

# FCC Test Report

Product Name	VistaHub WiFi only
Model No	VISTAHUB-W
FCC ID.	RZ5-VISTAHUB-W

Applicant	Onyx Healthcare Inc.
Address	2F., No.135, LANE 235, PAO CHIAO RD., XINDIAN DIST., NEW TAIPEI CITY 231, TAIWAN (R.O.C.)

Date of Receipt	Aug. 08, 2017
Issue Date	Nov. 06, 2017
Report No.	1790230R-RFUSP26V00
Report Version	V1.0



The test results relate only to the samples tested.

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

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## Test Report

Issue Date: Nov. 06, 2017

Report No.: 1790230R-RFUSP26V00



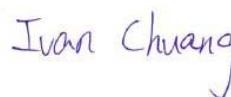
Product Name	VistaHub Wifi only
Applicant	Onyx Healthcare Inc.
Address	2F., No.135, LANE 235,PAO CHIAO RD., XINDIAN DIST., NEW TAIPEI CITY 231, TAIWAN (R.O.C.)
Manufacturer	VitalConnect, Inc.
Model No.	VISTAHUB-W
FCC ID.	RZ5-VISTAHUB-W
EUT Rated Voltage	AC 100-240V, 50/60Hz
EUT Test Voltage	AC 120V/60Hz
Trade Name	VitalConnect
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 :



( Senior Engineer / Ivan Chuang )

Approved By :



( Director / Vincent Lin )

## TABLE OF CONTENTS

Description	Page
<b>1. GENERAL INFORMATION .....</b>	<b>5</b>
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
<b>2. Conducted Emission.....</b>	<b>11</b>
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
<b>3. Peak Power Output .....</b>	<b>16</b>
3.1. Test Setup .....	16
3.2. Limits .....	16
3.3. Test Procedure .....	16
3.4. Uncertainty .....	16
3.5. Test Result of Peak Power Output.....	17
<b>4. Radiated Emission .....</b>	<b>21</b>
4.1. Test Setup .....	21
4.2. Limits .....	22
4.3. Test Procedure .....	22
4.4. Uncertainty .....	23
4.5. Test Result of Radiated Emission.....	24
<b>5. RF antenna conducted test.....</b>	<b>44</b>
5.1. Test Setup .....	44
5.2. Limits .....	44
5.3. Test Procedure .....	44
5.4. Uncertainty .....	44
5.5. Test Result of RF antenna conducted test.....	45
<b>6. Band Edge .....</b>	<b>49</b>
6.1. Test Setup .....	49
6.2. Limits .....	50
6.3. Test Procedure .....	50
6.4. Uncertainty .....	50
6.5. Test Result of Band Edge .....	51
<b>7. 6dB Bandwidth .....</b>	<b>67</b>
7.1. Test Setup .....	67
7.2. Limits .....	67

7.3.	Test Procedure .....	67
7.4.	Uncertainty .....	67
7.5.	Test Result of 6dB Bandwidth.....	68
<b>8.</b>	<b>Power Density .....</b>	<b>76</b>
8.1.	Test Setup .....	76
8.2.	Limits .....	76
8.3.	Test Procedure .....	76
8.4.	Uncertainty .....	76
8.5.	Test Result of Power Density .....	77
<b>9.</b>	<b>EMI Reduction Method During Compliance Testing .....</b>	<b>85</b>

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	VistaHub Wifi only
Trade Name	VitalConnect
Model No.	VISTAHUB-W
FCC ID.	RZ5-VISTAHUB-W
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	Dipole Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
Power Adapter (1)	M/N: ATM020-W050U Input: AC 100-240V~50-60Hz 0.45-0.27A Output: DC 5V, 3.5A Cable Out: Non-shielded, 1.8m
Power Adapter (2)	M/N: ATM036T-A050 Input: AC 100-240V~50-60Hz 1A-0.45 Output: DC 5V, 5A Cable IN: Non-shielded, 1.8m Cable Out: Non-shielded, 1.5m

#### Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	ARISTOTLE	RFA-02-C2M2-M32-3	Dipole Antenna	2.42dBi for WLAN
2	ARISTOTLE	RFA-02-C2M2-M32-3	Dipole Antenna	2.42dBi for Bluetooth

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 VistaHub Wifi only with a built-in 2.4GHz WLAN、Bluetooth transceiver, this report for 2.4GHz WLAN.
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)

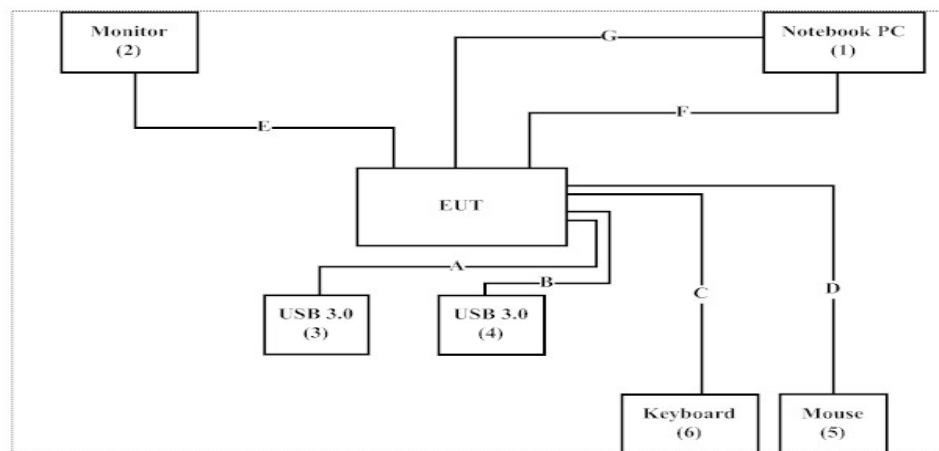
### 1.3. Tested System Details

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	229FJC2
2	Monitor	DELL	U2415	CN-01RMGX-74261-63H-0 9UL-A02
3	USB 3.0	WD	WDBUZG001 0BBK-PESN	WX11A166S2Y3
4	USB 3.0	WD	WDBUZG001 0BBK-PESN	WXR1AC5478U6
5	Mouse	Logitech	U0026	N/A
6	Keyboard	Logitech	K120	N/A

Signal Cable Type	Signal cable Description
A	HDD USB 3.0 Cable
B	HDD USB 3.0 Cable
C	USB Keyboard Cable
D	USB Mouse Cable
E	HDM Cable
F	USB Cable (Signal Cable)
G	USB Cable (Signal Cable)

### 1.4. Configuration of Tested System



### 1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “Ant RF Test App (Ver 1.00.00)” 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>

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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

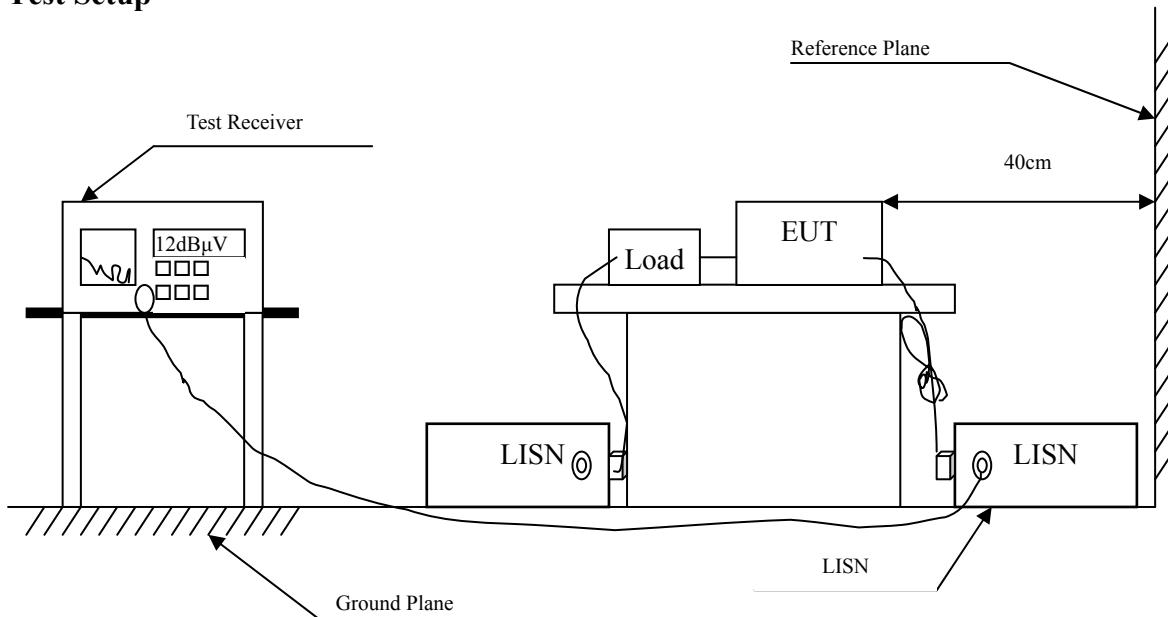
	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Loop Antenna	TESEQ	HLA6121	37133	2016.03.18	2018.03.17
X	Bi-Log Antenna	SCHWARZBECK	VULB9168	9168-674	2017.02.09	2018.02.08
X	Horn Antenna	ETS-Lindgren	3117	00203800	2016.10.13	2017.10.12
X	Horn Antenna	Com-Power	AH-840	101087	2017.05.24	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	2017.08.11	2018.08.10

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 $\mu$ 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 invested 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 : VistaHub Wifi only  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)  
               Adapter: ATM020-W050U  
 Test Date : 2017/10/02

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>Line 1</b>					
<b>Quasi-Peak</b>					
0.153	9.561	38.676	48.237	-17.677	65.914
0.190	9.560	33.082	42.642	-22.215	64.857
0.610	9.580	33.421	43.001	-12.999	56.000
2.337	9.583	33.057	42.640	-13.360	56.000
2.713	9.587	27.099	36.686	-19.314	56.000
4.827	9.608	17.098	26.706	-29.294	56.000
<b>Average</b>					
0.153	9.561	26.489	36.050	-19.864	55.914
0.190	9.560	21.782	31.342	-23.515	54.857
0.610	9.580	25.672	35.252	-10.748	46.000
2.337	9.583	25.313	34.896	-11.104	46.000
2.713	9.587	21.533	31.120	-14.880	46.000
4.827	9.608	8.434	18.042	-27.958	46.000

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 : VistaHub Wifi only  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)  
               Adapter: ATM020-W050U  
 Test Date : 2017/10/02

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>Line 2</b>					
<b>Quasi-Peak</b>					
0.153	9.552	39.219	48.770	-17.144	65.914
0.197	9.559	33.144	42.703	-21.954	64.657
0.607	9.575	34.040	43.615	-12.385	56.000
2.344	9.583	34.285	43.868	-12.132	56.000
2.700	9.587	29.113	38.700	-17.300	56.000
2.973	9.590	27.623	37.213	-18.787	56.000
<b>Average</b>					
0.153	9.552	26.316	35.868	-20.046	55.914
0.197	9.559	22.323	31.882	-22.775	54.657
0.607	9.575	25.696	35.271	-10.729	46.000
2.344	9.583	27.917	37.500	-8.500	46.000
2.700	9.587	23.205	32.792	-13.208	46.000
2.973	9.590	21.275	30.865	-15.135	46.000

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 : VistaHub Wifi only  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)  
               Adapter: ATM036T-A050  
 Test Date : 2017/10/02

Frequency MHz	Correct Factor	Reading Level dBµV	Measurement Level dBµV	Margin dB	Limit dBµV
<b>Line 1</b>					
<b>Quasi-Peak</b>					
0.157	9.560	29.325	38.886	-26.914	65.800
0.392	9.573	32.038	41.611	-17.475	59.086
2.305	9.583	36.237	45.820	-10.180	56.000
2.700	9.587	31.102	40.689	-15.311	56.000
3.000	9.590	28.955	38.545	-17.455	56.000
3.400	9.594	22.416	32.010	-23.990	56.000
<b>Average</b>					
0.157	9.560	19.147	28.708	-27.092	55.800
0.392	9.573	24.331	33.903	-15.183	49.086
2.305	9.583	29.794	39.377	-6.623	46.000
2.700	9.587	24.449	34.036	-11.964	46.000
3.000	9.590	22.584	32.174	-13.826	46.000
3.400	9.594	15.178	24.772	-21.228	46.000

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 : VistaHub Wifi only  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)  
               Adapter: ATM036T-A050  
 Test Date : 2017/10/02

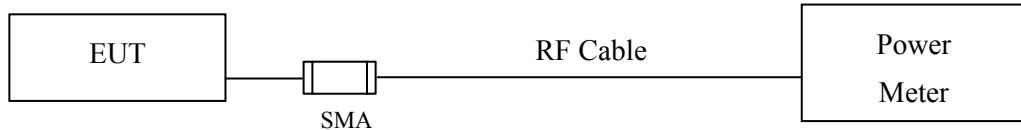
Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V	Margin dB	Limit dB $\mu$ V
<b>Line 2</b>					
<b>Quasi-Peak</b>					
0.159	9.552	30.480	40.032	-25.711	65.743
0.390	9.567	32.998	42.565	-16.578	59.143
2.321	9.583	38.450	48.033	-7.967	56.000
2.681	9.587	32.313	41.900	-14.100	56.000
2.962	9.590	30.252	39.842	-16.158	56.000
3.400	9.594	22.366	31.960	-24.040	56.000
<b>Average</b>					
0.159	9.552	20.159	29.711	-26.032	55.743
0.390	9.567	25.036	34.603	-14.540	49.143
2.321	9.583	30.402	39.985	-6.015	46.000
2.681	9.587	25.282	34.869	-11.131	46.000
2.962	9.590	23.557	33.146	-12.854	46.000
3.400	9.594	15.372	24.966	-21.034	46.000

Note:

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

### 3. Peak Power Output

#### 3.1. Test Setup



#### 3.2. Limits

The maximum peak power shall be less 1 Watt.

#### 3.3. Test Procedure

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 9.1.3 PKPM1 Peak power meter method.

#### 3.4. Uncertainty

±0.86 dB

### 3.5. Test Result of Peak Power Output

Product : VistaHub Wifi only  
 Test Item : Peak Power Output Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)  
 Test Date : 2017/09/20

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11			
		Measurement Level (dBm)						
01	2412	13.86	--	--	--	16.37	<30dBm	Pass
06	2437	15.41	15.33	15.27	15.13	17.59	<30dBm	Pass
11	2462	15.04	--	--	--	17.21	<30dBm	Pass

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

Product : VistaHub Wifi only  
 Test Item : Peak Power Output Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)  
 Test Date : 2017/09/20

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54			
		Measurement Level (dBm)										
01	2412	13.03	--	--	--	--	--	--	--	23.42	<30dBm	Pass
06	2437	15.51	15.42	15.33	15.24	15.11	15.03	14.96	14.88	23.13	<30dBm	Pass
11	2462	15.28	--	--	--	--	--	--	--	23.02	<30dBm	Pass

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

Product : VistaHub Wifi only  
 Test Item : Peak Power Output Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)  
 Test Date : 2017/09/20

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			
		Measurement Level (dBm)										
01	2412	11.8	--	--	--	--	--	--	--	20.65	<30dBm	Pass
06	2437	15.03	14.89	14.73	14.62	14.54	14.41	14.35	14.22	22.93	<30dBm	Pass
11	2462	14.87	--	--	--	--	--	--	--	23.57	<30dBm	Pass

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

Product : VistaHub Wifi only  
 Test Item : Peak Power Output Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)  
 Test Date : 2017/09/20

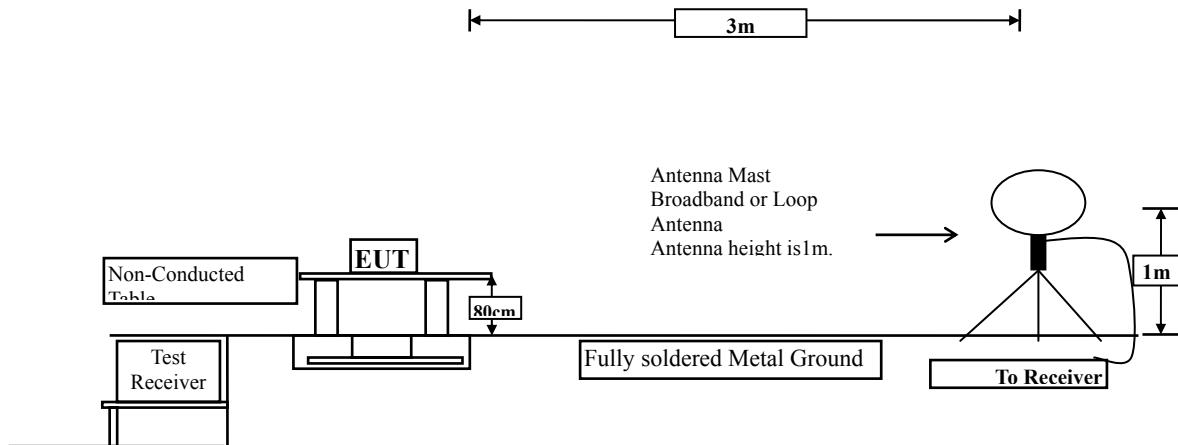
Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		15	30	45	60	90	120	135	150			
		Measurement Level (dBm)										
03	2422	10.45	--	--	--	--	--	--	--	18.7	<30dBm	Pass
06	2437	14.67	14.59	14.45	14.37	14.22	14.13	14.02	13.97	23.06	<30dBm	Pass
09	2452	12.92	--	--	--	--	--	--	--	21.35	<30dBm	Pass

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

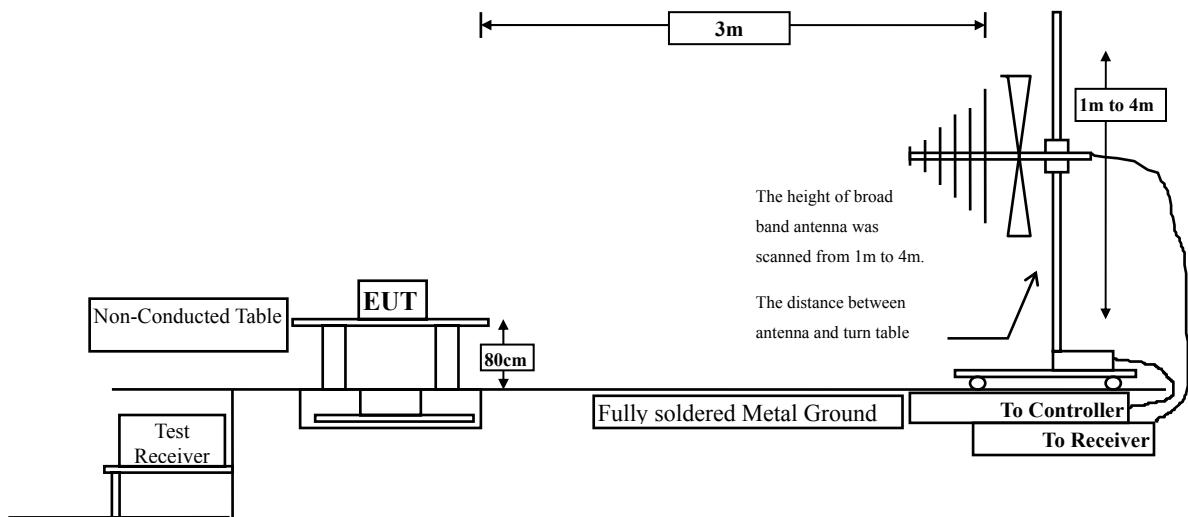
## 4. Radiated Emission

### 4.1. Test Setup

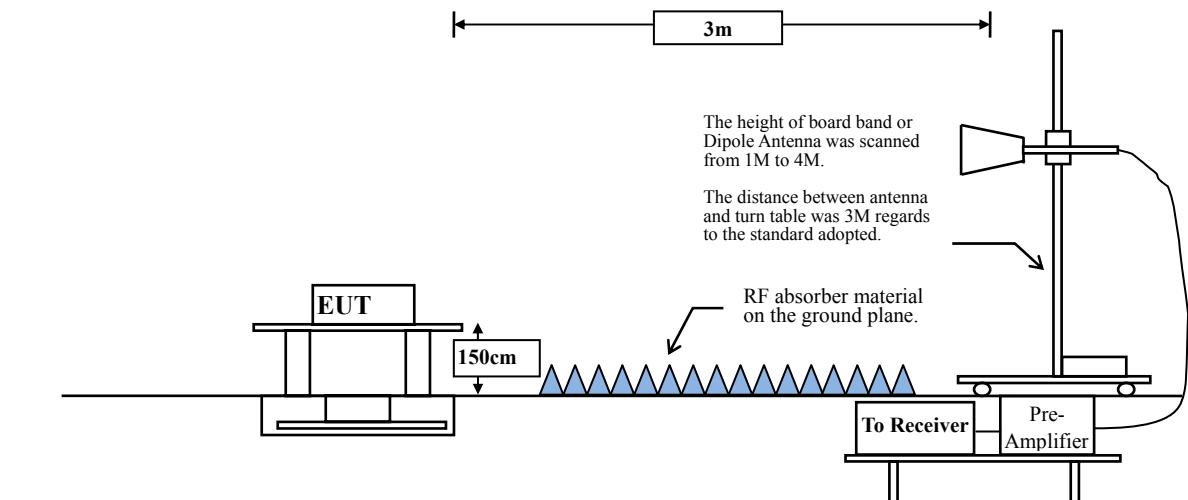
Radiated Emission Under 30MHz



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.

#### 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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)\_ Adapter: ATM020-W050U  
 Test Date : 2017/08/31

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4824.000	-2.866	57.550	54.684	-19.316	74.000
7236.000	0.381	44.760	45.141	-28.859	74.000
9648.000	2.391	42.110	44.501	-29.499	74.000
<b>Average Detector:</b>					
4824.000	-2.866	55.730	52.864	-1.136	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
4824.000	40.628	58.330	55.464	-18.536	74.000
7236.000	43.797	44.740	45.121	-28.879	74.000
9648.000	46.069	43.080	45.471	-28.529	74.000
<b>Average Detector:</b>					
4824.000	-2.866	56.290	53.424	-0.576	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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)\_ Adapter: ATM020-W050U  
 Test Date : 2017/08/31

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4874.000	-2.835	58.000	55.164	-18.836	74.000
7311.000	0.465	44.650	45.115	-28.885	74.000
9748.000	2.590	44.110	46.699	-27.301	74.000
<b>Average Detector:</b>					
4874.000	-2.835	56.000	53.164	-0.836	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
4874.000	-2.835	57.920	55.084	-18.916	74.000
7311.000	0.465	45.200	45.665	-28.335	74.000
9748.000	2.590	43.330	45.919	-28.081	74.000
<b>Average Detector:</b>					
4874.000	-2.835	56.110	53.274	-20.726	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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz) \_ Adapter: ATM020-W050U  
 Test Date : 2017/08/31

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
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### Horizontal

#### Peak Detector:

4924.000	-2.796	57.760	54.964	-19.036	74.000
7386.000	0.489	44.120	44.609	-29.391	74.000
9848.000	2.729	42.820	45.550	-28.450	74.000

#### Average Detector:

4924.000	-2.796	55.860	53.064	-0.936	54.000
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### Vertical

#### Peak Detector:

4924.000	-2.796	57.920	55.124	-18.876	74.000
7386.000	0.489	44.520	45.009	-28.991	74.000
9848.000	2.729	42.860	45.590	-28.410	74.000

#### Average Detector:

4924.000	-2.796	55.970	53.174	-0.826	54.000
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#### 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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz) \_ Adapter: ATM020-W050U  
 Test Date : 2017/09/12

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
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### Horizontal

#### Peak Detector:

4824.000	-2.866	54.790	51.924	-22.076	74.000
7236.000	0.381	44.900	45.281	-28.719	74.000
9648.000	2.391	42.880	45.271	-28.729	74.000

#### Average Detector:

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### Vertical

#### Peak Detector:

4824.000	-2.866	59.110	56.244	-17.756	74.000
7236.000	0.381	44.420	44.801	-29.199	74.000
9648.000	2.391	42.750	45.141	-28.859	74.000

#### Average Detector:

4824.000	-2.866	44.630	41.764	-12.236	54.000
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#### 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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz) \_ Adapter: ATM020-W050U  
 Test Date : 2017/09/12

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
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### Horizontal

#### Peak Detector:

4874.000	-2.835	58.580	55.744	-18.256	74.000
7311.000	0.465	44.850	45.315	-28.685	74.000
9748.000	2.590	43.980	46.569	-27.431	74.000

#### Average Detector:

4874.000	-2.835	44.950	42.114	-11.886	54.000
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### Vertical

#### Peak Detector:

4874.000	-2.835	64.540	61.704	-12.296	74.000
7311.000	0.465	44.810	45.275	-28.725	74.000
9748.000	2.590	43.640	46.229	-27.771	74.000

#### Average Detector:

4874.000	-2.835	50.880	48.044	-5.956	54.000
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#### 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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz) \_ Adapter: ATM020-W050U  
 Test Date : 2017/09/12

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
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### Horizontal

#### Peak Detector:

4924.000	-2.796	55.210	52.414	-21.586	74.000
7386.000	0.489	44.340	44.829	-29.171	74.000
9848.000	2.729	43.140	45.870	-28.130	74.000

#### Average Detector:

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### Vertical

#### Peak Detector:

4924.000	-2.796	58.030	55.234	-18.766	74.000
7386.000	0.489	44.050	44.539	-29.461	74.000
9848.000	2.729	42.020	44.750	-29.250	74.000

#### Average Detector:

4924.000	-2.796	42.900	40.104	-13.896	54.000
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#### 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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2412MHz)  
               Adapter: ATM020-W050U  
 Test Date : 2017/09/12

Frequency MHz	Correct Factor	Reading Level dB	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
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### Horizontal

#### Peak Detector:

4824.000	-2.866	50.870	48.004	-25.996	74.000
7236.000	0.381	44.290	44.671	-29.329	74.000
9648.000	2.391	42.120	44.511	-29.489	74.000

#### Average Detector:

--	--	--	--	--	54.000
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### Vertical

#### Peak Detector:

4824.000	-2.866	56.640	53.774	-20.226	74.000
7236.000	0.381	44.400	44.781	-29.219	74.000
9648.000	2.391	42.070	44.461	-29.539	74.000

#### Average Detector:

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#### 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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437 MHz)  
               \_Adapter: ATM020-W050U  
 Test Date : 2017/09/12

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4874.000	-2.835	60.220	57.384	-16.616	74.000
7311.000	0.465	44.670	45.135	-28.865	74.000
9748.000	2.590	43.790	46.379	-27.621	74.000
<b>Average Detector:</b>					
4874.000	-2.835	44.180	41.344	-12.656	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
4874.000	-2.835	62.270	59.434	-14.566	74.000
7311.000	0.465	45.210	45.675	-28.325	74.000
9748.000	2.590	43.140	45.729	-28.271	74.000
<b>Average Detector:</b>					
4874.000	-2.835	46.460	43.624	-10.376	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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz)  
               Adapter: ATM020-W050U  
 Test Date : 2017/09/12

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4924.000	-2.796	54.470	51.674	-22.326	74.000
7386.000	0.489	44.150	44.639	-29.361	74.000
9848.000	2.729	42.850	45.580	-28.420	74.000
<b>Average Detector:</b>					
--	--	--	--	--	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
4924.000	-2.796	57.780	54.984	-19.016	74.000
7386.000	0.489	43.780	44.269	-29.731	74.000
9848.000	2.729	43.230	45.960	-28.040	74.000
<b>Average Detector:</b>					
4924.000	-2.796	41.890	39.094	-14.906	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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2422MHz)  
               Adapter: ATM020-W050U  
 Test Date : 2017/09/13

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
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### Horizontal

#### Peak Detector:

4844.000	-2.852	45.800	42.948	-31.052	74.000
7266.000	0.426	45.220	45.646	-28.354	74.000
9688.000	2.479	43.340	45.819	-28.181	74.000

#### Average Detector:

--	--	--	--	--	54.000
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### Vertical

#### Peak Detector:

4844.000	-2.852	50.030	47.178	-26.822	74.000
7266.000	0.426	44.580	45.006	-28.994	74.000
9688.000	2.479	42.580	45.059	-28.941	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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437 MHz)  
               Adapter: ATM020-W050U  
 Test Date : 2017/09/13

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m

### Horizontal

#### Peak Detector:

4874.000	-2.835	50.270	47.434	-26.566	74.000
7311.000	0.465	44.620	45.085	-28.915	74.000
9748.000	2.590	43.430	46.019	-27.981	74.000

#### Average Detector:

--	--	--	--	--	54.000
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### Vertical

#### Peak Detector:

4874.000	-2.835	53.620	50.784	-23.216	74.000
7311.000	0.465	44.000	44.465	-29.535	74.000
9748.000	2.590	44.030	46.619	-27.381	74.000

#### Average Detector:

--	--	--	--	--	54.000
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#### 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 : VistaHub Wifi only  
 Test Item : Harmonic Radiated Emission Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2452 MHz)  
               Adapter: ATM020-W050U  
 Test Date : 2017/09/13

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4904.000	-2.828	48.080	45.252	-28.748	74.000
7356.000	0.473	43.970	44.442	-29.558	74.000
9808.000	2.719	42.750	45.470	-28.530	74.000
<b>Average Detector:</b>					
--	--	--	--	--	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
4904.000	-2.828	49.840	47.012	-26.988	74.000
7356.000	0.473	44.130	44.602	-29.398	74.000
9808.000	2.719	43.790	46.510	-27.490	74.000
<b>Average Detector:</b>					
--	--	--	--	--	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 : VistaHub Wifi only  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz) \_ Adapter: ATM020-W050U  
 Test Date : 2017/10/03

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m
<b>Horizontal</b>					
186.043	-12.887	54.110	41.223	-2.277	43.500
235.246	-12.163	54.509	42.347	-3.653	46.000
399.725	-7.349	51.324	43.975	-2.025	46.000
770.855	-0.656	42.686	42.029	-3.971	46.000
924.087	1.169	43.050	44.218	-1.782	46.000
1000.000	2.220	42.973	45.193	-8.807	54.000
<b>Vertical</b>					
39.841	-11.103	49.417	38.314	-1.686	40.000
184.638	-12.729	52.136	39.408	-4.092	43.500
399.725	-7.349	46.313	38.964	-7.036	46.000
616.217	-2.930	43.591	40.661	-5.339	46.000
924.087	1.169	43.883	45.051	-0.949	46.000
1000.000	2.220	43.261	45.481	-8.519	54.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : VistaHub Wifi only  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz) \_ Adapter: ATM020-W050U  
 Test Date : 2017/10/03

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
183.232	-12.567	52.250	39.683	-3.817	43.500
235.246	-12.163	54.039	41.877	-4.123	46.000
399.725	-7.349	49.266	41.917	-4.083	46.000
666.826	-2.298	38.817	36.520	-9.480	46.000
800.377	-0.321	45.706	45.386	-0.614	46.000
924.087	1.169	39.065	40.233	-5.767	46.000
<b>Vertical</b>					
38.435	-11.273	48.554	37.281	-2.719	40.000
183.232	-12.567	52.049	39.482	-4.018	43.500
399.725	-7.349	46.374	39.025	-6.975	46.000
533.275	-4.610	45.182	40.572	-5.428	46.000
770.855	-0.656	45.447	44.790	-1.210	46.000
924.087	1.169	43.738	44.906	-1.094	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 : VistaHub Wifi only  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437 MHz)  
               Adapter: ATM020-W050U  
 Test Date : 2017/10/03

Frequency MHz	Correct Factor	Reading dB $\mu$ V	Measurement dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
186.043	-12.887	54.119	41.232	-2.268	43.500
236.652	-12.074	53.576	41.502	-4.498	46.000
399.725	-7.349	51.225	43.876	-2.124	46.000
616.217	-2.930	41.184	38.254	-7.746	46.000
770.855	-0.656	43.241	42.584	-3.416	46.000
924.087	1.169	43.776	44.944	-1.056	46.000
<b>Vertical</b>					
58.116	-11.642	48.535	36.893	-3.107	40.000
186.043	-12.887	52.463	39.576	-3.924	43.500
461.580	-5.967	45.280	39.313	-6.687	46.000
600.754	-3.062	46.193	43.131	-2.869	46.000
770.855	-0.656	45.468	44.811	-1.189	46.000
924.087	1.169	41.496	42.664	-3.336	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 : VistaHub Wifi only  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437 MHz)  
               Adapter: ATM020-W050U  
 Test Date : 2017/10/03

Frequency MHz	Correct Factor	Reading dB $\mu$ V	Measurement dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
187.449	-13.047	53.439	40.391	-3.109	43.500
235.246	-12.163	53.372	41.210	-4.790	46.000
399.725	-7.349	49.899	42.550	-3.450	46.000
610.594	-2.978	39.115	36.137	-9.863	46.000
770.855	-0.656	45.591	44.934	-1.066	46.000
924.087	1.169	43.548	44.716	-1.284	46.000
<b>Vertical</b>					
39.841	-11.103	48.393	37.290	-2.710	40.000
183.232	-12.567	52.289	39.722	-3.778	43.500
399.725	-7.349	46.905	39.556	-6.444	46.000
616.217	-2.930	44.351	41.421	-4.579	46.000
770.855	-0.656	45.624	44.967	-1.033	46.000
924.087	1.169	43.754	44.922	-1.078	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 : VistaHub Wifi only  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz) \_ Adapter: ATM036T-A050  
 Test Date : 2017/10/02

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m
<b>Horizontal</b>					
136.841	-11.285	44.595	33.310	-10.190	43.500
221.188	-12.701	56.176	43.475	-2.525	46.000
399.725	-7.349	49.976	42.627	-3.373	46.000
616.217	-2.930	43.501	40.571	-5.429	46.000
770.855	-0.656	44.927	44.270	-1.730	46.000
924.087	1.169	41.685	42.853	-3.147	46.000
<b>Vertical</b>					
180.420	-12.247	54.674	42.427	-1.073	43.500
399.725	-7.349	47.247	39.898	-6.102	46.000
616.217	-2.930	45.656	42.726	-3.274	46.000
770.855	-0.656	45.234	44.577	-1.423	46.000
924.087	1.169	41.706	42.874	-3.126	46.000
1000.000	2.220	43.882	46.102	-7.898	54.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : VistaHub Wifi only  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz) \_ Adapter: ATM036T-A050  
 Test Date : 2017/10/03

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
193.072	-13.391	56.273	42.882	-0.618	43.500
222.594	-12.668	56.209	43.540	-2.460	46.000
399.725	-7.349	49.698	42.349	-3.651	46.000
600.754	-3.062	39.515	36.453	-9.547	46.000
770.855	-0.656	43.443	42.786	-3.214	46.000
924.087	1.169	44.020	45.188	-0.812	46.000
<b>Vertical</b>					
195.884	-13.430	56.646	43.216	-0.284	43.500
298.507	-9.933	50.913	40.980	-5.020	46.000
399.725	-7.349	49.671	42.322	-3.678	46.000
600.754	-3.062	40.125	37.063	-8.937	46.000
770.855	-0.656	43.938	43.281	-2.719	46.000
960.638	1.605	42.742	44.347	-9.653	54.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : VistaHub Wifi only  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437 MHz)  
               Adapter: ATM036T-A050  
 Test Date : 2017/10/03

Frequency MHz	Correct Factor	Reading dB $\mu$ V	Measurement dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
193.072	-13.391	56.477	43.086	-0.414	43.500
399.725	-7.349	51.044	43.695	-2.305	46.000
600.754	-3.062	39.895	36.833	-9.167	46.000
770.855	-0.656	45.643	44.986	-1.014	46.000
924.087	1.169	42.042	43.210	-2.790	46.000
960.638	1.605	43.553	45.158	-8.842	54.000
<b>Vertical</b>					
197.290	-13.451	53.350	39.899	-3.601	43.500
399.725	-7.349	47.242	39.893	-6.107	46.000
600.754	-3.062	43.953	40.891	-5.109	46.000
770.855	-0.656	46.100	45.443	-0.557	46.000
924.087	1.169	41.622	42.790	-3.210	46.000
1000.000	2.220	44.060	46.280	-7.720	54.000

## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : VistaHub Wifi only  
 Test Item : General Radiated Emission Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437 MHz)  
               Adapter: ATM036T-A050  
 Test Date : 2017/10/03

Frequency MHz	Correct Factor	Reading dB $\mu$ V	Measurement dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
195.884	-13.430	56.785	43.355	-0.145	43.500
399.725	-7.349	48.883	41.534	-4.466	46.000
600.754	-3.062	38.559	35.497	-10.503	46.000
700.565	-1.650	41.271	39.621	-6.379	46.000
770.855	-0.656	42.522	41.865	-4.135	46.000
924.087	1.169	43.727	44.895	-1.105	46.000
<b>Vertical</b>					
170.580	-10.941	50.187	39.245	-4.255	43.500
399.725	-7.349	49.798	42.449	-3.551	46.000
533.275	-4.610	44.939	40.329	-5.671	46.000
600.754	-3.062	42.436	39.374	-6.626	46.000
770.855	-0.656	36.465	35.808	-10.192	46.000
1000.000	2.220	42.367	44.587	-9.413	54.000

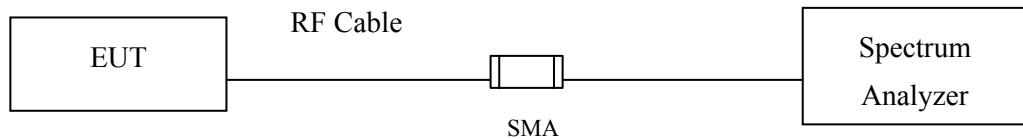
## Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

## 5. RF antenna conducted test

### 5.1. Test 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.

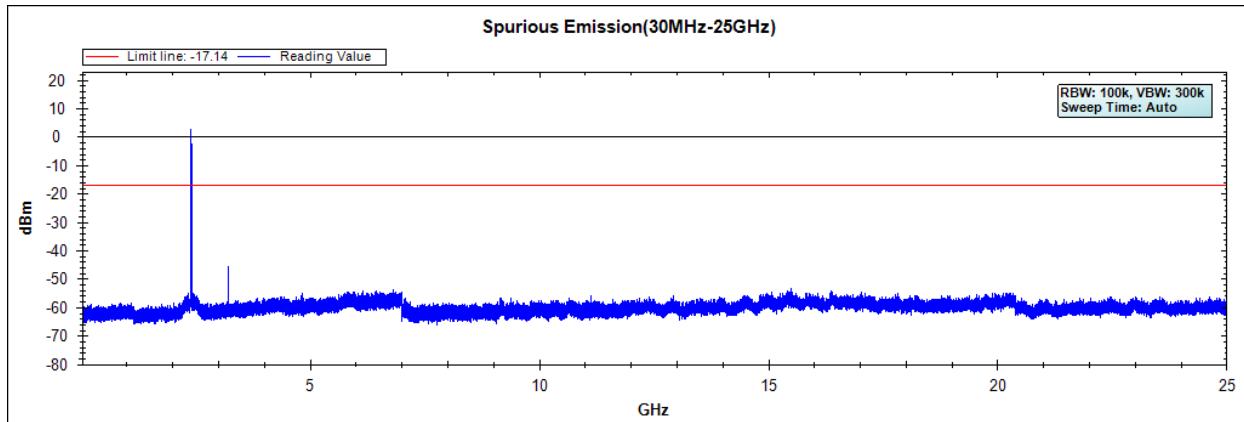
### 5.4. Uncertainty

±1.23dB

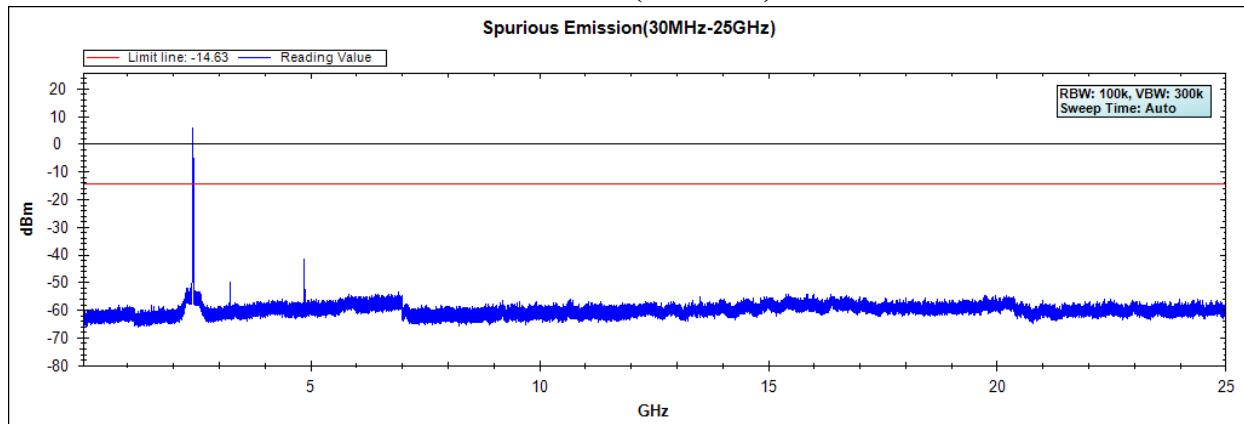
## 5.5. Test Result of RF antenna conducted test

Product : VistaHub Wifi only  
Test Item : RF antenna conducted test  
Test Mode : Mode 1: Transmit (802.11b 1Mbps)  
Test Date : 2017/09/16

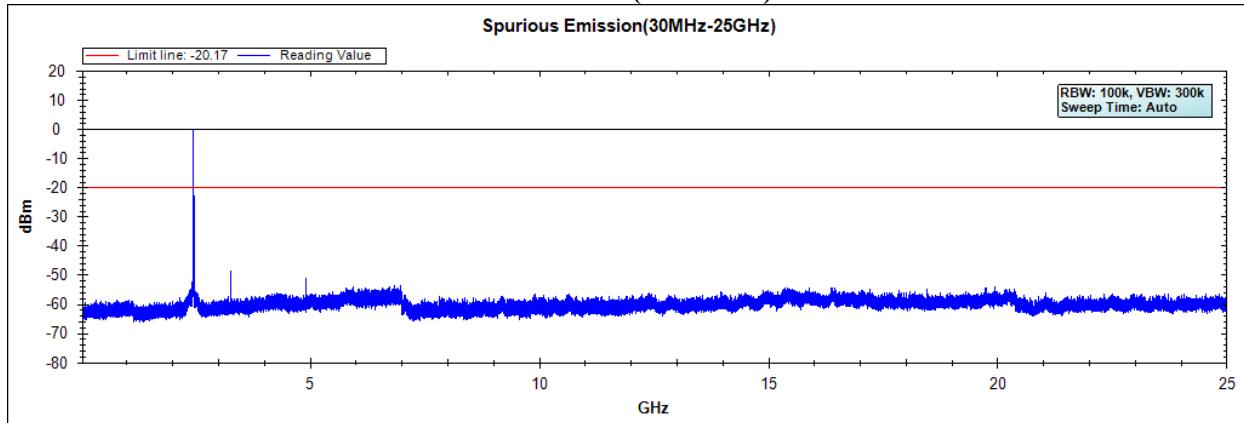
### Channel 01 (2412MHz)



### Channel 06 (2437MHz)



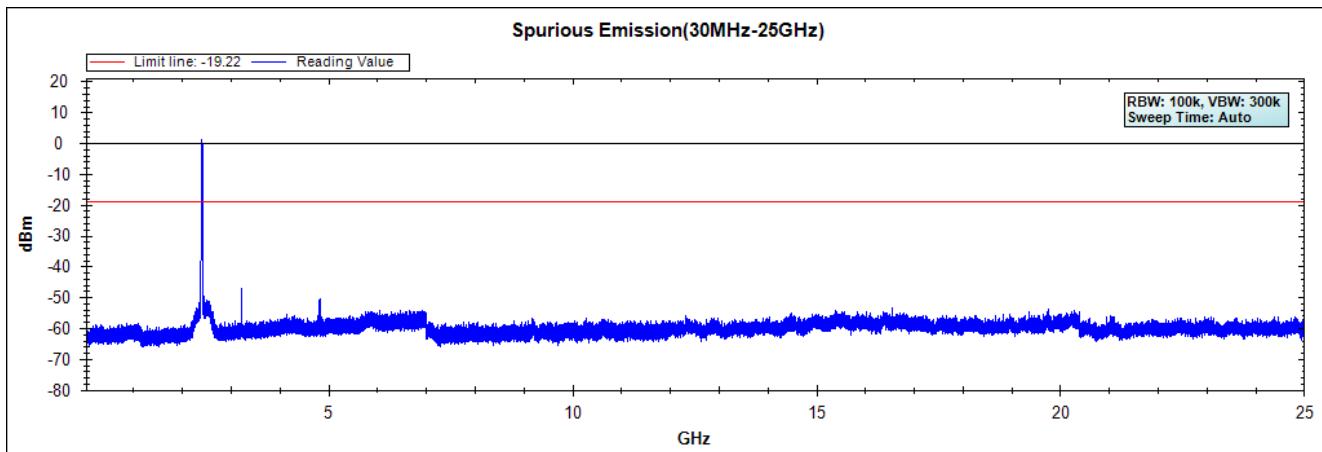
### Channel 11 (2462MHz)



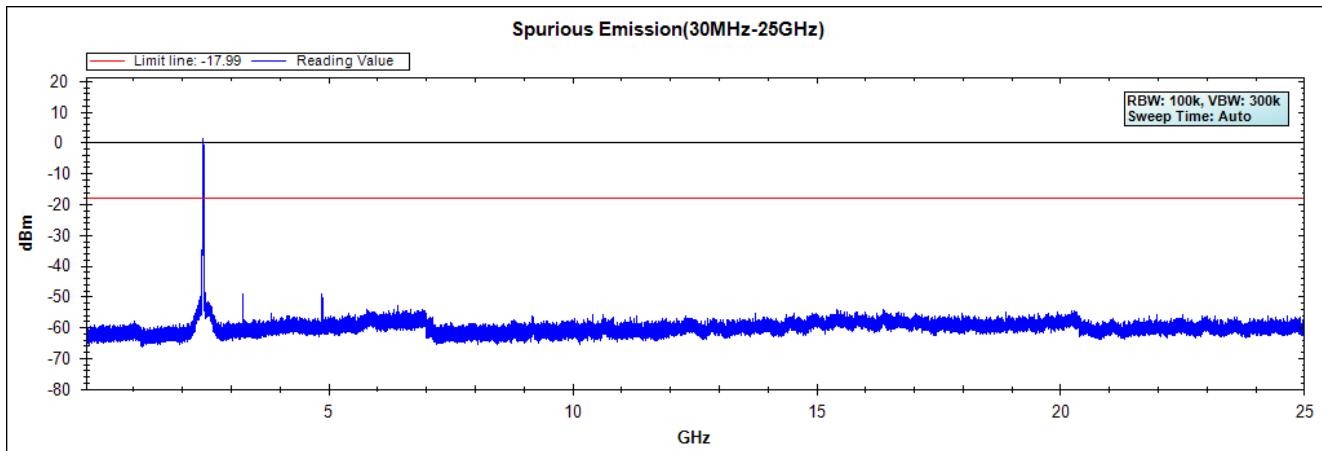
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : VistaHub Wifi only  
Test Item : RF Antenna Conducted Spurious  
Test Mode : Mode 2: Transmit (802.11g 6Mbps)  
Test Date : 2017/09/16

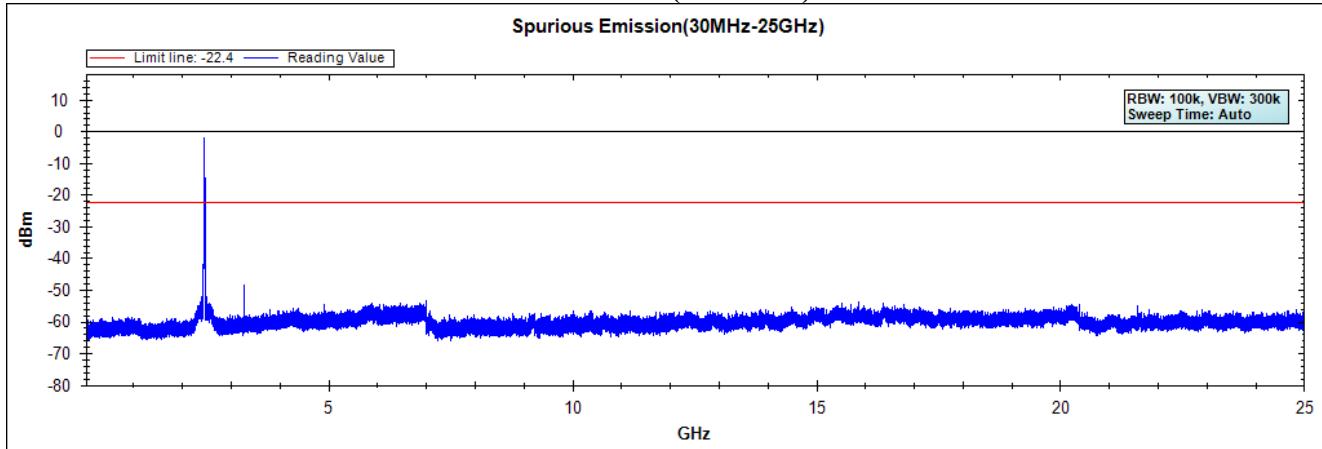
### Channel 01 (2412MHz)



### Channel 06 (2437MHz)



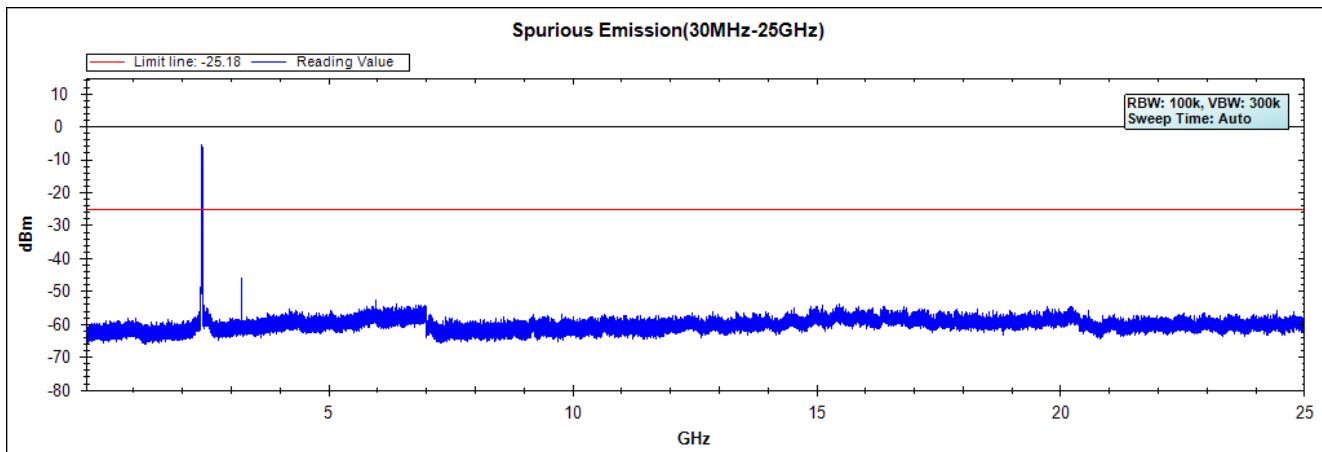
### Channel 11 (2462MHz)



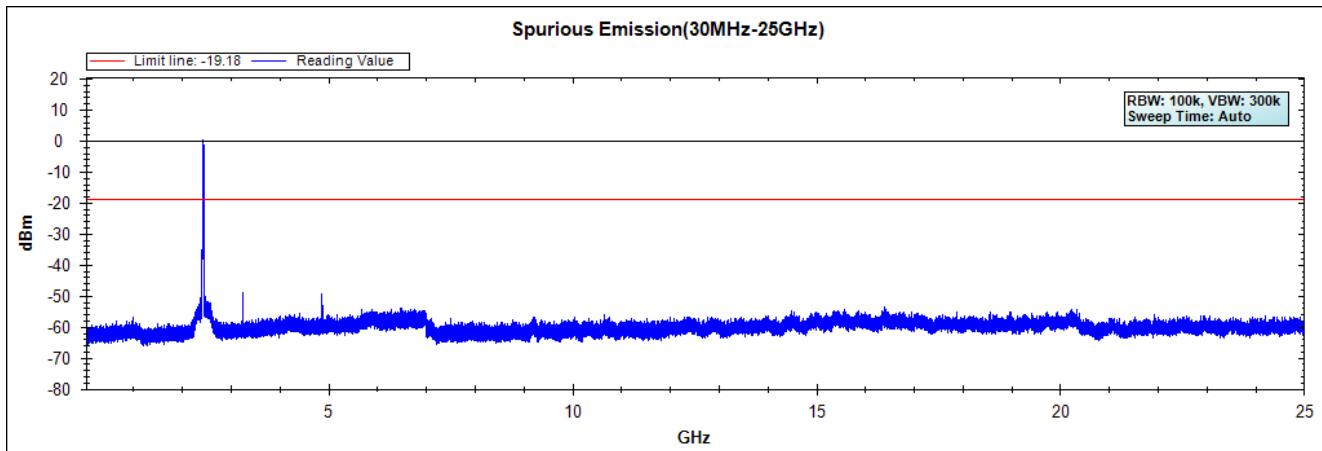
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : VistaHub Wifi only  
Test Item : RF Antenna Conducted Spurious  
Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)  
Test Date : 2017/09/16

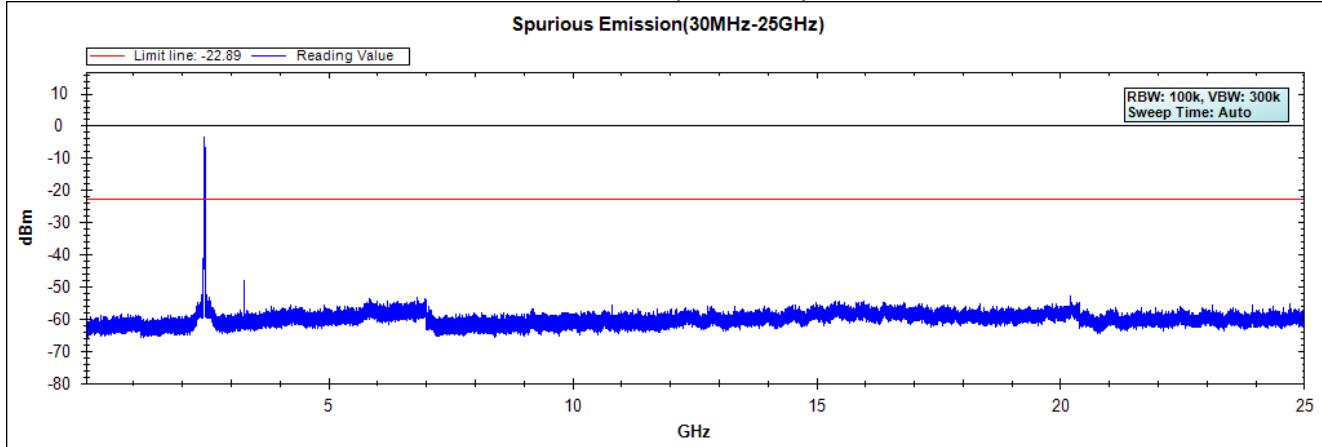
### Channel 01 (2412MHz)



### Channel 06 (2437MHz)



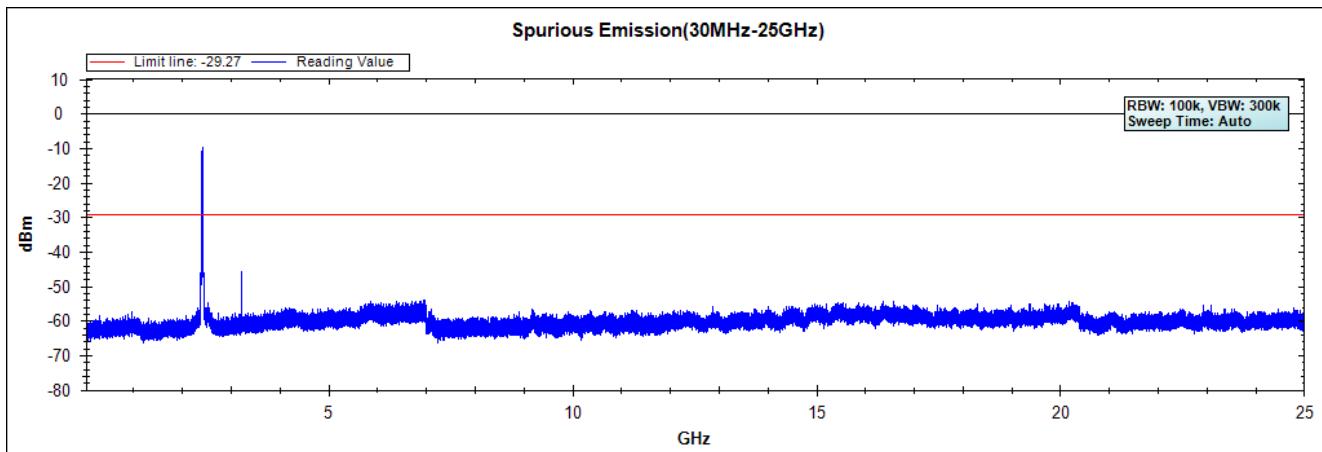
### Channel 11 (2462MHz)



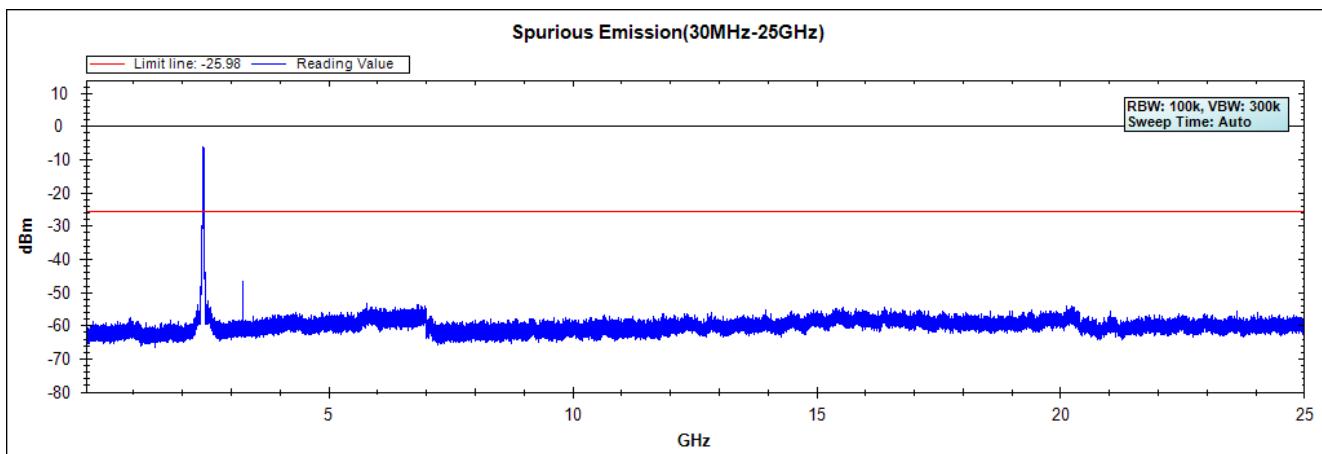
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : VistaHub Wifi only  
Test Item : RF Antenna Conducted Spurious  
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)  
Test Date : 2017/09/16

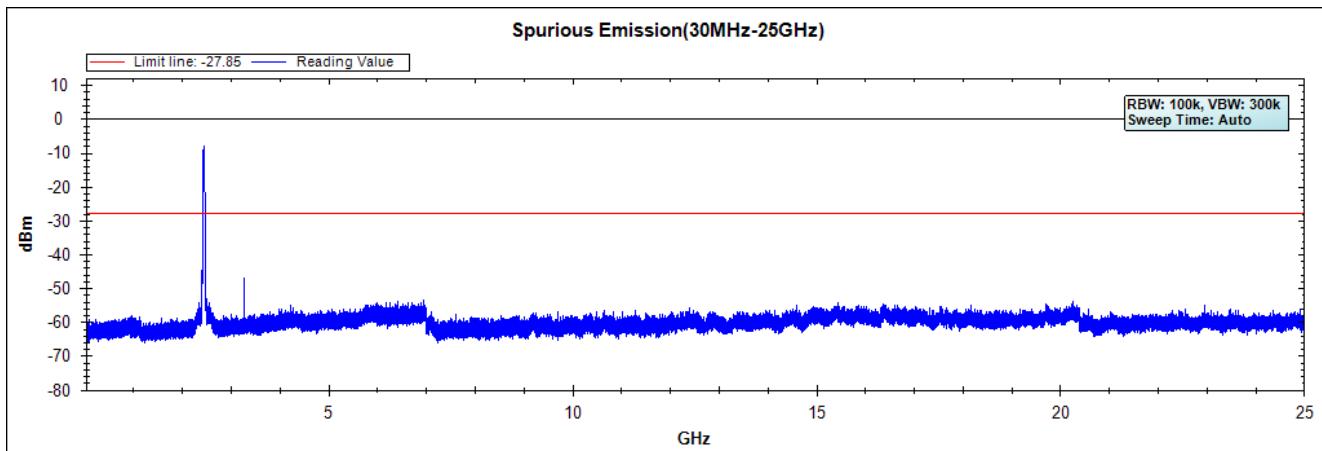
### Channel 01 (2422MHz)



### Channel 04 (2437MHz)



### Channel 07 (2452MHz)

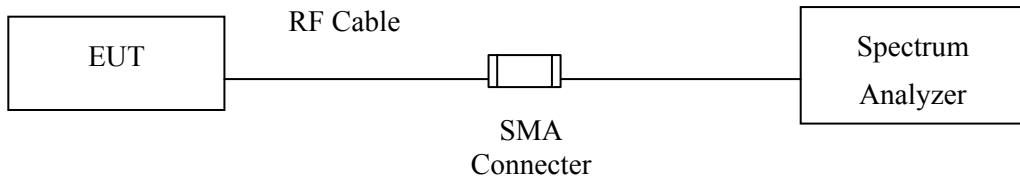


Note: The above test pattern is synthesized by multiple of the frequency range.

## 6. Band Edge

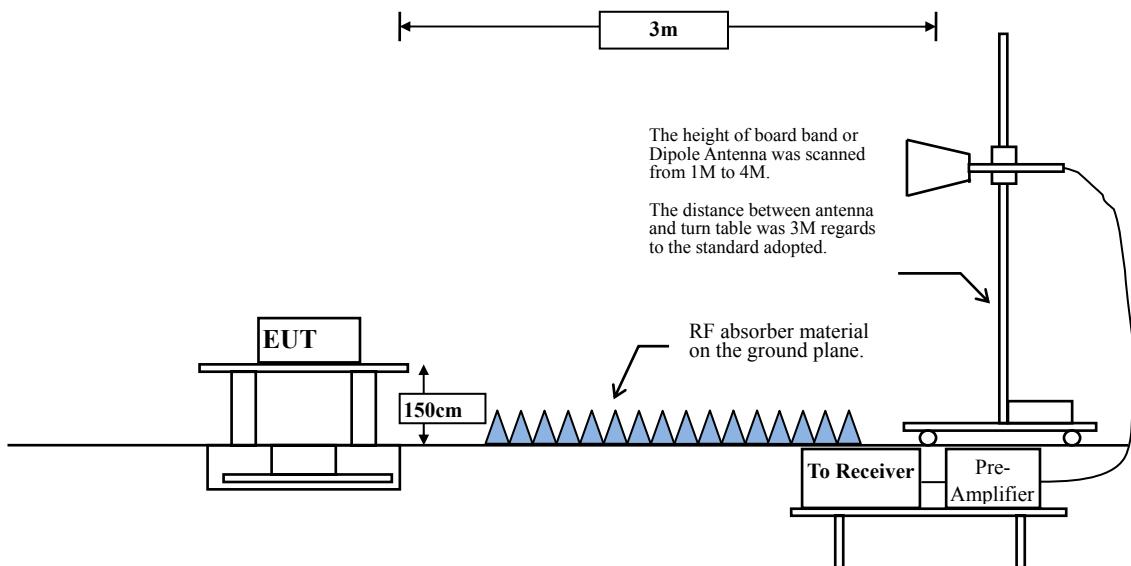
### 6.1. Test Setup

#### 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.

## 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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)  
 Test Date : 2017/08/26

### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
01 (Peak)	2352.464	11.438	48.753	60.191	74.00	54.00	Pass
01 (Peak)	2390.000	11.556	45.735	57.291	74.00	54.00	Pass
01 (Peak)	2397.101	11.573	57.331	68.903	--	--	--
01 (Peak)	2400.000	11.579	52.653	64.232	--	--	--
01 (Peak)	2410.580	11.604	88.806	100.410	--	--	--
01 (Average)	2375.217	11.512	33.810	45.322	74.00	54.00	Pass
01 (Average)	2390.000	11.556	33.651	45.207	74.00	54.00	Pass
01 (Average)	2397.246	11.573	51.884	63.457	--	--	--
01 (Average)	2400.000	11.579	44.078	55.657	--	--	--
01 (Average)	2409.275	11.601	85.509	97.110	--	--	--

Figure Channel 01:

Horizontal (Peak)

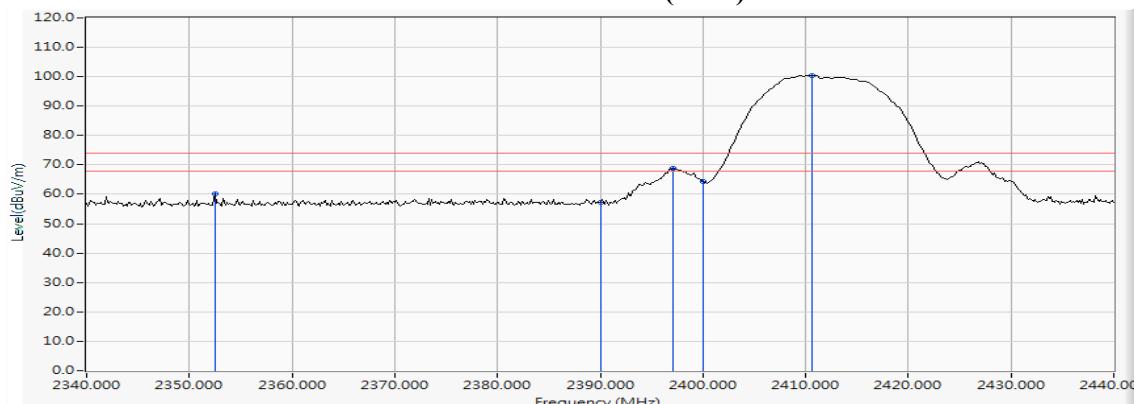
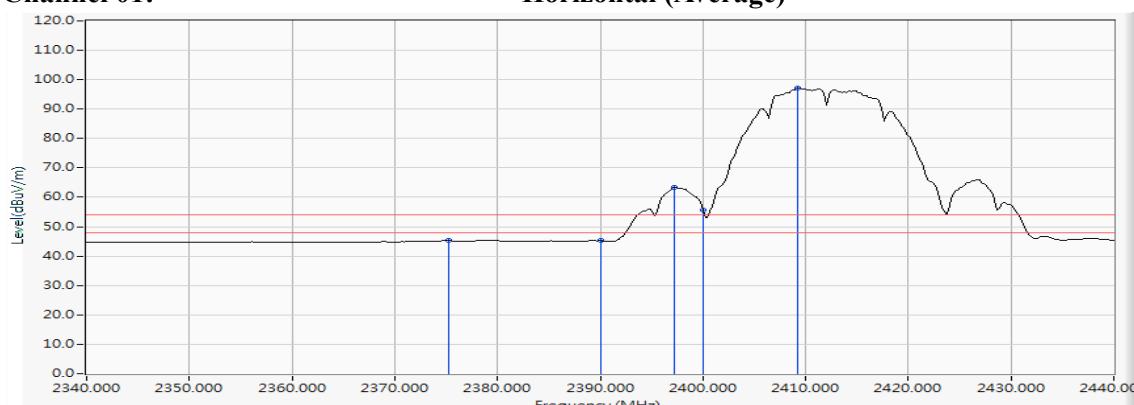


Figure Channel 01:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
01 (Peak)	2388.551	11.552	50.891	62.443	74.00	54.00	Pass
01 (Peak)	2390.000	11.556	50.432	61.988	74.00	54.00	Pass
01 (Peak)	2397.101	11.573	69.768	81.340	--	--	--
01 (Peak)	2400.000	11.579	64.357	75.936	--	--	--
01 (Peak)	2410.580	11.604	101.091	112.695	--	--	--
01 (Average)	2385.217	11.544	39.216	50.760	74.00	54.00	Pass
01 (Average)	2390.000	11.556	38.923	50.479	74.00	54.00	Pass
01 (Average)	2397.246	11.573	66.074	77.647	--	--	--
01 (Average)	2400.000	11.579	57.461	69.040	--	--	--
01 (Average)	2409.275	11.601	98.166	109.767	--	--	--

Figure Channel 01:

VERTICAL (Peak)

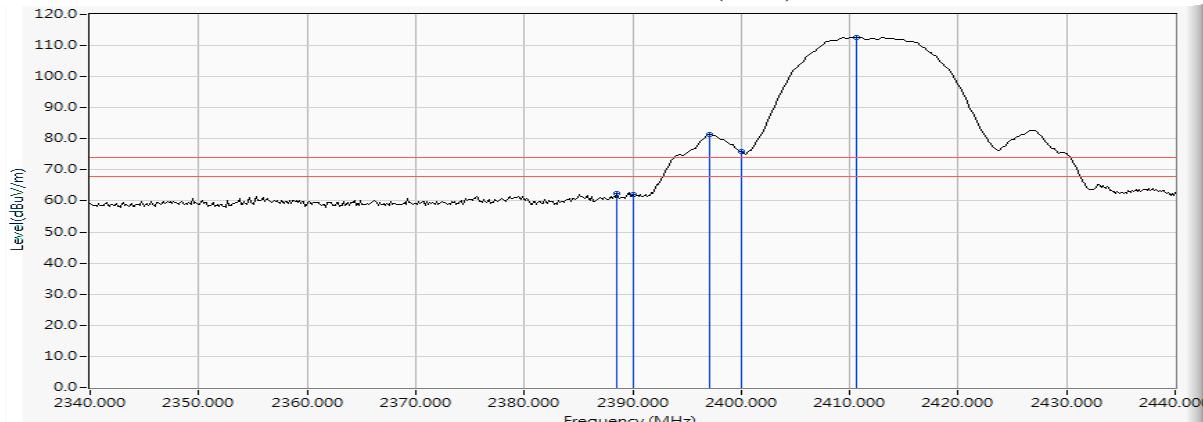
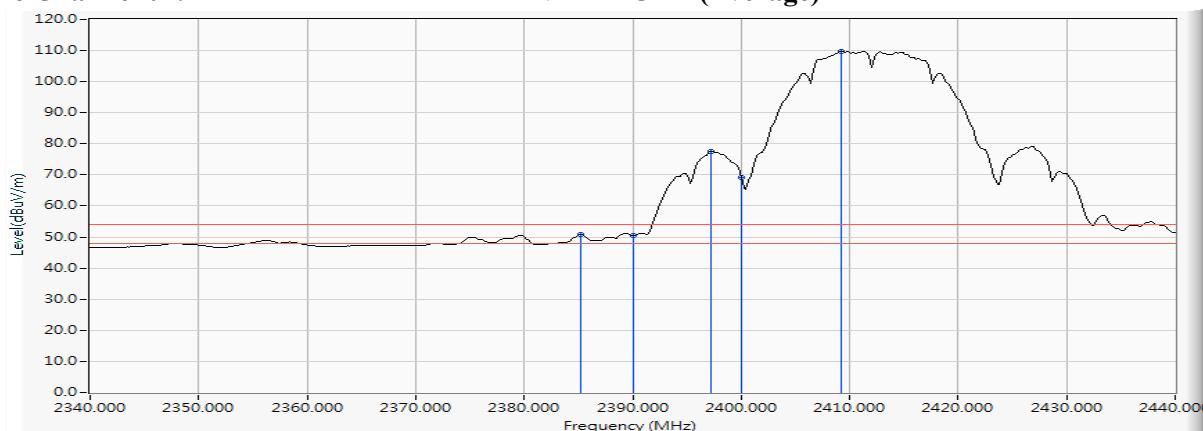


Figure Channel 01:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
11 (Peak)	2460.891	11.739	88.274	100.014	--	--	--
11 (Peak)	2483.500	11.800	46.390	58.190	74.00	54.00	Pass
11 (Peak)	2501.326	11.841	47.619	59.460	74.00	54.00	Pass
11 (Average)	2459.152	11.734	85.454	97.188	--	--	--
11 (Average)	2483.500	11.800	35.033	46.833	74.00	54.00	Pass

Figure Channel 11:

Horizontal (Peak)

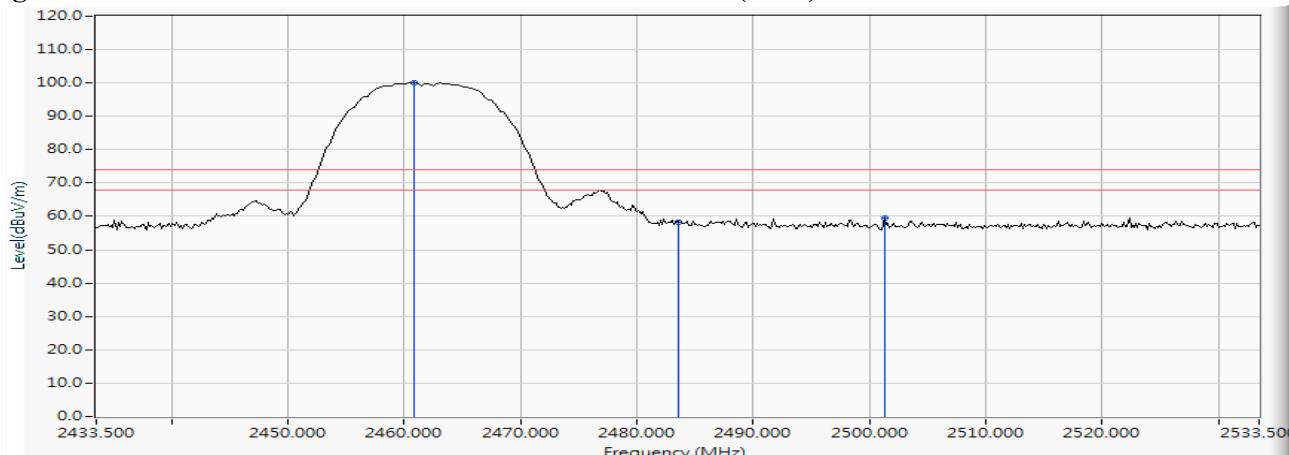
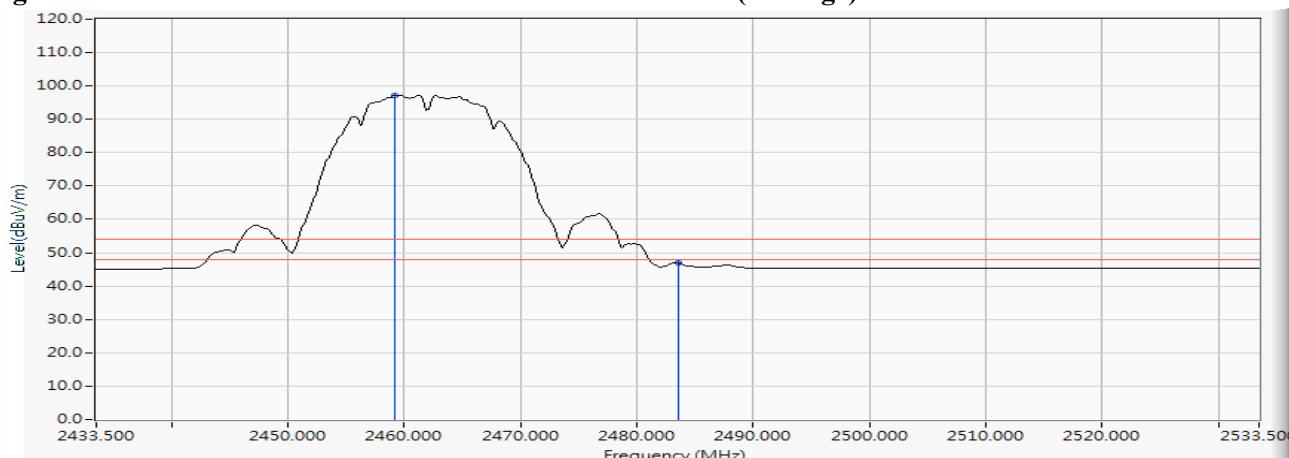


Figure Channel 11:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
11 (Peak)	2463.065	11.747	96.804	108.550	--	--	--
11 (Peak)	2483.500	11.800	49.875	61.675	74.00	54.00	Pass
11 (Average)	2462.775	11.745	93.654	105.399	--	--	--
11 (Average)	2483.500	11.800	40.628	52.428	74.00	54.00	Pass

Figure Channel 11:

VERTICAL (Peak)

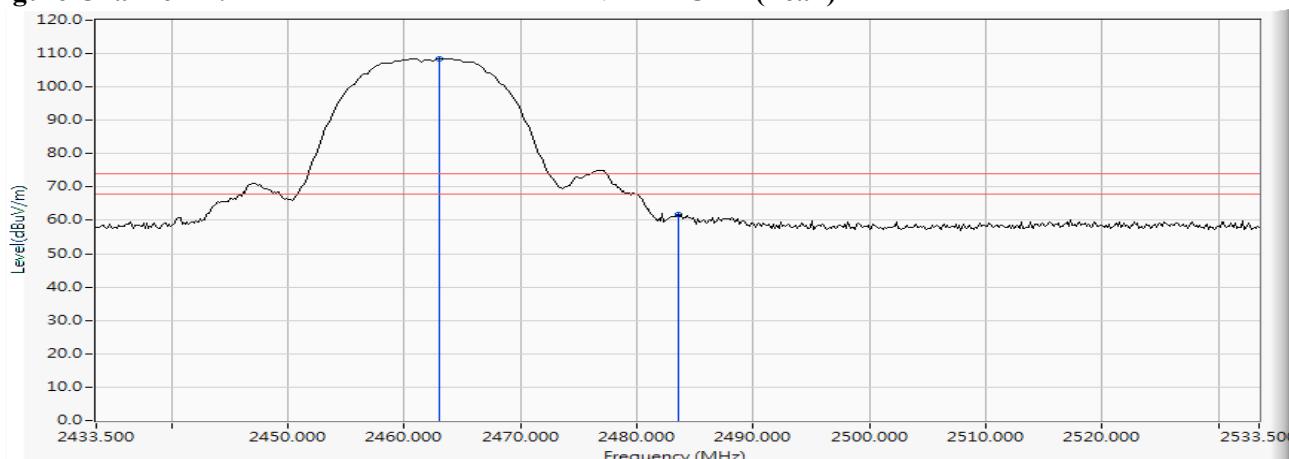
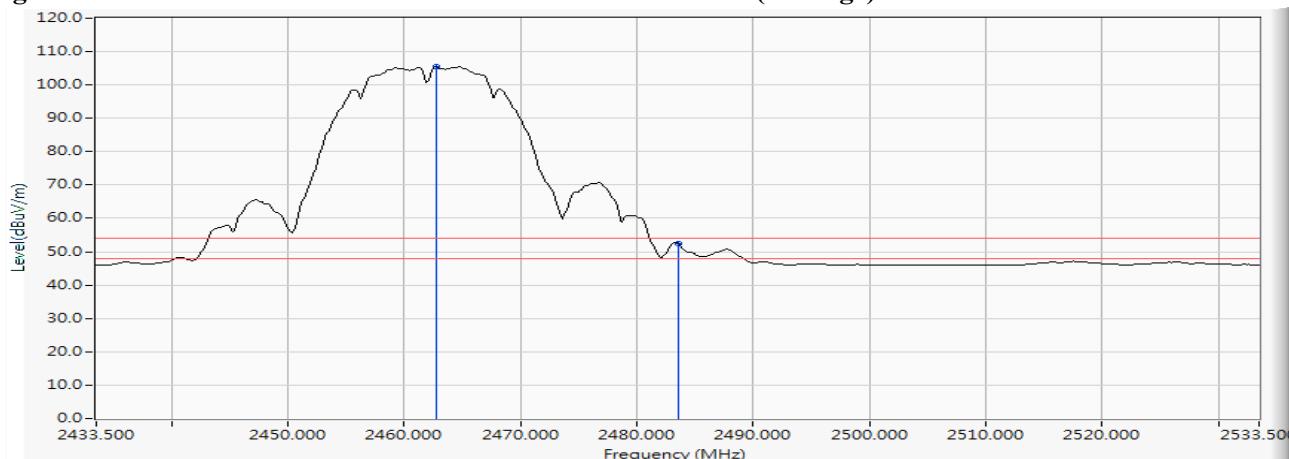


Figure Channel 11:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
01 (Peak)	2389.130	11.553	48.757	60.311	74.00	54.00	Pass
01 (Peak)	2390.000	11.556	48.032	59.588	74.00	54.00	Pass
01 (Peak)	2400.000	11.579	57.252	68.831	--	--	--
01 (Peak)	2409.275	11.601	85.305	96.906	--	--	--
01 (Average)	2390.000	11.556	34.118	45.674	74.00	54.00	Pass
01 (Average)	2400.000	11.579	43.187	54.766	--	--	--
01 (Average)	2409.130	11.600	75.868	87.469	--	--	--

Figure Channel 01:

Horizontal (Peak)

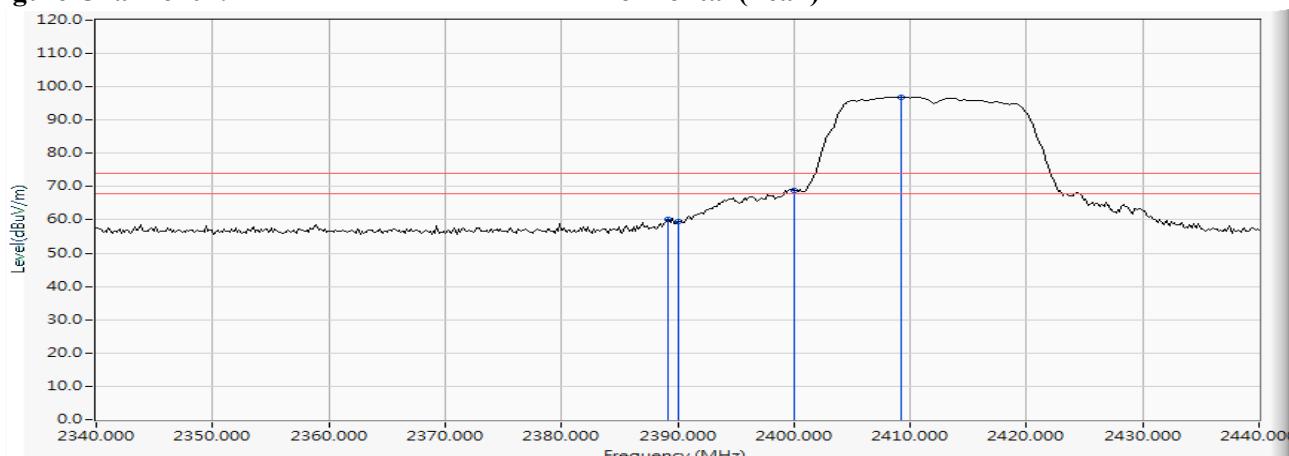
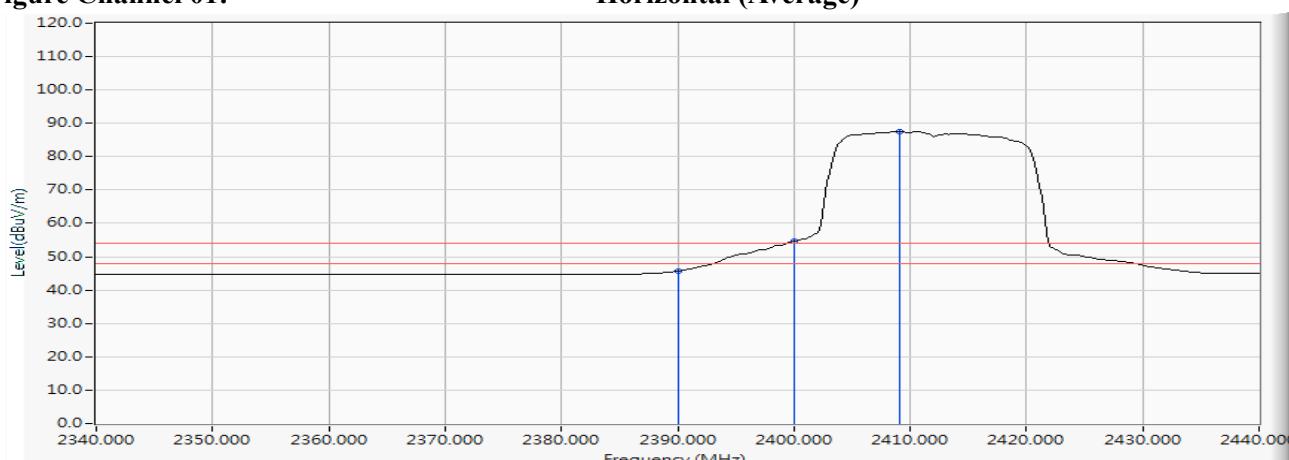


Figure Channel 01:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
01 (Peak)	2390.000	11.556	59.225	70.781	74.00	54.00	Pass
01 (Peak)	2400.000	11.579	69.092	80.671	--	--	--
01 (Peak)	2415.942	11.617	97.804	109.421	--	--	--
01 (Average)	2390.000	11.556	41.106	52.662	74.00	54.00	Pass
01 (Average)	2400.000	11.579	55.041	66.620	--	--	--
01 (Average)	2414.783	11.614	88.340	99.954	--	--	--

Figure Channel 01:

VERTICAL (Peak)

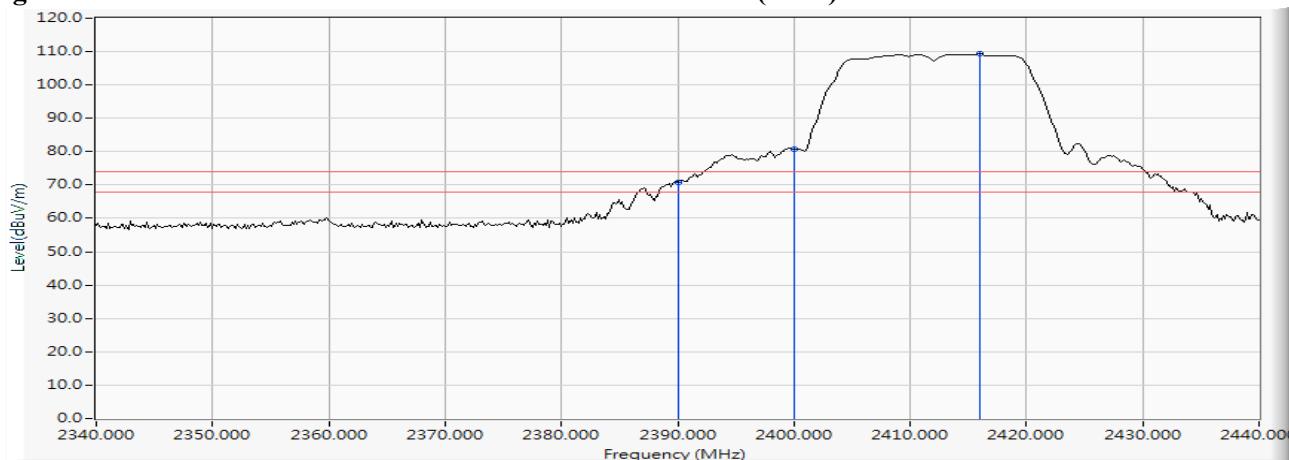
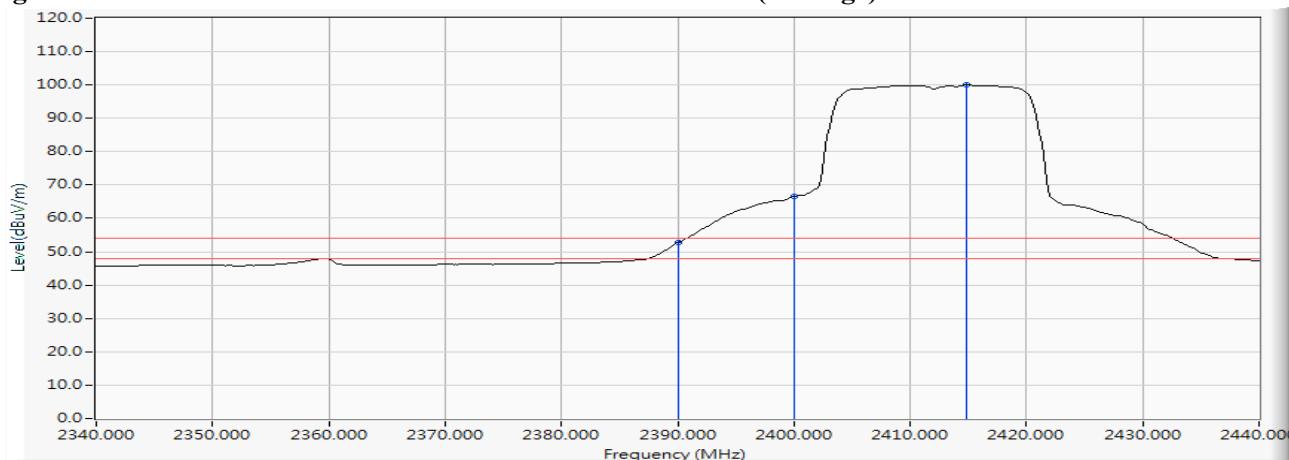


Figure Channel 01:

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.

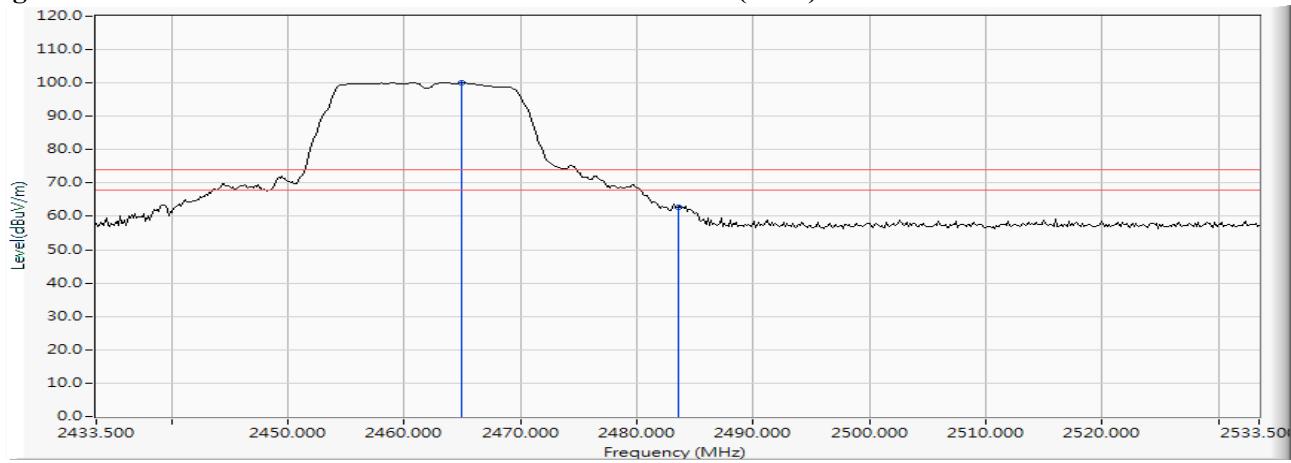
Product : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)  
 Test Date : 2017/08/26

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
11 (Peak)	2464.949	11.752	88.346	100.098	--	--	--
11 (Peak)	2483.500	11.800	50.939	62.739	74.00	54.00	Pass
11 (Average)	2458.572	11.733	79.091	90.823	--	--	--
11 (Average)	2483.500	11.800	35.430	47.230	74.00	54.00	Pass

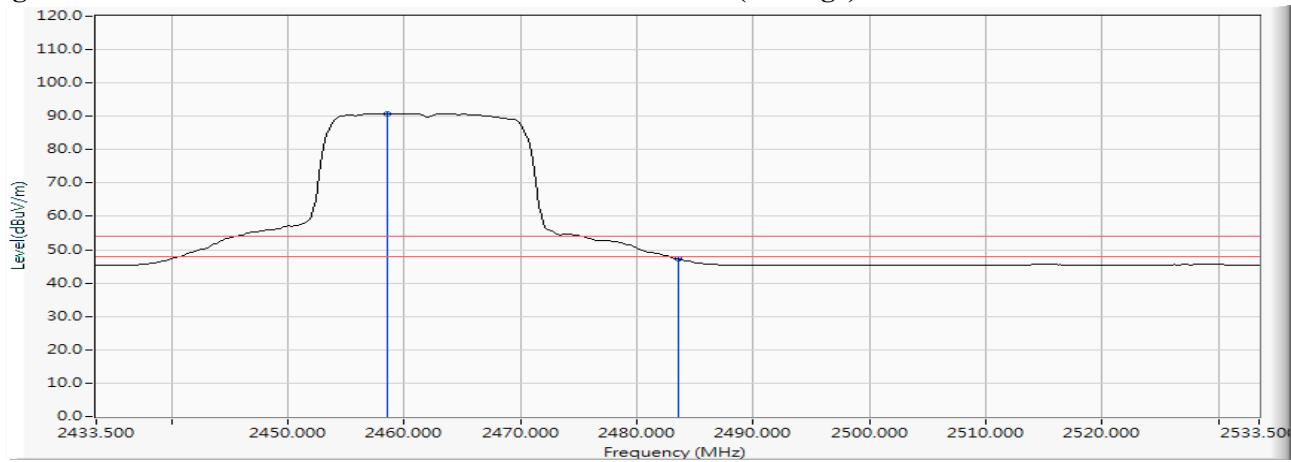
**Figure Channel 11:**

**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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
11 (Peak)	2465.094	11.752	98.144	109.896	--	--	--
11 (Peak)	2483.500	11.800	59.676	71.476	74.00	54.00	Pass
11 (Average)	2464.080	11.749	88.281	100.030	--	--	--
11 (Average)	2483.500	11.800	40.285	52.085	74.00	54.00	Pass

Figure Channel 11:

VERTICAL (Peak)

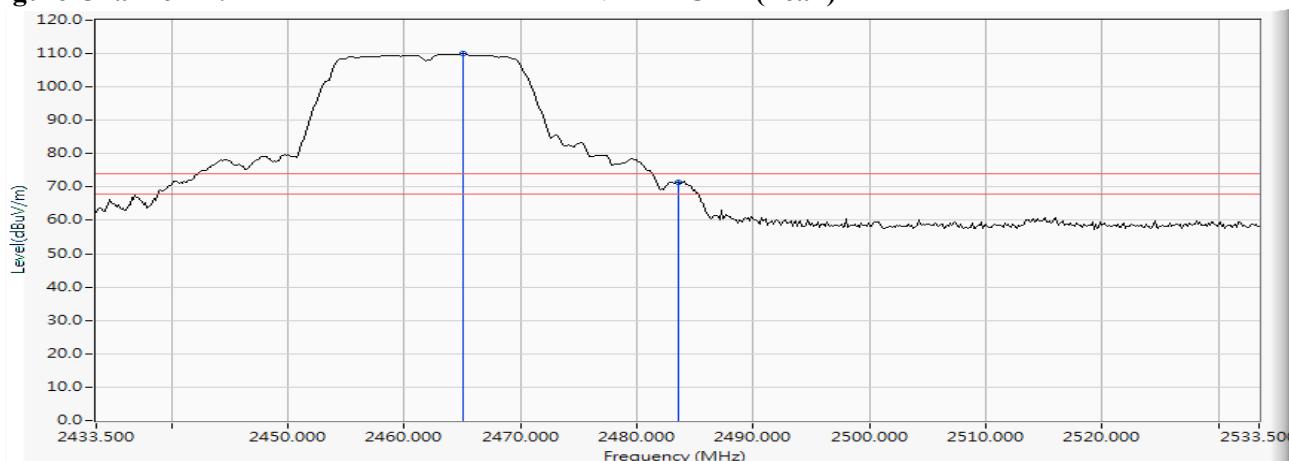
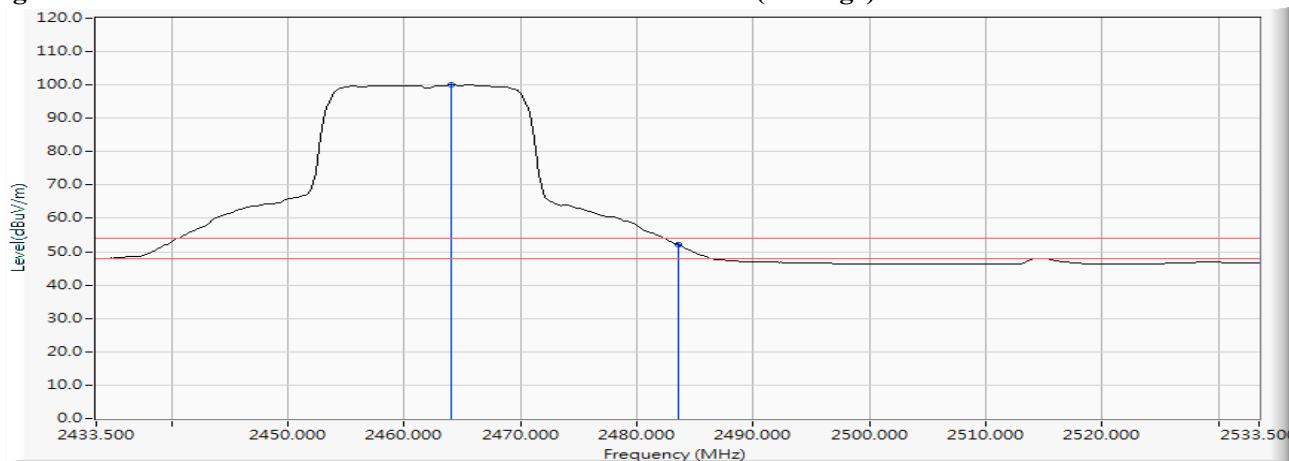


Figure Channel 11:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
01 (Peak)	2389.710	11.555	49.348	60.903	74.00	54.00	Pass
01 (Peak)	2390.000	11.556	47.954	59.510	74.00	54.00	Pass
01 (Peak)	2398.406	11.575	55.159	66.734	--	--	--
01 (Peak)	2400.000	11.579	54.873	66.452	--	--	--
01 (Peak)	2408.986	11.600	83.869	95.470	--	--	--
01 (Average)	2390.000	11.556	33.899	45.455	74.00	54.00	Pass
01 (Average)	2400.000	11.579	39.461	51.040	--	--	--
01 (Average)	2408.841	11.600	74.053	85.653	--	--	--

Figure Channel 01:

Horizontal (Peak)

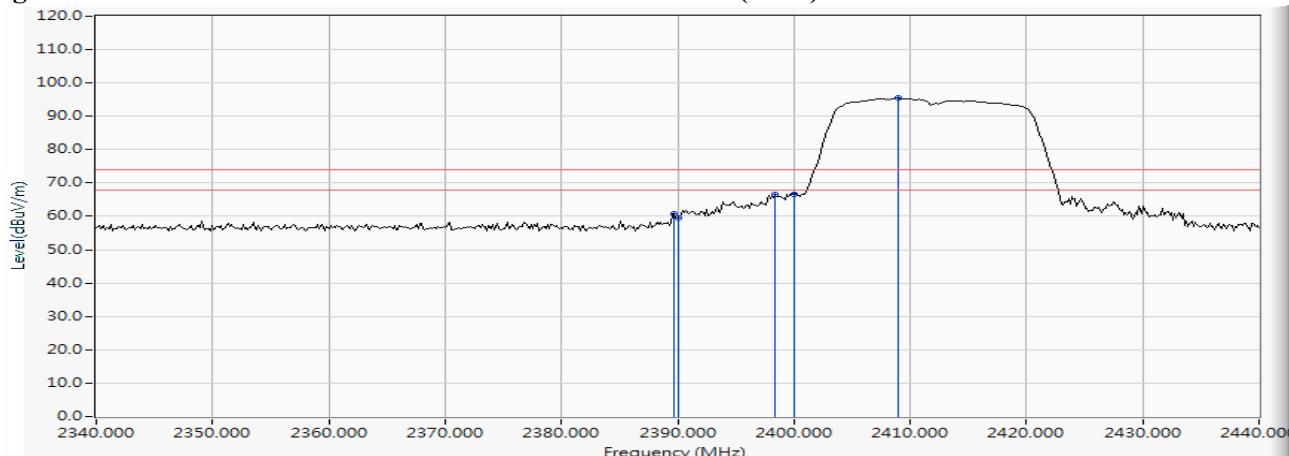
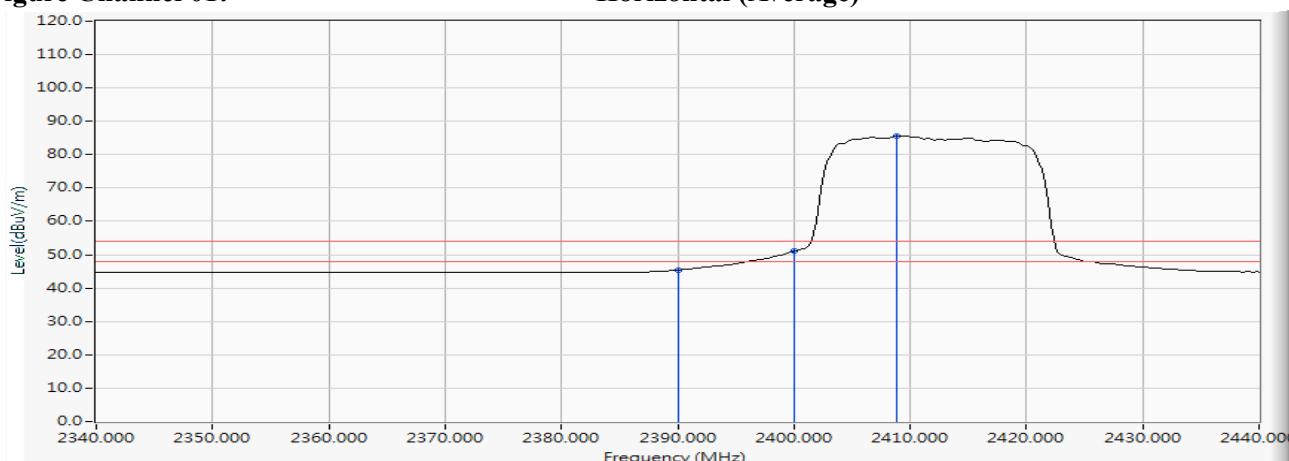


Figure Channel 01:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
01 (Peak)	2390.000	11.556	60.211	71.767	74.00	54.00	Pass
01 (Peak)	2398.116	11.574	67.113	78.688	--	--	--
01 (Peak)	2400.000	11.579	65.765	77.344	--	--	--
01 (Peak)	2415.217	11.616	95.753	107.368	--	--	--
01 (Average)	2390.000	11.556	39.262	50.818	74.00	54.00	Pass
01 (Average)	2400.000	11.579	50.920	62.499	--	--	--
01 (Average)	2415.217	11.616	86.307	97.922	--	--	--

Figure Channel 01:

VERTICAL (Peak)

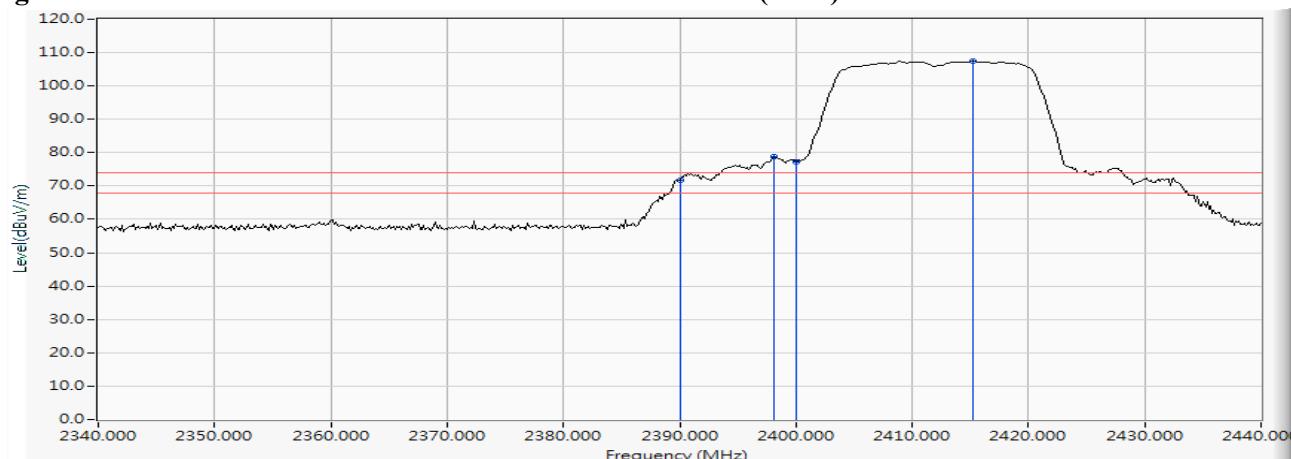
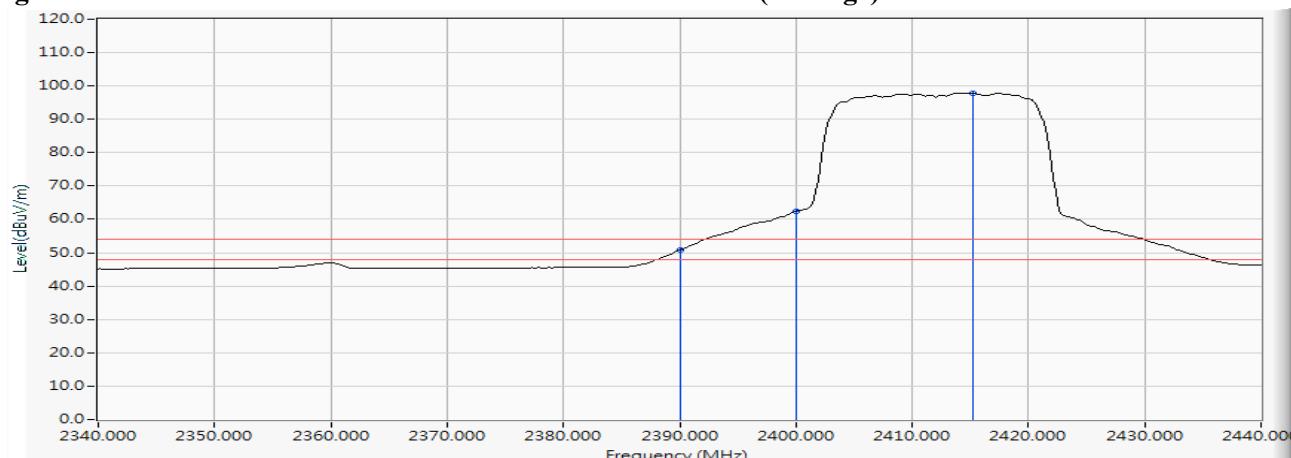


Figure Channel 01:

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.

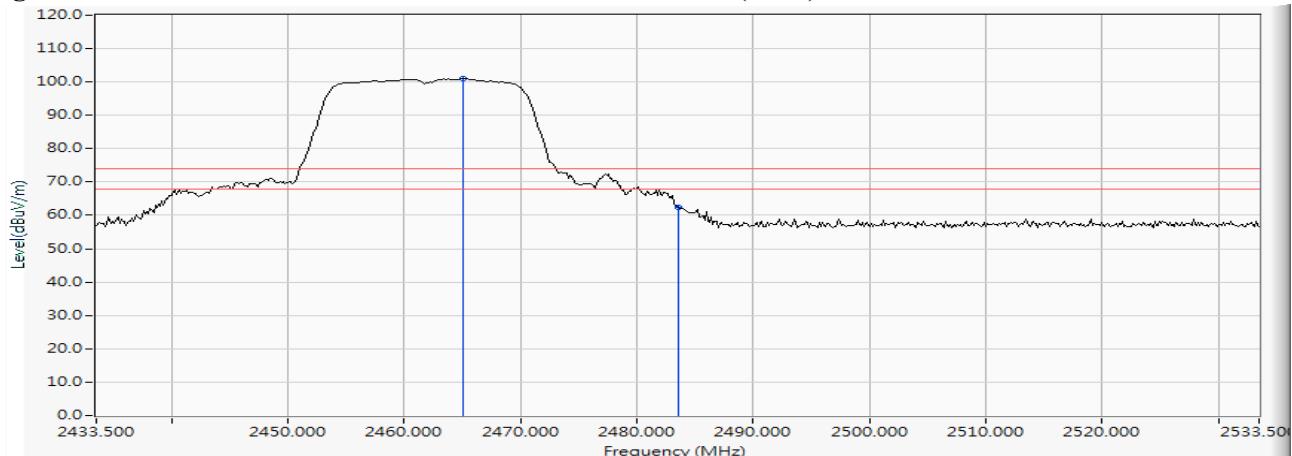
Product : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)  
 Test Date : 2017/08/26

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
11 (Peak)	2465.094	11.752	89.270	101.022	--	--	--
11 (Peak)	2483.500	11.800	50.636	62.436	74.00	54.00	Pass
11 (Average)	2464.370	11.750	79.973	91.723	--	--	--
11 (Average)	2483.500	11.800	35.461	47.261	74.00	54.00	Pass

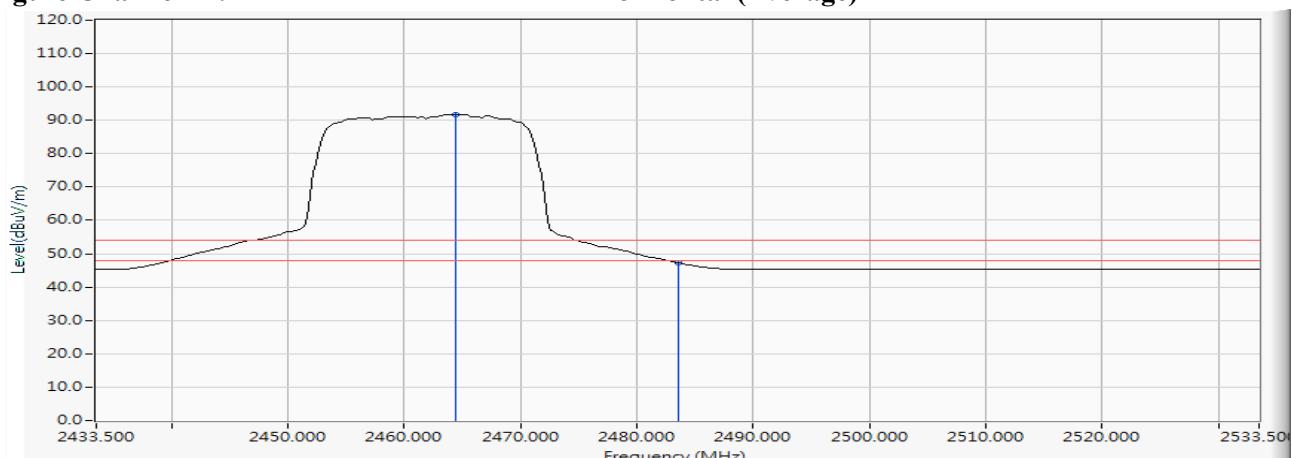
**Figure Channel 11:**

**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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
11 (Peak)	2458.717	11.733	97.760	109.493	--	--	--
11 (Peak)	2483.500	11.800	59.860	71.660	74.00	54.00	Pass
11 (Average)	2460.457	11.739	87.670	99.408	--	--	--
11 (Average)	2483.500	11.800	40.785	52.585	74.00	54.00	Pass

Figure Channel 11:

VERTICAL (Peak)

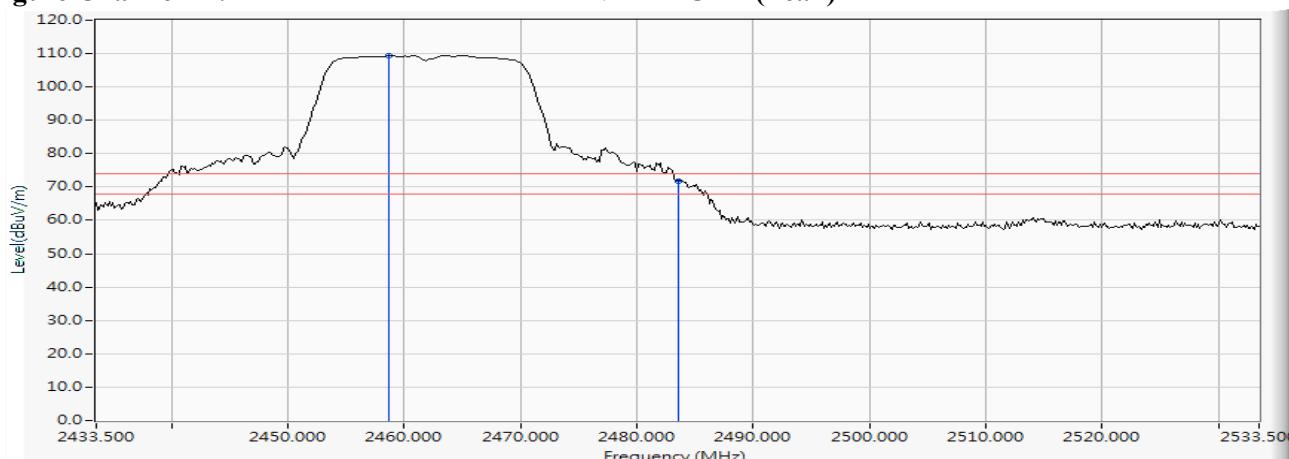
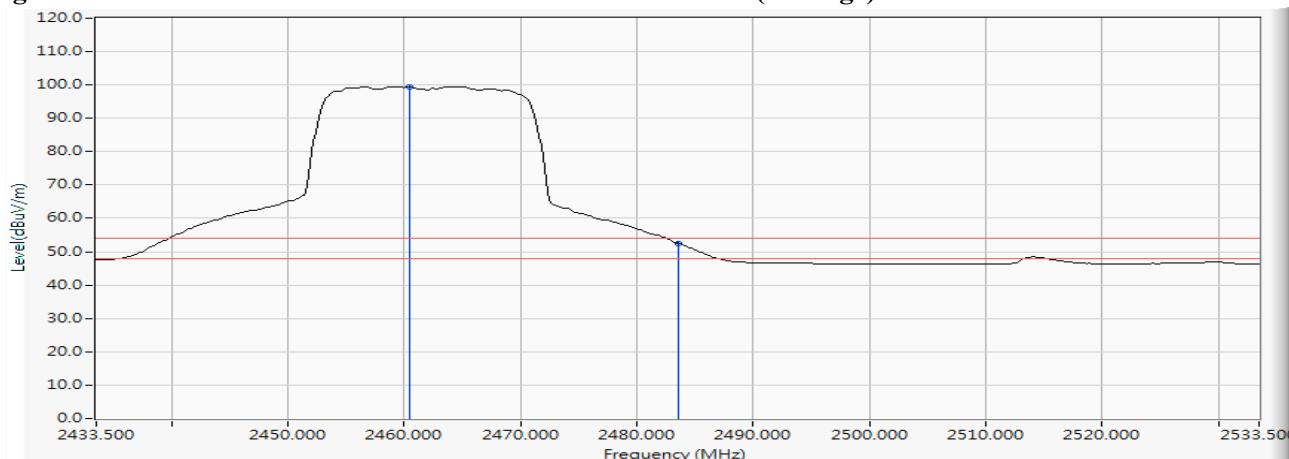


Figure Channel 11:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
03 (Peak)	2388.261	11.552	48.772	60.324	74.00	54.00	Pass
03 (Peak)	2390.000	11.556	48.691	60.247	74.00	54.00	Pass
03 (Peak)	2397.681	11.574	51.781	63.355	--	--	--
03 (Peak)	2400.000	11.579	51.237	62.816	--	--	--
03 (Peak)	2432.319	11.656	79.514	91.170	--	--	--
03 (Average)	2390.000	11.556	35.157	46.713	74.00	54.00	Pass
03 (Average)	2400.000	11.579	37.598	49.177	--	--	--
03 (Average)	2433.333	11.659	69.470	81.128	--	--	--

Figure Channel 03:

Horizontal (Peak)

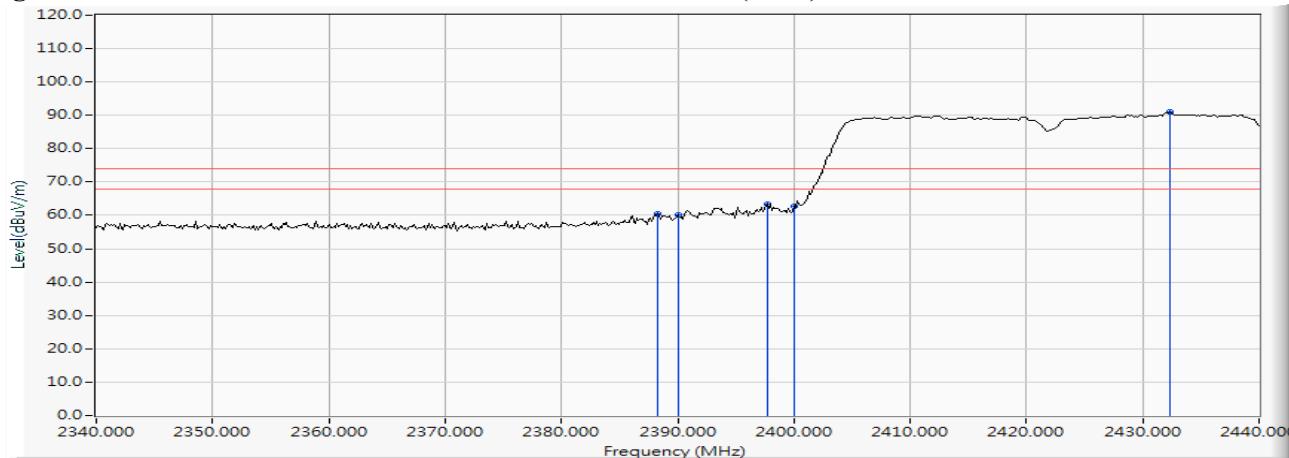
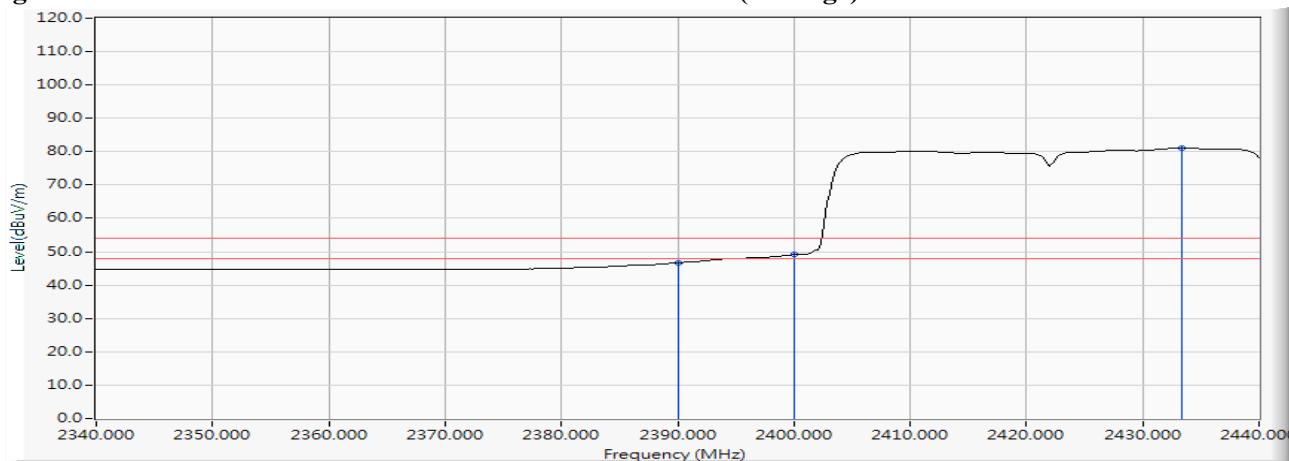


Figure Channel 03:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
03 (Peak)	2388.696	11.552	57.073	68.626	74.00	54.00	Pass
03 (Peak)	2390.000	11.556	54.690	66.246	74.00	54.00	Pass
03 (Peak)	2397.681	11.574	59.100	70.674	--	--	--
03 (Peak)	2400.000	11.579	57.466	69.045	--	--	--
03 (Peak)	2419.855	11.627	89.197	100.823	--	--	--
03 (Average)	2390.000	11.556	40.898	52.454	74.00	54.00	Pass
03 (Average)	2400.000	11.579	43.853	55.432	--	--	--
03 (Average)	2417.536	11.621	79.285	90.906	--	--	--

Figure Channel 03:

VERTICAL (Peak)

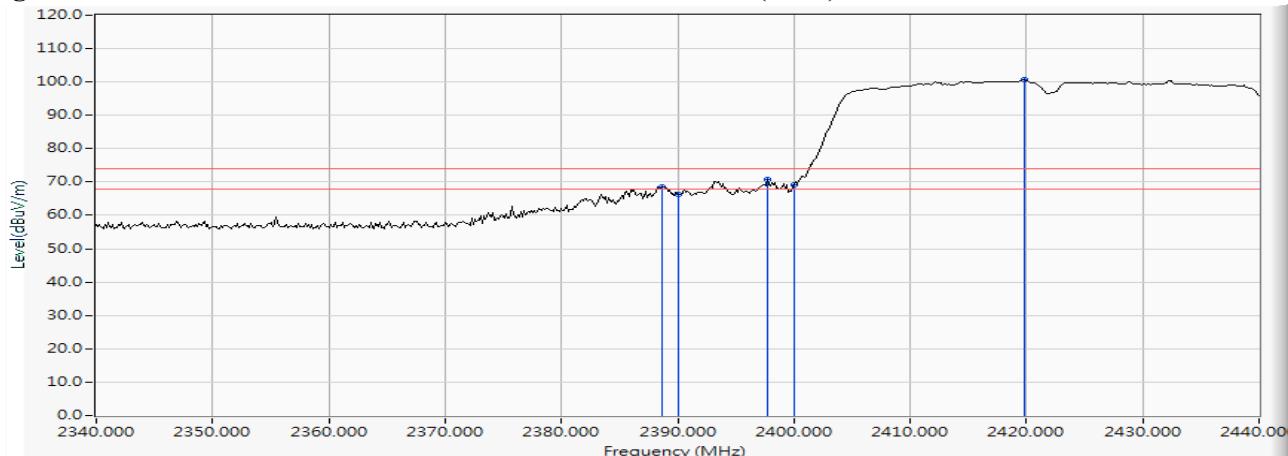
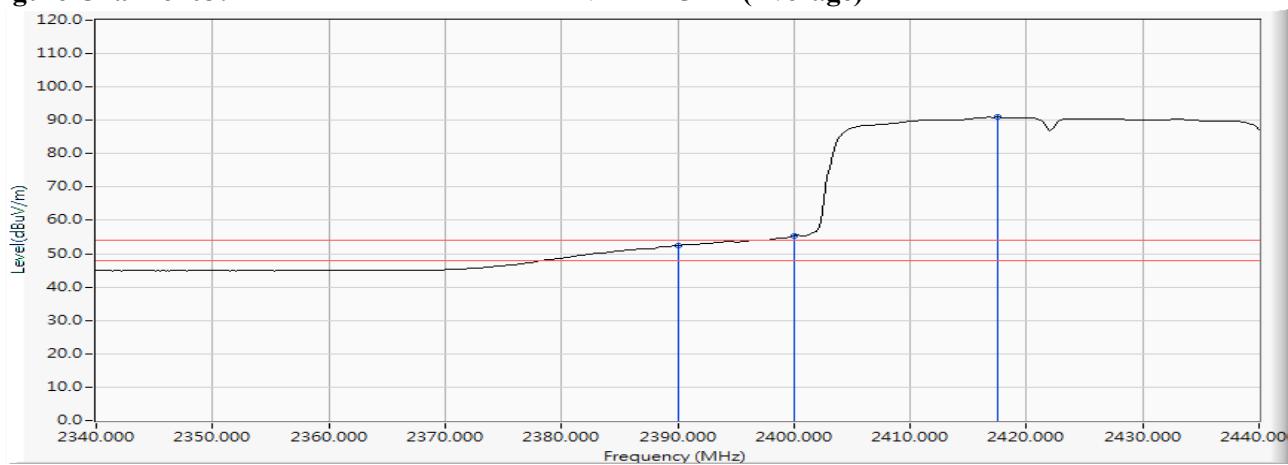


Figure Channel 03:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
09 (Peak)	2462.196	11.744	85.009	96.753	--	--	--
09 (Peak)	2483.500	11.800	48.376	60.176	74.00	54.00	Pass
09 (Peak)	2484.804	11.803	49.997	61.800	74.00	54.00	Pass
09 (Average)	2462.775	11.745	74.605	86.350	--	--	--
09 (Average)	2483.500	11.800	35.192	46.992	74.00	54.00	Pass

Figure Channel 09:

Horizontal (Peak)

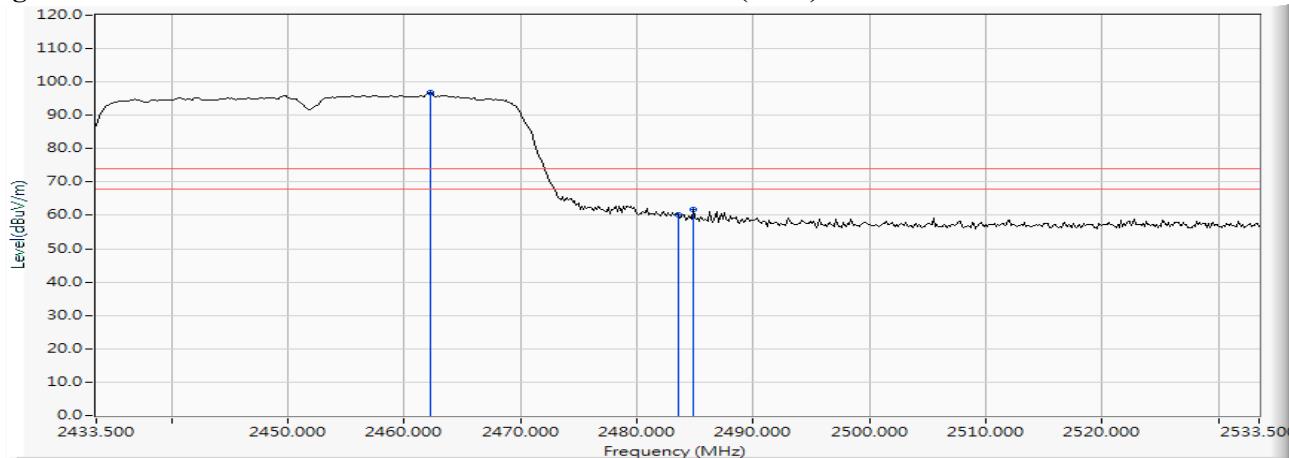
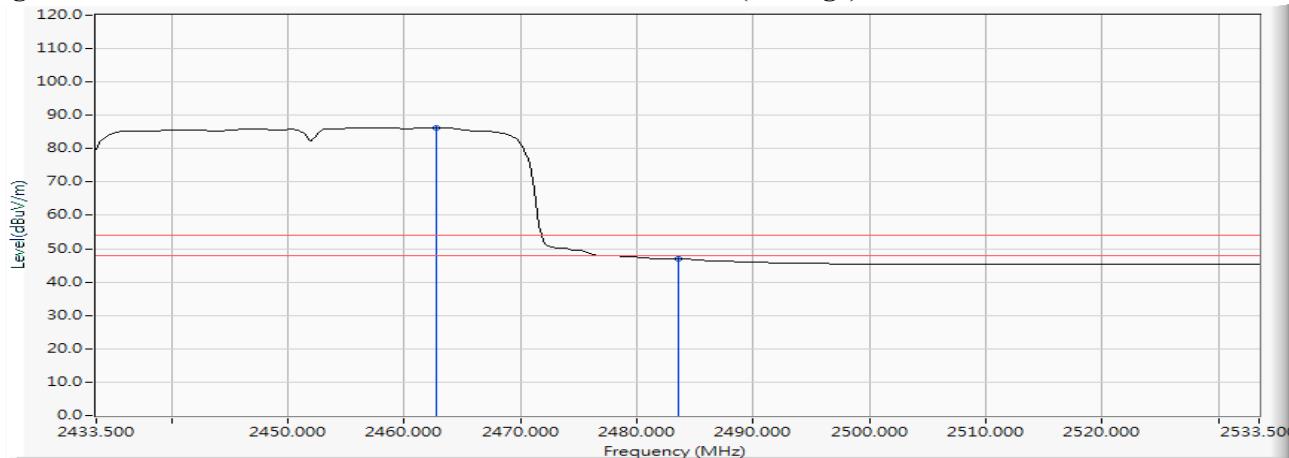


Figure Channel 09:

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 : VistaHub Wifi only  
 Test Item : Band Edge Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)  
 Test Date : 2017/08/26

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB $\mu$ V)	Emission Level (dB $\mu$ V/m)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)	Result
09 (Peak)	2462.196	11.744	90.901	102.645	--	--	--
09 (Peak)	2483.500	11.800	55.364	67.164	74.00	54.00	Pass
09 (Peak)	2487.993	11.810	56.604	68.414	74.00	54.00	Pass
09 (Average)	2462.920	11.745	80.926	92.672	--	--	--
09 (Average)	2483.500	11.800	40.891	52.691	74.00	54.00	Pass

Figure Channel 09:

VERTICAL (Peak)

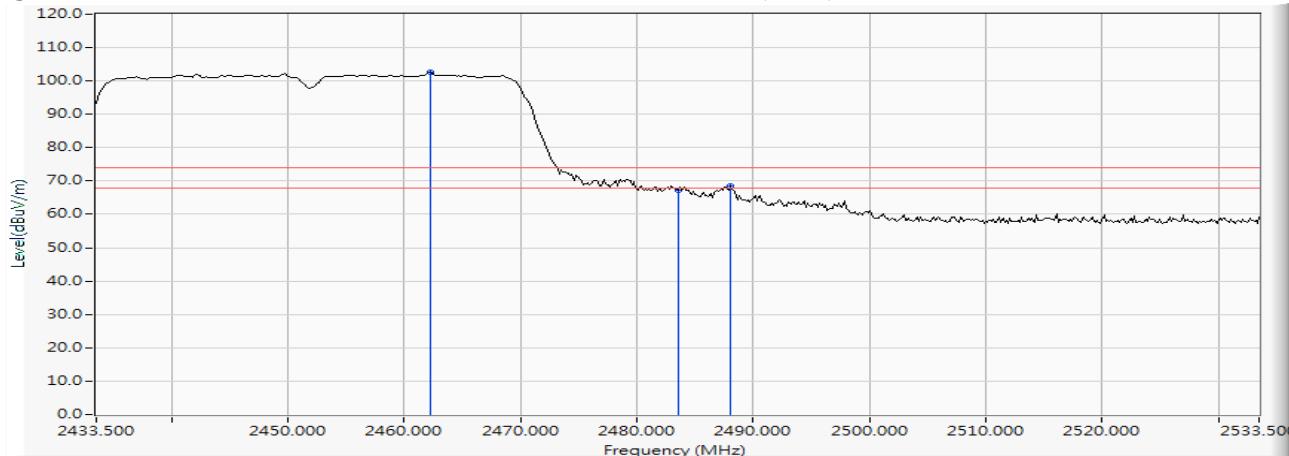
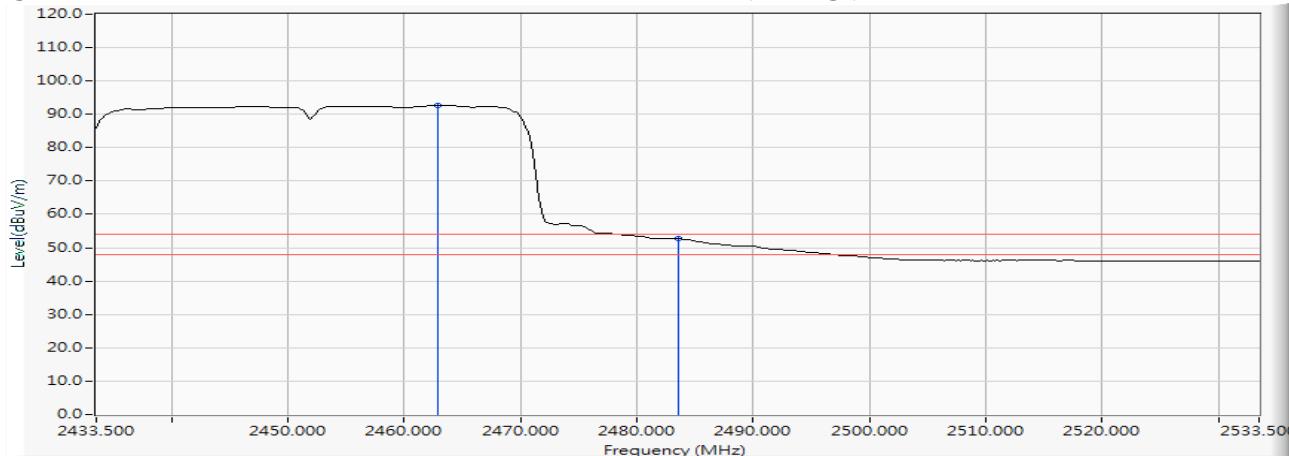


Figure Channel 09:

VERTICAL (Average)

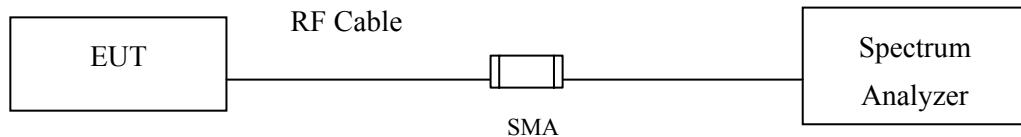


Note:

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**

$\pm$  279.2Hz

## 7.5. Test Result of 6dB Bandwidth

Product : VistaHub Wifi only  
 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	11350	>500	Pass
06	2437	12100	>500	Pass
11	2462	12150	>500	Pass

**Figure Channel 01:**

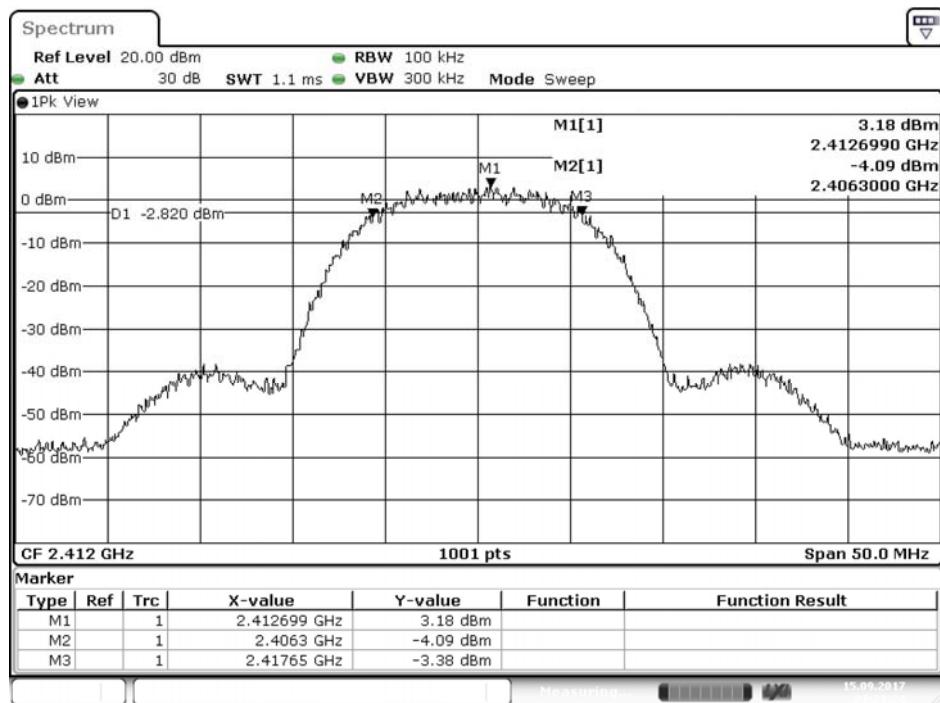
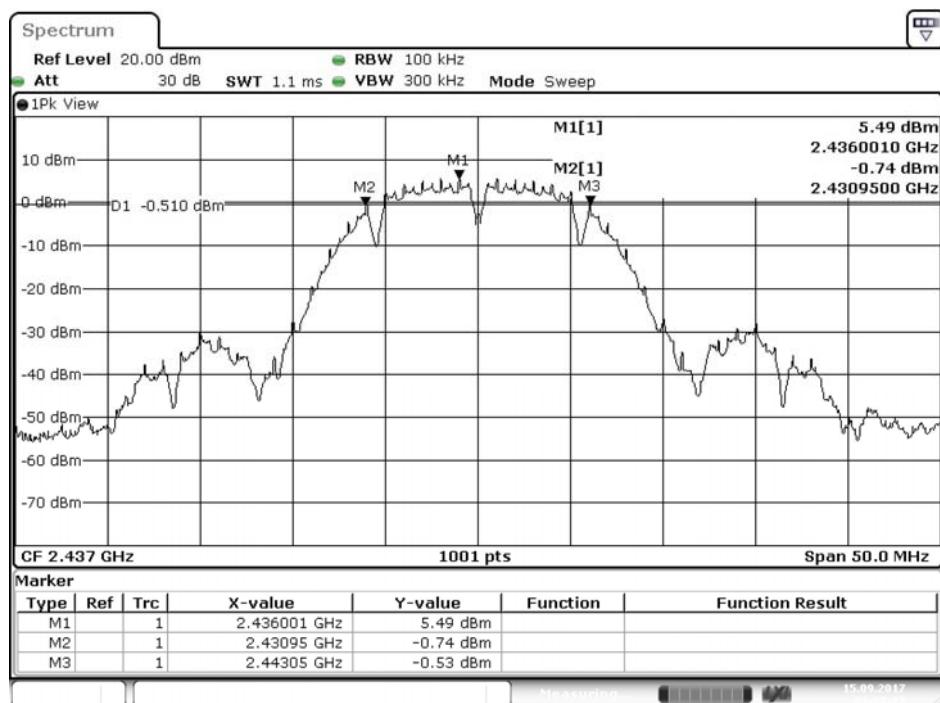
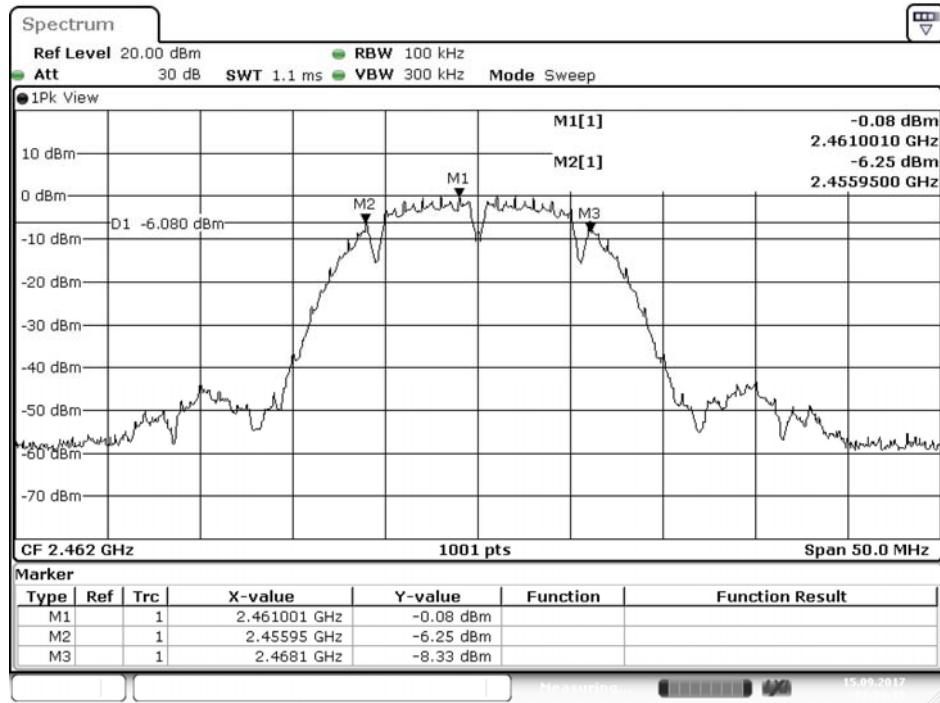


Figure Channel 06:



Date: 15.SEP.2017 23:27:27

Figure Channel 11:



Date: 15.SEP.2017 23:33:20

Product : VistaHub Wifi only  
 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	16500	>500	Pass
06	2437	16450	>500	Pass
11	2462	16450	>500	Pass

**Figure Channel 01:**

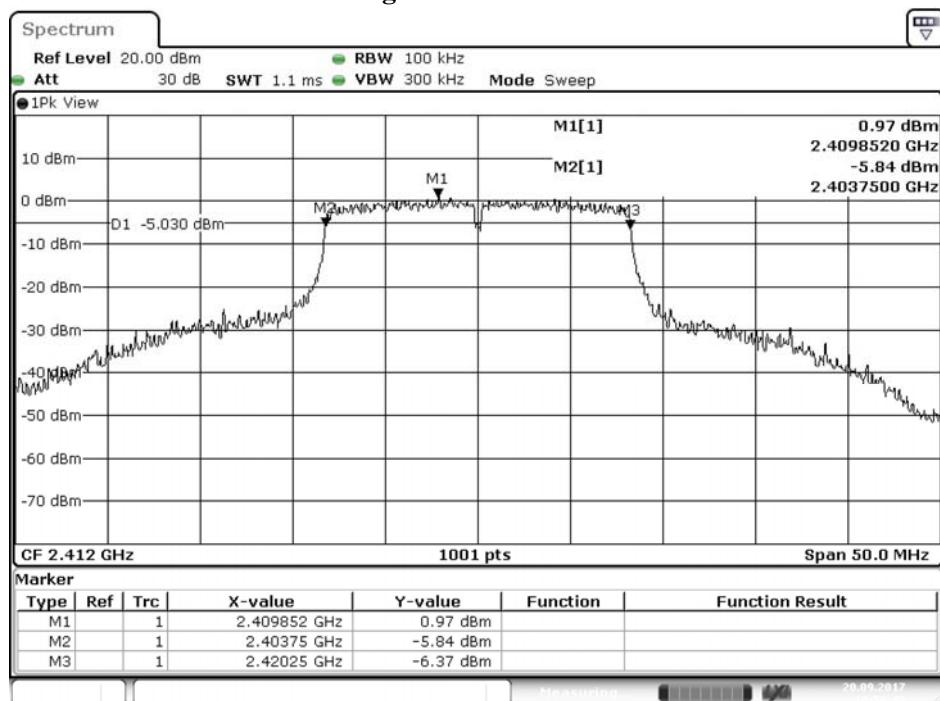
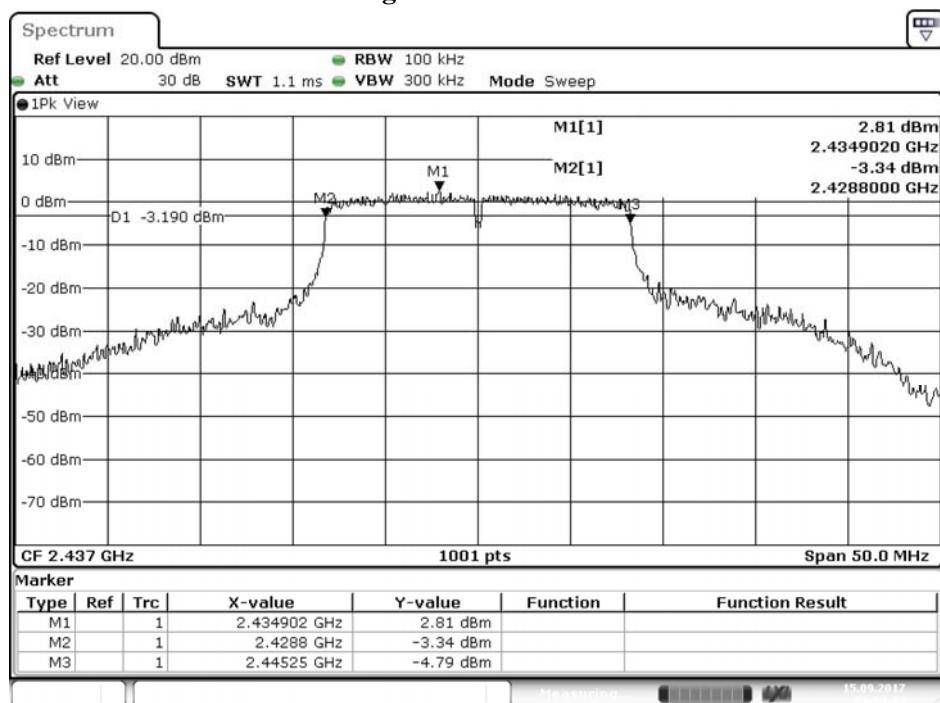
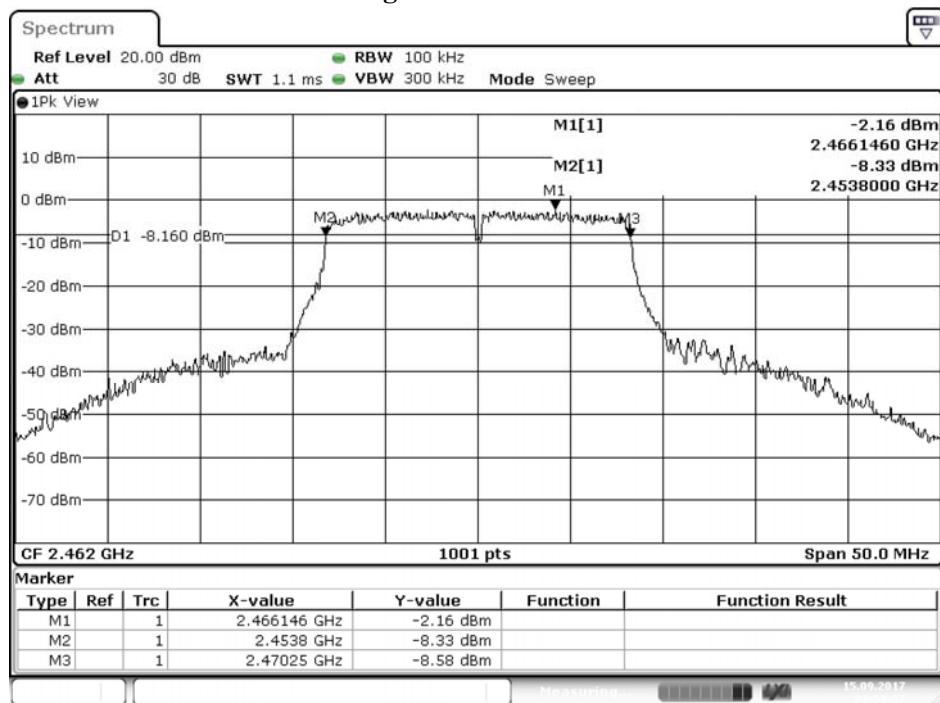


Figure Channel 06:



Date: 15.SEP.2017 23:54:34

Figure Channel 11:

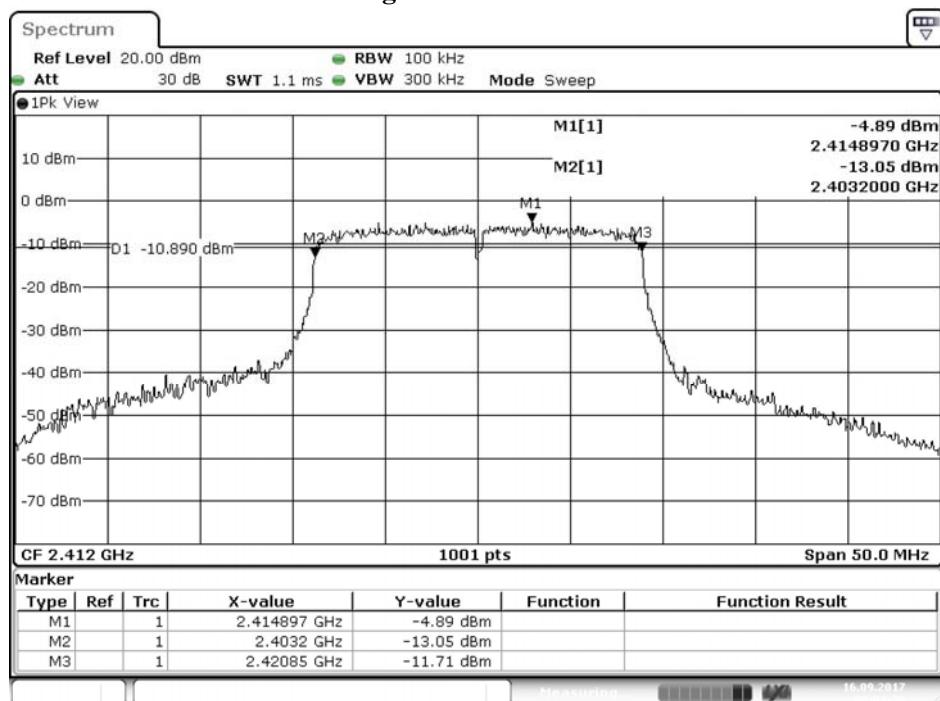


Date: 15.SEP.2017 23:58:57

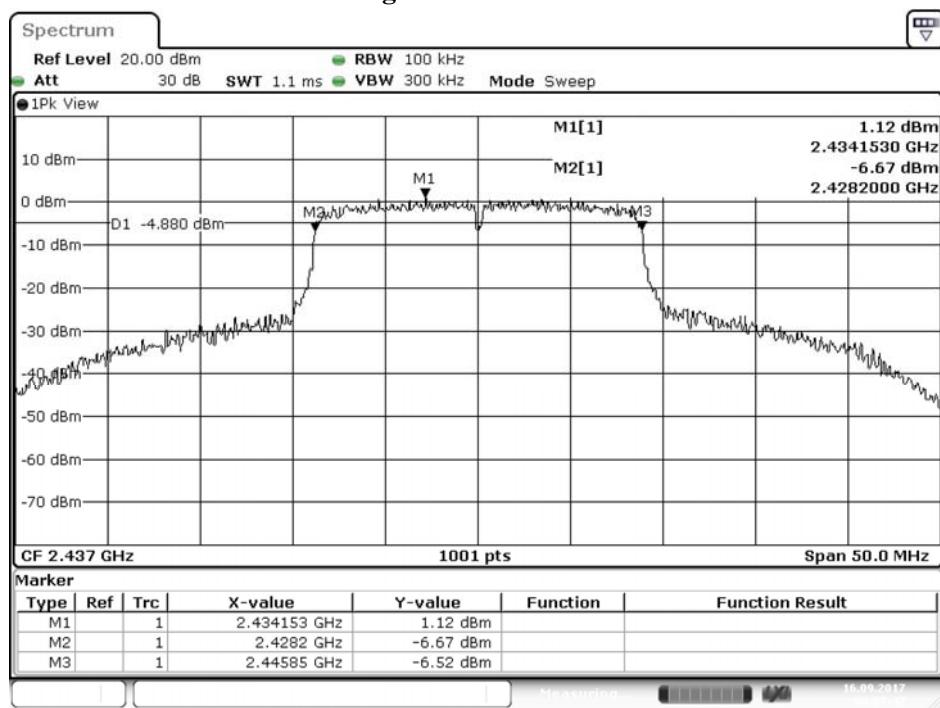
Product : VistaHub Wifi only  
 Test Item : 6dB Bandwidth Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

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

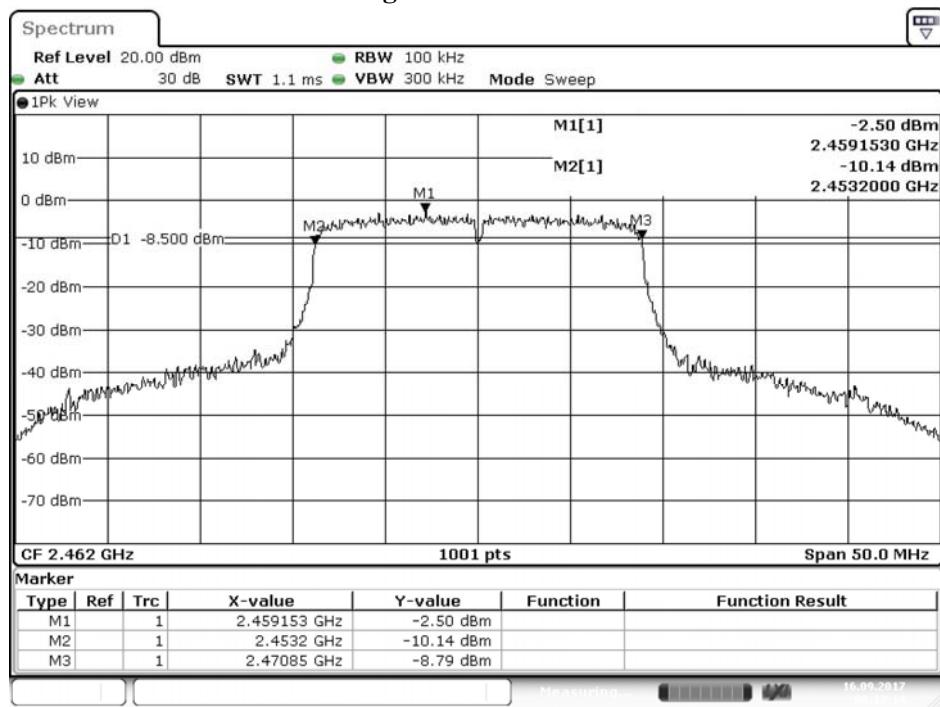
**Figure Channel 01:**



Date: 16.SEP.2017 00:03:31

**Figure Channel 06:**

Date: 16.SEP.2017 00:07:47

**Figure Channel 11:**

Date: 16.SEP.2017 00:12:14

Product : VistaHub Wifi only  
 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	36500	>500	Pass
09	2452	36500	>500	Pass

Figure Channel 03:

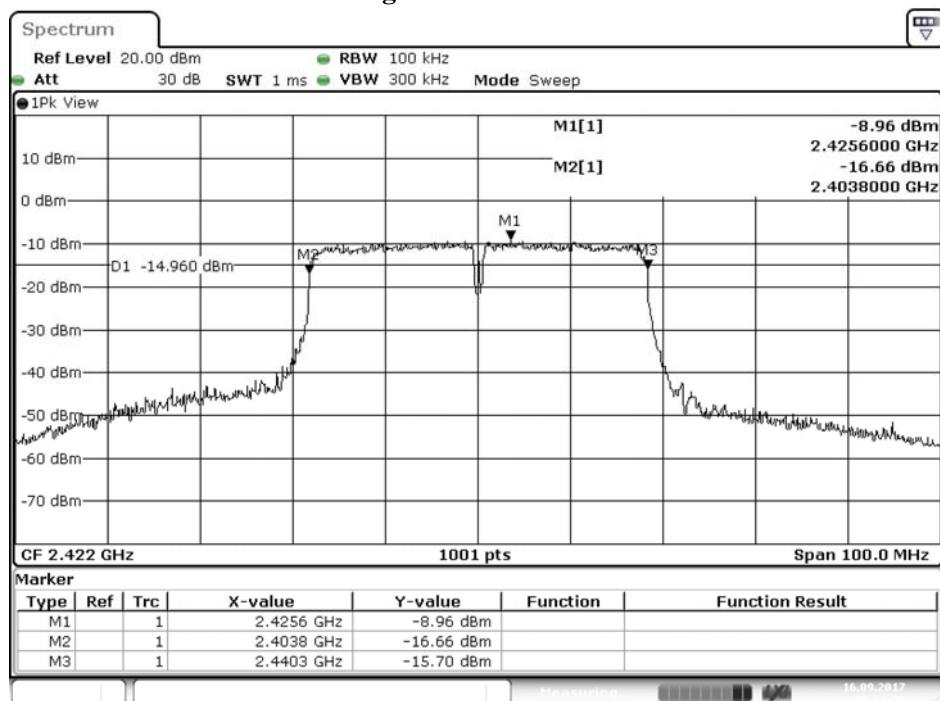


Figure Channel 06:

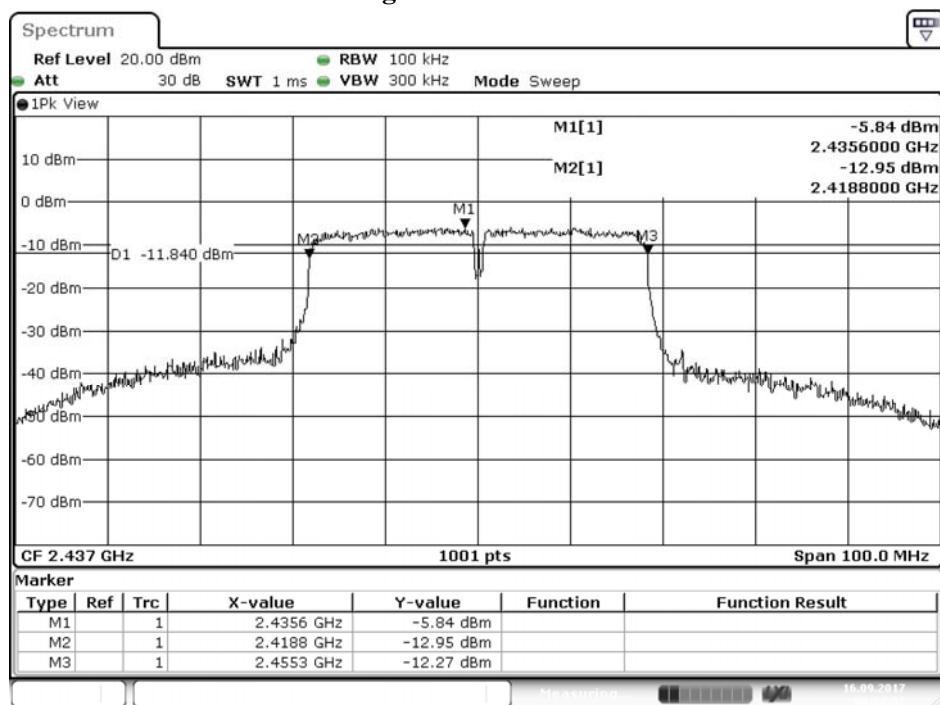
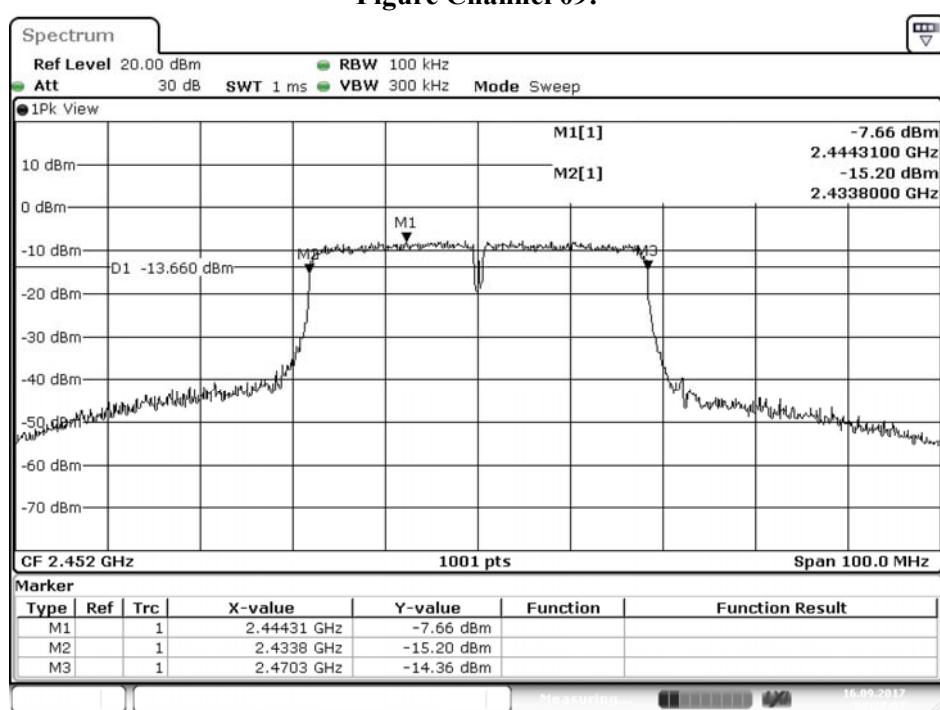
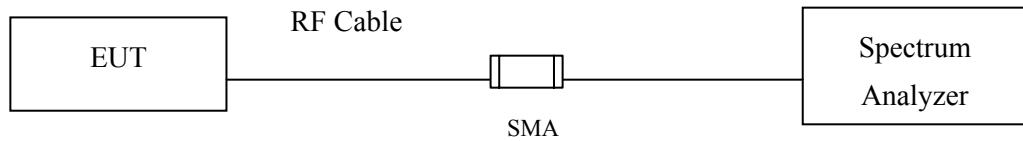


Figure Channel 09:



## 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

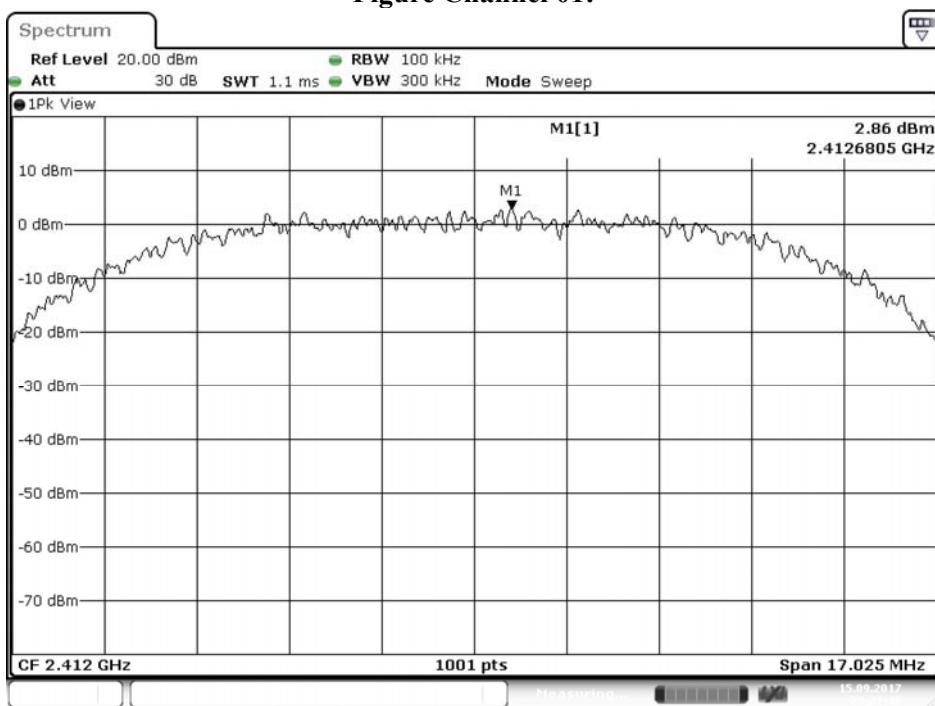
± 1.23 dB

## 8.5. Test Result of Power Density

Product : VistaHub Wifi only  
 Test Item : Power Density Data  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

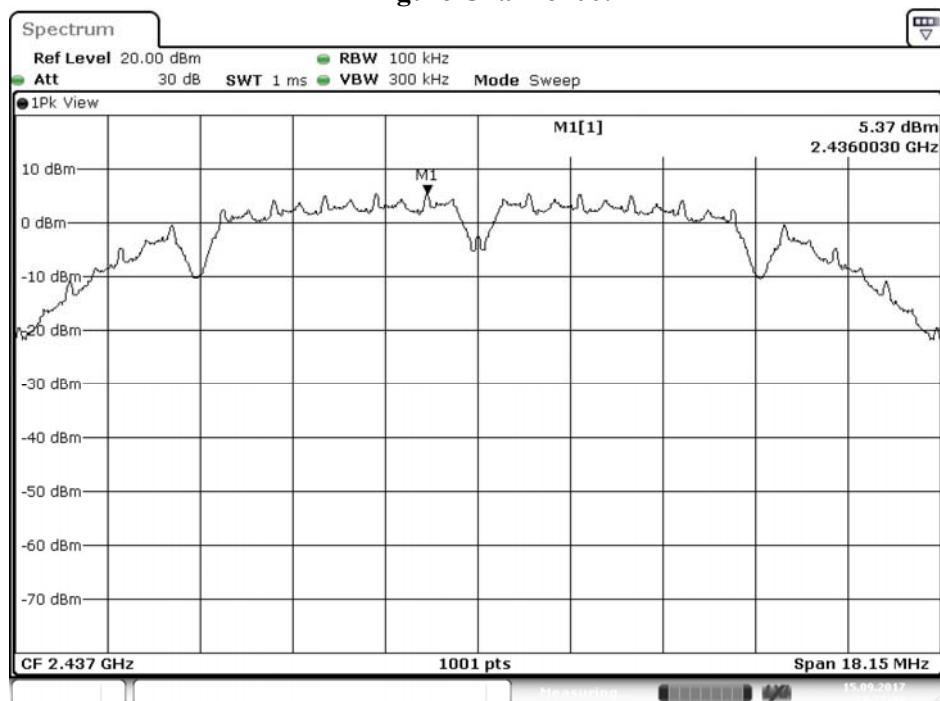
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	2.860	≤8dBm	Pass
06	2437	5.370	≤8dBm	Pass
11	2462	-0.170	≤8dBm	Pass

Figure Channel 01:



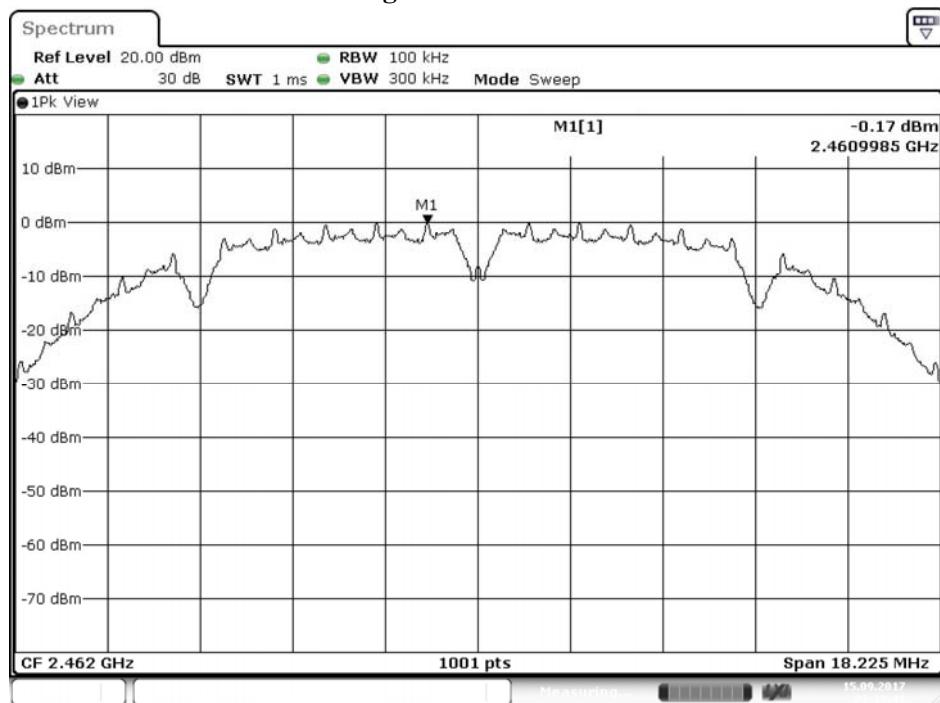
Date: 15.SEP.2017 23:21:46

Figure Channel 06:



Date: 15.SEP.2017 23:27:48

Figure Channel 11:

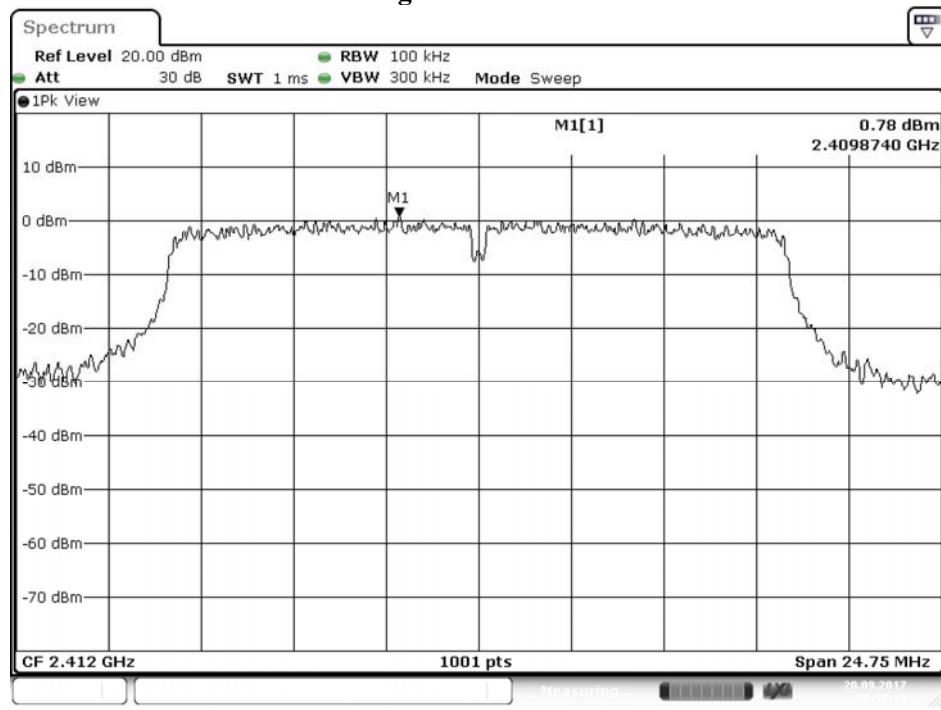


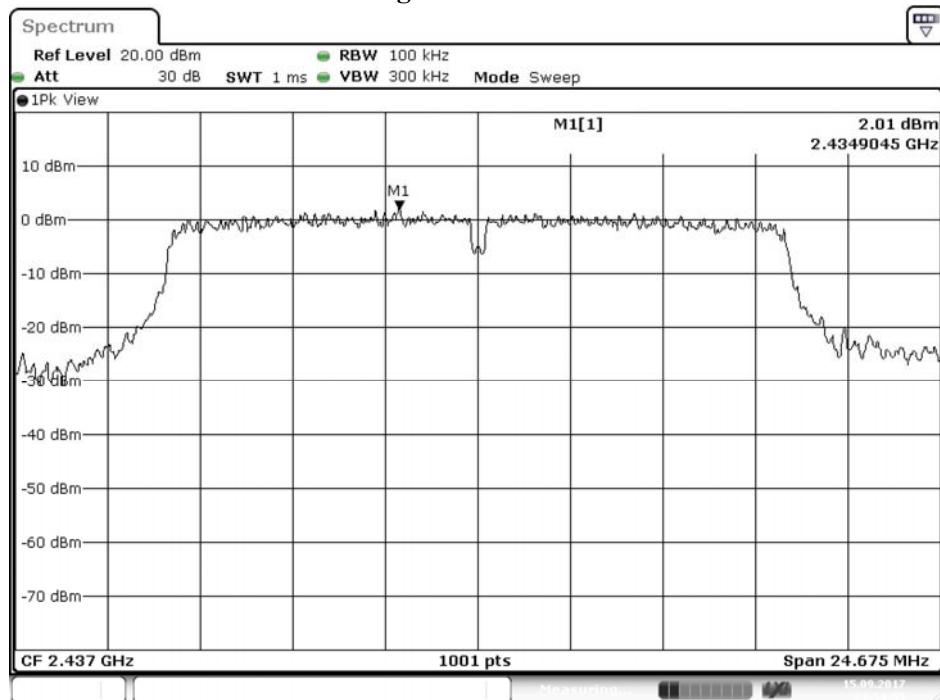
Date: 15.SEP.2017 23:33:41

Product : VistaHub Wifi only  
 Test Item : Power Density Data  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

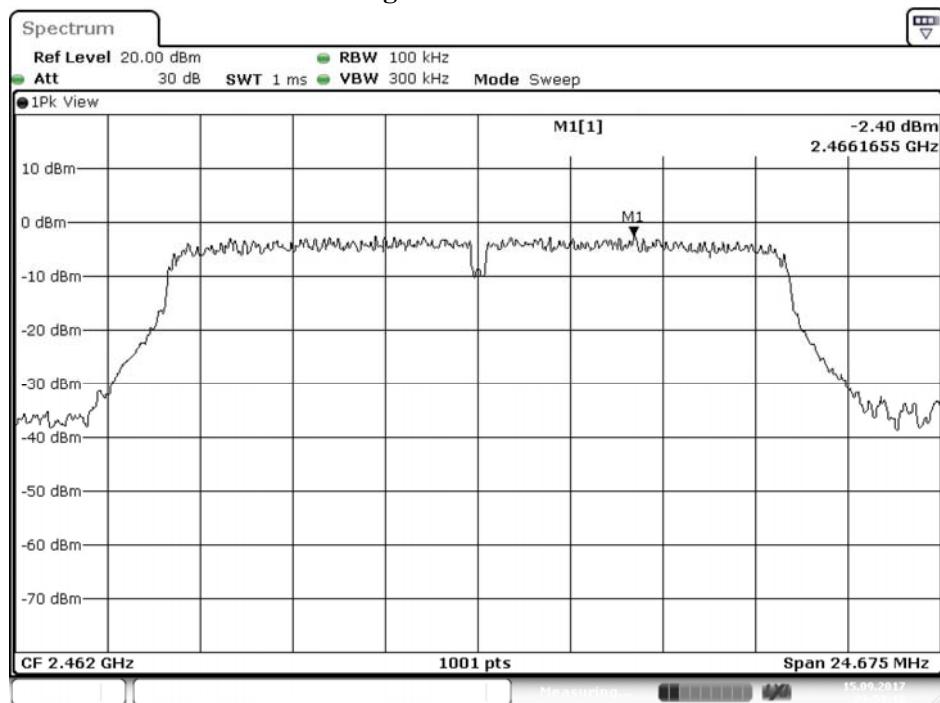
Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	0.780	≤8dBm	Pass
06	2437	2.010	≤8dBm	Pass
11	2462	-2.400	≤8dBm	Pass

**Figure Channel 01:**



**Figure Channel 06:**

Date: 15.SEP.2017 23:54:55

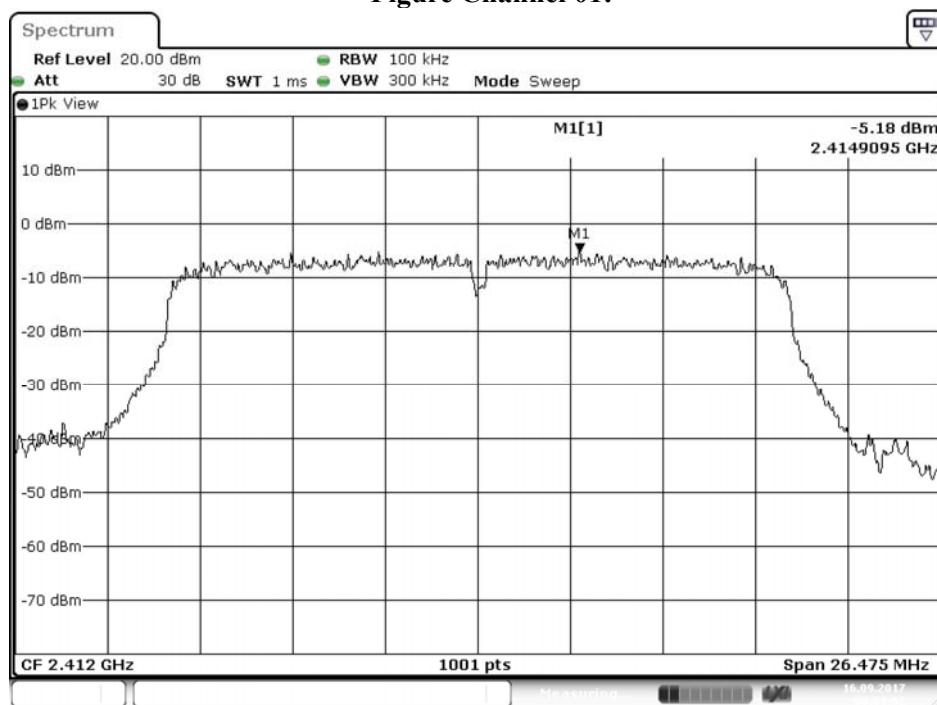
**Figure Channel 11:**

Date: 15.SEP.2017 23:59:19

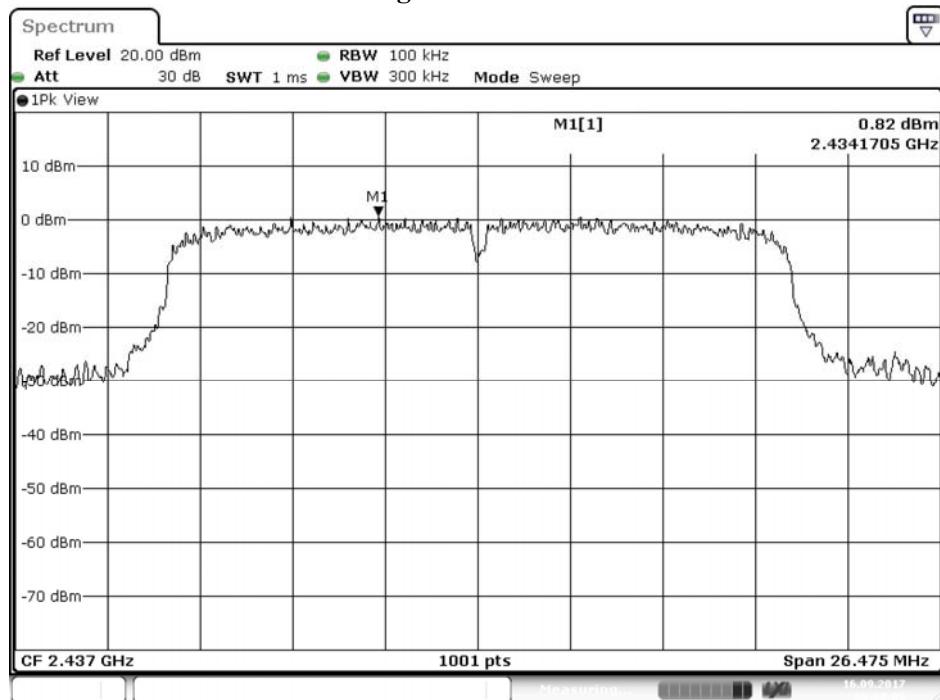
Product : VistaHub Wifi only  
 Test Item : Power Density Data  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	-5.180	≤8dBm	Pass
06	2437	0.820	≤8dBm	Pass
11	2462	-2.890	≤8dBm	Pass

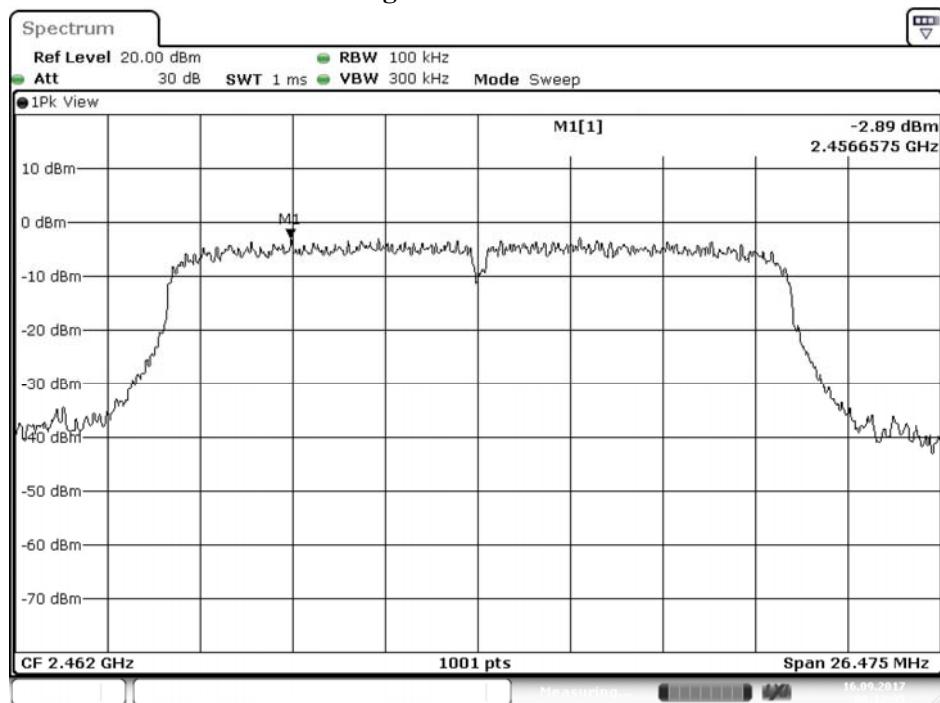
Figure Channel 01:



Date: 16.SEP.2017 00:03:52

**Figure Channel 06:**

Date: 16.SEP.2017 00:08:09

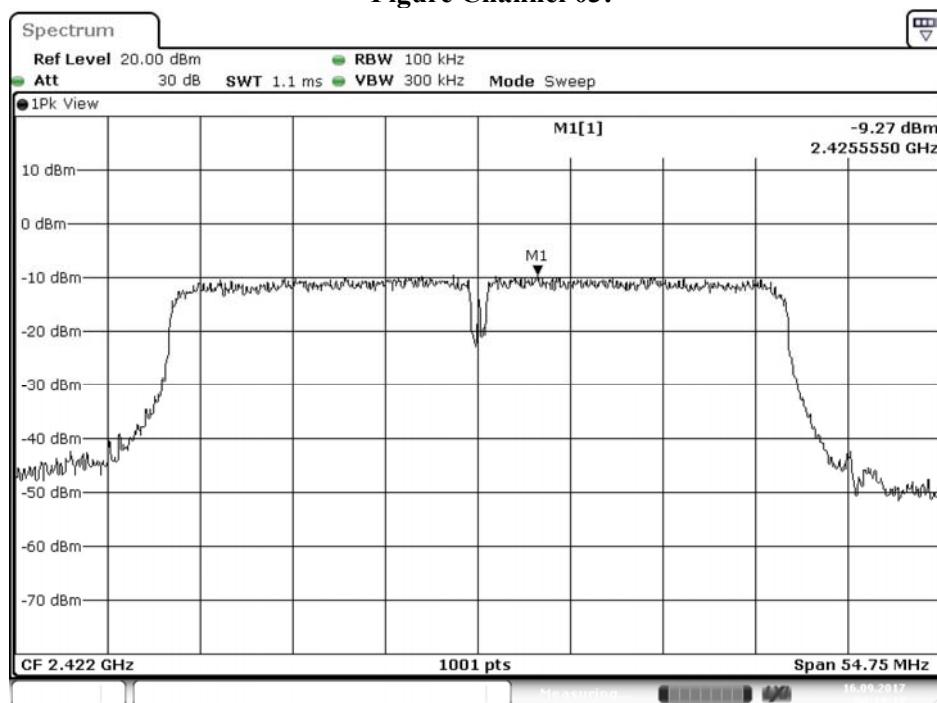
**Figure Channel 11:**

Date: 16.SEP.2017 00:12:35

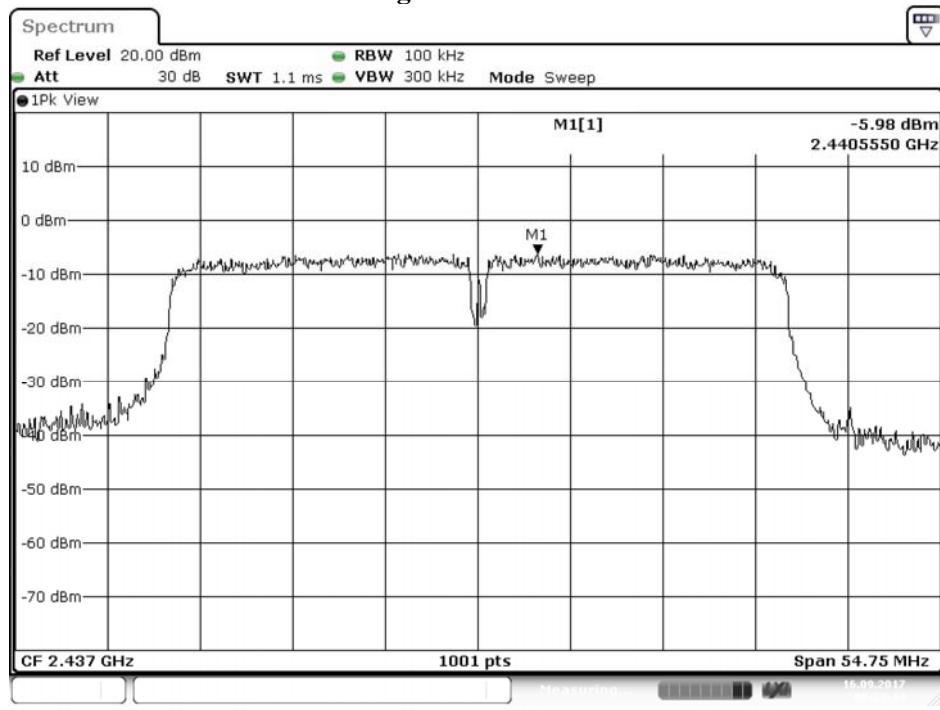
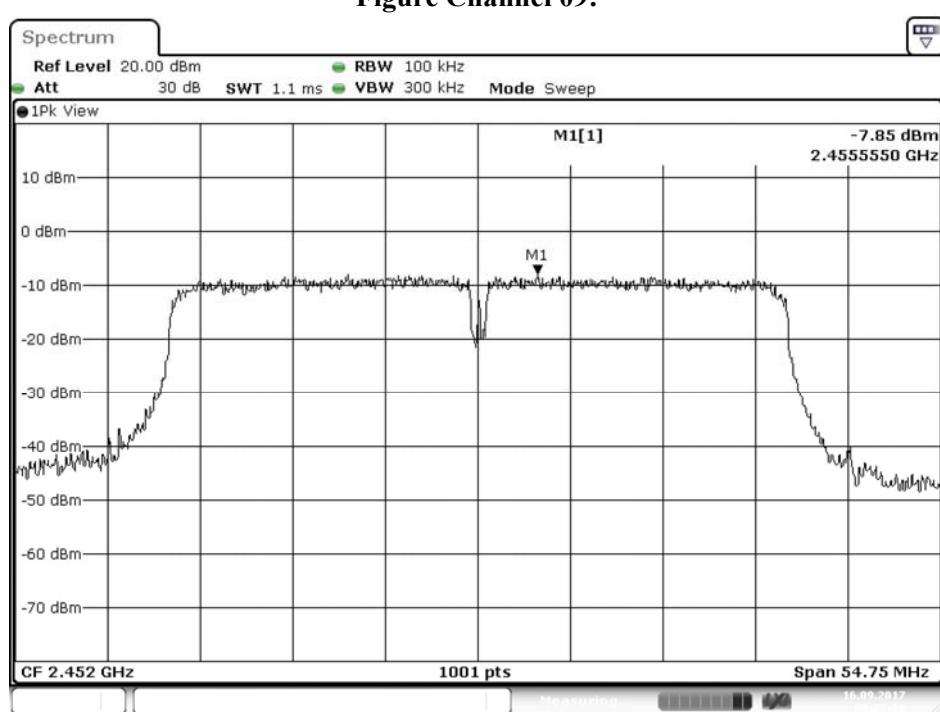
Product : VistaHub Wifi only  
 Test Item : Power Density Data  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	-9.270	≤8dBm	Pass
06	2437	-5.980	≤8dBm	Pass
09	2452	-7.850	≤8dBm	Pass

Figure Channel 03:



Date: 16.SEP.2017 00:19:18

**Figure Channel 06:****Figure Channel 09:**

## **9. EMI Reduction Method During Compliance Testing**

No modification was made during testing.