FCC 47 CFR PART 15 SUBPART C

Product Type	:	Bluetooth Transmitter
Applicant	:	DIMTON CO., LTD.
Address	:	15F., No. 866, Zhongzheng Rd., Zhonghe City, Taipei County 23586, Taiwan (R.O.C)
Trade Name	:	BlueVirtu
Model Number	:	BMD-01
Test Specification	:	FCC 47 CFR PART 15 SUBPART C: Oct., 2009 ANSI C63.4-2003
Issue Date	:	May 03, 2010

Issue by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade City,
Taoyuan Country 334, Taiwan R.O.C.
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Taiwan Accreditation Foundation accreditation number: 1330

Revision History

Rev.	Issue Date	Revisions	Revised By
00	Apr. 23, 2010	Initial Issue	
01	May 03, 2010	Revised product name, trade name, model number.	Joyce Liao

Verification

Issued Date: 2010/05/03

Product Type	:	Bluetooth Transmitter
Applicant	:	DIMTON CO., LTD.
Address	:	15F., No. 866, Zhongzheng Rd., Zhonghe City, Taipei County 23586, Taiwan (R.O.C)
Trade Name	:	BlueVirtu
Model Number	:	BMD-01
FCC ID	:	VON-BMD-01
EUT Rated Voltage	:	DC 1.5V, AAA
Test Voltage	:	120 Vac / 60 Hz
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C: Oct., 2009 ANSI C63.4-2003
Test Result	:	Complied
Performed Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade City, Taoyuan Country 334, Taiwan R.O.C. Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

The above equipment has been tested by A Test Lab Techno Corp., and found compliance with the requirements set forth in the Electromagnetic Compatibility Directive 2004/108/EC and technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.
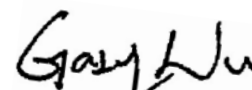
Approved By : _Miller Lee_　　Reviewed By : _Gary Wu_

(Manager)　　(Miller Lee)　　(Testing Engineer)　　(Gary Wu)

TABLE OF CONTENTS

1 General Information

1.1 Summary of Test Result

Standard		Item	Result	Remark
15.247	**RSS-GEN**			
15.207	7.2.2	AC Power Conducted Emission	N/A	-----
-----	6	Receiver Radiated Emissions	PASS	-----
Standard		Item	Result	Remark
15.247	**RSS-210**			
15.247(c)	A8.5	Transmitter Radiated Emissions	PASS	-----
15.247(b)(1)	A8.4 (2)	Max. Output Power	PASS	-----
15.247(a)(1)	A8.1 (1)	20dB RF Bandwidth	PASS	-----
15.247(a)(1)(iii)	A8.1 (2)	Carrier Frequency Separation	PASS	-----
15.247(a)(1)(iii)	A8.1 (4)	Number of Hopping	PASS	-----
15.247(a)(1)(iii)	A8.1 (4)	Time of Occupancy (Dwell Time)	PASS	-----
15.247(c)	A8.5	Out of Band Conducted Spurious Emission	PASS	-----
15.247(c)	A8.5	Band Edge Measurement	PASS	-----
15.247(c)	A8.5	Occupied Bandwidth Measurement	PASS	-----
15.203	-	Antenna Requirement	PASS	-----

The test results of this report relate only to the tested sample(s) identified in this report. Manufacturer or whom it may concern should recognize the pass or fail of the test result.

1.2 Measurement Uncertainty

Conducted Emission

The measurement uncertainty is evaluated as ± 2.24 dB.

Radiated Emission

The measurement uncertainty of 30 MHz - 1GHz is evaluated as $\pm$ 3.072dB.

2　EUT Description

Product	:	Bluetooth Transmitter
Trade Name	:	BlueVirtu
Model Number	:	BMD-01
Applicant	:	DIMTON CO., LTD. 15F., No. 866, Zhongzheng Rd., Zhonghe City, Taipei County 23586, Taiwan (R.O.C)
Manufacturer	:	DIMTON CO., LTD. 15F., No. 866, Zhongzheng Rd., Zhonghe City, Taipei County 23586, Taiwan (R.O.C)
FCC ID	:	VON-BMD-01
Frequency Range	:	2402 ~ 2480 MHz
Modulation Type	:	GFSK for 1Mbps
		π/4-DQPSK for 2Mbps
		8DPSK for 3Mbps
Antenna Type	:	Internal Type
Antenna Gain	:	1.3dBi
Component		
Battery	:	DC 1.5V, AAA

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: GFSK Mode
Mode 2: π/4-DQPSK Mode
Mode 3: 8DPSK Mode
Mode 4: Normal Operation Mode

Description of Test Modes

Preliminary tests were performed in different modulation to find the worst case. The modulation shown in the table below is the worst-case. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Modulation Type	Channel	Frequency (MHz)	Packet Type	Conducted Power (dBm)	Worst Case
GFSK	Low	2402	DH1	0.34	☐
	Low	2402	DH3	0.19	☐
	Low	2402	DH5	0.17	☐
	Middle	2441	DH1	0.77	☐
	Middle	2441	DH3	0.66	☐
	Middle	2441	DH5	0.80	■
	High	2480	DH1	-0.03	☐
	High	2480	DH3	-0.05	☐
	High	2480	DH5	-0.08	☐
π/4-DQPSK	Low	2402	2DH1	-1.75	☐
	Low	2402	2DH3	-1.71	☐
	Low	2402	2DH5	-1.74	☐
	Middle	2441	2DH1	-1.62	☐
	Middle	2441	2DH3	-1.51	☐
	Middle	2441	2DH5	-1.55	☐
	High	2480	2DH1	-2.56	☐
	High	2480	2DH3	-2.41	☐
	High	2480	2DH5	-2.45	☐
8DPSK	Low	2402	3DH1	-1.54	☐
	Low	2402	3DH3	-1.57	☐
	Low	2402	3DH5	-1.48	☐
	Middle	2441	3DH1	-1.35	☐
	Middle	2441	3DH3	-1.38	☐
	Middle	2441	3DH5	-1.10	☐
	High	2480	3DH1	-2.18	☐
	High	2480	3DH3	-2.37	☐
	High	2480	3DH5	-2.27	☐

Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Manufacturer	Model Number	Serial Number	Power Cord
1.	Bluetooth Tester	R & S	CBT	100350	NA

3.2. EUT Exercise Software

1.	Setup the EUT and Bluetooth Tester (CBT) as shown on 3.3.
2.	Turn on the power of all equipment.
3.	Open Bluetooth connect to Bluetooth Earphone to read and write.

3.3. Configuration of Test System Details
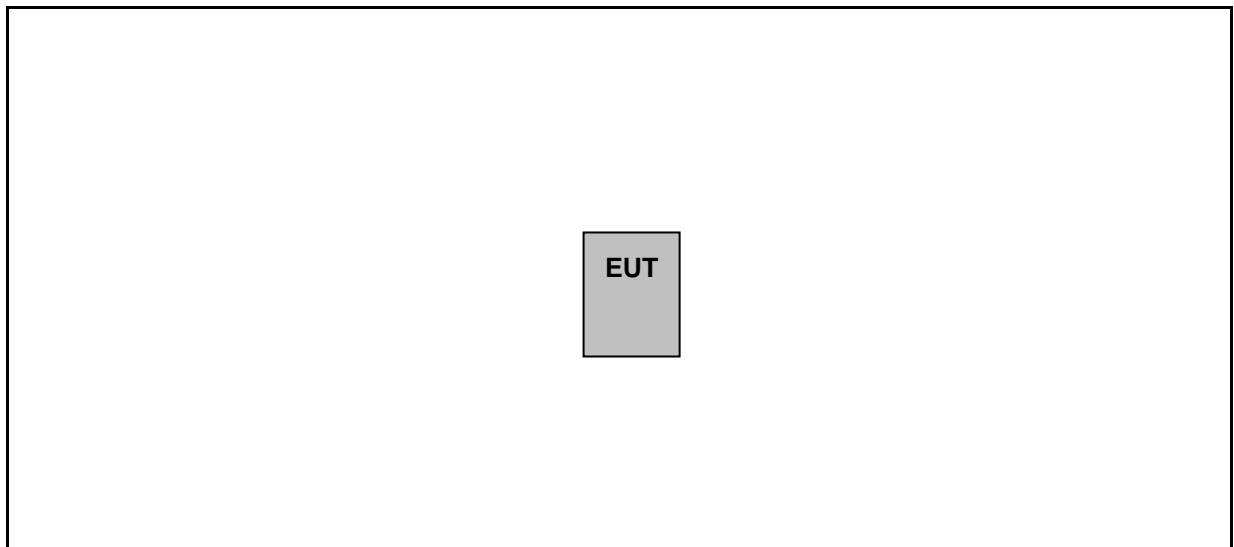
3.4. Test Site Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	25
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950

4   Conducted Emission Measurement

4.1. Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

4.2. Test Instruments

Describe	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Test Receiver	R&S	ESCI	100367	07/01/2009	(1)
LISN	EMCO	3816/2 SH	00060110	06/17/2009	(1)
LISN	EMCO	3816/2 SH	00060111	06/29/2009	(1)
Test Site	ATL	TE02	TE02	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

4.3. Test Setup
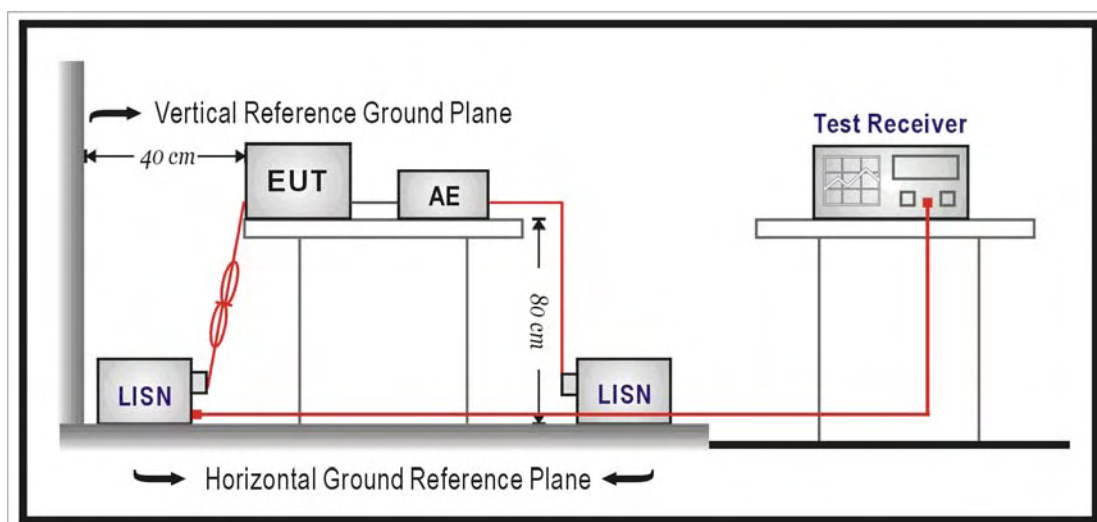
4.4. Test Procedure

The power line conducted emission measurements were performed in a shielded enclosure.   The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3162/2 SH Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPR quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 4.1.

4.5. Test Result

Not Applicable.

5   Radiated Interference Measurement

5.1. Limit

Frequency Range (MHz)	Peak (dBuV)
30 to 88	39
88 to 216	43.5
216 to 960	46.4
Above 960	49.5

5.2. Test Instruments

3 Meter Chamber					
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
RF Pre-selector	Agilent	N9039A	MY46520256	01/27/2009	(2)
Spectrum Analyzer	Agilent	E4446A	MY46180578	01/20/2009	(2)
Pre Amplifier	Agilent	8449B	3008A02237	07/01/2009	(1)
Pre Amplifier	Agilent	8447D	2944A10961	06/30/2009	(1)
Bi-log Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	9163-270	06/23/2009	(2)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	07/01/2009	(2)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	BBHA9170	9170-320	06/30/2009	(2)
Test Site	ATL	TE01	TE01	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

5.3. Setup
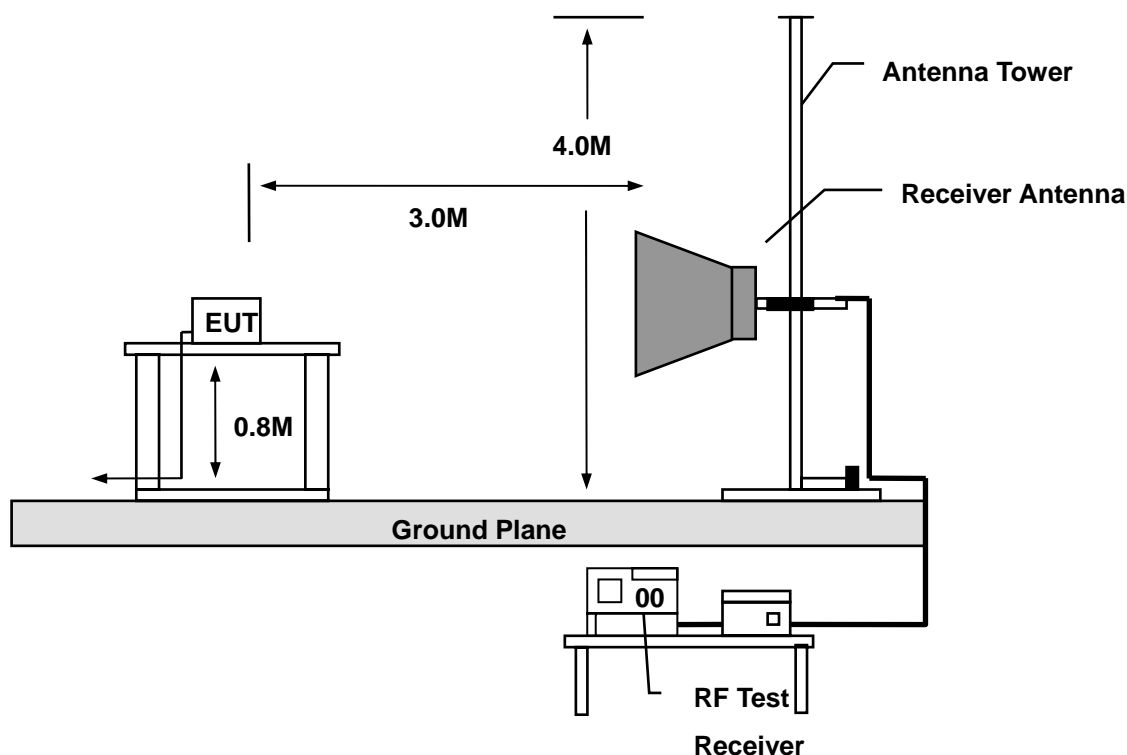
5.4. Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 30 MHz to 26.5 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on tree orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Biconilog Antenna (mode VULB9163) at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna (model BBHA9120D&9170) was used in frequencies 1 – 26.5 GHz at a distance of 1 meter. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20dB/decade).

For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro colts per meter (dBuV/m).

The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)

   FI= Reading of the field intensity.

   AF= Antenna factor.

   CL= Cable loss.

   P.S Amplitude is auto calculate in spectrum analyzer.

(2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)

   The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

   (a) For fundamental frequency : Transmitter Output < +30dBm

   (b) For spurious frequency :   Spurious emission limits = fundamental emission limit /10

5.5. Test Result

File :BMD01(Normal Operation)   Data :#1   Date: 2009/12/30   Time: 下午 01:24:31
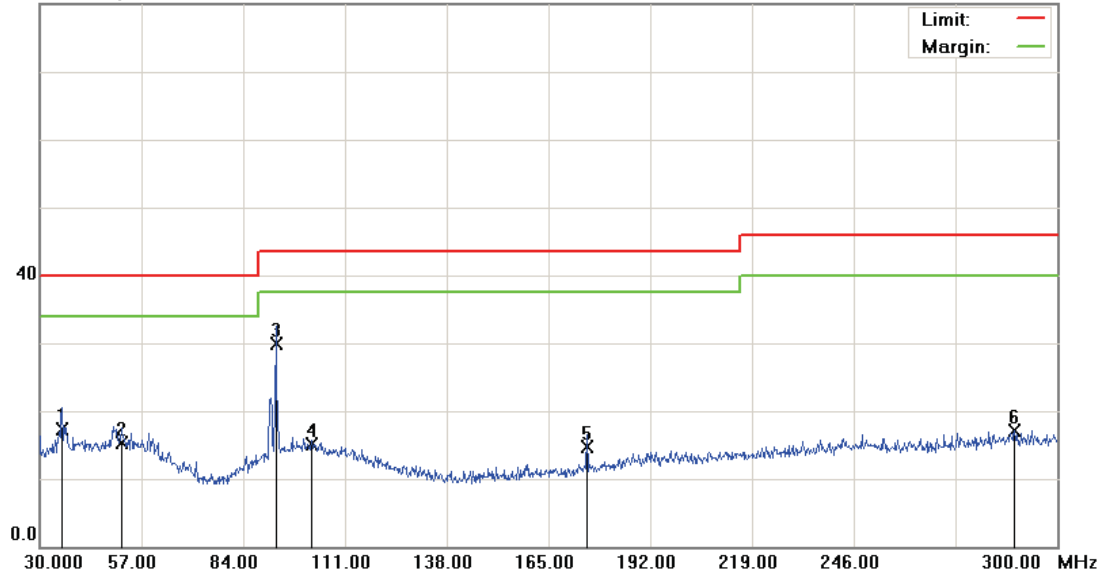
Site:	: 966 Chamber		Polarization:	*Vertical*	Temperature: 22 ℃
Limit:	FCC Class B 3M Radiation		Power:	AC 120V/60Hz	Humidity: 60 %
EUT:	Bluetooth Transmitter		Distance:	3m	
M/N:	BMD-01				
Mode:	4				
Note:					

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		cm	degree	
1		35.9400	30.22	-12.95	17.27	40.00	-22.73	QP			
2		51.6000	27.39	-12.17	15.22	40.00	-24.78	QP			
3	*	92.6400	42.48	-12.57	29.91	43.50	-13.59	QP			
4		102.0900	27.01	-11.90	15.11	43.50	-28.39	QP			
5		175.2600	29.37	-14.62	14.75	43.50	-28.75	QP			
6		288.6600	27.14	-10.09	17.05	46.00	-28.95	QP			

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

File :BMD01(Normal Operation)　　　　Data :#3　　　　　　Date: 2009/12/30　　　Time: 下午 01:29:20

Site:	: 966 Chamber	Polarization:	*Horizontal*	Temperature:	22 ℃
Limit:	FCC Class B 3M Radiation	Power:	AC 120V/60Hz	Humidity:	60 %
EUT:	Bluetooth Transmitter	Distance:	3m		

M/N: BMD-01
Mode: 4
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		cm	degree	
1		35.9400	30.28	-12.95	17.33	40.00	-22.67	QP			
2		53.4900	27.39	-12.19	15.20	40.00	-24.80	QP			
3	*	92.6400	39.10	-12.57	26.53	43.50	-16.97	QP			
4		105.8700	26.33	-12.15	14.18	43.50	-29.32	QP			
5		175.2600	29.31	-14.62	14.69	43.50	-28.81	QP			
6		284.6100	27.05	-10.31	16.74	46.00	-29.26	QP			

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

File :BMD01(Normal Operation)　　　　Data :#2　　　　　　　Date: 2009/12/30　　　Time: 下午 01:26:55
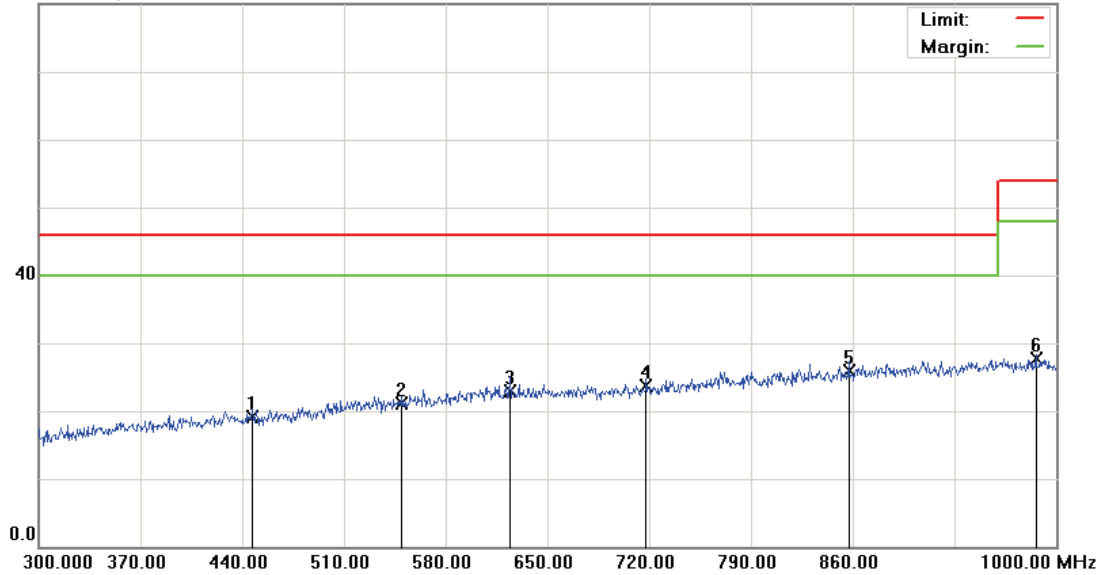
Site: : 966 Chamber
Limit: FCC Class B 3M Radiation
EUT: Bluetooth Transmitter
M/N: BMD-01
Mode: 4
Note:

Polarization:　　*Vertical*
Power:　　AC 120V/60Hz
Distance:　　3m

Temperature:　　22 ℃
Humidity:　　60 %

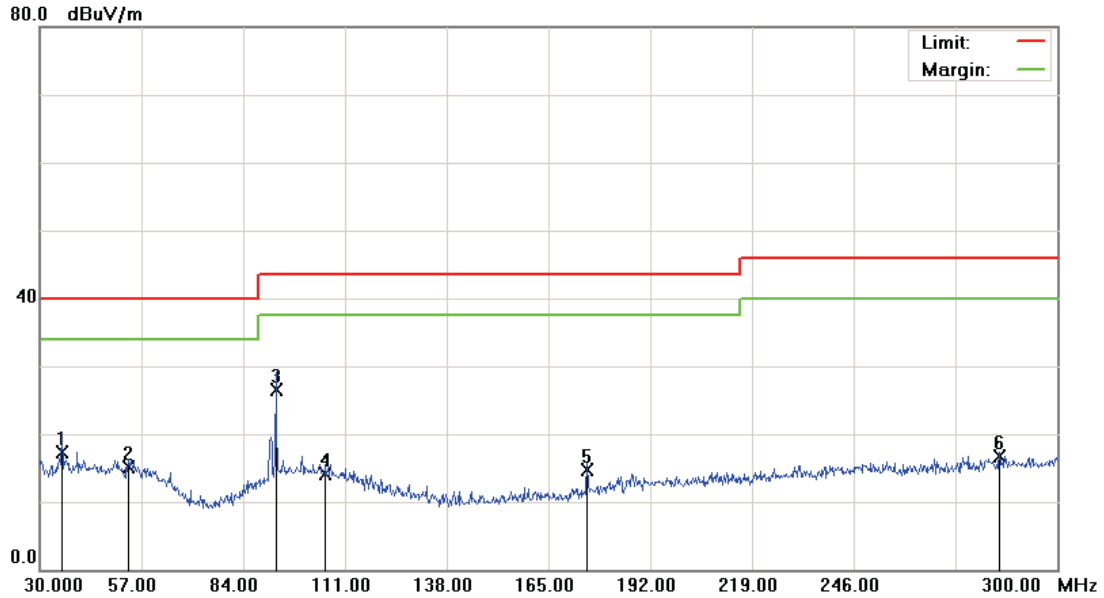| No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB		cm	degree	
1		447.0000	27.11	-8.08	19.03	46.00	-26.97	QP			
2		549.9000	27.18	-6.01	21.17	46.00	-24.83	QP			
3		624.1000	27.52	-4.60	22.92	46.00	-23.08	QP			
4		717.9000	27.31	-3.58	23.73	46.00	-22.27	QP			
5	*	857.2000	27.15	-1.19	25.96	46.00	-20.04	QP			
6		986.0000	27.13	0.62	27.75	54.00	-26.25	QP			

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

File :BMD01(Normal Operation)   Data :#4   Date: 2009/12/30   Time: 下午 01:31:43
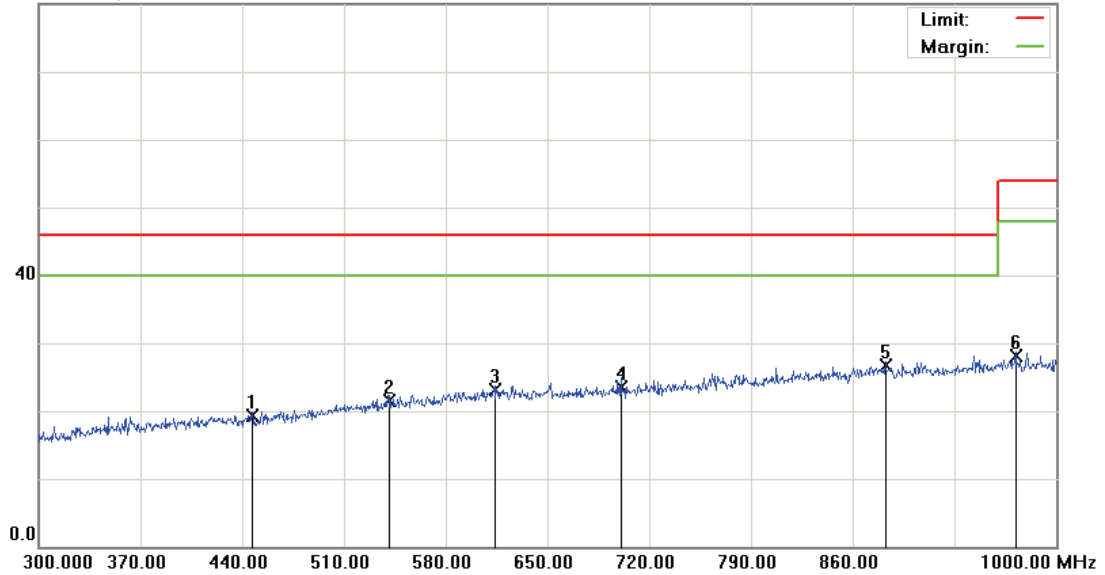
Site: : 966 Chamber
Limit: FCC Class B 3M Radiation
EUT: Bluetooth Transmitter
M/N: BMD-01
Mode: 4
Note:

Polarization: *Horizontal*
Power: AC 120V/60Hz
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		447.0000	27.33	-8.08	19.25	46.00	-26.75	QP			
2		541.5000	27.62	-6.04	21.58	46.00	-24.42	QP			
3		613.6000	27.58	-4.46	23.12	46.00	-22.88	QP			
4		700.4000	27.37	-3.88	23.49	46.00	-22.51	QP			
5	*	882.4000	27.08	-0.42	26.66	46.00	-19.34	QP			
6		972.0000	27.31	0.70	28.01	54.00	-25.99	QP			

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

File :BMD01(2402)   Data :#17   Date: 2009/12/29   Time: 下午 06:47:02

95.0 dBuV

Limit:		
AVG:		

Site: : 966 Chamber

Limit: FCC part 15 (PK)

EUT: Bluetooth Transmitter

M/N: BMD-01

Mode: 1

Note: 2402MHz

Polarization: *Vertical*

Power: AC 120V/60Hz

Distance: 3m

Temperature: 22 ℃

Humidity: 60 %

RBW: 1000 KHz VBW: 1000 KHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1		2589.500	43.96	0.47	44.43	74.00	-29.57	peak			
2		2700.000	41.05	22.58	63.63	74.00	-10.37	peak			
3		2700.000	21.01	22.58	43.59	54.00	-10.41	AVG			
4		4798.750	42.27	7.29	49.56	74.00	-24.44	peak			
5		9452.500	39.17	17.00	56.17	74.00	-17.83	peak			
6		9452.500	27.83	17.00	44.83	54.00	-9.17	AVG			
7		14180.000	28.84	28.39	57.23	74.00	-16.77	peak			
8	*	14180.000	17.53	28.39	45.92	54.00	-8.08	AVG			
9		17900.000	28.41	34.50	62.91	74.00	-11.09	peak			
10		17900.000	7.82	34.50	42.32	54.00	-11.68	AVG			
11		18658.750	38.34	23.09	61.43	74.00	-12.57	peak			
12		18658.750	19.33	23.09	42.42	54.00	-11.58	AVG			
13		21910.000	38.27	21.16	59.43	74.00	-14.57	peak			
14		21910.000	19.72	21.16	40.88	54.00	-13.12	AVG			
15		25841.250	40.28	18.69	58.97	74.00	-15.03	peak			
16		25841.250	22.26	18.69	40.95	54.00	-13.05	AVG			

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

File :BMD01(2402)   Data :#18   Date: 2009/12/29   Time: 下午 06:48:56

95.0 dBuV

Site: : 966 Chamber	Polarization: *Horizontal*	Temperature: 22 ℃
Limit: FCC part 15 (PK)	Power: AC 120V/60Hz	Humidity: 60 %
EUT: Bluetooth Transmitter	Distance: 3m	
M/N: BMD-01		RBW: 1000 KHz VBW: 1000 KHz
Mode: 1		
Note: 2402MHz		

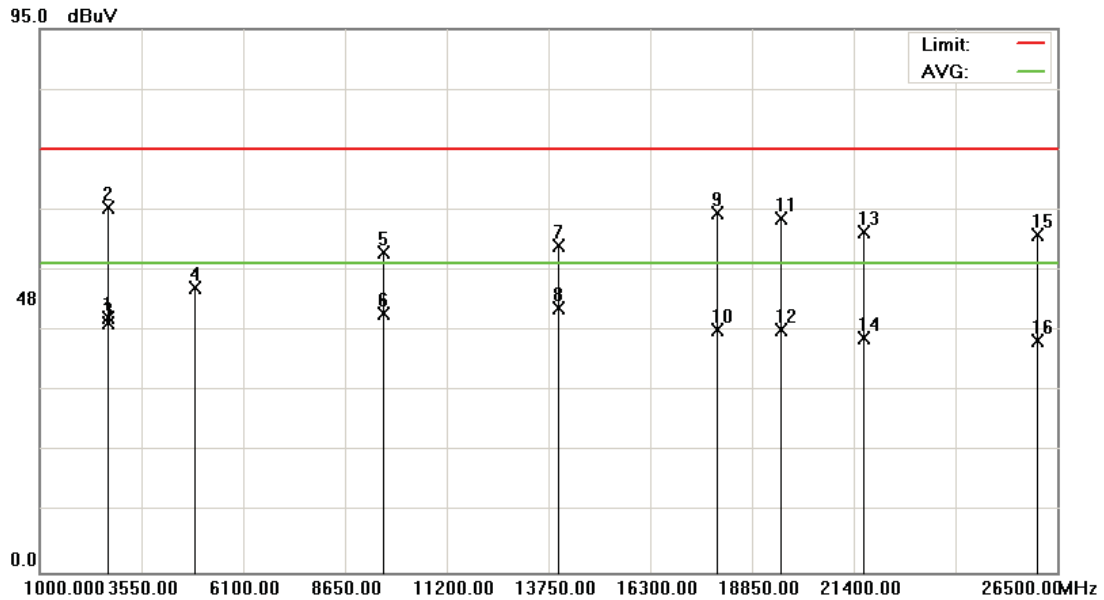| No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1		1601.800	49.20	-3.73	45.47	74.00	-28.53	peak			
2		2700.000	40.55	22.58	63.13	74.00	-10.87	peak			
3		2700.000	21.17	22.58	43.75	54.00	-10.25	AVG			
4		4804.000	38.57	7.32	45.89	74.00	-28.11	peak			
5		9689.750	38.56	17.35	55.91	74.00	-18.09	peak			
6		9689.750	27.95	17.35	45.30	54.00	-8.70	AVG			
7		14160.000	28.57	28.37	56.94	74.00	-17.06	peak			
8	*	14160.000	17.48	28.37	45.85	54.00	-8.15	AVG			
9		18000.000	27.86	35.11	62.97	74.00	-11.03	peak			
10		18000.000	7.60	35.11	42.71	54.00	-11.29	AVG			
11		18765.000	38.63	23.13	61.76	74.00	-12.24	peak			
12		18765.000	19.35	23.13	42.48	54.00	-11.52	AVG			
13		22080.000	38.13	21.07	59.20	74.00	-14.80	peak			
14		22080.000	19.37	21.07	40.44	54.00	-13.56	AVG			
15		24757.500	40.16	19.55	59.71	74.00	-14.29	peak			
16		24757.500	20.24	19.55	39.79	54.00	-14.21	AVG			

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

File :BMD01(2441)   Data :#17   Date: 2009/12/29   Time: 下午 07:39:58

Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Bluetooth Transmitter
M/N: BMD-01
Mode: 1
Note: 2441MHz

Polarization: **Vertical**
Power: AC 120V/60Hz
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %

RBW: 1000 KHz VBW: 1000 KHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1		2693.200	43.51	0.96	44.47	74.00	-29.53	peak			
2		2700.000	41.14	22.58	63.72	74.00	-10.28	peak			
3		2700.000	21.11	22.58	43.69	54.00	-10.31	AVG			
4		4890.000	42.11	7.73	49.84	74.00	-24.16	peak			
5		9598.500	38.57	17.41	55.98	74.00	-18.02	peak			
6		9598.500	27.89	17.41	45.30	54.00	-8.70	AVG			
7		13980.000	28.92	28.16	57.08	74.00	-16.92	peak			
8	*	13980.000	18.04	28.16	46.20	54.00	-7.80	AVG			
9		17980.000	28.18	34.75	62.93	74.00	-11.07	peak			
10		17980.000	7.64	34.75	42.39	54.00	-11.61	AVG			
11		19572.500	39.16	22.63	61.79	74.00	-12.21	peak			
12		19572.500	19.69	22.63	42.32	54.00	-11.68	AVG			
13		21633.750	38.20	21.28	59.48	74.00	-14.52	peak			
14		21633.750	19.58	21.28	40.86	54.00	-13.14	AVG			
15		25990.000	40.48	18.56	59.04	74.00	-14.96	peak			
16		25990.000	21.87	18.56	40.43	54.00	-13.57	AVG			

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

File :BMD01(2441) Data :#18 Date: 2009/12/29 Time: 下午 07:41:52

95.0 dBuV

Legend	
Limit:	(red)
AVG:	(green)

Site: : 966 Chamber Polarization: **Horizontal** Temperature: 22 ℃

Limit: FCC part 15 (PK) Power: AC 120V/60Hz Humidity: 60 %

EUT: Bluetooth Transmitter Distance: 3m

M/N: BMD-01 RBW: 1000 KHz VBW: 1000 KHz

Mode: 1

Note: 2441MHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1		2633.700	43.47	0.93	44.40	74.00	-29.60	peak			
2		2700.000	42.05	22.58	64.63	74.00	-9.37	peak			
3		2700.000	21.18	22.58	43.76	54.00	-10.24	AVG			
4		4882.000	38.82	7.74	46.56	74.00	-27.44	peak			
5		9708.000	38.68	17.49	56.17	74.00	-17.83	peak			
6		9708.000	27.97	17.49	45.46	54.00	-8.54	AVG			
7		14060.000	29.12	28.26	57.38	74.00	-16.62	peak			
8		14060.000	17.92	28.26	46.18	54.00	-7.82	AVG			
9		18000.000	28.06	35.11	63.17	74.00	-10.83	peak			
10	*	18000.000	11.67	35.11	46.78	54.00	-7.22	AVG			
11		18828.750	38.19	23.15	61.34	74.00	-12.66	peak			
12		18828.750	18.90	23.15	42.05	54.00	-11.95	AVG			
13		21676.250	37.90	21.25	59.15	74.00	-14.85	peak			
14		21676.250	19.20	21.25	40.45	54.00	-13.55	AVG			
15		25820.000	40.74	18.71	59.45	74.00	-14.55	peak			
16		25820.000	21.22	18.71	39.93	54.00	-14.07	AVG			

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

File :BMD01(2480)   Data :#17   Date: 2009/12/29   Time: 下午 07:31:43

Site: : 966 Chamber

Limit:	FCC part 15 (PK)
EUT:	Bluetooth Transmitter
M/N:	BMD-01
Mode:	1
Note:	2480MHz

Polarization: *Vertical*
Power: AC 120V/60Hz
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %

RBW: 1000 KHz VBW: 1000 KHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1		2247.800	43.68	0.48	44.16	74.00	-29.84	peak			
2		2700.000	40.94	22.58	63.52	74.00	-10.48	peak			
3		2700.000	21.33	22.58	43.91	54.00	-10.09	AVG			
4		4963.000	44.24	7.82	52.06	74.00	-21.94	peak			
5		4963.000	29.07	7.82	36.89	54.00	-17.11	AVG			
6		9397.750	39.03	17.07	56.10	74.00	-17.90	peak			
7		9397.750	27.83	17.07	44.90	54.00	-9.10	AVG			
8		14160.000	28.59	28.37	56.96	74.00	-17.04	peak			
9	*	14160.000	18.27	28.37	46.64	54.00	-7.36	AVG			
10		17980.000	28.34	34.75	63.09	74.00	-10.91	peak			
11		17980.000	8.08	34.75	42.83	54.00	-11.17	AVG			
12		18340.000	38.30	23.18	61.48	74.00	-12.52	peak			
13		18340.000	20.04	23.18	43.22	54.00	-10.78	AVG			
14		21548.750	38.10	21.33	59.43	74.00	-14.57	peak			
15		21548.750	19.90	21.33	41.23	54.00	-12.77	AVG			
16		25225.000	40.47	19.16	59.63	74.00	-14.37	peak			
17		25225.000	20.89	19.16	40.05	54.00	-13.95	AVG			

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

File :BMD01(2480)   Data :#18   Date: 2009/12/29   Time: 下午 07:33:37

Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Bluetooth Transmitter
M/N: BMD-01
Mode: 1
Note: 2480MHz

Polarization: *Horizontal*
Power: AC 120V/60Hz
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1		1652.800	49.90	-3.80	46.10	74.00	-27.90	peak			
2		2700.000	40.99	22.58	63.57	74.00	-10.43	peak			
3		2700.000	21.18	22.58	43.76	54.00	-10.24	AVG			
4		4960.000	37.93	7.80	45.73	74.00	-28.27	peak			
5		9835.750	38.38	17.83	56.21	74.00	-17.79	peak			
6		9835.750	27.88	17.83	45.71	54.00	-8.29	AVG			
7		14300.000	29.01	28.15	57.16	74.00	-16.84	peak			
8		14300.000	17.61	28.15	45.76	54.00	-8.24	AVG			
9		18000.000	28.18	35.11	63.29	74.00	-10.71	peak			
10	*	18000.000	11.84	35.11	46.95	54.00	-7.05	AVG			
11		18148.750	38.53	23.22	61.75	74.00	-12.25	peak			
12		18148.750	20.60	23.22	43.82	54.00	-10.18	AVG			
13		21803.750	38.07	21.21	59.28	74.00	-14.72	peak			
14		21803.750	19.54	21.21	40.75	54.00	-13.25	AVG			
15		25990.000	40.40	18.56	58.96	74.00	-15.04	peak			
16		25990.000	22.27	18.56	40.83	54.00	-13.17	AVG			

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

6   Maximum Conducted Output Power Measurement

6.1. Limit

For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels < 1 watt.

6.2. Test Setup

Spectrum Analyzer

RF Cable

EUT
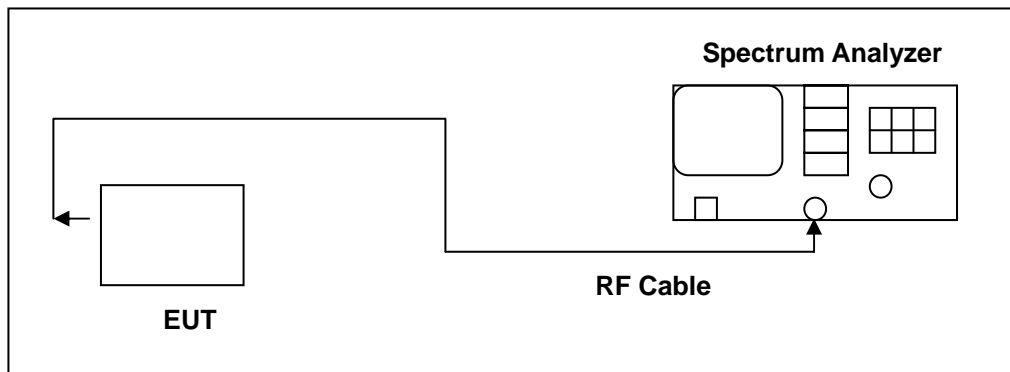
6.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	(2)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: [1] Calibration period 1 year. [2] Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

6.4. Test Procedure

The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to spectrum analyzer. The maximum peak output power shall not exceed 1 watt.

Use a direct connection between the antenna port of transmitter and the spectrum Analyzer, for prevent the spectrum analyzer input attenuation 40-50 dB. Set the RBW Bandwidth of the emission or use a channel power meter mode.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6)/3 dBm.

The antenna port of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

6.5. Test Result

Product	Bluetooth Transmitter			
Test Item	Maximum Conducted Output Power			
Test Mode	Mode 1: GFSK Link Mode			
Date of Test	12/28/2009		Test Site	TE06
Frequency (MHz)	Packet Type	Measurement		Limit (W)
		(dBm)	(W)	
2402	DH1	0.34	0.00108	< 1
	DH3	0.19	0.00104	< 1
	DH5	0.17	0.00104	< 1
2441	DH1	0.77	0.00119	< 1
	DH3	0.66	0.00116	< 1
	DH5	0.80	0.00120	< 1
2480	DH1	-0.03	0.00099	< 1
	DH3	-0.05	0.00099	< 1
	DH5	-0.08	0.00098	< 1

Product	Bluetooth Transmitter			
Test Item	Maximum Conducted Output Power			
Test Mode	Mode 2: π/4-DQPSK Mode			
Date of Test	12/28/2009		Test Site	TE06
Frequency (MHz)	Packet Type	Measurement		Limit (W)
		(dBm)	(W)	
2402	2DH1	-1.75	0.00067	< 1
	2DH3	-1.71	0.00067	< 1
	2DH5	-1.74	0.00067	< 1
2441	2DH1	-1.62	0.00069	< 1
	2DH3	-1.51	0.00071	< 1
	2DH5	-1.55	0.00070	< 1
2480	2DH1	-2.56	0.00055	< 1
	2DH3	-2.41	0.00057	< 1
	2DH5	-2.45	0.00057	< 1

Product	Bluetooth Transmitter			
Test Item	Maximum Conducted Output Power			
Test Mode	Mode 3: 8DPSK Mode			
Date of Test	12/28/2009		Test Site	TE06
Frequency (MHz)	Packet Type	Measurement		Limit (W)
		(dBm)	(W)	
2402	3DH1	-1.54	0.00070	< 1
	3DH3	-1.57	0.00070	< 1
	3DH5	-1.48	0.00071	< 1
2441	3DH1	-1.35	0.00073	< 1
	3DH3	-1.38	0.00073	< 1
	3DH5	-1.10	0.00078	< 1
2480	3DH1	-2.18	0.00061	< 1
	3DH3	-2.37	0.00058	< 1
	3DH5	-2.27	0.00059	< 1

6.6. Test Graphs

Mode 1: GFSK Link Mode_2402 MHz	
DH1	
DH3	
DH5	
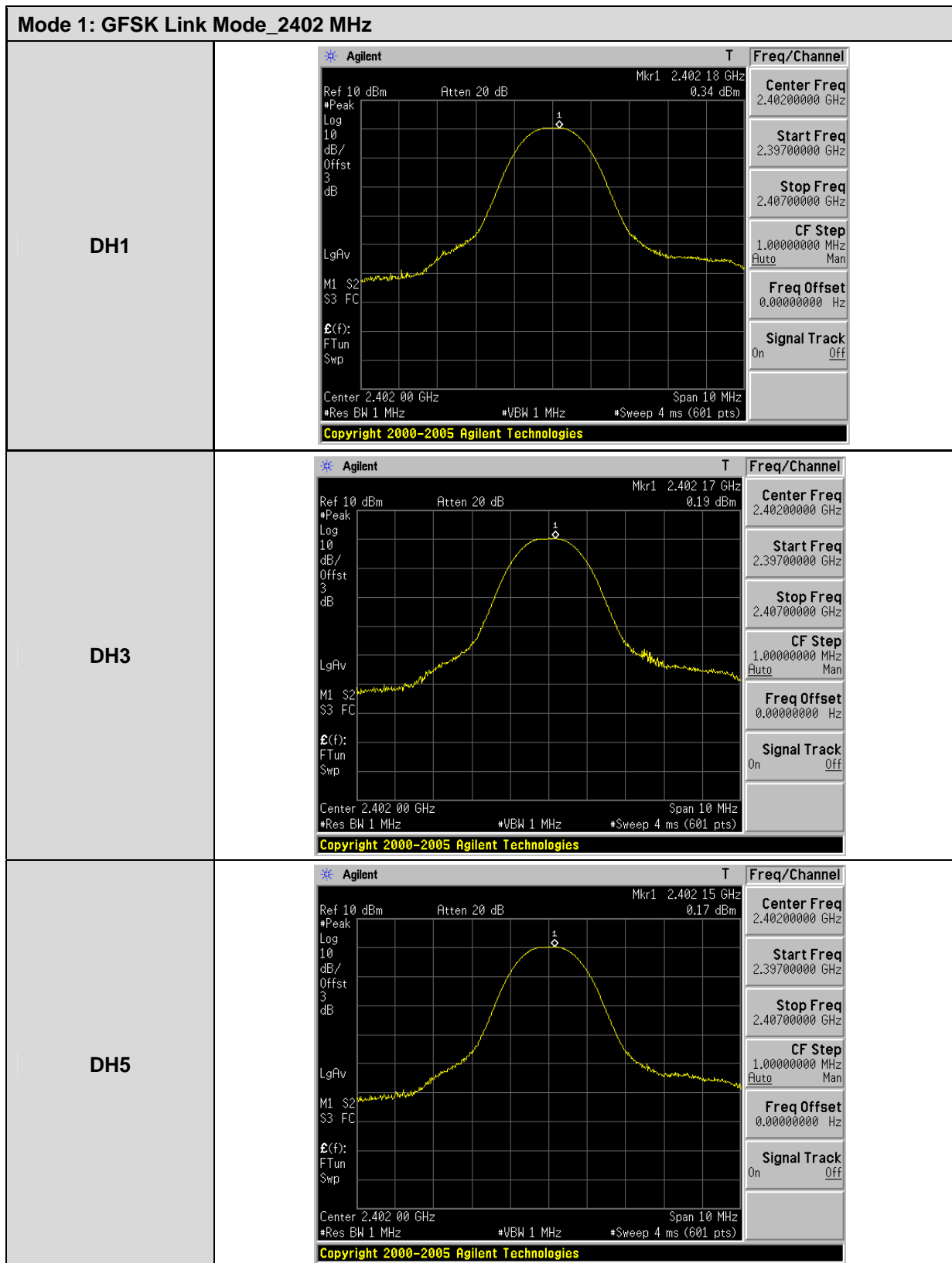
Mode 1: GFSK Link Mode_2441 MHz	
DH1	
DH3	
DH5	
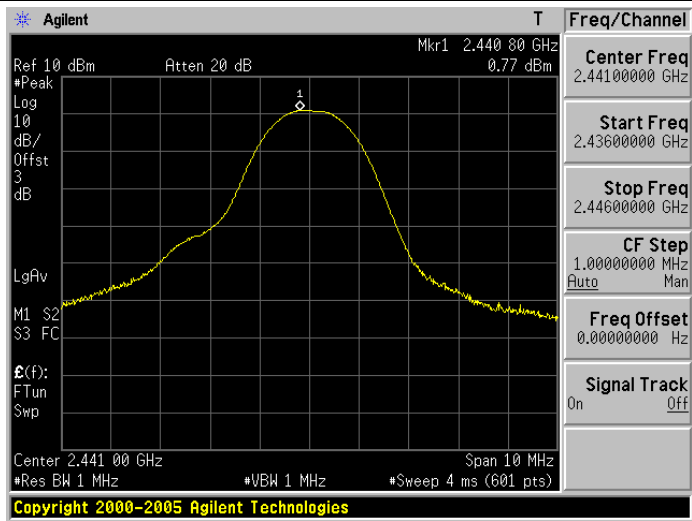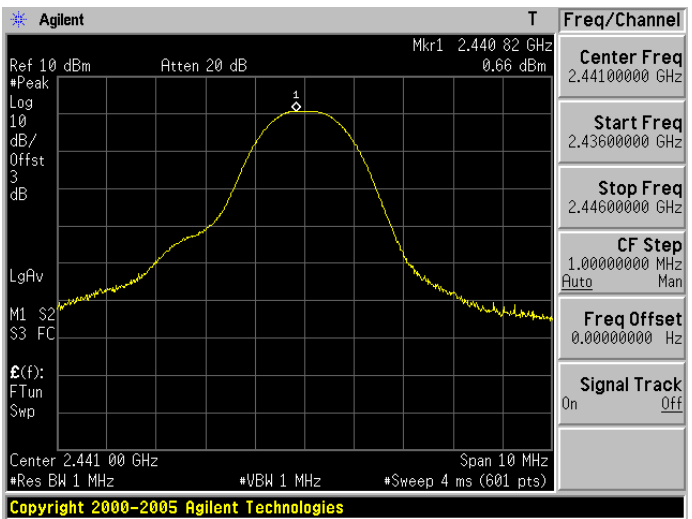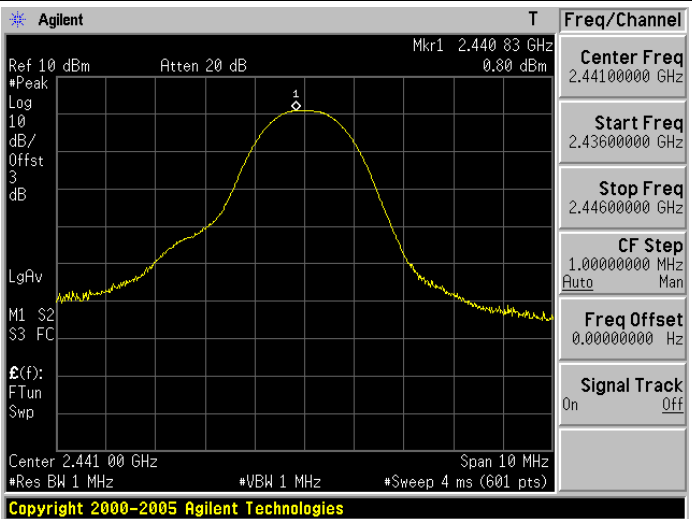
Mode 1: GFSK Link Mode_2480 MHz	
DH1	
DH3	
DH5	
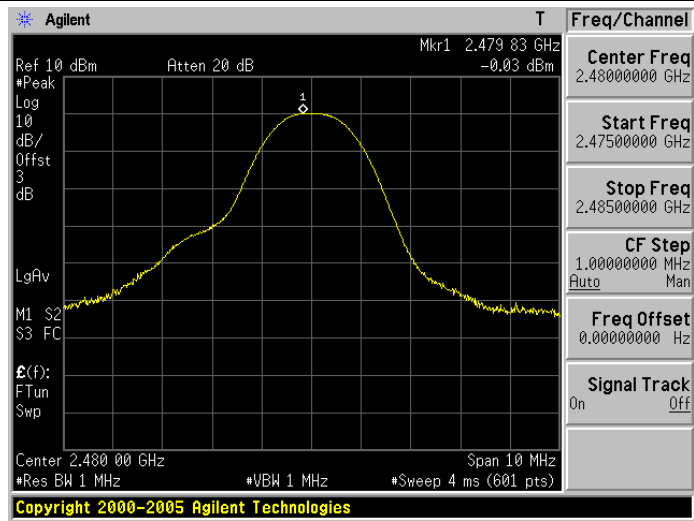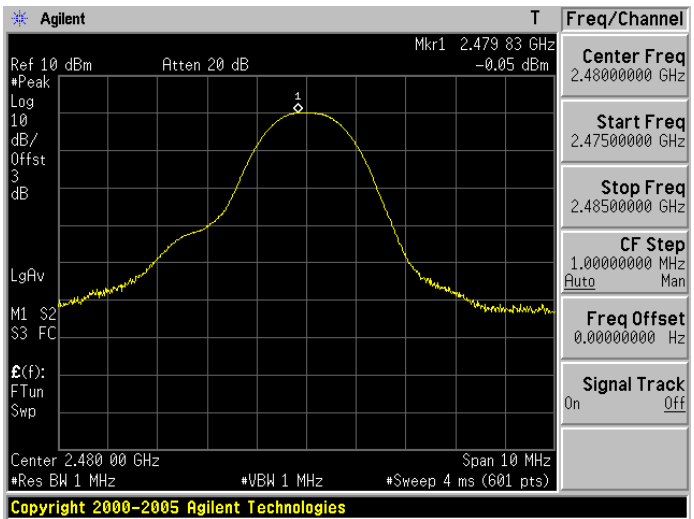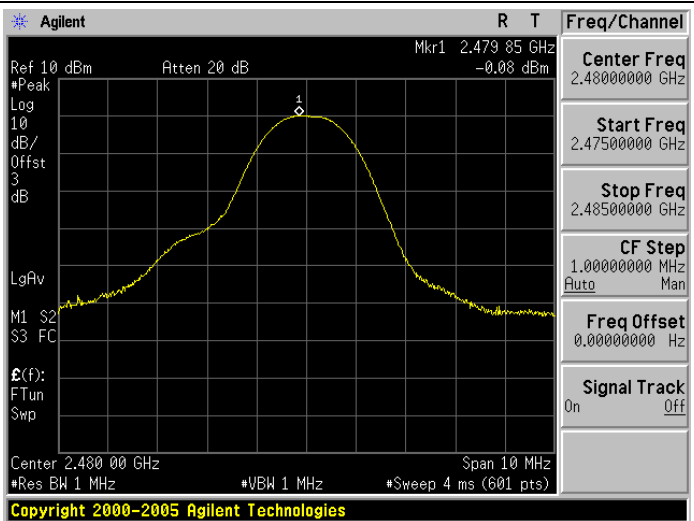
Mode2: π/4-DQPSK Link Mode_2402 MHz	
2DH1	
2DH3	
2DH5	
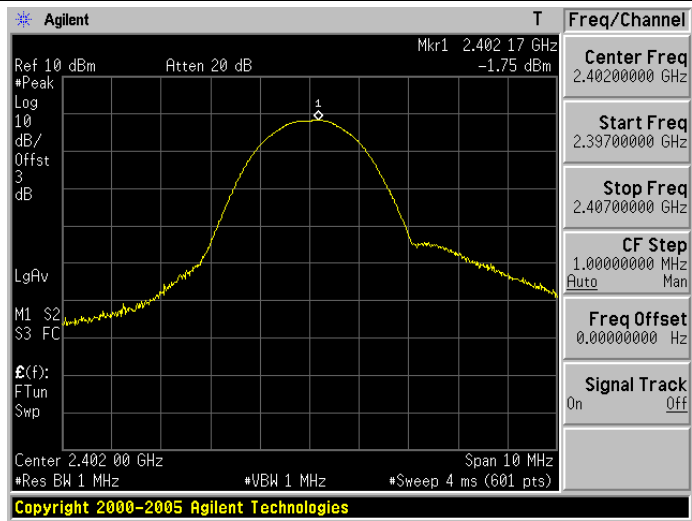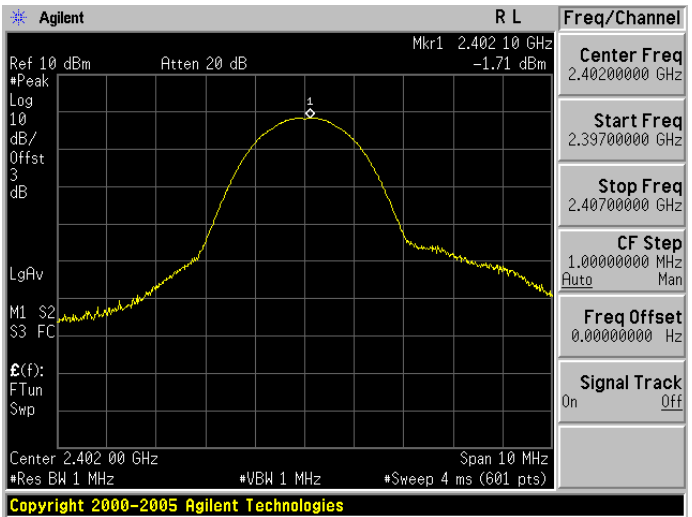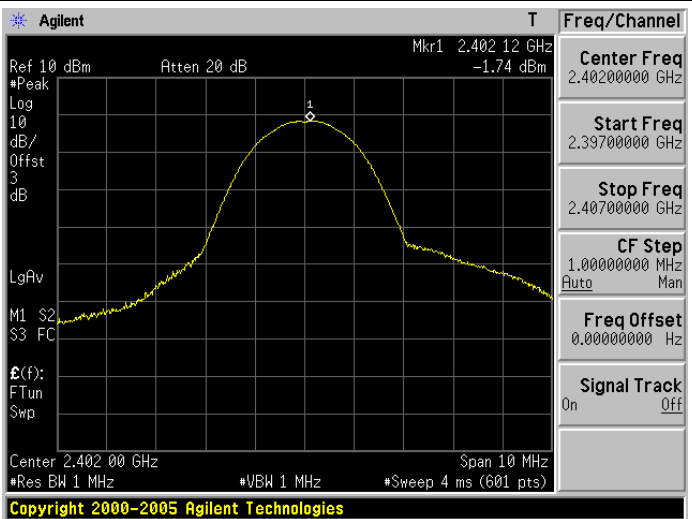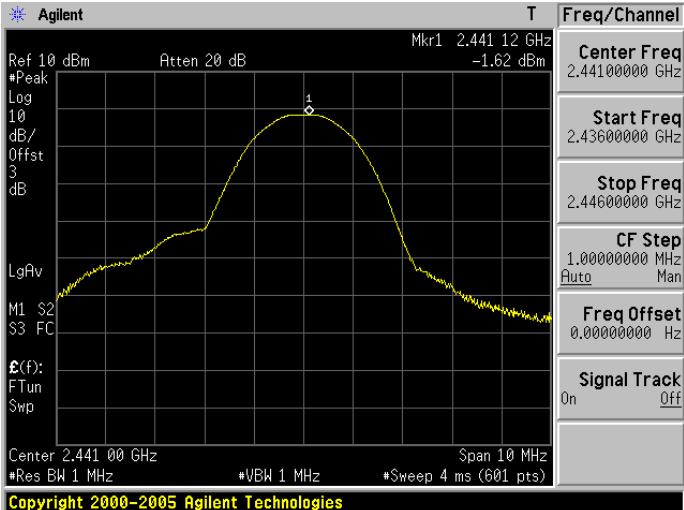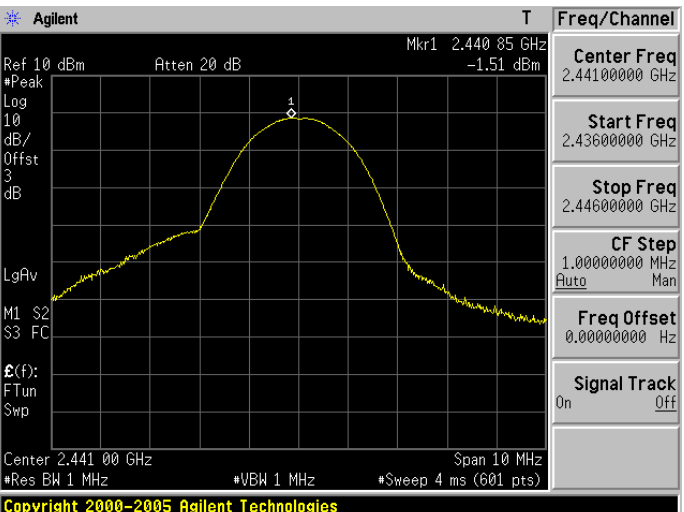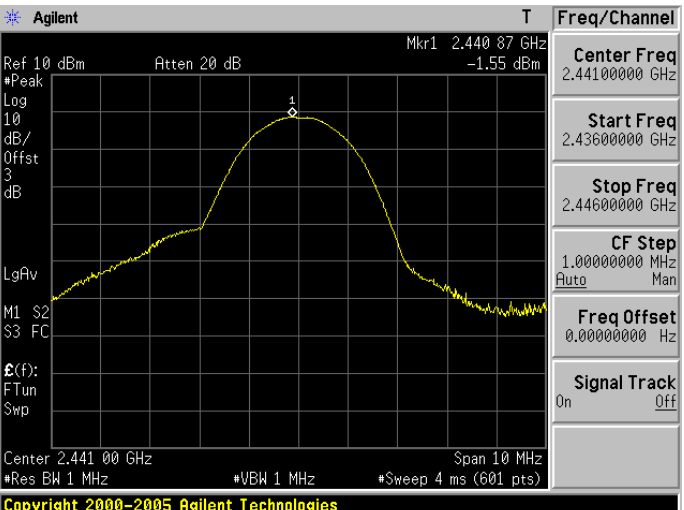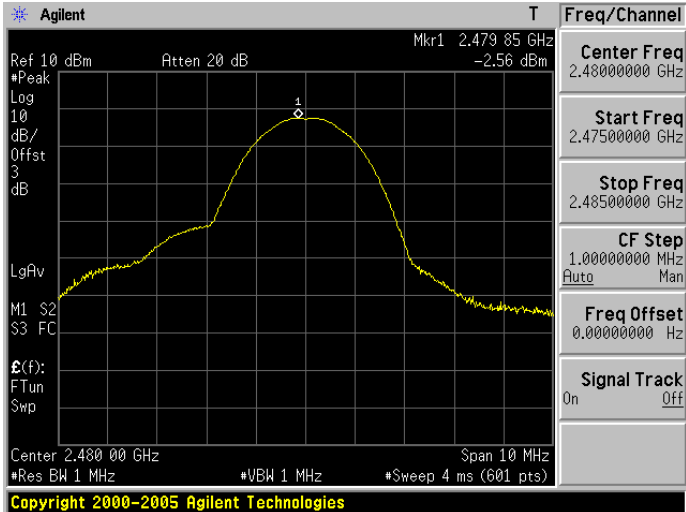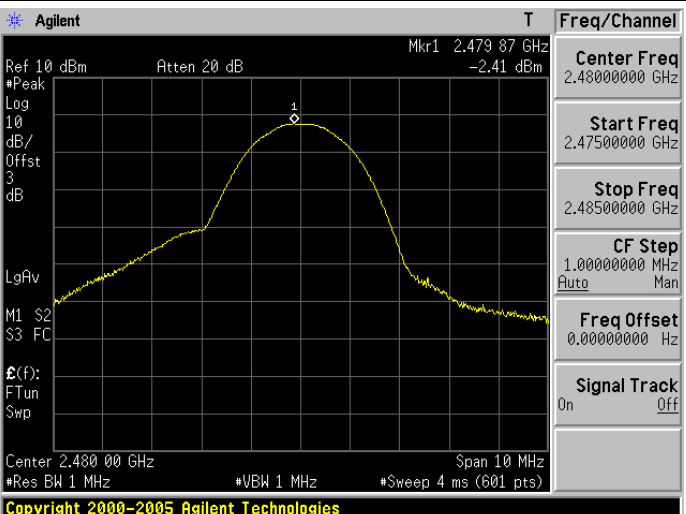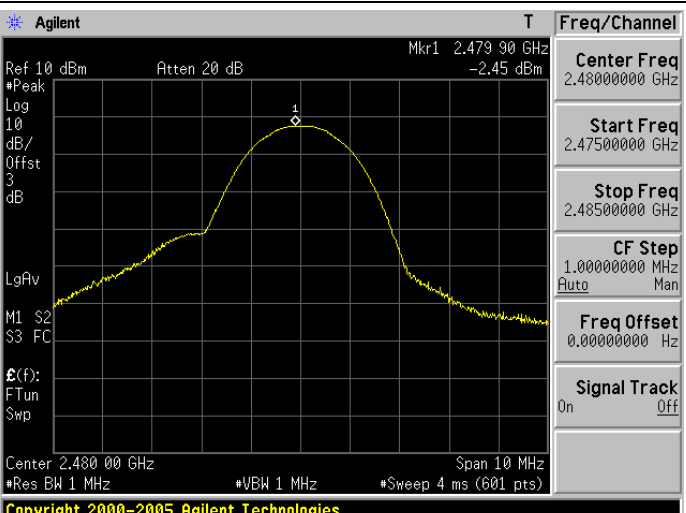
Mode2: π/4-DQPSK Link Mode_2441 MHz	
2DH1	
2DH3	
2DH5	

Mode2: π/4-DQPSK Link Mode_2480 MHz	
2DH1	
2DH3	
2DH5	

Mode3: 8DPSK Link Mode_2402 MHz	
3DH1	
3DH3	
3DH5	
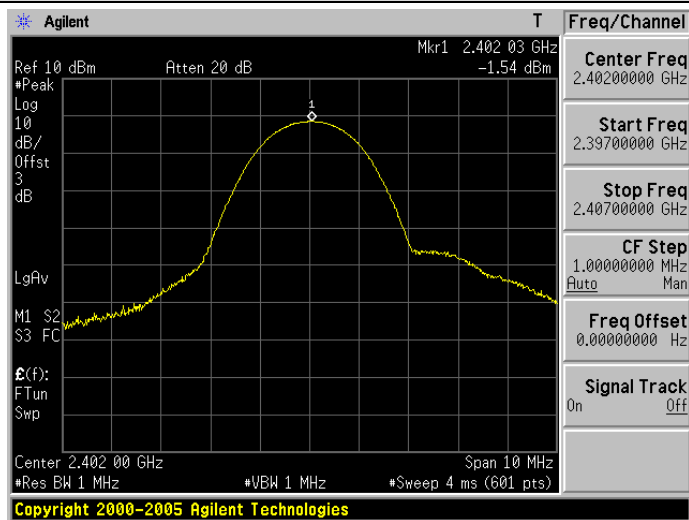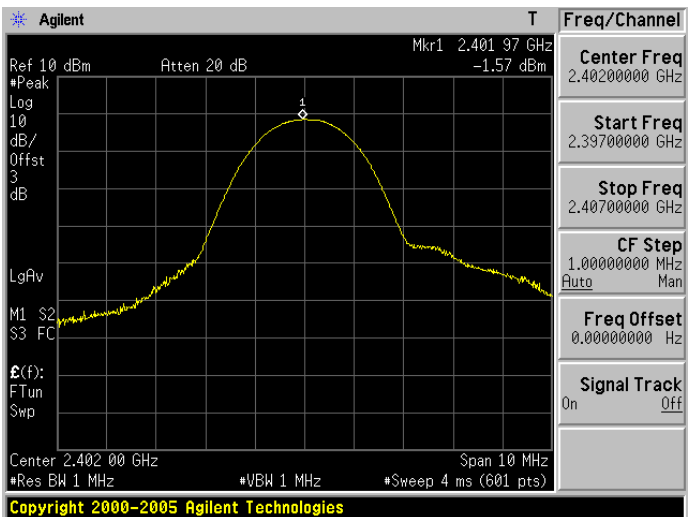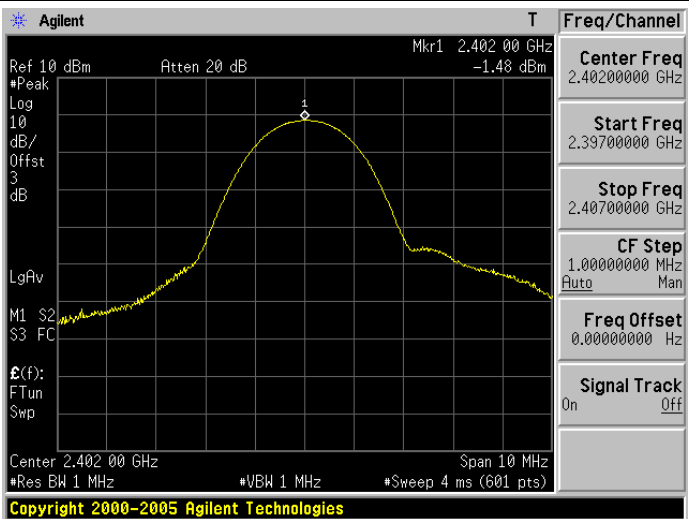
Mode3: 8DPSK Link Mode_2441 MHz

3DH1	
3DH3	
3DH5	
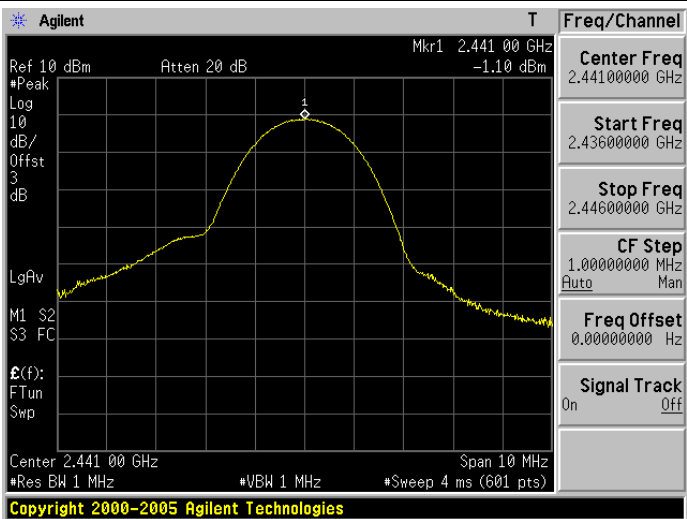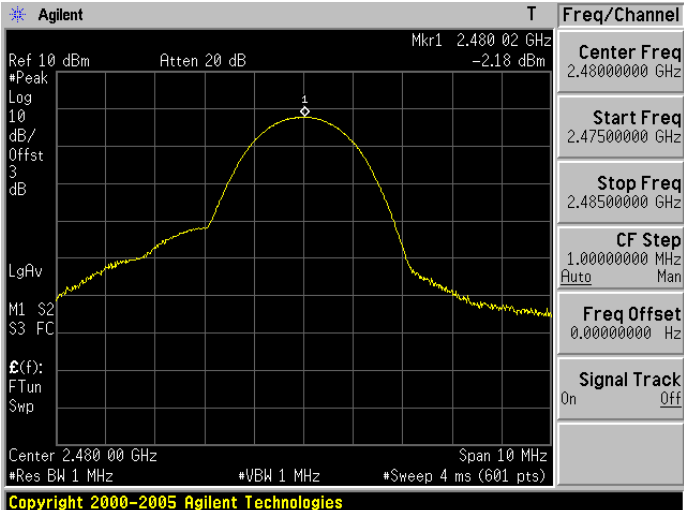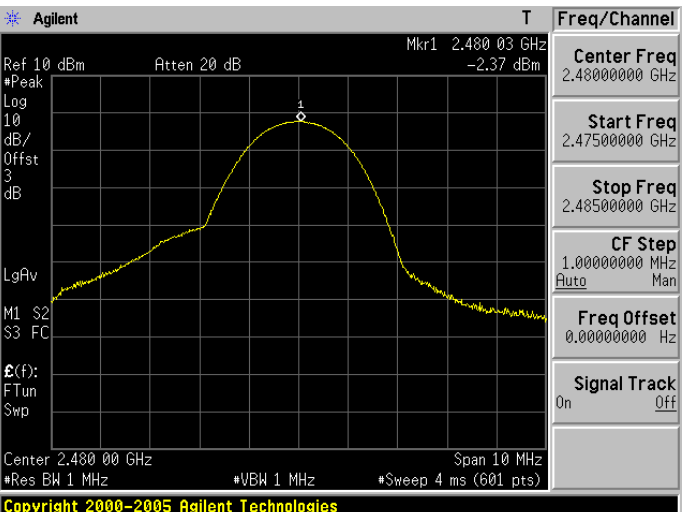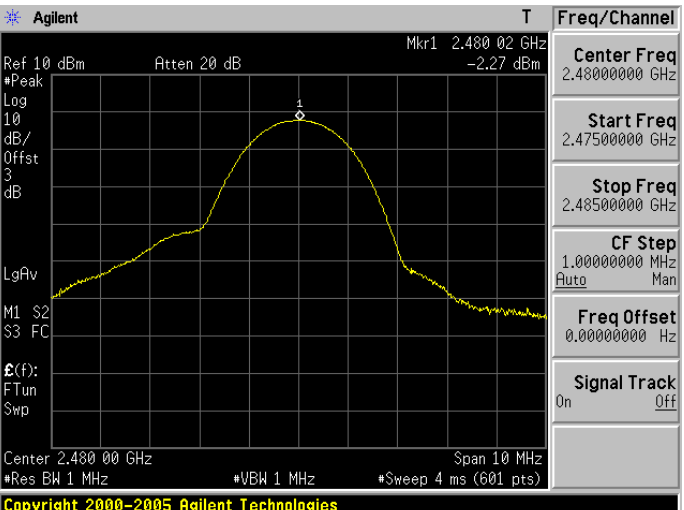
Mode3: 8DPSK Link Mode_2480 MHz	
3DH1	
3DH3	
3DH5	

7   Minimum 20dB RF Bandwidth Measurement

7.1. Limit

N/A

7.2. Test Setup
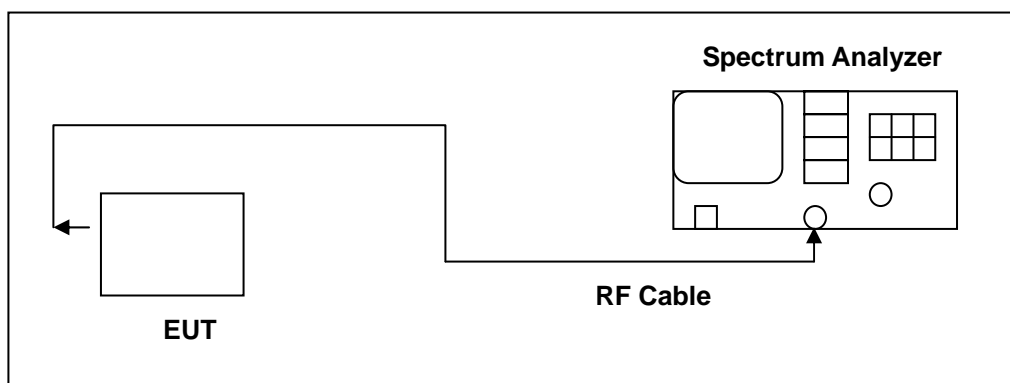
7.3. Test Instruments
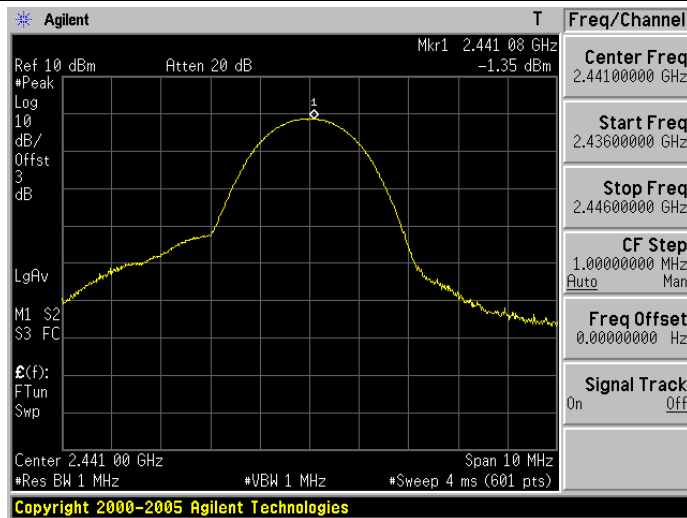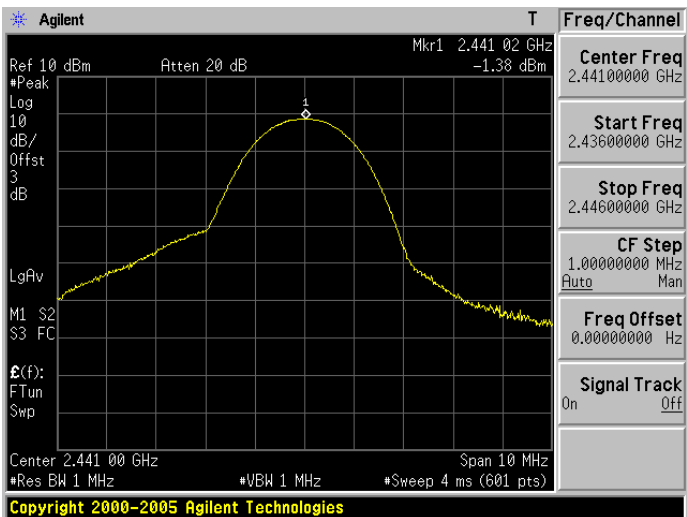
Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	(2)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: [1] Calibration period 1 year. [2] Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

7.4. Test Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

1. Span = approx. 2 to 3 times the 20dB bandwidth, centered on a hopping frequency

2. RBW $\geq$ 1% of the 20dB span

3. VBW $\geq$ RBW

4. Sweep = auto

5. Detector function = peak

6. Trace = max hold

The trace was allowed to stabilize. The EUT was transmitting at its maximum data rate. The marker-to-peak function was used to set the marker to the peak of the emission. The marker-delta function was used to measure 20dB down one side of the emission. The marker-delta function and marker was moved to the other side of the emission until it was even with the reference marker. The marker-delta reading at this point was the 20dB bandwidth of the emission.

7.5. Test Result

Product	Bluetooth Transmitter		
Test Item	Minimum 20dB RF Bandwidth		
Test Mode	Mode 1: GFSK Link Mode		
Date of Test	12/28/2009	Test Site	TE06
Frequency (MHz)	Measurement (MHz)		Limit (MHz)
2402	0.805		-----
2441	0.805		-----
2480	0.790		-----

Product	Bluetooth Transmitter		
Test Item	Minimum 20dB RF Bandwidth		
Test Mode	Mode 3: 8DPSK Mode		
Date of Test	12/28/2009	Test Site	TE06
Frequency (MHz)	20dB Bandwidth (MHz)	2/3 20dB Bandwidth (MHz)	Limit (MHz)
2402	1.200	0.800	-----
2441	1.215	0.810	-----
2480	1.210	0.806	-----

7.6. Test Graphs

Mode 1: GFSK Link Mode	
2402	
2441	
2480	
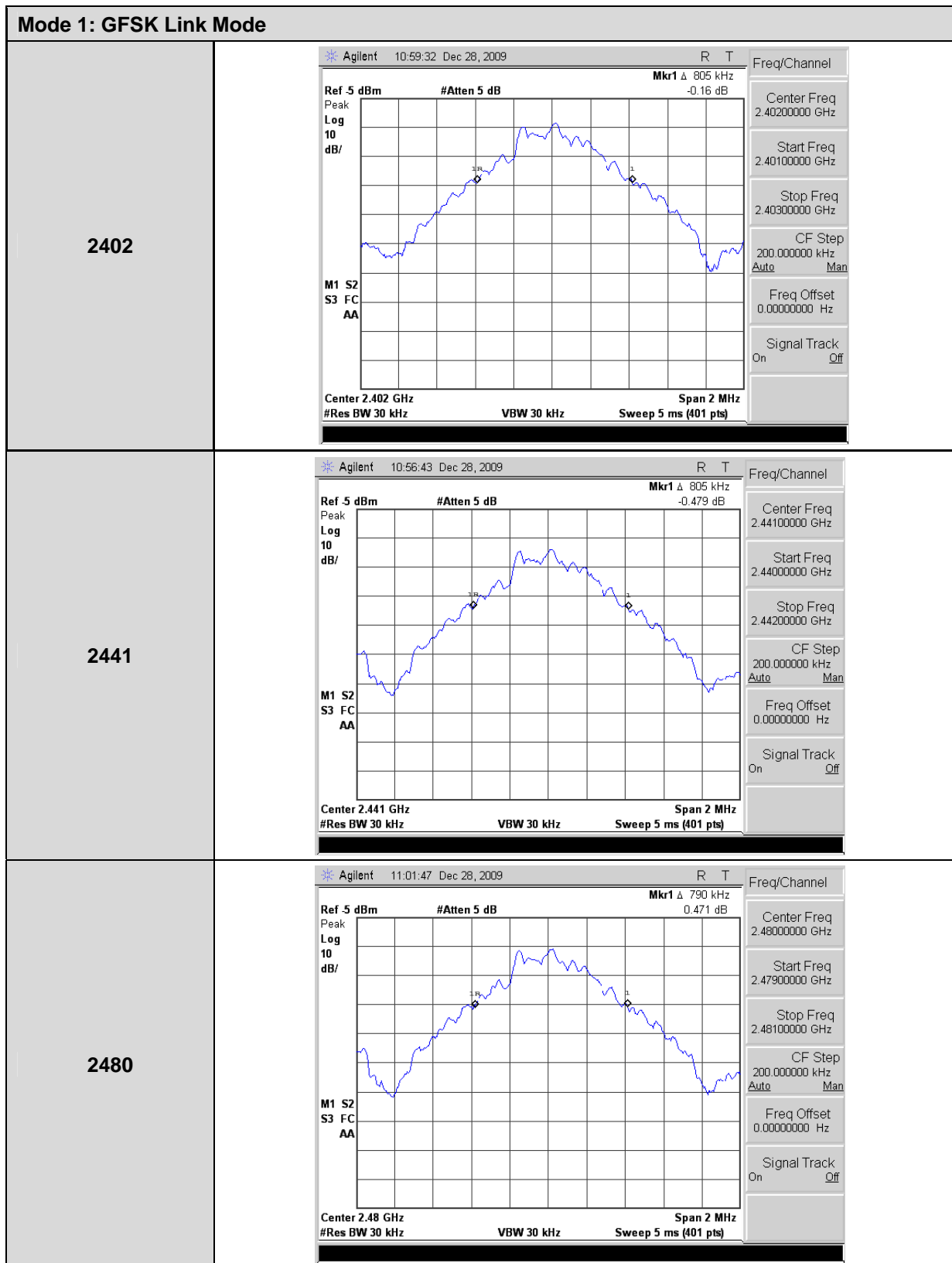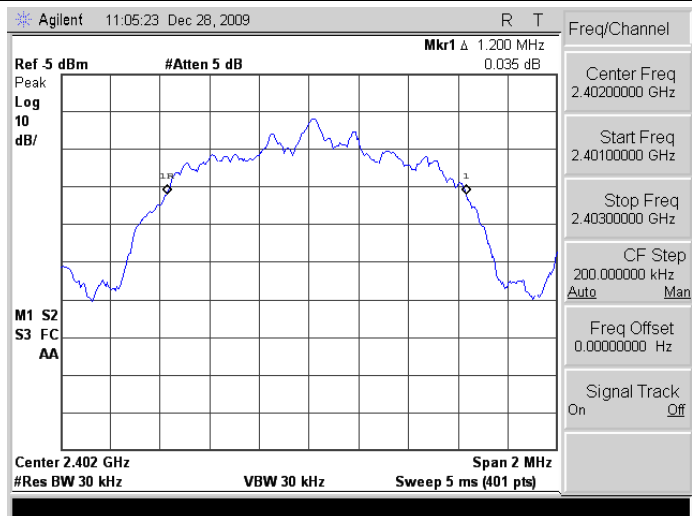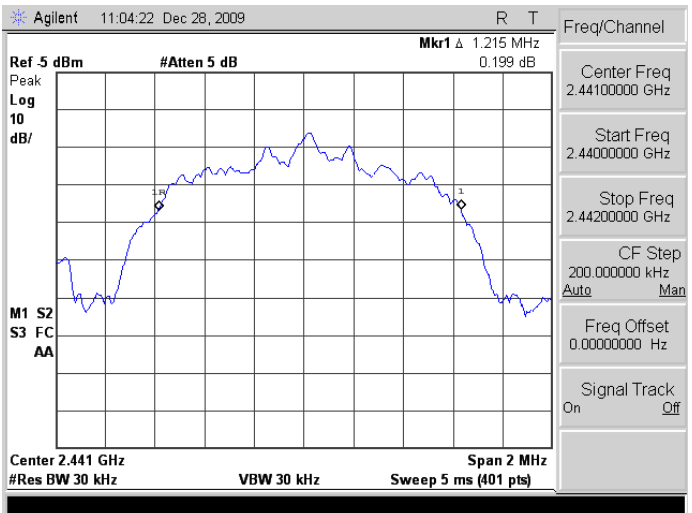
Mode3: 8DPSK Link Mode	
2402	
2441	
2480	
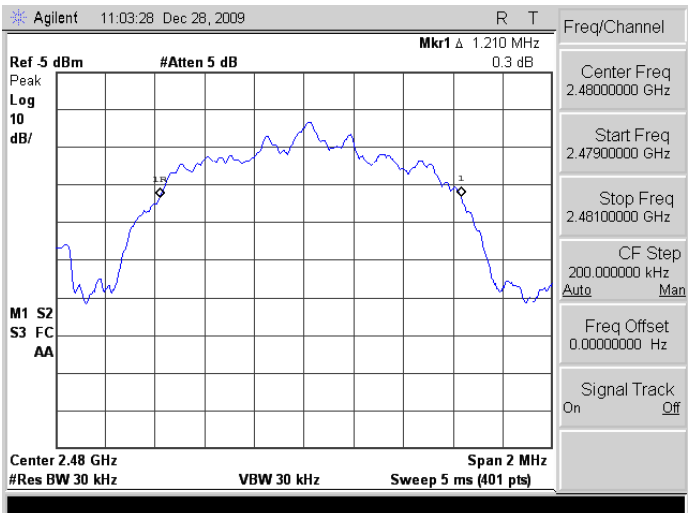
8   Carrier Frequency Separation Measurement

8.1. Limit

Title 47 of the CFR: 2002, Part 15 Subpart (c) 15.247(a)(1)(i) requires the measurement of the bandwidth of the transmission between the -20 dB points on the transmitted spectrum. The results of this test determine the limits for channel spacing. The channel spacing shall be a minimum of 25 kHz or the 20 dB bandwidth.

8.2. Test Setup
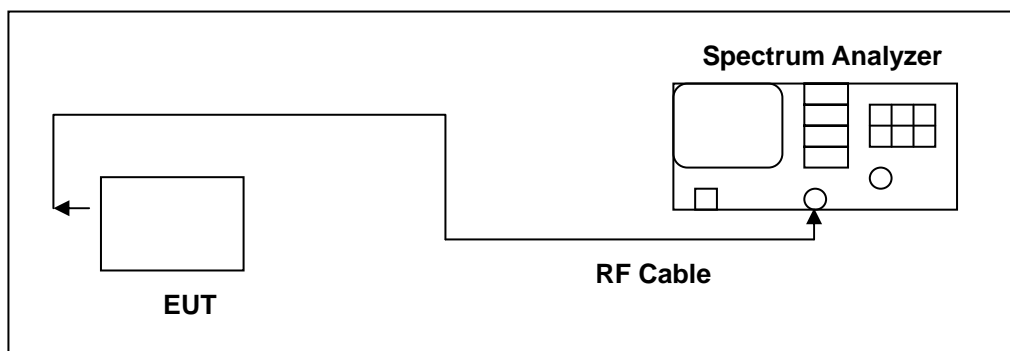
8.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	(2)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

8.4. Test Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth transmitter of the V6 had its hopping function enabled. The following spectrum analyzer settings were used:

1. Span = wide enough to capture the peaks of two adjacent channels
2. Resolution (or IF) Bandwidth (RBW) $\geq$ 1% of the span
3. Video (or Average) Bandwidth (VBW) $\geq$ RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

The trace was allowed to stabilize. The marker-delta function was used to determine the separation between the peaks of the adjacent channels.

8.5. Test Result

Product	Bluetooth Transmitter		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 1: GFSK Link Mode		
Date of Test	12/28/2009	Test Site	TE06
Frequency (MHz)	Measurement (MHz)		Limit (MHz)
2402	1		> 805
2441	1		> 805
2480	1		> 805

Product	Bluetooth Transmitter		
Test Item	Carrier Frequency Separation		
Test Mode	Mode 3: 8DPSK Mode		
Date of Test	12/28/2009	Test Site	TE06
Frequency (MHz)	Measurement (MHz)		Limit (MHz)
2402	1		> 810
2441	1		> 810
2480	1		> 810

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8.6. Test Graphs

Mode 1: GFSK Link Mode	
2402	
2441	
2480	
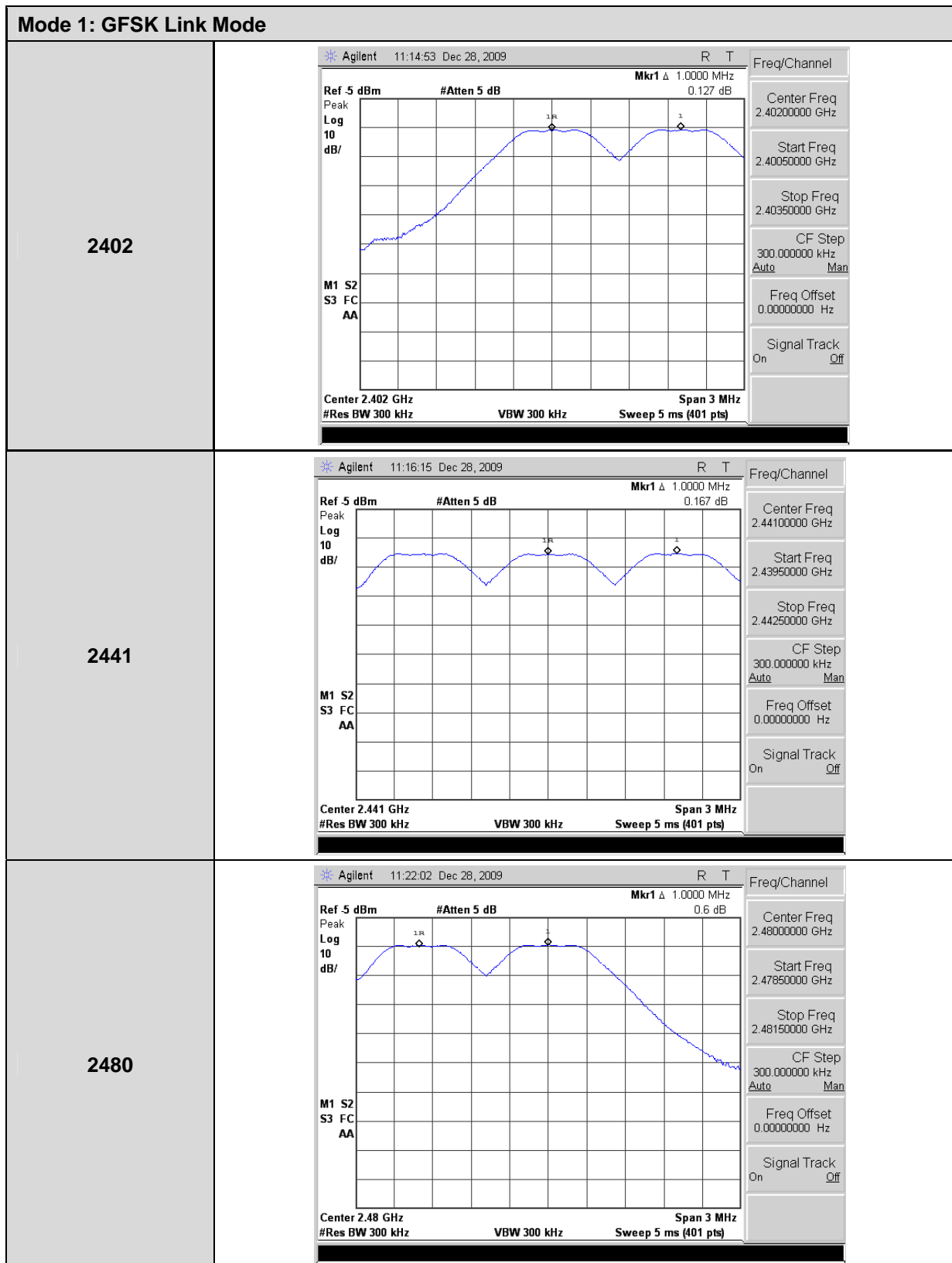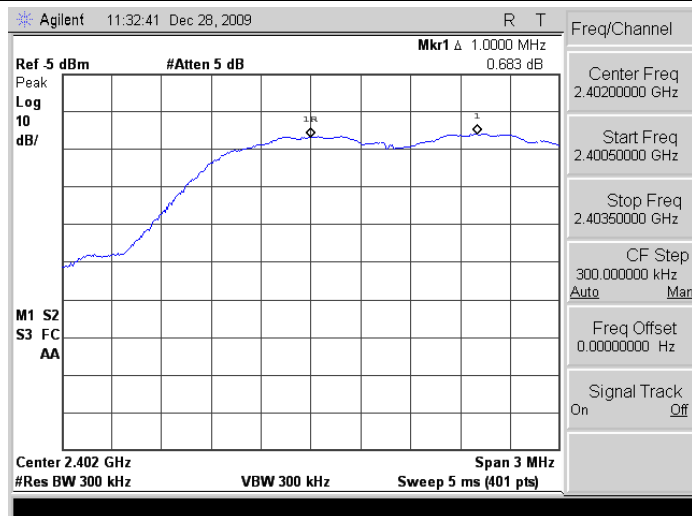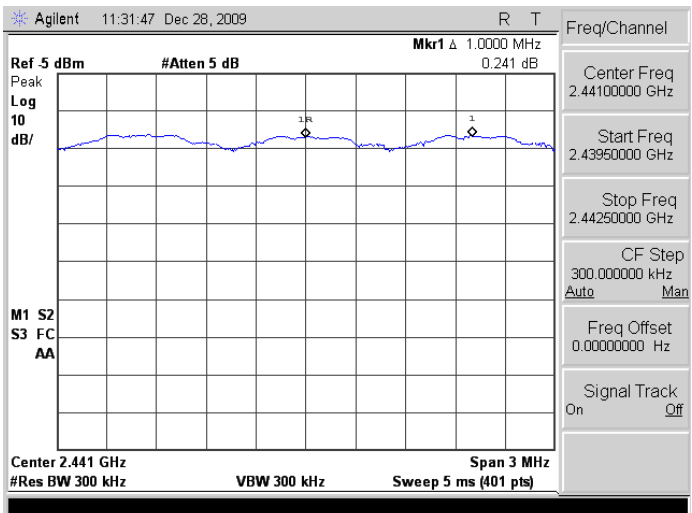
Mode3: 8DPSK Link Mode	
2402	
2441	
2480	
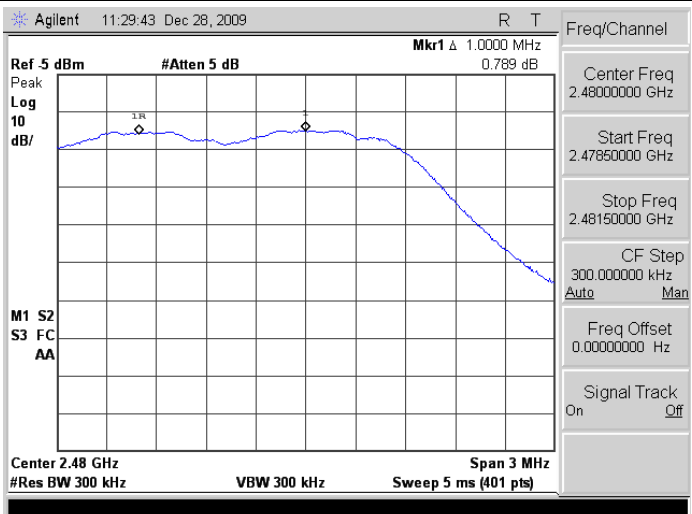
9 Number of Hopping Measurement

9.1. Limit

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

9.2. Test Setup
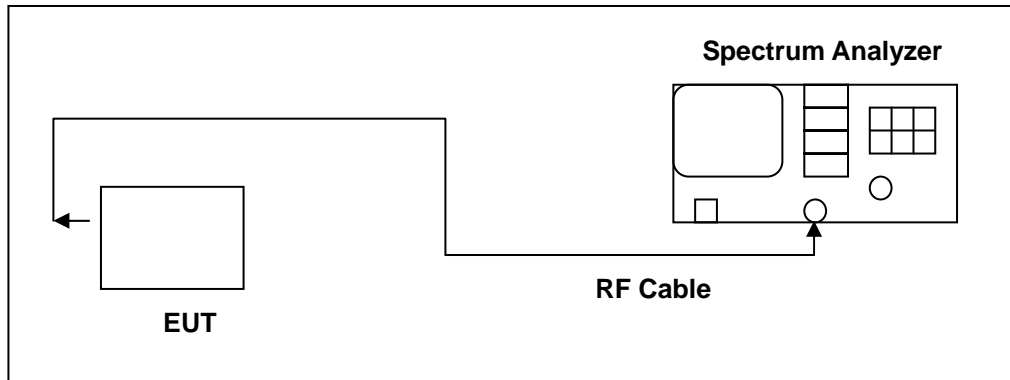
9.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	(2)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

9.4. Test Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

1. Span = the frequency band of operation
2. RBW $\geq$ 1% of the span
3. VBW $\geq$ RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

The trace was allowed to stabilize.

9.5. Test Result

Product	Bluetooth Transmitter		
Test Item	Number of Hopping		
Test Mode	Mode 1: GFSK Link Mode		
Date of Test	12/28/2009	Test Site	TE06
Frequency Range (MHz)	Measurement (ch)		Limit (ch)
2402 - 2480	79		> 15

Product	Bluetooth Transmitter		
Test Item	Number of Hopping		
Test Mode	Mode 3: 8DPSK Mode		
Date of Test	12/28/2009	Test Site	TE06
Frequency Range (MHz)	Measurement (ch)		Limit (ch)
2402 - 2480	79		> 15

9.6. Test Graphs

Mode 1: GFSK Link Mode	
CH0~CH39	
CH40~CH78	
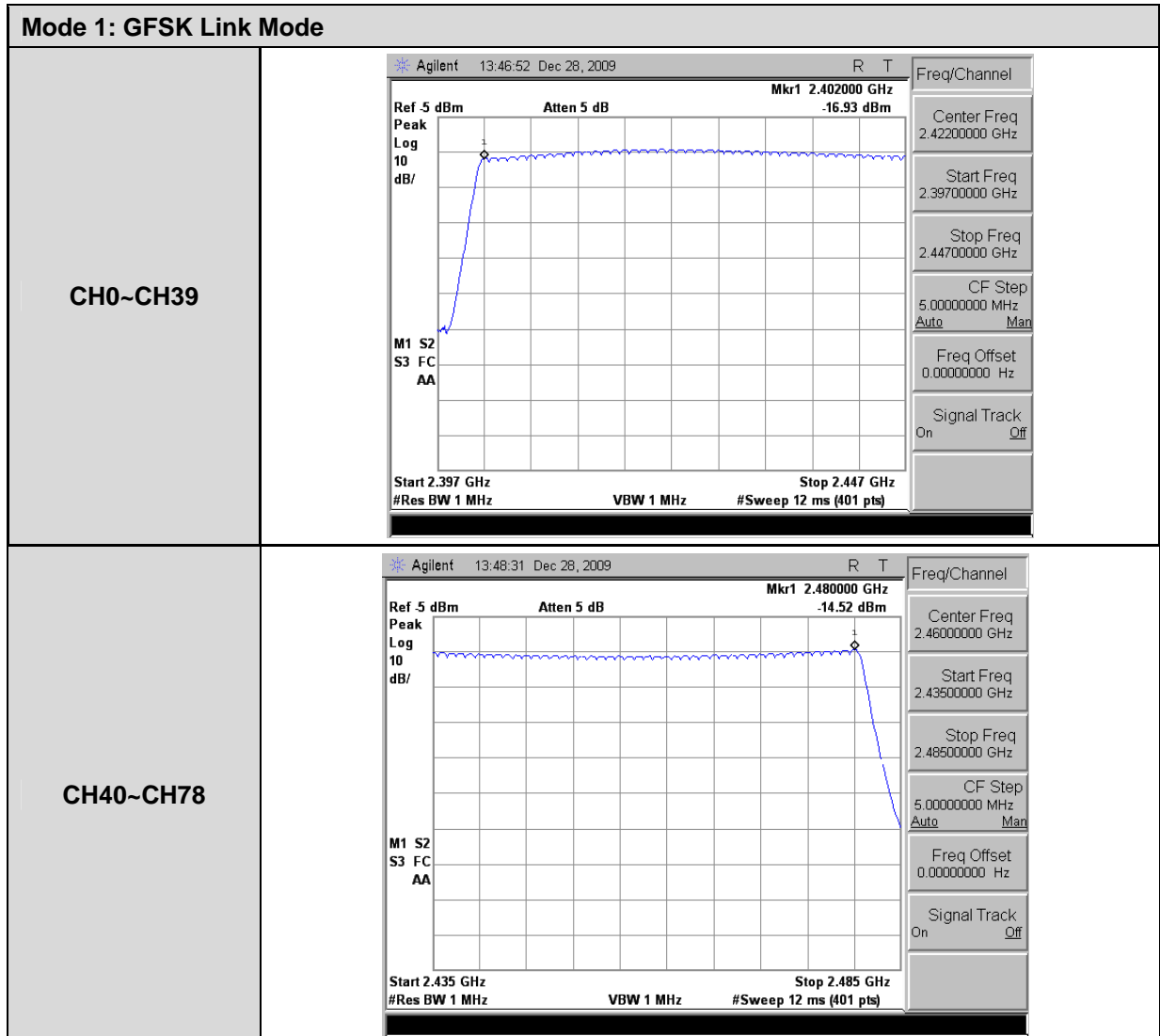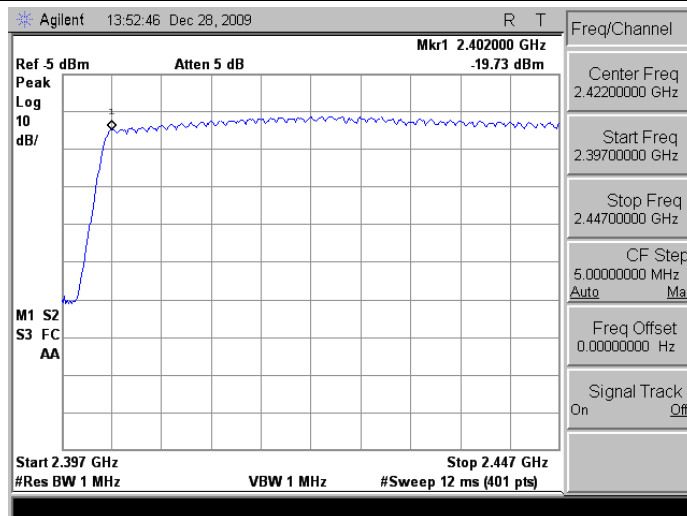
Mode 3: 8DPSK Link Mode	
CH0~CH39	
CH40~CH78	
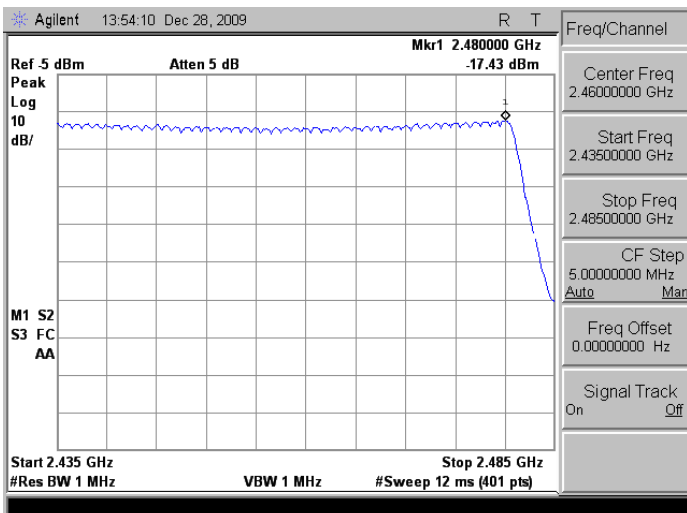
10 Time of Occupancy (Dwell Time) Measurement

10.1. Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

10.2. Test Setup
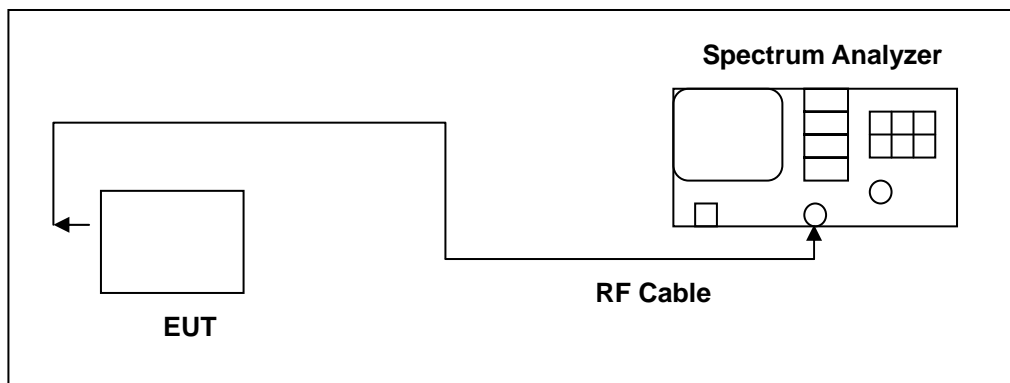
10.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	(2)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

10.4. Test Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage. The Bluetooth hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

1. Span = zero span, centered on a hopping channel

2. RBW = 1 MHz

3. VBW $\geq$ RBW

4. Sweep = as necessary to capture the entire dwell time per hopping channel

5. Detector function = peak

6. Trace = max hold

The marker-delta function was used to determine the dwell time.

10.5. Test Result

Product	Bluetooth Transmitter		
Test Item	Time of Occupancy (Dwell Time)		
Test Mode	Mode 1: GFSK Link Mode		
Date of Test	12/28/2009	Test Site	TE06
DH1			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	800/79CH = 10.13(times/sec)		
Each Channel Dwell Times (1)	0.400 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 10.13 = 320.108(times)		
Dwell Times on Cycle (1) * (2)	128.0432 ms (sec)		
LIMIT(msec)	< = 400		
DH3			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	400/79CH = 5.1(times/sec)		
Each Channel Dwell Times (1)	1.660 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 5.1 = 161.16(times)		
Dwell Times on Cycle (1) * (2)	267.5256 ms (sec)		
LIMIT(msec)	< = 400		
DH5			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	266.7/79CH = 3.37(times/sec)		
Each Channel Dwell Times (1)	2.880 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 3.37 = 106.492(times)		
Dwell Times on Cycle (1) * (2)	306.69696 ms (sec)		
LIMIT(msec)	< = 400		

Product	Bluetooth Transmitter		
Test Item	Time of Occupancy (Dwell Time)		
Test Mode	Mode 3: 8DPSK Mode		
Date of Test	12/28/2009	Test Site	TE06
DH1			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	800/79CH = 10.13(times/sec)		
Each Channel Dwell Times (1)	0.410 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 10.13 = 320.108(times)		
Dwell Times on Cycle (1) * (2)	131.24428 ms (sec)		
LIMIT(msec)	< = 400		
DH3			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	400/79CH = 5.1(times/sec)		
Each Channel Dwell Times (1)	1.660 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 5.1 = 161.16(times)		
Dwell Times on Cycle (1) * (2)	267.5256 ms (sec)		
LIMIT(msec)	< = 400		
DH5			
Cycle Calculate	79CH * 0.4 = 31.6 (sec)		
The EUT Hopping Number per Sec	1600 times/sec		
Each Channel Dwell Times per Sec	266.7/79CH = 3.37(times/sec)		
Each Channel Dwell Times (1)	2.910 ms (sec)		
Each Channel Dwell Times on Cycle(2)	31.6 * 3.37 = 106.492(times)		
Dwell Times on Cycle (1) * (2)	309.89172 ms (sec)		
LIMIT(msec)	< = 400		

10.6. Test Graphs

Mode 1: GFSK Link Mode	
DH1	
DH3	
DH5	
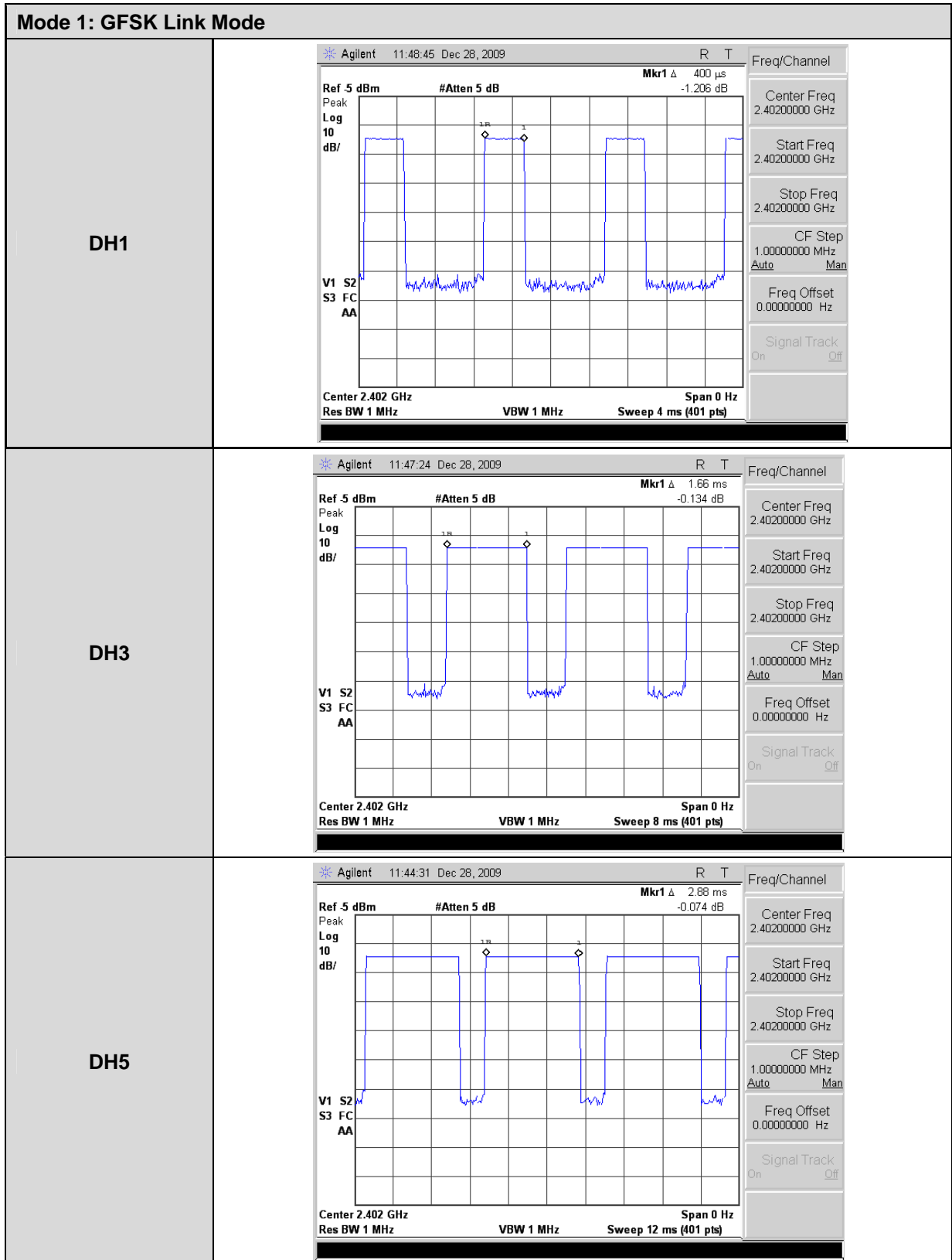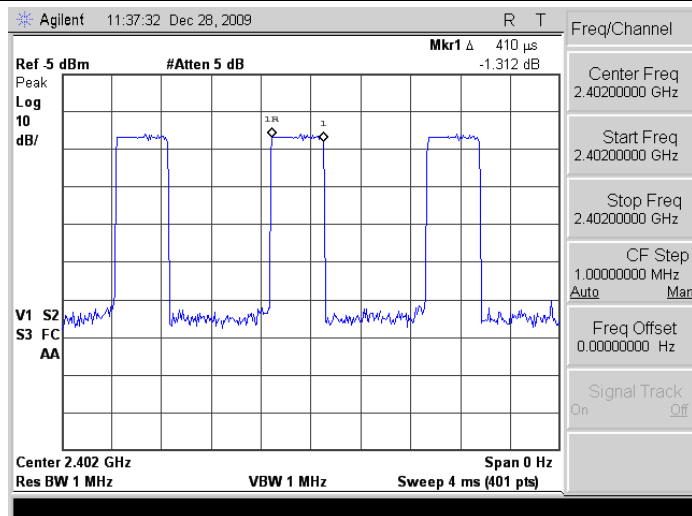
Mode3: 8DPSK Link Mode	
3DH1	
3DH3	
3DH5	
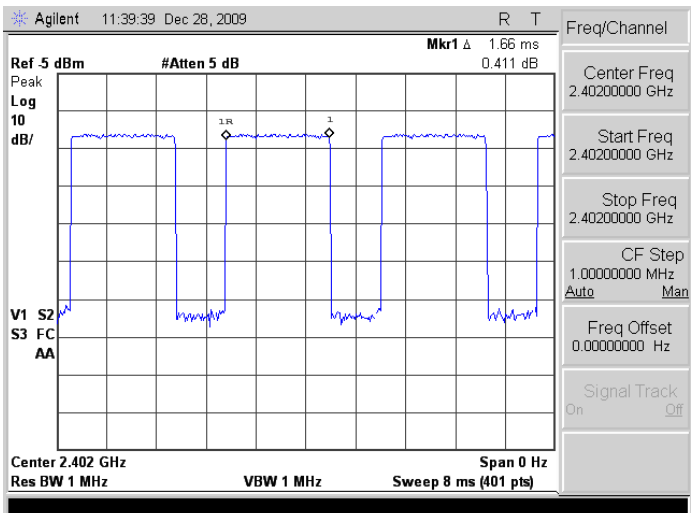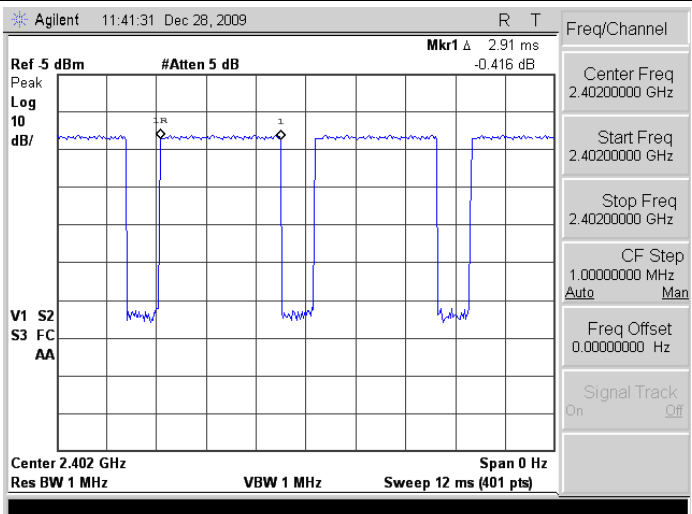
11 Out of Band Conducted Emissions Measurement

11.1. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

11.2. Test Setup
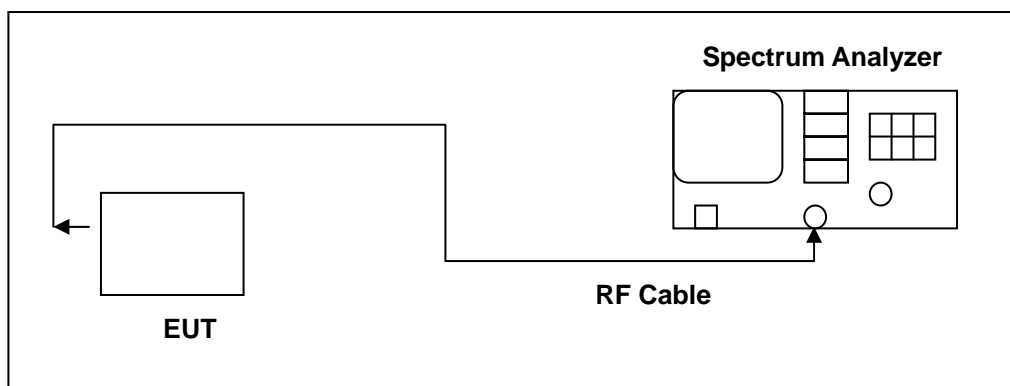
11.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4445A	MY46181986	05/14/2009	(2)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

11.4. Test Procedure

In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band. The test was performed at 3 channels (Channel 0, 39, 78)

11.5. Test Result

Product	Bluetooth Transmitter			
Test Item	Out of Band Conducted			
Test Mode	Mode 1: GFSK Link Mode			
Date of Test	12/29/2009		Test Site	TE06
Frequency (MHz)	Fundamental (dBµV)	Limit (dBµV)		Measurement (dBµV)
2402	-13.64	-33.64		-59.74
2441	-8.93	-28.93		-60.92
2480	-11.01	-31.01		-61.10

Product	Bluetooth Transmitter			
Test Item	Out of Band Conducted			
Test Mode	Mode 3: 8DPSK Mode			
Date of Test	12/29/2009		Test Site	TE06
Frequency (MHz)	Fundamental (dBµV)	Limit (dBµV)		Measurement (dBµV)
2402	-14.58	-34.58		-61.21
2441	-14.41	-34.41		-60.27
2480	-12.54	-32.54		-61.17

11.6. Test Graphs

File :BT(20db) Data :#1 Date: 2009/12/29 Time: 下午 02:48:04

Site: : RF Conducted	Polarization:	Temperature:	22 ℃
Limit:	Power:	Humidity:	60 %
EUT: Bluetooth Transmitter	Distance:	RBW: 100 KHz	VBW: 100 KHz
M/N: BMD-01		
Mode: 1		
Note: 2402MHz		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBm	dB	dBm	dBm	dB		cm	degree	
1	*	2412.300	-13.64	0.00	-13.64			peak			TX
2		25441.200	-59.74	0.00	-59.74			peak			

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

File :BT(20db)   Data :#2   Date: 2009/12/29   Time: 下午 02:49:15

Site: : RF Conducted	Polarization:	Temperature: 22 ℃
Limit:	Power:	Humidity: 60 %
EUT: Bluetooth Transmitter	Distance:	RBW: 100 KHz VBW: 100 KHz

M/N: BMD-01
Mode: 1
Note: 2441MHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBm	dB	dBm	dBm	dB		cm	degree	
1	*	2412.300	-8.93	0.00	-8.93			peak			TX
2		25639.725	-60.92	0.00	-60.92			peak			

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

File :BT(20db) Data :#3 Date: 2009/12/29 Time: 下午 02:50:05
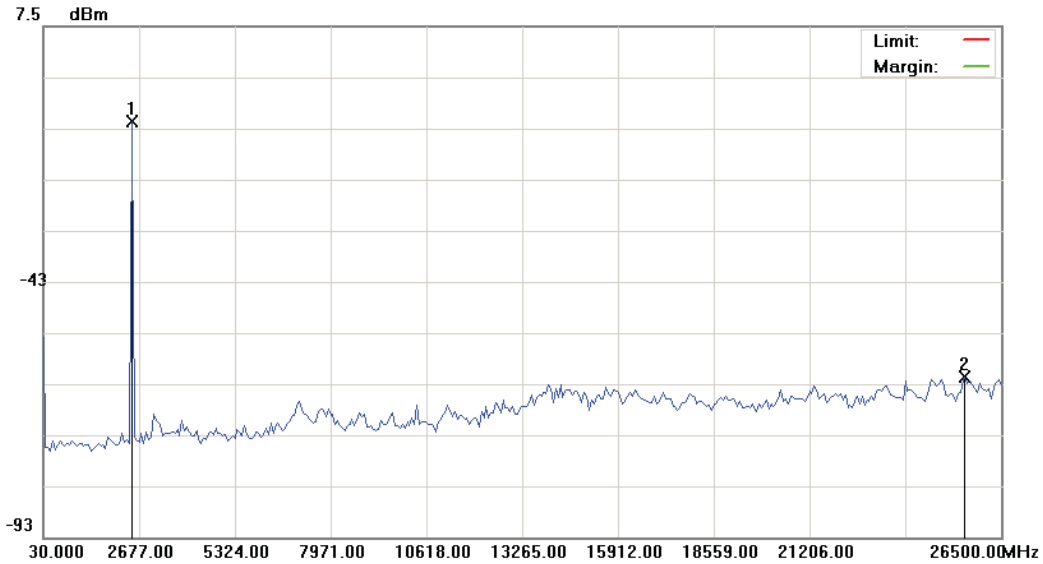
Site:	: RF Conducted	Polarization:		Temperature:	22 ℃
Limit:		Power:		Humidity:	60 %
EUT:	Bluetooth Transmitter	Distance:		RBW: 100 KHz	VBW: 100 KHz
M/N:	BMD-01				
Mode:	1				
Note:	2480MHz				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBm	dB	dBm	dBm	dB		cm	degree	
1	*	2478.475	-11.01	0.00	-11.01			peak			TX
2		25507.375	-61.10	0.00	-61.10			peak			

*:Maximum data   x:Over limit   !:over margin
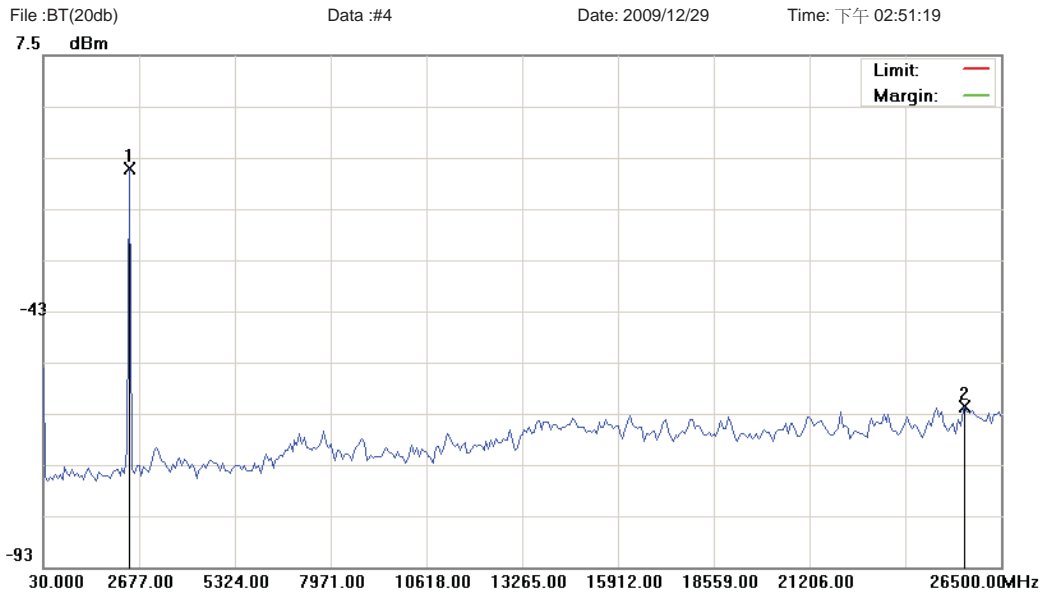
File :BT(20db) Data :#4 Date: 2009/12/29 Time: 下午 02:51:19

Site:	: RF Conducted	Polarization:		Temperature:	22 ℃
Limit:		Power:		Humidity:	60 %
EUT:	Bluetooth Transmitter	Distance:		RBW: 100 KHz	VBW: 100 KHz
M/N:	BMD-01				
Mode:	3				
Note:	2402MHz				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBm	dB	dBm	dBm	dB	Detector	cm	degree	Comment
1	*	2412.300	-14.58	0.00	-14.58			peak			TX
2		25507.375	-61.21	0.00	-61.21			peak			

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

File :BT(20db)　　　　　Data :#5　　　　　Date: 2009/12/29　　　　　Time: 下午 02:51:58
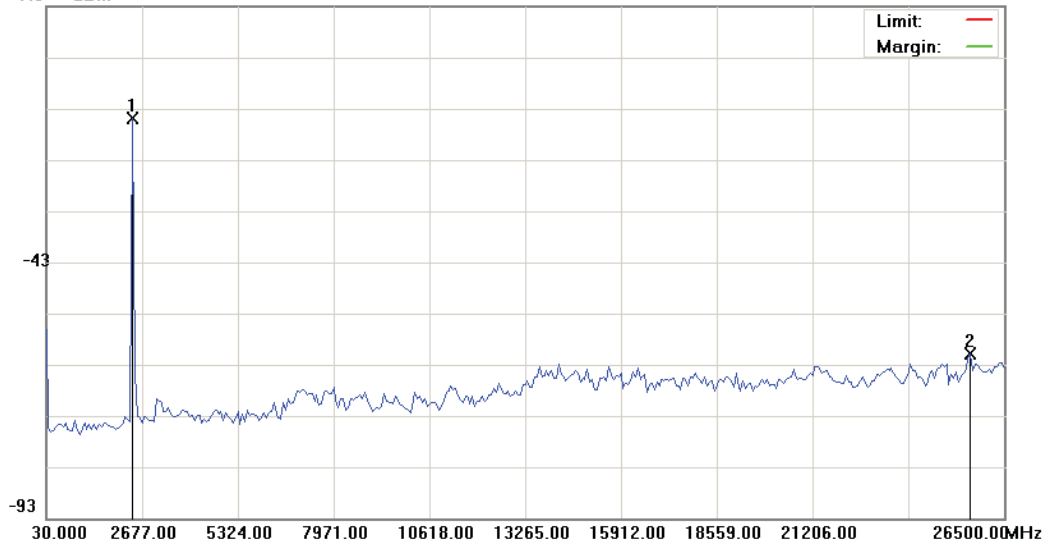
Site:	: RF Conducted		Polarization:		Temperature:	22 ℃
Limit:			Power:		Humidity:	60 %
EUT:	Bluetooth Transmitter		Distance:		RBW: 100 KHz	VBW: 100 KHz
M/N:	BMD-01					
Mode:	3					
Note:	2441MHz					

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBm	dB	dBm	dBm	dB		cm	degree	
1	*	2412.300	-14.41	0.00	-14.41			peak			TX
2		25573.550	-60.27	0.00	-60.27			peak			

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

File :BT(20db)   Data :#6   Date: 2009/12/29   Time: 下午 02:52:27

Site:	: RF Conducted	Polarization:		Temperature:	22 ℃
Limit:		Power:		Humidity:	60 %
EUT:	Bluetooth Transmitter	Distance:		RBW: 100 KHz	VBW: 100 KHz

M/N: BMD-01
Mode: 3
Note: 2480MHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBm	dB	dBm	dBm	dB		cm	degree	
1	*	2478.475	-12.54	0.00	-12.54			peak			TX
2		25772.075	-61.17	0.00	-61.17			peak			

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

12 Band Edges Measurement

12.1. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

12.2. Test Setup
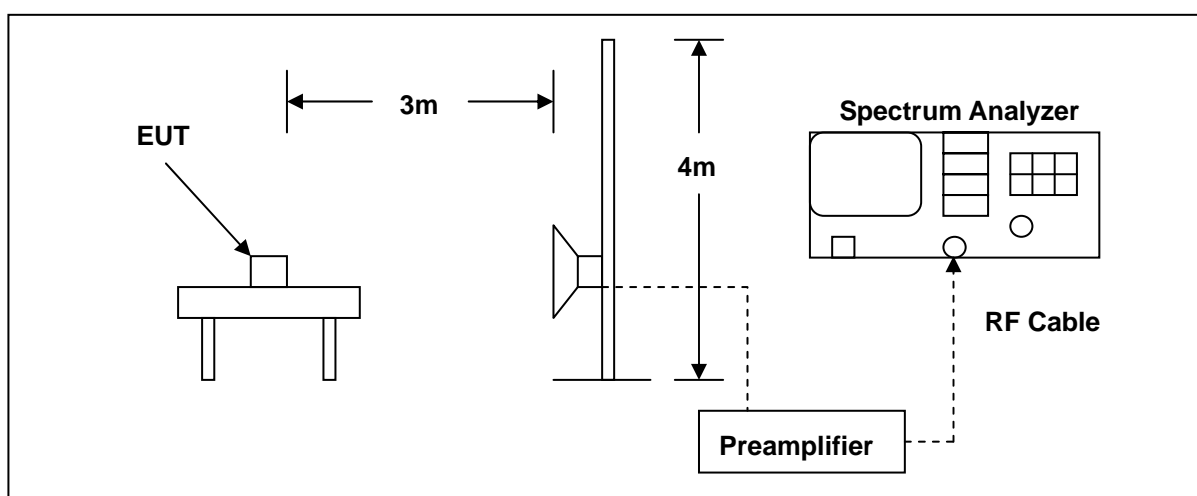
12.3. Test Instruments

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Remark
Spectrum Analyzer	Agilent	E4408B	MY45107753	06/23/2009	(2)
Pre Amplifier	Agilent	8449B	3008A02237	07/01/2009	(1)
Horn Antenna	SCHWARZBECK MESS-ELEKTRONIK	9120D	9120D-550	07/01/2009	(2)
Test Site	ATL	TE06	TE06	N.C.R.	-----

Remark: (1) Calibration period 1 year. (2) Calibration period 2 years.

NOTE: N.C.R. = No Calibration Request.

12.4. Test Procedure

The emissions on the harmonics frequencies, the limits, and the margin of compliance are presented. These tests were made when the transmitter was in full radiated power. The additional test was performed to show compliance with the requirement at the band-edge frequency 2483.5 MHz and up to 2500 MHz and at 2390.0 MHz.

The transmitter was configured with the worst case antenna and setup to transmit at the highest channel. Then the field strength was measured at 2483.5 MHz.

The transmitter was then configured with the worst case antenna and setup to transmit at the lowest channel. Then the field strength was measured at 2390.0 MHz. These tests were performed at 4 different bit rates.

12.5. Test Graphs

File :BMD01(Band Edge) Data :#1 Date: 2009/12/29 Time: 下午 04:34:37

Site:	: 966 Chamber	Polarization:	*Vertical*	Temperature:	22 ℃
Limit:	FCC part 15 (PK)	Power:	AC 120V/60Hz	Humidity:	60 %
EUT:	Bluetooth Transmitter	Distance:	3m		
M/N:	BMD-01			RBW: 1000 KHz VBW: 1000 KHz	
Mode:	1				
Note:	2402MHz				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1	*	2385.995	45.59	0.18	45.77	74.00	-28.23	peak			

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

File :BMD01(Band Edge)　　　　Data :#5　　　　Date: 2009/12/29　　　　Time: 下午 04:25:22

Site:　: 966 Chamber

Limit:　FCC part 15 (PK)

EUT:　Bluetooth Transmitter

M/N:　BMD-01

Mode:　1

Note:　2402MHz

Polarization:　**Horizontal**

Power:　AC 120V/60Hz

Distance:　3m

Temperature:　22 ℃

Humidity:　60 %

RBW: 1000 KHz　VBW: 1000 KHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1	*	2386.100	55.17	0.18	55.35	74.00	-18.65	peak			
2		2386.100	34.35	0.18	34.53	54.00	-19.47	AVG			

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

File :BMD01(Band Edge)   Data :#3   Date: 2009/12/29   Time: 下午 04:12:52

Site: : 966 Chamber

Limit: FCC part 15 (PK)

EUT: Bluetooth Transmitter

M/N: BMD-01

Mode: 1

Note: 2480MHz

Polarization: *Vertical*

Power: AC 120V/60Hz

Distance: 3m

Temperature: 22 ℃

Humidity: 60 %

RBW: 1000 KHz VBW: 1000 KHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1	*	2483.500	54.80	0.25	55.05	74.00	-18.95	peak			
2		2483.500	34.72	0.25	34.97	54.00	-19.03	AVG			

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

File :BMD01(Band Edge) Data :#7 Date: 2009/12/29 Time: 下午 04:09:50

Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Bluetooth Transmitter
M/N: BMD-01
Mode: 1
Note: 2480MHz

Polarization: *Horizontal*
Power: AC 120V/60Hz
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1	*	2483.500	63.26	0.25	63.51	74.00	-10.49	peak			
2		2483.500	40.66	0.25	40.91	54.00	-13.09	AVG			

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

File :BMD01(Band Edge)EDR   Data :#1   Date: 2009/12/29   Time: 下午 04:31:56

112.0 dBuV
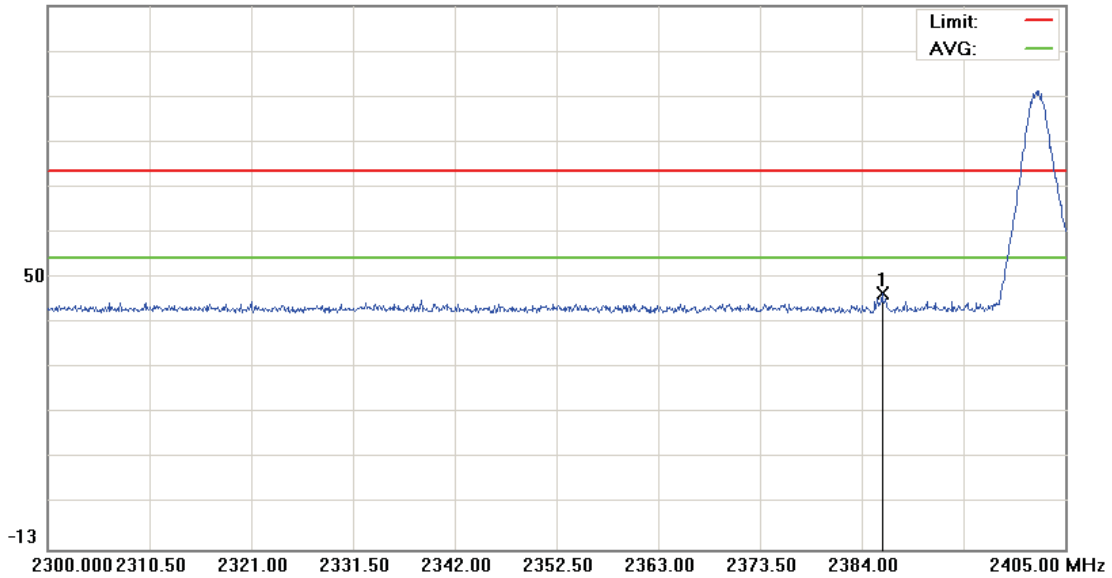
Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Bluetooth Transmitter
M/N: BMD-01
Mode: 3
Note: 2402MHz

Polarization: *Vertical*
Power: AC 120V/60Hz
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %

RBW: 1000 KHz VBW: 1000 KHz

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	Comment
1	*	2386.100	45.58	0.18	45.76	74.00	-28.24	peak			

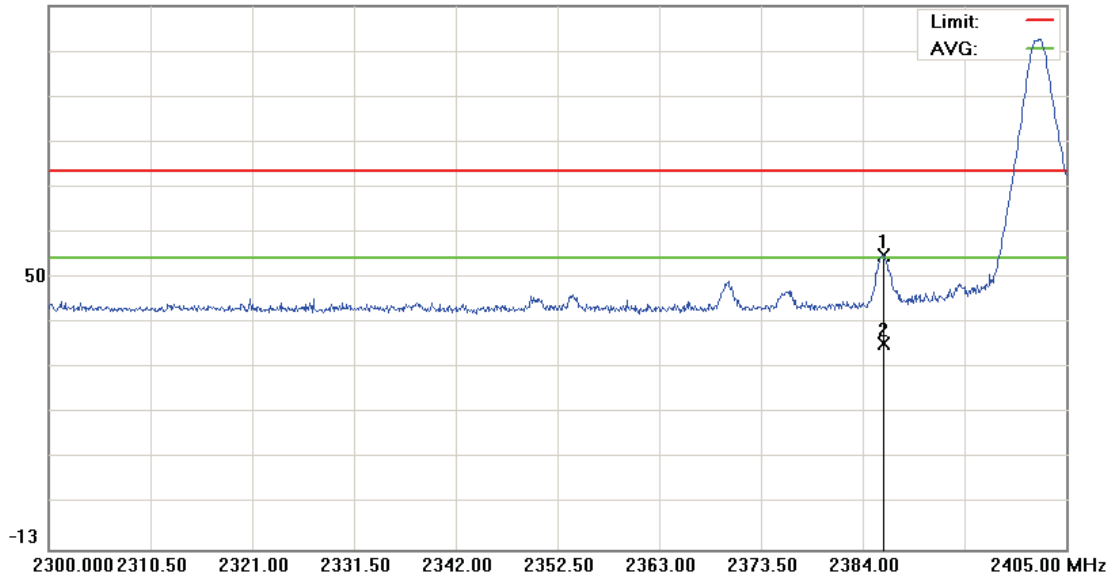*:Maximum data   x:Over limit   !:over margin

File :BMD01(Band Edge)EDR   Data :#5   Date: 2009/12/29   Time: 下午 04:28:52

Site: : 966 Chamber	Polarization:	*Horizontal*	Temperature: 22 ℃
Limit: FCC part 15 (PK)	Power:	AC 120V/60Hz	Humidity: 60 %
EUT: Bluetooth Transmitter	Distance:	3m	RBW: 1000 KHz VBW: 1000 KHz
M/N: BMD-01			
Mode: 3			
Note: 2402MHz			

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1	*	2386.205	54.47	0.17	54.64	74.00	-19.36	peak			
2		2386.205	34.33	0.17	34.50	54.00	-19.50	AVG			

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

File :BMD01(Band Edge)EDR   Data :#3   Date: 2009/12/29   Time: 下午 03:58:46

112.0 dBuV

Site: : 966 Chamber

Limit:	FCC part 15 (PK)
EUT:	Bluetooth Transmitter
M/N:	BMD-01
Mode:	3
Note:	2480MHz

Polarization:	*Vertical*
Power:	AC 120V/60Hz
Distance:	3m

Temperature:	22 ℃
Humidity:	60 %
RBW: 1000 KHz VBW: 1000 KHz	

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree	Comment
1		2483.500	63.88	0.25	64.13	74.00	-9.87	peak			
2	*	2483.500	45.01	0.25	45.26	54.00	-8.74	AVG			

*:Maximum data   x:Over limit   !:over margin
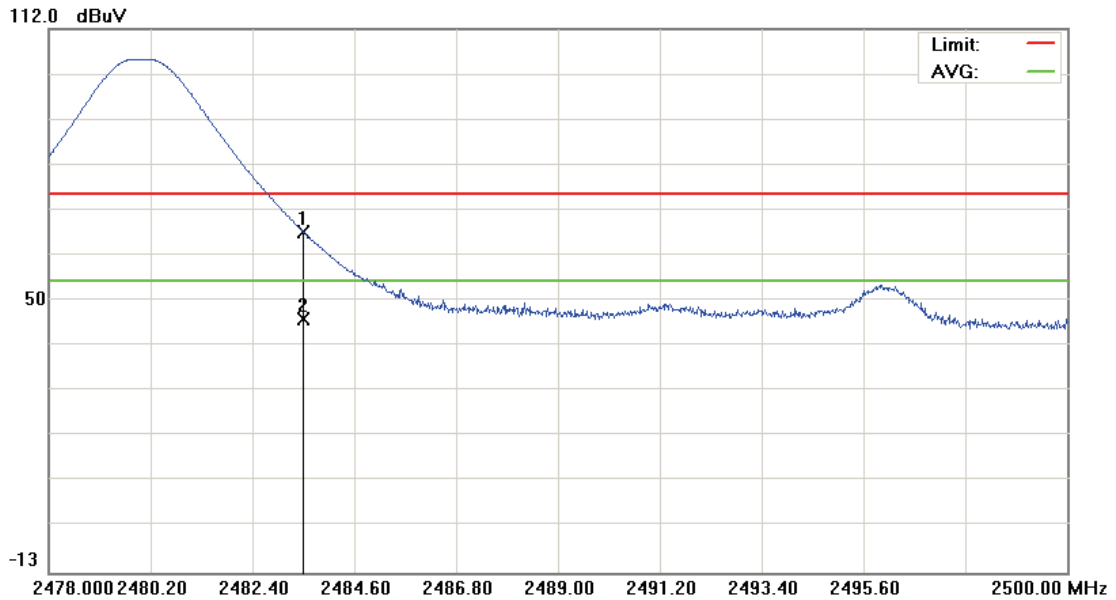
File :BMD01(Band Edge)EDR   Data :#7   Date: 2009/12/29   Time: 下午 04:03:10

Site:	: 966 Chamber	Polarization:	*Horizontal*	Temperature:	22 ℃
Limit:	FCC part 15 (PK)	Power:	AC 120V/60Hz	Humidity:	60 %
EUT:	Bluetooth Transmitter	Distance:	3m		
M/N:	BMD-01			RBW: 1000 KHz	VBW: 1000 KHz
Mode:	3				
Note:	2480MHz				

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	Detector	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		cm	degree	
1	*	2483.500	65.14	0.25	65.39	74.00	-8.61	peak			
2		2483.500	44.91	0.25	45.16	54.00	-8.84	AVG			

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

13   Antenna Measurement

13.1. Limit

For intentional device, according to 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power   shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

13.2. Antenna Connector Construction

The antenna used in this product is **internal antenna**. And the maximum Gain of this antenna is only **1.3 dBi**.