

FCC Test Report

Product Name	RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
Model No	NPort IAW5x50Ayyyyyyyyyy; x or y can be 0-9, A-Z, dash, slash, blank or any Character.
FCC ID.	SLE-IAW5X50A

Applicant	MOXA Inc.
Address	FL.4, NO. 135. LANE 235, BAOQIAO RD. XINDIAN DIST.,NEW TAIPEI CITY, TAIWAN

Date of Receipt	Nov. 09, 2016
Issue Date	Dec. 29, 2016
Report No.	16B0271R-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 of the equipment and evaluated measurement uncertainty herein.

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Test Report

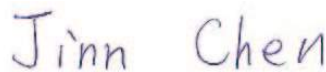
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Applicant	MOXA Inc.
Address	FL.4, NO. 135. LANE 235, BAOQIAO RD. XINDIAN DIST.,NEW TAIPEI CITY, TAIWAN
Manufacturer	MOXA Inc.
Model No.	NPort IAW5x50Ayyyyyyyyyy; x or y can be 0-9, A-Z, dash, slash, blank or any Character.
FCC ID.	SLE-IAW5X50A
EUT Rated Voltage	12-48VDC
EUT Test Voltage	DC 24V
Trade Name	MOXA
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 :



(Senior Adm. Specialist / Jinn Chen)

Tested By :



(Engineer / Kevin Liu)

Approved By :



(Director / Vincent Lin)

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	5
1.1. EUT Description.....	5
1.2. Operational Description	7
1.3. Tested System Details.....	8
1.4. Configuration of Tested System	8
1.5. EUT Exercise Software	8
1.6. Test Facility	9
1.7. List of Test Item and Equipment	10
2. Conducted Emission.....	11
2.1. Test Setup	11
2.2. Limits	11
2.3. Test Procedure	11
2.4. Uncertainty	11
2.5. Test Result of Conducted Emission.....	12
3. Peak Power Output	13
3.1. Test Setup	13
3.2. Limits	13
3.3. Test Procedure	13
3.4. Uncertainty	13
3.5. Test Result of Peak Power Output.....	14
4. Radiated Emission.....	18
4.1. Test Setup	18
4.2. Limits	19
4.3. Test Procedure	19
4.4. Uncertainty	19
4.5. Test Result of Radiated Emission.....	20
5. RF antenna conducted test.....	36
5.1. Test Setup	36
5.2. Limits	36
5.3. Test Procedure	36
5.4. Uncertainty	36
5.5. Test Result of RF antenna conducted test.....	37
6. Band Edge	41
6.1. Test Setup	41
6.2. Limits	42
6.3. Test Procedure	42
6.4. Uncertainty	42
6.5. Test Result of Band Edge	43
7. 6dB Bandwidth	59
7.1. Test Setup	59
7.2. Limits	59

7.3.	Test Procedure	59
7.4.	Uncertainty	59
7.5.	Test Result of 6dB Bandwidth.....	60
8.	Power Density	68
8.1.	Test Setup	68
8.2.	Limits	68
8.3.	Test Procedure	68
8.4.	Uncertainty	68
8.5.	Test Result of Power Density	69
9.	EMI Reduction Method During Compliance Testing	77
Attachment 1: EUT Test Photographs		
Attachment 2: EUT Detailed Photographs		

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
Trade Name	ASUS
Model No.	NPort IAW5x50Ayyyyyyyyyy; x or y can be 0-9, A-Z, dash, slash, blank or any Character.
FCC ID.	SLE-IAW5X50A
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 150Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	Dipole Antenna
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	KINSUN	6602D03081	Dipole	2.04 dBi for 2.4 GHz

Note:

1. The antenna of EUT conforms to FCC 15.203.
2. Only the higher gain antenna was tested and recorded in this report

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

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

802.11n-40MHz 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 RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O with a built-in WLAN and Bluetooth transceiver, this report for 2.4G 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 and 802.11n(40M-BW) is 15Mbps)
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.

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

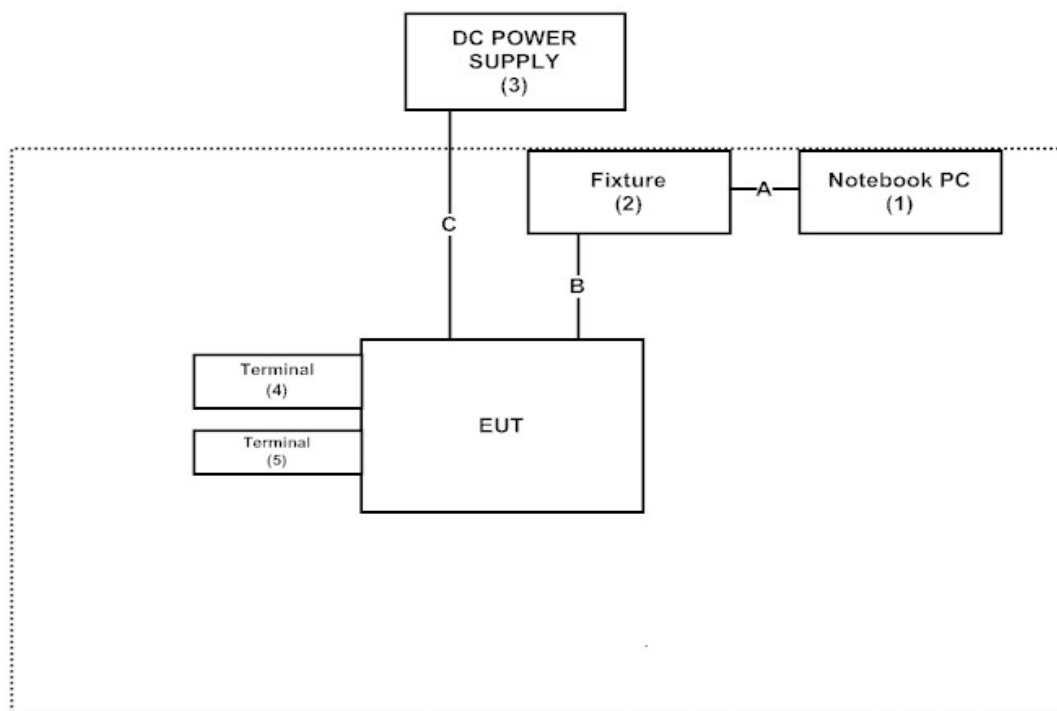
1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 Notebook PC	DELL	P62G	416FJC2	Non-Shielded, 0.8m
2 Fixture	MOXA	N/A	N/A	N/A
3 DC POWER SUPPLY	GWInstek	SPD-3606	N/A	N/A
4 Terminal	MOXA	N/A	N/A	N/A
5 Terminal	MOXA	N/A	N/A	N/A

Signal Cable Type	Signal cable Description
A USB Cable	Shielded, 0.8m
B RS-232 Cable	Non-Shielded, 0.3m
C DC Power Cable	Non-Shielded, 1.8m

1.4. Configuration of Tested System



1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “PuTTY Version 0.63” on the Notebook PC.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous Transmit.
5. Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from 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: TW1014

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	101602	2016.12.15	2017.12.14
X	Two-Line V-Network	R&S	ENV216	101306	2016.02.09	2017.02.08
X	Two-Line V-Network	R&S	ENV216	101307	2016.02.09	2017.02.08
X	Coaxial Cable	DEKRA	RG400_BNC	RF001	2016.05.25	2017.05.24

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 : DEKRA 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	103466	2016.12.14	2017.12.13
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

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 : DEKRA Conduction Test System V8.0.110

For Radiated measurements /ACB1

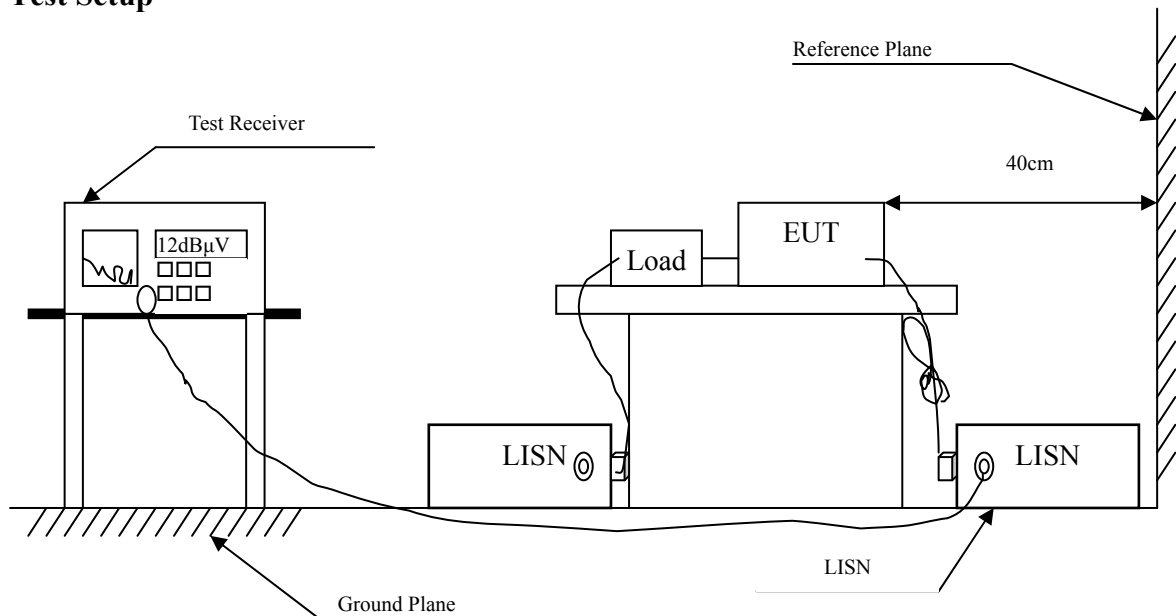
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Loop Antenna	A.H.	SAS-562B	272	2016.07.21	2017.07.20
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-674	2016.02.20	2017.02.19
X	Horn Antenna	ETS-Lindgren	3117	00203800	2016.10.13	2017.10.12
X	Horn Antenna	Com-Power	AH-840	101087	2016.05.03	2017.05.02
X	Pre-Amplifier	EMCI	EMC001330	980316	2016.04.27	2017.04.26
X	Pre-Amplifier	EMCI	EMC051835SE	980311	2016.04.27	2017.04.26
X	Pre-Amplifier	EMCI	EMC05820SE	980310	2016.04.28	2017.04.27
X	Pre-Amplifier	EMCI	EMC184045SE	980314	2016.05.12	2017.05.11
X	Filter	MICRO TRONICS	BRM50702	G251	2016.08.11	2017.08.10
	Filter	MICRO TRONICS	BRM50716	G188	2016.08.11	2017.08.10
X	EMI Test Receiver	R&S	ESR7	101602	2016.12.15	2017.12.14
X	Spectrum Analyzer	R&S	FSV40	101149	2016.12.14	2017.12.13
X	Coaxial Cable	SUHNER	SUCOFLEX 106	RF002	2016.05.25	2017.05.24
X	Mircoflex Cable	HUBER SUHNER	SUCOFLEX 102	MY3381/2	2016.08.11	2017.08.10

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 : DEKRA 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

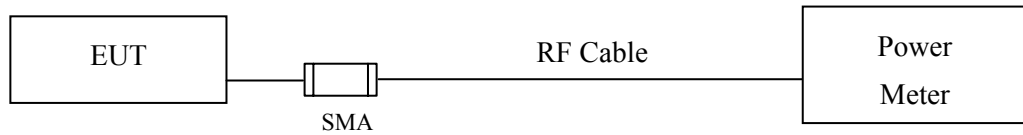
± 2.35 dB

2.5. Test Result of Conducted Emission

Owing to the EUT use DC supply voltage, this test item is not performed.

3. Peak Power Output

3.1. Test Setup



3.2. Limits

The maximum peak power shall be less 1 Watt.

3.3. Test Procedure

Tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 section 9.1.2 PKPM1 Peak power meter method.

3.4. Uncertainty

± 0.86 dB

3.5. Test Result of Peak Power Output

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Peak Power Output Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)
 Test Date : 2016/11/29

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	13.41	--	--	--	16.88	<30dBm	Pass
06	2437	15.27	15.21	15.18	15.08	17.92	<30dBm	Pass
11	2462	14.59	--	--	--	17.22	<30dBm	Pass

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

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Peak Power Output Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)
 Test Date : 2016/11/29

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	12.01	--	--	--	--	--	--	--	20.91	<30dBm	Pass
06	2437	15.12	15.02	14.89	14.81	14.78	14.68	14.57	14.5	21.47	<30dBm	Pass
11	2462	12.03	--	--	--	--	--	--	--	20.51	<30dBm	Pass

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

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Peak Power Output Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
 Test Date : 2016/11/29

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	11.92	--	--	--	--	--	--	--	20.65	<30dBm	Pass
06	2437	15.05	14.97	14.91	14.84	14.75	14.68	14.6	14.52	21.42	<30dBm	Pass
11	2462	11.82	--	--	--	--	--	--	--	20.44	<30dBm	Pass

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

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Peak Power Output Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)
 Test Date : 2016/11/29

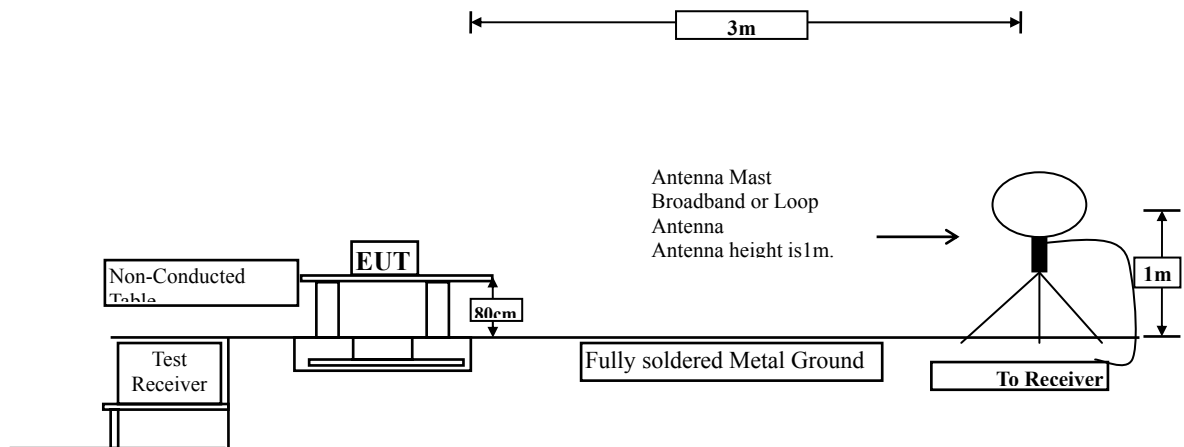
Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		15	30	45	60	90	120	135	150	15		
		Measurement Level (dBm)										
03	2422	11.31	--	--	--	--	--	--	--	20.28	<30dBm	Pass
06	2437	13.13	13.08	13.01	12.95	12.87	12.82	12.74	12.65	20.78	<30dBm	Pass
09	2452	11.21	--	--	--	--	--	--	--	19.86	<30dBm	Pass

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

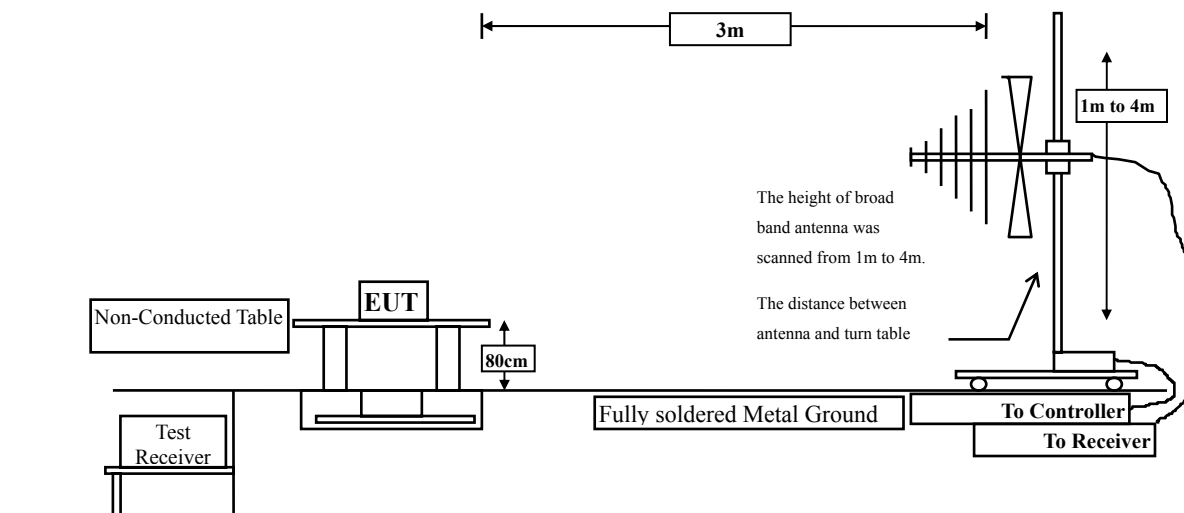
4. Radiated Emission

4.1. Test Setup

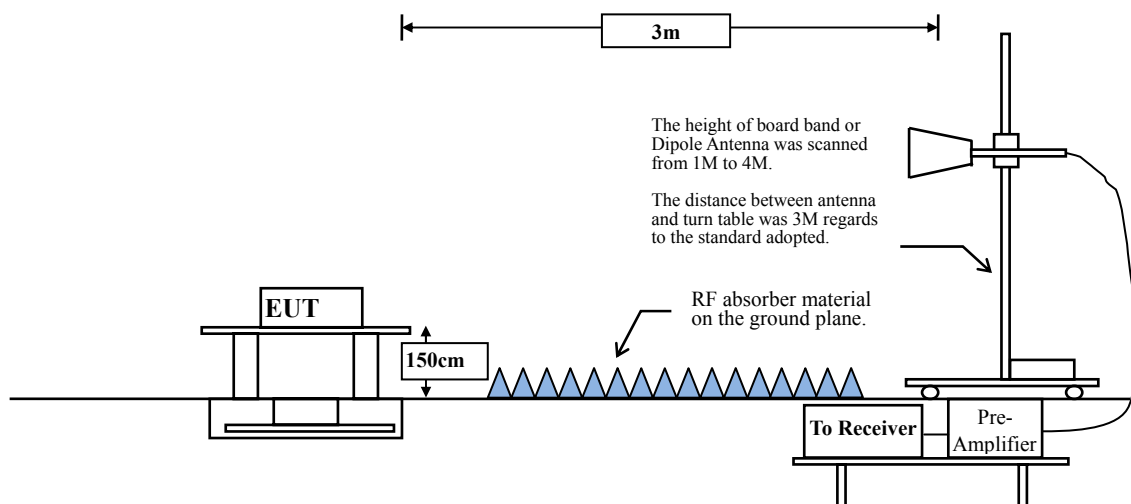
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.2. Limits

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

4.4. Uncertainty

Horizontal :

30-300MHz: ±4.08dB ; 300M-1GHz: ±3.86dB ; 1-18GHz: ±3.77dB ; 18-40GHz: ±3.98dB °

Vertical :

30-300MHz: ±4.81dB ; 300M-1GHz: ±3.87dB ; 1-18GHz: ±3.83dB ; 18-40GHz: ±3.98dB °

4.5. Test Result of Radiated Emission

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
 Test Date : 2016/11/26

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	-3.785	51.620	47.836	-26.164	74.000
7236.000	-0.753	46.470	45.716	-28.284	74.000
9648.000	1.186	45.040	46.226	-27.774	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4824.000	-3.785	51.400	47.616	-26.384	74.000
7236.000	-0.753	46.960	46.206	-27.794	74.000
9648.000	1.186	45.020	46.206	-27.794	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)
 Test Date : 2016/11/26

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	-3.770	50.900	47.130	-26.870	4874.000
7311.000	-0.719	47.350	46.632	-27.368	7311.000
9748.000	1.331	45.500	46.831	-27.169	9748.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4874.000	39.808	47.220	43.450	-30.550	74.000
7311.000	42.833	46.780	46.062	-27.938	74.000
9748.000	45.015	47.670	49.001	-24.999	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)
 Test Date : 2016/11/26

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4924.000	-3.743	51.100	47.357	-26.643	74.000
7386.000	-0.683	46.330	45.647	-28.353	74.000
9848.000	1.571	46.550	48.121	-25.879	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4924.000	-3.743	57.440	53.697	-20.303	74.000
7386.000	-0.683	47.490	46.807	-27.193	74.000
9848.000	1.571	49.740	51.311	-22.689	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
 Test Date : 2016/11/26

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	-3.785	46.940	43.156	-30.844	74.000
7236.000	-0.753	45.730	44.976	-29.024	74.000
9648.000	1.186	44.990	46.176	-27.824	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4824.000	-3.785	48.100	44.316	-29.684	74.000
7236.000	-0.753	45.240	44.486	-29.514	74.000
9648.000	1.186	45.180	46.366	-27.634	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)
 Test Date : 2016/11/26

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	-3.770	46.530	42.760	-31.240	74.000
7311.000	-0.719	45.760	45.042	-28.958	74.000
9748.000	1.331	44.870	46.201	-27.799	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4874.000	-3.770	47.230	43.460	-30.540	74.000
7311.000	-0.719	45.840	45.122	-28.878	74.000
9748.000	1.331	45.130	46.461	-27.539	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)
 Test Date : 2016/11/26

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4924.000	-3.743	48.410	44.667	-29.333	74.000
7386.000	-0.683	45.820	45.137	-28.863	74.000
9848.000	1.571	44.990	46.561	-27.439	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4924.000	-3.743	53.480	49.737	-24.263	74.000
7386.000	-0.683	47.050	46.367	-27.633	74.000
9848.000	1.571	45.740	47.311	-26.689	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2412MHz)
 Test Date : 2016/11/26

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	-3.785	46.960	43.176	-30.824	74.000
7236.000	-0.753	45.380	44.626	-29.374	74.000
9648.000	1.186	44.950	46.136	-27.864	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4824.000	-3.785	47.880	44.096	-29.904	74.000
7236.000	-0.753	45.730	44.976	-29.024	74.000
9648.000	1.186	44.600	45.786	-28.214	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437 MHz)
 Test Date : 2016/11/26

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	-3.770	51.000	47.230	-26.770	74.000
7311.000	-0.719	45.940	45.222	-28.778	74.000
9748.000	1.331	44.900	46.231	-27.769	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4874.000	-3.770	47.400	43.630	-30.370	74.000
7311.000	-0.719	45.850	45.132	-28.868	74.000
9748.000	1.331	45.050	46.381	-27.619	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz)
 Test Date : 2016/11/26

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4924.000	-3.743	47.970	44.227	-29.773	74.000
7386.000	-0.683	45.700	45.017	-28.983	74.000
9848.000	1.571	44.990	46.561	-27.439	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4924.000	-3.743	54.740	50.997	-23.003	74.000
7386.000	-0.683	46.400	45.717	-28.283	74.000
9848.000	1.571	46.220	47.791	-26.209	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2422MHz)
 Test Date : 2016/11/26

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:					
4844.000	-3.778	46.700	42.921	-31.079	74.000
7266.000	-0.732	45.980	45.248	-28.752	74.000
9688.000	1.249	44.450	45.700	-28.300	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4844.000	-3.778	47.130	43.351	-30.649	74.000
7266.000	-0.732	45.680	44.948	-29.052	74.000
9688.000	1.249	44.560	45.810	-28.190	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437 MHz)
 Test Date : 2016/11/26

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	39.808	47.990	44.220	-29.780	74.000
7311.000	42.833	46.240	45.522	-28.478	74.000
9748.000	45.015	44.820	46.151	-27.849	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4874.000	-3.770	47.340	43.570	-30.430	74.000
7311.000	-0.719	46.040	45.322	-28.678	74.000
9748.000	1.331	45.400	46.731	-27.269	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Harmonic Radiated Emission Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2452 MHz)
 Test Date : 2016/11/26

Frequency MHz	Correct Factor dB	Reading Level dBμV	Measurement Level dBμV/m	Margin dB	Limit dBμV/m
Horizontal					
Peak Detector:					
4904.000	-3.766	47.050	43.284	-30.716	74.000
7356.000	-0.693	45.670	44.977	-29.023	74.000
9808.000	1.467	44.520	45.986	-28.014	74.000
Average Detector:					
--	--	--	--	--	54.000
Vertical					
Peak Detector:					
4904.000	-3.766	47.950	44.184	-29.816	74.000
7356.000	-0.693	45.740	45.047	-28.953	74.000
9808.000	1.467	44.940	46.406	-27.594	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : General Radiated Emission Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)
 Test Date : 2016/11/18

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
332.246	-9.404	52.792	43.388	-2.612	46.000
354.739	-8.861	51.326	42.465	-3.535	46.000
465.797	-6.371	43.619	37.248	-8.752	46.000
554.362	-4.819	43.092	38.273	-7.727	46.000
599.348	-3.645	38.336	34.692	-11.308	46.000
931.116	0.774	33.602	34.376	-11.624	46.000
Vertical					
70.768	-13.712	50.274	36.562	-3.438	40.000
287.261	-10.562	46.624	36.062	-9.938	46.000
437.681	-6.906	45.291	38.385	-7.615	46.000
509.377	-5.677	42.262	36.585	-9.415	46.000
554.362	-4.819	43.088	38.269	-7.731	46.000
599.348	-3.645	44.176	40.532	-5.468	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : General Radiated Emission Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)
 Test Date : 2016/11/18

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
250.710	-11.904	52.979	41.074	-4.926	46.000
287.261	-10.562	53.562	43.000	-3.000	46.000
332.246	-9.404	52.800	43.396	-2.604	46.000
354.739	-8.861	51.307	42.446	-3.554	46.000
465.797	-6.371	43.552	37.181	-8.819	46.000
554.362	-4.819	42.602	37.783	-8.217	46.000
Vertical					
70.768	-13.712	49.046	35.334	-4.666	40.000
287.261	-10.562	46.537	35.975	-10.025	46.000
465.797	-6.371	43.259	36.888	-9.112	46.000
554.362	-4.819	42.112	37.293	-8.707	46.000
599.348	-3.645	44.302	40.658	-5.342	46.000
620.435	-3.475	40.242	36.767	-9.233	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : General Radiated Emission Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437 MHz)
 Test Date : 2016/11/18

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
243.681	-11.998	53.309	41.311	-4.689	46.000
287.261	-10.562	53.258	42.696	-3.304	46.000
332.246	-9.404	52.900	43.496	-2.504	46.000
354.739	-8.861	50.767	41.906	-4.094	46.000
420.812	-7.299	45.179	37.880	-8.120	46.000
554.362	-4.819	42.949	38.130	-7.870	46.000
Vertical					
70.768	-13.712	49.259	35.547	-4.453	40.000
287.261	-10.562	46.580	36.018	-9.982	46.000
465.797	-6.371	42.820	36.449	-9.551	46.000
554.362	-4.819	42.986	38.167	-7.833	46.000
599.348	-3.645	43.549	39.905	-6.095	46.000
931.116	0.774	33.257	34.031	-11.969	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : General Radiated Emission Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437 MHz)
 Test Date : 2016/11/18

Frequency	Correct	Reading	Measurement	Margin	Limit
MHz	Factor	Level	Level		
	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
247.899	-11.942	52.849	40.907	-5.093	46.000
287.261	-10.562	53.616	43.054	-2.946	46.000
332.246	-9.404	52.593	43.189	-2.811	46.000
465.797	-6.371	43.677	37.306	-8.694	46.000
554.362	-4.819	43.334	38.515	-7.485	46.000
730.087	-1.826	43.093	41.267	-4.733	46.000
Vertical					
70.768	-13.712	51.228	37.516	-2.484	40.000
287.261	-10.562	46.616	36.054	-9.946	46.000
319.594	-9.709	48.698	38.989	-7.011	46.000
554.362	-4.819	43.402	38.583	-7.417	46.000
599.348	-3.645	43.946	40.302	-5.698	46.000
745.551	-1.526	39.636	38.109	-7.891	46.000

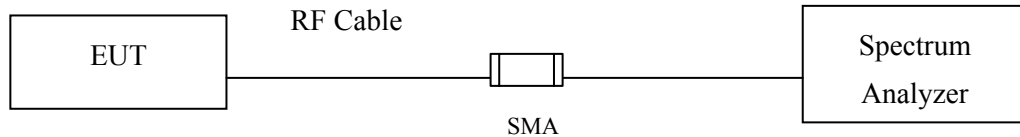
Note:

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.

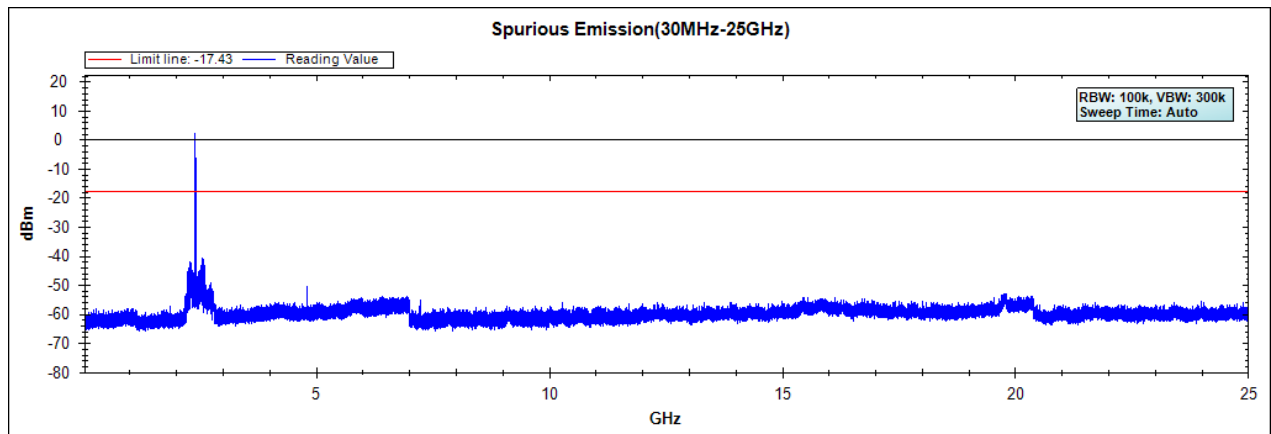
5.4. Uncertainty

$\pm 1.23\text{dB}$

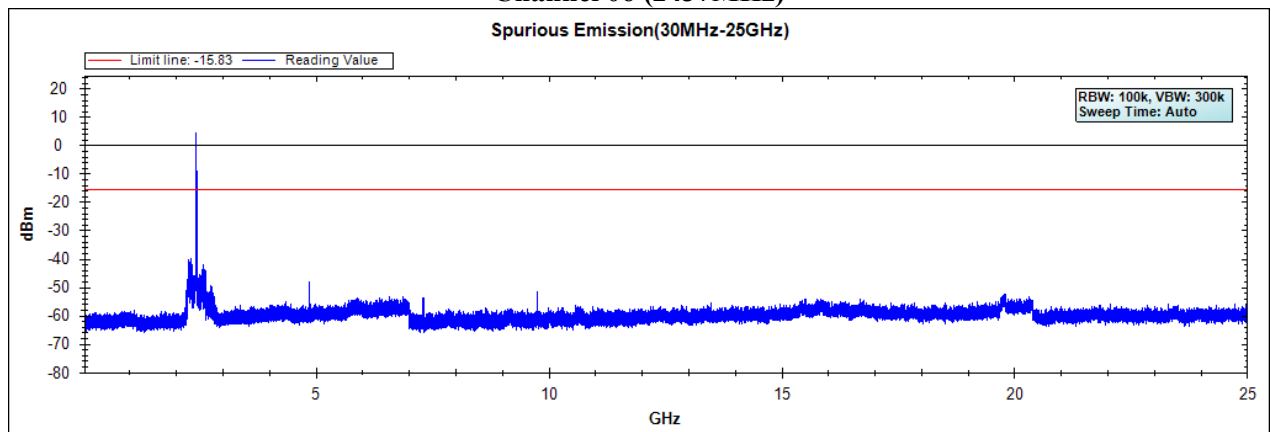
5.5. Test Result of RF antenna conducted test

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
Test Item : RF antenna conducted test
Test Mode : Mode 1: Transmit (802.11b 1Mbps)
Test Date : 2016/11/22

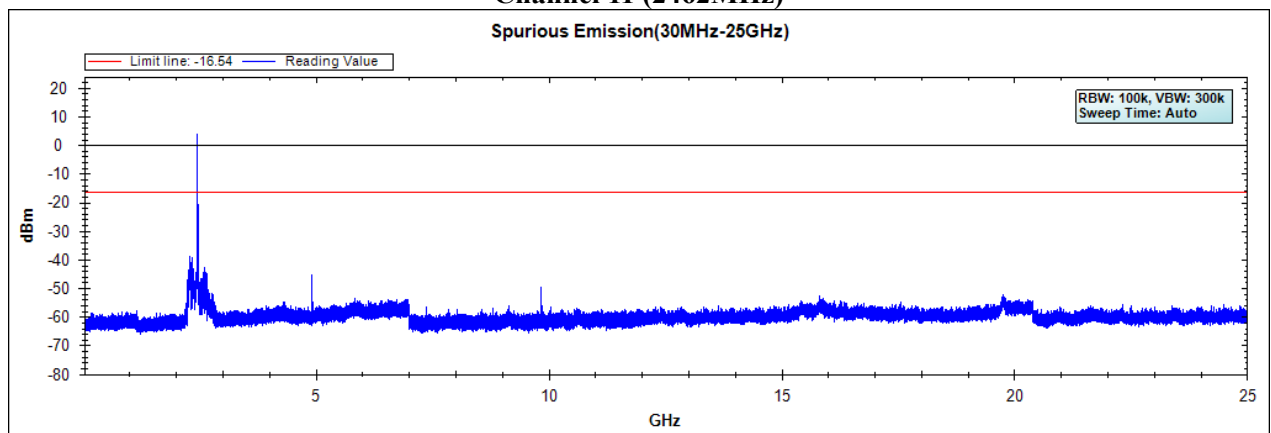
Channel 01 (2412MHz)



Channel 06 (2437MHz)



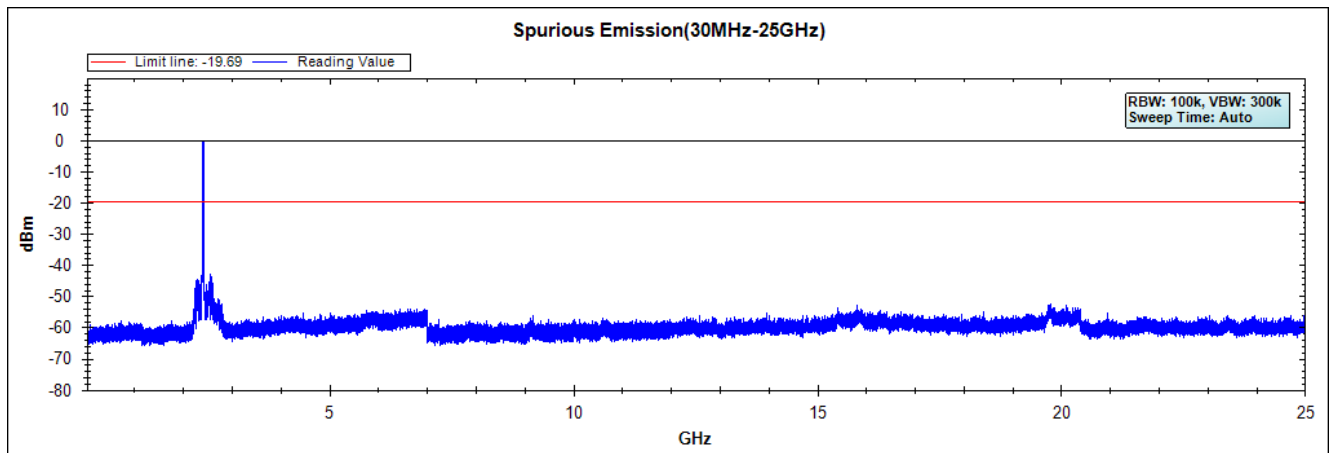
Channel 11 (2462MHz)



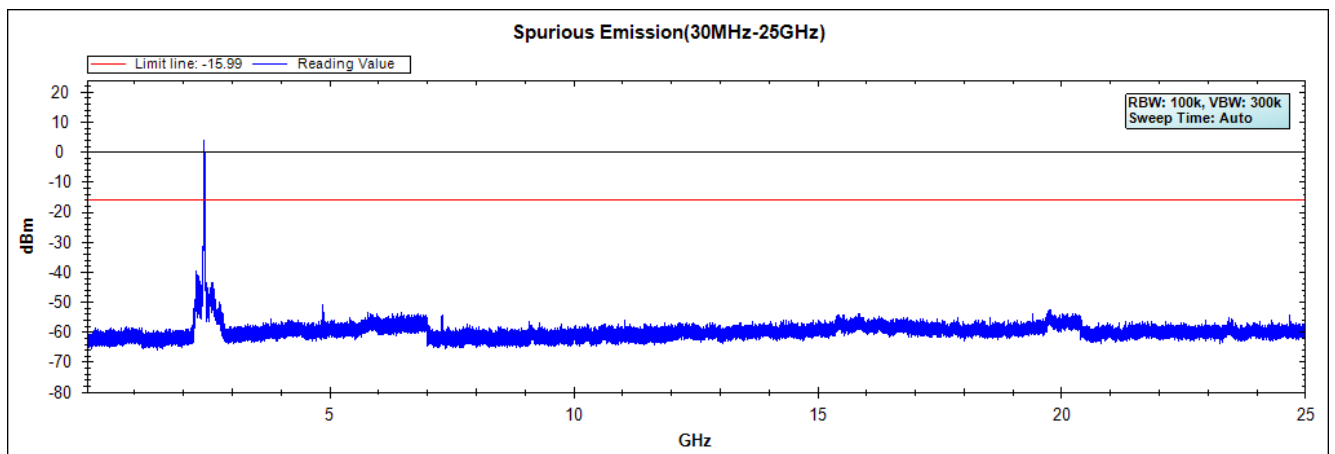
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
Test Item : RF Antenna Conducted Spurious
Test Mode : Mode 2: Transmit (802.11g 6Mbps)
Test Date : 2016/11/22

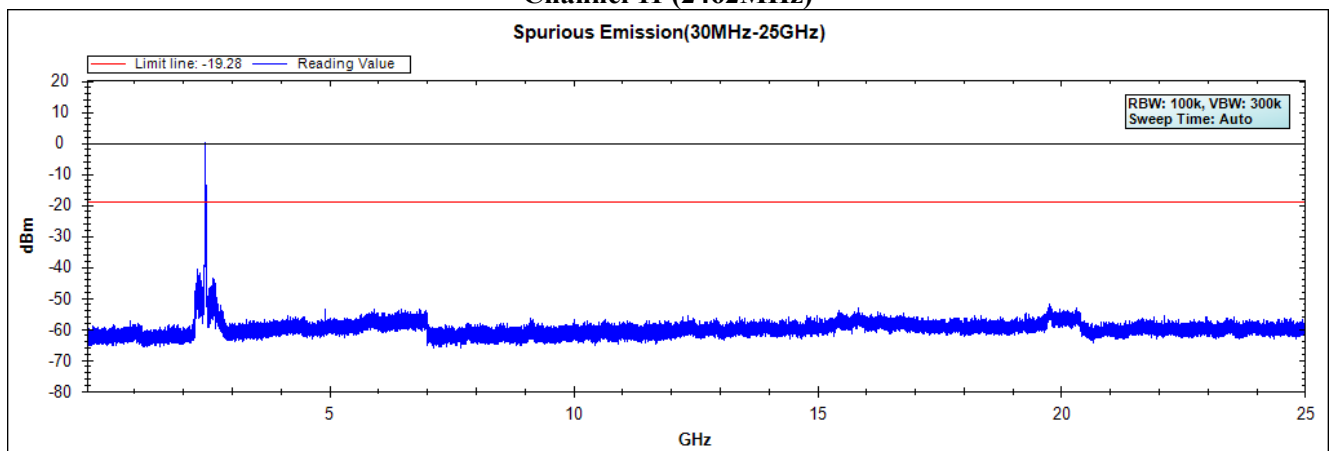
Channel 01 (2412MHz)



Channel 06 (2437MHz)



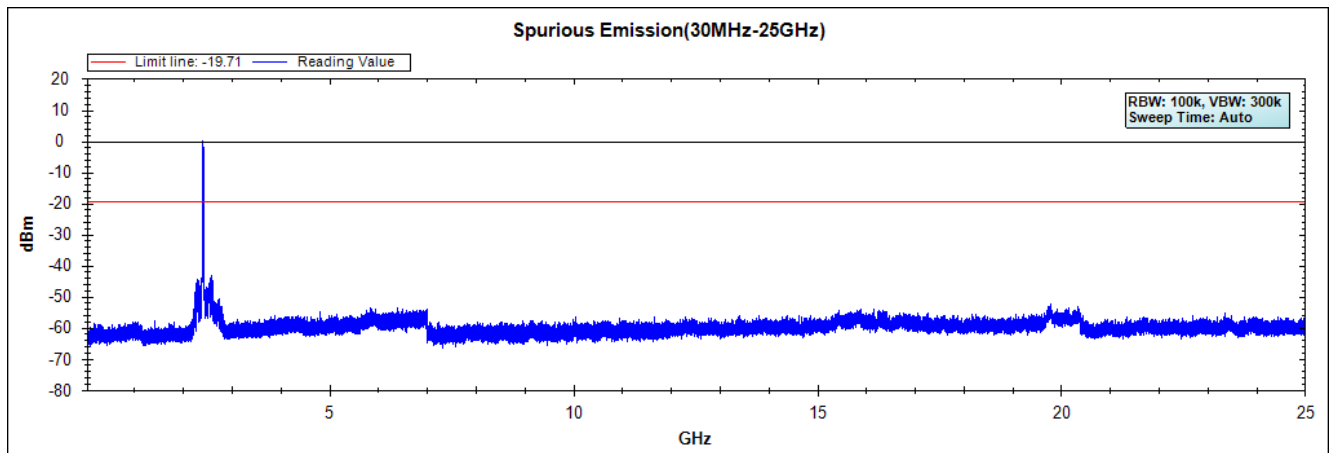
Channel 11 (2462MHz)



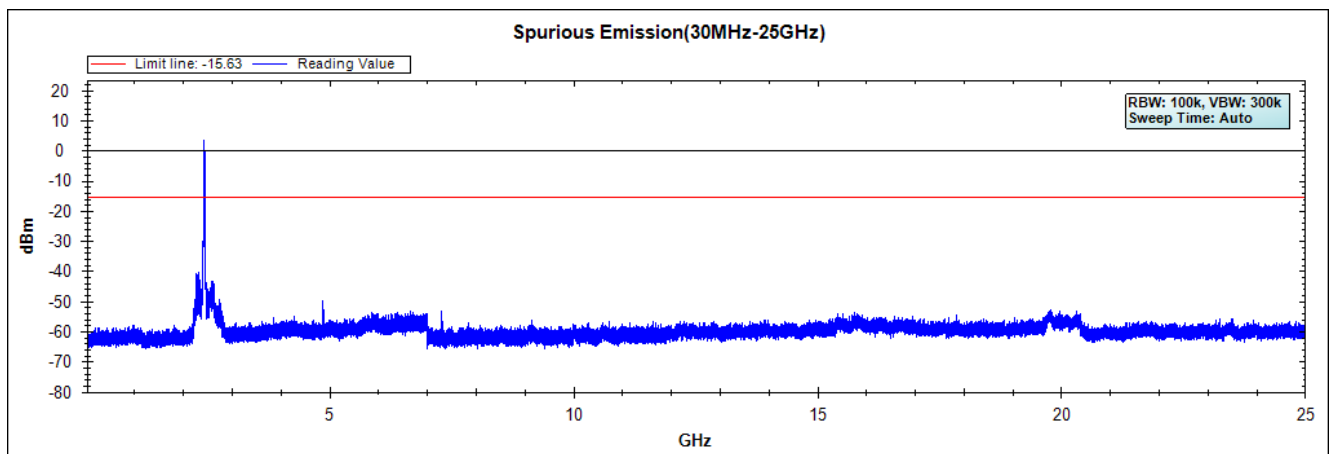
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
Test Item : RF Antenna Conducted Spurious
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
Test Date : 2016/11/22

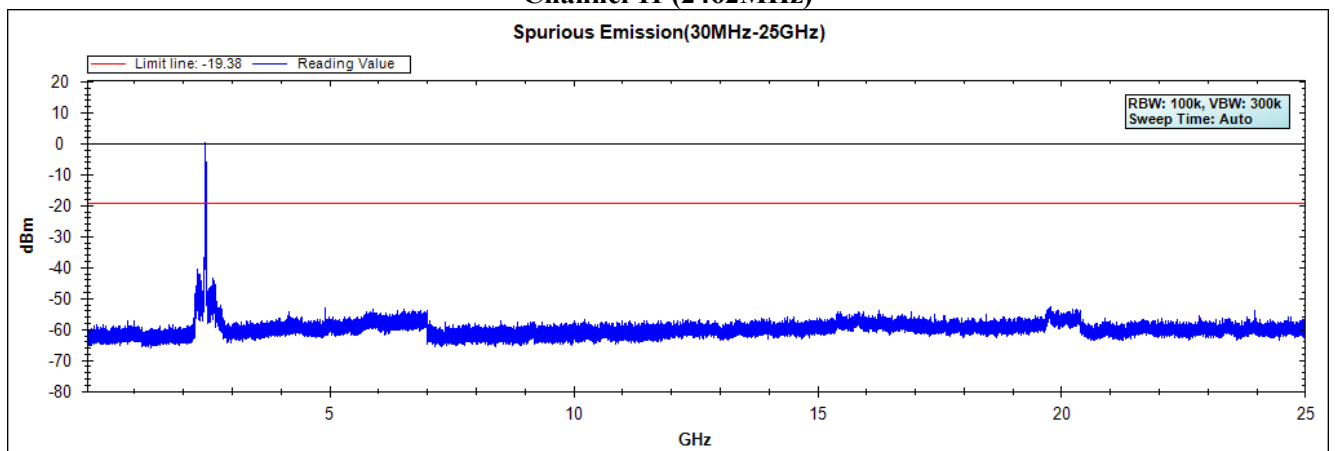
Channel 01 (2412MHz)



Channel 06 (2437MHz)



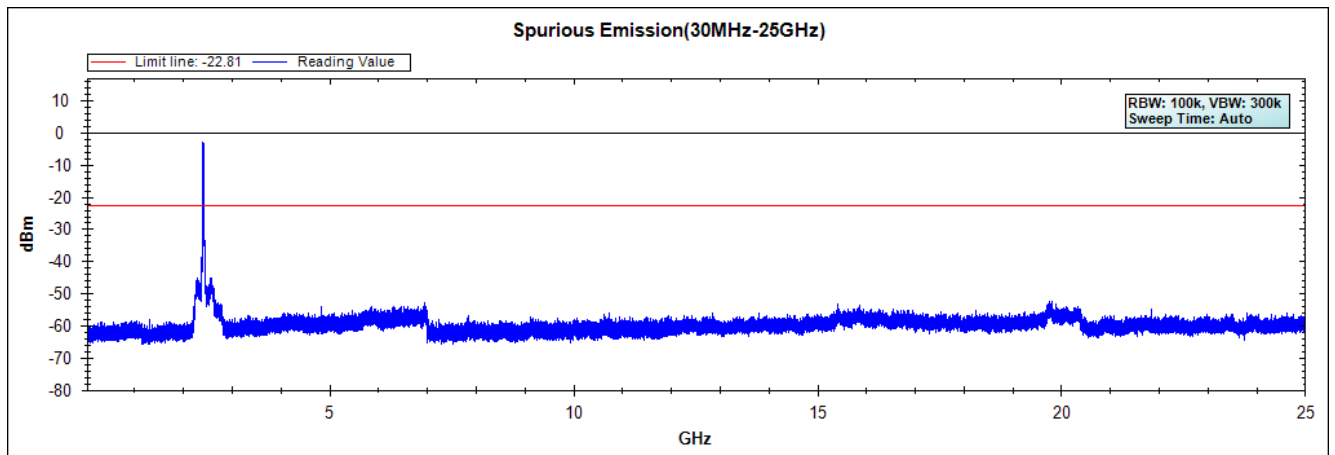
Channel 11 (2462MHz)



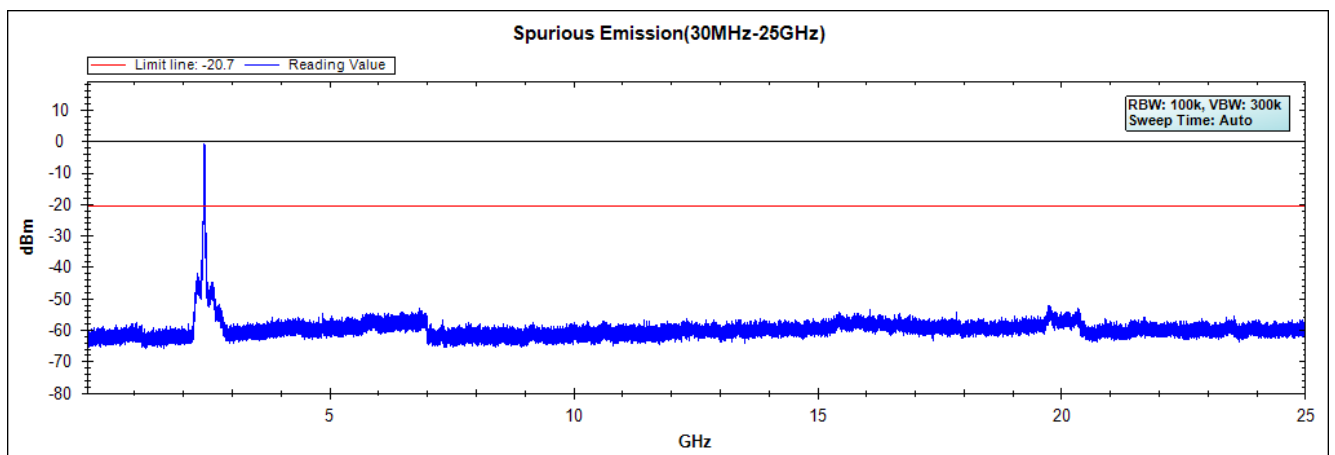
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
Test Item : RF Antenna Conducted Spurious
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)
Test Date : 2016/11/22

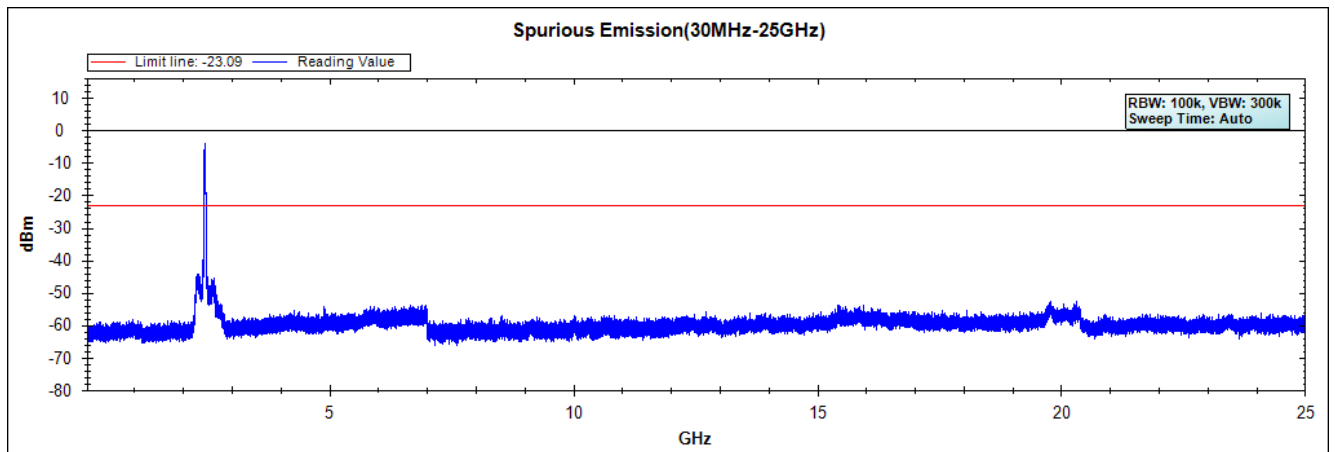
Channel 01 (2422MHz)



Channel 04 (2437MHz)



Channel 07 (2452MHz)

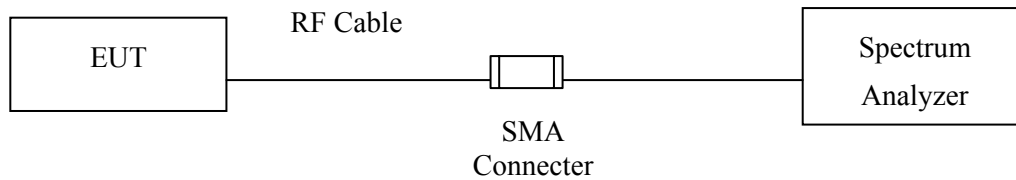


Note: The above test pattern is synthesized by multiple of the frequency range.

6. Band Edge

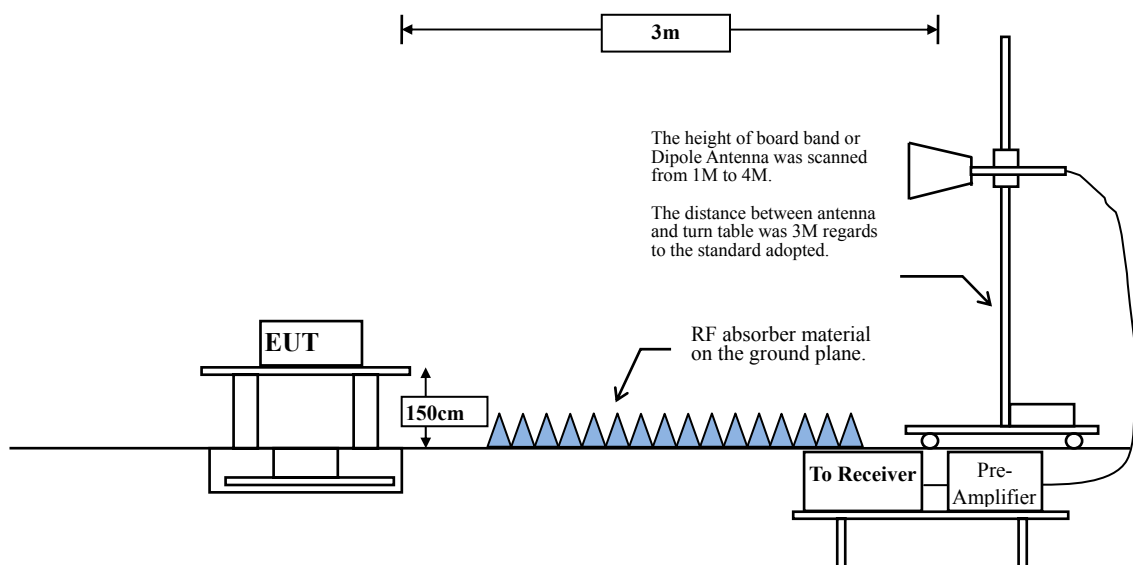
6.1. Test Setup

RF Conducted Measurement



RF Radiated Measurement:

Above 1GHz



6.2. Limits

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

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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
 Test Date : 2016/11/21

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)	2370.725	11.497	40.777	52.274	74.00	54.00	Pass
01 (Peak)	2390.000	11.556	36.624	48.180	74.00	54.00	Pass
01 (Peak)	2397.101	11.573	44.212	55.784	74.00	54.00	Pass
01 (Peak)	2400.000	11.579	40.351	51.930	--	--	--
01 (Peak)	2413.043	11.610	81.398	93.008	--	--	--
01 (Average)	2340.145	11.409	30.458	41.867	74.00	54.00	Pass
01 (Average)	2390.000	11.556	24.470	36.026	74.00	54.00	Pass
01 (Average)	2397.101	11.573	36.952	48.524	74.00	54.00	Pass
01 (Average)	2400.000	11.579	30.009	41.588	--	--	--
01 (Average)	2411.304	11.605	78.061	89.667	--	--	--

Figure Channel 01:

Horizontal (Peak)

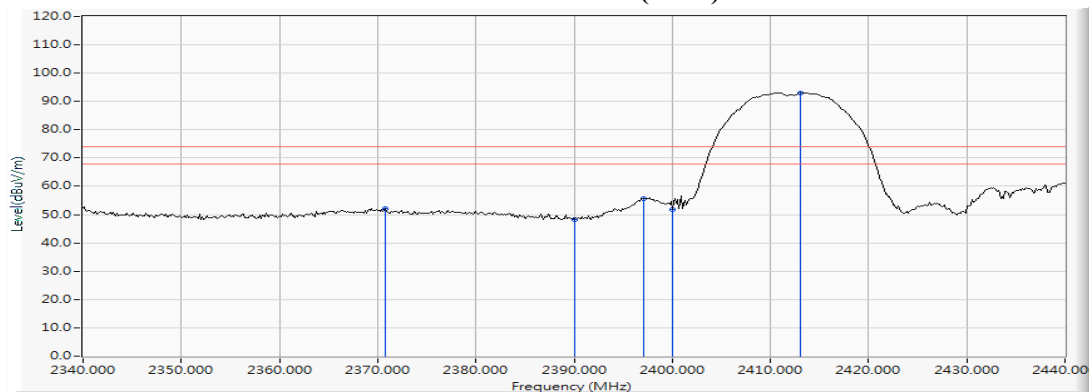
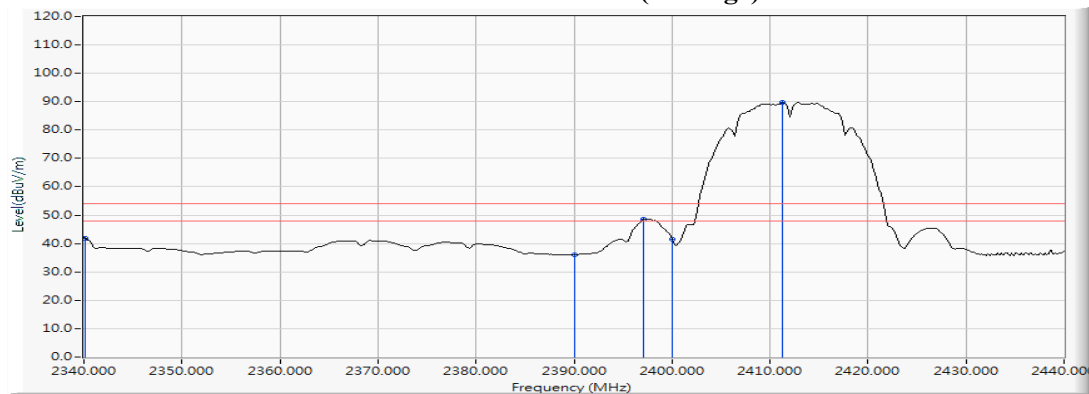


Figure Channel 01:

Horizontal (Average)

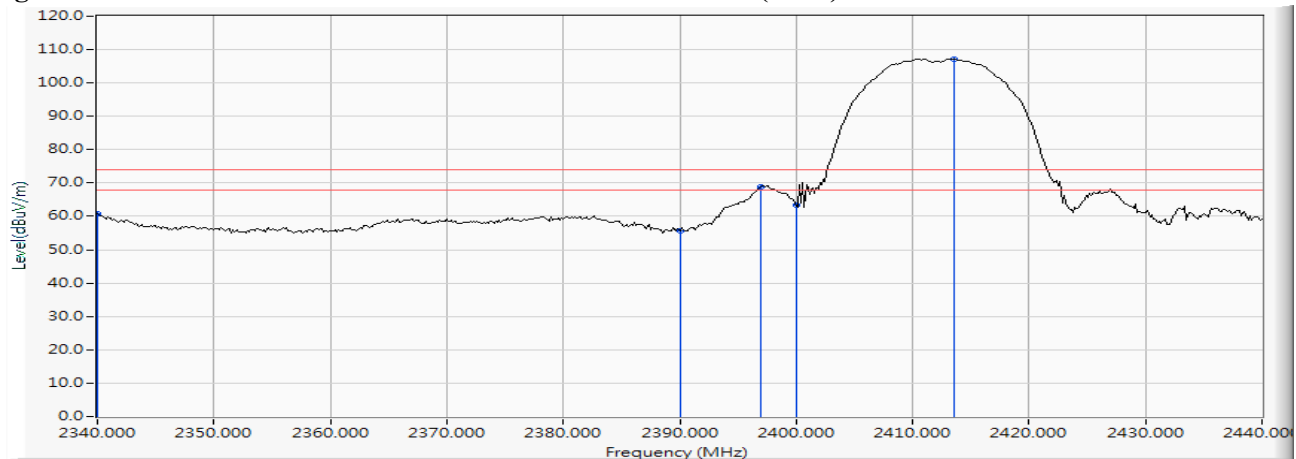
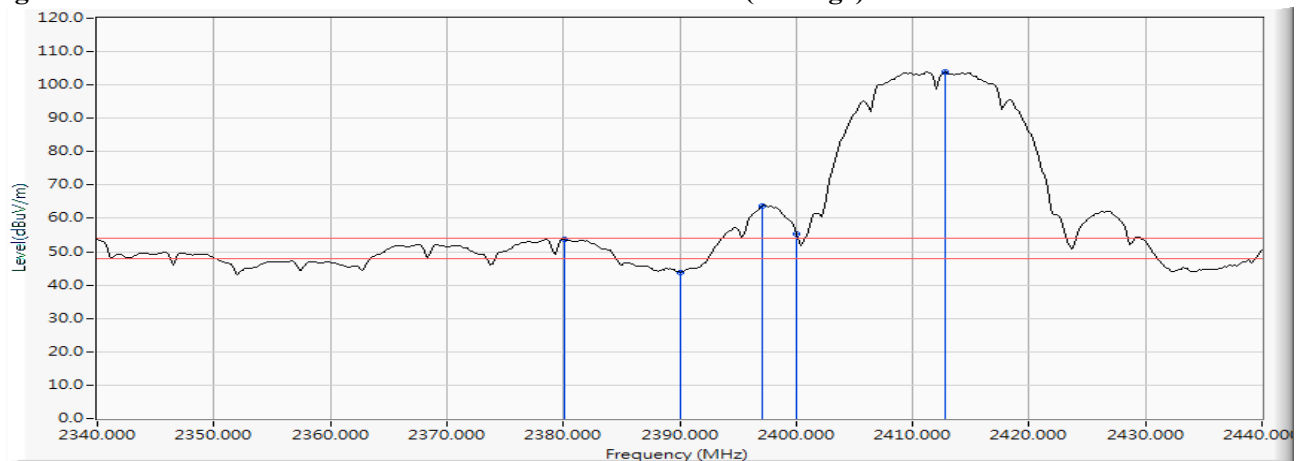


- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
 4. “ * ”, means this data is the worst emission level.
 5. Measurement Level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

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)
 Test Date : 2016/11/21

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)	2340.000	11.409	49.506	60.914	74.00	54.00	Pass
01 (Peak)	2390.000	11.556	44.094	55.650	74.00	54.00	Pass
01 (Peak)	2396.957	11.572	57.371	68.943	74.00	54.00	Pass
01 (Peak)	2400.000	11.579	51.647	63.226	--	--	--
01 (Peak)	2413.623	11.612	95.508	107.120	--	--	--
01 (Average)	2380.145	11.529	42.229	53.759	74.00	54.00	Pass
01 (Average)	2390.000	11.556	32.132	43.688	74.00	54.00	Pass
01 (Average)	2397.101	11.573	52.195	63.767	74.00	54.00	Pass
01 (Average)	2400.000	11.579	43.874	55.453	--	--	--
01 (Average)	2412.754	11.609	92.236	103.846	--	--	--

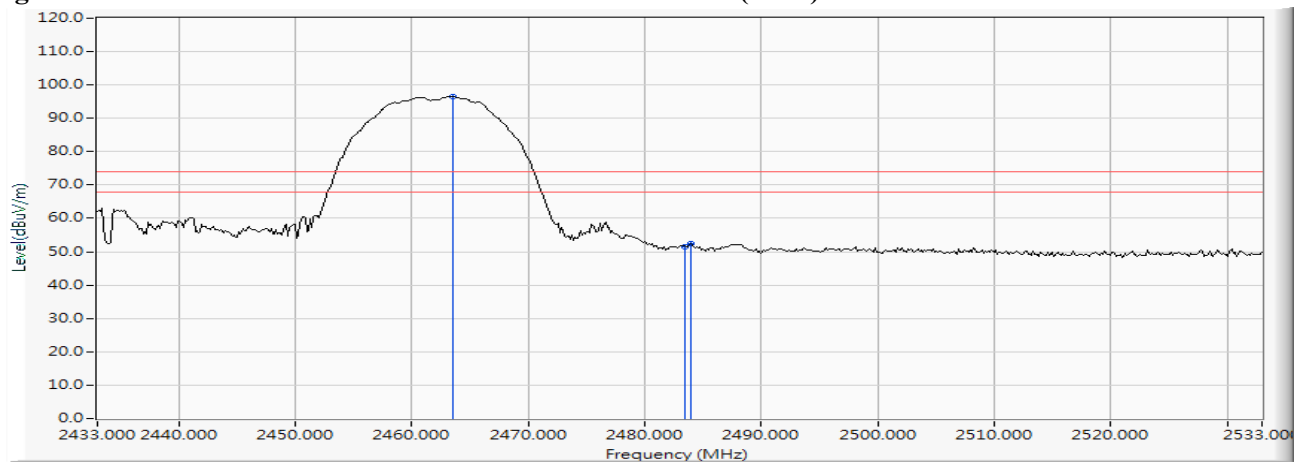
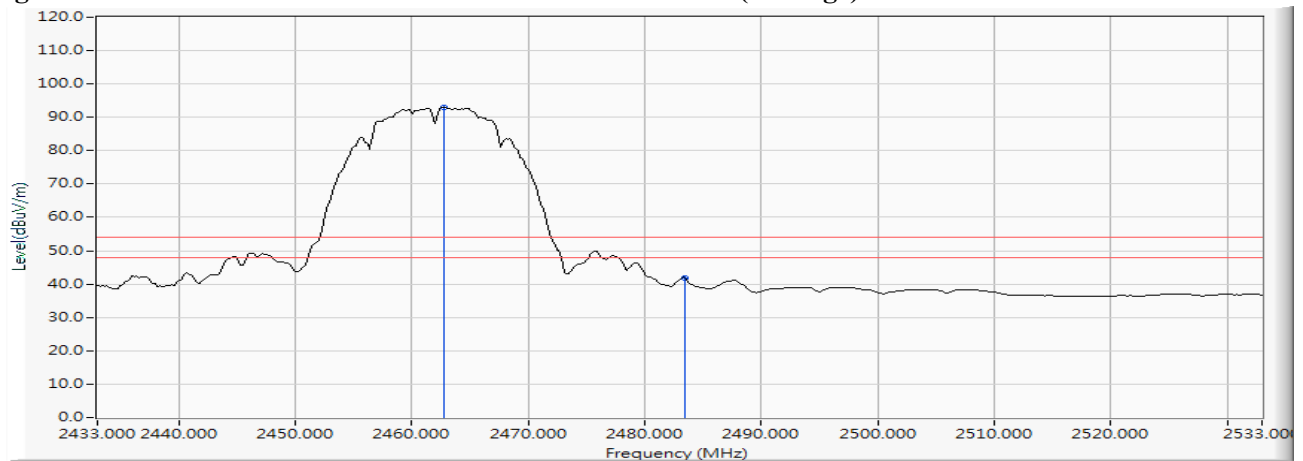
Figure Channel 01:**VERTICAL (Peak)****Figure Channel 01:****VERTICAL (Average)**

- 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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)
 Test Date : 2016/11/21

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)	2463.580	11.747	84.729	96.477	--	--	--
11 (Peak)	2483.500	11.800	39.821	51.621	74.00	54.00	Pass
11 (Peak)	2484.014	11.801	40.692	52.493	74.00	54.00	Pass
11 (Average)	2462.710	11.745	81.322	93.067	--	--	--
11 (Average)	2483.500	11.800	29.889	41.689	74.00	54.00	Pass

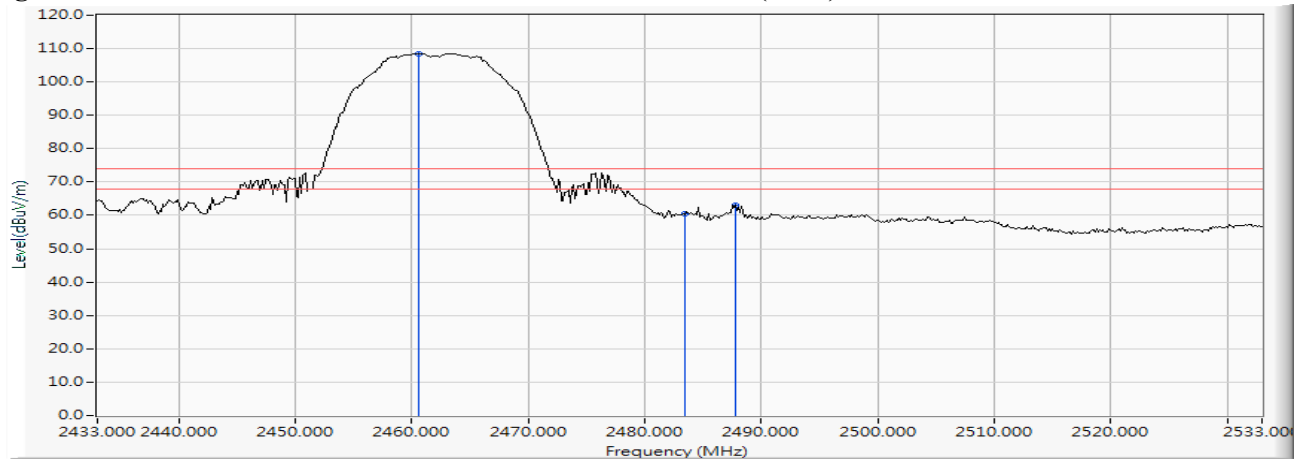
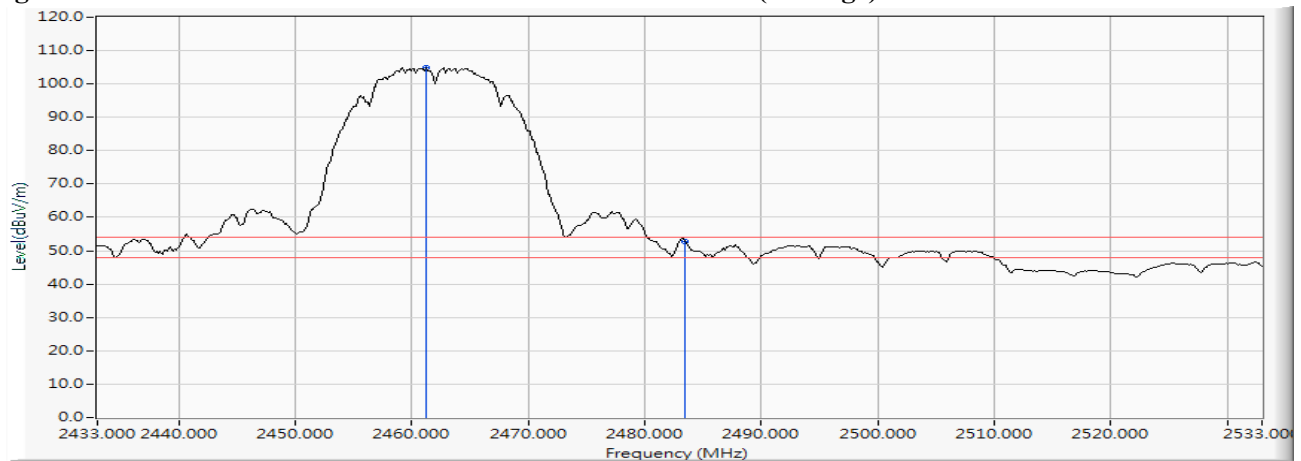
Figure Channel 11: Horizontal (Peak)

Figure Channel 11: Horizontal (Average)


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

Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)
 Test Date : 2016/11/21

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)	2460.536	11.739	96.817	108.555	--	--	--
11 (Peak)	2483.500	11.800	48.840	60.640	74.00	54.00	Pass
11 (Peak)	2487.783	11.810	51.302	63.112	74.00	54.00	Pass
11 (Average)	2461.261	11.741	93.114	104.855	--	--	--
11 (Average)	2483.500	11.800	40.995	52.795	74.00	54.00	Pass

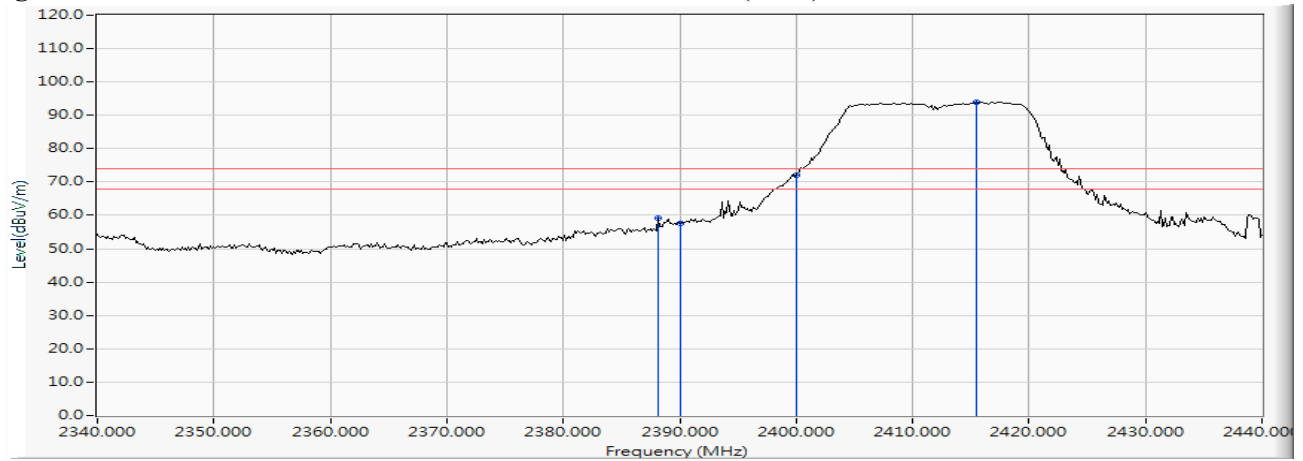
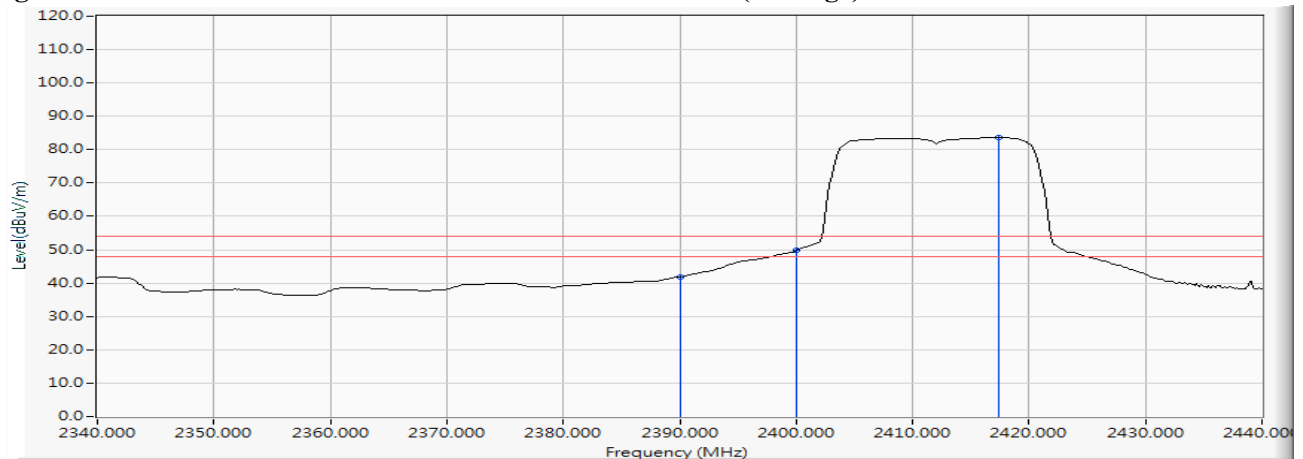
Figure Channel 11:**VERTICAL (Peak)****Figure Channel 11:****VERTICAL (Average)**

- 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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
 Test Date : 2016/11/21

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)	2388.116	11.552	47.523	59.074	74.00	54.00	Pass
01 (Peak)	2390.000	11.556	45.979	57.535	74.00	54.00	Pass
01 (Peak)	2400.000	11.579	60.338	71.917	--	--	--
01 (Peak)	2415.507	11.616	82.354	93.970	--	--	--
01 (Average)	2390.000	11.556	30.321	41.877	74.00	54.00	Pass
01 (Average)	2400.000	11.579	38.180	49.759	--	--	--
01 (Average)	2417.391	11.621	72.105	83.726	--	--	--

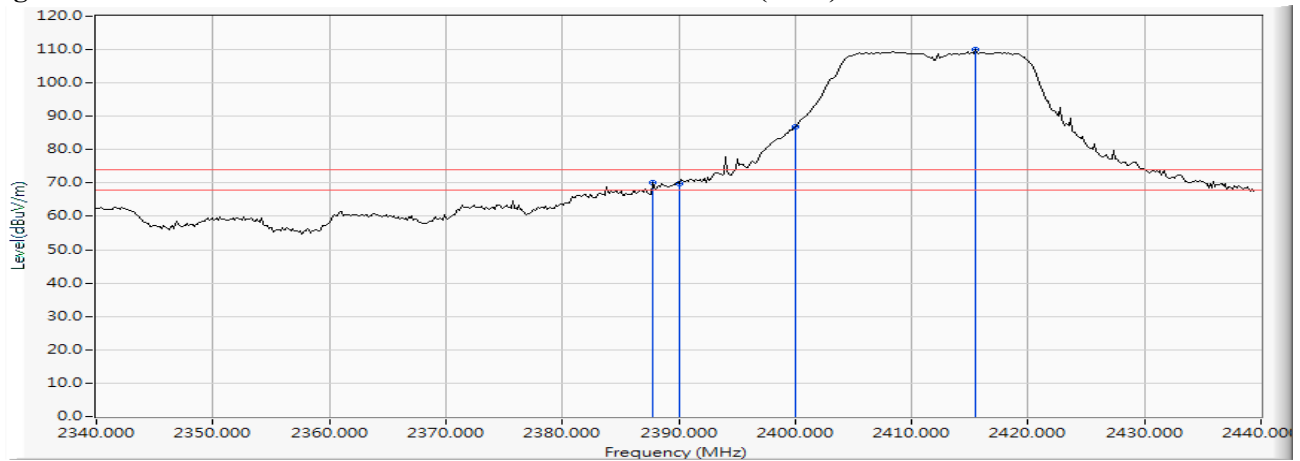
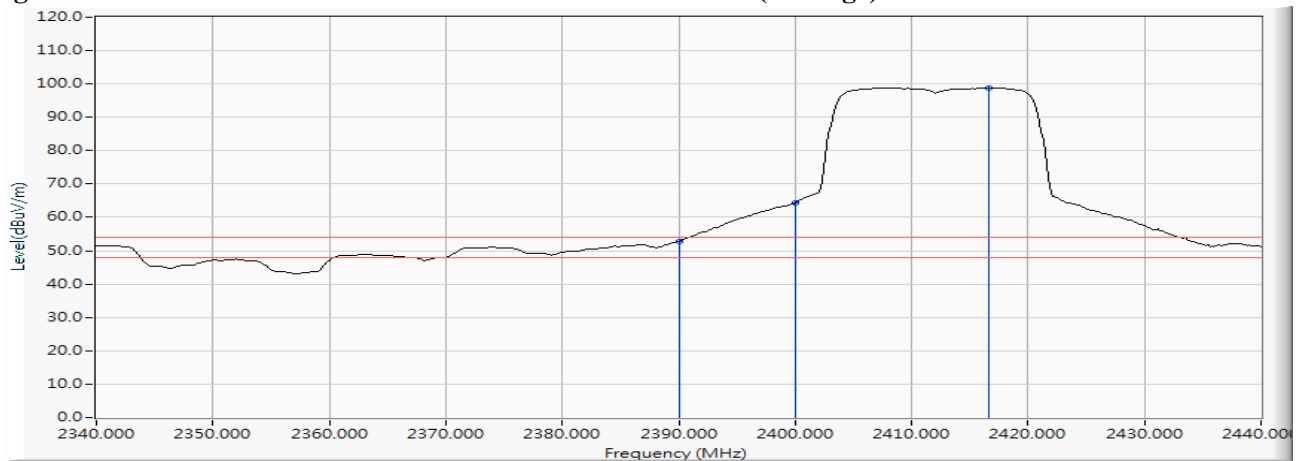
Figure Channel 01: Horizontal (Peak)

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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
 Test Date : 2016/11/21

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)	2387.826	11.550	58.548	70.098	74.00	54.00	Pass
01 (Peak)	2390.000	11.556	58.372	69.928	74.00	54.00	Pass
01 (Peak)	2400.000	11.579	75.160	86.739	--	--	--
01 (Peak)	2415.507	11.616	98.535	110.151	--	--	--
01 (Average)	2390.000	11.556	41.301	52.857	74.00	54.00	Pass
01 (Average)	2400.000	11.579	52.775	64.354	--	--	--
01 (Average)	2416.667	11.618	87.166	98.785	--	--	--

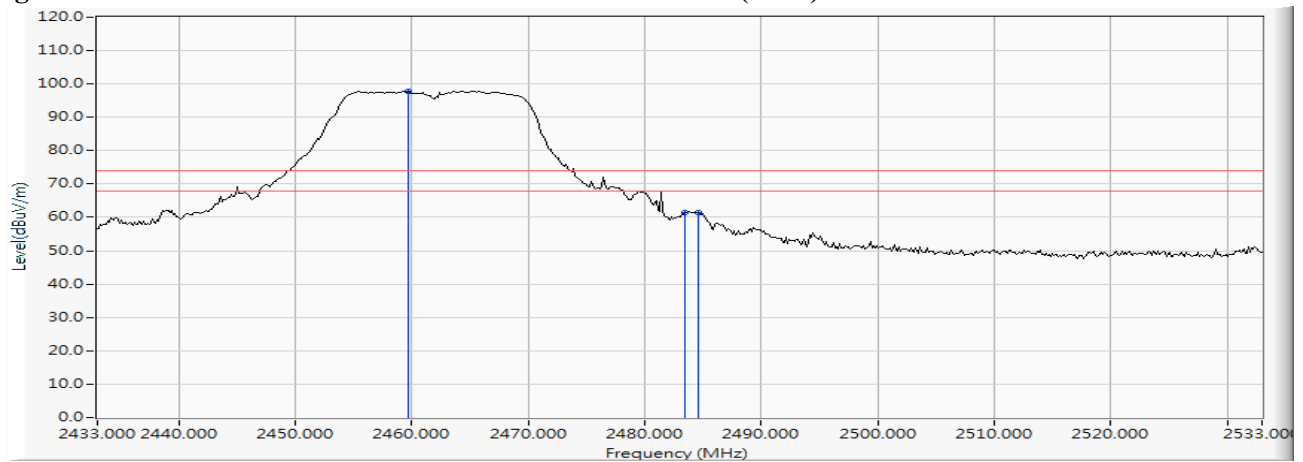
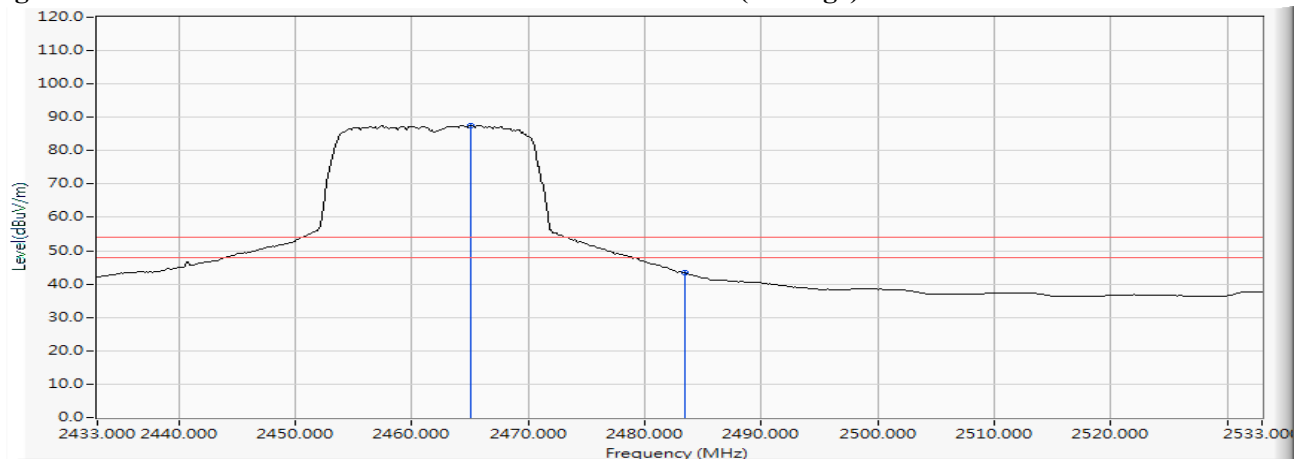
Figure Channel 01:
VERTICAL (Peak)

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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)
 Test Date : 2016/11/21

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)	2459.667	11.736	86.180	97.916	--	--	--
11 (Peak)	2483.500	11.800	49.557	61.357	74.00	54.00	Pass
11 (Peak)	2484.594	11.803	49.574	61.376	74.00	54.00	Pass
11 (Average)	2465.029	11.752	75.805	87.557	--	--	--
11 (Average)	2483.500	11.800	31.477	43.277	74.00	54.00	Pass

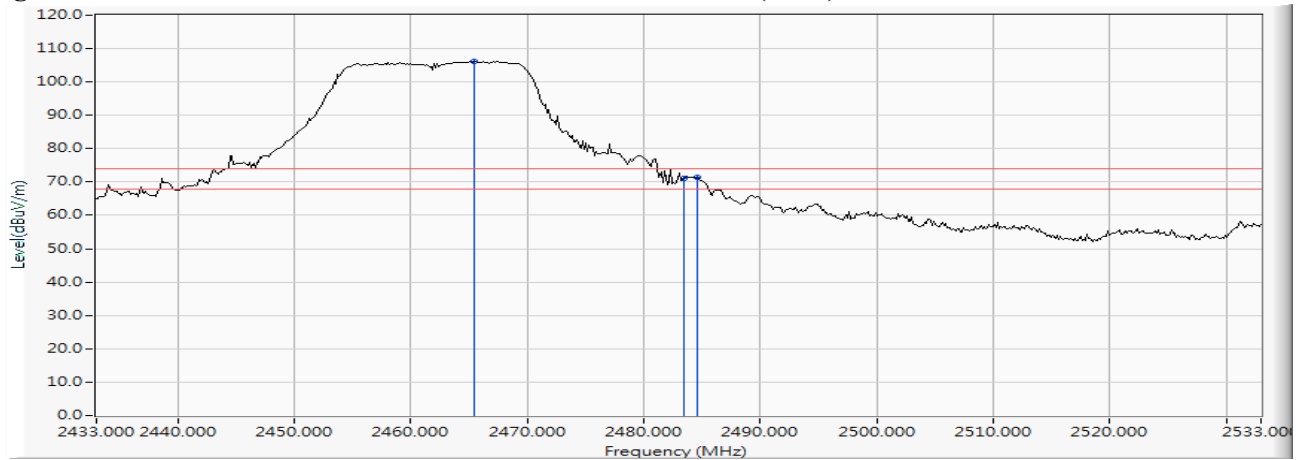
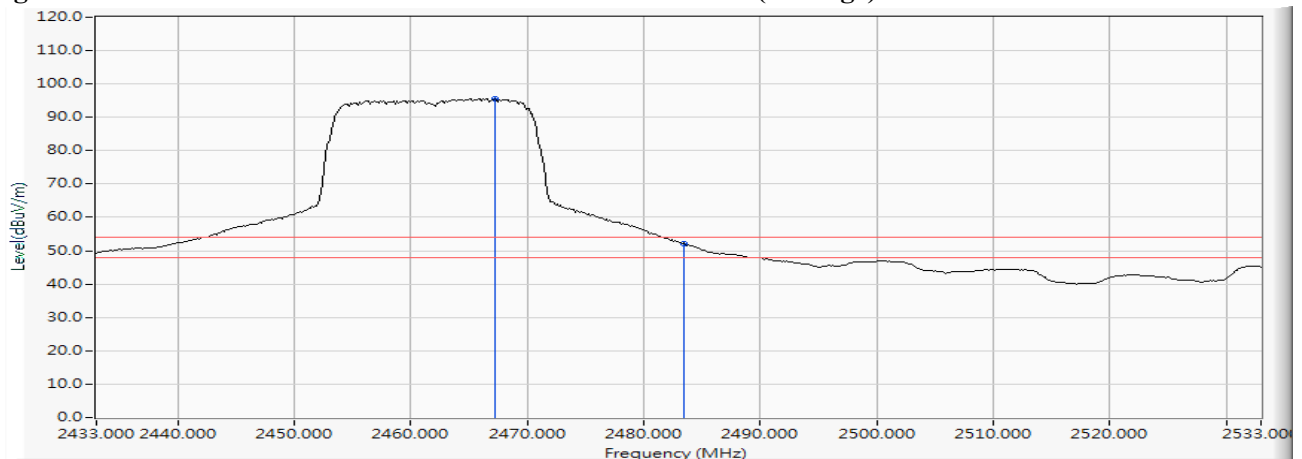
Figure Channel 11: Horizontal (Peak)

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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)
 Test Date : 2016/11/21

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)	2465.464	11.753	94.511	106.264	--	--	--
11 (Peak)	2483.500	11.800	59.352	71.152	74.00	54.00	Pass
11 (Peak)	2484.594	11.803	59.509	71.311	74.00	54.00	Pass
11 (Average)	2467.203	11.758	83.720	95.478	--	--	--
11 (Average)	2483.500	11.800	40.346	52.146	74.00	54.00	Pass

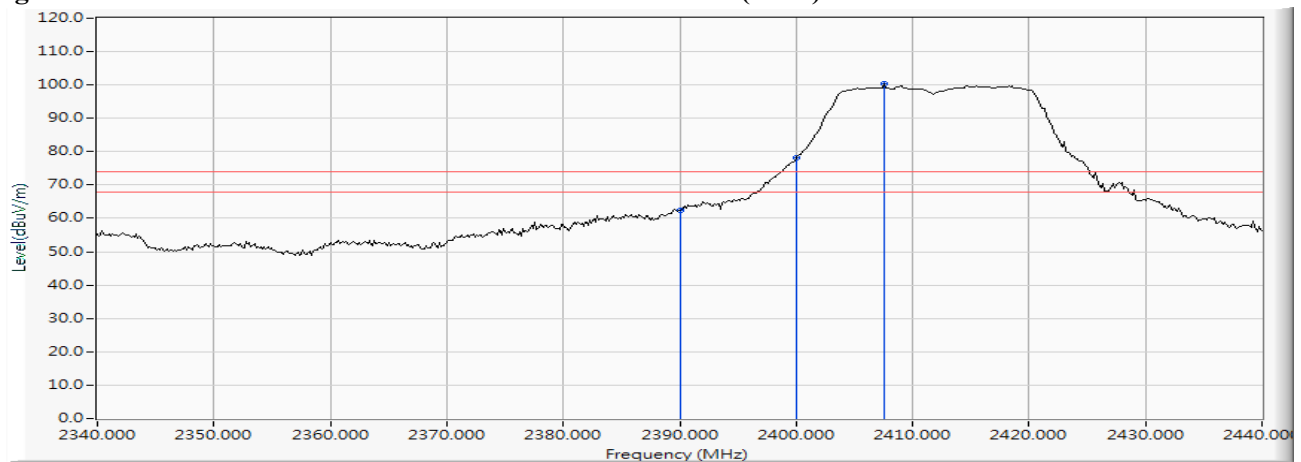
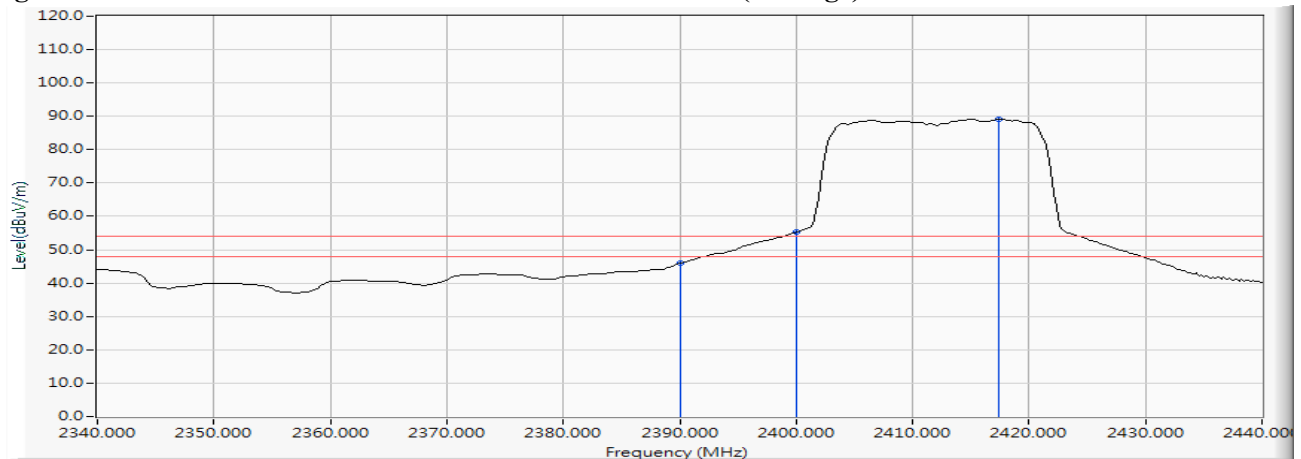
Figure Channel 11:**VERTICAL (Peak)****Figure Channel 11:****VERTICAL (Average)**

- 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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
 Test Date : 2016/11/21

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)	2390.000	11.556	50.708	62.264	74.00	54.00	Pass
01 (Peak)	2400.000	11.579	66.668	78.247	--	--	--
01 (Peak)	2407.536	11.596	88.701	100.298	--	--	--
01 (Average)	2390.000	11.556	34.311	45.867	74.00	54.00	Pass
01 (Average)	2400.000	11.579	43.598	55.177	--	--	--
01 (Average)	2417.391	11.621	77.544	89.165	--	--	--

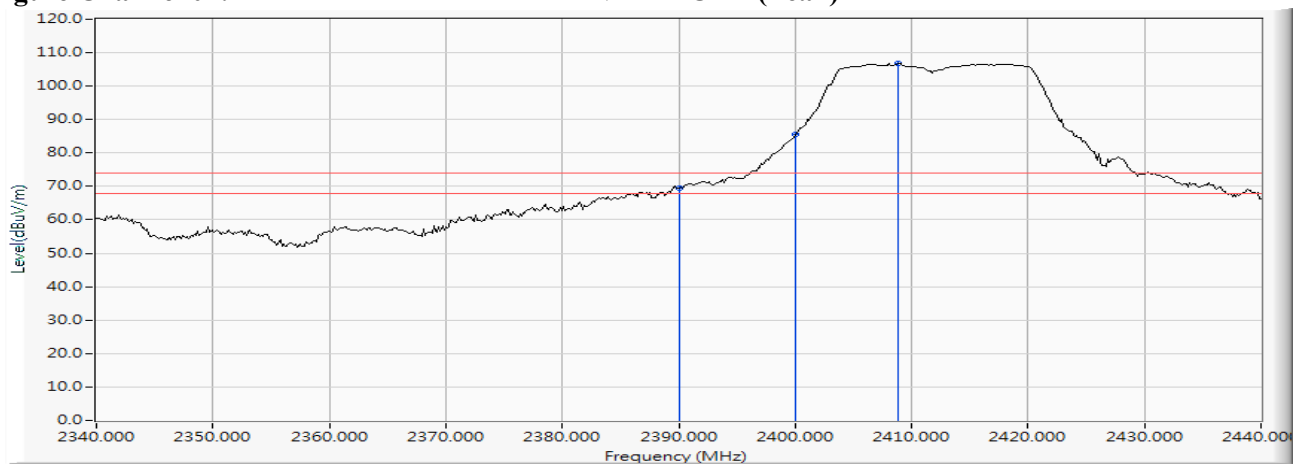
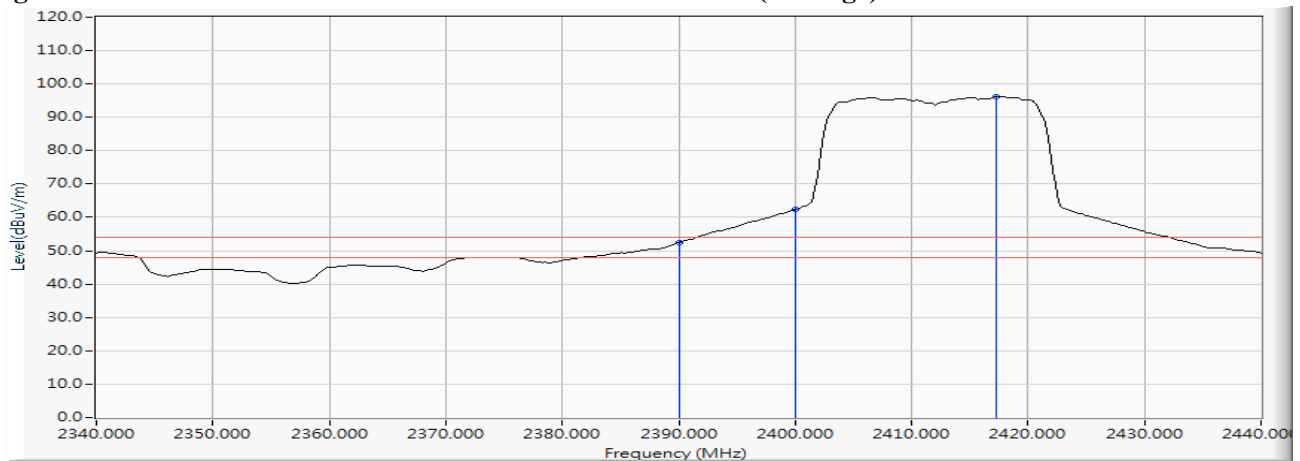
Figure Channel 01:**Horizontal (Peak)****Figure Channel 01:****Horizontal (Average)**

- 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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)
 Test Date : 2016/11/21

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)	2390.000	11.556	58.068	69.624	74.00	54.00	Pass
01 (Peak)	2400.000	11.579	73.998	85.577	--	--	--
01 (Peak)	2408.841	11.600	95.137	106.737	--	--	--
01 (Average)	2390.000	11.556	40.959	52.515	74.00	54.00	Pass
01 (Average)	2400.000	11.579	50.760	62.339	--	--	--
01 (Average)	2417.246	11.621	84.566	96.186	--	--	--

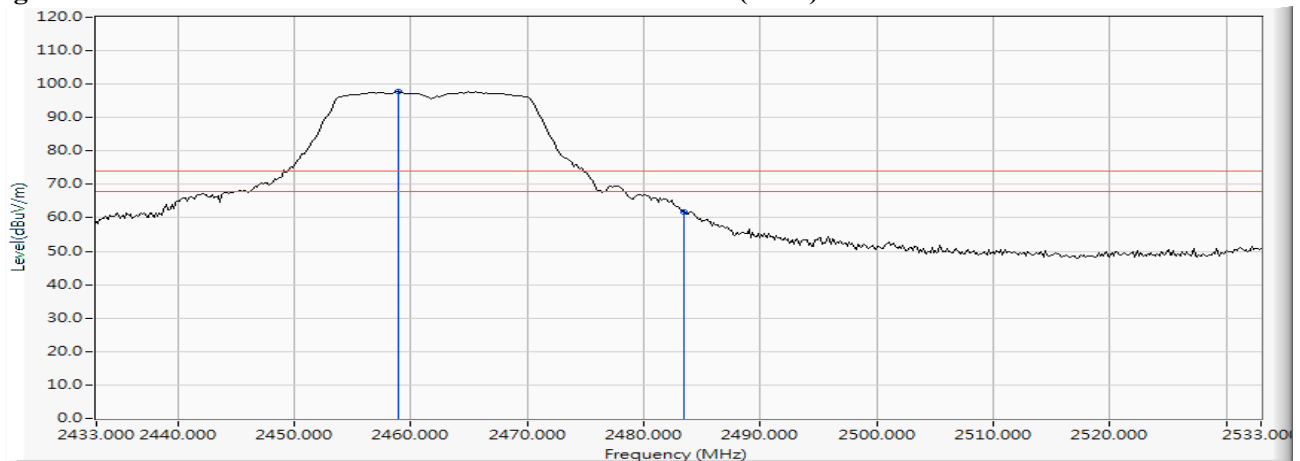
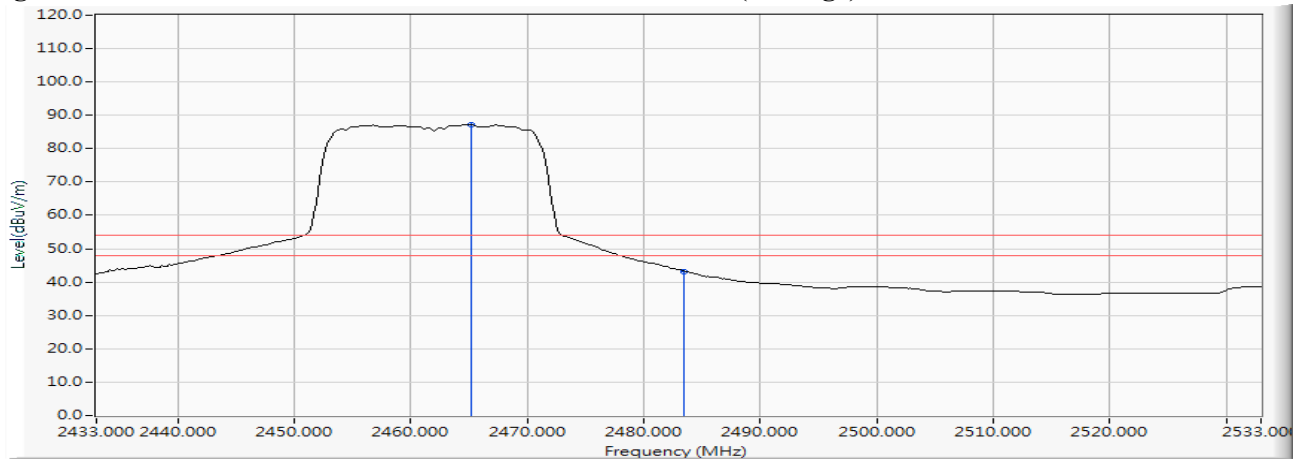
Figure Channel 01:**VERTICAL (Peak)****Figure Channel 01:****VERTICAL (Average)**

- 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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)
 Test Date : 2016/11/21

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)	2458.942	11.734	86.180	97.914	--	--	--
11 (Peak)	2483.500	11.800	50.096	61.896	74.00	54.00	Pass
11 (Average)	2465.174	11.753	75.405	87.157	--	--	--
11 (Average)	2483.500	11.800	31.465	43.265	74.00	54.00	Pass

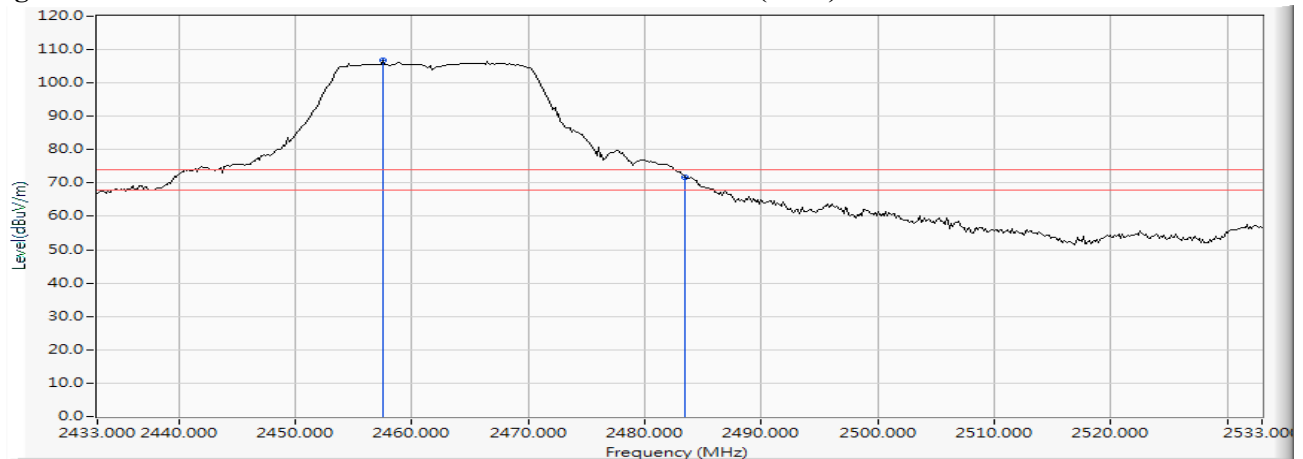
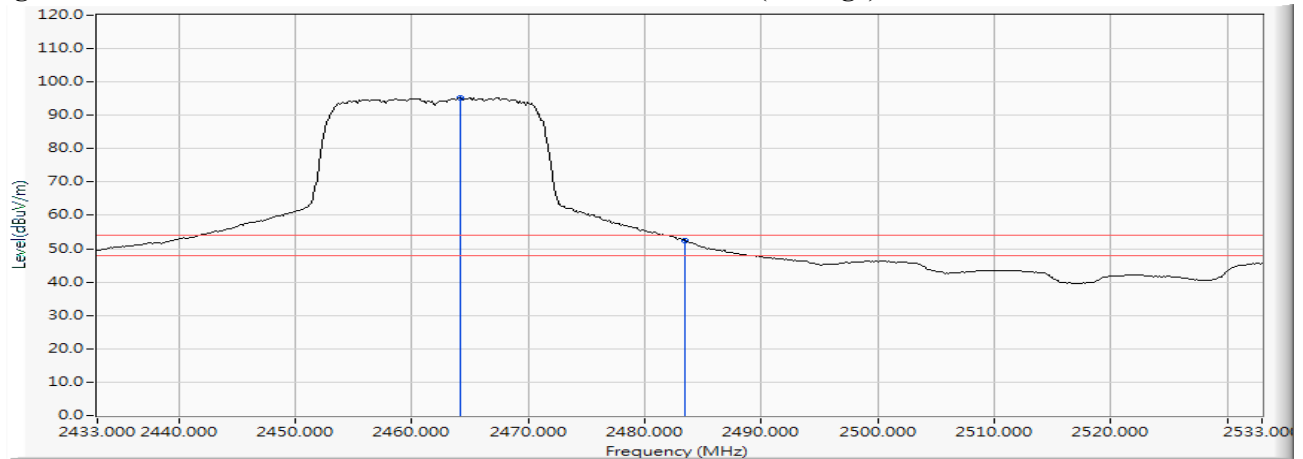
Figure Channel 11:**Horizontal (Peak)****Figure Channel 11:****Horizontal (Average)**

- 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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)
 Test Date : 2016/11/21

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)	2457.493	11.729	94.960	106.689	--	--	--
11 (Peak)	2483.500	11.800	59.954	71.754	74.00	54.00	Pass
11 (Average)	2464.159	11.749	83.476	95.225	--	--	--
11 (Average)	2483.500	11.800	40.520	52.320	74.00	54.00	Pass

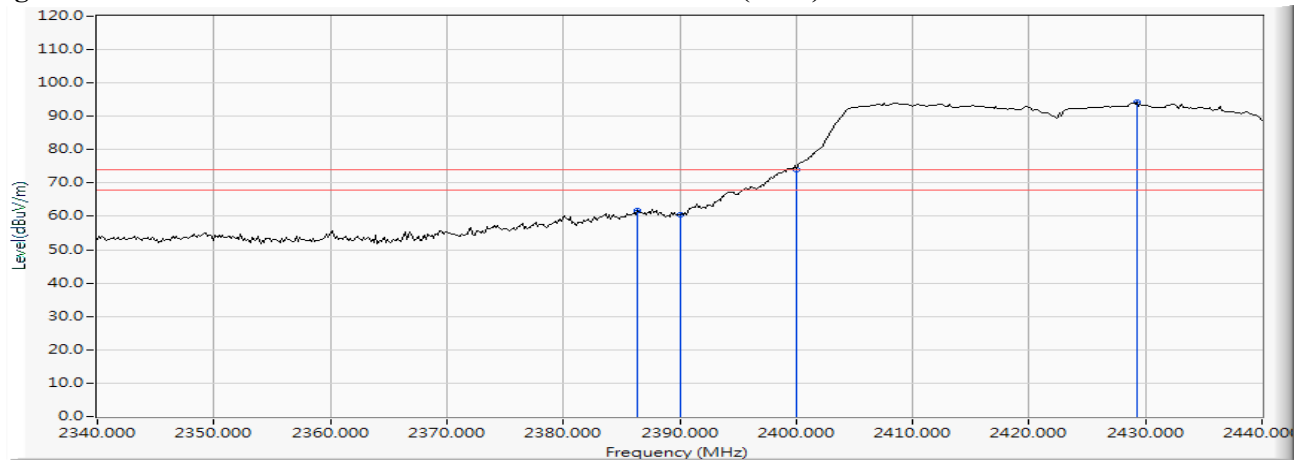
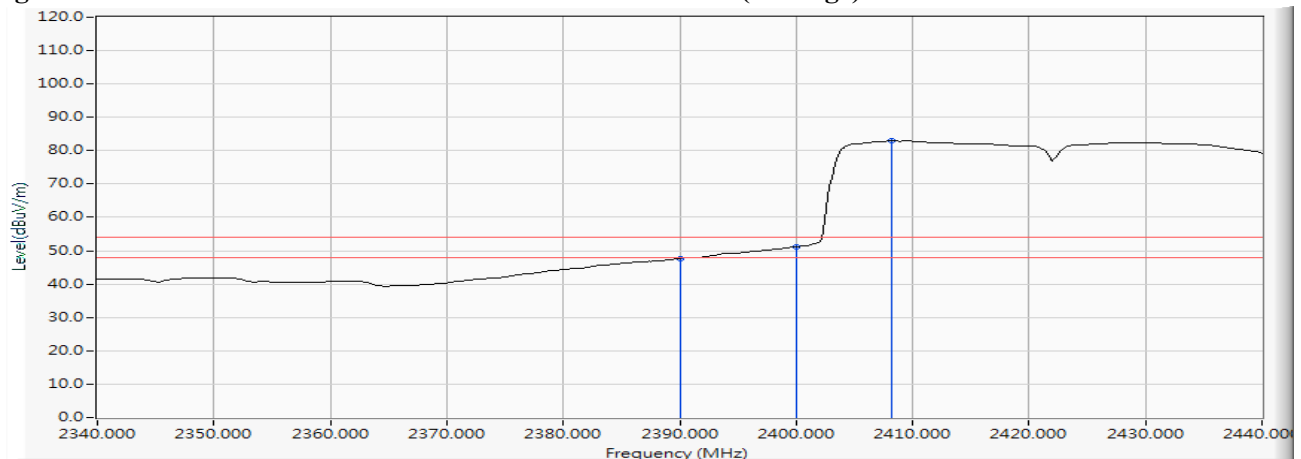
Figure Channel 11: VERTICAL (Peak)**Figure Channel 11: VERTICAL (Average)**

- 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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)
 Test Date : 2016/11/21

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
03 (Peak)	2386.377	11.547	50.208	61.755	74.00	54.00	Pass
03 (Peak)	2390.000	11.556	49.052	60.608	74.00	54.00	Pass
03 (Peak)	2400.000	11.579	62.568	74.147	--	--	--
03 (Peak)	2429.275	11.648	82.526	94.175	--	--	--
03 (Average)	2390.000	11.556	36.195	47.751	74.00	54.00	Pass
03 (Average)	2400.000	11.579	39.567	51.146	--	--	--
03 (Average)	2408.261	11.599	71.352	82.951	--	--	--

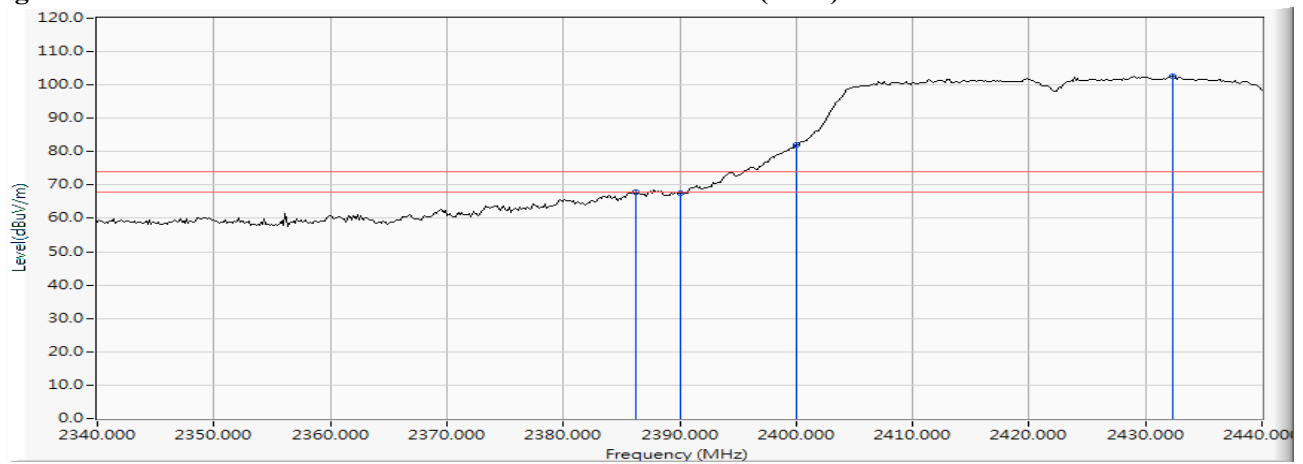
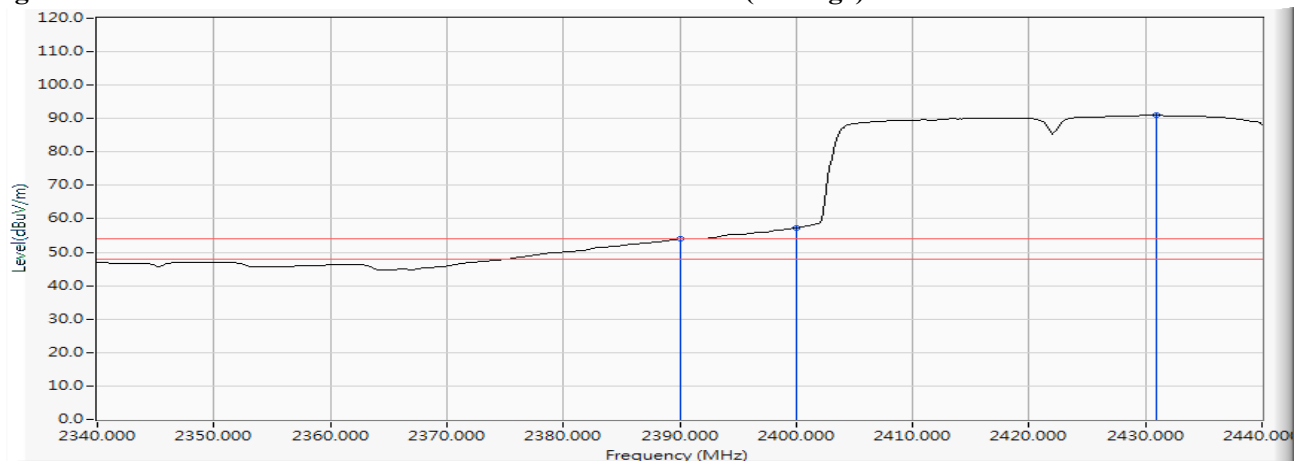
Figure Channel 03:
Horizontal (Peak)

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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)
 Test Date : 2016/11/21

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)	2386.232	11.547	56.393	67.940	74.00	54.00	Pass
03 (Peak)	2390.000	11.556	56.090	67.646	74.00	54.00	Pass
03 (Peak)	2400.000	11.579	70.511	82.090	--	--	--
03 (Peak)	2432.319	11.656	91.080	102.736	--	--	--
03 (Average)	2390.000	11.556	42.401	53.957	74.00	54.00	Pass
03 (Average)	2400.000	11.579	45.786	57.365	--	--	--
03 (Average)	2430.870	11.652	79.318	90.971	--	--	--

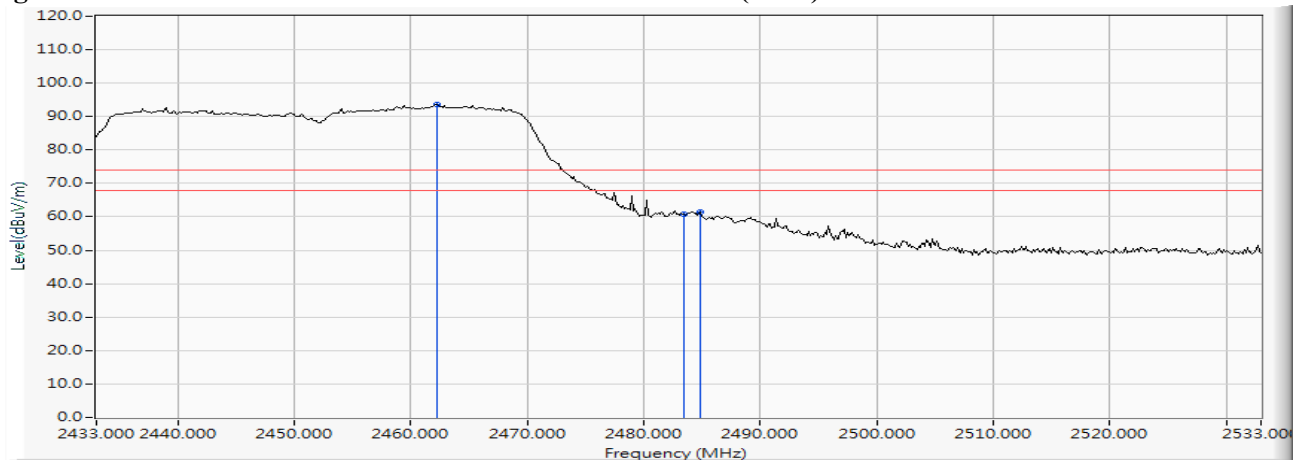
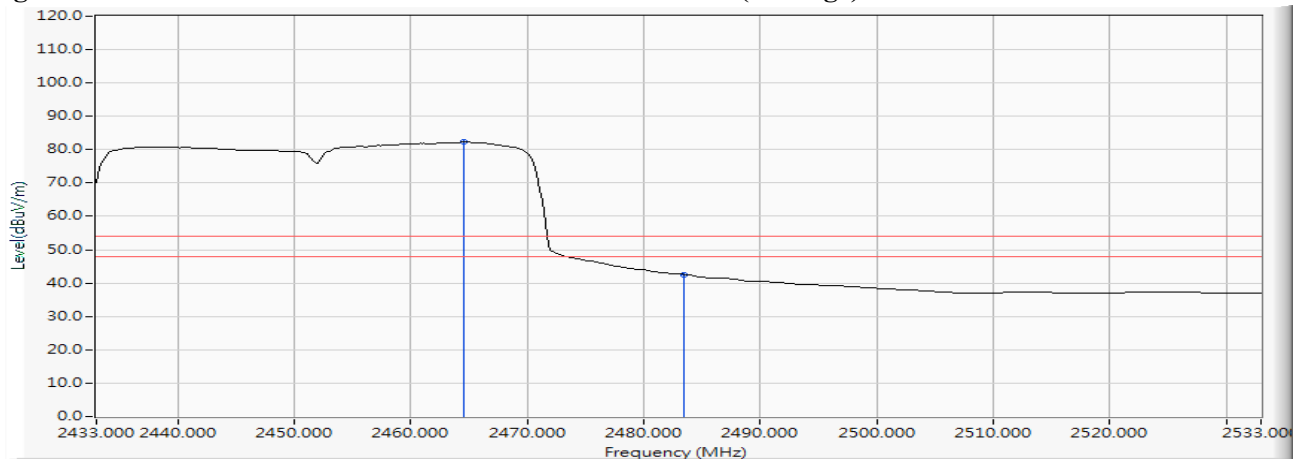
Figure Channel 03: VERTICAL (Peak)

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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)
 Test Date : 2016/11/21

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)	2462.275	11.744	81.869	93.613	--	--	--
09 (Peak)	2483.500	11.800	48.932	60.732	74.00	54.00	Pass
09 (Peak)	2484.884	11.803	49.605	61.408	74.00	54.00	Pass
09 (Average)	2464.594	11.751	70.503	82.254	--	--	--
09 (Average)	2483.500	11.800	30.776	42.576	74.00	54.00	Pass

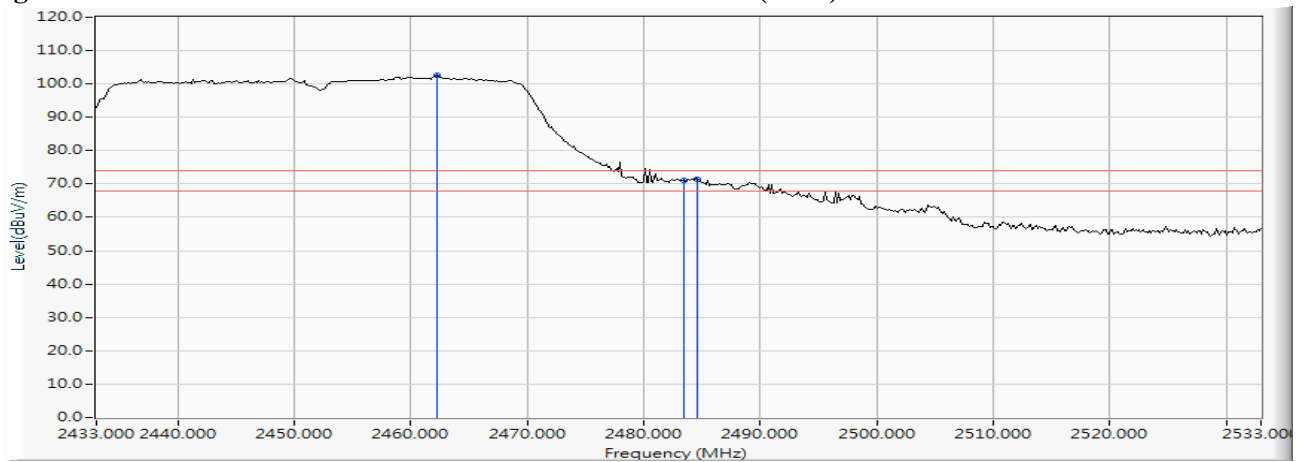
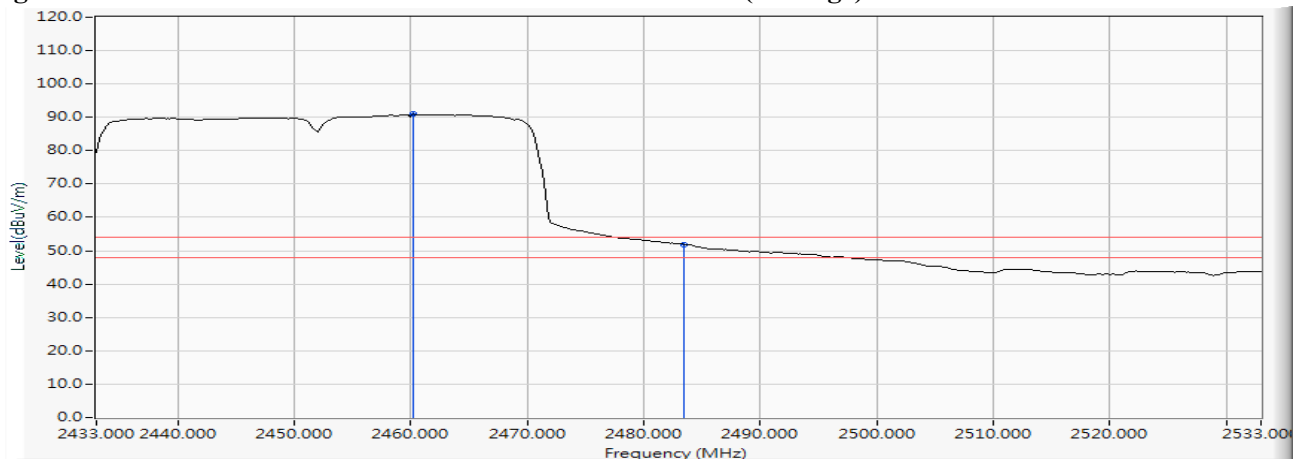
Figure Channel 09:**Horizontal (Peak)****Figure Channel 09:****Horizontal (Average)**

- 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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Band Edge Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)
 Test Date : 2016/11/21

RF Radiated Measurement (VERTICAL):

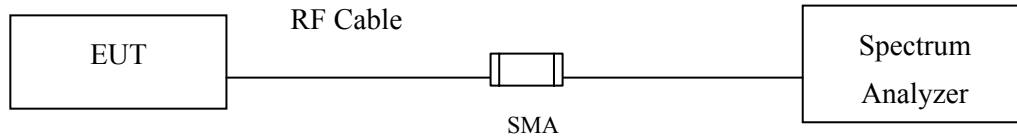
Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
09 (Peak)	2462.275	11.744	90.812	102.556	--	--	--
09 (Peak)	2483.500	11.800	59.228	71.028	74.00	54.00	Pass
09 (Peak)	2484.594	11.803	59.729	71.531	74.00	54.00	Pass
09 (Average)	2460.246	11.738	79.208	90.946	--	--	--
09 (Average)	2483.500	11.800	40.131	51.931	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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)
 Test Date : 2016/11/29

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	10150	>500	Pass
06	2437	10150	>500	Pass
11	2462	10150	>500	Pass

Figure Channel 01:

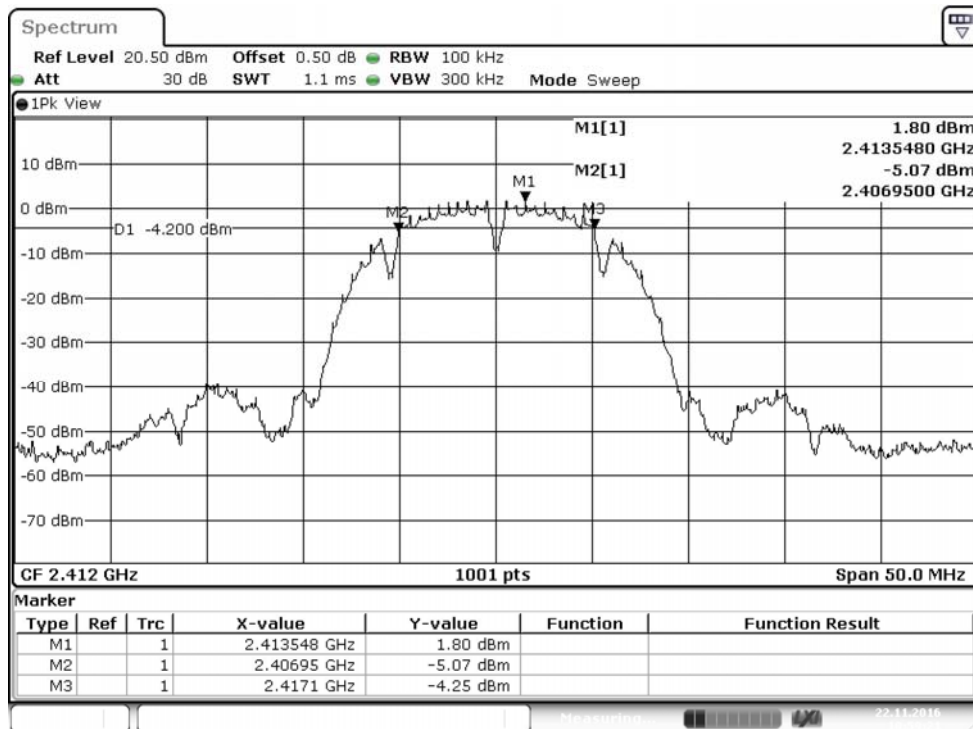


Figure Channel 06:

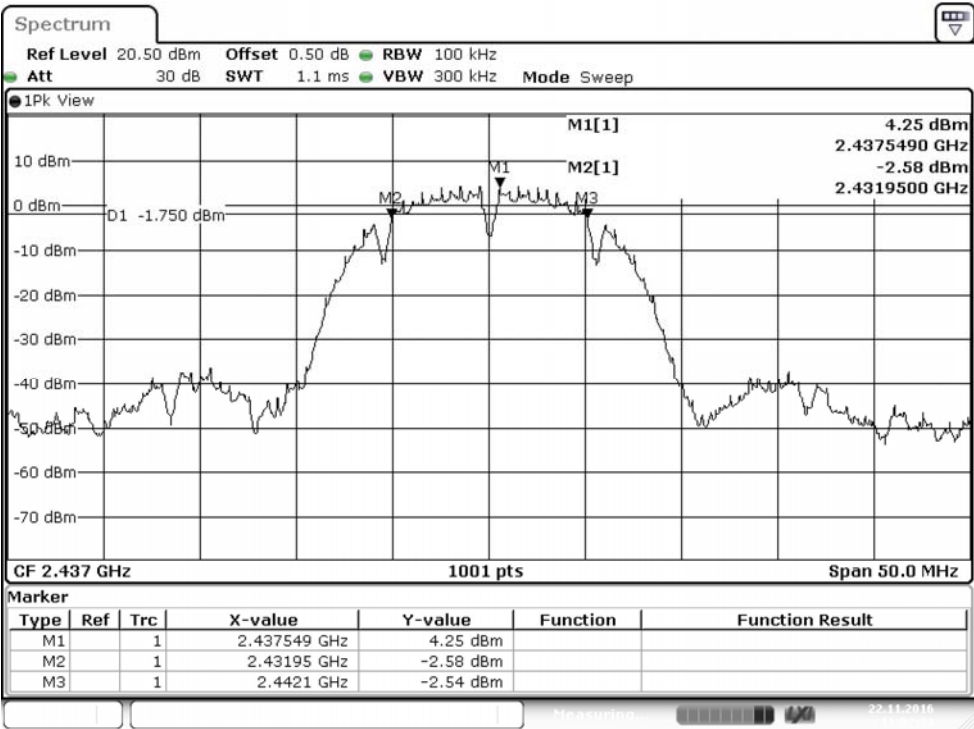
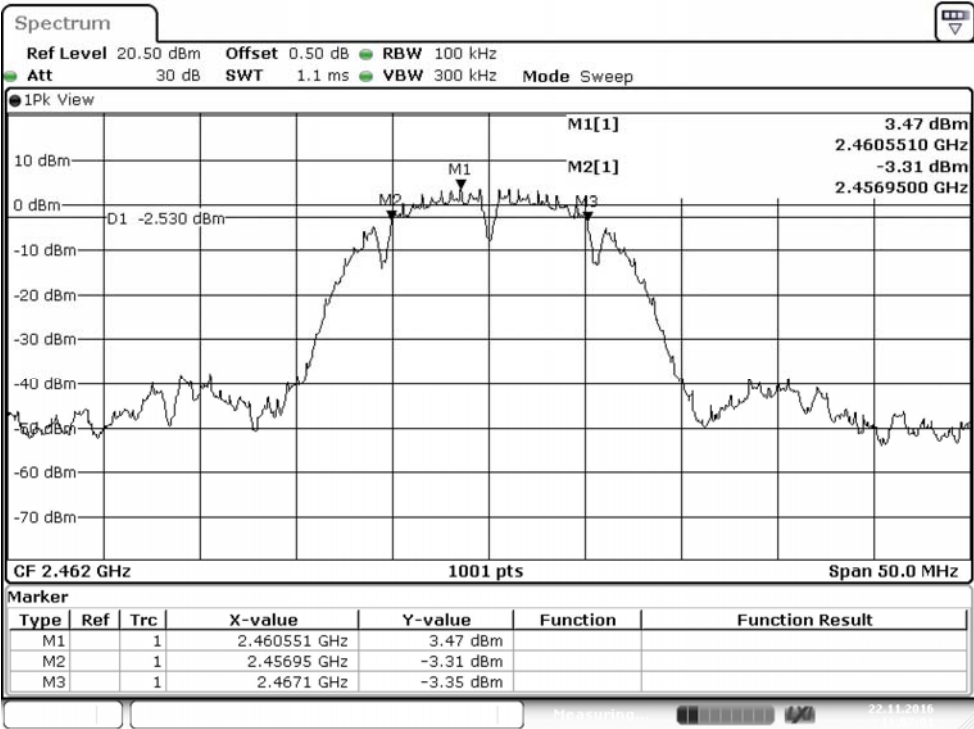


Figure Channel 11:



Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)
 Test Date : 2016/11/29

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

Figure Channel 01:

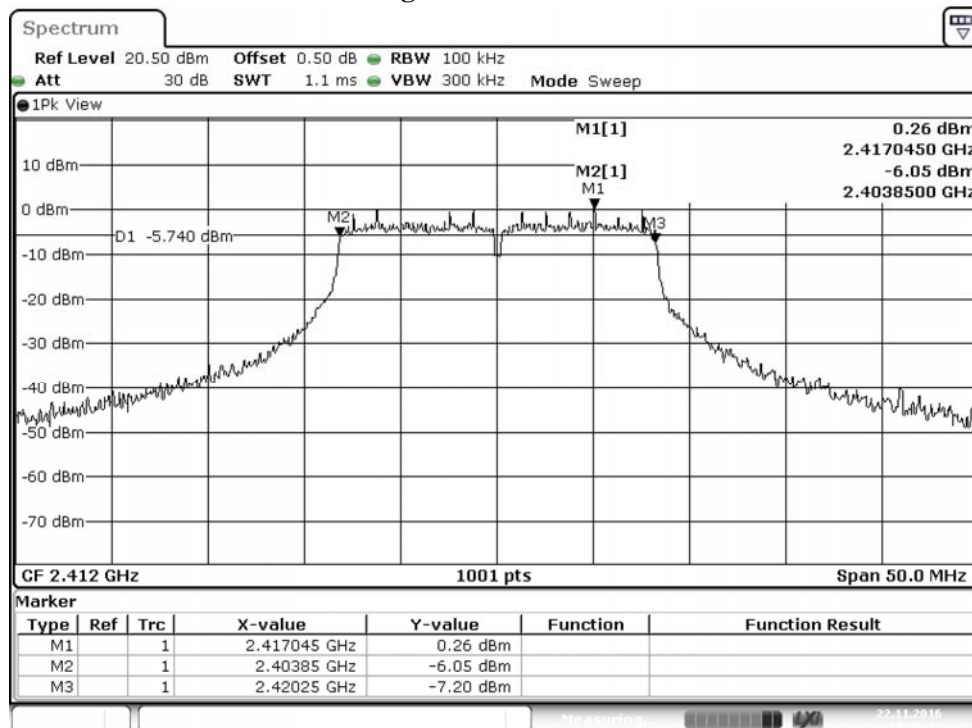


Figure Channel 06:

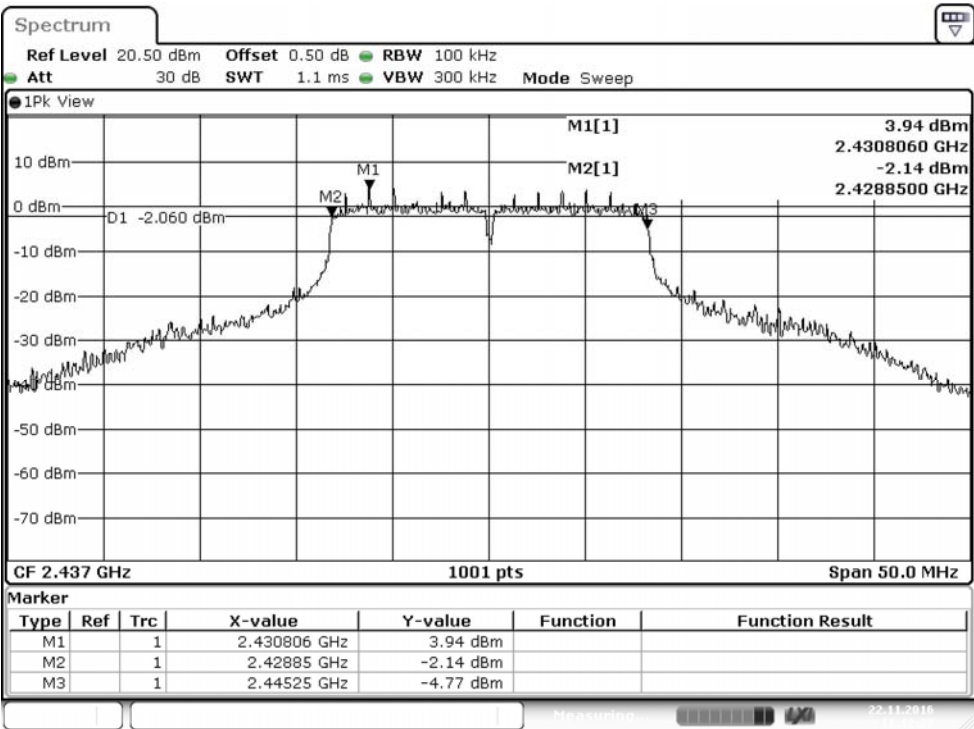
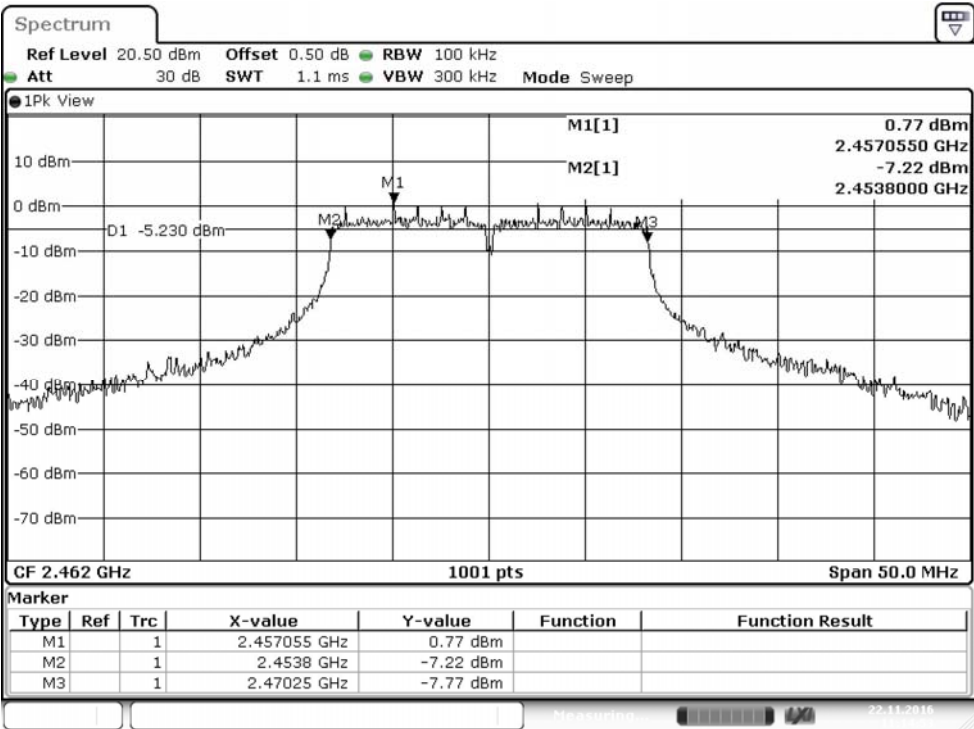


Figure Channel 11:



Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
 Test Date : 2016/11/29

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	17650	>500	Pass
06	2437	16950	>500	Pass
11	2462	17300	>500	Pass

Figure Channel 01:

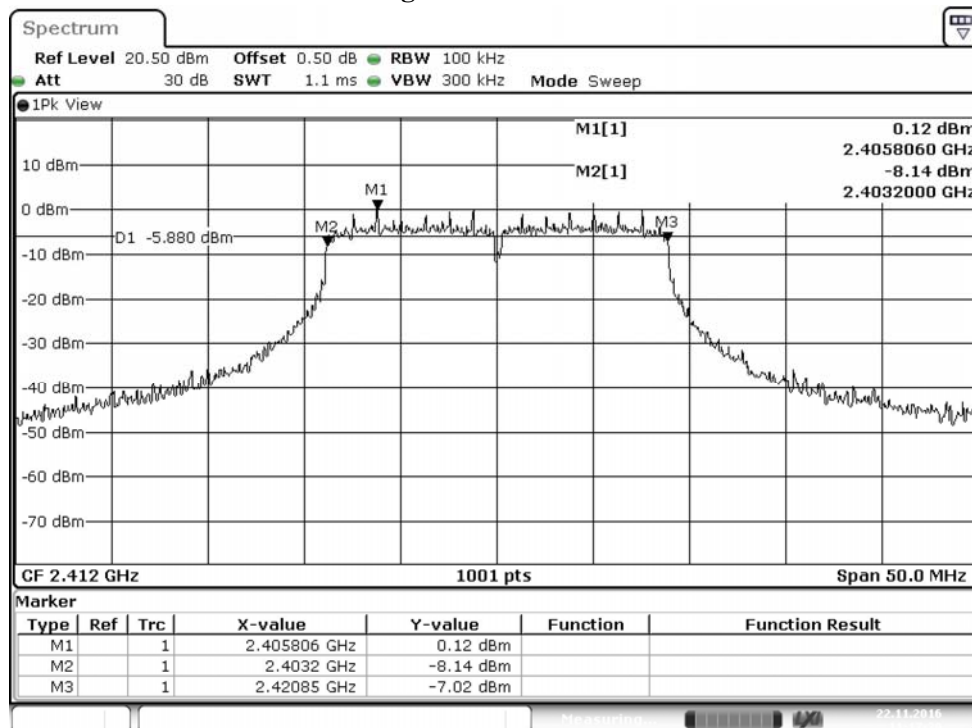


Figure Channel 06:

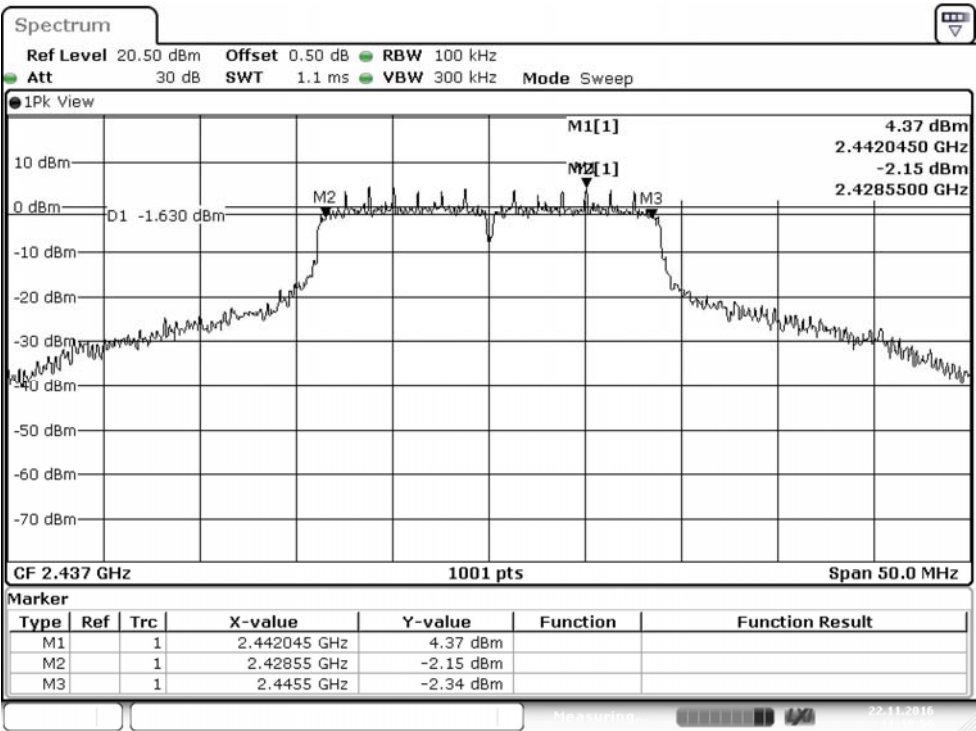
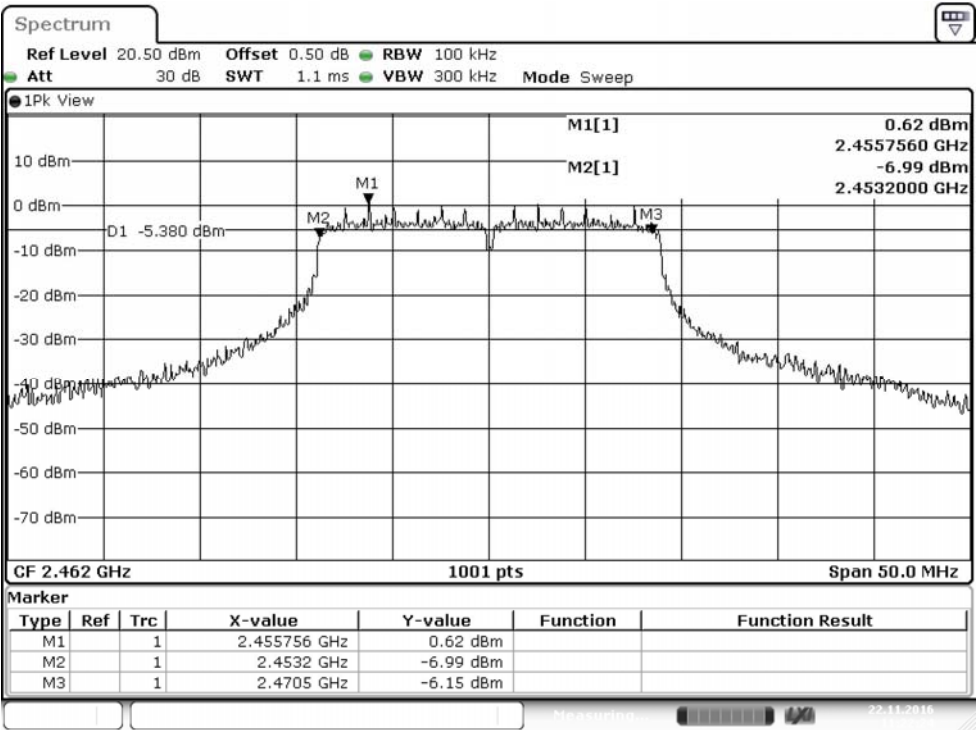


Figure Channel 11:



Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : 6dB Bandwidth Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)
 Test Date : 2016/11/29

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	35800	>500	Pass
06	2437	36100	>500	Pass
09	2452	36300	>500	Pass

Figure Channel 03:

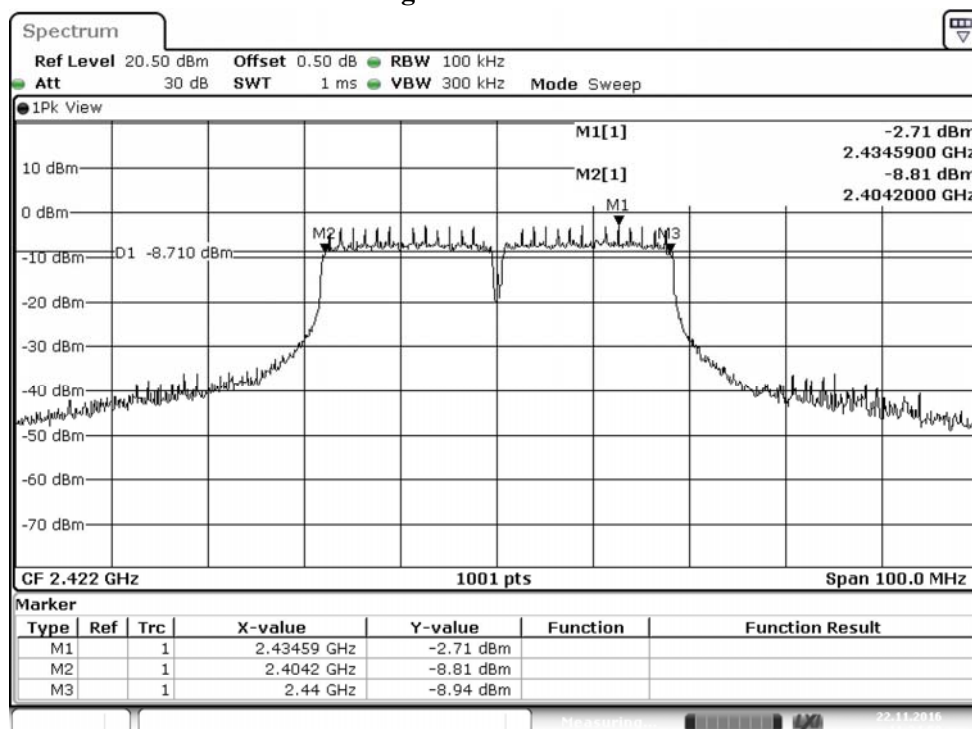


Figure Channel 06:

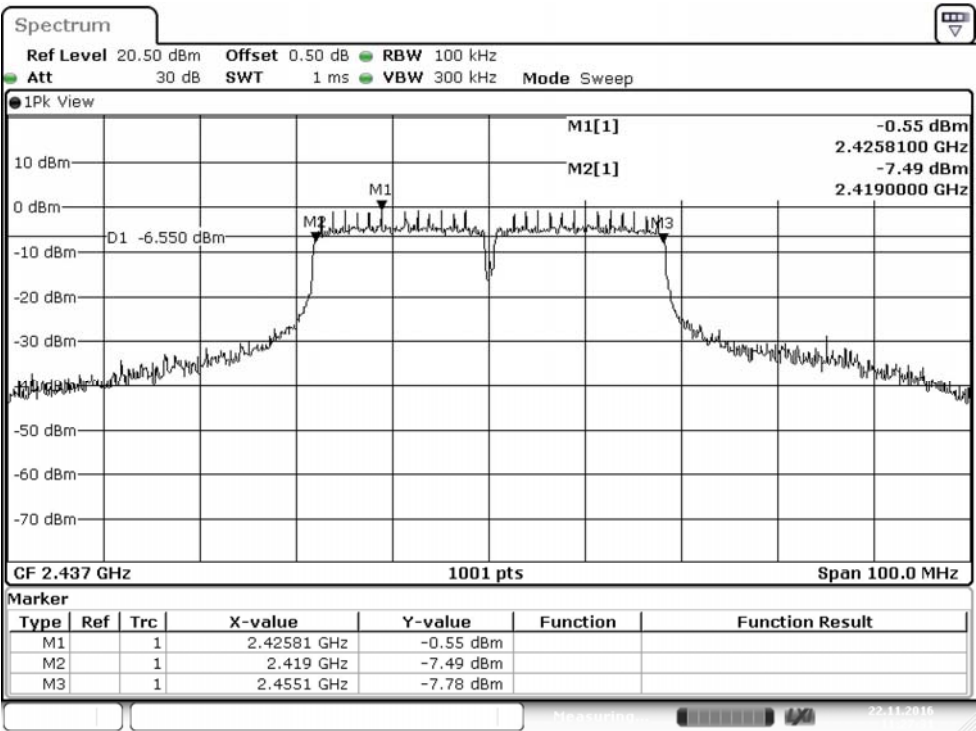
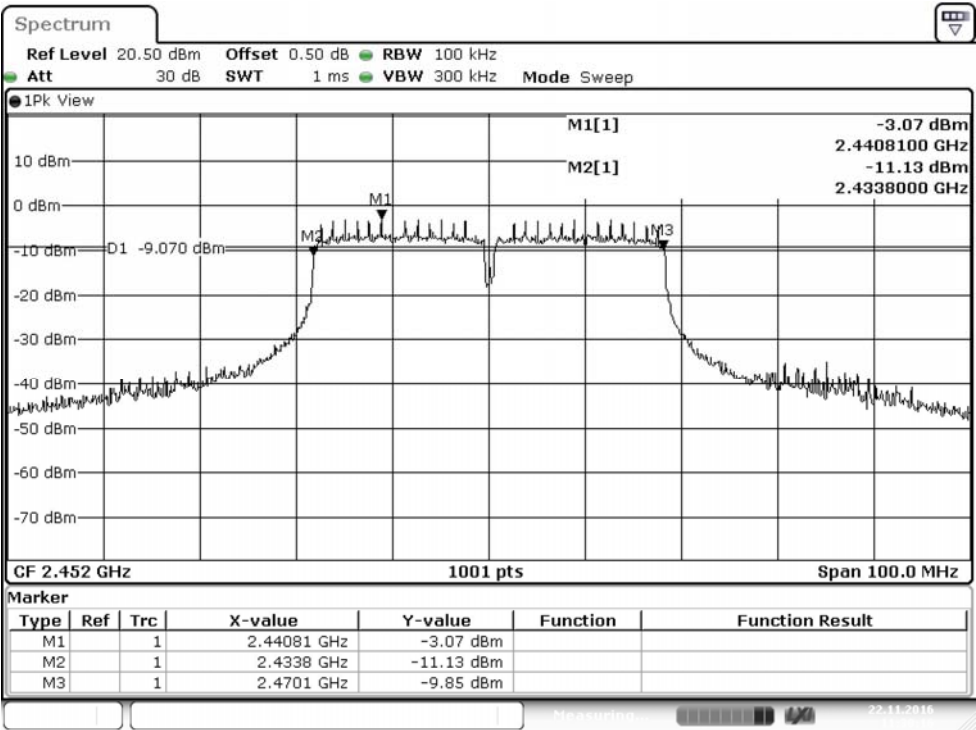
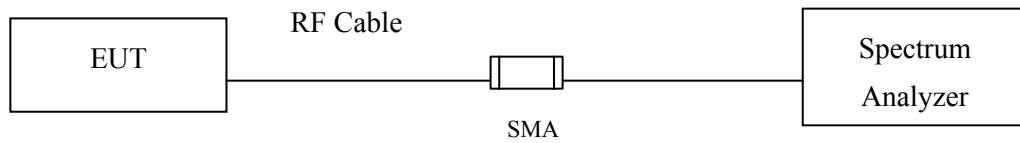


Figure Channel 09:



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 : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Power Density Data
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)
 Test Date : 2016/11/29

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	2.57	$\leq 8\text{dBm}$	Pass
06	2437	4.17	$\leq 8\text{dBm}$	Pass
11	2462	3.46	$\leq 8\text{dBm}$	Pass

Figure Channel 01:

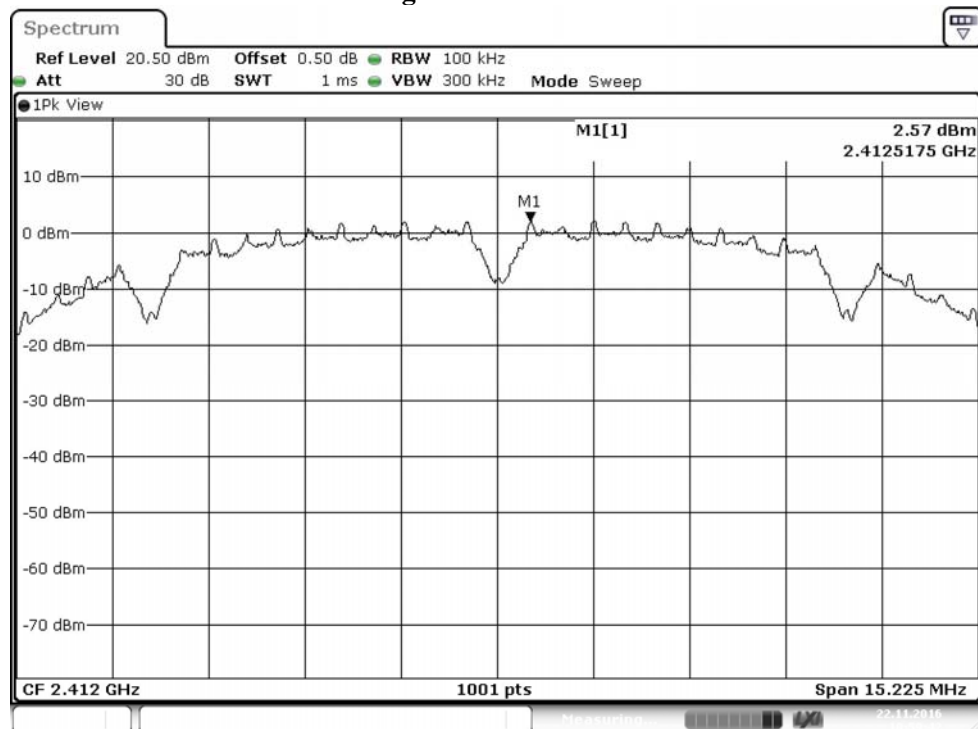


Figure Channel 06:

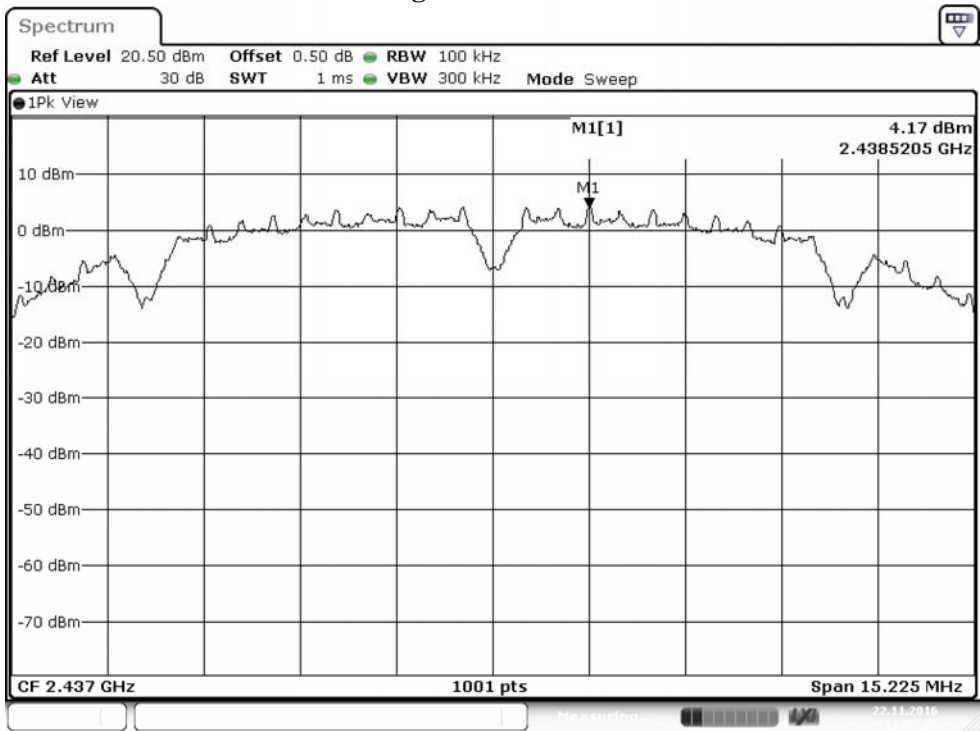
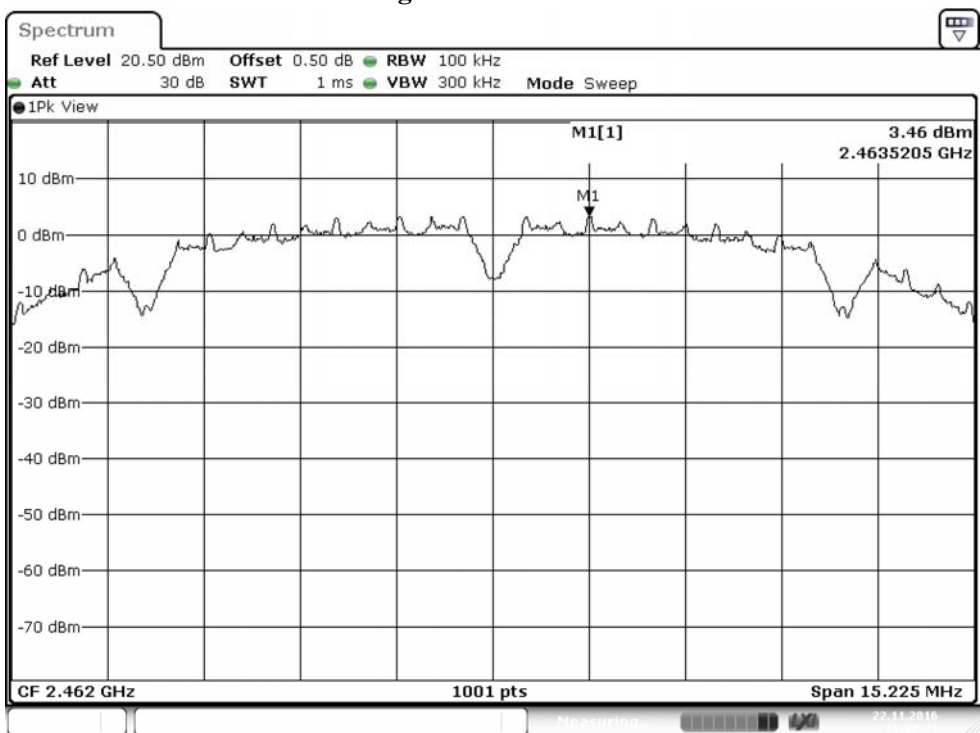


Figure Channel 11:



Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Power Density Data
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)
 Test Date : 2016/11/29

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	0.31	$\leq 8\text{dBm}$	Pass
06	2437	4.01	$\leq 8\text{dBm}$	Pass
11	2462	0.72	$\leq 8\text{dBm}$	Pass

Figure Channel 01:

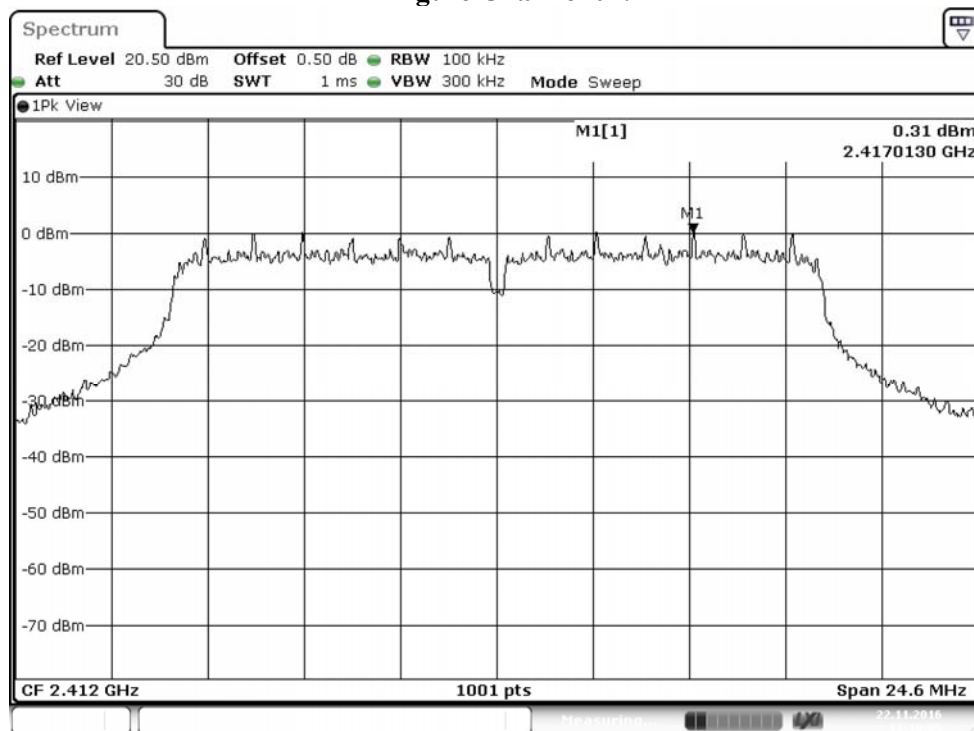


Figure Channel 06:

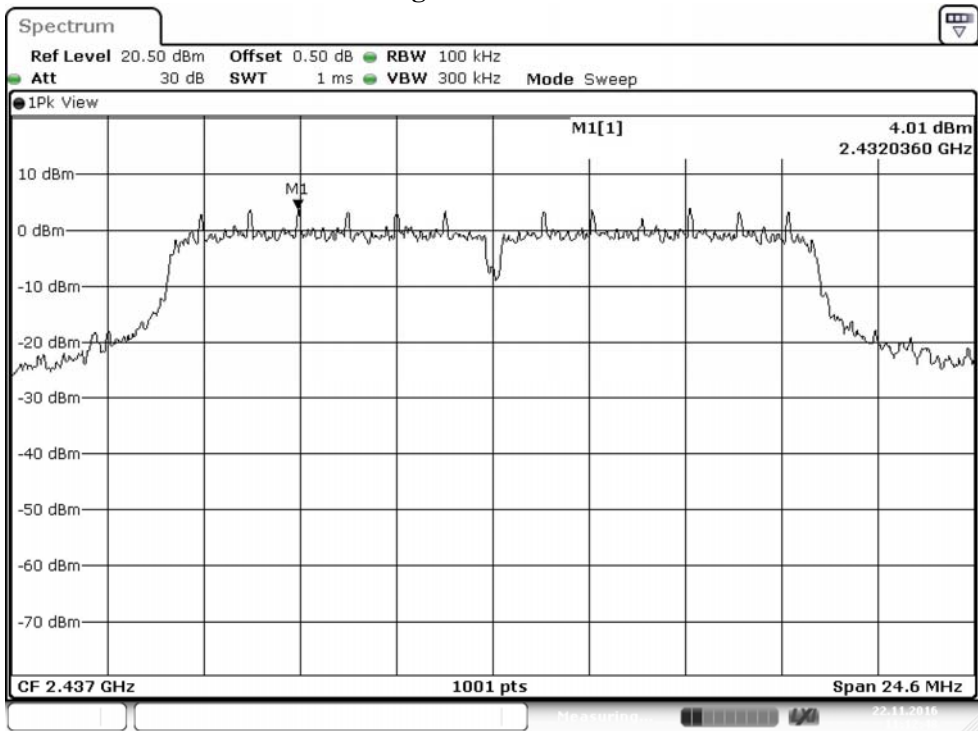
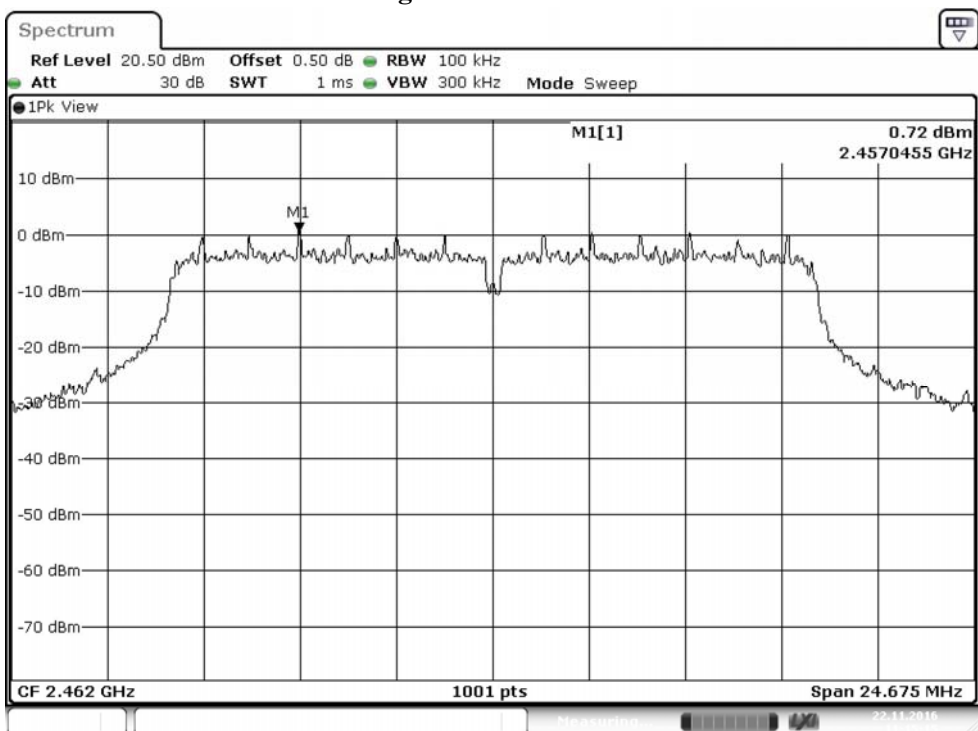


Figure Channel 11:



Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Power Density Data
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
 Test Date : 2016/11/29

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	0.29	$\leq 8\text{dBm}$	Pass
06	2437	4.37	$\leq 8\text{dBm}$	Pass
11	2462	0.62	$\leq 8\text{dBm}$	Pass

Figure Channel 01:

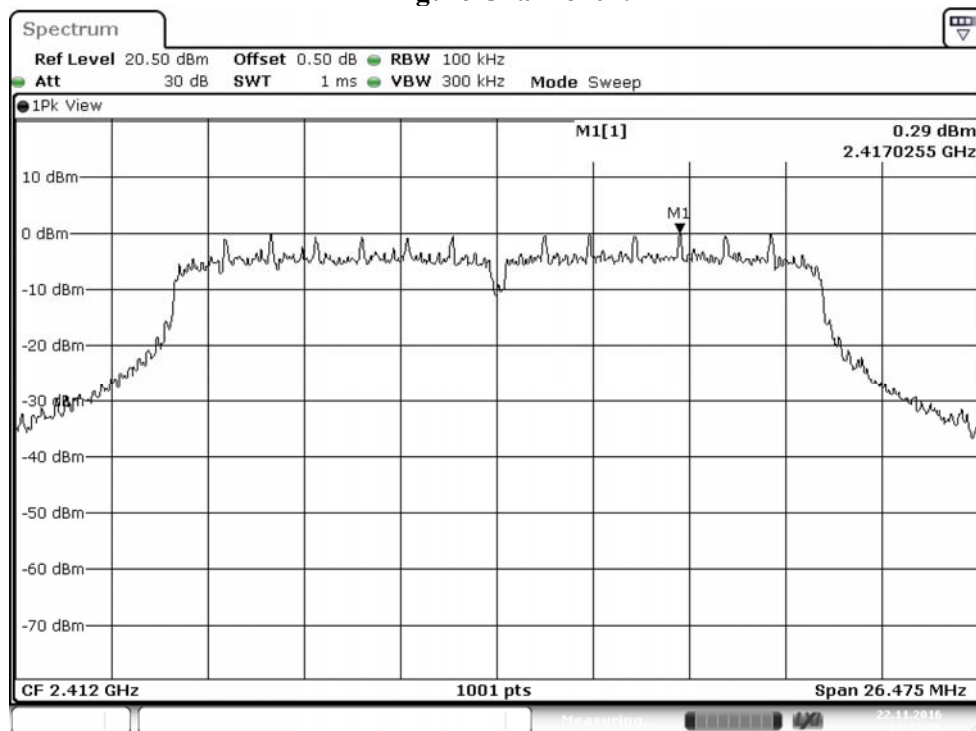


Figure Channel 06:

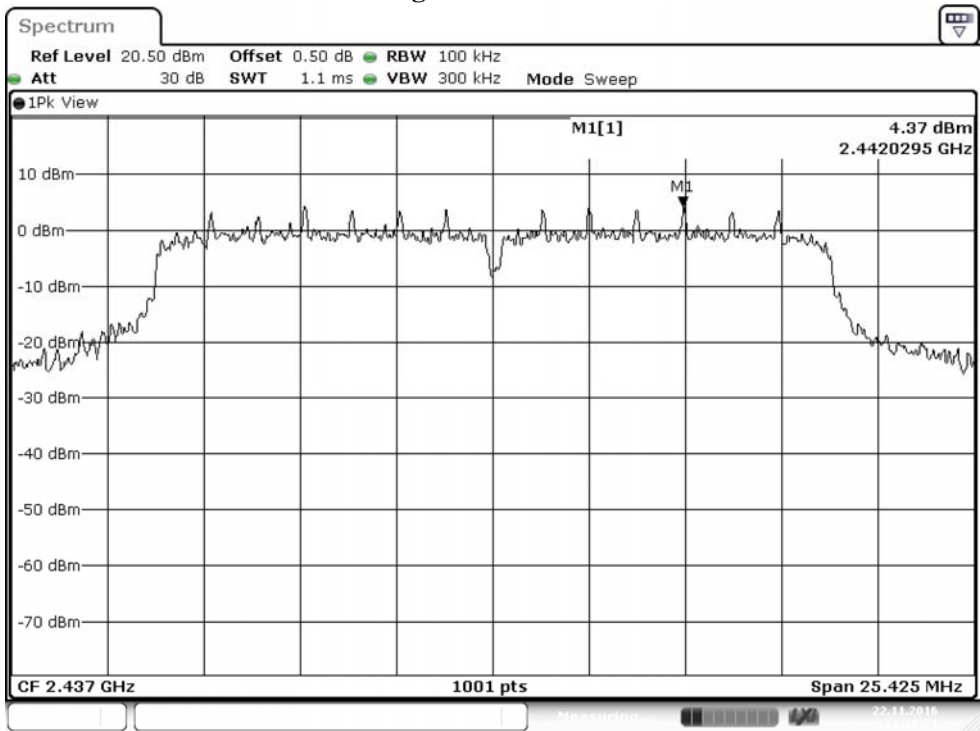
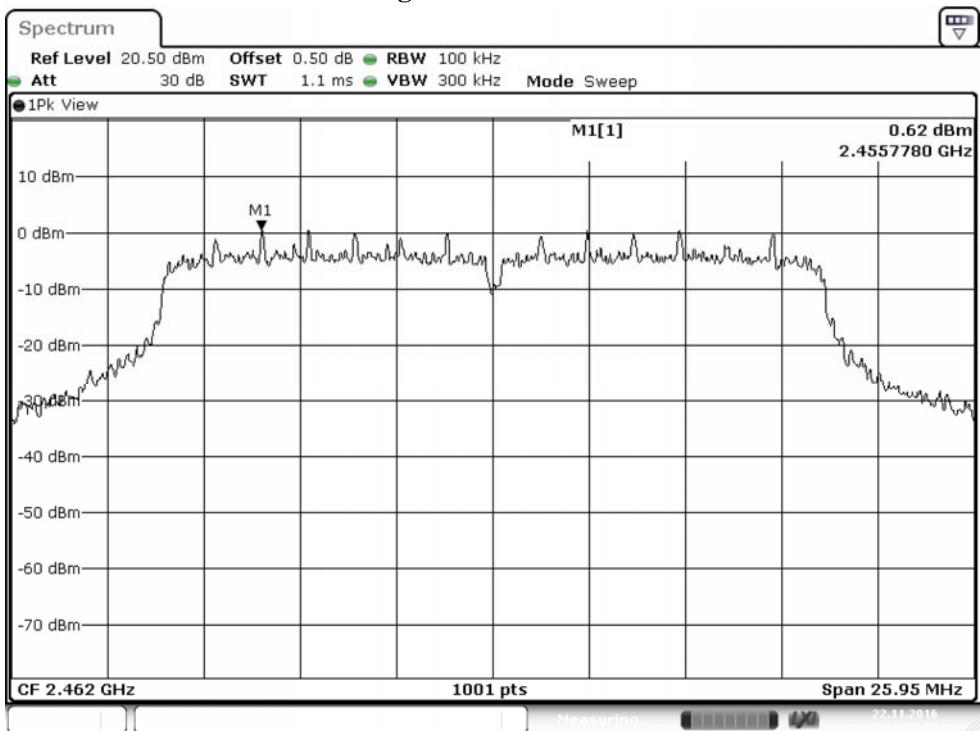


Figure Channel 11:



Product : RS-232/422/485 IEEE 802.11a/b/g/n wireless device server with I/O
 Test Item : Power Density Data
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)
 Test Date : 2016/11/29

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	-2.81	≤ 8 dBm	Pass
06	2437	-0.70	≤ 8 dBm	Pass
09	2452	-3.09	≤ 8 dBm	Pass

Figure Channel 03:

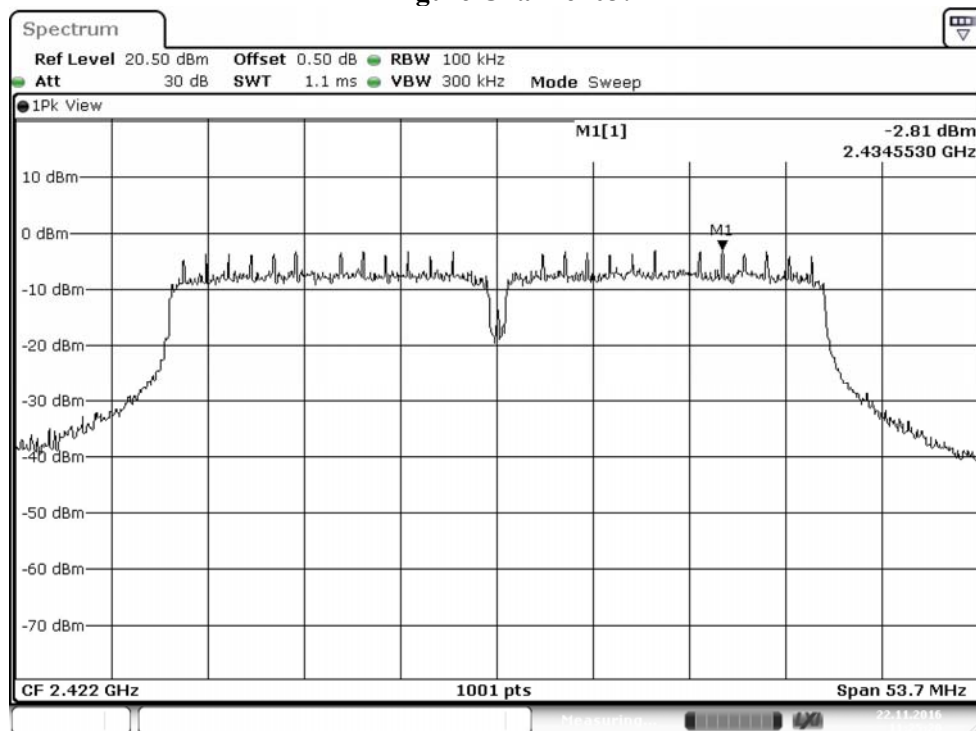


Figure Channel 06:

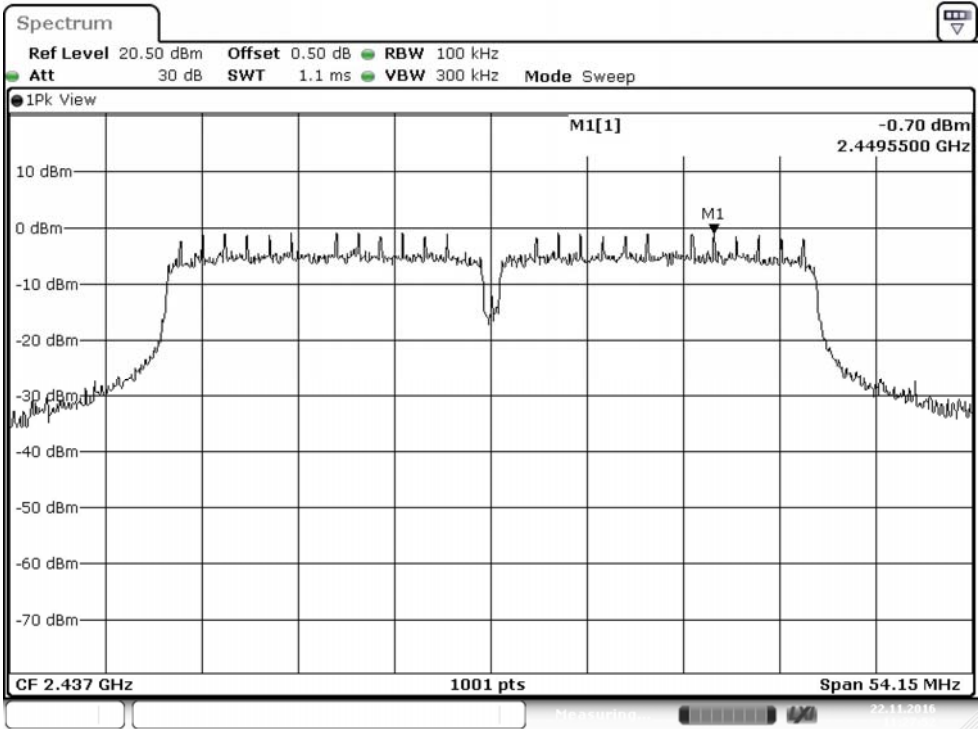
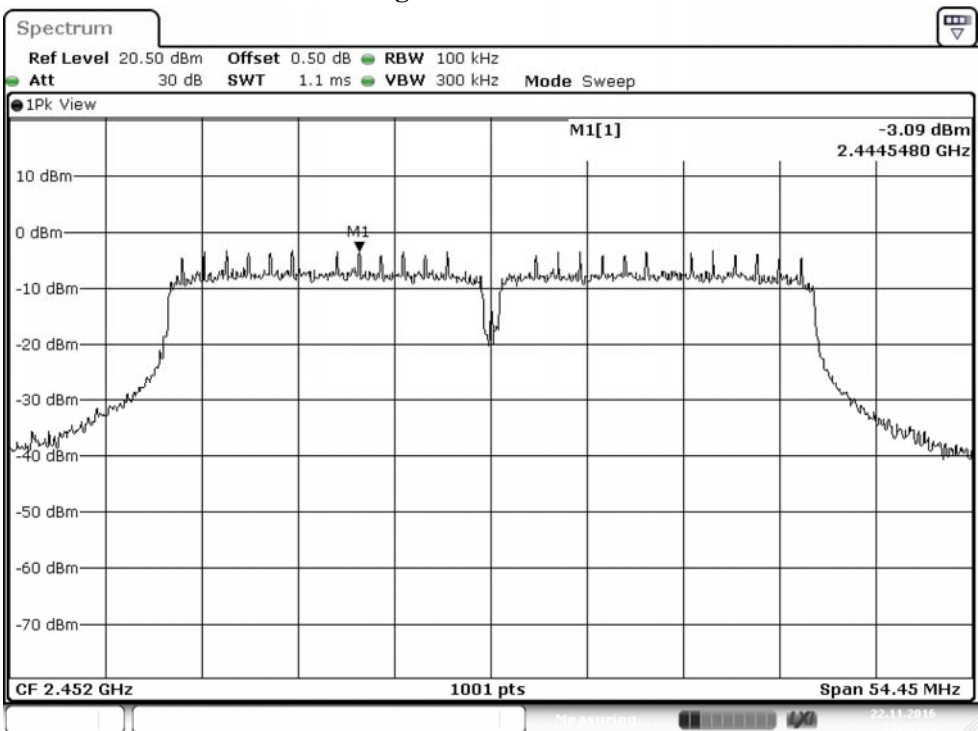


Figure Channel 09:



9. EMI Reduction Method During Compliance Testing

No modification was made during testing.