

FCC REPORT

Applicant: Shenzhen Ogemray Technology Co., Ltd.
Address of Applicant: 3/F~4F,NO.5 Bldg, Dongwu Industrial Park, Donghuan 1st Road, Longhua Town, Shenzhen, China
Equipment Under Test (EUT)
Product Name: USB Wireless Module
Model No.: GWF-1M01
FCC ID: YWTWF53721MX
Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt: 22 Aug., 2013
Date of Test: 22 Aug., 2013 to 28 Aug., 2013
Date of report issued: 28 Aug., 2013
Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2 Version

Version No.	Date	Description
00	28 Aug., 2013	Original

Prepared By:

Rachel Lu

Date:

28 Aug., 2013

Report Clerk

Check By:

Joe. Shou

Date:

28 Aug., 2013

Project Engineer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
Emission Bandwidth	15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Band Edge	15.247(d)	Pass
Spurious Emission	15.205/15.209	Pass

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 Client Information

Applicant:	Shenzhen Ogemray Technology Co., Ltd.
Address of Applicant:	3/F~4F,NO.5 Bldg, Dongwu Industrial Park, Donghuan 1st Road, Longhua Town, Shenzhen, China
Manufacturer:	Shenzhen Ogemray Technology Co., Ltd.
Address of Manufacturer:	3/F~4F,NO.5 Bldg, Dongwu Industrial Park, Donghuan 1st Road, Longhua Town, Shenzhen, China
Factory:	Shenzhen Ogemray Technology Co., Ltd.
Address of Factory:	3/F~4F,NO.5 Bldg, Dongwu Industrial Park, Donghuan 1st Road, Longhua Town, Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	USB Wireless Module
Model No.:	GWF-1M01
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2452MHz (802.11n(H40))
Channel numbers:	11 for 802.11b/802.11g/802.11n(H20),9 for 802.11n(H40)
Channel separation:	5MHz
Modulation technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps,54Mbps
Data speed (IEEE 802.11n):	Up to 150Mbps
Antenna Type:	External Antenna
Antenna gain:	3.3 dBi

Operation Frequency each of channel For 802.11b/g/n(H20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Operation Frequency each of channel For 802.11n(H40)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
		4	2427MHz	7	2442MHz		
		5	2432MHz	8	2447MHz		
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

802.11b/802.11g/802.11n (H20)

Channel	Frequency
The lowest channel	2412MHz
The middle channel	2437MHz
The Highest channel	2462MHz

802.11n (H40)

Channel	Frequency
The lowest channel	2422MHz
The middle channel	2437MHz
The Highest channel	2452MHz

5.3 Test environment and mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Operation mode	Keep the EUT in continuous transmitting with modulation
<p>The sample was placed 0.8m above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.</p>	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps
802.11n(H40)	13Mbps

Final Test Mode:

According to ANSI C63.4 standards, the test results are both the “worst case” and “worst setup” 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20). 13Mbps for 802.11n(H40),Duty cycle setting during the transmission is 100% with maximum power setting for all modulations. All tests were performed in MIMO mode.

5.4 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX745	N/A	DoC
DELL	MONITOR	E178FPC	N/A	DoC
DELL	KEYBOARD	SK-8115	N/A	DoC
DELL	MOUSE	MOC5UO	N/A	DoC

5.5 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC - Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 817957, February 27, 2012.

● **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

● **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

5.6 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
 Address: No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
 Bao'an District, Shenzhen, Guangdong, China
 Tel: 0755-23118282
 Fax: 0755-23116366

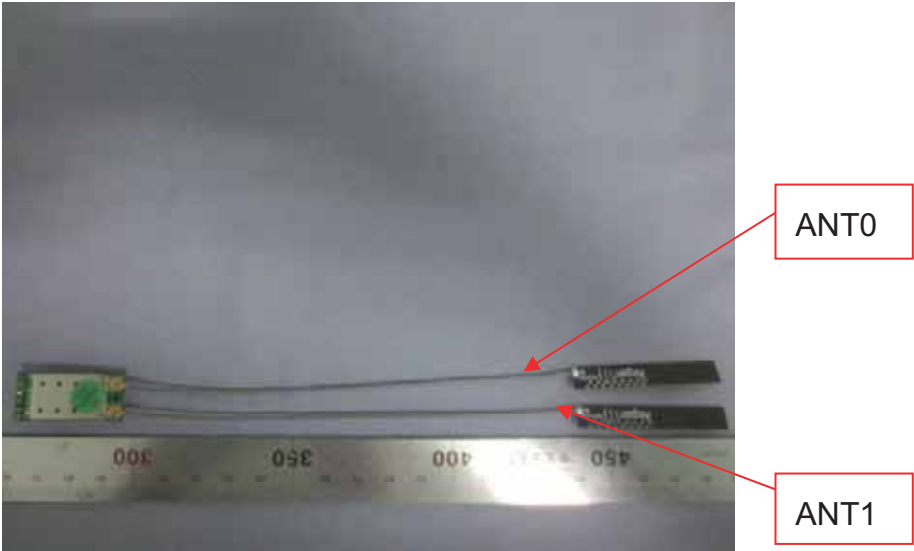
5.7 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	June 09 2013	June 08 2014
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	CCIS0002	N/A	N/A
3	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	June 04 2013	June 03 2014
4	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	May 30 2013	May 29 2014
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
6	Coaxial Cable	CCIS	N/A	CCIS0016	Apr. 01 2013	Mar. 31 2014
7	Coaxial Cable	CCIS	N/A	CCIS0017	Apr. 01 2013	Mar. 31 2014
8	Coaxial cable	CCIS	N/A	CCIS0018	Apr. 01 2013	Mar. 31 2014
9	Coaxial Cable	CCIS	N/A	CCIS0019	Apr. 01 2013	Mar. 31 2014
10	Coaxial Cable	CCIS	N/A	CCIS0087	Apr. 01 2013	Mar. 31 2014
11	Amplifier(10kHz-1.3GHz)	HP	8447D	CCIS0003	Apr. 01 2013	Mar. 31 2014
12	Amplifier(1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	June 09 2013	June 08 2014
13	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Apr. 01 2013	Mar. 31 2014
14	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2013	Mar. 29 2014
15	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
16	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
17	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	May. 29 2013	May. 28 2014
18	Loop antenna	Laplace instrument	RF300	EMC0701	Aug. 12 2013	Aug. 11 2014
19	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	May 25 2013	May 24 2014
20	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	May 29 2013	May 28 2014

Conducted Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	June 09 2013	June 08 2014
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	May 25 2013	May. 24 2014
3	LISN	CHASE	MN2050D	CCIS0074	Apr. 01 2013	Mar. 31 2014
4	Coaxial Cable	CCIS	N/A	CCIS0086	Apr. 01 2013	Mar. 31 2014

6 Test results and Measurement Data

6.1 Antenna requirement:

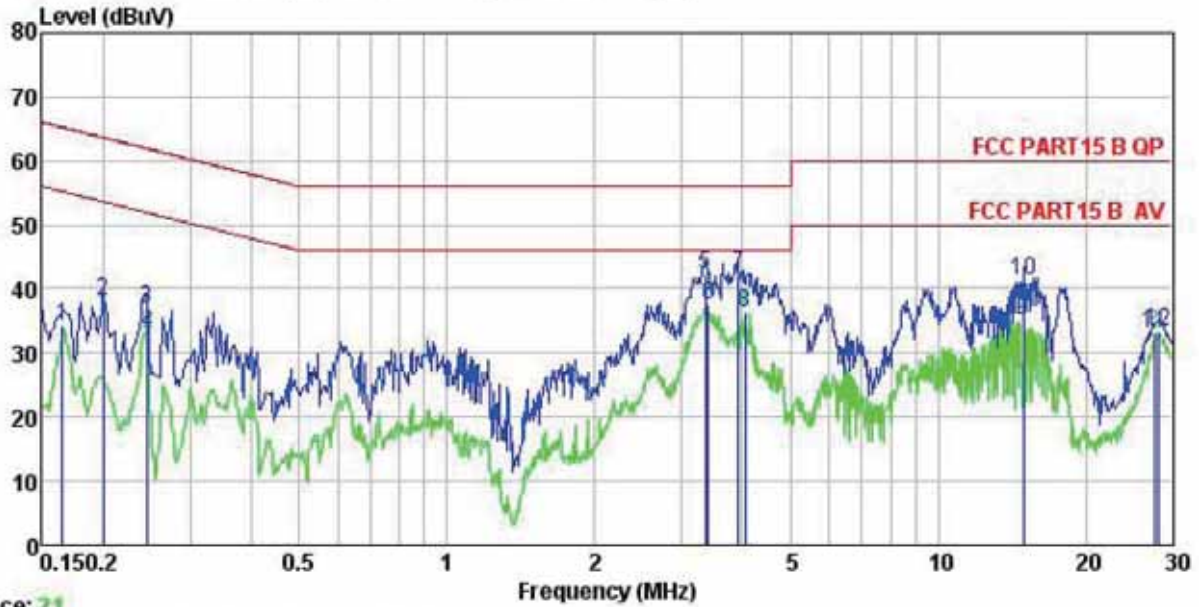
Standard requirement:	FCC Part15 C Section 15.203 /247(c)
<p><i>15.203 requirement:</i> <i>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</i></p> <p><i>15.247(c) (1)(i) requirement:</i> <i>(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</i></p>	
E.U.T Antenna:	
<p><i>The antenna is an internal antenna which cannot replace by end-user, the best case gain of the WiFi antenna is 3.3 dBi.</i></p>	
	

6.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.4: 2003														
Test Frequency Range:	150kHz to 30MHz														
Class / Severity:	Class B														
Receiver setup:	RBW=9kHz, VBW=30kHz														
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <tr> <td>0.15-0.5</td> <td>66 to 56*</td> <td>56 to 46*</td> </tr> <tr> <td>0.5-5</td> <td>56</td> <td>46</td> </tr> <tr> <td>5-30</td> <td>60</td> <td>50</td> </tr> </tbody> </table> <p>* Decreases with the logarithm of the frequency.</p>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test procedure	<ol style="list-style-type: none"> The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). The provide a 50ohm/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: 2003 on conducted measurement. 														
Test setup:	<p><i>Remark</i> <i>E.U.T: Equipment Under Test</i> <i>LISN: Line Impedance Stabilization Network</i> <i>Test table height=0.8m</i></p>														
Test Instruments:	Refer to section 5.7 for details														
Test mode:	Refer to section 5.3 for details														
Test results:	Passed														

Measurement Data

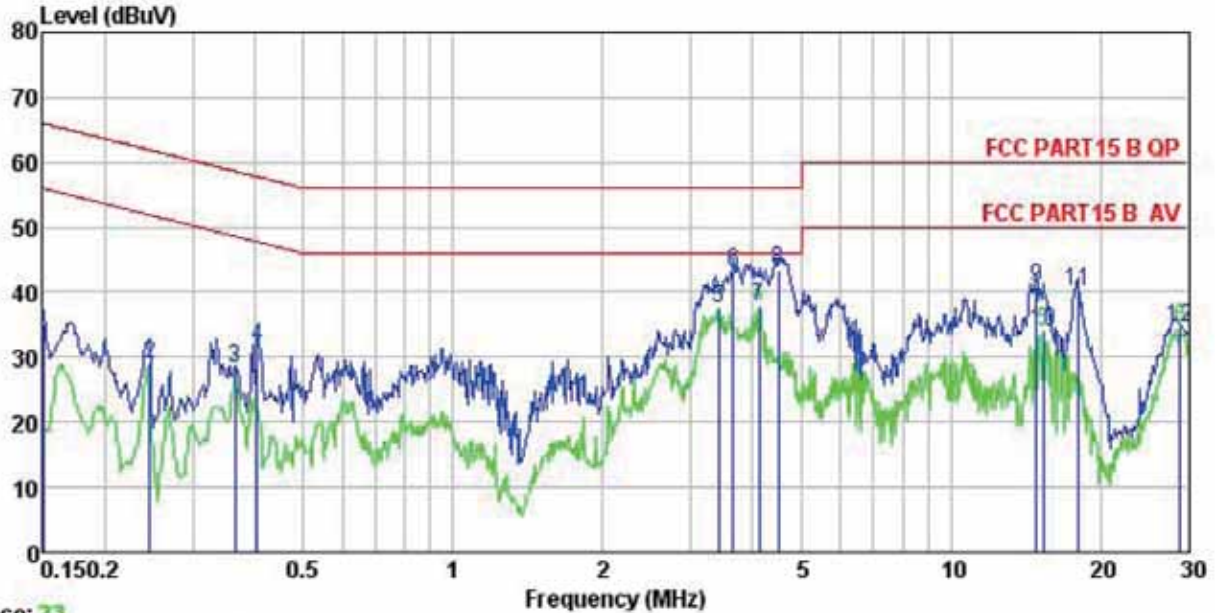
Neutral:



Trace: 21
 Site : CCIS Conducted Test Site
 Condition : FCC PART15 B QP LISN NEUTRAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF-1M01
 Test Mode : WIFI mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Winner

	Read	LISN	Cable	Level	Limit	Over	
Freq	Level	Factor	Loss	Level	Line	Limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.165	23.08	10.26	0.78	34.12	55.21	-21.09 Average
2	0.200	27.18	10.23	0.76	38.17	63.62	-25.45 QP
3	0.244	25.95	10.23	0.75	36.93	61.95	-25.02 QP
4	0.246	22.22	10.24	0.75	33.21	51.91	-18.70 Average
5	3.364	31.07	10.28	0.91	42.26	56.00	-13.74 QP
6	3.399	26.26	10.28	0.91	37.45	46.00	-8.55 Average
7	3.922	30.92	10.28	0.89	42.09	56.00	-13.91 QP
8	4.049	25.16	10.28	0.89	36.33	46.00	-9.87 Average
9	14.907	23.86	10.23	0.90	34.99	50.00	-15.01 Average
10	14.986	30.24	10.23	0.90	41.37	60.00	-18.63 QP
11	27.708	21.33	10.72	0.87	32.92	50.00	-17.08 Average
12	28.152	21.64	10.75	0.87	33.26	60.00	-26.74 QP

Line:



Trace: 23

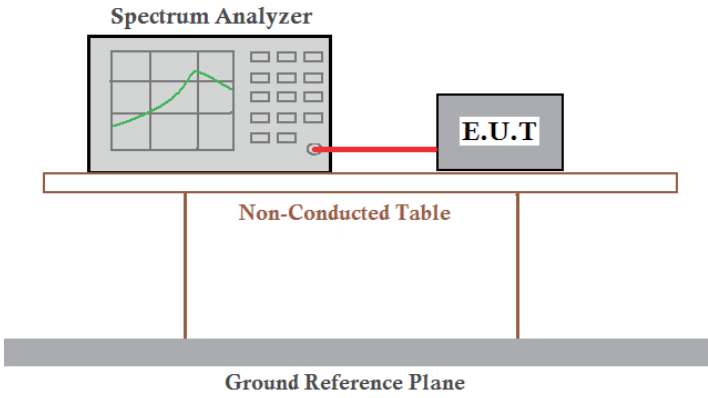
Site : CCIS Conducted Test Site
 Condition : FCC PART15 B QP LISN LINE
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF-1M01
 Test Mode : WIFI mode
 Power Rating : AC 120V/60Hz
 Environment : Temp: 23 °C Humi:56% Atmos:101KPa
 Test Engineer: Wunner

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.150	24.20	10.25	0.79	35.24	66.00	-30.76	QP
2	0.246	17.89	10.24	0.75	28.88	51.91	-23.03	Average
3	0.365	17.30	10.27	0.73	28.30	48.61	-20.31	Average
4	0.404	20.62	10.28	0.72	31.62	57.77	-26.15	QP
5	3.417	26.33	10.29	0.91	37.53	46.00	-8.47	Average
6	3.661	31.83	10.29	0.90	43.02	56.00	-12.98	QP
7	4.114	26.68	10.29	0.89	37.86	46.00	-8.14	Average
8	4.501	32.14	10.29	0.87	43.30	56.00	-12.70	QP
9	14.828	29.65	10.23	0.90	40.78	60.00	-19.22	QP
10	15.307	22.71	10.24	0.90	33.85	50.00	-16.15	Average
11	17.944	29.02	10.29	0.92	40.23	60.00	-19.77	QP
12	28.908	22.72	10.81	0.87	34.40	50.00	-15.60	Average

Notes:

1. An initial pre-scan was performed on the live and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss

6.3 Conducted Output Power

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.4:2003, KDB558074 and KDB 662911 D01
Limit:	30dBm
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	Test method refers to KDB558074 (DTS Measure Guidance). AVGSA-1 method was used.

Measurement Data

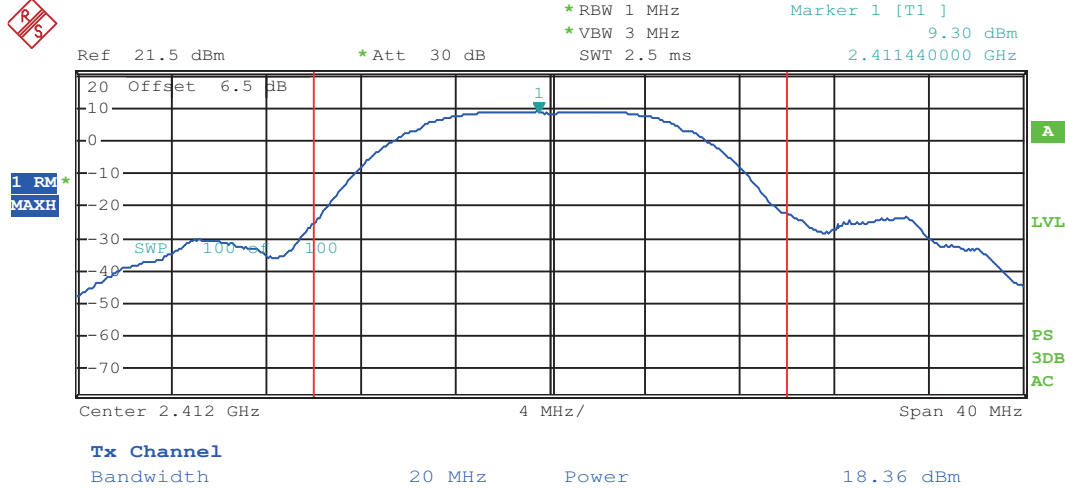
Mode	Test CH	Ant. Port	Conducted Output power (dBm)	Total power (dBm)	Limit (dBm)	Result
802.11b	Lowest	ANT0	18.36	21.31	30.00	Pass
		ANT1	18.24			
	Middle	ANT0	18.34	21.28	30.00	Pass
		ANT1	18.19			
	Highest	ANT0	18.48	21.46	30.00	Pass
		ANT1	18.39			
802.11g	Lowest	ANT0	14.31	17.42	30.00	Pass
		ANT1	14.51			
	Middle	ANT0	14.37	17.44	30.00	Pass
		ANT1	14.48			
	Highest	ANT0	14.49	17.41	30.00	Pass
		ANT1	14.30			
802.11n20	Lowest	ANT0	13.81	16.80	30.00	Pass
		ANT1	13.77			
	Middle	ANT0	13.77	16.75	30.00	Pass
		ANT1	13.70			
	Highest	ANT0	13.51	16.59	30.00	Pass
		ANT1	13.64			
802.11n40	Lowest	ANT0	13.61	16.66	30.00	Pass
		ANT1	13.69			
	Middle	ANT0	13.42	16.43	30.00	Pass
		ANT1	13.41			
	Highest	ANT0	13.33	16.37	30.00	Pass
		ANT1	13.39			

Test plot as follows:

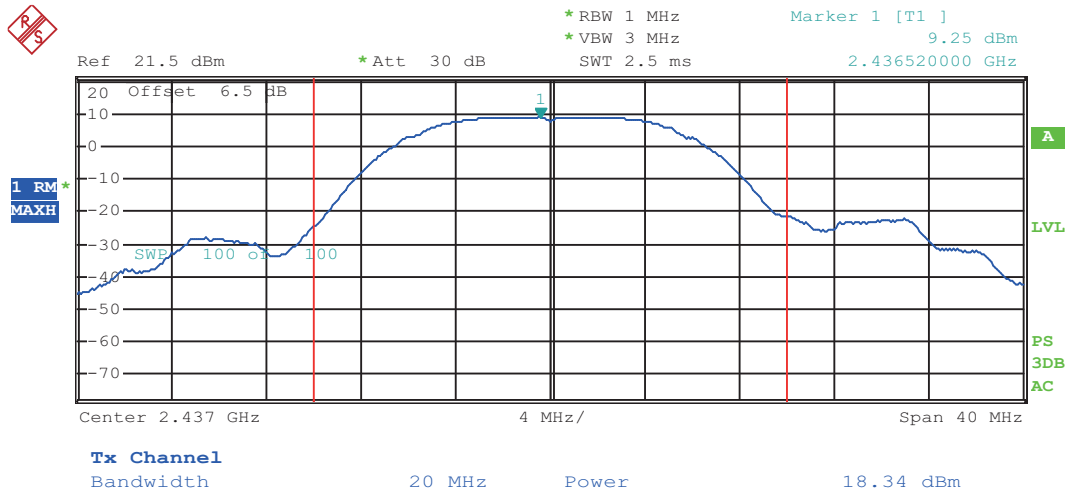
Test plot as follows:

ANT0

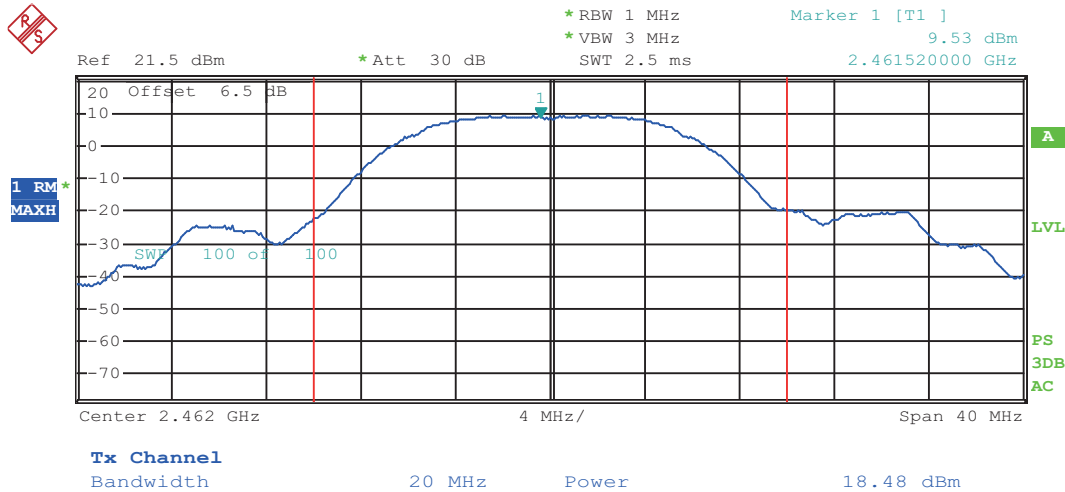
Test mode:	802.11b
------------	---------



Lowest channel



Middle channel



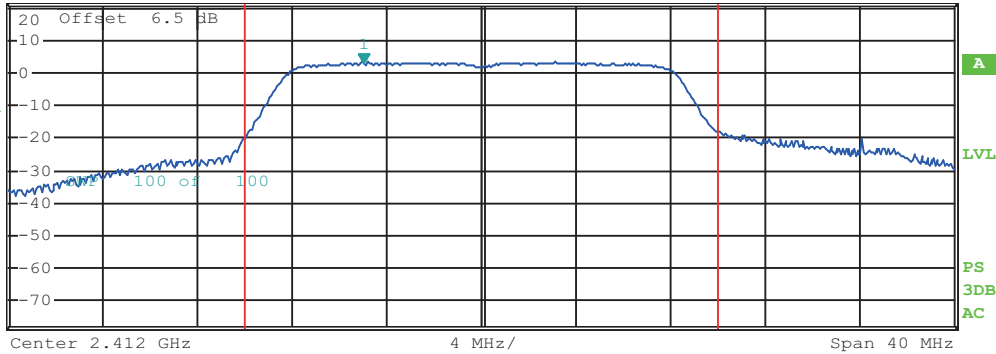
Highest channel

Test mode: 802.11g



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] 3.51 dBm
 *VBW 3 MHz 2.406960000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

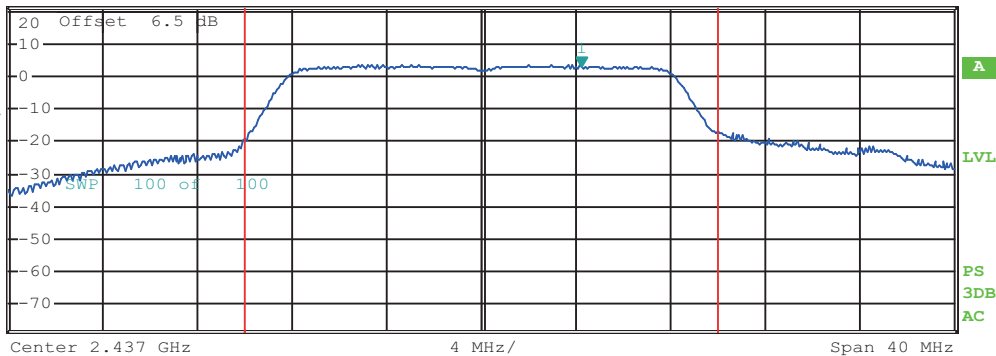
Bandwidth 20 MHz Power 14.31 dBm

Lowest channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] 3.73 dBm
 *VBW 3 MHz 2.441160000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

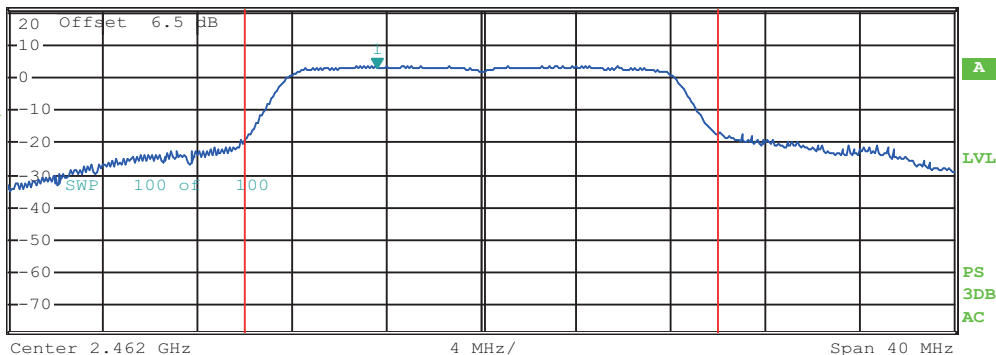
Bandwidth 20 MHz Power 14.37 dBm

Middle channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] 3.69 dBm
 *VBW 3 MHz 2.457520000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

Bandwidth 20 MHz Power 14.49 dBm

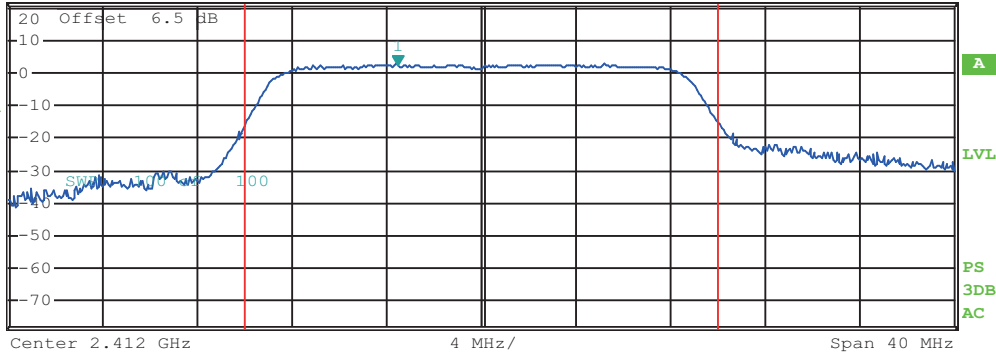
Highest channel

Test mode: 802.11n(H20)



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] 2.86 dBm
 *VBW 3 MHz 2.408400000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

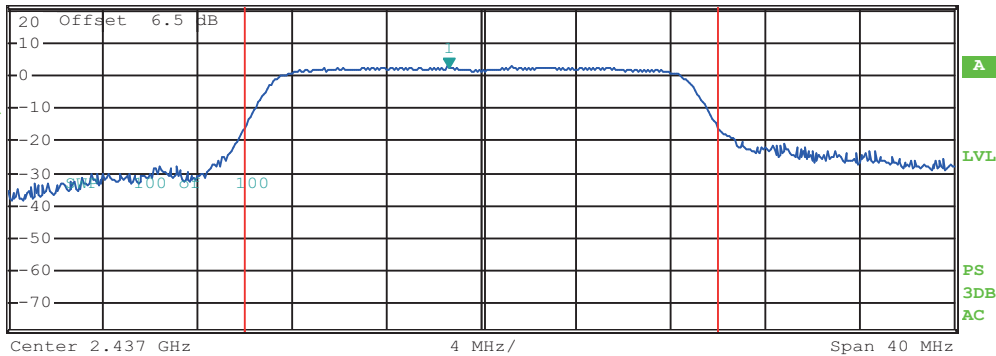
Bandwidth 20 MHz Power 13.81 dBm

Lowest channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] 3.00 dBm
 *VBW 3 MHz 2.435560000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

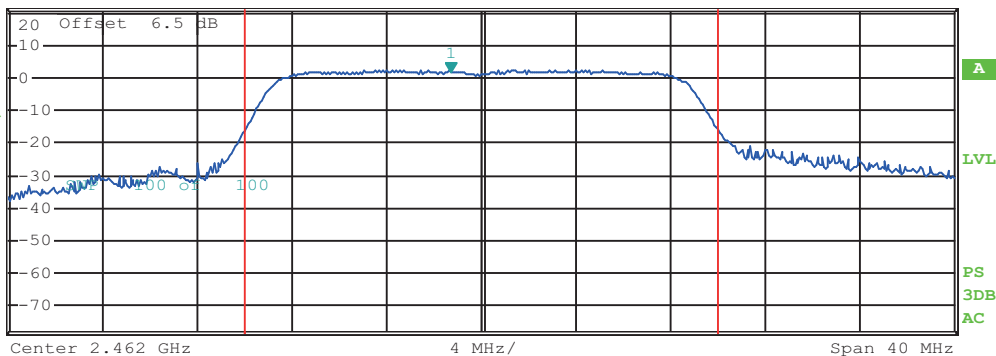
Bandwidth 20 MHz Power 13.77 dBm

Middle channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] 2.61 dBm
 *VBW 3 MHz 2.460640000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

Bandwidth 20 MHz Power 13.51 dBm

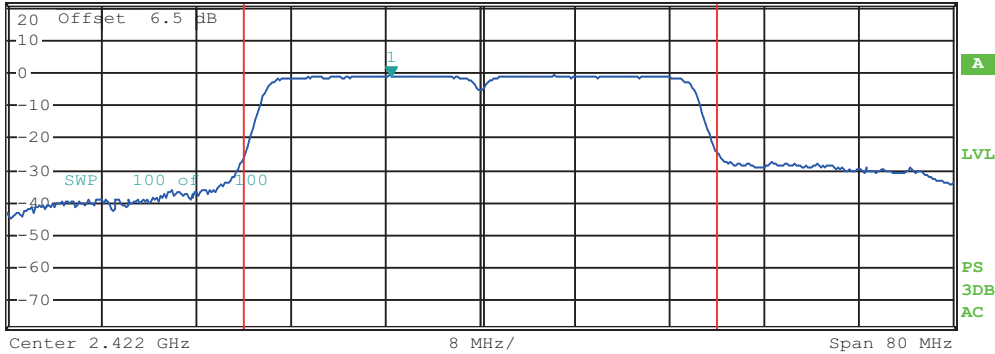
Highest channel

Test mode: 802.11n(H40)



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] -0.68 dBm
 *VBW 3 MHz 2.414320000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Center 2.422 GHz 8 MHz/ Span 80 MHz

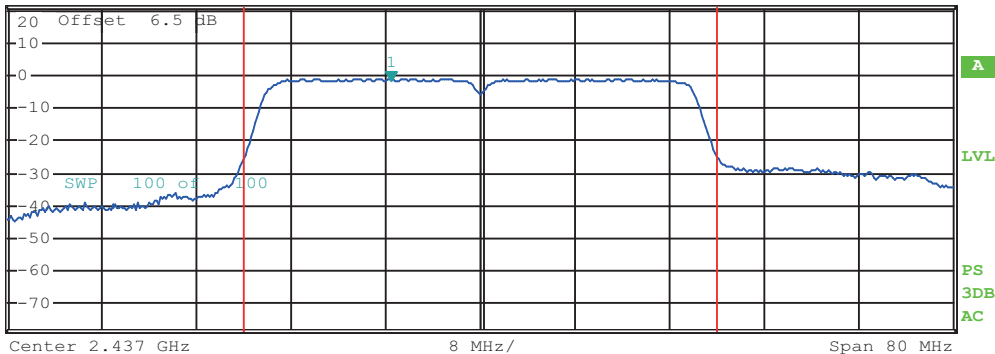
Tx Channel
 Bandwidth 40 MHz Power 13.61 dBm

Lowest channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] -0.85 dBm
 *VBW 3 MHz 2.429320000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Center 2.437 GHz 8 MHz/ Span 80 MHz

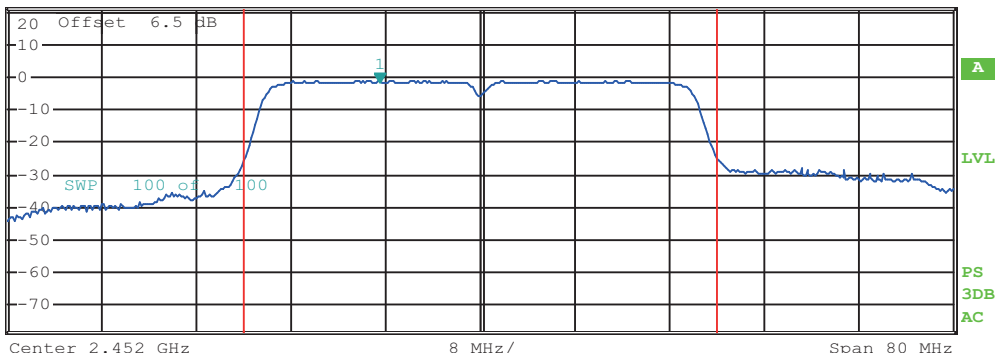
Tx Channel
 Bandwidth 40 MHz Power 13.42 dBm

Middle channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] -1.04 dBm
 *VBW 3 MHz 2.443360000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Center 2.452 GHz 8 MHz/ Span 80 MHz

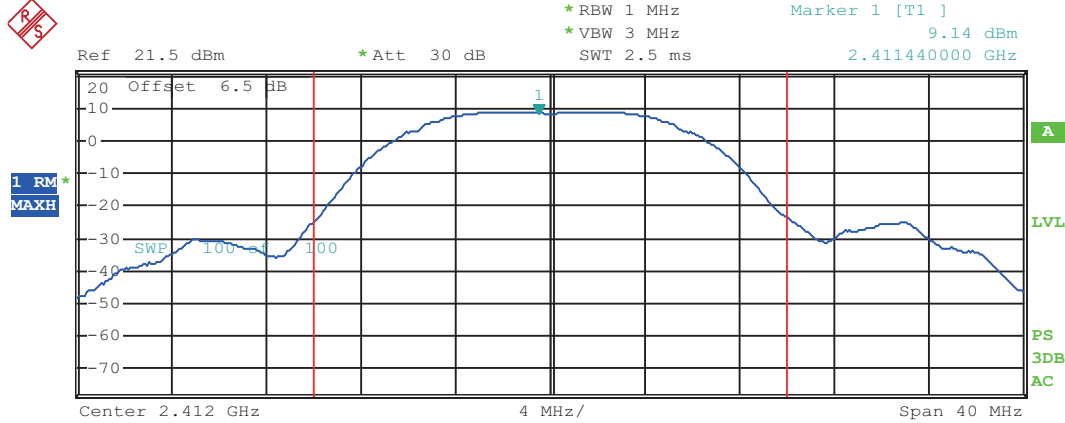
Tx Channel
 Bandwidth 40 MHz Power 13.33 dBm

Highest channel

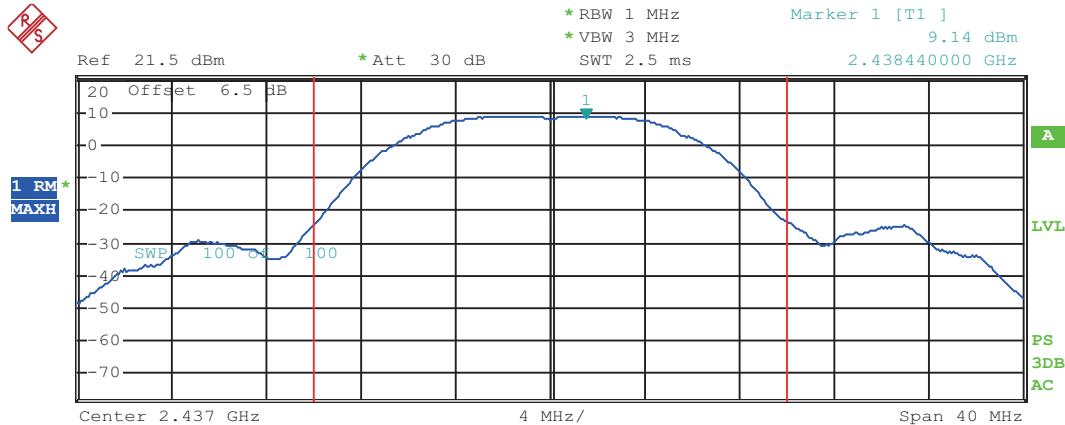
Test plot as follows:

ANT1

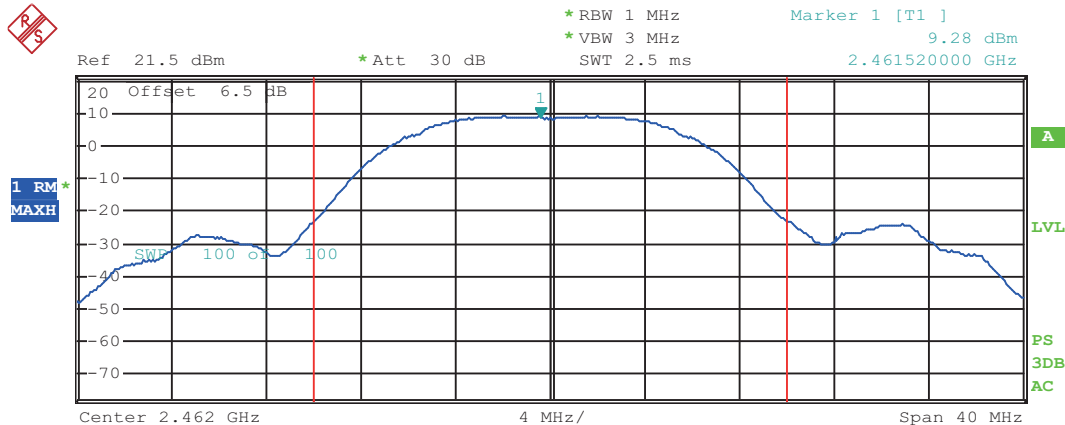
Test mode:	802.11b
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Lowest channel



Middle channel

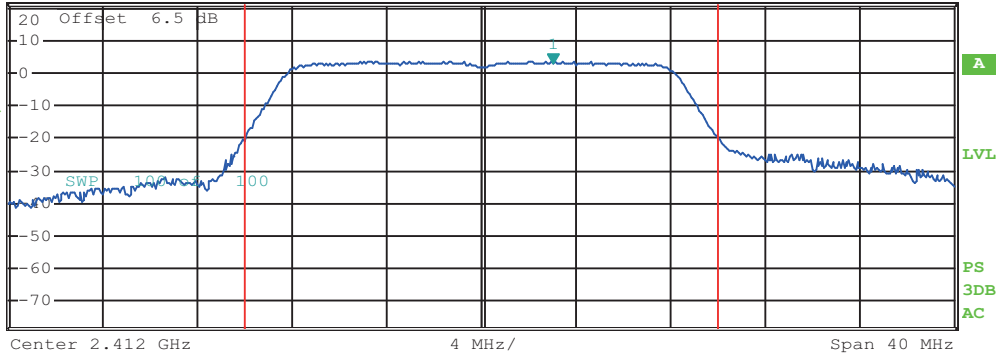


Highest channel

Test mode: 802.11g



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 2.5 ms Marker 1 [T1] 3.79 dBm 2.414960000 GHz



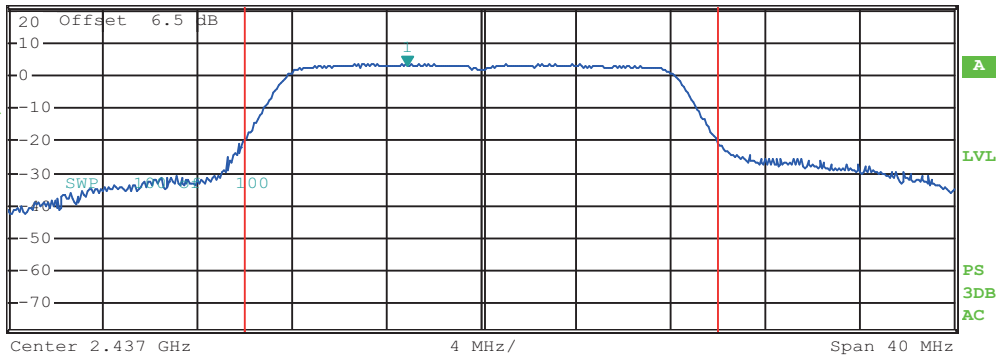
Tx Channel

Bandwidth 20 MHz Power 14.51 dBm

Lowest channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 2.5 ms Marker 1 [T1] 3.75 dBm 2.433800000 GHz



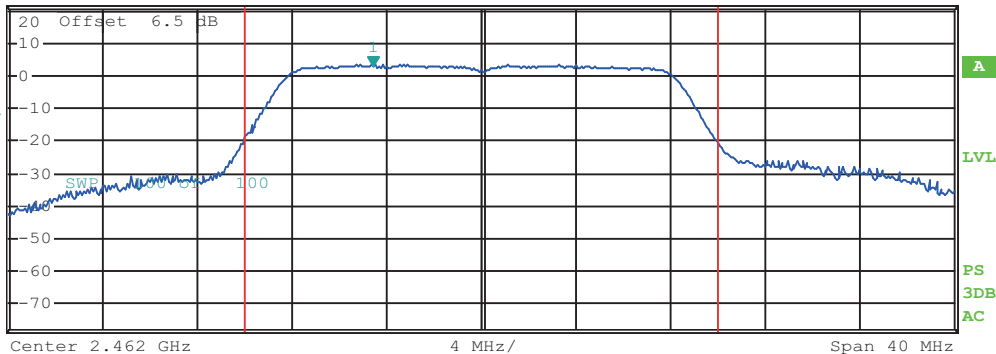
Tx Channel

Bandwidth 20 MHz Power 14.48 dBm

Middle channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz *VBW 3 MHz SWT 2.5 ms Marker 1 [T1] 3.76 dBm 2.457360000 GHz



Tx Channel

Bandwidth 20 MHz Power 14.30 dBm

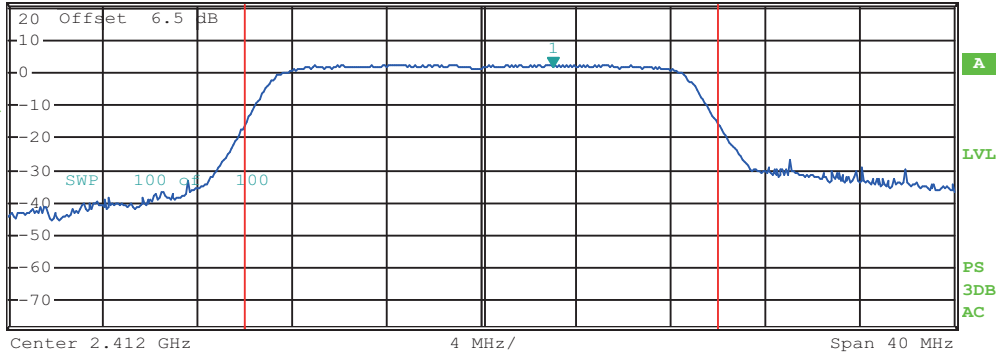
Highest channel

Test mode: 802.11n(H20)



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] 2.78 dBm
 *VBW 3 MHz 2.414960000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

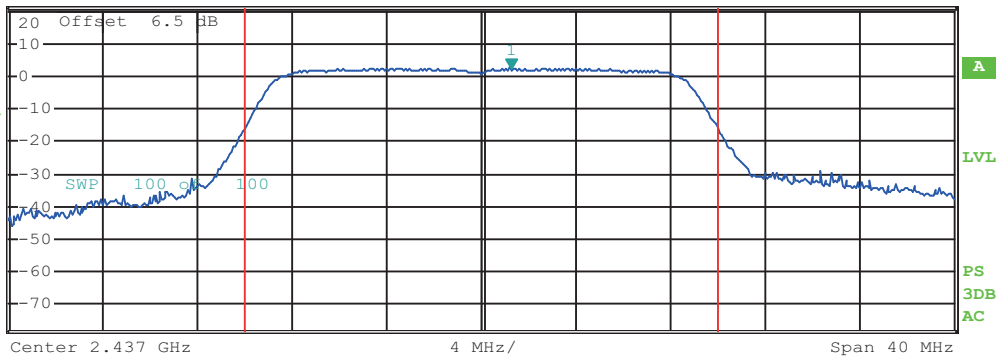
Bandwidth 20 MHz Power 13.77 dBm

Lowest channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] 2.84 dBm
 *VBW 3 MHz 2.438200000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

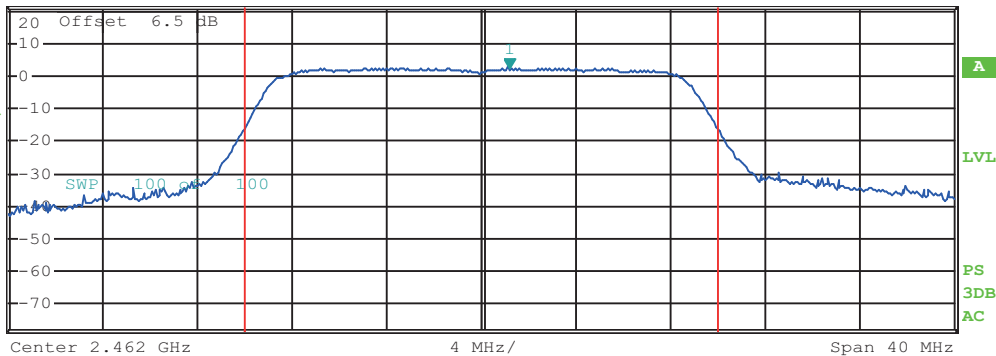
Bandwidth 20 MHz Power 13.70 dBm

Middle channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] 2.82 dBm
 *VBW 3 MHz 2.463120000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

Bandwidth 20 MHz Power 13.64 dBm

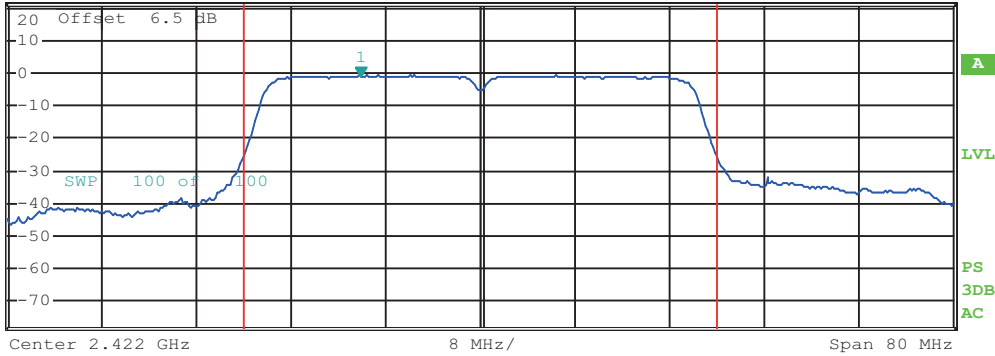
Highest channel

Test mode: 802.11n(H40)



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] -0.48 dBm
 *VBW 3 MHz 2.411760000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

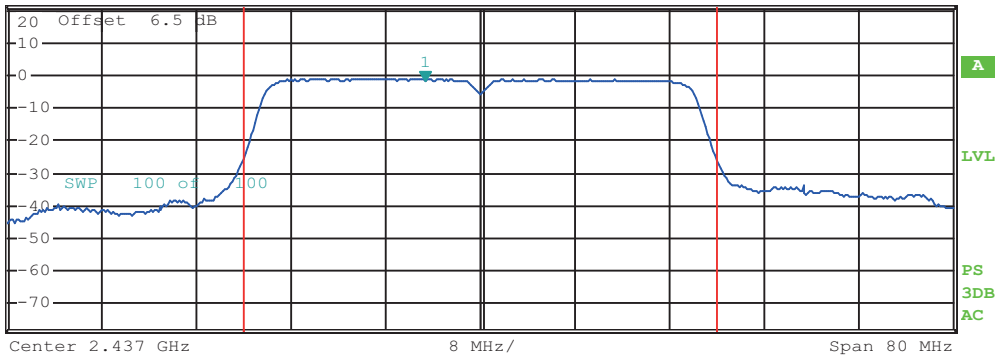
Bandwidth 40 MHz Power 13.69 dBm

Lowest channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] -0.75 dBm
 *VBW 3 MHz 2.432200000 GHz
 SWT 2.5 ms

1 RM*
MAXH



Tx Channel

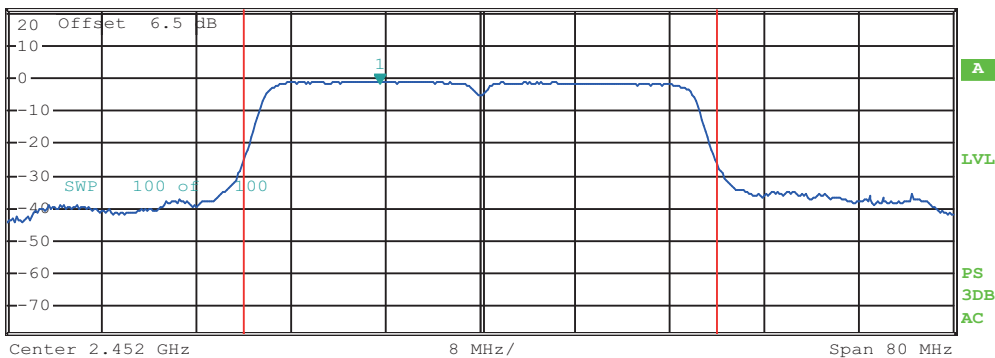
Bandwidth 40 MHz Power 13.41 dBm

Middle channel



Ref 21.5 dBm *Att 30 dB *RBW 1 MHz Marker 1 [T1] -0.85 dBm
 *VBW 3 MHz 2.443360000 GHz
 SWT 2.5 ms

1 RM*
MAXH

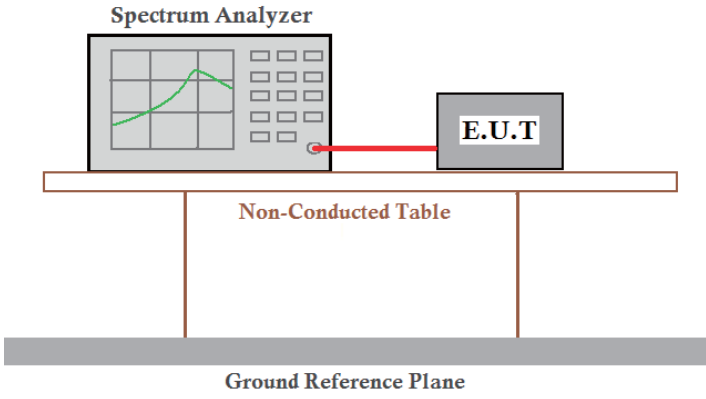


Tx Channel

Bandwidth 40 MHz Power 13.39 dBm

Highest channel

6.4 Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.4:2003, KDB558074
Limit:	>500kHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

ANT0

Test CH	6dB Occupy Bandwidth (MHz)				Limit(kHz)	Result
	802.11b	802.11g	802.11 n(H20)	802.11n(H40)		
Lowest	10.24	16.48	16.96	35.68	>500	Pass
Middle	10.32	16.48	17.04	35.68		
Highest	10.24	16.48	17.20	35.84		

Test CH	99%dB Occupy Bandwidth (MHz)				Limit(kHz)	Result
	802.11b	802.11g	802.11 n(H20)	802.11n(H40)		
Lowest	14.08	16.48	17.60	36.00	N/A	N/A
Middle	14.08	16.48	17.60	36.00		
Highest	14.16	16.56	17.60	36.00		

ANT1

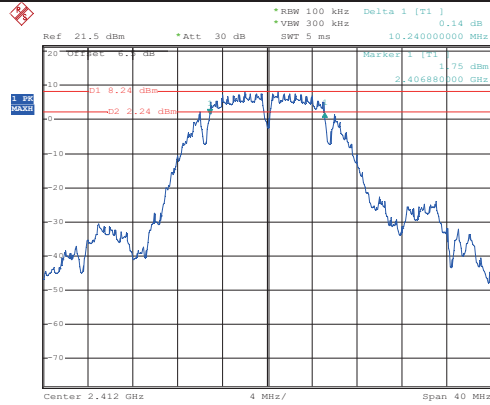
Test CH	6dB Occupy Bandwidth (MHz)				Limit(kHz)	Result
	802.11b	802.11g	802.11 n(H20)	802.11n(H40)		
Lowest	10.24	16.48	16.88	35.68	>500	Pass
Middle	10.32	16.48	16.80	35.84		
Highest	10.24	16.48	16.80	35.52		

Test CH	99%dB Occupy Bandwidth (MHz)				Limit(kHz)	Result
	802.11b	802.11g	802.11 n(H20)	802.11n(H40)		
Lowest	14.16	16.48	17.52	36.00	N/A	N/A
Middle	14.16	16.40	17.52	36.00		
Highest	14.08	16.40	17.52	35.84		

Test plot as follows:

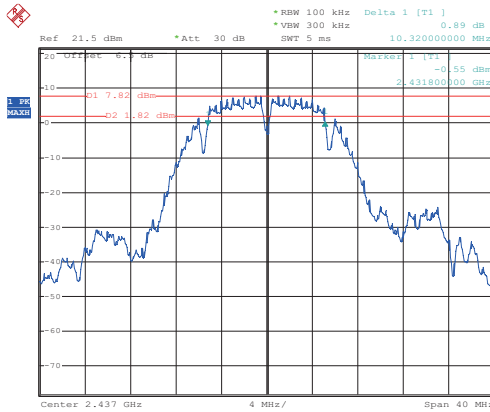
ANT0

Test mode:6dB BW	802.11b
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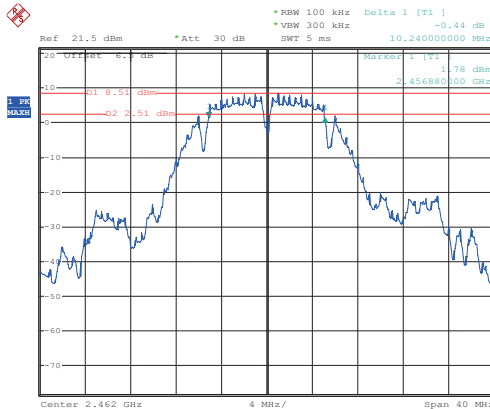
Date: 20.AUG.2013 09:19:03

Lowest channel



Date: 20.AUG.2013 09:32:34

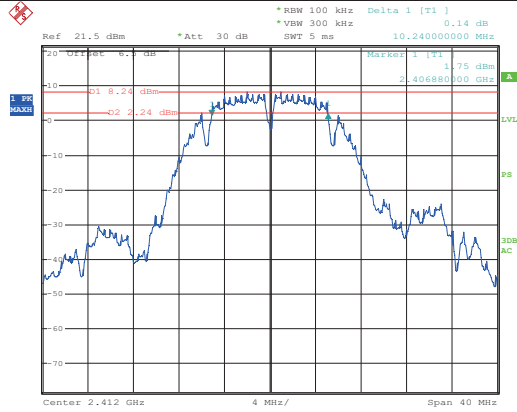
Middle channel



Date: 20.AUG.2013 09:35:18

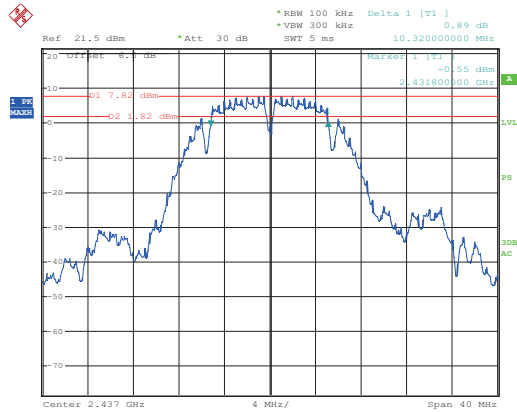
Highest channel

Test mode:6dB BW 802.11g



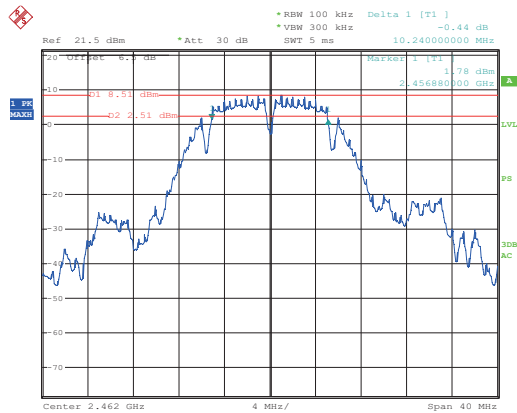
Date: 20.AUG.2013 09:19:03

Lowest channel



Date: 20.AUG.2013 09:32:34

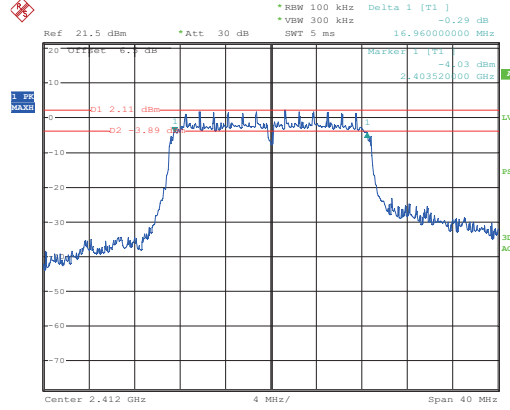
Middle channel



Date: 20.AUG.2013 09:35:18

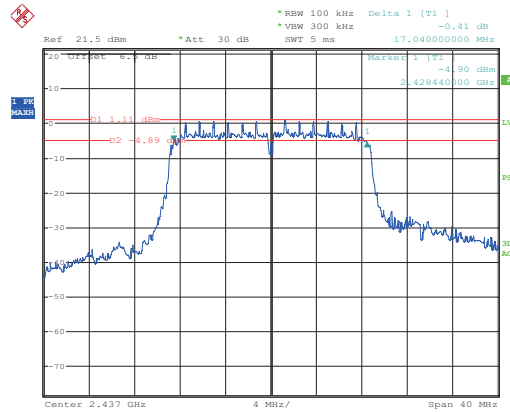
Highest channel

Test mode: 6dB BW 802.11 n(H20)



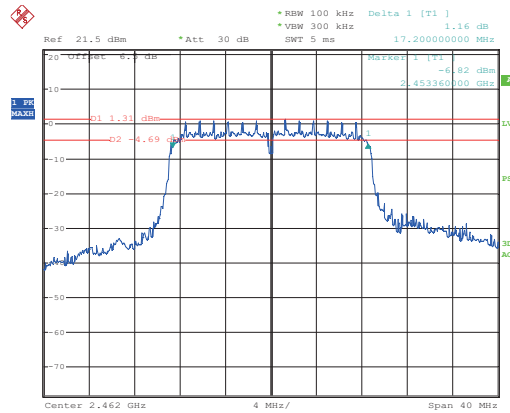
Date: 20.AUG.2013 10:03:03

Lowest channel



Date: 20.AUG.2013 10:14:24

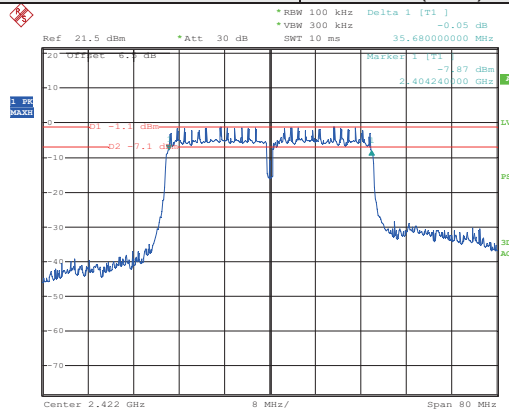
Middle channel



Date: 20.AUG.2013 10:16:40

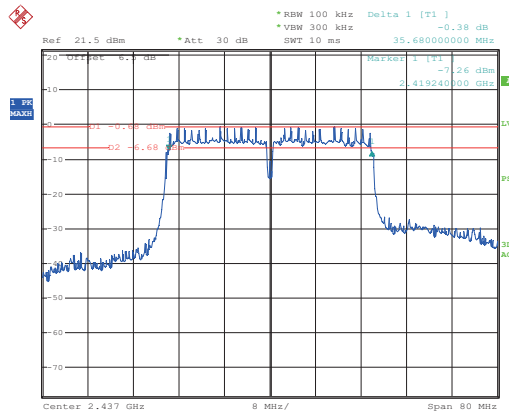
Highest channel

Test mode:6dB BW 802.11 n(H40)



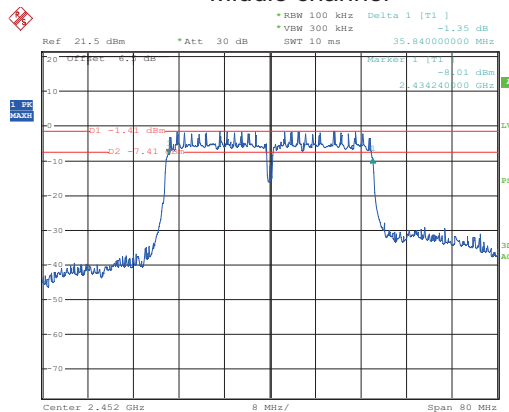
Date: 20.AUG.2013 10:35:20

Lowest channel



Date: 20.AUG.2013 10:28:26

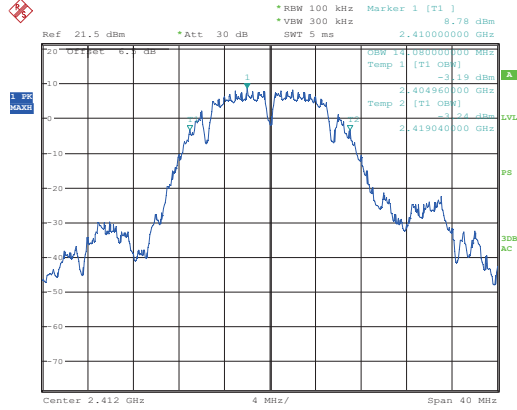
Middle channel



Date: 20.AUG.2013 10:30:42

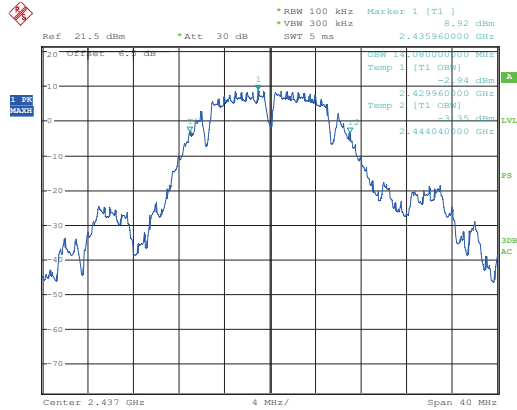
Highest channel

Test mode: 99%dB Occupy Bandwidth 802.11b



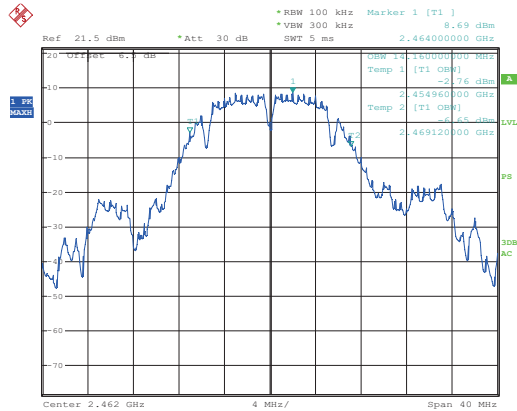
Date: 20.AUG.2013 10:47:30

Lowest channel



Date: 20.AUG.2013 10:42:00

Middle channel

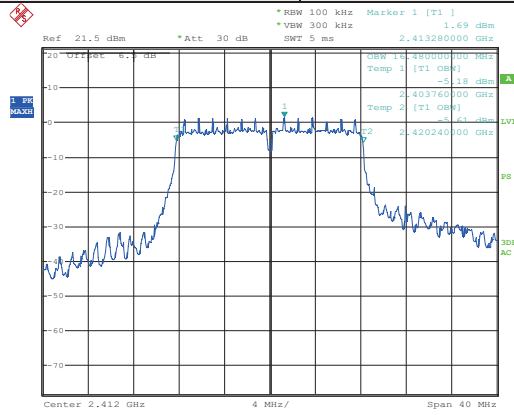


Date: 20.AUG.2013 10:42:58

Highest channel

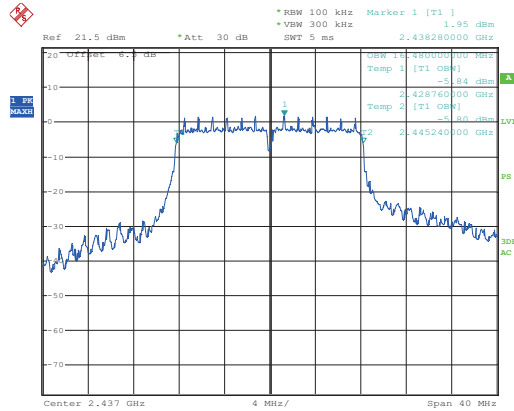
Test mode: 99%dB Occupy Bandwidth

802.11g



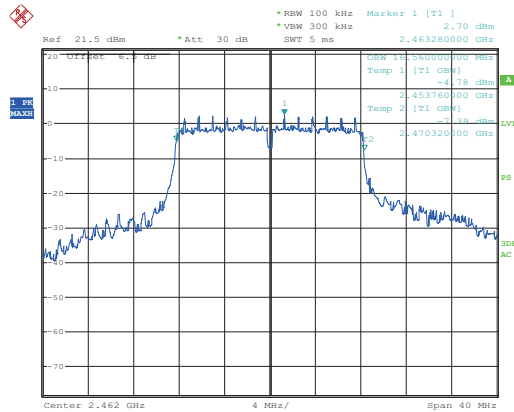
Date: 20.AUG.2013 10:48:29

Lowest channel



Date: 20.AUG.2013 10:52:32

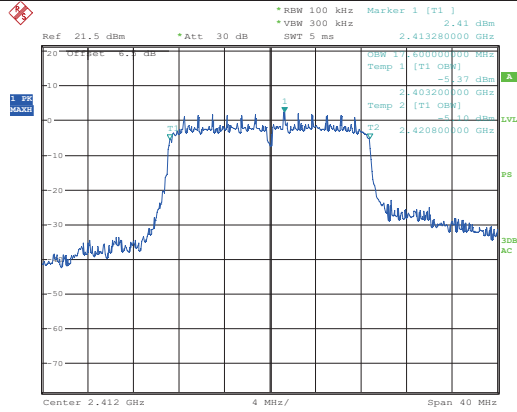
Middle channel



Date: 20.AUG.2013 10:53:24

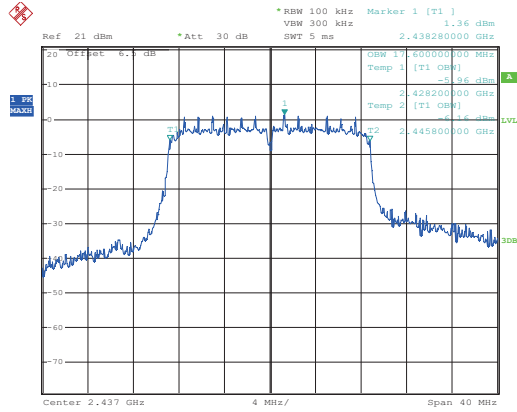
Highest channel

Test mode: 99%dB Occupy Bandwidth 802.11n(H20)



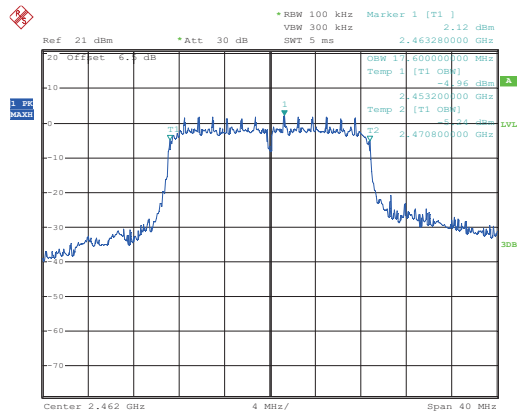
Date: 20.AUG.2013 10:58:18

Lowest channel



Date: 23.AUG.2013 16:33:15

Middle channel

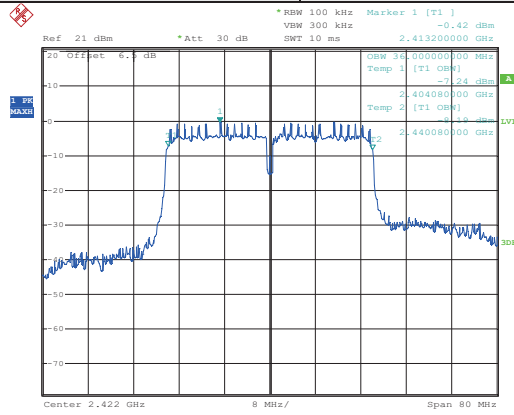


Date: 23.AUG.2013 16:39:01

Highest channel

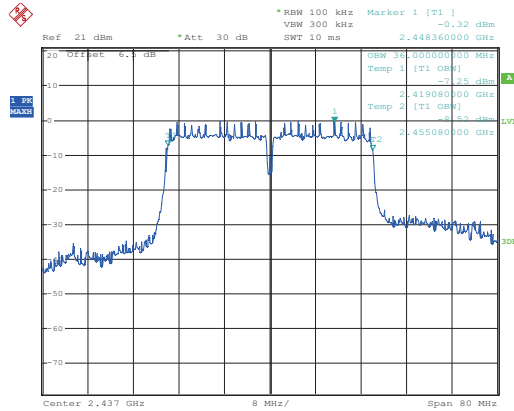
Test mode: 99%dB Occupy Bandwidth

802.11n(H40)



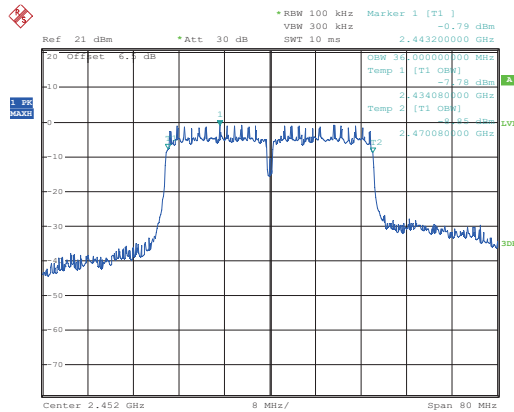
Date: 23.AUG.2013 16:44:04

Lowest channel



Date: 23.AUG.2013 16:45:05

Middle channel



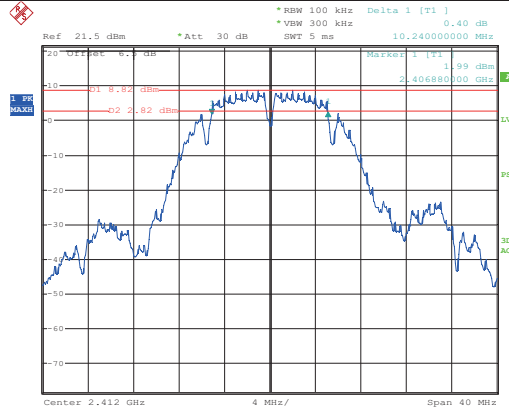
Date: 23.AUG.2013 16:58:23

Highest channel

ANT1

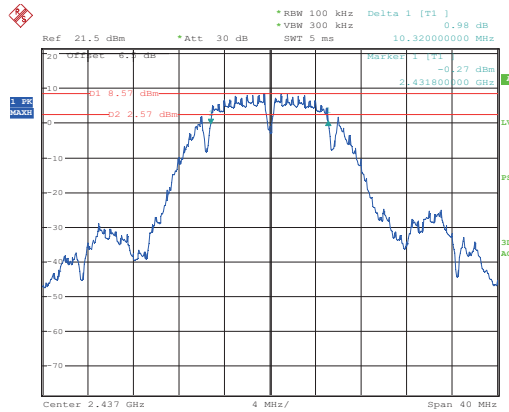
Test mode:6dB BW

802.11b



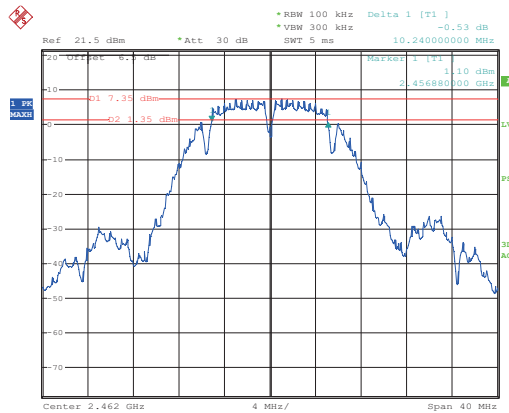
Date: 20.AUG.2013 09:22:46

Lowest channel



Date: 20.AUG.2013 09:27:35

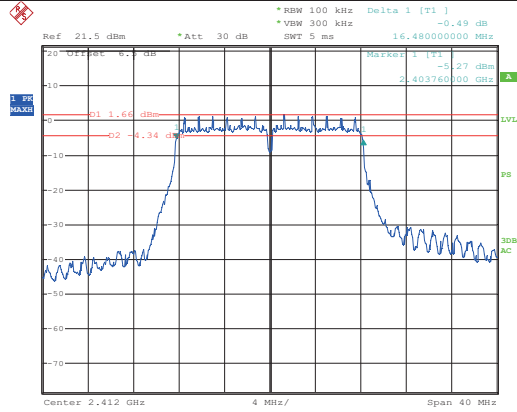
Middle channel



Date: 20.AUG.2013 09:37:00

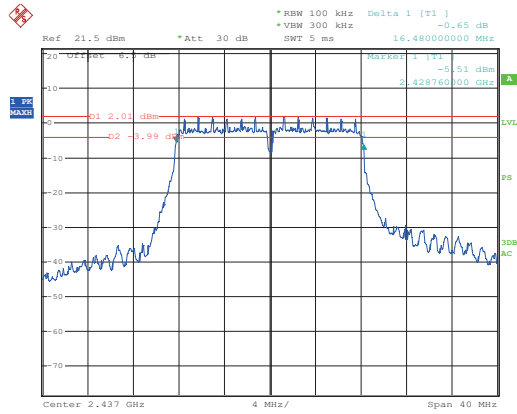
Highest channel

Test mode:6dB BW 802.11g



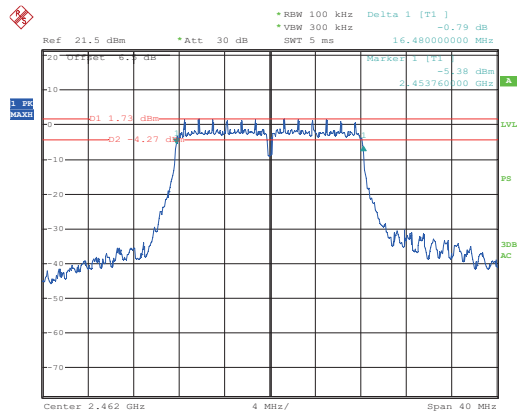
Date: 20.AUG.2013 09:41:12

Lowest channel



Date: 20.AUG.2013 09:48:26

Middle channel

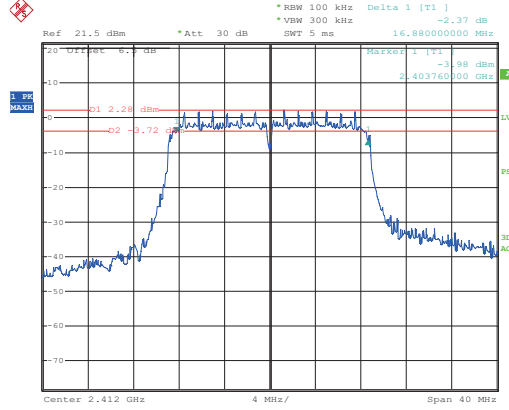


Date: 20.AUG.2013 09:50:17

Highest channel

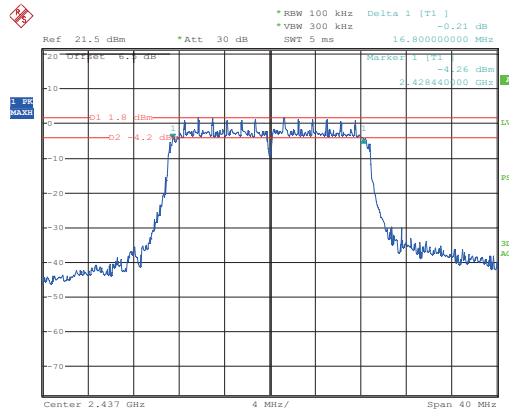
Test mode:6dB BW

802.11 n(H20)



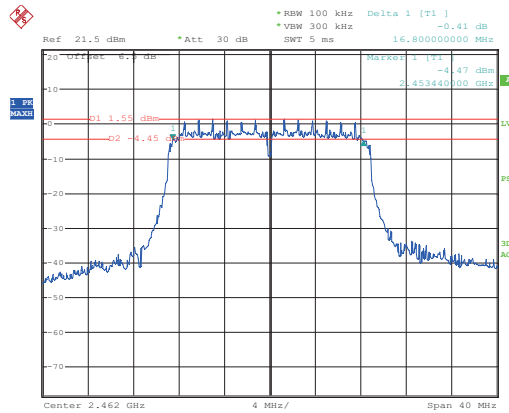
Date: 20.AUG.2013 10:06:14

Lowest channel



Date: 20.AUG.2013 10:09:30

Middle channel

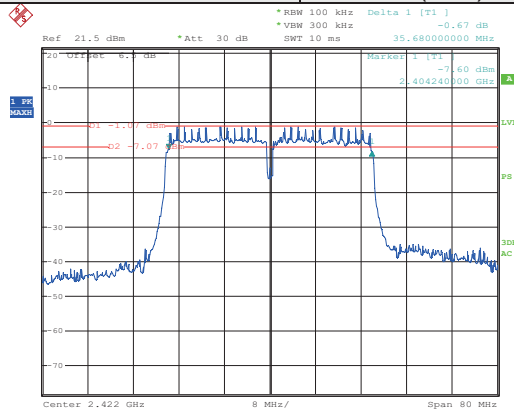


Date: 20.AUG.2013 10:18:26

Highest channel

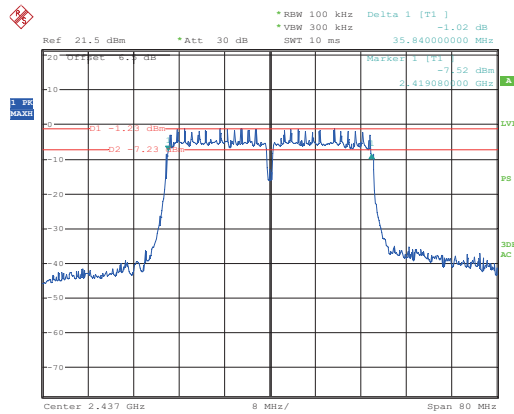
Test mode:6dB BW

802.11 n(H40)



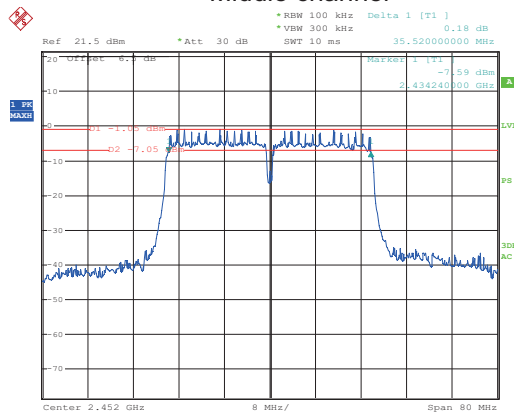
Date: 20.AUG.2013 10:34:02

Lowest channel



Date: 20.AUG.2013 10:26:33

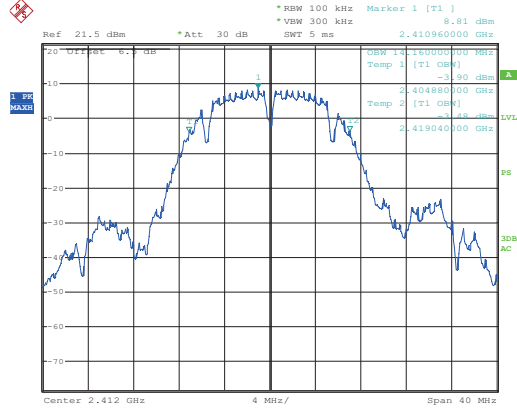
Middle channel



Date: 20.AUG.2013 10:32:21

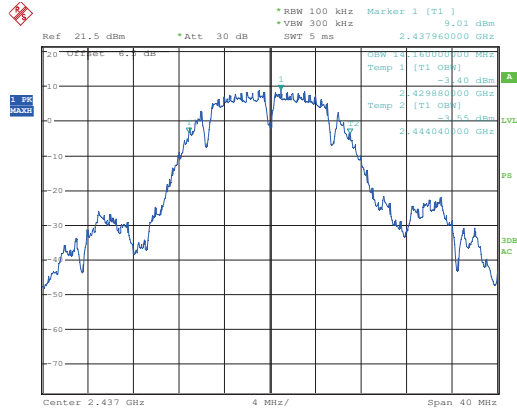
Highest channel

Test mode: 99%dB Occupy Bandwidth 802.11b



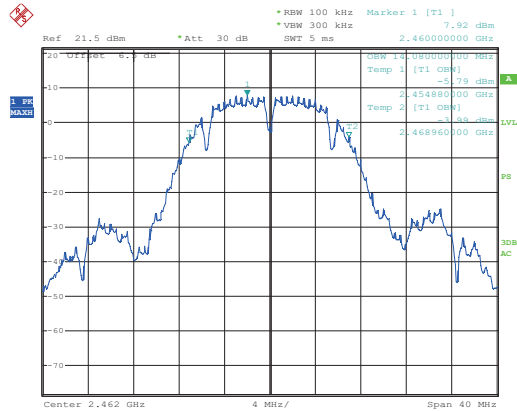
Date: 20.AUG.2013 10:45:13

Lowest channel



Date: 20.AUG.2013 10:40:31

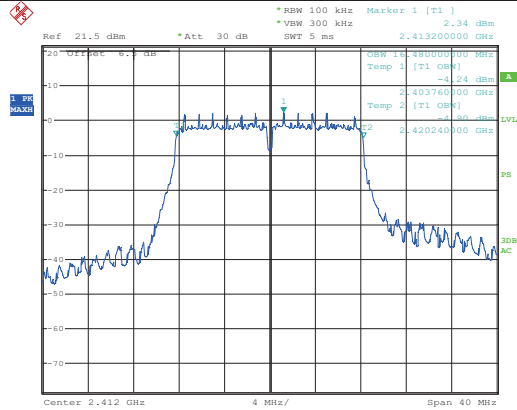
Middle channel



Date: 20.AUG.2013 10:44:11

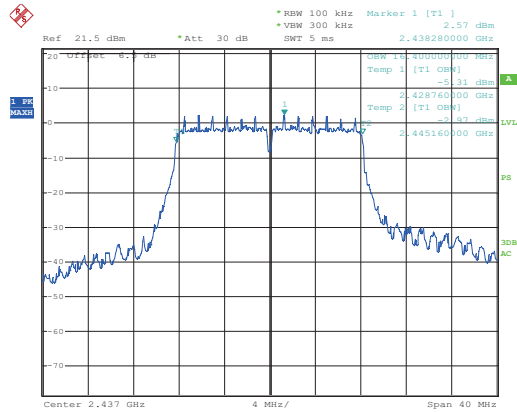
Highest channel

Test mode: 99%dB Occupy Bandwidth 802.11g



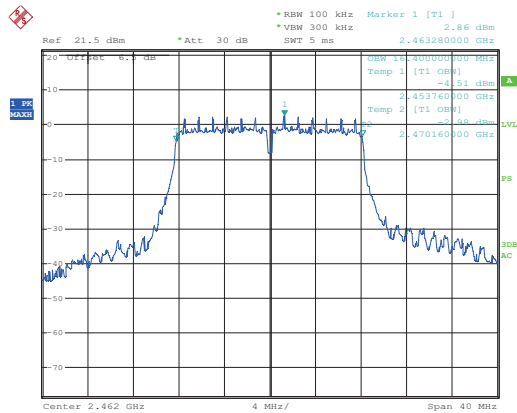
Date: 20.AUG.2013 10:49:48

Lowest channel



Date: 20.AUG.2013 10:51:29

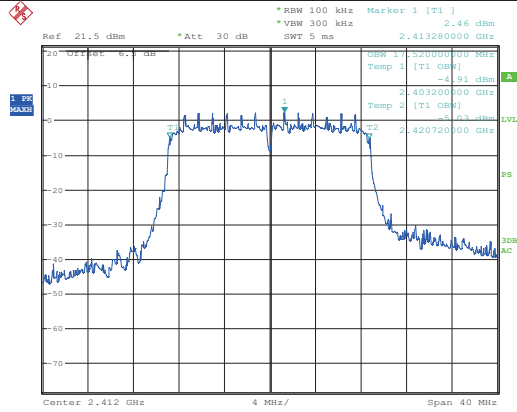
Middle channel



Date: 20.AUG.2013 10:54:15

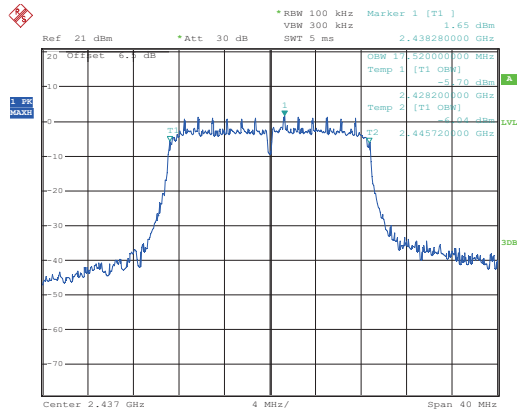
Highest channel

Test mode: 99%dB Occupy Bandwidth 802.11n(H20)



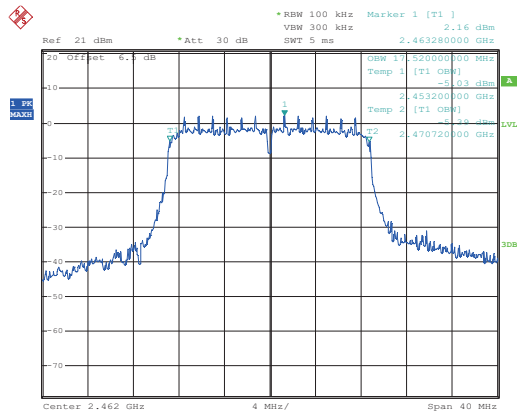
Date: 20.AUG.2013 10:56:35

Lowest channel



Date: 23.AUG.2013 16:35:01

Middle channel

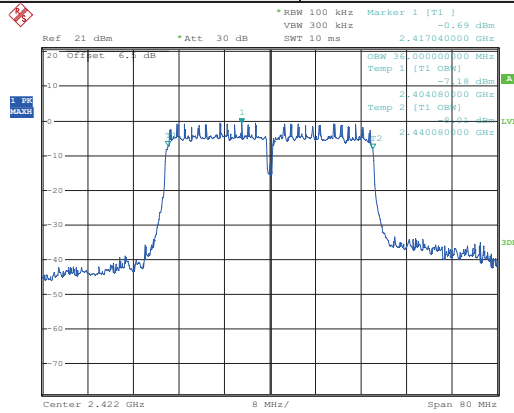


Date: 23.AUG.2013 16:37:51

Highest channel

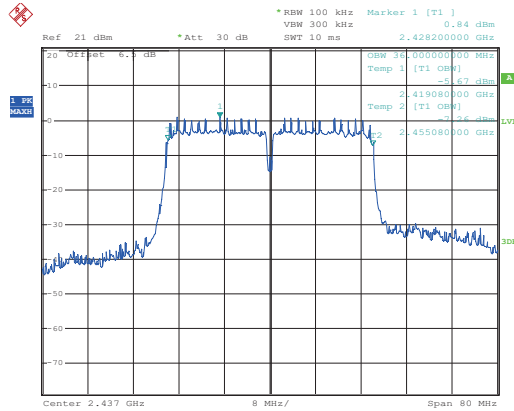
Test mode: 99%dB Occupy Bandwidth

802.11n(H40)



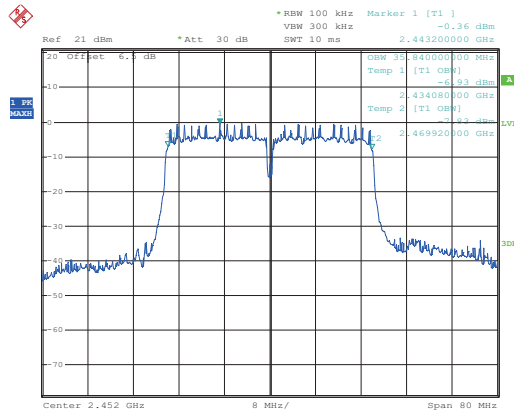
Date: 23.AUG.2013 16:43:19

Lowest channel



Date: 23.AUG.2013 16:55:45

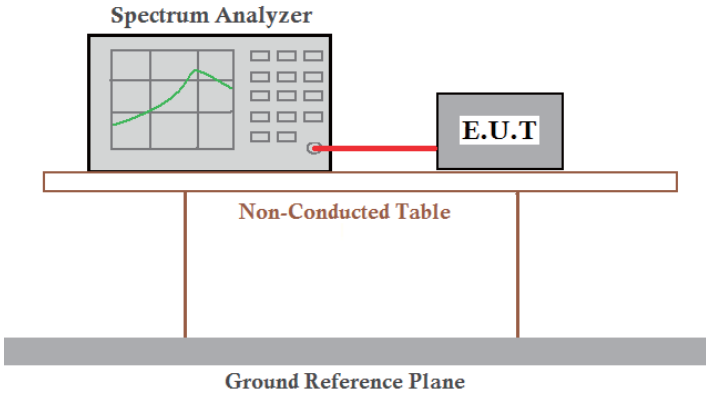
Middle channel



Date: 23.AUG.2013 16:56:58

Highest channel

6.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.4:2003, KDB558074 and KDB 662911 D01
Limit:	8dBm
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two legs. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

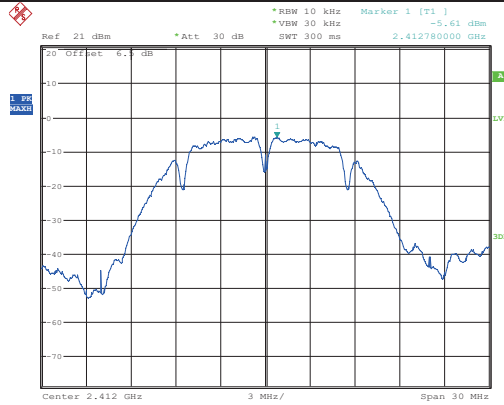
Measurement Data

Mode	Test CH	Ant. Port	PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Result
802.11b	Lowest	Ant 0	-5.61	-2.33	8.00	Pass
		Ant 1	-5.09			
	Middle	Ant 0	-5.41	-2.23	8.00	Pass
		Ant 1	-5.07			
	Highest	Ant 0	-4.90	-3.32	8.00	Pass
		Ant 1	-8.47			
802.11g	Lowest	Ant 0	-8.62	-5.76	8.00	Pass
		Ant 1	-8.92			
	Middle	Ant 0	-9.05	-5.71	8.00	Pass
		Ant 1	-8.42			
	Highest	Ant 0	-8.54	-5.23	8.00	Pass
		Ant 1	-7.96			
802.11n20	Lowest	Ant 0	-7.27	-4.56	8.00	Pass
		Ant 1	-7.90			
	Middle	Ant 0	-8.76	-5.75	8.00	Pass
		Ant 1	-8.77			
	Highest	Ant 0	-8.72	-5.58	8.00	Pass
		Ant 1	-8.47			
802.11n40	Lowest	Ant 0	-11.63	-7.95	8.00	Pass
		Ant 1	-10.38			
	Middle	Ant 0	-10.77	-7.82	8.00	Pass
		Ant 1	-10.90			
	Highest	Ant 0	-11.66	-8.50	8.00	Pass
		Ant 1	-11.37			

Test plot as follows:

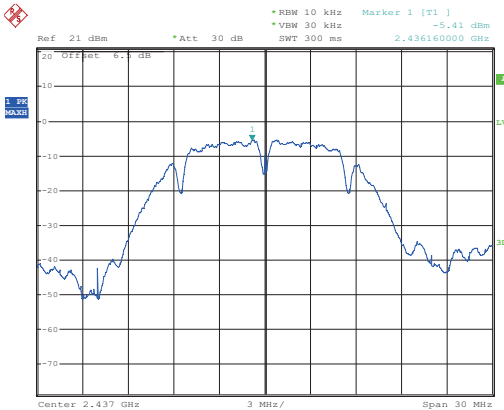
ANT0

Test mode:	802.11b
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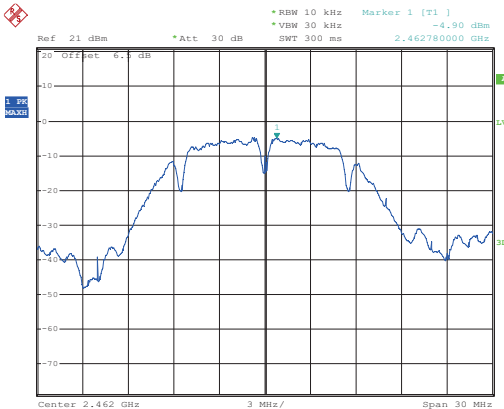
Date: 23.AUG.2013 18:35:56

Lowest channel



Date: 23.AUG.2013 18:38:19

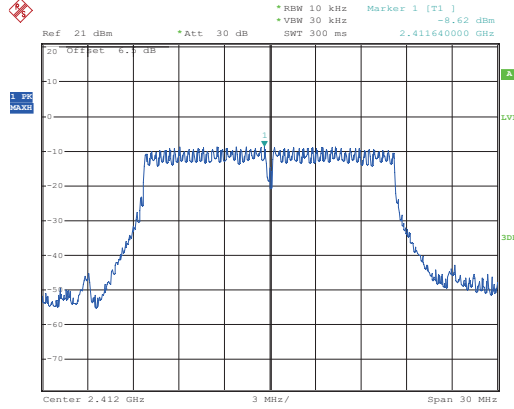
Middle channel



Date: 23.AUG.2013 18:39:28

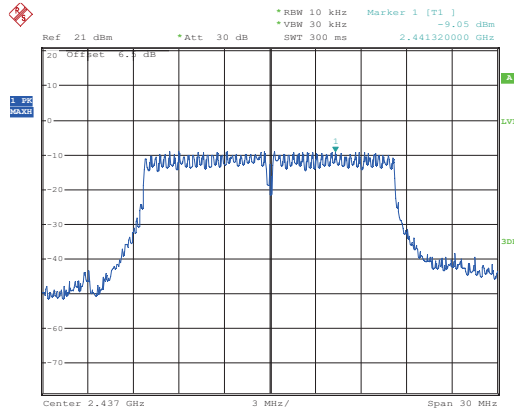
Highest channel

Test mode:	802.11g
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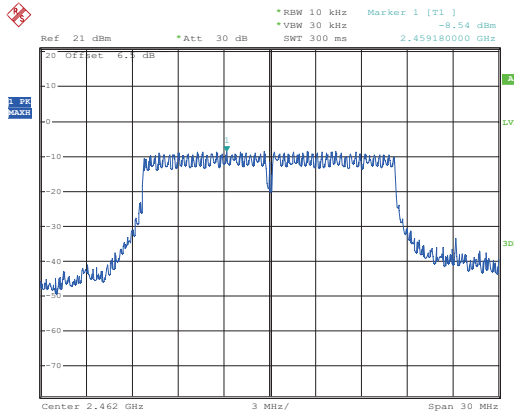
Date: 23.AUG.2013 18:41:40

Lowest channel



Date: 23.AUG.2013 18:44:11

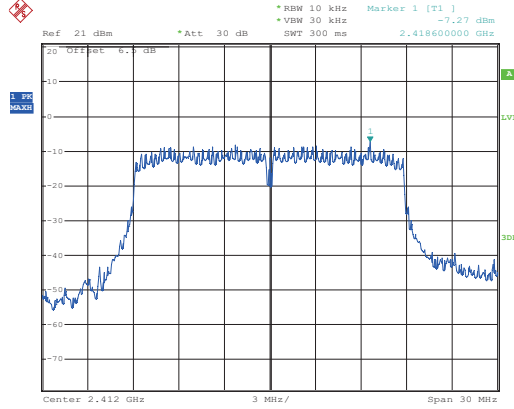
Middle channel



Date: 23.AUG.2013 18:49:37

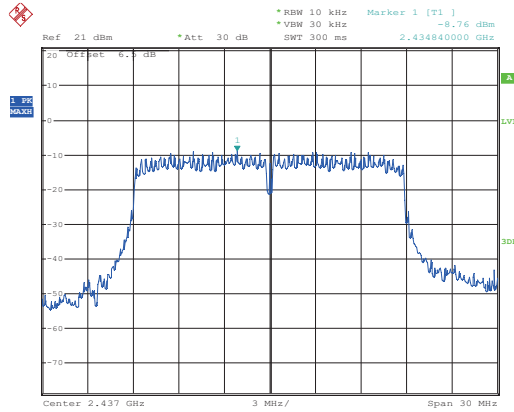
Highest channel

Test mode:	802.11n(H20)
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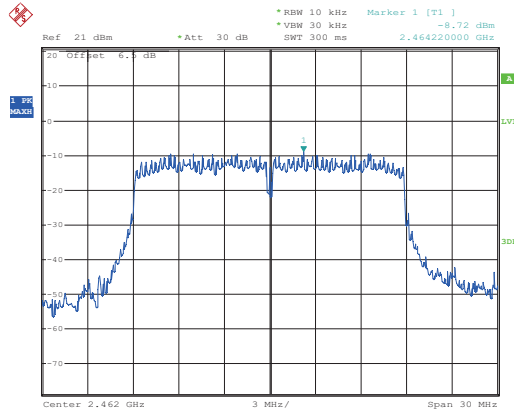
Date: 23.AUG.2013 18:52:58

Lowest channel



Date: 23.AUG.2013 18:57:36

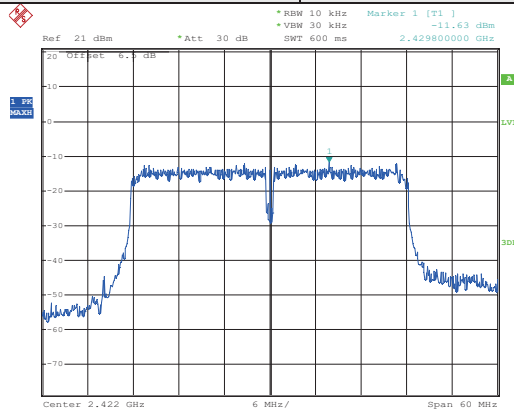
Middle channel



Date: 23.AUG.2013 19:03:03

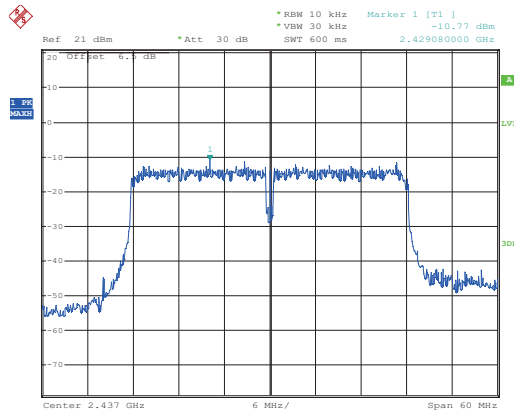
Highest channel

Test mode:	802.11n(H40)
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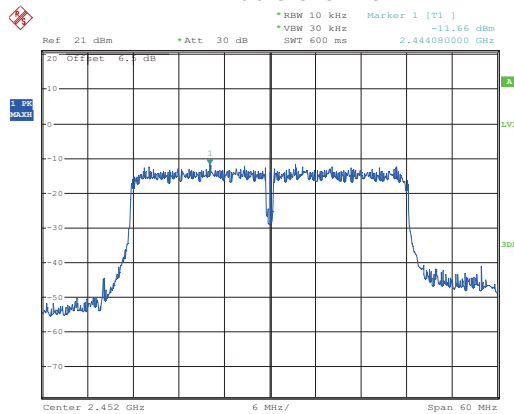
Date: 23.AUG.2013 19:04:50

Lowest channel



Date: 23.AUG.2013 19:06:58

Middle channel



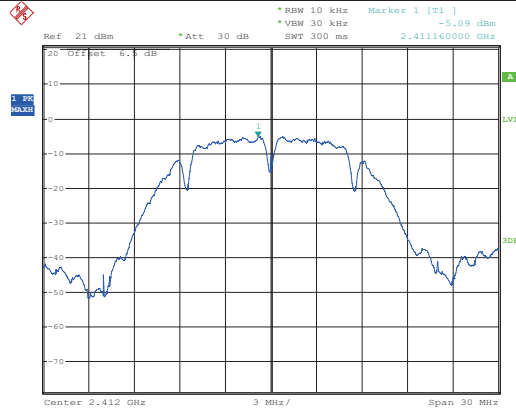
Date: 23.AUG.2013 19:08:52

Highest channel

ANT1

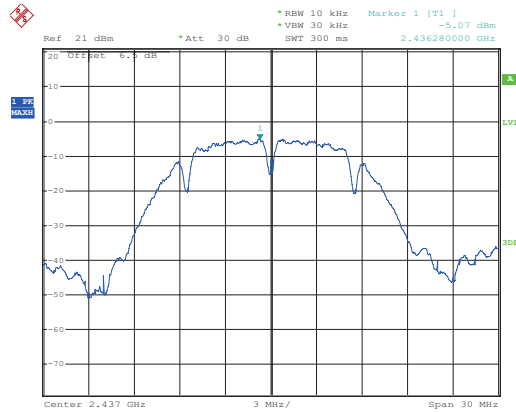
Test mode:

802.11b



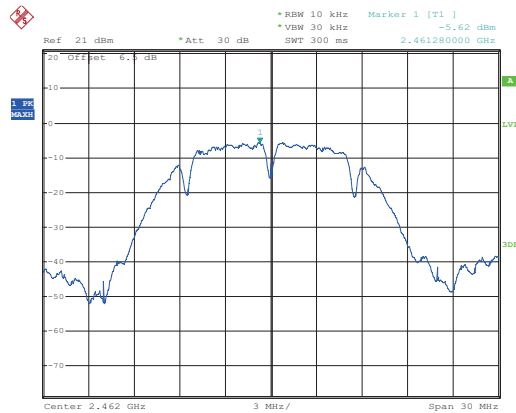
Date: 23.AUG.2013 18:36:48

Lowest channel



Date: 23.AUG.2013 18:37:27

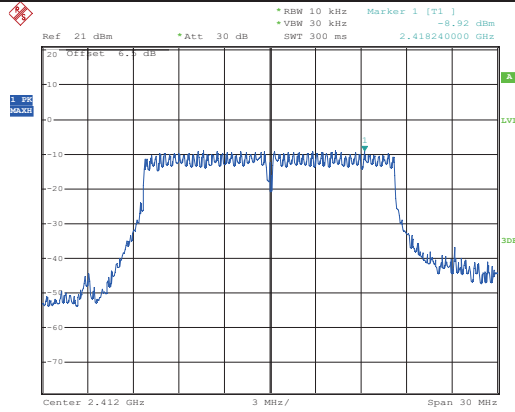
Middle channel



Date: 23.AUG.2013 18:40:19

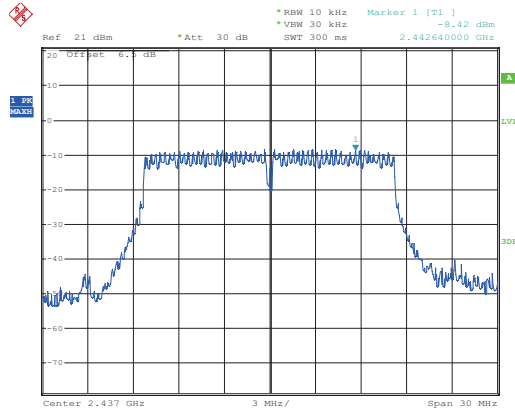
Highest channel

Test mode:	802.11g
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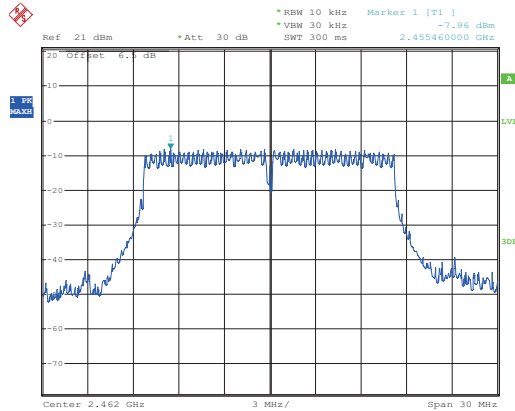
Date: 23.AUG.2013 18:42:29

Lowest channel



Date: 23.AUG.2013 18:45:01

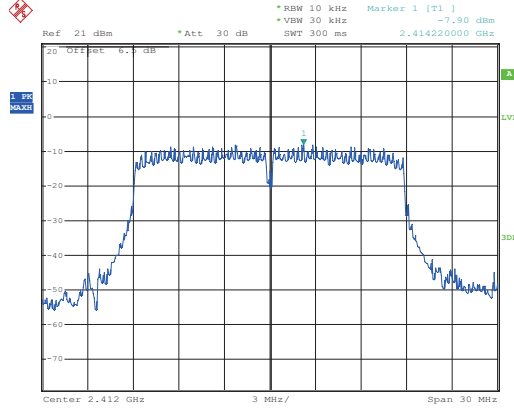
Middle channel



Date: 23.AUG.2013 18:48:16

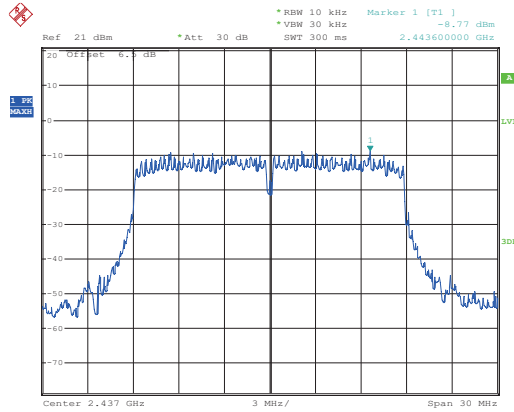
Highest channel

Test mode:	802.11n(H20)
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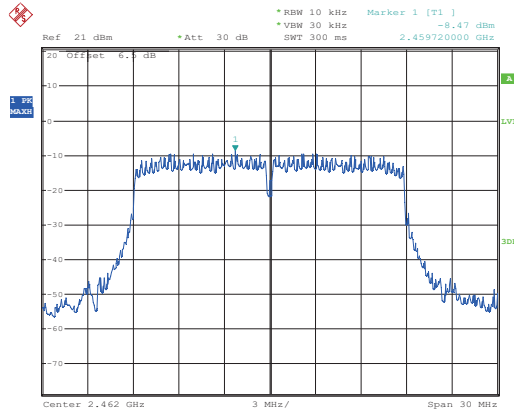
Date: 23.AUG.2013 18:54:17

Lowest channel



Date: 23.AUG.2013 18:58:29

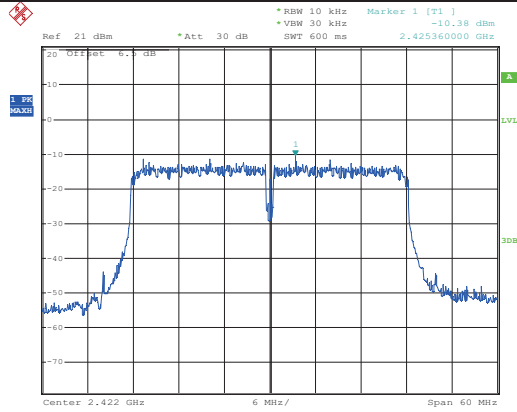
Middle channel



Date: 23.AUG.2013 19:03:39

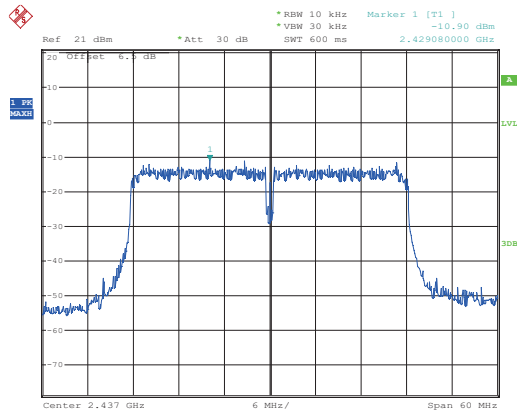
Highest channel

Test mode:	802.11n(H40)
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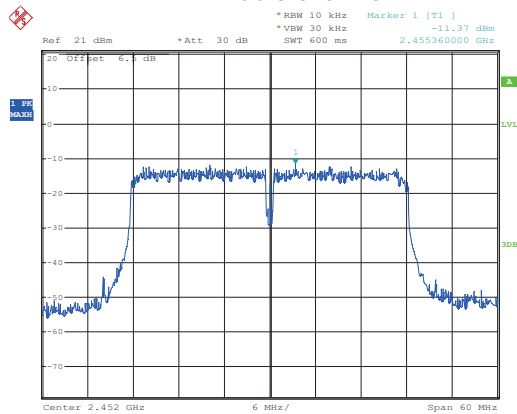
Date: 23.AUG.2013 19:05:56

Lowest channel



Date: 23.AUG.2013 19:07:45

Middle channel

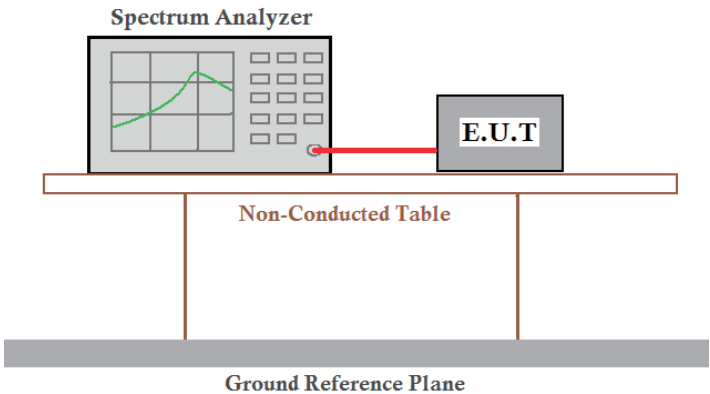


Date: 23.AUG.2013 19:09:35

Highest channel

6.6 Band Edge

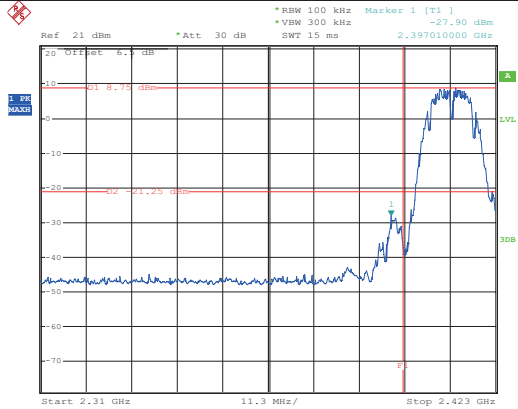
6.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003 and KDB558074
Limit:	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 30 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.
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:

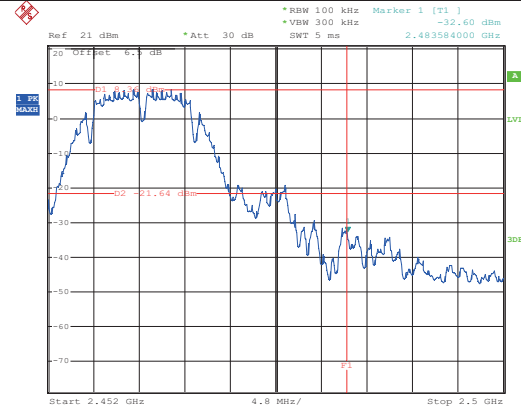
ANT0:

Test mode:	802.11b
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Date: 26.AUG.2013 11:42:15

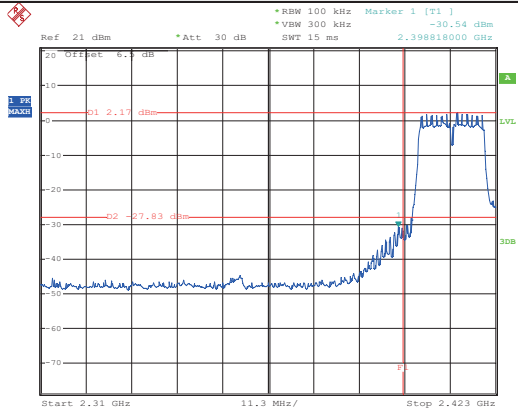
Lowest channel



Date: 26.AUG.2013 11:47:29

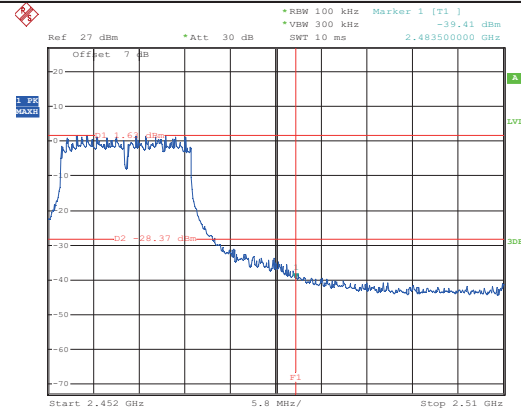
Highest channel

Test mode:	802.11g
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Date: 26.AUG.2013 12:14:21

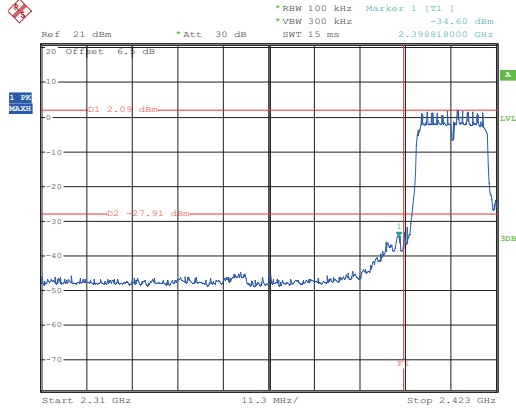
Lowest channel



Date: 10.MAY.2013 16:04:28

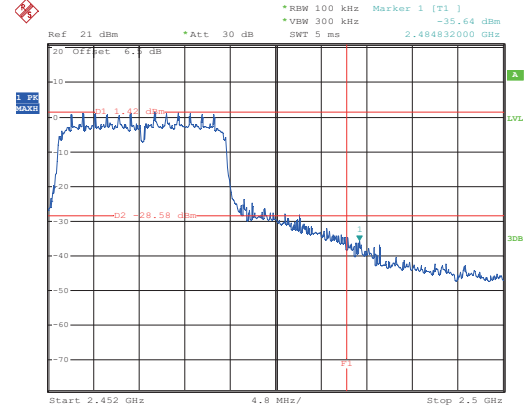
Highest channel

Test mode: 802.11n(H20)



Date: 26.AUG.2013 13:56:45

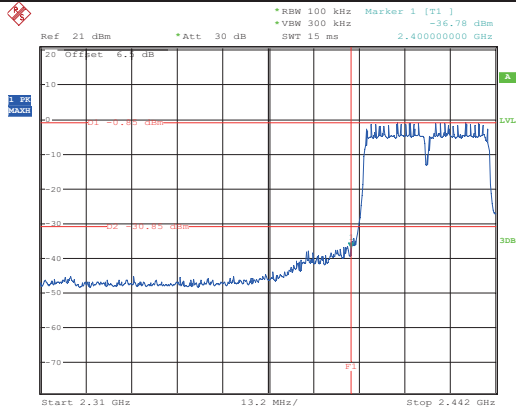
Lowest channel



Date: 26.AUG.2013 13:59:40

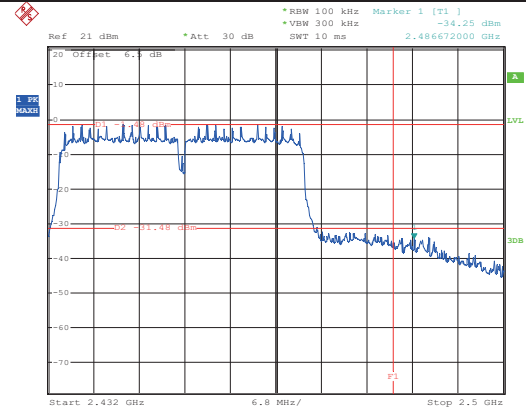
Highest channel

Test mode: 802.11 n(H40)



Date: 26.AUG.2013 14:15:25

Lowest channel

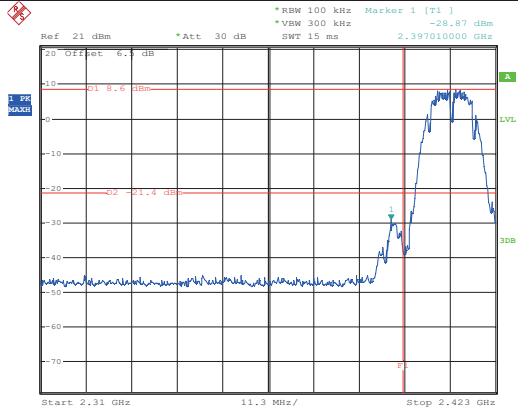


Date: 26.AUG.2013 14:44:36

Highest channel

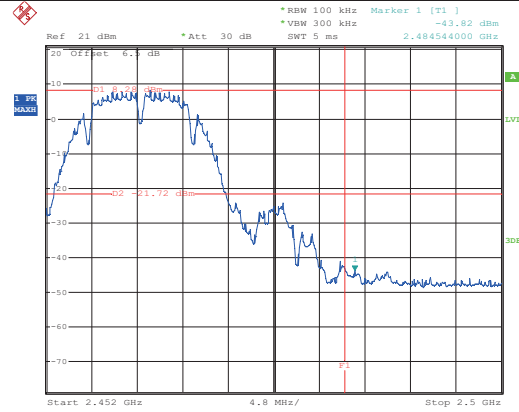
ANT1:

Test mode:	802.11b
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Date: 26.AUG.2013 11:57:17

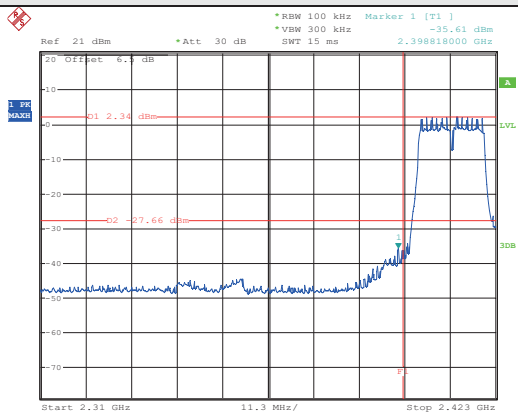
Lowest channel



Date: 26.AUG.2013 11:55:31

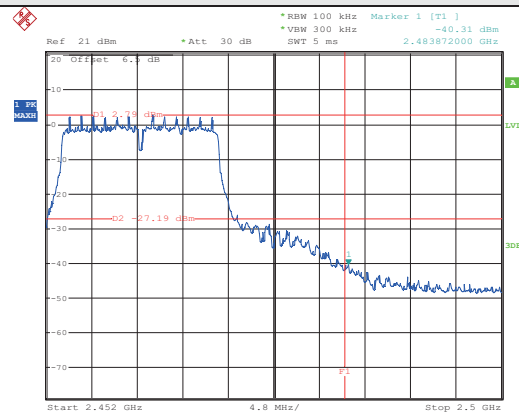
Highest channel

Test mode:	802.11g
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Date: 26.AUG.2013 12:16:01

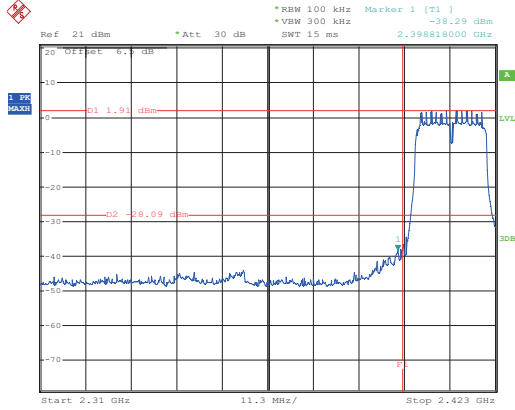
Lowest channel



Date: 26.AUG.2013 12:02:47

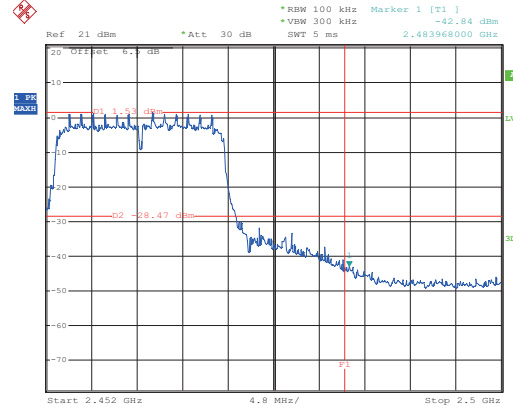
Highest channel

Test mode: 802.11n(H20)



Date: 26.AUG.2013 13:54:27

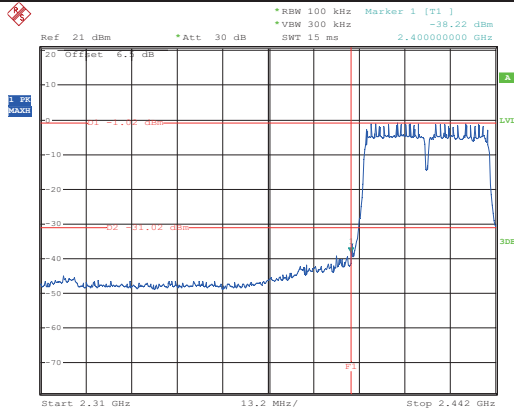
Lowest channel



Date: 26.AUG.2013 14:01:52

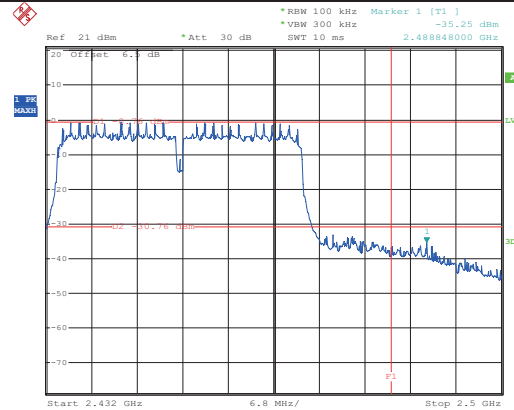
Highest channel

Test mode: 802.11 n(H40)



Date: 26.AUG.2013 14:12:18

Lowest channel



Date: 26.AUG.2013 14:27:44

Highest channel

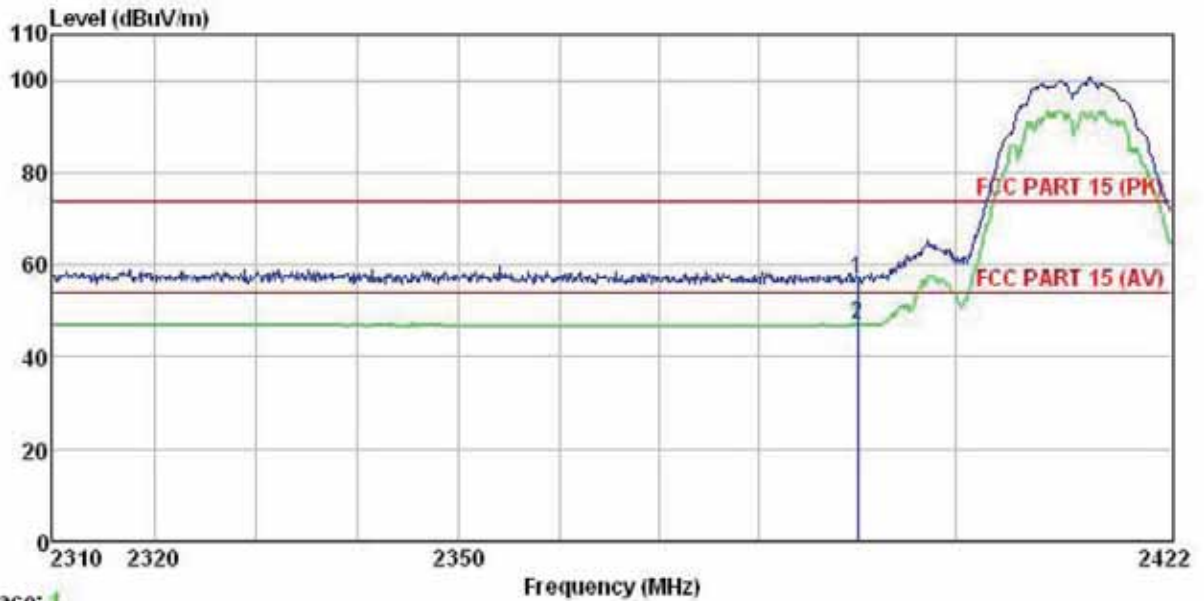
6.6.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205														
Test Method:	ANSI C63.4: 2003														
Test Frequency Range:	2.3GHz to 2.5GHz														
Test site:	Measurement Distance: 3m														
Receiver setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak Value</td> </tr> <tr> <td>Peak</td> <td>1MHz</td> <td>10Hz</td> <td>Average Value</td> </tr> </tbody> </table>	Frequency	Detector	RBW	VBW	Remark	Above 1GHz	Peak	1MHz	3MHz	Peak Value	Peak	1MHz	10Hz	Average Value
Frequency	Detector	RBW	VBW	Remark											
Above 1GHz	Peak	1MHz	3MHz	Peak Value											
	Peak	1MHz	10Hz	Average Value											
Limit:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dBuV/m @3m)</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Above 1GHz</td> <td>54.00</td> <td>Average Value</td> </tr> <tr> <td>74.00</td> <td>Peak Value</td> </tr> </tbody> </table>	Frequency	Limit (dBuV/m @3m)	Remark	Above 1GHz	54.00	Average Value	74.00	Peak Value						
Frequency	Limit (dBuV/m @3m)	Remark													
Above 1GHz	54.00	Average Value													
	74.00	Peak Value													
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 														
Test setup:															
Test Instruments:	Refer to section 5.7 for details														
Test mode:	Refer to section 5.3 for details														
Test results:	Passed														

802.11b

Test channel: Lowest

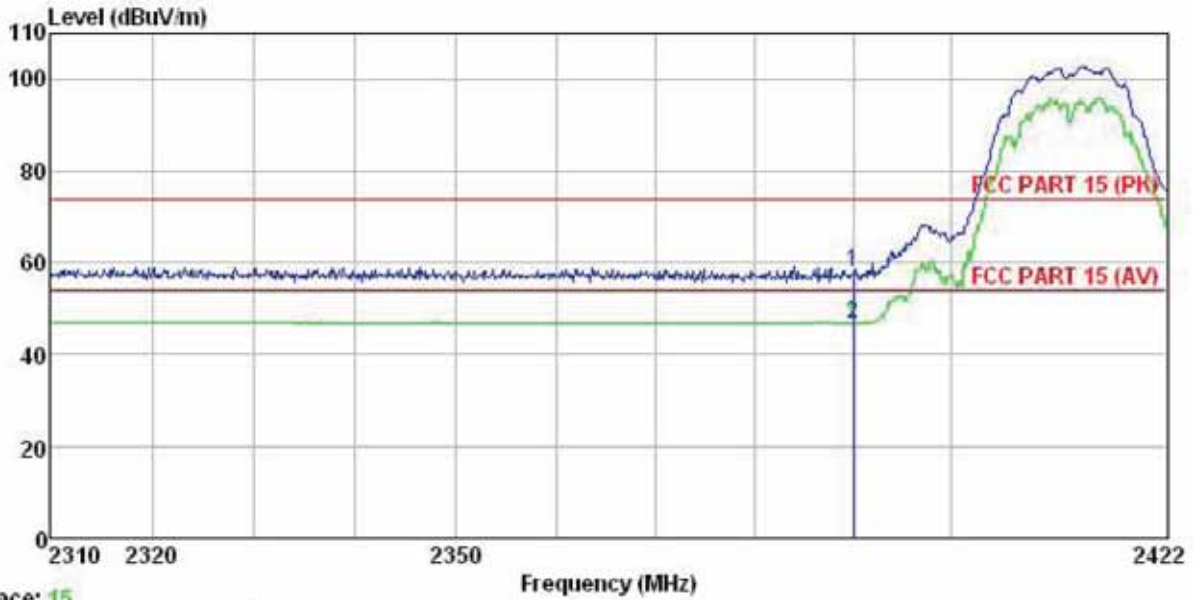
Horizontal:



Trace: 1
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 294RF
 EUI : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11b low channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	23.69	27.58	5.67	0.00	56.94	74.00	-17.06	Peak
2	2390.000	13.66	27.58	5.67	0.00	46.91	54.00	-7.09	Average

Vertical:

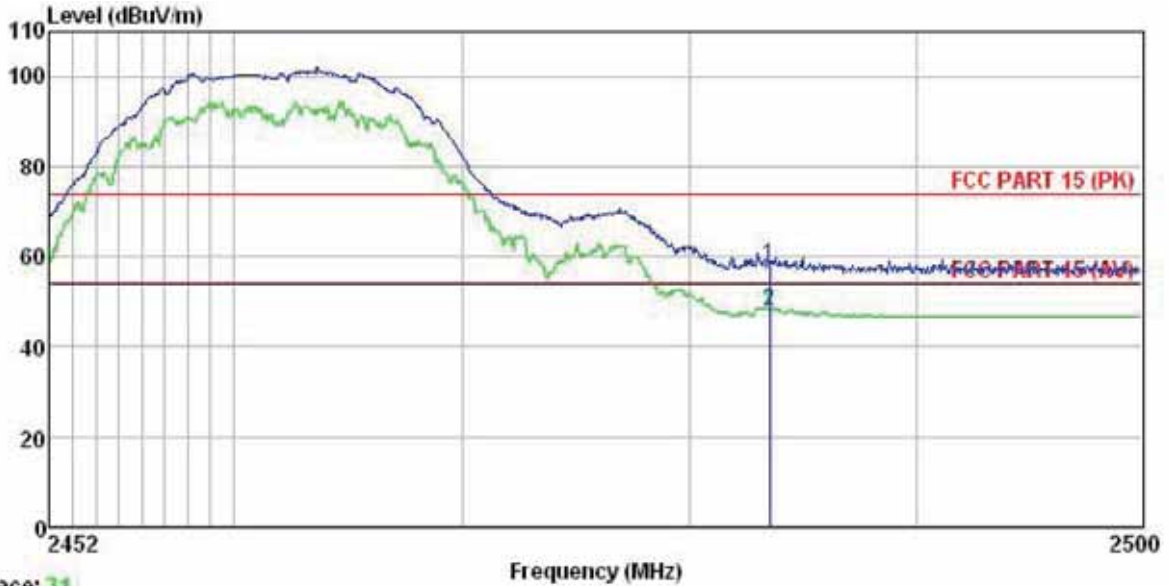


Trace: 15
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11b low channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Freq	ReadAntenna	Cable	Preamp	Limit	Over		
	MHz	Level	Factor	Loss	Line	Limit	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	
1	2390.000	24.80	27.58	5.67	0.00	58.05	74.00	-15.95 Peak
2	2390.000	13.56	27.58	5.67	0.00	46.81	54.00	-7.19 Average

Test channel: Highest

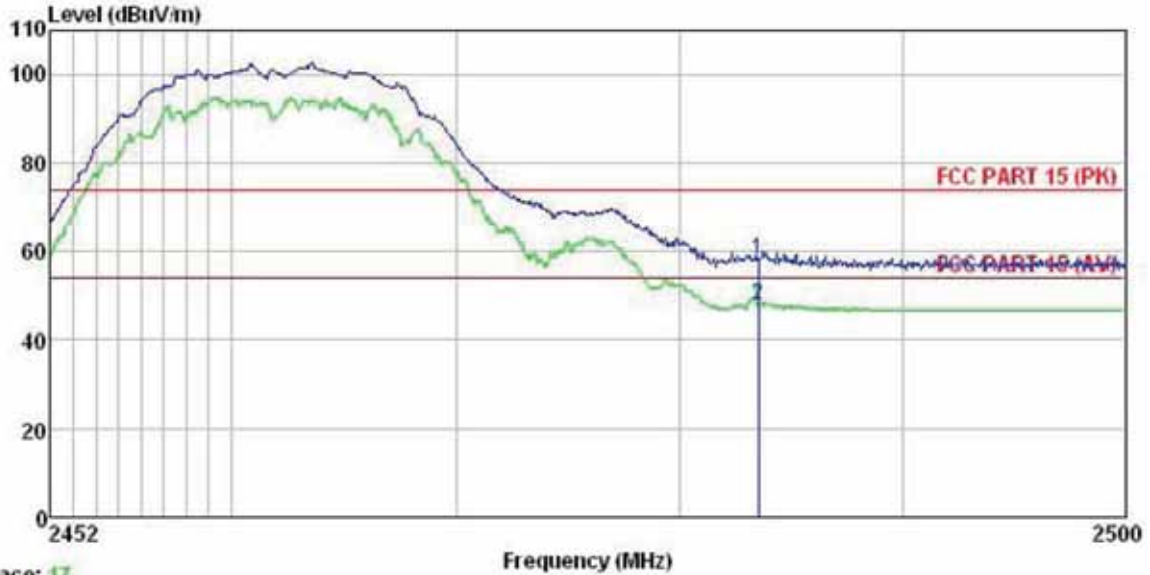
Horizontal:



Trace: 31
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 294RF
 EUI : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11b high channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Limit Level	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	24.67	27.52	5.70	0.00	57.89	74.00	-16.11 Peak
2	2483.500	14.70	27.52	5.70	0.00	47.92	54.00	-6.08 Average

Vertical:



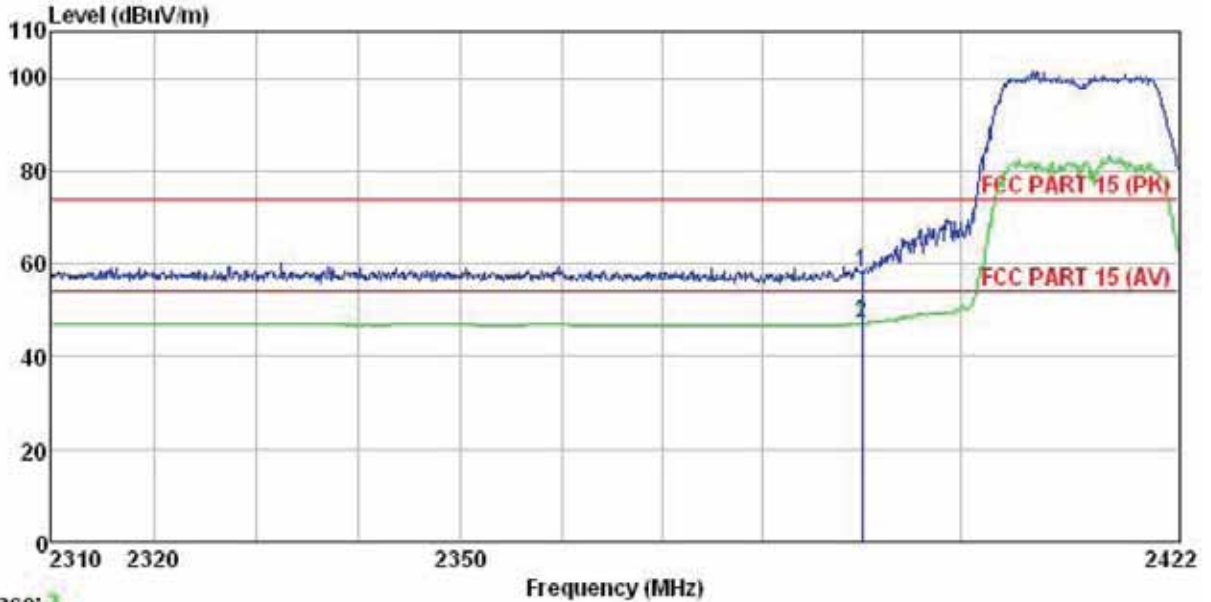
Trace: 17
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11b high channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	24.99	27.52	5.70	0.00	58.21	74.00 -15.79 Peak
2	2483.500	14.68	27.52	5.70	0.00	47.90	54.00 -6.10 Average

802.11g

Test channel: Lowest

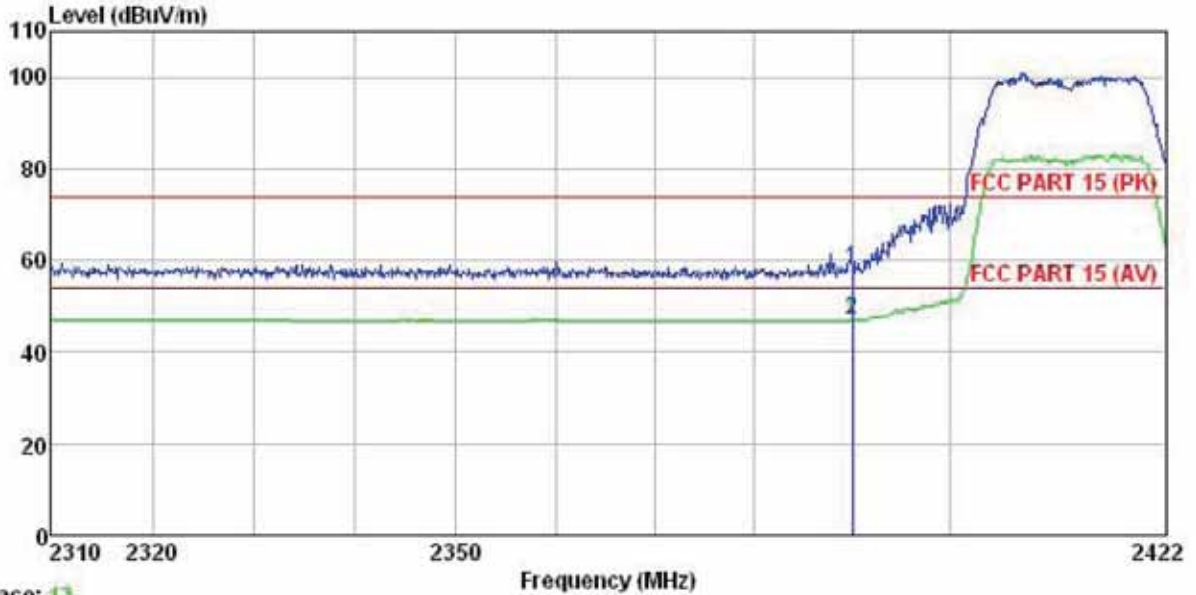
Horizontal:



Trace: 3
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11g low channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2390.000	24.76	27.58	5.67	0.00	58.01	74.00	-15.99	Peak
2	2390.000	13.94	27.58	5.67	0.00	47.19	54.00	-6.81	Average

Vertical:

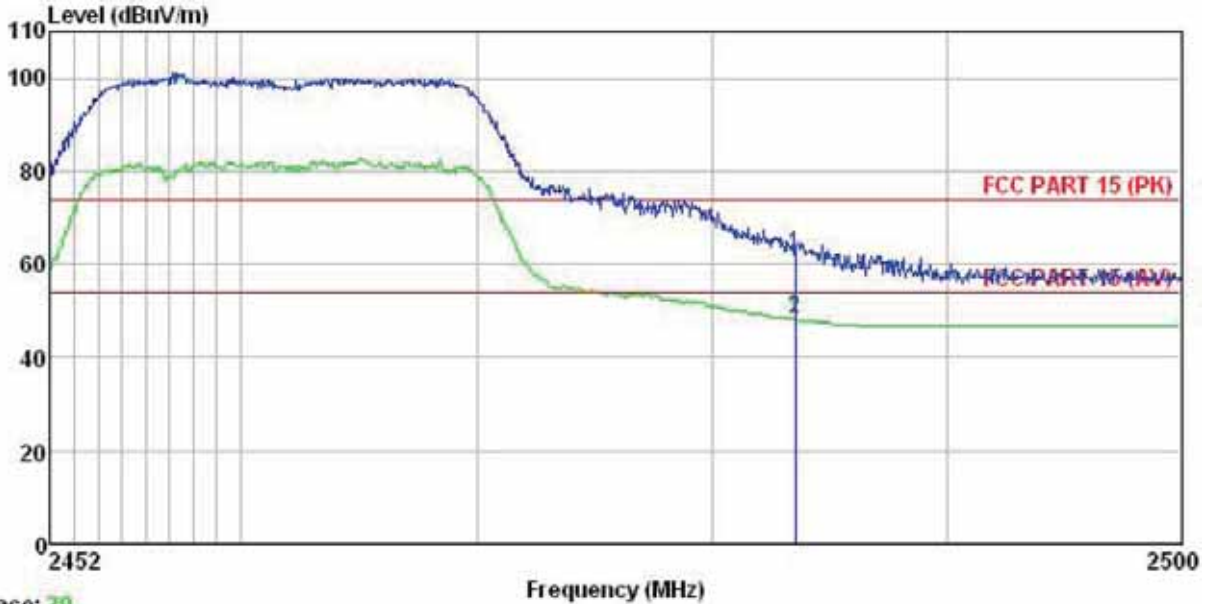


Trace: 13
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11g low channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	ReadAntenna	Cable	Preamp	Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	24.90	27.58	5.67	0.00	58.15	74.00	-15.85 Peak
2	2390.000	13.68	27.58	5.67	0.00	46.93	54.00	-7.07 Average

Test channel: Highest

Horizontal:

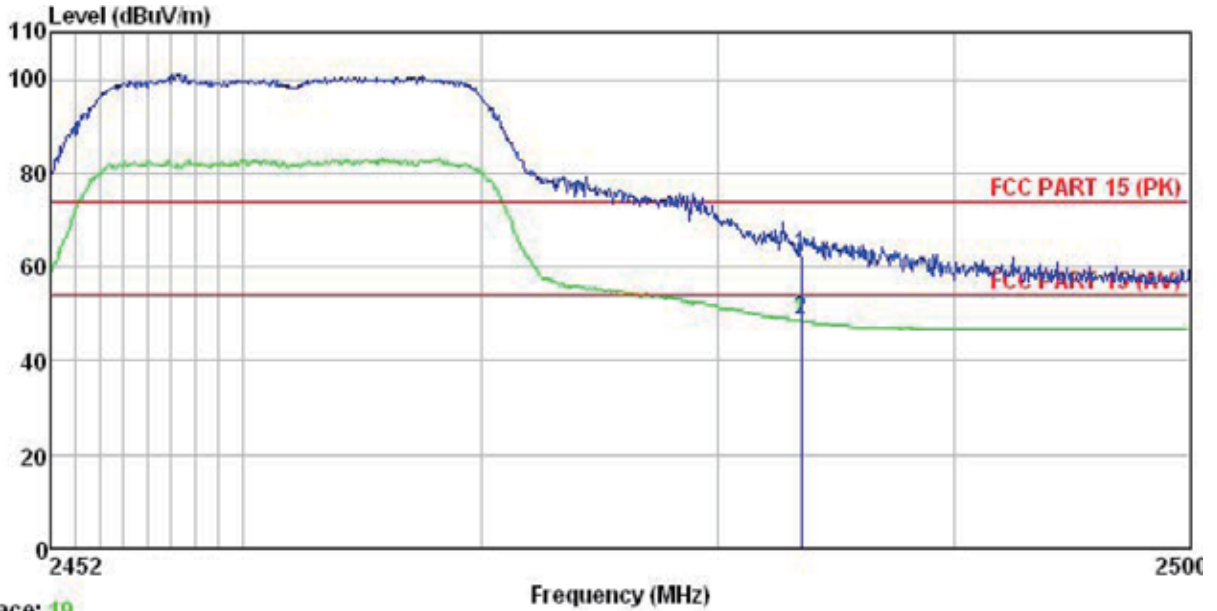


Trace: 29

Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11g high channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit	Over	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	29.02	27.52	5.70	0.00	62.24	74.00	-11.76	Peak
2	2483.500	14.94	27.52	5.70	0.00	48.16	54.00	-5.84	Average

Vertical;



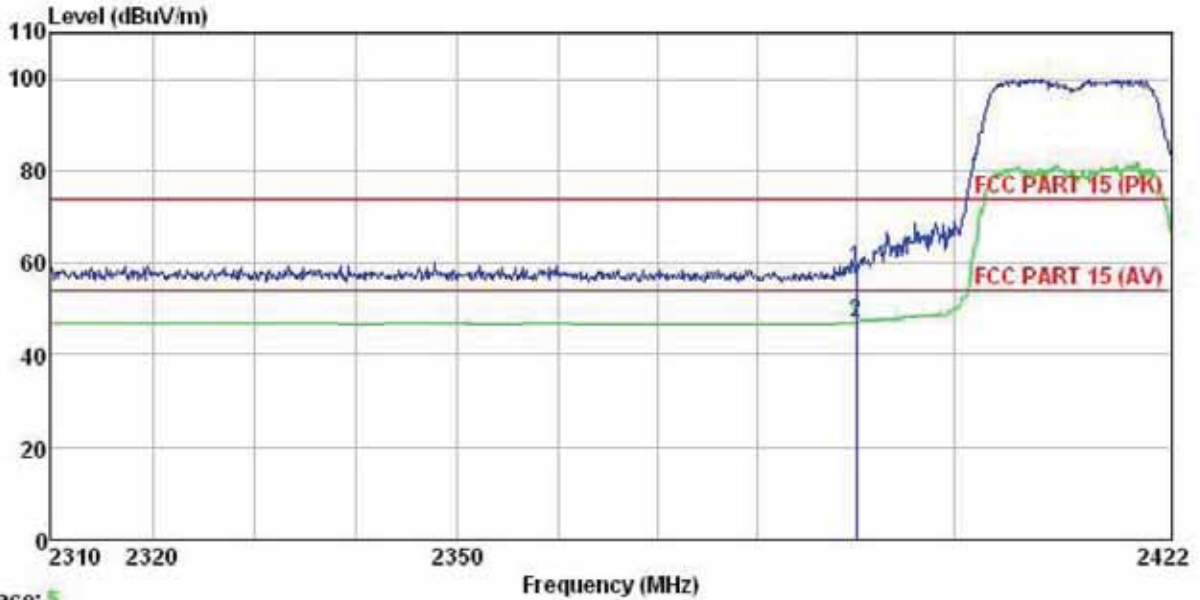
Trace: 19
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11g high channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Freq	ReadAntenna	Cable Preamp	Limit	Over				
	MHz	Level	Loss	Line	Limit	Remark			
	MHz	dBuV	dB/m	dB	dB	dBuV/m			
1	2483.500	29.30	27.52	5.70	0.00	62.52	74.00	-11.48	Peak
2	2483.500	15.30	27.52	5.70	0.00	48.52	54.00	-5.48	Average

802.11n (H20)

Test channel: Lowest

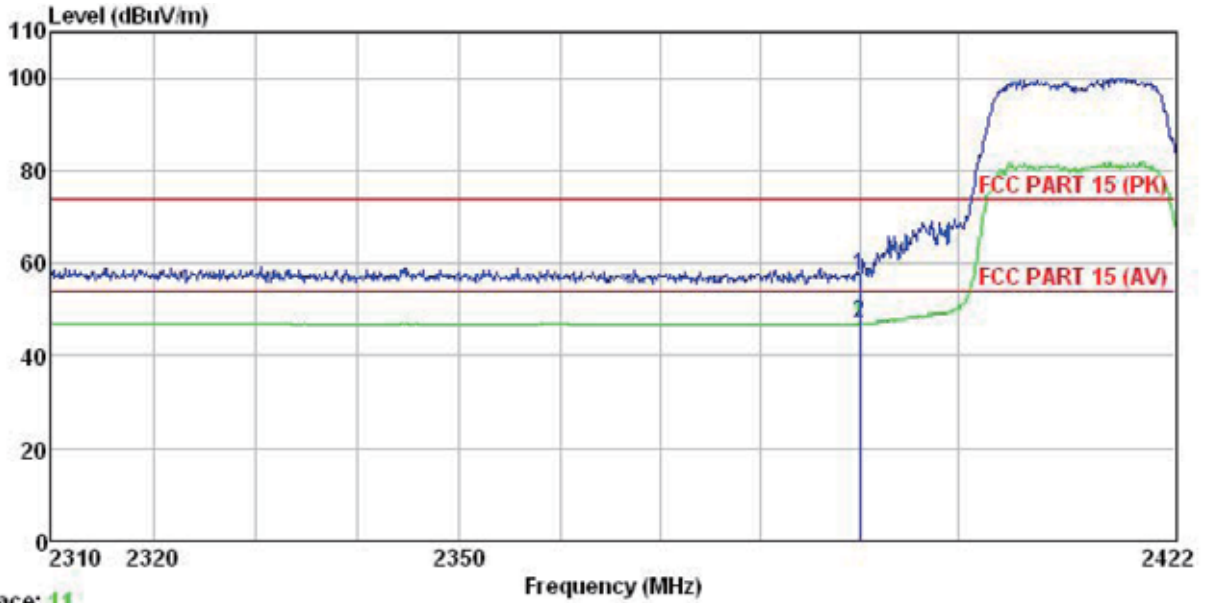
Horizontal:



Trace: 5
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11n20 low channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	ReadAntenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2390.000	25.51	27.58	5.67	0.00	58.76	74.00	-15.24 Peak
2	2390.000	14.00	27.58	5.67	0.00	47.25	54.00	-6.75 Average

Vertical:

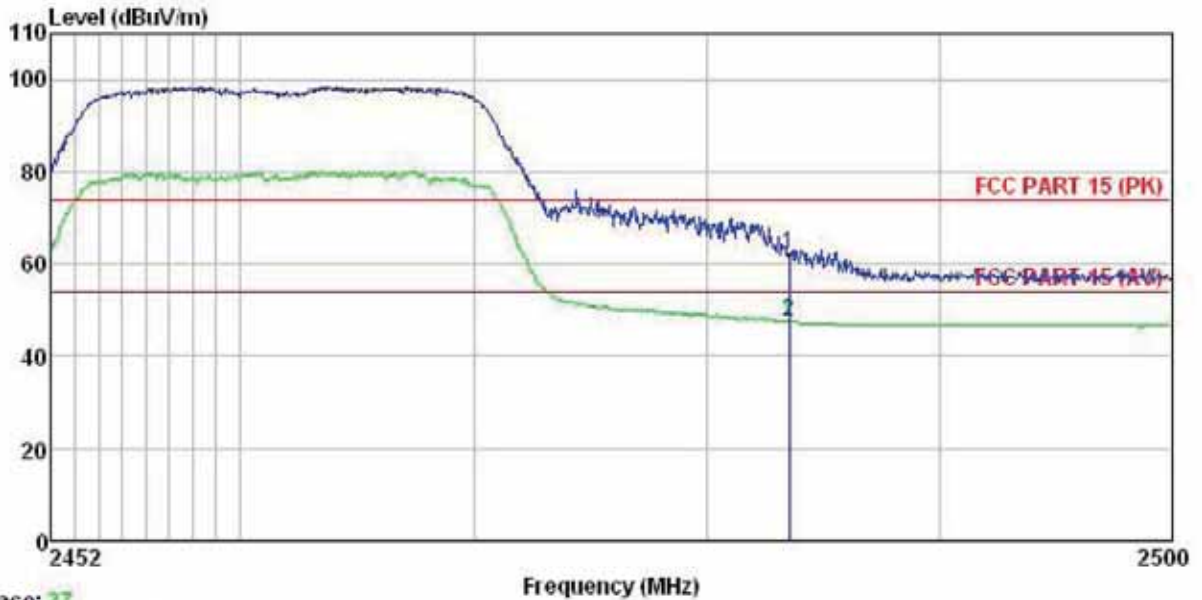


Trace: 11
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11n20 low channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Freq	ReadAntenna	Cable Preamp	Level	Limit	Over	Remark	
	MHz	Level	Factor	Loss	Factor	Line	Limit	
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	
1	2390.000	23.93	27.58	5.67	0.00	57.18	74.00	-16.82 Peak
2	2390.000	13.67	27.58	5.67	0.00	46.92	54.00	-7.08 Average

Test channel: Highest

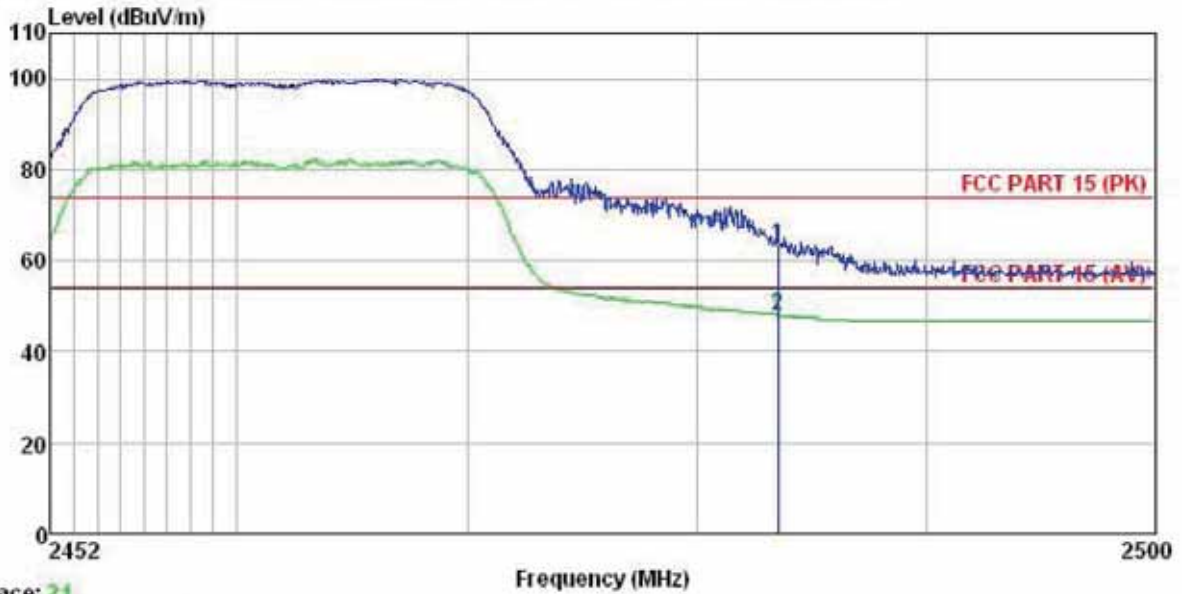
Horizontal:



Trace: 27
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 294RF
 EUI : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11n20 high channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	28.78	27.52	5.70	0.00	62.00	74.00 -12.00 Peak
2	2483.500	14.13	27.52	5.70	0.00	47.35	54.00 -6.65 Average

Vertical:



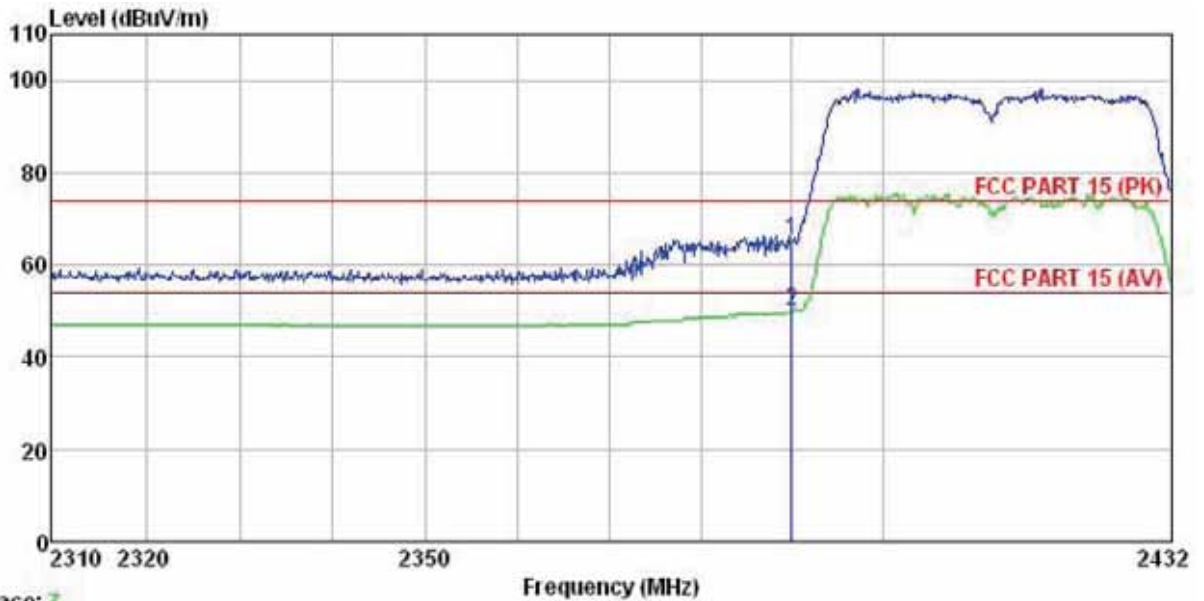
Trace: 21
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11n20 high channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Freq	ReadLevel	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	29.95	27.52	5.70	0.00	63.17	74.00	-10.83	Peak
2	2483.500	14.83	27.52	5.70	0.00	48.05	54.00	-5.95	Average

802.11n (H40)

Test channel: Lowest

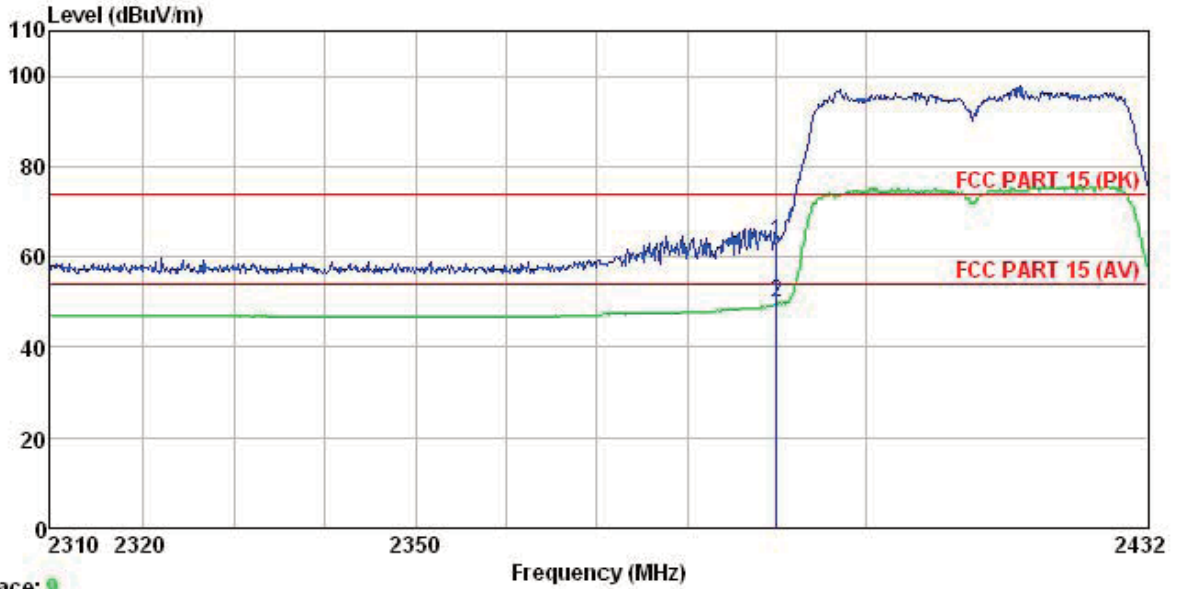
Horizontal:



Trace: 7
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11n40 low channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Wunner
 Remark :

	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Line	Limit	Remark
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	32.10	27.58	5.67	0.00	65.35	74.00	-8.65 Peak
2	2390.000	16.77	27.58	5.67	0.00	50.02	54.00	-3.98 Average

Vertical:

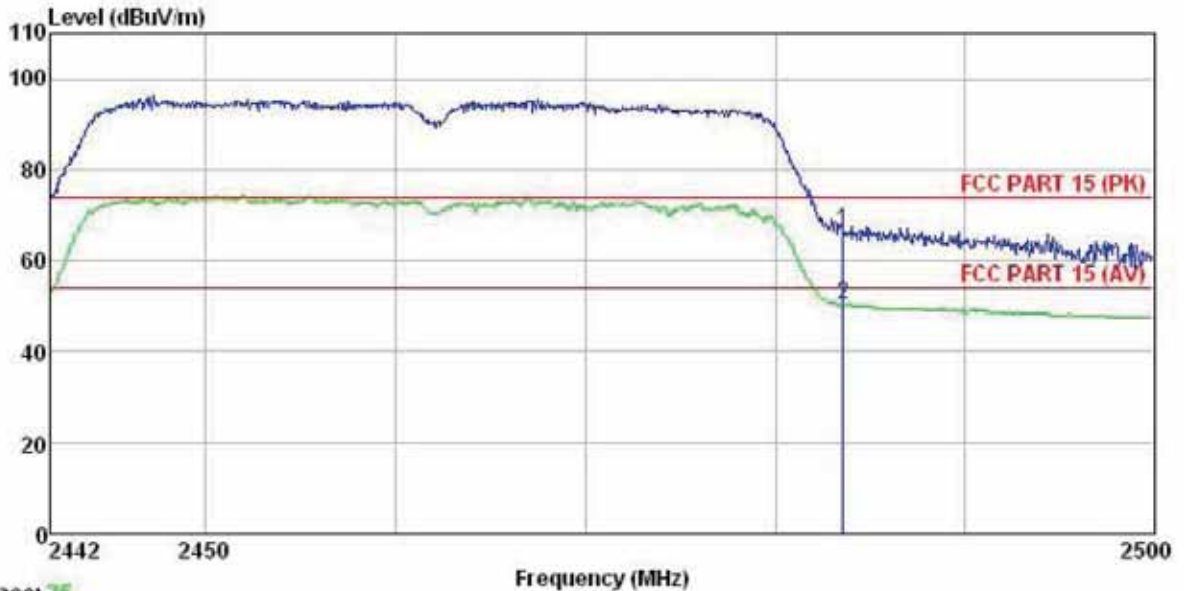


Trace: 9
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11n40 low channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2390.000	30.05	27.58	5.67	0.00	63.30	74.00 -10.70 Peak
2	2390.000	16.58	27.58	5.67	0.00	49.83	54.00 -4.17 Average

Test channel: Highest

Horizontal:

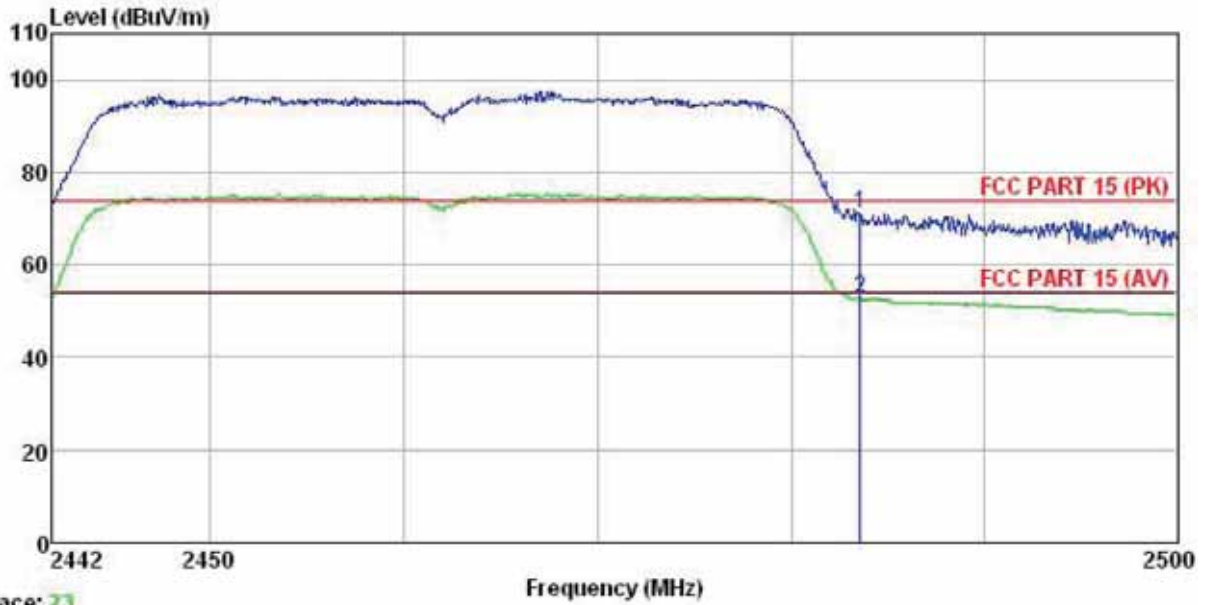


Trace: 25

Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) HORIZONTAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11n40 high channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2483.500	33.43	27.52	5.70	0.00	66.65	74.00	-7.35 Peak
2	2483.500	16.95	27.52	5.70	0.00	50.17	54.00	-3.83 Average

Vertical:

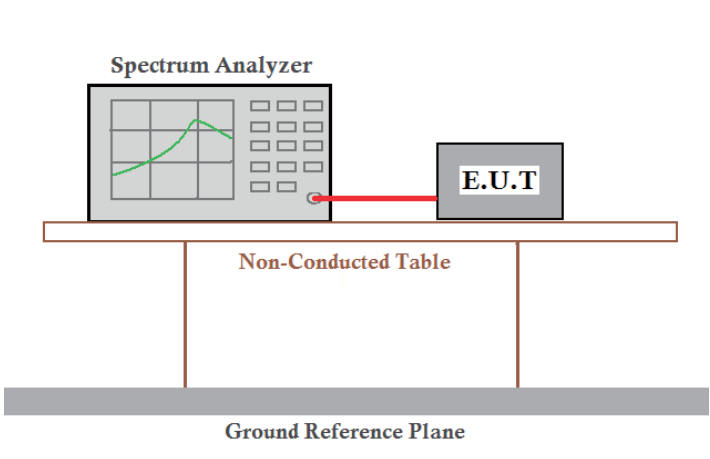


Trace: 23
 Site : 3m chamber
 Condition : FCC PART 15 (PK) 3m BBHA9120(1G18) VERTICAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : Band edge(802.11n40 high channel) mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	2483.500	37.81	27.52	5.70	0.00	71.03	74.00 -2.97 Peak
2	2483.500	19.41	27.52	5.70	0.00	52.63	54.00 -1.37 Average

6.7 Spurious Emission

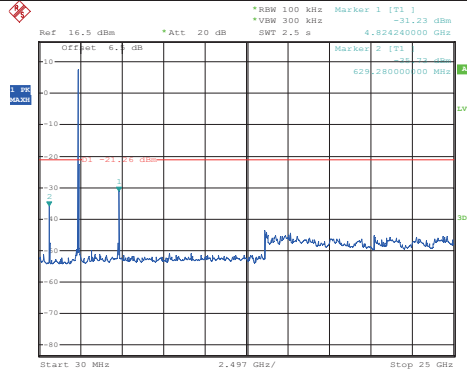
6.7.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.4:2003, KDB558074 and KDB 662911 D01
Limit:	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 30 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.
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:

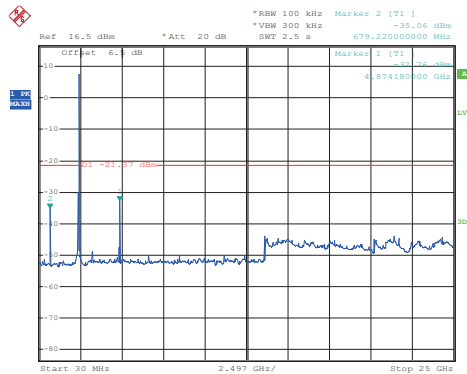
ANT0

Test mode:	802.11b
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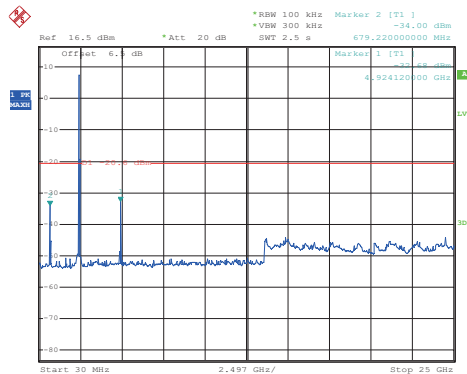
Date: 26.AUG.2013 15:55:30

Lowest channel (30MHz~25GHz)



Date: 26.AUG.2013 15:52:10

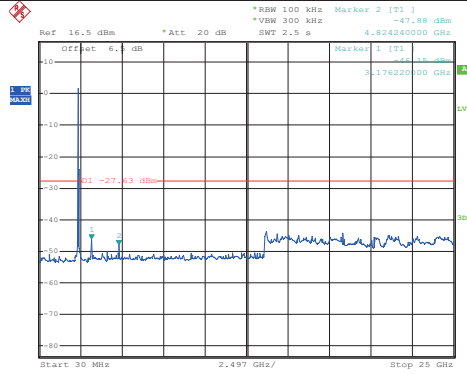
Middle channel (30MHz~25GHz)



Date: 26.AUG.2013 15:53:34

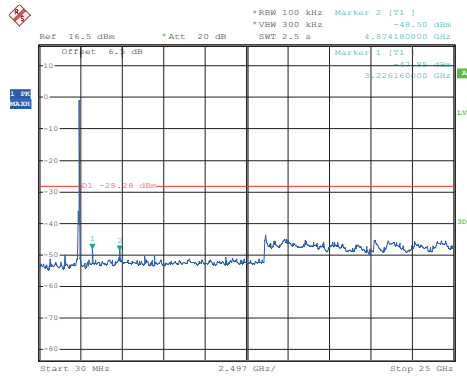
Highest channel (30MHz~25GHz)

Test mode: 802.11g



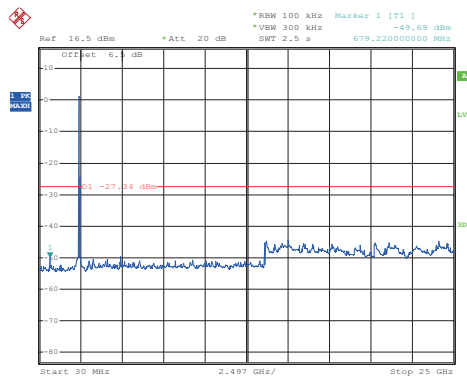
Date: 26.AUG.2013 16:09:46

Lowest channel (30MHz~25GHz)



Date: 26.AUG.2013 16:11:16

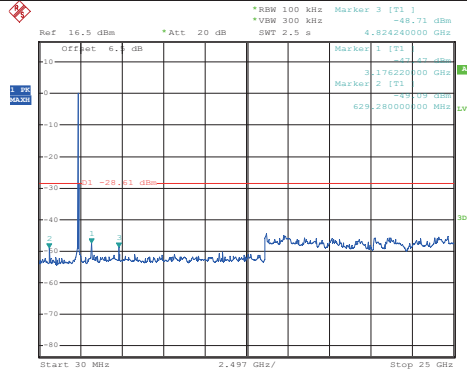
Middle channel (30MHz~25GHz)



Date: 26.AUG.2013 16:13:13

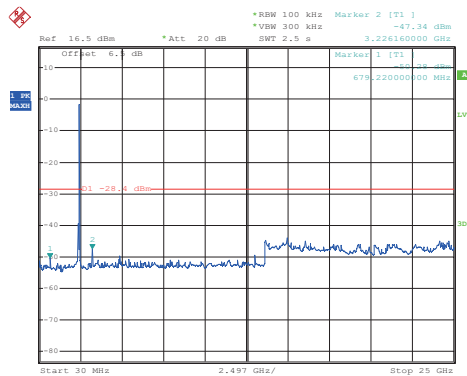
Highest channel (30MHz~25GHz)

Test mode: 802.11n(H20)



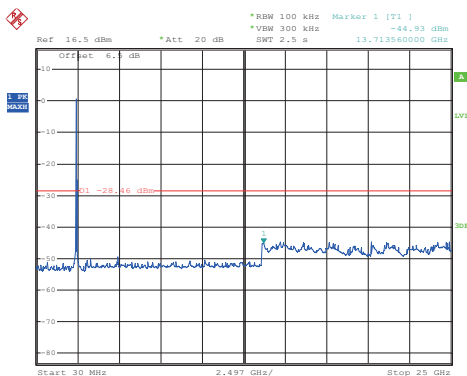
Date: 26.AUG.2013 16:15:05

Lowest channel (30MHz~25GHz)



Date: 26.AUG.2013 16:16:43

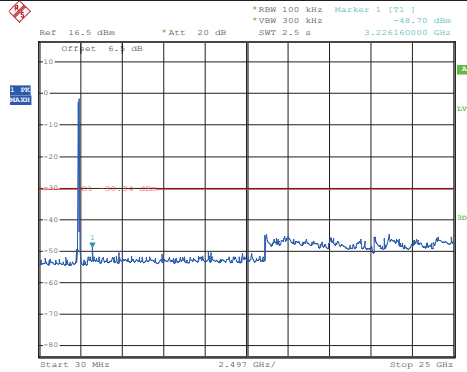
Middle channel(30MHz~25GHz)



Date: 26.AUG.2013 16:18:25

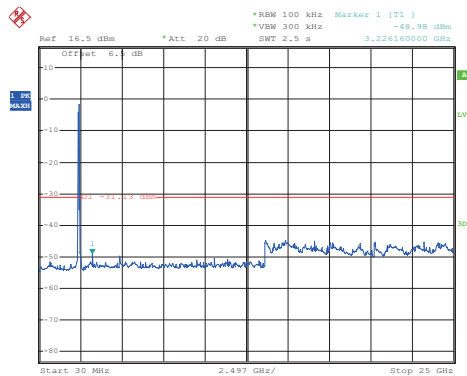
Highest channel (30MHz~25GHz)

Test mode: 802.11n(H40)



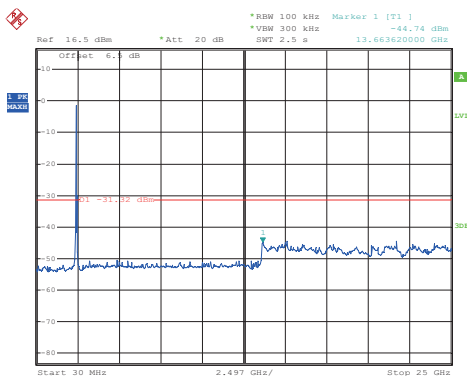
Date: 26.AUG.2013 16:32:54

Lowest channel (30MHz~25GHz)



Date: 26.AUG.2013 16:34:19

Middle channel (30MHz~25GHz)

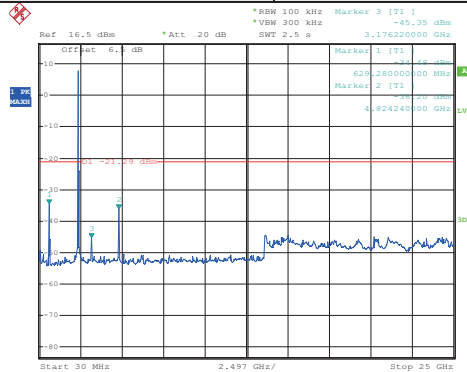


Date: 26.AUG.2013 16:36:07

Highest channel (30MHz~25GHz)

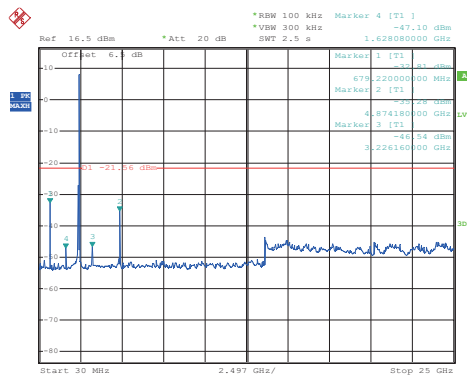
ANT1

Test mode:	802.11b
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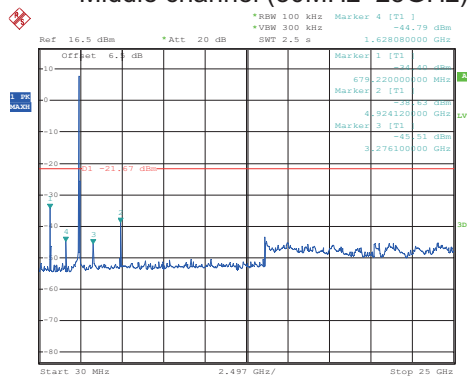
Date: 26.AUG.2013 15:57:28

Lowest channel (30MHz~25GHz)



Date: 26.AUG.2013 15:59:12

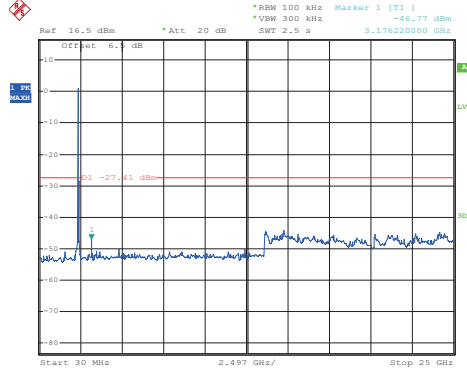
Middle channel (30MHz~25GHz)



Date: 26.AUG.2013 16:00:37

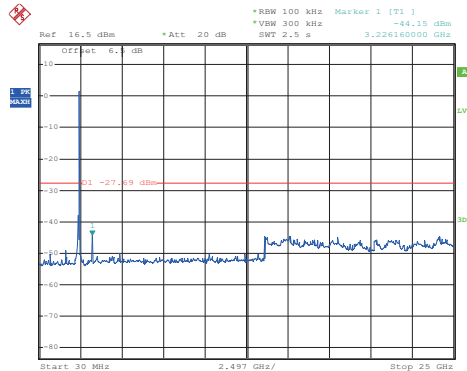
Highest channel (30MHz~25GHz)

Test mode:	802.11g
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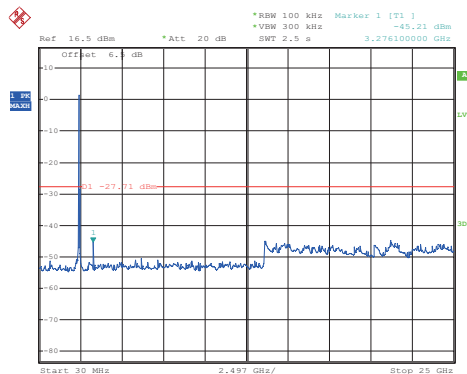
Date: 26.AUG.2013 16:02:54

Lowest channel (30MHz~25GHz)



Date: 26.AUG.2013 16:05:30

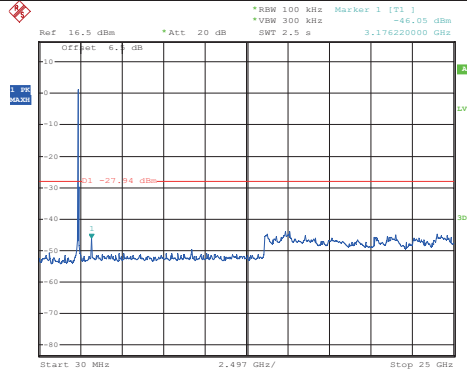
Middle channel (30MHz~25GHz)



Date: 26.AUG.2013 16:06:45

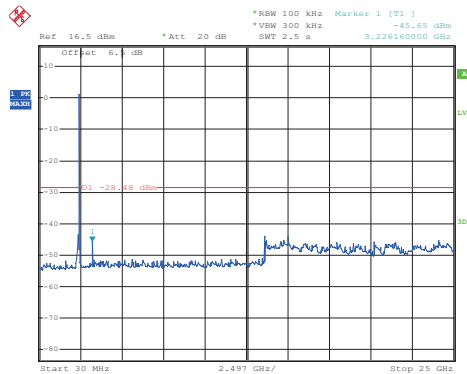
Highest channel (30MHz~25GHz)

Test mode: 802.11n(H20)



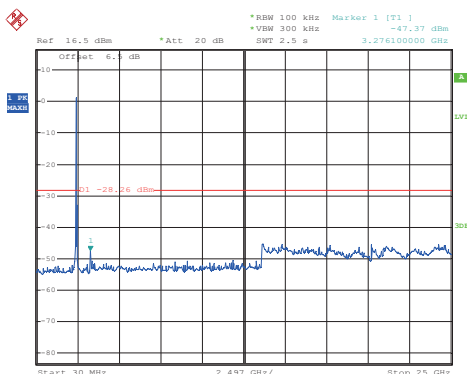
Date: 26.AUG.2013 16:20:14

Lowest channel (30MHz~25GHz)



Date: 26.AUG.2013 16:21:23

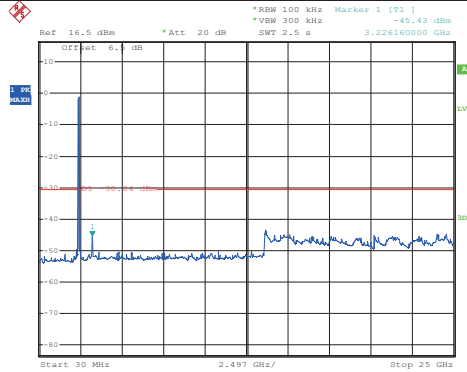
Middle channel (30MHz~25GHz)



Date: 26.AUG.2013 16:23:15

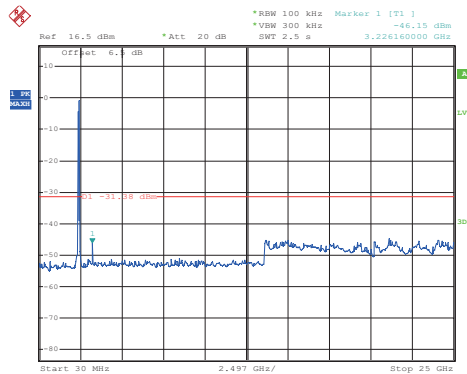
Highest channel(30MHz~25GHz)

Test mode: 802.11n(H40)



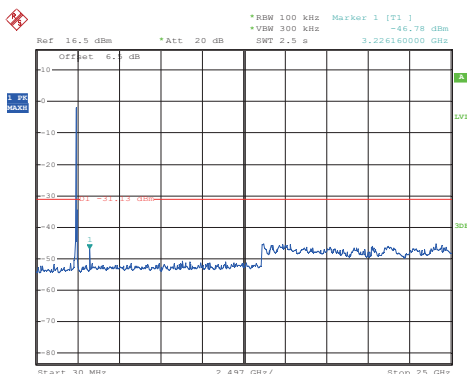
Date: 26.AUG.2013 16:26:20

Lowest channel (30MHz~25GHz)



Date: 26.AUG.2013 16:27:32

Middle channel (30MHz~25GHz)

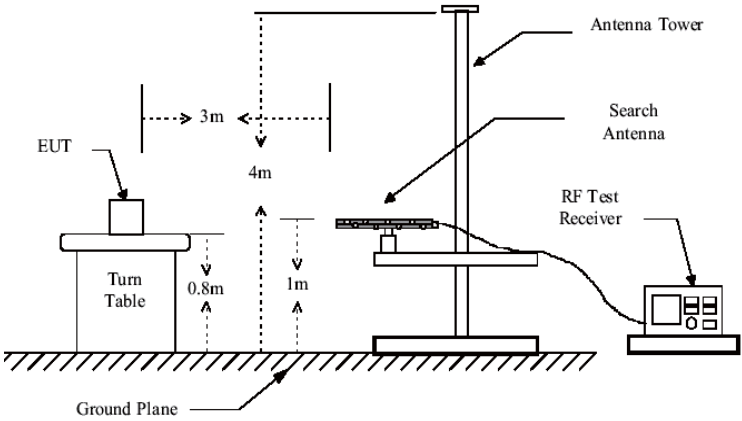
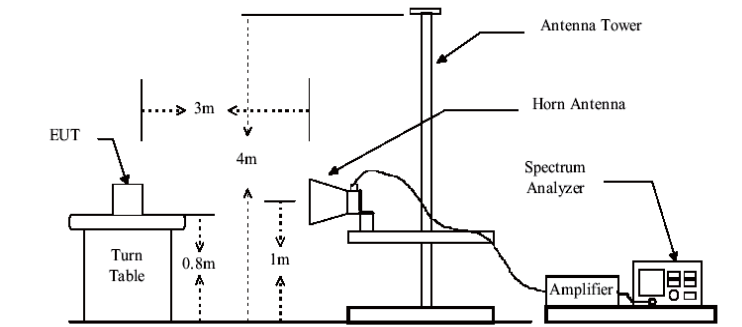


Date: 26.AUG.2013 16:31:15

Highest channel (30MHz~25GHz)

6.7.2 Radiated Emission Method

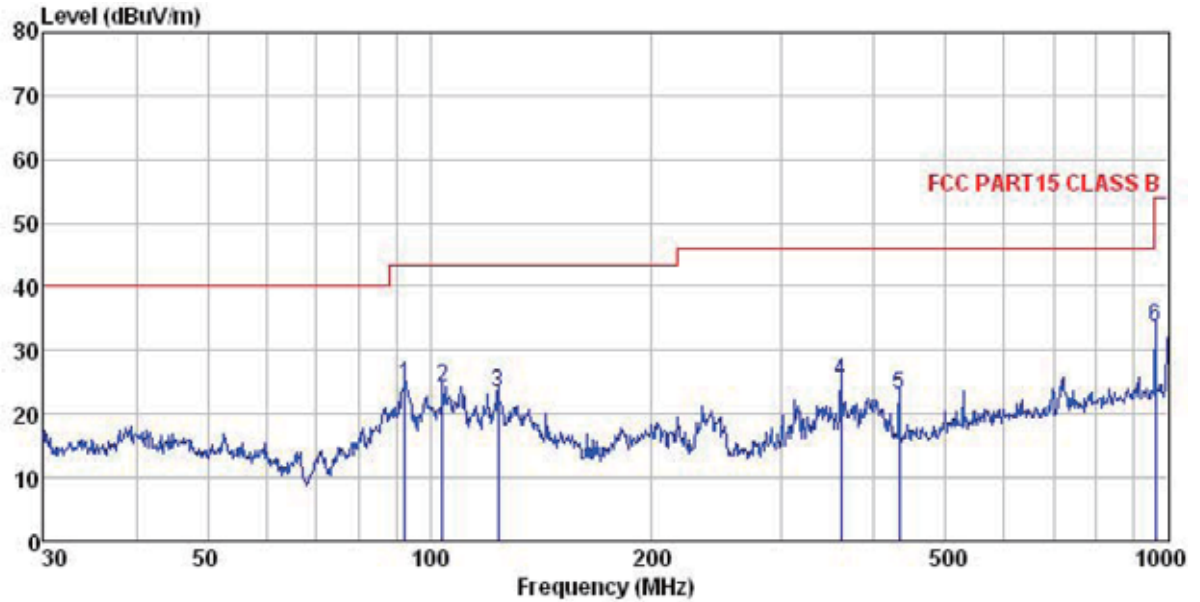
Test Requirement:	FCC Part15 C Section 15.209 and 15.205																								
Test Method:	ANSI C63.4:2003																								
Test Frequency Range:	9kHz to 25GHz																								
Test site:	Measurement Distance: 3m																								
Receiver setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>30MHz-1GHz</td> <td>Quasi-peak</td> <td>100KHz</td> <td>300KHz</td> <td>Quasi-peak Value</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak Value</td> </tr> <tr> <td>Peak</td> <td>1MHz</td> <td>10Hz</td> <td>Average Value</td> </tr> </tbody> </table>					Frequency	Detector	RBW	VBW	Remark	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value	Above 1GHz	Peak	1MHz	3MHz	Peak Value	Peak	1MHz	10Hz	Average Value	
	Frequency	Detector	RBW	VBW	Remark																				
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value																				
	Above 1GHz	Peak	1MHz	3MHz	Peak Value																				
Peak		1MHz	10Hz	Average Value																					
Limit:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dBuV/m @3m)</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>30MHz-88MHz</td> <td>40.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td>88MHz-216MHz</td> <td>43.5</td> <td>Quasi-peak Value</td> </tr> <tr> <td>216MHz-960MHz</td> <td>46.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td>960MHz-1GHz</td> <td>54.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>54.0</td> <td>Average Value</td> </tr> <tr> <td>74.0</td> <td>Peak Value</td> </tr> </tbody> </table>					Frequency	Limit (dBuV/m @3m)	Remark	30MHz-88MHz	40.0	Quasi-peak Value	88MHz-216MHz	43.5	Quasi-peak Value	216MHz-960MHz	46.0	Quasi-peak Value	960MHz-1GHz	54.0	Quasi-peak Value	Above 1GHz	54.0	Average Value	74.0	Peak Value
	Frequency	Limit (dBuV/m @3m)	Remark																						
	30MHz-88MHz	40.0	Quasi-peak Value																						
	88MHz-216MHz	43.5	Quasi-peak Value																						
	216MHz-960MHz	46.0	Quasi-peak Value																						
	960MHz-1GHz	54.0	Quasi-peak Value																						
	Above 1GHz	54.0	Average Value																						
74.0		Peak Value																							
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.																								
	2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.																								
	3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.																								
	4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.																								
	5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.																								
	6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.																								

<p>Test setup:</p>	<p>Below 1GHz</p>  <p>Above 1GHz</p> 
<p>Test Instruments:</p>	<p>Refer to section 5.7 for details</p>
<p>Test mode:</p>	<p>Refer to section 5.3 for details</p>
<p>Test results:</p>	<p>Passed</p>
<p>Remark:</p>	<ol style="list-style-type: none"> 1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case. 2. 9 kHz to 30MHz is too low, so only shows the data of above 30MHz in this report.

Below 1GHz

Measurement Data

Horizontal:

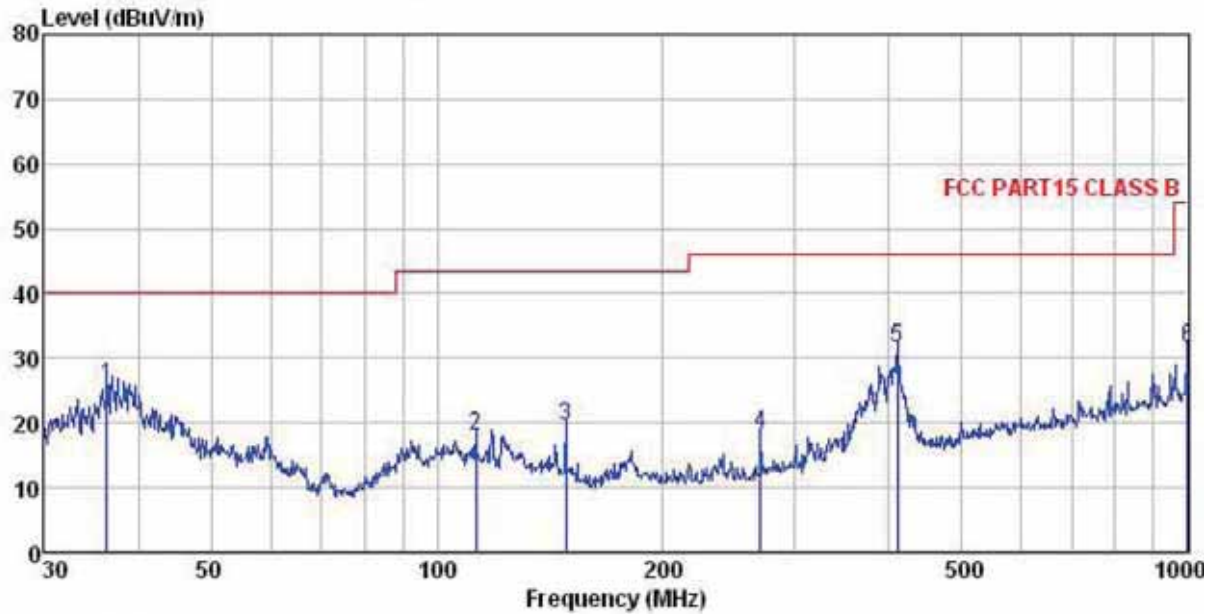


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Site       : 3m chamber
Condition  : FCC PART15 CLASS B 3m VULB9163(30M1G) HORIZONTAL
Job No.    : 294RF
EUT       : USB Wireless Module
Model     : GWF1M01
Test mode  : TX mode
Power Rating : AC 120V/60Hz
Environment : Temp:25°C Humi:55% Atmos:101Kpa
Test Engineer: Winner
Remark    :
    
```

	ReadAntenna	Cable	Preamp		Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	92.462	40.26	12.41	2.03	30.08	24.62	43.50 -18.88 QP
2	104.170	39.34	12.78	1.99	30.00	24.11	43.50 -19.39 QP
3	123.699	40.90	9.90	2.21	29.64	23.37	43.50 -20.13 QP
4	360.448	37.31	14.43	3.10	29.73	25.11	46.00 -20.89 QP
5	432.546	34.74	15.53	3.16	30.31	23.12	46.00 -22.88 QP
6	962.162	37.80	21.49	4.27	29.90	33.66	54.00 -20.34 QP

Vertical:



Site : 3m chamber
 Condition : FCC PART15 CLASS B 3m VULB9163(30M1G) VERTICAL
 Job No. : 294RF
 EUT : USB Wireless Module
 Model : GWF1M01
 Test mode : TX mode
 Power Rating : AC 120V/60Hz
 Environment : Temp:25°C Humi:55% Atmos:101Kpa
 Test Engineer: Winner
 Remark :

	ReadAntenna	Cable	Preamp		Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	36.381	38.89	12.68	1.11	26.93	25.75	40.00	-14.25 QP
2	112.524	33.96	11.83	2.08	29.83	18.04	43.50	-25.46 QP
3	148.441	37.98	8.25	2.50	29.25	19.48	43.50	-24.02 QP
4	269.428	32.59	12.34	2.86	29.53	18.26	46.00	-27.74 QP
5	410.383	43.27	15.27	3.10	30.02	31.62	46.00	-14.38 QP
6	1000.000	35.21	21.74	4.47	29.76	31.66	54.00	-22.34 QP

Above 1GHz

Test mode:		802.11b		Test channel:		Lowest		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4824.00	53.03	31.55	8.92	40.22	53.28	74.00	-20.72	Vertical		
7236.00	48.65	36.47	10.59	41.24	54.47	74.00	-19.53	Vertical		
9648.00	45.28	38.10	13.16	41.40	55.14	74.00	-18.86	Vertical		
4824.00	52.04	31.55	8.92	40.22	52.29	74.00	-21.71	Horizontal		
7236.00	48.69	36.47	10.59	41.24	54.51	74.00	-19.49	Horizontal		
9648.00	45.36	38.10	13.16	41.40	55.22	74.00	-18.78	Horizontal		

Test mode:		802.11b		Test channel:		Lowest		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4824.00	50.68	31.55	8.92	40.22	50.93	54.00	-3.07	Vertical		
7236.00	37.41	36.47	10.59	41.24	43.23	54.00	-10.77	Vertical		
9648.00	34.17	38.10	13.16	41.40	44.03	54.00	-9.97	Vertical		
4824.00	49.68	31.55	8.92	40.22	49.93	54.00	-4.07	Horizontal		
7236.00	37.95	36.47	10.59	41.24	43.77	54.00	-10.23	Horizontal		
9648.00	34.52	38.10	13.16	41.40	44.38	54.00	-9.62	Horizontal		

Test mode:		802.11b		Test channel:		Middle		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4874.00	53.84	31.57	8.98	40.15	54.24	74.00	-19.76	Vertical		
7311.00	49.57	36.47	10.69	41.15	55.58	74.00	-18.42	Vertical		
9748.00	46.78	38.45	13.37	41.71	56.89	74.00	-17.11	Vertical		
4874.00	53.58	31.57	8.98	40.15	53.98	74.00	-20.02	Horizontal		
7311.00	49.74	36.47	10.69	41.15	55.75	74.00	-18.25	Horizontal		
9748.00	46.28	38.45	13.37	41.71	56.39	74.00	-17.61	Horizontal		

Test mode:		802.11b		Test channel:		Middle		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4874.00	50.65	31.57	8.98	40.15	51.05	54.00	-2.95	Vertical		
7311.00	38.47	36.47	10.69	41.15	44.48	54.00	-9.52	Vertical		
9748.00	35.72	38.45	13.37	41.71	45.83	54.00	-8.17	Vertical		
4874.00	47.63	31.57	8.98	40.15	48.03	54.00	-5.97	Horizontal		
7311.00	38.34	36.47	10.69	41.15	44.35	54.00	-9.65	Horizontal		
9748.00	35.48	38.45	13.37	41.71	45.59	54.00	-8.41	Horizontal		

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:		802.11b		Test channel:		Highest		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4924.00	53.75	31.69	9.08	40.03	54.49	74.00	-19.51	Vertical		
7386.00	48.74	36.60	10.80	41.05	55.09	74.00	-18.91	Vertical		
9848.00	46.58	38.66	13.55	41.99	56.80	74.00	-17.20	Vertical		
4924.00	53.83	31.69	9.08	40.03	54.57	74.00	-19.43	Horizontal		
7386.00	49.34	36.60	10.80	41.05	55.69	74.00	-18.31	Horizontal		
9848.00	46.55	38.66	13.55	41.99	56.77	74.00	-17.23	Horizontal		

Test mode:		802.11b		Test channel:		Highest		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4924.00	42.52	31.69	9.08	40.03	43.26	54.00	-10.74	Vertical		
7386.00	37.94	36.60	10.80	41.05	44.29	54.00	-9.71	Vertical		
9848.00	35.27	38.66	13.55	41.99	45.49	54.00	-8.51	Vertical		
4924.00	42.62	31.69	9.08	40.03	43.36	54.00	-10.64	Horizontal		
7386.00	38.55	36.60	10.80	41.05	44.90	54.00	-9.10	Horizontal		
9848.00	35.41	38.66	13.55	41.99	45.63	54.00	-8.37	Horizontal		

Test mode:		802.11g		Test channel:		Lowest		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4824.00	50.34	31.55	8.92	40.22	50.59	74.00	-23.41	Vertical		
7236.00	48.79	36.47	10.59	41.24	54.61	74.00	-19.39	Vertical		
9648.00	45.37	38.10	13.16	41.40	55.23	74.00	-18.77	Vertical		
4824.00	50.54	31.55	8.92	40.22	50.79	74.00	-23.21	Horizontal		
7236.00	48.88	36.47	10.59	41.24	54.70	74.00	-19.30	Horizontal		
9648.00	45.68	38.10	13.16	41.40	55.54	74.00	-18.46	Horizontal		

Test mode:		802.11g		Test channel:		Lowest		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4824.00	39.36	31.55	8.92	40.22	39.61	54.00	-14.39	Vertical		
7236.00	37.57	36.47	10.59	41.24	43.39	54.00	-10.61	Vertical		
9648.00	34.33	38.10	13.16	41.40	44.19	54.00	-9.81	Vertical		
4824.00	39.13	31.55	8.92	40.22	39.38	54.00	-14.62	Horizontal		
7236.00	38.06	36.47	10.59	41.24	43.88	54.00	-10.12	Horizontal		
9648.00	34.87	38.10	13.16	41.40	44.73	54.00	-9.27	Horizontal		

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:		802.11g		Test channel:		Middle		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4874.00	50.97	31.57	8.98	40.15	51.37	74.00	-22.63	Vertical		
7311.00	49.82	36.47	10.69	41.15	55.83	74.00	-18.17	Vertical		
9748.00	46.94	38.45	13.37	41.71	57.05	74.00	-16.95	Vertical		
4874.00	50.73	31.57	8.98	40.15	51.13	74.00	-22.87	Horizontal		
7311.00	49.88	36.47	10.69	41.15	55.89	74.00	-18.11	Horizontal		
9748.00	46.56	38.45	13.37	41.71	56.67	74.00	-17.33	Horizontal		

Test mode:		802.11g		Test channel:		Middle		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4874.00	39.87	31.57	8.98	40.15	40.27	54.00	-13.73	Vertical		
7311.00	38.68	36.47	10.69	41.15	44.69	54.00	-9.31	Vertical		
9748.00	35.77	38.45	13.37	41.71	45.88	54.00	-8.12	Vertical		
4874.00	39.84	31.57	8.98	40.15	40.24	54.00	-13.76	Horizontal		
7311.00	38.66	36.47	10.69	41.15	44.67	54.00	-9.33	Horizontal		
9748.00	35.52	38.45	13.37	41.71	45.63	54.00	-8.37	Horizontal		

Test mode:		802.11g		Test channel:		Highest		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4924.00	50.98	31.69	9.08	40.03	51.72	74.00	-22.28	Vertical		
7386.00	48.89	36.60	10.80	41.05	55.24	74.00	-18.76	Vertical		
9848.00	46.73	38.66	13.55	41.99	56.95	74.00	-17.05	Vertical		
4924.00	50.96	31.69	9.08	40.03	51.70	74.00	-22.30	Horizontal		
7386.00	49.46	36.60	10.80	41.05	55.81	74.00	-18.19	Horizontal		
9848.00	46.61	38.66	13.55	41.99	56.83	74.00	-17.17	Horizontal		

Test mode:		802.11g		Test channel:		Highest		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4924.00	39.66	31.69	9.08	40.03	40.40	54.00	-13.60	Vertical		
7386.00	38.05	36.60	10.80	41.05	44.40	54.00	-9.60	Vertical		
9848.00	35.44	38.66	13.55	41.99	45.66	54.00	-8.34	Vertical		
4924.00	39.71	31.69	9.08	40.03	40.45	54.00	-13.55	Horizontal		
7386.00	38.59	36.60	10.80	41.05	44.94	54.00	-9.06	Horizontal		
9848.00	35.75	38.66	13.55	41.99	45.97	54.00	-8.03	Horizontal		

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Test mode:		802.11n(H20)		Test channel:		Lowest		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4824.00	50.65	31.55	8.92	40.22	50.90	74.00	-23.10	Vertical		
7236.00	48.68	36.47	10.59	41.24	54.50	74.00	-19.50	Vertical		
9648.00	45.25	38.10	13.16	41.40	55.11	74.00	-18.89	Vertical		
4824.00	50.64	31.55	8.92	40.22	50.89	74.00	-23.11	Horizontal		
7236.00	48.74	36.47	10.59	41.24	54.56	74.00	-19.44	Horizontal		
9648.00	45.33	38.10	13.16	41.40	55.19	74.00	-18.81	Horizontal		

Test mode:		802.11n(H20)		Test channel:		Lowest		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4824.00	39.35	31.55	8.92	40.22	39.60	54.00	-14.40	Vertical		
7236.00	37.14	36.47	10.59	41.24	42.96	54.00	-11.04	Vertical		
9648.00	34.58	38.10	13.16	41.40	44.44	54.00	-9.56	Vertical		
4824.00	39.95	31.55	8.92	40.22	40.20	54.00	-13.80	Horizontal		
7236.00	37.41	36.47	10.59	41.24	43.23	54.00	-10.77	Horizontal		
9648.00	34.54	38.10	13.16	41.40	44.40	54.00	-9.60	Horizontal		

Test mode:		802.11n(H20)		Test channel:		Middle		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4874.00	50.41	31.57	8.98	40.15	50.81	74.00	-23.19	Vertical		
7311.00	49.65	36.47	10.69	41.15	55.66	74.00	-18.34	Vertical		
9748.00	46.25	38.45	13.37	41.71	56.36	74.00	-17.64	Vertical		
4874.00	50.15	31.57	8.98	40.15	50.55	74.00	-23.45	Horizontal		
7311.00	49.74	36.47	10.69	41.15	55.75	74.00	-18.25	Horizontal		
9748.00	46.37	38.45	13.37	41.71	56.48	74.00	-17.52	Horizontal		

Test mode:		802.11n(H20)		Test channel:		Middle		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4874.00	39.33	31.57	8.98	40.15	39.73	54.00	-14.27	Vertical		
7311.00	38.52	36.47	10.69	41.15	44.53	54.00	-9.47	Vertical		
9748.00	35.24	38.45	13.37	41.71	45.35	54.00	-8.65	Vertical		
4874.00	39.74	31.57	8.98	40.15	40.14	54.00	-13.86	Horizontal		
7311.00	38.54	36.47	10.69	41.15	44.55	54.00	-9.45	Horizontal		
9748.00	35.68	38.45	13.37	41.71	45.79	54.00	-8.21	Horizontal		

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

Test mode:		802.11n(H20)		Test channel:		Highest		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4924.00	50.74	31.69	9.08	40.03	51.48	74.00	-22.52	Vertical		
7386.00	48.53	36.60	10.80	41.05	54.88	74.00	-19.12	Vertical		
9848.00	46.43	38.66	13.55	41.99	56.65	74.00	-17.35	Vertical		
4924.00	50.34	31.69	9.08	40.03	51.08	74.00	-22.92	Horizontal		
7386.00	49.45	36.60	10.80	41.05	55.80	74.00	-18.20	Horizontal		
9848.00	46.27	38.66	13.55	41.99	56.49	74.00	-17.51	Horizontal		

Test mode:		802.11n(H20)		Test channel:		Highest		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4924.00	39.41	31.69	9.08	40.03	40.15	54.00	-13.85	Vertical		
7386.00	38.64	36.60	10.80	41.05	44.99	54.00	-9.01	Vertical		
9848.00	35.24	38.66	13.55	41.99	45.46	54.00	-8.54	Vertical		
4924.00	39.65	31.69	9.08	40.03	40.39	54.00	-13.61	Horizontal		
7386.00	38.41	36.60	10.80	41.05	44.76	54.00	-9.24	Horizontal		
9848.00	35.46	38.66	13.55	41.99	45.68	54.00	-8.32	Horizontal		

Test mode:		802.11n(H40)		Test channel:		Lowest		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4844.00	50.25	31.55	8.92	40.24	50.48	74.00	-23.52	Vertical		
7266.00	49.57	36.49	10.61	41.26	55.41	74.00	-18.59	Vertical		
9688.00	46.54	38.12	13.18	41.42	56.42	74.00	-17.58	Vertical		
4844.00	50.24	31.55	8.92	40.24	50.47	74.00	-23.53	Horizontal		
7266.00	49.66	36.49	10.61	41.26	55.50	74.00	-18.50	Horizontal		
9688.00	46.24	38.12	13.18	41.42	56.12	74.00	-17.88	Horizontal		

Test mode:		802.11n(H40)		Test channel:		Lowest		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4844.00	39.54	31.55	8.92	40.24	39.77	54.00	-14.23	Vertical		
7266.00	38.57	36.49	10.61	41.26	44.41	54.00	-9.59	Vertical		
9688.00	35.45	38.12	13.18	41.42	45.33	54.00	-8.67	Vertical		
4844.00	39.64	31.55	8.92	40.24	39.87	54.00	-14.13	Horizontal		
7266.00	38.56	36.49	10.61	41.26	44.40	54.00	-9.60	Horizontal		
9688.00	35.74	38.12	13.18	41.42	45.62	54.00	-8.38	Horizontal		

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Test mode:		802.11n(H40)		Test channel:		Middle		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4874.00	50.35	31.57	8.98	40.15	50.75	74.00	-23.25	Vertical		
7311.00	49.21	36.47	10.69	41.15	55.22	74.00	-18.78	Vertical		
9748.00	47.56	38.45	13.37	41.71	57.67	74.00	-16.33	Vertical		
4874.00	50.24	31.57	8.98	40.15	50.64	74.00	-23.36	Horizontal		
7311.00	49.12	36.47	10.69	41.15	55.13	74.00	-18.87	Horizontal		
9748.00	47.54	38.45	13.37	41.71	57.65	74.00	-16.35	Horizontal		

Test mode:		802.11n(H40)		Test channel:		Middle		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4874.00	39.35	31.57	8.98	40.15	39.75	54.00	-14.25	Vertical		
7311.00	39.54	36.47	10.69	41.15	45.55	54.00	-8.45	Vertical		
9748.00	36.54	38.45	13.37	41.71	46.65	54.00	-7.35	Vertical		
4874.00	39.54	31.57	8.98	40.15	39.94	54.00	-14.06	Horizontal		
7311.00	39.64	36.47	10.69	41.15	45.65	54.00	-8.35	Horizontal		
9748.00	36.54	38.45	13.37	41.71	46.65	54.00	-7.35	Horizontal		

Test mode:		802.11n(H40)		Test channel:		Highest		Remark:		Peak
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4904.00	49.89	31.67	9.06	40.01	50.61	74.00	-23.39	Vertical		
7356.00	48.57	36.58	10.60	41.03	54.72	74.00	-19.28	Vertical		
9808.00	45.66	38.64	13.53	41.97	55.86	74.00	-18.14	Vertical		
4904.00	49.82	31.67	9.06	40.01	50.54	74.00	-23.46	Horizontal		
7356.00	48.67	36.58	10.60	41.03	54.82	74.00	-19.18	Horizontal		
9808.00	45.24	38.64	13.53	41.97	55.44	74.00	-18.56	Horizontal		

Test mode:		802.11n(H40)		Test channel:		Highest		Remark:		Average
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization		
4904.00	38.65	31.67	9.06	40.01	39.37	54.00	-14.63	Vertical		
7356.00	37.41	36.58	10.60	41.03	43.56	54.00	-10.44	Vertical		
9808.00	34.55	38.64	13.53	41.97	44.75	54.00	-9.25	Vertical		
4904.00	38.74	31.67	9.06	40.01	39.46	54.00	-14.54	Horizontal		
7356.00	37.87	36.58	10.60	41.03	44.02	54.00	-9.98	Horizontal		
9808.00	34.79	38.64	13.53	41.97	44.99	54.00	-9.01	Horizontal		

Remark:

1. *Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*