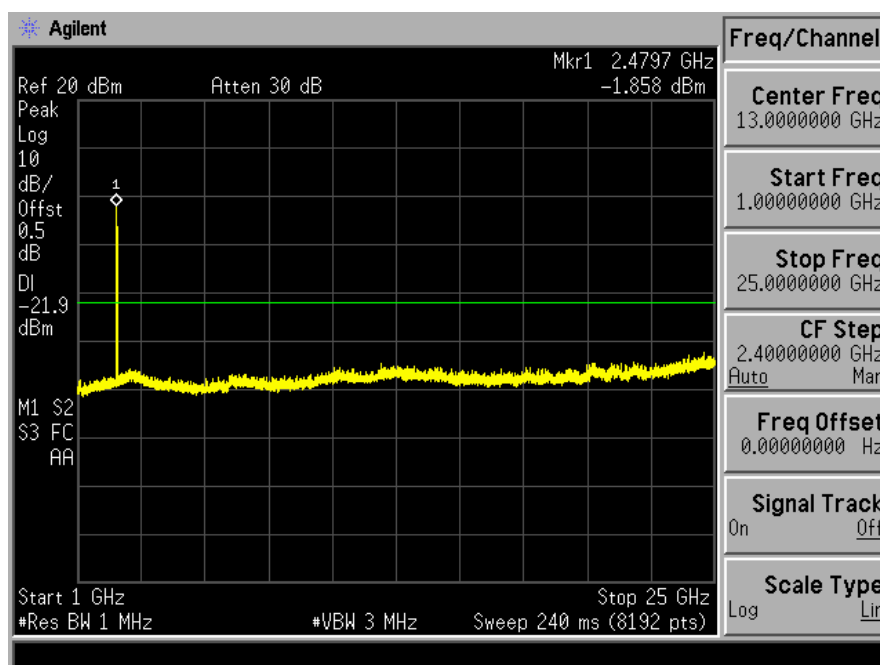
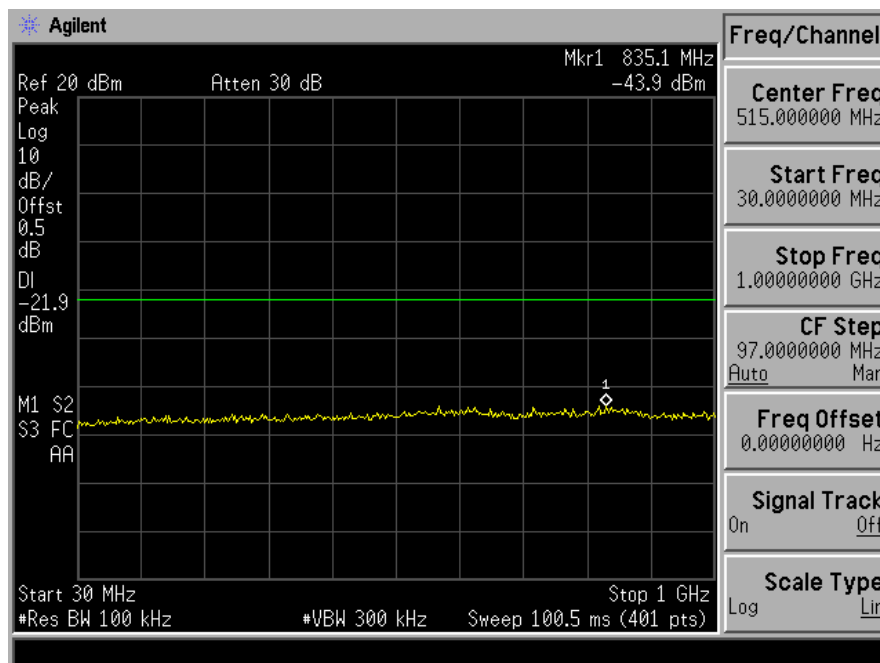
TX 2402MHz



TX 2441MHz



TX 2480MHz



13. Antenna Application

13.1 Antenna Requirement

Standard	Requirement
FCC CRF Part 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

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.

The EUT has 2 antennas: a Chip antenna for 2.4G WIFI, the gain is 1 dBi;
 a Chip antenna for BT, the gain is 1 dBi;

Note:Antenna use a permanently attached antenna which is not replaceable.
 which in accordance to section 15.203, please refer to the internal photos.

13.2 Result

PASS.