

FC

Test Report

Product Name	Notebook
Model No.	MS-1222, PR210, MS-1221, PR200
FCC ID.	I4L-MS6837D2

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

Date of Receipt	Apr. 17, 2007
Issued Date	June 20, 2007
Report No.	074L113-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.: 074L113-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-1222, PR210, MS-1221, PR200
FCC ID.	I4L-MS6837D2
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 : Anita Chou
 (Senior Engineering Adm. Specialist / Anita Chou)



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-MS6837D2
Model No.	MS-1222, PR210, MS-1221, PR200
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: LITEON, M/N: PA-1650-02 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	VSO	S79-1800610-V03	-2.81 dBi for 2.4 GHz
2	MSI	MS-6837D (Printed Antenna)	-4.11 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 a Notebook with a built-in 2.4GHz Bluetooth 2.0+EDR(Enhanced Data Rate) transceiver.
2. The EUT is including four 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

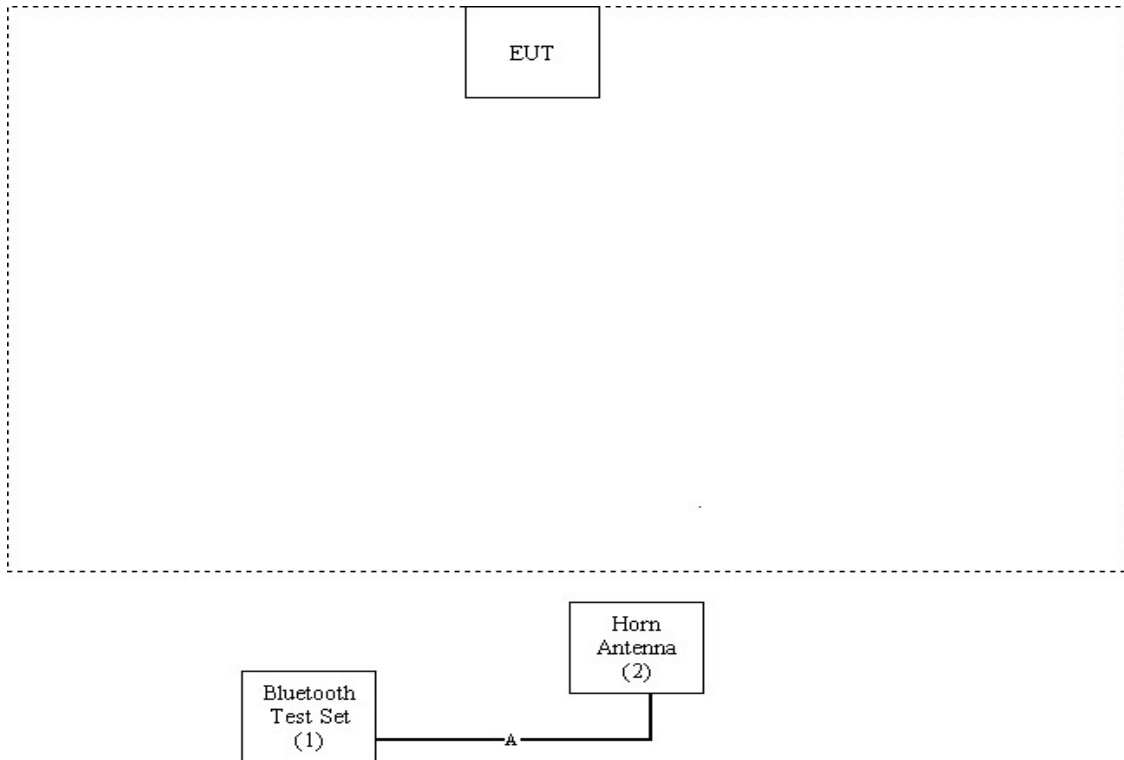
1.3. Tested System Details

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

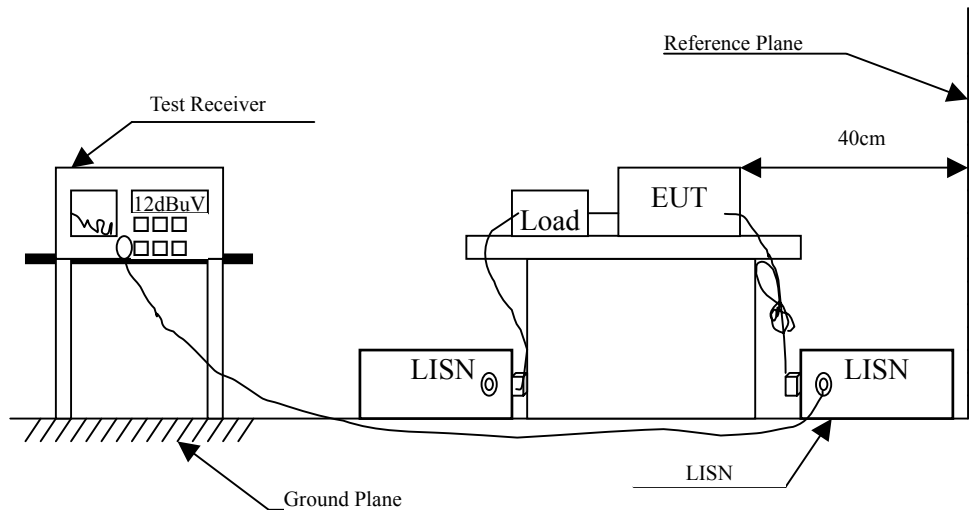
2.1. Test Equipment

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					
0.193	0.202	38.190	38.392	-26.379	64.771
0.283	0.213	37.730	37.943	-24.257	62.200
0.370	0.214	36.940	37.154	-22.560	59.714
0.485	0.216	34.800	35.016	-21.413	56.429
0.658	0.225	35.230	35.455	-20.545	56.000
0.745	0.230	36.200	36.430	-19.570	56.000
Average					
0.193	0.202	28.970	29.172	-25.599	54.771
0.283	0.213	28.540	28.753	-23.447	52.200
0.370	0.214	34.390	34.604	-15.110	49.714
0.485	0.216	31.730	31.946	-14.483	46.429
0.658	0.225	34.210	34.435	-11.565	46.000
0.745	0.230	31.220	31.450	-14.550	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 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					
0.184	0.202	39.660	39.862	-25.167	65.029
0.289	0.207	37.990	38.197	-23.832	62.029
0.369	0.214	35.710	35.924	-23.819	59.743
0.484	0.216	32.610	32.826	-23.631	56.457
0.661	0.218	34.400	34.618	-21.382	56.000
0.941	0.232	34.240	34.472	-21.528	56.000
Average					
0.184	0.202	25.820	26.022	-29.007	55.029
0.289	0.207	27.040	27.247	-24.782	52.029
0.369	0.214	33.590	33.804	-15.939	49.743
0.484	0.216	27.250	27.466	-18.991	46.457
0.661	0.218	32.410	32.628	-13.372	46.000
0.941	0.232	30.170	30.402	-15.598	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 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					
0.193	0.202	39.820	40.022	-24.749	64.771
0.365	0.214	33.350	33.564	-26.293	59.857
0.493	0.216	37.990	38.206	-17.994	56.200
0.655	0.224	34.860	35.084	-20.916	56.000
0.763	0.230	36.390	36.620	-19.380	56.000
0.940	0.232	33.510	33.742	-22.258	56.000
Average					
0.193	0.202	27.520	27.722	-27.049	54.771
0.365	0.214	30.150	30.364	-19.493	49.857
0.493	0.216	34.820	35.036	-11.164	46.200
0.655	0.224	32.950	33.174	-12.826	46.000
0.763	0.230	23.150	23.380	-22.620	46.000
0.940	0.232	29.970	30.202	-15.798	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 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					
0.283	0.204	36.190	36.395	-25.805	62.200
0.363	0.214	30.010	30.224	-29.690	59.914
0.498	0.216	30.530	30.746	-25.311	56.057
0.653	0.218	31.010	31.228	-24.772	56.000
0.945	0.232	27.590	27.822	-28.178	56.000
1.245	0.246	23.240	23.486	-32.514	56.000
Average					
0.283	0.204	26.270	26.475	-25.725	52.200
0.363	0.214	27.190	27.404	-22.510	49.914
0.498	0.216	29.580	29.796	-16.261	46.057
0.653	0.218	28.860	29.078	-16.922	46.000
0.945	0.232	25.230	25.462	-20.538	46.000
1.245	0.246	14.010	14.256	-31.744	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 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	34.170	34.373	-29.398	63.771
0.353	0.214	36.690	36.904	-23.296	60.200
0.518	0.216	34.680	34.896	-21.104	56.000
0.643	0.220	36.520	36.740	-19.260	56.000
0.938	0.232	37.000	37.232	-18.768	56.000
1.228	0.246	34.450	34.696	-21.304	56.000
Average					
0.228	0.203	33.720	33.923	-19.848	53.771
0.353	0.214	36.040	36.254	-13.946	50.200
0.518	0.216	32.750	32.966	-13.034	46.000
0.643	0.220	31.230	31.450	-14.550	46.000
0.938	0.232	32.390	32.622	-13.378	46.000
1.228	0.246	30.800	31.046	-14.954	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					
0.233	0.203	35.900	36.103	-27.526	63.629
0.288	0.207	37.080	37.287	-24.770	62.057
0.351	0.214	32.500	32.714	-27.543	60.257
0.518	0.216	32.790	33.006	-22.994	56.000
0.583	0.217	37.420	37.637	-18.363	56.000
0.646	0.218	36.680	36.898	-19.102	56.000
Average					
0.233	0.203	29.770	29.973	-23.656	53.629
0.288	0.207	33.070	33.277	-18.780	52.057
0.351	0.214	30.460	30.674	-19.583	50.257
0.518	0.216	30.910	31.126	-14.874	46.000
0.583	0.217	32.200	32.417	-13.583	46.000
0.646	0.218	32.750	32.968	-13.032	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					
0.232	0.203	36.370	36.573	-27.084	63.657
0.290	0.214	38.310	38.524	-23.476	62.000
0.355	0.214	34.590	34.804	-25.339	60.143
0.522	0.216	33.820	34.036	-21.964	56.000
0.582	0.217	37.300	37.517	-18.483	56.000
0.647	0.221	36.700	36.921	-19.079	56.000
Average					
0.232	0.203	31.040	31.243	-22.414	53.657
0.290	0.214	35.060	35.274	-16.726	52.000
0.355	0.214	34.290	34.504	-15.639	50.143
0.522	0.216	32.820	33.036	-12.964	46.000
0.582	0.217	31.300	31.517	-14.483	46.000
0.647	0.221	32.750	32.971	-13.029	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					
0.238	0.203	39.590	39.793	-23.693	63.486
0.353	0.214	36.890	37.104	-23.096	60.200
0.521	0.216	36.600	36.816	-19.184	56.000
0.578	0.217	35.370	35.587	-20.413	56.000
0.643	0.218	37.000	37.218	-18.782	56.000
1.001	0.233	35.200	35.433	-20.567	56.000
Average					
0.238	0.203	29.010	29.213	-24.273	53.486
0.353	0.214	36.260	36.474	-13.726	50.200
0.521	0.216	36.160	36.376	-9.624	46.000
0.578	0.217	24.770	24.987	-21.013	46.000
0.643	0.218	31.990	32.208	-13.792	46.000
1.001	0.233	31.200	31.433	-14.567	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

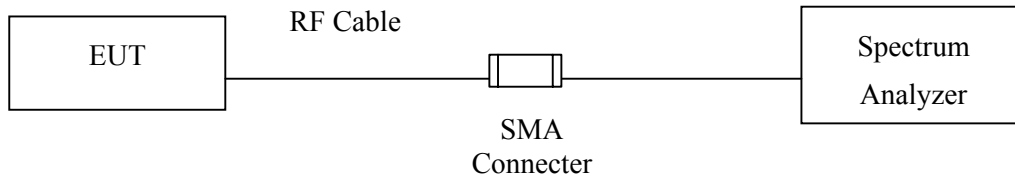
3.1. Test Equipment

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

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

3.2. Test Setup



3.3. Limit

The maximum peak power shall be less 1Watt.

3.4. Uncertainty

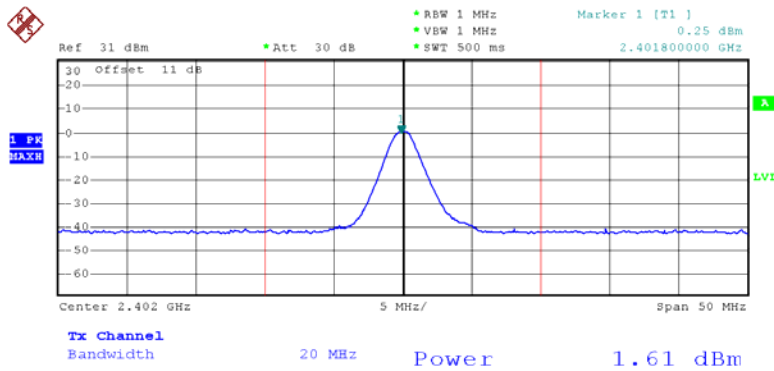
± 1.27 dB

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

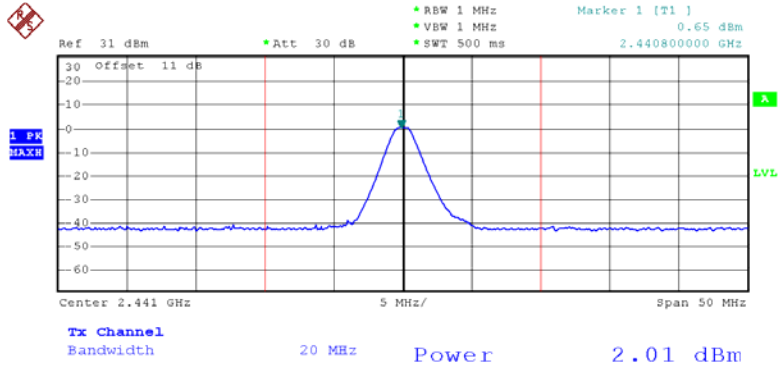
Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
Channel 00	2402.00	1.61dBm	1 Watt= 30 dBm	Pass
Channel 39	2441.00	2.01dBm	1 Watt= 30 dBm	Pass
Channel 78	2480.00	2.46dBm	1 Watt= 30 dBm	Pass

Channel 00



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

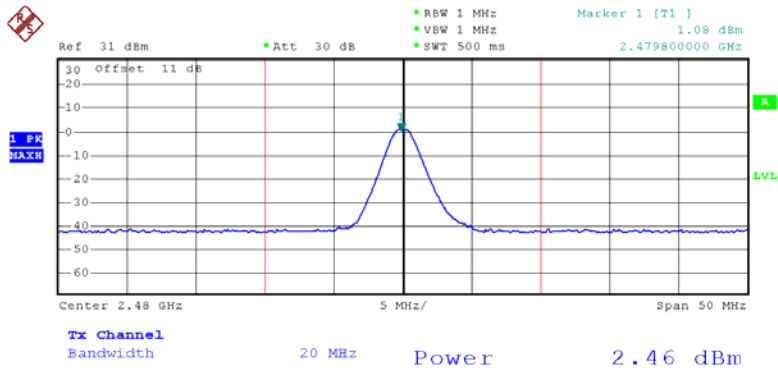
Channel 39



PN1

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

Channel 78

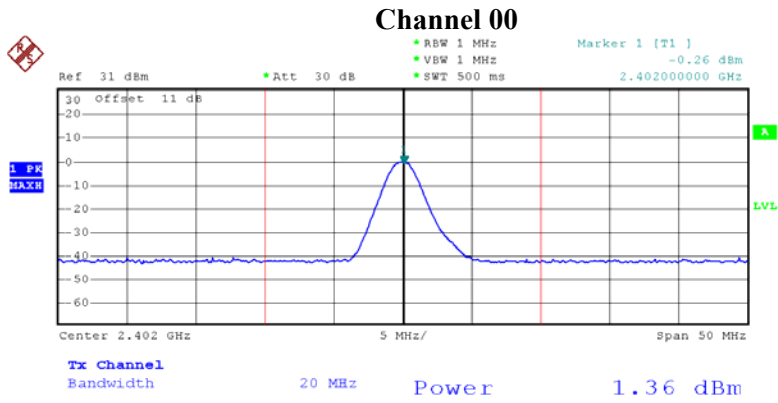


PN1

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

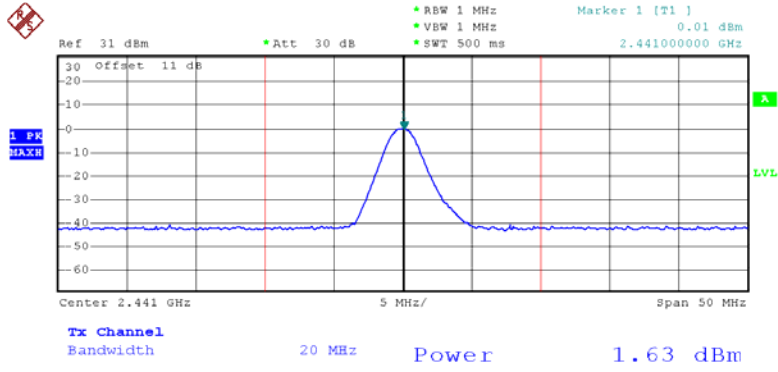
Product : Notebook
 Test Item : Peak Power Output
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter -3Mbps(8DPSK)-Antenna 1

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

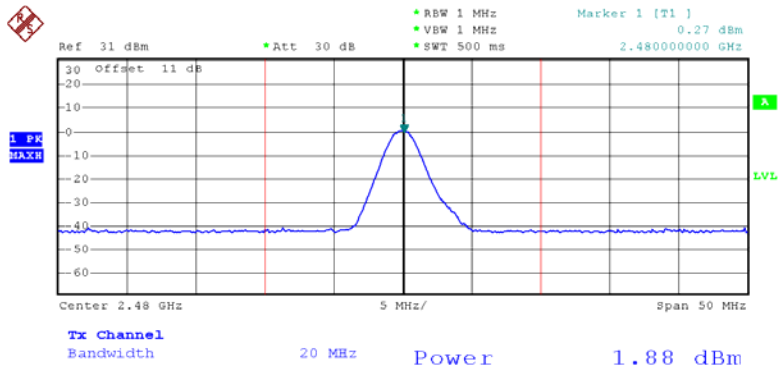
Channel 39



PN1

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

Channel 78



PN1

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

4. Radiated Emission

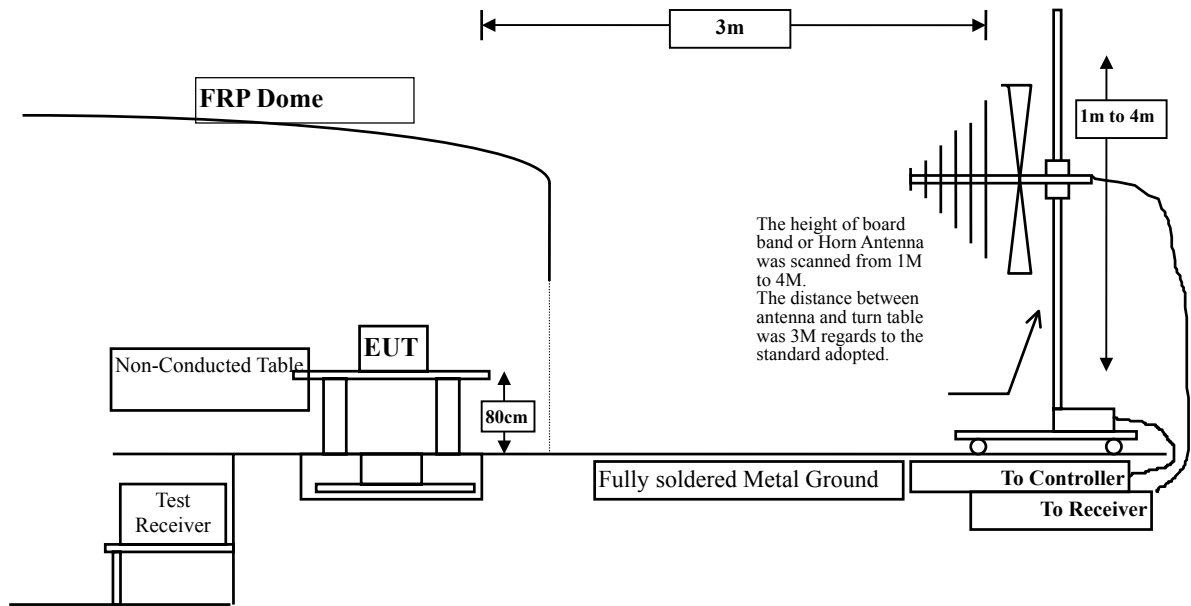
4.1. Test Equipment

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	43.300	46.963	-27.007	74.000
7206.000	9.357	40.300	49.656	-24.314	74.000
9608.000	11.842	36.900	48.742	-25.228	74.000

Average Detector:

--

Vertical

Peak Detector:

4804.000	3.663	50.200	53.863	-20.107	74.000
7206.000	9.357	41.100	50.456	-23.514	74.000
9608.000	11.842	36.400	48.242	-25.728	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 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	42.400	46.321	-27.649	74.000
7323.000	9.657	40.100	49.757	-24.213	74.000
9764.000	11.798	34.400	46.198	-27.772	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4882.000	3.921	48.360	52.281	-21.689	74.000
7323.000	9.657	42.100	51.757	-22.213	74.000
9764.000	11.798	36.400	48.198	-25.772	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 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	43.100	47.296	-26.674	74.000
7440.000	9.951	43.100	53.051	-20.919	74.000
9920.000	11.856	36.700	48.556	-25.414	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4960.000	4.197	48.300	52.496	-21.474	74.000
7440.000	9.951	41.100	51.051	-22.919	74.000
9920.000	11.856	36.400	48.256	-25.714	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 (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	41.200	44.863	-29.107	74.000
7206.000	9.357	36.500	45.856	-28.114	74.000
9608.000	11.842	35.500	47.342	-26.628	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.663	45.100	48.763	-25.207	74.000
7206.000	9.357	40.300	49.656	-24.314	74.000
9608.000	11.842	34.800	46.642	-27.328	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	41.900	45.821	-28.149	74.000
7323.000	9.657	39.500	49.157	-24.813	74.000
9764.000	11.798	36.400	48.198	-25.772	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4882.000	3.921	43.820	47.741	-26.229	74.000
7323.000	9.657	38.400	48.057	-25.913	74.000
9764.000	11.798	36.500	48.298	-25.672	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	41.500	45.696	-28.274	74.000
7440.000	9.951	38.800	48.751	-25.219	74.000
9920.000	11.856	36.900	48.756	-25.214	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4960.000	4.197	41.200	45.396	-28.574	74.000
7440.000	9.951	36.540	46.491	-27.479	74.000
9920.000	11.856	36.700	48.556	-25.414	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	46.500	50.163	-23.807	74.000
7206.000	9.357	34.100	43.456	-30.514	74.000
9608.000	11.842	33.100	44.942	-29.028	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.663	48.100	51.763	-22.207	74.000
7206.000	9.357	33.500	42.856	-31.114	74.000
9608.000	11.842	33.800	45.642	-28.328	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 (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	45.900	49.821	-24.149	74.000
7323.000	9.657	33.600	43.257	-30.713	74.000
9764.000	11.798	34.500	46.298	-27.672	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4882.000	3.921	49.100	53.021	-20.949	74.000
7323.000	9.657	33.200	42.857	-31.113	74.000
9764.000	11.798	34.100	45.898	-28.072	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 (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	49.300	53.496	-20.474	74.000
7440.000	9.951	36.600	46.551	-27.419	74.000
9920.000	11.856	38.100	49.956	-24.014	74.000

Average Detector:

Vertical

Peak Detector:

4960.000	4.197	48.100	52.296	-21.674	74.000
7440.000	9.951	37.100	47.051	-26.919	74.000
9920.000	11.856	36.400	48.256	-25.714	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 (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	41.890	45.553	-28.417	74.000
7206.000	9.357	36.600	45.956	-28.014	74.000
9608.000	11.842	38.100	49.942	-24.028	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4804.000	3.663	46.200	49.863	-24.107	74.000
7206.000	9.357	35.500	44.856	-29.114	74.000
9608.000	11.842	37.600	49.442	-24.528	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	43.250	47.171	-26.799	74.000
7323.000	9.657	39.500	49.157	-24.813	74.000
9764.000	11.798	35.540	47.338	-26.632	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4882.000	3.921	45.600	49.521	-24.449	74.000
7323.000	9.657	36.500	46.157	-27.813	74.000
9764.000	11.798	36.700	48.498	-25.472	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	45.100	49.296	-24.674	74.000
7440.000	9.951	38.500	48.451	-25.519	74.000
9920.000	11.856	36.400	48.256	-25.714	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4960.000	4.197	46.300	50.496	-23.474	74.000
7440.000	9.951	38.200	48.151	-25.819	74.000
9920.000	11.856	36.800	48.656	-25.314	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					
228.900	10.935	13.700	24.635	-21.365	46.000
255.300	13.900	14.200	28.100	-17.900	46.000
299.100	14.130	10.300	24.430	-21.570	46.000
367.100	15.897	11.340	27.237	-18.763	46.000
415.300	17.595	13.760	31.355	-14.645	46.000
460.100	18.565	12.870	31.435	-14.565	46.000
Vertical					
170.000	9.758	11.890	21.648	-21.852	43.500
230.100	11.195	13.250	24.445	-21.555	46.000
270.100	14.022	13.840	27.862	-18.138	46.000
415.600	19.615	13.250	32.865	-13.135	46.000
460.100	18.406	13.700	32.106	-13.894	46.000
500.100	18.381	12.400	30.781	-15.219	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	11.100	21.267	-22.233	43.500
200.100	9.717	10.500	20.217	-23.283	43.500
236.100	11.505	12.670	24.175	-21.825	46.000
386.100	15.771	13.250	29.021	-16.979	46.000
500.600	18.367	12.360	30.728	-15.272	46.000
658.100	20.821	13.800	34.621	-11.379	46.000
Vertical					
220.100	10.373	13.630	24.003	-21.997	46.000
270.100	14.022	13.370	27.392	-18.608	46.000
415.600	19.615	13.760	33.375	-12.625	46.000
444.600	19.055	13.200	32.255	-13.745	46.000
470.100	18.422	16.300	34.722	-11.278	46.000
640.100	20.443	11.200	31.642	-14.358	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	12.100	22.267	-21.233	43.500
200.100	9.717	11.670	21.387	-22.113	43.500
220.100	9.869	16.300	26.169	-19.831	46.000
270.100	13.522	13.700	27.222	-18.778	46.000
440.300	17.570	13.250	30.819	-15.181	46.000
643.500	20.926	11.800	32.726	-13.274	46.000
Vertical					
170.300	9.759	11.570	21.329	-22.171	43.500
200.100	9.683	12.300	21.983	-21.517	43.500
386.500	17.138	13.240	30.378	-15.622	46.000
415.600	19.615	13.970	33.585	-12.415	46.000
474.500	18.435	16.300	34.735	-11.265	46.000
500.100	18.381	12.470	30.851	-15.149	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					
214.300	9.334	12.340	21.674	-21.826	43.500
253.100	13.532	13.500	27.032	-18.968	46.000
415.600	17.658	13.840	31.498	-14.502	46.000
473.600	18.650	17.600	36.250	-9.750	46.000
500.100	18.307	12.340	30.647	-15.353	46.000
786.600	21.650	13.440	35.090	-10.910	46.000
Vertical					
199.900	9.703	11.100	20.803	-22.697	43.500
235.100	11.673	13.600	25.273	-20.727	46.000
415.500	19.614	16.600	36.214	-9.786	46.000
473.600	18.377	13.500	31.877	-14.123	46.000
500.100	18.381	13.870	32.251	-13.749	46.000
510.100	18.745	13.540	32.285	-13.715	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:

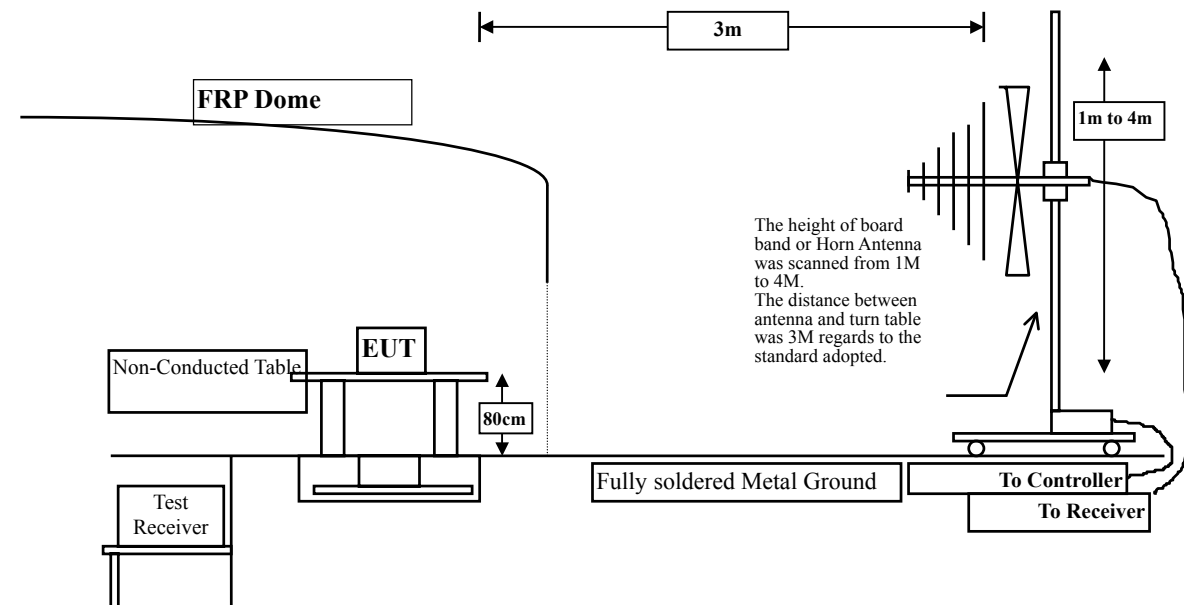
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2007
X	Spectrum Analyzer	HP	E4407B / US39440758	May, 2007
X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2006
X	Horn Antenna	Schwarzbeck	BBHA9170 / 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)

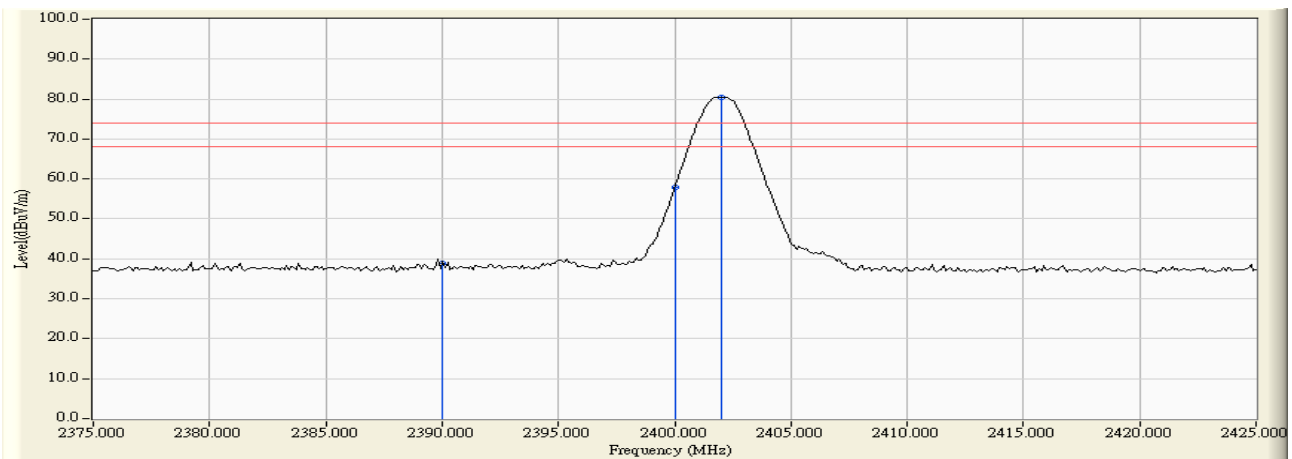
RF Radiated Measurement:

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	41.301	38.924	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)

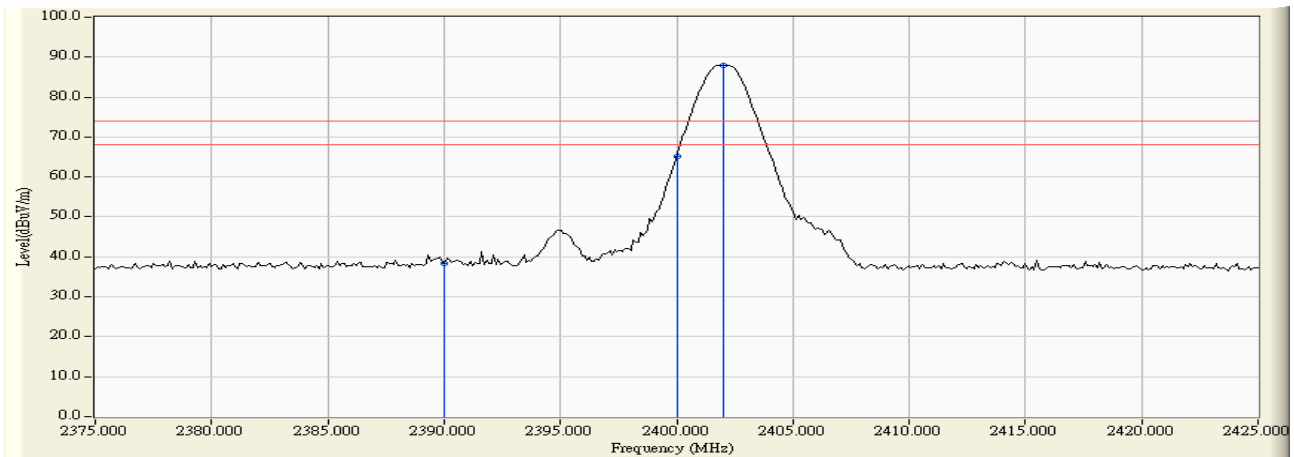
RF Radiated Measurement:

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	40.810	38.433	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)

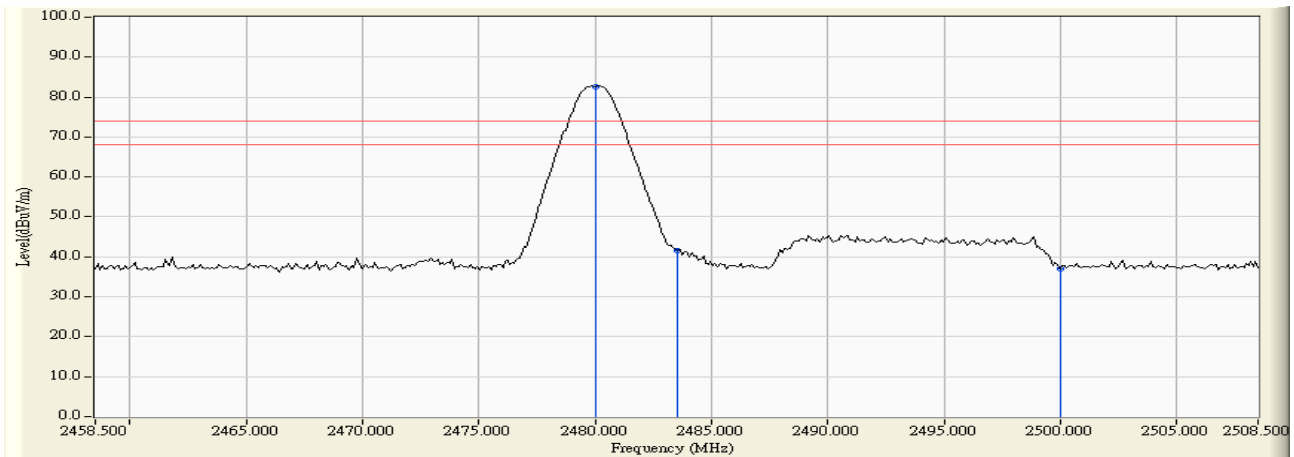
RF Radiated Measurement:

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	43.513	41.576	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)

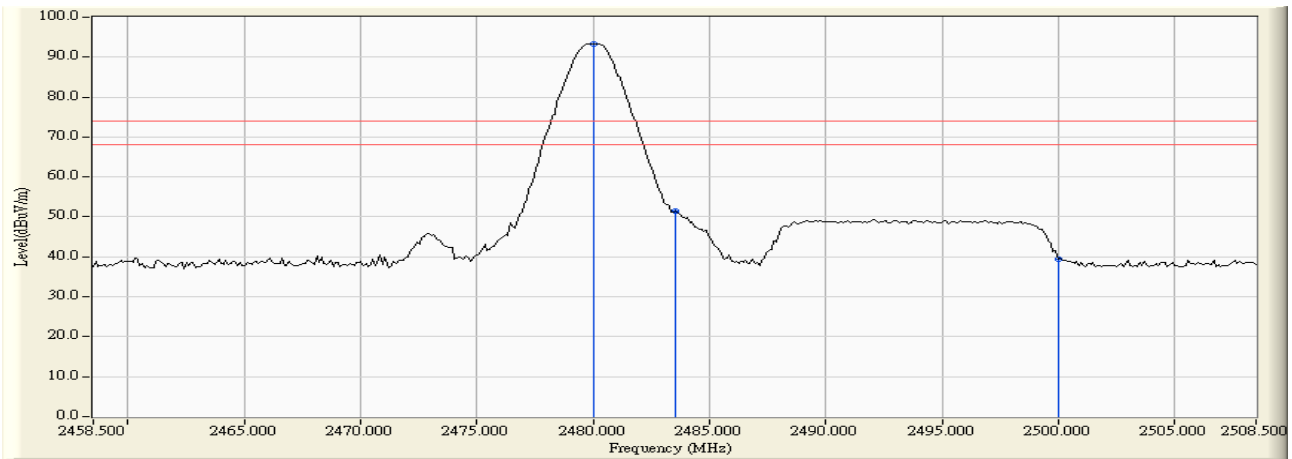
RF Radiated Measurement:

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)	2483.500	-1.937	53.308	51.371	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)

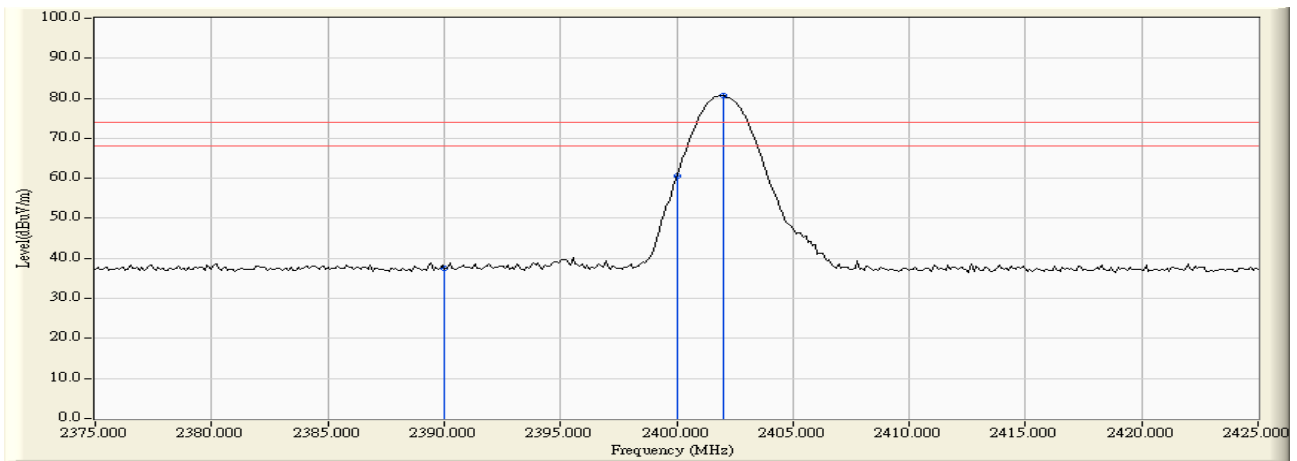
RF Radiated Measurement:

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	40.038	37.661	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)

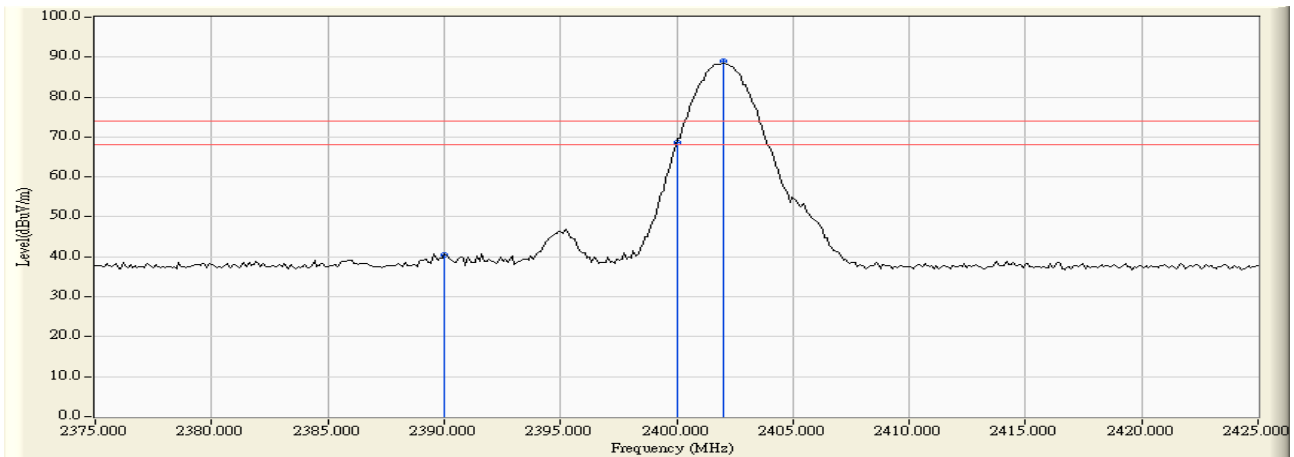
RF Radiated Measurement:

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	42.752	40.375	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)

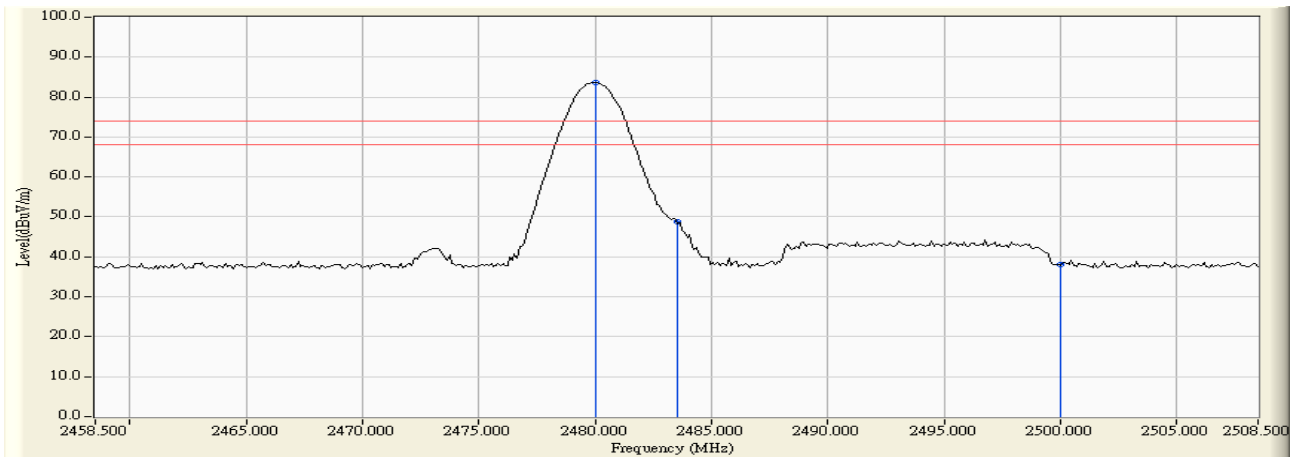
RF Radiated Measurement:

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)	2483.500	-1.937	50.692	48.755	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)

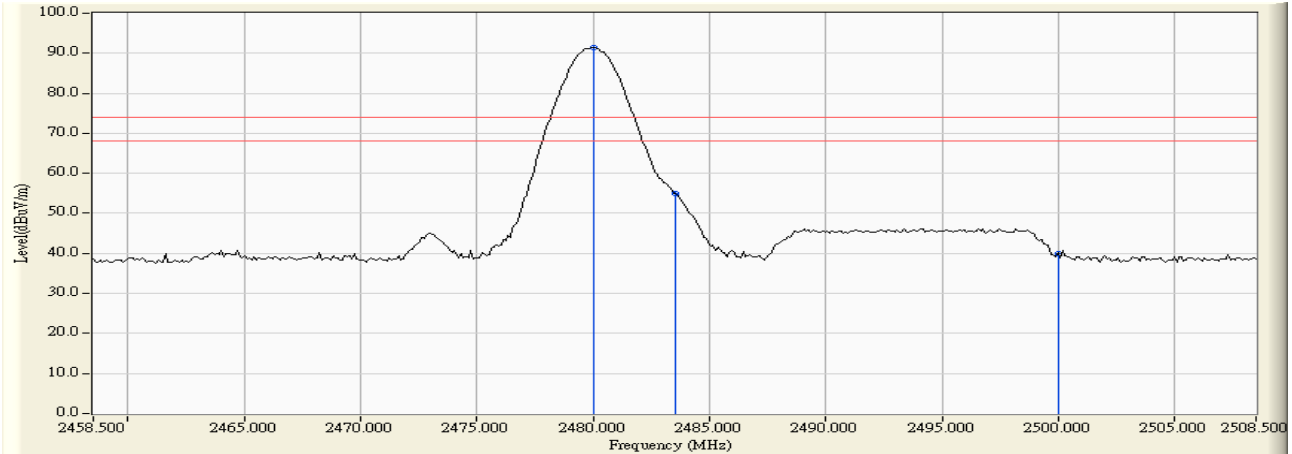
RF Radiated Measurement:

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)	2483.500	-1.937	56.852	54.915	74.00	54.00	Pass
78(Average)	2483.500	-1.937	47.413	45.476	74.00	54.00	Pass

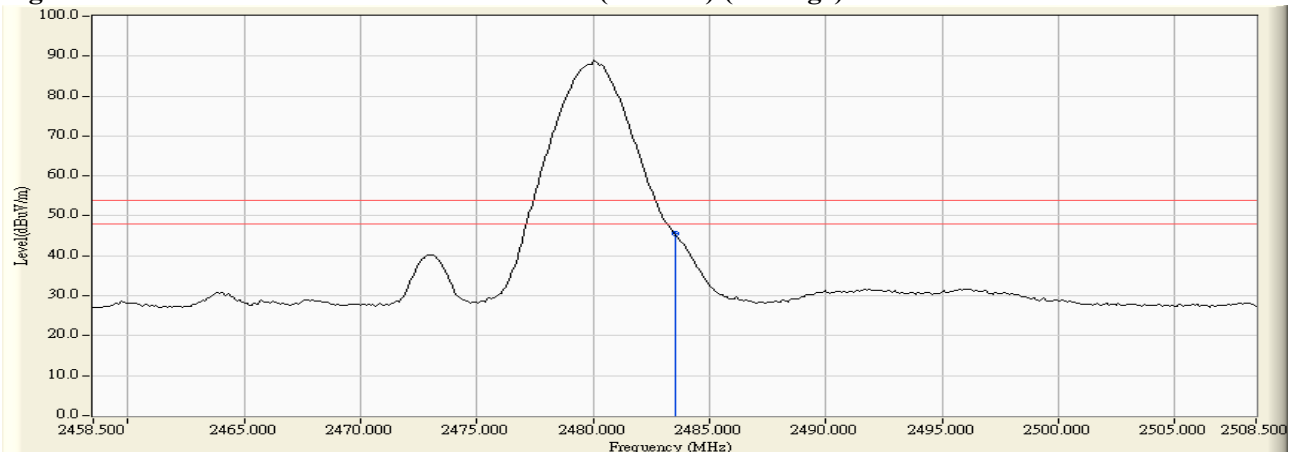
Figure Channel 78: (Vertical) (Peak)



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.

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

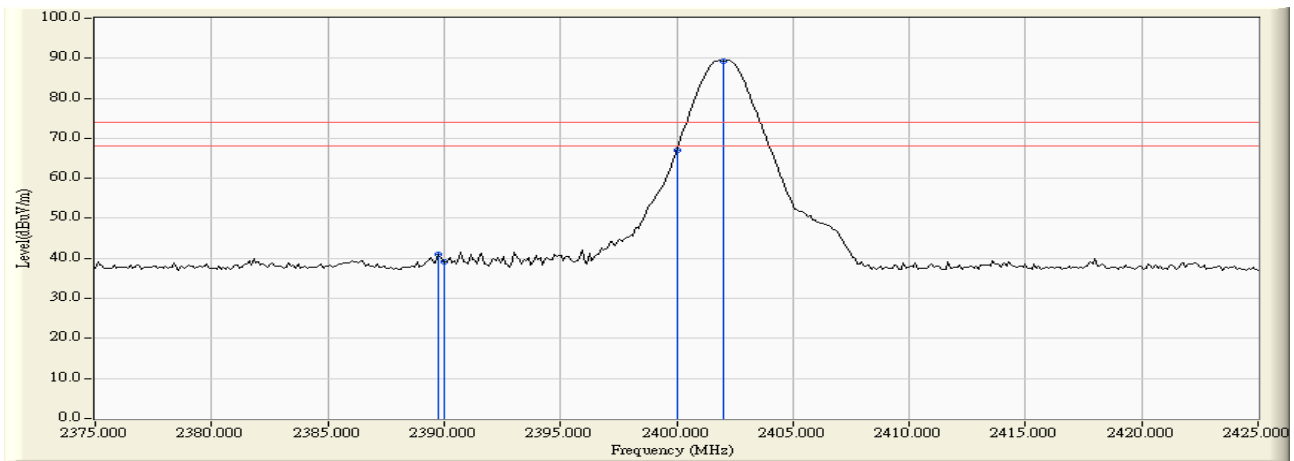
RF Radiated Measurement:

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)	2389.729	-2.379	43.459	41.081	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)

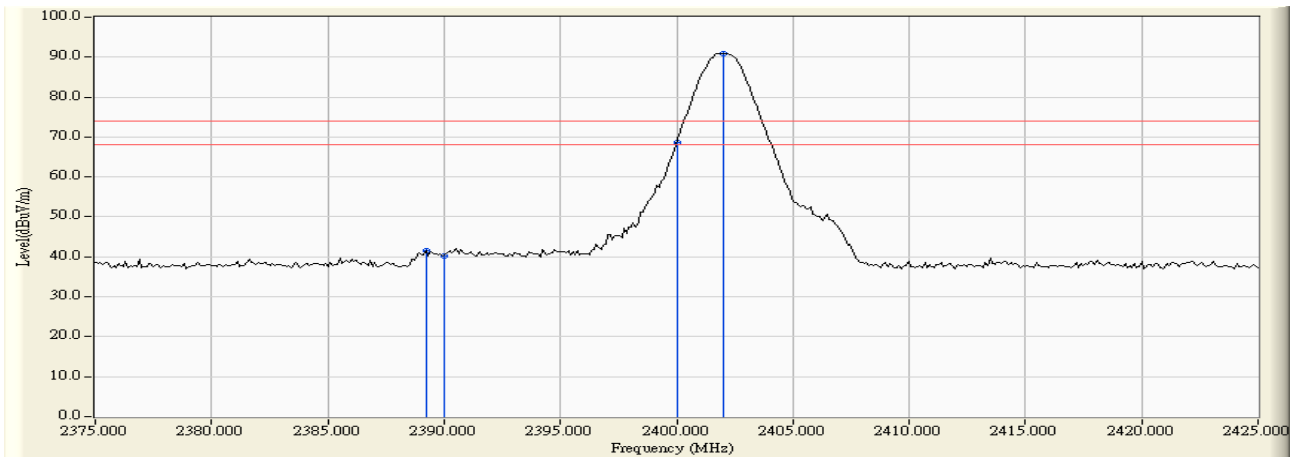
RF Radiated Measurement:

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)	2389.229	-2.381	43.999	41.618	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)

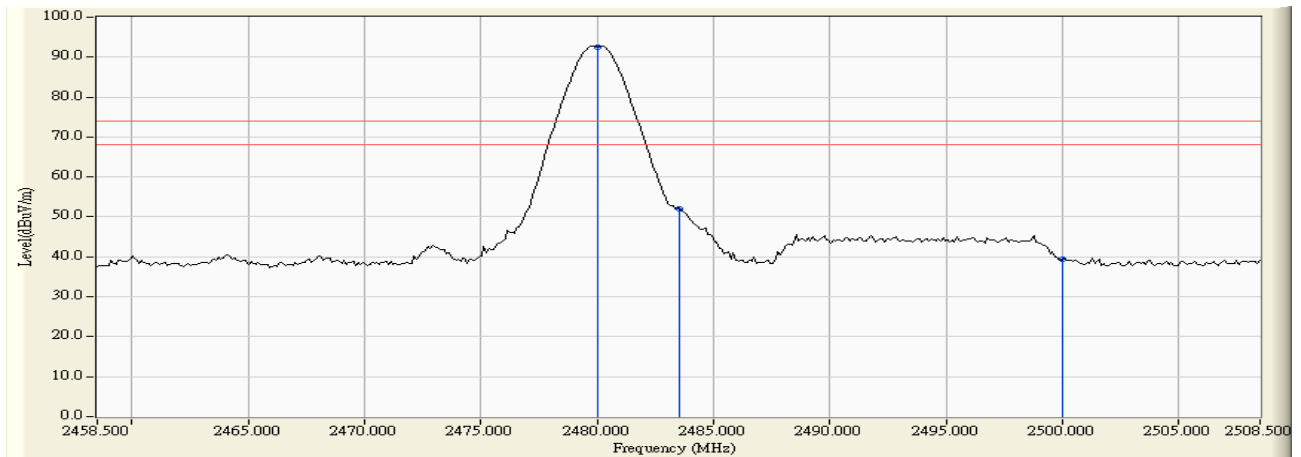
RF Radiated Measurement:

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	54.008	52.071	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 3: Transmitter -1Mbps(GFSK)- Antenna 2 (2480MHz)

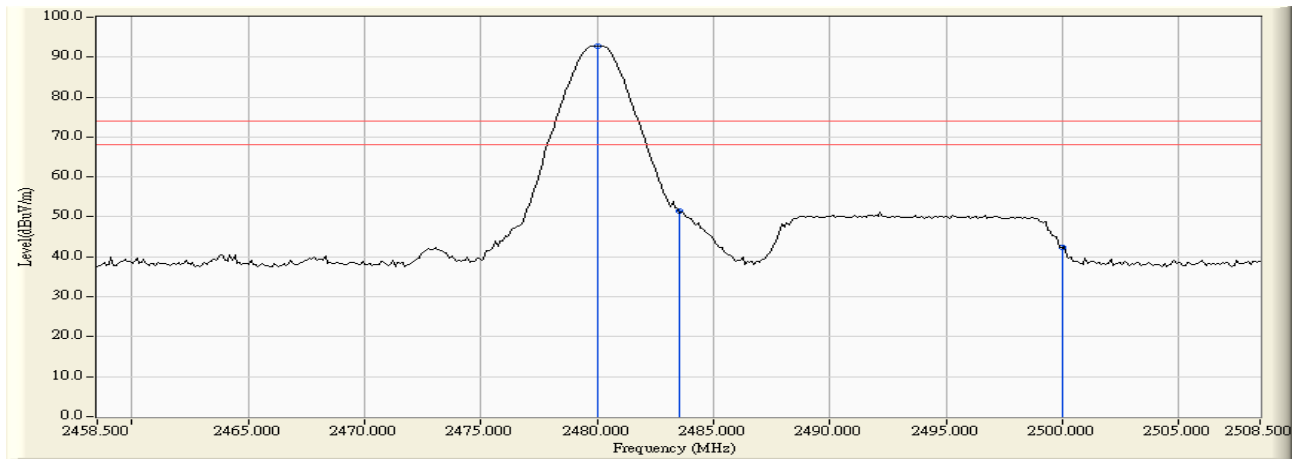
RF Radiated Measurement:

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	53.439	51.502	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 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2402MHz)

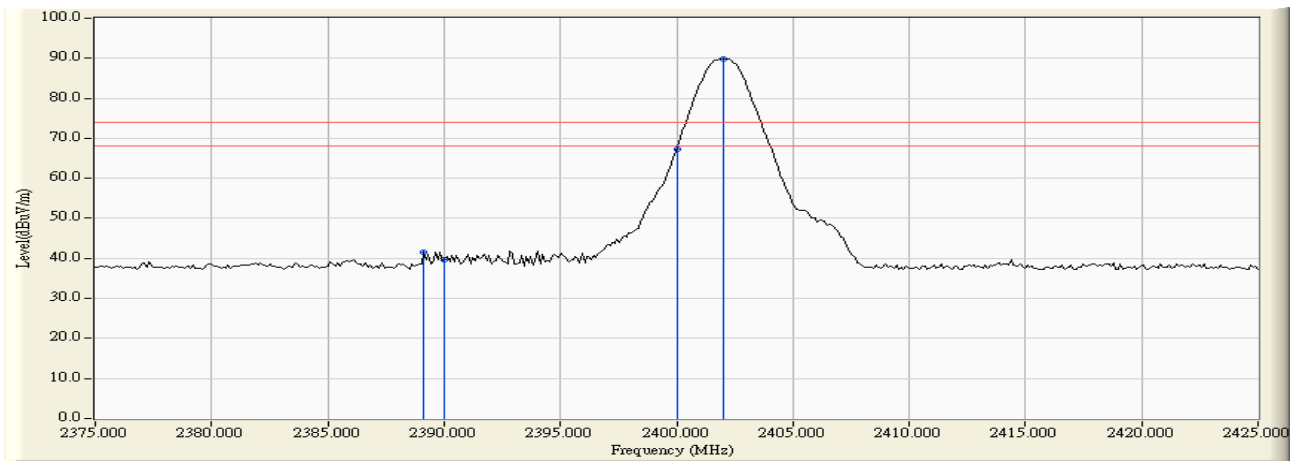
RF Radiated Measurement:

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)	2389.128	-2.382	43.941	41.560	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)

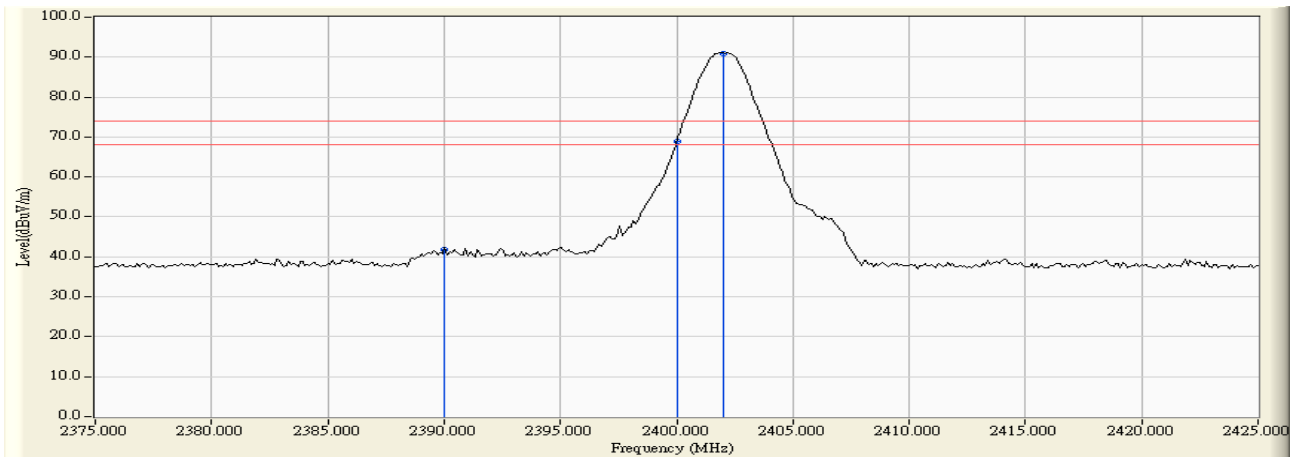
RF Radiated Measurement:

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	44.254	41.877	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)

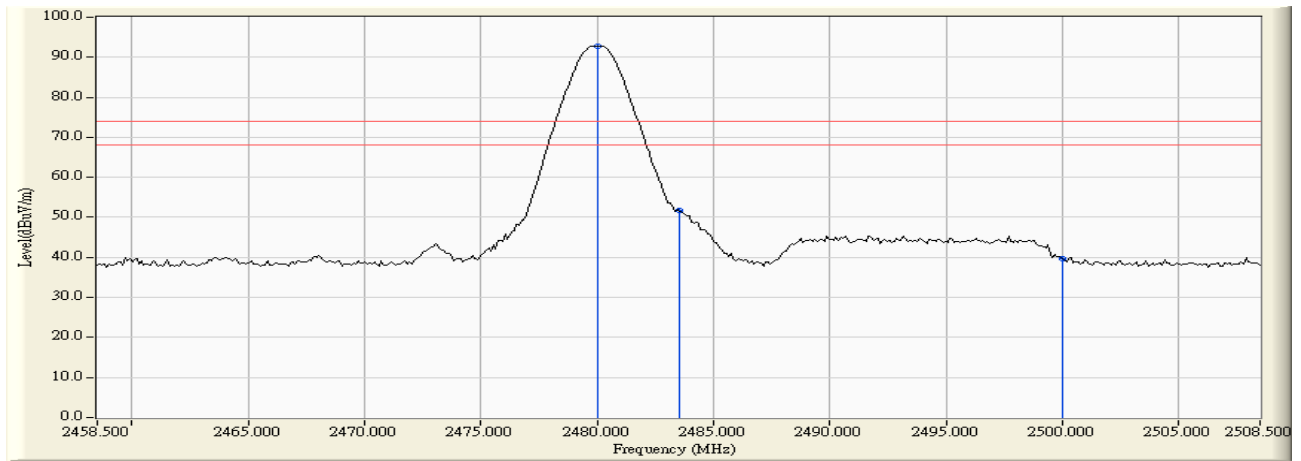
RF Radiated Measurement:

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)	2783.500	-1.937	53.670	51.733	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 4: Transmitter -3Mbps(8DPSK)-Antenna 2 (2480MHz)

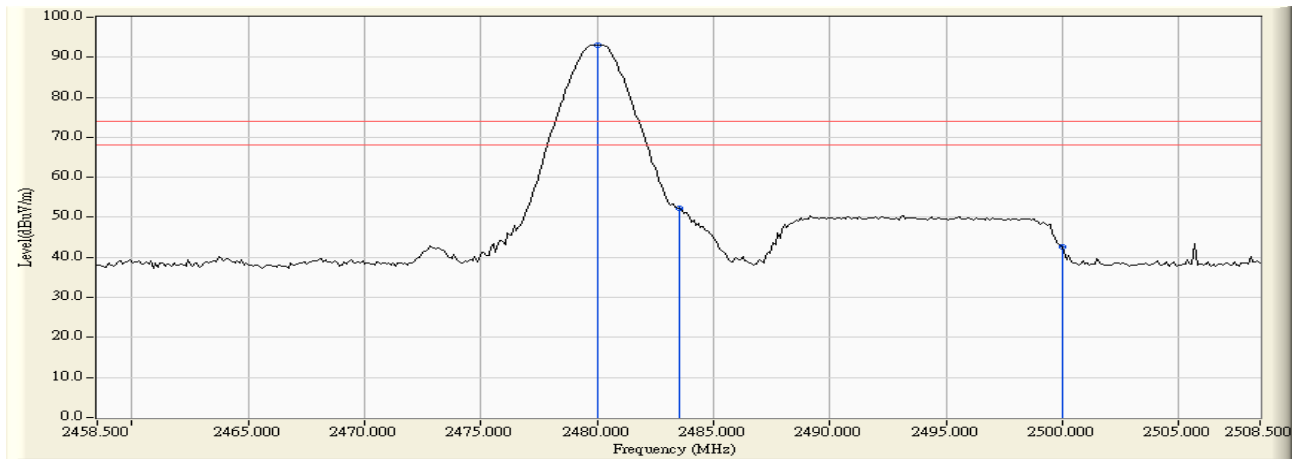
RF Radiated Measurement:

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	54.109	52.172	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.

6. Channel Number

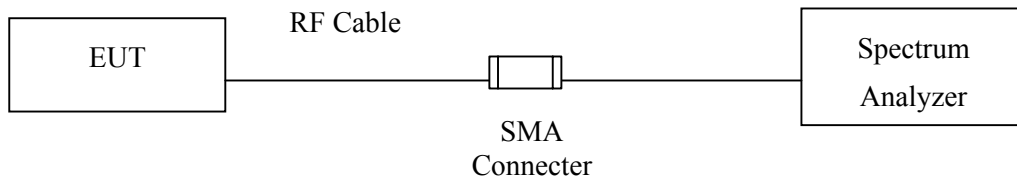
6.1. Test Equipment

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

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

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

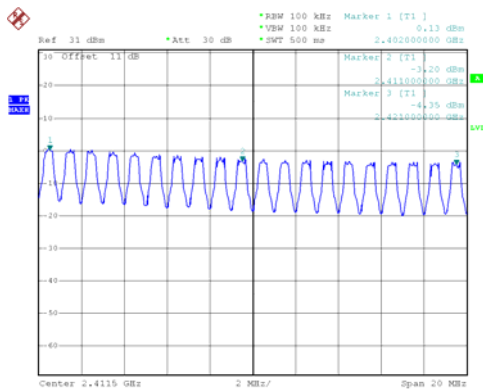
N/A

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

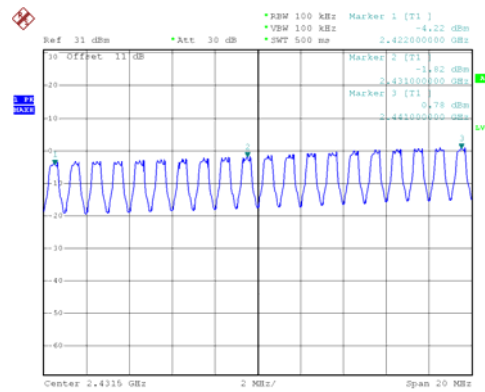
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2421MHz



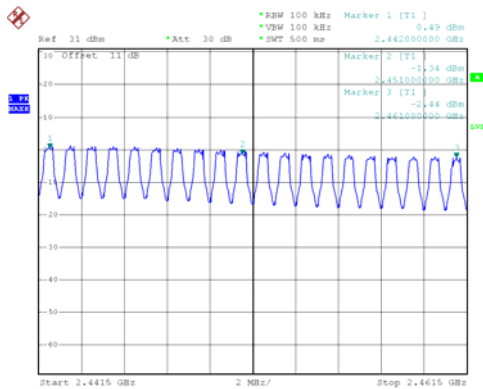
PN1
 Date: 7.MAY.2007 12:30:09

2422-2441MHz



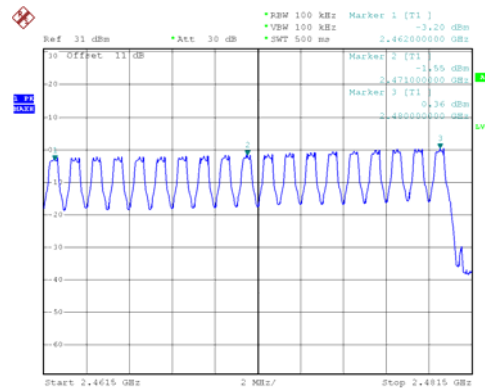
PN1
 Date: 7.MAY.2007 12:30:58

2442-2461MHz



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

2462-2480MHz

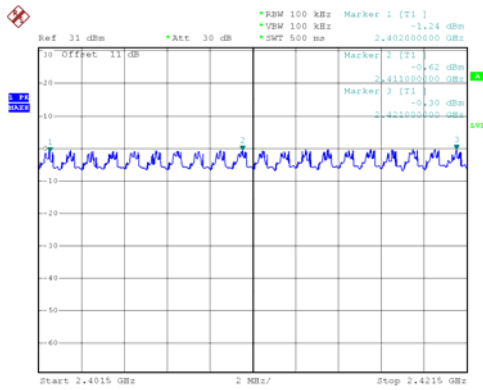


PN1
 Date: 7.MAY.2007 12:50:28

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

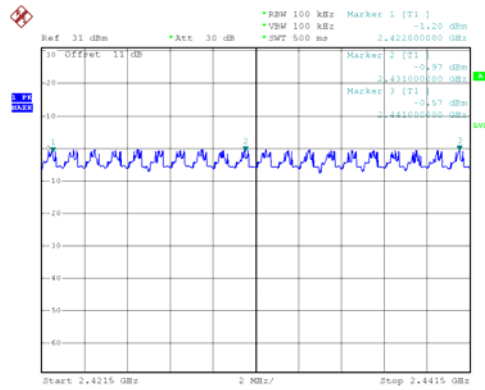
Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

2402-2421MHz



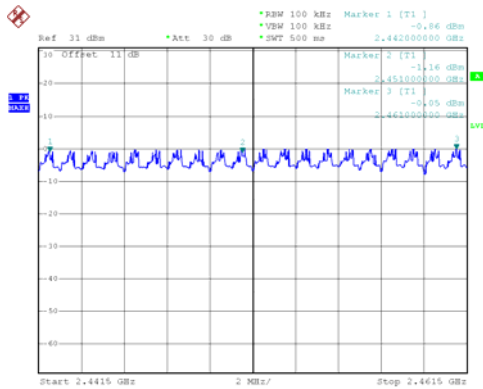
PN1
 Date: 8.MAY.2007 16:21:43

2422-2441MHz



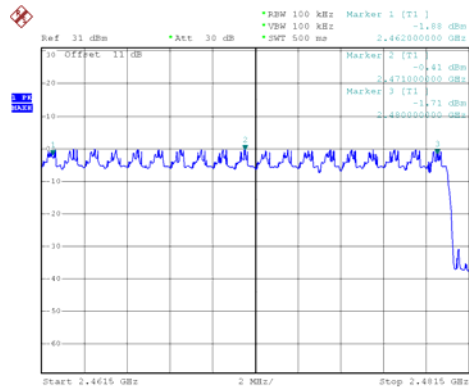
PN1
 Date: 8.MAY.2007 16:27:01

2442-2461MHz



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

2462-2480MHz



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

7. Channel Separation

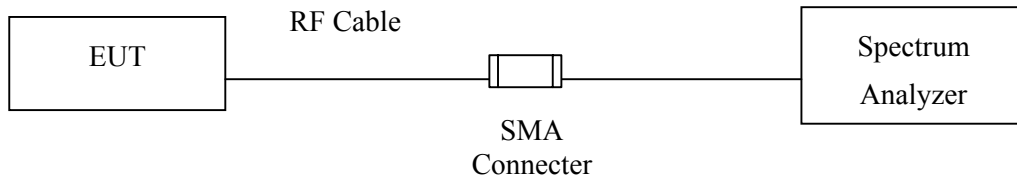
7.1. Test Equipment

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

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

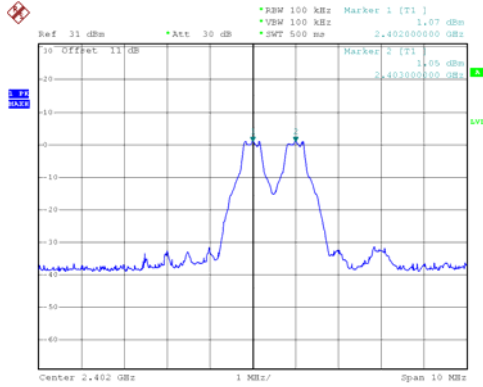
± 150Hz

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

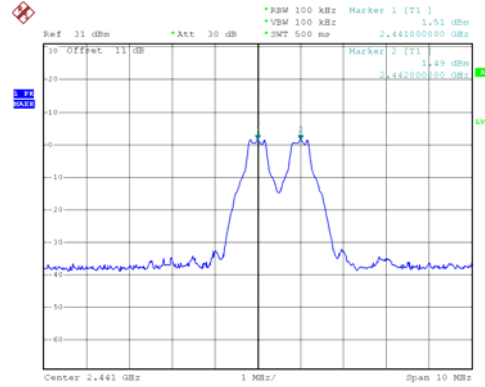
Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

Channel 00 2402MHz



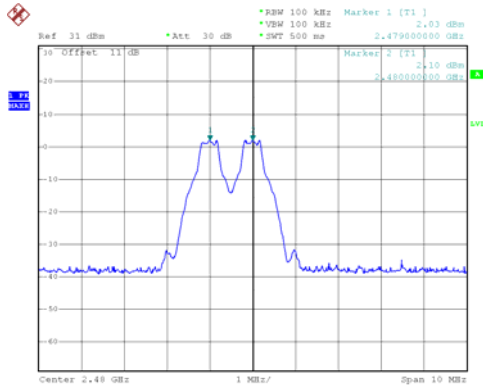
FN1
 Date: 7.MAY.2007 11:30:29

Channel 39 2441MHz



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

Channel 78 2480 MHz

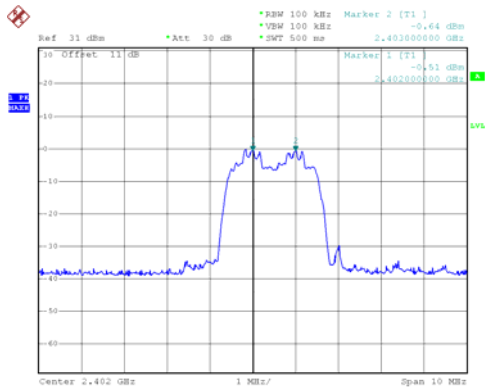


FN1
 Date: 7.MAY.2007 11:34:07

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

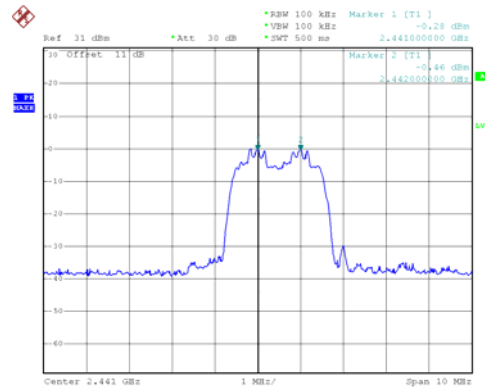
Frequency (MHz)	Measurement Level (MHz)	Required Limit	Result
2402	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2441	1.00	>25 kHz or 2/3 * 20 dB BW	Pass
2480	1.00	>25 kHz or 2/3 * 20 dB BW	Pass

Channel 00 2402MHz



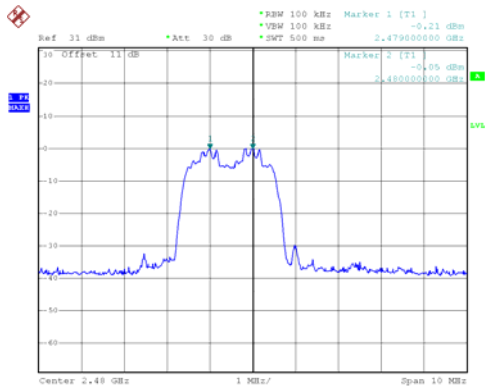
FN1
 Date: 7.MAY.2007 11:38:35

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

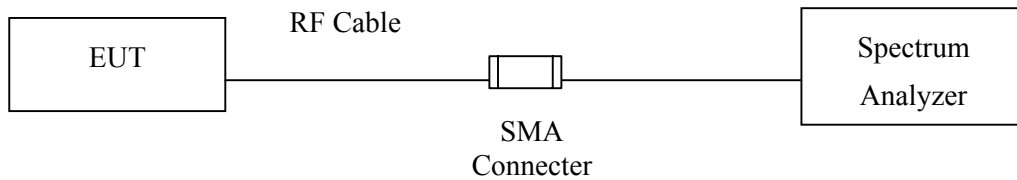
8.1. Test Equipment

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

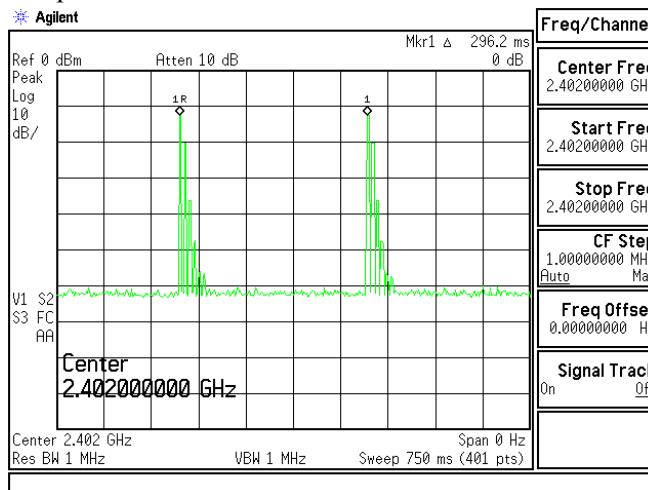
8.5. Test Result of Dwell Time

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)

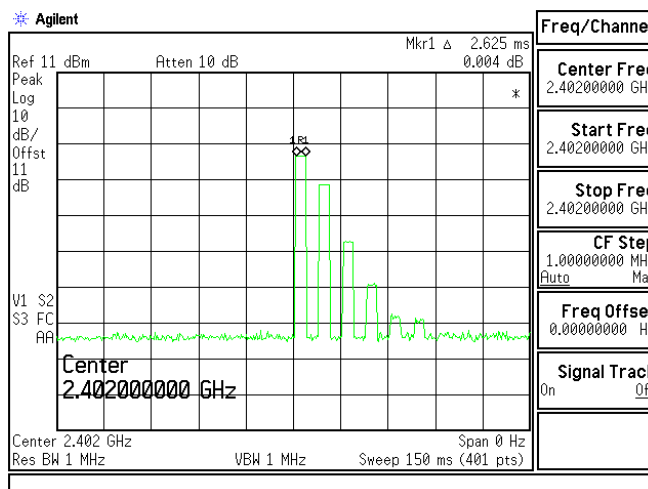
Channel No.	Frequency (MHz)	Time Interval between hops (ms)	Transmission Time (us)	Dwell Time (ms)	Limit (ms)	Result
00	2402	296.2	2625	280	400	Pass
39	2441	296.2	3000	320	400	Pass
78	2480	296.2	2750	293	400	Pass

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

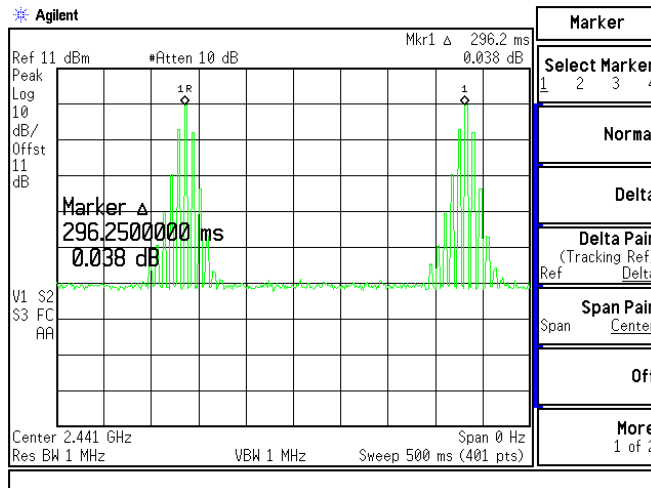
CH 00 Time Interval between hops



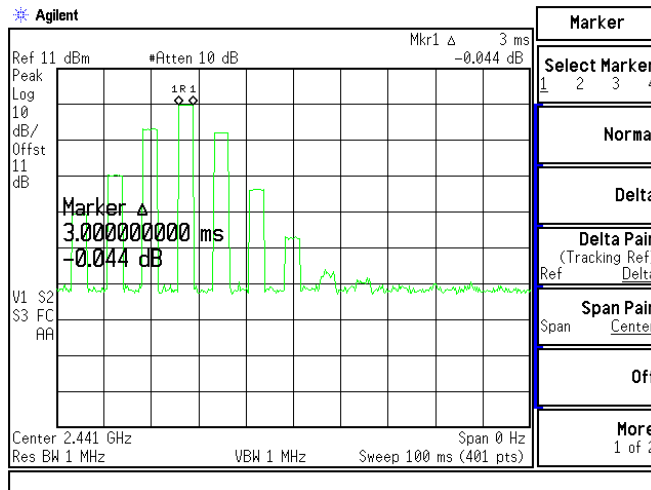
CH 00 Transmission Time



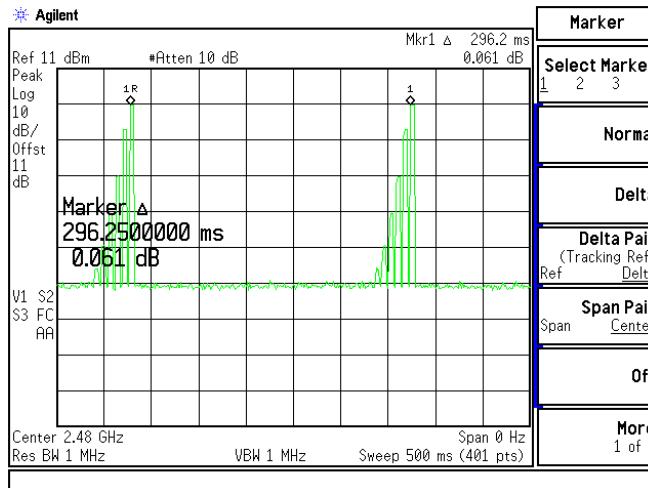
CH 39 Time Interval between hops



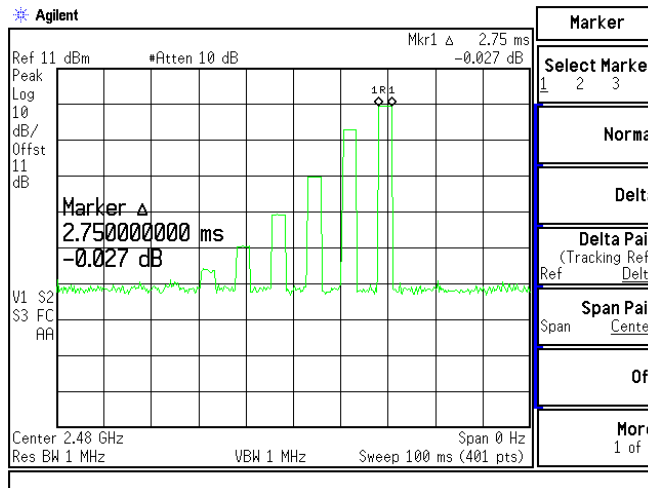
CH 39 Transmission Time



CH 78 Time Interval between hops



CH 78 Transmission Time



Note:

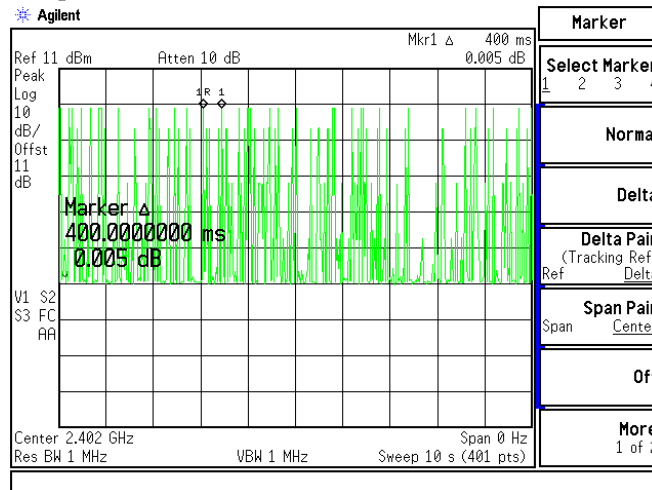
The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

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)

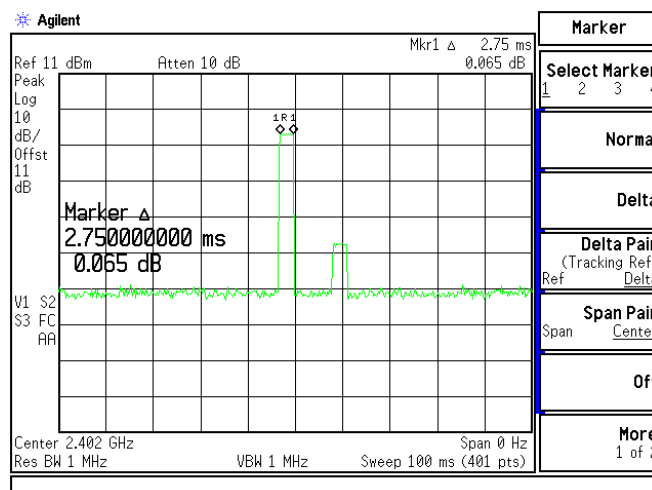
Channel No.	Frequency (MHz)	Time Interval between hops (ms)	Transmission Time (us)	Dwell Time (ms)	Limit (ms)	Result
00	2402	400	2750	217	400	Pass
39	2441	600	2750	145	400	Pass
78	2480	775	3000	122	400	Pass

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

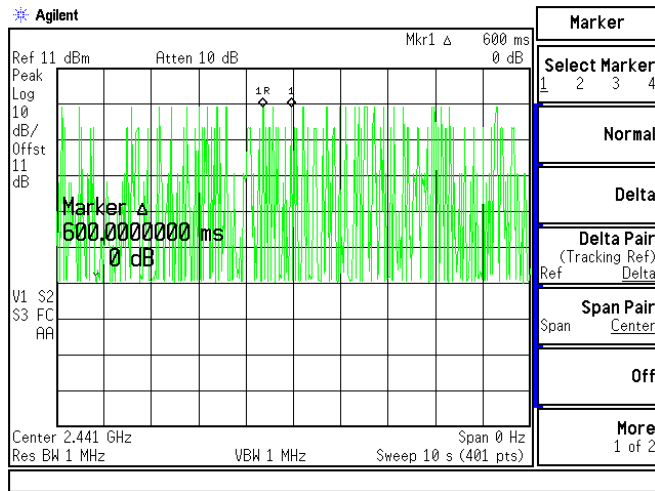
CH 00 Time Interval between hops



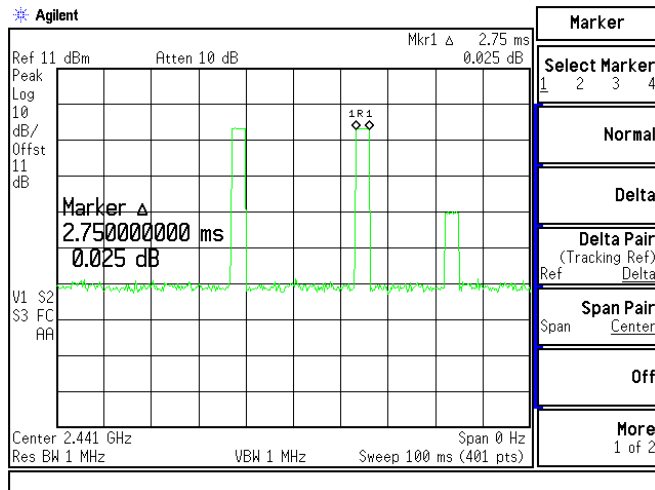
CH 00 Transmission Time



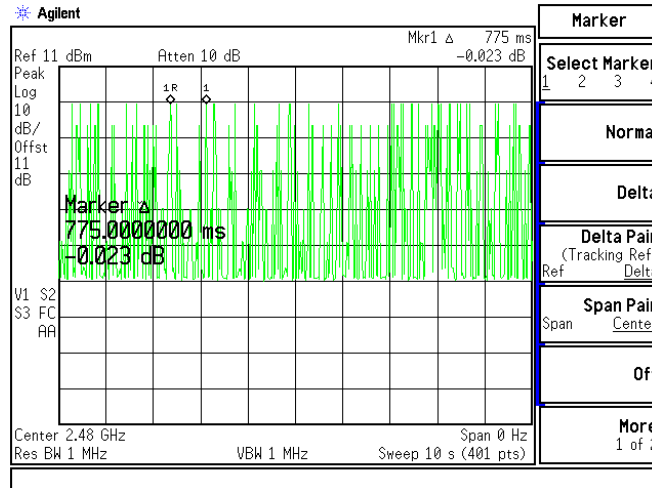
CH 39 Time Interval between hops



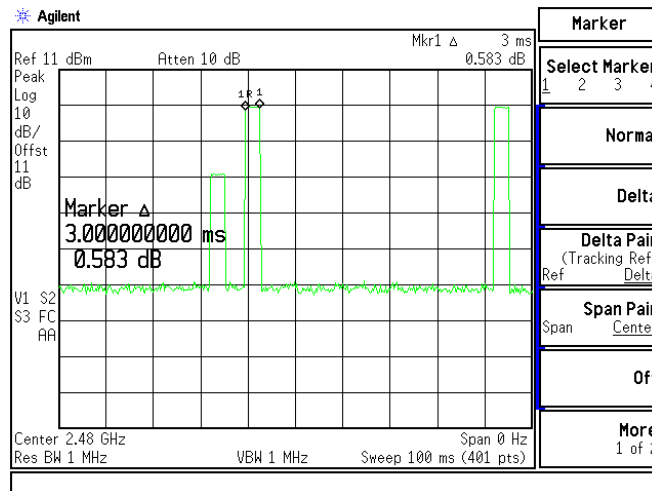
CH 39 Transmission Time



CH 78 Time Interval between hops



CH 78 Transmission Time



Note:

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

9. Occupied Bandwidth

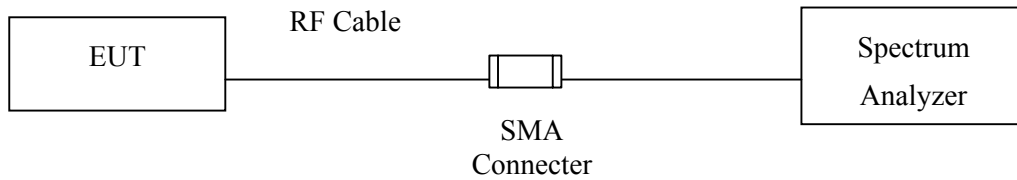
9.1. Test Equipment

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

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

9.2. Test Setup



9.3. Limits

N/A

9.4. Uncertainty

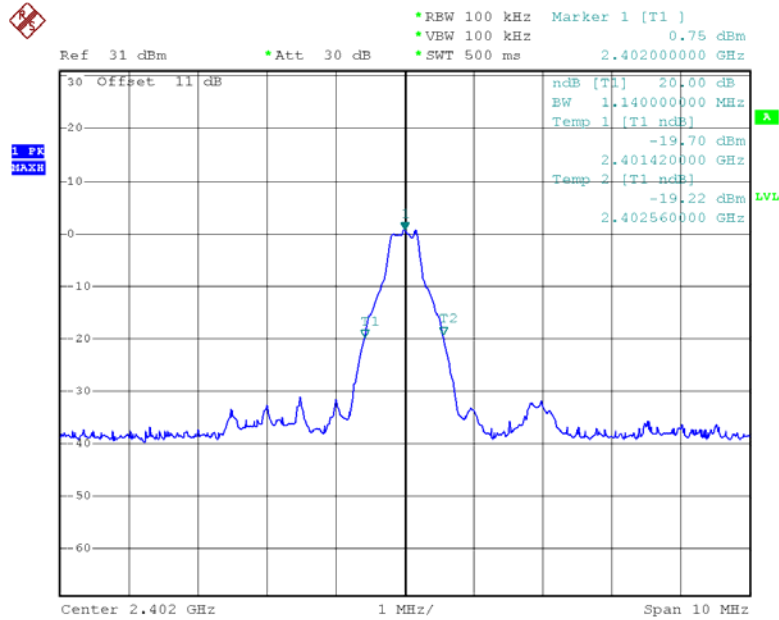
± 150Hz

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:

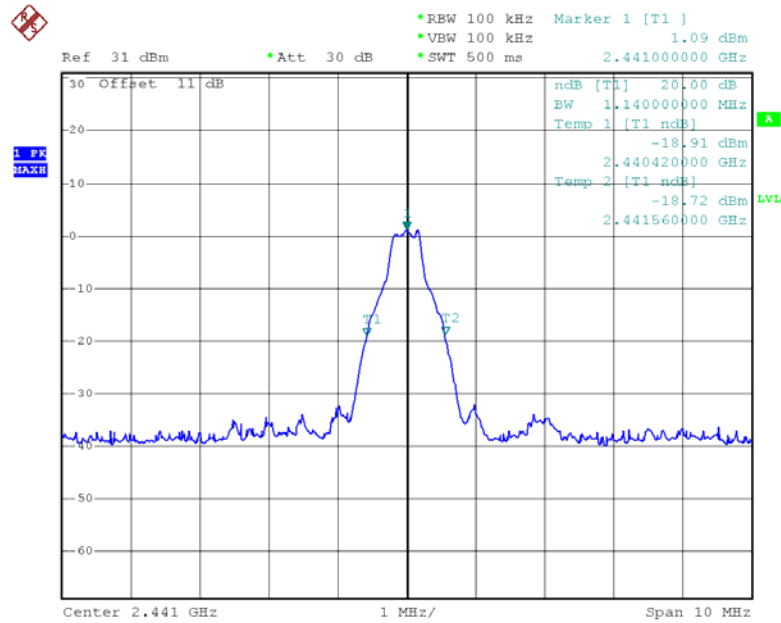


PN1
 Date: 7.MAY.2007 11:23:26

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:

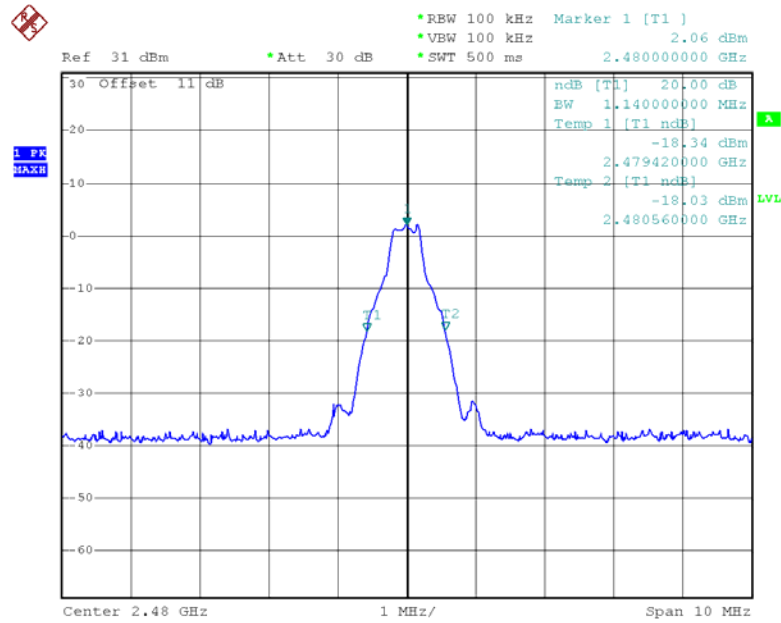


PN1
 Date: 7.MAY.2007 11:24:29

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:

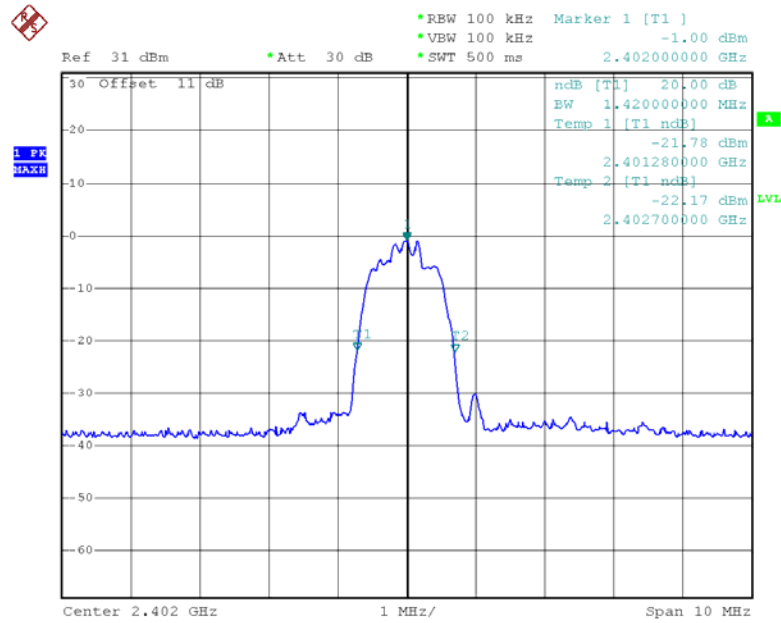


PN1
 Date: 7.MAY.2007 11:25:22

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:

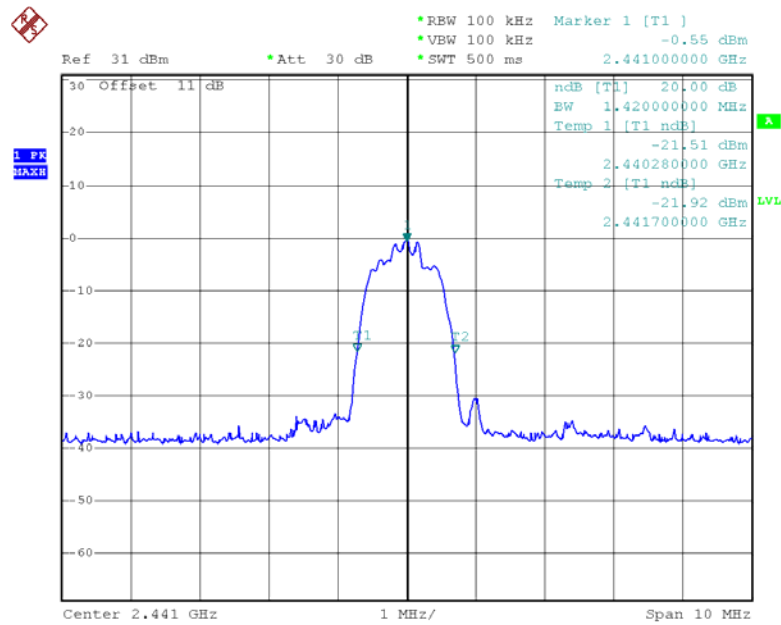


PN1
 Date: 7.MAY.2007 11:18:46

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:

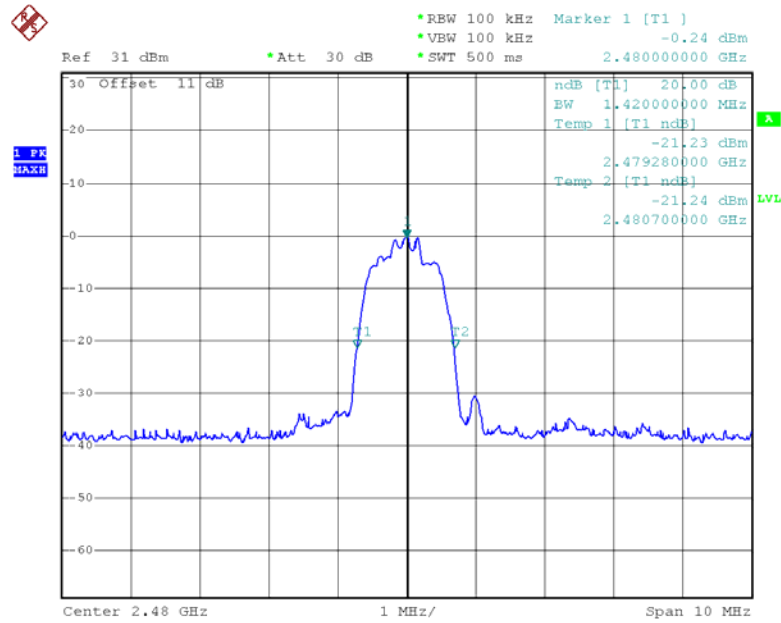


PN1
 Date: 7.MAY.2007 11:19:58

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.