

# FC

## Test Report

Product Name	BT Module
Model No.	WB110C
FCC ID.	PPQ-WB110C

Applicant	Lite-On TECHNOLOGY CORP.
Address	4F,90,Chien 1 Road, Chung-Ho, Taipei Hsien 235, Taiwan, R.O.C.

Date of Receipt	Apr. 16, 2008
Issued Date	May 02, 2008
Report No.	084261R-RFUSP06V01
Version	V1.0

The Test Results relate only to the samples tested.

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This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

# Test Report Certification

Issued Date: May 02, 2008

Report No.: 084261R-RFUSP06V01



Accredited by NIST (NVLAP)  
NVLAP Lab Code: 200533-0

Product Name	BT Module
Applicant	Lite-On TECHNOLOGY CORP.
Address	4F,90,Chien 1 Road, Chung-Ho, Taipei Hsien 235, Taiwan, R.O.C.
Manufacturer	LITE-ON TECHNOLOGY CORP.
Model No.	WB110C
FCC ID.	PPQ-WB110C
Rated Voltage	AC 120V/60Hz
Working Voltage	DC 5V (Power by USB)
Trade Name	LITE-ON
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003
Test Result	Complied



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( Deputy Manager / Vincent Lin )

0914

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	BT Module
Trade Name	LITE-ON
FCC ID.	PPQ-WB110C
Model No.	WB110C
Frequency Range	2402 – 2480MHz
Channel Number	79
Type of Modulation	GFSK(1Mbps)/ /4DQPSK(2Mbps) / 8DPSK(3Mbps)
Antenna Type	Printed on PCB
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”

#### Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	LITE-ON	N/A	-3.98 dBi for 2.4 GHz

## Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. The transmitter is presented with a continuous data stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its 79 channels and over the minimum number of hopping channels (75 channels).

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Note:

1. This device is an BT Module with a built-in 2.4GHz BluetoothVer.2.0+EDR transceiver.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

## 1.2. Operational Description

The EUT is an BT Module with built-in 2.4GHz BluetoothVer.2.0+EDR transceiver. The number of the channels is 79 in 2402-2480MHz. The device adapts the frequency hopping spread spectrum modulation. The antenna is Printed on PCB and provides diversity function to improve the receiving function.

This device provides wireless technology that revolutionizes personal connectivity. It is the solution for the seamless integration of Bluetooth technology into personal computer enabling short-range wireless connections between desktop/laptop computers, Bluetooth-enabled peripherals, and portable handheld devices.

Test Mode	Mode 1: Transmitter - 1Mbps (GFSK) Mode 2: Transmitter - 3Mbps (8DPSK)
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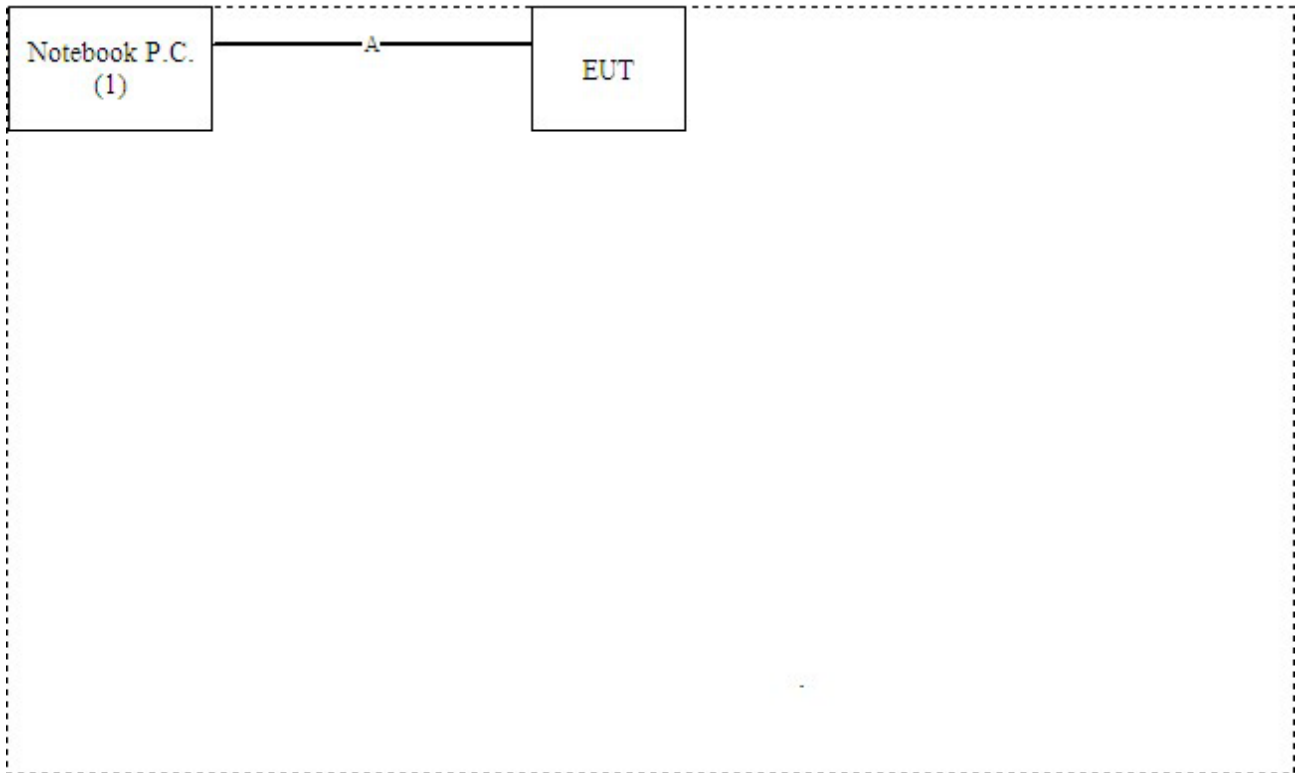
### 1.3. Tested System Details

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

	Product	Manufacturer	Model No.	Serial No.	Power Cord
1.	Notebook P.C.	ASUS	L4000L	37NP067733	Non-Shielded, 1.8m

	Signal Cable Type	Signal cable Description
A.	USB Cable	Shielded, 1.2m

### 1.4. Configuration of Tested System





## 1.5. EUT Exercise Software

- (1) Setup the EUT as shown in section 1.4
- (2) Execute the CSR program (the continuous transmission program) on the EUT
- (3) Setup the test mode, the test channel, and the data rate.
- (4) Press OK to start the transmission.
- (5) Verify that the EUT works correctly.

**1.6. Test Facility**

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description:

File on  
 Federal Communications Commission  
 Laboratory Division  
 7435 Oakland Mills Road  
 Columbia, MD 21046  
 Registration Number: 92195



Accreditation on NVLAP  
 NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation  
 Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,  
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FCC Accreditation Number: TW1014



## 2. Conducted Emission

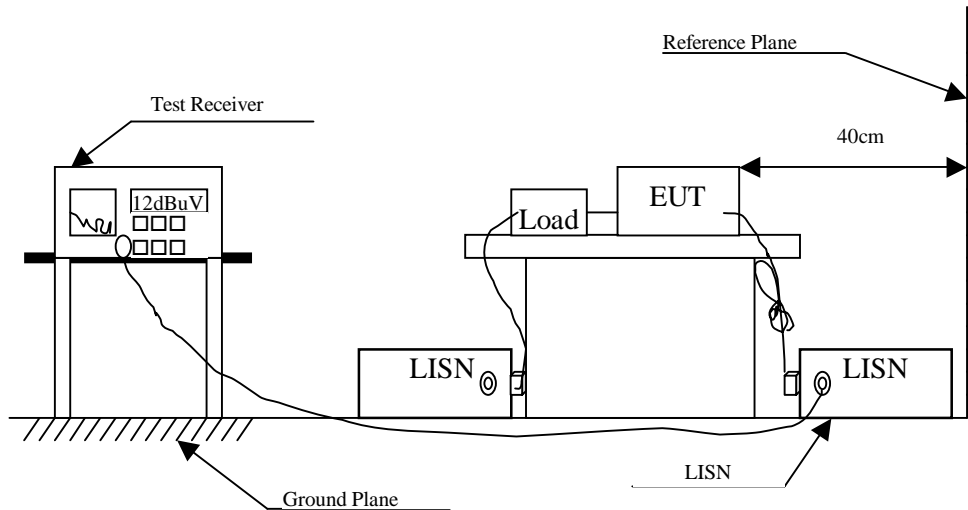
### 2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/014	Feb., 2008	
2	L.I.S.N.	R & S	ESH3-Z5/825562/002	Feb., 2008	EUT
3	L.I.S.N.	R & S	ENV4200/848411/010	Feb., 2008	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2/100410	July, 2007	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

### 2.2. Test Setup



**2.3. Limits**

<b>FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit</b>		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

**2.4. Test Procedure**

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

**2.5. Uncertainty**

± 2.26 dB

## 2.6. Test Result of Conducted Emission

Product : BT Module  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.197	0.670	36.540	37.210	-27.447	64.657
0.463	0.300	26.290	26.590	-30.467	57.057
0.658	0.310	25.150	25.460	-30.540	56.000
3.627	0.390	26.970	27.360	-28.640	56.000
6.068	0.470	26.570	27.040	-32.960	60.000
22.560	1.150	34.670	35.820	-24.180	60.000
<b>Average</b>					
0.197	0.670	29.470	30.140	-24.517	54.657
0.463	0.300	24.160	24.460	-22.597	47.057
0.658	0.310	21.810	22.120	-23.880	46.000
3.627	0.390	23.560	23.950	-22.050	46.000
6.068	0.470	23.790	24.260	-25.740	50.000
22.560	1.150	28.610	29.760	-20.240	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : BT Module  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK) (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.197	0.300	37.630	37.930	-26.727	64.657
0.529	0.310	30.670	30.980	-25.020	56.000
0.791	0.320	26.350	26.670	-29.330	56.000
2.572	0.360	23.930	24.290	-31.710	56.000
5.935	0.430	29.430	29.860	-30.140	60.000
23.349	1.030	33.070	34.100	-25.900	60.000
<b>Average</b>					
0.197	0.300	28.100	28.400	-26.257	54.657
0.529	0.310	28.550	28.860	-17.140	46.000
0.791	0.320	24.750	25.070	-20.930	46.000
2.572	0.360	20.980	21.340	-24.660	46.000
5.935	0.430	25.970	26.400	-23.600	50.000
23.349	1.030	25.060	26.090	-23.910	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "■" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : BT Module  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.201	0.643	34.380	35.023	-29.520	64.543
0.529	0.300	25.960	26.260	-29.740	56.000
0.724	0.310	24.700	25.010	-30.990	56.000
3.759	0.390	26.390	26.780	-29.220	56.000
6.002	0.470	25.290	25.760	-34.240	60.000
23.021	1.160	33.440	34.600	-25.400	60.000
<b>Average</b>					
0.201	0.643	27.400	28.043	-26.500	54.543
0.529	0.300	16.840	17.140	-28.860	46.000
0.724	0.310	20.970	21.280	-24.720	46.000
3.759	0.390	23.410	23.800	-22.200	46.000
6.002	0.470	23.170	23.640	-26.360	50.000
23.021	1.160	26.460	27.620	-22.380	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "█" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : BT Module  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.197	0.300	37.560	37.860	-26.797	64.657
0.529	0.310	30.420	30.730	-25.270	56.000
0.990	0.320	25.590	25.910	-30.090	56.000
3.166	0.380	24.470	24.850	-31.150	56.000
6.002	0.430	27.610	28.040	-31.960	60.000
22.623	1.000	33.160	34.160	-25.840	60.000
<b>Average</b>					
0.197	0.300	28.040	28.340	-26.317	54.657
0.529	0.310	28.710	29.020	-16.980	46.000
0.990	0.320	23.220	23.540	-22.460	46.000
3.166	0.380	20.380	20.760	-25.240	46.000
6.002	0.430	27.010	27.440	-22.560	50.000
22.623	1.000	30.580	31.580	-18.420	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. "█" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor



### 3. Peak Power Output

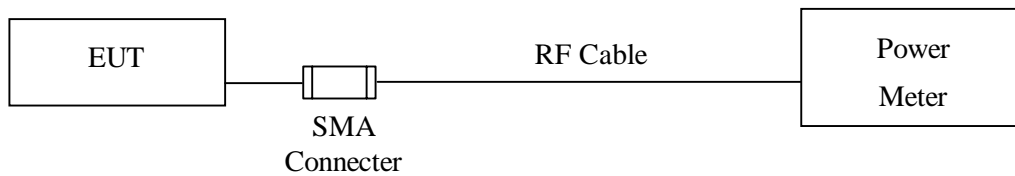
#### 3.1. Test Equipment

The following test equipments are used during the radiated emission tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Power Meter	Anritsu	ML2495A/6K00003357	May, 2007
X Power Sensor	Anritsu	MA2491A/034457	May, 2007

- Note:
1. All equipments are calibrated every one year.
  2. The test instruments marked by "X" are used to measure the final test results.

#### 3.2. Test Setup



#### 3.3. Limit

The maximum peak power shall be less 1Watt.

#### 3.4. Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

#### 3.5. Uncertainty

± 1.27 dB

### 3.6. Test Result of Peak Power Output

Product : BT Module  
Test Item : Peak Power Output  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	-6.32dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	-5.24dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	-4.44dBm	1 Watt= 30 dBm	Pass

Product : BT Module  
Test Item : Peak Power Output  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	-4.68dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	-3.92dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	-3.33dBm	1 Watt= 30 dBm	Pass

## 4. Radiated Emission

### 4.1. Test Equipment

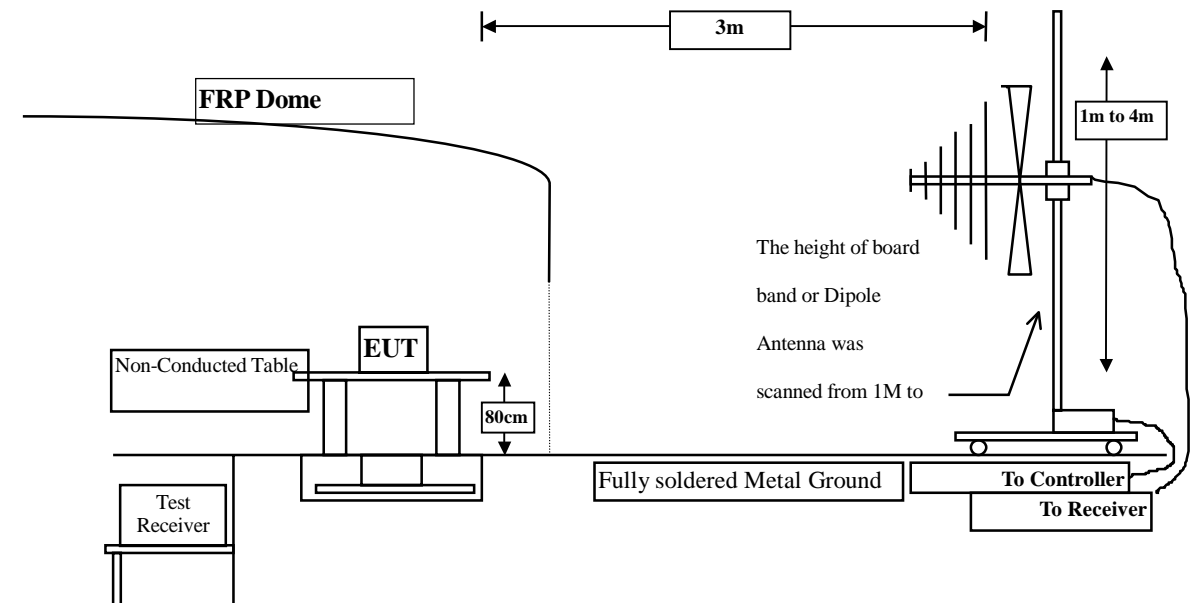
The following test equipments are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2007
	X	Pre-Amplifier	HP	8447D/2944A09549	Sep., 2007
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2007
	X	Spectrum Analyzer	HP	E4407B / US39440758	May, 2007
	X	Coaxial Cable	Quietek	QTK-CABLE/ CAB5	Feb., 2008
	X	Controller	Quietek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

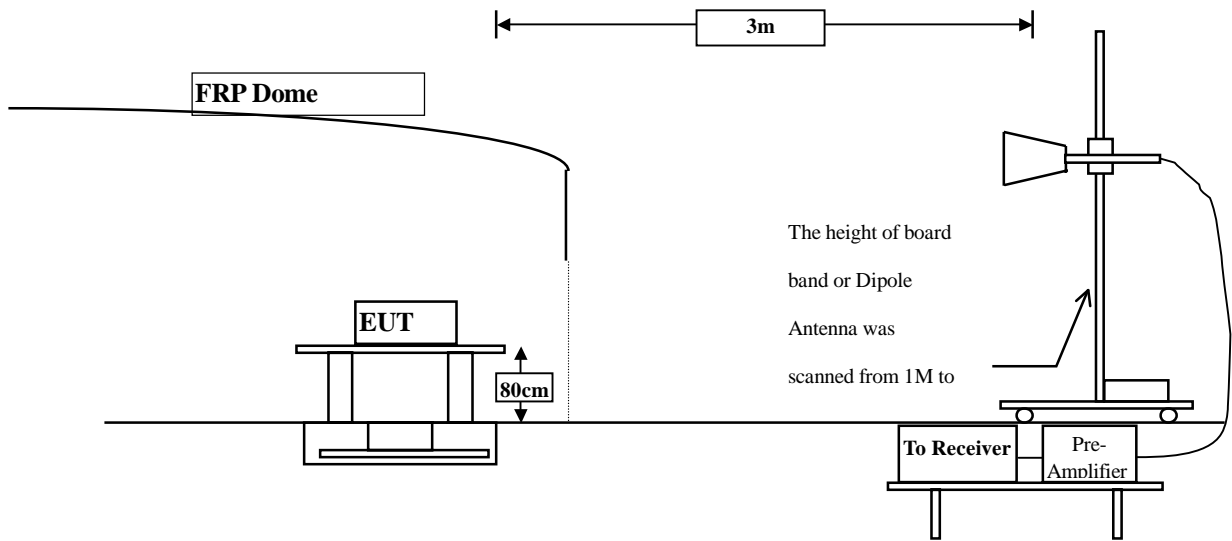
- Note:
1. All equipments are calibrated every one year.
  2. The test instruments marked by "X" are used to measure the final test results.

### 4.2. Test Setup

Below 1GHz



Above 1GHz



### 4.3. Limits

#### ➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

- Remarks:
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
  2. In the Above Table, the tighter limit applies at the band edges.
  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.

#### 4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB beamwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The frequency range from 30MHz to 10th harmonics is checked.

#### 4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

#### 4.6. Test Result of Radiated Emission

Product : BT Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4804.000	3.663	46.770	50.433	-23.567	74.000
7206.000	9.357	36.430	45.786	-28.214	74.000
9608.000	11.842	35.870	47.712	-26.288	74.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4804.000	3.663	45.940	49.603	-24.397	74.000
7206.000	9.357	36.710	46.066	-27.934	74.000
9608.000	11.842	35.240	47.082	-26.918	74.000
<b>Average Detector:</b>					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : BT Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4882.000	3.921	46.100	50.021	-23.979	74.000
7323.000	9.657	35.230	44.887	-29.113	74.000
9764.000	11.798	36.320	48.118	-25.882	74.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4882.000	3.921	47.130	51.051	-22.949	74.000
7323.000	9.657	35.520	45.177	-28.823	74.000
9764.000	11.798	36.420	48.218	-25.782	74.000
<b>Average Detector:</b>					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.



Product : BT Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2480MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4960.000	4.197	48.740	52.936	-21.064	74.000
7440.000	9.951	34.910	44.861	-29.139	74.000
9920.000	11.856	37.370	49.226	-24.774	74.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4960.000	4.197	49.520	53.716	-20.284	74.000
7440.000	9.951	35.490	45.441	-28.559	74.000
9920.000	11.856	37.020	48.876	-25.124	74.000
<b>Average Detector:</b>					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : BT Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4804.000	3.663	42.220	45.883	-28.117	74.000
7206.000	9.357	36.250	45.606	-28.394	74.000
9608.000	11.842	36.290	48.132	-25.868	74.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4804.000	3.663	41.010	44.673	-29.327	74.000
7206.000	9.357	35.850	45.206	-28.794	74.000
9608.000	11.842	35.800	47.642	-26.358	74.000
<b>Average Detector:</b>					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : BT Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4882.000	3.921	41.330	45.251	-28.749	74.000
7323.000	9.657	36.620	46.277	-27.723	74.000
9764.000	11.798	35.630	47.428	-26.572	74.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4882.000	3.921	41.440	45.361	-28.639	74.000
7323.000	9.657	35.000	44.657	-29.343	74.000
9764.000	11.798	36.300	48.098	-25.902	74.000
<b>Average Detector:</b>					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : BT Module  
 Test Item : Harmonic Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2480MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4960.000	4.197	43.800	47.996	-26.004	74.000
7440.000	9.951	35.400	45.351	-28.649	74.000
9920.000	11.856	36.500	48.356	-25.644	74.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4960.000	4.197	42.820	47.016	-26.984	74.000
7440.000	9.951	35.060	45.011	-28.989	74.000
9920.000	11.856	36.030	47.886	-26.114	74.000
<b>Average Detector:</b>					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz.
3. Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz.
4. Emission Level = Reading Level + Correct Factor.
5. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

Product : BT Module  
 Test Item : General Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
171.620	10.168	17.350	27.518	-15.982	43.500
311.300	13.820	19.527	33.347	-12.653	46.000
383.080	15.831	20.406	36.237	-9.763	46.000
623.640	20.810	13.424	34.234	-11.766	46.000
846.740	22.232	12.918	35.150	-10.850	46.000
978.660	23.412	7.340	30.752	-23.248	54.000
<b>Vertical</b>					
251.160	13.348	24.845	38.193	-7.807	46.000
460.680	18.467	15.702	34.169	-11.831	46.000
528.580	18.993	16.276	35.269	-10.731	46.000
672.140	19.948	19.727	39.675	-6.325	46.000
798.240	21.902	16.880	38.782	-7.218	46.000
926.280	24.105	7.834	31.939	-14.061	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. "█" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

Product : BT Module  
 Test Item : General Radiated Emission  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
251.160	13.394	26.741	40.135	-5.865	46.000
383.080	15.831	19.968	35.799	-10.201	46.000
439.340	17.545	18.983	36.528	-9.472	46.000
662.440	20.762	17.770	38.532	-7.468	46.000
817.640	21.732	17.306	39.038	-6.962	46.000
912.700	22.319	10.833	33.152	-12.848	46.000
<b>Vertical</b>					
251.160	13.348	24.597	37.945	-8.055	46.000
460.680	18.467	15.016	33.483	-12.517	46.000
528.580	18.993	16.786	35.779	-10.221	46.000
672.140	19.948	18.579	38.527	-7.473	46.000
802.120	21.729	17.108	38.837	-7.163	46.000
934.040	24.053	12.640	36.693	-9.307	46.000

Note:

1. The reading levels below 1GHz are quasi-peak values.
2. "█" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor.
4. The radiated emissions below 1GHz of the lowest, middle, highest frequency are pretested. Only the worst case is shown on the report.

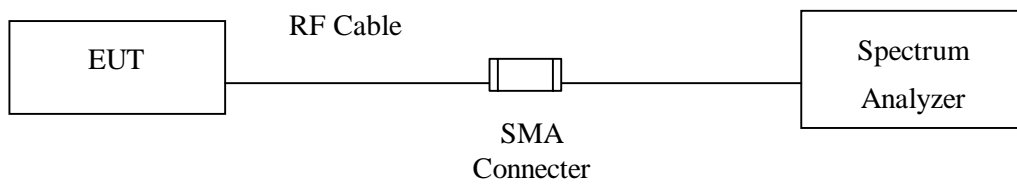
**5. RF Antenna Conducted Test**

**5.1. Test Equipment**

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2007

- Note:
1. All equipments are calibrated every one year.
  2. The test instruments Marked “X” are used to measure the final test results.

**5.2. Test Setup**



**5.3. Limits**

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

**5.4. Test Procedure**

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

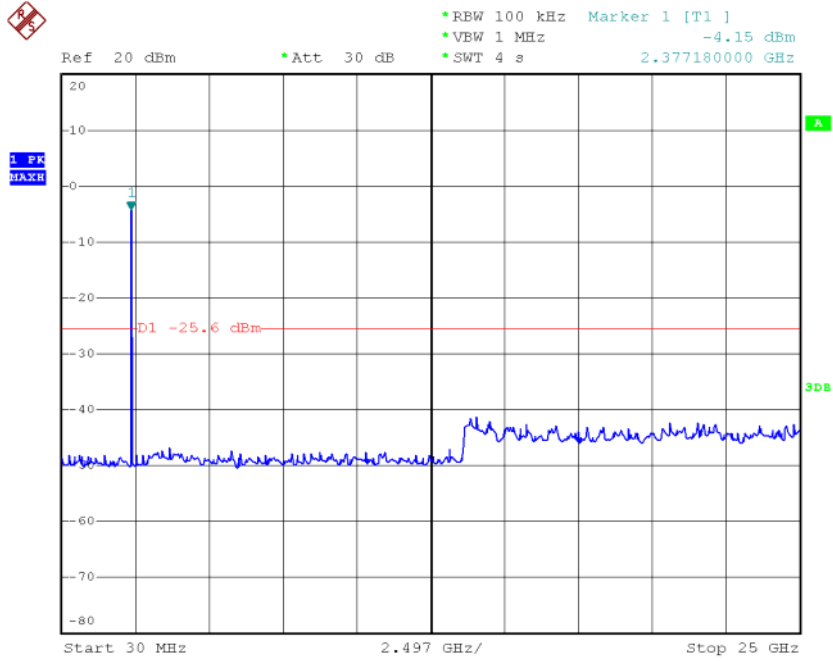
**5.5. Uncertainty**

± 150Hz

### 5.6. Test Result of RF Antenna Conducted Test

Product : BT Module  
Test Item : RF Antenna Conducted Test  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

Figure Channel 00: 30MHz-25GHz

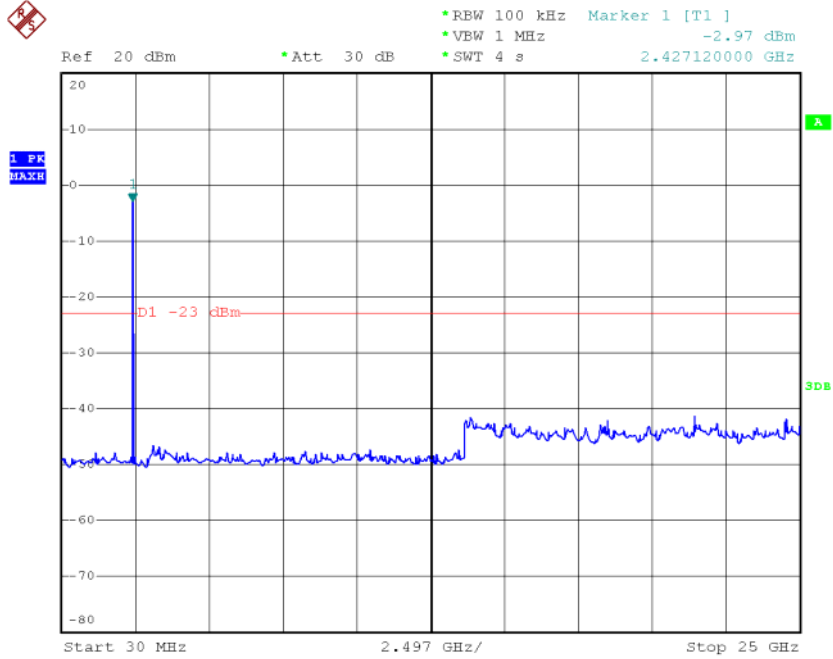


Date: 24.APR.2008 17:54:55



Product : BT Module  
Test Item : RF Antenna Conducted Test  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

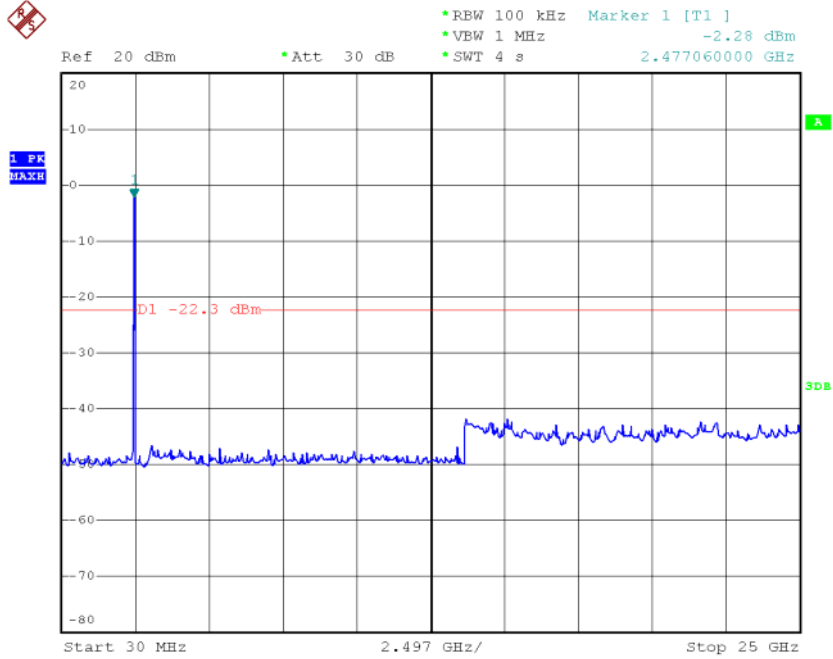
Figure Channel 39: 30MHz-25GHz



Date: 24.APR.2008 17:55:54

Product : BT Module  
Test Item : RF Antenna Conducted Test  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

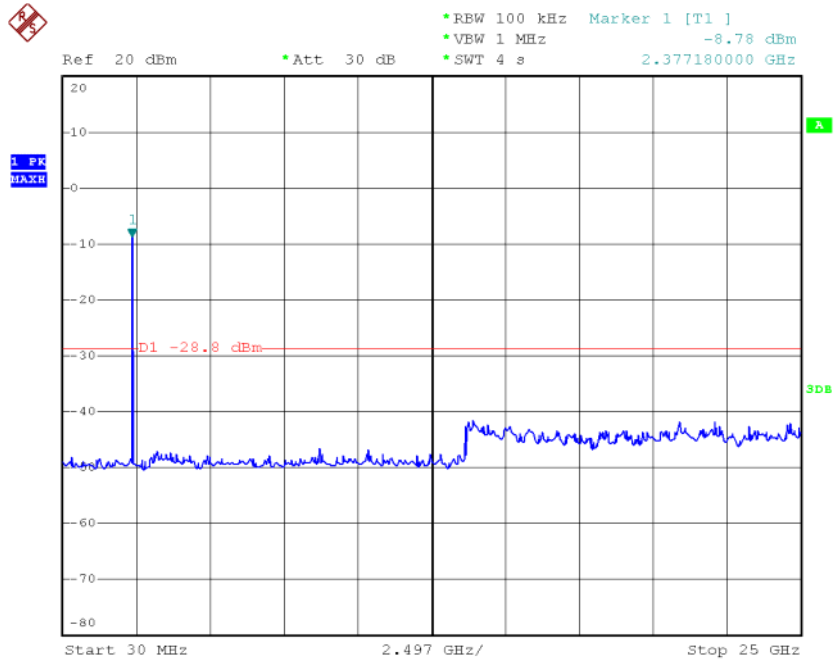
Figure Channel 78: 30MHz-25GHz



Date: 24.APR.2008 17:56:47

Product : BT Module  
Test Item : RF Antenna Conducted Test  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

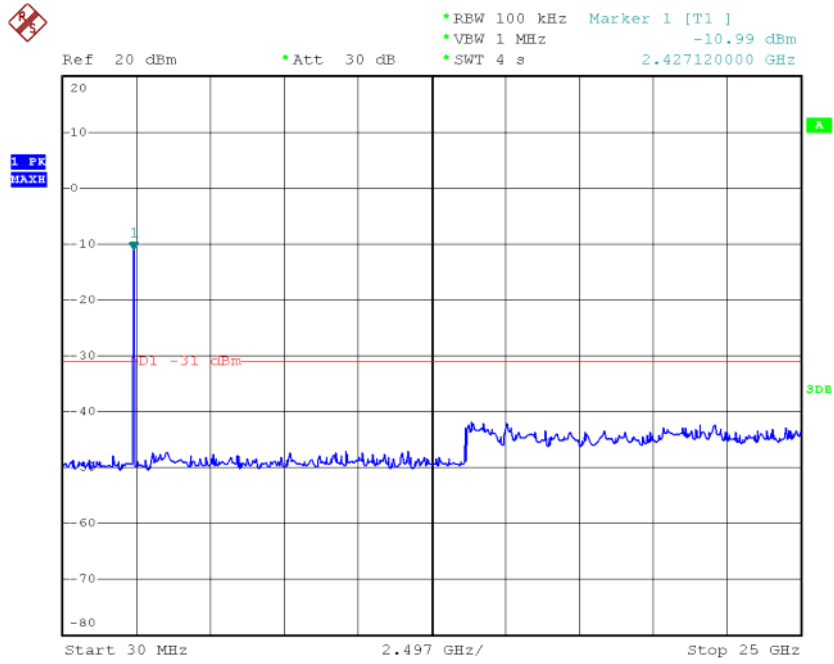
Figure Channel 00: 30MHz-25GHz



Date: 24.APR.2008 18:01:34

Product : BT Module  
Test Item : RF Antenna Conducted Test  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

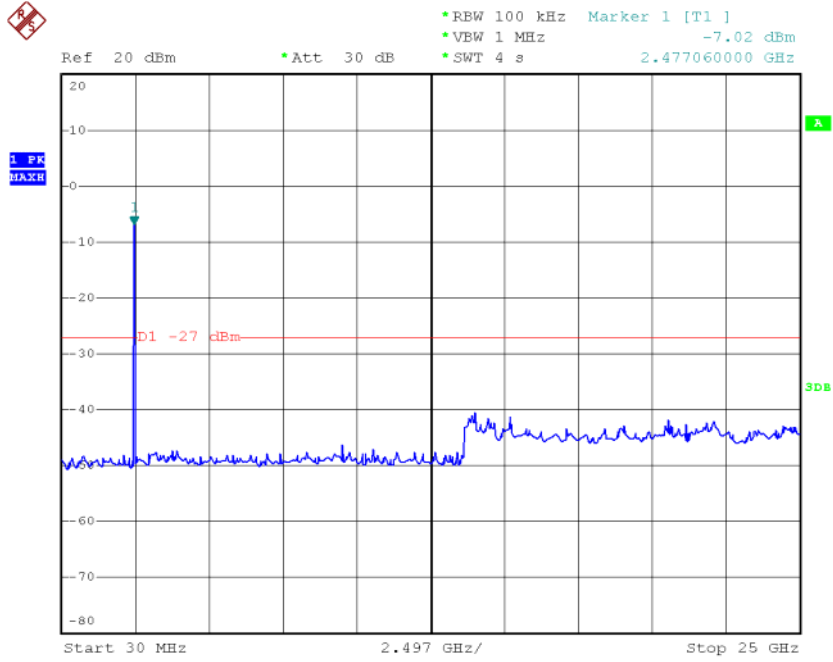
Figure Channel 39: 30MHz-25GHz



Date: 24.APR.2008 18:03:56

Product : BT Module  
Test Item : RF Antenna Conducted Test  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

Figure Channel 78: 30MHz-25GHz



Date: 24.APR.2008 18:04:34

## 6. Band Edge

### 6.1. Test Equipment

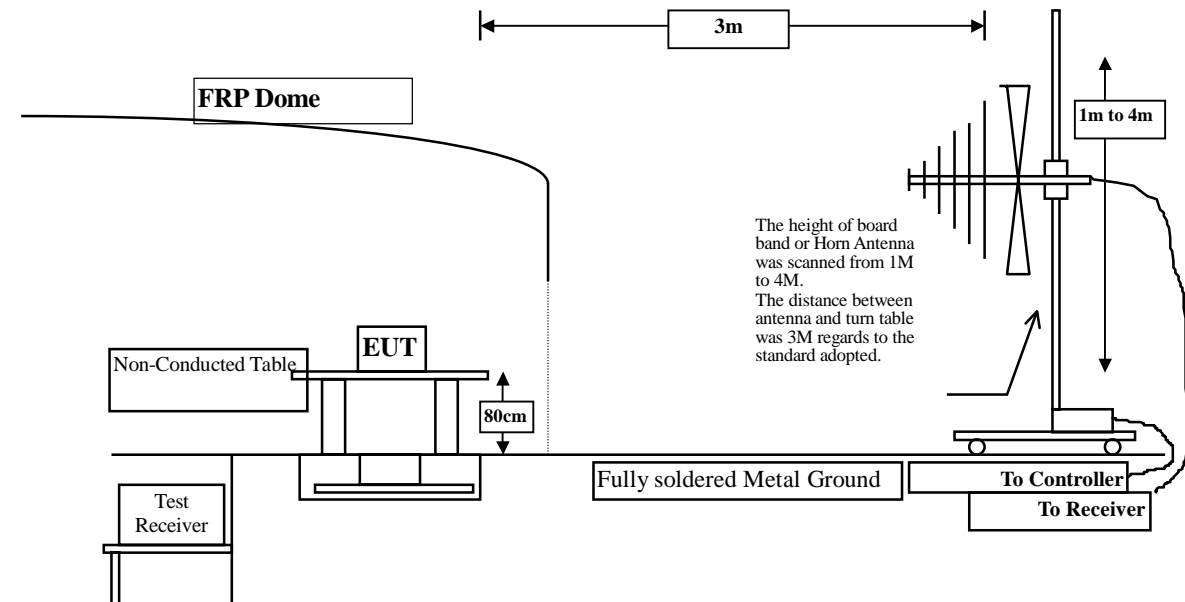
The following test equipments are used during the band edge tests:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2007
	X Pre-Amplifier	HP	8447D/2944A09549	Sep., 2007
	X Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2007
	X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007
	X Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2008
	X Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X Coaxial Switch	Anritsu	MP59B/6200265729	N/A

- Note:
1. All equipments are calibrated every one year.
  2. The test instruments marked by "X" are used to measure the final test results.

### 6.2. Test Setup

#### RF Radiated Measurement:



### **6.3. Limit**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the 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)).

### **6.4. Test Procedure**

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz. The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

### **6.5. Uncertainty**

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

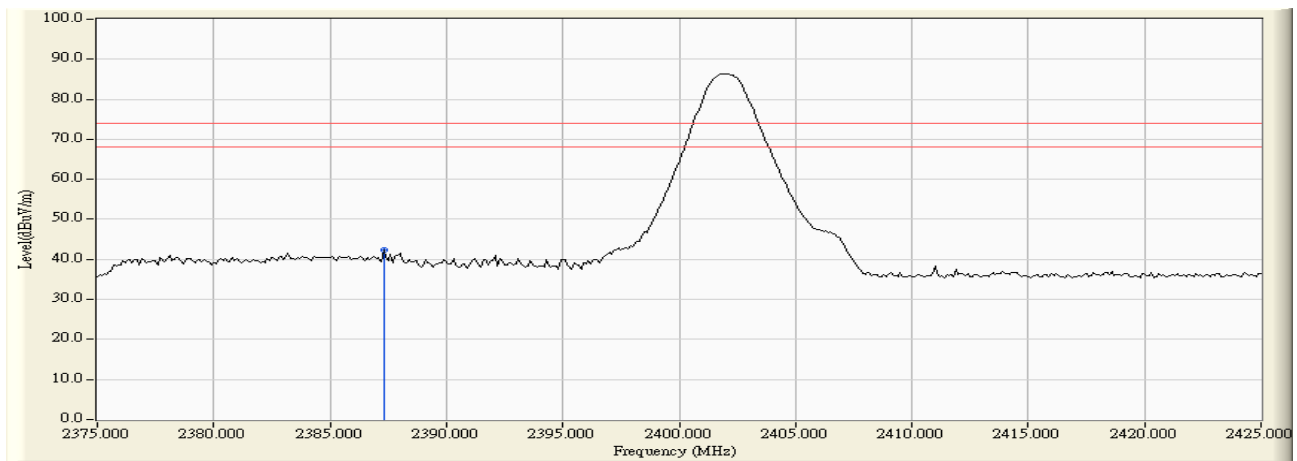
**6.6. Test Result of Band Edge**

Product : BT Module  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2387.300	-2.391	44.663	42.273	74.00	54.00	Pass

**Figure Channel 00: Horizontal (Peak)**



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

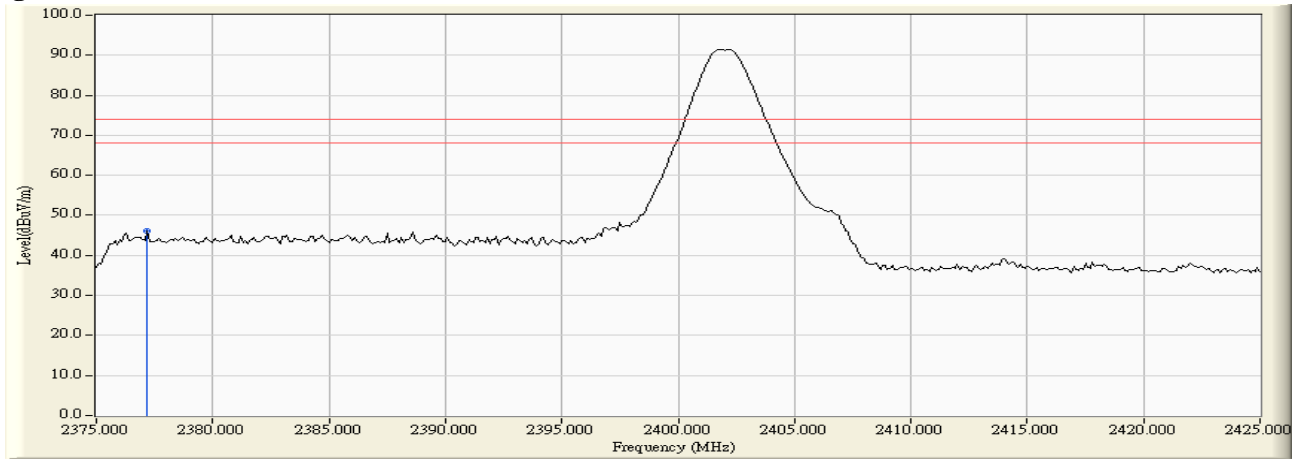


Product : BT Module  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

**RF Radiated Measurement (Vertical):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2377.200	-2.437	48.434	45.996	74.00	54.00	Pass

**Figure Channel 00: Vertical (Peak)**



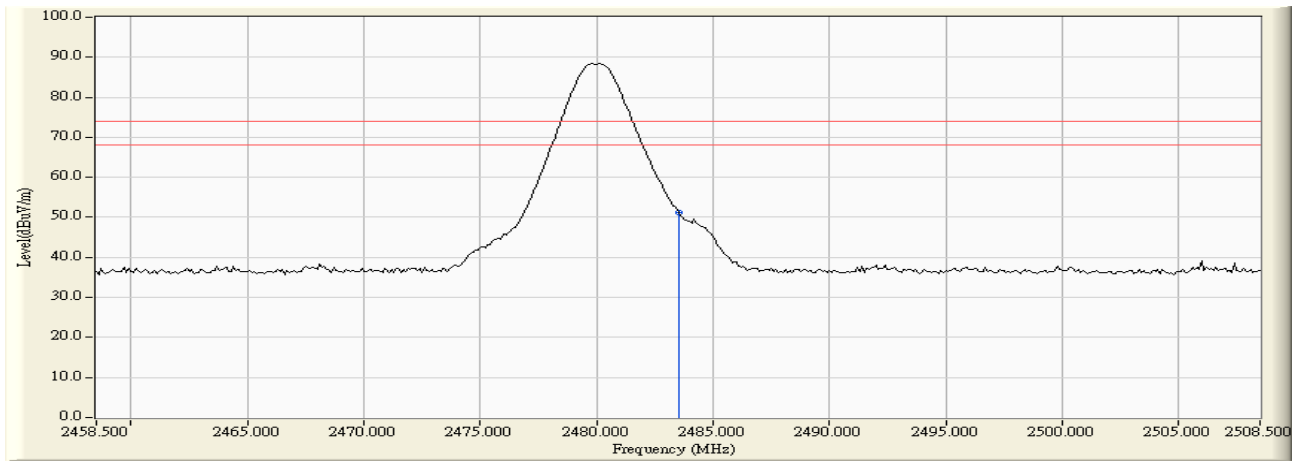
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : BT Module  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78 (Peak)	2483.500	-1.937	53.042	51.105	74.00	54.00	Pass

**Figure Channel 78: Horizontal (Peak)**



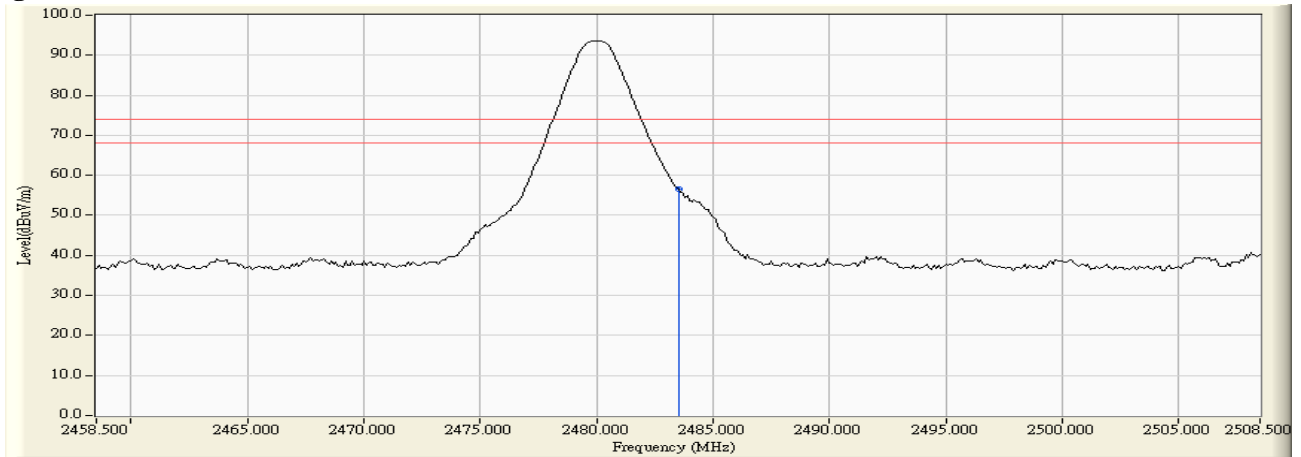
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : BT Module  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

**RF Radiated Measurement (Vertical):**

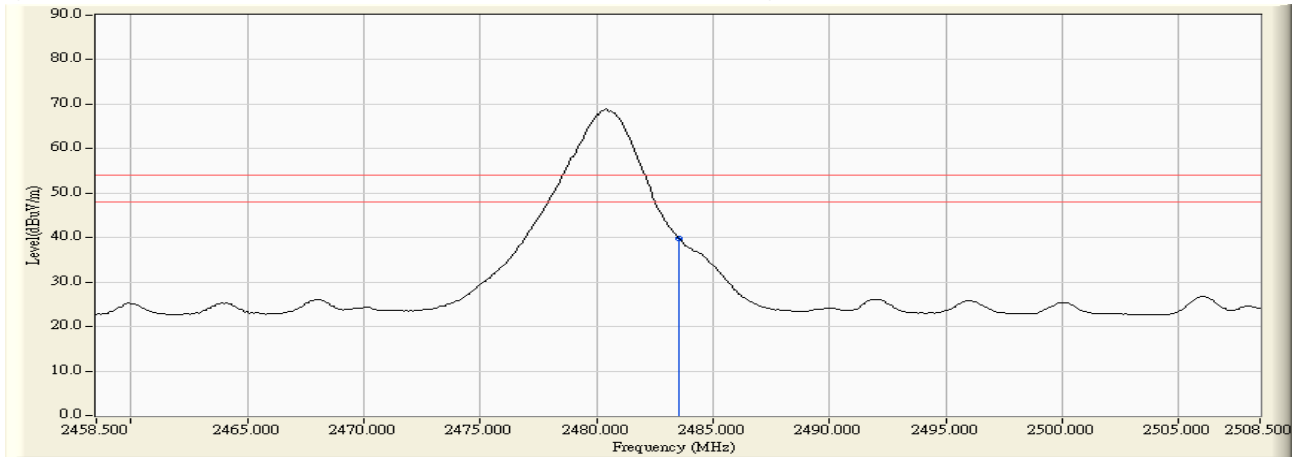
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78 (Peak)	2483.500	-1.937	58.427	56.490	74.00	54.00	Pass
78 (Average)	2483.500	-1.937	41.782	39.845	74.00	54.00	Pass

**Figure Channel 78: Vertical (Peak)**



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

**Figure Channel 78: Vertical (Average)**



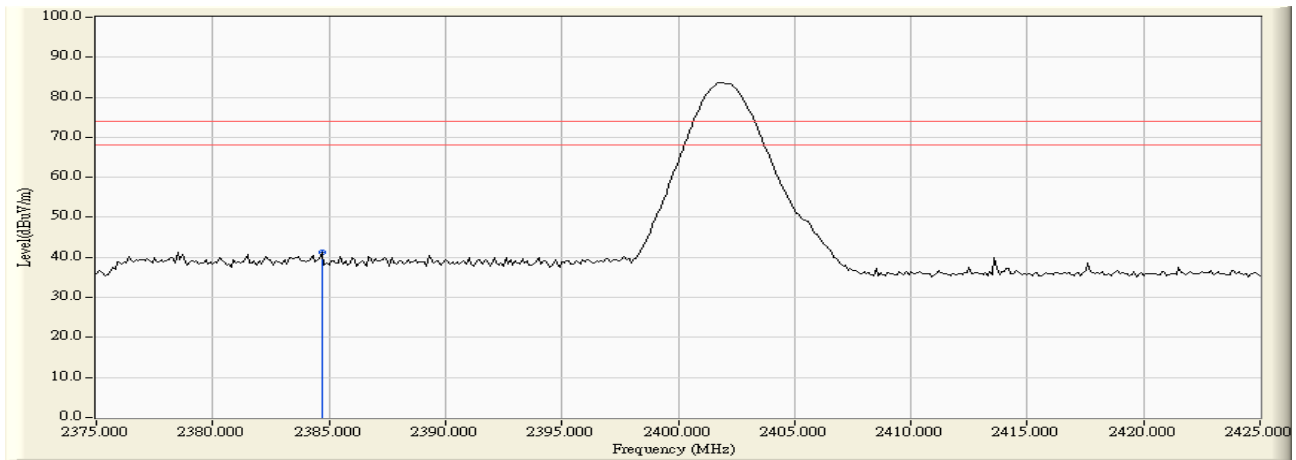
Note: RBW=1MHz, VBW=30Hz, Sweep=500ms

Product : BT Module  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2384.700	-2.403	43.759	41.356	74.00	54.00	Pass

**Figure Channel 00: Horizontal (Peak)**



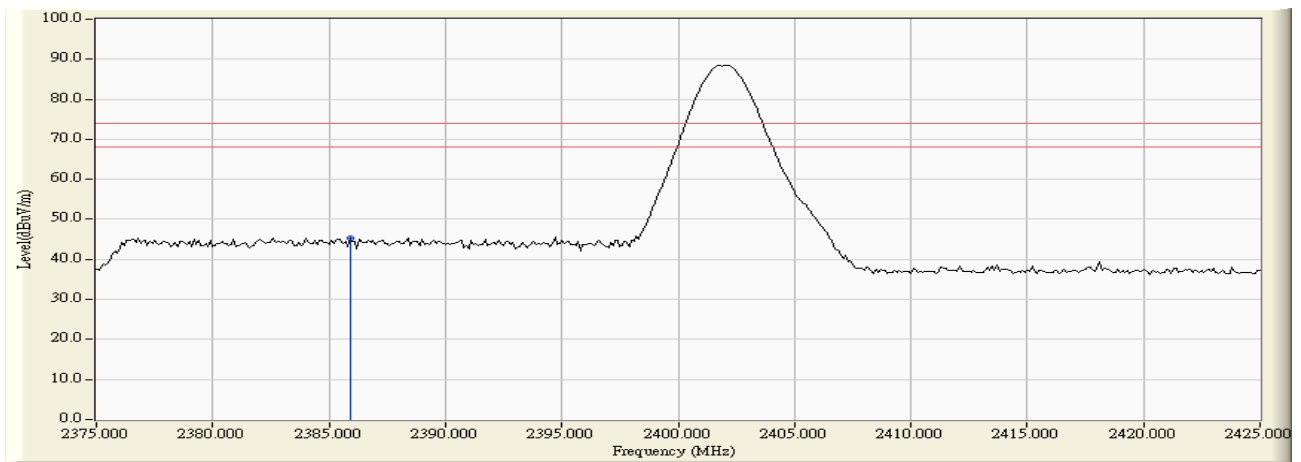
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : BT Module  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

**RF Radiated Measurement (Vertical):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2385.900	-2.397	47.766	45.369	74.00	54.00	Pass

**Figure Channel 00: Vertical (Peak)**



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

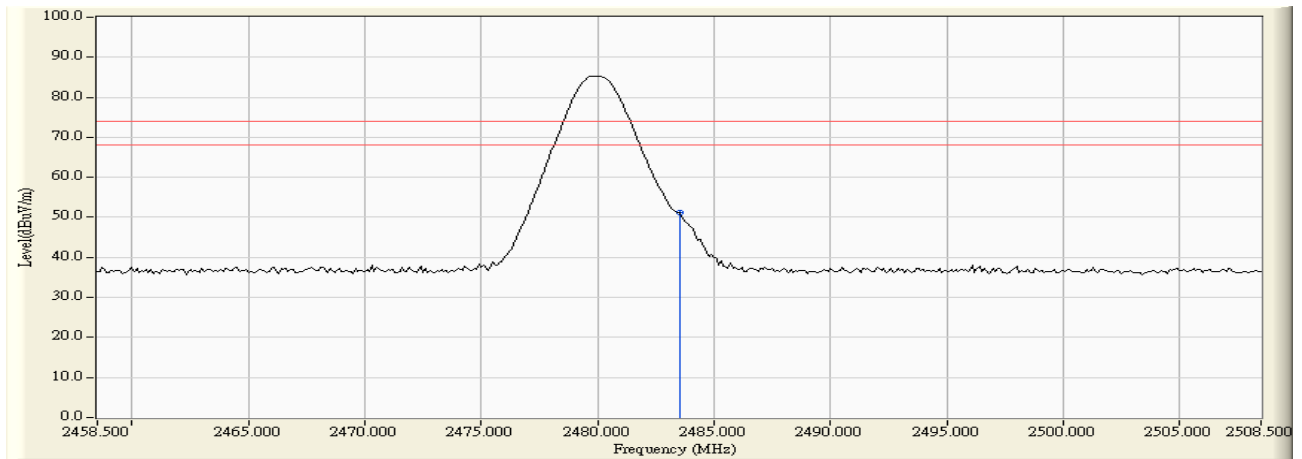
Product : BT Module  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78 (Peak)	2483.500	-1.937	53.020	51.083	74.00	54.00	Pass

**Figure Channel 78:**

**Horizontal (Peak)**



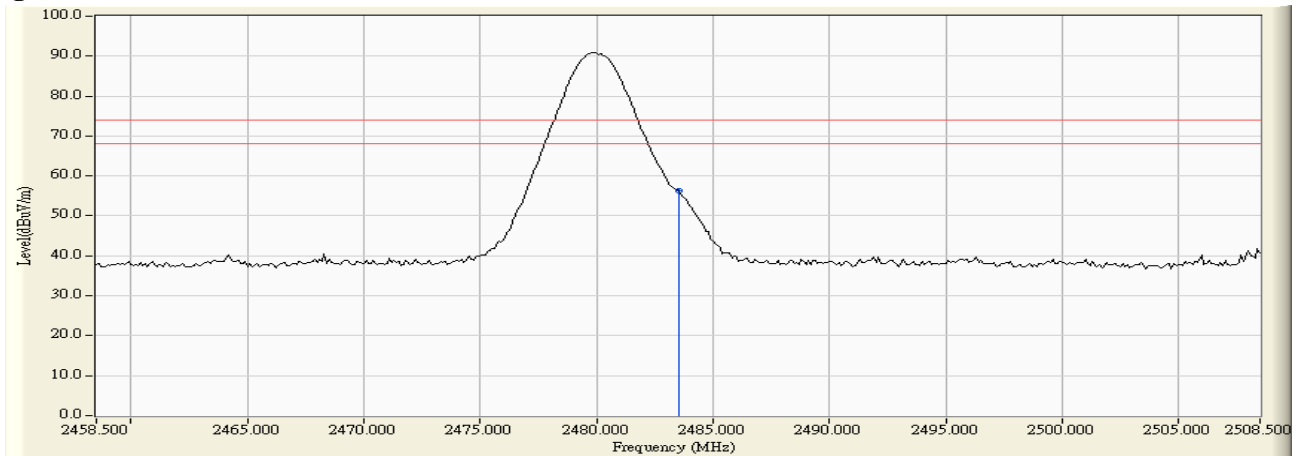
Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

Product : BT Module  
 Test Item : Band Edge  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

**RF Radiated Measurement (Vertical):**

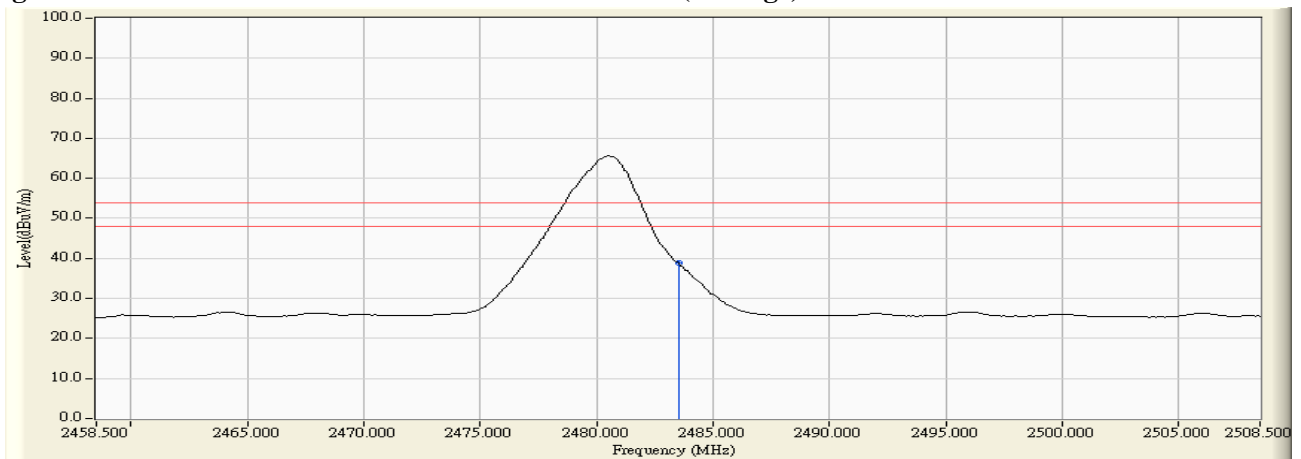
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78 (Peak)	2483.500	-1.937	58.269	56.332	74.00	54.00	Pass
78 (Average)	2483.500	-1.937	40.741	38.804	74.00	54.00	Pass

**Figure Channel 78: Vertical (Peak)**



Note: RBW=1MHz, VBW=1MHz, Sweep=500ms

**Figure Channel 78: Vertical (Average)**



Note: RBW=1MHz, VBW=30Hz, Sweep=500ms

**7. Channel Number**

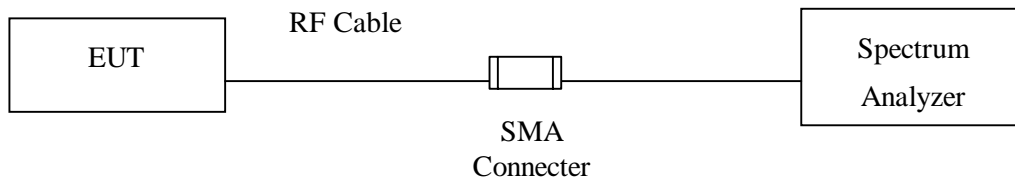
**7.1. Test Equipment**

The following test equipments are used during the radiated emission tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2007
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007

Note: 1. All equipments are calibrated every one year.  
 2. The test instruments marked by “X” are used to measure the final test results.

**7.2. Test Setup**



**7.3. Limit**

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

**7.4. Test Procedure**

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

**7.5. Uncertainty**

N/A

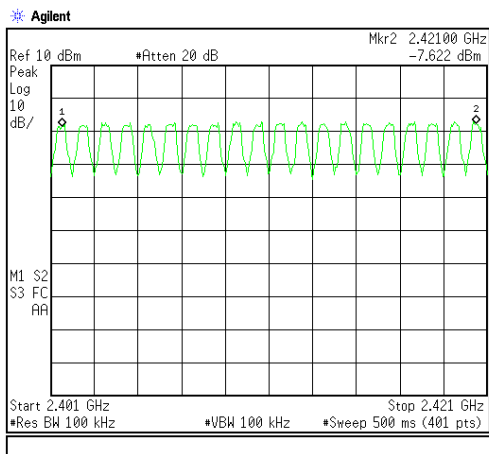


### 7.6. Test Result of Channel Number

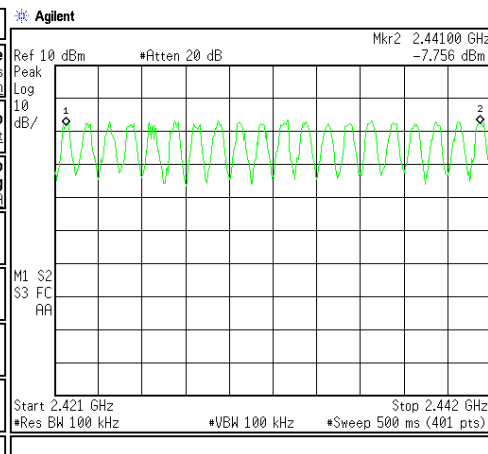
Product : BT Module  
 Test Item : Channel Number  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

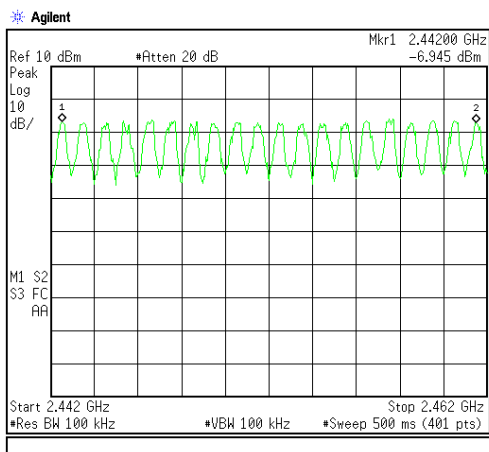
**2402-2421MHz**



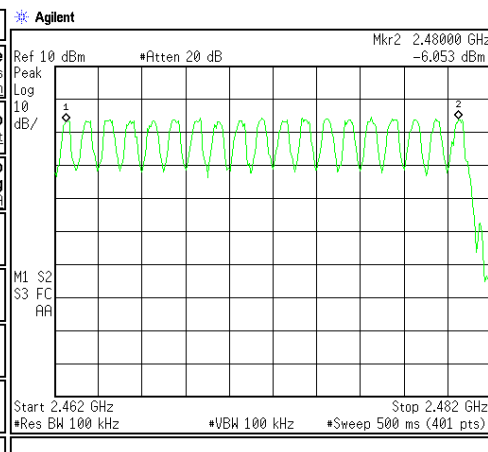
**2422-2441MHz**



**2442-2461MHz**



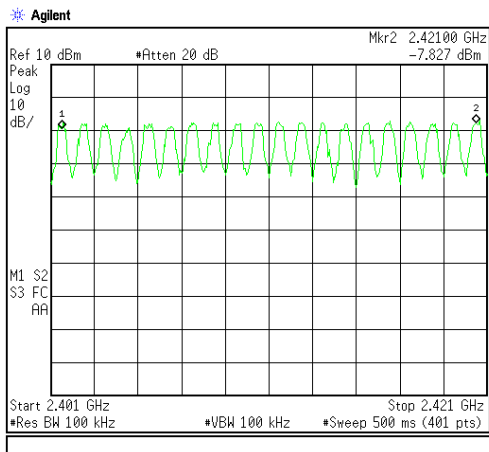
**2462-2480MHz**



Product : BT Module  
 Test Item : Channel Number  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

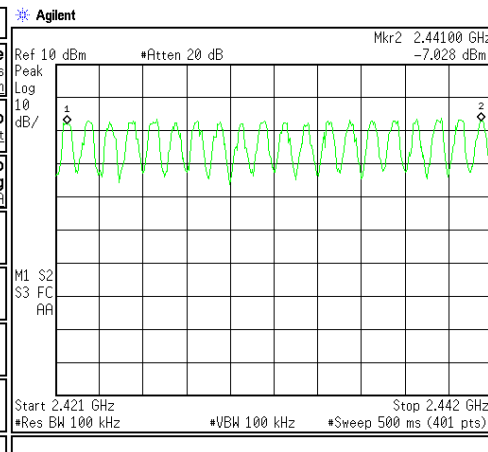
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

**2402-2421MHz**



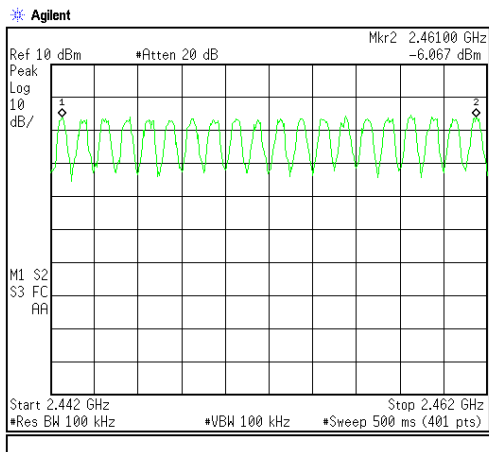
Sweep	
Sweep Time	500.0 ms
Auto	Man
Single	Cont
Auto Sweep	Coupling
SR	SA

**2422-2441MHz**



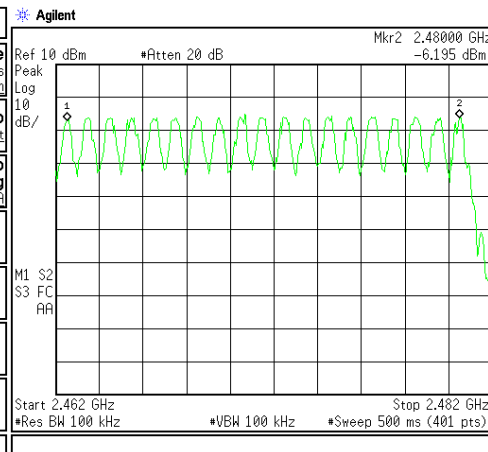
Sweep	
Sweep Time	500.0 ms
Auto	Man
Single	Cont
Auto Sweep	Coupling
SR	SA

**2442-2461MHz**



Sweep	
Sweep Time	500.0 ms
Auto	Man
Single	Cont
Auto Sweep	Coupling
SR	SA

**2462-2480MHz**



Sweep	
Sweep Time	500.0 ms
Auto	Man
Single	Cont
Auto Sweep	Coupling
SR	SA

**8. Channel Separation**

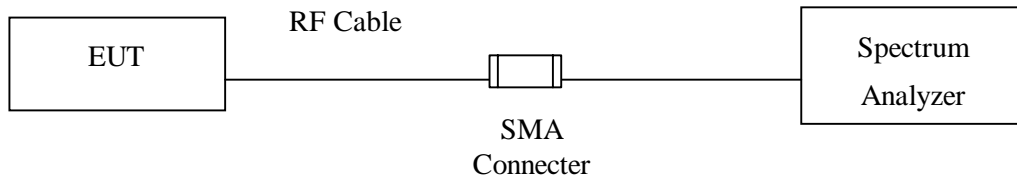
**8.1. Test Equipment**

The following test equipments are used during the radiated emission tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2007
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007

- Note: 1. All equipments are calibrated every one year.  
 2. The test instruments mark by “X” are used to measure the final test results.

**8.2. Test Setup**



**8.3. Limit**

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

**8.4. Test Procedure**

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

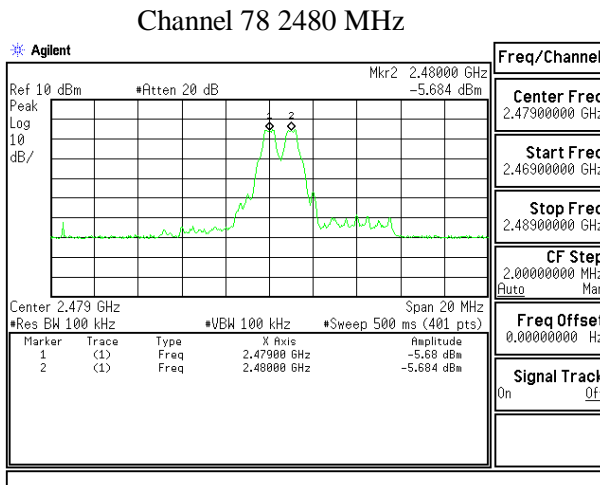
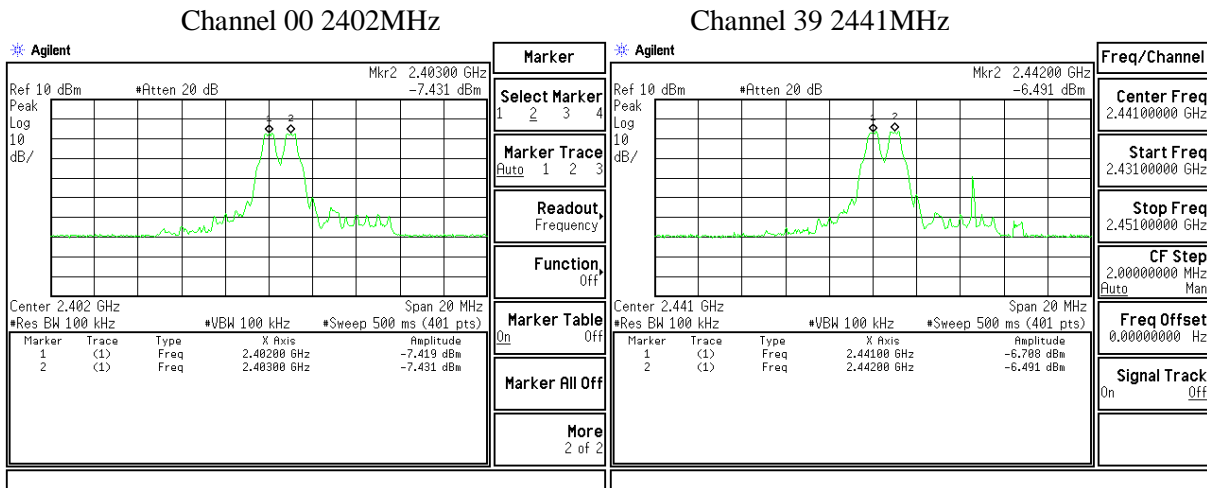
**8.5. Uncertainty**

± 150Hz

### 8.6. Test Result of Channel Separation

Product : BT Module  
 Test Item : Channel Separation  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)

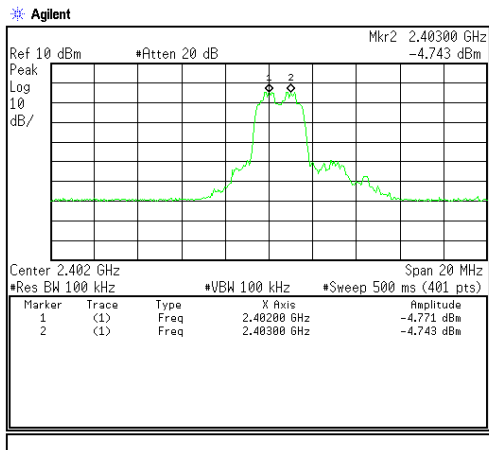
Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass



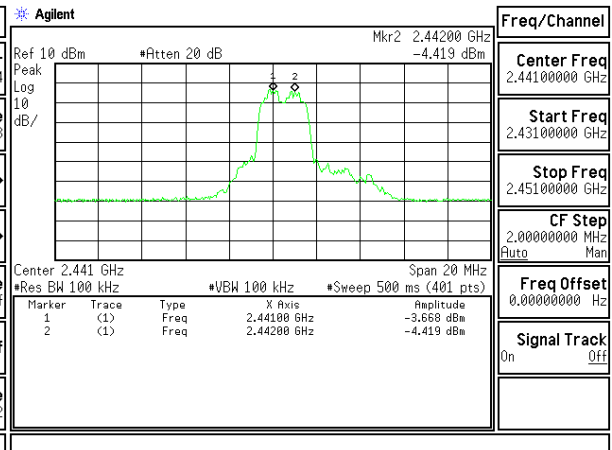
Product : BT Module  
 Test Item : Channel Separation  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)

Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

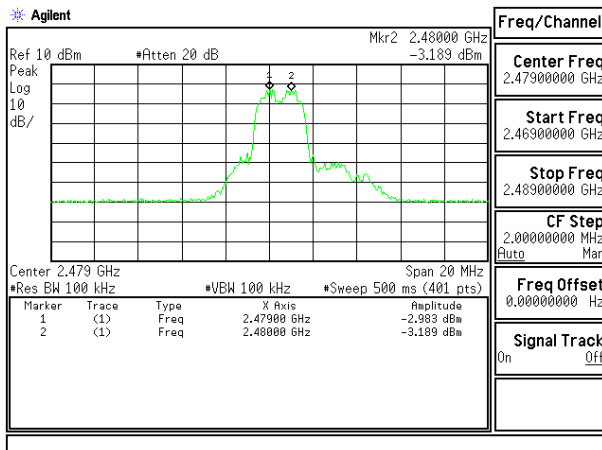
Channel 00 2402MHz



Channel 39 2441MHz



Channel 78 2480 MHz



**9. Dwell Time**

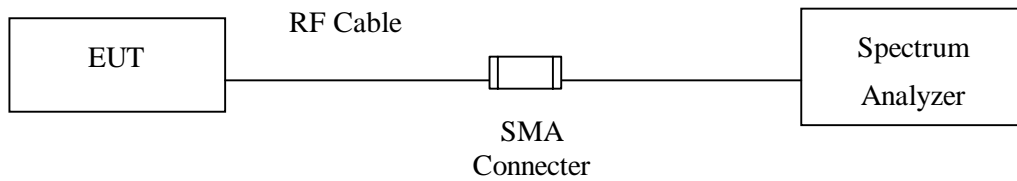
**9.1. Test Equipment**

The following test equipments are used during the radiated emission tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2007
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007

- Note:
1. All equipments are calibrated every one year.
  2. The test instruments marked by "X" are used to measure the final test results.

**9.2. Test Setup**



**9.3. Limit**

The dwell time shall be the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 30 second period.

**9.4. Test Procedure**

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

**9.5. Uncertainty**

± 25msec

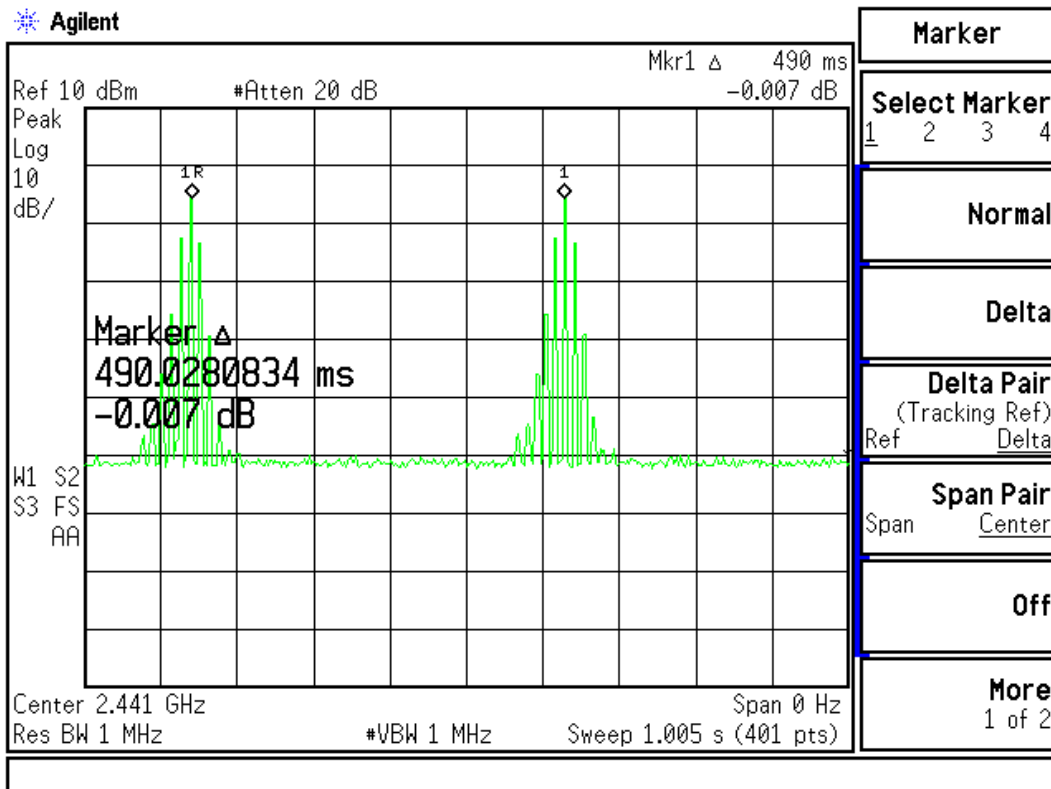
**9.6. Test Result of Dwell Time**

Product : BT Module  
 Test Item : Dwell Time  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(DH5)

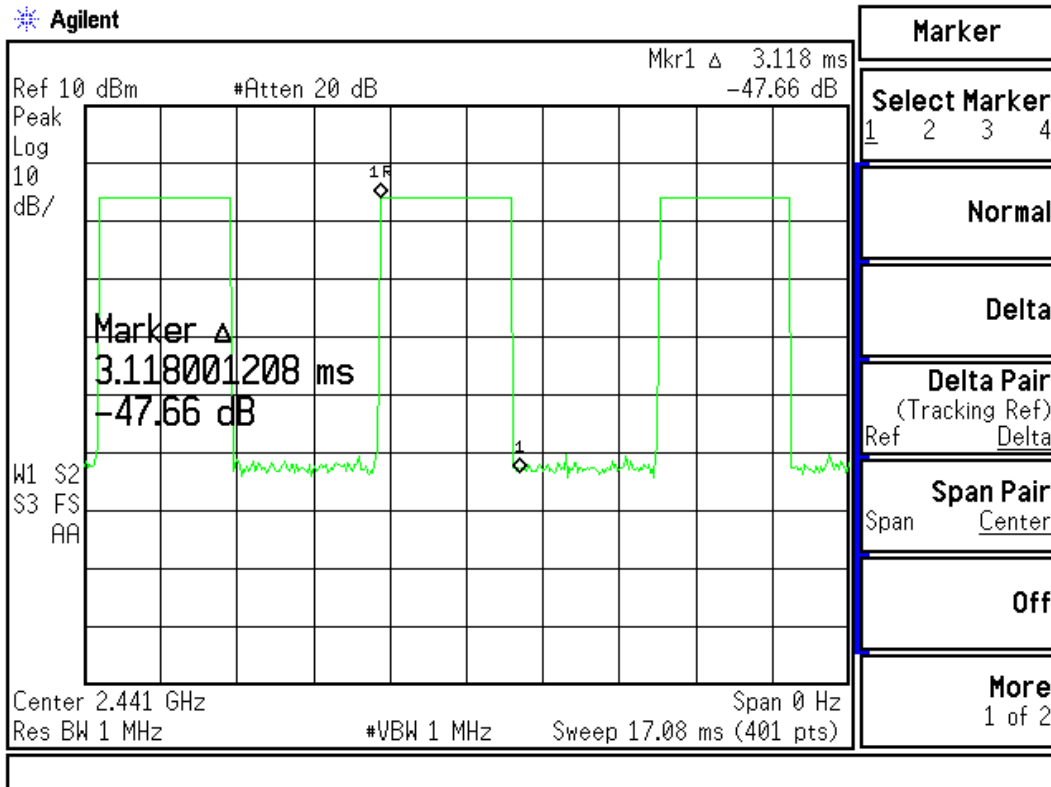
Channel No.	Frequency (MHz)	Time Interval between hops (ms)	Transmission Time (us)	Dwell Time (ms)	Limit (ms)	Result
39	2441	490.028	3118	200.9643469	400	Pass

Note: Dwell Time = 79 \* 400 / Time Interval Between Hops \* Transmission Time / 1000

**CH39 Time Interval between hops**



**CH39 Transmission Time**



Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case DH5 is shown on the report.

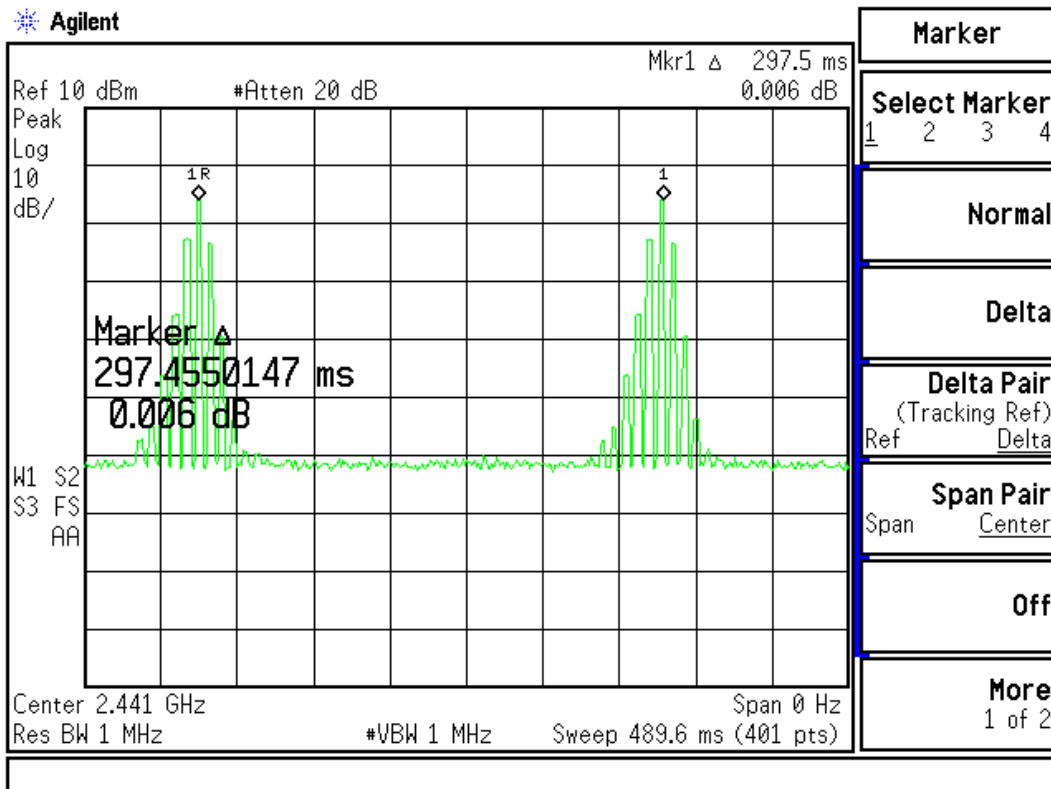


Product : BT Module  
 Test Item : Dwell Time  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(DH5)

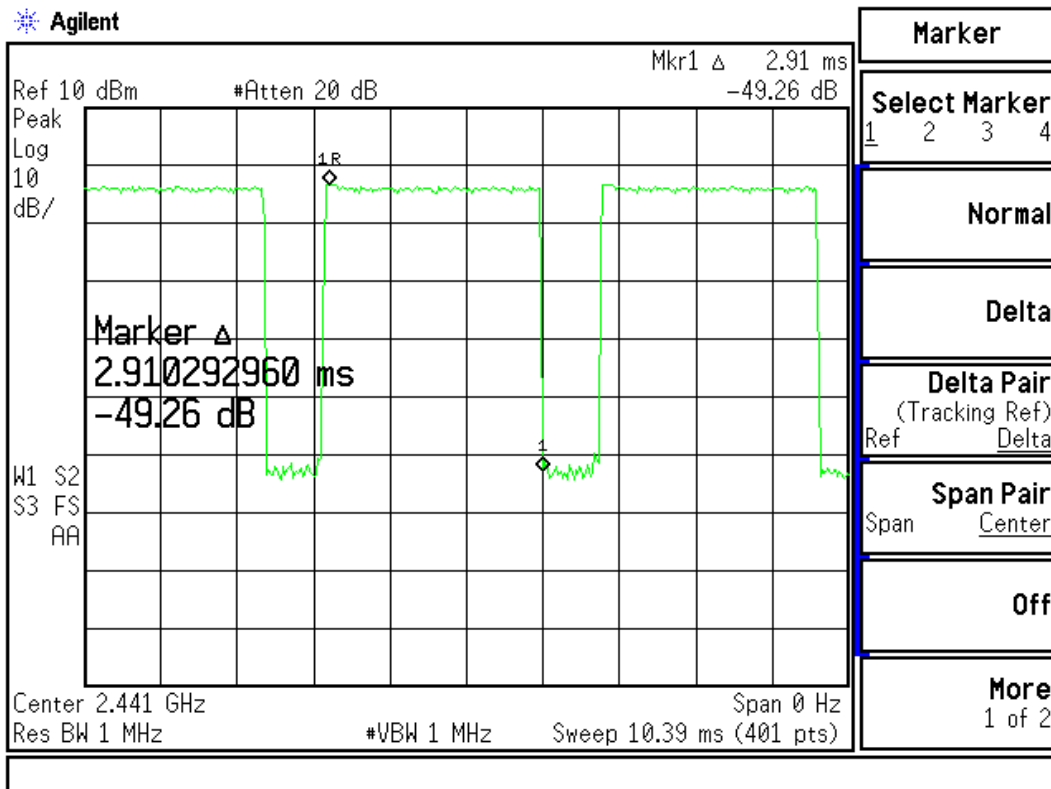
Channel No.	Frequency (MHz)	Time Interval between hops (ms)	Transmission Time (us)	Dwell Time (ms)	Limit (ms)	Result
39	2441	297.455	2910	309.1425594	400	Pass

Note: Dwell Time = 79 \* 400 / Time Interval Between Hops \* Transmission Time / 1000

**CH39 Time Interval between hops**



### CH39 Transmission Time



Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case DH5 is shown on the report.

**10. Occupied Bandwidth**

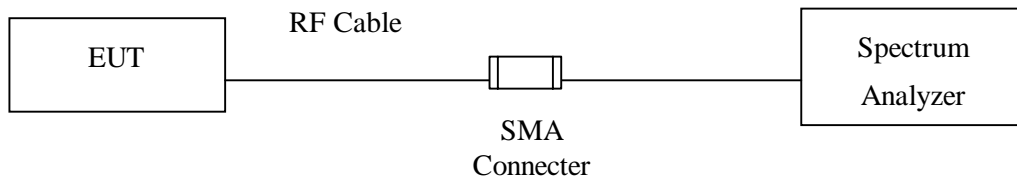
**10.1. Test Equipment**

The following test equipments are used during the radiated emission tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R & S	FSP40 / 100170	Nov, 2007
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007

- Note: 1. All equipments are calibrated every one year.  
 2. The test instruments marked by “X” are used to measure the final test results.

**10.2. Test Setup**



**10.3. Limits**

N/A

**10.4. Test Procedure**

The EUT was setup to ANSI C63.4, 2003; tested to FHSS test procedure of FCC Public Notice DA 00-705 for compliance to FCC 47CFR 15.247 requirements.

**10.5. Uncertainty**

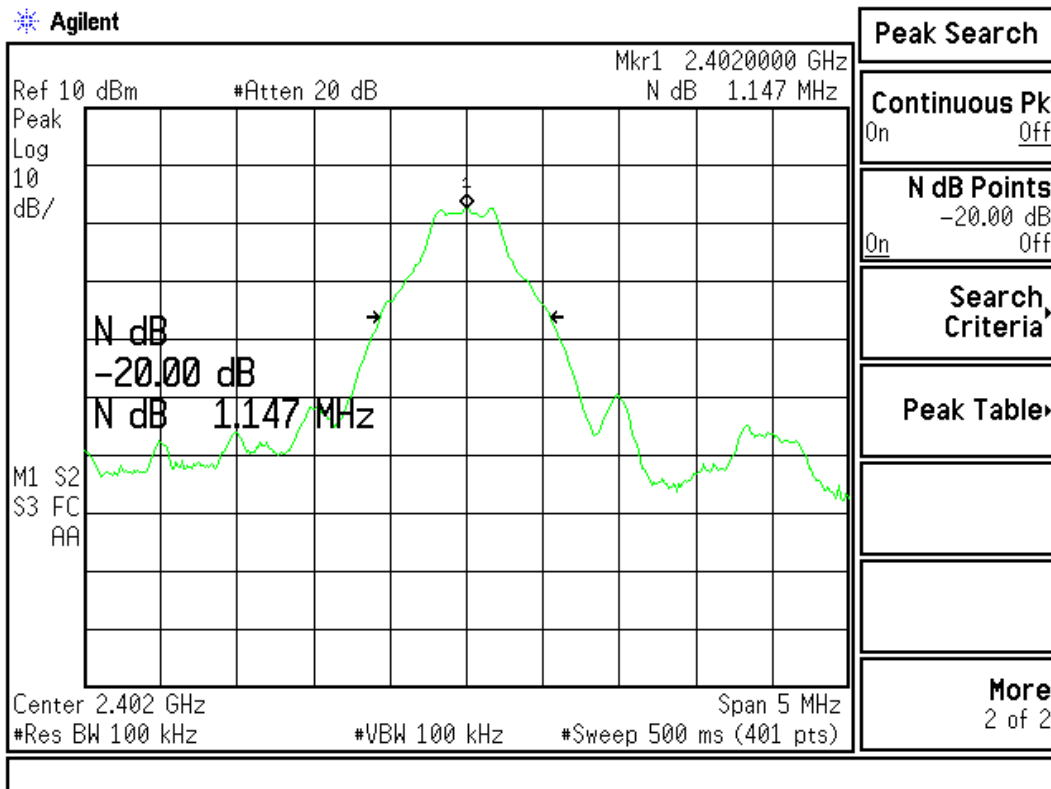
± 150Hz

**10.6. Test Result of Occupied Bandwidth**

Product : BT Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1147	--	NA

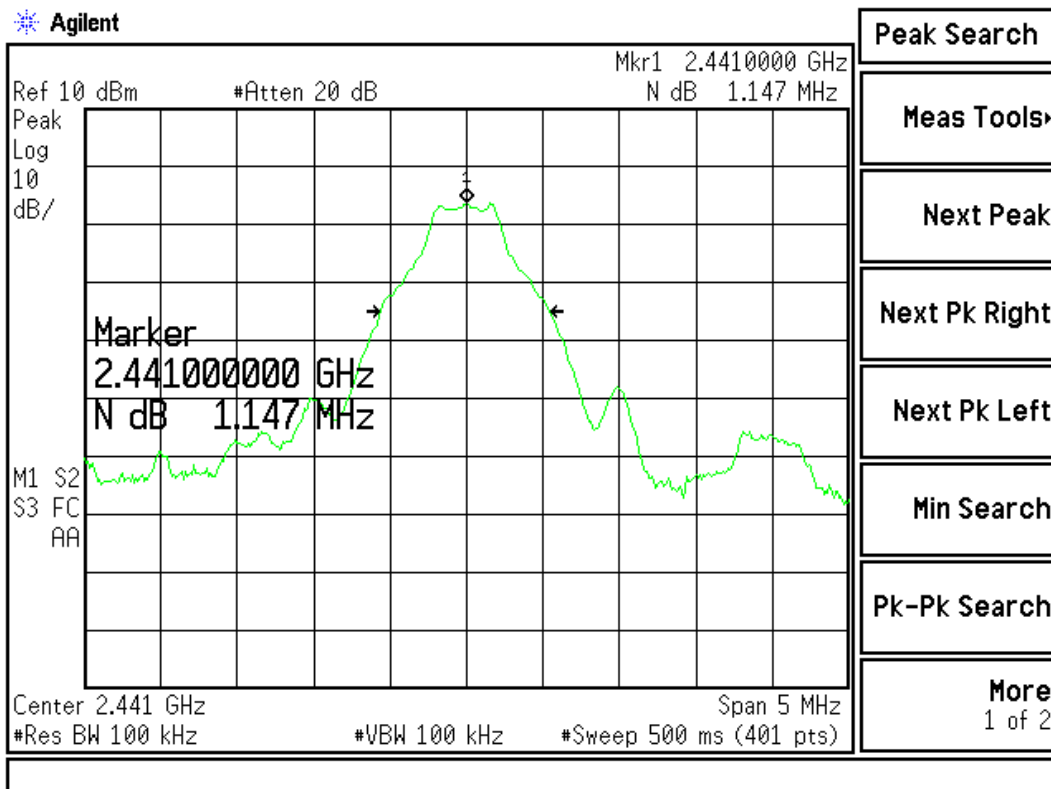
**Figure Channel 00:**



Product : BT Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2441MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1147	--	NA

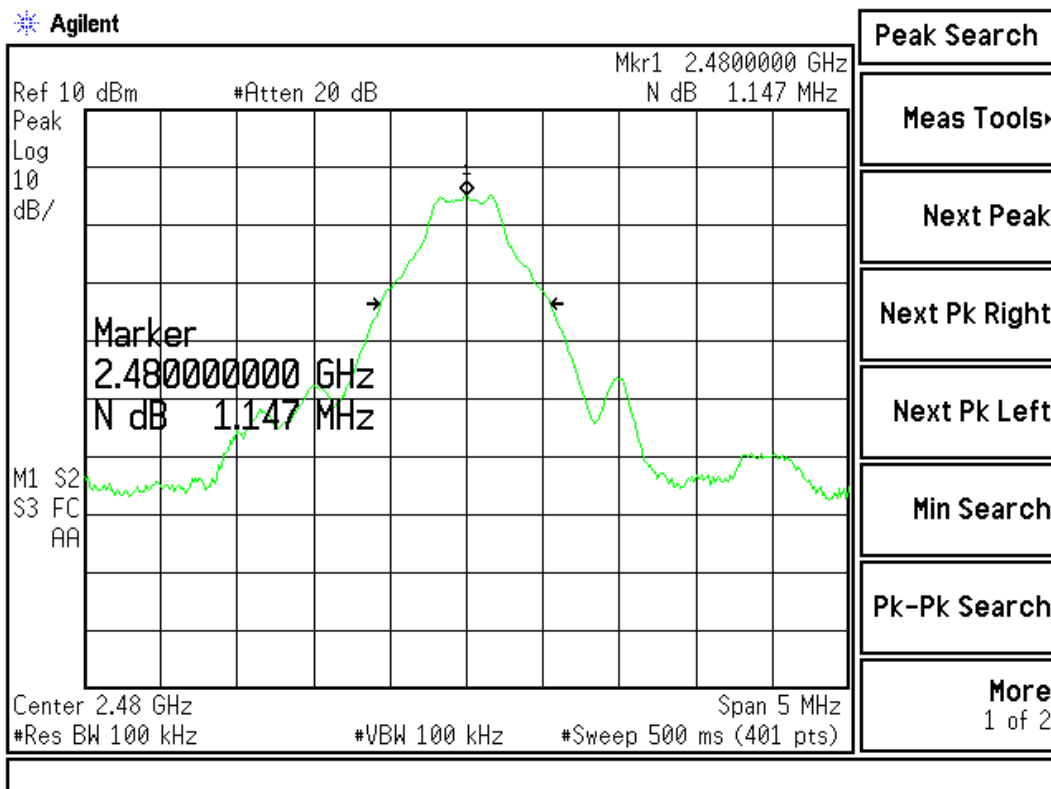
**Figure Channel 39:**



Product : BT Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter - 1Mbps (GFSK)(2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1147	--	NA

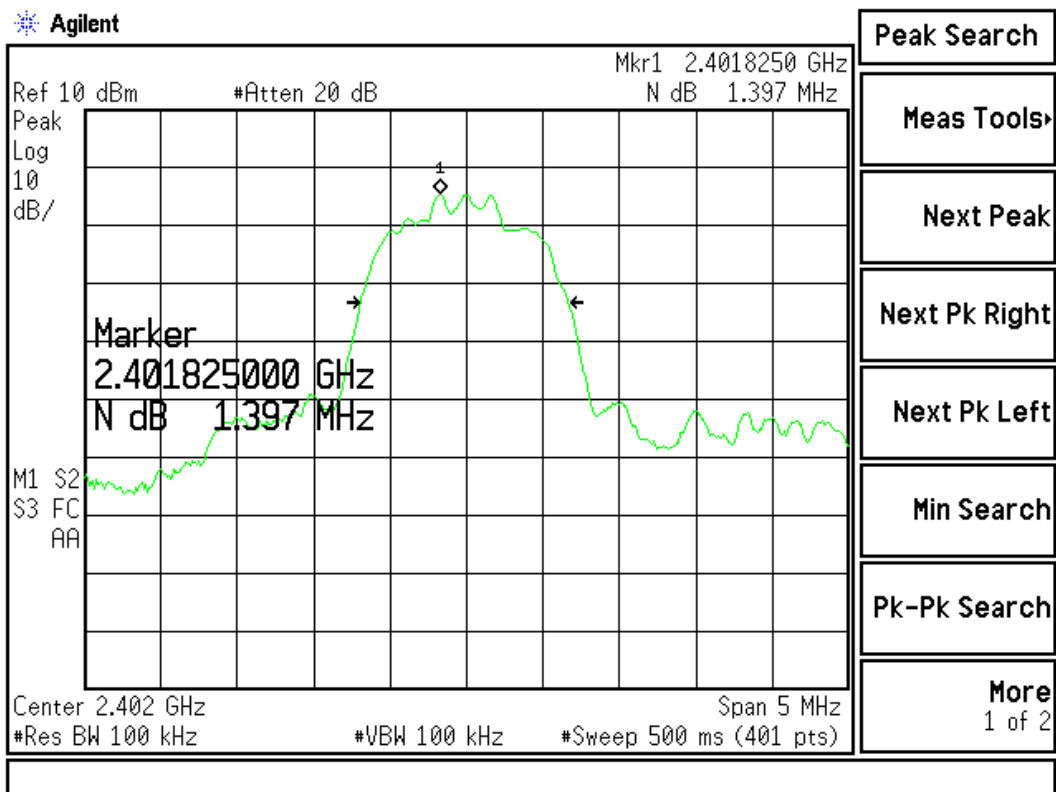
**Figure Channel 78:**



Product : BT Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1397	--	NA

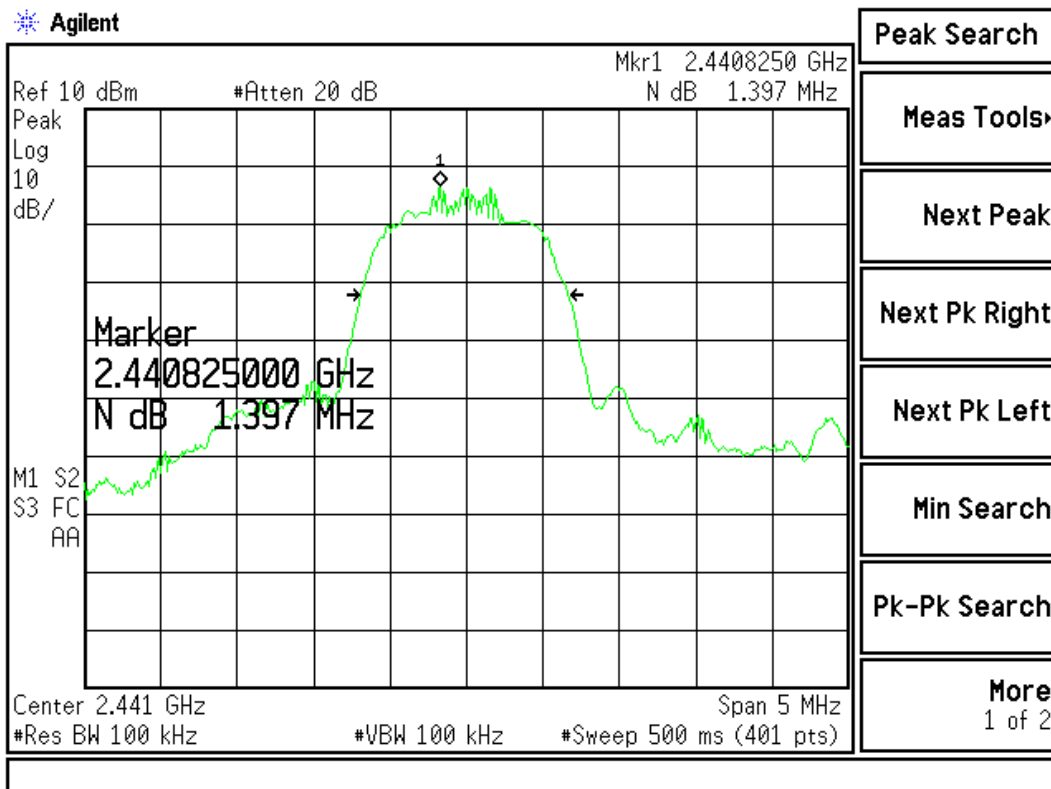
**Figure Channel 00:**



Product : BT Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK) (2441MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1397	--	NA

**Figure Channel 39:**

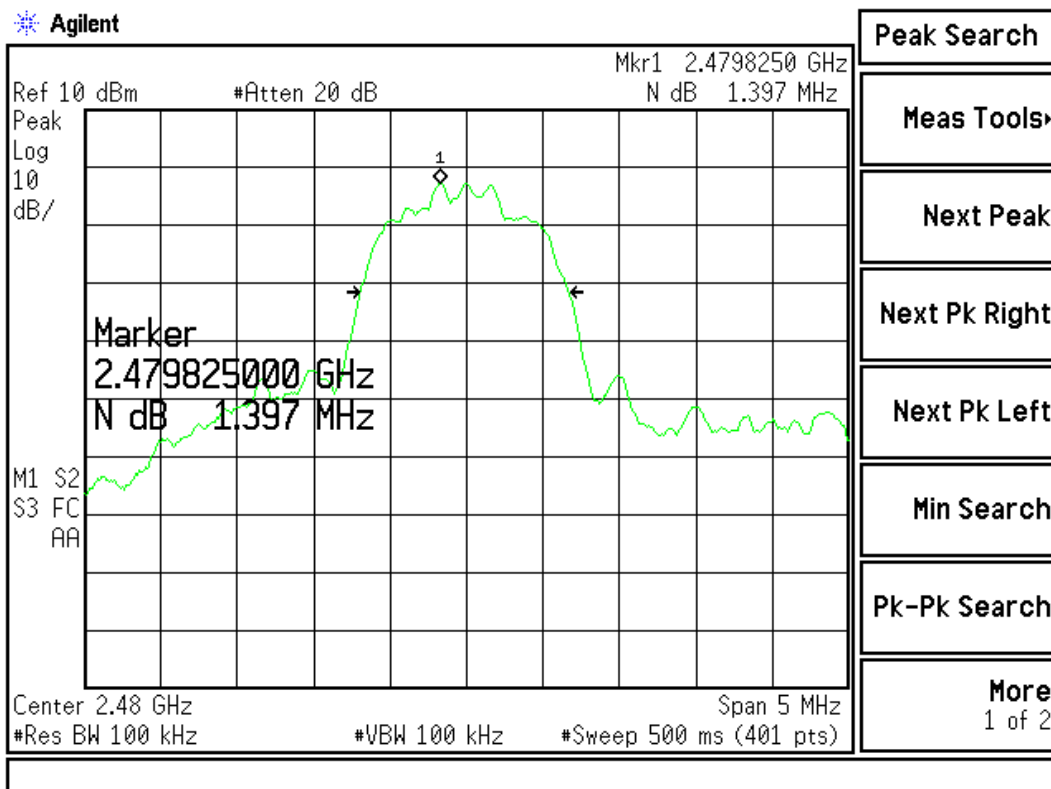




Product : BT Module  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter - 3Mbps (8DPSK)(2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1400	--	NA

**Figure Channel 78:**



## **11. EMI Reduction Method During Compliance Testing**

No modification was made during testing.