

FCC Test Report

Product Name	WiFi Digital Microscope
Model No	DMC-2513
FCC ID.	R7RDMC2513

Applicant	VAST Technologies INC.
Address	7F., No. 80, Sec. 1, GuangFu Rd., 241 SanChong Dist., New Taipei City, Taiwan

Date of Receipt	July 25, 2017
Issue Date	Nov. 27, 2017
Report No.	1770355R-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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Applicant	VAST Technologies INC.
Address	7F., No. 80, Sec. 1, GuangFu Rd., 241 SanChong Dist., New Taipei City, Taiwan
Manufacturer	VAST TECHNOLOGIES INC.
Model No.	DMC-2513
FCC ID.	R7RDMC2513
EUT Rated Voltage	DC 3.6V (Power by Battery)
EUT Test Voltage	DC 3.6V (Power by Battery)
Trade Name	VAST
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2016 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 DTS Meas Guidance v04
Test Result	Complied

Documented By :



(Senior Adm. Specialist / Genie Chang)

Tested By :



(Engineer / Kevin Liu)

Approved By :



(Director / Vincent Lin)

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	WiFi Digital Microscope
Trade Name	VAST
Model No.	DMC-2513
FCC ID.	R7RDMC2513
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 150Mbps
Channel separation	802.11b/g/n: 5 MHz
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	FPC Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Walsin	RFFPA330805IMAB301	FPC Antenna	4.89dBi for 2.4 GHz

Note: The antenna of EUT is conforming to FCC 15.203.

802.11b/g/n-20MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

802.11n-40MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 03:	2422 MHz	Channel 04:	2427 MHz	Channel 05:	2432 MHz	Channel 06:	2437 MHz
Channel 07:	2442 MHz	Channel 08:	2447 MHz	Channel 09:	2452 MHz		

Note:

1. The EUT is a WiFi Digital Microscope with a built-in 2.4GHz WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.
(802.11b is 1Mbps 、802.11g is 6Mbps 、802.11n(20M-BW) is 7.2Mbps and 802.11n(40M-BW) is 15Mbps)
4. 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.
5. 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)
	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)
	Mode 5: Transmit

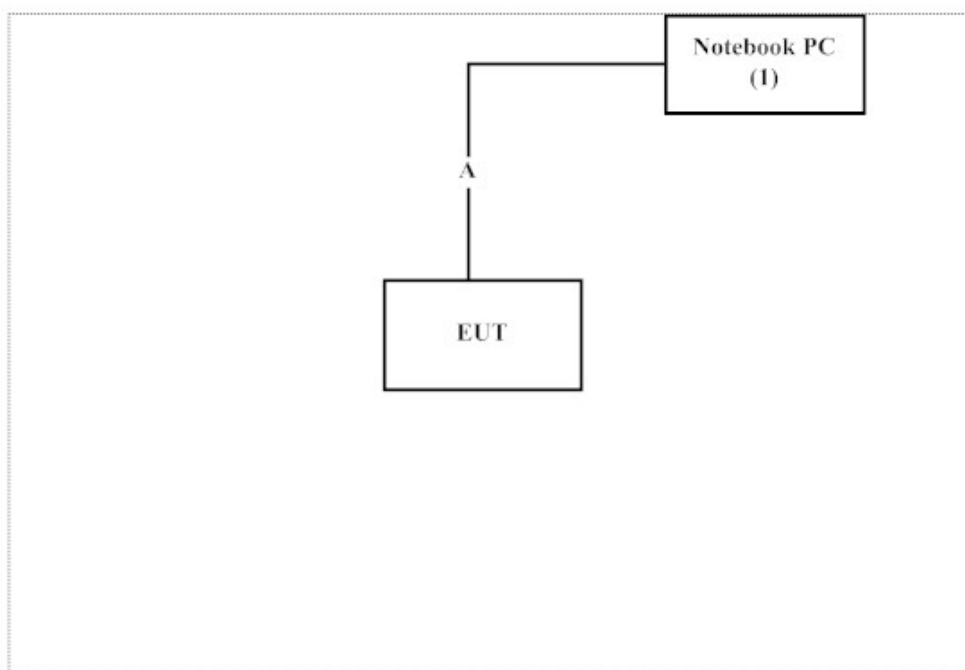
1.3. Tested System Details

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	P62G	9TSGJC2	N/A

Signal Cable Type	Signal cable Description
A USB Cable	Shielded, 0.5m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “MT7601 USB V1.0.9.11” 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 DEKRA Testing and Certification Co., Ltd. Web Site:

<http://www.dekra.com.tw/english/about/certificates.aspx?bval=5>

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw/index_en

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FCC Accreditation Number: TW3023

1.7. List of Test Item and Equipment

For Conduction measurements /ASR1

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	EMI Test Receiver	R&S	ESR7	161601	2017.01.06	2018.01.05
X	Two-Line V-Network	R&S	ENV216	101306	2017.02.16	2018.02.15
X	Two-Line V-Network	R&S	ENV216	101307	2017.03.17	2018.03.16
X	Coaxial Cable	Quietek	RG400_BNC	RF001	2017.05.24	2018.05.23

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

For Conducted measurements /ASR4

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Spectrum Analyzer	R&S	FSV30	103464	2017.01.09	2018.01.08
X	Power Meter	Anritsu	ML2496A	1548003	2016.12.15	2017.12.14
X	Power Sensor	Anritsu	MA2411B	1531024	2016.12.15	2017.12.14
X	Power Sensor	Anritsu	MA2411B	1531025	2016.12.15	2017.12.14
	Bluetooth Tester	R&S	CBT	101238	2017.01.03	2018.01.02

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 Conduction Test System V8.0.110

For Radiated measurements /ACB1

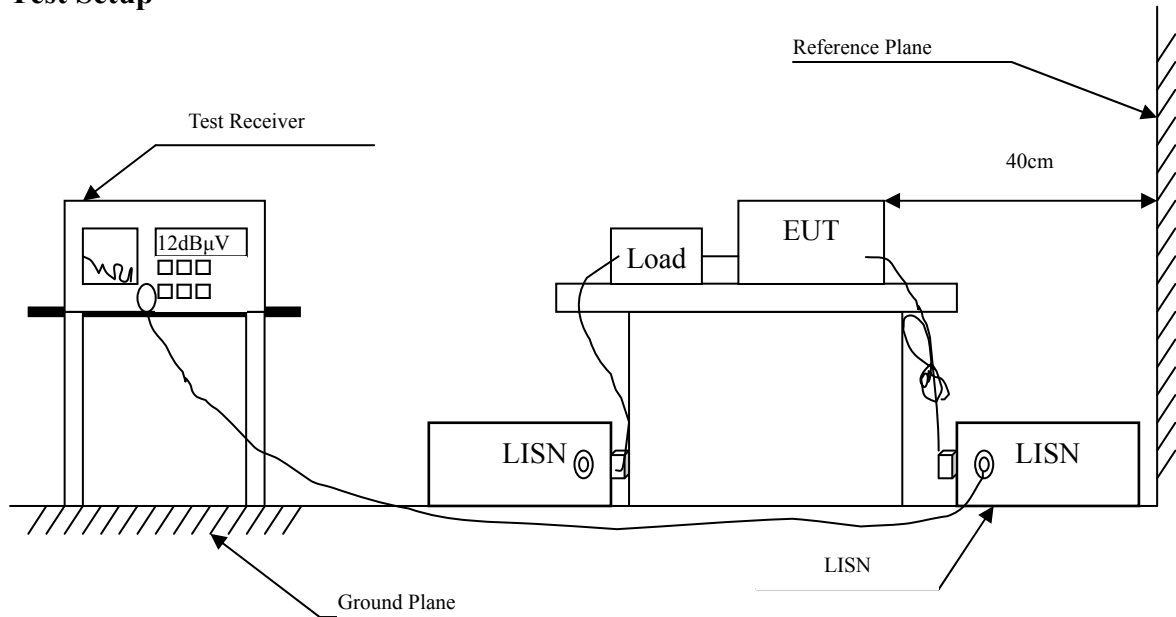
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Loop Antenna	TESEQ	HLA6121	37133	2016.03.18	2018.03.17
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-674	2017.02.09	2018.02.08
X	Horn Antenna	ETS-Lindgren	3117	00203800	2016.10.13	2017.10.12
X	Horn Antenna	Com-Power	AH-840	101087	2017.05.24	2018.05.23
X	Pre-Amplifier	EMCI	EMC001330	980316	2017.05.14	2018.05.13
X	Pre-Amplifier	EMCI	EMC051835SE	980311	2017.05.15	2018.05.14
X	Pre-Amplifier	EMCI	EMC05820SE	980310	2017.05.15	2018.05.14
X	Pre-Amplifier	EMCI	EMC184045SE	980314	2017.05.17	2018.05.16
X	Filter	MICRO TRONICS	BRM50702	G249	2017.08.11	2018.08.10
	Filter	MICRO TRONICS	BRM50716	G187	2017.08.16	2018.08.15
X	EMI Test Receiver	R&S	ESR7	101602	2016.12.15	2017.12.14
X	Spectrum Analyzer	R&S	FSV40	101148	2017.01.24	2018.01.23
X	Coaxial Cable	SUHNER	SUCOFLEX 106	RF002	2017.05.25	2018.05.24
X	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2016.08.11	2017.08.10

Note:

1. Loop Antenna is calibrated every two year, the other 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 (dB μ V) 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 investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Uncertainty

± 2.35 dB

2.5. Test Result of Conducted Emission

Product : WiFi Digital Microscope
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437MHz)
 Test Date : 2017/08/31

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V	Margin dB	Limit dB μ V
Line 1					
Quasi-Peak					
0.152	9.707	37.984	47.691	-18.252	65.943
0.429	9.723	24.845	34.568	-23.461	58.029
0.550	9.742	22.168	31.910	-24.090	56.000
3.604	9.853	25.942	35.795	-20.205	56.000
5.662	9.888	20.033	29.920	-30.080	60.000
10.291	10.005	29.989	39.994	-20.006	60.000
Average					
0.152	9.707	14.286	23.993	-31.950	55.943
0.429	9.723	10.835	20.558	-27.471	48.029
0.550	9.742	7.717	17.459	-28.541	46.000
3.604	9.853	16.191	26.044	-19.956	46.000
5.662	9.888	13.694	23.582	-26.418	50.000
10.291	10.005	23.864	33.869	-16.131	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 : WiFi Digital Microscope
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437MHz)
 Test Date : 2017/08/31

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dBμV	dBμV	dB	dBμV
Line 2					
Quasi-Peak					
0.152	9.698	37.827	47.525	-18.418	65.943
0.433	9.717	24.845	34.561	-23.353	57.914
0.553	9.734	22.325	32.059	-23.941	56.000
3.511	9.843	26.562	36.405	-19.595	56.000
3.649	9.854	26.451	36.305	-19.695	56.000
10.113	9.993	30.237	40.230	-19.770	60.000
Average					
0.152	9.698	14.041	23.739	-32.204	55.943
0.433	9.717	12.484	22.201	-25.713	47.914
0.553	9.734	8.429	18.164	-27.836	46.000
3.511	9.843	16.737	26.580	-19.420	46.000
3.649	9.854	16.203	26.058	-19.942	46.000
10.113	9.993	24.337	34.330	-15.670	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 : WiFi Digital Microscope
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)
 Test Date : 2017/08/31

Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dB μ V	dB μ V	dB	dB μ V
Line 1					
Quasi-Peak					
0.152	9.707	37.539	47.247	-18.696	65.943
0.431	9.723	13.959	23.682	-34.289	57.971
0.557	9.742	21.331	31.074	-24.926	56.000
1.363	9.771	13.090	22.861	-33.139	56.000
3.538	9.846	24.563	34.409	-21.591	56.000
10.257	10.003	29.445	39.448	-20.552	60.000
Average					
0.152	9.707	14.077	23.785	-32.158	55.943
0.431	9.723	2.155	11.879	-36.092	47.971
0.557	9.742	9.772	19.515	-26.485	46.000
1.363	9.771	4.292	14.063	-31.937	46.000
3.538	9.846	15.142	24.987	-21.013	46.000
10.257	10.003	23.576	33.579	-16.421	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 : WiFi Digital Microscope
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)
 Test Date : 2017/08/31

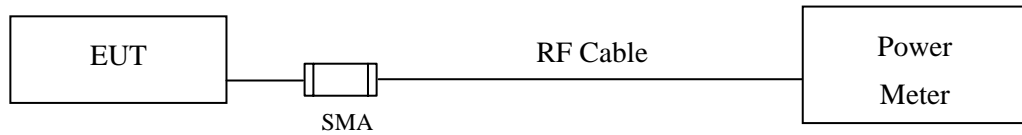
Frequency	Correct	Reading	Measurement	Margin	Limit
	Factor	Level	Level		
MHz	dB	dB μ V	dB μ V	dB	dB μ V
Line 2					
Quasi-Peak					
0.159	9.697	38.812	48.509	-17.234	65.743
0.494	9.727	25.742	35.470	-20.701	56.171
1.158	9.755	13.145	22.900	-33.100	56.000
3.532	9.845	24.990	34.834	-21.166	56.000
10.012	9.993	27.992	37.985	-22.015	60.000
13.754	10.067	16.147	26.215	-33.785	60.000
Average					
0.159	9.697	24.576	34.273	-21.470	55.743
0.494	9.727	10.067	19.795	-26.376	46.171
1.158	9.755	4.866	14.621	-31.379	46.000
3.532	9.845	15.876	25.721	-20.279	46.000
10.012	9.993	22.201	32.194	-17.806	50.000
13.754	10.067	10.986	21.053	-28.947	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 and Average Power Output

3.1. Test Setup



3.2. Limits

The maximum peak power shall be less 1 Watt.

3.3. Test Procedure

The measurement is according to the DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum Peak and Average conducted output power is performed using KDB 558074 section 9.1.3 PKPM1 Peak power meter method and 9.2.3.2 method AVGPM-G power meter method.

3.4. Uncertainty

± 0.86 dB

3.5. Test Result of Peak Power Output

Product : WiFi Digital Microscope
 Test Item : Peak Power Output Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)
 Test Date : 2017/08/29

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	4.89	--	--	--	8.51	<30dBm	Pass
06	2437	4.91	4.84	4.77	4.7	8.52	<30dBm	Pass
11	2462	4.97	--	--	--	8.57	<30dBm	Pass

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

Product : WiFi Digital Microscope
 Test Item : Peak Power Output Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)
 Test Date : 2017/08/29

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	4.63	--	--	--	--	--	--	--	13.02	<30dBm	Pass
06	2437	4.52	4.45	4.38	4.31	4.24	4.18	4.11	4.05	13.25	<30dBm	Pass
11	2462	4.72	--	--	--	--	--	--	--	13.58	<30dBm	Pass

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

Product : WiFi Digital Microscope
 Test Item : Peak Power Output Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
 Test Date : 2017/08/29

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	4.44	--	--	--	--	--	--	--	13.49	<30dBm	Pass
06	2437	4.41	4.34	4.27	4.2	4.13	4.06	3.99	3.92	13.04	<30dBm	Pass
11	2462	4.62	--	--	--	--	--	--	--	13.12	<30dBm	Pass

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

Product : WiFi Digital Microscope
 Test Item : Peak Power Output Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)
 Test Date : 2017/08/29

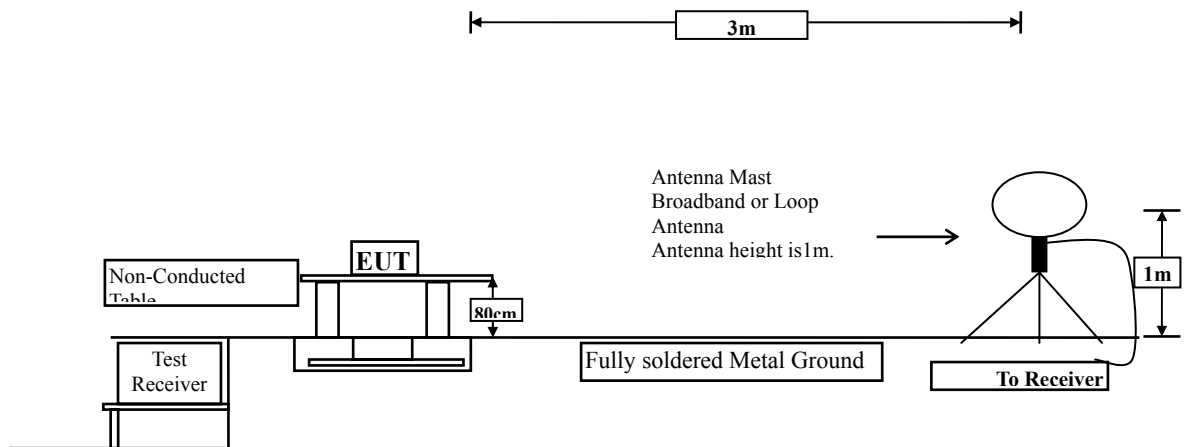
Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		15	30	45	60	90	120	135	150	15		
		Measurement Level (dBm)										
03	2422	4.55	--	--	--	--	--	--	--	13.86	<30dBm	Pass
06	2437	4.51	4.44	4.38	4.31	4.25	4.18	4.11	4.04	13.24	<30dBm	Pass
09	2452	4.64	--	--	--	--	--	--	--	13.34	<30dBm	Pass

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

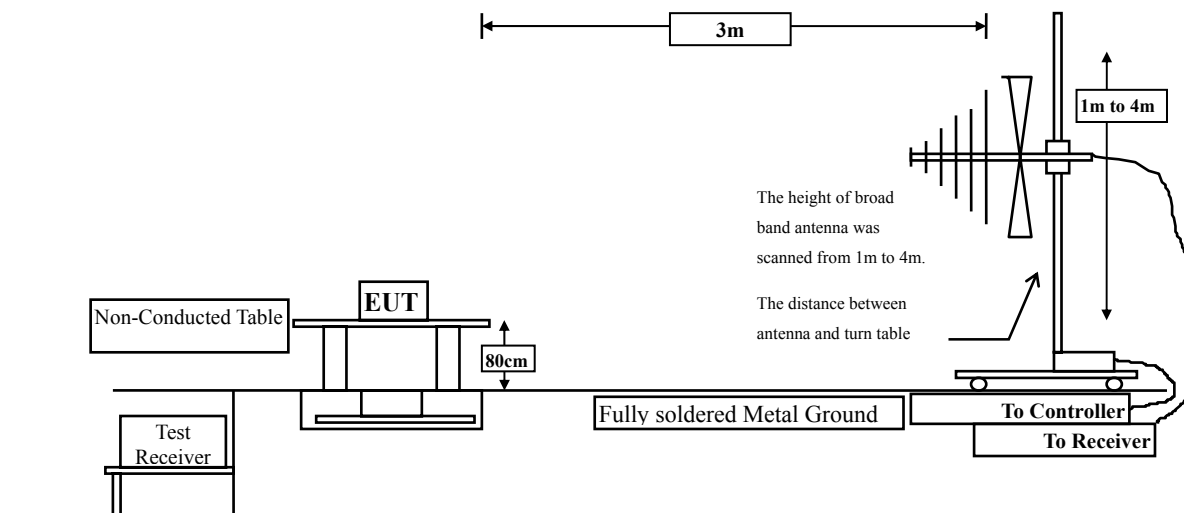
4. Radiated Emission

4.1. Test Setup

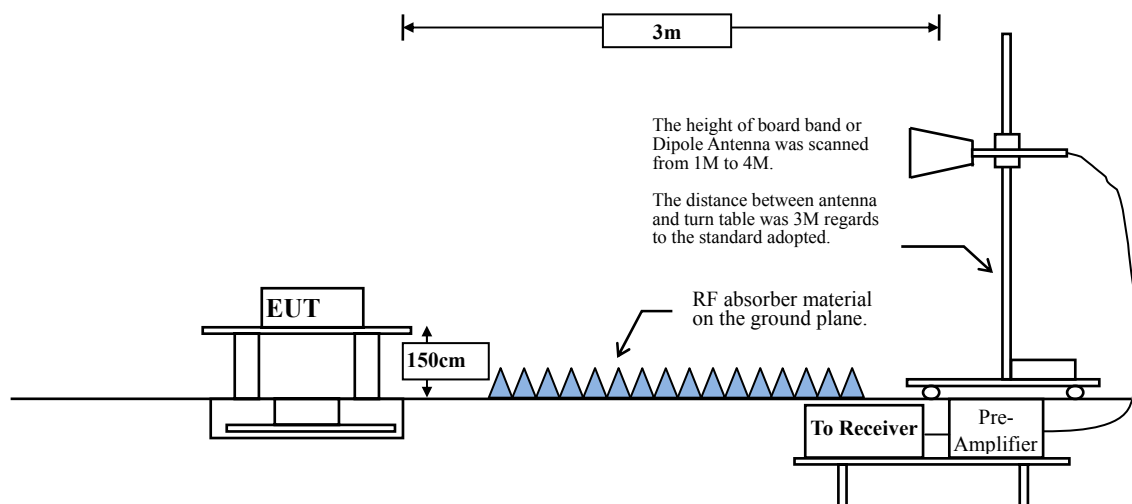
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.2. Limits

➤ General Radiated Emission Limits

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

FCC Part 15 Subpart C Paragraph 15.209 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:
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

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 measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

RBW and VBW Parameter setting:

According to KDB 558074 section 12.2.4. Peak power measurement procedure

RBW = as specified in Table 1.

VBW $\geq 3 \times$ RBW.

Table 1 —RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to KDB 558074 section 12.2.5. Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle $\geq 98 \%$

VBW $\geq 1/T$, when duty cycle $< 98 \%$

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	98.15	8.742	--	10
802.11g	88.94	1.45652	686.568	1k
802.11n20	87.85	1.36232	734.0419	1k
802.11n40	77.67	0.67536	1480.692	2k

Note: Duty Cycle Refer to Section 9

4.4. Uncertainty

Horizontal :

30-300MHz: $\pm 4.08\text{dB}$; 300M-1GHz: $\pm 3.86\text{dB}$; 1-18GHz: $\pm 3.77\text{dB}$; 18-40GHz: $\pm 3.98\text{dB}$ °

Vertical :

30-300MHz: $\pm 4.81\text{dB}$; 300M-1GHz: $\pm 3.87\text{dB}$; 1-18GHz: $\pm 3.83\text{dB}$; 18-40GHz: $\pm 3.98\text{dB}$ °

4.5. Test Result of Radiated Emission

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
 Test Date : 2017/11/23

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4824.000	-2.866	45.490	42.624	-31.376	74.000
7236.000	0.381	44.260	44.641	-29.359	74.000
9648.000	2.391	42.380	44.771	-29.229	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4824.000	-2.866	47.240	44.374	-29.626	74.000
7236.000	0.381	44.030	44.411	-29.589	74.000
9648.000	2.391	42.550	44.941	-29.059	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)
 Test Date : 2017/11/23

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
Peak Detector:					
4874.000	-2.835	45.170	42.334	-31.666	74.000
7311.000	0.465	44.330	44.795	-29.205	74.000
9748.000	2.590	43.240	45.829	-28.171	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4874.000	-2.835	46.350	43.514	-30.486	74.000
7311.000	0.465	44.690	45.155	-28.845	74.000
9748.000	2.590	43.210	45.799	-28.201	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)
 Test Date : 2017/11/23

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4924.000	-2.796	45.090	42.294	-31.706	74.000
7386.000	0.489	43.750	44.239	-29.761	74.000
9848.000	2.729	42.110	44.840	-29.160	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4924.000	-2.796	45.870	43.074	-30.926	74.000
7386.000	0.489	43.790	44.279	-29.721	74.000
9848.000	2.729	42.540	45.270	-28.730	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
 Test Date : 2017/11/23

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	-2.866	46.330	43.464	-30.536	74.000
7236.000	0.381	44.150	44.531	-29.469	74.000
9648.000	2.391	42.550	44.941	-29.059	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4824.000	-2.866	45.640	42.774	-31.226	74.000
7236.000	0.381	44.790	45.171	-28.829	74.000
9648.000	2.391	42.430	44.821	-29.179	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)
 Test Date : 2017/11/23

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:					
4874.000	-2.835	45.830	42.994	-31.006	74.000
7311.000	0.465	44.170	44.635	-29.365	74.000
9748.000	2.590	43.680	46.269	-27.731	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4874.000	-2.835	45.050	42.214	-31.786	74.000
7311.000	0.465	44.470	44.935	-29.065	74.000
9748.000	2.590	43.820	46.409	-27.591	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)
 Test Date : 2017/11/23

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4924.000	-2.796	45.250	42.454	-31.546	74.000
7386.000	0.489	43.360	43.849	-30.151	74.000
9848.000	2.729	42.230	44.960	-29.040	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4924.000	-2.796	45.560	42.764	-31.236	74.000
7386.000	0.489	44.150	44.639	-29.361	74.000
9848.000	2.729	42.660	45.390	-28.610	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2412MHz)
 Test Date : 2017/11/23

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	-2.866	45.340	42.474	-31.526	74.000
7236.000	0.381	44.040	44.421	-29.579	74.000
9648.000	2.391	42.580	44.971	-29.029	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4824.000	-2.866	45.550	42.684	-31.316	74.000
7236.000	0.381	43.970	44.351	-29.649	74.000
9648.000	2.391	42.430	44.821	-29.179	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437 MHz)
 Test Date : 2017/11/23

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:					
4874.000	-2.835	44.960	42.124	-31.876	74.000
7311.000	0.465	44.620	45.085	-28.915	74.000
9748.000	2.590	42.950	45.539	-28.461	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4874.000	-2.835	45.360	42.524	-31.476	74.000
7311.000	0.465	44.400	44.865	-29.135	74.000
9748.000	2.590	43.150	45.739	-28.261	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz)
 Test Date : 2017/11/23

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4924.000	-2.796	45.670	42.874	-31.126	74.000
7386.000	0.489	44.400	44.889	-29.111	74.000
9848.000	2.729	43.210	45.940	-28.060	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4924.000	-2.796	45.830	43.034	-30.966	74.000
7386.000	0.489	43.720	44.209	-29.791	74.000
9848.000	2.729	42.600	45.330	-28.670	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2422MHz)
 Test Date : 2017/11/23

Frequency MHz	Correct Factor dB	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
4844.000	-2.852	45.860	43.008	-30.992	74.000
7266.000	0.426	44.910	45.336	-28.664	74.000
9688.000	2.479	42.290	44.769	-29.231	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4844.000	-2.852	45.890	43.038	-30.962	74.000
7266.000	0.426	45.010	45.436	-28.564	74.000
9688.000	2.479	42.160	44.639	-29.361	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437 MHz)
 Test Date : 2017/11/23

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
Peak Detector:					
4874.000	-2.835	44.780	41.944	-32.056	74.000
7311.000	0.465	43.790	44.255	-29.745	74.000
9748.000	2.590	43.390	45.979	-28.021	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4874.000	-2.835	44.490	41.654	-32.346	74.000
7311.000	0.465	44.860	45.325	-28.675	74.000
9748.000	2.590	43.290	45.879	-28.121	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2452 MHz)
 Test Date : 2017/11/23

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:					
4904.000	-2.828	44.670	41.842	-32.158	74.000
7356.000	0.473	43.840	44.312	-29.688	74.000
9808.000	2.719	42.670	45.390	-28.610	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4904.000	-2.828	44.850	42.022	-31.978	74.000
7356.000	0.473	44.090	44.562	-29.438	74.000
9808.000	2.719	43.180	45.900	-28.100	74.000
Average Detector:					
--	--	--	--	--	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.

Product : WiFi Digital Microscope
 Test Item : General Radiated Emission Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)
 Test Date : 2017/11/23

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
167.768	-11.135	46.621	35.486	-8.014	43.500
335.058	-9.553	46.481	36.928	-9.072	46.000
360.362	-8.975	50.361	41.386	-4.614	46.000
377.232	-8.593	48.774	40.181	-5.819	46.000
408.159	-7.876	43.677	35.801	-10.199	46.000
455.957	-6.750	39.321	32.571	-13.429	46.000
Vertical					
167.768	-11.135	41.444	30.309	-13.191	43.500
209.942	-13.557	39.293	25.736	-17.764	43.500
360.362	-8.975	40.585	31.610	-14.390	46.000
377.232	-8.593	42.722	34.129	-11.871	46.000
408.159	-7.876	33.002	25.126	-20.874	46.000
455.957	-6.750	31.145	24.395	-21.605	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 : WiFi Digital Microscope
 Test Item : General Radiated Emission Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)
 Test Date : 2017/11/23

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
125.594	-12.844	48.877	36.033	-7.467	43.500
167.768	-11.135	49.010	37.875	-5.625	43.500
335.058	-9.553	43.602	34.049	-11.951	46.000
360.362	-8.975	47.958	38.983	-7.017	46.000
377.232	-8.593	46.522	37.929	-8.071	46.000
456.245	-6.746	39.411	32.665	-13.335	46.000
Vertical					
125.594	-12.844	36.525	23.681	-19.819	43.500
167.768	-11.135	36.256	25.121	-18.379	43.500
360.362	-8.975	37.837	28.862	-17.138	46.000
377.232	-8.593	39.876	31.283	-14.717	46.000
419.406	-7.599	36.652	29.053	-16.947	46.000
461.580	-6.656	31.181	24.525	-21.475	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 : WiFi Digital Microscope
 Test Item : General Radiated Emission Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437 MHz)
 Test Date : 2017/11/23

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
80.609	-15.749	48.002	32.253	-7.747	40.000
167.768	-11.135	44.956	33.821	-9.679	43.500
335.058	-9.553	46.154	36.601	-9.399	46.000
360.362	-8.975	46.859	37.884	-8.116	46.000
377.232	-8.593	46.796	38.203	-7.797	46.000
408.159	-7.876	39.973	32.097	-13.903	46.000
Vertical					
125.594	-12.844	40.062	27.218	-16.282	43.500
209.942	-13.557	42.109	28.552	-14.948	43.500
360.362	-8.975	42.980	34.005	-11.995	46.000
377.232	-8.593	43.391	34.798	-11.202	46.000
419.406	-7.599	38.651	31.052	-14.948	46.000
455.957	-6.750	36.992	30.242	-15.758	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 : WiFi Digital Microscope
 Test Item : General Radiated Emission Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437 MHz)
 Test Date : 2017/11/23

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
125.594	-12.844	47.975	35.131	-8.369	43.500
167.768	-11.135	49.979	38.844	-4.656	43.500
360.362	-8.975	43.928	34.953	-11.047	46.000
419.406	-7.599	39.195	31.596	-14.404	46.000
455.957	-6.750	39.184	32.434	-13.566	46.000
503.754	-5.965	34.706	28.742	-17.258	46.000
Vertical					
167.768	-11.135	39.334	28.199	-15.301	43.500
209.942	-13.557	41.891	28.334	-15.166	43.500
360.362	-8.975	41.249	32.274	-13.726	46.000
377.232	-8.593	43.422	34.829	-11.171	46.000
419.406	-7.599	38.471	30.872	-15.128	46.000
455.957	-6.750	37.830	31.080	-14.920	46.000

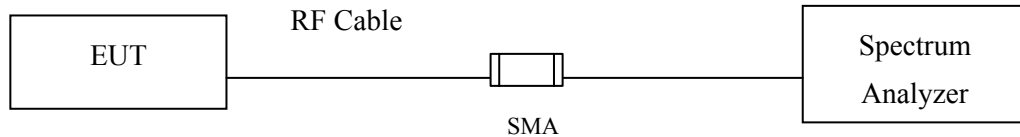
Note:

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.

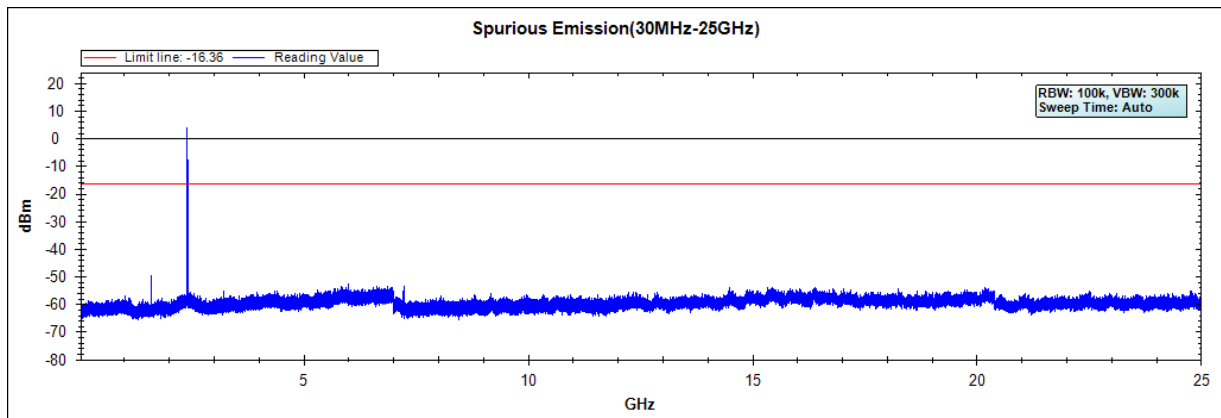
5.4. Uncertainty

$\pm 1.23\text{dB}$

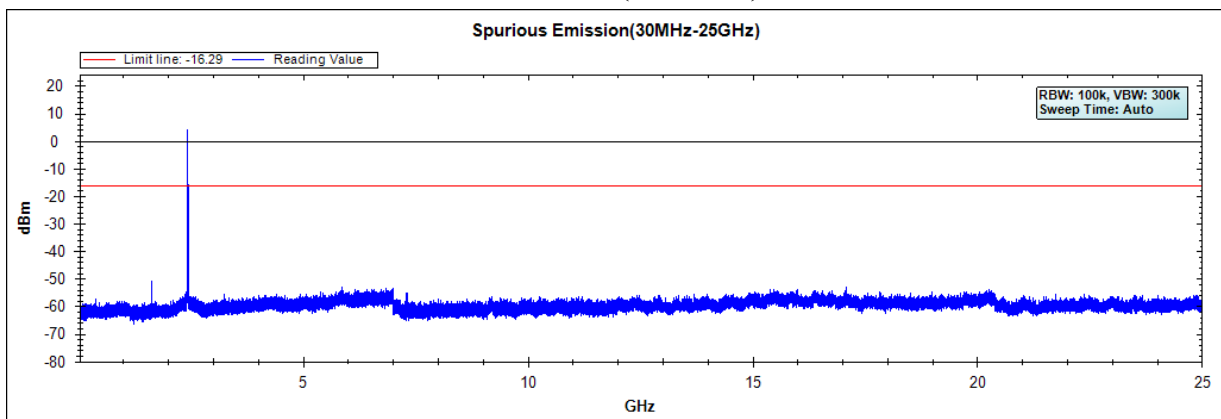
5.5. Test Result of RF antenna conducted test

Product : WiFi Digital Microscope
Test Item : RF antenna conducted test
Test Mode : Mode 1: Transmit (802.11b 1Mbps)
Test Date : 2017/08/25

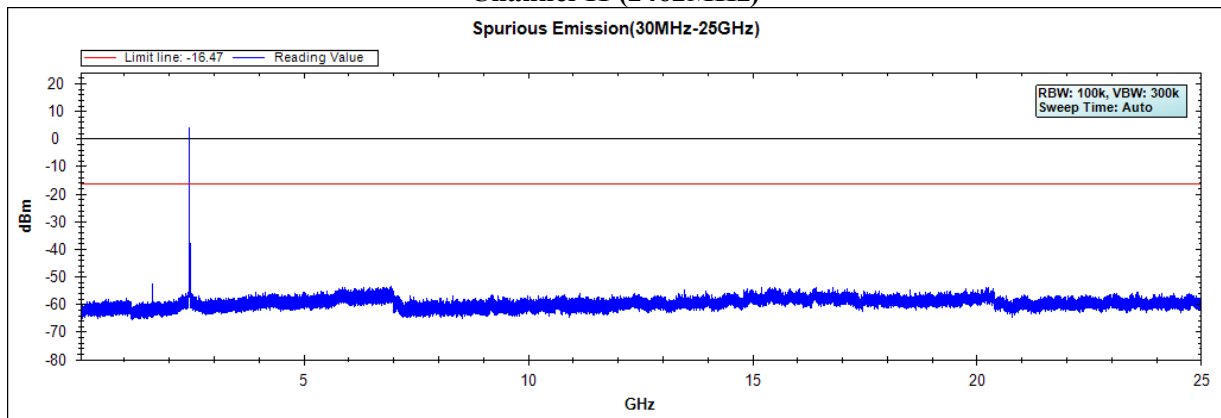
Channel 01 (2412MHz)



Channel 06 (2437MHz)



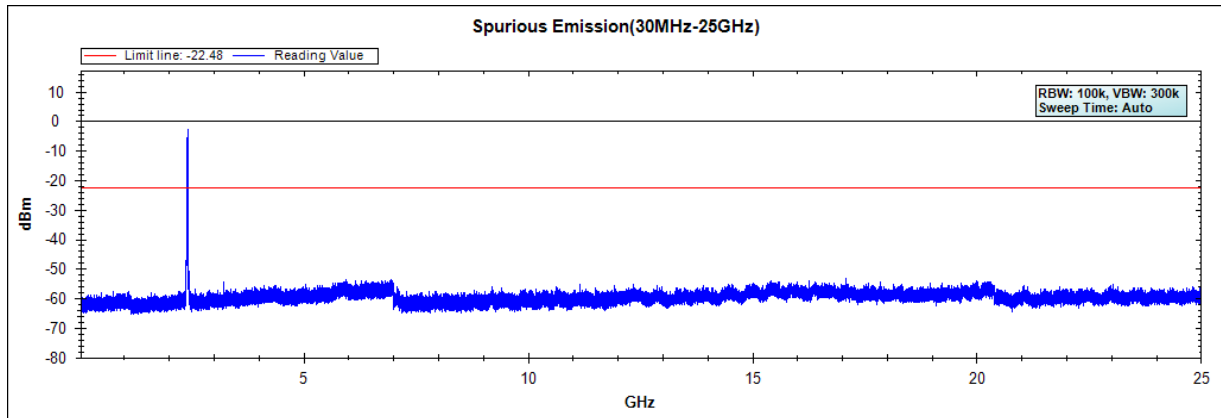
Channel 11 (2462MHz)



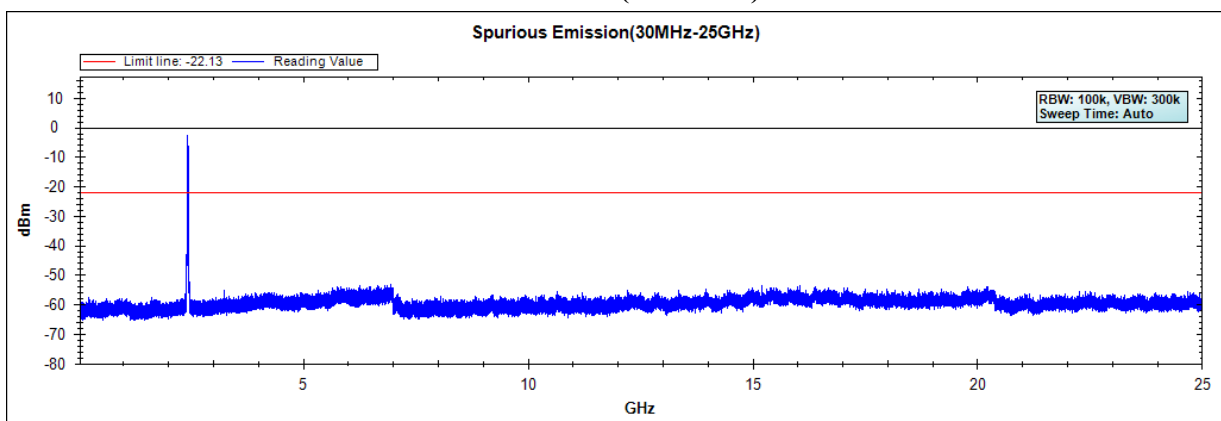
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : WiFi Digital Microscope
Test Item : RF Antenna Conducted Spurious
Test Mode : Mode 2: Transmit (802.11g 6Mbps)
Test Date : 2017/08/25

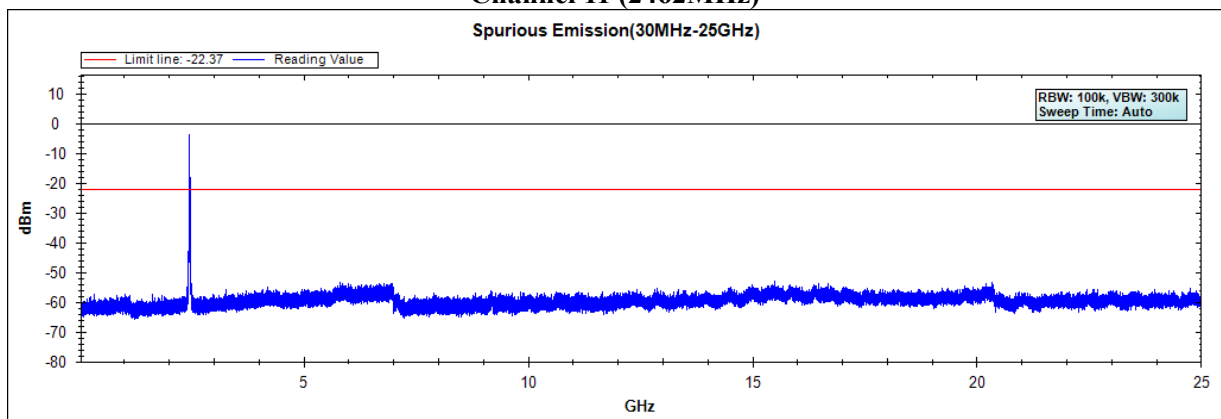
Channel 01 (2412MHz)



Channel 06 (2437MHz)



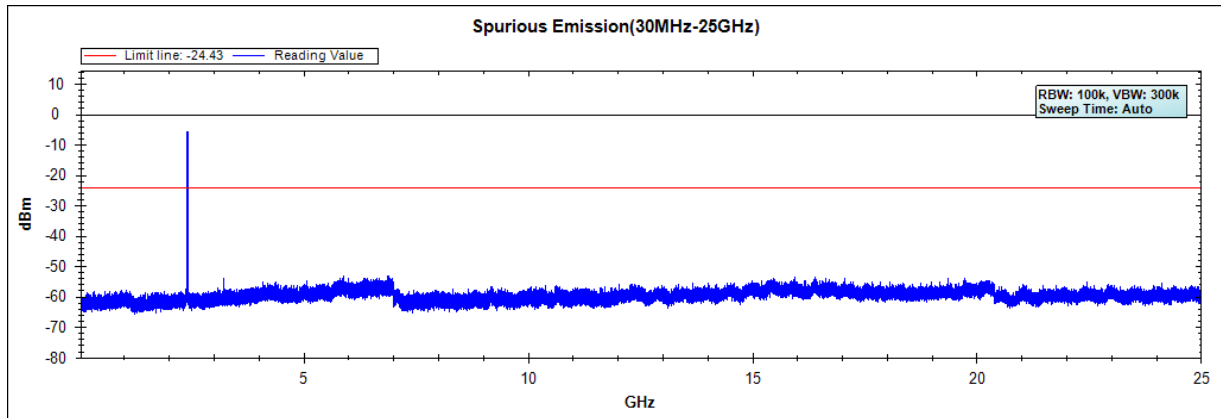
Channel 11 (2462MHz)



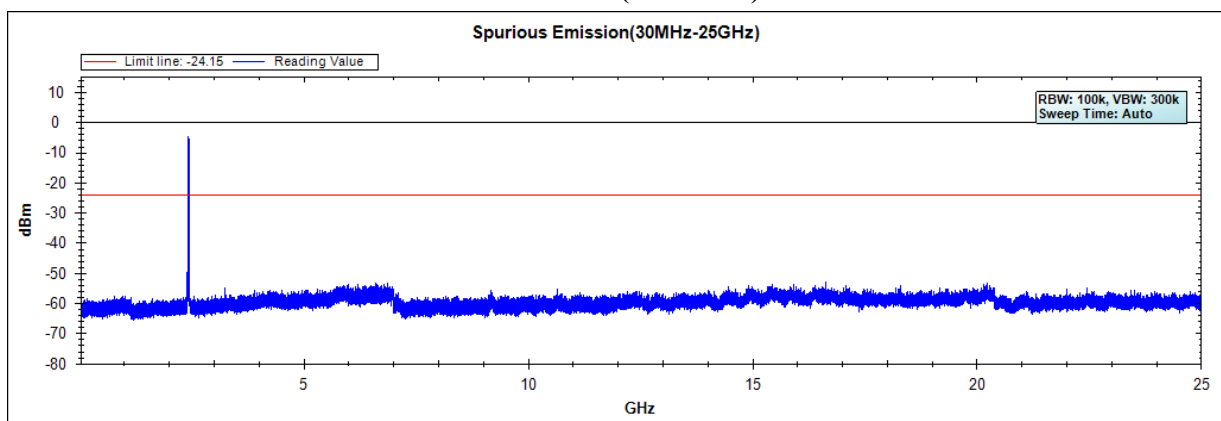
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : WiFi Digital Microscope
Test Item : RF Antenna Conducted Spurious
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
Test Date : 2017/08/25

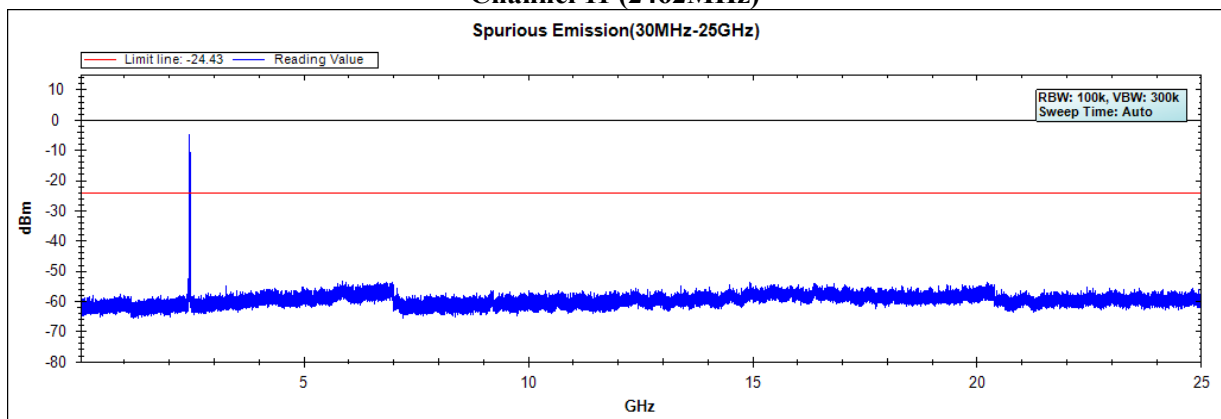
Channel 01 (2412MHz)



Channel 06 (2437MHz)



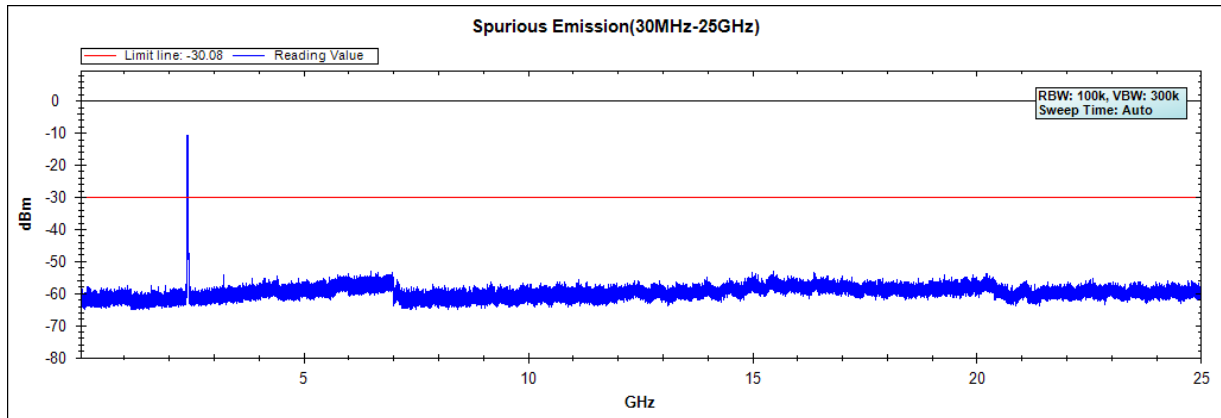
Channel 11 (2462MHz)



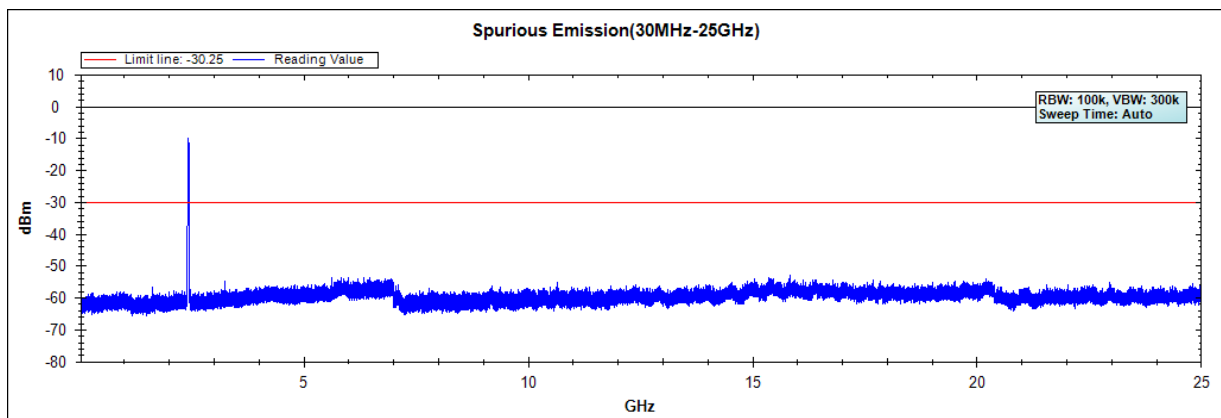
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : WiFi Digital Microscope
Test Item : RF Antenna Conducted Spurious
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)
Test Date : 2017/08/25

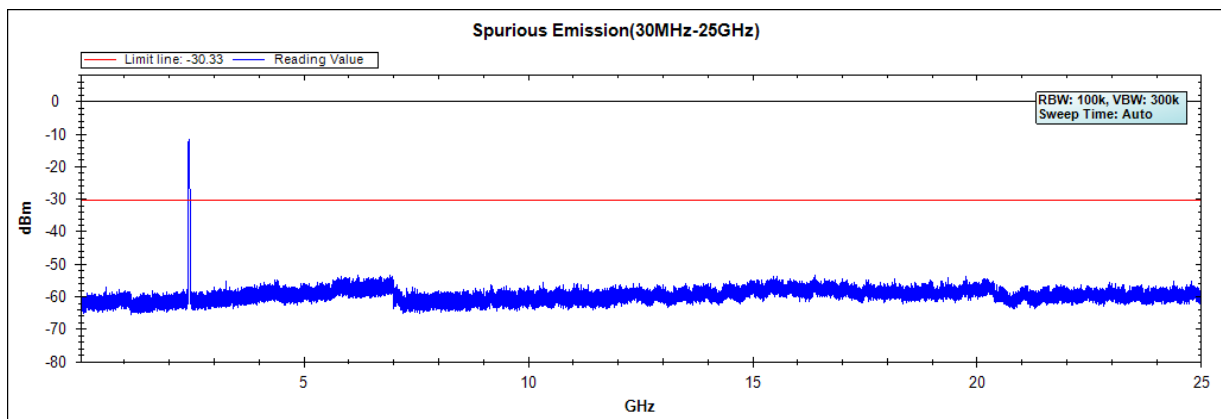
Channel 01 (2422MHz)



Channel 04 (2437MHz)



Channel 07 (2452MHz)

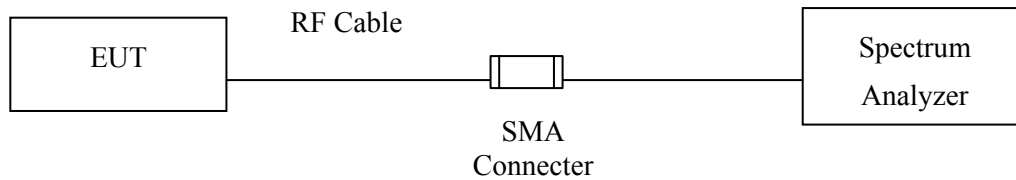


Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

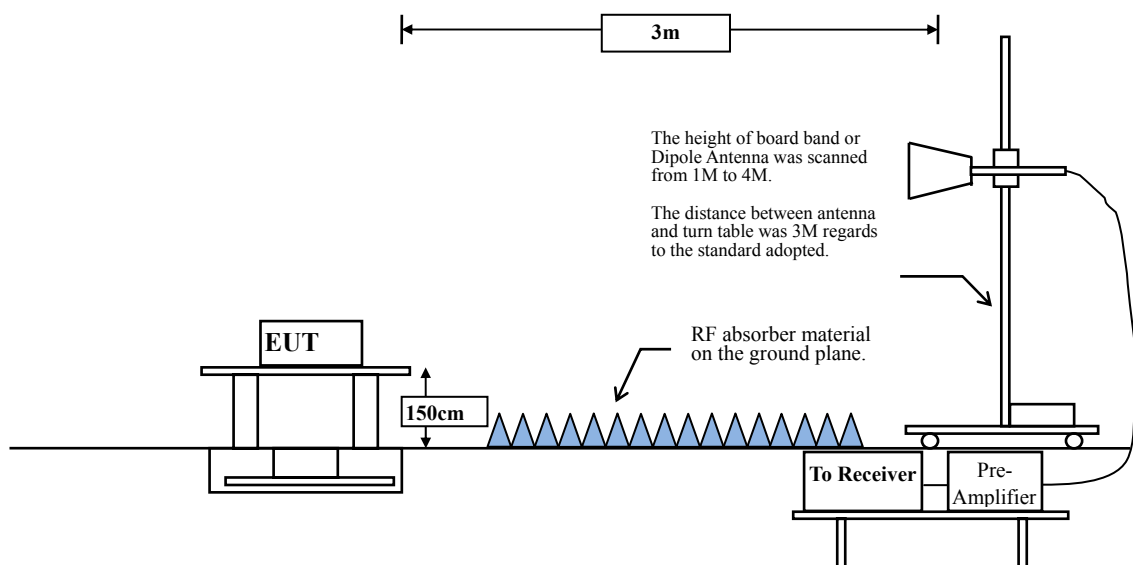
6.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement:

Above 1GHz



6.2. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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)).

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.

RBW and VBW Parameter setting:

According to KDB 558074 section 12.2.4. Peak power measurement procedure

RBW = as specified in Table 1.

$VBW \geq 3 \times RBW$.

Table 1 —RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to KDB 558074 section 12.2.5. Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle $\geq 98 \%$

$VBW \geq 1/T$, when duty cycle $< 98 \%$

(T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.)

2.4GHz band	Duty Cycle (%)	T (ms)	1/T (Hz)	VBW (Hz)
802.11b	98.15	8.742	--	10
802.11g	88.94	1.45652	686.568	1k
802.11n20	87.85	1.36232	734.0419	1k
802.11n40	77.67	0.67536	1480.692	2k

Note: Duty Cycle Refer to Section 9

6.4. Uncertainty

Conducted: $\pm 1.23\text{dB}$

Radiated:

Horizontal polarization : 1-18GHz: $\pm 3.77\text{dB}$

Vertical polarization : 1-18GHz : $\pm 3.83\text{dB}$

6.5. Test Result of Band Edge

Product : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
 Test Date : 2017/11/23

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)	2363.188	12.072	29.946	42.018	74.00	54.00	Pass
01 (Peak)	2390.000	12.148	28.798	40.946	74.00	54.00	Pass
01 (Peak)	2400.000	12.176	30.453	42.629	--	--	--
01 (Peak)	2410.580	12.200	73.134	85.334	--	--	--
01 (Average)	2387.391	12.141	16.113	28.254	74.00	54.00	Pass
01 (Average)	2390.000	12.148	16.012	28.160	74.00	54.00	Pass
01 (Average)	2400.000	12.176	17.832	30.008	--	--	--
01 (Average)	2409.275	12.198	69.022	81.219	--	--	--

Figure Channel 01: Horizontal (Peak)

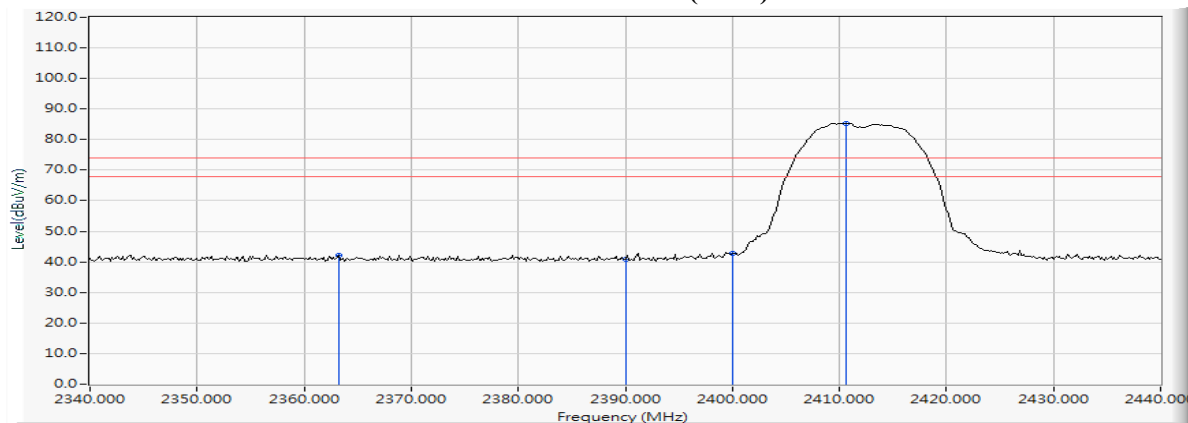
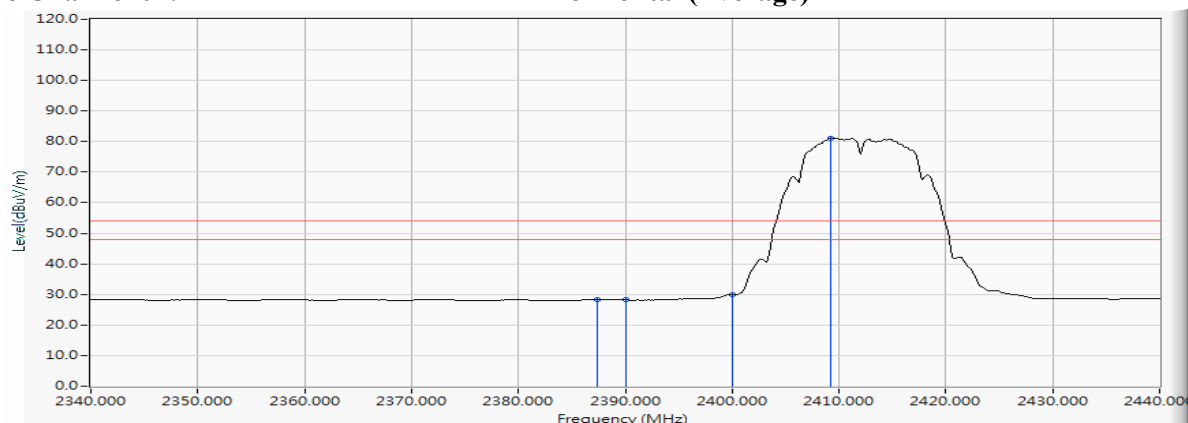


Figure Channel 01: Horizontal (Average)

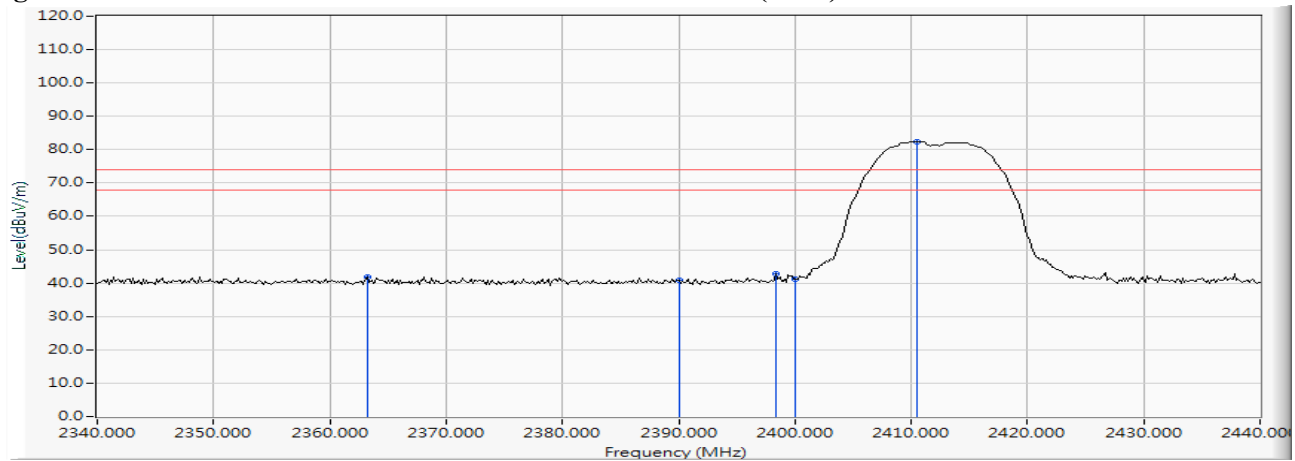
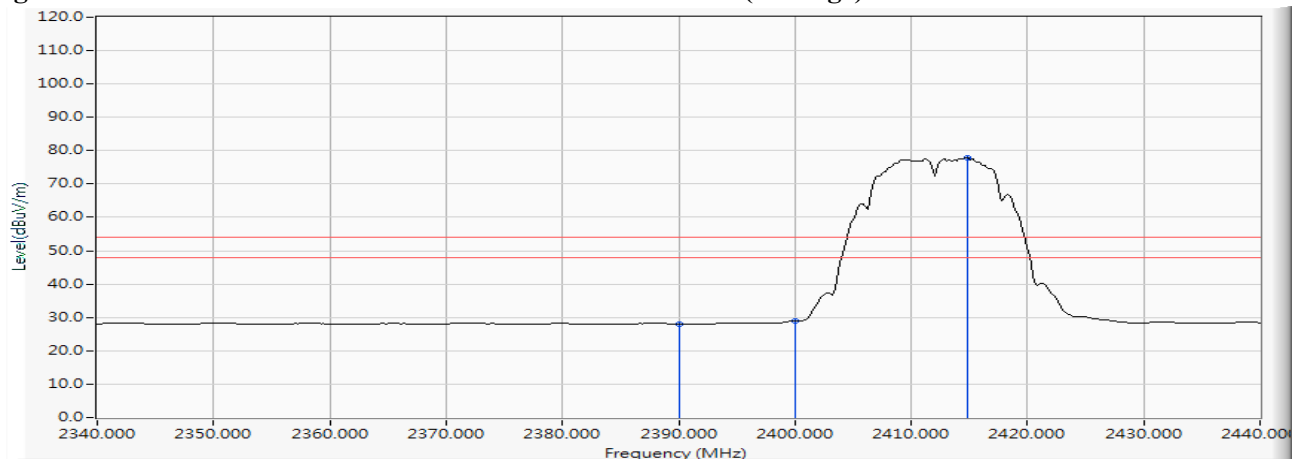


- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
 4. “ * ”, means this data is the worst emission level.
 5. Measurement Level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

Product : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
 Test Date : 2017/11/23

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
01 (Peak)	2363.188	12.072	29.684	41.756	74.00	54.00	Pass
01 (Peak)	2390.000	12.148	28.617	40.765	74.00	54.00	Pass
01 (Peak)	2398.406	12.172	30.704	42.875	--	--	--
01 (Peak)	2400.000	12.176	28.930	41.106	--	--	--
01 (Peak)	2410.435	12.200	70.215	82.415	--	--	--
01 (Average)	2390.000	12.148	15.922	28.070	74.00	54.00	Pass
01 (Average)	2400.000	12.176	16.725	28.901	--	--	--
01 (Average)	2414.783	12.209	65.723	77.933	--	--	--

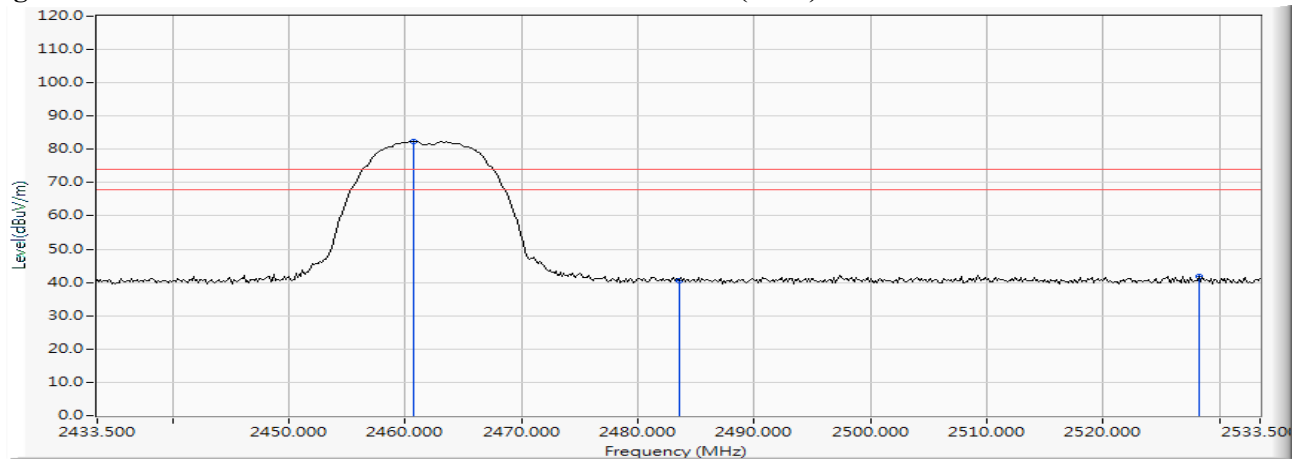
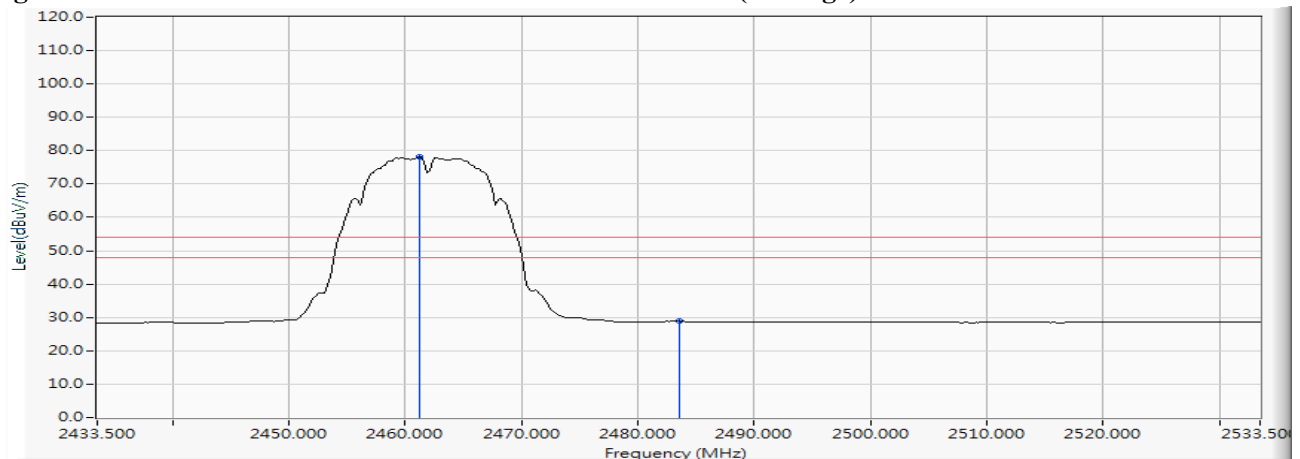
Figure Channel 01:
VERTICAL (Peak)

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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)
 Test Date : 2017/11/23

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
11 (Peak)	2460.746	12.337	70.037	82.375	--	--	--
11 (Peak)	2483.500	12.403	28.035	40.438	74.00	54.00	Pass
11 (Peak)	2528.283	12.511	29.268	41.778	74.00	54.00	Pass
11 (Average)	2461.181	12.339	65.794	78.133	--	--	--
11 (Average)	2483.500	12.403	16.412	28.815	74.00	54.00	Pass

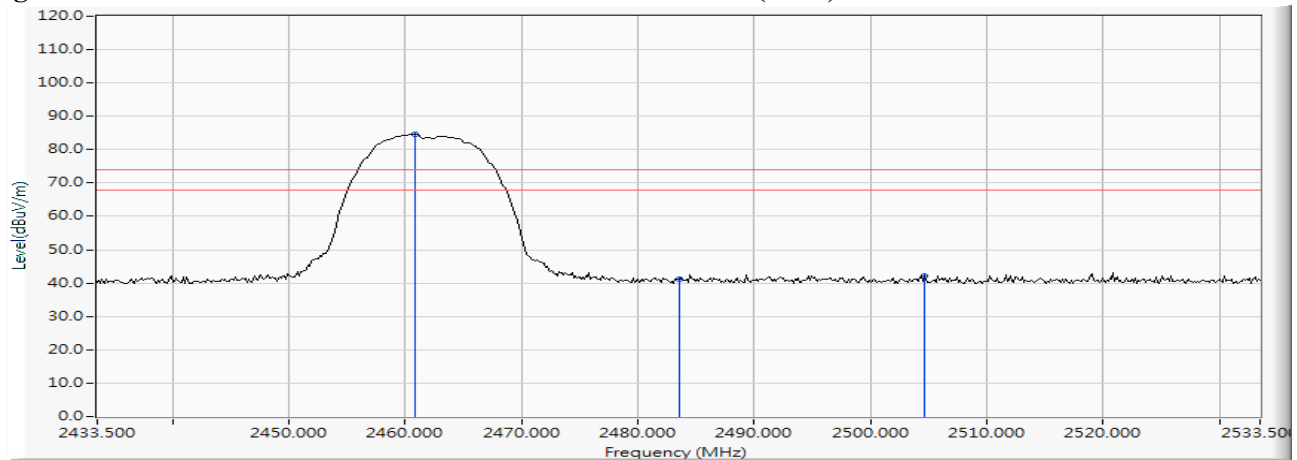
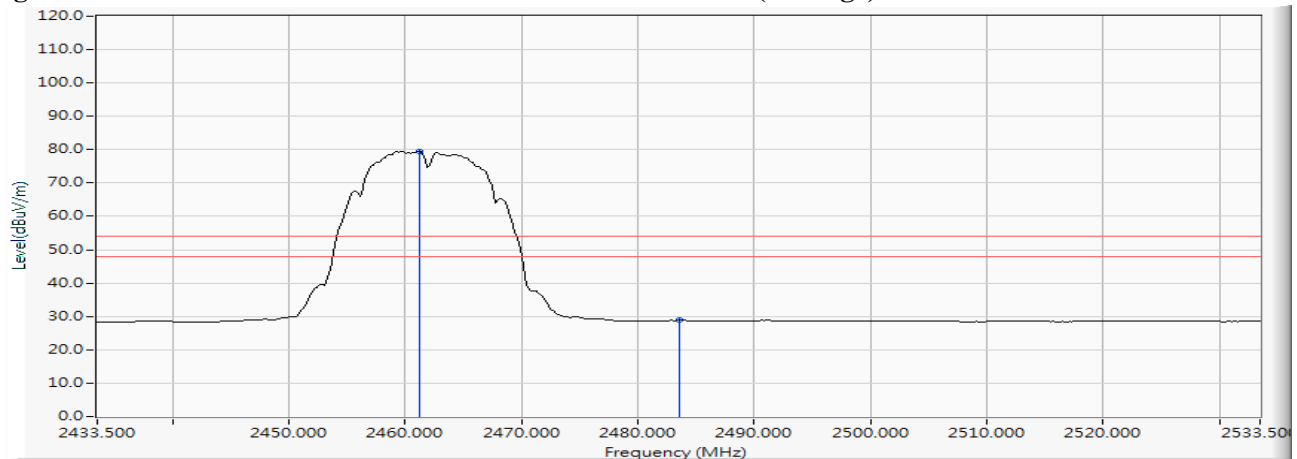
Figure Channel 11: Horizontal (Peak)**Figure Channel 11: Horizontal (Average)**

- 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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)
 Test Date : 2017/11/23

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
11 (Peak)	2460.891	12.337	72.235	84.573	--	--	--
11 (Peak)	2483.500	12.403	28.807	41.210	74.00	54.00	Pass
11 (Peak)	2504.659	12.455	29.817	42.272	74.00	54.00	Pass
11 (Average)	2461.181	12.339	67.217	79.556	--	--	--
11 (Average)	2483.500	12.403	16.403	28.806	74.00	54.00	Pass

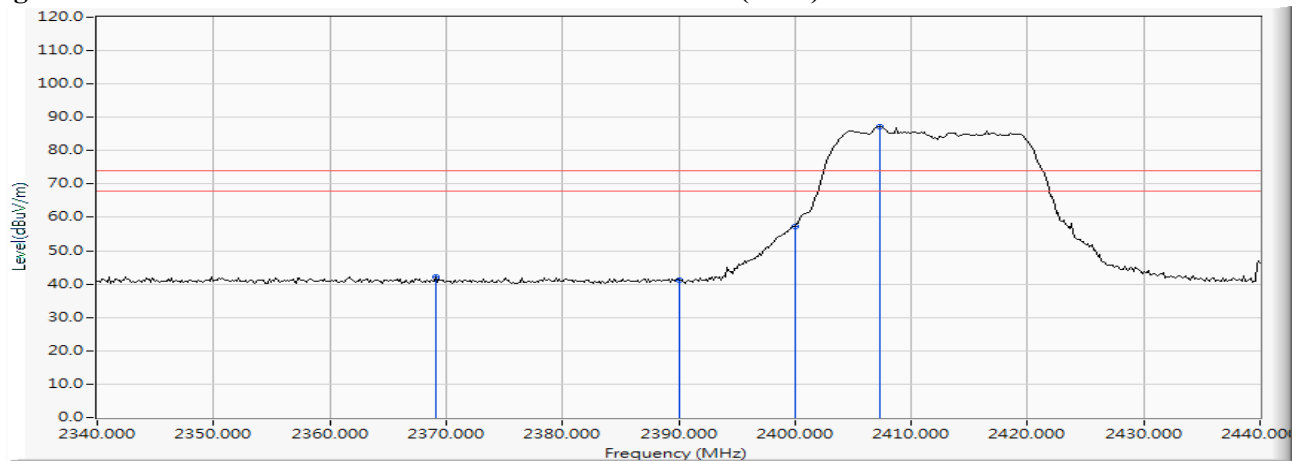
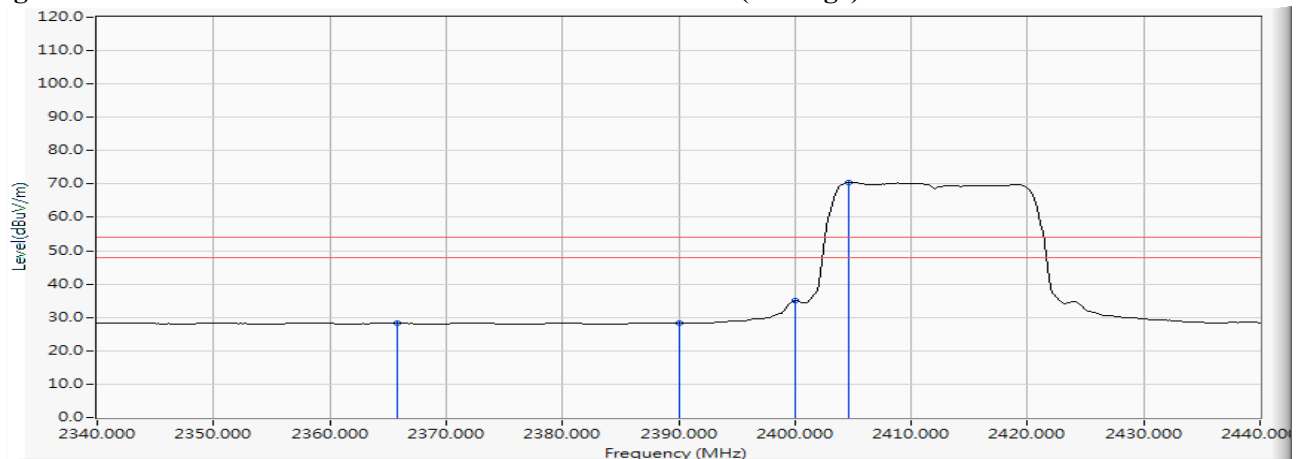
Figure Channel 11: VERTICAL (Peak)

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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
 Test Date : 2017/11/23

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)	2369.130	12.088	29.950	42.038	74.00	54.00	Pass
01 (Peak)	2390.000	12.148	28.921	41.069	74.00	54.00	Pass
01 (Peak)	2400.000	12.176	45.087	57.263	--	--	--
01 (Peak)	2407.246	12.193	74.915	87.108	--	--	--
01 (Average)	2365.797	12.079	16.211	28.290	74.00	54.00	Pass
01 (Average)	2390.000	12.148	16.116	28.264	74.00	54.00	Pass
01 (Average)	2400.000	12.176	22.821	34.997			
01 (Average)	2404.638	12.186	58.395	70.582	--	--	--

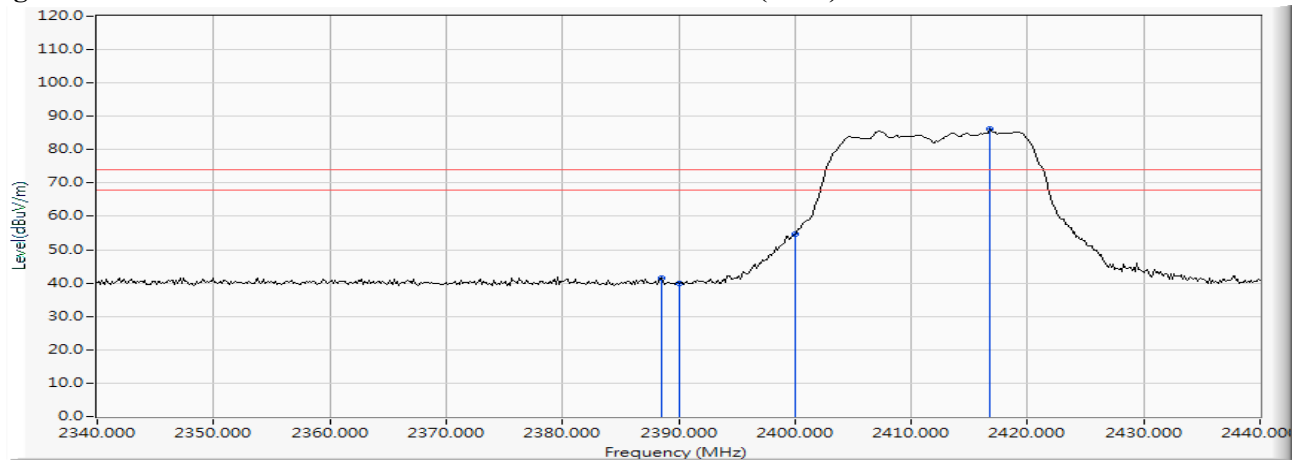
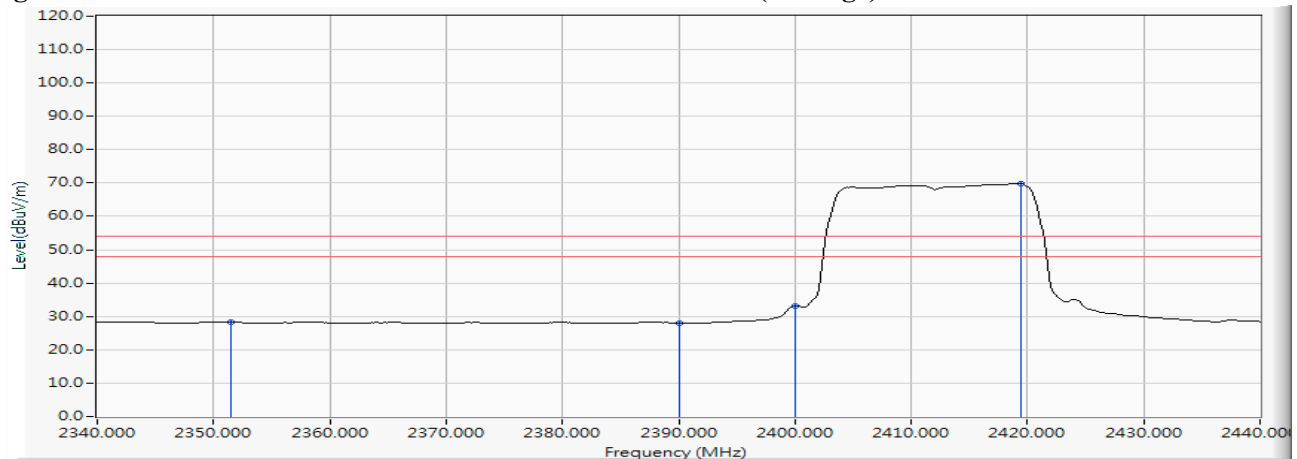
Figure Channel 01: Horizontal (Peak)

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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
 Test Date : 2017/11/23

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)	2388.551	12.144	29.233	41.377	74.00	54.00	Pass
01 (Peak)	2390.000	12.148	27.868	40.016	74.00	54.00	Pass
01 (Peak)	2400.000	12.176	42.510	54.686	--	--	--
01 (Peak)	2416.812	12.214	73.888	86.103	--	--	--
01 (Average)	2351.449	12.038	16.216	28.254	74.00	54.00	Pass
01 (Average)	2390.000	12.148	15.916	28.064	74.00	54.00	Pass
01 (Average)	2400.000	12.176	21.015	33.191	--	--	--
01 (Average)	2419.420	12.221	57.615	69.836	--	--	--

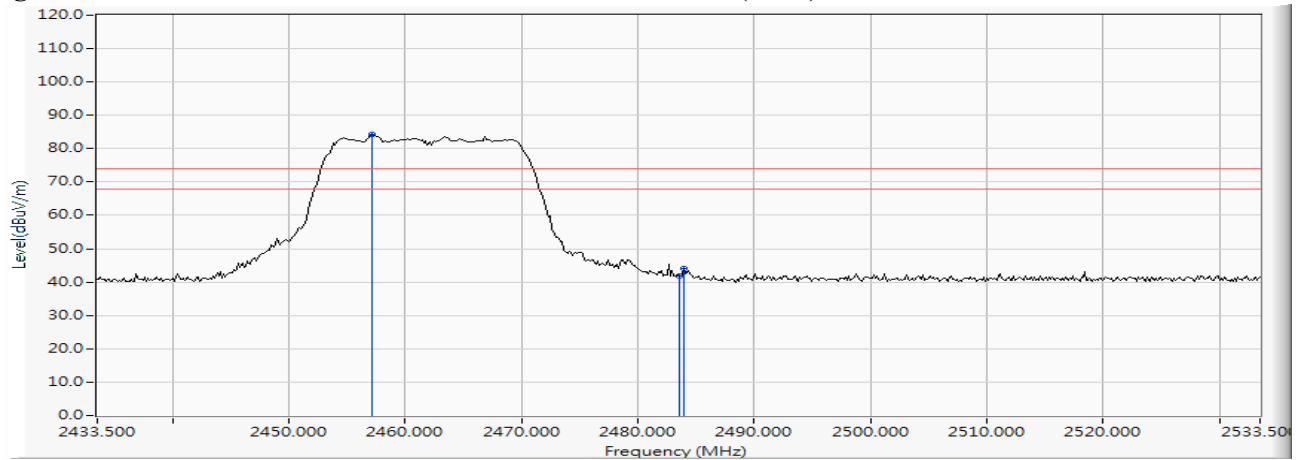
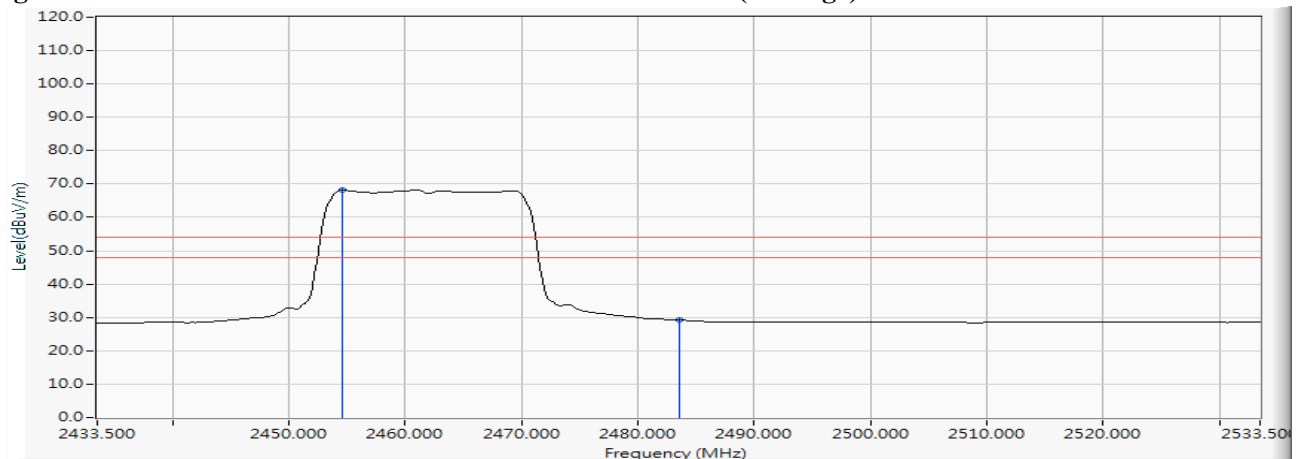
Figure Channel 01:
VERTICAL (Peak)

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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)
 Test Date : 2017/11/23

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)	2457.123	12.327	71.849	84.177	--	--	--
11 (Peak)	2483.500	12.403	29.504	41.907	74.00	54.00	Pass
11 (Peak)	2483.935	12.404	31.664	44.068	74.00	54.00	Pass
11 (Average)	2454.514	12.320	55.848	68.168	--	--	--
11 (Average)	2483.500	12.403	16.881	29.284	74.00	54.00	Pass

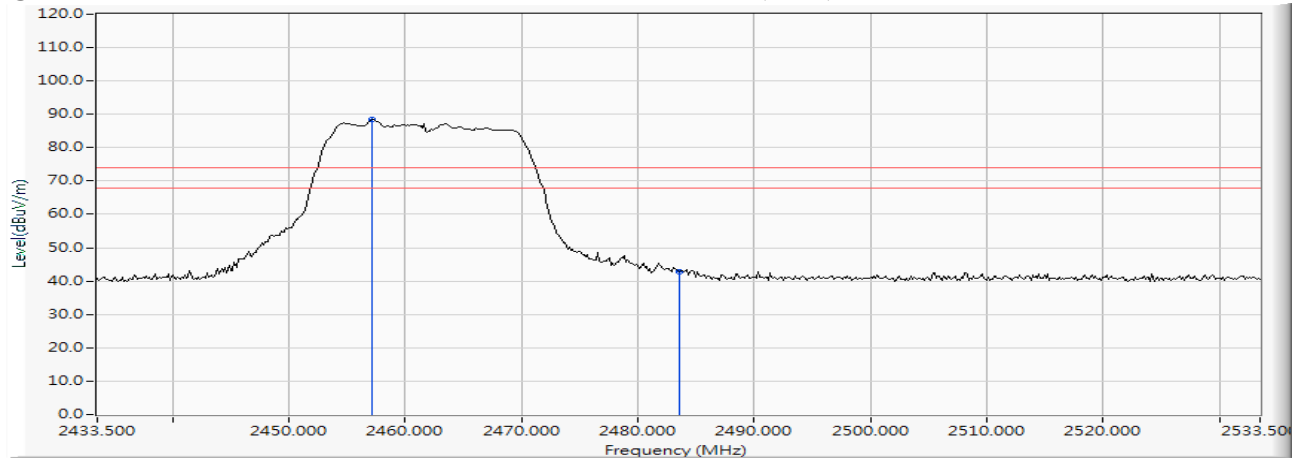
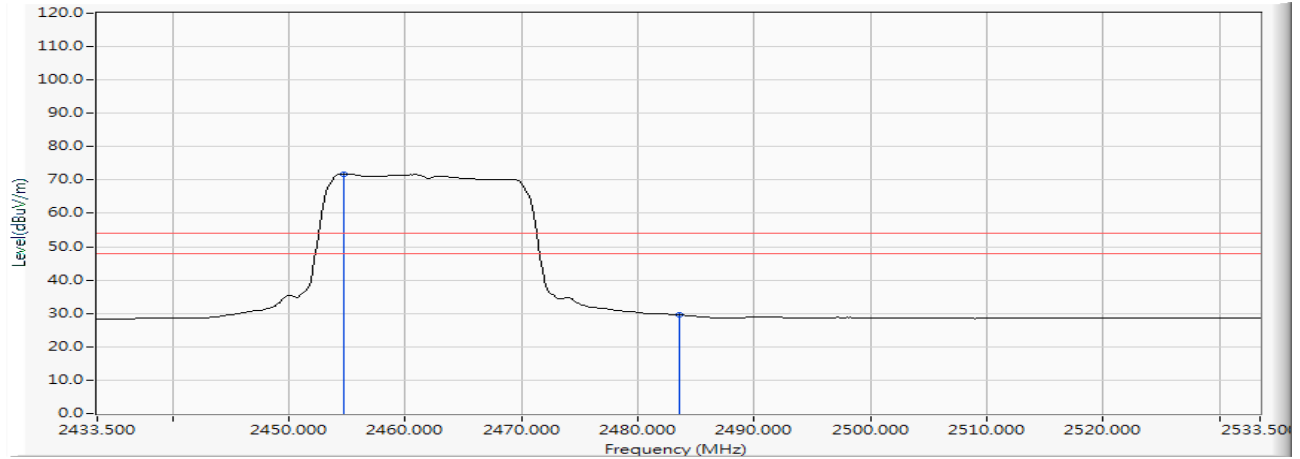
Figure Channel 11: Horizontal (Peak)

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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)
 Test Date : 2017/11/23

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
11 (Peak)	2457.123	12.327	76.063	88.391	--	--	--
11 (Peak)	2483.500	12.403	30.459	42.862	74.00	54.00	Pass
11 (Average)	2454.659	12.322	59.577	71.898	--	--	--
11 (Average)	2483.500	12.403	17.244	29.647	74.00	54.00	Pass

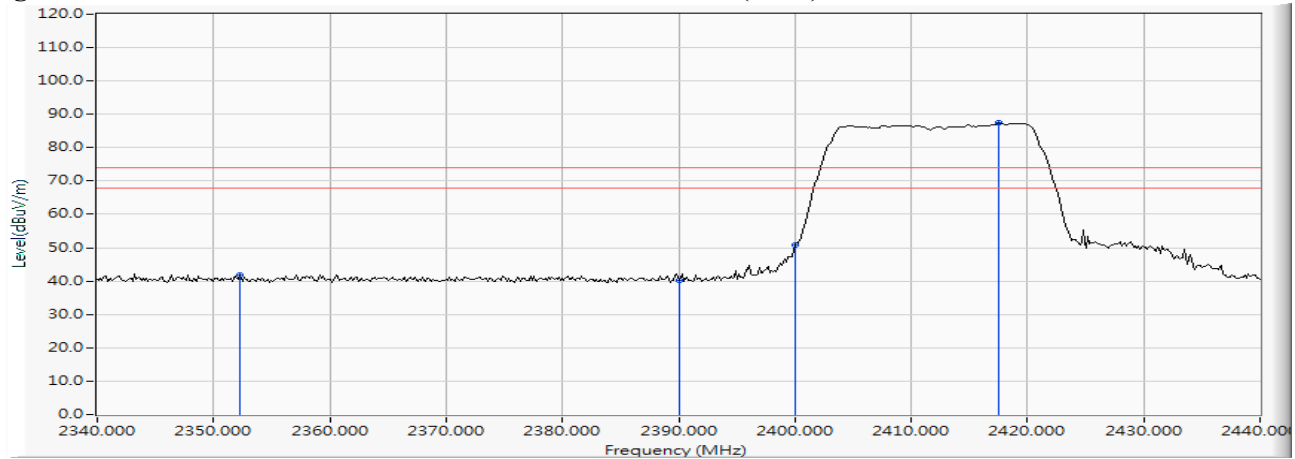
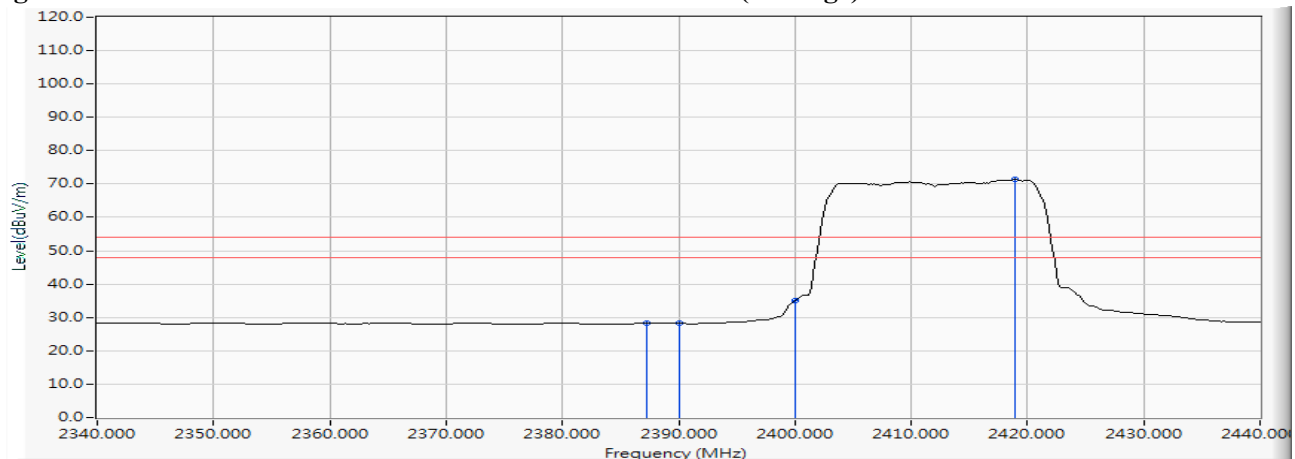
Figure Channel 11: VERTICAL (Peak)

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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
 Test Date : 2017/11/23

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
01 (Peak)	2352.319	12.041	29.862	41.902	74.00	54.00	Pass
01 (Peak)	2390.000	12.148	28.068	40.216	74.00	54.00	Pass
01 (Peak)	2400.000	12.176	38.506	50.682	--	--	--
01 (Peak)	2417.536	12.217	75.166	87.382	--	--	--
01 (Average)	2387.246	12.140	16.129	28.269	74.00	54.00	Pass
01 (Average)	2390.000	12.148	16.023	28.171	74.00	54.00	Pass
01 (Average)	2400.000	12.176	23.045	35.221	--	--	--
01 (Average)	2418.986	12.219	59.088	71.308	--	--	--

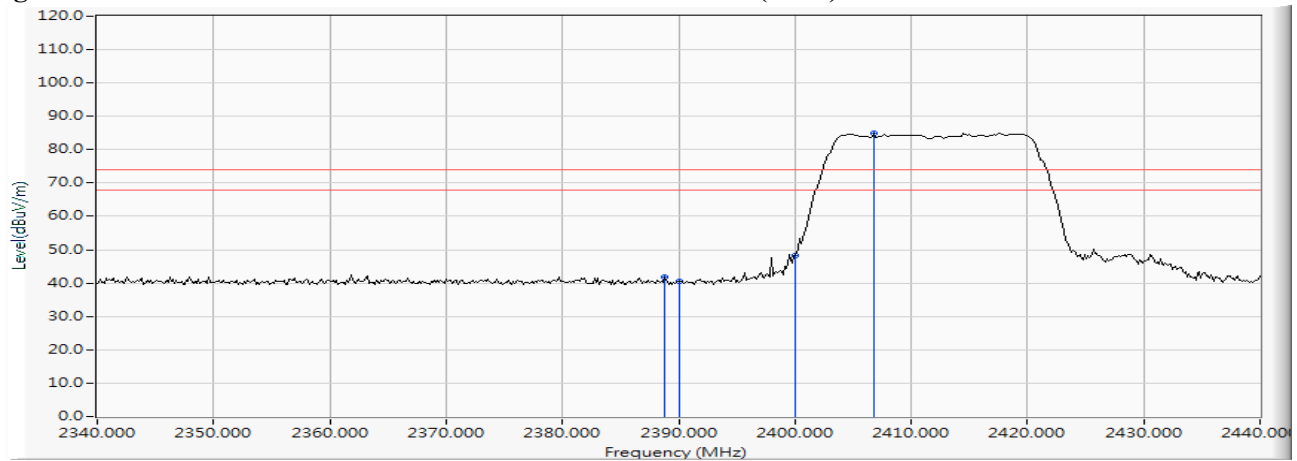
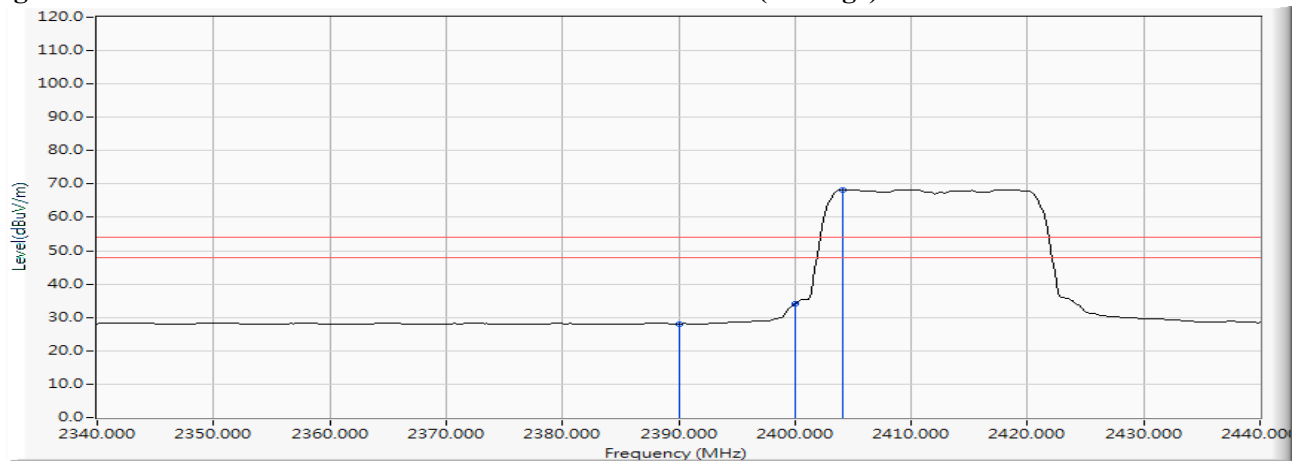
Figure Channel 01:**Horizontal (Peak)****Figure Channel 01:****Horizontal (Average)**

- 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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
 Test Date : 2017/11/23

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)	2388.841	12.145	29.628	41.773	74.00	54.00	Pass
01 (Peak)	2390.000	12.148	28.249	40.397	74.00	54.00	Pass
01 (Peak)	2400.000	12.176	36.141	48.317	--	--	--
01 (Peak)	2406.812	12.192	72.702	84.894	--	--	--
01 (Average)	2390.000	12.148	15.915	28.063	74.00	54.00	Pass
01 (Average)	2400.000	12.176	21.930	34.106	--	--	--
01 (Average)	2404.058	12.186	56.137	68.323	--	--	--

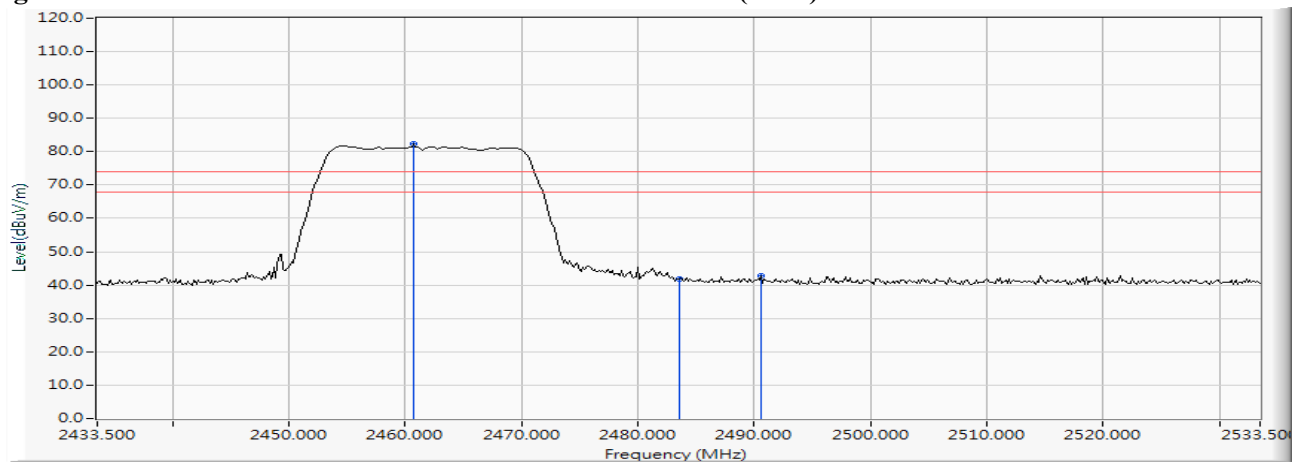
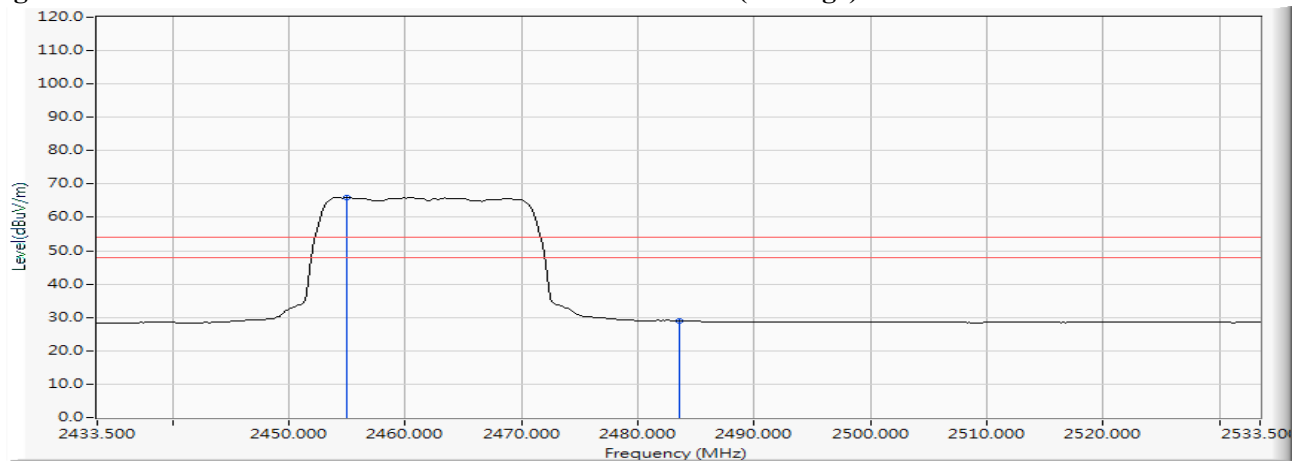
Figure Channel 01:
VERTICAL (Peak)

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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)
 Test Date : 2017/11/23

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
11 (Peak)	2460.746	12.337	69.938	82.276	--	--	--
11 (Peak)	2483.500	12.403	29.468	41.871	74.00	54.00	Pass
11 (Peak)	2490.601	12.423	30.369	42.791	74.00	54.00	Pass
11 (Average)	2454.949	12.322	53.790	66.112	--	--	--
11 (Average)	2483.500	12.403	16.675	29.078	74.00	54.00	Pass

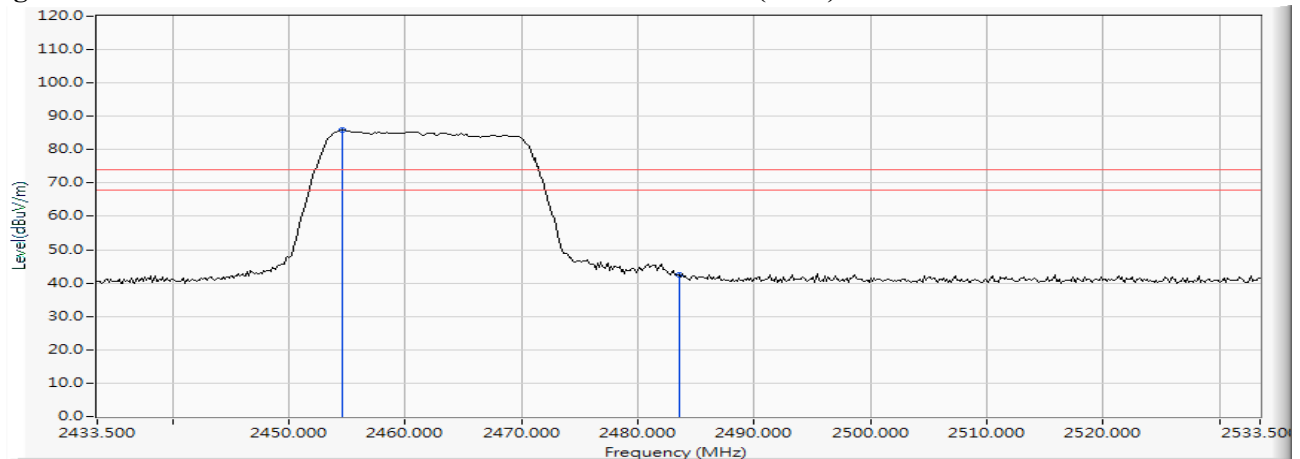
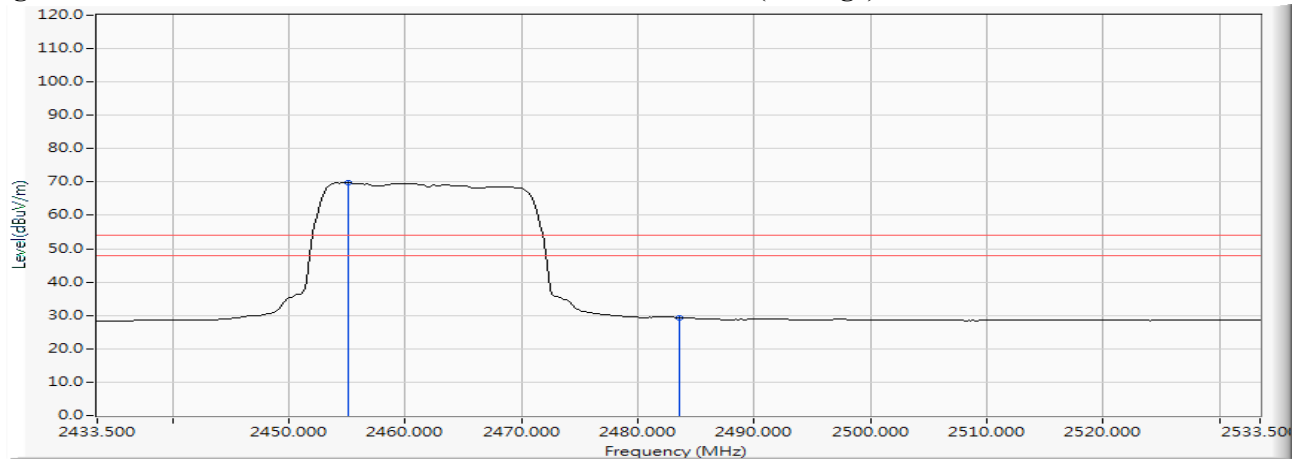
Figure Channel 11: Horizontal (Peak)

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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)
 Test Date : 2017/11/23

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)	2454.514	12.320	73.511	85.831	--	--	--
11 (Peak)	2483.500	12.403	29.948	42.351	74.00	54.00	Pass
11 (Average)	2455.094	12.322	57.599	69.921	--	--	--
11 (Average)	2483.500	12.403	16.926	29.329	74.00	54.00	Pass

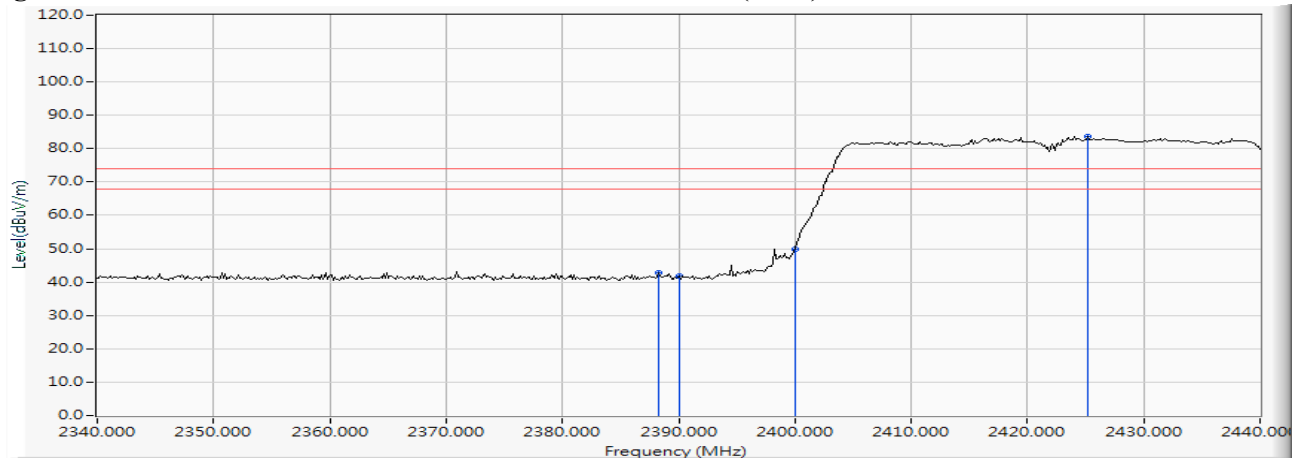
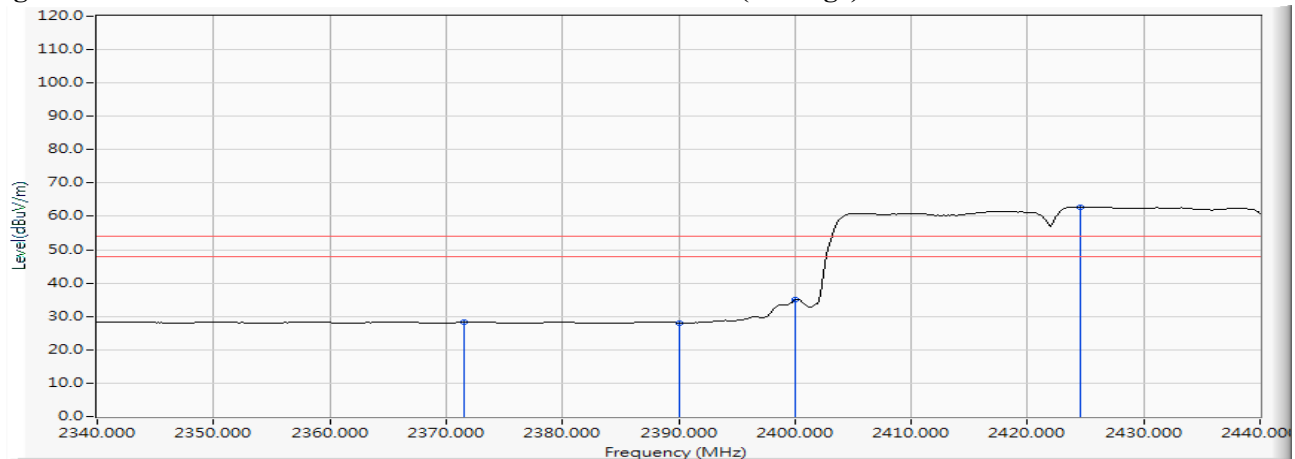
Figure Channel 11: VERTICAL (Peak)

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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)
 Test Date : 2017/11/23

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
03 (Peak)	2388.261	12.144	30.670	42.813	74.00	54.00	Pass
03 (Peak)	2390.000	12.148	29.672	41.820	74.00	54.00	Pass
03 (Peak)	2400.000	12.176	37.772	49.948	--	--	--
03 (Peak)	2425.217	12.237	71.441	83.678	--	--	--
03 (Average)	2371.594	12.095	16.169	28.264	74.00	54.00	Pass
03 (Average)	2390.000	12.148	15.995	28.143	74.00	54.00	Pass
03 (Average)	2400.000	12.176	22.867	35.043	--	--	--
03 (Average)	2424.493	12.235	50.590	62.825	--	--	--

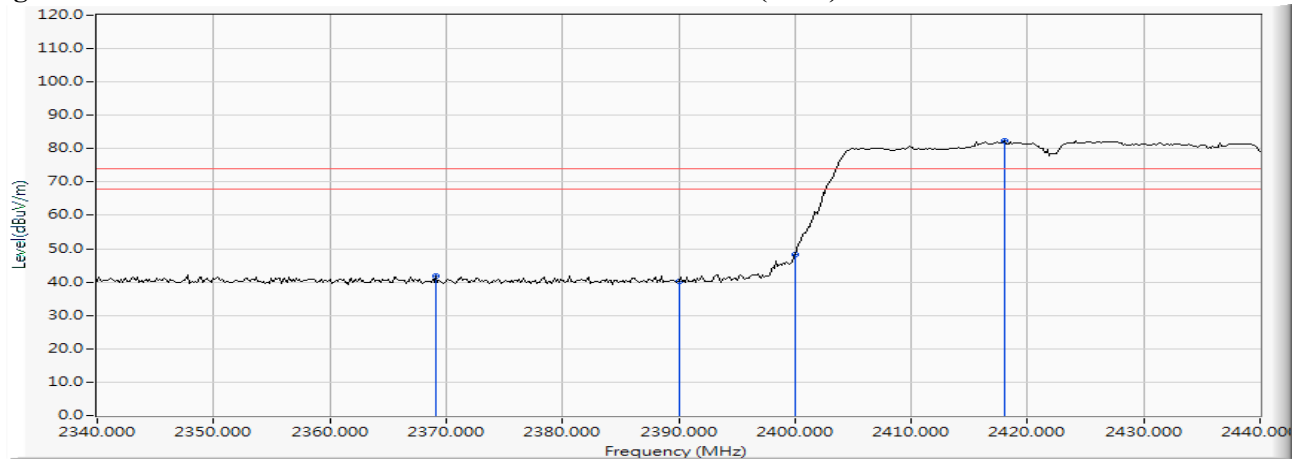
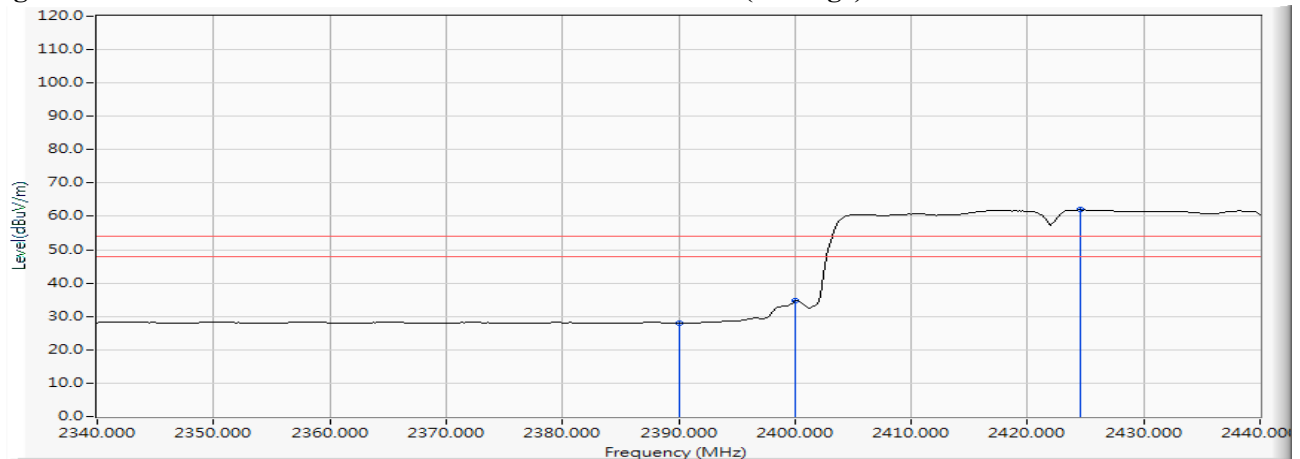
Figure Channel 03:
Horizontal (Peak)

Figure Channel 03:
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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)
 Test Date : 2017/11/23

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
03 (Peak)	2369.130	12.088	29.740	41.828	74.00	54.00	Pass
03 (Peak)	2390.000	12.148	28.015	40.163	74.00	54.00	Pass
03 (Peak)	2400.000	12.176	36.092	48.268	--	--	--
03 (Peak)	2417.971	12.218	70.210	82.427	--	--	--
03 (Average)	2390.000	12.148	15.904	28.052	74.00	54.00	Pass
03 (Average)	2400.000	12.176	22.427	34.603	--	--	--
03 (Average)	2424.493	12.235	49.716	61.951	--	--	--

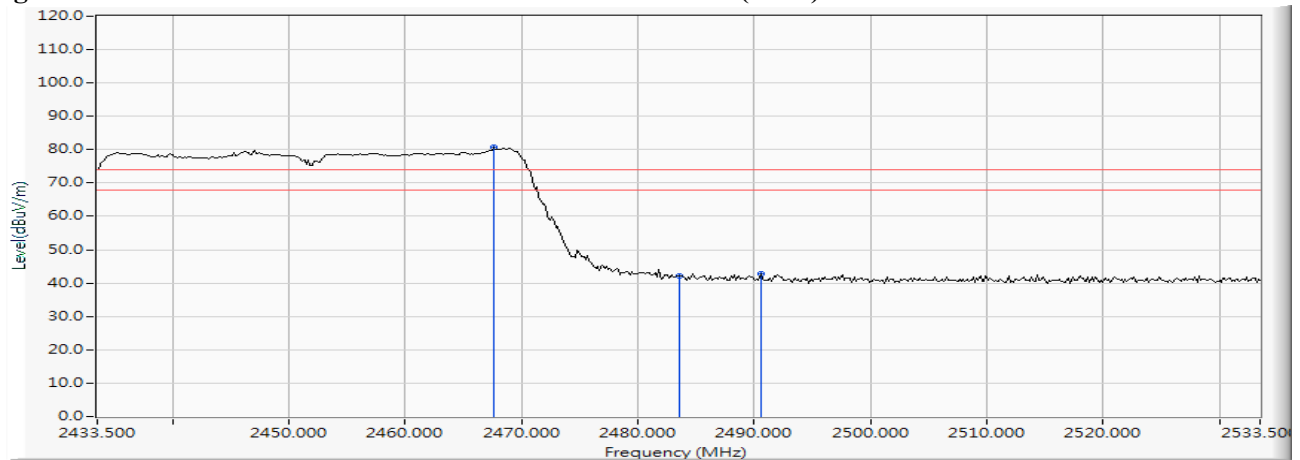
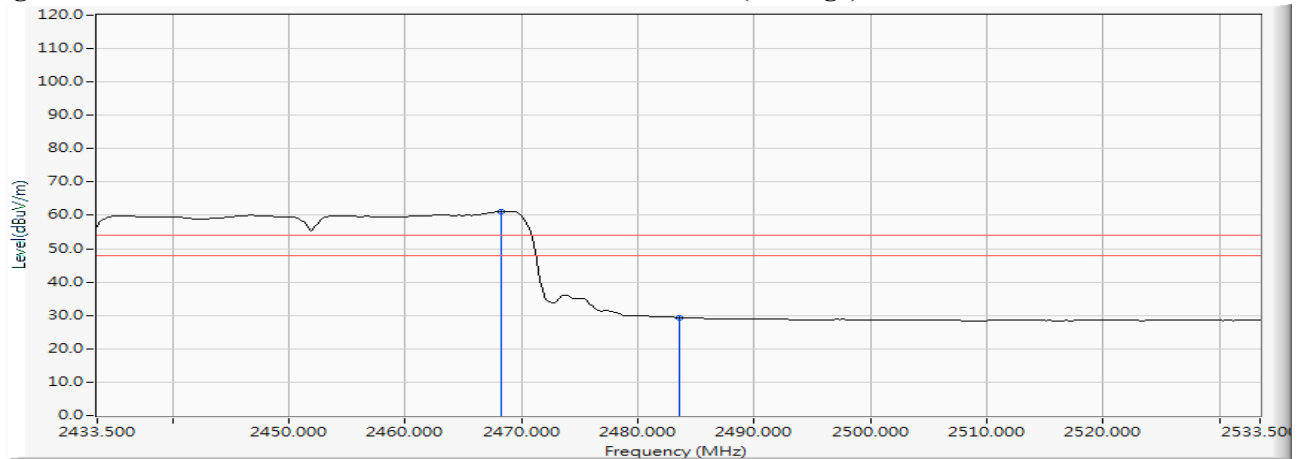
Figure Channel 03: VERTICAL (Peak)

Figure Channel 03: 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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)
 Test Date : 2017/11/23

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
09 (Peak)	2467.558	12.357	68.275	80.632	--	--	--
09 (Peak)	2483.500	12.403	29.703	42.106	74.00	54.00	Pass
09 (Peak)	2490.601	12.423	30.292	42.714	74.00	54.00	Pass
09 (Average)	2468.283	12.360	48.841	61.200	--	--	--
09 (Average)	2483.500	12.403	17.028	29.431	74.00	54.00	Pass

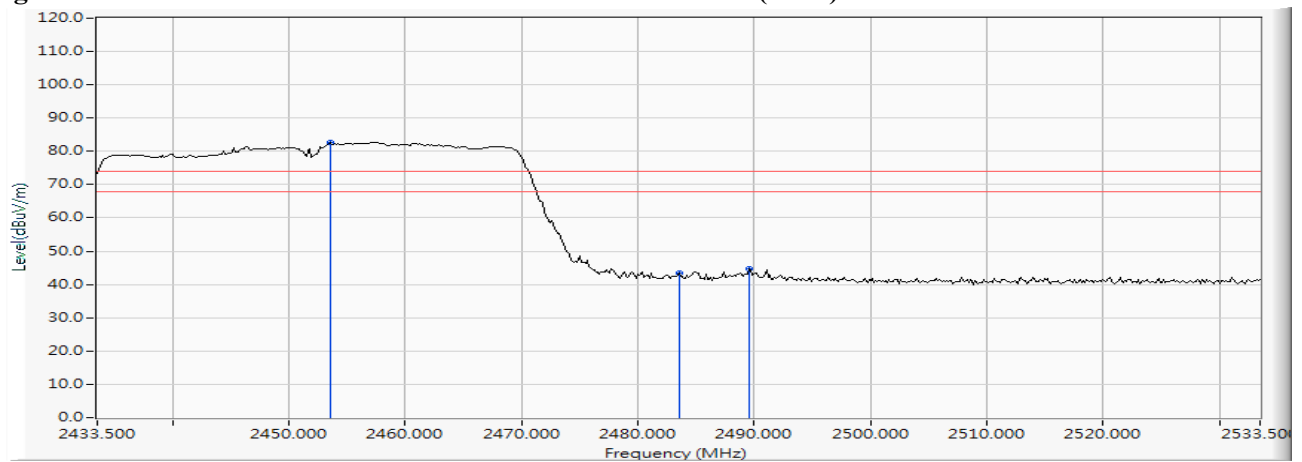
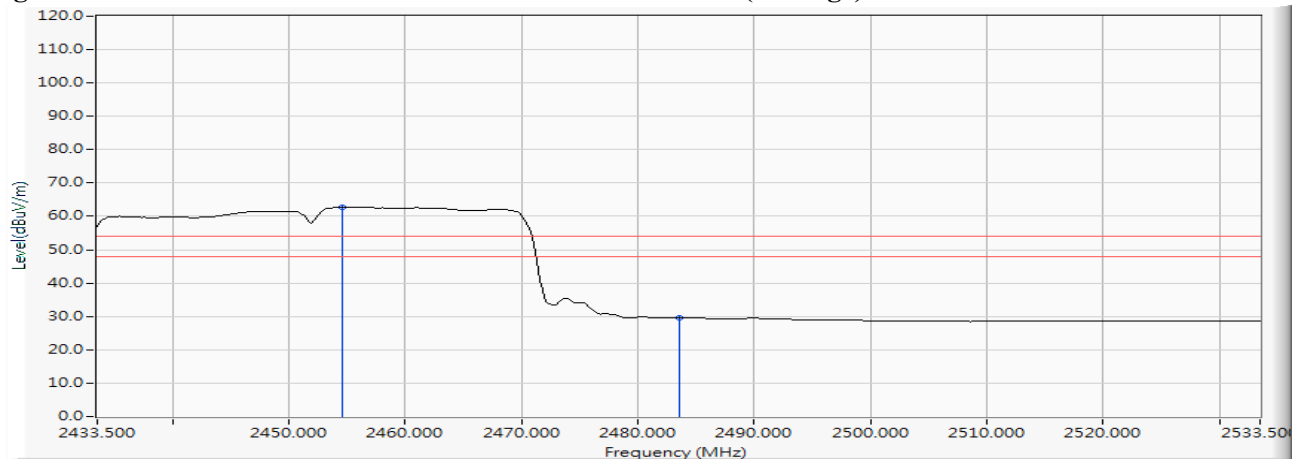
Figure Channel 09:**Horizontal (Peak)****Figure Channel 09:****Horizontal (Average)**

- 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 : WiFi Digital Microscope
 Test Item : Band Edge Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)
 Test Date : 2017/11/23

RF Radiated Measurement (VERTICAL):

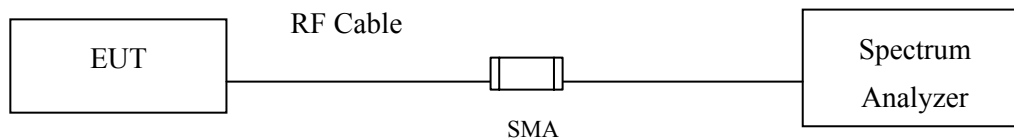
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Emission Level (dB μ V/m)	Peak Limit (dB μ V/m)	Average Limit (dB μ V/m)	Result
09 (Peak)	2453.500	12.317	70.379	82.697	--	--	--
09 (Peak)	2483.500	12.403	30.878	43.281	74.00	54.00	Pass
09 (Peak)	2489.587	12.419	32.139	44.558	74.00	54.00	Pass
09 (Average)	2454.514	12.320	50.427	62.747	--	--	--
09 (Average)	2483.500	12.403	17.284	29.687	74.00	54.00	Pass

Figure Channel 09: VERTICAL (Peak)

Figure Channel 09: 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

$\pm 279.2\text{Hz}$

7.5. Test Result of 6dB Bandwidth

Product : WiFi Digital Microscope
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	10200	>500	Pass
06	2437	10200	>500	Pass
11	2462	10200	>500	Pass

Figure Channel 01:

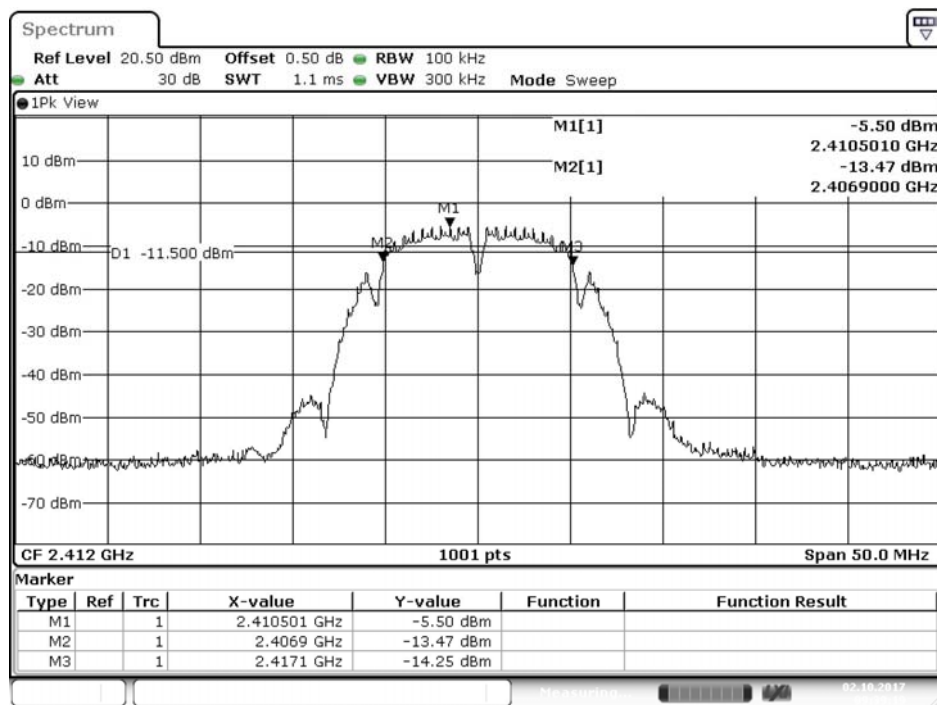
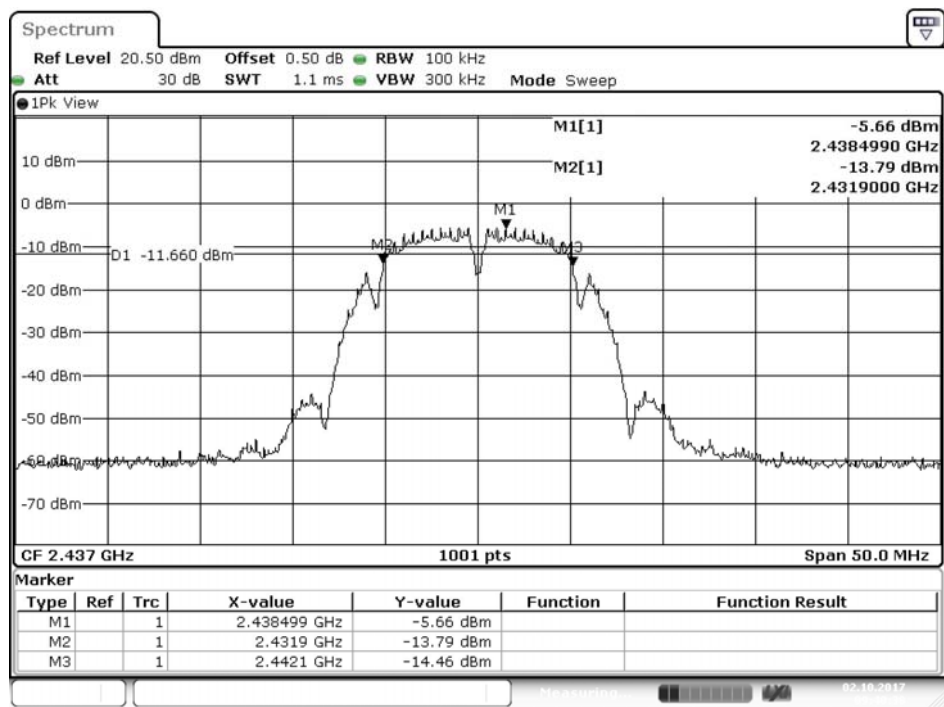
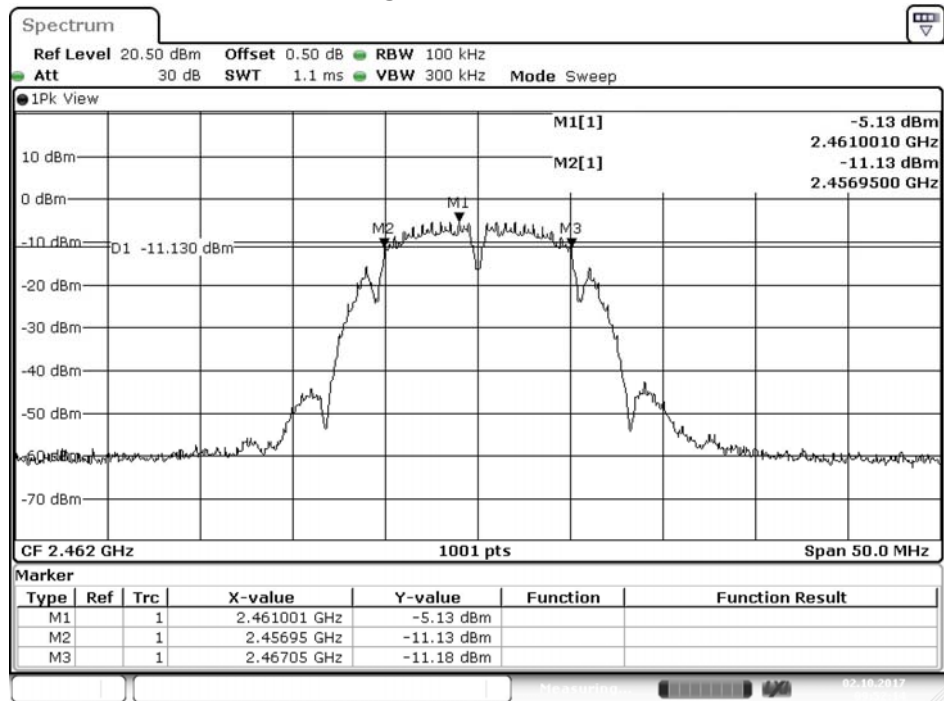


Figure Channel 06:



Date: 2.OCT.2017 09:40:38

Figure Channel 11:

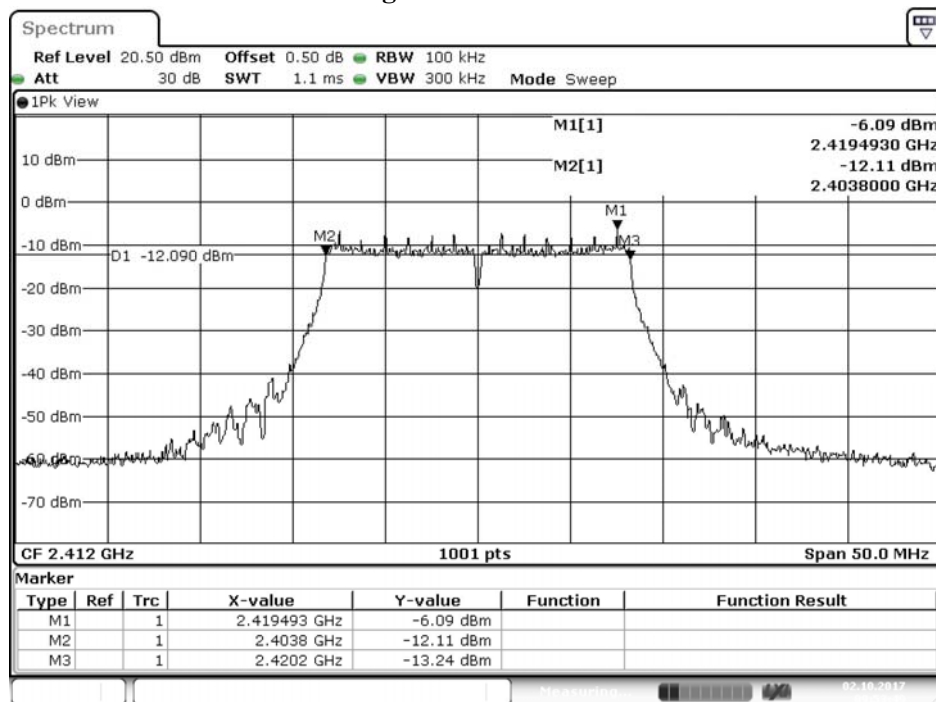


Date: 2.OCT.2017 09:52:15

Product : WiFi Digital Microscope
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

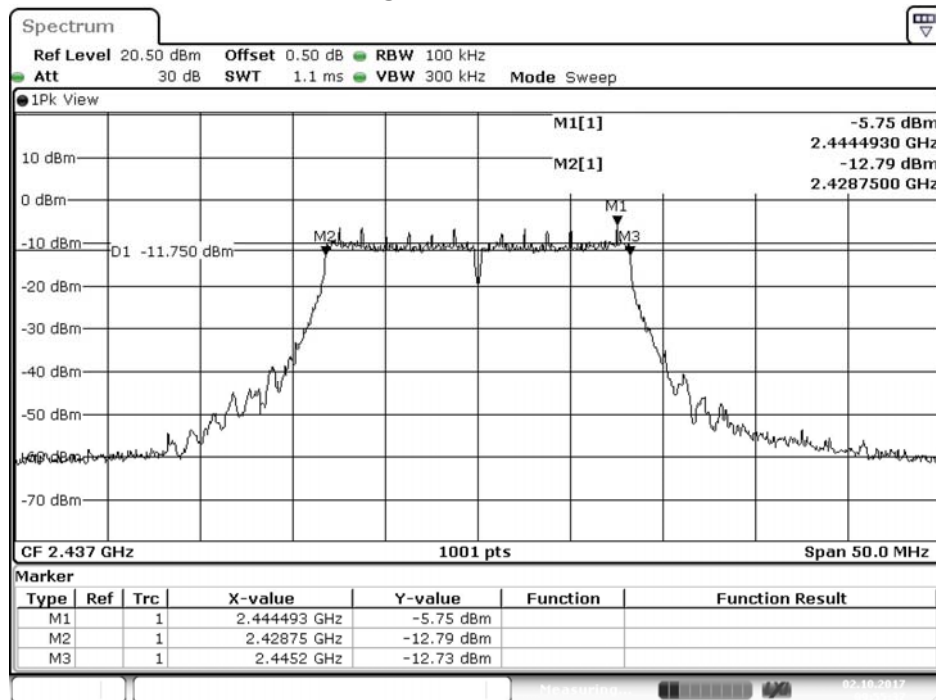
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	16400	>500	Pass
06	2437	16450	>500	Pass
11	2462	16400	>500	Pass

Figure Channel 01:



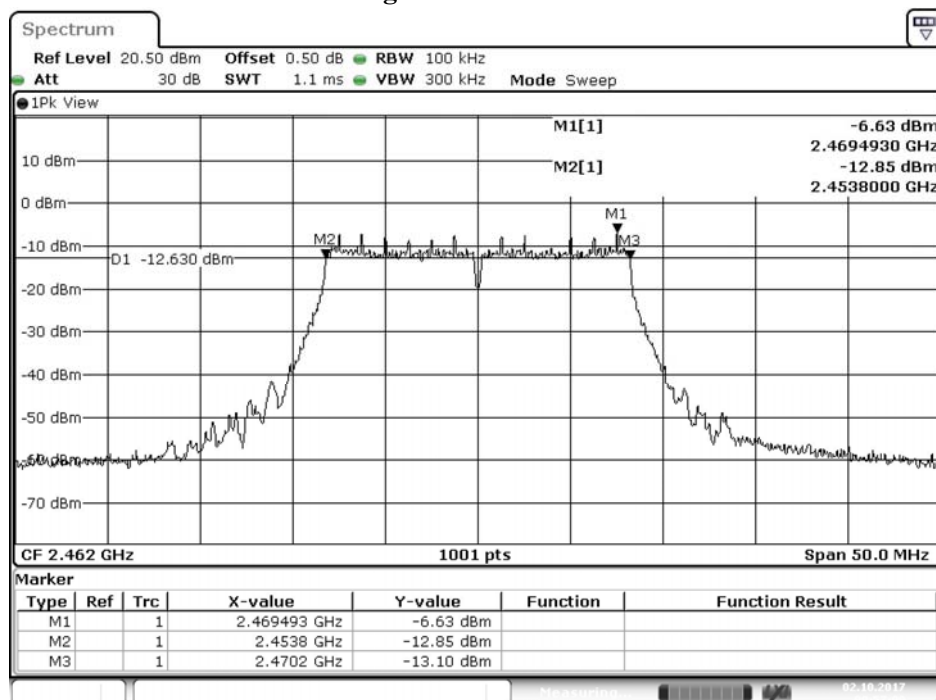
Date: 2.OCT.2017 09:53:49

Figure Channel 06:



Date: 2.OCT.2017 09:55:37

Figure Channel 11:

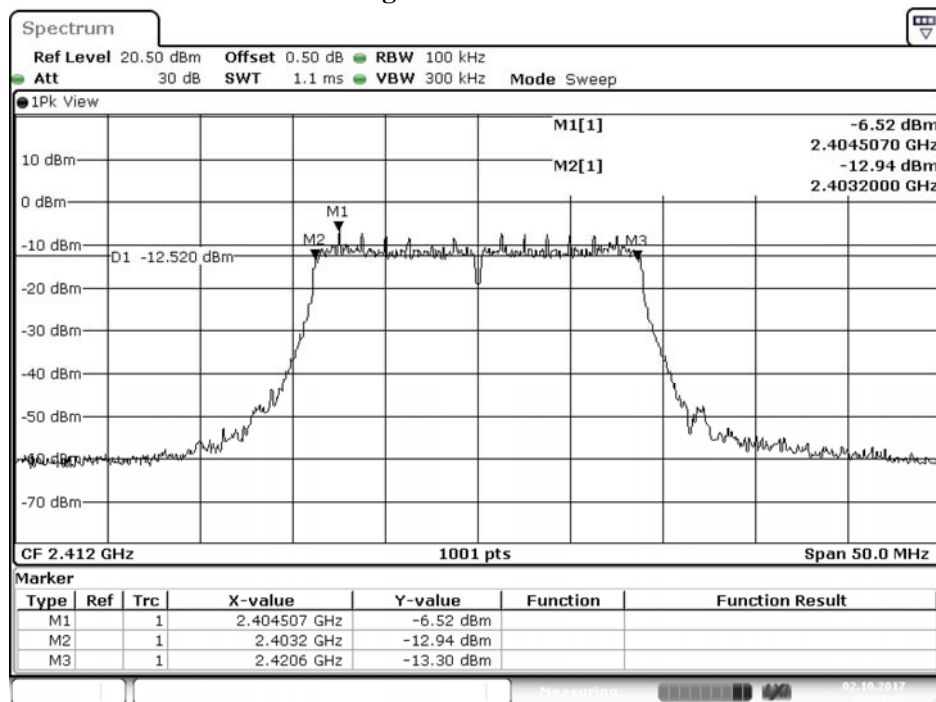


Date: 2.OCT.2017 09:57:01

Product : WiFi Digital Microscope
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

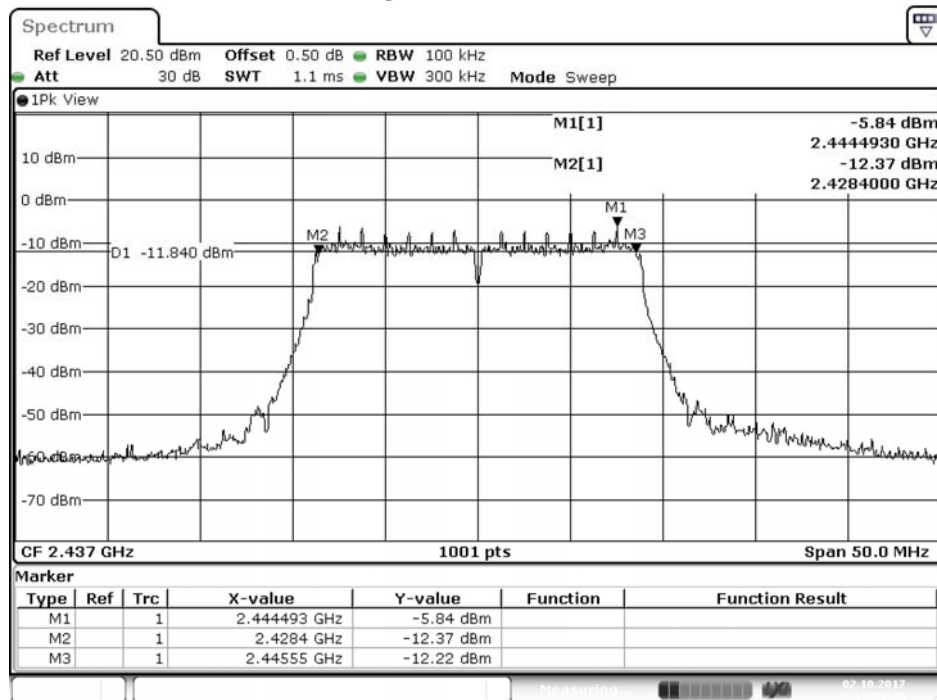
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	17400	>500	Pass
06	2437	17150	>500	Pass
11	2462	17200	>500	Pass

Figure Channel 01:



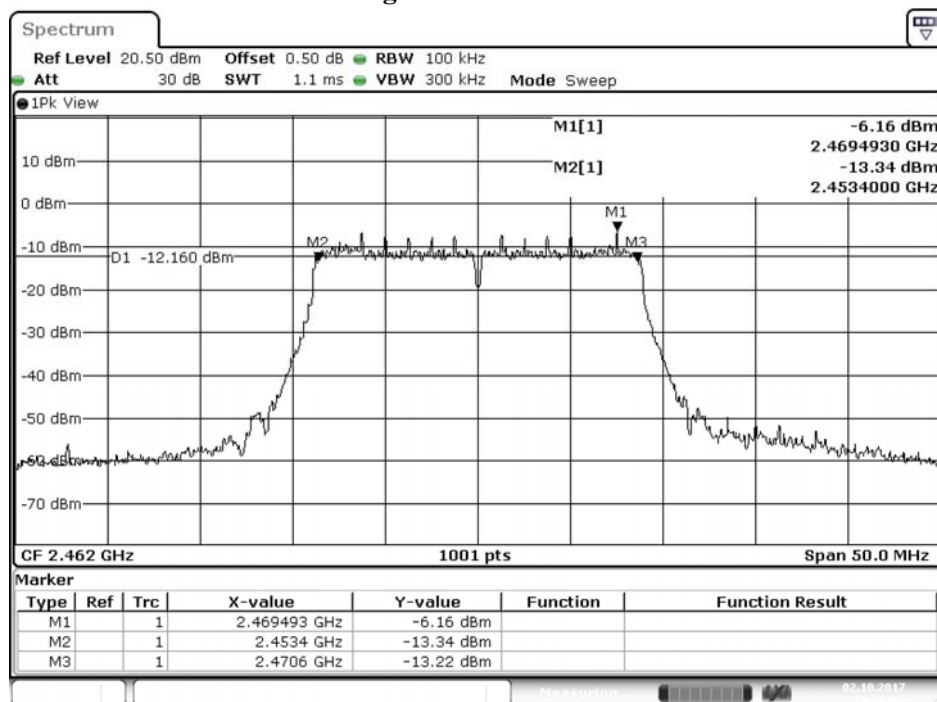
Date: 2.OCT.2017 09:58:37

Figure Channel 06:



Date: 2.OCT.2017 10:04:40

Figure Channel 11:

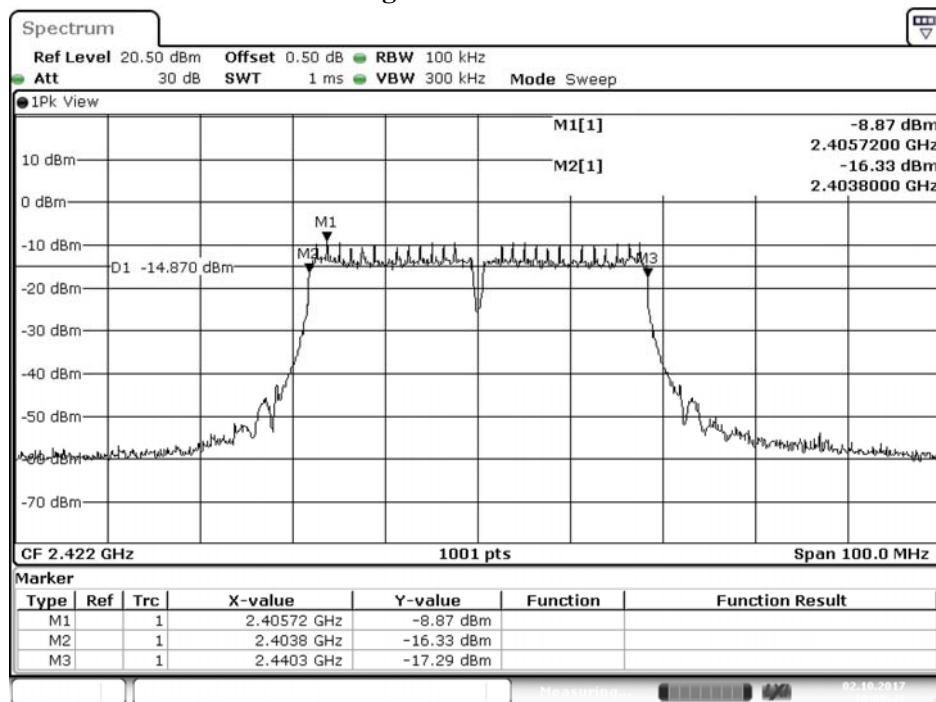


Date: 2.OCT.2017 10:06:06

Product : WiFi Digital Microscope
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	36500	>500	Pass
06	2437	36300	>500	Pass
09	2452	36200	>500	Pass

Figure Channel 03:



Date: 2.OCT.2017 10:07:41

Figure Channel 06:

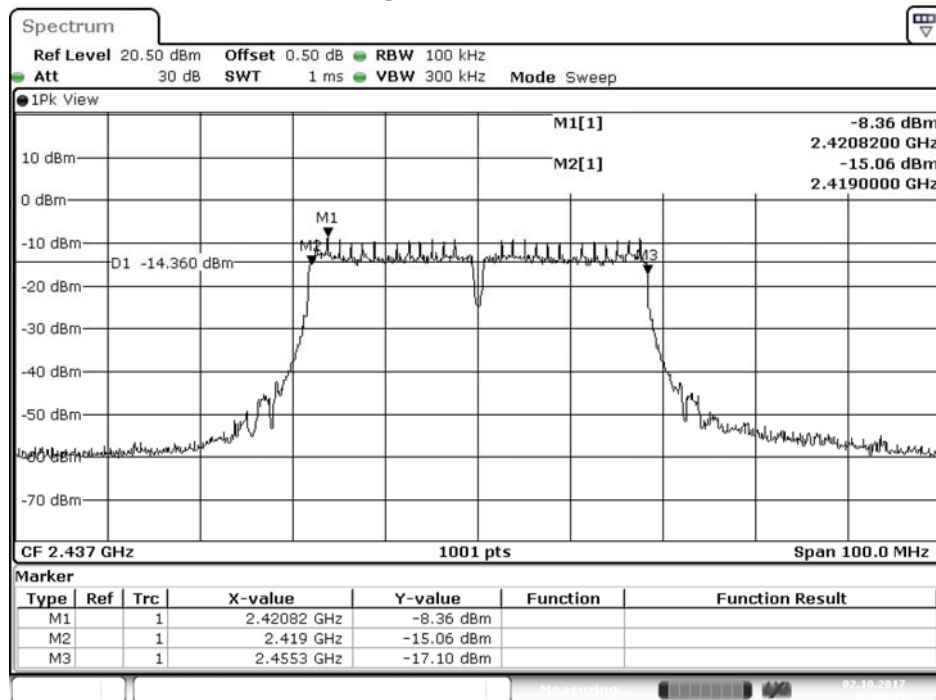
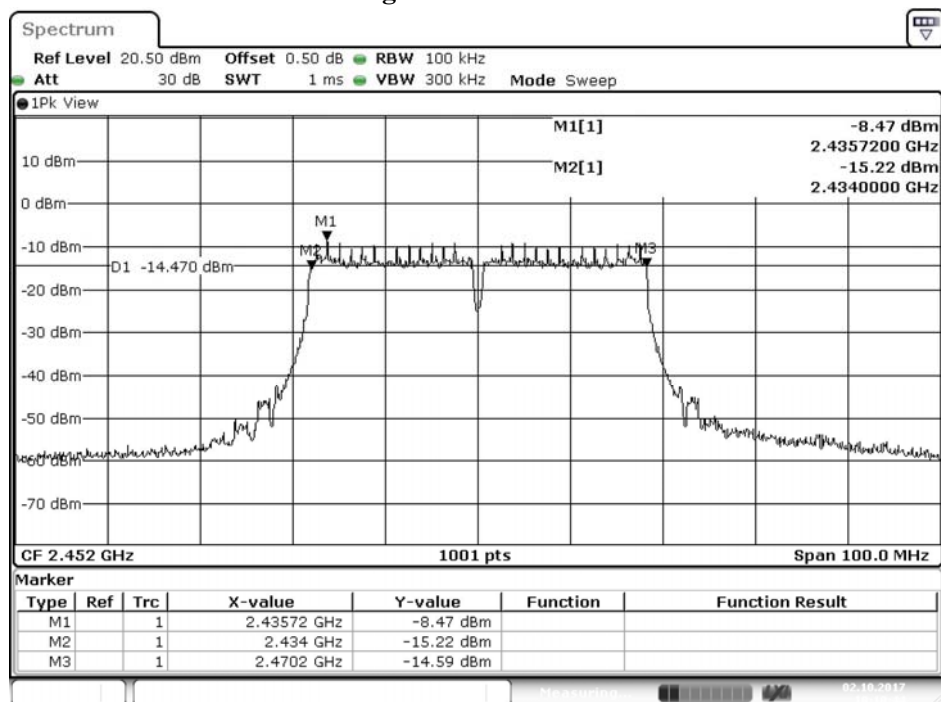
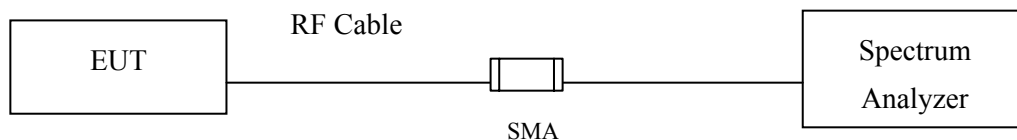


Figure Channel 09:



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

± 1.23 dB

8.5. Test Result of Power Density

Product : WiFi Digital Microscope
 Test Item : Power Density Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	-5.640	≤ 8 dBm	Pass
06	2437	-5.460	≤ 8 dBm	Pass
11	2462	-4.690	≤ 8 dBm	Pass

Figure Channel 01:

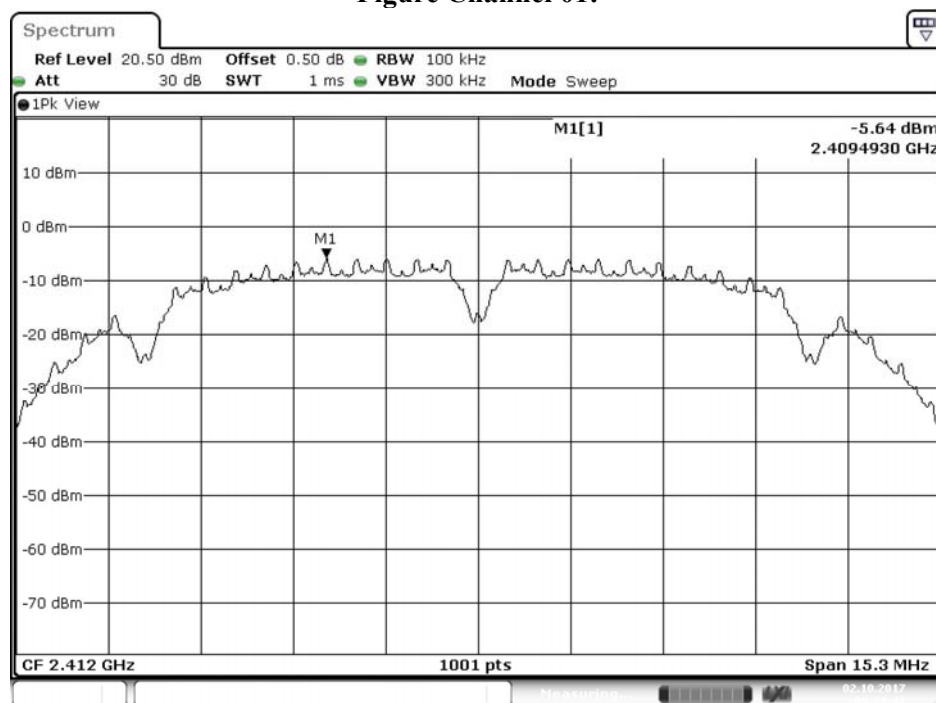
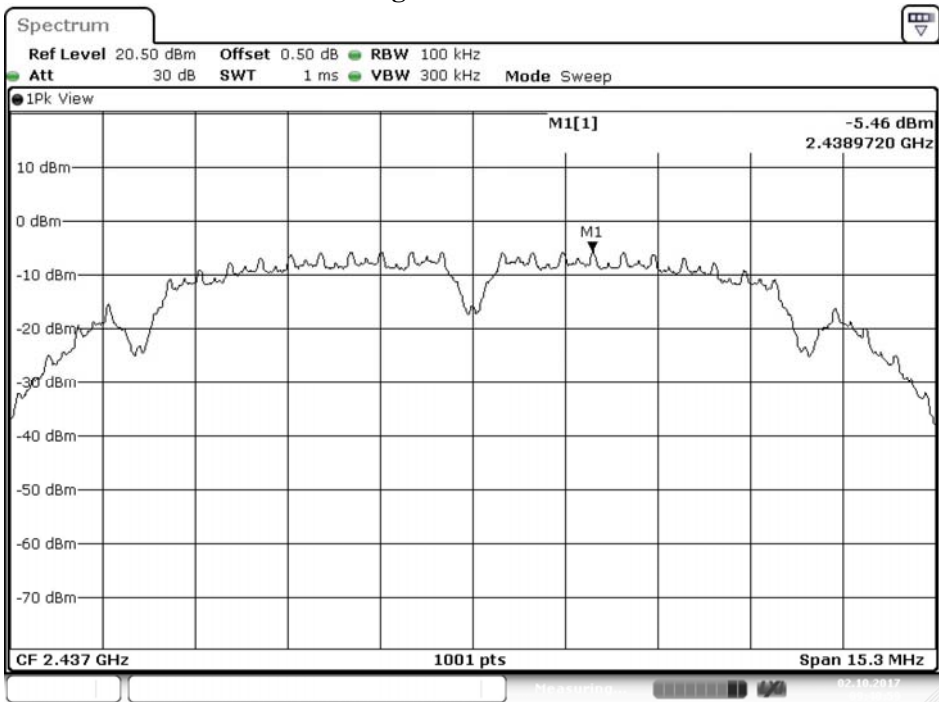
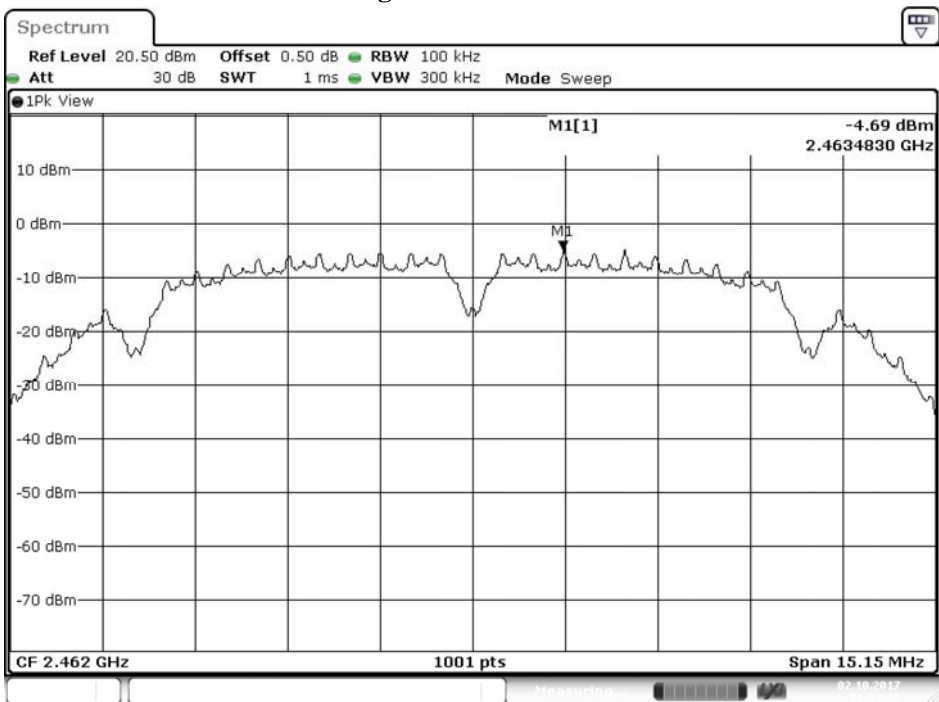


Figure Channel 06:



Date: 2.OCT.2017 09:41:00

Figure Channel 11:



Date: 2.OCT.2017 09:52:36

Product : WiFi Digital Microscope
 Test Item : Power Density Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	-6.230	≤ 8 dBm	Pass
06	2437	-5.800	≤ 8 dBm	Pass
11	2462	-6.630	≤ 8 dBm	Pass

Figure Channel 01:

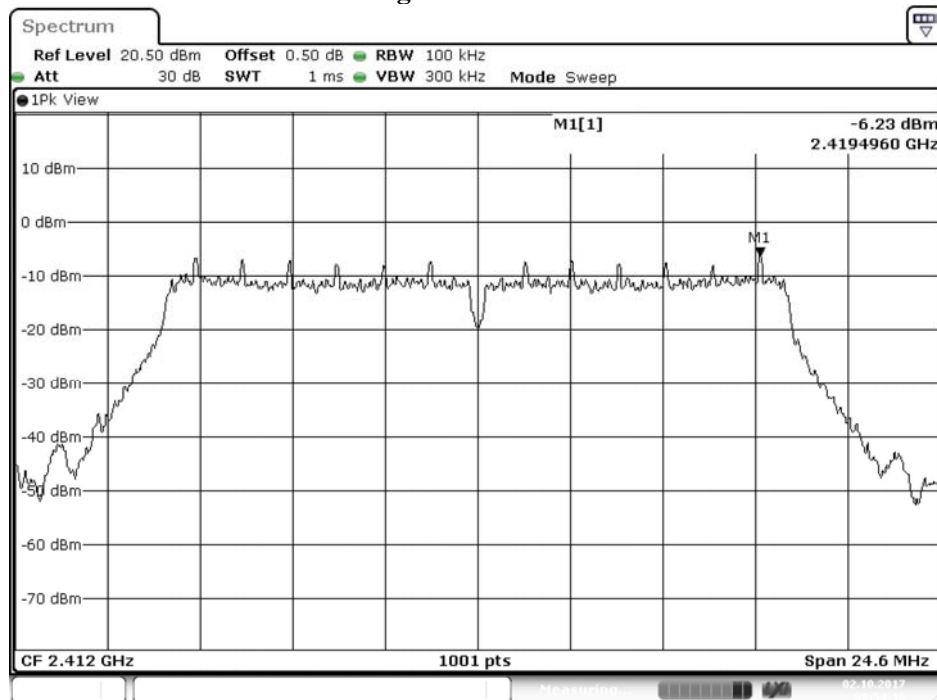
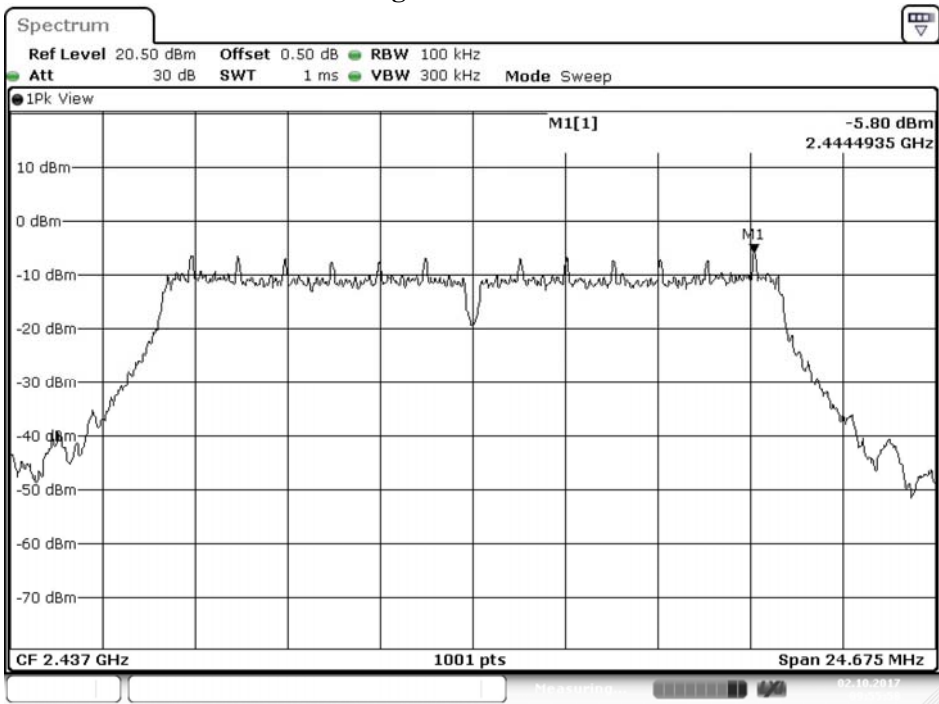
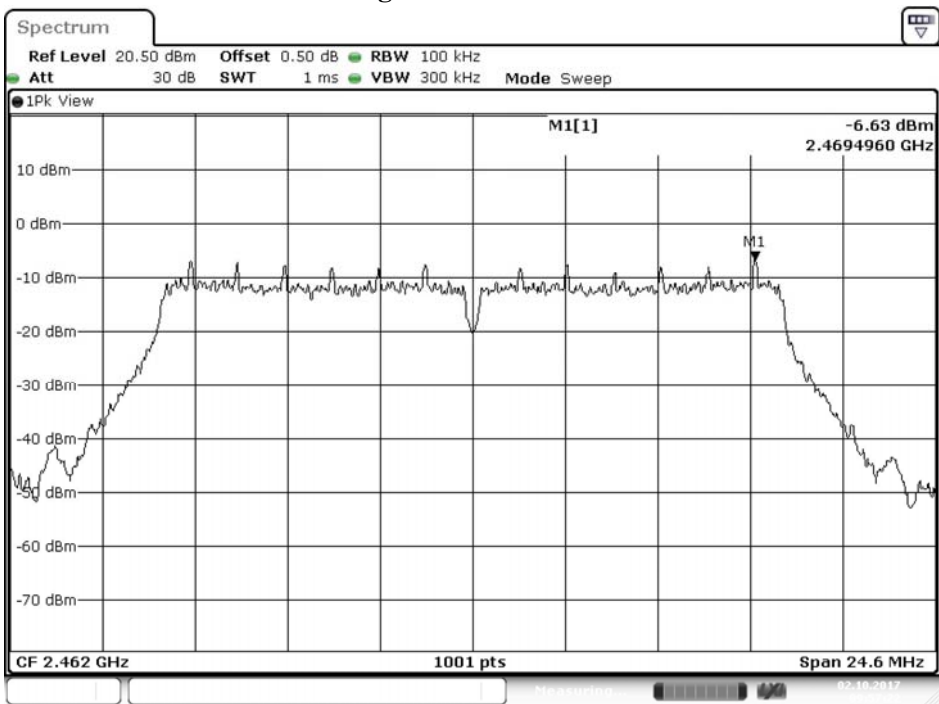


Figure Channel 06:



Date: 2.OCT.2017 09:55:59

Figure Channel 11:



Date: 2.OCT.2017 09:57:22

Product : WiFi Digital Microscope
 Test Item : Power Density Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	-6.150	≤ 8 dBm	Pass
06	2437	-5.890	≤ 8 dBm	Pass
11	2462	-6.170	≤ 8 dBm	Pass

Figure Channel 01:

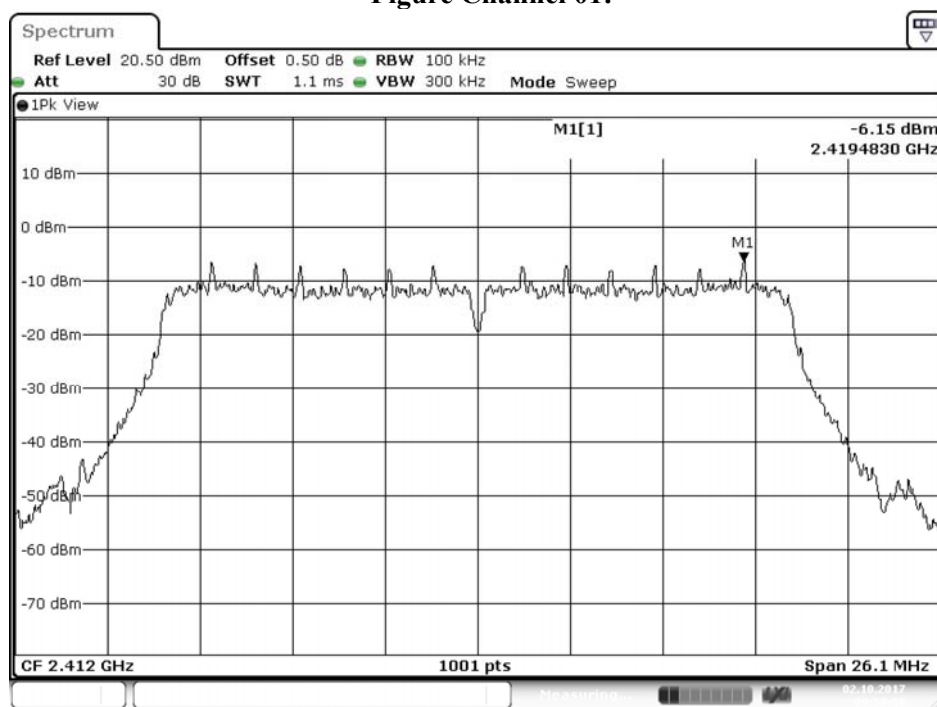
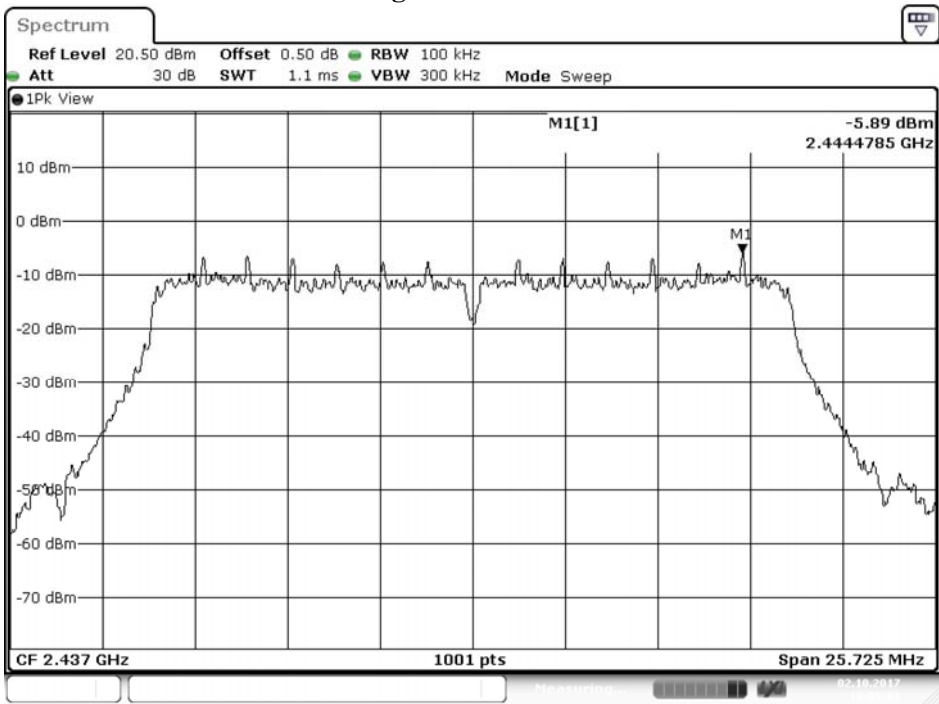
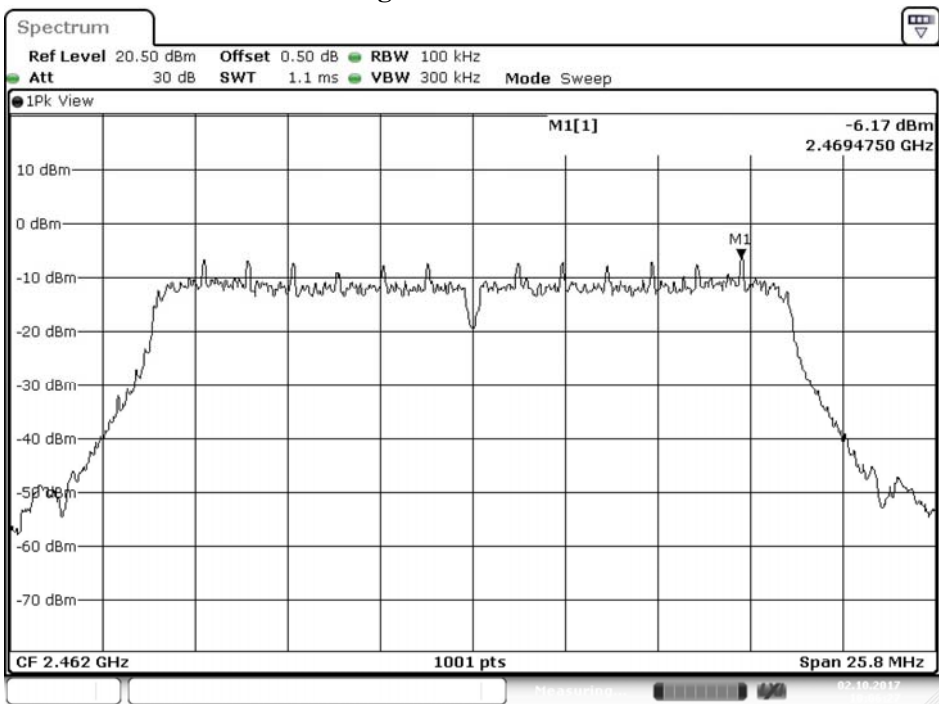


Figure Channel 06:



Date: 2.OCT.2017 10:05:01

Figure Channel 11:



Date: 2.OCT.2017 10:06:27

Product : WiFi Digital Microscope
 Test Item : Power Density Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	-8.920	$\leq 8\text{dBm}$	Pass
06	2437	-8.570	$\leq 8\text{dBm}$	Pass
09	2452	-8.700	$\leq 8\text{dBm}$	Pass

Figure Channel 03:

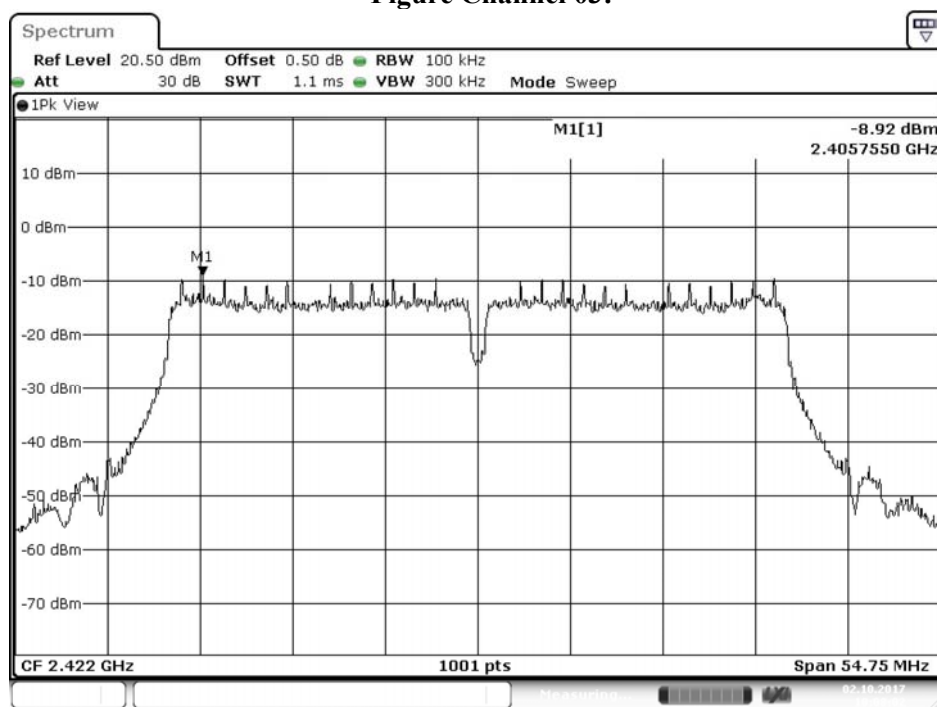
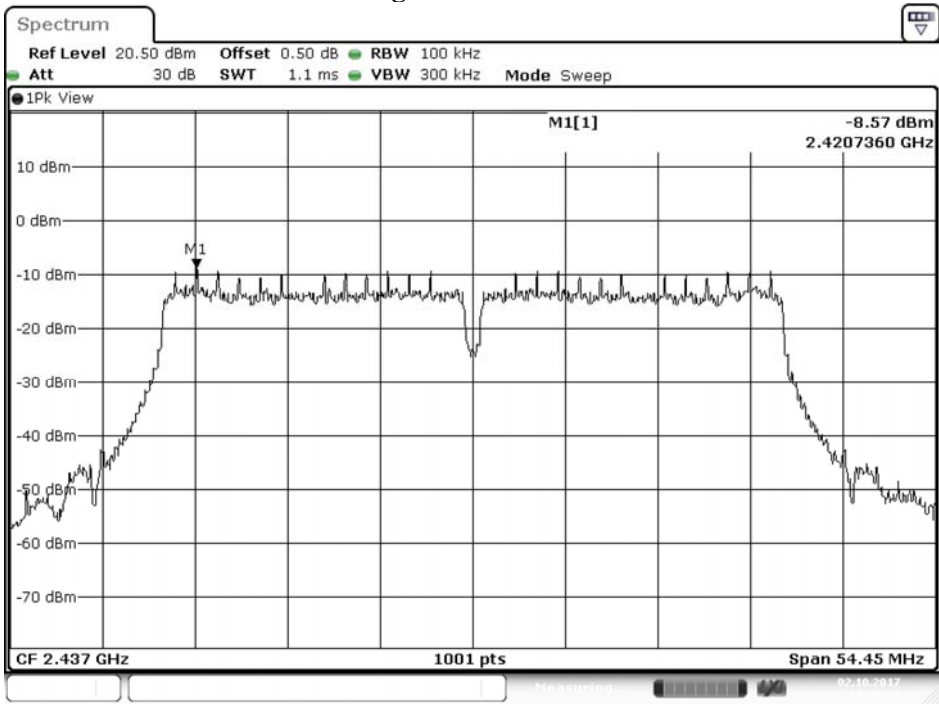
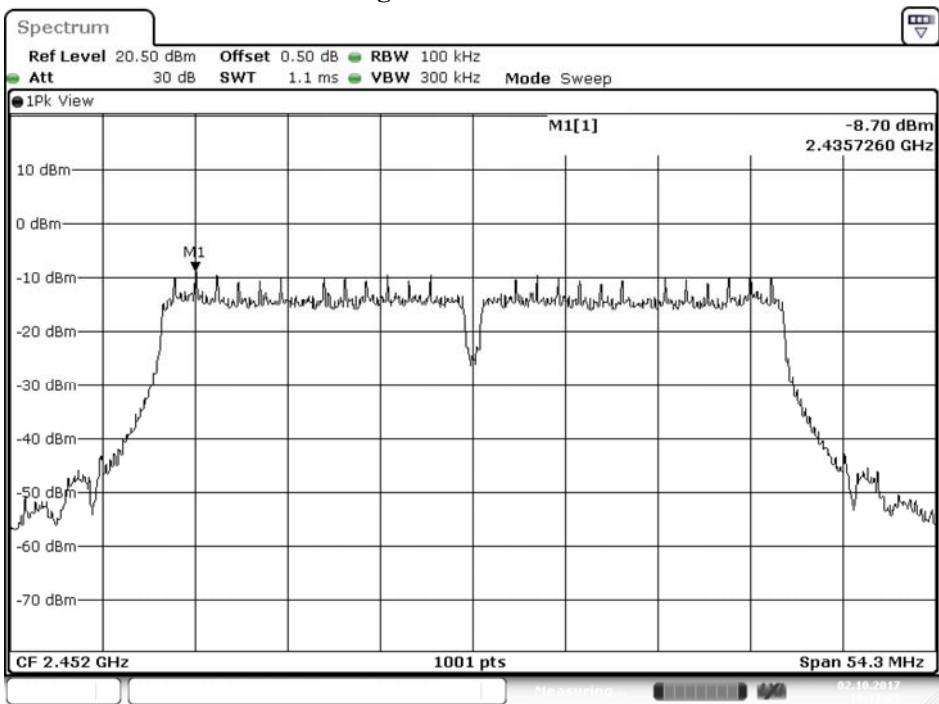


Figure Channel 06:



Date: 2.OCT.2017 10:09:22

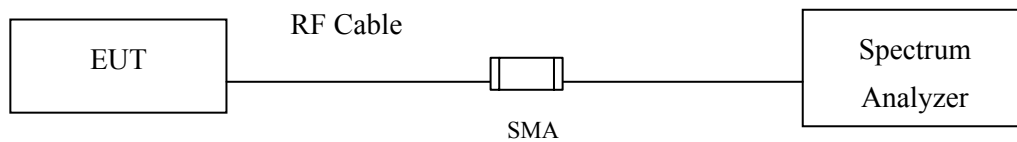
Figure Channel 09:



Date: 2.OCT.2017 10:11:06

9. Duty Cycle

9.1. Test Setup



9.2. Test Procedure

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

9.3. Uncertainty

$\pm 2.31\text{msec}$

9.4. Test Result of Duty Cycle

Product : WiFi Digital Microscope
 Test Item : Duty Cycle
 Test Mode : Mode 5: Transmit

Duty Cycle Formula:

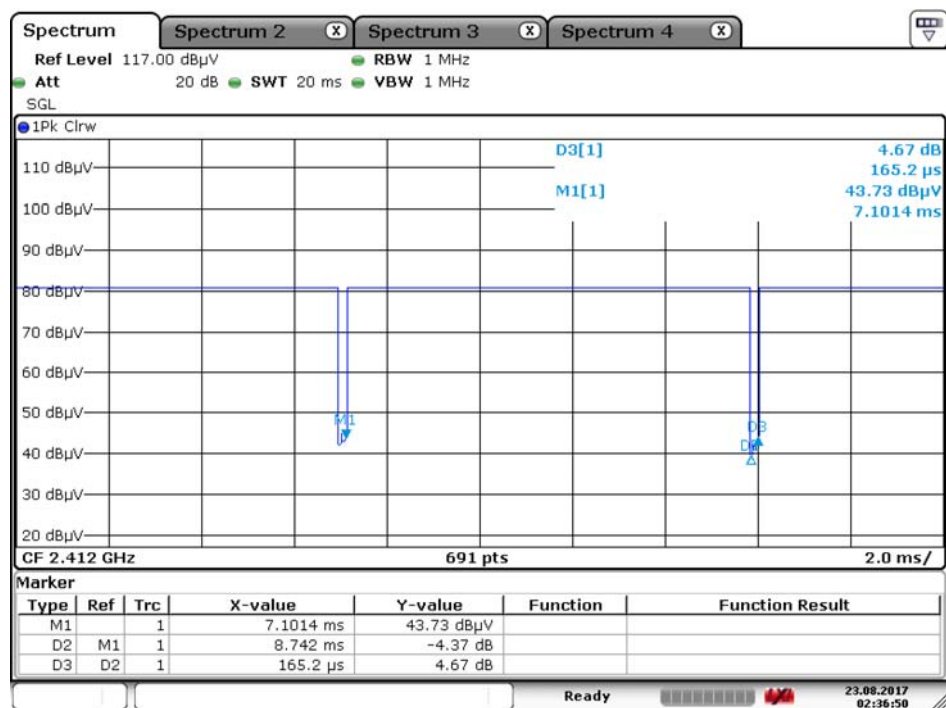
$$\text{Duty Cycle} = \text{Ton} / (\text{Ton} + \text{Toff})$$

$$\text{Duty Factor} = 10 \text{ Log} (1/\text{Duty Cycle})$$

Results:

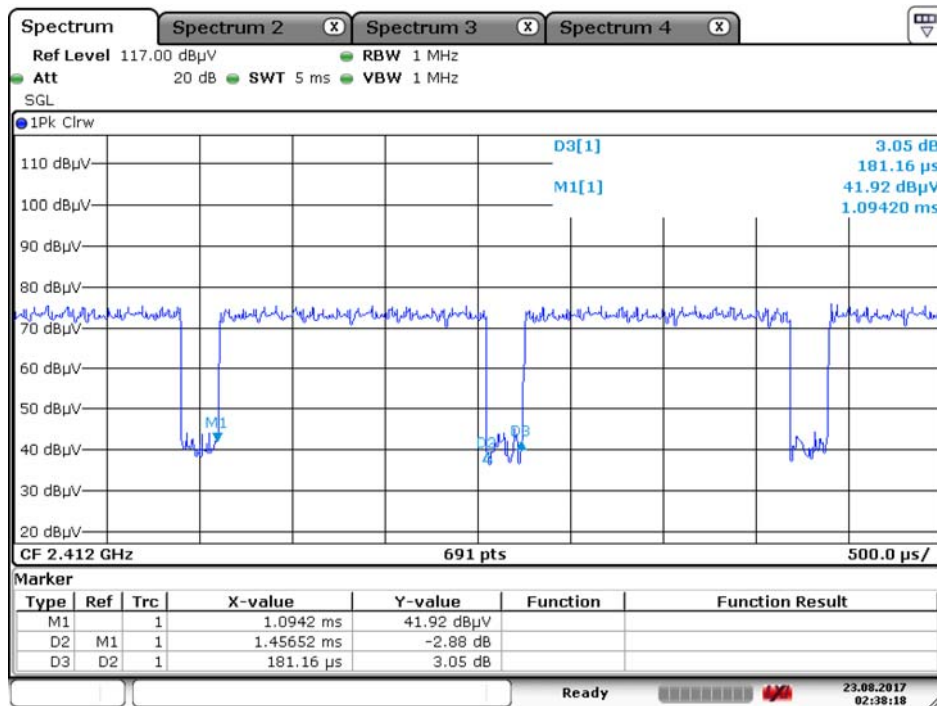
2.4GHz band	Ton (ms)	Ton + Toff (ms)	Duty Cycle (%)	Duty Factor (dB)
802.11b	8.742	8.9072	98.15	0.08
802.11g	1.45652	1.63768	88.94	0.51
802.11n20	1.36232	1.55073	87.85	0.56
802.11n40	0.67536	0.86956	77.67	1.10

802.11b



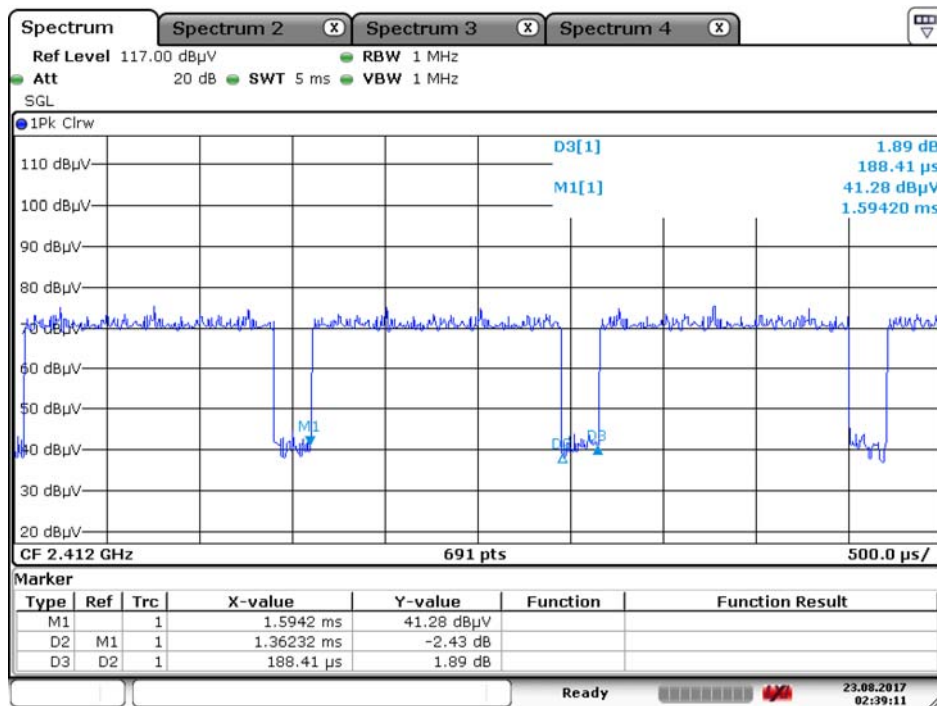
Date: 23.AUG.2017 02:36:51

802.11g



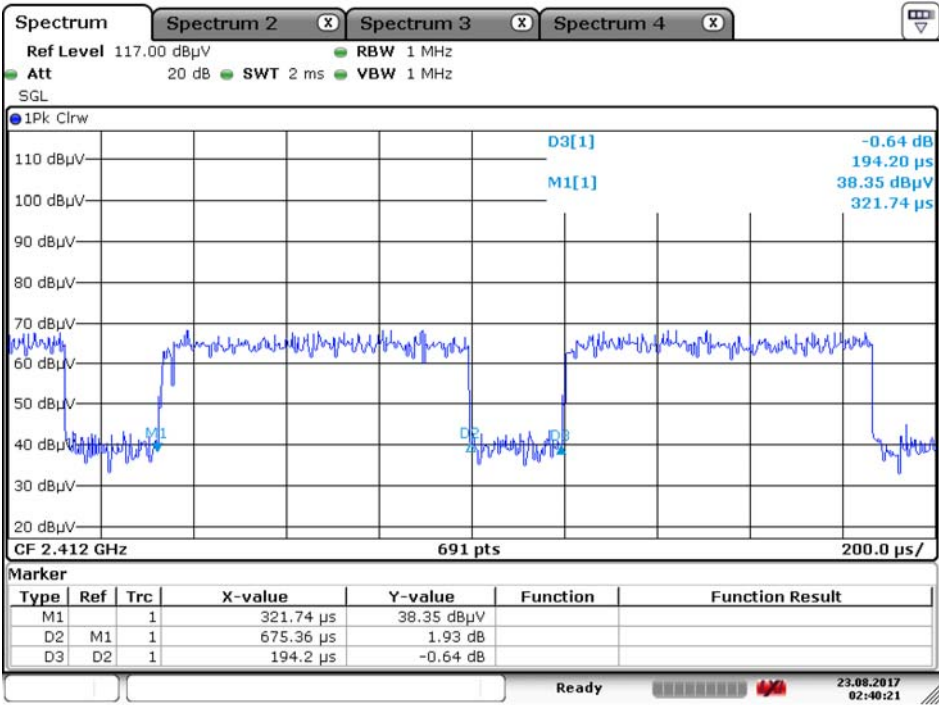
Date: 23.AUG.2017 02:38:18

802.11n20



Date: 23.AUG.2017 02:39:11

802.11n40



Date: 23.AUG.2017 02:40:22

10. EMI Reduction Method During Compliance Testing

No modification was made during testing.