Test Report

Product Name	Wireless 802.11b/g/n 2T3R mini-PCI card
Model No	MS-6893
FCC ID.	I4L-MS6893

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

Date of Receipt	May. 29, 2008
Issue Date	June. 26, 2008
Report No.	086079R-RFUSP05V01
Version	V1.0

Test Report Certification

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Applicant	MICRO-STAR INT'L Co., LTD.
Address	No. 69, Li-De St., Jung-He City, Taipei Hsien, Taiwan, R.O.C.
Manufacturer	MICRO-STAR INT'L Co., LTD.
Model No.	MS-6893
Rated Voltage	AC 120V/60Hz
Working Voltage	DC 3.3V
Trade Name	MSI
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003
Test Result	Complied

NVLAP Lab Code: 200533-0

The test results relate only to the samples tested.
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This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By : Leven Huang
(Adm. Specialist / Leven Huang)

Tested By : Tim Sung
(Senior Engineer / Tim Sung)

Approved By :
(Deputy Manager / Vincent Lin)

Testing Laboratory
0914

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Wireless 802.11b/g/n 2T3R mini-PCI card
Trade Name	MSI
Model No.	MS-6893
FCC ID.	I4L-MS6893
Frequency Range	2412-2462MHz for 802.11b/g/n-20MBW, 2422-2452MHz for 802.11n-40MBW
Number of Channels	802.11b/g/n-10MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: 6.5-130Mbps
Type of Modulation	802.11b:DSSS DBPSK, DQPSK, CCK 802.11g/n:OFDM BPSK, QPSK, 16QAM, 64QAM
Antenna Interface	Dipole
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	ARISTOTLE	RFA-02-C2M2	Dipole	2.87dBi for 2.4 GHz
2	ARISTOTLE	RFA-02-C2H1-06-80-CR	Dipole	2.09dBi for 2.4 GHz
3	ARISTOTLE	RFA-02-3-C5M3-B32	Dipole	3dBi for 2.4 GHz
4	ARISTOTLE	RFA-02-5-F7M3	Dipole	4.5dBi for 2.4 GHz
5	WHA YU	C942-510009-A	Dipole	2.2dBi for 2.4 GHz
6	WHA YU	C942-510032-A (SSR-74413)	Dipole	2dBi for 2.4 GHz
7	WHA YU	C942-510029-A (SSR-74254)	Dipole	3dBi for 2.4 GHz
8	WHA YU	C942-510005-A	Dipole	5dBi for 2.4 GHz
9	WANSHIH	YDW0006A1	Dipole	2dBi for 2.4 GHz
10	Joymax	IWF-144XIPAX-257	Dipole	2dBi for 2.4 GHz

802.11b/g/n-10MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11n-40MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2422 MHz	Channel 02:	2427 MHz	Channel 03:	2432 MHz	Channel 04:	2437 MHz
Channel 05:	2442 MHz	Channel 06:	2447 MHz	Channel 07:	2452 MHz		

Note:

1. The EUT is an Wireless 802.11b/g/n 2T3R mini-PCI card with a built-in 2.4GHz WLAN 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 1Mbps 、802.11g is 54Mbps、802.11n(20MBW) is 6.5Mbps and 、802.11n(40MBW) is 13Mbps)
4. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices

1.2. Operational Description

The EUT is an Wireless 802.11b/g/n 2T3R mini-PCI card with 11 channels. This device provided four kinds of transmitting speed 1, 2, 5.5 and 11Mbps and the device of RF carrier is DBPSK, DQPSK and CCK (IEEE 802.11b). The device provided of eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11g).

The device provided of eight kinds of transmitting speed 6.5,13,19.5,26,39,52,58.5 and 65Mbps in 802.11n(20MBW) mode and 13,26,39,52,78,104,117 and 130 Mbps(40MBW) the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11n).

The device adapts direct sequence spread spectrum modulation. The antenna provides diversity function to improve the receiving function.

This Wireless 802.11b/g/n 2T3R mini-PCI card, compliant 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 being bound to the network wires. Operation in 2.4GHz Direst Sequence Spread Spectrum (DSSS) radio transmission, the Wireless 802.11b/g/n 2T3R mini-PCI card 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 1Mbps)
	Mode 2: Transmitter (802.11g 6Mbps)
	Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW)
	Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW)

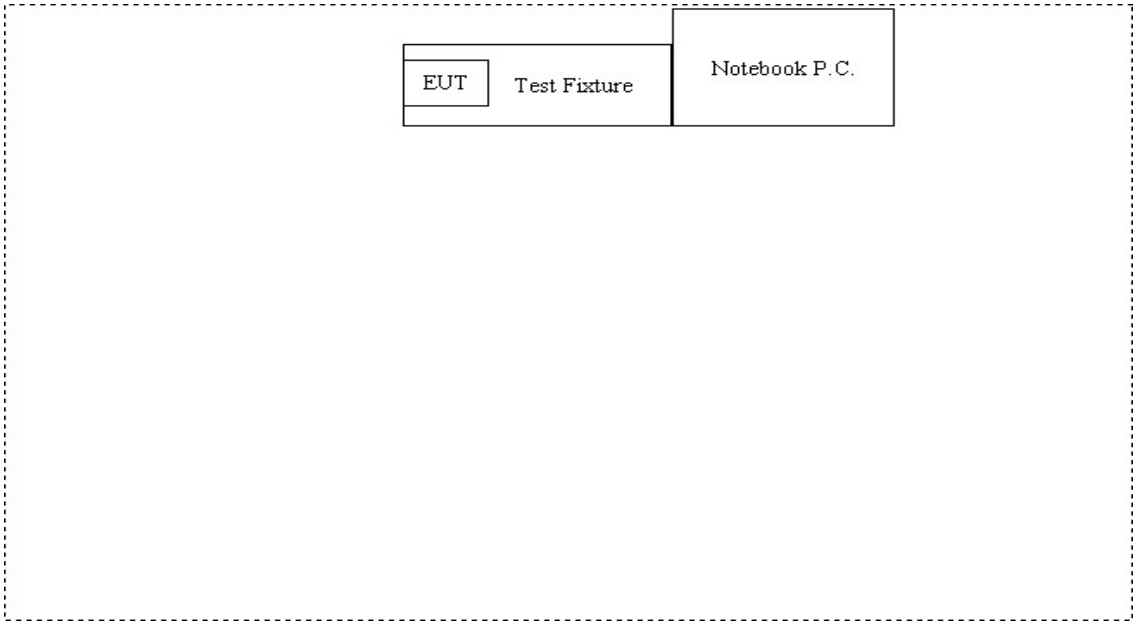
1.3. Tested System Details

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

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

Signal Cable Type		Signal cable Description
A	N/A	N/A

1.4. Configuration of Tested System



1.5. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.4

(2) Execute “RT2880_iNIC_0.0.2.3” on the EUT.

(3) Configure the test mode, the test channel, and the data rate.

(4) Press “OK” to start the continuous Receiver.

(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
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

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

Testing Laboratory
0914

2. Conducted Emission

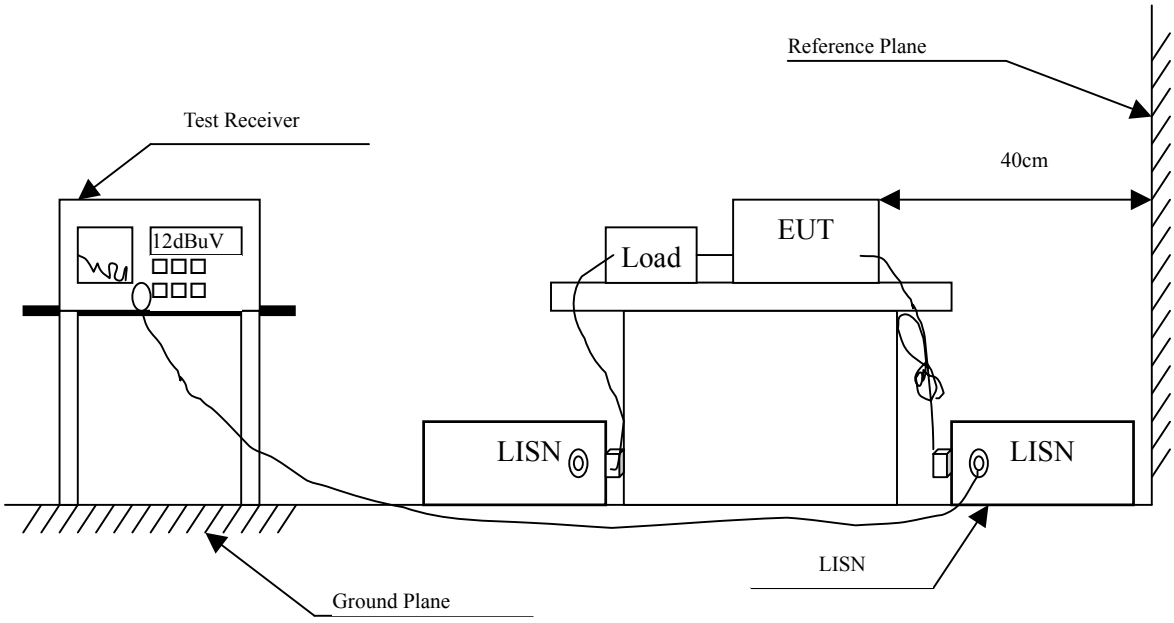
2.1. Test Equipment

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, 2008	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2008	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2008	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2008	
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 B Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
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 : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.197	0.670	37.020	37.690	-26.967	64.657
0.591	0.300	27.640	27.940	-28.060	56.000
1.513	0.330	23.100	23.430	-32.570	56.000
2.830	0.370	24.930	25.300	-30.700	56.000
6.060	0.470	27.600	28.070	-31.930	60.000
14.947	1.000	41.240	42.240	-17.760	60.000
Average					
0.197	0.670	30.940	31.610	-23.047	54.657
0.591	0.300	25.640	25.940	-20.060	46.000
1.513	0.330	21.450	21.780	-24.220	46.000
2.830	0.370	23.500	23.870	-22.130	46.000
6.060	0.470	25.980	26.450	-23.550	50.000
14.947	1.000	37.660	38.660	-11.340	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 : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.263	0.300	30.250	30.550	-32.221	62.771
0.525	0.310	31.070	31.380	-24.620	56.000
0.990	0.320	24.580	24.900	-31.100	56.000
2.041	0.350	24.070	24.420	-31.580	56.000
5.666	0.430	26.430	26.860	-33.140	60.000
15.076	0.900	40.040	40.940	-19.060	60.000
Average					
0.263	0.300	29.830	30.130	-22.641	52.771
0.525	0.310	29.640	29.950	-16.050	46.000
0.990	0.320	22.570	22.890	-23.110	46.000
2.041	0.350	21.860	22.210	-23.790	46.000
5.666	0.430	24.080	24.510	-25.490	50.000
15.076	0.900	33.480	34.380	-15.620	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 : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.197	0.670	37.100	37.770	-26.887	64.657
0.463	0.300	25.560	25.860	-31.197	57.057
0.986	0.310	22.190	22.500	-33.500	56.000
3.490	0.380	26.950	27.330	-28.670	56.000
6.259	0.470	26.650	27.120	-32.880	60.000
15.806	1.020	38.890	39.910	-20.090	60.000
Average					
0.197	0.670	30.690	31.360	-23.297	54.657
0.463	0.300	23.650	23.950	-23.107	47.057
0.986	0.310	20.520	20.830	-25.170	46.000
3.490	0.380	24.250	24.630	-21.370	46.000
6.259	0.470	24.360	24.830	-25.170	50.000
15.806	1.020	34.650	35.670	-14.330	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 : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.201	0.300	35.400	35.700	-28.843	64.543
0.591	0.310	30.660	30.970	-25.030	56.000
1.052	0.320	24.490	24.810	-31.190	56.000
1.974	0.350	22.790	23.140	-32.860	56.000
5.728	0.430	26.880	27.310	-32.690	60.000
14.880	0.890	40.960	41.850	-18.150	60.000
Average					
0.201	0.300	25.680	25.980	-28.563	54.543
0.591	0.310	22.850	23.160	-22.840	46.000
1.052	0.320	23.260	23.580	-22.420	46.000
1.974	0.350	20.780	21.130	-24.870	46.000
5.728	0.430	23.880	24.310	-25.690	50.000
14.880	0.890	36.210	37.100	-12.900	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 : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.193	0.698	31.740	32.438	-32.333	64.771
0.525	0.300	26.350	26.650	-29.350	56.000
0.658	0.310	24.900	25.210	-30.790	56.000
1.318	0.320	22.320	22.640	-33.360	56.000
6.255	0.470	27.380	27.850	-32.150	60.000
15.017	1.000	40.960	41.960	-18.040	60.000
Average					
0.193	0.698	25.310	26.008	-28.763	54.771
0.525	0.300	19.000	19.300	-26.700	46.000
0.658	0.310	18.570	18.880	-27.120	46.000
1.318	0.320	20.830	21.150	-24.850	46.000
6.255	0.470	24.940	25.410	-24.590	50.000
15.017	1.000	37.520	38.520	-11.480	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 : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.197	0.300	38.280	38.580	-26.077	64.657
0.463	0.310	27.970	28.280	-28.777	57.057
0.986	0.320	24.860	25.180	-30.820	56.000
2.041	0.350	23.080	23.430	-32.570	56.000
5.529	0.422	25.290	25.712	-34.288	60.000
15.279	0.900	40.810	41.710	-18.290	60.000
Average					
0.197	0.300	28.390	28.690	-25.967	54.657
0.463	0.310	23.550	23.860	-23.197	47.057
0.986	0.320	22.360	22.680	-23.320	46.000
2.041	0.350	20.900	21.250	-24.750	46.000
5.529	0.422	21.620	22.042	-27.958	50.000
15.279	0.900	36.240	37.140	-12.860	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 : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 1					
Quasi-Peak					
0.201	0.643	33.900	34.543	-30.000	64.543
0.396	0.300	24.760	25.060	-33.911	58.971
0.724	0.310	23.920	24.230	-31.770	56.000
1.513	0.330	22.320	22.650	-33.350	56.000
6.060	0.470	26.990	27.460	-32.540	60.000
15.412	1.010	40.300	41.310	-18.690	60.000
Average					
0.201	0.643	27.450	28.093	-26.450	54.543
0.396	0.300	21.410	21.710	-27.261	48.971
0.724	0.310	21.980	22.290	-23.710	46.000
1.513	0.330	20.640	20.970	-25.030	46.000
6.060	0.470	25.390	25.860	-24.140	50.000
15.412	1.010	35.900	36.910	-13.090	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 : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
Line 2					
Quasi-Peak					
0.197	0.300	37.990	38.290	-26.367	64.657
0.529	0.310	29.120	29.430	-26.570	56.000
1.119	0.325	25.170	25.495	-30.505	56.000
2.240	0.350	22.960	23.310	-32.690	56.000
5.466	0.420	26.920	27.340	-32.660	60.000
14.951	0.900	40.210	41.110	-18.890	60.000
Average					
0.197	0.300	27.910	28.210	-26.447	54.657
0.529	0.310	24.250	24.560	-21.440	46.000
1.119	0.325	24.430	24.755	-21.245	46.000
2.240	0.350	20.230	20.580	-25.420	46.000
5.466	0.420	24.700	25.120	-24.880	50.000
14.951	0.900	37.660	38.560	-11.440	50.000

Note:

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

3. Peak Power Output

3.1. Test Equipment

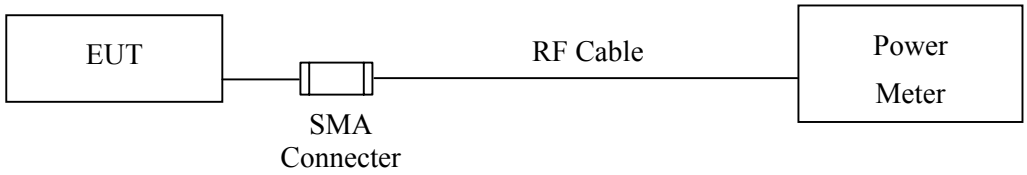
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2008
X	Power Sensor	Anritsu	MA2491A/034457	May, 2008

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. Test Procedure

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps)

Cable loss=0.5dB		Peak Power Output				
Channel No.	Frequency (MHz)	Data Rate				Required Limit
		1	2	5.5	11	
1	2412.00	19.77	--	--	--	1Watt= 30 dBm
6	2437.00	19.94	19.93	19.72	19.91	1Watt= 30 dBm
11	2462.00	19.67	--	--	--	1Watt= 30 dBm

Note: 1.Peak Power Output Value =Reading value on peak power meter + cable loss.
2. Power meter VBW up to 65MHz.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps)

Cable loss=0.5dB		Peak Power Output								
Channel No.	Frequency (MHz)	Data Rate								Required Limit
		6	9	12	18	24	36	48	54	
1	2412.00	22.65	--	--	--	--	--	--	--	1Watt= 30 dBm
6	2437.00	22.94	22.28	22.25	21.17	20.3	19.28	18.5	19.17	1Watt= 30 dBm
11	2462.00	22.03	--	--	--	--	--	--	--	1Watt= 30 dBm

Note: 1. Peak Power Output Value =Reading value on peak power meter + cable loss.
2. Power meter VBW up to 65MHz.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW)

Cable loss=0.5dB		Peak Power Output								
Channel No.	Frequency (MHz)	Data Rate								Required Limit
		6.5	13	19.5	26	39	52	58.5	65	
1	2412.00	24.71	--	--	--	--	--	--	--	1Watt= 30 dBm
6	2437.00	24.81	24.63	24.62	24.39	23.11	22.19	22.19	20.68	1Watt= 30 dBm
11	2462.00	25.24	--	--	--	--	--	--	--	1Watt= 30 dBm

Note: 1. Peak Power Output Value =Reading value on peak power meter + cable loss.
2. Power meter VBW up to 65MHz.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW)

Cable loss=0.5dB		Peak Power Output								
Channel No.	Frequency (MHz)	Data Rate								Required Limit
		13	26	39	52	78	104	117	130	
1	2422.00	22.68	--	--	--	--	--	--	--	1Watt= 30 dBm
4	2437.00	22.85	22.8	21.29	21.37	20.24	19.52	18.07	18.51	1Watt= 30 dBm
7	2452.00	23.08	--	--	--	--	--	--	--	1Watt= 30 dBm

Note: 1. Peak Power Output Value =Reading value on peak power meter + cable loss.
2. Power meter VBW up to 65MHz.

4. Radiated Emission

4.1. Test Equipment

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

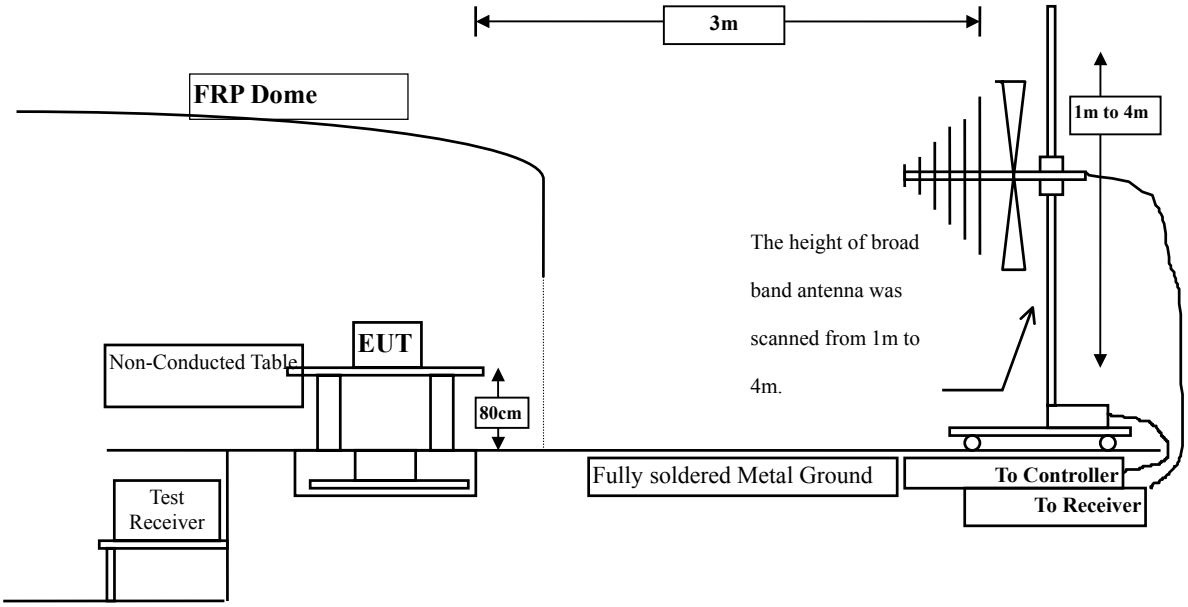
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2007
	X	Pre-Amplifier	AGILENT	8447D/2944A09549	Sep., 2007
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2007
	X	Spectrum Analyzer	Advantest	R3162/91700283	Oct., 2007
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2008
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

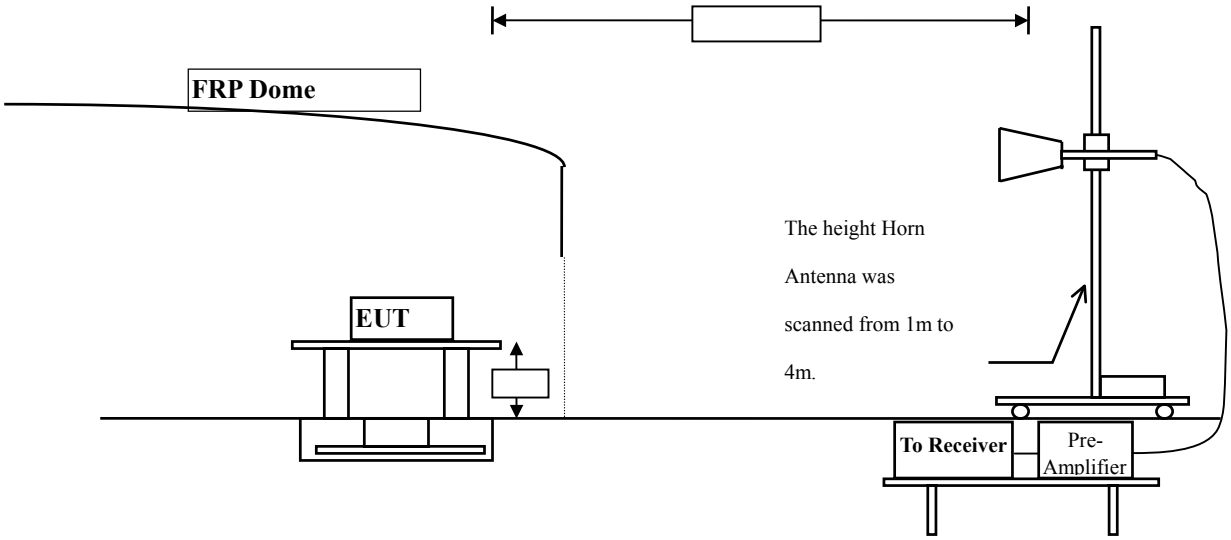
2. The test instruments marked with "X" are used to measure the final test results.

4.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.3. 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: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.
The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.
Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.
The measurement is divided into the Preliminary Measurement and the Final Measurement.
The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB beamwidth of the antenna.
The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.
The frequency range from 30MHz to 10th harminics is checked.

4.5. Uncertainty

± 3.9 dB above 1GHz
± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.723	44.770	48.493	-25.507	74.000
7236.000	9.439	38.310	47.749	-26.251	74.000
9648.000	11.829	36.340	48.169	-25.831	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	3.723	51.760	55.483	-18.517	74.000
7236.000	9.439	43.560	52.999	-21.001	74.000
9648.000	11.829	36.370	48.199	-25.801	74.000
Average Detector:					
4824.000	3.723	47.960	51.683	-2.317	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.893	42.980	46.872	-27.128	74.000
7311.000	9.624	36.540	46.164	-27.836	74.000
9748.000	11.805	36.370	48.176	-25.824	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	3.893	50.760	54.652	-19.348	74.000
7311.000	9.624	39.220	48.844	-25.156	74.000
9748.000	11.805	36.080	47.886	-26.114	74.000
Average Detector:					
4874.000	3.893	47.760	51.652	-2.348	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	4.075	43.550	47.625	-26.375	74.000
7386.000	9.812	35.050	44.862	-29.138	74.000
9848.000	11.819	35.770	47.589	-26.411	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	4.075	50.980	55.055	-18.945	74.000
7386.000	9.812	36.920	46.732	-27.268	74.000
9848.000	11.819	35.770	47.589	-26.411	74.000
Average					
Detector:					
4924.000	4.075	47.360	51.435	-2.565	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.723	40.580	44.303	-29.697	74.000
7236.000	9.439	36.820	46.259	-27.741	74.000
9648.000	11.829	36.020	47.849	-26.151	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	3.723	47.700	51.423	-22.577	74.000
7236.000	9.439	42.950	52.389	-21.611	74.000
9648.000	11.829	36.010	47.839	-26.161	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.893	39.190	43.082	-30.918	74.000
7311.000	9.624	36.140	45.764	-28.236	74.000
9748.000	11.805	36.160	47.966	-26.034	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	3.893	46.320	50.212	-23.788	74.000
7311.000	9.624	38.790	48.414	-25.586	74.000
9748.000	11.805	36.020	47.826	-26.174	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal Peak Detector:					
4924.000	4.075	38.500	42.575	-31.425	74.000
7386.000	9.812	34.920	44.732	-29.268	74.000
9848.000	11.819	35.920	47.739	-26.261	74.000
Average Detector:					
--					
Vertical Peak Detector:					
4924.000	4.075	43.570	47.645	-26.355	74.000
7386.000	9.812	35.880	45.692	-28.308	74.000
9848.000	11.819	35.980	47.799	-26.201	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4824.000	3.723	39.060	42.783	-31.217	74.000
7236.000	9.439	37.060	46.499	-27.501	74.000
9648.000	11.829	36.190	48.019	-25.981	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	3.723	45.780	49.503	-24.497	74.000
7236.000	9.439	38.210	47.649	-26.351	74.000
9648.000	11.829	36.060	47.889	-26.111	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.893	38.110	42.002	-31.998	74.000
7311.000	9.624	35.310	44.934	-29.066	74.000
9748.000	11.805	35.920	47.726	-26.274	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	3.893	43.690	47.582	-26.418	74.000
7311.000	9.624	37.270	46.894	-27.106	74.000
9748.000	11.805	36.350	48.156	-25.844	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4924.000	4.075	38.960	43.035	-30.965	74.000
7386.000	9.812	35.020	44.832	-29.168	74.000
9848.000	11.819	36.210	48.029	-25.971	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4924.000	4.075	43.890	47.965	-26.035	74.000
7386.000	9.812	35.310	45.122	-28.878	74.000
9848.000	11.819	36.020	47.839	-26.161	74.000
Average					
Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2422MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4844.000	3.788	37.640	41.428	-32.572	74.000
7266.000	9.517	35.840	45.357	-28.643	74.000
9688.000	11.818	36.170	47.988	-26.012	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4844.000	3.788	39.490	43.278	-30.722	74.000
7266.000	9.517	35.860	45.377	-28.623	74.000
9688.000	11.818	36.570	48.388	-25.612	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.893	37.720	41.612	-32.388	74.000
7311.000	9.624	35.170	44.794	-29.206	74.000
9748.000	11.805	35.880	47.686	-26.314	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	3.893	38.970	42.862	-31.138	74.000
7311.000	9.624	35.670	45.294	-28.706	74.000
9748.000	11.805	35.710	47.516	-26.484	74.000
Average Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2452 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4904.000	4.002	37.000	41.002	-32.998	74.000
7386.000	9.812	35.620	45.432	-28.568	74.000
9808.000	11.795	36.420	48.215	-25.785	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4904.000	4.002	38.010	42.012	-31.988	74.000
4908.000	4.016	38.010	42.026	-31.974	74.000
7356.000	9.747	35.320	45.067	-28.933	74.000
Average					
Detector:					
--					

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
221.575	11.949	17.868	29.817	-16.183	46.000
308.875	16.021	13.023	29.044	-16.956	46.000
381.625	18.348	12.507	30.855	-15.145	46.000
502.875	21.635	10.859	32.494	-13.506	46.000
587.750	23.560	8.871	32.431	-13.569	46.000
694.450	24.932	9.111	34.043	-11.957	46.000
Vertical					
267.650	16.348	9.826	26.174	-19.826	46.000
325.850	16.521	11.970	28.491	-17.509	46.000
401.025	21.066	8.383	29.449	-16.551	46.000
522.275	22.006	8.066	30.072	-15.928	46.000
624.125	24.833	4.198	29.031	-16.969	46.000
733.250	27.220	1.400	28.620	-17.380	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
236.125	13.531	13.894	27.425	-18.575	46.000
345.250	17.057	12.139	29.196	-16.804	46.000
502.875	21.635	9.056	30.691	-15.309	46.000
709.000	24.401	7.690	32.091	-13.909	46.000
759.925	26.150	6.330	32.480	-13.520	46.000
881.175	26.845	5.405	32.250	-13.750	46.000
Vertical					
260.375	16.741	11.293	28.034	-17.966	46.000
342.825	17.054	9.579	26.633	-19.367	46.000
500.450	21.461	7.306	28.767	-17.233	46.000
575.625	24.915	0.931	25.846	-20.154	46.000
599.875	25.395	1.913	27.308	-18.692	46.000
759.925	27.200	3.875	31.075	-14.925	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
240.975	14.126	14.779	28.905	-17.095	46.000
345.250	17.057	11.947	29.004	-16.996	46.000
510.150	22.097	10.630	32.727	-13.273	46.000
624.150	24.486	10.517	35.003	-10.997	46.000
699.300	24.690	8.724	33.414	-12.586	46.000
767.200	26.369	6.258	32.627	-13.373	46.000
Vertical					
260.375	16.741	11.030	27.771	-18.229	46.000
316.150	16.306	9.319	25.625	-20.375	46.000
381.625	19.321	8.260	27.581	-18.419	46.000
500.450	21.461	6.826	28.287	-17.713	46.000
575.625	24.915	3.290	28.205	-17.795	46.000
650.800	23.703	5.669	29.372	-16.628	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
301.600	16.266	13.201	29.467	-16.533	46.000
345.250	17.057	13.198	30.255	-15.745	46.000
384.050	18.407	13.476	31.883	-14.117	46.000
502.875	21.635	9.631	31.266	-14.734	46.000
643.525	24.672	8.972	33.644	-12.356	46.000
759.925	26.150	6.946	33.096	-12.904	46.000
Vertical					
325.850	16.521	9.670	26.191	-19.809	46.000
384.050	19.468	9.200	28.668	-17.332	46.000
500.450	21.461	6.418	27.879	-18.121	46.000
607.150	25.327	1.309	26.636	-19.364	46.000
755.075	27.302	1.626	28.928	-17.072	46.000
866.625	26.688	3.205	29.893	-16.107	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

5. RF antenna conducted test

5.1. Test Equipment

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

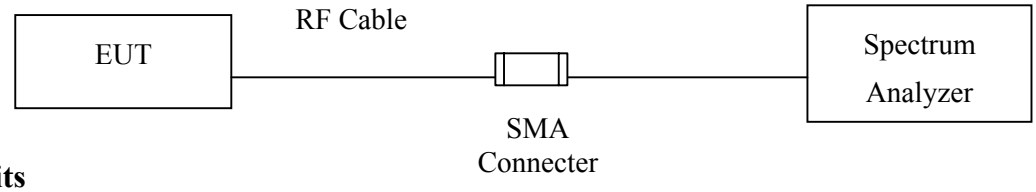
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2. The test instruments marked with "X" are used to measure the final test results.

5.2. Test Setup

RF antenna Conducted 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 was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW> RBW, scan up through 10th harmonic.

5.5. Uncertainty

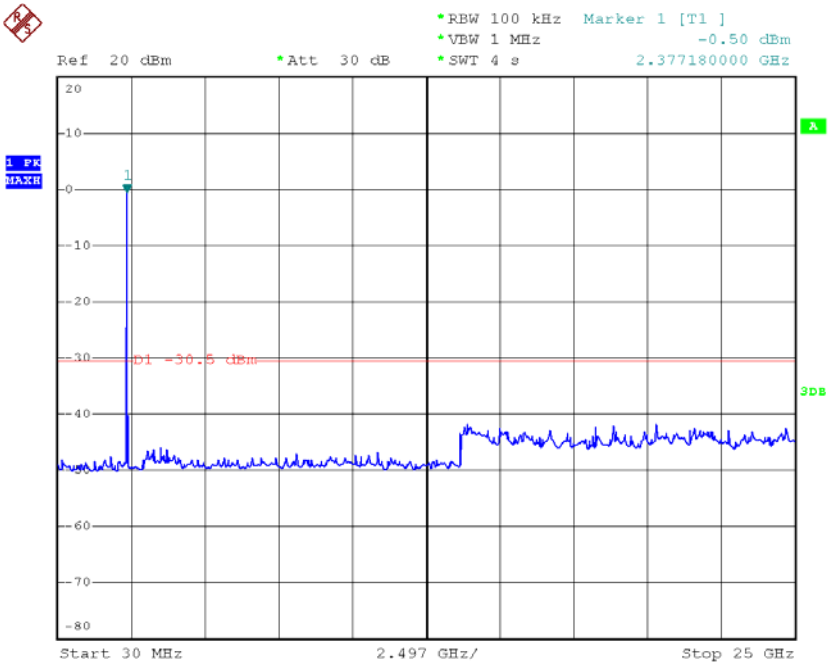
The measurement uncertainty

Conducted is defined as ± 1.27dB

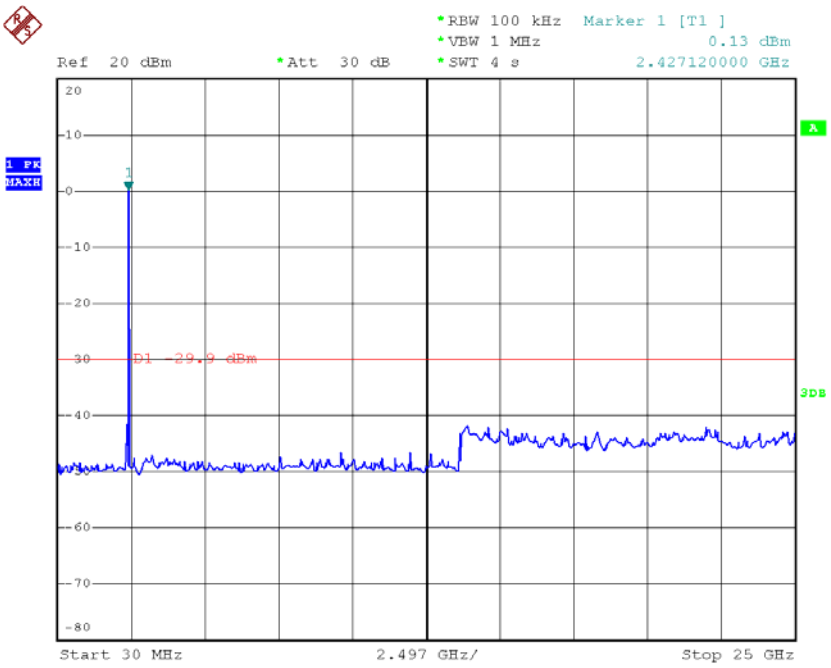
5.6. Test Result of RF antenna conducted test

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : RF antenna conducted test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps)

Channel 01 (2412MHz) 30-25GHz

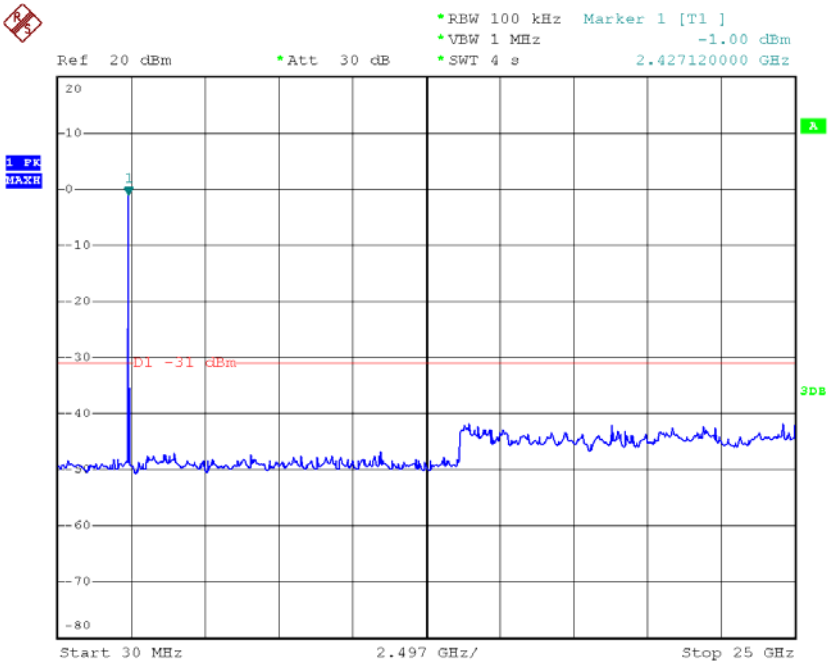


Channel 06 (2437MHz) 30-25GHz



Date: 13.JUN.2008 01:05:12

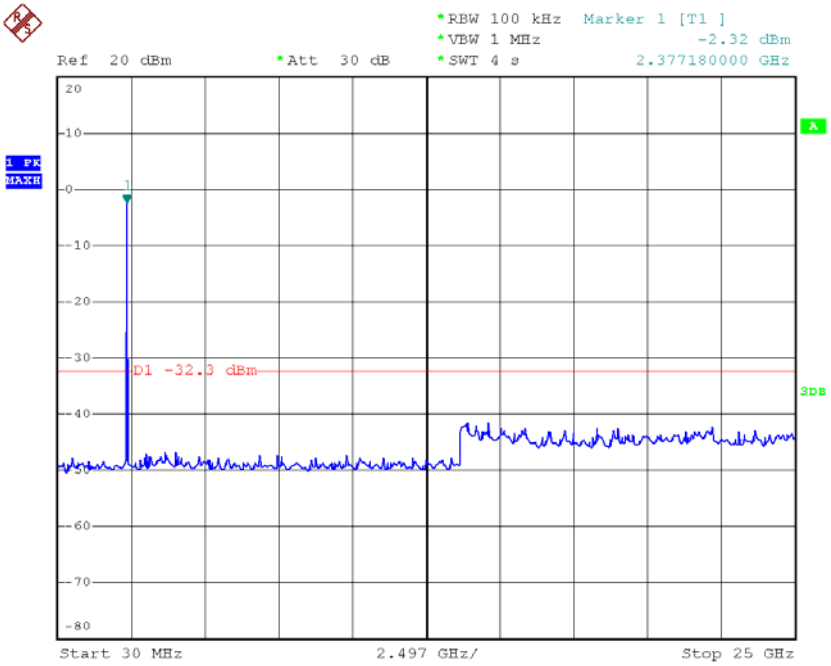
Channel 11 (2462MHz) 30-25GHz



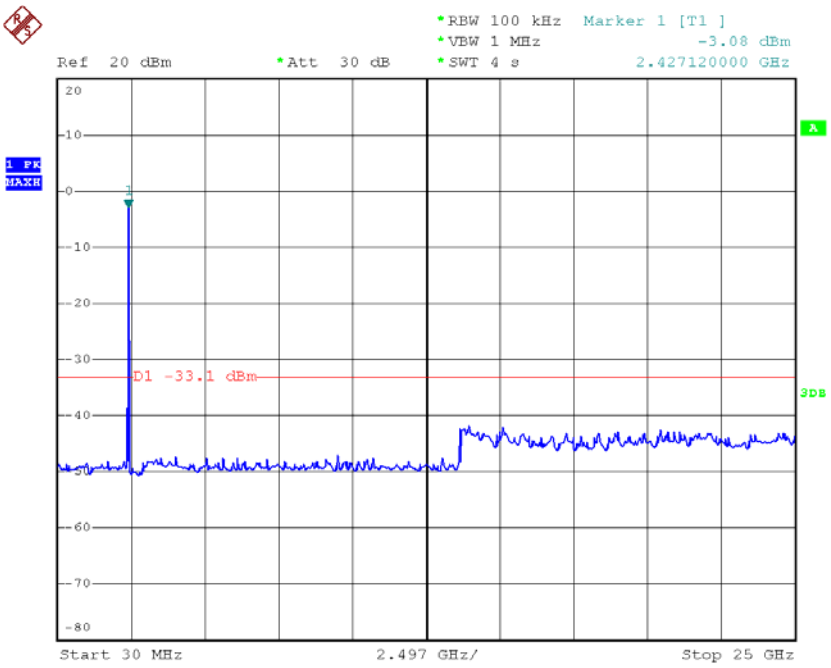
Date: 13.JUN.2008 01:05:46

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps)

Channel 01 (2412MHz) 30-25GHz

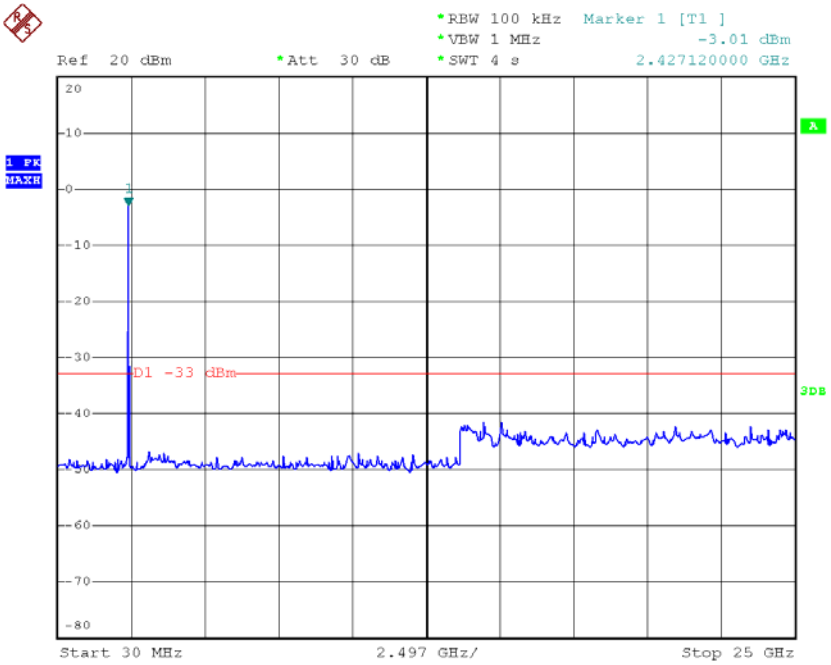


Channel 06 (2437MHz) 30-25GHz



Date: 13.JUN.2008 01:06:55

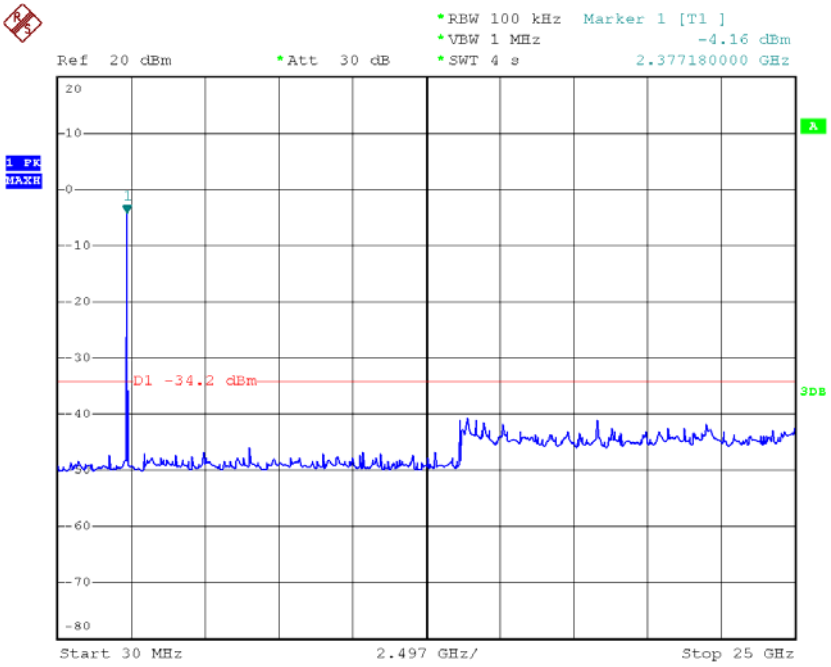
Channel 11 (2462MHz) 30-25GHz



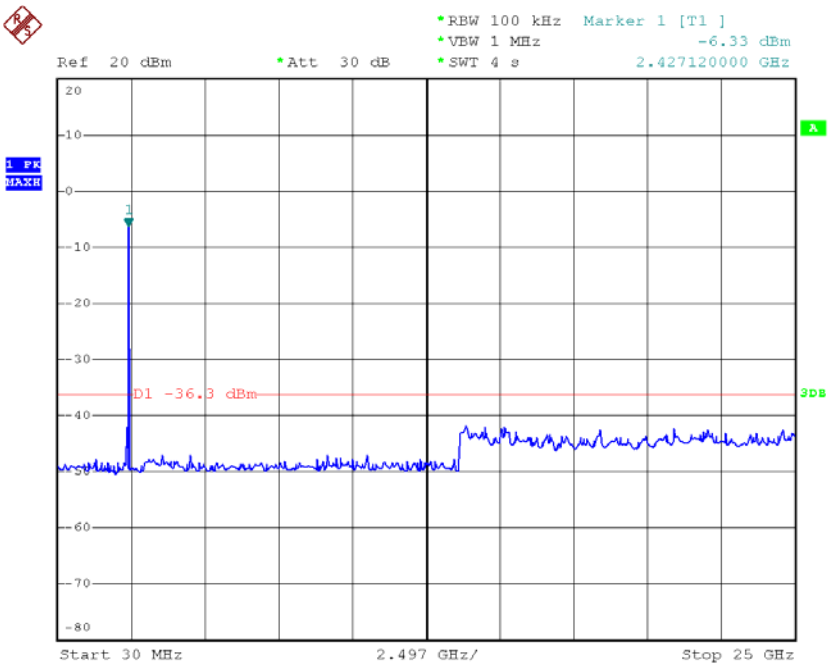
Date: 13.JUN.2008 01:07:31

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (Antenna A)

Channel 01 (2412MHz) 30-25GHz

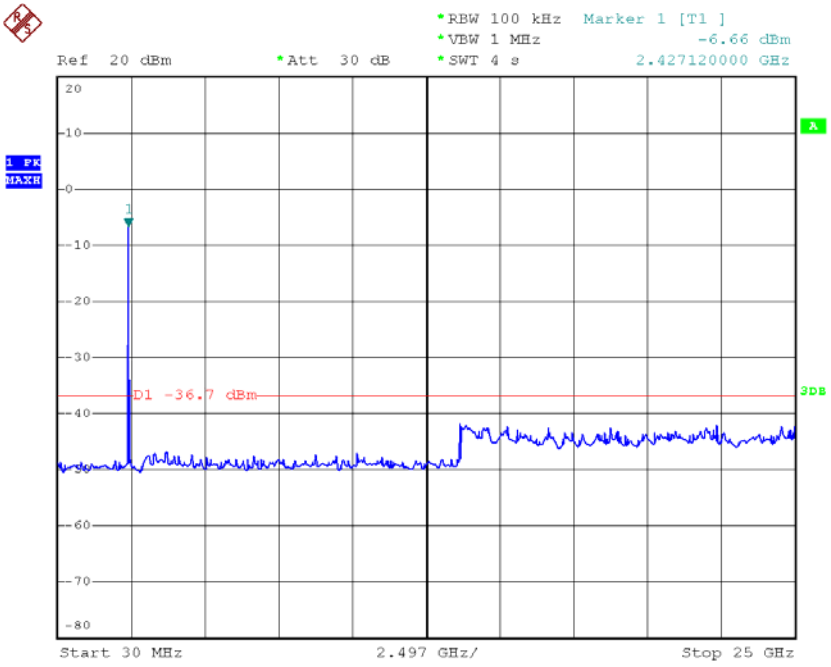


Channel 06 (2437MHz) 30-25GHz



Date: 13.JUN.2008 01:08:49

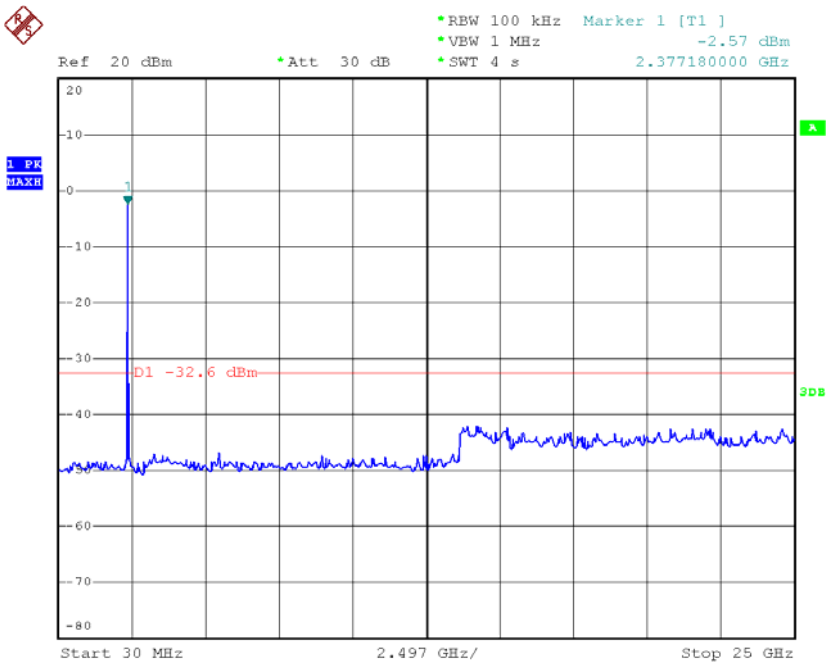
Channel 11 (2462MHz) 30-25GHz



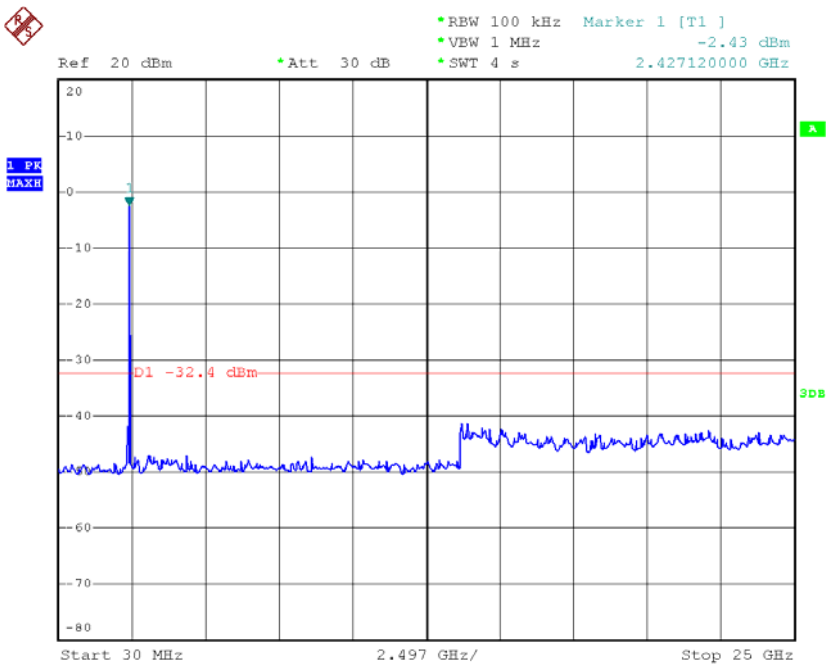
Date: 13.JUN.2008 01:09:20

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (Antenna B)

Channel 01 (2412MHz) 30-25GHz

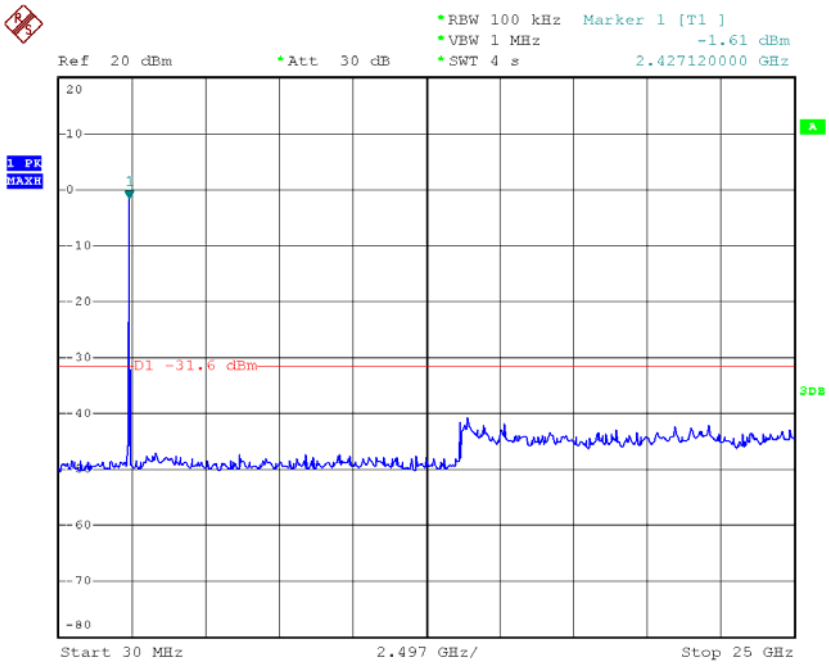


Channel 06 (2437MHz) 30-25GHz



Date: 13.JUN.2008 01:38:51

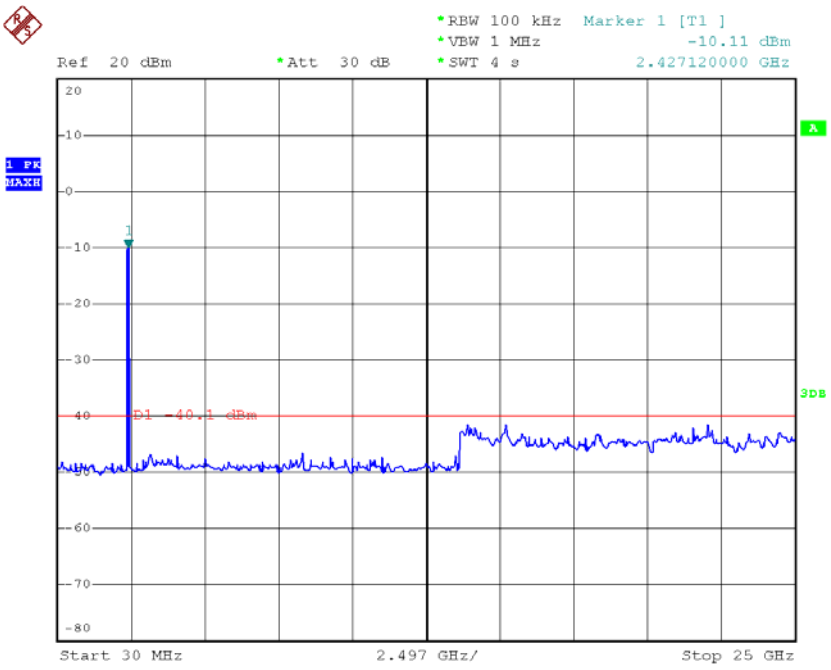
Channel 11 (2462MHz) 30-25GHz



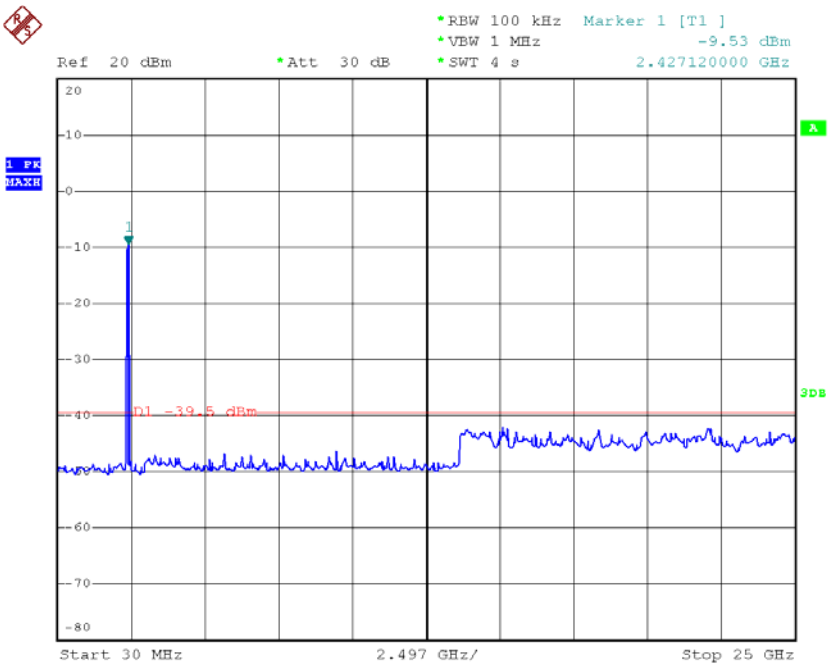
Date: 13.JUN.2008 01:39:17

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (Antenna A)

Channel 01 (2422MHz) 30-25GHz

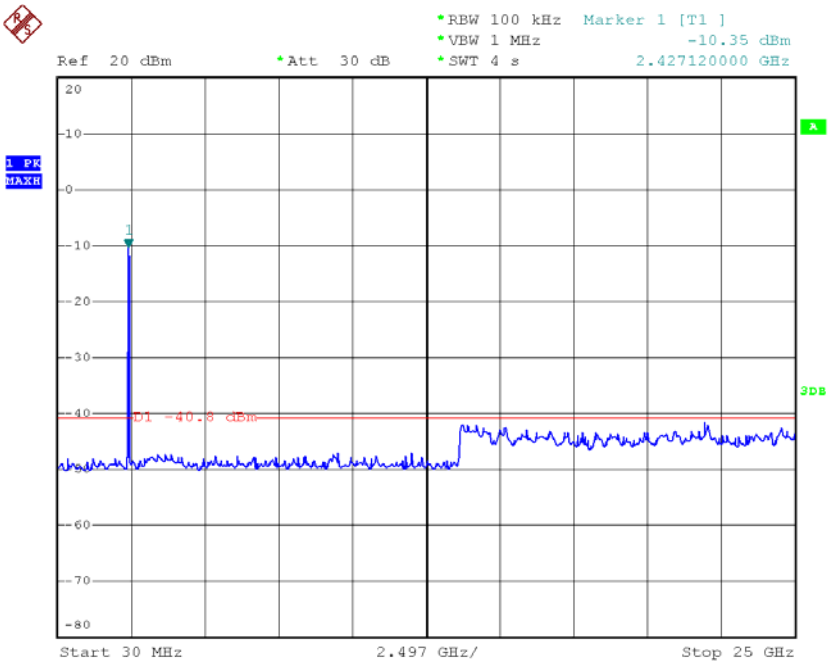


Channel 04 (2437MHz) 30-25GHz



Date: 13.JUN.2008 01:10:29

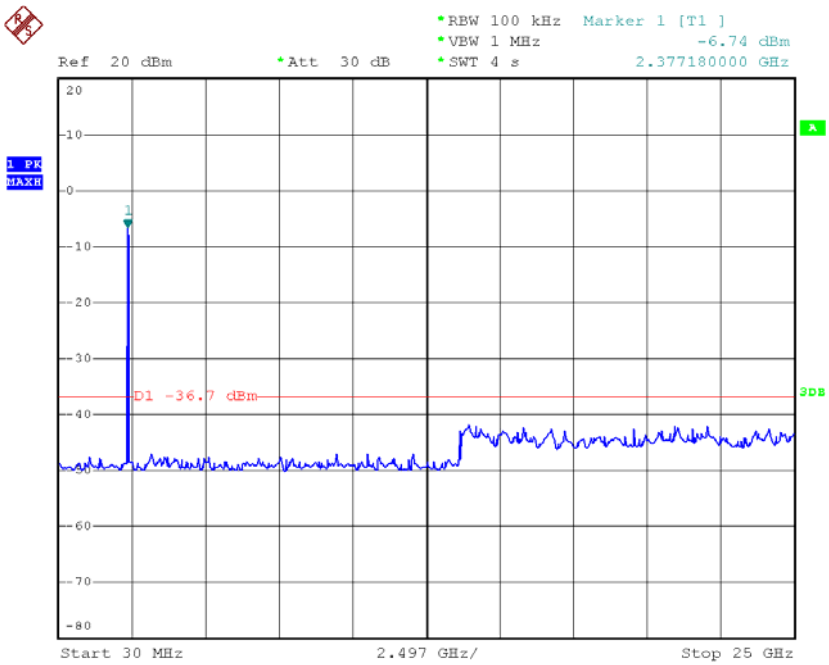
Channel 07 (2452MHz) 30-25GHz



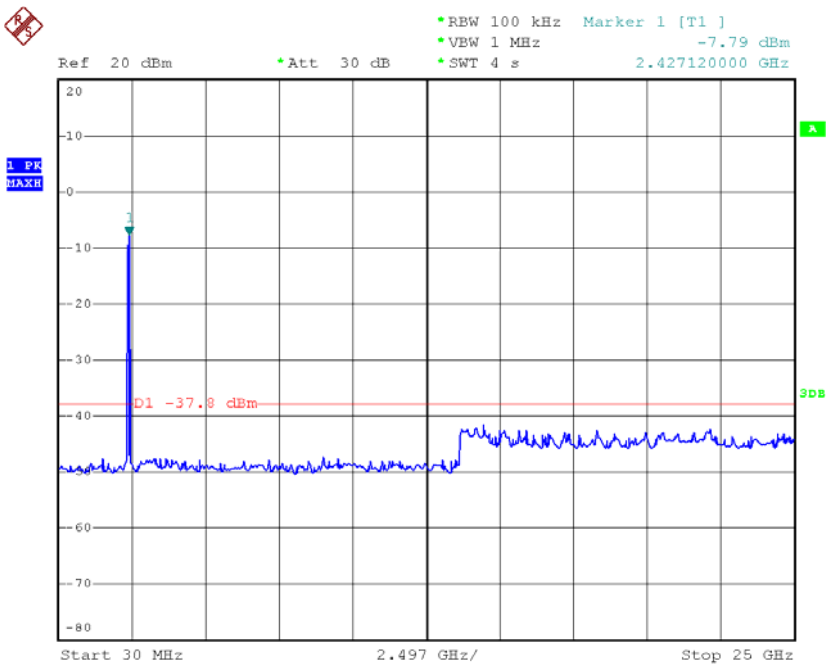
Date: 13.JUN.2008 01:11:05

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (Antenna B)

Channel 01 (2422MHz) 30-25GHz

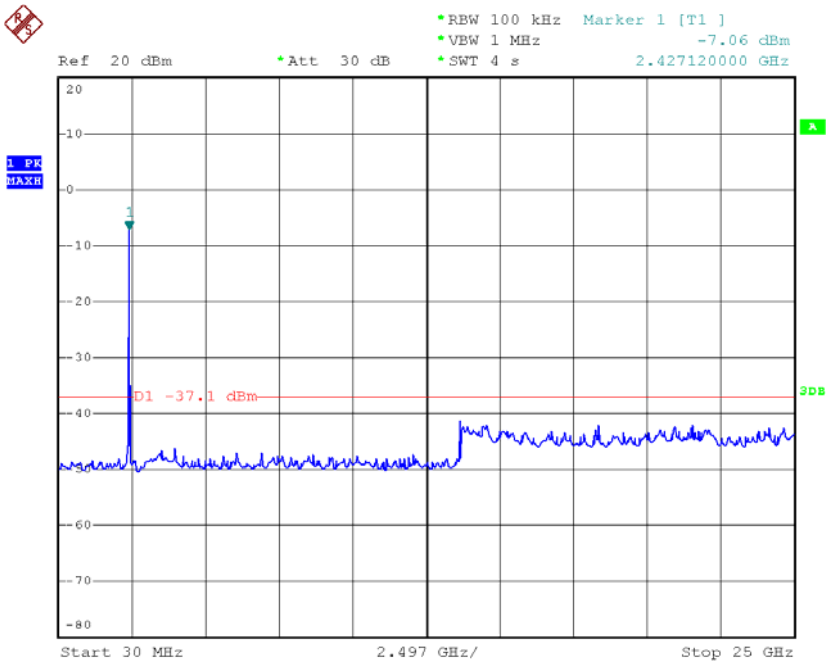


Channel 04 (2437MHz) 30-25GHz



Date: 13.JUN.2008 01:40:34

Channel 07 (2452MHz) 30-25GHz



Date: 13.JUN.2008 01:41:00

6. Band Edge

6.1. Test Equipment

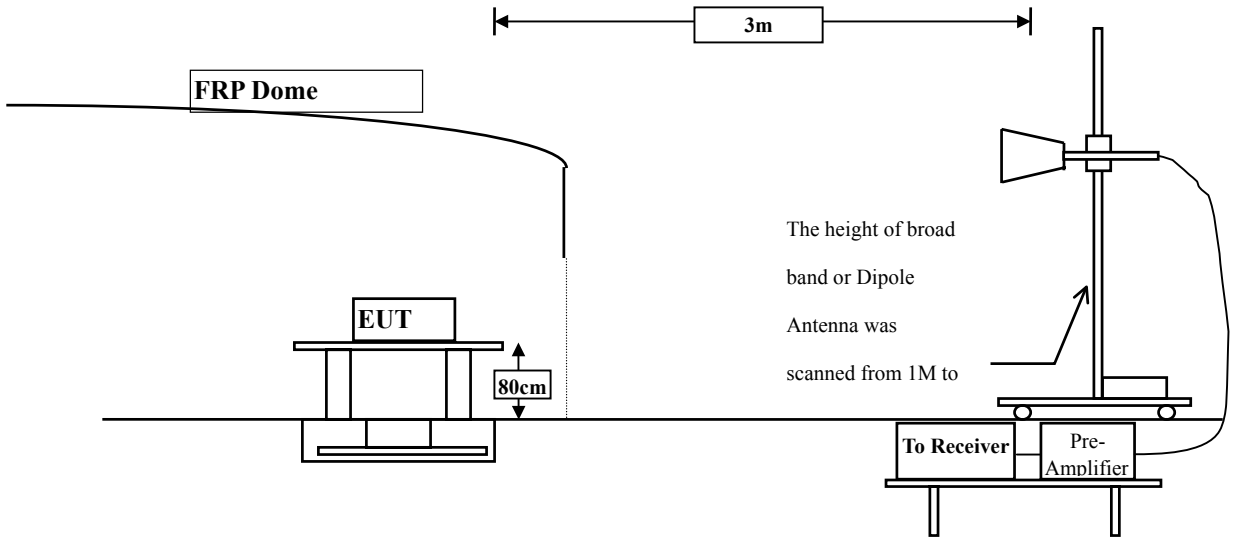
The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2007
	X	Pre-Amplifier	AGILENT	8447D/2944A09549	Sep., 2007
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2007
	X	Spectrum Analyzer	Advantest	R3162/91700283	Oct., 2007
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2008
	X	Controller	QuieTek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

Note: 1. All 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

RF Radiated Measurement:



6.3. 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.

6.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

6.5. Uncertainty

± 3.9 dB above 1GHz
± 3.8 dB below 1GHz

6.6. Test Result of Band Edge

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps)

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
01 (Peak)	2389.700	31.128	25.718	56.846	74.00	54.00	Pass
01 (Average)	2389.700	31.128	13.460	44.588	74.00	54.00	Pass

Figure Channel 01: Horizontal (Peak)

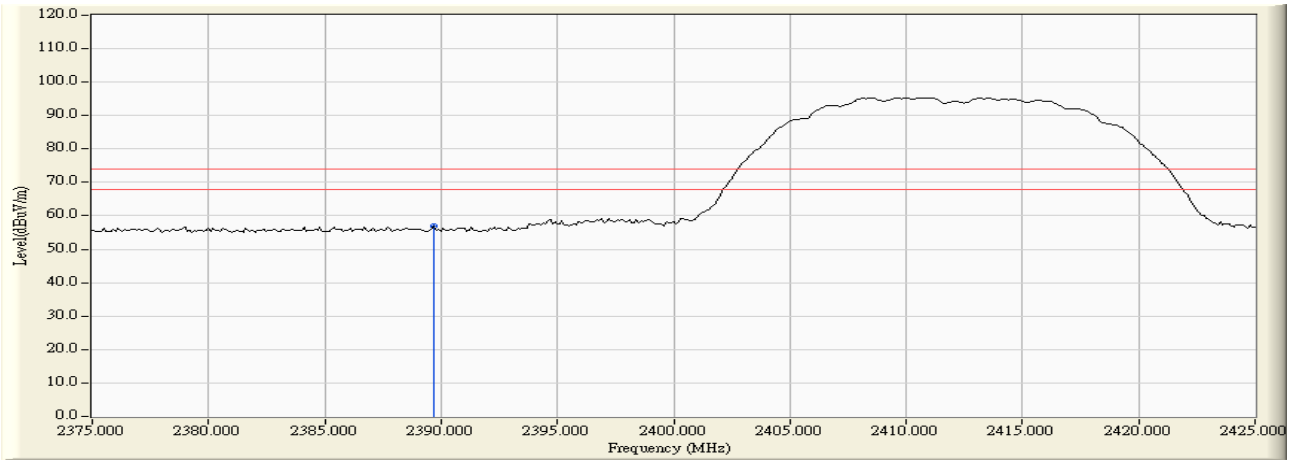
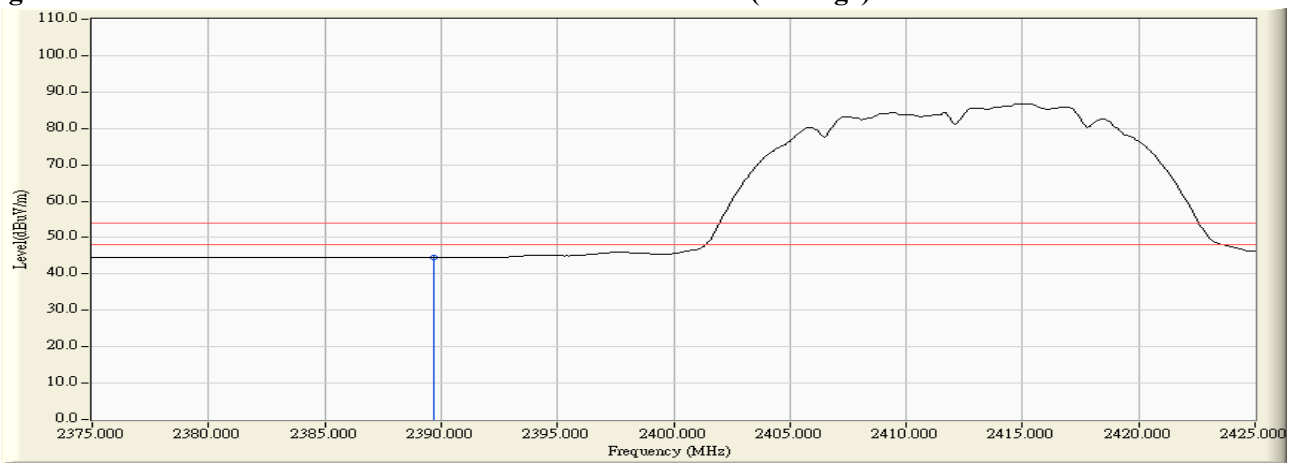


Figure Channel 01: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps)

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
01 (Peak)	2385.800	-6.781	60.789	54.008	74.00	54.00	Pass
01 (Average)	2385.800	-6.777	52.573	45.796	74.00	54.00	Pass

Figure Channel 01: Vertical (Peak)

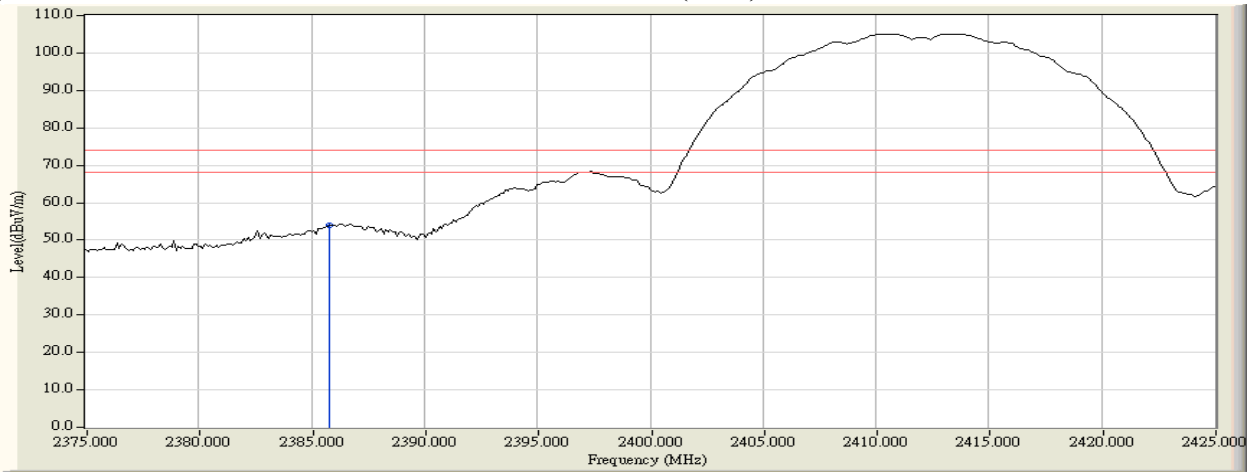
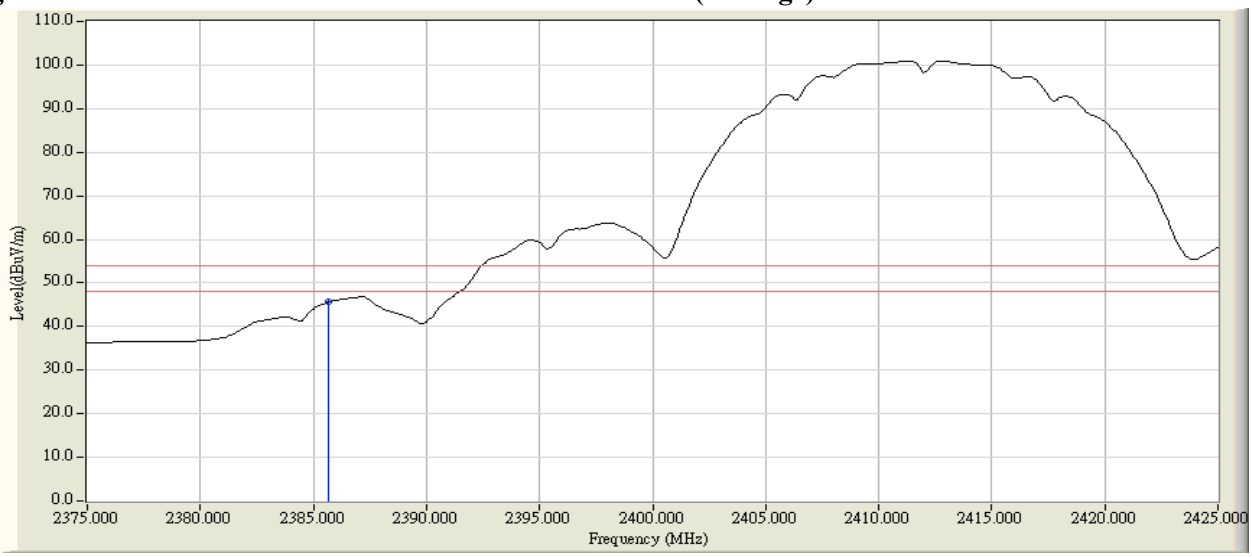


Figure Channel 01: Vertical (Average)



Note:

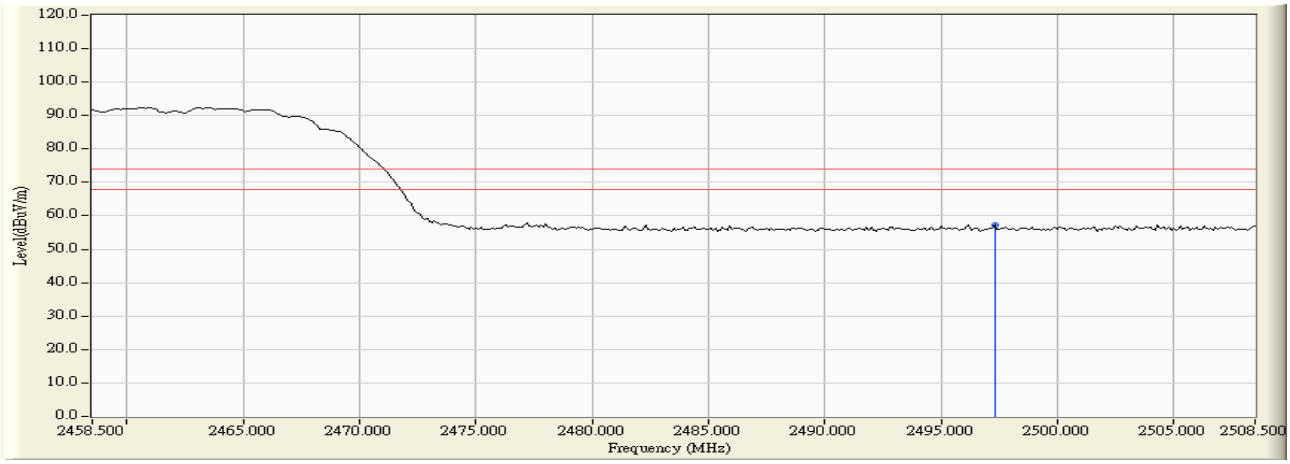
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps)

RF Radiated Measurement (Horizontal):

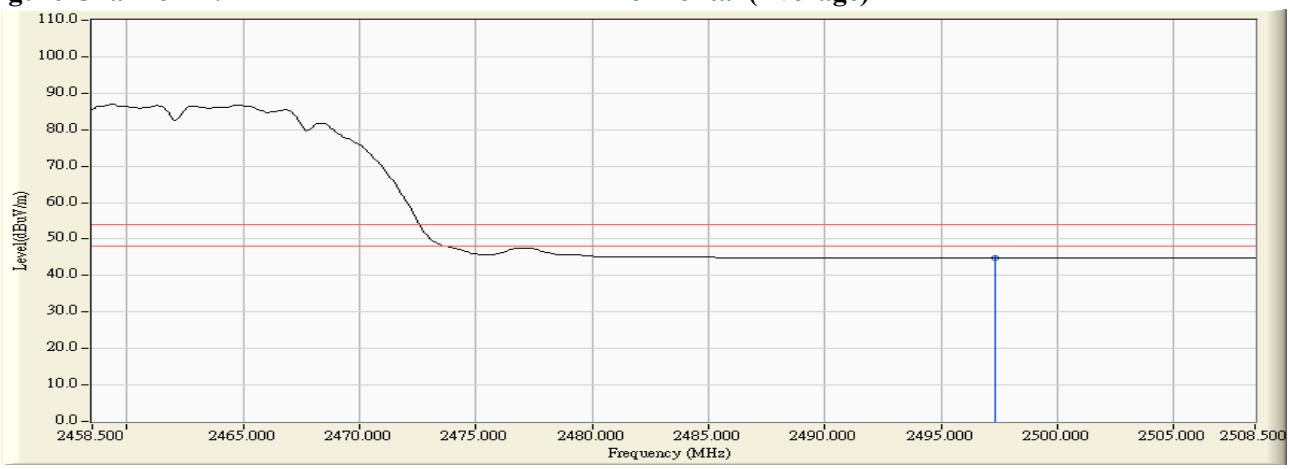
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2497.300	31.540	25.812	57.353	74.00	54.00	Pass
11(Average)	2497.300	31.540	13.290	44.831	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)



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

Figure Channel 11: Horizontal (Average)



Note:

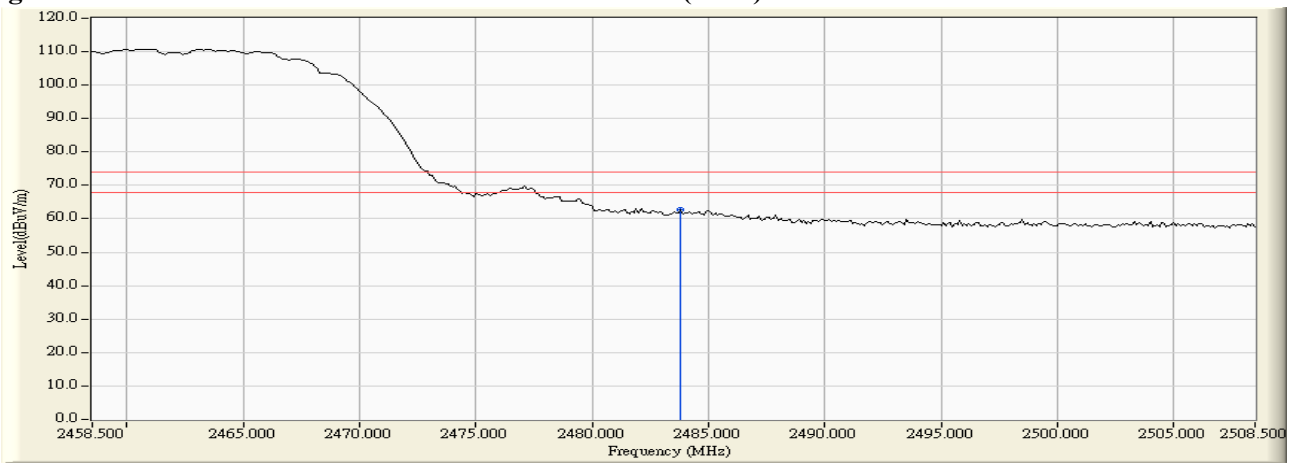
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps)

RF Radiated Measurement (Vertical):

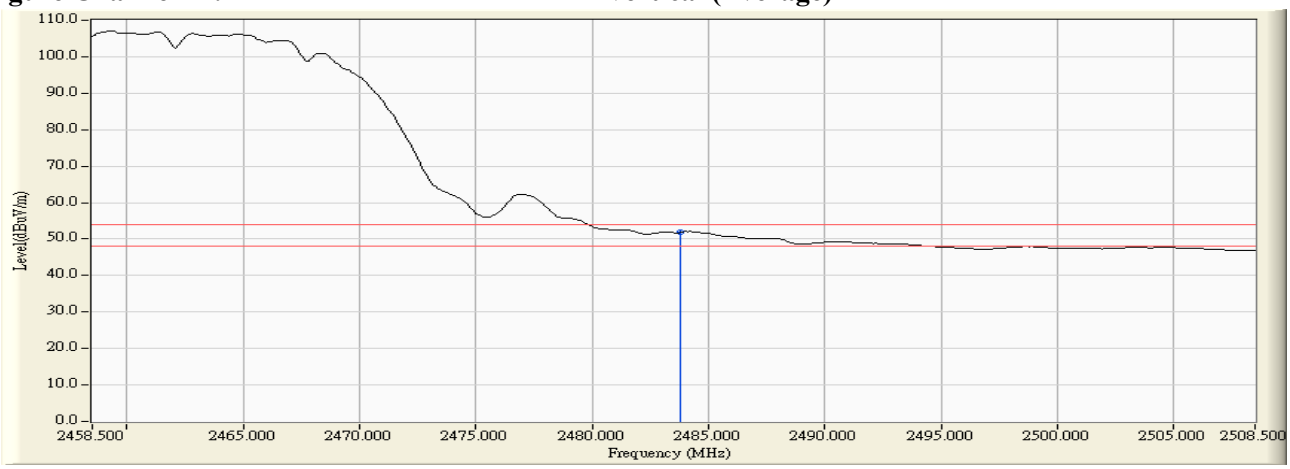
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2483.800	31.504	31.071	62.575	74.00	54.00	Pass
11(Average)	2483.800	31.504	20.317	51.821	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)



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

Figure Channel 11: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps)

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
01 (Peak)	2388.300	31.122	25.627	56.749	74.00	54.00	Pass
01 (Average)	2388.300	31.122	13.602	44.724	74.00	54.00	Pass

Figure Channel 01: Horizontal (Peak)

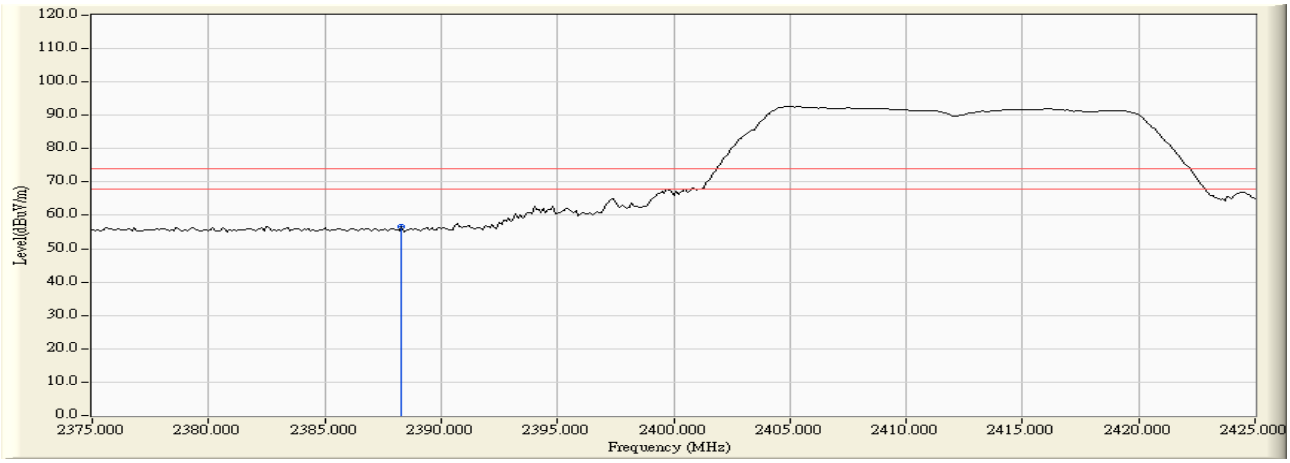
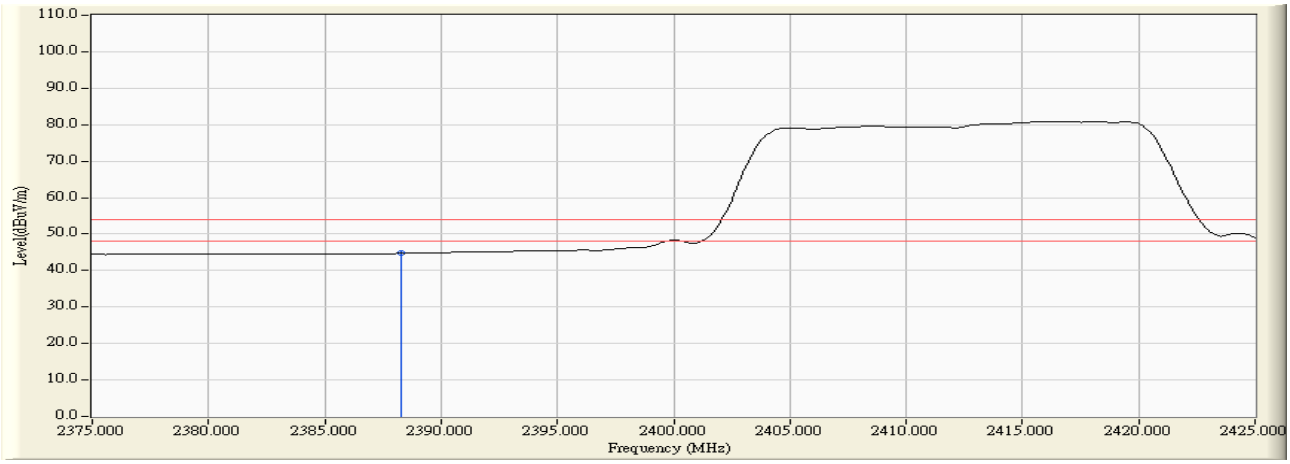


Figure Channel 01: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps)

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
01 (Peak)	2389.300	31.126	37.503	68.629	74.00	54.00	Pass
01 (Average)	2389.300	31.126	20.655	51.781	74.00	54.00	Pass

Figure Channel 01: (Vertical) (Peak)

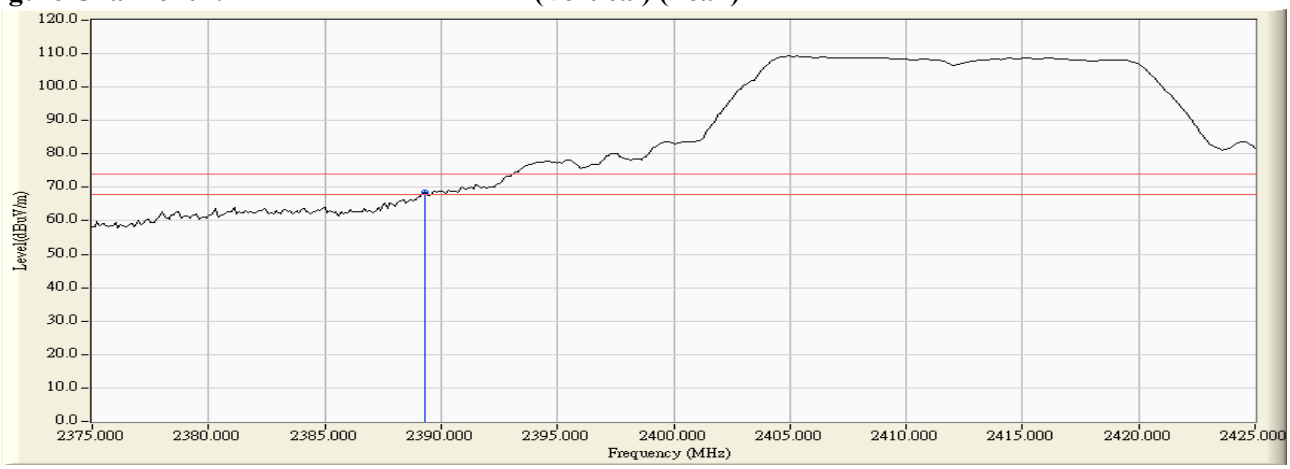
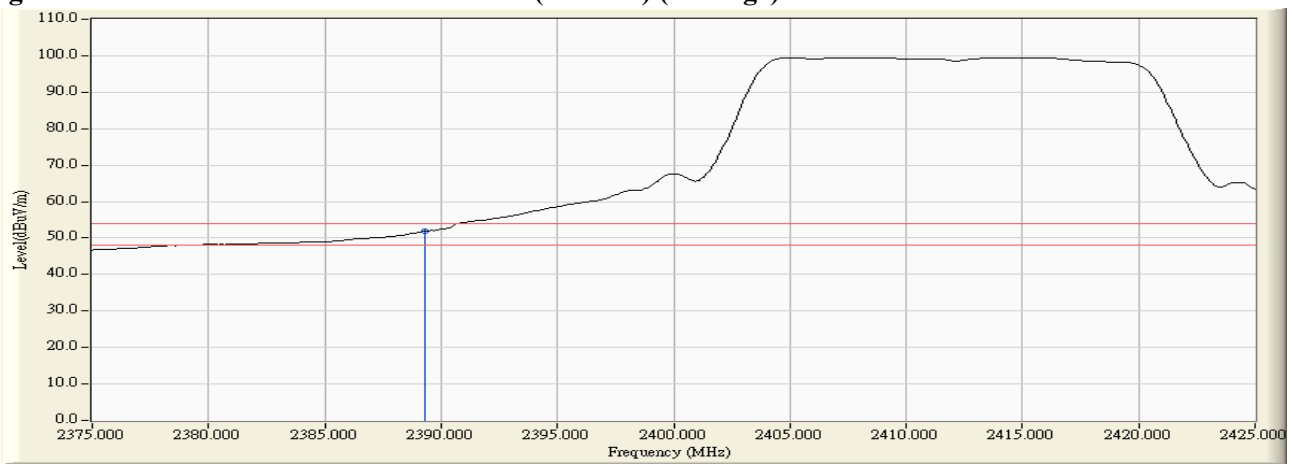


Figure Channel 01: (Vertical) (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps)

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)	2504.500	31.558	25.600	57.158	74.00	54.00	Pass
11 (Average)	2504.500	31.558	13.322	44.880	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

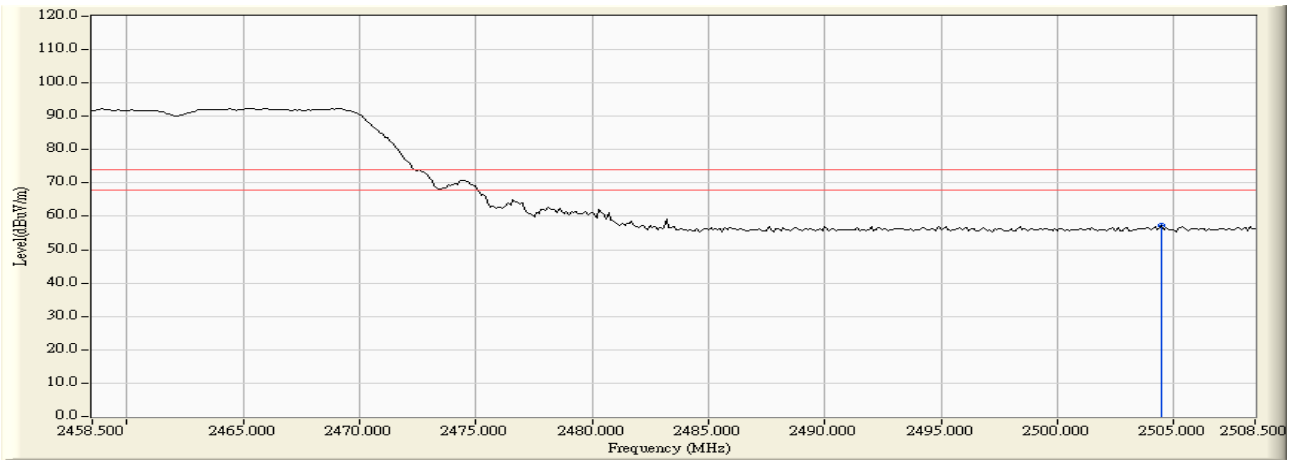
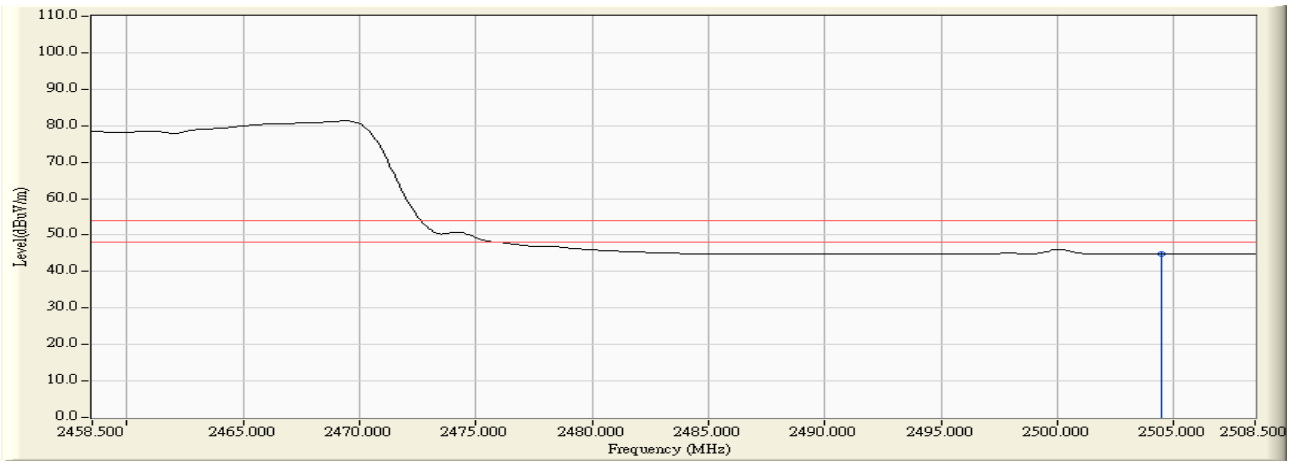


Figure Channel 11: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps)

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)	2483.500	31.503	38.772	70.275	74.00	54.00	Pass
11(Average)	2483.500	31.503	20.673	52.176	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

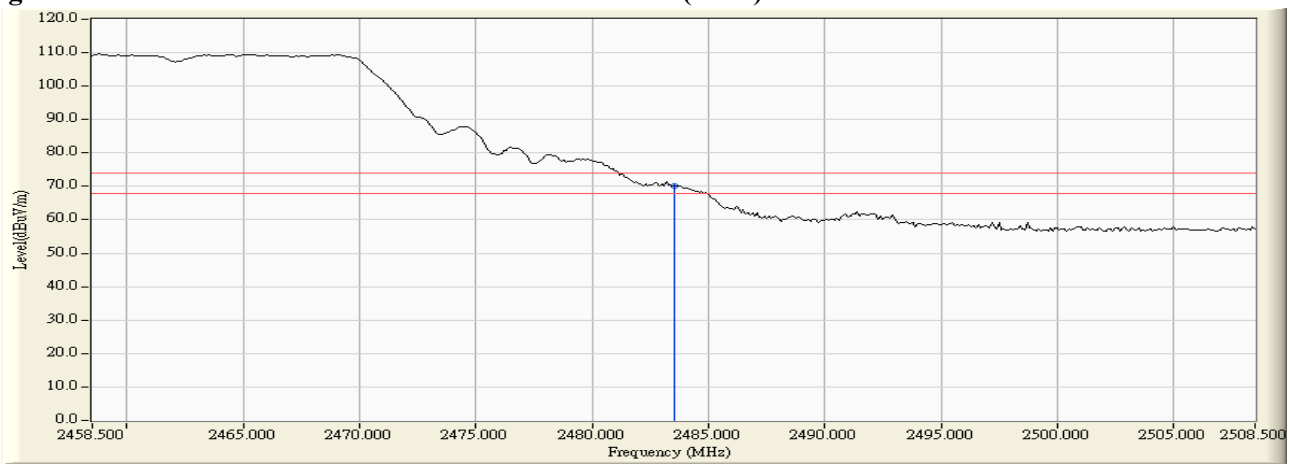
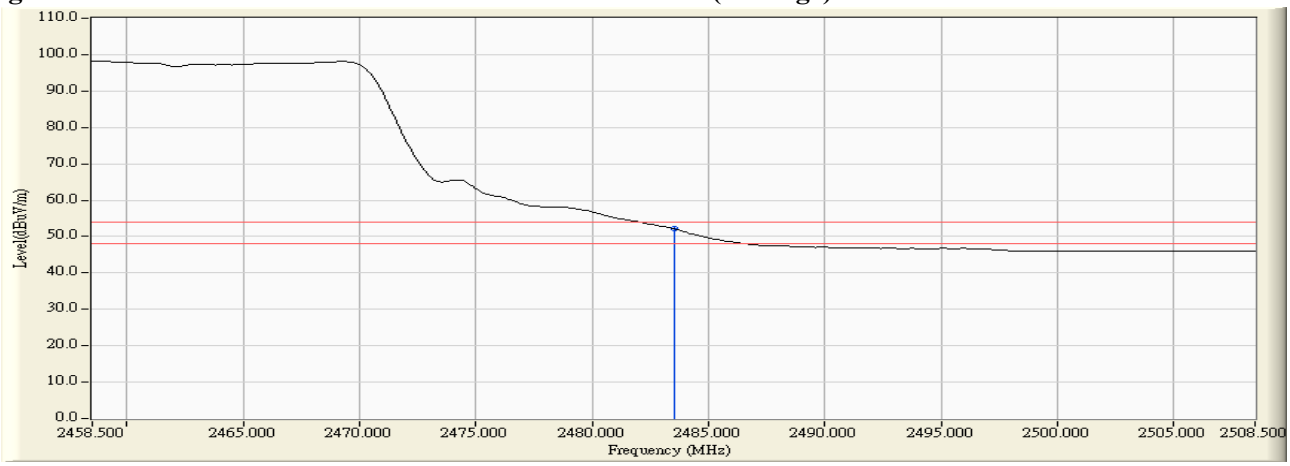


Figure Channel 11: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW)

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
01 (Peak)	2381.600	31.093	26.193	57.286	74.00	54.00	Pass
01 (Average)	2381.600	31.093	13.298	44.391	74.00	54.00	Pass

Figure Channel 01: Horizontal (Peak)

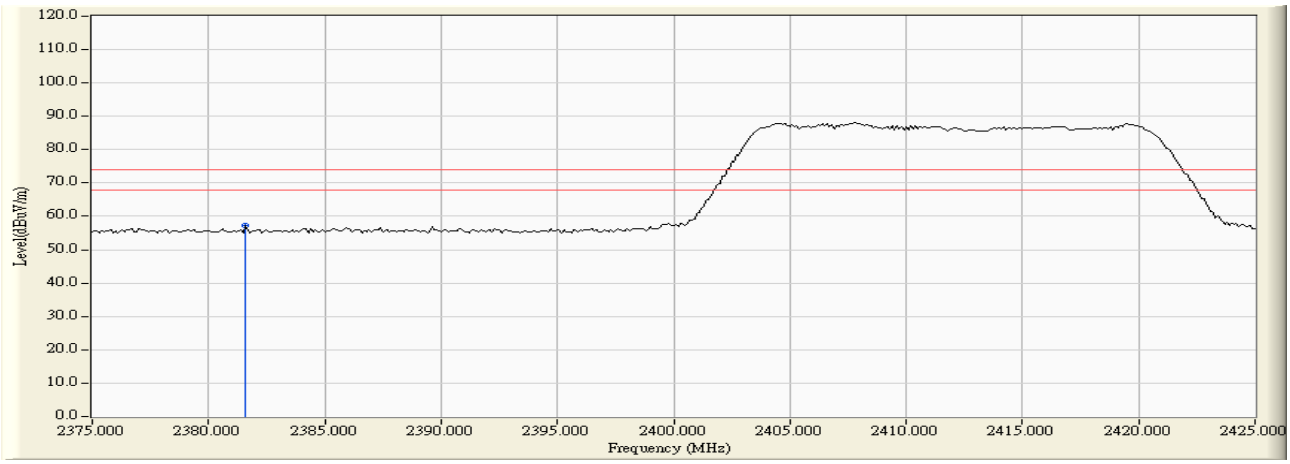
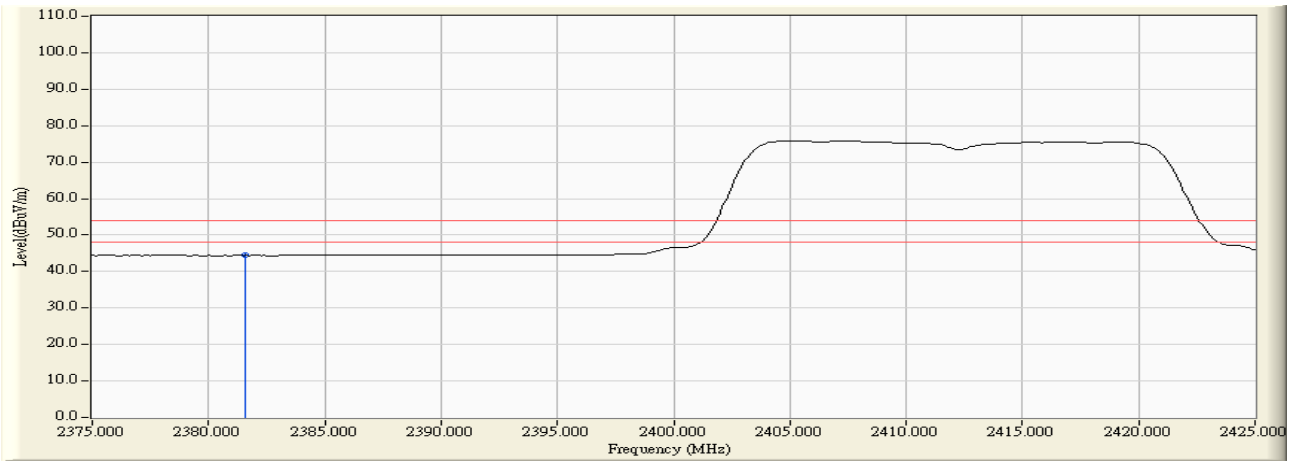


Figure Channel 01: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW)

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
01 (Peak)	2388.100	31.121	29.294	60.415	74.00	54.00	Pass
01 (Average)	2388.100	31.121	17.279	48.400	74.00	54.00	Pass

Figure Channel 01: (Vertical) (Peak)

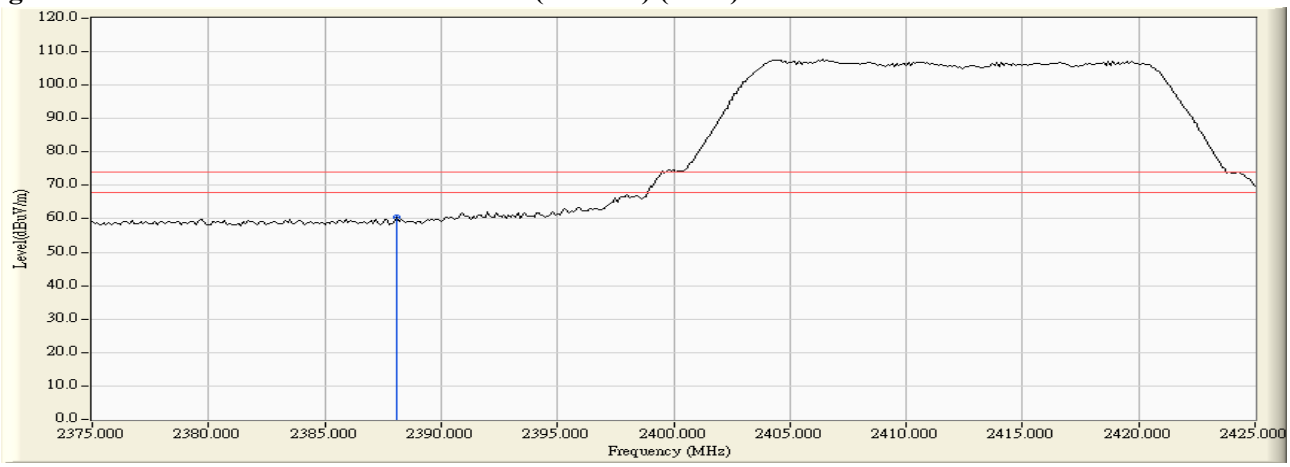
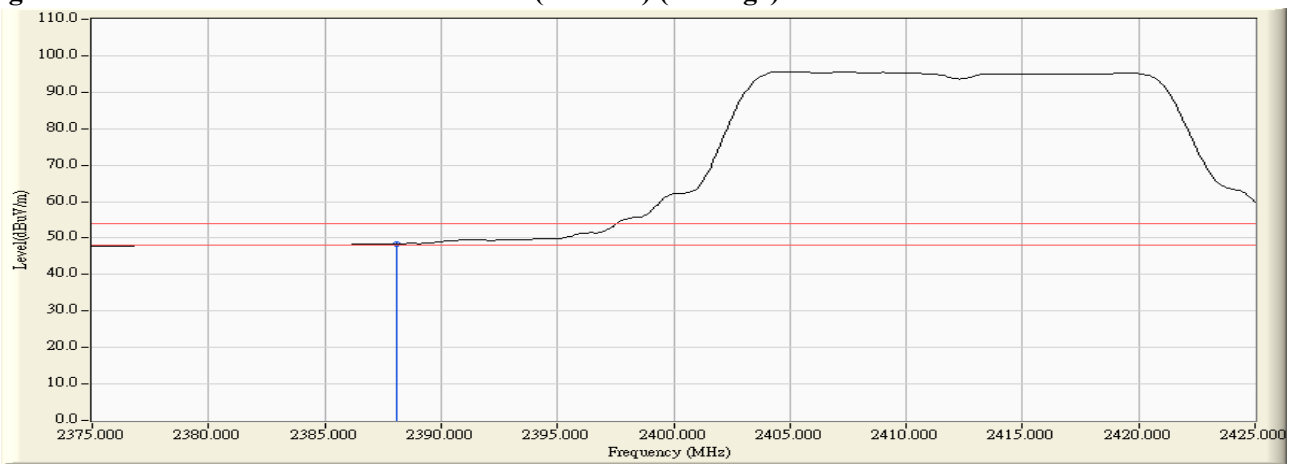


Figure Channel 01: (Vertical) (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW)

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)	2485.100	31.507	25.267	56.775	74.00	54.00	Pass
11 (Average)	2485.100	31.507	13.297	44.805	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

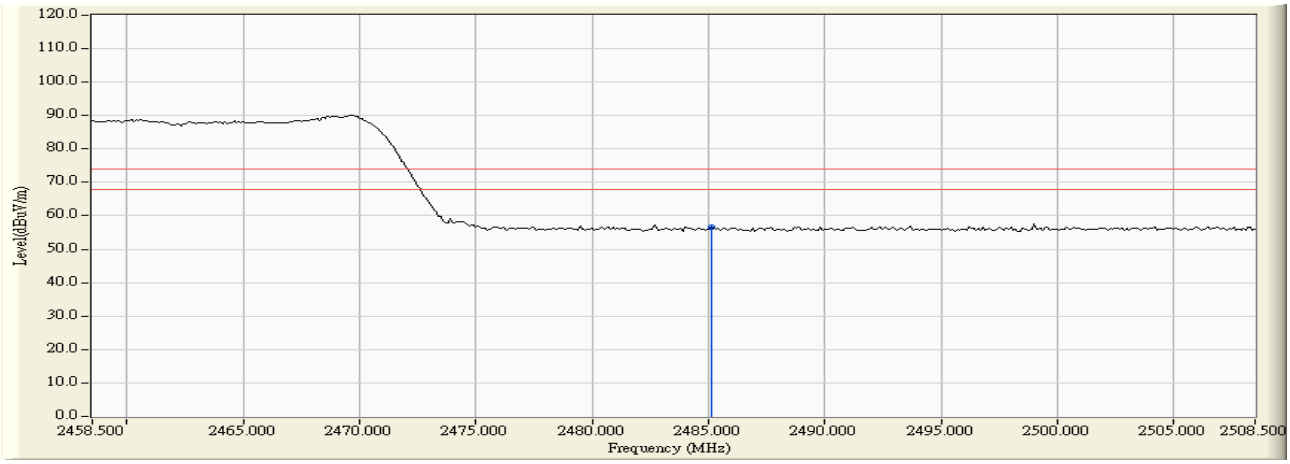
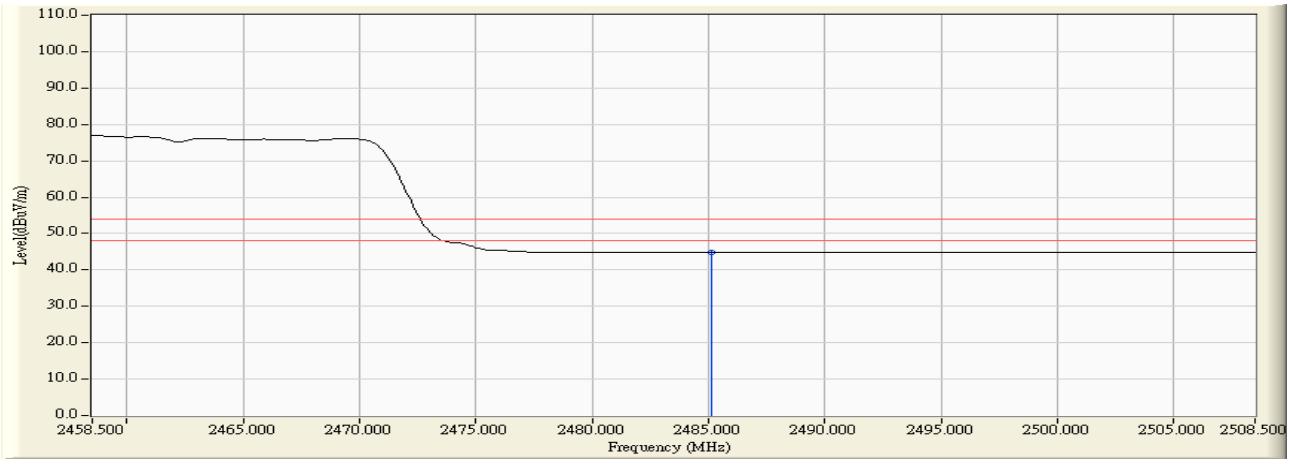


Figure Channel 11: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW)

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)	2483.500	31.503	30.462	61.965	74.00	54.00	Pass
11 (Average)	2483.500	31.503	18.807	50.310	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

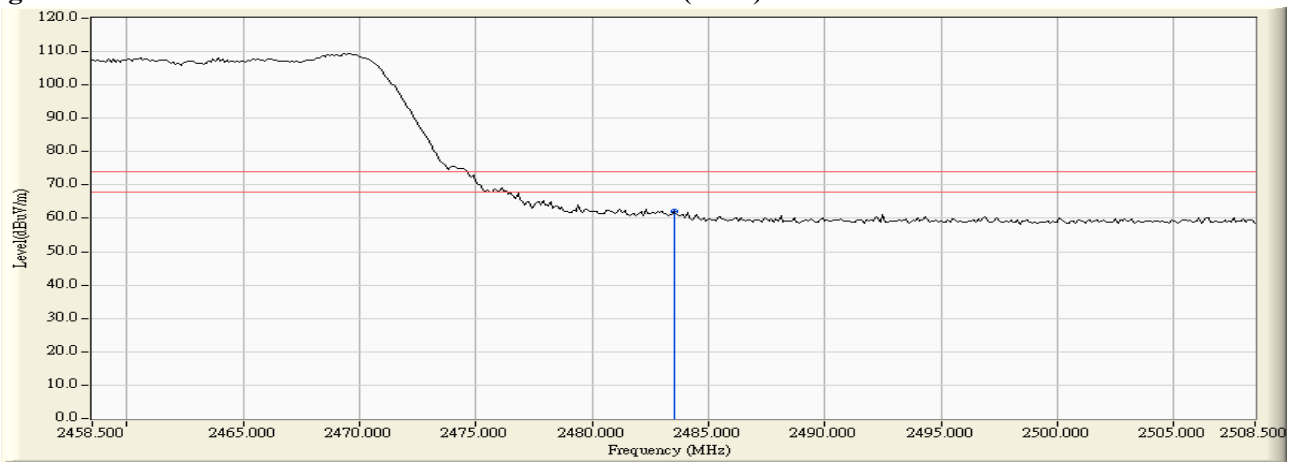
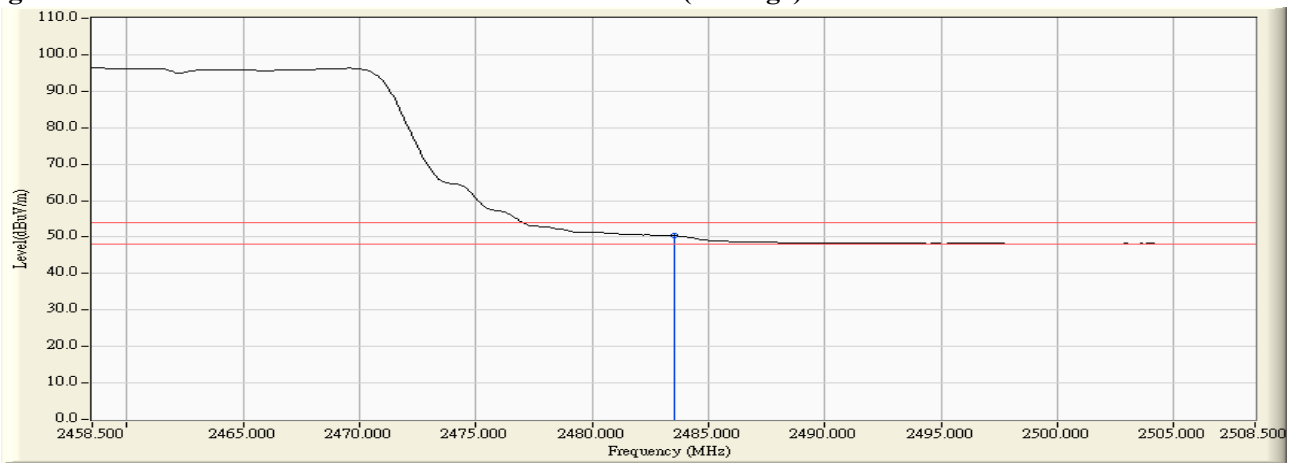


Figure Channel 11: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW)

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
01 (Peak)	2383.300	31.100	25.894	56.994	74.00	54.00	Pass
01 (Average)	2383.300	31.100	13.326	44.426	74.00	54.00	Pass

Figure Channel 01: Horizontal (Peak)

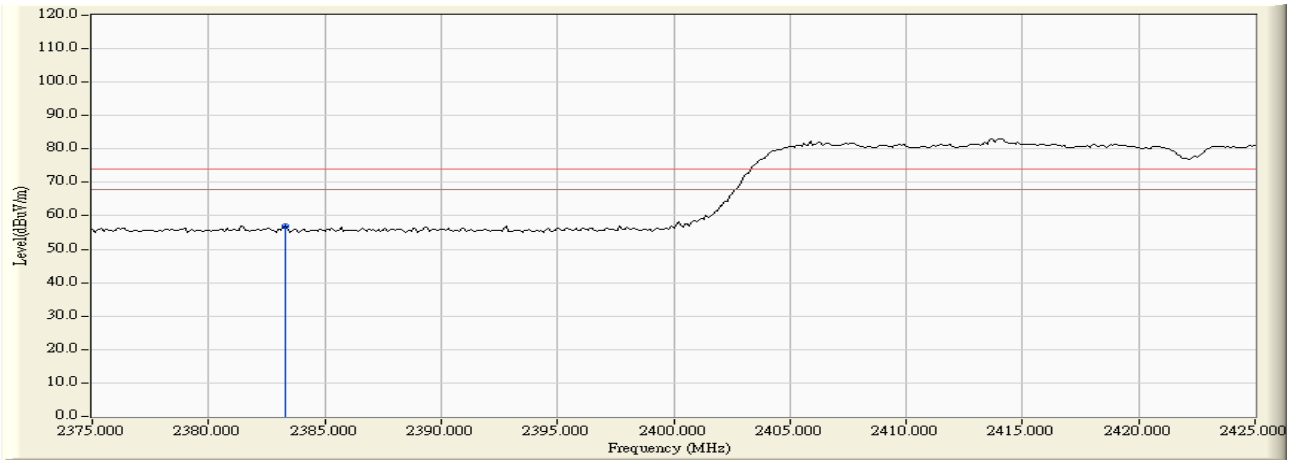
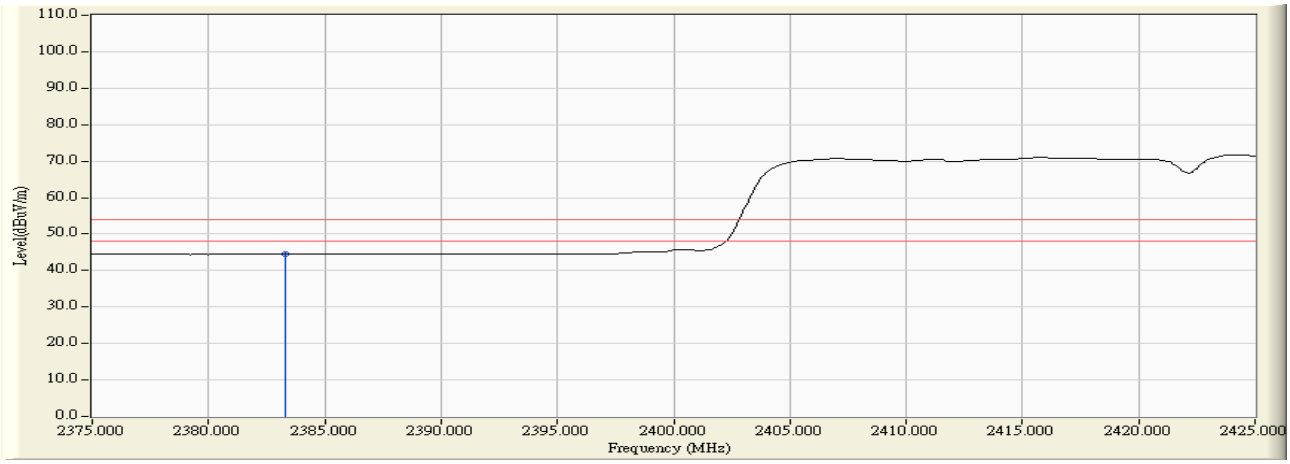


Figure Channel 01: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW)

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
01 (Peak)	2389.100	31.125	29.236	60.361	74.00	54.00	Pass
01 (Average)	2389.100	31.125	17.884	49.009	74.00	54.00	Pass

Figure Channel 01: (Vertical) (Peak)

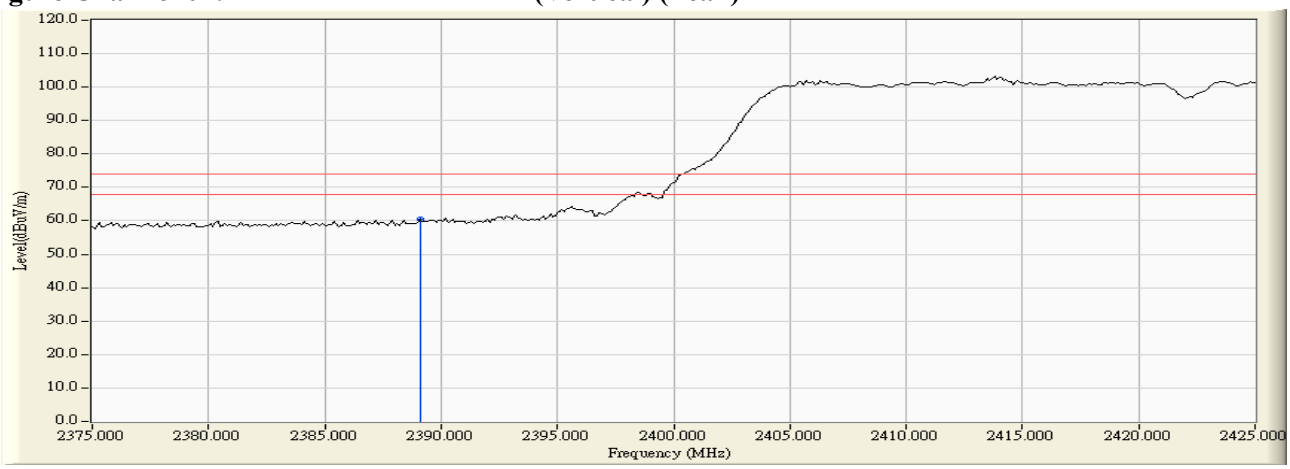
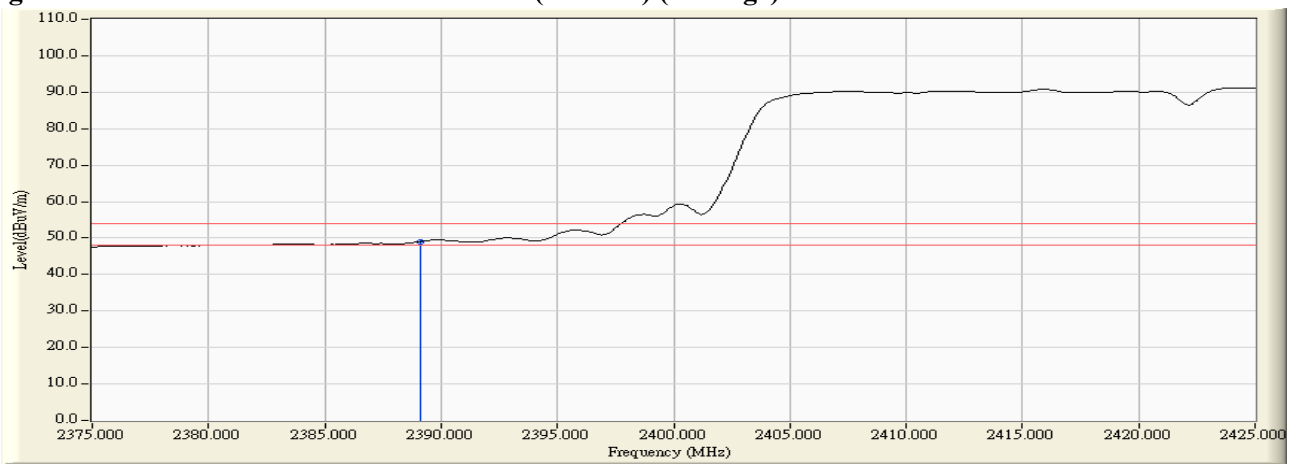


Figure Channel 01: (Vertical) (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW)

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
07 (Peak)	2485.500	31.509	25.526	57.035	74.00	54.00	Pass
07 (Average)	2485.500	31.509	13.266	44.775	74.00	54.00	Pass

Figure Channel 07: Horizontal (Peak)

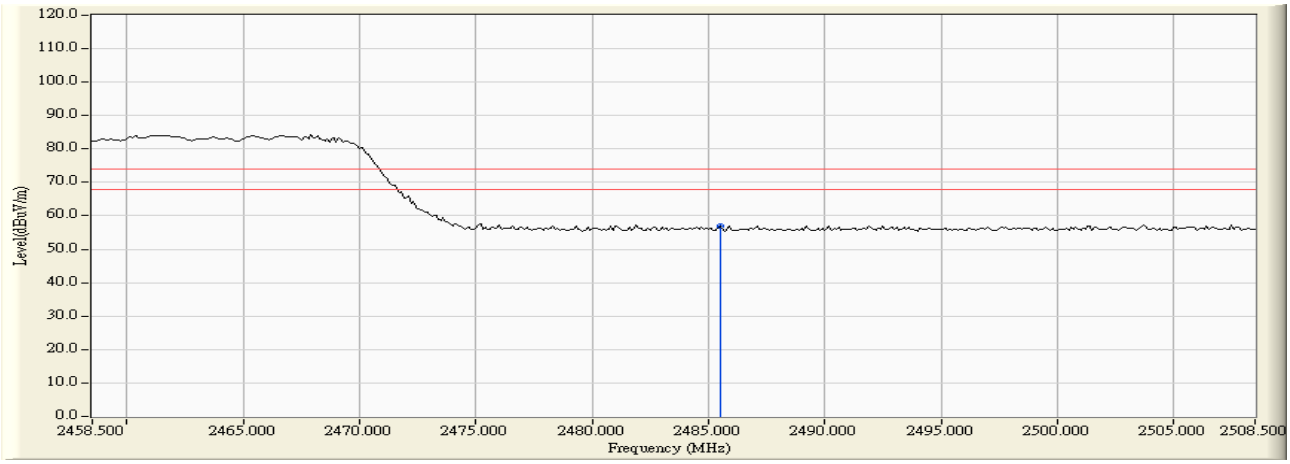
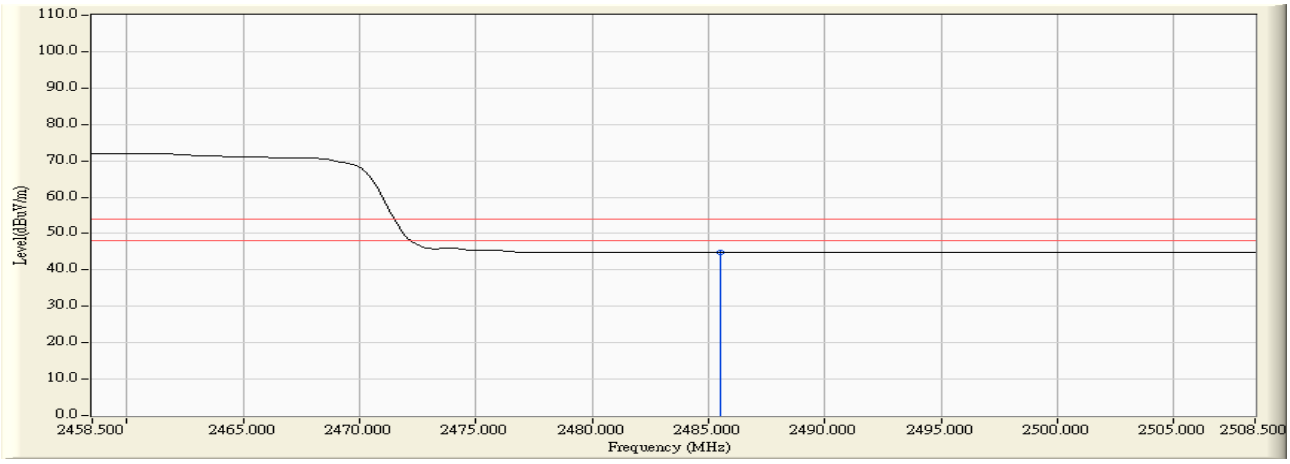


Figure Channel 07: Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW)

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
07 (Peak)	2483.700	31.504	29.813	61.317	74.00	54.00	Pass
07 (Average)	2483.700	31.504	17.583	49.087	74.00	54.00	Pass

Figure Channel 07: Vertical (Peak)

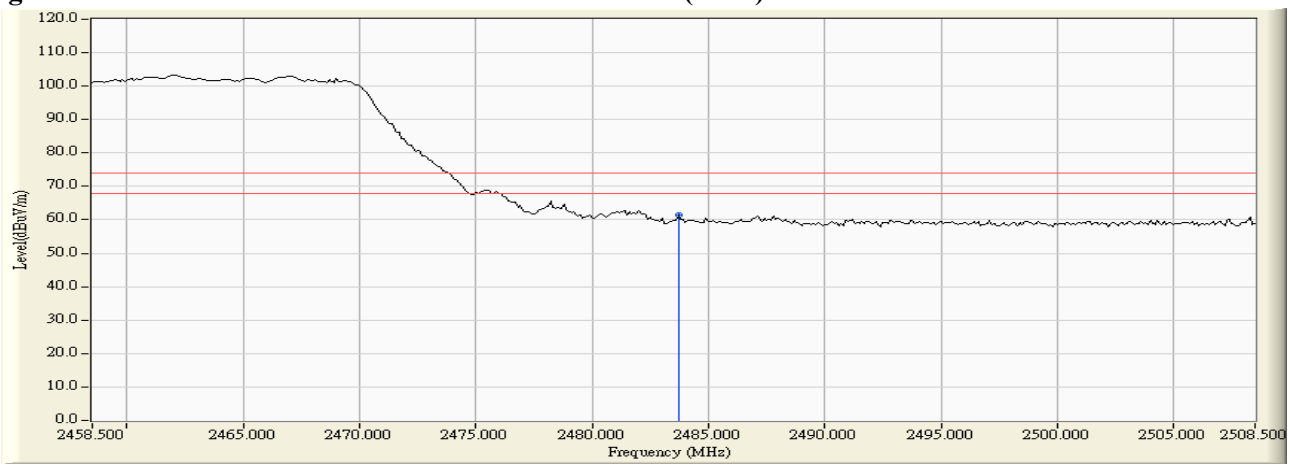
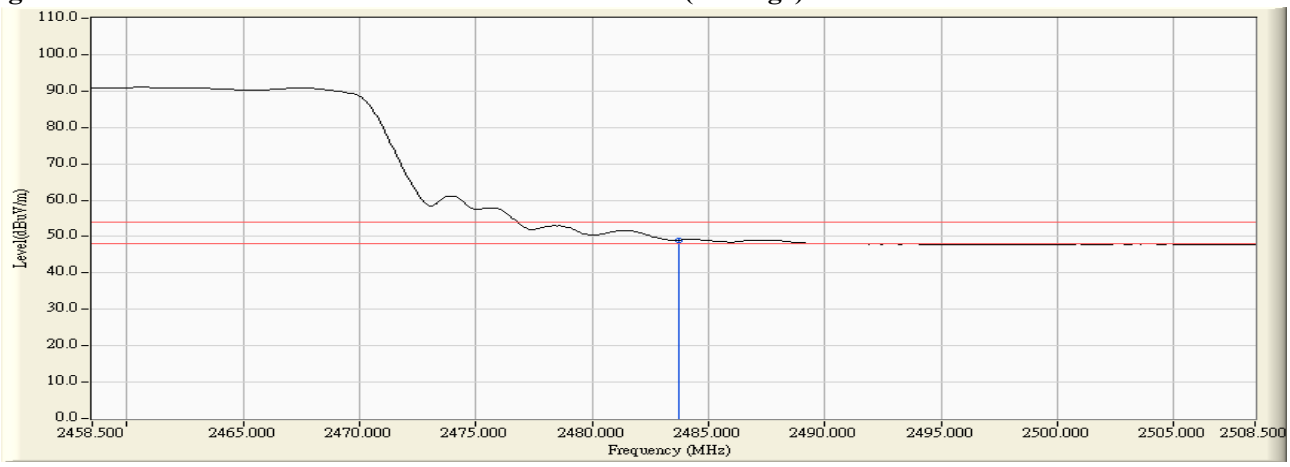


Figure Channel 07: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. " * ", means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

7. Occupied Bandwidth

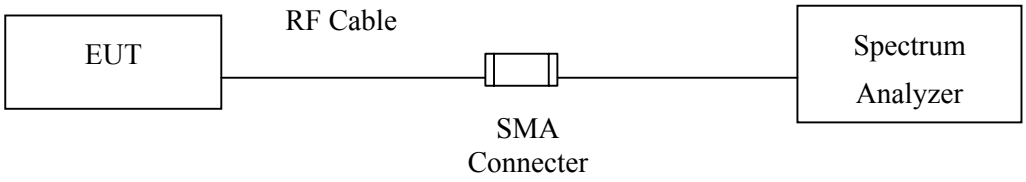
7.1. Test Equipment

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, 2008

Note: 1. All instruments 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 minimum bandwidth shall be at least 500 kHz.

7.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Span greater than RBW.

7.5. Uncertainty

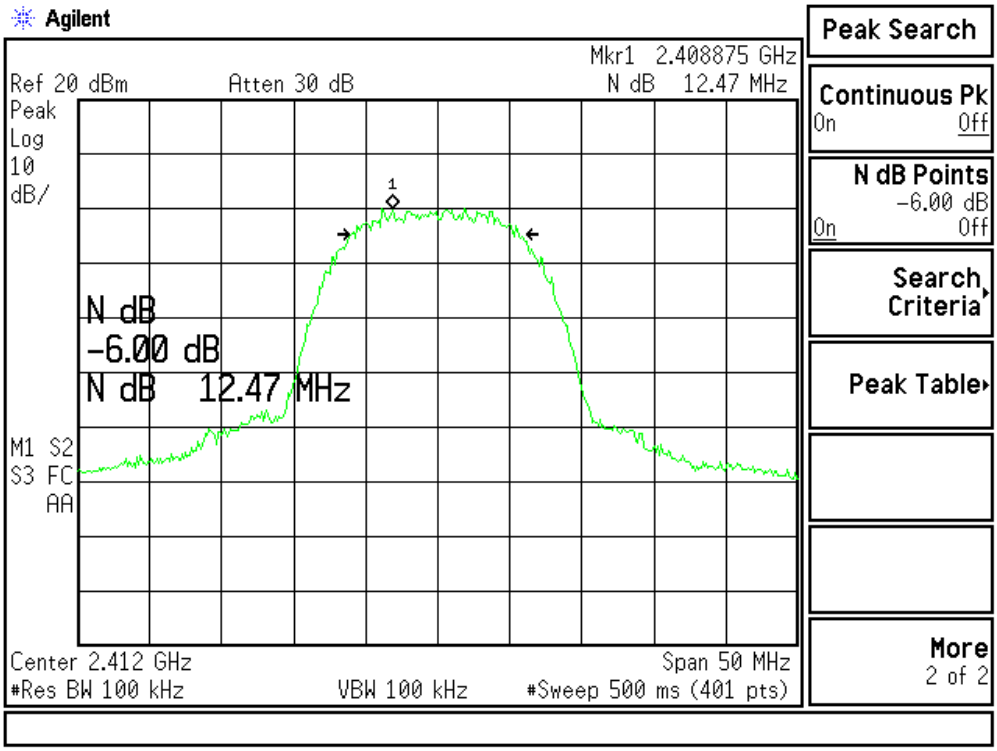
± 150Hz

7.6. Test Result of Occupied Bandwidth

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (1Mbps)	2412.00	12470	>500	Pass

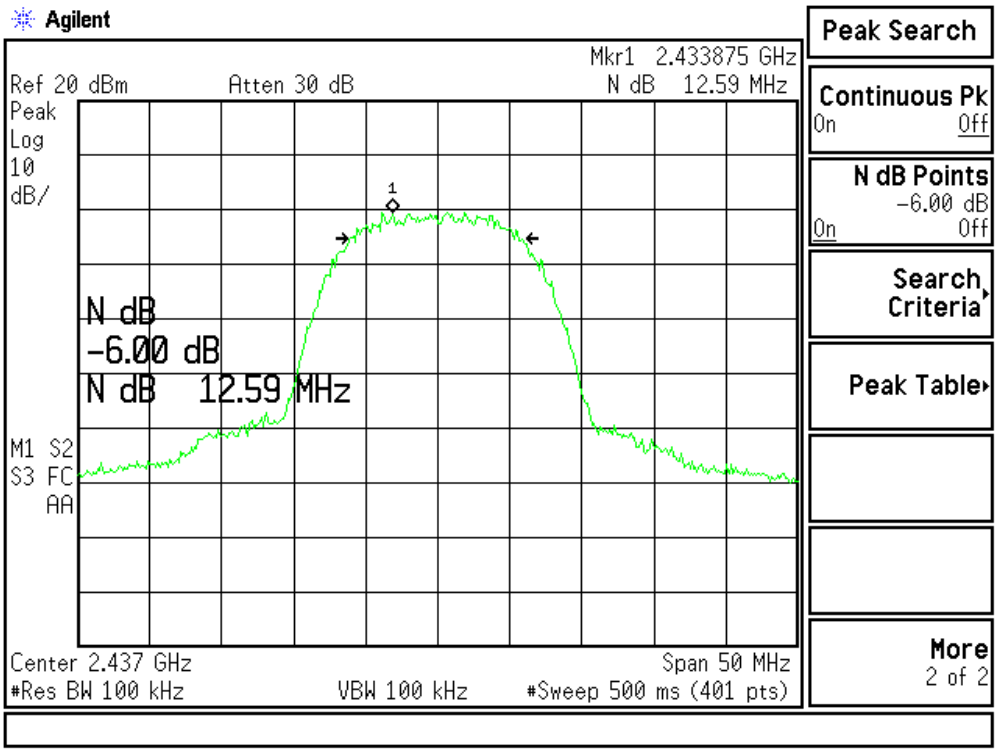
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6 (1Mbps)	2437.00	12590	>500	Pass

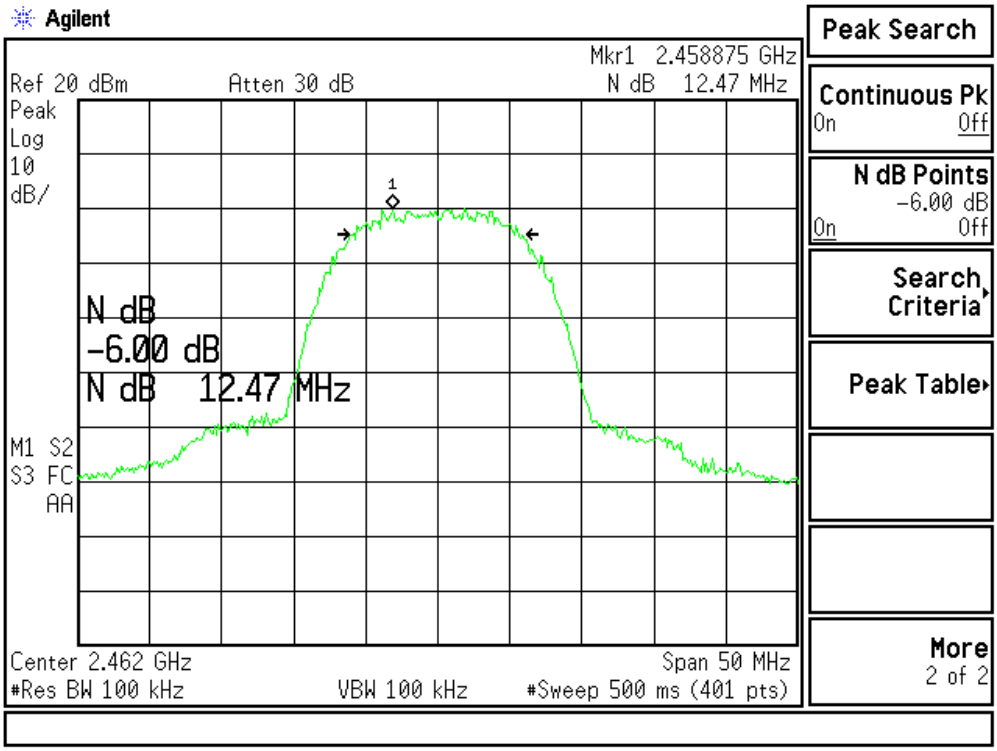
Figure Channel 6:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11 (1Mbps)	2462.00	12470	>500	Pass

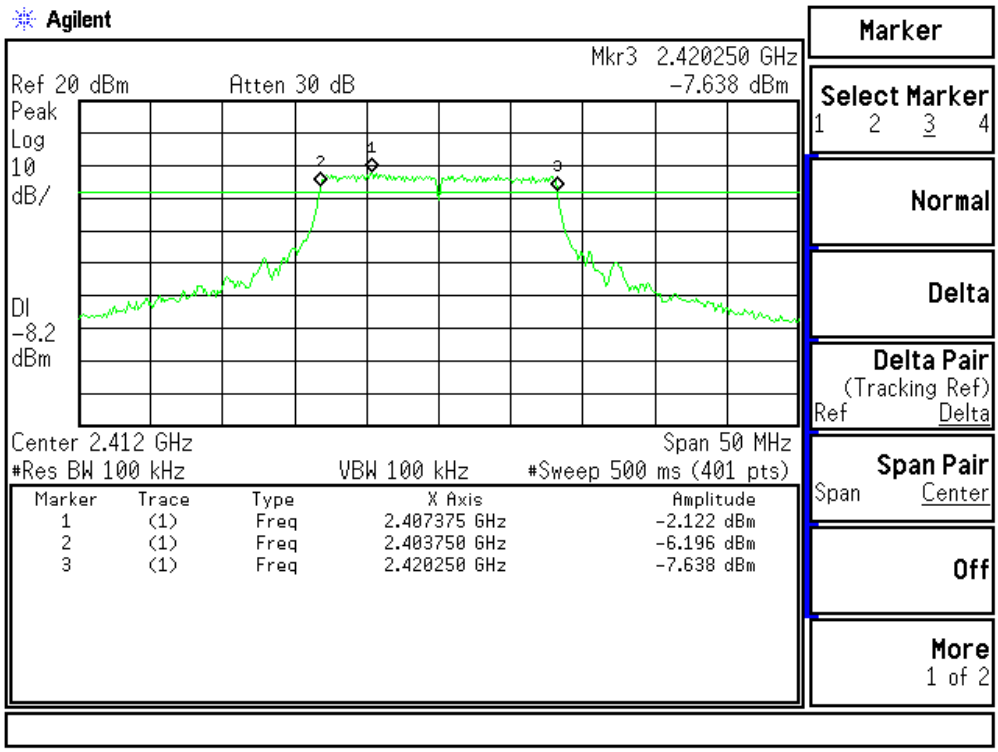
Figure Channel 11:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (54Mbps)	2412.00	16500	>500	Pass

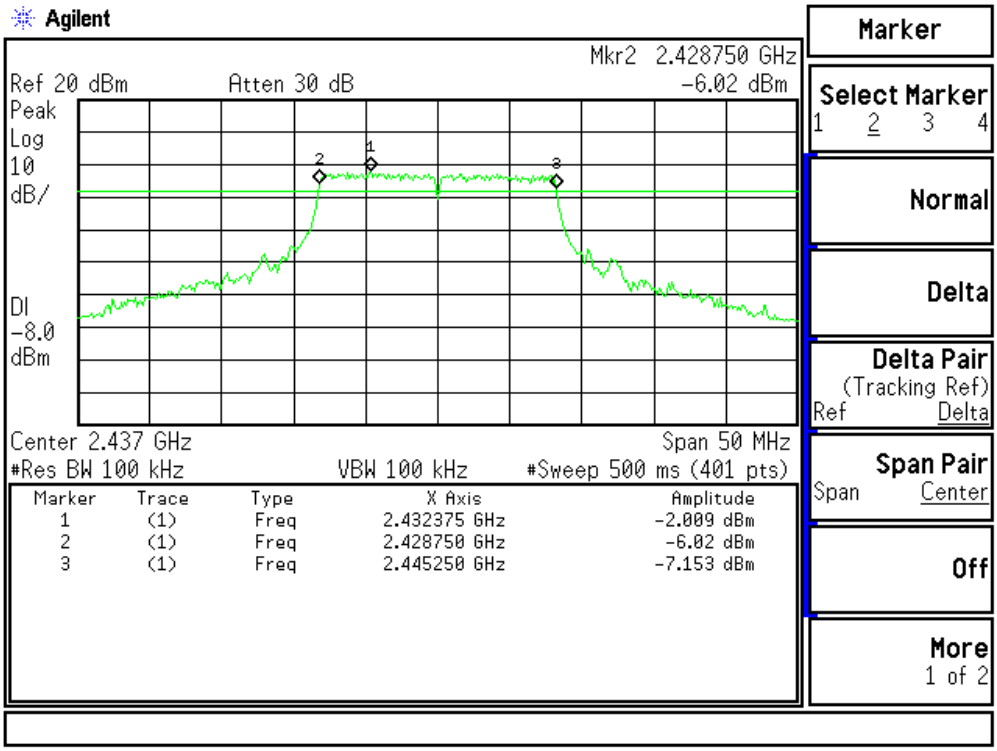
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6 (54Mbps)	2437.00	16500	>500	Pass

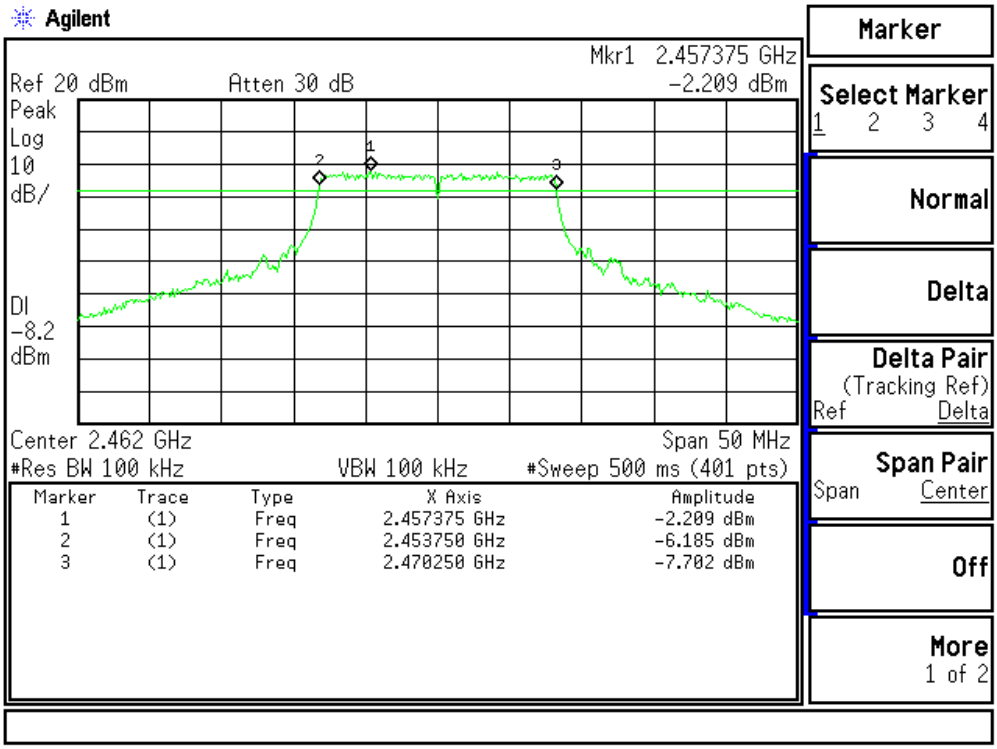
Figure Channel 6:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11 (54Mbps)	2462.00	16500	>500	Pass

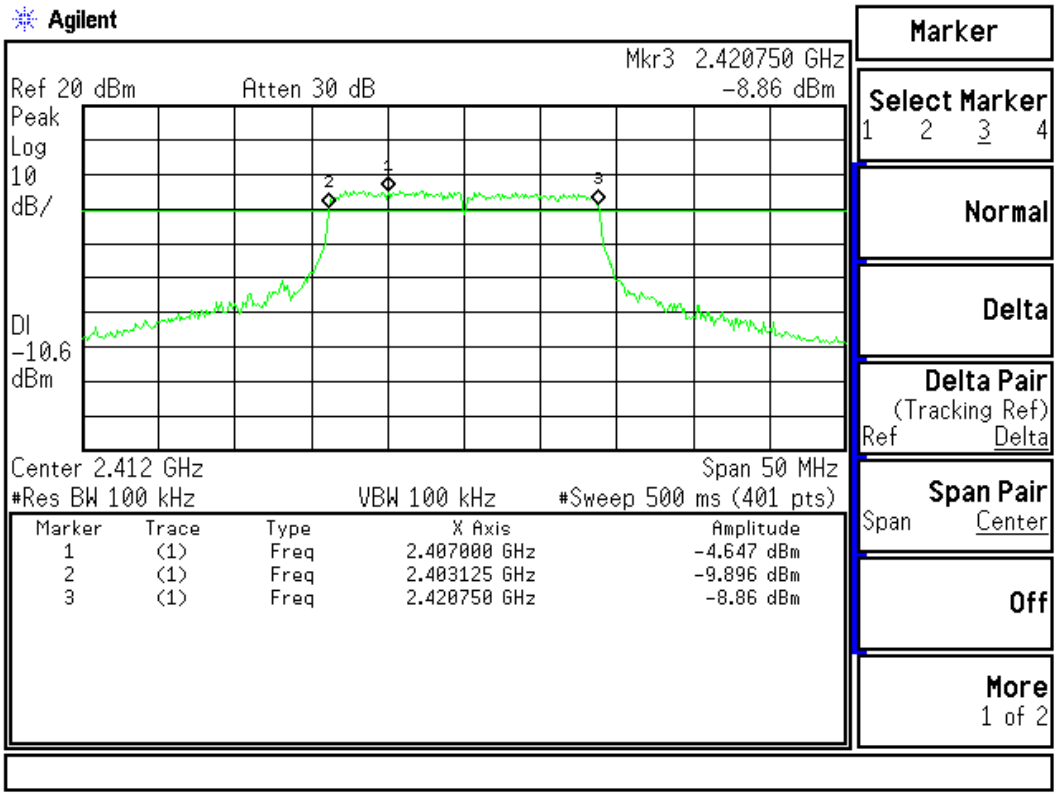
Figure Channel 11:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2412MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (6.5Mbps)	2412.00	17625	>500	Pass

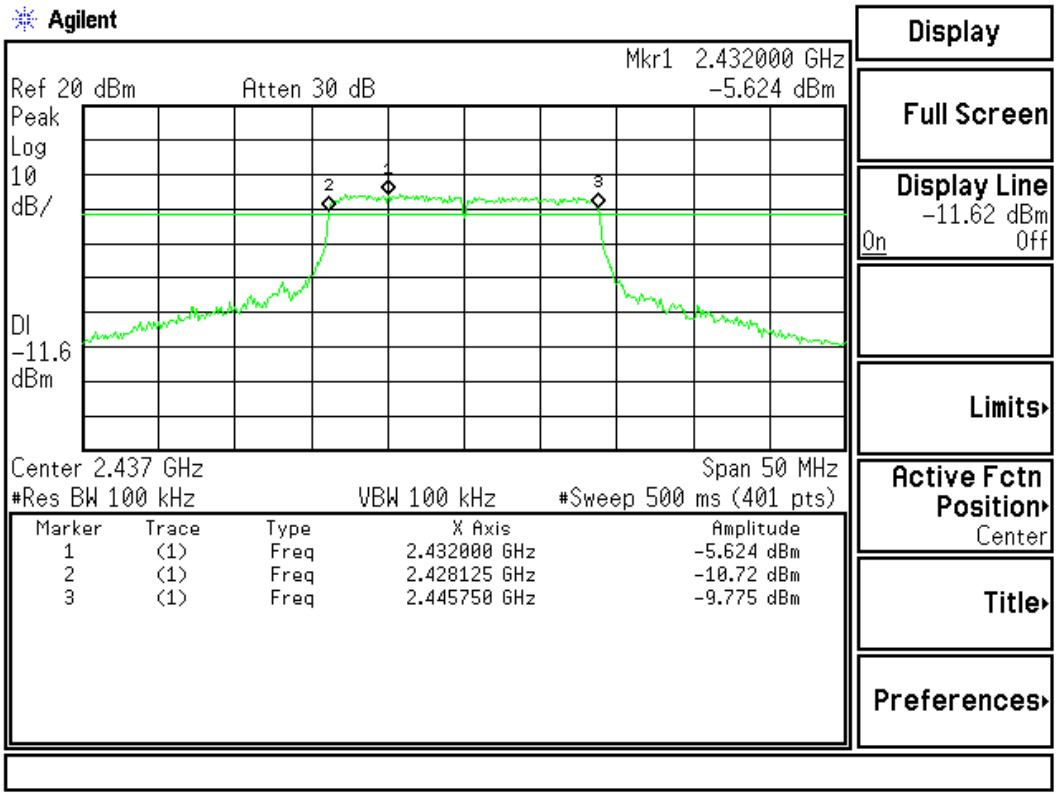
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2437MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6 (6.5Mbps)	2437.00	17625	>500	Pass

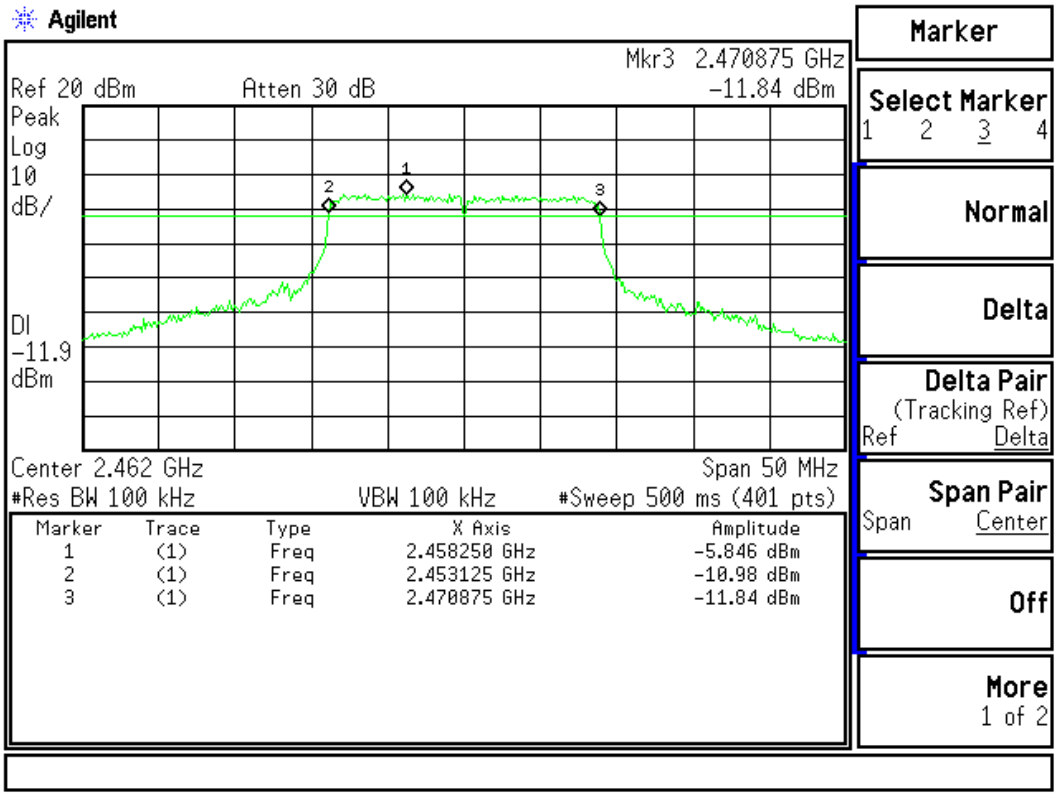
Figure Channel 6:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2462MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11 (6.5Mbps)	2462.00	17750	>500	Pass

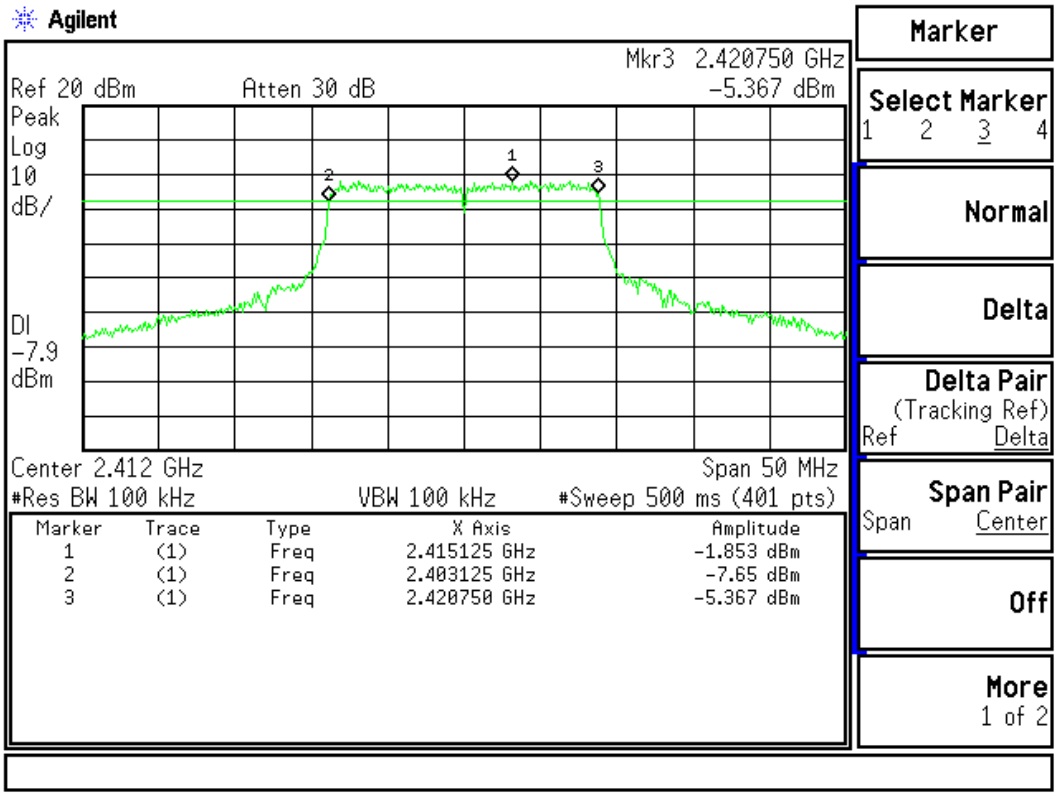
Figure Channel 11:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2412MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (6.5Mbps)	2412.00	17625	>500	Pass

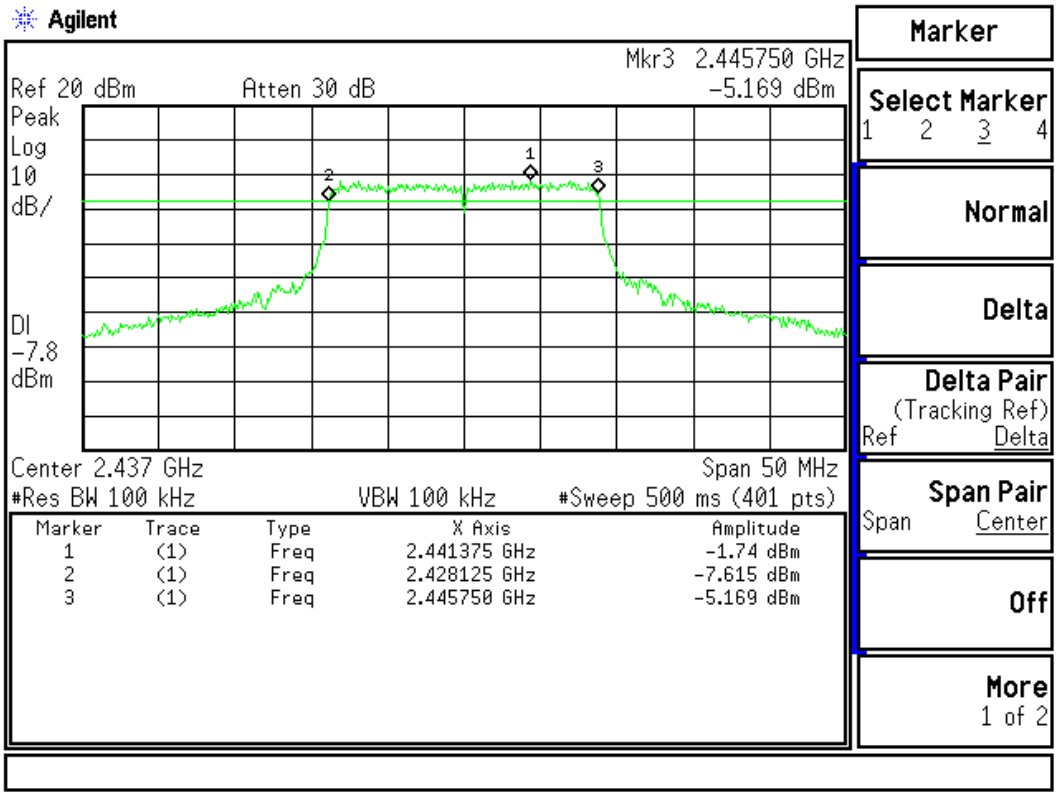
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2437MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
6 (6.5Mbps)	2437.00	17625	>500	Pass

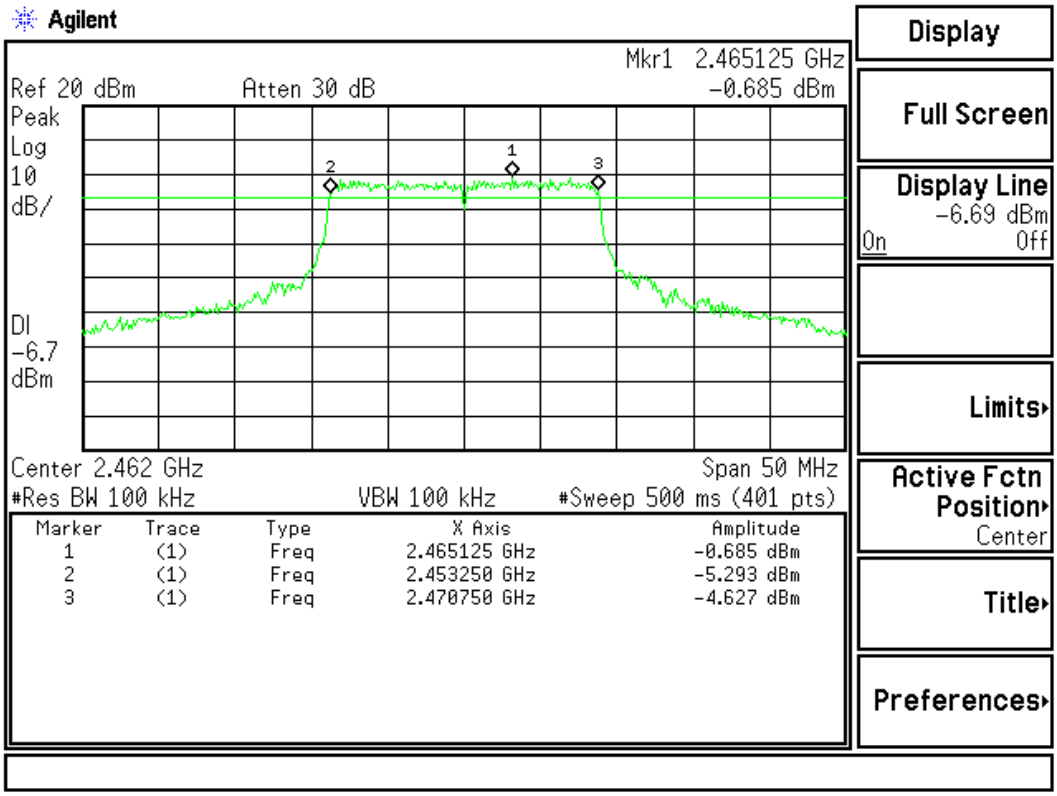
Figure Channel 6:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2462MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
11 (6.5Mbps)	2462.00	17500	>500	Pass

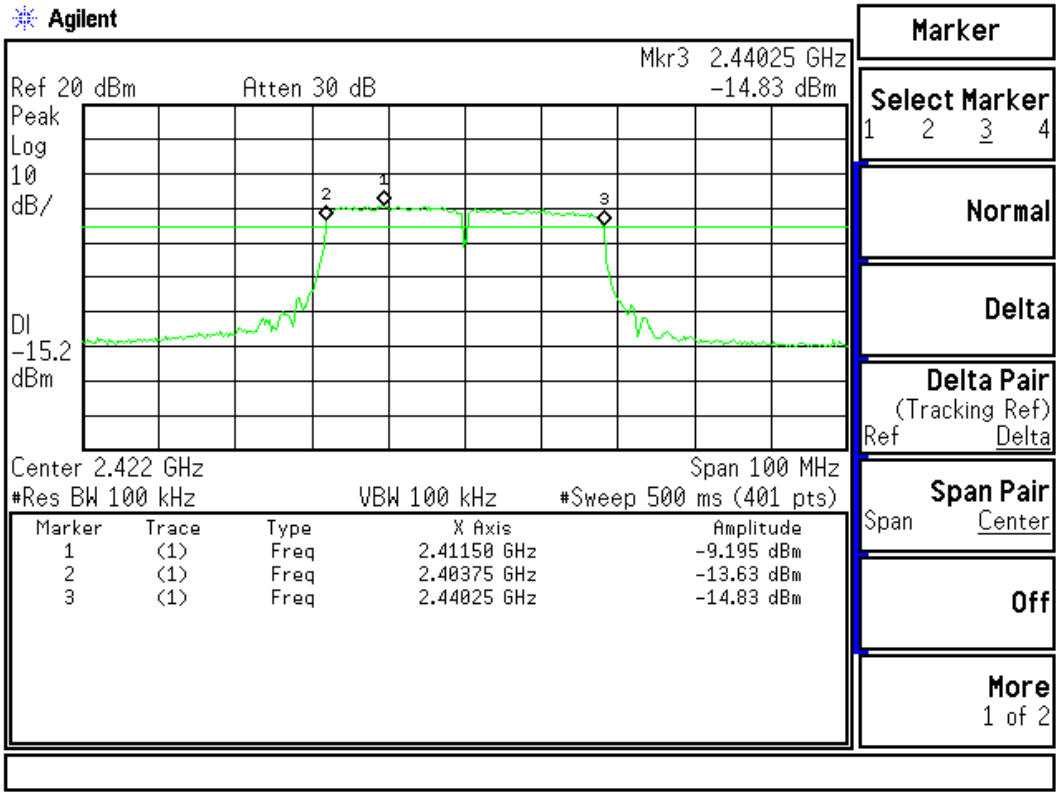
Figure Channel 11:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2422MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (13Mbps)	2422.00	36500	>500	Pass

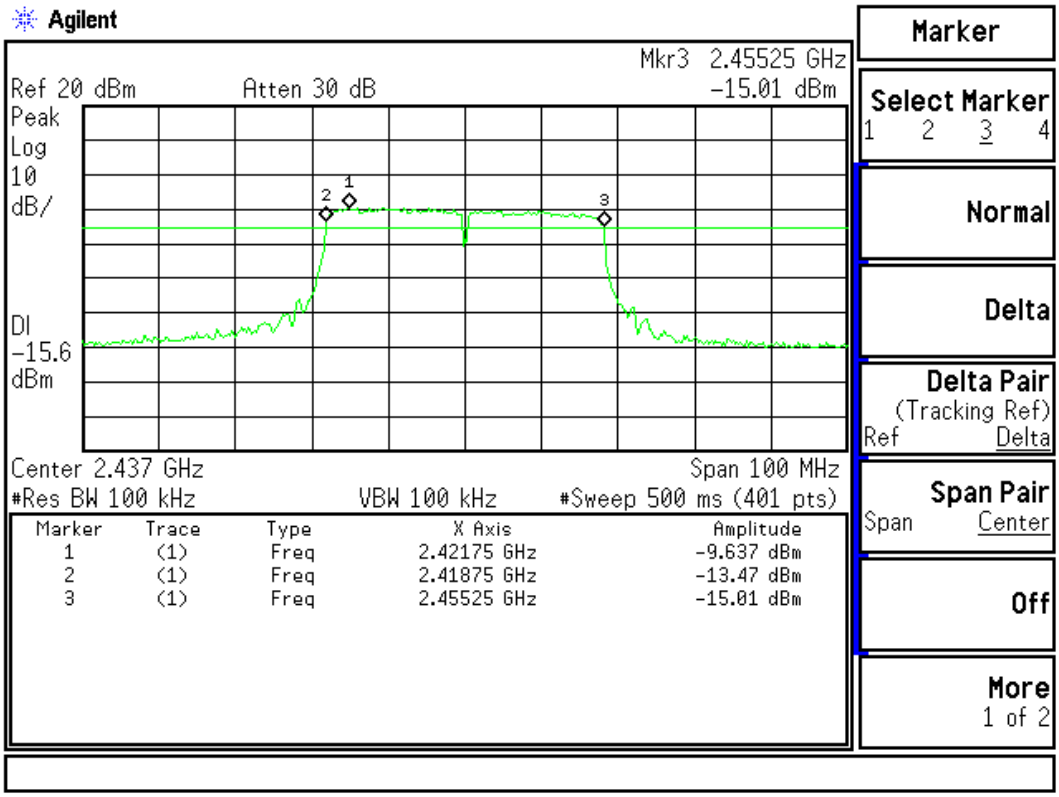
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2437MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
4 (13Mbps)	2437.00	36500	>500	Pass

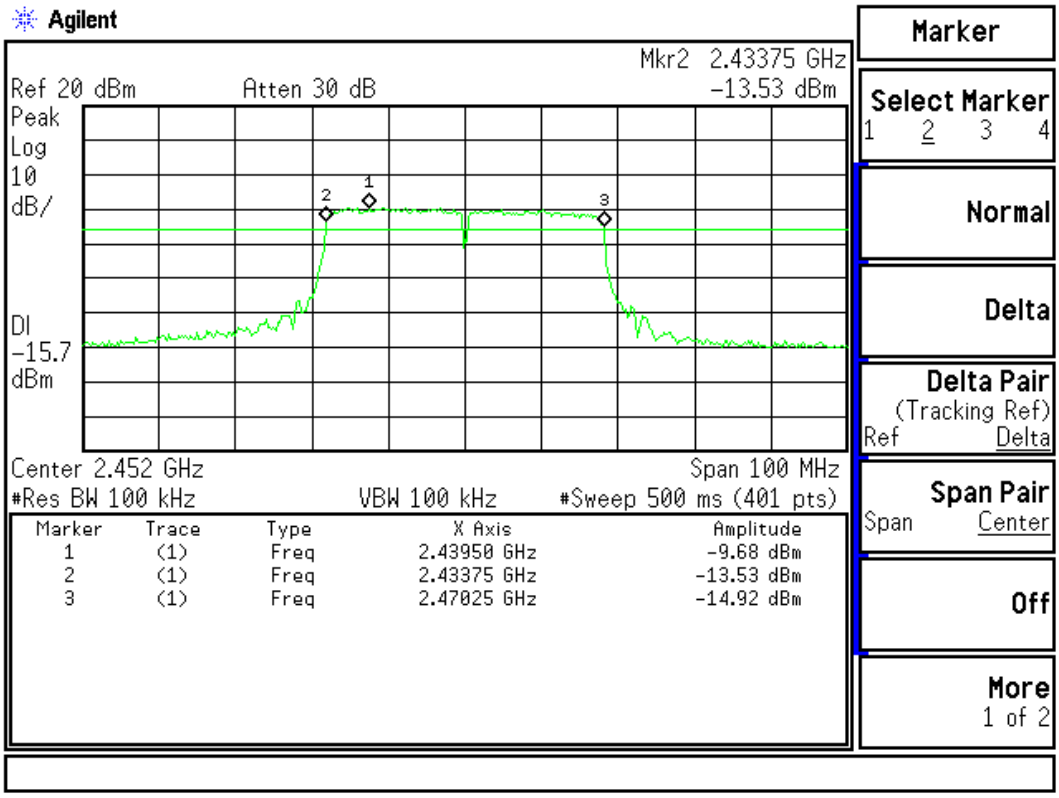
Figure Channel 4:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2452MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
7 (13Mbps)	2452.00	36500	>500	Pass

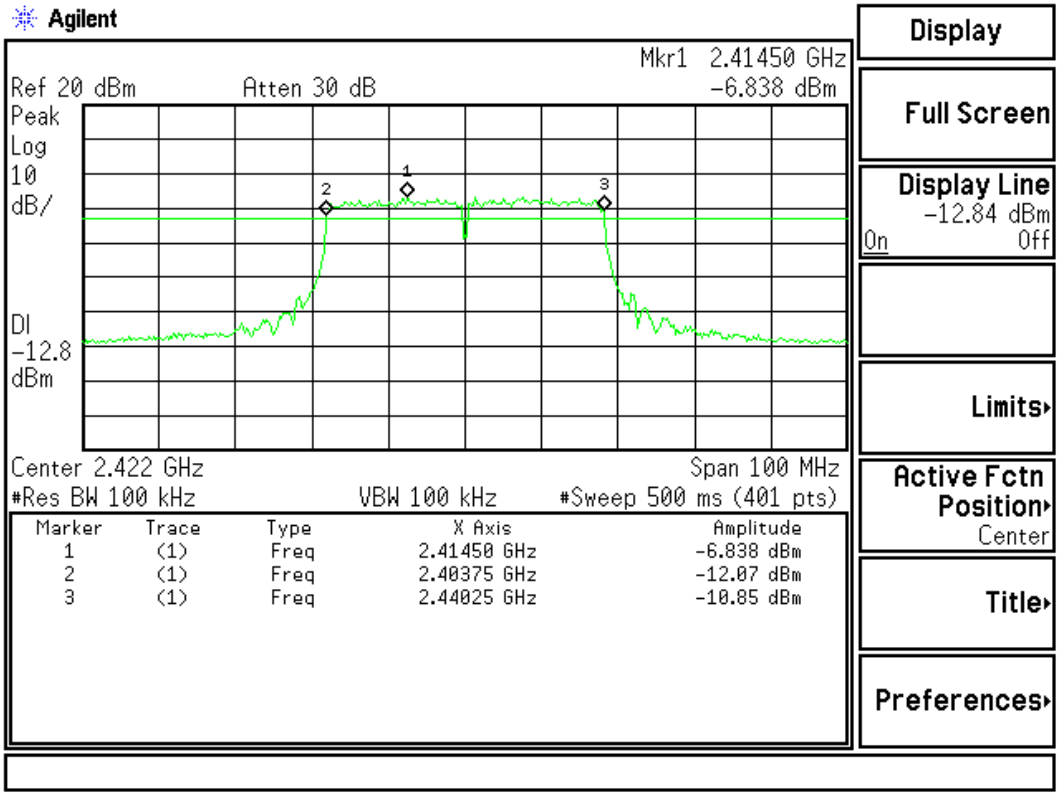
Figure Channel 7:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2422MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
1 (13Mbps)	2422.00	36500	>500	Pass

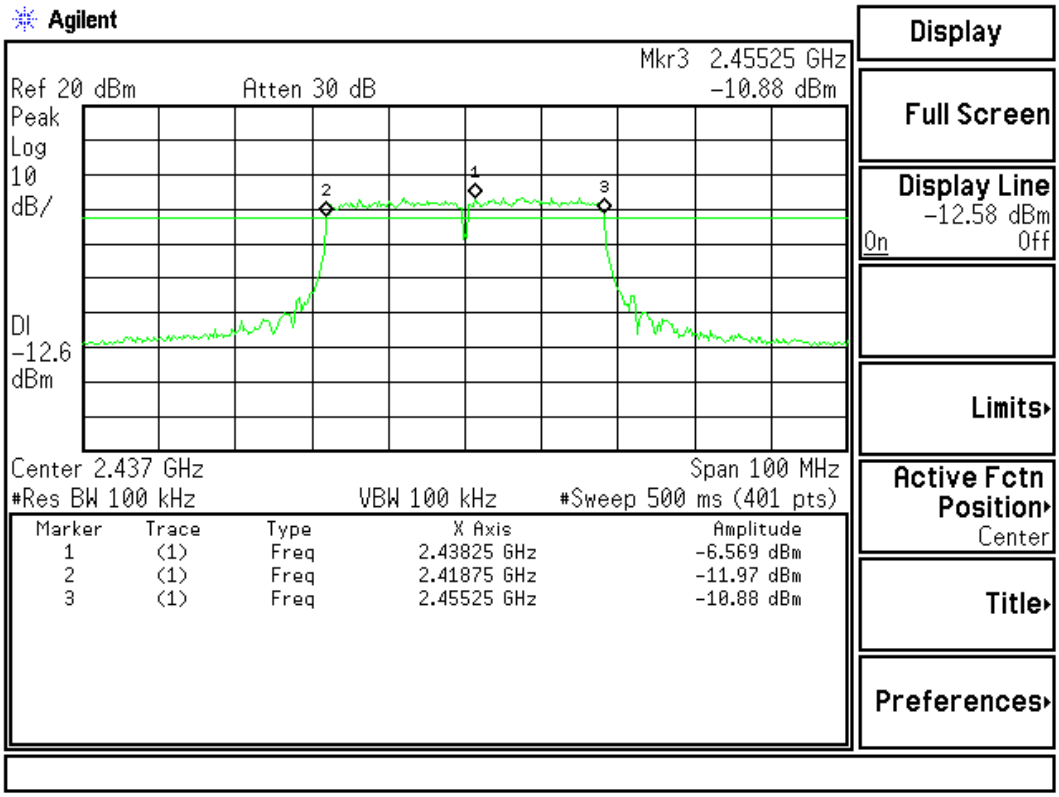
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2437MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
4 (13Mbps)	2437.00	36500	>500	Pass

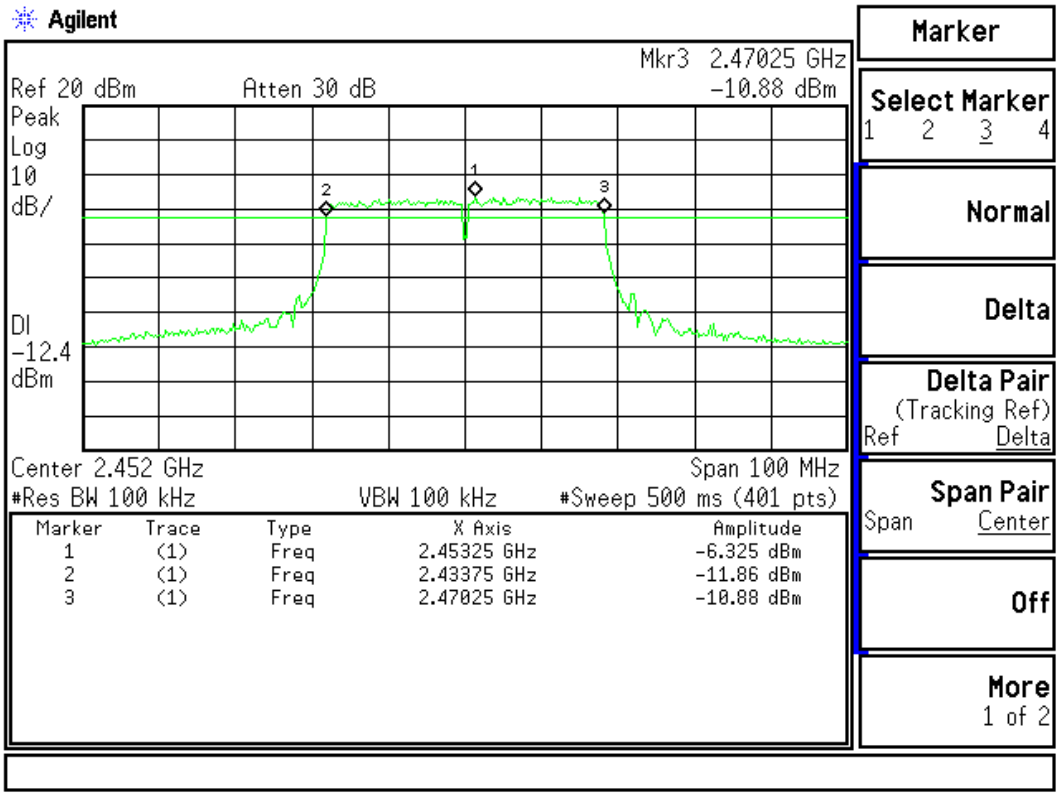
Figure Channel 4:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Occupied Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2452MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
7 (13Mbps)	2452.00	36500	>500	Pass

Figure Channel 7:



8. Power Density

8.1. Test Equipment

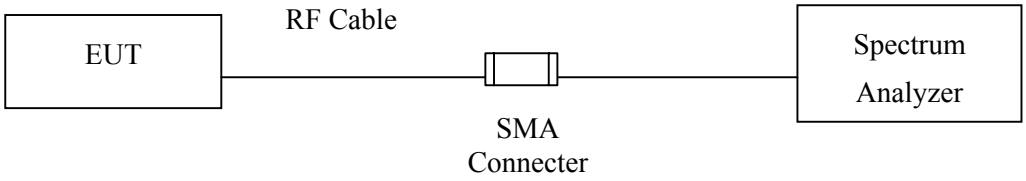
The following test equipments are used during the radiated emission tests:

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008

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. Limits

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

8.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2003; tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.
Set RBW= 3 kHz, VBW=10KHz, Sweep time=(SPAN/3KHz), detector=Peak detector

8.5. Uncertainty

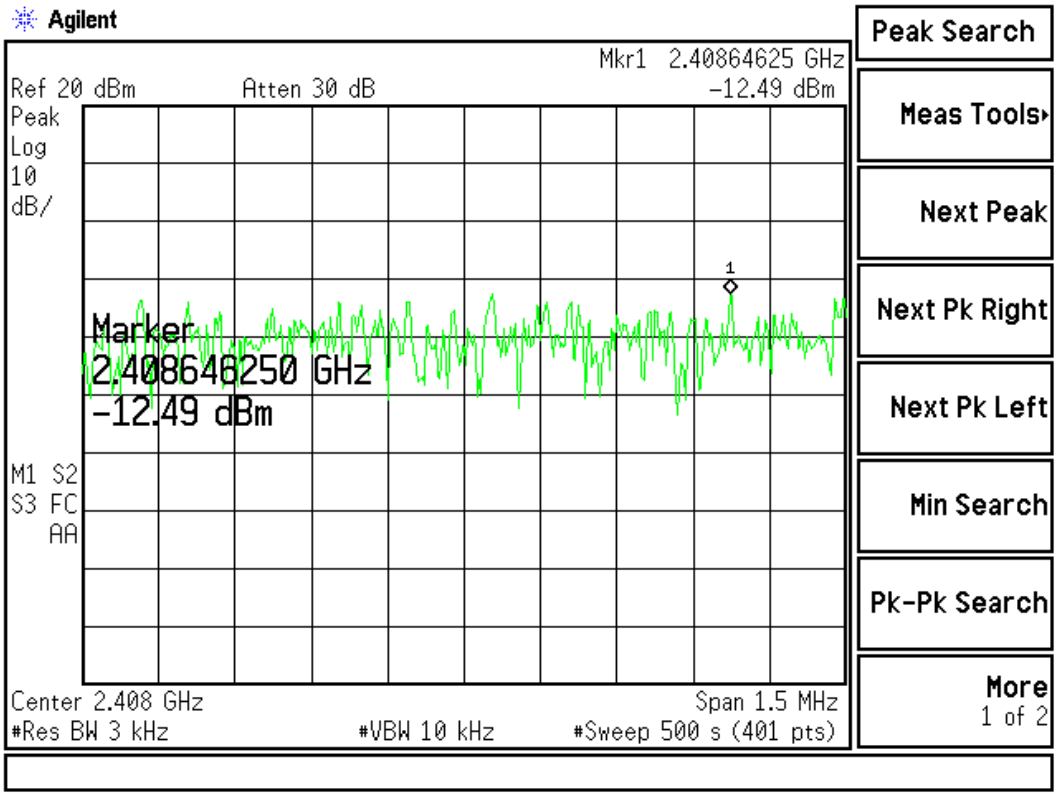
± 1.27 dB

8.6. Test Result of Power Density

Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1 (1Mbps)	2412.00	-12.49	< 8dBm	Pass

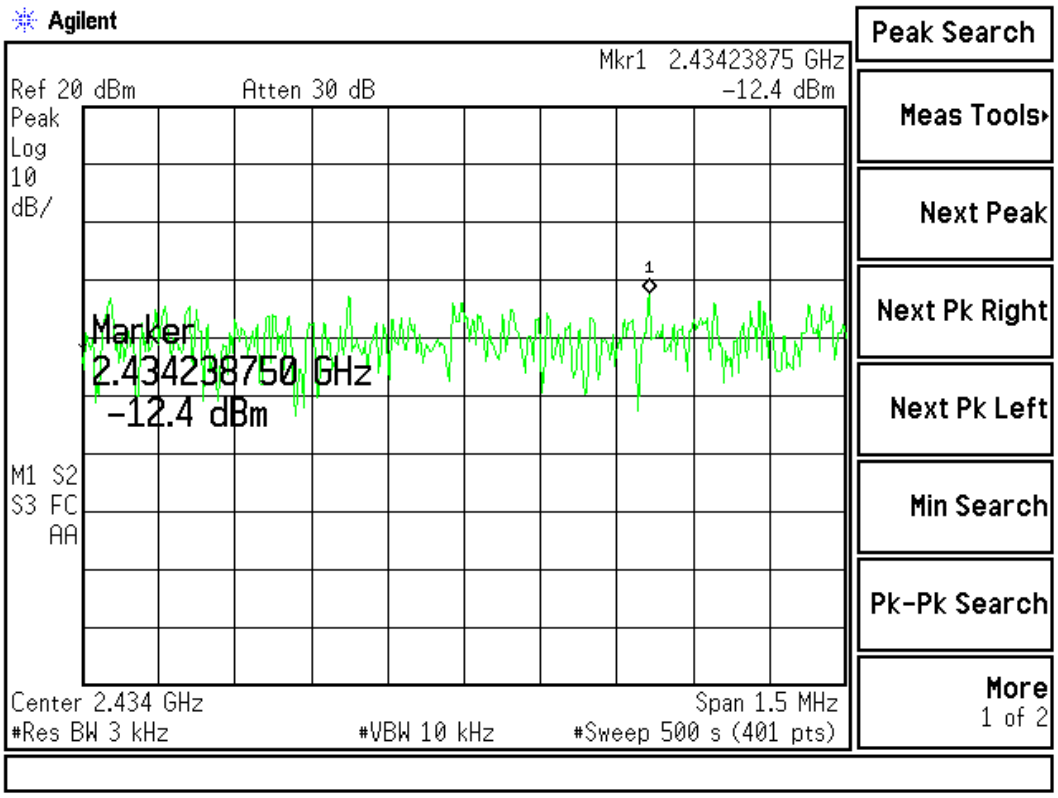
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6 (1Mbps)	2437.000	-12.4	< 8dBm	Pass

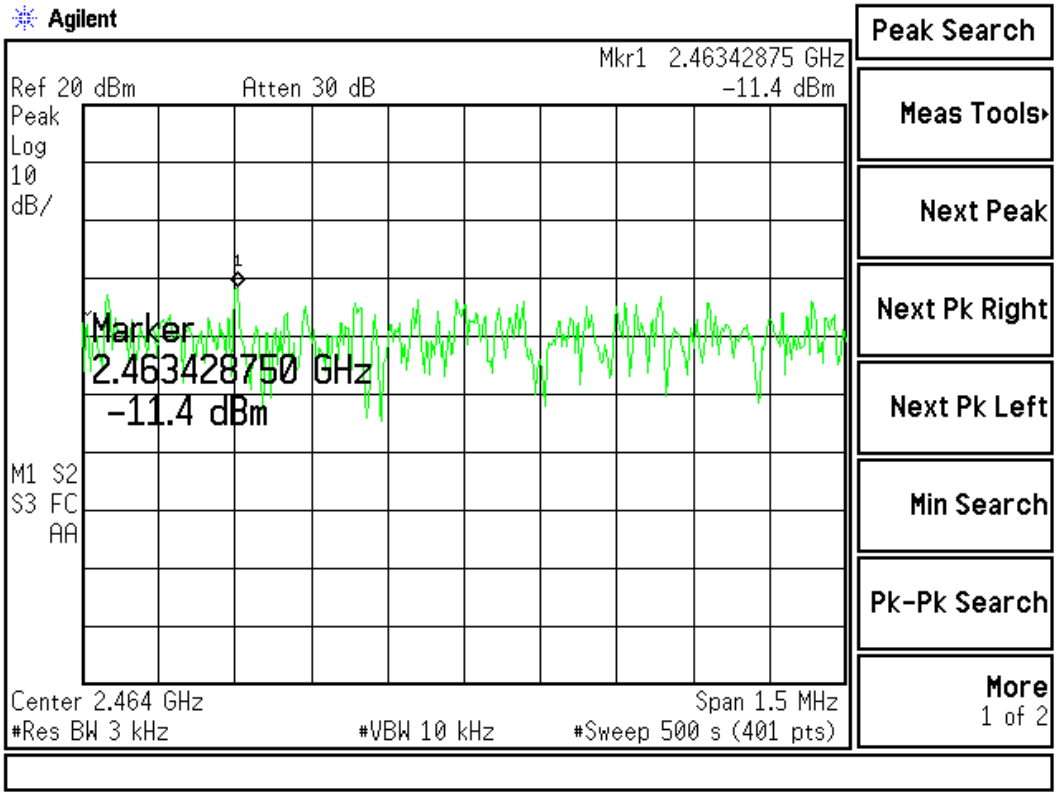
Figure Channel 6:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter (802.11b 1Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11 (1Mbps)	2462.00	-11.4	< 8dBm	Pass

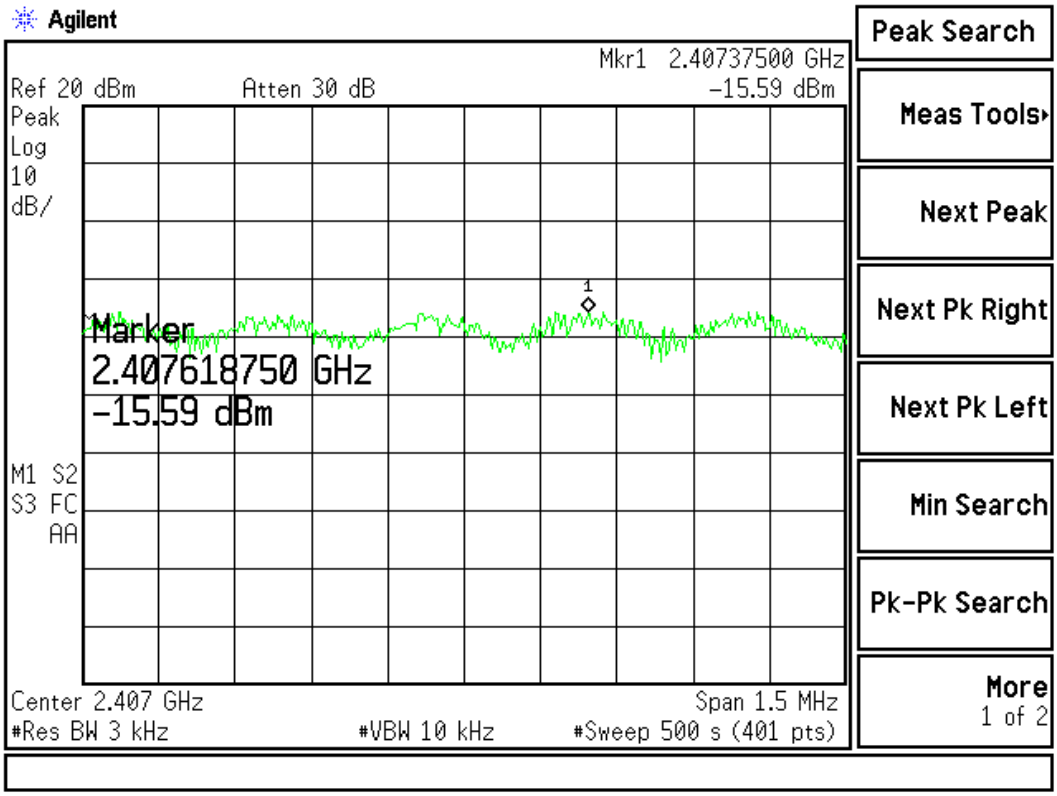
Figure Channel 11:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1 (54Mbps)	2412.00	-15.59	< 8dBm	Pass

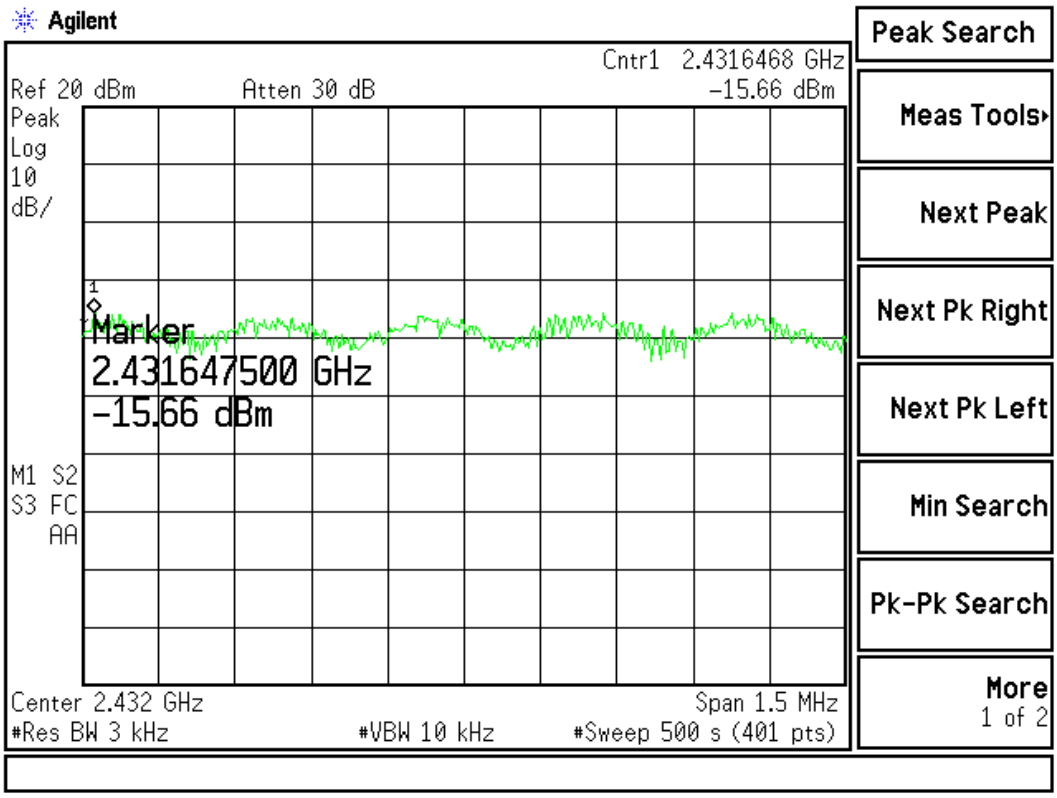
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2437MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6 (54Mbps)	2437.000	-15.66	< 8dBm	Pass

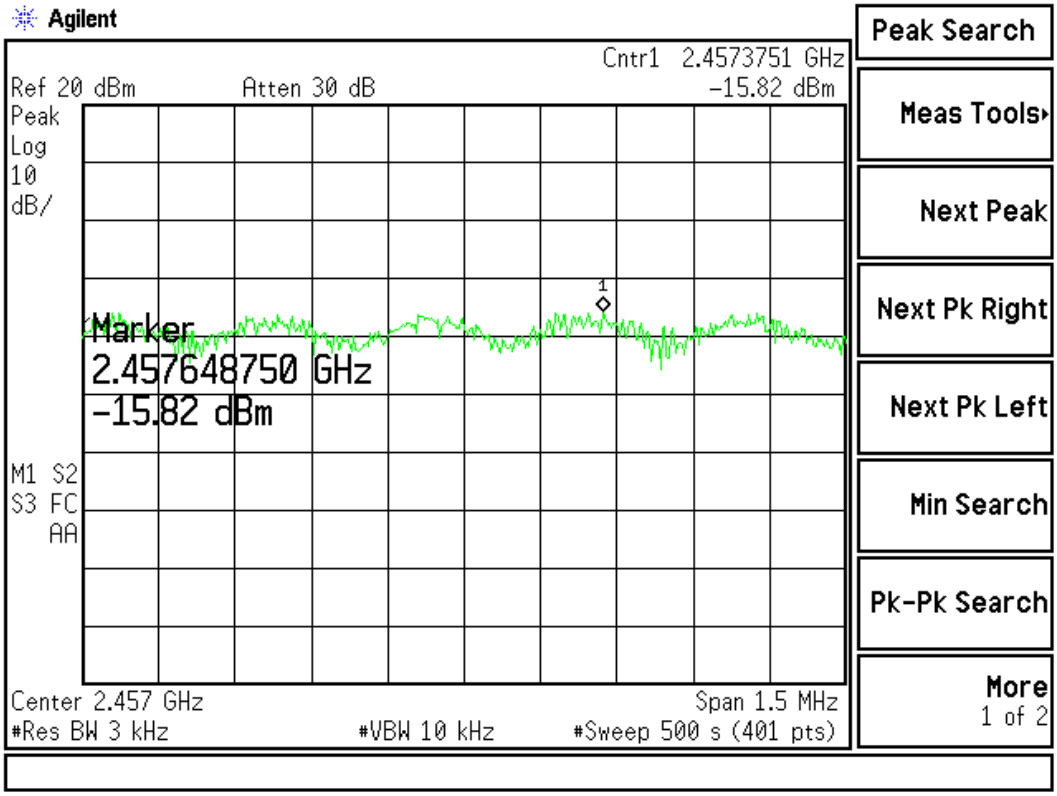
Figure Channel 6:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter (802.11g 6Mbps) (2462MHz)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11 (54Mbps)	2462.00	-15.82	< 8dBm	Pass

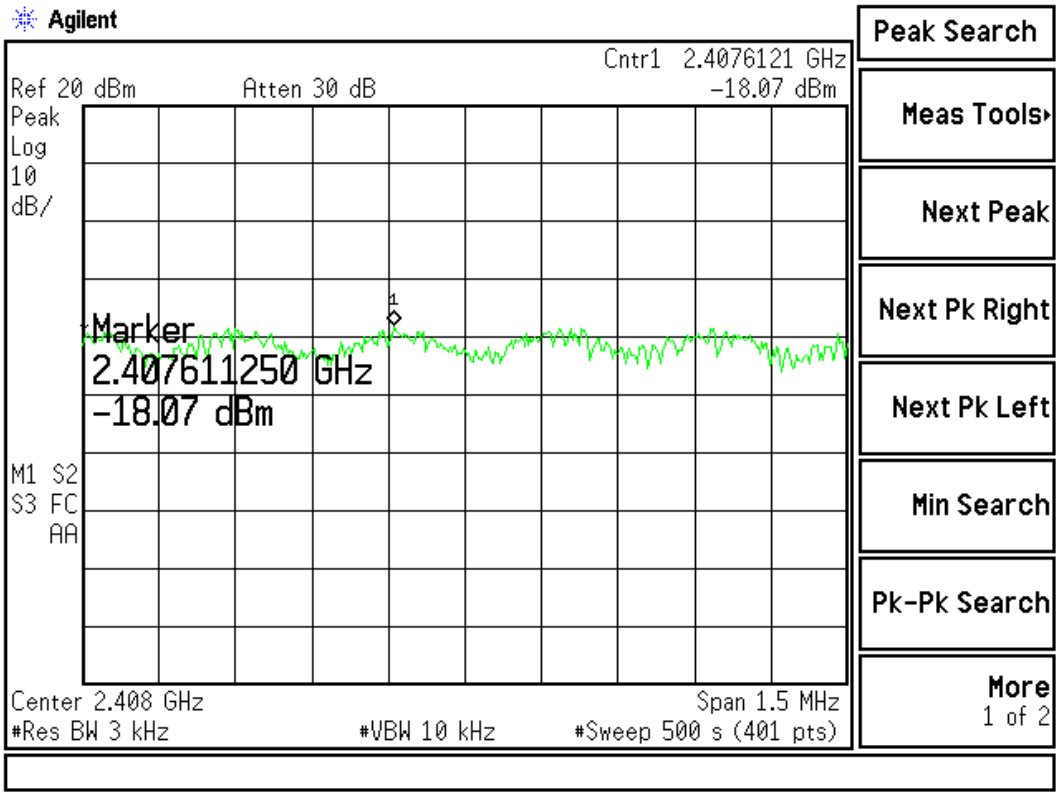
Figure Channel 11:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2412MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1 (6.5Mbps)	2412.00	-18.07	< 8dBm	Pass

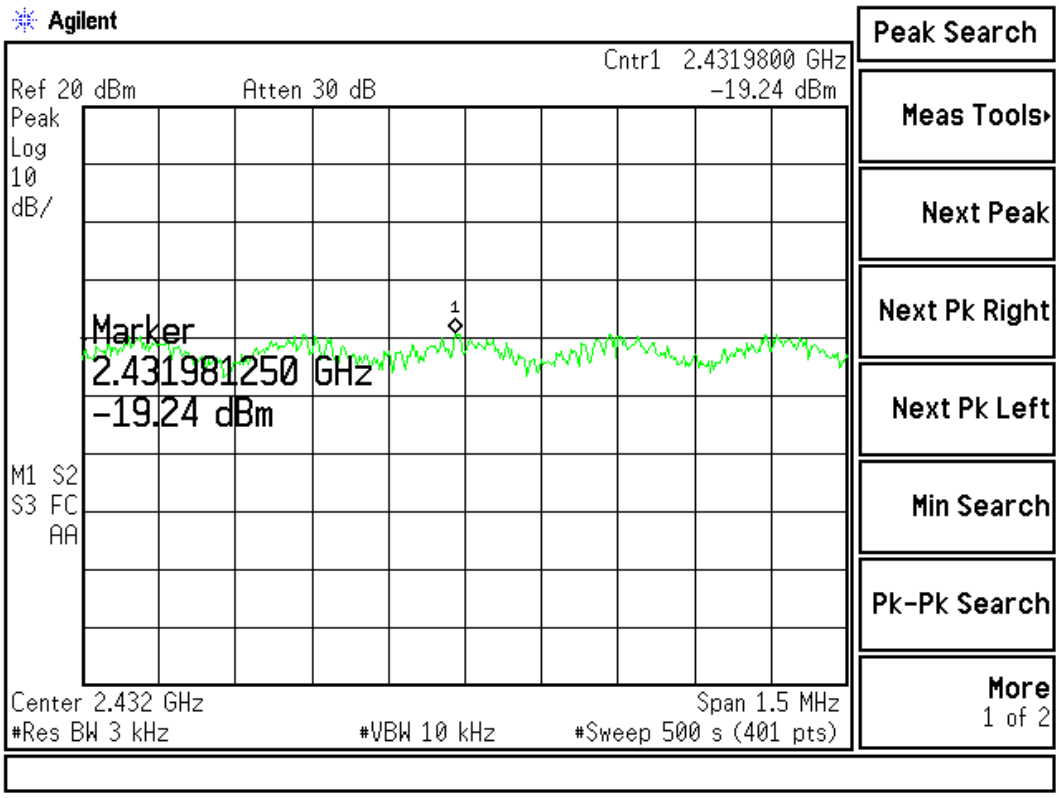
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2437MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6 (6.5Mbps)	2437.000	-19.24	< 8dBm	Pass

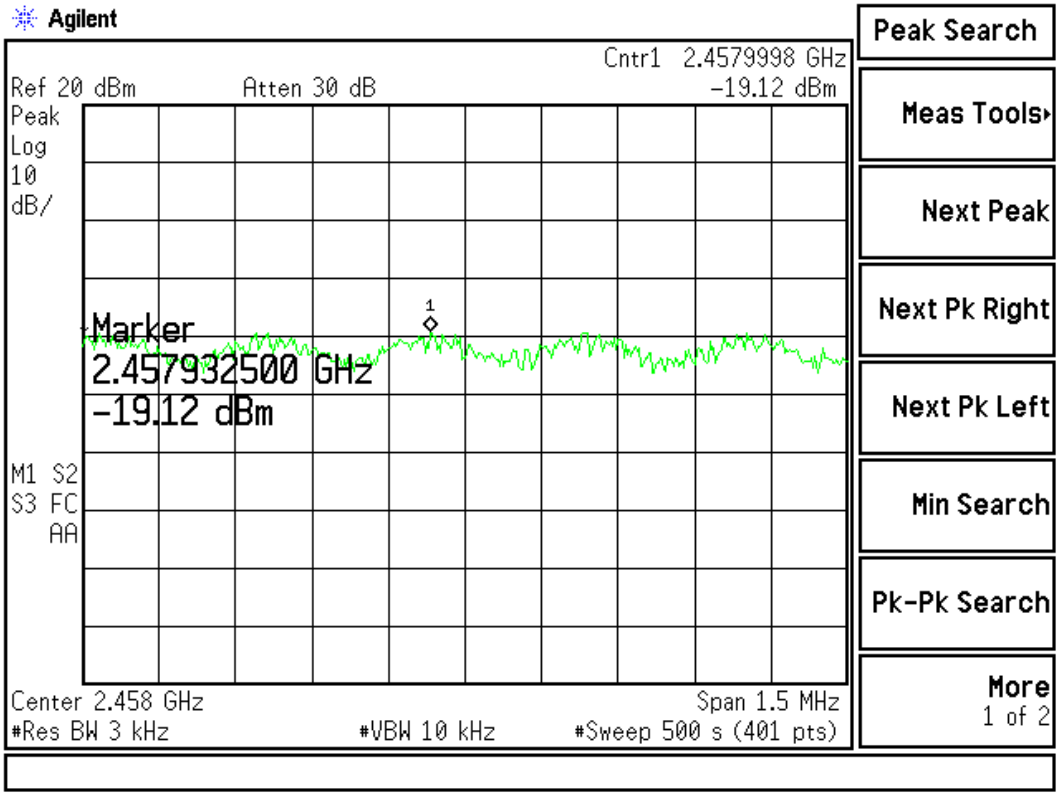
Figure Channel 6:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2462MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11 (6.5Mbps)	2462.00	-19.12	< 8dBm	Pass

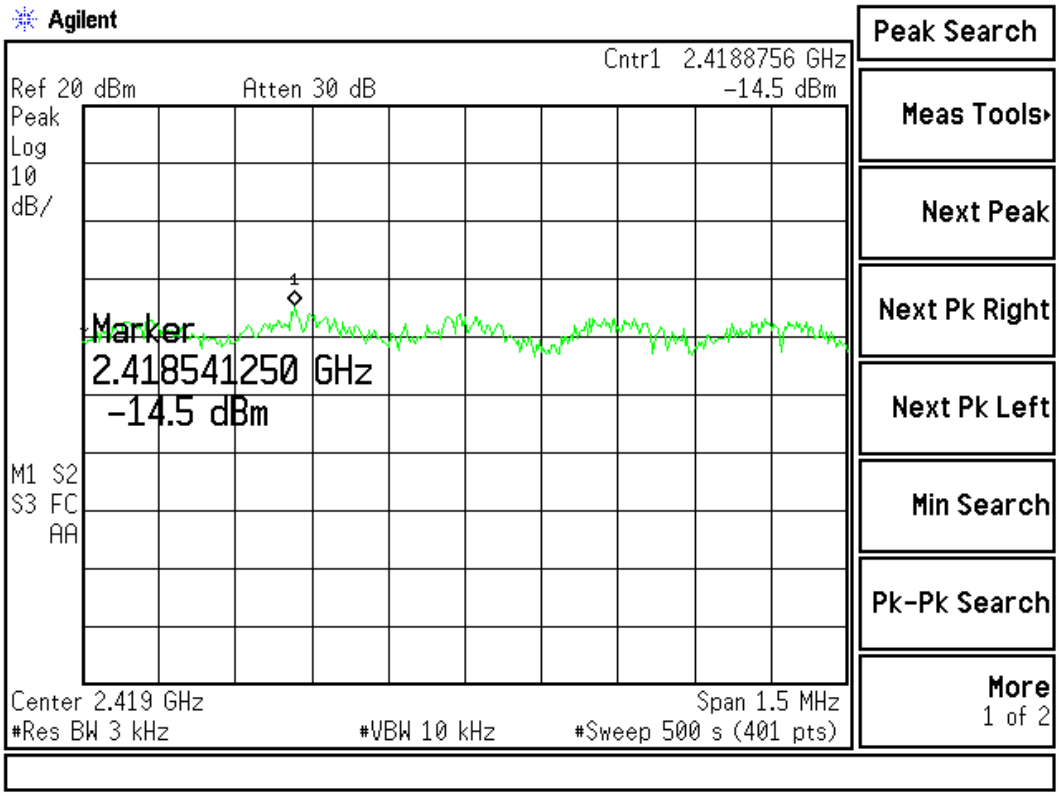
Figure Channel 11:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2412MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1 (6.5Mbps)	2412.00	-14.5	< 8dBm	Pass

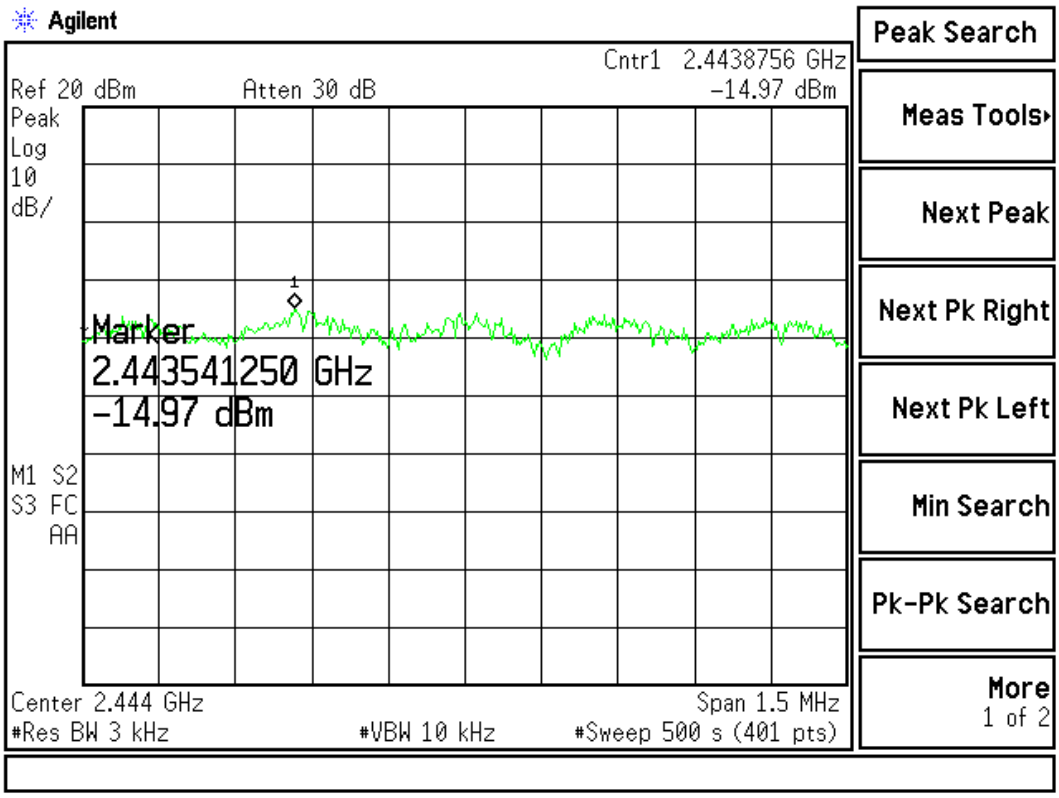
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2437MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
6 (6.5Mbps)	2437.000	-14.97	< 8dBm	Pass

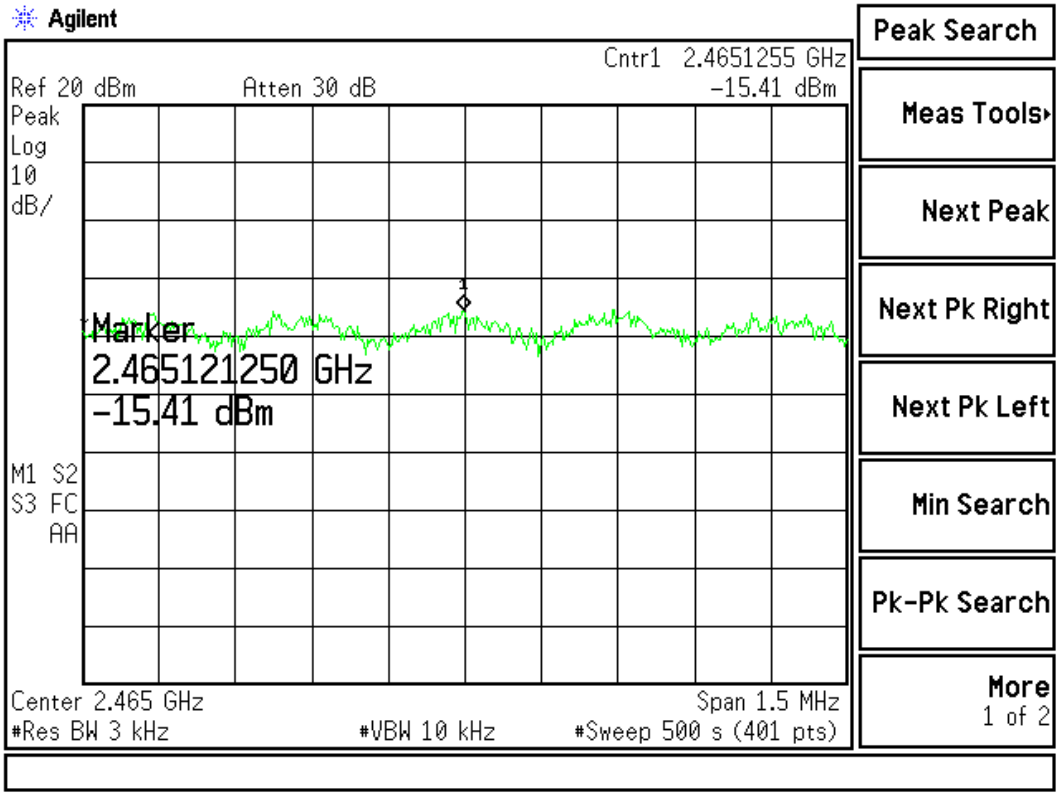
Figure Channel 6:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmitter (802.11n MCS0 6.5Mbps 20MBW) (2462MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11 (6.5Mbps)	2462.00	-15.41	< 8dBm	Pass

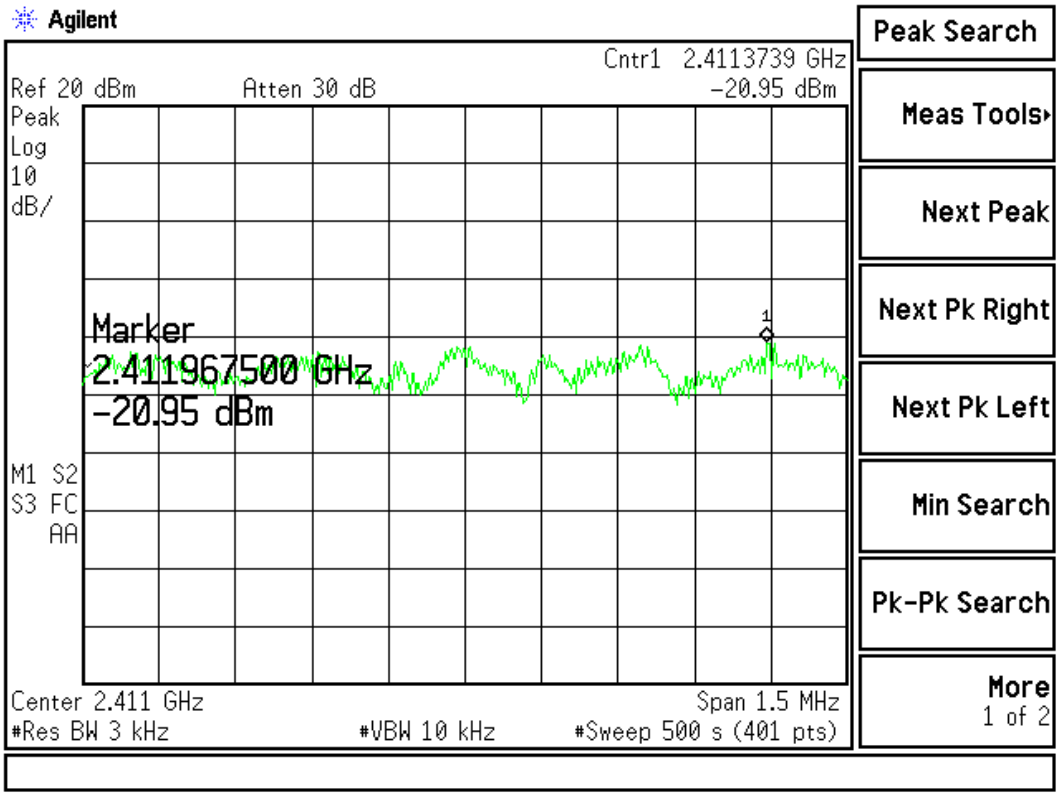
Figure Channel 11:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2422MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1 (13Mbps)	2422.00	-20.95	< 8dBm	Pass

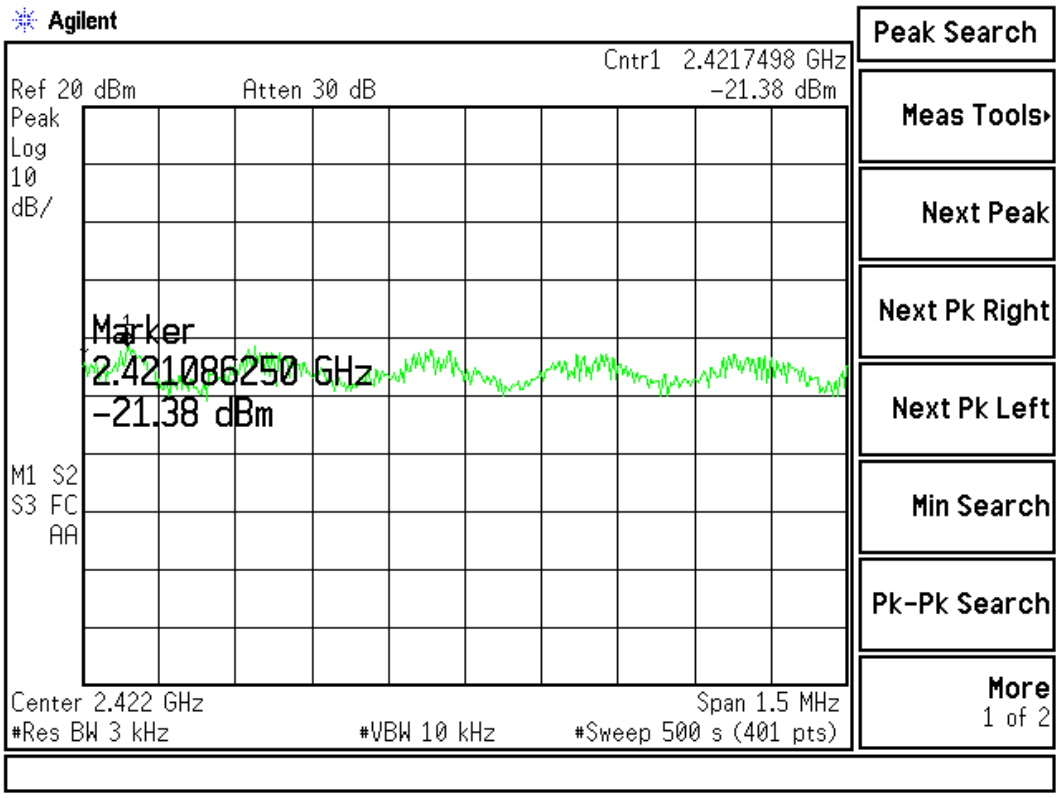
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2437MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
4 (13Mbps)	2437.000	-21.38	< 8dBm	Pass

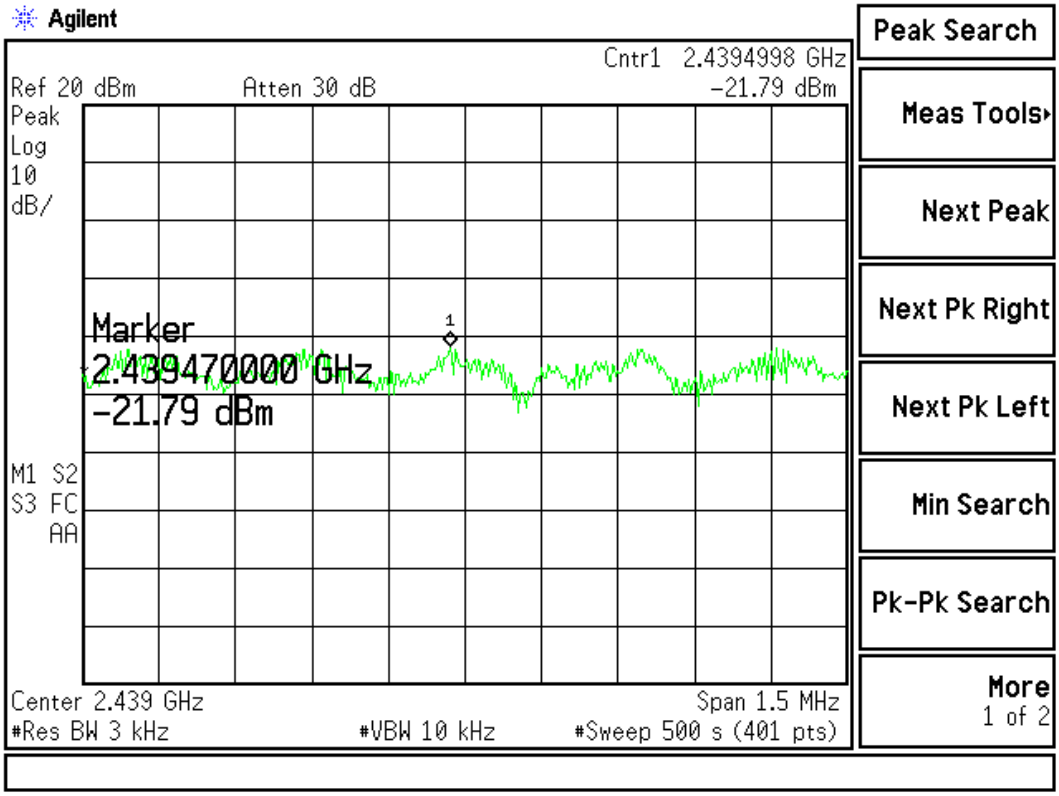
Figure Channel 4:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2452MHz) (Antenna A)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
07 (6Mbps)	2452.00	-21.79	< 8dBm	Pass

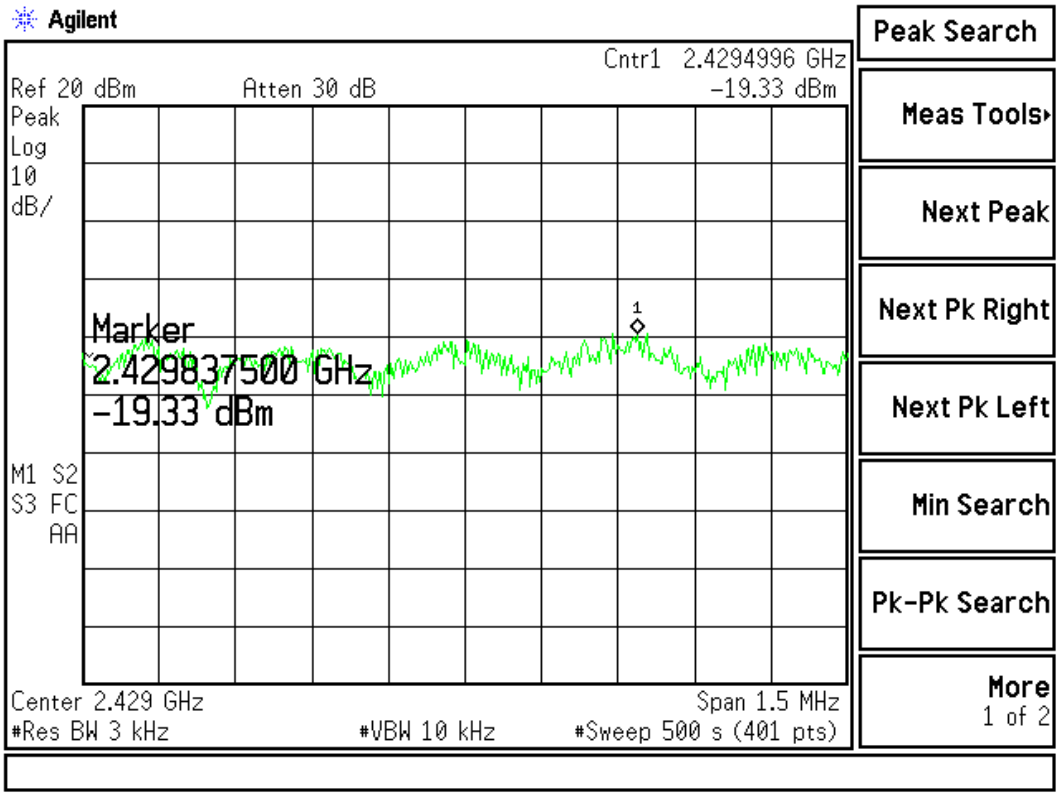
Figure Channel 7:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2422MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
1 (13Mbps)	2422.00	-19.33	< 8dBm	Pass

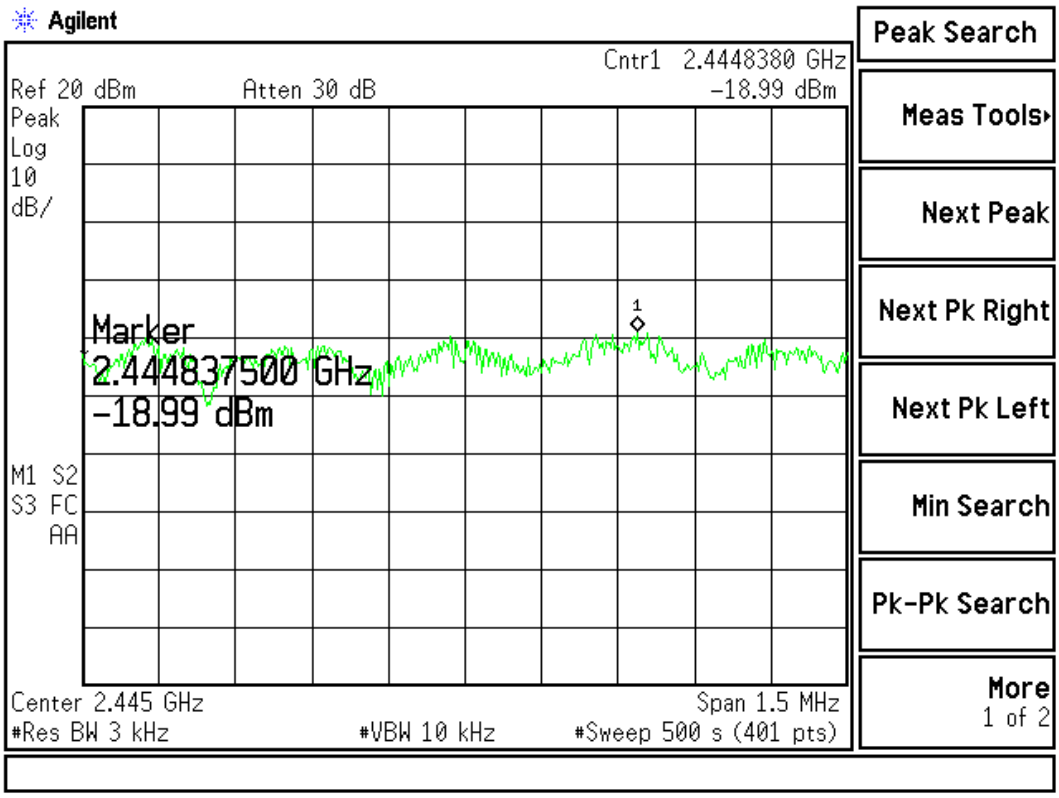
Figure Channel 1:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2437MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
4 (13Mbps)	2437.000	-18.99	< 8dBm	Pass

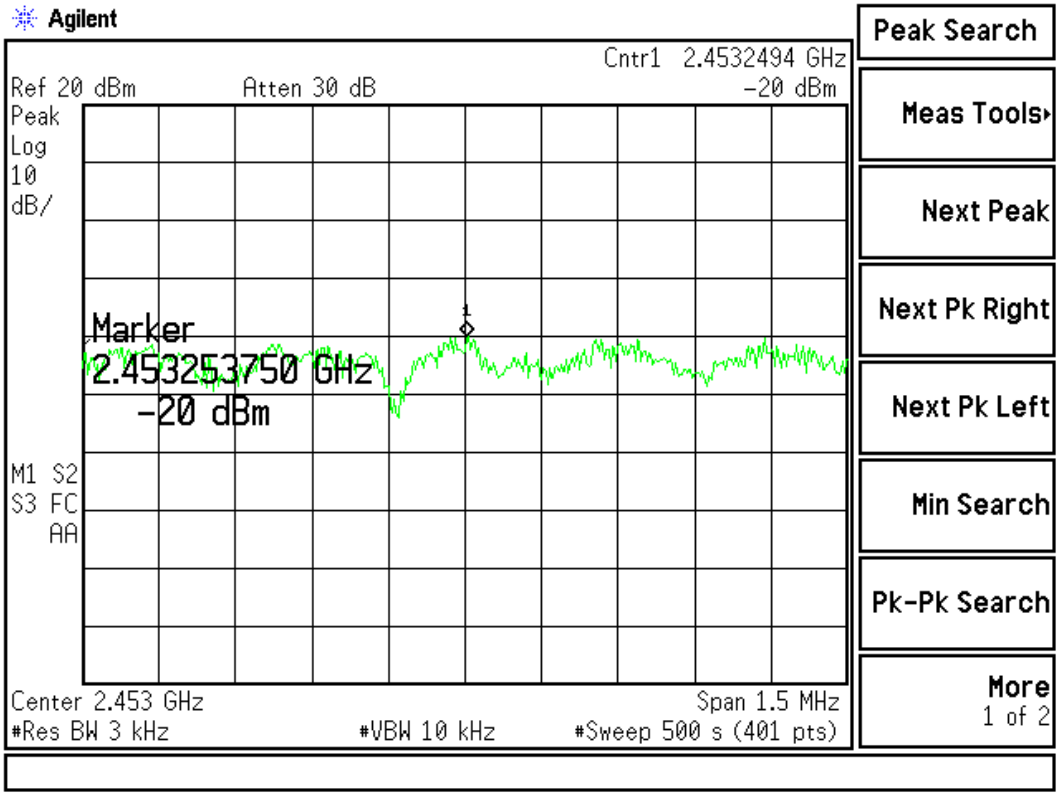
Figure Channel 4:



Product : Wireless 802.11b/g/n 2T3R mini-PCI card
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmitter (802.11n MCS8 13Mbps 40MBW) (2452MHz) (Antenna B)

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
07 (6Mbps)	2452.00	-20	< 8dBm	Pass

Figure Channel 7:



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.