



Test Report

Product Name	Notebook
Model No.	MS-1637, PR600, PR601, MS-1636, EX600, EX601, MS-1634, GS610, MS-163B, VR610
FCC ID.	I4L-MS6837D6

Applicant	MICRO-STAR INTL Co., LTD.
Address	No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan, R.O.C.

Date of Receipt	March 07, 2007
Issued Date	June 20, 2007
Report No.	073L039-RFUSP06V01

The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.

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

Test Report Certification

Issued Date: June 20, 2007

Report No.: 073L039-RFUSP06V01



Product Name	Notebook
Applicant	MICRO-STAR INTL Co., LTD.
Address	No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan, R.O.C.
Manufacturer	MICRO-STAR INTL Co., LTD.
Model No.	MS-1637, PR600, PR601, MS-1636, EX600, EX601, MS-1634, GS610, MS-163B, VR610
FCC ID.	I4L-MS6837D6
Rated Voltage	AC 120V/60Hz
Working Voltage	DC 5V
Trade Name	MSI
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2006 ANSI C63.4: 2003
Test Result	Complied



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Documented By : Rita Huang
 (Engineering Adm. Specialist / Rita Huang)



Tested By : Tom Hsieh
 (Engineer / Tom Hsieh)

Approved By : Gene Chang
 (President / Gene Chang)



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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Notebook
Trade Name	MSI
FCC ID.	I4L-MS6837D6
Model No.	MS-1637, PR600, PR601, MS-1636, EX600, EX601, MS-1634, GS610, MS-163B, VR610
Frequency Range	2402 - 2480MHz
Channel Number	79
Type of Modulation	1Mbps (GFSK)/ 2Mbps($\pi/4$ DQPSK)/3Mbps(8DPSK)
Antenna type	Connector / Printed
Channel Control	Auto
Antenna Gain	Refer to the table "Antenna List"
Power Adapter	MFR: LI SHIN, M/N: LSE0202C1990 Cable Out: Non-Shielded, 1.8m with one ferrite core bonded. Power Cord: Non-Shielded, 1.8m

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	HIGH-TEK	S79-1800280-H39	0.96dBi for 2.4 GHz
2	MSI	MS-6837D (Printed Antenna)	-4.11dBi for 2.4GHz

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 a Notebook with a built-in 2.4GHz Bluetooth 2.0+EDR(Enhanced Data Rate) transceiver.
2. The EUT is including ten models for different marketing requirement.
3. 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.
4. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
5. 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 Notebook with a built-in 2.4GHz Bluetooth 2.0+EDR(Enhanced Data Rate) transceiver. The number of the channels is 79 in 2402-2480MHz. The device adapts the frequency hopping spread spectrum modulation. The antenna is connector-type 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)- Antenna 1
	Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1
	Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2
	Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2

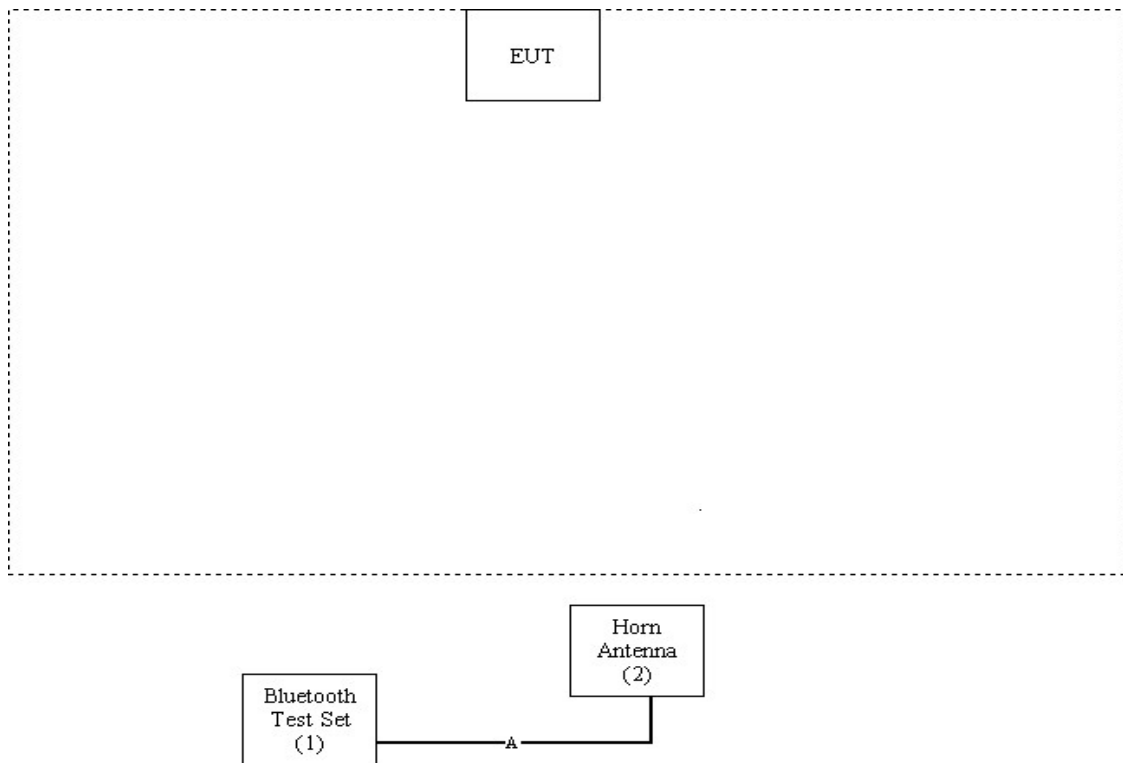
1.3. Tested System Details

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)	Bluetooth Test Set	Anritsu	MT8852B	6K00006092	Non-Shielded, 1.8m
(2)	Horn Antenna	Schwarzbeck	BBHA9120D	305	N/A

Signal Cable Type	Signal cable Description
A. RF Cable	Shielded, 1.5m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- 1 Setup the EUT and simulators as shown on 1.4.
- 2 Turn on the power of all equipment.
- 3 Messages will be transmitted and received through EUT.
- 4 Test is based on the mandatory continuous transmitter.
- 5 Repeat the above procedure (3) to (4).

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
 FCC Engineering Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046
 Reference 31040/SIT1300F2



Accreditation on NVLAP
 NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation
 Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
 Lin-Kou Shiang, Taipei,
 Taiwan, R.O.C.
 TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
 E-Mail : service@quietek.com



FCC Accreditation Number: TW1014

2. Conducted Emission

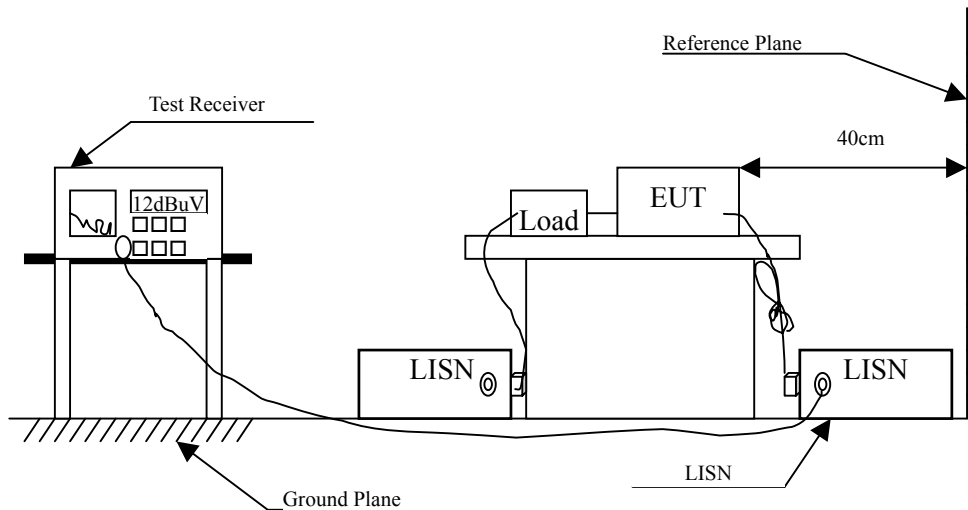
2.1. Test Equipment

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 30/825442/17	May, 2007	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2007	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2007	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2007	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
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.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

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

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 1					
Quasi-Peak					
0.185	0.753	35.450	36.203	-28.797	65.000
0.380	0.300	37.330	37.630	-21.799	59.429
0.697	0.310	35.280	35.590	-20.410	56.000
1.392	0.330	35.520	35.850	-20.150	56.000
4.052	0.400	32.200	32.600	-23.400	56.000
21.904	1.140	27.220	28.360	-31.640	60.000
Average					
0.185	0.753	31.860	32.613	-22.387	55.000
0.380	0.300	36.940	37.240	-12.189	49.429
0.697	0.310	34.020	34.330	-11.670	46.000
1.392	0.330	34.500	34.830	-11.170	46.000
4.052	0.400	29.200	29.600	-16.400	46.000
21.904	1.140	24.600	25.740	-24.260	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 : Notebook
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 1: Transmitter -1Mbps(GFSK)- Antenna 1 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 2					
Quasi-Peak					
0.188	0.300	41.530	41.830	-23.084	64.914
0.318	0.300	39.610	39.910	-21.290	61.200
0.505	0.310	36.700	37.010	-18.990	56.000
1.330	0.330	35.310	35.640	-20.360	56.000
4.115	0.400	32.660	33.060	-22.940	56.000
7.220	0.450	27.600	28.050	-31.950	60.000
Average					
0.188	0.300	40.810	41.110	-13.804	54.914
0.318	0.300	39.230	39.530	-11.670	51.200
0.505	0.310	36.130	36.440	-9.560	46.000
1.330	0.330	32.700	33.030	-12.970	46.000
4.115	0.400	30.820	31.220	-14.780	46.000
7.220	0.450	23.440	23.890	-26.110	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 : Notebook
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 1					
Quasi-Peak					
0.396	0.300	37.460	37.760	-21.211	58.971
0.591	0.300	38.530	38.830	-17.170	56.000
1.248	0.320	36.860	37.180	-18.820	56.000
2.298	0.350	36.250	36.600	-19.400	56.000
4.861	0.430	31.890	32.320	-23.680	56.000
15.483	1.010	30.950	31.960	-28.040	60.000
Average					
0.396	0.300	36.930	37.230	-11.741	48.971
0.591	0.300	38.220	38.520	-7.480	46.000
1.248	0.320	36.060	36.380	-9.620	46.000
2.298	0.350	35.340	35.690	-10.310	46.000
4.861	0.430	28.710	29.140	-16.860	46.000
15.483	1.010	27.560	28.570	-21.430	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 : Notebook
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 2					
Quasi-Peak					
0.197	0.300	42.140	42.440	-22.217	64.657
0.326	0.300	41.390	41.690	-19.281	60.971
0.982	0.320	36.260	36.580	-19.420	56.000
2.099	0.350	35.310	35.660	-20.340	56.000
4.263	0.400	32.680	33.080	-22.920	56.000
15.405	0.900	28.780	29.680	-30.320	60.000
Average					
0.197	0.300	41.320	41.620	-13.037	54.657
0.326	0.300	40.770	41.070	-9.901	50.971
0.982	0.320	35.620	35.940	-10.060	46.000
2.099	0.350	33.130	33.480	-12.520	46.000
4.263	0.400	29.690	30.090	-15.910	46.000
15.405	0.900	24.430	25.330	-24.670	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 : Notebook
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 1					
Quasi-Peak					
0.228	0.203	32.720	32.923	-30.848	63.771
0.298	0.214	36.870	37.084	-24.687	61.771
0.348	0.214	33.120	33.334	-27.009	60.343
0.518	0.216	31.820	32.036	-23.964	56.000
0.583	0.217	37.160	37.377	-18.623	56.000
0.648	0.221	37.850	38.071	-17.929	56.000
Average					
0.228	0.203	31.880	32.083	-21.688	53.771
0.298	0.214	25.010	25.224	-26.547	51.771
0.348	0.214	24.820	25.034	-25.309	50.343
0.518	0.216	28.540	28.756	-17.244	46.000
0.583	0.217	30.490	30.707	-15.293	46.000
0.648	0.221	34.270	34.491	-11.509	46.000

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 : Notebook
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 2					
Quasi-Peak					
0.225	0.202	26.550	26.752	-37.105	63.857
0.290	0.207	37.580	37.787	-24.213	62.000
0.350	0.214	30.400	30.614	-29.672	60.286
0.522	0.216	33.120	33.336	-22.664	56.000
0.580	0.217	34.060	34.277	-21.723	56.000
0.645	0.218	35.000	35.218	-20.782	56.000
Average					
0.225	0.202	22.440	22.642	-31.215	53.857
0.290	0.207	33.800	34.007	-17.993	52.000
0.350	0.214	27.300	27.514	-22.772	50.286
0.522	0.216	32.610	32.826	-13.174	46.000
0.580	0.217	25.290	25.507	-20.493	46.000
0.645	0.218	30.940	31.158	-14.842	46.000

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 : Notebook
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 1					
Quasi-Peak					
0.226	0.203	31.020	31.223	-32.606	63.829
0.351	0.214	34.750	34.964	-25.293	60.257
0.522	0.216	36.130	36.346	-19.654	56.000
0.645	0.220	37.240	37.460	-18.540	56.000
0.950	0.232	34.990	35.222	-20.778	56.000
1.227	0.246	32.880	33.126	-22.874	56.000
Average					
0.226	0.203	29.870	30.073	-23.756	53.829
0.351	0.214	32.720	32.934	-17.323	50.257
0.522	0.216	35.610	35.826	-10.174	46.000
0.645	0.220	32.880	33.100	-12.900	46.000
0.950	0.232	24.020	24.252	-21.748	46.000
1.227	0.246	28.080	28.326	-17.674	46.000

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 : Notebook
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
LINE 2					
Quasi-Peak					
0.236	0.203	36.970	37.173	-26.370	63.543
0.289	0.207	36.760	36.967	-25.062	62.029
0.351	0.214	32.110	32.324	-27.933	60.257
0.519	0.216	31.360	31.576	-24.424	56.000
0.579	0.217	33.630	33.847	-22.153	56.000
0.647	0.218	35.930	36.148	-19.852	56.000
Average					
0.236	0.203	27.450	27.653	-25.890	53.543
0.289	0.207	32.410	32.617	-19.412	52.029
0.351	0.214	29.960	30.174	-20.083	50.257
0.519	0.216	28.940	29.156	-16.844	46.000
0.579	0.217	24.440	24.657	-21.343	46.000
0.647	0.218	32.340	32.558	-13.442	46.000

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

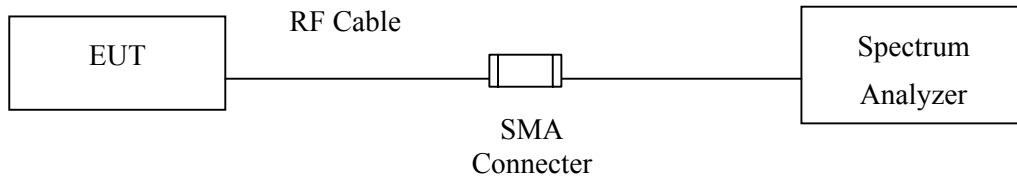
3.1. Test Equipment

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

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

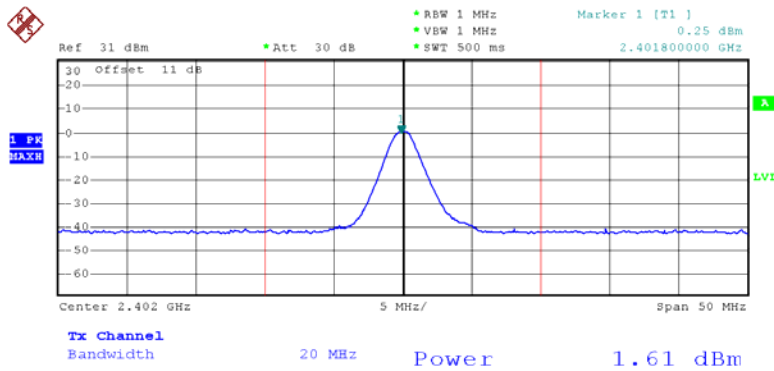
± 1.27 dB

3.5. Test Result of Peak Power Output

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

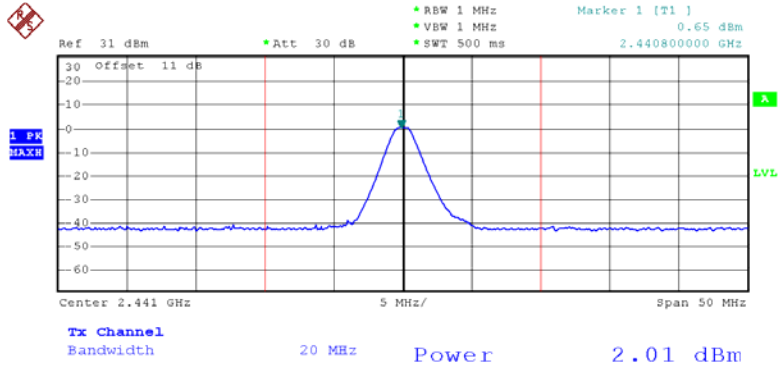
Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	1.16dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	2.01dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	2.64dBm	1 Watt= 30 dBm	Pass

Channel 00



PN1
 Date: 7.MAY.2007 11:05:09

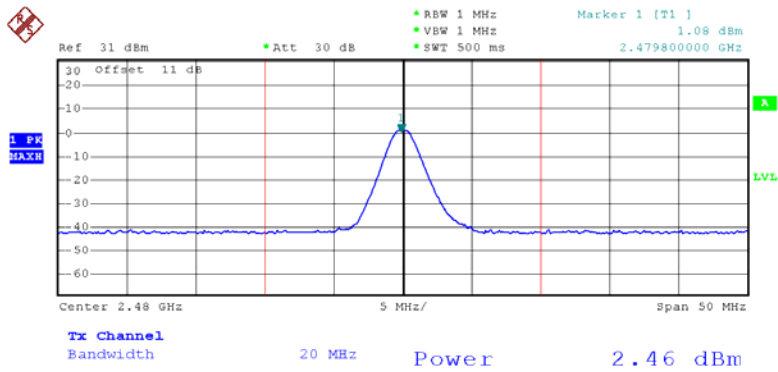
Channel 39



PN1

Date: 7.MAY.2007 11:05:50

Channel 78

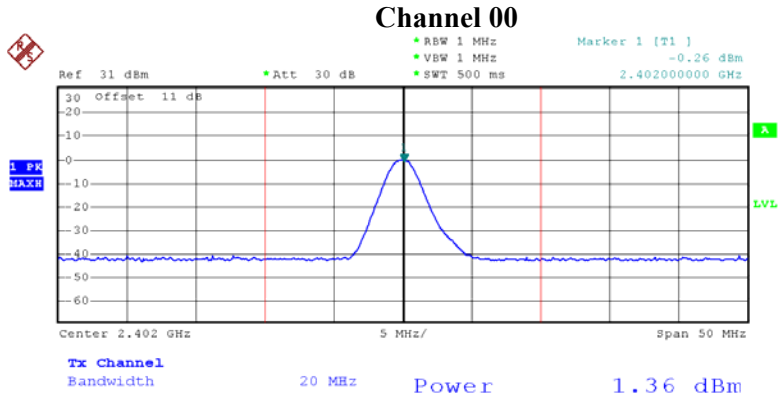


PN1

Date: 7.MAY.2007 11:06:39

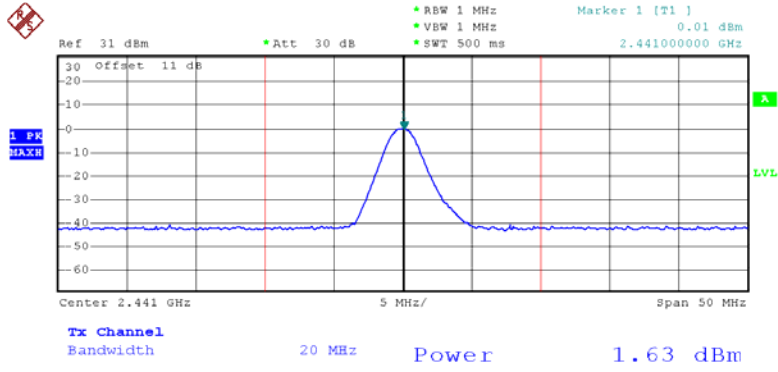
Product : Notebook
 Test Item : Peak Power Output
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1

Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	1.36dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	1.63dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	1.88dBm	1 Watt= 30 dBm	Pass



PN1
 Date: 7.MAY.2007 11:08:49

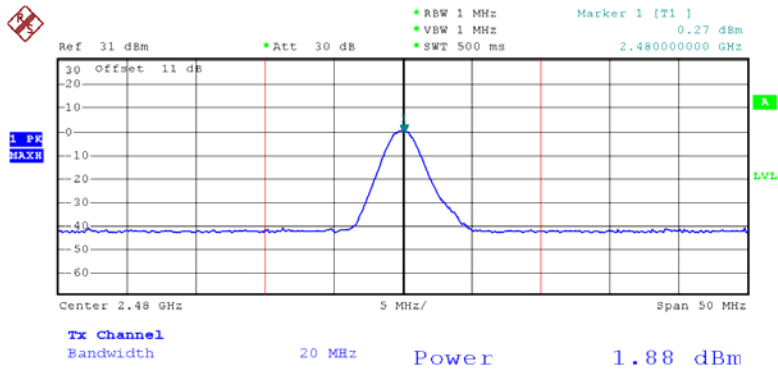
Channel 39



PN1

Date: 7.MAY.2007 11:09:37

Channel 78



PN1

Date: 7.MAY.2007 11:10:28

4. Radiated Emission

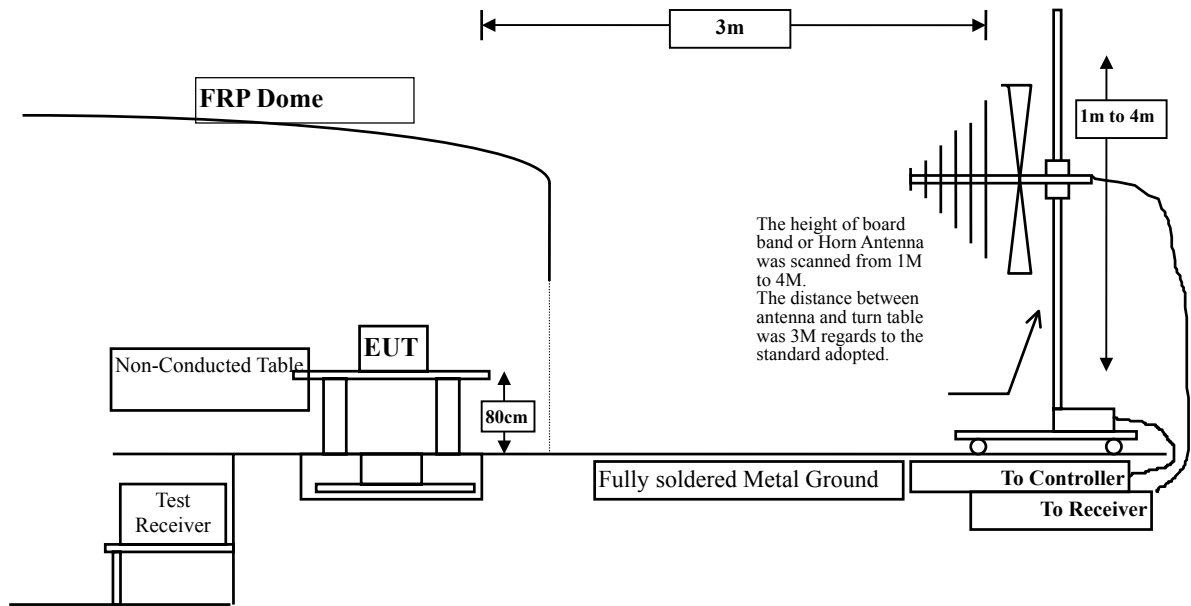
4.1. Test Equipment

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

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input type="checkbox"/> Site # 1	Test Receiver	R & S	ESVS 10 / 834468/003	May, 2007
	Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2007
	Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2007
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Sep., 2006
<input type="checkbox"/> Site # 2	Test Receiver	R & S	ESCS 30 / 836858 / 022	May, 2007
	Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2007
	Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2007
	Bilog Antenna	SCHAFFNER	CBL6112B / 2705	May, 2007
	Horn Antenna	ETS	3115 / 0005-6160	Sep., 2006
	Pre-Amplifier	QTK	QTK-AMP-01/ 0001	May, 2007
<input checked="" type="checkbox"/> Site # 3	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2007
	Spectrum Analyzer	HP	E4407B / US39440758	May, 2007
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2006
	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2006
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2006
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2007
	Pre-Amplifier	HP	8449B / 3008A01123	July, 2006

- 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



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 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 additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

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

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

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.663	44.616	48.278	-25.692	74.000
7206.000	9.357	40.439	49.795	-24.175	74.000
9608.000	11.842	37.688	49.530	-24.440	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.663	51.521	55.183	-18.787	74.000
7206.000	9.357	44.282	53.639	-20.331	74.000
9608.000	11.842	39.247	51.089	-22.881	74.000
Average Detector:					
4804.000	3.663	46.604	50.266	-3.704	54.000

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -1Mbps(GFSK)- Antenna 1(2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4882.000	3.921	44.465	48.386	-25.584	74.000
7323.000	9.657	41.297	50.954	-23.016	74.000
9764.000	11.798	38.445	50.243	-23.727	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4882.000	3.921	49.636	53.557	-20.413	74.000
7323.000	9.657	45.875	55.532	-18.438	74.000
9764.000	11.798	37.522	49.320	-24.650	74.000
Average Detector:					
7323.000	9.657	40.953	50.610	-3.360	54.000

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -1Mbps(GFSK)- Antenna 1(2480MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4960.000	4.197	44.687	48.883	-25.087	74.000
7440.000	9.951	42.195	52.146	-21.824	74.000
9920.000	11.856	37.875	49.731	-24.239	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4960.000	4.197	50.705	54.901	-19.069	74.000
7440.000	9.951	45.108	55.059	-18.911	74.000
9920.000	11.856	37.813	49.669	-24.301	74.000
Average Detector:					
4960.000	4.197	45.359	49.555	-4.415	54.000
7440.000	9.951	41.065	51.016	-2.954	54.000

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1 (2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.663	42.259	45.921	-28.049	74.000
7206.000	9.357	37.908	47.264	-26.706	74.000
9608.000	11.842	36.974	48.816	-25.154	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.663	44.515	48.177	-25.793	74.000
7206.000	9.357	40.910	50.266	-23.704	74.000
9608.000	11.842	38.011	49.853	-24.117	74.000
Average Detector:					
--					

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4882.000	3.921	41.851	45.772	-28.198	74.000
7323.000	9.657	37.934	47.591	-26.379	74.000
9764.000	11.798	37.461	49.259	-24.711	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4882.000	3.921	43.918	47.839	-26.131	74.000
7323.000	9.657	38.913	48.570	-25.400	74.000
9764.000	11.798	37.461	49.259	-24.711	74.000
Average Detector:					
--					

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1 (2480MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4960.000	4.197	42.523	46.719	-27.251	74.000
7440.000	9.951	39.834	49.785	-24.185	74.000
9920.000	11.856	38.454	50.310	-23.660	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4960.000	4.197	41.948	46.144	-27.826	74.000
7440.000	9.951	37.533	47.484	-26.486	74.000
9920.000	11.856	38.030	49.886	-24.084	74.000
Average Detector:					
--					

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.663	46.650	50.313	-23.657	74.000
7206.000	9.357	33.210	42.566	-31.404	74.000
9608.000	11.842	32.610	44.452	-29.518	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.663	51.620	55.283	-18.687	74.000
7206.000	9.357	32.840	42.196	-31.774	74.000
9608.000	11.842	32.680	44.522	-29.448	74.000
Average Detector:					
4804.000	3.663	48.280	51.943	-2.027	54.000

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4882.000	3.921	49.550	53.471	-20.499	74.000
7323.000	9.657	32.780	42.437	-31.533	74.000
9764.000	11.798	32.830	44.628	-29.342	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4882.000	3.921	50.250	54.171	-19.799	74.000
7323.000	9.657	32.200	41.857	-32.113	74.000
9764.000	11.798	33.970	45.768	-28.202	74.000
Average Detector:					
4882.000	3.921	47.390	51.311	-2.659	54.000

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2480MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4960.000	4.197	50.730	54.926	-19.044	74.000
7440.000	9.951	38.320	48.271	-25.699	74.000
9920.000	11.856	38.280	50.136	-23.834	74.000
Average Detector:					
4960.000	4.197	47.880	52.076	-1.894	54.000
Vertical					
Peak Detector:					
4960.000	4.197	49.890	54.086	-19.884	74.000
7440.000	9.951	38.280	48.231	-25.739	74.000
9920.000	11.856	38.410	50.266	-23.704	74.000
Average Detector:					
4960.000	4.197	47.370	51.566	-2.404	54.000

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2402MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4804.000	3.663	42.830	46.493	-27.477	74.000
7206.000	9.357	37.570	46.926	-27.044	74.000
9608.000	11.842	37.570	49.412	-24.558	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.663	45.450	49.113	-24.857	74.000
7206.000	9.357	36.550	45.906	-28.064	74.000
9608.000	11.842	38.000	49.842	-24.128	74.000
Average Detector:					
--					

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4882.000	3.921	42.520	46.441	-27.529	74.000
7323.000	9.657	38.480	48.137	-25.833	74.000
9764.000	11.798	36.850	48.648	-25.322	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4882.000	3.921	46.160	50.081	-23.889	74.000
7323.000	9.657	37.430	47.087	-26.883	74.000
9764.000	11.798	37.710	49.508	-24.462	74.000
Average Detector:					
--					

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:3KHz; 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 : Notebook
 Test Item : Harmonic Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2480MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4960.000	4.197	43.770	47.966	-26.004	74.000
7440.000	9.951	37.750	47.701	-26.269	74.000
9920.000	11.856	37.940	49.796	-24.174	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4960.000	4.197	45.600	49.796	-24.174	74.000
7440.000	9.951	37.550	47.501	-26.469	74.000
9920.000	11.856	38.420	50.276	-23.694	74.000
Average Detector:					
--					

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:3KHz; 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 : Notebook
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -1Mbps(GFSK)- Antenna 1(2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
236.100	11.505	13.200	24.705	-21.295	46.000
243.300	12.281	14.900	27.181	-18.819	46.000
270.100	13.522	19.000	32.522	-13.478	46.000
439.600	17.552	16.700	34.252	-11.748	46.000
471.100	18.728	16.400	35.128	-10.872	46.000
645.100	20.934	12.400	33.333	-12.667	46.000
Vertical					
214.300	10.667	13.400	24.067	-19.433	43.500
236.100	11.805	12.600	24.405	-21.595	46.000
371.300	16.645	13.600	30.245	-15.755	46.000
439.900	18.919	13.700	32.620	-13.380	46.000
671.100	19.950	10.210	30.160	-15.840	46.000
775.100	22.389	13.700	36.088	-9.912	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 : Notebook
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
170.600	10.167	11.640	21.807	-21.693	43.500
215.300	9.382	14.300	23.682	-19.818	43.500
272.300	13.301	16.300	29.601	-16.399	46.000
415.600	17.658	13.670	31.328	-14.672	46.000
440.300	17.570	10.600	28.169	-17.831	46.000
474.100	18.599	16.400	35.000	-11.000	46.000
Vertical					
170.600	9.760	12.300	22.060	-21.440	43.500
199.900	9.703	10.600	20.303	-23.197	43.500
224.100	10.659	10.670	21.329	-24.671	46.000
440.100	18.927	11.396	30.323	-15.677	46.000
711.100	21.454	14.300	35.754	-10.246	46.000
815.300	21.660	3.300	24.959	-21.041	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 : Notebook
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
170.600	10.167	12.300	22.467	-21.033	43.500
372.100	15.907	13.600	29.507	-16.493	46.000
473.600	18.650	16.300	34.950	-11.050	46.000
700.100	20.768	13.360	34.128	-11.872	46.000
760.100	21.990	11.600	33.589	-12.411	46.000
815.600	21.644	15.400	37.044	-8.956	46.000
Vertical					
237.100	11.930	12.200	24.130	-21.870	46.000
386.500	17.138	14.600	31.738	-14.262	46.000
471.100	18.438	16.340	34.778	-11.222	46.000
760.100	23.003	11.140	34.143	-11.857	46.000
815.600	21.567	14.340	35.907	-10.093	46.000
840.100	21.404	16.300	37.704	-8.296	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 : Notebook
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2441MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
199.600	9.694	10.600	20.293	-23.207	43.500
215.300	9.382	12.400	21.782	-21.718	43.500
371.600	15.943	13.600	29.543	-16.457	46.000
440.100	17.564	11.360	28.924	-17.076	46.000
672.300	20.587	13.630	34.218	-11.782	46.000
786.100	21.649	13.840	35.489	-10.511	46.000
Vertical					
170.600	9.760	10.100	19.860	-23.640	43.500
199.600	9.698	10.360	20.058	-23.442	43.500
224.100	10.659	10.560	21.219	-24.781	46.000
385.000	17.116	14.600	31.716	-14.284	46.000
501.300	18.355	11.360	29.715	-16.285	46.000
785.600	22.199	13.820	36.018	-9.982	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.

5. Band Edge

5.1. Test Equipment

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

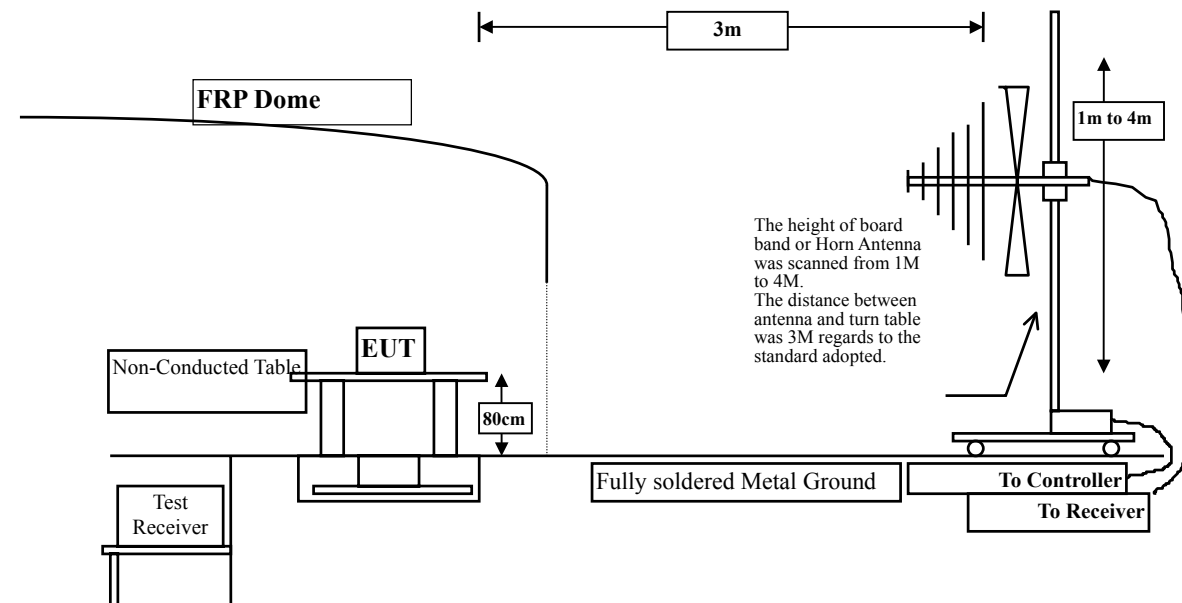
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2007
X	Spectrum Analyzer	HP	E4407B / US39440758	May, 2007
X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2006
X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2006
X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2006
X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2007
X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2006

Test Site Site 3

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

5.2. Test Setup

RF Radiated Measurement:



5.3. 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)).

5.4. 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.

5.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

5.6. Test Result of Band Edge

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -1Mbps(GFSK)- Antenna 1(2402MHz)

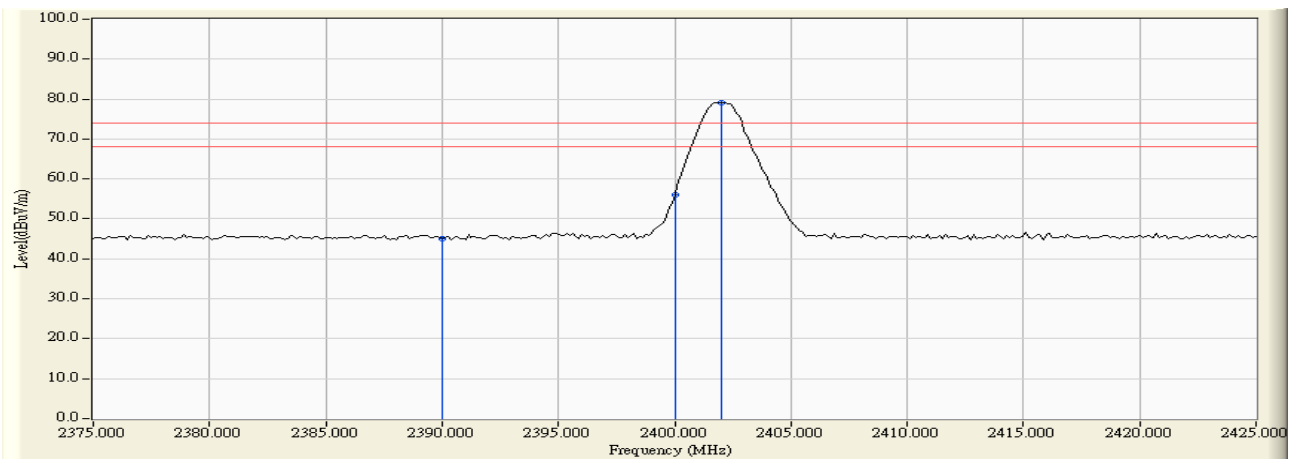
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-2.378	47.467	45.090	74.00	54.00	Pass
00 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Horizontal) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -1Mbps(GFSK)- Antenna 1(2402MHz)

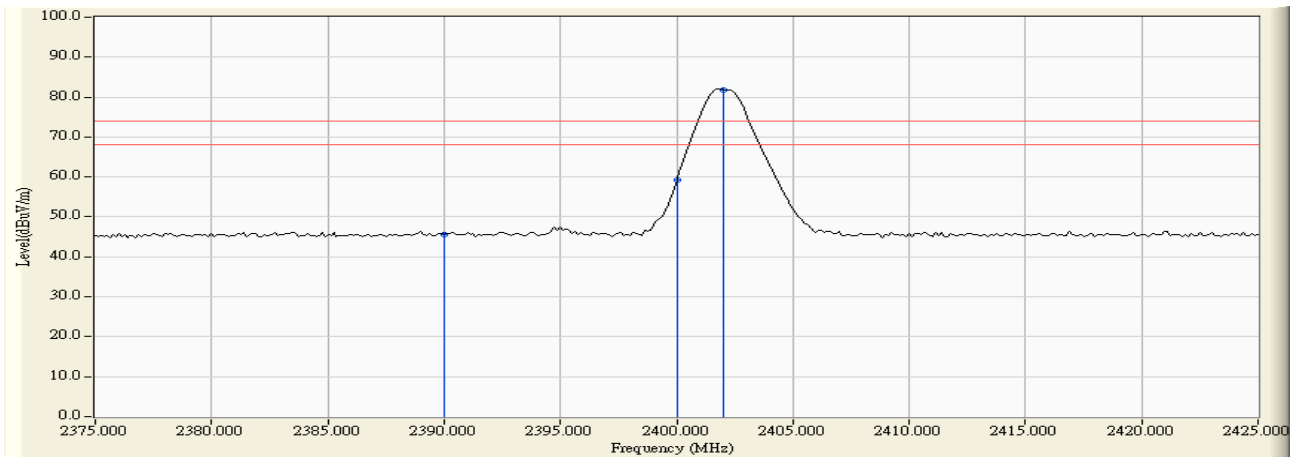
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-2.378	47.831	45.454	74.00	54.00	Pass
00(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Vertical) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -1Mbps(GFSK)- Antenna 1(2480MHz)

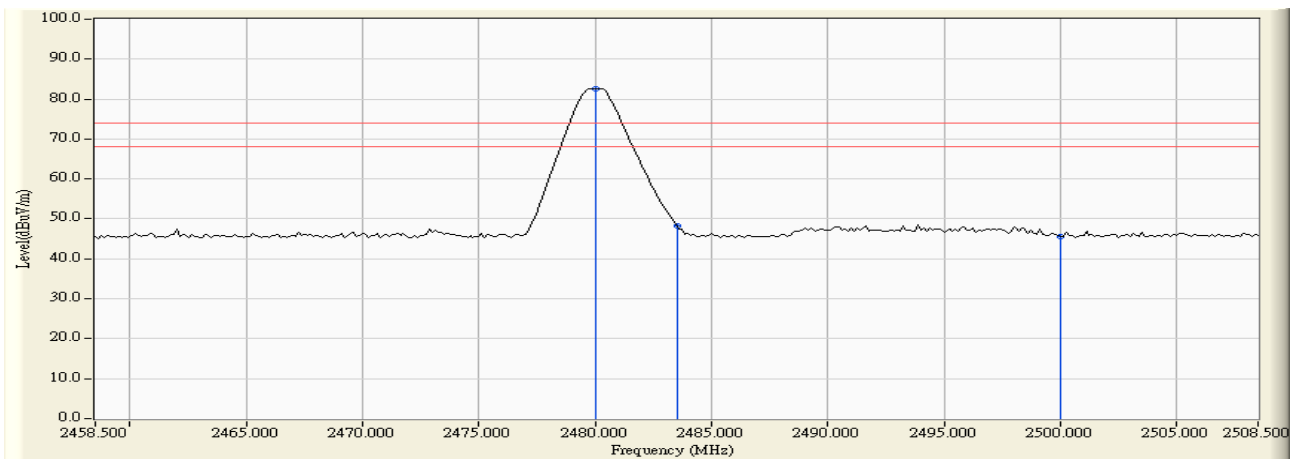
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Horizontal):

Channel	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	50.175	48.238	74.00	54.00	Pass
78(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 78: (Horizontal) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -1Mbps(GFSK)- Antenna 1(2480MHz)

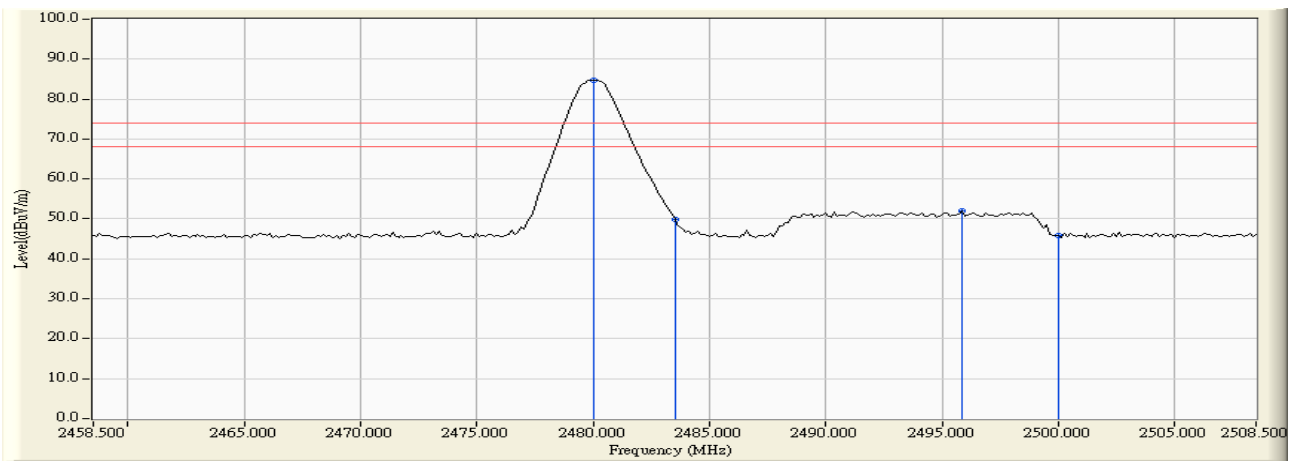
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2495.875	-1.898	53.814	51.916	74.00	54.00	Pass
78(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 78: (Vertical) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Note: 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 : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1(2402MHz)

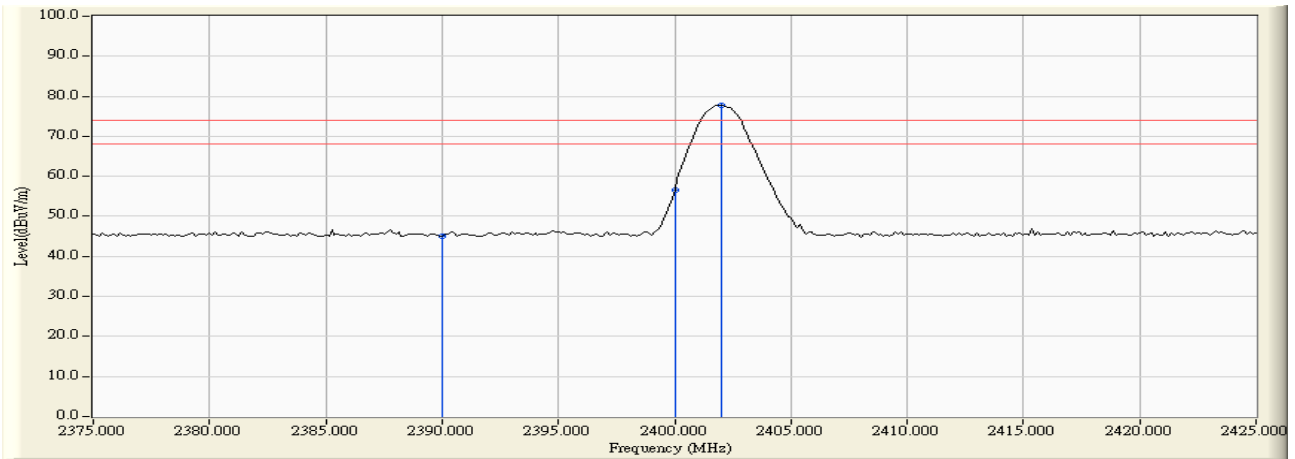
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-2.378	47.477	45.100	74.00	54.00	Pass
00 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Horizontal) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1(2402MHz)

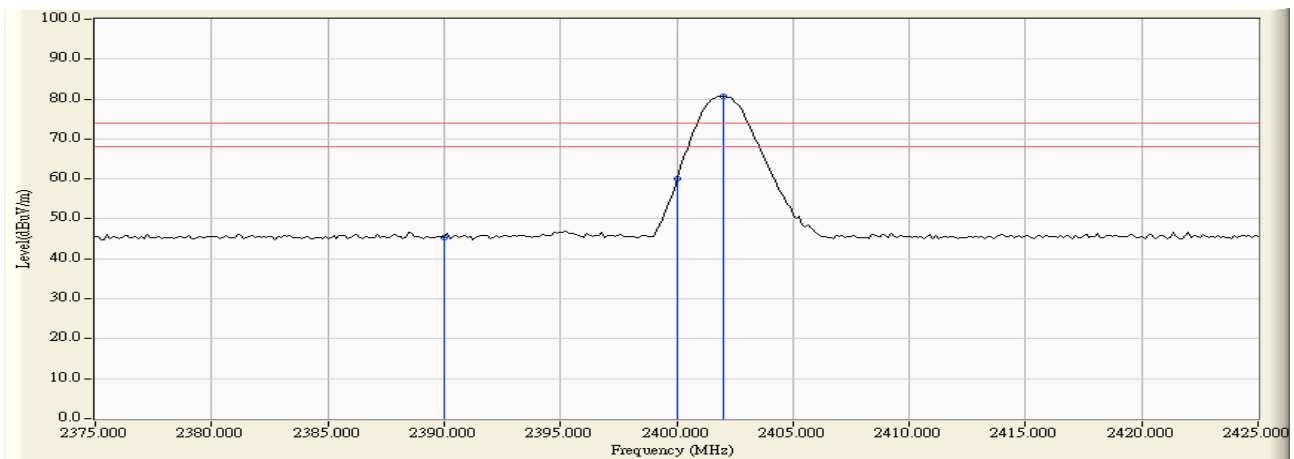
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-2.378	47.591	45.214	74.00	54.00	Pass
00(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Vertical) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1(2480MHz)

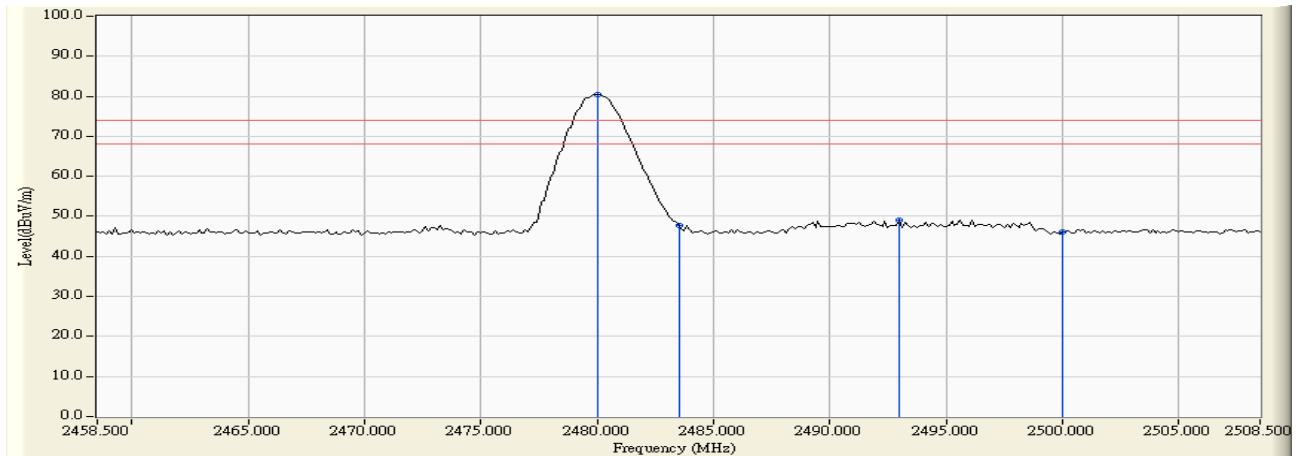
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2493.000	-1.907	51.016	49.109	74.00	54.00	Pass
78(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 78: (Horizontal) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1(2480MHz)

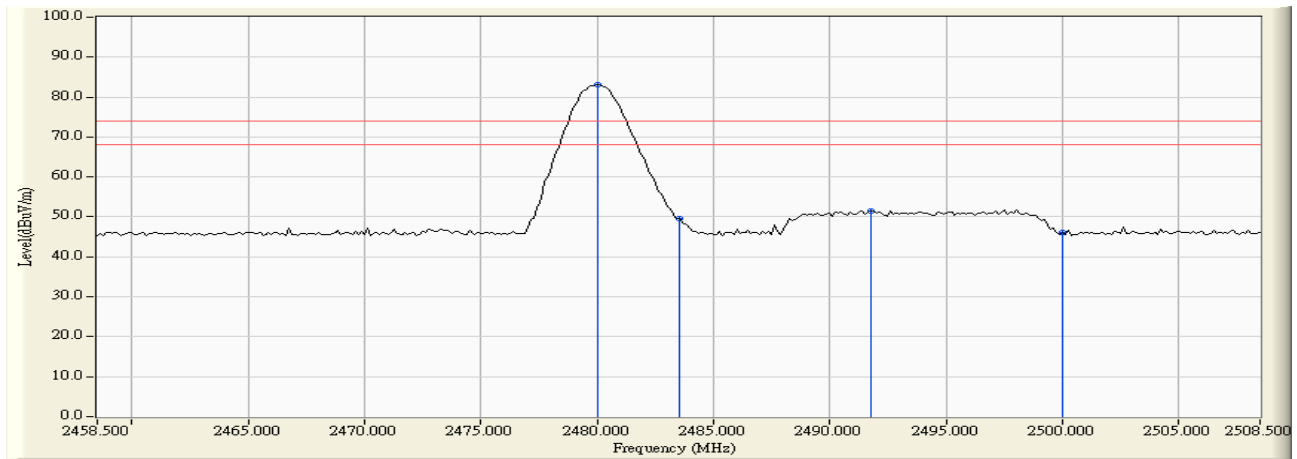
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
78(Peak)	2491.750	-1.911	53.387	51.476	74.00	54.00	Pass
78(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 78: (Vertical) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Note: 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 : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2402MHz)

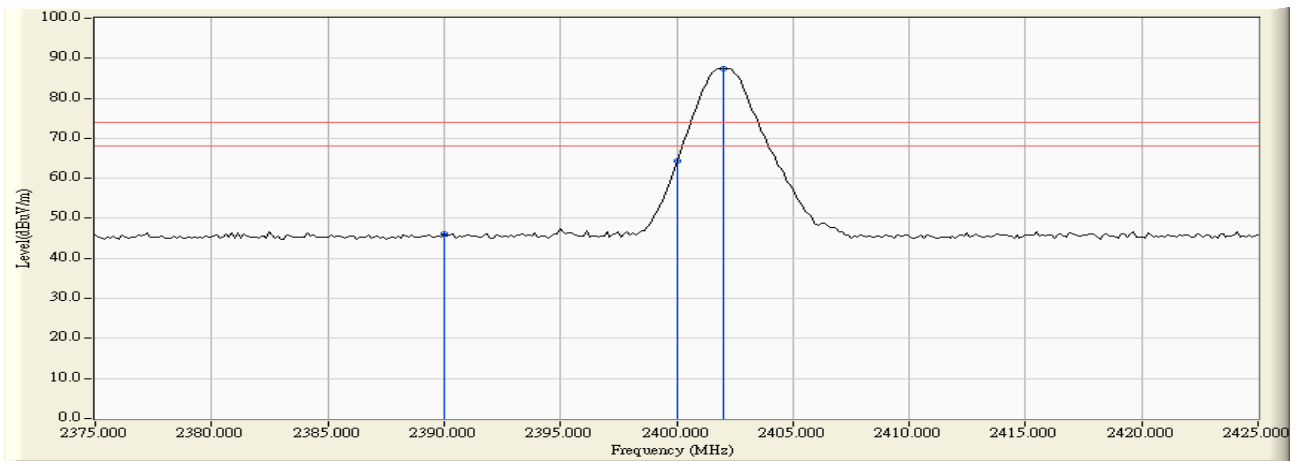
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-2.378	48.403	46.026	74.00	54.00	Pass
00 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Horizontal) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2402MHz)

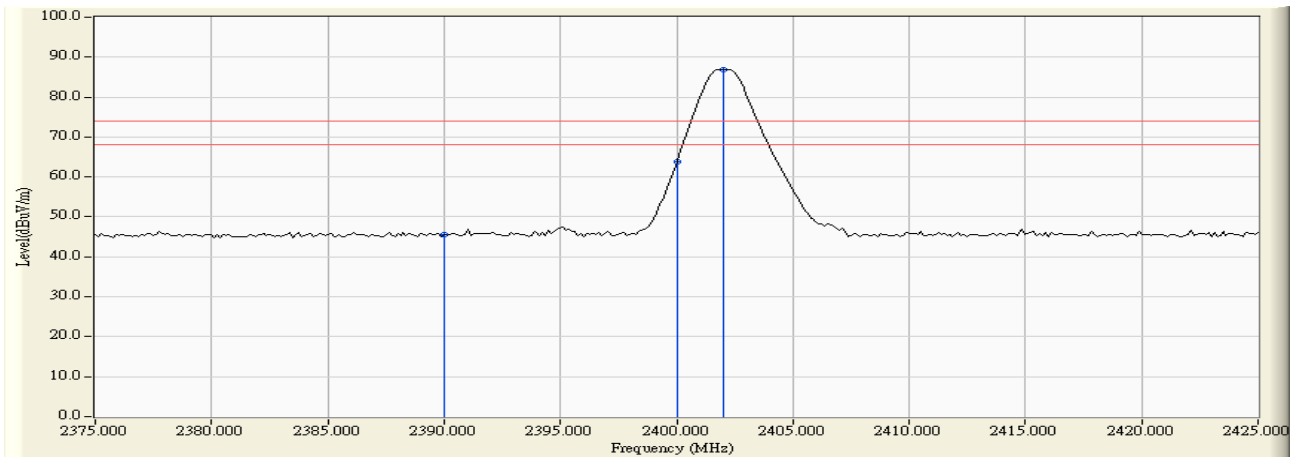
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-2.378	47.913	45.536	74.00	54.00	Pass
00(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Vertical) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2480MHz)

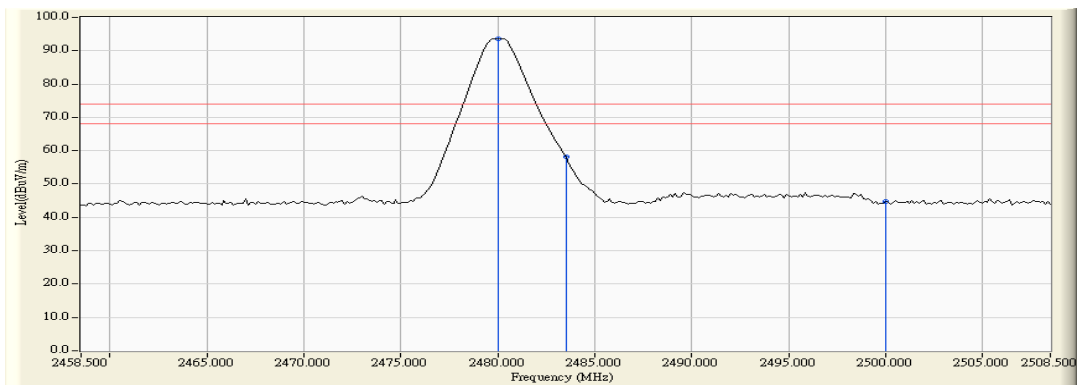
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Horizontal):

Channel	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	60.188	58.251	74.00	54.00	Pass
78(Average)	2483.500	-1.937	55.589	53.652	74.00	54.00	Pass

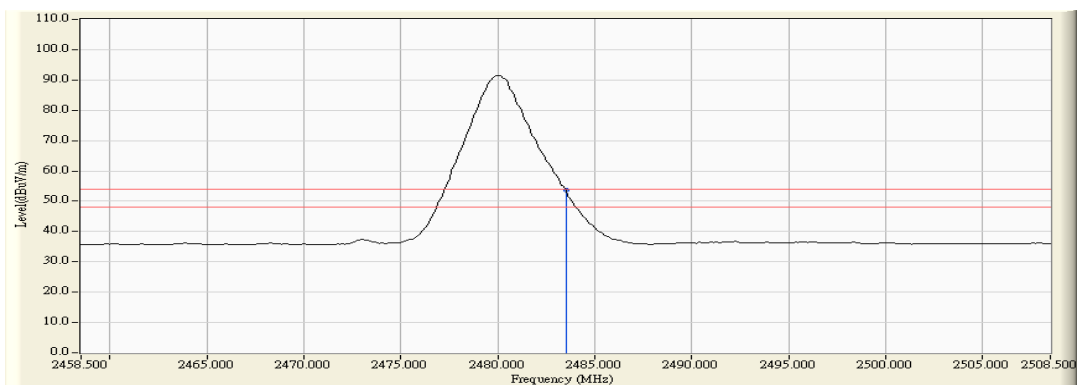
Figure Channel 78: (Horizontal) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Figure Channel 78: (Horizontal) (Average)



Note:

RBW=1MHz, VBW=3KHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2480MHz)

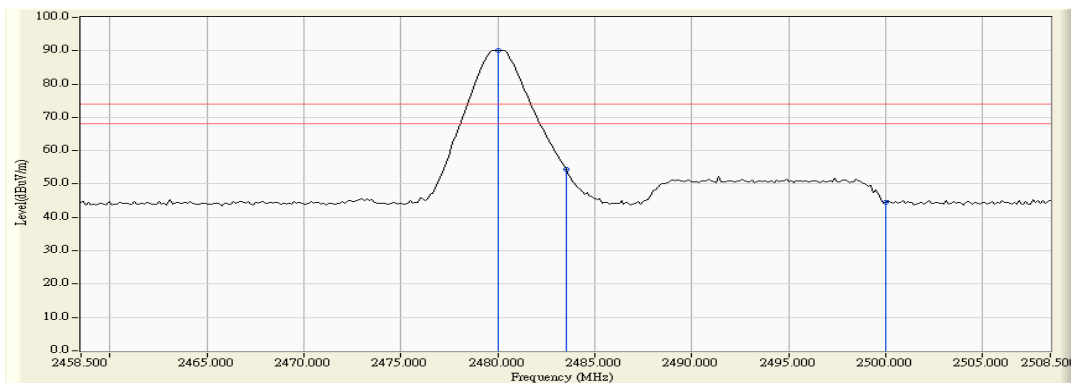
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Vertical):

Channel	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	56.477	54.540	74.00	54.00	Pass
78(Average)	2483.500	-1.937	53.254	51.317	74.00	54.00	Pass

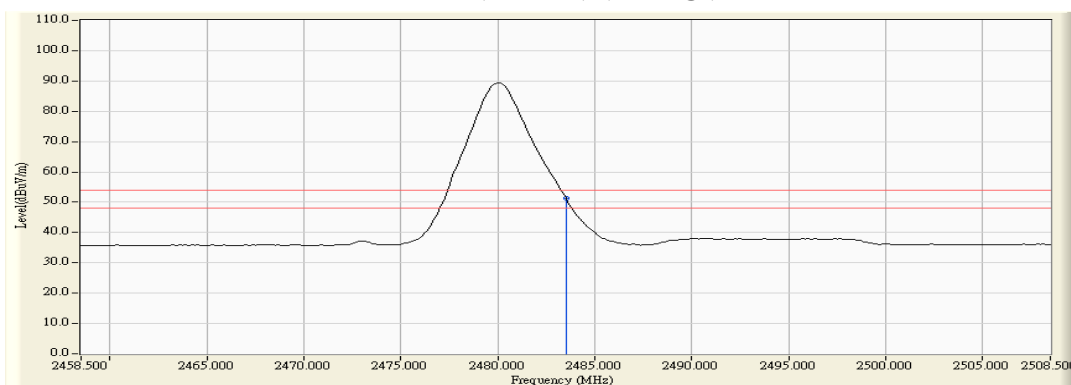
Figure Channel 78: (Vertical) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Figure Channel 78: (Vertical) (Average)



Note:

RBW=1MHz, VBW=3KMHZ, Sweep Time=500ms.

Note: 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 : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2402MHz)

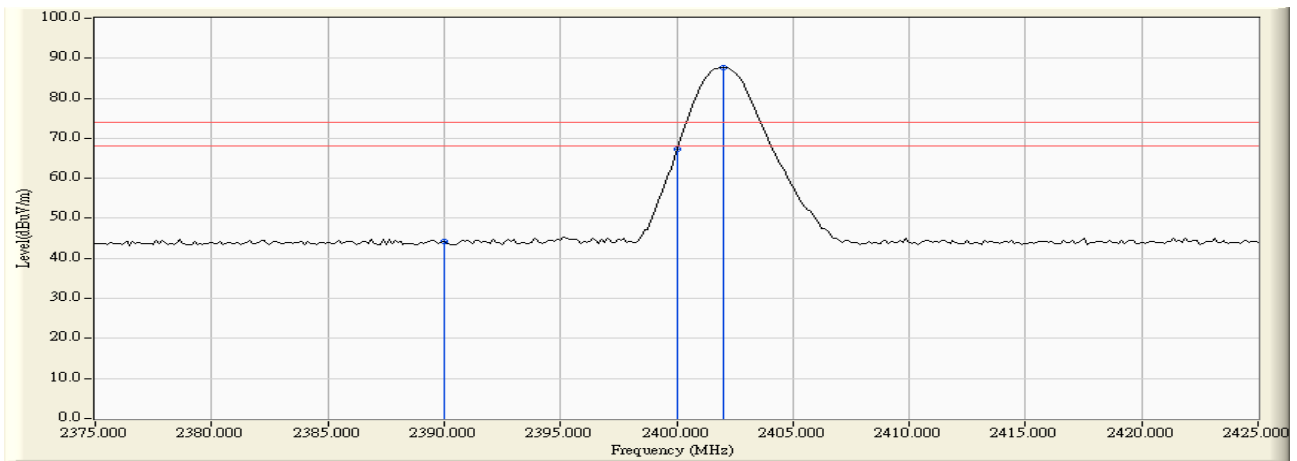
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Horizontal):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-2.378	46.700	44.323	74.00	54.00	Pass
00 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Horizontal) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2402MHz)

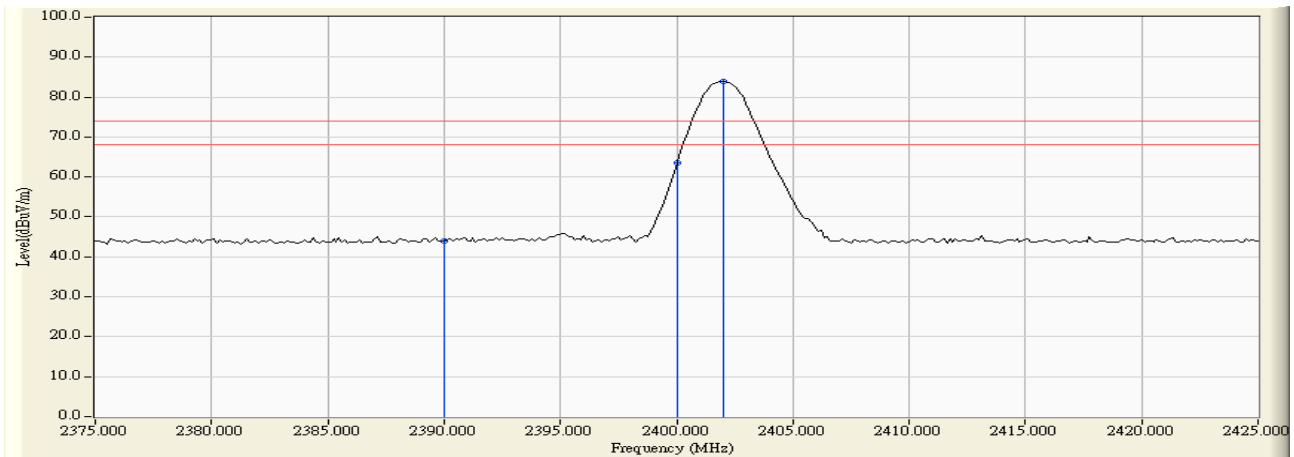
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
00	<2400	>20	Pass

RF Radiated Measurement (Vertical):

Channel	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
00 (Peak)	2390.000	-2.378	46.321	43.944	74.00	54.00	Pass
00(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 00: (Vertical) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2480MHz)

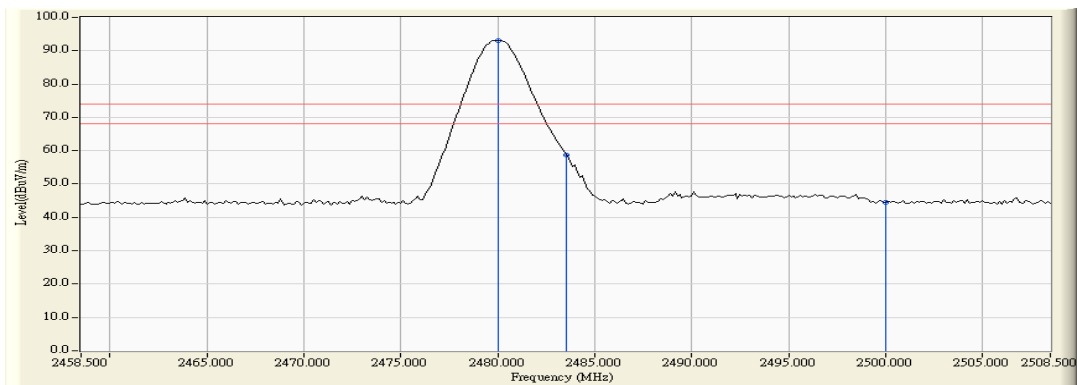
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Horizontal):

Channel	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	60.593	58.656	74.00	54.00	Pass
78(Average)	2483.500	-1.937	54.872	52.935	74.00	54.00	Pass

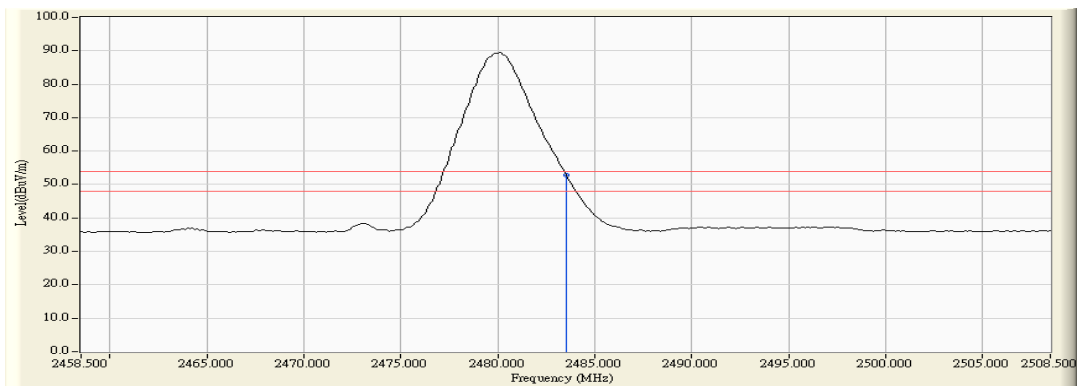
Figure Channel 78: (Horizontal) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Figure Channel 78: (Horizontal) (Average)



Note:

RBW=1MHz, VBW=3KHz, Sweep Time=500ms.

Product : Notebook
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2480MHz)

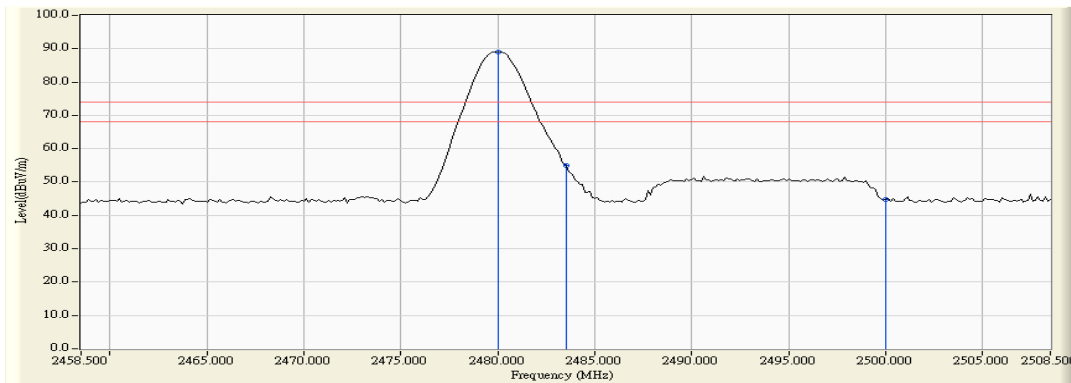
RF Radiated Measurement:

Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
78	>2483.5	>20	Pass

RF Radiated Measurement (Vertical):

Channel	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	56.775	54.838	74.00	54.00	Pass
78(Average)	2483.500	-1.937	51.521	49.584	74.00	54.00	Pass

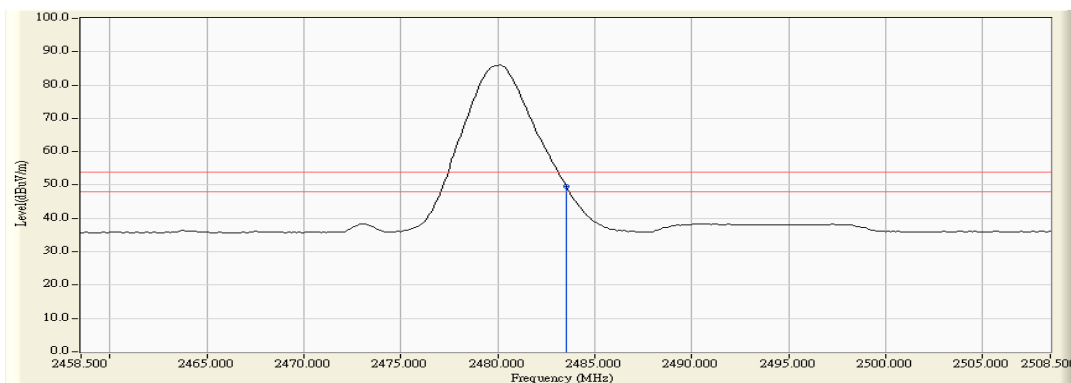
Figure Channel 78: (Vertical) (Peak)



Note:

RBW=1MHz, VBW=1MHz, Sweep Time=500ms.

Figure Channel 78: (Vertical) (Average)



Note:

RBW=1MHz, VBW=3KHz, Sweep Time=500ms.

Note: 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.

6. Channel Number

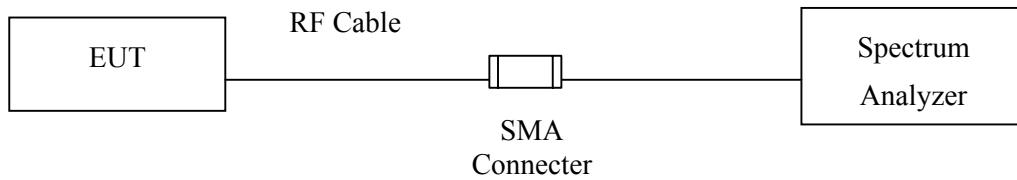
6.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 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.

6.2. Test Setup



6.3. Limit

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

6.4. Uncertainty

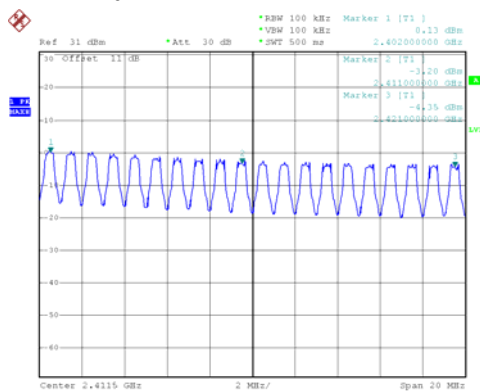
N/A

6.5. Test Result of Channel Number

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

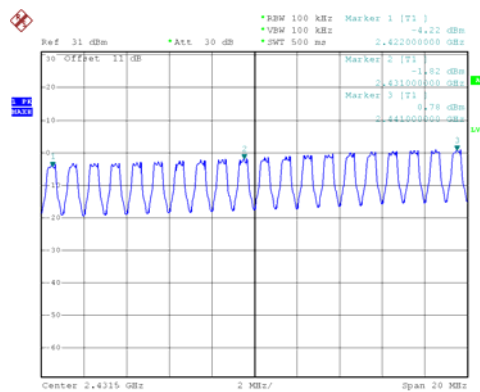
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2421MHz



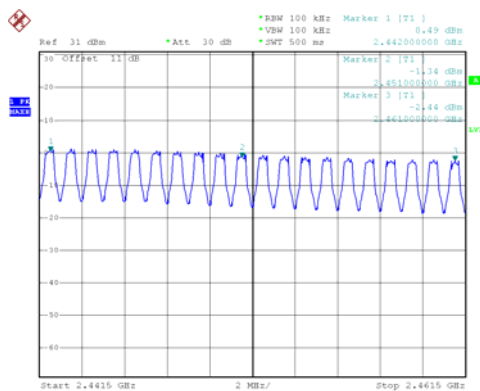
PN1
 Date: 7.MAY.2007 12:30:09

2422-2441MHz



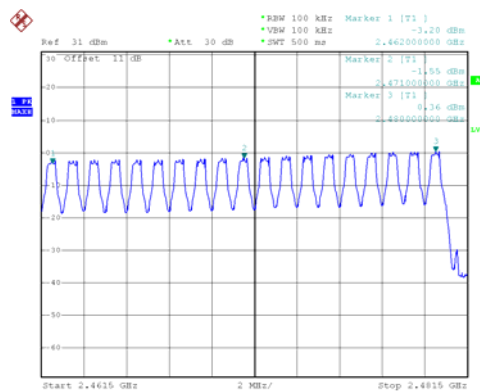
PN1
 Date: 7.MAY.2007 12:38:58

2442-2461MHz



PN1
 Date: 7.MAY.2007 12:44:52

2462-2480MHz

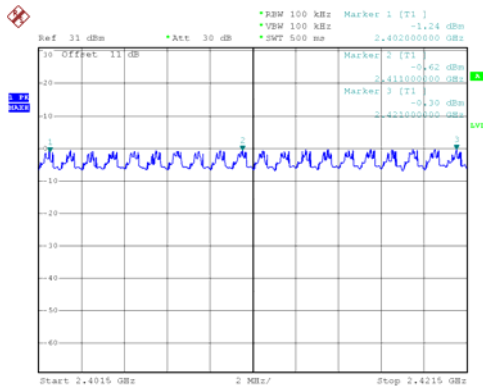


PN1
 Date: 7.MAY.2007 12:50:28

Product : Notebook
 Test Item : Channel Number
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1

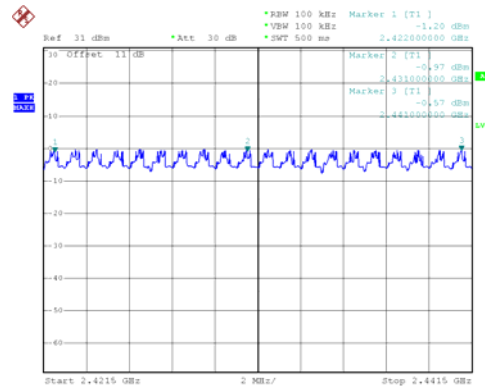
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2421MHz



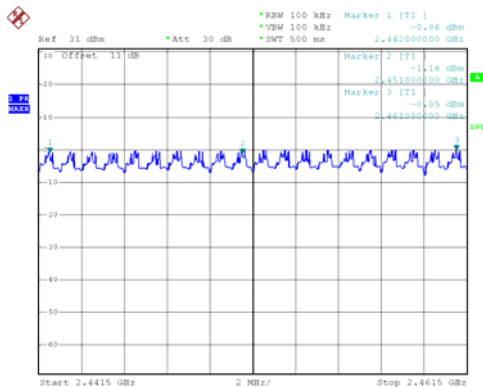
PN1
 Date: 8.MAY.2007 16:21:43

2422-2441MHz



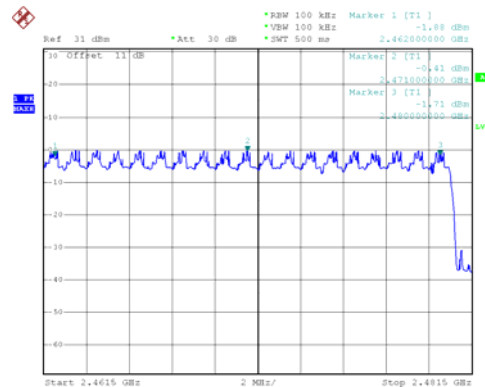
PN1
 Date: 8.MAY.2007 16:27:01

2442-2461MHz



PN1
 Date: 8.MAY.2007 16:31:59

2462-2480MHz



PN1
 Date: 8.MAY.2007 16:37:06

7. Channel Separation

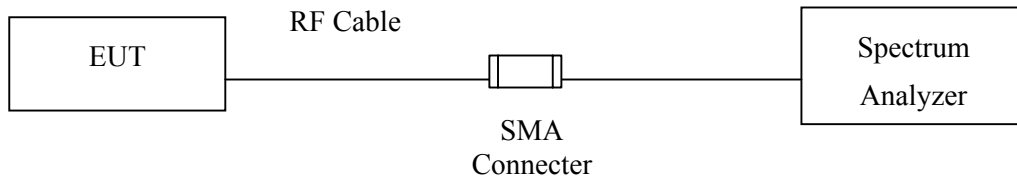
7.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 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.

7.2. Test Setup



7.3. 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.

7.4. Uncertainty

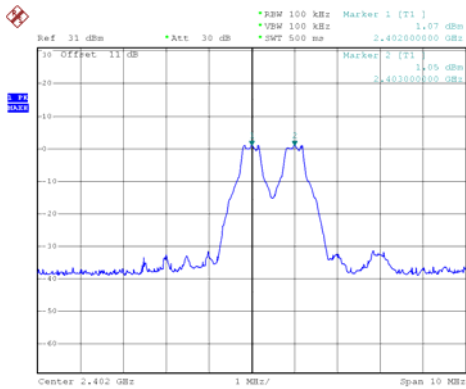
± 150Hz

7.5. Test Result of Channel Separation

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

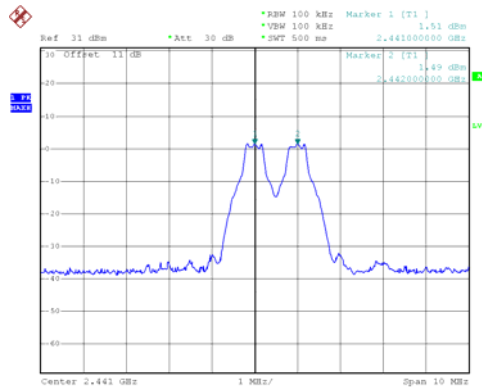
Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

Channel 00 2402MHz



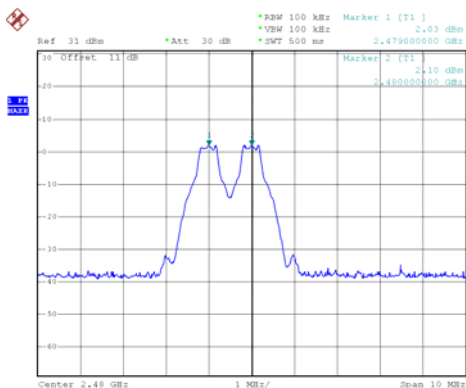
FN1
 Date: 7.MAY.2007 11:30:29

Channel 39 2441MHz



FN1
 Date: 7.MAY.2007 11:32:49

Channel 78 2480 MHz

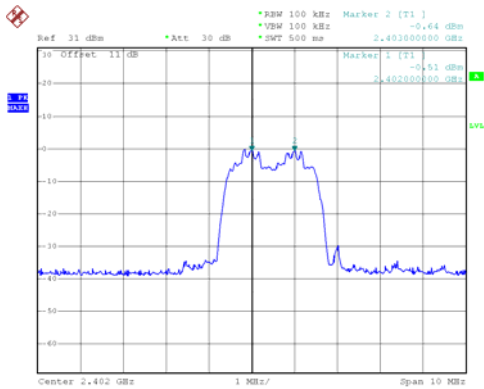


FN1
 Date: 7.MAY.2007 11:34:07

Product : Notebook
 Test Item : Channel Separation
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1

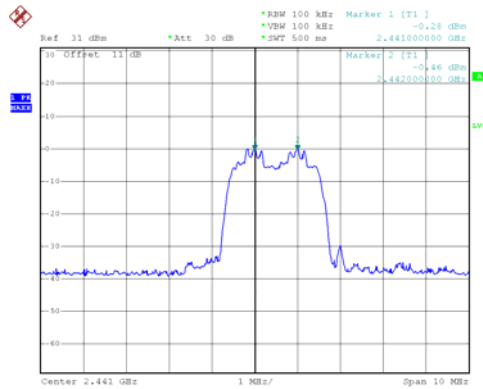
Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

Channel 00 2402MHz



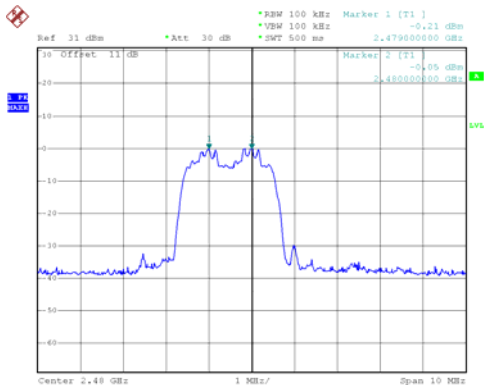
FN1
 Date: 7.MAY.2007 11:38:35

Channel 39 2441MHz



FN1
 Date: 7.MAY.2007 11:39:39

Channel 78 2480 MHz



FN1
 Date: 7.MAY.2007 11:40:51

8. Dwell Time

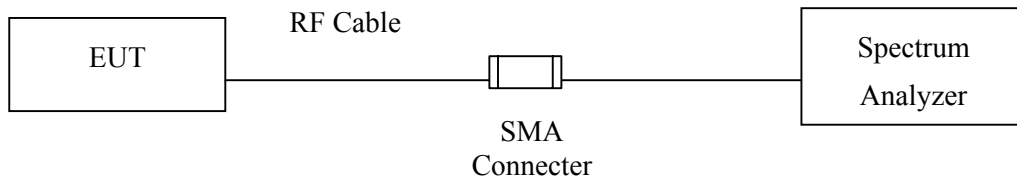
8.1. Test Equipment

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

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
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.

8.2. Test Setup



8.3. 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.

8.4. Uncertainty

± 25msec

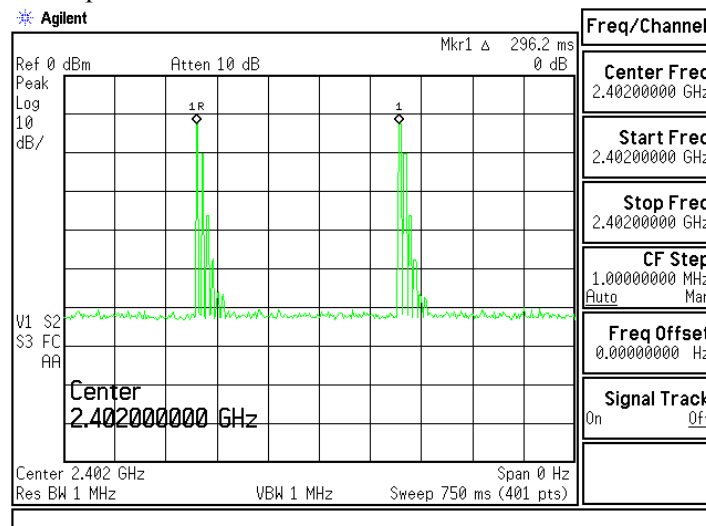
8.5. Test Result of Dwell Time

Product : Notebook
 Test Item : Dwell Time
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter -1Mbps(GFSK)- Antenna 1(Channel 00,39,78 –DH5)

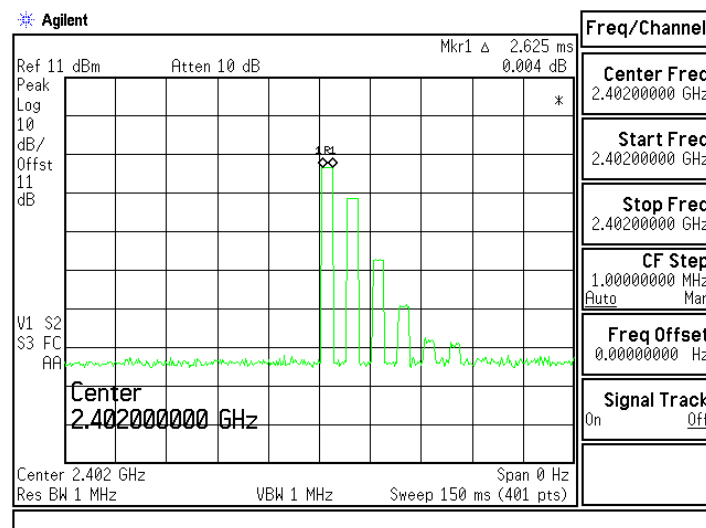
Channel No.	Frequency (MHz)	Time Interval between hops (ms)	Transmission Time (us)	Dwell Time (ms)	Limit (ms)	Result
00	2402	296.2	2625	280	400	Pass
39	2441	296.2	3000	320	400	Pass
78	2480	296.2	2750	293	400	Pass

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

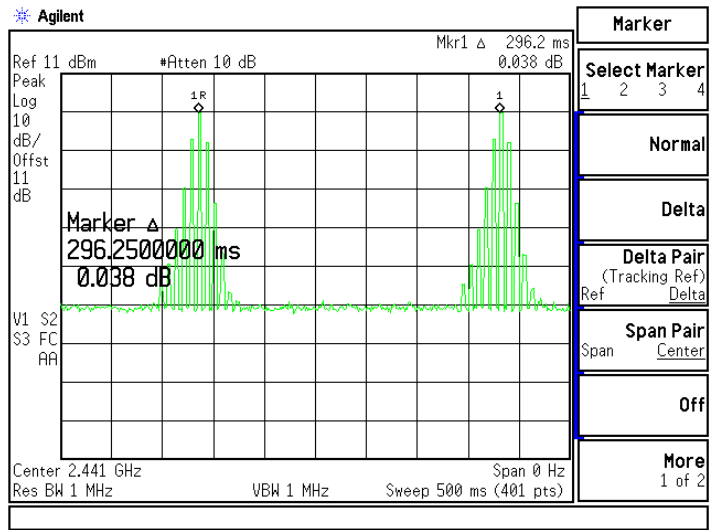
CH 00 Time Interval between hops



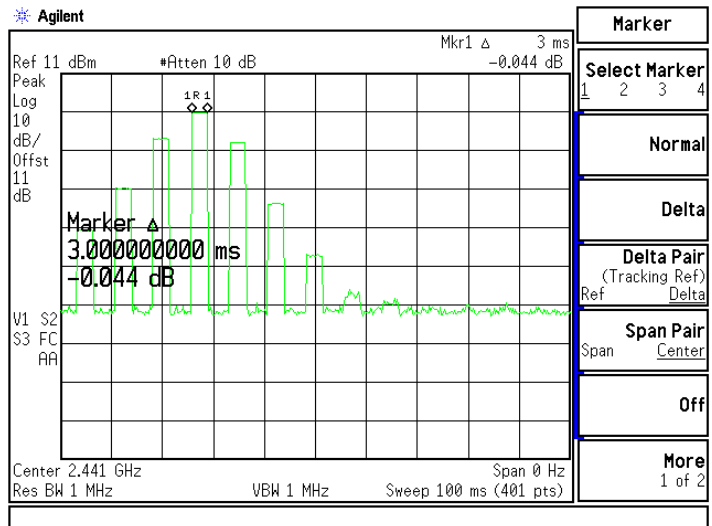
CH 00 Transmission Time



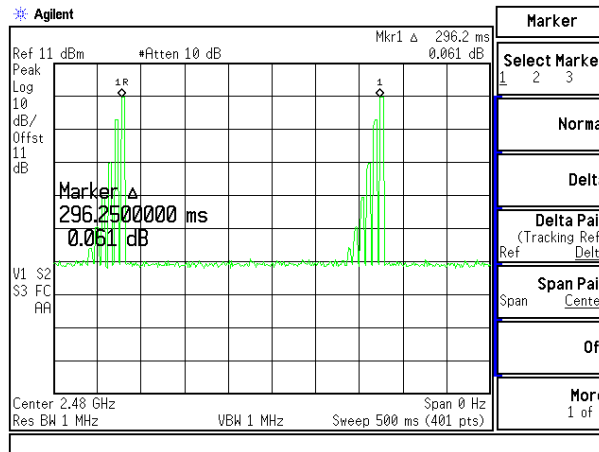
CH39 Time Interval between hops



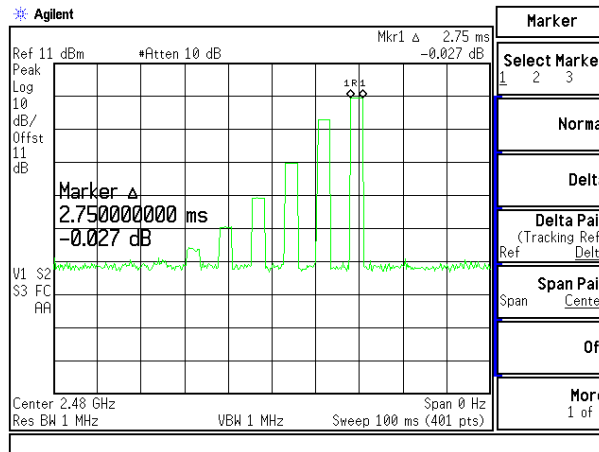
CH 39 Transmission Time



CH 78 Time Interval between hops



CH 78 Transmission Time



Note:

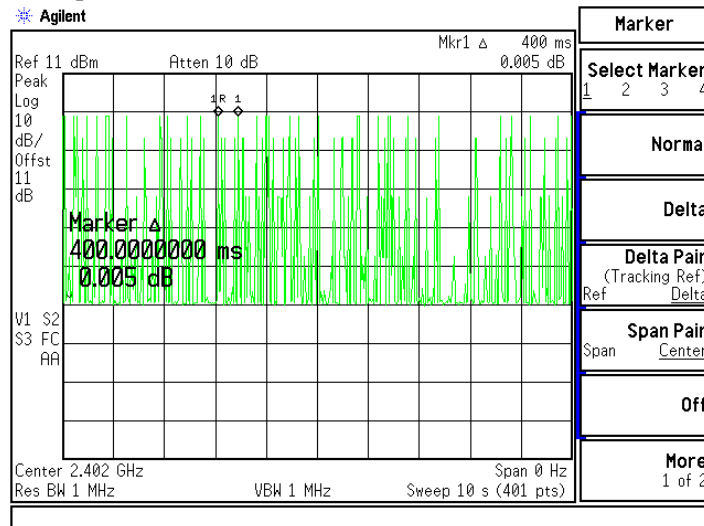
The dwell times of the packet type of DH1, DH3, and DH3 are tested. Only the worst case is shown on the report.

Product : Notebook
 Test Item : Dwell Time
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1(Channel 00,39,78 –DH5)

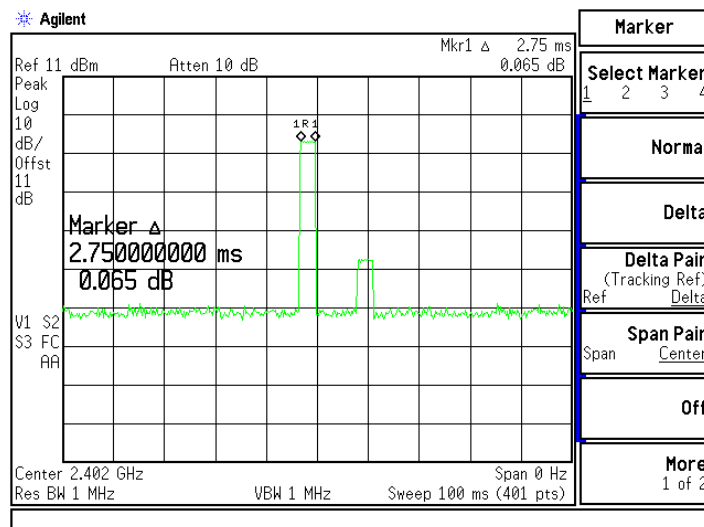
Channel No.	Frequency (MHz)	Time Interval between hops (ms)	Transmission Time (us)	Dwell Time (ms)	Limit (ms)	Result
00	2402	400	2750	217	400	Pass
39	2441	600	2750	145	400	Pass
78	2480	775	3000	122	400	Pass

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

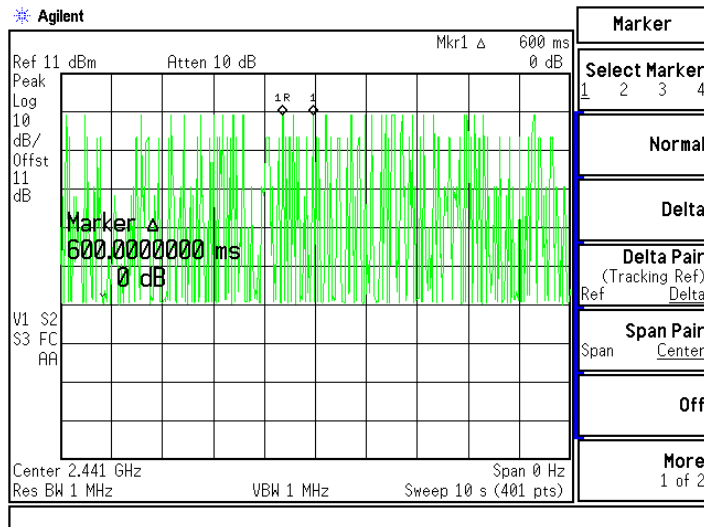
CH00 Time Interval between hops



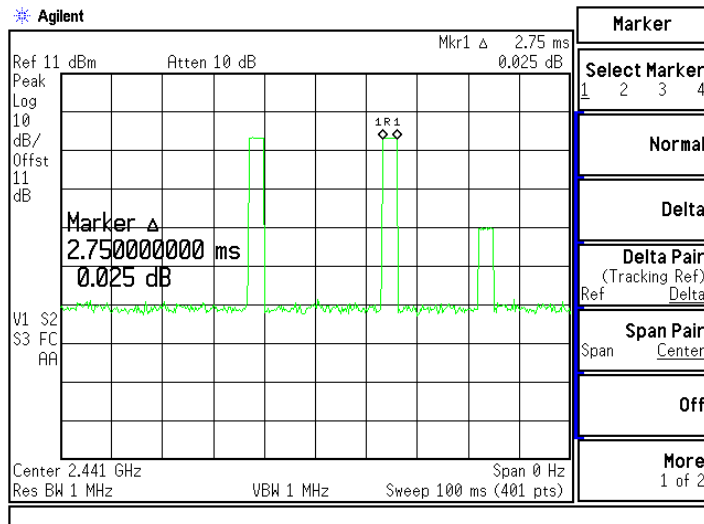
CH 00 Transmission Time



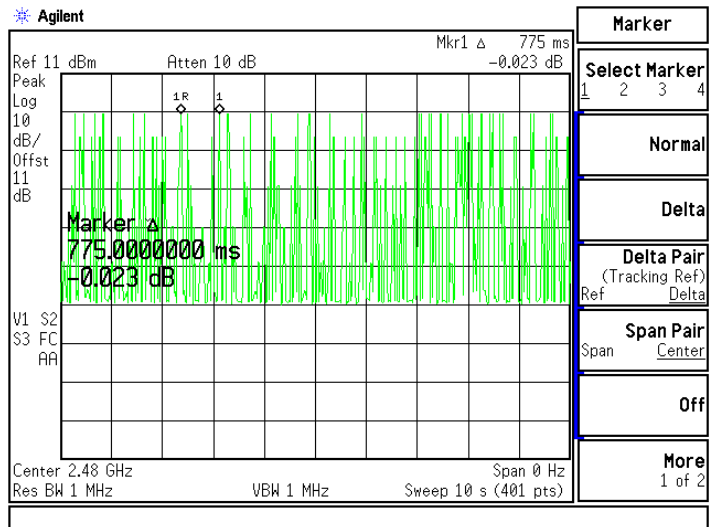
CH 39 Time Interval between hops



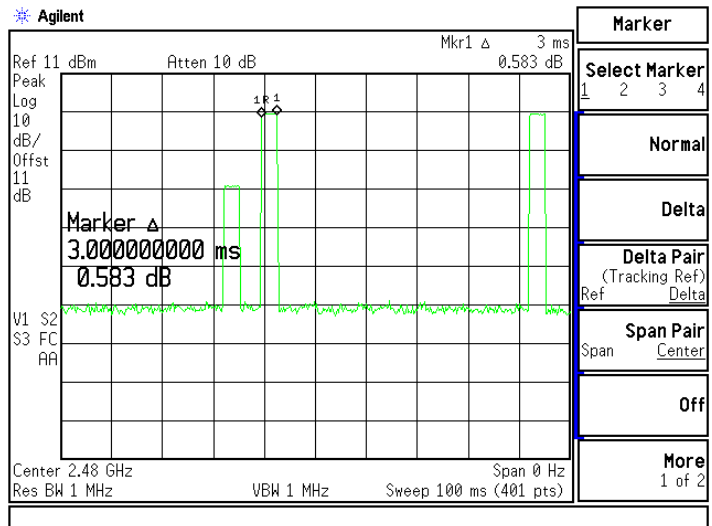
CH39 Transmission Time



CH 78 Time Interval between hops



CH 78 Transmission Time



Note:

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

9. Occupied Bandwidth

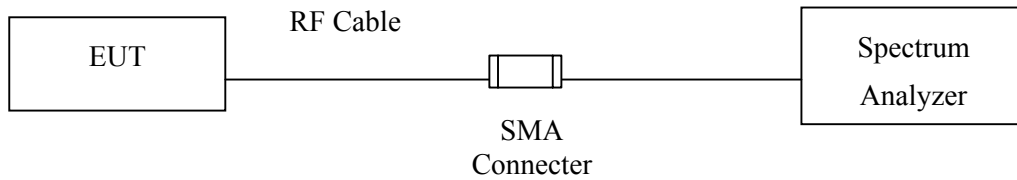
9.1. Test Equipment

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

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Test Receiver	R & S	ESI 26 / 838786 / 004	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. Limits

N/A

9.4. Uncertainty

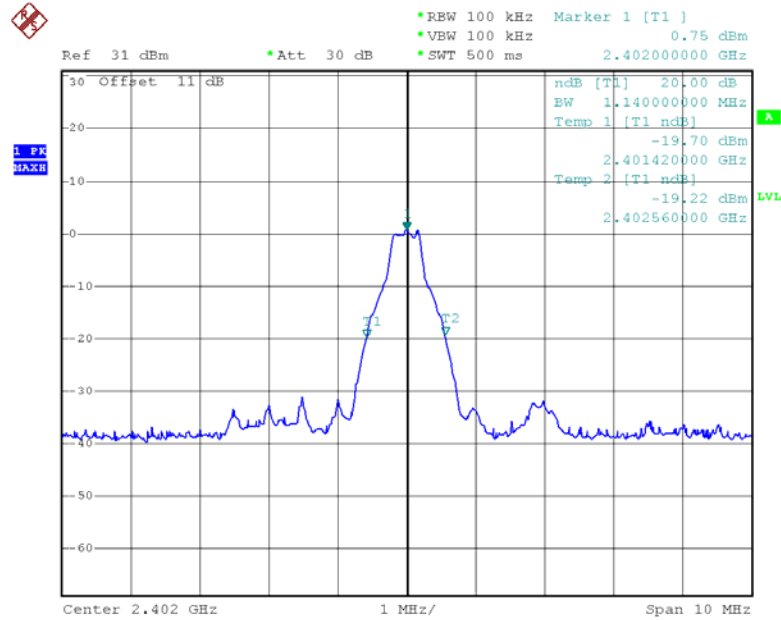
± 150Hz

9.5. Test Result of Occupied Bandwidth

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

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1140	--	NA

Figure Channel 00:

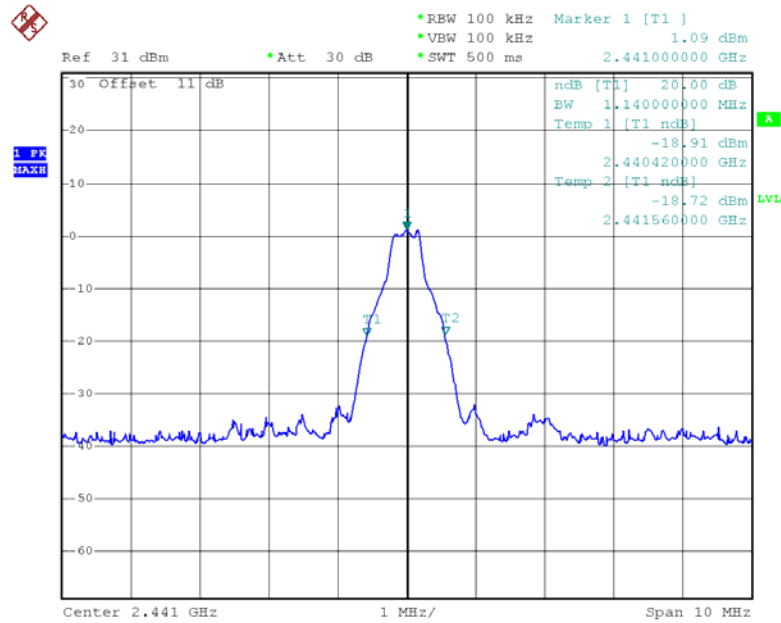


PN1
 Date: 7.MAY.2007 11:23:26

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

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1140	--	NA

Figure Channel 39:

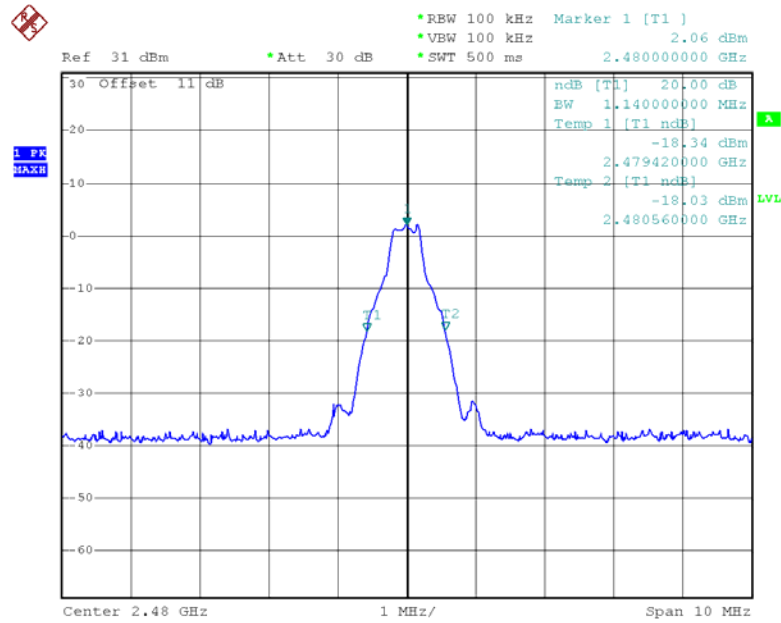


PN1
 Date: 7.MAY.2007 11:24:29

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

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1140	--	NA

Figure Channel 78:

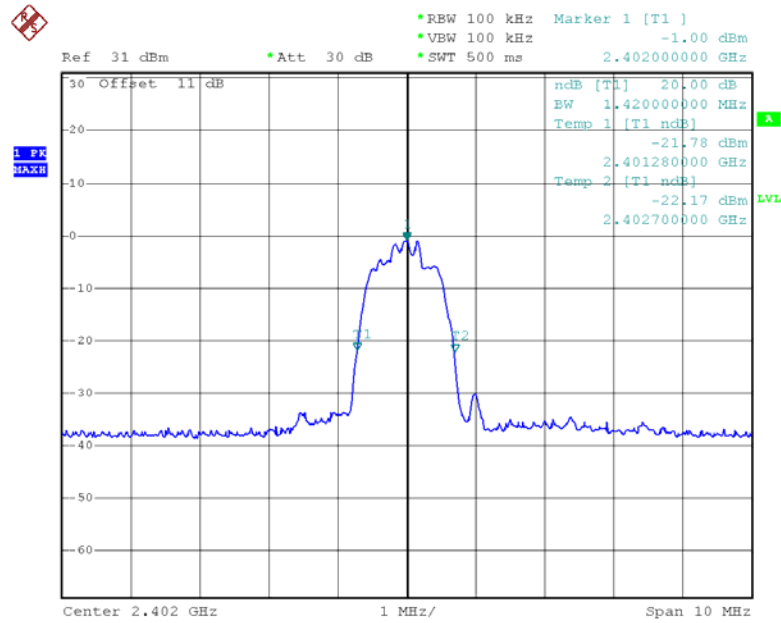


PN1
 Date: 7.MAY.2007 11:25:22

Product : Notebook
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1 (2402MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1420	--	NA

Figure Channel 00:

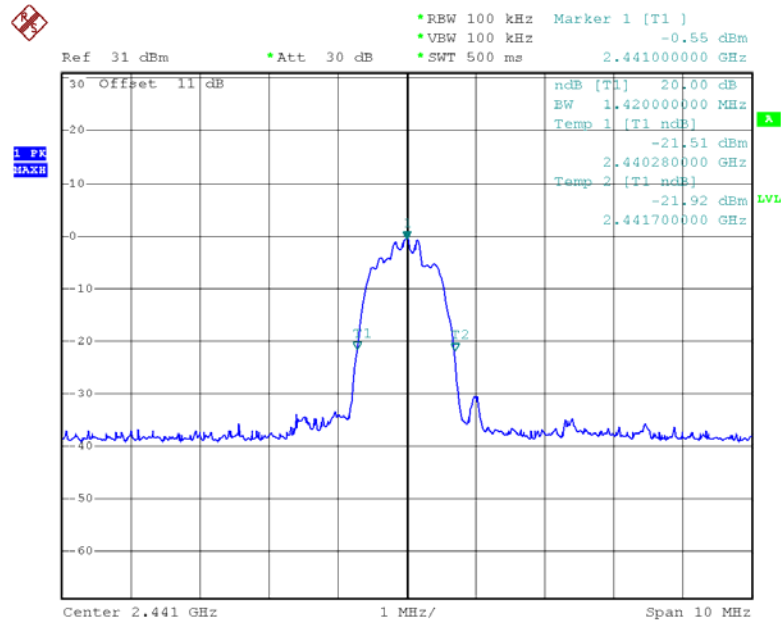


PN1
 Date: 7.MAY.2007 11:18:46

Product : Notebook
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1 (2441MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2441	1420	--	NA

Figure Channel 39:

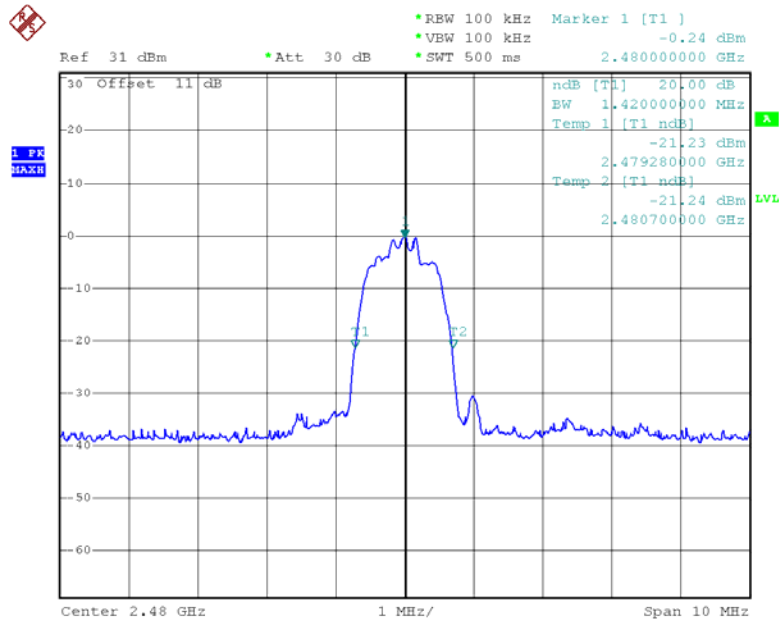


PN1
 Date: 7.MAY.2007 11:19:58

Product : Notebook
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1 (2480MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
78	2480	1420	--	NA

Figure Channel 78:



PN1
 Date: 7.MAY.2007 11:21:07

10. EMI Reduction Method During Compliance Testing

No modification was made during testing.