

FCC Test Report (Class II Permissive Change)

Product Name	802.11b/g/n RTL8192EE Combo module
Model No	RTL8192EEBT
FCC ID.	TX2RTL8192EEBT

Applicant	Realtek Semiconductor Corp.
Address	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

Date of Receipt	Sep. 26, 2015
Issue Date	Dec. 29, 2015
Report No.	15A0002R-RFUSP02V00-B
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

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Test Report

Issue Date: Dec. 29, 2015

Report No.: 15A0002R-RFUSP02V00-B



Product Name	802.11b/g/n RTL8192EE Combo module
Applicant	Realtek Semiconductor Corp.
Address	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan
Manufacturer	Realtek Semiconductor Corp.
Model No.	RTL8192EEBT
EUT Rated Voltage	DC 3.3V (via Mini-PCI Express slot)
EUT Test Voltage	AC 120V/60Hz
Trade Name	REALTEK
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2013 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 DTS Meas Guidance v03r03
Test Result	Complied

Documented By :

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Tested By :

Nova chu

(Engineer /Nova Chu)

Approved By :

Vincent Lin

(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	802.11b/g/n RTL8192EE Combo module
Trade Name	REALTEK
Model No.	RTL8192EEBT
FCC ID.	TX2RTL8192EEBT
Frequency Range	802.11b/g/n-20MHz:2412-2462MHz,802.11n-40MHz:2422-2452MHz
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11a/g: 6-54Mbps, 802.11n: up to 300Mbps
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
Power Adapter	MFR: ASUS (PI), M/N: AD883J20 Input: AC 100-240V, 50/60Hz, 1.0A Output: DC 19V, 2.37A Cable out: Non-Shielded, 2.25m.
Test Platform.	Brand Name: ASUS, M/N: TP501U, J501U, R518U

Antenna List

No.	Manufacturer	Part No.	Antenna type	Peak Gain
1	INPAQ	WA-P-LB-02-300 (Main) WA-P-LB-01-141 (Aux)	PIFA Antenna	-0.13dBi for 2.4GHz
2	Luxshare	LA05RF873-2H (Main) LA05RF873-1H (Aux)	PIFA Antenna	-0.16dBi for 2.4GHz

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

2. Only the higher gain antenna was tested and recorded in this report.

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 (2.4G Band) Center Working 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 an 802.11b/g/n RTL8192EE Combo module with a built-in WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
4. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report.
5. 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.
6. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
7. This is to request a Class II permissive change for FCC ID: TX2RTL8192EEBT, originally granted on 5/19/2015.

The major change filed under this application is:

Change #1: Additional Chassis added, ASUSTeK, model number : TP501U, J501U, R518U
notebook/tablet.

All models are listed as below

Brand	Model	Difference
ASUS	TP501U (Main test model)	All models are electrically identical, different model names are for marketing purpose.
	J501U	
	R518U	

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

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

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n-20BW_14.4Mbps)
	Mode 4: Transmit (802.11n-40BW_30Mbps)

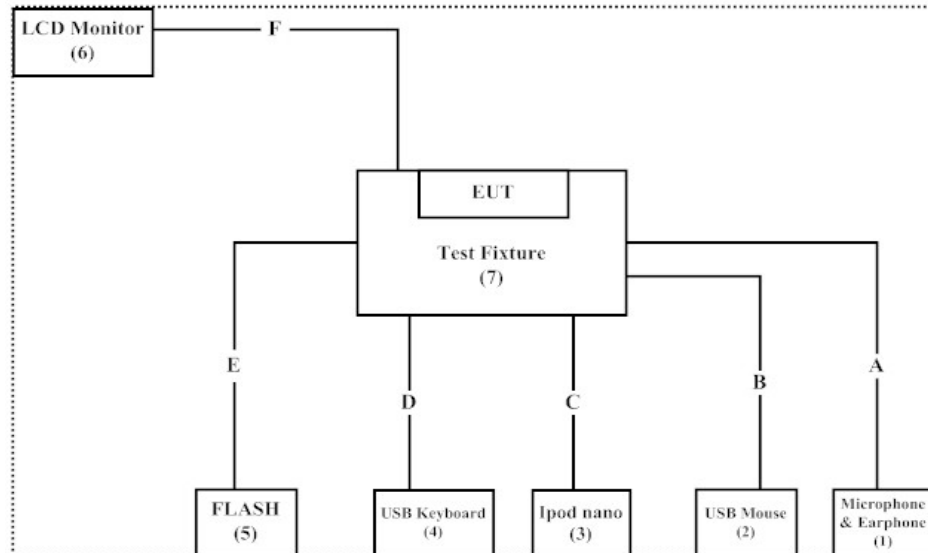
1.3. Tested System Details

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 Microphone & Earphone	PCHOME	N/A	N/A	N/A
2 USB Mouse	Logitech	M-BE58	HCA30103100	N/A
3 Ipod nano	Apple	A1199	YM706LSCVQ5	N/A
4 USB Keyboard	DELL	SK-8115	MY-0DJ325-71619-6 A3-1912	N/A
5 FLASH	Transcend	JetFlash110	155422-2931	N/A
6 LCD Monitor	ASUS	VS229HA	F4LMQS135395	Non-Shielded, 1.8m
7 Test Fixture	ASUS	N/A	N/A	N/A

Signal Cable Type	Signal cable Description
A Microphone & Earphone Cable	Non-Shielded, 2 m
B USB Cable	Non-Shielded, 1.8 m
C USB Cable	Non-Shielded, 1.2 m
D USB Cable	Non-Shielded, 1.8 m
E USB Cable	Non-Shielded, 2 m
F HDMI Cable	Non-Shielded, 1.8 m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

- (1) Setup the EUT as shown on 1.4
- (2) Execute "REALTEK v0.0026.16.20140701" program on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) 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

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/chinese/about/certificates.aspx?bval=5>

The address and introduction of Quietek Corporation's laboratories can be founded in our Web site:

<http://www.quietek.com/>

Site Description: 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. Maximum Conducted Power

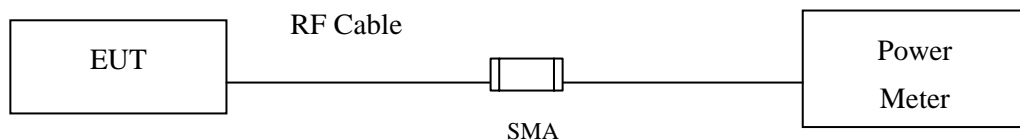
2.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2015
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2015
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2015
	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2015

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 average power shall be less 1 Watt. (Section 15.247 (b)(3))

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 D01 DTS Meas Guidance v03r02 section 9.1.2 PKPM1 Peak power meter method.

2.5. Uncertainty

± 1.27 dB

2.6. Test Result of Maximum Conducted Power

Product : 802.11b/g/n RTL8192EE Combo module
 Test Item : Maximum Conducted Power
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

for 1TX

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Average Power	Required Limit	Result
		1	2	5.5	11	1		
		Measurement Level (dBm)						
01	2412	12.89	--	--	--	12.89	<30dBm	Pass
06	2437	12.69	12.62	12.53	12.45	12.69	<30dBm	Pass
11	2462	12.44	--	--	--	12.44	<30dBm	Pass

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

Product : 802.11b/g/n RTL8192EE Combo module
 Test Item : Maximum Conducted Power
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

for 1TX

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Average Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	13	--	--	--	--	--	--	--	13	<30dBm	Pass
06	2437	12.93	12.86	12.79	12.71	12.63	12.55	12.47	12.39	12.93	<30dBm	Pass
11	2462	12.68	--	--	--	--	--	--	--	12.68	<30dBm	Pass

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

Product : 802.11b/g/n RTL8192EE Combo module
 Test Item : Maximum Conducted Power
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-20BW_14.4Mbps)

for 1TX

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Average Power	Required Limit	Result
		HT0	HT1	HT2	HT3	HT4	HT5	HT6	HT7	HT0		
		Measurement Level (dBm)										
01	2412	13	--	--	--	--	--	--	--	13	<30dBm	Pass
06	2437	12.91	12.83	12.75	12.69	12.62	12.55	12.47	12.39	12.91	<30dBm	Pass
11	2462	12.65	--	--	--	--	--	--	--	12.65	<30dBm	Pass

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

Product : 802.11b/g/n RTL8192EE Combo module
 Test Item : Maximum Conducted Power
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11n-40BW_30Mbps)

for 1TX

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Average Power	Required Limit	Result
		HT0	HT1	HT2	HT3	HT4	HT5	HT6	HT7	HT0		
		Measurement Level (dBm)										
3	2422	12.83	--	--	--	--	--	--	--	12.83	<30dBm	Pass
6	2437	12.69	12.60	12.53	12.44	12.36	12.28	12.21	12.13	12.69	<30dBm	Pass
9	2452	12.56	--	--	--	--	--	--	--	12.56	<30dBm	Pass

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

3. Radiated Emission

3.1. Test Equipment

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

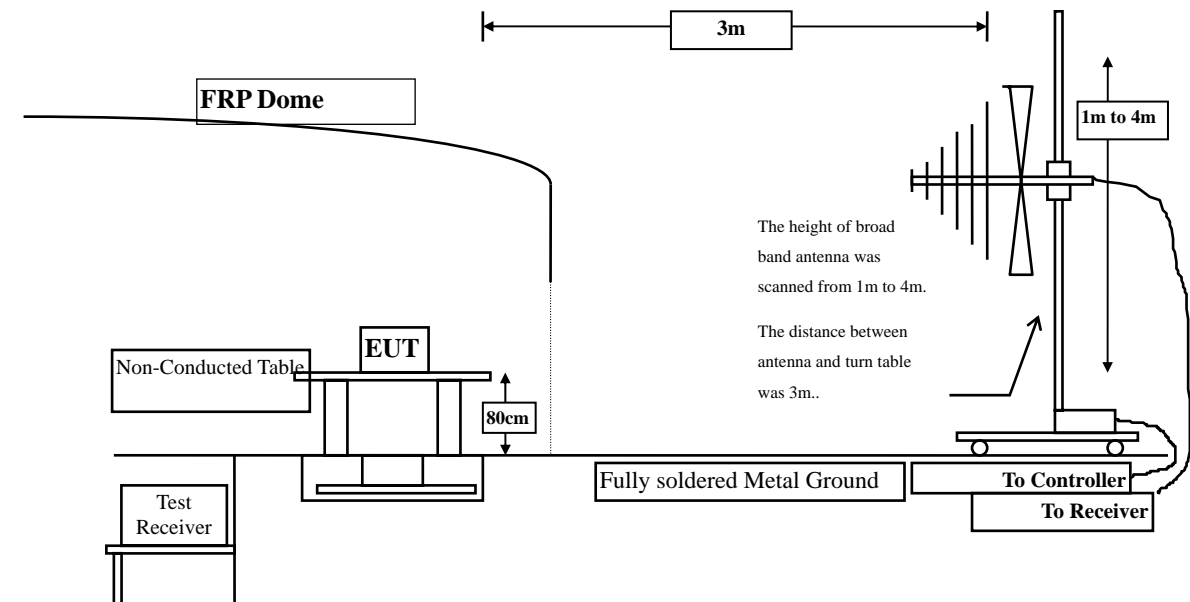
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input checked="" type="checkbox"/> Site # 3	X	Magnetic Loop Antenna	Teseq	HLA6121/ 37133	Sep, 2015
	X	Bilog Antenna	Schaffner Chase	CBL6112B/ 2707	Jun, 2015
	X	EMI Test Receiver	R&S	ESCS 30/838251/ 001	Jun, 2015
	X	Coaxial Cable	QTK(Arnist)	RG 214/ LC003-RG	Jun, 2015
	X	Coaxial signal switch	Arnist	MP59B/ 6200798682	Jun, 2015

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input checked="" type="checkbox"/> CB # 8	X	Spectrum Analyzer	R&S	FSP40/ 100339	Oct, 2015
	X	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar, 2015
	X	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan, 2015
	X	Horn Antenna	TRC	AH-0801/95051	Aug, 2015
	X	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan, 2015
	X	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul, 2015
	X	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul, 2015

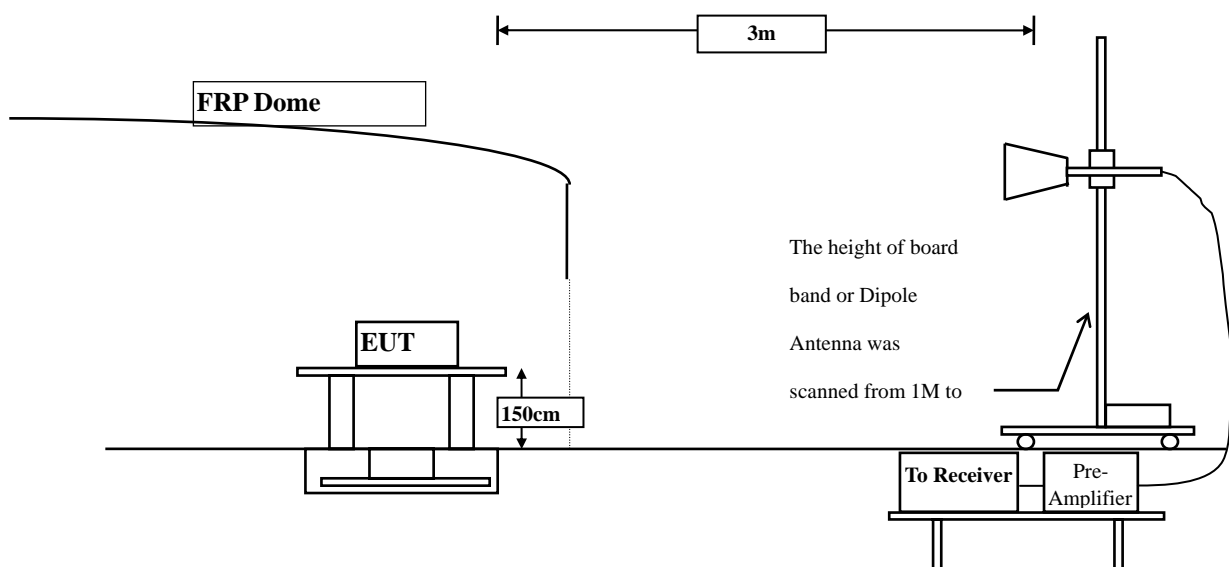
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with "X" are used to measure the final test results.

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 30dB 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 (dBuV/m) = 20 log E field strength (uV/m)

3.4. Test Procedure

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 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: 2013 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 measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

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 RTL8192EE Combo module
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4824.000	6.347	42.950	49.298	-24.702	74.000
7236.000	10.324	41.990	52.314	-21.686	74.000
9648.000	13.334	36.120	49.454	-24.546	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	6.347	46.320	52.668	-21.332	74.000
7236.000	10.324	39.210	49.534	-24.466	74.000
9648.000	13.334	39.550	52.884	-21.116	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	5.997	43.100	49.096	-24.904	74.000
7311.000	10.727	38.640	49.367	-24.633	74.000
9748.000	13.342	38.530	51.872	-22.128	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.997	46.570	52.566	-21.434	74.000
7311.000	10.727	38.670	49.397	-24.603	74.000
9748.000	13.342	38.240	51.582	-22.418	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	6.404	41.740	48.144	-25.856	74.000
7386.000	10.613	38.280	48.893	-25.107	74.000
9848.000	13.573	37.580	51.153	-22.847	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	6.404	46.820	53.224	-20.776	74.000
7386.000	10.613	39.620	50.233	-23.767	74.000
9848.000	13.573	39.110	52.683	-21.317	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

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

Horizontal

Peak Detector:

4824.000	6.347	40.280	46.628	-27.372	74.000
7236.000	10.324	37.990	48.314	-25.686	74.000
9648.000	13.334	37.260	50.594	-23.406	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	6.347	46.710	53.058	-20.942	74.000
7236.000	10.324	37.970	48.294	-25.706	74.000
9648.000	13.334	39.280	52.614	-21.386	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	5.997	42.570	48.566	-25.434	74.000
7311.000	10.727	39.240	49.967	-24.033	74.000
9748.000	13.342	38.260	51.602	-22.398	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.997	45.100	51.096	-22.904	74.000
7311.000	10.727	37.950	48.677	-25.323	74.000
9748.000	13.342	39.280	52.622	-21.378	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	6.404	41.650	48.054	-25.946	74.000
7386.000	10.613	39.520	50.133	-23.867	74.000
9848.000	13.573	38.620	52.193	-21.807	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	6.404	46.820	53.224	-20.776	74.000
7386.000	10.613	39.460	50.073	-23.927	74.000
9848.000	13.573	39.260	52.833	-21.167	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-20BW_14.4Mbps) (2412MHz)

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

Horizontal

Peak Detector:

4824.000	6.347	41.250	47.598	-26.402	74.000
7236.000	10.324	40.120	50.444	-23.556	74.000
9648.000	13.334	40.220	53.554	-20.446	74.000

Average

Detector:

--

Vertical

Peak Detector:

4824.000	6.347	45.000	51.348	-22.652	74.000
7236.000	10.324	39.260	49.584	-24.416	74.000
9648.000	13.334	39.570	52.904	-21.096	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-20BW_14.4Mbps) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	5.997	42.330	48.326	-25.674	74.000
7311.000	10.727	39.620	50.347	-23.653	74.000
9748.000	13.342	39.550	52.892	-21.108	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.997	44.870	50.866	-23.134	74.000
7311.000	10.727	38.620	49.347	-24.653	74.000
9748.000	13.342	40.080	53.422	-20.578	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-20BW_14.4Mbps) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4924.000	6.347	41.970	48.318	-25.682	74.000
7386.000	10.613	39.580	50.193	-23.807	74.000
9848.000	13.573	38.380	51.953	-22.047	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	6.404	45.740	52.144	-21.856	74.000
7386.000	10.613	41.270	51.883	-22.117	74.000
9848.000	13.573	38.260	51.833	-22.167	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n-40BW_30Mbps) (2422MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4844.000	6.135	41.250	47.386	-26.614	74.000
7266.000	10.405	39.310	49.714	-24.286	74.000
9688.000	13.292	38.620	51.911	-22.089	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4844.000	6.135	42.950	49.086	-24.914	74.000
7266.000	10.405	41.230	51.634	-22.366	74.000
9688.000	13.292	39.820	53.111	-20.889	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n-40BW_30Mbps) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
Peak Detector:					
4874.000	5.997	41.280	47.276	-26.724	74.000
7311.000	10.727	39.470	50.197	-23.803	74.000
9748.000	13.342	39.710	53.052	-20.948	74.000
Average					
Detector:					
--					
Vertical					
Peak Detector:					
4874.000	5.997	43.860	49.856	-24.144	74.000
7311.000	10.727	39.540	50.267	-23.733	74.000
9748.000	13.342	40.360	53.702	-20.298	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 RTL8192EE Combo module
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n-40BW_30Mbps) (2452 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
Peak Detector:					
4904.000	6.379	40.260	46.639	-27.361	74.000
7356.000	10.078	39.140	49.217	-24.783	74.000
9808.000	13.444	37.980	51.424	-22.576	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4904.000	6.379	41.250	47.629	-26.371	74.000
7356.000	10.078	39.240	49.317	-24.683	74.000
9808.000	13.444	39.640	53.084	-20.916	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 RTL8192EE Combo module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
212.360	-10.540	41.121	30.581	-12.919	43.500
342.340	-2.710	37.554	34.844	-11.156	46.000
505.300	1.940	35.026	36.966	-9.034	46.000
652.740	1.744	35.741	37.485	-8.515	46.000
782.720	5.154	33.165	38.319	-7.681	46.000
939.860	6.530	25.057	31.587	-14.413	46.000
Vertical					
216.240	-6.206	40.113	33.907	-12.093	46.000
359.800	-1.440	39.240	37.801	-8.199	46.000
518.880	0.570	37.908	38.478	-7.522	46.000
681.840	1.455	36.060	37.515	-8.485	46.000
815.700	2.665	35.143	37.808	-8.192	46.000
967.020	3.695	29.320	33.015	-20.985	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 RTL8192EE Combo module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
212.360	-10.540	42.367	31.827	-11.673	43.500
357.860	-0.846	37.792	36.946	-9.054	46.000
483.960	1.288	36.717	38.005	-7.995	46.000
602.300	3.560	34.612	38.172	-7.828	46.000
734.220	2.961	33.541	36.502	-9.498	46.000
901.060	5.603	26.888	32.491	-13.509	46.000
Vertical					
198.780	-5.880	38.182	32.302	-11.198	43.500
293.840	-5.184	41.373	36.190	-9.810	46.000
468.440	-3.724	41.469	37.745	-8.255	46.000
631.400	-1.635	37.368	35.733	-10.267	46.000
778.840	2.351	35.875	38.226	-7.774	46.000
928.220	3.400	29.309	32.709	-13.291	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 RTL8192EE Combo module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-20BW_14.4Mbps) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
210.420	-10.586	42.678	32.093	-11.407	43.500
336.520	-3.556	40.709	37.153	-8.847	46.000
449.040	0.241	38.091	38.332	-7.668	46.000
608.120	3.700	35.647	39.347	-6.653	46.000
771.080	4.905	34.634	39.539	-6.461	46.000
937.920	6.527	26.473	33.000	-13.000	46.000
Vertical					
225.940	-6.410	38.321	31.911	-14.089	46.000
392.780	-1.290	36.653	35.363	-10.637	46.000
505.300	-0.130	38.002	37.872	-8.128	46.000
672.140	-0.720	38.652	37.932	-8.068	46.000
804.060	3.120	36.469	39.589	-6.411	46.000
937.920	2.887	30.763	33.650	-12.350	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 RTL8192EE Combo module
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n-40BW_30Mbps) (2437 MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBuV	dBuV/m	dB	dBuV/m
Horizontal					
214.300	-10.488	41.144	30.655	-12.845	43.500
359.800	-0.350	36.908	36.559	-9.441	46.000
524.700	2.950	34.813	37.763	-8.237	46.000
679.900	2.658	35.304	37.962	-8.038	46.000
821.520	6.845	30.944	37.789	-8.211	46.000
941.800	6.570	27.498	34.068	-11.932	46.000
Vertical					
200.720	-5.850	37.638	31.788	-11.712	43.500
299.660	-4.270	39.599	35.329	-10.671	46.000
462.620	-2.723	41.190	38.467	-7.533	46.000
606.180	2.020	36.584	38.604	-7.396	46.000
782.720	2.524	34.910	37.434	-8.566	46.000
943.740	3.170	29.335	32.505	-13.495	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.

4. Band Edge

4.1. Test Equipment

RF Conducted Measurement

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

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2015
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2015

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.

RF Radiated Measurement:

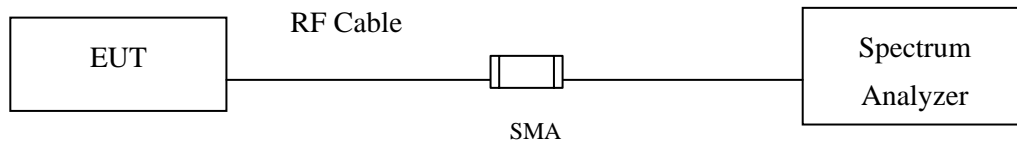
The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ CB # 8	X	Spectrum Analyzer	R&S	FSP40/ 100339	Oct, 2015
	X	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar, 2015
	X	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan, 2015
	X	Horn Antenna	TRC	AH-0801/95051	Aug, 2015
	X	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan, 2015
	X	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul, 2015
	X	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul, 2015

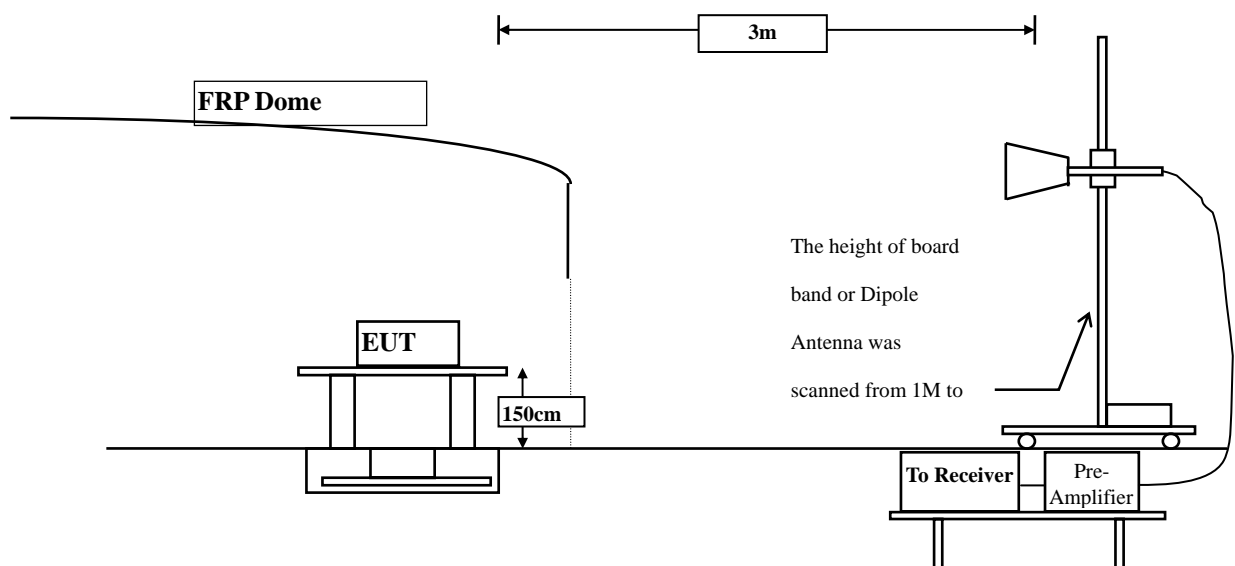
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with “X” are used to measure the final test results.

4.2. Test Setup

RF Conducted Measurement



RF Radiated Measurement:



4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 30dB 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, 2013 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 1.5 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 C63.10:2013 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 RTL8192EE Combo module
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)	2376.800	1.847	54.545	56.391	74.00	54.00	Pass
01 (Peak)	2390.000	1.818	54.350	56.167	74.00	54.00	Pass
01 (Peak)	2400.000	1.832	69.880	71.712	--	--	--
01 (Peak)	2412.000	1.964	105.315	107.279	--	--	--
01 (Average)	2386.400	1.811	41.542	43.353	74.00	54.00	Pass
01 (Average)	2390.000	1.818	41.482	43.299	74.00	54.00	Pass
01 (Average)	2400.000	1.832	64.581	66.413	--	--	--
01 (Average)	2411.200	1.953	102.059	104.012	--	--	--

Figure Channel 01: Horizontal (Peak)

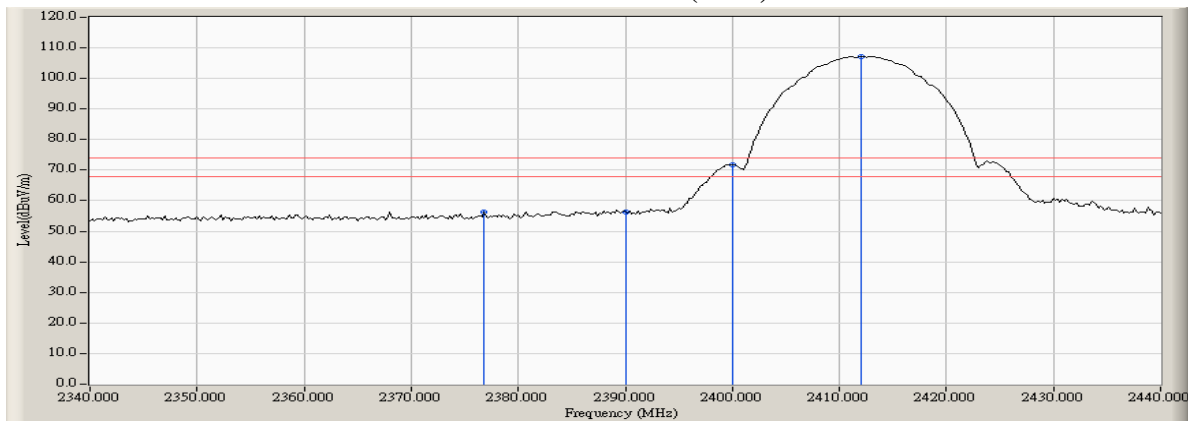
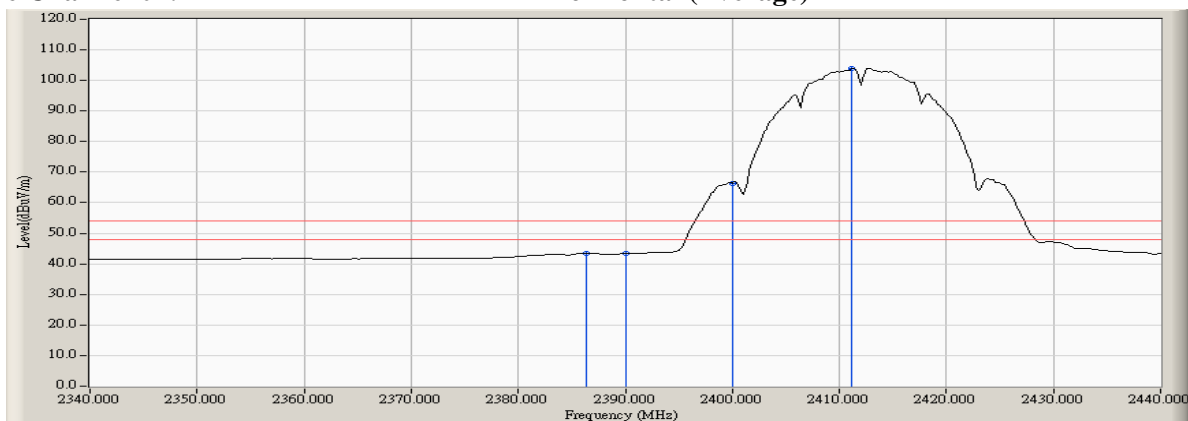


Figure Channel 01: Horizontal (Average)



- 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 RTL8192EE Combo module
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)	2385.800	1.810	55.540	57.350	74.00	54.00	Pass
01 (Peak)	2390.000	1.818	53.756	55.573	74.00	54.00	Pass
01 (Peak)	2400.000	1.832	71.103	72.935	--	--	--
01 (Peak)	2412.200	1.967	107.077	109.044	--	--	--
01 (Average)	2390.000	1.818	42.079	43.896	74.00	54.00	Pass
01 (Average)	2400.000	1.832	66.097	67.929	--	--	--
01 (Average)	2412.800	1.975	103.834	105.809	--	--	--

Figure Channel 01:

Vertical (Peak)

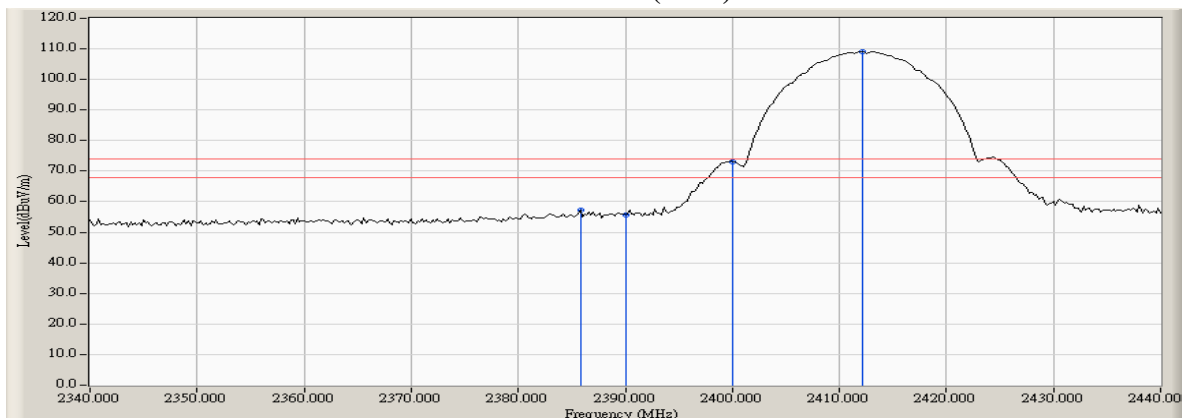
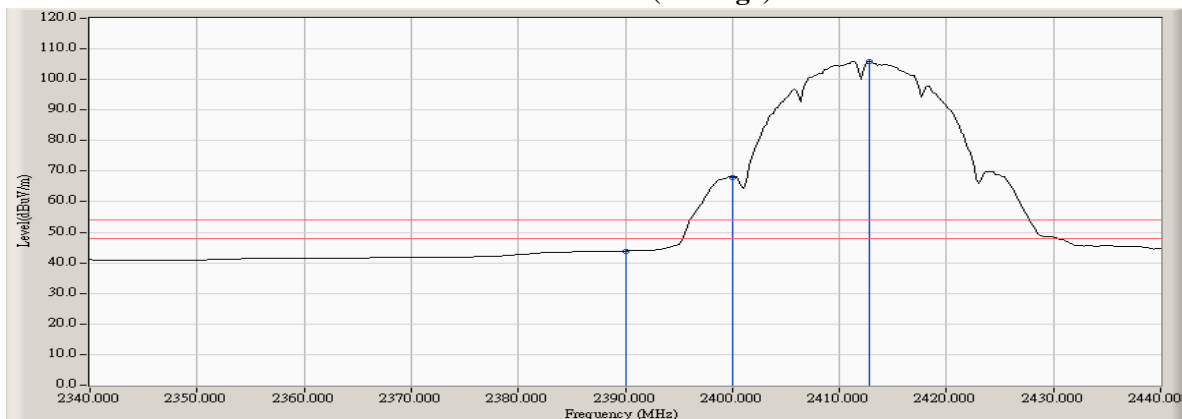


Figure Channel 01:

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 RTL8192EE Combo module
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)	2461.900	2.065	105.408	107.473	--	--	--
11 (Peak)	2483.500	2.393	54.828	57.220	74.00	54.00	Pass
11 (Average)	2462.700	2.077	102.159	104.236	--	--	--
11 (Average)	2483.500	2.393	41.831	44.223	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

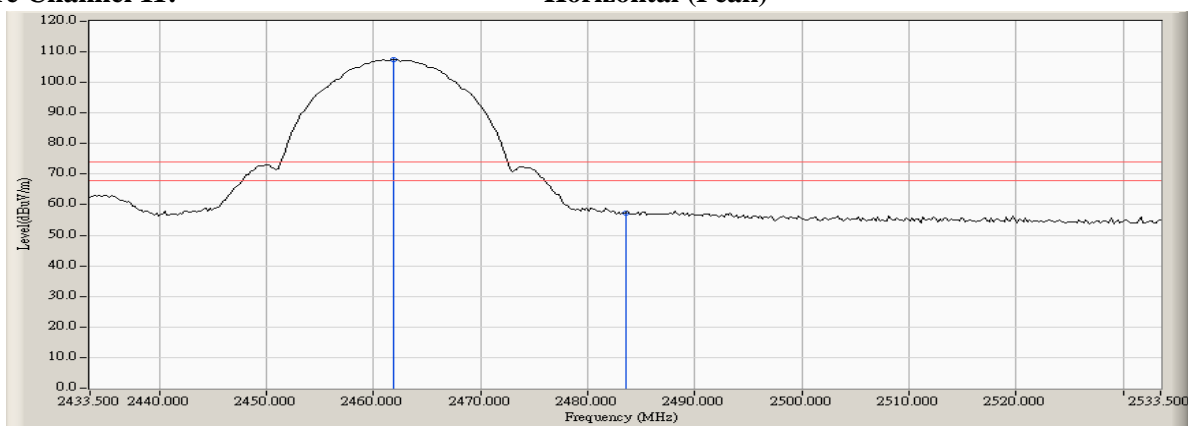
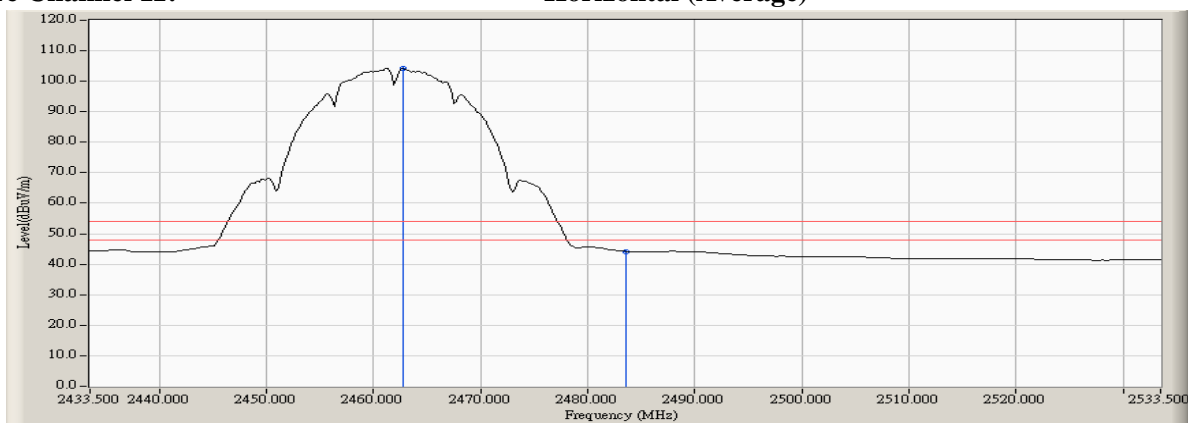


Figure Channel 11: Horizontal (Average)



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 RTL8192EE Combo module
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)	2462.100	2.068	106.427	108.495	--	--	--
11 (Peak)	2483.500	2.393	55.613	58.005	74.00	54.00	Pass
11 (Average)	2462.700	2.077	103.226	105.303	--	--	--
11 (Average)	2483.500	2.393	43.110	45.502	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

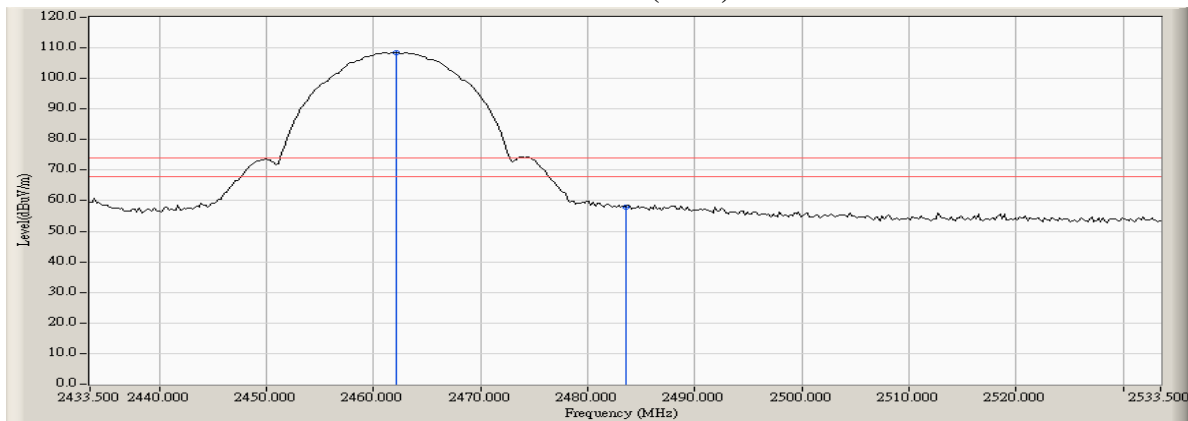
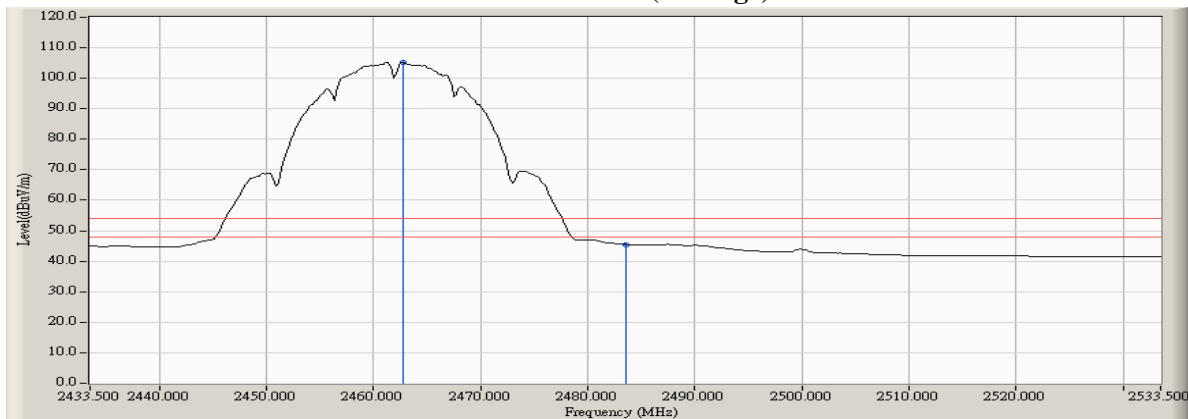


Figure Channel 11: Vertical (Average)



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 RTL8192EE Combo module
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)	2389.200	1.816	65.313	67.129	74.00	54.00	Pass
01 (Peak)	2390.000	1.818	63.935	65.752	74.00	54.00	Pass
01 (Peak)	2400.000	1.832	82.144	83.976	--	--	--
01 (Peak)	2418.400	2.051	106.208	108.259	--	--	--
01(Average)	2390.000	1.818	46.849	48.666	74.00	54.00	Pass
01(Average)	2400.000	1.832	57.235	59.067	--	--	--
01(Average)	2414.200	1.994	96.993	98.987	--	--	--

Figure Channel 01: Horizontal (Peak)

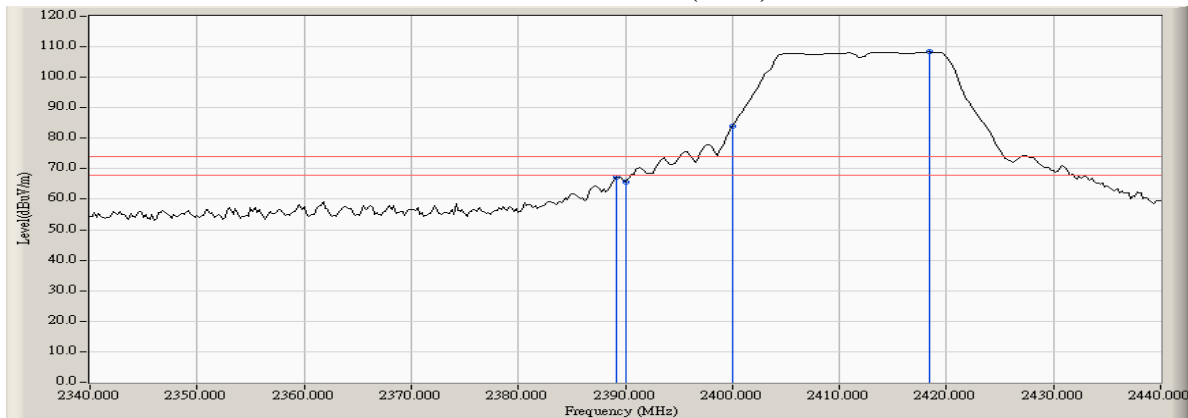
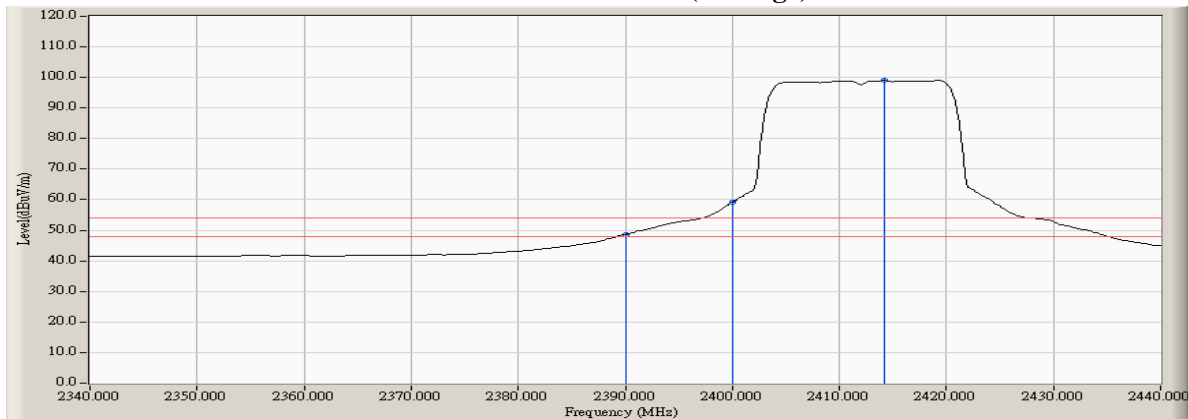


Figure Channel 01: Horizontal (Average)



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 RTL8192EE Combo module
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	1.818	66.968	68.785	74.00	54.00	Pass
01 (Peak)	2400.000	1.832	83.688	85.520	--	--	--
01 (Peak)	2418.400	2.051	108.322	110.373	--	--	--
01 (Average)	2390.000	1.818	48.952	50.769	74.00	54.00	Pass
01 (Average)	2400.000	1.832	60.381	62.213	--	--	--
01 (Average)	2419.000	2.060	98.973	101.033	--	--	--

Figure Channel 01: Vertical (Peak)

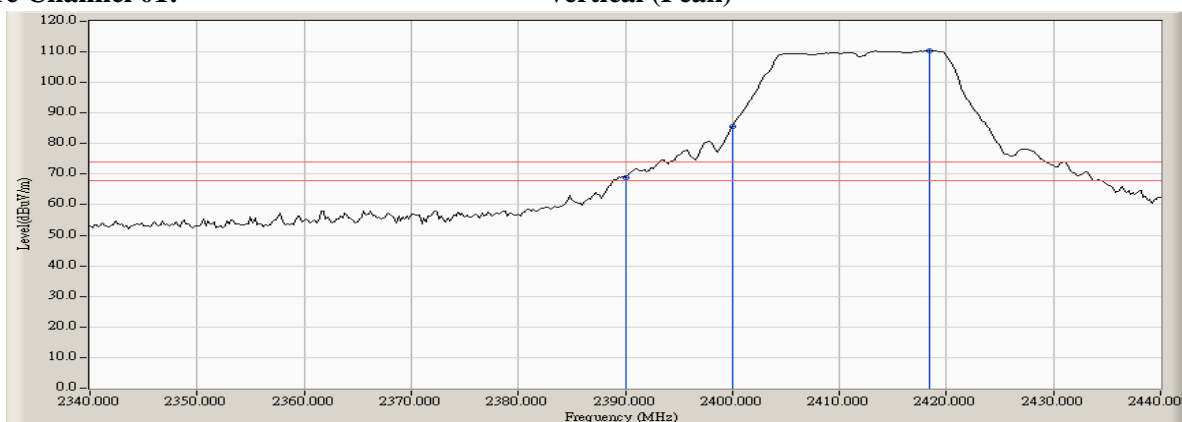
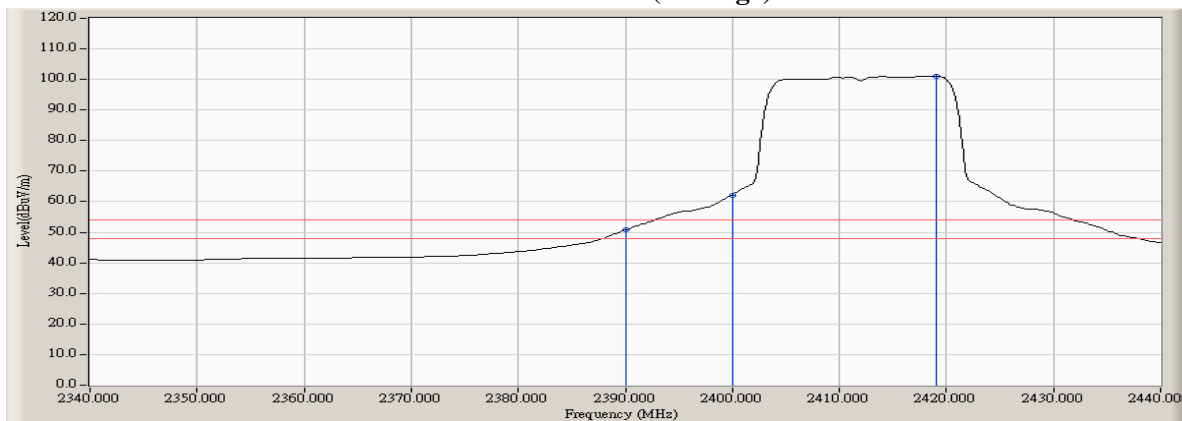


Figure Channel 01: Vertical (Average)



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 RTL8192EE Combo module
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)	2455.100	1.982	106.782	108.764	--	--	--
11 (Peak)	2483.500	2.393	61.022	63.414	74.00	54.00	Pass
11 (Peak)	2486.500	2.438	61.225	63.663	74.00	54.00	Pass
11 (Average)	2459.500	2.027	97.423	99.450	--	--	--
11 (Average)	2483.500	2.393	46.431	48.823	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

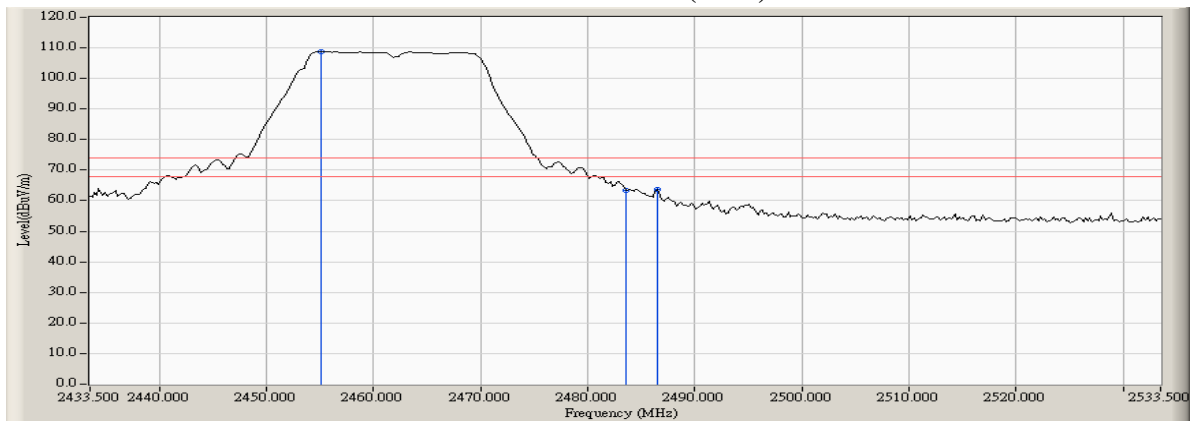
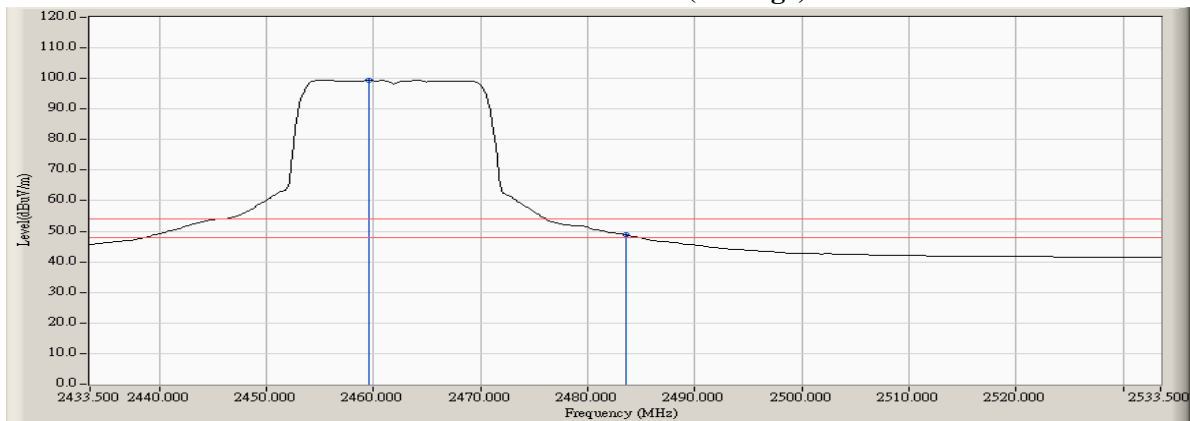


Figure Channel 11: Horizontal (Average)



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 RTL8192EE Combo module
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)	2468.500	2.166	107.711	109.877	--	--	--
11 (Peak)	2483.500	2.393	65.212	67.604	74.00	54.00	Pass
11 (Average)	2469.100	2.176	98.432	100.607	--	--	--
11 (Average)	2483.500	2.393	48.854	51.246	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

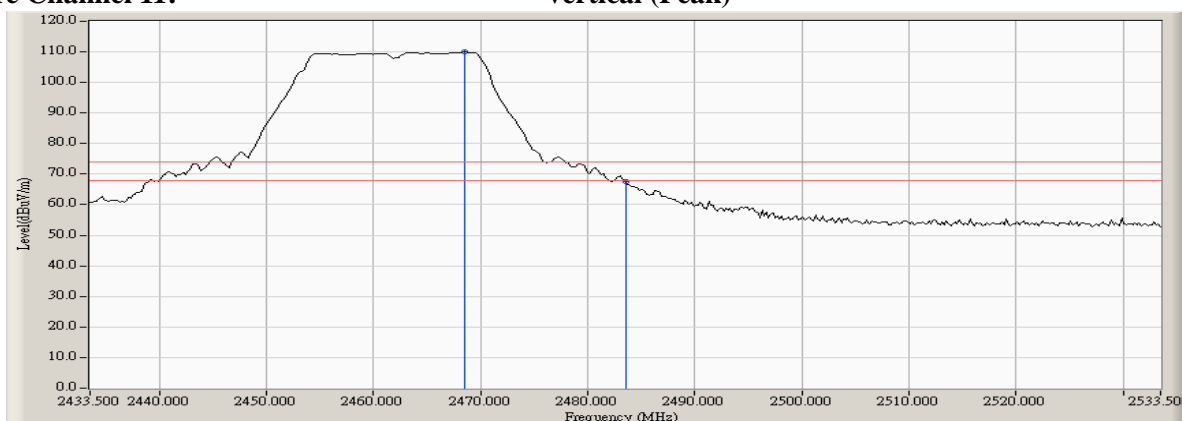
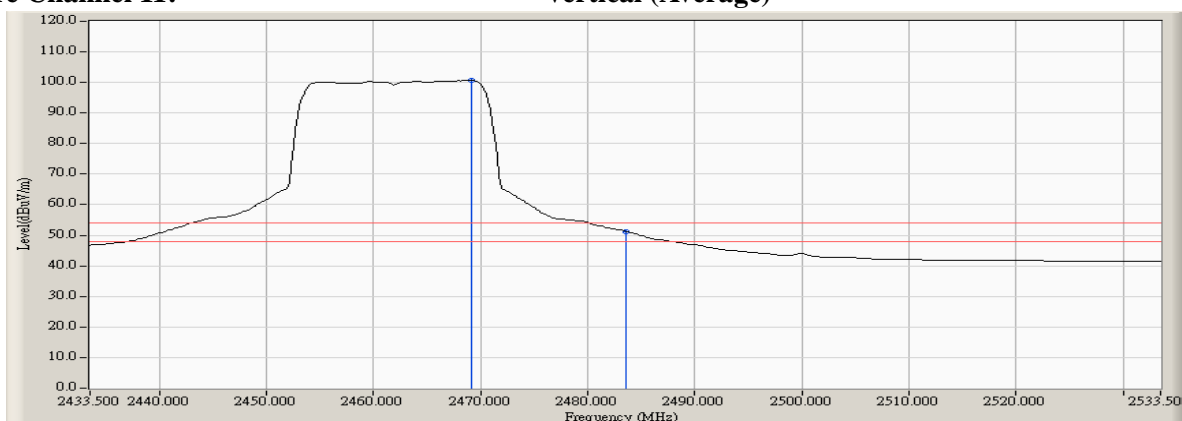


Figure Channel 11: Vertical (Average)



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 RTL8192EE Combo module
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-20BW_14.4Mbps)

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	1.818	70.890	72.707	74.00	54.00	Pass
01 (Peak)	2400.000	1.832	82.382	84.214	--	--	--
01 (Peak)	2413.600	1.986	107.092	109.078	--	--	--
01 (Average)	2390.000	1.818	47.120	48.937	74.00	54.00	Pass
01 (Average)	2400.000	1.832	57.029	58.861	--	--	--
01 (Average)	2417.800	2.043	96.635	98.678	--	--	--

Figure Channel 01:

Horizontal (Peak)

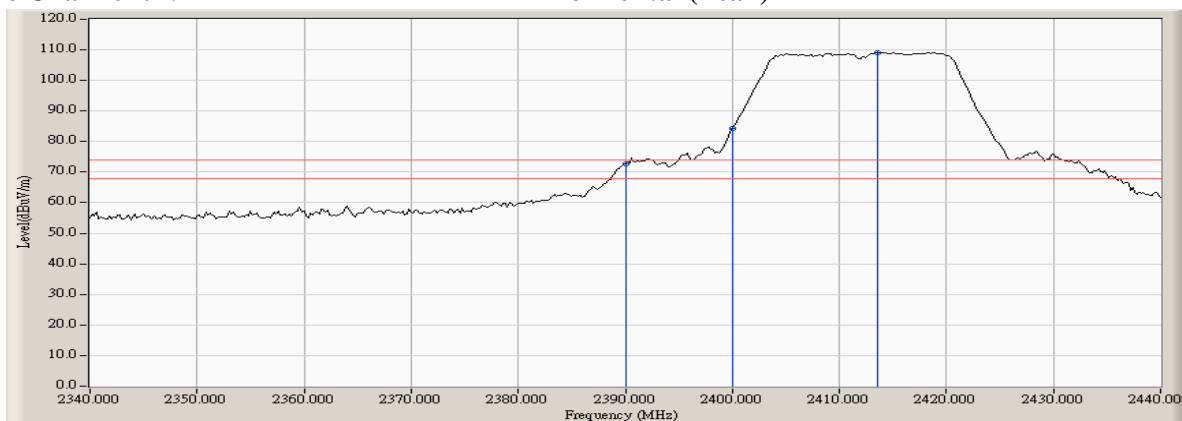
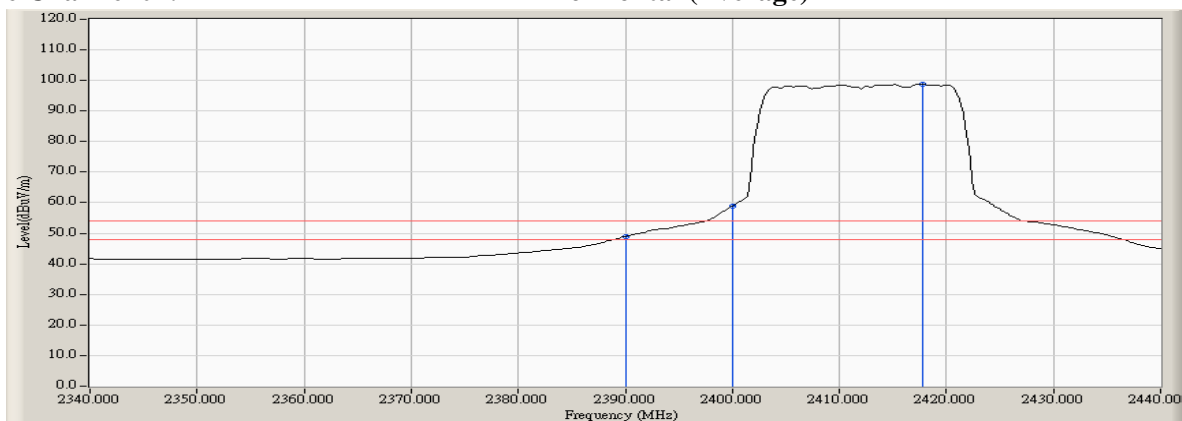


Figure Channel 01:

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 RTL8192EE Combo module
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-20BW_14.4Mbps)

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	1.818	69.908	71.725	74.00	54.00	Pass
01 (Peak)	2400.000	1.832	82.485	84.317	--	--	--
01 (Peak)	2419.200	2.062	107.270	109.332	--	--	--
01 (Average)	2390.000	1.818	46.600	48.417	74.00	54.00	Pass
01 (Average)	2400.000	1.832	57.063	58.895	--	--	--
01 (Average)	2418.000	2.046	97.613	99.659	--	--	--

Figure Channel 01: Vertical (Peak)

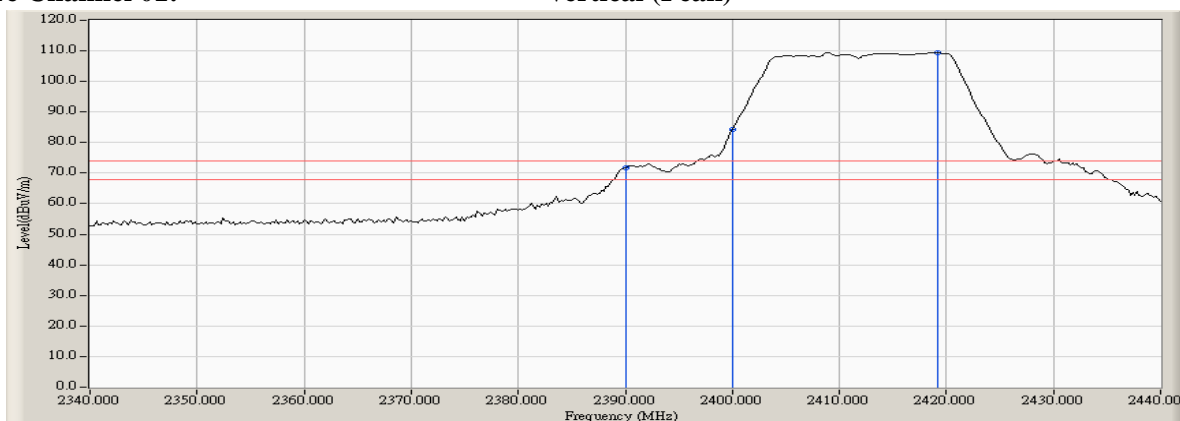
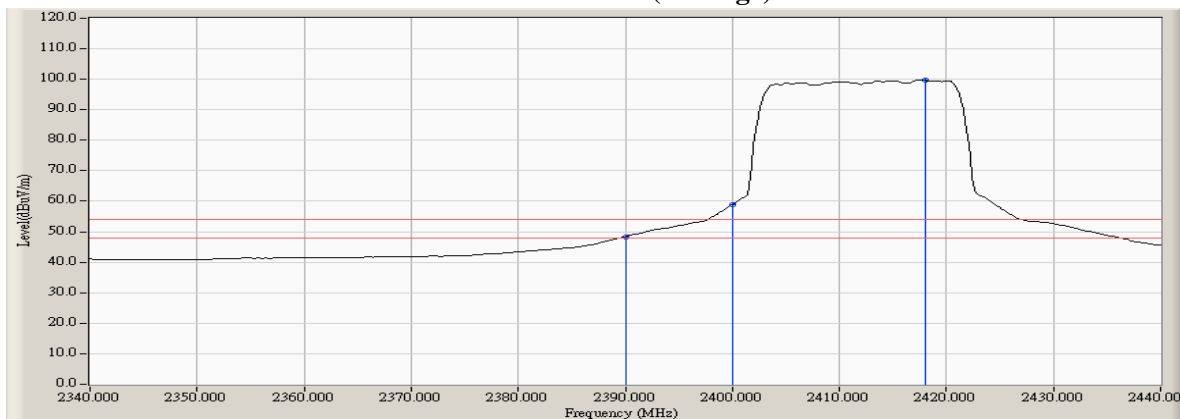


Figure Channel 01: Vertical (Average)



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 RTL8192EE Combo module
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-20BW_14.4Mbps)

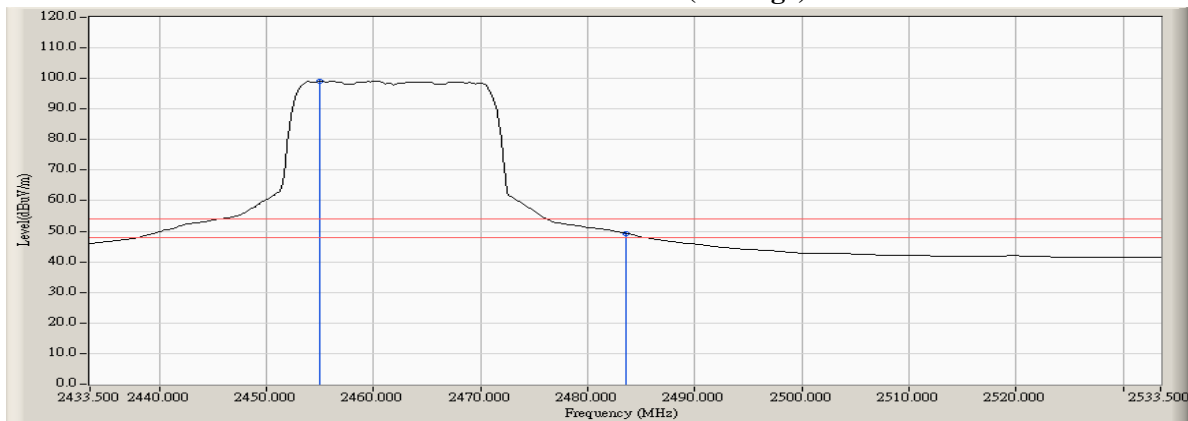
RF Radiated Measurement (Horizontal):

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)	2458.900	2.018	107.319	109.337	--	--	--
11 (Peak)	2483.500	2.393	65.631	68.023	74.00	54.00	Pass
11 (Average)	2454.900	1.984	97.074	99.058	--	--	--
11 (Average)	2483.500	2.393	46.913	49.305	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 RTL8192EE Combo module
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-20BW_14.4Mbps)

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)	2458.900	2.018	107.976	109.994	--	--	--
11 (Peak)	2483.500	2.393	69.416	71.808	74.00	54.00	Pass
11 (Average)	2467.900	2.157	98.038	100.195	--	--	--
11 (Average)	2483.500	2.393	49.263	51.655	74.00	54.00	Pass

Figure Channel 11: Vertical (Peak)

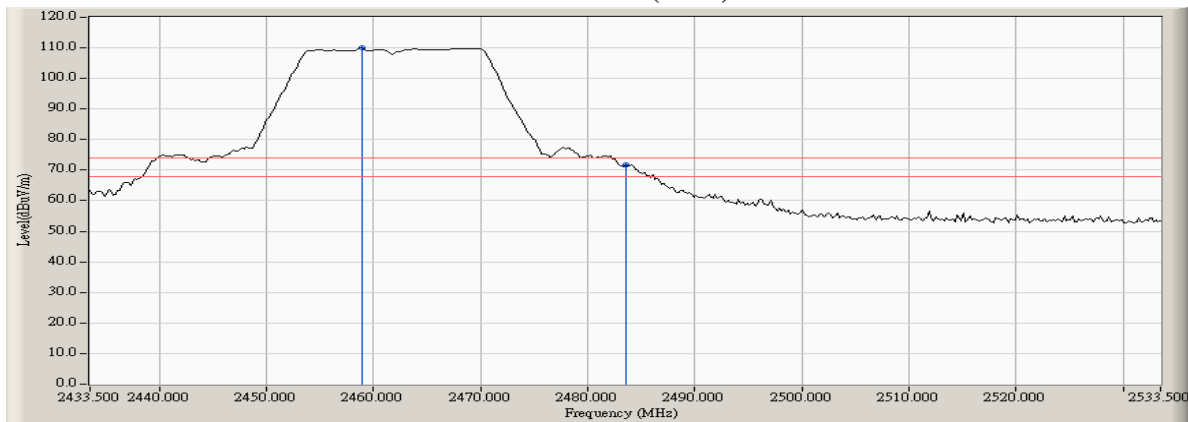
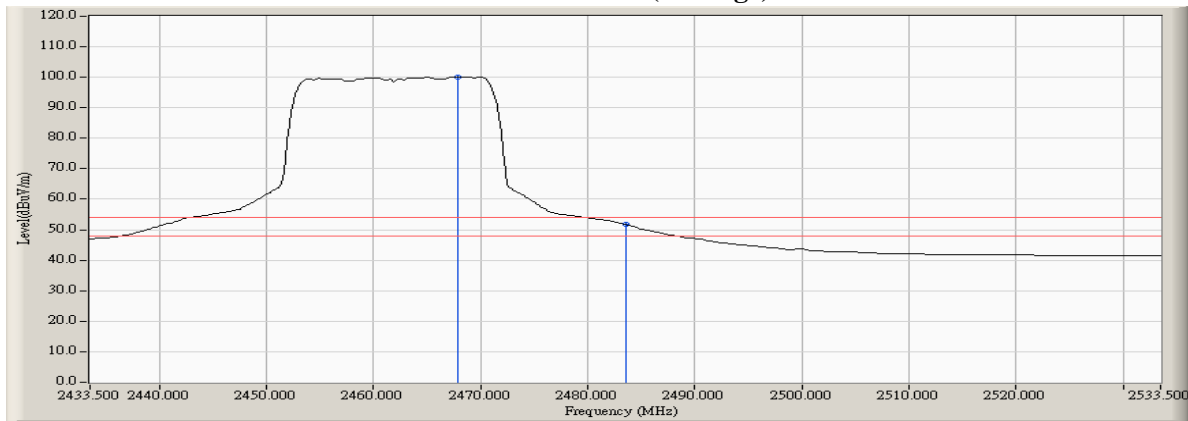


Figure Channel 11: Vertical (Average)



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 RTL8192EE Combo module
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n-40BW_30Mbps)

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
03 (Peak)	2386.000	1.810	68.661	70.471	74.00	54.00	Pass
03 (Peak)	2390.000	1.818	65.961	67.778	74.00	54.00	Pass
03 (Peak)	2400.000	1.832	73.904	75.736	--	--	--
03 (Peak)	2419.800	2.071	104.021	106.091	--	--	--
03 (Average)	2390.000	1.818	48.794	50.611	74.00	54.00	Pass
03 (Average)	2400.000	1.832	62.167	63.999	--	--	--
03 (Average)	2425.000	2.108	93.873	95.981	--	--	--

Figure Channel 01: Horizontal (Peak)

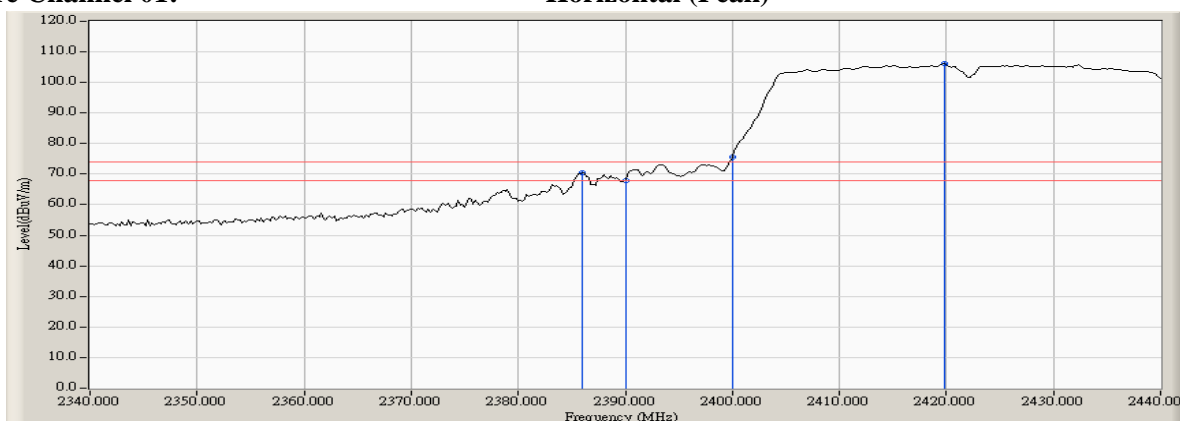
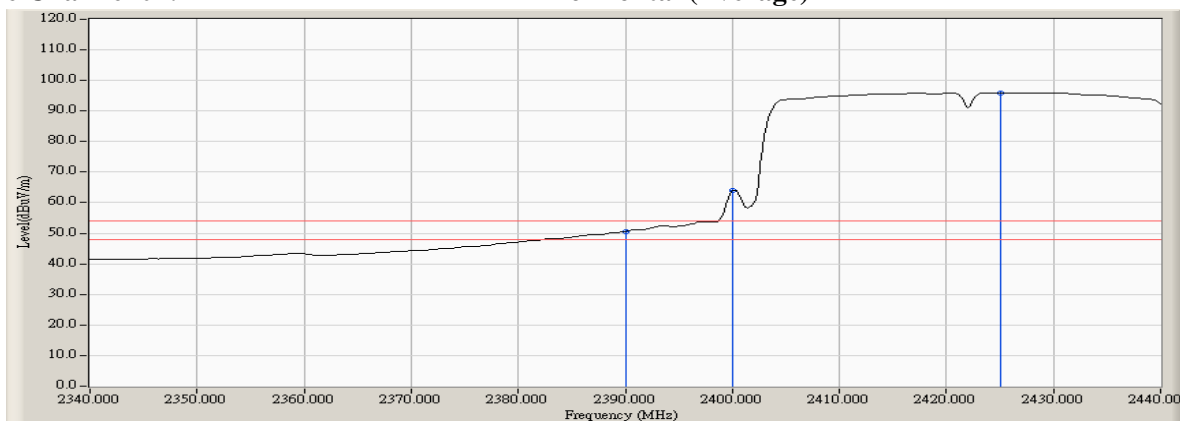


Figure Channel 01: Horizontal (Average)



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 RTL8192EE Combo module
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n-40BW_30Mbps)

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
03 (Peak)	2386.000	1.810	69.979	71.789	74.00	54.00	Pass
03 (Peak)	2390.000	1.818	68.578	70.395	74.00	54.00	Pass
03 (Peak)	2400.000	1.832	75.194	77.026	--	--	--
03 (Peak)	2419.800	2.071	105.556	107.626	--	--	--
03 (Average)	2390.000	1.818	50.659	52.476	74.00	54.00	Pass
03 (Average)	2400.000	1.832	63.357	65.189	--	--	--
03 (Average)	2425.600	2.112	95.552	97.664	--	--	--

Figure Channel 01: Vertical (Peak)

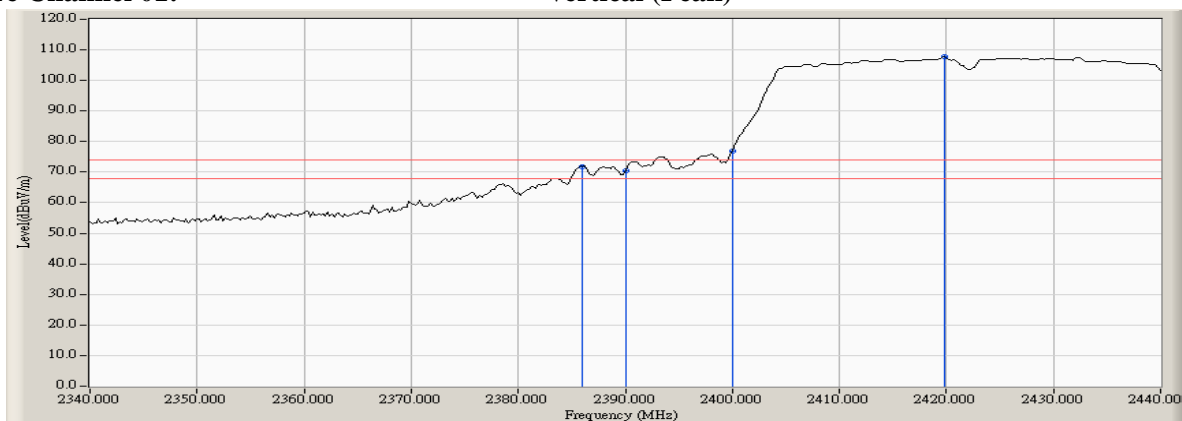
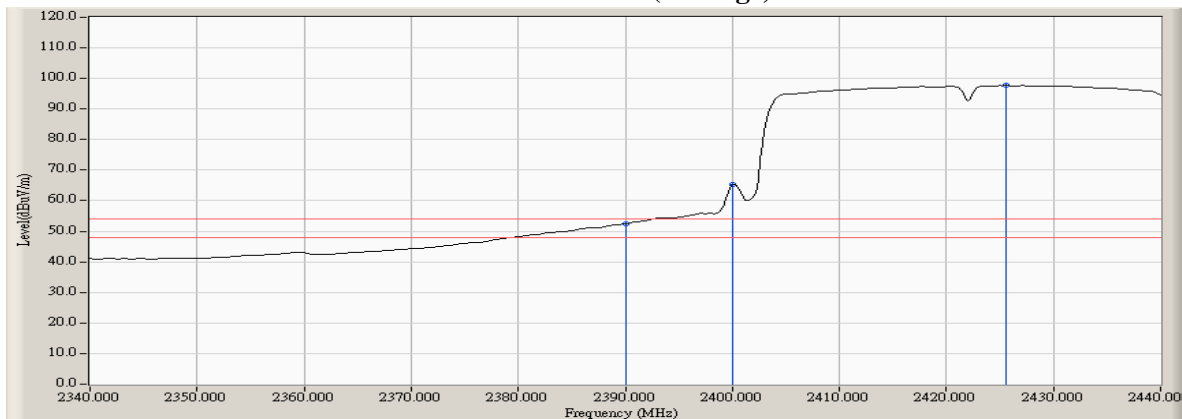


Figure Channel 01: Vertical (Average)



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 RTL8192EE Combo module
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n-40BW_30Mbps)

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
09 (Peak)	2449.700	2.050	104.701	106.751	--	--	--
09 (Peak)	2483.500	2.393	66.636	69.028	74.00	54.00	Pass
09 (Average)	2447.700	2.074	94.503	96.578	--	--	--
09 (Average)	2483.500	2.393	48.056	50.448	74.00	54.00	Pass

Figure Channel 07: Horizontal (Peak)

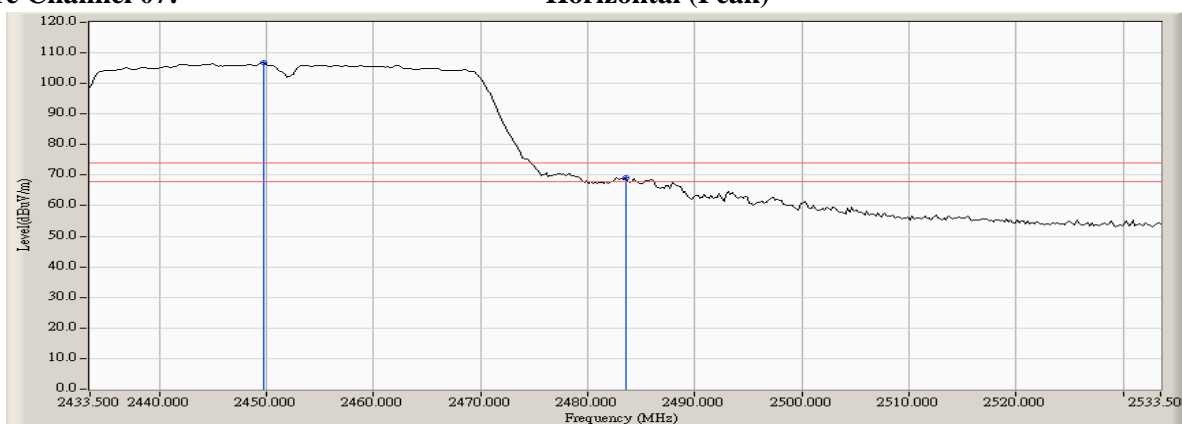


Figure Channel 07: Horizontal (Average)



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 RTL8192EE Combo module
Test Item : Band Edge
Test Site : No.3 OATS
Test Mode : Mode 4: Transmit (802.11n-40BW_30Mbps)

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
09 (Peak)	2449.700	2.050	104.951	107.001	--	--	--
09 (Peak)	2483.500	2.393	67.564	69.956	74.00	54.00	Pass
09 (Peak)	2485.900	2.428	68.440	70.868	74.00	54.00	Pass
09 (Average)	2447.700	2.074	94.883	96.958	--	--	--
09 (Average)	2483.500	2.393	50.616	53.008	74.00	54.00	Pass

Figure Channel 07: Vertical (Peak)

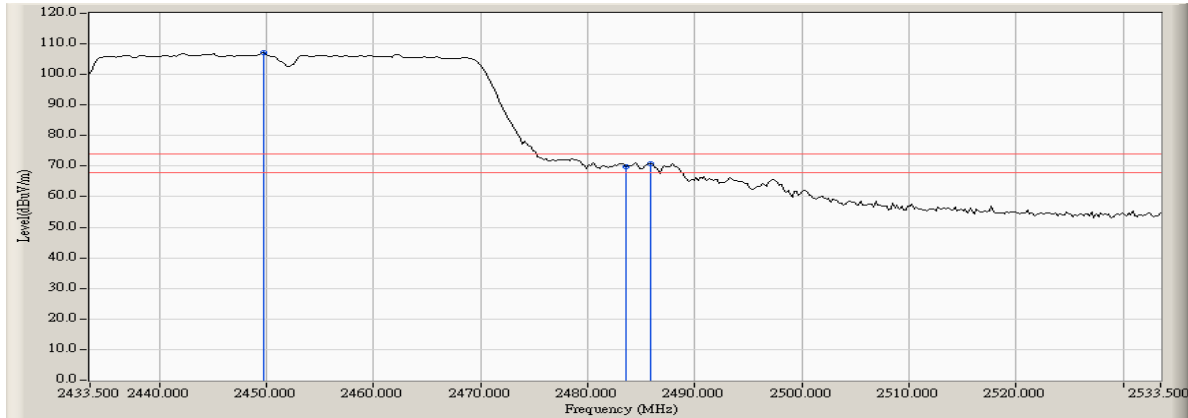
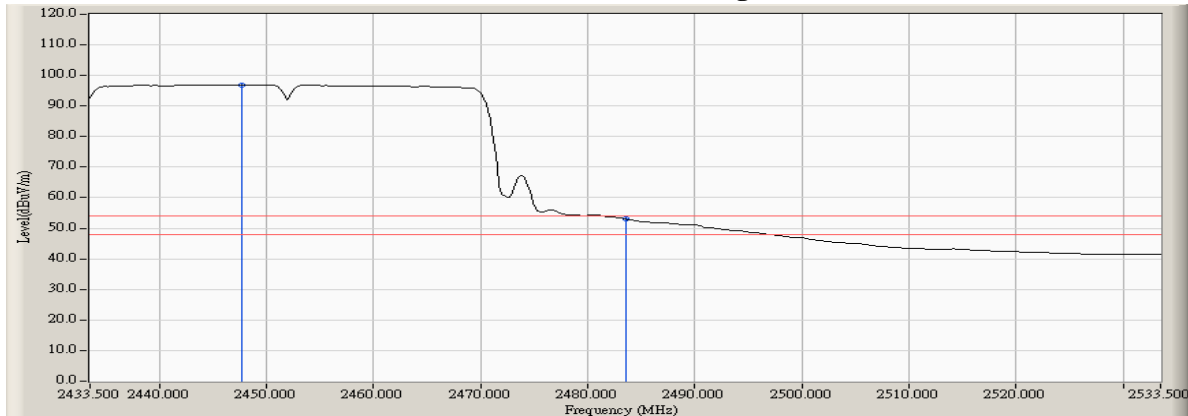


Figure Channel 07: Vertical (Average)



Note:

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

5. EMI Reduction Method During Compliance Testing

No modification was made during testing.