



Test Report

Product Name	2G Wireless NPort
Model No.	NPort W2150 Plus, NPort W2250 Plus,NPort W2150 Plus-T, NPort W2250 Plus-T
FCC ID	SLEW2250Plus

Applicant	Moxa Inc.
Address	Fl.4, No. 135, Lane 235, Pao-Chiao Rd., Shing Tien City, Taipei, Taiwan, R.O.C.

Date of Receipt	June. 02, 2008
Issued Date	June. 19, 2008
Report No.	086111R-RFUSP05V01
Version	V1.0

The test results relate only to the samples tested.

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

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

Test Report Certification

Issued Date: June. 19, 2008

Report No.: 086111R-RFUSP05V01



Product Name	2G Wireless NPort
Applicant	Moxa Inc.
Address	Fl.4, No. 135, Lane 235, Pao-Chiao Rd., Shing Tien City, Taipei, Taiwan, R.O.C.
Manufacturer	Moxa Inc.
Model No.	NPort W2150 Plus, NPort W2250 Plus,NPort W2150 Plus-T, NPort W2250 Plus-T
Rated Voltage	AC 120V/60Hz
Working Voltage	DC 12V
Trade Name	Moxa
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003
Test Result	Complied



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Documented By :



(Adm. Specialist /Leven Huang)



Tested By :



(Senior Engineer /Tim Sung)



Testing Laboratory

0914

Approved By :



(Deputy Manager /Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	2G Wireless NPort
Trade Name	Moxa
Model No.	NPort W2150 Plus, NPort W2250 Plus,NPort W2150 Plus-T, NPort W2250 Plus-T
FCC ID	SLEW2250Plus
Frequency Range	2412 – 2462MHz for 802.11 b/g 5180 – 5240MHz, 5745 – 5805MHz for 802.11a
Channel Number	11 in 2.4GHz band, 8 in 5GHz band
Data Speed	802.11b – 1, 2, 5.5, 11Mbps 802.11a/g – 6, 9, 12, 18, 24, 36, 48, 54Mbps
Type of Modulation	802.11b:DSSS DBPSK, DQPSK, CCK 802.11 a/g: OFDM BPSK, QPSK, 16QAM, 64QAM
Antenna Type	Connector (Reverse SMA)
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
Channel Separation	5MHz in 2.4GHz band, 20MHz in 5GHz band

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	WANSIH	WNW1730A1	1.76 dBi for 2.4 GHz 1.47 dBi for 5.0 GHz
2	KINSUN	6602D03081	1.76 dBi for 2.4 GHz 1.47 dBi for 5.0 GHz

Note:

- Due to Ant 1 and Ant 2 are the same type antennas. Only the 2.4GHz band higher gain antenna “Ant 1” was tested and recorded in this report.

2.4GHz Band Frequency of Each Channel:

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

5GHz Band Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 1	5180 MHz	Channel 2	5200 MHz	Channel 3	5220 MHz	Channel 4	5240 MHz
Channel 5	5745 MHz	Channel 6	5765 MHz	Channel 7	5785 MHz	Channel 8	5805 MHz

Note:

1. The EUT is a 2G Wireless NPort with a built-in 2.4GHz transceiver.
2. The EUT is including four models for different marketing requirement.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps and 802.11a/g is 6Mbps)
5. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
6. Part 15 Subpart B compliance for spread spectrum devices is shown on the report no. 086111R-RFUSP01V02.
7. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

1.2. Operational Description

The EUT is a 2G Wireless NPort with 11 channels. for 802.11b/g and 9 channels for 802.11a. This device provides four kinds of transmitting speed 1, 2, 5.5 and 11Mbps. The modulation of device is BPSK, QPSK and CCK (IEEE 802.11b) and eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps are provided. The technology of this device used is OFDM (IEEE 802.11 a/g).

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

This 2G Wireless NPort, compliant with IEEE 802.11b and IEEE 802.11 a/g, 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 Direct Sequence Spread Spectrum (DSSS) radio transmission, the 2G Wireless NPort Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any IEEE 802.11b and IEEE 802.11 a/g network.

Test Mode	Mode 1: Transmitter 802.11b
	Mode 2: Transmitter 802.11g

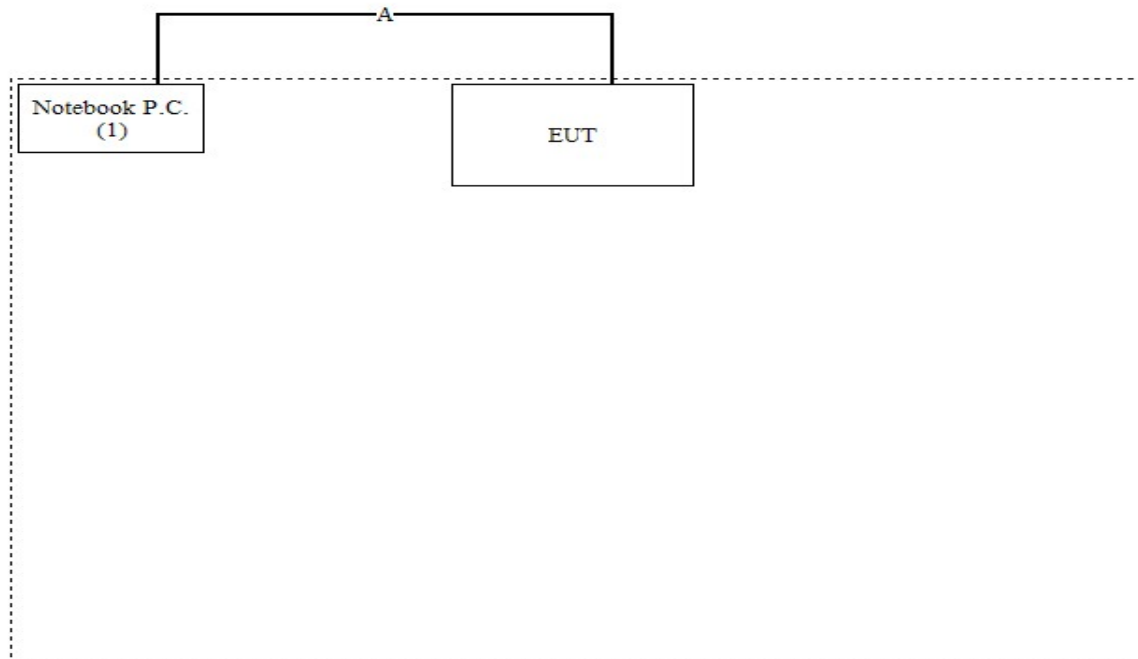
1.3. Tested System Details

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 PC	DELL	PP18L	42649348672
				Non-Shielded, 0.8m

Signal Cable Type	Signal cable Description
A	LAN Cable
	Shielded, 1.5m

1.4. Configuration of Test System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute Telnet IP on the notebook.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press "OK" to start the continuous transmission.
- (5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195
Accreditation on NVLAP
NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation
Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
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E-Mail : service@quietek.com

FCC Accreditation Number: TW1014



2. Radiated Emission

2.1. Test Equipment

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

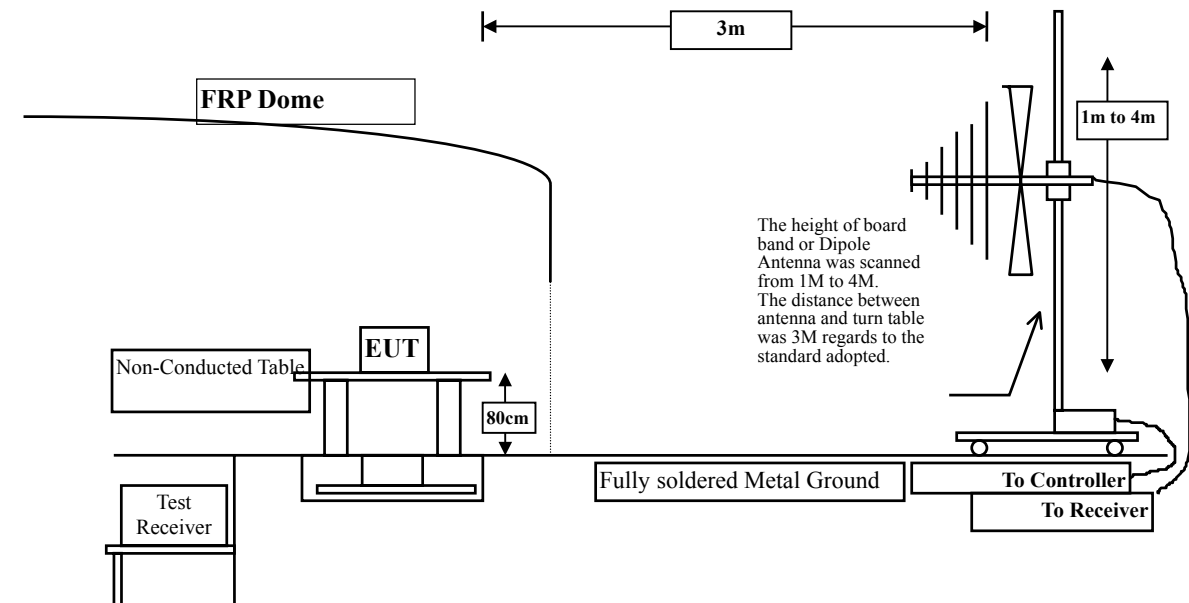
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input type="checkbox"/> Site # 1		Test Receiver	R & S	ESVS 10 / 834468/003	May, 2008
		Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2008
		Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2008
		Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Sep., 2007
<input type="checkbox"/> Site # 2		Test Receiver	R & S	ESCS 30 / 836858 / 022	May, 2008
		Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2008
		Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2008
		Bilog Antenna	SCHAFFNER	CBL6112B / 2705	May, 2008
		Horn Antenna	ETS	3115 / 0005-6160	Sep., 2007
		Pre-Amplifier	QTK	QTK-AMP-01/ 0001	May, 2008
<input checked="" type="checkbox"/> Site # 3	X	Test Receiver	R & S	ESI 26 / 838786/004	May, 2008
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	X	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
	X	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
	X	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
	X	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
	X	Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

Note: 1. All equipments are calibrated every one year.

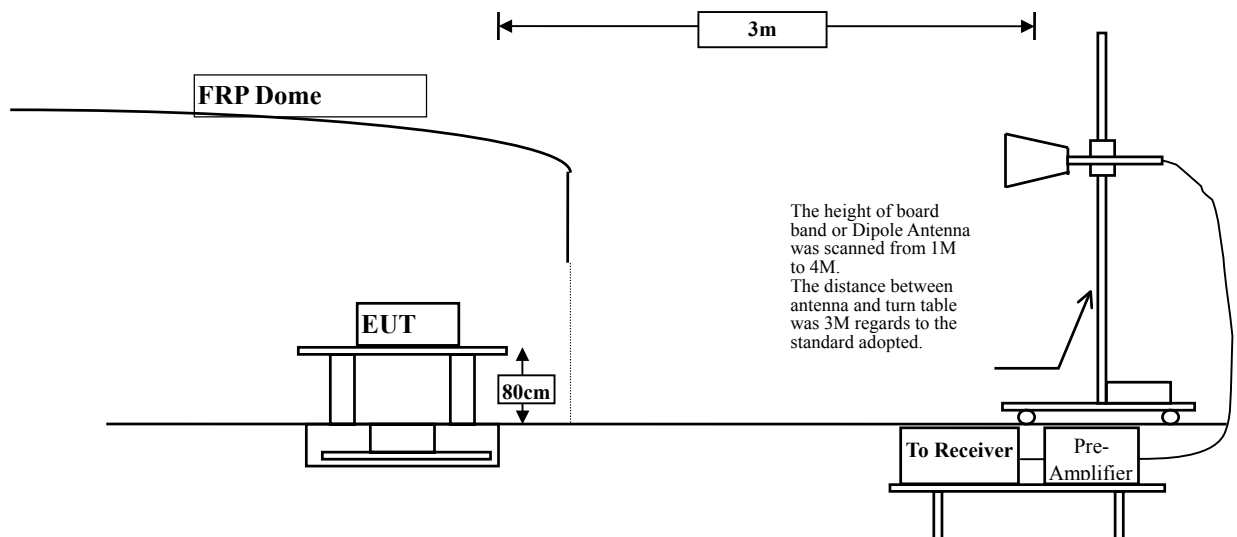
2. Test equipments marked by "X" are used to measure the final test results.

2.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



2.3. Limits

➤ General Radiated Emission Limits

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

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

- Remarks :
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

2.4. 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 harmonics is checked.

2.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

2.6. Test Result of Radiated Emission

Product : 2G Wireless NPort
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmitter 802.11b (2412MHz)

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

Horizontal

Peak Detector:

4824.000	3.723	37.370	41.093	-32.907	74.000
7236.000	9.439	35.470	44.909	-29.091	74.000
9648.000	11.829	35.430	47.259	-26.741	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	3.723	37.250	40.973	-33.027	74.000
7236.000	9.439	34.940	44.379	-29.621	74.000
9648.000	11.829	33.580	45.409	-28.591	74.000

Average

Detector:

--

Note:

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

Product : 2G Wireless NPort
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	3.893	36.390	40.282	-33.718	74.000
7311.000	9.624	35.512	45.136	-28.864	74.000
9748.000	11.805	36.250	48.056	-25.944	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	3.893	34.790	38.682	-35.318	74.000
7311.000	9.624	34.590	44.214	-29.786	74.000
9748.000	11.805	37.270	49.076	-24.924	74.000
Average					
Detector:					
--					

Note:

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

Product : 2G Wireless NPort
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (2462 MHz)

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

Horizontal

Peak Detector:

4924.000	4.075	36.060	40.135	-33.865	74.000
7386.000	9.812	34.470	44.282	-29.718	74.000
9848.000	11.819	35.970	47.789	-26.211	74.000

Average

Detector:

--

Vertical

Peak Detector:

4924.000	4.075	36.140	40.215	-33.785	74.000
7386.000	9.812	34.670	44.482	-29.518	74.000
9848.000	11.819	36.280	48.099	-25.901	74.000

Average

Detector:

--

Note:

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

Product : 2G Wireless NPort
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3OATS
 Test Mode : Mode 2: Transmitter 802.11g (2412 MHz)

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

Horizontal

Peak Detector:

4824.000	3.723	37.080	40.803	-33.197	74.000
7236.000	9.439	35.710	45.149	-28.851	74.000
9648.000	11.829	35.840	47.669	-26.331	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	3.723	37.156	40.879	-33.121	74.000
7236.000	9.439	35.990	45.429	-28.571	74.000
9648.000	11.829	36.410	48.239	-25.761	74.000

Average

Detector:

--

Note:

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

Product : 2G Wireless NPort
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (2437 MHz)

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

Horizontal

Peak Detector:

4874.000	3.893	36.150	40.042	-33.958	74.000
7311.000	9.624	34.250	43.874	-30.126	74.000
9748.000	11.805	35.620	47.426	-26.574	74.000

Average

Detector:

--

Vertical

Peak Detector:

4874.000	3.893	36.250	40.142	-33.858	74.000
7311.000	9.624	34.790	44.414	-29.586	74.000
9748.000	11.805	35.840	47.646	-26.354	74.000

Average

Detector:

--

Note:

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

Product : 2G Wireless NPort
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmitter 802.11g (2462 MHz)

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

Horizontal

Peak Detector:

4924.000	4.075	36.174	40.249	-33.751	74.000
7386.000	9.812	34.970	44.782	-29.218	74.000
9848.000	11.819	35.950	47.769	-26.231	74.000

Average

Detector:

--

Vertical

Peak Detector:

4924.000	4.075	36.600	40.675	-33.325	74.000
7386.000	9.812	34.510	44.322	-29.678	74.000
9848.000	11.819	36.250	48.069	-25.931	74.000

Average

Detector:

--

Note:

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

Product : 2G Wireless NPort
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
265.480	13.975	9.704	23.680	-22.320	46.000
435.690	17.601	5.879	23.480	-22.520	46.000
584.690	20.153	11.689	31.843	-14.157	46.000
634.850	20.778	12.482	33.260	-12.740	46.000
795.480	22.119	11.372	33.490	-12.510	46.000
961.250	22.915	3.926	26.840	-27.160	54.000
Vertical					
348.500	15.059	12.521	27.580	-18.420	46.000
472.320	18.545	7.935	26.480	-19.520	46.000
551.490	20.996	11.364	32.360	-13.640	46.000
648.860	20.198	7.487	27.685	-18.315	46.000
845.290	21.482	0.117	21.598	-24.402	46.000
911.580	24.000	10.580	34.580	-11.420	46.000

Note:

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

Product : 2G Wireless NPort
 Test Item : General Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
336.520	14.414	14.536	28.950	-17.050	46.000
497.590	18.402	3.638	22.040	-23.960	46.000
567.410	19.160	5.219	24.380	-21.620	46.000
724.590	21.157	6.723	27.880	-18.120	46.000
836.150	21.952	6.188	28.140	-17.860	46.000
946.200	22.829	6.751	29.580	-16.420	46.000
Vertical					
247.300	12.991	16.938	29.930	-16.070	46.000
385.300	17.127	12.473	29.600	-16.400	46.000
512.300	18.762	5.928	24.690	-21.310	46.000
687.600	20.418	4.273	24.690	-21.310	46.000
744.600	23.239	11.062	34.300	-11.700	46.000
833.650	21.463	7.137	28.600	-17.400	46.000

Note:

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

3. Band Edge

3.1. Test Equipment

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

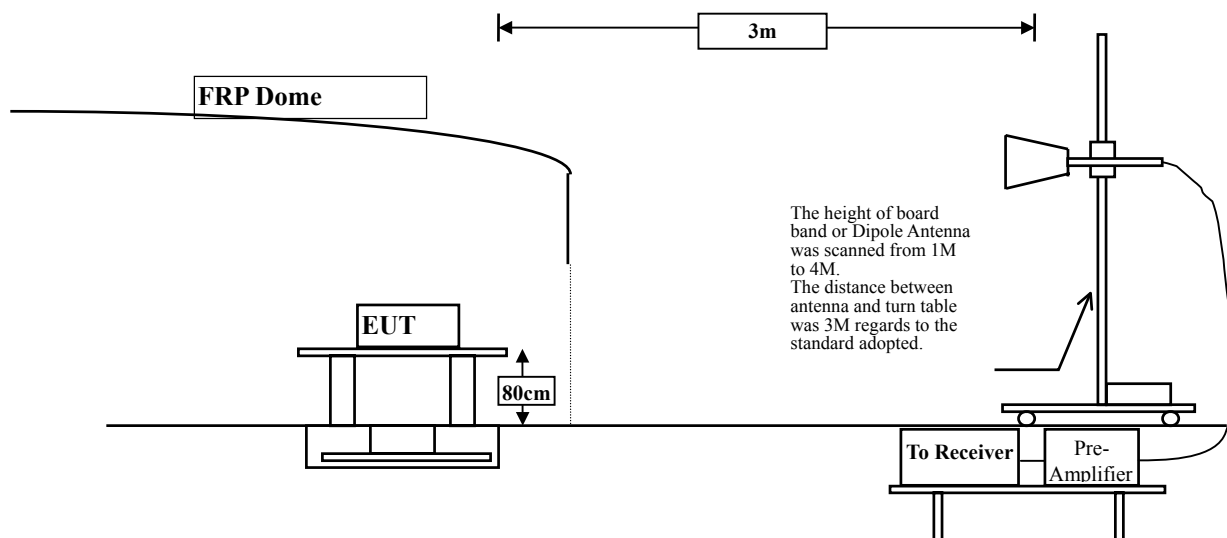
Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Test Receiver	R & S	ESI 26 / 838786/004	May, 2008
X Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
X Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
X Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
X Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
X Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
X Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
X Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

Test Site: Site3

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

3.2. Test Setup

RF Radiated Measurement:



3.3. 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)).

3.4. Test Procedure

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

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

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

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

3.5. Uncertainty

Conducted is ± 1.27 dB

Radiated is ± 3.9 dB

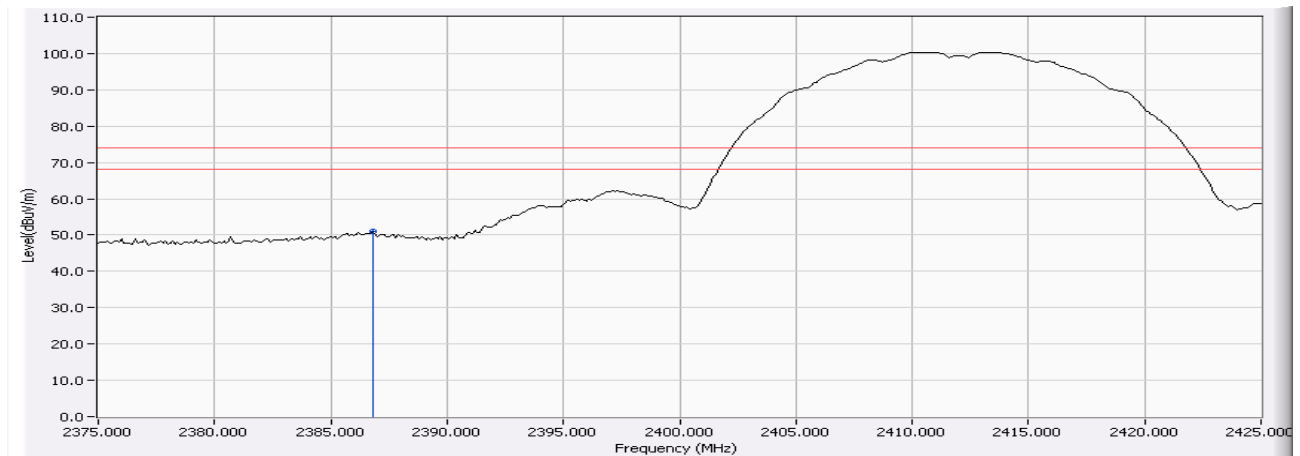
3.6. Test Result of Band Edge

Product : 2G Wireless NPort
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2386.800	-6.777	57.679	50.902	74.00	54.00	Pass
1 (Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 1: Horizontal (Peak)



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 : 2G Wireless NPort
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2385.800	-6.781	60.789	54.008	74.00	54.00	Pass
1 (Average)	2386.900	-6.777	53.573	46.796	74.00	54.00	Pass

Figure Channel 1: Vertical (Peak)

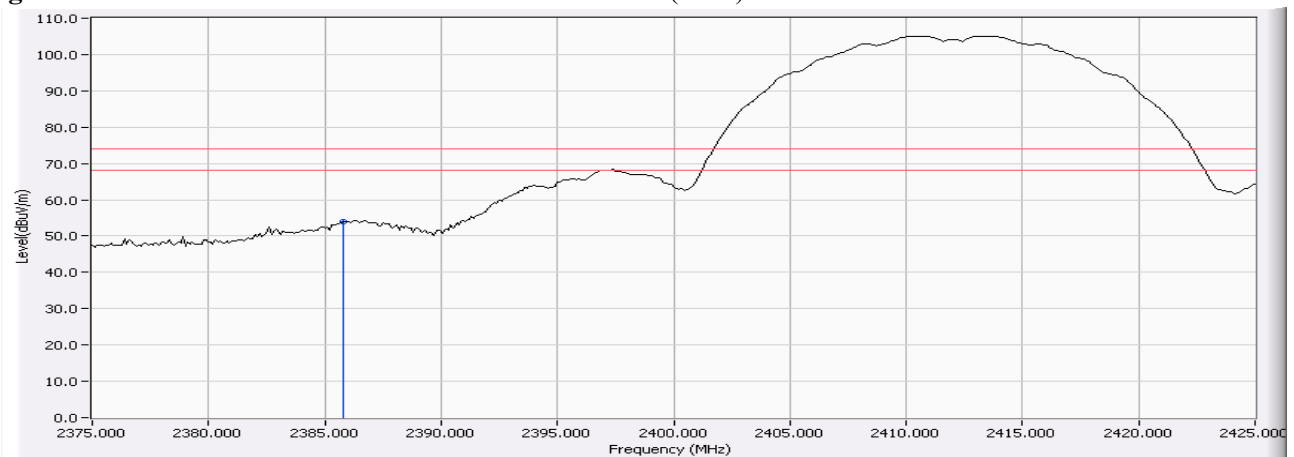


Figure Channel 1: Vertical (Average)



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.

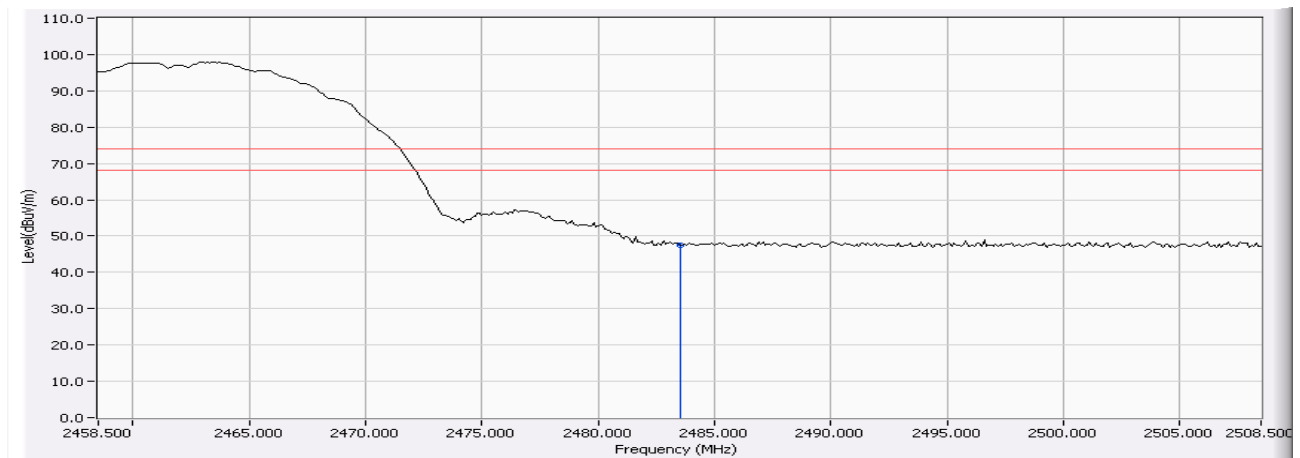
Product : 2G Wireless NPort
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11(Peak)	2483.500	-6.469	54.077	47.609	74.00	54.00	Pass
11(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 11:

Horizontal (Peak)



Note:

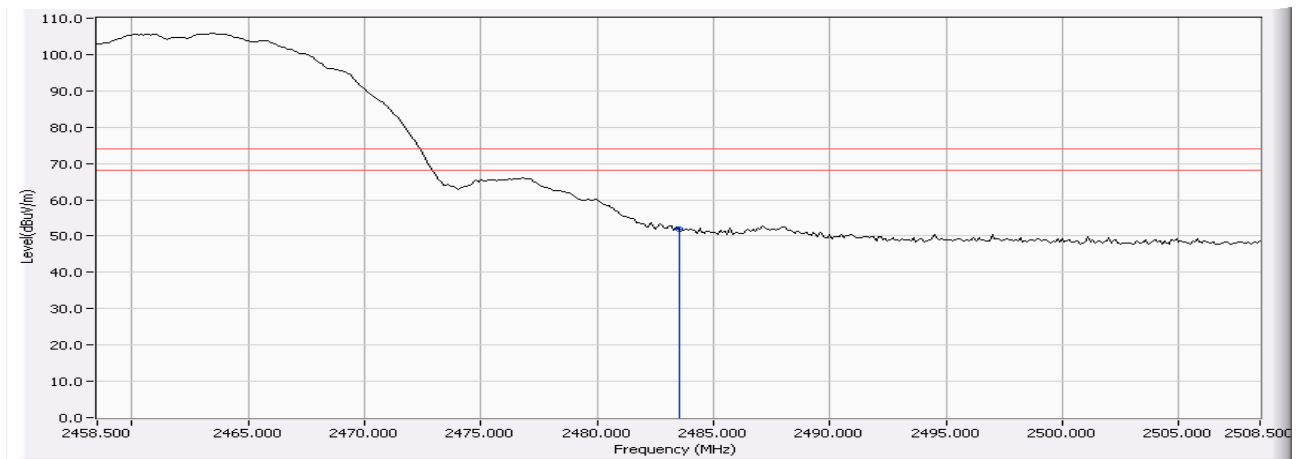
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ * ”, means this data is the worst emission level.
5. Measurement Level = Reading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

Product : 2G Wireless NPort
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter 802.11b

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	-6.469	58.458	51.990	74.00	54.00	Pass
11(Average)	--	--	--	--	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)



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 : 2G Wireless NPort
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2390.000	-6.769	69.115	62.347	74.00	54.00	Pass
1 (Average)	2390.000	-6.769	52.200	45.432	74.00	54.00	Pass

Figure Channel 1: Horizontal (Peak)

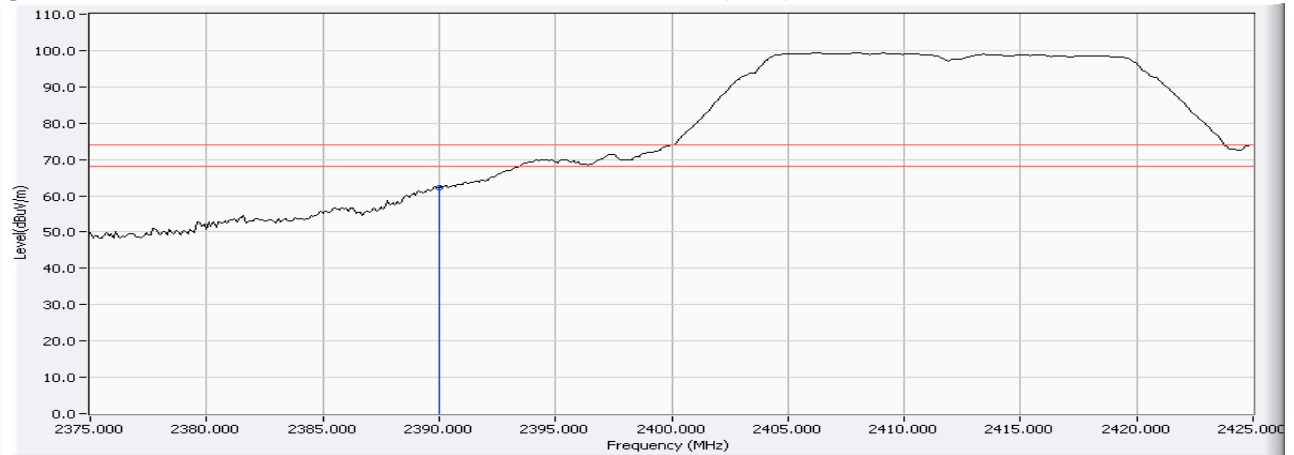
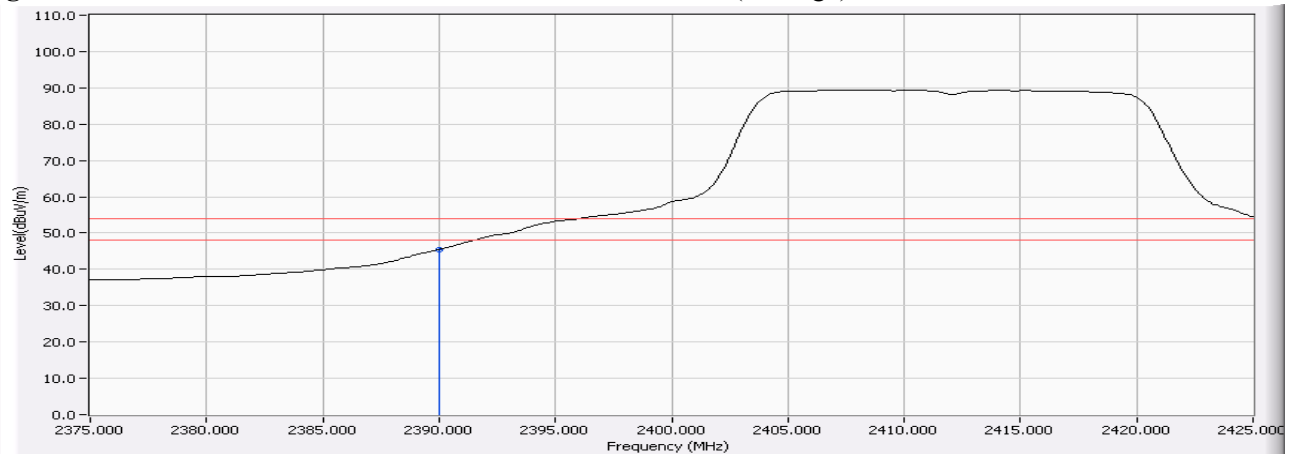


Figure Channel 1: Horizontal (Average)



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 : 2G Wireless NPort
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g

RF Radiated Measurement (Vertical):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
1 (Peak)	2390.000	-6.769	71.980	65.212	74.00	54.00	Pass
1 (Average)	2390.000	-6.769	55.172	48.404	74.00	54.00	Pass

Figure Channel 1: Vertical (Peak)

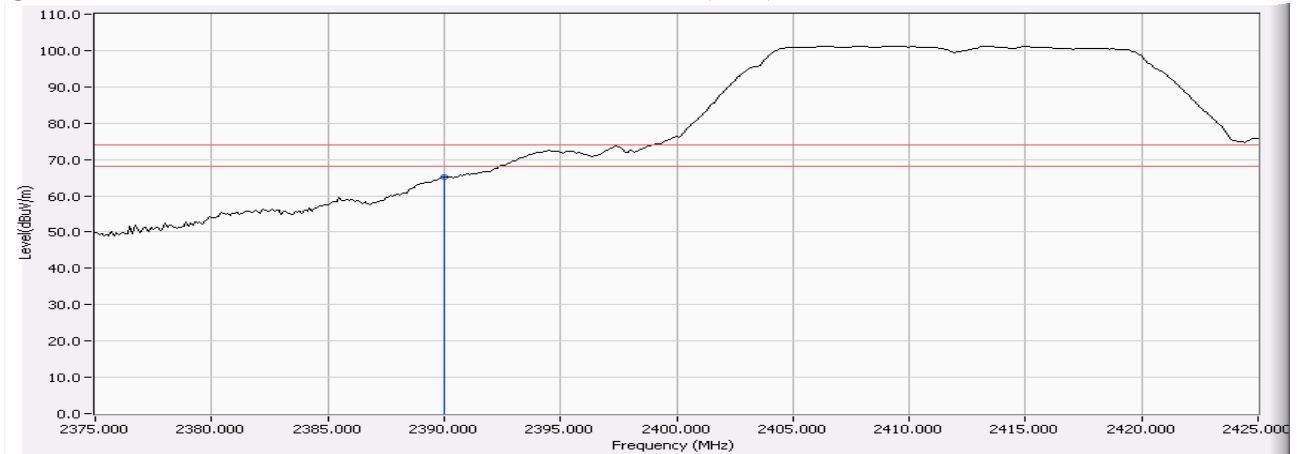
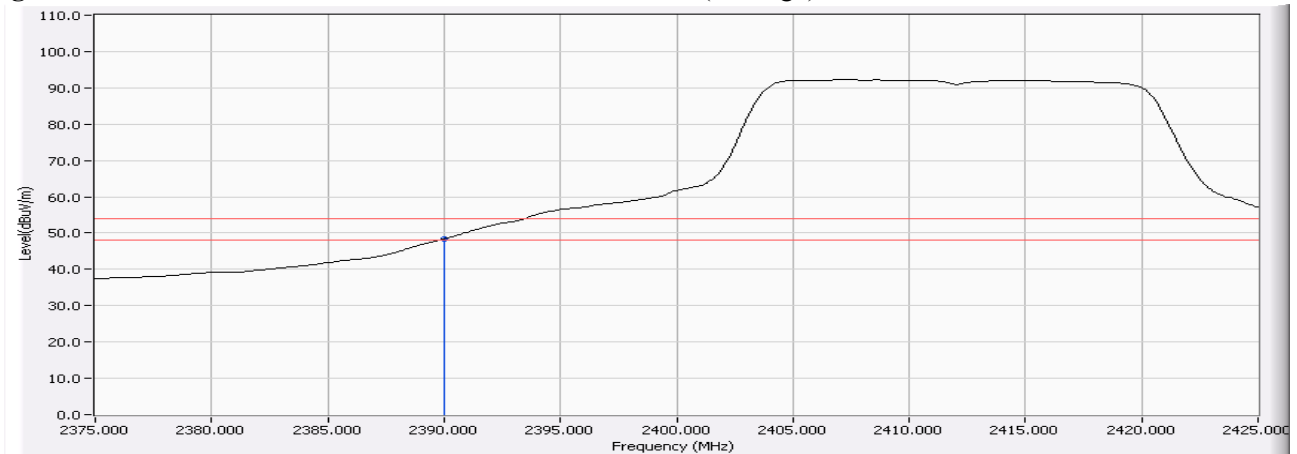


Figure Channel 1: Vertical (Average)



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 : 2G Wireless NPort
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2483.500	-1.937	66.000	64.063	74.00	54.00	Pass
11(Average)	2483.500	-1.937	46.545	44.608	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

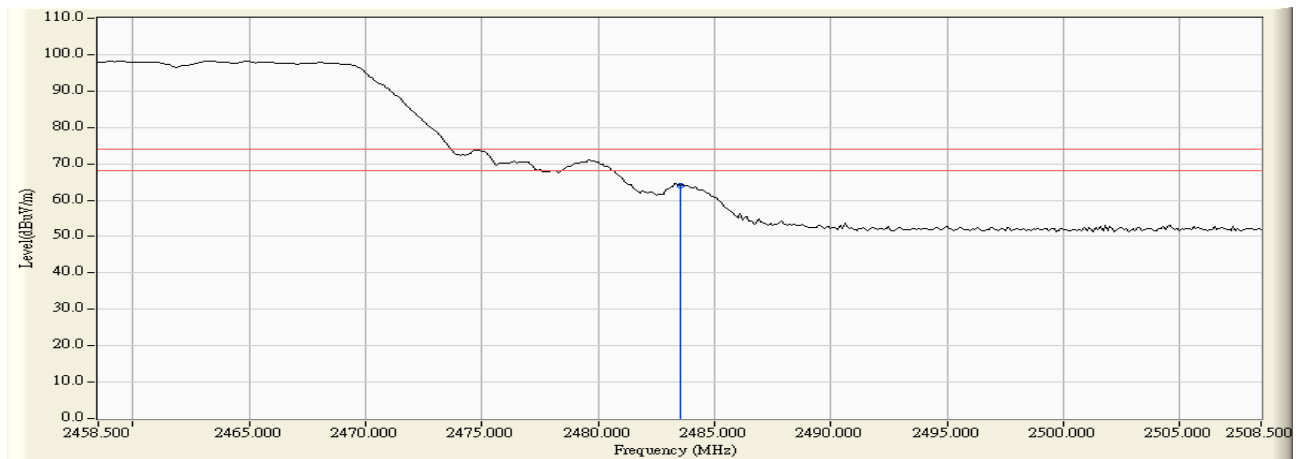
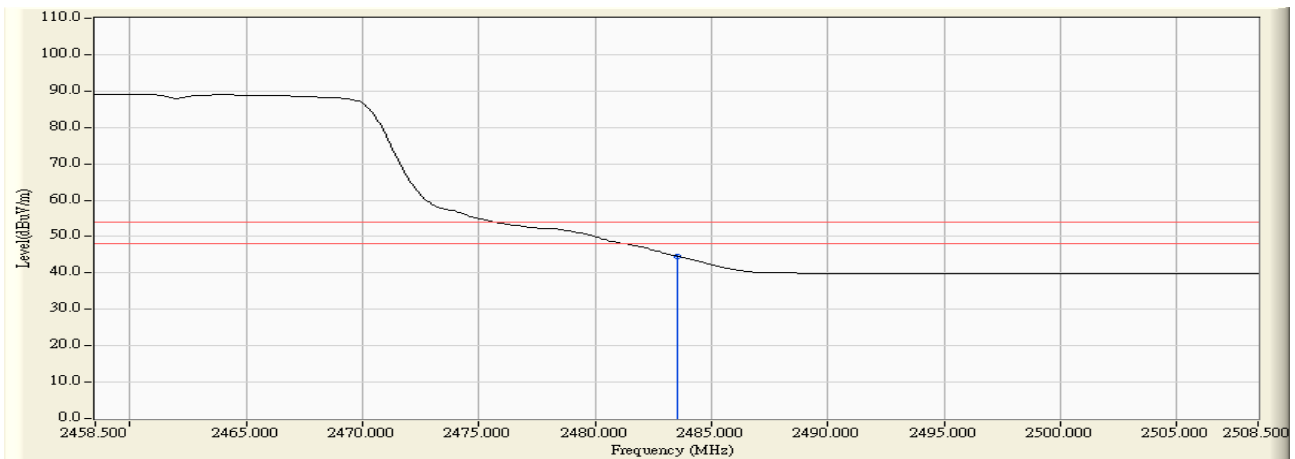


Figure Channel 11: Horizontal (Average)



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 : 2G Wireless NPort
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmitter 802.11g

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	-1.937	68.939	67.002	74.00	54.00	Pass
11(Average)	2483.500	-1.937	49.616	47.679	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

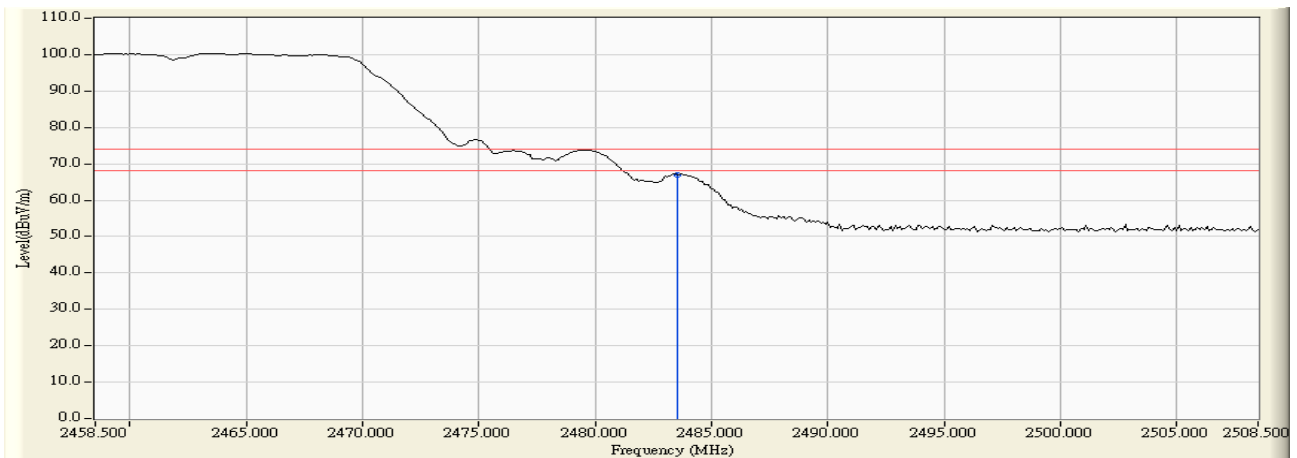
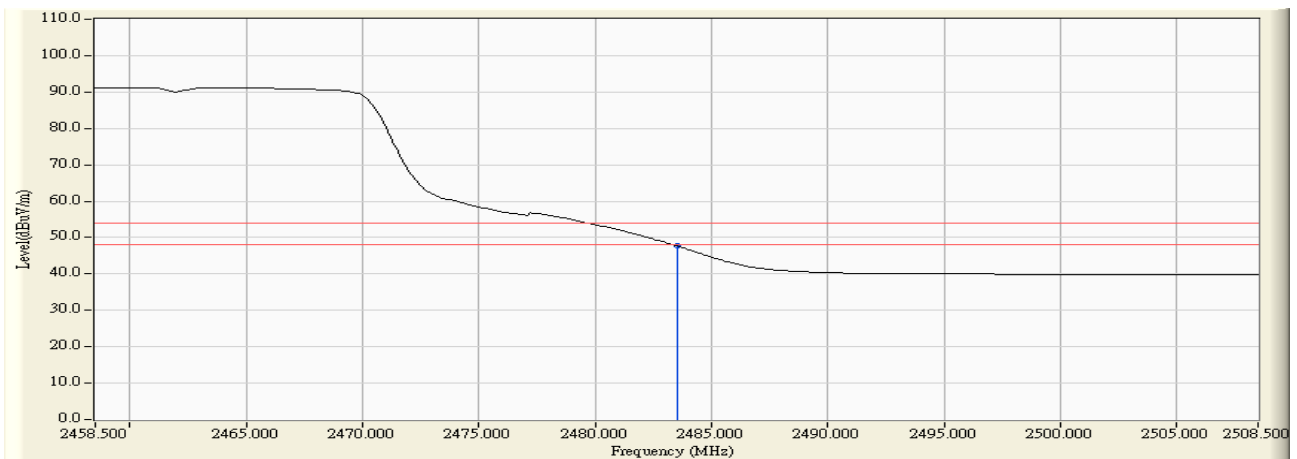


Figure Channel 11: Vertical (Average)



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.

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.