FCC Test Report
(Class II Permissive Change)

Product Name	802.11b/g/n 1T1R Combo Card
Model No	MT7630E
FCC ID.	RAS-MT7630E

Applicant	MediaTek Inc.
Address	No. 1, Dusing 1st Rd., Hsinchu Science Park, Hsinchu City 30078, Taiwan

Date of Receipt	Mar. 26, 2014
Issue Date	May 08, 2014
Report No.	1440029R-RFUSP25V00
Report Version	V1.0

Testing Laboratory
0914

Test Report

Issue Date: May 08, 2014
Report No.: 1440029R-RFUSP25V00

Product Name	802.11b/g/n 1T1R Combo Card
Applicant	MediaTek Inc.
Address	No. 1, Dusing 1st Rd., Hsinchu Science Park, Hsinchu City 30078, Taiwan
Manufacturer	MediaTek Inc.
Model No.	MT7630E
FCC ID.	RAS-MT7630E
EUT Rated Voltage	DC 3.3V (via Mini-PCI Express slot)
EUT Test Voltage	AC 120V/60Hz
Trade Name	MediaTek
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2012 ANSI C63.10: 2009, KDB 558074
Test Result	Complied

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

Tested By : Andy Lin
(Engineer / Andy Lin)

Approved By :
(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	802.11b/g/n 1T1R Combo Card
Trade Name	MediaTek
Model No.	MT7630E
FCC ID.	RAS-MT7630E
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 150Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	PIFA Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
Test Platform.(Notebook PC)	Brand Name: ASUS, M/N: TP500L, J500L, R515L
Power Adapter	MFR: LITEON (ASUS), M/N: PA-1650-93 Input:AC 100-240V~50-60Hz 1.7A Output: 19Vdc⎓, 3.42A Cable Out:Non-shielded, 2.3 m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	ACON	APP6P-701147 (Main) APP6P-701147 (Aux)	PIFA Antenna	-1.71dBi for 2.4 GHz

Note:

1. The antenna of EUT is conform to FCC 15.203.

802.11b/g/n-20MHz 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 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		

Note:

1. This device is a 802.11b/g/n 1T1R Combo Card, Contains functions and so on WLAN、Bluetooth , This report for WLAN.
2. The Hardware is identical for three models, the differences between the models is sale via different distributors.
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、802.11g is 6Mbps、802.11n(20M-BW) is 7.2Mbps、802.11n(40M-BW) is 15Mbps).
5. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report.
6. 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.
7. This is to request a Class II permissive change for FCC ID: RAS-MT7630E, originally granted on 11/08/2013.

   The major change filed under this application is:

   Change #1: Additional Chassis added, Model number: TP500L, J500L, R515L

   (The Hardware is identical for two models, the differences between the models is sale via different distributors.)

   #2: In tablet mode, Reduce the Output Power through firmware (only reduce Wi-Fi Power, bluetooth power haven't changes).

   #3: Addition one new antennas, the antenna type is the same, the antenna gain is smaller than the original application.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

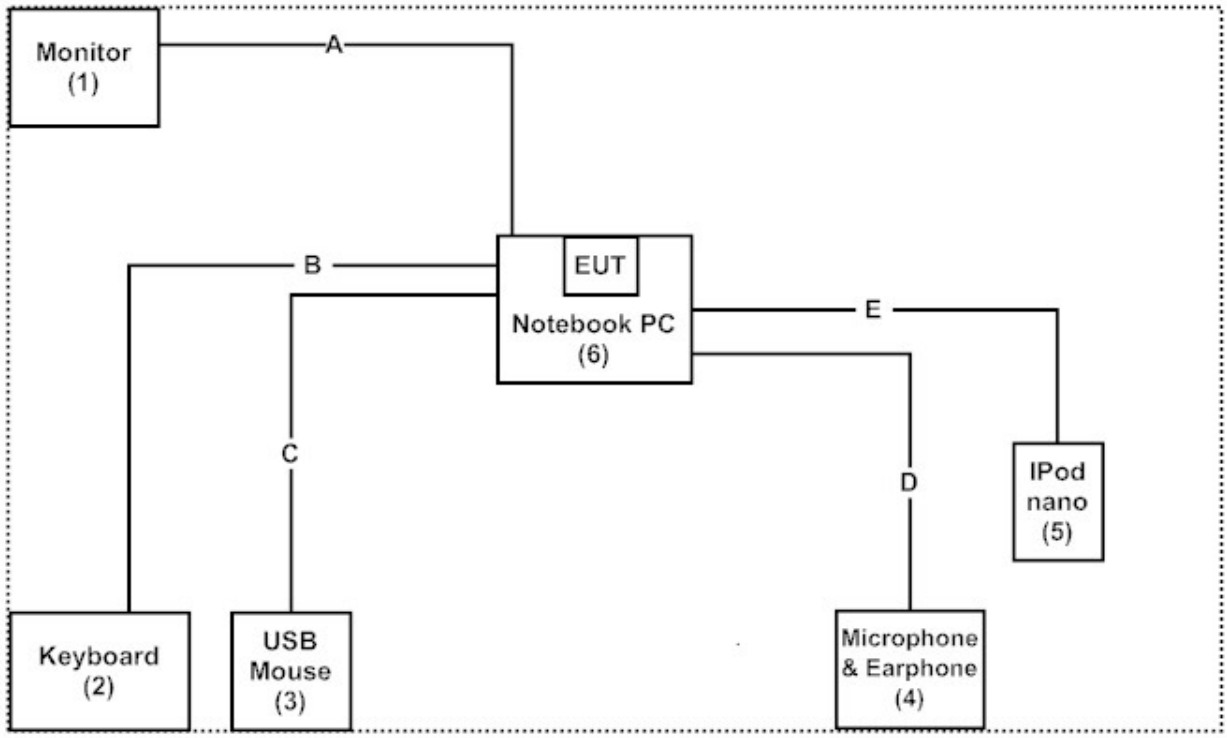
1.3. Tested System Details

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	Monitor	Dell	2407WFPb	CN-0FC255-46633-67T-04AS	Non-Shielded, 1.8m
2	Keyboard	DELL	SK-8115	MY-0DJ325-71619-6A3-1917	N/A
3	USB Mouse	DELL	M056U0A	F0Y01YEP	N/A
4	Microphone & Earphone	PCHOME	N/A	N/A	N/A
5	IPod nano	Apple	A1199	YM706LSCVQ5	N/A
6	Notebook PC	ASUS	TP500L	N/A	Non-Shielded, 1.8m

Signal Cable Type		Signal cable Description
A	HDMI Cable	Shielded, 1.8m
B	USB Cable	Shielded, 1.8m
C	USB Cable	Shielded, 1.8m
D	Microphone & Earphone Cable	Non-Shielded, 2.0m
E	USB Cable	Shielded, 1.2m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.4

(2) Execute software “MT76XXE QA (V2.0.3.0)” on the Notebook PC.

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

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

(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

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Site Name: Quietek Corporation
Site Address: No.5-22, Ruishukeng Linkou Dist., New Taipei City
24451, Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

2. Peak Power Output

2.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2014
X	Power Sensor	Anritsu	MA2411B/0738448	Jun., 2013
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2013
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2013
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2014

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.

2.2. Test Setup

2.3. Limits

The maximum peak power shall be less 1 Watt.

2.4. Test Procedure

The EUT was tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 section 9.1.3 PKPM1 Peak power meter method.

2.5. Uncertainty

± 1.27 dB

2.6. Test Result of Peak Power Output

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	10.91	--	--	--	14.5	<30dBm	Pass
06	2437	10.93	10.81	10.75	10.65	14.63	<30dBm	Pass
11	2462	10.92	--	--	--	14.43	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	10.92	--	--	--	--	--	--	--	20.24	<30dBm	Pass
06	2437	10.93	10.81	10.75	10.66	10.51	10.42	10.29	10.18	20.31	<30dBm	Pass
11	2462	10.95	--	--	--	--	--	--	--	20.33	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2	7.2		
		Measurement Level (dBm)										
01	2412	10.91	--	--	--	--	--	--	--	20.11	<30dBm	Pass
06	2437	10.92	10.82	10.74	10.63	10.55	10.4	10.24	10.12	20.28	<30dBm	Pass
11	2462	10.91	--	--	--	--	--	--	--	20.13	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		15	30	45	60	90	120	135	150	15		
		Measurement Level (dBm)										
03	2422	10.91	--	--	--	--	--	--	--	19.59	<30dBm	Pass
06	2437	10.92	10.81	10.73	10.57	10.42	10.34	10.19	10.08	19.32	<30dBm	Pass
09	2452	10.92	--	--	--	--	--	--	--	19.51	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

3. Radiated Emission

3.1. Test Equipment

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

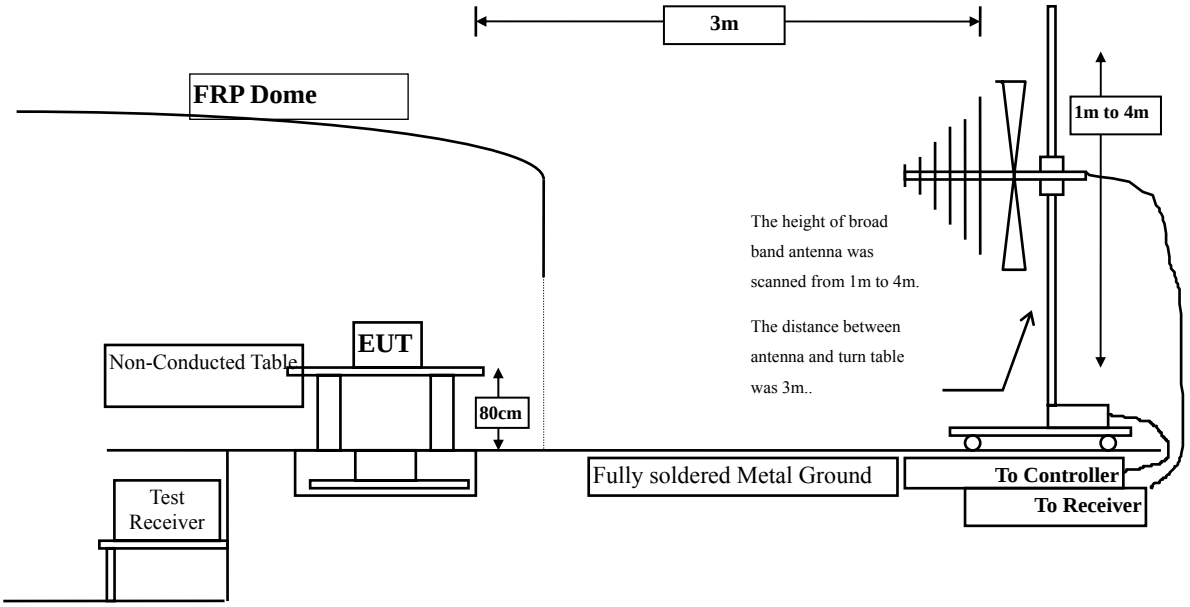
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Loop Antenna	Teseq	HLA6120 / 26739	Jul., 2013
	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2013
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2013
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2013
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2014
	X	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2013
	X	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2014
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2014
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2013
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	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.

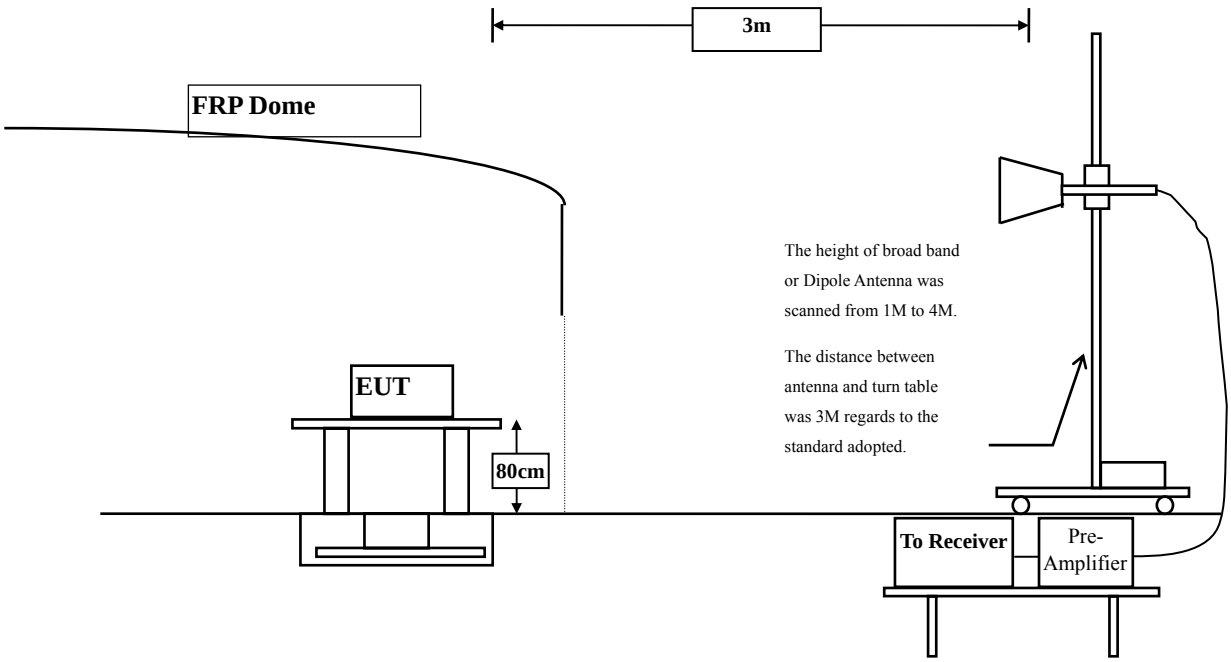
2. The test instruments marked with "X" are used to measure the final test results.

3.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



3.3. 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	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dBμV/m) = 20 log E field strength (uV/m)

3.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2009 and tested according to DTS test procedure of 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 C63.10, 2009 on radiated measurement.
The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.
Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~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 bandwidth of the antenna.
The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.
The frequency range from 9kHz to 10th harmonics is checked.

3.5. Uncertainty

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

3.6. Test Result of Radiated Emission

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	11.490	37.810	49.301	-24.699	74.000
7236.000	15.510	34.068	49.578	-24.422	74.000
9648.000	15.186	33.869	49.056	-24.944	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	11.490	36.057	47.548	-26.452	74.000
7236.000	15.510	33.456	48.966	-25.034	74.000
9648.000	15.186	34.827	50.014	-23.986	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	11.647	38.928	50.575	-23.425	74.000
7311.000	15.556	33.201	48.757	-25.243	74.000
9748.000	15.520	34.017	49.537	-24.463	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	11.647	36.028	47.675	-26.325	74.000
7311.000	15.556	33.093	48.649	-25.351	74.000
9748.000	15.520	34.442	49.962	-24.038	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4924.000	11.579	41.268	52.847	-21.153	74.000
7386.000	15.518	33.671	49.189	-24.811	74.000
9848.000	15.759	33.536	49.295	-24.705	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	11.579	36.780	48.359	-25.641	74.000
7386.000	15.518	33.028	48.546	-25.454	74.000
9848.000	15.759	33.400	49.159	-24.841	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	11.490	36.895	48.386	-25.614	74.000
7236.000	15.510	33.285	48.795	-25.205	74.000
9648.000	15.186	34.255	49.442	-24.558	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	11.490	35.184	46.675	-27.325	74.000
7236.000	15.510	33.816	49.326	-24.674	74.000
9648.000	15.186	34.275	49.462	-24.538	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	11.647	38.098	49.745	-24.255	74.000
7311.000	15.556	32.992	48.548	-25.452	74.000
9748.000	15.520	34.268	49.788	-24.212	74.000
Average Detector:					
--					
Peak Detector:					
4874.000	11.647	35.035	46.682	-27.318	74.000
7311.000	15.556	32.922	48.478	-25.522	74.000
9748.000	15.520	34.011	49.531	-24.469	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4924.000	11.579	41.365	52.944	-21.056	74.000
7386.000	15.518	33.496	49.014	-24.986	74.000
9848.000	15.759	33.336	49.095	-24.905	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	11.579	35.786	47.365	-26.635	74.000
7386.000	15.518	32.692	48.210	-25.790	74.000
9848.000	15.759	33.611	49.370	-24.630	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	11.490	41.060	52.551	-21.449	74.000
7236.000	15.510	33.787	49.297	-24.703	74.000
9648.000	15.186	33.901	49.088	-24.912	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	11.490	34.925	46.416	-27.584	74.000
7236.000	15.510	33.892	49.402	-24.598	74.000
9648.000	15.186	33.791	48.978	-25.022	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	11.647	39.183	50.830	-23.170	74.000
7311.000	15.556	33.080	48.636	-25.364	74.000
9748.000	15.520	33.765	49.285	-24.715	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	11.647	35.669	47.316	-26.684	74.000
7311.000	15.556	33.111	48.667	-25.333	74.000
9748.000	15.520	34.329	49.849	-24.151	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4924.000	11.579	41.692	53.271	-20.729	74.000
7386.000	15.518	33.467	48.985	-25.015	74.000
9848.000	15.759	33.619	49.378	-24.622	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	11.579	35.719	47.298	-26.702	74.000
7386.000	15.518	33.773	49.291	-24.709	74.000
9848.000	15.759	33.497	49.256	-24.744	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2422MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4844.000	11.651	35.273	46.924	-27.076	74.000
7266.000	15.549	33.304	48.853	-25.147	74.000
9688.000	15.155	35.309	50.464	-23.536	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4844.000	11.651	34.844	46.495	-27.505	74.000
7266.000	15.549	33.264	48.813	-25.187	74.000
9688.000	15.155	34.747	49.902	-24.098	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	11.647	35.793	47.440	-26.560	74.000
7311.000	15.556	33.171	48.727	-25.273	74.000
9748.000	15.520	34.244	49.764	-24.236	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	11.647	35.953	47.600	-26.400	74.000
7311.000	15.556	32.590	48.146	-25.854	74.000
9748.000	15.520	34.534	50.054	-23.946	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2452 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4904.000	11.482	35.880	47.362	-26.638	74.000
7356.000	15.772	32.831	48.603	-25.397	74.000
9808.000	15.513	33.812	49.325	-24.675	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	11.482	35.333	46.815	-27.185	74.000
7356.000	15.772	32.625	48.397	-25.603	74.000
9808.000	15.513	33.770	49.283	-24.717	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
150.280	-7.870	43.770	35.900	-7.600	43.500
227.880	-8.769	42.299	33.531	-12.469	46.000
299.660	-4.751	36.510	31.759	-14.241	46.000
396.660	0.771	37.877	38.648	-7.352	46.000
798.240	6.409	32.213	38.621	-7.379	46.000
852.560	7.106	29.748	36.854	-9.146	46.000
Vertical					
150.280	-5.350	39.323	33.973	-9.527	43.500
301.600	-3.985	26.670	22.685	-23.315	46.000
390.840	-0.768	36.681	35.913	-10.087	46.000
676.020	0.451	32.251	32.703	-13.297	46.000
800.180	2.637	24.877	27.514	-18.486	46.000
968.960	3.936	23.152	27.088	-26.912	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
150.280	-7.870	43.540	35.670	-7.830	43.500
262.800	-5.484	36.246	30.762	-15.238	46.000
398.600	0.879	35.063	35.942	-10.058	46.000
520.820	3.198	28.140	31.337	-14.663	46.000
796.300	6.389	28.823	35.212	-10.788	46.000
875.840	5.816	28.853	34.669	-11.331	46.000
988.360	7.541	26.364	33.905	-20.095	54.000
Vertical					
41.640	-11.715	42.834	31.120	-8.880	40.000
150.280	-5.350	39.393	34.043	-9.457	43.500
227.880	-6.169	31.569	25.401	-20.599	46.000
398.600	-2.371	38.190	35.819	-10.181	46.000
681.840	1.622	32.406	34.028	-11.972	46.000
922.400	3.200	23.684	26.884	-19.116	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
150.280	-7.870	44.425	36.555	-6.945	43.500
224.000	-10.069	41.855	31.786	-14.214	46.000
404.420	0.889	37.508	38.397	-7.603	46.000
520.820	3.198	28.498	31.695	-14.305	46.000
823.460	7.241	27.074	34.315	-11.685	46.000
926.280	6.832	25.486	32.318	-13.682	46.000
Vertical					
227.880	-6.169	32.111	25.943	-20.057	46.000
379.200	0.881	36.826	37.707	-8.293	46.000
520.820	1.078	26.527	27.604	-18.396	46.000
683.780	2.011	33.445	35.456	-10.544	46.000
819.580	3.001	23.273	26.274	-19.726	46.000
930.160	3.830	23.370	27.200	-18.800	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : 802.11b/g/n 1T1R Combo Card
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
150.280	-7.870	42.892	35.022	-8.478	43.500
227.880	-8.769	43.004	34.236	-11.764	46.000
404.420	0.889	36.147	37.036	-8.964	46.000
513.060	3.186	29.589	32.775	-13.225	46.000
604.240	4.289	25.997	30.287	-15.713	46.000
914.640	6.410	30.275	36.685	-9.315	46.000
Vertical					
150.280	-5.350	38.126	32.776	-10.724	43.500
224.000	-6.379	31.479	25.100	-20.900	46.000
377.260	0.647	34.529	35.176	-10.824	46.000
615.880	1.473	28.412	29.885	-16.115	46.000
683.780	2.011	30.881	32.892	-13.108	46.000
967.020	3.889	24.840	28.729	-25.271	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. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss –Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

4. Band Edge

4.1. Test Equipment

RF Radiated Measurement:

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

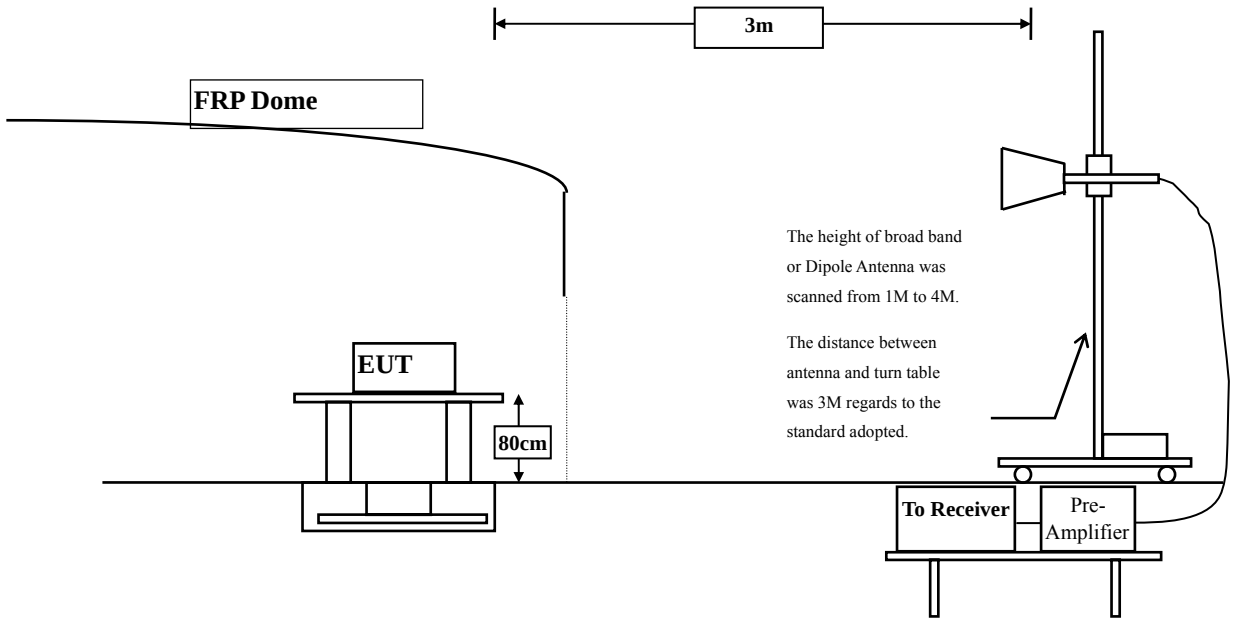
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3		Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2013
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2013
		Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2013
	X	Pre-Amplifier	Agilent	8447D/2944A09549	Sep., 2013
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2014
		Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2013
	X	Coaxial Cable	QuieTek	QTK-CABLE/ CAB5	Feb., 2014
	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.

4.2. Test Setup

RF Radiated Measurement:



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.

4.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2009 and tested according to DTS test procedure of 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 C63.10, 2009 on radiated measurement.

4.5. Uncertainty

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

4.6. Test Result of Band Edge

Product : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (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)	2390.000	11.672	47.058	58.730	74.00	54.00	Pass
01 (Peak)	2400.000	11.703	58.472	70.174	--	--	Pass
01 (Peak)	2410.900	11.740	98.041	109.781	--	--	Pass
01 (Average)	2390.000	11.672	33.869	45.541	74.00	54.00	Pass
01 (Average)	2400.000	11.703	49.824	61.526	--	--	Pass
01 (Average)	2411.200	11.740	95.407	107.147	--	--	Pass

Figure Channel 01: Horizontal (Peak)

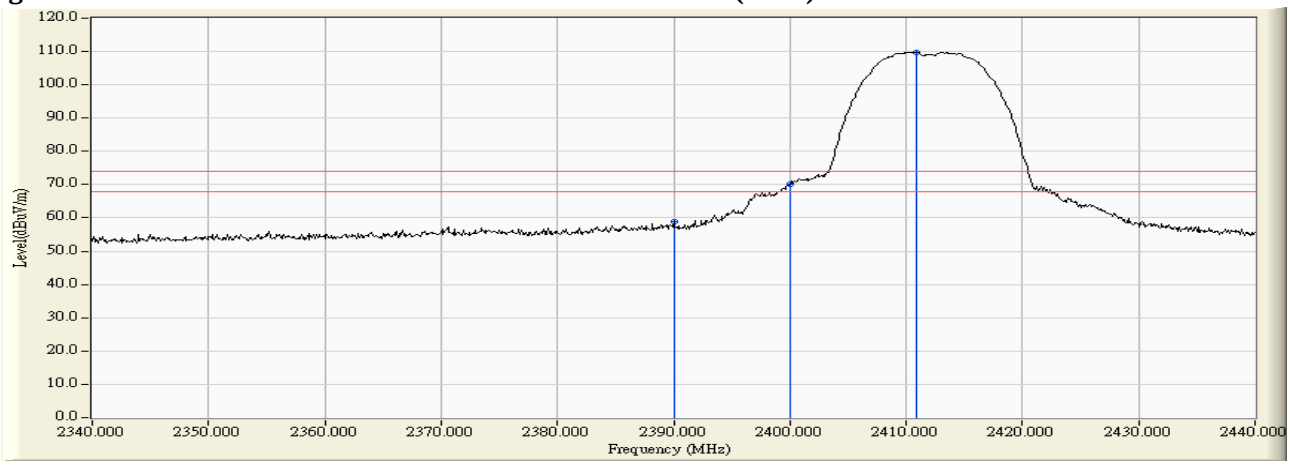
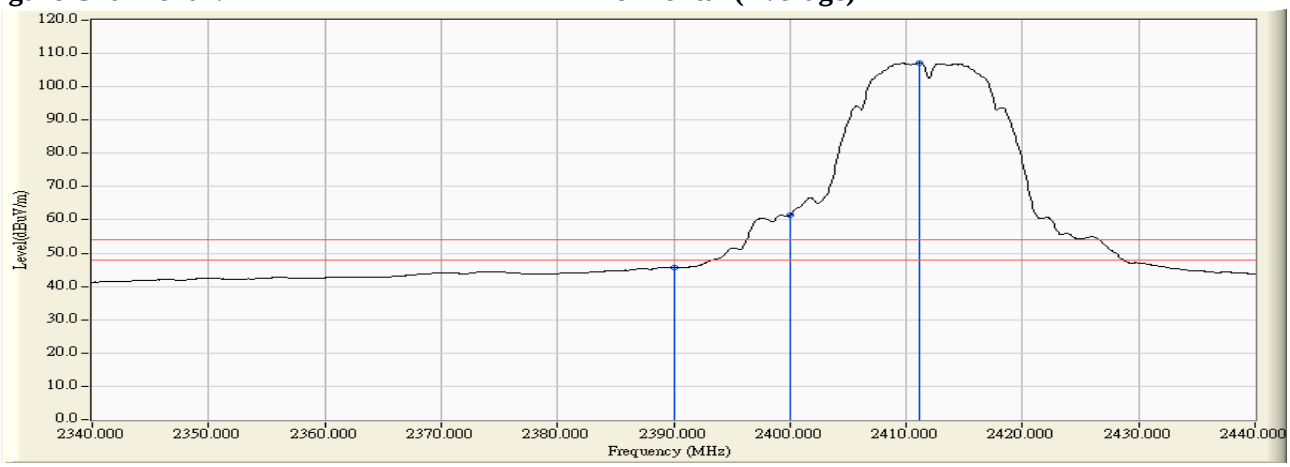


Figure Channel 01: Horizontal (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (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)	2389.000	11.669	42.653	54.323	74.00	54.00	Pass
01 (Peak)	2390.000	11.672	41.328	53.000	74.00	54.00	Pass
01 (Peak)	2400.000	11.703	49.501	61.203	--	--	Pass
01 (Peak)	2410.900	11.740	87.968	99.708	--	--	Pass
01 (Average)	2390.000	11.672	29.647	41.319	74.00	54.00	Pass
01 (Average)	2400.000	11.703	40.389	52.091	--	--	Pass
01 (Average)	2409.700	11.736	85.330	97.065	--	--	Pass

Figure Channel 01: Vertical (Peak)

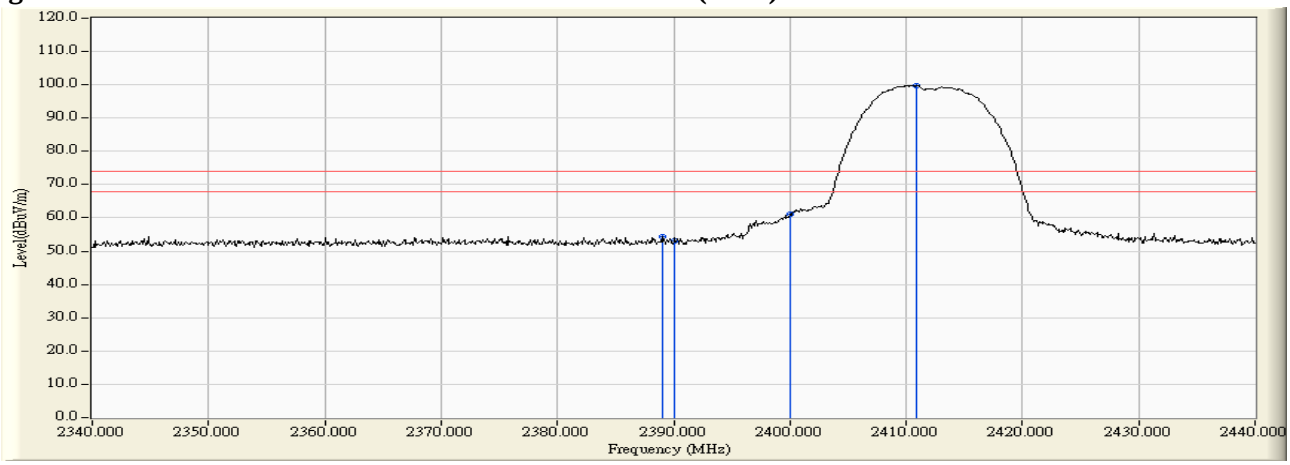
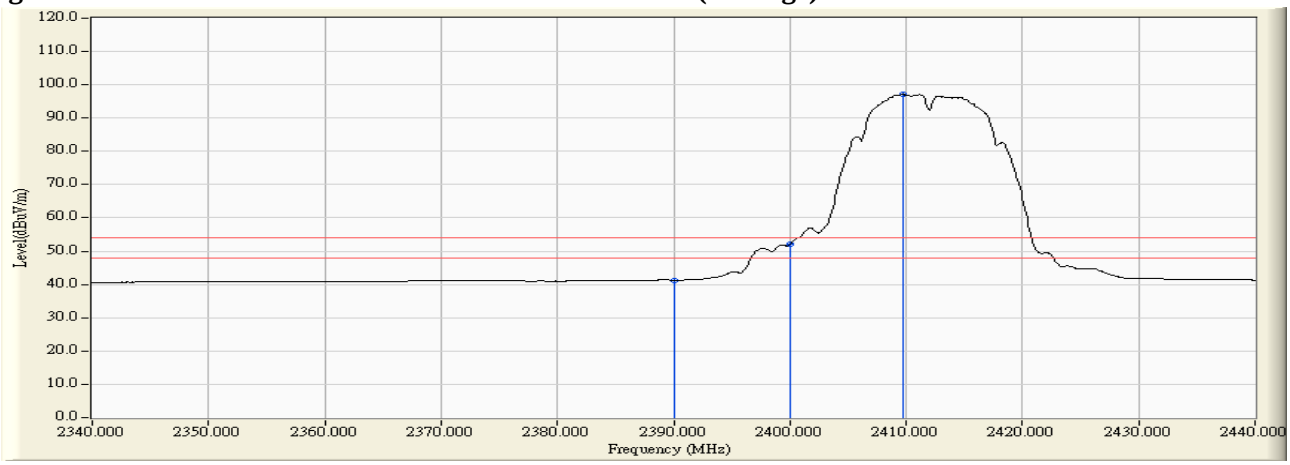


Figure Channel 01: Vertical (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (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)	2460.900	11.781	94.804	106.585	--	--	Pass
11 (Peak)	2483.500	12.049	41.850	53.899	74.00	54.00	Pass
11 (Peak)	2484.400	12.056	44.255	56.311	74.00	54.00	Pass
11 (Average)	2461.200	11.786	92.169	103.955	--	--	Pass
11 (Average)	2483.500	12.049	30.728	42.777	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

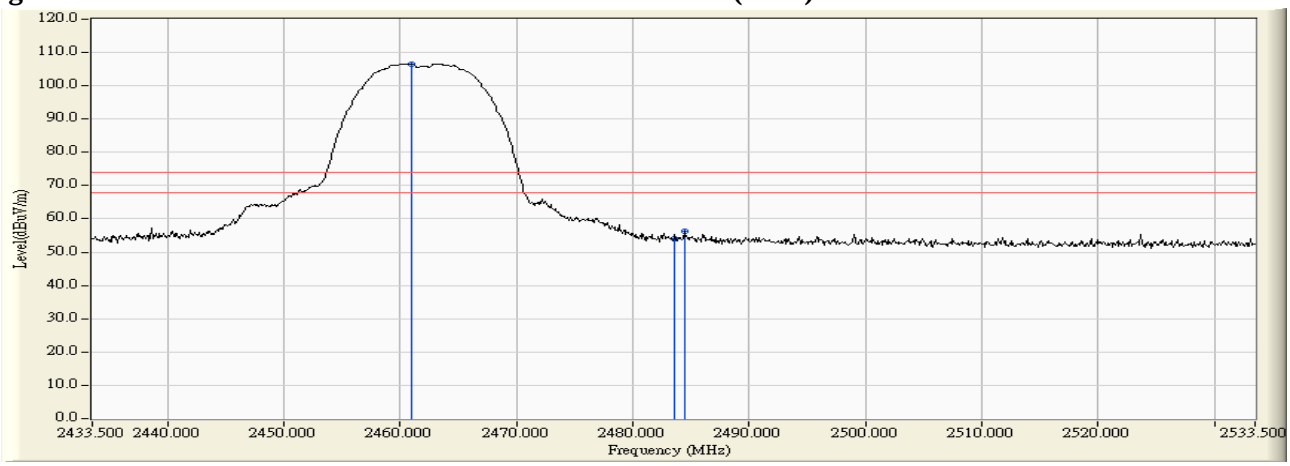
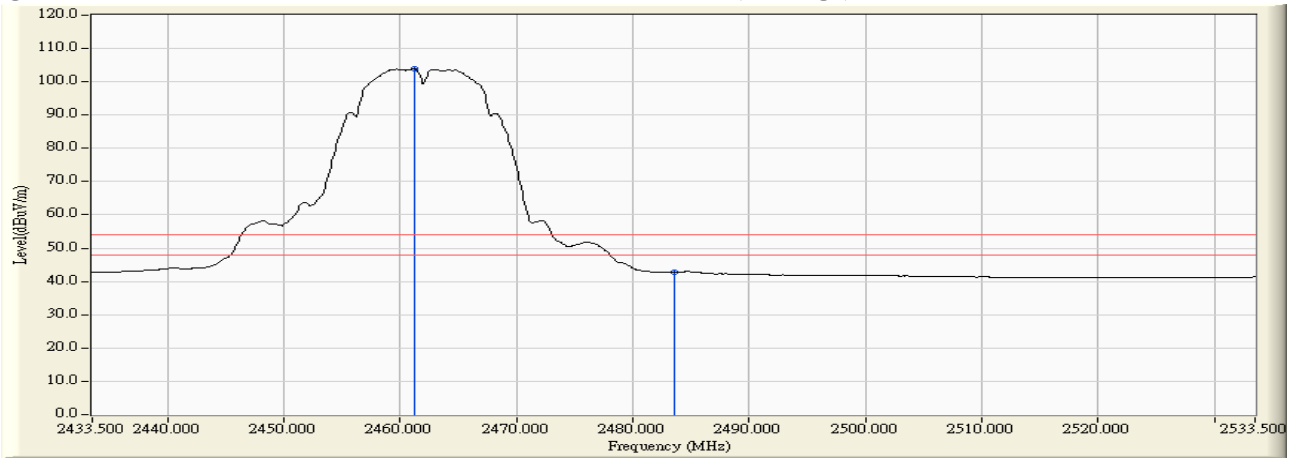


Figure Channel 11: Horizontal (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (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)	2463.100	11.814	89.939	101.752	--	--	Pass
11 (Peak)	2483.500	12.049	41.440	53.489	74.00	54.00	Pass
11 (Average)	2461.200	11.786	86.963	98.749	--	--	Pass
11 (Average)	2483.500	12.049	29.845	41.894	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

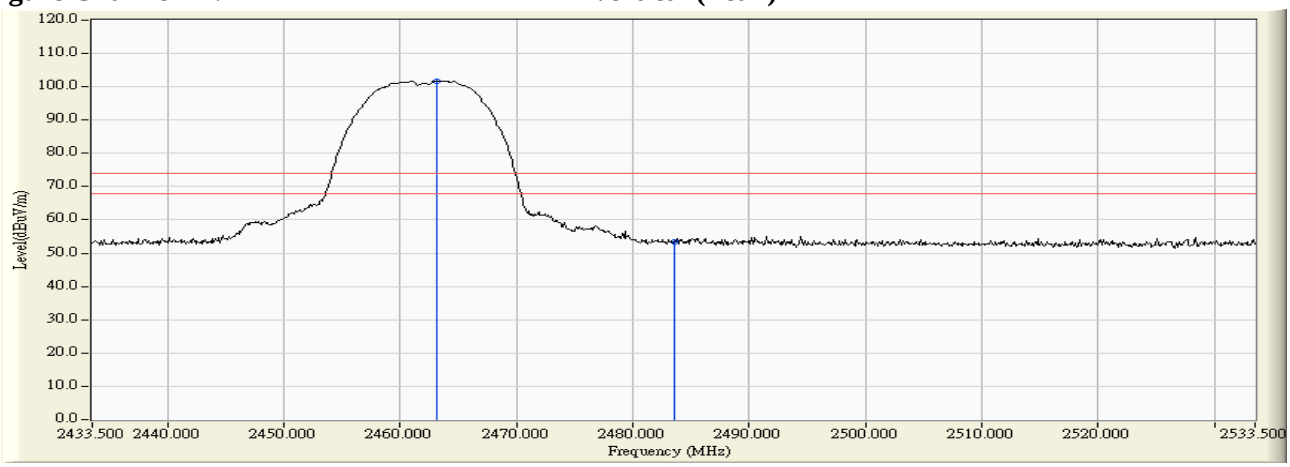
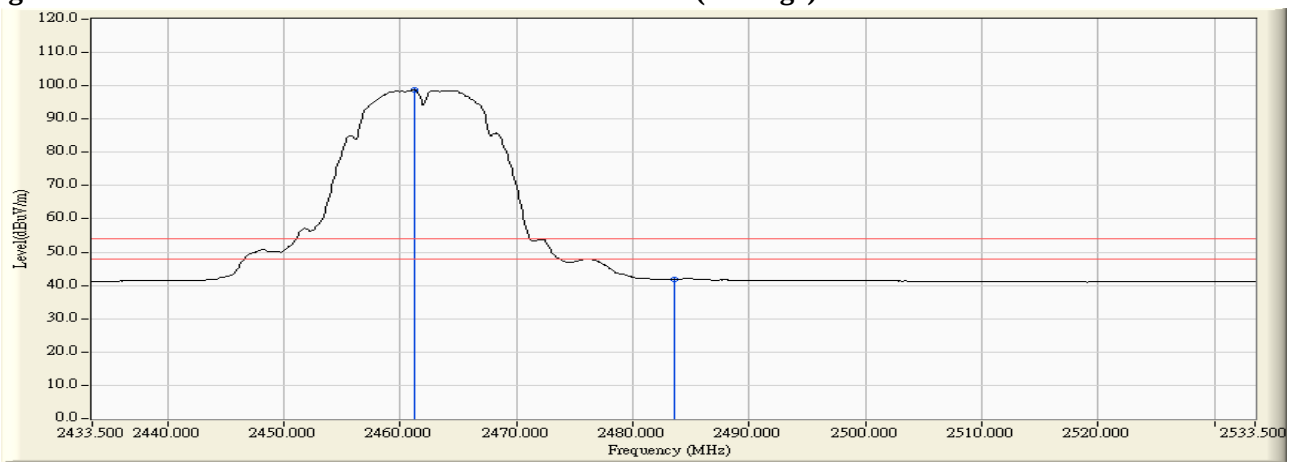


Figure Channel 11: Vertical (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (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)	2390.000	11.672	54.413	66.085	74.00	54.00	Pass
01 (Peak)	2400.000	11.703	65.892	77.594	--	--	Pass
01 (Peak)	2409.600	11.735	95.030	106.765	--	--	Pass
01(Average)	2390.000	11.672	37.314	48.986	74.00	54.00	Pass
01(Average)	2400.000	11.703	50.598	62.300	--	--	Pass
01(Average)	2411.000	11.740	86.389	98.129	--	--	Pass

Figure Channel 01: Horizontal (Peak)

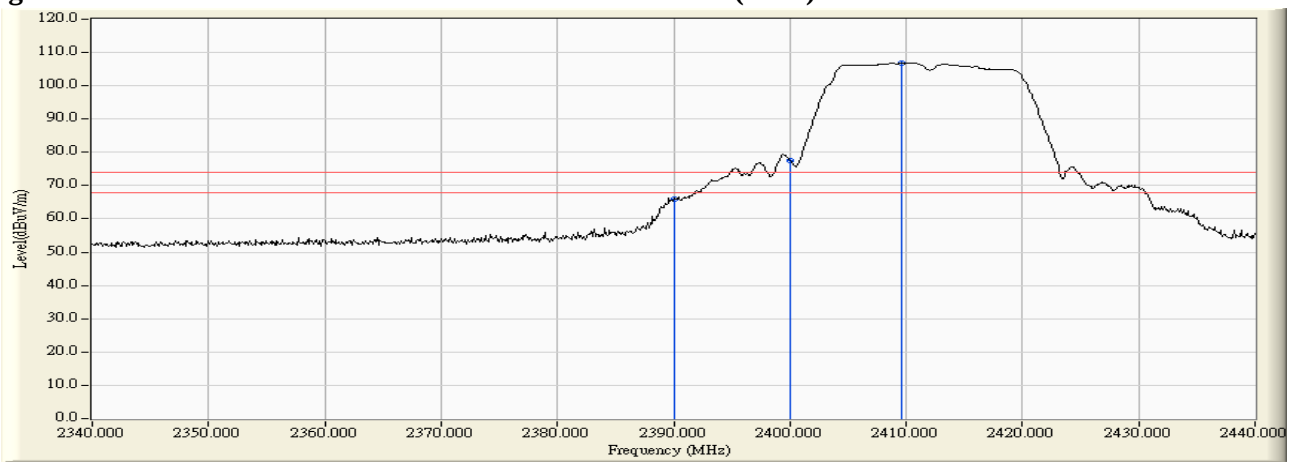
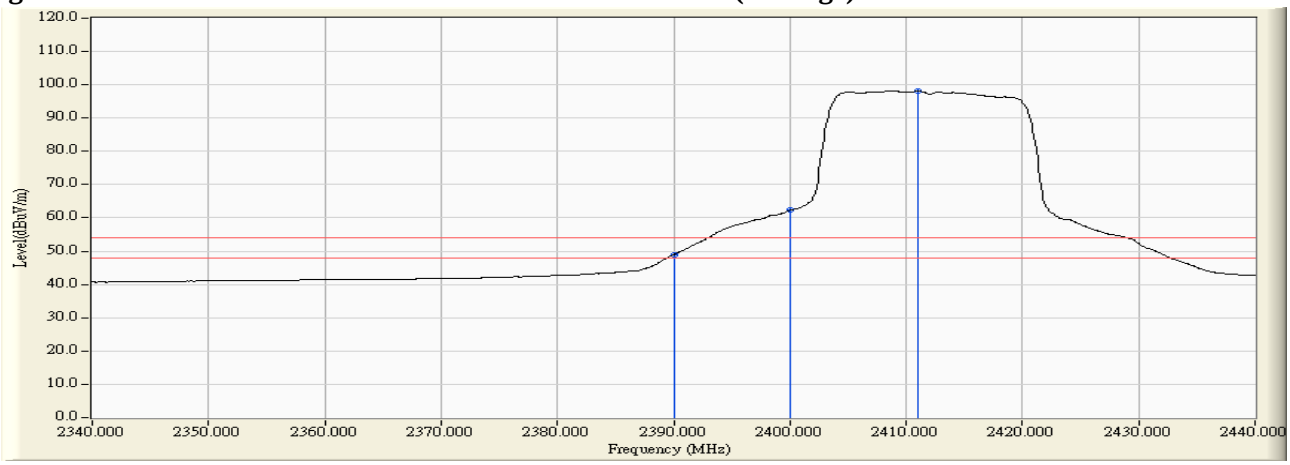


Figure Channel 01: Horizontal (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (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)	2390.000	11.672	50.013	61.685	74.00	54.00	Pass
01 (Peak)	2400.000	11.703	60.661	72.363	--	--	Pass
01 (Peak)	2410.500	11.738	90.869	102.607	--	--	Pass
01 (Average)	2390.000	11.672	33.389	45.061	74.00	54.00	Pass
01 (Average)	2400.000	11.703	45.951	57.653	--	--	Pass
01 (Average)	2411.100	11.740	82.291	94.031	--	--	Pass

Figure Channel 01: Vertical (Peak)

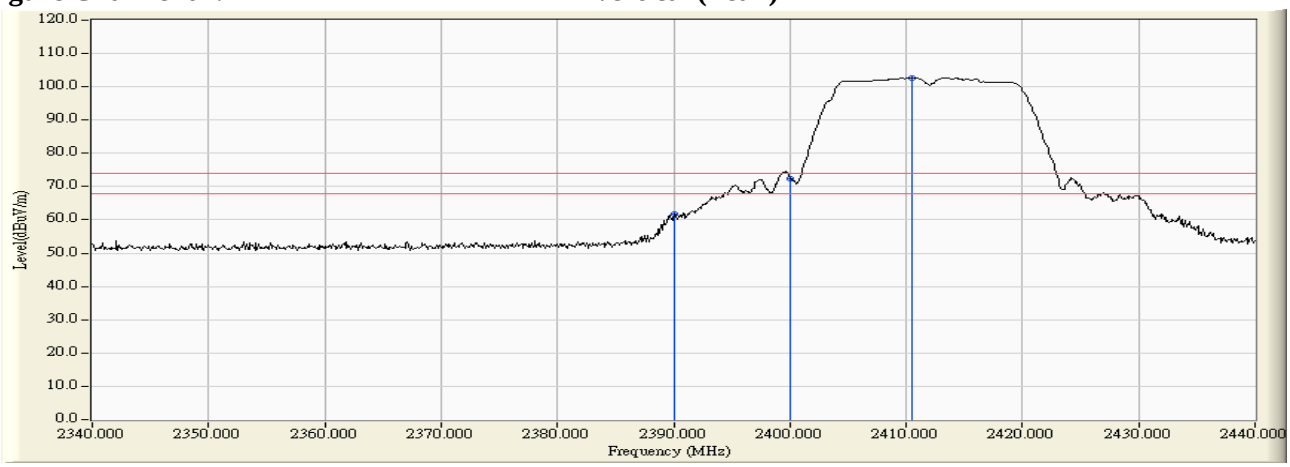
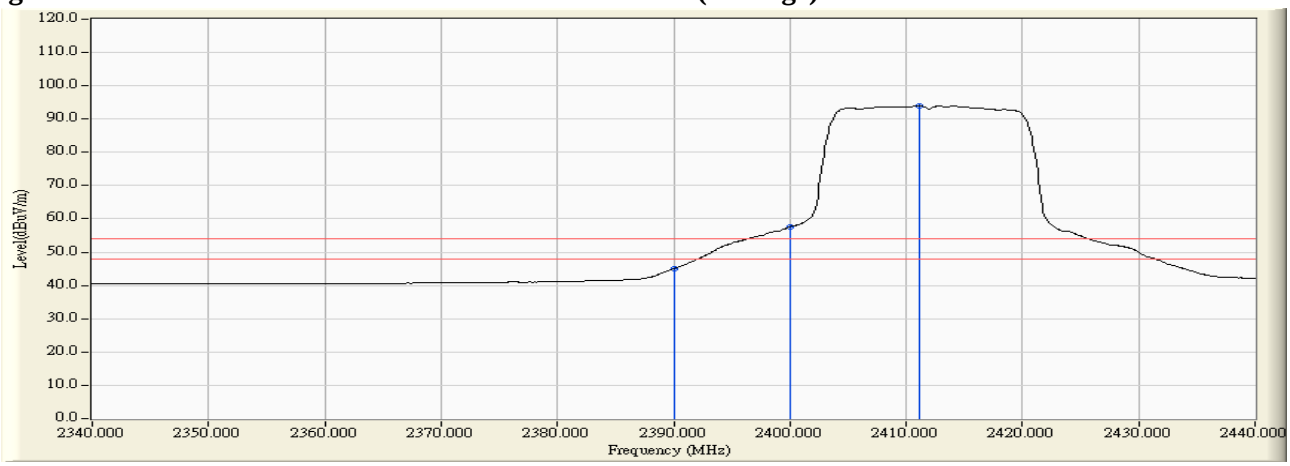


Figure Channel 01: Vertical (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (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)	2463.400	11.818	99.636	111.454	--	--	Pass
11 (Peak)	2483.500	12.049	57.648	69.697	74.00	54.00	Pass
11 (Average)	2460.600	11.778	91.038	102.815	--	--	Pass
11 (Average)	2483.500	12.049	40.640	52.689	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

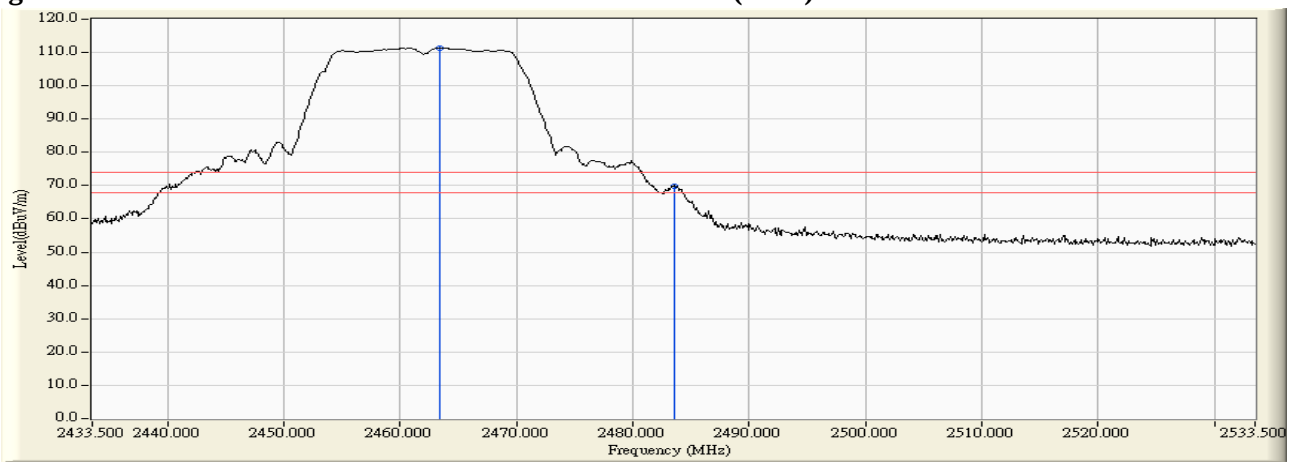
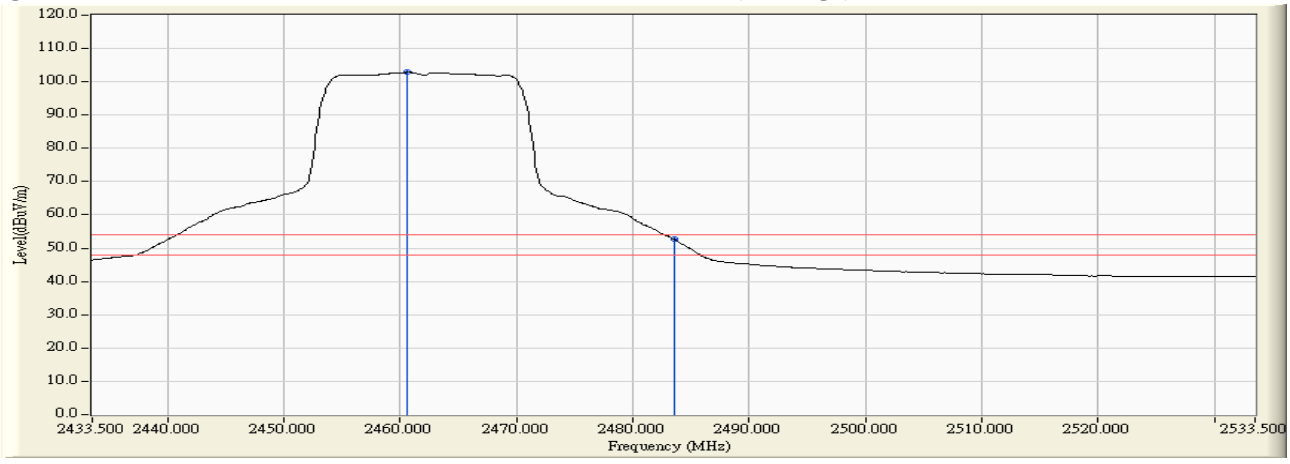


Figure Channel 11: Horizontal (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (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)	2463.400	11.818	90.899	102.717	--	--	Pass
11 (Peak)	2483.500	12.049	49.188	61.237	74.00	54.00	Pass
11 (Peak)	2484.100	12.054	49.545	61.599	74.00	54.00	Pass
11 (Average)	2460.500	11.775	82.216	93.992	--	--	Pass
11 (Average)	2483.500	12.049	34.004	46.053	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

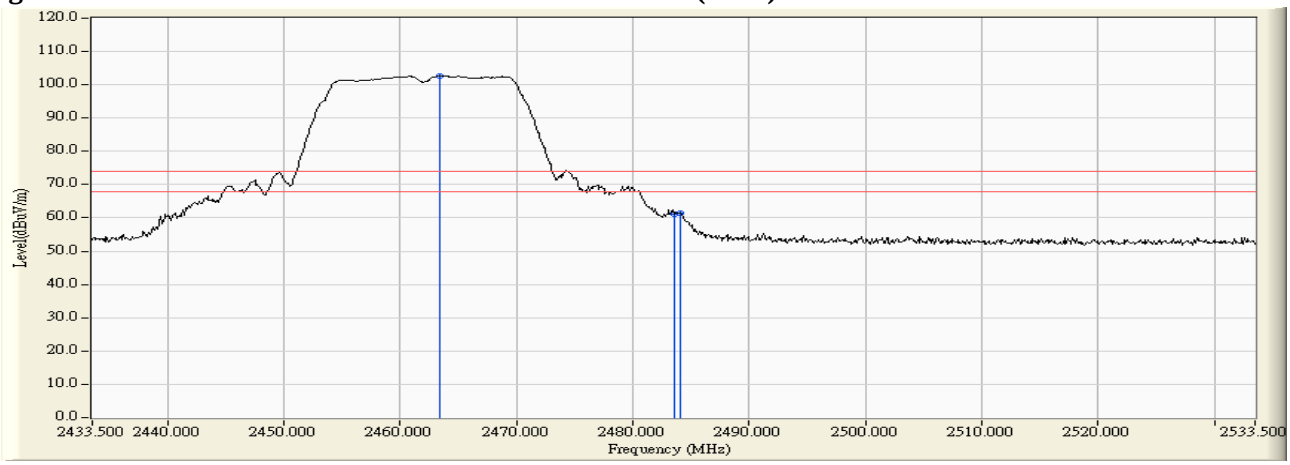
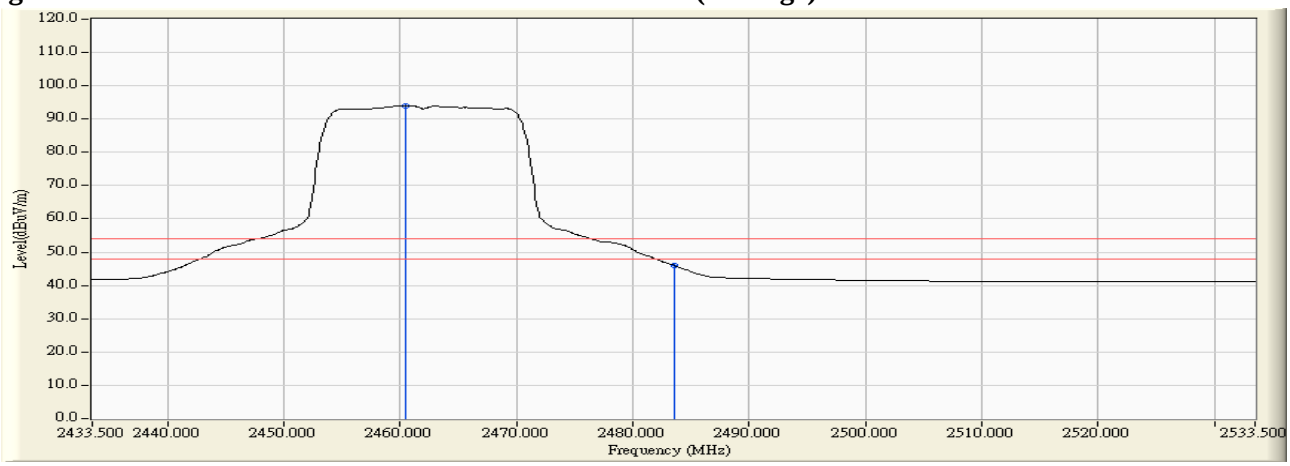


Figure Channel 11: Vertical (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

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)	2390.000	11.672	58.771	70.443	74.00	54.00	Pass
01 (Peak)	2400.000	11.703	65.137	76.839	--	--	Pass
01 (Peak)	2410.700	11.739	94.961	106.700	--	--	Pass
01 (Average)	2390.000	11.672	38.964	50.636	74.00	54.00	Pass
01 (Average)	2400.000	11.703	50.566	62.268	--	--	Pass
01 (Average)	2409.300	11.734	86.017	97.751	--	--	Pass

Figure Channel 01: Horizontal (Peak)

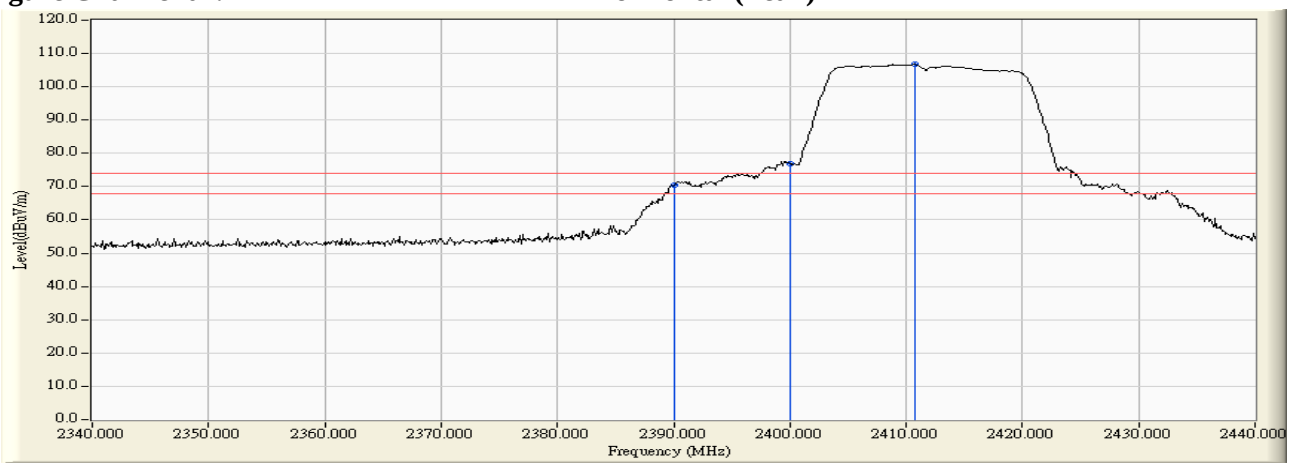
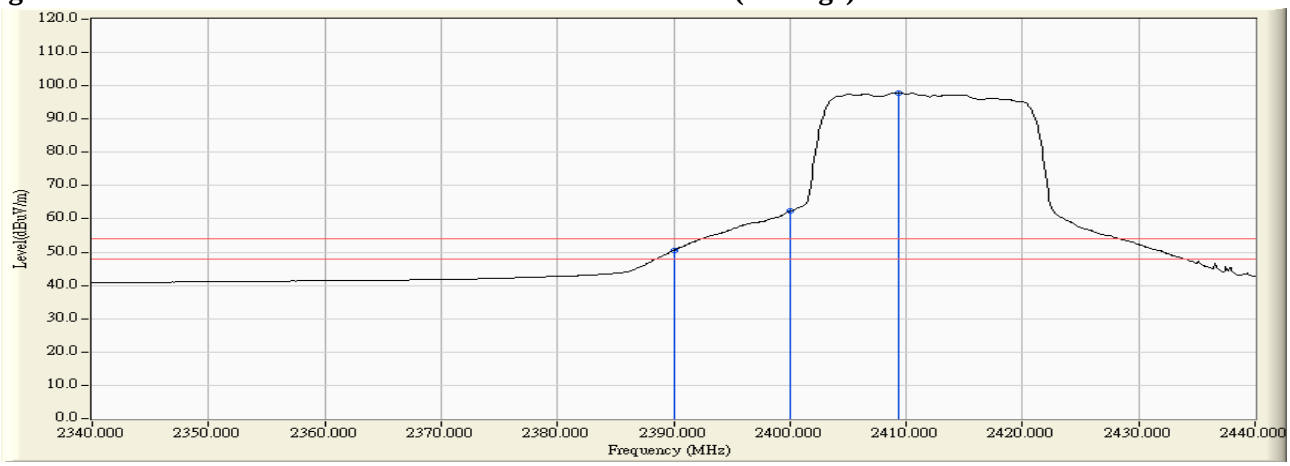


Figure Channel 01: Horizontal (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

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)	2390.000	11.672	55.055	66.727	74.00	54.00	Pass
01 (Peak)	2400.000	11.703	60.867	72.569	--	--	Pass
01 (Peak)	2410.800	11.740	91.457	103.196	--	--	Pass
01 (Average)	2390.000	11.672	35.606	47.278	74.00	54.00	Pass
01 (Average)	2400.000	11.703	46.484	58.186	--	--	Pass
01 (Average)	2414.500	11.748	82.418	94.166	--	--	Pass

Figure Channel 01: Vertical (Peak)

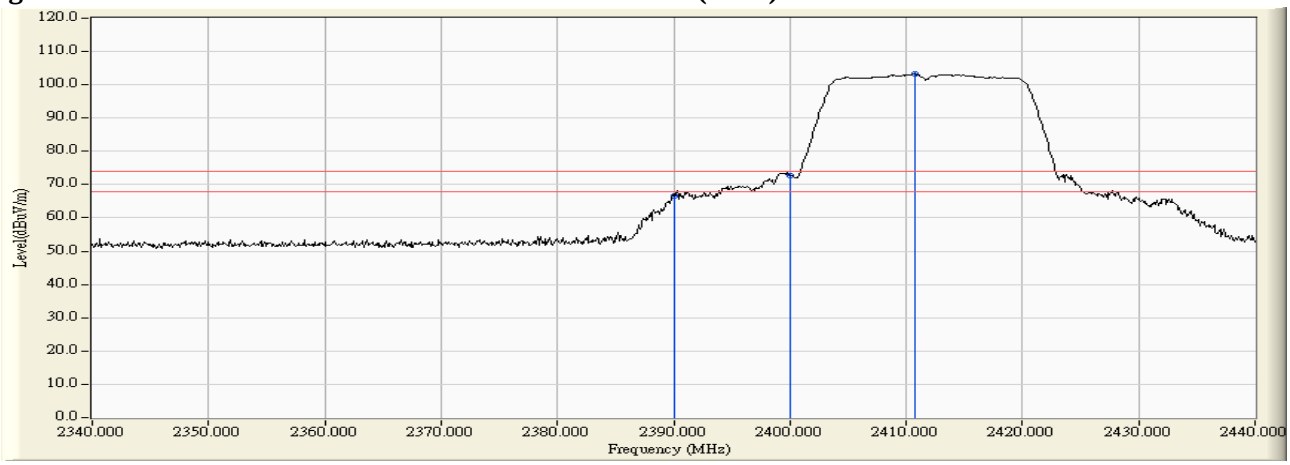
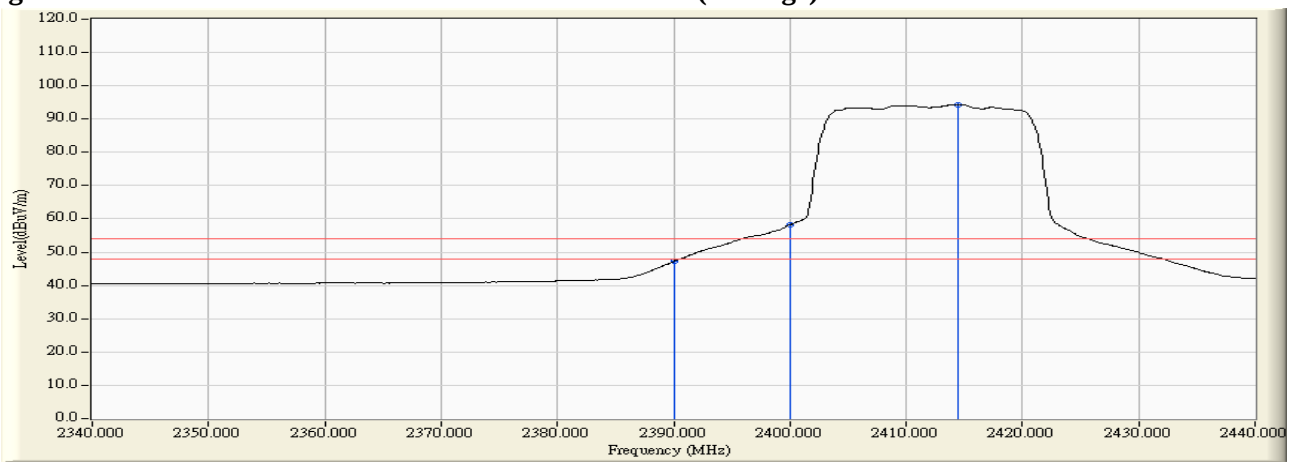


Figure Channel 01: Vertical (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

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)	2460.700	11.779	93.775	105.554	--	--	Pass
11 (Peak)	2483.500	12.049	54.929	66.978	74.00	54.00	Pass
11 (Peak)	2483.700	12.051	55.746	67.797	74.00	54.00	Pass
11 (Average)	2463.700	11.822	84.595	96.417	--	--	Pass
11 (Average)	2483.500	12.049	37.495	49.544	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

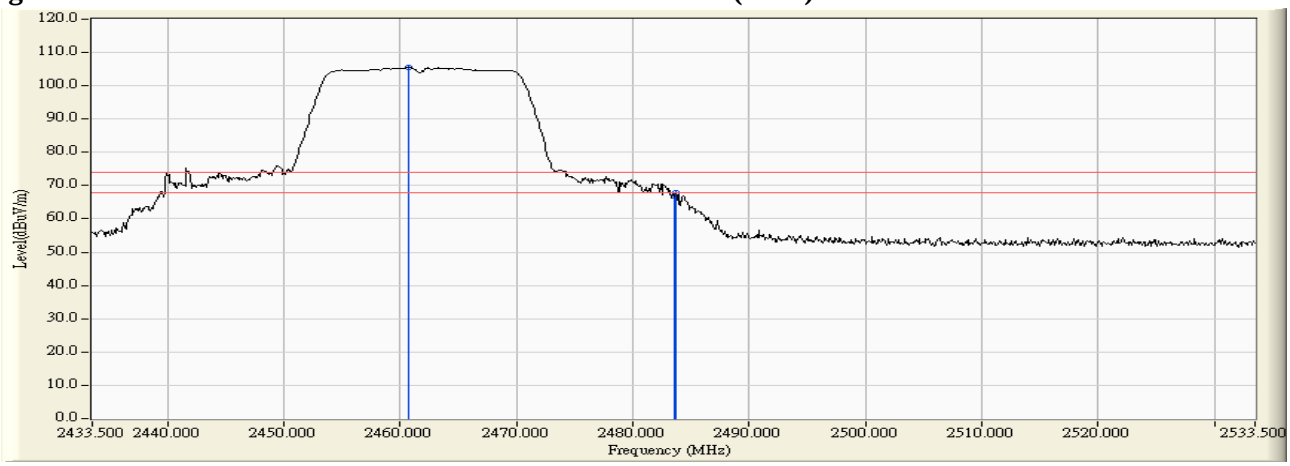
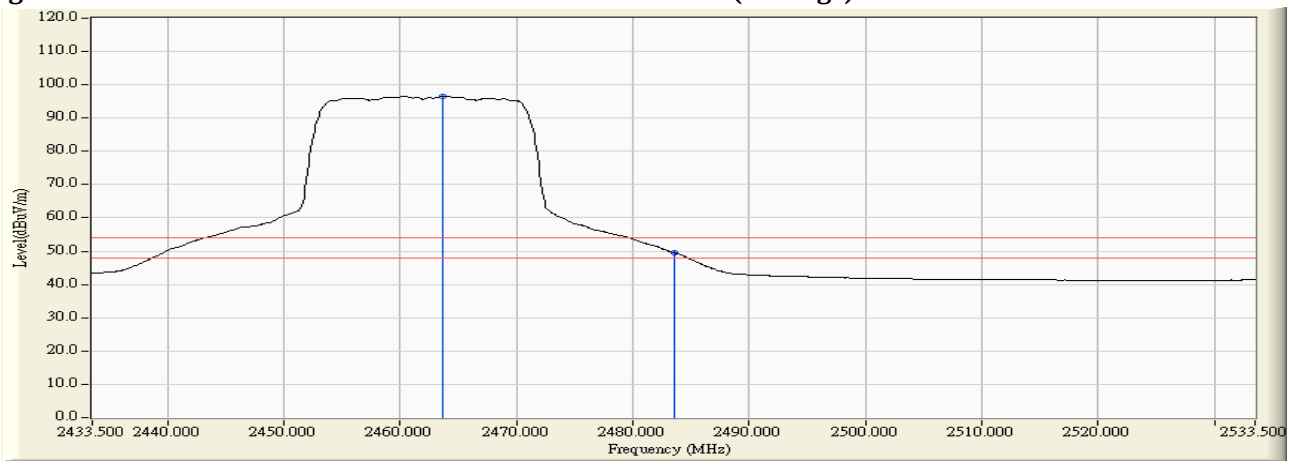


Figure Channel 11: Horizontal (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

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)	2469.100	11.900	91.653	103.554	--	--	Pass
11 (Peak)	2483.500	12.049	54.108	66.157	74.00	54.00	Pass
11 (Peak)	2484.300	12.055	54.708	66.764	74.00	54.00	Pass
11 (Average)	2468.900	11.898	82.700	94.598	--	--	Pass
11 (Average)	2483.500	12.049	37.099	49.148	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

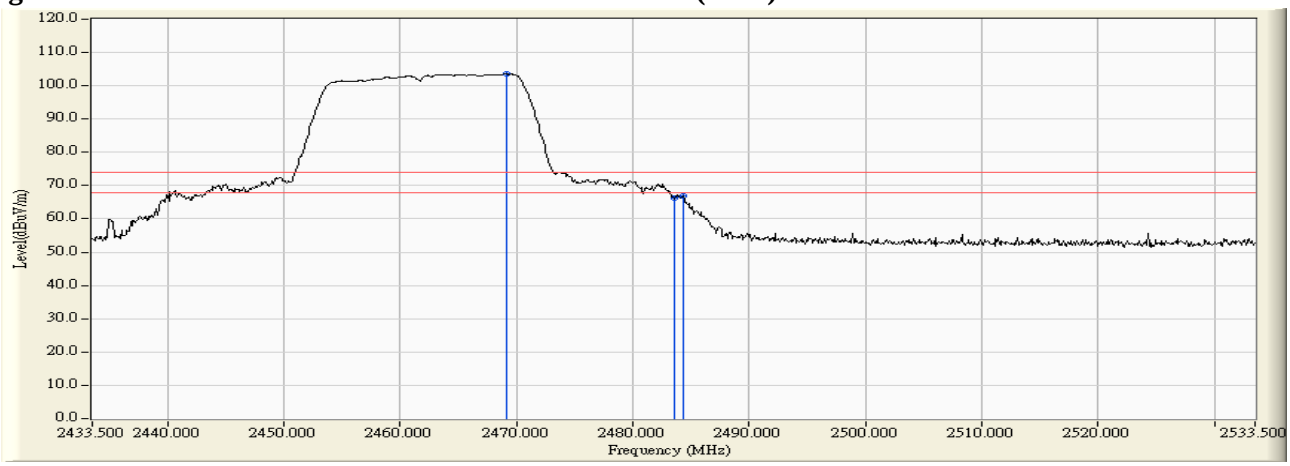
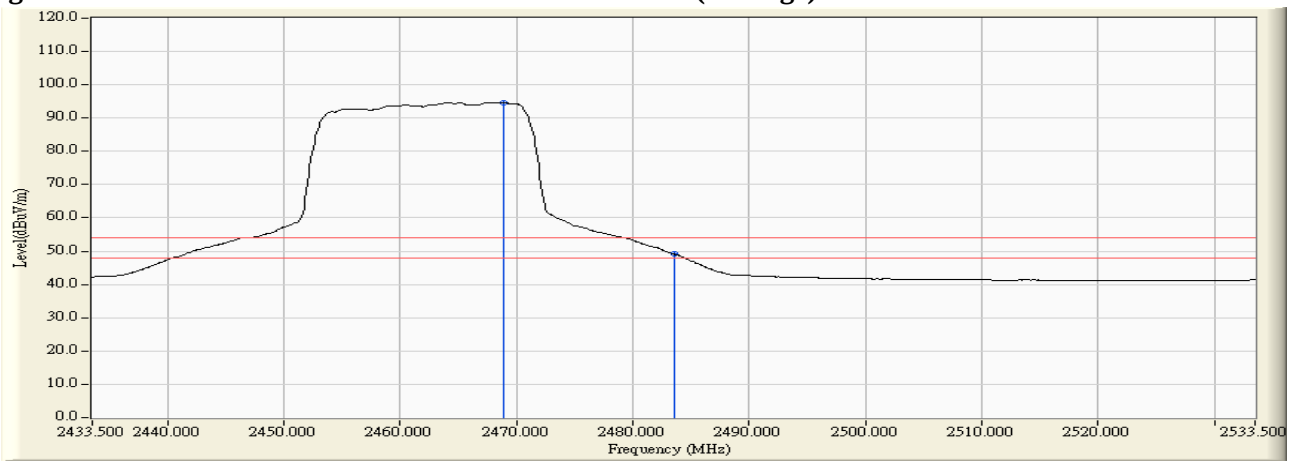


Figure Channel 11: Vertical (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) –2422MHz

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)	2388.500	11.669	56.203	67.871	74.00	54.00	Pass
01 (Peak)	2390.000	11.672	52.641	64.313	74.00	54.00	Pass
01 (Peak)	2400.000	11.703	58.712	70.414	--	--	Pass
01 (Peak)	2419.700	11.760	90.916	102.676	--	--	Pass
01 (Average)	2390.000	11.672	42.004	53.676	74.00	54.00	Pass
01 (Average)	2400.000	11.703	47.323	59.025	--	--	Pass
01 (Average)	2416.500	11.752	81.463	93.216	--	--	Pass

Figure Channel 01: Horizontal (Peak)

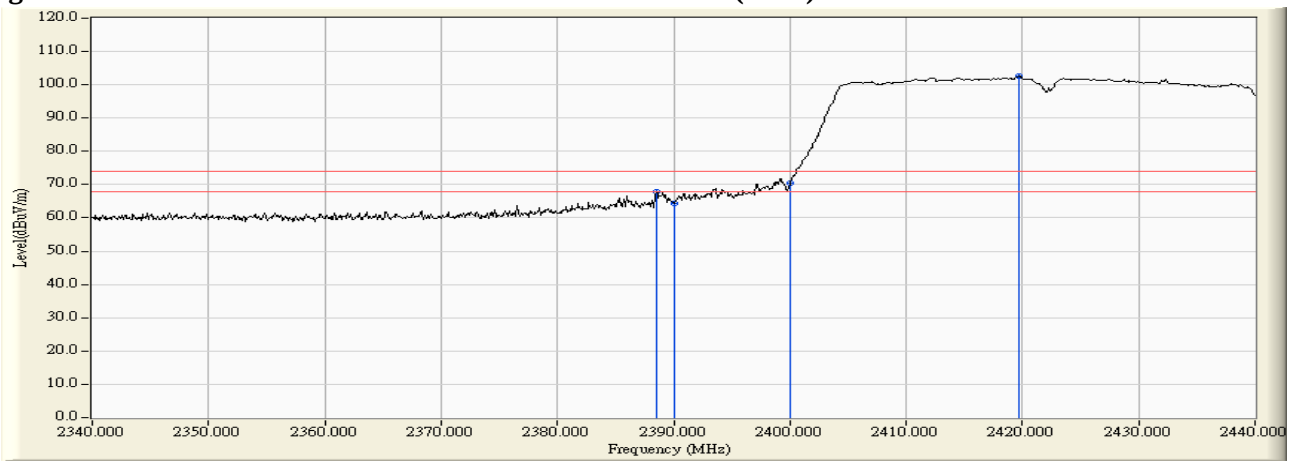
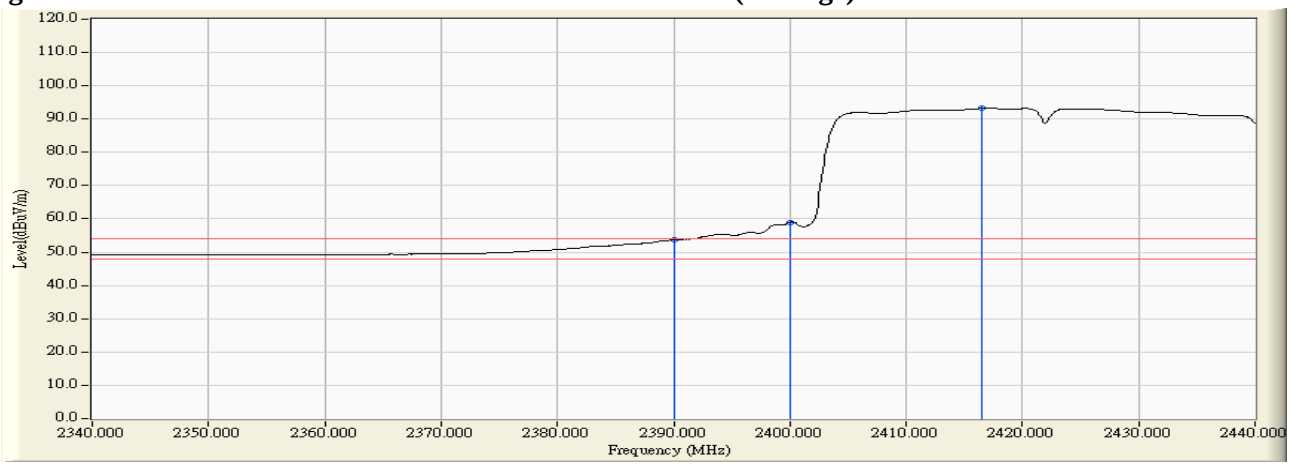


Figure Channel 01: Horizontal (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) –2422MHz

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)	2390.000	11.672	52.187	63.859	74.00	54.00	Pass
01 (Peak)	2400.000	11.703	53.118	64.820	--	--	Pass
01 (Peak)	2419.800	11.760	84.725	96.485	--	--	Pass
01 (Average)	2390.000	11.672	38.730	50.402	74.00	54.00	Pass
01 (Average)	2400.000	11.703	41.592	53.294	--	--	Pass
01 (Average)	2417.300	11.754	75.148	86.902	--	--	Pass

Figure Channel 01: Vertical (Peak)

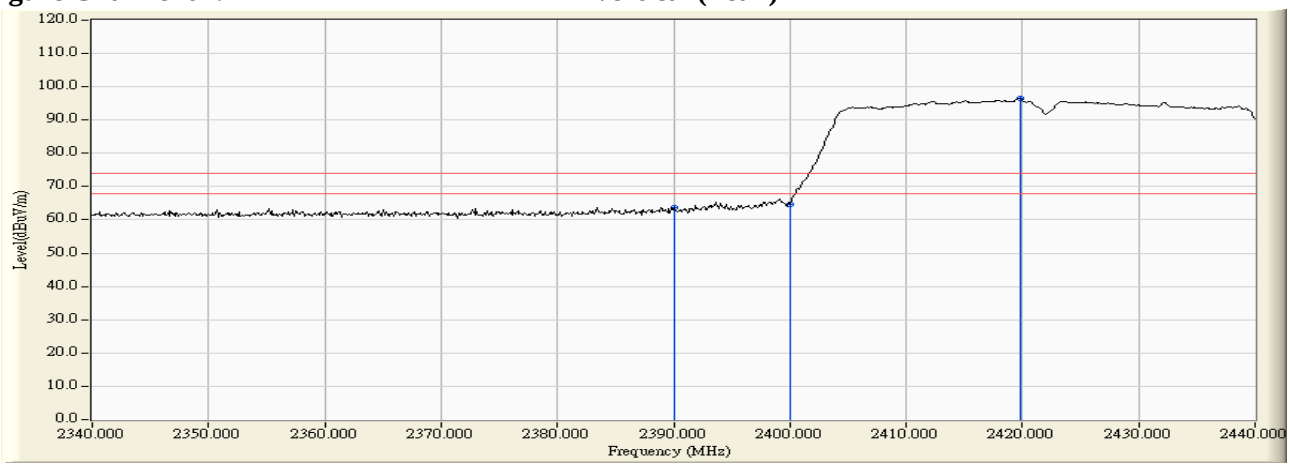
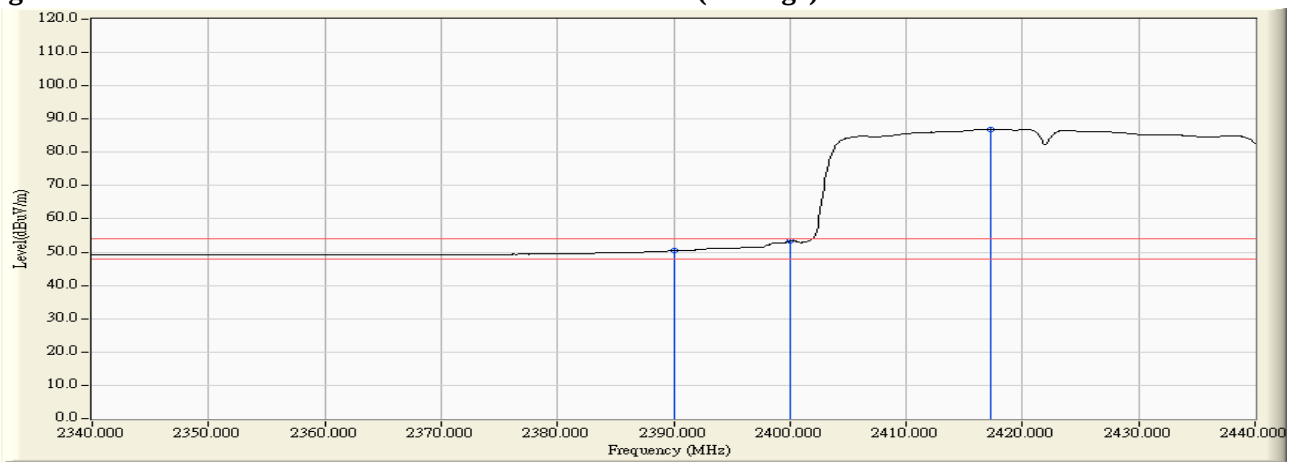


Figure Channel 01: Vertical (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) –2452MHz

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)	2449.600	11.811	90.590	102.401	--	--	Pass
07 (Peak)	2483.500	12.049	52.656	64.705	74.00	54.00	Pass
07 (Peak)	2487.600	12.081	54.258	66.339	74.00	54.00	Pass
07 (Average)	2447.600	11.844	81.183	93.026	--	--	Pass
07 (Average)	2483.500	12.049	40.300	52.349	74.00	54.00	Pass

Figure Channel 07: Horizontal (Peak)

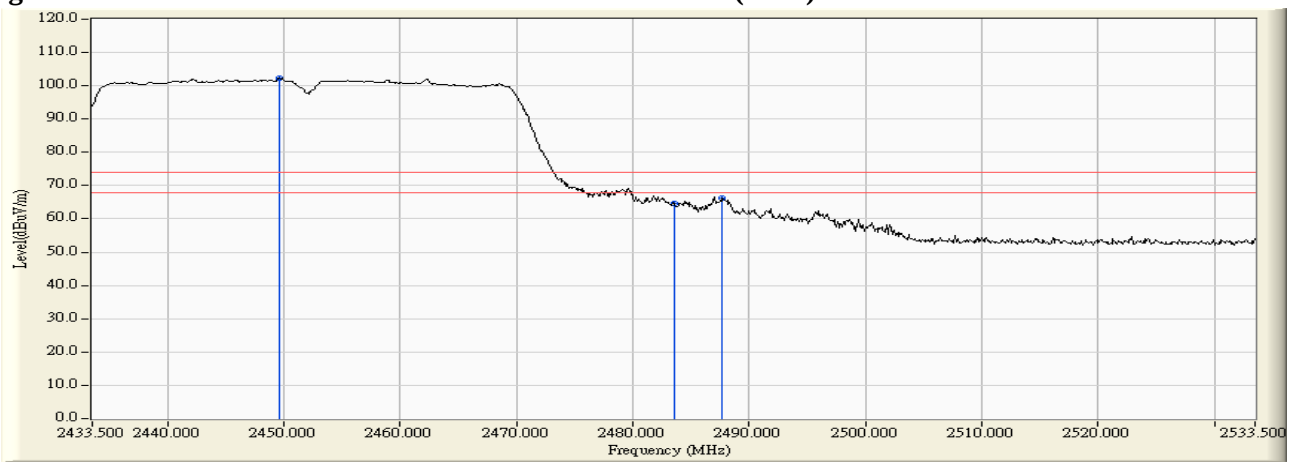
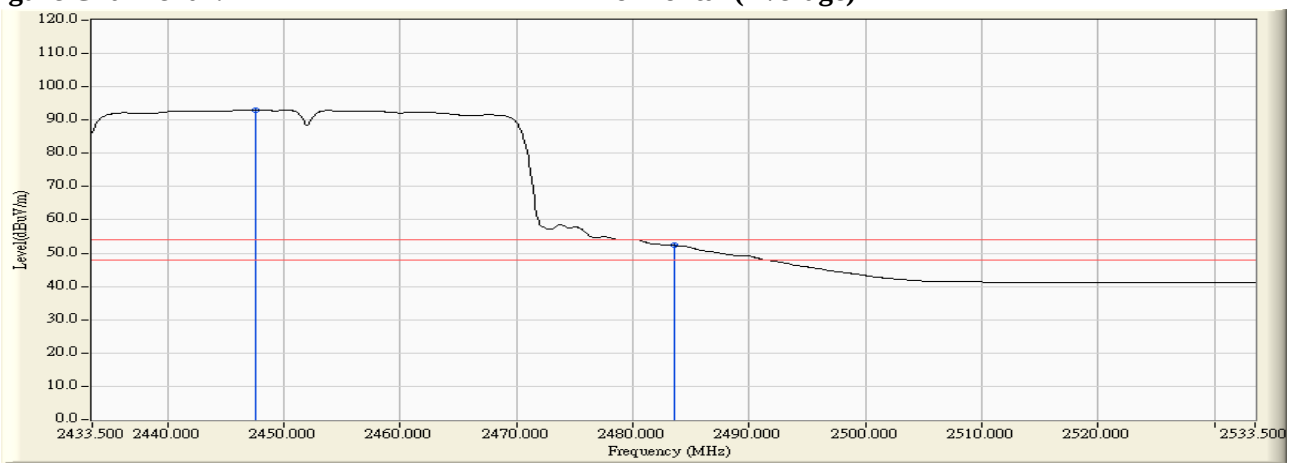


Figure Channel 07: Horizontal (Average)



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 : 802.11b/g/n 1T1R Combo Card
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) –2452MHz

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)	2449.800	11.808	88.584	100.392	--	--	Pass
07 (Peak)	2483.500	12.049	49.409	61.458	74.00	54.00	Pass
07 (Peak)	2487.200	12.079	50.948	63.026	74.00	54.00	Pass
07 (Average)	2450.300	11.800	79.157	90.957	--	--	Pass
07 (Average)	2483.500	12.049	37.867	49.916	74.00	54.00	Pass

Figure Channel 07: Vertical (Peak)

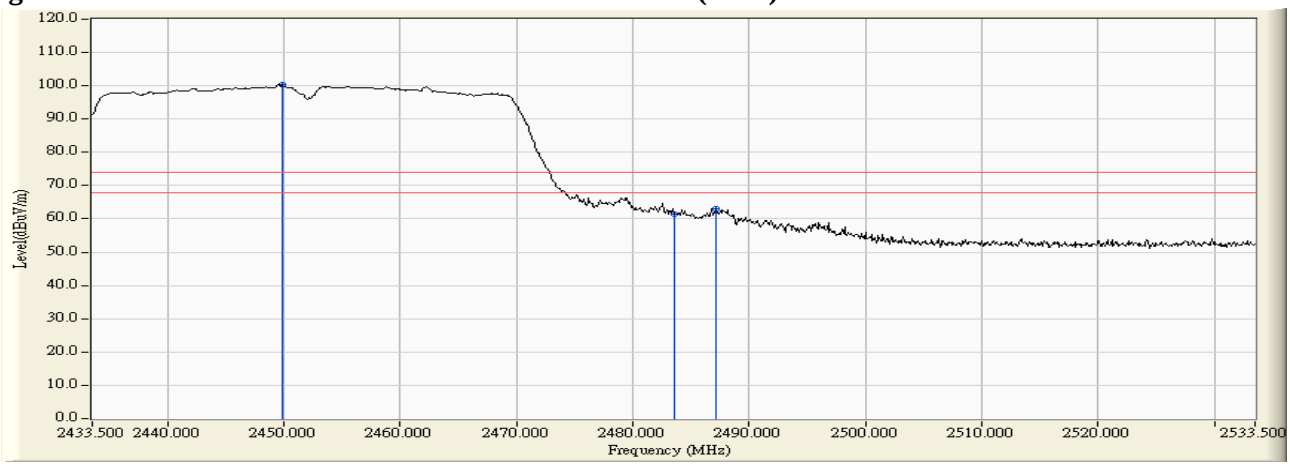
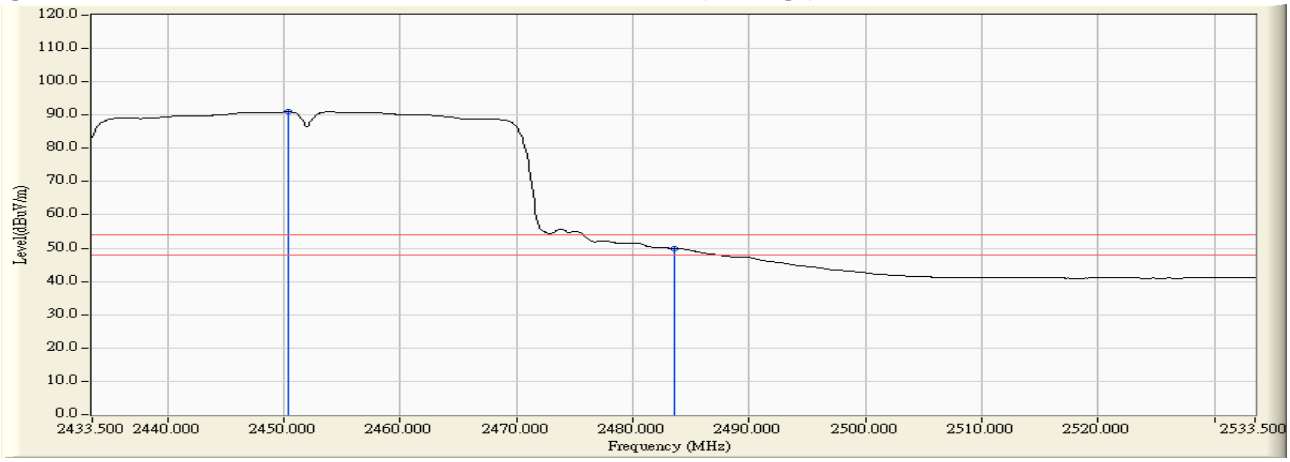


Figure Channel 01: Vertical (Average)



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.

5. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs