



Test Report

Product Name	Notebook P.C.
Model No.	F9D
FCC ID	MSQF9AWGE780

Applicant	ASUSTeK COMPUTER INC.
Address	4FL., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.

Date of Receipt	March 13, 2007
Issued Date	May 14, 2007
Report No.	074L108-RFUSP05V01

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: May 14, 2007

Report No.: 074L108-RFUSP05V01



Accredited by NIST (NVLAP)

NVLAP Lab Code: 200533-0

Product Name	Notebook P.C.
Applicant	ASUSTeK COMPUTER INC.
Address	4FL., No. 150, Li-Te Rd., Peitou, Taipei, Taiwan, R.O.C.
Manufacturer	ASUSTeK COMPUTER INC.
Model No.	F9D
Rated Voltage	AC 120V/60Hz
Working Voltage	AC 120V/60Hz
Trade Name	ASUS
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2005 ANSI C63.4: 2003
Test Result	Complied



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

Documented By

:

Genie Chang(Engineering Adm. Specialist /
Genie Chang)

Tested By

:

Dino Chen

(Engineer /Tim Sung)



0914

Approved By

:

Gene Chang

(President /Gene Chang)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. EUT Description.....	5
1.2. Operational Description	6
1.3. Tested System Details.....	7
1.4. Configuration of Test System.....	7
1.5. EUT Exercise Software	7
1.6. Test Facility	8
2. Conducted Emission.....	9
2.1. Test Equipment.....	9
2.2. Test Setup	9
2.3. Limits	9
2.4. Test Procedure	10
2.5. Uncertainty	10
2.6. Test Result of Conducted Emission.....	11
3. Peak Power Output	15
3.1. Test Equipment.....	15
3.2. Test Setup	15
3.3. Limits	15
3.4. Uncertainty	15
3.5. Test Result of Peak Power Output.....	16
4. Radiated Emission.....	20
4.1. Test Equipment.....	20
4.2. Test Setup	21
4.3. Limits	21
4.4. Test Procedure	22
4.5. Uncertainty	22
4.6. Test Result of Radiated Emission.....	23
5. Band Edge	31
5.1. Test Equipment.....	31
5.2. Test Setup	31
5.3. Limits	32
5.4. Test Procedure	32
5.5. Uncertainty	32
5.6. Test Result of Band Edge	33
6. Occupied Bandwidth.....	41
6.1. Test Equipment.....	41
6.2. Test Setup	41
6.3. Limits	41
6.4. Uncertainty	41
6.5. Test Result of Occupied Bandwidth	42
7. Power Density	48
7.1. Test Equipment.....	48

7.2.	Test Setup	48
7.3.	Limits	48
7.4.	Uncertainty	48
7.5.	Test Result of Power Density	49
8.	EMI Reduction Method During Compliance Testing	55

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Notebook P.C.
Trade Name	ASUS
Model No.	F9D
FCC ID	MSQF9AWGE780
Frequency Range	2412MHz - 2462MHz
Channel Number	11 in 2.4GHz band
Data Speed	802.11b – 1, 2, 5.5, 11Mbps 802.11g – 6, 9, 12, 18, 24, 36, 48, 54Mbps
Type of Modulation	DSSS/OFDM
Antenna Type	Connector (I-PEX)
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
Channel Separation	5MHz in 2.4GHz band
Power Adapter	MFR: LITE ON, M/N: PA-1900-04 Input: AC 100-240V, 50-60Hz, 1.5A Output: DC 19V-4.74A Cable out: Non-Shielded, 1.75m with one ferrite core bonded. Power Cord: Non-Shielded, 1.8m

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	TYCO	1909802 (Main) 1909805 (AUX) 1909888 (MIMO)	0.44 dBi for 2.4 GHz
2	ACON	APP6P-700043/CM2P76-0245600 APP6P-700044/CM2P76-0245601 APP6P-700045/CM2P76-0245602	2.52 dBi for 2.4 GHz

Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 1:	2412 MHz	Channel 5:	2432 MHz	Channel 9:	2452 MHz
Channel 2:	2417 MHz	Channel 6:	2437 MHz	Channel 10:	2457 MHz
Channel 3:	2422 MHz	Channel 7:	2442 MHz	Channel 11:	2462 MHz
Channel 4:	2427 MHz	Channel 8:	2447 MHz		

Note:

1. The EUT is a Notebook P.C. with a built-in 2.4GHz transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 11Mbps and 802.11a/g is 54Mbps)
4. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
5. Part 15 Subpart B compliance for spread spectrum devices is shown on the report no. 074L108-RFUSP01V02.
6. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

1.2. Operational Description

EUT is a Notebook P.C. with a built-in 2.4GHz transceiver. There are 11 channels in 2412 – 2462MHz. The channels are separated by 5MHz. This device supports the data rates of 1, 2, 5.5, 11Mbps in 802.11b mode and 6, 9, 12, 18, 24, 36, 48, 54Mbps in 802.11g mode. The signals are modulated by DSSS in 802.11b mode and OFDM in 802.11g mode. The antennas are Connector and use diversity to improve the receiving sensitivity.

This Notebook P.C., complied with IEEE 802.11b and IEEE 802.11g, is a high-efficiency Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without network wires. Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any IEEE 802.11b and IEEE 802.11g network.

Test Mode	Mode 1: Transmitter 802.11b (AR5BXB63)
	Mode 2: Transmitter 802.11g (AR5BXB63)

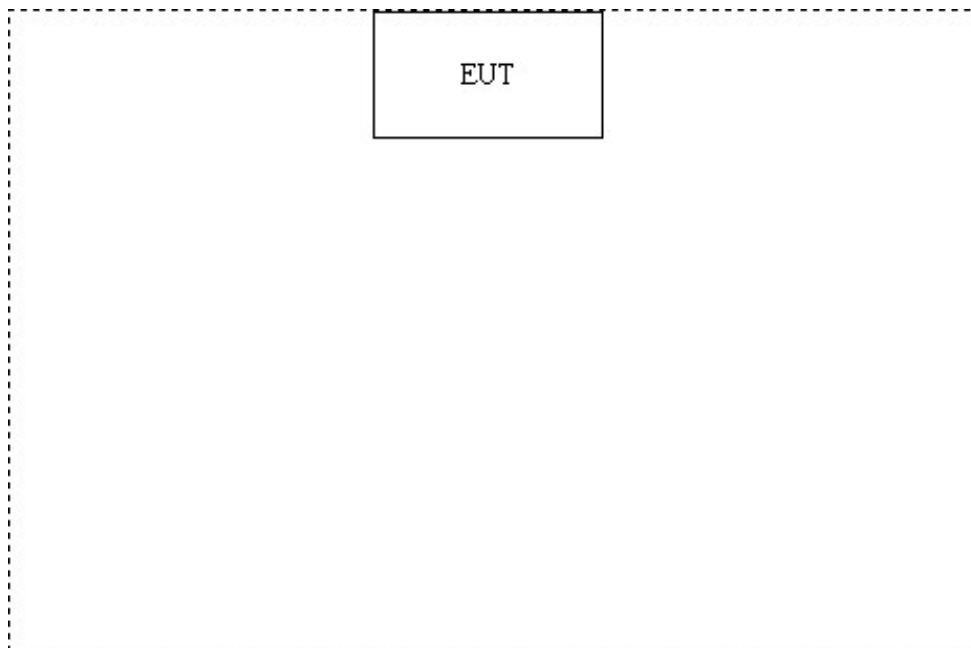
1.3. Tested System Details

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	N/A	N/A	N/A	N/A

Signal Cable Type	Signal cable Description
A	N/A

1.4. Configuration of Test System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Run “ART TOOL” test software on the notebook.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press “OK” to start the continuous transmission.
- (5) Verify that the EUT works properly.

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	50-65
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

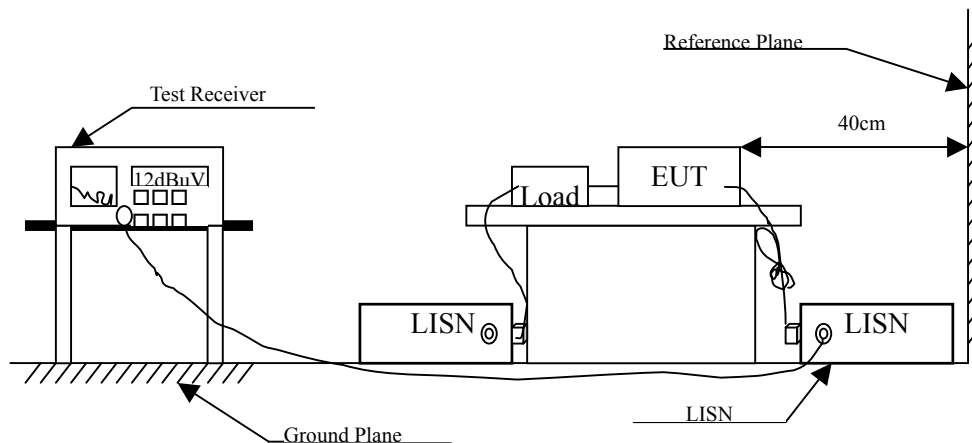
2.1. Test Equipment

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 _(註)	56-46 _(註)
0.50-5.0	56	46
5.0 - 30	60	50

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 refers 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 of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were invested 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 P.C.
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.177	0.202	41.350	41.552	-23.677	65.229
0.224	0.202	41.880	42.082	-21.804	63.886
0.642	0.219	37.840	38.059	-17.941	56.000
2.494	0.293	38.720	39.013	-16.987	56.000
4.845	0.394	31.310	31.704	-24.296	56.000
17.533	0.933	32.120	33.053	-26.947	60.000
Average					
0.177	0.202	20.150	20.352	-34.877	55.229
0.224	0.202	32.910	33.112	-20.774	53.886
0.642	0.219	26.300	26.519	-19.481	46.000
2.494	0.293	30.670	30.963	-15.037	46.000
4.845	0.394	24.840	25.234	-20.766	46.000
17.533	0.933	26.910	27.843	-22.157	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 P.C.
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.150	0.202	50.290	50.492	-15.508	66.000
0.392	0.215	42.610	42.825	-16.261	59.086
0.630	0.218	42.040	42.258	-13.742	56.000
1.318	0.247	41.220	41.467	-14.533	56.000
5.330	0.391	27.980	28.371	-31.629	60.000
17.255	0.782	28.780	29.562	-30.438	60.000
Average					
0.150	0.202	40.400	40.602	-15.398	56.000
0.392	0.215	31.310	31.525	-17.561	49.086
0.630	0.218	29.660	29.878	-16.122	46.000
1.318	0.247	30.510	30.757	-15.243	46.000
5.330	0.391	21.880	22.271	-27.729	50.000
17.255	0.782	23.690	24.472	-25.528	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 P.C.
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.205	0.202	40.640	40.842	-23.587	64.429
0.330	0.214	38.970	39.184	-21.673	60.857
0.900	0.232	37.190	37.422	-18.578	56.000
2.435	0.292	38.910	39.202	-16.798	56.000
4.267	0.366	30.980	31.346	-24.654	56.000
16.880	0.925	33.000	33.925	-26.075	60.000
Average					
0.205	0.202	25.450	25.652	-28.777	54.429
0.330	0.214	28.250	28.464	-22.393	50.857
0.900	0.232	26.790	27.022	-18.978	46.000
2.435	0.292	30.750	31.042	-14.958	46.000
4.267	0.366	24.230	24.596	-21.404	46.000
16.880	0.925	27.850	28.775	-21.225	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 P.C.
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.162	0.202	48.130	48.332	-17.325	65.657
0.244	0.203	43.120	43.323	-19.991	63.314
0.615	0.218	41.780	41.998	-14.002	56.000
1.873	0.274	38.790	39.064	-16.936	56.000
5.048	0.387	27.270	27.657	-32.343	60.000
16.853	0.785	29.490	30.275	-29.725	60.000
Average					
0.162	0.202	38.550	38.752	-16.905	55.657
0.244	0.203	33.030	33.233	-20.081	53.314
0.615	0.218	29.260	29.478	-16.522	46.000
1.873	0.274	29.540	29.814	-16.186	46.000
5.048	0.387	20.690	21.077	-28.923	50.000
16.853	0.785	24.510	25.295	-24.705	50.000

Note:

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

3. Peak Power Output

3.1. Test Equipment

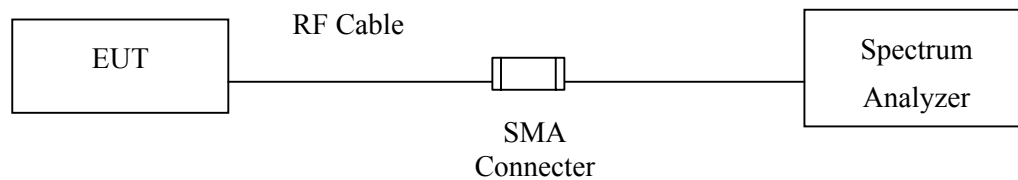
The following test equipments are used during the radiated emission tests:

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007

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

3.2. Test Setup

Conducted Measurement



3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Uncertainty

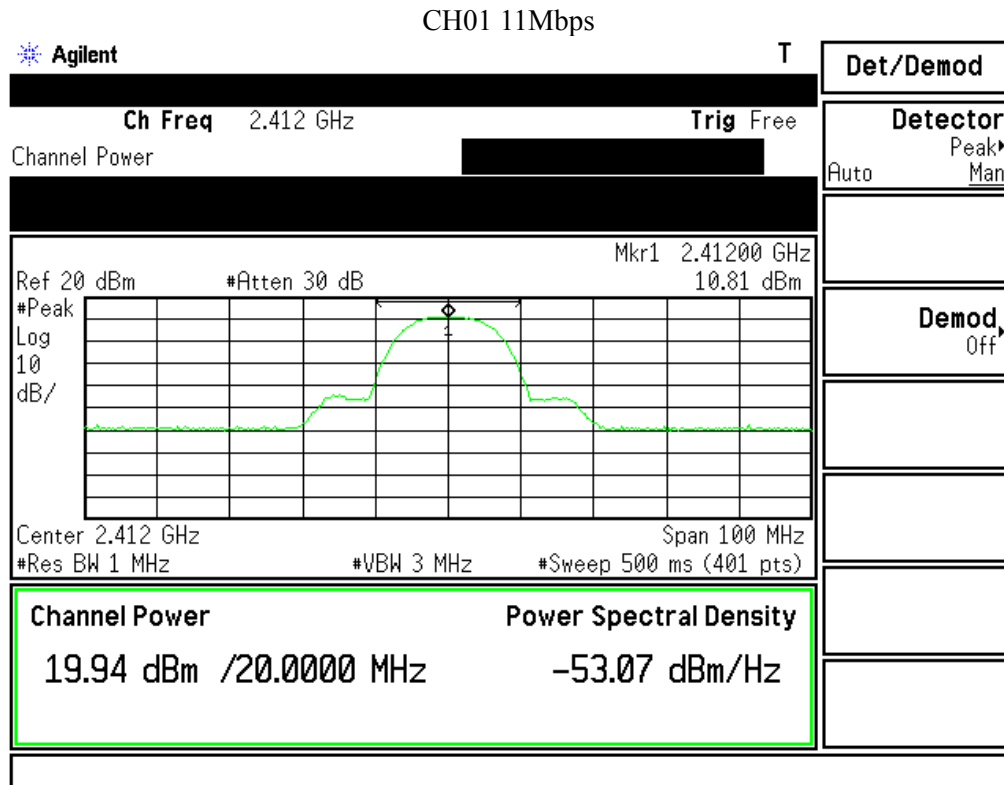
± 1.27 dB

3.5. Test Result of Peak Power Output

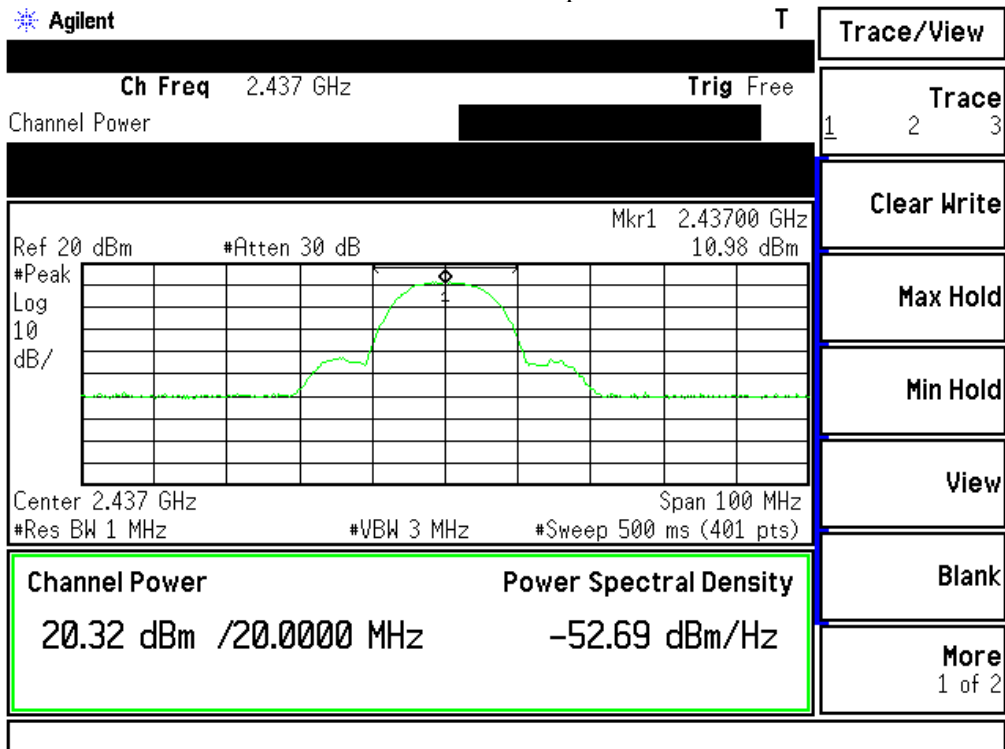
Product : Notebook P.C.
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63)

Data Speed: 1Mbps

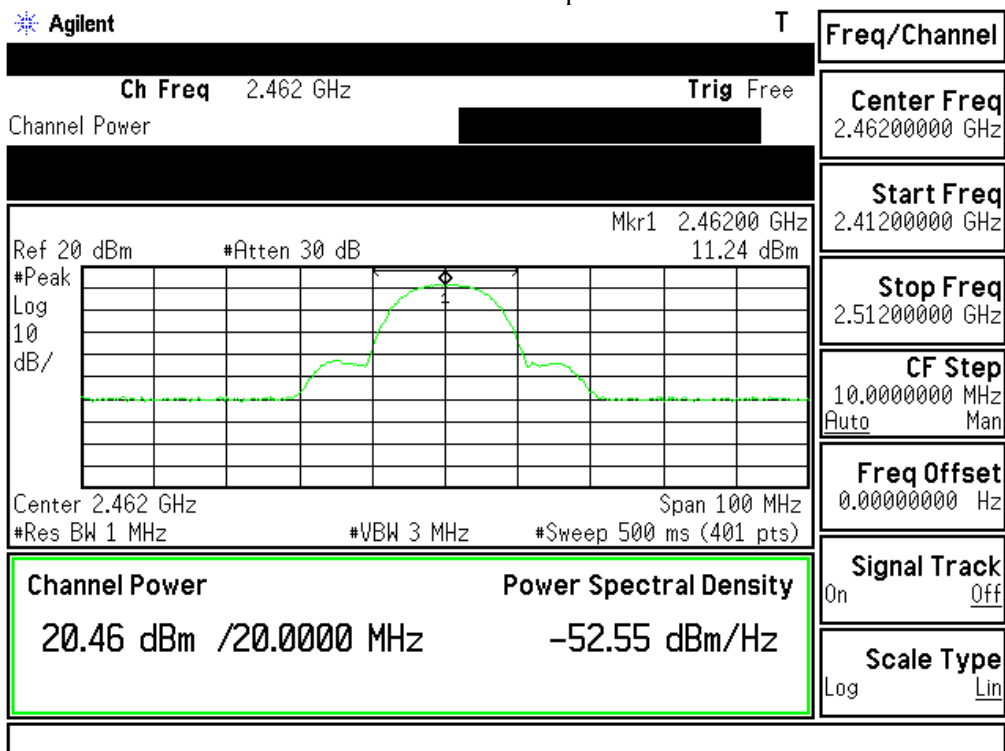
Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
1	2412.00	19.94dBm	1 Watt= 30 dBm	Pass
6	2437.00	20.32dBm	1 Watt= 30 dBm	Pass
11	2462.00	20.46dBm	1 Watt= 30 dBm	Pass



CH06 11Mbps



CH11 11Mbps

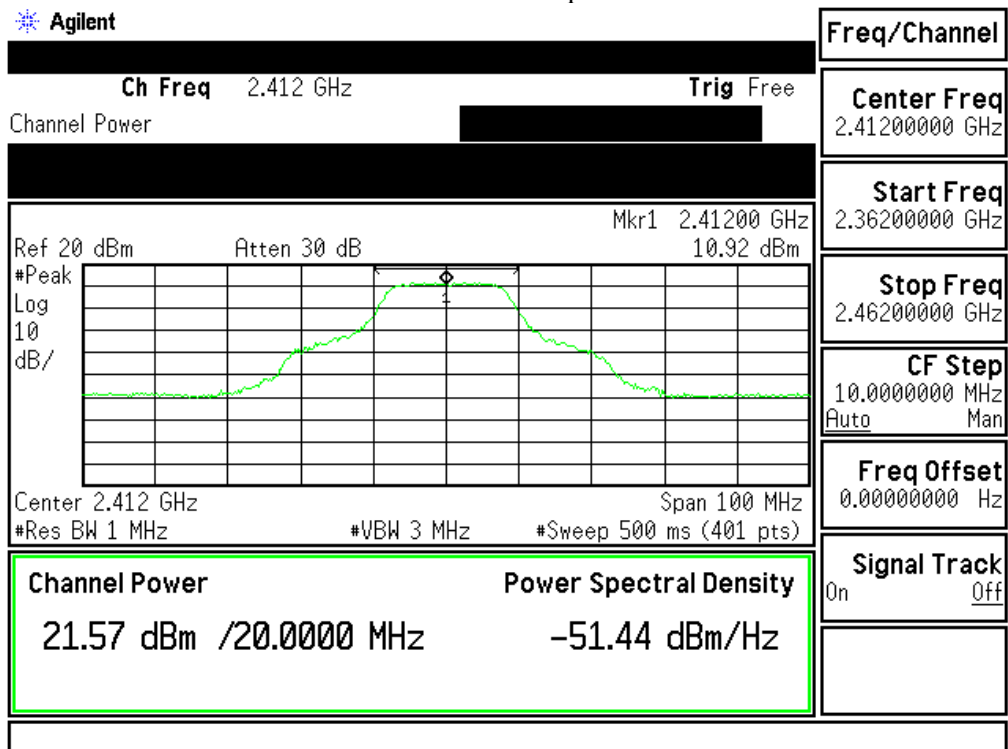


Product : Notebook P.C.
 Test Item : Peak Power Output Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63)

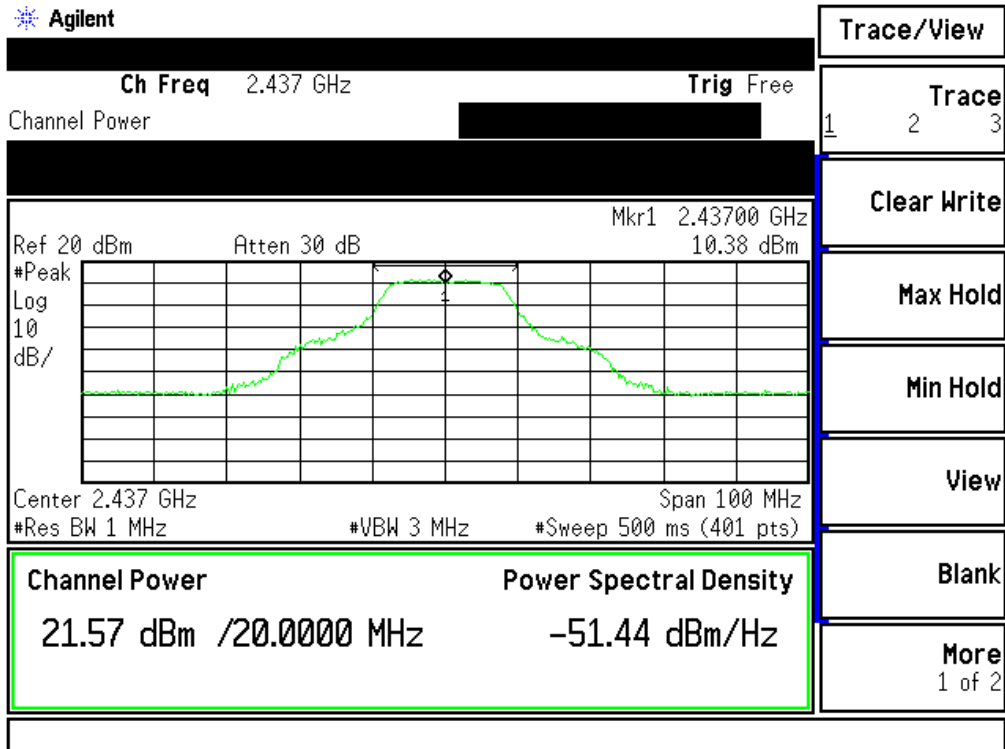
Data Speed: 6Mbps

Channel No.	Frequency (MHz)	Measurement	Required Limit	Result
1	2412.00	21.57dBm	1 Watt= 30 dBm	Pass
6	2437.00	21.57dBm	1 Watt= 30 dBm	Pass
11	2462.00	21.58dBm	1 Watt= 30 dBm	Pass

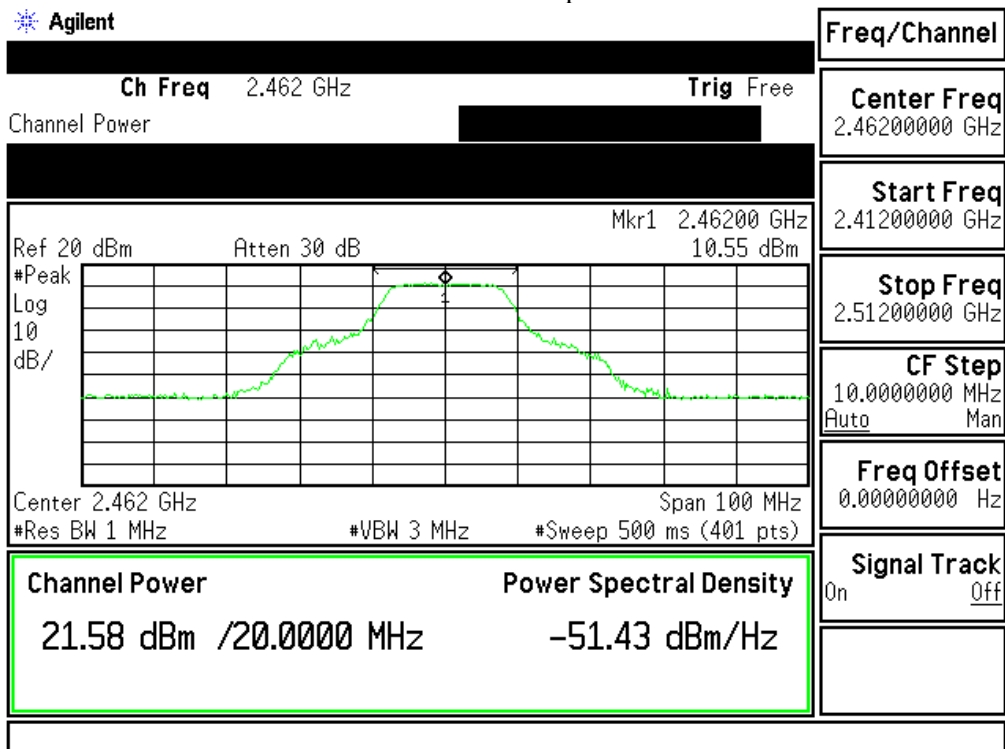
CH01 54Mbps



CH06 54Mbps



CH11 54Mbps



4. Radiated Emission

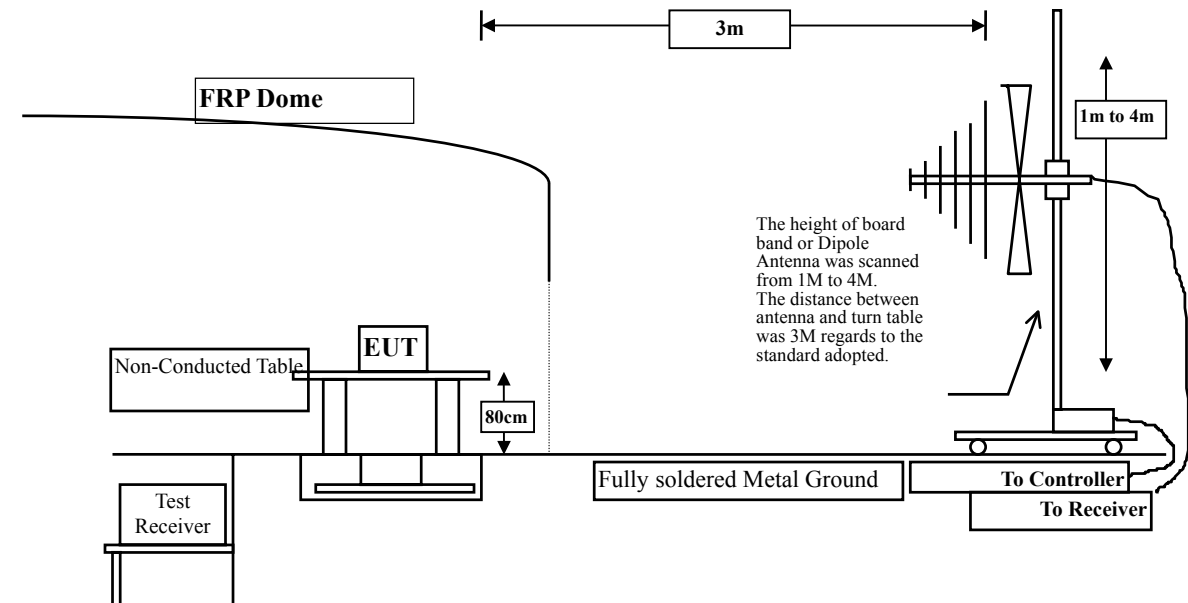
4.1. Test Equipment

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

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☐ 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
☐ 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
☒ Site # 3	X	Test Receiver	R & S	ESI 26 / 838786/004	May, 2007
	X	Spectrum Analyzer	Agilent	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

Note: 1. All equipments are calibrated every one year.
2. Test equipments 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(a) 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 P.C.
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2412MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4824.000	3.723	35.449	39.172	-34.828	74.000
7236.000	9.439	32.602	42.040	-31.960	74.000
9648.000	11.829	31.290	43.119	-30.881	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	4.281	39.283	43.564	-30.436	74.000
7236.000	9.439	32.520	41.958	-32.042	74.000
9648.000	11.829	32.183	44.012	-29.988	74.000

Average

Detector:

--

Note:

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

Product : Notebook P.C.
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4874.000	3.893	34.725	38.617	-35.383	74.000
7311.000	9.624	32.991	42.615	-31.385	74.000
9748.000	11.805	32.296	44.102	-29.898	74.000

Average

Detector:

--

Vertical

Peak Detector:

4874.000	3.893	39.213	43.105	-30.895	74.000
7311.000	9.624	32.445	42.069	-31.931	74.000
9748.000	11.805	31.420	43.226	-30.774	74.000

Average

Detector:

--

Note:

- The reading levels below 1GHz and above 1GHz are quasi-peak values and peak/average values, respectively.
- Receiver setting (Peak Detector) : RBW:1MHz; VBW:1MHz; Span:100MHz °
- Receiver setting (AVG Detector) : RBW:1MHz; VBW:30Hz; Span:20MHz °
- Emission Level = Reading Level + Correct Factor.
- 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 P.C.
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4924.000	4.075	34.669	38.743	-35.257	74.000
7386.000	9.812	33.176	42.988	-31.012	74.000
9848.000	11.819	32.583	44.402	-29.598	74.000

Average

Detector:

--

Vertical

Peak Detector:

4924.000	4.282	39.150	43.432	-30.568	74.000
7386.000	9.773	32.612	42.385	-31.615	74.000
9848.000	11.819	31.472	43.291	-30.709	74.000

Average

Detector:

--

Note:

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

Product : Notebook P.C.
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2412 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4806.000	3.668	35.514	39.182	-34.818	74.000
7218.000	9.389	33.091	42.480	-31.520	74.000
9630.000	11.829	32.071	43.901	-30.099	74.000

Average

Detector:

--

Vertical

Peak Detector:

4806.000	4.302	38.936	43.238	-30.762	74.000
7218.000	9.439	32.233	41.671	-32.329	74.000
9630.000	11.829	32.038	43.867	-30.133	74.000

Average

Detector:

--

Note:

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

Product : Notebook P.C.
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4874.000	3.893	34.731	38.623	-35.377	74.000
7311.000	9.624	32.986	42.610	-31.390	74.000
9748.000	11.805	33.065	44.871	-29.129	74.000

Average

Detector:

--

Vertical

Peak Detector:

4874.000	3.893	38.776	42.668	-31.332	74.000
7311.000	9.624	33.327	42.951	-31.049	74.000
9748.000	11.805	32.899	44.705	-29.295	74.000

Average

Detector:

--

Note:

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

Product : Notebook P.C.
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2462 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m

Horizontal

Peak Detector:

4924.000	4.075	34.527	38.601	-35.399	74.000
7386.000	9.812	32.548	42.360	-31.640	74.000
9848.000	11.819	32.741	44.560	-29.440	74.000

Average

Detector:

--

Vertical

Peak Detector:

4924.000	4.282	39.256	43.538	-30.462	74.000
7386.000	9.812	32.982	42.794	-31.206	74.000
9848.000	11.819	32.299	44.118	-29.882	74.000

Average

Detector:

--

Note:

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

Product : Notebook P.C.
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
265.225	14.028	24.745	38.773	-7.227	46.000
425.275	17.766	21.658	39.424	-6.576	46.000
568.350	19.178	22.115	41.293	-4.707	46.000
779.325	21.392	18.550	39.942	-6.058	46.000
922.400	23.080	17.040	40.120	-5.880	46.000
992.725	23.488	17.699	41.187	-12.813	54.000
Vertical					
265.225	14.417	26.922	41.339	-4.661	46.000
398.600	17.966	20.928	38.894	-7.106	46.000
495.600	18.480	23.072	41.552	-4.448	46.000
568.350	21.217	20.076	41.293	-4.707	46.000
709.000	21.237	21.293	42.530	-3.470	46.000
961.200	23.009	21.840	44.849	-9.151	54.000

Note:

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

Product : Notebook P.C.
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
265.225	14.028	23.202	37.230	-8.770	46.000
367.075	15.892	23.456	39.348	-6.652	46.000
425.275	17.766	20.662	38.428	-7.572	46.000
568.350	19.178	22.177	41.355	-4.645	46.000
709.000	20.437	21.177	41.614	-4.386	46.000
961.200	22.909	24.982	47.891	-6.109	54.000
Vertical					
265.225	14.417	24.925	39.342	-6.658	46.000
354.950	15.686	22.924	38.610	-7.390	46.000
495.600	18.480	23.286	41.766	-4.234	46.000
568.350	21.217	20.659	41.876	-4.124	46.000
798.725	21.809	18.878	40.686	-5.314	46.000
961.200	23.009	18.057	41.066	-12.934	54.000

Note:

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

5. Band Edge

5.1. Test Equipment

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

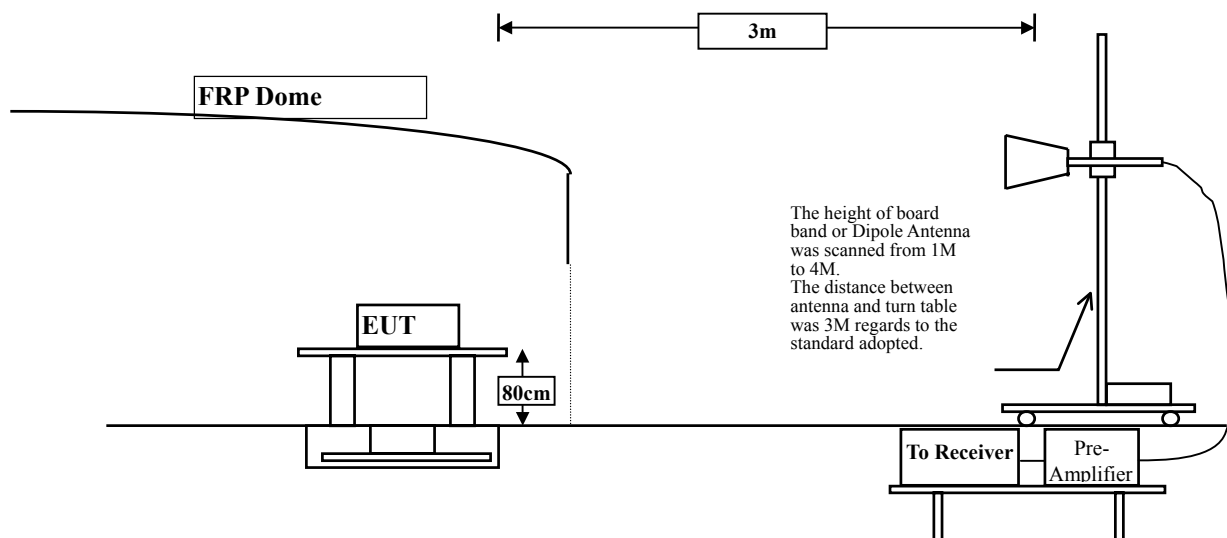
Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Test Receiver	R & S	ESI 26 / 838786/004	May, 2007
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007
X Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2007
X Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2006
X Horn Antenna	Schwarzbeck	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: Site3

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

5.2. Test Setup

RF Radiated Measurement:



5.3. Limits

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 setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

5.5. Uncertainty

Conducted is ± 1.27 dB

Radiated is ± 3.9 dB

5.6. Test Result of Band Edge

Product : Notebook P.C.
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63)

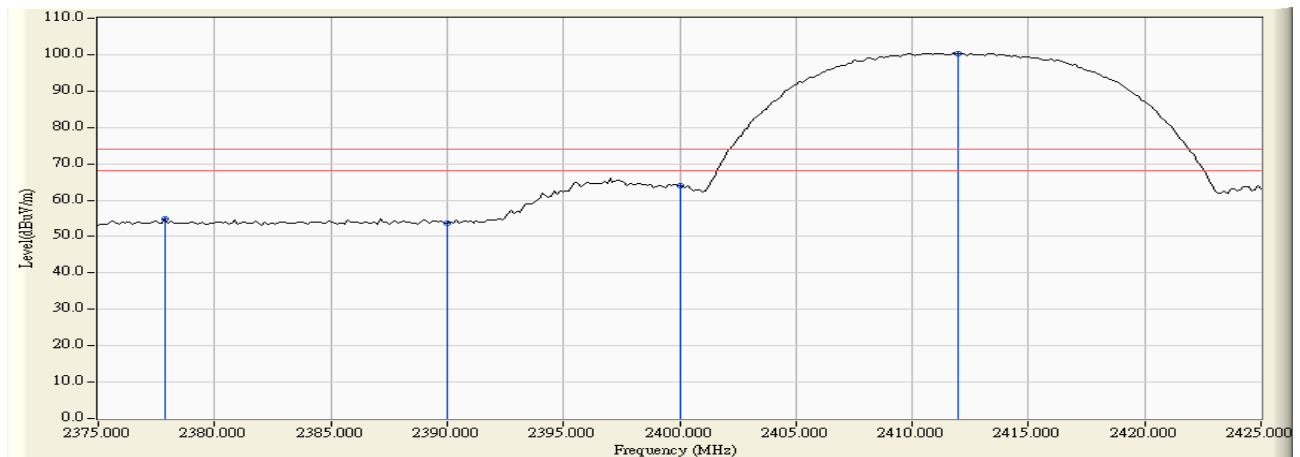
RF Radiated Measurement:

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

RF Radiated Measurement (Horizontal):

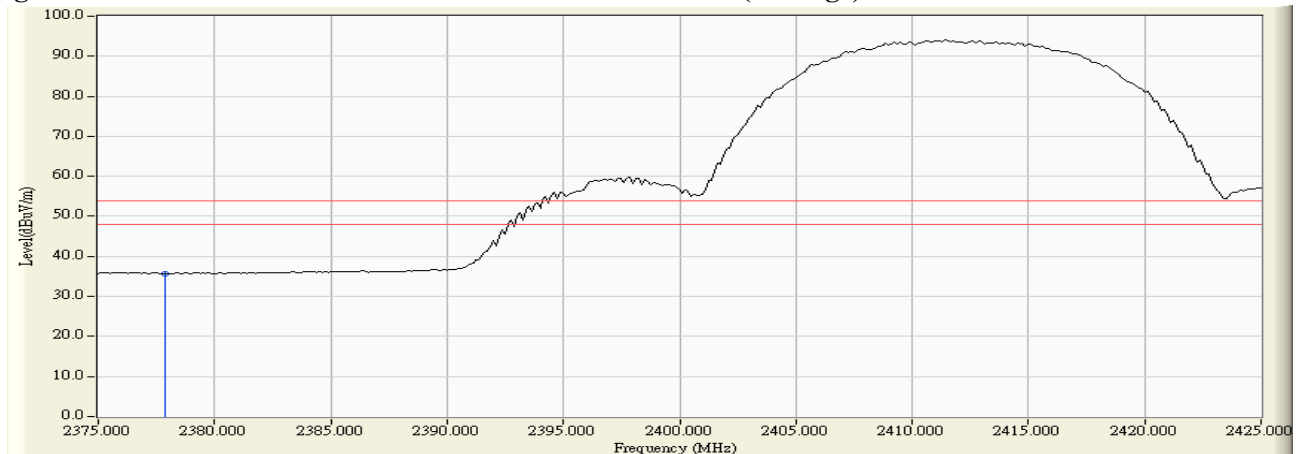
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2377.875	-2.434	57.262	54.828	74.00	54.00	Pass
1 (Average)	2377.875	-2.434	38.192	35.758	74.00	54.00	Pass

Figure Channel 1: Horizontal (Peak)



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

Figure Channel 1: Horizontal (Average)



Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

Product : Notebook P.C.
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63)

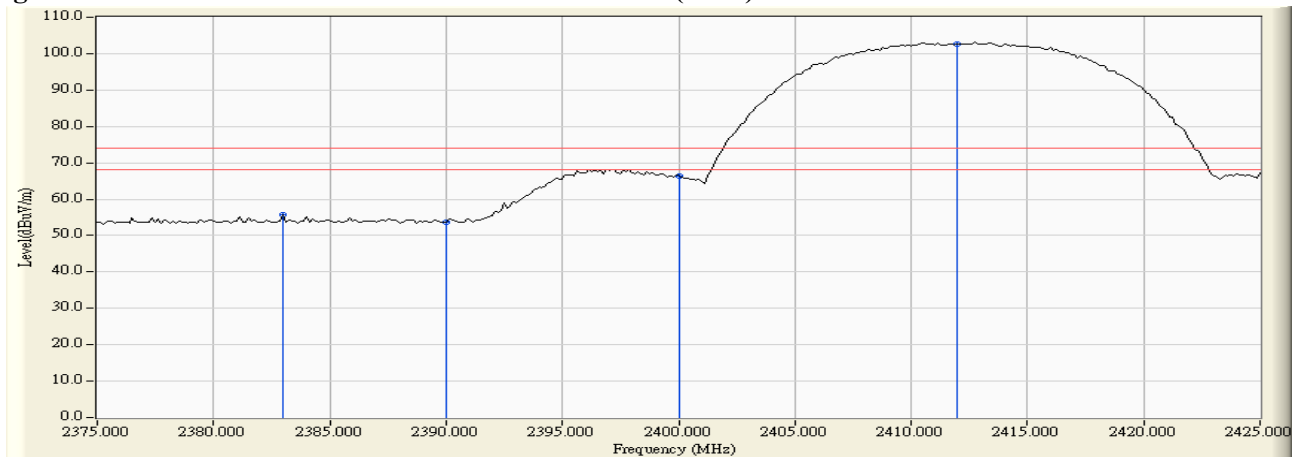
RF Radiated Measurement:

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

RF Radiated Measurement (Vertical):

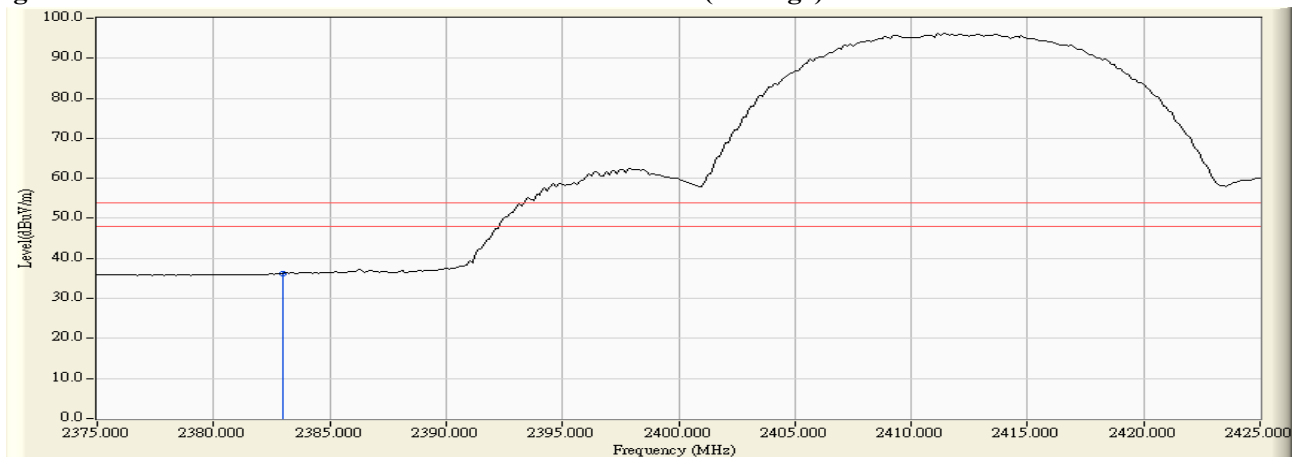
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2383.000	-2.411	58.101	55.690	74.00	54.00	Pass
1 (Average)	2383.000	-2.411	38.563	36.152	74.00	54.00	Pass

Figure Channel 1: Vertical (Peak)



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

Figure Channel 1: Vertical (Average)



Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

Product : Notebook P.C.
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63)

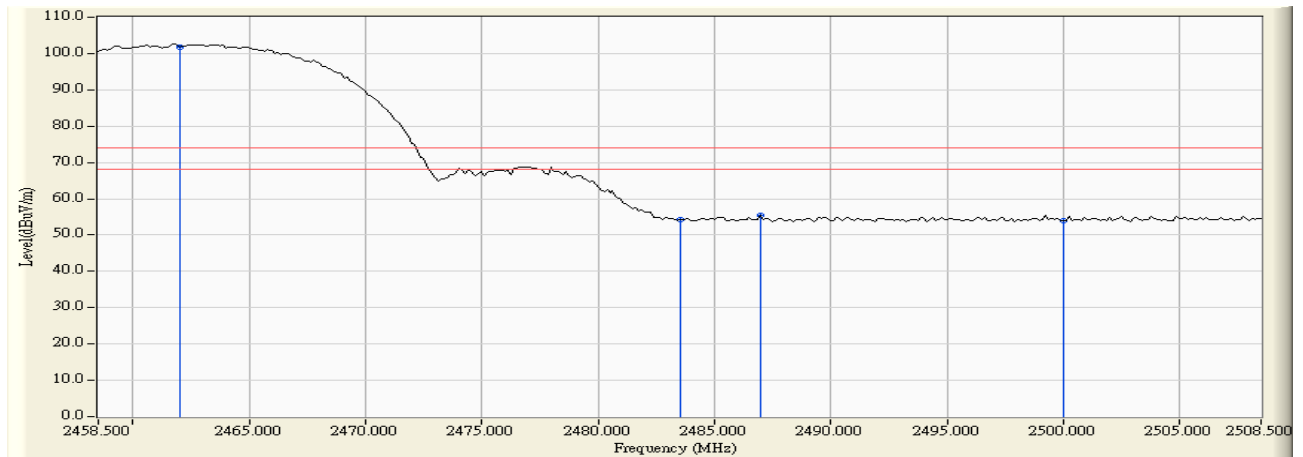
RF Radiated Measurement:

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

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2487.000	-1.926	57.296	55.370	74.00	54.00	Pass
11(Average)	2487.000	-1.926	39.308	37.382	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)



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

Figure Channel 11: Horizontal (Average)



Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

Product : Notebook P.C.
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63)

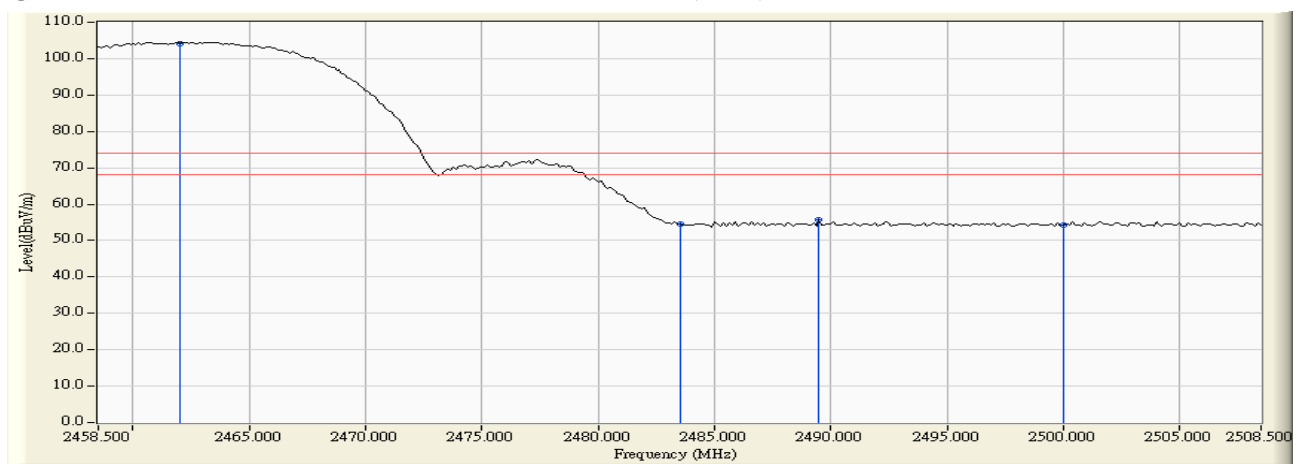
RF Radiated Measurement:

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

RF Radiated Measurement (Vertical):

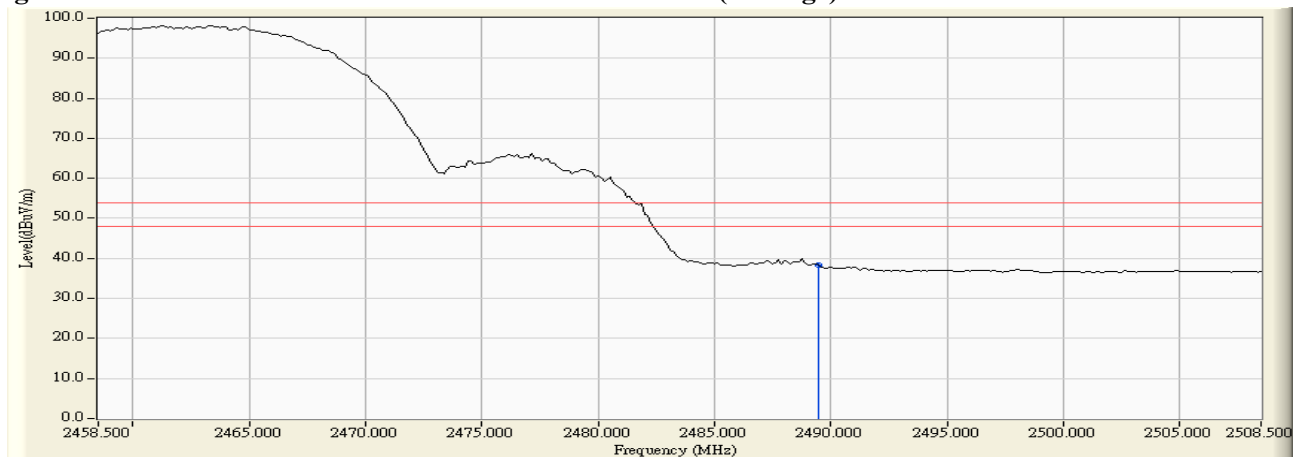
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2489.500	-1.919	57.558	55.640	74.00	54.00	Pass
11(Average)	2489.500	-1.919	40.320	38.402	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)



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

Figure Channel 11: Vertical (Average)



Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

Product : Notebook P.C.
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63)

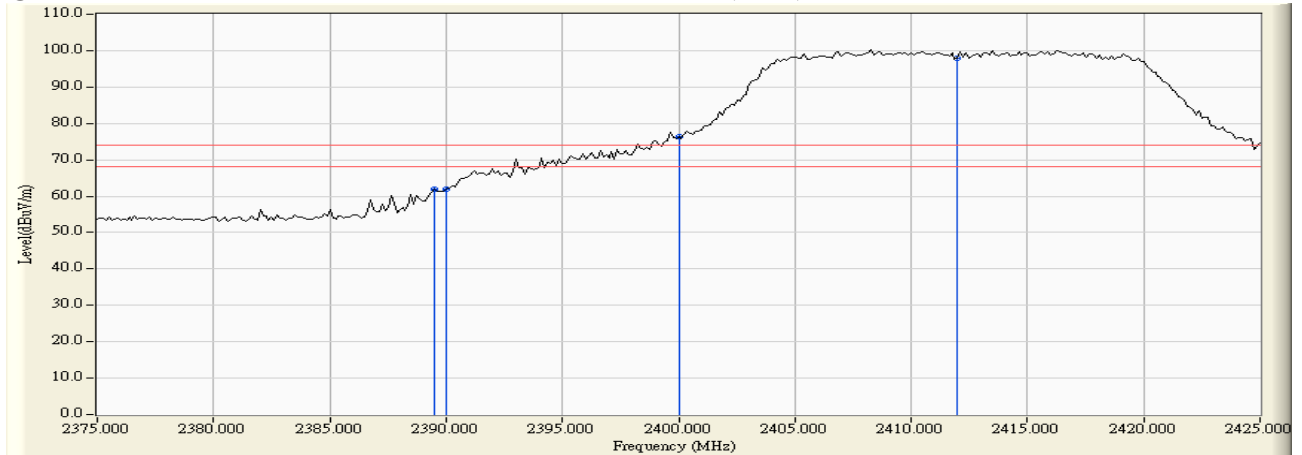
RF Radiated Measurement:

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

RF Radiated Measurement (Horizontal):

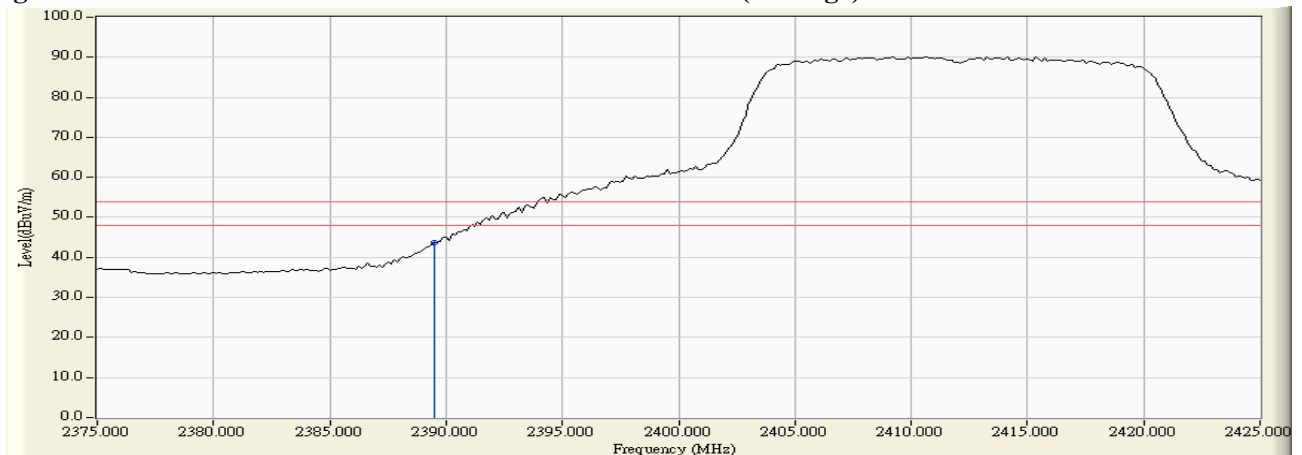
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2389.500	-2.379	64.184	61.804	74.00	54.00	Pass
1 (Average)	2389.500	-2.379	46.133	43.753	74.00	54.00	Pass

Figure Channel 1: Horizontal (Peak)



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

Figure Channel 1: Horizontal (Average)



Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

Product : Notebook P.C.
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63)

RF Radiated Measurement:

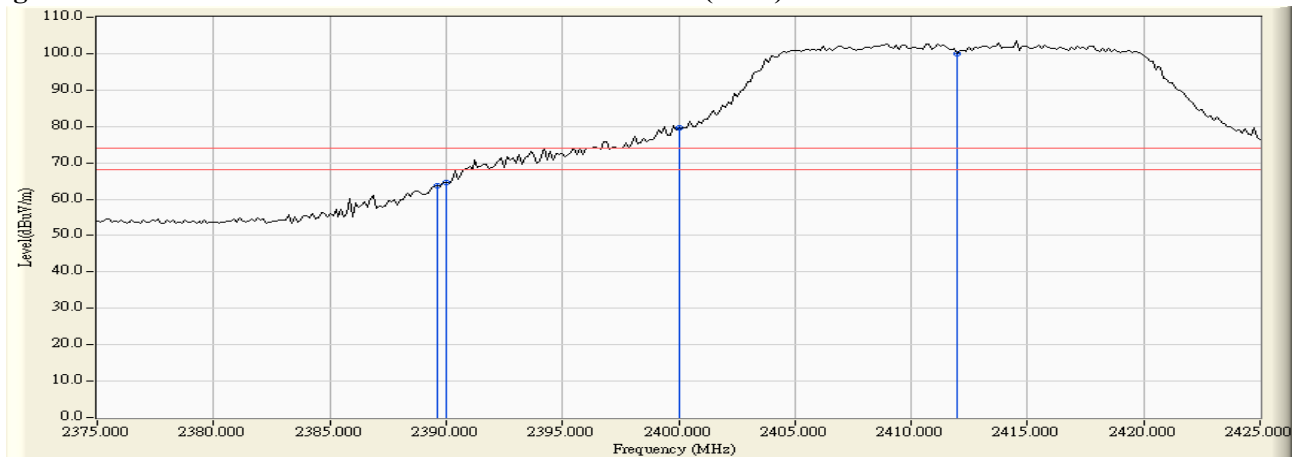
Channel No.	Frequency (MHz)	Required Limit (dBc)	Result
1 (Vertical)	<2400	>20	Pass

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2389.625	-2.379	65.985	63.606	74.00	54.00	Pass
1 (Average)	2389.625	-2.379	49.197	46.818	74.00	54.00	Pass

Figure Channel 1:

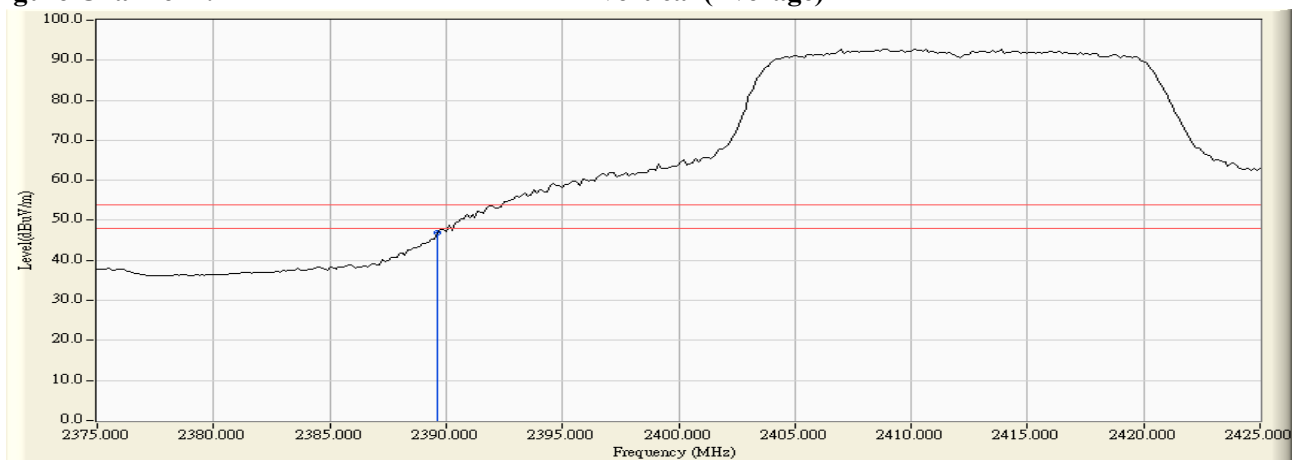
Vertical (Peak)



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

Figure Channel 1:

Vertical (Average)



Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

Product : Notebook P.C.
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63)

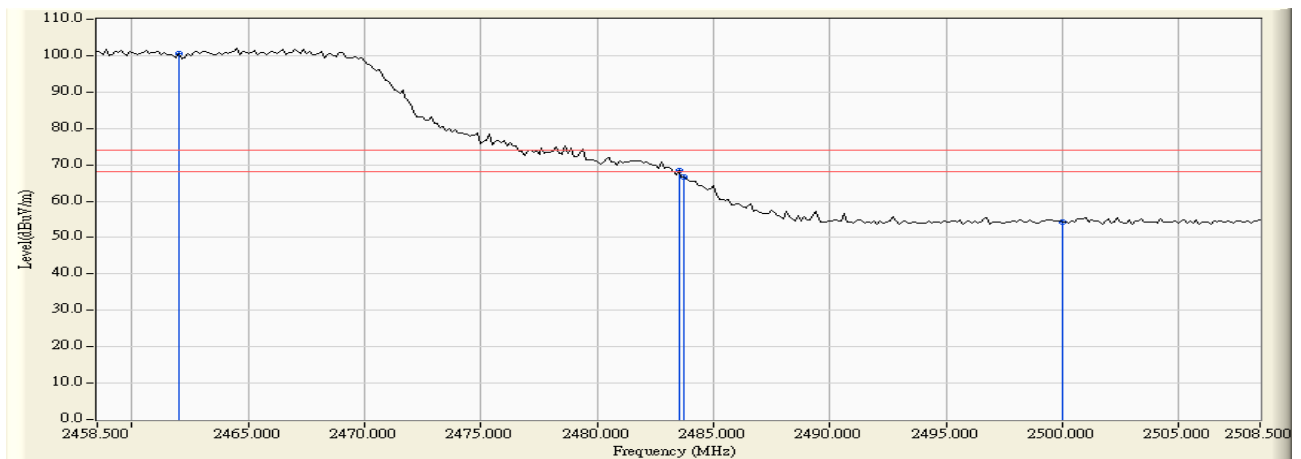
RF Radiated Measurement:

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

RF Radiated Measurement (Horizontal):

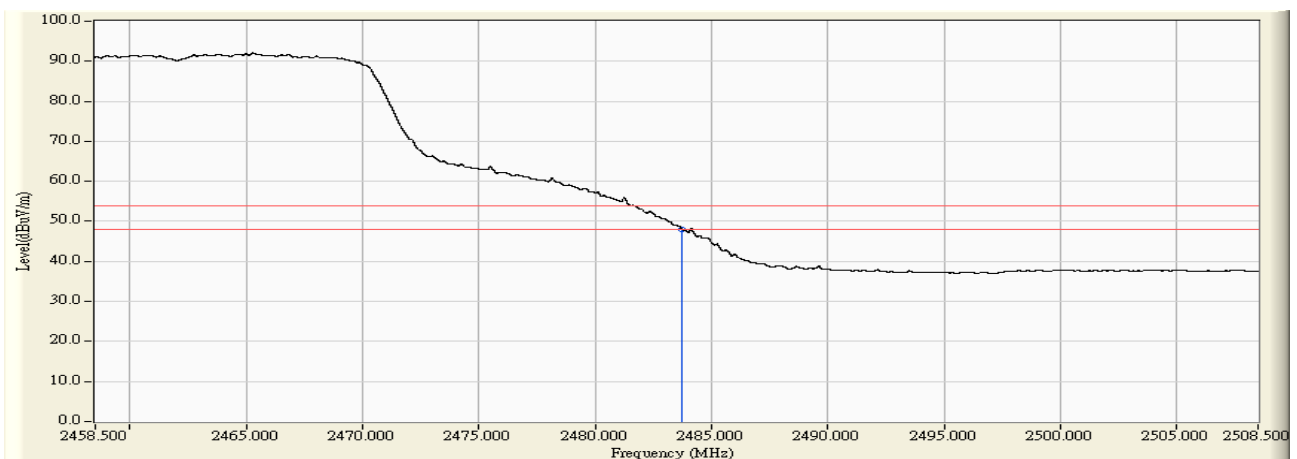
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2483.750	-1.936	68.711	66.775	74.00	54.00	Pass
11(Average)	2483.750	-1.936	49.828	47.892	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)



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

Figure Channel 11: Horizontal (Average)



Note: RBW=1MHz, VBW=300Hz, Sweep=500ms

Product : Notebook P.C.
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63)

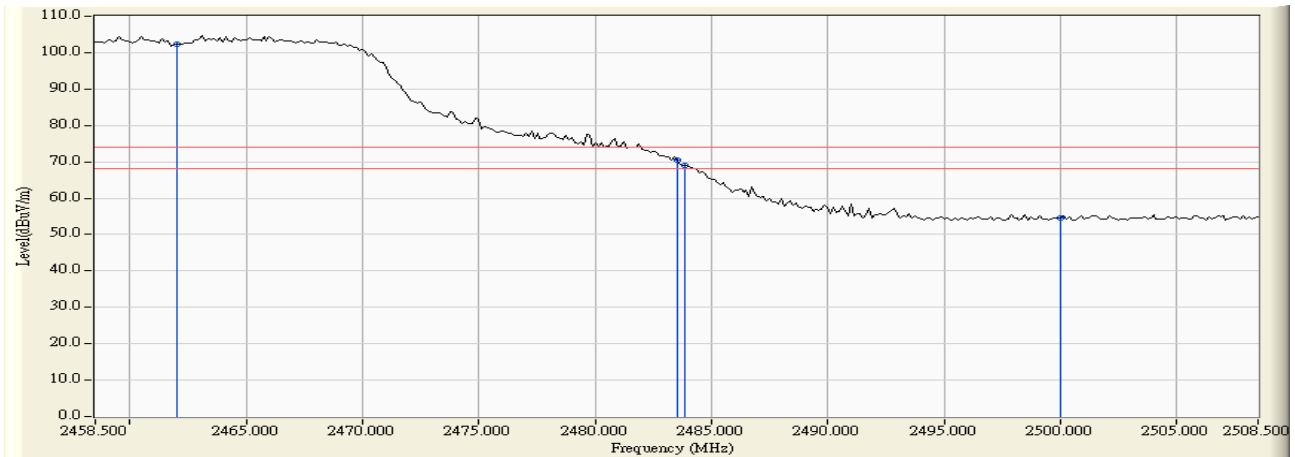
RF Radiated Measurement:

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

RF Radiated Measurement (Vertical):

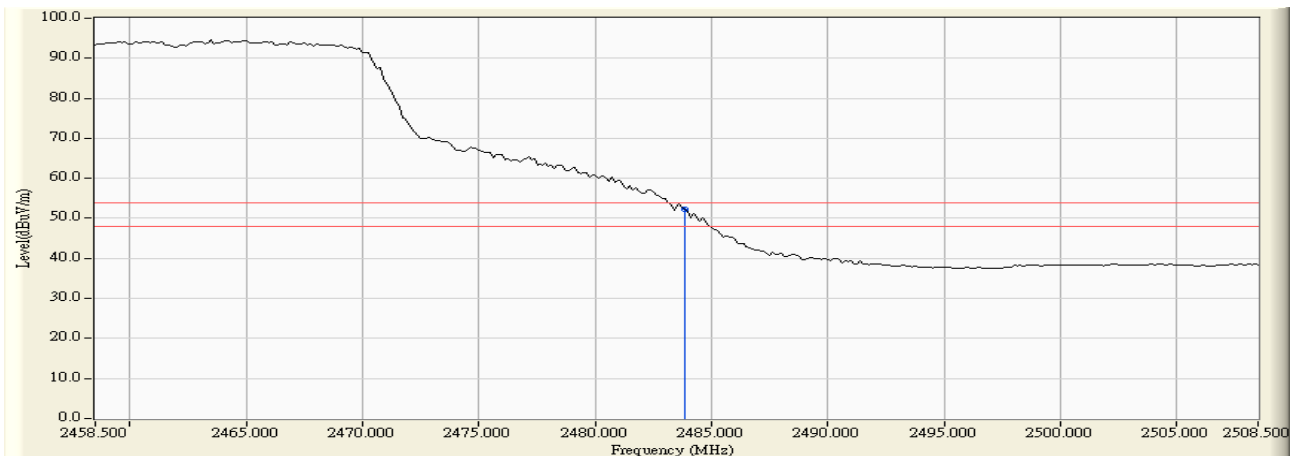
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2483.875	-1.936	70.957	69.021	74.00	54.00	Pass
11(Average)	2483.875	-1.936	54.208	52.272	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)



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

Figure Channel 11: Vertical (Average)



Note: RBW=1MHz, VBW=300Hz, Sweep=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. Occupied Bandwidth

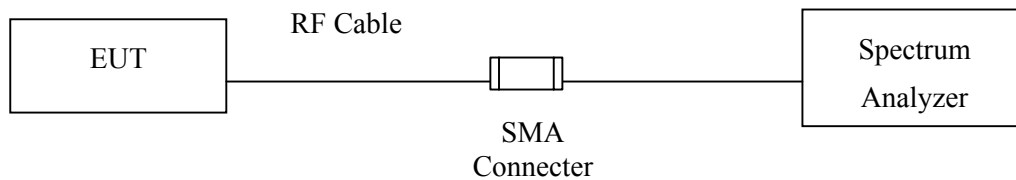
6.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007

Note: 1. All instruments 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. Limits

The minimum 6dB bandwidth shall be at least 500kHz.

6.4. Uncertainty

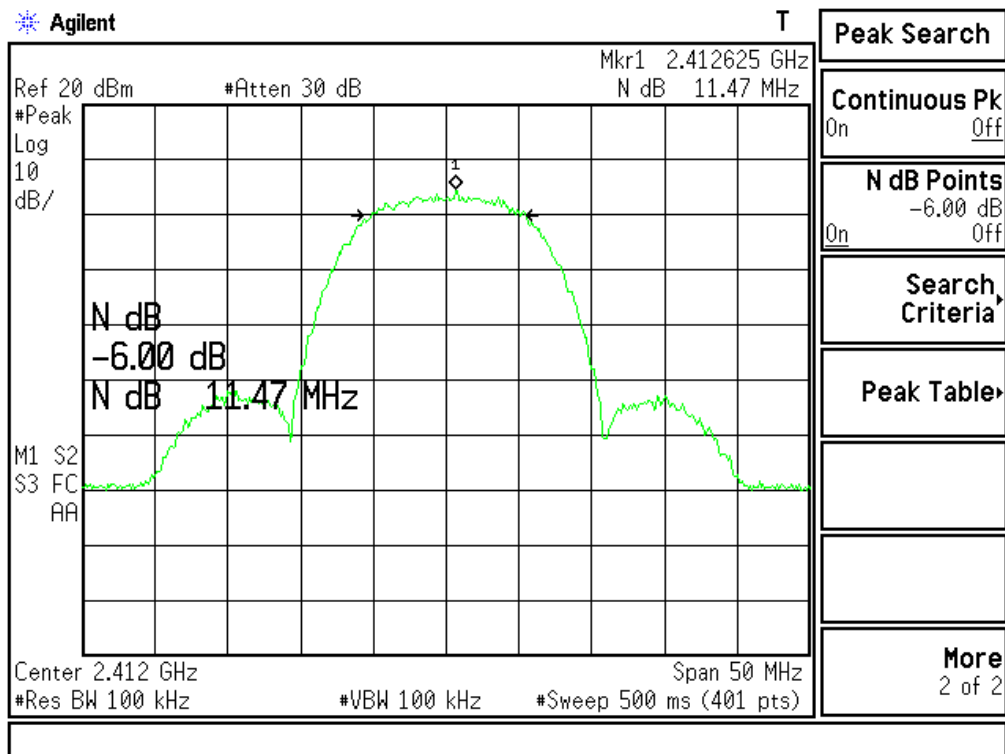
$\pm 150\text{Hz}$

6.5. Test Result of Occupied Bandwidth

Product : Notebook P.C.
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (11Mbps)	2412.00	11470	>500	Pass

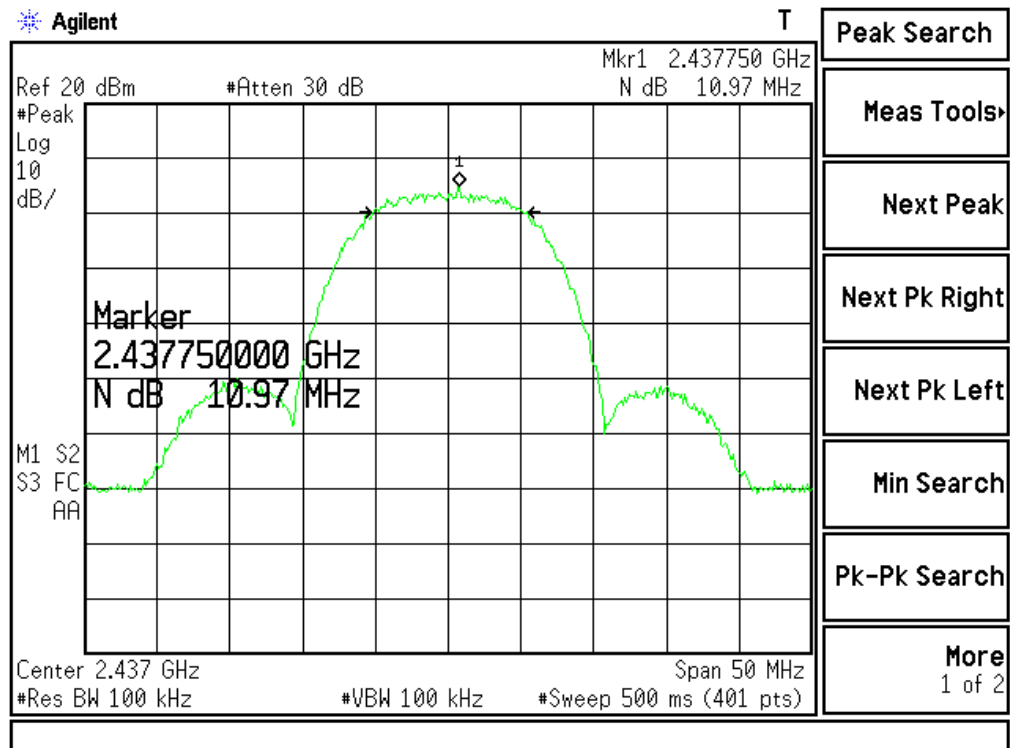
Figure Channel 1:



Product : Notebook P.C.
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6 (11Mbps)	2437.00	10970	>500	Pass

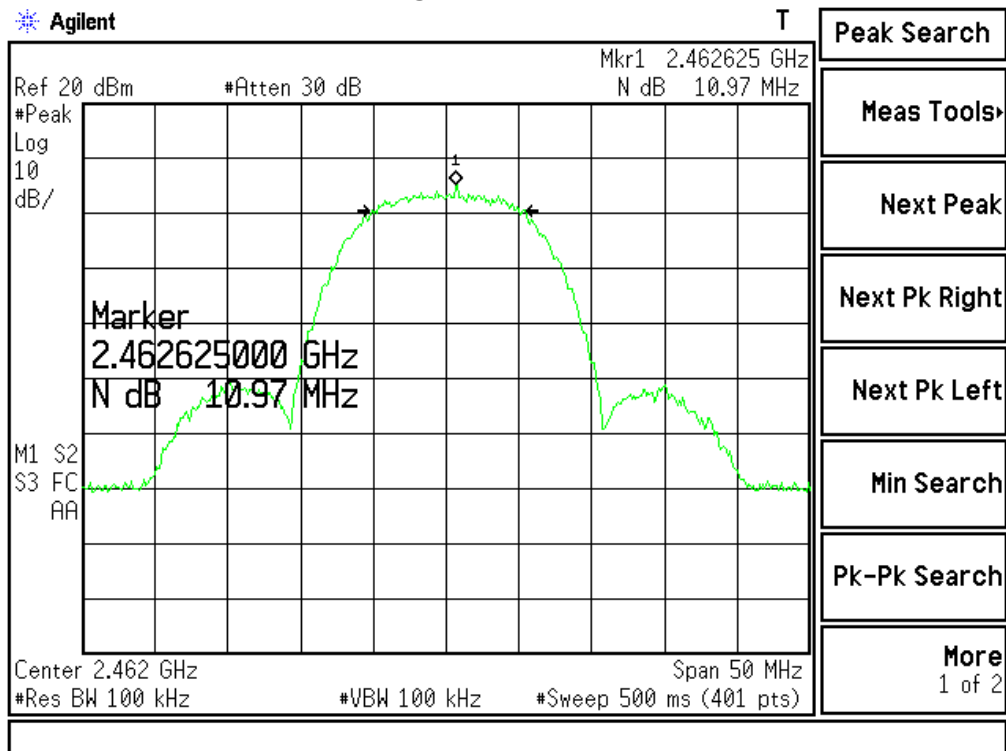
Figure Channel 6:



Product : Notebook P.C.
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11 (11Mbps)	2462.00	10970	>500	Pass

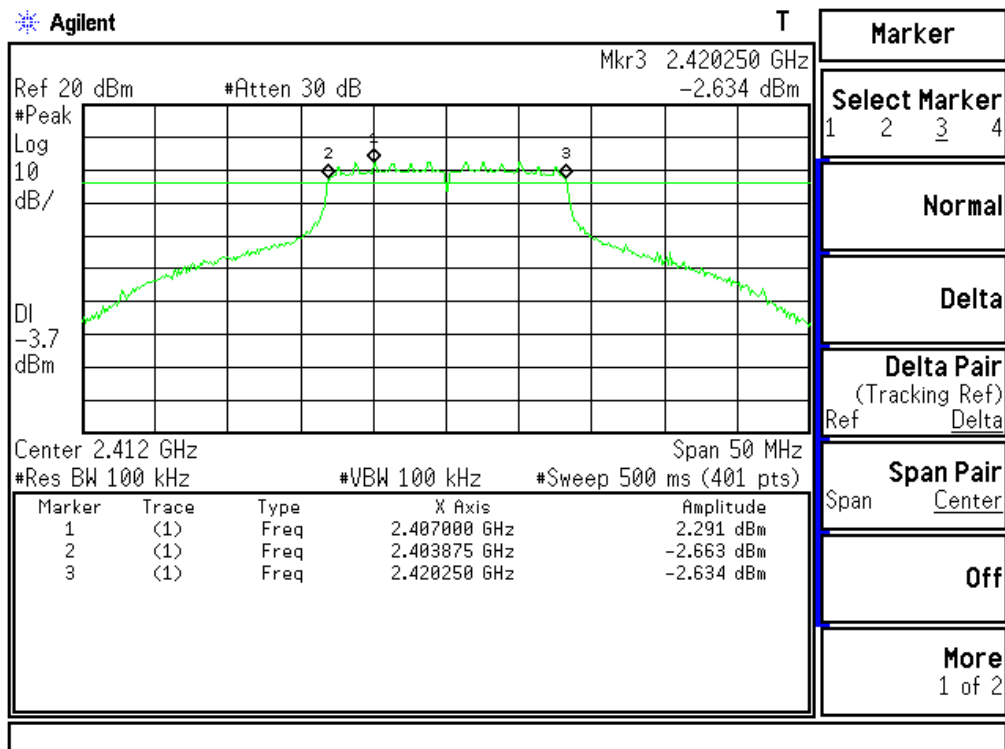
Figure Channel 11:



Product : Notebook P.C.
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (54Mbps)	2412.00	16375	>500	Pass

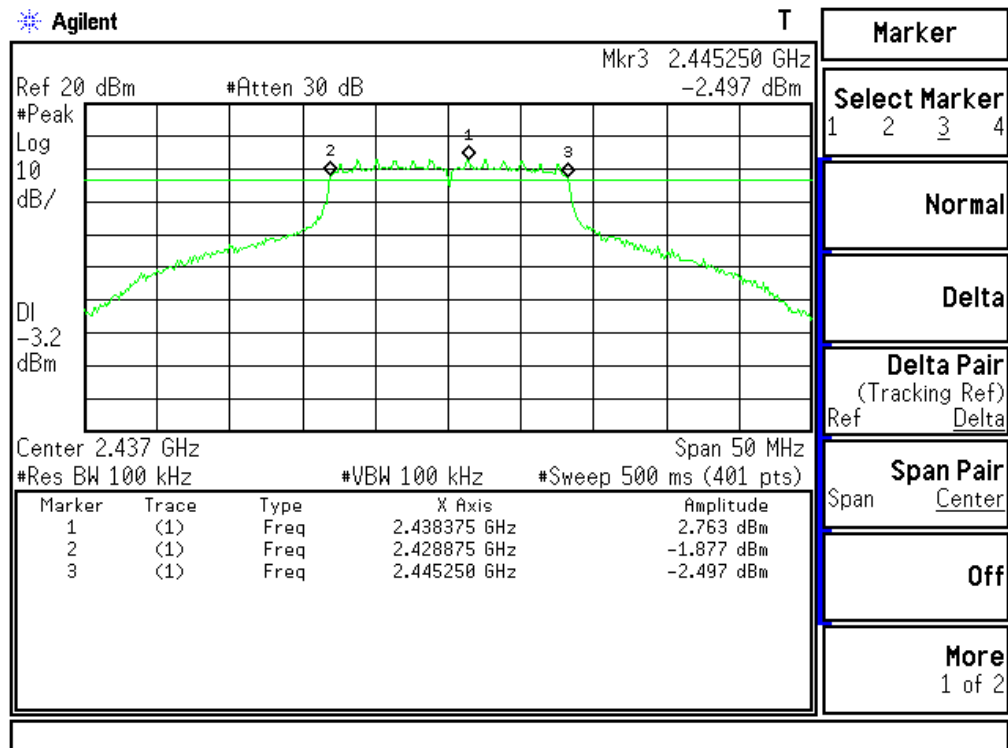
Figure Channel 1:



Product : Notebook P.C.
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6 (54Mbps)	2437.00	16375	>500	Pass

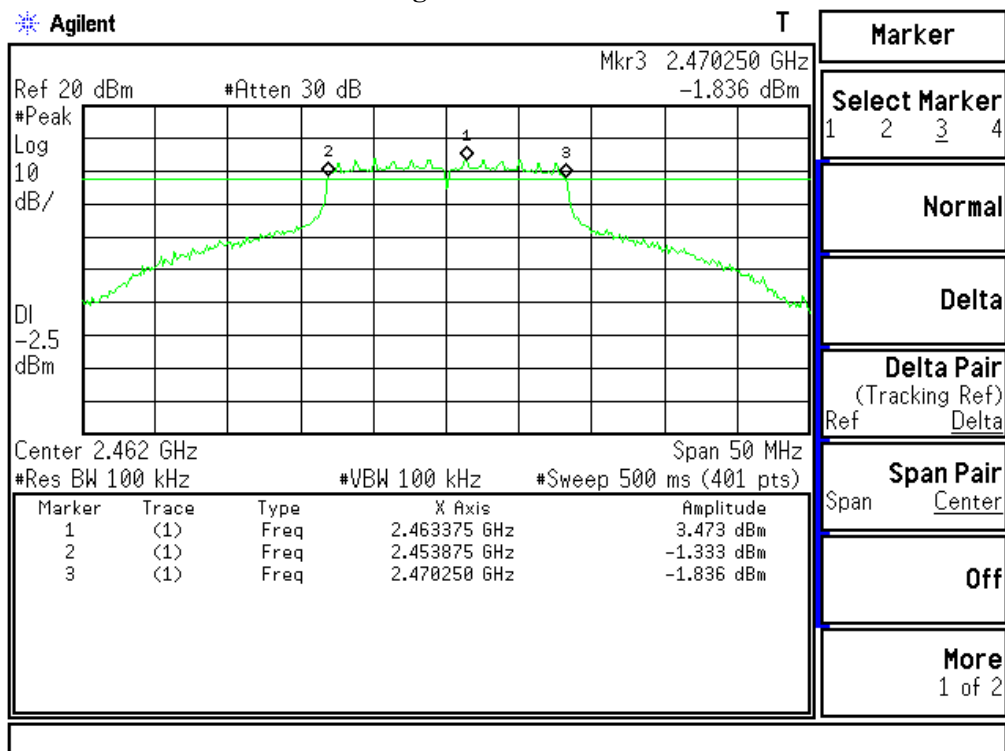
Figure Channel 6:



Product : Notebook P.C.
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11 (54Mbps)	2462.00	16375	>500	Pass

Figure Channel 11:



7. Power Density

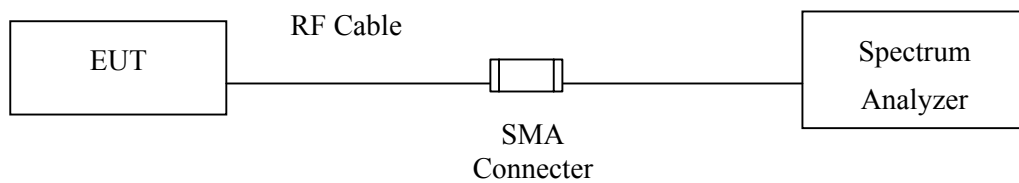
7.1. Test Equipment

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2007

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

7.2. Test Setup



7.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

7.4. Uncertainty

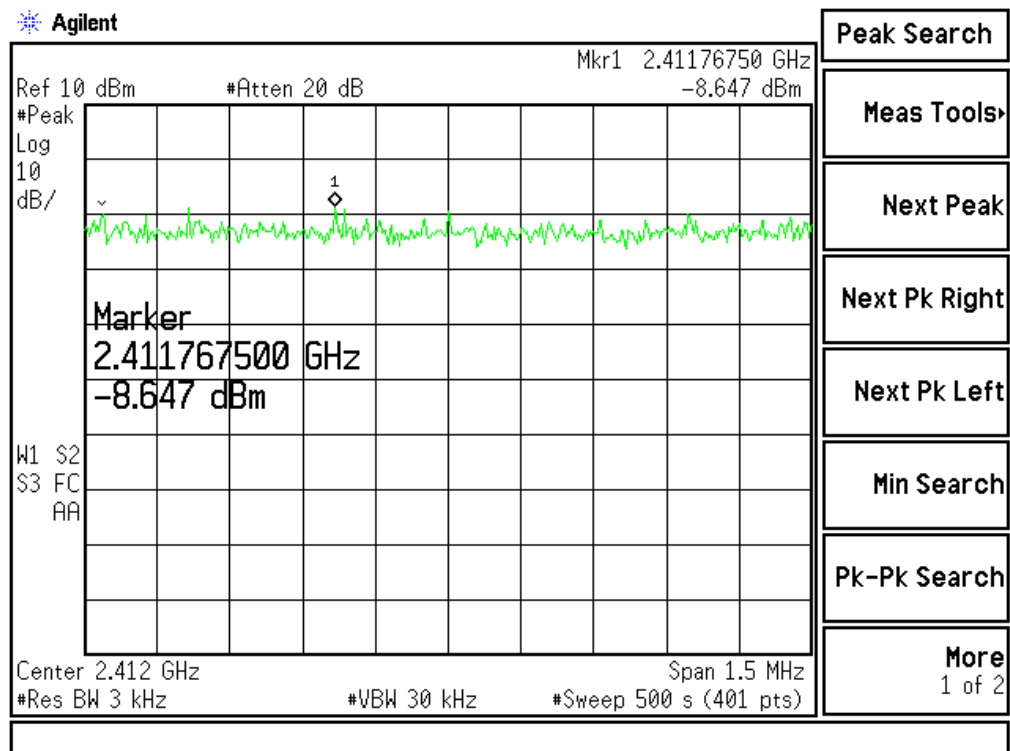
± 1.27 dB

7.5. Test Result of Power Density

Product : Notebook P.C.
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1 (11Mbps)	2412.00	-8.647	< 8dBm	Pass

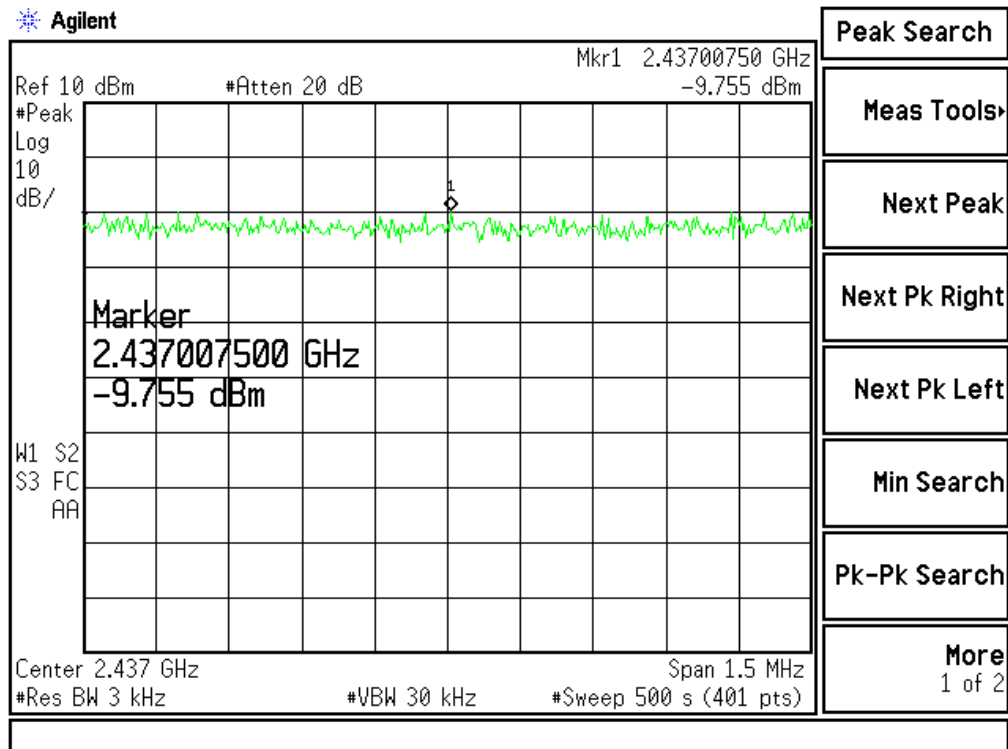
Figure Channel 1:



Product : Notebook P.C.
 Test Item : Power Density Data
 Test Site : No.3OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6 (11Mbps)	2437.000	-9.755	< 8dBm	Pass

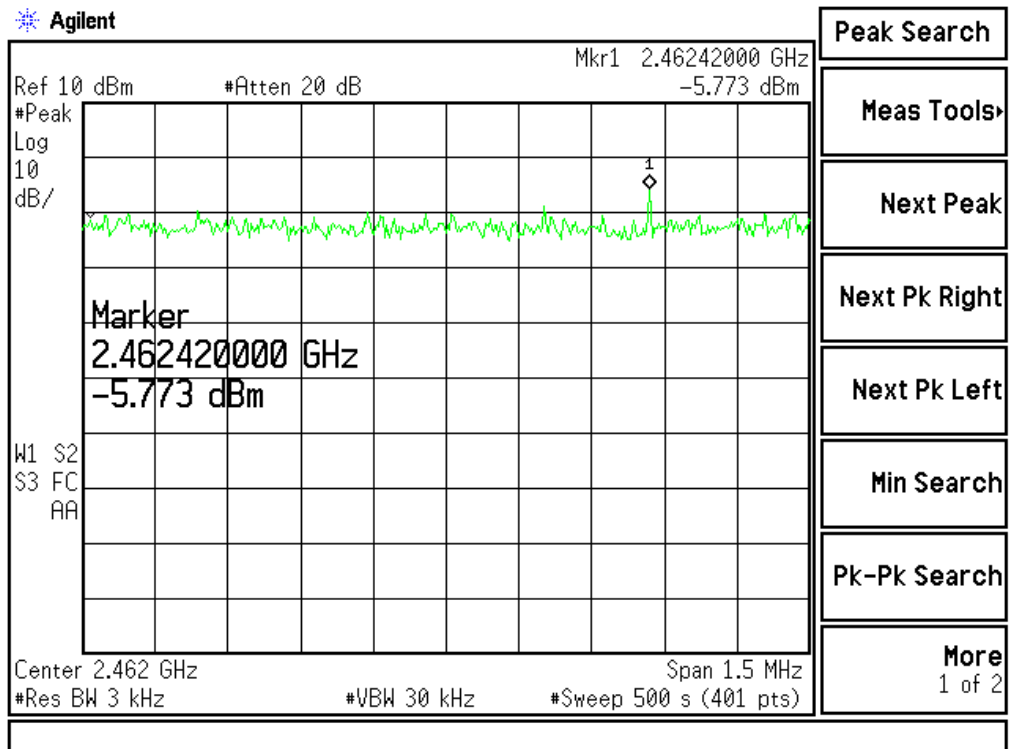
Figure Channel 6:



Product : Notebook P.C.
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (AR5BXB63) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11 (11Mbps)	2462.00	-5.773	< 8dBm	Pass

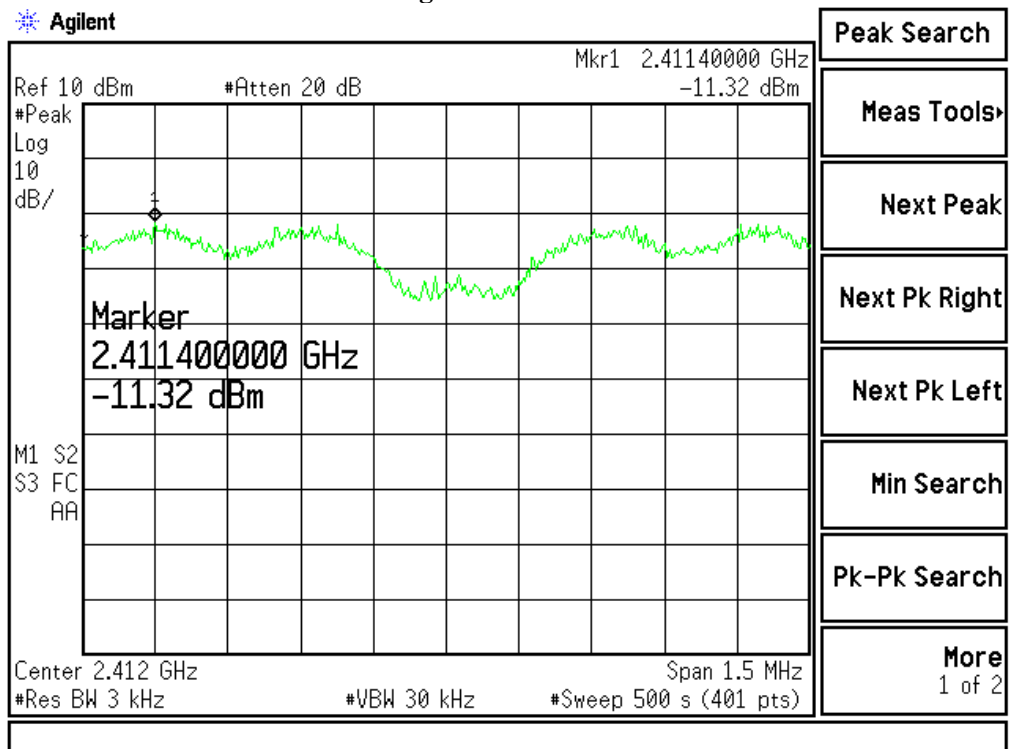
Figure Channel 11:



Product : Notebook P.C.
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1 (54Mbps)	2412.00	-11.32	< 8dBm	Pass

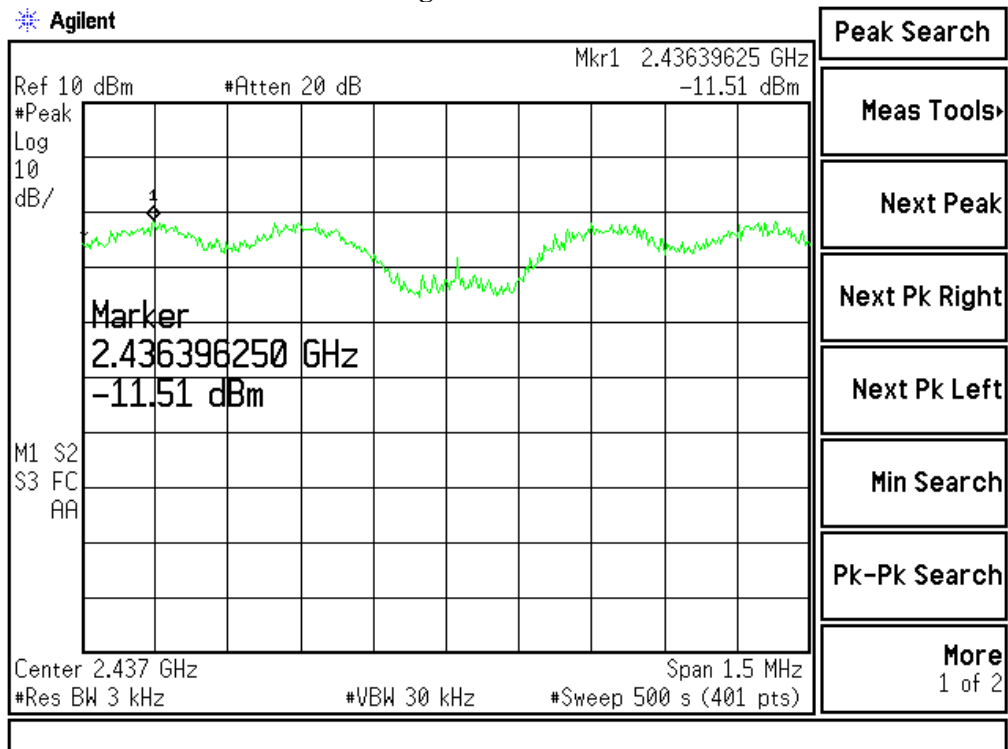
Figure Channel 1:



Product : Notebook P.C.
 Test Item : Power Density Data
 Test Site : No.3OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6 (54Mbps)	2437.000	-11.51	< 8dBm	Pass

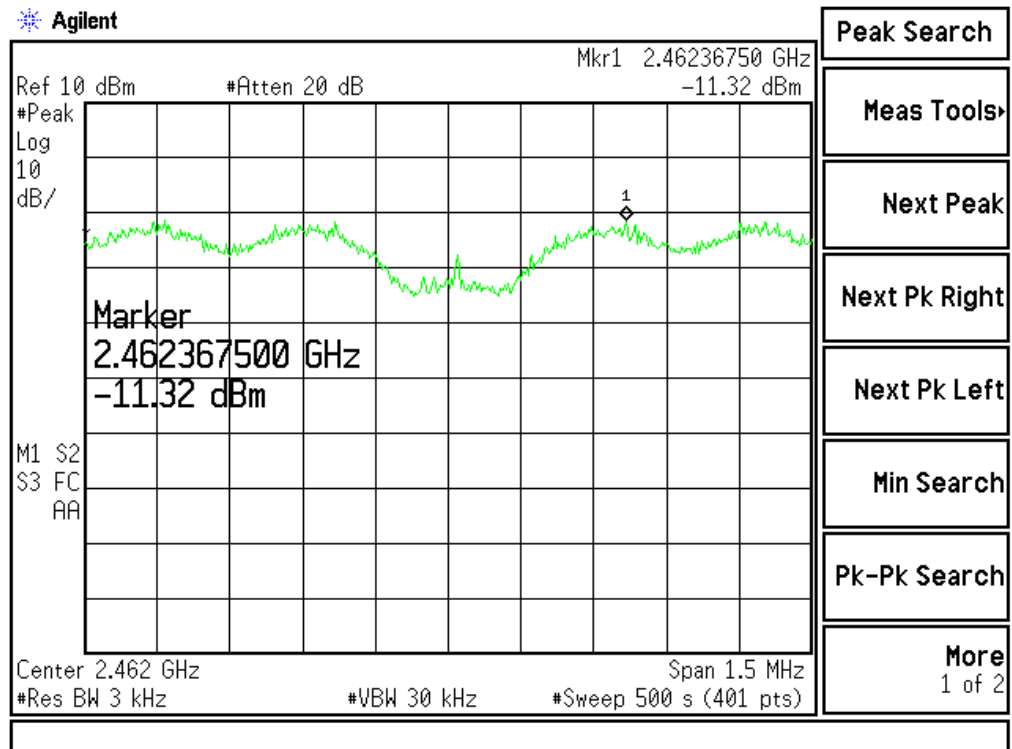
Figure Channel 6:



Product : Notebook P.C.
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (AR5BXB63) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11 (54Mbps)	2462.00	-11.32	< 8dBm	Pass

Figure Channel 11:



8. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs