FCC TEST REPORT

REPORT NO.: FCI0912043R

MODEL NO.: WL03U, WL04U

RECEIVED: Dec. 10, 2009

TESTED: Dec. 11, 2009 to Dec. 24, 2009

APPLICANT: Full River (Hongkong) Ltd.

ADDRESS: Full River Industrial Zone, Ceramics Estate Garden Area, Liling City, Hunan Province, China

ISSUED BY: SHENZHEN SETEK TECHNOLOGY CO., LTD.

LAB LOCATION: 2/F,A3 Bldg, East Industry Zone, Overseas Chinese Town, Shenzhen, China

SHENZHEN SETEK TECHNOLOGY CO., LTD.

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TEL:86-755-26966362 **FAX: 86-755-26966270**

Prepared for	:	Full River (Hongkong) Ltd.
Address	:	Full River Industrial Zone, Ceramics Estate Garden Area, Liling City, Hunan Province, China
Product	:	Wireless Lan Card
Model No(s).	:	WL03U, WL04U
Trademark	:	N/A
Test Standard	:	FCC Part 15 Paragraph 15.247
Prepared by	:	SHENZHEN SETEK TECHNOLOGY CO., LTD.
Address	:	2/F, A3 Bldg, East Industry Zone, Overseas Chinese Town, Shenzhen, China Tel: (86-755) 26966362 Fax:(86-755) 26966270
Test Lab	:	SEM Test Compliance Service Co., Ltd.
Address	:	3/F, Jinbao Commerce Bldg., Xin'an Fanshen Rd., Bao'an District, Shenzhen, P. R. China
FCC R.N.	:	FCC Registration Number: 994117

Prepared by : Sophie Zang
(Engineer)

Reviewer by : Sean pang
(Project Engineer)

Approved by : Andy Zhang
(Manager)

Report Number	:	FCI0912043R
Date of Test	:	Dec. 11, 2009 to Dec. 24, 2009
Date of Report	:	Dec. 24, 2009
FCC ID	:	VTI WL03U04U

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Description Page

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

Applicant	:	Full River (Hongkong) Ltd.
Address	:	Full River Industrial Zone, Ceramics Estate Garden Area, Liling City, Hunan Province, China
Manufacturer	:	Full River (Hongkong) Ltd.
Address	:	Full River Industrial Zone, Ceramics Estate Garden Area, Liling City, Hunan Province, China
EUT	:	Wireless Lan Card
Model Number(s)	:	WL03U, WL04U
Description of EUT	:	DTS
Description of Antenna	:	PCB printed Antenna
Power Supply	:	DC5V
Operation Frequency	:	2412 MHz ~ 2462 MHz / 2422 MHz ~2452 MHz
Number of Channels	:	11/7
Received	:	Dec. 10, 2009
Date of Test	:	Dec. 11, 2009 to Dec. 24, 2009

1.2 Test Summary

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.203;§15.247(c)(1)(i)	Antenna Requirement	Compliant
§15.207	Conducted Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.247(a)(2)	6 dB Bandwidth	Compliant
§15.247(b)(3)	Power Output	Compliant
§15.209(a)(d)	Radiated Emission	Compliant
§15.247(d)	Band edge	Compliant
§1.1307(b)	Maximum Permissible Exposure	N/A

1.3. Description of Support Device

The EUT has been tested as an independent unit.

1.4. Standards Applicable for Testing

The customer requested FCC tests for a Wireless Lan Card. The standards used were FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

1.5. List of Measuring Equipments Used

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4408B	MY44210575	May 27,2009	1 Year
2.	Test Receiver	Rohde & Schwarz	ESIB26	100234	May 27,2009	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	May 27,2009	1 Year
4.	Loop Antenna	EMCO	6502	00042960	May 27,2009	1 Year
5.	50 Coaxial Switch	Anritsu Corp	MP59B	6100237248	May 27,2009	1 Year
6.	Cable	Schwarzbeck	AK9513(1m)	CR RX2	May 27,2009	1 Year
7.	Cable	Schwarzbeck	AK9513(10m)	AC RX1	May 27,2009	1 Year
8.	Cable	Rosenberger	N/A(6m)	CR RX1	May 27,2009	1 Year
9.	Cable	Rosenberger	N/A(10m)	FP2RX2	May 27,2009	1 Year
9.	DC Power Filter	MPE	23872C	N/A	May 27,2009	1 Year
10.	Single Phase Power Line Filter	MPE	23332C	N/A	May 27,2009	1 Year
11.	3 Phase Power Line Filter	MPE	23333C	N/A	May 27,2009	1 Year
12.	Signal Generator	HP	8648A	3625U00573	May 27,2009	1 Year
13.	Test Receiver	Rohde & Schwarz	ESCS30	100350	May 27,2009	1 Year
14.	L.I.S.N.	Rohde & Schwarz	ESH2-Z5	834549/005	May 27,2009	1 Year
15.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	May 27,2009	1 Year
16.	RF Cable	FUJIKURA	RG-55/U	LISN Cable	May 27,2009	1 Year
17	Spectrum Analyzer	Agilent	E4446A	MY43360126	May 27,2009	1 Year
18	Spectrum Analyzer	Agilent	E7405A	US41160416	May 27,2009	1 Year
19	Horn Antenna	Rohde & Schwarz	HF906	100039	May 27,2009	1 Year
20	Horn Antenna	Schwarzbeck	BBHA9170	154	May 27,2009	1 Year

1.6. Test Facility

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

FCC – Registration No.: 994117

SEM Test Compliance Service Co., Ltd., the EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission.

2. ANTENNA REQUIREMENT

2.1 Standard Applicable

According to FCC 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.
The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
The antenna gain is 0dBi.

2.2 Test Result

This product has a unique and integral antenna, fulfill the requirement of this section.

3. CONDUCTED EMISSION TEST

3.1 Standard Applicable

According to FCC 15.207 Conducted margin for a Class B device

3.2 Test Equipment

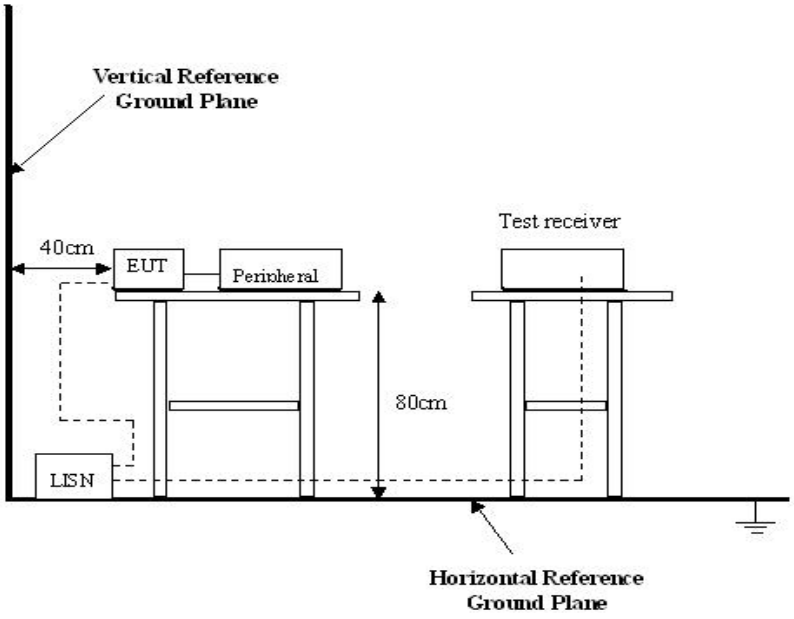
Please refer to Section 1.5. this report.

3.3 Test Procedure

1. The EUT was tested according to ANSI C63.4: 2003. The frequency spectrum from 150kHz to 30MHz was investigated.
2. The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

3.4Conducted Test Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 Paragraph 15.207 limits.



3.5Environmental Conditions

Test Voltage: DC 5.0V
Mode: TX On connect to PC
Temperature: 24 C
Humidity: 52%RH

3.6 Summary of Test Results

LINE CONDUCTED EMISSIONS				FCC 15.207	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBμV	QP/Ave/Pk	Line/Neutral	dBμV	dB
0.154	57.19	Pk	Neutral	65.77	-8.58
0.210	44.18	Ave	Line	53.20	-9.02
0.158	56.05	Pk	Line	65.55	-9.50
0.214	40.60	Ave	Neutral	53.04	-12.44
0.490	30.46	Ave	Neutral	46.16	-15.70
4.062	28.65	Ave	Neutral	45.99	-17.34
0.702	28.21	Ave	Line	45.99	-17.78
4.130	27.10	Ave	Line	45.99	-18.89
0.418	38.48	Pk	Line	57.48	-19.00
0.490	36.37	Pk	Neutral	56.15	-19.78
4.130	36.05	Pk	Line	55.99	-19.94
7.786	30.05	Ave	Line	49.99	-19.95

Note: Emissions attenuation more than 20dB are not report.

4 POWER SPECTRAL DENSITY

4.1 Standard Applicable

According to 15.247(a)(1)(iii), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.2 Test Equipment List and Details

Please refer to Section 1.5. this report.

4.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. Set the spectrum analyzer as RBW, VBW=3KHz, Span = 20MHz.
4. Repeat above procedures until all frequency measured was complete.

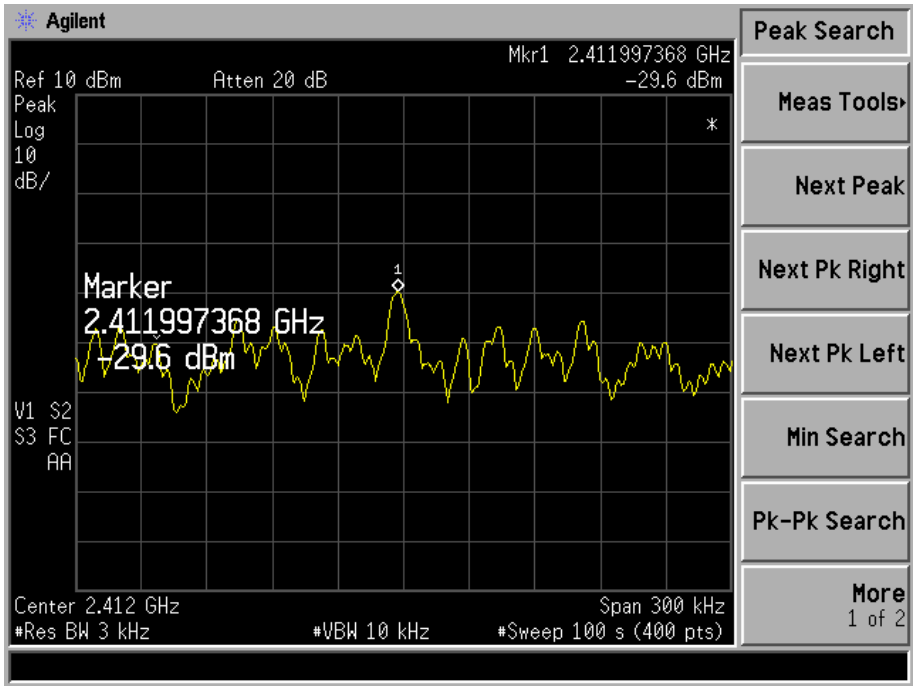
4.4 Environmental Conditions

Test Voltage:	DC 5.0V
Mode:	TX On
Temperature:	24 C
Humidity:	52%RH

4.5 Summary of Test Results

Test mode	Test channel	Reading Chain 0	Reading Chain 1	Total PSD	Limit dBm/3kHz
802.11b	Low channel (2412MHz)	-29.6	-30.92	-27.19	8
	Middle channel (2437MHz)	-27.47	-29.05	-25.17	8
	High channel (2462MHz)	-32.78	-33.81	-30.25	8
802.11g	Low channel (2412MHz)	-29.39	-30.92	-27.07	8
	Middle channel (2437MHz)	-29.05	-28.48	-25.74	8
	High channel (2462MHz)	-30.48	-37.26	-29.65	8
802.11n/HT20	Low channel (2412MHz)	-30.42	-30.5	-27.44	8
	Middle channel (2437MHz)	-30.43	-32.98	-28.51	8
	High channel (2462MHz)	-34.88	-34.88	-31.86	8
802.11n/HT40	Low channel (2422MHz)	-32.68	-34.68	-30.55	8
	Middle channel (2437MHz)	-32.04	-31.3	-28.64	8
	High channel (2452MHz)	-33.96	-33.66	-30.79	8

For Chain 0 Test
For 802.11b
Low Channel:



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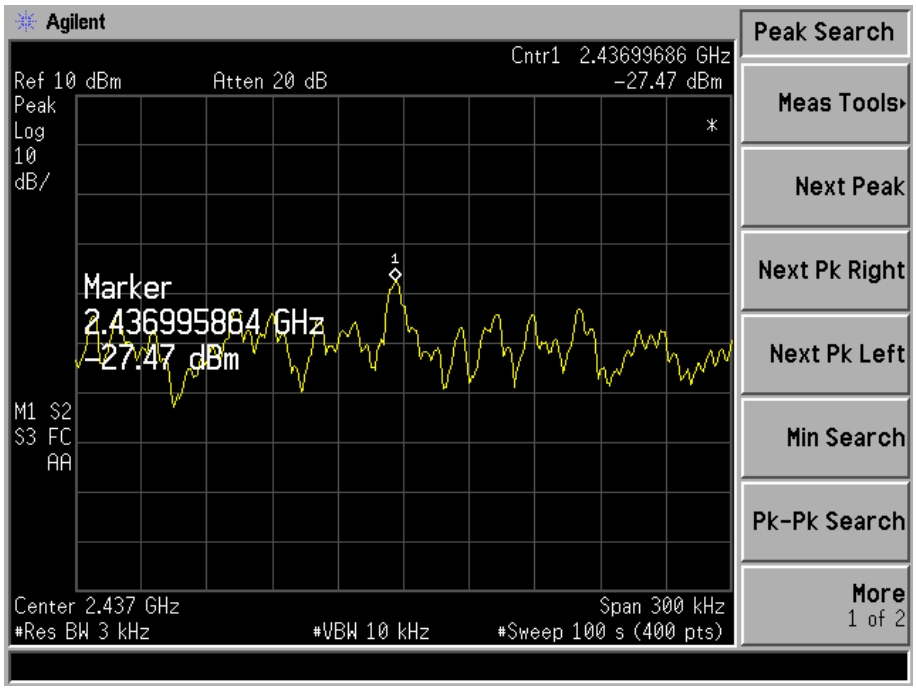

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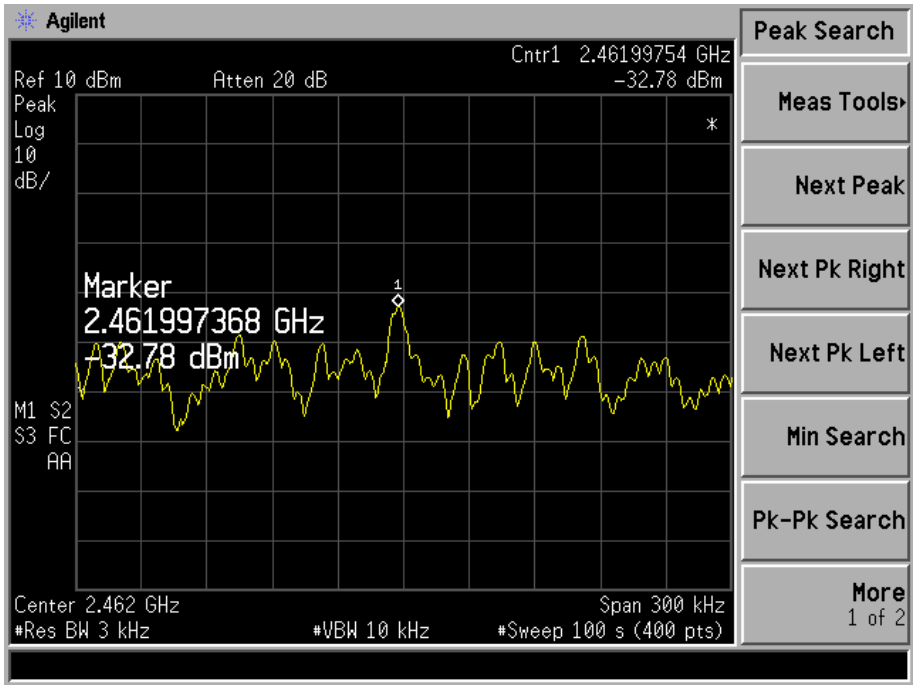

For 802.11g
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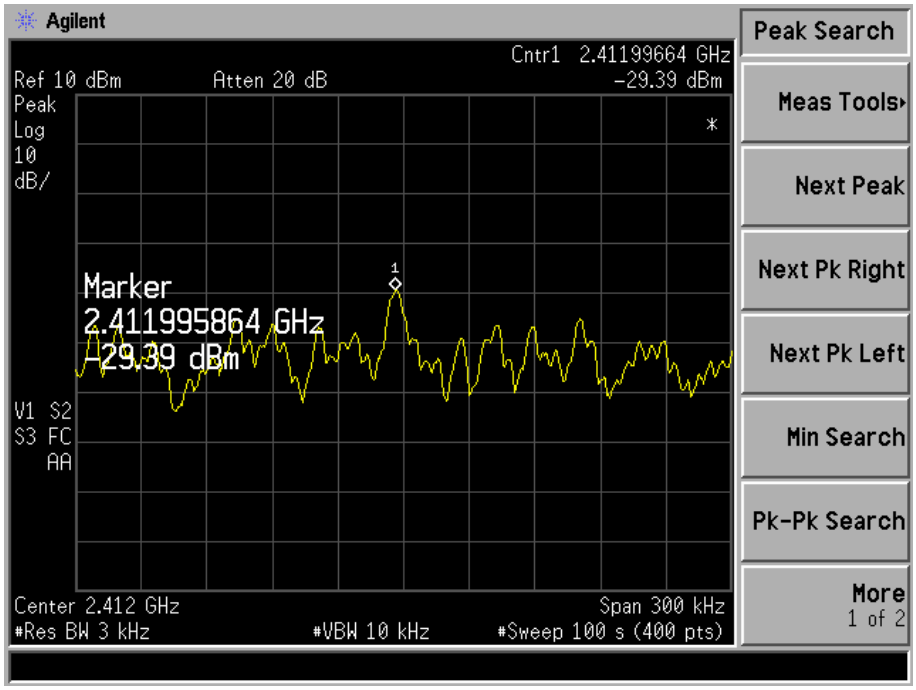

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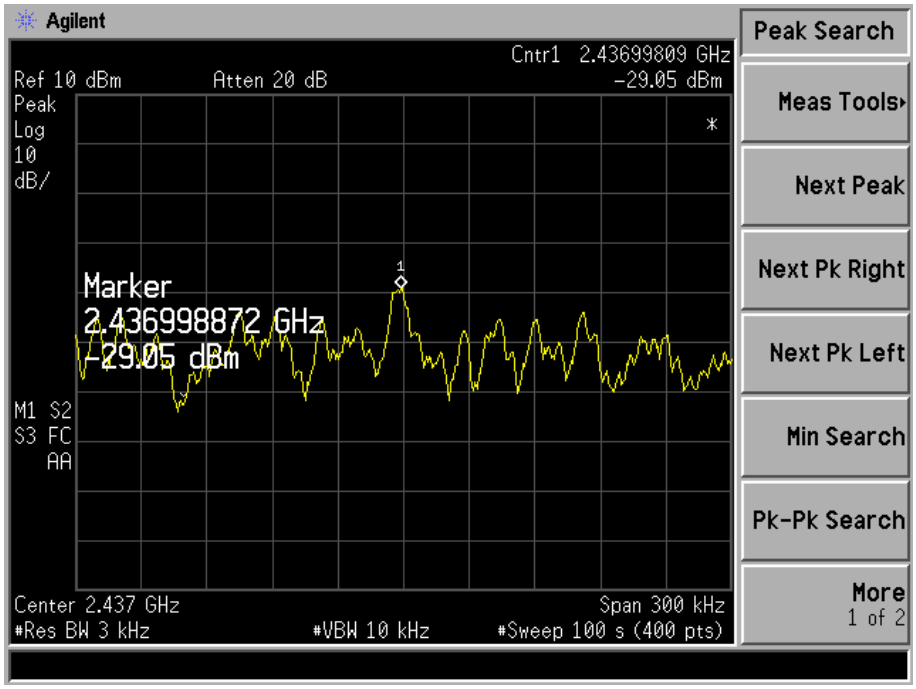

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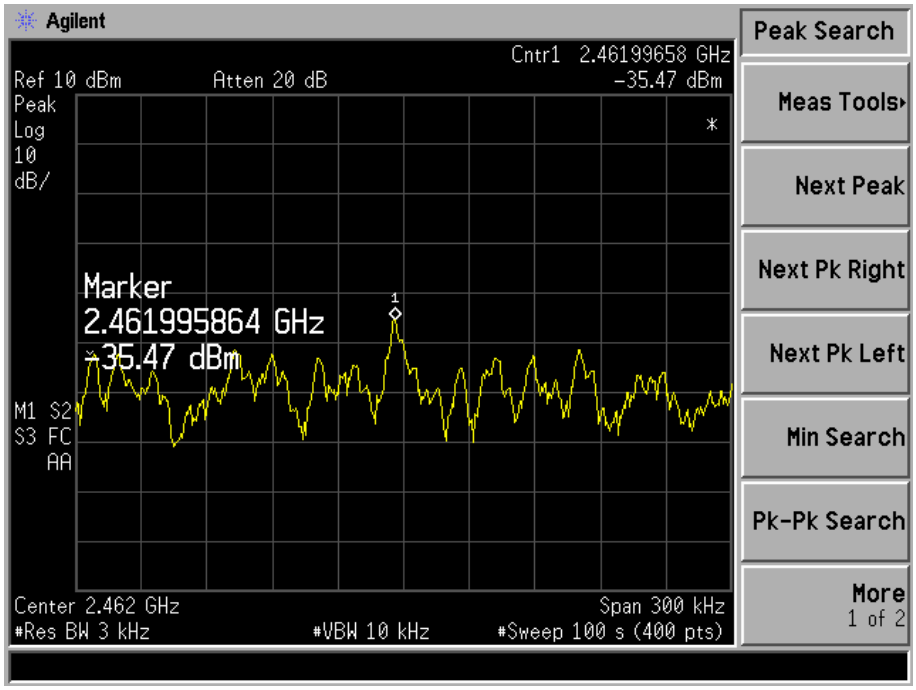

For 802.11n/HT20
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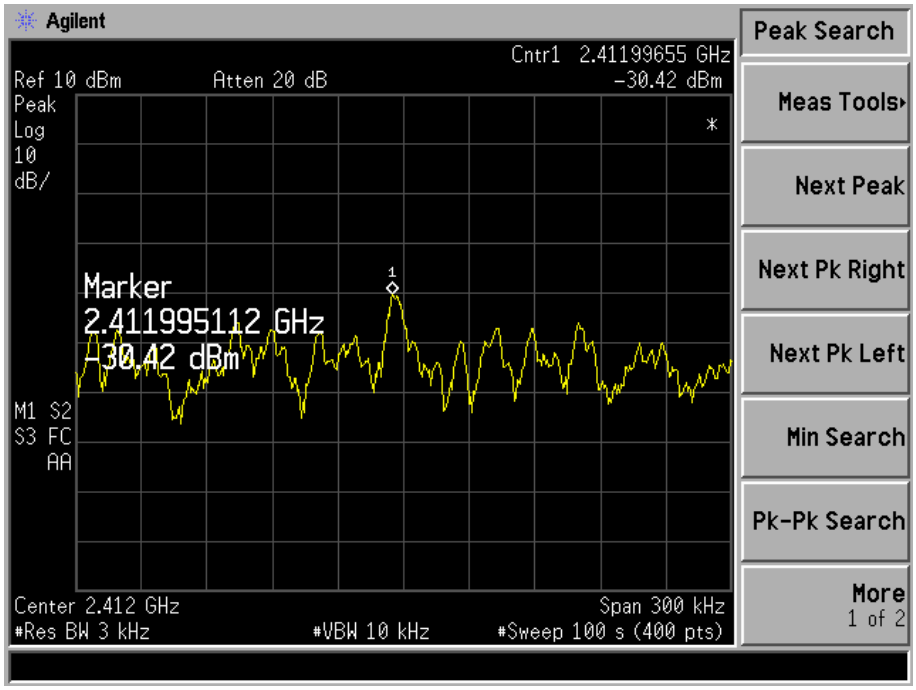

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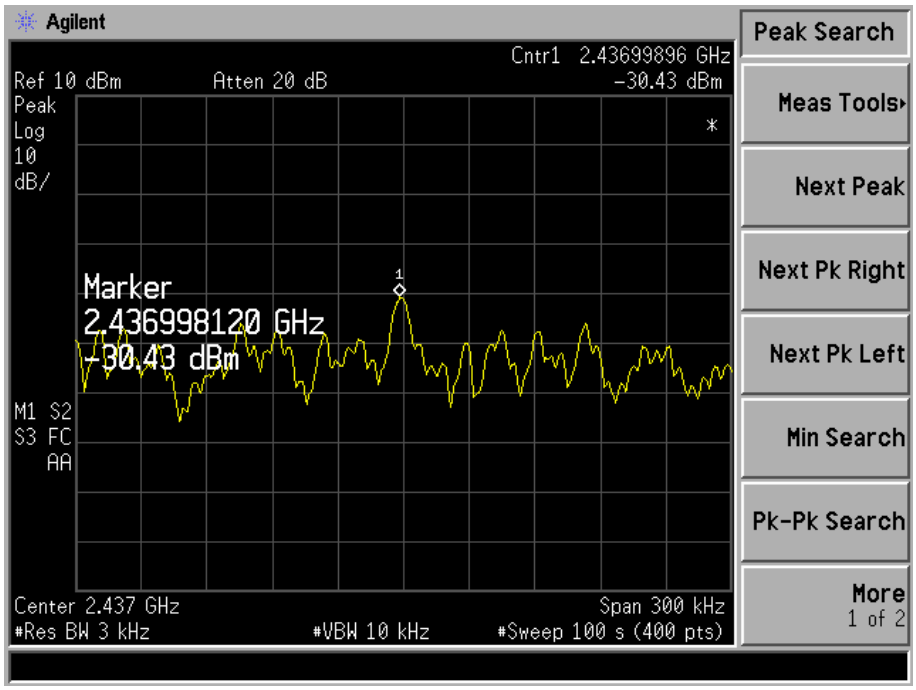

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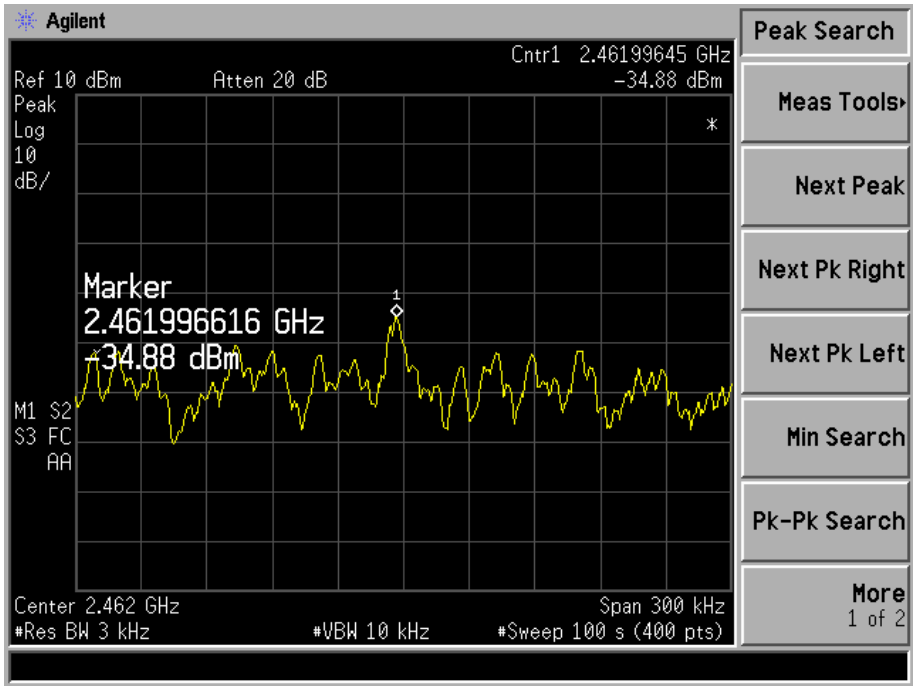

For 802.11n/HT40
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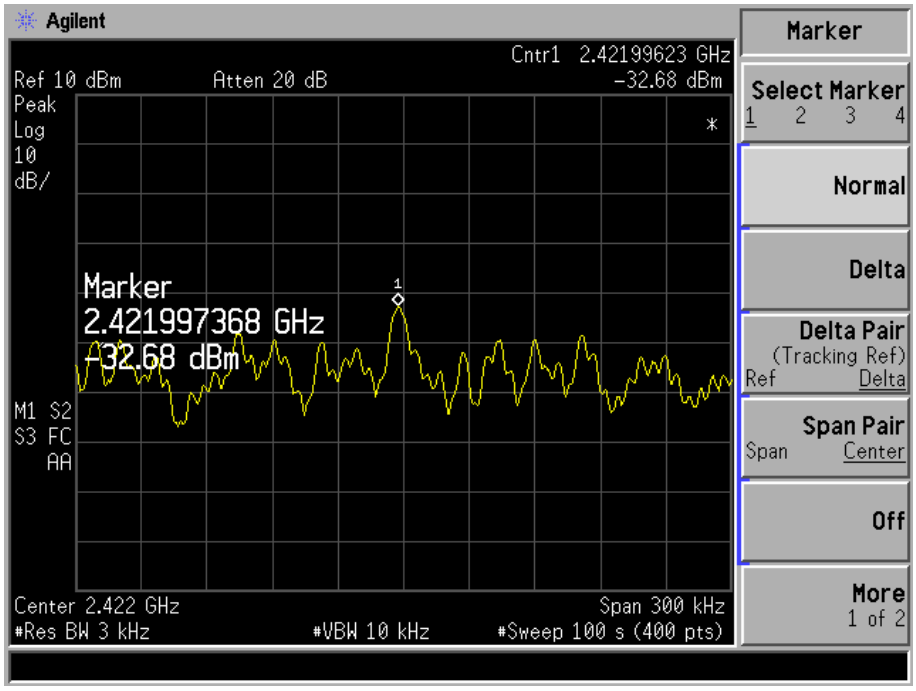

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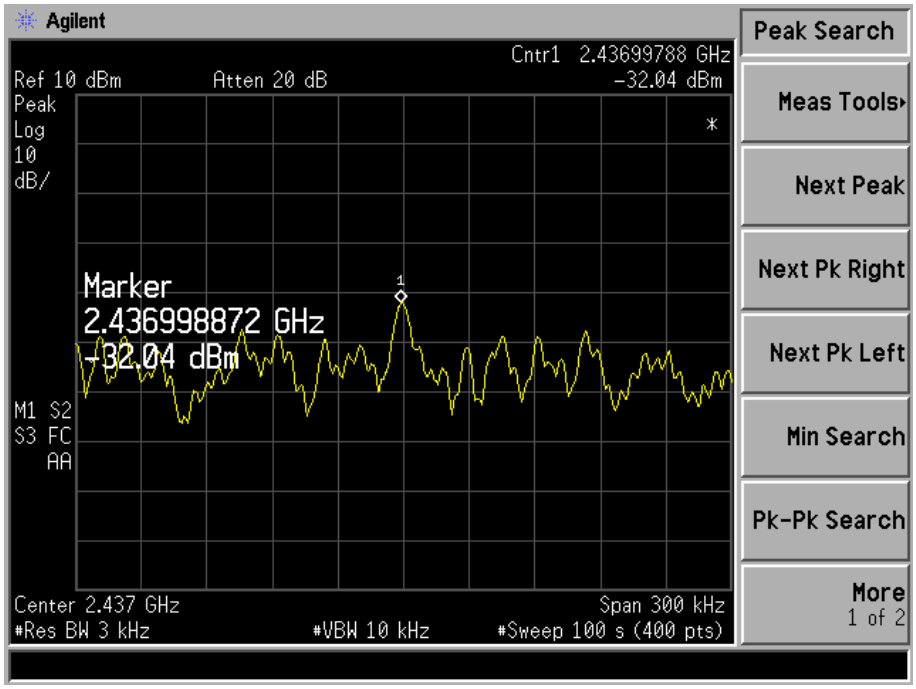

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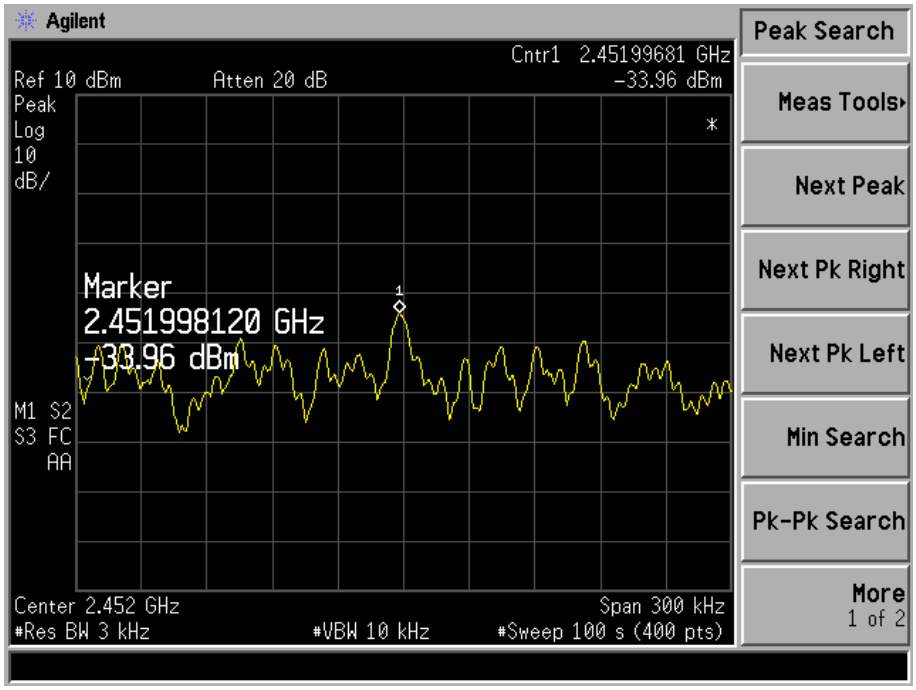
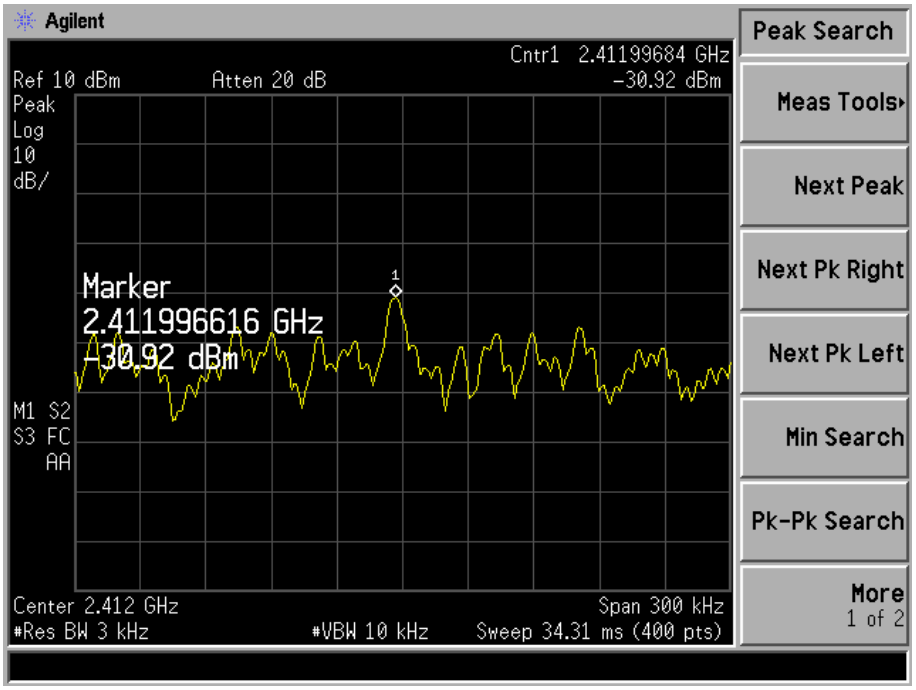


For Chain 1 Test
For 802.11b
Low Channel:



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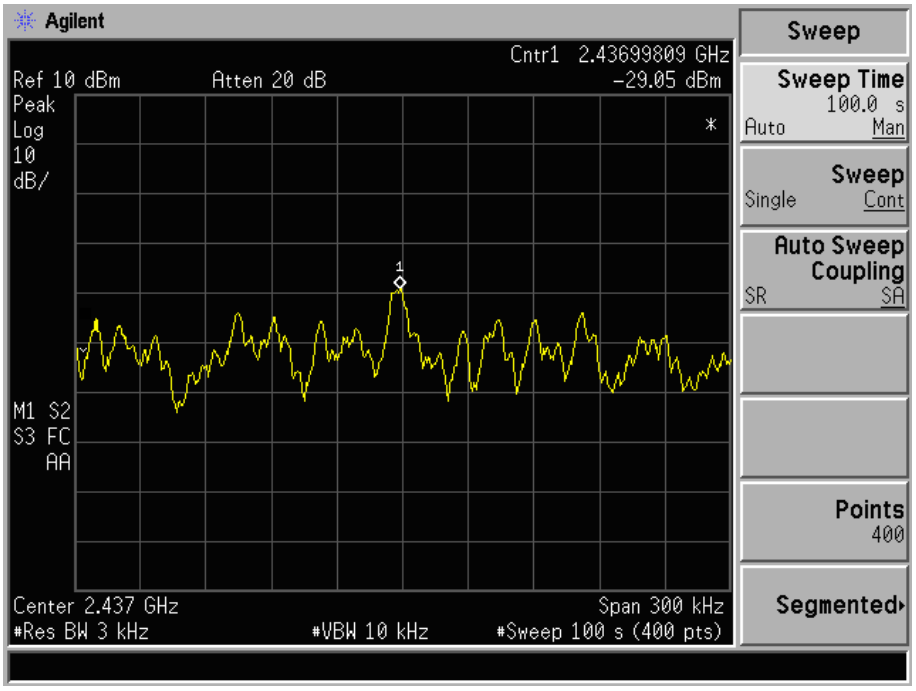

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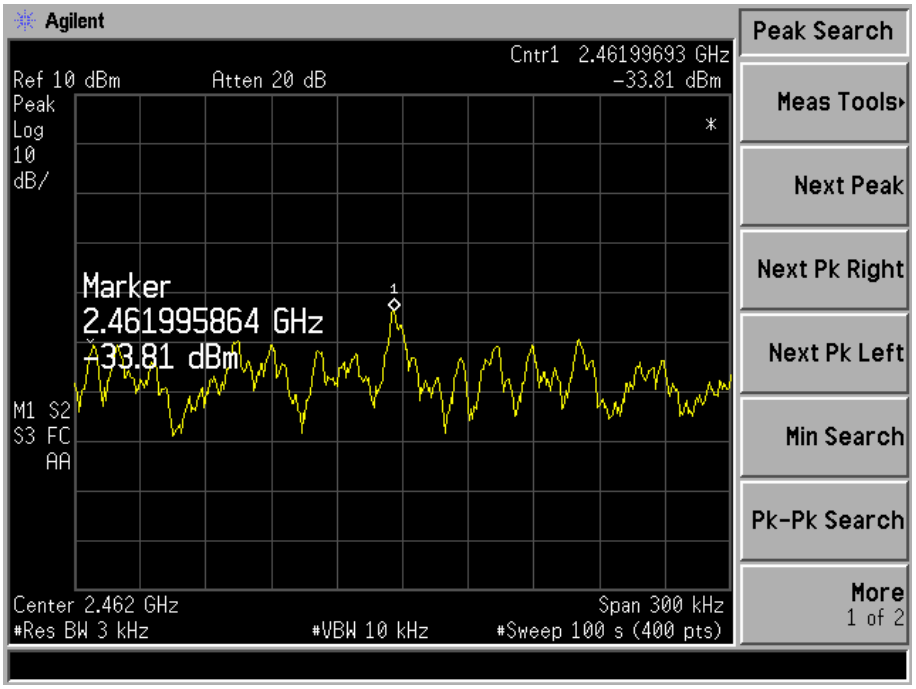
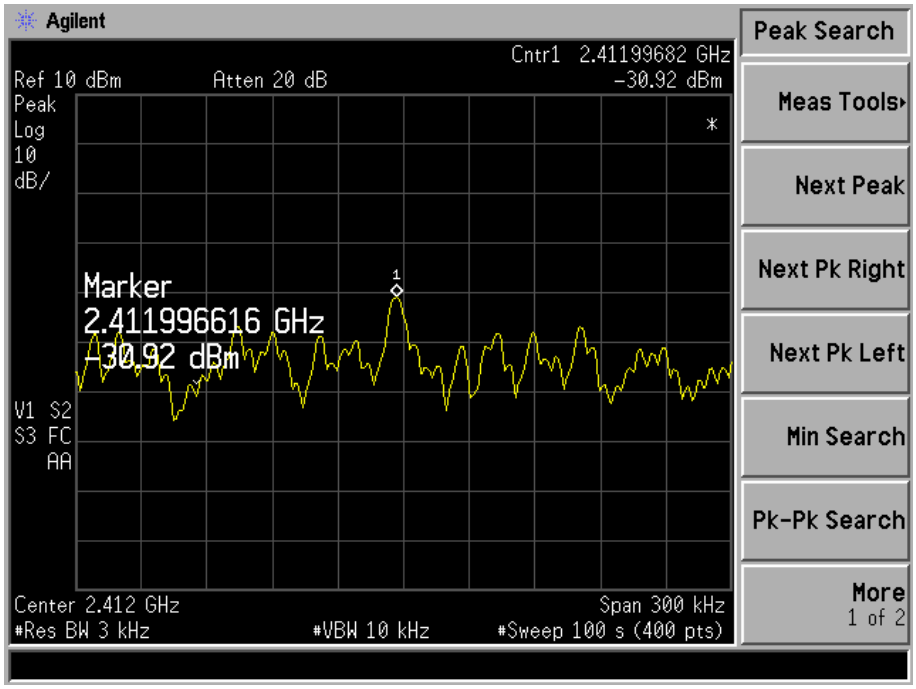


For 802.11g
Low Channel:



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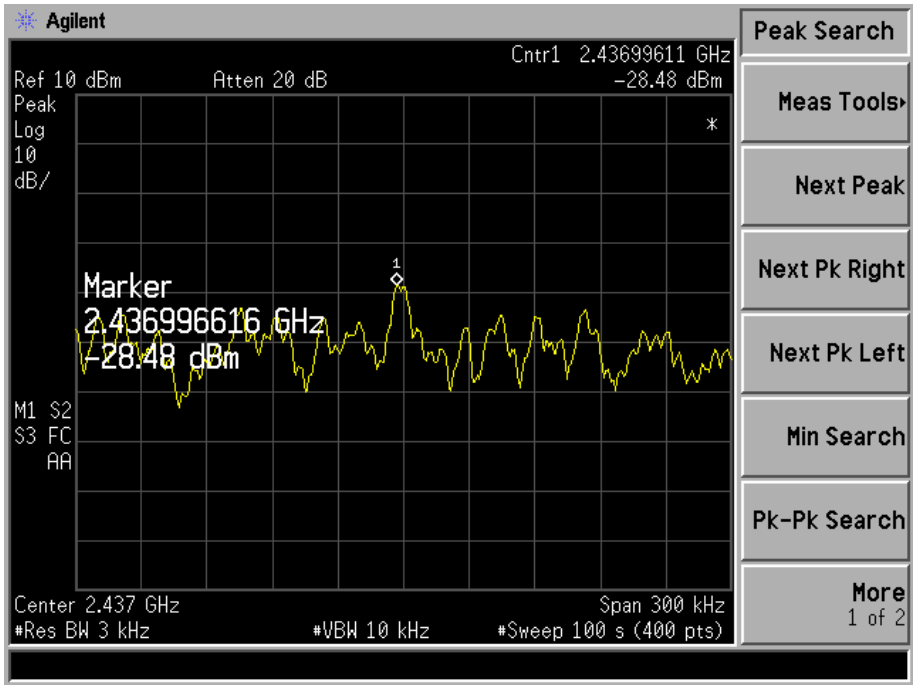

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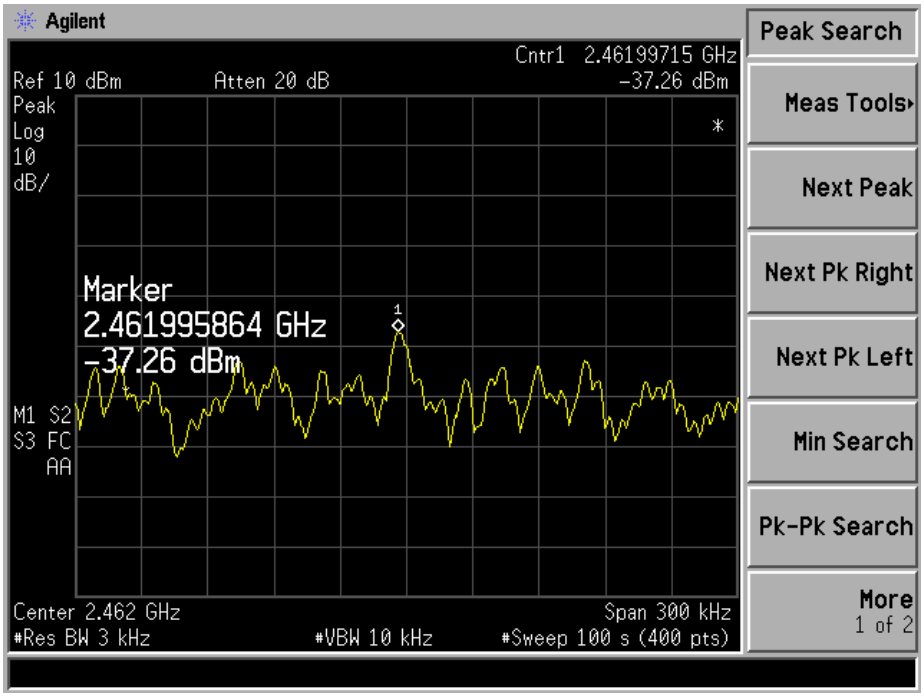
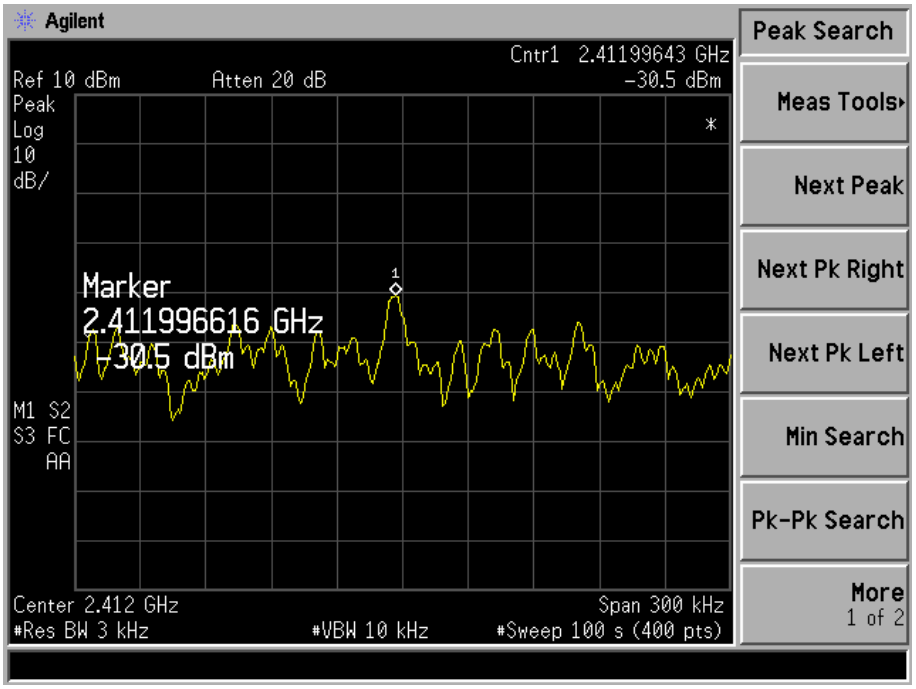


For 802.11n HT20

Low Channel:



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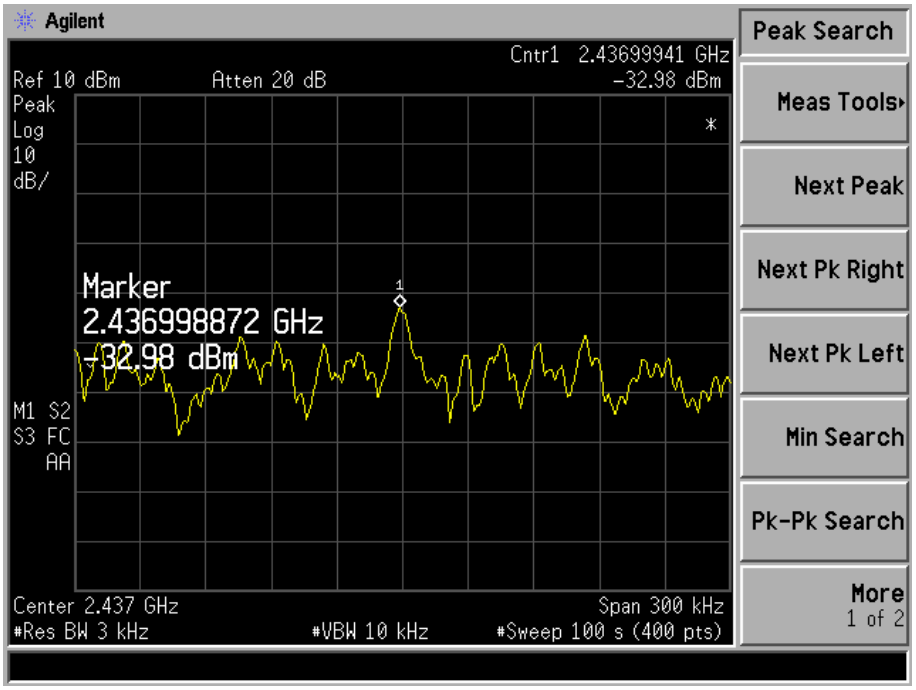

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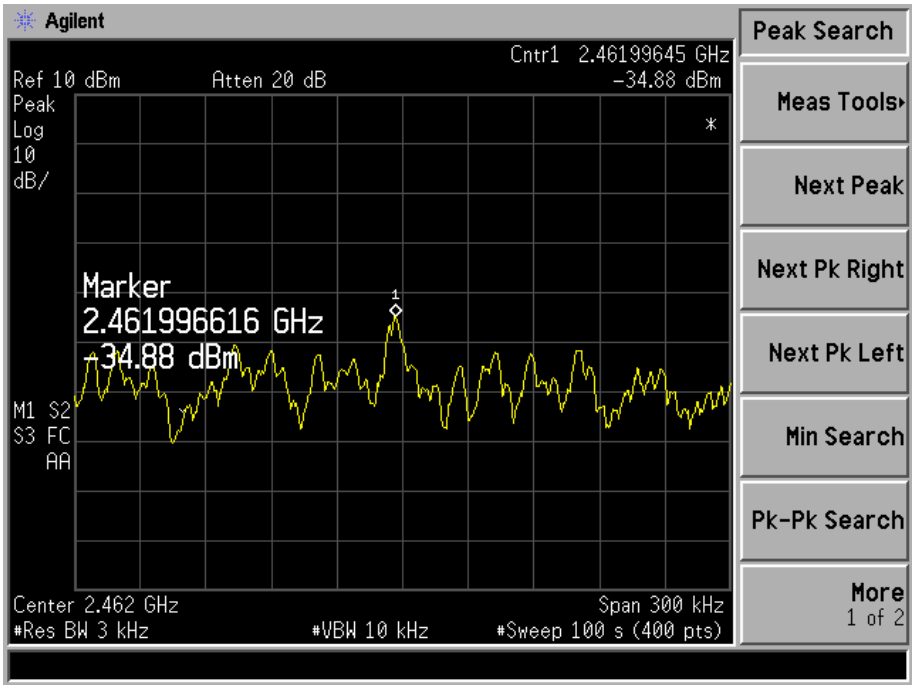

For 802.11nHT40

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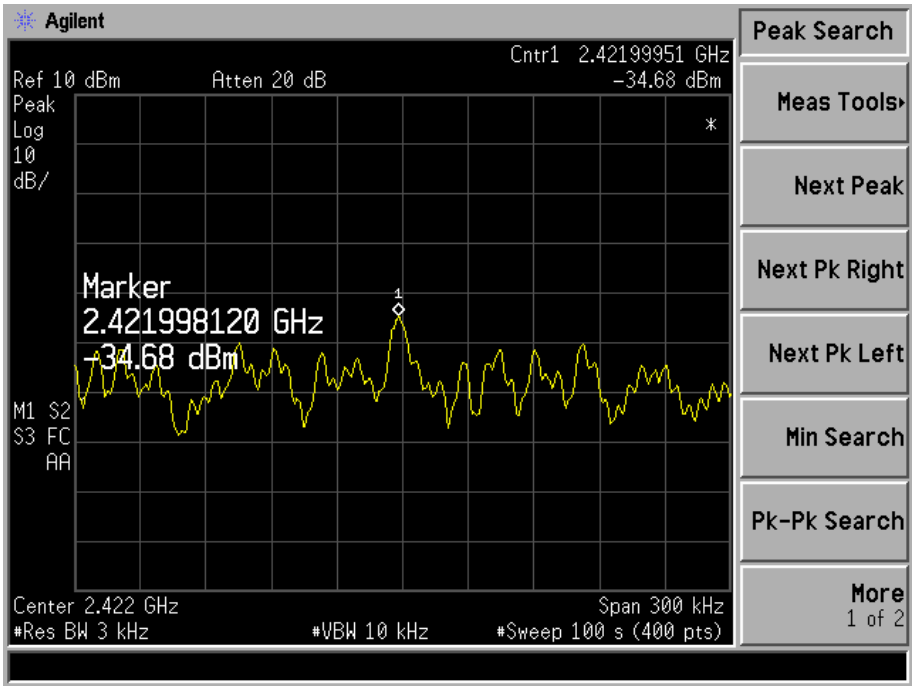

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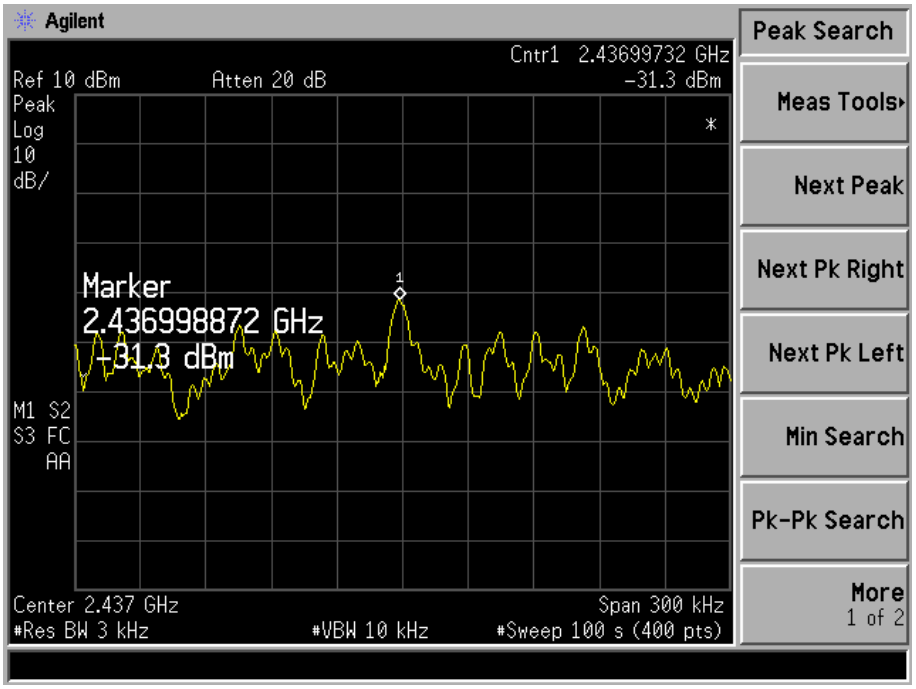

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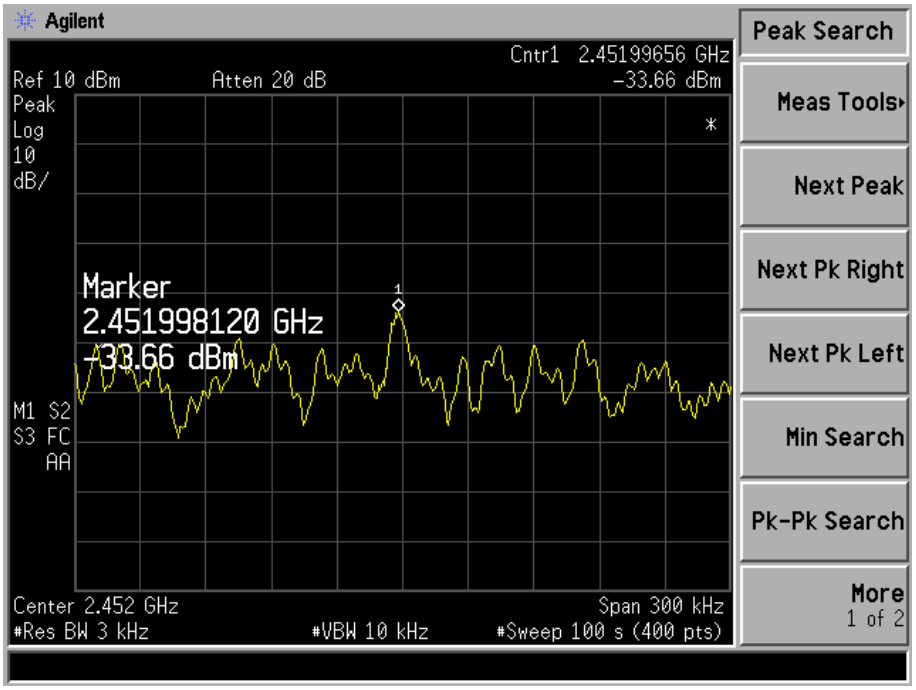


5 -6dB BANDWIDTH

Standard Applicable
According to 15.247(a)(2). Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.1 Test Equipment List and Details

Please refer to Section 1.5. this report.

5.2Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. The spectrum analyzer as RBW=100kHz , BVW>RBW, Sweep=auto
4. Mark the peak frequency and –6dB (upper and lower) frequency.

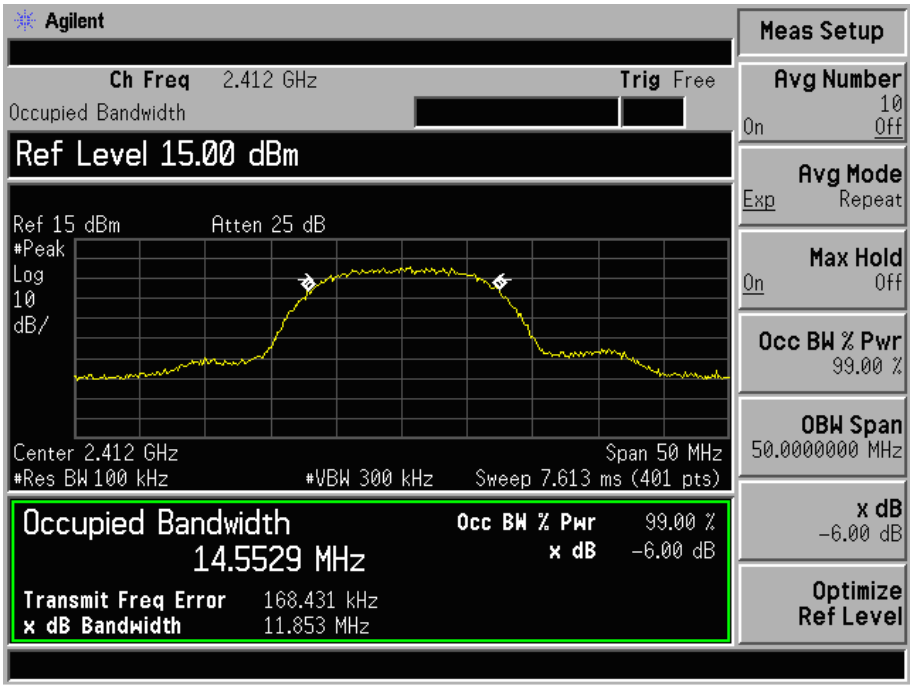
5.3Environmental Conditions

Test Voltage:	DC 5.0V
Mode:	TX On
Temperature:	24 C
Humidity:	52%RH

5.4Summary of Test Results

Test mode	Frequency MHz	6 dB Bandwidth kHz Chain 0	6 dB Bandwidth kHz Chain 1	Limit kHz
802.11b	2412	11853	10609	500
	2437	11591	10628	500
	2462	11181	10545	500
802.11g	2412	16250	16512	500
	2437	16141	16520	500
	2462	16213	16584	500
802.11n/HT20	2412	16475	16540	500
	2437	16650	16534	500
	2462	16801	16466	500
802.11n/HT40	2422	35184	36354	500
	2437	35255	36208	500
	2452	34885	35730	500

For Chain 0 Test
For 802.11b
Low Channel:



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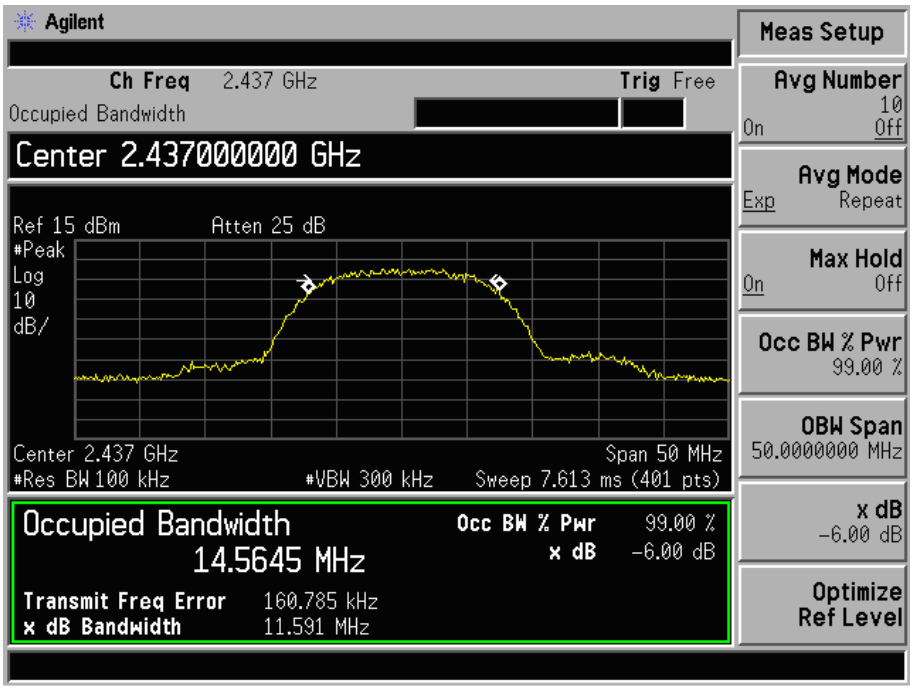

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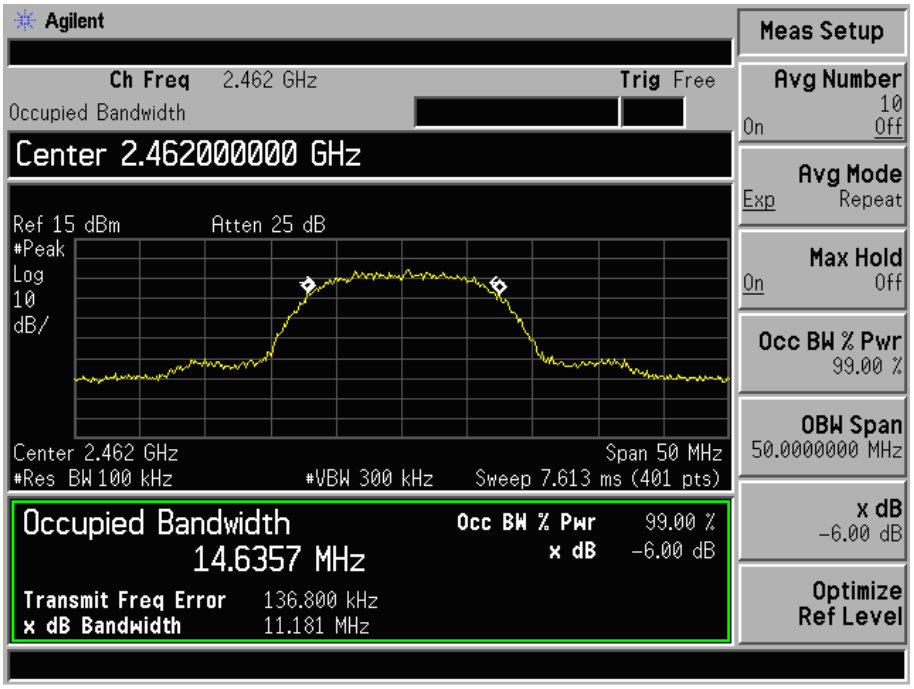
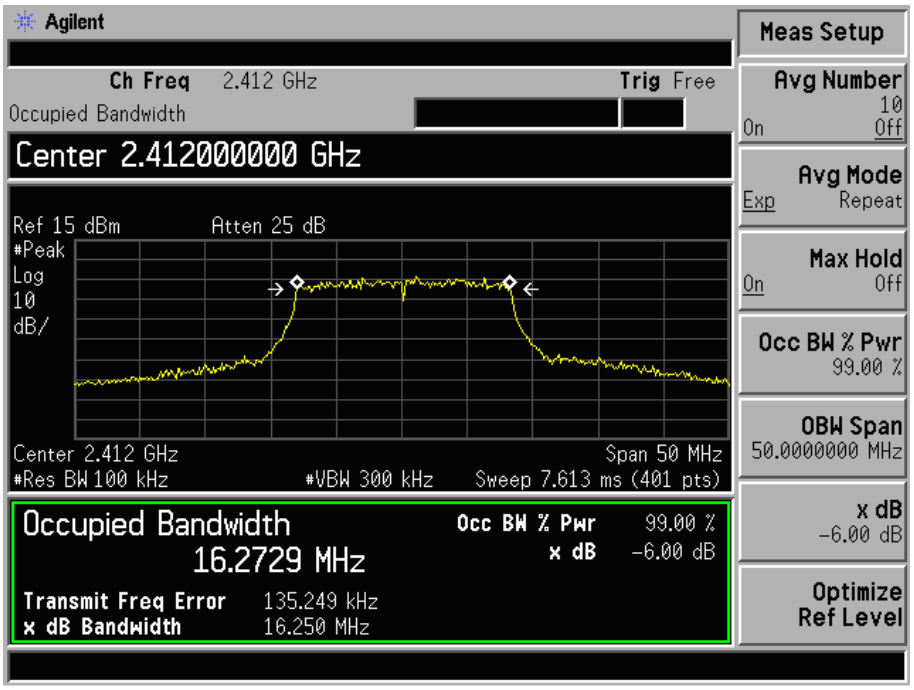


For 802.11g
Low Channel:



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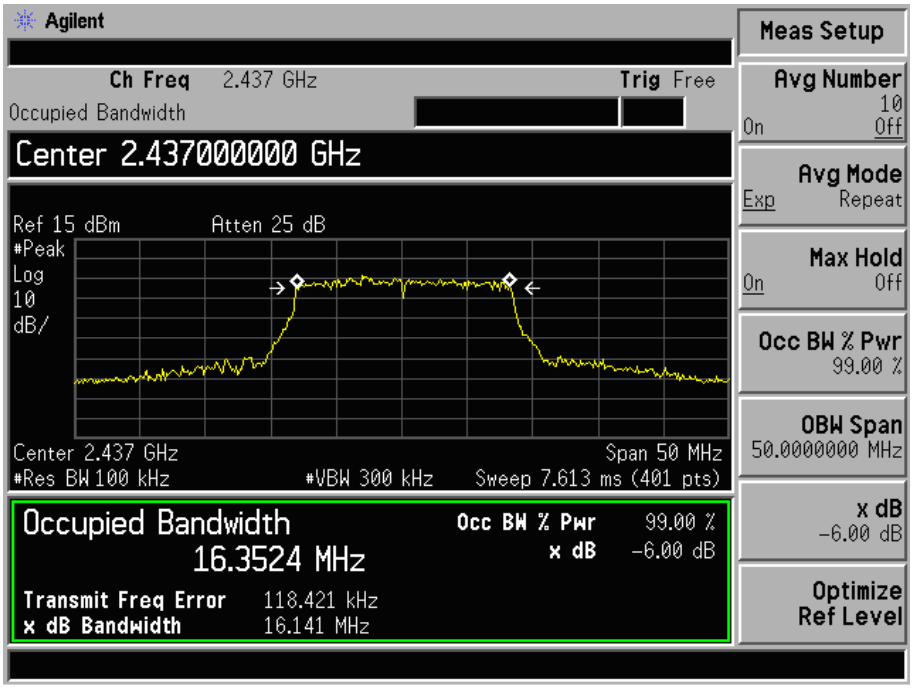

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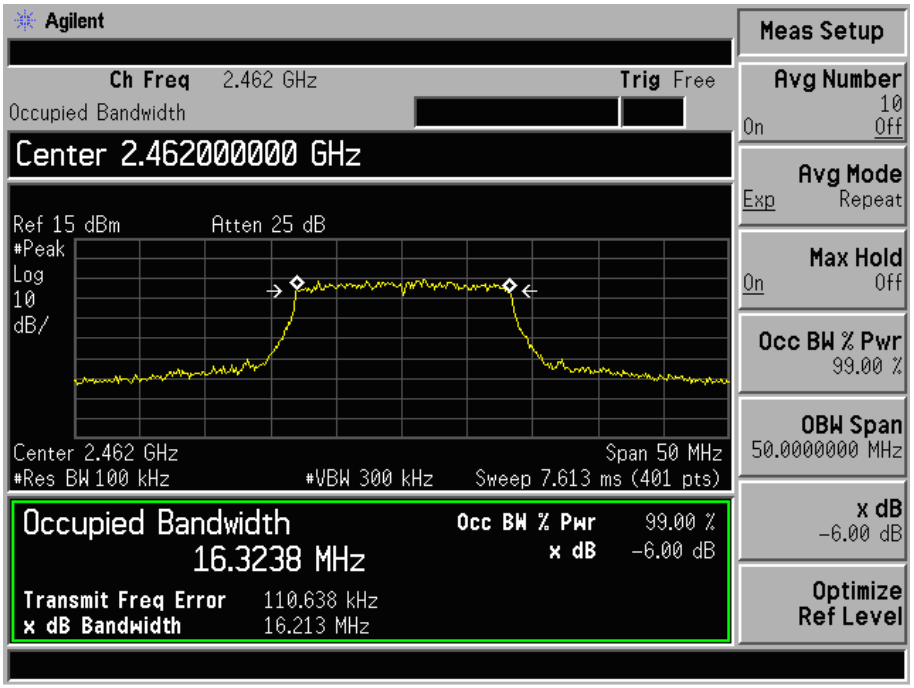

For 802.11n/HT20
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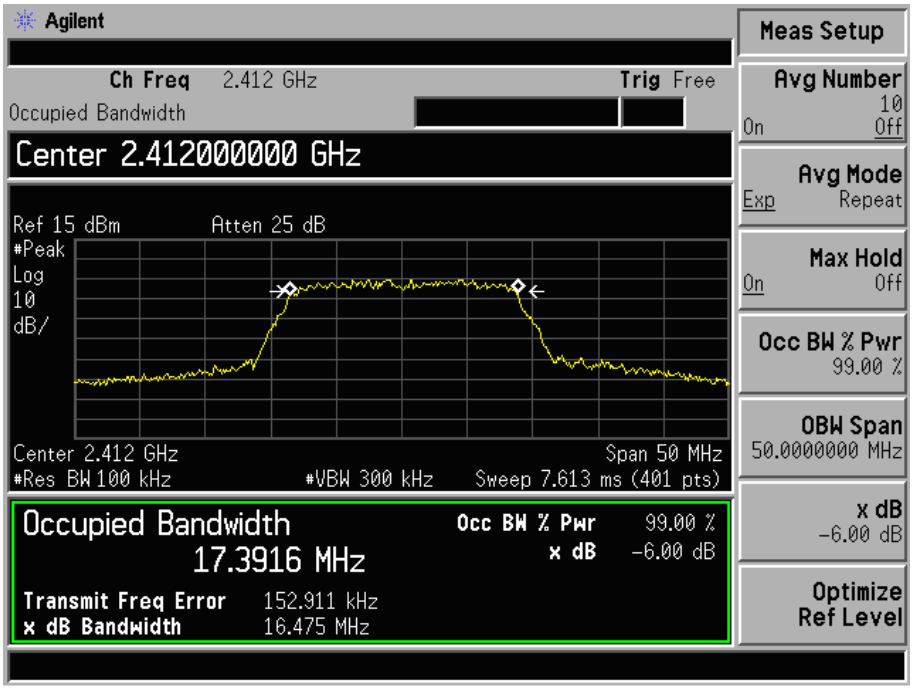
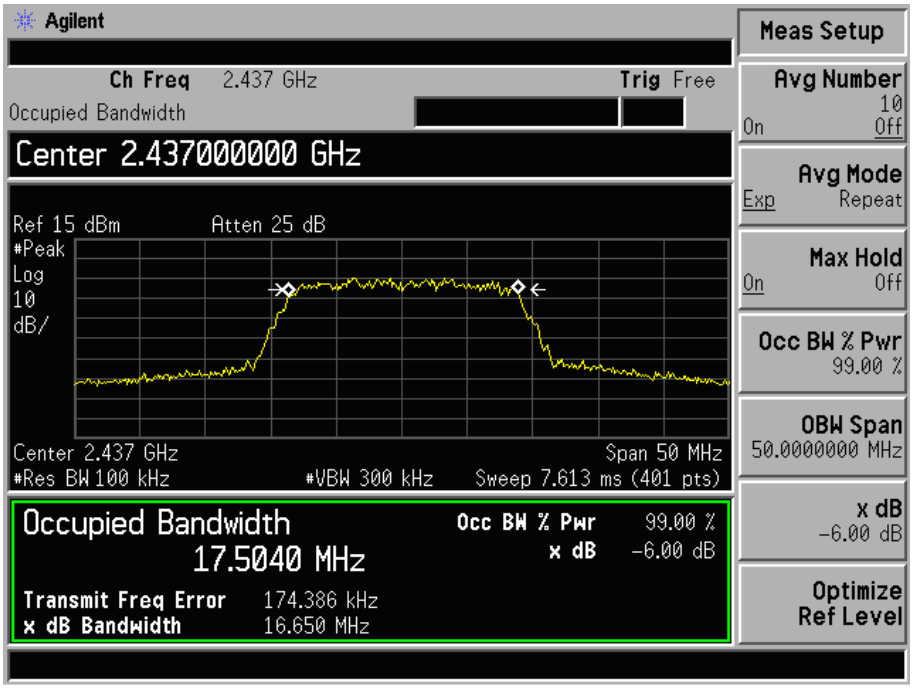
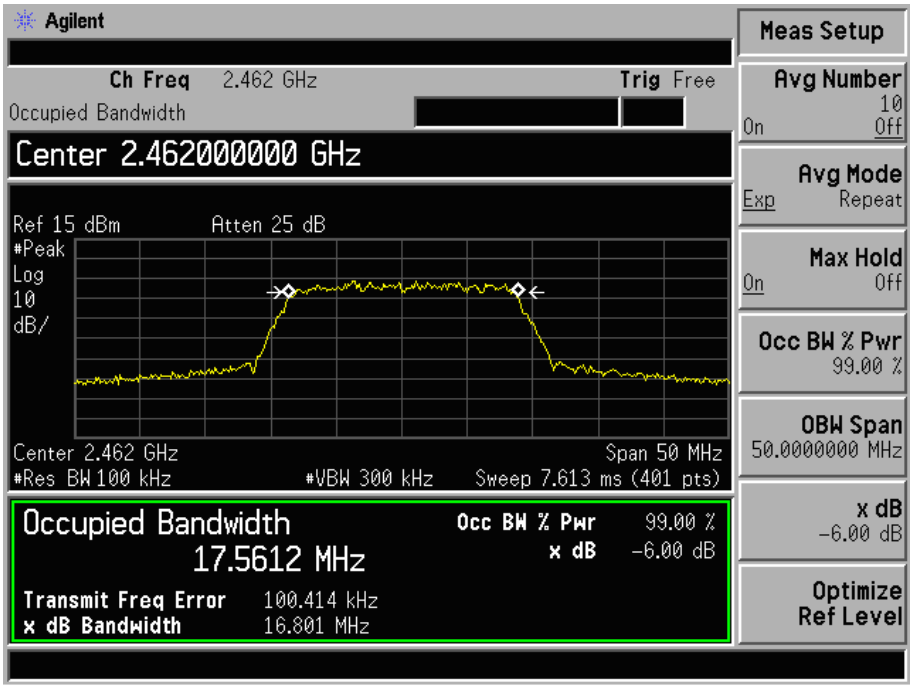


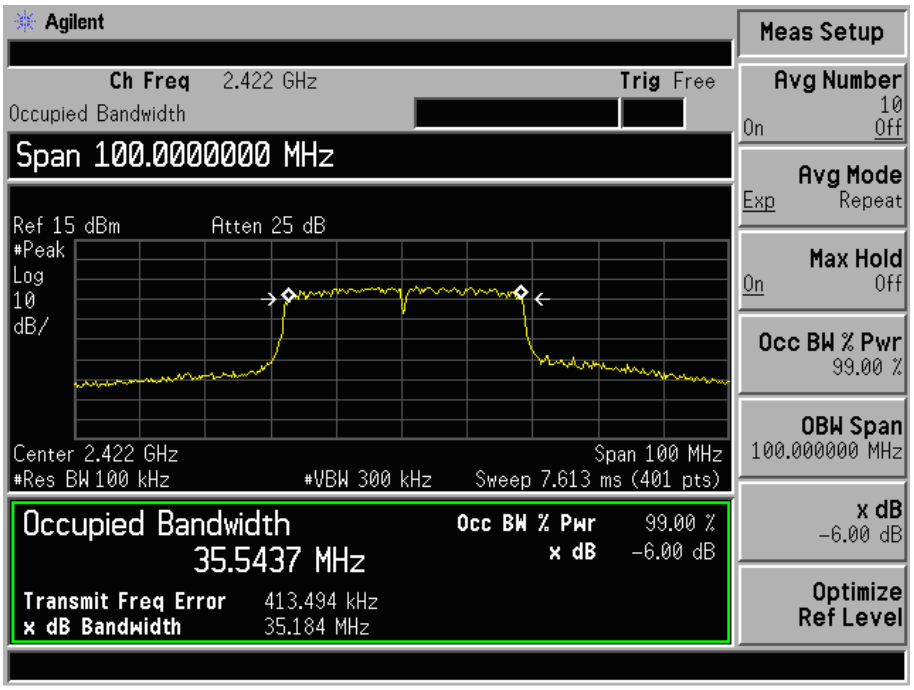
Middle Channel:



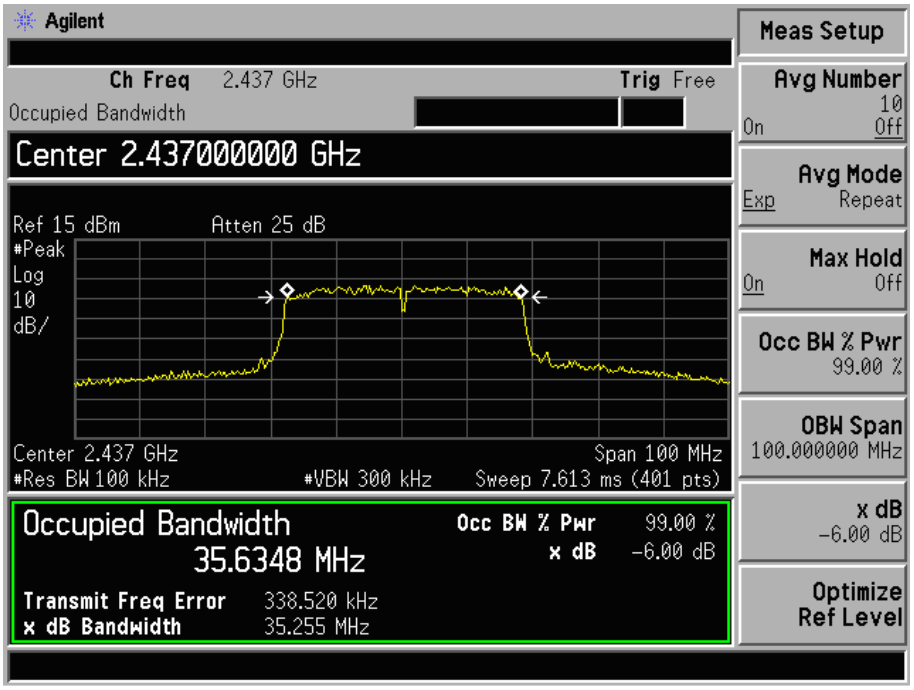
High Channel:



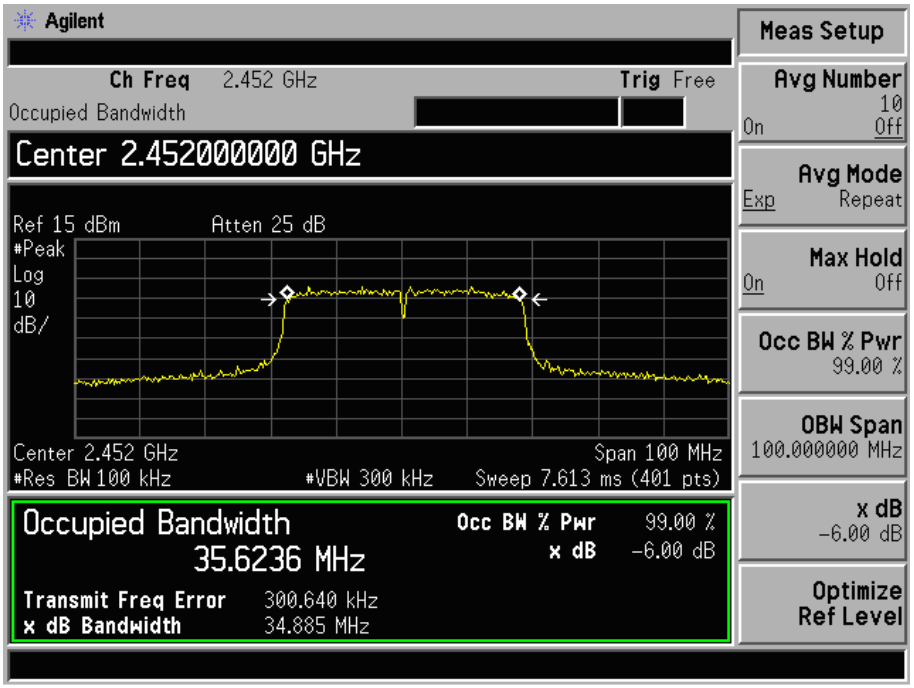
For 802.11n/HT40
Low Channel:



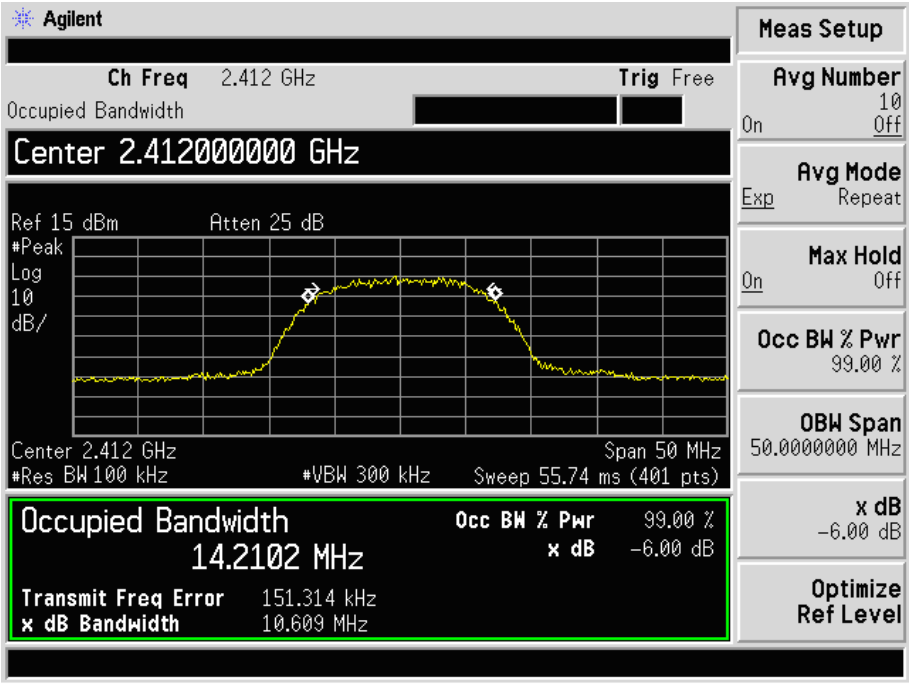
Middle Channel:



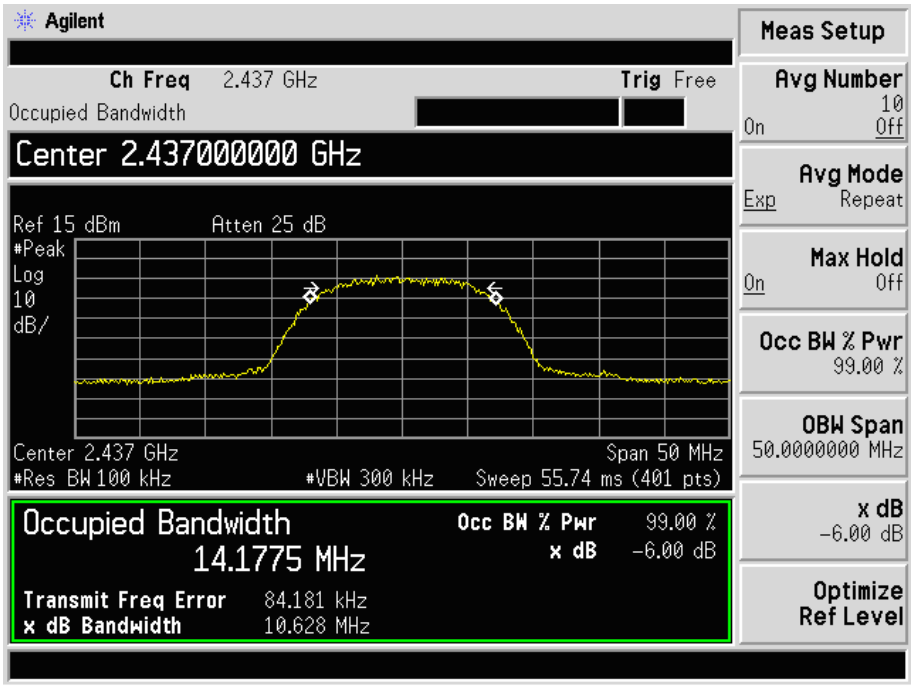
High Channel:



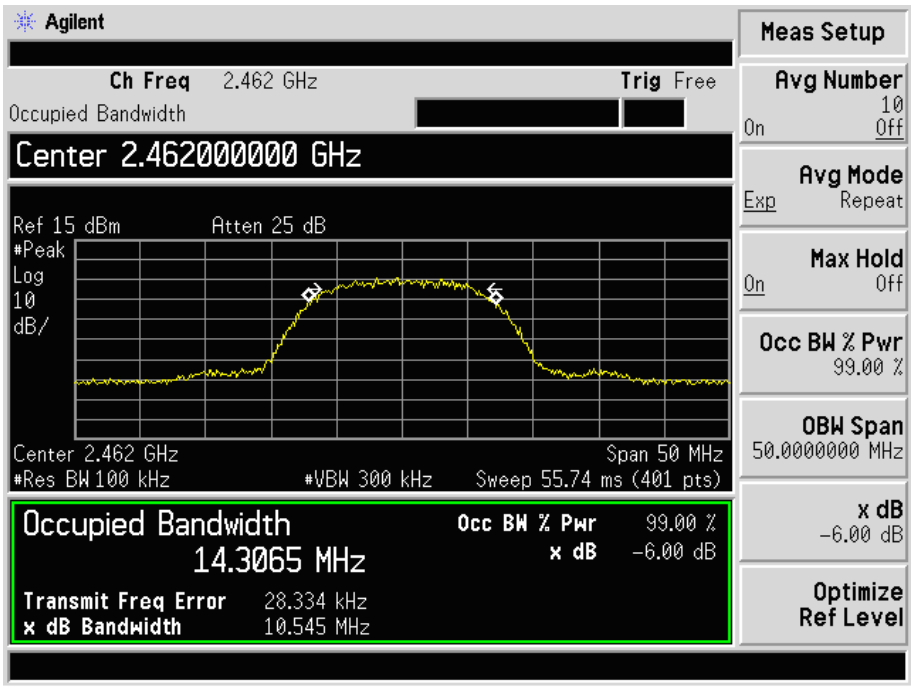
For Chain 1 Test
For 802.11b
Low Channel:



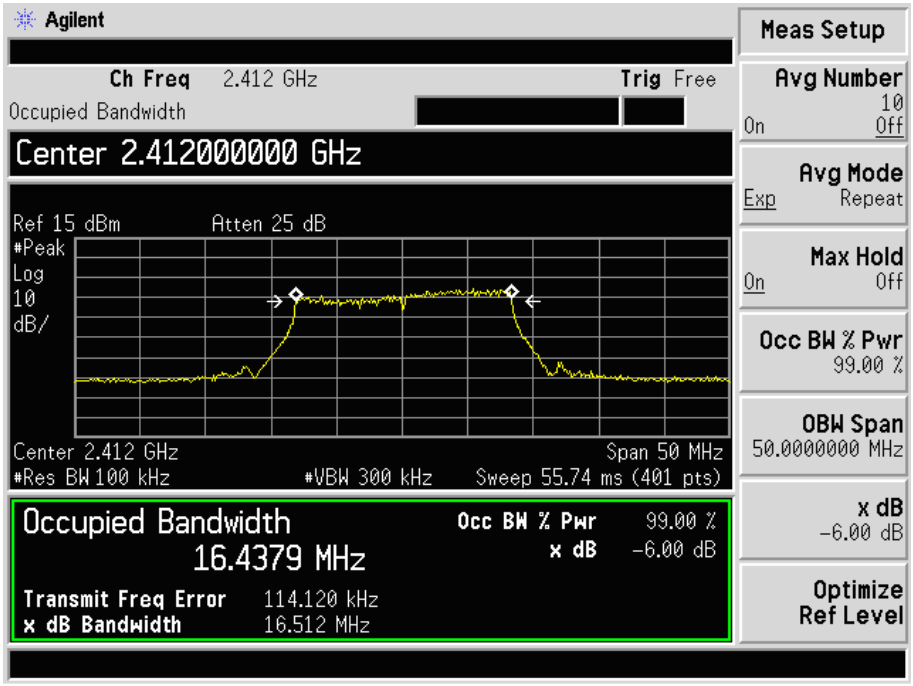
Middle Channel:



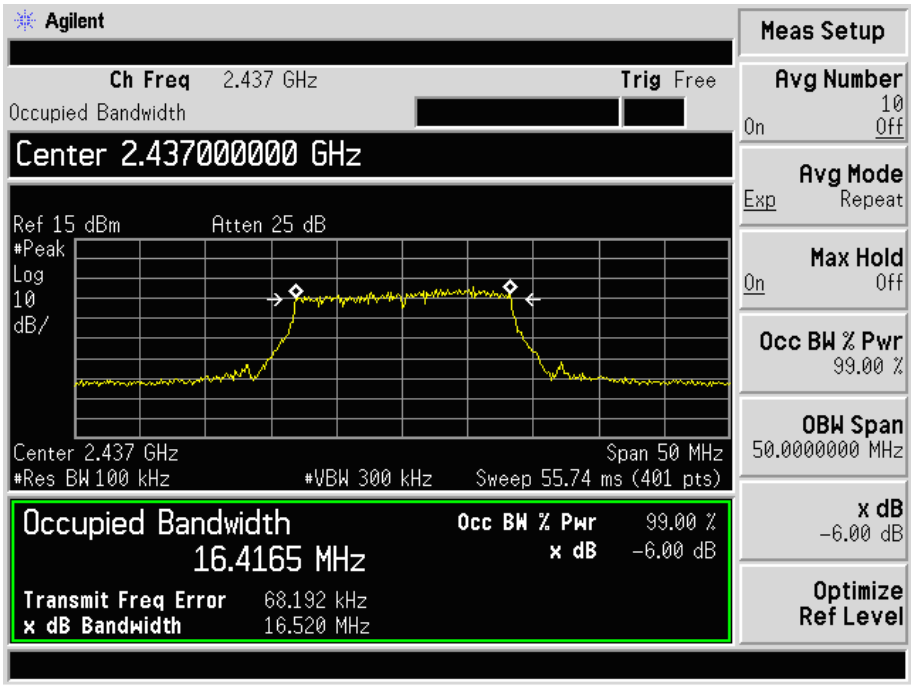
High Channel:



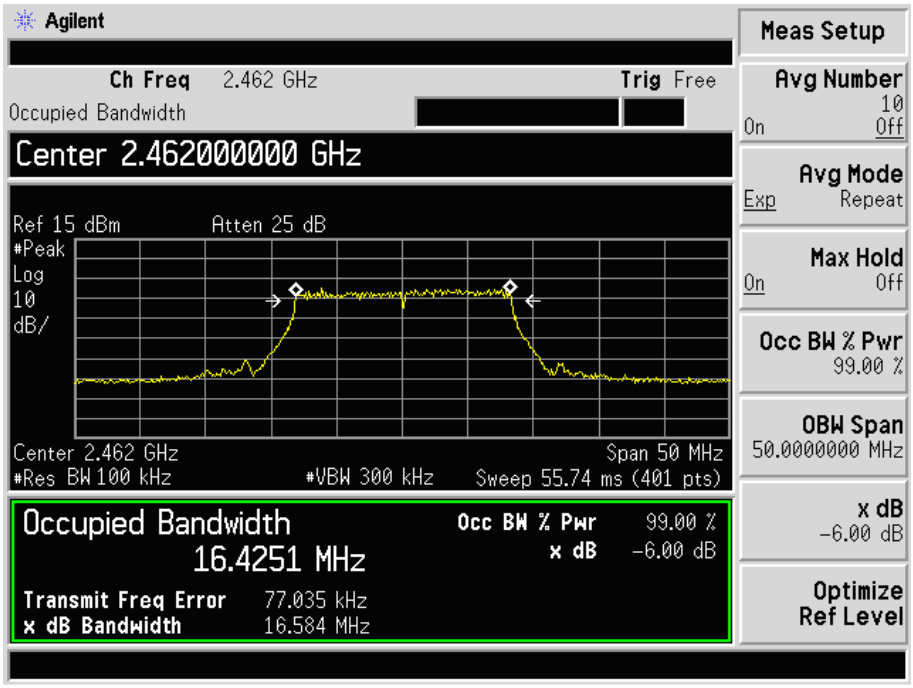
For 802.11g
Low Channel:



Middle Channel:

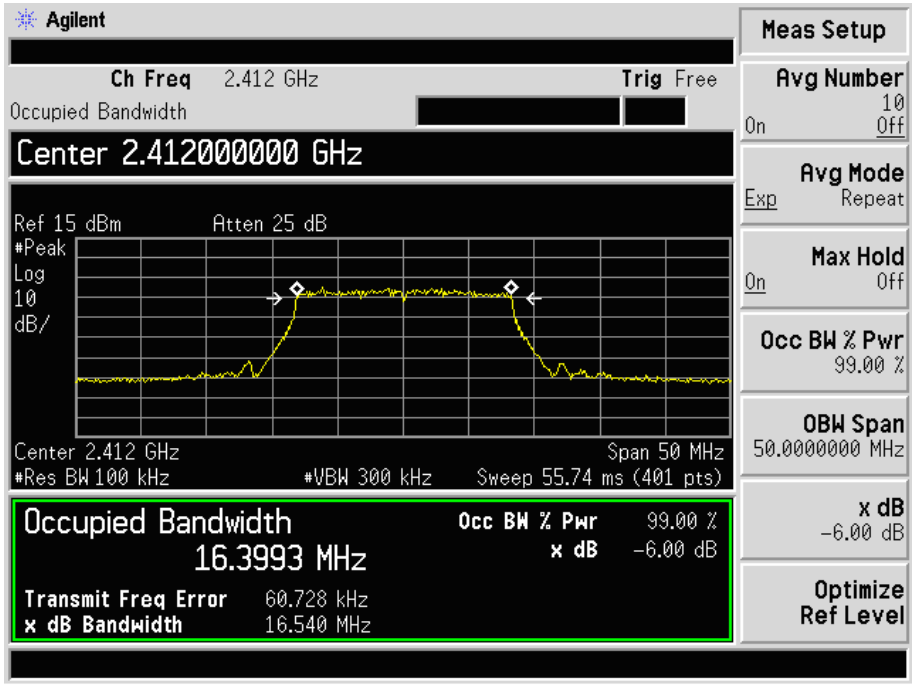


High Channel:

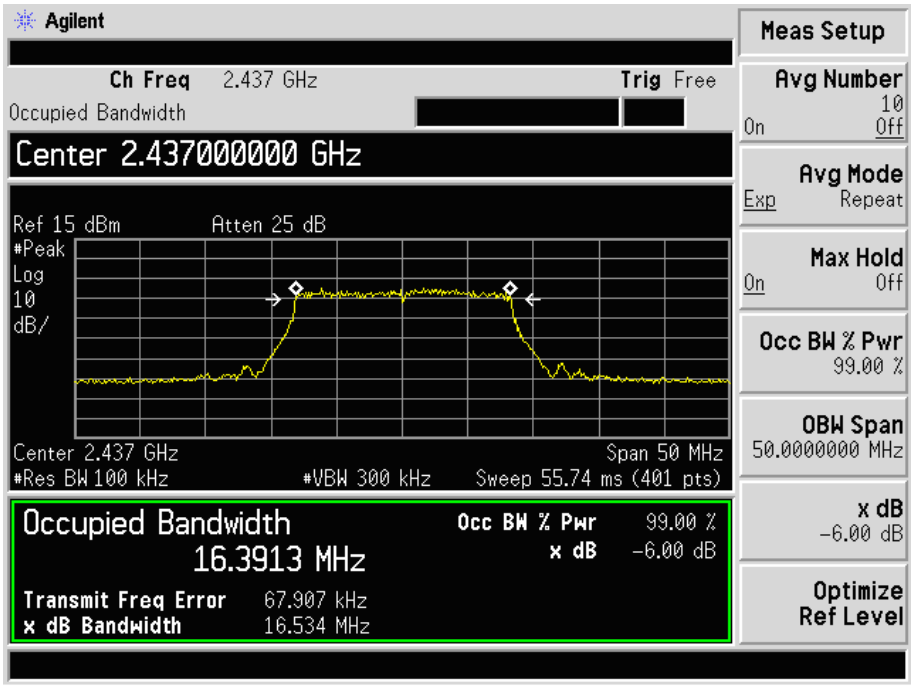


For 802.11n HT20

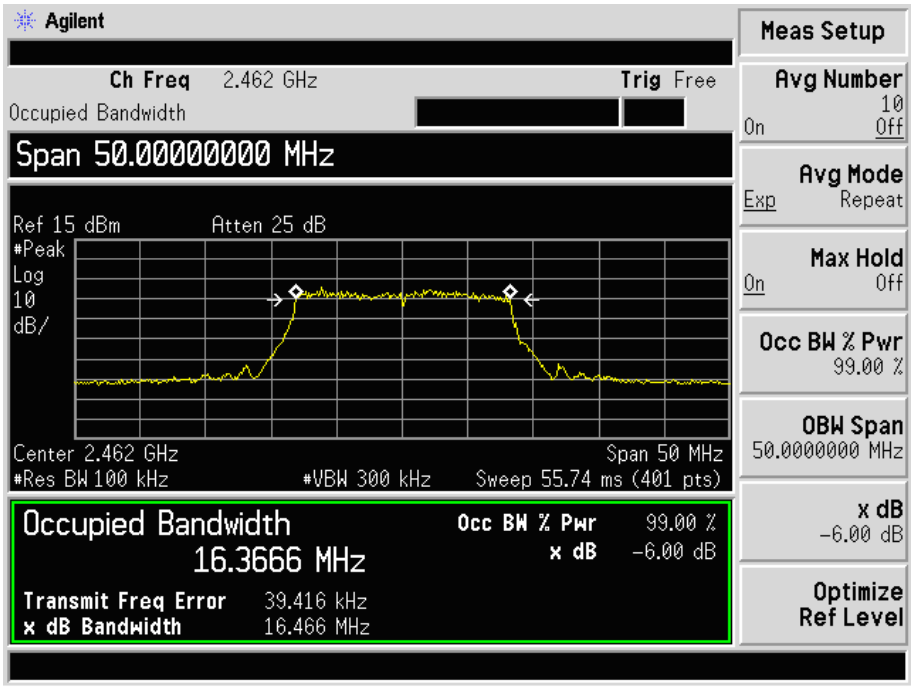
Low Channel:



Middle Channel:

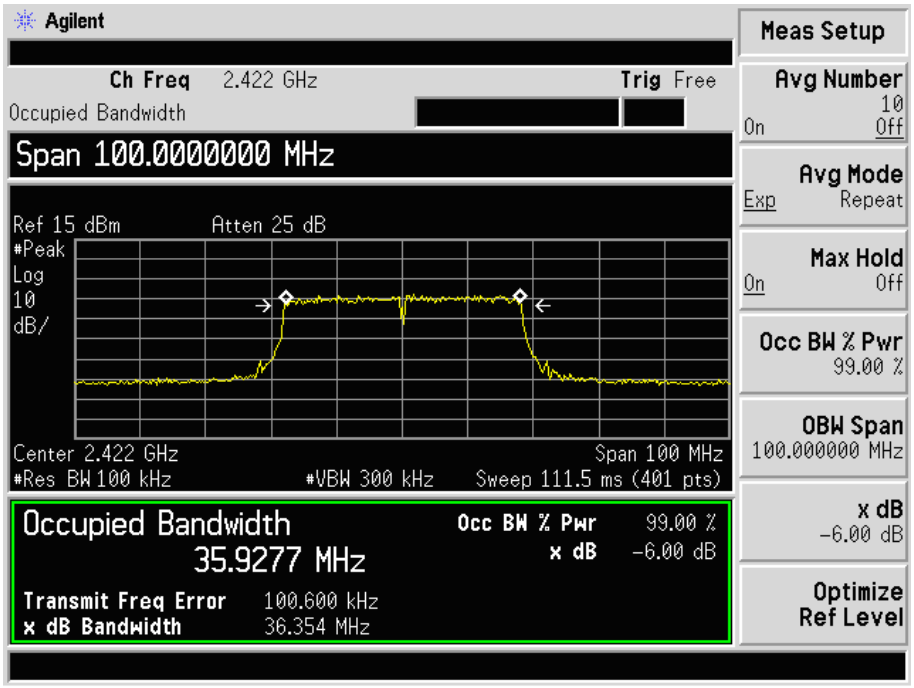


High Channel:

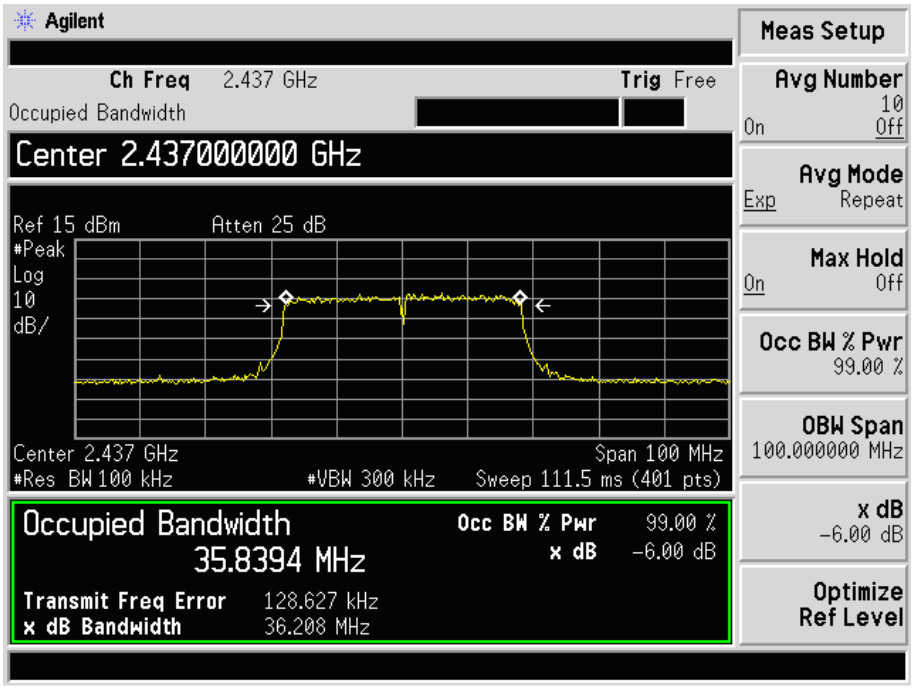


For 802.11nHT40

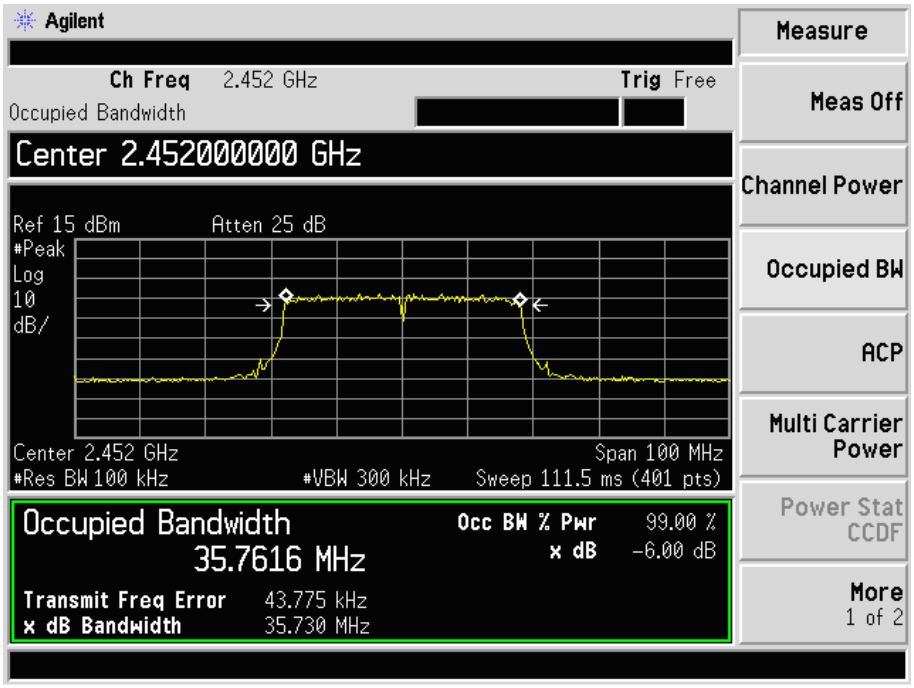
Low Channel:



Middle Channel:



High Channel:



6 POWER OUTPUT

6.1 Standard Applicable

According to 15.247(b)(3). For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

6.2 Test Equipment List and Details

Please refer to Section 1.5. this report.

6.3 Test Procedure

The device under test has an integral antenna and the power was measured on a radiated basis.

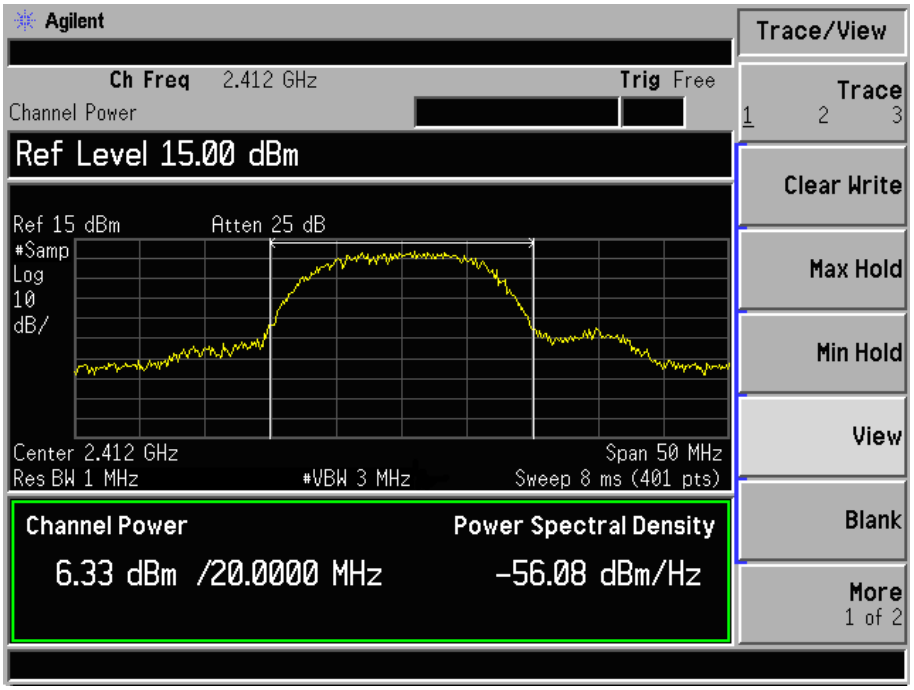
6.4 Environmental Conditions

Test Voltage:	DC 5.0V
Mode:	TX On
Temperature:	24 C
Humidity:	52%RH

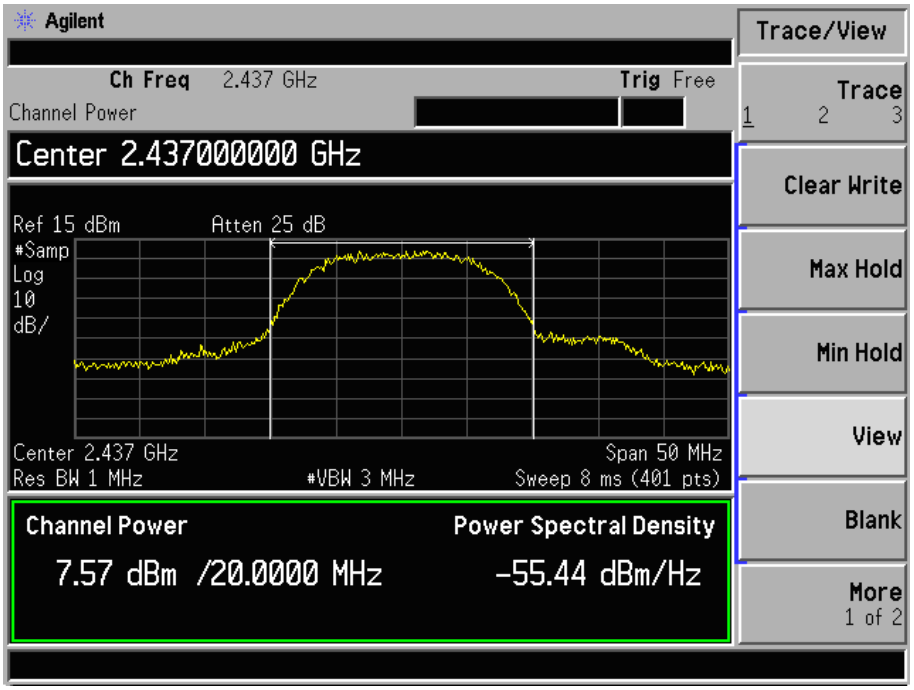
6.5Summary of Test Results/Plots

Test mode	Frequency MHz	Chain 0 Reading dBm	Chain 1 Reading dBm	Total Output power W	Limit W
802.11b	2412	6.33	9.43	0.013065	1
	2437	7.57	10.93	0.018102	1
	2462	5.24	11.03	0.016019	1
802.11g	2412	6.16	9.12	0.012746	1
	2437	7.90	7.28	0.011512	1
	2462	7.75	6.15	0.010078	1
802.11n/HT20	2412	7.28	6.42	0.009731	1
	2437	6.16	6.17	0.00827	1
	2462	6.34	5.67	0.007995	1
802.11n/HT40	2422	6.24	7.47	0.009792	1
	2437	6.07	6.62	0.008638	1
	2452	5.51	6.16	0.007686	1

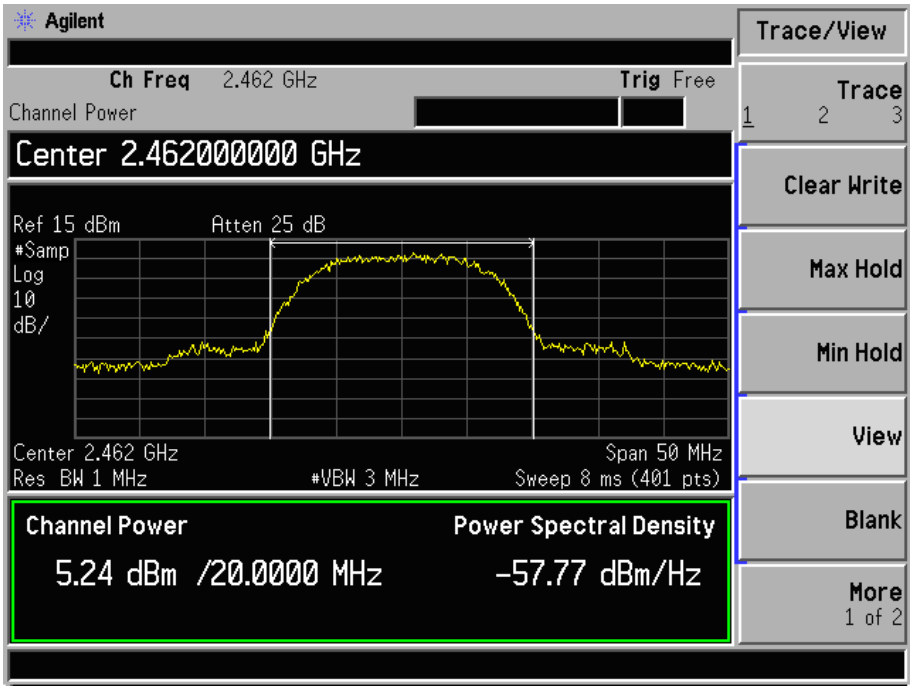
For Chain 0 test plots
For 802.11b
Low Channel:



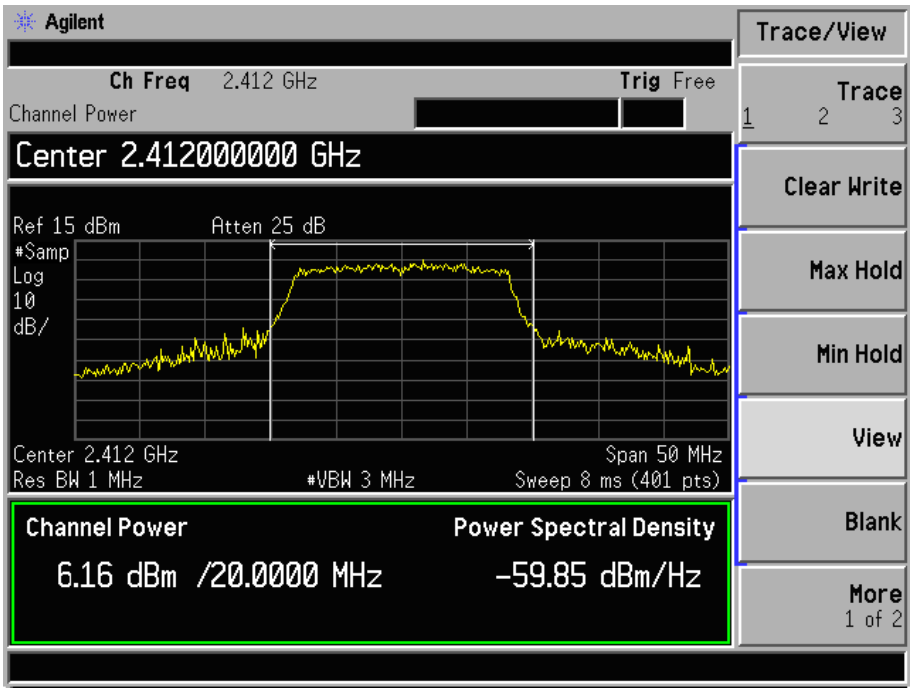
Middle Channel:



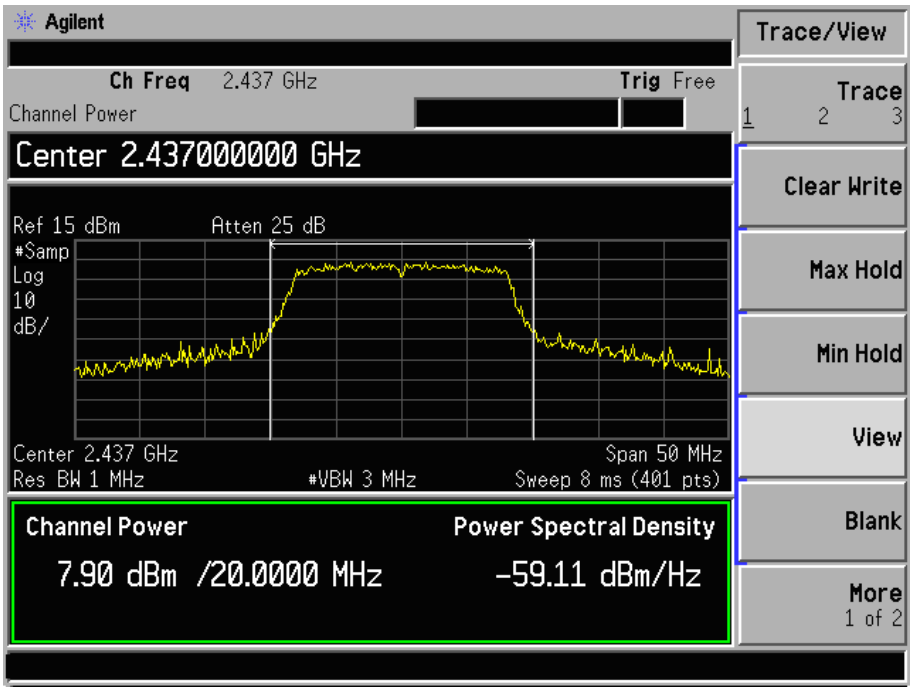
High Channel:



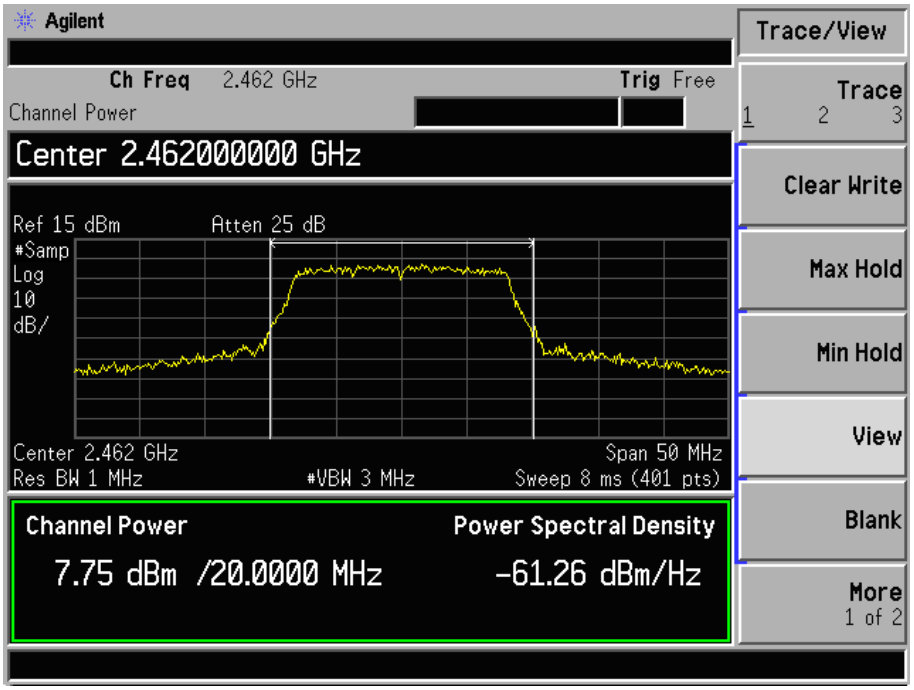
For 802.11g
Low Channel:



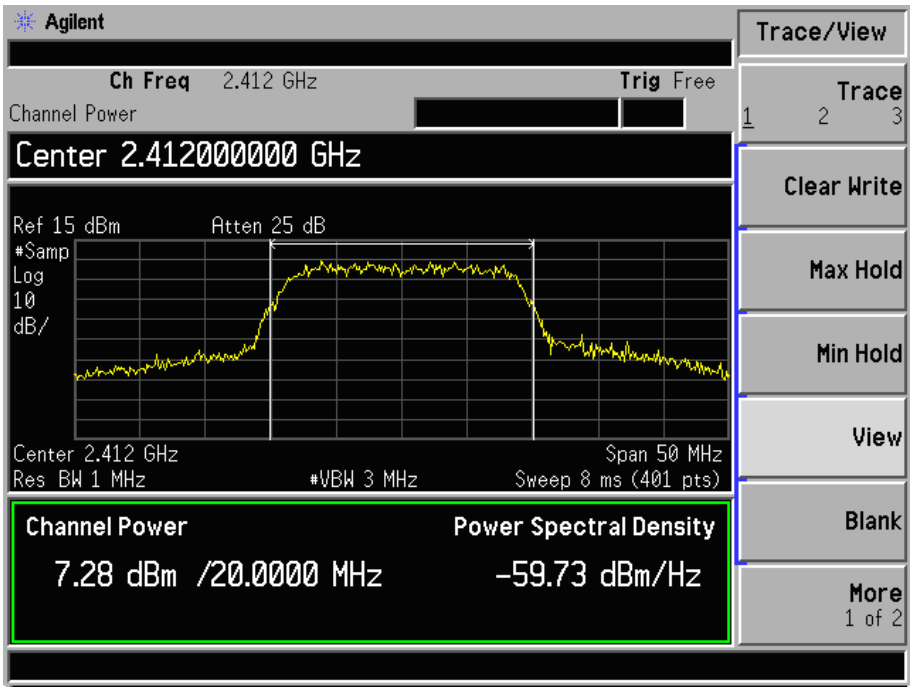
Middle Channel:



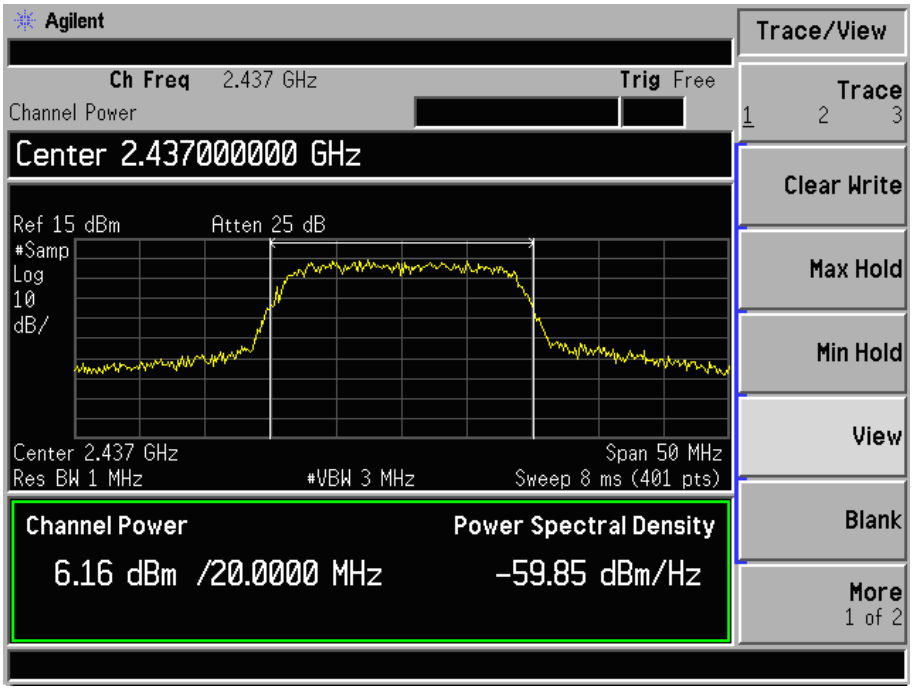
High Channel:



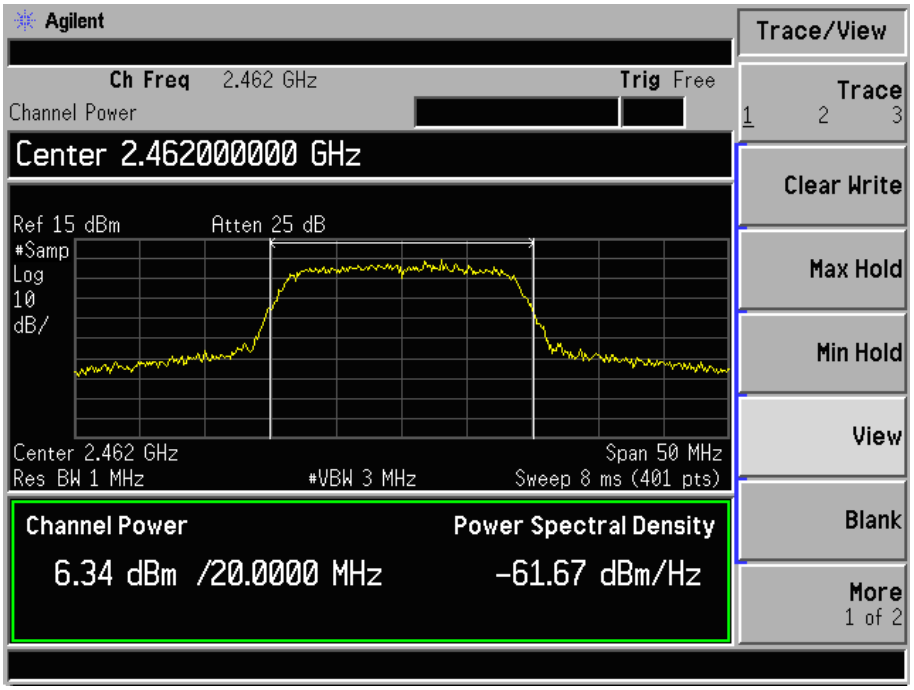
For 802.11n/HT20
Low Channel:



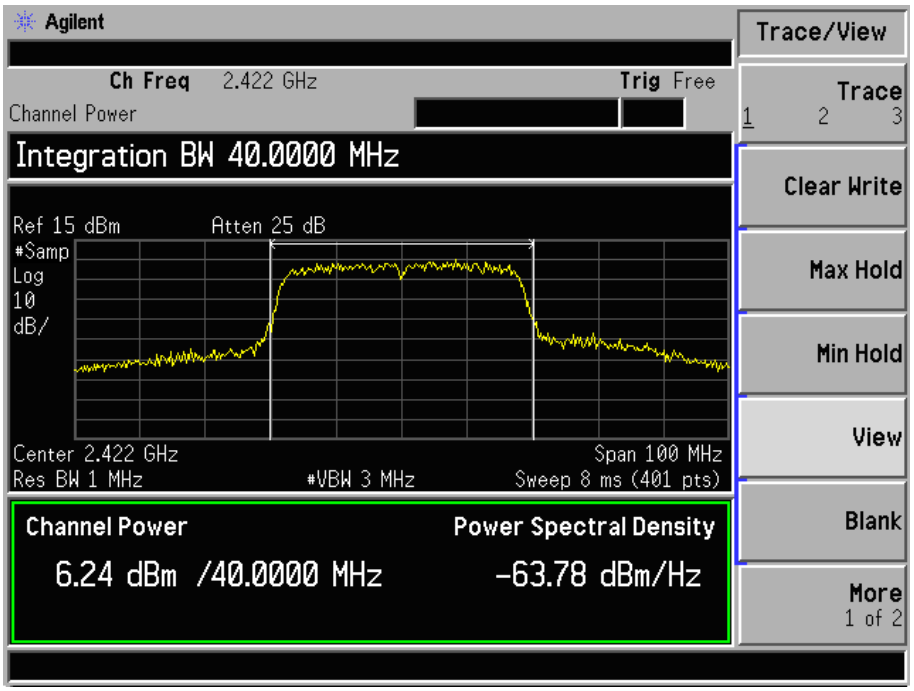
Middle Channel:



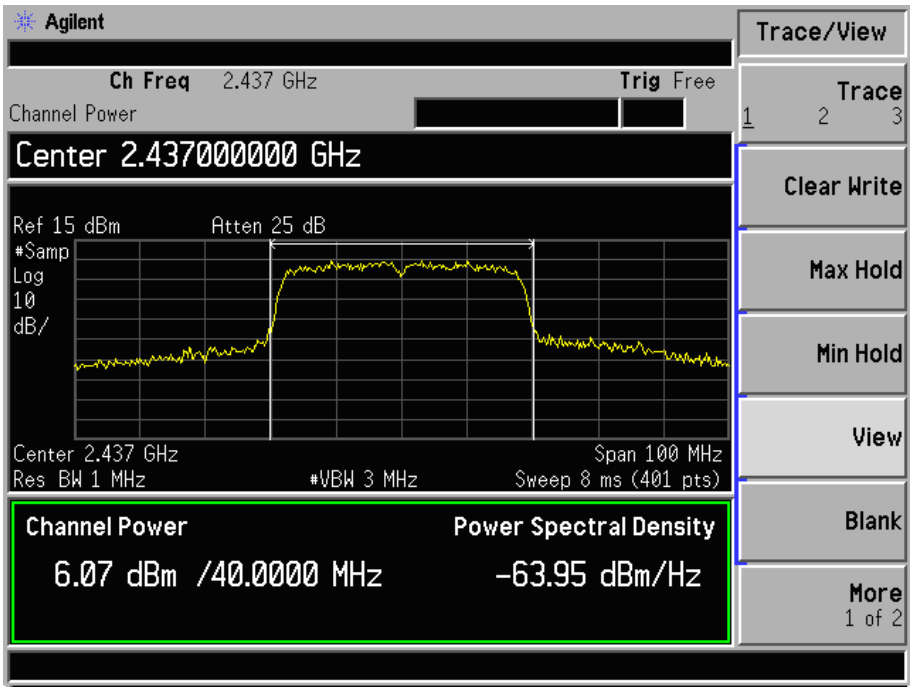
High Channel:



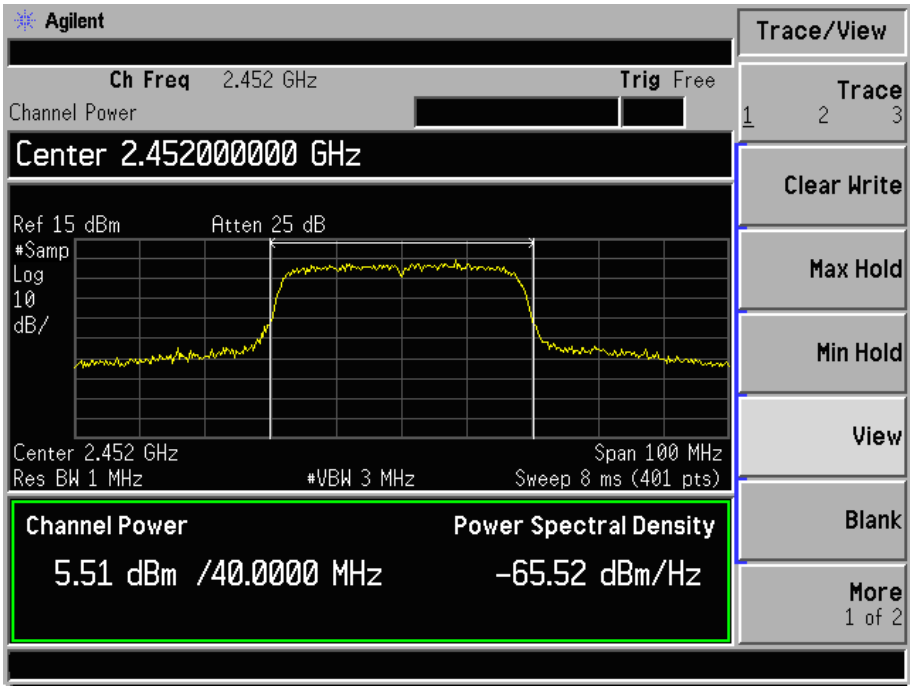
For 802.11n/HT40
Low Channel:



Middle Channel:

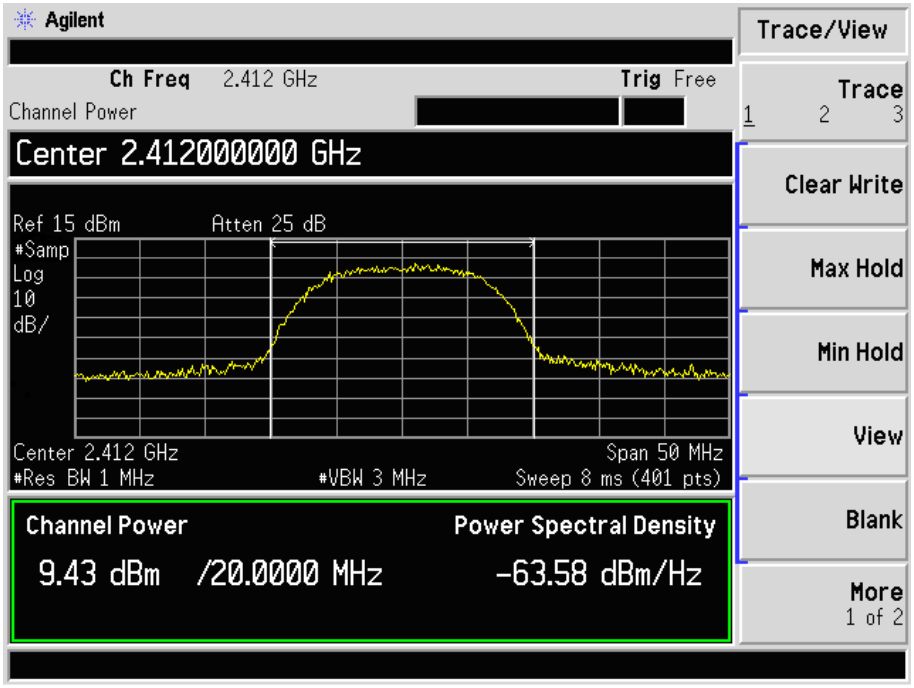


High Channel:

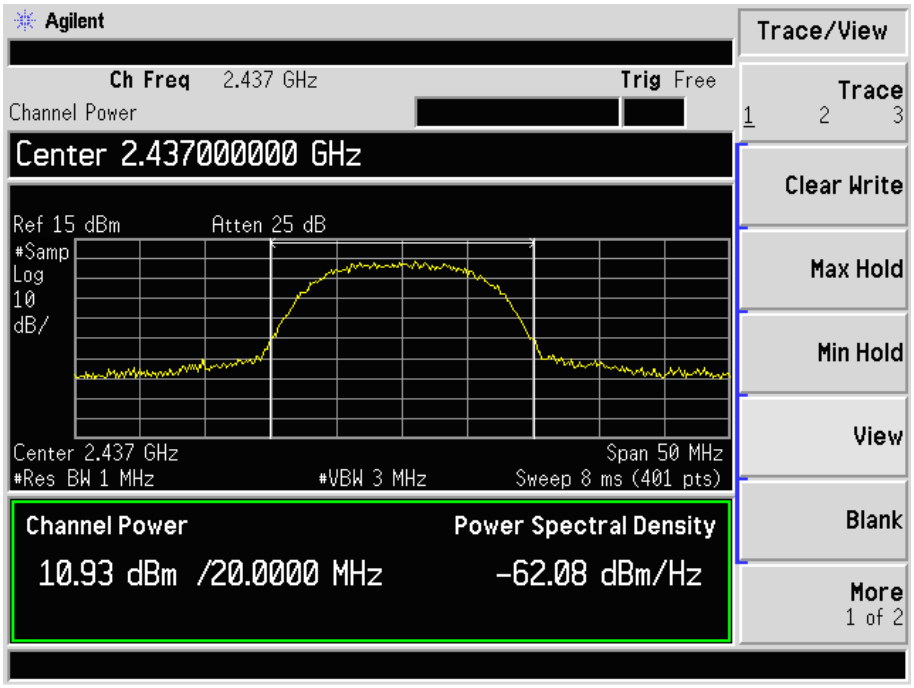


For Chain 1 test mode plots

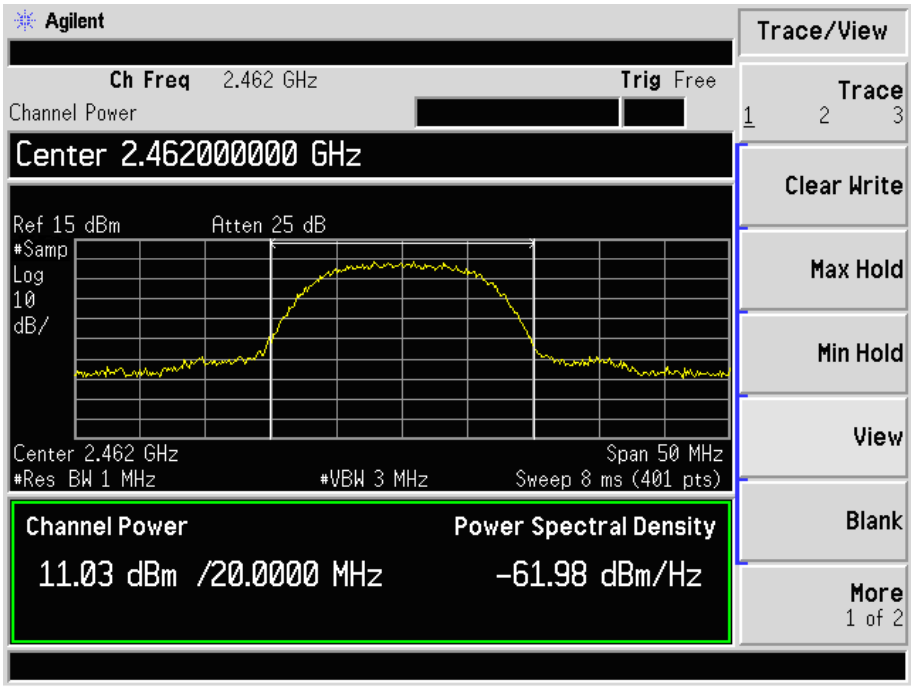
For 802.11b
Low Channel:



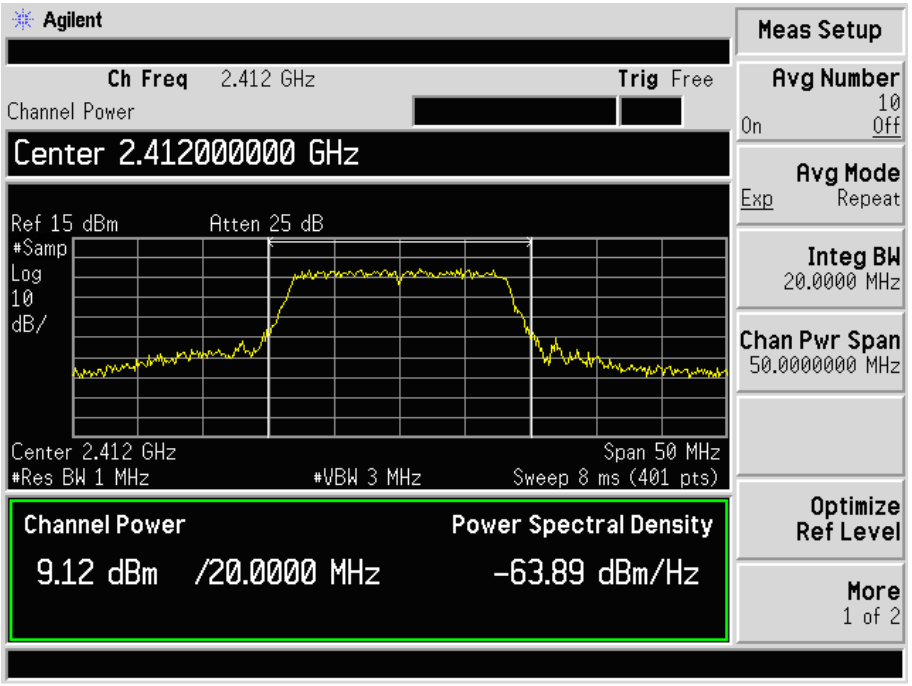
Middle Channel:



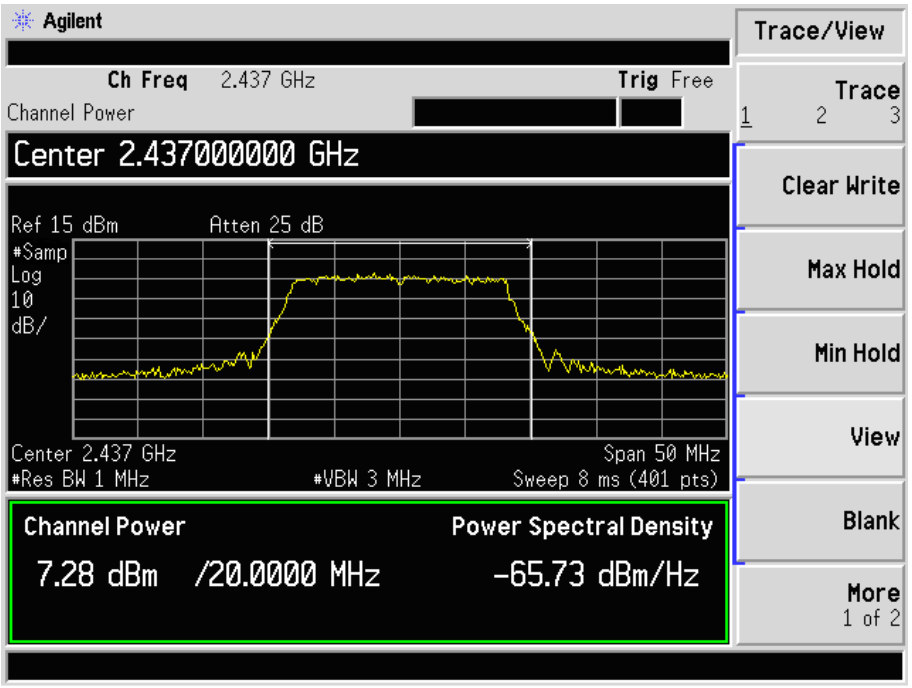
High Channel:



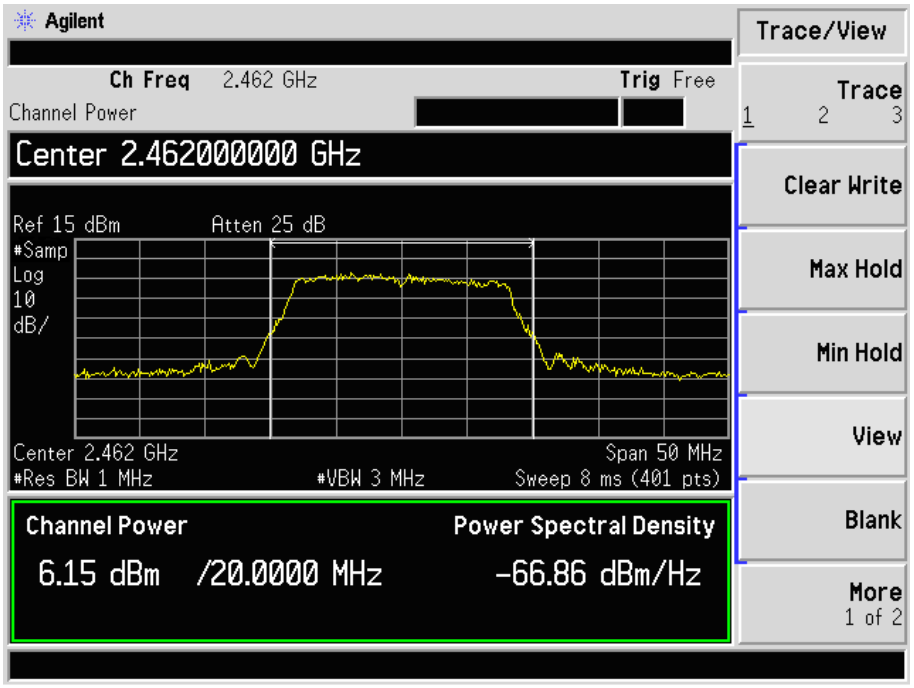
For 802.11g
Low Channel:



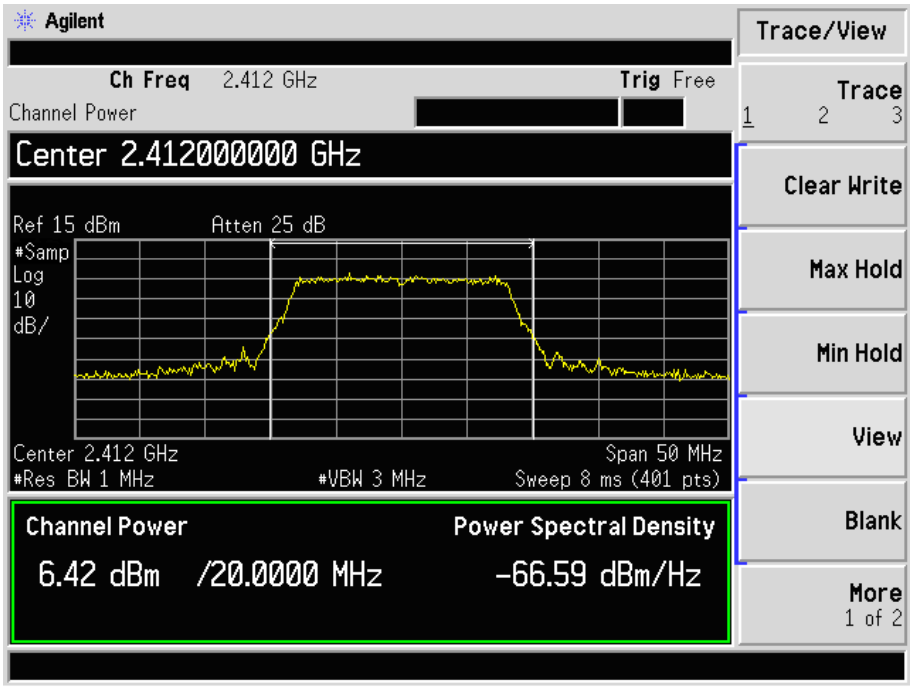
Middle Channel:



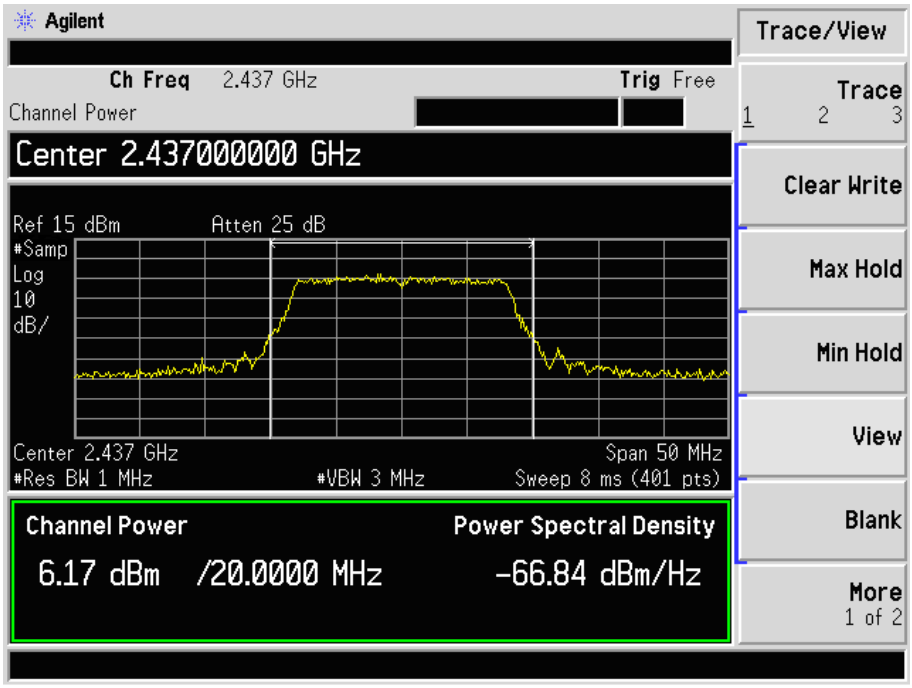
High Channel:



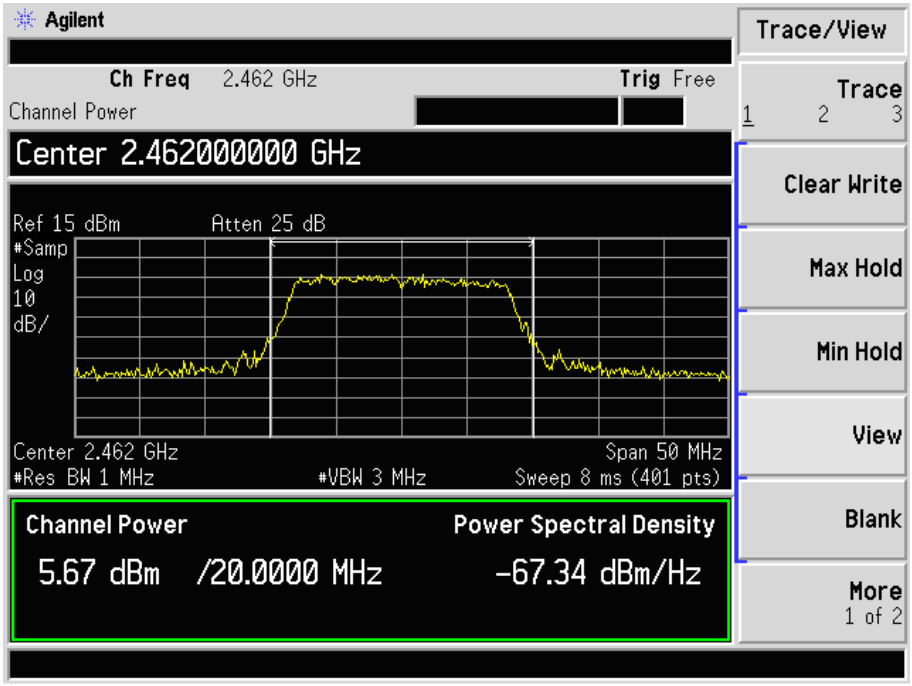
For 802.11n(HT20)
Low Channel:



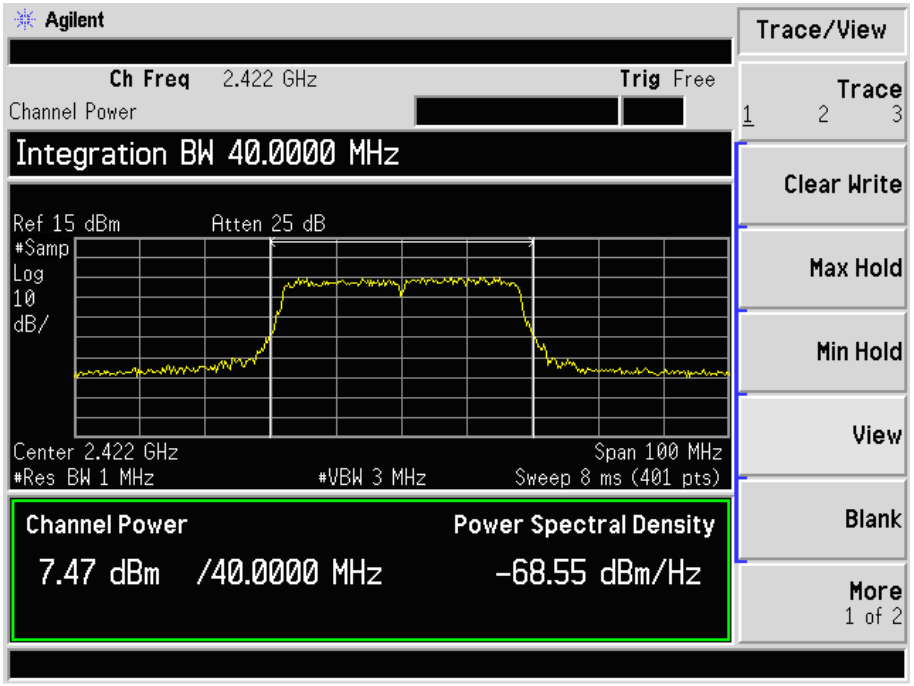
Middle Channel:



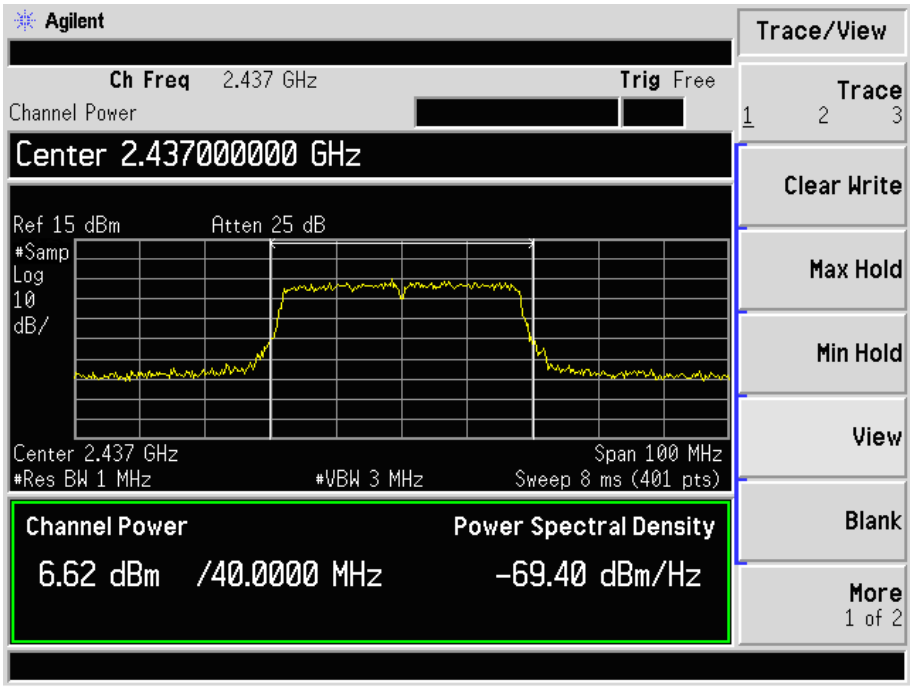
High Channel:



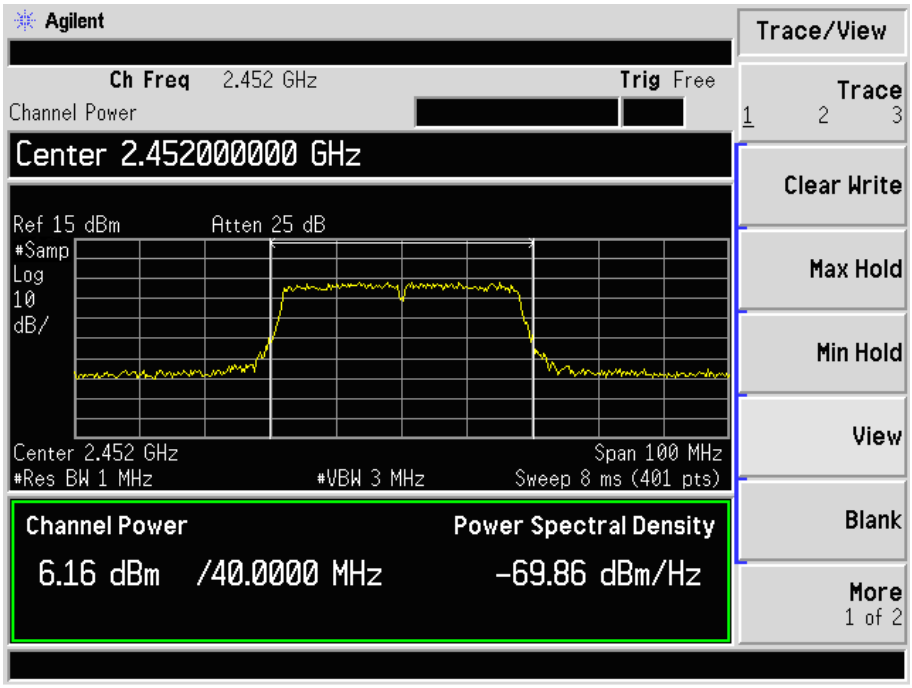
For 802.11n(HT40)
Low Channel:



Middle Channel:



High Channel:



7 FIELD STRENGTH OF SPURIOUS EMISSIONS

7.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ±2.9 dB.

7.2 Standard Applicable

According to §15.247(c), 15.205 15.209(b) &15.35 (b), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Section 15.209:
30 - 88 MHz 40 dBuV/m @3M
88 -216 MHz 43.5 dBuV/m @3M
216 -960 MHz 46 dBuV/m @3M
Above 960 MHz 54dBuV/m @3M

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

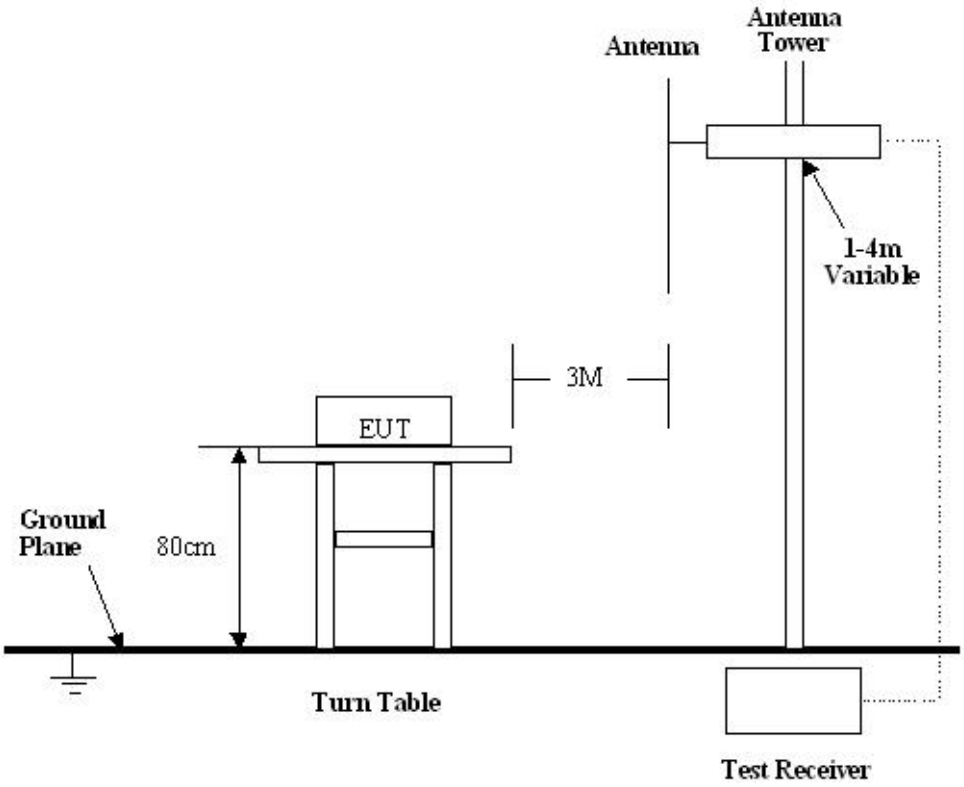
Emissions that fall in the restricted bands (15.205) must be less than 54dBuV/m otherwise the spurious and harmonics must be attenuated by at least 20dB.

7.3 Test Equipment List and Details

Please refer to Section 1.5. this report.

7.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.The spacing between the peripherals was 10 cm.



7.5Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Ant. Factor + Cable Loss – Ampl. Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15 Limit

7.6 Environmental Conditions

Test Voltage:	DC 5.0V
Mode:	TX On
Temperature:	24 C
Humidity:	52%RH

7.7 Summary of Test Results/Plots

According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst margin of:

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11b Middel Channel)
Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	245.2606	25.80	7.56	33.36	46.00	-12.64	peak
2	523.8763	25.95	13.43	39.38	46.00	-6.62	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	899.9577	20.58	18.80	39.38	46.00	-6.62	peak
2	181.3000	22.86	4.89	27.75	43.50	-15.75	peak
3	55.2883	25.12	7.44	32.56	40.00	-7.44	peak
4	598.7067	18.97	14.99	33.96	46.00	-12.04	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11g Middle Channel)
Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	520.2079	26.30	13.35	39.65	46.00	-6.35	peak
2	120.6118	21.00	5.19	26.19	43.50	-17.31	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	39.1825	20.58	7.71	28.29	40.00	-11.71	peak
2	124.9249	18.42	4.57	22.99	43.50	-20.51	peak
3	590.3511	19.10	14.82	33.92	46.00	-12.08	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11n/HT20 Middle Channel)
Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	520.2079	25.31	13.35	38.66	46.00	-7.34	peak
2	120.6118	20.40	5.19	25.59	43.50	-17.91	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	80.8042	27.96	3.43	31.39	40.00	-8.61	peak
2	602.9287	18.12	15.04	33.16	46.00	-12.84	peak

Spurious Emission From 30 MHz to 1 GHz
Test mode: Transmitting (802.11n/HT40 Low Channel)
Horizontal

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	523.8763	26.00	13.43	39.43	46.00	-6.57	peak
2	120.6118	21.70	5.19	26.89	43.50	-16.61	peak

Vertical

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	280.2936	19.96	8.46	28.42	46.00	-17.58	peak
2	594.5143	18.13	14.91	33.04	46.00	-12.96	peak

Spurious Emission Above 1GHz
Test Mode: Transmitting (802.11b)

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4824.0	PK	53.9	90	V	34.1	5.2	33.0	60.2	74	-13.8
7236.0	PK	51.2	270	V	37.4	6.1	33.5	61.2	74	-12.8
7236.0	PK	52.5	180	H	37.4	6.1	33.5	62.5	74	-11.5
4824.0	PK	55.4	45	H	34.1	5.2	33.0	61.7	74	-12.3
4824.0	AV	46.3	270	V	34.1	5.2	33.0	52.6	54	-1.4
7236.0	AV	41.4	90	V	37.4	6.1	33.5	51.4	54	-2.6
7236.0	AV	42.2	45	H	37.4	6.1	33.5	52.2	54	-1.8
4824.0	AV	45.8	60	H	34.1	5.2	33.0	52.1	54	-1.9
Middle Channel (1G to 25GHz)										
7311.0	PK	54.5	45	V	37.4	6.1	33.5	60.8	74	-13.2
4874.0	PK	49.7	270	V	34.1	5.2	33.0	59.7	74	-14.3
7311.0	PK	52.3	45	H	37.4	6.1	33.5	62.3	74	-11.7
4874.0	PK	54.9	180	H	34.1	5.2	33.0	61.2	74	-12.8
7311.0	AV	45.3	270	V	37.4	6.1	33.5	51.6	54	-2.4
4874.0	AV	41.8	90	V	34.1	5.2	33.0	51.8	54	-2.2
7311.0	AV	42.4	60	H	37.4	6.1	33.5	52.4	54	-1.6
4874.0	AV	46.2	45	H	34.1	5.2	33.0	52.5	54	-1.5
High Channel (1G to 25GHz)										
4924.0	PK	54.4	270	V	34.1	5.2	33.0	60.7	74	-13.3
7386.0	PK	50.5	45	V	37.4	6.1	33.5	60.5	74	-13.5
4924.0	PK	51.4	180	H	34.1	5.2	33.0	61.4	74	-12.6
7386.0	PK	55.4	45	H	37.4	6.1	33.5	61.7	74	-12.3
4924.0	AV	46.3	90	V	34.1	5.2	33.0	52.6	54	-1.4
7386.0	AV	42.8	270	V	37.4	6.1	33.5	52.8	54	-1.2
4924.0	AV	42.7	60	H	34.1	5.2	33.0	52.7	54	-1.3
7386.0	AV	46.4	60	H	37.4	6.1	33.5	52.7	54	-1.3

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 5th Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

Spurious Emission Above 1GHz
Test Mode: Transmitting (802.11g)

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4824.0	PK	53.4	90	V	34.1	5.2	33.0	59.7	74	-14.3
7236.0	PK	48.8	270	V	37.4	6.1	33.5	58.8	74	-15.2
7236.0	PK	49.9	180	H	37.4	6.1	33.5	59.9	74	-14.1
4824.0	PK	54.5	45	H	34.1	5.2	33.0	60.8	74	-13.2
4824.0	AV	45.3	270	V	34.1	5.2	33.0	51.6	54	-2.4
7236.0	AV	40.8	90	V	37.4	6.1	33.5	50.8	54	-3.2
7236.0	AV	41.9	45	H	37.4	6.1	33.5	51.9	54	-2.1
4824.0	AV	46.1	60	H	34.1	5.2	33.0	52.4	54	-1.6
Middle Channel (1G to 25GHz)										
7311.0	PK	54.3	45	V	37.4	6.1	33.5	60.6	74	-13.4
4874.0	PK	50.5	270	V	34.1	5.2	33.0	60.5	74	-13.5
7311.0	PK	51.5	45	H	37.4	6.1	33.5	61.5	74	-12.5
4874.0	PK	55.5	180	H	34.1	5.2	33.0	61.8	74	-12.2
7311.0	AV	46.1	270	V	37.4	6.1	33.5	52.4	54	-1.6
4874.0	AV	41.9	90	V	34.1	5.2	33.0	51.9	54	-2.1
7311.0	AV	44.7	60	H	37.4	6.1	33.5	52.7	54	-1.3
4874.0	AV	46.3	45	H	34.1	5.2	33.0	52.6	54	-1.4
High Channel (1G to 25GHz)										
4924.0	PK	52.6	270	V	34.1	5.2	33.0	58.9	74	-15.1
7386.0	PK	50.6	45	V	37.4	6.1	33.5	60.6	74	-13.4
4924.0	PK	50.1	180	H	34.1	5.2	33.0	60.1	74	-13.9
7386.0	PK	55.2	45	H	37.4	6.1	33.5	61.5	74	-12.5
4924.0	AV	44.0	90	V	34.1	5.2	33.0	50.3	54	-3.7
7386.0	AV	42.4	270	V	37.4	6.1	33.5	52.4	54	-1.6
4924.0	AV	41.4	60	H	34.1	5.2	33.0	51.4	54	-2.6
7386.0	AV	46.2	60	H	37.4	6.1	33.5	52.5	54	-1.5

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 5th Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

Spurious Emission Above 1GHz
Test Mode: Transmitting (802.11n/HT20)

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4824.0	PK	52.3	221	V	34.1	5.2	33.0	58.6	74	-15.4
7236.0	PK	49.4	54	V	37.4	6.1	33.5	59.4	74	-14.6
7236.0	PK	50.5	35	H	37.4	6.1	33.5	60.5	74	-13.5
4824.0	PK	53.2	156	H	34.1	5.2	33.0	59.5	74	-14.5
4824.0	AV	44.1	90	V	34.1	5.2	33.0	50.4	54	-3.6
7236.0	AV	41.2	54	V	37.4	6.1	33.5	51.2	54	-2.8
7236.0	AV	41.9	161	H	37.4	6.1	33.5	51.9	54	-2.1
4824.0	AV	46.1	15	H	34.1	5.2	33.0	52.4	54	-1.6
Middle Channel (1G to 25GHz)										
7311.0	PK	52.3	65	V	37.4	6.1	33.5	58.6	74	-15.4
4874.0	PK	47.8	44	V	34.1	5.2	33.0	57.8	74	-16.2
7311.0	PK	49.5	46	H	37.4	6.1	33.5	59.5	74	-14.5
4874.0	PK	52.4	158	H	34.1	5.2	33.0	58.7	74	-15.3
7311.0	AV	44.1	11	V	37.4	6.1	33.5	50.4	54	-3.6
4874.0	AV	39.8	48	V	34.1	5.2	33.0	49.8	54	-4.2
7311.0	AV	41.7	160	H	37.4	6.1	33.5	51.7	54	-2.3
4874.0	AV	43.5	26	H	34.1	5.2	33.0	49.8	54	-4.2
High Channel (1G to 25GHz)										
4924.0	PK	52.2	9	V	34.1	5.2	33.0	58.5	74	-15.5
7386.0	PK	46.7	59	V	37.4	6.1	33.5	56.7	74	-17.3
4924.0	PK	49.8	51	H	34.1	5.2	33.0	59.8	74	-14.2
7386.0	PK	51.6	65	H	37.4	6.1	33.5	57.9	74	-16.1
4924.0	AV	44.0	90	V	34.1	5.2	33.0	50.3	54	-3.7
7386.0	AV	38.4	44	V	37.4	6.1	33.5	48.4	54	-5.6
4924.0	AV	41.2	164	H	34.1	5.2	33.0	51.2	54	-2.8
7386.0	AV	43.0	166	H	37.4	6.1	33.5	49.3	54	-4.7

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 5th Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

Spurious Emission Above 1GHz
Test Mode: Transmitting (802.11n/HT40)

Frequency MHz	Detector	Meter Reading dBuV	Direction Degree	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Correction Amplitude dBuV/m	Limit dBuV/m	Margin dB
Low Channel (1G to 25GHz)										
4844.0	PK	52.5	65	V	34.1	5.2	33.0	58.8	74	-15.2
7266.0	PK	50.1	235	V	37.4	6.1	33.5	60.1	74	-13.9
7266.0	PK	51.2	165	H	37.4	6.1	33.5	61.2	74	-12.8
4844.0	PK	53.3	33	H	34.1	5.2	33.0	59.6	74	-14.4
4844.0	AV	44.4	22	V	34.1	5.2	33.0	50.7	54	-3.3
7266.0	AV	41.6	30	V	37.4	6.1	33.5	51.6	54	-2.4
7266.0	AV	42.0	15	H	37.4	6.1	33.5	52.0	54	-2.0
4844.0	AV	45.0	154	H	34.1	5.2	33.0	51.3	54	-2.7
Middle Channel (1G to 25GHz)										
7311.0	PK	51.3	61	V	37.4	6.1	33.5	57.6	74	-16.4
4874.0	PK	47.9	64	V	34.1	5.2	33.0	57.9	74	-16.1
7311.0	PK	48.8	54	H	37.4	6.1	33.5	58.8	74	-15.2
4874.0	PK	52.6	11	H	34.1	5.2	33.0	58.9	74	-15.1
7311.0	AV	43.1	102	V	37.4	6.1	33.5	49.4	54	-4.6
4874.0	AV	39.6	132	V	34.1	5.2	33.0	49.6	54	-4.4
7311.0	AV	41.3	102	H	37.4	6.1	33.5	51.3	54	-2.7
4874.0	AV	44.8	55	H	34.1	5.2	33.0	51.1	54	-2.9
High Channel (1G to 25GHz)										
4904.0	PK	51.7	312	V	34.1	5.2	33.0	58.0	74	-16.0
7356.0	PK	46.8	48	V	37.4	6.1	33.5	56.8	74	-17.2
4904.0	PK	49.6	69	H	34.1	5.2	33.0	59.6	74	-14.4
7356.0	PK	51.4	75	H	37.4	6.1	33.5	57.7	74	-16.3
4904.0	AV	43.5	84	V	34.1	5.2	33.0	49.8	54	-4.2
7356.0	AV	38.5	110	V	37.4	6.1	33.5	48.5	54	-5.5
4904.0	AV	41.7	57	H	34.1	5.2	33.0	51.7	54	-2.3
7356.0	AV	43.5	57	H	37.4	6.1	33.5	49.8	54	-4.2

Note: Testing is carried out with frequency rang 30MHz to the tenth harmonics, which above 5th Harmonics is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

8 OUT OF BAND EMISSIONS

8.1 Standard Applicable

According to §15.247 (d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

8.2 Test Equipment List and Details

Please refer to Section 1.5. this report.

8.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW, VBW=100KHz, Span=50MHz, Sweep = auto
3. Set the Lowest and Highest Transmitting Channel, observed the outside band of 2400MHz to 2438.5MHz, then mark the higher-level emission for comparing with the FCC rules.

8.4 Environmental Conditions

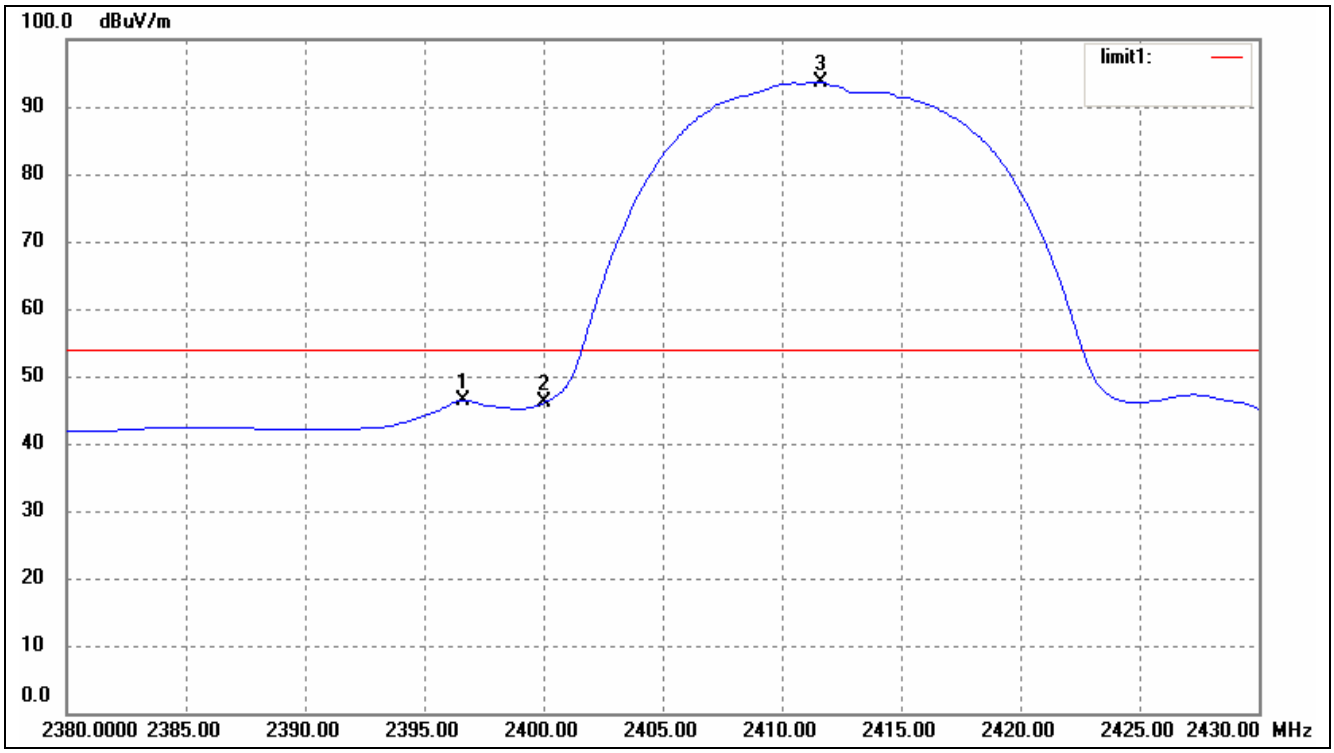
Test Voltage:	DC 5.0V
Mode:	TX On
Temperature:	24 C
Humidity:	52%RH

8.510.5 Summary of Test Results/Plots

Test mode	Frequency MHz	Limit dBuV /dB	Result
802.11b	2396.633	<54dBuv	Pass
	2400.000	>20dB	Pass
	2476.152	<54dBuv	Pass
802.11g	2390.000	<54dBuv	Pass
	2400.000	>20dB	Pass
	2483.500	<54dBuv	Pass
802.11n/HT20	2390.000	<54dBuv	Pass
	2400.000	>20dB	Pass
	2483.500	<54dBuv	Pass
802.11n/HT40	2390.000	<54dBuv	Pass
	2400.000	>20dB	Pass
	2483.500	<54dBuv	Pass

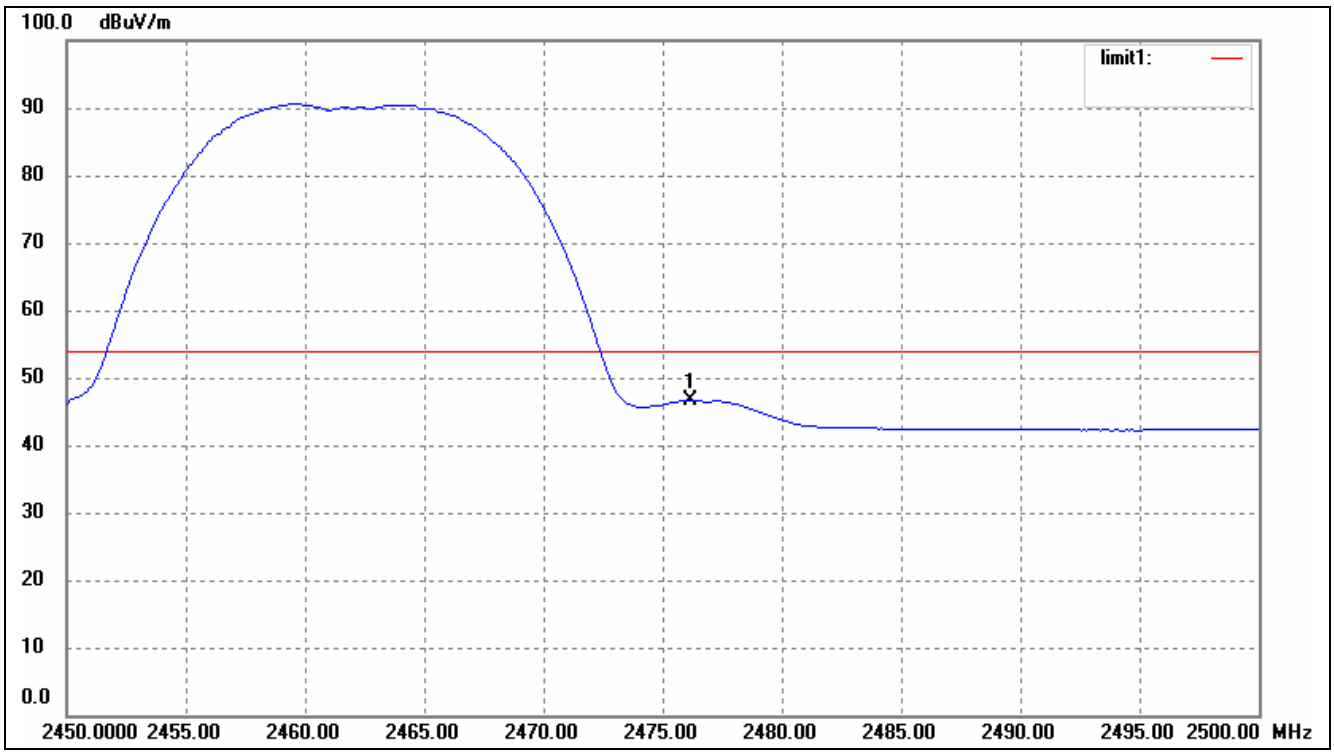
For 802.11b

Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2396.633	10.74	35.65	46.39	54.00	-7.61	peak
	2396.633	20.62	35.65	56.27	74.00	-17.73	Ave
2	2400.000	10.46	35.68	46.14	54.00	-7.86	Ave
3	2411.663	58.02	35.72	93.74	54.00	39.74	peak

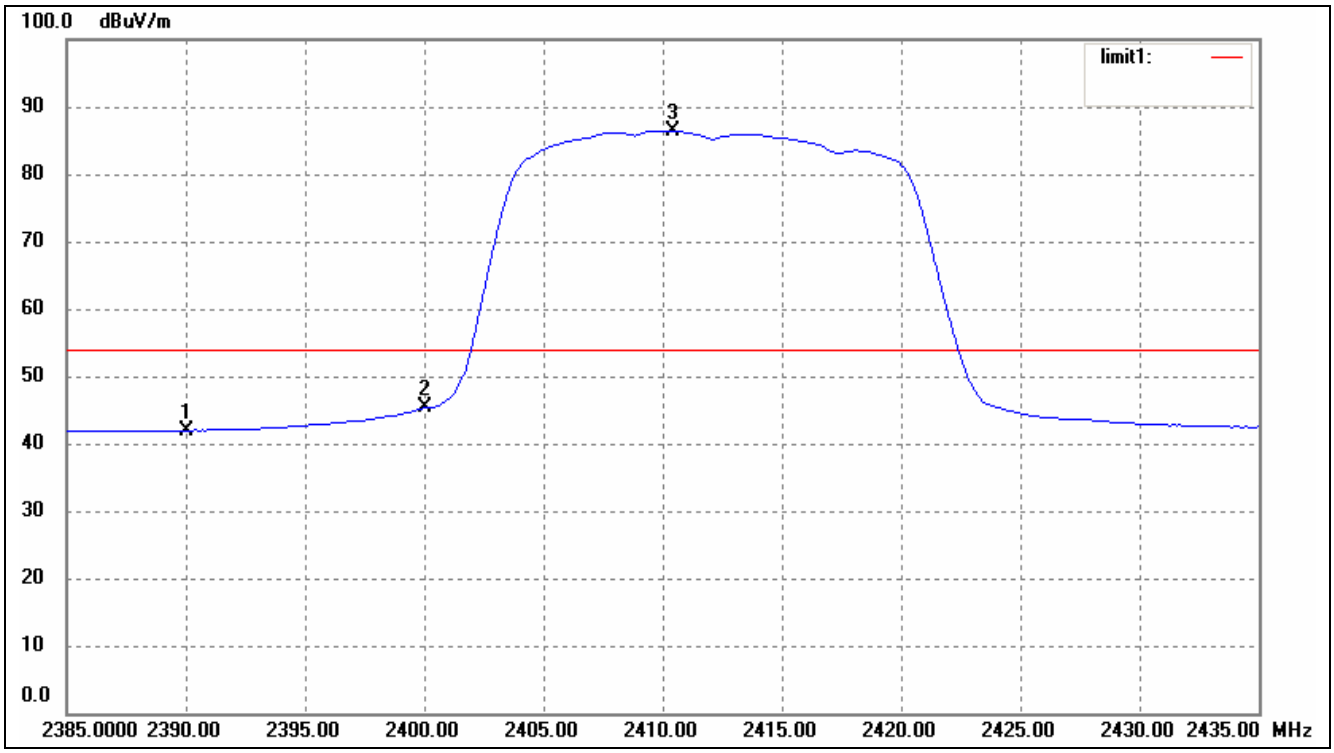
Highest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2476.152	10.67	35.95	46.62	54.00	-7.38	peak
	2476.152	19.89	35.95	55.84	74.00	-18.16	Ave

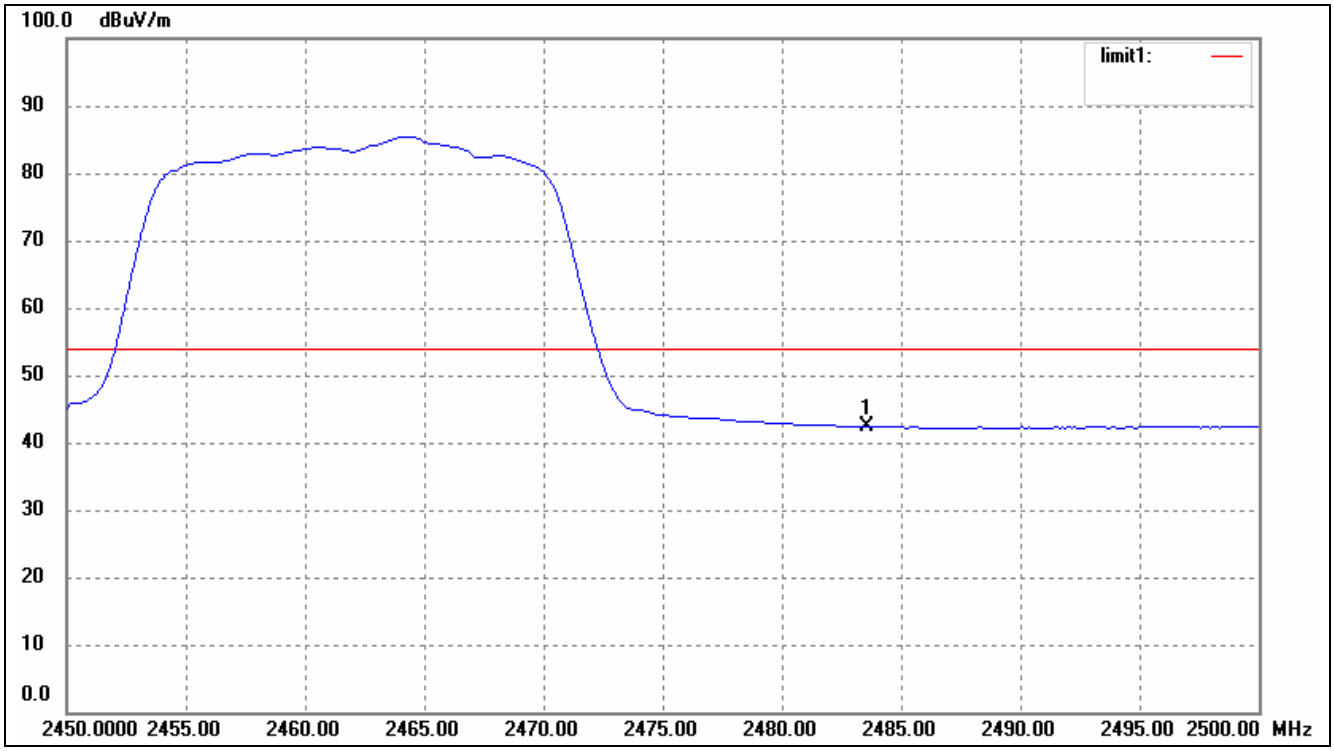
For 802.11g

Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2390.000	6.41	35.59	42.00	54.00	-12.00	peak
	2390.000	15.48	35.59	51.16	74.00	-22.84	Ave
2	2400.000	9.60	35.68	45.28	54.00	-8.72	Ave
3	2410.351	50.69	35.72	86.41	54.00	32.41	peak

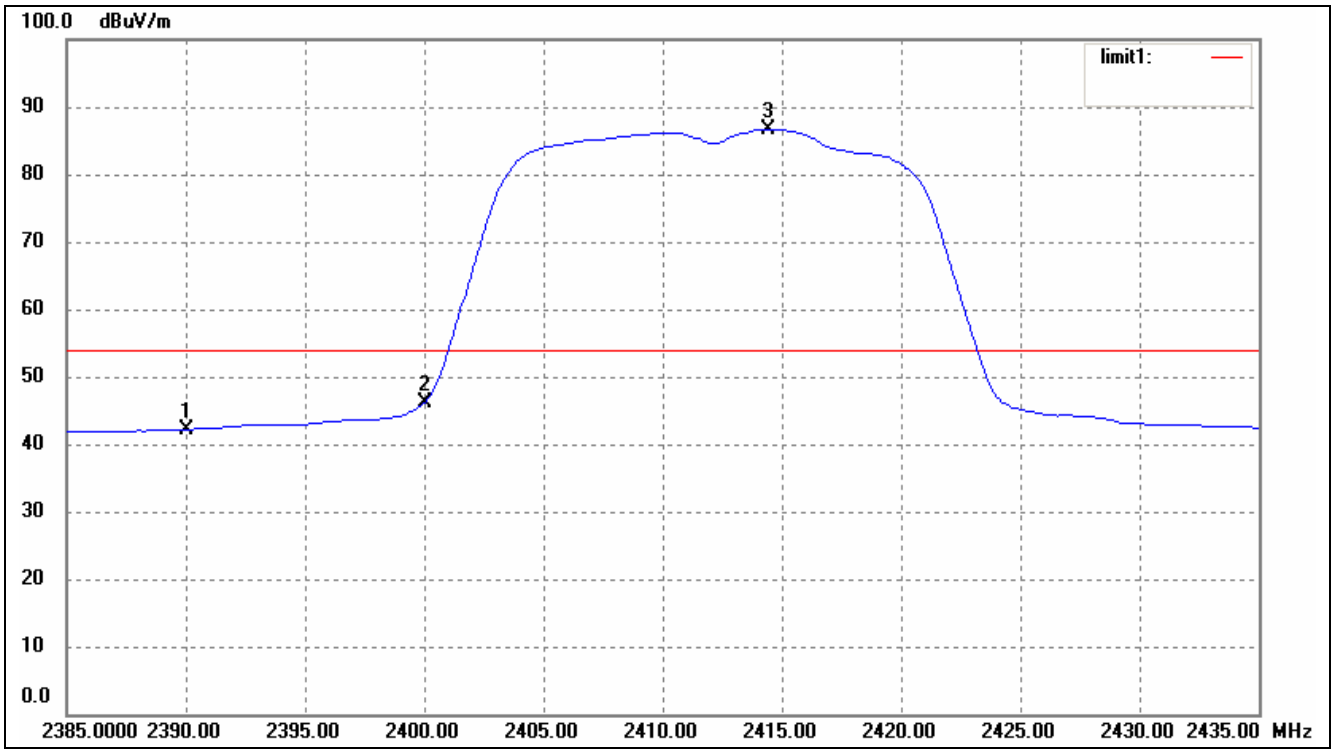
Highest Bandedge



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2483.500	6.40	35.97	42.37	54.00	-11.63	peak
	2483.500	16.06	35.97	52.03	74.00	-21.97	Ave

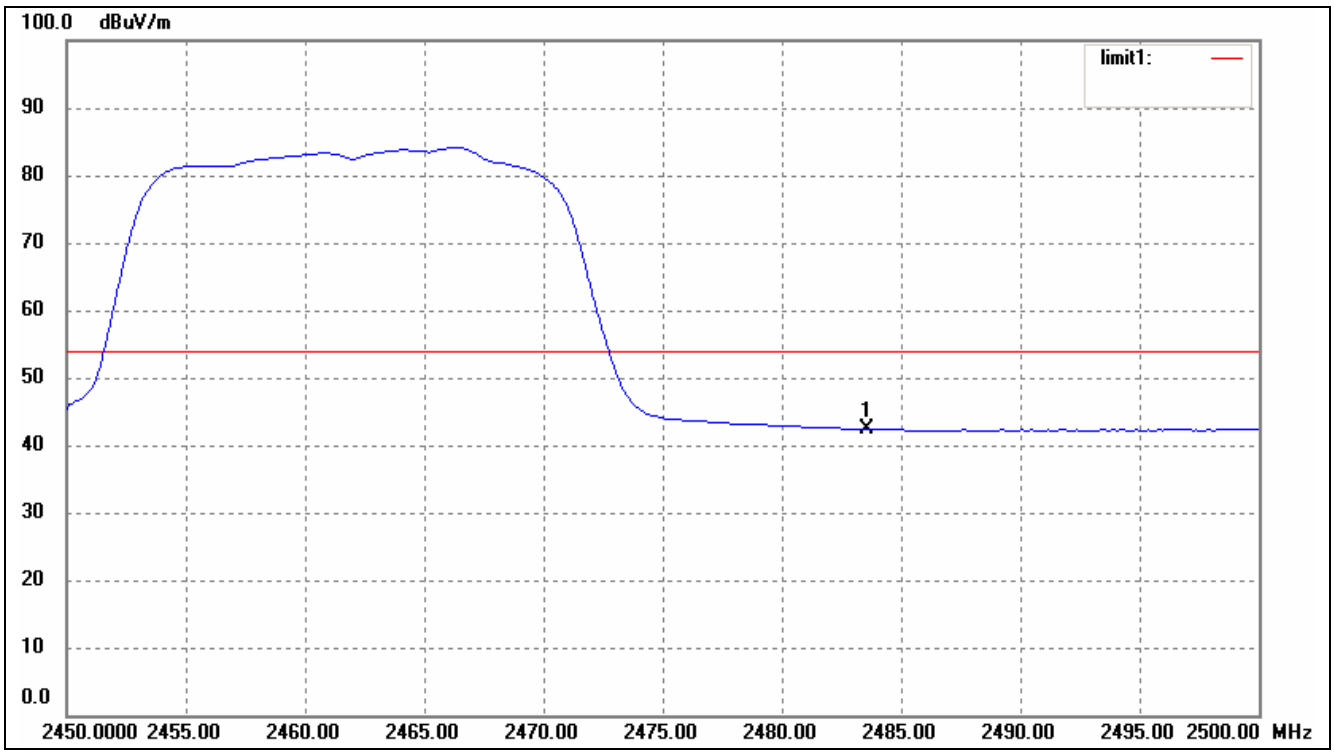
For 802.11n/HT20

Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2390.000	6.57	35.59	42.16	54.00	-11.84	peak
	2390.000	15.51	35.59	51.10	74.00	-22.90	Ave
2	2400.000	10.49	35.68	46.17	54.00	-7.83	Ave
3	2414.359	50.97	35.73	86.70	54.00	32.70	peak

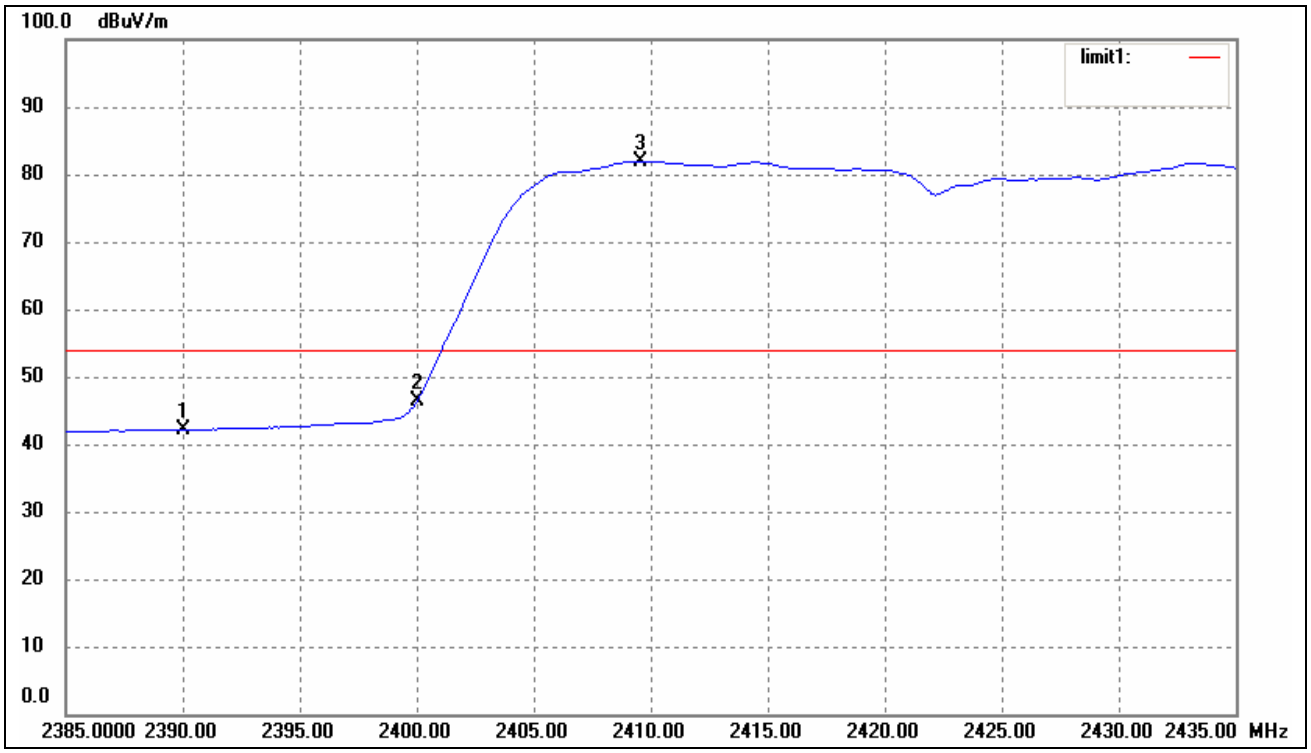
Highest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(cm)	
1	2483.500	6.41	35.97	42.38	54.00	100	peak
	2483.500	15.71	35.97	51.68	74.00	100	Ave

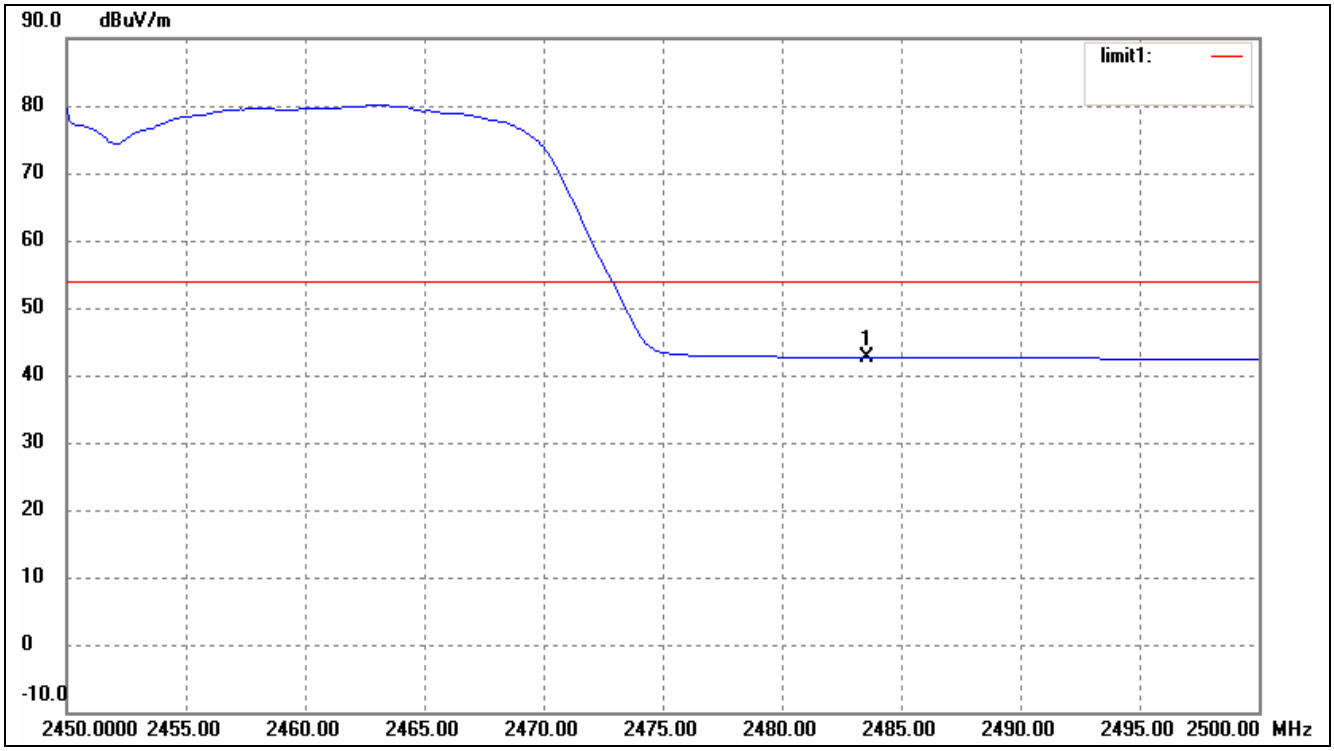
For 802.11n/HT40

Lowest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(cm)	
1	2390.000	6.56	35.59	42.15	54.00	100	peak
	2390.000	15.87	35.59	51.46	74.00	100	Ave
2	2400.000	10.76	35.68	46.44	54.00	100	Ave
3	2409.449	46.19	35.71	81.90	54.00		peak

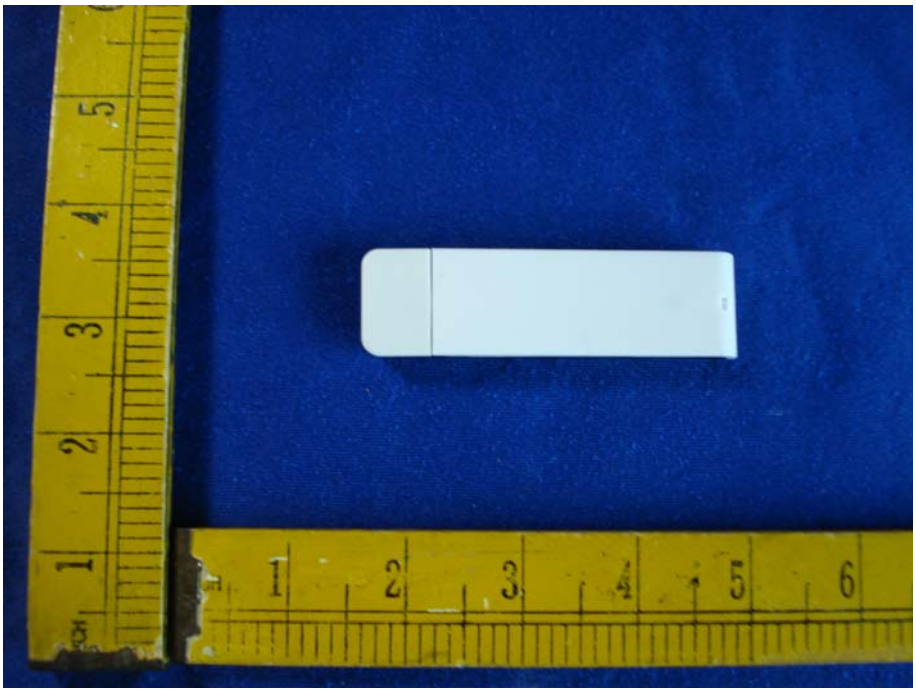
Highest Bandedge



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	
1	2483.500	6.64	35.97	42.61	54.00	-11.39	peak
	2483.500	16.04	35.97	52.01	74.00	-21.99	Ave

9 PHOTOGRAPHS OF TEST SETUP

10 PHOTOGRAPHS OF EUT



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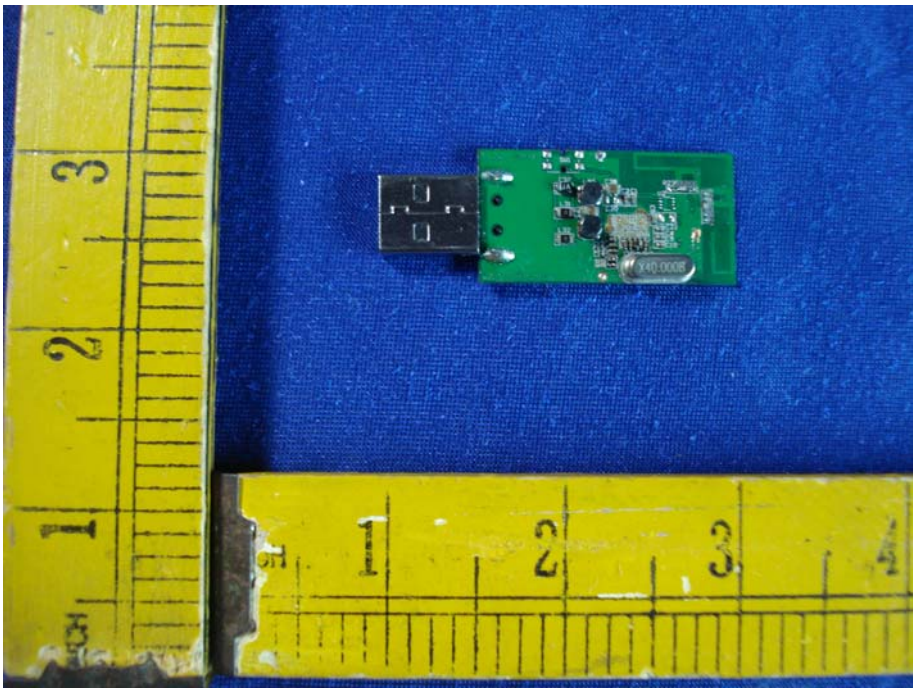
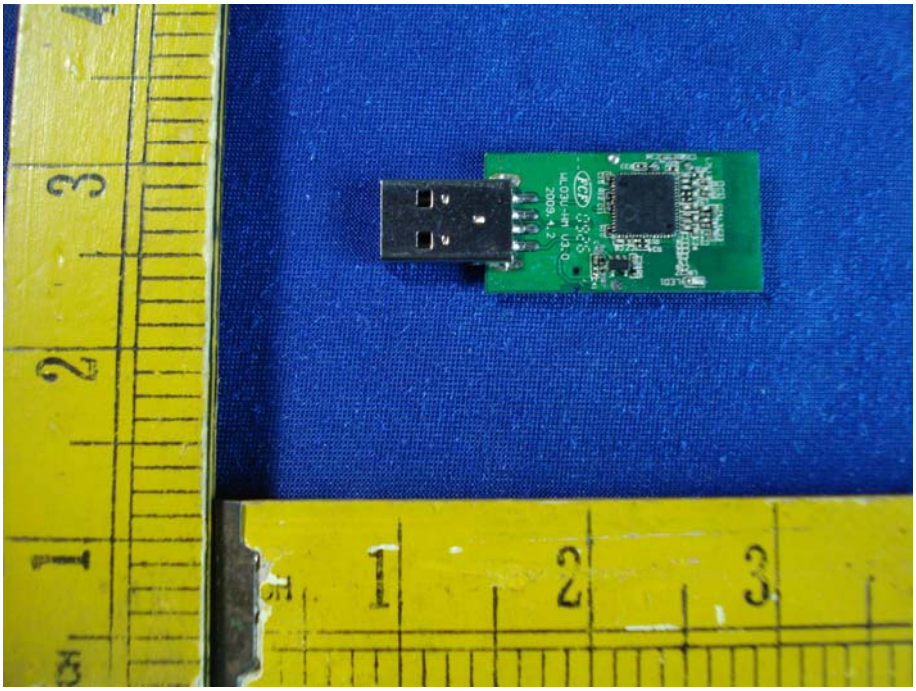
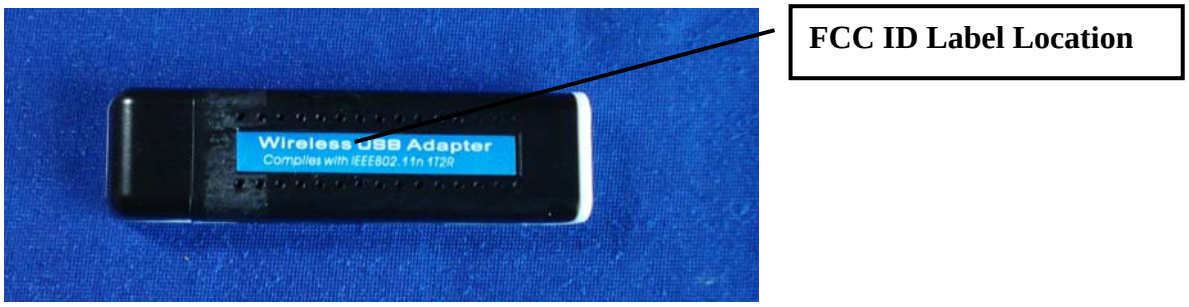




11 FCC ID LABEL

This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1)this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

The Label must not be a stick-on paper.
The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.



END of the Report