

FCC Test Report

Product Name	PIC
Model No	P1
FCC ID.	2AITJPICP1

Applicant	boud
Address	6/7F 6, Dosan-daero 17-gil Gangnam-gu, Seoul, Korea 06037

Date of Receipt	Jun. 27, 2016
Issue Date	Jul. 06, 2016
Report No.	1670008R-RFUSP26V00
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: Jul. 06, 2016

Report No.: 1670008R-RFUSP26V00



Product Name	PIC
Applicant	boud
Address	6/7F 6, Dosan-daero 17-gil Gangnam-gu, Seoul, Korea 06037
Manufacturer	Altek (Kunshan) Co., Ltd.
Model No.	P1
FCC ID.	2AITJPICP1
EUT Rated Voltage	DC 3.7V (Power by Battery)
EUT Test Voltage	DC 3.7V (Power by Battery)
Trade Name	boud
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2015 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 DTS Meas Guidance v03r05
Test Result	Complied

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Tested By :

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Approved By :

Vincent Lin

(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	PIC
Trade Name	boud
Model No.	P1
FCC ID.	2AITJPICP1
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW
Number of Channels	802.11b/g/n-20MHz: 11
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	Chip Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
USB Cable	Shielded, 0.21m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	INPAQ	ACM3-5036-A1-CC-S	Chip Antenna	1.63 dBi for 2.4 GHz

Note:

1. The antenna of EUT conforms 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		

Note:

1. The EUT is a PIC with a built-in WLAN and Bluetooth transceiver, this report for WLAN.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. At result of pretests, module supports dual-channel transmission, only the worst case is shown in the report.
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 and 802.11n(20M-BW) is 7.2Mbps).
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.

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

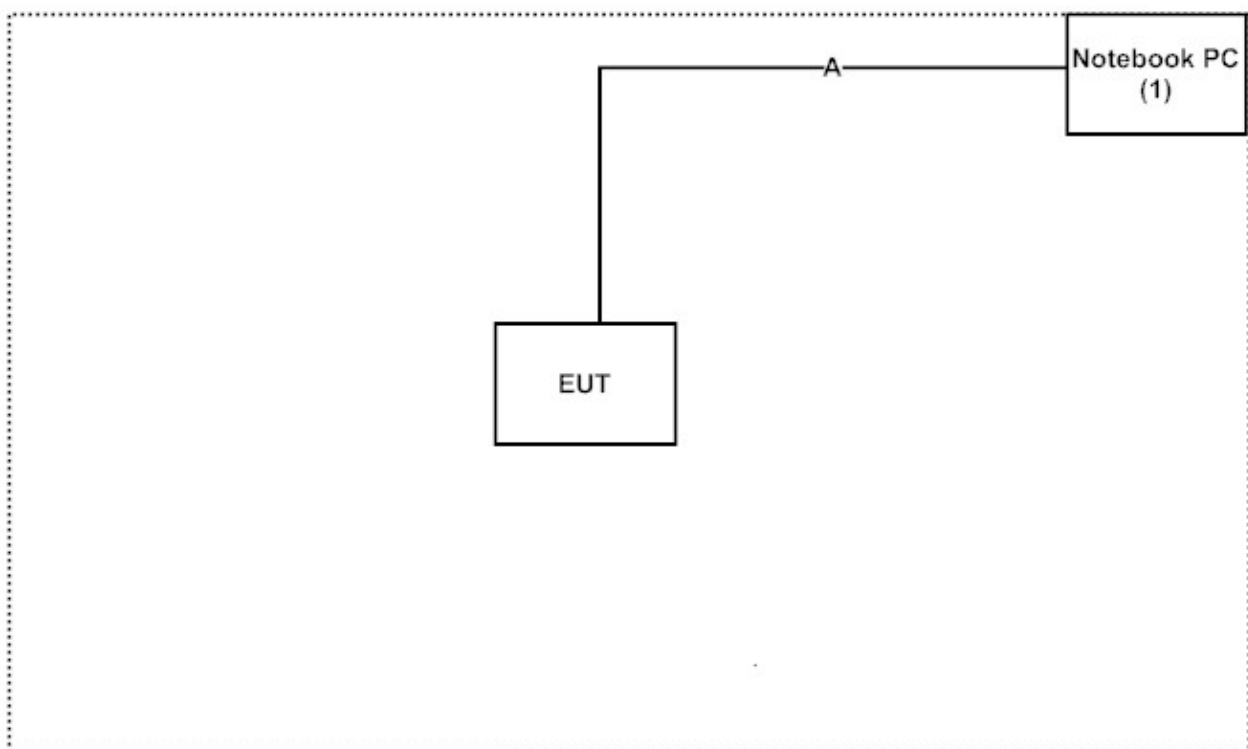
1.3. Tested System Details

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	Notebook PC	DELL	Latitude E5440	B6TYTZ1	Non-Shielded, 0.8m

Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 2.0m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “PTPDII Test V1.0.0.1” 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/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: File on
Federal Communications Commission
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FCC Accreditation Number: TW1014

2. Conducted Emission

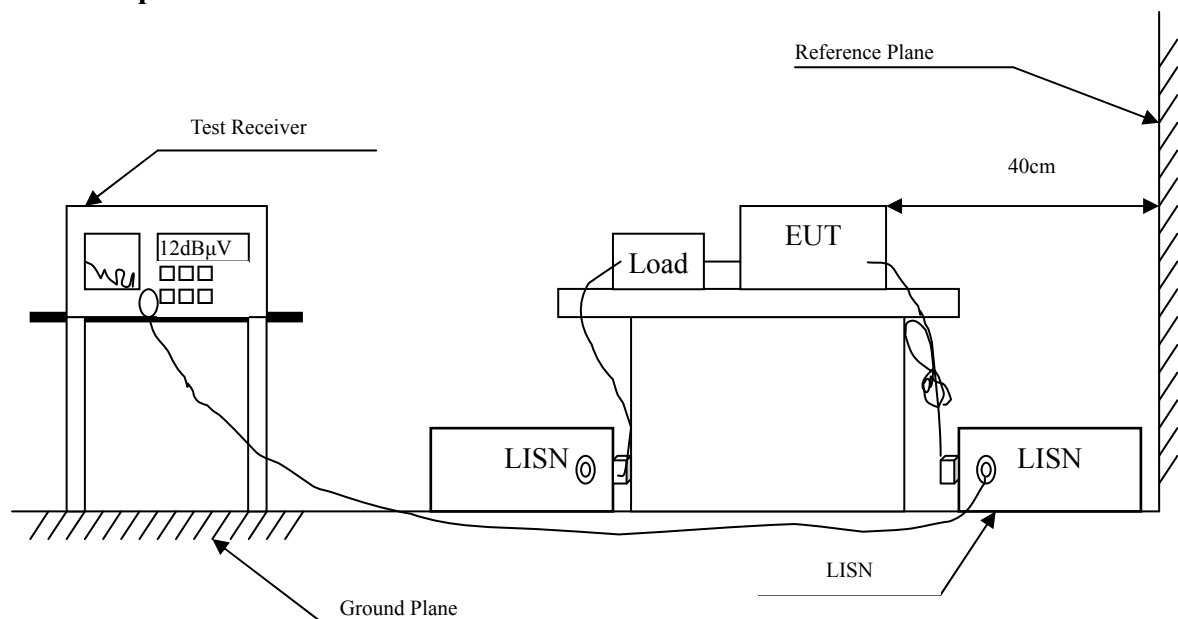
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2015	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2016	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2016	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar., 2016	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2016	
	No.1 Shielded Room				

Note:

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

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBμV) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : PIC
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV	Margin dB	Limit dBμV
Line 1					
Quasi-Peak					
0.158	9.761	36.720	46.482	-19.289	65.771
0.369	9.768	32.940	42.708	-17.035	59.743
0.795	9.801	19.590	29.391	-26.609	56.000
4.716	9.984	24.010	33.994	-22.006	56.000
13.404	10.123	12.720	22.843	-37.157	60.000
26.638	10.183	11.420	21.603	-38.397	60.000
Average					
0.158	9.761	32.750	42.512	-13.259	55.771
0.369	9.768	31.890	41.658	-8.085	49.743
0.795	9.801	18.350	28.151	-17.849	46.000
4.716	9.984	17.010	26.994	-19.006	46.000
13.404	10.123	3.800	13.923	-36.077	50.000
26.638	10.183	4.190	14.373	-35.627	50.000

Note:

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

Product : PIC
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437MHz)

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level	dB	dBμV
	dB	dBμV	dBμV		
Line 2					
Quasi-Peak					
0.158	9.761	37.510	47.272	-18.499	65.771
0.365	9.767	34.520	44.287	-15.570	59.857
0.771	9.799	17.710	27.509	-28.491	56.000
4.853	9.986	23.220	33.206	-22.794	56.000
9.150	10.093	15.480	25.573	-34.427	60.000
28.068	10.413	12.500	22.913	-37.087	60.000
Average					
0.158	9.761	32.800	42.562	-13.209	55.771
0.365	9.767	25.560	35.327	-14.530	49.857
0.771	9.799	16.330	26.129	-19.871	46.000
4.853	9.986	18.070	28.056	-17.944	46.000
9.150	10.093	8.660	18.753	-31.247	50.000
28.068	10.413	4.700	15.113	-34.887	50.000

Note:

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

3. Peak Power Output

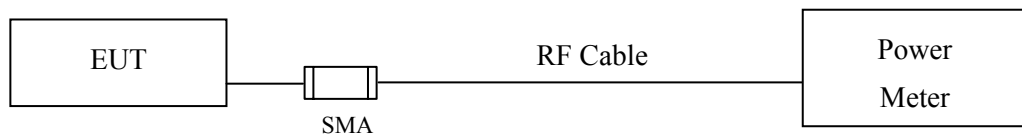
3.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2016
X	Power Sensor	Anritsu	MA2411B/0738448	Jun., 2016

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



3.3. Limits

The maximum peak power shall be less 1 Watt.

3.4. Test Procedure

The EUT was tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 D01 DTS Meas Guidance v03r04 section 9.1.2 PKPM1 Peak power meter method.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Power Output

Product : PIC
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	16.01	--	--	--	19.03	<30dBm	Pass
06	2437	16.06	15.95	15.84	15.76	19.05	<30dBm	Pass
11	2462	16.07	--	--	--	19.04	<30dBm	Pass

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

Product : PIC
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			
		Measurement Level (dBm)										
01	2412	14.41	--	--	--	--	--	--	--	22.31	<30dBm	Pass
06	2437	13.57	13.46	13.32	13.25	13.19	13.04	12.99	12.91	22.51	<30dBm	Pass
11	2462	13.65	--	--	--	--	--	--	--	22.24	<30dBm	Pass

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

Product : PIC
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	12.33	--	--	--	--	--	--	--	21.95	<30dBm	Pass
06	2437	12.53	12.44	12.33	12.27	12.16	12.07	11.95	11.88	22.06	<30dBm	Pass
11	2462	11.76	--	--	--	--	--	--	--	22.08	<30dBm	Pass

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

4. Radiated Emission

4.1. Test Equipment

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

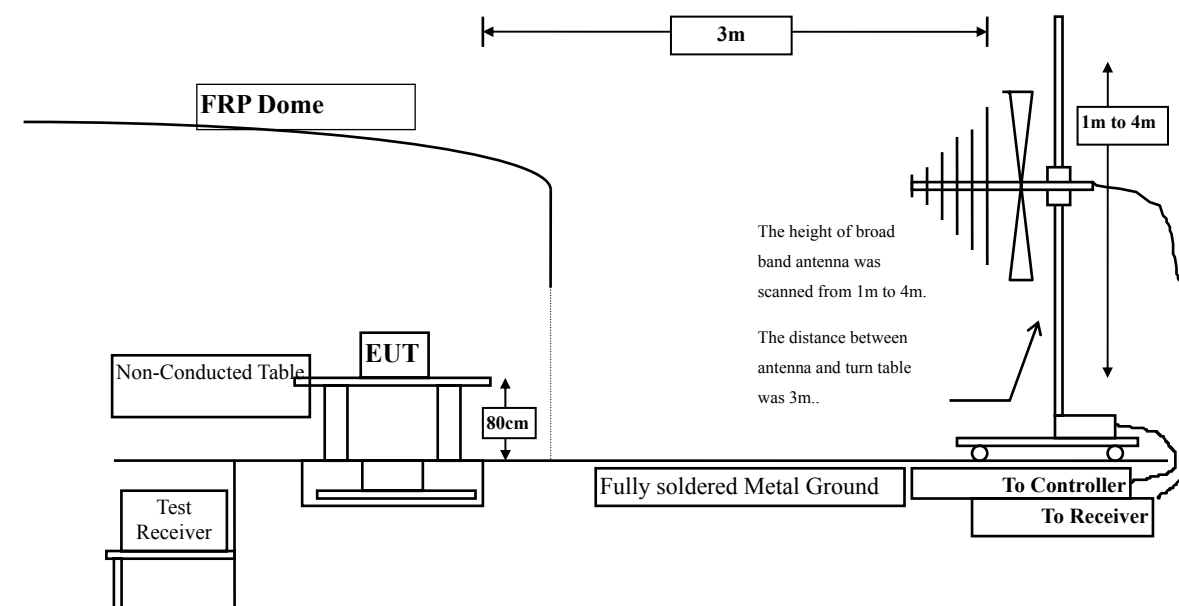
Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Magnetic Loop Antenna	Teseq	HLA6121/ 37133	Sep., 2015
	X	Bilog Antenna	Schaffner Chase	CBL6112B/ 2707	Jun., 2016
	X	EMI Test Receiver	R&S	ESCS 30/838251/ 001	Jun., 2016
	X	Coaxial Cable	QTK(Arnist)	RG 214/ LC003-RG	Jun., 2016
	X	Coaxial signal switch	Arnist	MP59B/ 6200798682	Jun., 2016

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., 2016
	X	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan., 2016
	X	Horn Antenna	TRC	AH-0801/95051	Aug., 2015
	X	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan., 2016
	X	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul., 2016
	X	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul., 2016

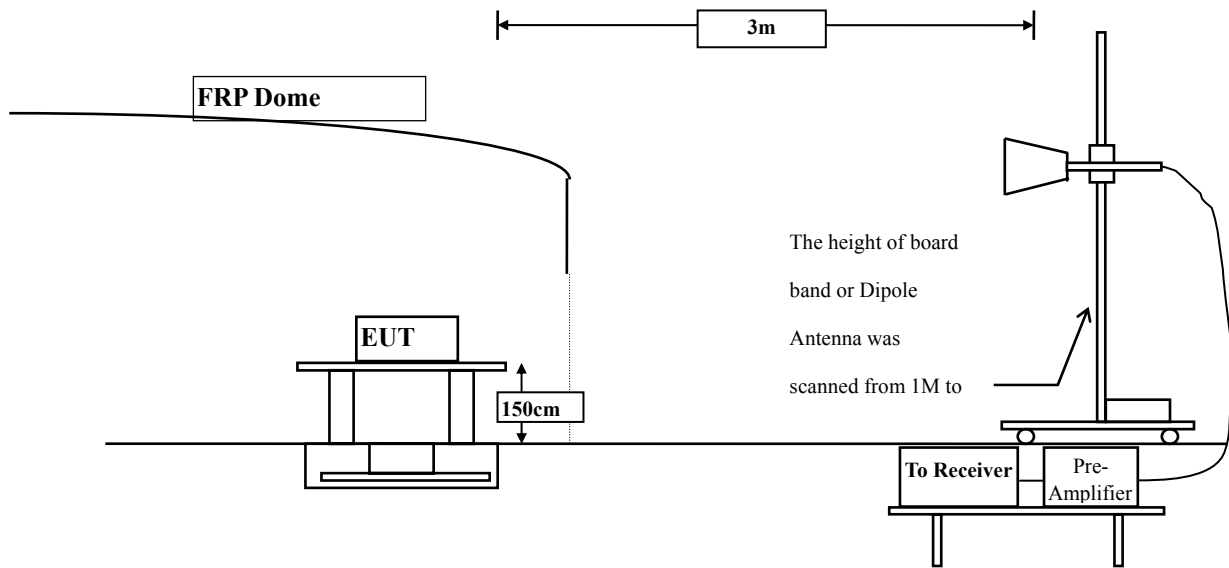
- Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

4.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.3. Limits

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

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	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 (dB μ V/m) = 20 log E field strength (uV/m)

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.

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.

4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

4.6. Test Result of Radiated Emission

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

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

Horizontal

Peak Detector:

4824.000	2.428	46.290	48.719	-25.281	74.000
7236.000	9.177	39.510	48.687	-25.313	74.000
9648.000	10.019	39.480	49.500	-24.500	74.000

Average Detector:

--

Vertical

Peak Detector:

4824.000	2.836	46.130	48.967	-25.033	74.000
7236.000	9.676	39.240	48.916	-25.084	74.000
9648.000	10.556	38.930	49.487	-24.513	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 : PIC
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	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	2.076	43.570	45.647	-28.353	74.000
7311.000	9.512	38.210	47.722	-26.278	74.000
9748.000	9.630	38.350	47.980	-26.020	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	2.532	48.520	51.052	-22.948	74.000
7311.000	10.089	39.120	49.209	-24.791	74.000
9748.000	10.266	38.541	48.808	-25.192	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 : PIC
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

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

Horizontal

Peak Detector:

4924.000	2.191	47.393	49.584	-24.416	74.000
7386.000	10.373	40.147	50.521	-23.479	74.000
9848.000	9.964	40.960	50.924	-23.076	74.000

Average Detector:

--

Vertical

Peak Detector:

4924.000	2.805	48.416	51.221	-22.779	74.000
7386.000	11.180	39.874	51.054	-22.946	74.000
9848.000	10.801	41.245	52.046	-21.954	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 : PIC
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	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4824.000	2.428	44.223	46.652	-27.348	74.000
7236.000	9.177	38.186	47.363	-26.637	74.000
9648.000	10.019	40.038	50.058	-23.942	74.000

Average Detector:

--

Vertical

Peak Detector:

4824.000	2.836	47.417	50.254	-23.746	74.000
7236.000	9.676	39.987	49.663	-24.337	74.000
9648.000	10.556	40.027	50.584	-23.416	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 : PIC
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	dBμV	dBμV/m	dB	dBμV/m

Horizontal

Peak Detector:

4874.000	2.076	49.437	51.514	-22.486	74.000
7311.000	9.512	40.453	49.965	-24.035	74.000
9748.000	9.630	41.944	51.574	-22.426	74.000

Average Detector:

--

Vertical

Peak Detector:

4874.000	2.532	47.509	50.041	-23.959	74.000
7311.000	10.089	39.875	49.964	-24.036	74.000
9748.000	10.266	40.959	51.226	-22.774	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 : PIC
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 dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4924.000	2.191	46.656	48.847	-25.153	74.000
7386.000	10.373	39.147	49.521	-24.479	74.000
9848.000	9.964	41.620	51.584	-22.416	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	2.805	44.705	47.510	-26.490	74.000
7386.000	11.180	39.515	50.695	-23.305	74.000
9848.000	10.801	40.832	51.633	-22.367	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 : PIC
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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

4824.000	2.428	46.452	48.881	-25.119	74.000
7236.000	9.177	40.785	49.962	-24.038	74.000
9648.000	10.019	40.306	50.326	-23.674	74.000

Average Detector:

--

Vertical

Peak Detector:

4824.000	2.836	47.494	50.331	-23.669	74.000
7236.000	9.676	38.955	48.631	-25.369	74.000
9648.000	10.556	40.967	51.524	-22.476	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 : PIC
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 MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4874.000	2.076	46.037	48.114	-25.886	74.000
7311.000	9.512	39.179	48.691	-25.309	74.000
9748.000	9.630	41.324	50.954	-23.046	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	2.532	45.800	48.332	-25.668	74.000
7311.000	10.089	40.780	50.869	-23.131	74.000
9748.000	10.266	40.878	51.145	-22.855	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 : PIC
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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBμV	dBμV/m	dB	dBμV/m

Horizontal

Peak Detector:

4924.000	2.191	46.660	48.851	-25.149	74.000
7386.000	10.373	40.044	50.418	-23.582	74.000
9848.000	9.964	41.299	51.263	-22.737	74.000

Average Detector:

--

Vertical

Peak Detector:

4924.000	2.805	45.560	48.365	-25.635	74.000
7386.000	11.180	40.697	51.877	-22.123	74.000
9848.000	10.801	41.258	52.059	-21.941	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 : PIC
Test Item : General 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	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
191.020	-9.679	44.029	34.350	-9.150	43.500
288.020	-5.557	44.411	38.854	-7.146	46.000
373.380	0.873	40.908	41.781	-4.219	46.000
623.640	1.606	38.885	40.491	-5.509	46.000
817.640	6.716	35.036	41.752	-4.248	46.000
912.700	6.450	36.679	43.129	-2.871	46.000
Vertical					
99.840	-6.063	35.720	29.657	-13.843	43.500
202.660	-5.573	43.460	37.888	-5.612	43.500
332.640	-2.255	30.721	28.466	-17.534	46.000
507.240	0.429	34.908	35.337	-10.663	46.000
747.800	1.665	30.581	32.246	-13.754	46.000
951.500	3.083	31.277	34.360	-11.640	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 : PIC
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
288.020	-5.557	44.118	38.561	-7.439	46.000
373.380	0.873	41.042	41.915	-4.085	46.000
623.640	1.606	39.391	40.997	-5.003	46.000
817.640	6.716	35.256	41.972	-4.028	46.000
912.700	6.450	36.463	42.913	-3.087	46.000
949.560	7.036	35.916	42.952	-3.048	46.000
Vertical					
101.780	-5.570	37.518	31.947	-11.553	43.500
202.660	-5.573	44.290	38.718	-4.782	43.500
507.240	0.429	35.224	35.653	-10.347	46.000
608.120	2.175	28.660	30.835	-15.165	46.000
749.740	2.023	32.341	34.364	-11.636	46.000
951.500	3.083	32.977	36.060	-9.940	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 : PIC
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	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
288.020	-5.557	45.104	39.547	-6.453	46.000
373.380	0.873	40.326	41.199	-4.801	46.000
528.580	3.074	34.804	37.878	-8.122	46.000
623.640	1.606	38.791	40.397	-5.603	46.000
817.640	6.716	35.500	42.216	-3.784	46.000
912.700	6.450	36.464	42.914	-3.086	46.000
Vertical					
202.660	-5.573	40.711	35.139	-8.361	43.500
303.540	-3.998	32.271	28.273	-17.727	46.000
507.240	0.429	37.811	38.240	-7.760	46.000
608.120	2.175	30.121	32.296	-13.704	46.000
749.740	2.023	31.680	33.703	-12.297	46.000
996.120	-1.323	46.569	45.246	-8.754	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.

5. RF antenna conducted test

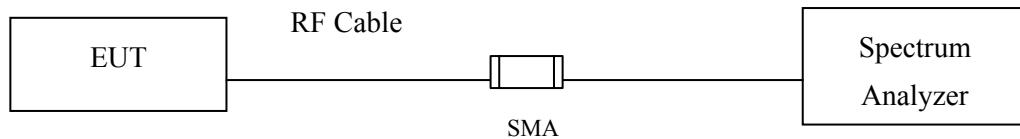
5.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2016
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2016
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

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

5.2. Test Setup

RF antenna Conducted Measurement:



5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

5.4. Test Procedure

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

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

5.5. Uncertainty

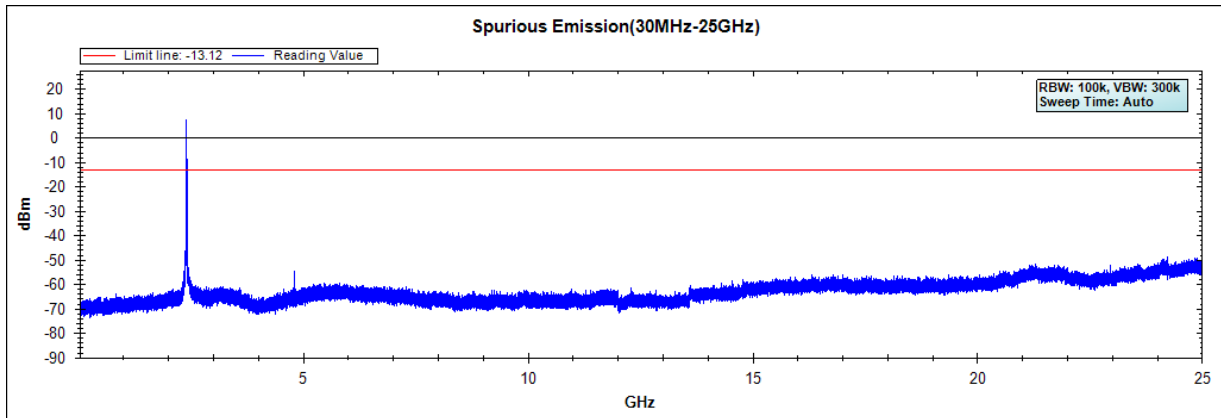
The measurement uncertainty

Conducted is defined as $\pm 1.27\text{dB}$

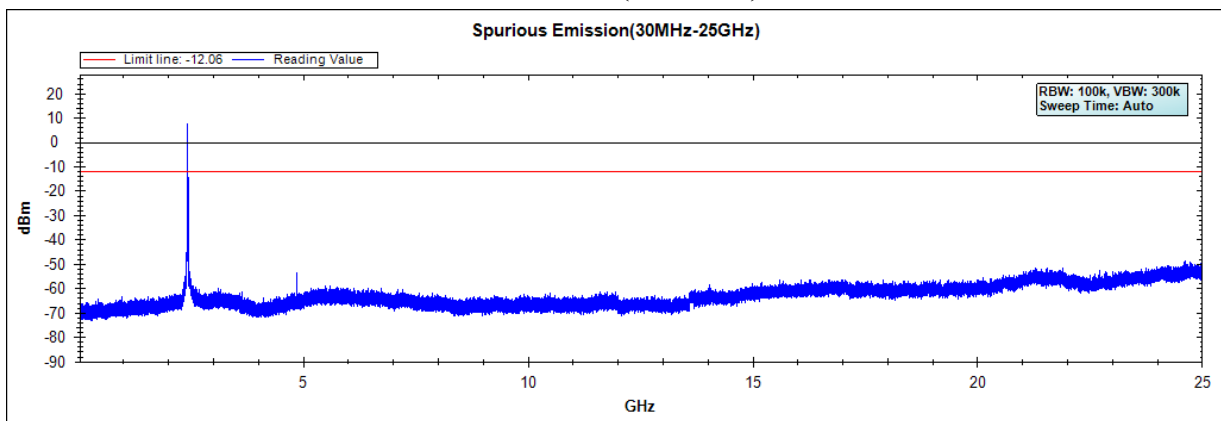
5.6. Test Result of RF antenna conducted test

Product : PIC
Test Item : RF antenna conducted test
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

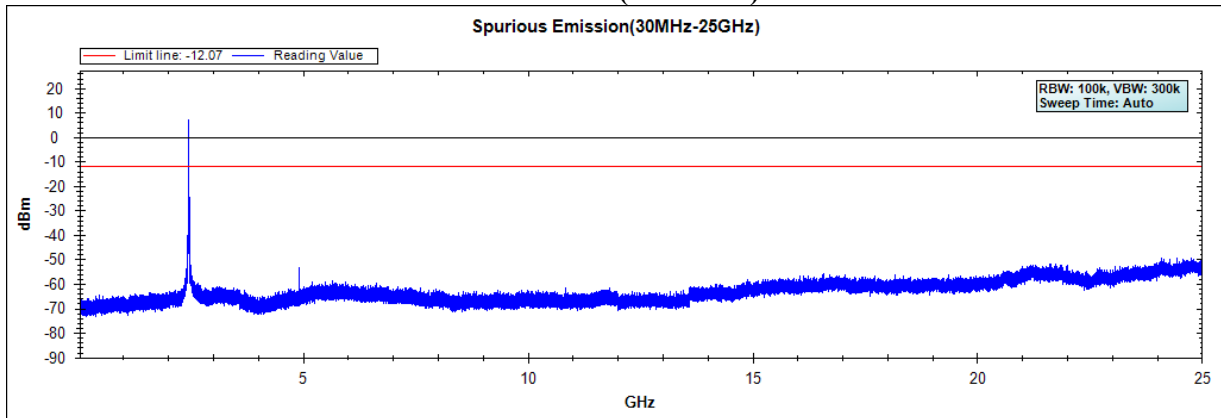
Channel 01 (2412MHz)



Channel 06 (2437MHz)



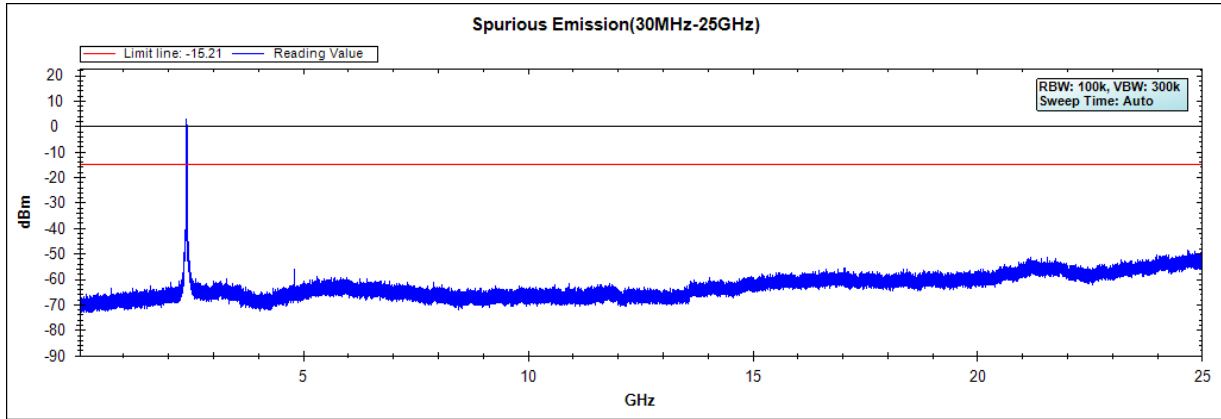
Channel 11 (2462MHz)



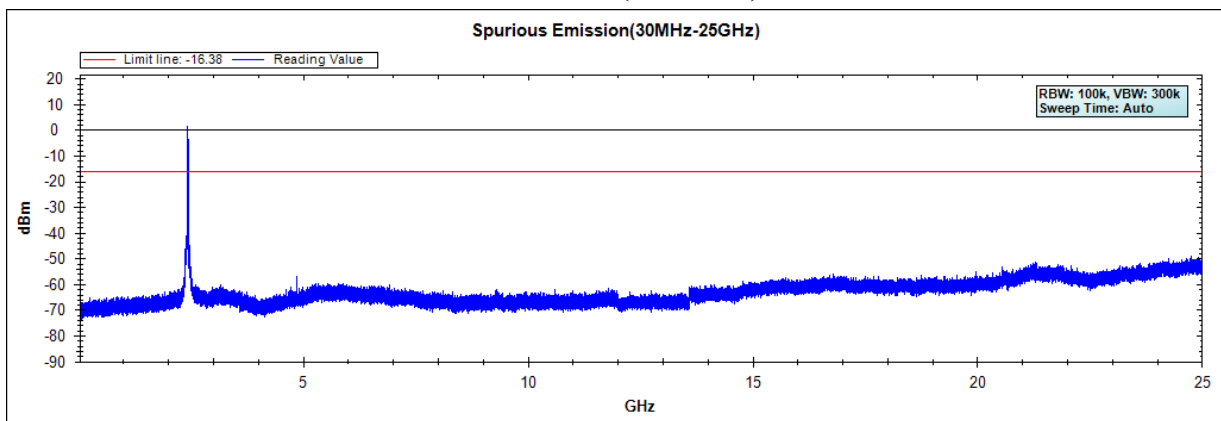
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : PIC
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

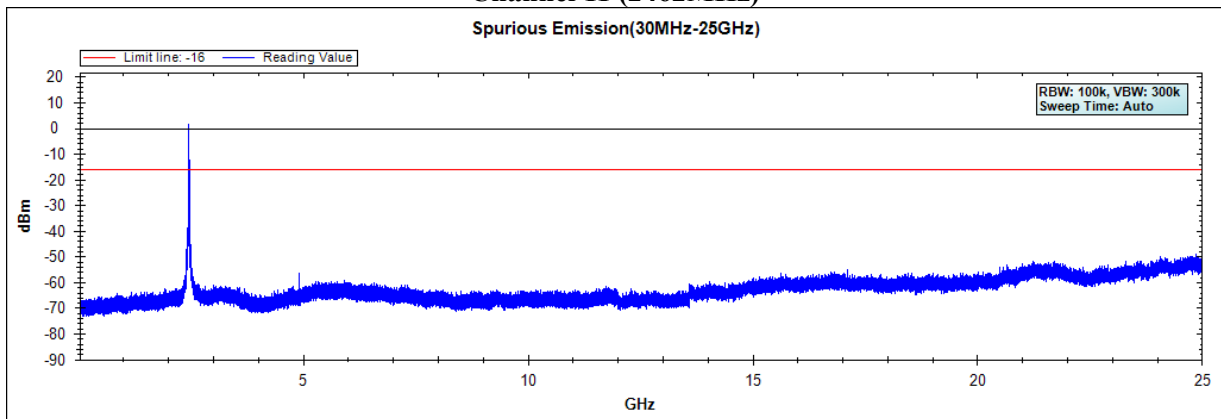
Channel 01 (2412MHz)



Channel 06 (2437MHz)



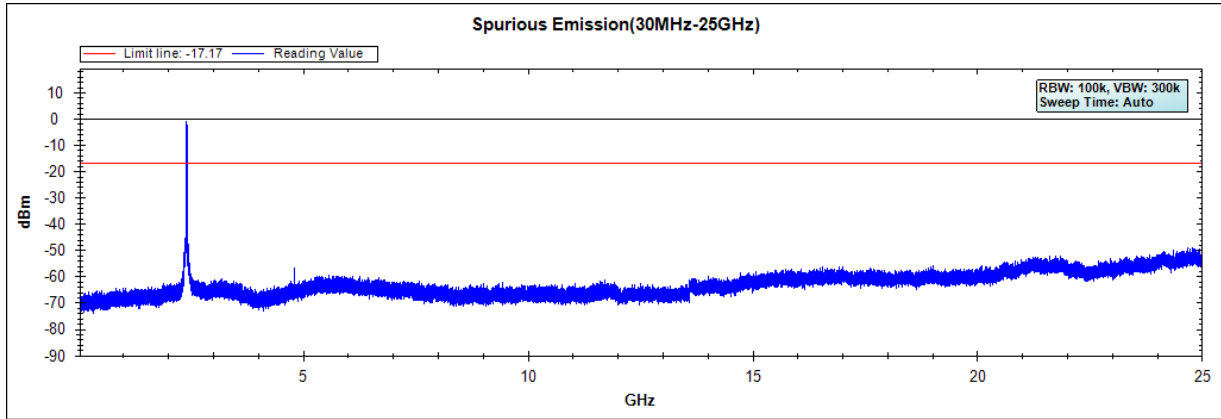
Channel 11 (2462MHz)



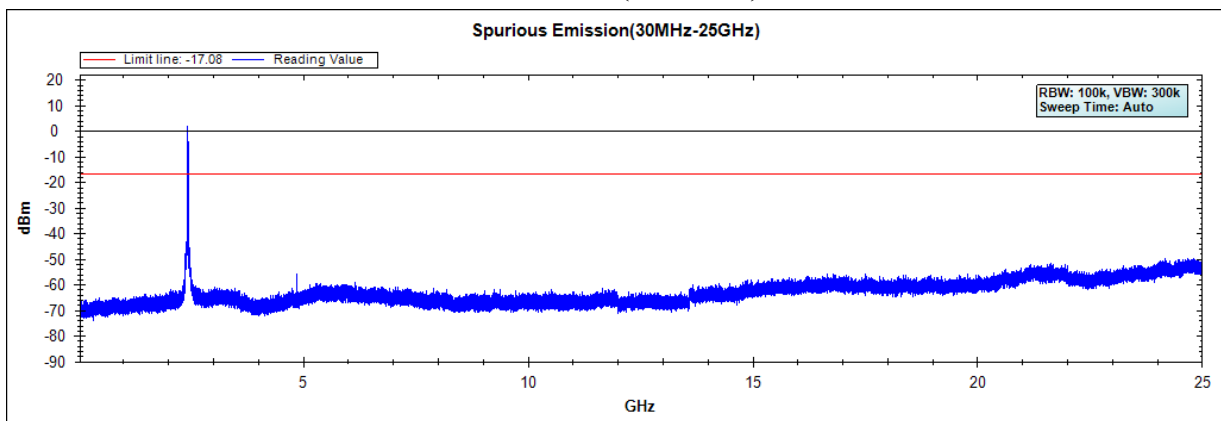
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : PIC
Test Item : RF Antenna Conducted Spurious
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

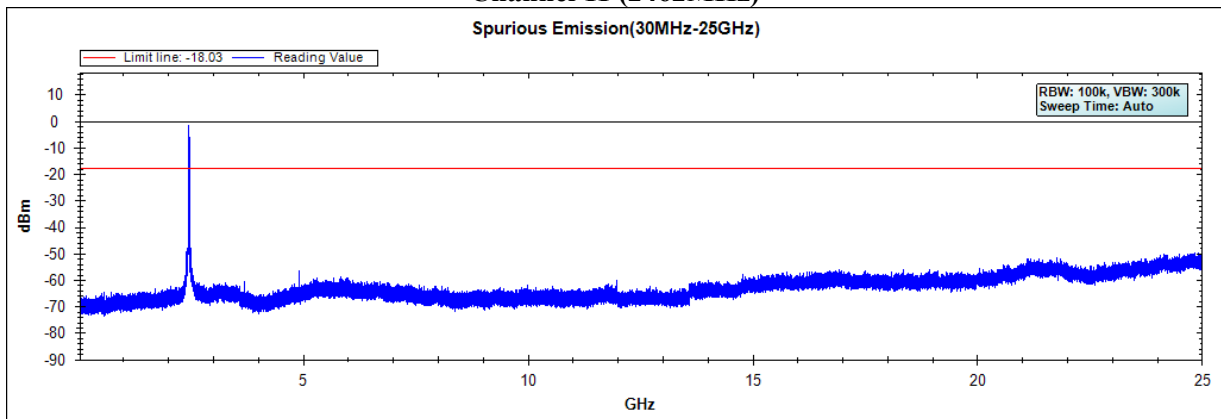
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

6.1. Test Equipment

RF Radiated Measurement:

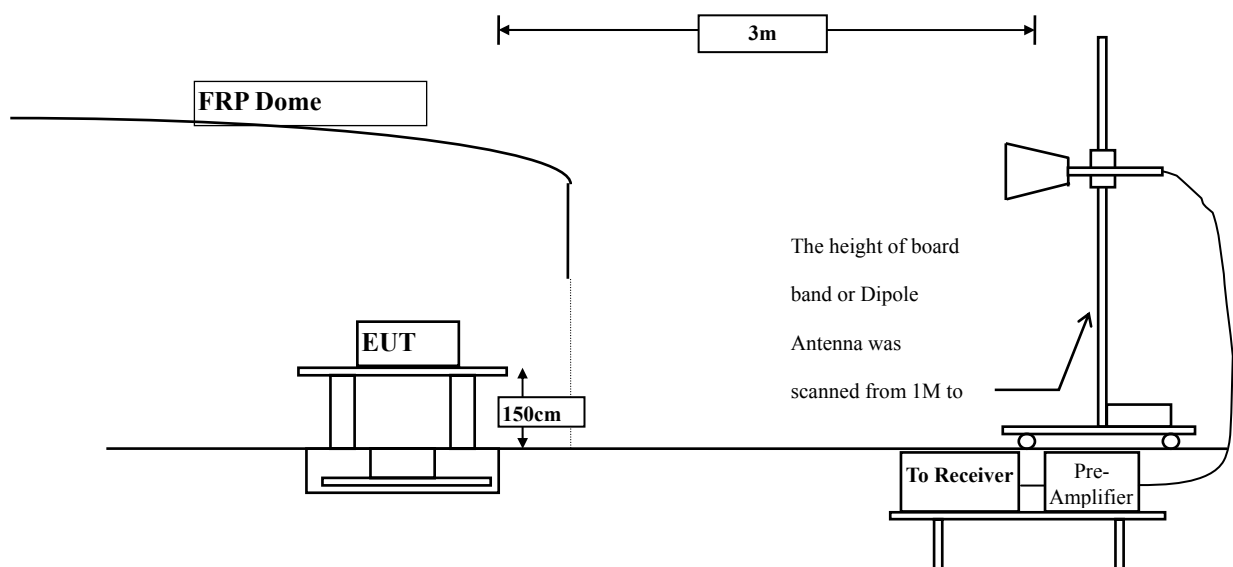
The following test equipments are used during the band edge tests:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ CB # 8	X	Spectrum Analyzer	R&S	FSP40/ 100339	Oct., 2015
	X	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar., 2016
	X	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan., 2016
	X	Horn Antenna	TRC	AH-0801/95051	Aug., 2015
	X	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan., 2016
	X	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul., 2016
	X	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul., 2016

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

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

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

6.4. Test Procedure

The EUT was setup according to ANSI C63.10, 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.

6.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

6.6. Test Result of Band Edge

Product : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2386.232	-1.146	42.662	41.516	74.00	54.00	Pass
01 (Peak)	2390.000	-1.131	38.605	37.474	74.00	54.00	Pass
01 (Peak)	2397.101	-1.099	54.071	52.972	--	--	--
01 (Peak)	2400.000	-1.084	51.653	50.570	--	--	--
01 (Peak)	2412.319	-1.014	91.483	90.469	--	--	--
01 (Average)	2386.377	-1.145	35.400	34.255	74.00	54.00	Pass
01 (Average)	2390.000	-1.131	29.372	28.241	74.00	54.00	Pass
01 (Average)	2397.971	-1.094	48.915	47.821	--	--	--
01 (Average)	2400.000	-1.084	43.053	41.970	--	--	--
01 (Average)	2412.899	-1.010	87.518	86.508	--	--	--

Figure Channel 01:

Horizontal (Peak)

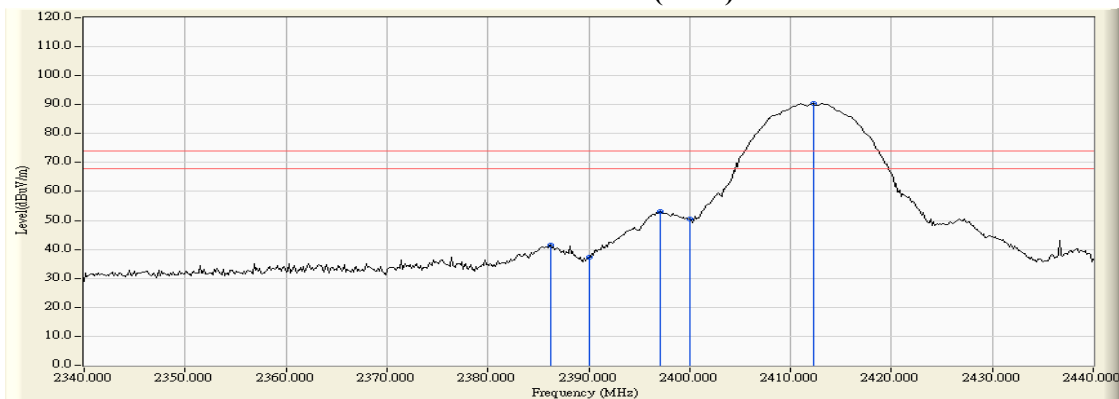
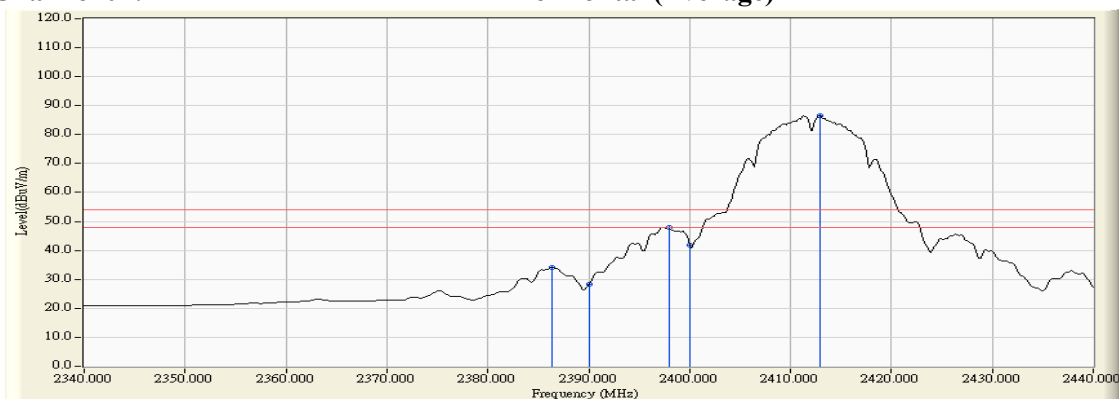


Figure Channel 01:

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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2385.652	-1.705	41.059	39.354	74.00	54.00	Pass
01 (Peak)	2390.000	-1.725	38.474	36.749	74.00	54.00	Pass
01 (Peak)	2397.391	-1.737	48.535	46.798	--	--	--
01 (Peak)	2400.000	-1.733	45.610	43.878	--	--	--
01 (Peak)	2411.884	-1.706	84.572	82.866	--	--	--
01 (Average)	2386.377	-1.708	28.533	26.825	74.00	54.00	Pass
01 (Average)	2390.000	-1.725	24.209	22.484	74.00	54.00	Pass
01 (Average)	2397.391	-1.737	42.194	40.457	--	--	--
01 (Average)	2400.000	-1.733	36.627	34.895	--	--	--
01 (Average)	2412.899	-1.699	80.374	78.674	--	--	--

Figure Channel 01:

VERTICAL (Peak)

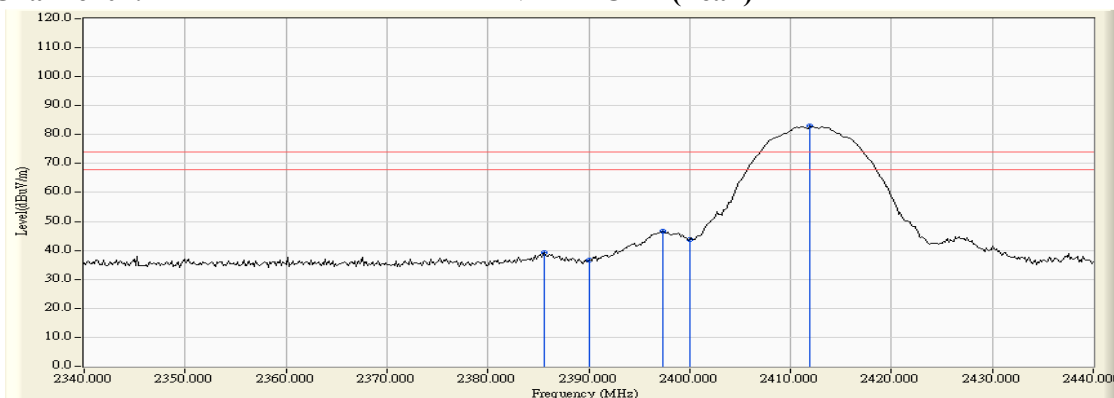
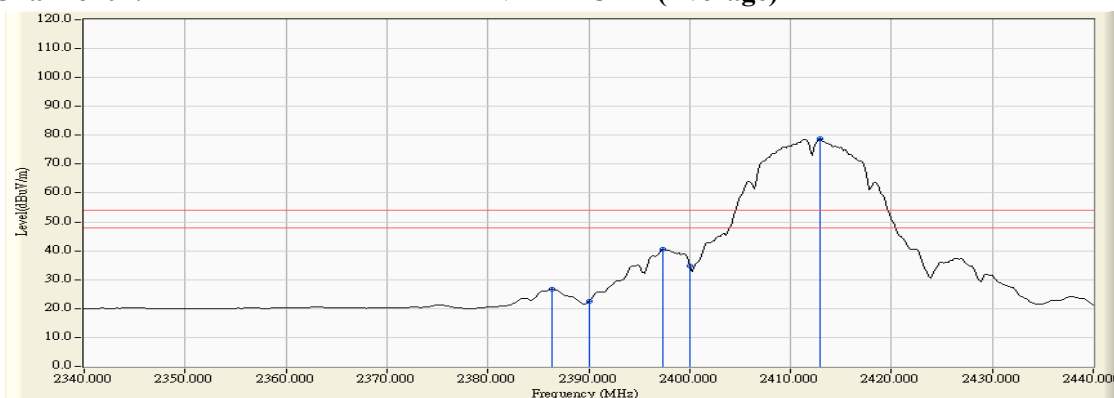


Figure Channel 01:

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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2462.051	-0.695	91.110	90.416	--	--	--
11 (Peak)	2483.500	-0.558	45.469	44.911	74.00	54.00	Pass
11 (Peak)	2484.949	-0.549	46.700	46.151	74.00	54.00	Pass
11 (Average)	2462.775	-0.690	87.220	86.530	--	--	--
11 (Average)	2483.500	-0.558	31.027	30.469	74.00	54.00	Pass
11 (Average)	2487.993	-0.529	33.354	32.824	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

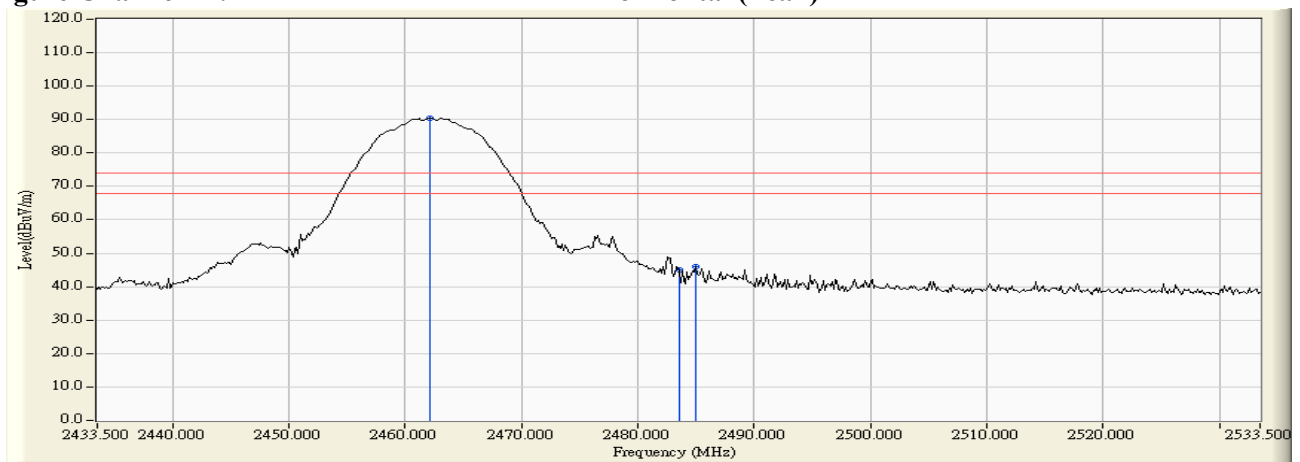


Figure Channel 11: Horizontal (Average)



- 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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2461.906	-1.425	84.619	83.195	--	--	--
11 (Peak)	2483.500	-1.305	39.449	38.144	74.00	54.00	Pass
11 (Peak)	2488.428	-1.278	45.659	44.381	74.00	54.00	Pass
11 (Average)	2462.775	-1.420	80.590	79.171	--	--	--
11 (Average)	2483.500	-1.305	25.592	24.287	74.00	54.00	Pass
11 (Average)	2488.138	-1.278	27.669	26.390	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

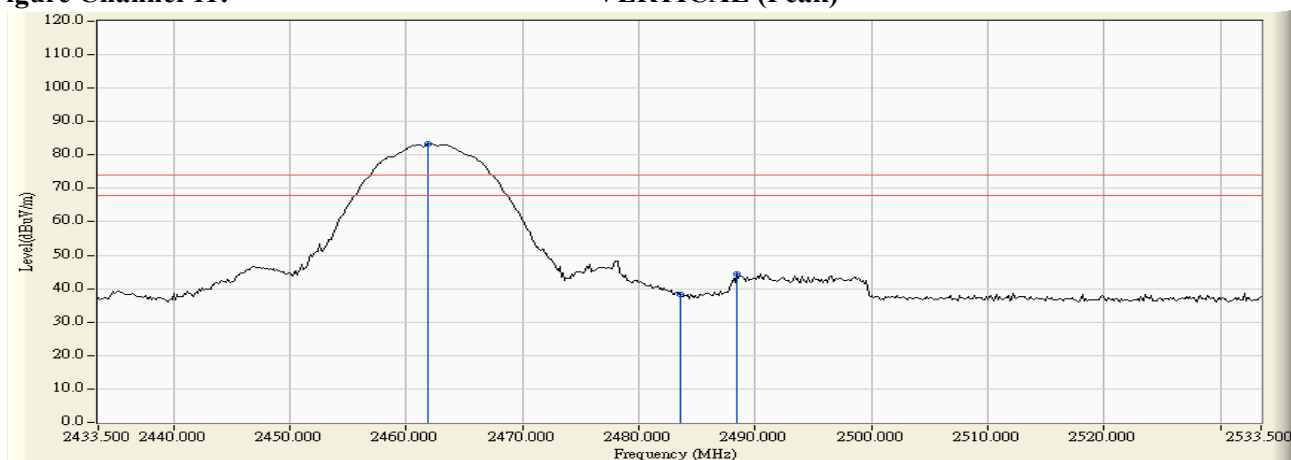


Figure Channel 11: VERTICAL (Average)



- 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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2390.000	-1.131	59.567	58.436	74.00	54.00	Pass
01 (Peak)	2399.420	-1.086	69.130	68.044	--	--	--
01 (Peak)	2400.000	-1.084	66.229	65.146	--	--	--
01 (Peak)	2411.449	-1.019	91.867	90.847	--	--	--
01 (Average)	2390.000	-1.131	38.313	37.182	74.00	54.00	Pass
01 (Average)	2400.000	-1.084	47.764	46.681	--	--	--
01 (Average)	2413.043	-1.009	77.469	76.460	--	--	--

Figure Channel 01: Horizontal (Peak)

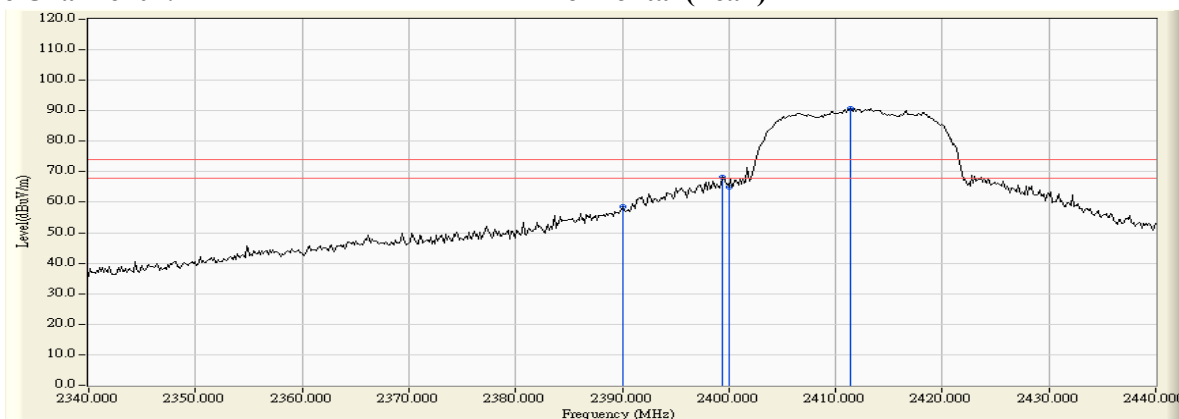
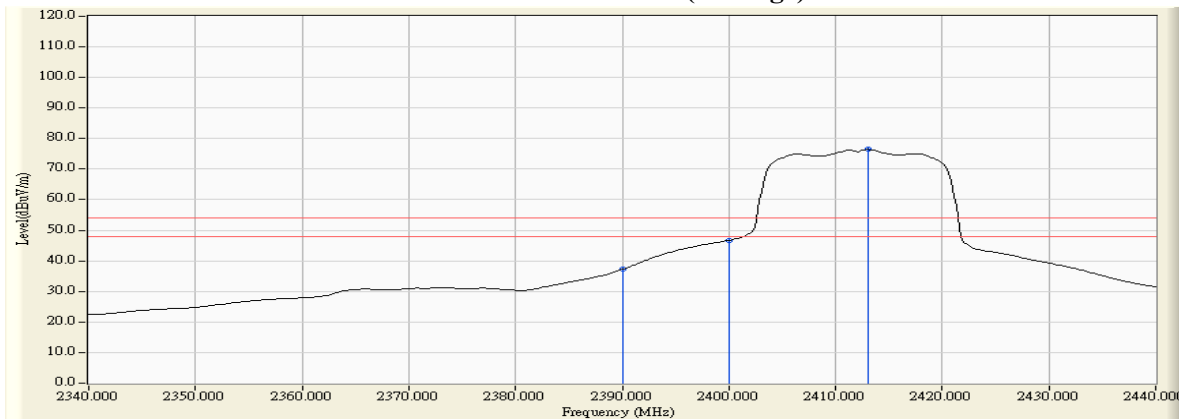


Figure Channel 01: Horizontal (Average)



- 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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2389.565	-1.723	53.051	51.328	74.00	54.00	Pass
01 (Peak)	2390.000	-1.725	52.244	50.519	74.00	54.00	Pass
01 (Peak)	2399.420	-1.733	62.583	60.850	--	--	--
01 (Peak)	2400.000	-1.733	61.167	59.435	--	--	--
01 (Peak)	2411.884	-1.706	85.774	84.068	--	--	--
01 (Average)	2390.000	-1.725	30.508	28.783	74.00	54.00	Pass
01 (Average)	2400.000	-1.733	38.431	36.699	--	--	--
01 (Average)	2413.043	-1.698	71.884	70.185	--	--	--

Figure Channel 01:

VERTICAL (Peak)

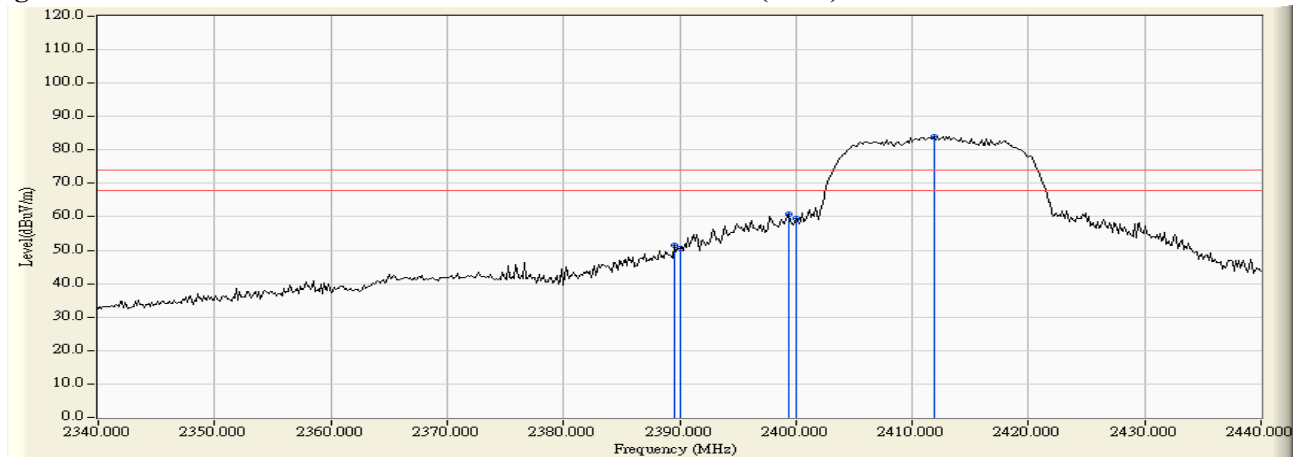
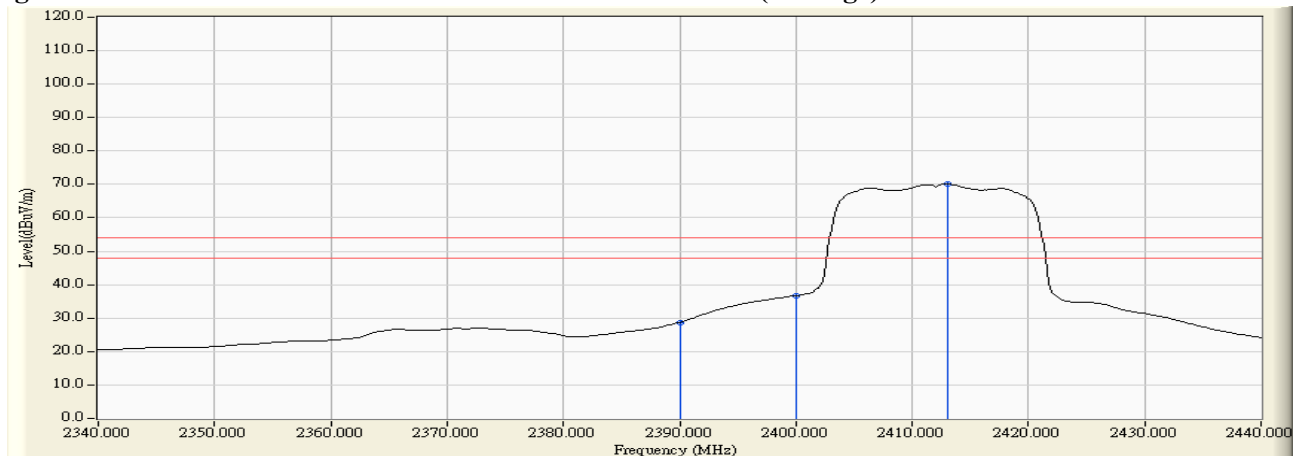


Figure Channel 01:

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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2462.486	-0.691	93.225	92.533	--	--	--
11 (Peak)	2483.500	-0.558	58.368	57.810	74.00	54.00	Pass
11 (Average)	2462.920	-0.689	78.243	77.554	--	--	--
11 (Average)	2483.500	-0.558	34.242	33.684	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

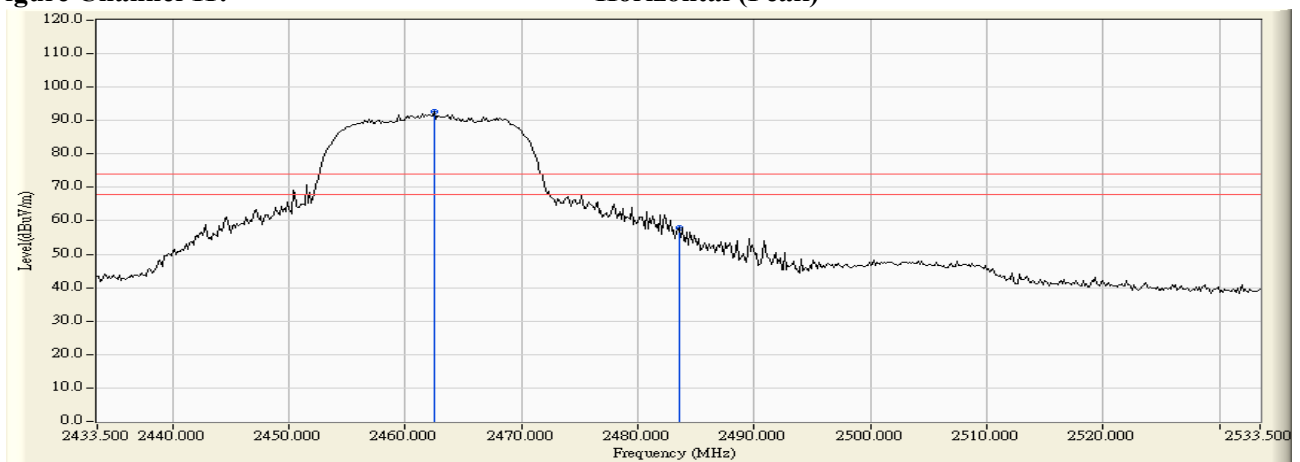
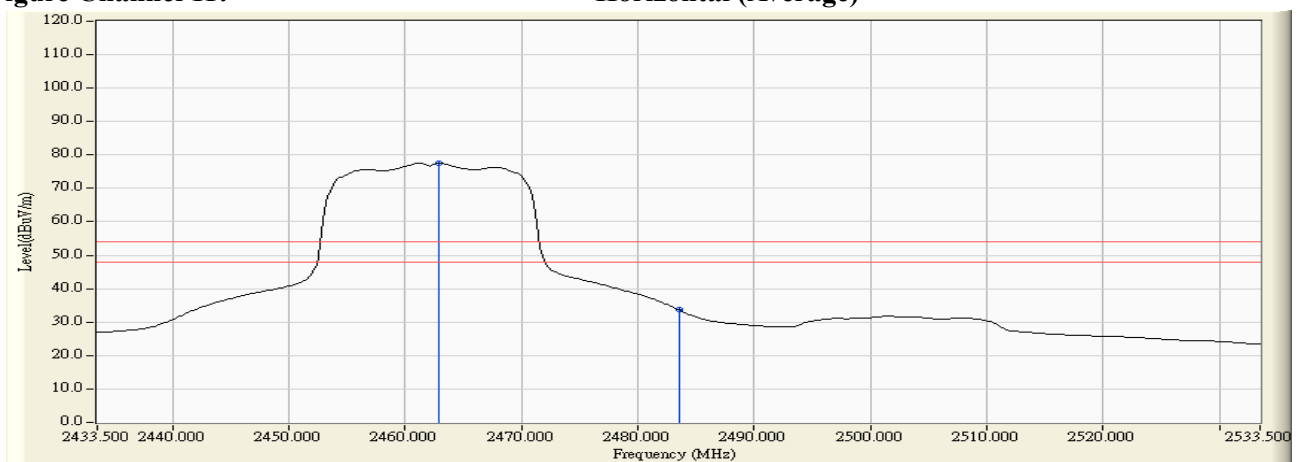


Figure Channel 11: Horizontal (Average)



- 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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2461.906	-1.425	87.767	86.343	--	--	--
11 (Peak)	2483.500	-1.305	54.201	52.896	74.00	54.00	Pass
11 (Average)	2462.920	-1.419	72.044	70.625	--	--	--
11 (Average)	2483.500	-1.305	29.246	27.941	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

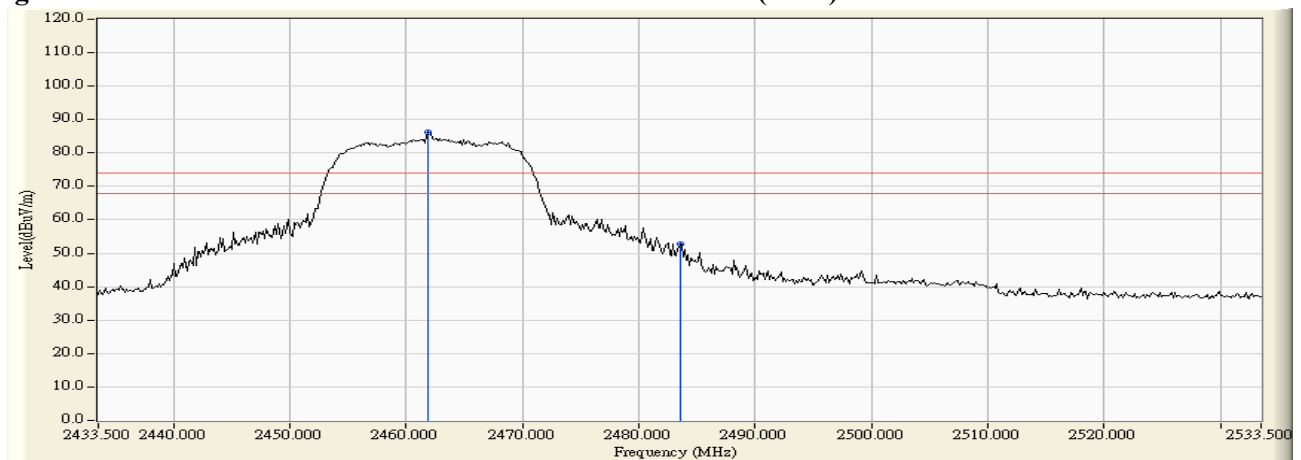
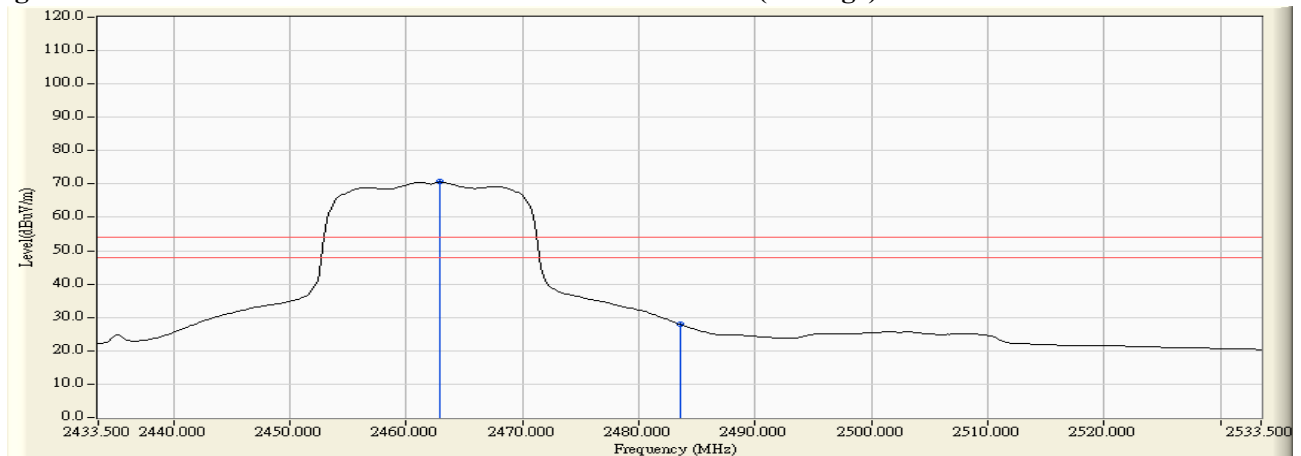


Figure Channel 11: VERTICAL (Average)



- 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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2389.565	-1.132	56.723	55.590	74.00	54.00	Pass
01 (Peak)	2390.000	-1.131	51.373	50.242	74.00	54.00	Pass
01 (Peak)	2399.565	-1.085	62.888	61.803	--	--	--
01 (Peak)	2400.000	-1.084	59.930	58.847	--	--	--
01 (Peak)	2410.870	-1.024	89.996	88.973	--	--	--
01 (Average)	2390.000	-1.131	31.460	30.329	74.00	54.00	Pass
01 (Average)	2400.000	-1.084	38.958	37.875	--	--	--
01 (Average)	2413.043	-1.009	75.238	74.229	--	--	--

Figure Channel 01:

Horizontal (Peak)

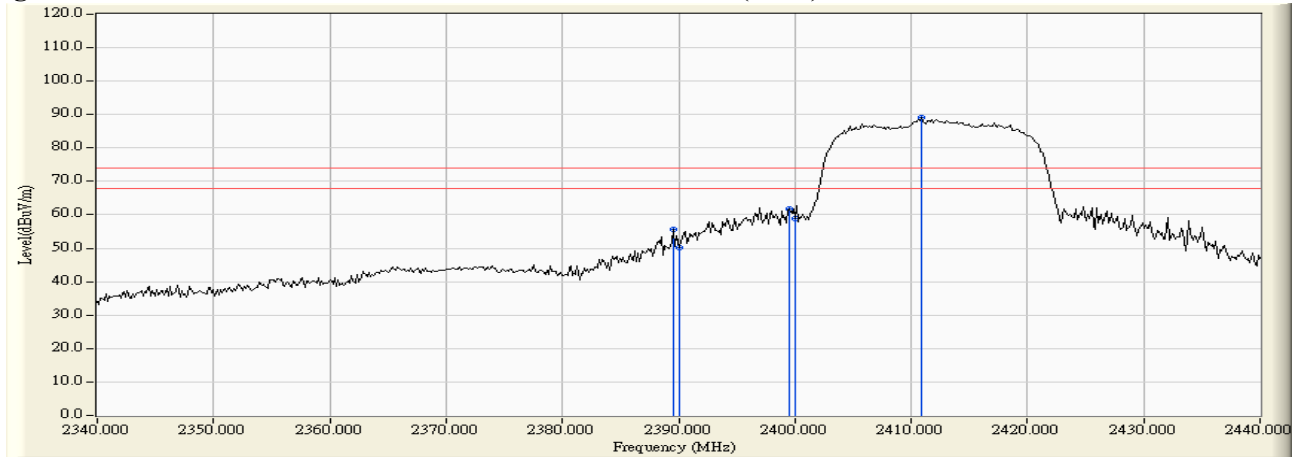
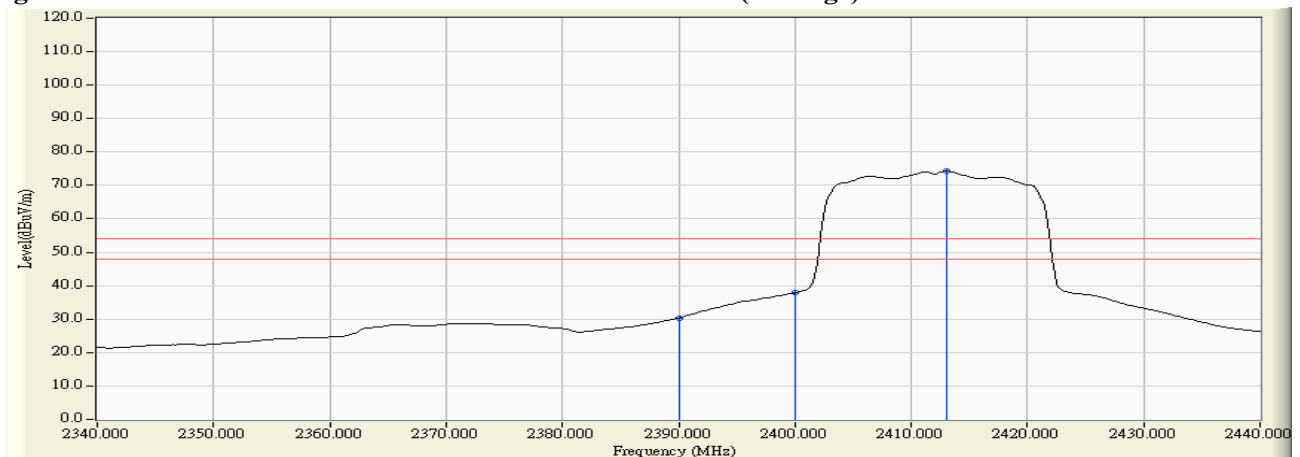


Figure Channel 01:

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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2390.000	-1.725	51.312	49.587	74.00	54.00	Pass
01 (Peak)	2399.565	-1.733	57.623	55.890	--	--	--
01 (Peak)	2400.000	-1.733	55.178	53.446	--	--	--
01 (Peak)	2412.464	-1.703	84.006	82.304	--	--	--
01 (Average)	2390.000	-1.725	27.378	25.653	74.00	54.00	Pass
01 (Average)	2400.000	-1.733	34.015	32.283	--	--	--
01 (Average)	2413.043	-1.698	69.691	67.992	--	--	--

Figure Channel 01: VERTICAL (Peak)

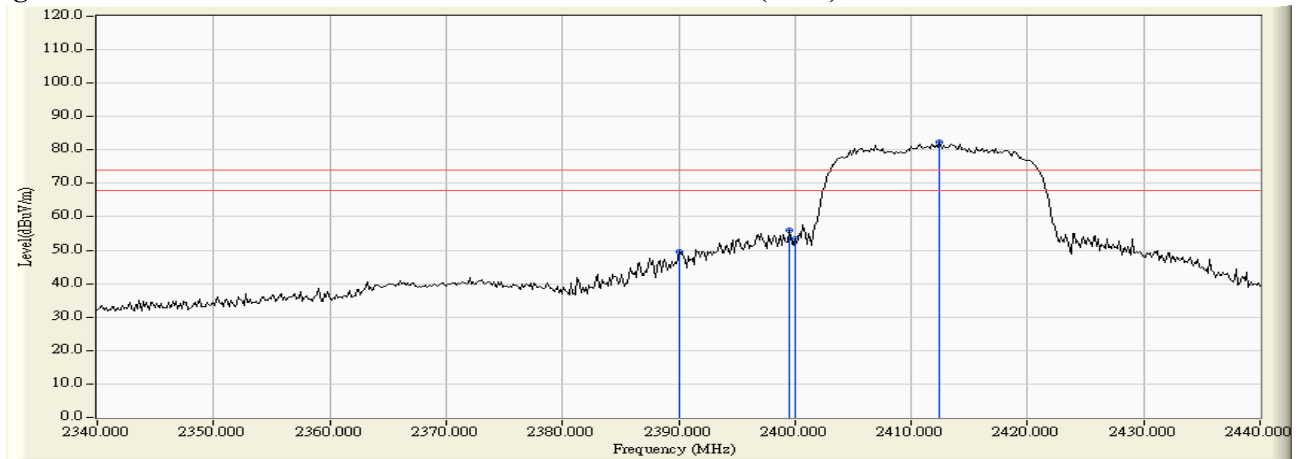
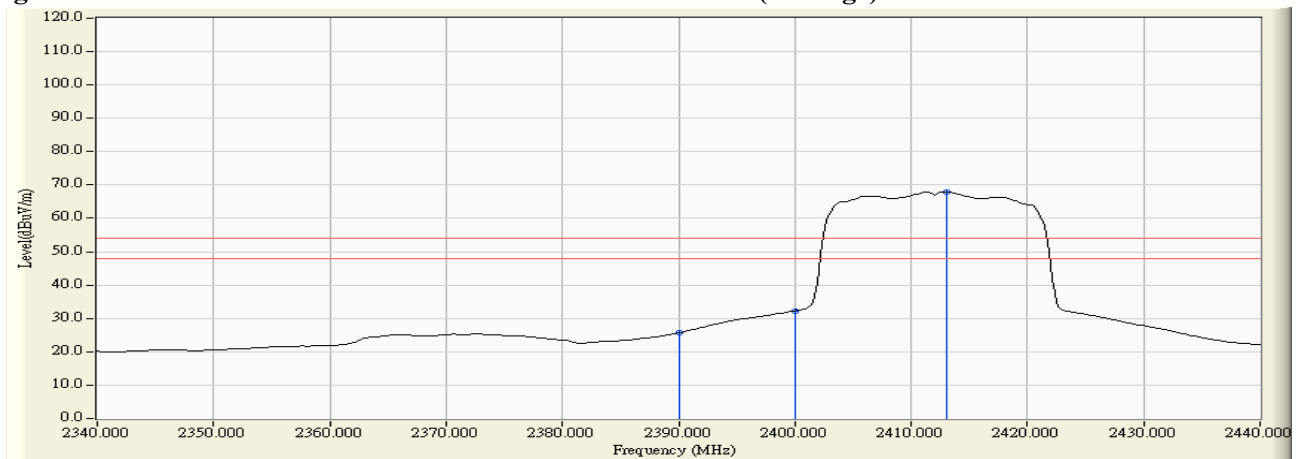


Figure Channel 01: VERTICAL (Average)



- 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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2461.326	-0.699	91.365	90.666	--	--	--
11 (Peak)	2483.500	-0.558	53.219	52.661	74.00	54.00	Pass
11 (Peak)	2486.833	-0.537	54.141	53.604	74.00	54.00	Pass
11 (Average)	2461.181	-0.699	76.965	76.265	--	--	--
11 (Average)	2483.500	-0.558	33.239	32.681	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

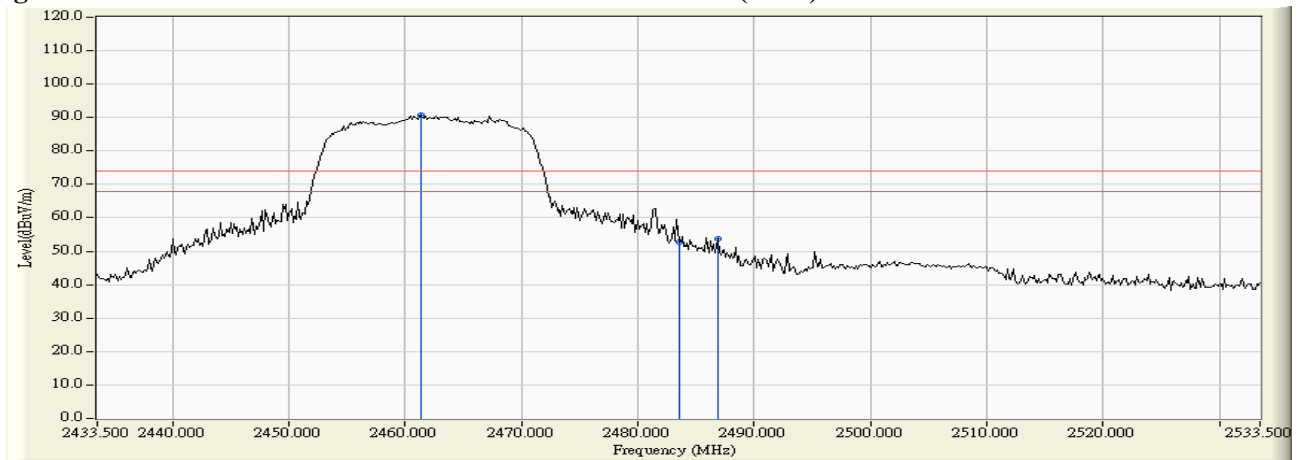
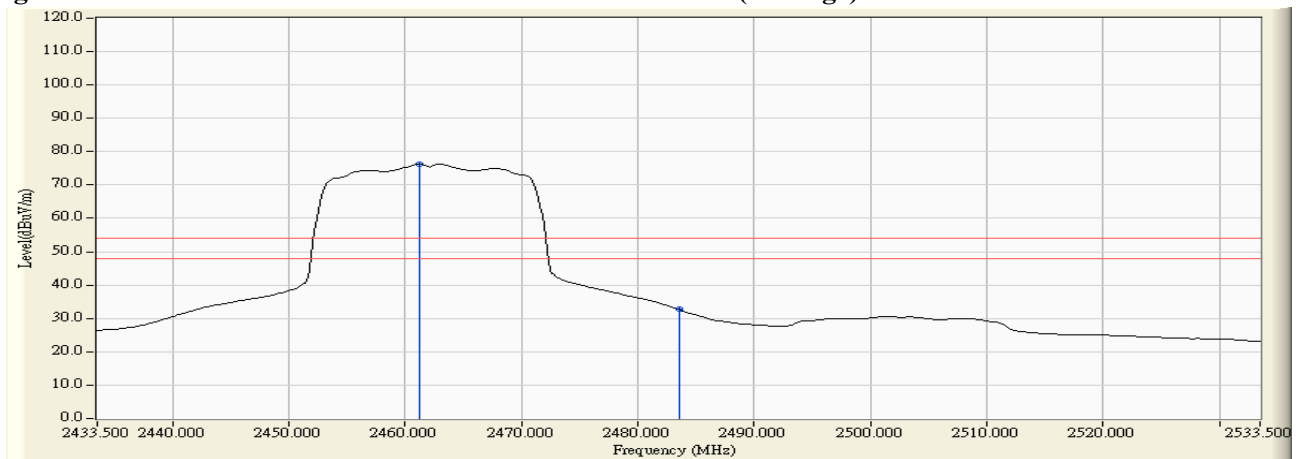


Figure Channel 11: Horizontal (Average)



- 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 : PIC
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2462.920	-1.419	84.188	82.769	--	--	--
11 (Peak)	2483.500	-1.305	49.194	47.889	74.00	54.00	Pass
11 (Peak)	2486.254	-1.289	49.390	48.100	74.00	54.00	Pass
11 (Average)	2461.181	-1.428	69.889	68.461	--	--	--
11 (Average)	2483.500	-1.305	27.614	26.309	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

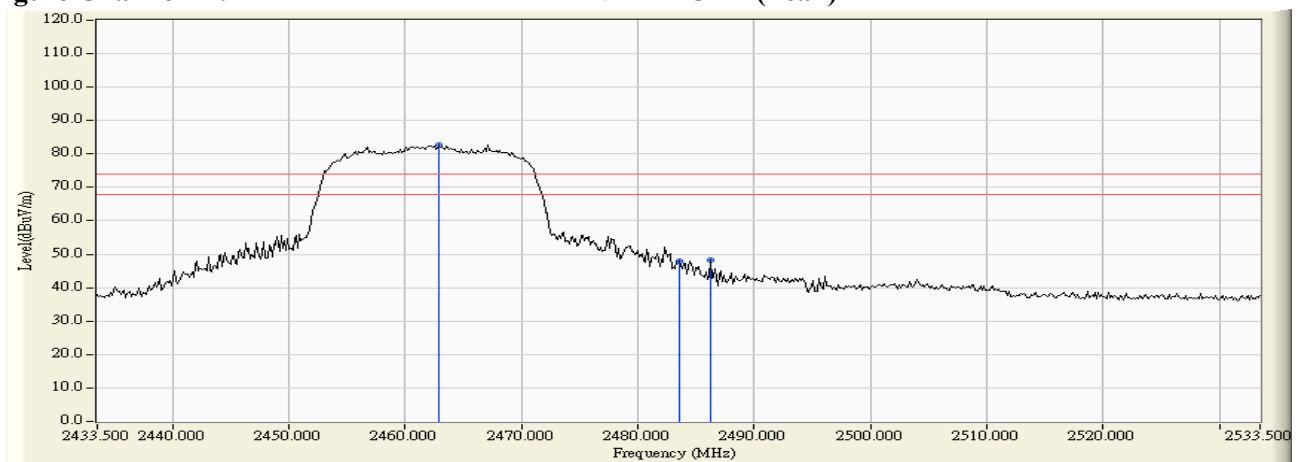
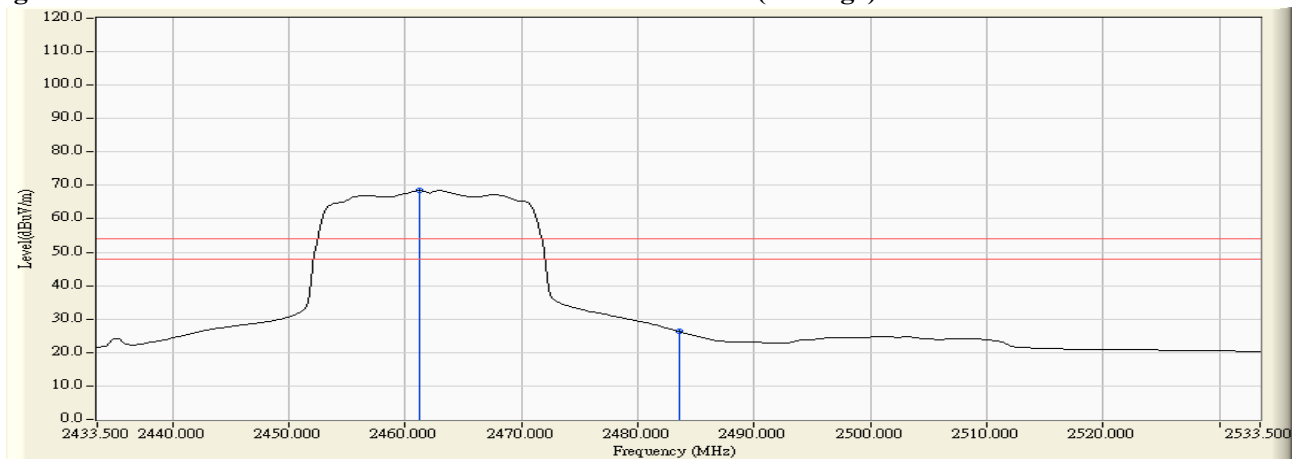


Figure Channel 11: VERTICAL (Average)



- 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.

7. 6dB Bandwidth

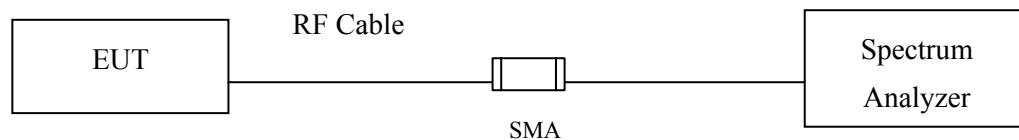
7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2016
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2016
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

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.

7.2. Test Setup



7.3. Limits

The minimum bandwidth shall be at least 500 kHz.

7.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2014; tested according to DTS test procedure of Jan KDB558074 for compliance to FCC 47CFR 15.247 requirements.

7.5. Uncertainty

$\pm 150\text{Hz}$

7.6. Test Result of 6dB Bandwidth

Product : PIC
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	8100	>500	Pass
06	2437	8150	>500	Pass
11	2462	8200	>500	Pass

Figure Channel 01:

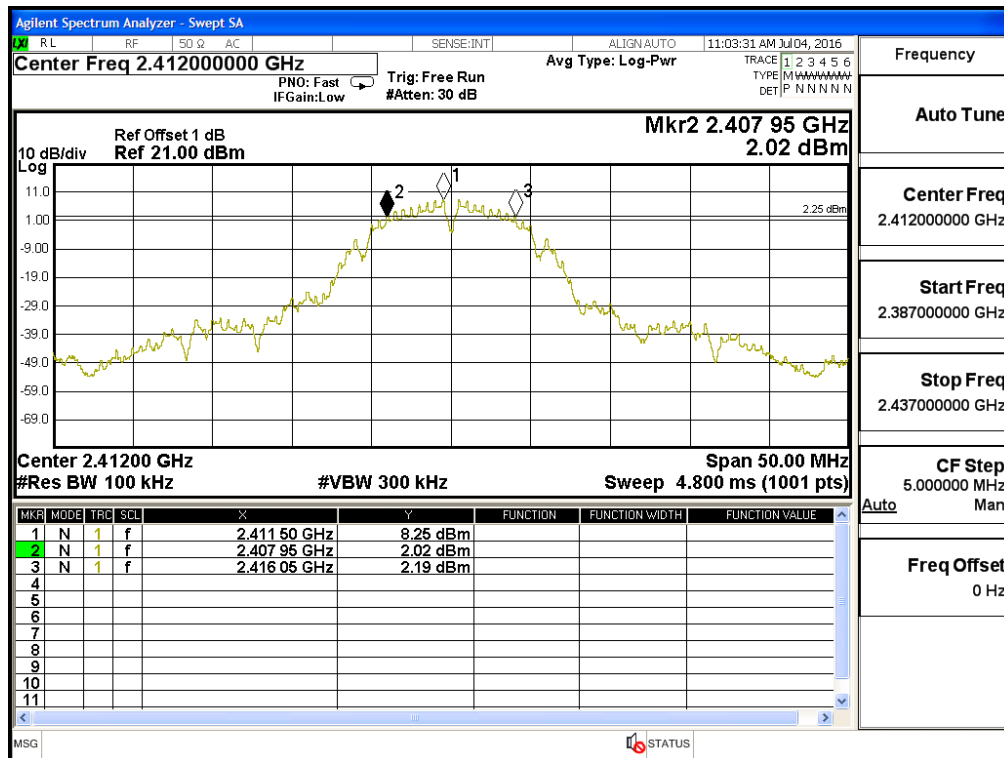


Figure Channel 06:

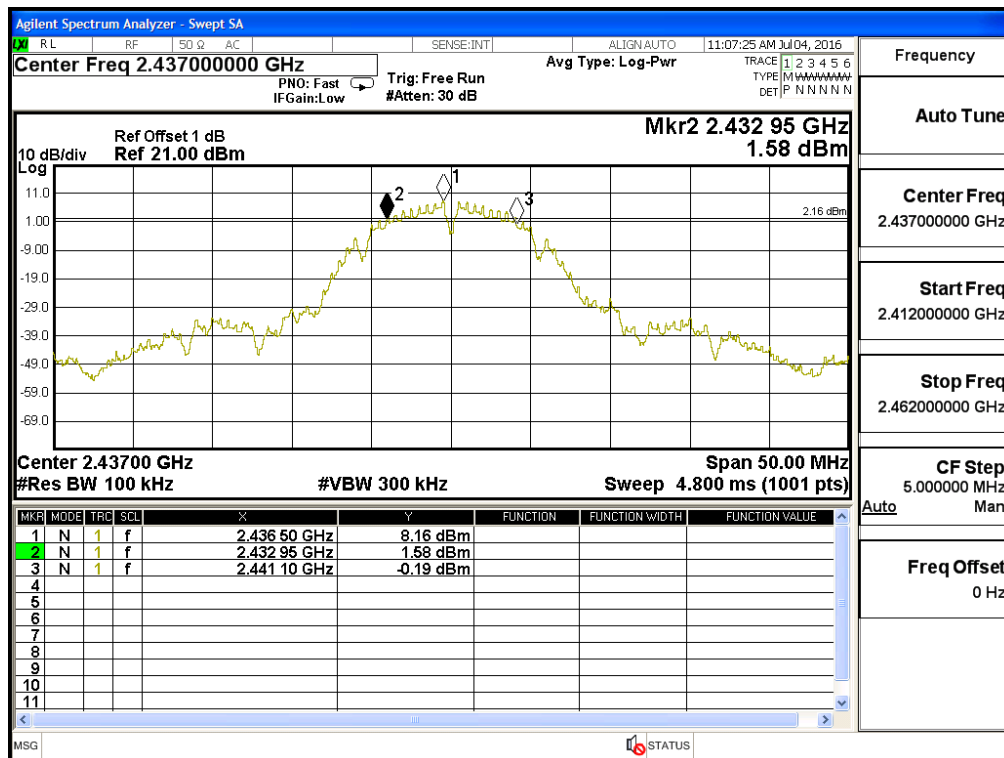
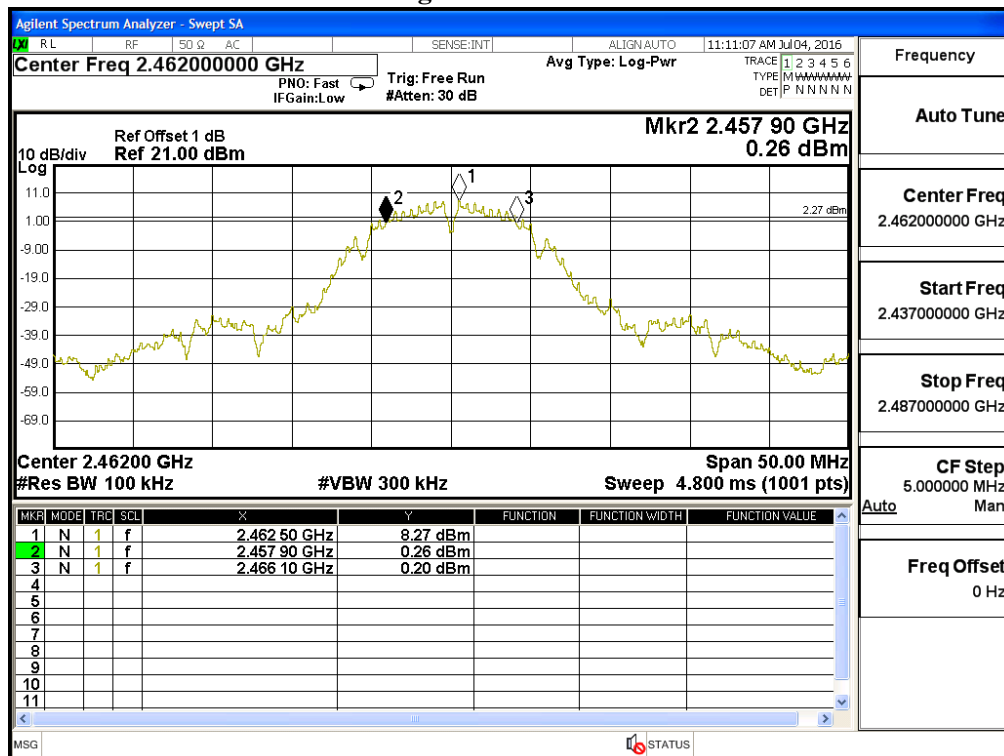


Figure Channel 11:



Product : PIC
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15200	>500	Pass
06	2437	15200	>500	Pass
11	2462	15200	>500	Pass

Figure Channel 01:

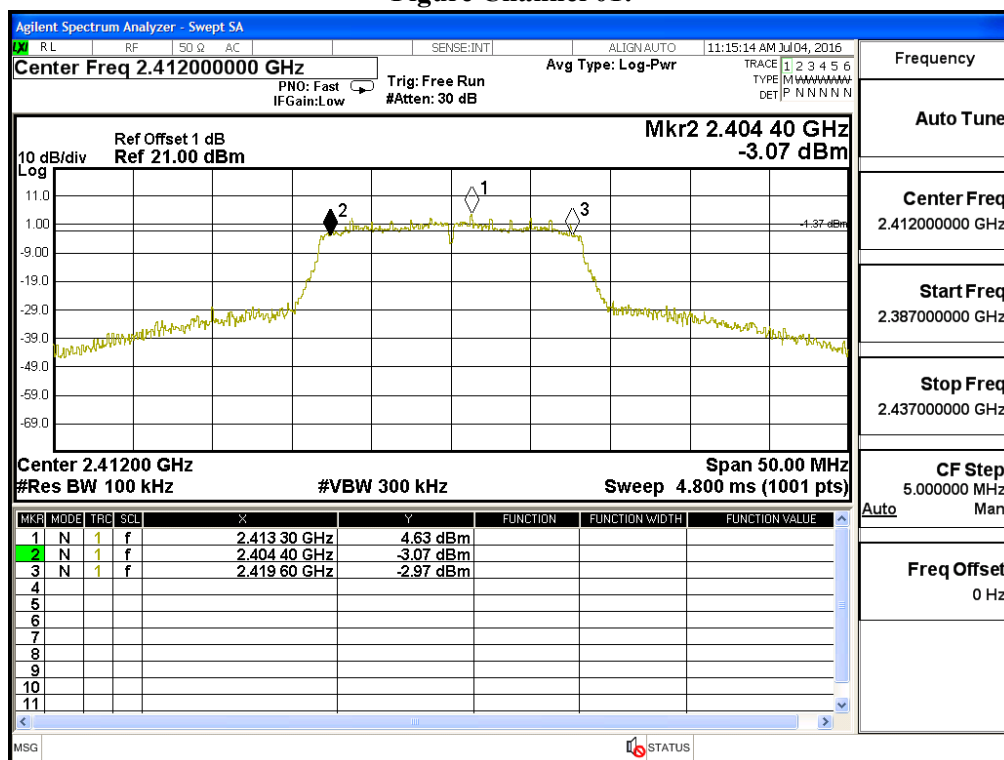


Figure Channel 06:

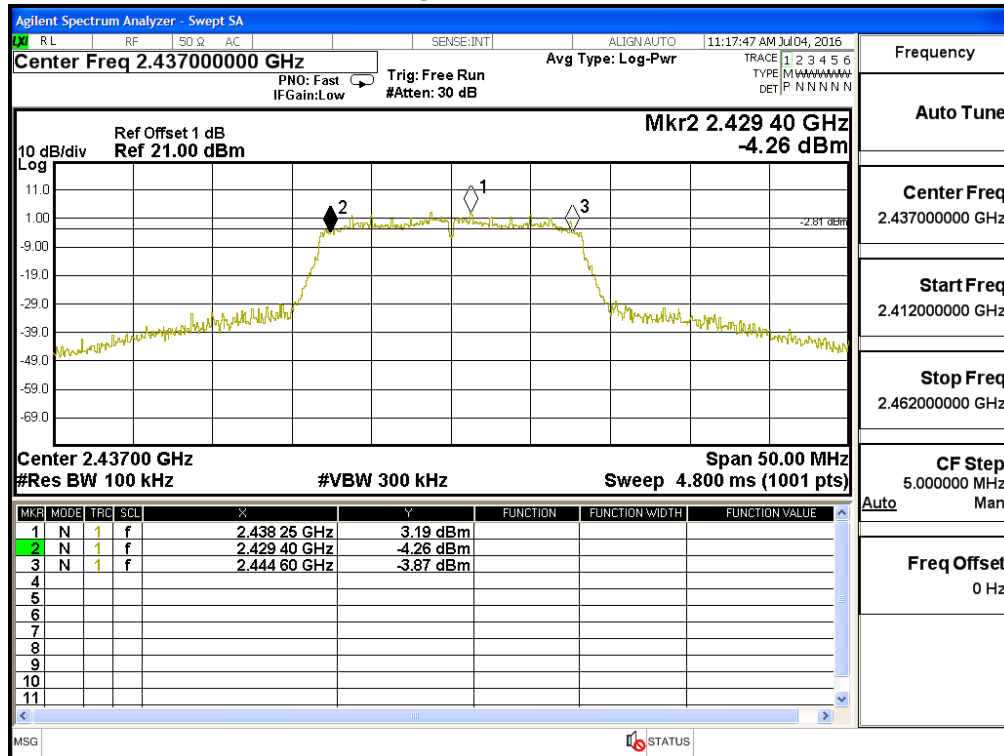
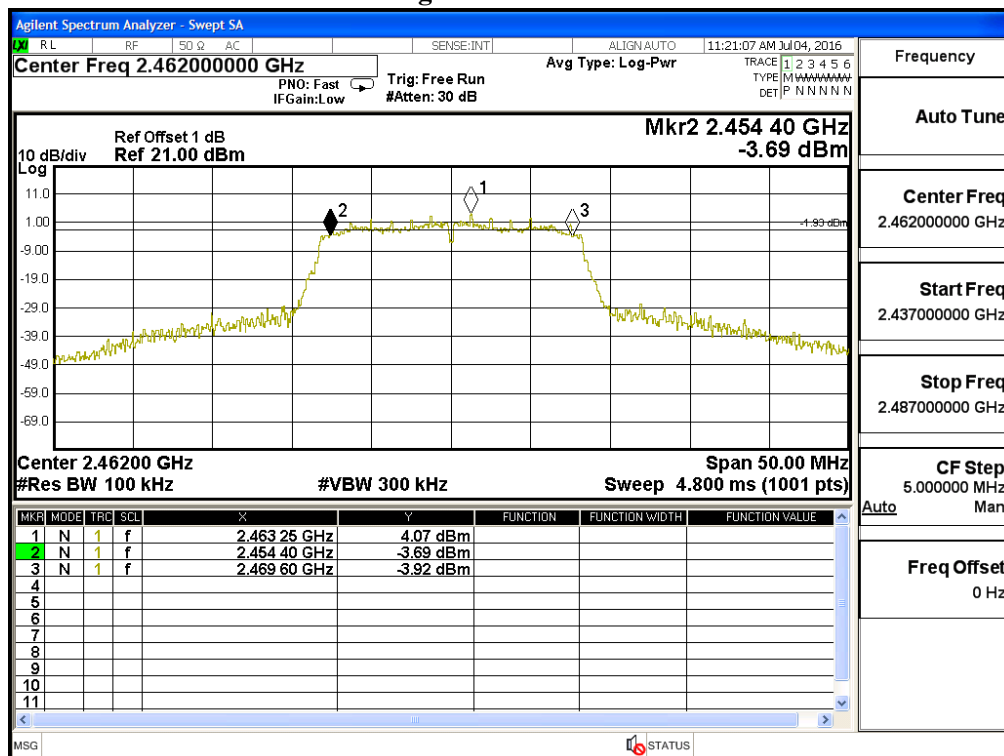


Figure Channel 11:



Product : PIC
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15200	>500	Pass
06	2437	15200	>500	Pass
11	2462	15200	>500	Pass

Figure Channel 01:

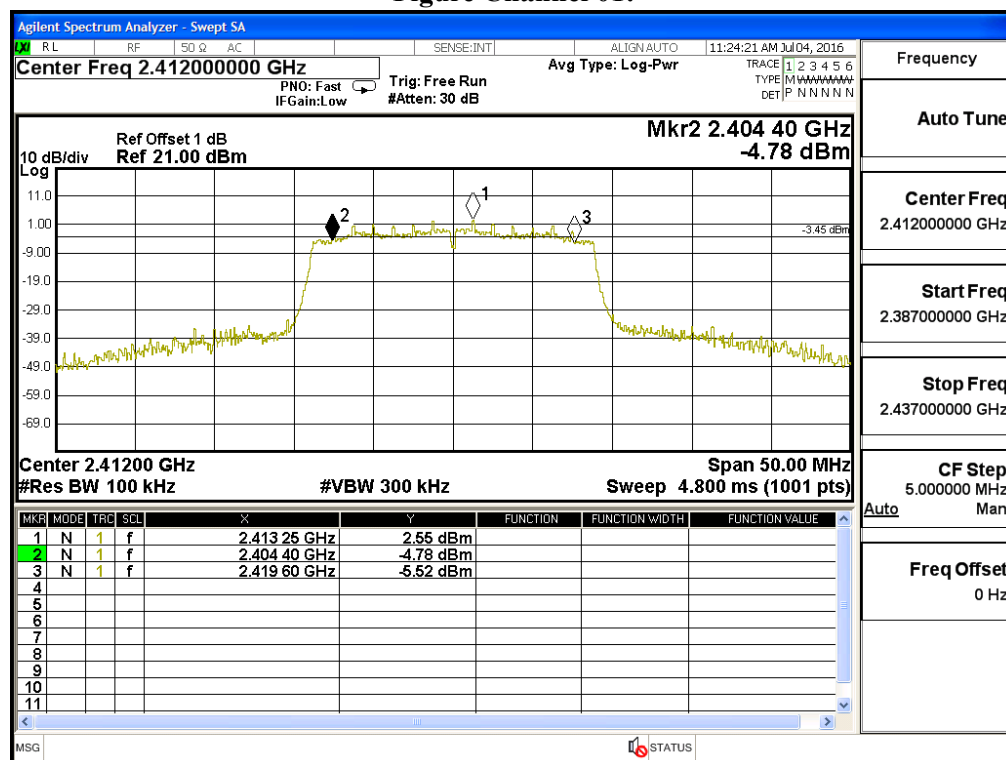


Figure Channel 06:

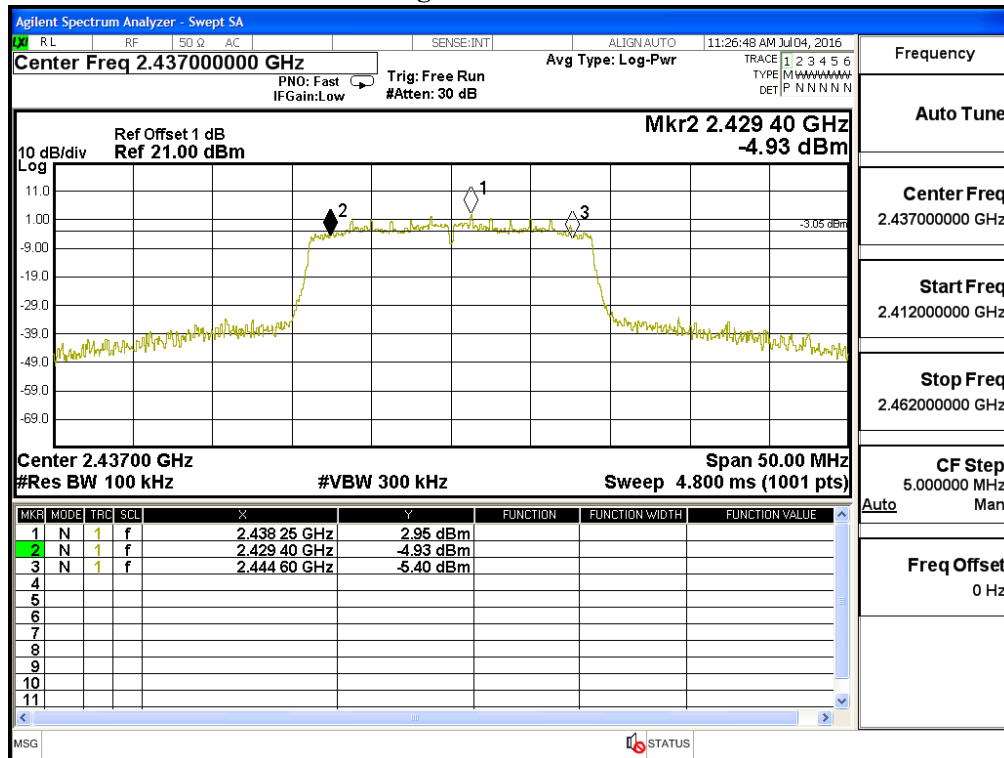
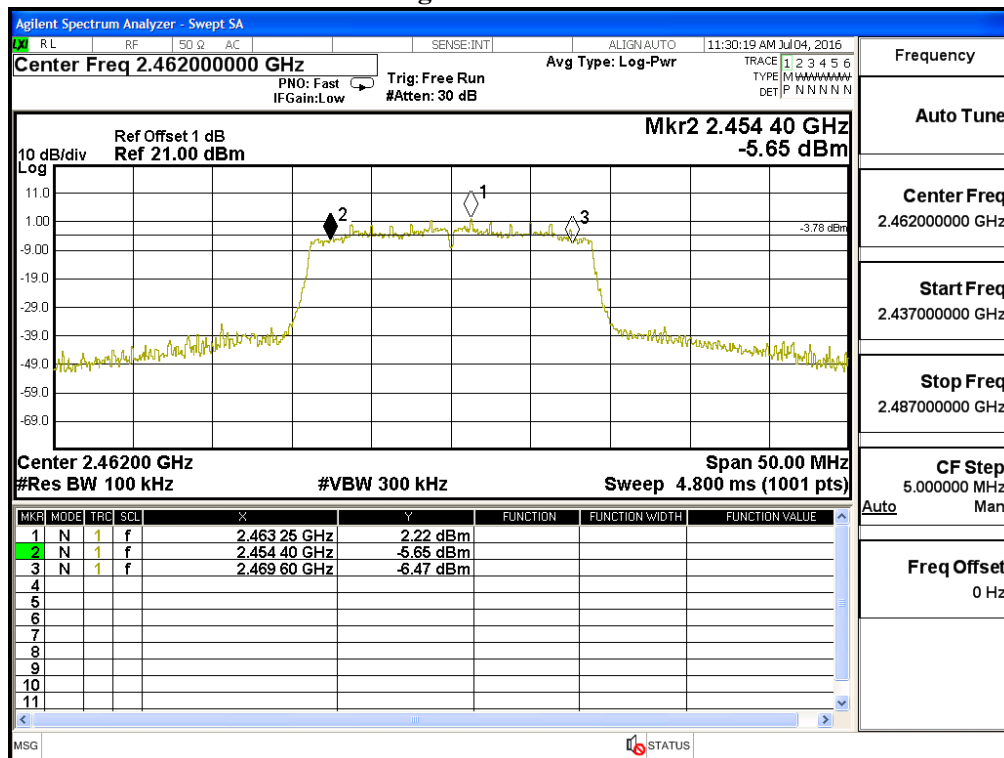


Figure Channel 11:



8. Power Density

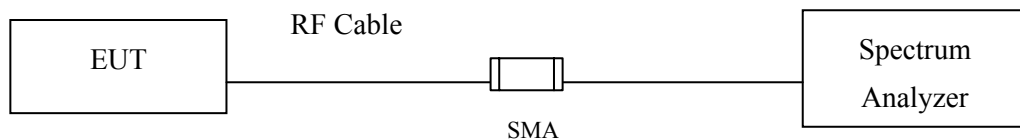
8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
	Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2016
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2016
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

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.

8.2. Test Setup



8.3. Limits

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

8.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

The maximum power spectral density using KDB 558074 section 10.2 PKPSD (peak PSD) method.

8.5. Uncertainty

± 1.27 dB

8.6. Test Result of Power Density

Product : PIC
 Test Item : Power Density Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	6.880	$\leq 8\text{dBm}$	Pass
06	2437	7.940	$\leq 8\text{dBm}$	Pass
11	2462	7.930	$\leq 8\text{dBm}$	Pass

Figure Channel 01:

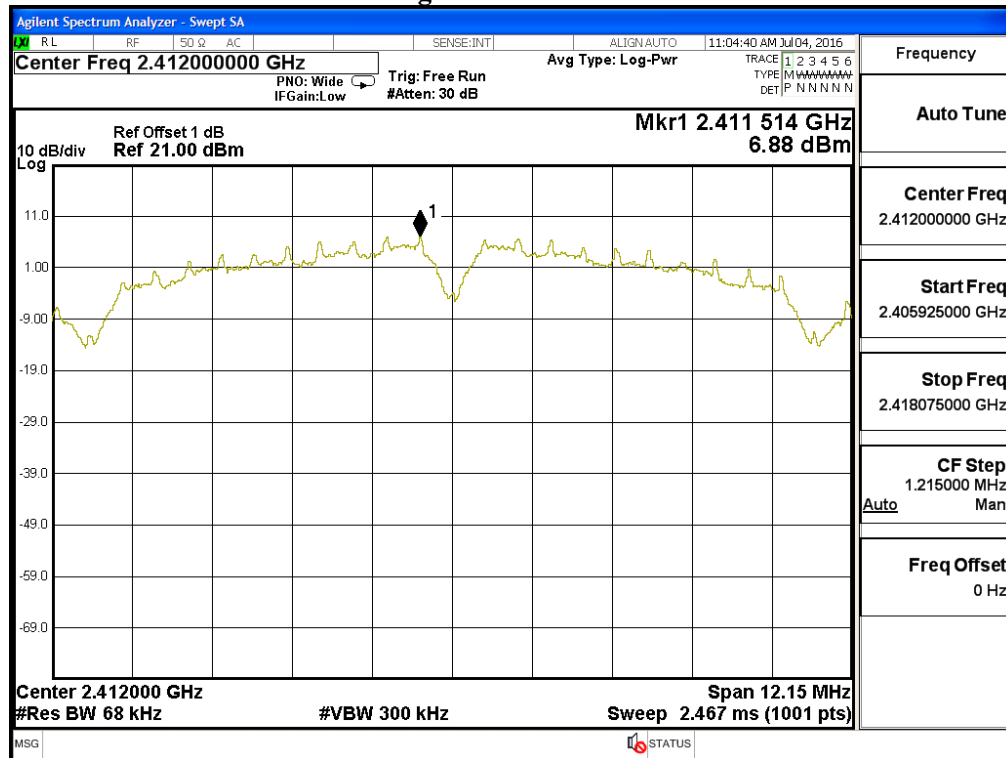


Figure Channel 06:

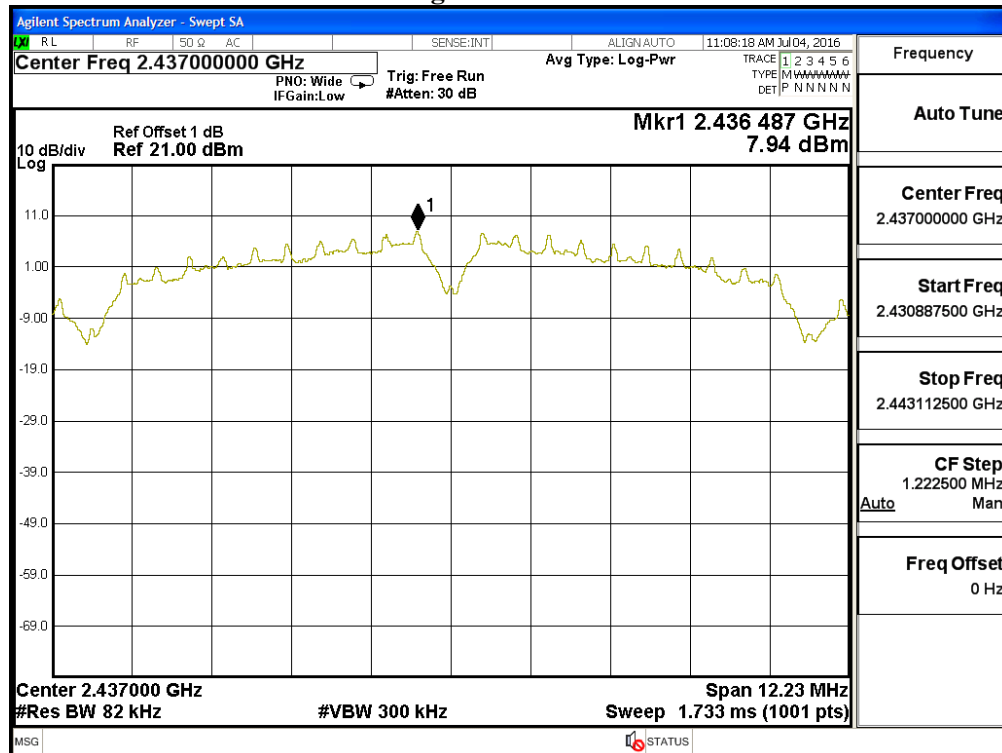
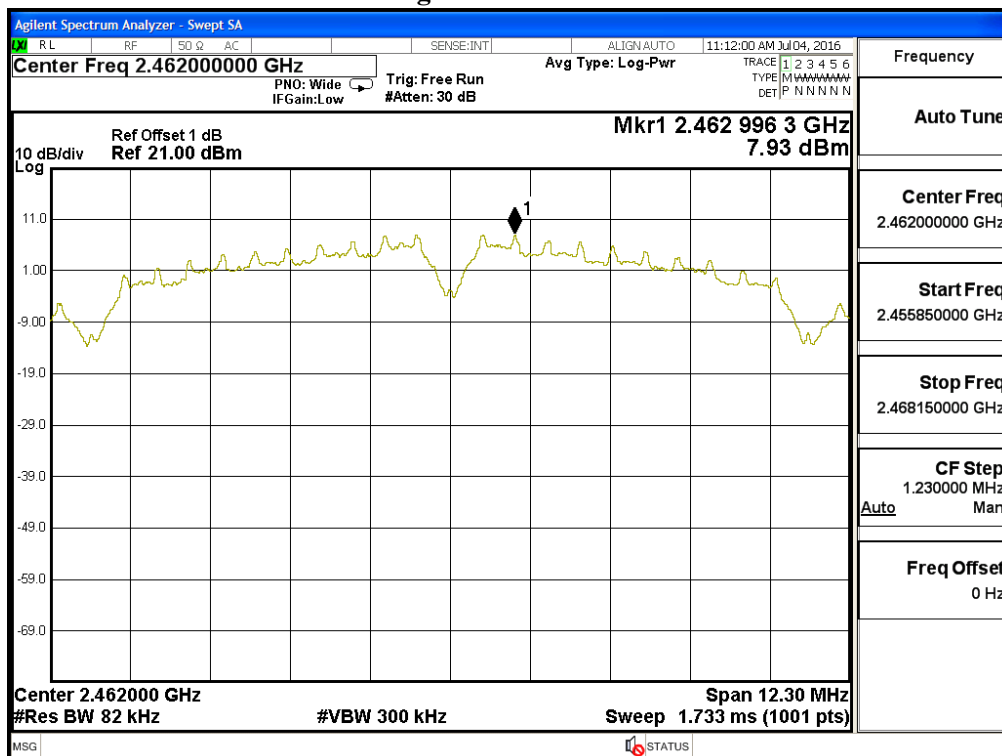


Figure Channel 11:



Product : PIC
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	4.790	$\leq 8\text{dBm}$	Pass
06	2437	3.620	$\leq 8\text{dBm}$	Pass
11	2462	4.000	$\leq 8\text{dBm}$	Pass

Figure Channel 01:

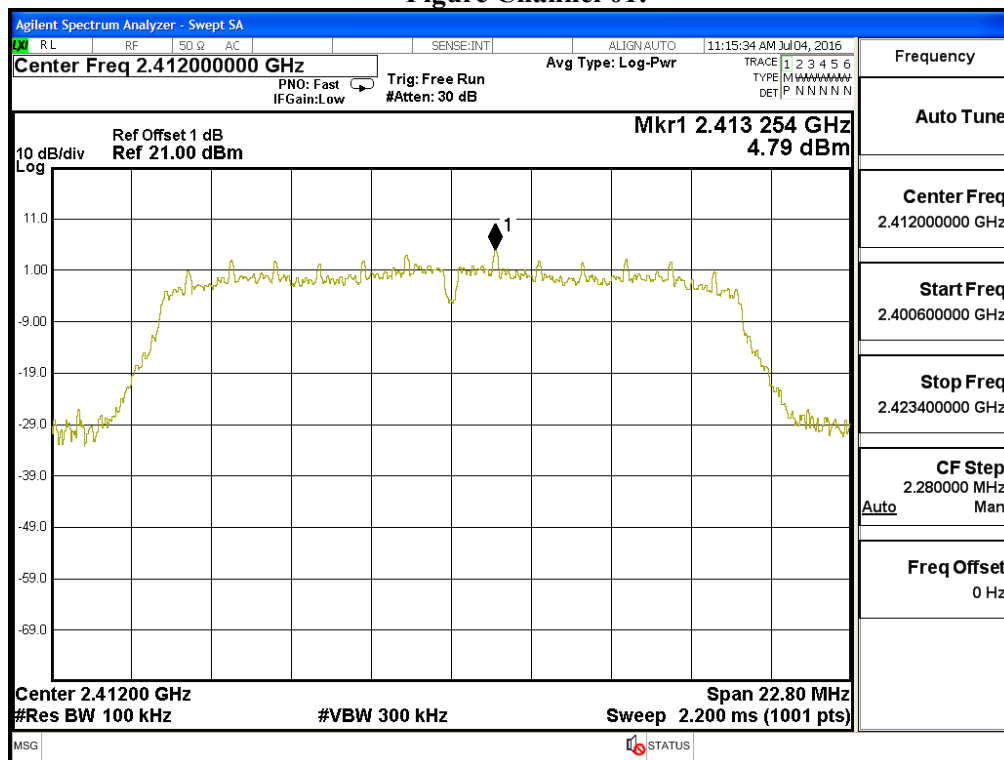


Figure Channel 06:

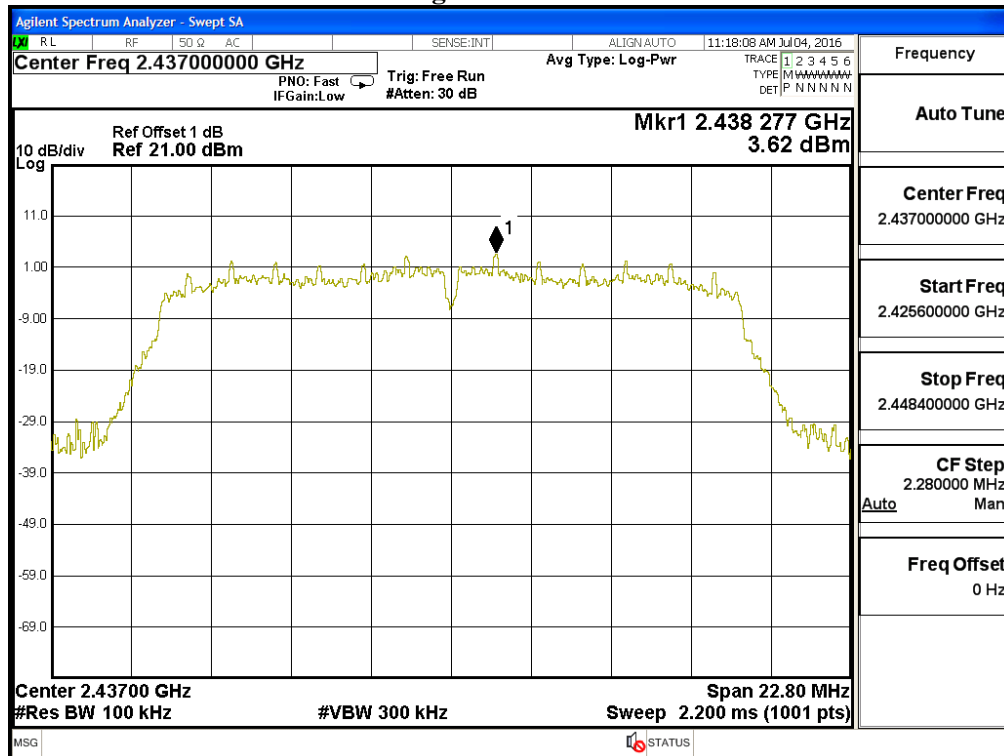
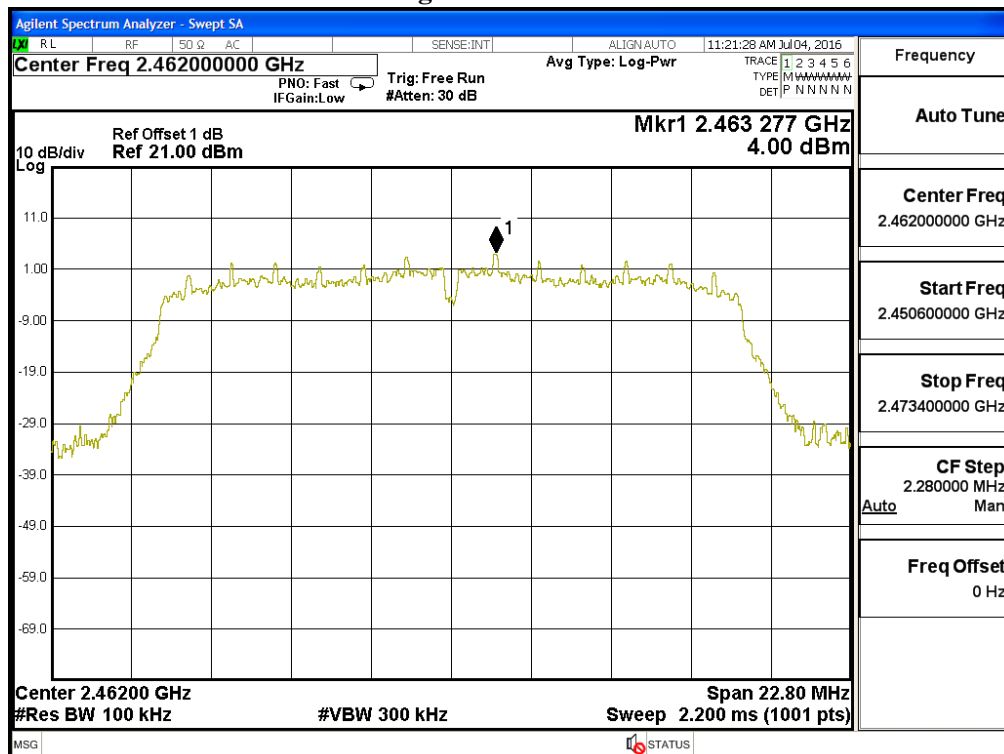


Figure Channel 11:



Product : PIC
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	2.830	$\leq 8\text{dBm}$	Pass
06	2437	2.920	$\leq 8\text{dBm}$	Pass
11	2462	1.970	$\leq 8\text{dBm}$	Pass

Figure Channel 01:

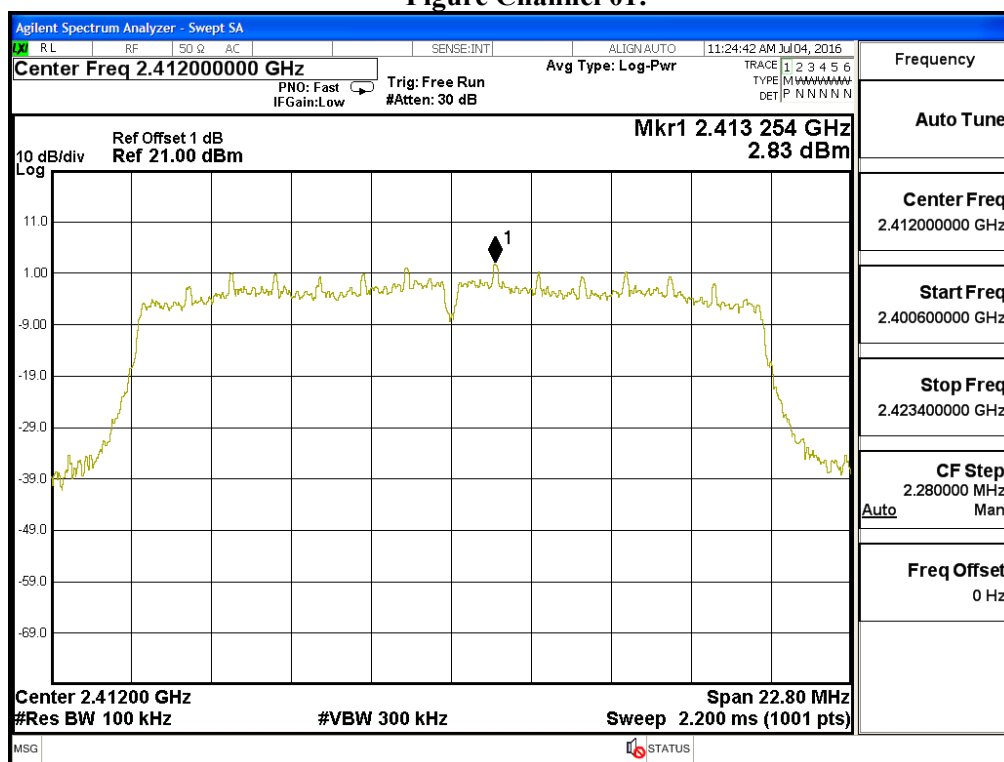


Figure Channel 06:

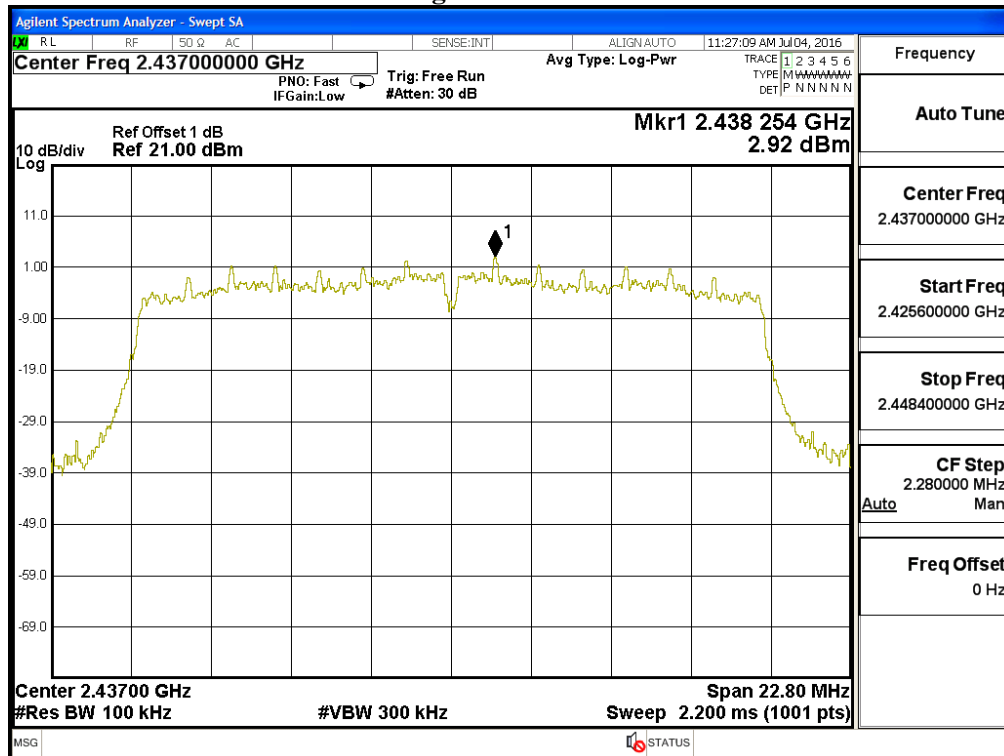
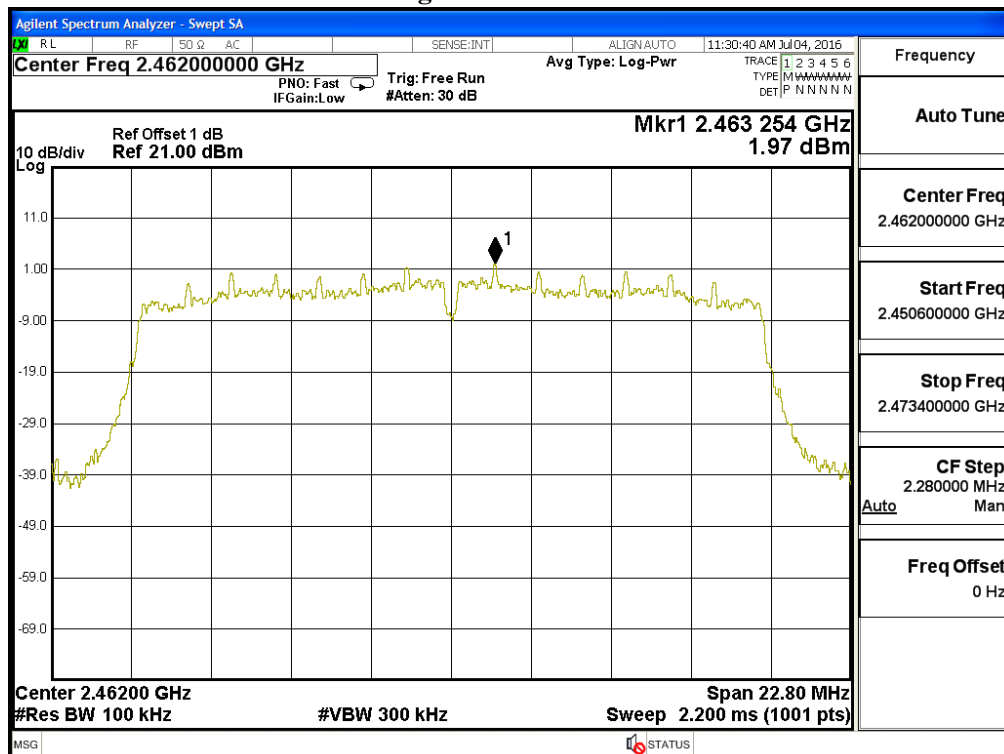


Figure Channel 11:



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs