



AUDIX Technology (Shenzhen) Co., Ltd.

FCC ID:WWMDN421V1

FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

Proware Technologies Co., Ltd.

Wireless Lite-N USB Adapter

Model No.: PW-DN421, VNT9271BU0D0

FCC ID: WWMDN421V1

Prepared for : Proware Technologies Co., Ltd.
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Report Number : ACS-F11043
Date of Test : Feb.21, 2011
Date of Report : Feb.28, 2011

FCC ID:WWMDN421V1

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TEST REPORT CERTIFICATION

Applicant : Proware Technologies Co., Ltd.
Manufacturer : Proware Technologies Co., Ltd.
EUT Description : Wireless Lite-N USB Adapter
FCC ID : WWMDN421V1
(A) MODEL NO. : PW-DN421 , VNT9271BU0D0
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : DC 5V From PC
(D) TEST VOLTAGE : DC 5V From PC Input AC 120V/60Hz

Tested for comply with:
FCC Rules and Regulations Part 15 Subpart C: 2008

Test procedure used:
ANSI C63.10:2009

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to confirm comply with all the FCC Part 15 Subpart C requirements.

The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC and IC requirements.

This Report is made under FCC Part 2.1075. No modifications were required during testing to bring this product into compliance.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Date of Test : Feb.21, 2011 Report of date: Feb.28, 2011

Prepared by : Vicky Huang Reviewer by : Sunny Lu
Vicky Huang / Assistant Sunny Lu / Senior Assistant



Approved & Authorized Signer : Ken Lu / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10: 2009	PASS
Radiated Emission	FCC Part 15: 15.207 ANSI C63.10: 2009	PASS
Band Edge Compliance	FCC Part 15: 15.247 ANSI C63.10: 2009	PASS
Conducted spurious emissions	FCC Part 15: 15.247 ANSI C63.10: 2009	PASS
6dB Bandwidth	FCC Part 15: 15.247 ANSI C63.10: 2009	PASS
Peak Output Power	FCC Part 15: 15.247 ANSI C63.10: 2009	PASS
Power Spectral Density	FCC Part 15: 15.247 ANSI C63.10: 2009	PASS
Antenna requirement	FCC Part 15: 15.203	PASS

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Product Name : Wireless Lite-N USB Adapter

Model Number : PW-DN421, VNT9271BU0D0

FCC ID : WWMDN421V1

Operation Frequency : IEEE 802.11b/g, 802.11n HT20: 2412MHz---2462MHz
IEEE802.11n HT40: 2422MHz---2452MHz

Channel Number : IEEE 802.11b/g, 802.11n HT20: 11 Channels
IEEE 802.11n HT40: 7 Channels

Modulation Technology : IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)
IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)
IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK,BPSK)

Antenna Assembly Gain : MIMO 1TX2R 2.12dBi (maximum)

Applicant : Proware Technologies Co., Ltd.
2nd F1 East Wing, South Section, Factory Building 24,
Science & Technology Park, Shennan Rd, Nanshan
District, Shenzhen

Manufacturer : Proware Technologies Co., Ltd.
2nd F1 East Wing, South Section, Factory Building 24,
Science & Technology Park, Shennan Rd, Nanshan
District, Shenzhen

Date of Test : Feb.21, 2011

Date of Receipt : Feb.20, 2011

Sample Type : Prototype production

2.2. Test Information

A special test software was used to control EUT work in Continuous TX mode(100% duty cycle), and select test channel, wireless mode and data rate.

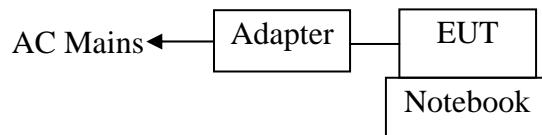
Tested mode, channel, and data rate information			
Mode	data rate (Mbps)(see Note)	Channel	Frequency (MHz)
IEEE 802.11b	11	Low :CH1	2412
	11	Middle: CH6	2437
	11	High: CH11	2462
IEEE 802.11g	54	Low :CH1	2412
	54	Middle: CH6	2437
	54	High: CH11	2462
IEEE 802.11n HT20	6.5	Low :CH1	2412
	6.5	Middle: CH6	2437
	6.5	High: CH11	2462
IEEE 802.11n HT40	13.5	Low :CH1	2422
	13.5	Middle: CH4	2437
	13.5	High: CH7	2452

Note1: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.
Note2: This device use MIMO 2X2 antennas ,all the radiated spurious emissions and band edge test were performed with two antennas transmit synchronous.
Note3:This device have two model number PW-DN421, VNT9271BU0D0,The difference between PW-DN421 and VNT9271BU0D0 is the housing printing and Back Label, other characteristic are all the same, but In the test data, use PW-DN421 as a representative.

2.3. Tested Supporting System Details

No.	Description	ACS No.	Manufacturer	Model	Serial Number	Approved type
1.	Notebook	N/A	DELL	PP09S	N/A	<input checked="" type="checkbox"/> FCC DoC <input checked="" type="checkbox"/> BSMI ID: R41108
		Power Cord: Unshielded, Detachable, 1.8m Power Adapter: Manufacturer: DELL, M/N: LA65NS1-00 Cable: Unshielded, Detachable, 4.0m(Bond one ferrite core)				

2.4. Block diagram of connection between the EUT and simulators



Notebook run test software to control EUT work in Continuous TX mode

(EUT: Wireless Lite-N USB Adapter)

2.5. Test Facility

Site Description

Name of Firm

: Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block, Shenzhen
Science & Industrial Park, Nantou,
Shenzhen, Guangdong, China

3m Anechoic Chamber

: Mar.31, 2009 File on Federal
Communication Commission
Registration Number: 90454

3m & 10m Anechoic Chamber : Dec. 30, 2009 File on Federal
Communication Commission
Registration Number: 794232

EMC Lab.

: Certificated by Industry Canada
Registration Number: IC 5183A-1
Jul. 03, 2009

: Accredited by DATech, German
Registration Number: DAT-P-091/99-01
Feb. 02, 2009

Accredited by NVLAP, USA
NVLAP Code: 200372-0
Mar.31, 2012

2.6. Measurement Uncertainty (95% confidence levels, k=2)

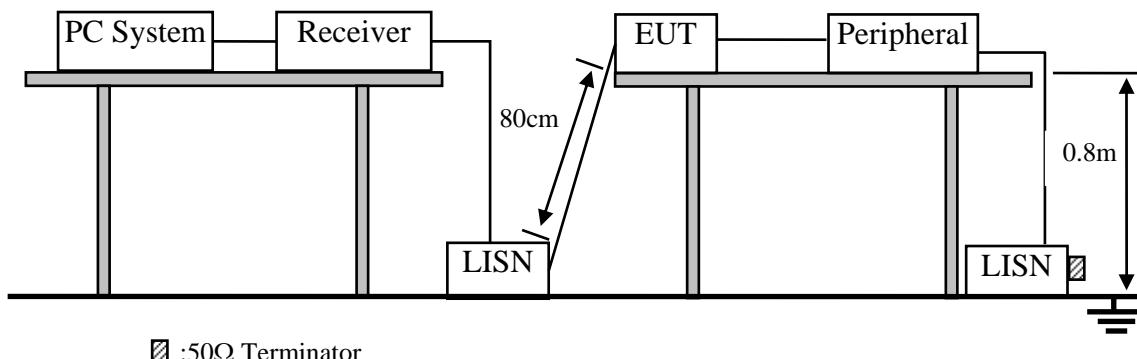
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	3.64 dB (9kHz to 150kHz)
	3.22 dB(150kHz to 30MHz)
Uncertainty for Radiation Emission test in 3m chamber	4.20 dB (Polarize: V)
	4.66 dB (Polarize: H)
Uncertainty for Radiated Spurious Emission test in RF chamber	2.70 dB(Bilog antenna 30M~1000MHz)
	2.27 dB(Horn antenna 1000M~12750MHz)
Uncertainty for Conduction Spurious emission test	2.12 dB
Uncertainty for Output power test	0.97 dB
Uncertainty for Power density test	2.21 dB
Uncertainty for Frequency range test	1×10^{-9}
Uncertainty for Bandwidth test	1×10^{-9}
Uncertainty for DC power test	0.038 %
Uncertainty for test site temperature and humidity	0.3°C
	2%

3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Nov.05, 10	1 Year
2.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Mar.30, 10	1 Year
3.	Terminator	Hubersuhner	50Ω	No. 1	May.08, 10	1 Year
4.	RF Cable	Fujikura	3D-2W	LISN Cable 1#	May.08, 10	1 Year
5.	Coaxial Switch	Anritsu	MP59B	M55367	May.08, 10	1 Year
6.	Passive Probe	Rohde & Schwarz	ESH2-Z3	299.7810.52	May.08, 10	1 Year
7.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 10	1 Year

3.2. Block Diagram of Test Setup



3.3. Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(µV)	Average Level dB(µV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4.Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1.Wireless Lite-N USB Adapter (EUT)

Model Number : PW-DN421
Serial Number : N/A

3.4.2.Support Equipment: As Tested Supporting System Details, in Section 2.3.

3.5.Operating Condition of EUT

3.5.1.Setup the EUT and simulator as shown as Section 2.4.

3.5.2.Turned on the power of all equipment.

3.5.3.Notebook run test software to control EUT work in Tx mode.

3.6.Test Procedure

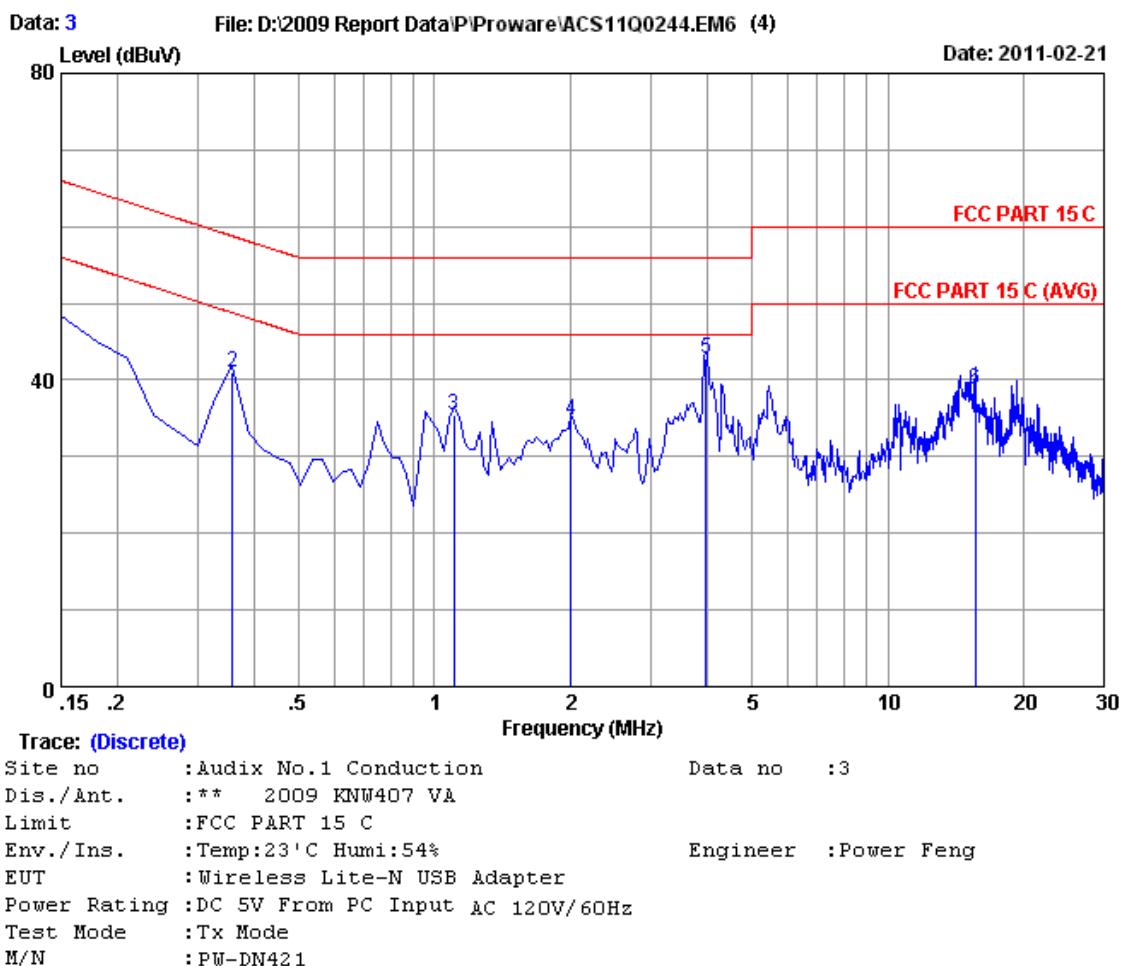
The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2009 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESHS10) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked.

3.7.Power Line Conducted Emission Test Results

PASS. (All emissions not reported below are too low against the prescribed limits.)



No	Freq (MHz)	LISN	Cable	Emission				Remark
		Factor (dB)	Loss (dB)	Reading (dBuV)	Level (dBuV)	Limits (dBuV)	Margin (dB)	
<hr/>								
1	0.15000	0.20	9.88	37.17	47.25	66.00	18.75	QP
2	0.35895	0.20	9.89	30.85	40.94	58.75	17.81	QP
3	1.105	0.19	9.89	25.38	35.46	56.00	20.54	QP
4	2.001	0.21	9.90	24.62	34.73	56.00	21.27	QP
5	3.971	0.27	9.91	32.58	42.76	56.00	13.24	QP
6	15.612	0.34	9.97	28.45	38.76	60.00	21.24	QP
<hr/>								

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)+Reading
 2.If the average limit is met when using a quasi-peak detector.
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

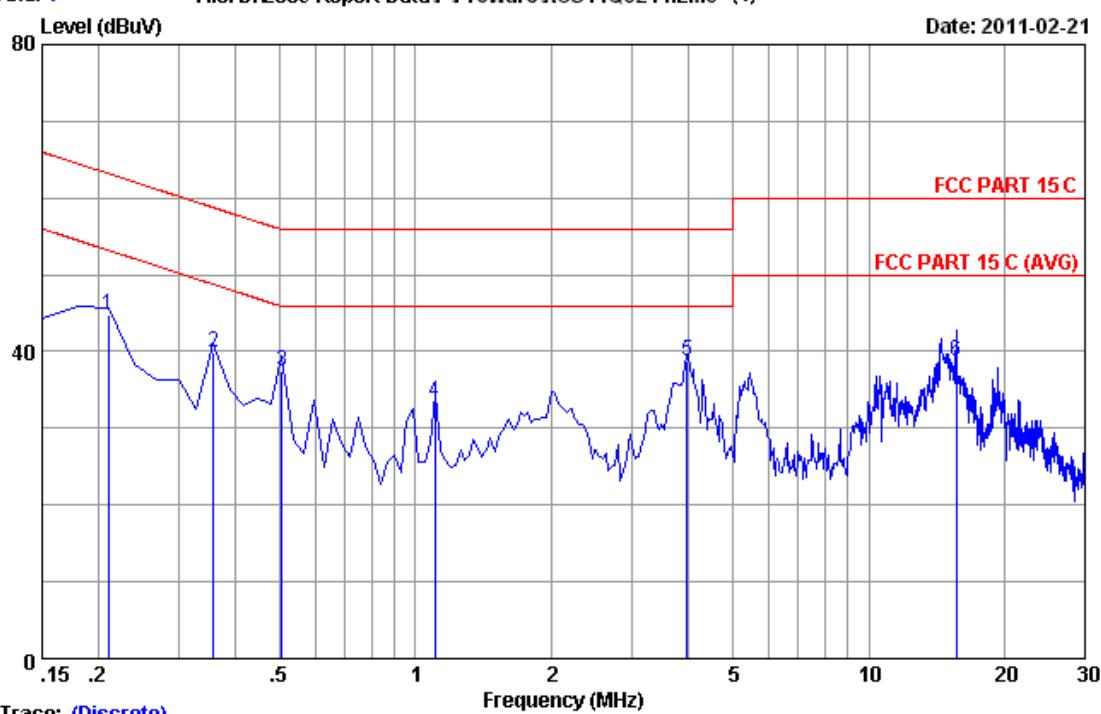
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Site no :Audix No.1 Conduction
 Dis./Ant. :** 2009 KNW407 VB
 Limit :FCC PART 15 C
 Env./Ins. :Temp:23'C Humi:54%
 EUT :Wireless Lite-N USB Adapter
 Power Rating :DC 5V From PC Input AC 120V/60Hz
 Test Mode :Tx Mode
 M/N :PW-DN421

Data no :4
 Engineer :Power Feng

No	Freq (MHz)	LISN	Cable	Emission			
		Factor (dB)	Loss (dB)	Reading (dBuV)	Level (dBuV)	Limits (dBuV)	Margin (dB)
1	0.20970	0.20	9.88	34.60	44.68	63.22	18.54 QP
2	0.35895	0.20	9.89	29.85	39.94	58.75	18.81 QP
3	0.50820	0.20	9.89	27.29	37.38	56.00	18.62 QP
4	1.105	0.19	9.89	23.38	33.46	56.00	22.54 QP
5	3.971	0.27	9.91	28.58	38.76	56.00	17.24 QP
6	15.612	0.34	9.97	28.45	38.76	60.00	21.24 QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss (Include 10dB pulse limit)+Reading
 2.If the average limit is met when using a quasi-peak detector.
 the EUT shall be deemed to meet both limits and measurement
 with average detector is unnecessary.

4. RADIATED EMISSION TEST

4.1. Test Equipment

Frequency rang: 30~1000MHz

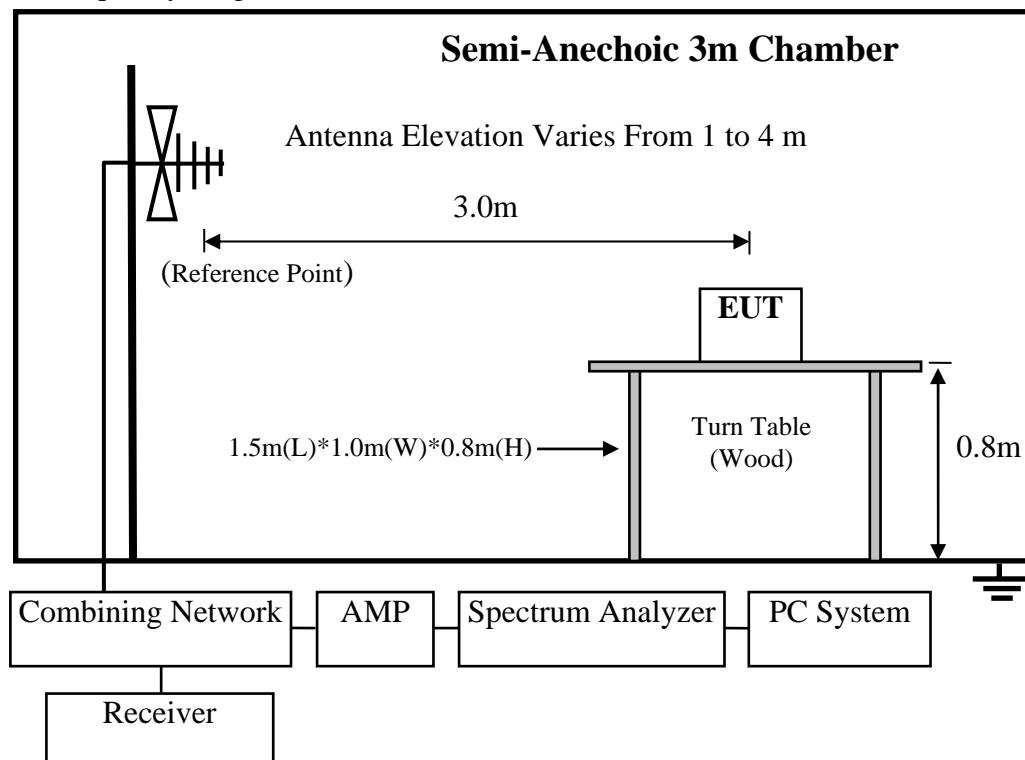
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Dec.06,10	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 10	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 10	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 10	1 Year
5	Bilog Antenna	Schaffner	CBL6111C	2598	Oct.26, 10	1 Year
6	RF Cable	MIYAZAKI	8D-FB	3# Chamber No.1	May.08, 10	1 Year
7	Coaxial Switch	Anritsu	MP59B	M73989	May.08, 10	1 Year

Frequency rang: above 1000MHz

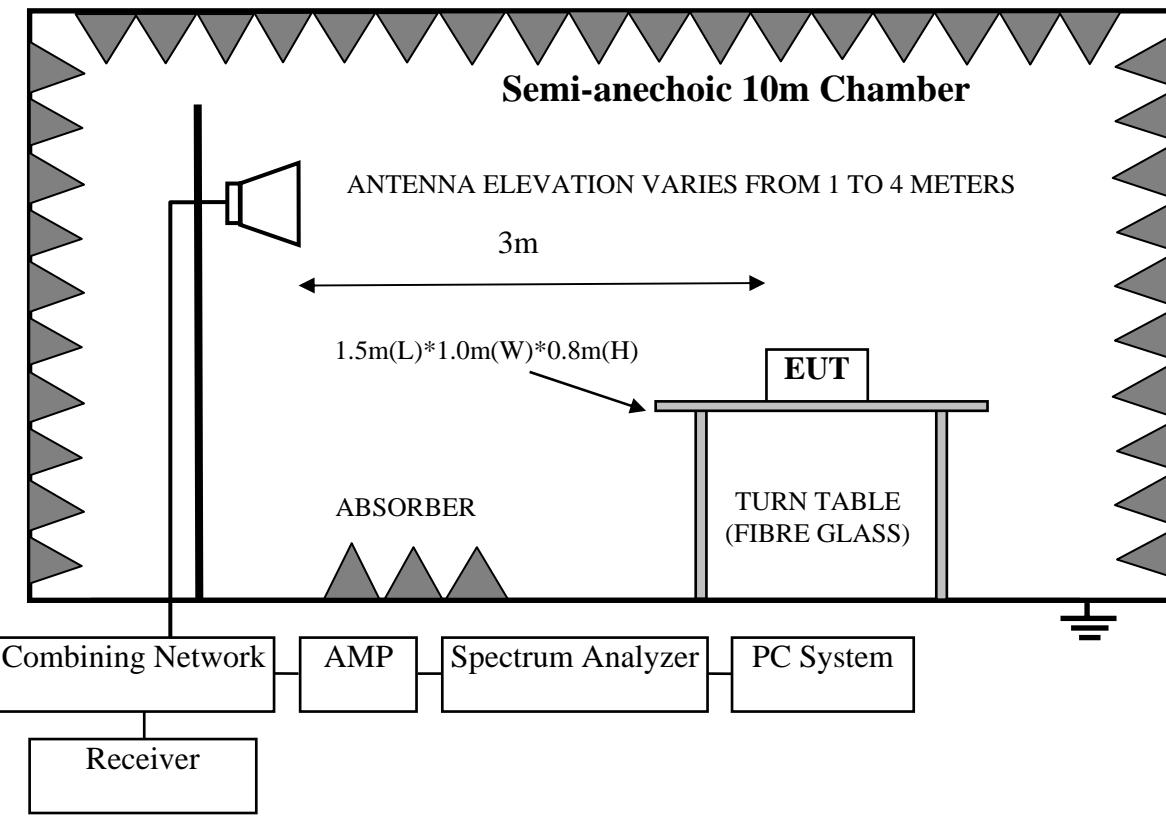
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 10	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 09	1.5 Year
3	Horn Antenna	EMCO	3116	00060089	Nov.25, 09	1.5 Year
4	Amplifier	Agilent	8449B	3008A00863	May.08, 10	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08, 10	1 Year
6	RF Cable	Hubersuhner	SUCOFLEX102	29091/2	May.08, 10	1 Year

4.2. Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range 1GHz-25GHz



4.3.Radiated Emission Limit

4.3.1.15.209 limits

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

Remark : (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V}/\text{m}$

(2) The smaller limit shall apply at the cross point between two frequency bands.

(3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.3.2.15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

4.4.EUT Configuration on Test

The configurations of EUT are listed in Section 3.5.

4.5.Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 4.2.

4.6.Test Procedure

EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.



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4.7.Radiated Emission Test Results

PASS.

All the emissions from 30MHz to 25 GHz were comply with 15.209 limits.

Note: For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

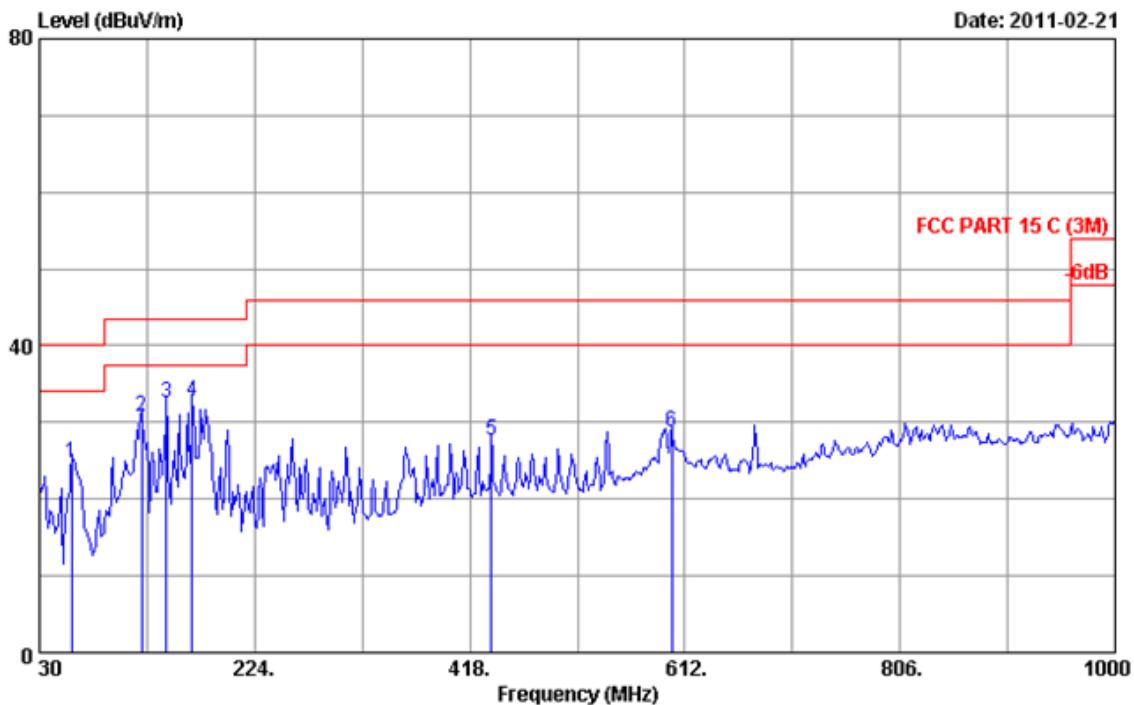
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Frequency: 30MHz~1GHz

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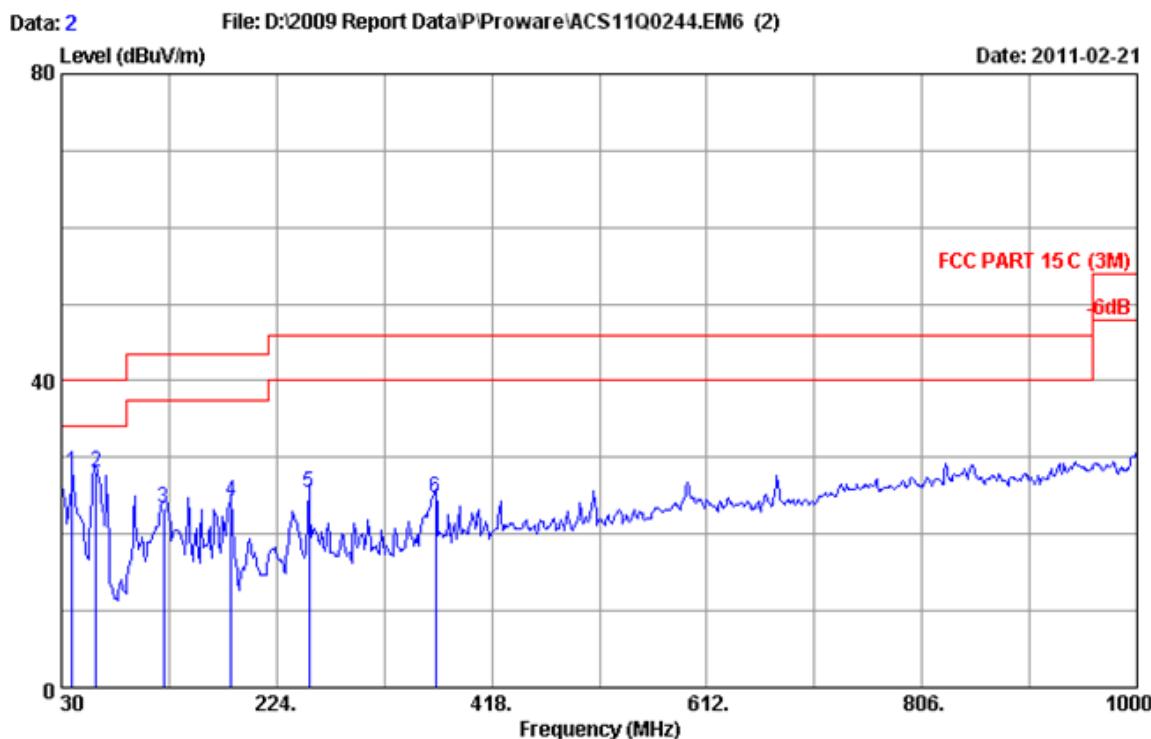
Site no. : 3m Chamber Data no. : 1
 Dis. / Ant. : 3m CBL6111C Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 B (3M)
 Env. / Ins. : 24°C/56% Engineer : Alan Geng
 EUT : Wireless Lite-N USB Adapter
 Power Rating : DC 5V from PC input AC 120V/60Hz
 Test Mode : Tx Mode
 M/N : PW-DN421

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	59.100	6.10	0.52	18.12	24.74	40.00	15.26	QP
2	122.150	11.87	0.84	18.12	30.83	43.50	12.67	QP
3	144.460	11.78	0.94	19.72	32.44	43.50	11.06	QP
4	167.740	10.33	0.97	21.37	32.67	43.50	10.83	QP
5	437.400	16.90	1.97	8.69	27.56	46.00	18.44	QP
6	600.360	19.47	2.44	6.75	28.66	46.00	17.34	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

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Site no. : 3m Chamber Data no. : 2
Dis. / Ant. : 3m CBL6111C Ant. pol. : VERTICAL
Limit : FCC PART 15 B (3M)
Env. / Ins. : 24°C/56% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power Rating : DC 5V from PC input AC 120V/60Hz
Test Mode : Tx Mode
M/N : PW-DN421

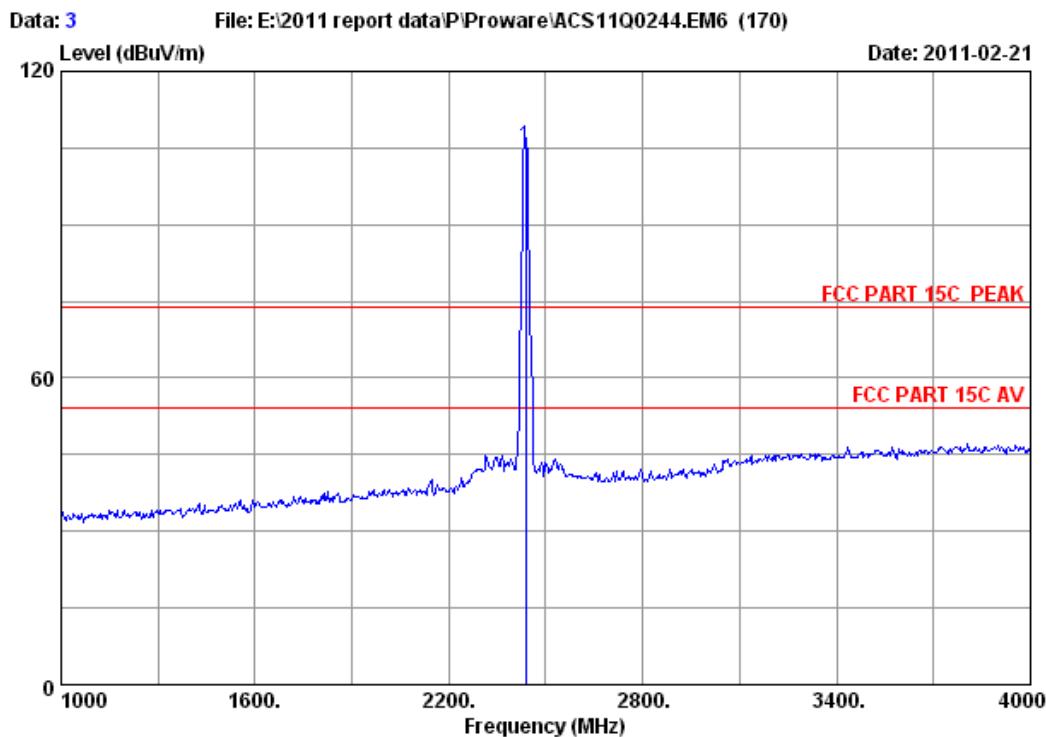
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	39.700	14.41	0.35	13.24	28.00	40.00	12.00	QP
2	61.040	5.90	0.50	21.63	28.03	40.00	11.97	QP
3	122.150	11.87	0.84	10.58	23.29	43.50	20.21	QP
4	183.260	9.37	1.07	13.85	24.29	43.50	19.21	QP
5	253.100	12.96	1.48	11.01	25.45	46.00	20.55	QP
6	367.560	15.41	1.78	7.66	24.85	46.00	21.15	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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Frequency: 1GHz~18GHz


Site no.	:	RF Chamber	Data no.	:	3
Dis. / Ant.	:	3m 3115(0905)	Ant. pol.	:	HORIZONTAL
Limit	:	FCC PART 15C PEAK			
Env. / Ins.	:	23°C/54%	Engineer	:	Alan Geng
EUT	:	Wireless Lite-N USB Adapter			
Power	:	DC 5V From PC input AC 120V/60Hz			
Test mode	:	IEEE802.11b CH6 2437MHz			
M/N	:	PW-DN421			

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)
1	2437.000	28.53	8.60	36.06	104.37	105.44	74.00 -31.44 Peak

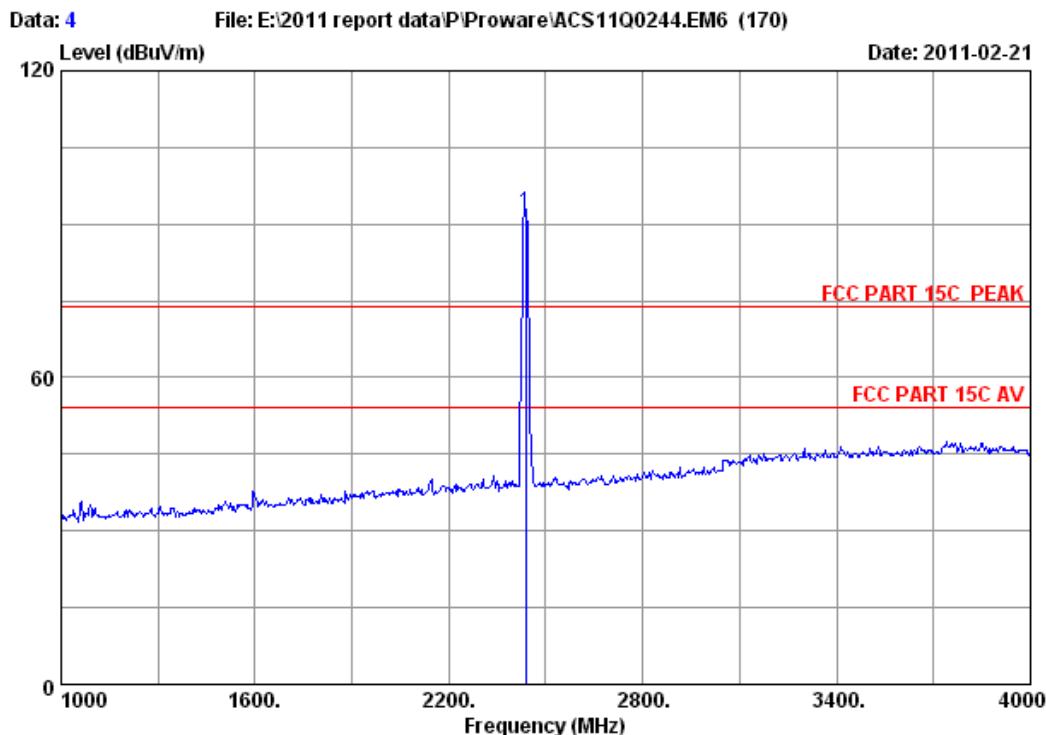
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 4
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH6 2437MHz
M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission			
				Reading (dbuv)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1 2437.000	28.53	8.60	36.06	91.28	92.35	74.00	-18.35 Peak

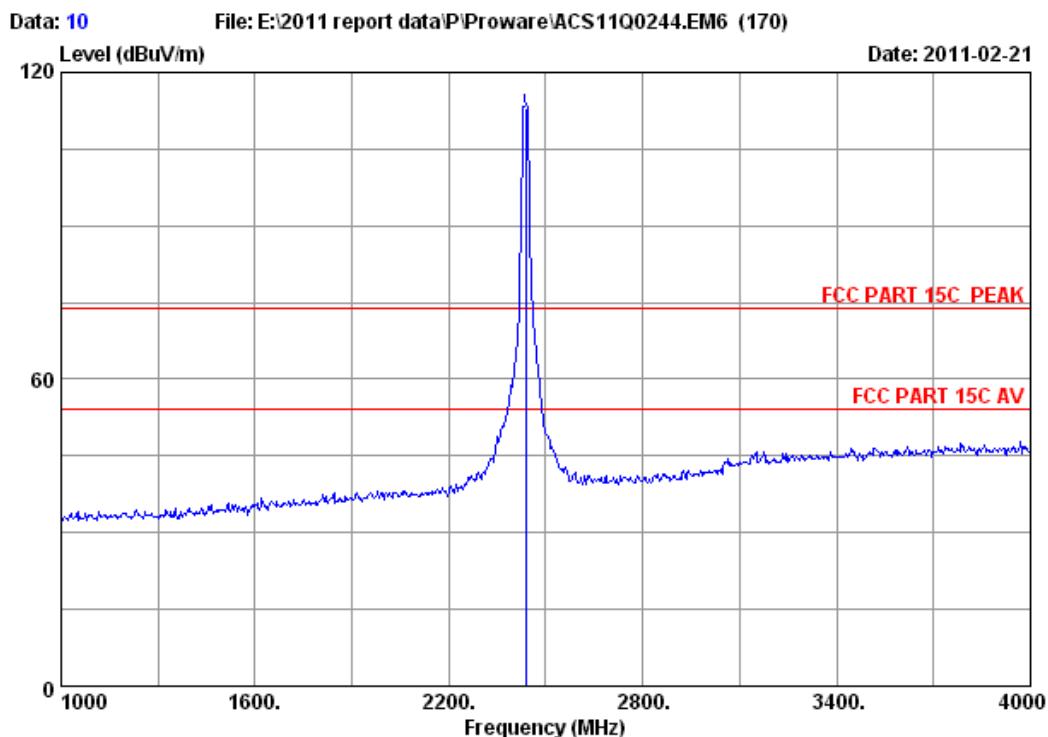
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 10
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH6 2437MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin Remark
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)
1	2437.000	28.53	8.60	36.06	111.87	112.94	74.00 -38.94 Peak

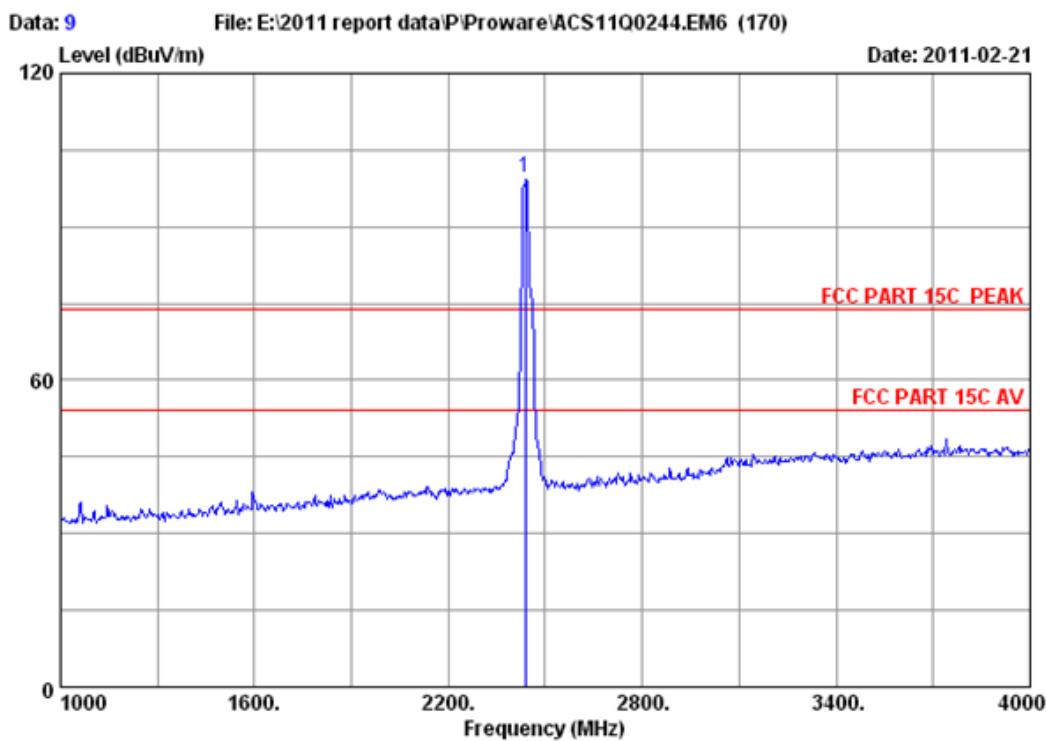
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 9
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH6 2437MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)
1	2437.000	28.53	8.60	36.06	98.39	99.46	74.00 -25.46 Peak

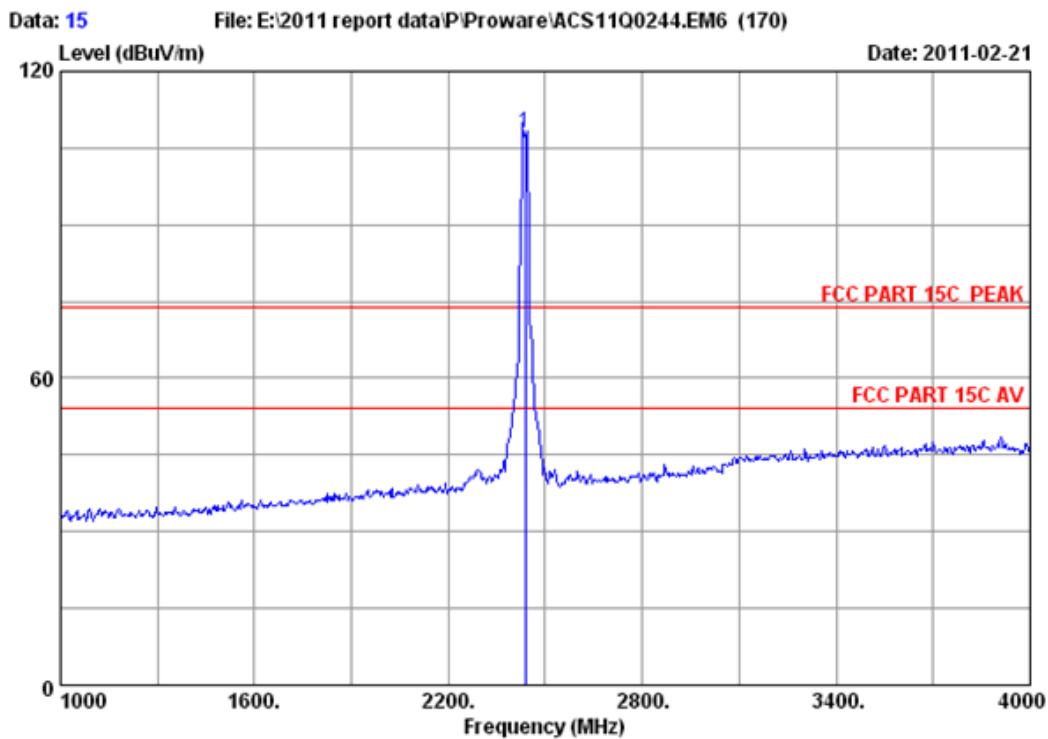
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 15
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT20 CH6 2437MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)
1	2437.000	28.53	8.60	36.06	106.82	107.89	74.00 -33.89 Peak

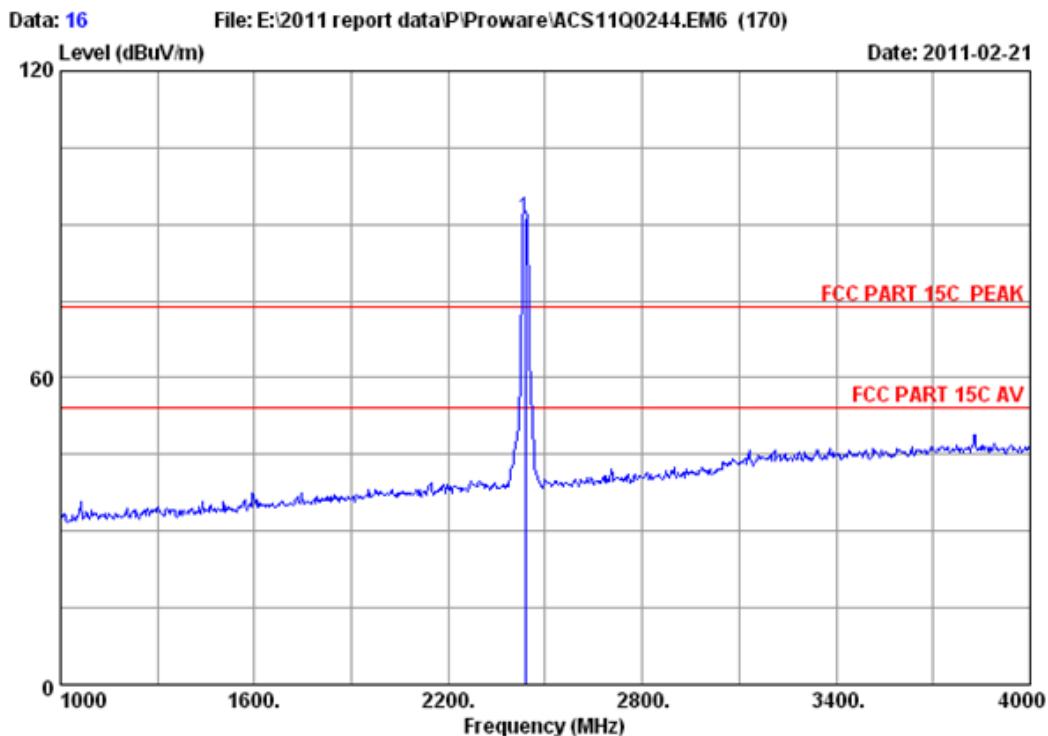
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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Site no. : RF Chamber Data no. : 16
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT20 CH6 2437MHz
M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dbuv)	Emission			
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2437.000	28.53	8.60	36.06	90.16	91.23	74.00	-17.23	Peak

Remarks:

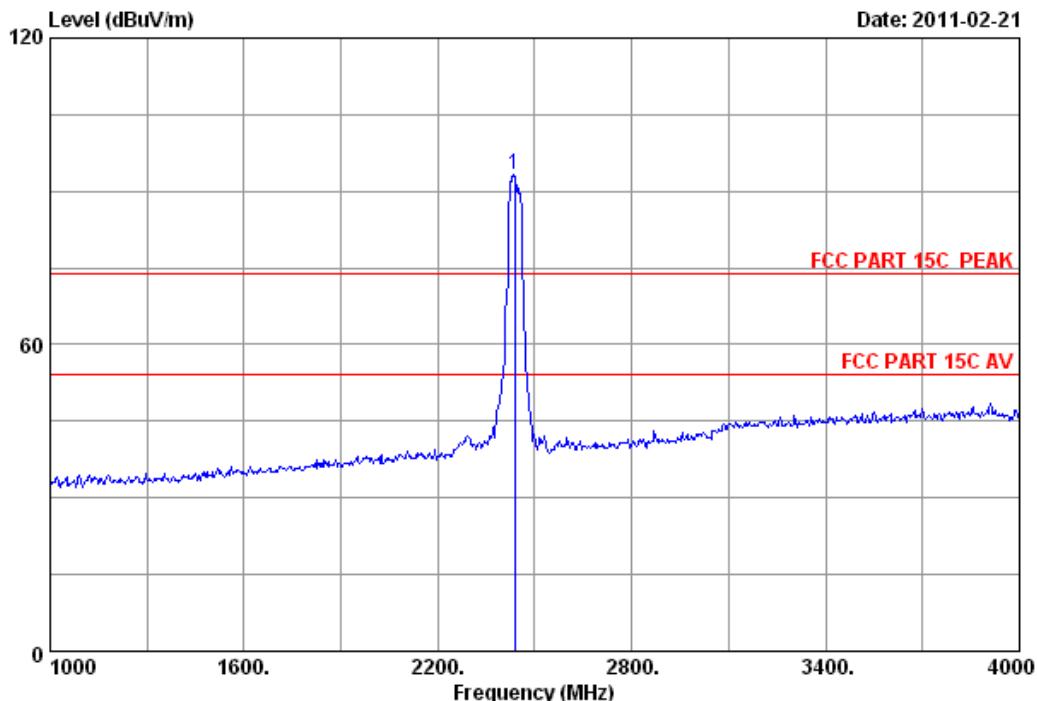
1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 21 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 21
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT40 CH4 2437MHz
M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission			
				Reading (dbuv)	Level (dB _B V/m)	Limits (dB _B V/m)	Margin (dB)
1 2437.000	28.53	8.60	36.06	92.23	93.30	74.00	-19.30 Peak

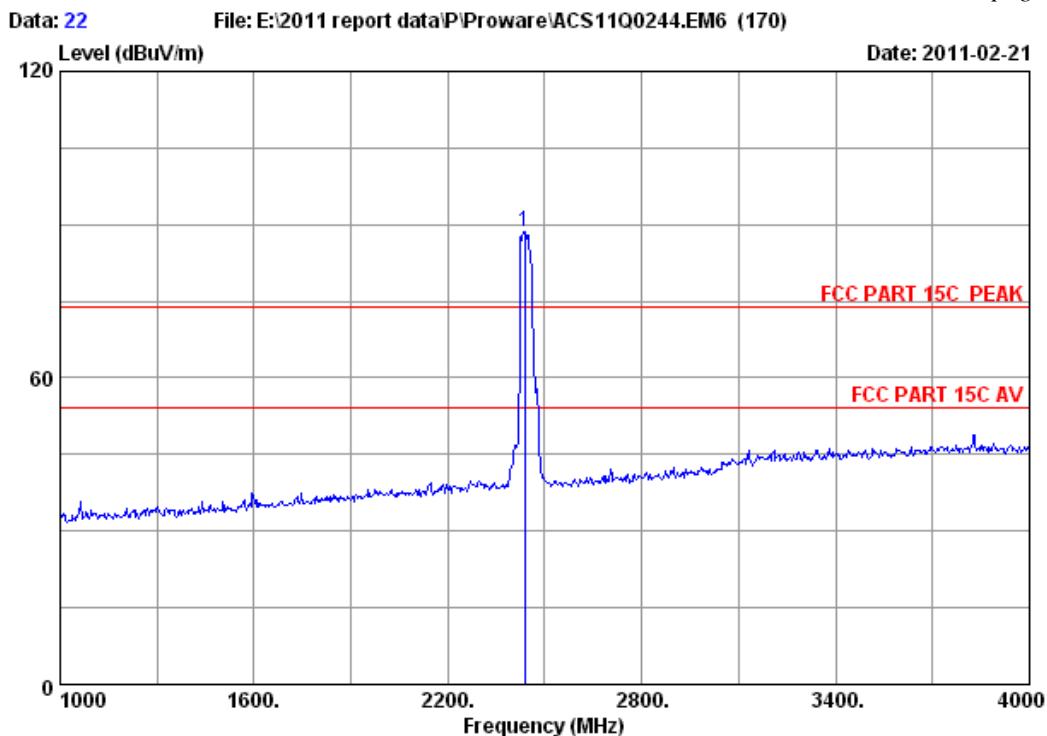
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 22
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT40 CH4 2437MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)
1	2437.000	28.53	8.60	36.06	87.45	88.52	74.00 -14.52 Peak

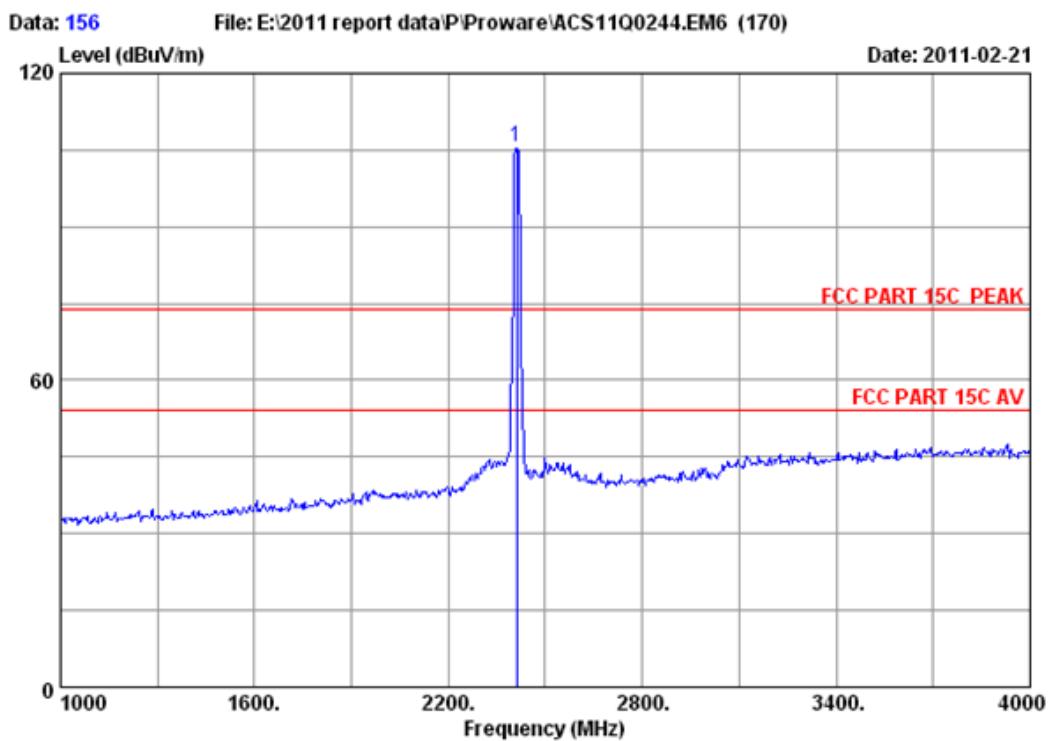
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 156
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH1 2412MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2412.000	28.48	8.60	35.95	104.49	105.62	74.00 -31.62 Peak

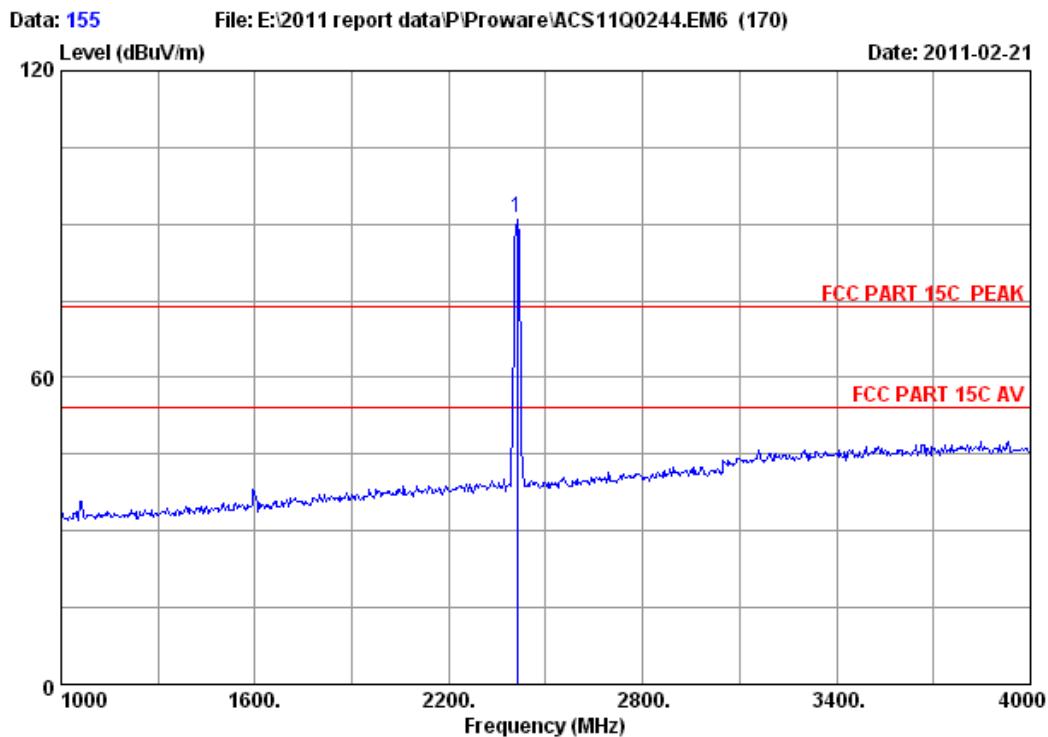
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 155
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH1 2412MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2412.000	28.48	8.60	35.95	90.19	91.32	74.00 -17.32 Peak

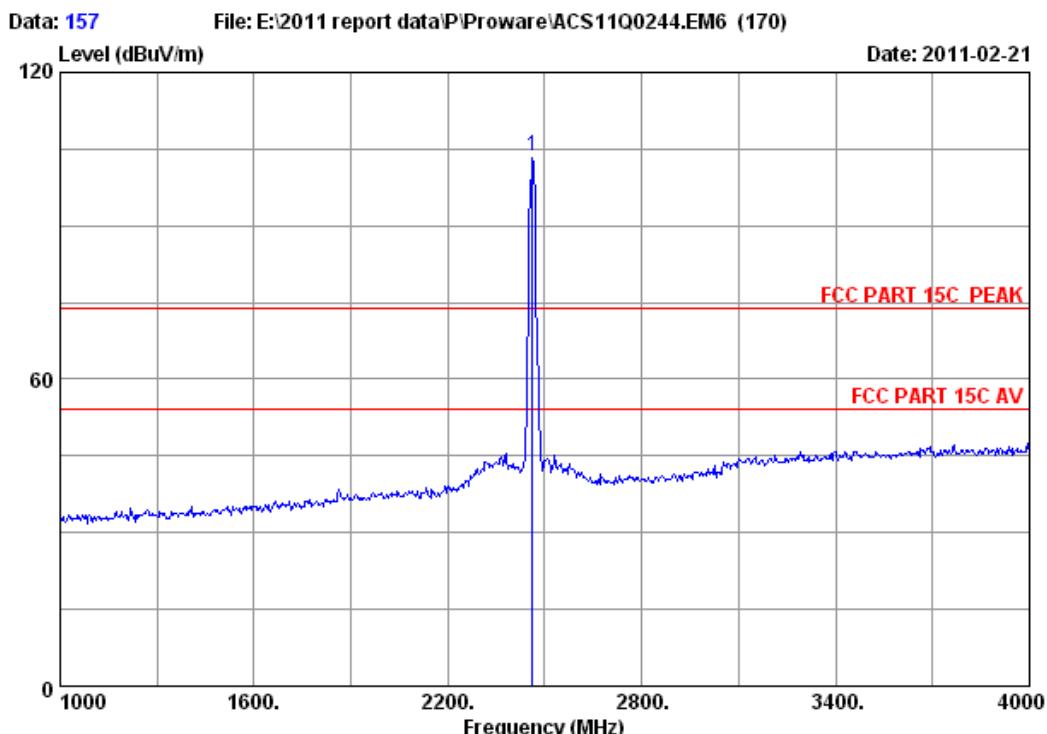
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 157
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH11 2462MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2462.000	28.55	8.76	36.02	102.36	103.65	74.00	-29.65 Peak

Remarks:

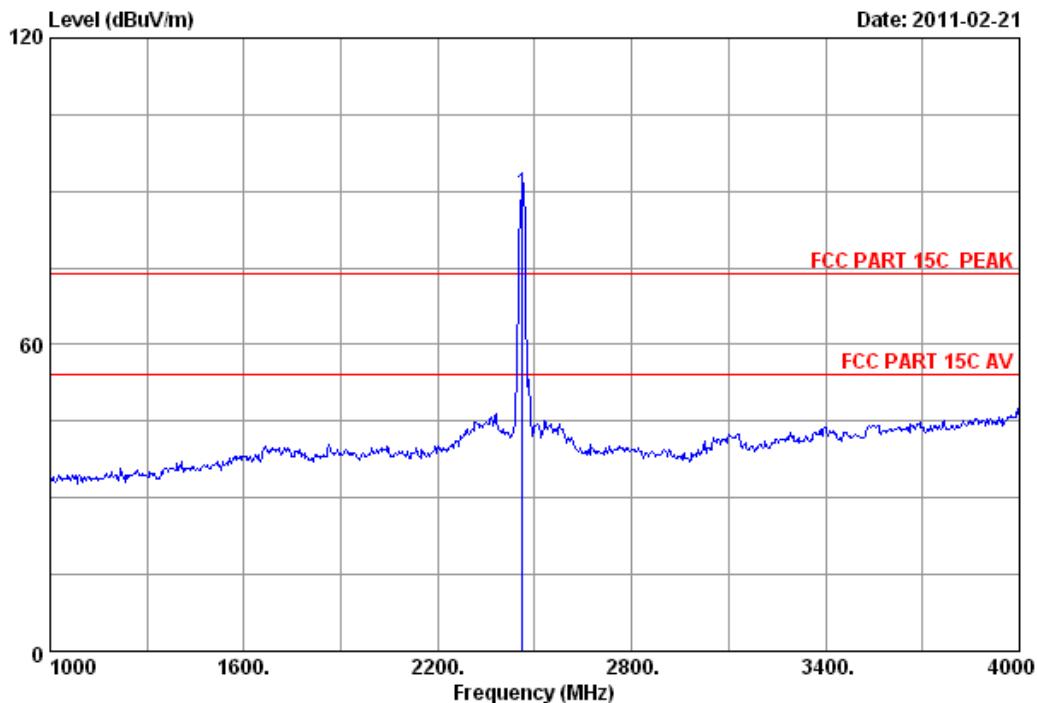
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 158 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no.	:	RF Chamber	Data no. :	158
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	VERTICAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11b CH11 2462MHz		
M/N	:	PW-DN421		

	Ant.	Cable	Amp.	Emission			
	Freq. Factor	loss	Factor	Reading	Level	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dB _{UV})	(dB _{UV} /m)	(dB _{UV} /m)	(dB)
1	2462.000	28.55	8.76	36.02	88.18	89.47	74.00 -15.47 Peak

Remarks:

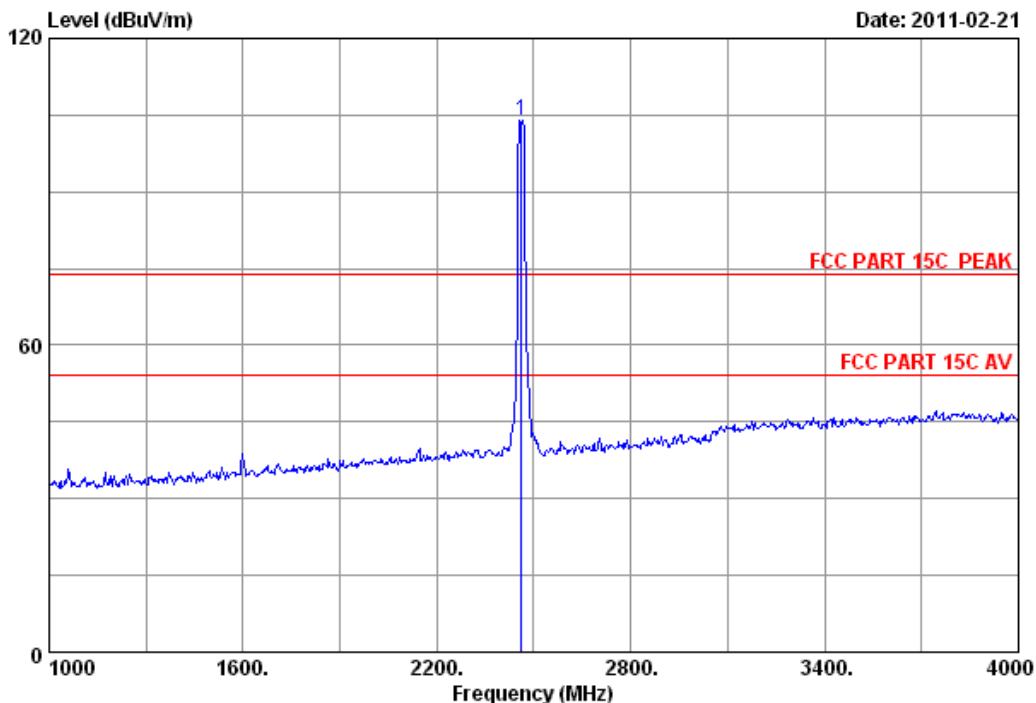
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 160 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 160
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH11 2462MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2462.000	28.55	8.76	36.02	102.66	103.95	74.00	-29.95 Peak

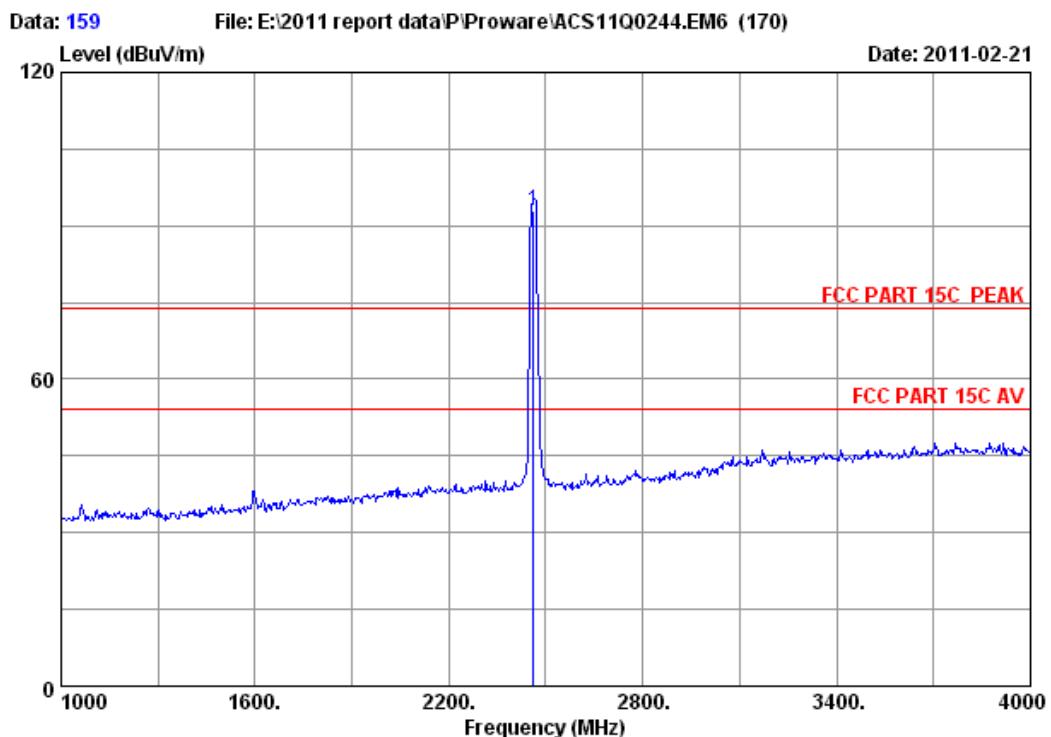
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 159
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH11 2462MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2462.000	28.55	8.76	36.02	91.59	92.88	74.00	-18.88 Peak

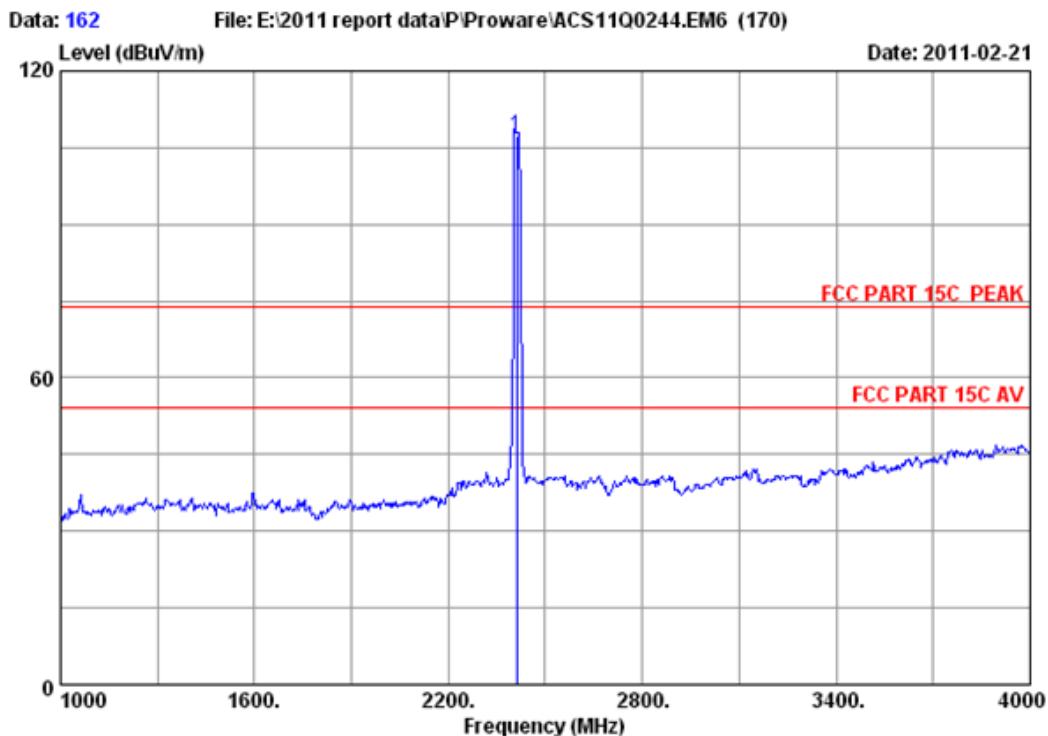
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 162
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH1 2412MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2412.000	28.48	8.60	35.95	106.29	107.42	74.00	-33.42 Peak

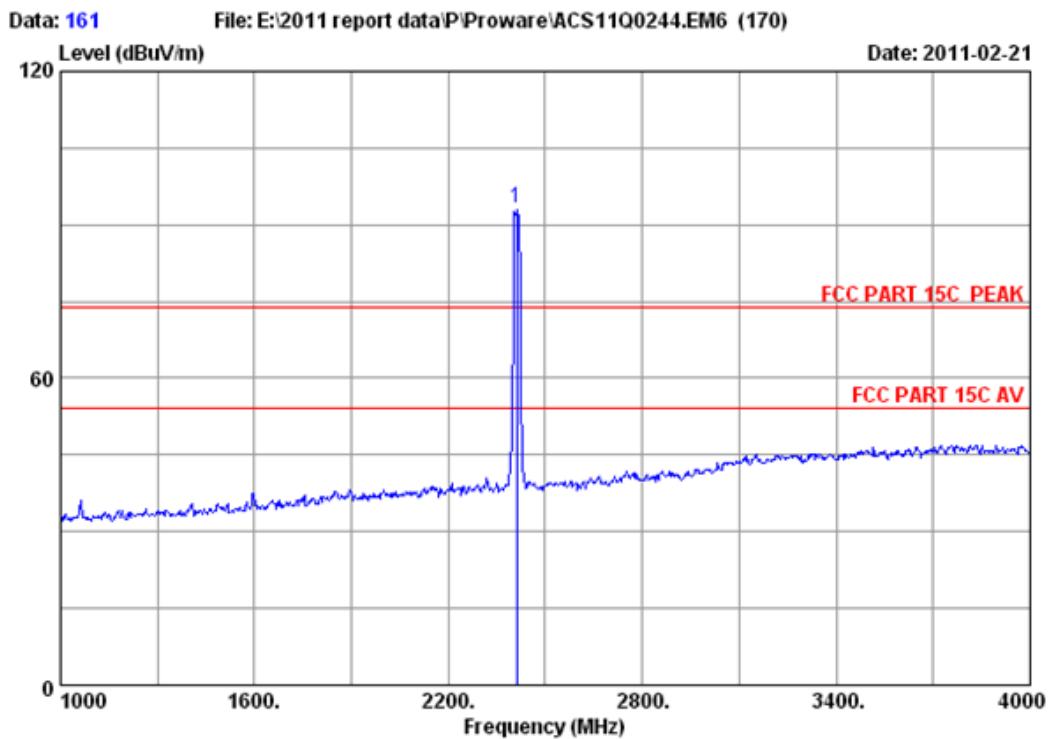
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 161
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH1 2412MHz
M/N : PW-DN421

Freq. (MHz)	Ant. (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission			
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1 2412.000	28.48	8.60	35.95	91.99	93.12	74.00	-19.12 Peak

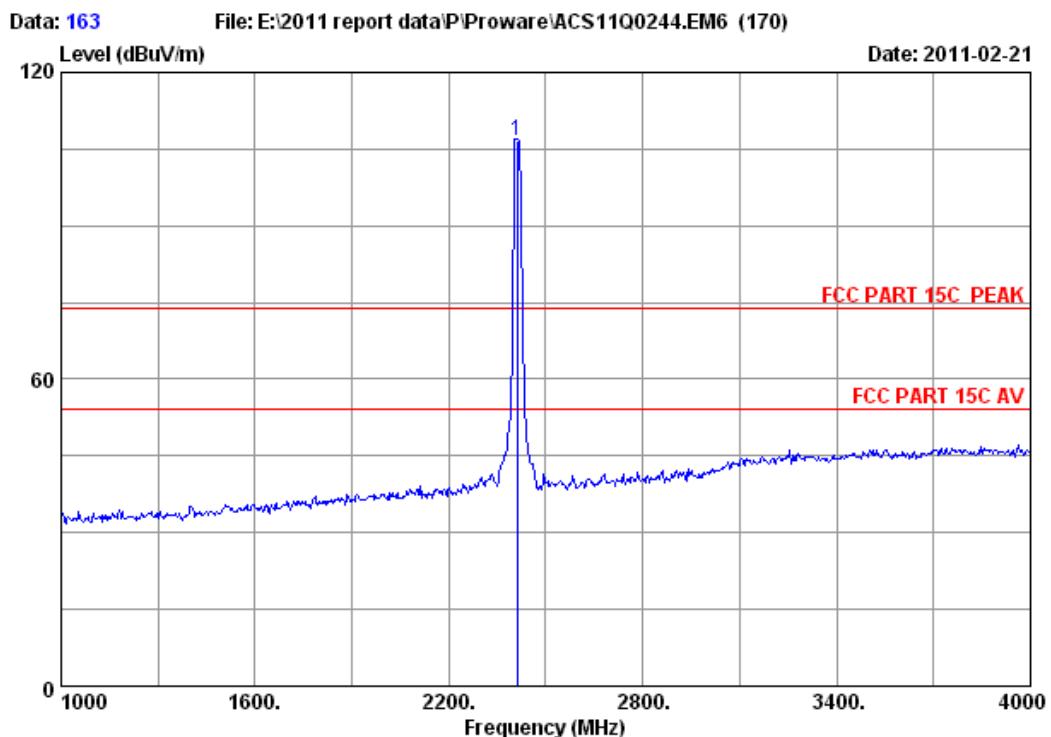
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 163
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Alan Geng
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11nHT20 CH1 2412MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
	Freq. Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2412.000	28.48	8.60	35.95	105.40	106.53	74.00	-32.53 Peak

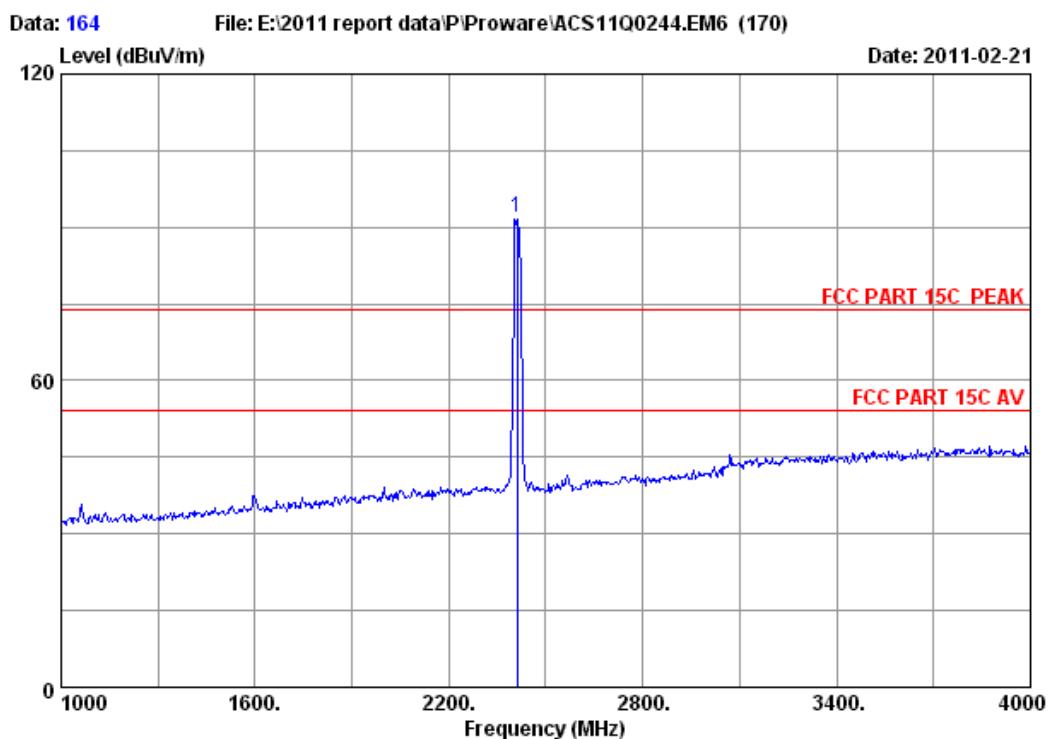
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 164
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT20 CH1 2412MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2412.000	28.48	8.60	35.95	90.78	91.91	74.00 -17.91 Peak

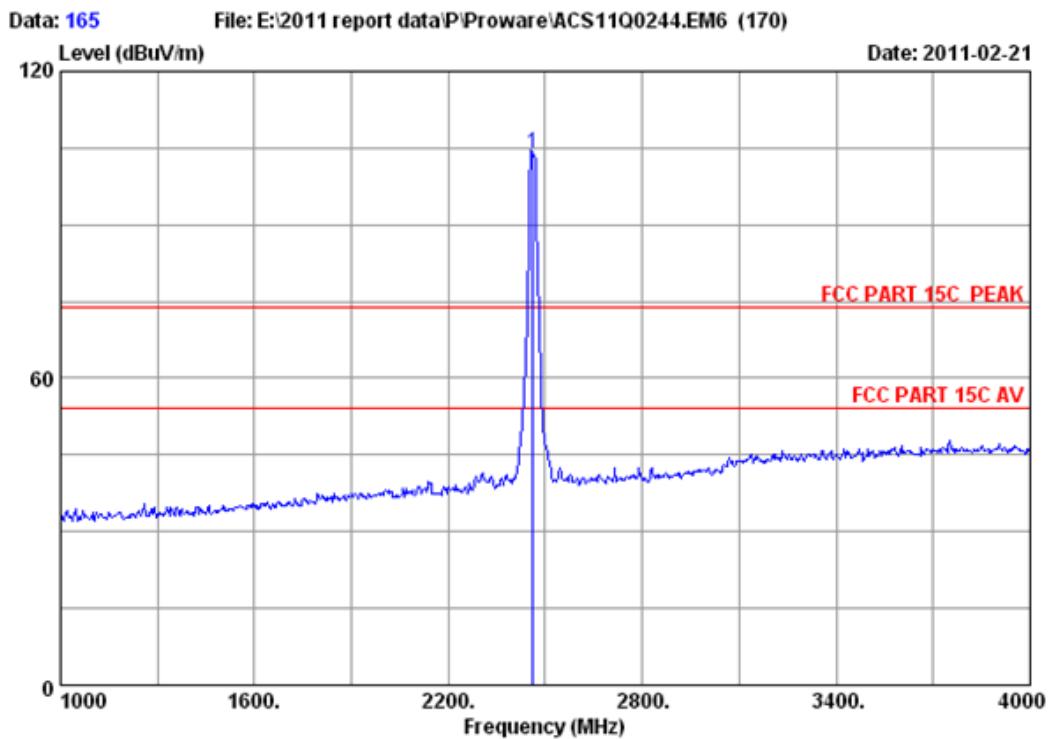
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 165
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT20 CH11 2462MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2462.000	28.55	8.76	36.02	102.53	103.82	74.00	-29.82 Peak

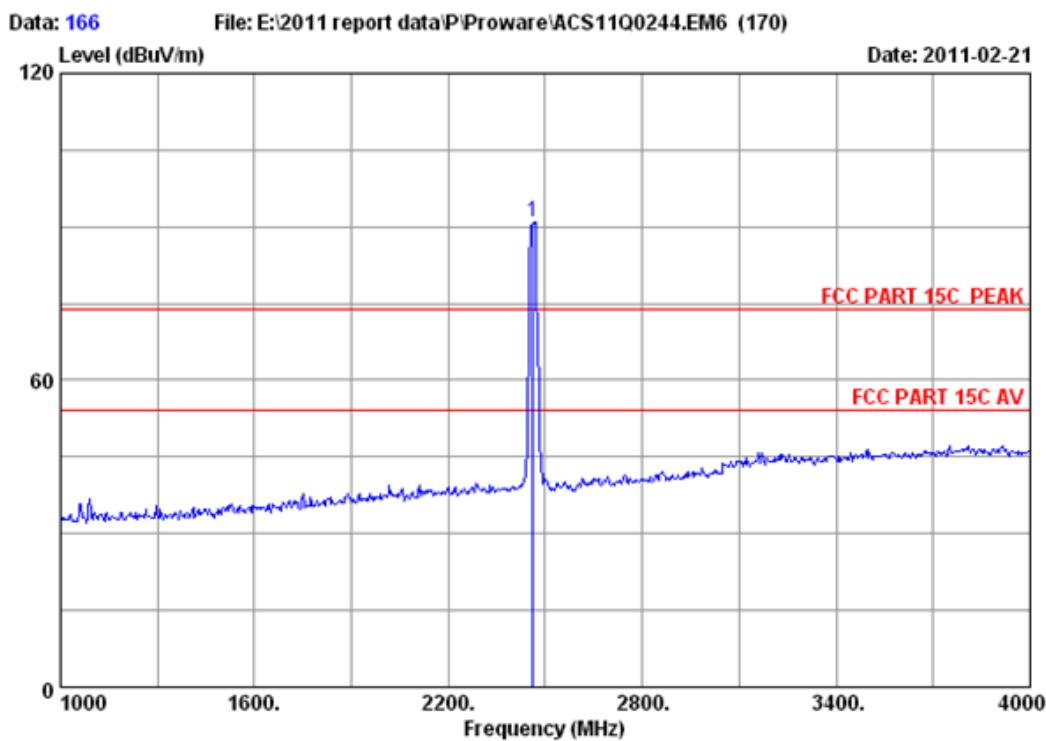
Remarks:

1. Emission Level = Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no.	:	RF Chamber	Data no. :	166
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	VERTICAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11nHT20 CH11 2462MHz		
M/N	:	PW-DN421		

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission			
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1 2462.000	28.55	8.76	36.02	89.58	90.87	74.00	-16.87 Peak

Remarks:

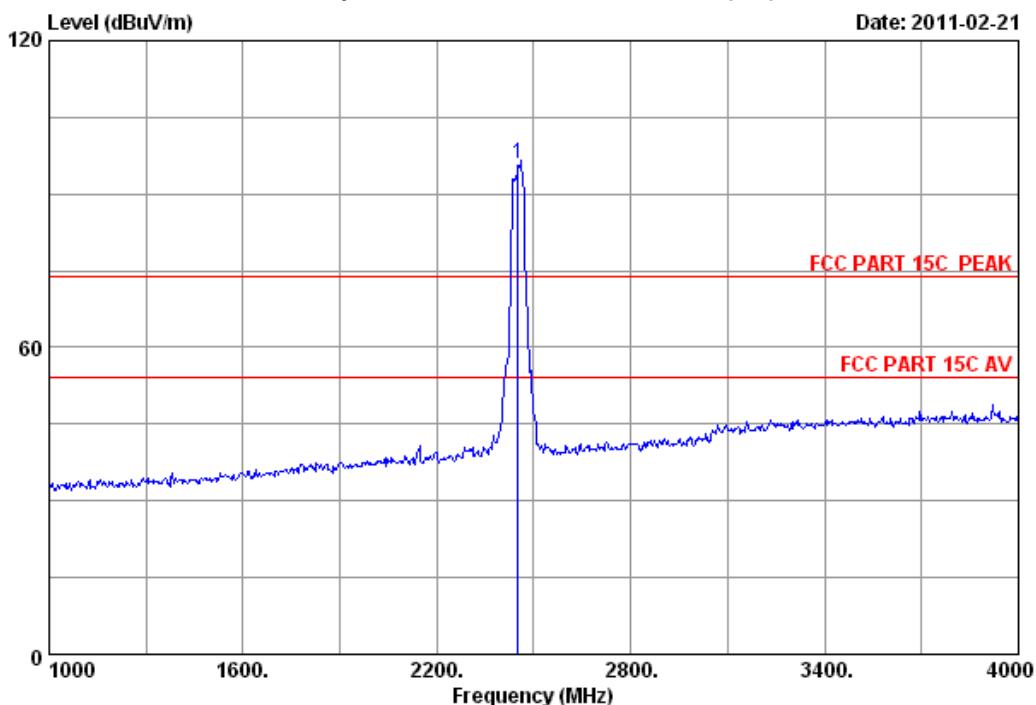
1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 168 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 168
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT40 CH7 2452MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2452.000	28.53	8.48	36.06	95.11	96.06	74.00 -22.06 Peak

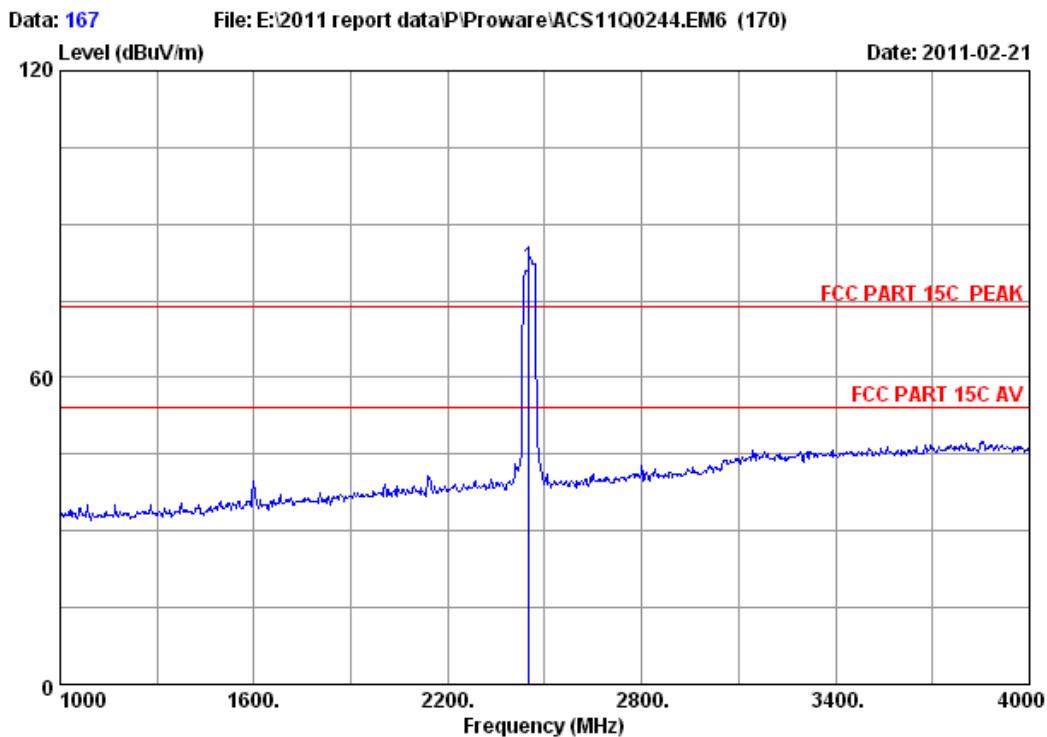
Remarks:

1. Emission Level = Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 167
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT40 CH7 2452MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2452.000	28.53	8.48	36.06	80.55	81.50	74.00 -7.50 Peak

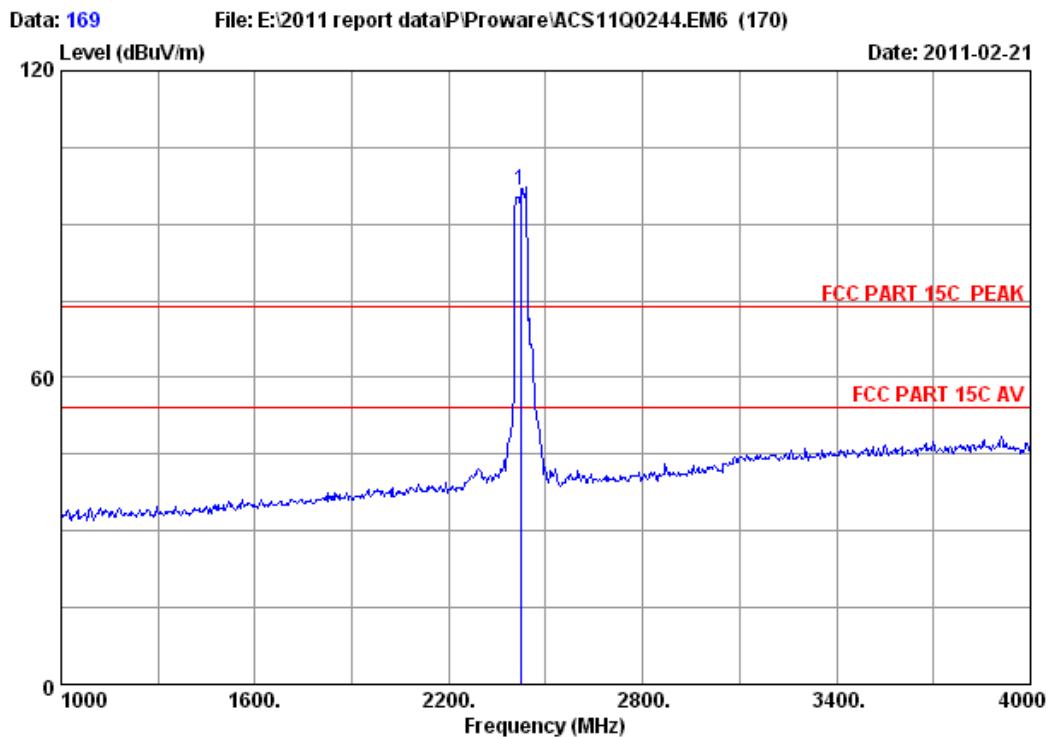
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 169
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT40 CH1 2422MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2422.000	28.50	8.60	36.01	95.67	96.76	74.00 -22.76 Peak

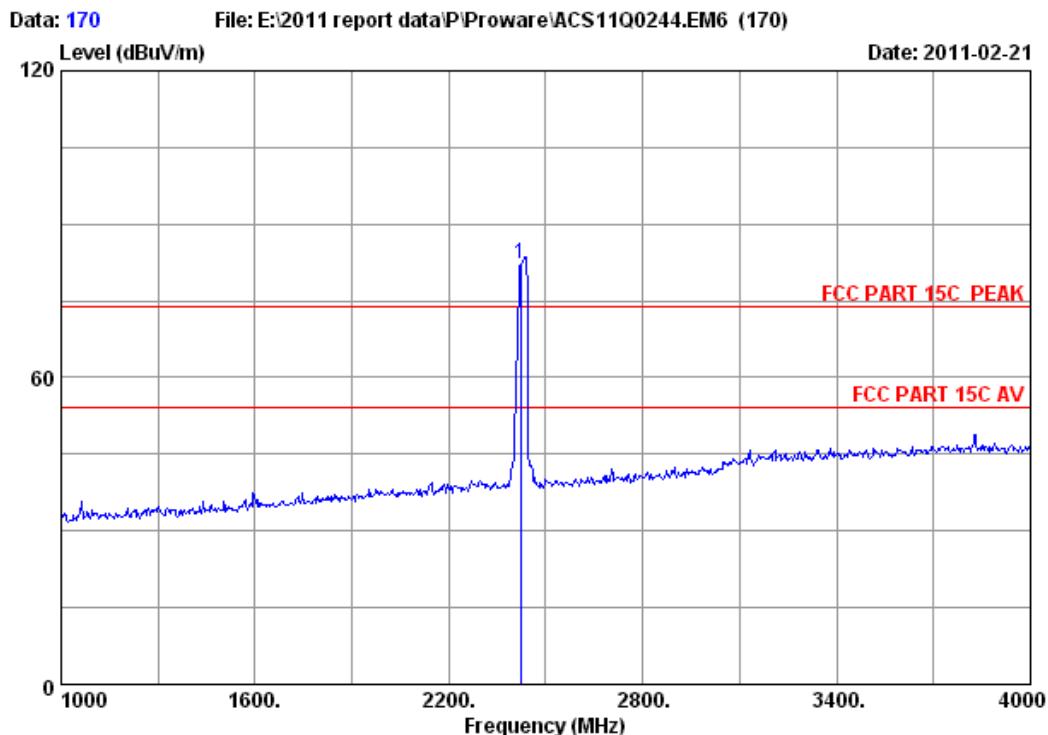
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 170
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT40 CH1 2422MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2422.000	28.50	8.60	36.01	81.27	82.36	74.00 -8.36 Peak

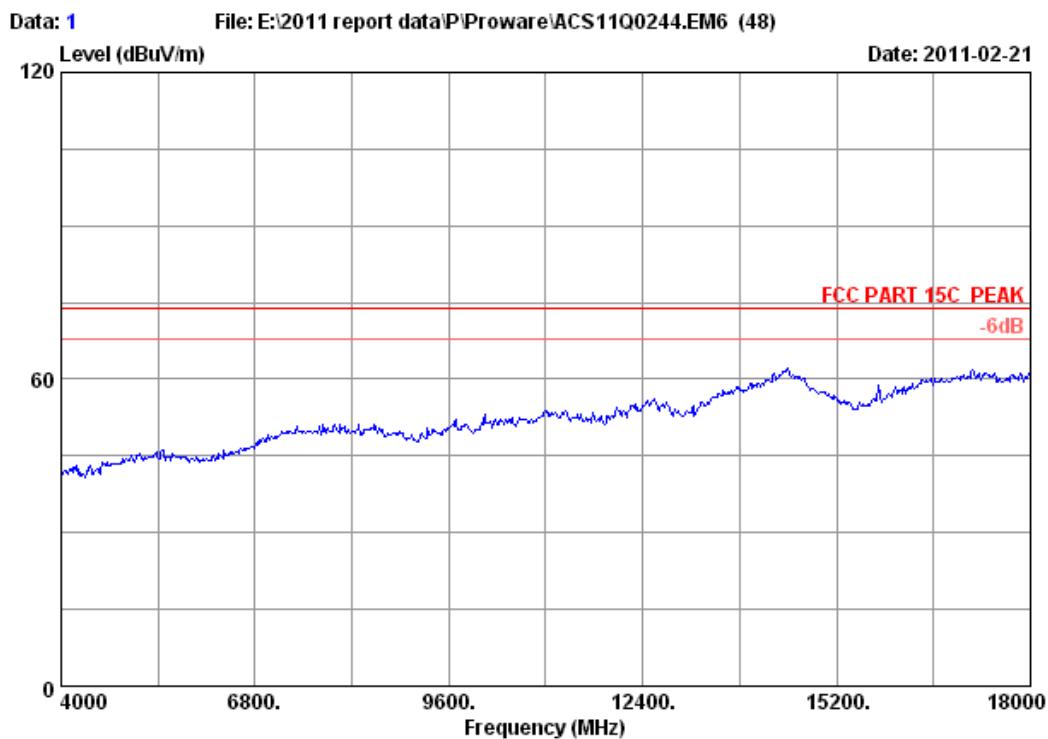
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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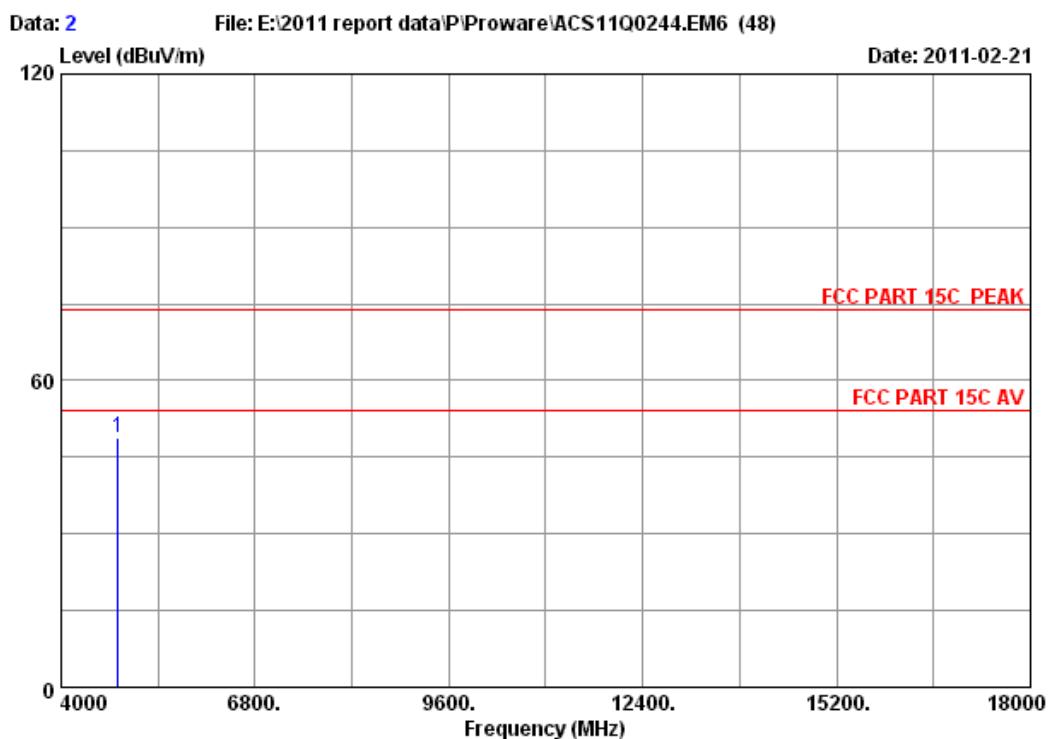


Site no. : RF Chamber Data no. : 1
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH1 2412MHz
M/N : PW-DN421

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Site no. : RF Chamber Data no. : 2
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Alan Geng
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11b CH1 2412MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
	Freq. Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	34.47	12.58	35.25	37.00	48.80	74.00	25.20 Peak

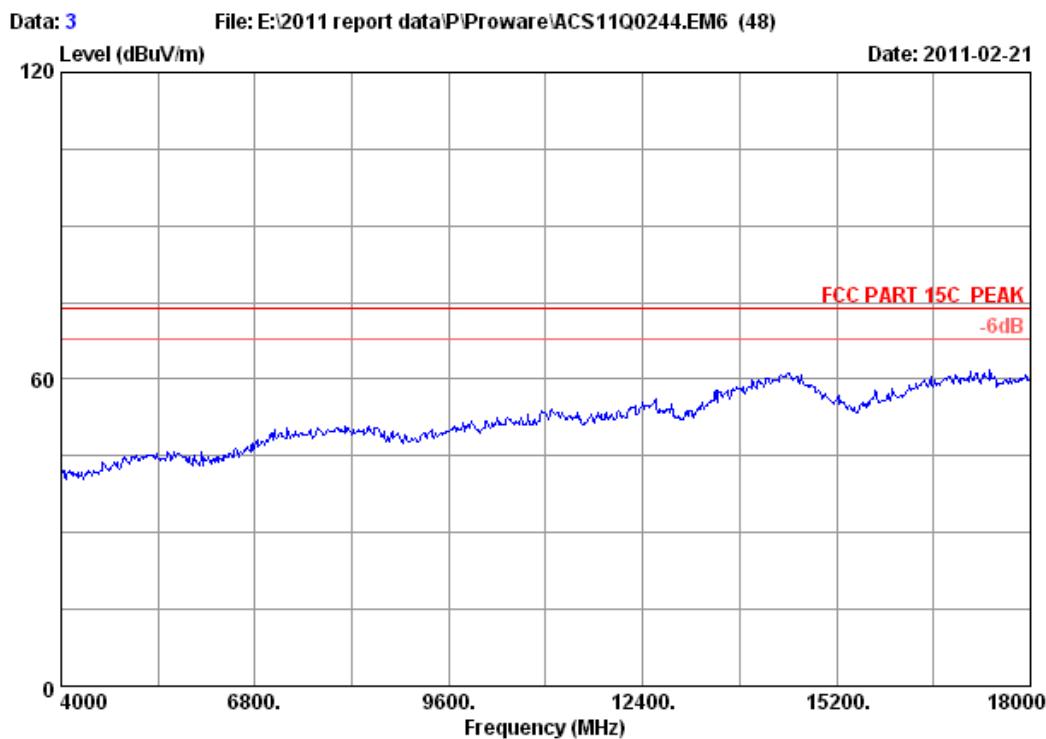
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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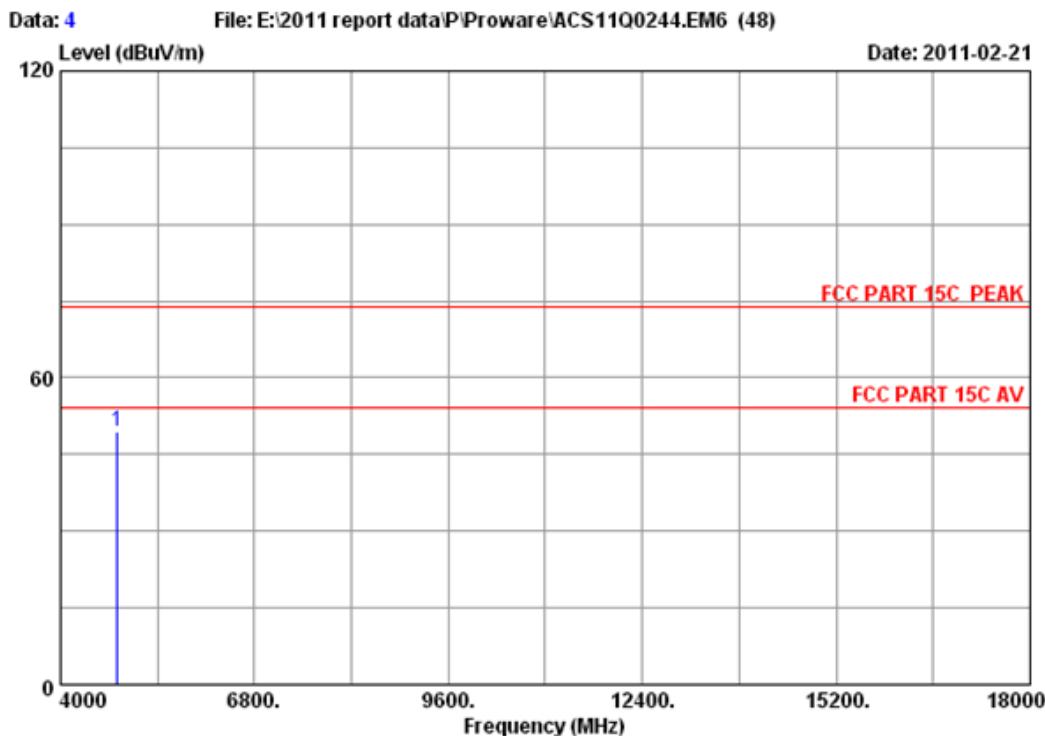


Site no. : RF Chamber Data no. : 3
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH1 2412MHz
M/N : PW-DN421

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 4
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH1 2412MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin Remark
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)
1	4824.000	34.47	10.80	35.25	39.51	49.53	74.00 24.47 Peak

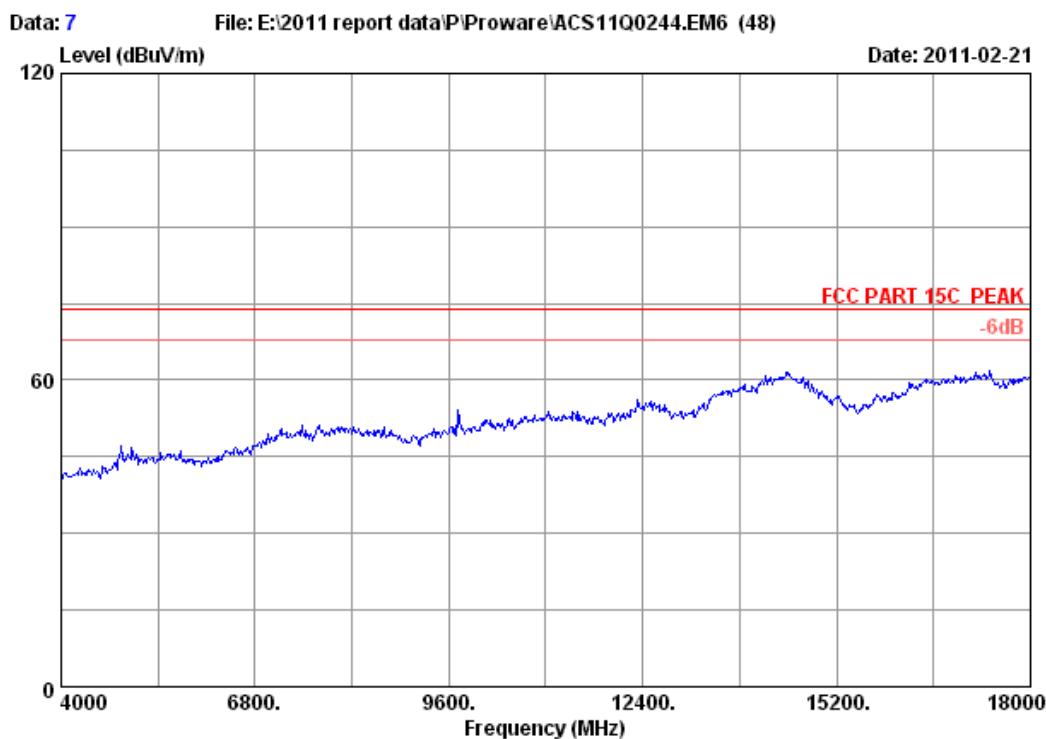
Remarks:

1. Emission Level = Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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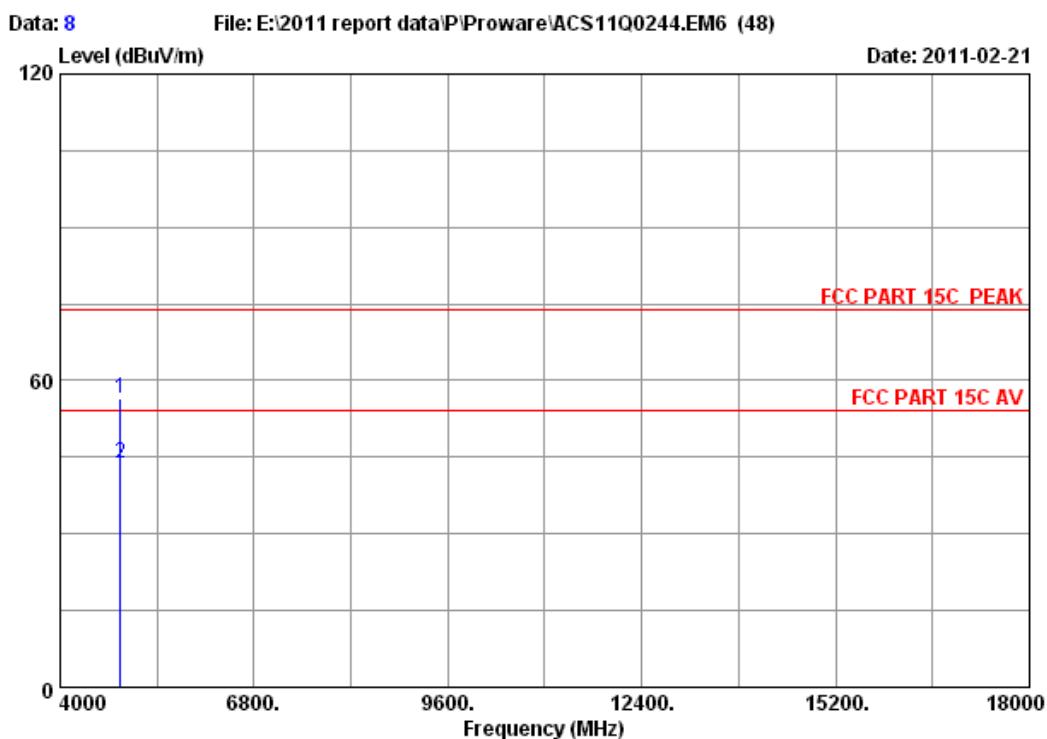


Site no. : RF Chamber Data no. : 7
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH1 2437MHz
M/N : PW-DN421

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 8
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH1 2437MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
	Freq. Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	34.78	12.23	35.36	44.99	56.64	74.00	17.36 Peak
2	4874.000	34.78	12.23	35.36	32.19	43.84	54.00	10.16 Average

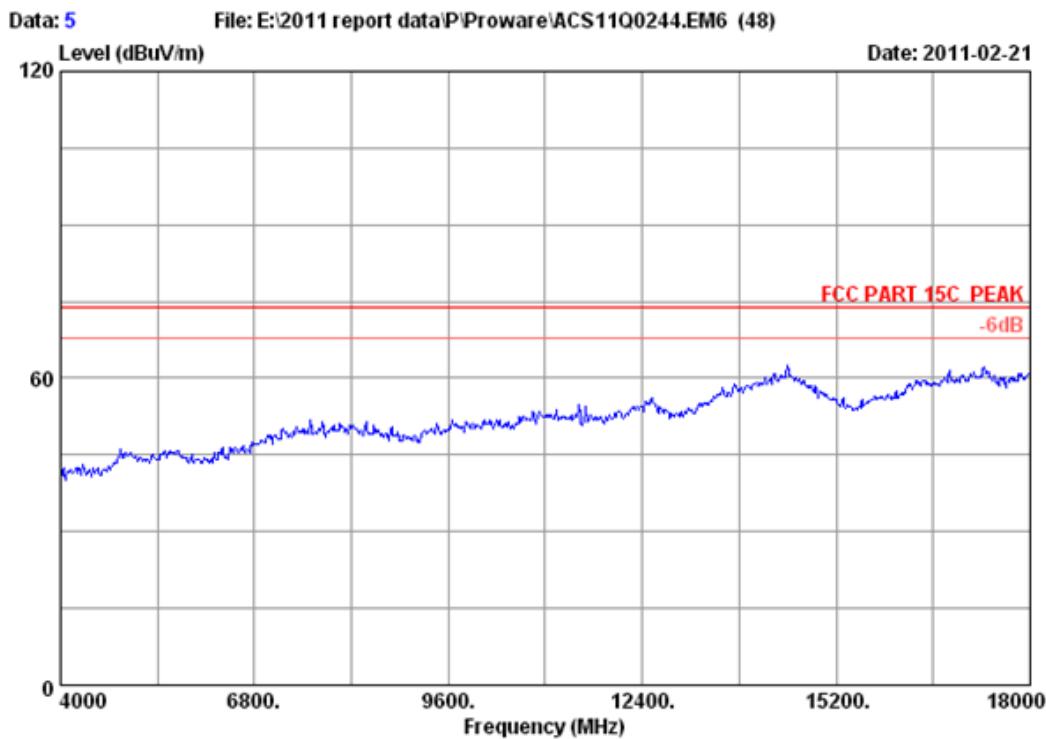
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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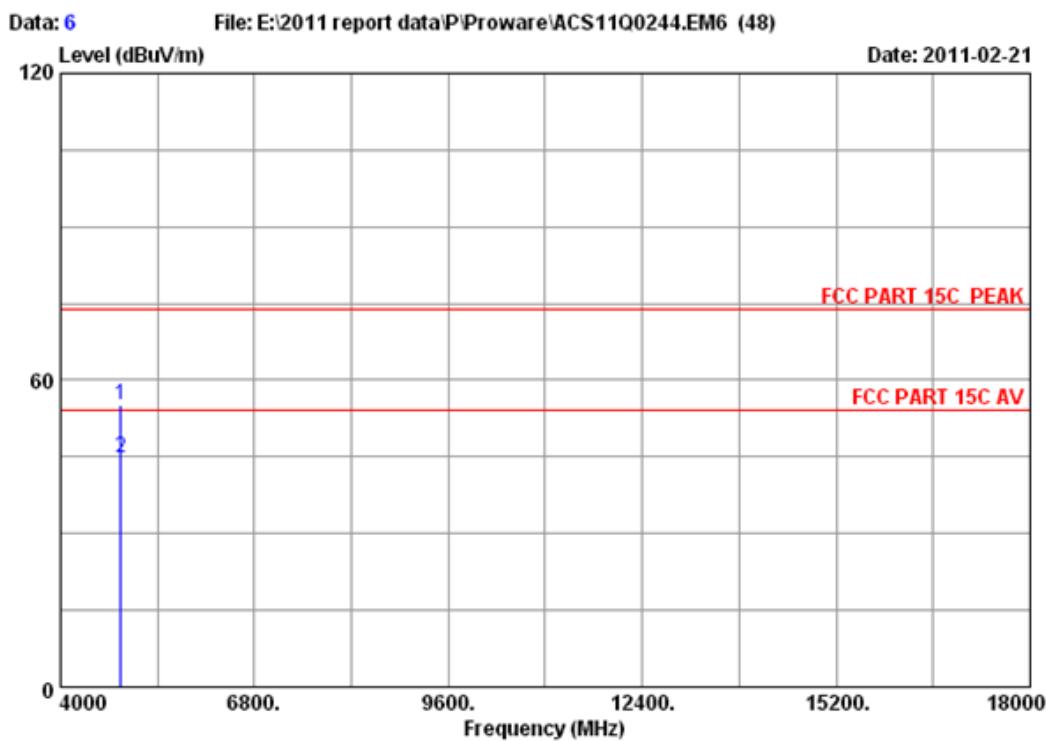


Site no. : RF Chamber Data no. : 5
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH1 2437MHz
M/N : PW-DN421

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Site no.	:	RF Chamber	Data no. :	6
Dis. / Ant.	:	3m 3115	Ant. pol. :	VERTICAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11b CH6 2437MHz		
M/N	:	PW-DN421		

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dbuv)	(dBuV/m)	(dBuV/m)	(dB)
1	4874.000	34.78	10.56	34.58	44.39	55.15	74.00
2	4874.000	34.78	10.56	34.58	34.00	44.76	54.00

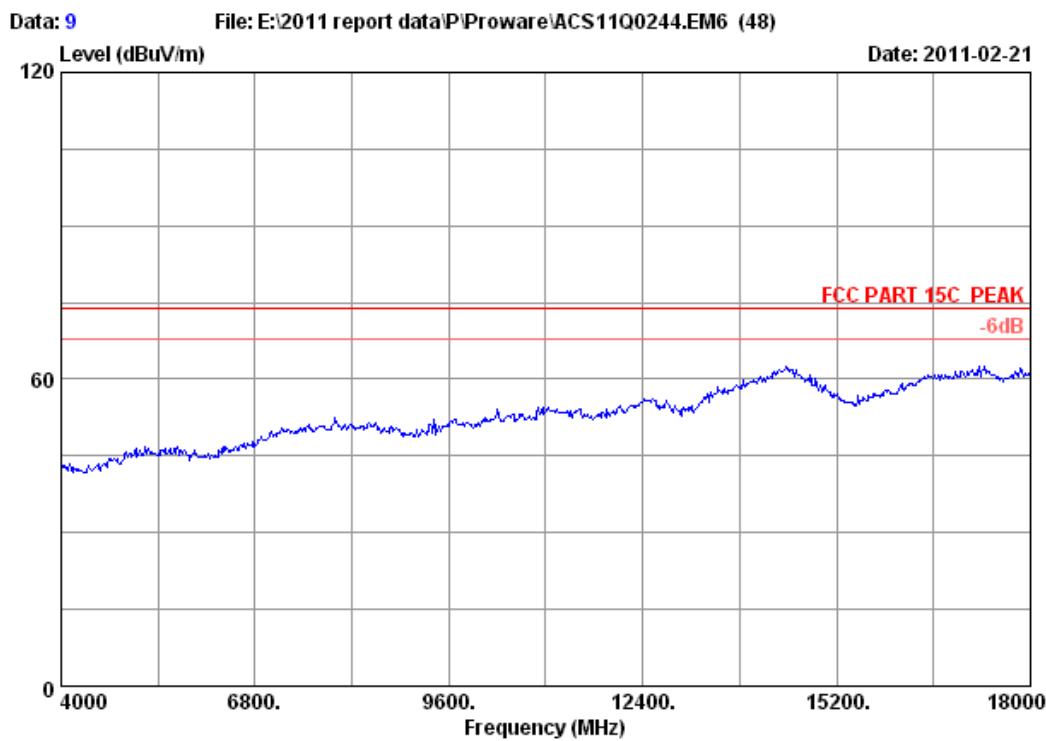
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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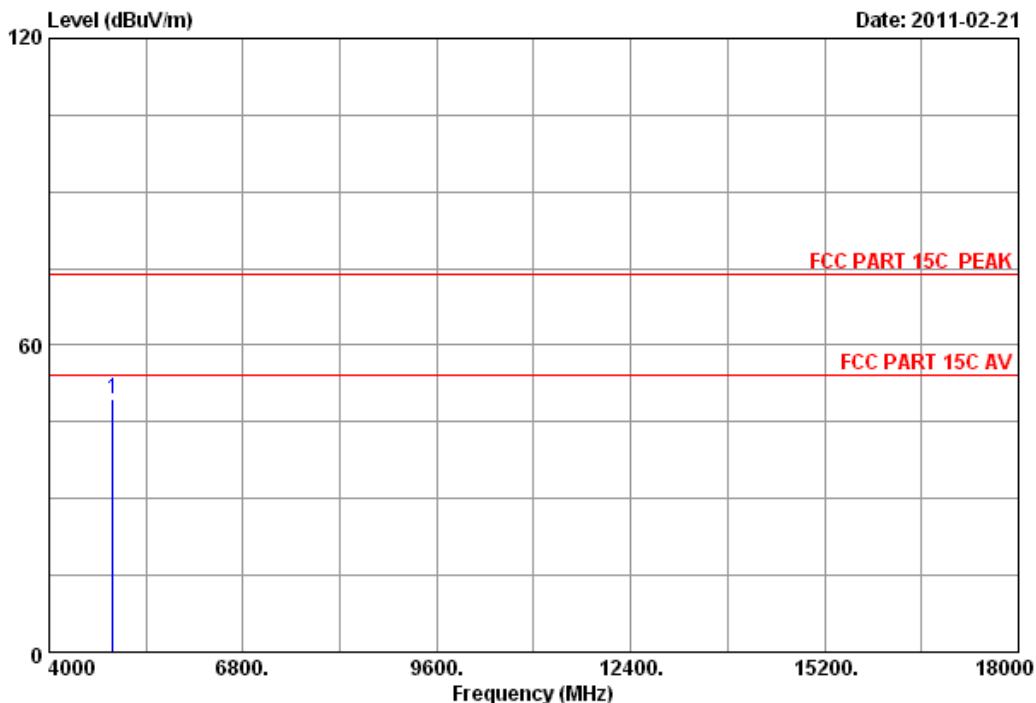
Site no. : RF Chamber Data no. : 9
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH11 2462MHz
M/N : PW-DN421

FCC ID: WWMDN421V1

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Data: 10 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (48)



Site no. : RF Chamber Data no. : 10
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH11 2462MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4924.000	35.09	12.58	35.34	37.01	49.34	74.00	24.66 Peak

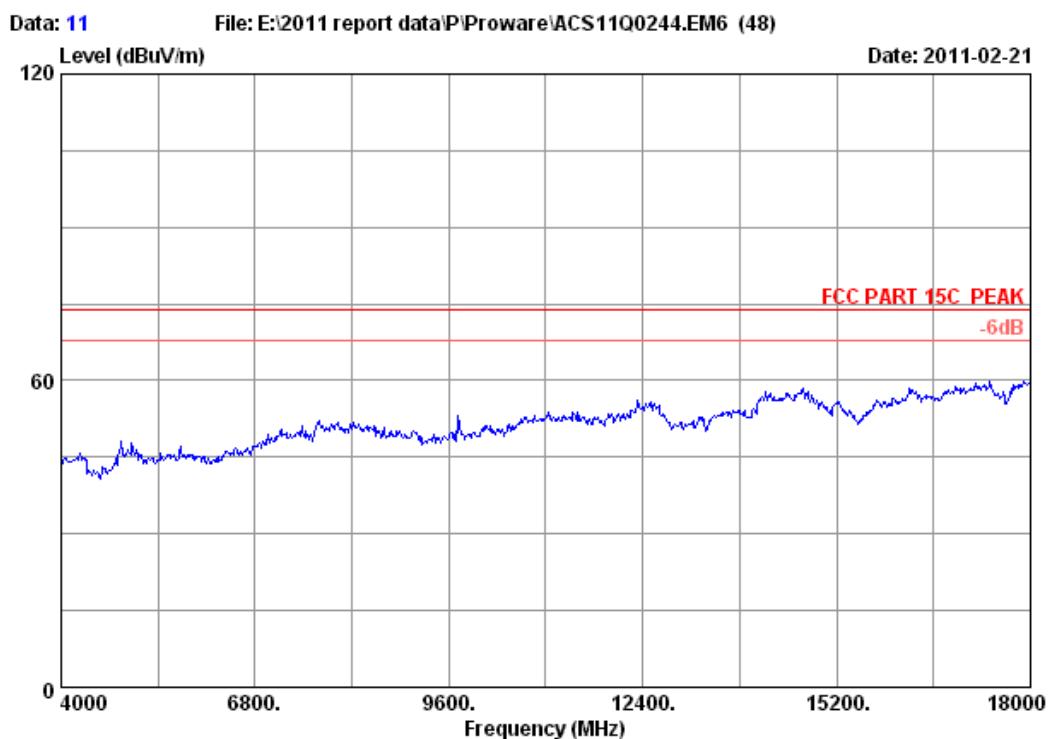
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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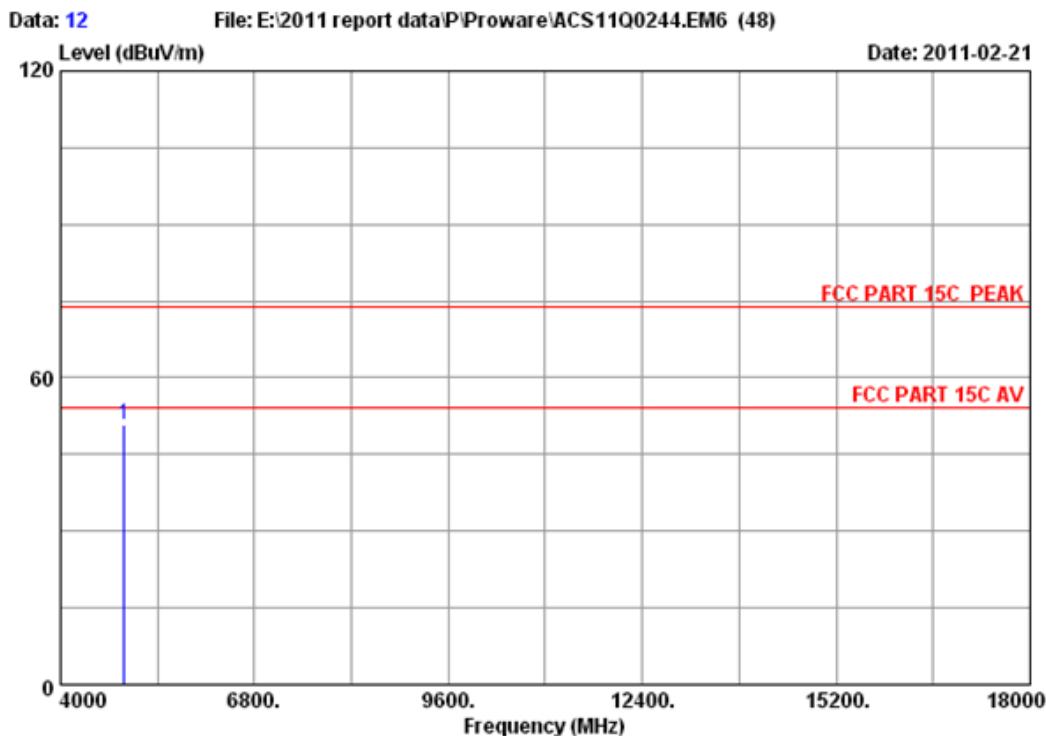


Site no. : RF Chamber Data no. : 11
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH11 2462MHz
M/N : PW-DN421

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 12
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH11 2462MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	4924.000	35.09	12.58	35.34	38.32	50.65	74.00 23.35 Peak

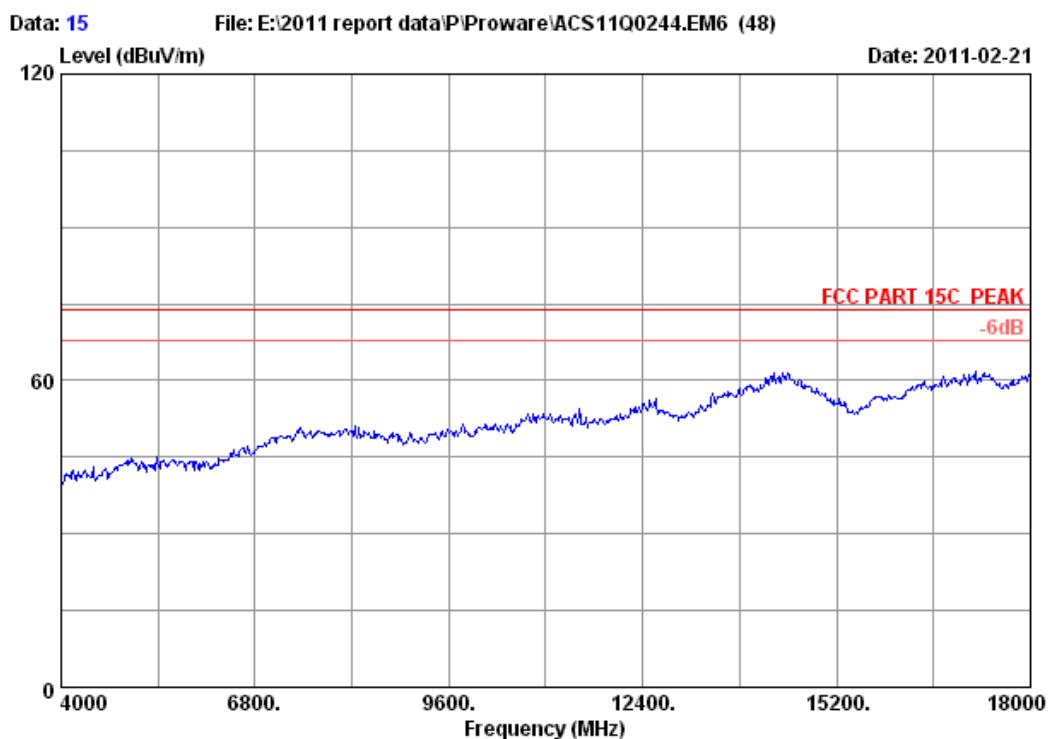
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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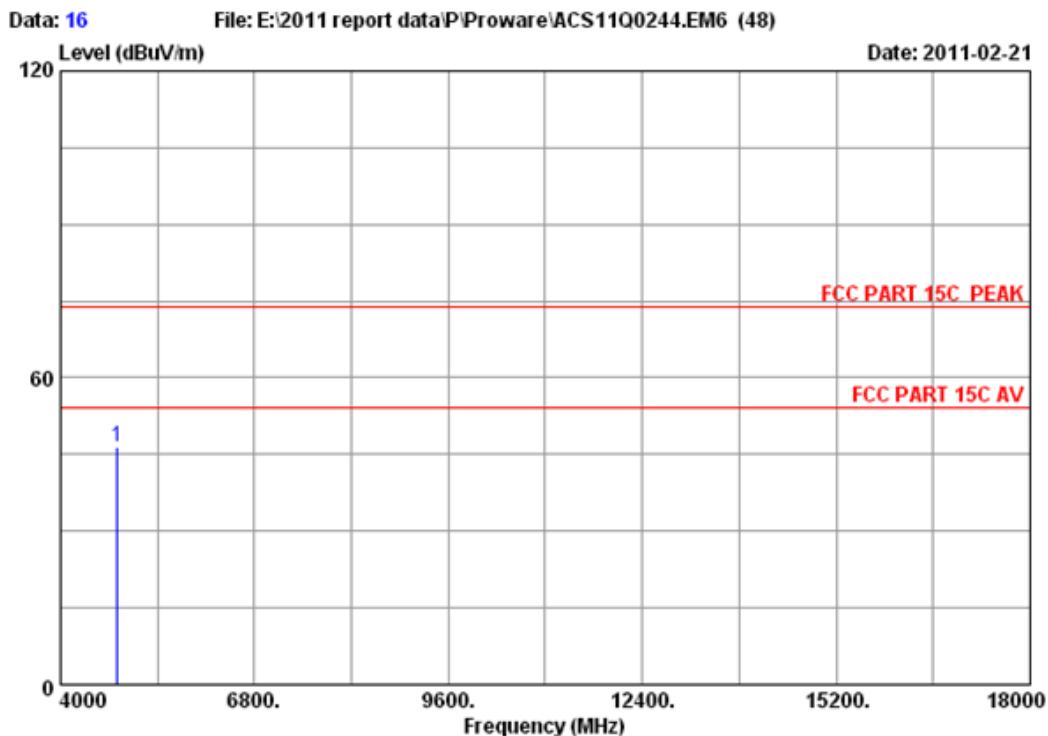


Site no. : RF Chamber Data no. : 15
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH1 2412MHz
M/N : PW-DN421

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 16
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH1 2412MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission					
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)		
1	4824.000	34.47	12.58	35.25	34.52	46.32	74.00	27.68	Peak

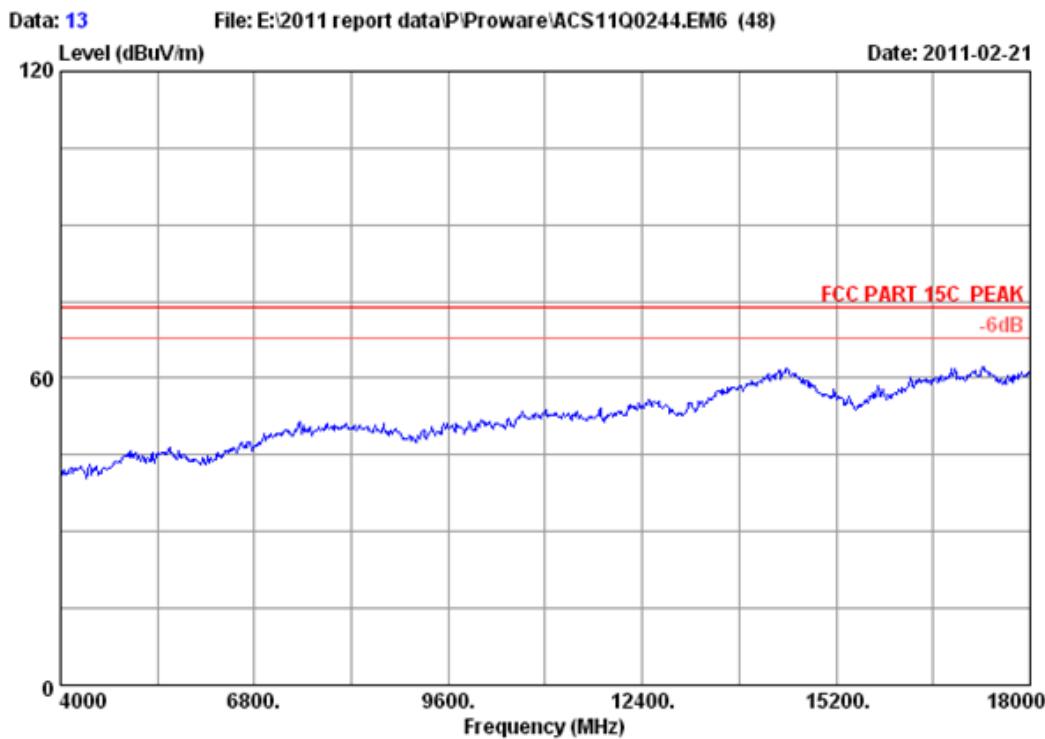
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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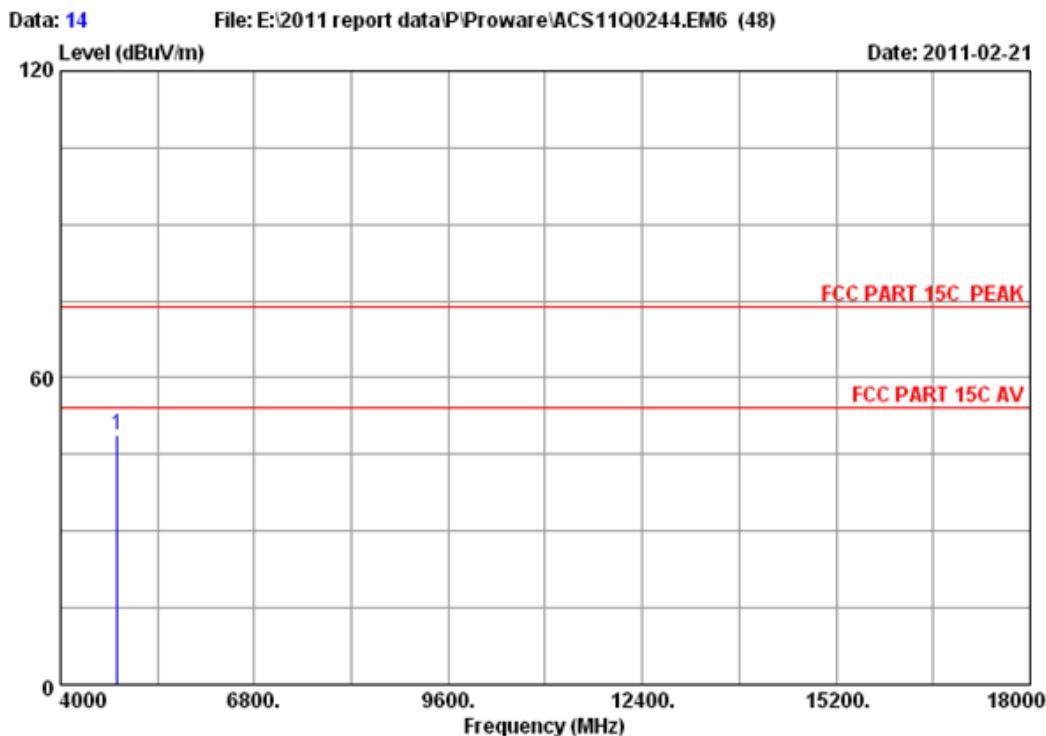


Site no.	:	RF Chamber	Data no. :	13
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	VERTICAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11g CH1 2412MHz		
M/N	:	PW-DN421		

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 14
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH1 2412MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
	Freq. Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	34.47	12.58	35.25	37.16	48.96	74.00	25.04 Peak

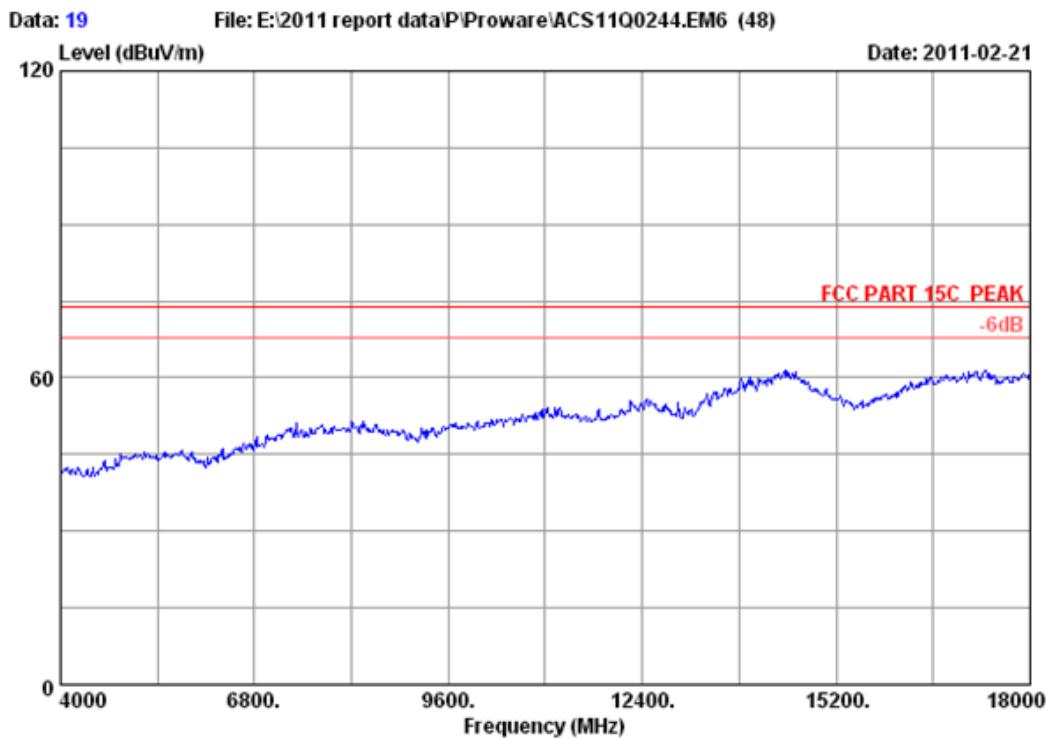
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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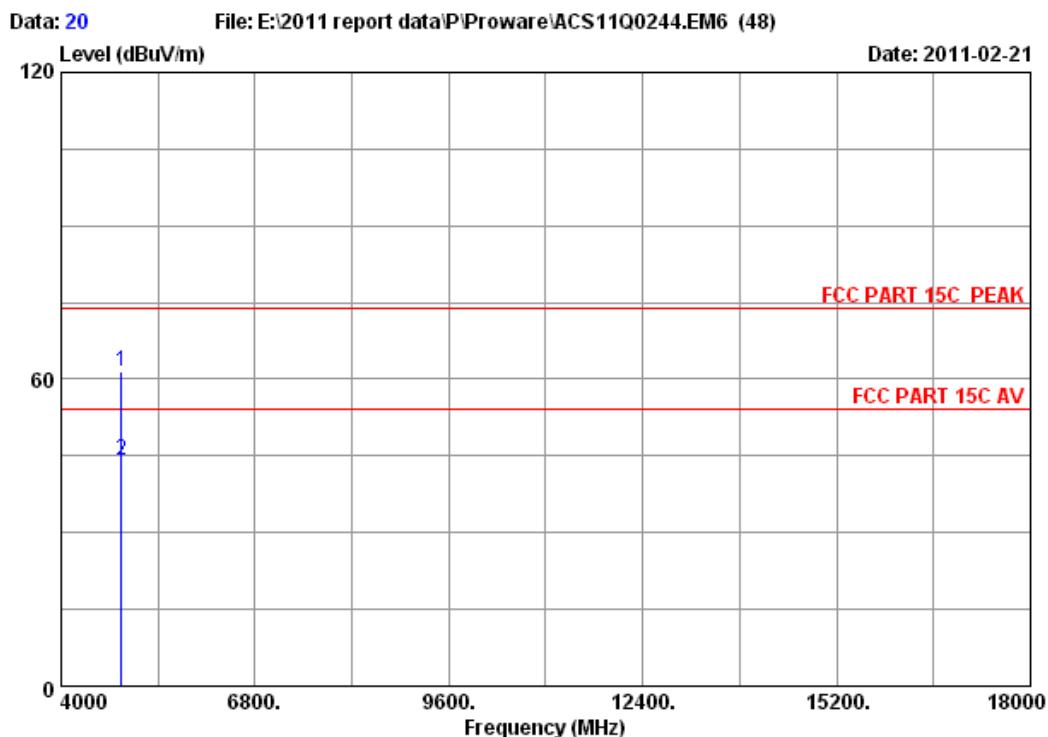


Site no. : RF Chamber Data no. : 19
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH6 2437MHz
M/N : PW-DN421

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 20
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH6 2437MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission					
	Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	34.78	12.23	35.36	49.93	61.58	74.00	12.42	Peak
2	4874.000	34.78	12.23	35.36	32.55	44.20	54.00	9.80	Average

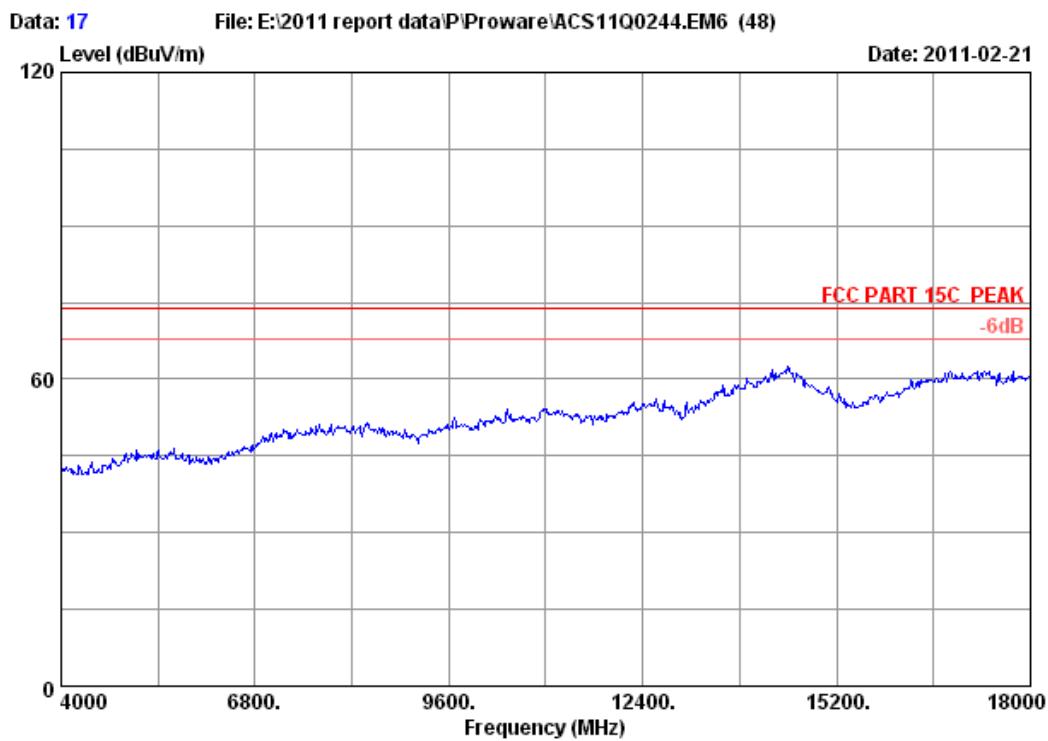
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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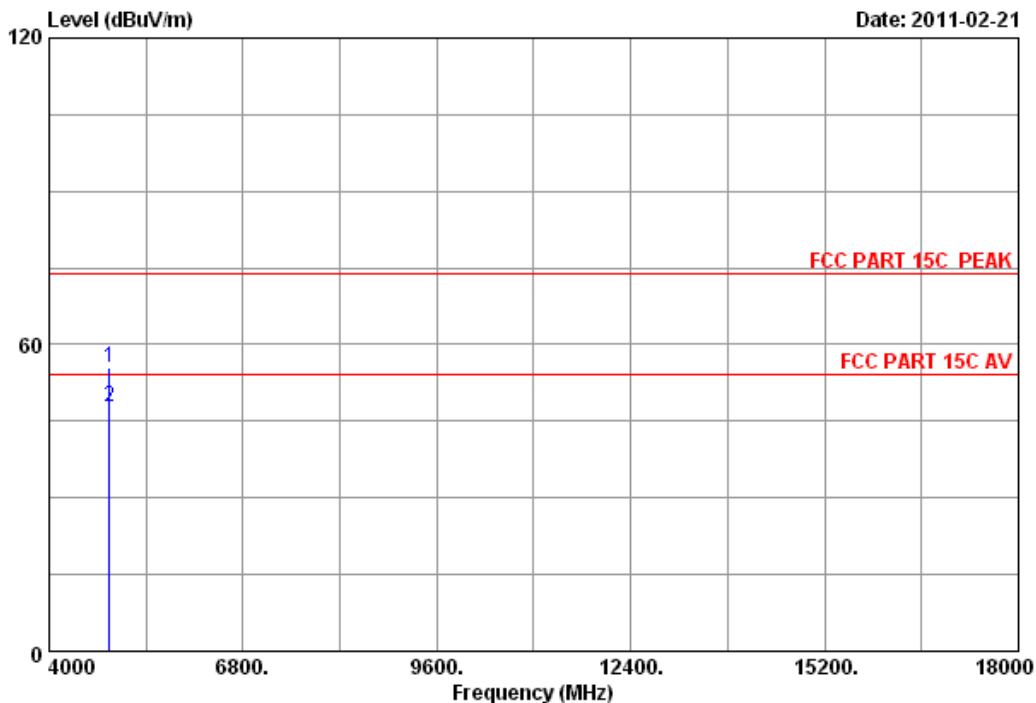


FCC ID: WWMDN421V1

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Data: 18 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (48)



Site no.	:	RF Chamber	Data no. :	18
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	VERTICAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11g CH6 2437MHz		
M/N	:	PW-DN421		

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 4874.000	34.78	9.83	35.36	46.38	55.63	74.00	18.37	Peak
2 4874.000	34.78	9.83	35.36	38.68	47.93	54.00	6.07	Average

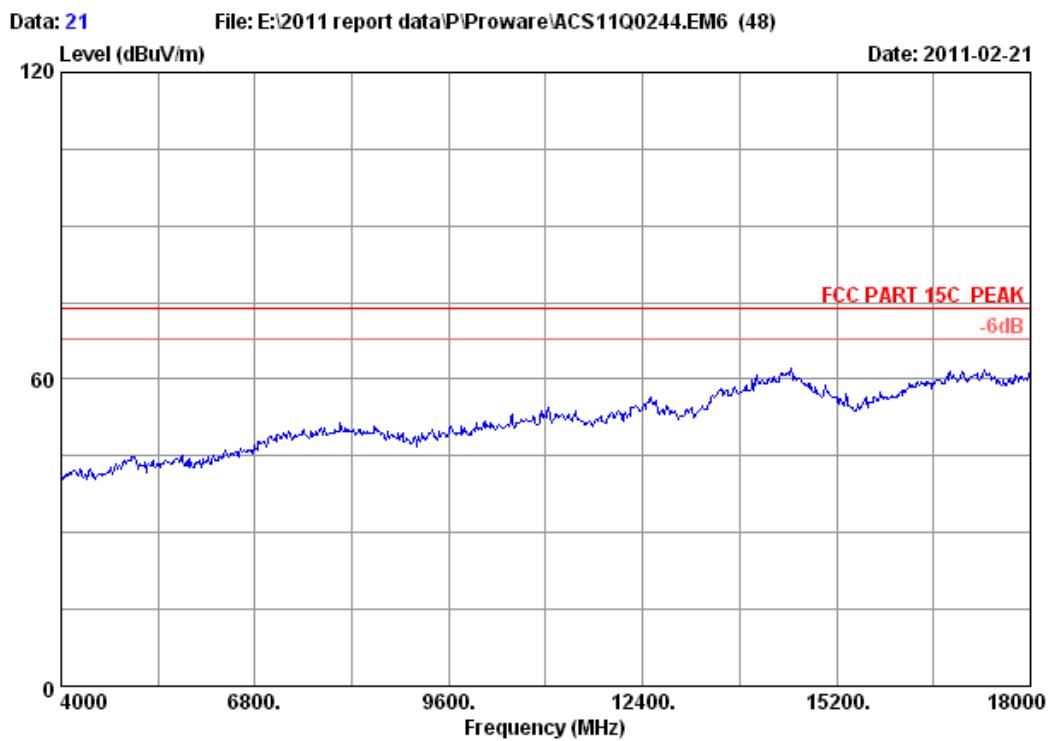
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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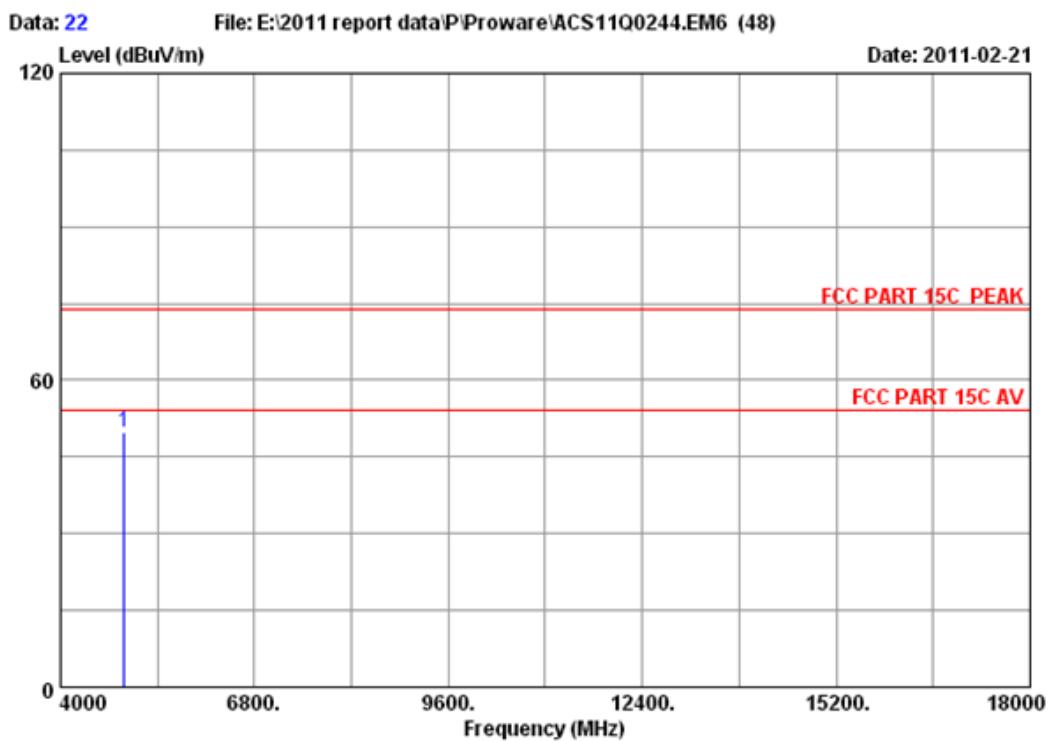


Site no. : RF Chamber Data no. : 21
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH11 2462MHz
M/N : PW-DN421

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Site no.	:	RF Chamber	Data no. :	22
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	HORIZONTAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11g CH11 2462MHz		
M/N	:	PW-DN421		

Freq. (MHz)	Ant. (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission			
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1 4924.000	35.09	12.58	35.34	37.60	49.93	74.00	24.07 Peak

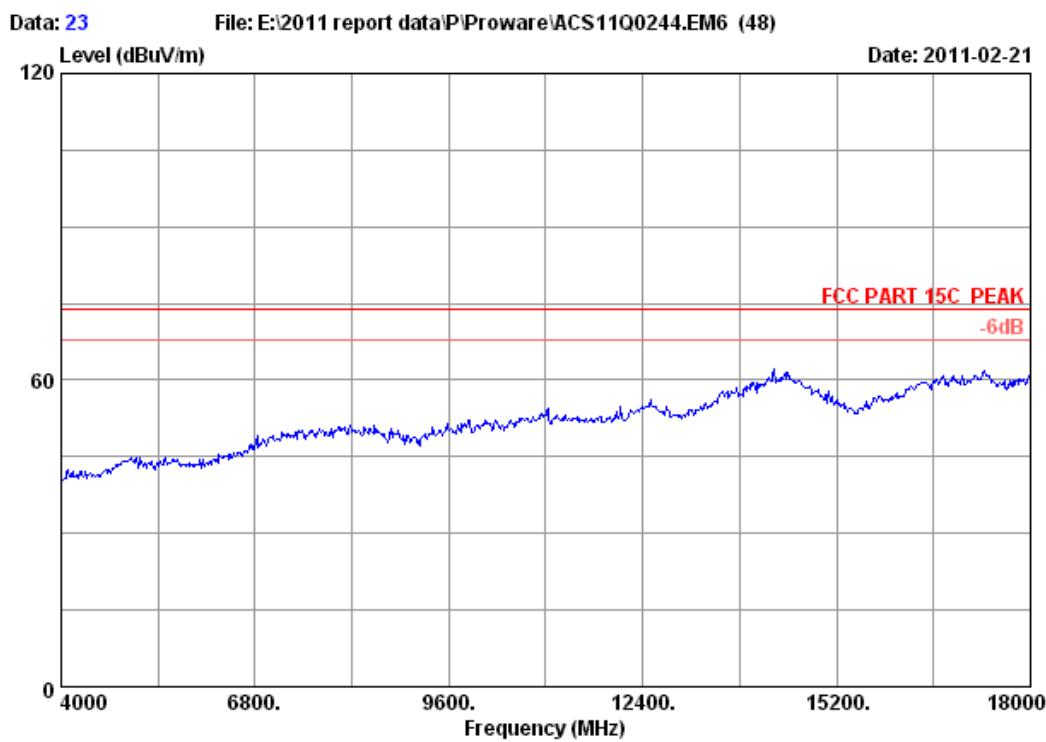
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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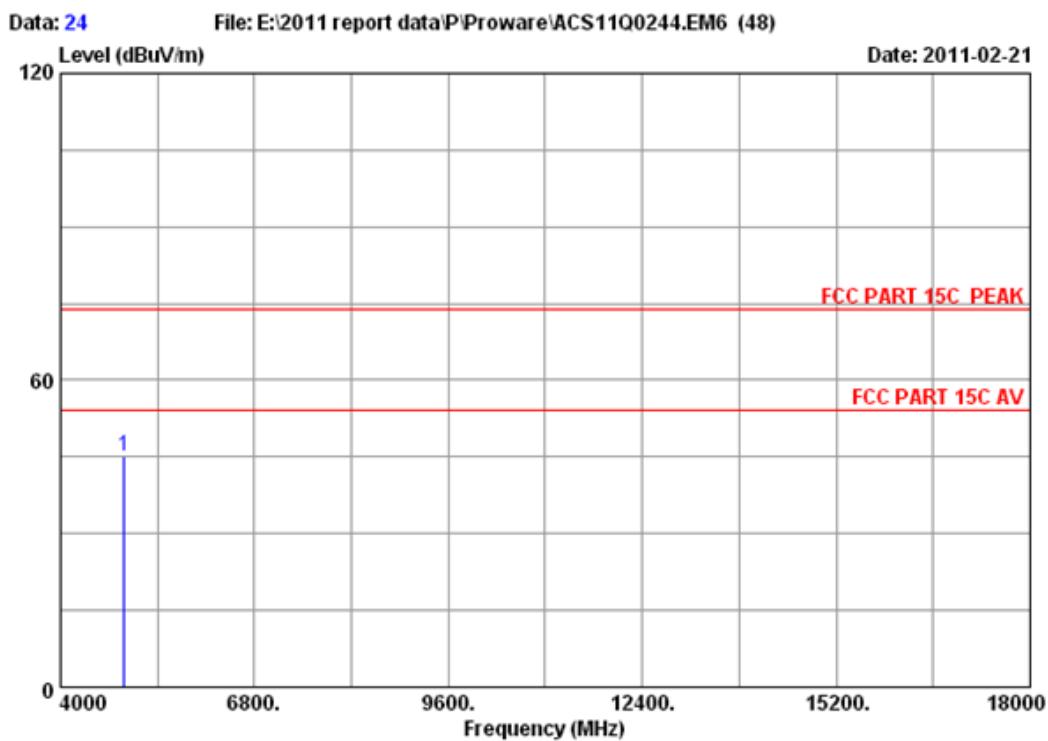


Site no. : RF Chamber Data no. : 23
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH11 2462MHz
M/N : PW-DN421

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Site no.	:	RF Chamber	Data no. :	24
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	VERTICAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11g CH11 2462MHz		
M/N	:	PW-DN421		

Freq. (MHz)	Ant. (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission			
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1 4924.000	35.09	12.58	35.34	32.79	45.12	74.00	28.88 Peak

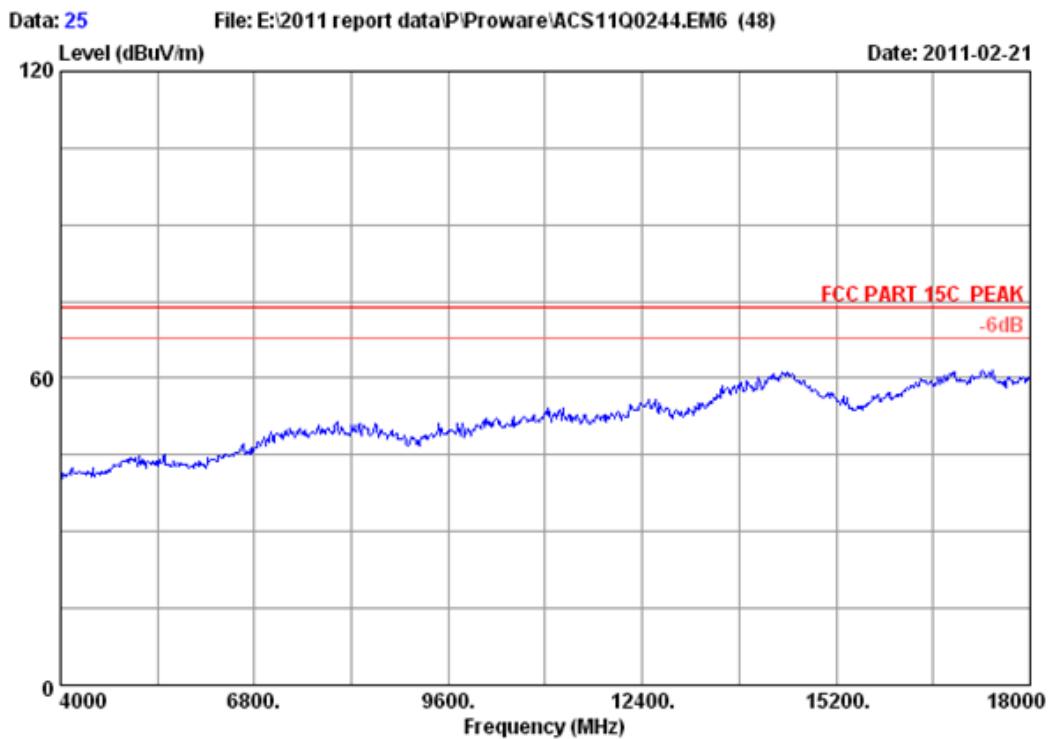
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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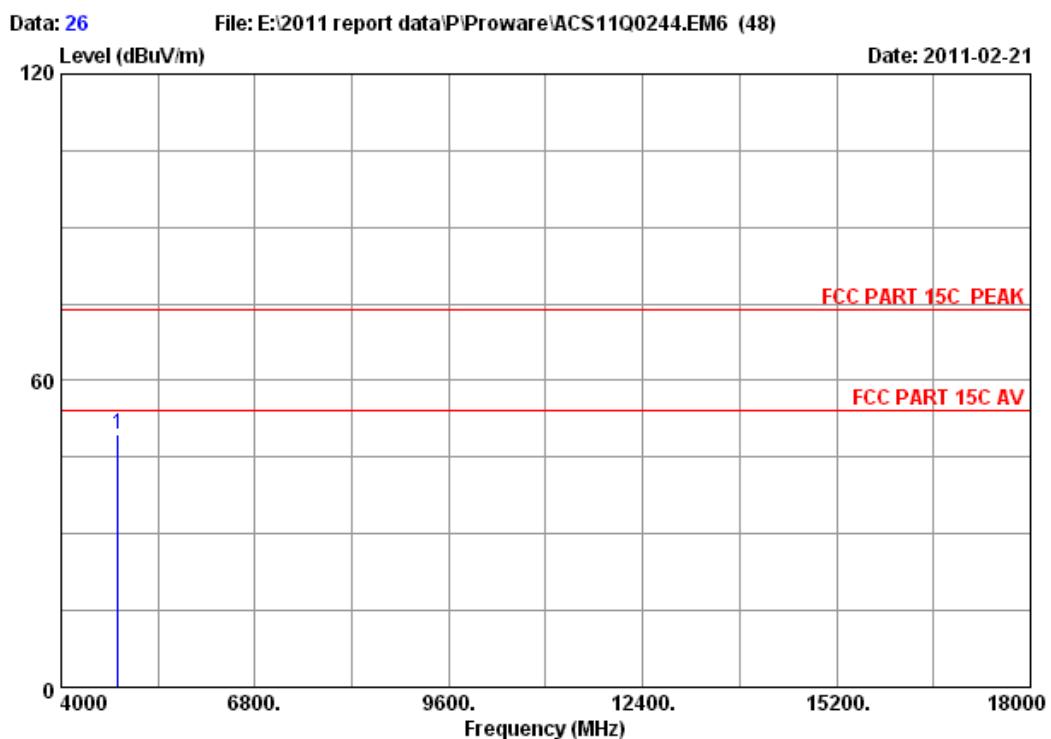


Site no.	:	RF Chamber	Data no. :	25
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	HORIZONTAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802. HT20 CH1 2412MHz		
M/N	:	PW-DN421		

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Site no. : RF Chamber Data no. : 26
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Alan Geng
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802. HT20 CH1 2412MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
	Freq. Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4824.000	34.47	12.58	35.25	37.54	49.34	74.00	24.66 Peak

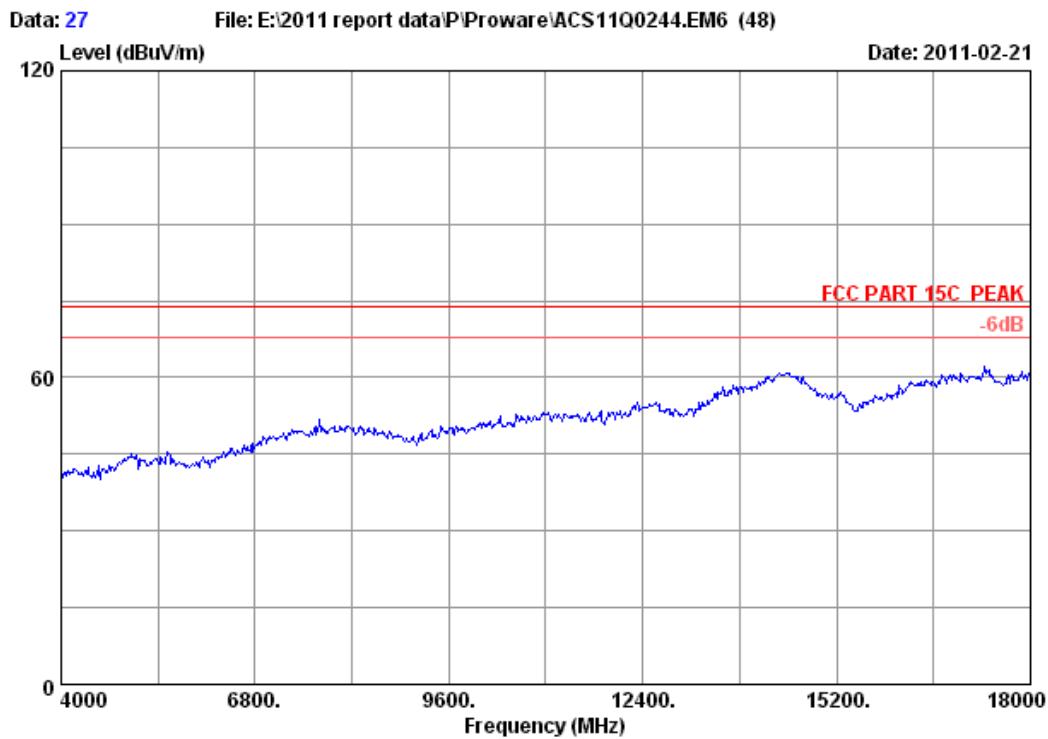
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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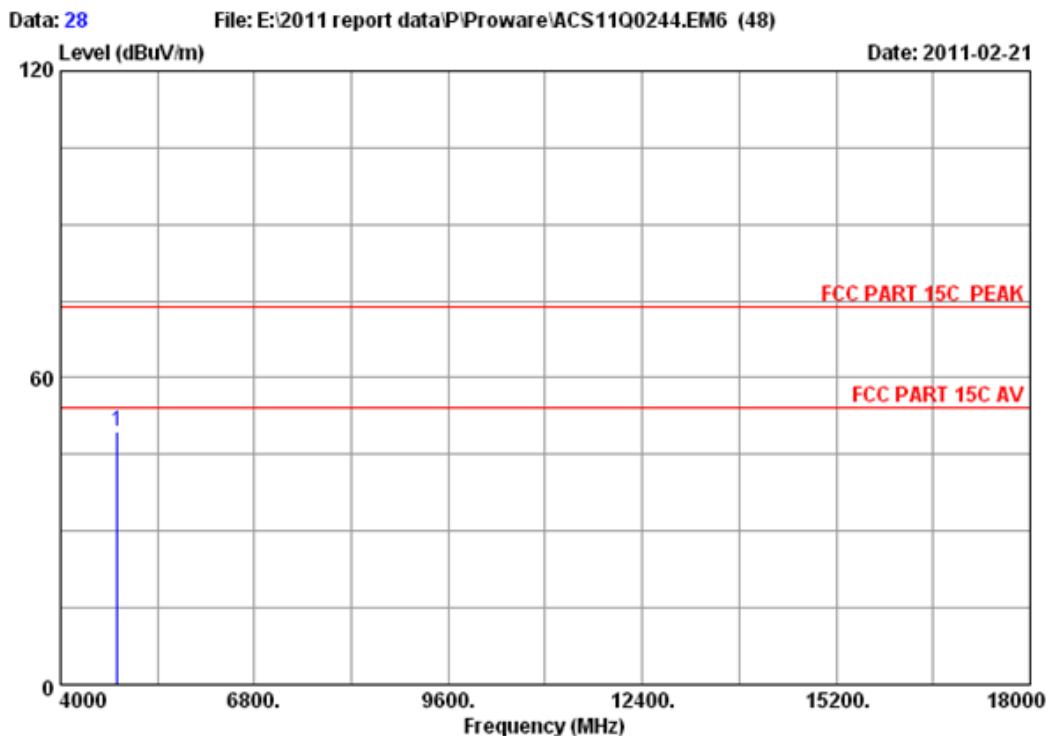


Site no. : RF Chamber Data no. : 27
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802. HT20 CH1 2412MHz
M/N : PW-DN421

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Site no. : RF Chamber Data no. : 28
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802. HT20 CH1 2412MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission					
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark	
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)		
1	4824.000	34.47	12.58	35.25	37.62	49.42	74.00	24.58	Peak

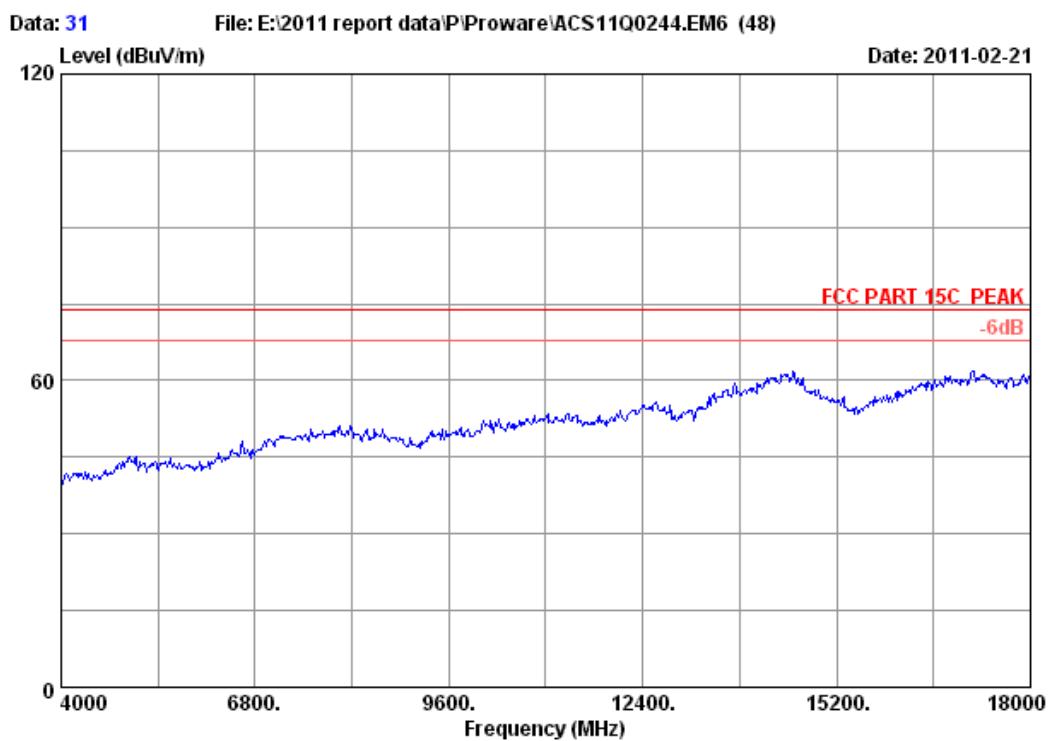
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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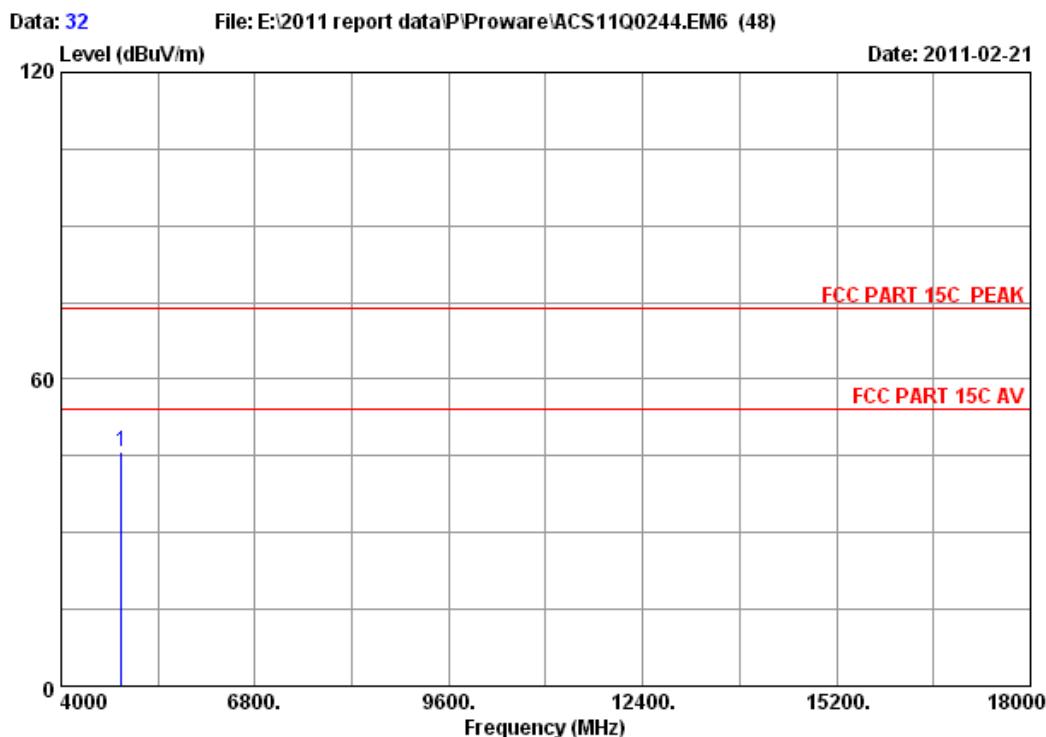


Site no. : RF Chamber Data no. : 31
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT20 CH6 2437MHz
M/N : PW-DN421

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Site no. : RF Chamber Data no. : 32
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Alan Geng
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11nHT20 CH6 2437MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
	Freq. Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	34.78	12.23	35.36	34.18	45.83	74.00	28.17 Peak

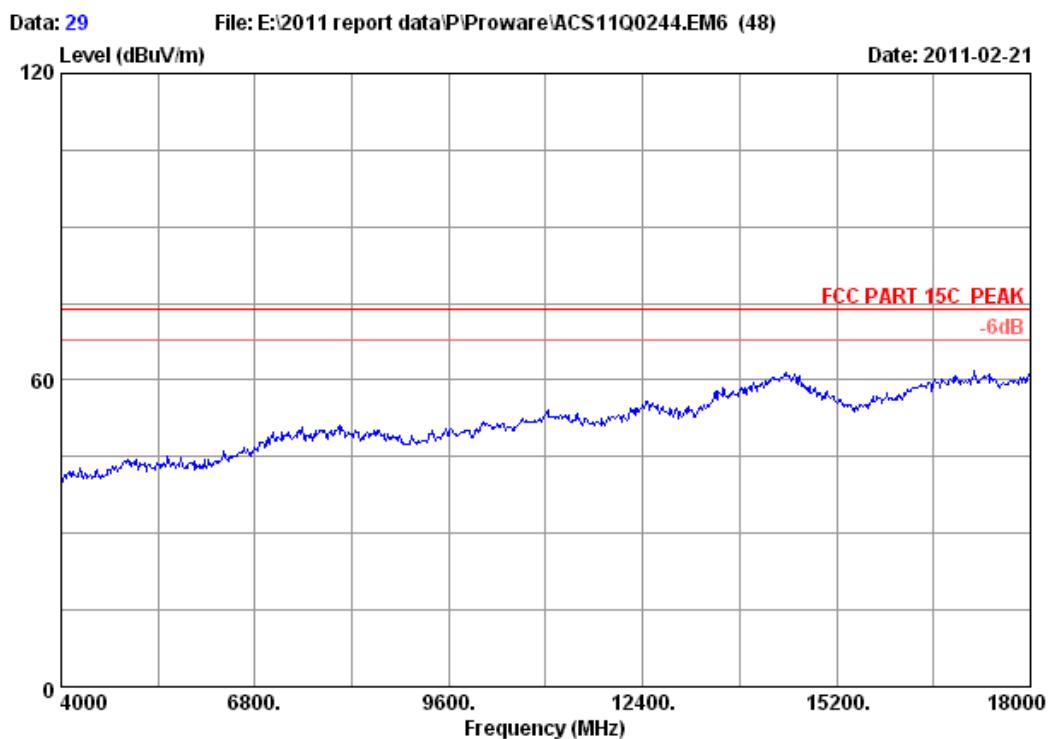
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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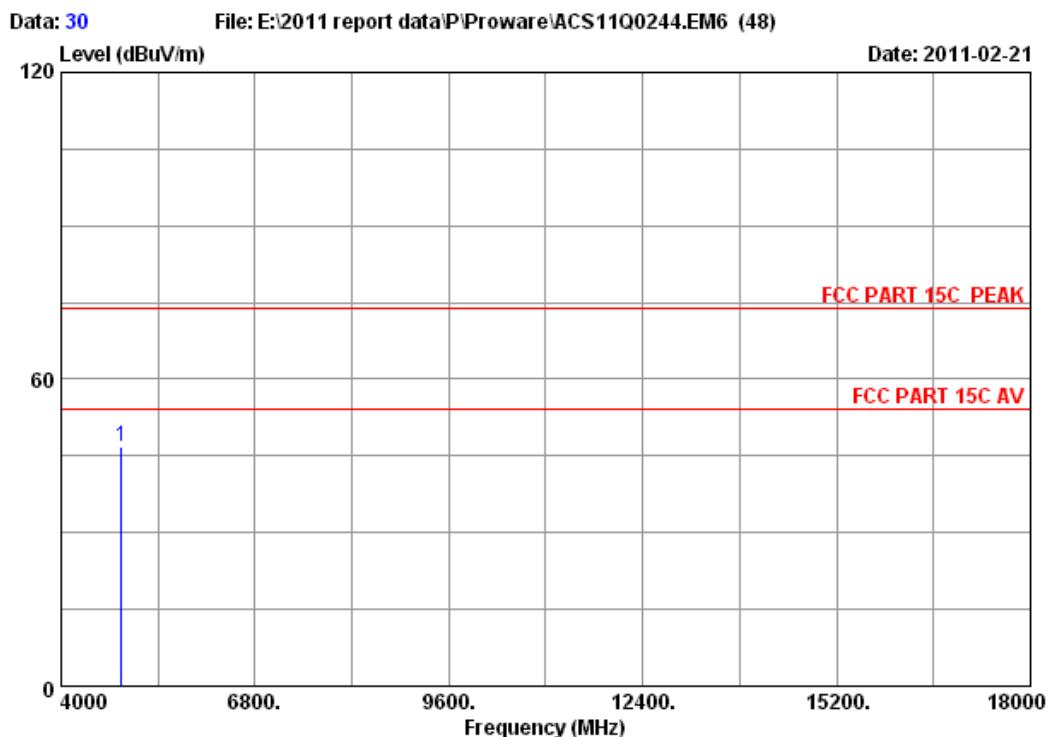


Site no. : RF Chamber Data no. : 29
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT20 CH6 2437MHz
M/N : PW-DN421

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Site no. : RF Chamber Data no. : 30
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Alan Geng
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11nHT20 CH6 2437MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4874.000	34.78	12.23	35.36	34.99	46.64	74.00	27.36 Peak

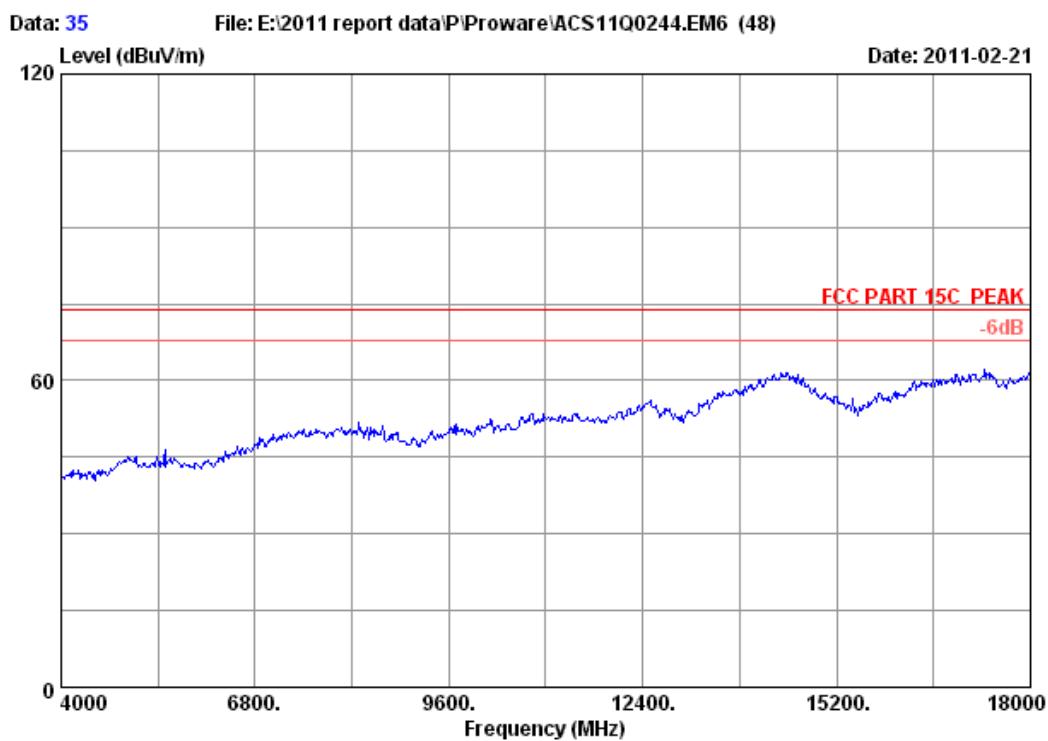
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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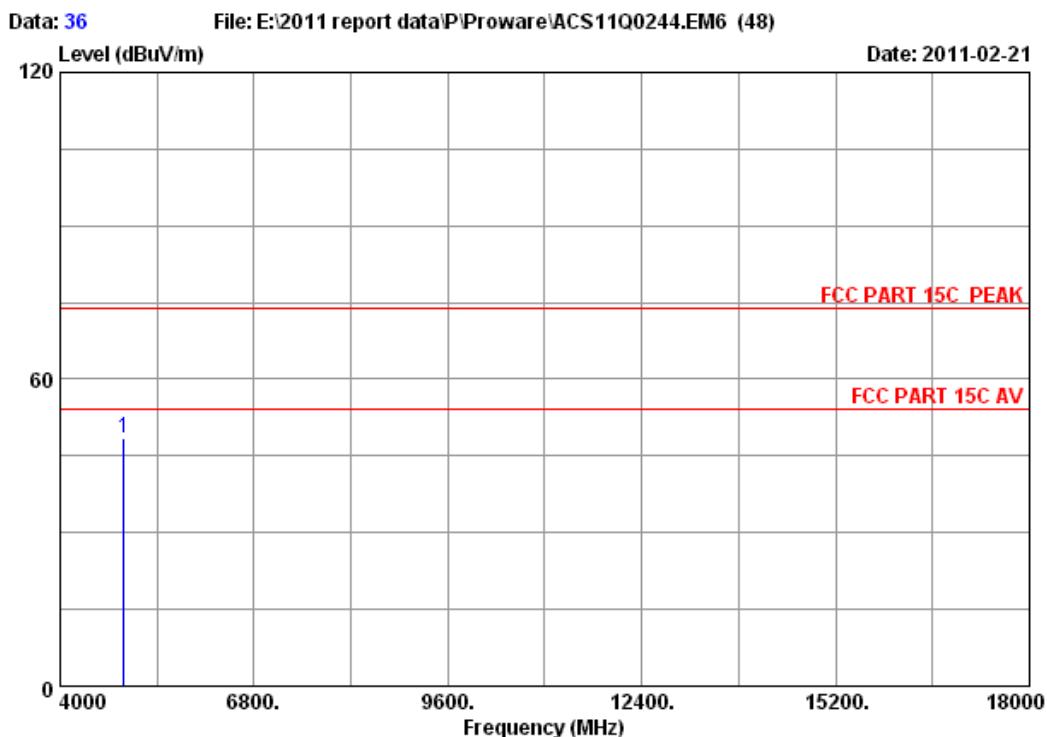


Site no. : RF Chamber Data no. : 35
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT20 CH11 2462MHz
M/N : PW-DN421

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Site no. : RF Chamber Data no. : 36
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT20 CH11 2462MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
	Freq. Factor	loss	Factor	Reading	Level	Limits	Margin
	(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	4924.000	35.09	12.58	35.34	36.17	48.50	74.00 25.50 Peak

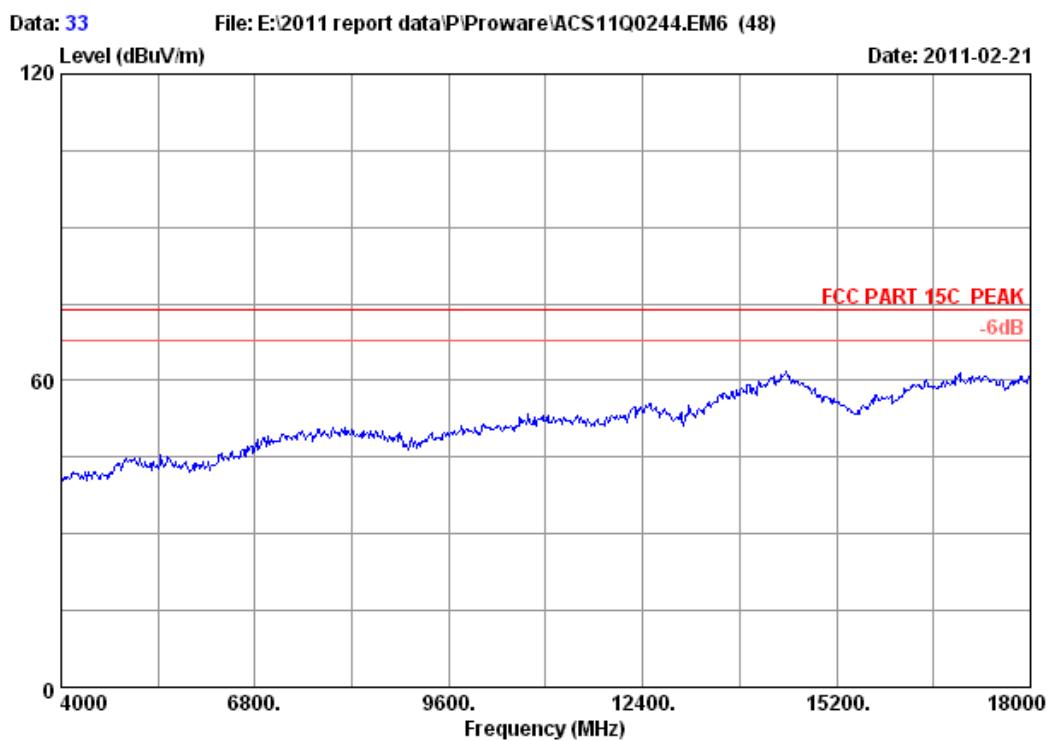
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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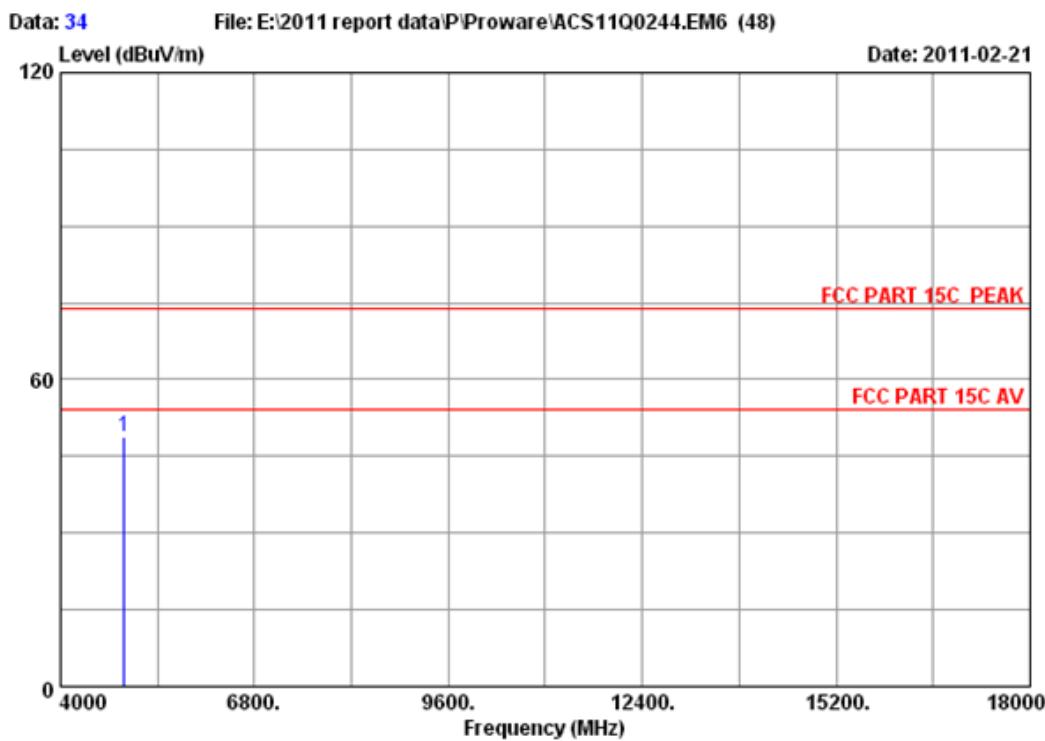


Site no. : RF Chamber Data no. : 33
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT20 CH11 2462MHz
M/N : PW-DN421

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Site no. : RF Chamber Data no. : 34
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT20 CH11 2462MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	4924.000	35.09	12.58	35.34	36.41	48.74	74.00 25.26 Peak

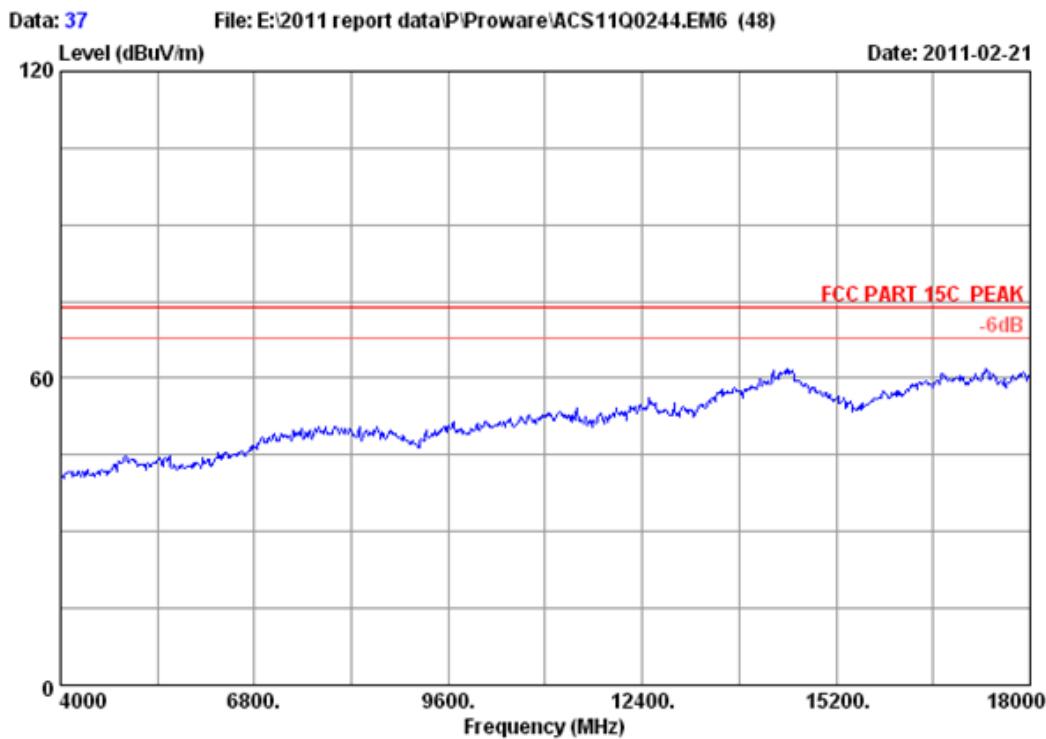
Remarks:

1. Emission Level = Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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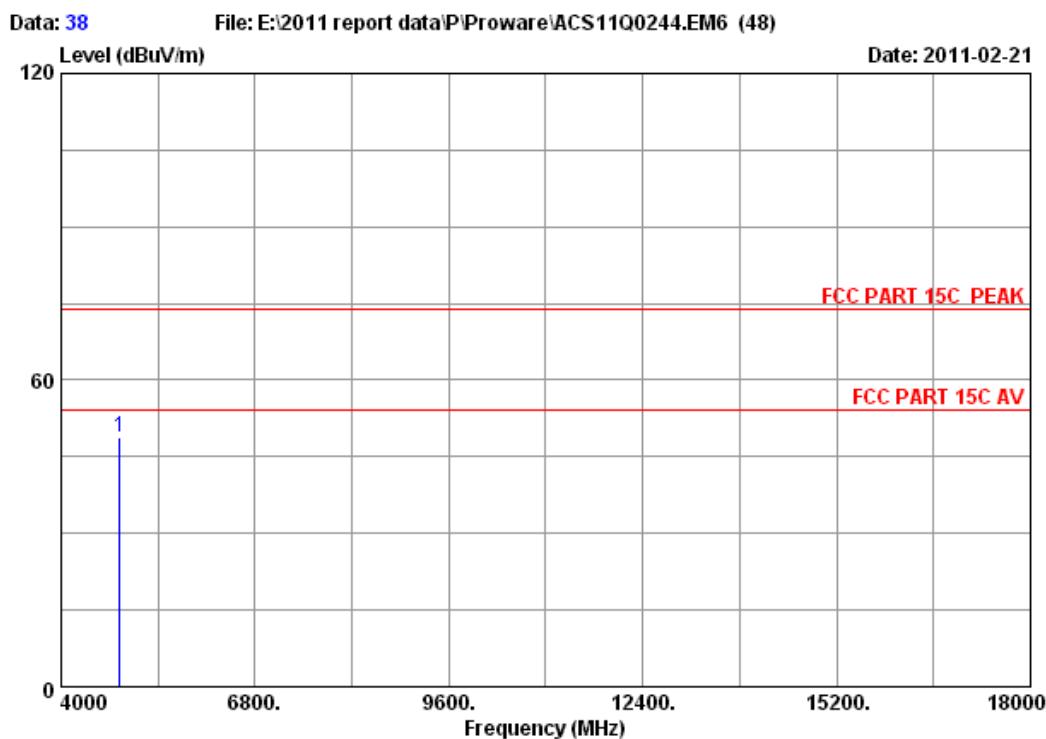


Site no.	:	RF Chamber	Data no. :	37
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	HORIZONTAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11nHT40 CH1 2422MHz		
M/N	:	PW-DN421		

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Site no. : RF Chamber Data no. : 38
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Alan Geng
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11nHT40 CH1 2422MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4844.000	34.57	12.45	35.25	37.10	48.87	74.00	25.13 Peak

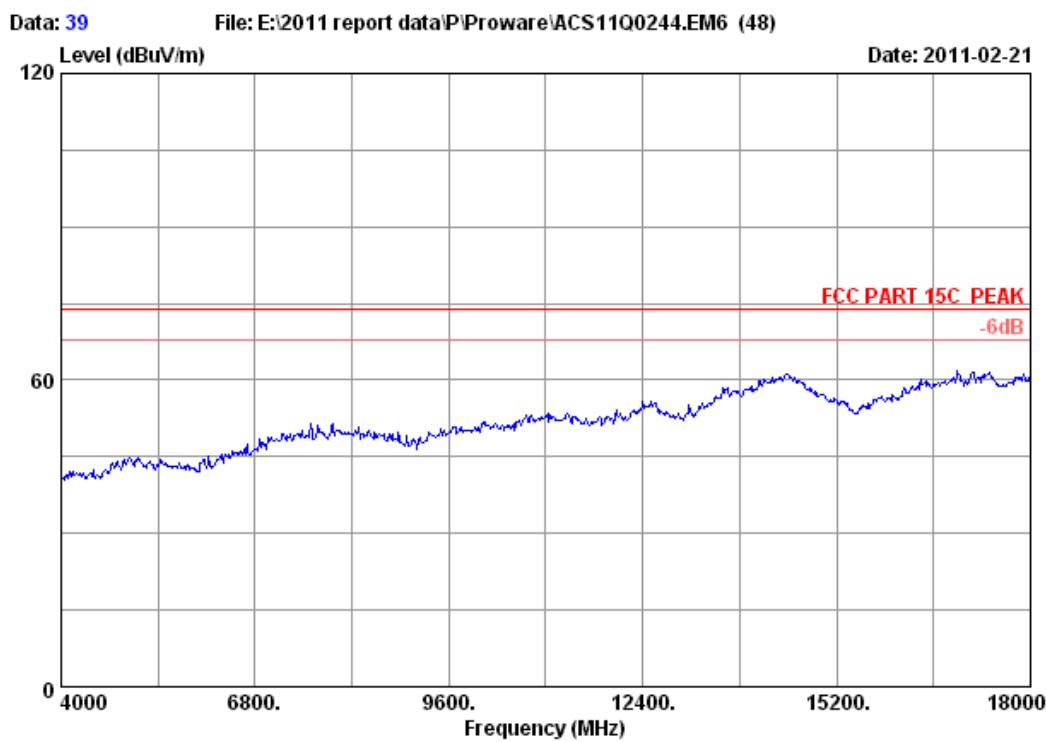
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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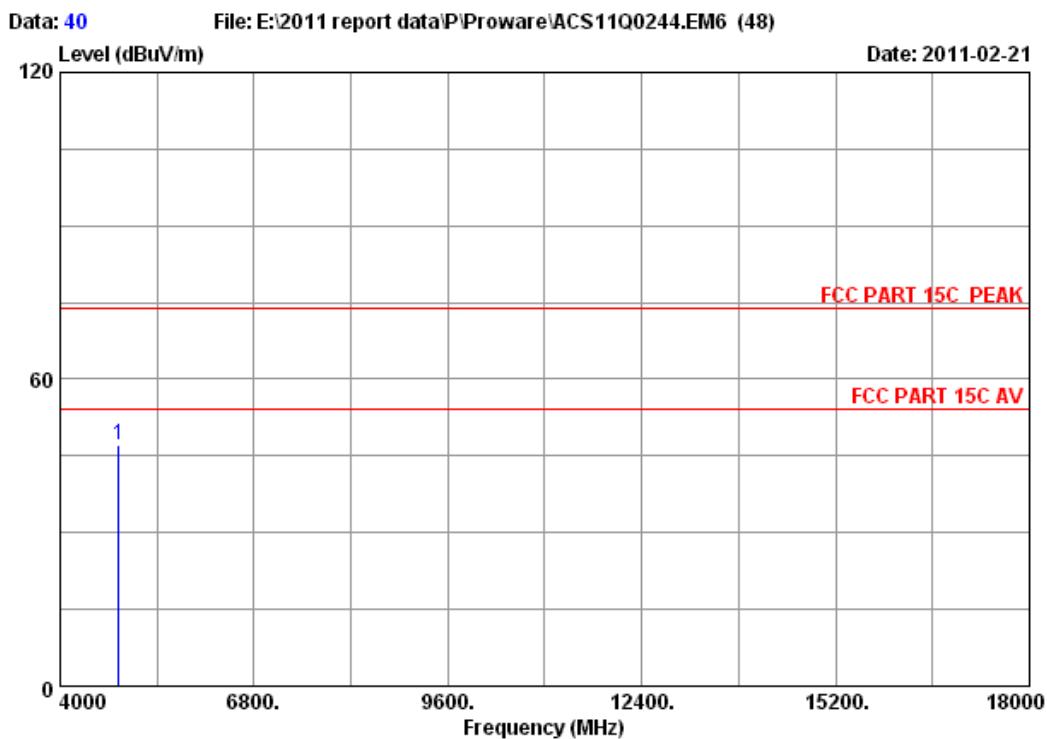


Site no.	:	RF Chamber	Data no. :	39
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	VERTICAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11nHT40 CH1 2422MHz		
M/N	:	PW-DN421		

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Site no. : RF Chamber Data no. : 40
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Alan Geng
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11nHT40 CH1 2422MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
	Freq. Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4844.000	34.57	12.45	35.25	35.47	47.24	74.00	26.76 Peak

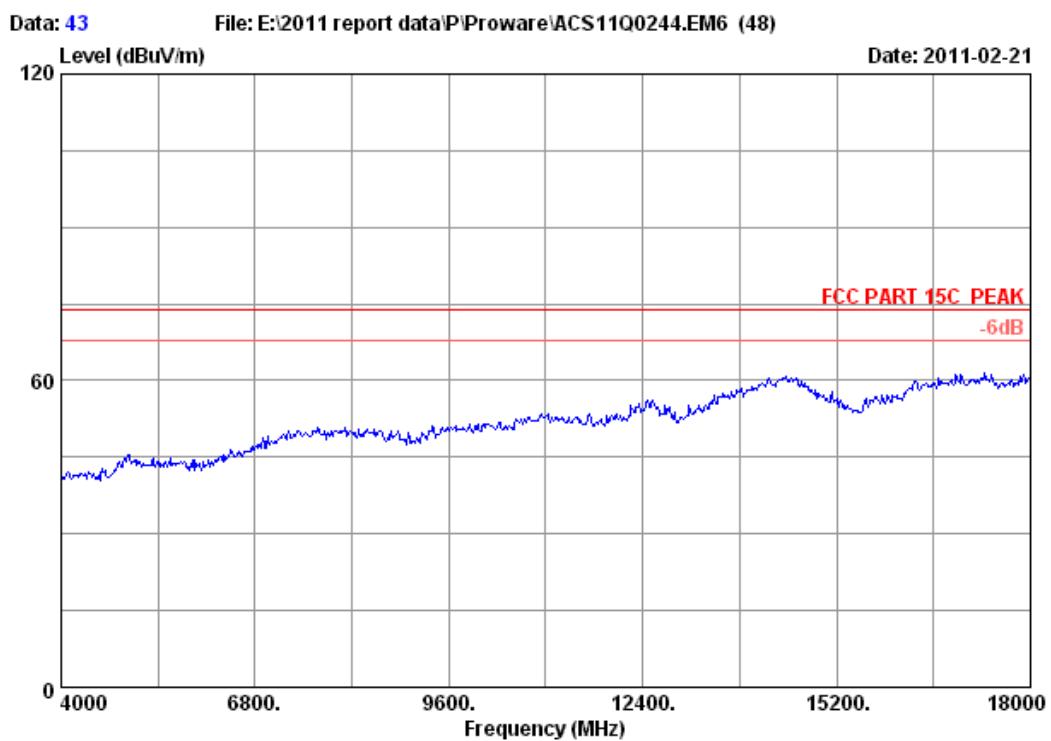
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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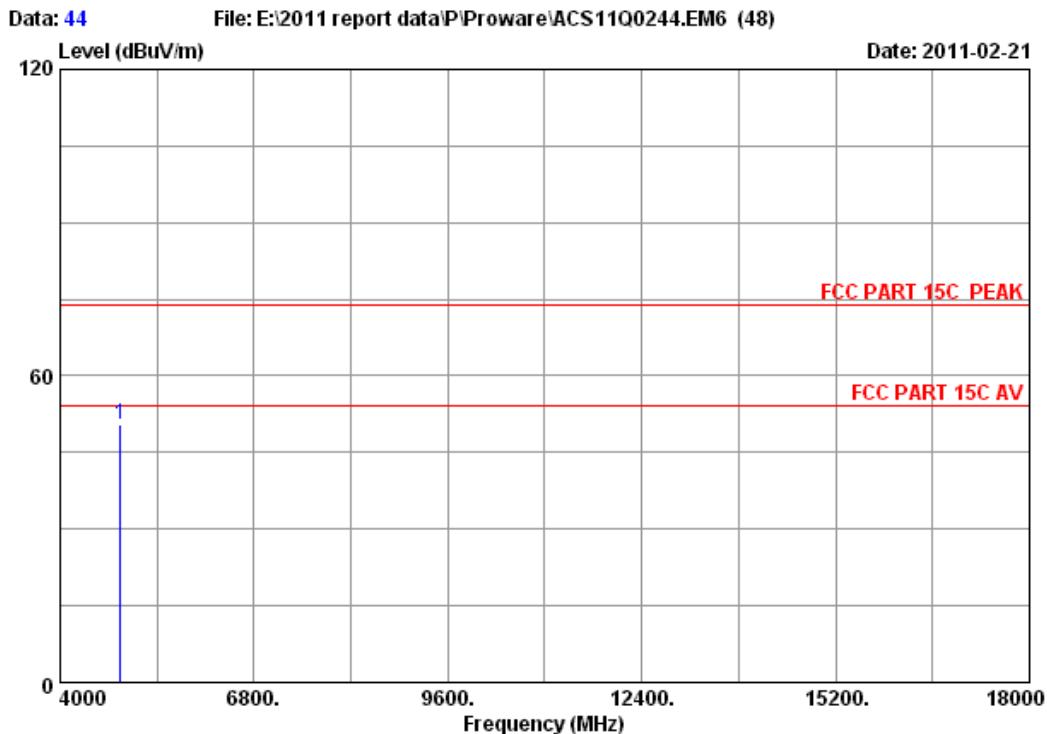


Site no. : RF Chamber Data no. : 43
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT40 CH4 2437MHz
M/N : PW-DN421

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Site no. : RF Chamber Data no. : 44
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT40 CH4 2437MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	4874.000	34.78	12.23	35.36	38.66	50.31	74.00 23.69 Peak

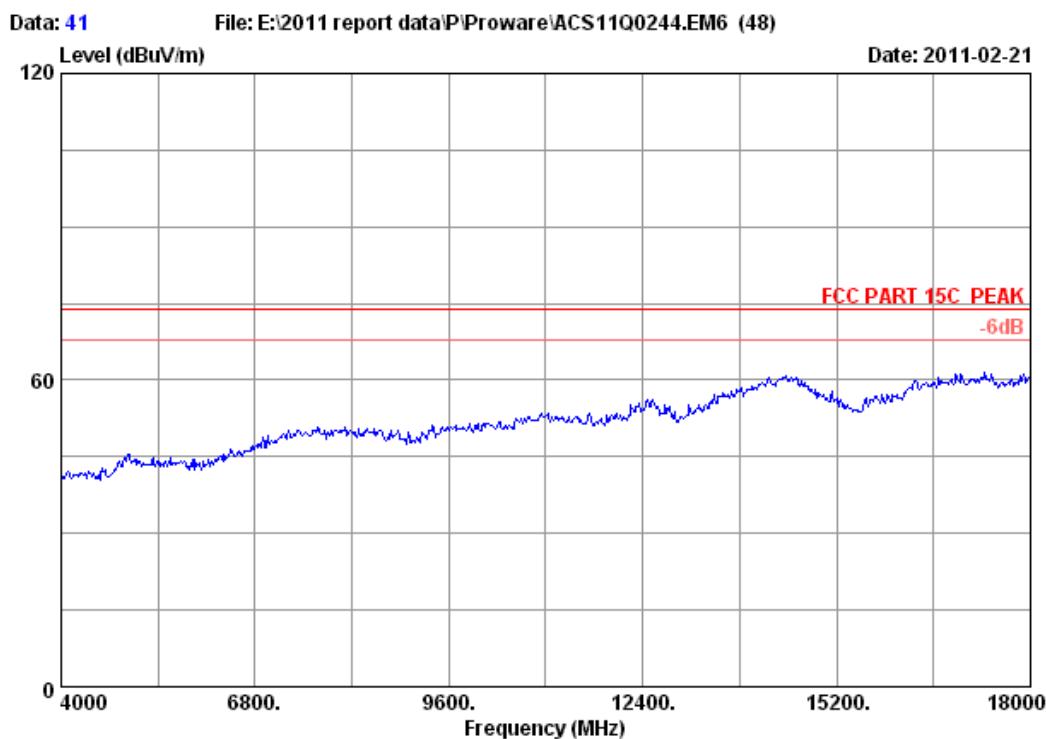
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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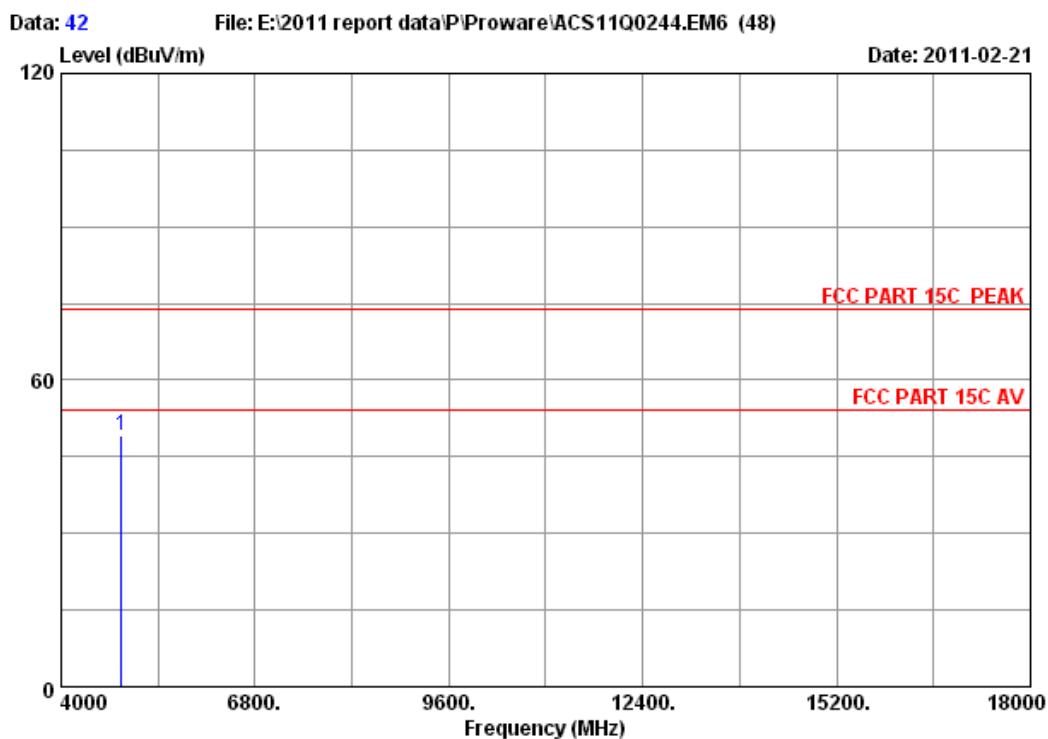
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Site no. : RF Chamber Data no. : 42
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Alan Geng
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11nHT40 CH4 2437MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	4874.000	34.78	12.23	35.36	37.48	49.13	74.00 24.87 Peak

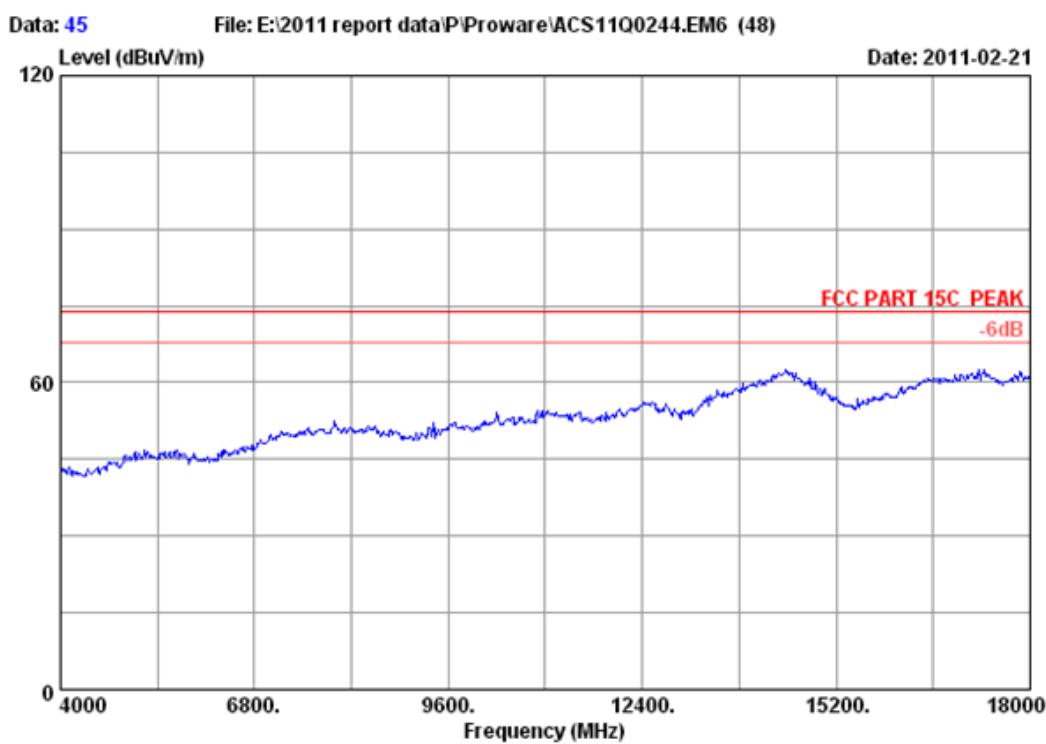
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

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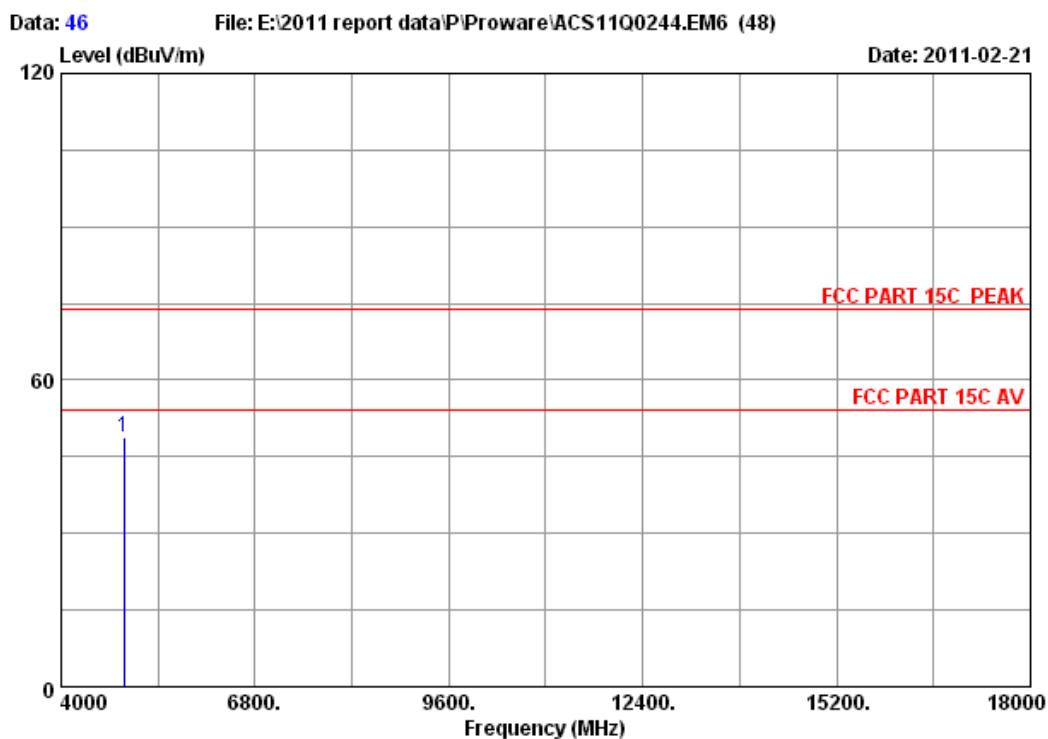


Site no. : RF Chamber Data no. : 45
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT40 CH7 2452MHz
M/N : PW-DN421

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Site no. : RF Chamber Data no. : 46
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Alan Geng
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11nHT40 CH7 2452MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	4904.000	34.98	12.43	35.27	36.63	48.77	74.00 25.23 Peak

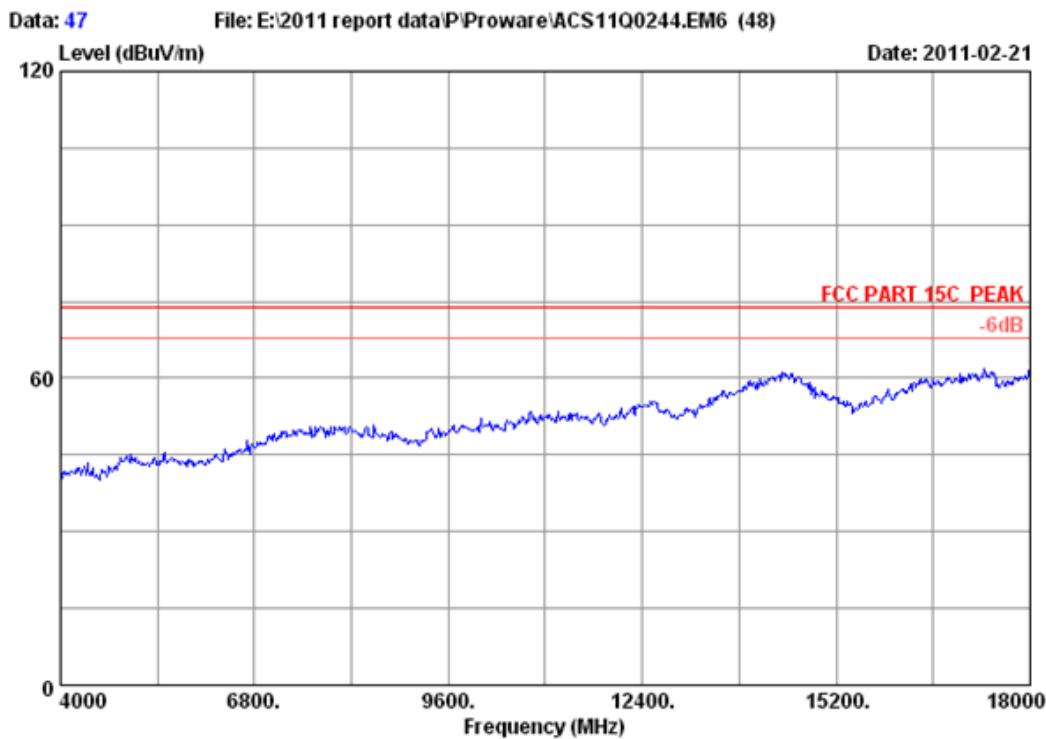
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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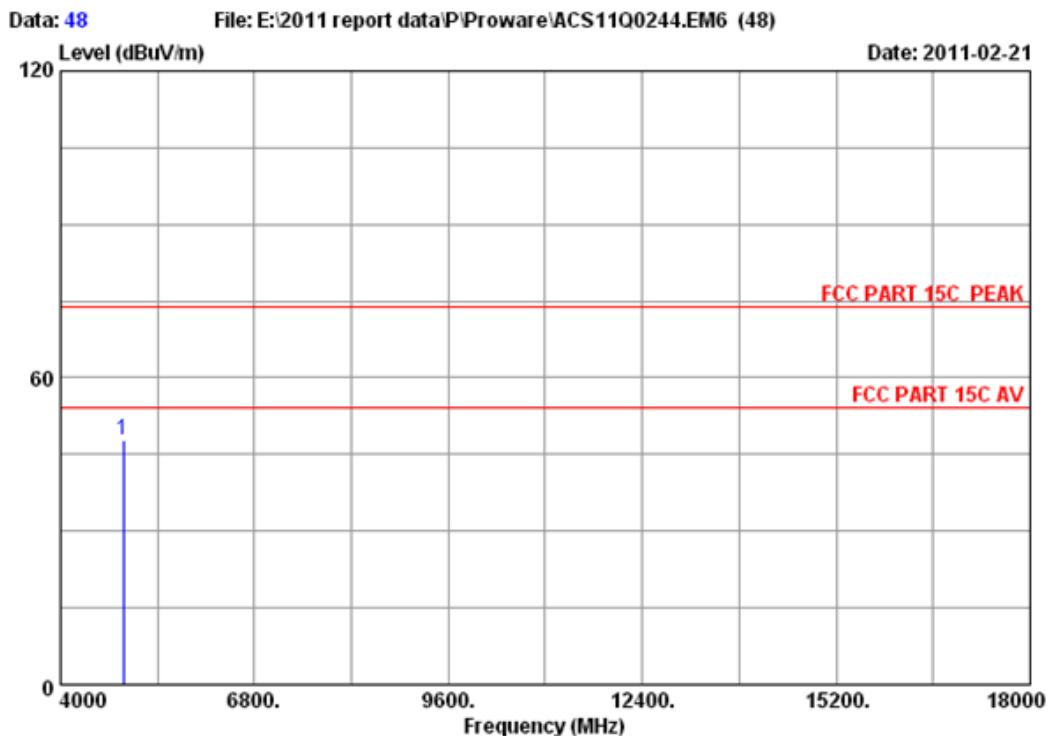


Site no.	:	RF Chamber	Data no. :	47
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	VERTICAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Alan Geng
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11nHT40 CH7 2452MHz		
M/N	:	PW-DN421		

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 48
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Alan Geng
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11nHT40 CH7 2452MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	4904.000	34.98	12.43	35.27	35.64	47.78	74.00	26.22 Peak

Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

5. CONDUCTED SPURIOUS EMISSIONS

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,10	1 Year
2.	Attenuator	Agilent	8491B	MY39262165	May.08,10	1 Year
3.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,10	1 Year

5.2. Limit

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

5.3. Test Procedure

The transmitter output was connected to a spectrum analyzer, The resolution bandwidth is set to 100 kHz, The video bandwidth is set to 300 kHz and measure all the emissions detected.

5.4. Test result

PASS (The testing data was attached in the next pages.)

FCC ID: WWMDN421V1

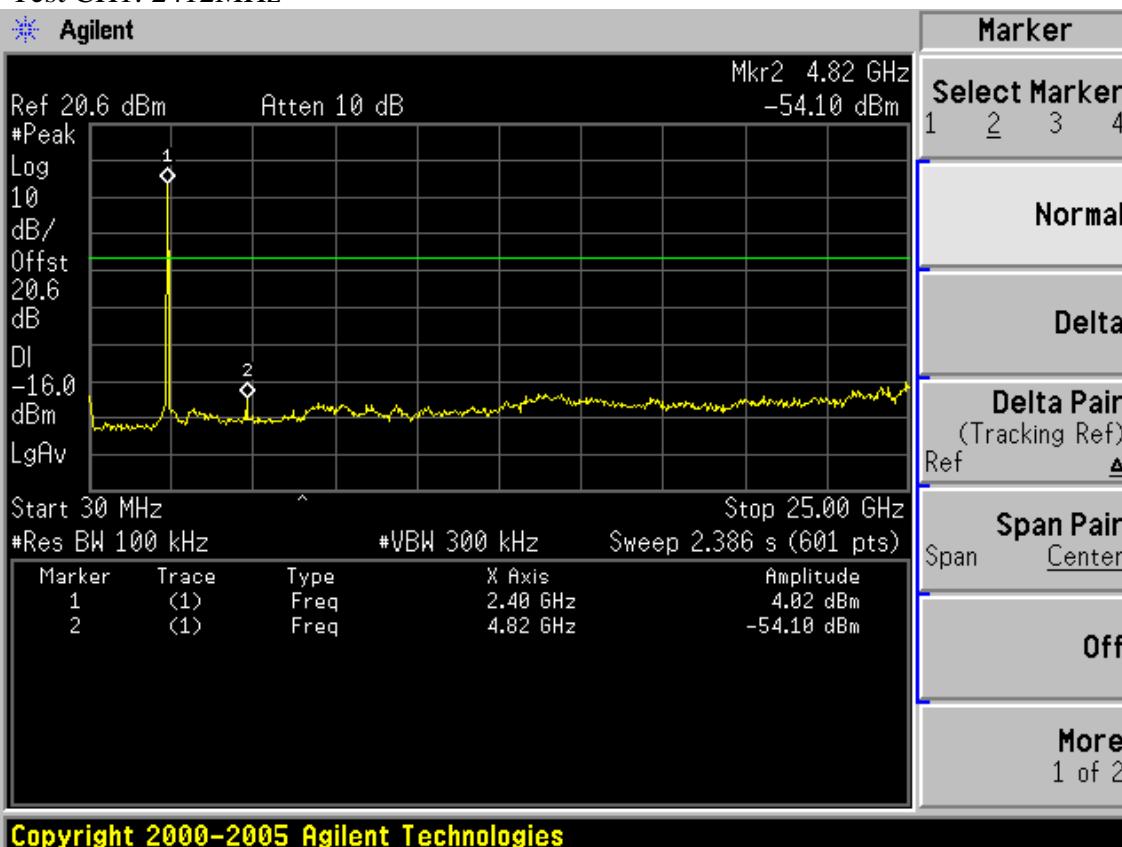
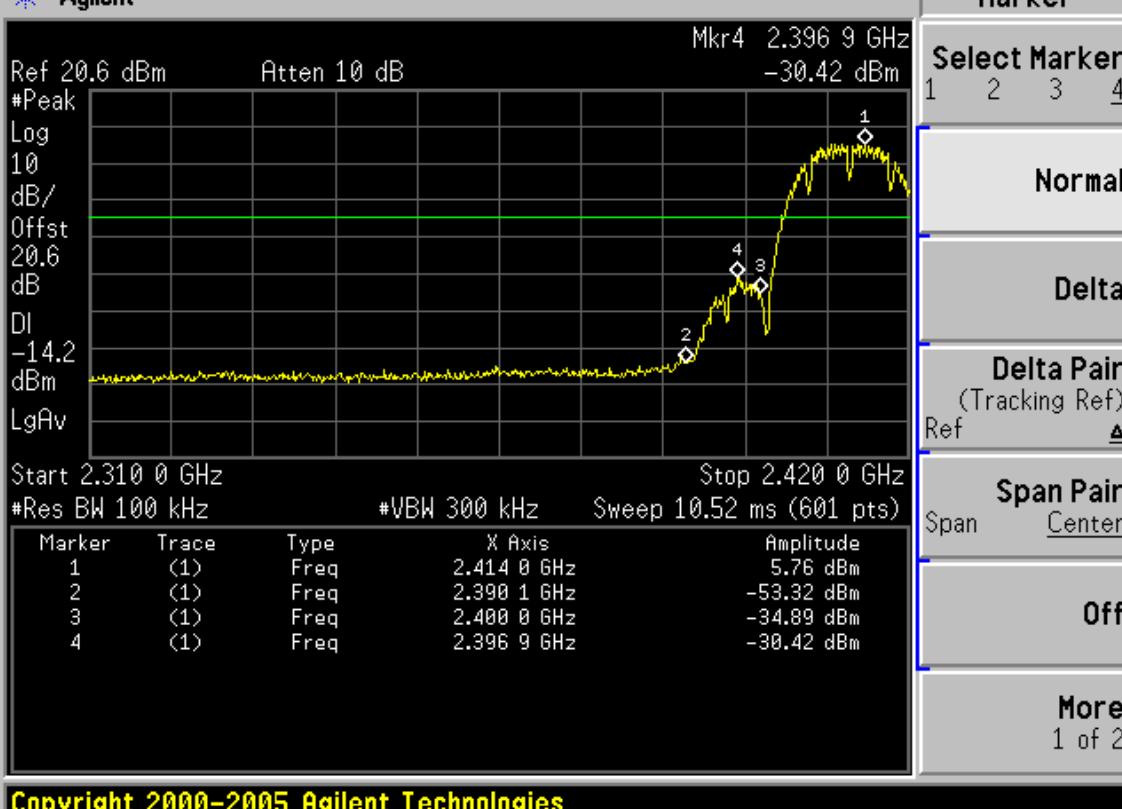
page

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Conducted emission test data:

Test Mode: IEEE 802.11b TX

Test CH1: 2412MHz

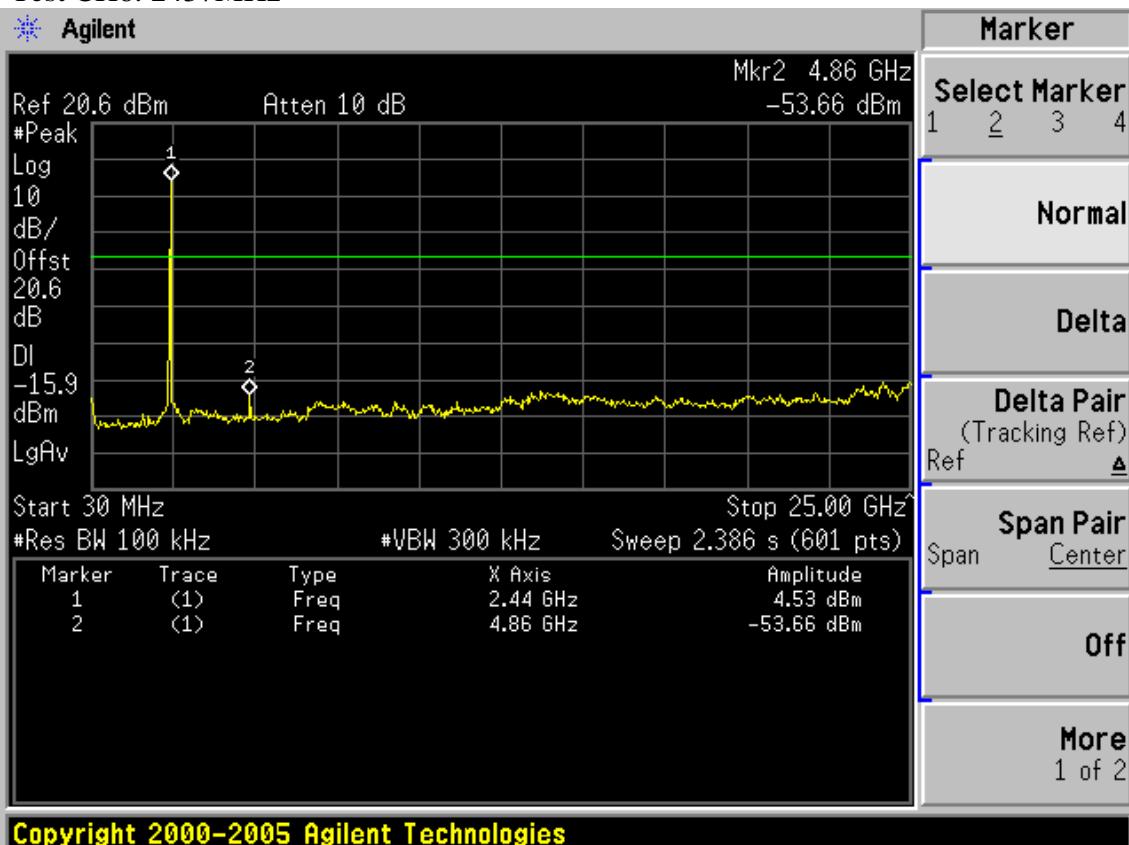



FCC ID: WWMDN421V1

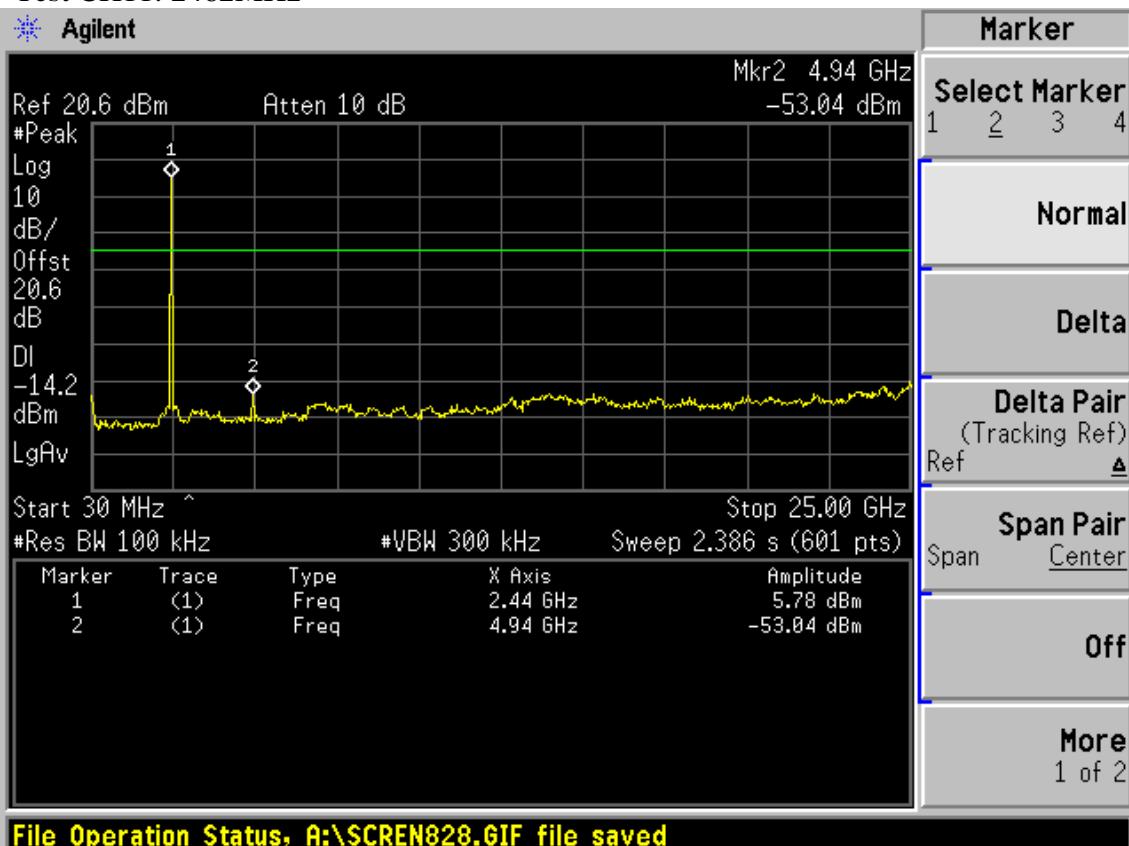
page

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Test CH6: 2437MHz



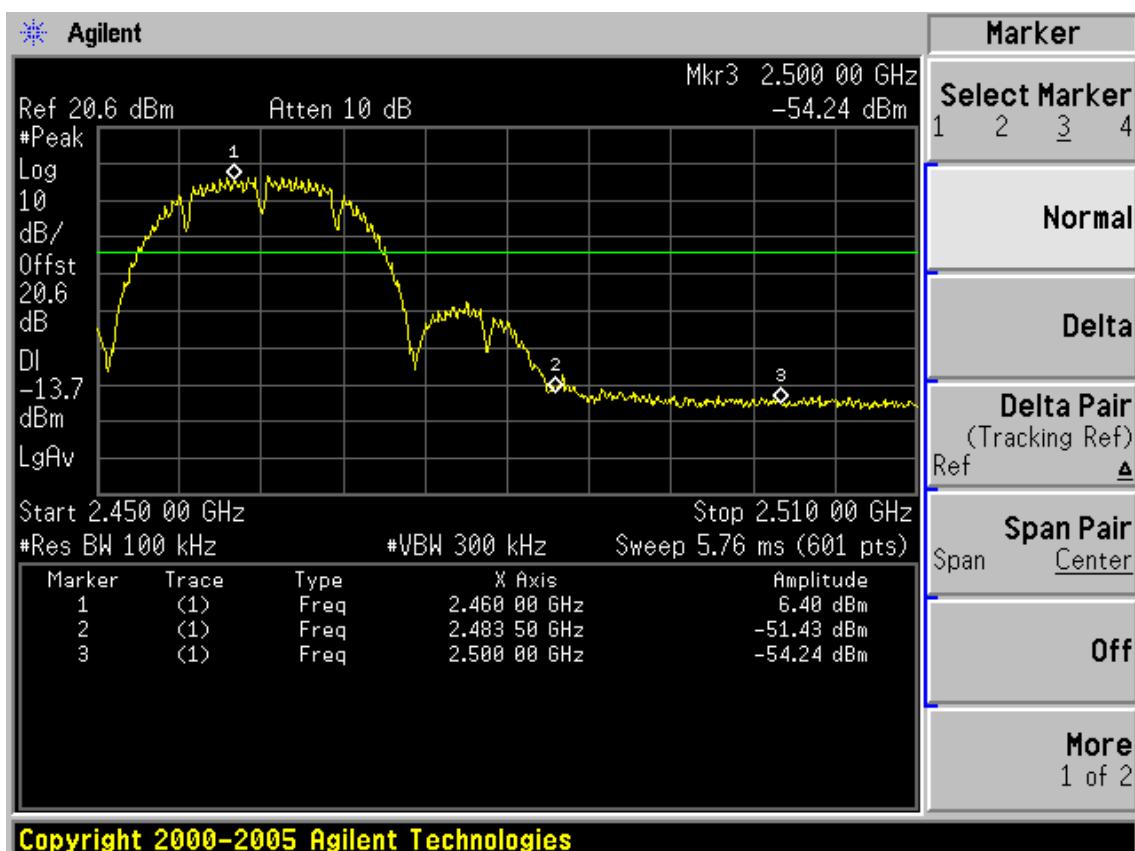
Test CH11: 2462MHz



FCC ID: WWMDN421V1

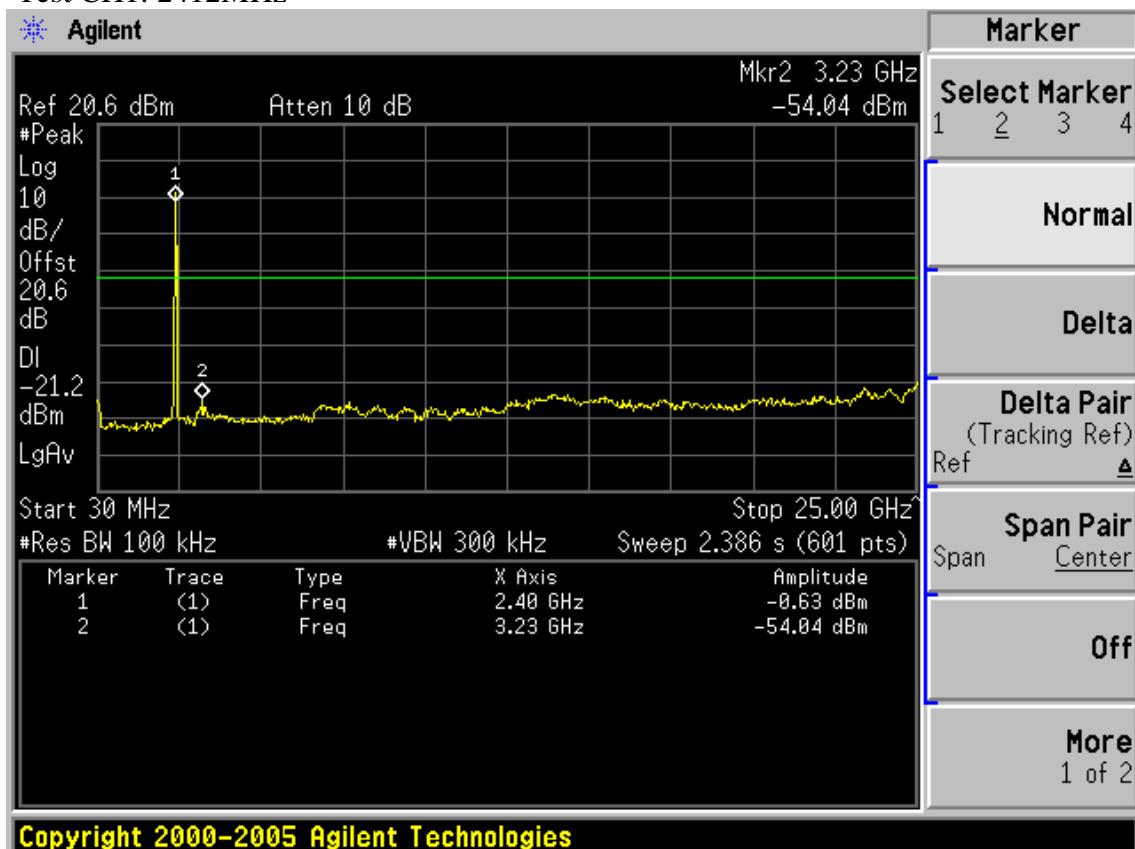
page

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Test Mode: IEEE 802.11g TX

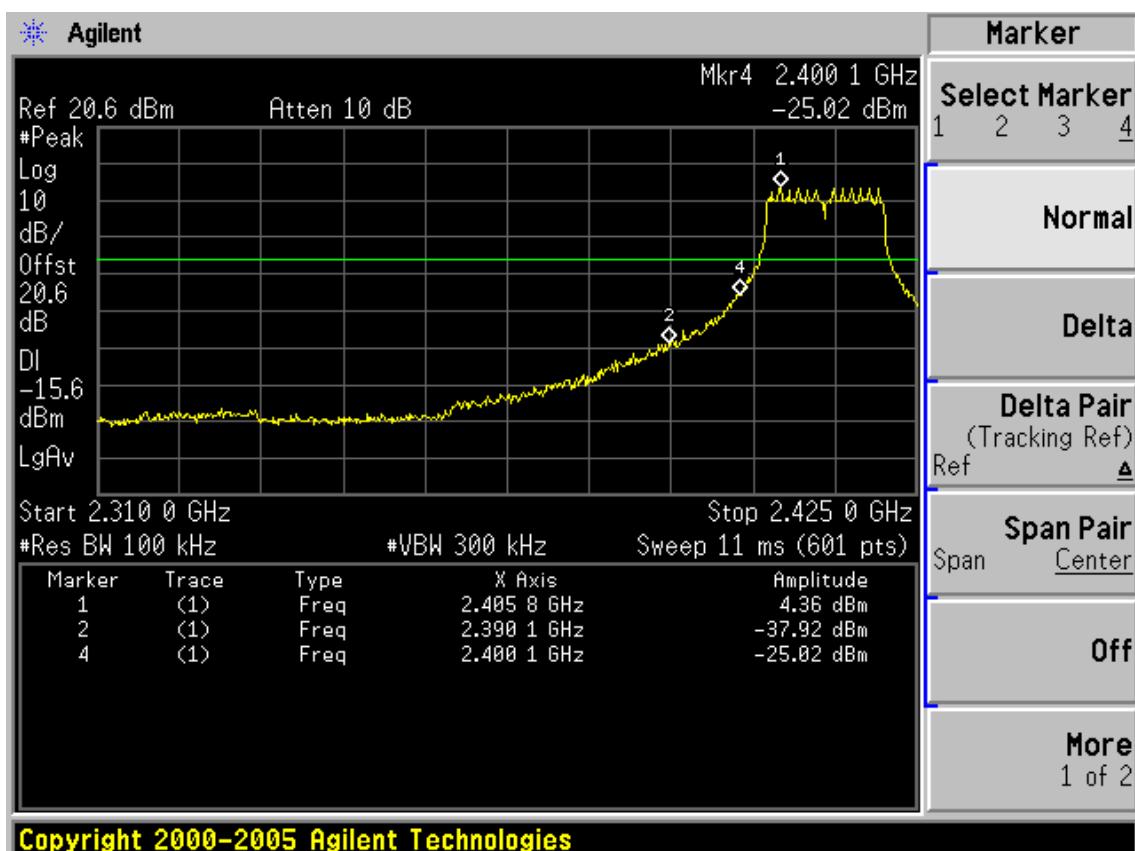
Test CH1: 2412MHz



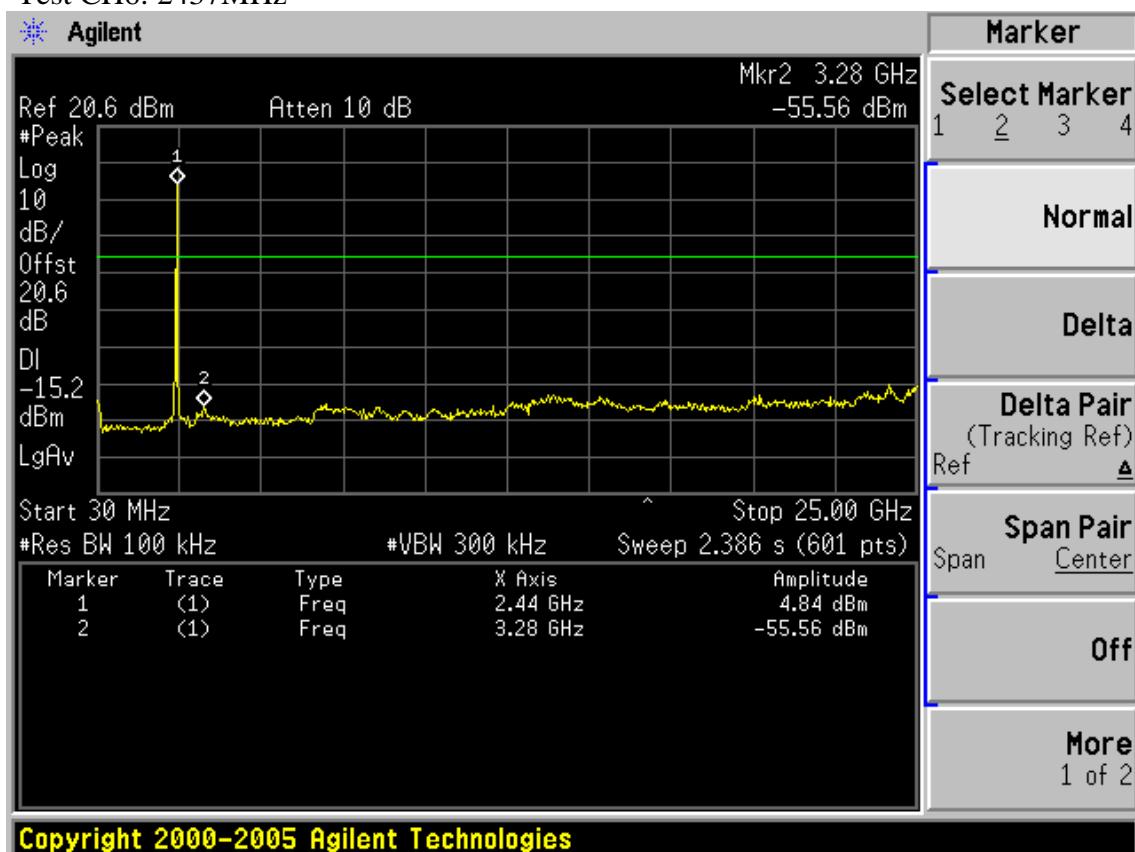
FCC ID: WWMDN421V1

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Test CH6: 2437MHz

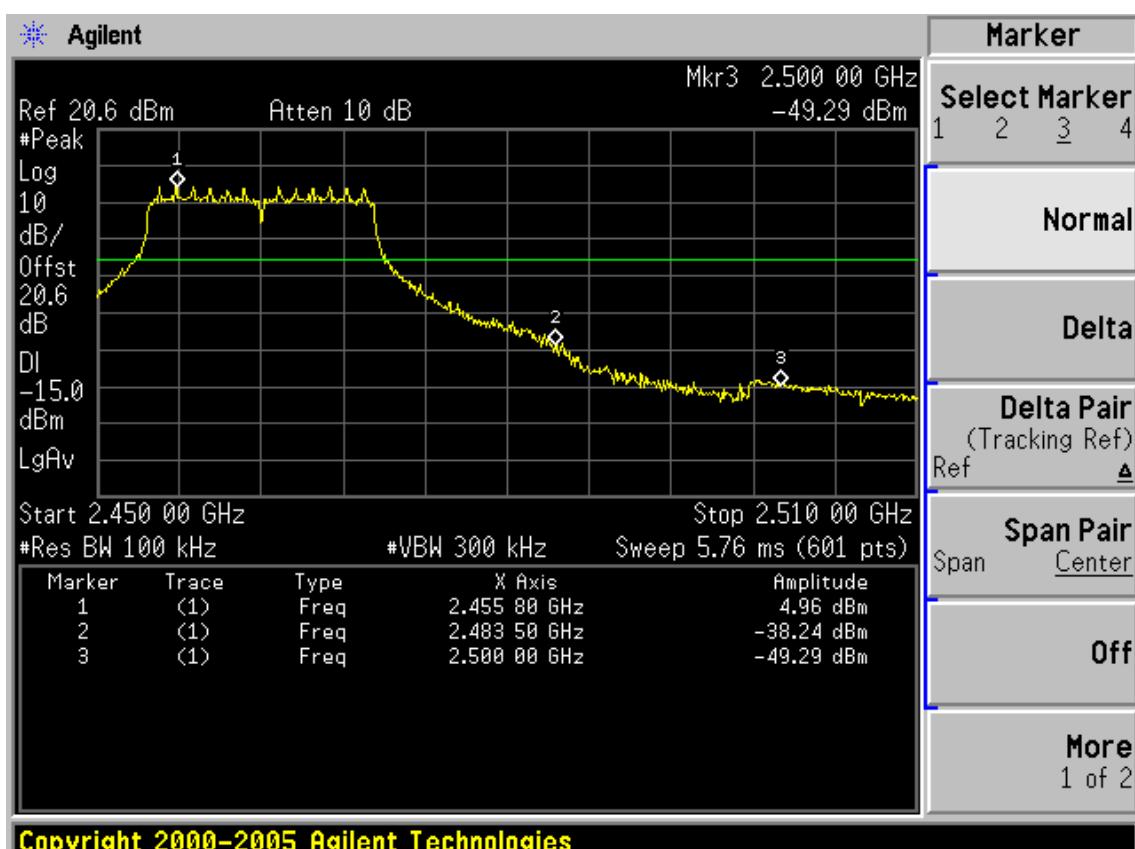
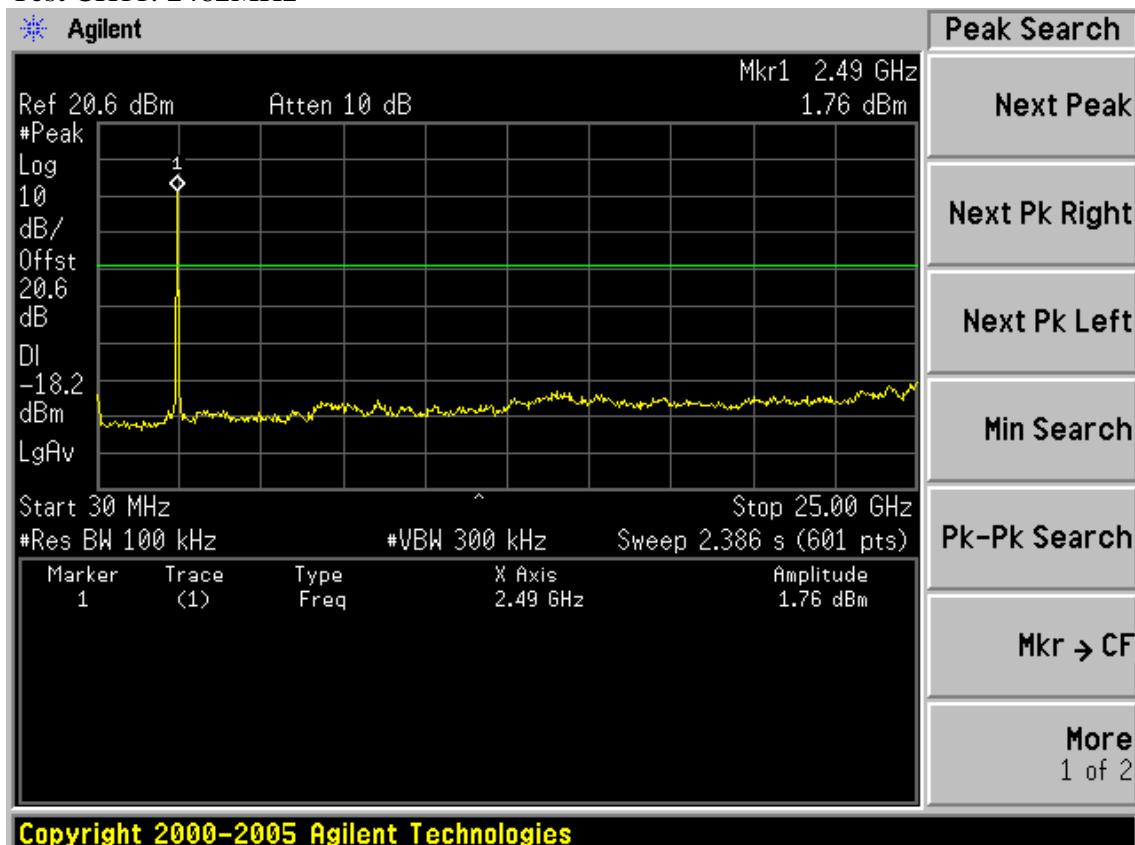


FCC ID: WWMDN421V1

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Test CH11: 2462MHz



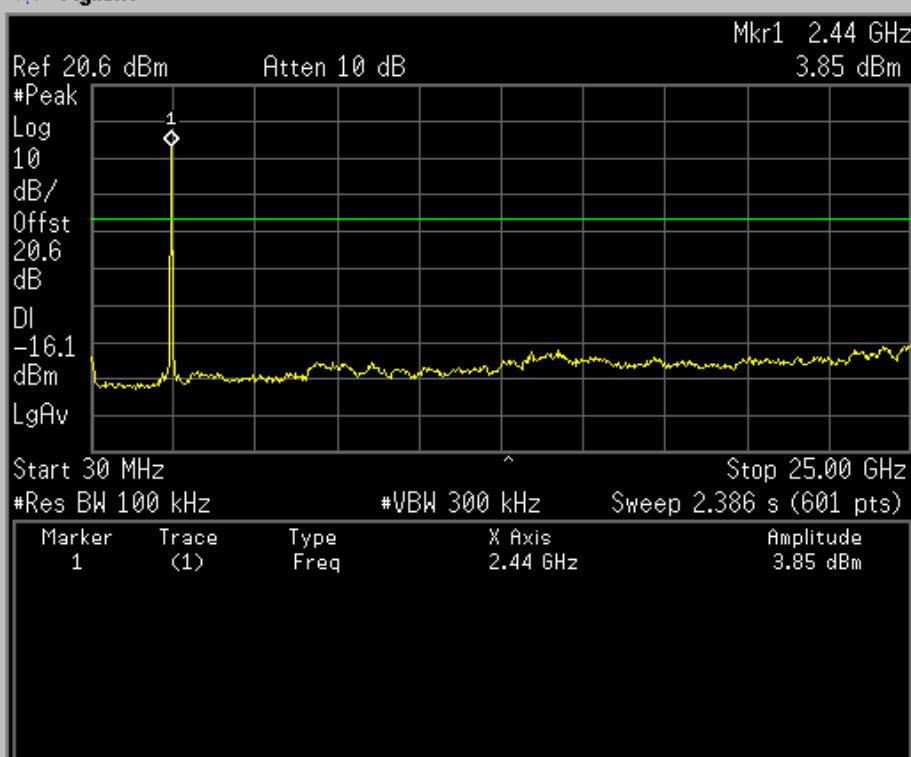
FCC ID: WWMDN421V1

page

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Test Mode: IEEE 802.11n HT20 TX

Test CH1: 2412MHz


Display
Full Screen
Display Line

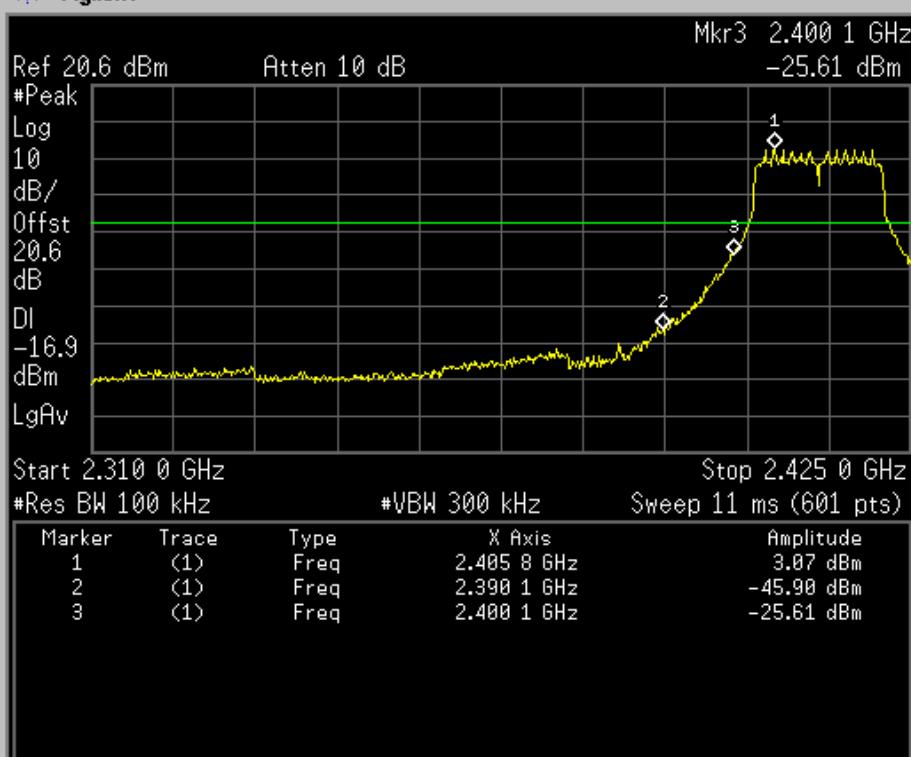
 -16.15 dBm
On

Limits
Active Fctn Position

Top

Title
Preferences

Copyright 2000-2005 Agilent Technologies


Marker
Select Marker

1 2 3 4

Normal
Delta
Delta Pair
(Tracking Ref)
Ref

Span Pair
Span Center

Off
More
1 of 2

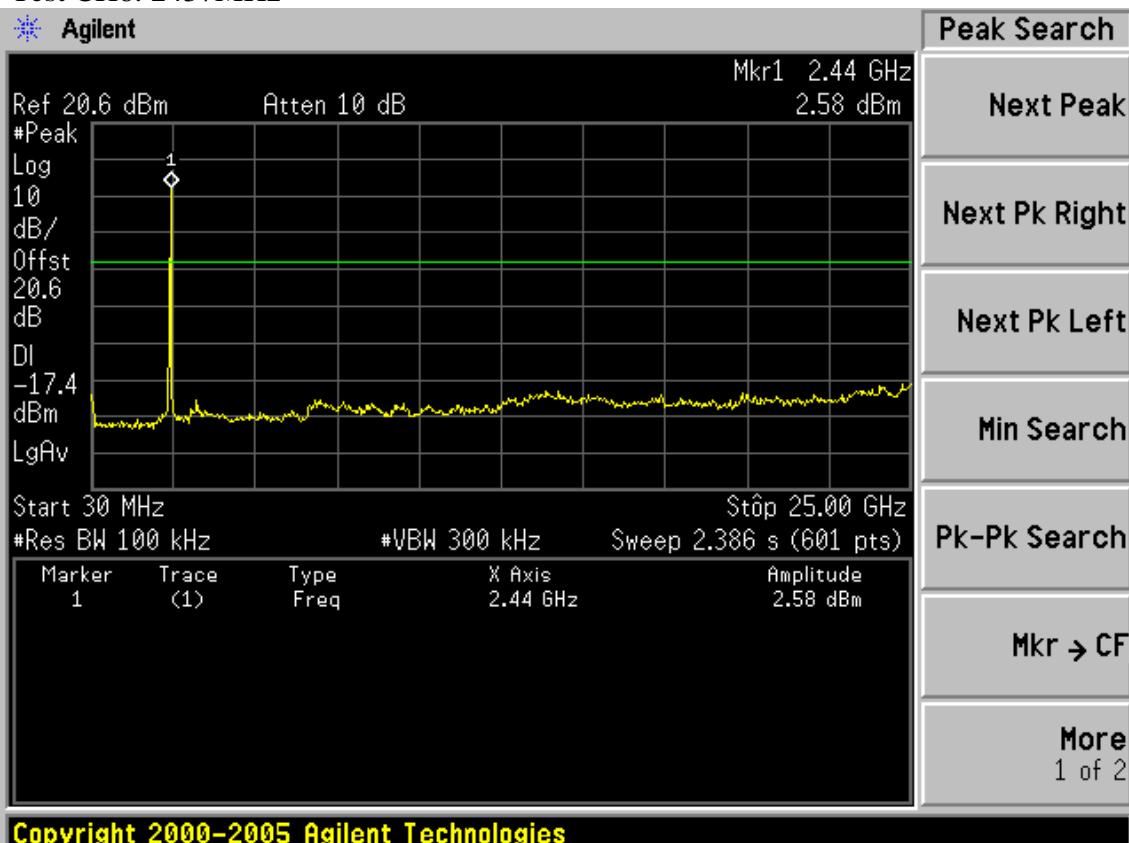
Copyright 2000-2005 Agilent Technologies

FCC ID: WWMDN421V1

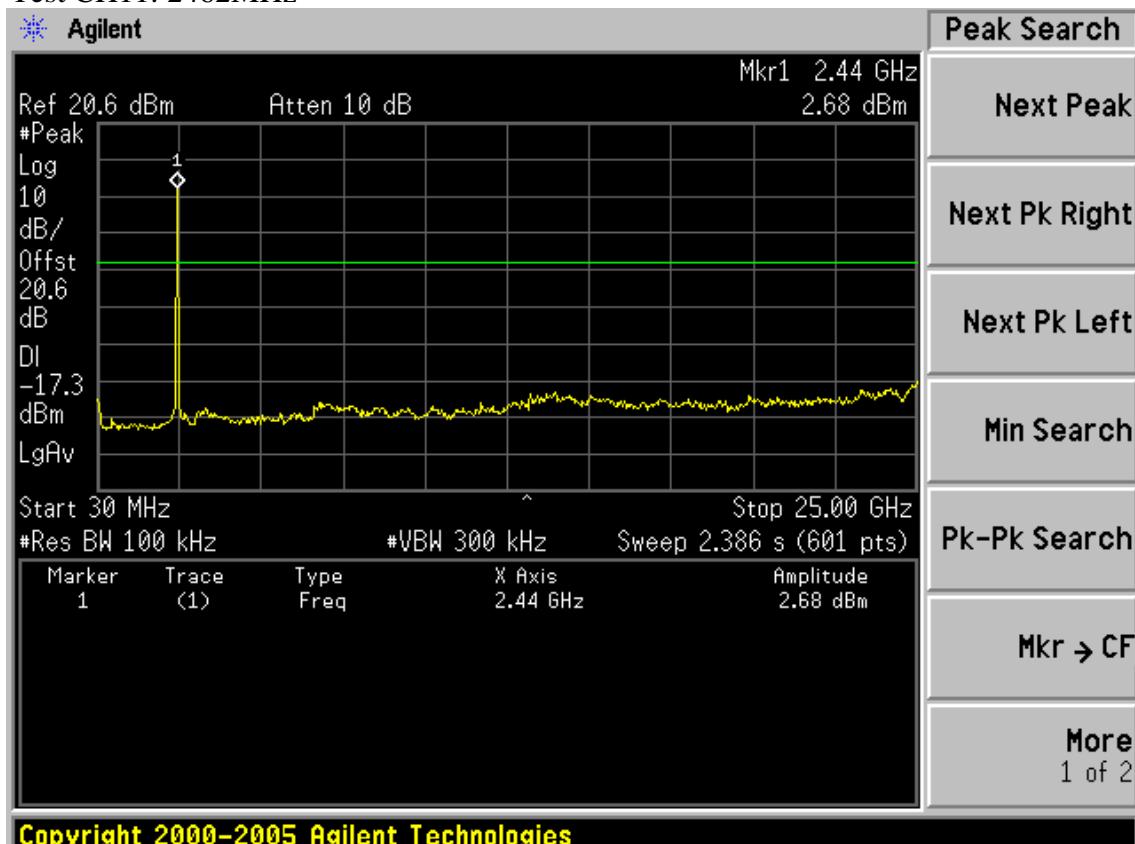
page

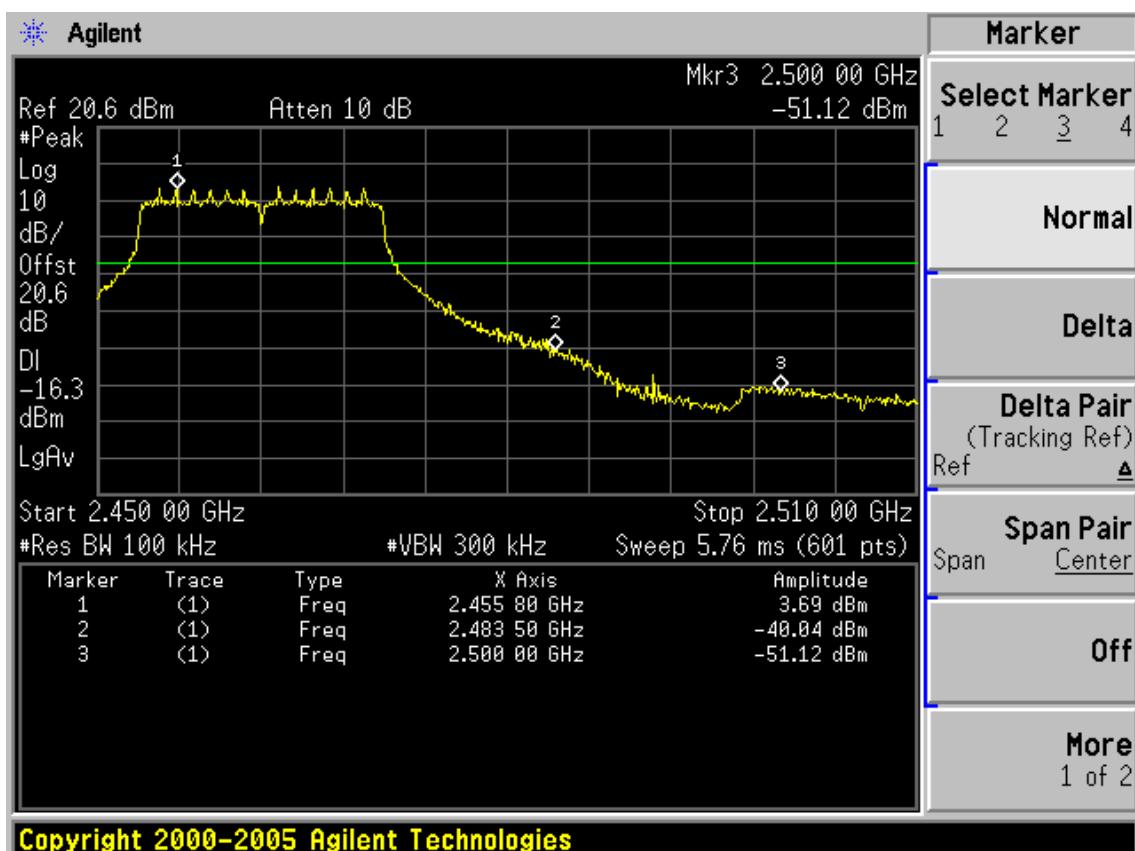
5-90

Test CH6: 2437MHz



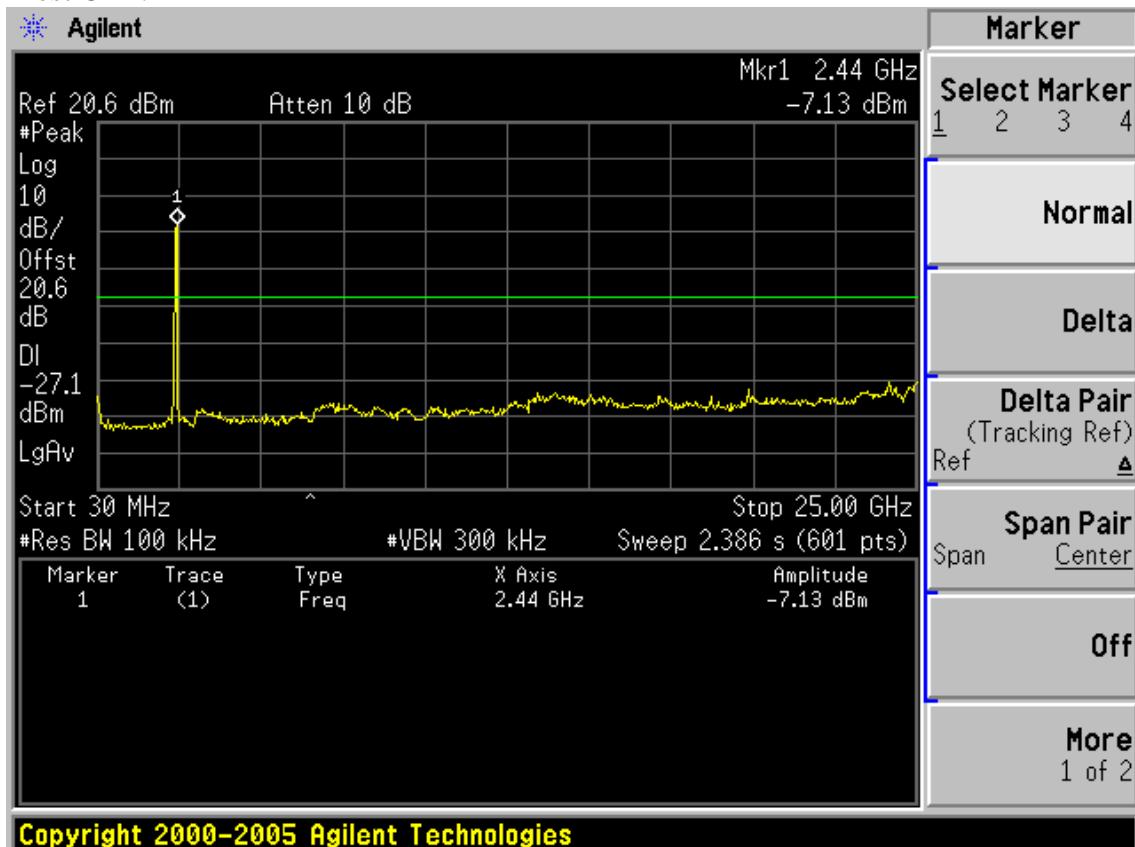
Test CH11: 2462MHz





Test Mode: IEEE 802.11n HT40 TX

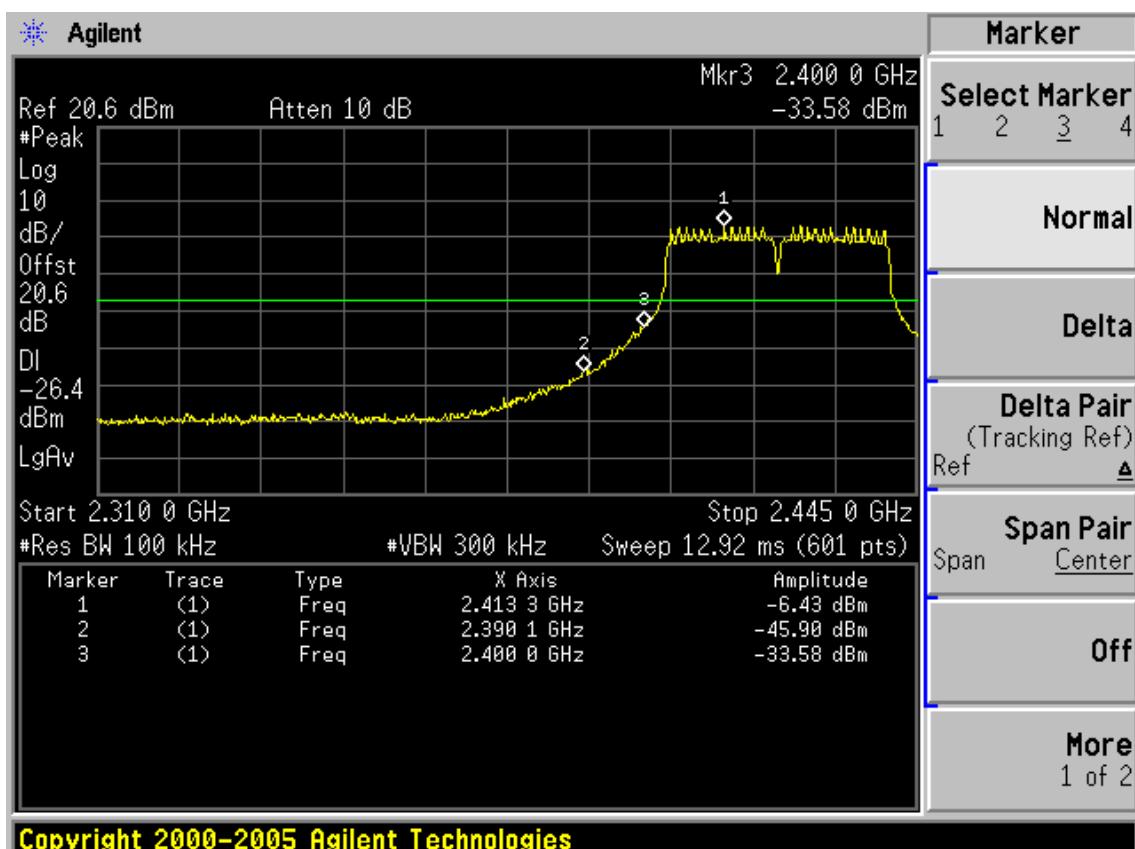
Test CH1: 2422MHz



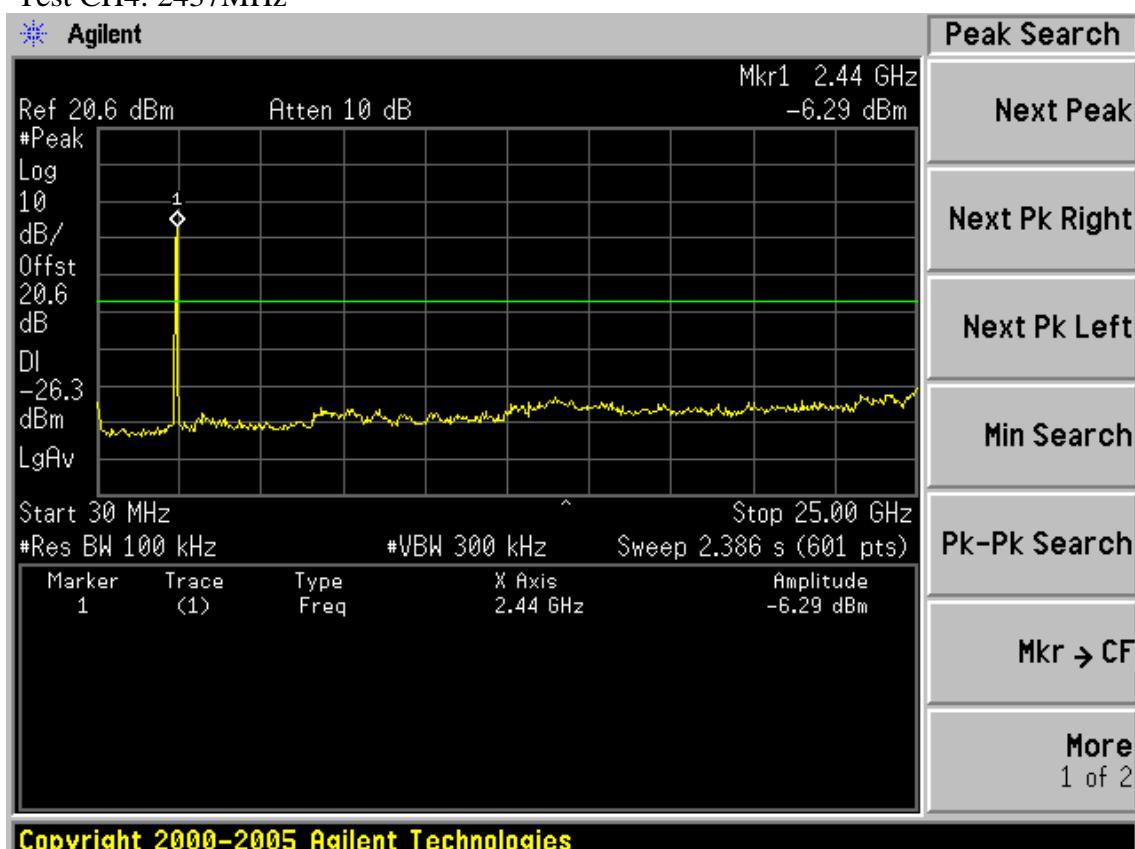
FCC ID: WWMDN421V1

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Test CH4: 2437MHz

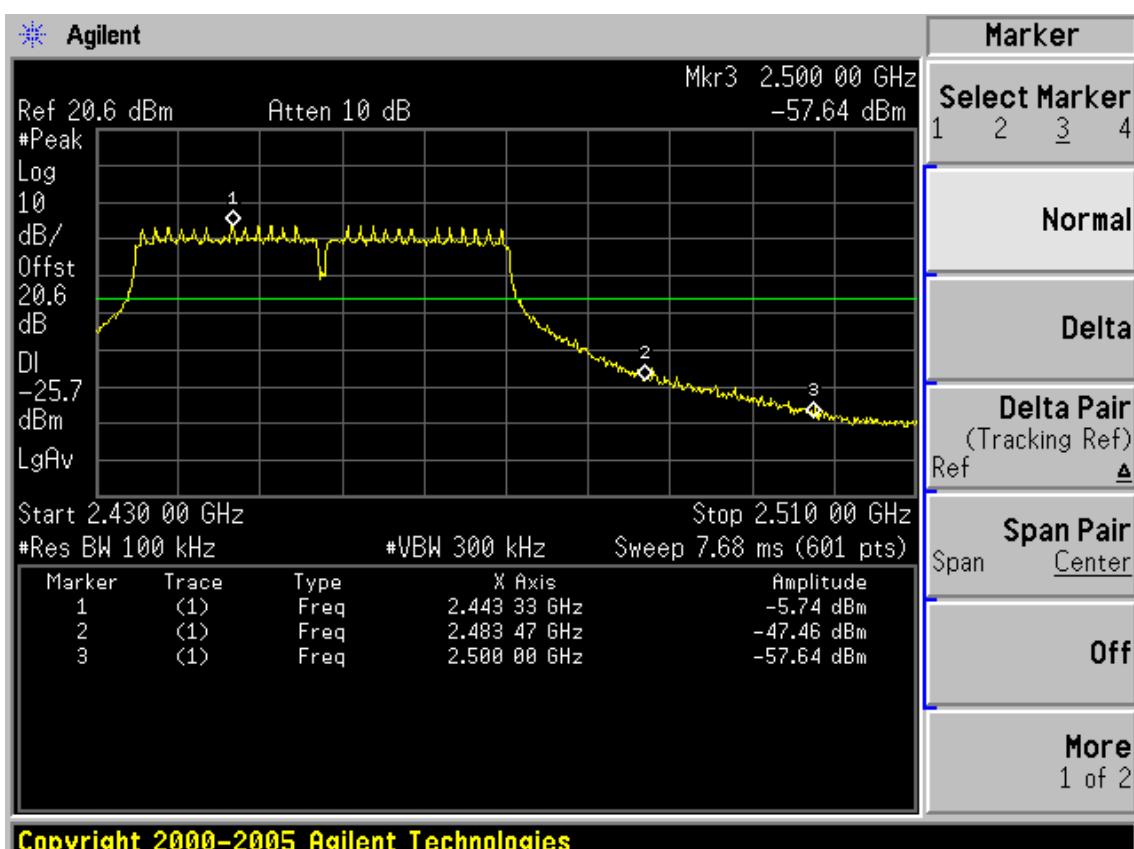
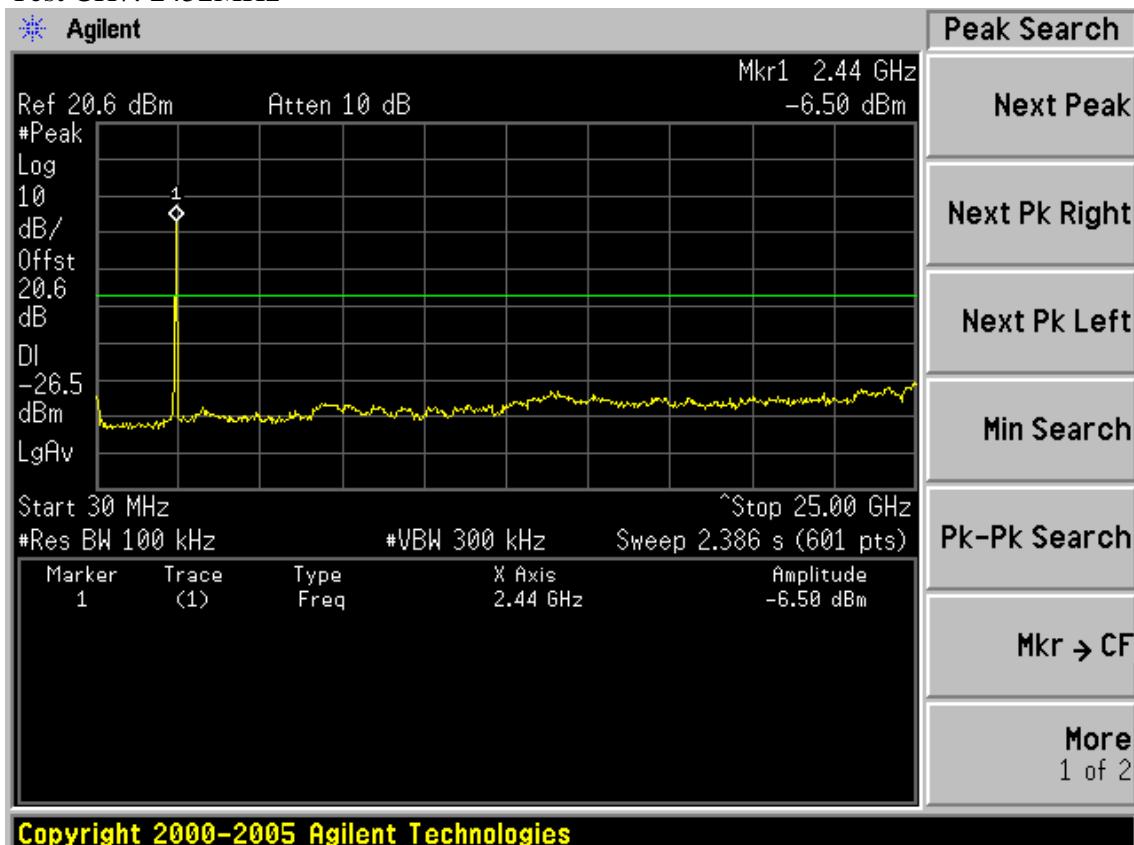


FCC ID: WWMDN421V1

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Test CH7: 2452MHz



6. BAND EDGE COMPLIANCE TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,10	1 Year
2.	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 09	1.5 Year
3.	Amplifier	Agilent	8449B	3008A02495	May.08, 10	1 Year
4.	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08,10	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,10	1 Year
6.	RF Cable	Hubersuhner	SUCOFLEX102	28610/2	May.08,10	1 Year

6.2. Limit

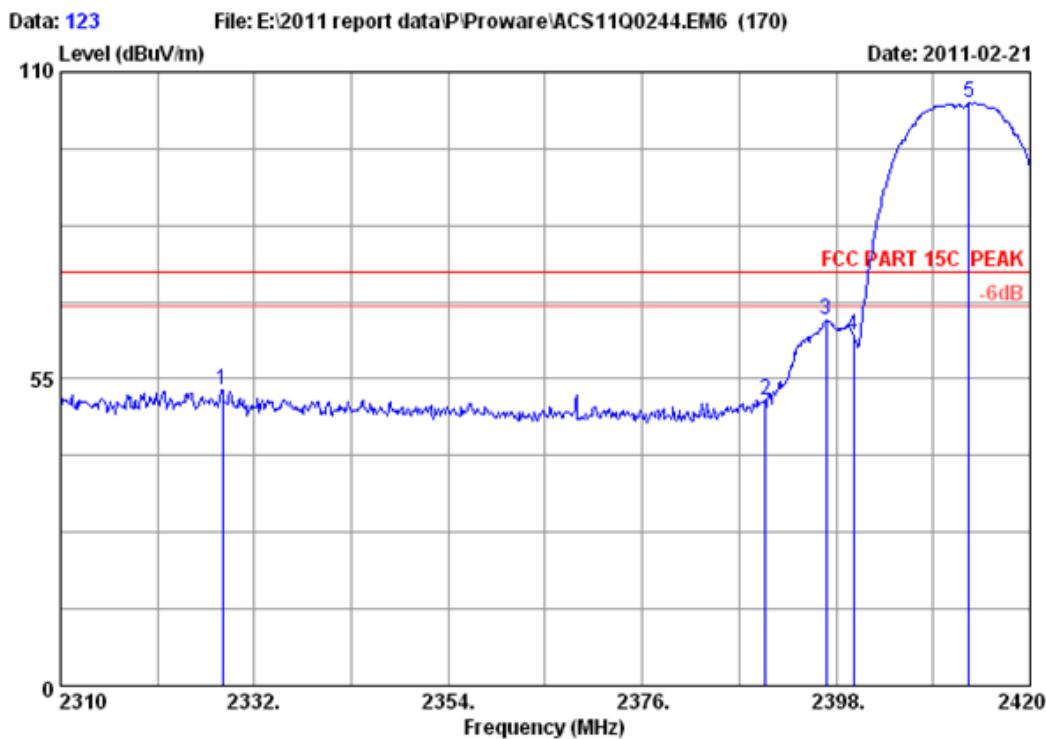
All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

6.3. Test Produce

1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=1MHz; VBW=3MHz; Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz; VBW=10Hz; Sweep=AUTO

6.4. Test Results

Pass (The testing data was attached in the next pages.)



Site no. : RF Chamber Data no. : 123
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11b CH1 2412MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2328.370	28.36	7.61	36.06	53.07	52.98	74.00	21.02 Peak
2	2390.000	28.46	7.66	36.09	51.06	51.09	74.00	22.91 Peak
3	2396.900	28.46	7.66	36.09	65.43	65.46	74.00	8.54 Peak
4	2400.000	28.46	7.66	36.09	62.79	62.82	74.00	11.18 Peak
5	2413.070	28.48	7.66	35.95	104.32	104.51	74.00	-30.51 Peak

Remarks:

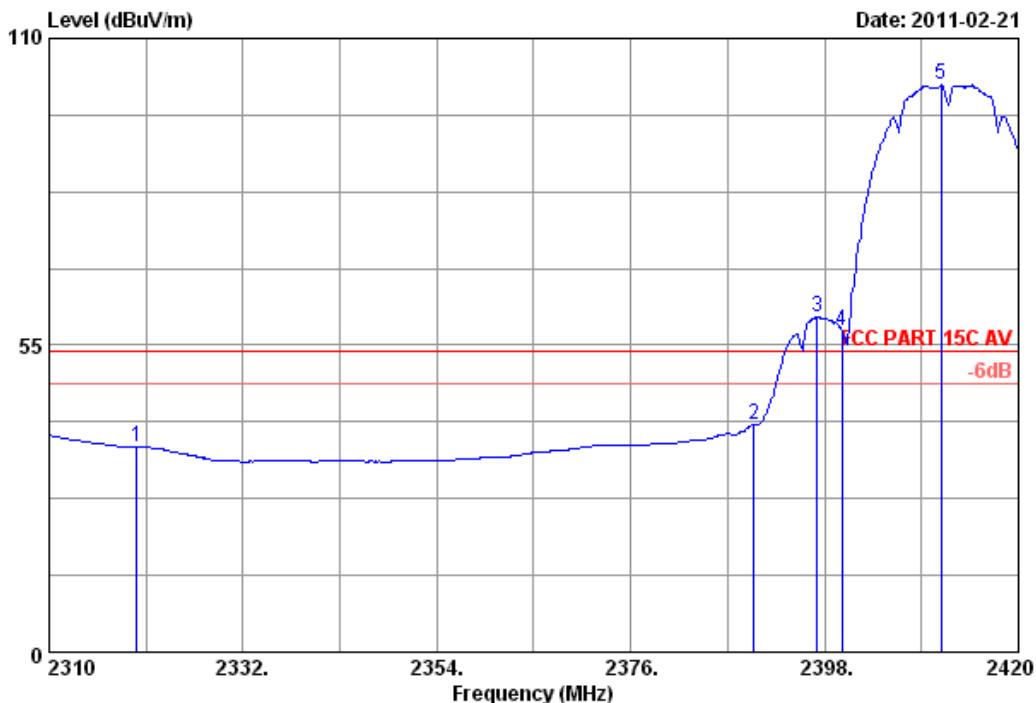
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 124 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 124
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11b CH1 2412MHz
 M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2319.900	28.36	7.55	36.06	37.07	36.92	54.00	17.08	Average
2 2390.000	28.46	7.66	36.09	40.65	40.68	54.00	13.32	Average
3 2397.120	28.46	7.66	36.09	60.05	60.08	54.00	-6.08	Average
4 2400.000	28.46	7.66	36.09	57.71	57.74	54.00	-3.74	Average
5 2411.200	28.48	7.66	35.95	101.42	101.61	54.00	-47.61	Average

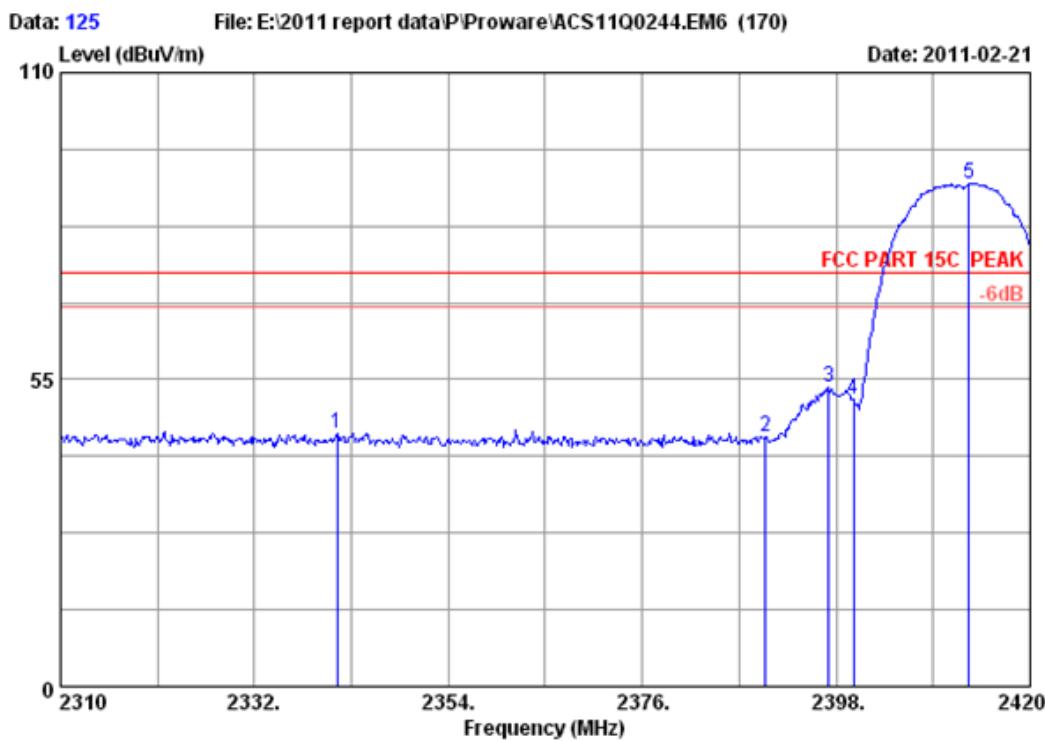
Remarks:

1. Emission Level = Antenna Factor + Cable Loss + Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 125
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH1 2412MHz
M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dB _u V)	Level (dB _u V/m)	Limits (dB _u V/m)	Margin (dB)	Remark
1 2341.350	28.38	7.61	35.99	45.42	45.42	74.00	28.58	Peak
2 2390.000	28.46	7.66	36.09	44.84	44.87	74.00	29.13	Peak
3 2397.120	28.46	7.66	36.09	53.64	53.67	74.00	20.33	Peak
4 2400.000	28.46	7.66	36.09	51.51	51.54	74.00	22.46	Peak
5 2413.070	28.48	7.66	35.95	90.00	90.19	74.00	-16.19	Peak

Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 126 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 126
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11b CH1 2412MHz
 M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2390.000	28.46	7.66	36.09	33.41	33.44	54.00	20.56	Average
2 2397.230	28.46	7.66	36.09	46.23	46.26	54.00	7.74	Average
3 2400.000	28.46	7.66	36.09	43.73	43.76	54.00	10.24	Average
4 2414.720	28.48	7.66	35.95	84.15	84.34	54.00	-30.34	Average

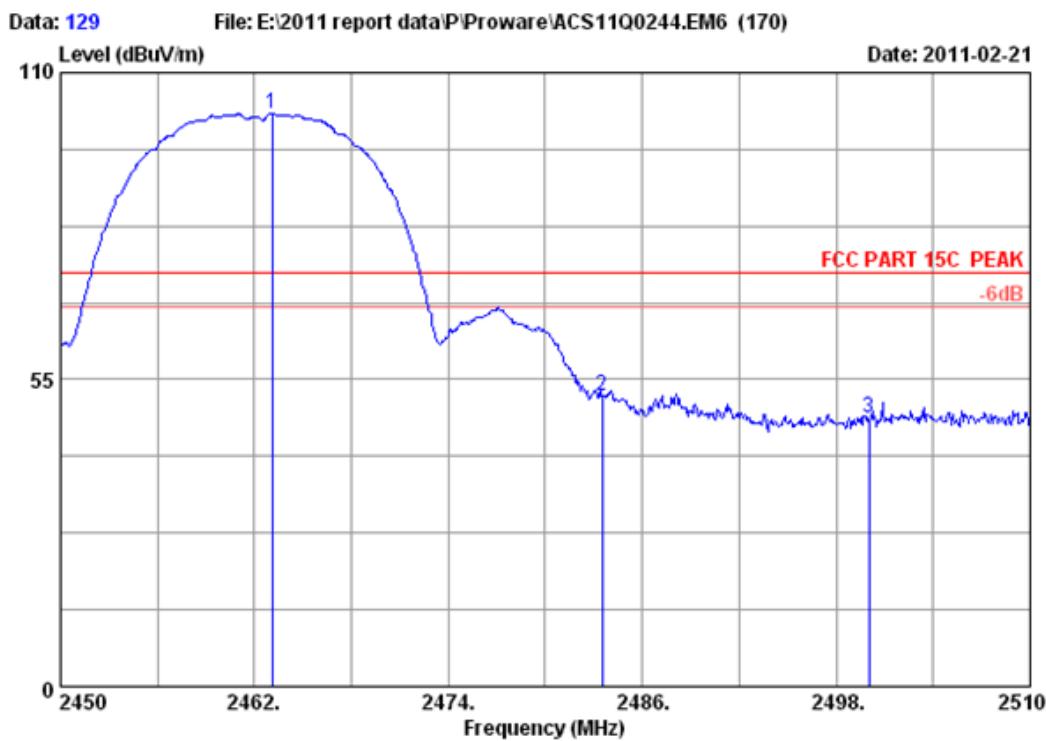
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no.	:	RF Chamber	Data no. :	129
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	HORIZONTAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Paul Tian
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11b CH11 2462MHz		
M/N	:	PW-DN421		

Freq. (MHz)	Ant. (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dB _u V)	Level (dB _u V/m)	Limits (dB _u V/m)	Margin (dB)	Remark
1 2463.080	28.55	7.72	36.02	102.35	102.60	74.00	-28.60	Peak
2 2483.500	28.58	7.77	35.97	51.69	52.07	74.00	21.93	Peak
3 2500.000	28.60	7.77	36.00	47.62	47.99	74.00	26.01	Peak

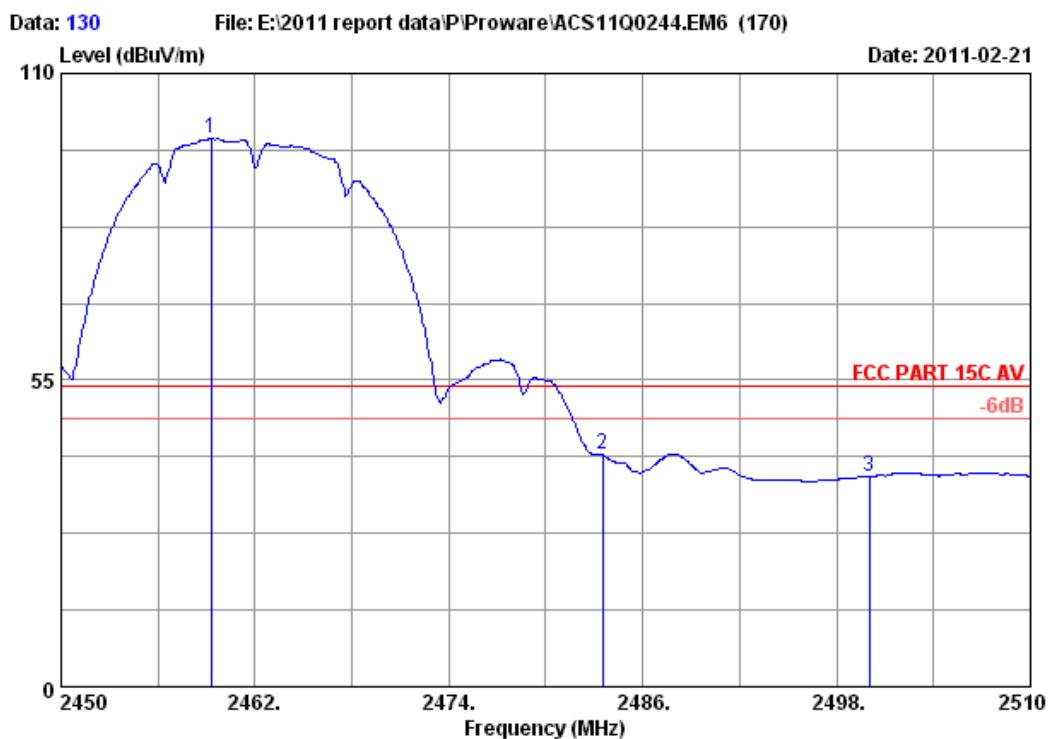
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 130
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11b CH11 2462MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2459.300	28.55	7.72	36.02	98.10	98.35	54.00	-44.35 Average
2	2483.500	28.58	7.77	35.97	41.33	41.71	54.00	12.29 Average
3	2500.000	28.60	7.77	36.00	37.34	37.71	54.00	16.29 Average

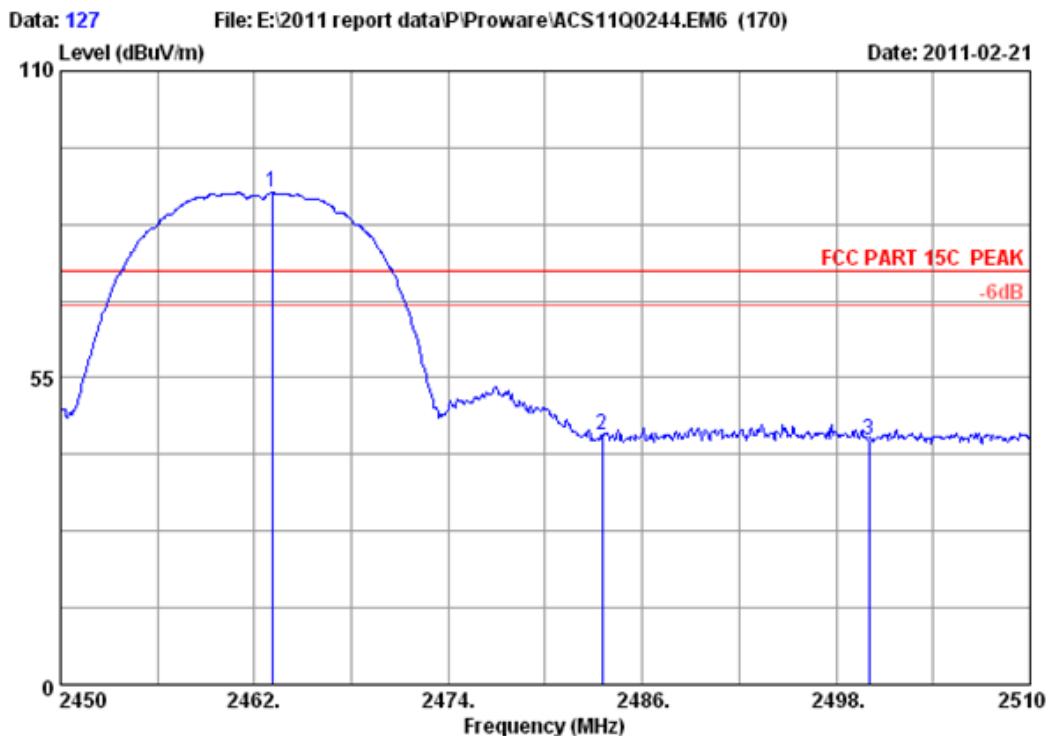
Remarks:

- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 127
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11b CH11 2462MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2463.080	28.55	7.72	36.02	87.92	88.17	74.00	-14.17 Peak
2	2483.500	28.58	7.77	35.97	44.37	44.75	74.00	29.25 Peak
3	2500.000	28.60	7.77	36.00	43.53	43.90	74.00	30.10 Peak

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 128 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 128
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11b CH11 2462MHz
M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2461.220	28.55	7.72	36.02	84.60	84.85	54.00	-30.85	Average
2 2483.500	28.58	7.77	35.97	33.52	33.90	54.00	20.10	Average
3 2500.000	28.60	7.77	36.00	32.87	33.24	54.00	20.76	Average

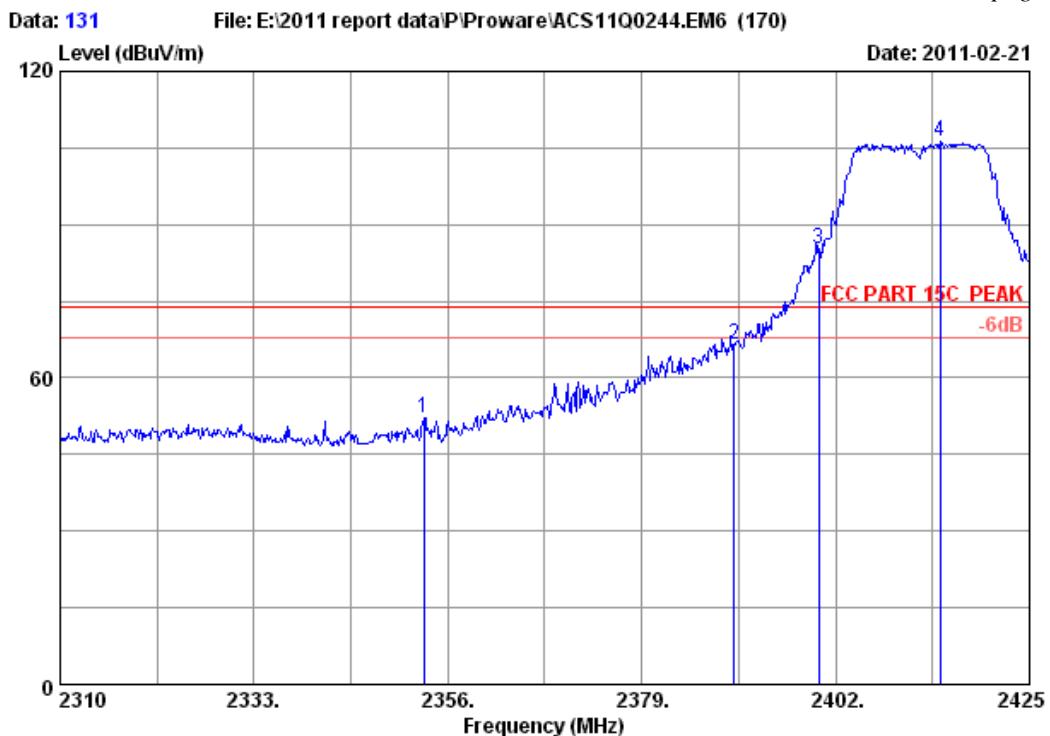
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 131
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH1 2412MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2353.125	28.41	7.61	35.91	52.18	52.29	74.00	21.71 Peak
2	2390.000	28.46	7.66	36.09	66.58	66.61	74.00	7.39 Peak
3	2400.000	28.46	7.66	36.09	85.17	85.20	74.00	-11.20 Peak
4	2414.420	28.48	7.66	35.95	106.14	106.33	74.00	-32.33 Peak

Remarks:

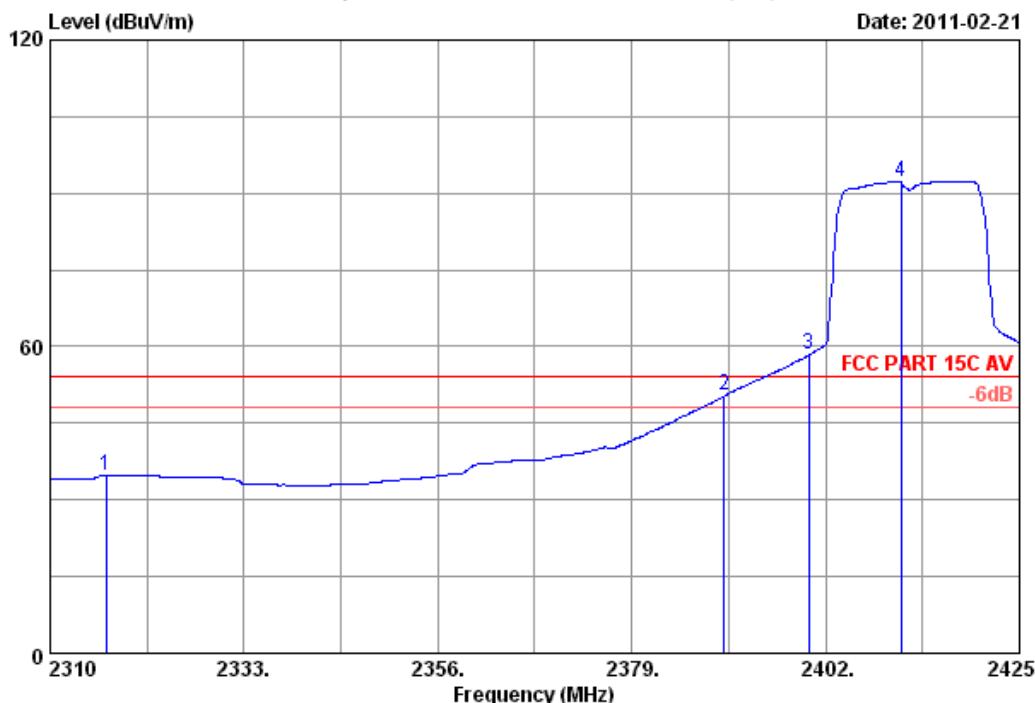
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 132 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 132
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11g CH1 2412MHz
 M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2316.670	28.33	7.55	35.86	34.87	34.89	54.00	19.11	Average
2 2390.000	28.46	7.66	36.09	50.45	50.48	54.00	3.52	Average
3 2400.000	28.46	7.66	36.09	58.39	58.42	54.00	-4.42	Average
4 2410.970	28.48	7.66	35.95	92.20	92.39	54.00	-38.39	Average

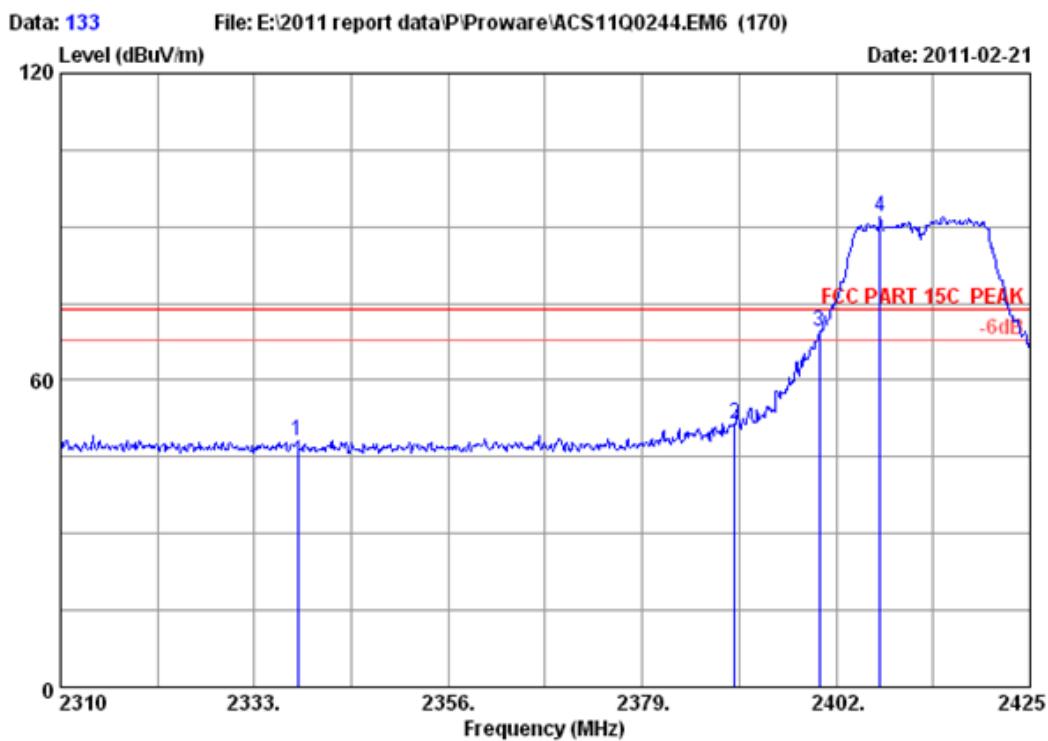
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 133
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11g CH1 2412MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2338.175	28.38	7.61	35.99	47.99	47.99	74.00	26.01 Peak
2	2390.000	28.46	7.66	36.09	51.49	51.52	74.00	22.48 Peak
3	2400.000	28.46	7.66	36.09	69.33	69.36	74.00	4.64 Peak
4	2407.175	28.48	7.66	35.95	91.80	91.99	74.00	-17.99 Peak

Remarks:

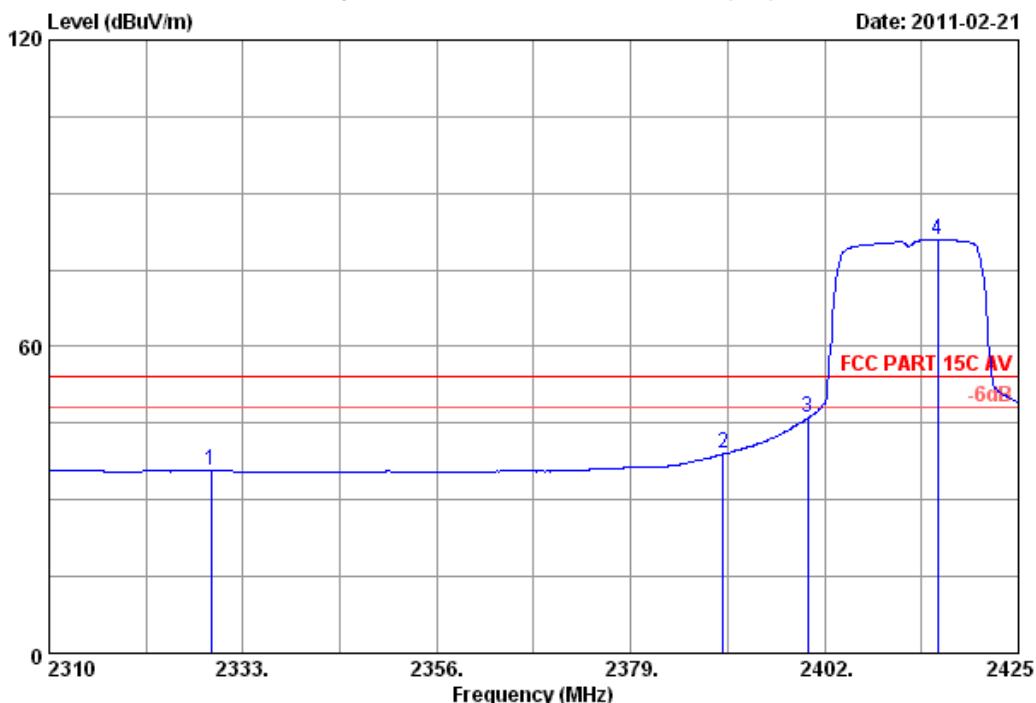
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 134 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 134
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11g CH1 2412MHz
 M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2329.205	28.36	7.61	36.06	35.85	35.76	54.00	18.24	Average
2 2390.000	28.46	7.66	36.09	38.93	38.96	54.00	15.04	Average
3 2400.000	28.46	7.66	36.09	46.03	46.06	54.00	7.94	Average
4 2415.455	28.48	7.66	35.95	80.75	80.94	54.00	-26.94	Average

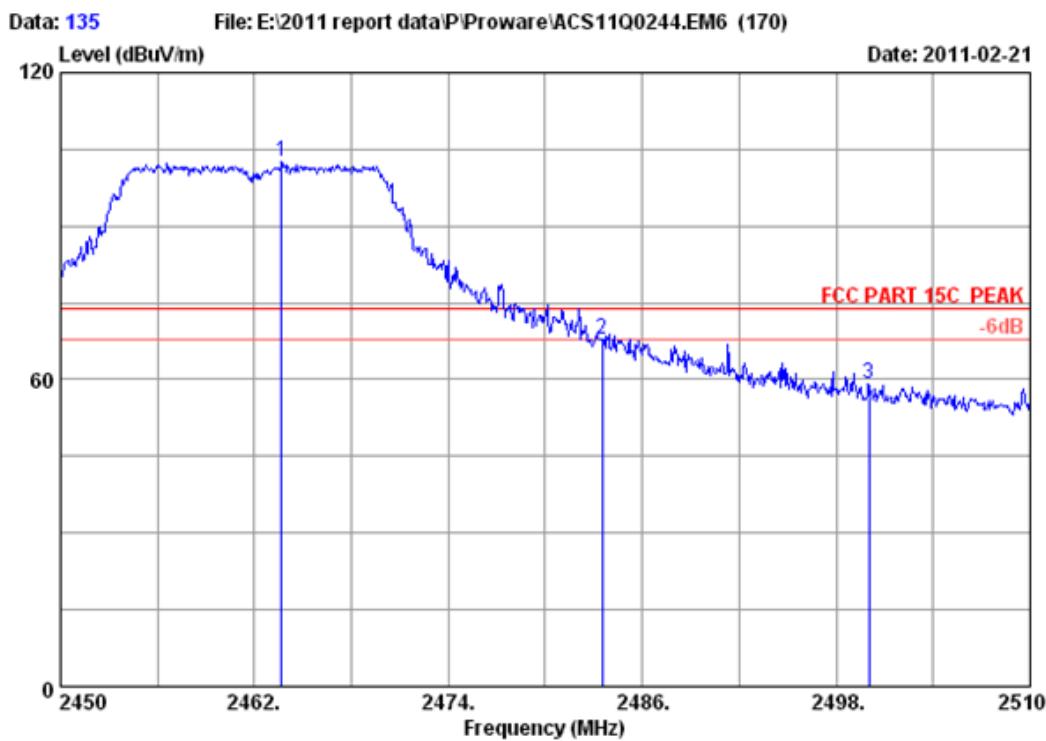
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 135
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11g CH11 2462MHz
M/N : PW-DN421

Freq. (MHz)	Ant. (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dB _u V)	Level (dB _u V/m)	Limits (dB _u V/m)	Margin (dB)	Remark
1 2463.680	28.55	7.72	36.02	102.40	102.65	74.00	-28.65	Peak
2 2483.500	28.58	7.77	35.97	67.34	67.72	74.00	6.28	Peak
3 2500.000	28.60	7.77	36.00	58.79	59.16	74.00	14.84	Peak

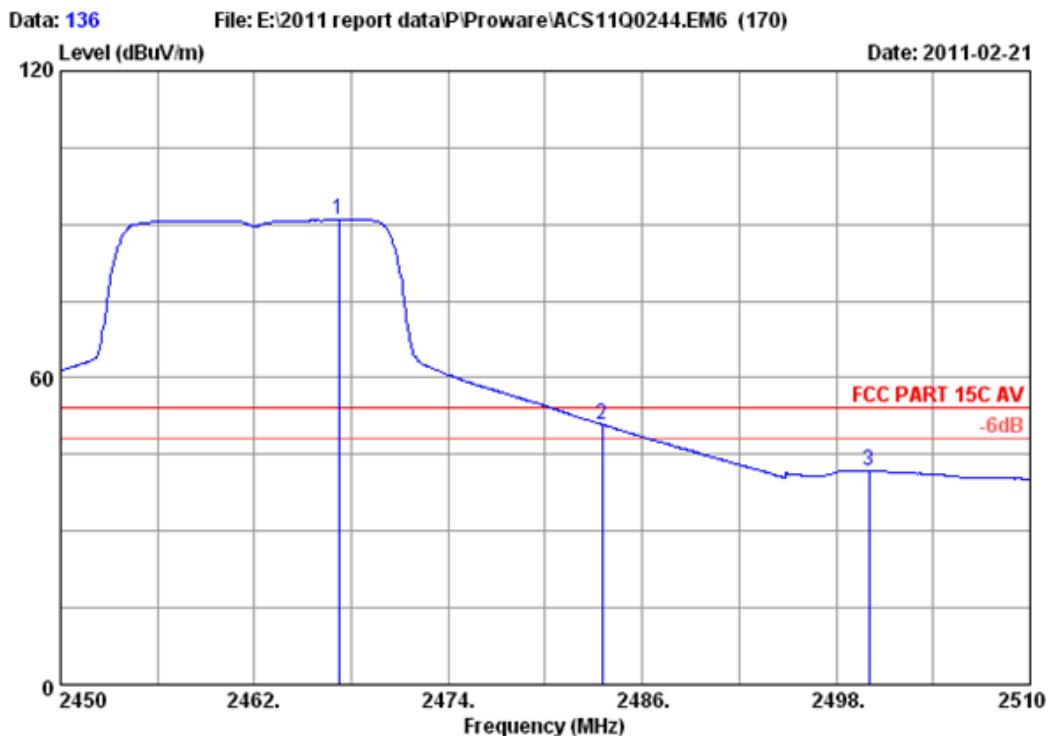
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 136
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11g CH11 2462MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2467.220	28.55	7.72	36.02	90.62	90.87	54.00	-36.87 Average
2	2483.500	28.58	7.77	35.97	50.55	50.93	54.00	3.07 Average
3	2500.000	28.60	7.77	36.00	41.39	41.76	54.00	12.24 Average

Remarks:

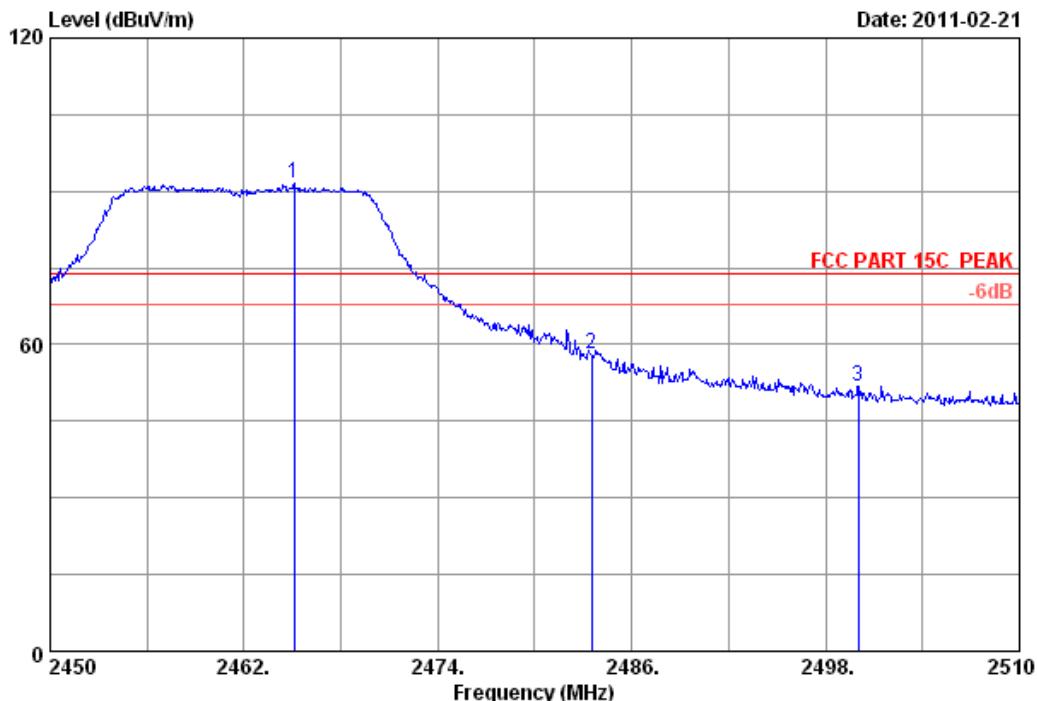
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 137 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no.	:	RF Chamber	Data no. :	137
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	VERTICAL
Limit	:	FCC PART 15C PEAK		
Env. / Ins.	:	23°C/54%	Engineer :	Paul Tian
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11g CH11 2462MHz		
M/N	:	PW-DN421		

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2465.120	28.55	7.72	36.02	91.33	91.58	74.00	-17.58	Peak
2 2483.500	28.58	7.77	35.97	57.74	58.12	74.00	15.88	Peak
3 2500.000	28.60	7.77	36.00	51.52	51.89	74.00	22.11	Peak

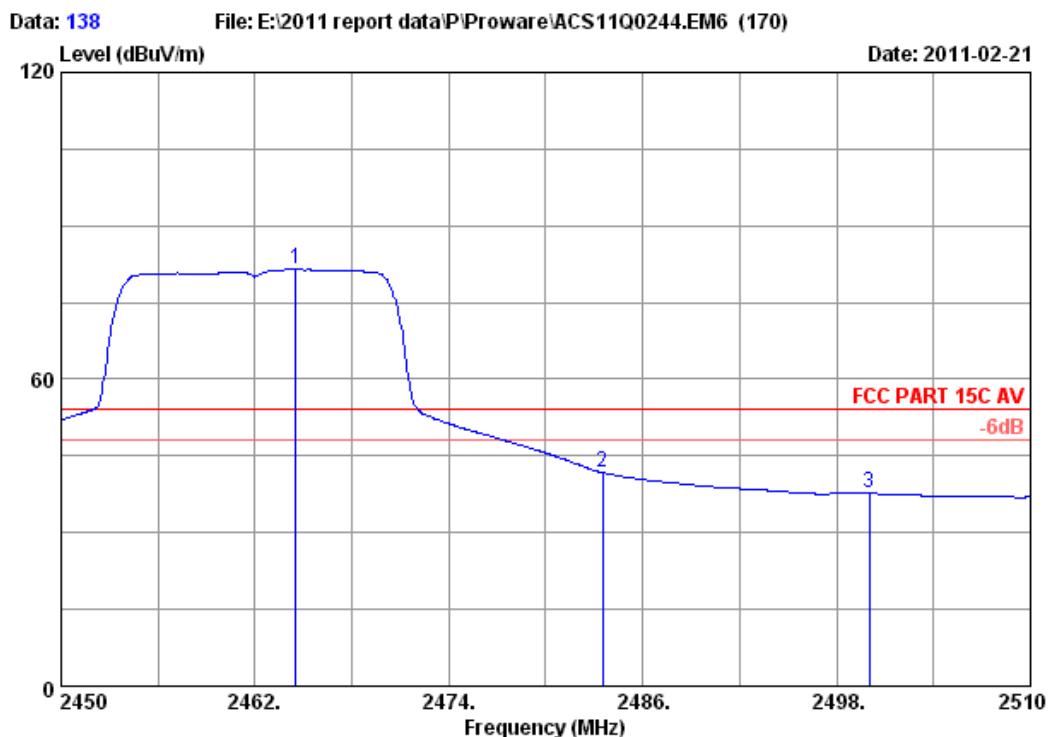
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 138
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11g CH11 2462MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
	Freq. Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
	(MHz)	(dB/m)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2464.520	28.55	7.72	36.02	81.20	81.45	54.00	-27.45 Average
2	2483.500	28.58	7.77	35.97	41.34	41.72	54.00	12.28 Average
3	2500.000	28.60	7.77	36.00	37.30	37.67	54.00	16.33 Average

Remarks:

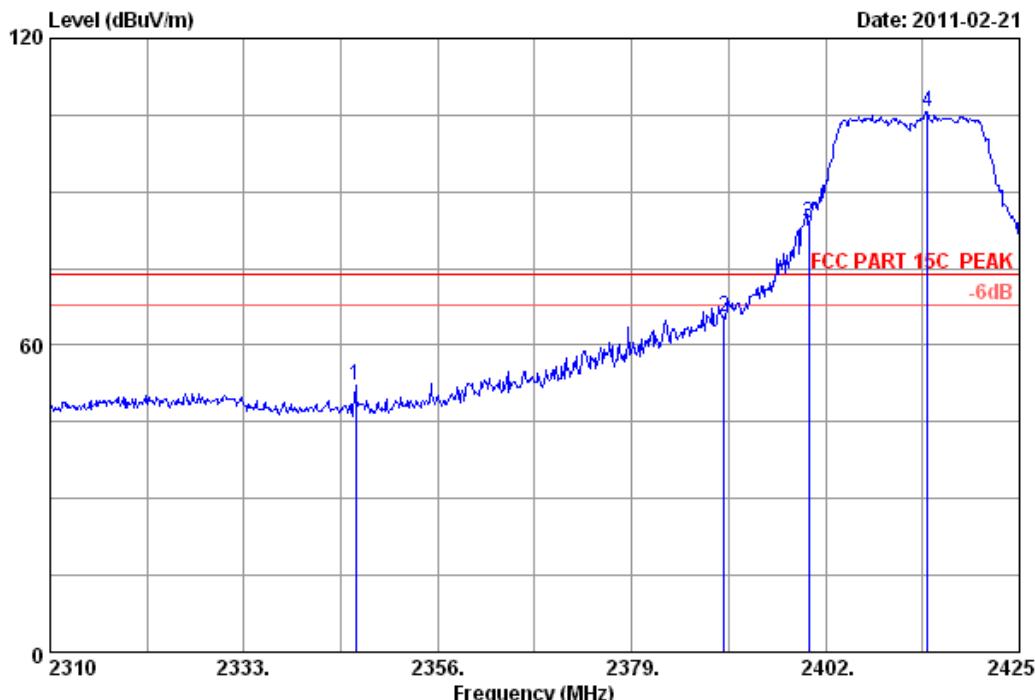
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 141 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 141
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11n HT20 CH1 2412MHz
 M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2346.225	28.38	7.61	35.99	52.19	52.19	74.00	21.81	Peak
2 2390.000	28.46	7.66	36.09	65.33	65.36	74.00	8.64	Peak
3 2400.000	28.46	7.66	36.09	83.72	83.75	74.00	-9.75	Peak
4 2414.075	28.48	7.66	35.95	105.41	105.60	74.00	-31.60	Peak

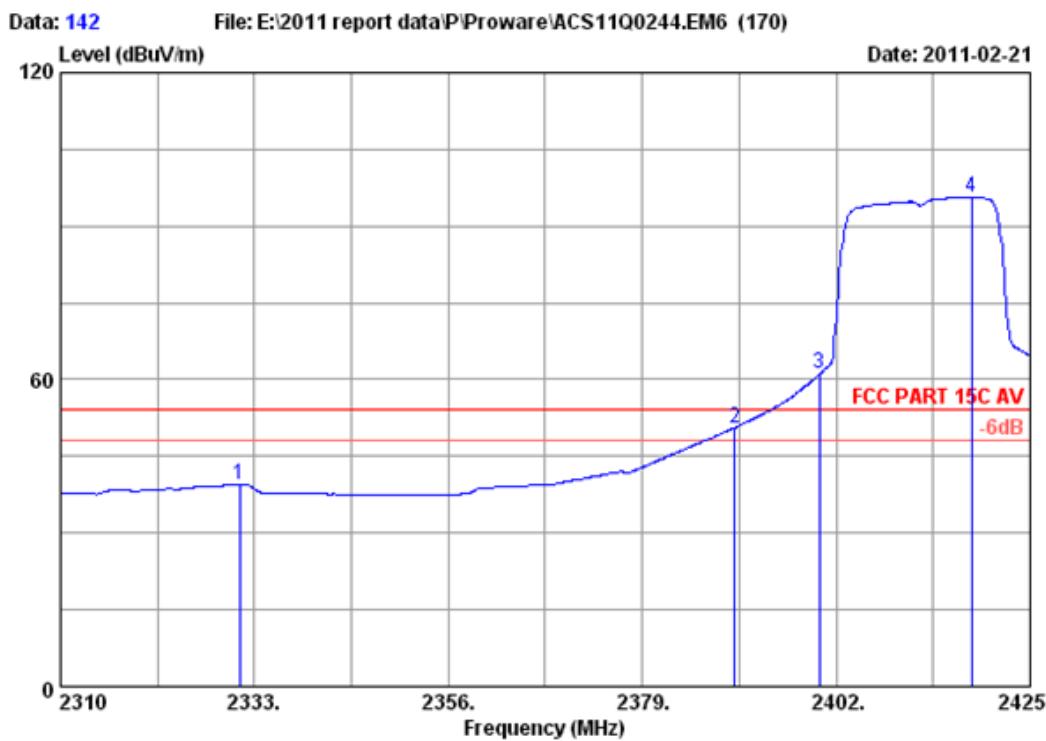
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 142
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11n HT20 CH1 2412MHz
 M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission					
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark	
<hr/>									
1 2331.275	28.36	7.61	36.06	39.49	39.40	54.00	14.60	Average	
2 2390.000	28.46	7.66	36.09	50.59	50.62	54.00	3.38	Average	
3 2400.000	28.46	7.66	36.09	61.10	61.13	54.00	-7.13	Average	
4 2418.100	28.48	7.66	35.95	95.39	95.58	54.00	-41.58	Average	
<hr/>									

Remarks:

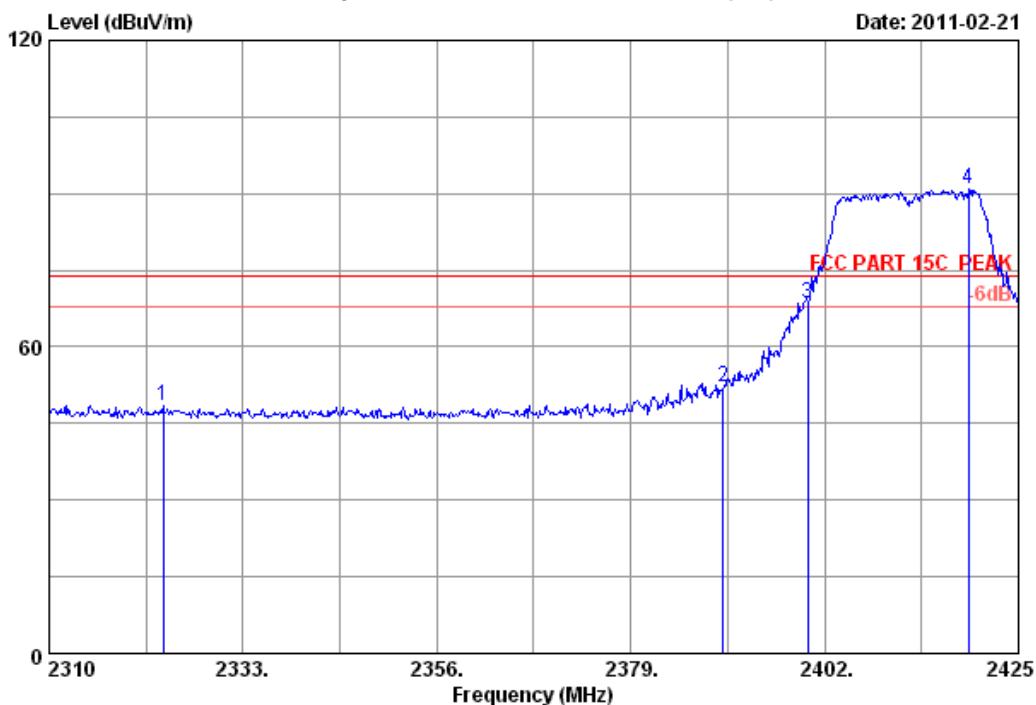
1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 139 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 139
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11n HT20 CH1 2412MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2323.570	28.36	7.55	36.06	48.75	48.60	74.00	25.40 Peak
2	2390.000	28.46	7.66	36.09	52.06	52.09	74.00	21.91 Peak
3	2400.000	28.46	7.66	36.09	68.61	68.64	74.00	5.36 Peak
4	2419.020	28.48	7.66	35.95	90.60	90.79	74.00	-16.79 Peak

Remarks:

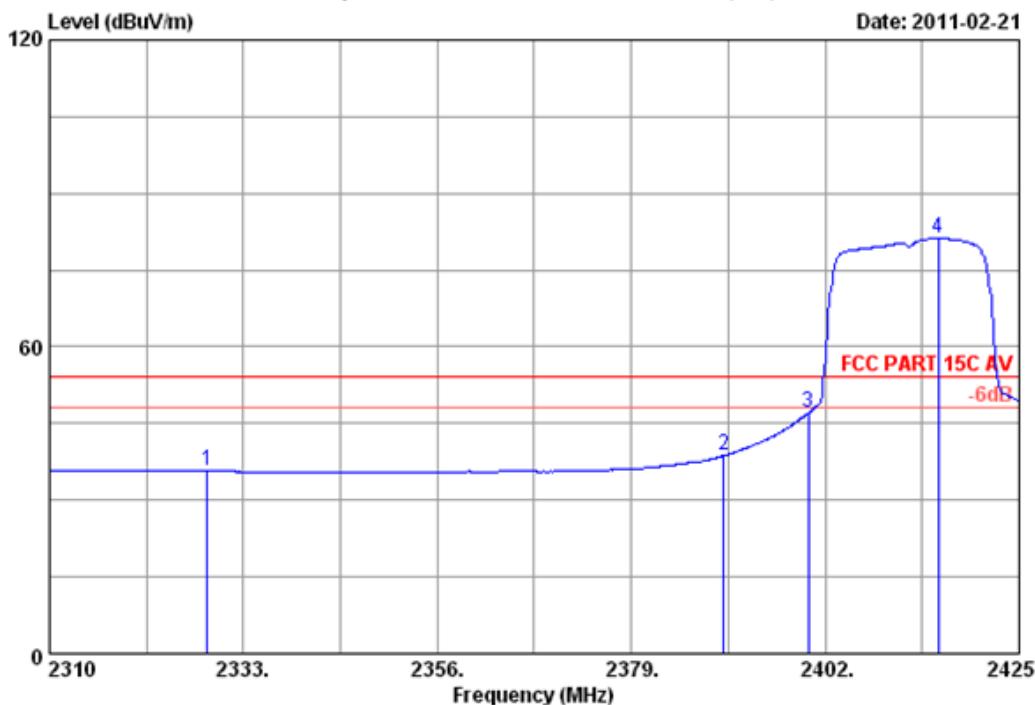
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 140 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 140
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11n HT20 CH1 2412MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2328.745	28.36	7.61	36.06	35.77	35.68	54.00	18.32 Average
2	2390.000	28.46	7.66	36.09	38.69	38.72	54.00	15.28 Average
3	2400.000	28.46	7.66	36.09	47.13	47.16	54.00	6.84 Average
4	2415.455	28.48	7.66	35.95	81.05	81.24	54.00	-27.24 Average

Remarks:

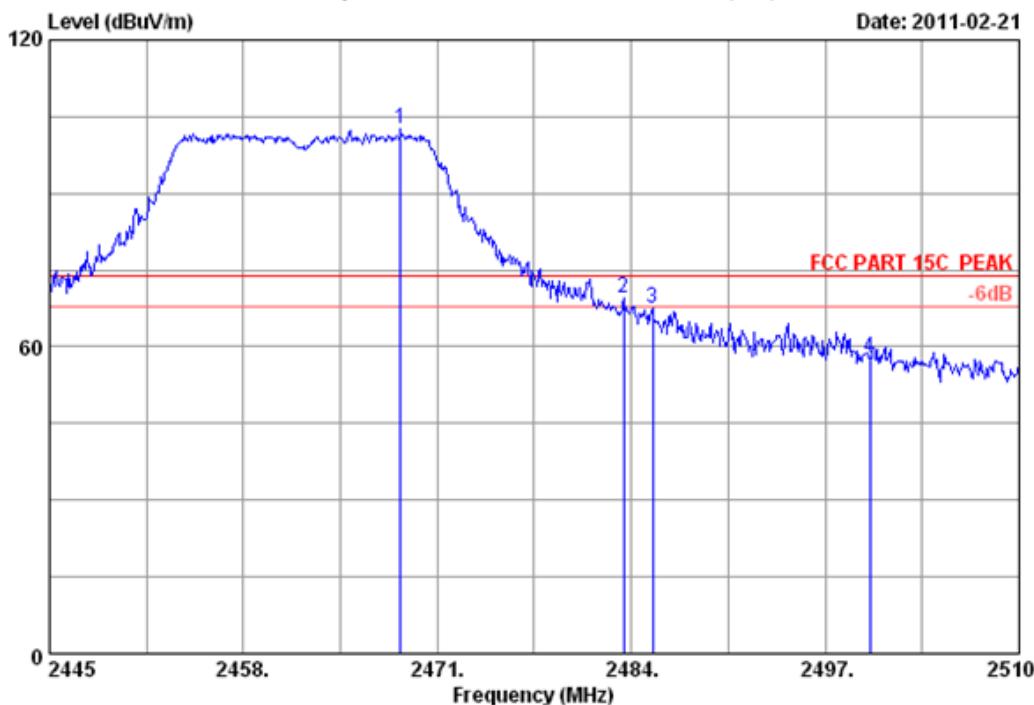
1. Emission Level = Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 143 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 143
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11n HT20 CH11 2462MHz
M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2468.530	28.55	7.72	36.02	102.27	102.52	74.00	-28.52	Peak
2 2483.500	28.58	7.77	35.97	69.20	69.58	74.00	4.42	Peak
3 2485.430	28.58	7.77	35.97	66.99	67.37	74.00	6.63	Peak
4 2500.000	28.60	7.77	36.00	57.37	57.74	74.00	16.26	Peak

Remarks:

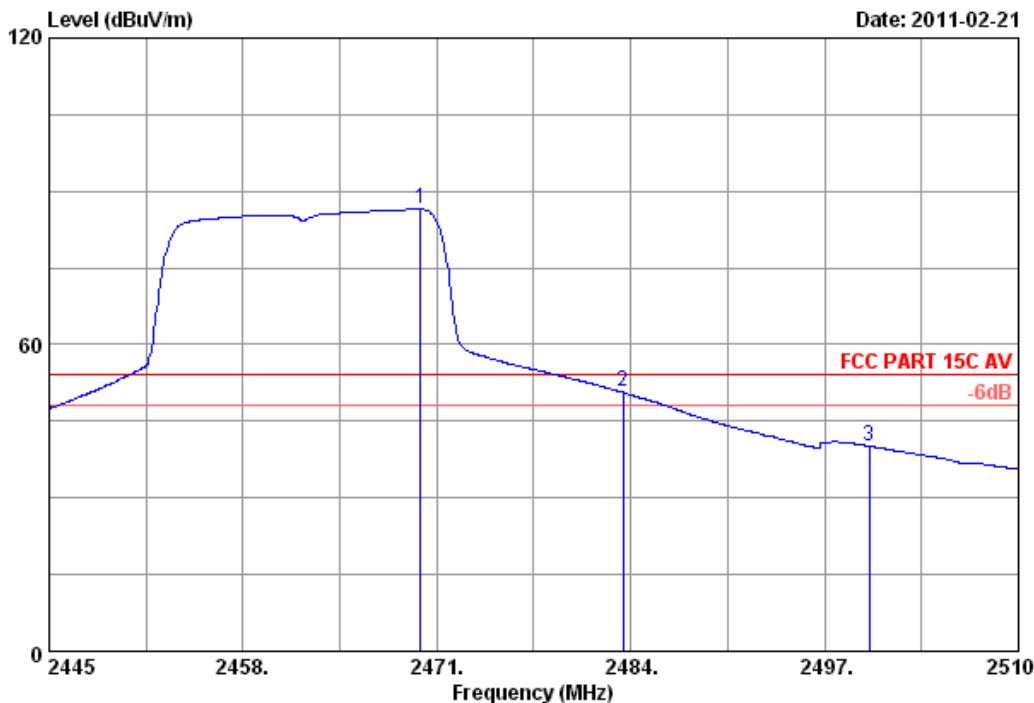
1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 144 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no.	:	RF Chamber	Data no. :	144
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	HORIZONTAL
Limit	:	FCC PART 15C AV		
Env. / Ins.	:	23°C/54%	Engineer :	Paul Tian
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11n HT20 CH11 2462MHz		
M/N	:	PW-DN421		

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dB _B V)	Level (dB _B V/m)	Limits (dB _B V/m)	Margin (dB)	Remark
1 2469.895	28.55	7.72	36.02	86.23	86.48	54.00	-32.48	Average
2 2483.500	28.58	7.77	35.97	50.33	50.71	54.00	3.29	Average
3 2500.000	28.60	7.77	36.00	39.76	40.13	54.00	13.87	Average

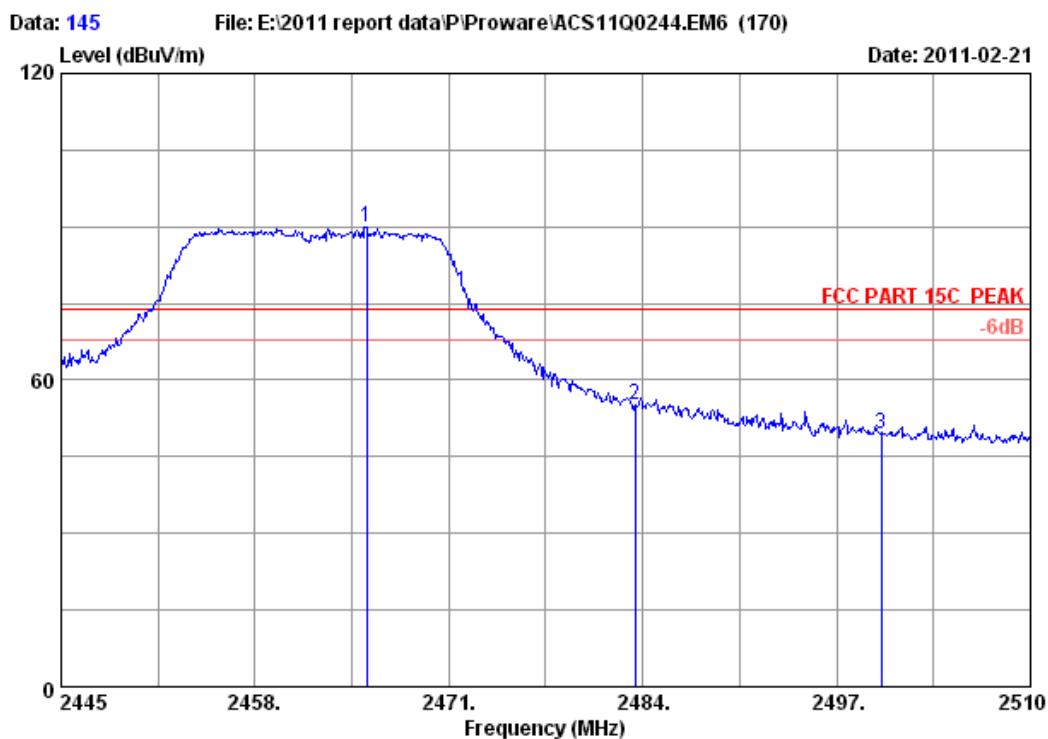
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 145
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11n HT20 CH11 2462MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2465.475	28.55	7.72	36.02	89.72	89.97	74.00	-15.97 Peak
2	2483.500	28.58	7.77	35.97	54.86	55.24	74.00	18.76 Peak
3	2500.000	28.60	7.77	36.00	49.19	49.56	74.00	24.44 Peak

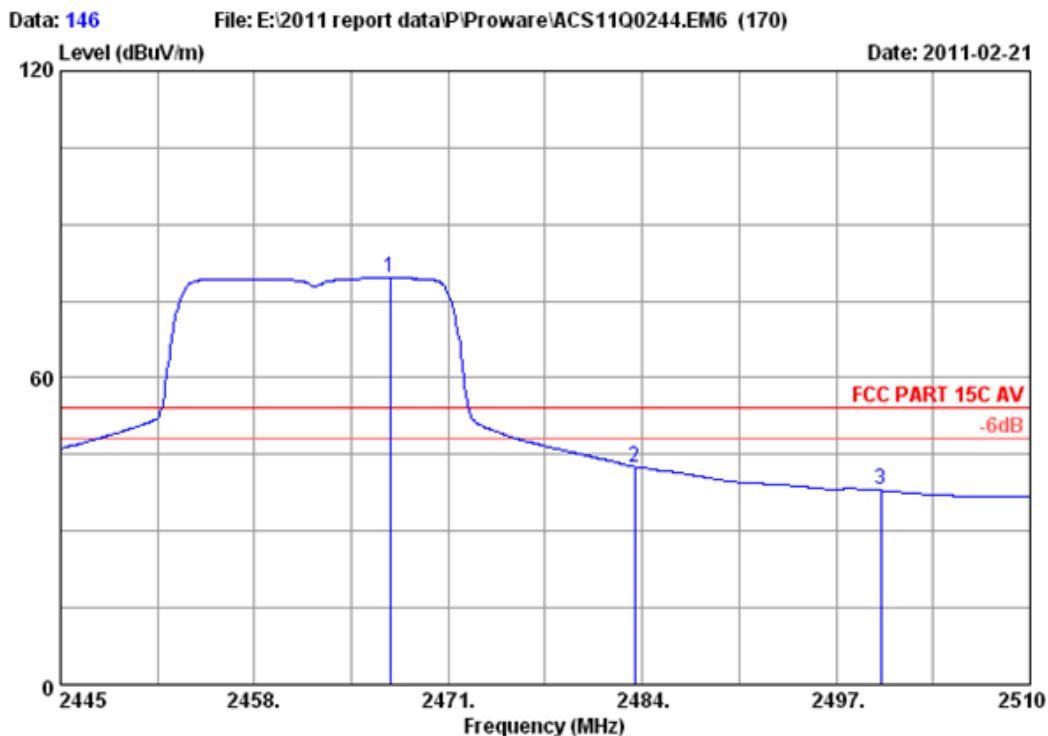
Remarks:

- Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
- The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 146
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11n HT20 CH11 2462MHz
M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2467.100	28.55	7.72	36.02	79.28	79.53	54.00	-25.53 Average
2	2483.500	28.58	7.77	35.97	42.21	42.59	54.00	11.41 Average
3	2500.000	28.60	7.77	36.00	37.57	37.94	54.00	16.06 Average

Remarks:

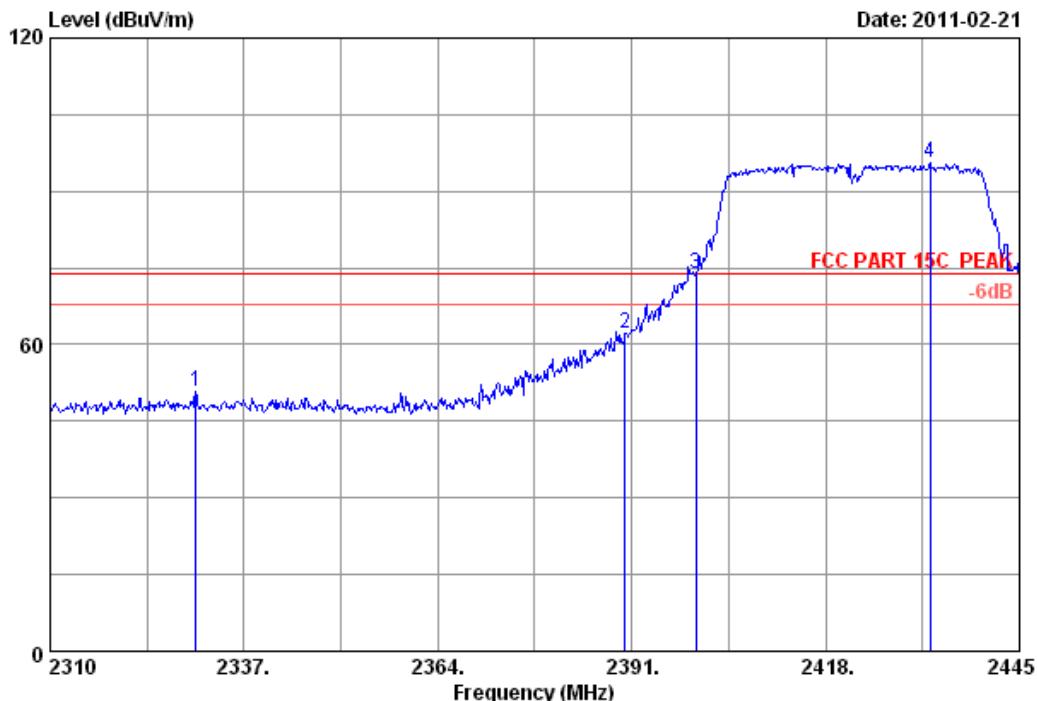
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 149 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 149
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11n HT40 CH1 2422MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)
1	2330.250	28.36	7.61	36.06	50.85	50.76	74.00	23.24 Peak
2	2390.000	28.46	7.66	36.09	62.03	62.06	74.00	11.94 Peak
3	2400.000	28.46	7.66	36.09	73.99	74.02	74.00	-0.02 Peak
4	2432.580	28.50	7.72	36.01	95.45	95.66	74.00	-21.66 Peak

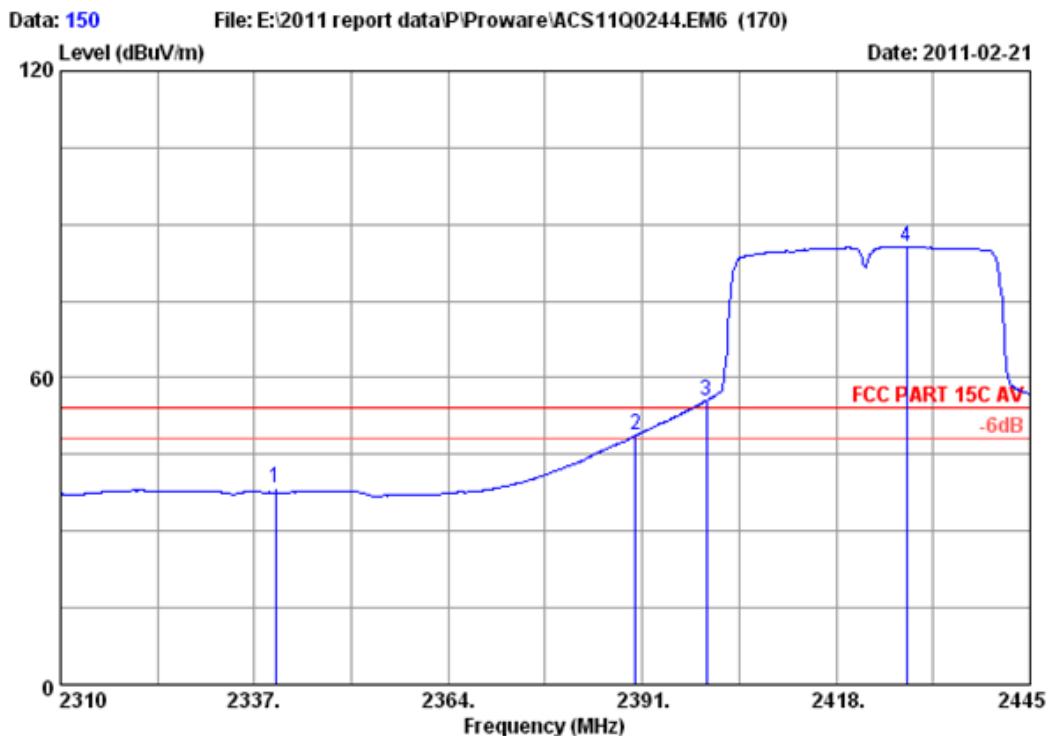
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 150
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C AV
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11n HT40 CH1 2422MHz
 M/N : PW-DN421

Freq. (MHz)	Factor (dB/m)	Ant. loss (dB)	Cable Factor (dB)	Amp. Reading (dBuV)	Emission			
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2339.970	28.38	7.61	35.99	38.29	38.29	54.00	15.71	Average
2 2390.000	28.46	7.66	36.09	48.62	48.65	54.00	5.35	Average
3 2400.000	28.46	7.66	36.09	55.57	55.60	54.00	-1.60	Average
4 2427.855	28.50	7.72	36.01	85.29	85.50	54.00	-31.50	Average

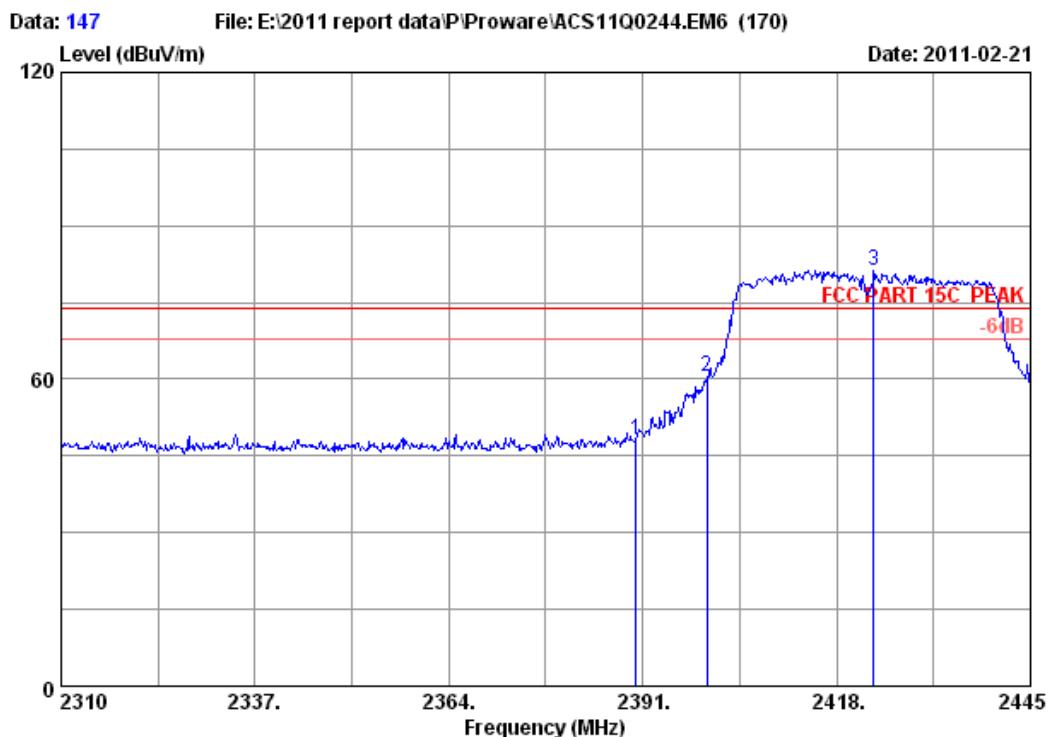
Remarks:

1. Emission Level = Antenna Factor + Cable Loss - Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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6-121



Site no. : RF Chamber Data no. : 147
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11n HT40 CH1 2422MHz
M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2390.000	28.46	7.66	36.09	48.08	48.11	74.00	25.89	Peak
2 2400.000	28.46	7.66	36.09	60.60	60.63	74.00	13.37	Peak
3 2423.130	28.50	7.66	36.01	81.11	81.26	74.00	-7.26	Peak

Remarks:

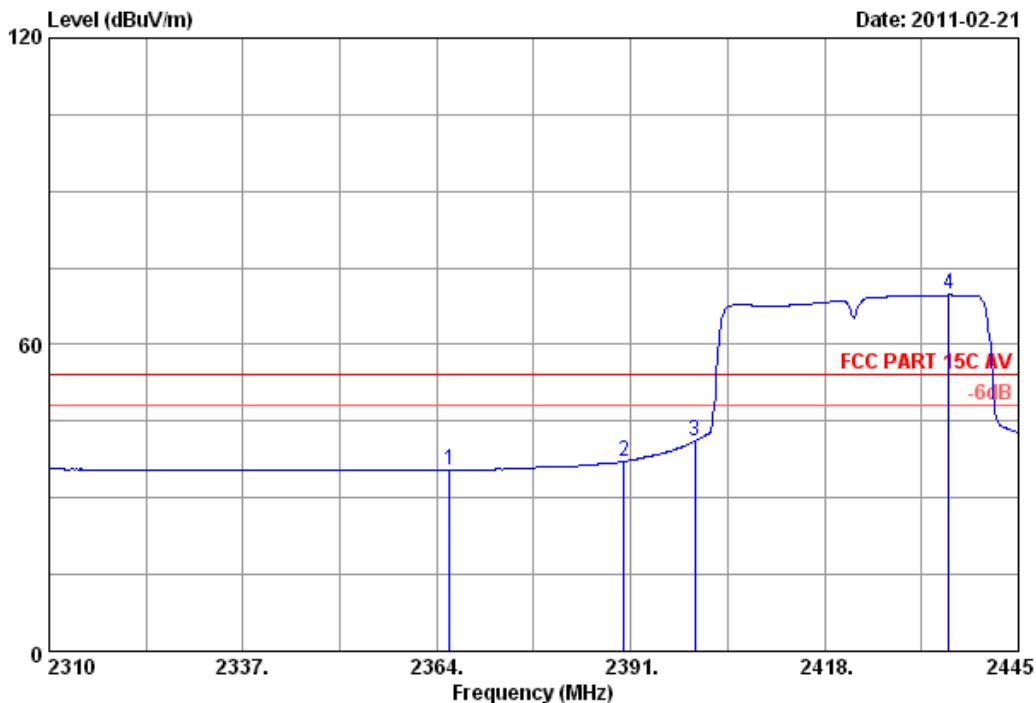
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Data: 148 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no.	:	RF Chamber	Data no. :	148
Dis. / Ant.	:	3m 3115(0905)	Ant. pol. :	VERTICAL
Limit	:	FCC PART 15C AV		
Env. / Ins.	:	23°C/54%	Engineer :	Paul Tian
EUT	:	Wireless Lite-N USB Adapter		
Power	:	DC 5V From PC input AC 120V/60Hz		
Test mode	:	IEEE802.11n HT40 CH1 2422MHz		
M/N	:	PW-DN421		

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2365.755	28.41	7.61	35.91	35.43	35.54	54.00	18.46	Average
2 2390.000	28.46	7.66	36.09	37.09	37.12	54.00	16.88	Average
3 2400.000	28.46	7.66	36.09	41.14	41.17	54.00	12.83	Average
4 2435.280	28.50	7.72	36.01	69.54	69.75	54.00	-15.75	Average

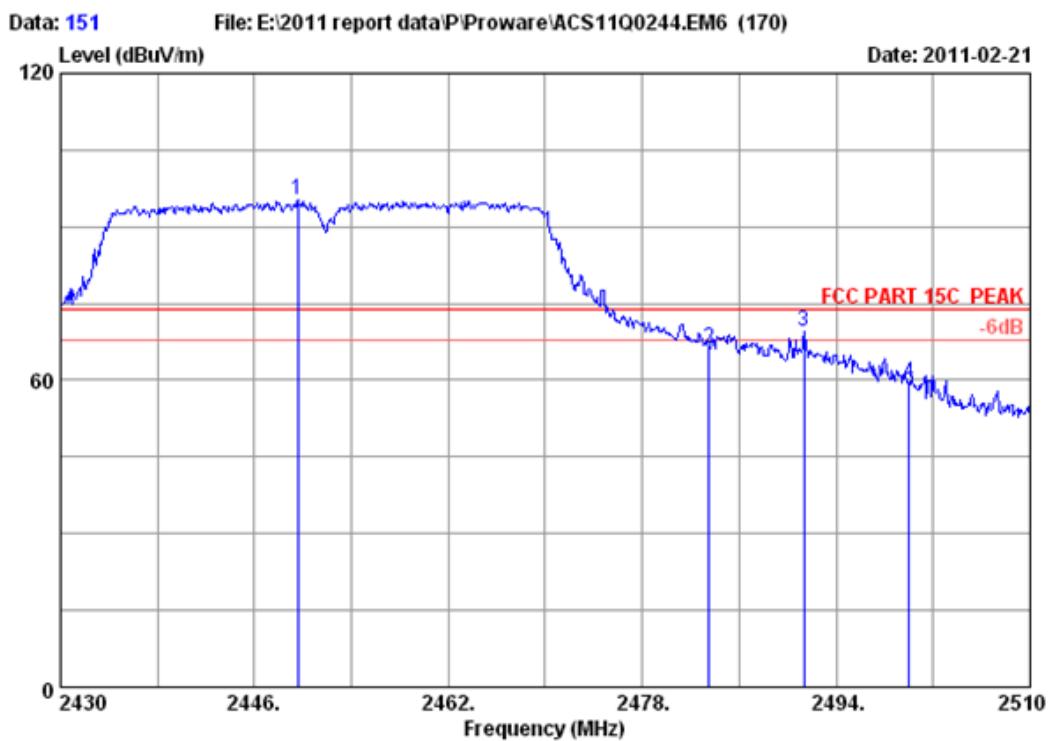
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

page

6-123



Site no. : RF Chamber Data no. : 151
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11n HT40 CH7 2452MHz
 M/N : PW-DN421

	Ant.	Cable	Amp.	Emission				
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin	Remark
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	
1	2449.600	28.53	7.72	36.06	94.92	95.11	74.00	-21.11 Peak
2	2483.500	28.58	7.77	35.97	65.85	66.23	74.00	7.77 Peak
3	2491.360	28.60	7.77	36.00	69.22	69.59	74.00	4.41 Peak
4	2500.000	28.60	7.77	36.00	59.26	59.63	74.00	14.37 Peak

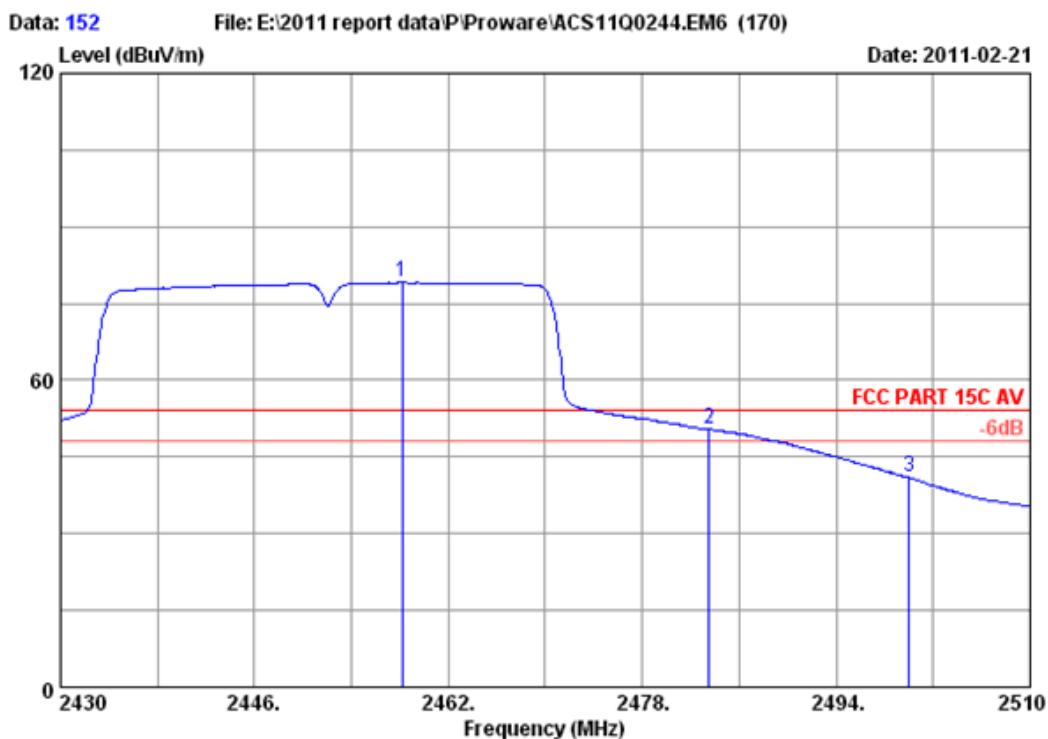
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 152
Dis. / Ant. : 3m 3115(0905) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11n HT40 CH7 2452MHz
M/N : PW-DN421

Freq. (MHz)	Ant. (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission					
				Factor	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2458.160	28.55	7.72	36.02	78.83	79.08	54.00	-25.08	Average	
2 2483.500	28.58	7.77	35.97	50.08	50.46	54.00	3.54	Average	
3 2500.000	28.60	7.77	36.00	40.59	40.96	54.00	13.04	Average	

Remarks:

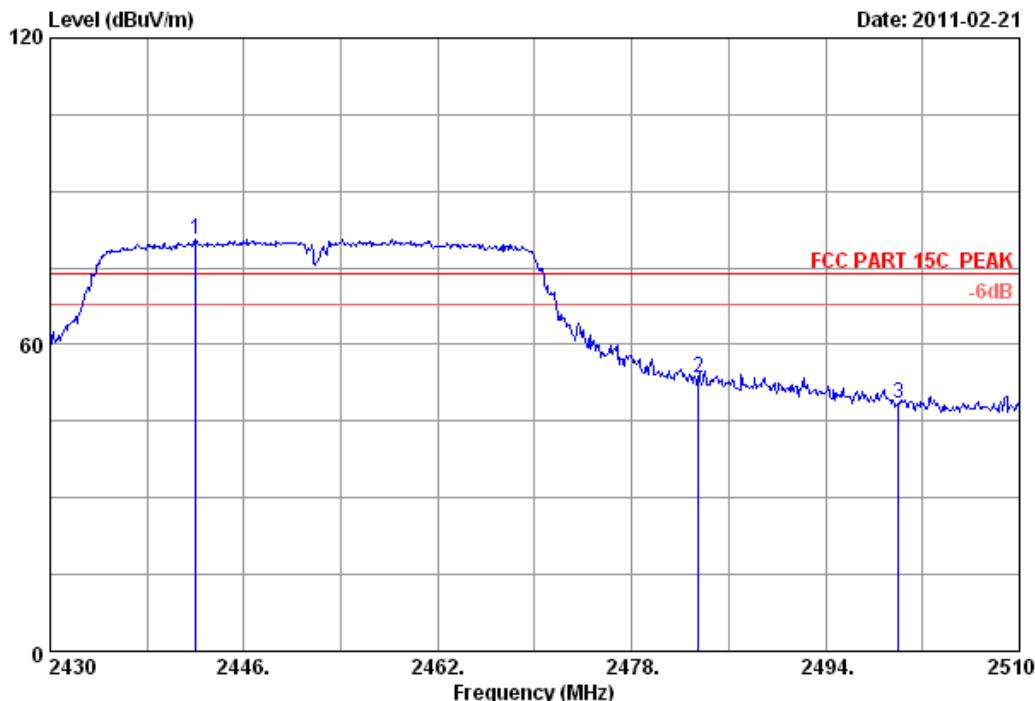
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

page

6-125

Data: 153 File: E:\2011 report data\P\Proware\ACS11Q0244.EM6 (170)



Site no. : RF Chamber Data no. : 153
 Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 23°C/54% Engineer : Paul Tian
 EUT : Wireless Lite-N USB Adapter
 Power : DC 5V From PC input AC 120V/60Hz
 Test mode : IEEE802.11n HT40 CH7 2452MHz
 M/N : PW-DN421

Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2442.000	28.53	7.72	36.06	80.36	80.55	74.00	-6.55	Peak
2 2483.500	28.58	7.77	35.97	53.24	53.62	74.00	20.38	Peak
3 2500.000	28.60	7.77	36.00	48.09	48.46	74.00	25.54	Peak

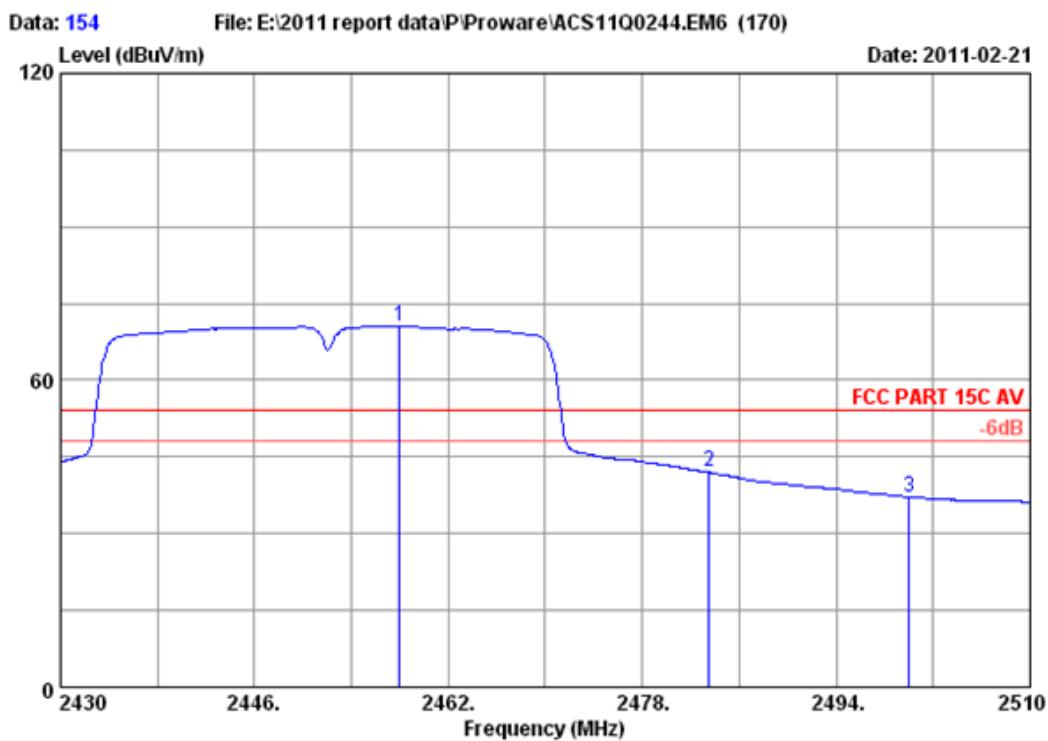
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

FCC ID: WWMDN421V1

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Site no. : RF Chamber Data no. : 154
Dis. / Ant. : 3m 3115(0905) Ant. pol. : VERTICAL
Limit : FCC PART 15C AV
Env. / Ins. : 23°C/54% Engineer : Paul Tian
EUT : Wireless Lite-N USB Adapter
Power : DC 5V From PC input AC 120V/60Hz
Test mode : IEEE802.11n HT40 CH7 2452MHz
M/N : PW-DN421

Freq. (MHz)	Ant. (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Emission				
				Factor	Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
1 2458.000	28.55	7.72	36.02	70.27	70.52	54.00	-16.52	Average
2 2483.500	28.58	7.77	35.97	41.60	41.98	54.00	12.02	Average
3 2500.000	28.60	7.77	36.00	36.82	37.19	54.00	16.81	Average

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

7. 6dB Bandwidth Test

7.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,10	1 Year
2.	Attenuator	Agilent	8491B	MY39262165	May.08,10	1 Year
3.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,10	1 Year

7.2. Limit

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

7.3. Test Procedure

The transmitter output was connected to a spectrum analyzer. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 300 kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

7.4. Test Results

EUT: Wireless Lite-N USB Adapter		
M/N: PW-DN421, VNT9271BU0D0		
Test date: 2011-02-21	Pressure: 100.6 kpa	Humidity: 57 %
Tested by: Sunny-lu	Test site: RF Site	Temperature: 24°C

Cable loss: 0.6 dB		Attenuator loss: 20 dB	Antenna Gain: 2.12 dBi
Test Mode	CH	6dB bandwidth (MHz)	Limit (KHz)
11b	CH1	12.183	>500
	CH6	12.222	>500
	CH11	12.247	>500
11g	CH1	16.906	>500
	CH6	17.179	>500
	CH11	16.759	>500
11n HT20	CH1	17.910	>500
	CH6	17.996	>500
	CH11	18.268	>500
11n HT40	CH1	36.803	>500
	CH4	36.810	>500
	CH7	36.591	>500
Conclusion : PASS			

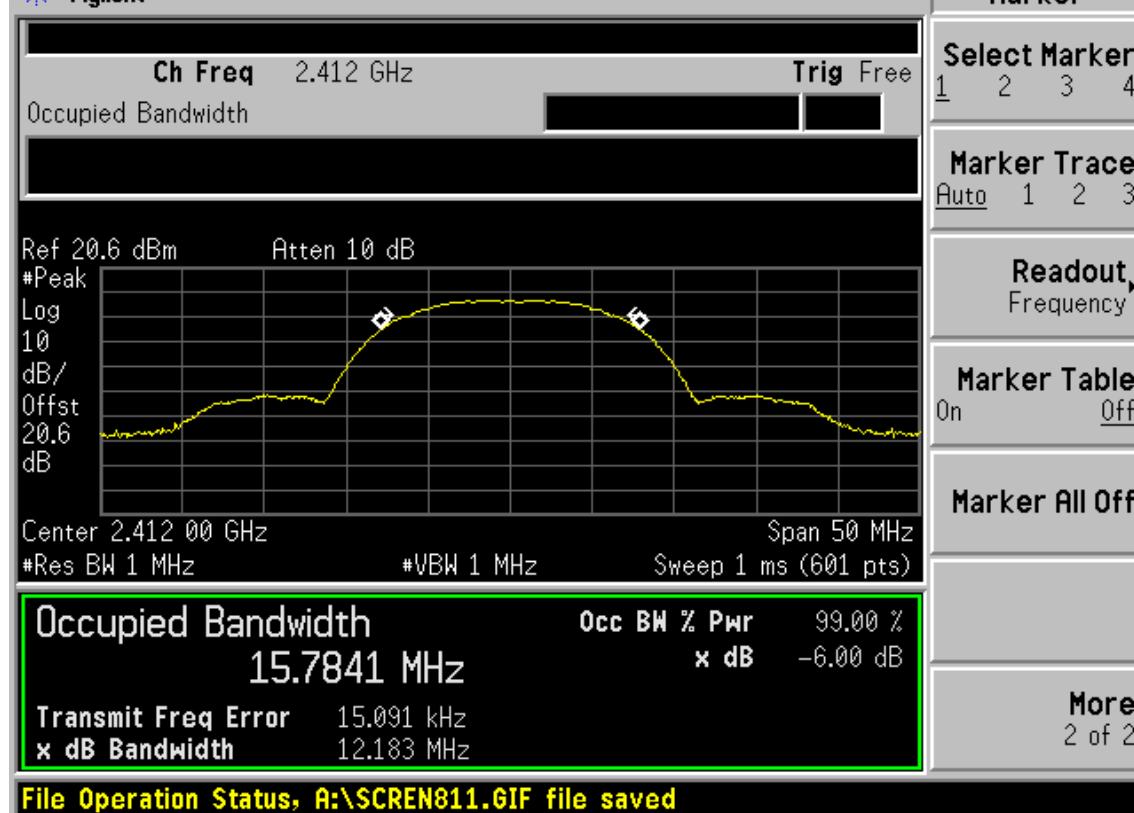
FCC ID: WWMDN421V1

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Test Mode: IEEE 802.11b TX

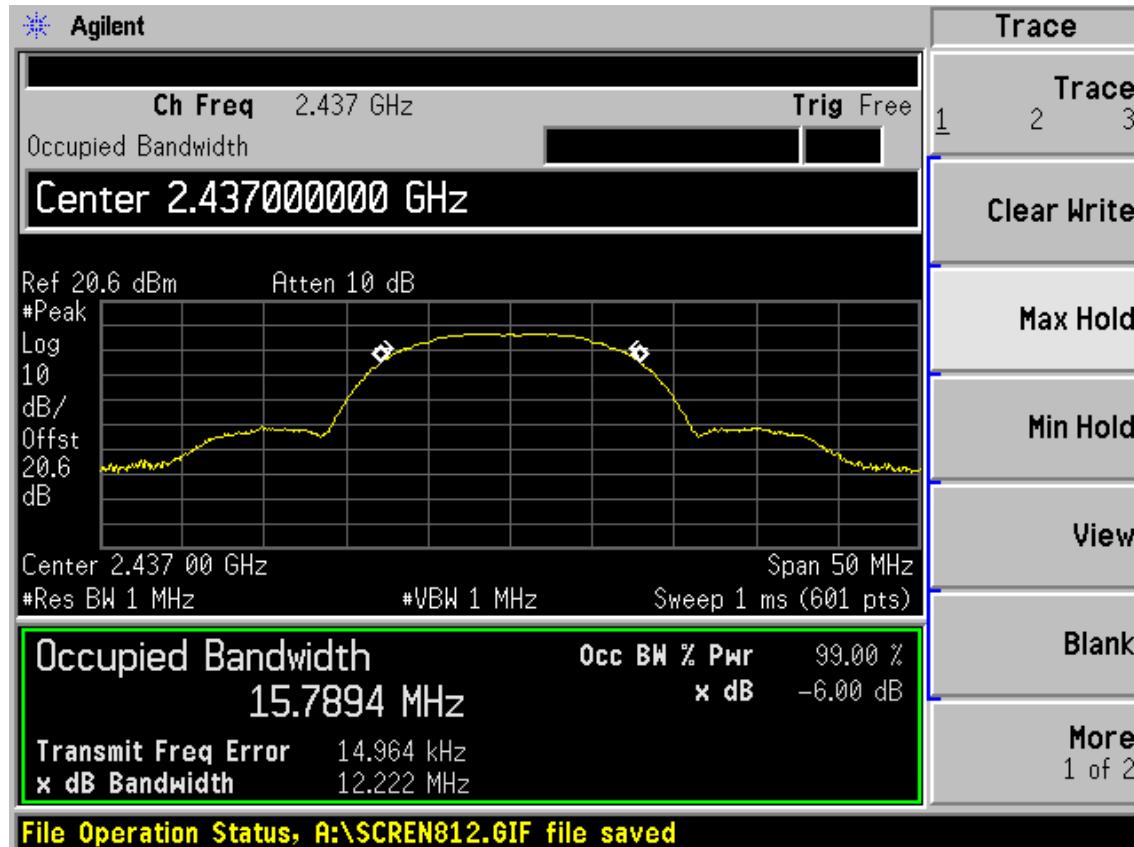
Test CH1: 2412MHz

Agilent



Test CH6: 2437MHz

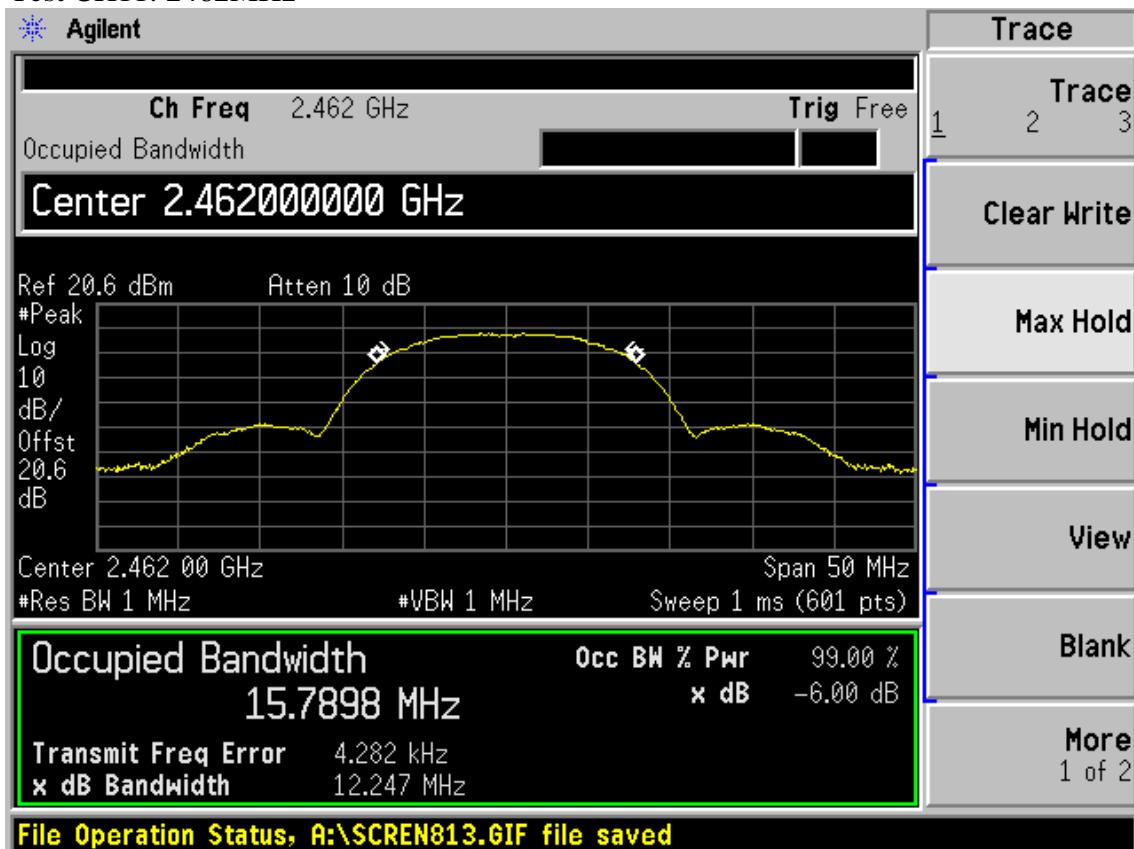
Agilent



FCC ID: WWMDN421V1

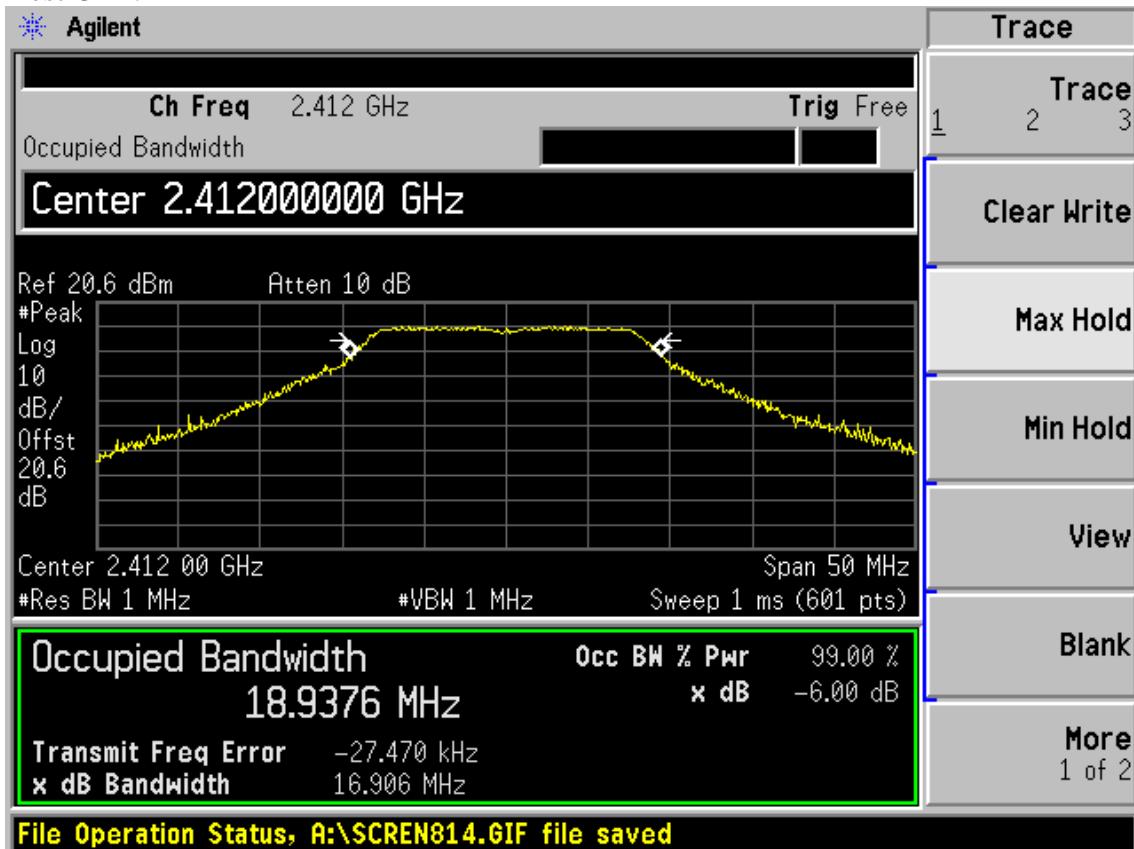
page 7-129

Test CH11: 2462MHz



Test Mode: IEEE 802.11g TX

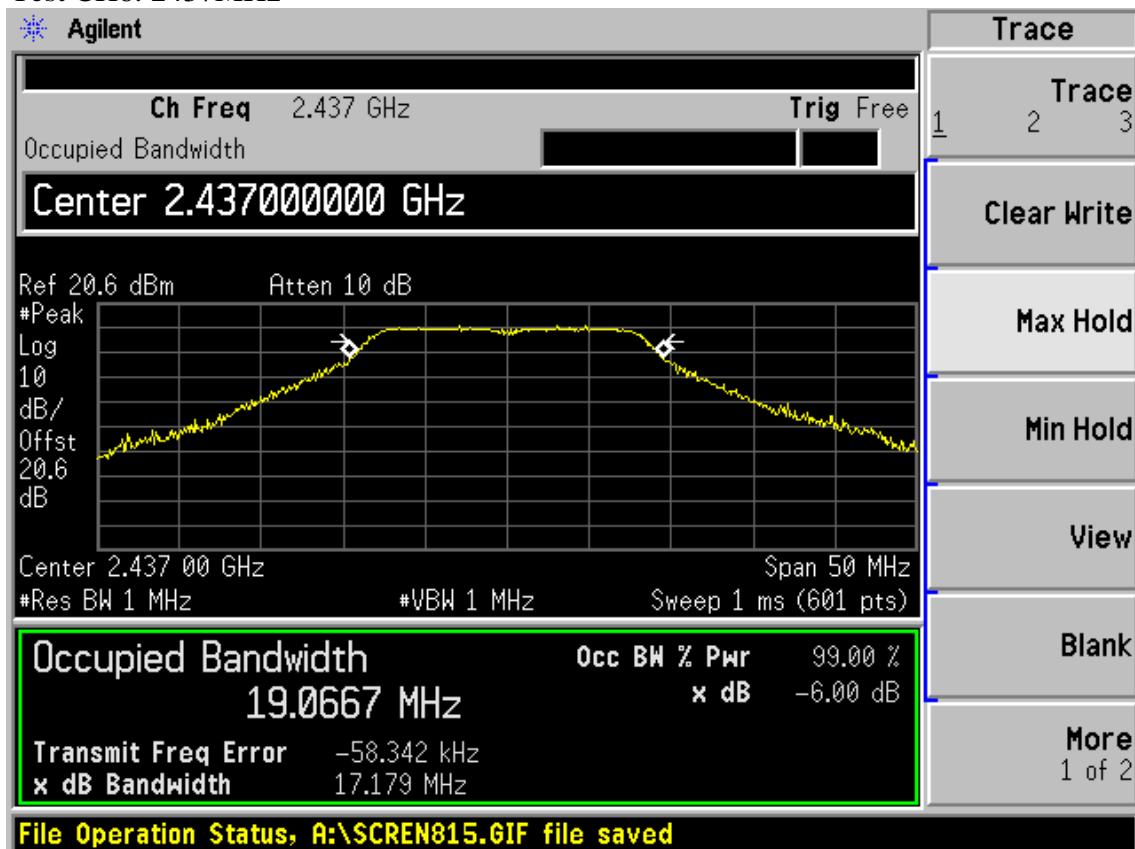
Test CH1: 2412MHz



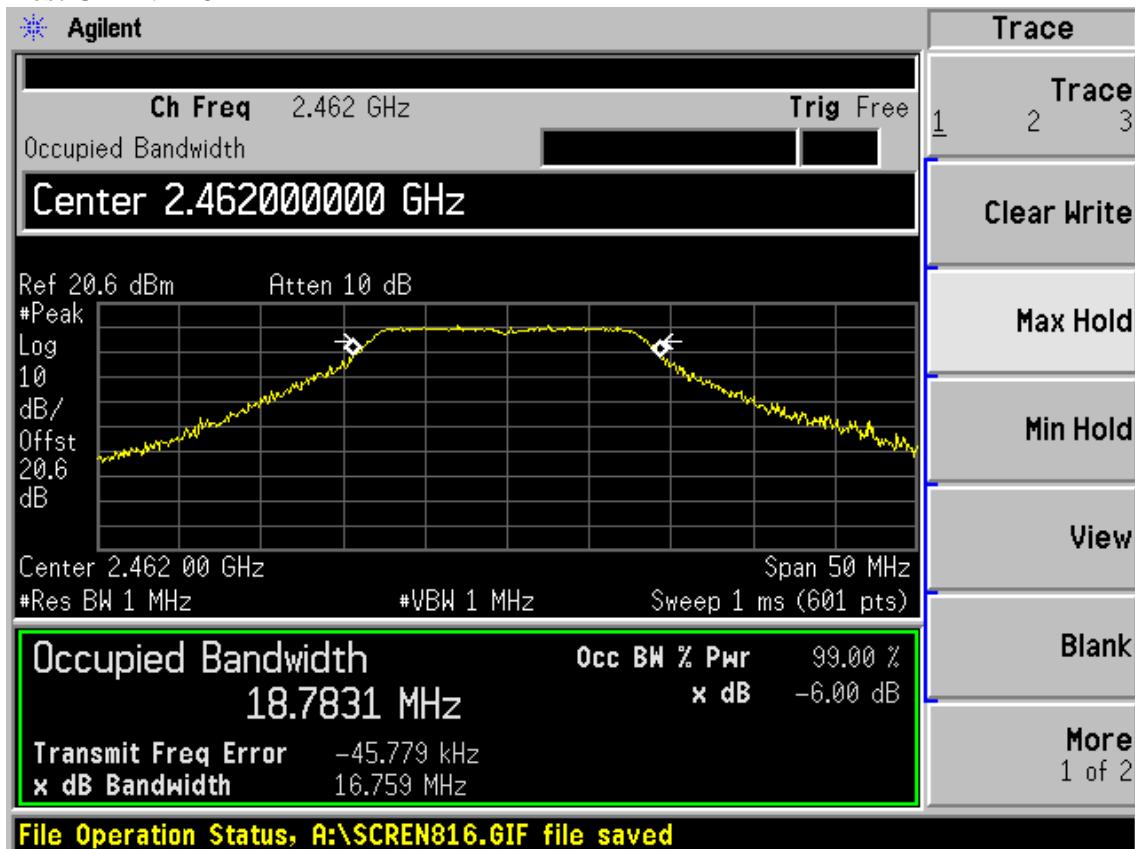
FCC ID: WWMDN421V1

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Test CH6: 2437MHz



Test CH11: 2462MHz

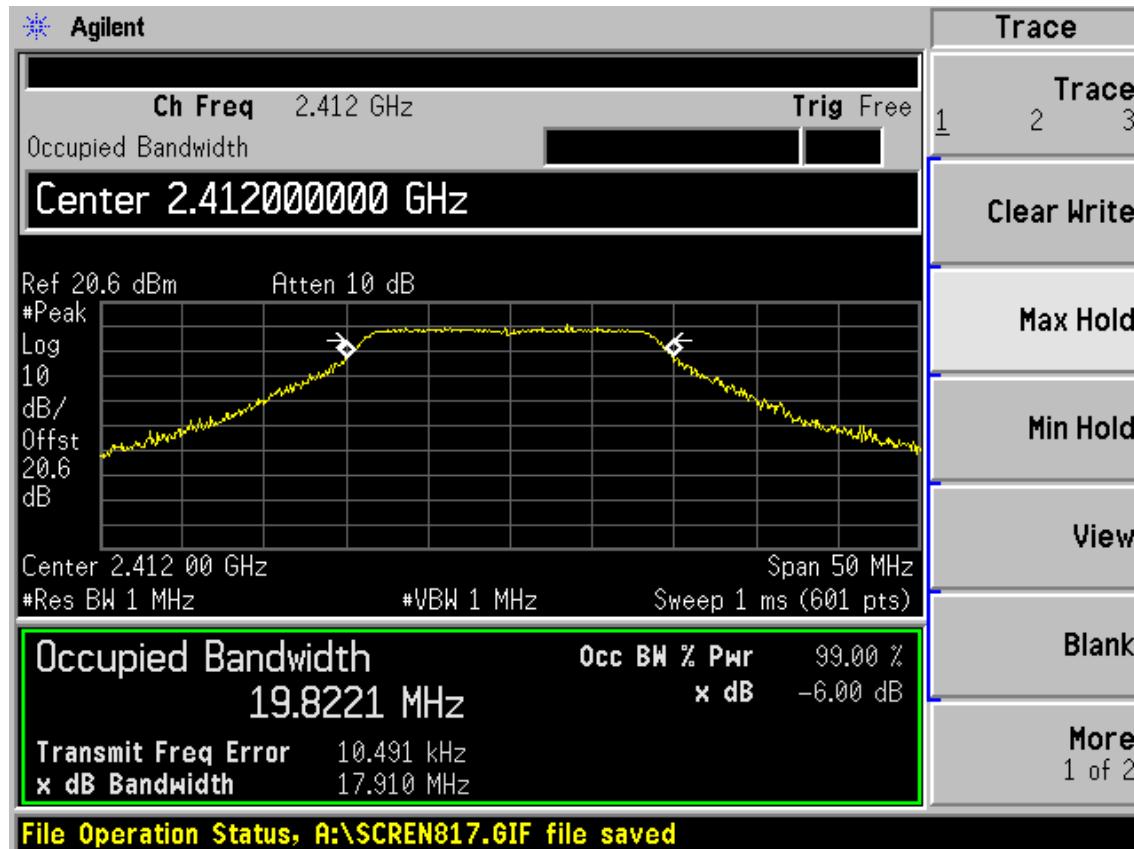


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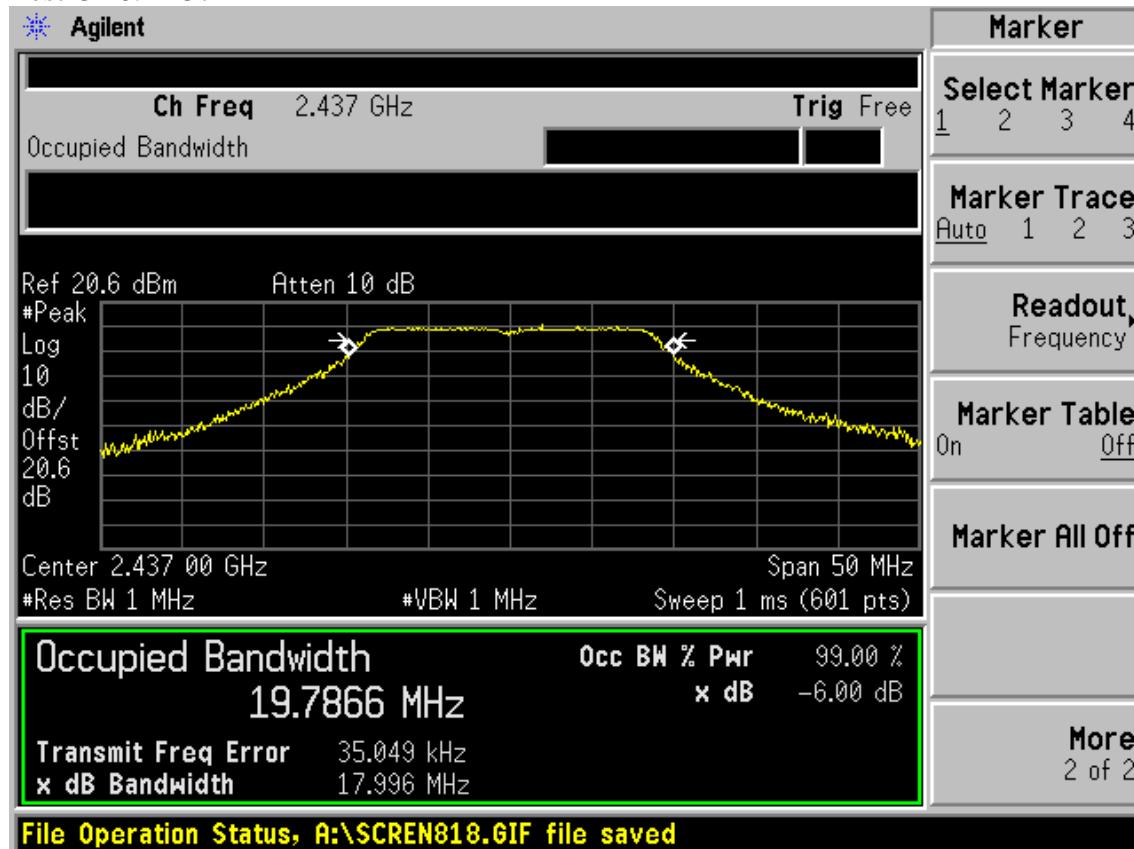
page 7-131

Test Mode: IEEE 802.11n HT20 TX

Test CH1: 2412MHz



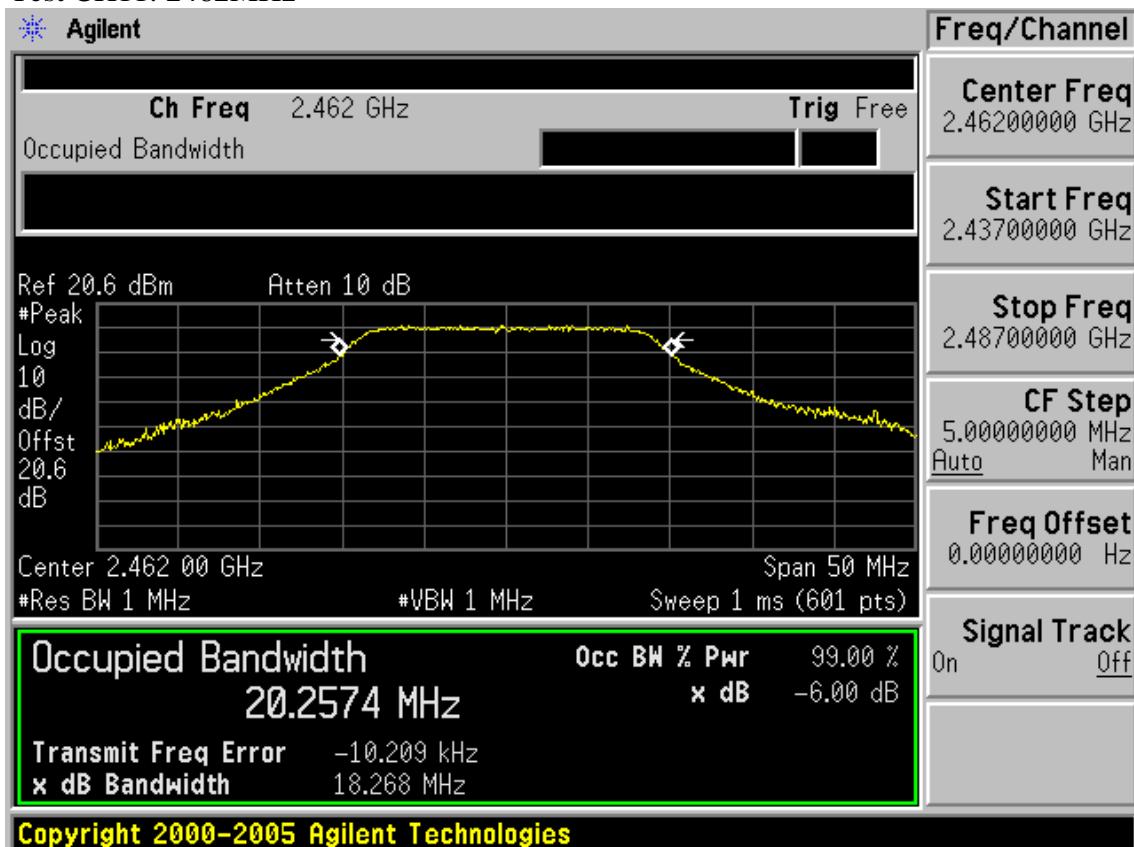
Test CH6: 2437MHz



FCC ID: WWMDN421V1

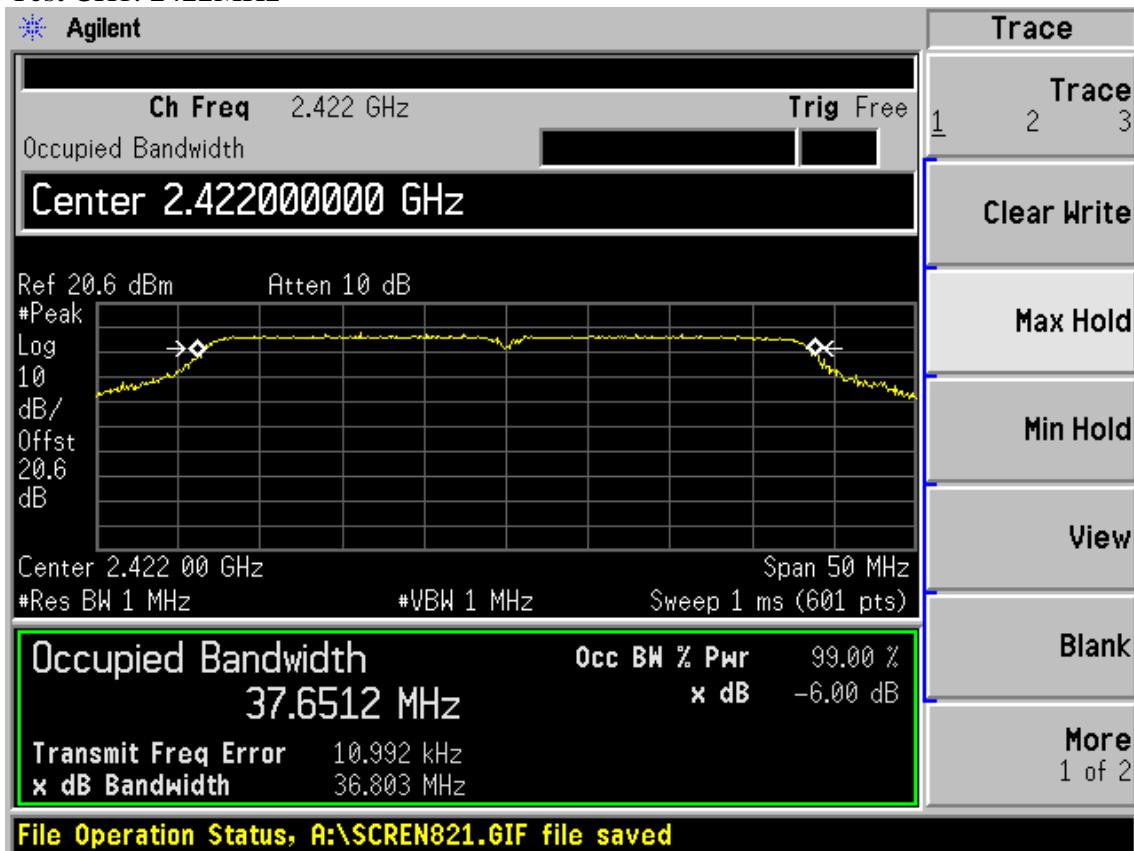
page 7-132

Test CH11: 2462MHz



Test Mode: IEEE 802.11n HT40 TX

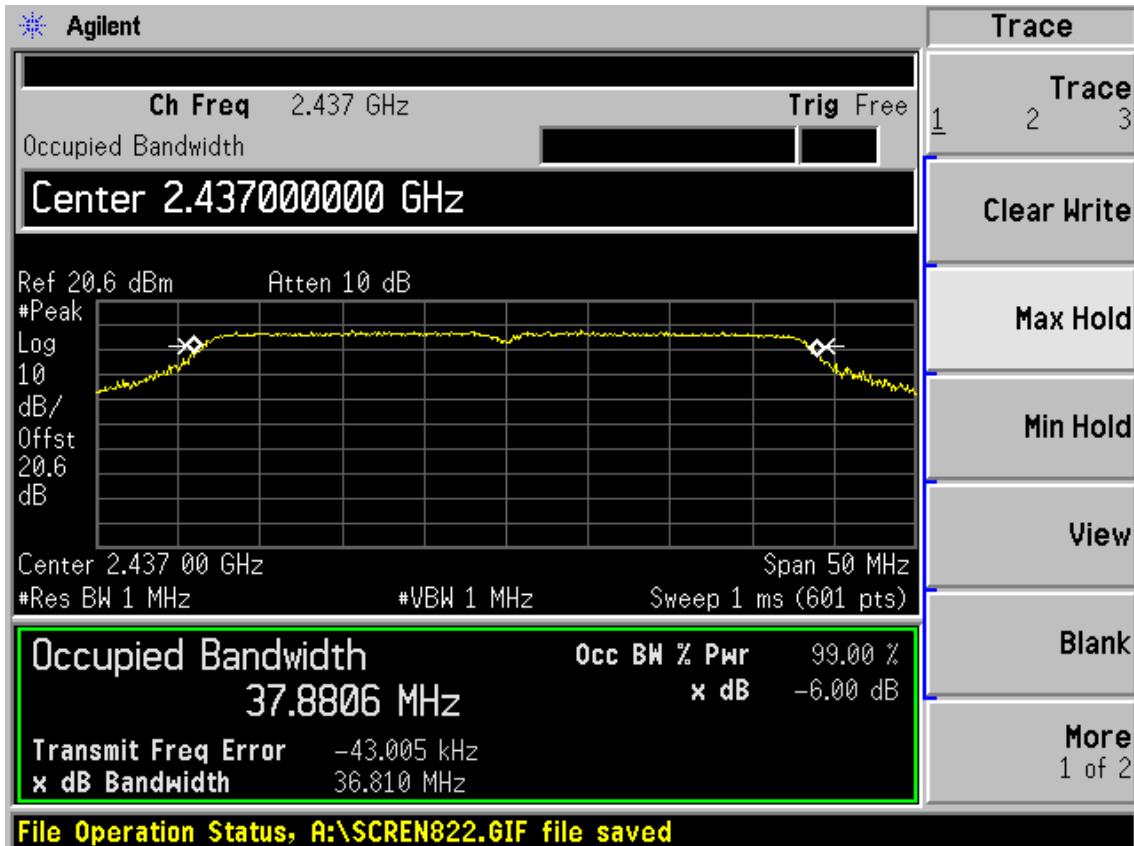
Test CH1: 2422MHz



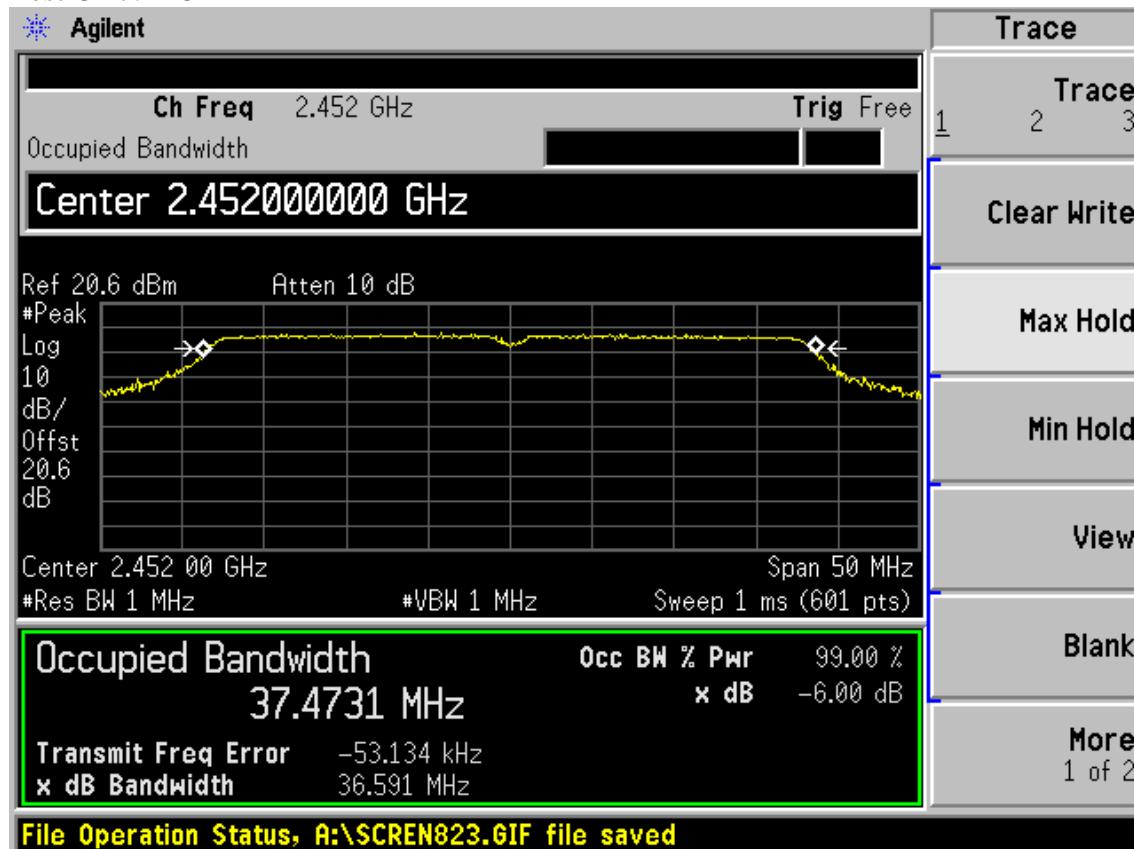
FCC ID: WWMDN421V1

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Test CH4: 2437MHz



Test CH7: 2452MHz



8. OUTPUT POWER TEST

8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power meter	Anritsu	ML2487A	6K00002472	May.08,10	1 Year
2.	Power sensor	Anritsu	MA2491A	0033005	May.08,10	1 Year
3	Attenuator	Agilent	8491B	MY39262165	May.08,10	1 Year
4	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 10	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,10	1 Year

8.2. Limit (FCC Part 15C 15.247 b(3))

For systems using digital modulation in the 2400—2483.5MHz, The Peak out put Power shall not exceed 1W(30dBm)

8.3. Test Procedure

- 1, Connected the EUT's antenna port to measure device by 20dB attenuator.
- 2, For IEEE 802.11b/g and IEEE802.11n HT20 mode, use a PK power meter which's bandwidth is 20MHz and above 6dB bandwidth of signal to measure out each test modes' PK output power.
- 3, For IEEE802.11n HT40 mode, because the signal's bandwidth is about 40MHz and above 20MHz bandwidth of power sensor ML2491A. So Bandwidth correction method according to ANSI C63.10 clause 6.10.2.1 part (c) was used:
 - 1) Set the RBW=3MHz and VBW =8MHz
 - 2) Turn averaging off
 - 3) Set sweep to automatic
 - 4) Set the span just large enough to capture the emission
 - 5) Use a peak detector on max hold
 - 6) Record the measured power
 - 7) Calculate Output power of EUT use the formula:

Peak output power =measured power+ 10log[(6dB bandwidth of emission)/(analyzer RBW)]

- 4, For IEEE802.11n mode, it's MIMO technology, so account total PK output power by add each chain's PK output power.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

8.4. Test Results

EUT: Wireless Lite-N USB Adapter			
M/N: PW-DN421, VNT9274BU0D0			
Test date: 2011-05-02	Pressure: 101.6 kpa		Humidity: 57 %
Tested by: Leo-Li	Test site: RF site		Temperature: 25 °C
Cable loss: 0.6dB		Attenuator loss: 20 dB	Antenna Gain: 2.12 dBi
Test Mode	CH (MHz)	Peak output Power (dBm)	Limit (dBm)
11b	CH1	19.60	30
	CH6	20.60	30
	CH11	21.04	30
11g	CH1	21.62	30
	CH6	22.49	30
	CH11	23.19	30
11n HT20	CH1	21.46	30
	CH6	22.28	30
	CH11	22.90	30

Test Mode	CH	Result		Limit (dBm)
		Measured power(dBm)/3MHz	PK Output power (dBm)	
11n HT40	CH1	10.13	21.02	30
	CH4	11.47	22.36	30
	CH7	11.53	22.42	30

6dB Bandwidth for 11n HT40: 36.8MHz

BW correction factor = $10\log[(36.8\text{MHz})/(3\text{MHz})] = 10.89\text{dB}$

Conclusion: PASS

9. POWER SPECTRAL DENSITY TEST

9.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 10	1 Year
2.	Attenuator	Agilent	8491B	MY39262165	May.08, 10	1 Year
3.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08, 10	1 Year

9.2. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

9.3. Test Procedure

- 1, Connected the EUT's antenna port to spectrum analyzer device by 20dB attenuator.
- 2, Follow the test procedure as described in ANSI C.10: 2009 Clause 6.11.2.3 to measure out each test modes and chain's power density with 3KHz.

9.4. Test Results

EUT: Wireless Lite-N USB Adapter			
M/N: PW-DN421, VNT9271BU0D0			
Test date: 2011-02-21	Pressure:100.6 kpa	Humidity:58%	
Tested by: Sunny-lu	Test site: RF site	Temperature:23.5°C	
Cable loss: 0.6 dB	Attenuator loss: 20 dB	Antenna Gain: 2.12 dBi	
Test Mode	CH	Power density (dBm/3KHz)	Limit (dBm/3KHz)
11b	CH1	-9.16	8
	CH6	-7.84	8
	CH11	-6.93	8
11g	CH1	-11.11	8
	CH6	-10.15	8
	CH11	-9.90	8
11n HT20	CH1	-11.37	8
	CH6	-10.07	8
	CH11	-10.30	8
11n HT40	CH1	-21.8	8
	CH4	-17.4	8
	CH7	-21.2	8
Conclusion : PASS			

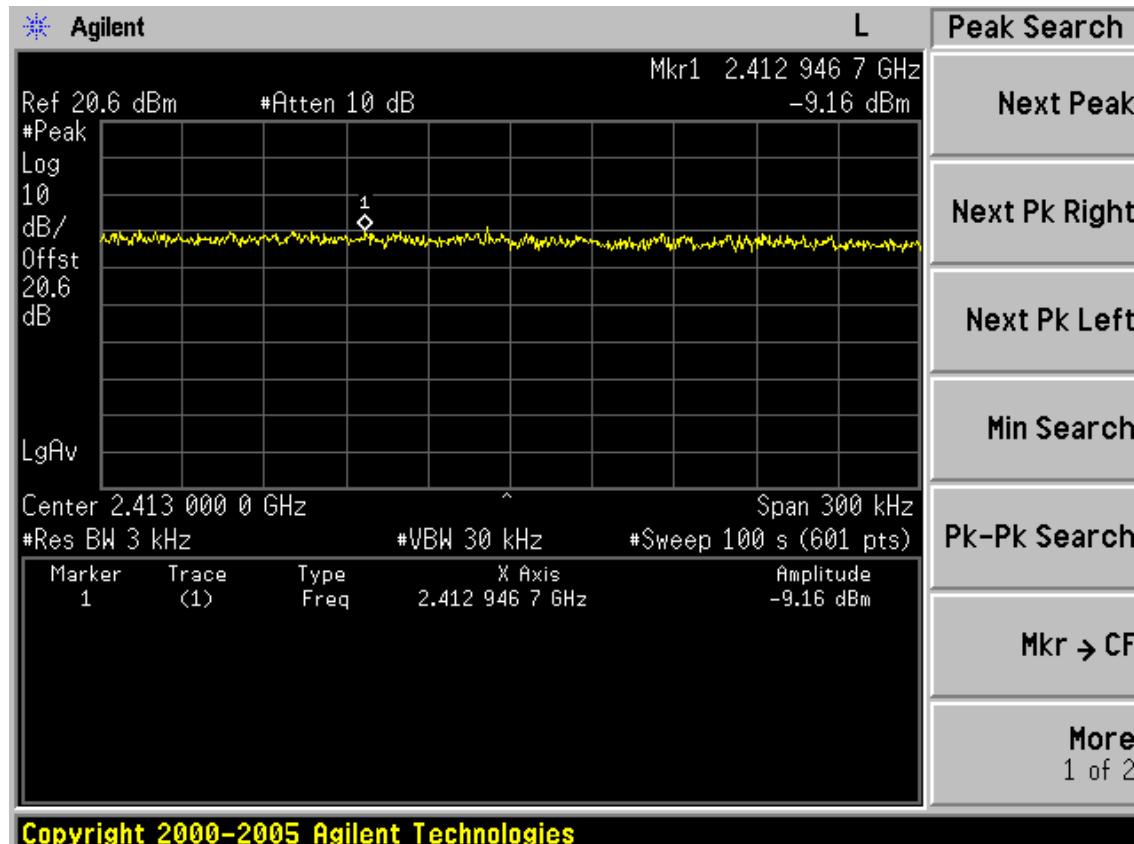
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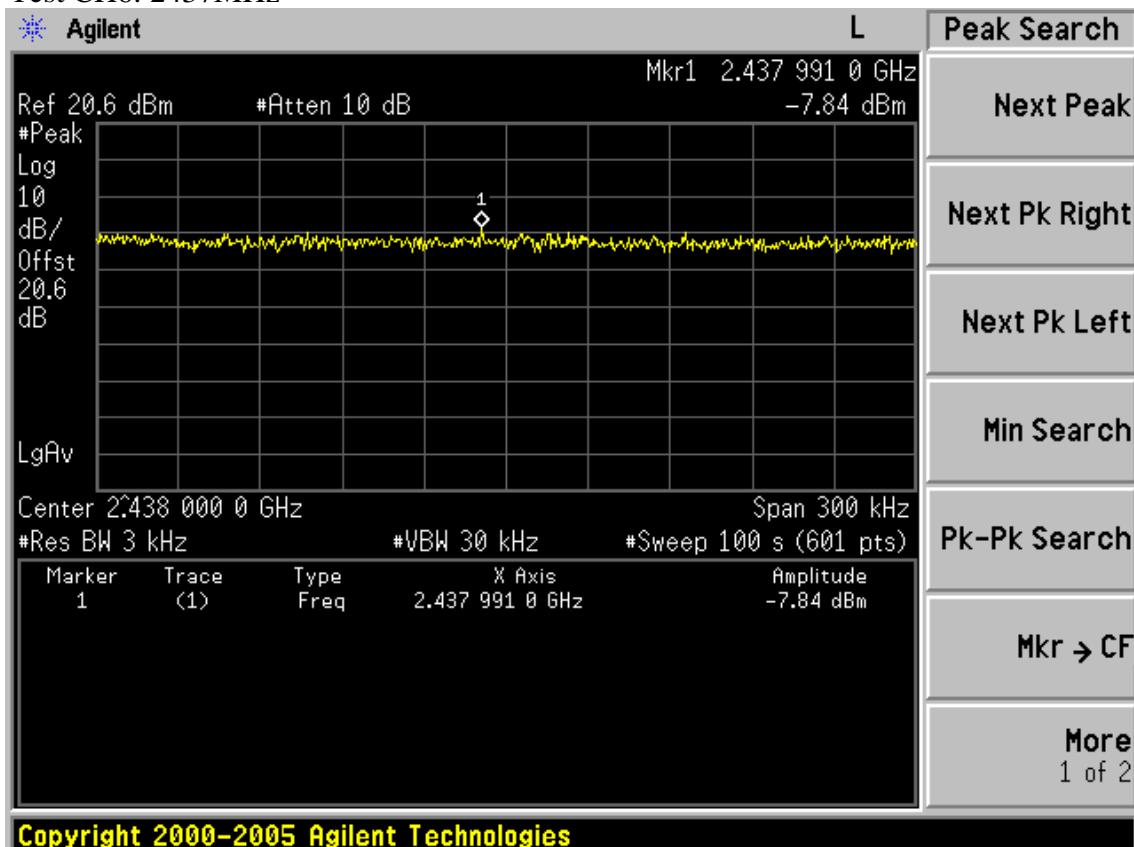
9-5

Test Mode: IEEE 802.11b TX

Test CH1: 2412MHz



Test CH6: 2437MHz

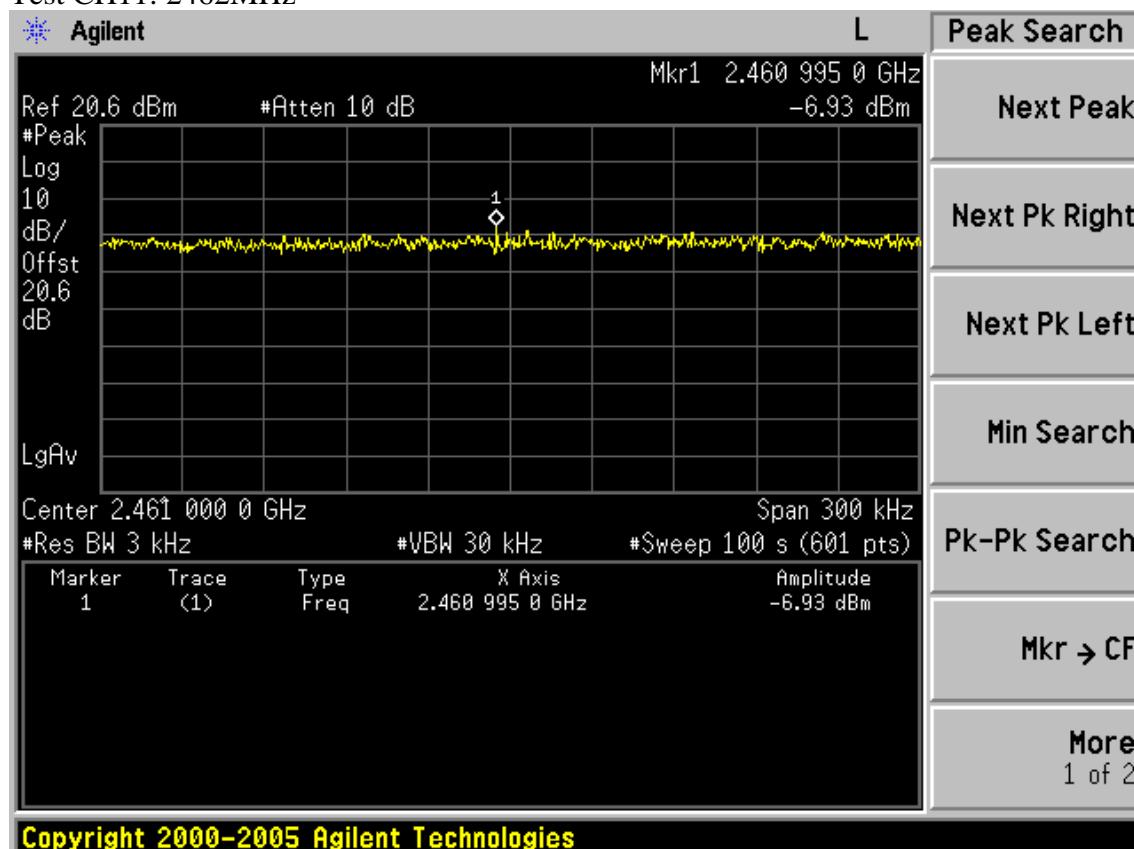


FCC ID: WWMDN421V1

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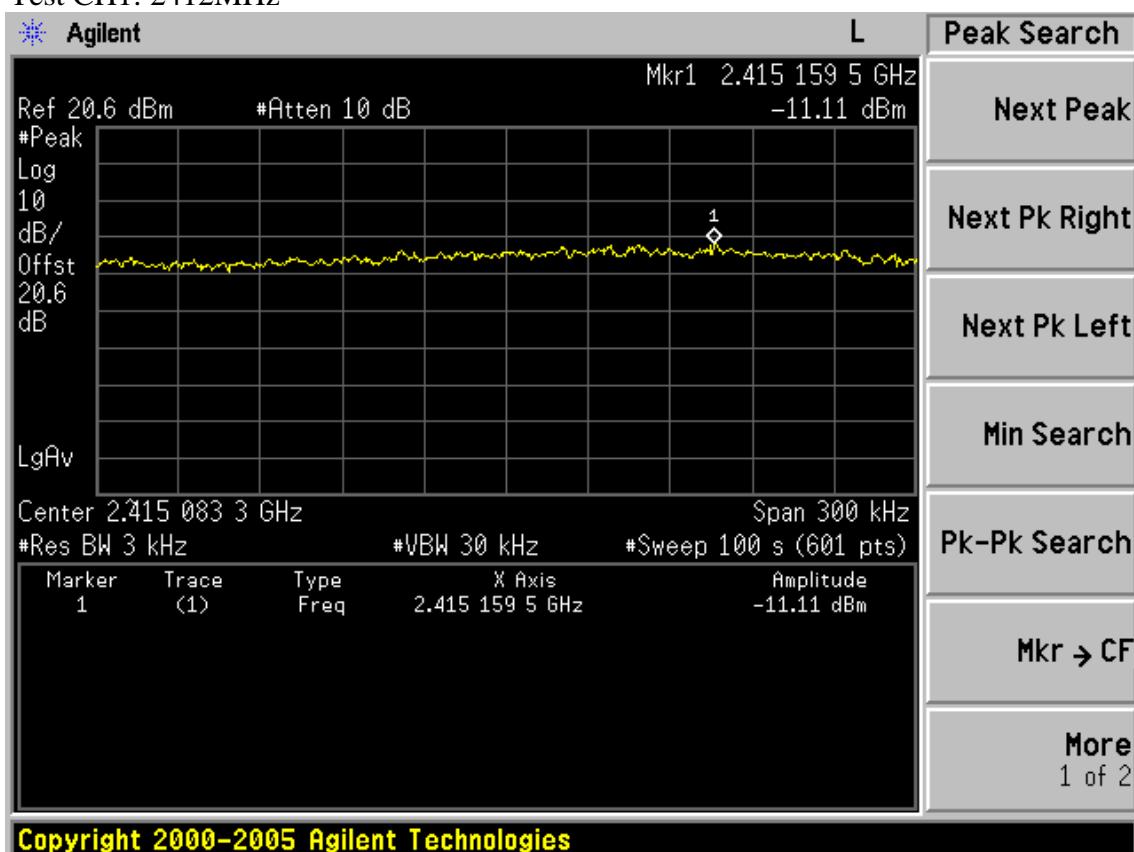
9-6

Test CH11: 2462MHz



Test Mode: IEEE 802.11g TX

Test CH1: 2412MHz

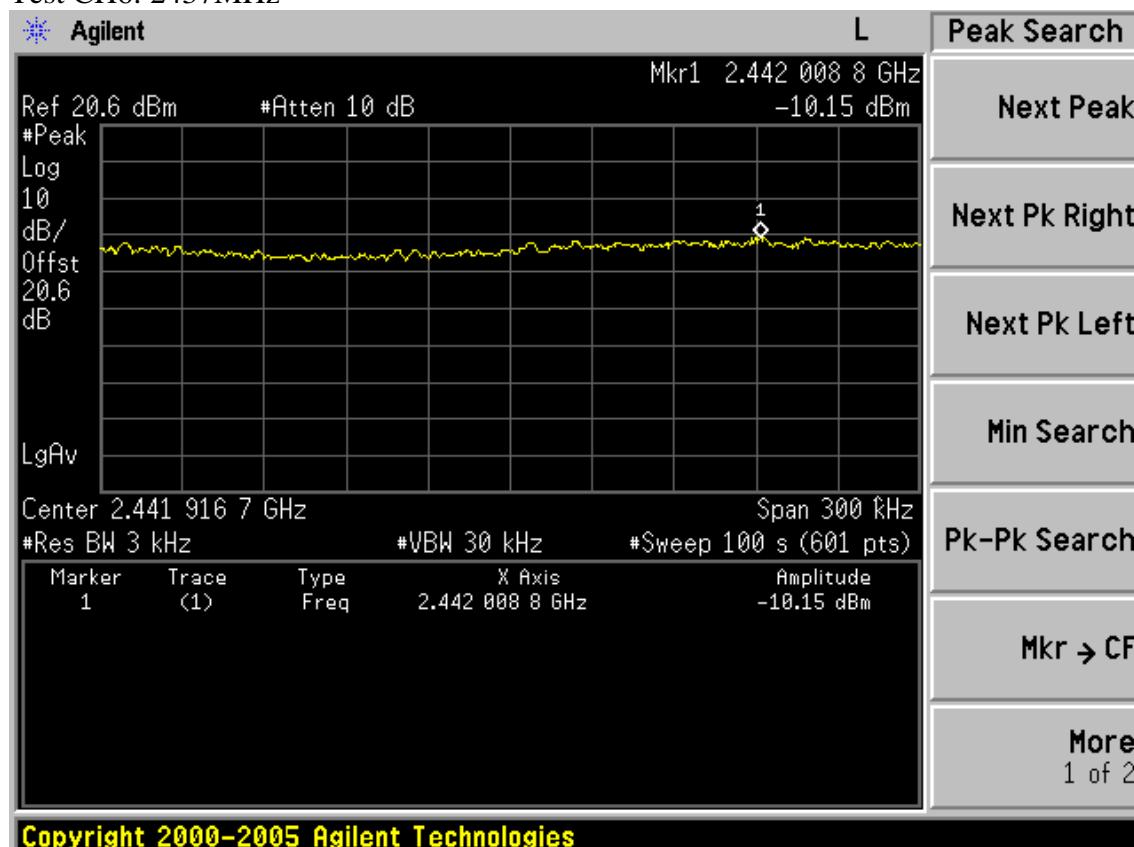


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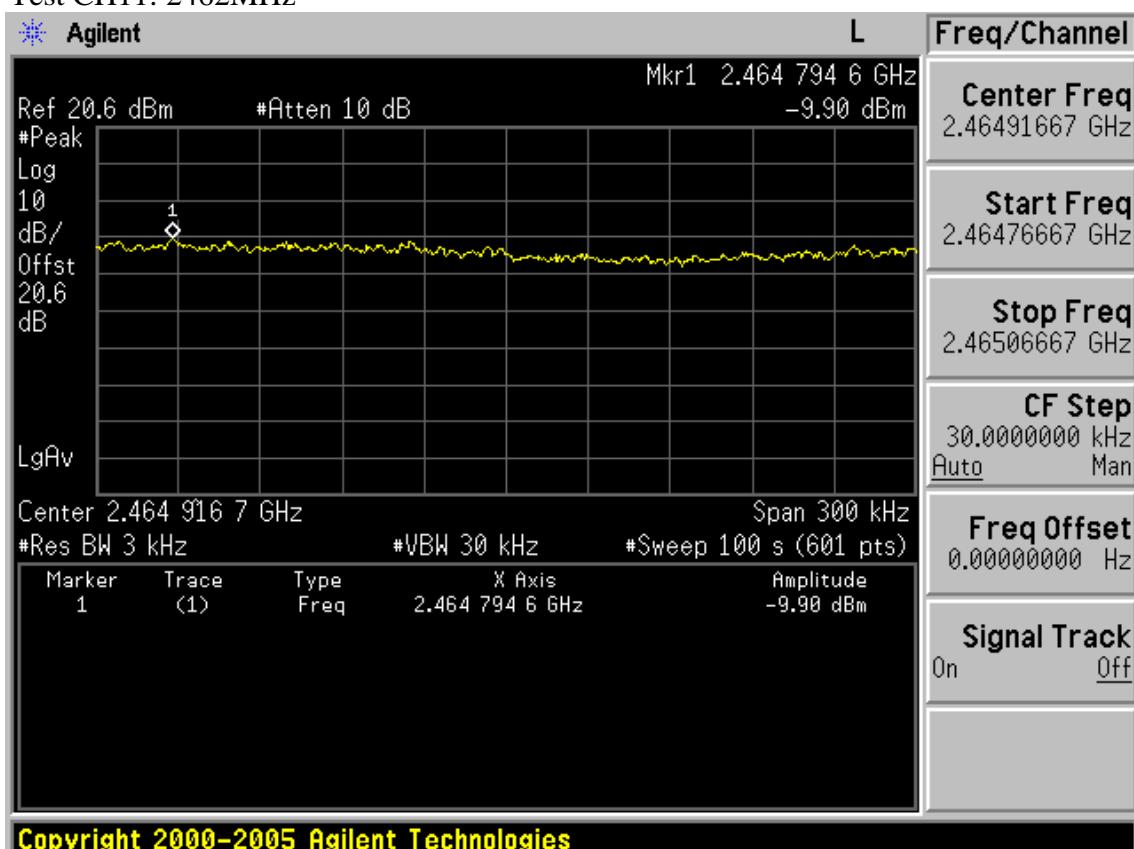
page

9-7

Test CH6: 2437MHz



Test CH11: 2462MHz



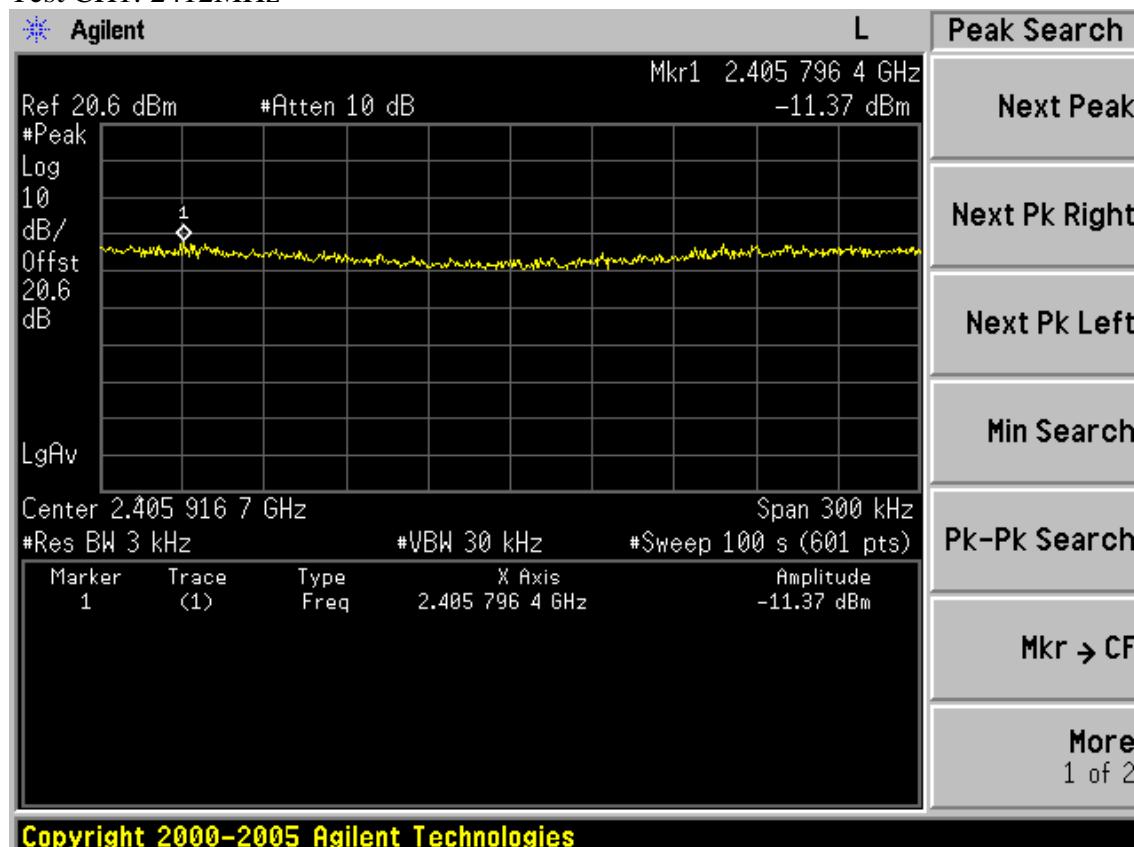
FCC ID: WWMDN421V1

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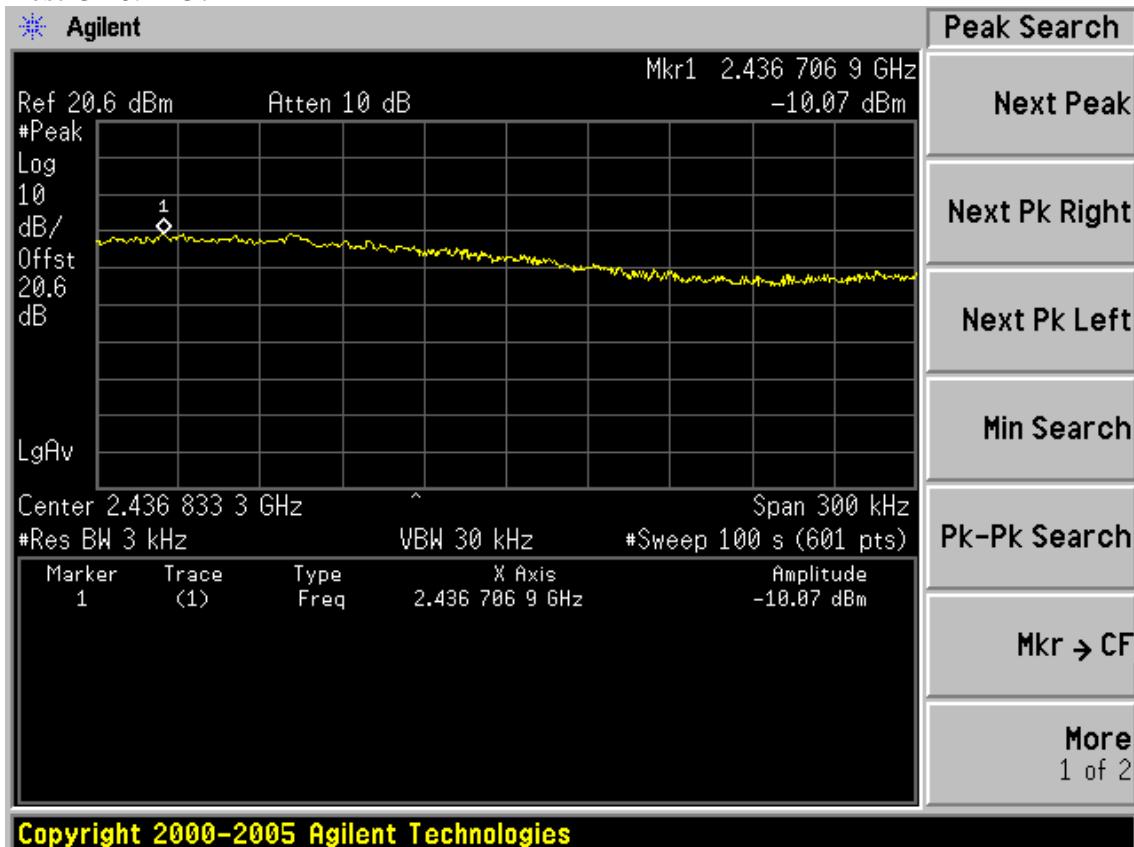
9-8

Test Mode: IEEE 802.11n HT20 TX

Test CH1: 2412MHz



Test CH6: 2437MHz

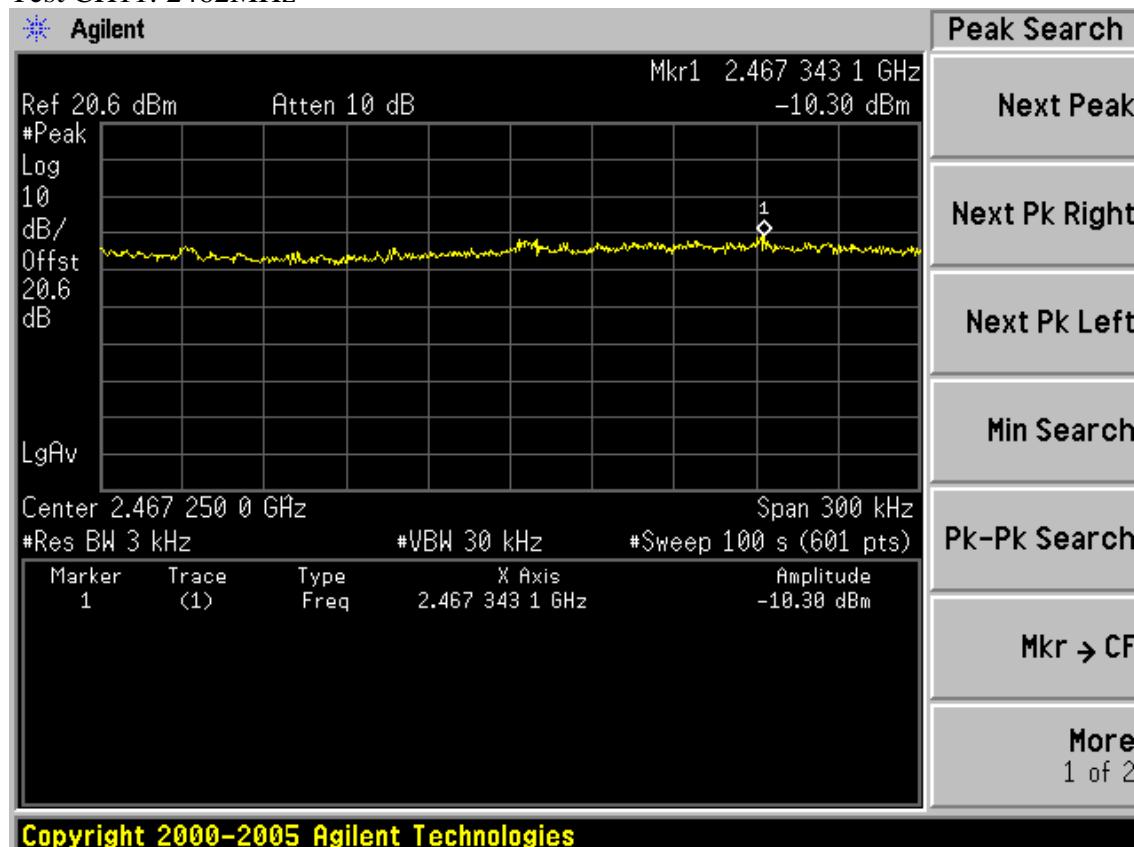


FCC ID: WWMDN421V1

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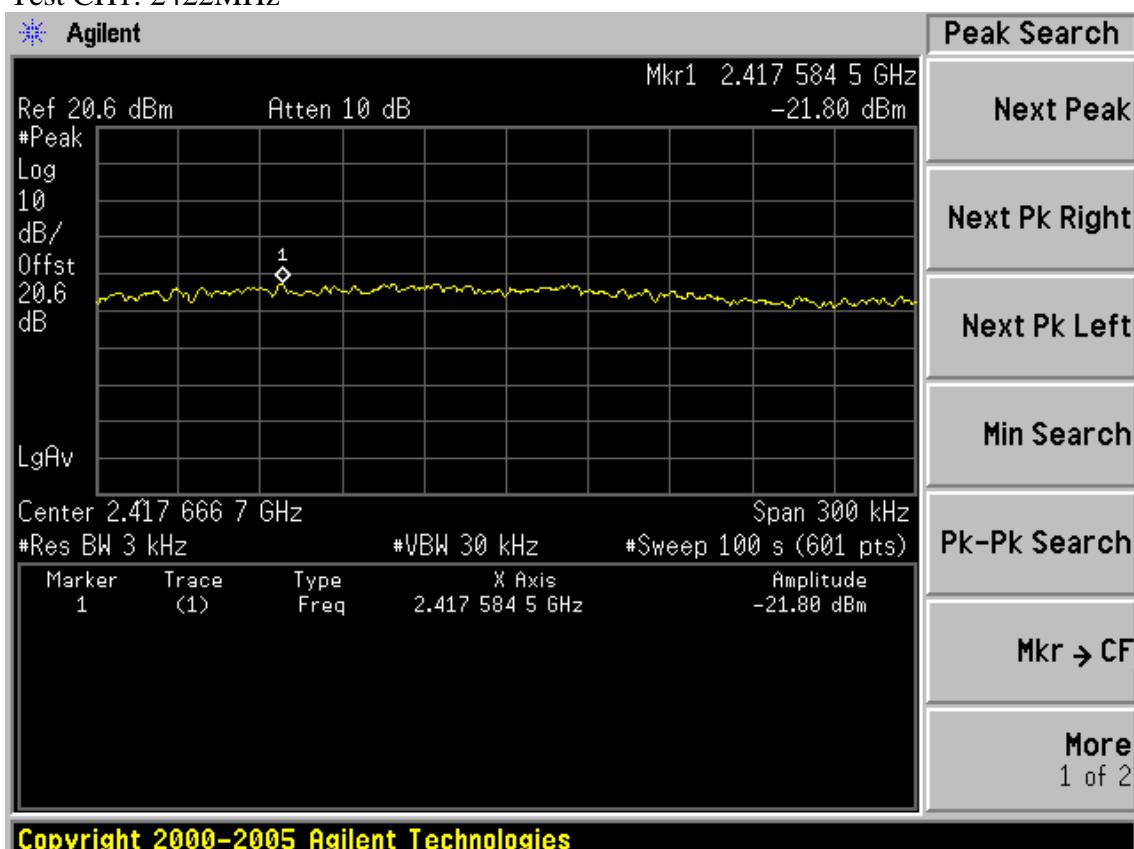
9-9

Test CH11: 2462MHz



Test Mode: IEEE 802.11n HT40 TX

Test CH1: 2422MHz

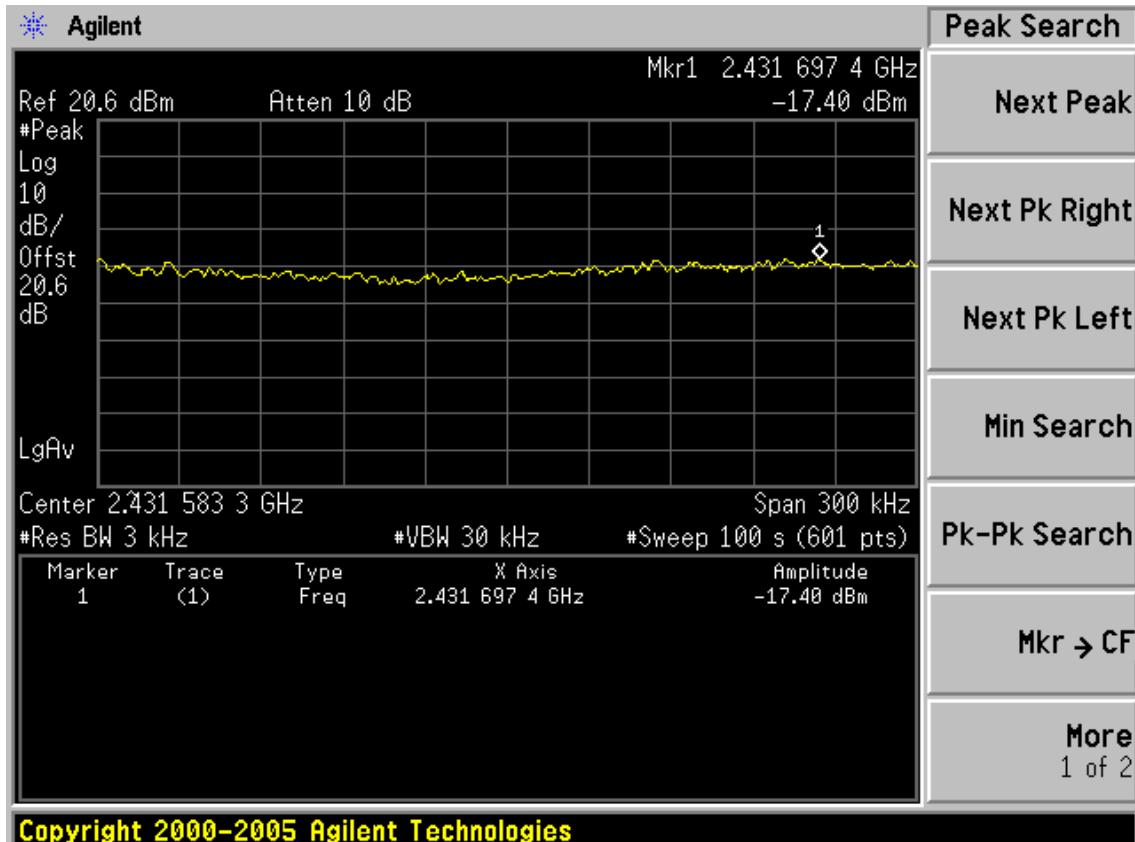


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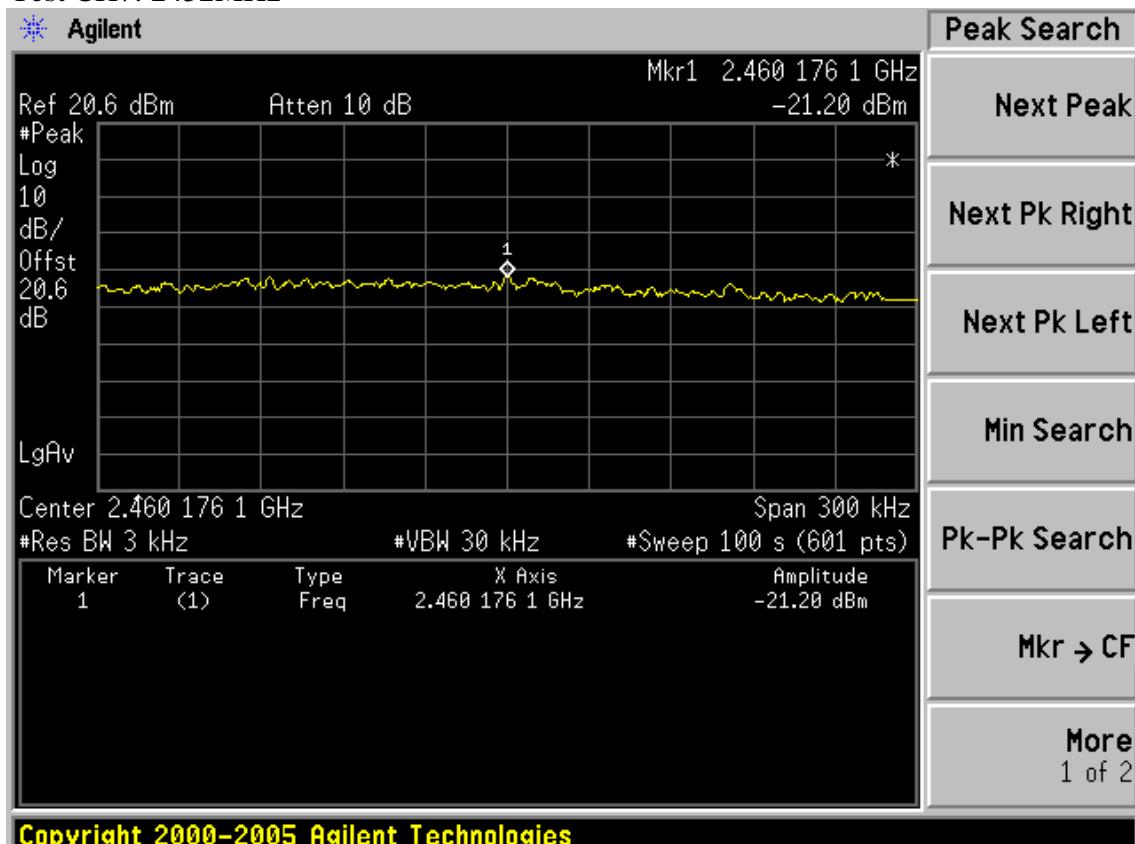
page

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Test CH4: 2437MHz



Test CH7: 2452MHz



10. ANTENNA REQUIREMENT

10.1. STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2. ANTENNA CONNECTED CONSTRUCTION

The antennas used for this product are MIMO 2X2 dipole antenna with SMA-B connector that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 5dBi.

11.DEVIATION TO TEST SPECIFICATIONS

[NONE]