

APPLICATION FOR CERTIFICATION

On Behalf of

Cregle Inc.

CregleBook

Model No. : CB1101

FCC ID : ZOBCB1101

Brand: Cregle

Prepared for : Cregle Inc.

4000 Legato Road, Suite 1100, Fairfax, VA

Prepared By : AUDIX Technology Corporation

EMC Department

No. 53-11, Tin-Fu Tsun, Lin-Kou,  
Taipei, Taiwan.

Tel : (02) 2609-9301, 2609-2133

Fax: (02) 2609-9303

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Date of Test : Jul. 08 ~ 28, 2011

Date of Report : Aug. 03, 2011

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## TEST REPORT CERTIFICATION

Applicant	:	Cregle Inc.
Manufacturer	:	INVENTEC BESTA Co., Ltd.
EUT Description	:	CregleBook
<b>FCC ID</b>	:	<b>ZOBCB1101</b>
(A) Model No.	:	CB1101
(B) Serial No.	:	N/A
(C) Brand	:	Cregle
(D) Power Supply	:	DC 12V
(E) Test Voltage	:	AC 120V/60Hz Via AC Adapter

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C, Oct. 2010  
AND ANSI C63.4/2003

(FCC CFR 47 Part 15C, §15.207 and §15.209 and §15.247)

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 limits.

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 official limits.

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 : Jul. 08 ~ 28, 2011      Date of Report : Aug. 03, 2011

Producer : Tina Huang  
(Tina Huang/Administrator)

Signatory : Leon Liu  
(Leon Liu/Deputy General Manager)

# 1. GENERAL INFORMATION

## 1.1. Description of Device (EUT)

Description	:	CregleBook (The EUT is built-in IEEE 802.11b/g/n + BT 2.1 EDR combo Slim module, this report for Bluetooth, Wireless LAN is tested in other report of EM-F1000700)
Model Number	:	CB1101
Serial Number	:	N/A
Brand	:	Cregle
IC	:	ZOBCB1101
Applicant	:	Cregle Inc. 4000 Legato Road, Suite 1100, Fairfax, VA
Manufacturer	:	INVENTEC BESTA Co., Ltd. 10FL., No. 36, Lane 513, Rui Guang Road, Nei Hu Dist., Taipei, Taiwan, R.O.C.
WLAN 802.11b/g/n + BT 2.1 EDR combo Slim Module (1T1R)	:	msi, M/N: MS-3871
Fundamental Range	:	2400MHz - 2483.5MHz
Channel Number	:	79
Radio Technology	:	GFSK, $\pi/4$ DQPSK, 8-DPSK
Antenna Gain	:	-3.38dBi (Peak)
AC Adapter	:	ENERTRONIX, M/N EXA0801XA I/P: AC 100-240V, 50-60Hz, 1.0A O/P: 12V, 3.0A DC Cord: Non-Shielded, Undetached, 1.8m Bonded a ferrite core AC Cord: Non-Shielded, Detached, 0.8m (2 Pin) Bonded a ferrite core
Date of Receipt of Sample	:	Jun. 16, 2011
Date of Test	:	Jul. 08 ~ 28, 2011

## 1.2. Tested Supporting System Details

**【ONLY FOR CONDUCTED EMISSION MEASUREMENT】**

## 1.2.1. USB MOUSE

Model Number	:	M056U0A
Serial Number	:	G0D038FE
FCC ID	:	By DoC
BSMI ID	:	R41108
Manufacturer	:	DELL (Brand: DELL)
Data Cable	:	Shielded, Undetachable, 1.8m

## 1.2.2. I-POD PLAYER

Model Number	:	A1204
Serial Number	:	4H722T84VTE
BSMI ID	:	R33057
Manufacturer	:	APPLE
USB Data Cable	:	Shielded, Undetachable, 1m

## 1.2.3. EARPHONE

Model Number	:	N/A
Serial Number	:	N/A
Manufacturer	:	Panasonic
Earphone Cable	:	Non-Shielded, Detachable, 1.1m

## 1.2.4. BLUETOOTH EARPHONE

Model Number	:	IH-05
Serial Number	:	N/A
Manufacturer	:	Innostar (Brand: Innostar)
FCC ID	:	UU9MBH200

## 1.2.5. SD CARD (INSTALL IN EUT)

Model Number	:	AP-SDC51201AC0G
Serial Number	:	390619200000
Manufacturer	:	Apacer
Capacity	:	512MB

### 1.3. Description of Test Facility

Name of Firm : **AUDIX Technology Corporation**  
 EMC Department  
 No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang,  
 Taipei Hsien, Taiwan

Test Site : **No. 3 Shielded Room**  
 (C3/Semi-AC) No. 67-4, Tin-Fu Tsun, Lin-Kou Hsiang,  
 Taipei Hsien, Taiwan

**Semi-Anechoic Chamber**  
 No. 53-11, Tin-Fu Tsun, Lin-Kou Hsiang,  
 Taipei Hsien, Taiwan  
 Federal Communication Commission  
 Registration Number: 90993  
 Date of Renewal: May 14, 2009

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 =  $k_{uc}(y)$

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

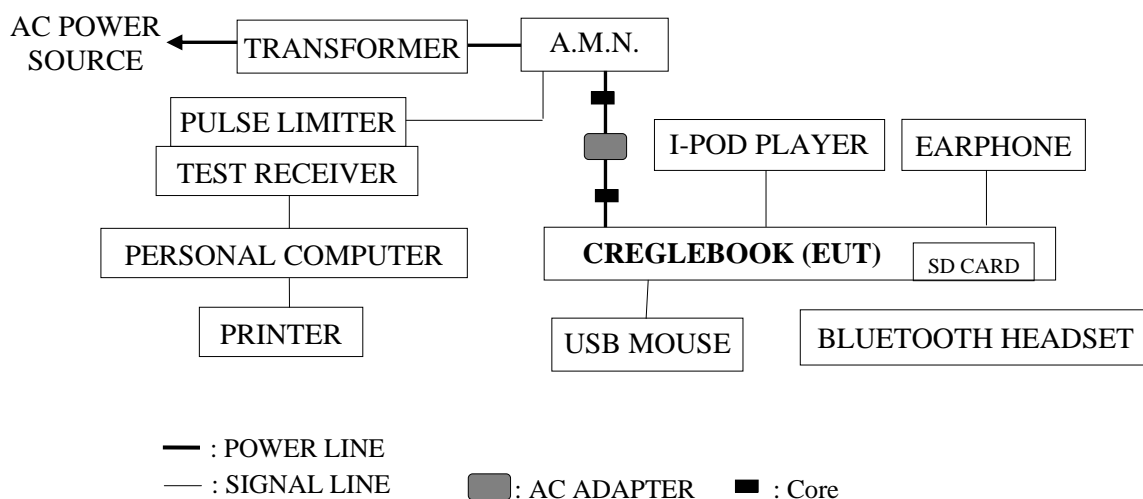
## 2. CONDUCTED EMISSION MEASUREMENT

### 2.1. Test Equipment

The following test equipment was used during the conducted emission measurement :  
(No. 3 Shielded Room)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R & S	ESCS30	100337	Apr. 11, 11'	Apr. 10, 12'
2.	A.M.N.	Kyoritsu	KNW-244C	8-1373-5	Jul. 14, 11'	Jul. 13, 12'
3.	Pulse Limiter	R & S	ESH3Z2	100041	Feb. 01, 11'	Jan. 31, 12'

### 2.2. Block Diagram of Test Setup



### 2.3. Conducted Emission Limits (§15.207, Class B)

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level	Average Level
150kHz ~ 500kHz	66 ~ 56 dB $\mu$ V	56 ~ 46 dB $\mu$ V
500kHz ~ 5MHz	56 dB $\mu$ V	46 dB $\mu$ V
5MHz ~ 30MHz	60 dB $\mu$ V	50 dB $\mu$ 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. Set up the EUT and simulator as shown on 2.2.
- 2.4.2. Turn on the power of all equipment.
- 2.4.3. The Wireless LAN+BT combo slim module was installed in the CregleBook (EUT), the CregleBook was running test program "Bluesuiet V2.3" and to set the EUT on transmitting and receiving during all testing.
- 2.4.4. The other peripheral devices were driven and operated in turn during all testing.

## 2.5. Test Procedure

The EUT was put on table which was above the ground by 80cm and its AC adapter's power cord connected to the AC 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 regulation 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. Conducted Emission Measurement Results

### **PASSED.**

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

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

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

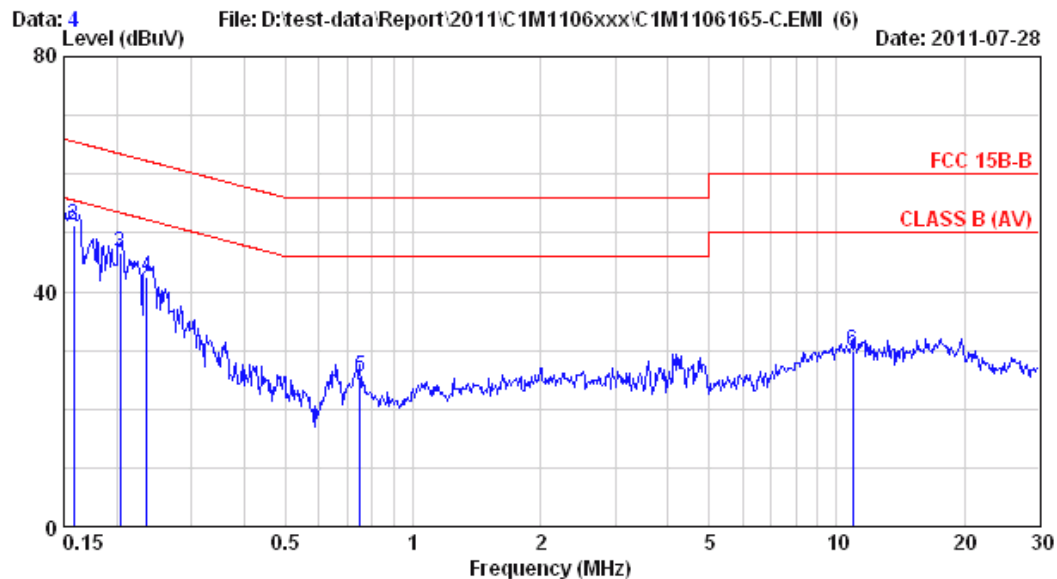
EUT : CregleBook                      M/N : CB1101

Test Date : Jul. 28, 2011    Temperature : 25°C    Humidity : 52%

Reference Test Data : Neutral # 4; Line # 3



AUDIX TECHNOLOGY Corp. EMC Laboratory  
 No.53-11, Tin-fu Tsun, Lin-kou Hsiang, Taipei  
 County, Taiwan R.O.C. Post Code:24443  
 Tel:+886-2-26092133 Fax:+886-2-26099303  
 Email:emc@audixtech.com



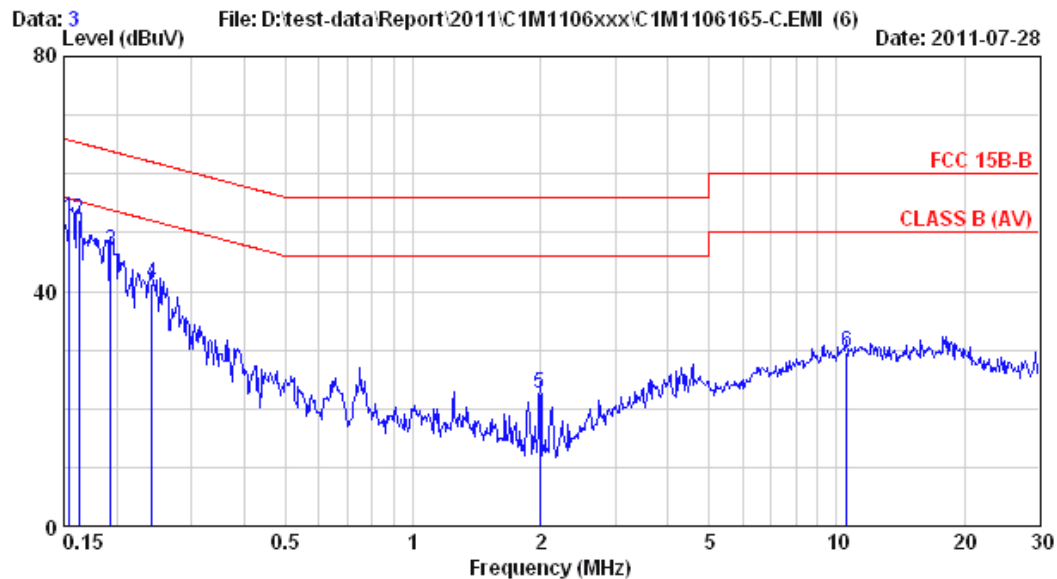
Site : No.3 Shielded Room Data : 4  
 Condition : KNW-244C Phase : NEUTRAL  
 Limit : FCC 15B-B  
 Env. / Ins. : 25°C / 52% ESCS 30 (337) Engineer: Edward  
 EUT M/N : CB1101  
 Power Rating : 120Vac / 60Hz  
 Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.150	0.14	0.20	51.81	52.15	66.00	13.85	QP
2	0.158	0.13	0.20	50.96	51.29	65.56	14.27	QP
3	0.204	0.10	0.20	46.17	46.47	63.45	16.98	QP
4	0.235	0.10	0.20	42.17	42.47	62.26	19.79	QP
5	0.751	0.10	0.20	25.22	25.52	56.00	30.48	QP
6	10.905	0.32	0.70	28.98	30.00	60.00	30.00	QP

Remarks: 1.Emission Level= AMN 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.



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code:24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:emc@audixtech.com



Site : No.3 Shielded Room Data : 3  
Condition : KNW-244C Phase : LINE  
Limit : FCC 15B-B  
Env. / Ins. : 25°C / 52% ESCS 30 (337) Engineer: Edward  
EUT M/N : CB1101  
Power Rating : 120Vac / 60Hz  
Test Mode : Operating

	Freq. (MHz)	AMN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.155	0.14	0.20	52.25	52.59	65.74	13.15	QP
2	0.162	0.13	0.20	51.75	52.08	65.34	13.26	QP
3	0.193	0.10	0.20	46.54	46.84	63.89	17.04	QP
4	0.242	0.10	0.20	41.07	41.37	62.04	20.67	QP
5	1.991	0.10	0.40	21.97	22.47	56.00	33.53	QP
6	10.564	0.40	0.70	28.55	29.65	60.00	30.35	QP

Remarks: 1.Emission Level= AMN 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)

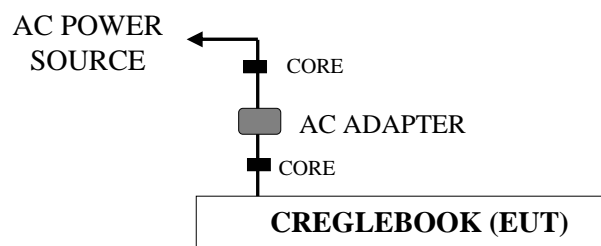
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'
2.	Test Receiver	R & S	ESCS30	100338	Jul. 12, 11'	Jul. 11, 12'
3.	Amplifier	HP	8447D	2944A06305	Feb. 10, 11'	Feb. 09, 12'
4.	Log Periodic Antenna	Schwarzbeck	UHALP 9108-A	0810	Mar. 08, 11'	Mar. 07, 12'
5.	Biconical Antenna	CHASE	VBA6106A	1264	Mar. 08, 11'	Mar. 07, 12'

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

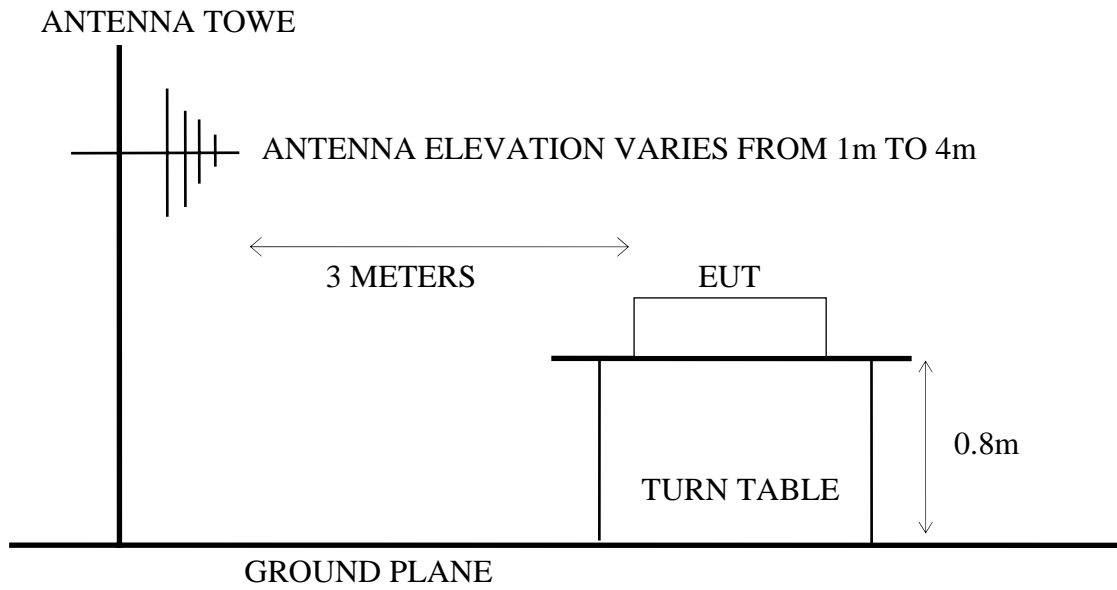
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'
2.	Test Receiver	R & S	ESCS30	100338	Jul. 12, 11'	Jul. 11, 12'
3.	Amplifier	HP	8449B	3008A00529	Dec. 10, 10'	Dec. 09, 11'
4.	Horn Antenna	EMCO	3115	9112-3775	May 09, 11'	May 08, 12'
5.	Horn Antenna	EMCO	3116	2653	Oct. 04, 10'	Oct. 03, 11'

#### 3.2. Block Diagram of Test Setup

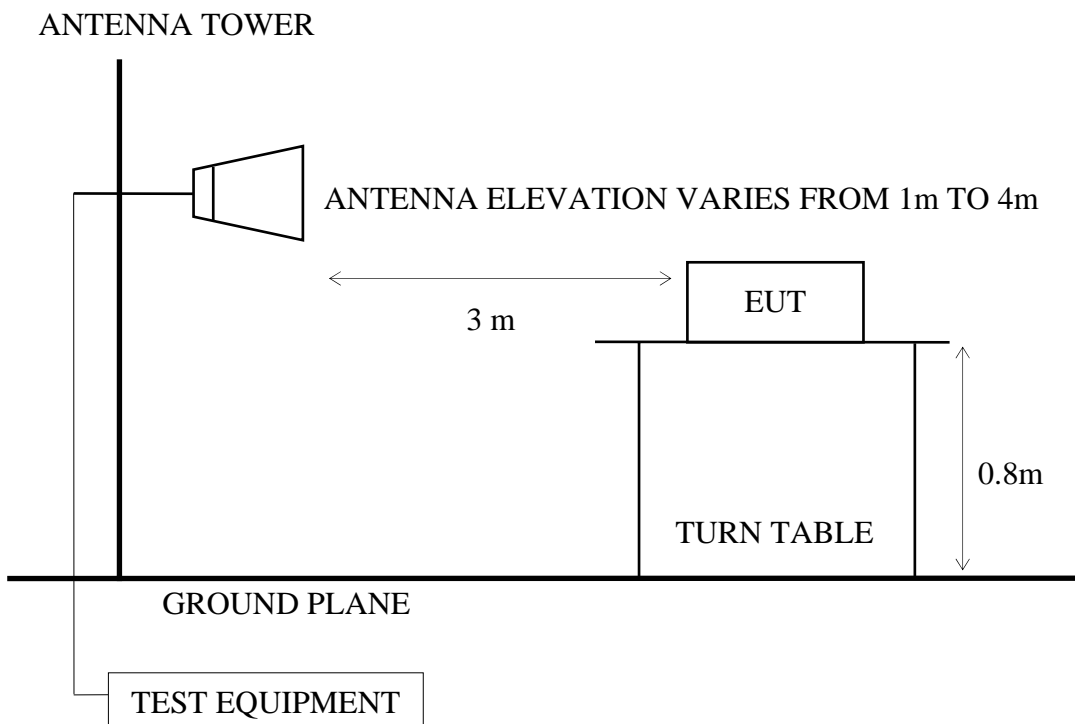
##### 3.2.1. Block Diagram of connection between EUT and simulators



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



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



### 3.3. Radiated Emission Limits (§15.209)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
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 $\text{dB}\mu\text{V/m}$ (Peak) 54.0 $\text{dB}\mu\text{V/m}$ (Average)	

- Remark :
- (1) Emission level ( $\text{dB}\mu\text{V/m}$ ) = 20 log Emission level ( $\mu\text{V/m}$ )
  - (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 (CregleBook) and simulator as shown on 3.2.
- 3.4.2. To turn on the power of all equipment.
- 3.4.3. The Wireless LAN+BT combo slim module was installed in the CregleBook (EUT), the CregleBook was running test program “Bluesuiet V2.3”.
- 3.4.4. Transmitting Mode: The EUT was set to continuously transmit signals at 2402MHz, 2441MHz and 2480MHz during the testing.
- 3.4.5. Receiver Mode: The EUT was set to continuously receive signals at 2441MHz during the testing.

### 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 to 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 ANSI C63.4-2003 regulation during radiated measurement.

The bandwidth of the R&S Test Receiver 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 10<sup>th</sup> harmonics from fundamental frequency) was checked. 30MHz to 1000MHz was measured with Quasi-Peak detector. Above 1GHz was measured with peak and average detector. For average reading in frequency from 5.5G 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.

### 3.6. Radiated Emission Measurement Results

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

EUT : CregleBook M/N : CB1101

Test Date : Jul. 27, 2011 Temperature : 26°C Humidity : 50%

The radiation tests on three different axes (stand, lie and side), we assessed the value and we selected the worst radiation position “lie” link to AC adapter for our measured results.

#### For Frequency Range 30MHz-1000MHz:

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

The EUT with the following test modes was tested during the testing and all the test results are listed in section 3.6.1.

This module contains BT and WIFI and can transmit simultaneously, thus we also performed simultaneous mode in BT (GFSK TX2480MHz) and 802.11b (TX2412MHz).

No.	Test Mode and Frequency		Reference Test Data No.	
			Horizontal	Vertical
1.	Transmitting	BT (GFSK TX2480MHz)+ 802.11b (TX2412MHz)	# 10	# 9
2.		2402MHz (CH0)	# 8	# 7
3.		2441MHz (CH39)	# 8	# 7
4.		2480MHz (CH78)	# 8	# 7
5.	Receiving	2441MHz (CH39)	# 6	# 5

\* Type of modulation: GFSK.

\* All above final readings were measured with Quasi-Peak detector.

**For Frequency Range above 1GHz:**

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

The EUT with the following test modes was tested during the testing and all the test results are listed in section 3.6.2.

No.	Test Mode and Frequency		Reference Test Data No.			
			Horizontal		Vertical	
			Peak	Average	Peak	Average
1.	Transmitting	BT (GFSK TX2480MHz)+ 802.11b (TX2412MHz)	# 4, # 5, #8	# 12	# 3, # 6, #7	# 11
2.		2402MHz (CH0)	# 2, # 3	# 10	# 1, # 4	# 9
3.		2441MHz (CH39)	# 2, # 3	# 10	# 1, # 4	# 9
4.		2480MHz (CH78)	# 2, # 3	# 10	# 1, # 4	# 9
5.	Receiving	2441MHz (CH39)	# 4, # 1	# 8	# 3, # 2	# 7

\* Type of modulation: GFSK.

\* For receiving mode, peak value in 2.68GHz to 5.5GHz has complies with the average limit, it is unnecessary to perform an average measurement.  
(According to ANSI C63.4-2003 section 8.3.1.2)

**For Restricted Bands:**

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

The EUT was tested in restricted bands and all the test results are listed in section 3.6.3. (The restricted bands defined in part 15.205(a))

No.	Test Mode and Frequency		Reference Test Data No.	
			Horizontal	Vertical
1.	Transmitting	2402MHz (CH0)	# 15, # 14	# 16 , # 13
2.		2480MHz (CH78)	# 10, # 11	# 9, # 12

\* Type of modulation: 8-DPSK.

No.	Test Mode and Frequency		Reference Test Data No.	
			Horizontal	Vertical
1.	Transmitting	2402MHz (CH0)	# 2, # 3	# 1 , # 4
2.		2480MHz (CH78)	# 7, # 6	# 8, # 5

\* Type of modulation: GFSK.



## 3.6.1. Frequency Range 30MHz-1000MHz Measurement Result

**802.11b+BT(GFSK), Transmit, Frequency: 2412MHz+2480MHz**

Site no. : A/C Chamber Data no. : 10  
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL  
 Limit : FCC PART-15C  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)+TX2412(820.11b)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	360.770	16.24	4.43	20.61	41.28	46.00	4.72	
2	386.960	17.43	4.70	17.46	39.59	46.00	6.41	
3	434.490	17.36	5.24	19.74	42.34	46.00	3.66	
4	534.400	19.57	7.00	14.12	40.69	46.00	5.31	
5	800.180	24.14	6.90	14.08	45.11	46.00	0.89	
6	830.250	24.75	7.10	8.42	40.27	46.00	5.73	
7	868.080	25.89	7.20	7.52	40.61	46.00	5.39	
8	882.630	25.28	7.30	6.70	39.28	46.00	6.72	
9	898.150	24.98	7.30	8.01	40.29	46.00	5.71	

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. : A/C Chamber Data no. : 9  
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL  
 Limit : FCC PART-15C  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)+TX2412(820.11b)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	201.690	22.07	3.03	10.48	35.58	43.50	7.92	
2	268.620	24.86	3.70	11.03	39.59	46.00	6.41	
3	399.570	17.69	4.80	16.98	39.46	46.00	6.54	
4	532.460	19.64	7.00	13.74	40.38	46.00	5.62	
5	767.200	23.86	6.80	9.19	39.85	46.00	6.15	
6	800.180	24.14	6.90	10.01	41.04	46.00	4.96	
7	868.080	25.89	7.20	8.31	41.40	46.00	4.60	

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

**BT(GFSK), Transmit, Frequency: 2402MHz**

Site no. : A/C Chamber Data no. : 8  
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL  
 Limit : FCC PART-15C  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2402MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	166.770	20.96	2.70	12.67	36.33	43.50	7.17	
2	348.160	15.26	4.31	20.73	40.30	46.00	5.70	
3	385.990	17.41	4.70	17.91	40.02	46.00	5.98	
4	532.460	19.64	7.00	15.24	41.88	46.00	4.12	
5	767.200	23.86	6.80	7.69	38.35	46.00	7.65	
6	798.240	24.09	6.90	9.69	40.68	46.00	5.32	
7	866.140	25.97	7.20	6.90	40.07	46.00	5.93	
8	894.270	25.02	7.30	9.28	41.60	46.00	4.40	

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. : A/C Chamber Data no. : 7  
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL  
 Limit : FCC PART-15C  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2402MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	166.770	20.96	2.70	10.38	34.04	43.50	9.46	
2	239.520	23.03	3.40	10.31	36.74	46.00	9.26	
3	480.080	18.68	6.05	9.14	33.87	46.00	12.13	
4	532.460	19.64	7.00	12.01	38.65	46.00	7.35	
5	767.200	23.86	6.80	6.84	37.50	46.00	8.50	
6	800.180	24.14	6.90	9.90	40.93	46.00	5.07	
7	868.080	25.89	7.20	6.71	39.80	46.00	6.20	

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

**BT(GFSK), Transmit, Frequency: 2441MHz**

Site no. : A/C Chamber Data no. : 8  
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL  
 Limit : FCC PART-15C  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2441MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	267.650	24.79	3.70	11.01	39.50	46.00	6.50	
2	399.570	17.69	4.80	17.06	39.54	46.00	6.46	
3	432.550	17.28	5.20	18.68	41.15	46.00	4.85	
4	532.460	19.64	7.00	16.28	42.92	46.00	3.08	
5	754.590	23.51	6.70	12.53	42.74	46.00	3.26	
6	768.170	23.87	6.80	10.93	41.60	46.00	4.40	
7	800.180	24.14	6.90	9.25	40.29	46.00	5.71	
8	841.890	25.11	7.10	9.77	41.99	46.00	4.01	
9	866.140	25.97	7.20	6.50	39.67	46.00	6.33	

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. : A/C Chamber Data no. : 7  
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL  
 Limit : FCC PART-15C  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2441MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	166.770	20.96	2.70	10.33	33.99	43.50	9.51	
2	243.400	23.29	3.40	7.19	33.88	46.00	12.12	
3	480.080	18.68	6.05	7.91	32.64	46.00	13.36	
4	532.460	19.64	7.00	15.12	41.76	46.00	4.24	
5	567.380	20.97	6.50	6.95	34.43	46.00	11.57	
6	602.300	21.37	6.30	6.26	33.93	46.00	12.07	
7	802.120	24.17	6.90	10.25	41.32	46.00	4.68	

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

**BT(GFSK), Transmit, Frequency: 2480MHz**

Site no. : A/C Chamber Data no. : 8  
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL  
 Limit : FCC PART-15C  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	166.770	20.96	2.70	11.50	35.16	43.50	8.34	
2	266.680	24.74	3.70	13.31	41.75	46.00	4.25	
3	432.550	17.28	5.20	17.93	40.40	46.00	5.60	
4	532.460	19.64	7.00	12.92	39.56	46.00	6.44	
5	767.200	23.86	6.80	10.82	41.48	46.00	4.52	
6	798.240	24.09	6.90	9.04	40.02	46.00	5.98	
7	866.140	25.97	7.20	8.99	42.16	46.00	3.84	

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. : A/C Chamber Data no. : 7  
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL  
 Limit : FCC PART-15C  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	167.740	20.97	2.70	11.42	35.10	43.50	8.40	
2	480.080	18.68	6.05	7.73	32.46	46.00	13.54	
3	534.400	19.57	7.00	15.20	41.77	46.00	4.23	
4	765.260	23.82	6.80	6.82	37.44	46.00	8.56	
5	800.180	24.14	6.90	10.48	41.51	46.00	4.49	
6	868.080	25.89	7.20	7.31	40.40	46.00	5.60	
7	896.210	25.01	7.30	6.67	38.98	46.00	7.02	

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

**BT(GFSK), Receive, Frequency: 2441MHz**

Site no. : A/C Chamber Data no. : 6  
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : HORIZONTAL  
 Limit : FCC PART-15C  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : RX2441MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	133.790	19.89	2.40	14.81	37.10	43.50	6.40	
2	266.680	24.74	3.70	10.16	38.60	46.00	7.40	
3	432.550	17.28	5.20	17.93	40.40	46.00	5.60	
4	534.400	19.57	7.00	15.74	42.31	46.00	3.69	
5	767.200	23.86	6.80	10.63	41.29	46.00	4.71	
6	798.240	24.09	6.90	10.07	41.06	46.00	4.94	
7	866.140	25.97	7.20	7.08	40.26	46.00	5.74	
8	887.480	25.16	7.30	7.12	39.58	46.00	6.42	

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. : A/C Chamber Data no. : 5  
 Dis. / Ant. : 3m VBA6106A/UHALP9108A Ant. pol. : VERTICAL  
 Limit : FCC PART-15C  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : RX2441MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	167.740	20.97	2.70	10.76	34.44	43.50	9.06	
2	480.080	18.68	6.05	8.07	32.80	46.00	13.20	
3	532.460	19.64	7.00	11.61	38.25	46.00	7.75	
4	800.180	24.14	6.90	7.16	38.20	46.00	7.80	
5	865.170	26.00	7.20	5.18	38.38	46.00	7.62	
6	876.810	25.35	7.30	6.19	38.84	46.00	7.16	

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. Frequency Range Above 1GHz Measurement Results

**802.11b+BT(GFSK), Transmit, Frequency: 2412MHz+2480MHz**

Site no. : A/C Chamber Data no. : 4  
 Dis. / Ant. : 3m 3115(3775) Ant. pol. : HORIZONTAL  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)+TX2412(820.11b)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	28.75	57.55	74.00	16.45	Peak
2	1599.760	26.10	6.14	18.76	51.00	74.00	23.00	Peak
3	1804.720	26.90	6.88	19.95	53.73	74.00	20.27	Peak
4	2132.320	27.84	6.03	23.58	57.44	74.00	16.56	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. : A/C Chamber Data no. : 3  
 Dis. / Ant. : 3m 3115(3775) Ant. pol. : VERTICAL  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)+TX2412(820.11b)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	20.77	49.57	74.00	24.43	Peak
2	1330.960	25.22	4.93	19.45	49.59	74.00	24.41	Peak
3	1599.760	26.10	6.14	22.95	55.19	74.00	18.81	Peak
4	2128.960	27.82	6.02	27.23	61.08	74.00	12.92	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. : A/C Chamber Data no. : 12  
 Dis. / Ant. : 3m 3115(3775) Ant. pol. : HORIZONTAL  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)+TX2412(820.11b)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	21.34	50.14	54.00	3.86	Average
2	1599.760	26.10	6.14	12.38	44.62	54.00	9.38	Average
3	1804.720	26.90	6.88	12.97	46.75	54.00	7.25	Average
4	2132.320	27.84	6.03	14.65	48.52	54.00	5.48	Average

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. : A/C Chamber Data no. : 11  
 Dis. / Ant. : 3m 3115(3775) Ant. pol. : VERTICAL  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)+TX2412(820.11b)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	13.39	42.19	54.00	11.81	Average
2	1330.960	25.22	4.93	12.94	43.09	54.00	10.91	Average
3	1599.760	26.10	6.14	15.38	47.62	54.00	6.38	Average
4	2128.960	27.82	6.02	17.42	51.26	54.00	2.74	Average

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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)+TX2412(820.11b)

Data no. : 5  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	3311.000	30.72	7.49	18.61	56.82	74.00	17.18	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)+TX2412(820.11b)

Data no. : 8  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	4963.000	33.23	9.12	12.83	55.18	74.00	18.82	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)+TX2412(820.11b)

Data no. : 6  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	3311.000	30.72	7.49	12.52	50.73	74.00	23.27	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)+TX2412(820.11b)

Data no. : 7  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	4960.000	33.23	9.12	12.46	54.81	74.00	19.19	Peak

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 : Jul. 27, 2011 Temperature : 26°C  
 EUT : CregleBook Humidity : 50%  
 Test Mode : 802.11b+BT(GFSK), Transmit, Frequency: 2412MHz+2480MHz

Emission Frequency (MHz)	Peak Value (dB/m)	Duty Cycle Factor (dB)	Average Value Horizontal (dBμV/m)	Limit (dBμV/m)	Margin (dB)
3311.00	56.82	-30.75	26.07	54.00	27.93
4963.00	55.18	-30.75	24.43	54.00	29.57

Remarks: 1. Duty Cycle Factor= $20\log(\text{dwell time}/100\text{ms})=20\log(2.9\text{ms}/100\text{ms})=-30.75$   
 2. Average value=Peak value+ Duty Cycle Factor

Emission Frequency (MHz)	Peak Value (dB/m)	Duty Cycle Factor (dB)	Average Value Vertical (dBμV/m)	Limit (dBμV/m)	Margin (dB)
3311.00	50.73	-30.75	19.98	54.00	34.02
4960.00	54.81	-30.75	24.06	54.00	29.94

Remarks: 1. Duty Cycle Factor= $20\log(\text{dwell time}/100\text{ms})=20\log(2.9\text{ms}/100\text{ms})=-30.75$   
 2. Average value=Peak value+ Duty Cycle Factor

**BT(GFSK), Transmit, Frequency: 2402MHz**

Site no. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2402MHz(BT-GFSK)

Data no. : 2  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1057.120	24.44	4.31	26.85	55.60	74.00	18.40	Peak
2	1594.720	26.10	6.12	22.57	54.79	74.00	19.21	Peak
3	2128.960	27.82	6.02	21.18	55.03	74.00	18.97	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2402MHz(BT-GFSK)

Data no. : 1  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	24.25	53.05	74.00	20.95	Peak
2	1594.720	26.10	6.12	23.21	55.43	74.00	18.57	Peak
3	2128.960	27.82	6.02	25.76	59.61	74.00	14.39	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2402MHz(BT-GFSK)

Data no. : 10  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1057.120	24.44	4.31	18.84	47.59	54.00	6.41	Average
2	1594.720	26.10	6.12	14.44	46.66	54.00	7.34	Average
3	2128.960	27.82	6.02	14.46	48.30	54.00	5.70	Average

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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2402MHz(BT-GFSK)

Data no. : 9  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	17.76	46.56	54.00	7.44	Average
2	1594.720	26.10	6.12	16.68	48.90	54.00	5.10	Average
3	2128.960	27.82	6.02	16.85	50.69	54.00	3.31	Average

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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2402MHz(BT-GFSK)

Data no. : 3  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	3207.340	30.51	7.36	23.61	61.49	74.00	12.51	Peak
2	4804.000	32.92	9.14	11.44	53.50	74.00	20.50	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2402MHz(BT-GFSK)

Data no. : 4  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	3207.340	30.51	7.36	19.77	57.65	74.00	16.35	Peak
2	4804.000	32.92	9.14	15.27	57.33	74.00	16.67	Peak

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 : Jul. 27, 2011 Temperature : 26°C

EUT : CregleBook Humidity : 50%

Test Mode : BT(GFSK), Transmit, Frequency: 2402MHz

Emission Frequency	Peak Value	Duty Cycle Factor	Average Value Horizontal	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
3207.34	61.49	-30.75	30.74	54.00	23.26
4804.00	53.5	-30.75	22.75	54.00	31.25

Remarks: 1. Duty Cycle Factor= $20\log(\text{dwell time}/100\text{ms})=20\log(2.9\text{ms}/100\text{ms})=-30.75$   
 2. Average value=Peak value+ Duty Cycle Factor

Emission Frequency	Peak Value	Duty Cycle Factor	Average Value Vertical	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
3207.34	57.65	-30.75	26.90	54.00	27.10
4804.00	57.33	-30.75	26.58	54.00	27.42

Remarks: 1. Duty Cycle Factor= $20\log(\text{dwell time}/100\text{ms})=20\log(2.9\text{ms}/100\text{ms})=-30.75$   
 2. Average value=Peak value+ Duty Cycle Factor

**BT(GFSK), Transmit, Frequency: 2441MHz**

Site no.	: A/C Chamber	Data no.	: 2
Dis. / Ant.	: 3m 3115(3775)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART-15C (1G-PK)		
Env. / Ins.	: E4446A 26°C/50%		□Jarwei Wang
EUT	: CB1101		
Power Rating	: 120Vac/60Hz		
Test Mode	: TX2441MHz(BT-GFSK)		

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	26.70	55.50	74.00	18.50	Peak
2	1599.760	26.10	6.14	17.57	49.81	74.00	24.19	Peak
3	2128.960	27.82	6.02	21.38	55.23	74.00	18.77	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.	: A/C Chamber	Data no.	: 1
Dis. / Ant.	: 3m 3115(3775)	Ant. pol.	: VERTICAL
Limit	: FCC PART-15C (1G-PK)		
Env. / Ins.	: E4446A 26°C/50%		□Jarwei Wang
EUT	: CB1101		
Power Rating	: 120Vac/60Hz		
Test Mode	: TX2441MHz(BT-GFSK)		

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	24.16	52.96	74.00	21.04	Peak
2	1594.720	26.10	6.12	22.94	55.16	74.00	18.84	Peak
3	2128.960	27.82	6.02	26.53	60.38	74.00	13.62	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2441MHz(BT-GFSK)

Data no. : 10  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	19.65	48.45	54.00	5.55	Average
2	1599.760	26.10	6.14	10.30	42.54	54.00	11.46	Average
3	2128.960	27.82	6.02	14.53	48.37	54.00	5.63	Average

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

Site no. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2441MHz(BT-GFSK)

Data no. : 9  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	16.48	45.29	54.00	8.71	Average
2	1594.720	26.10	6.12	15.96	48.18	54.00	5.82	Average
3	2128.960	27.82	6.02	17.56	51.40	54.00	2.60	Average

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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2441MHz(BT-GFSK)

Data no. : 3  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	3255.280	30.62	7.40	19.35	57.37	74.00	16.63	Peak
2	4884.000	33.09	9.16	12.73	54.99	74.00	19.01	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2441MHz(BT-GFSK)

Data no. : 4  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	3255.280	30.62	7.40	14.87	52.89	74.00	21.11	Peak
2	4884.000	33.09	9.16	13.65	55.91	74.00	18.09	Peak

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 : Jul. 27, 2011 Temperature : 26°C

EUT : CregleBook Humidity : 50%

Test Mode : BT(GFSK), Transmit, Frequency: 2441MHz

Emission Frequency	Peak Value	Duty Cycle Factor	Average Value Horizontal	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
3255.28	57.37	-30.75	26.62	54.00	27.38
4884.00	54.99	-30.75	24.24	54.00	29.76

Remarks: 1. Duty Cycle Factor= $20\log(\text{dwell time}/100\text{ms})=20\log(2.9\text{ms}/100\text{ms})=-30.75$   
 2. Average value=Peak value+ Duty Cycle Factor

Emission Frequency	Peak Value	Duty Cycle Factor	Average Value Vertical	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
3255.28	52.89	-30.75	22.14	54.00	31.86
4884.00	55.91	-30.75	25.16	54.00	28.84

Remarks: 1. Duty Cycle Factor= $20\log(\text{dwell time}/100\text{ms})=20\log(2.9\text{ms}/100\text{ms})=-30.75$   
 2. Average value=Peak value+ Duty Cycle Factor

**BT(GFSK), Transmit, Frequency: 2480MHz**

Site no. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)

Data no. : 2  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1057.120	24.44	4.31	26.93	55.68	74.00	18.32	Peak
2	1594.720	26.10	6.12	22.12	54.34	74.00	19.66	Peak
3	2132.320	27.84	6.03	21.63	55.49	74.00	18.51	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)

Data no. : 1  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	24.35	53.15	74.00	20.85	Peak
2	1594.720	26.10	6.12	22.92	55.14	74.00	18.86	Peak
3	2128.960	27.82	6.02	26.23	60.08	74.00	13.92	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)

Data no. : 10  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1057.120	24.44	4.31	18.11	46.87	54.00	7.13	Average
2	1594.720	26.10	6.12	14.17	46.39	54.00	7.61	Average
3	2132.320	27.84	6.03	14.69	48.56	54.00	5.44	Average

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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)

Data no. : 9  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	18.89	47.69	54.00	6.31	Average
2	1594.720	26.10	6.12	14.58	46.80	54.00	7.20	Average
3	2128.960	27.82	6.02	17.70	51.54	54.00	2.46	Average

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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)

Data no. : 3  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	3311.680	30.72	7.49	18.18	56.39	74.00	17.61	Peak
2	4960.000	33.27	9.12	12.16	54.55	74.00	19.45	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : TX2480MHz(BT-GFSK)

Data no. : 4  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	3311.680	30.72	7.49	14.62	52.83	74.00	21.17	Peak
2	4960.000	33.27	9.12	12.64	55.03	74.00	18.97	Peak

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

Date of Test : Jul. 27, 2011 Temperature : 26°C

EUT : CregleBook Humidity : 50%

Test Mode : BT(GFSK), Transmit, Frequency: 2480MHz

Emission Frequency	Peak Value	Duty Cycle Factor	Average Value Horizontal	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
3311.00	56.39	-30.75	25.64	54.00	28.36
4960.00	54.55	-30.75	23.80	54.00	30.20

Remarks: 1. Duty Cycle Factor= $20\log(\text{dwell time}/100\text{ms})=20\log(2.9\text{ms}/100\text{ms})=-30.75$   
 2. Average value=Peak value+ Duty Cycle Factor  
 3. All final readings of measurement were with Average values.

Emission Frequency	Peak Value	Duty Cycle Factor	Average Value Vertical	Limit	Margin
(MHz)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)
3311.00	52.83	-30.75	22.08	54.00	31.92
4960.00	55.03	-30.75	24.28	54.00	29.72

Remarks: 1. Duty Cycle Factor= $20\log(\text{dwell time}/100\text{ms})=20\log(2.9\text{ms}/100\text{ms})=-30.75$   
 2. Average value=Peak value+ Duty Cycle Factor  
 3. All final readings of measurement were with Average values.

**BT(GFSK), Receive, Frequency: 2441MHz**

Site no. : A/C Chamber Data no. : 4  
 Dis. / Ant. : 3m 3115(3775) Ant. pol. : HORIZONTAL  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : RX2441MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	27.80	56.60	74.00	17.40	Peak
2	1594.720	26.10	6.12	20.74	52.96	74.00	21.04	Peak
3	1955.920	27.50	6.08	16.37	49.96	74.00	24.04	Peak
4	2128.960	27.82	6.02	22.13	55.98	74.00	18.02	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. : A/C Chamber Data no. : 1  
 Dis. / Ant. : 3m 3115(3775) Ant. pol. : VERTICAL  
 Limit : FCC PART-15C (1G-PK)  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : RX2441MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1057.120	24.44	4.31	21.97	50.72	74.00	23.28	Peak
2	1325.920	25.22	4.91	24.66	54.79	74.00	19.21	Peak
3	1594.720	26.10	6.12	23.60	55.82	74.00	18.18	Peak
4	2128.960	27.82	6.02	26.60	60.45	74.00	13.55	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. : A/C Chamber Data no. : 8  
 Dis. / Ant. : 3m 3115(3775) Ant. pol. : HORIZONTAL  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : RX2441MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1062.160	24.49	4.31	18.85	47.65	54.00	6.35	Average
2	1594.720	26.10	6.12	14.65	46.87	54.00	7.13	Average
3	1955.920	27.50	6.08	10.00	43.58	54.00	10.42	Average
4	2128.960	27.82	6.02	13.55	47.39	54.00	6.61	Average

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. : A/C Chamber Data no. : 7  
 Dis. / Ant. : 3m 3115(3775) Ant. pol. : VERTICAL  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : RX2441MHz(BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	1057.120	24.44	4.31	13.47	42.23	54.00	11.77	Average
2	1325.920	25.22	4.91	16.83	46.96	54.00	7.04	Average
3	1594.720	26.10	6.12	15.58	47.80	54.00	6.20	Average
4	2128.960	27.82	6.02	17.55	51.39	54.00	2.61	Average

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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : RX2441MHz(BT-GFSK)

Data no. : 3  
 Ant. pol. : HORIZONTAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	3193.240	30.48	7.35	9.66	47.49	54.00	6.51	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. : A/C Chamber  
 Dis. / Ant. : 3m 3115(3775)  
 Limit : FCC PART-15C (1G-AV)  
 Env. / Ins. : E4446A 26°C/50%  
 EUT : CB1101  
 Power Rating : 120Vac/60Hz  
 Test Mode : RX2441MHz(BT-GFSK)

Data no. : 2  
 Ant. pol. : VERTICAL  
 □Jarwei Wang

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBμV)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark
1	3193.240	30.48	7.35	12.21	50.04	54.00	3.96	Peak

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

## 3.6.3. Restricted Bands Measurement Results

Date of Test : Jun. 27 2011 Temperature : 26°C

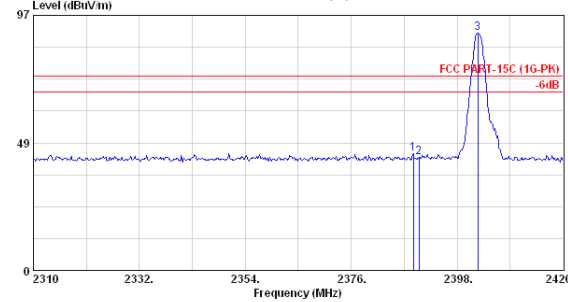
EUT : CregleBook Humidity : 50%

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code:24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:itmc@itmc.com.tw

Data: 15 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 15  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : HORIZONTAL  
Limit : FCC PART-15C (1G-PK)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2402MHz (BT-8DPSK)

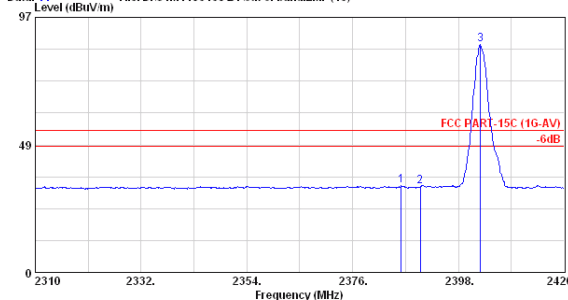
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2388.870	28.10	6.34	9.87	44.30	74.00	29.70	Peak
2	2390.080	28.10	6.34	8.46	42.90	74.00	31.10	Peak
3	2402.290	28.10	6.36	55.86	90.31	74.00	-16.31	Peak

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code:24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:itmc@itmc.com.tw

Data: 14 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 14  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : HORIZONTAL  
Limit : FCC PART-15C (1G-AV)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2402MHz (BT-8DPSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2386.120	28.10	6.33	-1.51	32.92	54.00	21.08	Average
2	2390.080	28.10	6.34	-1.81	32.63	54.00	21.37	Average
3	2402.620	28.11	6.36	52.31	86.78	54.00	-32.78	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 : Jun. 27 2011 Temperature : 26°C

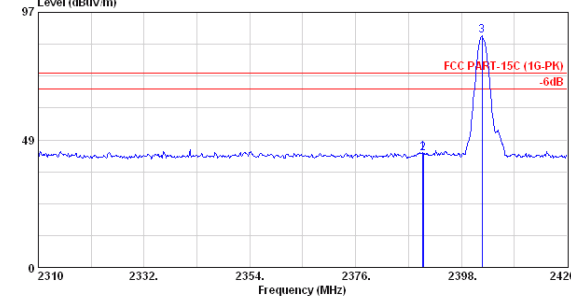
EUT : CregleBook Humidity : 50%

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel: +886-2-26092133 Fax: +886-2-26099303  
Email: itemc@itemc.com.tw

Data: 16 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 16  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : VERTICAL  
Limit : FCC PART-15C (1G-PK)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2402MHz (BT-8DPSK)

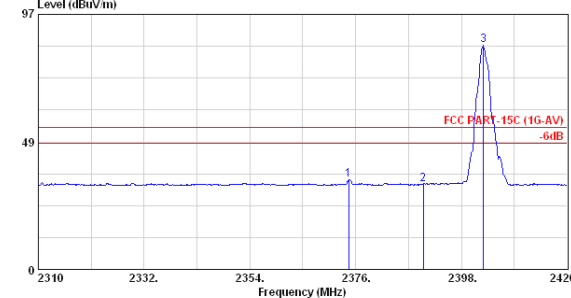
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2389.970	28.10	6.34	9.11	43.55	74.00	30.45	Peak
2	2390.080	28.10	6.34	9.04	43.48	74.00	30.52	Peak
3	2402.290	28.10	6.36	53.52	87.97	74.00	-13.97	Peak

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel: +886-2-26092133 Fax: +886-2-26099303  
Email: itemc@itemc.com.tw

Data: 13 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 13  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : VERTICAL  
Limit : FCC PART-15C (1G-AV)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2402MHz (BT-8DPSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2374.570	28.08	6.32	-0.36	34.04	54.00	19.96	Average
2	2390.080	28.10	6.34	-2.00	32.44	54.00	21.56	Average
3	2402.620	28.11	6.36	50.63	85.10	54.00	-31.10	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 : Jun. 27 2011 Temperature : 26°C

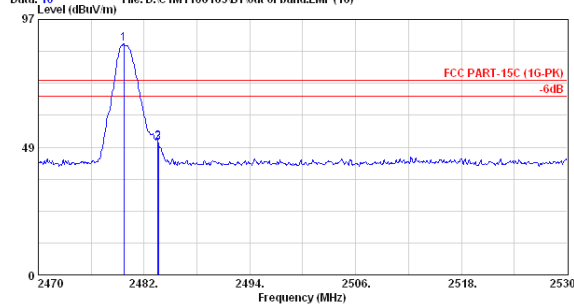
EUT : CregleBook Humidity : 50%

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel: +886-2-26092133 Fax: +886-2-26099303  
Email: itemc@itemc.com.tw

Data: 10 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 10  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : HORIZONTAL  
Limit : FCC PART-15C (1G-PK)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2480MHz (BT-8DPSK)

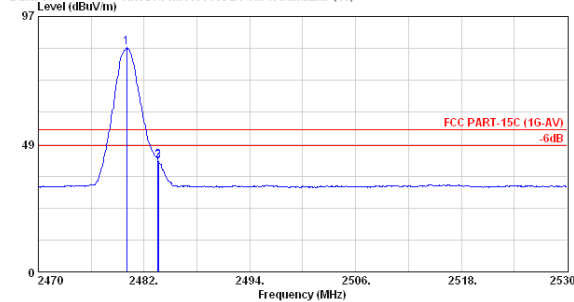
Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2479.720	28.18	6.44	53.16	87.78	74.00	-13.78	Peak
2 2483.560	28.18	6.45	15.98	50.62	74.00	23.38	Peak
3 2483.620	28.18	6.45	15.31	49.94	74.00	24.06	Peak

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel: +886-2-26092133 Fax: +886-2-26099303  
Email: itemc@itemc.com.tw

Data: 11 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 11  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : HORIZONTAL  
Limit : FCC PART-15C (1G-AV)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2480MHz (BT-8DPSK)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2480.020	28.18	6.44	50.68	85.31	54.00	-31.31	Average
2 2483.560	28.18	6.45	7.80	42.44	54.00	11.56	Average
3 2483.620	28.18	6.45	7.22	41.85	54.00	12.15	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 : Jun. 27 2011 Temperature : 26°C

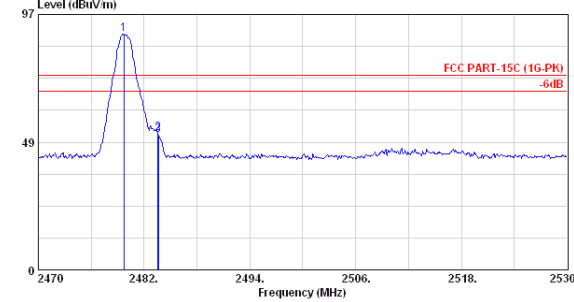
EUT : CregleBook Humidity : 50%

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-Fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email: itemc@itemc.com.tw

Data: 9 File: D:\C1M1106165\BT out of band EMI (16)



Site no. : A/C Chamber Data no. : 9  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : VERTICAL  
Limit : FCC PART-15C (1G-PK)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2480MHz (BT-8DPSK)

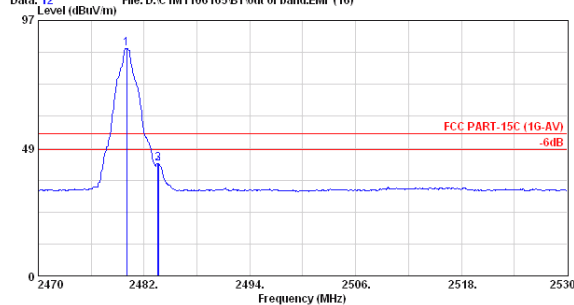
Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2479.720	28.18	6.44	55.07	89.69	74.00	-15.69	Peak
2 2483.560	28.18	6.45	17.24	51.87	74.00	22.13	Peak
3 2483.620	28.18	6.45	16.57	51.20	74.00	22.80	Peak

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-Fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email: itemc@itemc.com.tw

Data: 12 File: D:\C1M1106165\BT out of band EMI (16)



Site no. : A/C Chamber Data no. : 12  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : VERTICAL  
Limit : FCC PART-15C (1G-AV)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2480MHz (BT-8DPSK)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2480.020	28.18	6.44	51.77	86.40	54.00	-32.40	Average
2 2483.560	28.18	6.45	8.06	42.70	54.00	11.30	Average
3 2483.620	28.18	6.45	8.04	42.67	54.00	11.33	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 : Jun. 27 2011 Temperature : 26°C

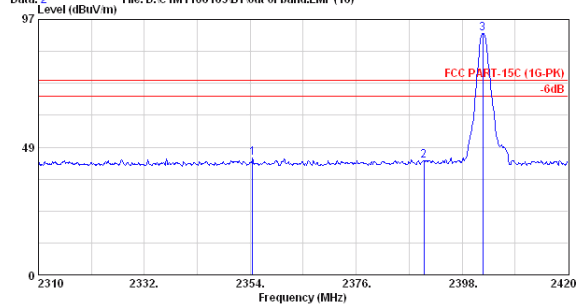
EUT : CregleBook Humidity : 50%

Test Mode : Transmitting Mode, Frequency: 2402MHz (CH0), GFSK



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-Ru Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:itmc@itmc.com.tw

Data: 2 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 2  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : HORIZONTAL  
Limit : FCC PART-15C (1G-PK)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2402MHz (BT-GFSK)

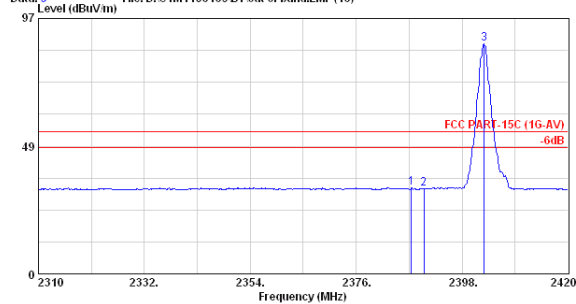
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2354.440	28.06	6.29	10.01	44.37	74.00	29.63	Peak
2	2390.080	28.10	6.34	8.73	43.17	74.00	30.83	Peak
3	2402.290	28.10	6.36	57.25	91.70	74.00	-17.70	Peak

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-Ru Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:itmc@itmc.com.tw

Data: 3 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 3  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : HORIZONTAL  
Limit : FCC PART-15C (1G-AV)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2402MHz (BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2387.440	28.10	6.33	-1.72	32.71	54.00	21.29	Average
2	2390.080	28.10	6.34	-1.98	32.46	54.00	21.54	Average
3	2402.620	28.11	6.36	52.80	87.27	54.00	-33.27	Average

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

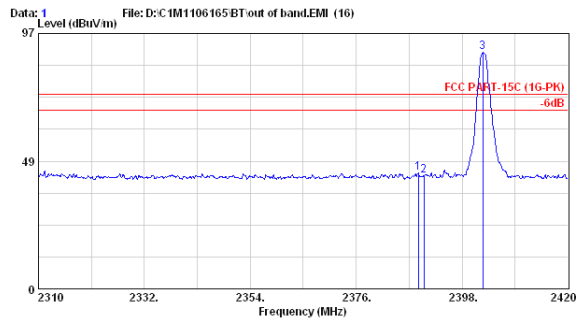
Date of Test : Jun. 27 2011 Temperature : 26°C

EUT : CregleBook Humidity : 50%

Test Mode : Transmitting Mode, Frequency: 2402MHz (CH0), GFSK



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-Fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:ttmc@ttmc.com.tw



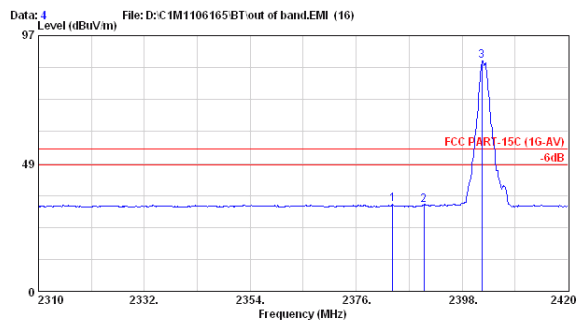
Site no. : A/C Chamber Data no. : 1  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : VERTICAL  
Limit : FCC PART-15C (1G-PK)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2402MHz (BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2388.870	28.10	6.34	9.78	44.21	74.00	29.79	Peak
2	2390.080	28.10	6.34	9.54	42.98	74.00	31.02	Peak
3	2402.290	28.10	6.36	55.35	89.80	74.00	-15.80	Peak

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-Fu Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:ttmc@ttmc.com.tw



Site no. : A/C Chamber Data no. : 4  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : VERTICAL  
Limit : FCC PART-15C (1G-AV)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2402MHz (BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2383.590	28.08	6.33	-1.52	32.89	54.00	21.11	Average
2	2390.080	28.10	6.34	-1.65	32.79	54.00	21.21	Average
3	2402.070	28.10	6.36	52.87	87.32	54.00	-33.32	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 : Jun. 27 2011 Temperature : 26°C

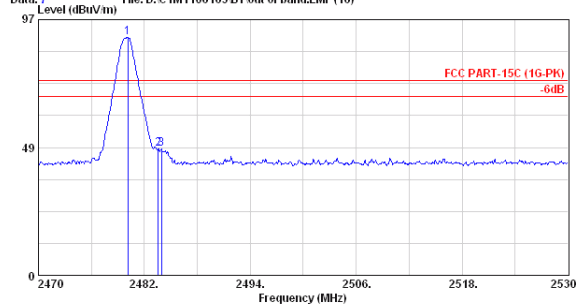
EUT : CregleBook Humidity : 50%

Test Mode : Transmitting Mode, Frequency: 2480MHz (CH78), GFSK



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-Ru Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:itmc@itmc.com.tw

Data: 7 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 7  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : HORIZONTAL  
Limit : FCC PART-15C (1G-PK)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2480MHz (BT-GFSK)

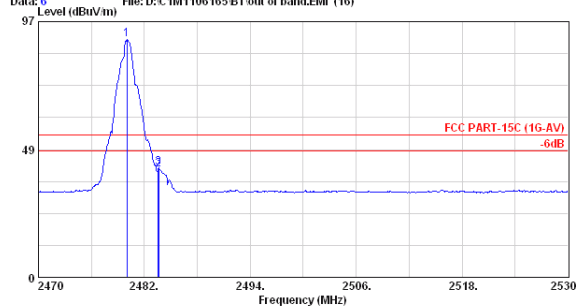
Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2480.140	28.18	6.44	55.79	90.42	74.00	-16.42	Peak
2 2483.560	28.18	6.45	13.20	47.84	74.00	26.16	Peak
3 2483.920	28.18	6.45	13.41	48.04	74.00	25.96	Peak

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-Ru Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:itmc@itmc.com.tw

Data: 6 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 6  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : HORIZONTAL  
Limit : FCC PART-15C (1G-AV)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2480MHz (BT-GFSK)

Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2480.020	28.18	6.44	55.54	90.17	54.00	-36.17	Average
2 2483.560	28.18	6.45	6.39	41.02	54.00	12.98	Average
3 2483.620	28.18	6.45	6.88	41.51	54.00	12.49	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 : Jun. 27 2011 Temperature : 26°C

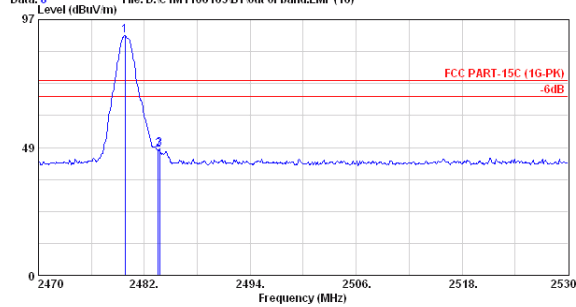
EUT : CregleBook Humidity : 50%

Test Mode : Transmitting Mode, Frequency: 2480MHz (CH78), GFSK



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-Ru Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:itmc@itmc.com.tw

Data: 8 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 8  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : VERTICAL  
Limit : FCC PART-15C (1G-PK)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2480MHz (BT-GFSK)

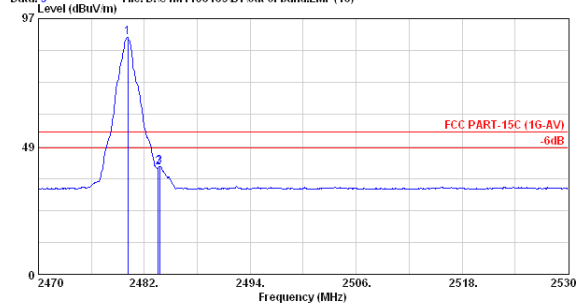
	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.840	28.18	6.44	56.34	90.96	74.00	-16.96	Peak
2	2483.560	28.18	6.45	12.82	47.45	74.00	26.55	Peak
3	2483.740	28.18	6.45	13.31	47.94	74.00	26.06	Peak

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



AUDIX TECHNOLOGY Corp. EMC Laboratory  
No.53-11, Tin-Ru Tsun, Lin-kou Hsiang, Taipei  
County, Taiwan R.O.C. Post Code 24443  
Tel:+886-2-26092133 Fax:+886-2-26099303  
Email:itmc@itmc.com.tw

Data: 5 File: D:\C1M1106165\BT out of band.EMI (16)



Site no. : A/C Chamber Data no. : 5  
Dis. / Ant. : 3m 3115 (3775) Ant. pol. : VERTICAL  
Limit : FCC PART-15C (1G-AV)  
Env. / Ins. : E4446A 26°C/50% □Jarwei Wang  
EUT : CB1101  
Power Rating : 120Vac/60Hz  
Test Mode : TX2480MHz (BT-GFSK)

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.140	28.18	6.44	55.42	90.05	54.00	-36.05	Average
2	2483.560	28.18	6.45	5.96	40.59	54.00	13.41	Average
3	2483.740	28.18	6.45	6.31	40.94	54.00	13.06	Average

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

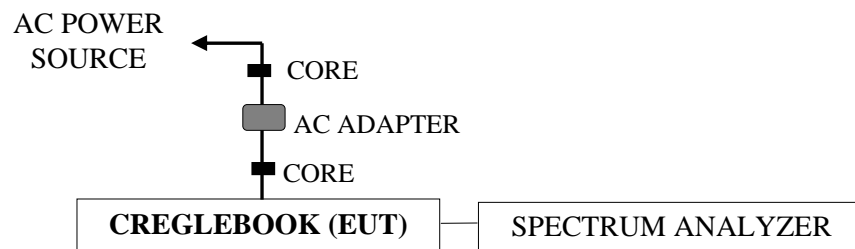
## 4. 20dB BANDWIDTH MEASUREMENT

### 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	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'

### 4.2. Block Diagram of Test Setup



### 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 (CregleBook) was on transmitting frequency function during the testing.

### 4.5. Test Procedure (DA 00-705)

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 3kHz RBW and 3kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

RBW=1% of the 20dB bandwidth

VBW=RBW

#### 4.6. Test Results

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

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

EUT : CregleBook

M/N : CB1101

Test Date: Jul. 08, 2011 Temperature : 26°C Humidity : 54 %

##### 4.6.1.Type of Modulation: 8-DPSK

No.	Channel	Test Frequency	20dB Bandwidth	2/3 (20dB Bandwidth)
1.	0	2402MHz	<b>1.205MHz</b>	<b>0.803MHz</b>
2.	39	2441MHz	<b>1.210MHz</b>	<b>0.807MHz</b>
3.	78	2480MHz	<b>1.200MHz</b>	<b>0.800MHz</b>

The maximum two-thirds of the 20dB bandwidth shall be at maximum 0.807MHz.

##### 4.6.2.Type of Modulation: GFSK

No.	Channel	Test Frequency	20dB Bandwidth	2/3 (20dB Bandwidth)
1.	0	2402MHz	<b>930kHz</b>	<b>620kHz</b>
2.	39	2441MHz	<b>930kHz</b>	<b>620kHz</b>
3.	78	2480MHz	<b>925kHz</b>	<b>617kHz</b>

The maximum two-thirds of the 20dB bandwidth shall be at maximum 620kHz.

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

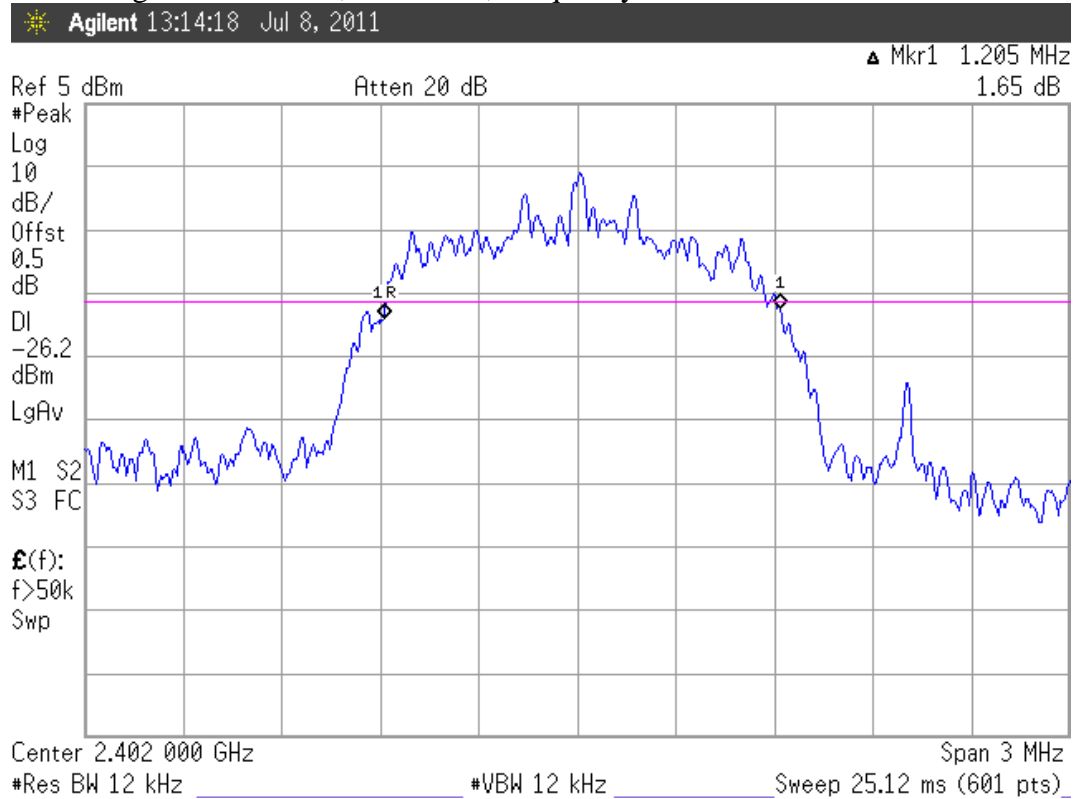


Figure 2: 8-DPSK, Channel 39, Frequency: 2441MHz

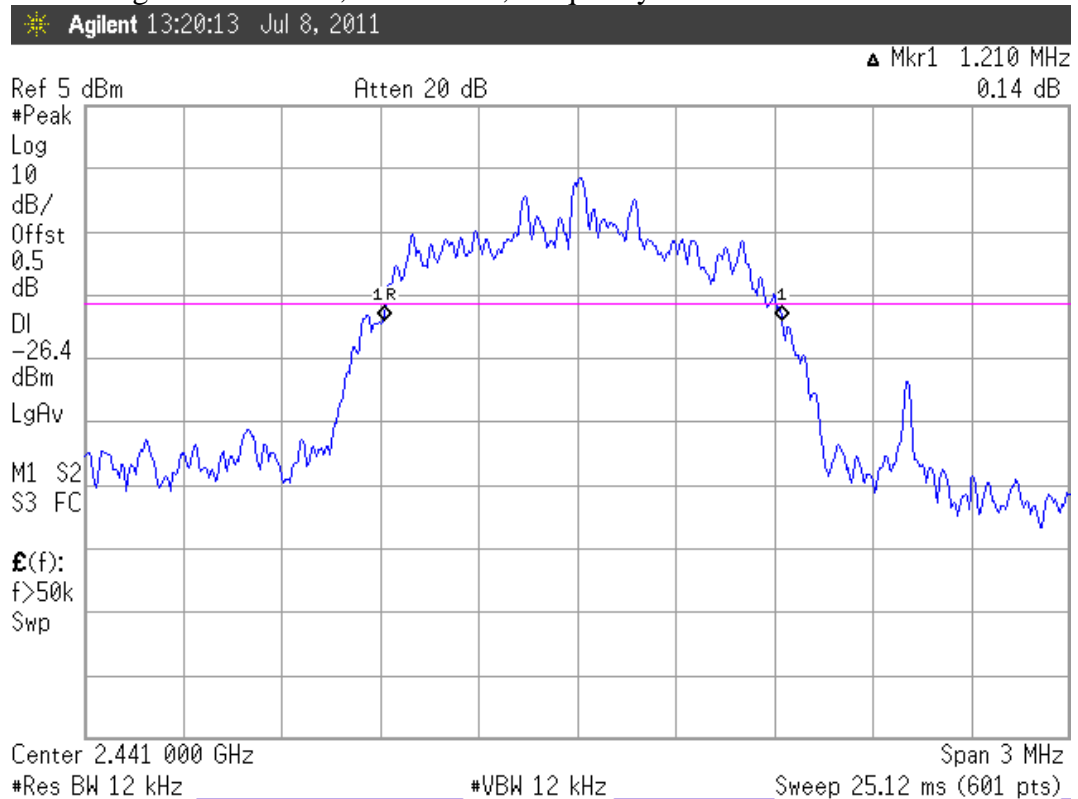


Figure 3: 8-DPSK, Channel 78, Frequency: 2480MHz

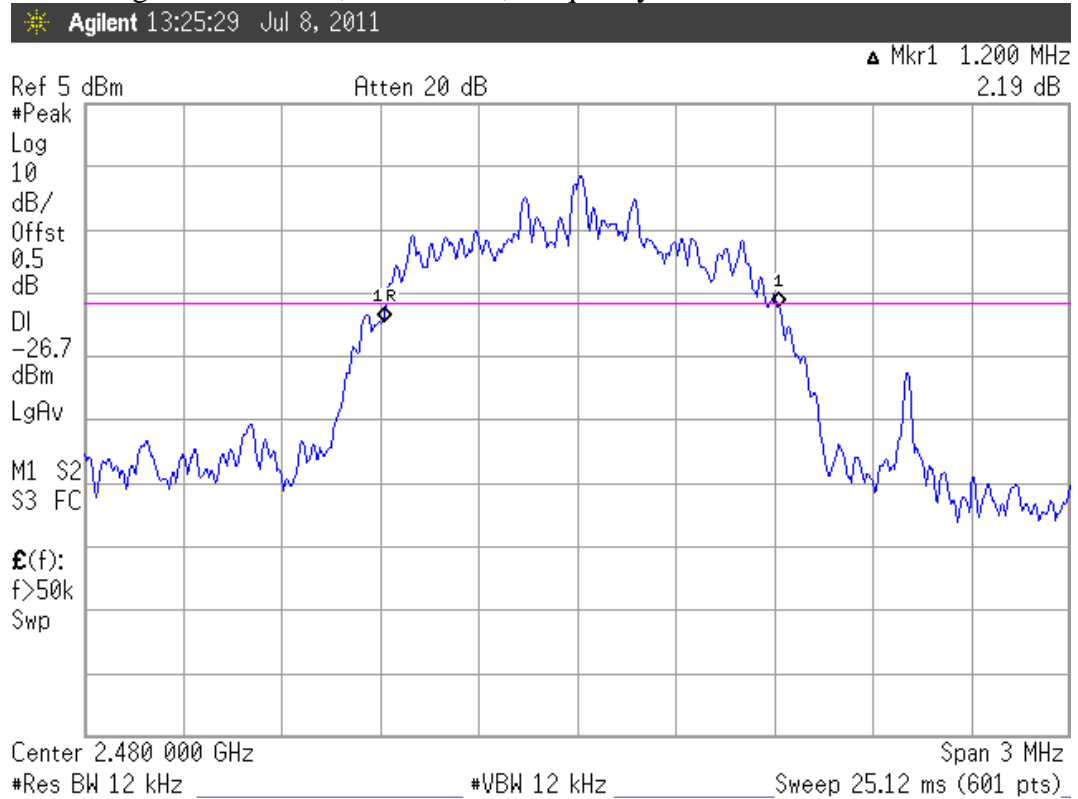


Figure 4: GFSK, Channel 0, Frequency: 2402MHz



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	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'

### 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 (DA 00-705)

The transmitter output was connected to the spectrum analyzer. The channel separation was measure by spectrum analyzer with 39kHz RBW and 39kHz VBW. The video bandwidth not to be smaller than resolution bandwidth, the peak was mark on adjacent bandwidth, the between of peak is carrier frequency separation.

RBW=1% Span

VBW=RBW

## 5.6. Test Results

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

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

EUT : CregleBook

M/N : CB1101

Test Date: Jul. 08, 2011 Temperature : 26°C 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

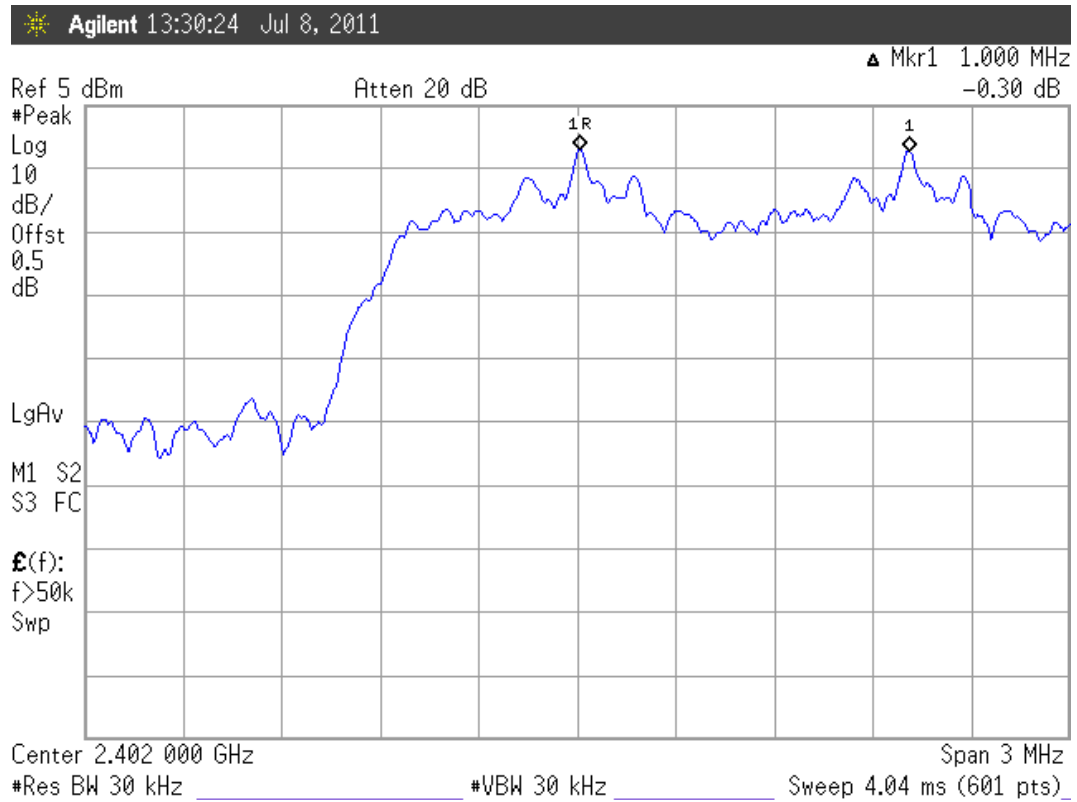


Figure 2: 8-DPSK, 2441MHz adjacent channel of right carrier frequency separation

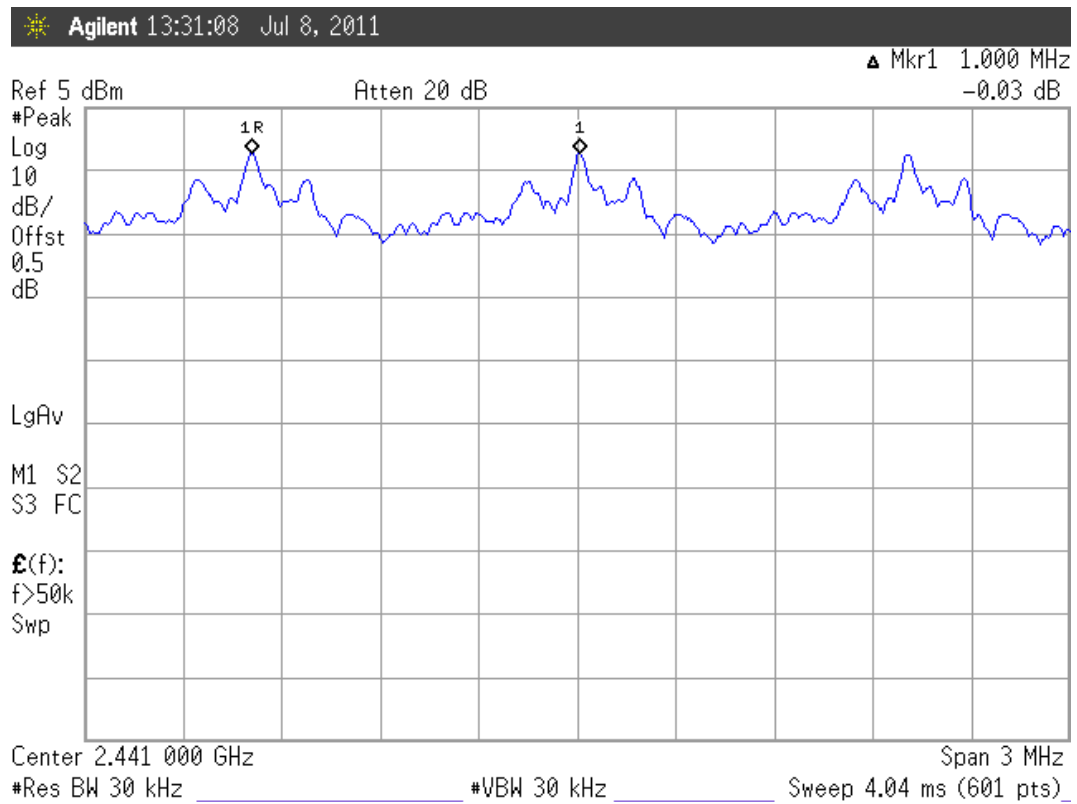


Figure 3: 8-DPSK, 2441MHz adjacent channel of left carrier frequency separation

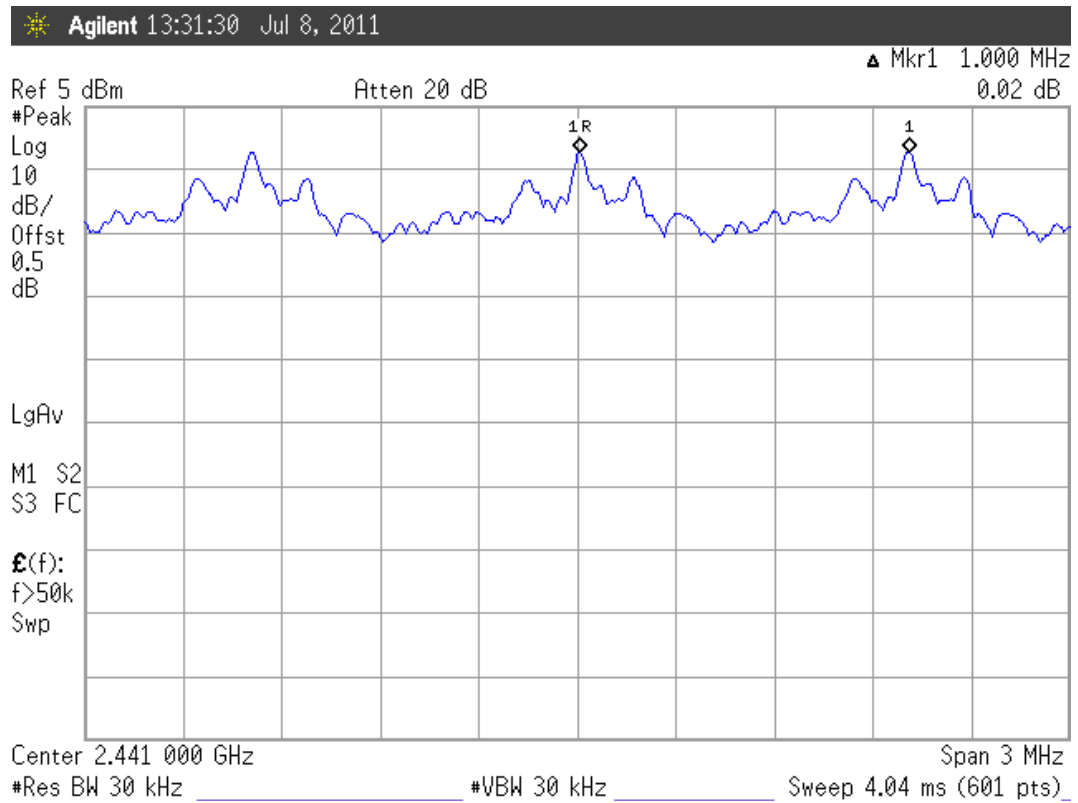


Figure 4: 8-DPSK, 2480MHz adjacent channel of carrier frequency separation



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

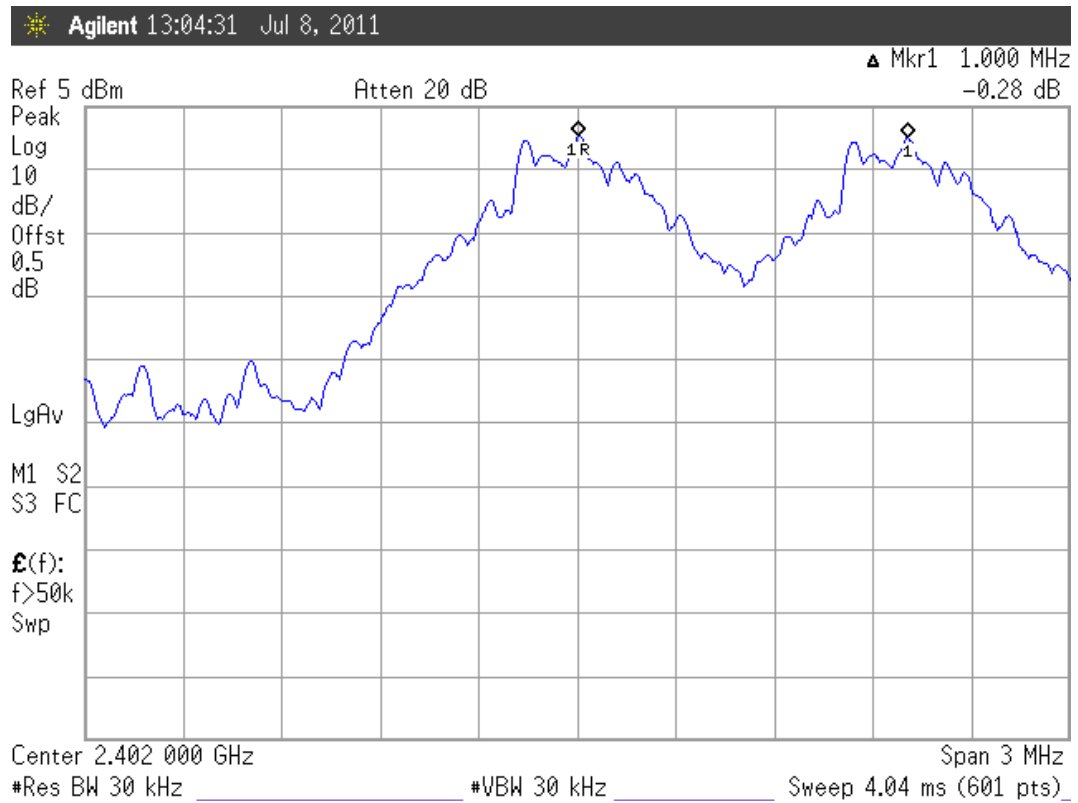


Figure 6: GFSK, 2441MHz adjacent channel of right carrier frequency separation

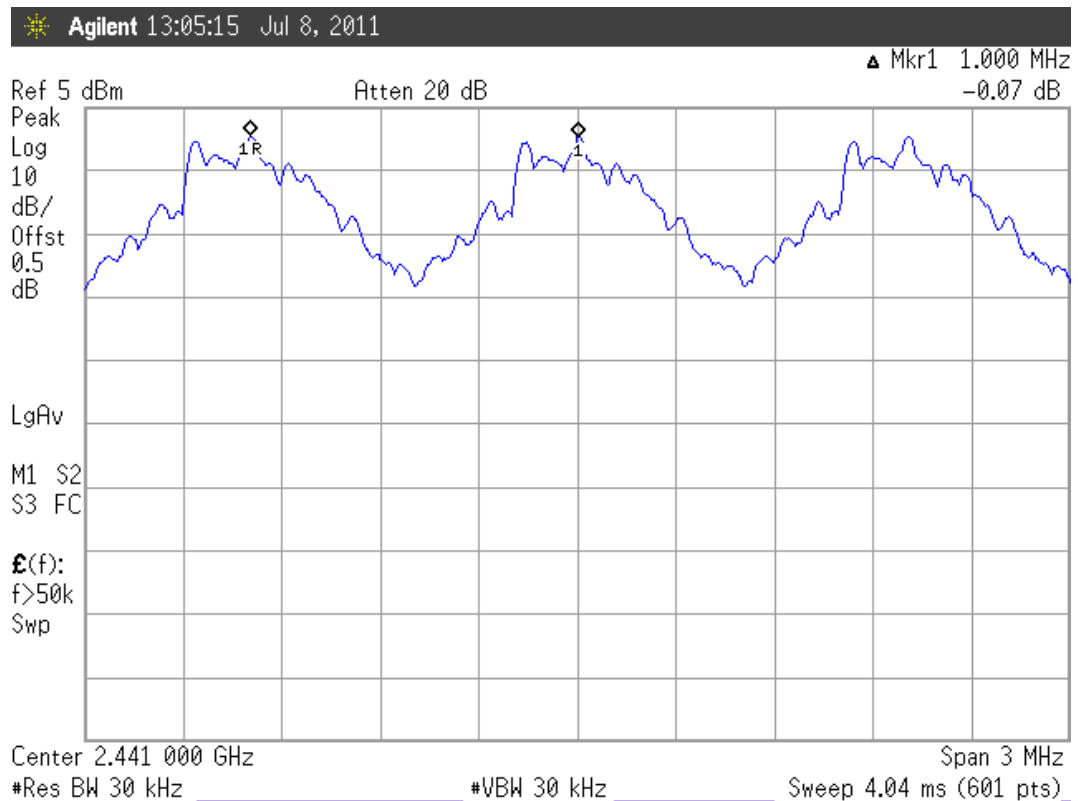


Figure 7: GFSK, 2441MHz adjacent channel of left carrier frequency separation

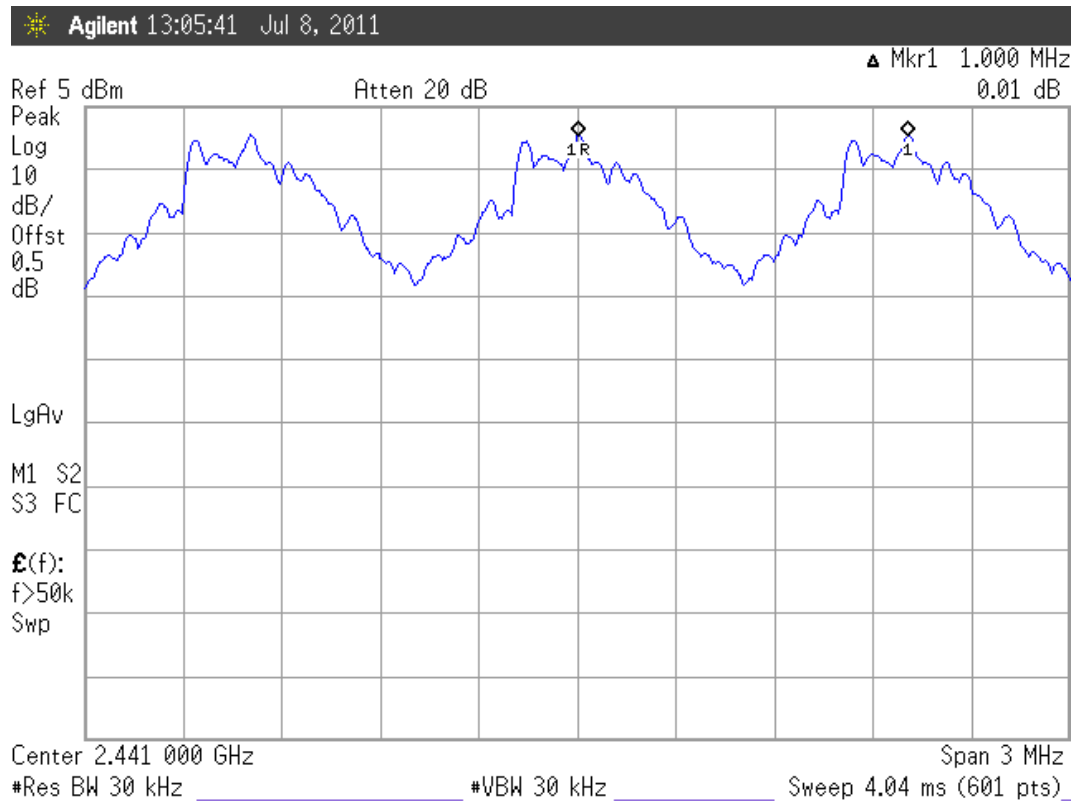


Figure 8: GFSK, 2480MHz adjacent channel of carrier frequency separation



## 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	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'

### 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 (DA 00-705)

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

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

## 6.6. Test Results

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

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

EUT : CregleBook M/N : CB1101

Test Date: Jul. 08, 2011 Temperature : 26°C Humidity : 54 %

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

Duty cycle: 79channels\*0.4 seconds = 31.6 seconds

3DH1 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH1 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 800 hops per second with 79 channels. So you have each channel 10.13 time per second and so for 31.6 seconds you have 320 time of appearance.

Each Tx-time per appearance is 383.3us.

$10.13 \text{ time} * 31.6 \text{ seconds} * 0.3833\text{ms} = 122.697\text{ms} (<400\text{ms})$

B. For each 5 seconds of 51 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

$51 \text{ channels} * 31.6 \text{ seconds} / 5 * 0.3833\text{ms} = 123.545\text{ms} (<400\text{ms})$

3DH3 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH3 packet need 3 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 400 hops per second with 79 channels. So you have each channel 5.1 time per second and so for 31.6 seconds you have 161 time of appearance.

Each Tx-time per appearance is 1650us.

$5.1 \text{ time} * 31.6 \text{ seconds} * 1.650\text{ms} = 265.914\text{ms} (<400\text{ms})$

B. For each 5 seconds of 25 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

$25 \text{ channels} * 31.6 \text{ seconds} / 5 * 1.650\text{ms} = 260.700\text{ms} (<400\text{ms})$

3DH5 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH5 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 266.7 hops per second with 79 channels. So you have each channel 3.37 time per second and so for 31.6 seconds you have 106 time of appearance.

Each Tx-time per appearance is 2900us.

$3.37 \text{ time} * 31.6 \text{ seconds} * 2.900\text{ms} = 308.826\text{ms} (<400\text{ms})$

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

$17 \text{ channels} * 31.6 \text{ seconds} / 5 * 2.900\text{ms} = 311.576\text{ms} (<400\text{ms})$

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

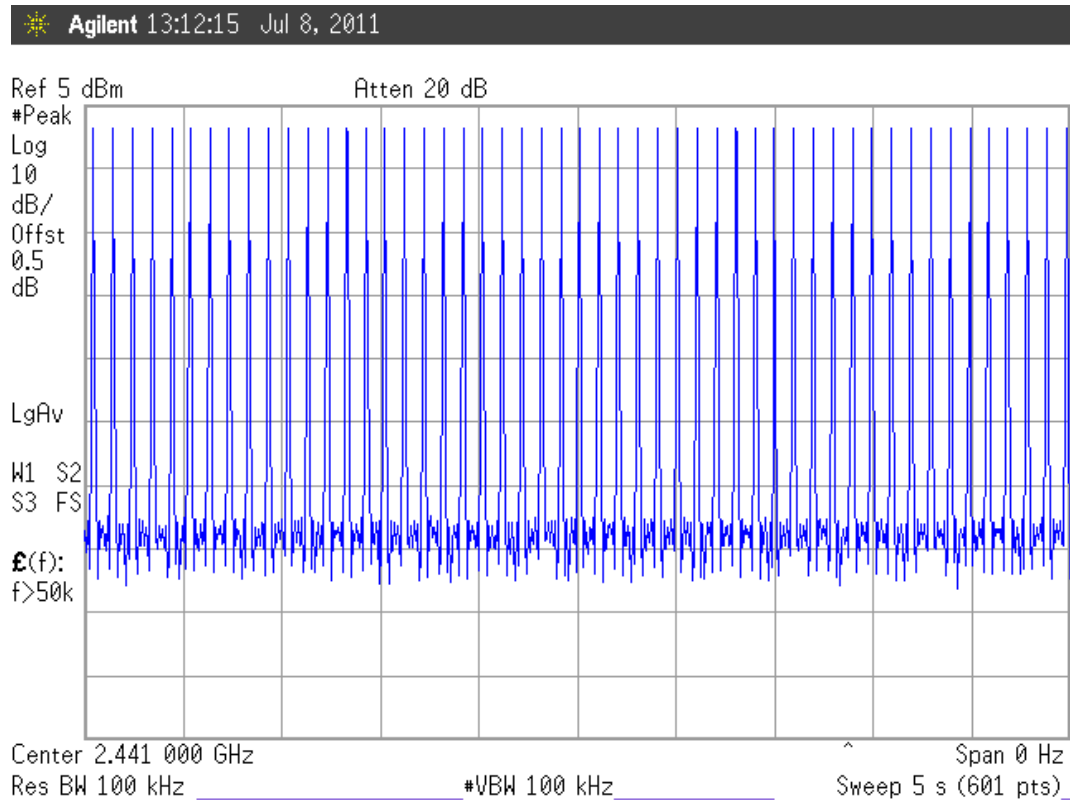
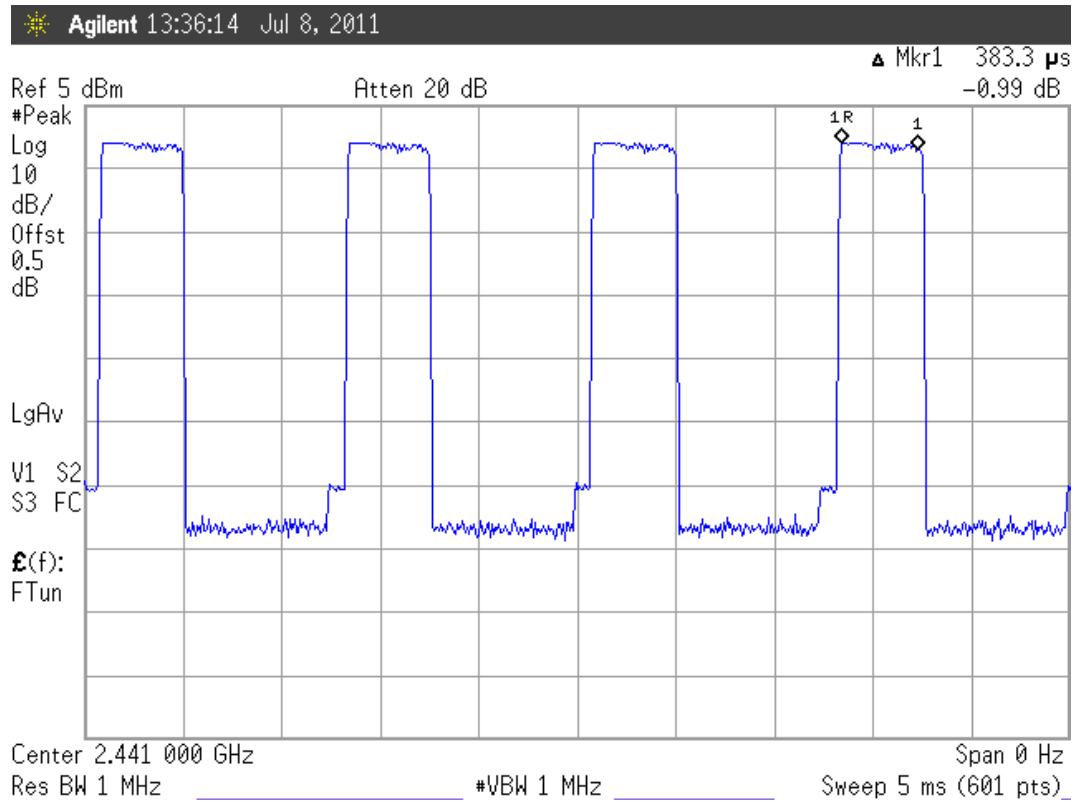


Figure 2: 8-DPSK, 2441MHz, 3DH3

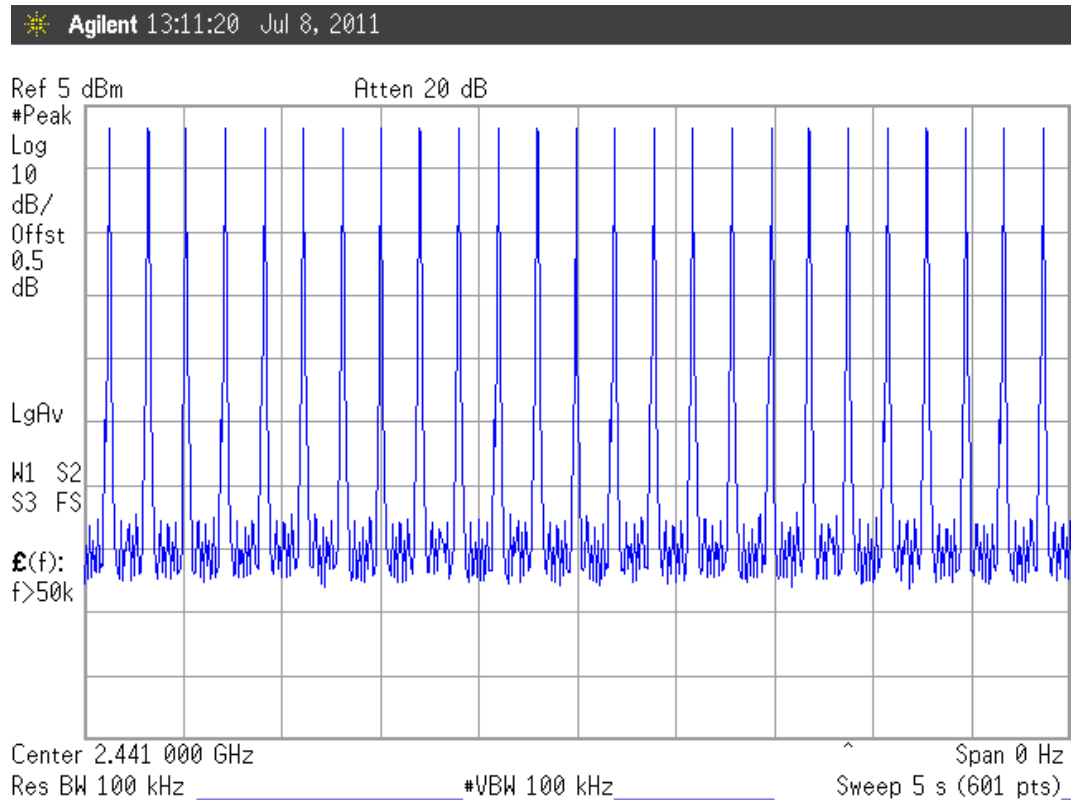
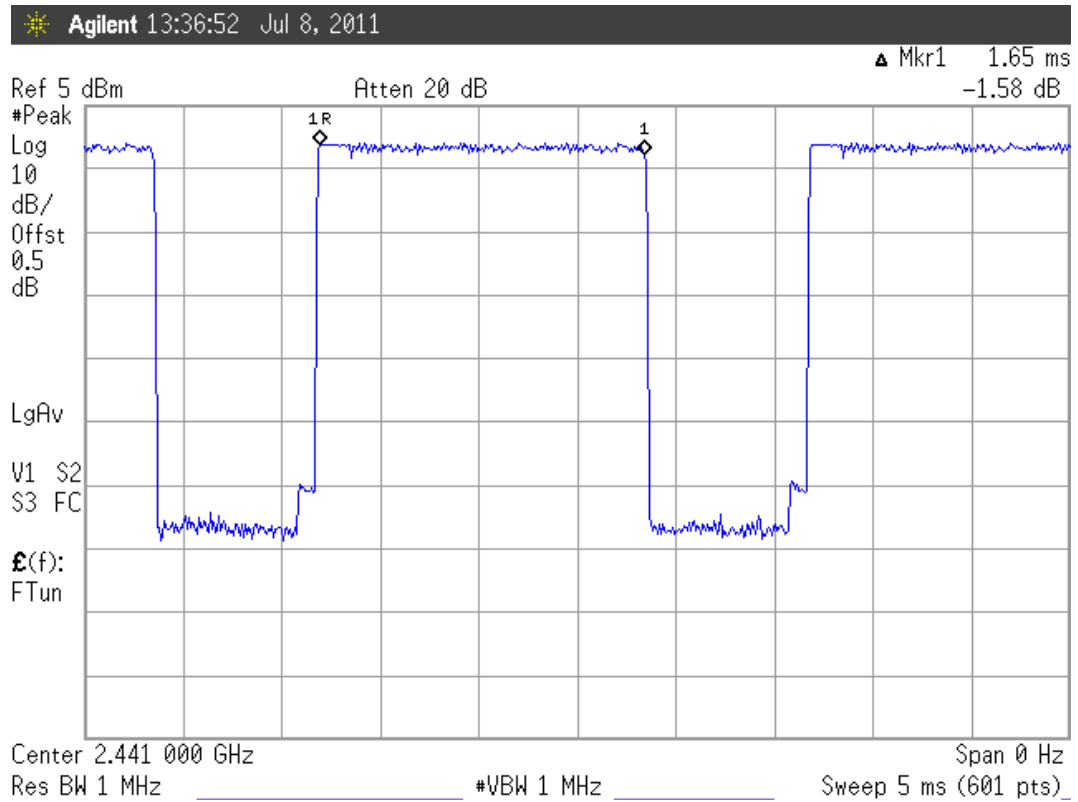
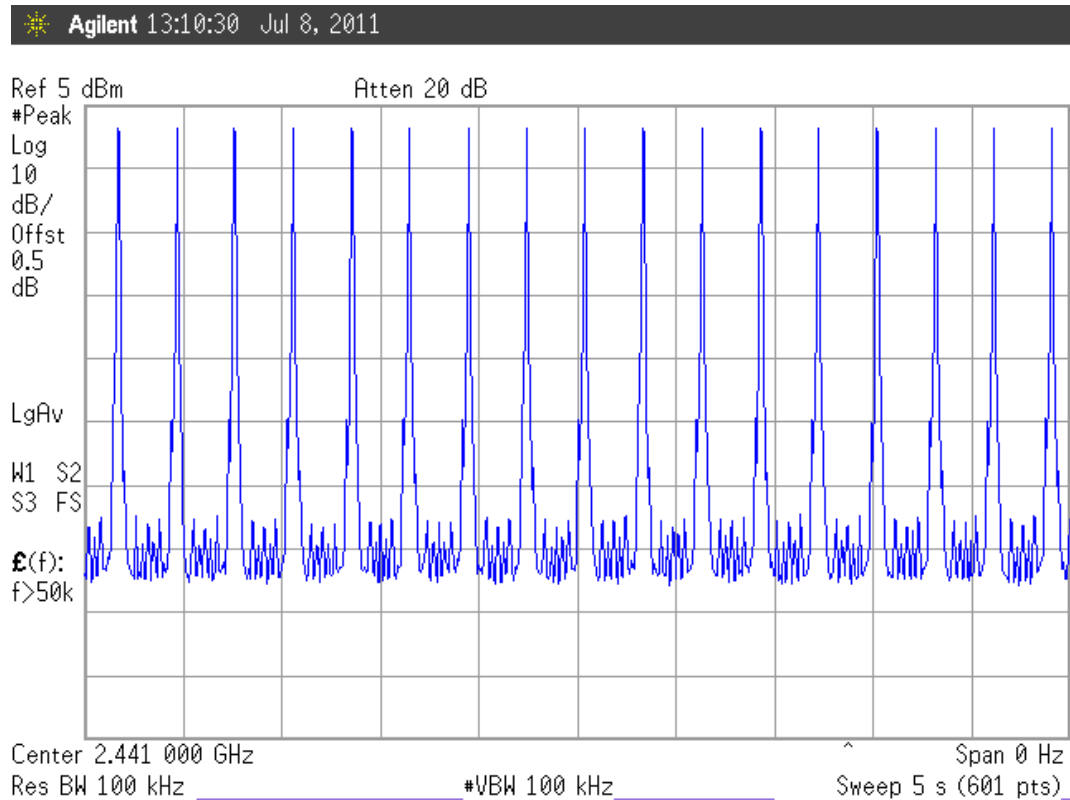
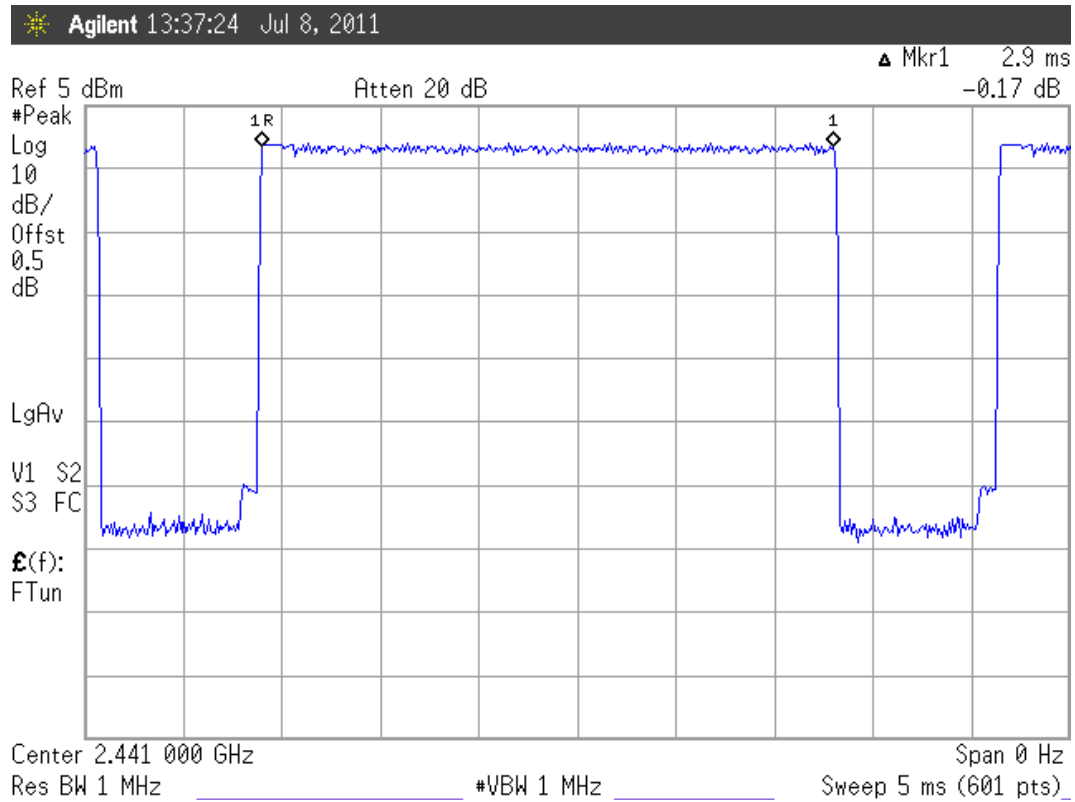




Figure 3: 8-DPSK, 2441MHz, 3DH5



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

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

DH1 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH1 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 800 hops per second with 79 channels. So you have each channel 10.13 time per second and so for 31.6 seconds you have 320 time of appearance.

Each Tx-time per appearance is 383.3us.

$10.13 \text{ time} \times 31.6 \text{ seconds} \times 0.3833\text{ms} = 122.697\text{ms} (<400\text{ms})$

B. For each 5 seconds of 51 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

$51 \text{ channels} \times 31.6 \text{ seconds} / 5 \times 0.3833\text{ms} = 123.545\text{ms} (<400\text{ms})$

DH3 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH3 packet need 3 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 400 hops per second with 79 channels. So you have each channel 5.1 time per second and so for 31.6 seconds you have 161 time of appearance.

Each Tx-time per appearance is 1650us.

$5.1 \text{ time} \times 31.6 \text{ seconds} \times 1.650\text{ms} = 265.914\text{ms} (<400\text{ms})$

B. For each 5 seconds of 25 channels appearance, the longest time of occupancy for each of 31.6 seconds is:

$25 \text{ channels} \times 31.6 \text{ seconds} / 5 \times 1.650\text{ms} = 260.700\text{ms} (<400\text{ms})$

DH5 : A The system makes worst case 1600 hops per second or 1 time slot has a length of 625us with 79 channels. A DH5 packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 266.7 hops per second with 79 channels. So you have each channel 3.37 time per second and so for 31.6 seconds you have 106 time of appearance.

Each Tx-time per appearance is 2900us.

$3.37 \text{ time} \times 31.6 \text{ seconds} \times 2.900\text{ms} = 308.826\text{ms} (<400\text{ms})$

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

$17 \text{ channels} \times 31.6 \text{ seconds} / 5 \times 2.900\text{ms} = 311.576\text{ms} (<400\text{ms})$

Figure 1: GFSK, 2441MHz, DH1

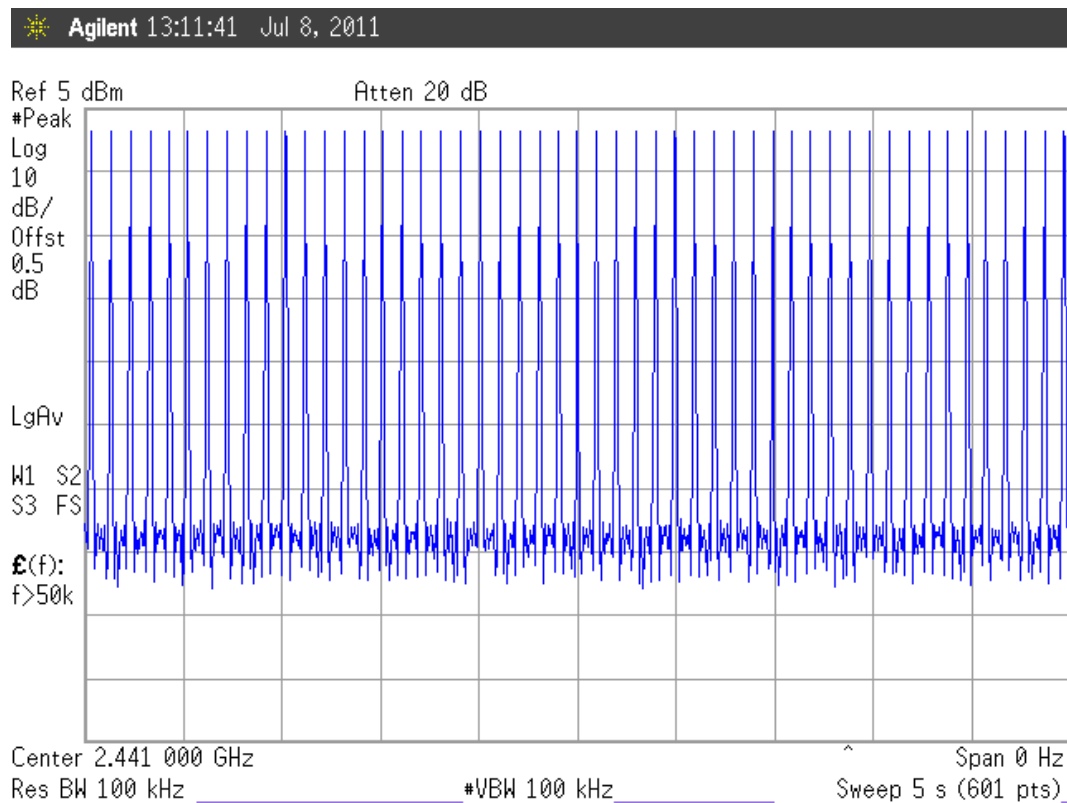
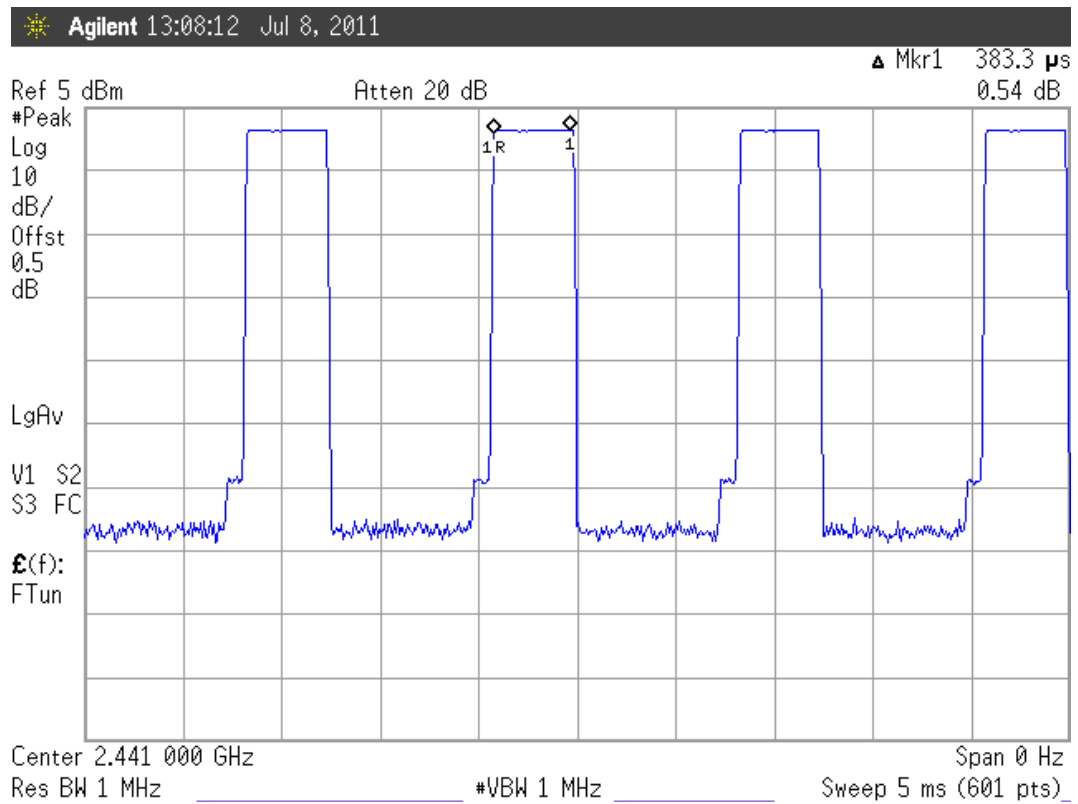


Figure 2: GFSK, 2441MHz, DH3

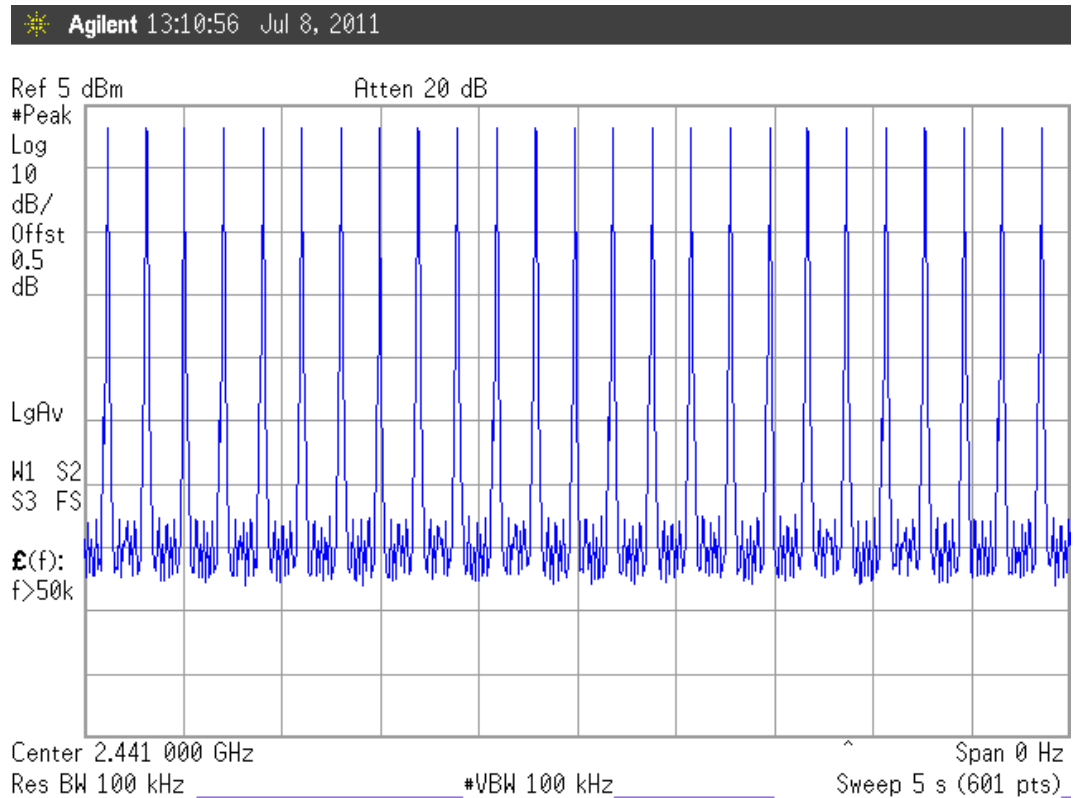
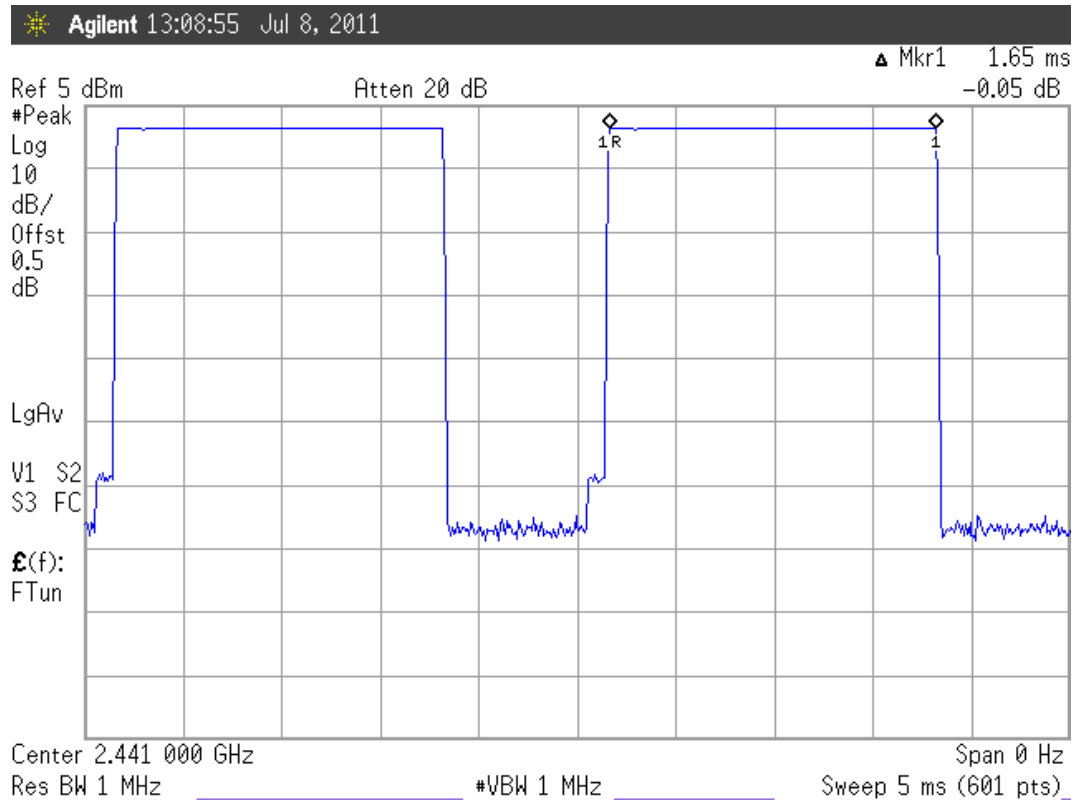
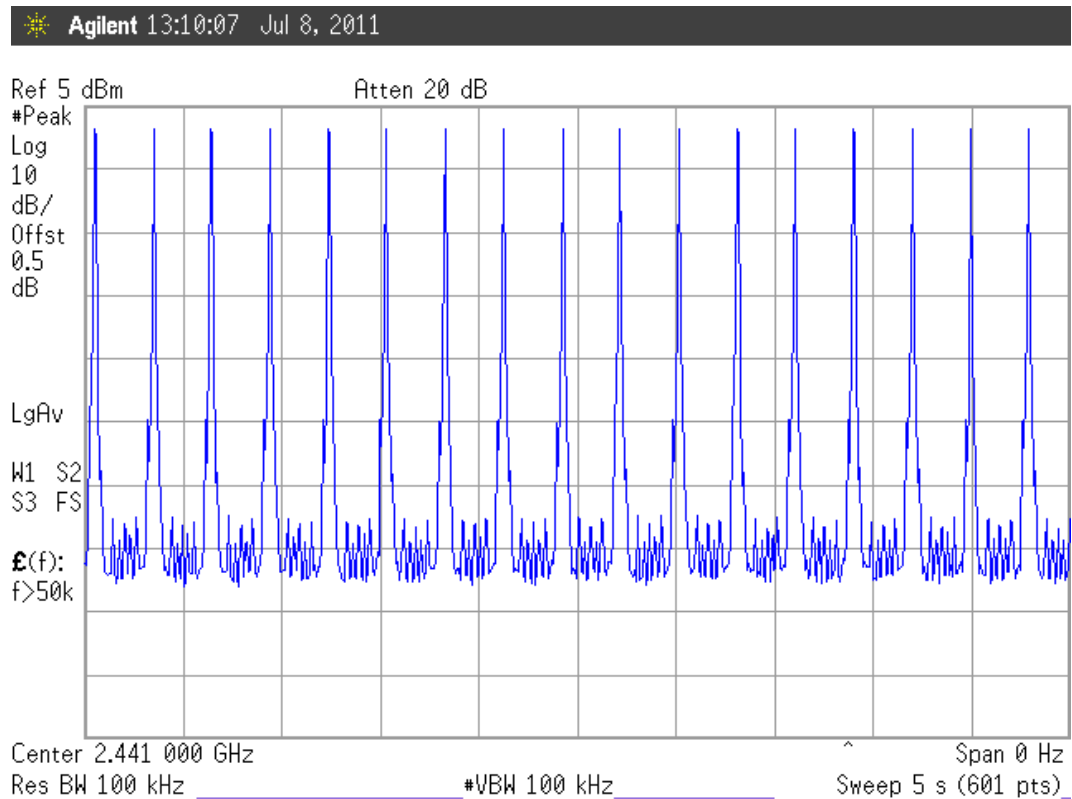
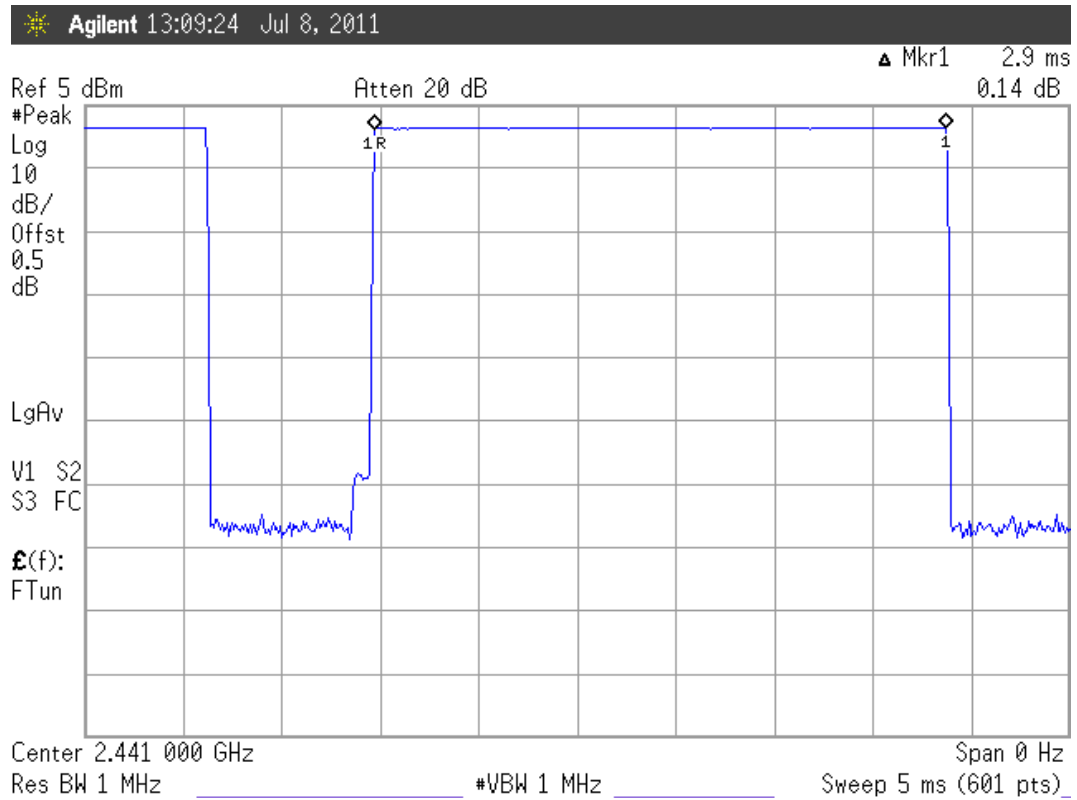


Figure 3: GFSK, 2441MHz, DH5



## 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	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'

### 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 (DA 00-705)

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100kHz RBW and 100kHz VBW. Sweep=Auto ; Detector function=peak ; Trace=Max hold

### 7.6. Test Results

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

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

EUT : CregleBook M/N : CB1101

Test Date: Jul. 08, 2011 Temperature : 26°C 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

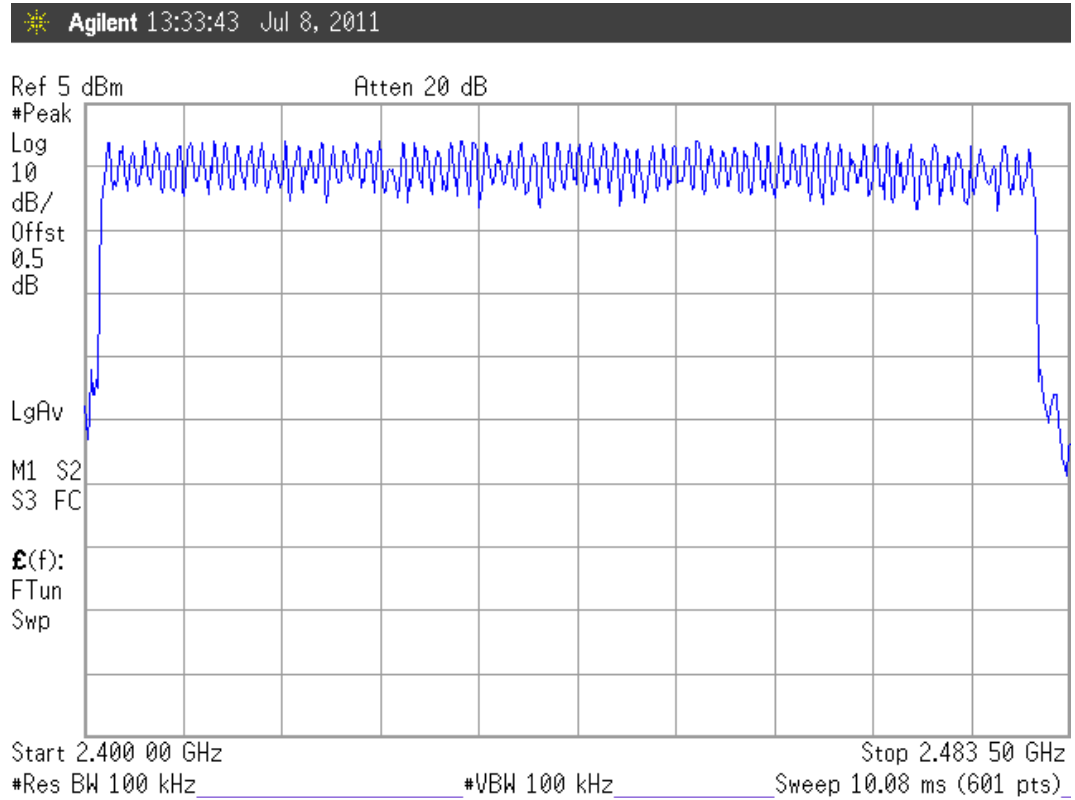
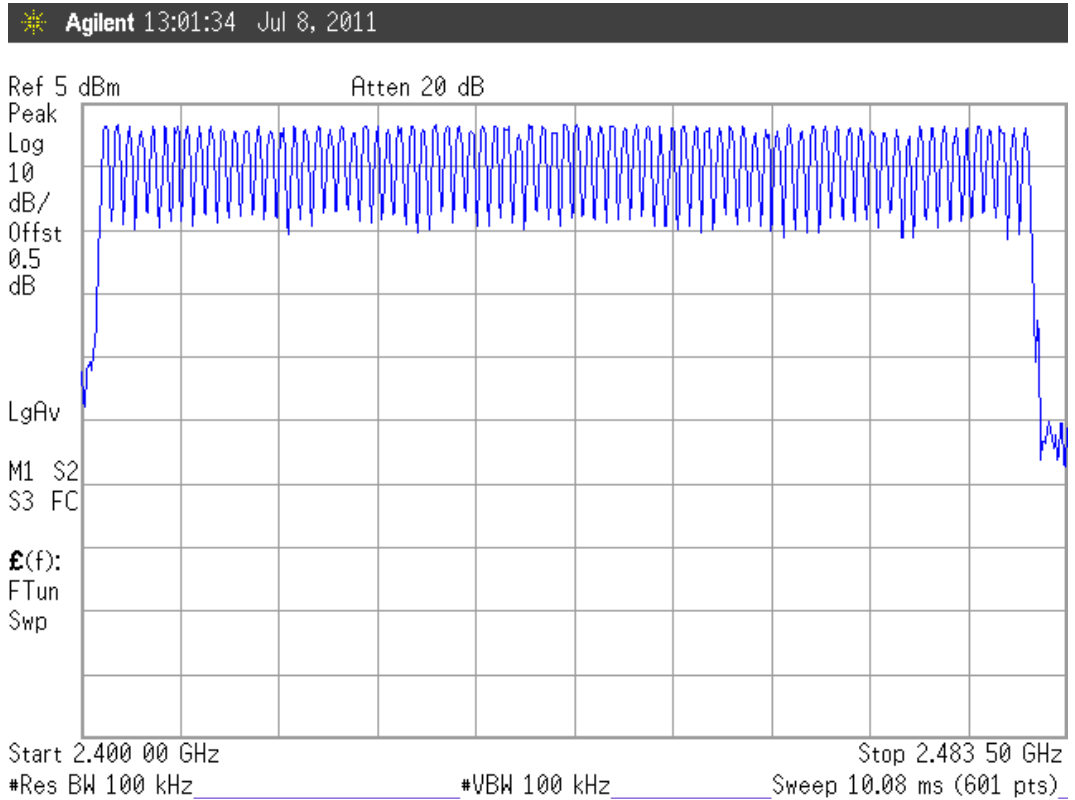


Figure 2: GFSK



## 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	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'

### 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 except the test set up replaced by section 8.2.

### 8.5. Test Procedure (DA 00-705)

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 1MHz RBW and 13MHz VBW. Sweep=Auto ; Detector function=peak ; Trace=Max hold



## 8.6. Test Results

**PASSED.** All the test results are listed below.

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

EUT : CregleBook M/N : CB1101

Test Date: Jul. 08, 2011 Temperature : 26°C Humidity : 54 %

### 8.6.1.Type of Modulation: 8-DPSK

No.	Channel	Test Frequency	Peak Output Power	Limit
1.	0	2402MHz	<b>-0.32dBm</b>	21dBm
2.	39	2441MHz	<b>-0.27dBm</b>	21dBm
3.	78	2480MHz	<b>-0.67dBm</b>	21dBm

### 8.6.2.Type of Modulation: GFSK

No.	Channel	Test Frequency	Peak Output Power	Limit
1.	0	2402MHz	<b>1.44dBm</b>	21dBm
2.	39	2441MHz	<b>1.53dBm</b>	21dBm
3.	78	2480MHz	<b>1.40dBm</b>	21dBm

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

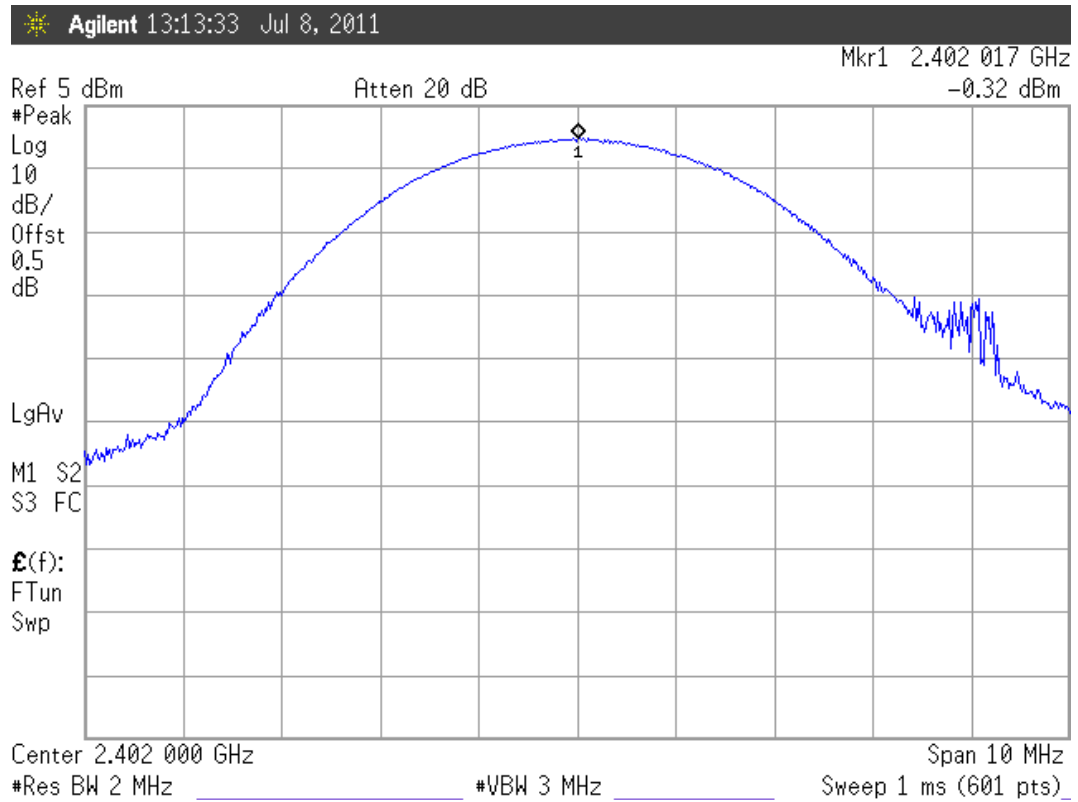


Figure 2: 8-DPSK, Channel 39, Frequency: 2441MHz

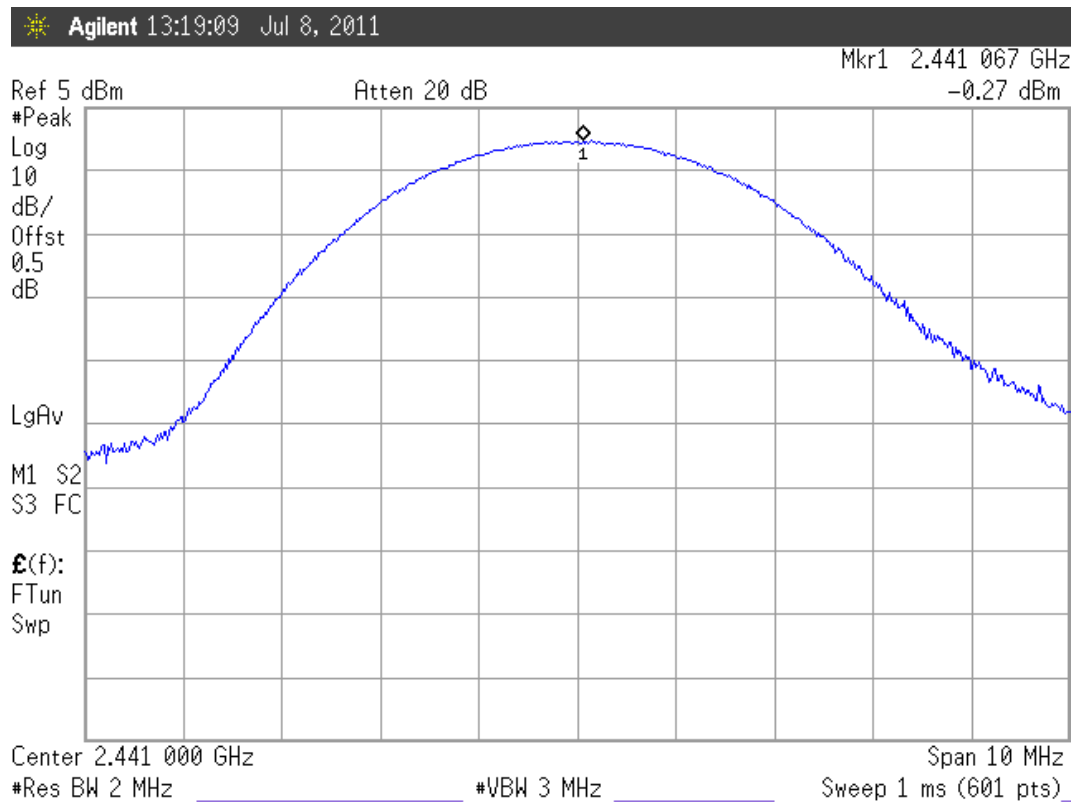


Figure 3: 8-DPSK, Channel 78, Frequency: 2480MHz

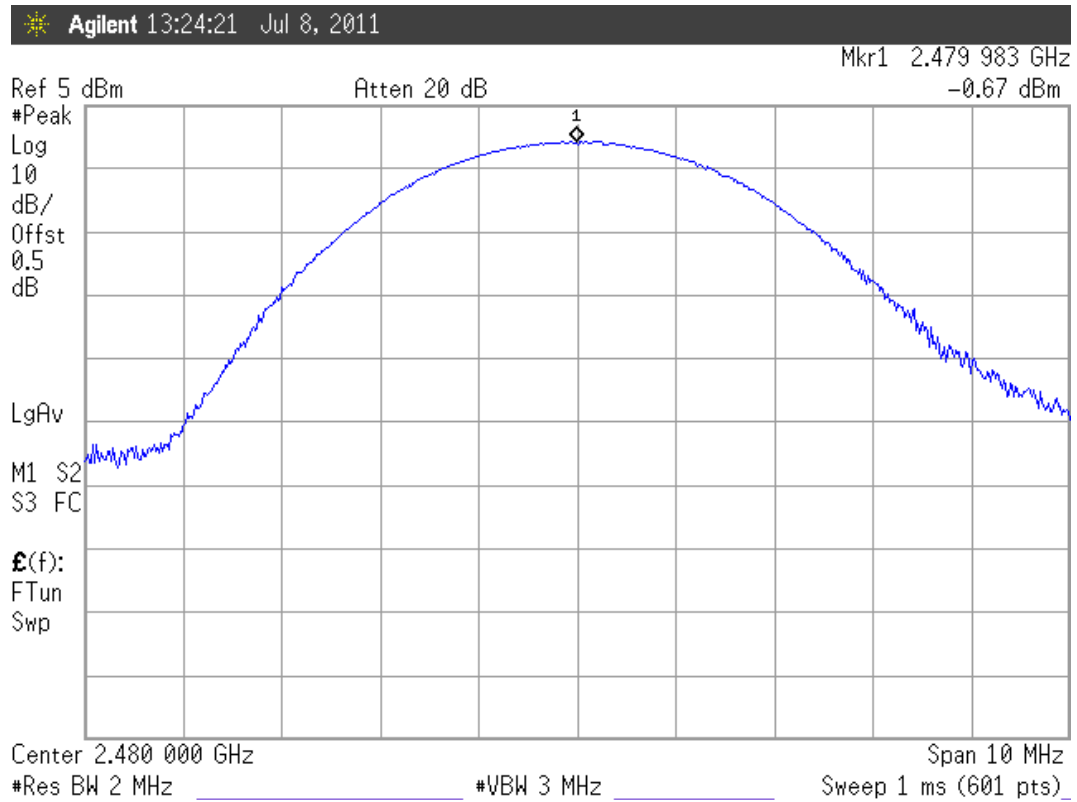


Figure 4: GFSK, Channel 0, Frequency: 2402MHz

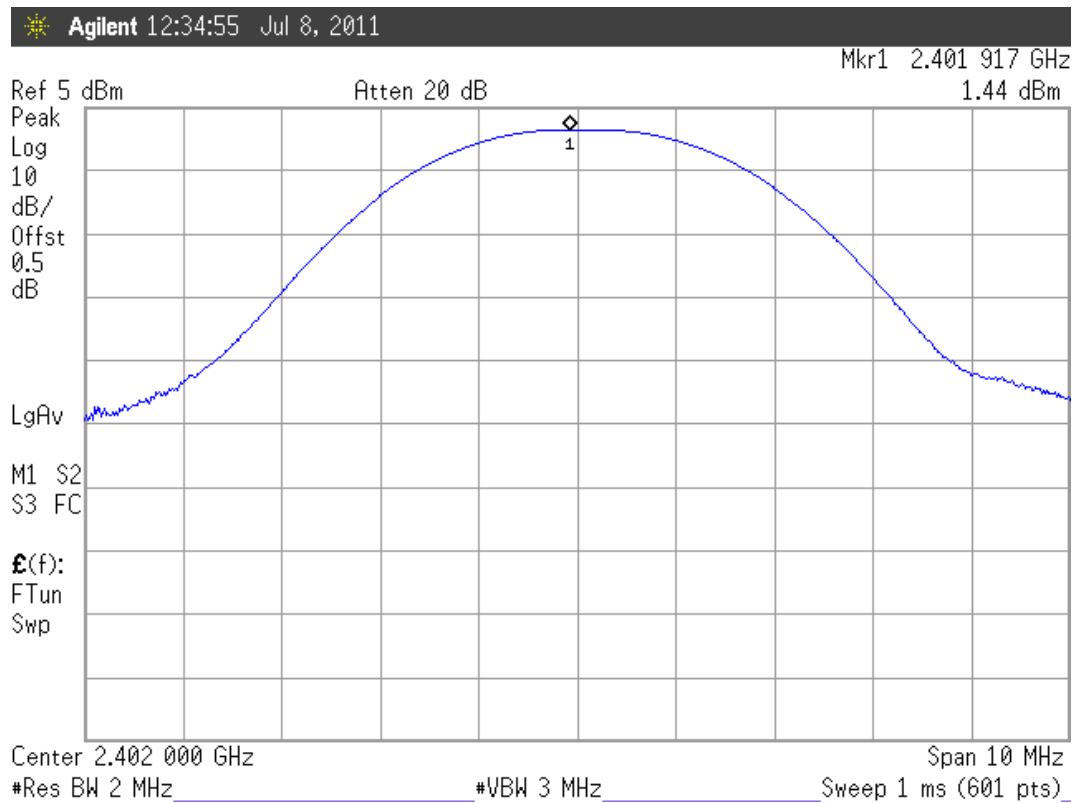


Figure 5: GFSK, Channel 39, Frequency: 2441MHz

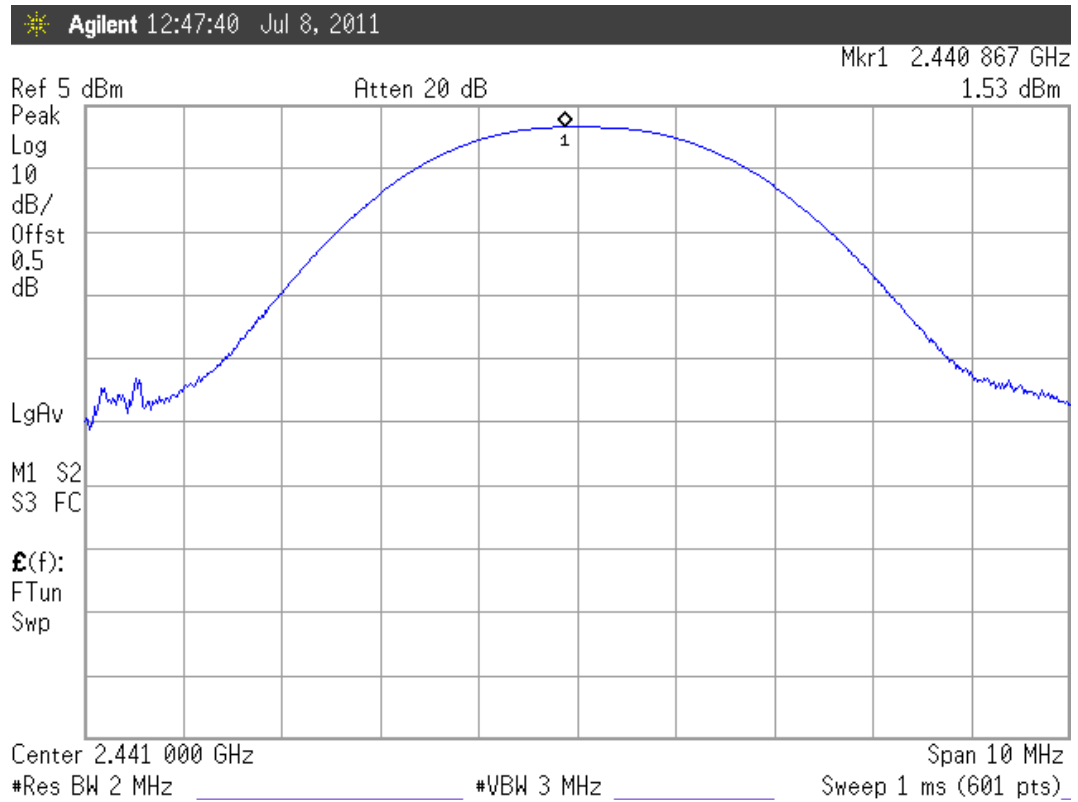
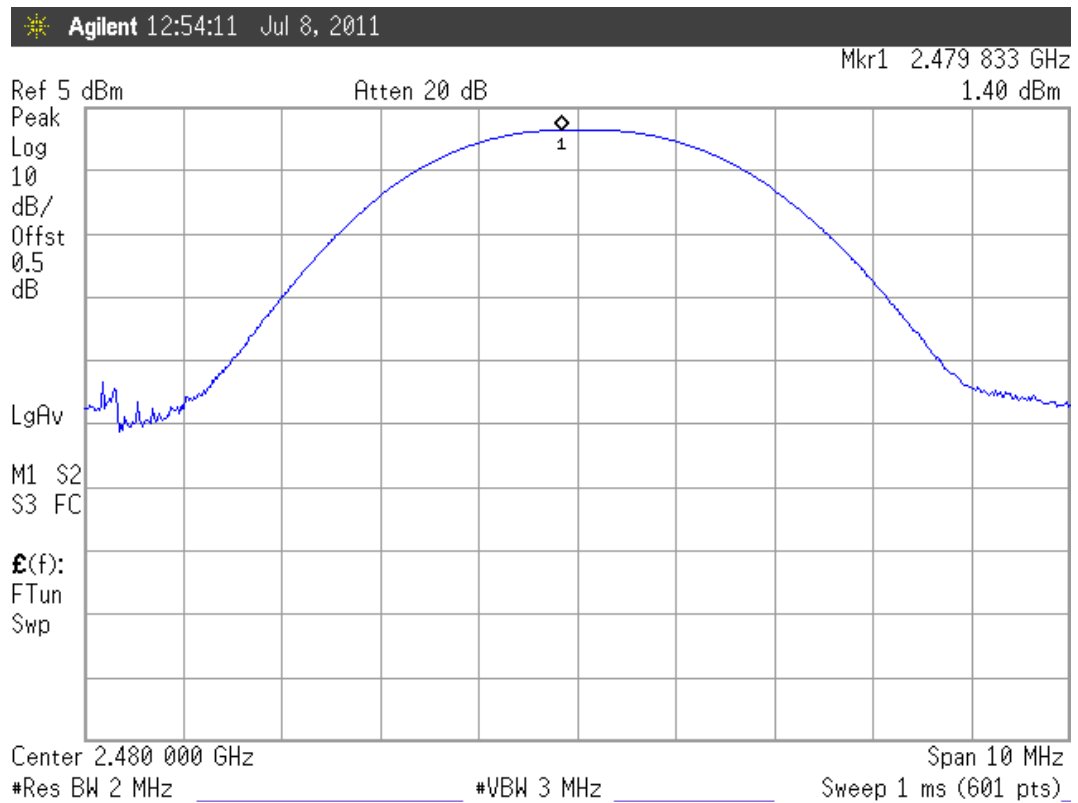


Figure 6: GFSK, Channel 78, Frequency: 2480MHz



## 9. EMISSION LIMITATIONS MEASUREMENT

### 9.1. Test Equipment

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

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'

### 9.2. Block Diagram of Test Setup

The same as section.4.2.

### 9.3. 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)

### 9.4. Operating Condition of EUT

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

### 9.5. Test Procedure (DA 00-705)

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with frequency range from 30MHz to 25GHz.

## 9.6. Test Results

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

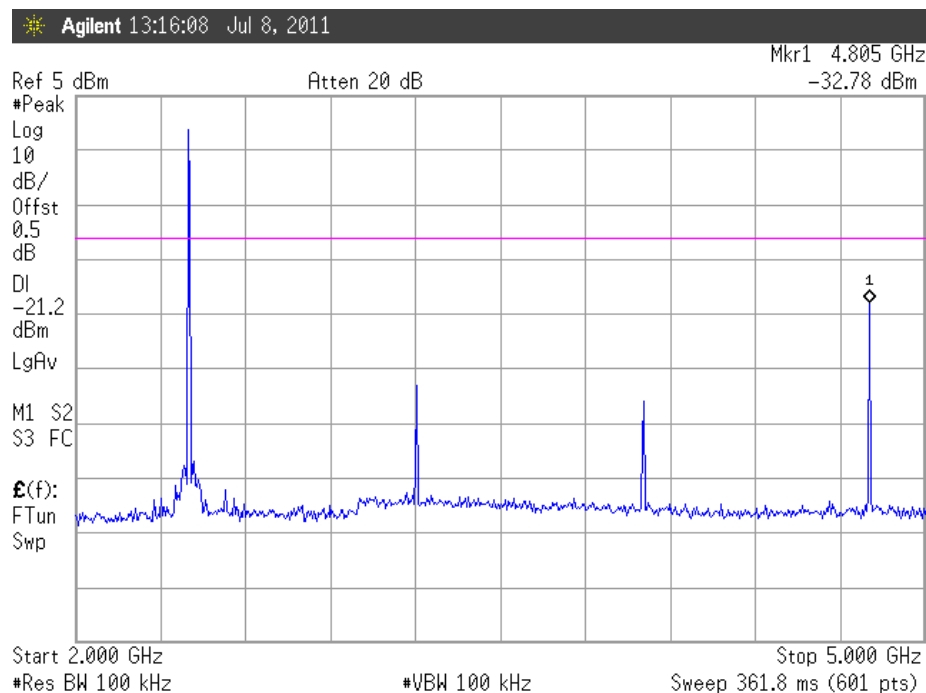
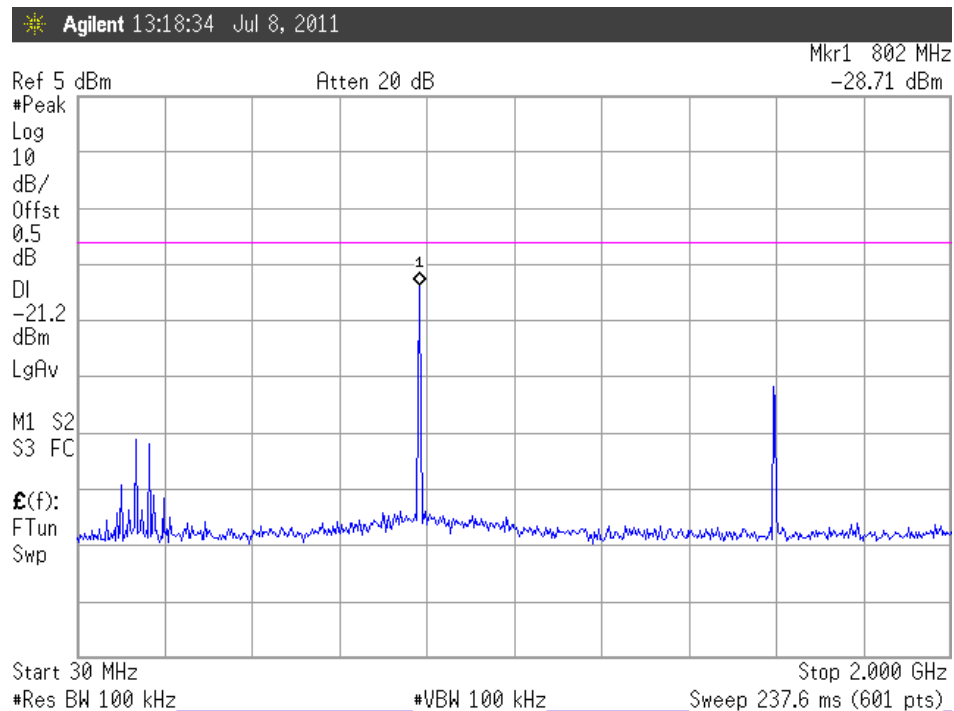
**[Note: Three types of modulation (8-DPSK,  $\pi$  /4DQPSK, GFSK) were evaluated but only two types of modulation (8-DPSK and GFSK) were reported in this report.]**

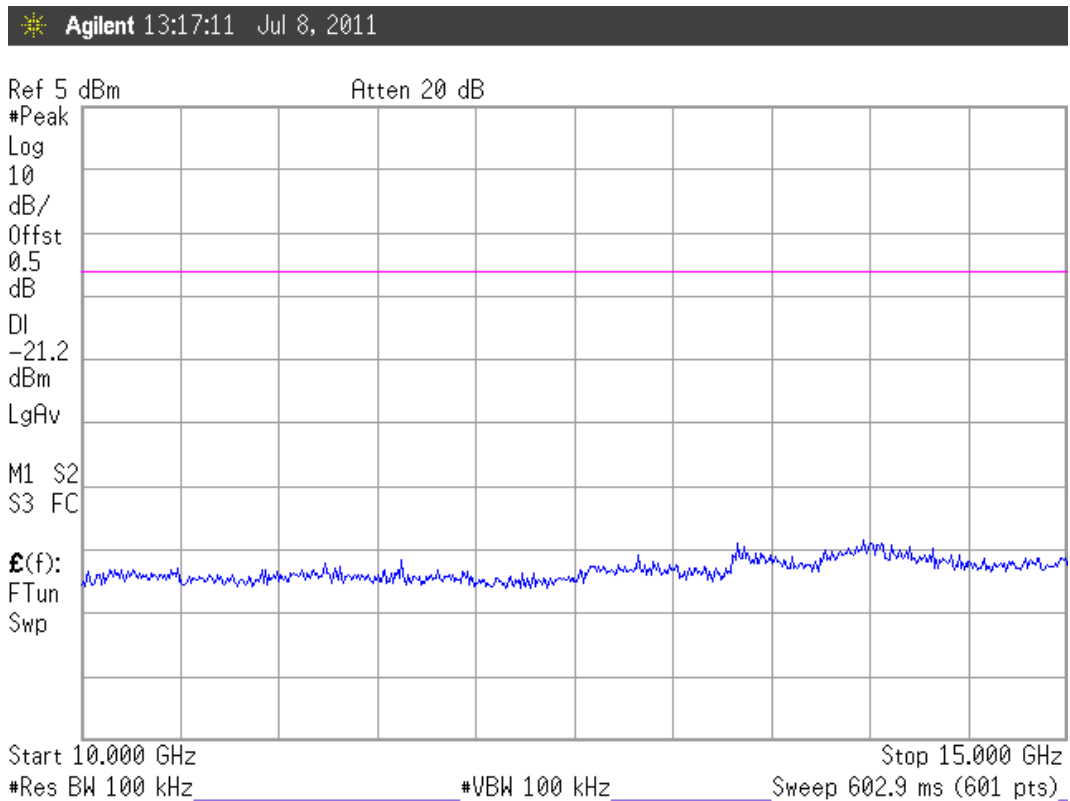
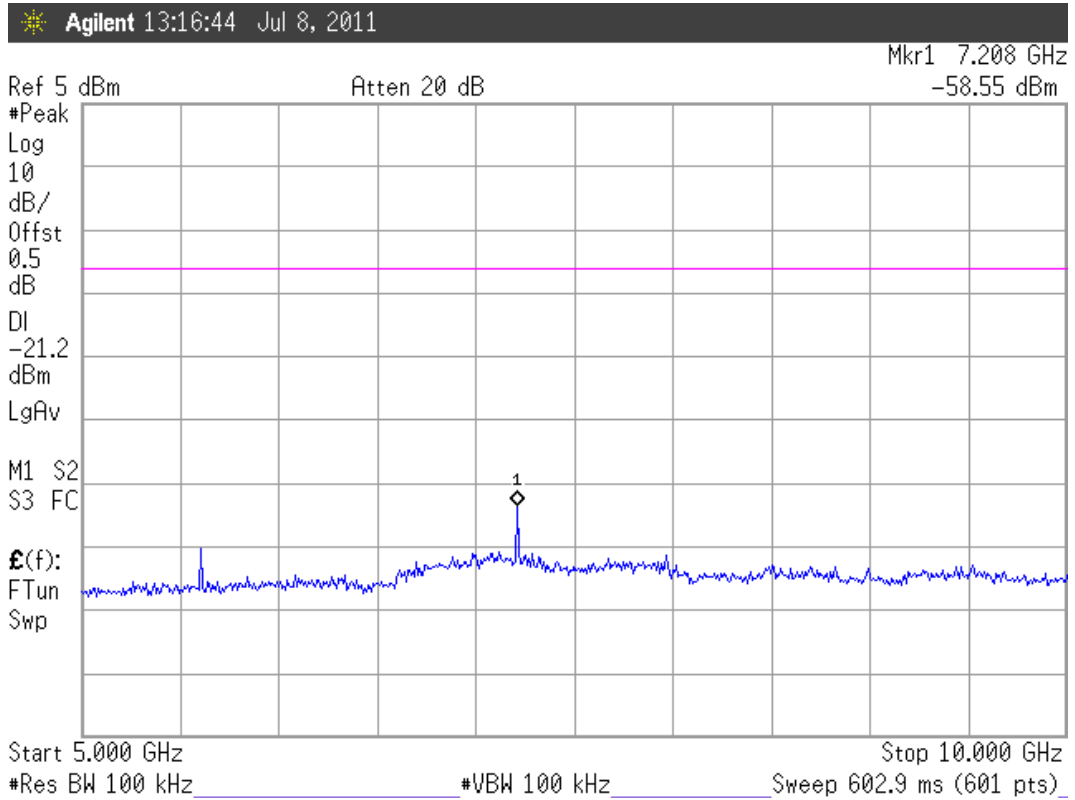
EUT : CregleBook

M/N : CB1101

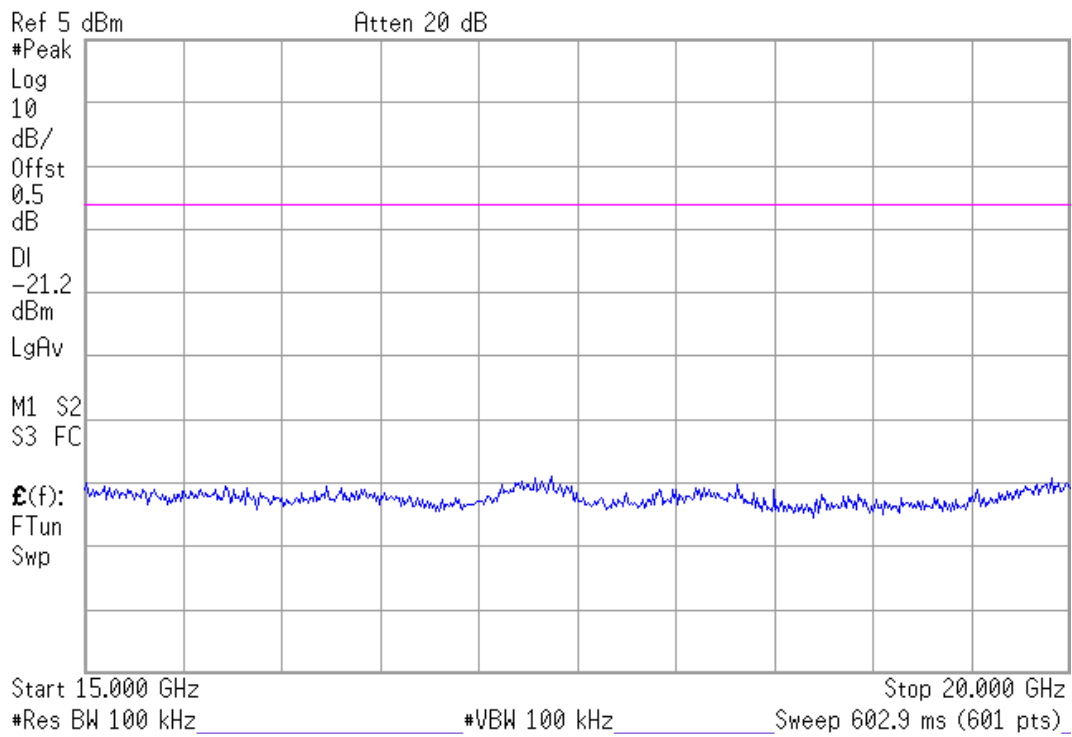
Test Date: Jul. 08, 2011 Temperature : 26°C Humidity : 54 %

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





Agilent 13:17:34 Jul 8, 2011



Agilent 13:18:04 Jul 8, 2011

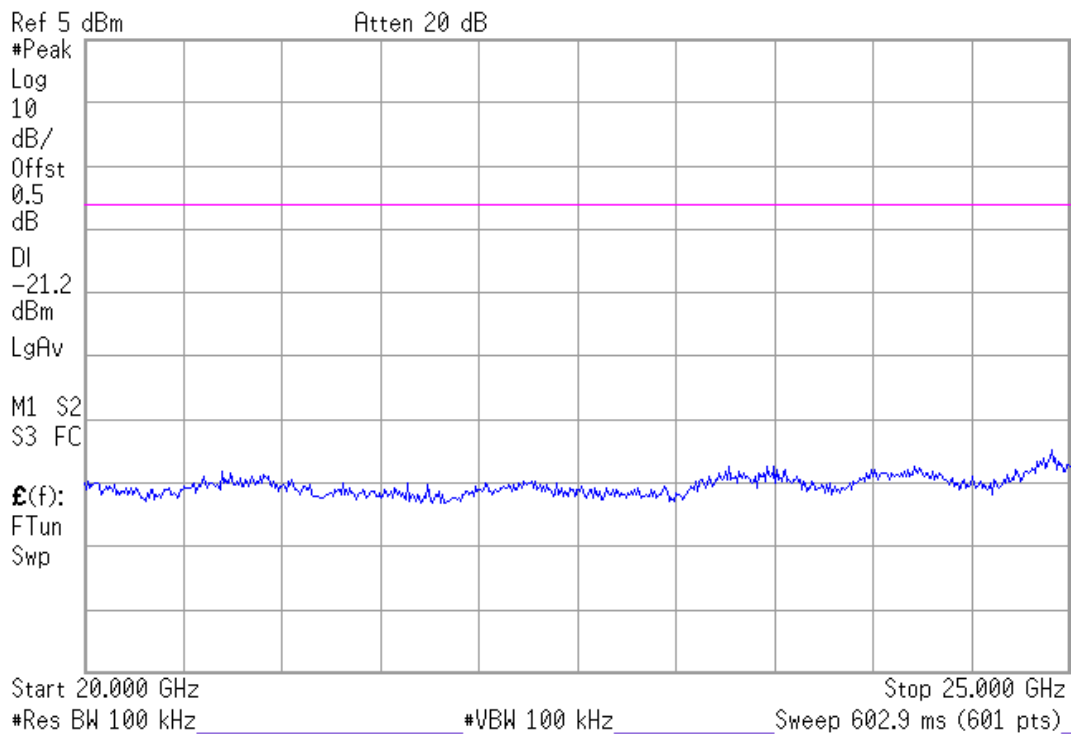
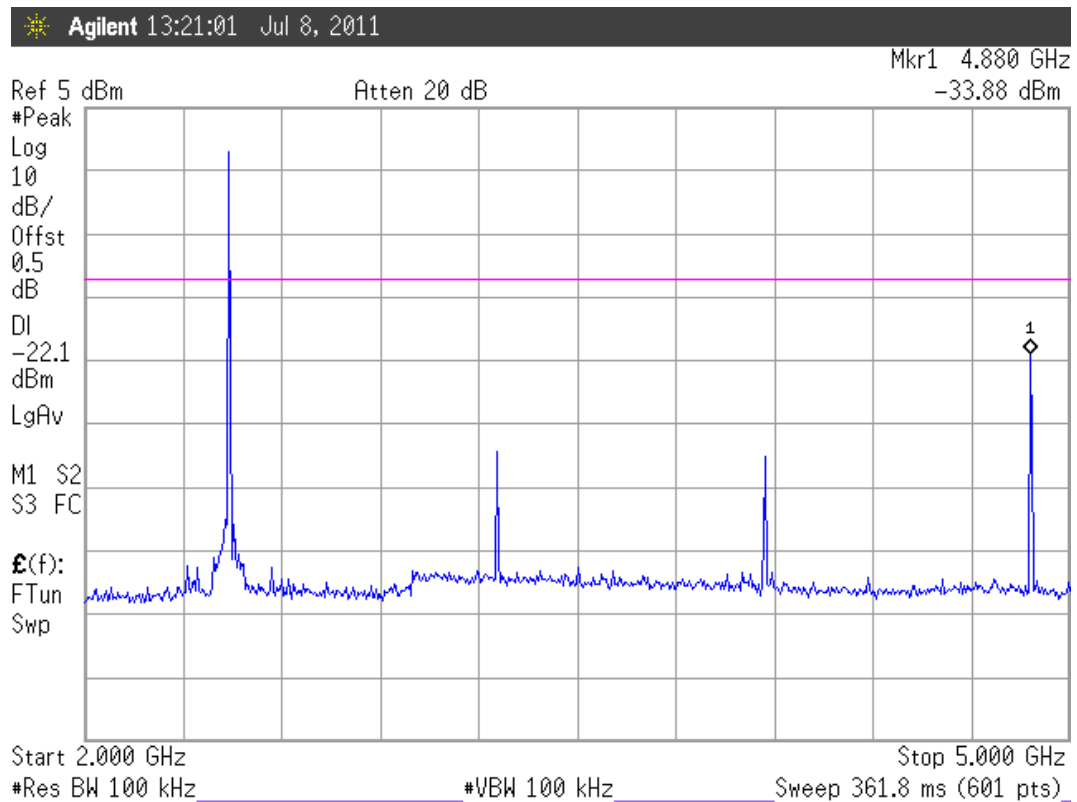
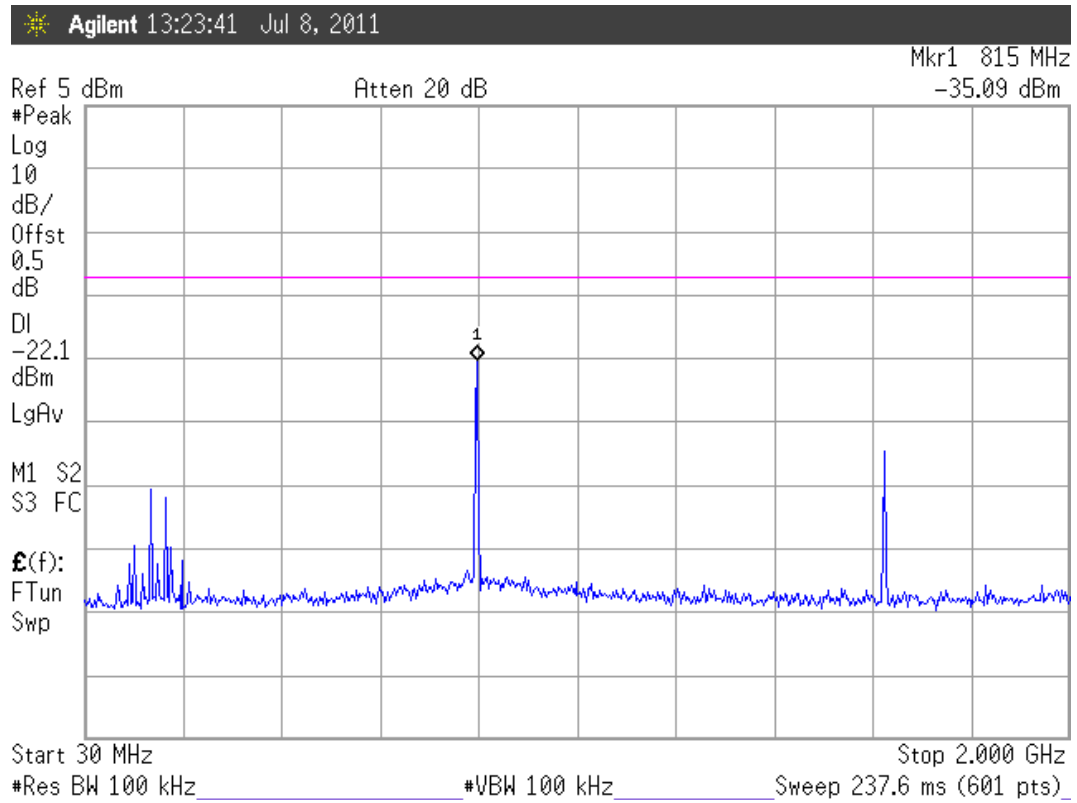
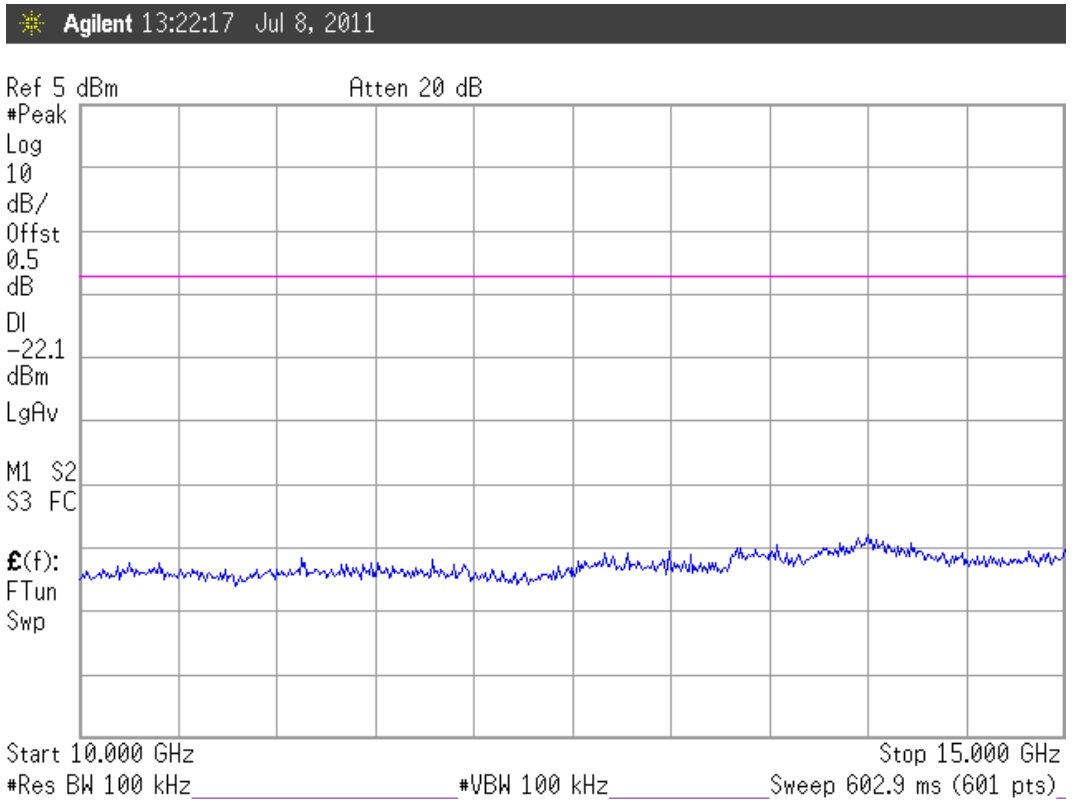
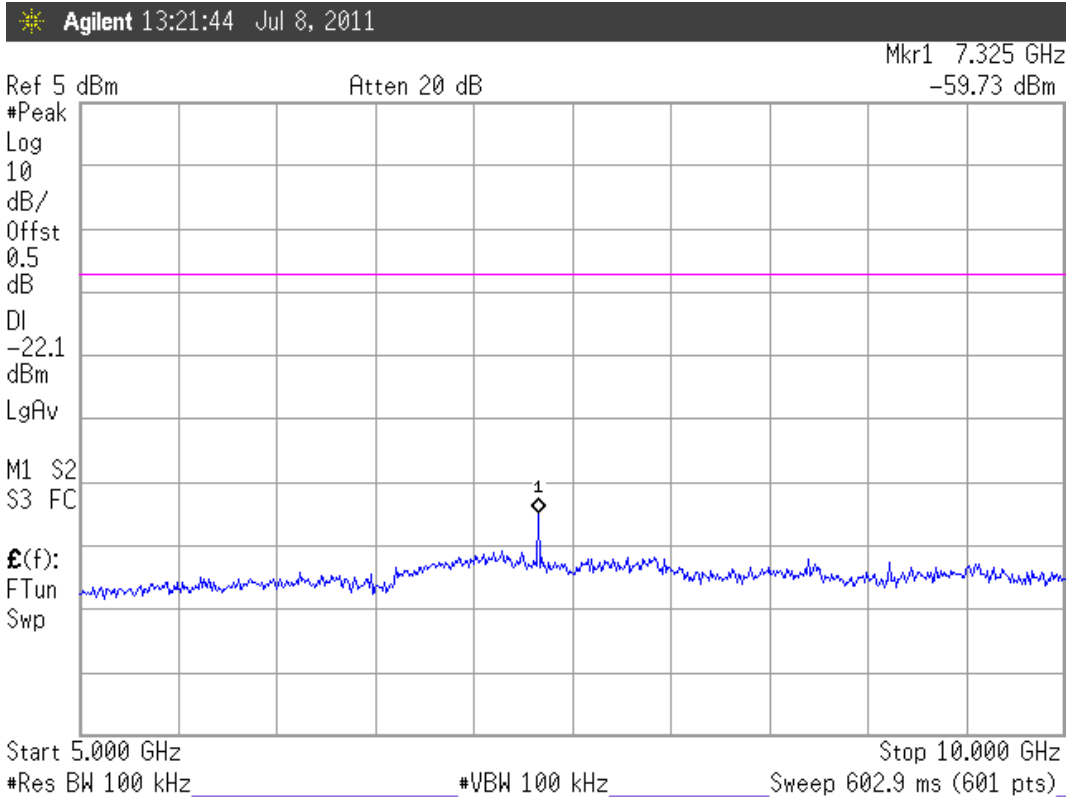


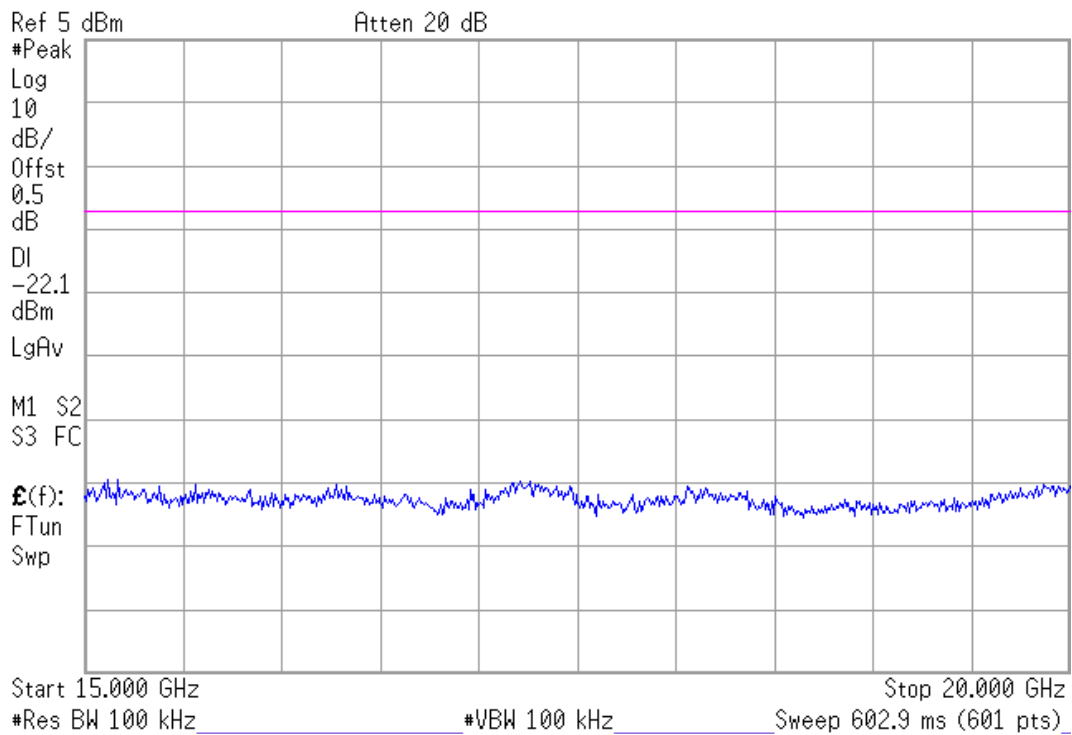


Figure 2: 8-DPSK, Channel 39, Frequency: 2441MHz





Agilent 13:22:39 Jul 8, 2011



Agilent 13:23:03 Jul 8, 2011

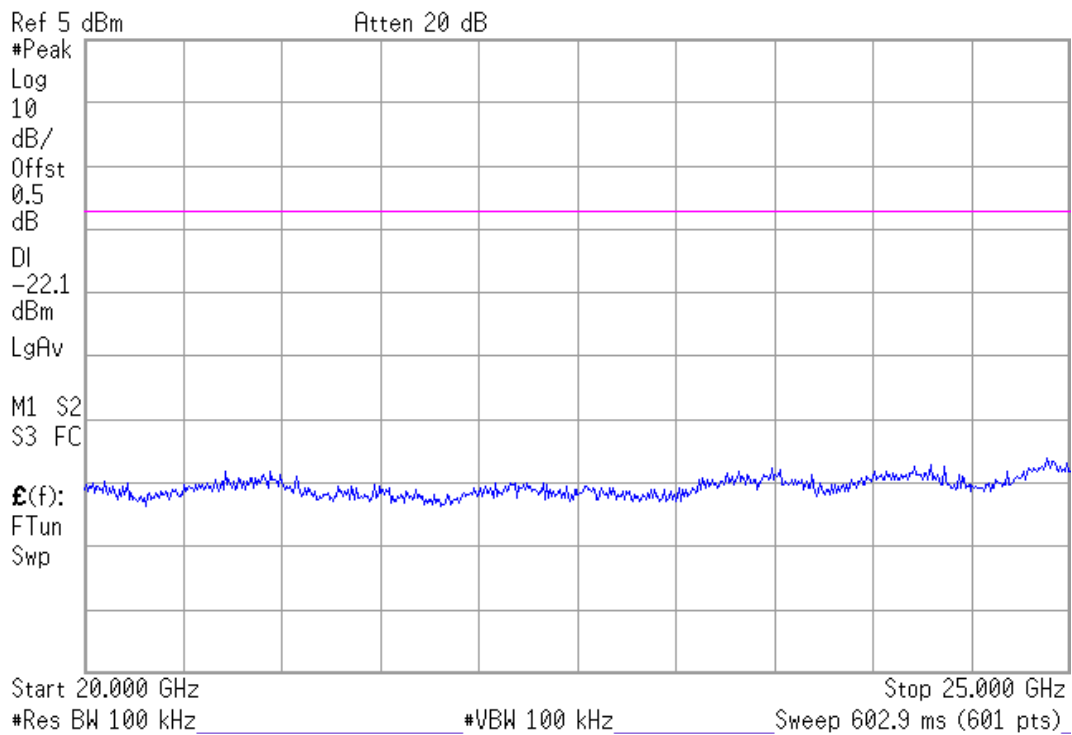
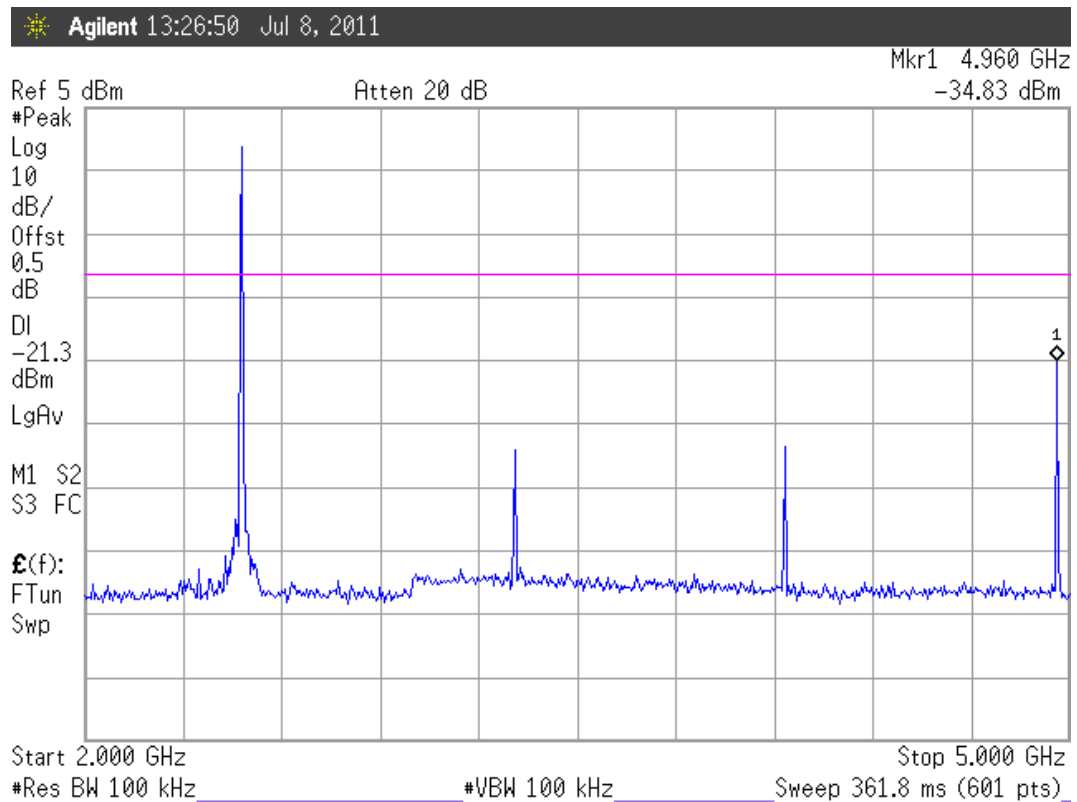
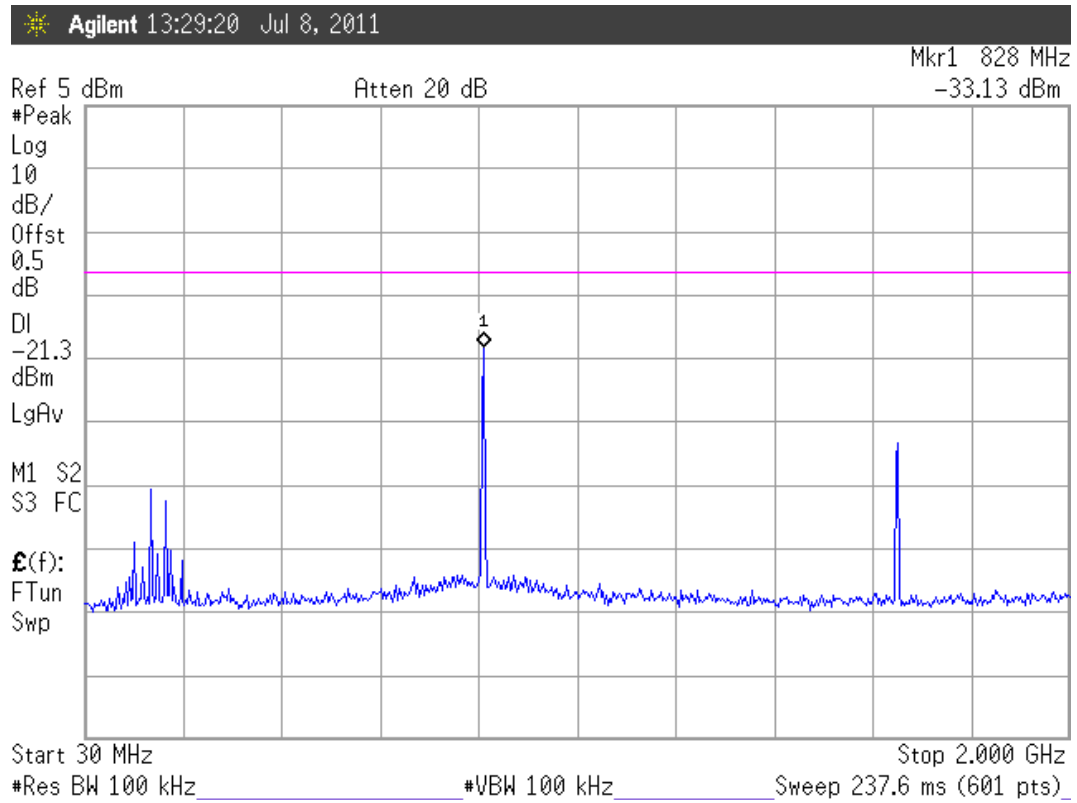
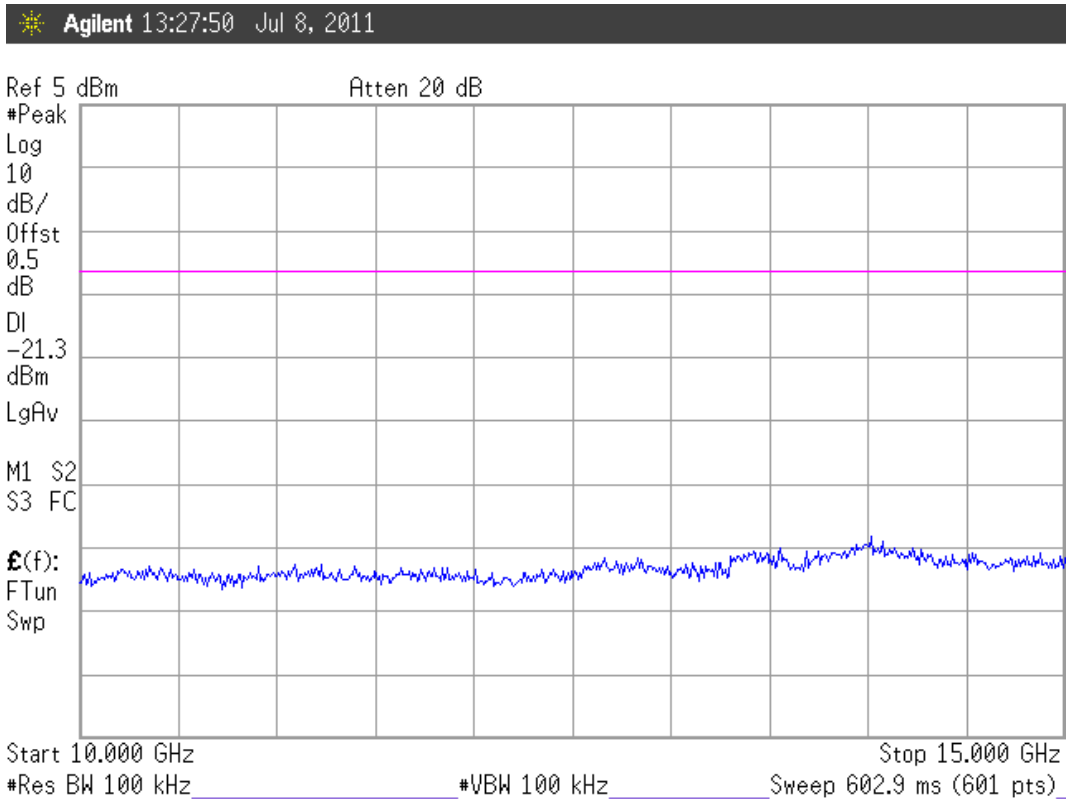
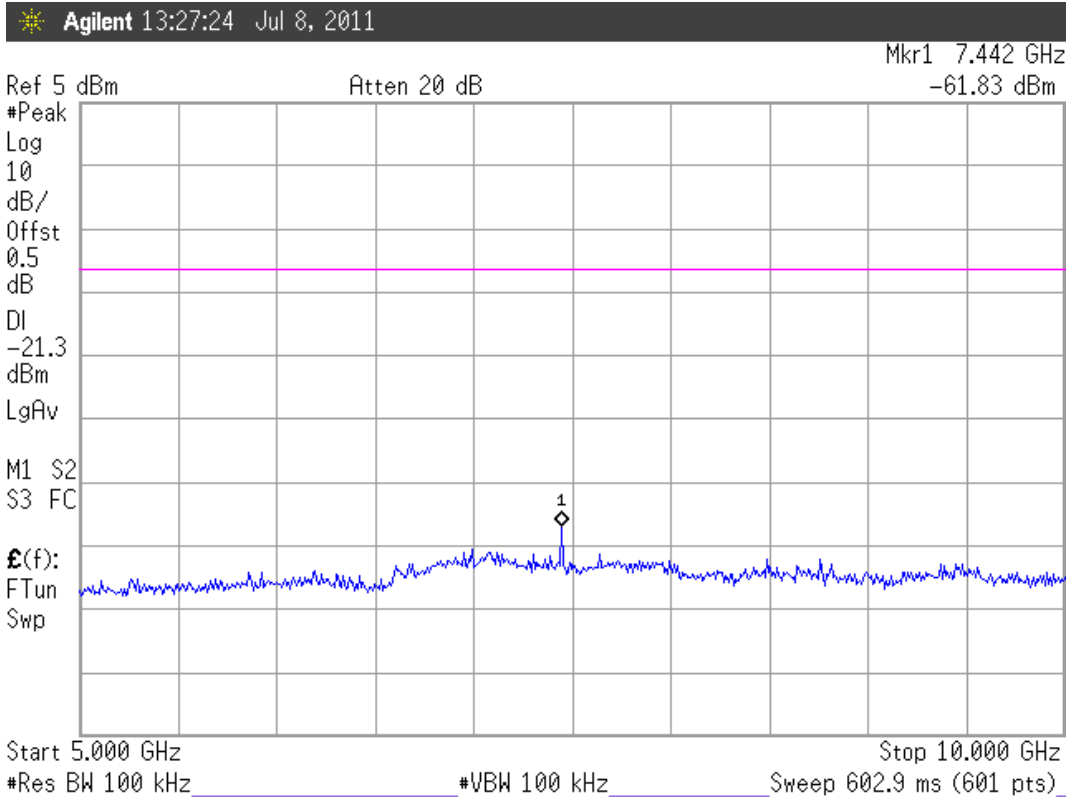
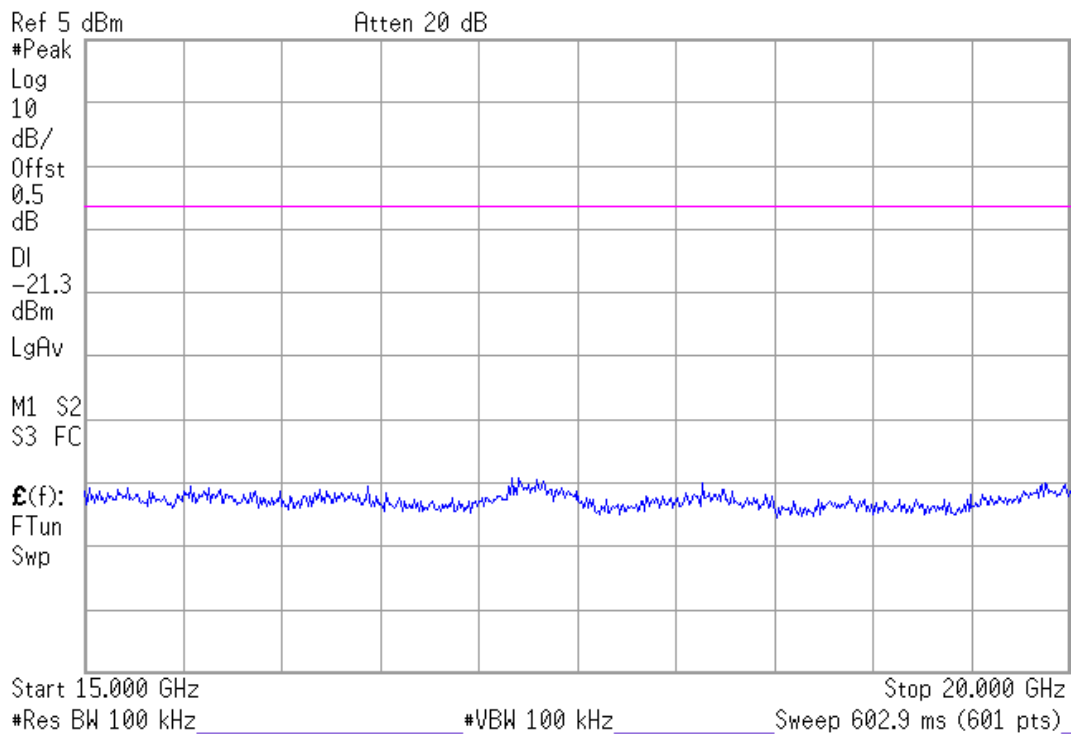


Figure 3: 8-DPSK, Channel 78, Frequency: 2480MHz





Agilent 13:28:17 Jul 8, 2011



Agilent 13:28:47 Jul 8, 2011

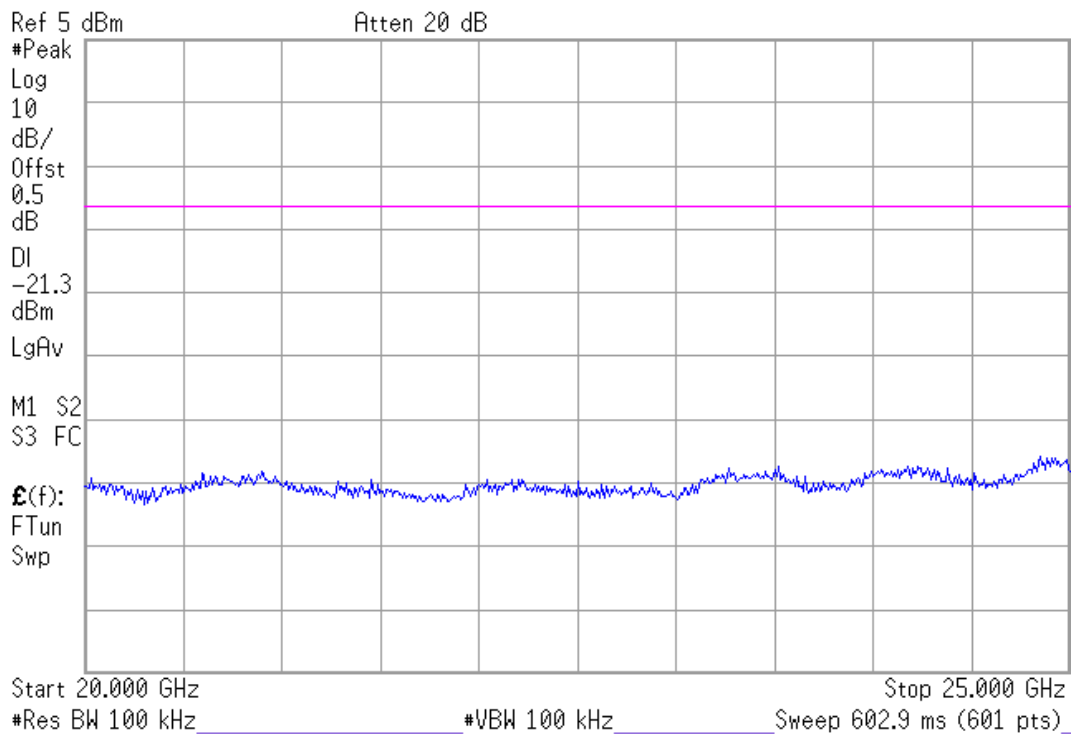
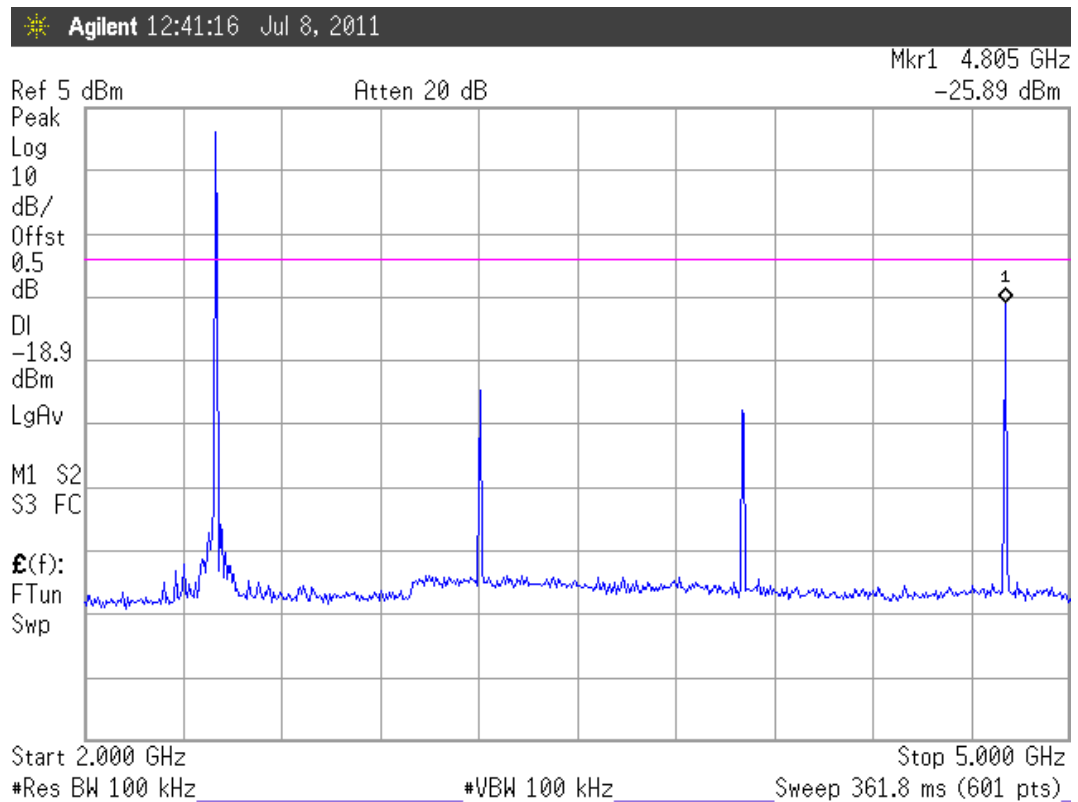
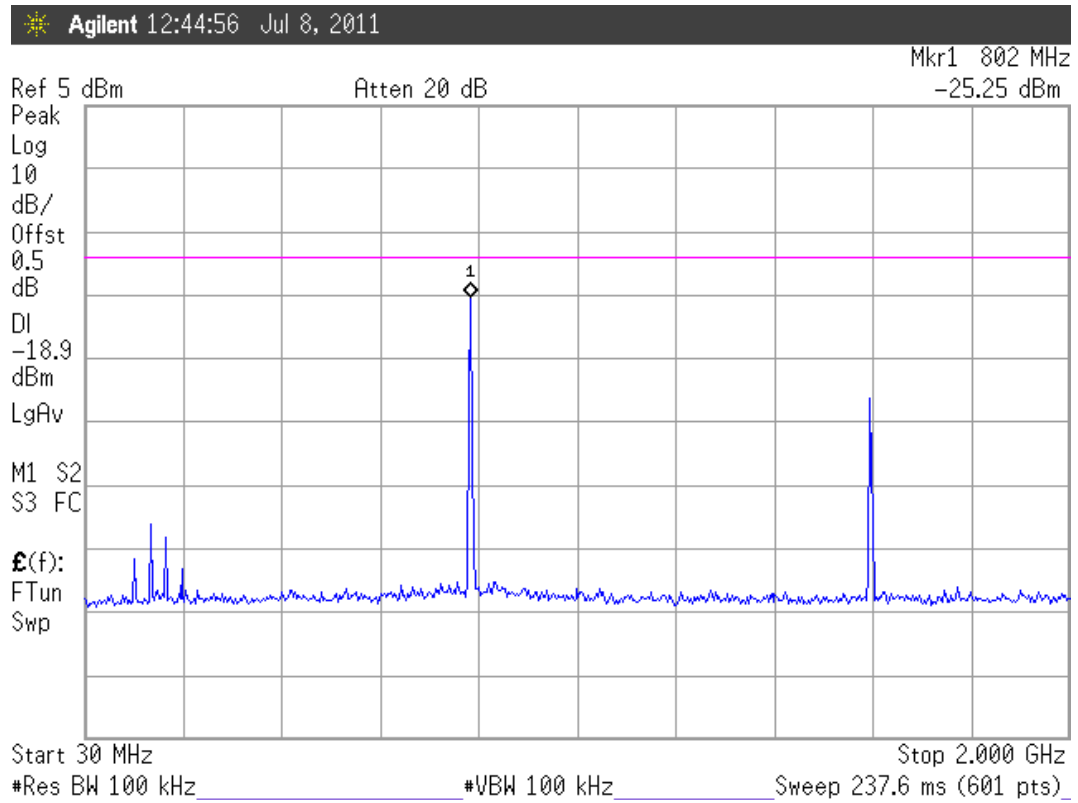
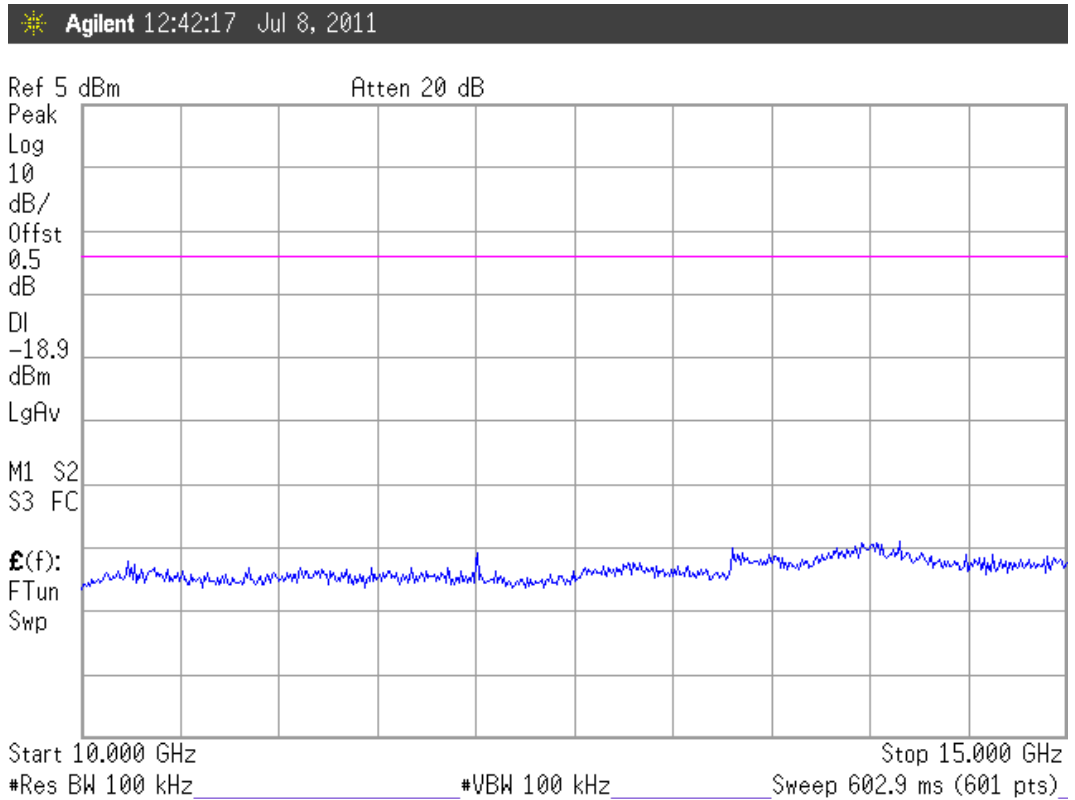
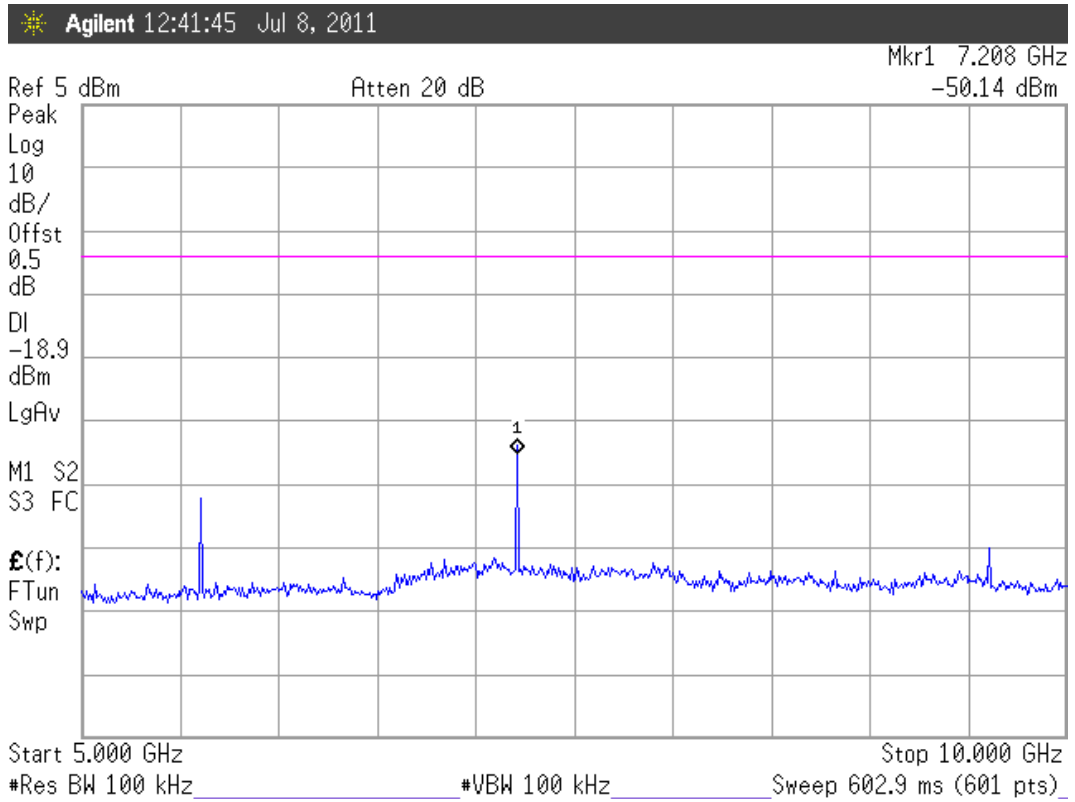


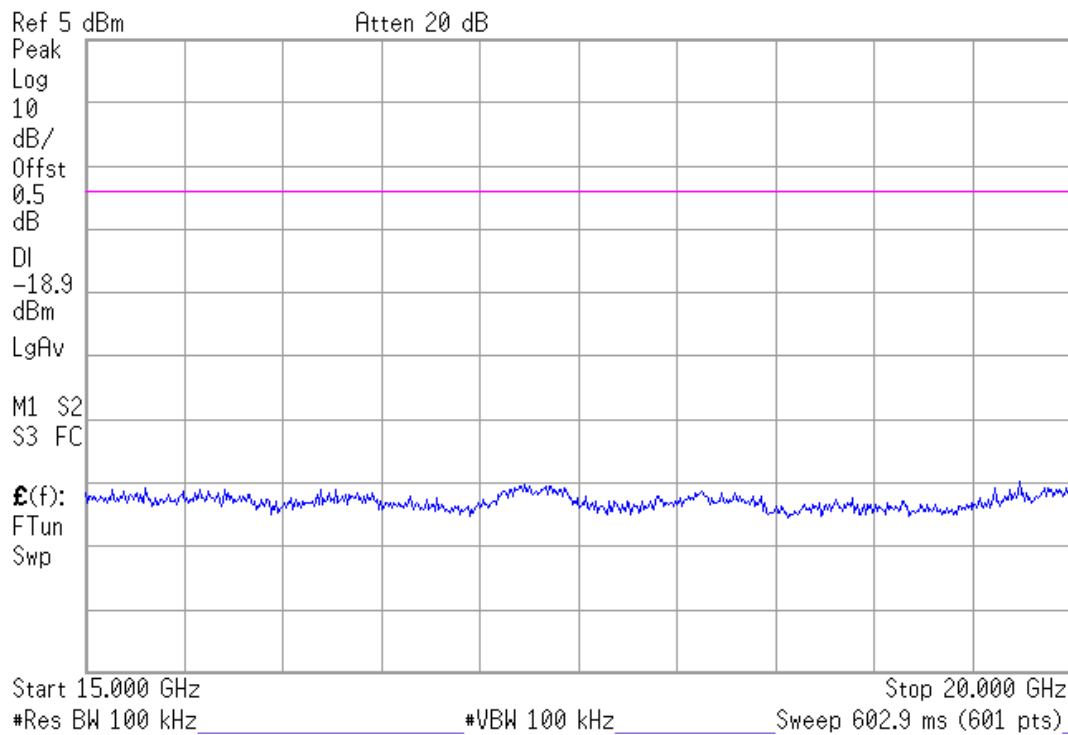
Figure 4: GFSK, Channel 0, Frequency: 2402MHz







Agilent 12:42:44 Jul 8, 2011



Agilent 12:43:11 Jul 8, 2011

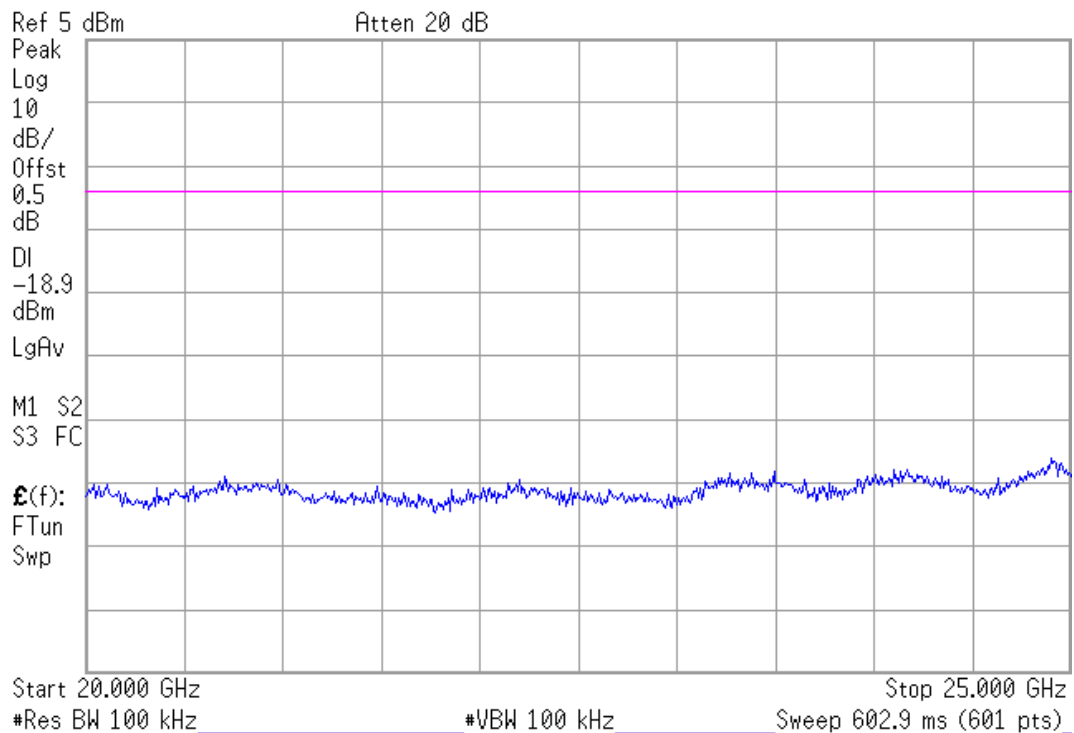
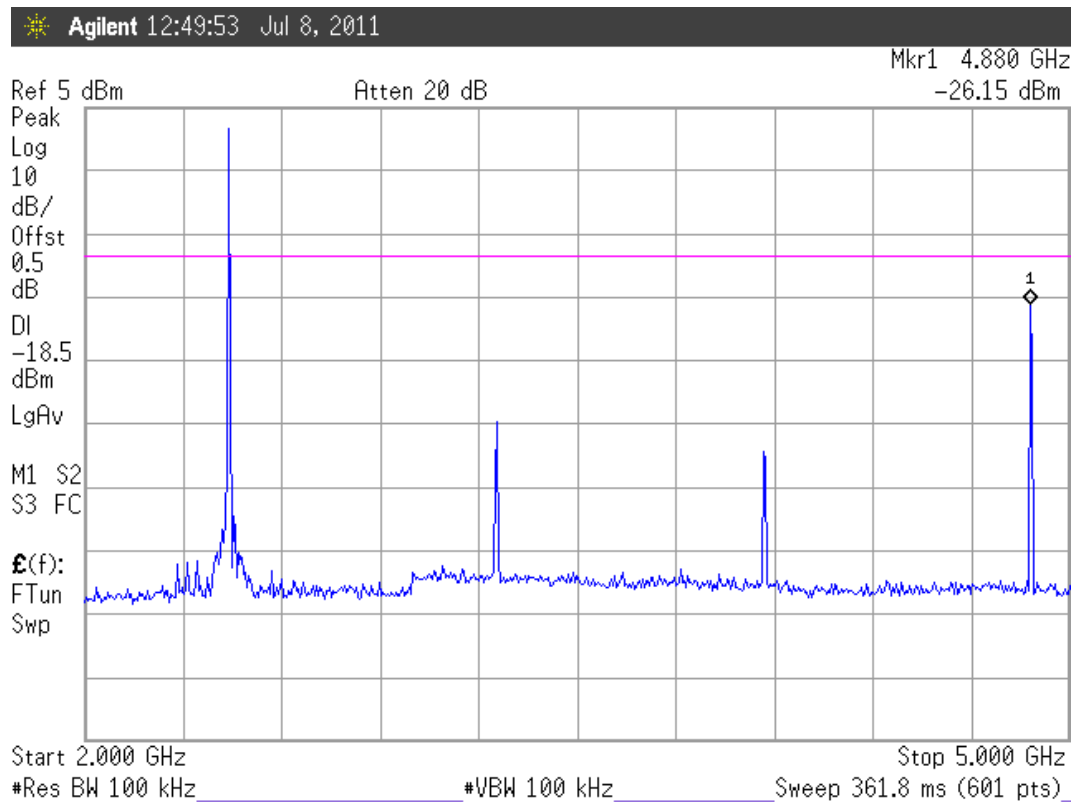
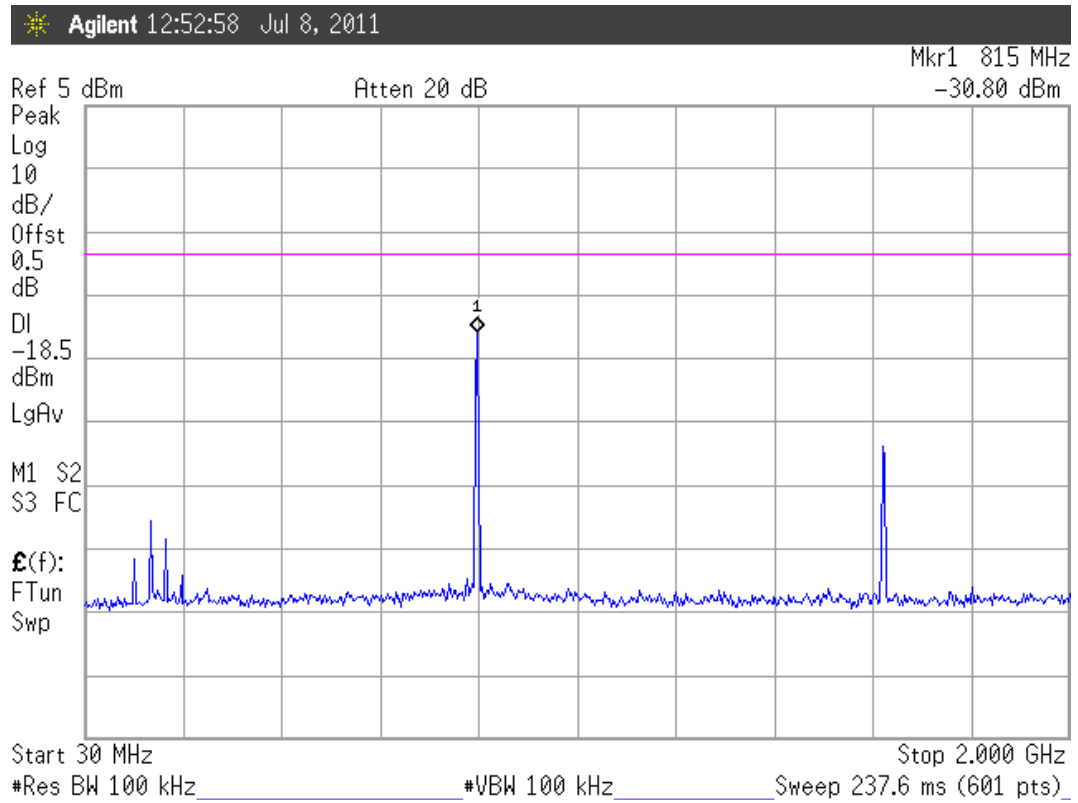
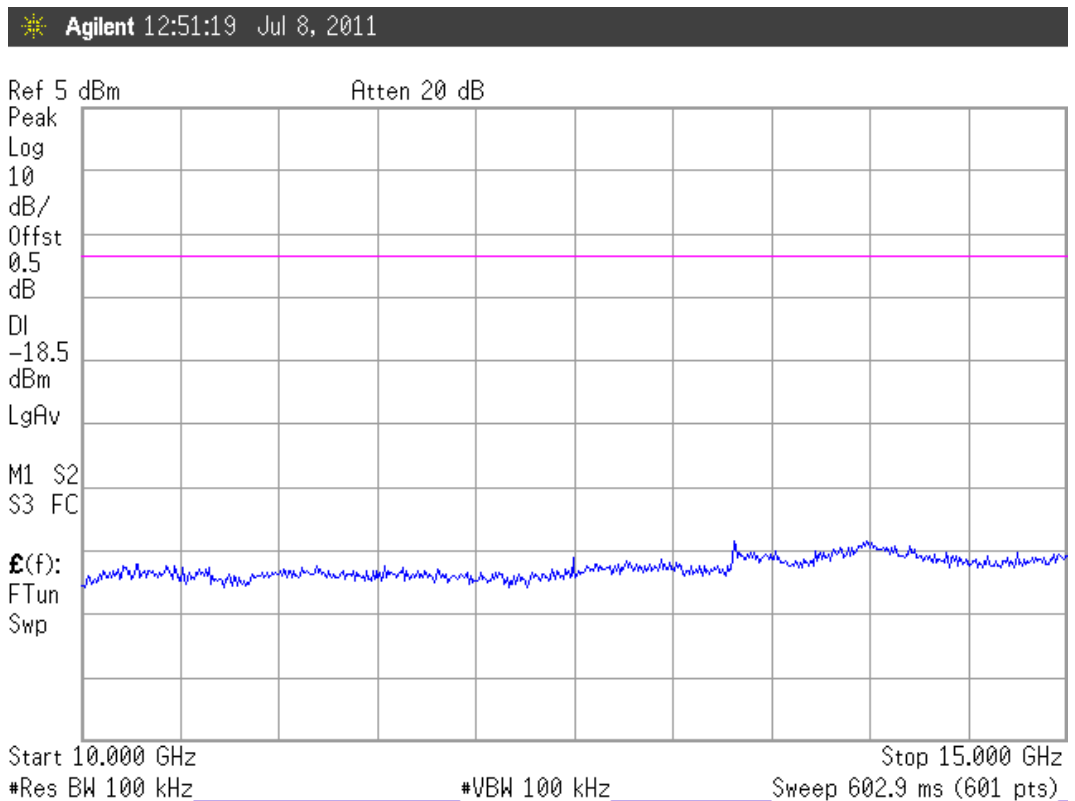
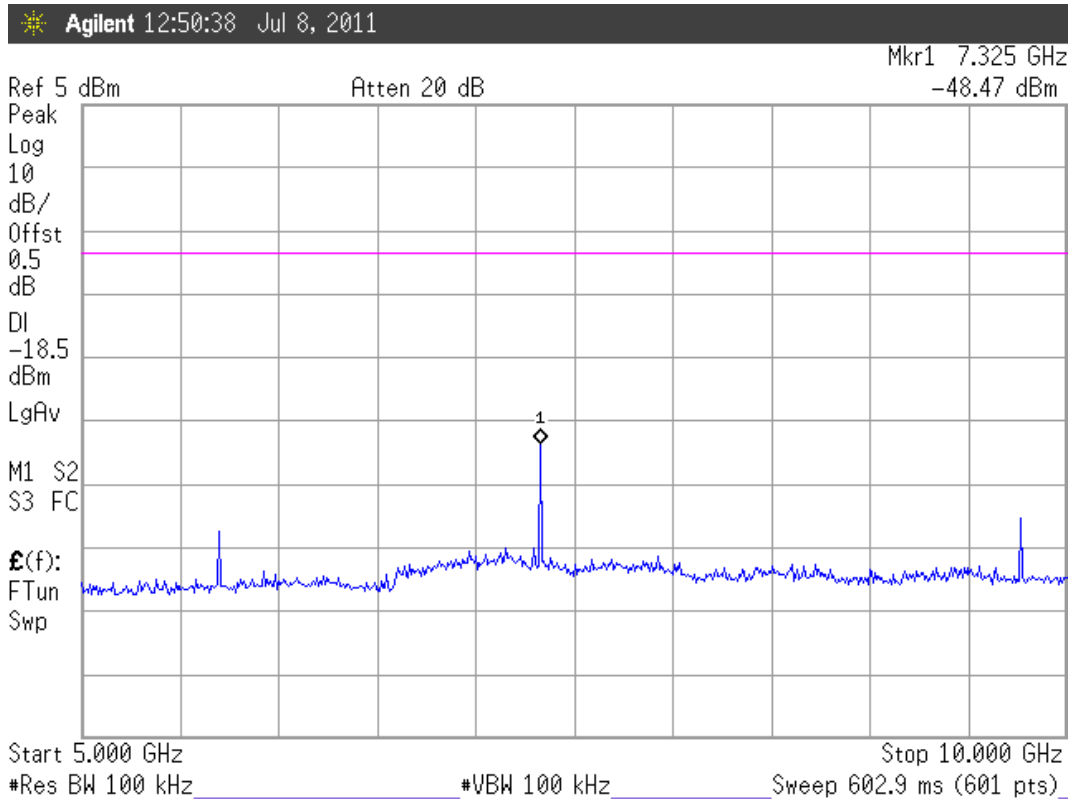
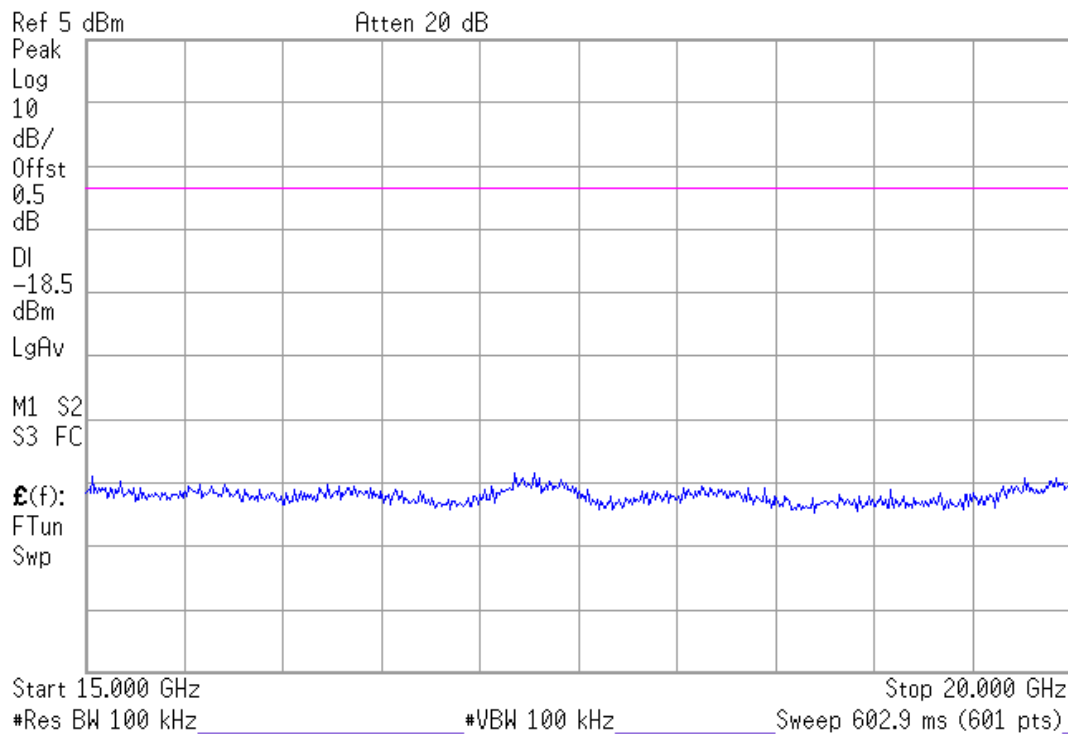


Figure 5: GFSK, Channel 39, Frequency: 2441MHz





Agilent 12:51:51 Jul 8, 2011



Agilent 12:52:19 Jul 8, 2011

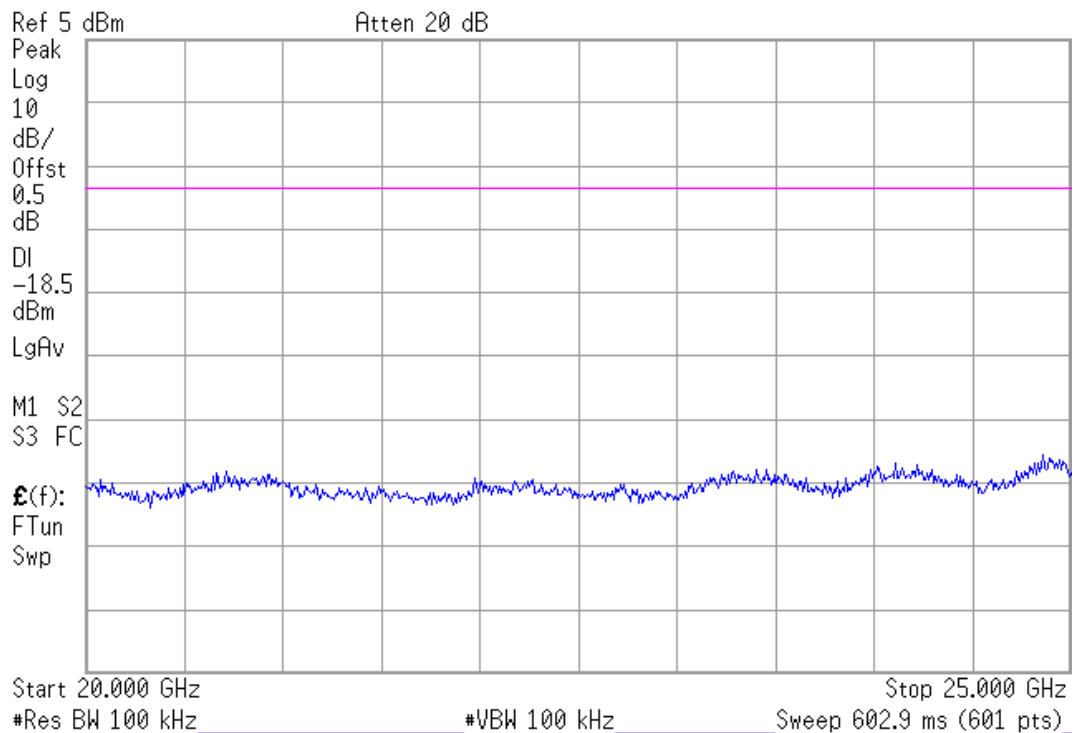
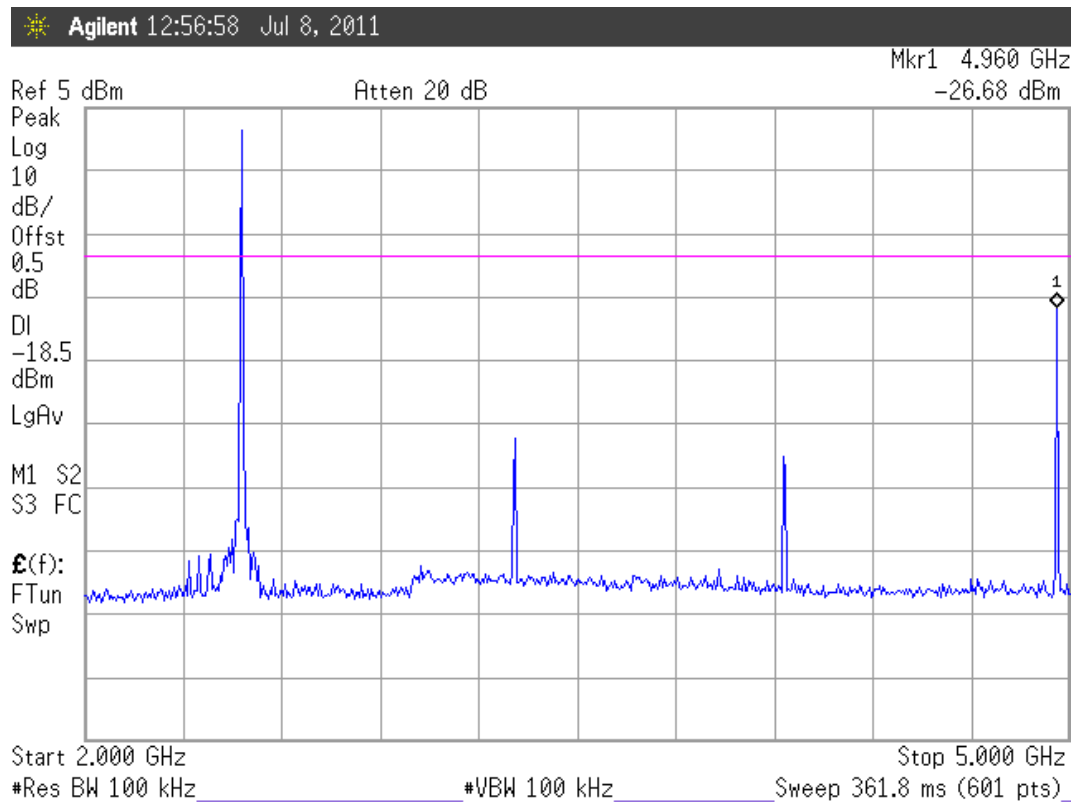
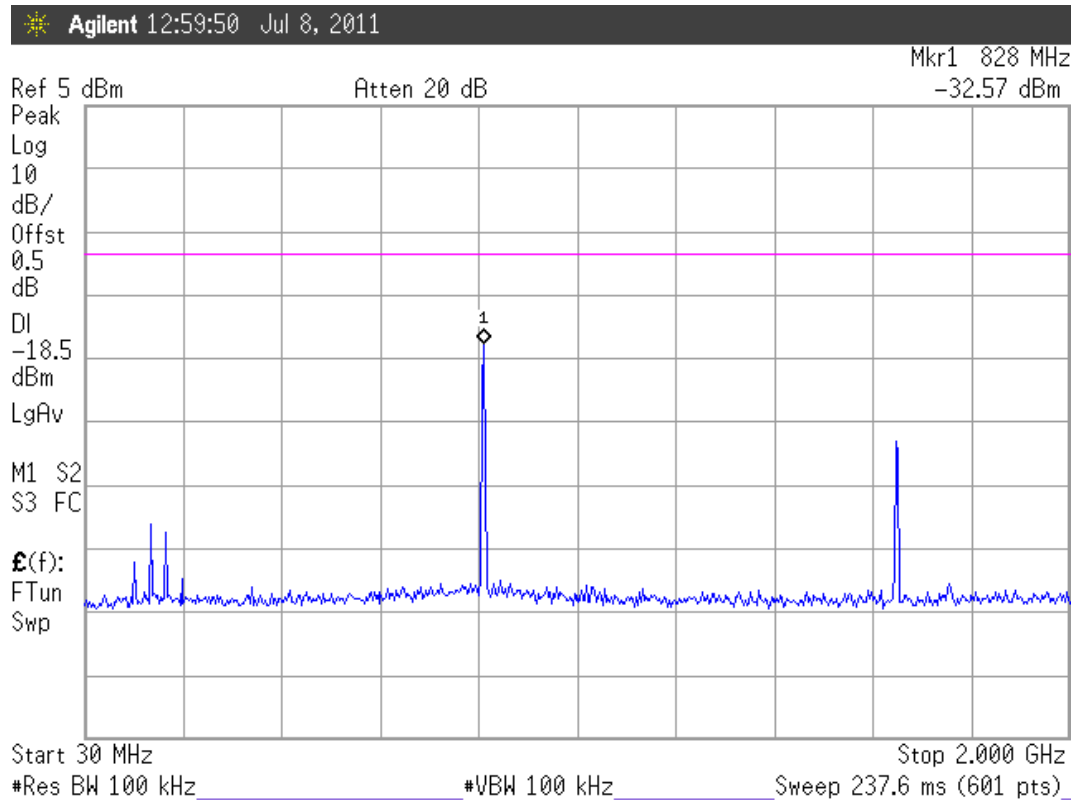
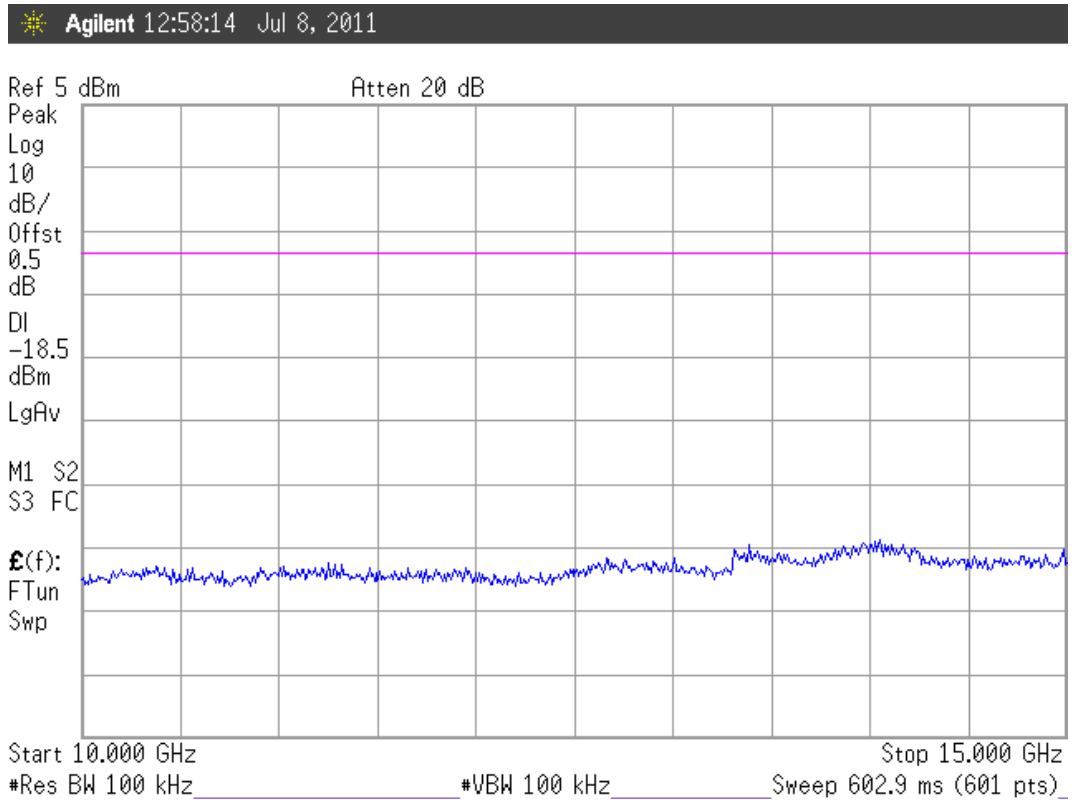
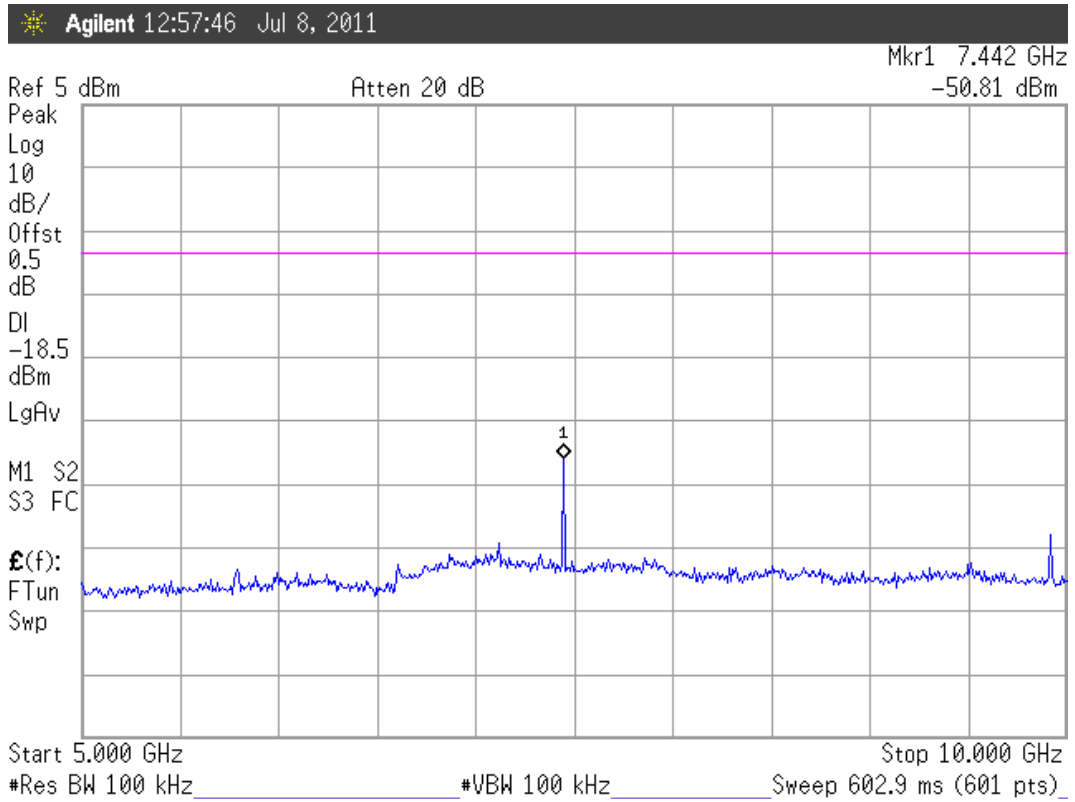
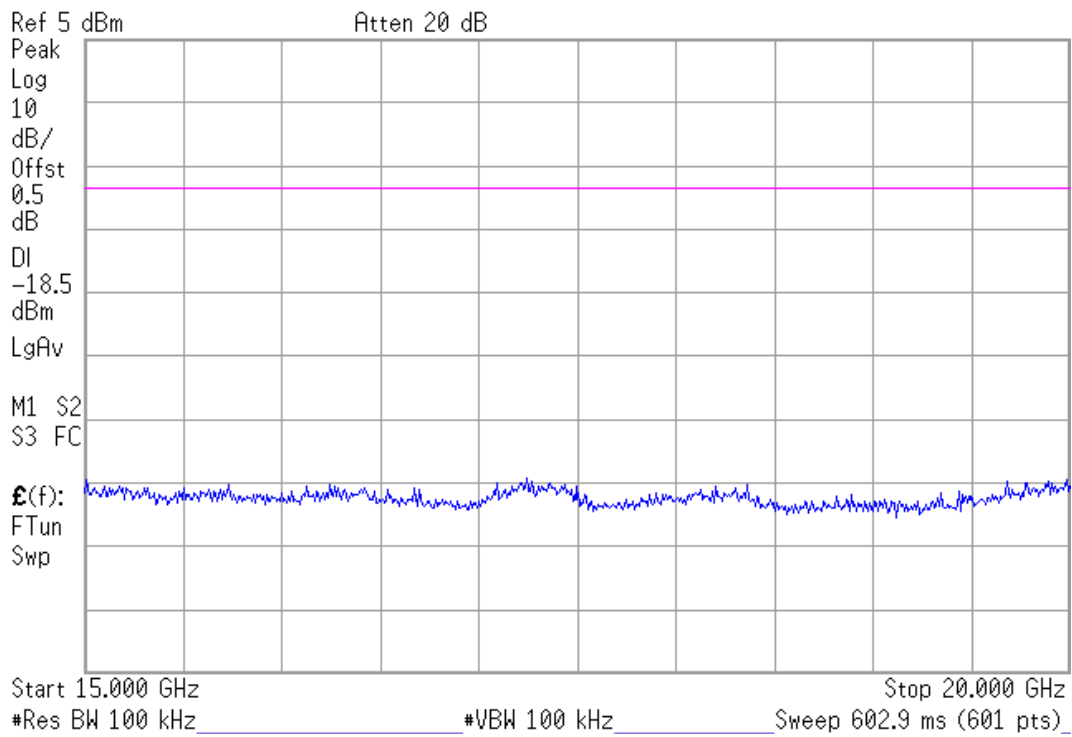


Figure 6: GFSK, Channel 78, Frequency: 2480MHz

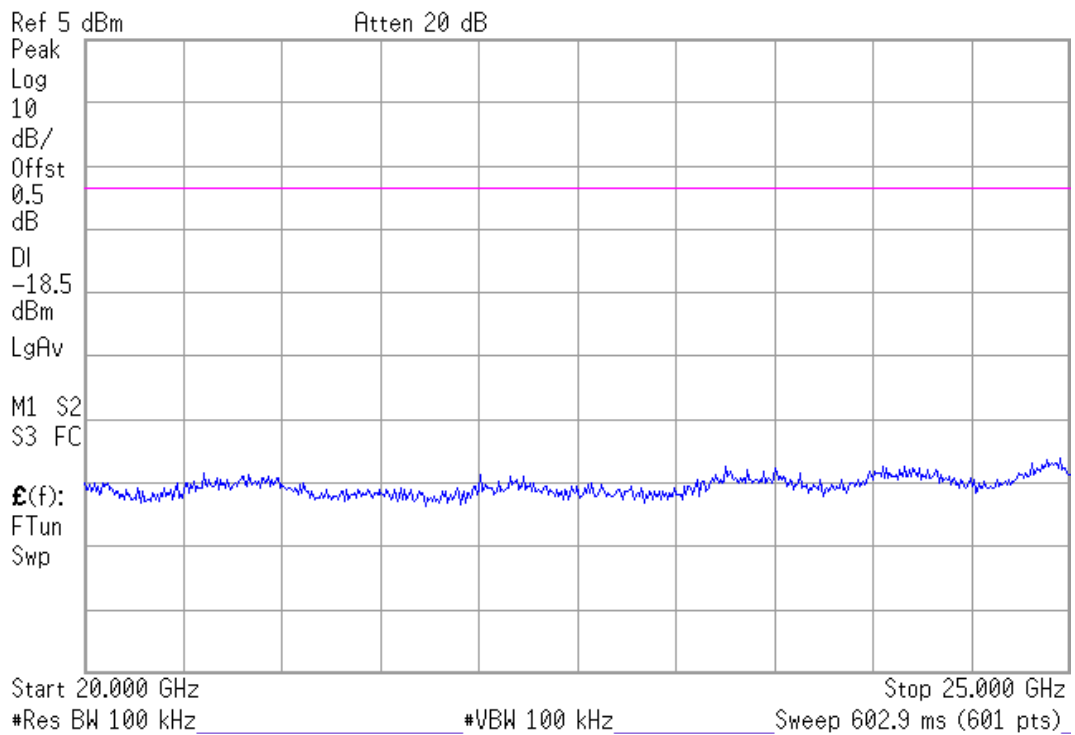




Agilent 12:58:42 Jul 8, 2011



Agilent 12:59:09 Jul 8, 2011



## 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	E4446A	US44300366	Aug. 04, 10'	Aug. 03, 11'

### 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 (DA 00-705)

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.



## 10.6. Test Results

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

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

EUT : CregleBook M/N : CB1101

Test Date: Jul. 08, 2011 Temperature : 26°C Humidity : 54 %

### 10.6.1. Type of Modulation: 8-DPSK (Single Channel)

1. Below Band edge : The highest emission level is -45.60dBm on 2.39992GHz °
2. Upper Band edge: The highest emission level is -48.85dBm on 2.48358GHz °

### 10.6.2. Type of Modulation: 8-DPSK (Hopping ON)

3. Below r Band edge : The highest emission level is -43.54dBm on 2.40000GHz °
4. Upper Band edge: The highest emission level is -47.42dBm on 2.48350GHz °

### 10.6.3. Type of Modulation: GFSK (Single Channel)

1. Below Band edge : The highest emission level is -38.99dBm on 2.39992GHz °
2. Upper Band edge: The highest emission level is -46.89dBm on 2.48358GHz °

### 10.6.4. Type of Modulation: GFSK (Hopping ON)

3. Below Band edge : The highest emission level is -36.56dBm on 2.40000GHz °
4. Upper Band edge: The highest emission level is -46.92dBm on 2.48350GHz °

Figure 1: 8-DPSK, Below Band edge (Single Channel)

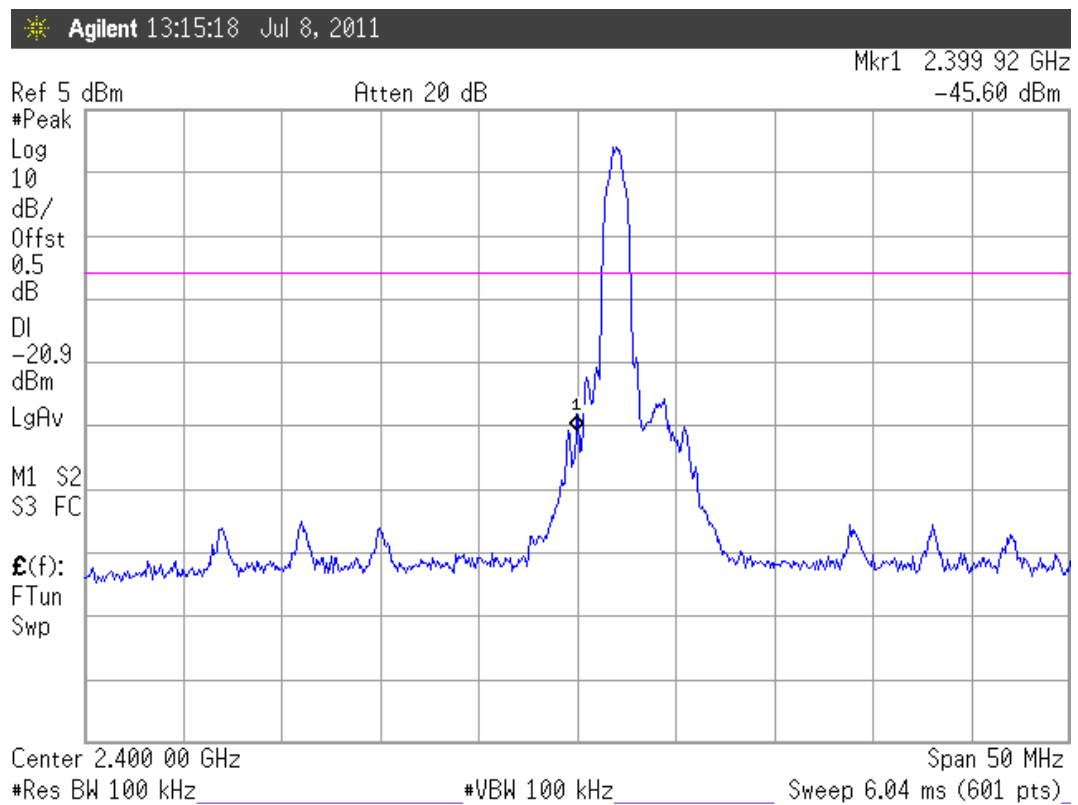


Figure 2: 8-DPSK, Upper Band edge (Single Channel)

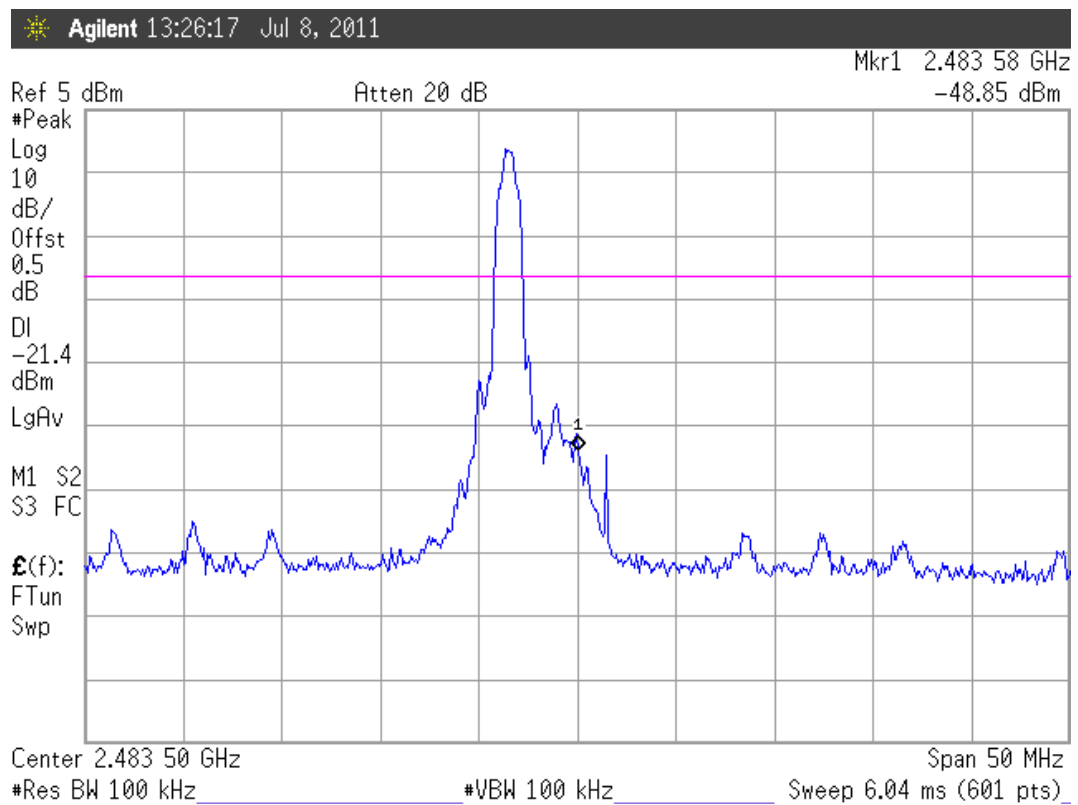


Figure 3: 8-DPSK, Below Band edge (Hopping ON)

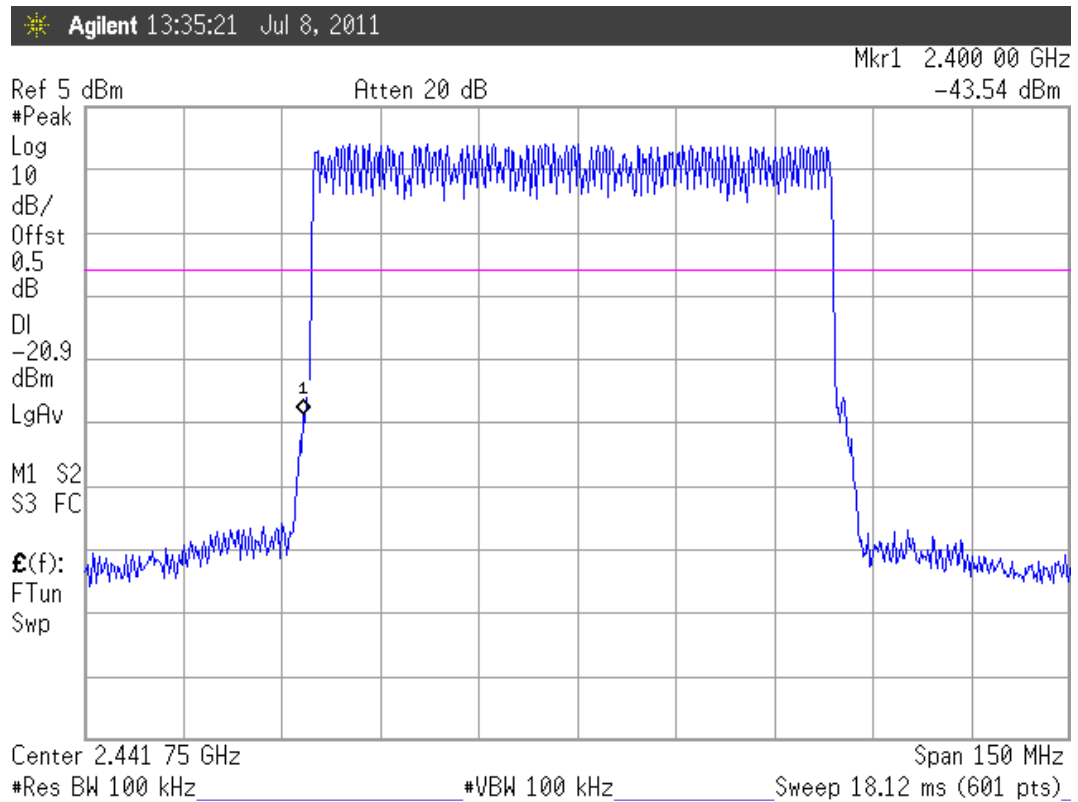


Figure 4: 8-DPSK, Upper Band edge (Hopping ON)

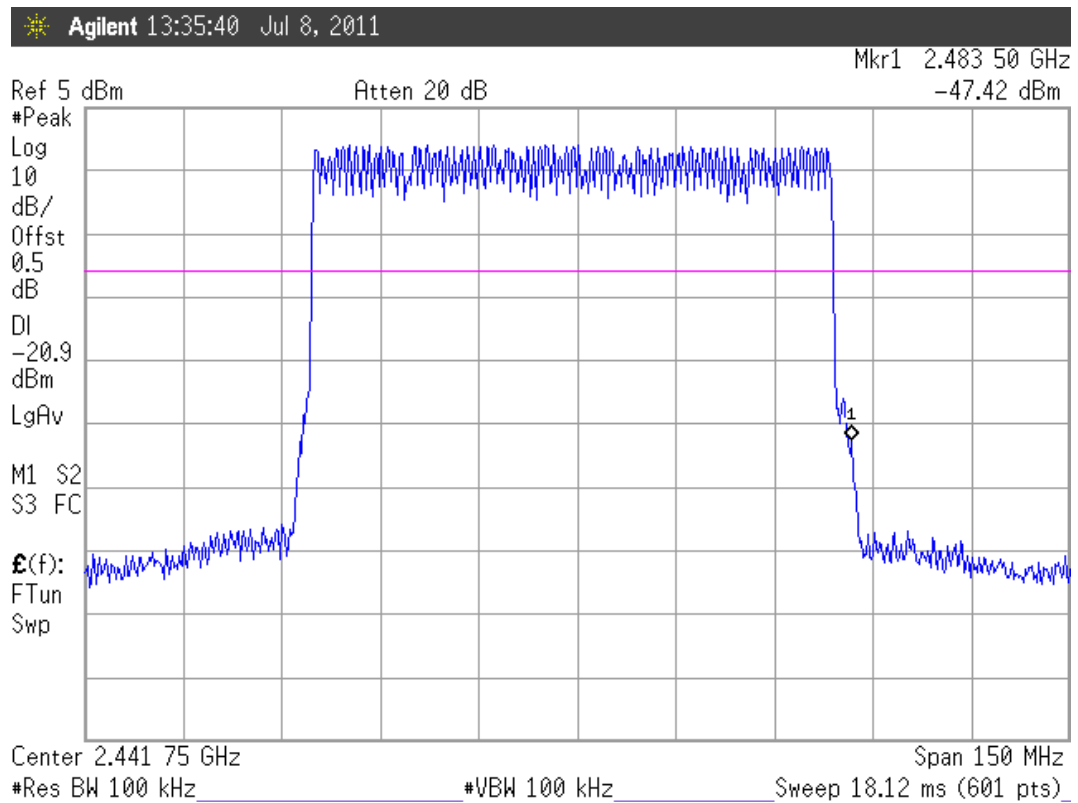


Figure 5: GFSK, Below Band edge (Single Channel)

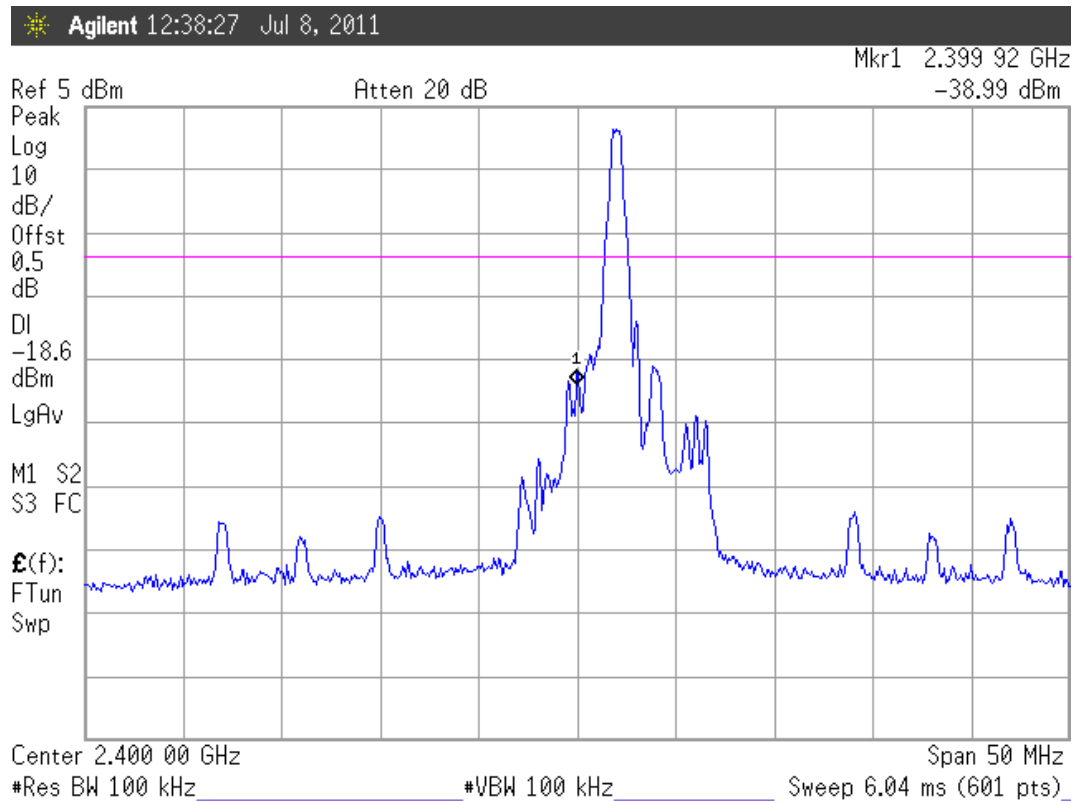


Figure 6: GFSK, Upper Band edge (Single Channel)

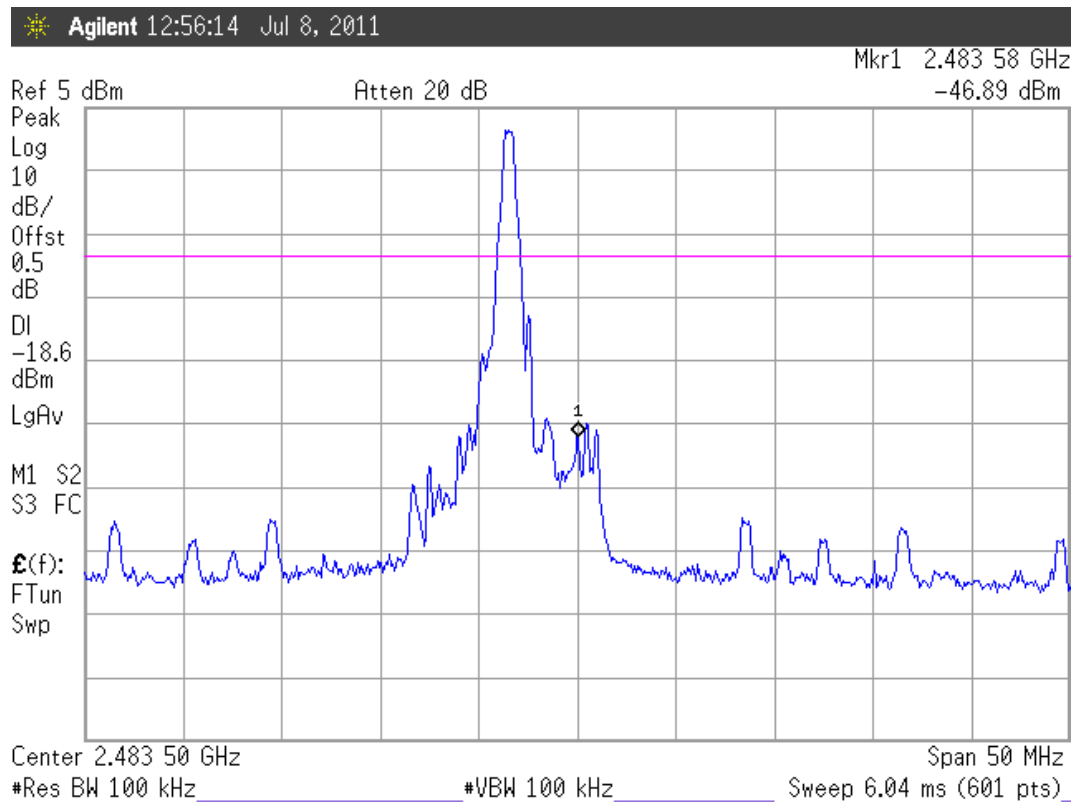


Figure 7: GFSK, Below Band edge (Hopping ON)

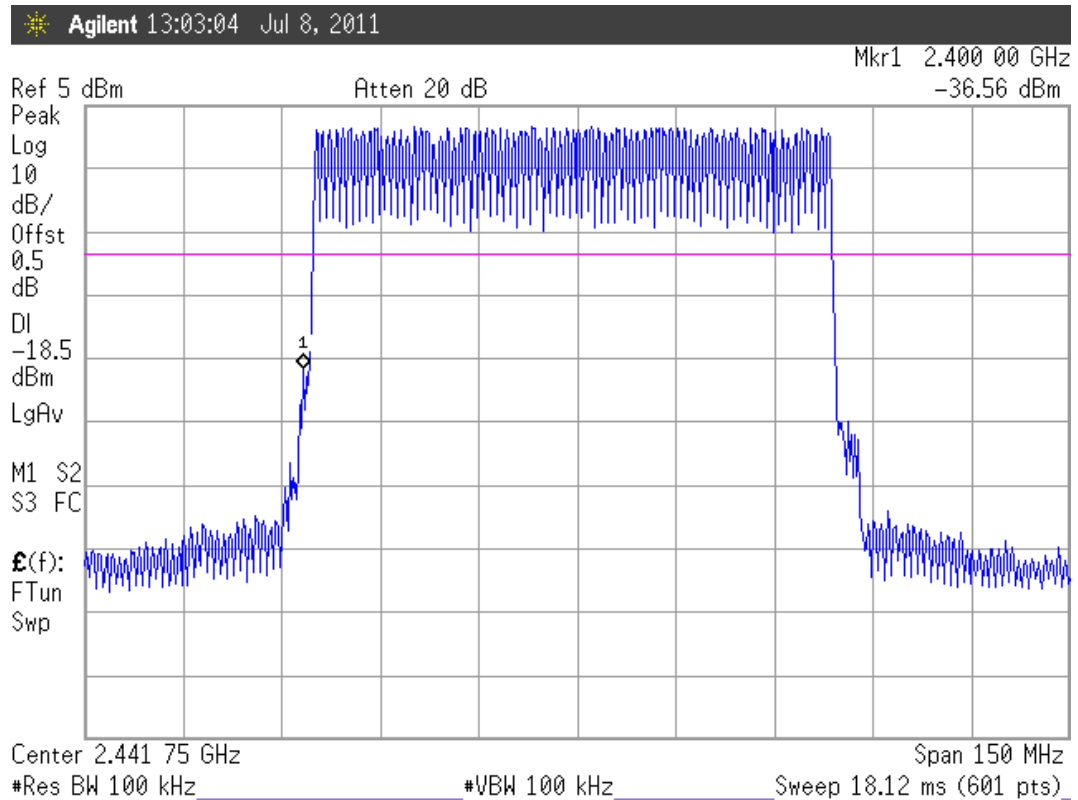
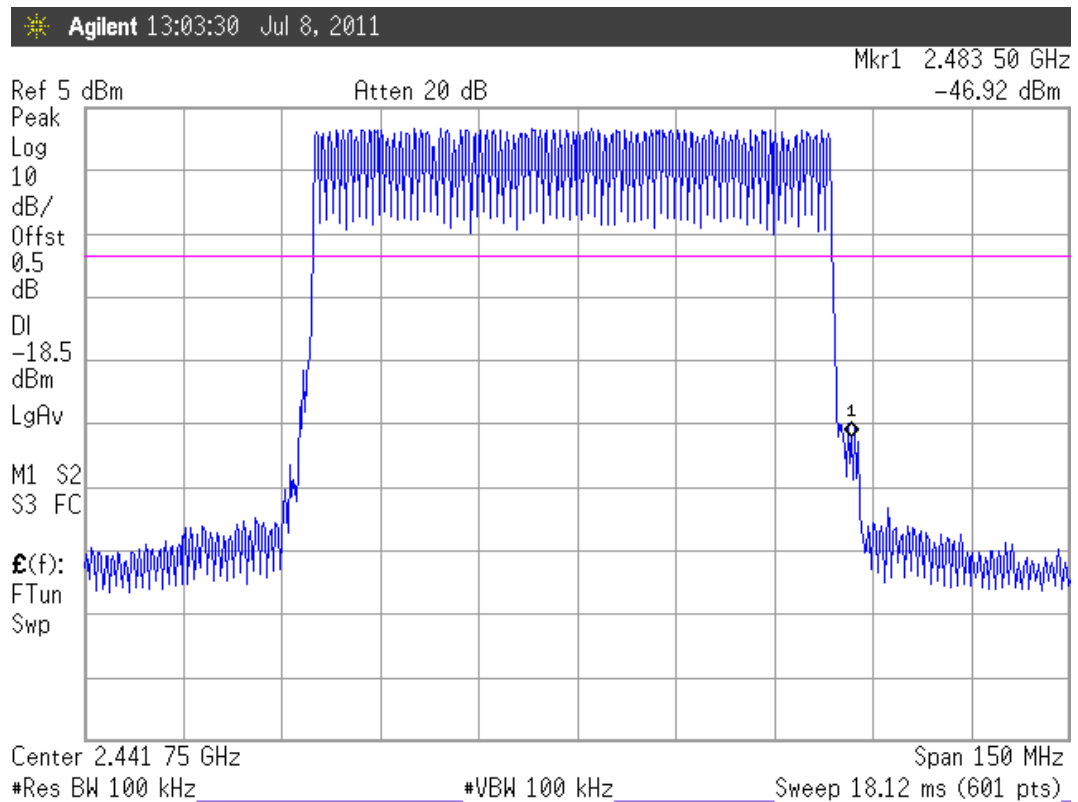


Figure 8: GFSK, Upper Band edge (Hopping ON)



## **11.DEVIATION TO TEST SPECIFICATIONS**

**【NONE】**