

APPLICATION FOR CERTIFICATION

On Behalf of

digiO2 International Co., Ltd.

Care Pal dongle

Models No. : CPW-103

FCC ID : X58-CPW-103

Brand : digiO2

Prepared for : digiO2 International Co., Ltd.

4F-13, No. 79, Sec. 1, Hsin Tai Wu Rd.,
Hsi-Chih Dist., New Taipei City 221, Taiwan

Prepared By : AUDIX Technology Corporation

EMC Department

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File Number : C1M1310155

Report Number : EM-F1020772

Date of Test : Oct. 28 ~ Nov. 07, 2013

Date of Report : Nov. 08, 2013

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TEST REPORT CERTIFICATION

Applicant : digiO2 International Co., Ltd.
Manufacturer : digiO2 International Co., Ltd.
Factory : digiO2 International Co., Ltd.
EUT Description : Care Pal dongle
FCC ID : **X58-CPW-103**
(A) Model No. : CPW-103
(B) Serial No. : N/A
(C) Brand : digiO2
(D) Power Supply : DC 5V (Powered by Notebook PC)

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart C, Oct 2012
(FCC CFR 47 Part 15C, §15.205, §15.207, §15.209 and §15.247)
ANSI C63.4/2003
FCC Public Notice DA 00-705, Mar. 2000

The device described above was tested by AUDIX Technology Corporation to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 Subpart C limit.

The measurement results are contained in this test report and AUDIX Technology Corporation is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC Part 15 standard.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX Technology Corporation.

Date of Test : Oct. 28 ~ Nov. 07, 2013

Date of Report : Nov. 08, 2013

Producer : Annie Yu
(Annie Yu/Administrator)

Signatory : Ben Cheng
(Ben Cheng/Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product	Care Pal dongle
Model Number	CPW-103
Serial Number	N/A
Brand Name	digiO2
Applicant	digiO2 International Co., Ltd. 4F-13, No. 79, Sec. 1, Hsin Tai Wu Rd., Hsi-Chih Dist., New Taipei City 221, Taiwan
Manufacturer	digiO2 International Co., Ltd. 4F-13, No. 79, Sec. 1, Hsin Tai Wu Rd., Hsi-Chih Dist., New Taipei City 221, Taiwan
FCC ID	X58-CPW-103
Fundamental Range	2402MHz ~ 2480MHz
Frequency Channel	79 channels
Radio Technology	FHSS (GFSK, $\pi/4$ DQPSK, 8-DPSK)
Data Transfer Rate	3Mbps
Antenna Type	PCB Antenna
Antenna Gain	-0.12dBi
Date of Receipt of Sample	Oct. 14, 2013
Date of Test	Oct. 28 ~ Nov. 07, 2013

1.2. Tested Supporting System Details

1.2.1. NOTEBOOK PC

Model Number : ZL5
 Serial Number : N/A
 Manufacturer : acer
 AC Adapter : LITEON, M/N PA-1650-02
 AC Power Cord : DC Cord: Non-Shielded, Undetachable, 1.8m
 AC Power Cord : Non-Shielded, Detachable, 1.8m

1.3. Description of Test Facility

Name of Firm : **AUDIX Technology Corporation**
EMC Department
 No. 53-11, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan

Test Location & Facility : **No. 8 Shielded Room**
 (C8/AC) No. 53-11, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan

Semi-Anechoic Chamber
 No. 53-11, Dingfu, Linkou Dist.,
 New Taipei City 244, Taiwan
 May 11, 2012 File on
 Federal Communication Commission
 Registration Number: 90993

NVLAP Lab. Code : 200077-0

TAF Accreditation No : 1724

1.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conduction Test	150kHz~30MHz	±1.73dB
Radiation Test (Distance: 3m)	30MHz~300MHz	±2.91dB
	300MHz~1000MHz	±2.94dB
	Above 1GHz	± 5.02dB

Remark : Uncertainty = $ku_c(y)$

Test Item	Uncertainty
20dB Bandwidth	± 0.2kHz
Carrier Frequency Separation	± 0.2kHz
Time Of Occupancy	± 0.03sec
Maximum peak Output power	± 0.52dBm
Emission Limitations	± 0.13dB
Band Edges	± 0.13dB

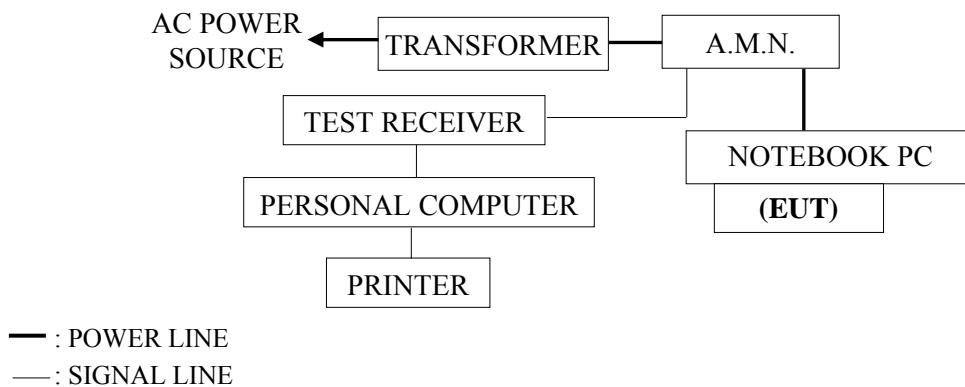
2. POWERLINE CONDUCTED EMISSION MEASUREMENT

2.1. Test Equipment

The following test equipment was used during the conducted emission measurement :
(No. 8 Shielded Room)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCS30	100265	Aug. 22, 13'	Aug. 21, 14'
2.	A.M.N.	R&S	ESH2-Z5	100366	Mar. 19, 13'	Mar. 18, 14'
3.	L.I.S.N.	Kyoritsu	KNW-407	8-881-13	Jan. 21, 13'	Jan. 30, 14'

2.2. Block Diagram of Test Setup



EUT: Care Pal dongle

2.3. Powerline Conducted Emission Limit (§15.207)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB μ V	56 ~ 46 dB μ V
500kHz ~ 5MHz	56 dB μ V	46 dB μ V
5MHz ~ 30MHz	60 dB μ V	50 dB μ V

Remark1.: If the average limit is met when using a Quasi-Peak detector, the EUT shall be deemed to meet both limits and measurement with the average detector is unnecessary.

2.: The lower limit applies at the band edges.

2.4. Operating Condition of EUT

- 2.4.1. Setup the EUT (Care Pal dongle) as shown on 2.2.
- 2.4.2. Turn on the power of all equipment.
- 2.4.3. The Notebook PC was running test software “eHealth RF Test” to set EUT (Care Pal dongle) on transmitting and receiving during all testing.

2.5. Test Procedure

The EUT link AC adapter was put on table which was above the ground by 80cm and power cord was connected to power mains through an Artificial Mains Network (A.M.N.). This provided a 50 ohm coupling impedance for the measuring equipment. (Please refer to the block diagram of the test setup and photographs.) Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions simulators of the interface cables should be manipulated according to FCC ANSI C63.4-2003 during conducted measurement.

The bandwidth of the R & S Test Receiver ESCS30 was set at 9kHz.

The frequency range from 150kHz to 30MHz was checked.

All the final readings from Test Receiver were measured with the Quasi-Peak detector and Average detector. (Remark: If the Average limit is met when using a Quasi-Peak detector, the Average detector is unnecessary)

2.6. Powerline Conducted Emission Measurement Results

PASSED.

(All the emissions not reported below are too low against the prescribed limits.)

EUT was performed during this section testing and all the test results are attached in next pages.

EUT : Care Pal dongle M/N : CPW-103

Test Date : Nov. 07, 2013 Temperature : 22 Humidity : 70%

The details are as follows :

Mode	Reference Test Data	
	Neutral	Line
1.	# 2	# 1

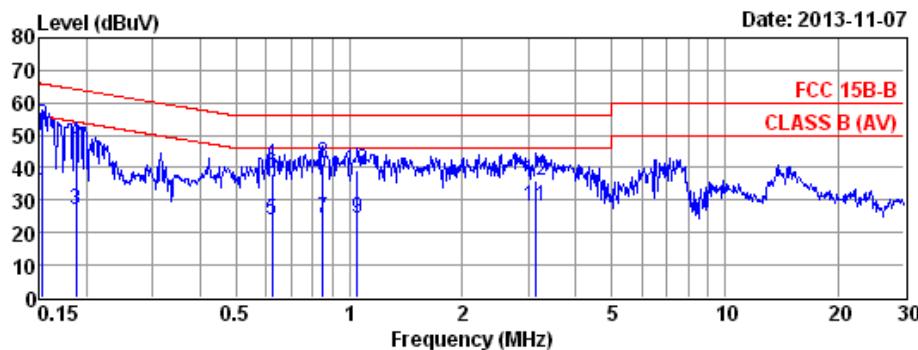


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Data: 2

File: D:\test data\REPORT\2013\C1M1310XXX\C1M1310155-C-D.EM6 (2)

Date: 2013-11-07



Site no. : No.8 Shielded Room Data no. : 2
 Dis. / Ant. : ESH2-Z5 366 Ant. pol. : NEUTRAL
 Limit : FCC 15B-B
 Env. / Ins. : 22°C / 70% ESCS (265) Engineer : Jack_Wu
 EUT : CPW-103
 Power Rating : 120Vac/60Hz
 Test Mode : OPERATING

	AMII.	Cable		Emission				
Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB)	(dB)	(dB μ V)	(dB μ V)	(dB μ V)	(dB)		
1	0.152	0.21	0.03	32.10	32.34	55.87	23.53	Average
2	0.152	0.21	0.03	52.70	52.94	65.87	12.93	QP
3	0.187	0.21	0.03	27.03	27.27	54.15	26.88	Average
4	0.187	0.21	0.03	47.41	47.65	64.15	16.50	QP
5	0.624	0.23	0.04	23.40	23.67	46.00	22.33	Average
6	0.624	0.23	0.04	38.11	38.38	56.00	17.62	QP
7	0.853	0.24	0.05	24.29	24.58	46.00	21.42	Average
8	0.853	0.24	0.05	40.97	41.26	56.00	14.74	QP
9	1.049	0.24	0.05	24.15	24.44	46.00	21.56	Average
10	1.049	0.24	0.05	38.97	39.26	56.00	16.74	QP
11	3.140	0.30	0.10	27.53	27.93	46.00	18.07	Average
12	3.140	0.30	0.10	35.64	36.04	56.00	19.96	QP

Remarks: 1. Emission Level= AMII Factor + Cable Loss + Reading.
 2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

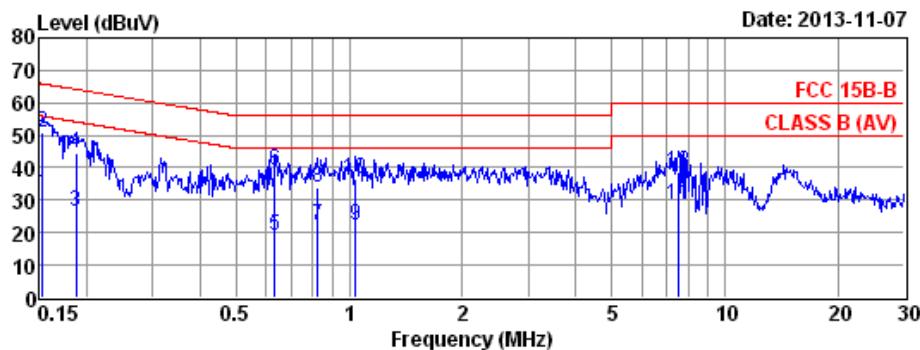


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Data: 1

File: D:\test data\REPORT\2013\C1M1310XXX\C1M1310155-C-D.EM6 (2)

Date: 2013-11-07



Site no. : No.8 Shielded Room Data no. : 1
 Dis. / Ant. : ESH2-Z5 366 Ant. pol. : LINE
 Limit : FCC 15B-B
 Env. / Ins. : 22°C / 70% ESCS (265) Engineer : Jack_Wu
 EUT : CPW-103
 Power Rating : 120Vac/60Hz
 Test Mode : OPERATING

	AMII.	Cable		Emission				
Freq.	Factor	Loss	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB)	(dB)	(dB μ V)	(dB μ V)	(dB μ V)	(dB)		
1	0.152	0.11	0.03	31.87	32.01	55.87	23.86	Average
2	0.152	0.11	0.03	50.55	50.69	65.87	15.18	QP
3	0.187	0.11	0.03	26.58	26.72	54.15	27.43	Average
4	0.187	0.11	0.03	44.61	44.75	64.15	19.40	QP
5	0.634	0.13	0.04	18.96	19.13	46.00	26.87	Average
6	0.634	0.13	0.04	39.06	39.23	56.00	16.77	QP
7	0.826	0.14	0.05	21.87	22.06	46.00	23.94	Average
8	0.826	0.14	0.05	33.81	34.00	56.00	22.00	QP
9	1.037	0.14	0.05	21.85	22.04	46.00	23.96	Average
10	1.037	0.14	0.05	36.12	36.31	56.00	19.69	QP
11	7.486	0.23	0.18	27.96	28.37	50.00	21.63	Average
12	7.486	0.23	0.18	38.09	38.50	60.00	21.50	QP

Remarks: 1. Emission Level = AMII Factor + Cable Loss + Reading.
 2. If the average limit is met when using a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

The following test equipment was used during the radiated emission measurement:

3.1.1. For Frequency Range 30MHz~1000MHz (at Semi-Anechoic Chamber)

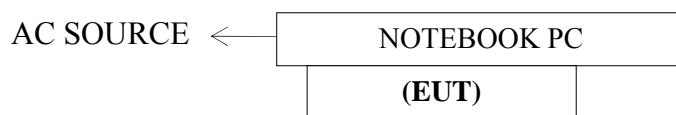
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Jul. 30, 13'	Jul. 29, 14'
2	Test Receiver	R & S	ESCS30	100338	Jul. 01, 13'	Jun. 30, 14'
3	Amplifier	HP	8447D	2944A06305	Feb. 19, 13'	Feb. 18, 14'
4	Log Periodic Antenna	Schwarzbeck	UHALP 9108-A	0810	Mar. 02, 13'	Mar. 01, 14'
5	Biconical Antenna	CHASE	VBA6106A	1264	Mar. 02, 13'	Mar. 01, 14'

3.1.2. For Frequency Above 1GHz (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Jul. 30, 13'	Jul. 29, 14'
2	Test Receiver	R & S	ESCS30	100338	Jul. 01, 13'	Jun. 30, 14'
3	Pre-Amplifier	HP	8449B	3008A02676	Mar. 01, 13'	Feb. 28, 14'
4	2.4GHz Notch Filter	K&L	7NSL10-244 1.5E130.5-0 0	1	Jun. 13, 13'	Jun. 12, 14'
5	3GHz High Pass Filter	Microware Circuits	H3G018G1	484796	Jun. 13, 13'	Jun. 12, 14'
7	Horn Antenna	EMCO	3115	9112-3775	May 07, 13'	May 06, 14'
8	Horn Antenna	EMCO	3116	2653	Oct. 11, 13'	Oct. 10, 14'

3.2. Block Diagram of Test Setup

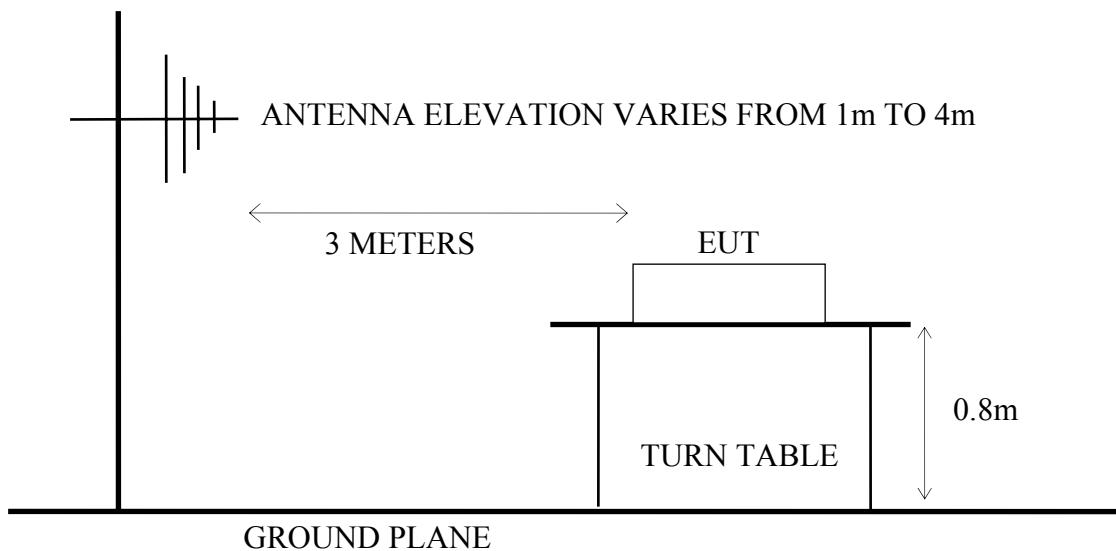
3.2.1. Block Diagram of connection between EUT and simulators



EUT: Care Pal dongle

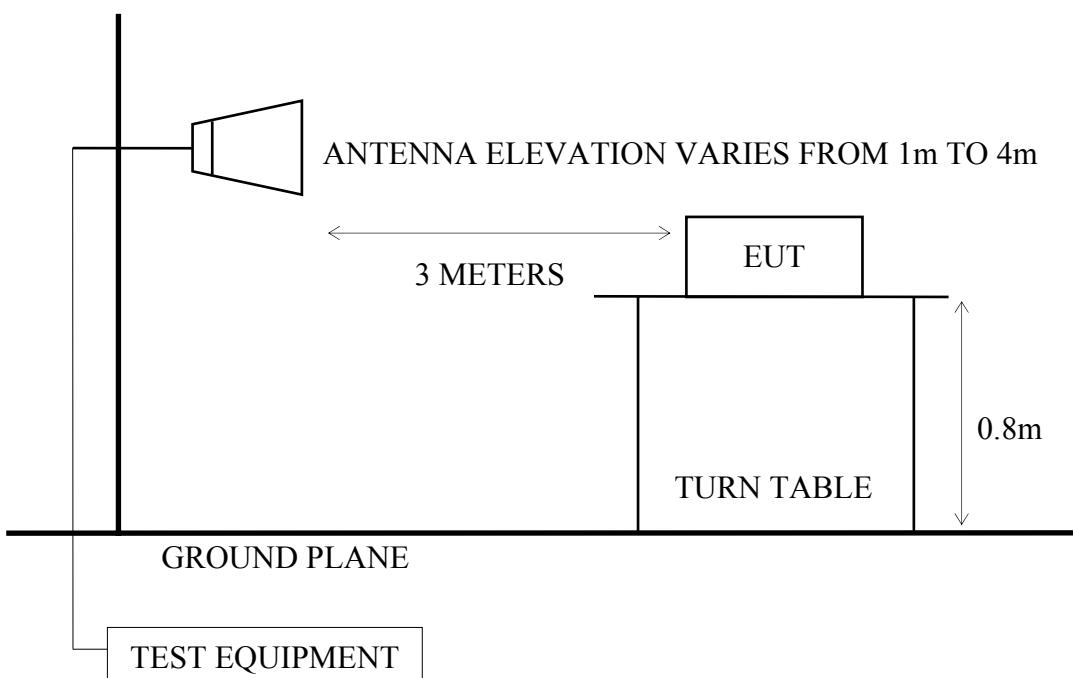
3.2.2. Semi-Anechoic Chamber (3m) Setup Diagram for 30-1000MHz

ANTENNA TOWER



3.2.3. Semi-Anechoic Chamber (3m) Setup Diagram for above 1GHz

ANTENNA TOWER



3.3. Radiated Emission Limits (§15.209)

Frequency MHz	Distance Meters	Field Strengths Limits	
		µV/m	dBµV/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Above 1000	3	74.0 dBµV/m (Peak) 54.0 dBµV/m (Average)	

Remark :

- (1) Emission level (dBµV/m) = 20 log Emission level (µV/m)
- (2) The tighter limit applies at the edge between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- (4) The limits in this table are based on CFR 47 Part 15.205(a)(b) and Part 15.209 (a).
- (5) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.205(b) & Part 15.209(e) and Part 15.207(c).

3.4. Operating Condition of EUT

- 3.4.1. Set up the EUT (Care Pal dongle) as shown on 3.2.1.
- 3.4.2. To turn on the power of all equipments.
- 3.4.3. The EUT set to continuously transmit signals at 2402MHz, 2441MHz and 2480MHz during all test time. (The test program is eHealth RF Test)

3.5. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set 3 meters away from the receiving antenna which was mounted on an antenna tower. The antenna moved up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna such as calibrated biconical and log-periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to FCC ANSI C63.4-2003 regulation, and the measurement guideline was according to FCC Public Notice DA 00-705.

The bandwidth of the R&S Test Receiver ESCS30 was set at 120kHz. (For 30MHz to 1000MHz)

The resolution bandwidth and video bandwidth of test spectrum analyzer is 1MHz for peak detection (PK) at frequency above 1GHz.

The resolution bandwidth of test spectrum analyzer is 1MHz and the video bandwidth is 10Hz for average detection (AV) at frequency above 1GHz.

The frequency range from 30MHz to 25GHz (Up to 10th harmonics from fundamental frequency) was checked. 30MHz to 1000MHz was measured with Quasi-Peak detector. Pursuant to ANSI 4.2.2, peak detector is an alternate option for frequency from 30MHz to 1000MHz.

Above 1GHz was measured with peak and average detector. For frequency from 1GHz to 25GHz, we checked it in 1 meter distance and with a shorter cable 2 meter instead of original's. There is no signal exist.

Pursuant to ANSI C63.4 8.3.1.2, when peak value complies with the average limit, we didn't perform measurement in average detector.

3.6. Radiated Emission Measurement Results

PASSED. (All the emissions not reported below are too low against the prescribed limits.)

EUT : Care Pal dongle M/N : CPW-103

Test Date : Nov. 07, 2013 Temperature : 26 Humidity : 54%

For Frequency Range 30MHz-1000MHz:

[Note: Three types of modulation (8-DPSK, π/4DQPSK, GFSK) were evaluated but only the worst case (8-DPSK) was reported in this report.]

The EUT with following test modes were performed during this section testing and all the test results are listed in section 3.6.1.

No.	Channel	Frequency	Operating	Reference Test Data No.	
				Horizontal	Vertical
1	CH 0	2402MHz	Transmit	# 1	# 4
2	CH 39	2441MHz		# 2	# 5
3	CH 78	2480MHz		# 3	# 6

* Type of modulation: 8-DPSK.

* All above final readings were measured with Peak detector.

For Frequency above 1GHz:

The emissions (up to 25GHz) not reported are too low to be measured.

For Restricted Bands:

[Note: Three types of modulation (8-DPSK, π/4DQPSK, GFSK) were evaluated but only the worst case (8-DPSK) was reported in this report.]

The EUT with following test modes was performed during this section testing and all the test results are listed in section 3.6.2. (The restricted bands defined in part 15.205(a))

No.	Channel	Frequency	Test Mode	Reference Test Data No.	
				Horizontal	Vertical
1	CH 0	2402MHz	Transmitting	# 1, 2	# 3, 4
2	CH 78	2480MHz		# 5, 6	# 7, 8

3.6.1. Frequency Range 30MHz-1000MHz Measurement Result

Transmit, Frequency: 2402MHz (8-DPSK)

Site no. : Audix NO.1 Chamber Data no. : 1
 Dis. / Ant. : 3m CBL6112D 33821 Ant. pol. : HORIZONTAL
 Limit : 30M-1G
 Env. / Ins. : 26*C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2402MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 250.19	13.00	3.50	15.11	31.61	46.00	14.39	Peak
2 482.99	17.56	6.10	8.01	31.67	46.00	14.33	Peak
3 828.31	20.94	7.10	8.99	37.03	46.00	8.97	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : Audix NO.1 Chamber Data no. : 4
 Dis. / Ant. : 3m CBL6112D 33821 Ant. pol. : VERTICAL
 Limit : 30M-1G
 Env. / Ins. : 26*C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2402MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 36.79	15.84	1.20	14.19	31.23	40.00	8.77	Peak
2 484.99	17.58	6.20	6.50	30.28	46.00	15.72	Peak
3 829.28	20.95	7.10	3.01	31.06	46.00	14.94	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Transmit, Frequency: 2441MHz (8-DPSK)

Site no. : Audix NO.1 Chamber Data no. : 2
 Dis. / Ant. : 3m CBL6112D 33821 Ant. pol. : HORIZONTAL
 Limit : 30M-1G
 Env. / Ins. : 26°C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2441MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 249.22	12.92	3.50	14.70	31.12	46.00	14.88	Peak
2 484.93	17.58	6.20	8.87	32.65	46.00	13.35	Peak
3 880.25	20.98	7.10	9.34	37.40	46.00	8.60	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : Audix NO.1 Chamber Data no. : 5
 Dis. / Ant. : 3m CBL6112D 33821 Ant. pol. : VERTICAL
 Limit : 30M-1G
 Env. / Ins. : 26°C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2441MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 36.79	15.84	1.20	14.30	31.34	40.00	8.66	Peak
2 482.02	17.54	6.10	9.91	33.55	46.00	12.45	Peak
3 911.73	21.72	7.40	3.84	32.96	46.00	13.04	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Transmit, Frequency: 2480MHz (8-DPSK)

Site no. : Audix NO.1 Chamber Data no. : 3
 Dis. / Ant. : 3m CBL6112D 33821 Ant. pol. : HORIZONTAL
 Limit : 30M-1G
 Env. / Ins. : 26*C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2480MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 250.19	13.00	3.50	15.29	31.79	46.00	14.21	Peak
2 488.98	17.57	6.14	7.27	30.98	46.00	15.02	Peak
3 828.31	20.94	7.10	8.92	36.96	46.00	9.64	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Site no. : Audix NO.1 Chamber Data no. : 6
 Dis. / Ant. : 3m CBL6112D 33821 Ant. pol. : VERTICAL
 Limit : 30M-1G
 Env. / Ins. : 26*C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2480MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 36.79	15.84	1.20	14.99	32.03	40.00	7.97	Peak
2 515.97	18.02	6.80	10.25	35.07	46.00	10.93	Peak
3 827.34	20.93	7.04	3.60	31.57	46.00	14.43	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

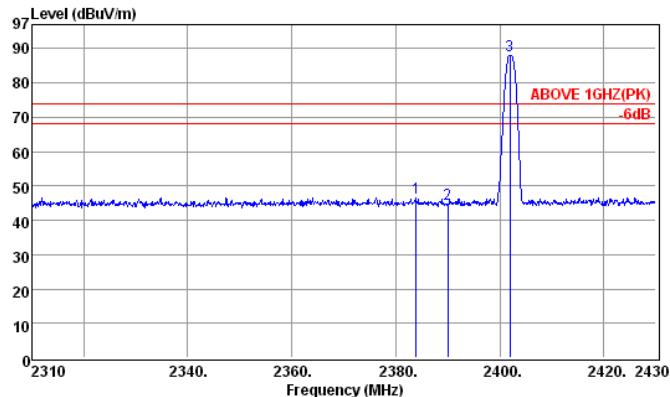
3.6.2. Restricted Bands Measurement Results

Date of Test : Nov. 07, 2013 Temperature : 26

EUT : Care Pal dongle Humidity : 54%

Test Mode : Transmitting Mode, Frequency: 2402MHz (CH0), 8-DPSK

Data: 1 File: C:\Documents and Settings\RF\桌面\1M1310155 BTBT\8DPSK OUT OF BAND.EM6

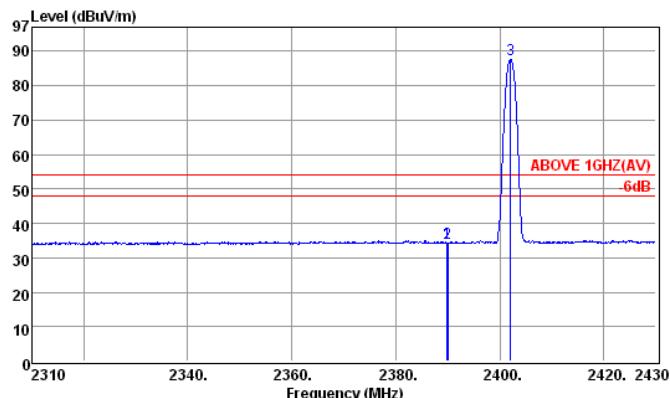


Site no. : Audix NO.1 Chamber Data no. : 1
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 26°C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2402MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 2388.92	28.43	6.33	11.80	46.56	74.00	27.44	Peak
2 2390.04	28.47	6.34	9.77	44.58	74.00	29.42	Peak
3 2401.82	28.47	6.36	53.20	88.03	74.00	-14.03	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Data: 2 File: C:\Documents and Settings\RF\桌面\1M1310155 BTBT\8DPSK OUT OF BAND.EM6



Site no. : Audix NO.1 Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 26°C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2402MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 2388.92	28.47	6.34	-0.42	34.39	54.00	19.61	Average
2 2390.04	28.47	6.34	-0.49	34.32	54.00	19.68	Average
3 2402.04	28.47	6.36	52.80	87.73	54.00	-33.73	Average

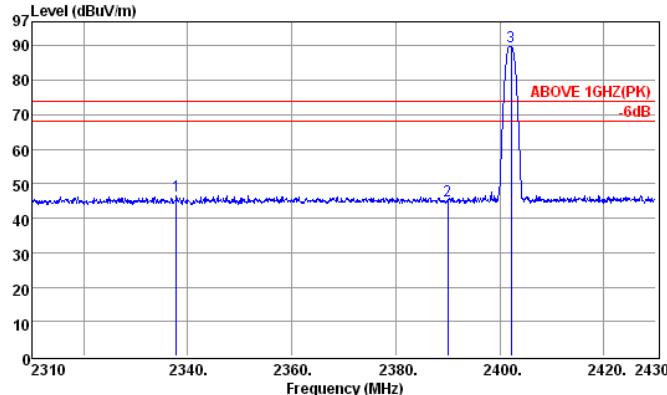
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Nov. 07, 2013 Temperature : 26

EUT : Care Pal dongle Humidity : 54%

Test Mode : Transmitting Mode, Frequency: 2402MHz (CH0) , 8-DPSK

Data: 3 File: C:\Documents and Settings\RF\桌面\1M1310155 BTBT\8DPSK OUT OF BAND.EM6

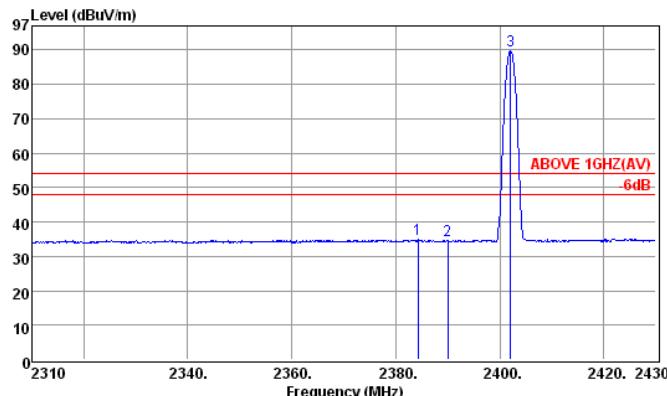


Site no. : Audix NO.1 Chamber Data no. : 3
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 26°C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2402MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 2337.84	28.96	6.27	11.97	46.60	74.00	27.40	Peak
2 2390.04	28.47	6.34	10.90	45.11	74.00	28.89	Peak
3 2402.16	28.47	6.36	55.04	89.87	74.00	-15.87	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Data: 4 File: C:\Documents and Settings\RF\桌面\1M1310155 BTBT\8DPSK OUT OF BAND.EM6



Site no. : Audix NO.1 Chamber Data no. : 4
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 26°C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2402MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 2334.28	28.43	6.33	0.23	34.99	54.00	19.01	Average
2 2390.04	28.47	6.34	-0.25	34.56	54.00	19.44	Average
3 2402.04	28.47	6.36	54.86	89.69	54.00	-35.63	Average

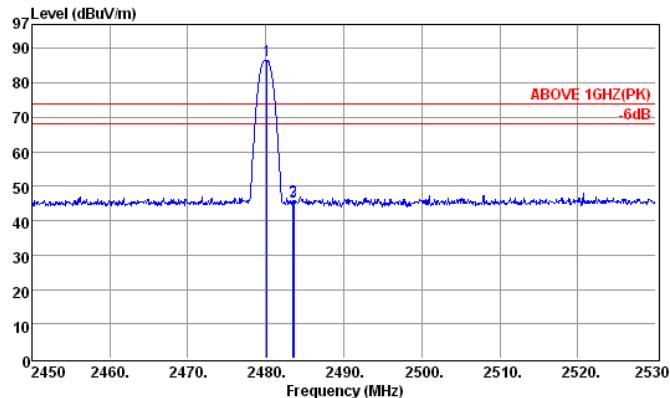
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Nov. 07, 2013 Temperature : 26

EUT : Care Pal dongle Humidity : 54%

Test Mode : Transmitting Mode, Frequency: 2480MHz (CH78) , 8-DPSK

Data: 5 File: C:\Documents and Settings\RF桌面\1M1310155 BTBT\8DPSK OUT OF BAND.EM6

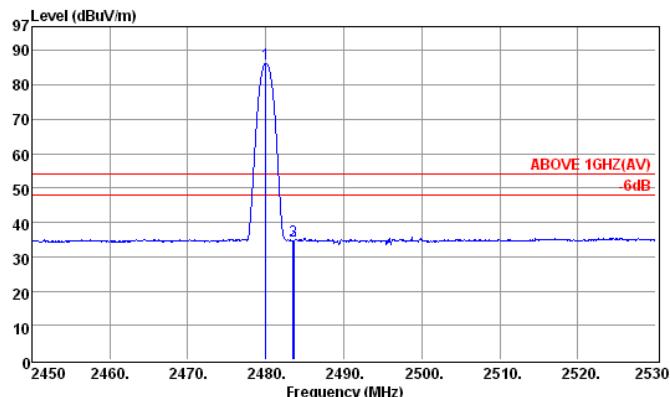


Site no. : Audix NO.1 Chamber Data no. : 5
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 26°C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2480MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 2480.16	28.66	6.44	51.41	86.51	74.00	-12.51	Peak
2 2488.52	28.66	6.45	10.56	45.67	74.00	28.33	Peak
3 2488.60	28.66	6.45	10.32	45.43	74.00	28.57	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Data: 6 File: C:\Documents and Settings\RF桌面\1M1310155 BTBT\8DPSK OUT OF BAND.EM6



Site no. : Audix NO.1 Chamber Data no. : 6
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : HORIZONTAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 26°C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2480MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 2480.00	28.66	6.44	51.21	86.81	54.00	-32.81	Average
2 2488.52	28.66	6.45	-0.49	34.62	54.00	19.38	Average
3 2488.60	28.66	6.45	-0.47	34.64	54.00	19.36	Average

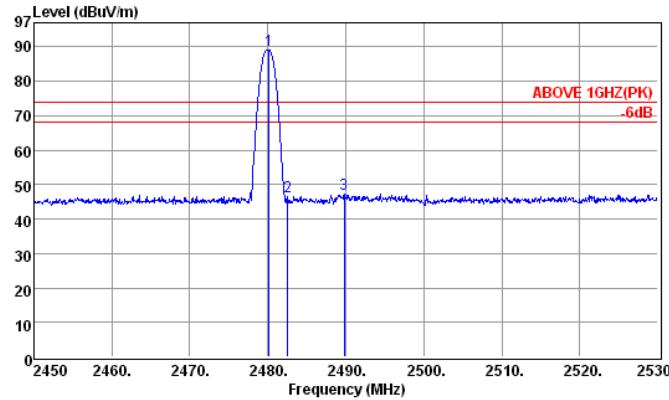
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Date of Test : Nov. 07, 2013 Temperature : 26

EUT : Care Pal dongle Humidity : 54%

Test Mode : Transmitting Mode, Frequency: 2480MHz (CH78) , 8-DPSK

Data: 7 File: C:\Documents and Settings\RF\桌面\1M1310155 BT\BT\8DPSK OUT OF BAND.EM6

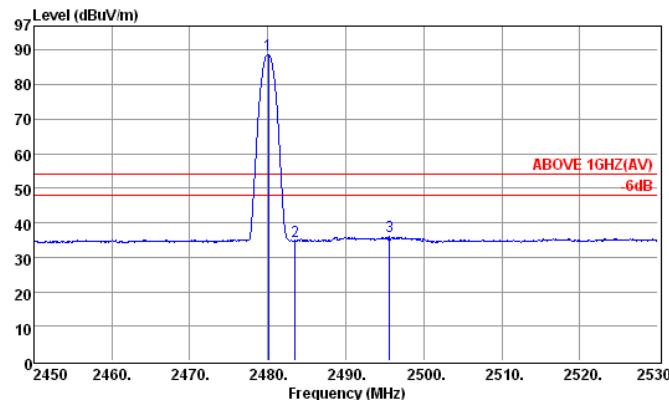


Site no. : Audix NO.1 Chamber Data no. : 7
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(PK)
 Env. / Ins. : 28°C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2480MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 2480.16	28.66	6.44	53.89	88.99	74.00	-14.99	Peak
2 2482.56	28.66	6.45	11.47	46.58	74.00	27.42	Peak
3 2488.84	28.70	6.46	12.14	47.80	74.00	26.70	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Data: 8 File: C:\Documents and Settings\RF\桌面\1M1310155 BT\BT\8DPSK OUT OF BAND.EM6



Site no. : Audix NO.1 Chamber Data no. : 8
 Dis. / Ant. : 3m 3115(4927) Ant. pol. : VERTICAL
 Limit : ABOVE 1GHZ(AV)
 Env. / Ins. : 28°C / 54% N9030A(140) Engineer : Johnny_Hsueh
 EUT : CarePal dongle M/N:CPW-103
 Power Rating : DC 5.0V(Via Usb)
 Test Mode : 8DPSK(Tx2480MHz)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dB μ V)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Remark
1 2480.08	28.66	6.44	53.71	88.81	54.00	-34.81	Average
2 2483.52	28.66	6.45	-0.46	34.65	54.00	19.35	Average
3 2495.60	28.70	6.46	0.85	36.01	54.00	17.99	Average

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

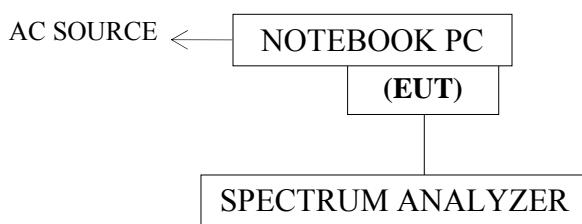
4. 20dB BANDWIDTH MEASUREMENT

4.1. Test Equipment

The following test equipment was used during the 20dB bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Jul. 30, 13'	Jul. 29, 14'

4.2. Block Diagram of Test Setup



EUT: Care Pal dongle

4.3. Specification Limits [§15.247(a)(1)]

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

4.4. Operating Condition of EUT

- 4.4.1. Set up the EUT and simulator as shown on 4.2.
- 4.4.2. To turn on the power of all equipment.
- 4.4.3. The EUT (Care Pal dongle) linked Notebook PC, the test program “eHealth RF Test” was used to enable the EUT to transmit data at different channel frequency individually.

4.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The RBW of the fundamental frequency was measure by spectrum analyzer 1% of the 20dB bandwidth and the setting equal to RBW and VBW is equal to RBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

The measurement guideline was according to FCC Public Notice DA 00-705.

4.6. Test Results

PASSED. All the test results are attached in next pages.

[Note: Three types of modulation (8-DPSK,π /4DQPSK, GFSK) were evaluated but only two types of modulation (8-DPSK and GFSK) were reported in this report.]

Test Date : Oct. 28, 2013 Temperature : 26 Humidity : 54%

4.6.1. Type of Modulation: 8-DPSK

No.	Channel	Test Frequency	20dB Bandwidth	2/3 (20dB Bandwidth)
1.	0	2402MHz	1.299MHz	0.866MHz
2.	39	2441MHz	1.296MHz	0.864MHz
3.	78	2480MHz	1.290MHz	0.860MHz

The maximum two-thirds of the 20dB bandwidth shall be at maximum 0.866MHz.

4.6.2. Type of Modulation: GFSK

No.	Channel	Test Frequency	20dB Bandwidth	2/3 (20dB Bandwidth)
1.	0	2402MHz	0.930MHz	0.620MHz
2.	39	2441MHz	0.924MHz	0.616MHz
3.	78	2480MHz	0.924MHz	0.616MHz

The maximum two-thirds of the 20dB bandwidth shall be at maximum 0.620MHz.

Figure 1: 8-DPSK, Channel 0, Frequency: 2402MHz

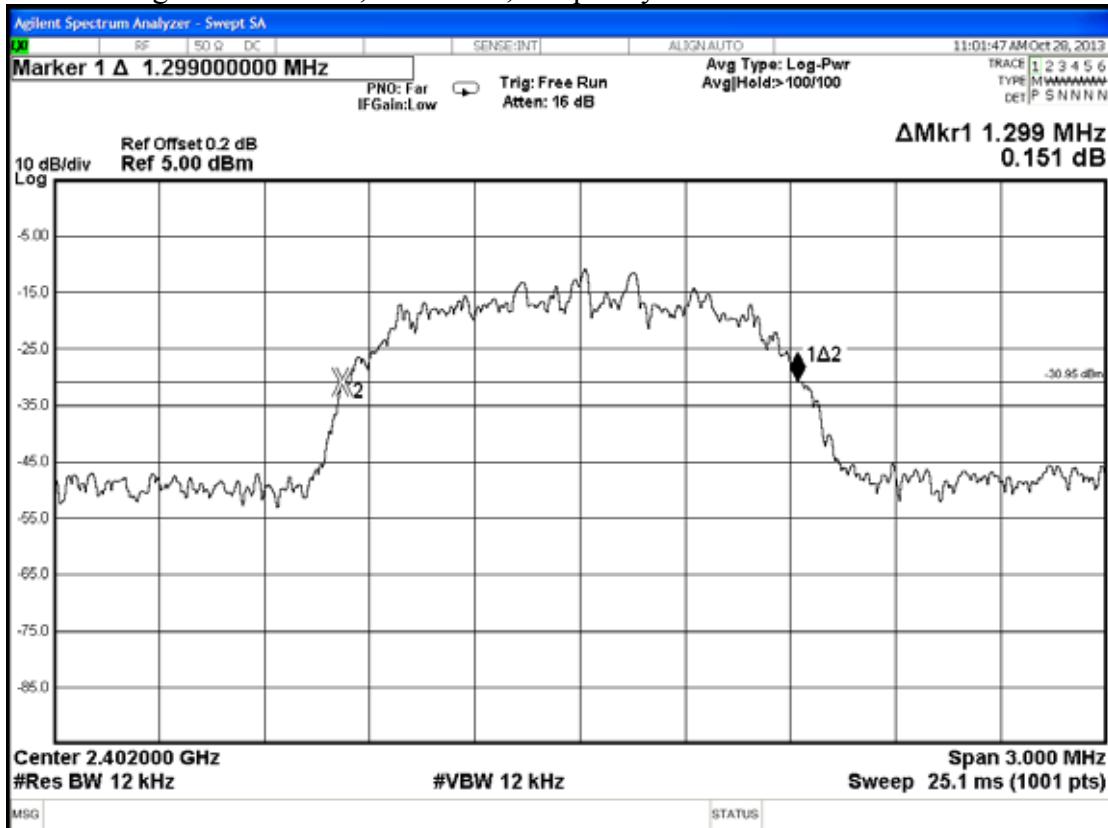


Figure 2: 8-DPSK, Channel 39, Frequency: 2441MHz



Figure 3: 8-DPSK, Channel 78, Frequency: 2480MHz

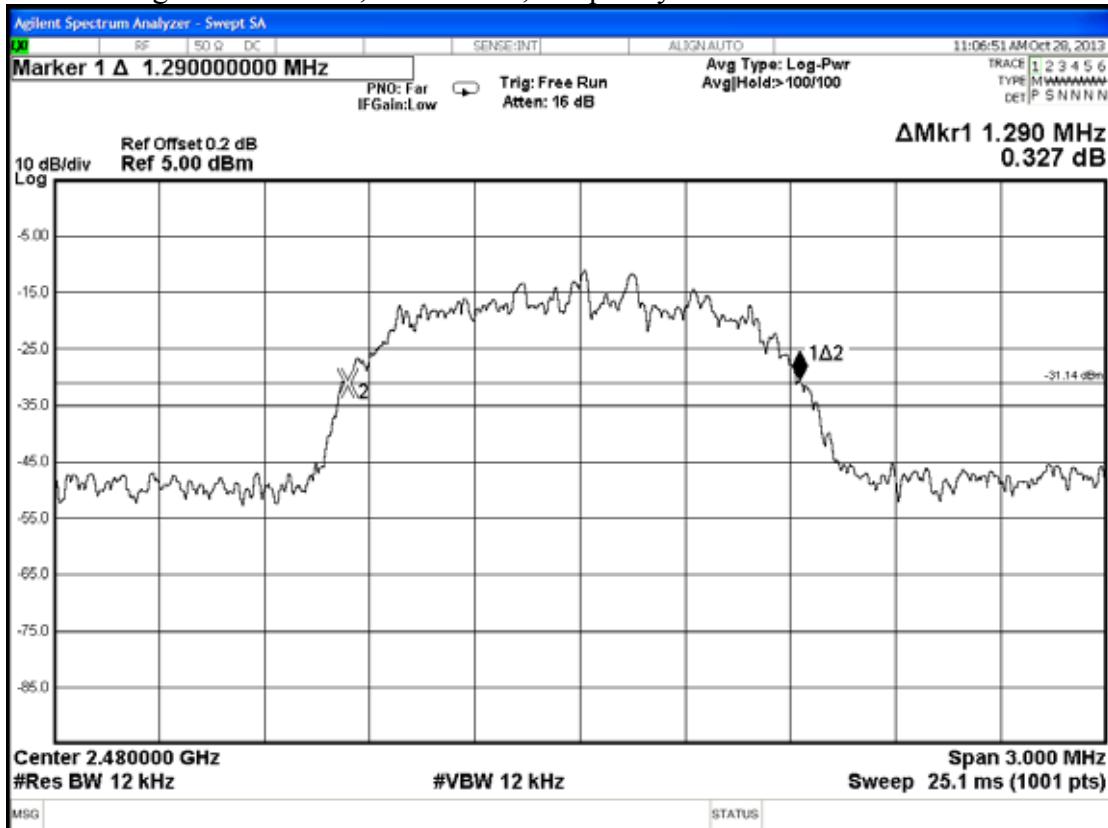


Figure 4: GFSK, Channel 0, Frequency: 2402MHz

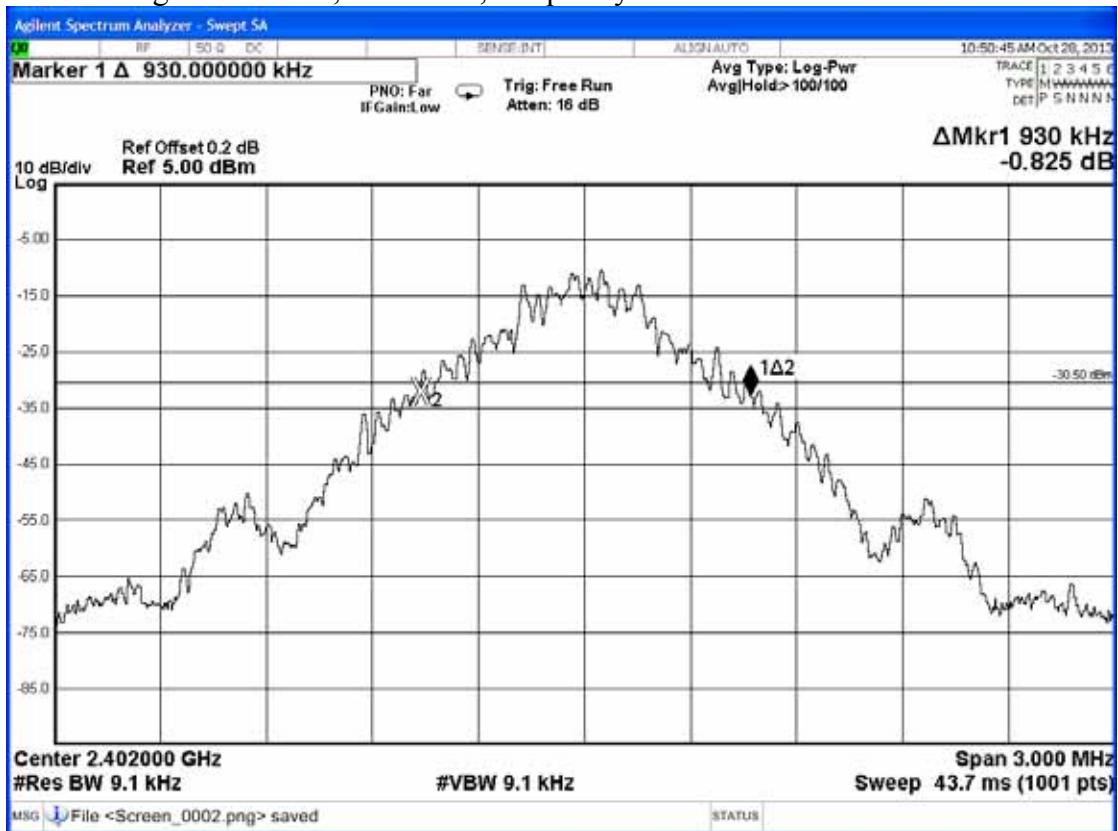


Figure 5: GFSK, Channel 39, Frequency: 2441MHz



Figure 6: GFSK, Channel 78, Frequency: 2480MHz



5. CARRIER FREQUENCY SEPARATION MEASUREMENT

5.1. Test Equipment

The following test equipment was used during the carrier frequency separation measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Jul. 30, 13'	Jul. 29, 14'

5.2. Block Diagram of Test Setup

The same as section 4.2.

5.3. Specification Limits [§15.247(a)(1)]

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output no greater than 125mW.

5.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

5.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The channel separation was measured by spectrum analyzer with RBW equal to 1% of the span. The video bandwidth not to be smaller than resolution bandwidth, the peak was marked on adjacent bandwidth, the between of peak is carrier frequency separation. The measurement guideline was according to FCC Public Notice DA 00-705.

5.6. Test Results

PASSED. All the test results are attached in next pages.

[Note: Three types of modulation (8-DPSK,π /4DQPSK, GFSK) were evaluated but only two types of modulation (8-DPSK and GFSK) were reported in this report.]

Test Date : Oct. 28, 2013 Temperature : 26 Humidity : 54%

5.6.1. Type of Modulation: 8-DPSK

1. 2402MHz adjacent channel of carrier frequency separation: 1.000MHz.
2. 2441MHz adjacent channel of right carrier frequency separation: 1.000MHz.
3. 2441MHz adjacent channel of left carrier frequency separation: 1.000MHz.
4. 2480MHz adjacent channel of carrier frequency separation: 1.000MHz.

[Above values have met the requirement as specified in section 4.3: 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.]

5.6.2. Type of Modulation: GFSK

1. 2402MHz adjacent channel of carrier frequency separation: 1.000MHz.
2. 2441MHz adjacent channel of right carrier frequency separation: 1.000MHz.
3. 2441MHz adjacent channel of left carrier frequency separation: 1.000MHz.
4. 2480MHz adjacent channel of carrier frequency separation: 1.000MHz.

[Above values have met the requirement as specified in section 4.3: 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.]

Figure 1: 8-DPSK, 2402MHz adjacent channel of carrier frequency separation

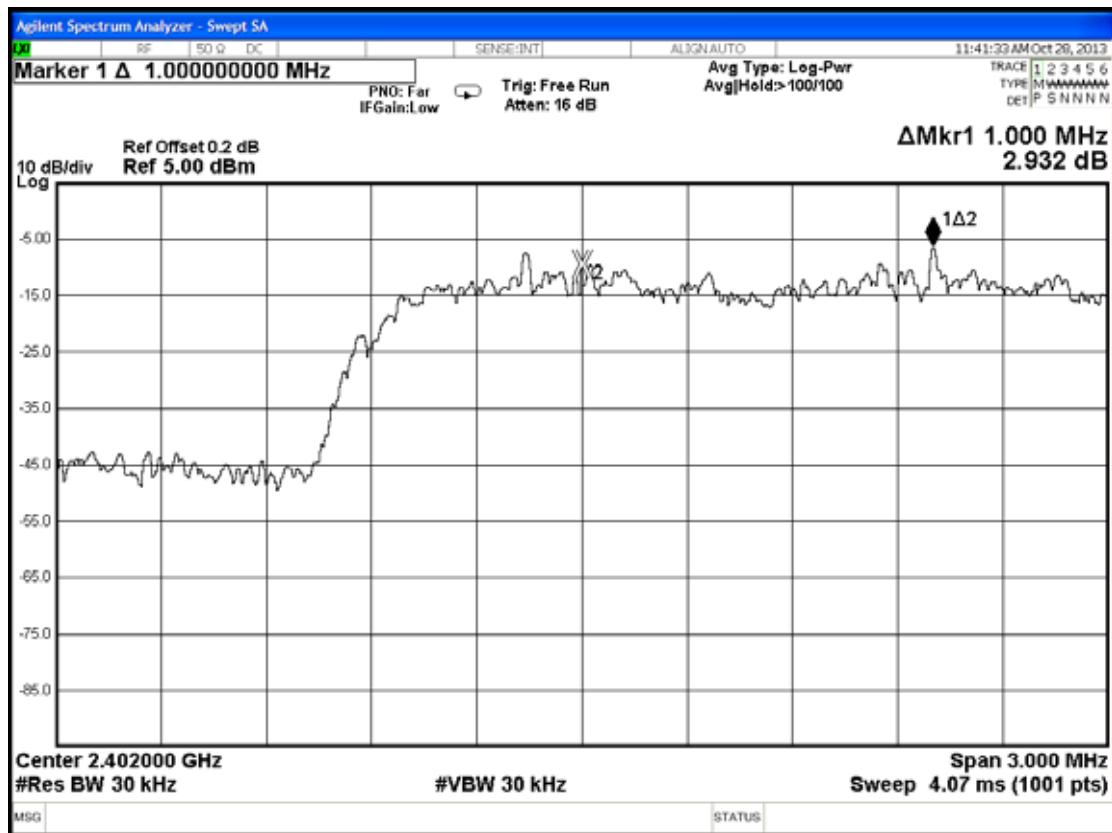


Figure 2: 8-DPSK, 2441MHz adjacent channel of left carrier frequency separation

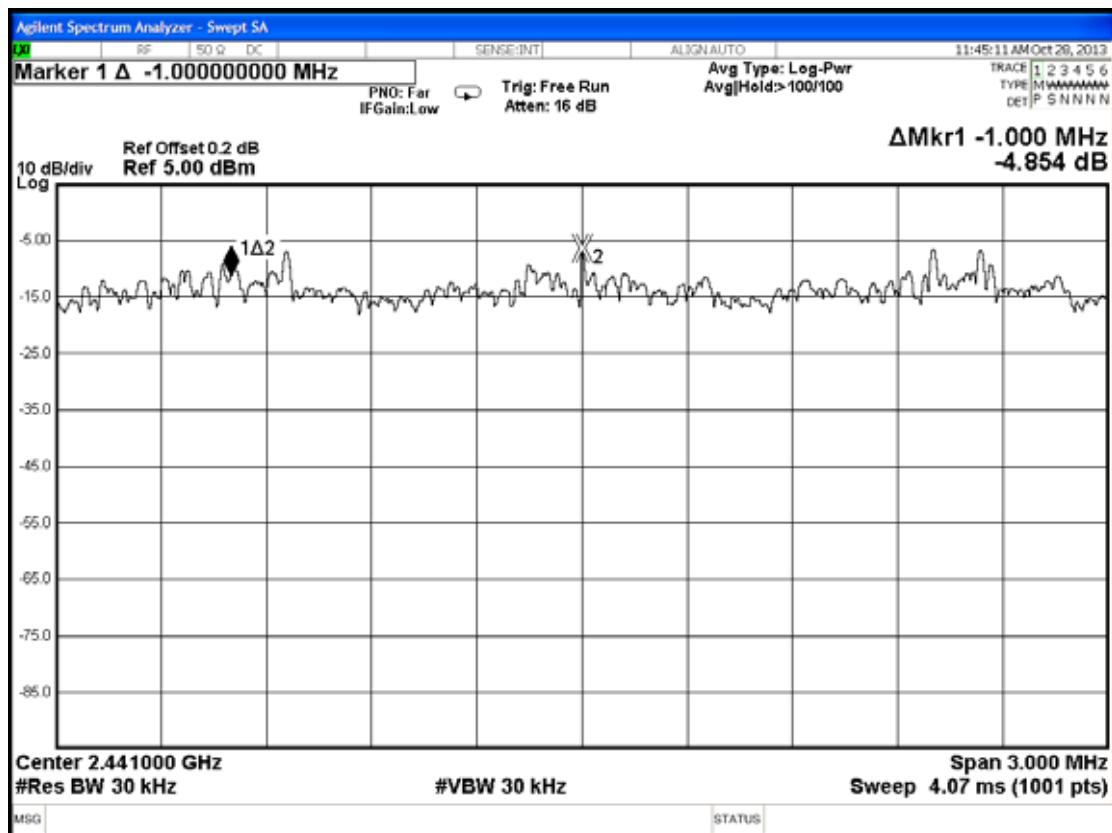


Figure 3: 8-DPSK, 2441MHz adjacent channel of right carrier frequency separation

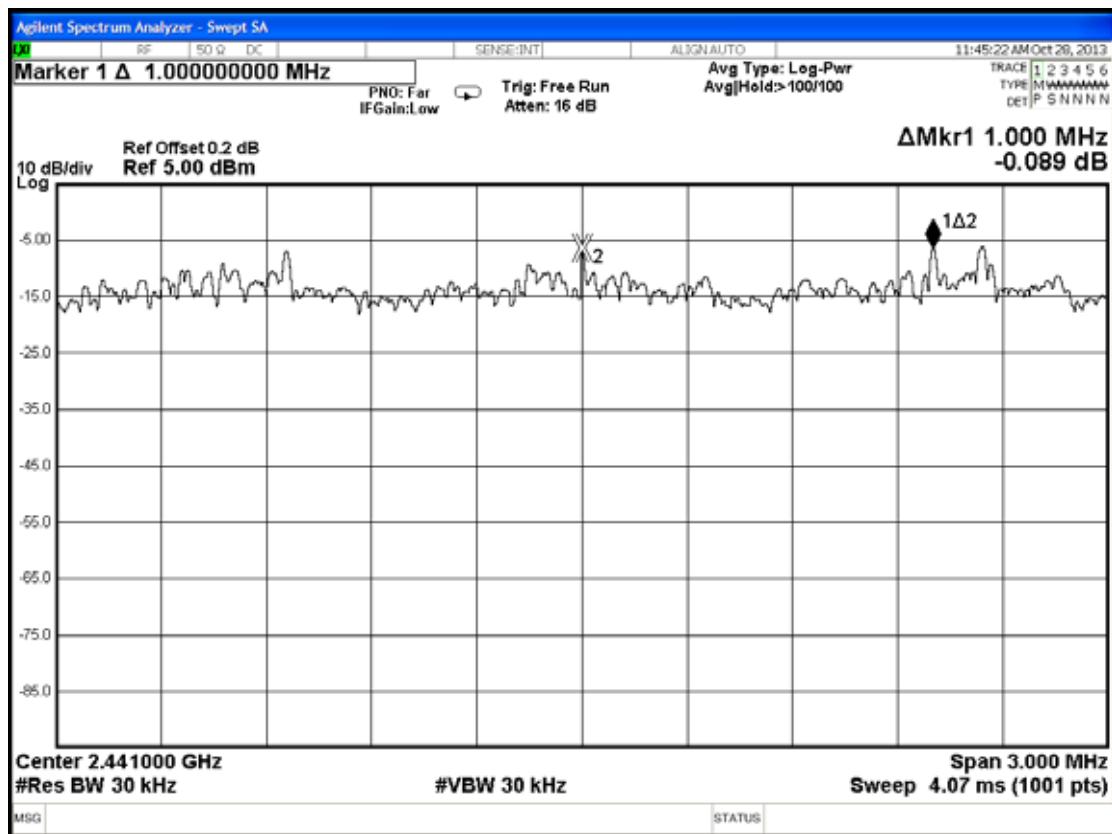


Figure 4: 8-DPSK, 2480MHz adjacent channel of carrier frequency separation



Figure 5: GFSK, 2402MHz adjacent channel of carrier frequency separation



Figure 6: GFSK, 2441MHz adjacent channel of left carrier frequency separation

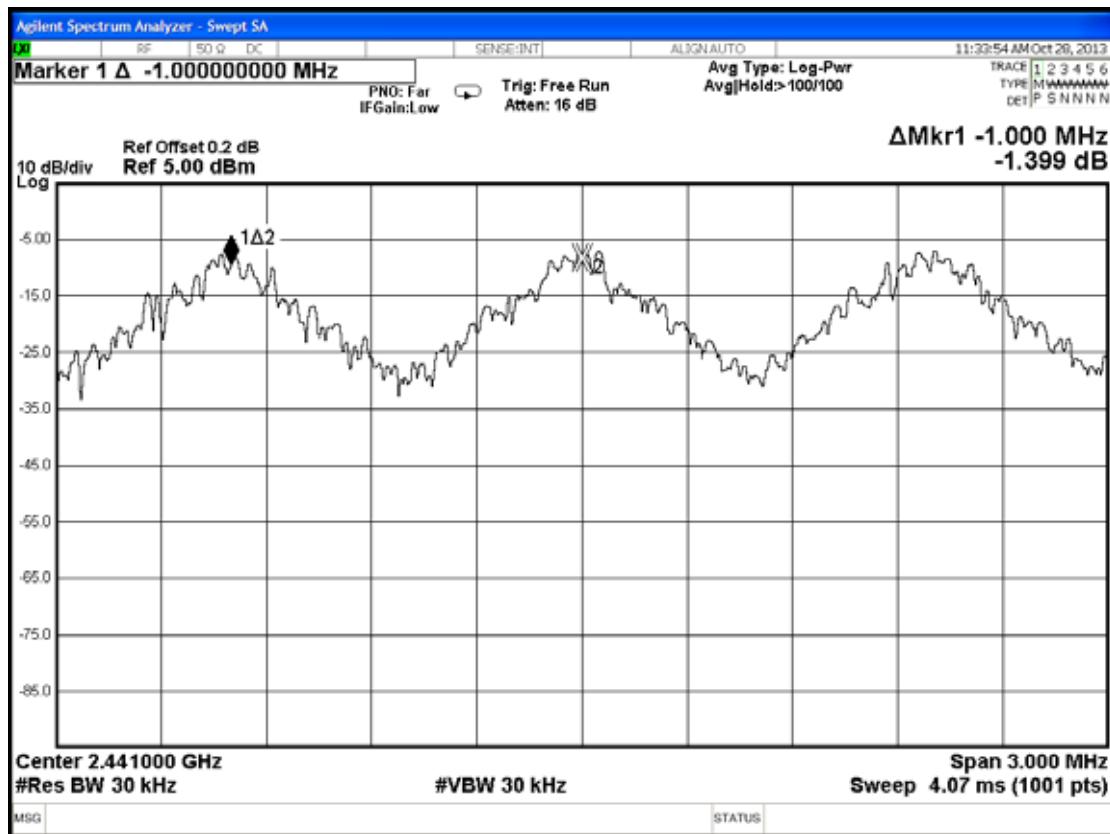


Figure 7: GFSK, 2441MHz adjacent channel of right carrier frequency separation

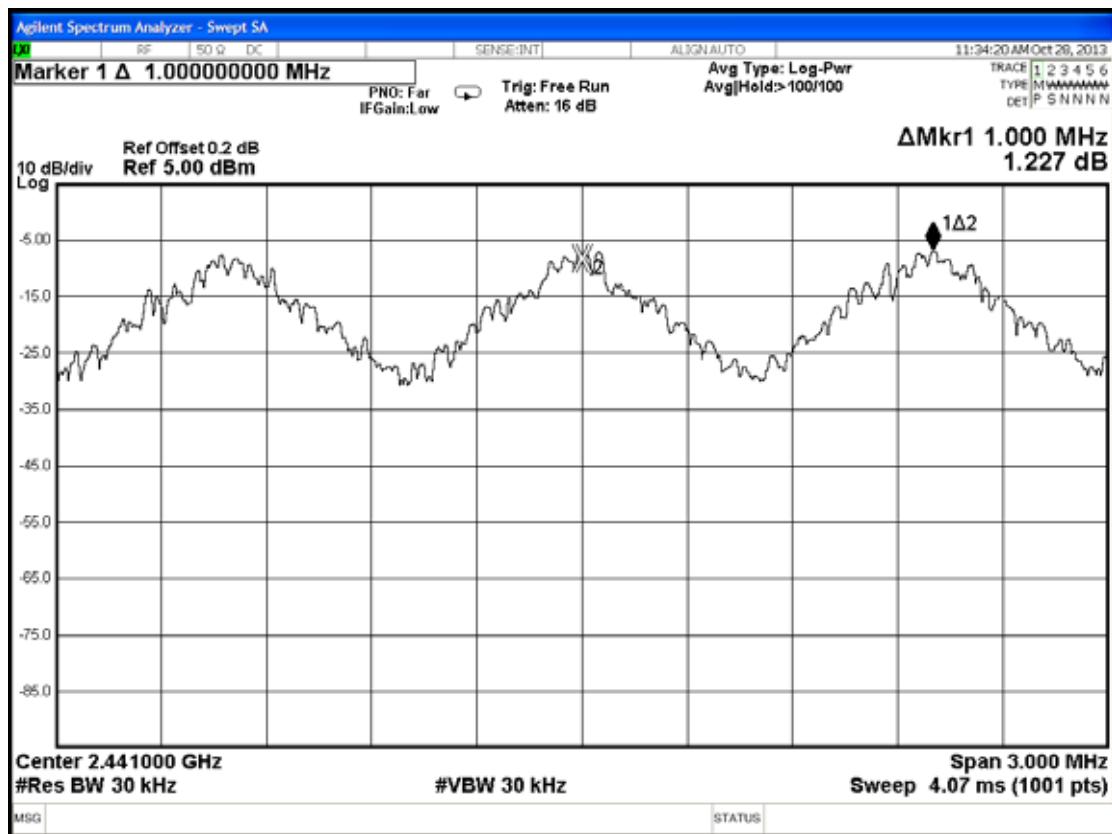
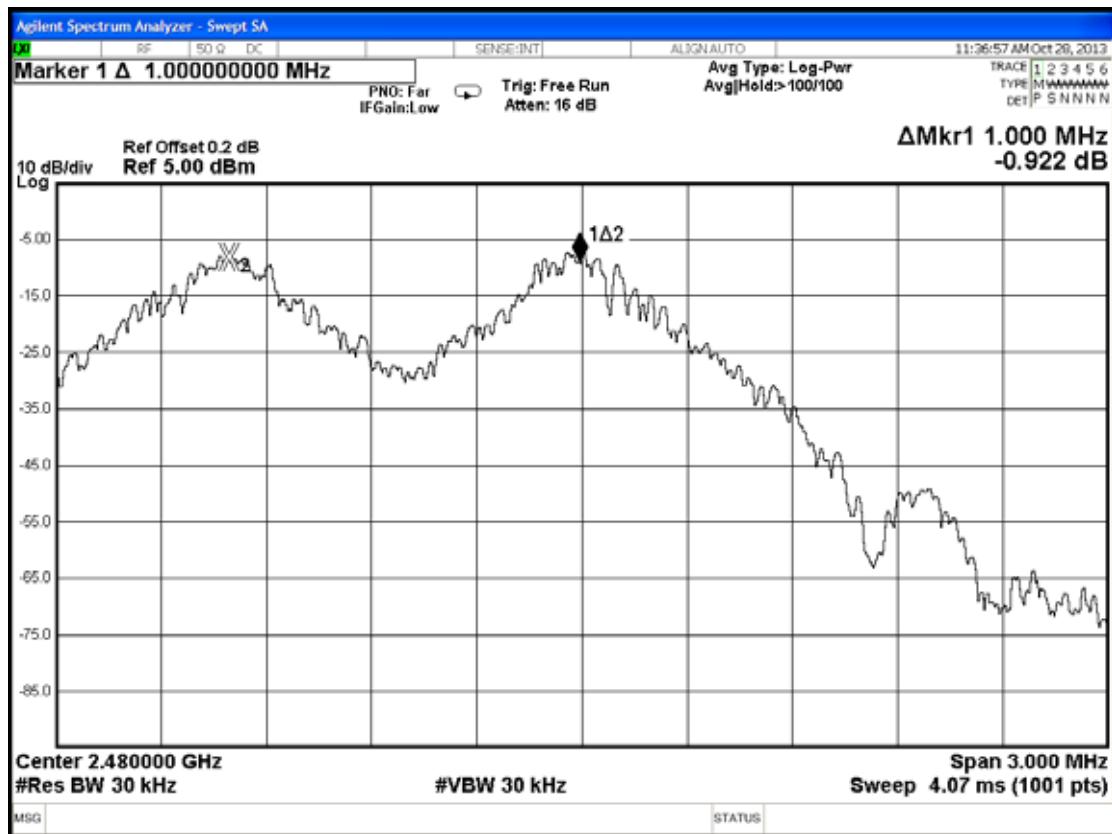


Figure 8: GFSK, 2480MHz adjacent channel of carrier frequency separation



6. TIME OF OCCUPANCY MEASUREMENT

6.1. Test Equipment

The following test equipment was used during the time of occupancy measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Jul. 30, 13'	Jul. 29, 14'

6.2. Block Diagram of Test Setup

The same as section 4.2.

6.3. Specification Limits [§15.247(a)(1)(iii)]

Frequency hopping systems in the 2400-2483.5MHz 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 number of hopping channels employed.

6.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

6.5. Test Procedure

The EUT was connected to the notebook. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 1MHz RBW and 1MHz VBW. $VBW \geq RBW$; Span=zero span.

Centred on a hopping channel sweep=as necessary to capture the entire dwell time per hopping channel; Detector function=peak; Trace=Max hold

The measurement guideline was according to FCC Public Notice DA 00-705.

6.6. Test Results

PASSED. All the test results are attached in next pages.

[Note: Three types of modulation (8-DPSK,π /4DQPSK, GFSK) were evaluated but only two types of modulation (8-DPSK and GFSK) were reported in this report.]

Test Date : Nov. 06, 2013 Temperature : 25 Humidity : 55%

6.6.1. Type of Modulation : 8-DPSK, Test Frequency : 2441MHz

Duty cycle: $79\text{channels} \times 0.4\text{ seconds} = 31.6\text{ seconds}$

3DH1 : For each 5 seconds of 50 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

$$50\text{ channels} \times 31.6\text{ seconds} / 5 \times 0.468\text{ms} = 147.888\text{ms} (<400\text{ms})$$

3DH3 : For each 5 seconds of 26 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

$$26\text{ channels} \times 31.6\text{ seconds} / 5 \times 1.036\text{ms} = 170.236\text{ms} (<400\text{ms})$$

3DH5 : For each 5 seconds of 17 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

$$17\text{ channels} \times 31.6\text{ seconds} / 5 \times 1.608\text{ms} = 172.764\text{ms} (<400\text{ms})$$

Figure 1: 8-DPSK, 2441MHz, 3DH1

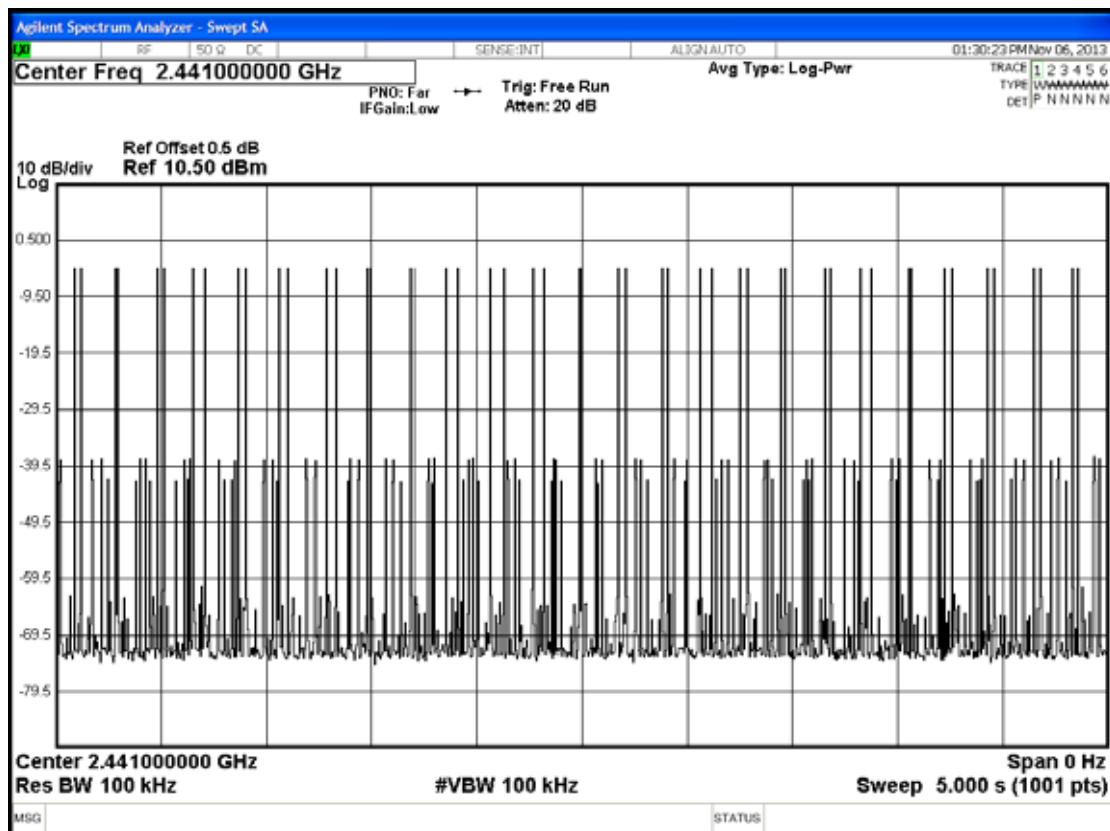
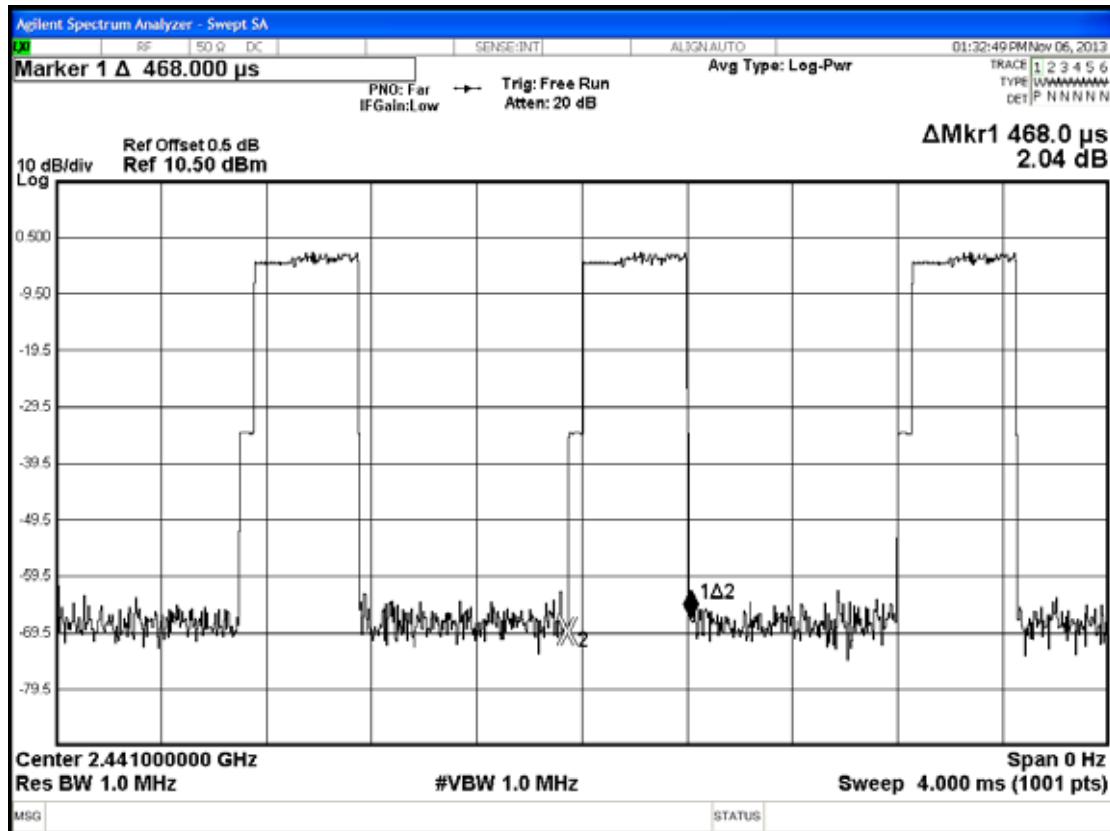


Figure 2: 8-DPSK, 2441MHz, 3DH3

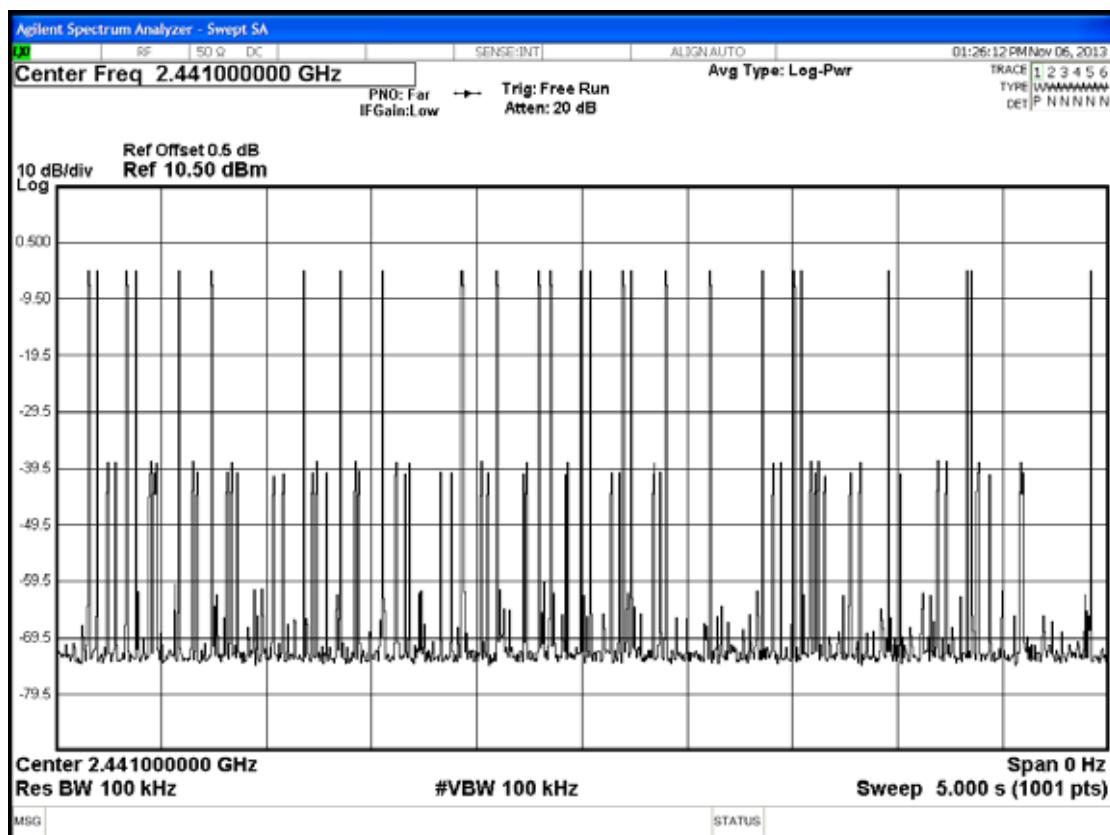
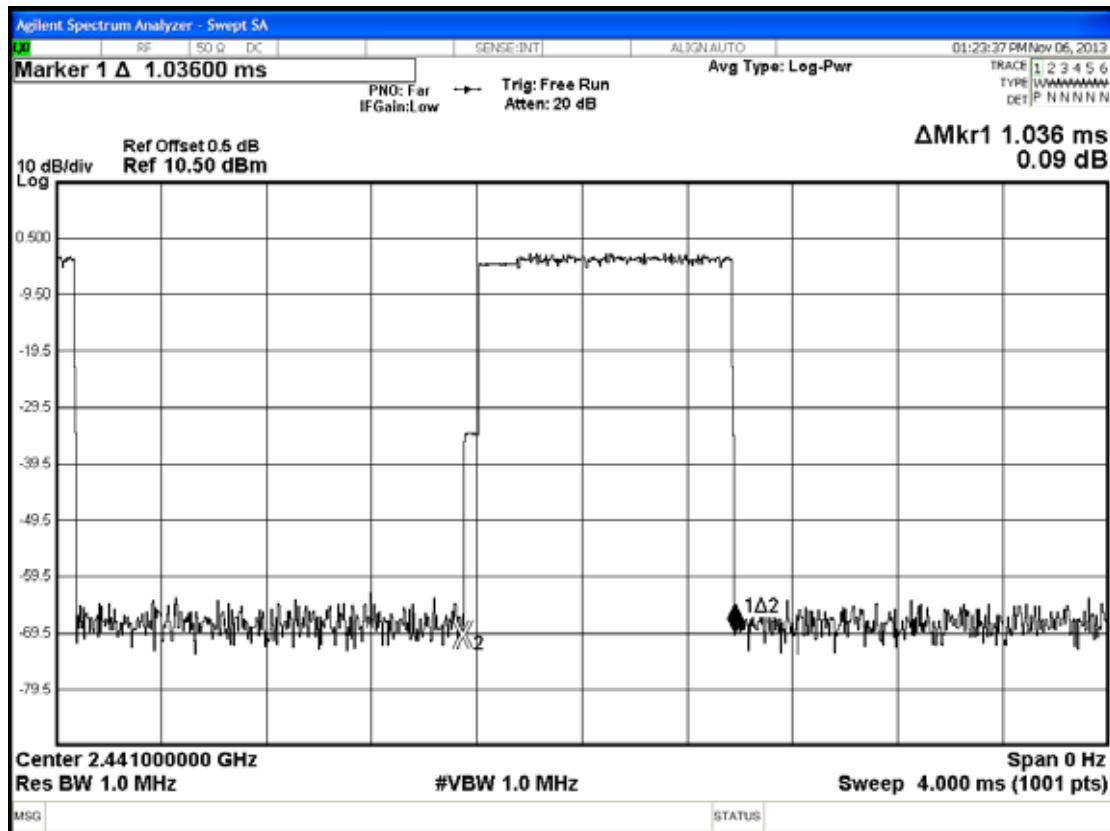
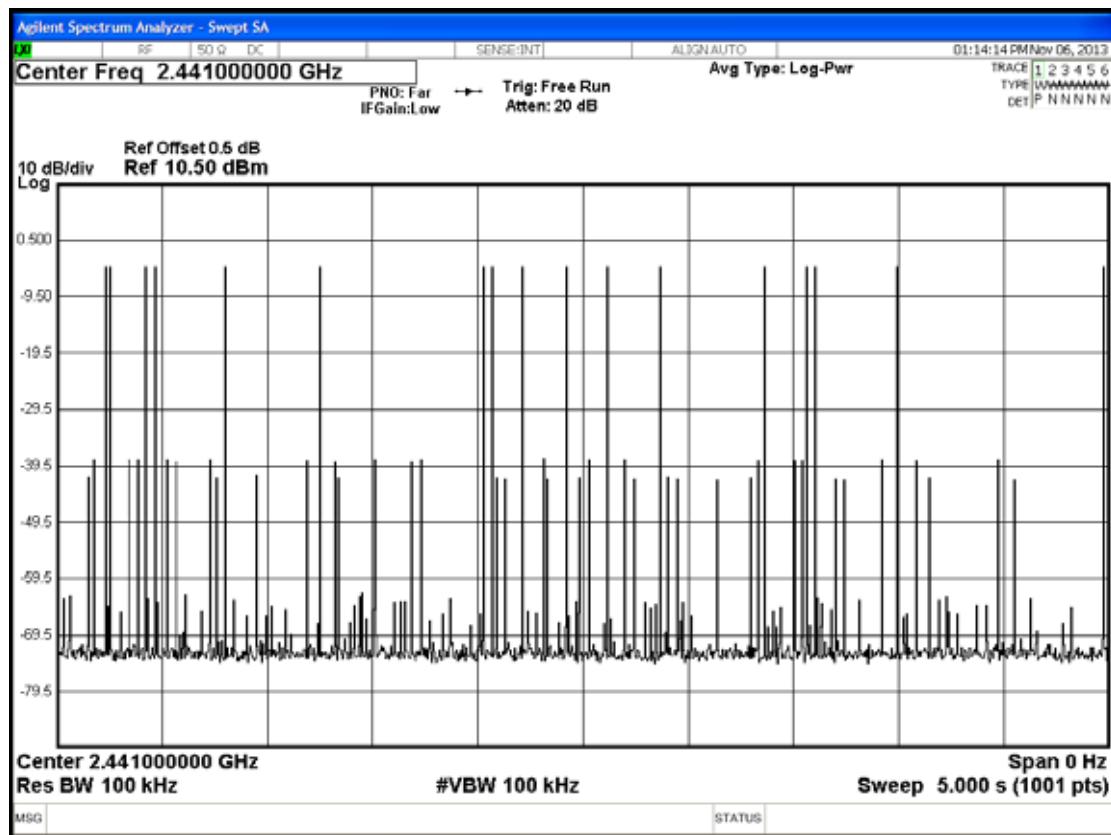
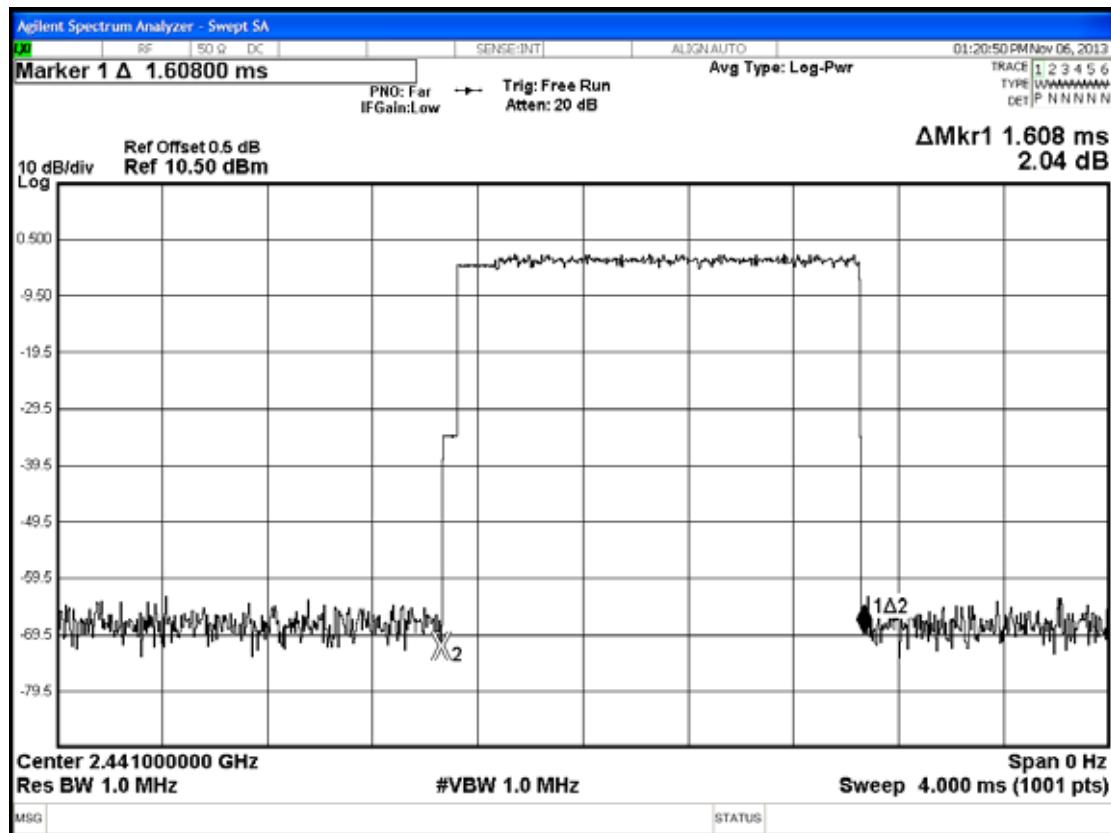


Figure 3: 8-DPSK, 2441MHz, 3DH5



6.6.2. Type of Modulation : GFSK, Test Frequency : 2441MHz

Duty cycle: 79channels*0.4 seconds = 31.6 seconds

DH1 : For each 5 seconds of 50 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

$$50 \text{ channels} * 31.6 \text{ seconds} / 5 * 0.460\text{ms} = 145.360\text{ms} (<400\text{ms})$$

DH3 : For each 5 seconds of 23 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

$$23 \text{ channels} * 31.6 \text{ seconds} / 5 * 1.716\text{ms} = 249.438\text{ms} (<400\text{ms})$$

DH5 : For each 5 seconds of 17 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

$$17 \text{ channels} * 31.6 \text{ seconds} / 5 * 2.972\text{ms} = 319.312\text{ms} (<400\text{ms})$$

Figure 4: GFSK, 2441MHz, DH1

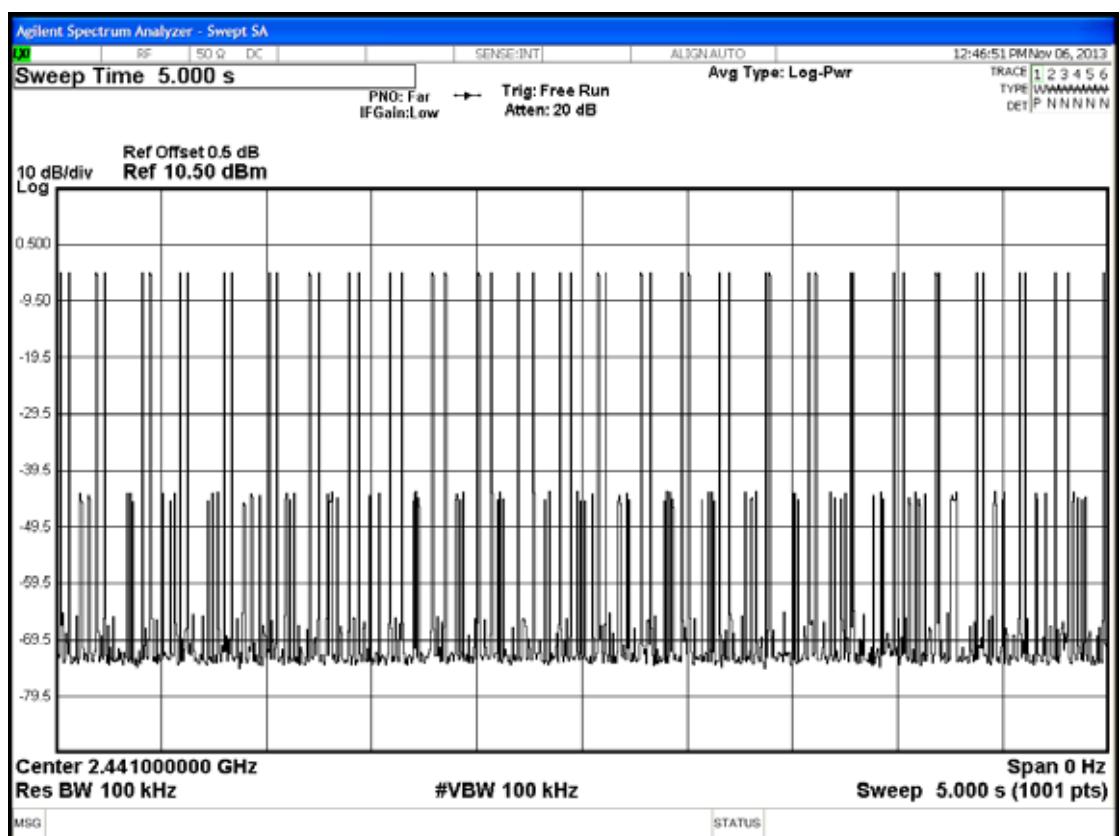
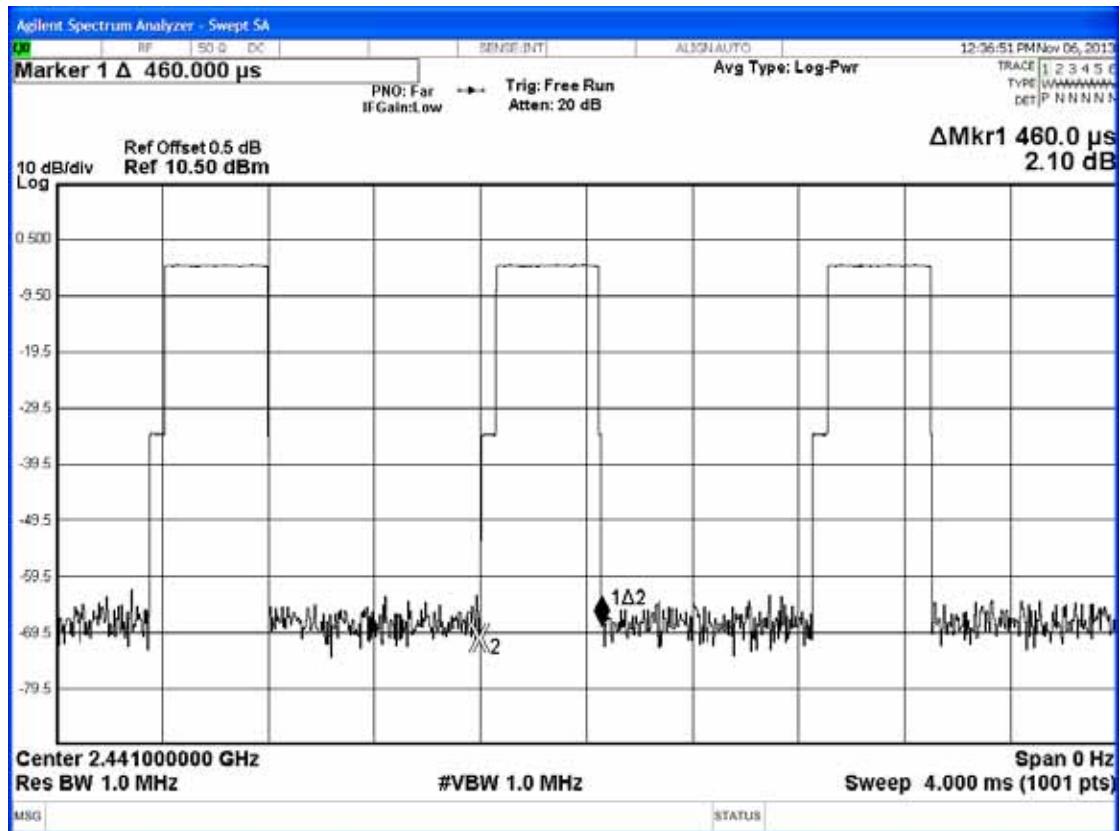


Figure 5: GFSK, 2441MHz, DH3

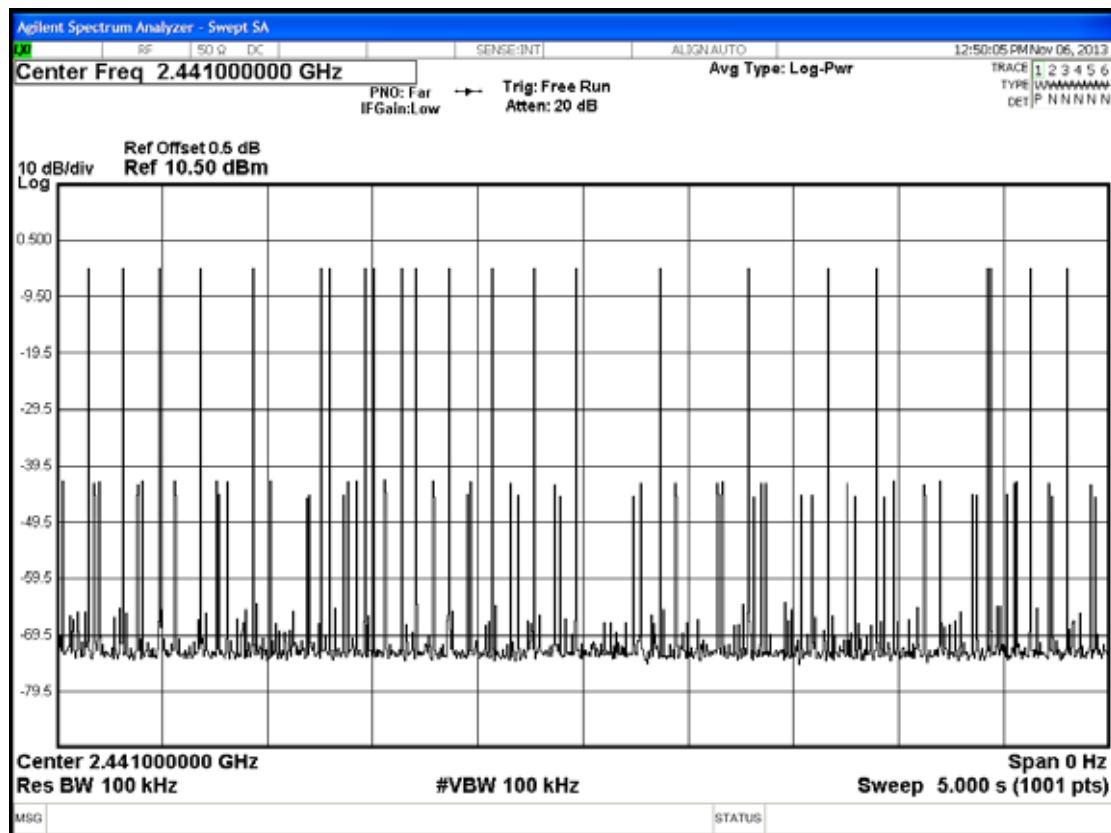
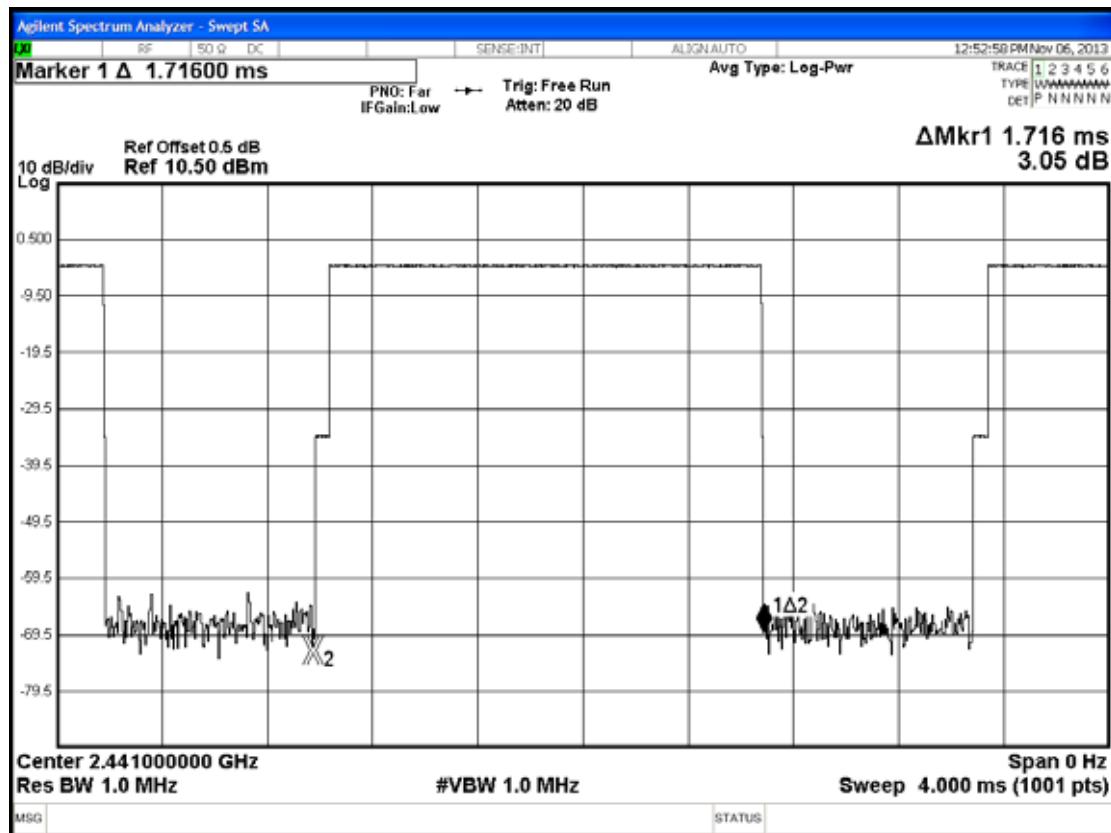
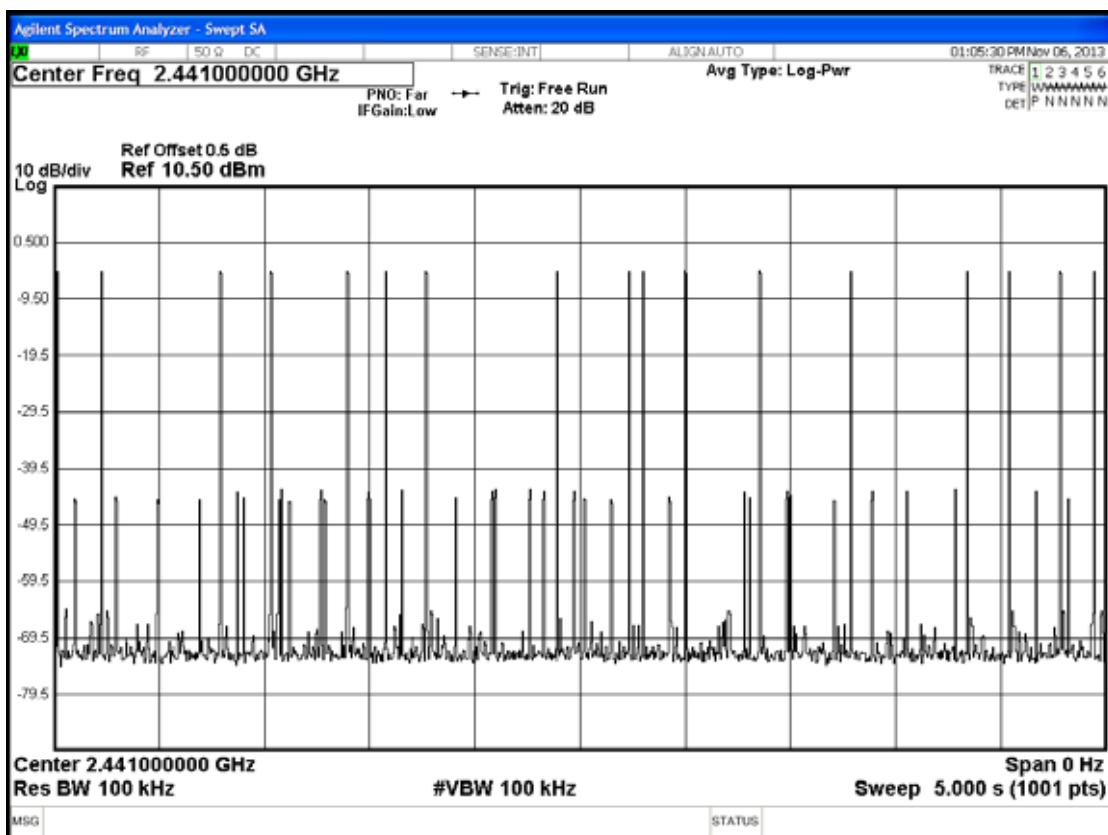
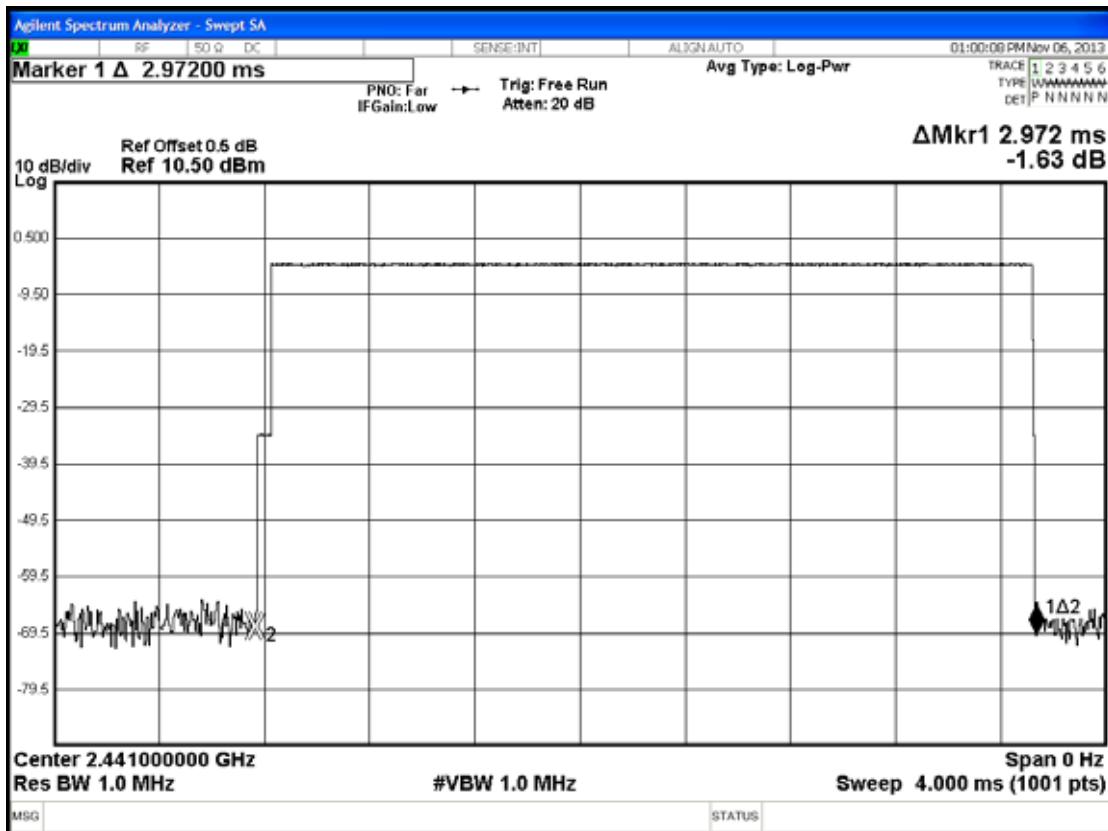


Figure 6: GFSK, 2441MHz, DH5



7. NUMBER OF HOPPING CHANNELS MEASUREMENT

7.1. Test Equipment

The following test equipment was used during the number of hopping channels measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Jul. 30, 13'	Jul. 29, 14'

7.2. Block Diagram of Test Setup

The same as section 4.2.

7.3. Specification Limits [§15.247(a)(1)(iii)]

Frequency hopping systems which use fewer than 20 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels.

7.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

7.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. Sweep=Auto ; Detector function=peak ; Trace=Max hold. The measurement guideline was according to FCC Public Notice DA 00-705.

7.6. Test Results

PASSED. All the test results are attached in next page.

[Note: Three types of modulation (8-DPSK,π /4DQPSK, GFSK) were evaluated but only two types of modulation (8-DPSK and GFSK) were reported in this report.]

Test Date : Oct. 28, 2013 Temperature : 26 Humidity : 54%

7.6.1. Type of Modulation: 8-DPSK

The number hopping channel is 79.

7.6.2. Type of Modulation: GFSK

The number hopping channel is 79.

Figure 1: 8-DPSK

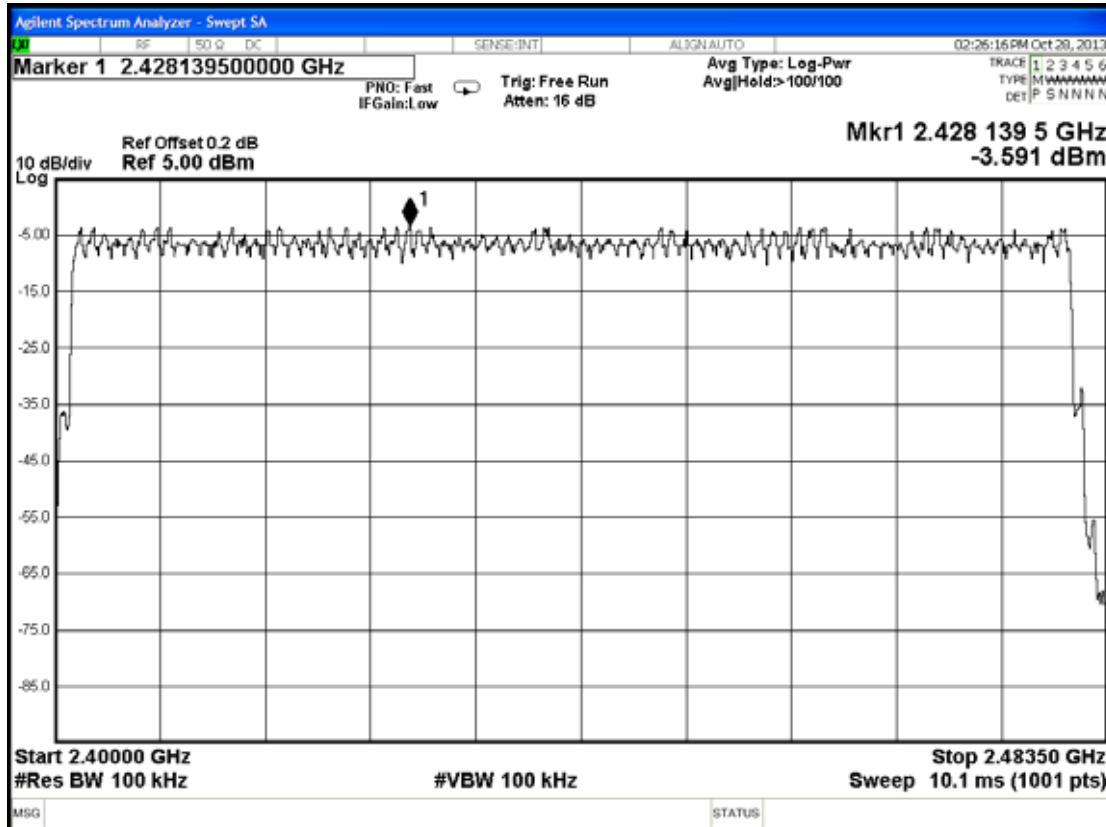
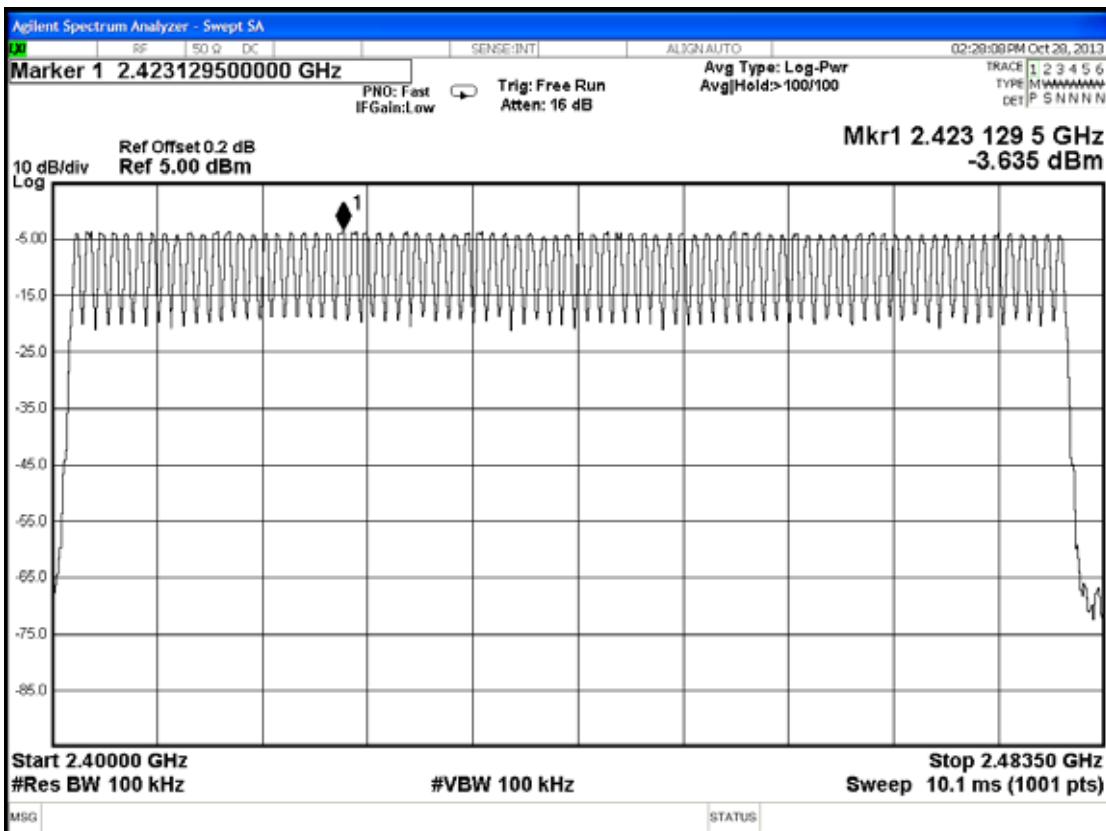


Figure 2: GFSK



8. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

8.1. Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Jul. 30, 13'	Jul. 29, 14'

8.2. Block Diagram of Test Setup

The same as section 4.2.

8.3. Specification Limits [§15.247(b)-(1)]

The Limits of maximum Peak Output Power for frequency hopping systems in 2400-2483.5MHz is: 0.125Watt. (21dBm)

8.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in 4.4.

8.5. Test Procedure

The transmitter output was connected to the spectrum analyzer.

Span can encompass the waveform

RBW>EBW

VBW RBW

Sweep=5MHz

The measurement guideline was according to FCC Public Notice DA 00-705.

8.6. Test Results

PASSED. All the test results are listed below.

[Note: Three types of modulation (8-DPSK, π/4DQPSK, GFSK) were evaluated but only two types of modulation (8-DPSK and GFSK) were reported in this report.]

Test Date : Sep. 13, 2013 Temperature : 25 Humidity : 56%

8.6.1. Type of Modulation: 8-DPSK

No.	Channel	Test Frequency	Peak Output Power	Limit
1.	0	2402MHz	-1.916 dBm	21dBm
2.	39	2441MHz	-1.968 dBm	21dBm
3.	78	2480MHz	-2.165 dBm	21dBm

8.6.2. Type of Modulation: GFSK

No.	Channel	Test Frequency	Peak Output Power	Limit
1.	0	2402MHz	-3.874 dBm	21dBm
2.	39	2441MHz	-3.884 dBm	21dBm
3.	78	2480MHz	-4.534 dBm	21dBm

Figure 1: 8-DPSK, Channel 0, Frequency: 2402MHz

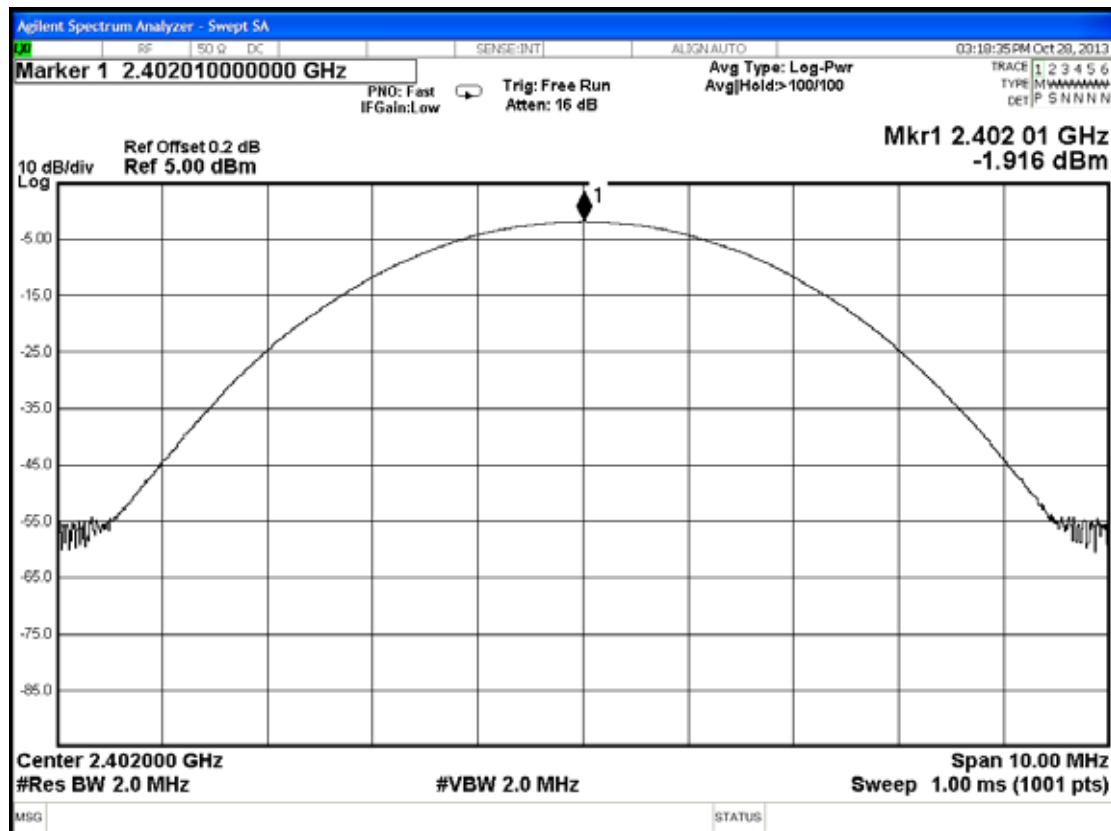


Figure 2: 8-DPSK, Channel 39, Frequency: 2441MHz

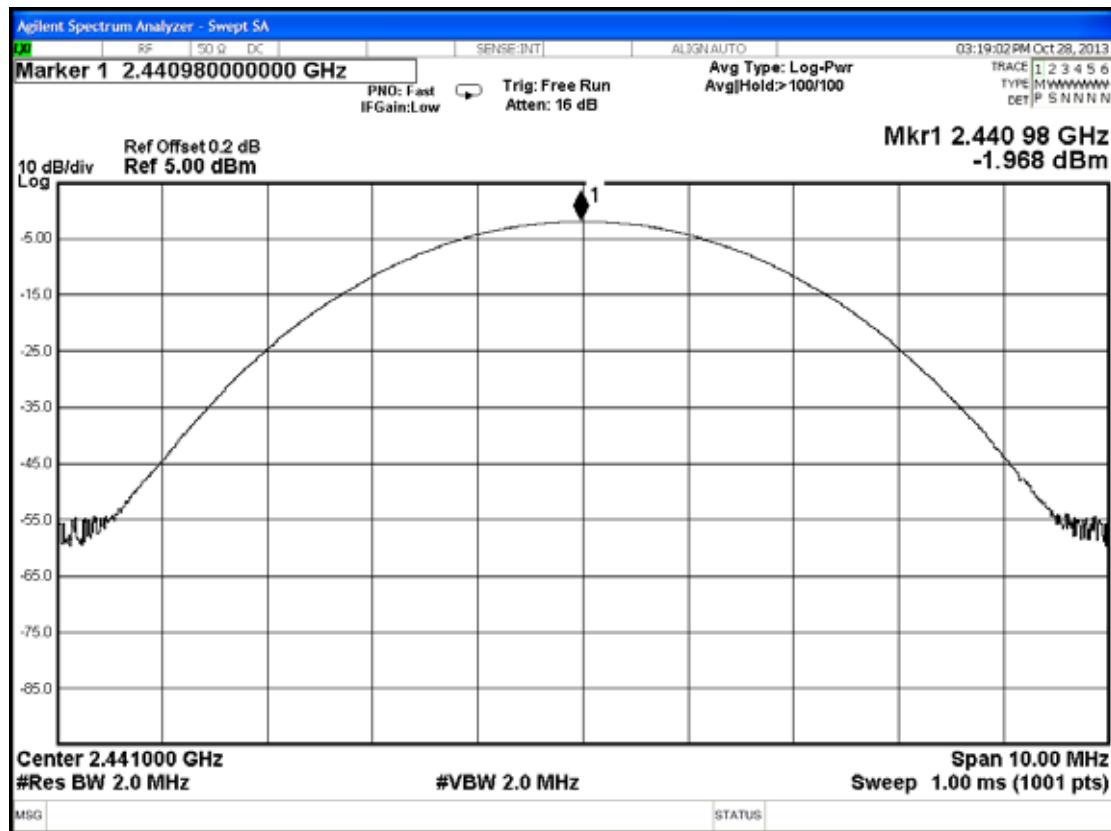


Figure 3: 8-DPSK, Channel 78, Frequency: 2480MHz

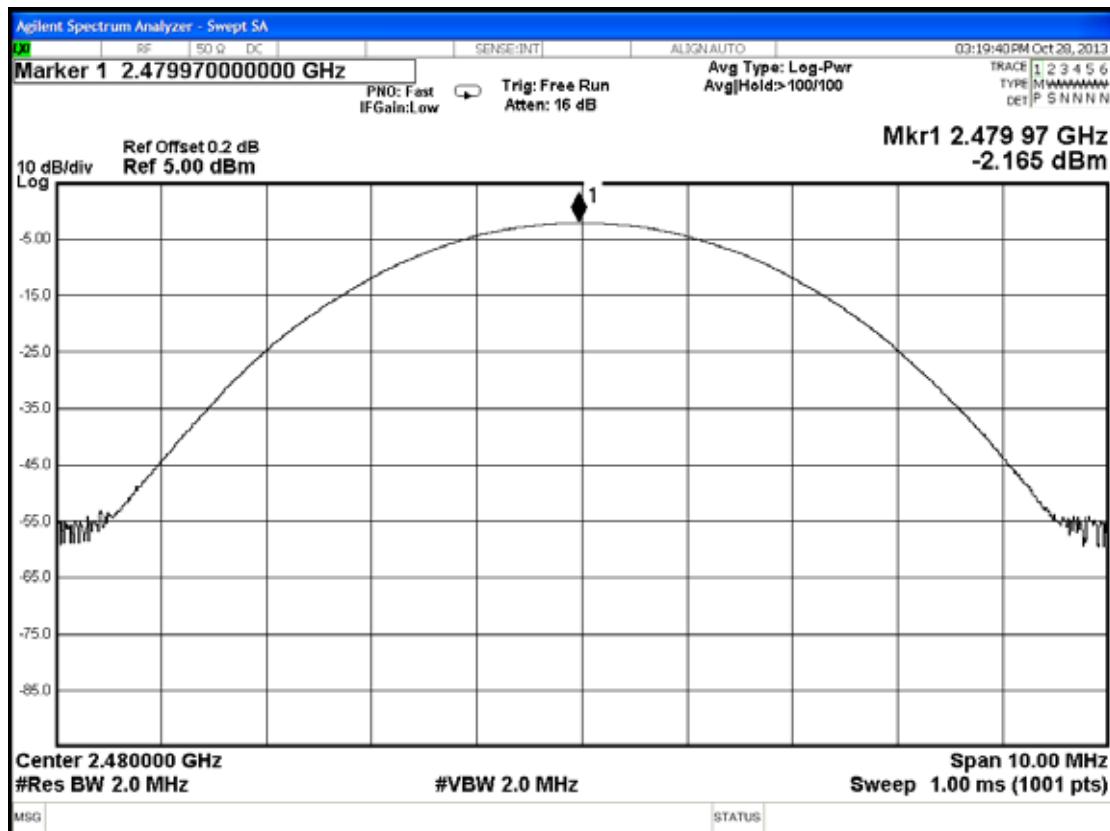


Figure 4: GFSK, Channel 0, Frequency: 2402MHz

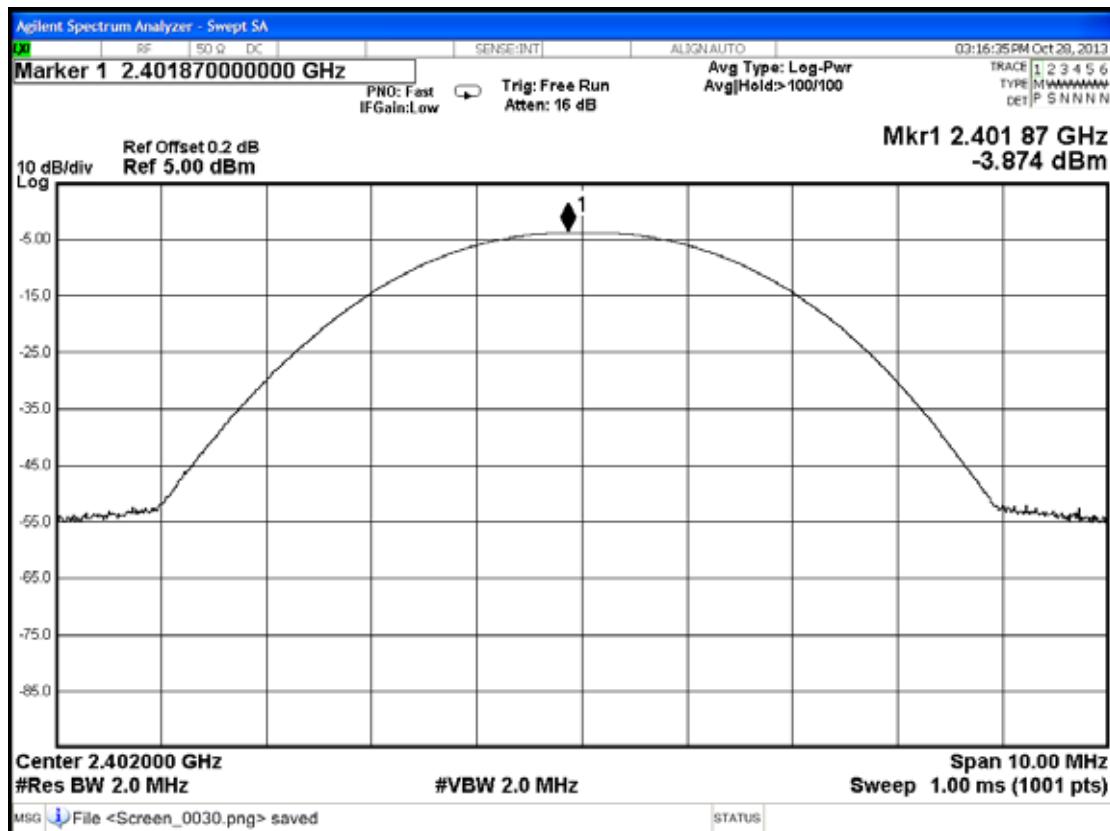


Figure 5: GFSK, Channel 39, Frequency: 2441MHz

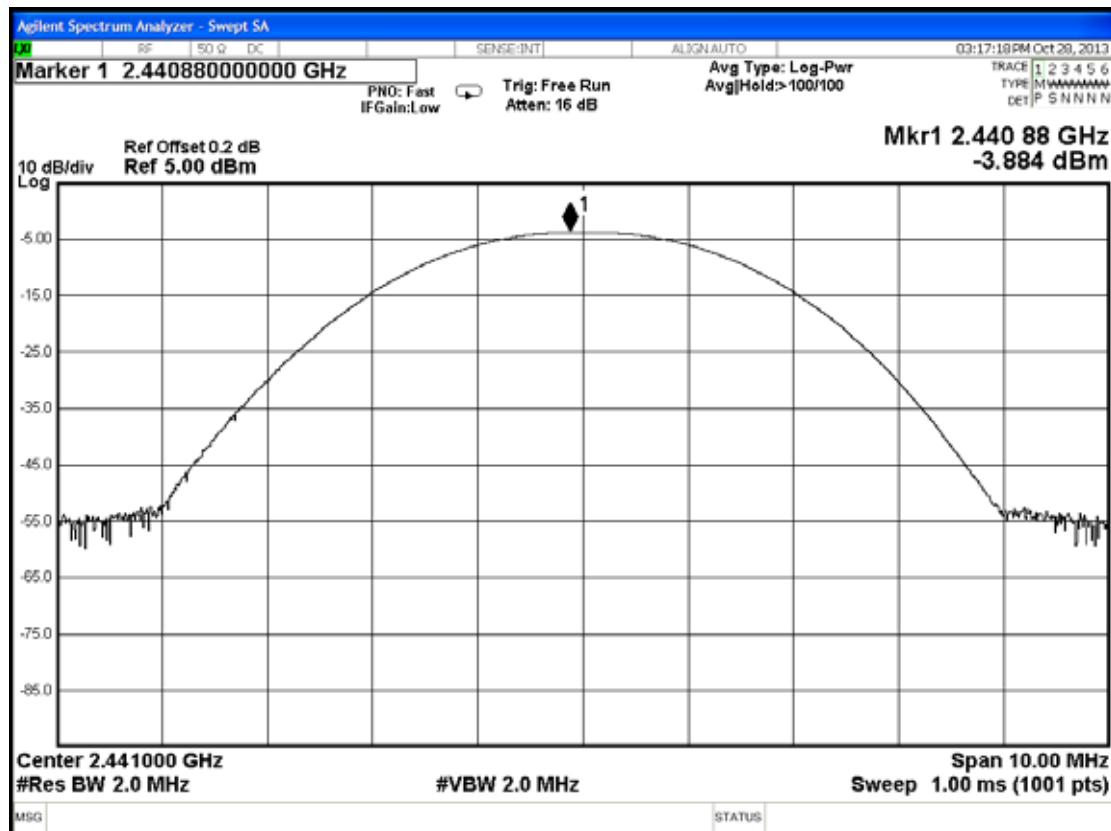
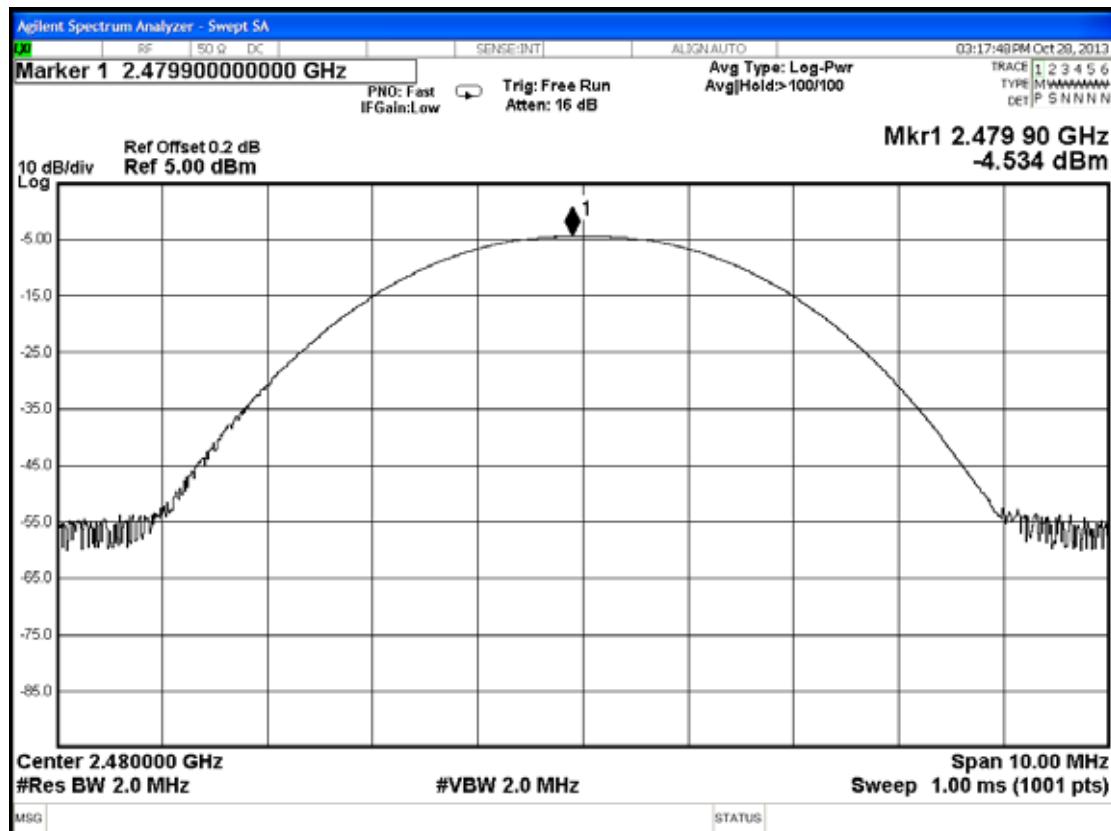


Figure 6: GFSK, Channel 78, Frequency: 2480MHz



9. EMISSION LIMITATIONS MEASUREMENT

All emission levels have been compliance with the limit specified in 15.209, thus conducted limitation is not required and presented.

10. BAND EDGES MEASUREMENT

10.1. Test Equipment

The following test equipment was used during the band edges measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	N9030A-544	US51350140	Jul. 30, 13'	Jul. 29, 14'

10.2. Block Diagram of Test Setup

The same as section 4.2.

10.3. Specification Limits [§15.247(c)]

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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)). (This test result attaching to §3.6.3)

10.4. Operating Condition of EUT

Same as carrier frequency separation measurement which was listed in section 4.4.

10.5. Test Procedure

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100kHz bandwidth from band edge.

The measurement guideline was according to FCC Public Notice DA 00-705.

10.6. Test Results

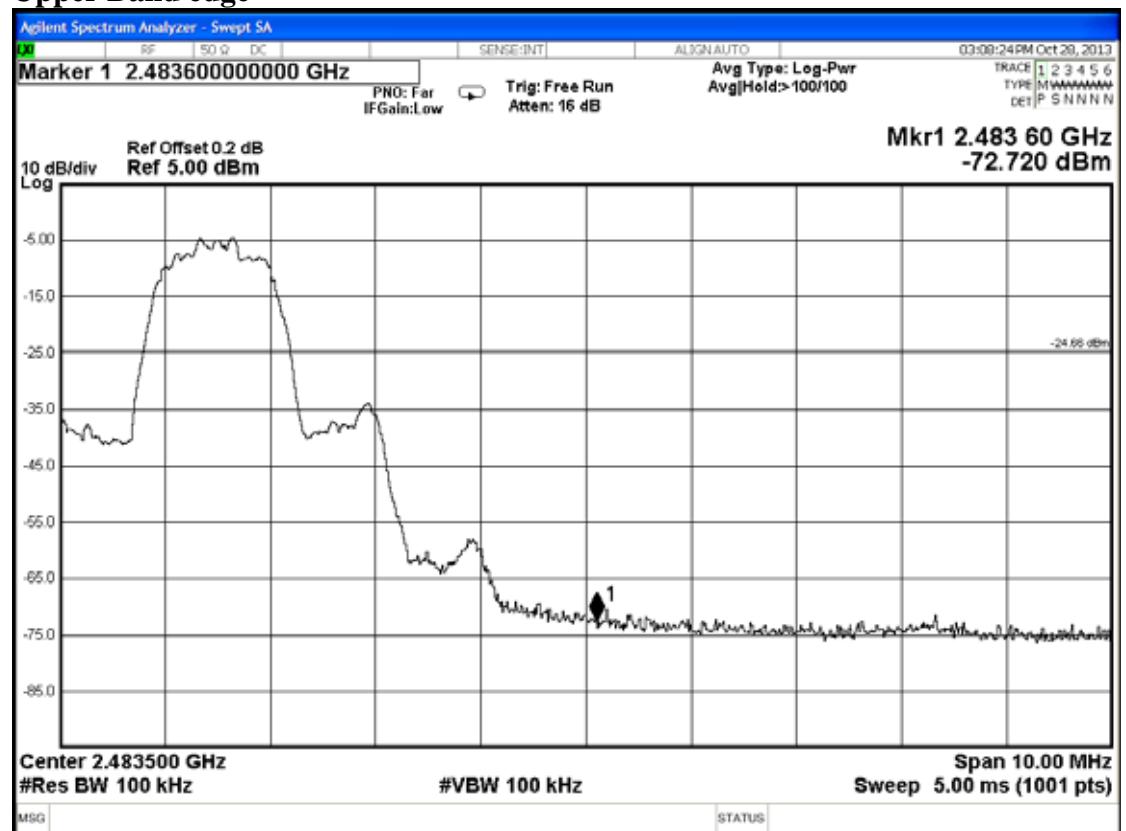
PASSED. The testing data was attached in the next pages.

[Note: Three types of modulation (8-DPSK, π/4DQPSK, GFSK) were evaluated but only two types of modulation (8-DPSK and GFSK) were reported in this report.]

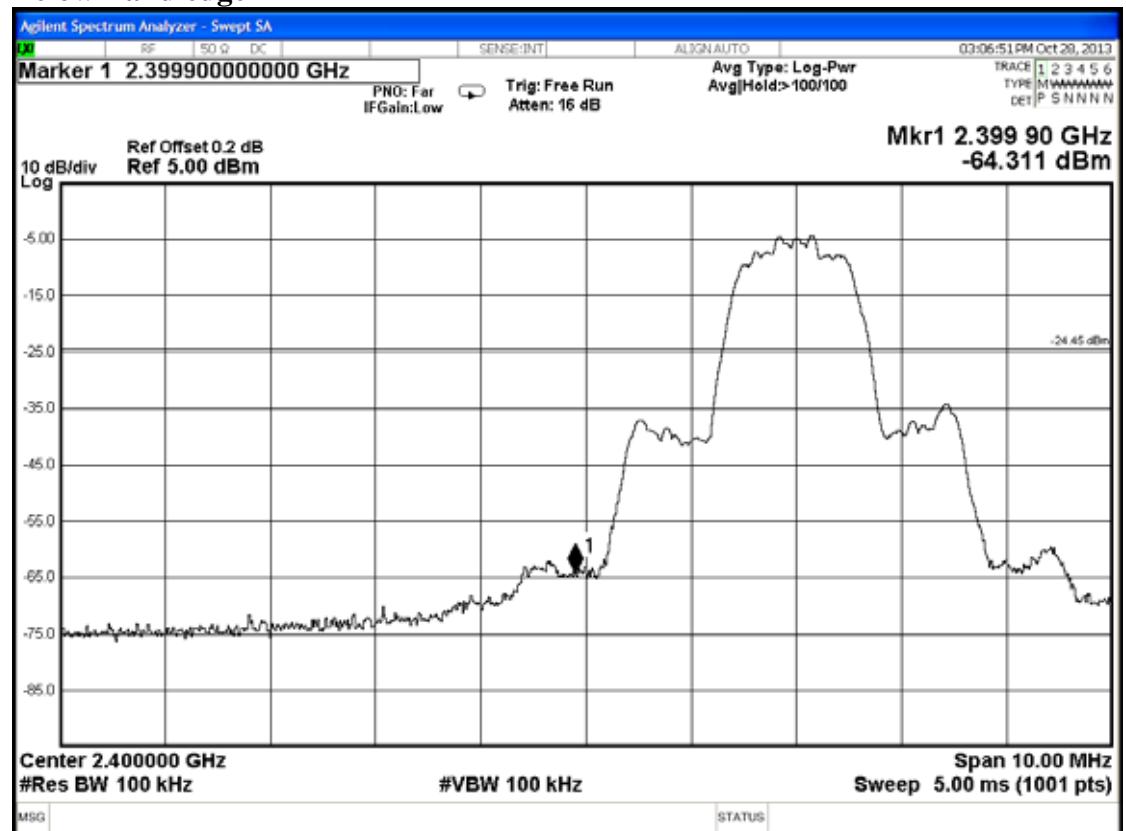
Test Date : Oct. 28, 2013 Temperature : 26 Humidity : 54%

10.6.1. Type of Modulation: 8-DPSK

Upper Band edge

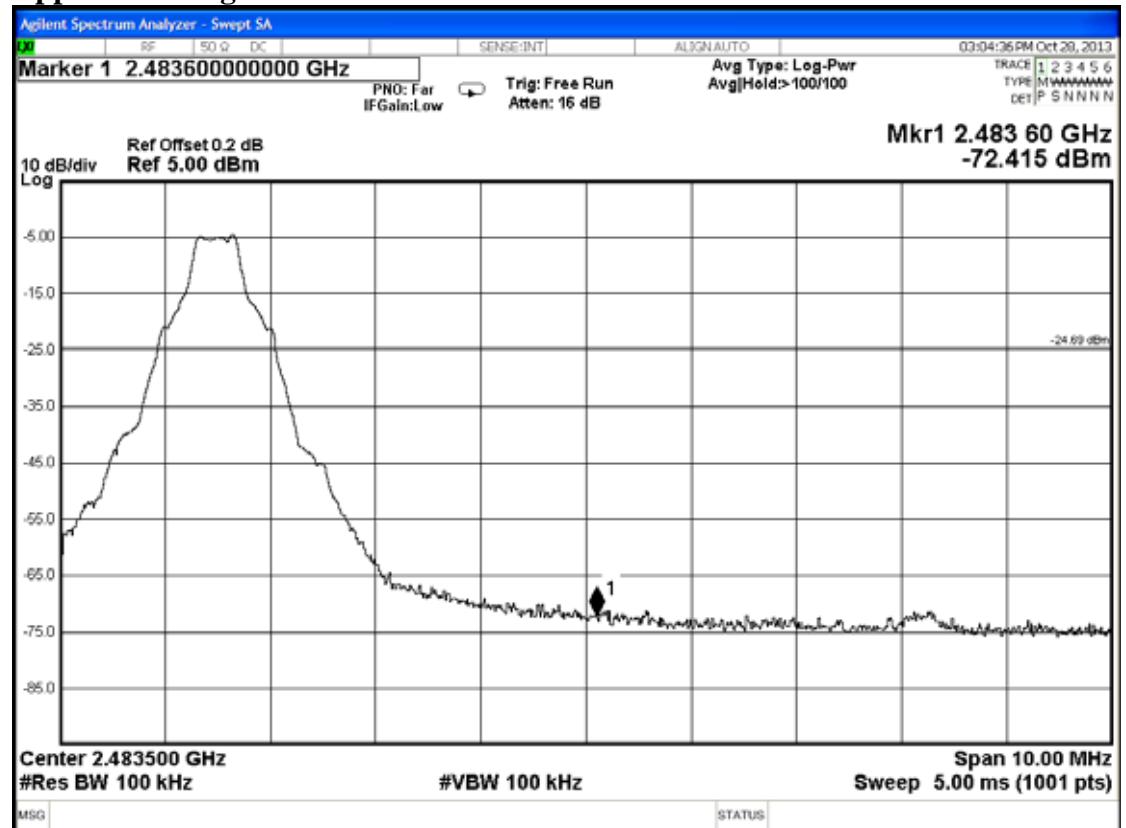


Below Band edge

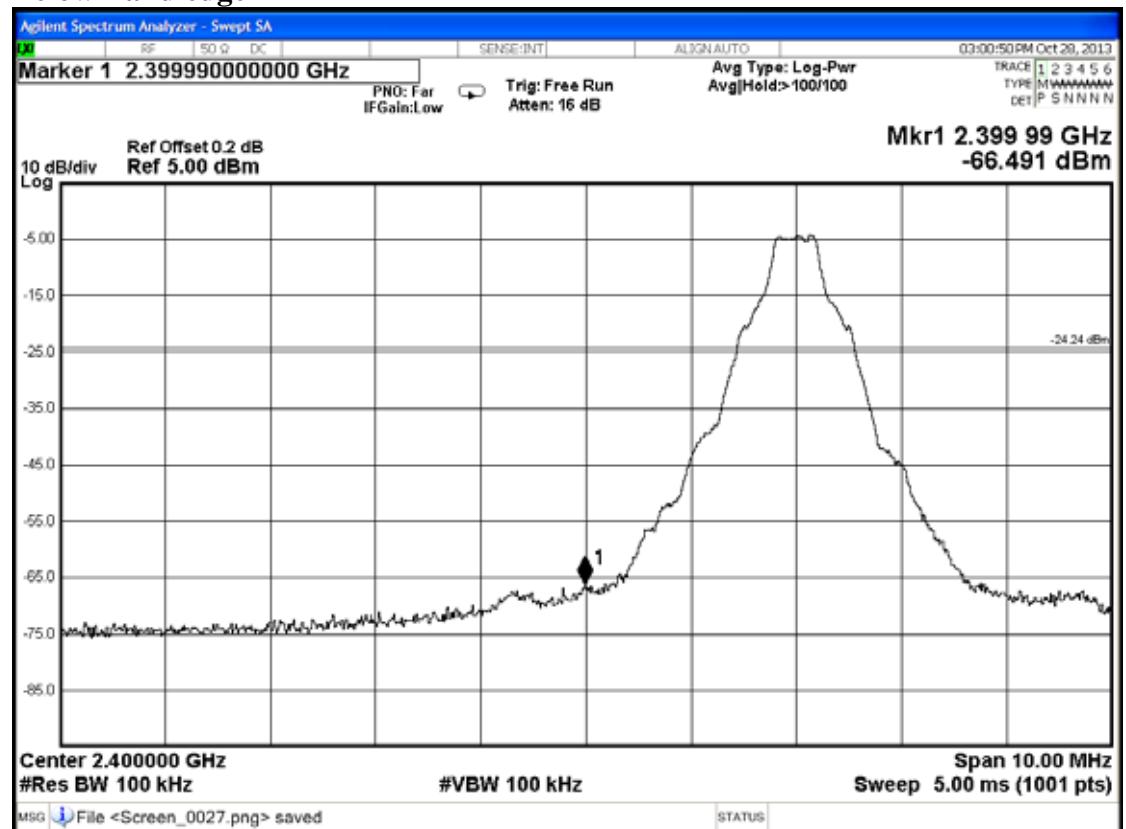


10.6.2. Type of Modulation: GFSK

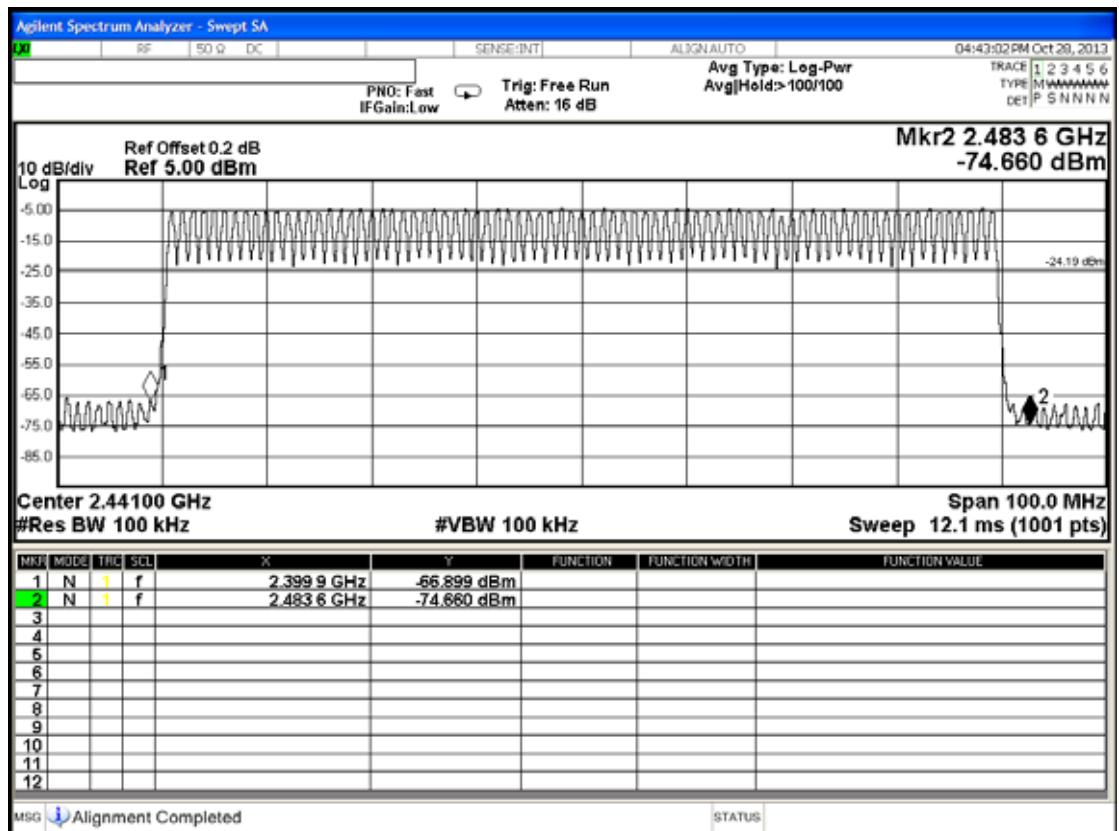
Upper Band edge



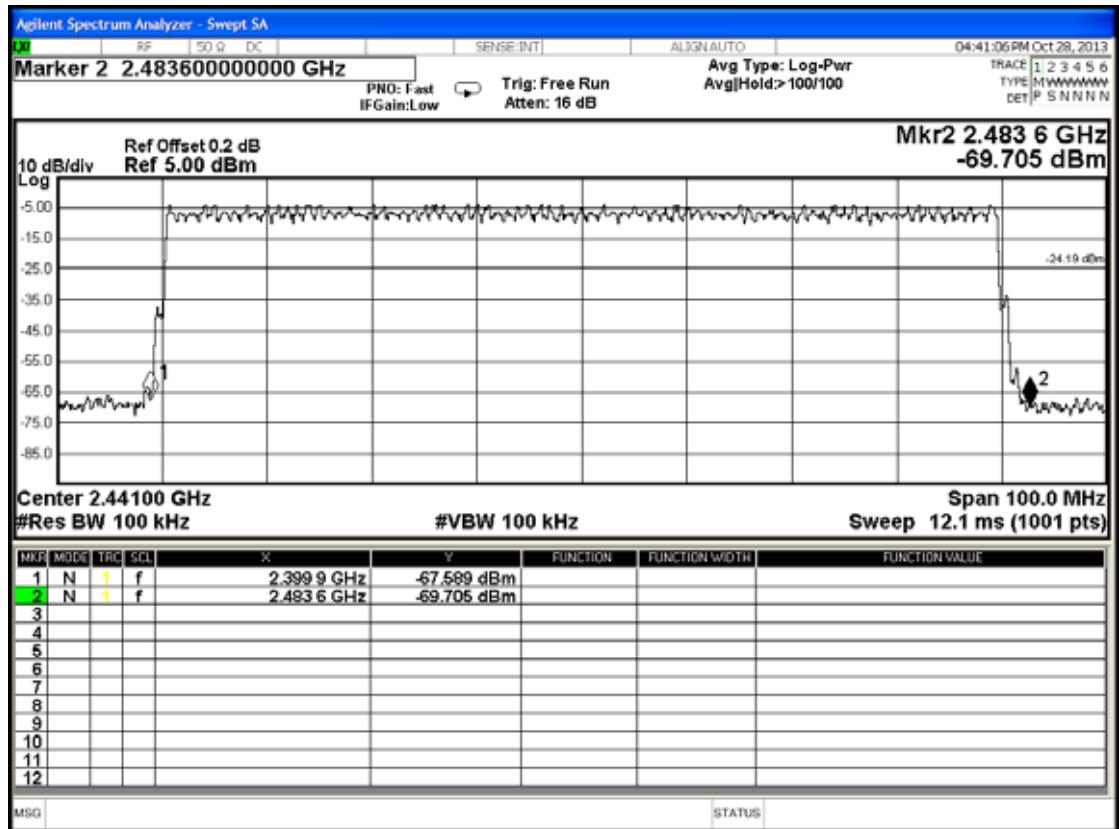
Below Band edge



10.6.3. Hopping Mode (Type of Modulation: 8-DPSK)



10.6.4. Hopping Mode (Type of Modulation: GFSK)



11. DEVIATION TO TEST SPECIFICATIONS

【NONE】

12. PHOTOGRAPHS

12.1. Photos of Conducted Disturbance Measurement



FRONT VIEW OF CONDUCTED MEASUREMENT



BACK VIEW OF CONDUCTED MEASUREMENT

12.2.Photos of Radiated Emission Measurement at Semi-Anechoic Chamber

12.2.1. Frequency Range 30MHz-1GHz



12.2.2. Frequency Range Above 1GHz



12.3.Photo of Section RF Conducted Measurement

