
FCC PART 15 SUBPART C MEASUREMENT AND TEST REPORT

For

Scosche Industries Inc

1550 Pacific Ave, Oxnard, California 93033, United States

E.U.T.: Bluetooth Wireless Media Speaker

Model Name: BTSPK2

Trade name: Scosche

FCC ID: IKQBTSPK2

Report Number: NTC1203190F

Test Date(s): March 13 2012 to March 26 2012

Report Date(s): March 26 2012

Prepared by

Dongguan NTC Co., Ltd.

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Approved By



***Sunm Lv / Q.A. Director
Dongguan NTC Co., Ltd.***

Note: This test report is for the customer shown above and their specific product only. It may not be duplicated or used in part without prior written consent from Dongguan NTC Co., Ltd. The test results referenced from this report are relevant only to the sample tested.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test

The Scosche Industries Inc's product, model name : BTSPK2 is a Bluetooth Wireless Media Speaker. It's power by internal 3.7V rechargeable Li-lithium battery, and also can be charged by USB Port. For more details features, please refer to User's Manual.

Manufacturer	: Scosche Industries Inc
Address	: 1550 Pacific Ave, Oxnard, California 93033, United States
Frequency:	: 2402-2480MHz
Modulation	: GFSK, $\pi/4$ -DQPSK, 8DPSK
Number of Channel	: 79
Channel space	: 1MHz
Max RF Output Power	: 0.553mW
Antenna Type	: Integral
Antenna Gain	: 2dBi
Power Supply	: Li-lithium Battery 3.7V : DC 5V come from PC or Adapter :
Model name	: BTSPK2

Note: N/A

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: IKQBTSPK2 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rule.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2003) and DA 00-705. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters.

1.4 Equipment Modifications

Not available for this EUT intended for grant.

1.5 Test Facility and Location

Listed by FCC, August 02, 2011
The Certificate Registration Number is 665078.

Listed by Industry Canada, July 01, 2011
The Certificate Registration Number is 46405-9743.

Dongguan NTC Co., Ltd.

Building D, Gaosheng Science and Technology Park,
Hongtu Road, Nancheng District, Dongguan City,
Guangdong Province, China

1.6 Summary of Test Results

FCC Rules	Description Of Test	Result
§15.247(a)(1)	Channel Separation test	Compliant
§15.247(a)(1)	20dB Bandwidth	Compliant
§15.247(a)(1)(iii)	Hopping Channel Number	Compliant
§15.247(a)(1)(iii)	Time of Occupancy (Dwell Time)	Compliant
§15.247(b)	Max Peak output Power test	Compliant
§15.247(d)	Band edge test	Compliant
§15.207 (a)	AC Power Conducted Emission	Compliant
§15.247(d), §15.209, §15.205	Radiated Emission	Compliant
§15.203	Antenna Requirement	Compliant
§15.247(d)	Conducted Spurious Emission	Compliant

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 Special Accessories

Not available for this EUT intended for grant.

2.3 Description of test modes

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and normal mode is programmed. The Lowest, middle and highest channel were chosen for testing, and all packets DH1, DH3 and DH5 mode in all modulation type GFSK, $\pi/4$ -DQPSK, 8DPSK were tested.

2.4 EUT Exercise

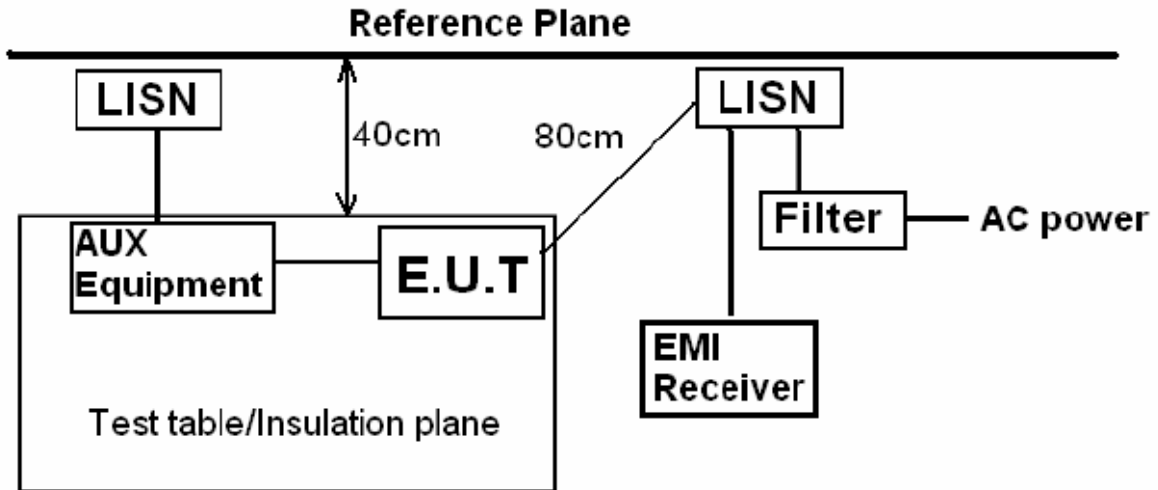
The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

2.5 Support Device

IBM notebook PC, Model: 1834, P/N: 13N5615.

4. Conducted Emissions Test

4.1 Test SET-UP (Block Diagram of Configuration)



4.2 Test Condition

Test Requirement: FCC Part 15.207

Frequency Range: 150KHz ~ 30MHz

Detector: RBW 9KHz, VBW 30KHz

Operation Mode: Charging & Bluetooth

4.3 Measurement Results

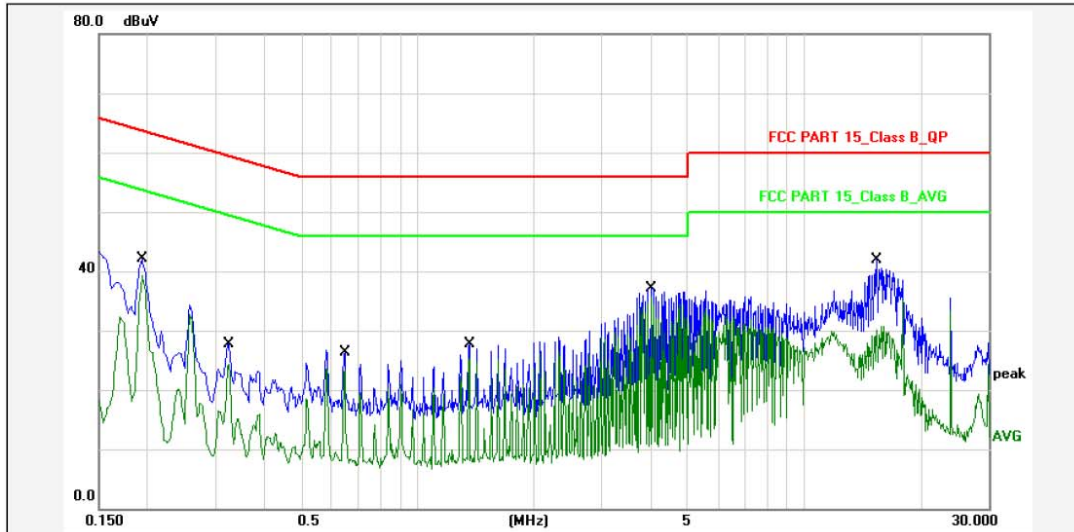
Please refer to following plots.



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 Tel: +86-769-22022444 Fax: +86-769-22022799
 Web: [Http://www.ntc-c.com](http://www.ntc-c.com)

Site: Conduction

Test Time: 2012-3-26 16:12:16



Report No.: BTSPK2
 Test Standard: FCC PART 15_Class B_QP
 Test item: Conducted Emission
 Applicant: CCA Electronic Factory
 Product: Bluetooth Wireless Media Speaker
 Model No.: BTSPK2
 Phase: L1
 Temp.()/Hum.(%): 23(C) / 54 %
 Power Rating: AC 120V/60Hz (PC Input)
 Test Engineer: Think
 Test Mode: Charging & Bluetooth
 Remark:

No.	Frequency (MHz)	Factor (dBuV)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1940	12.00	30.15	42.15	63.86	-21.71	QP	P	
2	0.1940	12.00	27.39	39.39	53.86	-14.47	AVG	P	
3	0.3260	12.00	15.73	27.73	59.55	-31.82	QP	P	
4	0.3260	12.00	12.34	24.34	49.55	-25.21	AVG	P	
5	0.6500	12.00	14.23	26.23	56.00	-29.77	QP	P	
6	0.6500	12.00	11.47	23.47	46.00	-22.53	AVG	P	
7	1.3619	12.00	15.73	27.73	56.00	-28.27	QP	P	
8	1.3619	12.00	13.20	25.20	46.00	-20.80	AVG	P	
9	4.0140	12.00	25.16	37.16	56.00	-18.84	QP	P	
10	4.0140	12.00	22.76	34.76	46.00	-11.24	AVG	P	
11	15.4139	12.00	29.83	41.83	60.00	-18.17	QP	P	
12	15.4139	12.00	18.75	30.75	50.00	-19.25	AVG	P	

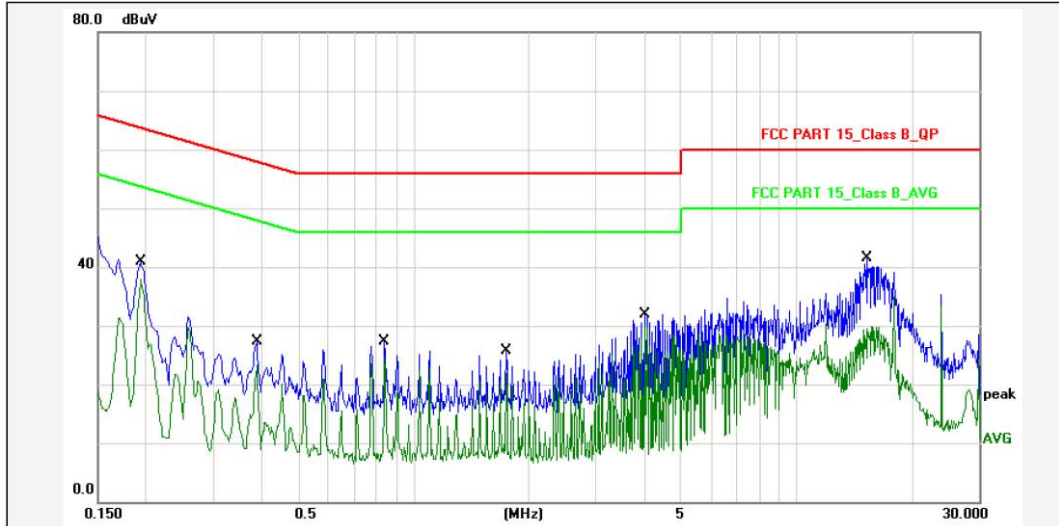
Note: Level=Reading+Factor.
 Margin=Limit-Level.



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Site: Conduction

Test Time: 2012-3-26 16:10:17



Report No.: BTSPK2
 Test Standard: FCC PART 15_Class B_QP
 Test item: Conducted Emission
 Applicant: CCA Electronic Factory
 Product: Bluetooth Wireless Media Speaker
 Model No.: BTSPK2
 Phase: N
 Temp.()/Hum.(%): 23(C) / 54 %
 Power Rating: AC 120V/60Hz (PC Input)
 Test Engineer: Think
 Test Mode: Charging & Bluetooth
 Remark:

No.	Frequency (MHz)	Factor (dBuV)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1940	12.00	28.81	40.81	63.86	-23.05	QP	P	
2	0.1940	12.00	25.89	37.89	53.86	-15.97	AVG	P	
3	0.3899	12.00	15.29	27.29	58.06	-30.77	QP	P	
4	0.3899	12.00	11.31	23.31	48.06	-24.75	AVG	P	
5	0.8420	12.00	15.29	27.29	56.00	-28.71	QP	P	
6	0.8420	12.00	6.73	18.73	46.00	-27.27	AVG	P	
7	1.7500	12.00	13.62	25.62	56.00	-30.38	QP	P	
8	1.7500	12.00	9.84	21.84	46.00	-24.16	AVG	P	
9	4.0180	12.00	19.86	31.86	56.00	-24.14	QP	P	
10	4.0180	12.00	17.82	29.82	46.00	-16.18	AVG	P	
11	15.3860	12.00	29.44	41.44	60.00	-18.56	QP	P	
12	15.3860	12.00	17.97	29.97	50.00	-20.03	AVG	P	

Note: Level=Reading+Factor.

Margin=Limit-Level.

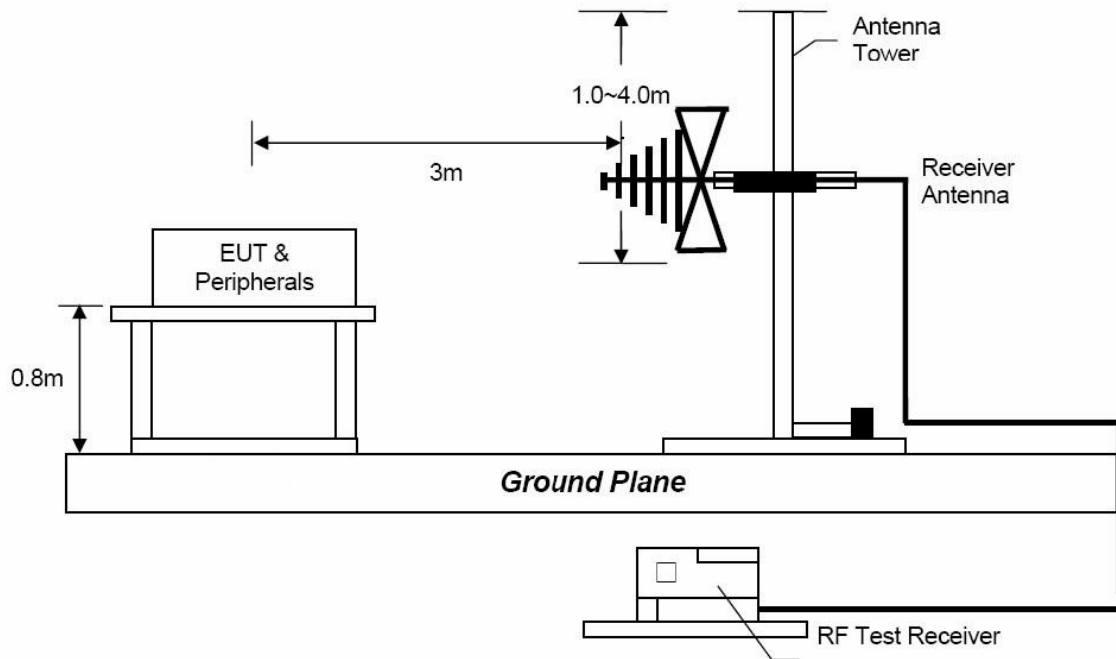
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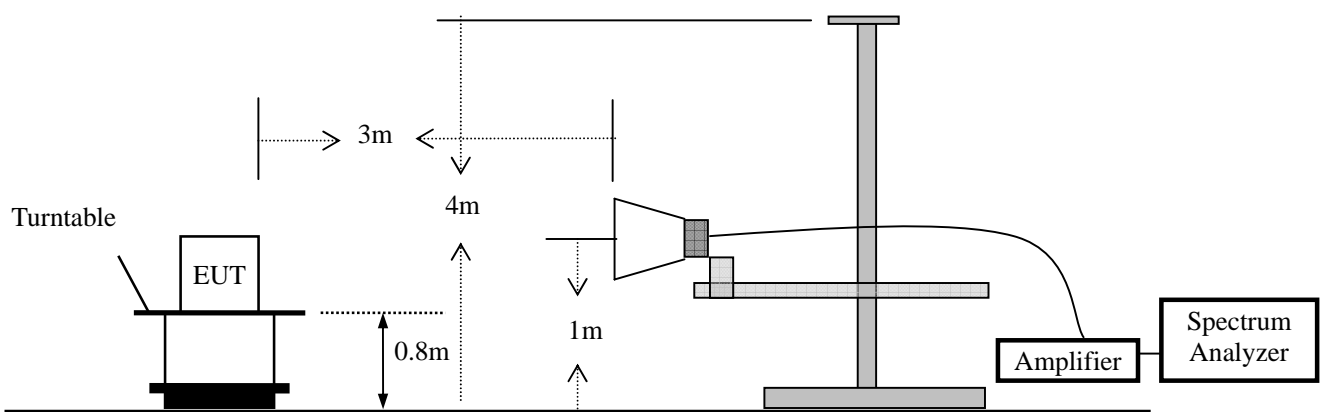
5. Radiated Emission Test

5.1 Test SET-UP (Block Diagram of Configuration)

Radiated Emission Test Set-Up, Frequency Below 1GHz



Radiated Emission Test Set-Up, Frequency above 1GHz



5.2 Measurement Results

Operation Mode: TX+RX Mode
 Frequency Range: 30~1000MHz Temperature : 22 °C
 Test Result: PASS Humidity : 54 %
 Measured Distance: 3m Test By: Think
 Test Date : March 26, 2012

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBUV)	Limit 3m (dBUV/m)	Margin (dB)	Note
30.01	V	33.57	40.00	-6.43	QP
63.95	V	33.71	40.00	-6.29	QP
184.22	V	37.25	43.50	-6.25	QP
211.38	V	36.07	43.50	-7.43	QP
527.61	V	32.05	46.00	-13.95	QP
63.95	H	32.88	40.00	-7.12	QP
185.20	H	37.06	43.50	-6.44	QP
208.48	H	36.97	43.50	-6.53	QP
384.05	H	38.64	46.00	-7.36	QP
524.70	H	33.02	46.00	-12.98	QP

- Note:**
- (1) All Readings are Peak Value.
 - (2) Emission Level= Reading Level+Probe Factor +Cable Loss
 - (3) The average measurement was not performed when the peak measured data under the limit of average detection.



Modulation: GFSK (the worst case)
 Operation Mode: TX Mode (Low) Test Date : March 26, 2012
 Frequency Range: Above 1GHz Temperature : 22 °C
 Test Result: PASS Humidity : 54 %
 Measured Distance: 3m Test By: Think

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4804	V	50.59	41.53	74.00	54.00	-23.41	-12.47
7206	V	49.67	40.19	74.00	54.00	-24.33	-13.81
9608	V	49.52	40.02	74.00	54.00	-24.48	-13.98
12010	V	47.23	39.17	74.00	54.00	-26.77	-14.83
4804	H	51.28	40.95	74.00	54.00	-12.72	-13.05
7206	H	49.23	39.38	74.00	54.00	-24.77	-14.62
9608	H	48.85	39.12	74.00	54.00	-25.15	-14.88
12010	H	50.34	41.26	74.00	54.00	-23.66	-12.74

Other harmonics emissions are lower than 20dB below the allowable limit.

- Note:**
- (1) All Readings are Peak Value and AV.
 - (2) Emission Level= Reading Level+Probe Factor +Cable Loss
 - (3) The average measurement was not performed when the peak measured data under the limit of average detection.



Modulation: GFSK (the worst case)
 Operation Mode: TX Mode (Mid) Test Date : March 26, 2012
 Frequency Range: Above 1GHz Temperature : 22 °C
 Test Result: PASS Humidity : 54 %
 Measured Distance: 3m Test By: Think

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4882	V	49.68	39.25	74.00	54.00	-24.32	-14.75
7323	V	47.24	37.65	74.00	54.00	-26.76	-16.35
9764	V	47.85	37.12	74.00	54.00	-26.15	-16.88
12205	V	45.53	35.68	74.00	54.00	-28.47	-18.32
4882	H	50.24	40.82	74.00	54.00	-23.76	-13.18
7323	H	49.64	39.11	74.00	54.00	-24.36	-14.89
9764	H	50.23	40.65	74.00	54.00	-23.77	-13.35
12205	H	47.67	37.51	74.00	54.00	-26.33	-16.49

Other harmonics emissions are lower than 20dB below the allowable limit.

- Note:**
- (1) All Readings are Peak Value and AV.
 - (2) Emission Level= Reading Level+Probe Factor +Cable Loss
 - (3) The average measurement was not performed when the peak measured data under the limit of average detection.



Modulation: GFSK (the worst case)
 Operation Mode: TX Mode (High) Test Date : March 26, 2012
 Frequency Range: Above 1GHz Temperature : 22 °C
 Test Result: PASS Humidity : 54 %
 Measured Distance: 3m Test By: Think

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV)		Limit 3m(dBuV/m)		Margin(dB)	
		PK	AV	PK	AV	PK	AV
4960	V	50.65	41.03	74.00	54.00	-23.35	-12.97
7440	V	49.67	39.70	74.00	54.00	-24.33	-14.30
9920	V	47.82	38.56	74.00	54.00	-26.18	-15.44
12400	V	47.03	36.92	74.00	54.00	-26.97	-17.08
4960	H	51.31	41.62	74.00	54.00	-22.69	-12.38
7440	H	48.63	39.64	74.00	54.00	-25.37	-14.36
9920	H	50.11	40.19	74.00	54.00	-23.89	-13.81
12400	H	47.94	38.84	74.00	54.00	-26.06	-15.16

Other harmonics emissions are lower than 20dB below the allowable limit.

- Note:**
- (1) All Readings are Peak Value and AV.
 - (2) Emission Level= Reading Level+Probe Factor +Cable Loss
 - (3) The average measurement was not performed when the peak measured data under the limit of average detection.

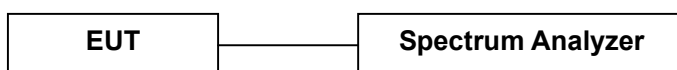
6. Channel Separation test

6.1 Measurement Procedure

Minimum Hopping Channel Carrier Frequency Separation, FCC Rule 15.247(a)(1):

Connect EUT antenna terminal to the spectrum analyzer with a low loss cable, and using the MARKER and Max-Hold function to record the separation of two adjacent channels.

6.2 Test SET-UP (Block Diagram of Configuration)

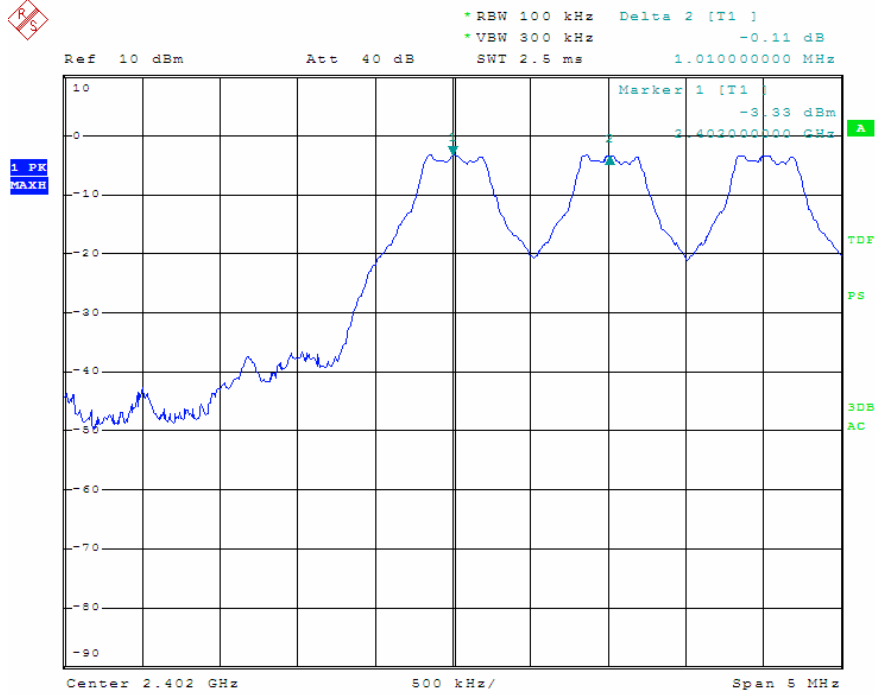


6.3 Measurement Results

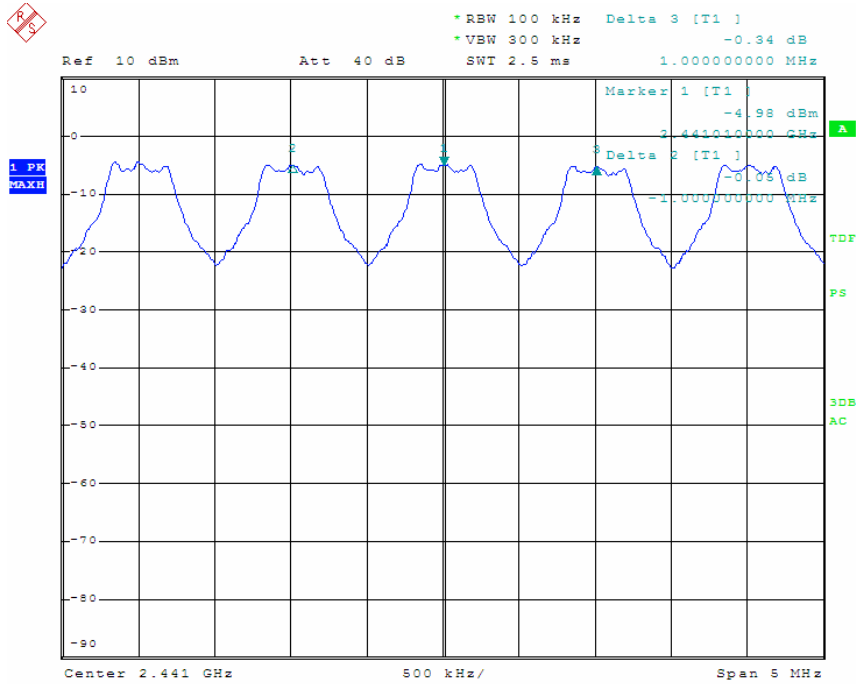
Modulation:	GFSK, $\pi/4$ -DQPSK, 8DPSK		
RBW:	100KHz	VBW:	300KHz
Packet:	DH5	Spectrum Detector:	PK
Test By:	Think	Test Date :	March 22, 2012
Temperature :	22 °C	Humidity :	54 %
Test Result:	PASS		

Channel number	Channel frequency (MHz)	Separation Read Value (KHz)	Separation Limit (KHz)
GFSK			
Lowest	2402	1010	>926.7
Middle	2441	1000	>926.7
Highest	2480	1010	>926.7
$\pi/4$ -DQPSK			
Lowest	2402	1000	>926.7
Middle	2441	1000	>926.7
Highest	2480	1000	>926.7
8DPSK			
Lowest	2402	1000	>926.7
Middle	2441	1000	>926.7
Highest	2480	1010	>926.7

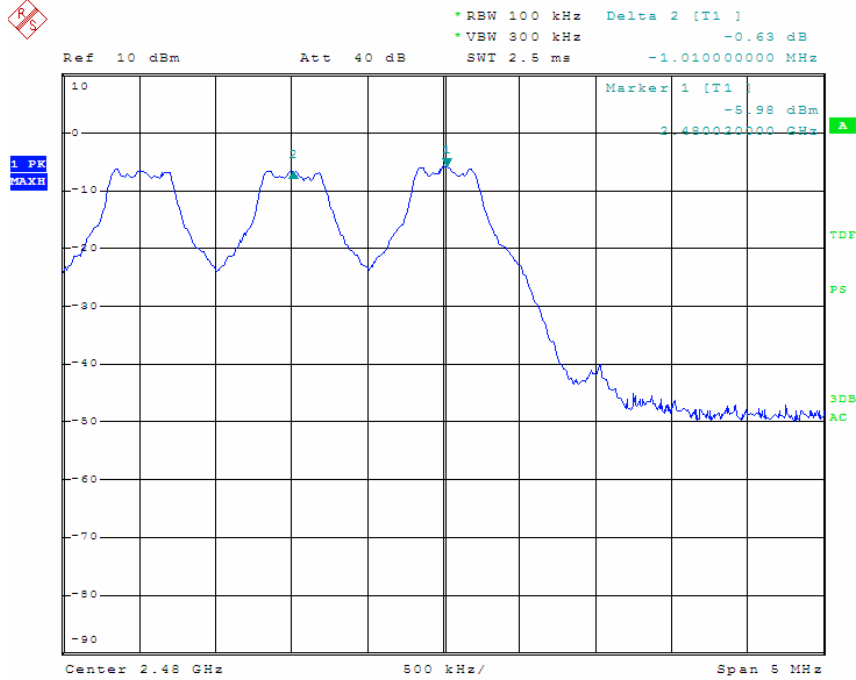
GFSK Lowest Channel



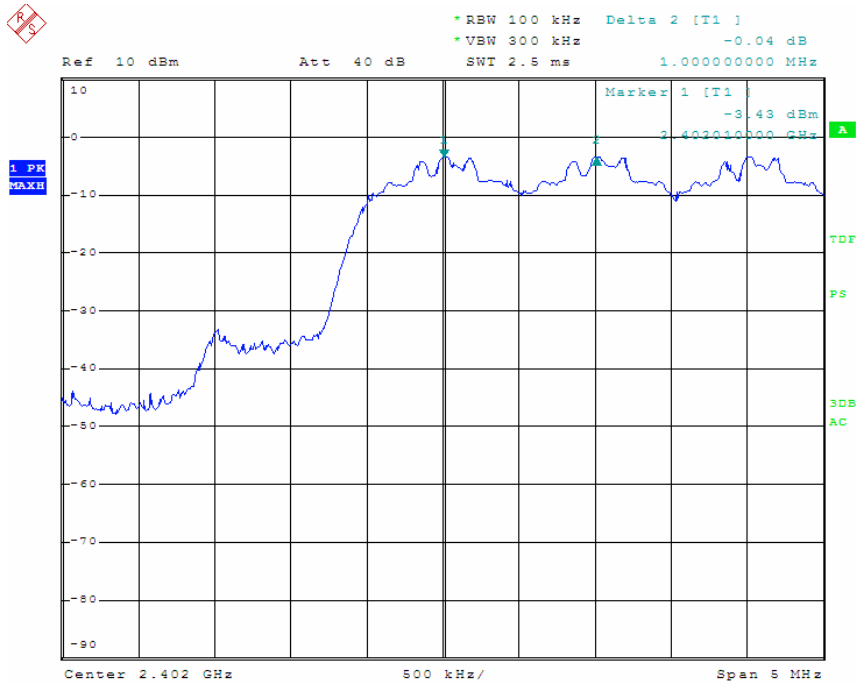
GFSK Middle Channel



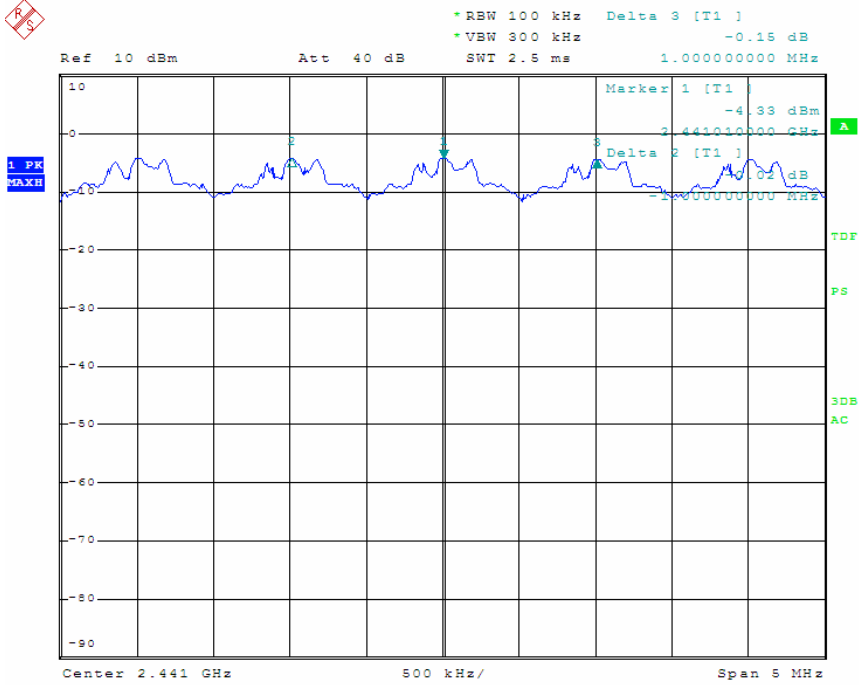
GFSK Highest Channel



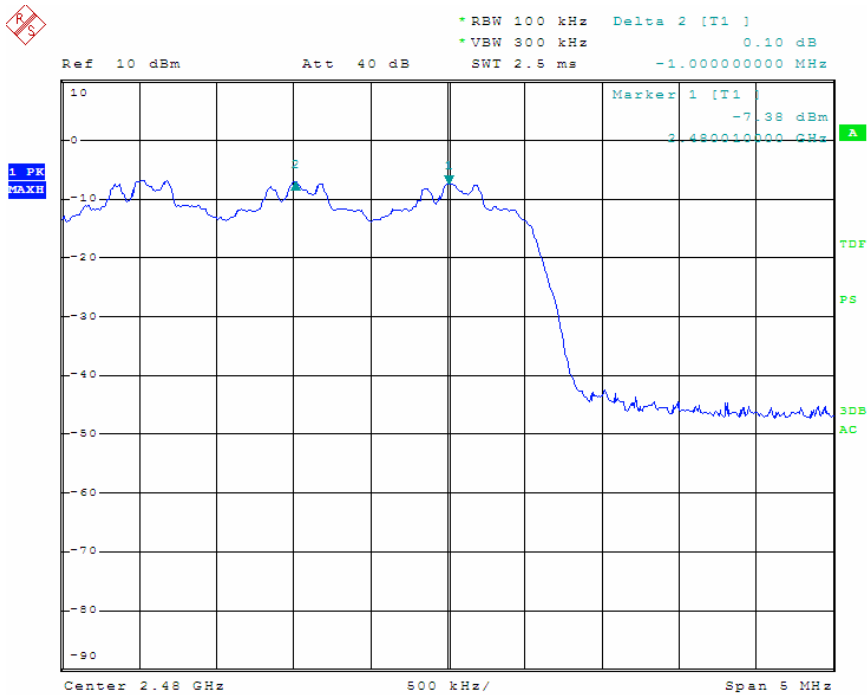
$\pi/4$ -DQPSK Lowest Channel



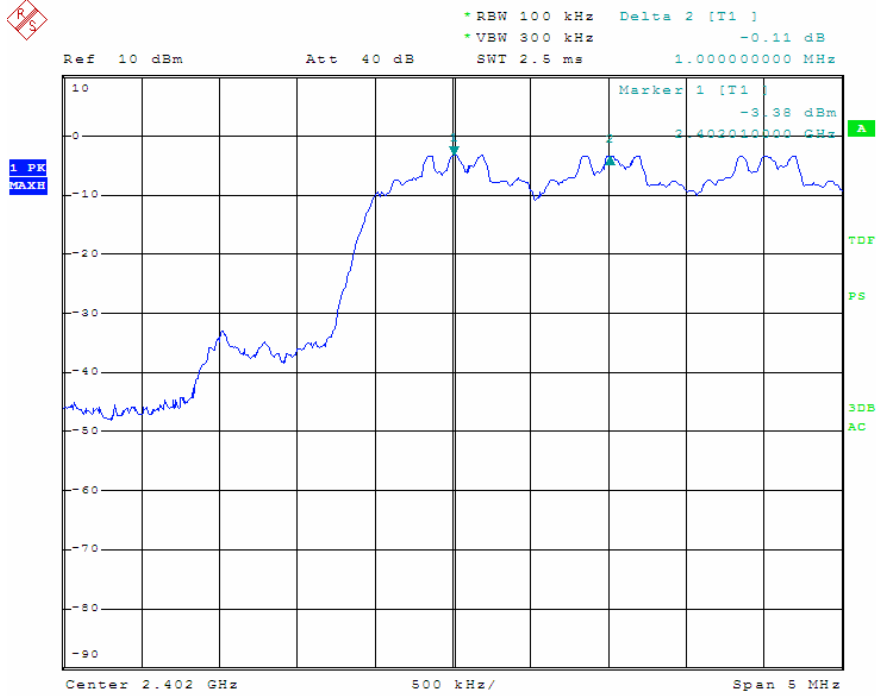
$\pi/4$ -DQPSK Middle Channel



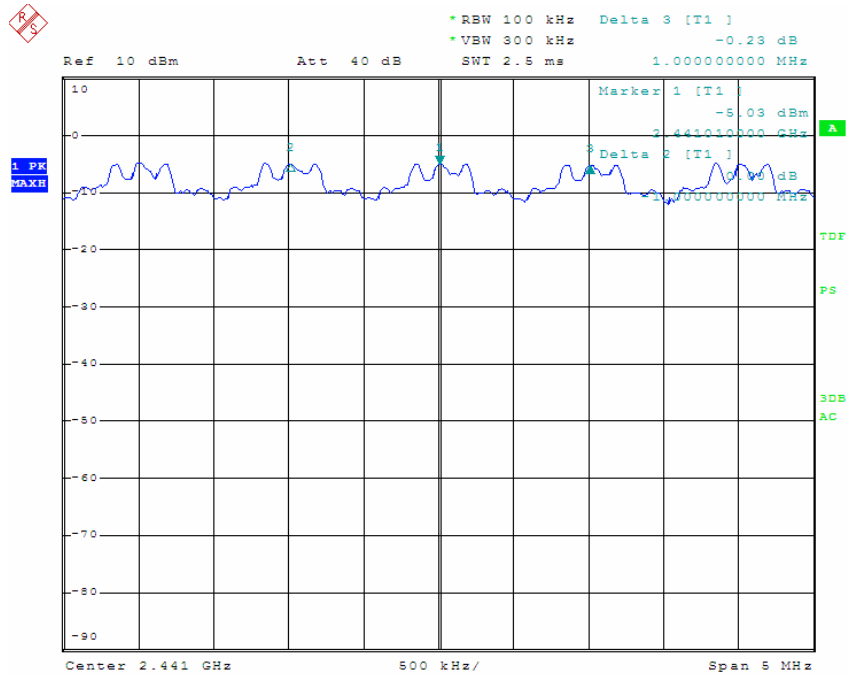
$\pi/4$ -DQPSK Highest Channel



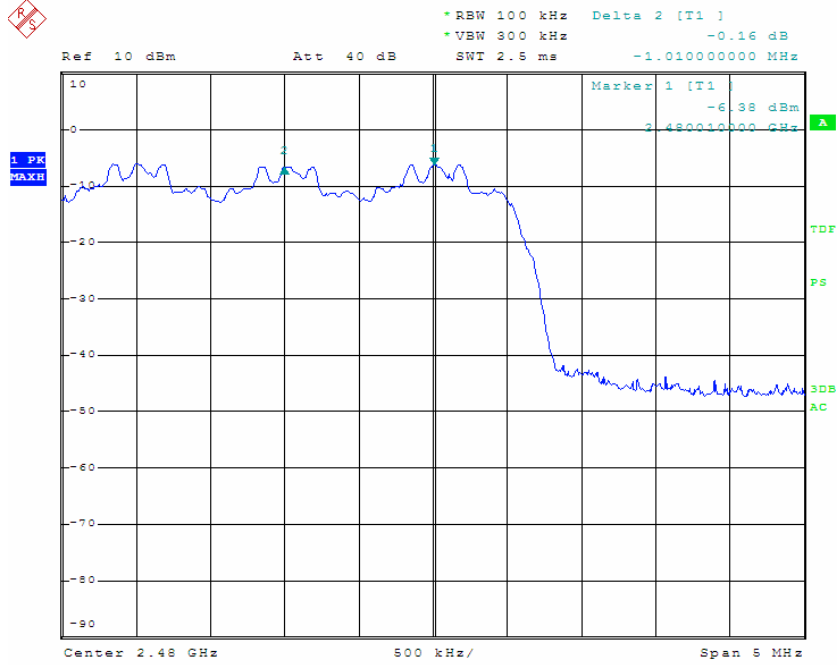
8DPSK Lowest Channel



8DPSK Middle Channel



8DPSK Highest Channel



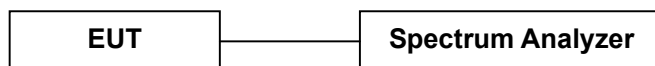
7. 20dB Bandwidth

7.1 Measurement Procedure

Maximum 20dB RF Bandwidth, FCC Rule 15.247(a)(1):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was chosen so that the display was a result of the hopping channel modulation. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. Use the spectrum 20dB down delta function to measure the bandwidth.

7.2 Test SET-UP (Block Diagram of Configuration)



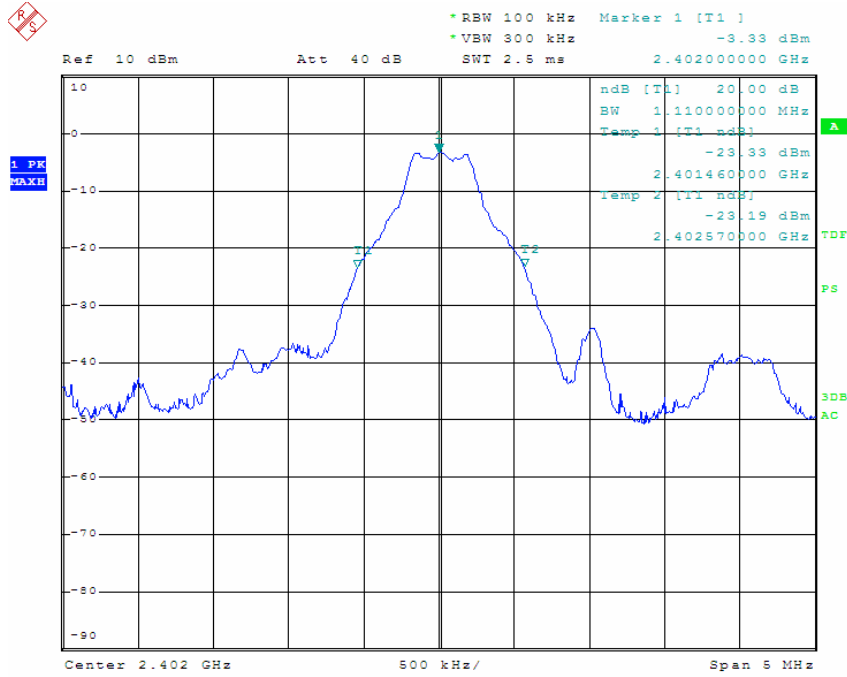
7.3 Measurement Results

Refer to attached data chart.

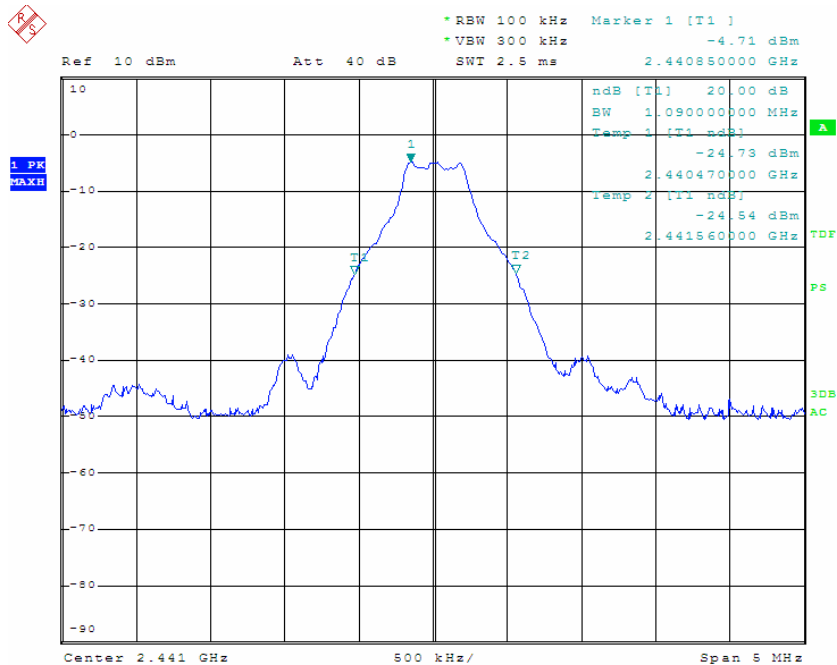
Modulation:	GFSK, $\pi/4$ -DQPSK, 8DPSK		
RBW:	100KHz	VBW:	300KHz
Packet:	DH5	Spectrum Detector:	PK
Test By:	Think	Test Date :	March 22, 2012
Temperature :	22 °C	Humidity :	54 %
Test Result:	PASS		

Channel frequency (MHz)	20dB Down BW(kHz)
GFSK	
2402	1110
2441	1090
2480	1090
$\pi/4$ -DQPSK	
2402	1390
2441	1370
2480	1380
8DPSK	
2402	1390
2441	1390
2480	1380

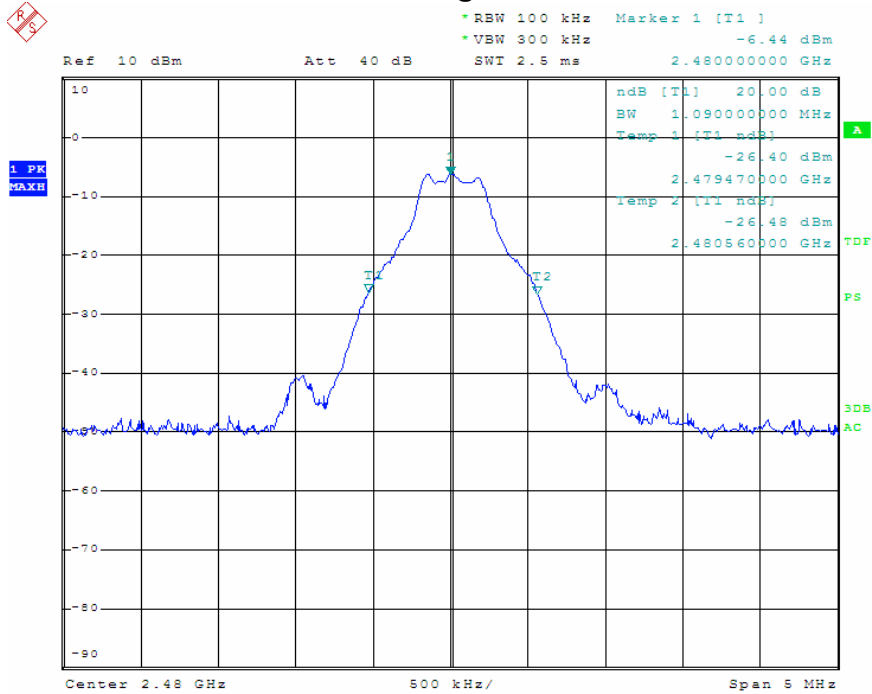
GFSK Lowest Channel



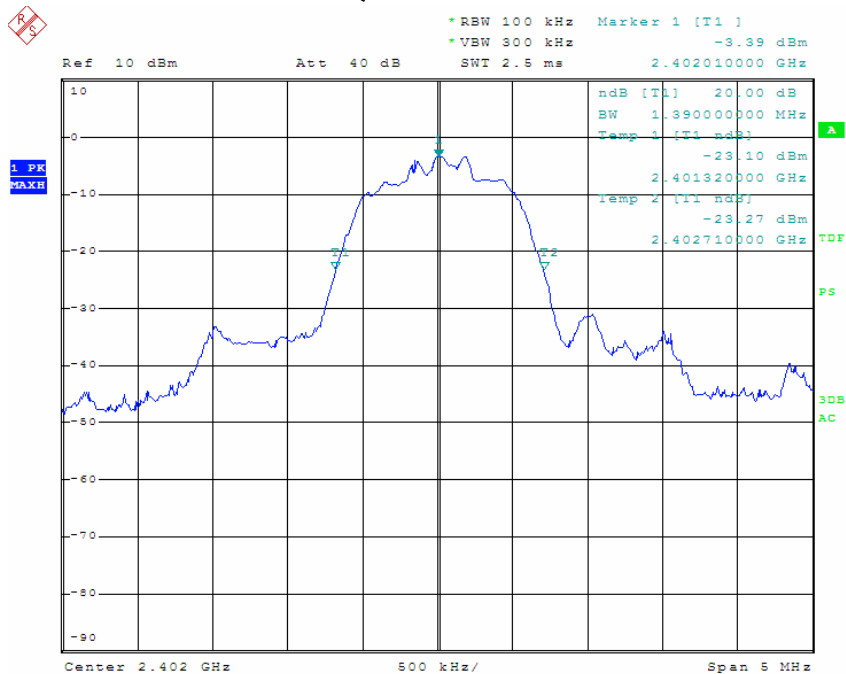
GFSK Middle Channel



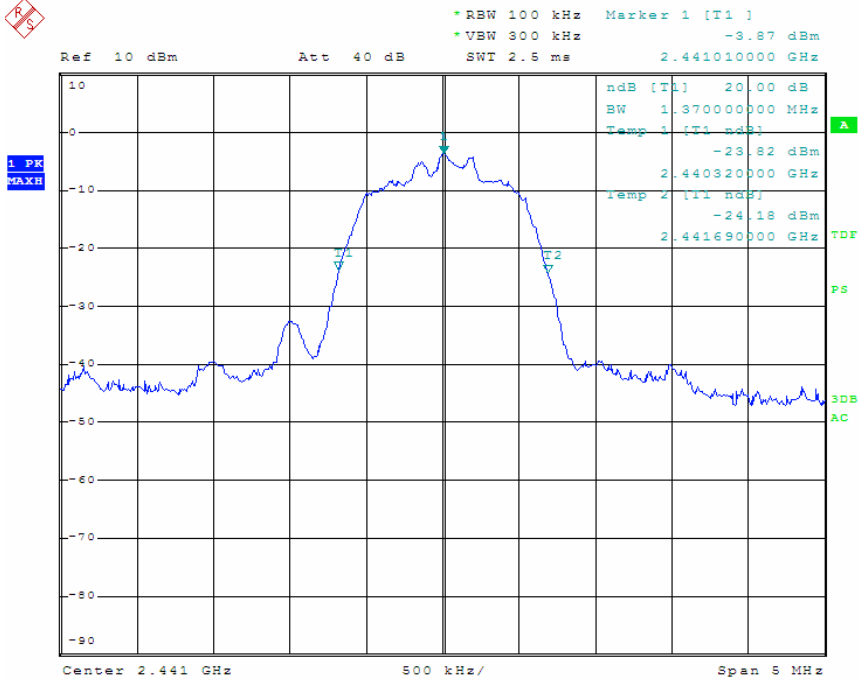
GFSK Highest Channel



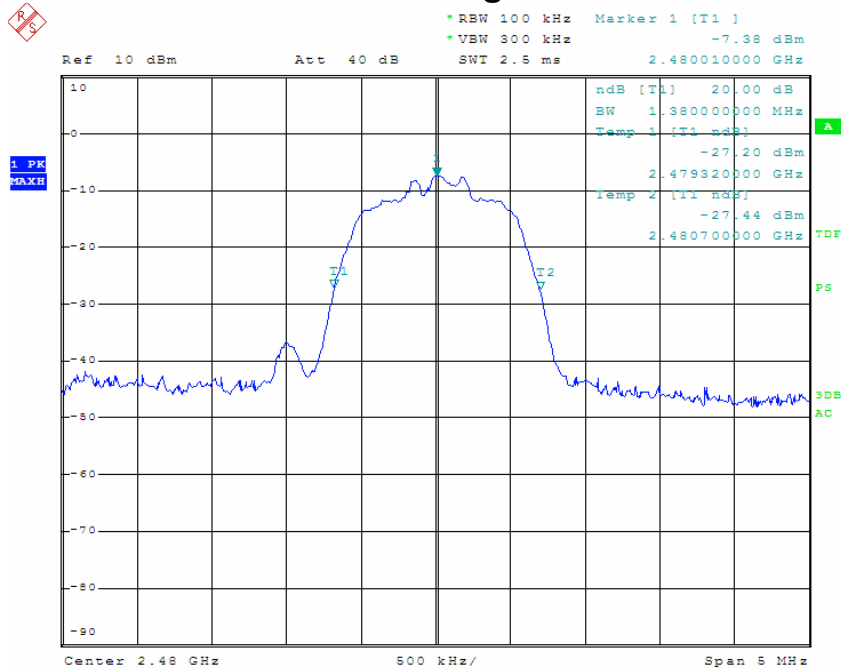
$\pi/4$ -DQPSK Lowest Channel



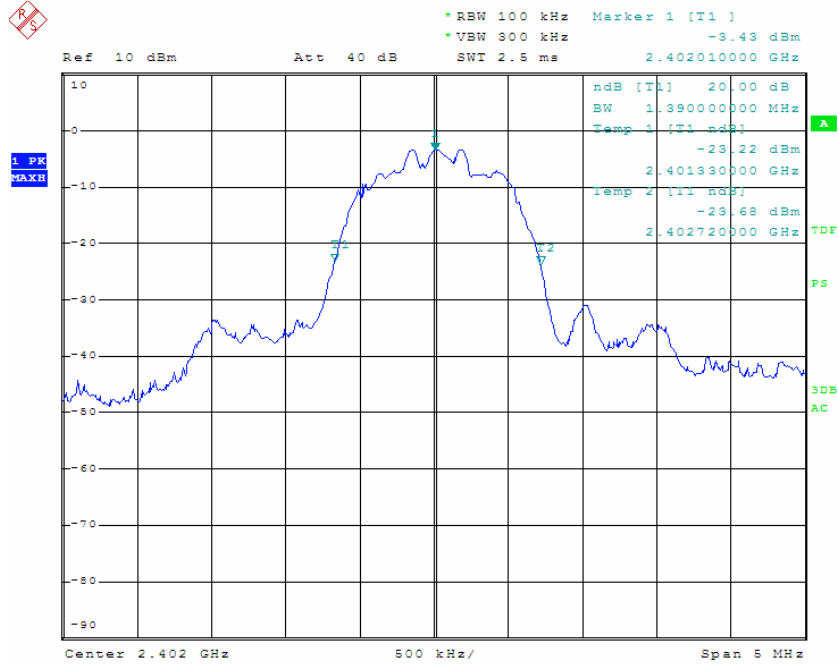
$\pi/4$ -DQPSK Middle Channel



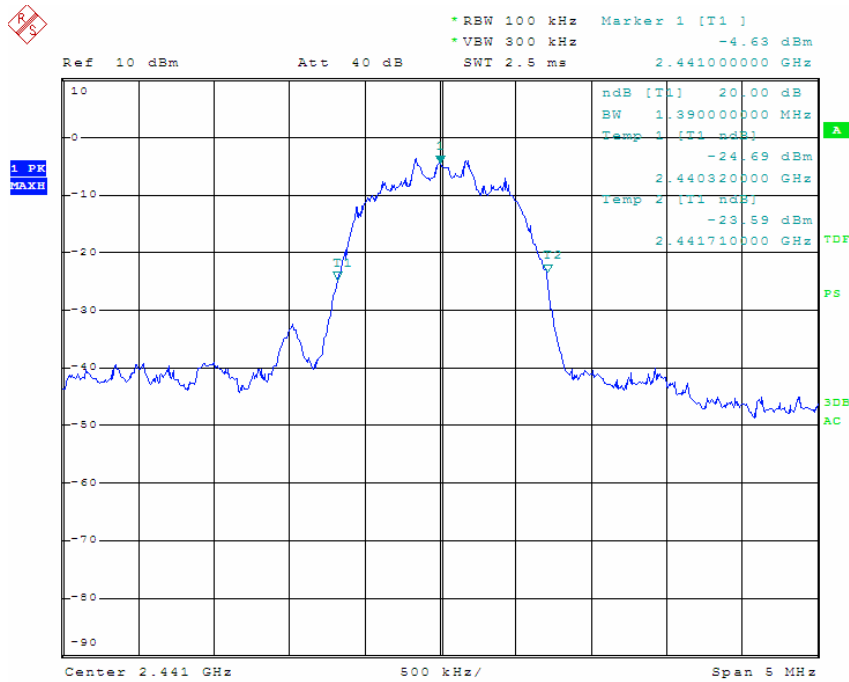
$\pi/4$ -DQPSK Highest Channel



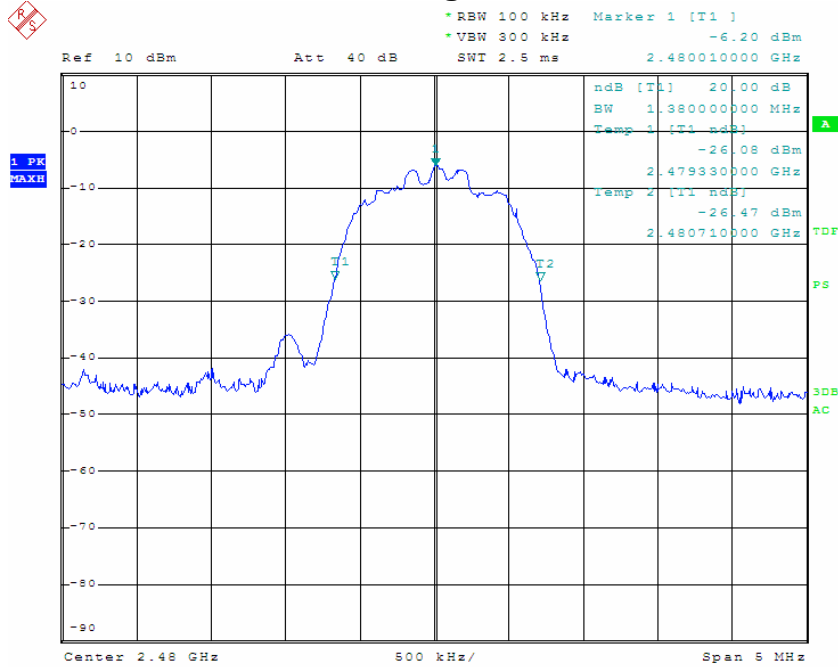
8DPSK Lowest Channel



8DPSK Middle Channel



8DPSK Highest Channel



8. Hopping Channel Number

8.1 Measurement Procedure

Minimum Number of Hopping Frequencies, FCC Rule 15.247(a)(1)(iii):

Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum, and the spectrum analyzer set to MAX HOLD readings were taken for 3-5 minutes. The channel peaks so recorded were added together, and the total number compared to the minimum number of channels required in the regulation.

8.2 Test SET-UP (Block Diagram of Configuration)



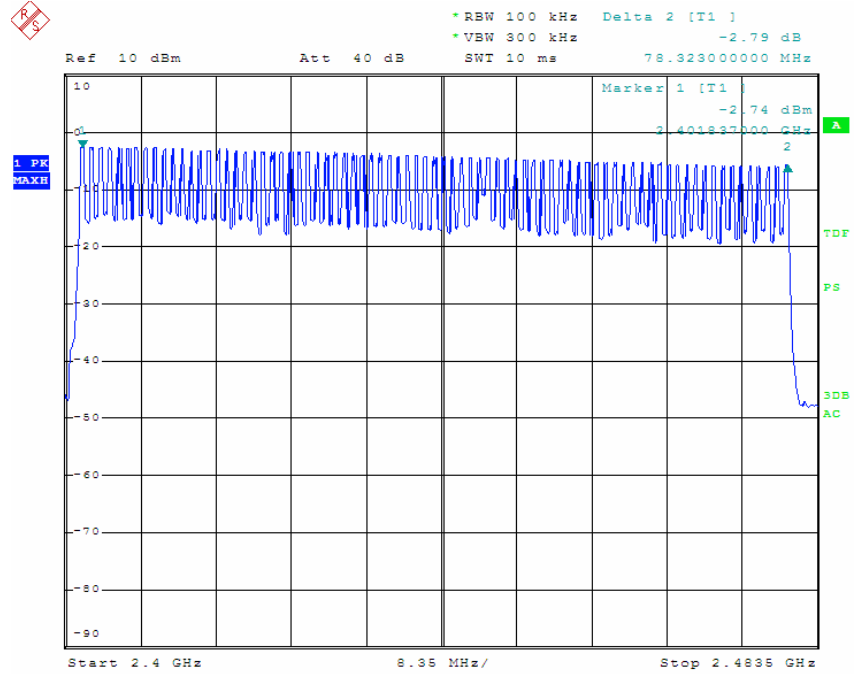
8.3 Measurement Results

Refer to attached data chart.

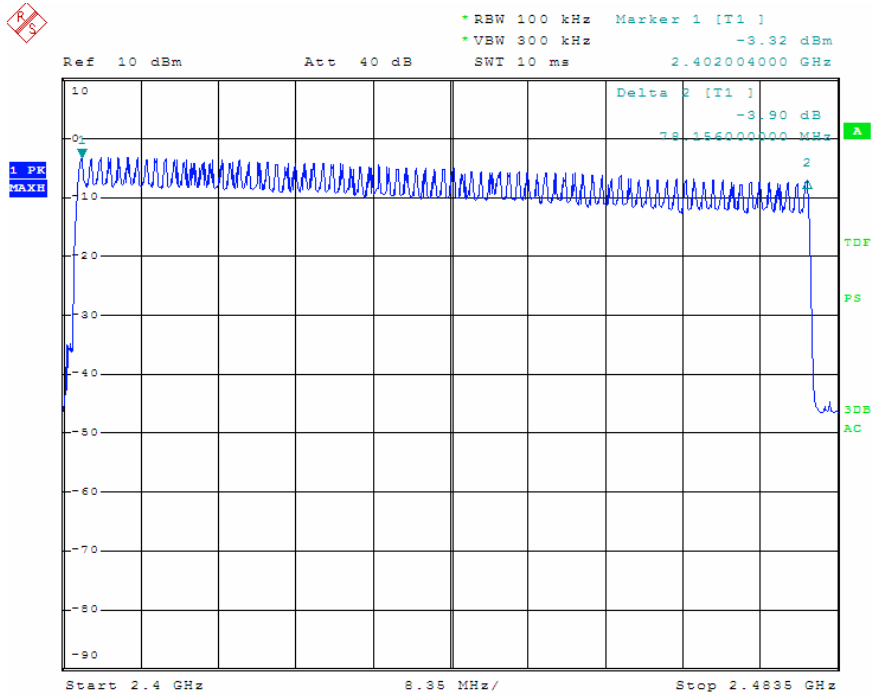
Modulation	GFSK, $\pi/4$ -DQPSK, 8DPSK		
RBW:	100KHz	VBW:	300KHz
Packet:	DH5	Spectrum Detector:	PK
Test By:	Think	Test Date :	March 22, 2012
Temperature :	22 °C	Humidity :	54 %
Test Result:	PASS		

Hopping Channel Frequency Range	Number of Hopping Channels	Limit
2402-2480	79	≥ 75

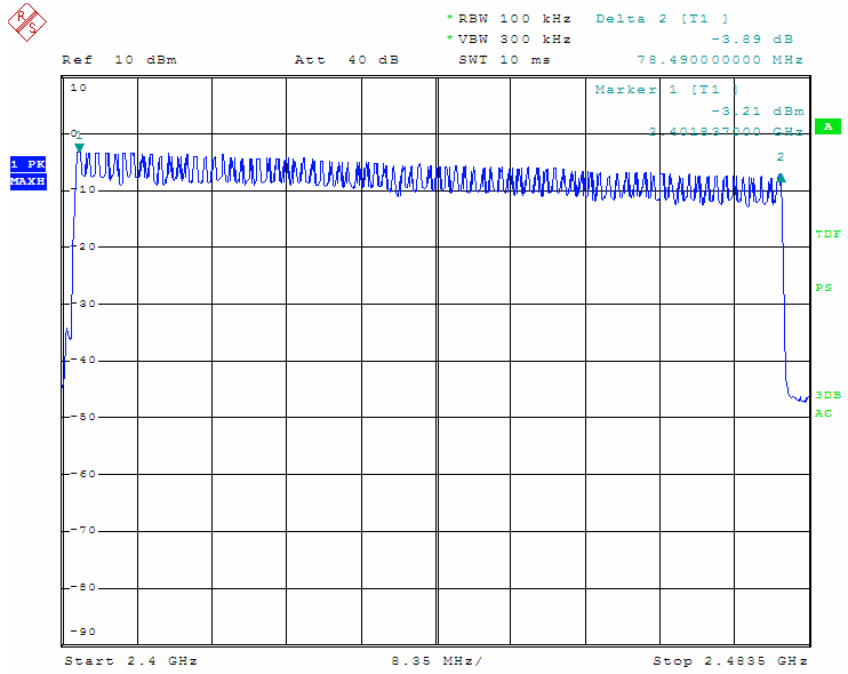
GFSK



$\pi/4$ -DQPSK



8DPSK



9. Time of Occupancy (Dwell Time)

9.1 Measurement Procedure

Average Channel Occupancy Time, FCC Ref:15.247(a)(1)(iii):

Connect EUT antenna terminal to the specturm analyzer with a low loss cable. The spectrum analyzer center frequency was set to one of the known hopping channels. The Sweep was set to 10ms, the SPAN was set to Zero SPAN. The time duration of the transmissions so captured was measured with the Marker Delta function

9.2 Measurement Results

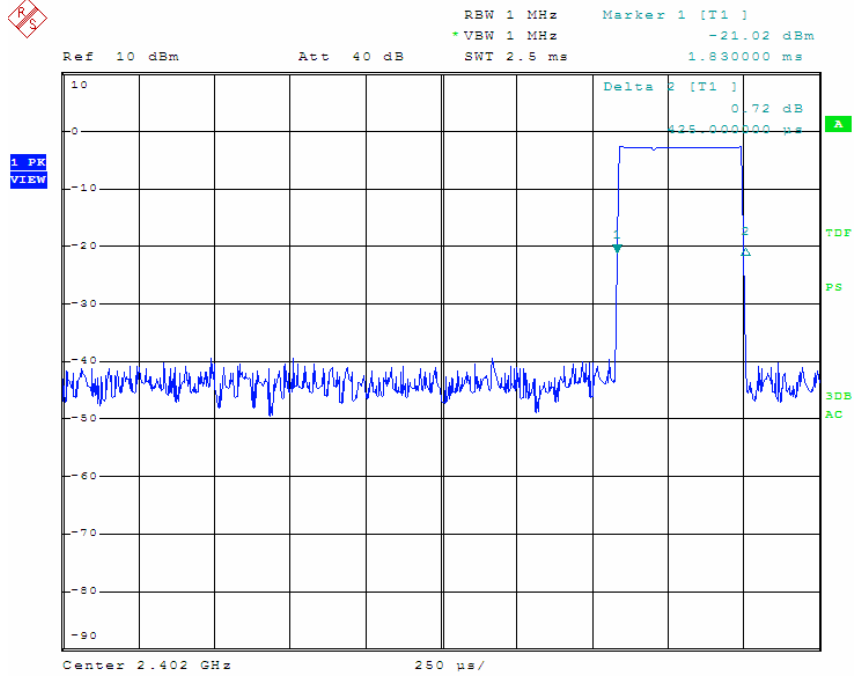
The maximum number of hopping channels in 31.6s (0.4s/Channel x 79 Channel)

Refer to attached data chart.

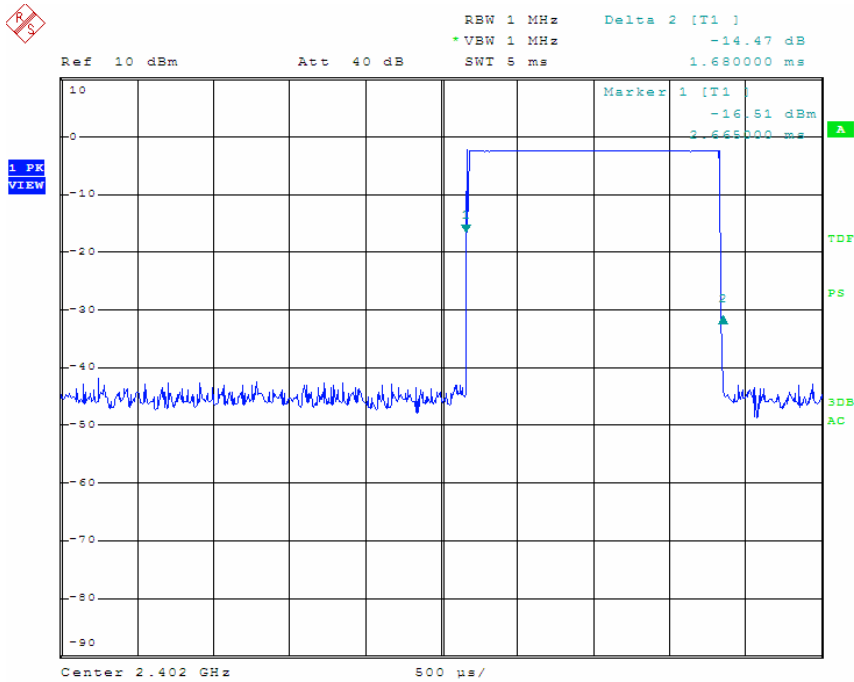
Modulation :	GFSK, $\pi/4$ -DQPSK, 8DPSK		
RBW :	1MHz	VBW :	1MHz
Spectrum Detector:	PK	Test By:	Think
Test Date :	March 22, 2012	Temperature :	22 °C
Test Result:	PASS	Humidity :	54 %

Packet	Frequency (MHz)	Result (msec)	Limit (msec)
GFSK			
DH1	2402	$0.425(\text{ms}) * (1600 / (2 * 79)) * 31.6 = 136.0$	400
DH3	2402	$1.680(\text{ms}) * (1600 / (4 * 79)) * 31.6 = 268.8$	400
DH5	2402	$2.925(\text{ms}) * (1600 / (6 * 79)) * 31.6 = 312.0$	400
$\pi/4$-DQPSK			
2-DH1	2402	$0.425(\text{ms}) * (1600 / (2 * 79)) * 31.6 = 136.0$	400
2-DH3	2402	$1.690(\text{ms}) * (1600 / (4 * 79)) * 31.6 = 270.4$	400
2-DH5	2402	$2.955(\text{ms}) * (1600 / (6 * 79)) * 31.6 = 315.2$	400
8DPSK			
3-DH1	2402	$0.425(\text{ms}) * (1600 / (2 * 79)) * 31.6 = 136.0$	400
3-DH3	2402	$1.685(\text{ms}) * (1600 / (4 * 79)) * 31.6 = 269.6$	400
3-DH5	2402	$2.935(\text{ms}) * (1600 / (6 * 79)) * 31.6 = 313.1$	400

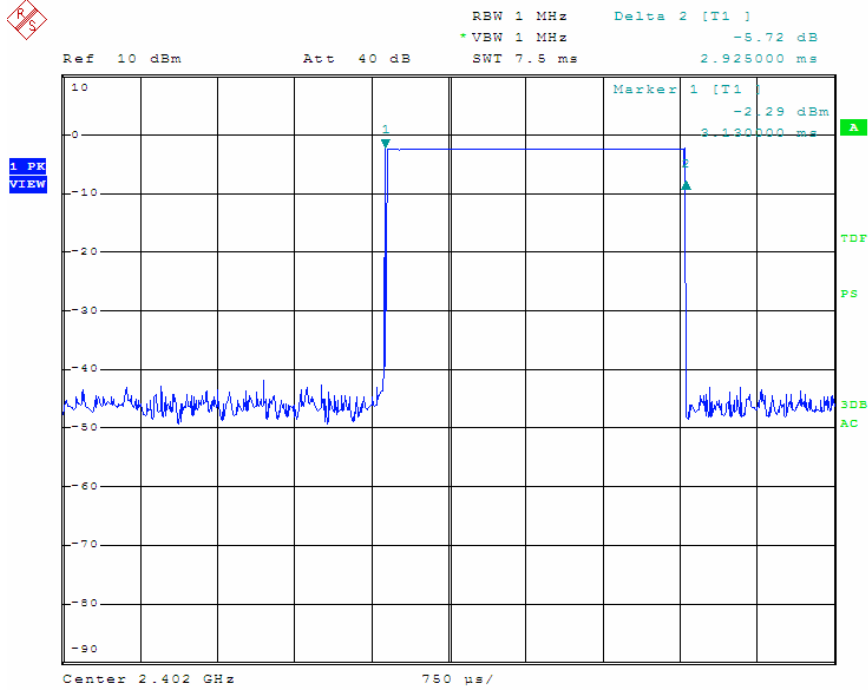
GFSK DH1



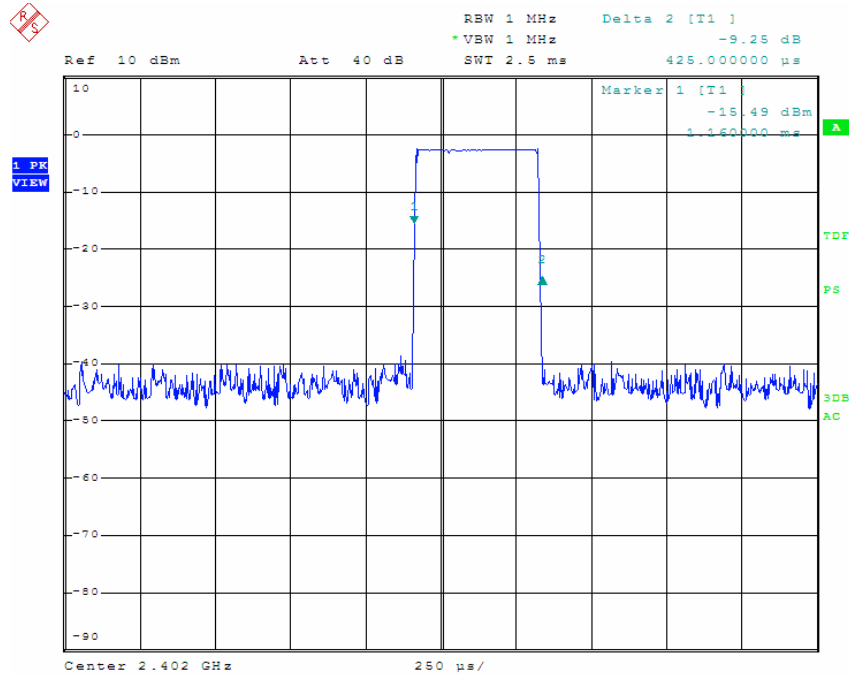
GFSK DH3



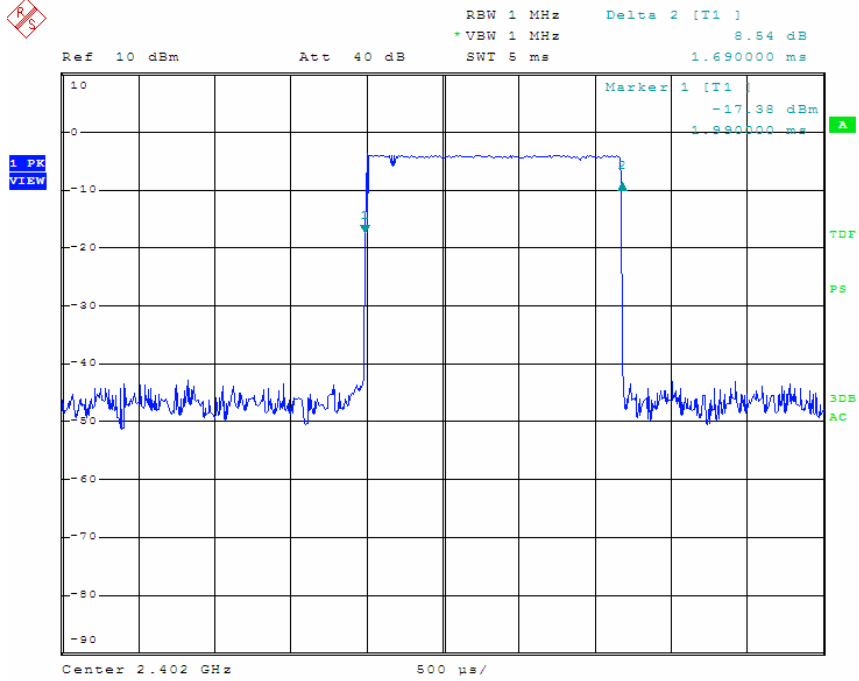
GFSK DH5



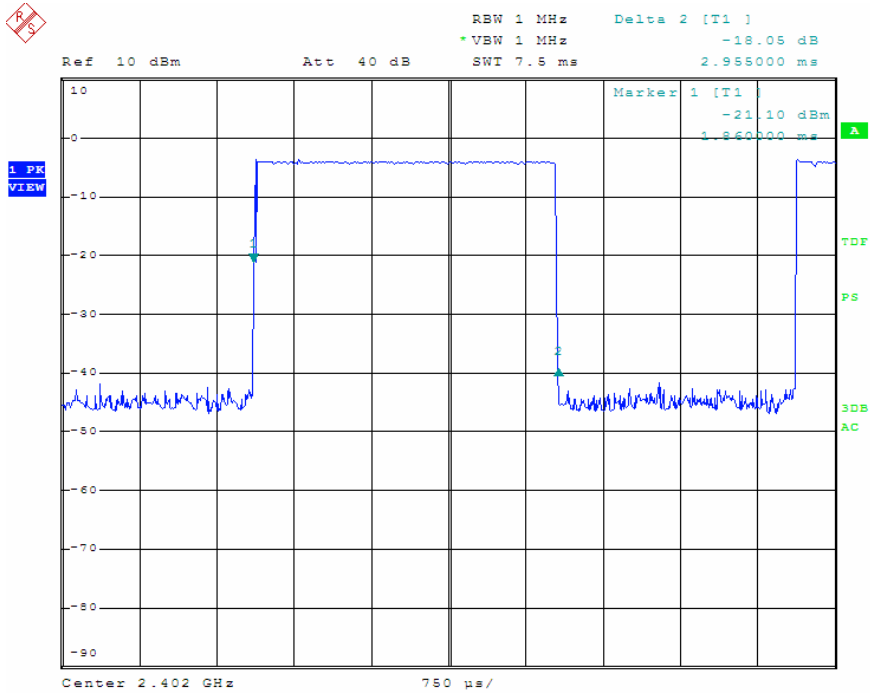
$\pi/4$ -DQPSK 2-DH1



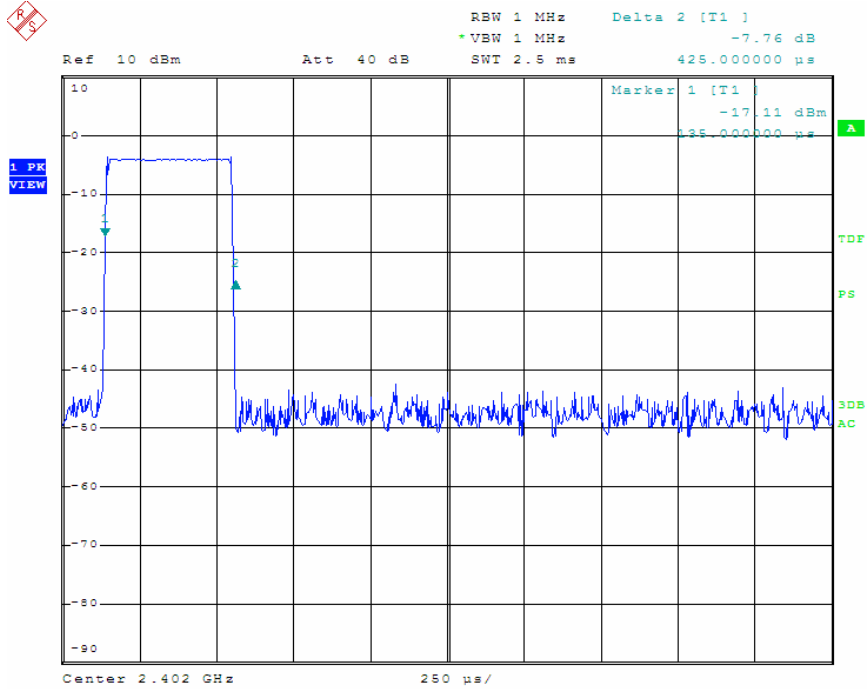
$\pi/4$ -DQPSK 2-DH3



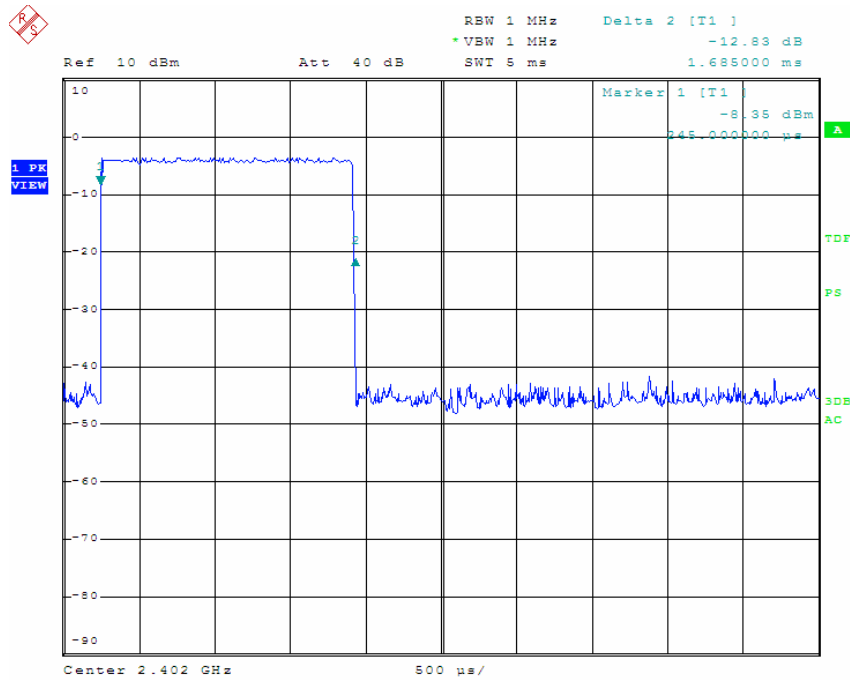
$\pi/4$ -DQPSK 2-DH5



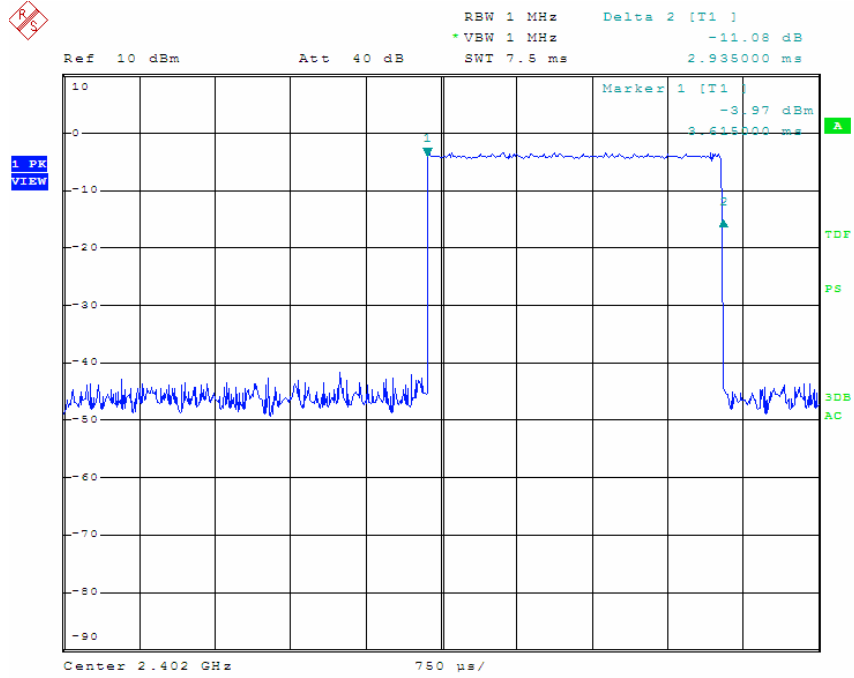
8DPSK 3-DH1



8DPSK 3-DH3



8DPSK 3-DH5



10. MAXIMUM PEAK OUTPUT POWER

10.1 Measurement Procedure

Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(1):

Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum. The analyzer was set for RBW > 20dB bandwidth and power was read directly in dBm. Cable loss was considered during this measurement.

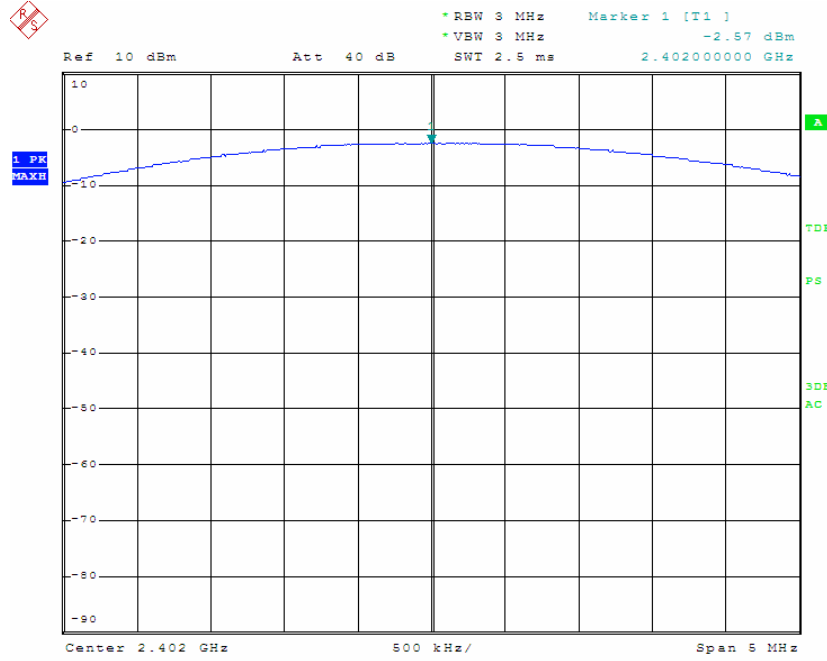
10.2 Measurement Results

Refer to attached data chart.

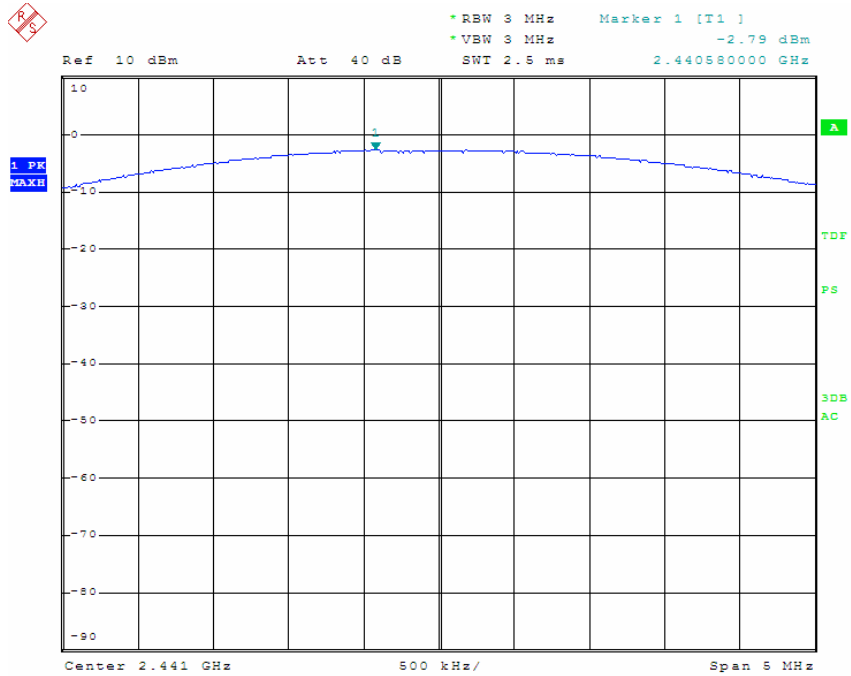
Modulation :	GFSK, $\pi/4$ -DQPSK, 8DPSK		
RBW :	3MHz	VBW :	3MHz
Spectrum Detector:	PK	Test Date :	March 22, 2012
Test By:	Think	Temperature :	22 °C
Test Result:	PASS	Humidity :	54 %

Channel Frequency (MHz)	Cable Loss dB	Peak Power output(mW)	Peak Power output(dBm)	Peak Power Limit(dBm)	Pass/Fail
GFSK					
2402.00	1.5	0.553	-2.57	21	PASS
2441.00	1.5	0.526	-2.79	21	PASS
2480.00	1.5	0.348	-4.59	21	PASS
$\pi/4$ -DQPSK					
2402.00	1.5	0.473	-3.25	21	PASS
2441.00	1.5	0.424	-3.73	21	PASS
2480.00	1.5	0.290	-5.37	21	PASS
8DPSK					
2402.00	1.5	0.460	-3.37	21	PASS
2441.00	1.5	0.466	-3.32	21	PASS
2480.00	1.5	0.290	-5.37	21	PASS

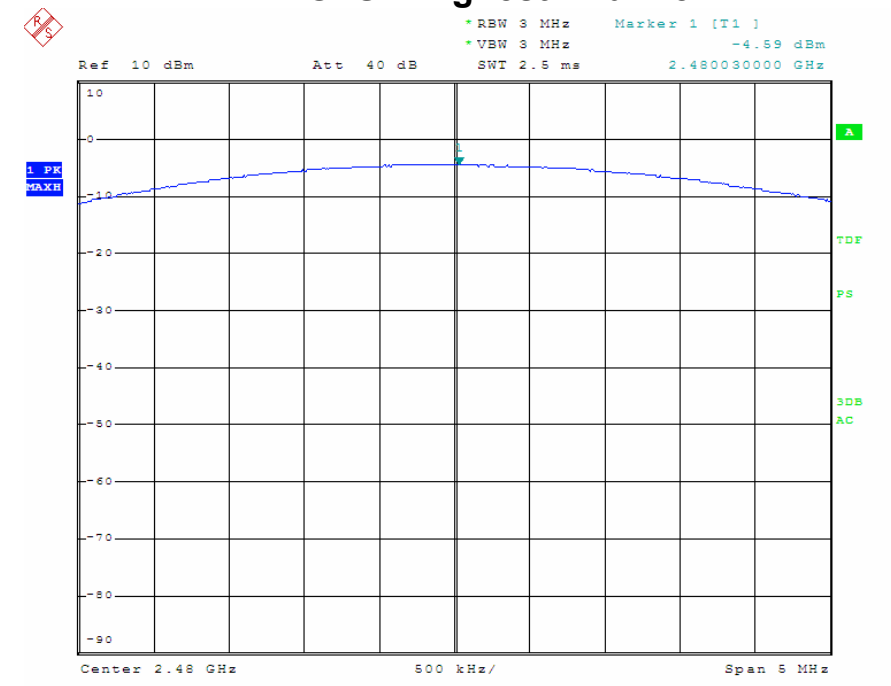
GFSK Lowest Channel



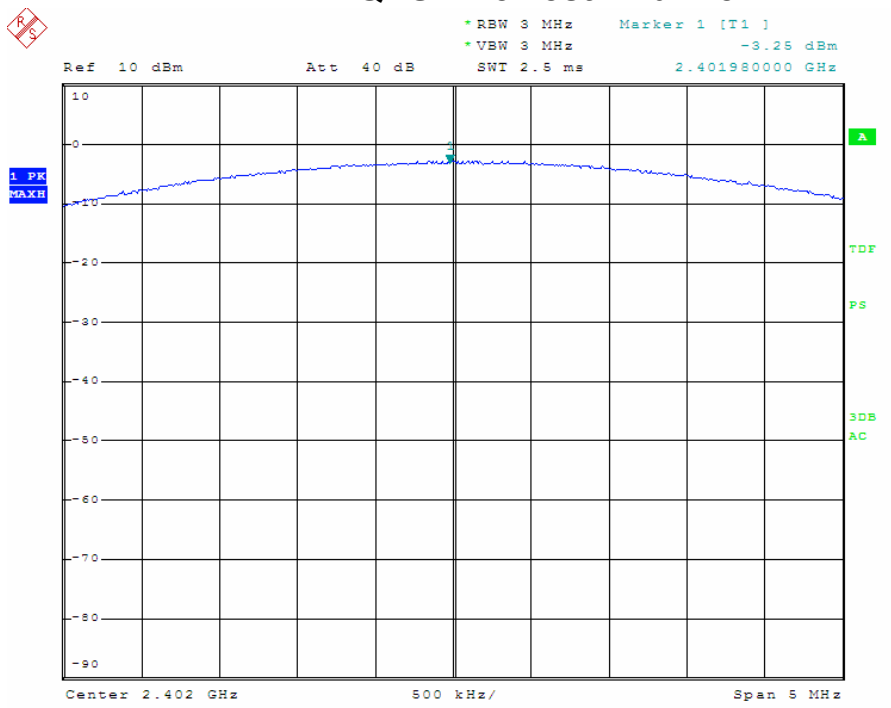
GFSK Middle Channel



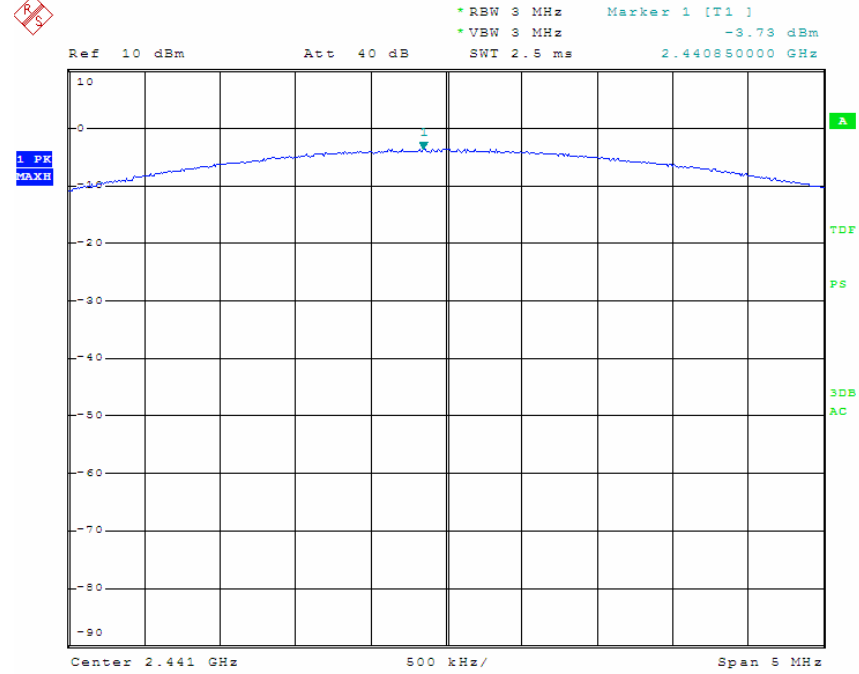
GFSK Highest Channel



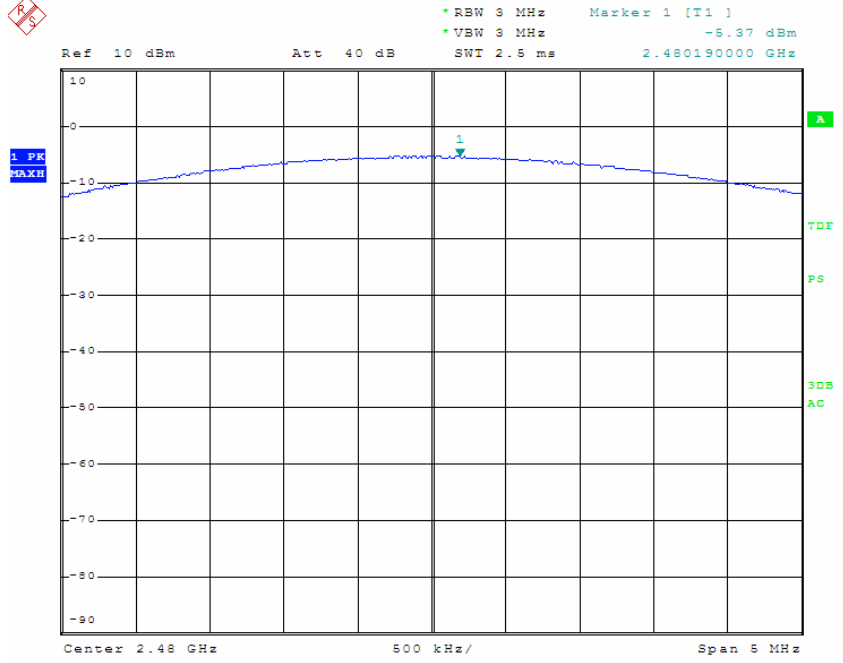
$\pi/4$ -DQPSK Lowest Channel



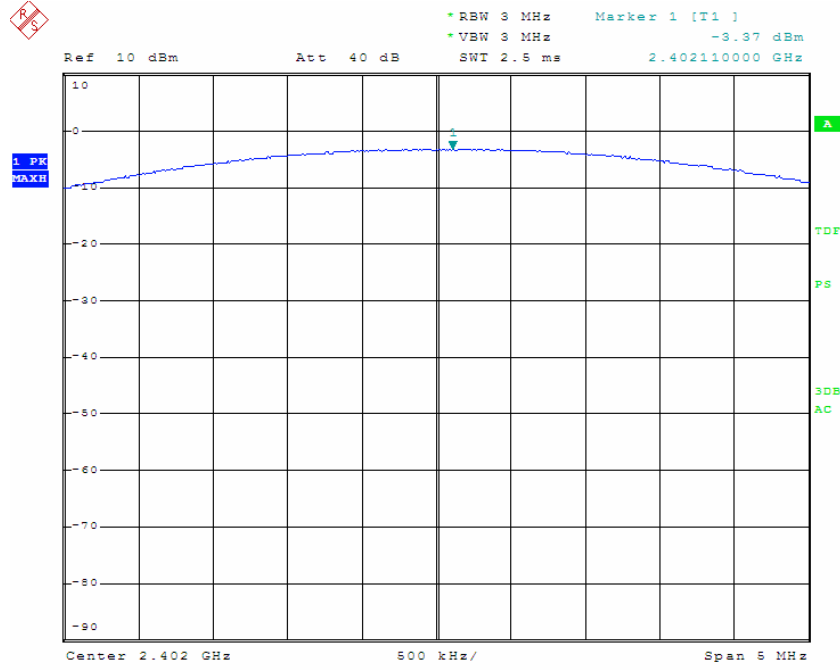
$\pi/4$ -DQPSK Middle Channel



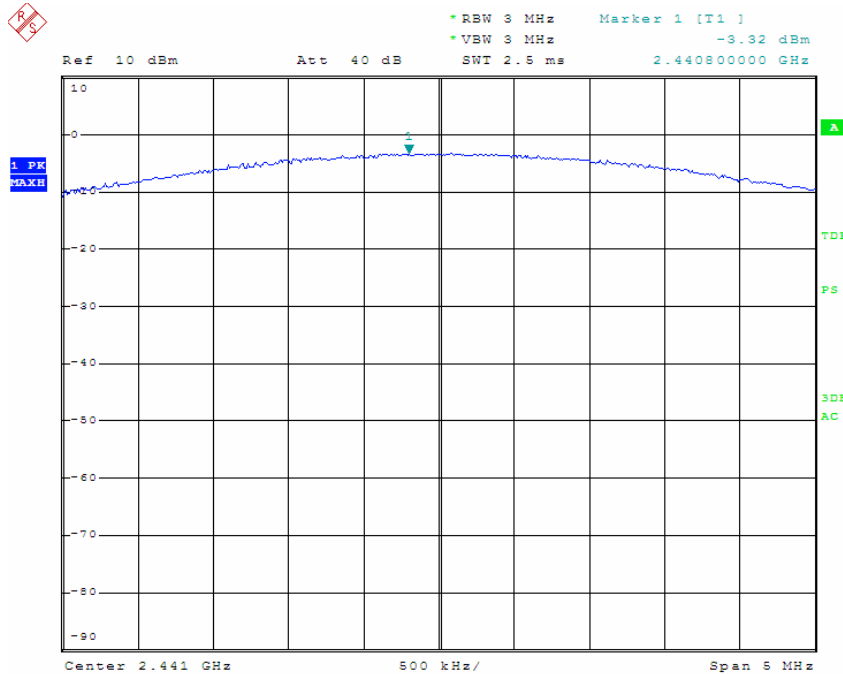
$\pi/4$ -DQPSK Highest Channel



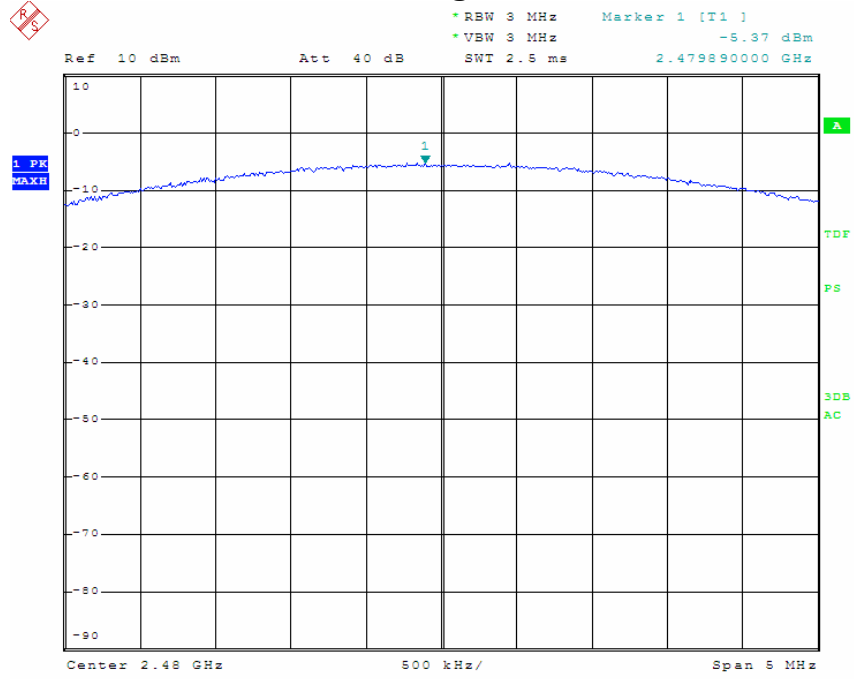
8DPSK Lowest Channel



8DPSK Middle Channel



8DPSK Highest Channel



11. Band Edge

11.1 Measurement Procedure

Out of Band Conducted Emissions, FCC Rule 15.247(d):

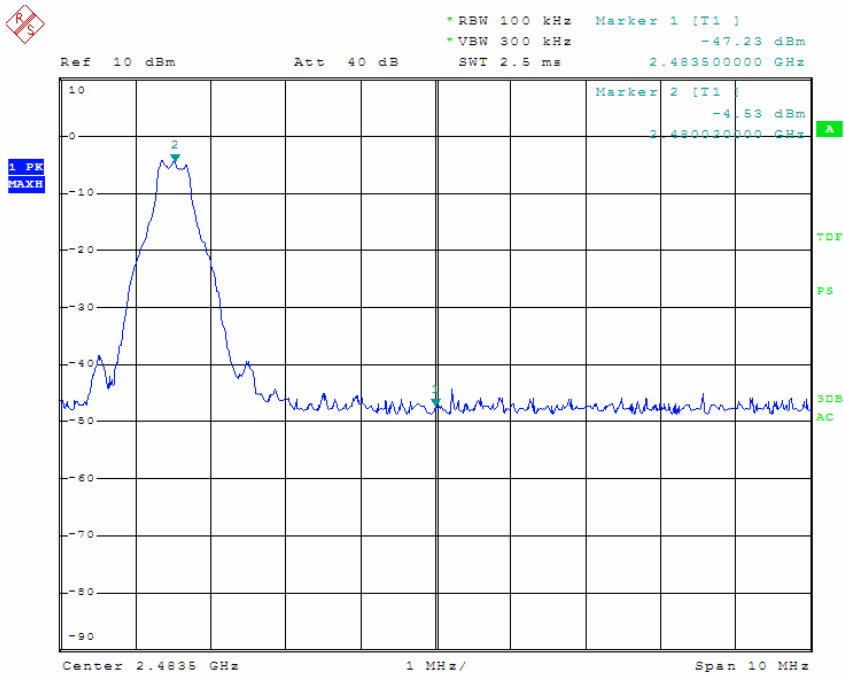
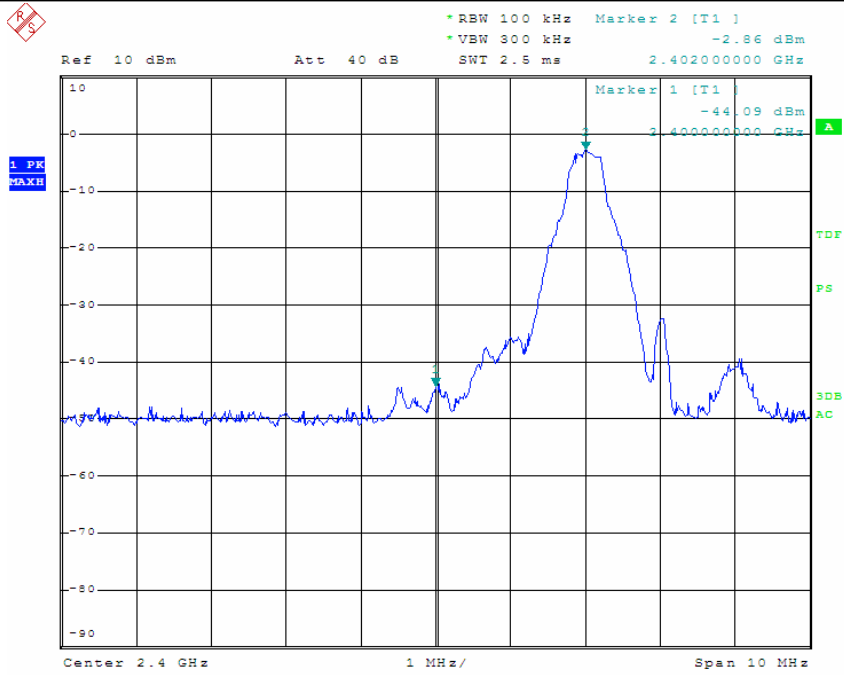
The transmitter output is connected to spectrum analyzer. The resolution bandwidth is set to 100KHz, and the video bandwidth set to 300KHz.

11.2 Limit

15.247(d) In any 100KHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

11.3 Measurement Results

Please refer to following plots, the worst case was shown.



12. Antenna Application

12.1 Antenna requirement

According to of FCC part 15C section 15.203 and 15.240:

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, 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.

Systems operating in the 2400-2483.5MHz 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.

12.2. Measurement Results

The antenna is integrated on the main PCB and no consideration of replacement, and the best case gain of the antenna is 2dBi. So, the antenna is considered meet the requirement.

13. Conducted Spurious Emissions

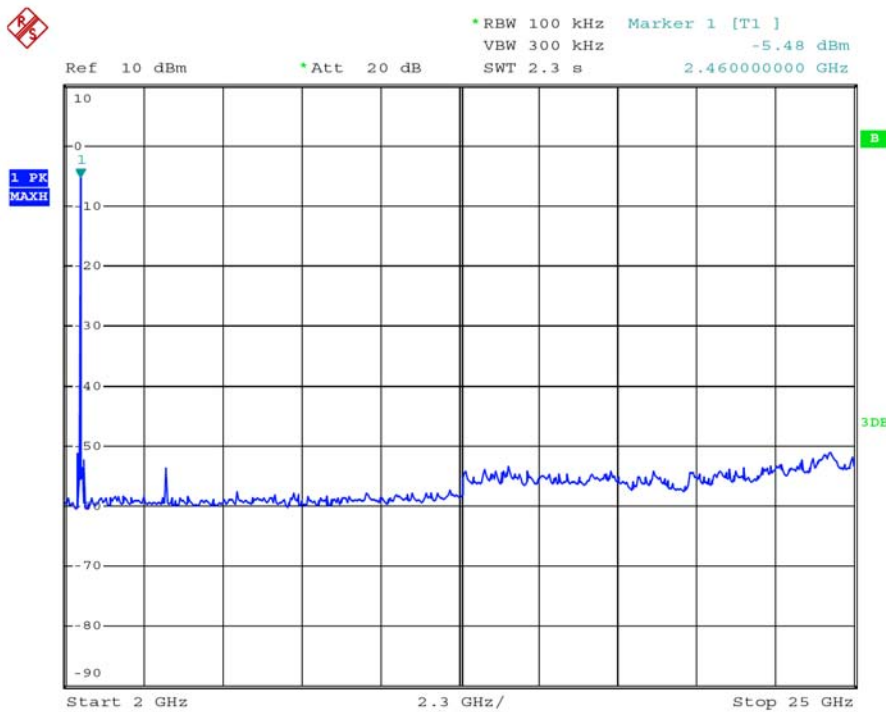
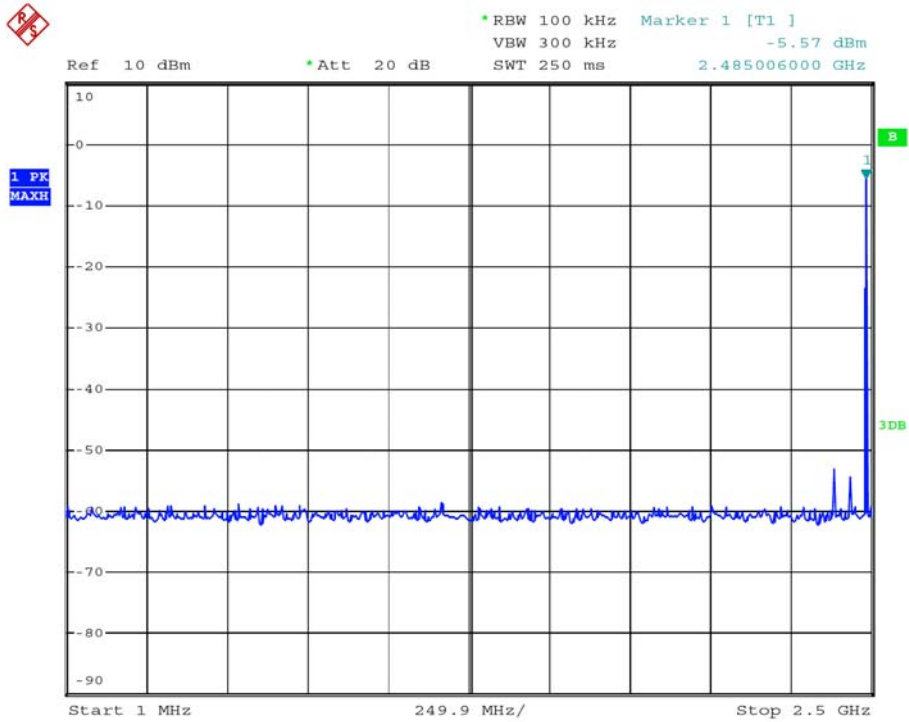
13.1 Measurement Procedure

Out of Band Conducted Spurious Emissions, FCC Rule 15.247(d):

The transmitter output is connected to spectrum analyzer. All spurious emission and up to the tenth harmonic was measured and they were found to be at least 20dB below the highest level of the desired power in the passband.

13.2. Measurement Results

Please refer to following plots, the worst case was shown.





14. Test Equipment List

Description	Manfucaturer	Model Number	Serial Number	Calibration Date	Calibration Due Date
Receiver	Rohde & Schwarz	ESCI7	100837	Nov.05 2011	Nov.05 2012
Spectrum Analyzer	Rohde & Schwarz	FSP30	101194	Nov. 28, 2011	Nov. 28, 2012
L.I.S.N	Rohde & Schwarz	ENV-216	101317	Nov.05 2011	Nov.05 2012
RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	Nov.05 2011	Nov.05 2012
Pre-Amplifier	HP	8447D	2944A07999	Nov.05 2011	Nov.05 2012
Broadband Antenna	Schwarzbeck	VULB9162	9162-010	Nov. 28, 2011	Nov. 28, 2012
Horn Antenna	Schwarzbeck	BBHA9120D	D262	Nov. 28, 2011	Nov. 28, 2012
Horn Antenna	ETS	3116	00101347	Nov. 28, 2011	Nov. 28, 2012
Pre-Amplifier	Agilent	8449B	3008A02964	Nov. 28, 2011	Nov. 28, 2012
Cable	UBER+SUHNER	CBL2-NN-1M	22320001	Nov.05 2011	Nov.05 2012
Cable	Schwarzbeck	CIL02	N/A	Nov.05 2011	Nov.05 2012