FCC Test Report

Product Name	zoomBox
Model No	ZB-DM-001
FCC ID.	2AJ4QZBP802C1G04GC0

Applicant	DIGIT MOBILE INC.
Address	5F, No. 550, Ruei Guang Rd., Nei Hu Dist., Taipei City 114, Taiwan

Date of Receipt	Oct. 13, 2016
Issue Date	Nov. 04, 2016
Report No.	16A0226R-RFUSP04V00
Report Version	V1.0

ilac-MRA TAF Testing Laboratory 3023

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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The test report shall not be reproduced without the written approval of QuieTek Corporation.

Test Report

Issue Date: Nov. 04, 2016
Report No.: 16A0226R-RFUSP04V00

Product Name	zoomBox
Applicant	DIGIT MOBILE INC.
Address	5F, No. 550, Ruei Guang Rd., Nei Hu Dist., Taipei City 114, Taiwan
Manufacturer	ZINWELL CORPORATION
Model No.	ZB-DM-001
FCC ID.	2AJ4QZBP802C1G04GC0
EUT Rated Voltage	DC 5V, 2A
EUT Test Voltage	AC 120V/60Hz
Trade Name	zoomBox
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

Documented By : Anita Chou

(Senior Engineering Adm. Specialist / Anita Chou)

Tested By : Tom chiu

(Engineer / Tom Chiu)

Approved By :

(Director / Vincent Lin)

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	zoomBox
Trade Name	zoomBox
Model No.	ZB-DM-001
FCC ID.	2AJ4QZBP802C1G04GC0
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 72.2Mbps
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
HDMI Cable	Non-shielded, 1.5m
Bluetooth Speaker	Trade :Jabra Model :PHS002W (FCC ID:BCE-PHS002W)
Power Adapter	MFR: APD, M/N: WE-10E05FU Input: AC 100-240V ~ 50-60Hz Output: DC 5V, 2A
Contain Module	AMPAK/AP6212

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	zoomBox	I30	PIFA Antenna	3.1dBi for 2.4 GHz

Note: 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 zoomBox with a built-in WLAN、Bluetooth V3.0, V2.1+EDR,V4.0 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、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)

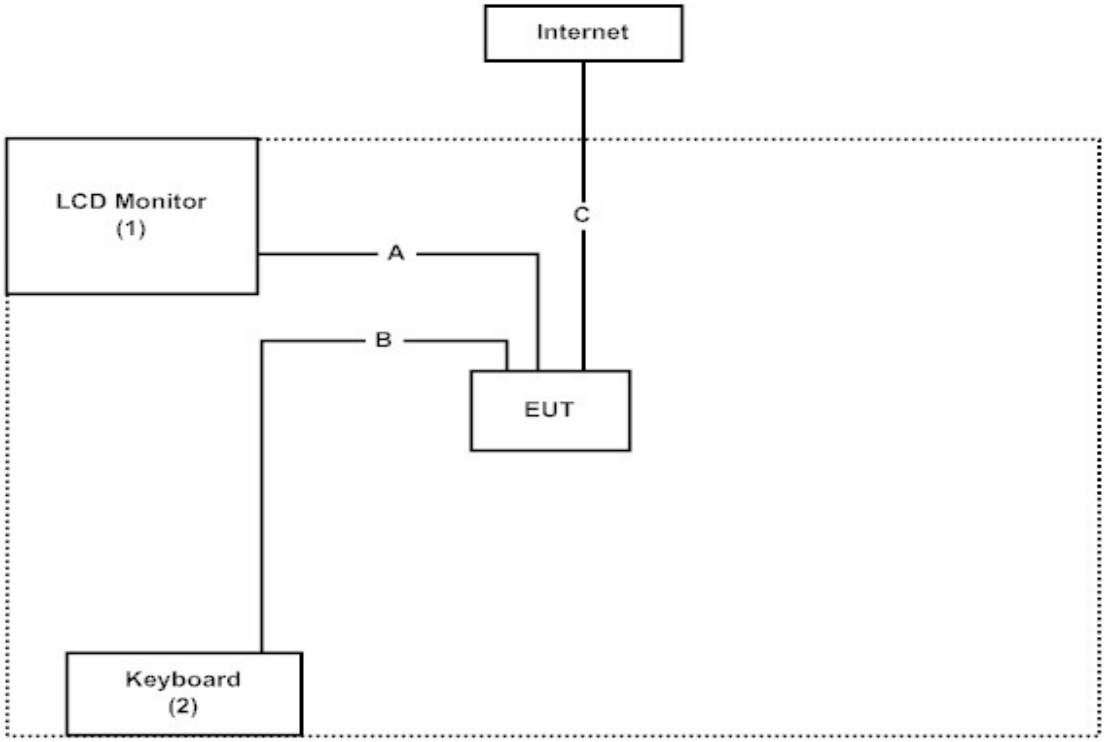
1.3. Tested System Details

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	LCD Monitor	ASUS	VS229HA	F4LMQS135395	Non-Shielded, 1.8m
2	Keyboard	DELL	SK-8115	MY-0DJ325-71619-6A3-1913	N/A

Signal Cable Type		Signal cable Description
A	HDMI Cable	Non-shielded, 1.5m
B	USB Cable	Shielded, 1.0m, with one ferrite core bonded.
C	LAN Cable	Non-shielded, 2.5m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “RF TestTool V5.5” on the EUT.
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
FCC Engineering Laboratory
7435 Oakland Mills Road
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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

1.7. List of Test Equipment

For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Spectrum Analyzer	Agilent	N9010A	MY48030495	2016/7/22	2017/7/21
X	Power Meter	Anritsu	ML2495A	6K00003357	2016/6/23	2017/6/22
X	EMI Test Receiver	R&S	ESCS 30	100369	2016/10/13	2017/10/12
X	LISN	R&S	ESH3-Z5	836679/017	2016/1/7	2017/1/6
X	LISN	R&S	ENV216	100097	2016/1/7	2017/1/6
X	Coaxial Cable	QTK(Arnist)	RG 400	LC018-RG	2016/6/25	2017/6/24

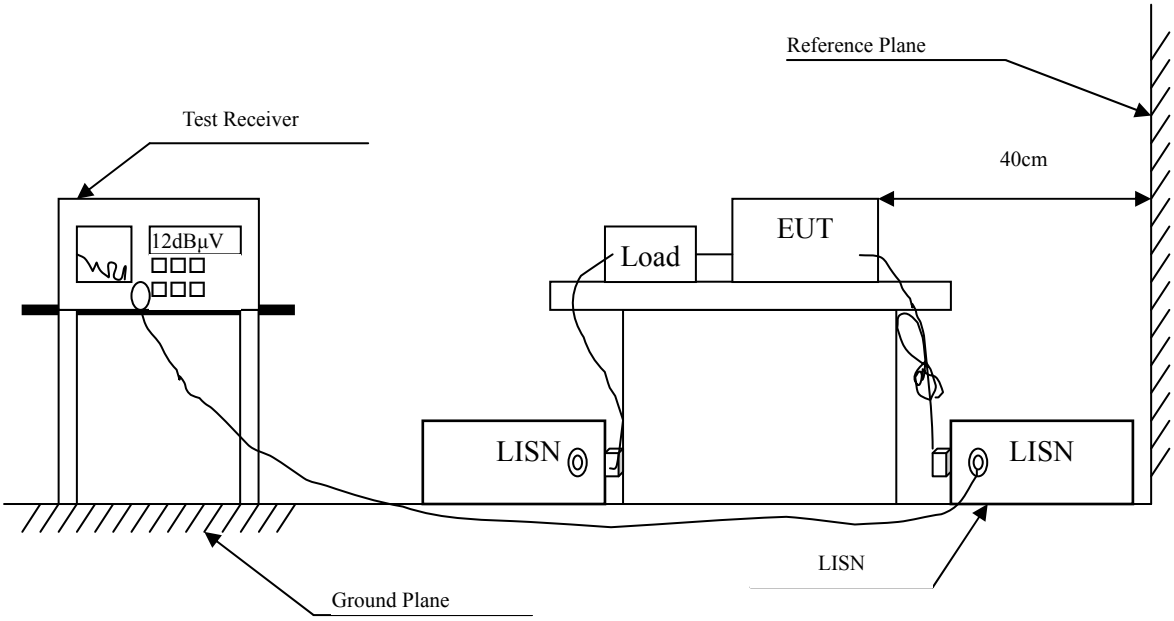
For Radiated measurements /Site3/CB8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Spectrum Analyzer	R&S	FSP40	100170	2016/1/5	2017/1/4
	Loop Antenna	Teseq	HLA6121	37133	2016/3/18	2017/3/17
X	Bi-Log Antenna	Schaffner Chase	CBL6112B	2707	2016/9/10	2017/9/9
X	Horn Antenna	ETS-Lindgren	3117	00135205	2016/4/6	2017/4/5
X	Horn Antenna	Schwarzbeck	BBHA9170	9170430	2016/1/11	2017/1/10
X	Pre-Amplifier	QTK	AP/0100A	CHM/0901069	2016/6/28	2017/6/27
X	Pre-Amplifier	EMCI	EMC012630SE	980210	2016/1/27	2017/1/26
X	Pre-Amplifier	NARDA WE	DBL-1840N506	013	2016/9/30	2017/9/29
X	Filter	MicroTRON	BRM50701	019	2016/10/20	2017/10/19
X	Filter	Microwave Circuits	N0257881	36681	2015/12/7	2016/12/6
X	EMI Test Receiver	R&S	ESR26	101385	2016/9/29	2017/9/28
X	Coaxial Cable	QTK(Arnist)	SUCOFLEX 106	L1606-015C	2016/6/25	2017/6/24
X	EMI Test Receiver	R&S	ESCS 30	838251/001	2016/7/21	2017/7/20
X	Coaxial Cable	QTK(Arnist)	RG 214	LC003-RG	2016/6/21	2017/6/20
X	Coaxial signal switch	Anritsu	MP59B	6201415889	2016/6/16	2017/6/15

Note:
1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : QuieTek EMI 2.0 V2.1.113

2. Conducted Emission

2.1. Test Setup



2.2. 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

2.3. 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.

2.4. Uncertainty

± 2.26 dB

2.5. Test Result of Conducted Emission

Product : zoomBox
Test Item : Conducted Emission Test
Power Line : Line 1
Test Date : 2016/10/20
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					
0.181	9.678	23.860	33.538	-31.576	65.114
0.291	9.675	24.690	34.365	-27.606	61.971
0.531	9.677	11.730	21.407	-34.593	56.000
1.291	9.711	15.020	24.731	-31.269	56.000
3.461	9.771	12.920	22.691	-33.309	56.000
17.481	9.988	10.410	20.398	-39.602	60.000
Average					
0.181	9.678	17.260	26.938	-28.176	55.114
0.291	9.675	20.060	29.735	-22.236	51.971
0.531	9.677	7.970	17.647	-28.353	46.000
1.291	9.711	9.580	19.291	-26.709	46.000
3.461	9.771	9.910	19.681	-26.319	46.000
17.481	9.988	4.650	14.638	-35.362	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	:	zoomBox
Test Item	:	Conducted Emission Test
Power Line	:	Line 2
Test Date	:	2016/10/20
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437MHz)

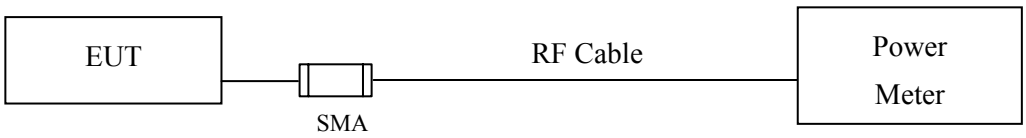
Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV	Margin dB	Limit dBμV
Line 2					
Quasi-Peak					
0.198	9.736	20.810	30.546	-34.083	64.629
0.298	9.739	18.820	28.559	-33.212	61.771
1.288	9.771	12.320	22.091	-33.909	56.000
5.578	9.886	8.570	18.456	-41.544	60.000
20.468	10.213	6.460	16.673	-43.327	60.000
29.998	10.662	15.390	26.052	-33.948	60.000
Average					
0.198	9.736	8.390	18.126	-36.503	54.629
0.298	9.739	10.090	19.829	-31.942	51.771
1.288	9.771	4.710	14.481	-31.519	46.000
5.578	9.886	3.480	13.366	-36.634	50.000
20.468	10.213	2.290	12.503	-37.497	50.000
29.998	10.662	5.400	16.062	-33.938	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 Setup



3.2. Limits

The maximum peak power shall be less 1 Watt.

3.3. 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.

3.4. Uncertainty

± 1.19 dB

3.5. Test Result of Peak Power Output

Product : zoomBox
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2016/10/19
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	15.62	--	--	--	17.97	<30dBm	Pass
06	2437	15.45	15.42	15.39	15.36	17.96	<30dBm	Pass
11	2462	15.61	--	--	--	17.95	<30dBm	Pass

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

Product : zoomBox
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2016/10/19
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54	6		
		Measurement Level (dBm)										
01	2412	14.87	--	--	--	--	--	--	--	23.64	<30dBm	Pass
06	2437	14.91	14.89	14.87	14.85	14.82	14.8	14.79	14.75	23.71	<30dBm	Pass
11	2462	14.97	--	--	--	--	--	--	--	23.61	<30dBm	Pass

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

Product : zoomBox
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2016/10/19
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

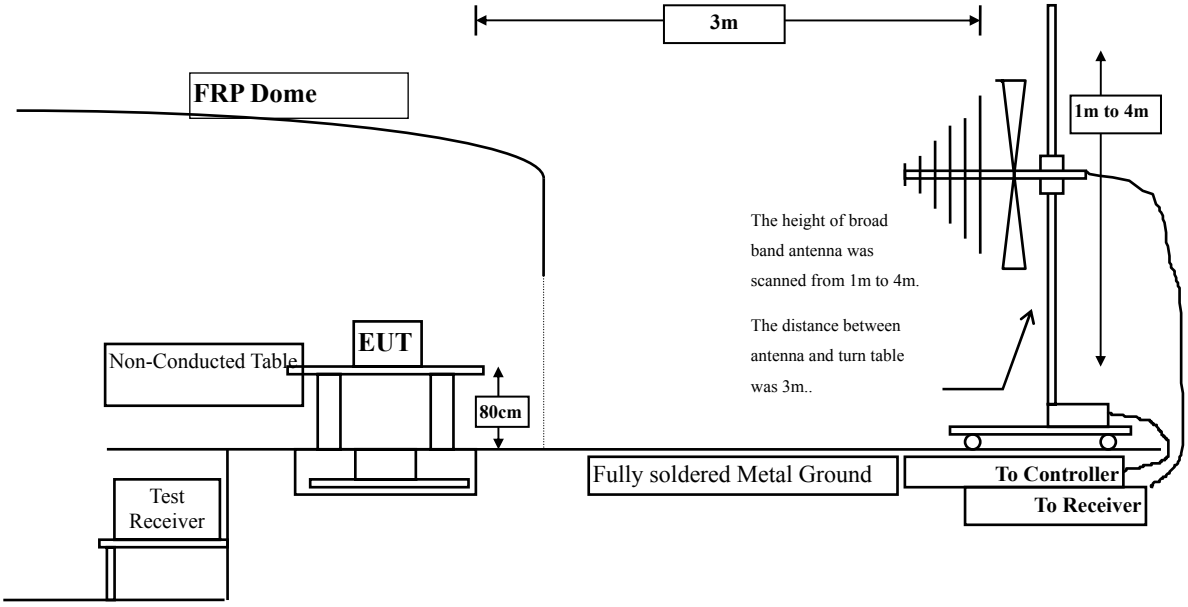
Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2	7.2		
		Measurement Level (dBm)										
01	2412	13.64	--	--	--	--	--	--	--	23.21	<30dBm	Pass
06	2437	13.57	13.55	13.52	13.5	13.49	13.47	13.45	13.41	23.08	<30dBm	Pass
11	2462	13.61	--	--	--	--	--	--	--	23.12	<30dBm	Pass

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

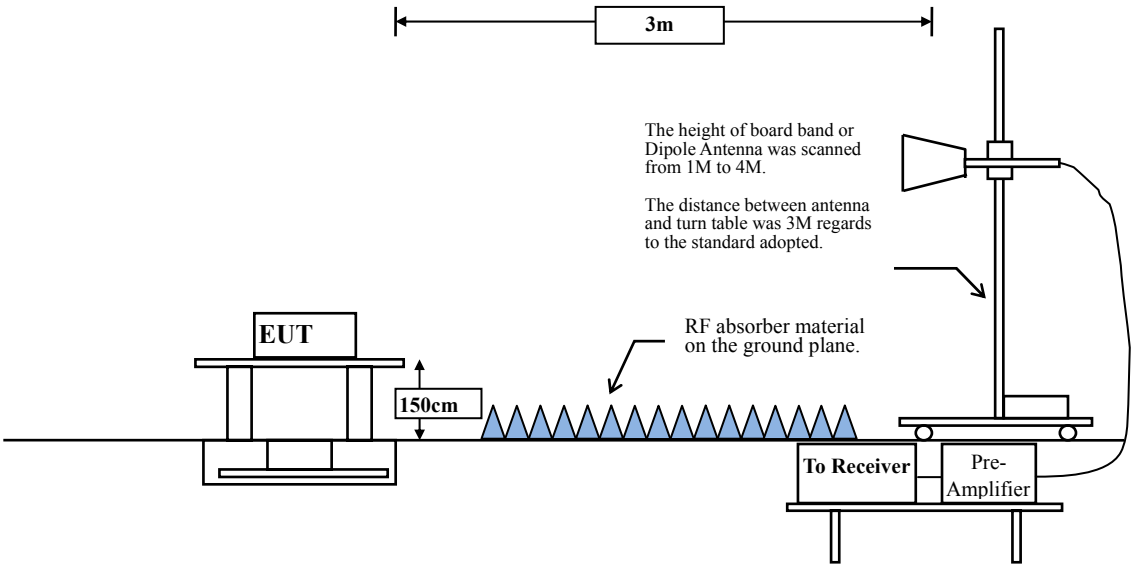
4. Radiated Emission

4.1. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.2. Limits

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

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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

4.3. 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 form 9kHz - 10th Harmonic of fundamental was investigated.

4.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

4.5. Test Result of Radiated Emission

Product : zoomBox
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/10/24
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4824.000	0.212	39.920	40.133	-33.867	74.000
7236.000	5.860	39.345	45.205	-28.795	74.000
9648.000	11.325	37.215	48.539	-25.461	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	0.212	40.158	40.371	-33.629	74.000
7236.000	5.860	38.101	43.961	-30.039	74.000
9648.000	11.325	37.132	48.456	-25.544	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	:	zoomBox
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2016/10/24
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4874.000	0.106	39.510	39.616	-34.384	74.000
7311.000	5.772	42.100	47.873	-26.127	74.000
9748.000	11.810	36.744	48.555	-25.445	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	0.106	39.359	39.465	-34.535	74.000
7311.000	5.772	39.089	44.862	-29.138	74.000
9748.000	11.810	36.809	48.620	-25.380	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 : zoomBox
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/10/24
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4924.000	0.266	39.290	39.556	-34.444	74.000
7386.000	6.651	42.024	48.675	-25.325	74.000
9848.000	13.211	36.090	49.302	-24.698	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	0.266	39.160	39.426	-34.574	74.000
7386.000	6.651	39.283	45.934	-28.066	74.000
9848.000	13.211	36.334	49.546	-24.454	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	:	zoomBox
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2016/10/24
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4824.000	0.212	39.355	39.568	-34.432	74.000
7236.000	5.860	40.590	46.450	-27.550	74.000
9648.000	11.325	37.050	48.374	-25.626	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	0.212	39.076	39.289	-34.711	74.000
7236.000	5.860	37.596	43.456	-30.544	74.000
9648.000	11.325	37.252	48.576	-25.424	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	:	zoomBox
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2016/10/24
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					
Peak Detector:					
4874.000	0.106	39.910	40.016	-33.984	74.000
7311.000	5.772	45.527	51.300	-22.700	74.000
9748.000	11.810	37.169	48.980	-25.020	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	0.106	39.696	39.802	-34.198	74.000
7311.000	5.772	39.594	45.367	-28.633	74.000
9748.000	11.810	37.336	49.147	-24.853	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	:	zoomBox
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2016/10/24
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	0.266	39.367	39.633	-34.367	74.000
7386.000	6.651	44.870	51.521	-22.479	74.000
9848.000	13.211	36.786	49.998	-24.002	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	0.212	39.982	40.195	-33.805	74.000
7386.000	6.651	39.269	45.920	-28.080	74.000
9848.000	13.211	36.383	49.595	-24.405	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 : zoomBox
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/10/24
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4824.000	0.212	39.919	40.132	-33.868	74.000
7236.000	5.860	38.642	44.502	-29.498	74.000
9648.000	11.325	37.423	48.747	-25.253	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	0.212	40.448	40.661	-33.339	74.000
7236.000	5.860	37.739	43.599	-30.401	74.000
9648.000	11.325	37.404	48.728	-25.272	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	:	zoomBox
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2016/10/24
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	0.106	39.709	39.815	-34.185	74.000
7311.000	5.772	41.824	47.597	-26.403	74.000
9748.000	11.810	36.848	48.659	-25.341	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	0.106	39.552	39.658	-34.342	74.000
7311.000	5.772	38.431	44.204	-29.796	74.000
9748.000	11.810	36.945	48.756	-25.244	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	:	zoomBox
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2016/10/24
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4924.000	0.266	39.325	39.591	-34.409	74.000
7386.000	6.651	42.229	48.880	-25.120	74.000
9848.000	13.211	36.111	49.323	-24.677	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	0.266	39.465	39.731	-34.269	74.000
7386.000	6.651	38.139	44.790	-29.210	74.000
9848.000	13.211	36.033	49.245	-24.755	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	:	zoomBox
Test Item	:	General Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2016/10/24
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
381.140	1.386	29.193	30.579	-15.421	46.000
455.830	2.028	31.425	33.453	-12.547	46.000
504.330	2.015	35.023	37.038	-8.962	46.000
551.860	3.390	34.091	37.481	-8.519	46.000
609.090	3.795	33.878	37.673	-8.327	46.000
696.390	3.367	42.122	45.489	-0.511	46.000
Vertical					
178.410	-0.966	25.314	24.348	-19.152	43.500
383.080	0.195	24.565	24.760	-21.240	46.000
538.280	1.996	24.784	26.780	-19.220	46.000
607.150	2.216	25.964	28.180	-17.820	46.000
696.390	1.047	39.753	40.800	-5.200	46.000
782.720	2.757	27.120	29.877	-16.123	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 : zoomBox
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/10/24
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					
455.830	2.028	31.756	33.784	-12.216	46.000
504.330	2.015	34.071	36.086	-9.914	46.000
551.860	3.390	34.179	37.569	-8.431	46.000
610.060	3.657	33.870	37.527	-8.473	46.000
696.390	3.367	42.381	45.748	-0.252	46.000
816.670	6.584	31.582	38.166	-7.834	46.000
Vertical					
380.170	0.962	23.568	24.530	-21.470	46.000
504.330	-0.055	25.925	25.870	-20.130	46.000
605.210	2.274	26.506	28.780	-17.220	46.000
696.390	1.047	40.502	41.549	-4.451	46.000
754.590	2.855	25.772	28.626	-17.374	46.000
922.400	3.200	24.332	27.532	-18.468	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 : zoomBox
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2016/10/24
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					
381.140	1.386	29.283	30.669	-15.331	46.000
503.360	1.994	35.215	37.209	-8.791	46.000
600.360	3.472	34.046	37.518	-8.482	46.000
647.890	1.609	32.714	34.324	-11.676	46.000
696.390	3.367	42.219	45.586	-0.414	46.000
849.650	6.631	30.945	37.576	-8.424	46.000
Vertical					
376.290	0.523	24.452	24.975	-21.025	46.000
504.330	-0.055	27.189	27.134	-18.866	46.000
537.310	1.803	23.860	25.663	-20.337	46.000
610.060	2.087	26.402	28.489	-17.511	46.000
696.390	1.047	41.318	42.365	-3.635	46.000
928.220	3.640	24.498	28.138	-17.862	46.000

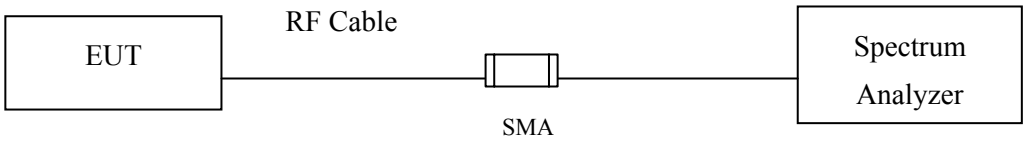
Note:

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.

5. RF antenna conducted test

5.1. Test Setup

RF antenna Conducted Measurement:



5.2. 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)).

5.3. 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.

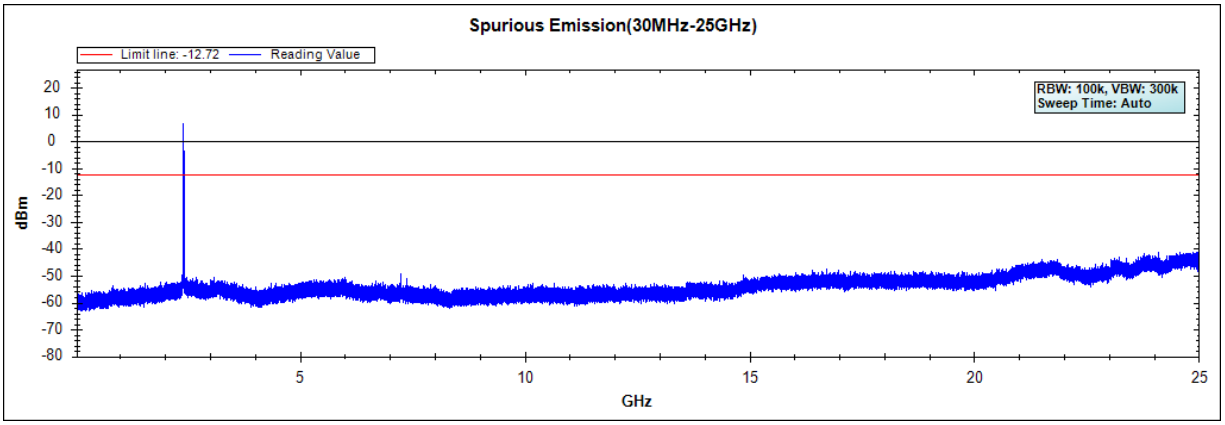
5.4. Uncertainty

The measurement uncertainty
Conducted is defined as ± 1.20dB

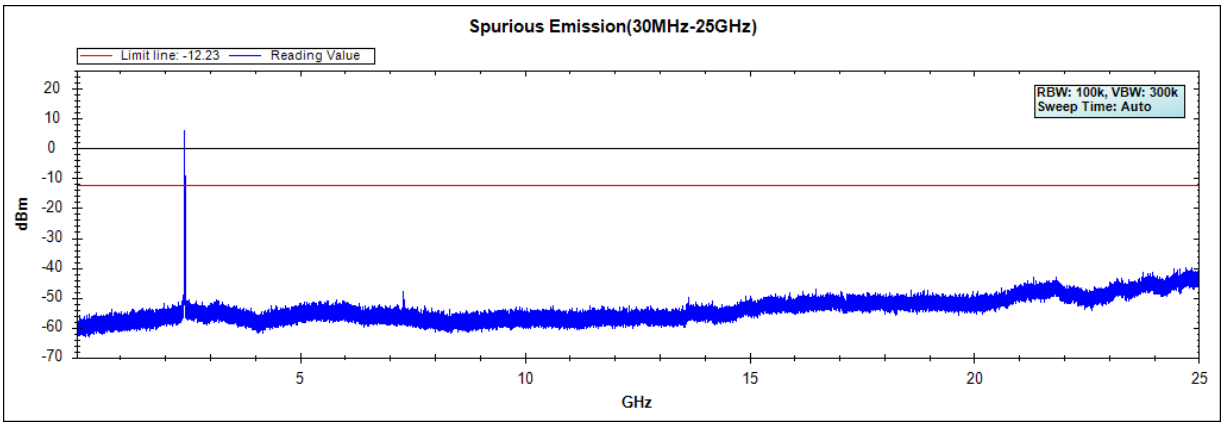
5.5. Test Result of RF antenna conducted test

Product	:	zoomBox
Test Item	:	RF antenna conducted test
Test Site	:	No.3 OATS
Test Date	:	2016/10/20
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps)

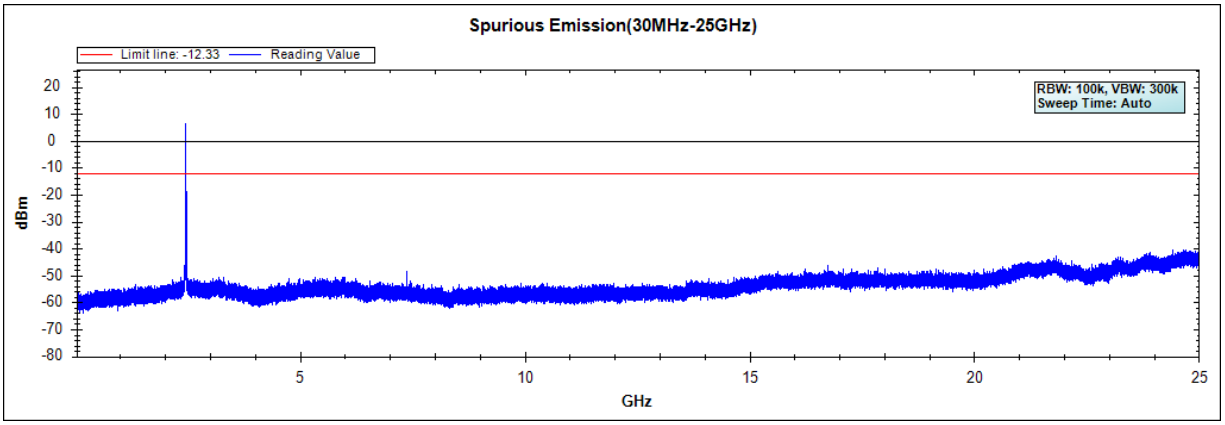
Channel 01 (2412MHz)



Channel 06 (2437MHz)



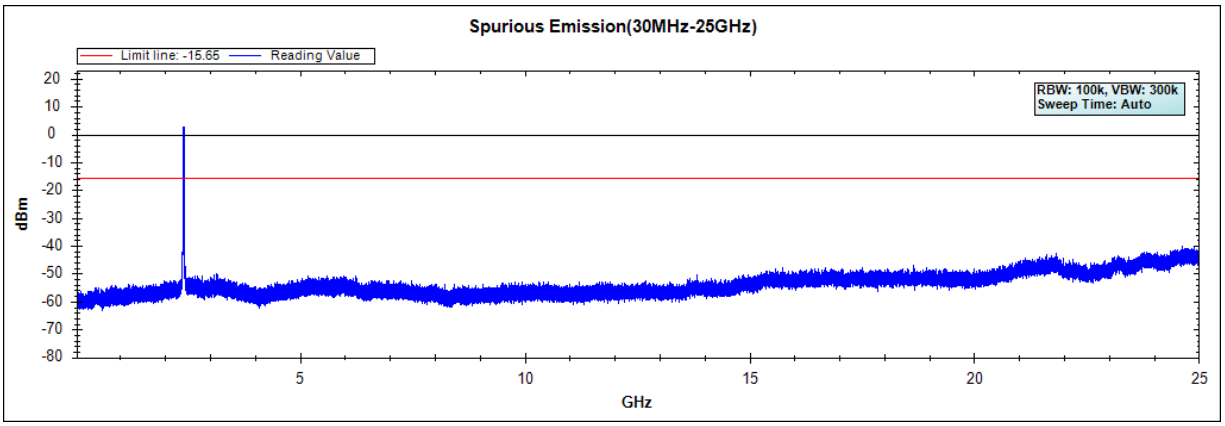
Channel 11 (2462MHz)



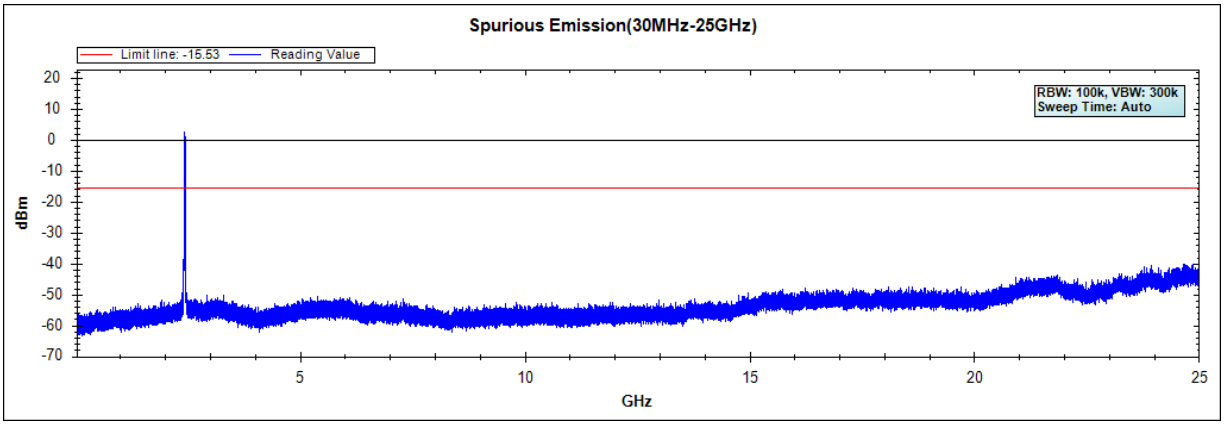
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	zoomBox
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Date	:	2016/10/20
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

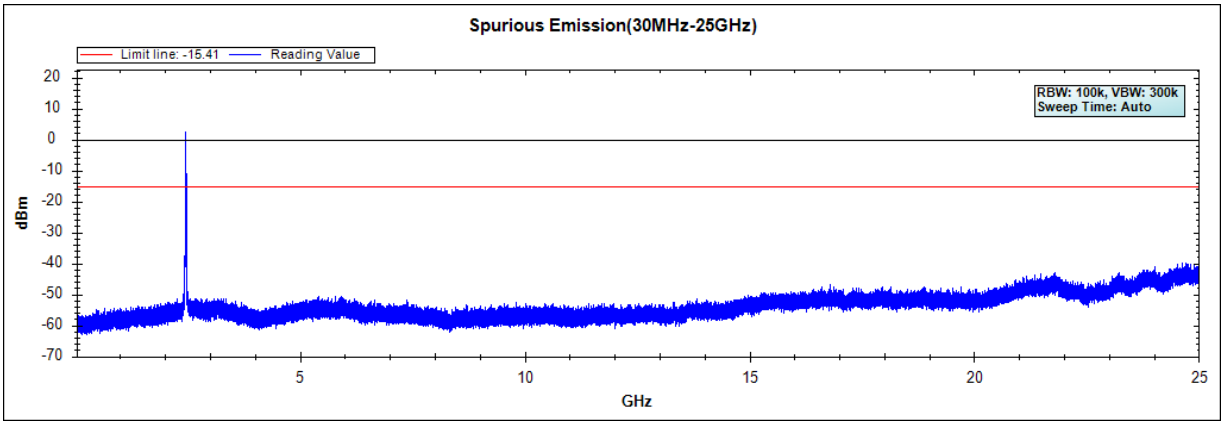
Channel 01 (2412MHz)



Channel 06 (2437MHz)



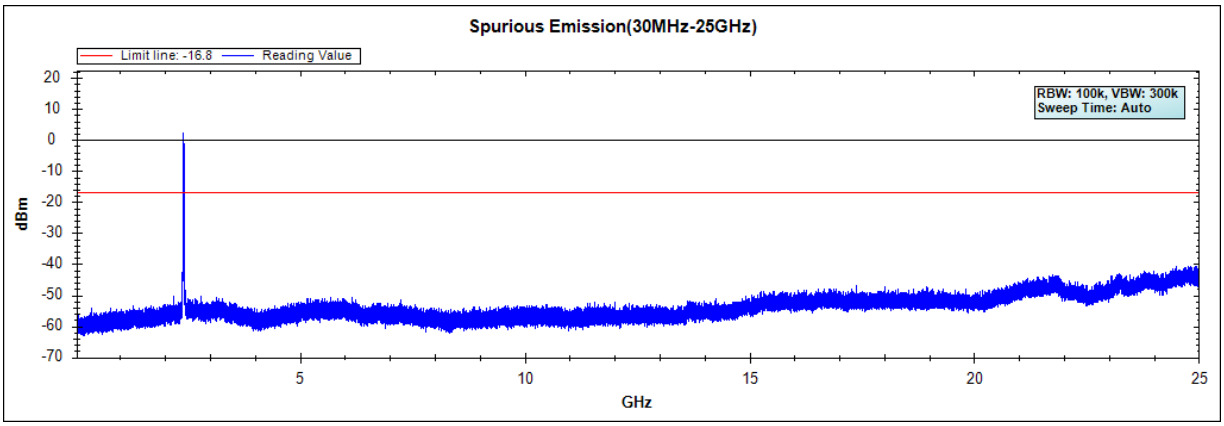
Channel 11 (2462MHz)



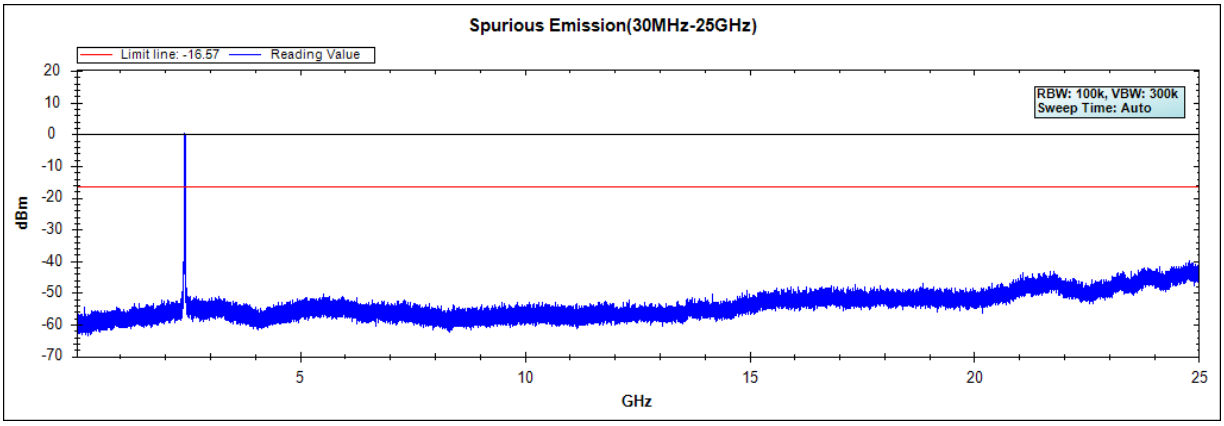
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	zoomBox
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Date	:	2016/10/20
Test Mode	:	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

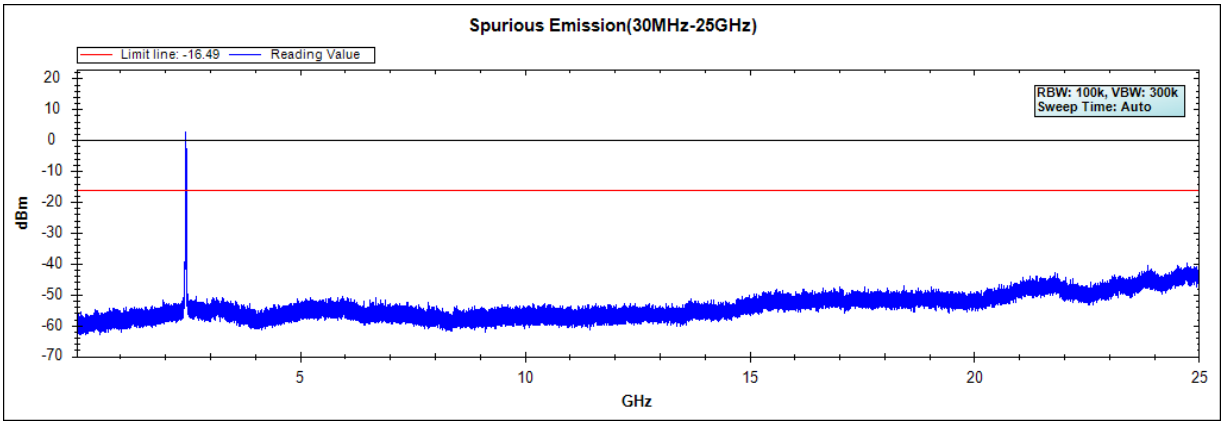
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)

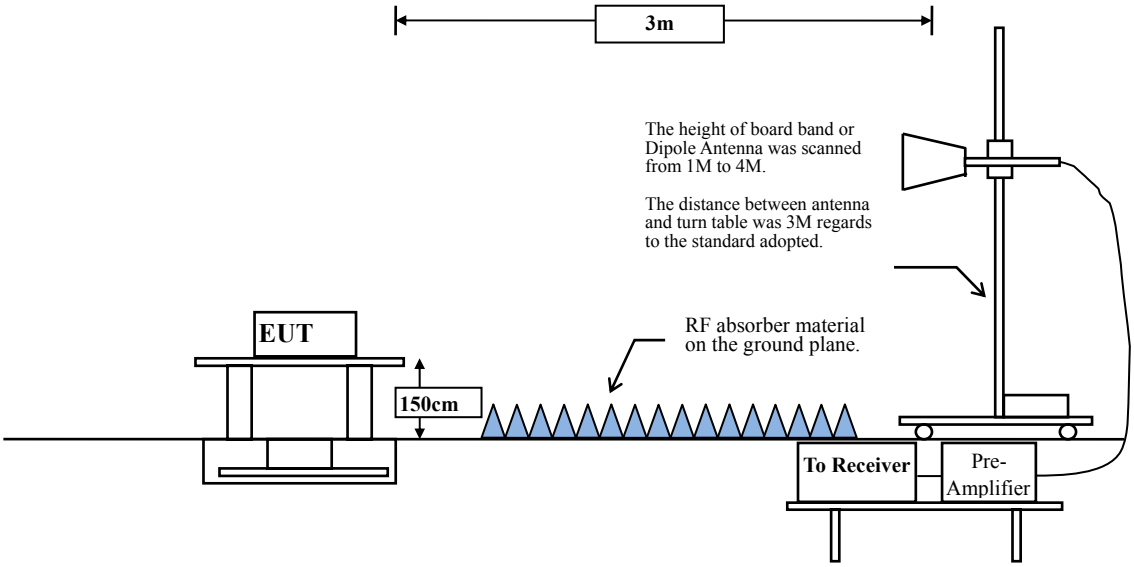


Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

6.1. Test Setup

RF Radiated Measurement:



6.2. 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.

6.3. 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.

6.4. Uncertainty

± 4.08 dB above 1GHz
± 4.22 dB below 1GHz

6.5. Test Result of Band Edge

Product : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2388.900	5.866	47.035	52.900	74.000	54.000	Pass
01 (Peak)	2390.000	5.881	45.817	51.699	74.000	54.000	Pass
01 (Peak)	2400.000	6.035	54.267	60.302	74.000	54.000	Pass
01 (Peak)	2411.000	6.126	98.375	104.501	--	--	--
01 (Average)	2389.300	5.871	37.948	43.819	74.000	54.000	Pass
01 (Average)	2390.000	5.881	36.205	42.087	74.000	54.000	Pass
01 (Average)	2399.000	6.019	49.423	55.442	--	--	--
01 (Average)	2400.000	6.035	45.903	51.938	74.000	54.000	Pass
01 (Average)	2411.200	6.125	95.413	101.538	--	--	--

Figure Channel 01: Horizontal (Peak)

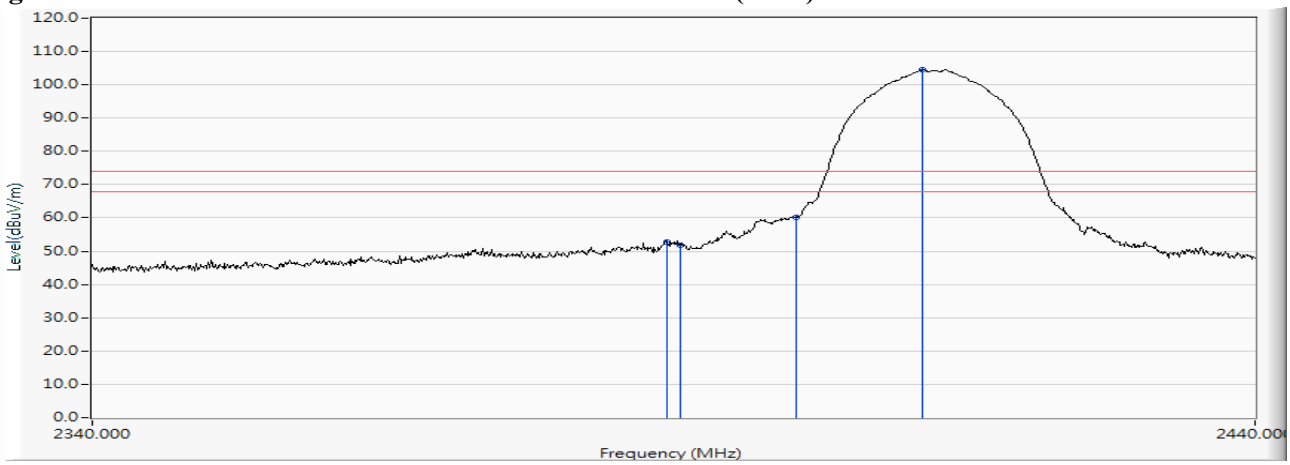
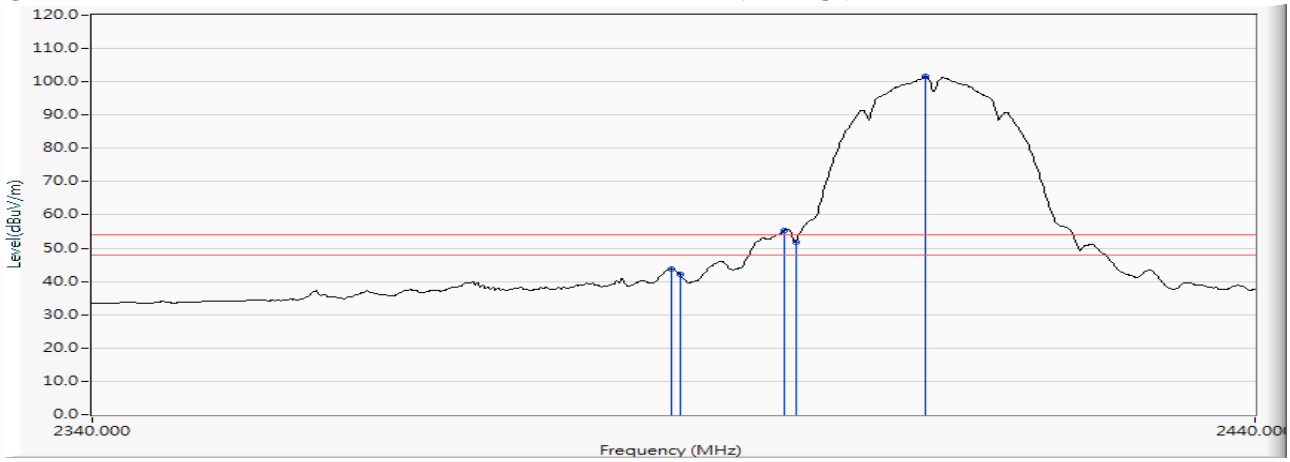


Figure Channel 01: Horizontal (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

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	5.881	41.332	47.214	74.000	54.000	Pass
01 (Peak)	2398.900	6.018	45.266	51.284	74.000	54.000	Pass
01 (Peak)	2400.000	6.035	44.907	50.942	74.000	54.000	Pass
01 (Peak)	2411.000	6.126	86.978	93.104	--	--	--
01 (Average)	2390.000	5.881	30.001	35.883	74.000	54.000	Pass
01 (Average)	2399.200	6.022	37.249	43.271	74.000	54.000	Pass
01 (Average)	2400.000	6.035	36.205	42.240	74.000	54.000	Pass
01 (Average)	2411.200	6.125	84.352	90.477	--	--	--

Figure Channel 01: VERTICAL (Peak)

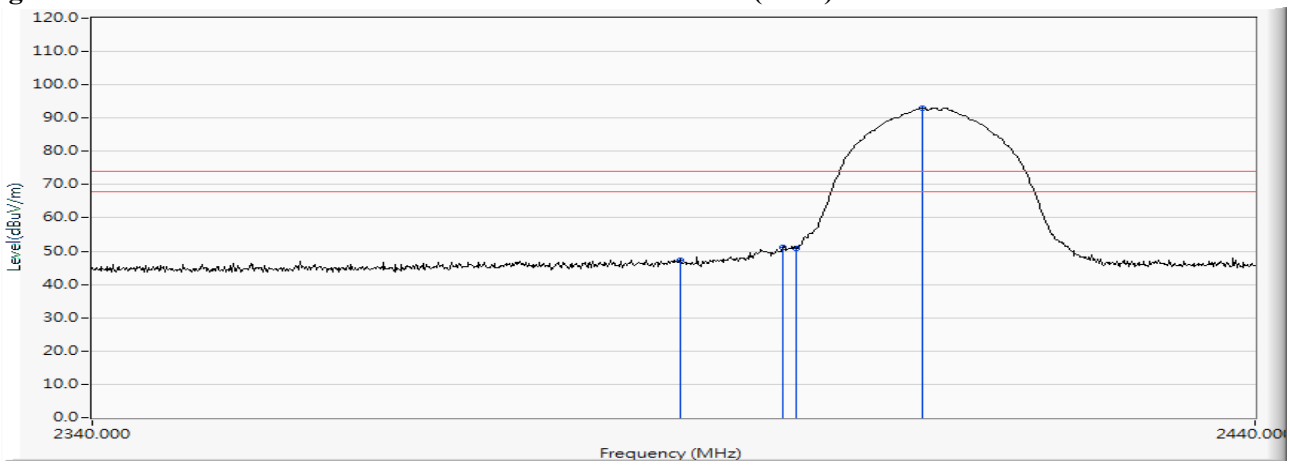
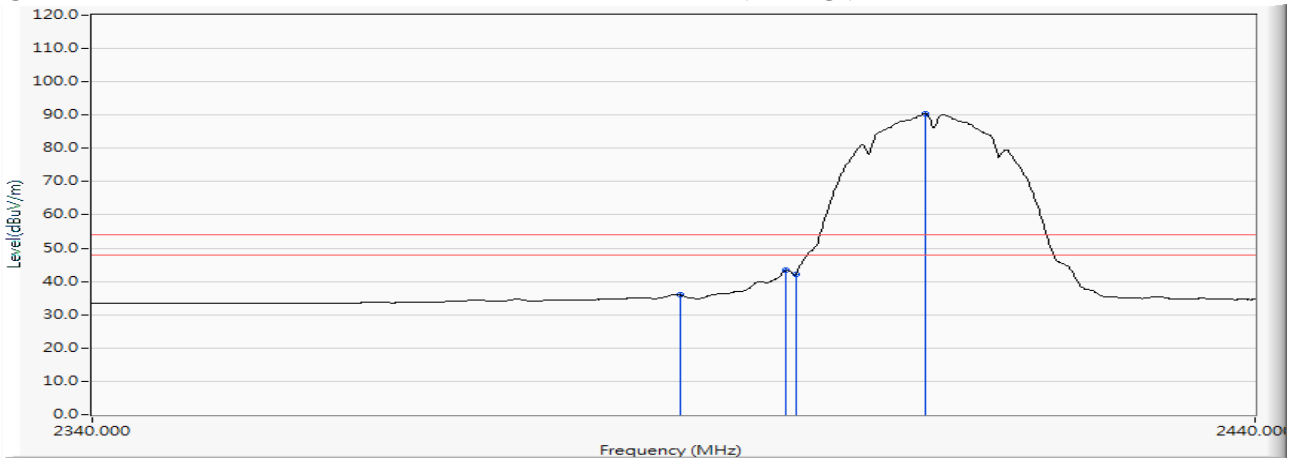


Figure Channel 01: VERTICAL (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

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)	2461.000	5.652	98.156	103.808	--	--	--
11 (Peak)	2483.500	5.845	44.026	49.871	74.000	54.000	Pass
11 (Peak)	2489.600	5.913	48.277	54.189	74.000	54.000	Pass
11 (Average)	2461.200	5.648	95.296	100.944	--	--	--
11 (Average)	2483.500	5.845	33.222	39.067	74.000	54.000	Pass
11 (Average)	2490.300	5.920	38.851	44.771	74.000	54.000	Pass

Figure Channel 11: Horizontal (Peak)

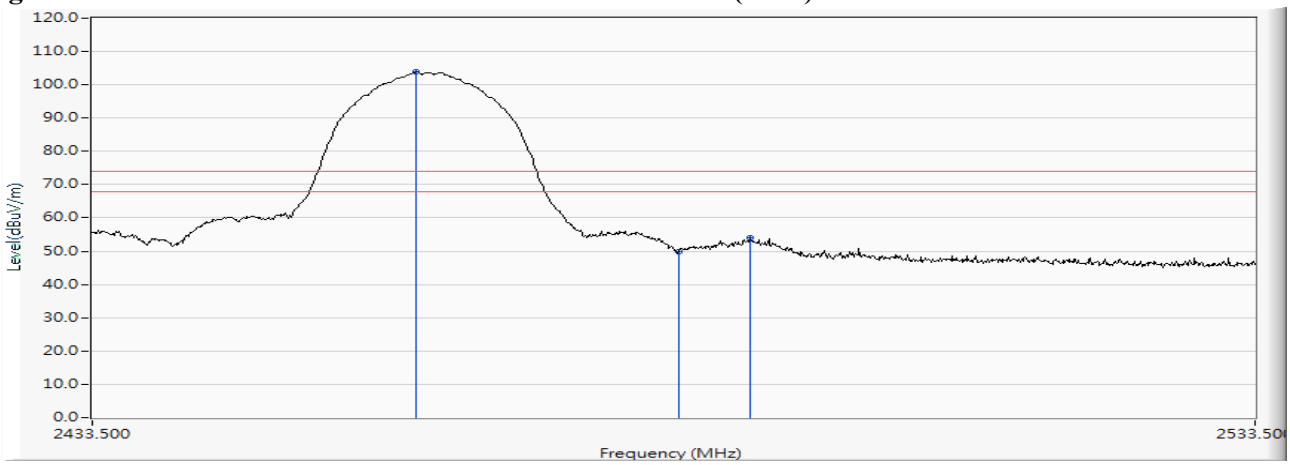
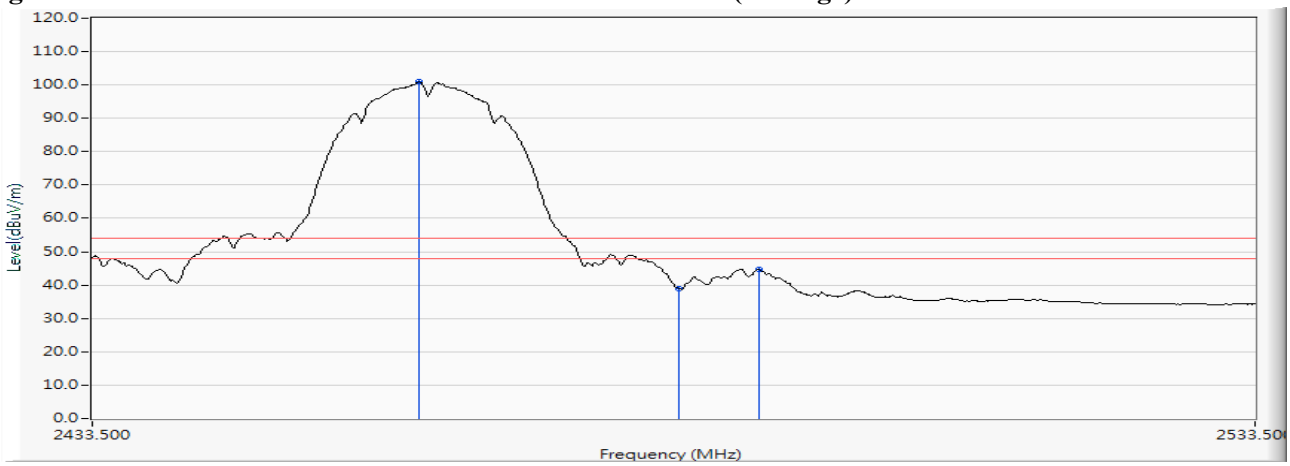


Figure Channel 11: Horizontal (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

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)	2461.000	5.652	86.381	92.033	--	--	--
11 (Peak)	2483.500	5.845	39.447	45.292	74.000	54.000	Pass
11 (Peak)	2484.200	5.853	41.457	47.310	74.000	54.000	Pass
11 (Average)	2461.100	5.651	83.590	89.240	--	--	--
11 (Average)	2483.500	5.845	28.535	34.380	74.000	54.000	Pass

Figure Channel 11: VERTICAL (Peak)

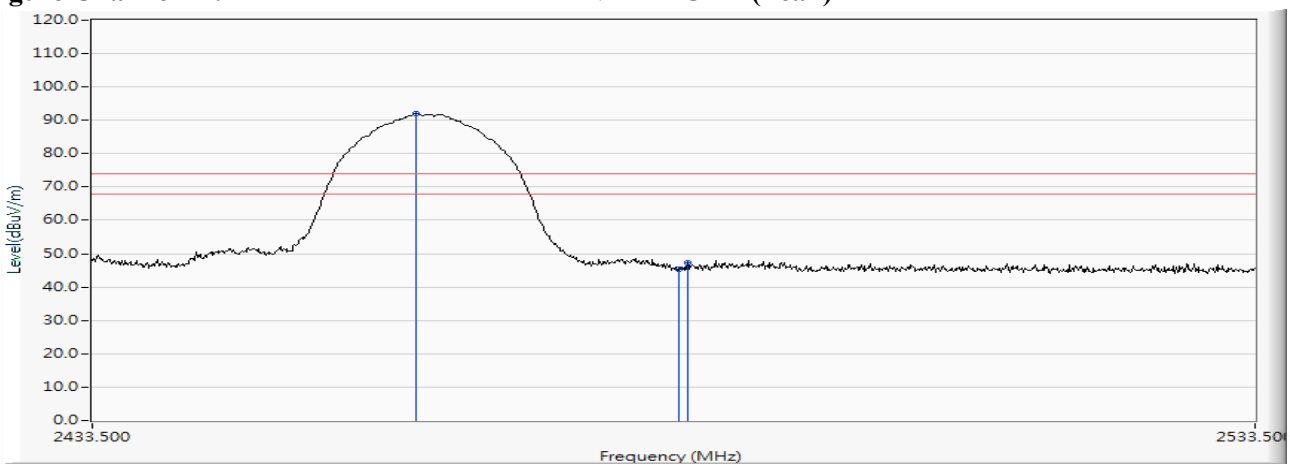
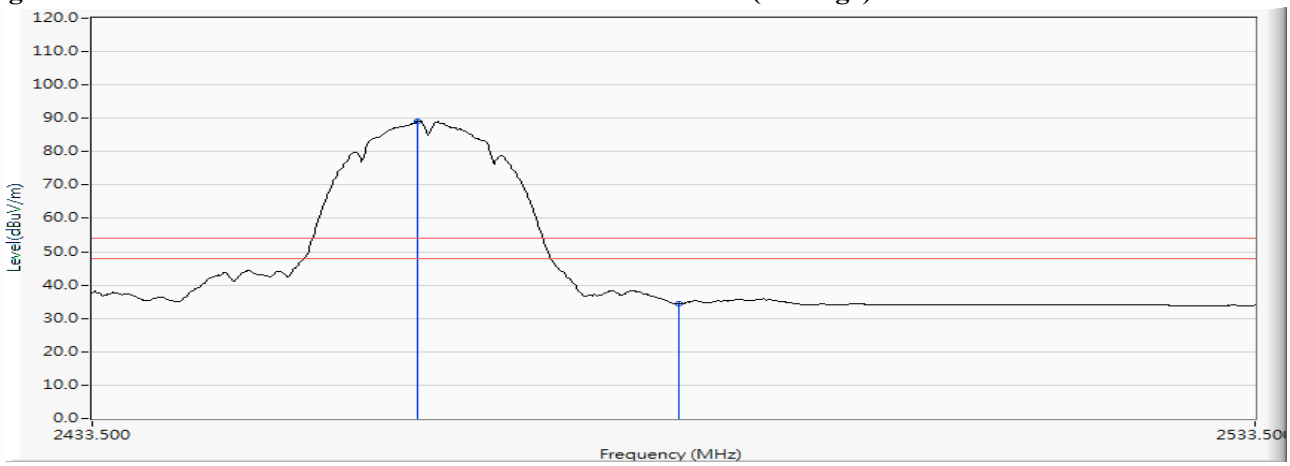


Figure Channel 11: VERTICAL (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

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	5.881	61.946	67.828	74.000	54.000	Pass
01 (Peak)	2400.000	6.035	73.777	79.812	--	--	--
01 (Peak)	2411.900	6.124	102.199	108.323	--	--	--
01 (Average)	2390.000	5.881	44.402	50.284	74.000	54.000	Pass
01 (Average)	2400.000	6.035	55.669	61.704	--	--	--
01 (Average)	2405.700	6.090	89.274	95.364	--	--	--

Figure Channel 01: Horizontal (Peak)

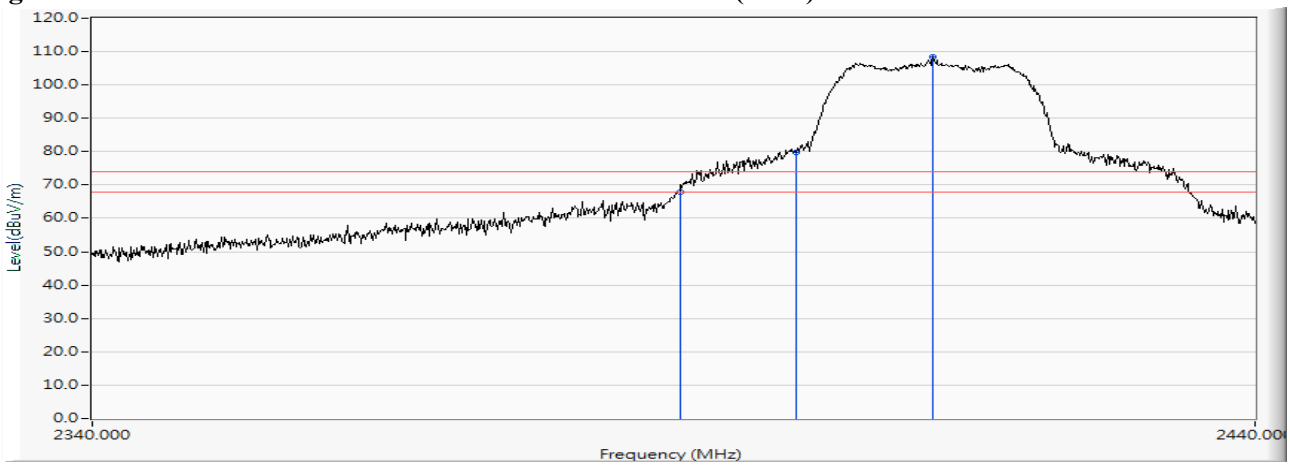
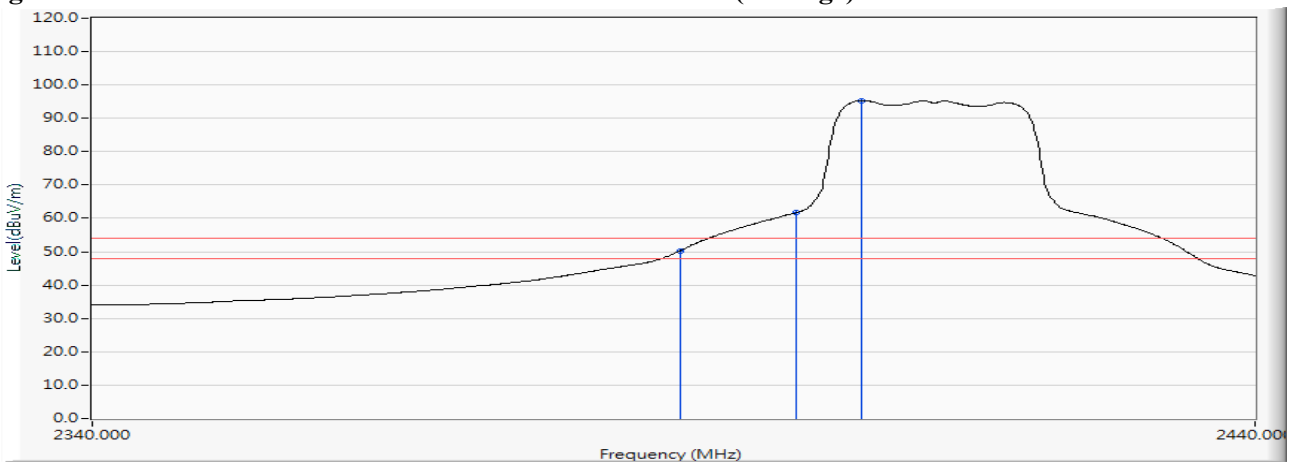


Figure Channel 01: Horizontal (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

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	5.881	53.870	59.752	74.000	54.000	Pass
01 (Peak)	2399.000	6.019	64.856	70.875	74.000	54.000	Pass
01 (Peak)	2400.000	6.035	64.329	70.364	74.000	54.000	Pass
01 (Peak)	2411.800	6.124	90.441	96.565	--	--	--
01 (Average)	2390.000	5.881	35.389	41.271	74.000	54.000	Pass
01 (Average)	2400.000	6.035	45.829	51.864	74.000	54.000	Pass
01 (Average)	2405.700	6.090	78.654	84.744	--	--	--

Figure Channel 01: VERTICAL (Peak)

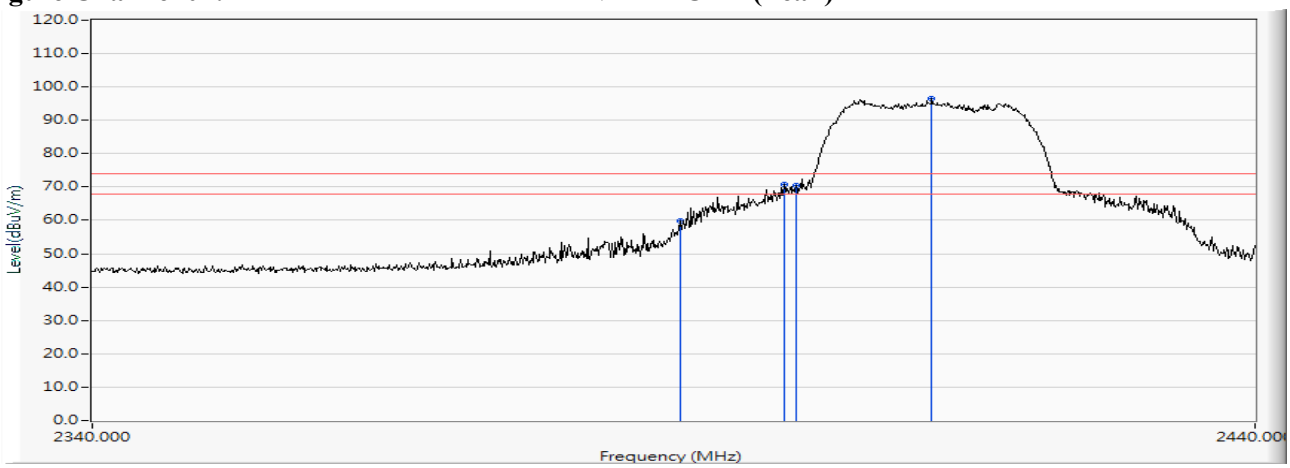
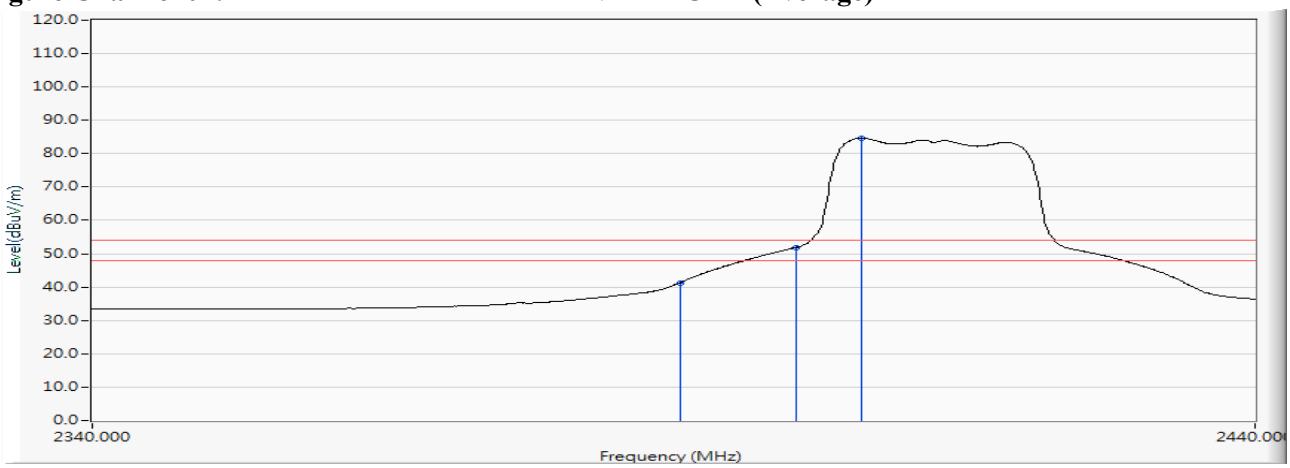


Figure Channel 01: VERTICAL (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

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)	2461.800	5.636	102.014	107.650	--	--	--
11 (Peak)	2483.500	5.845	65.811	71.656	74.000	54.000	Pass
11 (Average)	2455.500	5.760	88.968	94.728	--	--	--
11 (Average)	2483.500	5.845	43.831	49.676	74.000	54.000	Pass

Figure Channel 11: Horizontal (Peak)

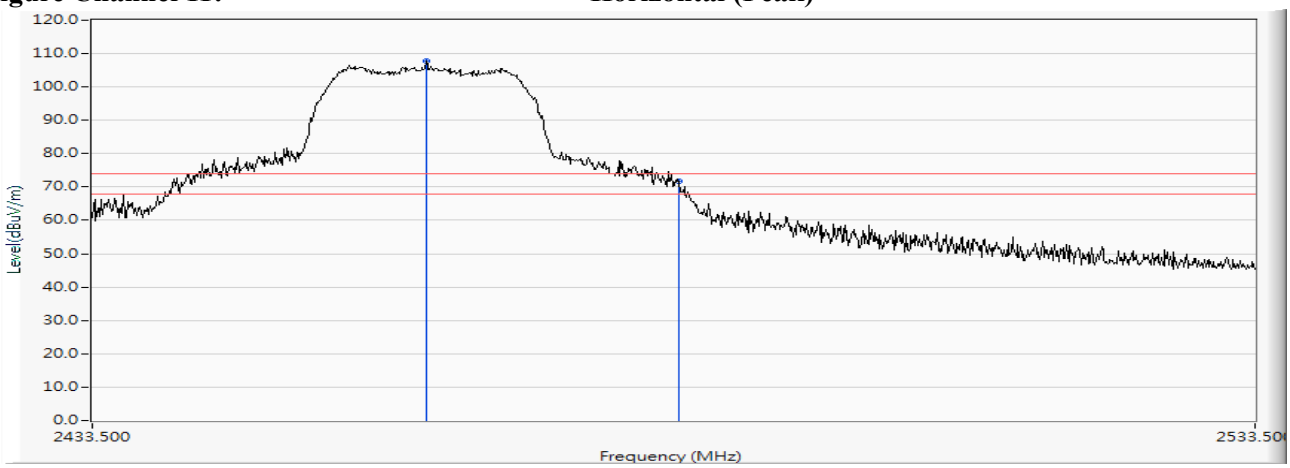
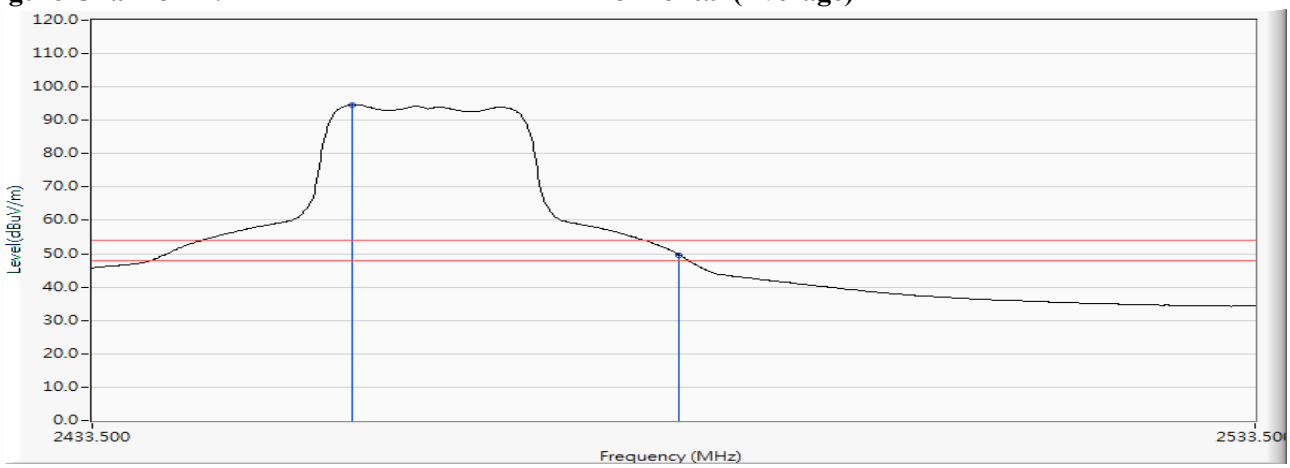


Figure Channel 11: Horizontal (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

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)	2461.900	5.634	88.036	93.670	--	--	--
11 (Peak)	2483.500	5.845	54.457	60.302	74.000	54.000	Pass
11 (Average)	2455.700	5.757	76.530	82.287	--	--	--
11 (Average)	2483.500	5.845	33.778	39.623	74.000	54.000	Pass

Figure Channel 11: VERTICAL (Peak)

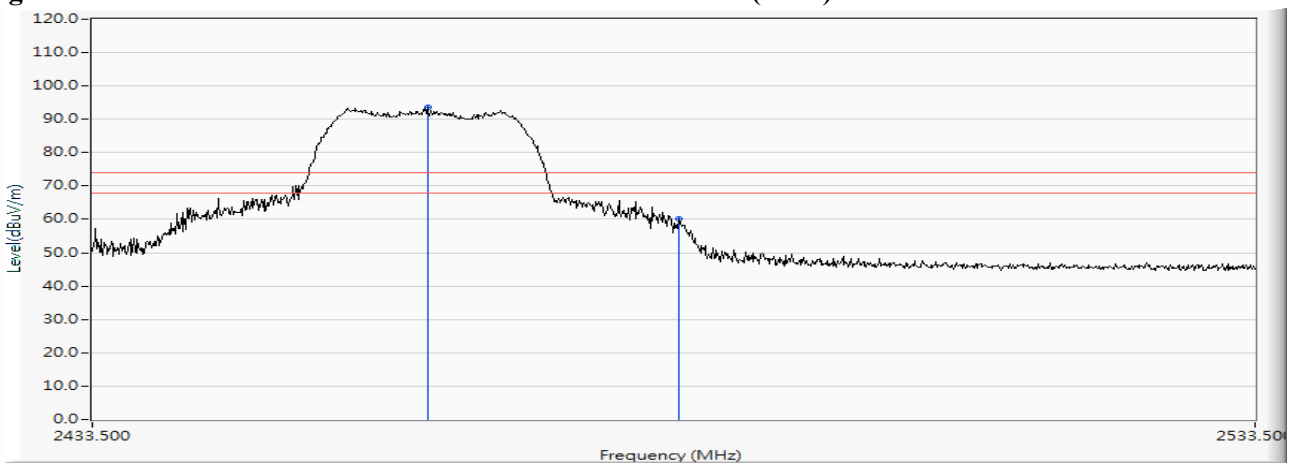
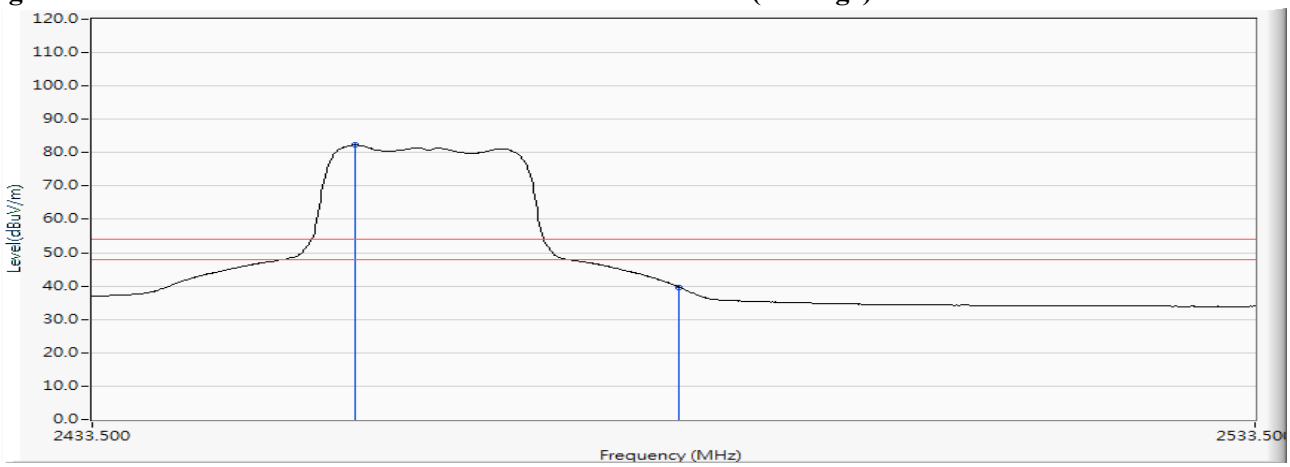


Figure Channel 11: VERTICAL (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
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 (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2390.000	5.881	61.284	67.166	74.000	54.000	Pass
01 (Peak)	2399.000	6.019	73.220	79.239	74.000	54.000	Pass
01 (Peak)	2400.000	6.035	72.081	78.116	--	--	--
01 (Peak)	2405.300	6.087	100.006	106.093	--	--	--
01 (Average)	2390.000	5.881	44.183	50.065	74.000	54.000	Pass
01 (Average)	2400.000	6.035	53.437	59.472	--	--	--
01 (Average)	2405.700	6.090	87.525	93.615	--	--	--

Figure Channel 01: Horizontal (Peak)

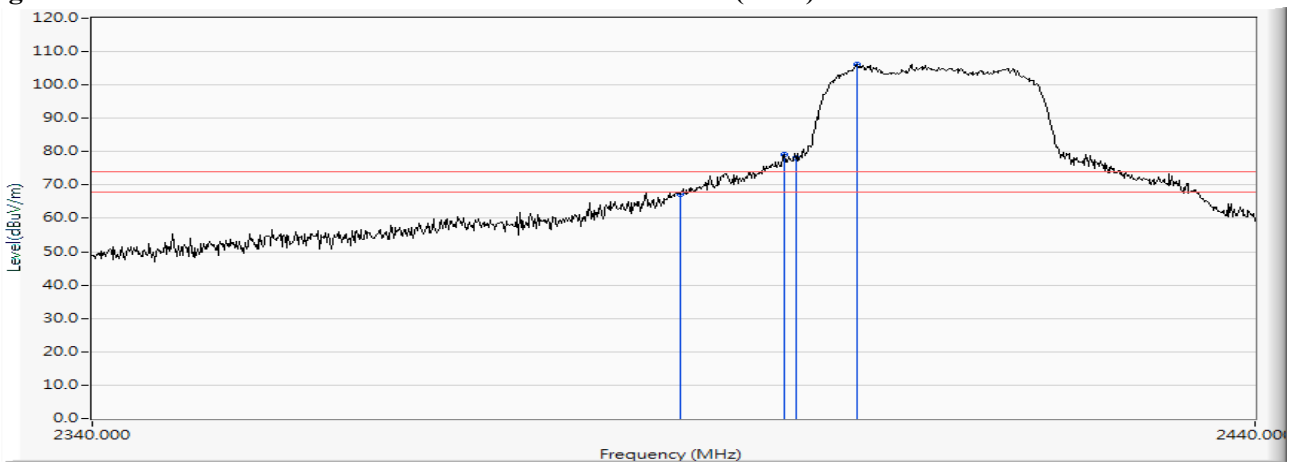
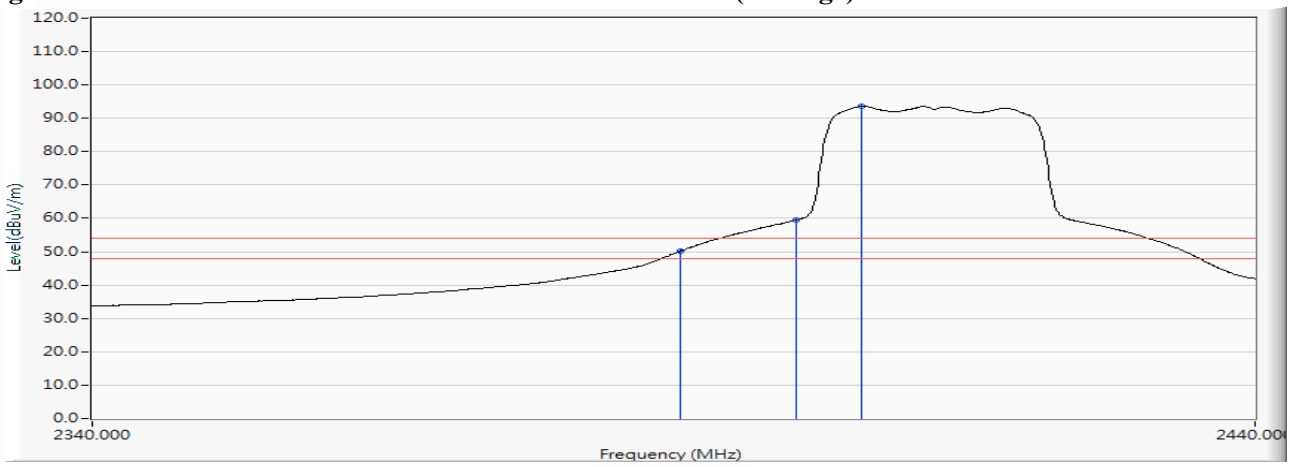


Figure Channel 01: Horizontal (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
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 (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2390.000	5.881	51.326	57.208	74.000	54.000	Pass
01 (Peak)	2399.900	6.033	62.342	68.375	74.000	54.000	Pass
01 (Peak)	2400.000	6.035	59.148	65.183	74.000	54.000	Pass
01 (Peak)	2405.200	6.087	88.558	94.645	--	--	--
01 (Average)	2390.000	5.881	35.303	41.185	74.000	54.000	Pass
01 (Average)	2400.000	6.035	43.736	49.771	74.000	54.000	Pass
01 (Average)	2405.700	6.090	76.886	82.976	--	--	--

Figure Channel 01: VERTICAL (Peak)

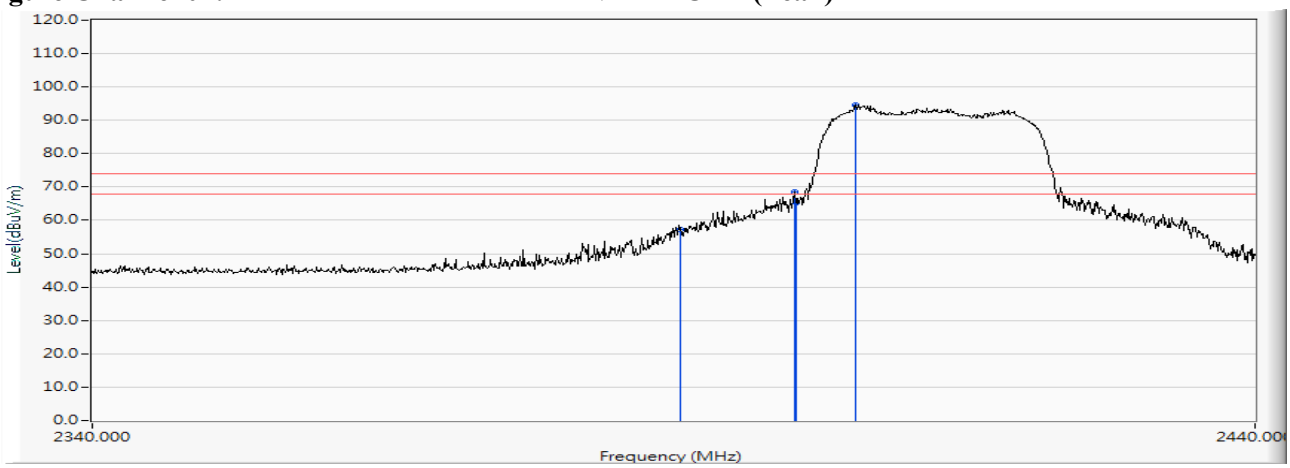
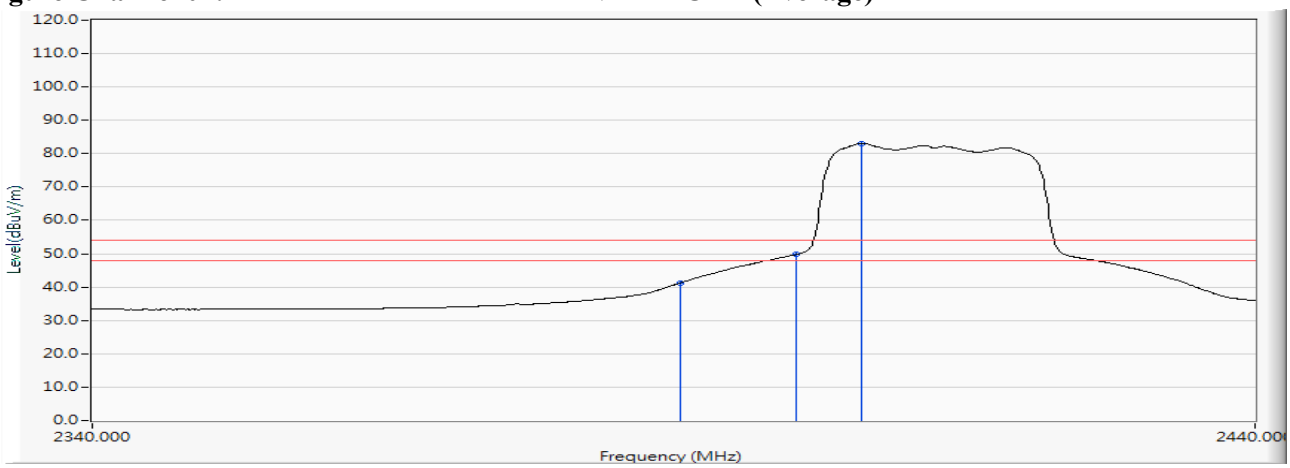


Figure Channel 01: VERTICAL (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
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 (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2460.100	5.670	99.554	105.224	--	--	--
11 (Peak)	2483.500	5.845	63.025	68.870	74.000	54.000	Pass
11 (Average)	2455.700	5.757	87.226	92.983	--	--	--
11 (Average)	2483.500	5.845	43.239	49.084	74.000	54.000	Pass

Figure Channel 11: Horizontal (Peak)

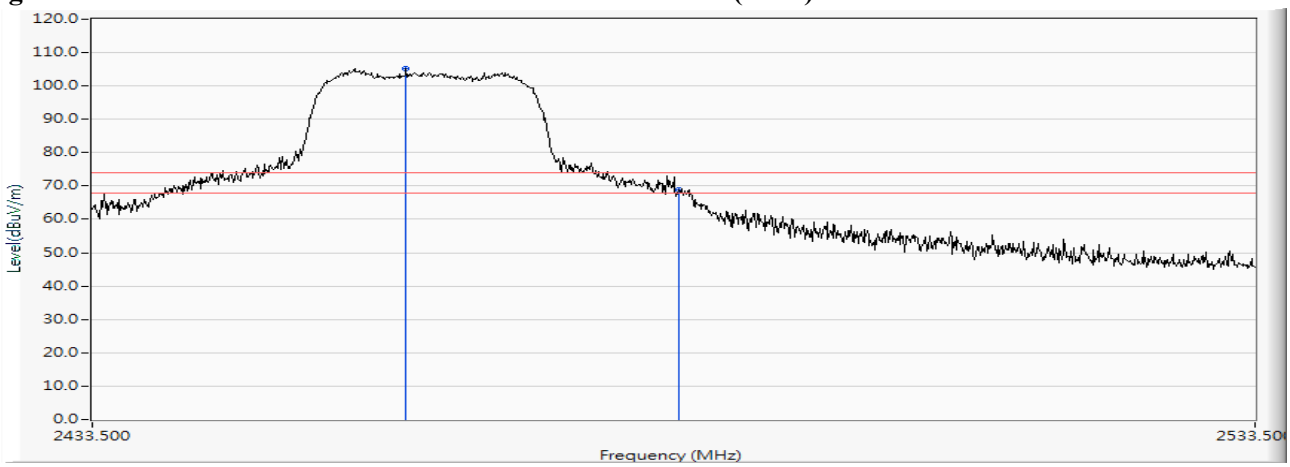
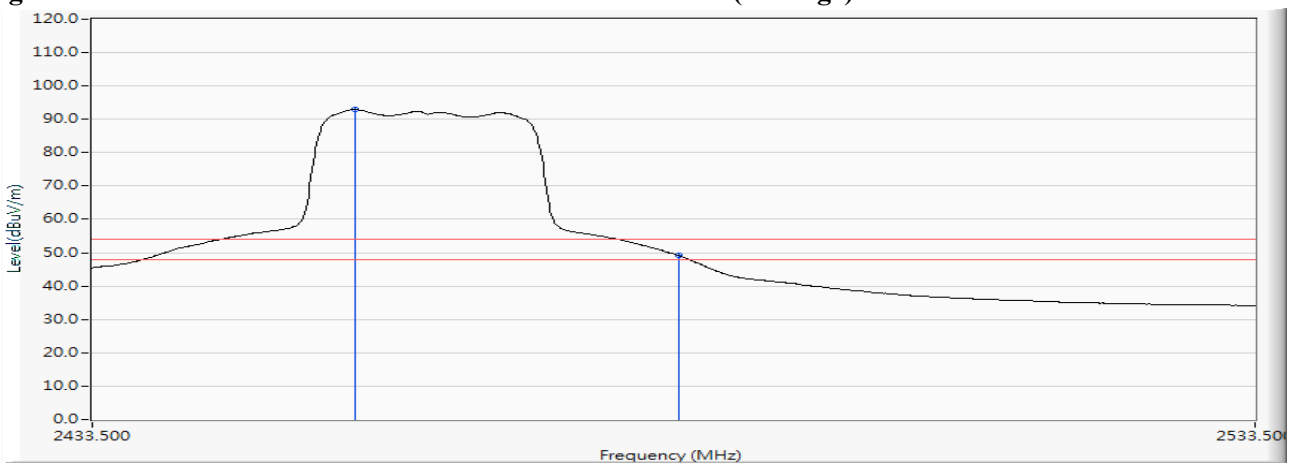


Figure Channel 11: Horizontal (Average)



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 : zoomBox
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2016/10/21
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 (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2456.600	5.741	89.275	95.016	--	--	--
11 (Peak)	2483.500	5.845	55.323	61.168	74.000	54.000	Pass
11 (Average)	2455.600	5.759	77.554	83.313	--	--	--
11 (Average)	2483.500	5.845	35.044	40.889	74.000	54.000	Pass

Figure Channel 11: VERTICAL (Peak)

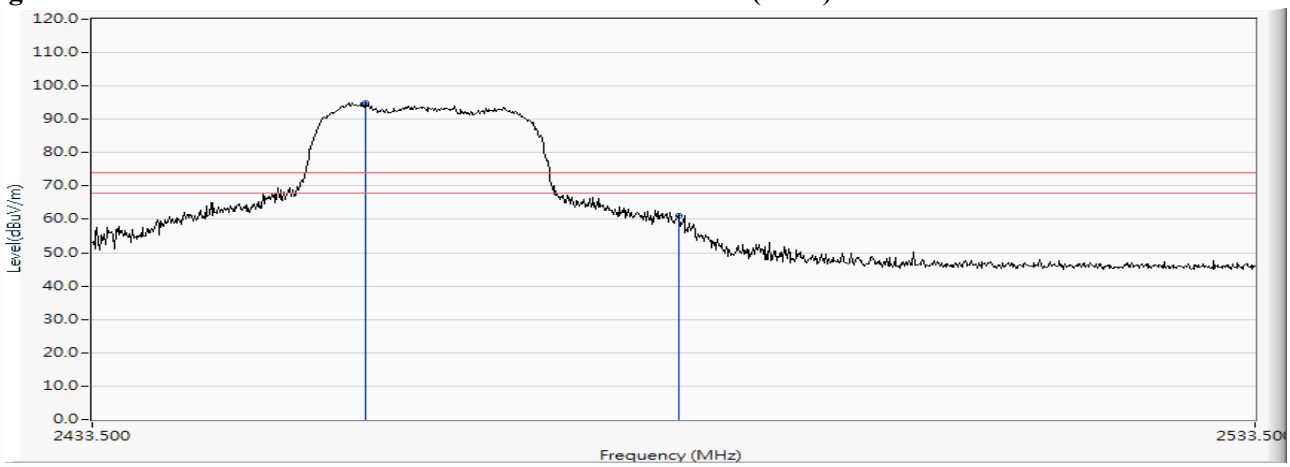
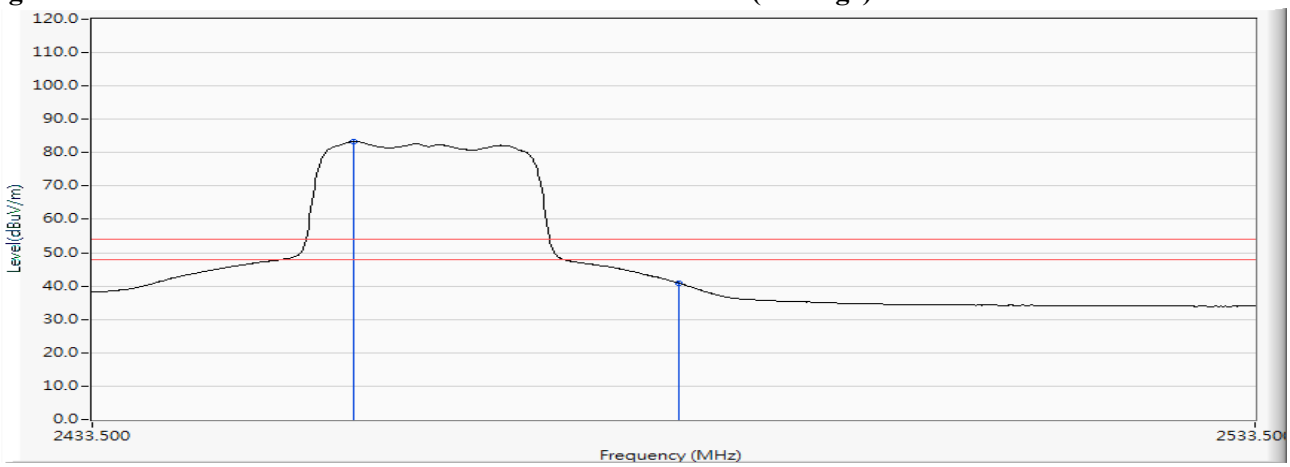


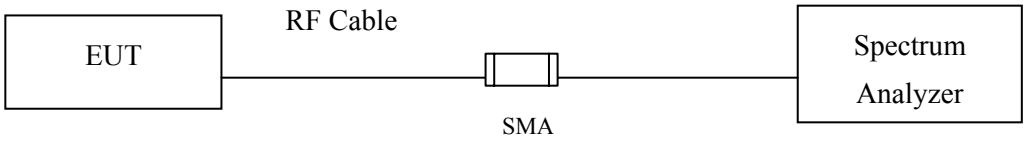
Figure Channel 11: VERTICAL (Average)



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 Setup



7.2. Limits

The minimum bandwidth shall be at least 500 kHz.

7.3. 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.

7.4. Uncertainty

± 283Hz

7.5. Test Result of 6dB Bandwidth

Product : zoomBox
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Date : 2016/10/19
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	9150	>500	Pass
06	2437	9150	>500	Pass
11	2462	9100	>500	Pass

Figure Channel 01:

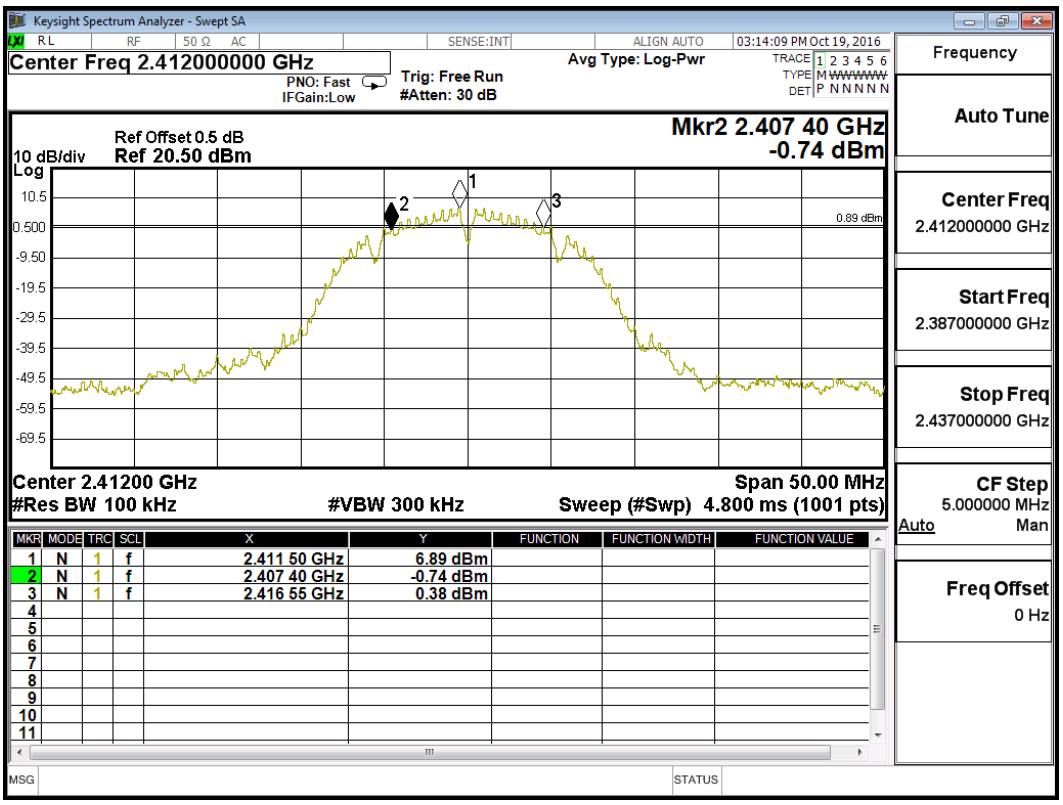


Figure Channel 06:

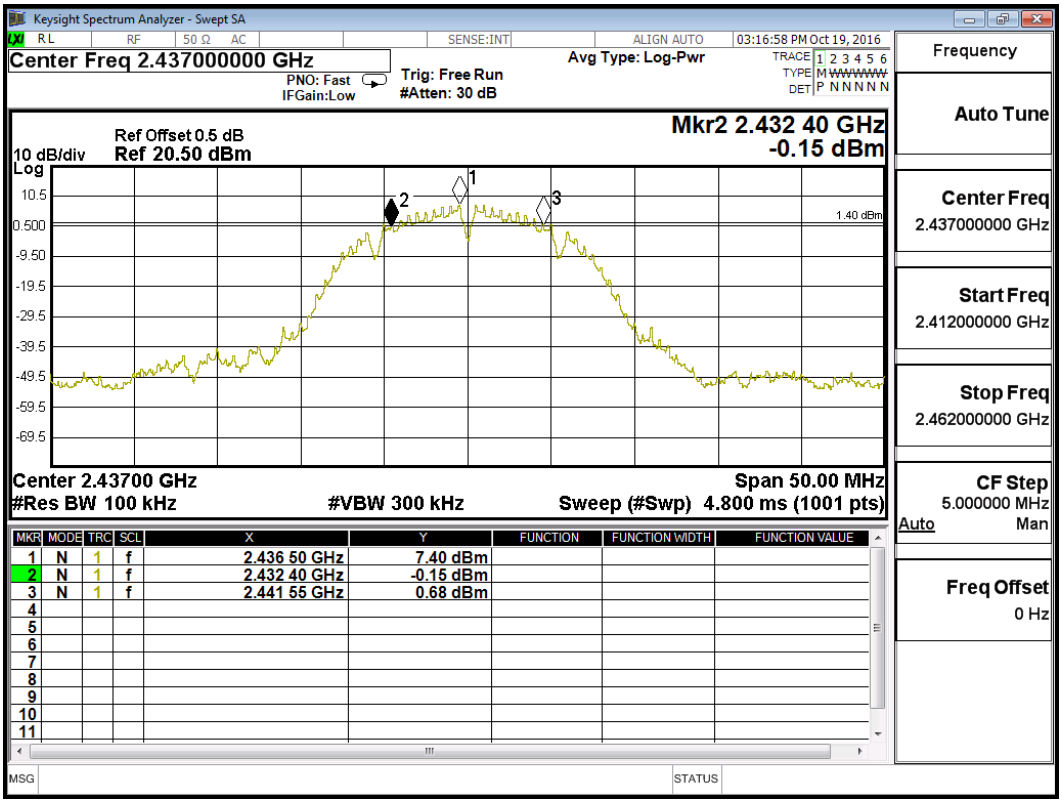
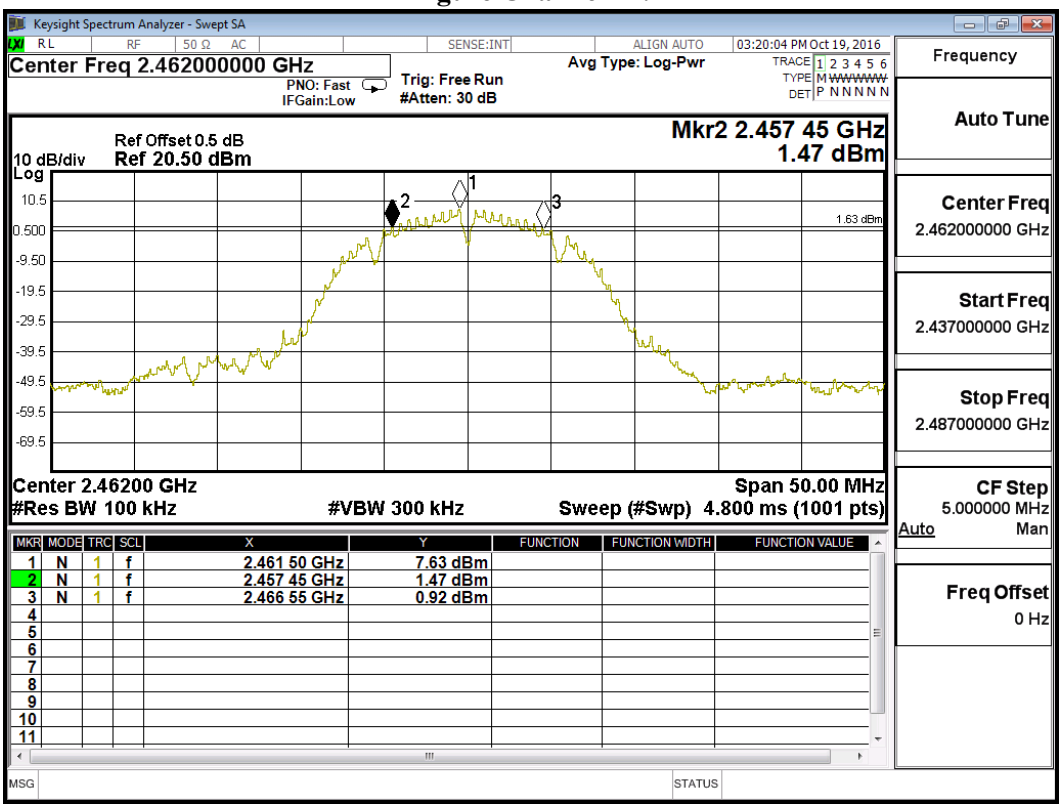


Figure Channel 11:



Product : zoomBox
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
Test Date : 2016/10/19

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15950	>500	Pass
06	2437	16200	>500	Pass
11	2462	15950	>500	Pass

Figure Channel 01:

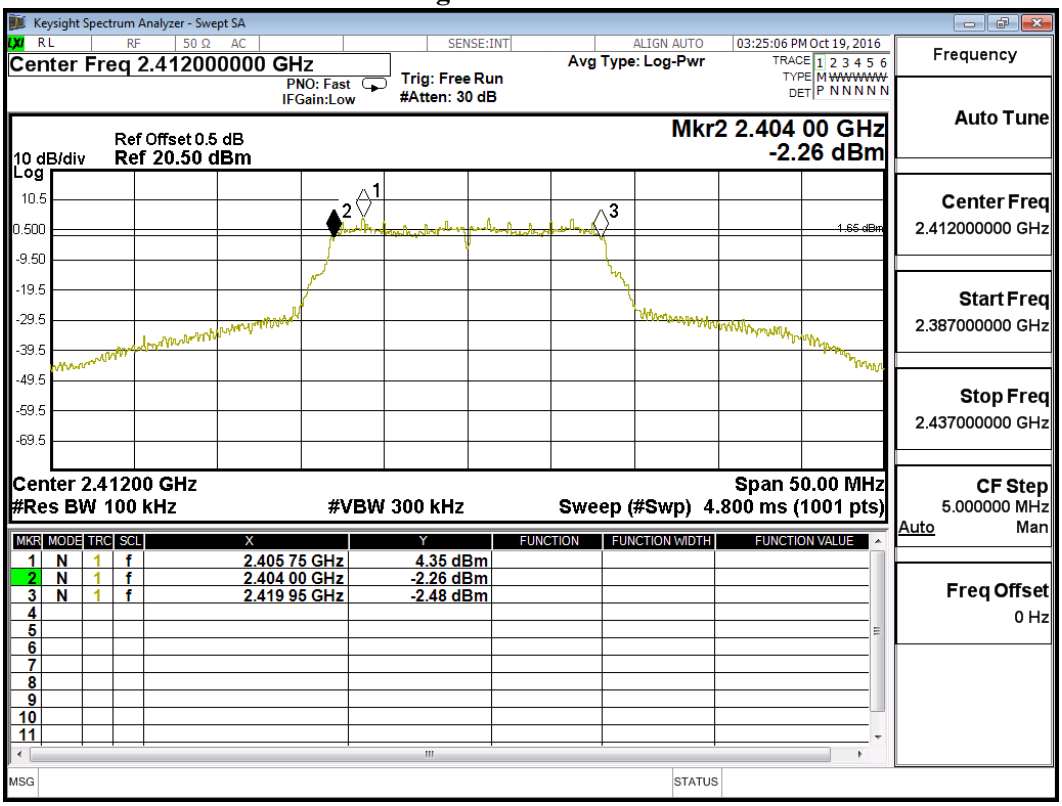


Figure Channel 06:

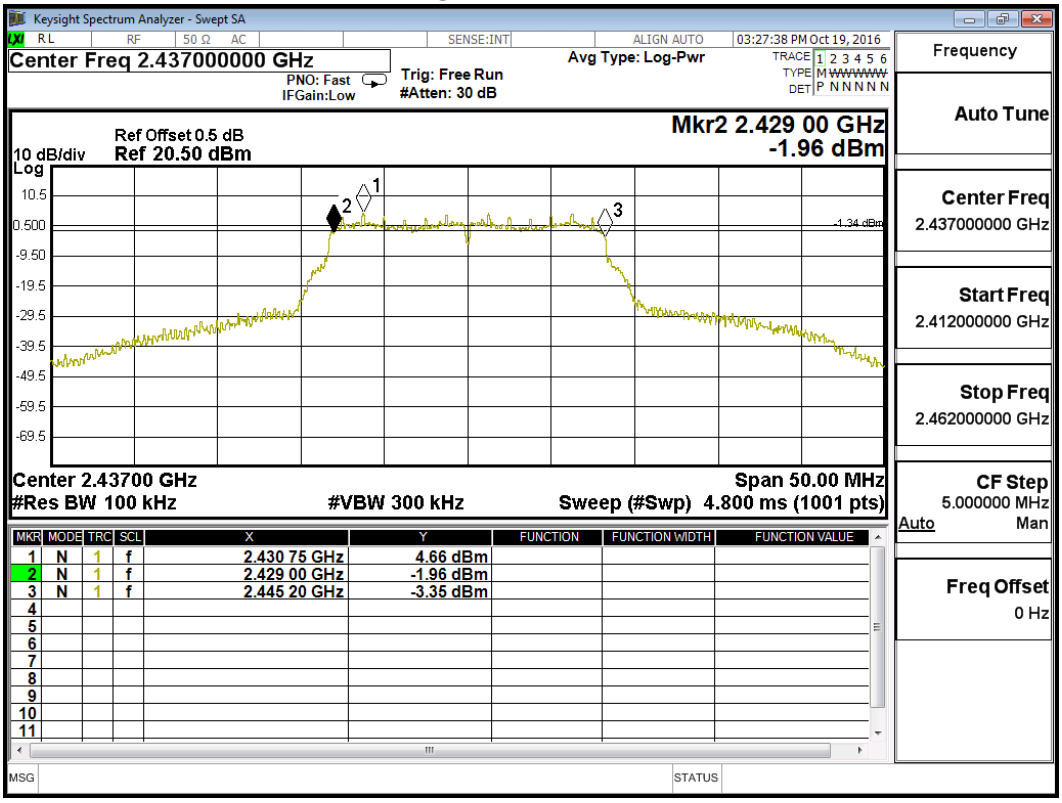
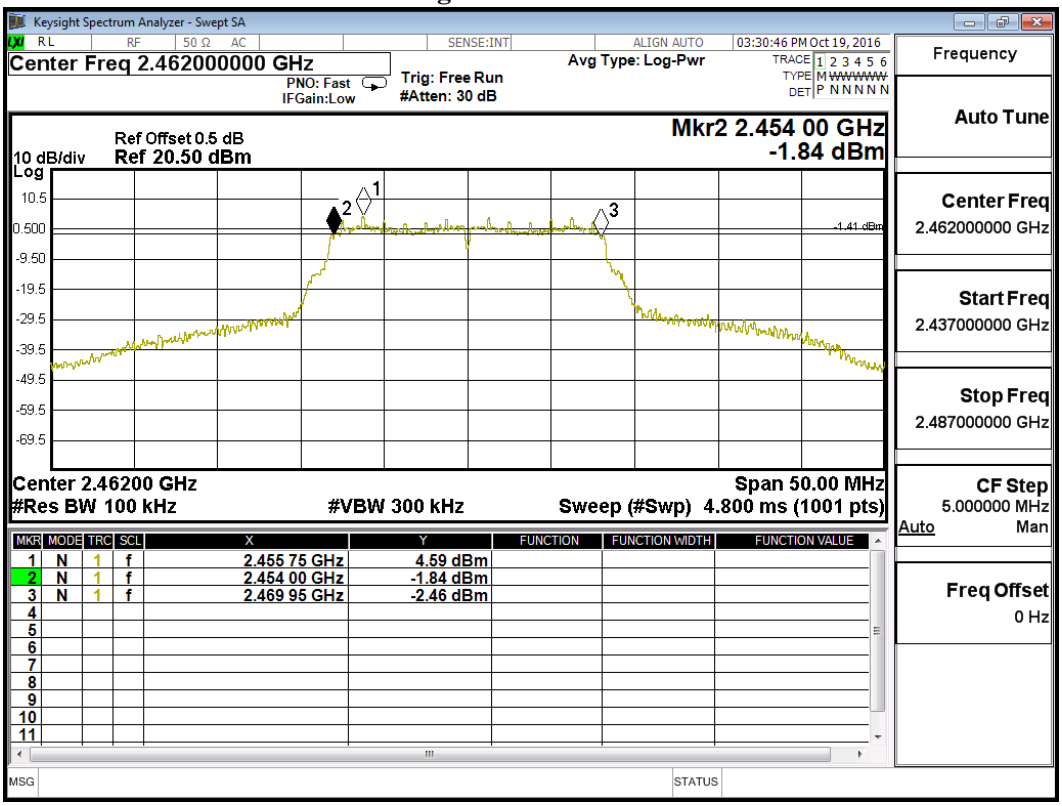


Figure Channel 11:



Product : zoomBox
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Date : 2016/10/19
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	17600	>500	Pass
06	2437	17650	>500	Pass
11	2462	17650	>500	Pass

Figure Channel 01:

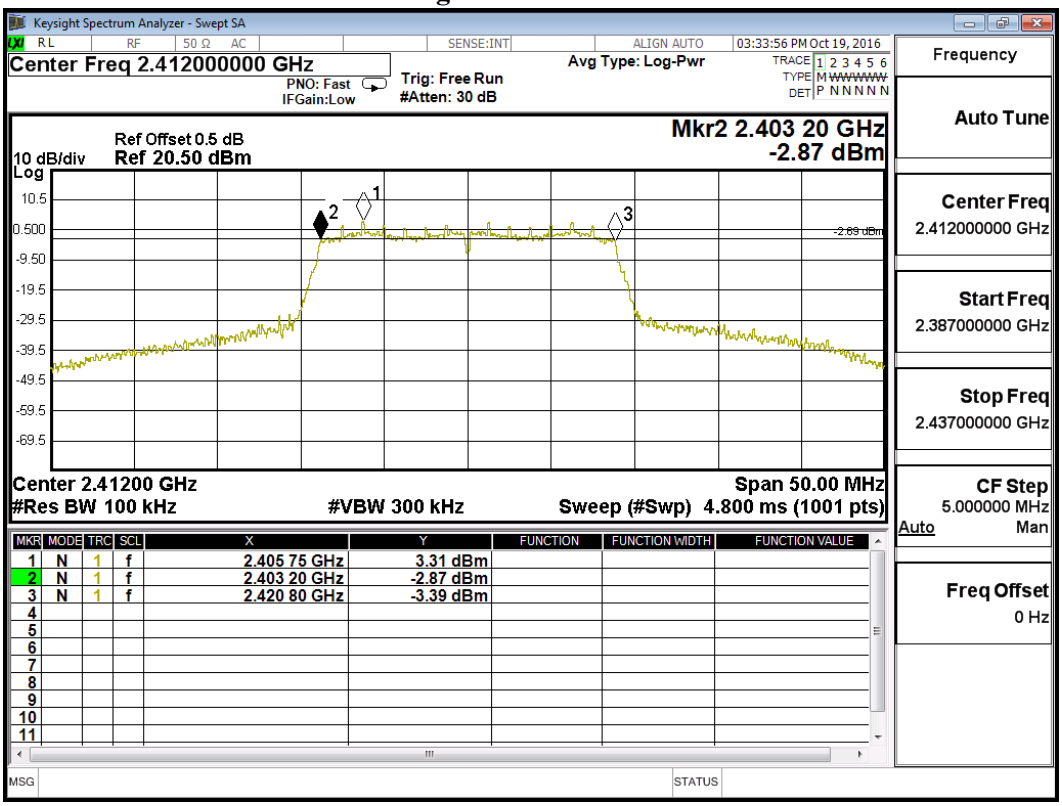


Figure Channel 06:

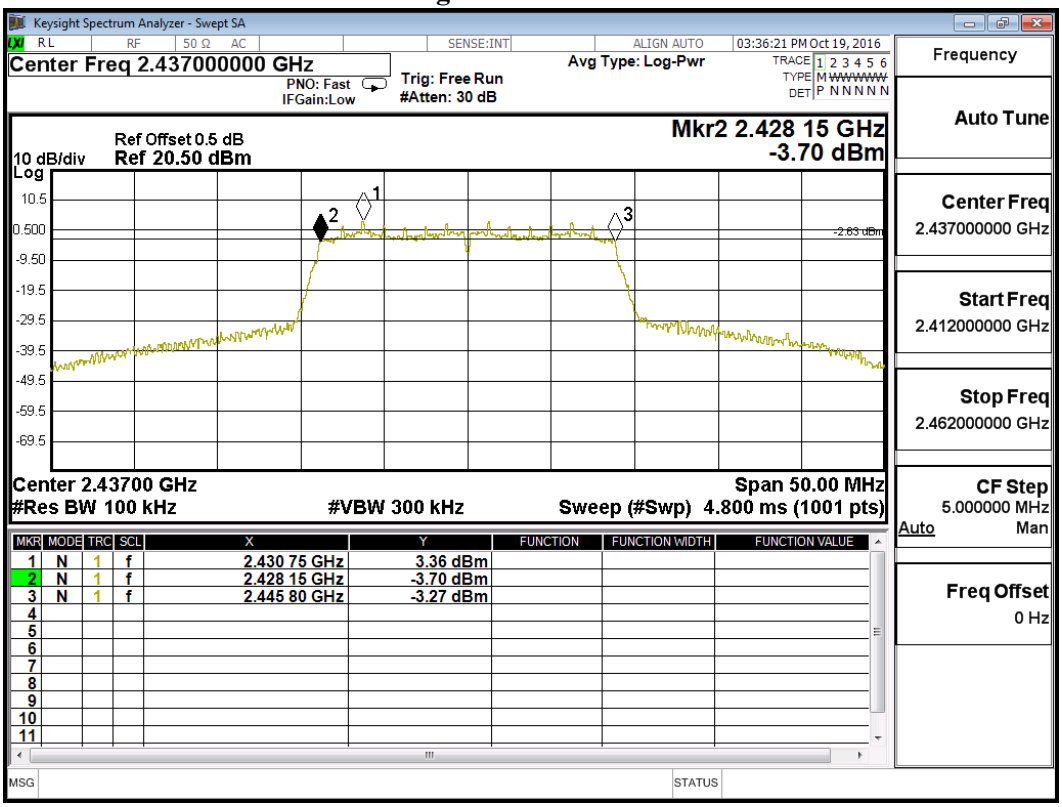
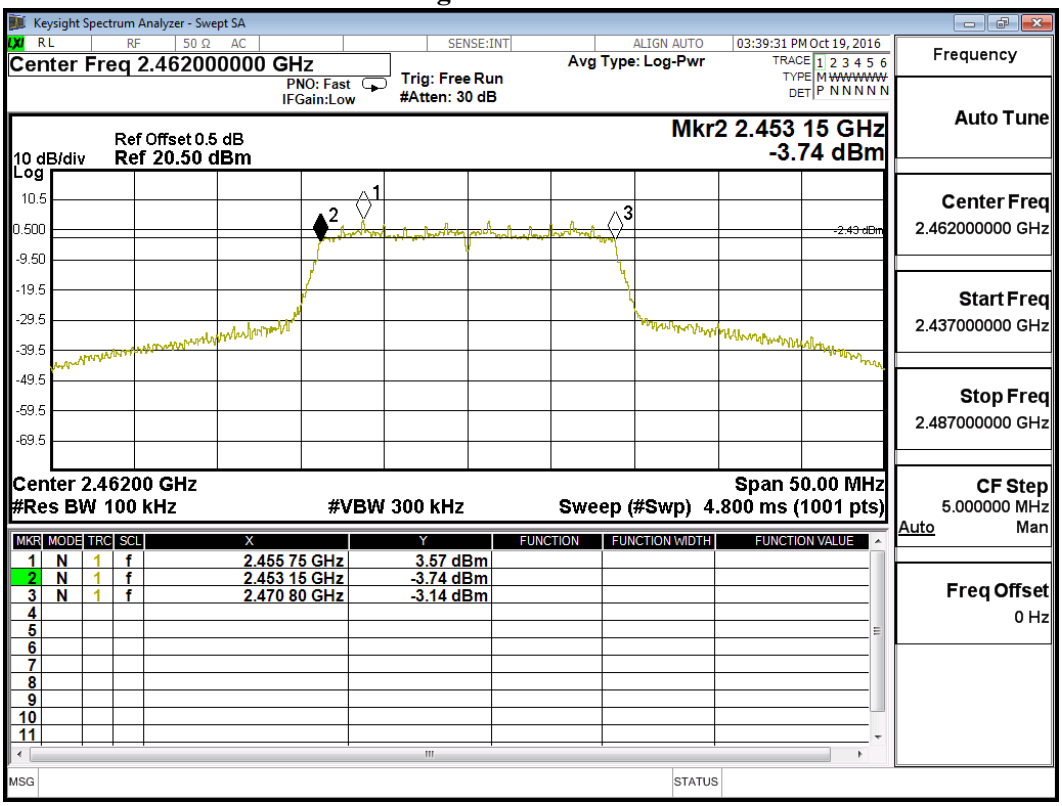
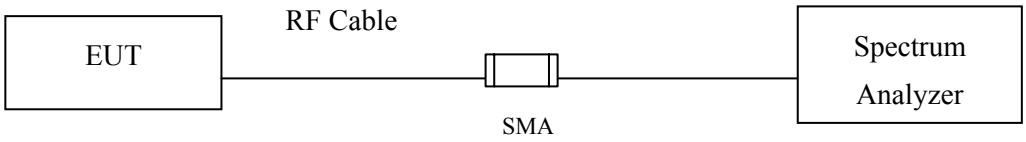


Figure Channel 11:



8. Power Density

8.1. Test Setup



8.2. Limits

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

8.3. 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.

8.4. Uncertainty

± 1.20 dB

8.5. Test Result of Power Density

Product : zoomBox
Test Item : Power Density Data
Test Site : No.3 OATS
Test Date : 2016/10/19
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	7.280	≦8dBm	Pass
06	2437	7.770	≦8dBm	Pass
11	2462	7.670	≦8dBm	Pass

Figure Channel 01:

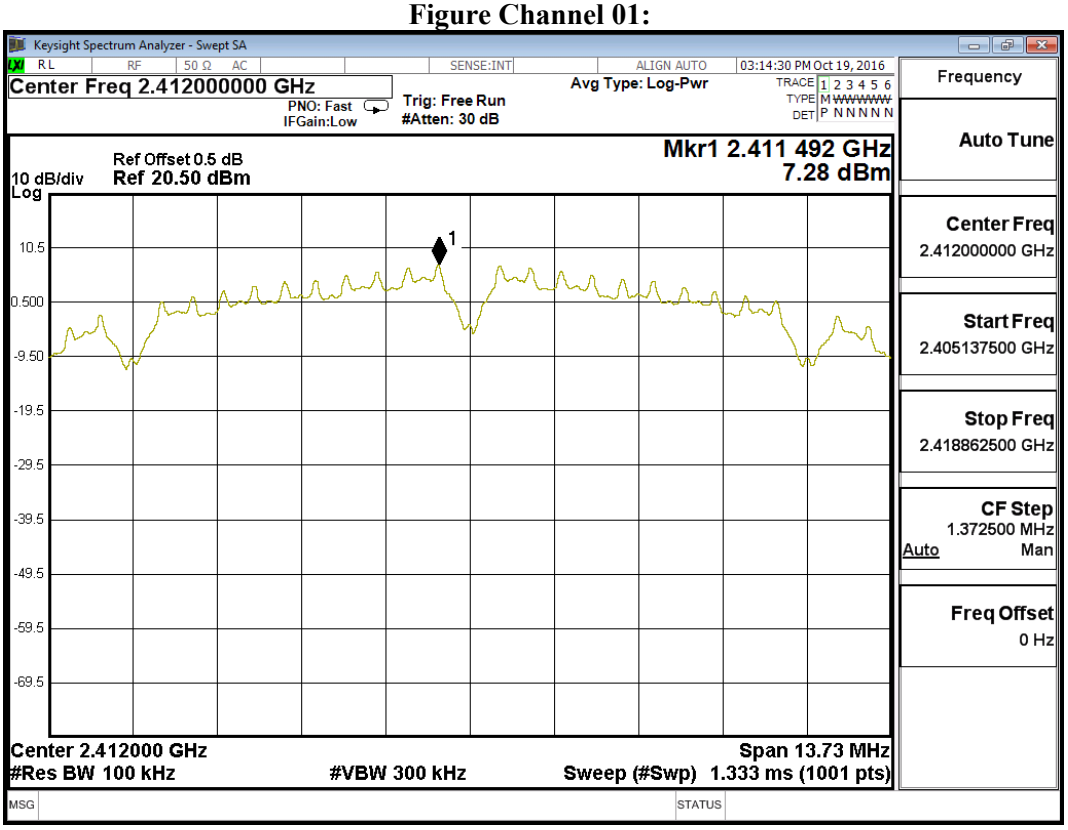


Figure Channel 06:

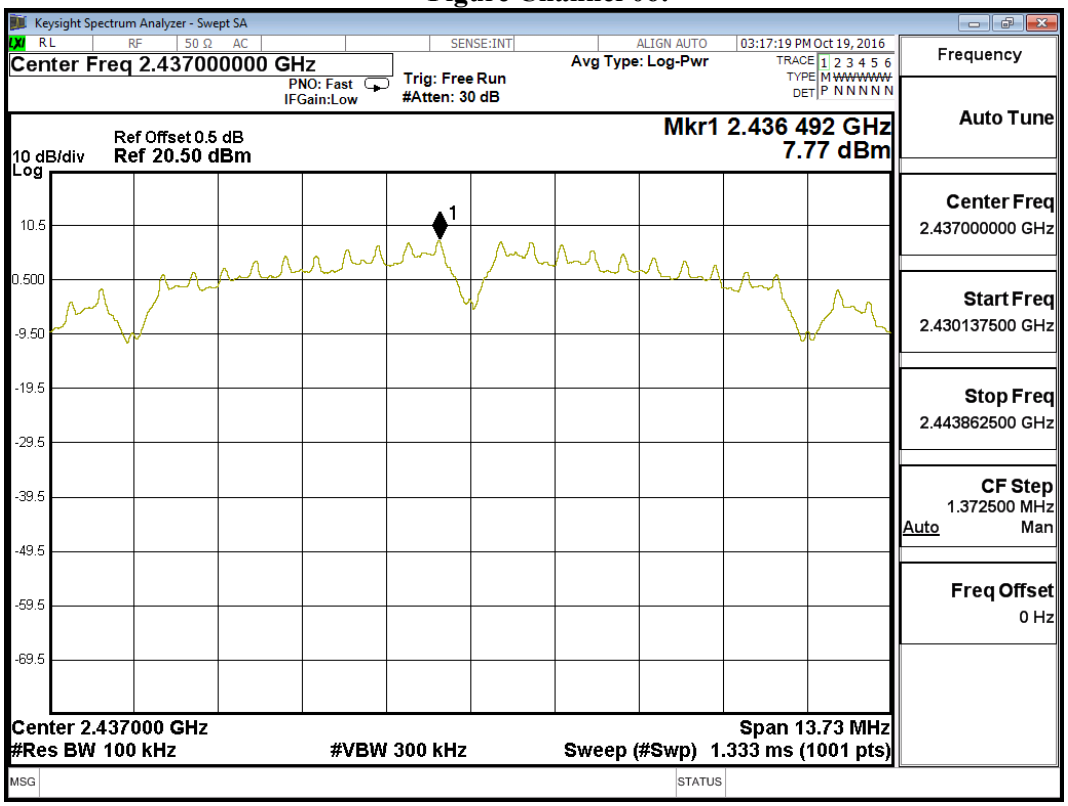
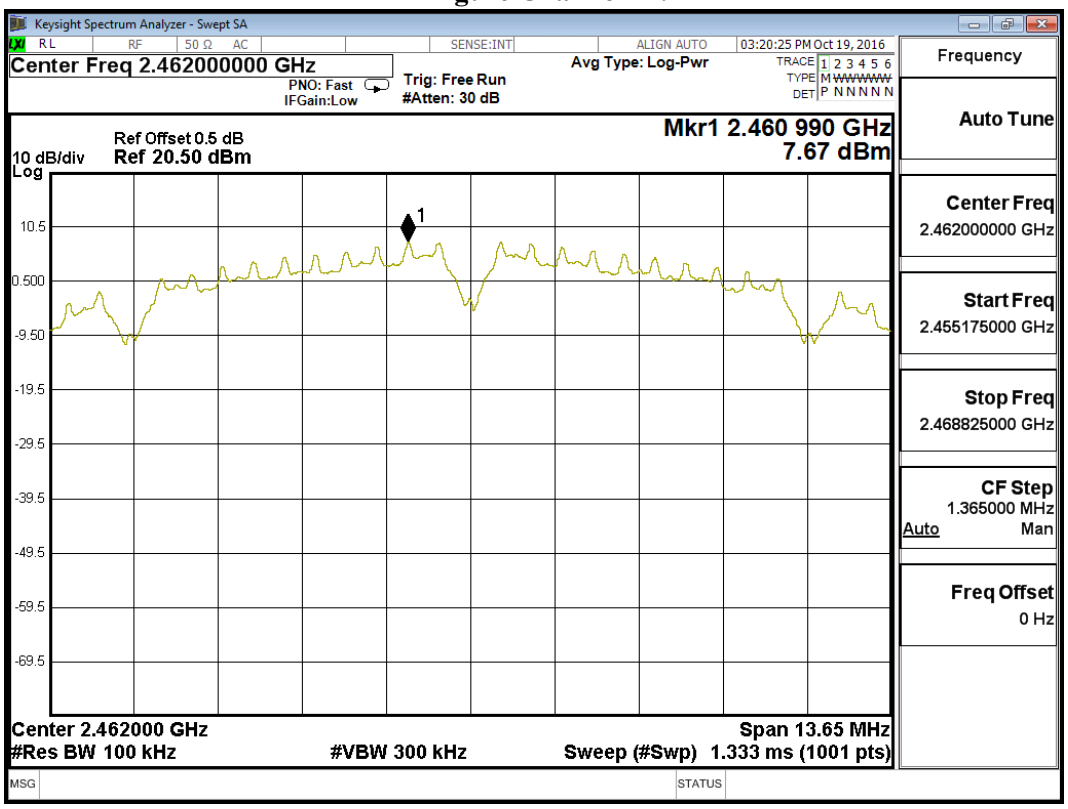


Figure Channel 11:



Product : zoomBox
Test Item : Power Density Data
Test Site : No.3 OATS
Test Date : 2016/10/19
Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	4.350	≦8dBm	Pass
06	2437	4.470	≦8dBm	Pass
11	2462	4.590	≦8dBm	Pass

Figure Channel 01:

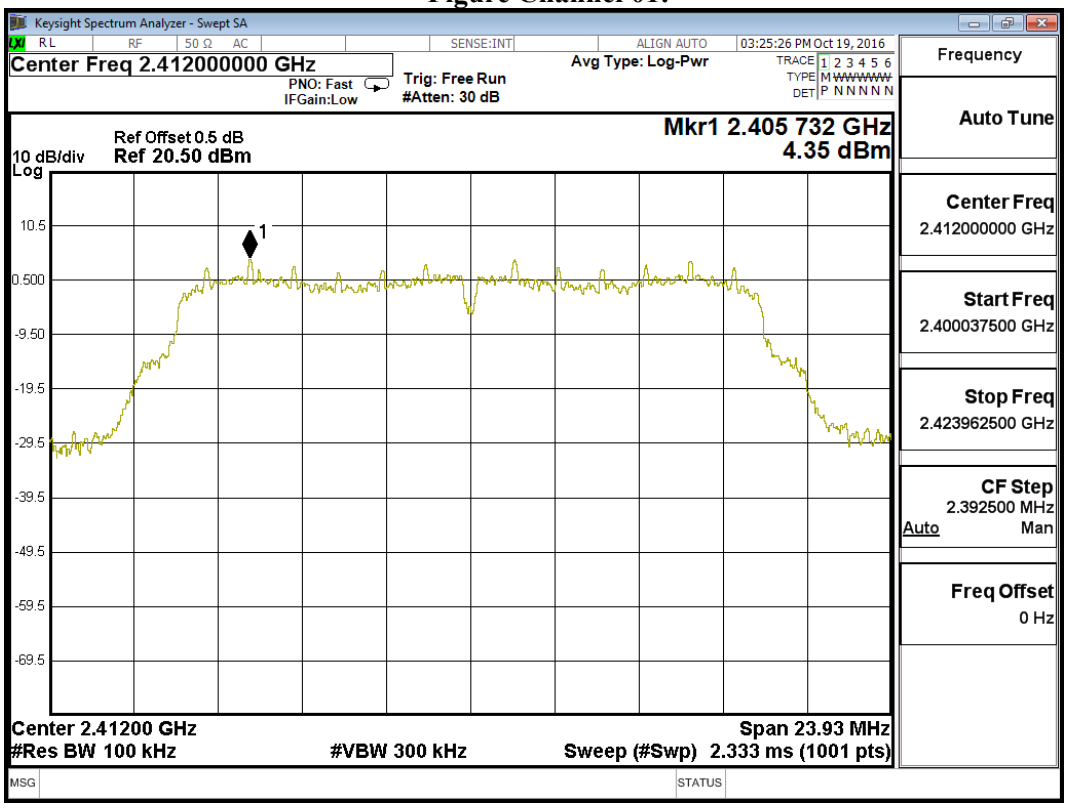


Figure Channel 06:

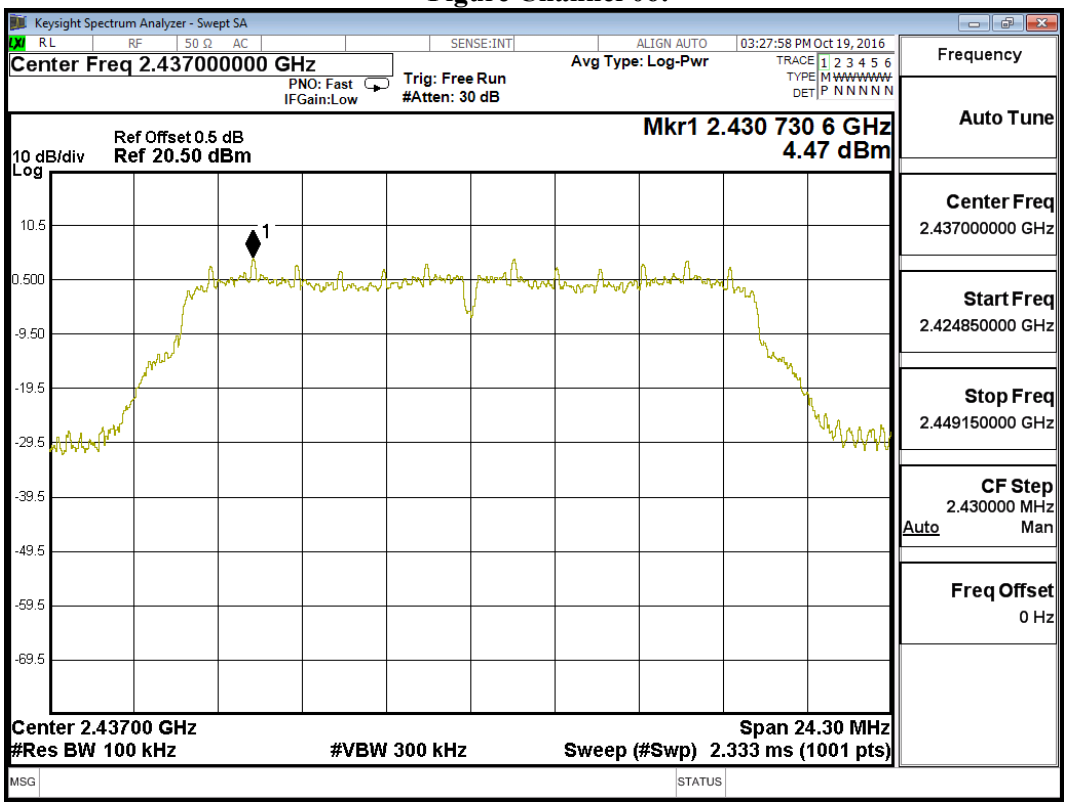
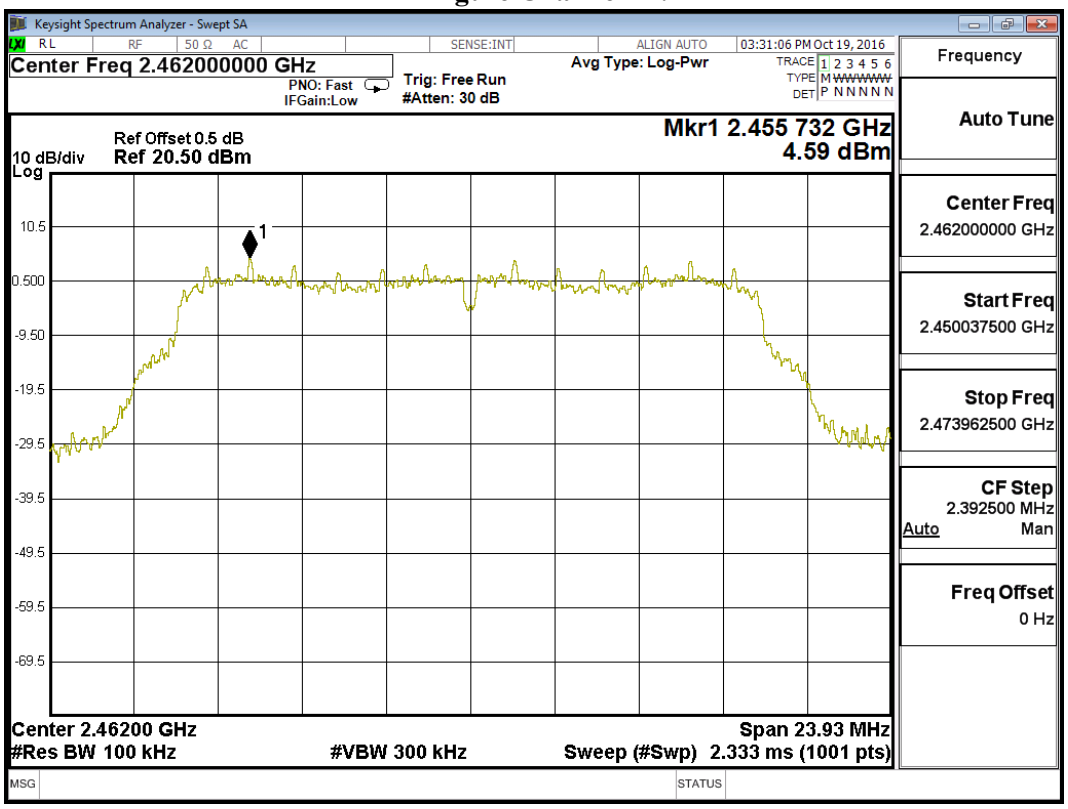


Figure Channel 11:



Product : zoomBox
Test Item : Power Density Data
Test Site : No.3 OATS
Test Date : 2016/10/19
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	3.200	≦8dBm	Pass
06	2437	3.430	≦8dBm	Pass
11	2462	3.510	≦8dBm	Pass

Figure Channel 01:

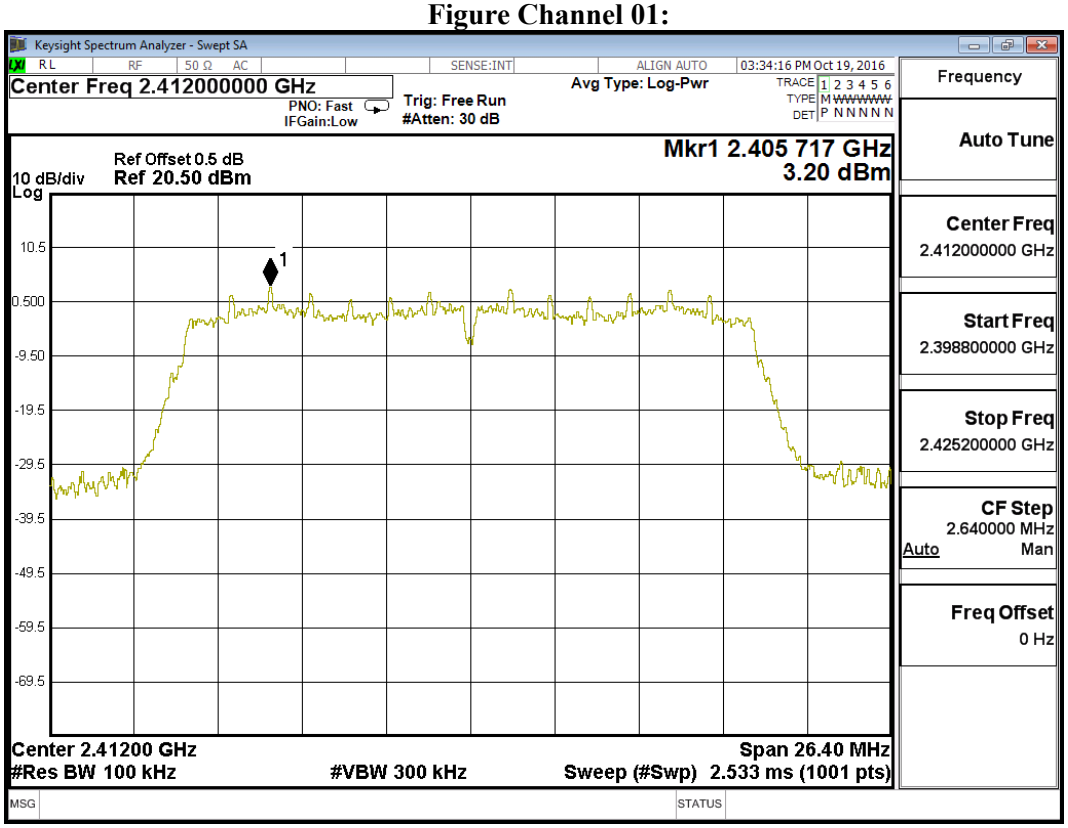


Figure Channel 06:

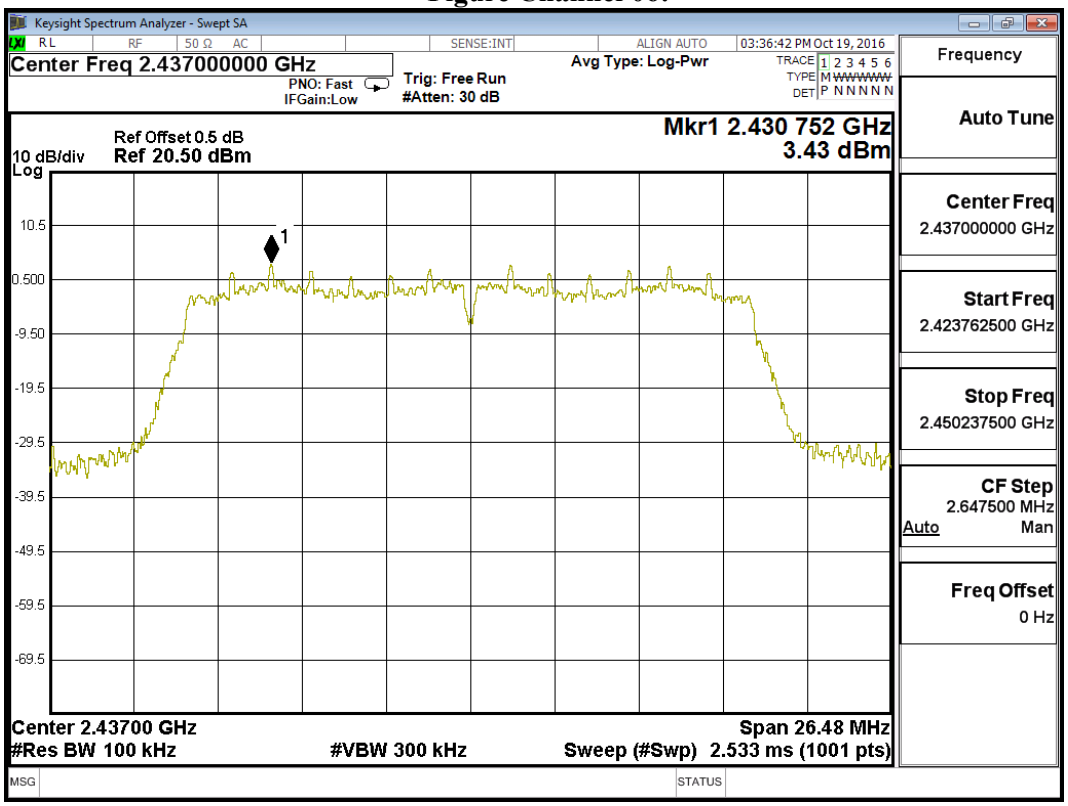
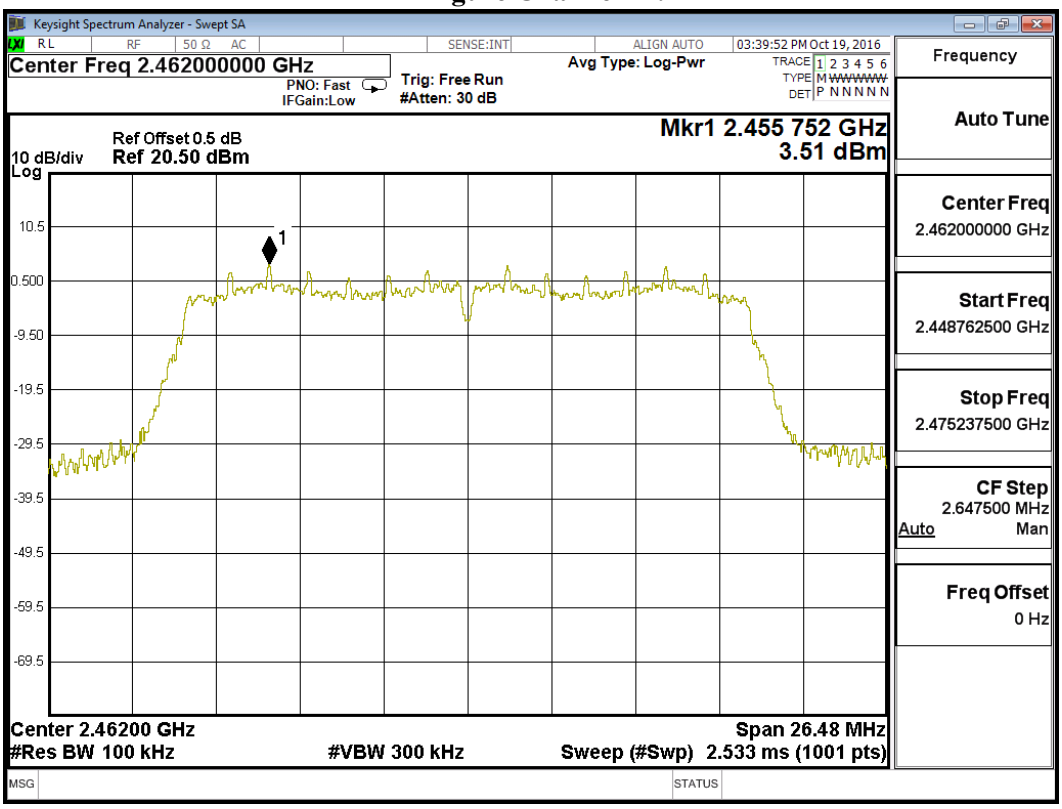


Figure Channel 11:



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs