



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Applicant : PDI Communication System, Inc.

Address : 40 Greenwood Lane, Springboro Ohio 45066

Product Name : LCD TV

Model Name : PDI-P40LCDE

Brand Name : N/A

FCC ID : WQ5P40LCDE

Report No. : MOST110823F2

Date of Issue : September. 14, 2011

Issued by : Most Technology Service Co., Ltd.

Address : No.5, 2nd Langshan Road, North District, Hi-tech Industrial
Park, Nanshan, Shenzhen, Guangdong, China

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1. VERIFICATION OF CONFORMITY

Equipment Under Test: LCD TV
Brand Name: N/A
Model Number: PDI-P40LCDE
FCC ID: WQ5P40LCDE
Applicant: PDI Communication System, Inc.
 40 Greenwood Lane, Springboro Ohio 45066
Manufacturer: WANLIDA GROUP CO., LTD
 WANLIDA INDUSTRY ZONE, NANJING, FUJIAN, CHINA. 363601
Technical Standards: 47 CFR Part 15 Subpart C
File Number: MOST110823F2
Date of test: August 11, 2011 ~ September 14, 2011
Deviation: None
Condition of Test Sample: Normal
Test Result: PASS

The above equipment was tested by Most Technology Service Co., Ltd. for compliance with the requirements set forth in FCC rules and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

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

Tested by (+ signature): Petter Ping
 Petter Ping/Test Engineer September 14, 2011

Review by (+ signature): JW
 July Wen/Lab Manager September 14, 2011

Approved by (+ signature): Tao Yang
 Terry Yang/Manager September 14, 2011

2. GENERAL INFORMATION

2.1 Product Information

EUT Description	
Description:	LCD TV
Model Name:	PDI-P40LCDE
Series Number:	N/A
Model Difference description:	N/A
Power Supply:	AC 120V, 60Hz, 220W
Frequency Range:	2402MHz-2480MHz
Number of Channels:	79
Transmit Power	2.553dBm
Modulation Type:	GFSK, $\pi/4$ DQPSK, 8DPSK
Antenna Type:	Integral
Antenna Gain:	2 dBi
Temperature Range:	-20°C ~ +55°C

NOTE:

1. For a more detailed features description about the EUT, please refer to User's Manual.

2.2 Objective

The objective of the report is to perform tests according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15(10-1-05 Edition)	Radio Frequency Devices

2.3 Test Standards and Results

Test items and the results are as bellow:

No.	Section	Description	Result	Date of Test
1	15.247(b)	Number of Hopping Frequency	PASS	2011-09-01
2	15.247(a)	20dB Bandwidth	PASS	2011-09-01
3	15.247(b)	Peak Output Power	PASS	2011-09-01
4	15.247(a)	Carrier Frequency Separation	PASS	2011-09-01
5	15.247(a)	Time of Occupancy (Dwell time)	PASS	2011-09-01
6	15.247(d)	Conducted Spurious Emission	PASS	2011-09-14
7	15.247(d)	Band Edge	PASS	2011-09-01
8	15.207	Conducted Emission	PASS	2011-08-18
9	15.247(d) 15.205 15.209	Radiated Emission	PASS	2011-08-16

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

2.4 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

3. TEST FACILITY

3.1 TEST FACILITY

Test Site:	Most Technology Service Co., Ltd.
Location:	No.5, Langshan 2nd Rd., North Hi-Tech Industrial park, Nanshan, Shenzhen, Guangdong, China
Description:	<p>There is one 3m semi-anechoic an area test sites and two line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:2003 and CISPR 16 requirements.</p> <p>The FCC Registration Number is 490827.</p>
Site Filing:	The site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
Instrument Tolerance:	All measuring equipment is in accord with ANSI C63.4:2009 and CISPR 16 requirements that meet industry regulatory agency and accreditation agency requirement.
Ground Plane:	Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna.

3.2 GENERAL TEST PROCEDURES

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Conducted Emissions

The EUT is placed on the turntable, 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 modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable 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 maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4:2009.

3.3 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

4. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipment used at MOST for testing. The equipment conforms to the CISPR 16-1/ANSI C63.2 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10 kHz to 1.0 GHz or above.

No.	Equipment	Manufacturer	Model No.	S/N	Calculator due date
1	Test Receiver	Rohde & Schwarz	ESCI	100492	2012/03/14
2	Spectrum Analyzer	Agilent	E7405A	US44210471	2012/03/14
3	L.I.S.N.	Rohde & Schwarz	ENV216	100093	2012/03/14
4	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2012/03/14
5	Terminator	Hubersuhner	50Ω	No.1	2012/03/14
6	RF Cable	SchwarzBeck	N/A	No.1	2012/03/14
7	Test Receiver	Rohde & Schwarz	ESPI	101202	2012/03/14
8	Bilog Antenna	Sunol	JB3	A121206	2012/03/14
9	Horn Antenna	SchwarzBeck	BBHA9120D	N/A	2012/03/14
	Horn Antenna	ETS	3115	N/A	2012/03/14
10	Cable	Resenberger	N/A	NO.1	2012/03/14
11	Cable	SchwarzBeck	N/A	NO.2	2012/03/14
12	Cable	SchwarzBeck	N/A	NO.3	2012/03/14
13	DC Power Filter	DuoJi	DL2×30B	N/A	2012/03/14
14	Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	2012/03/14
15	3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	2012/03/14
16	Test Receiver	Rohde & Schwarz	ESCI	100492	2012/03/14
17	Absorbing Clamp	Luthi	MDS21	3635	2012/03/14
18	Coaxial Switch	Anritsu Corp	MP59B	6200283933	2012/03/14
19	AC Power Source	Kikusui	AC40MA	LM003232	2012/03/14
20	Test Analyzer	Kikusui	KHA1000	LM003720	2012/03/14
21	Line Impedance Network	Kikusui	LIN40MA-PCR-L	LM002352	2012/03/14
22	ESD Tester	Kikusui	KES4021	LM003537	2012/03/14
23	EMC PRO System	EM Test	UCS-500-M4	V0648102026	2012/03/14
24	Signal Generator	IFR	2032	203002/100	2012/03/14
25	Amplifier	A&R	150W1000	301584	2012/03/14
26	CDN	FCC	FCC-801-M2-25	47	2012/03/14
27	CDN	FCC	FCC-801-M3-25	107	2012/03/14
28	EM Injection Clamp	FCC	F-203I-23mm	403	2012/03/14
29	RF Cable	MIYAZAKI	N/A	No.1/No.2	2012/03/14
30	Universal Radio Communication Tester	ROHDE&SCHWARZ	CMU200	0304789	2012/03/14
31	Telecommunication Antenna	European Antennas	PSA 75301R/170	0304213	2012/03/14

NOTE: Equipments listed above have been calibrated and are in the period of validation.

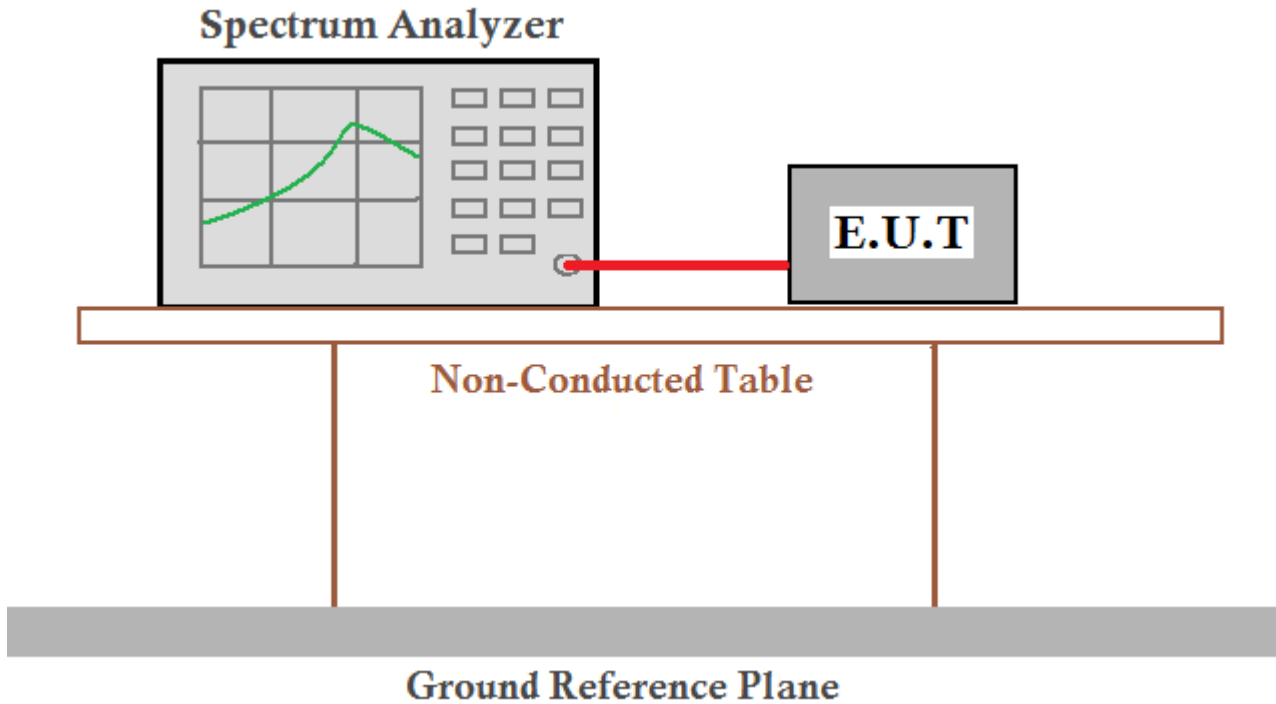
5. 47 CFR Part 15 C 15.247 Requirements

5.1 Number of Hopping Frequency

5.1.1 Definition

According to FCC section 15.247(b)(1), frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels

5.1.2 Test Description



The EUT, which is powered by the AC 120V, 60Hz AC mains supply, is coupled to the Spectrum Analyzer (SA) and the Bluetooth Module with RF cable. The RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. During the measurement, the Bluetooth Module of the EUT is activated and is set to operate under test mode transmitting at maximum power.

5.1.3 Test Result

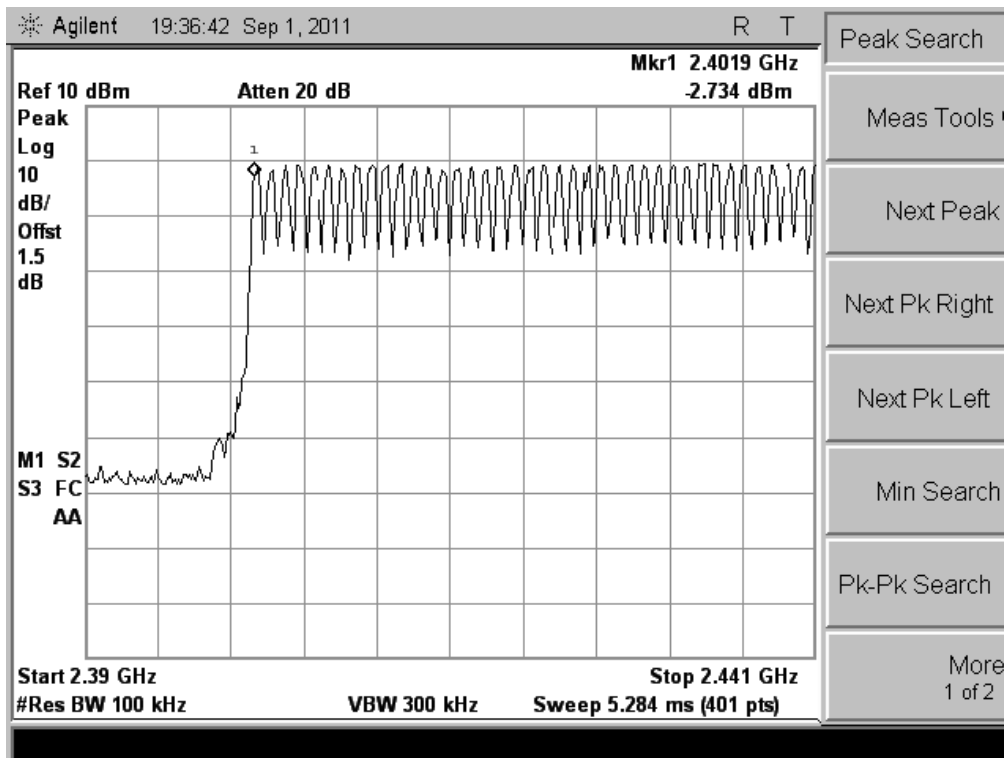
The Bluetooth Module operates at hopping-on test mode; the frequencies number employed is counted to verify the Module's using the number of hopping frequency.

A. Test Verdict

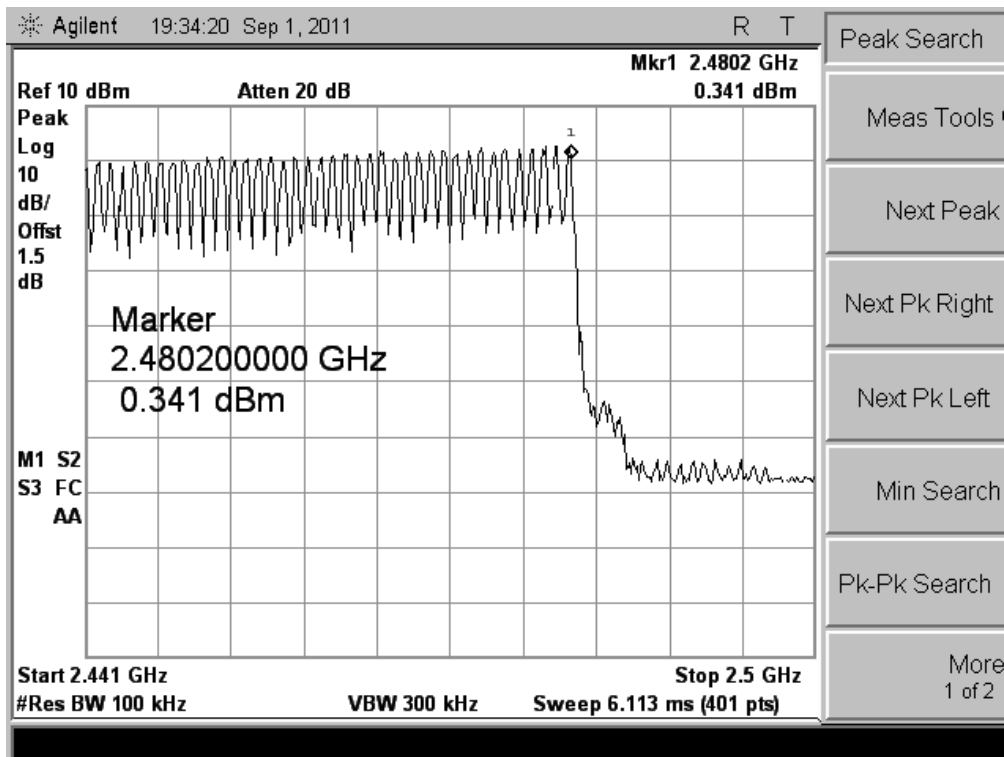
Mode	Measured Channel Numbers	Min. Limit	Verdict
GFSK	79	75	PASS
$\pi/4$ DQPSK	79	75	PASS
8DPSK	79	75	PASS

B. Test Plots

Test Mode GFSK

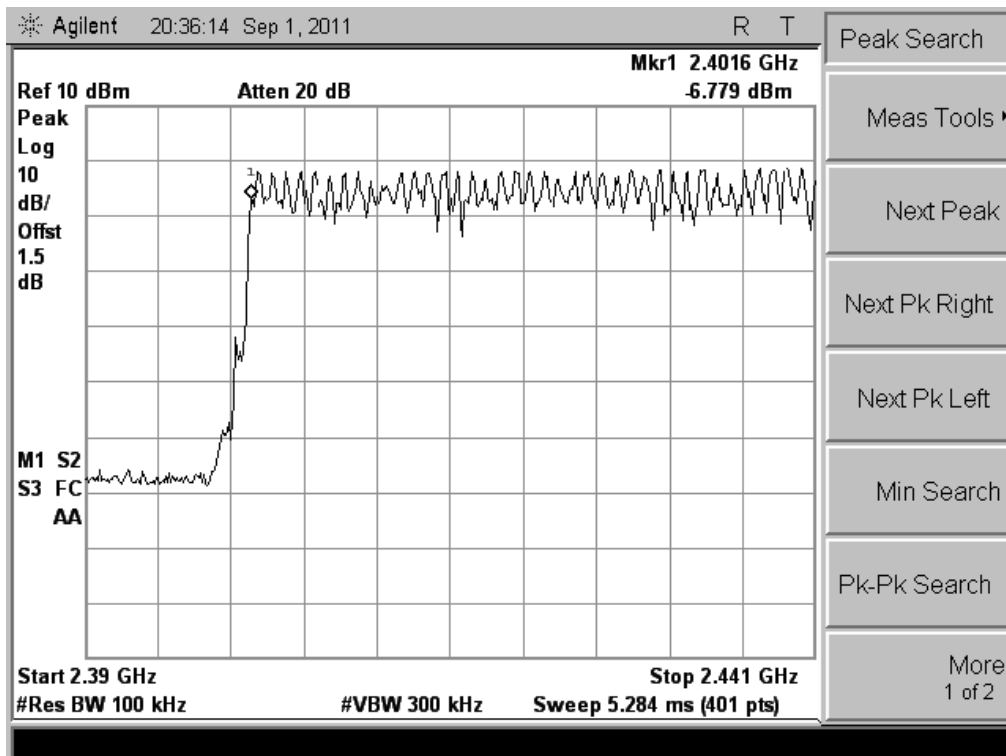


(Plot A.1: 2402MHz to 2441MHz)

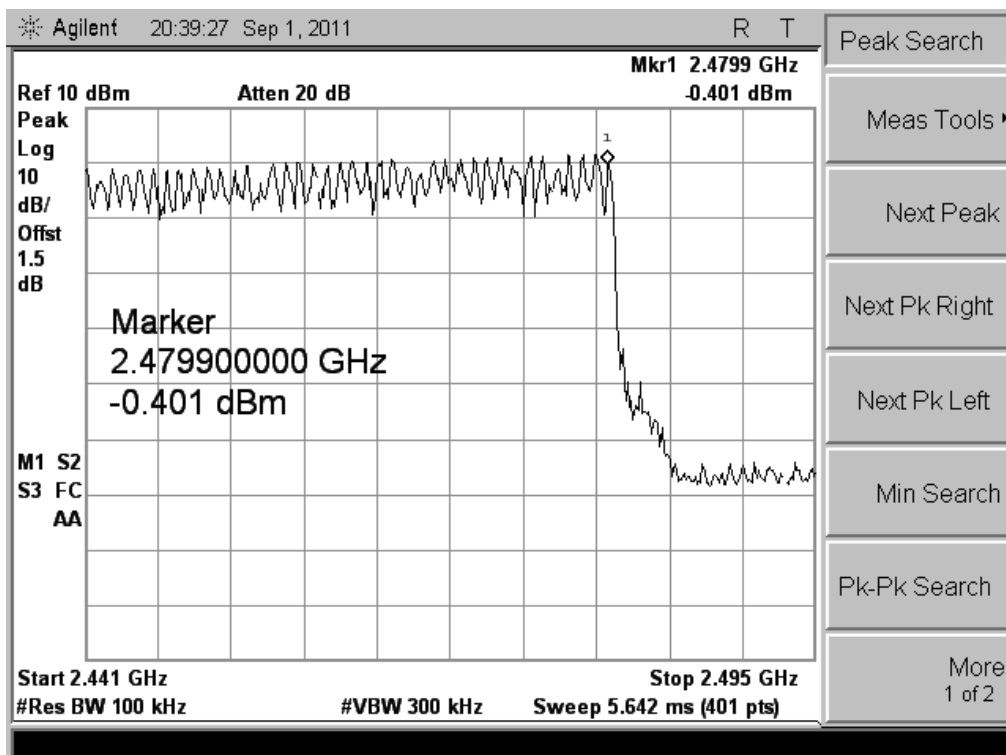


(Plot A.2: 2441MHz to 2480MHz)

Test Mode π/4DQPSK

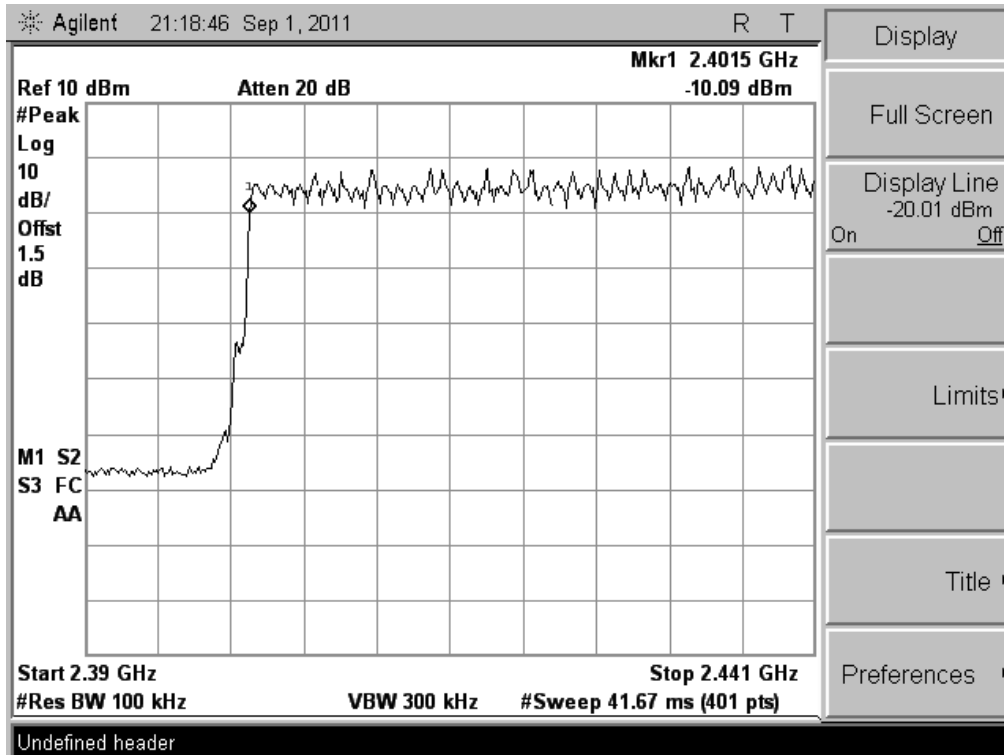


(Plot A.3: 2402MHz to 2441MHz)

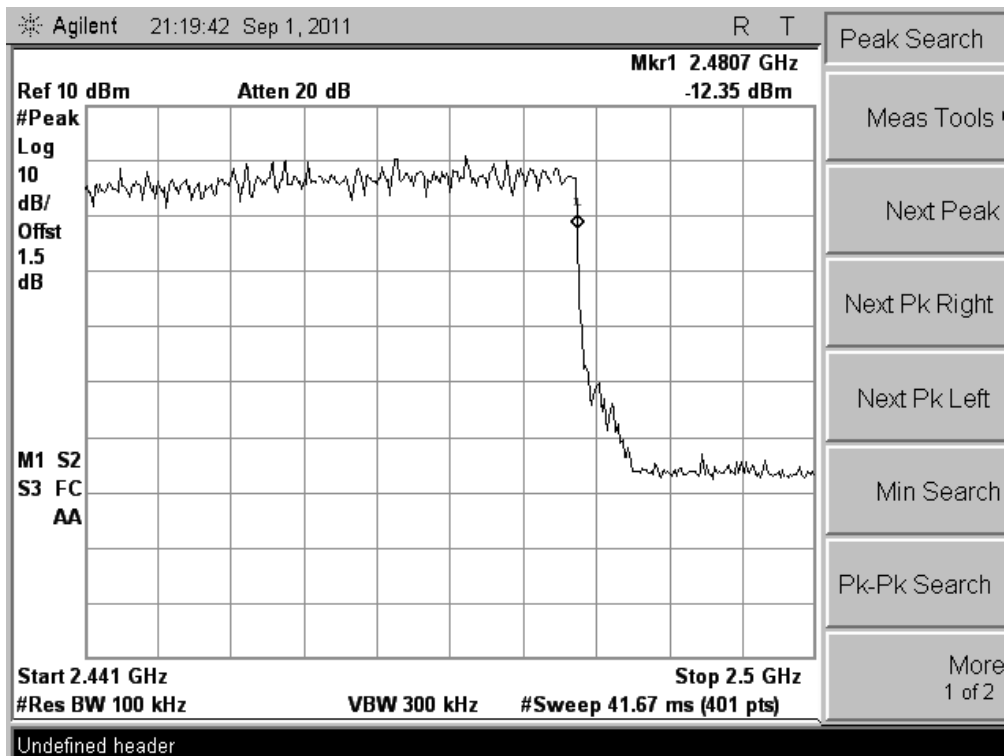


(Plot A.4: 2441MHz to 2480MHz)

Test Mode 8DPSK



(Plot A.5: 2402MHz to 2441MHz)



(Plot A.6: 2441MHz to 2480MHz)

5.2 20dB Bandwidth

5.2.1 Definition

According to FCC section 15.247(a)(1), frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

5.2.2 Test Description

See section 5.1.2 of this report.

5.2.3 Test Result

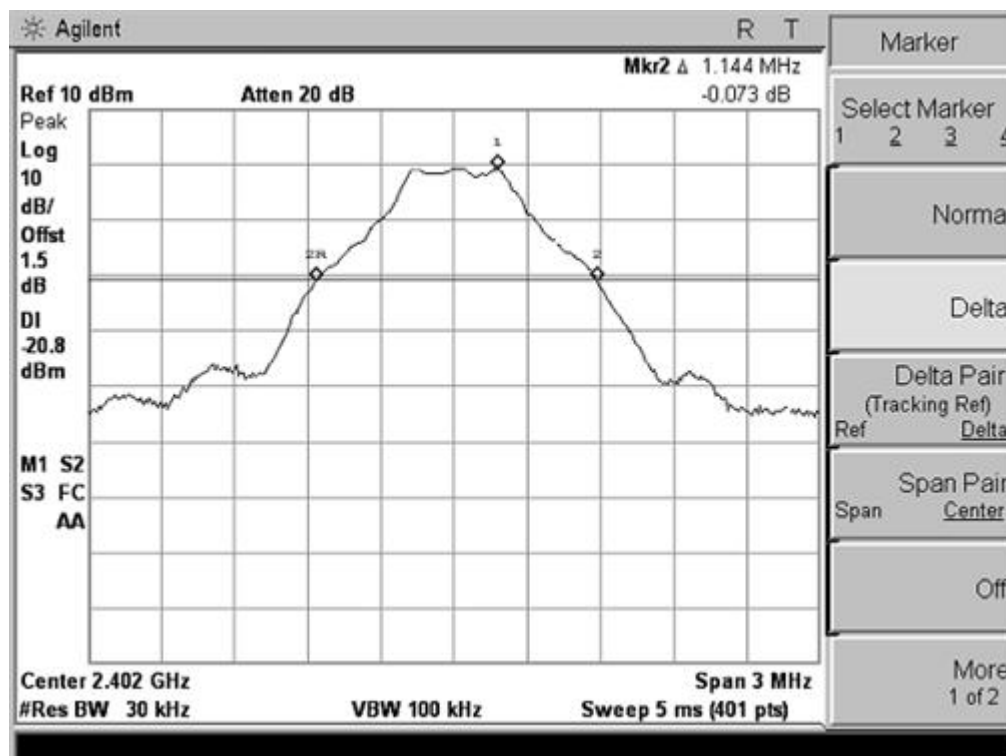
The lowest, middle and highest channels are selected to perform testing to record the 20 dB bandwidth of the Module.

A. Test Verdict:

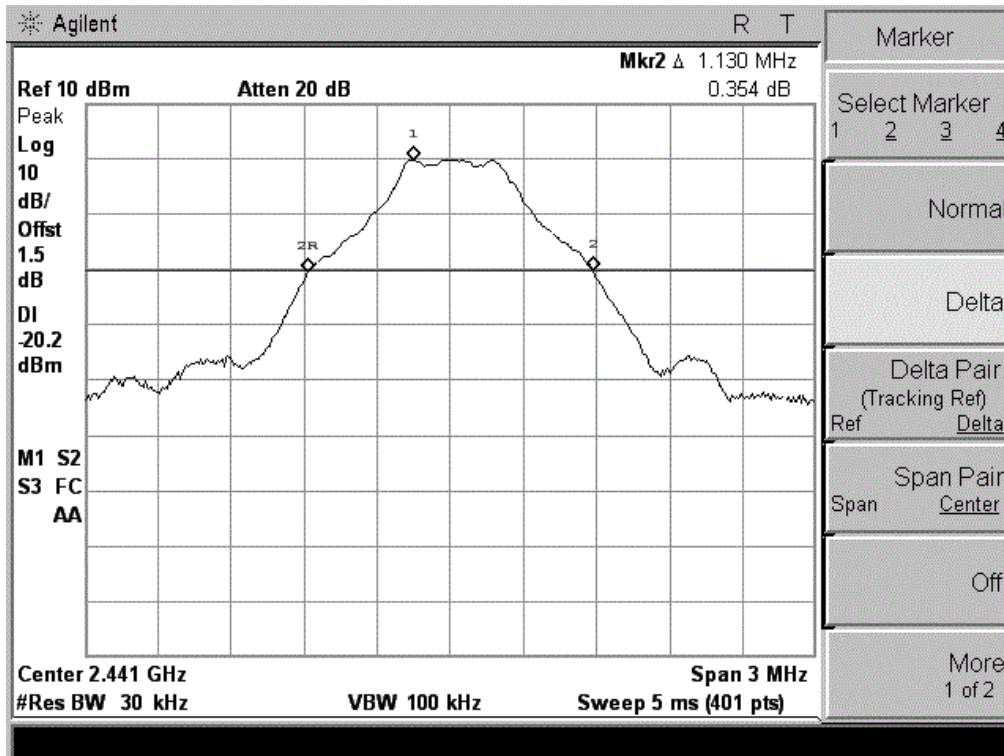
Channel	20 dB Bandwidth (MHz)		
	GFSK	$\pi/4$ DQPSK	8DPSK
Low	1.144	1.433	1.433
Middle	1.130	1.443	1.440
High	1.148	1.435	1.423

B. Test Plot:

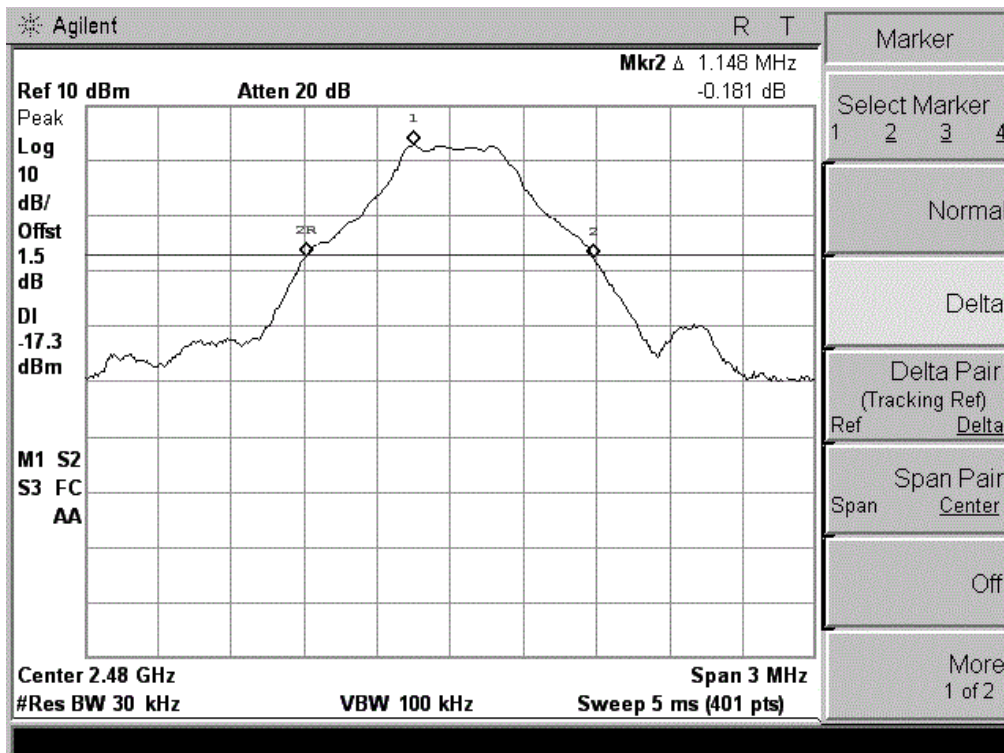
Test Mode	GFSK
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(Plot A: CH Low)

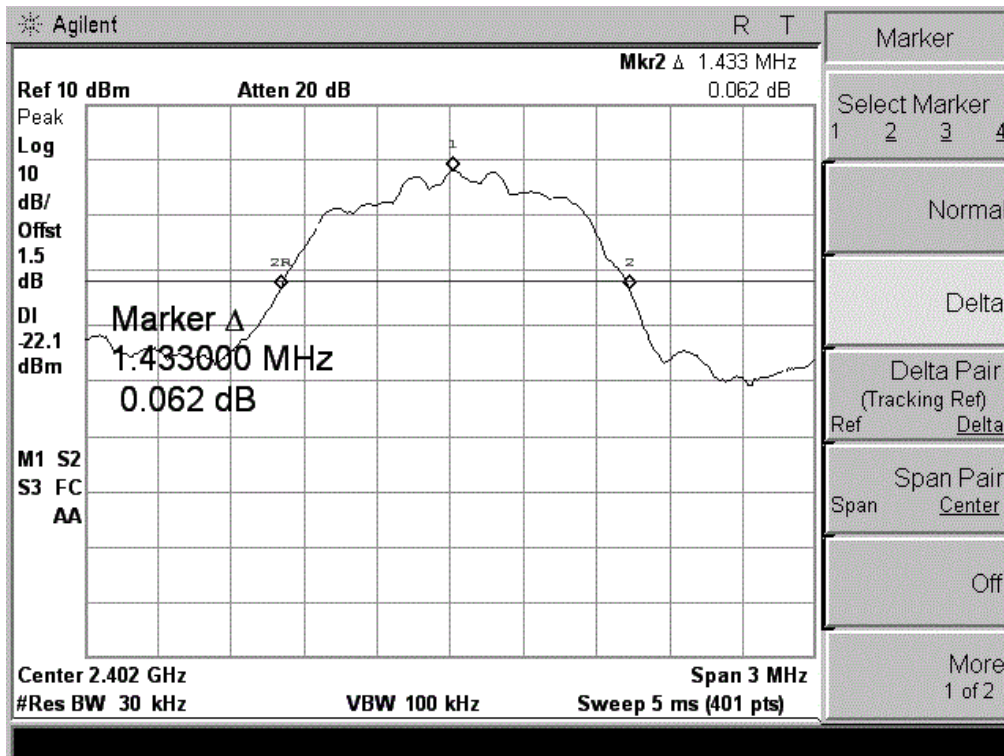


(Plot B: CH Mid)

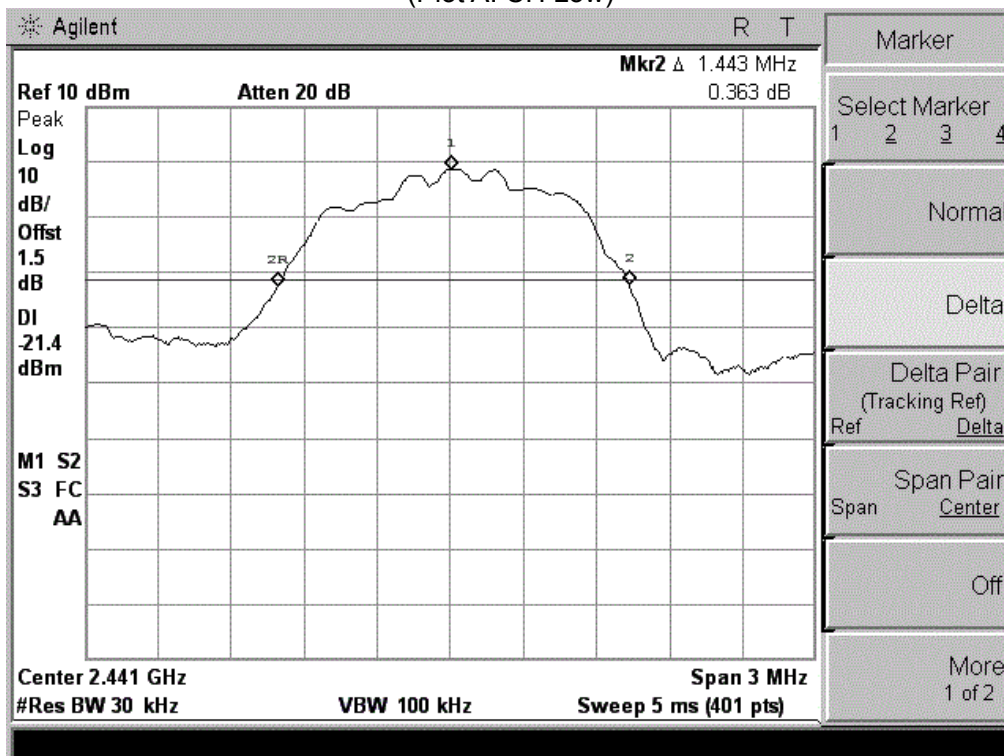


(Plot C: CH High)

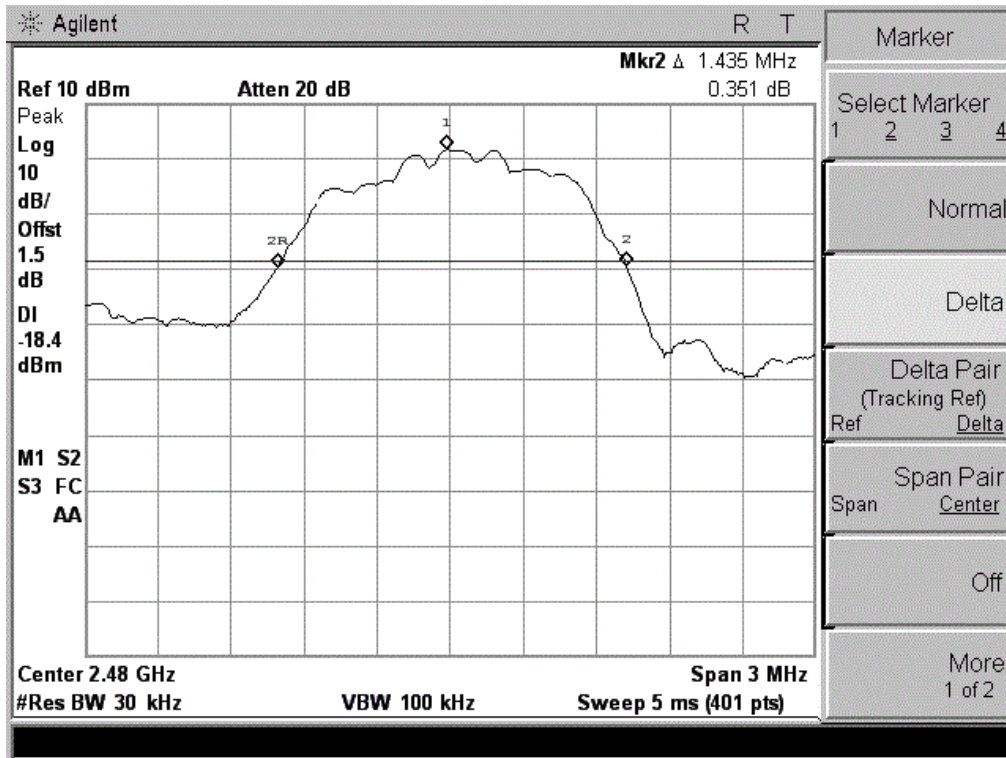
Test Mode π/4DQPSK



(Plot A: CH Low)

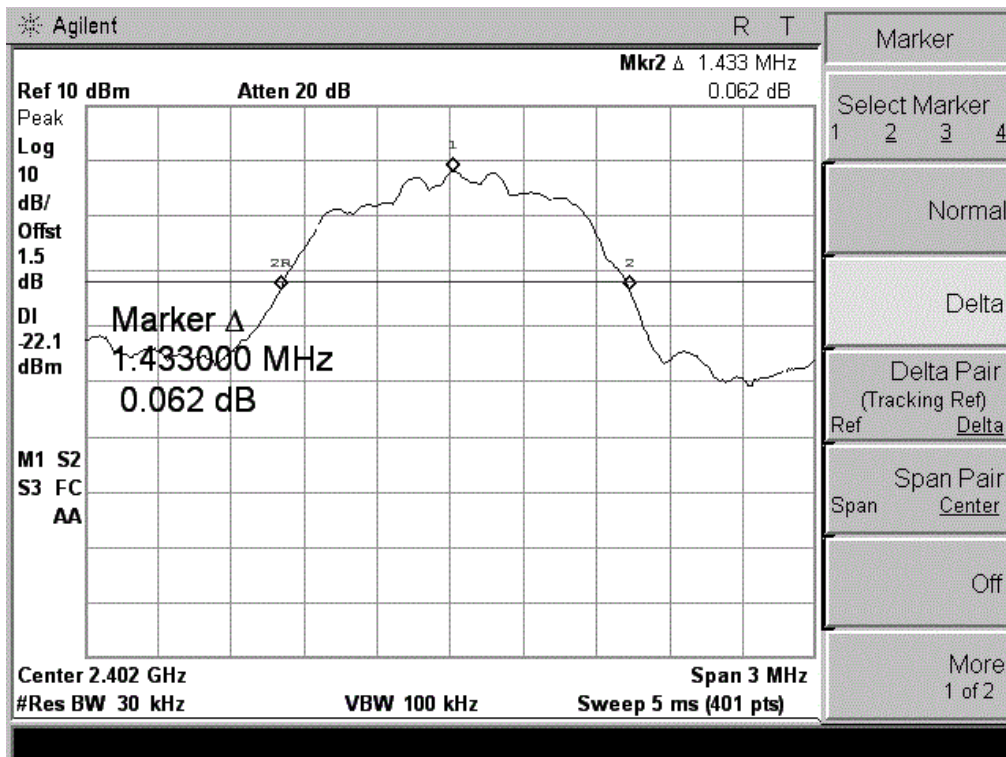


(Plot B: CH Mid)

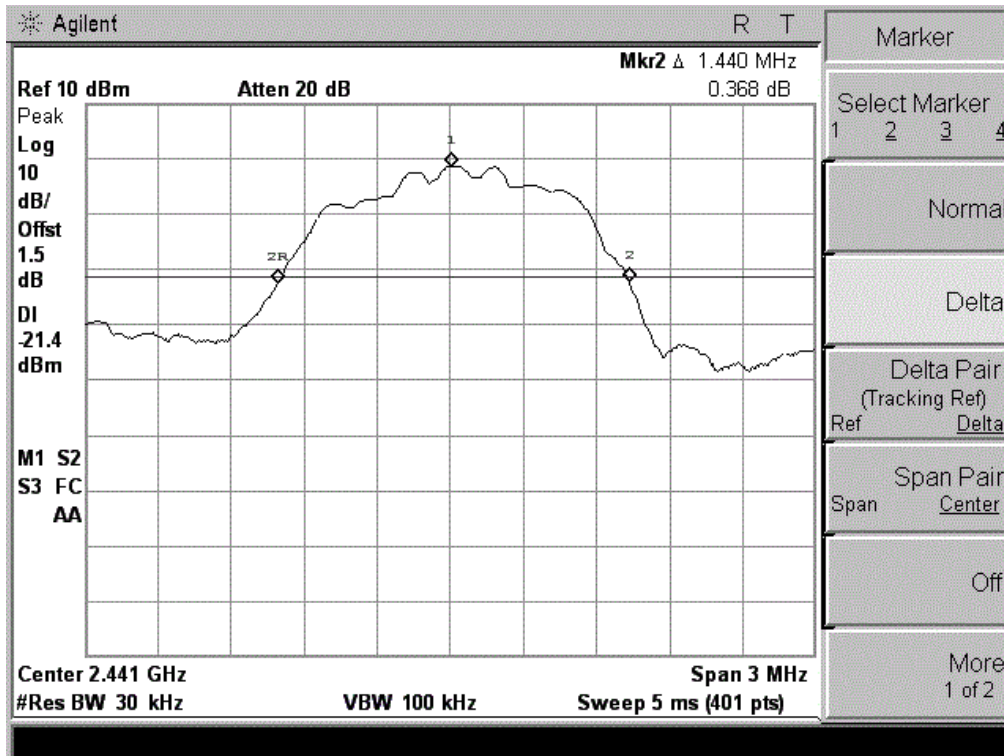


(Plot C: CH High)

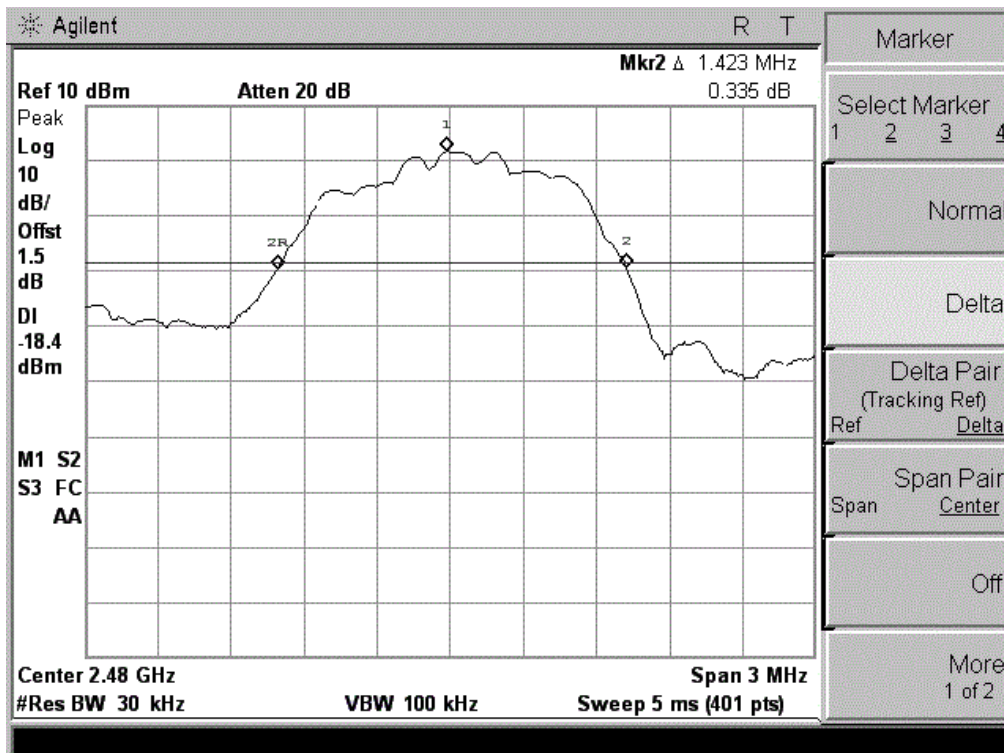
Test Mode 8DPSK



(Plot A: CH Low)



(Plot B: CH Mid)



(Plot C: CH High)

5.3 Peak Output Power

5.3.1 Definition

According to FCC section 15.247(b)(1), for frequency hopping systems that operates in the 2400MHz to 2483.5MHz band employing at least 75 hopping channels, the maximum peak output power of the intentional radiator shall not exceed 1Watt. For all other frequency hopping systems in the 2400MHz to 2483.5MHz band, it is 0.125Watts.

5.3.2 Test Description

See section 5.1.2 of this report.

5.3.3 Test Result

The EUT operates at maximum output power mode. The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module. This power complies with the FCC requirement.

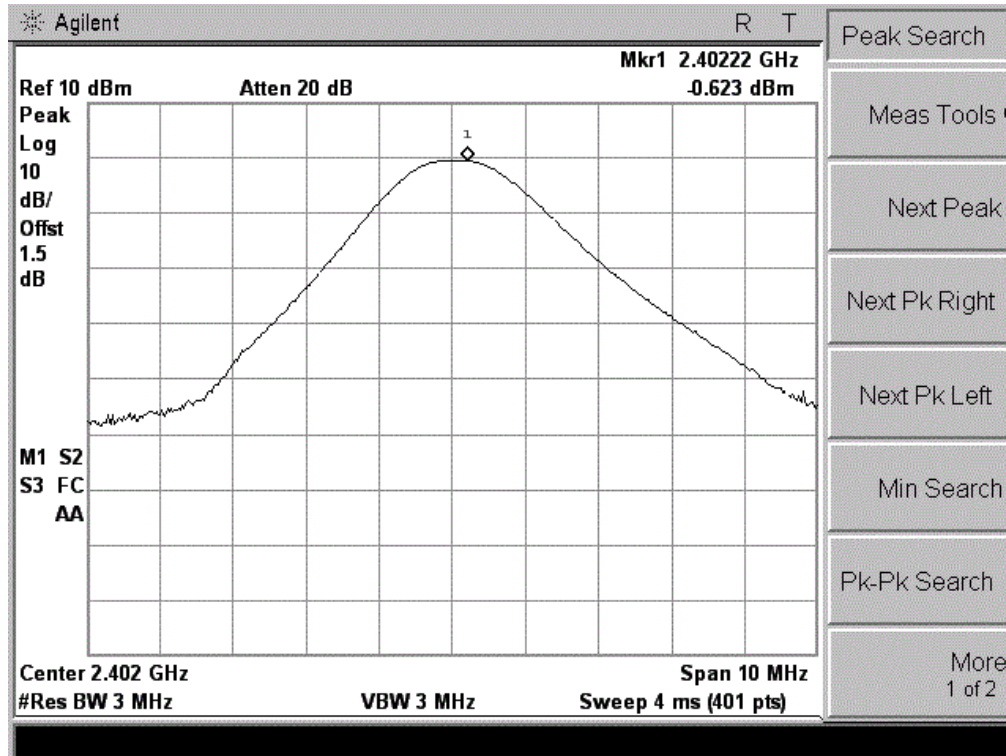
A. Test Verdict:

GFSK Mode				
Channel	Frequency (MHz)	Measured Output Peak Power (dBm)	Limit (dBm)	Verdict
Low	2402	-0.623	30	PASS
Middle	2441	-0.014		PASS
High	2480	2.553		PASS
$\pi/4$ DQPSK Mode				
Channel	Frequency (MHz)	Measured Output Peak Power (dBm)	Limit (dBm)	Verdict
Low	2402	-1.750	30	PASS
Middle	2441	-1.124		PASS
High	2480	1.725		PASS
8DPSK Mode				
Channel	Frequency (MHz)	Measured Output Peak Power (dBm)	Limit (dBm)	Verdict
Low	2402	-1.422	30	PASS
Middle	2441	-0.784		PASS
High	2480	2.414		PASS

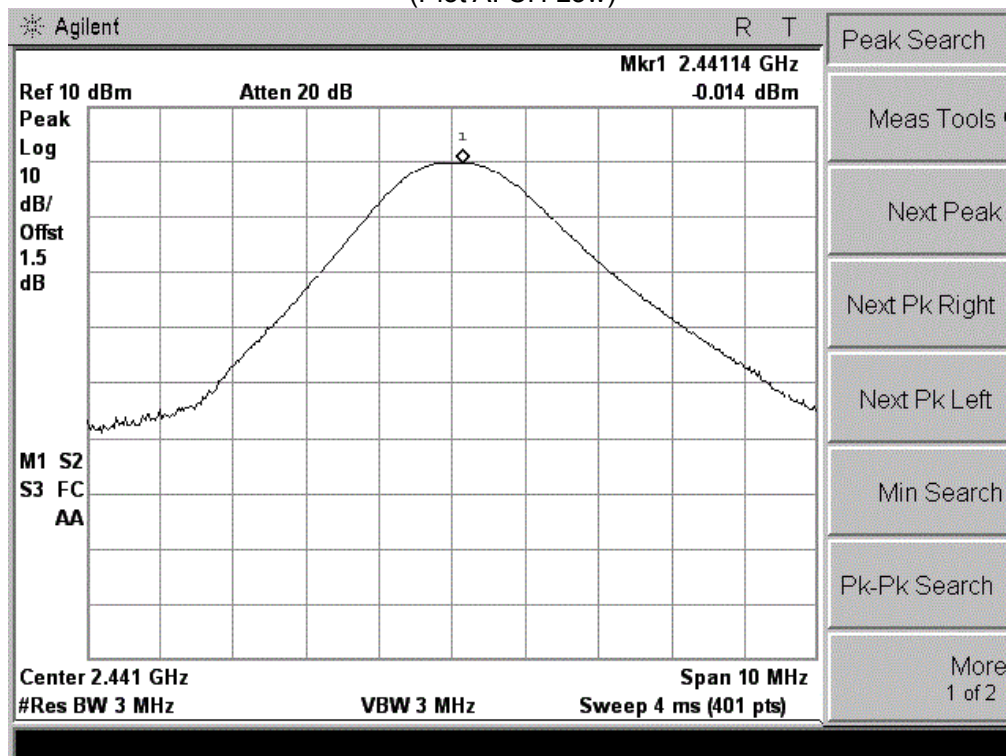
NOTE: The offset of cable loss is 1.5dB in the spectrum analyzer.

Test Plot:

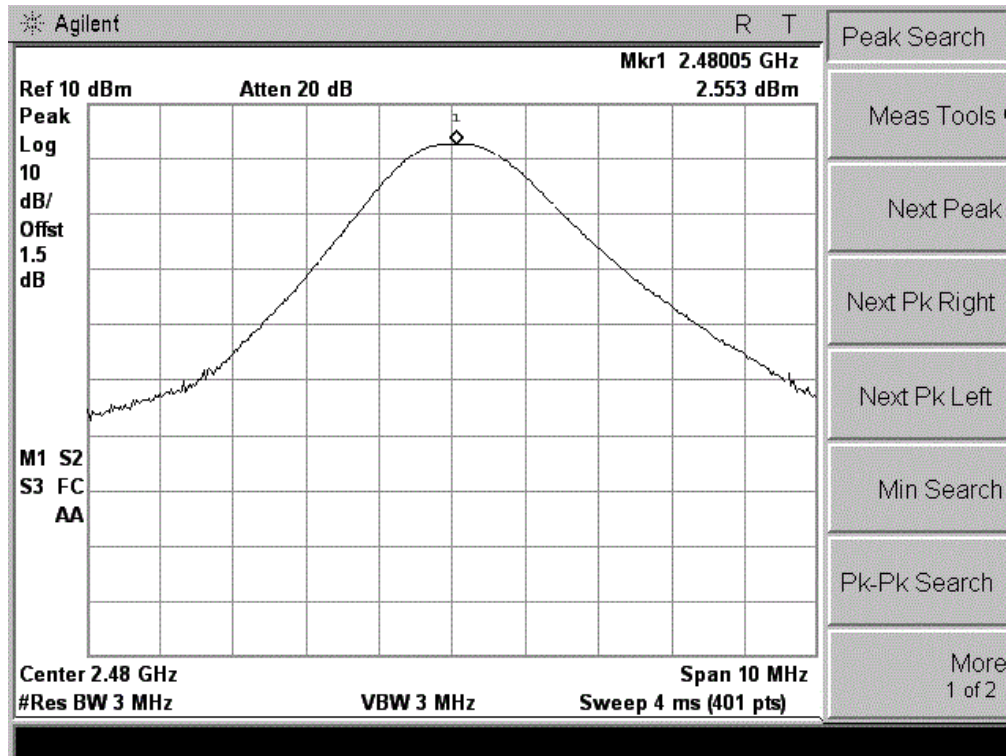
Test Mode	GFSK
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(Plot A: CH Low)

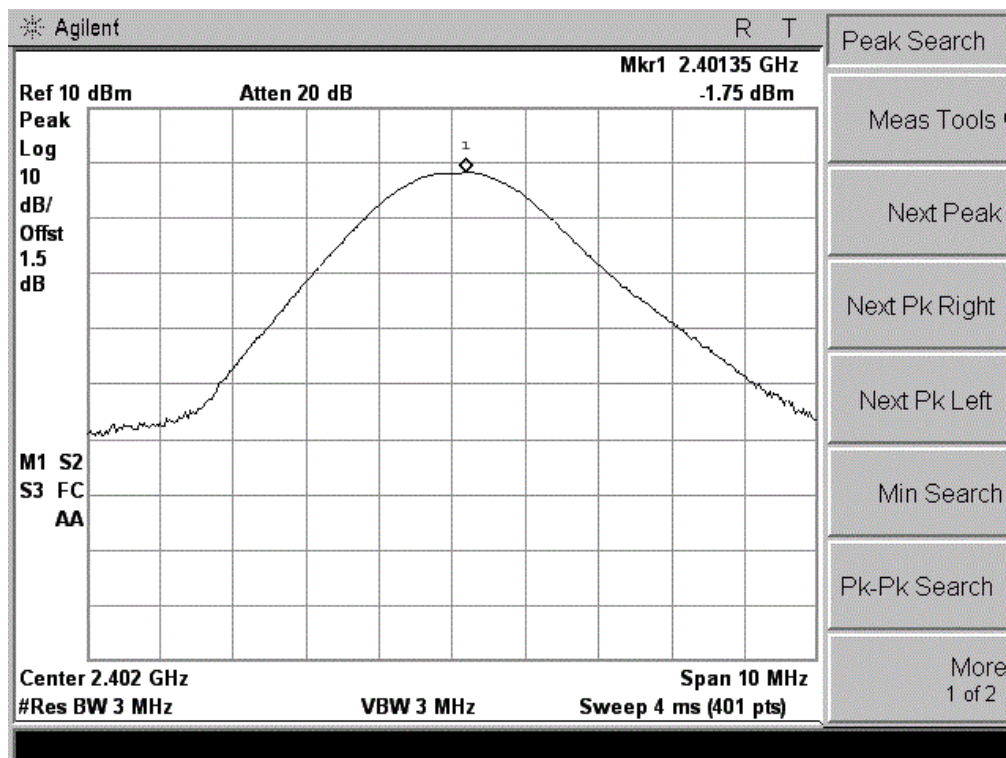


(Plot B: CH Mid)

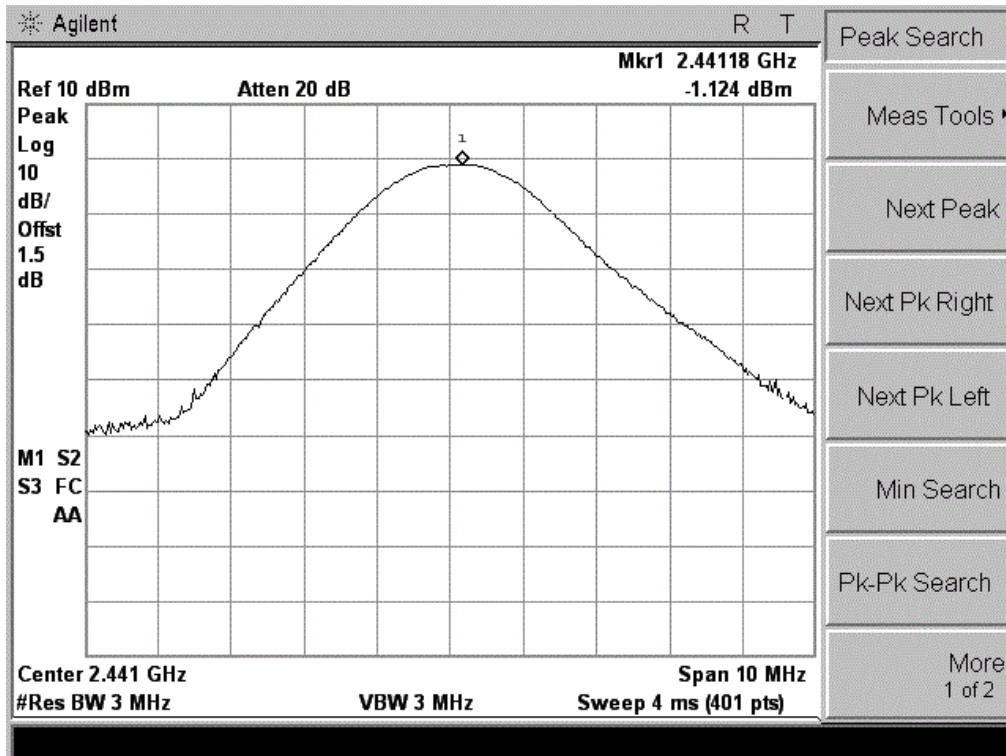


(Plot C: CH High)

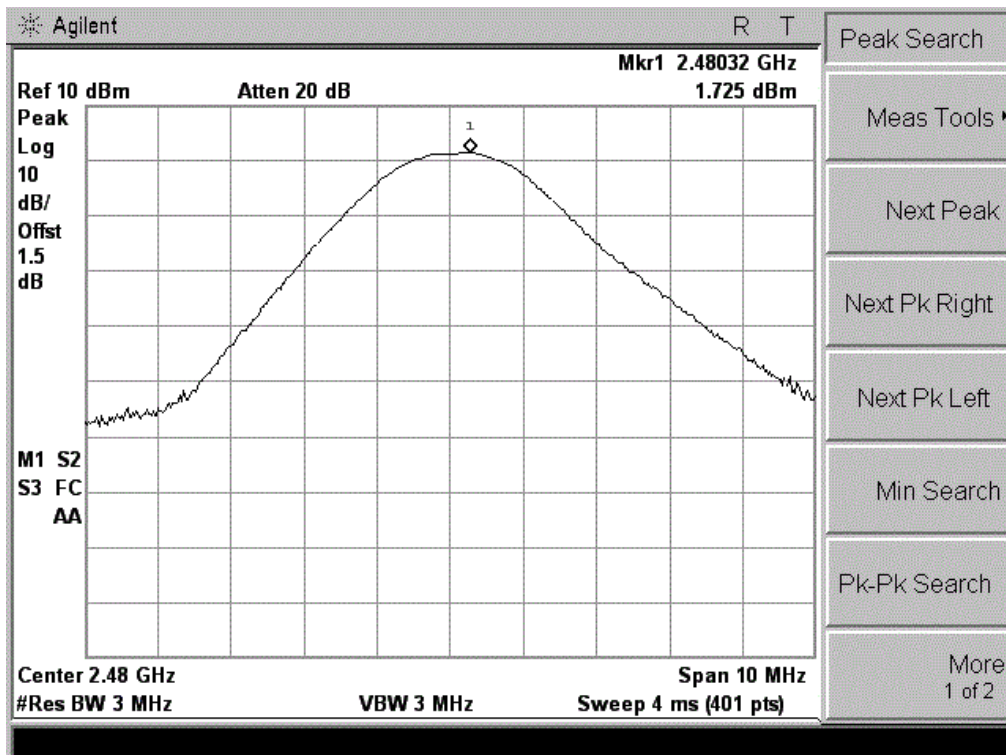
Test Mode	$\pi/4$ DQPSK
-----------	---------------



(Plot A: CH Low)

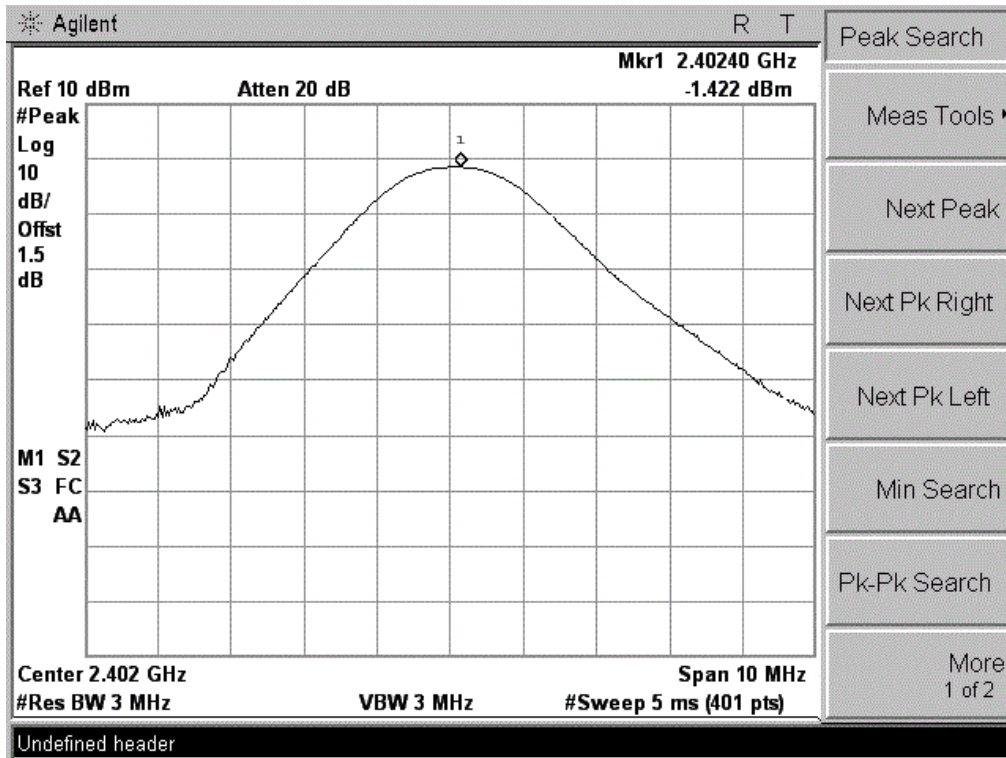


(Plot B: CH Mid)

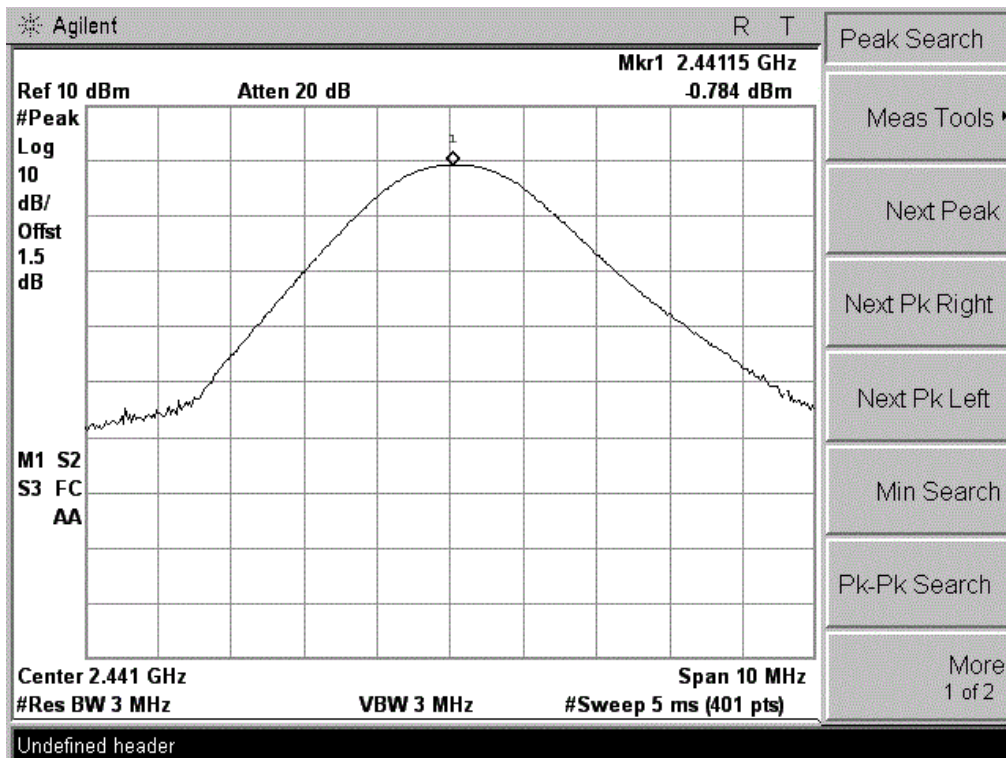


(Plot C: CH High)

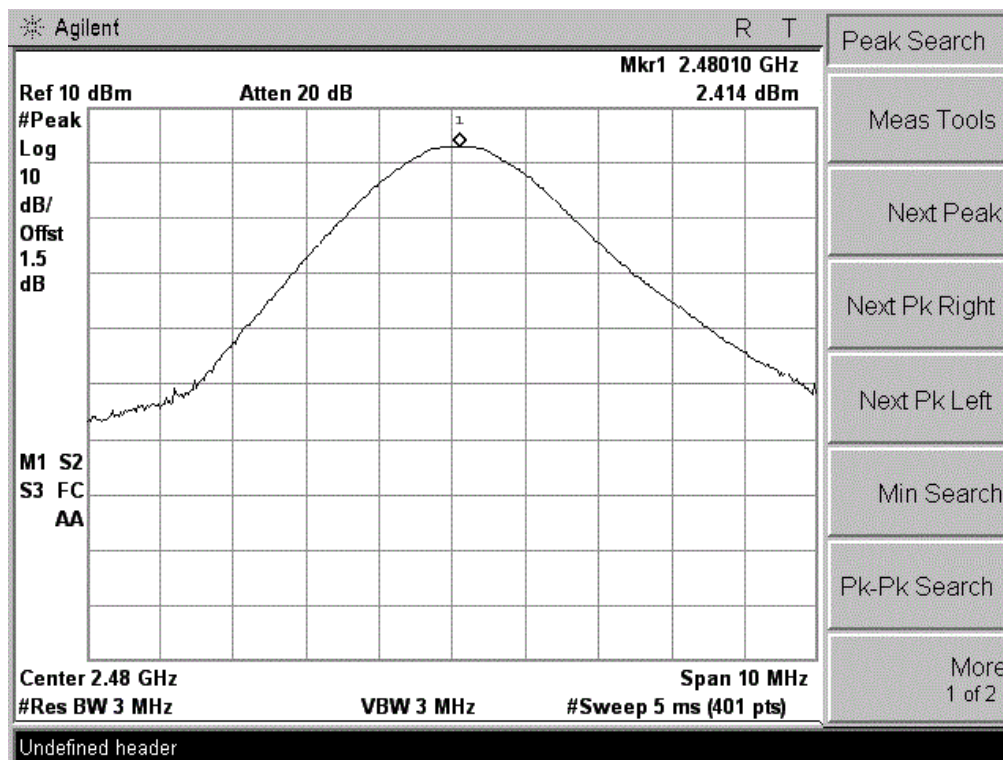
Test Mode 8DPSK



(Plot A: CH Low)



(Plot B: CH Mid)



(Plot C: CH High)

5.4 Carried Frequency Separation

5.4.1 Definition

According to FCC section 15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater..

5.4.2 Test Description

See section 5.1.2 of this report.

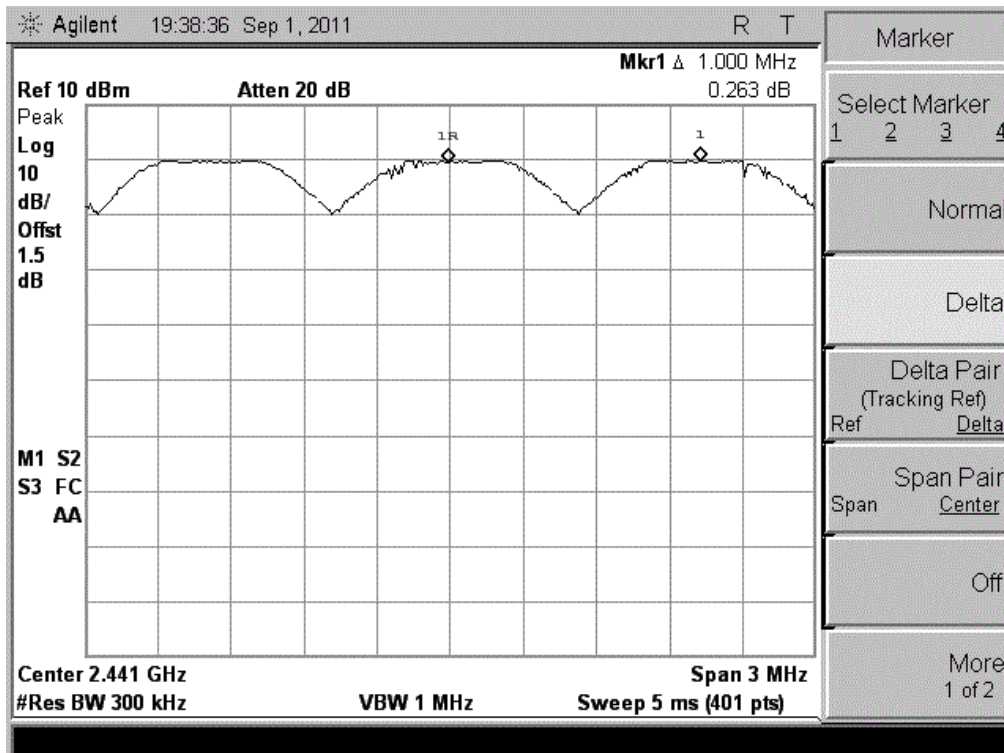
5.4.3 Test Result

The EUT operates at hopping-on test mode. The Module does have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel (refer to section 5.2.3), whichever is greater. This Carried Frequency Separation complies with the FCC requirement.

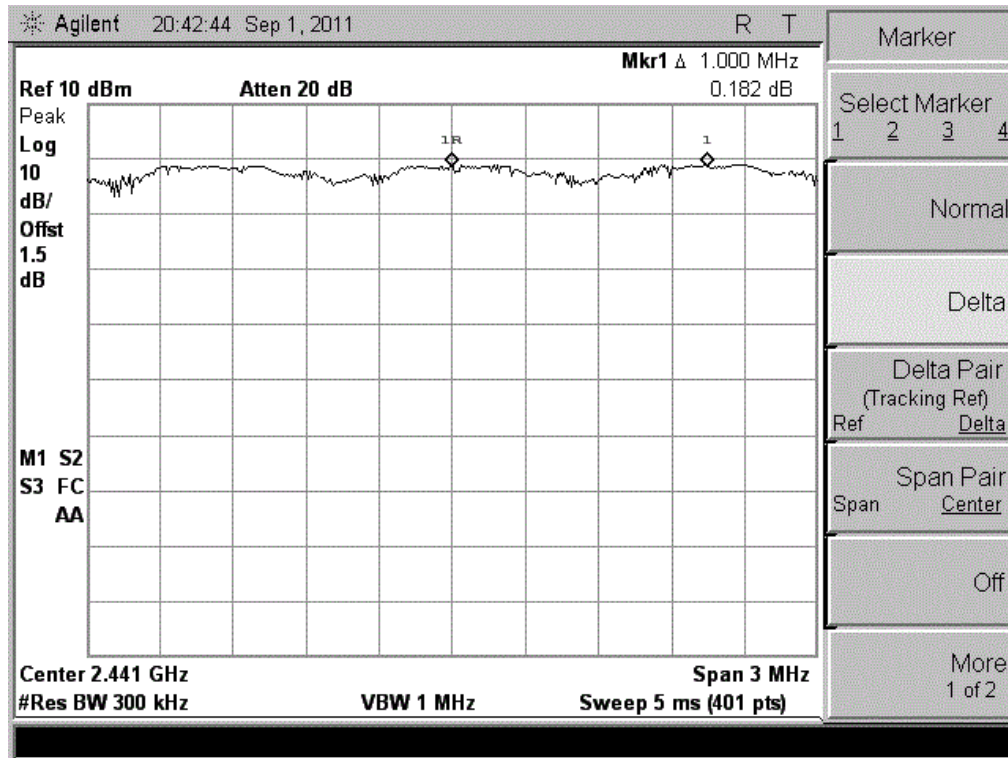
Mode	Carried Frequency Separation (MHz)	Limit (MHz)	Verdict
GFSK	1.000	0.960	PASS
$\pi/4$ DQPSK	1.000	0.960	PASS
8DPSK	1.000	0.960	PASS

Note: Limit is 0.025MHz or 2/3 of the 20dB bandwidth (whichever is greater)

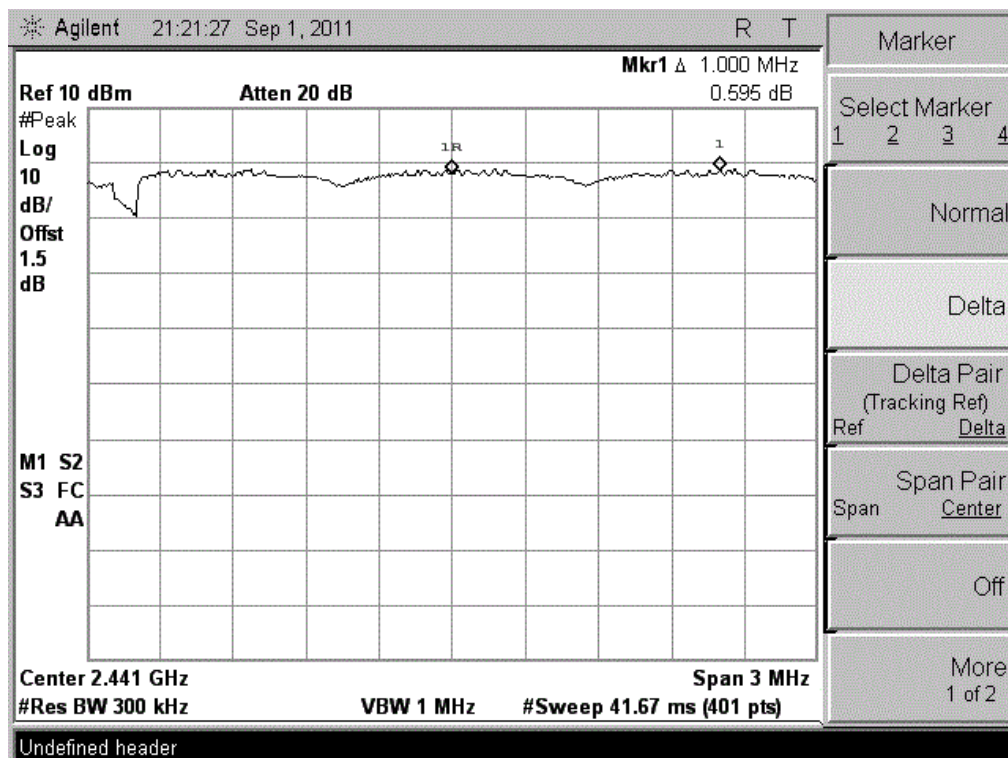
Test Mode	GFSK
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Test Mode π/4DQPSK



Test Mode 8DPSK



5.5 Time of Occupancy (Dwell time)

5.5.1 Definition

According to FCC section 15.247(a) (1)(iii), frequency hopping systems in the 2400 - 2483.5MHz band shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

5.5.2 Test Description

See section 5.1.2 of this report.

5.5.3 Test Result

The average time of occupancy on any channel within the Period can be calculated with formulas (for DH5 package type):

$$\begin{aligned} \{\text{Total of Dwell}\} &= \{\text{Pulse Time}\} * (1600 / 6) / \{\text{Number of Hopping Frequency}\} * \{\text{Period}\} \\ \{\text{Period}\} &= 0.4s * \{\text{Number of Hopping Frequency}\} \end{aligned}$$

The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

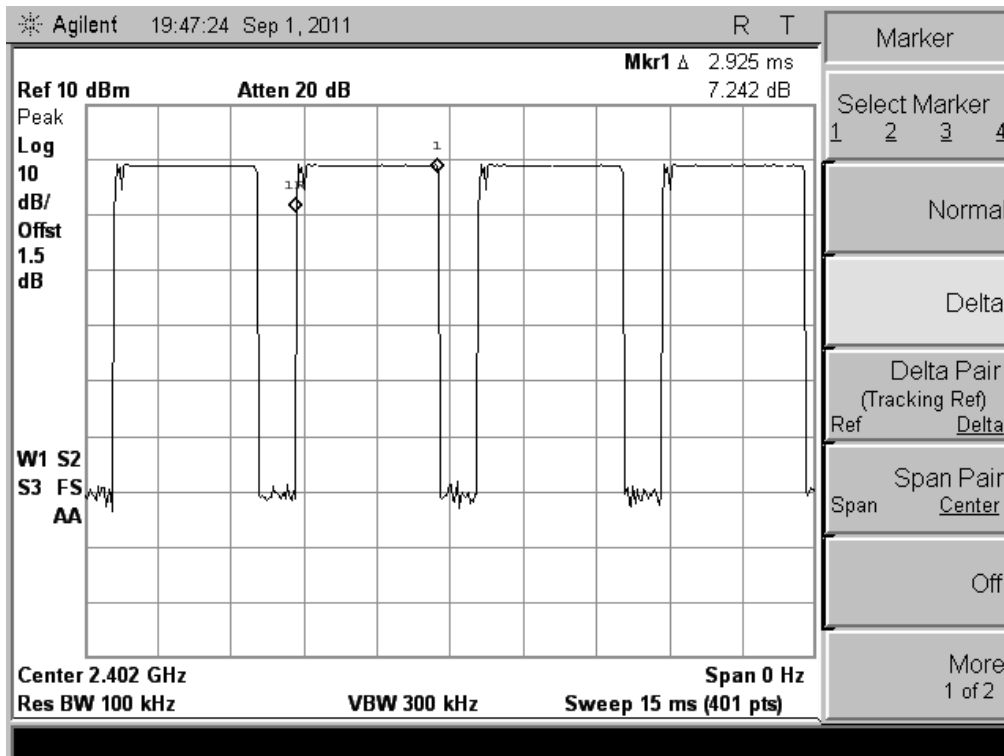
A. Test Verdict

Mode	Channel	Pulse Time	Calculated Dwell Time (ms)	Limit (ms)	Verdict
		ms			
GFSK	Low	2.925	312.000	400	PASS
	Middle	2.888	308.053		PASS
	High	2.925	312.000		PASS
CH Low: $2.925 * (1600/6)/79 * 31.6 = 312.000$ (ms) CH Mid: $2.888 * (1600/6)/79 * 31.6 = 308.053$ (ms) CH High: $2.925 * (1600/6)/79 * 31.6 = 312.000$ (ms)					
π/4DQPSK	Low	2.925	312.000	400	PASS
	Middle	2.962	315.947		PASS
	High	2.925	312.000		PASS
CH Low: $2.925 * (1600/6)/79 * 31.6 = 312.000$ (ms) CH Mid: $2.962 * (1600/6)/79 * 31.6 = 315.947$ (ms) CH High: $2.925 * (1600/6)/79 * 31.6 = 312.000$ (ms)					
π/4DQPSK	Low	2.925	312.000	400	PASS
	Middle	2.888	308.053		PASS
	High	2.887	307.947		PASS
CH Low: $2.925 * (1600/6)/79 * 31.6 = 312.000$ (ms) CH Mid: $2.962 * (1600/6)/79 * 31.6 = 308.053$ (ms) CH High: $2.887 * (1600/6)/79 * 31.6 = 307.947$ (ms)					

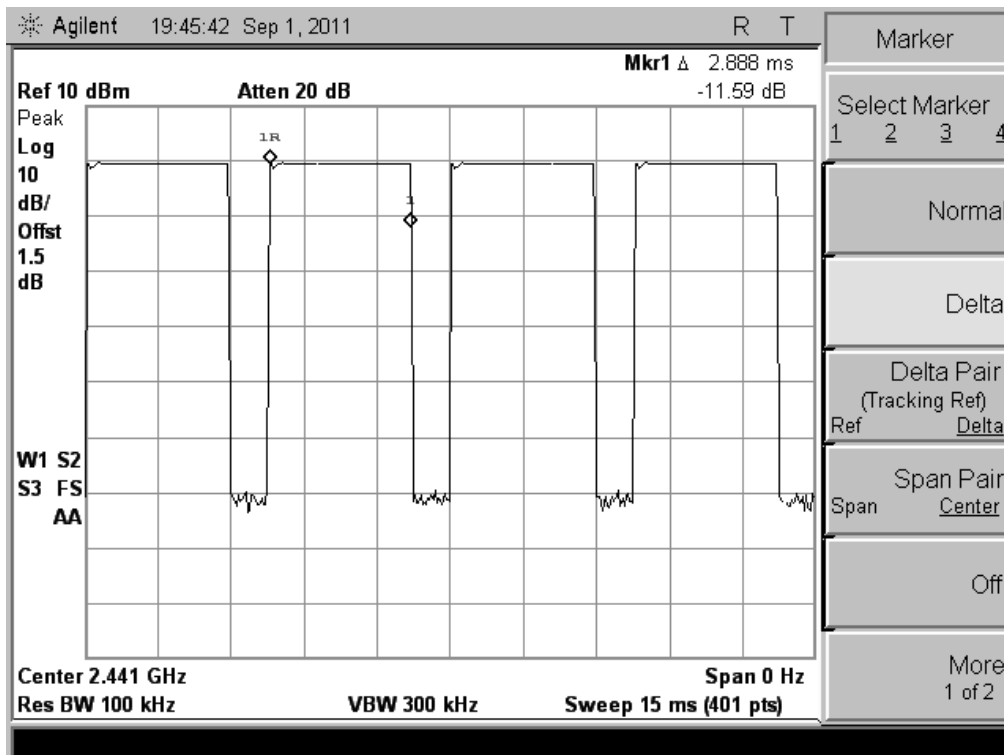
B. Test Plots

Note: the following plots record the Pulse Time of the Module carrier.

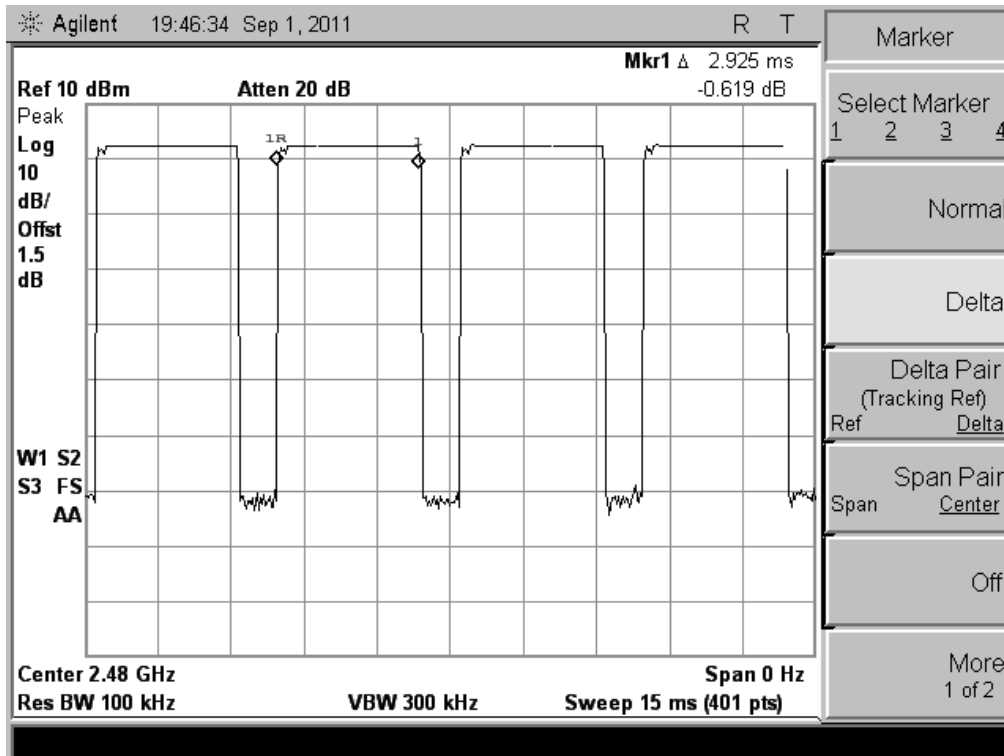
Test Mode GFSK



(Plot A: CH Low)

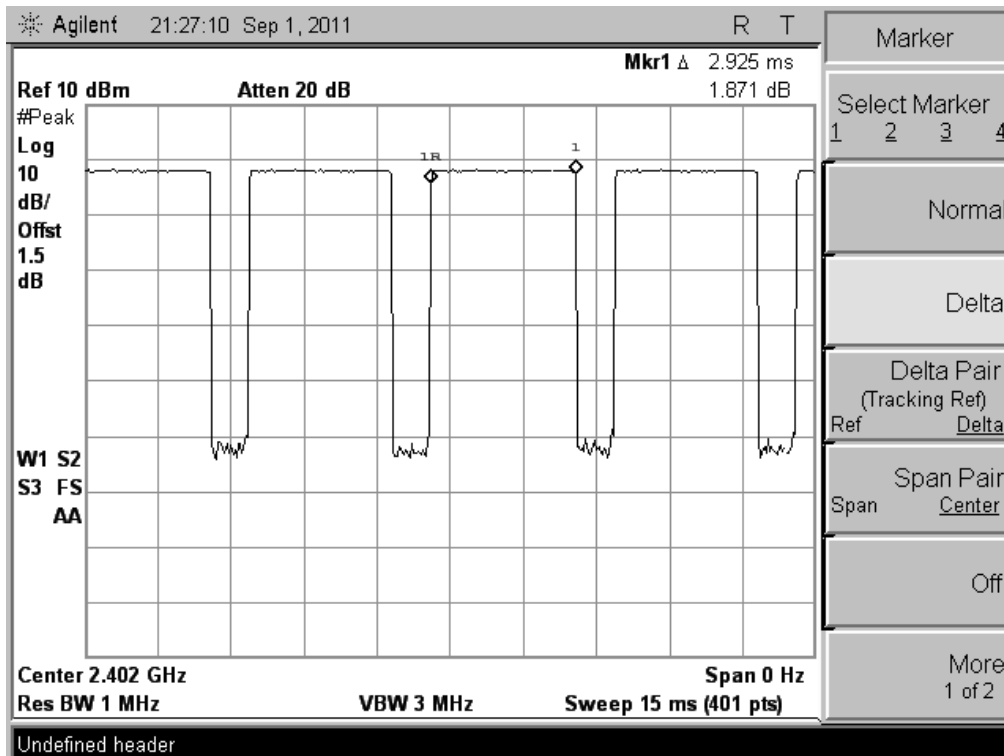


(Plot B: CH Mid)

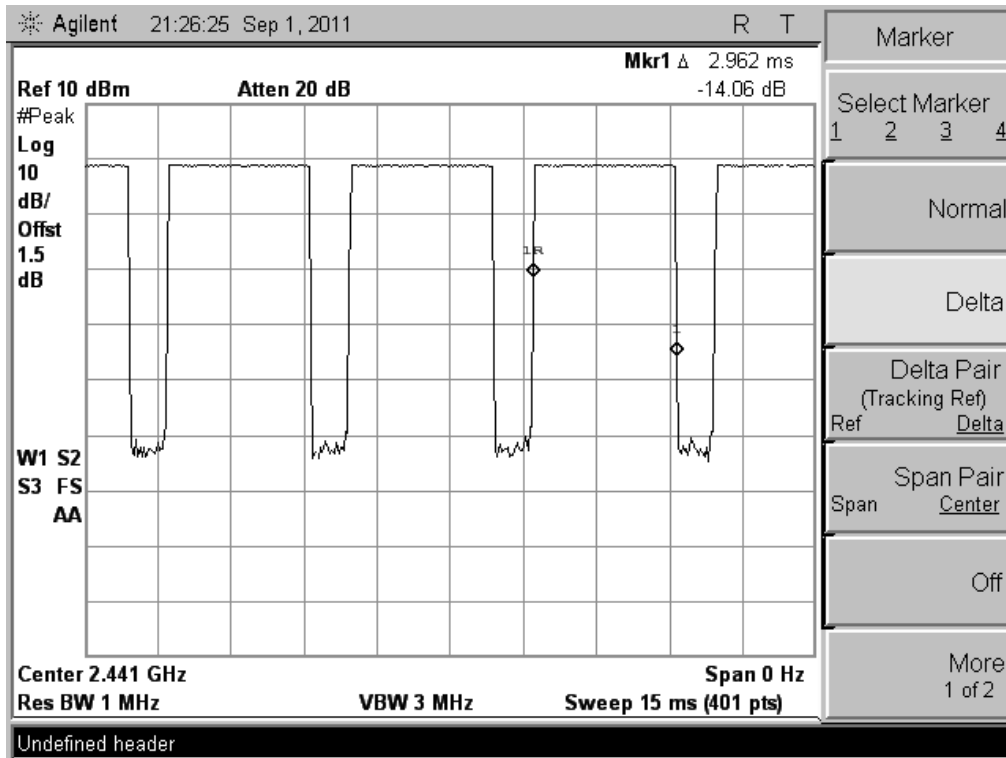


(Plot C: CH High)

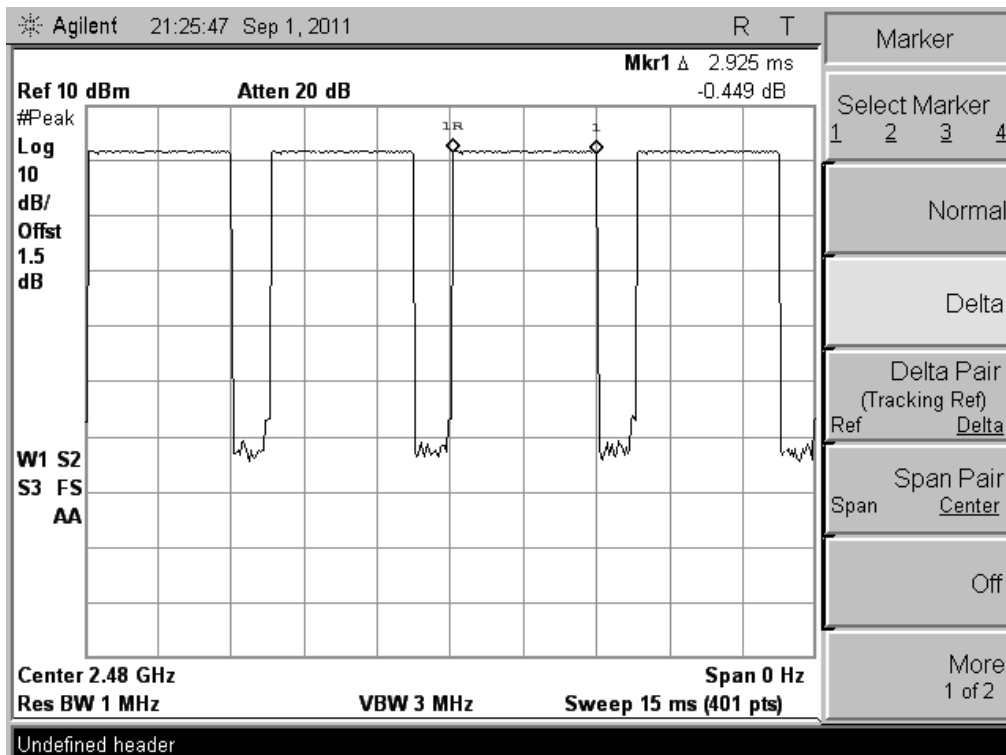
Test Mode π/4DQPSK



(Plot A: CH Low)

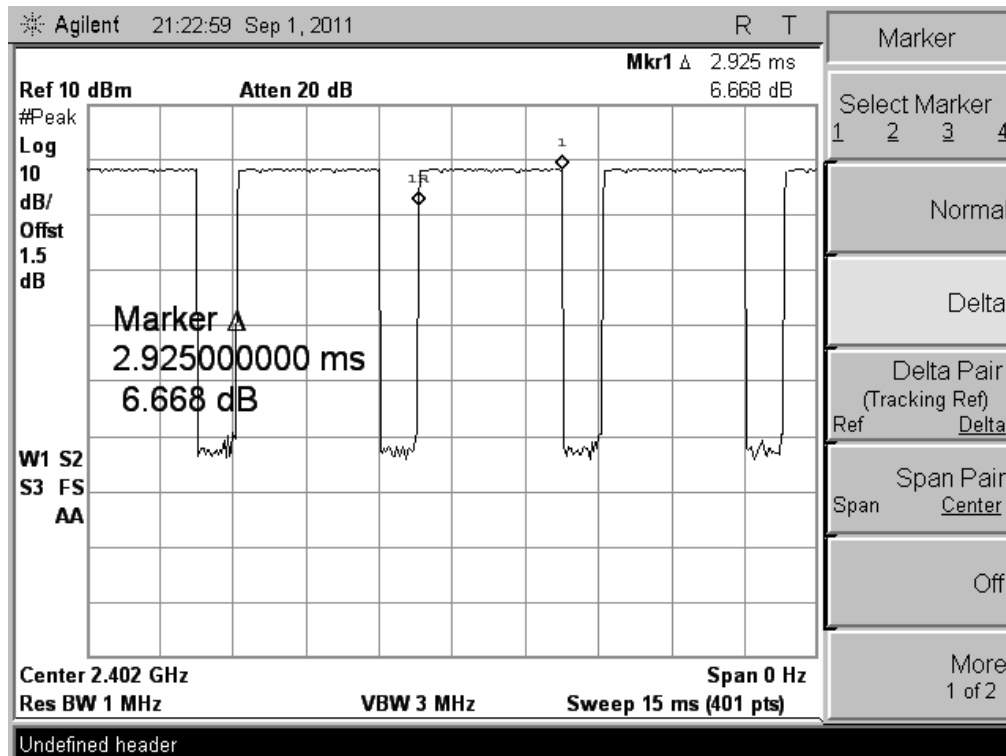


(Plot B: CH Mid)

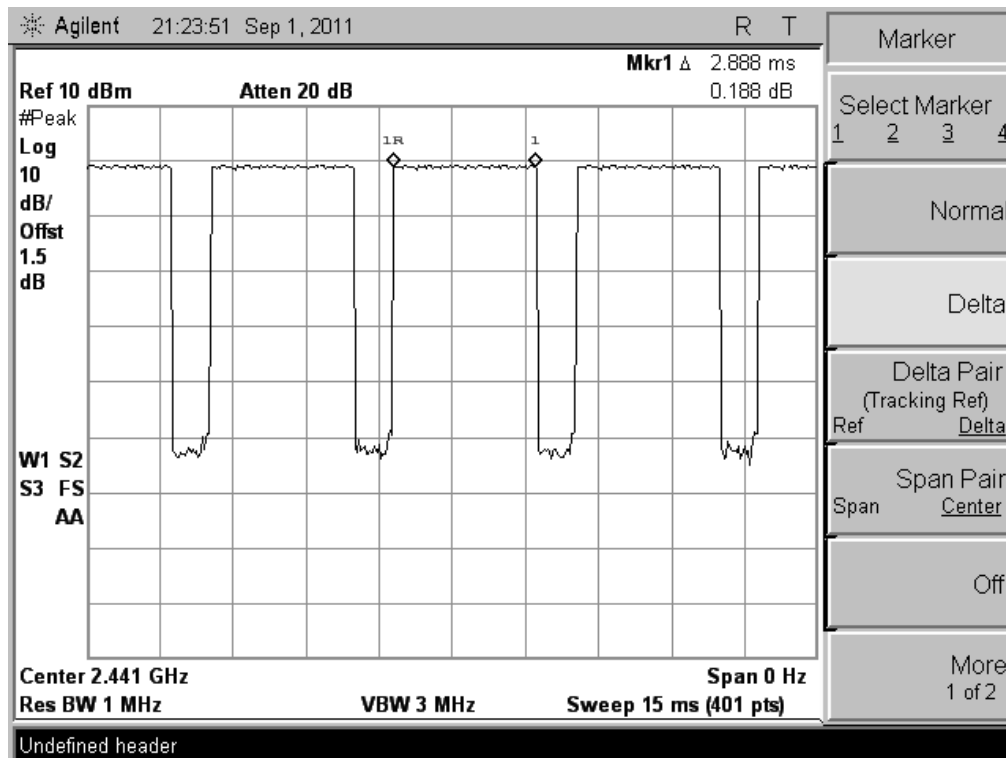


(Plot C: CH High)

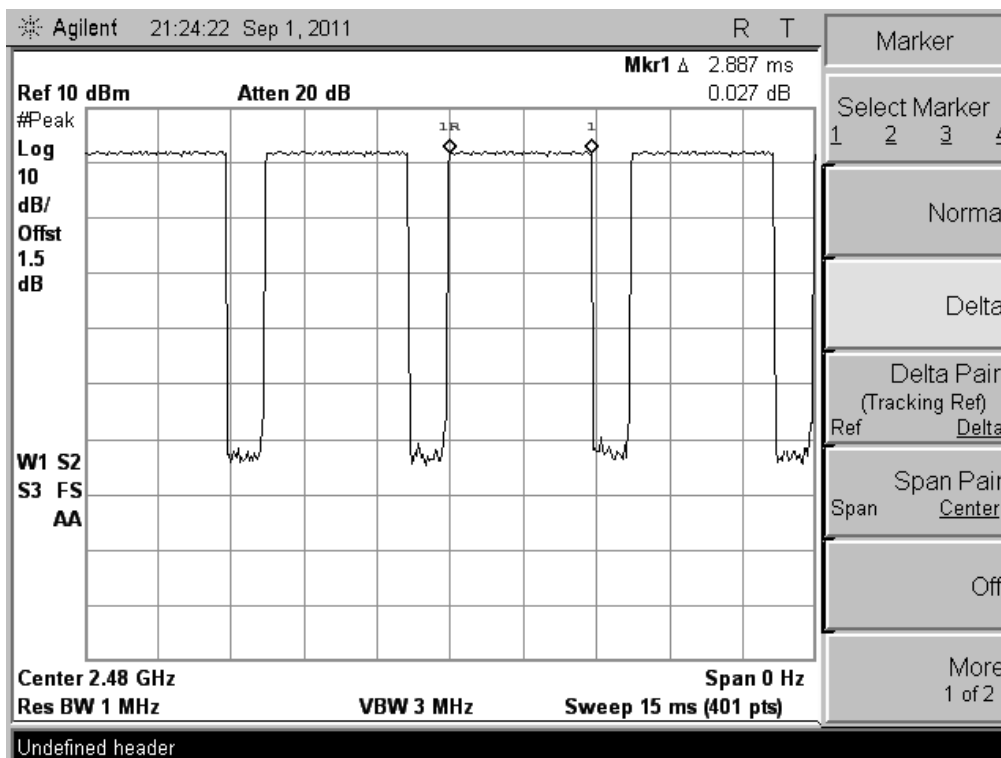
Test Mode	8DPSK
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(Plot A: CH Low)



(Plot B: CH Mid)



(Plot C: CH High)

5.6 Conducted Spurious Emission

5.6.1 Definition

According to FCC section 15.247(d), in any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

5.6.2 Test Description

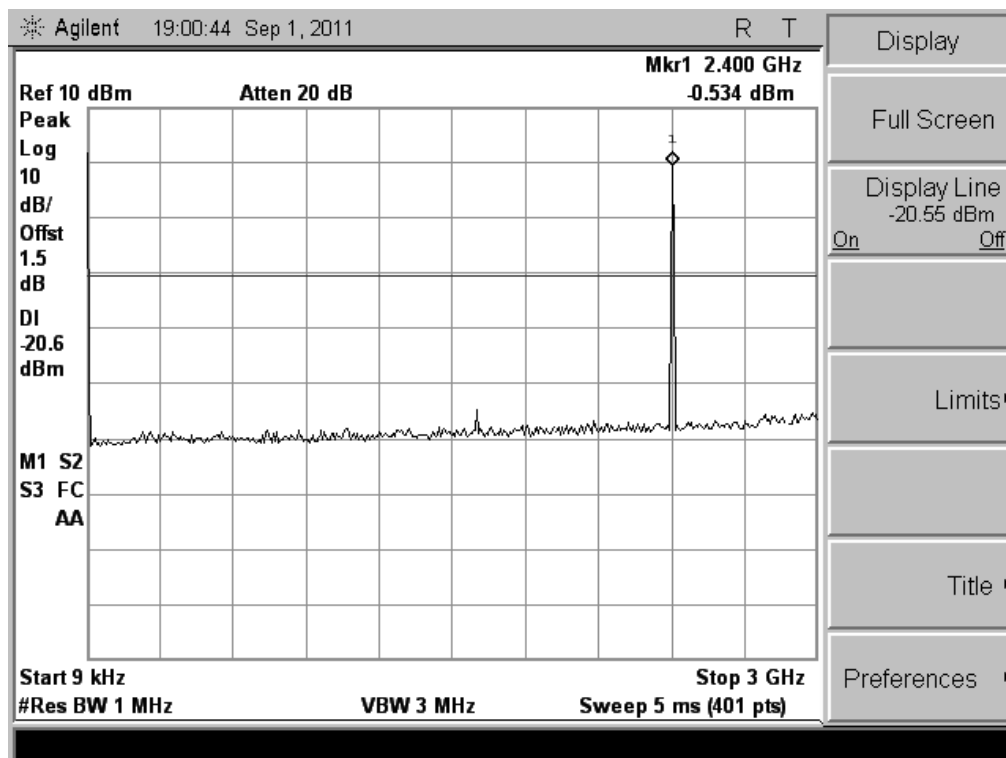
See section 5.1.2 of this report.

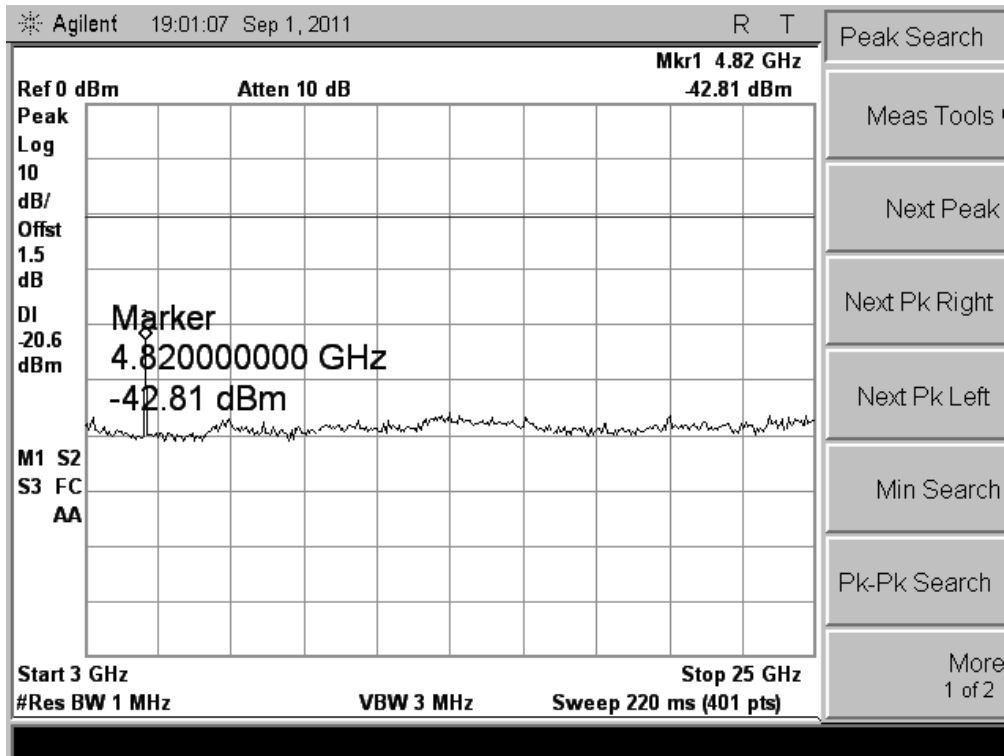
5.6.3 Test Result

The EUT operates at hopping-off test mode. The measurement frequency range is from 9 KHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the spurious emissions.

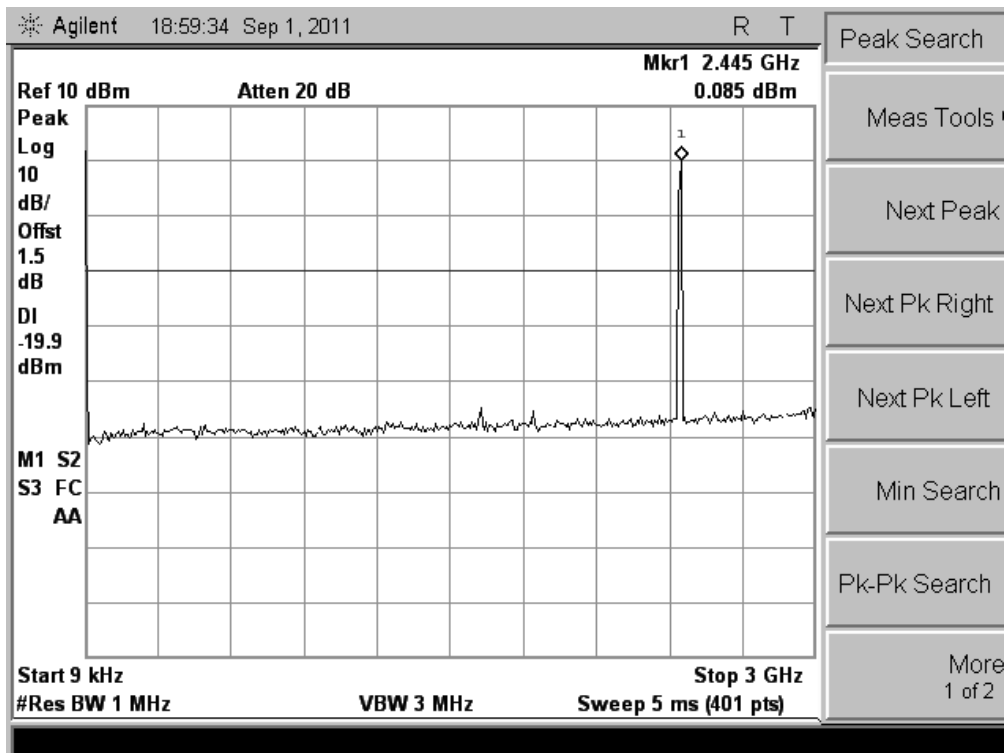
Test Plot:

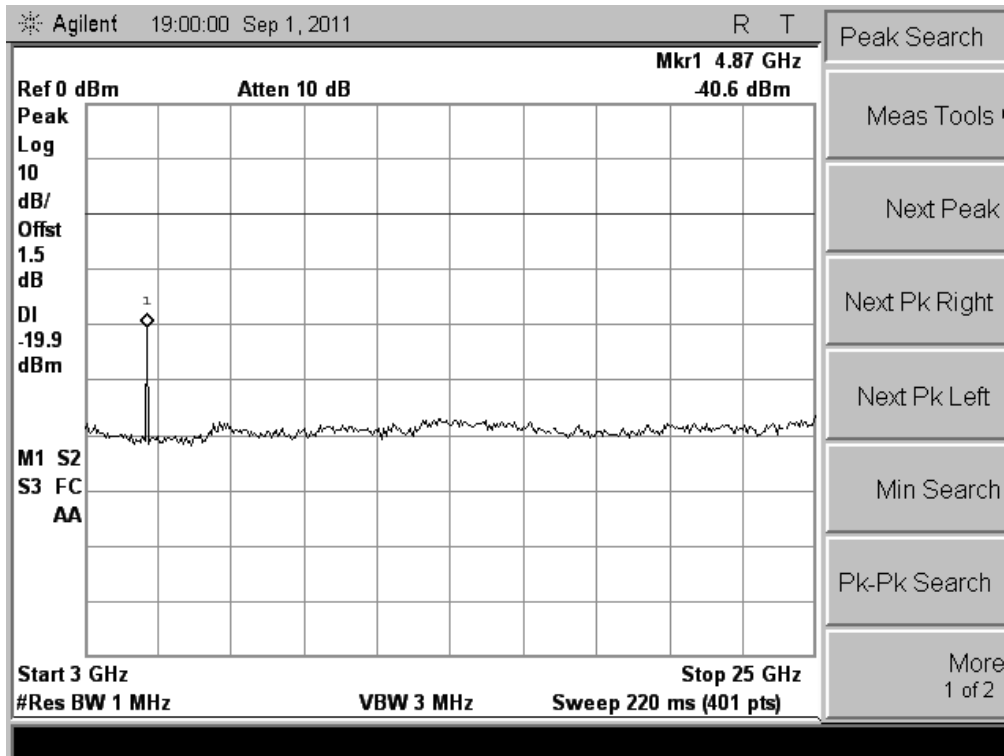
Test Mode	GFSK
-----------	------



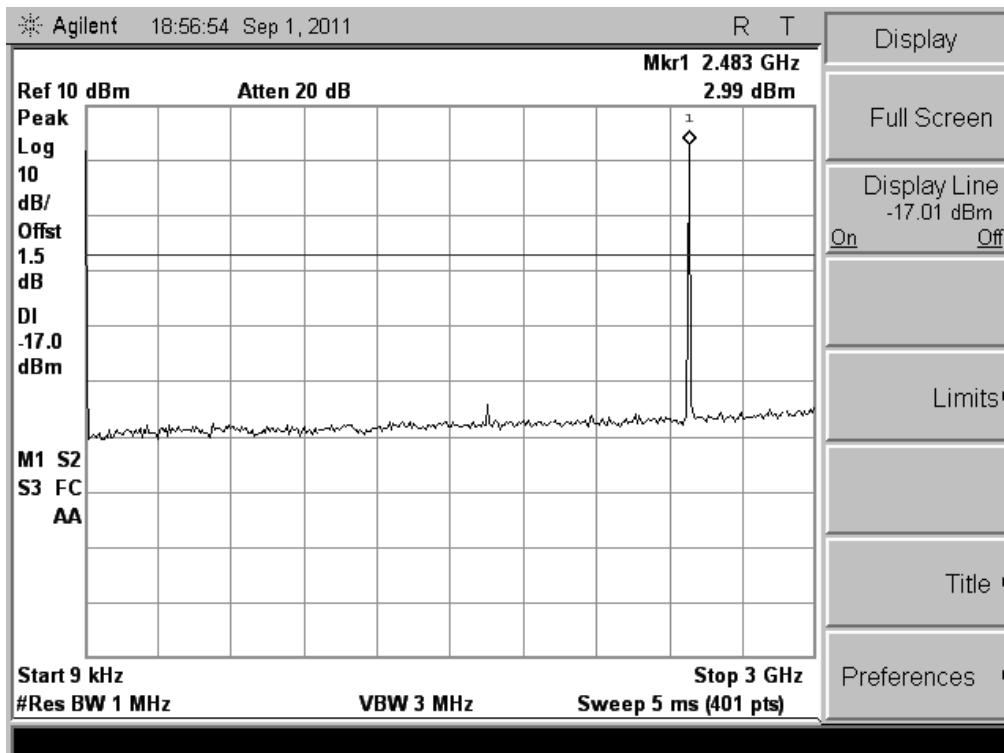


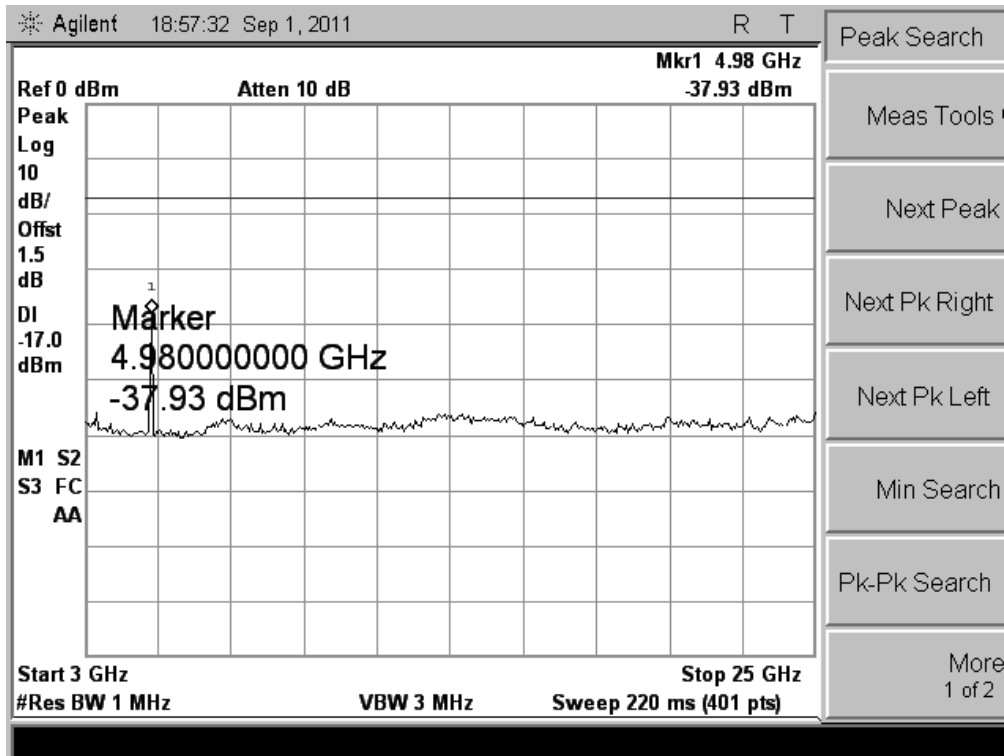
(CH Low, 9kHz to 25GHz)





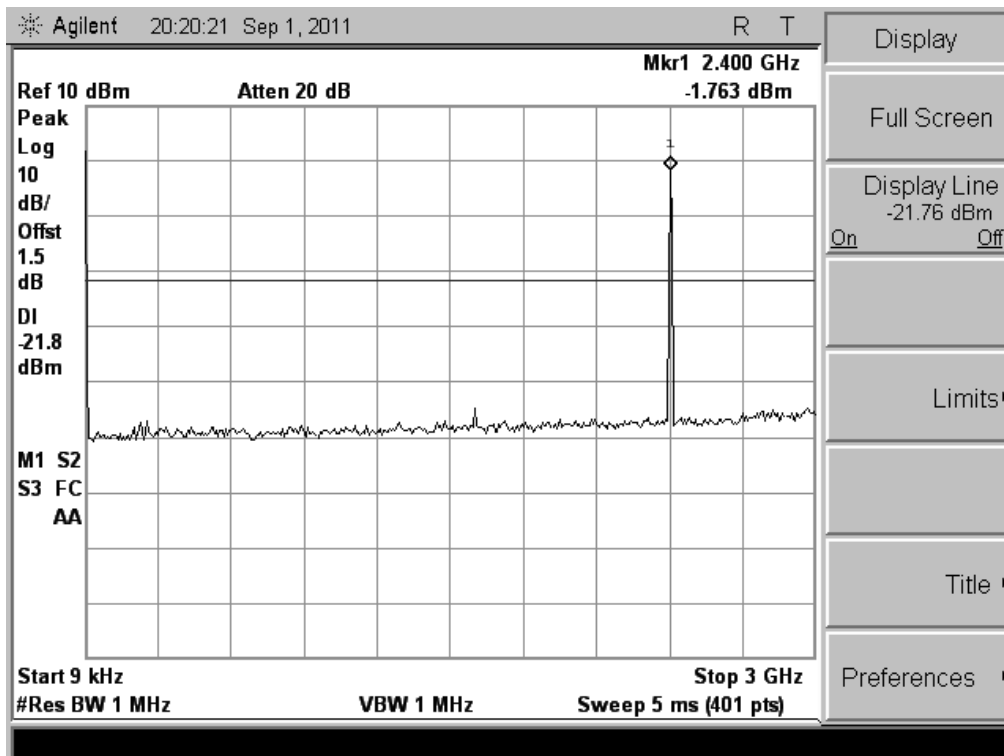
(CH Mid, 9kHz to 25GHz)

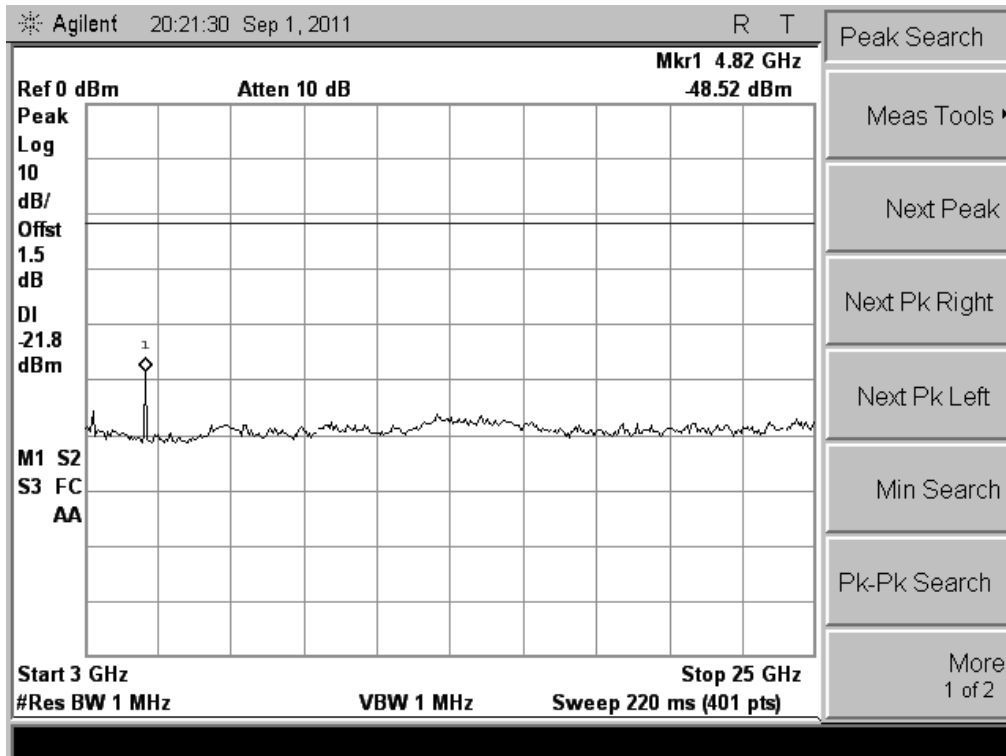




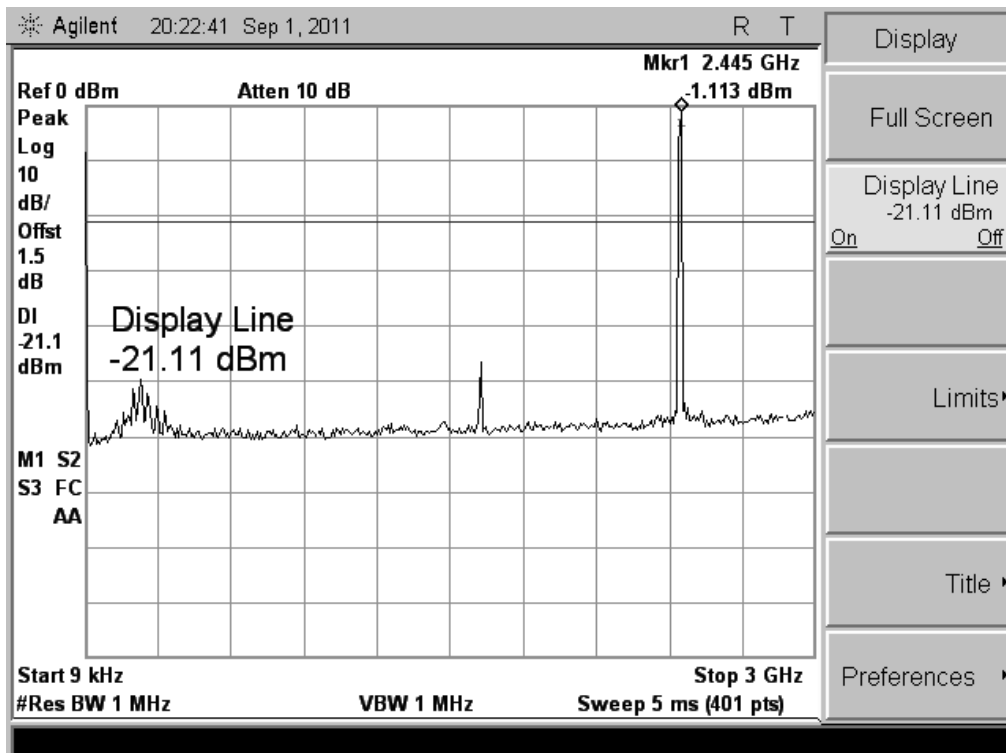
(CH High, 9kHz to 25GHz)

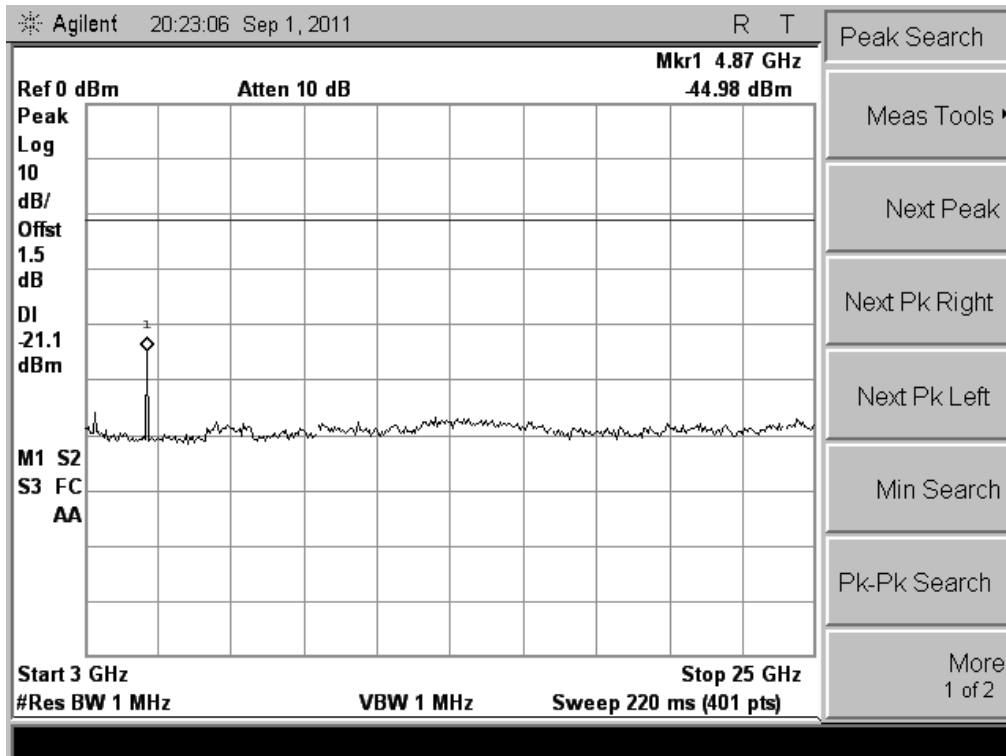
Test Mode π/4DQPSK



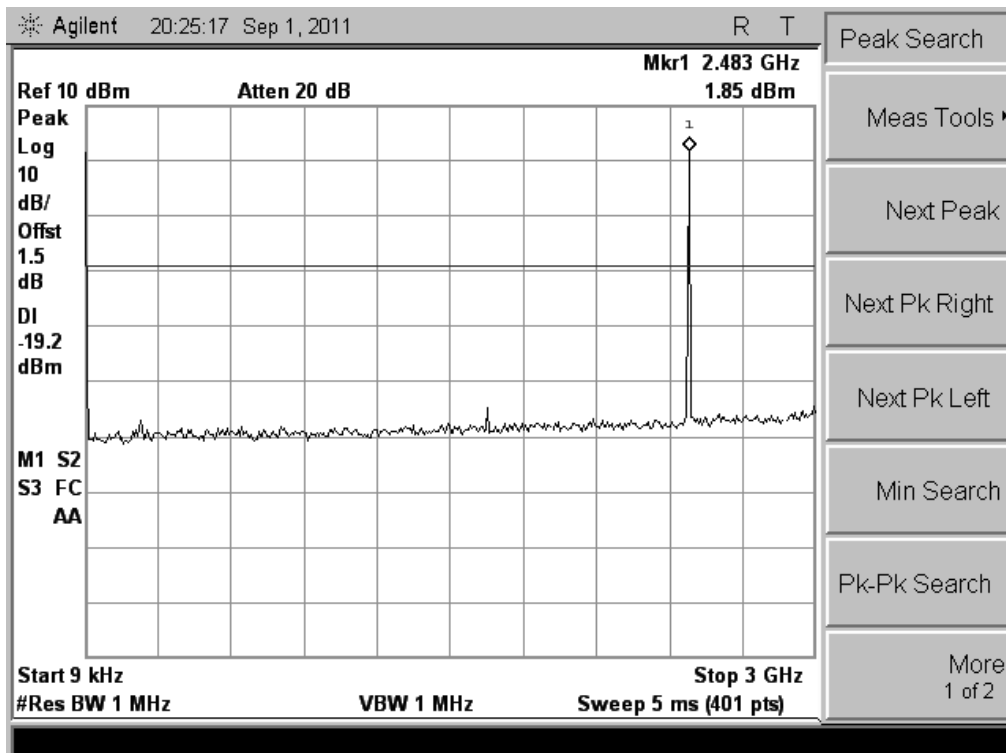


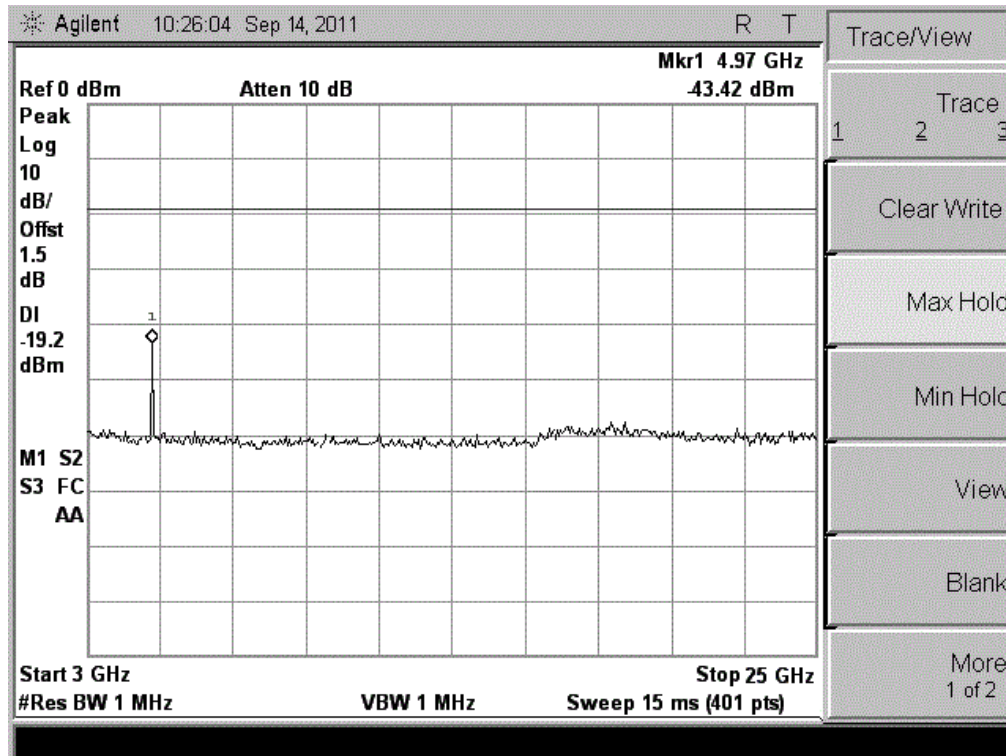
(CH Low, 9kHz to 25GHz)





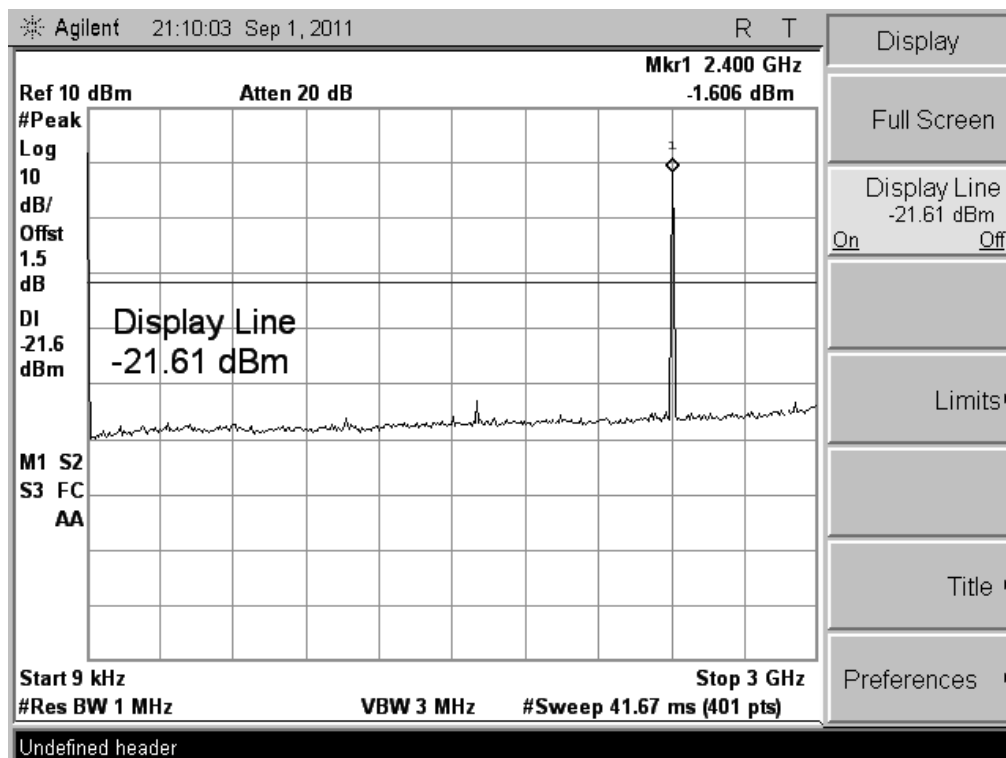
(CH Mid, 9kHz to 25GHz)

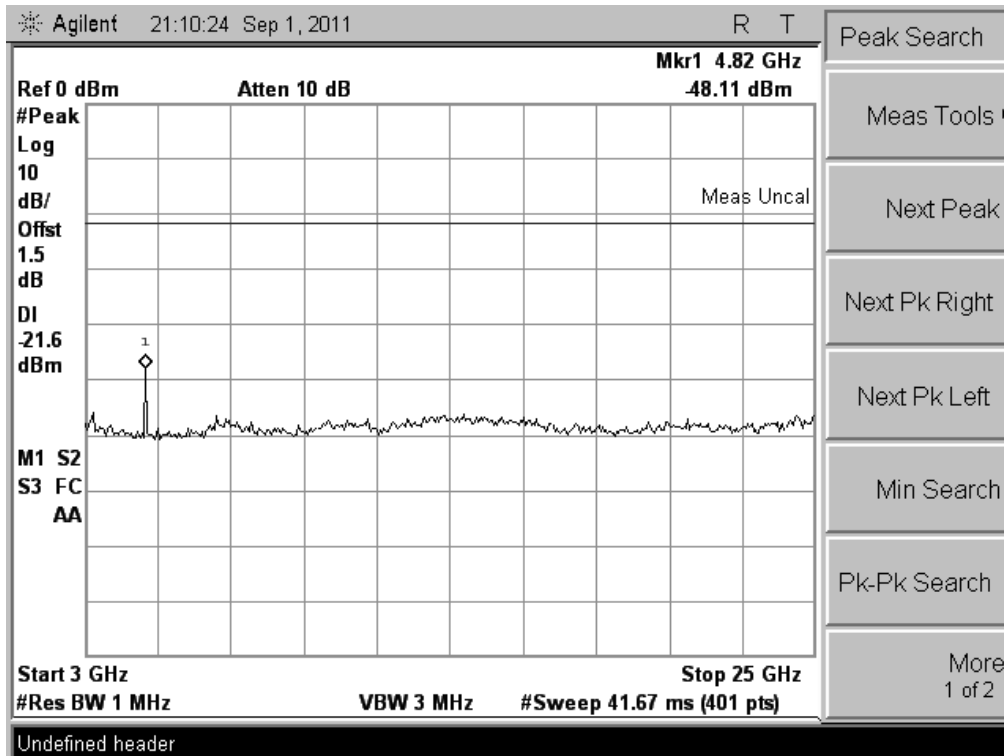




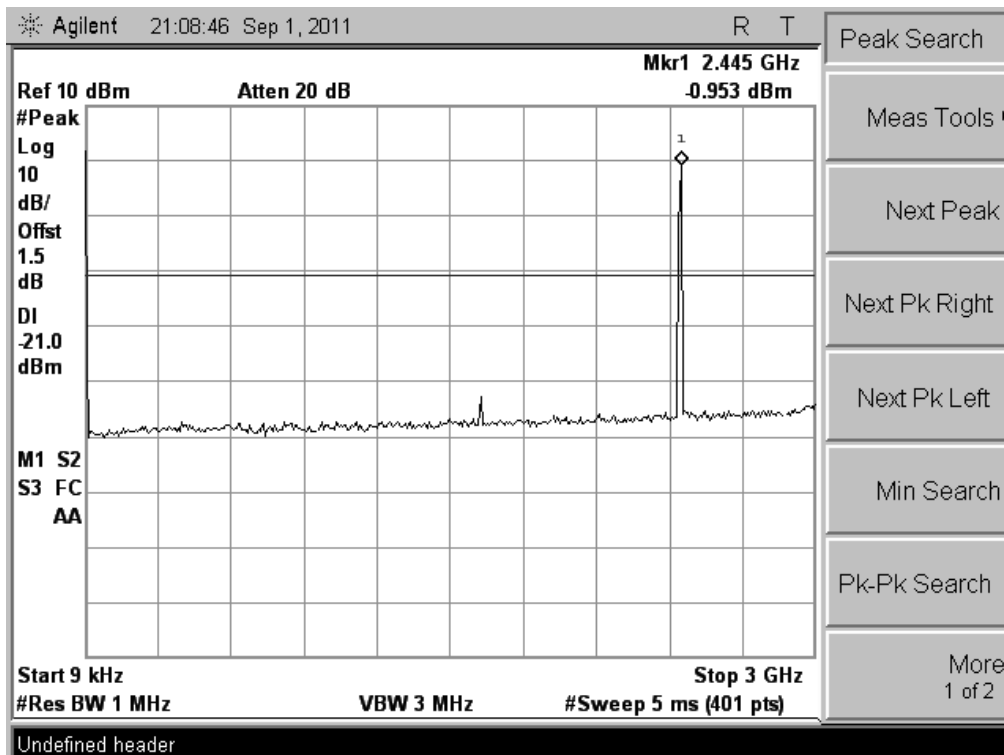
(CH High, 9kHz to 25GHz)

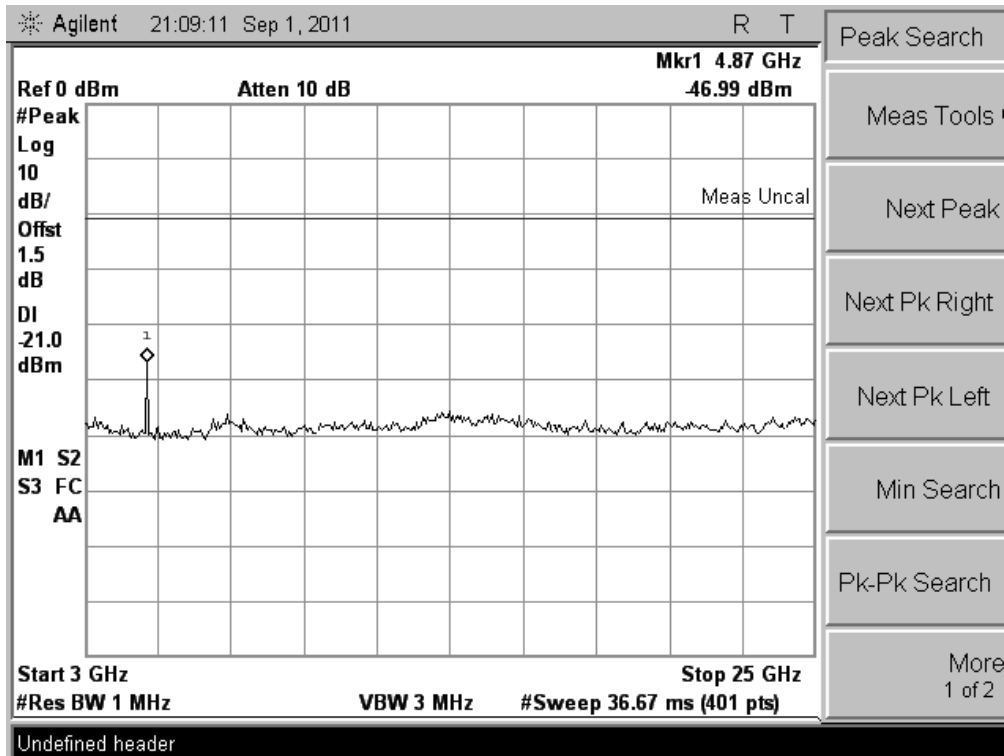
Test Mode 8DPSK



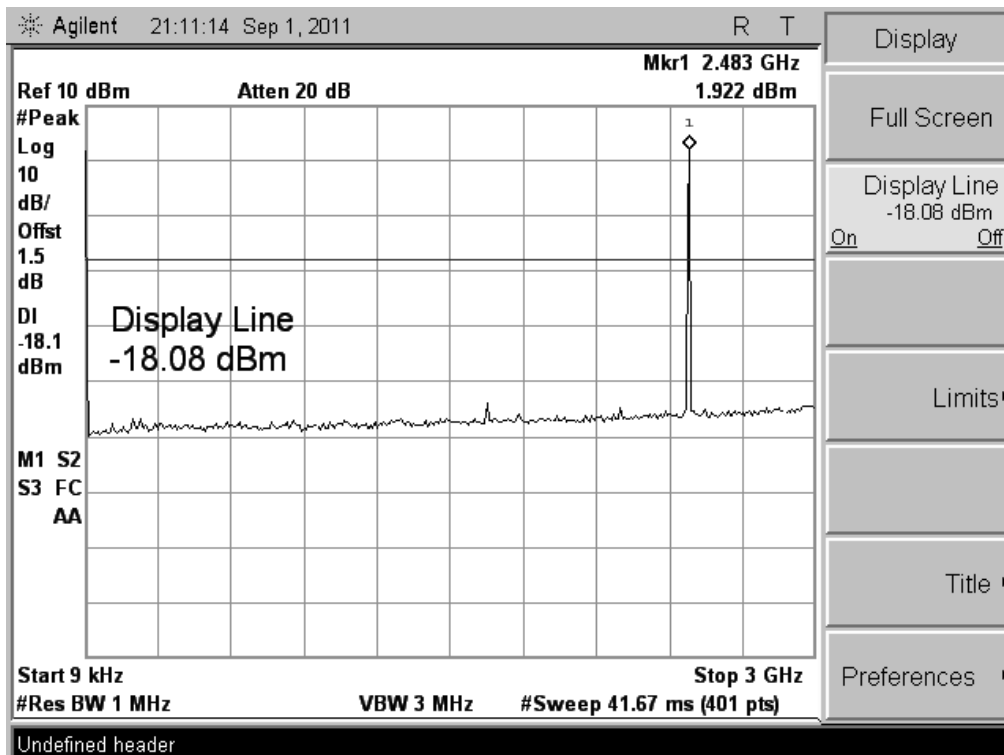


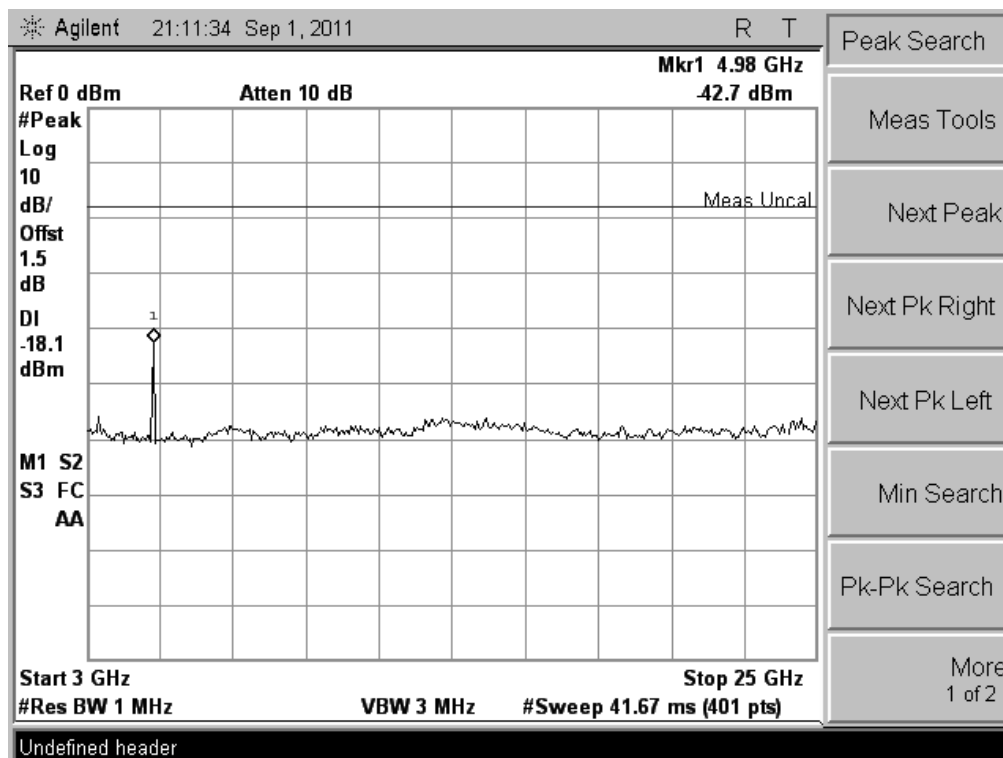
(CH Low, 9kHz to 25GHz)





(CH Mid, 9kHz to 25GHz)





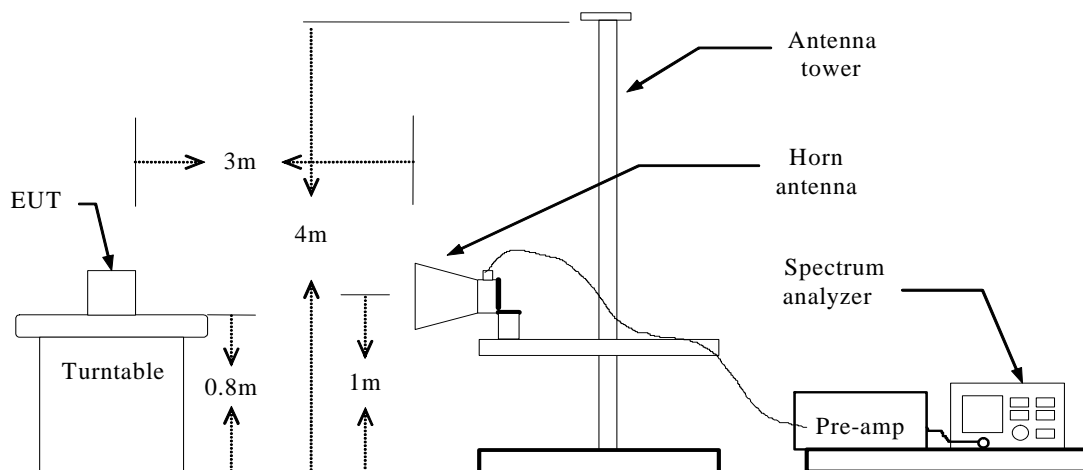
(CH High, 9kHz to 25GHz)

5.7 Band Edge

5.7.1 Definition

According to FCC section 15.247(d), in any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

5.7.2 Test Description



5.7.3 Test Result

The EUT operates at hopping-off and hopping-on test mode. Only the worse test data was recorded in the report. The hopping-off test mode data was showed below. The lowest and highest channels are tested to verify the band edge emissions.

Mode	Channel	Channel Marked Frequency	Test Result Highest Emission (dBuV/m)			
			Horizontal		Vertical	
			Peak	Average	Peak	Average
GFSK	Low	2402MHz	91.64	75.45	93.03	77.48
		2400MHz	63.92	48.66	67.95	49.85
	High	2480MHz	90.72	77.28	93.18	79.31
		2483.5MHz	59.77	43.96	60.26	44.28
π/4DQPSK	Low	2402MHz	92.37	76.82	92.81	79.52
		2400MHz	65.43	49.75	66.64	50.35
	High	2480MHz	92.18	79.17	95.52	83.28
		2483.5MHz	57.54	41.28	57.16	42.84
8DPSK	Low	2402MHz	92.74	78.82	93.77	81.46
		2400MHz	62.96	47.14	65.48	48.32
	High	2480MHz	93.83	80.14	95.31	81.97
		2483.5MHz	58.63	44.54	59.63	43.82

5.8 Conducted Emission

5.8.1 Definition

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

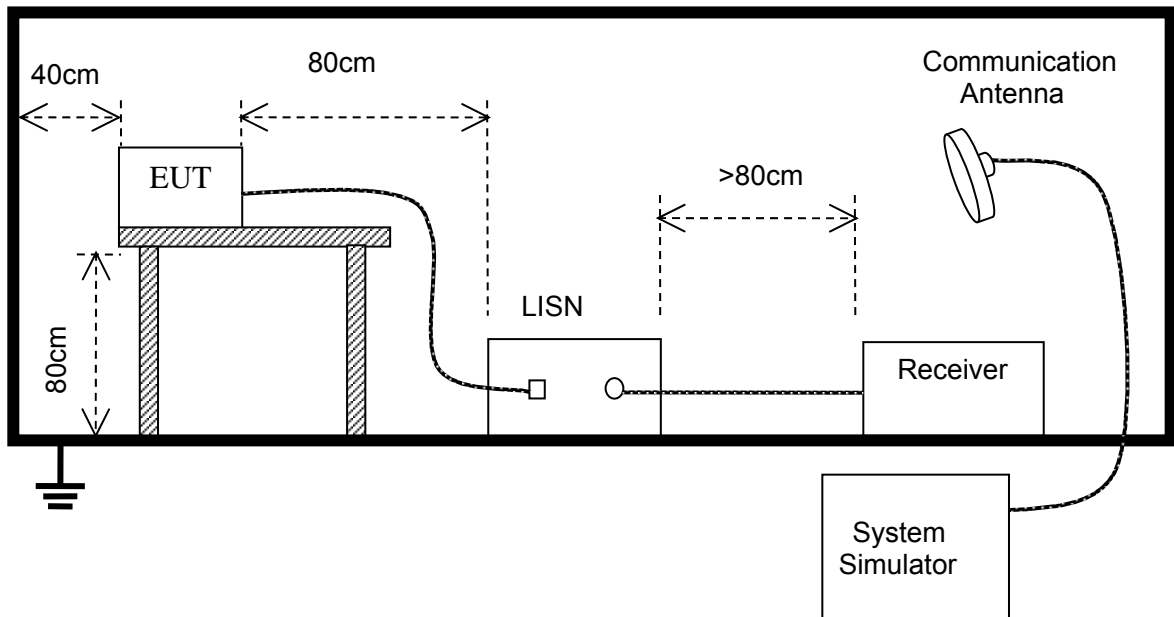
Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz-500kHz	66-56	56-46
500kHz-5MHz	56	46
5MHz-30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

5.8.2 Test Description

The EUT is powered by AC 120V, 60Hz AC mains supply. The path loss as the factor is calibrated to correct the reading. During the measurement, the EUT is activated and is set to operate at maximum power.



No.	Equipment	Manufacturer	Model No.	Note
1	PC	DELL	DCSM	FCC DOC
2	keyboard	Dell	L100	FCC DOC
3	mouse	Dell	D PPID	FCC DOC

5.8.3 Test Result

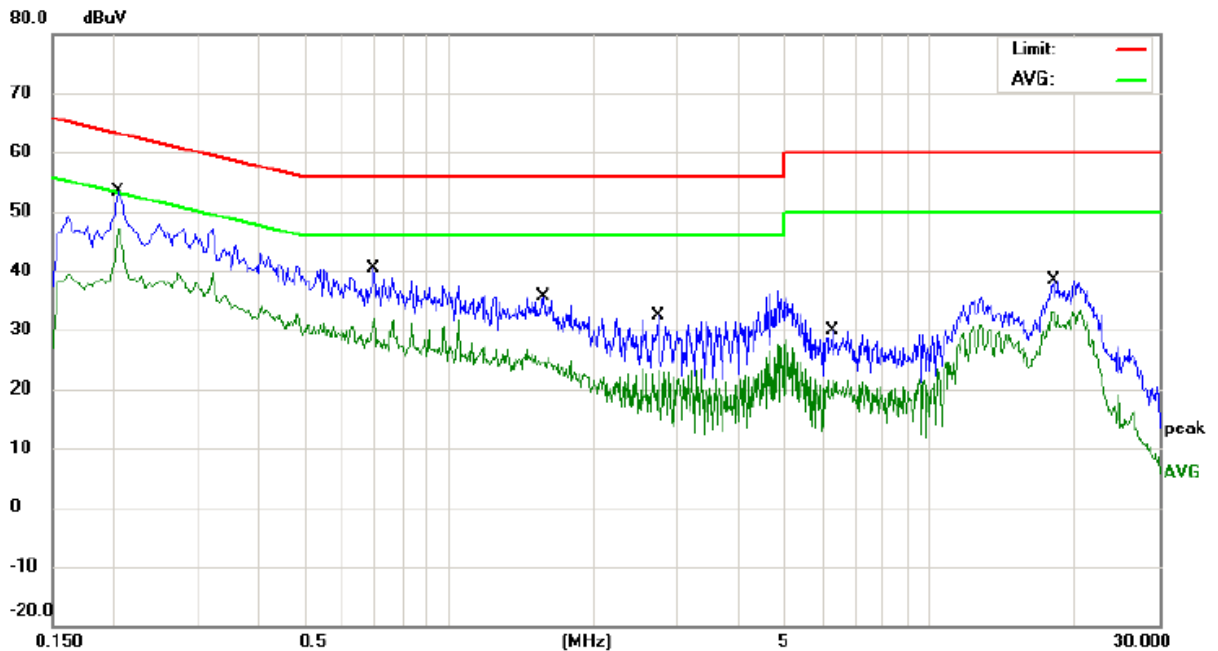
A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.



Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park
 Guangdong, China
 Tel: 0755-86170306 Fax: 0755-86170310

Conducted Emission Measurement

File :PDI-P40LCDE Data :#21 Date: 2011-08-18 Time: 11:02:19



Site site MOST 3M
 Limit: FCC Part15 C
 EUT: LCD TV
 M/N: PDI-P40LCDE
 Mode: TX CW LOW CHANNEL
 Note:

Phase: L1
 Power: AC 120V/60Hz

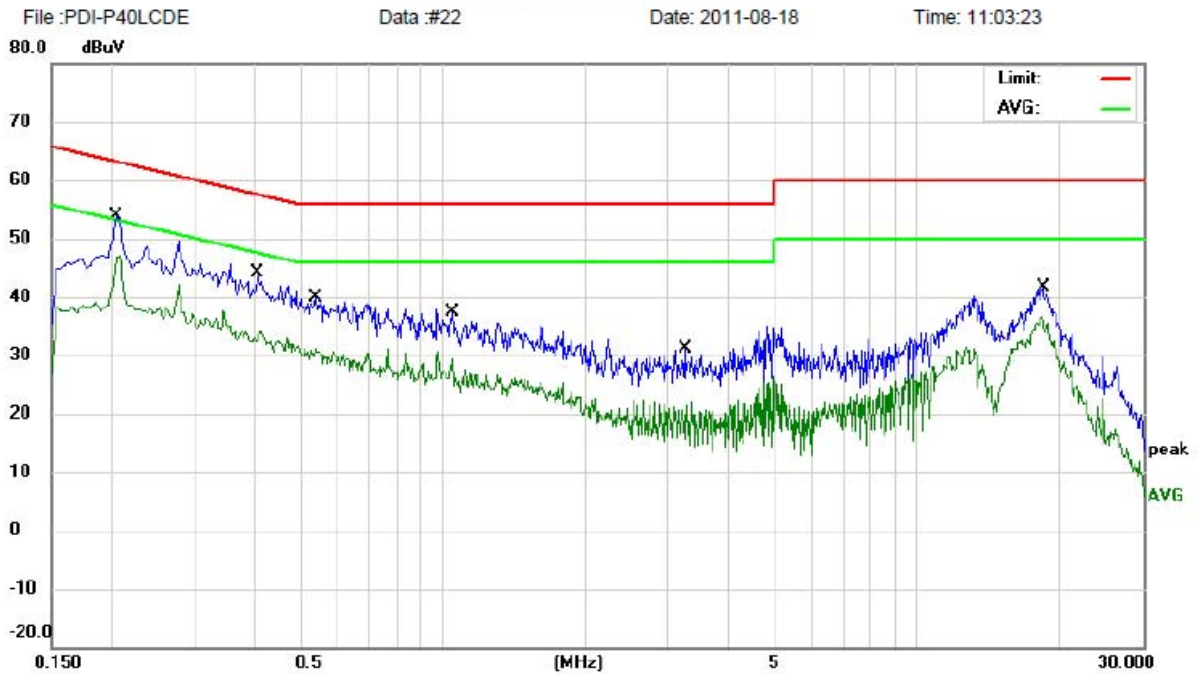
Temperature: 26
 Humidity: 60 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.2060	41.43	11.96	53.39	63.36	-9.97	QP	
2		0.6980	30.40	10.00	40.40	56.00	-15.60	QP	
3		1.5700	26.29	9.43	35.72	56.00	-20.28	QP	
4		2.7300	22.73	9.73	32.46	56.00	-23.54	QP	
5		6.2780	18.54	11.23	29.77	60.00	-30.23	QP	
6		18.2180	29.32	9.00	38.32	60.00	-21.68	QP	



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 Guangdong, China
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Conducted Emission Measurement



Site: site MOST 3M Phase: *N* Temperature: 26
 Limit: FCC Part15 C Power: AC 120V/60Hz Humidity: 60 %
 EUT: LCD TV
 M/N: PDI-P40LCDE
 Mode: TX CW LOW CHANNEL
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.2060	41.85	11.96	53.81	63.36	-9.55	QP	
2		0.4104	32.52	10.60	43.12	57.64	-14.52	QP	
3		0.5420	29.85	10.00	39.85	56.00	-16.15	QP	
4		1.0500	27.54	9.95	37.49	56.00	-18.51	QP	
5		3.2420	20.99	10.24	31.23	56.00	-24.77	QP	
6		18.4900	32.74	9.00	41.74	60.00	-18.26	QP	

5.9 Radiated Emission

5.9.1 Definition

According to FCC section 15.247(d), radiated emission outside the frequency band attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

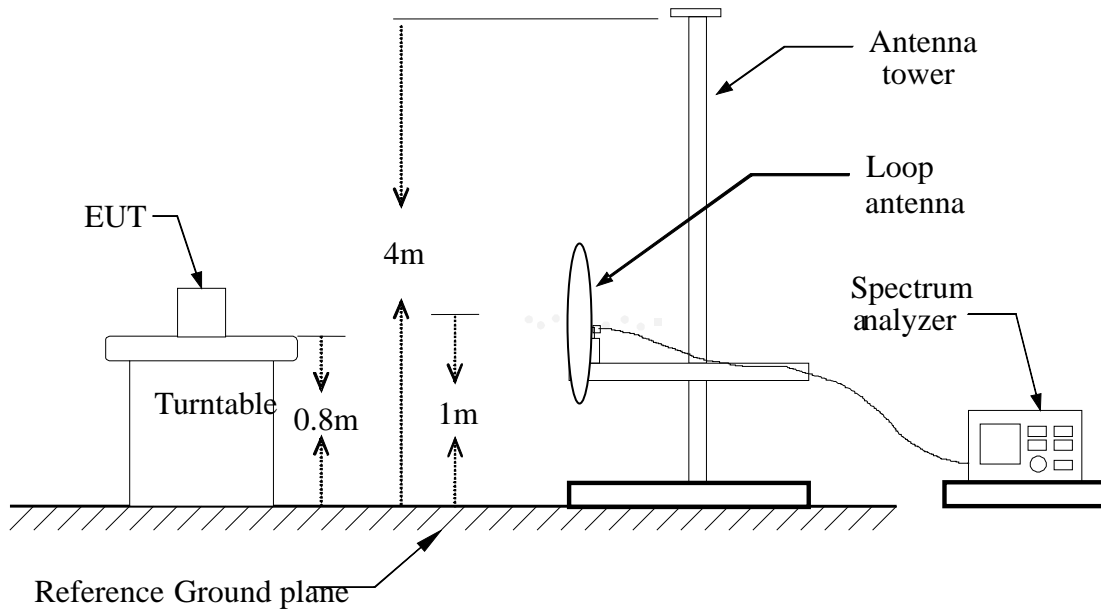
According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

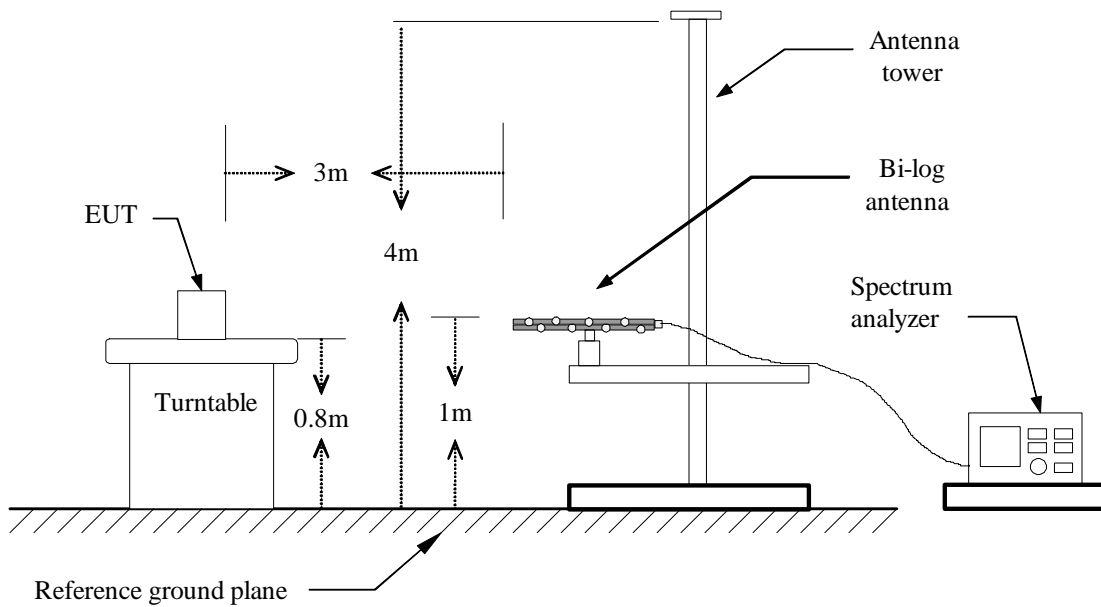
As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

5.9.2 Test Description

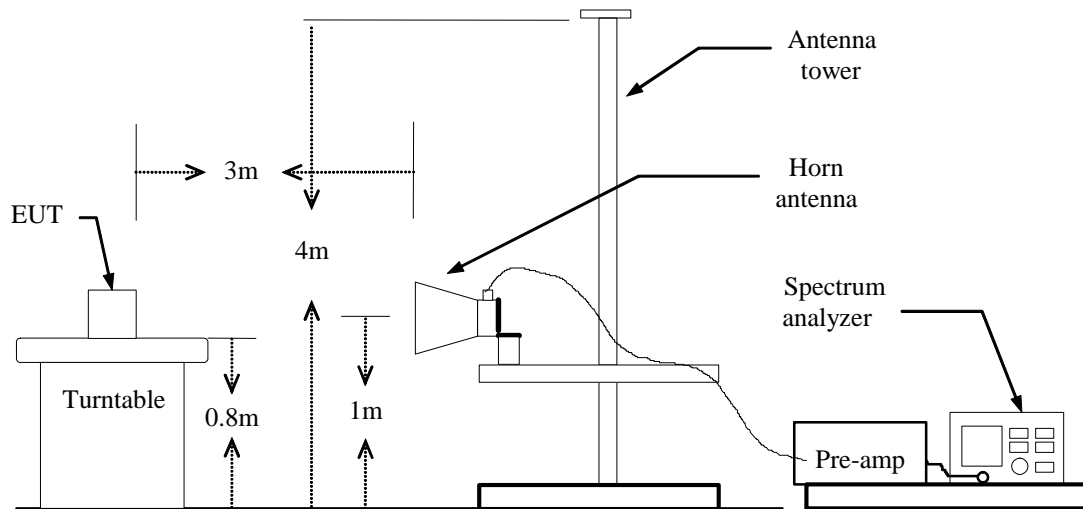
A. Test Setup:



Blow 1GHz:



Above 1GHz:



No.	Equipment	Manufacturer	Model No.	Note
1	PC	DELL	DCSM	FCC DOC
2	keyboard	Dell	L100	FCC DOC
3	mouse	Dell	D PPID	FCC DOC

B. Test procedures

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
7. Below 1GHz: RBW=100 kHz / VBW=300 kHz / Sweep=AUTO
8. Above 1GHz : (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO (The EUT is in CW mode)
9. Repeat above procedures until the measurements for all frequencies are complete.

5.9.3 Test Result

Below 1 GHz



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Radiated Emission Measurement

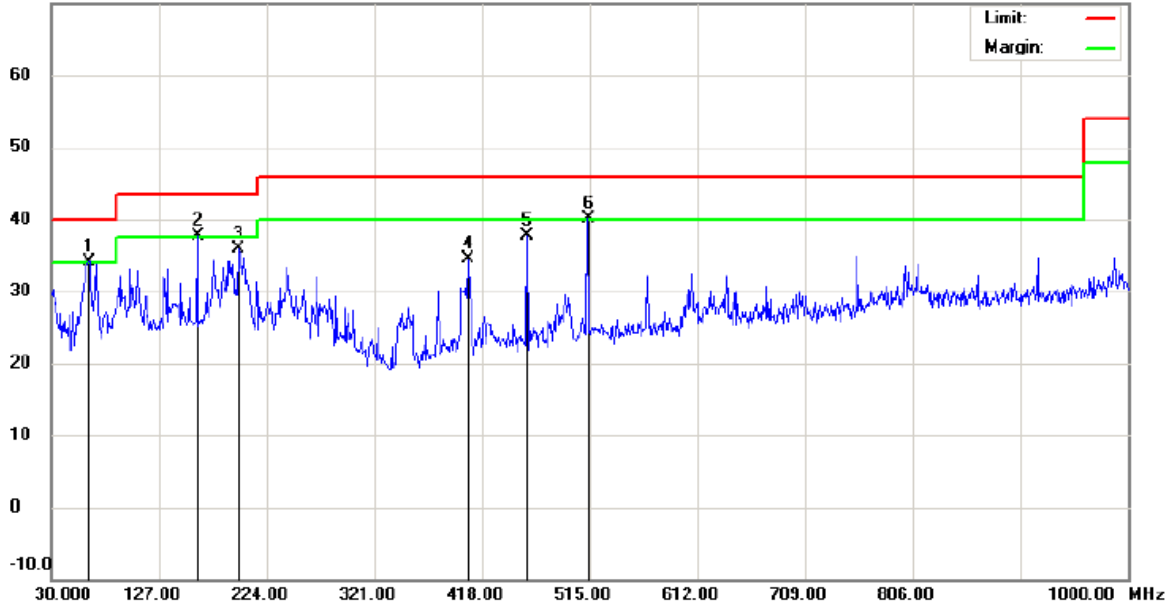
File :PDI-P40LCDE

Data :#15

Date: 2011-8-16

Time: 17:09:44

70.0 dBuV/m



Site site MOST 3M

Polarization: *Vertical*

Temperature: 26

Limit: FCC Part15 C

Power: AC120V/60Hz

Humidity: 61 %

EUT: LCD TV

Distance:

M/N: PDI-P40LCDE

Mode: TX CW LOW CHANNEL

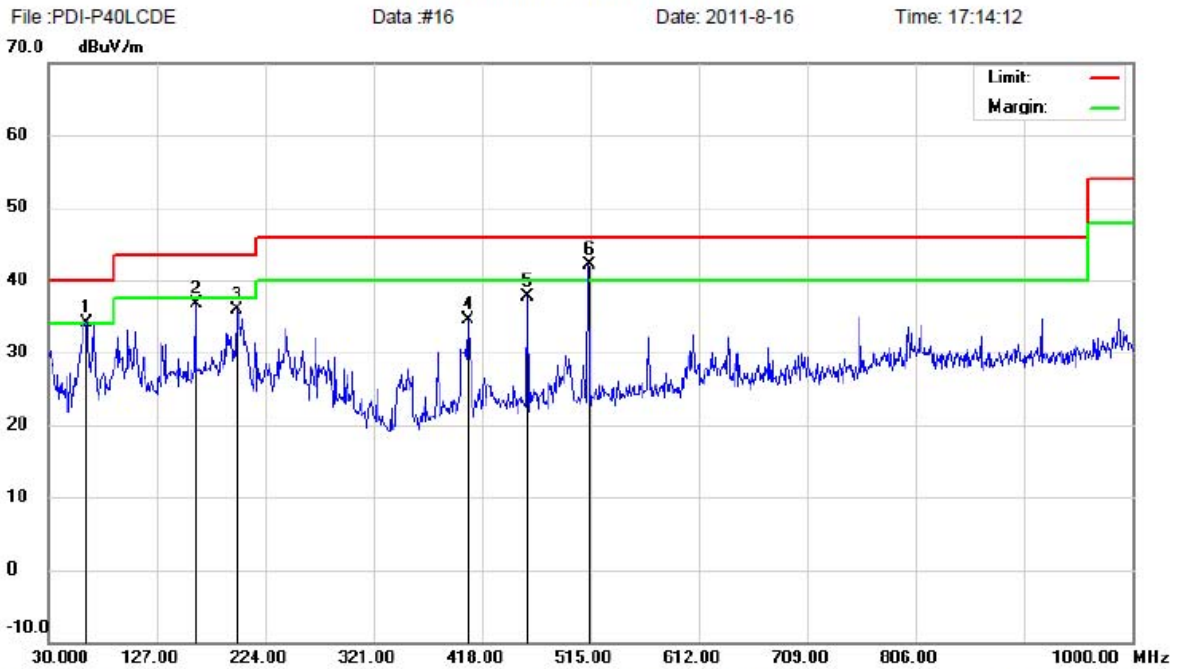
Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1	!	63.9500	22.98	11.20	34.18	40.00	-5.82	QP			
2	*	161.9199	20.46	17.26	37.72	43.50	-5.78	QP			
3		198.7800	18.63	17.27	35.90	43.50	-7.60	QP			
4		405.3899	15.72	18.82	34.54	46.00	-11.46	QP			
5		458.7400	17.28	20.34	37.62	46.00	-8.38	QP			
6	!	513.0599	18.51	21.56	40.07	46.00	-5.93	QP			



Address: No.5, Langshan 2nd Rd., North Hi-Tech Industrial park
 Guangdong, China
 Tel: 0755-86170306 Fax: 0755-86170310

Radiated Emission Measurement



Site site MOST 3M Polarization: *Horizontal* Temperature: 26
 Limit: FCC Part15 C Power: AC120V/60Hz Humidity: 61 %
 EUT: LCD TV Distance:
 M/N: PDI-P40LCDE
 Mode: TX CW LOW CHANNEL
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1	!	63.9500	22.98	11.20	34.18	40.00	-5.82	QP			
2		161.9199	19.46	17.26	36.72	43.50	-6.78	QP			
3		198.7800	18.63	17.27	35.90	43.50	-7.60	QP			
4		405.3899	15.72	18.82	34.54	46.00	-11.46	QP			
5		458.7400	17.28	20.34	37.62	46.00	-8.38	QP			
6	*	513.0598	20.51	21.56	42.07	46.00	-3.93	QP			

Above 1 GHz

Worse case Mode: GFSK (Low Channel)

Test Date: August. 16, 2011

Temperature: 20°C

Tested by: Petter Ping

Humidity: 70 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)			
1420.50	H	55.67	29.73	5.58	61.25	35.31	74.00	54.00	-18.69
4805.00	H	48.69	29.12	16.54	65.23	45.66	74.00	54.00	-8.34
N/A									>20
4960.50	V	51.81	31.34	16.54	68.35	47.88	74.00	54.00	-6.12
N/A									>20

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz
 - b. AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz,(The EUT is in CW mode)
5. No additional spurious emissions found between lowest internal generated and 30 MHz

Worse case Mode: GFSK (Mid Channel)
Temperature: 20°C
Humidity: 70 % RH

Test Date: August. 16, 2011
Tested by: Petter Ping
Polarity: Ver. / Hor.

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)			
3492.50	H	53.65	22.69	12.73	66.38	35.42	74.00	54.00	-18.58
4884.50	H	53.54	28.31	17.04	70.58	45.35	74.00	54.00	-8.65
N/A									>20
1820.00	V	59.46	28.37	7.88	67.34	36.25	74.00	54.00	-17.75
4884.50	V	54.12	30.18	17.04	71.16	47.22	74.00	54.00	-6.78
N/A									>20

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz
 - b. AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz, (The EUT is in CW mode)
5. No additional spurious emissions found between lowest internal generated and 30 MHz

Worse case Mode: GFSK (HighChannel)
Temperature: 20°C
Humidity: 70 % RH

Test Date: August. 16, 2011
Tested by: Petter Ping
Polarity: Ver. / Hor.

Freq. (MHz)	Ant. Pol HV	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	AV Margin (dB)
					Peak (dBuV/m)	AV (dBuV/m)			
4960.50	H	54.72	31.24	17.59	72.31	48.83	74.00	54.00	-5.17
NA									>20
4969.50	V	55.14	31.96	17.59	72.73	49.55	74.00	54.00	-4.45
NA									>20

Notes:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz
 - b. AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz,(The EUT is in CW mode)
5. No additional spurious emissions found between lowest internal generated and 30 MHz

APPENDIX 1
PHOTOGRAPHS OF TEST SETUP

CE TEST SETUP



RE TEST SETUP



CONDUCTED SPURIOUS EMISSION TEST SETUP



APPENDIX 2
PHOTOGRAPHS OF EUT

FRONT VIEW OF SAMPLE



BACK VIEW OF SAMPLE



LEFT VIEW OF SAMPLE



RIGHT VIEW OF SAMPLE

