ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C AND CANADIAN RSS 210 REQUIREMENT

for

RASIN TECHNOLOGY (H.K.) CO., LIMITED

RX3070-A

Model No.: RX-WL3070-A

FCC ID: X83RX3070A1
IC ID: 8889A-3070A1

Prepared for	:	RASIN TECHNOLOGY (H.K.) CO., LIMITED
Address	:	Room 1609-12A, Nanfeng Building, 173 Des Voeux Road C., HongKong

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Report Number	:	KA100203021CA
Date of Test	:	March 10, 2010–March 26, 2010
Date of Report	:	March 26, 2010

TABLE OF CONTENTS

1. TEST CERTIFICATION 4

2. TEST RESULT SUMMARY 5

3. EUT DESCRIPTION 6

4. DESCRIPTION OF TEST MODES 7

5. SETUP OF EQUIPMENT UNDER TEST 8

5.1 DESCRIPTION OF SUPPORT UNITS 8

5.2 CONFIGURATION OF SYSTEM UNDER TEST 8

6 FACILITIES AND UNCERTAINTY 9

6.1 FACILITIES 9

6.2 MEASUREMENT UNCERTAINTY 9

7. POWER LINE CONDUCTED EMISSIONS MEASUREMENT 10

7.1 LIMITS 10

7.2 TEST INSTRUMENTS 10

7.3 TEST PROCEDURES 10

7.4 TEST SETUP 11

7.5 TEST RESULTS 11

8. SPURIOUS EMISSIONS MEASUREMENT 13

8.1 LIMITS OF CONDUCTED EMISSIONS MEASUREMENT 13

8.2 TEST INSTRUMENTS 13

8.3 TEST PROCEDURE 13

8.4 TEST SETUP 13

8.5 TEST RESULTS 13

9 RADIATED EMISSIONS 20

9.1 LIMITS OF RADIATED EMISSIONS MEASUREMENT 20

9.2 TEST INSTRUMENTS 20

9.3 TEST PROCEDURE 21

9.4 TEST SETUP 21

9.5 TEST RESULTS 22

10 6DB BANDWIDTH MEASUREMENTS 36

10.1 LIMITS 36

10.2 TEST INSTRUMENTS 36

10.3 TEST PROCEDURES 36
10.4 TEST SETUP 36
10.5 TEST RESULTS 36

11 99% BANDWIDTH MEASUREMENTS 44

11.1 LIMITS 44
11.2 TEST INSTRUMENTS 44
11.3 TEST PROCEDURES 44
11.4 TEST SETUP 44
11.5 TEST RESULTS 44

12 PEAK OUTPUT POWER 52

12.1 LIMITS 52
12.2 TEST INSTRUMENTS 52
12.3 TEST PROCEDURES 52
12.4 TEST SETUP 52
12.5 TEST RESULTS 53

13 BAND EDGES MEASUREMENT 60

13.1 LIMITS 60
13.2 TEST INSTRUMENTS 60
13.3 TEST PROCEDURES 60
13.4 TEST SETUP 60
13.5 TEST RESULTS 61

14 PEAK POWER SPECTRAL DENSITY MEASUREMENT 71

14.1 LIMITS 71
14.2 TEST INSTRUMENTS 71
14.3 TEST PROCEDURES 71
14.4 TEST SETUP 71
14.5 TEST RESULTS 71

15 ANTENNA REQUIREMENT 79

15.1 STANDARD APPLICABLE 79
15.2 ANTENNA CONNECTED CONSTRUCTION 79

1. TEST CERTIFICATION

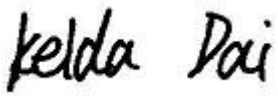
Applicant	RASIN TECHNOLOGY (H.K.) CO., LIMITED Room 1609-12A, Nanfeng Building, 173 Des Voeux Road C., HongKong
Manufacturer	Shenzhen Xinjinlong Electronics Co., Ltd. 5 / 6 F, 4B, Ping Shan Private Science And Technology Park, Xili, Nanshan District, Shenzhen, China
EUT	RX3070-A
Model No.	RX-WL3070-A
Power Supply	DC 5V

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC PART 15 C & RSS 210	**No non-compliance noted**

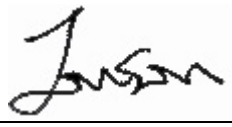
The measurement results are contained in this test report and SHENZHEN EMTEK CO., LTD. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC part 15C and Canadian RSS-210 requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of SHENZHEN LCS CERTIFICATION SERVICES INC.

Date of Test: March 10, 2010–March 26, 2010

Prepared by: 

(Engineer)

Reviewed by: 

(Quality Manager)

2. TEST RESULT SUMMARY

Test Items	Result	Remark
6dB Bandwidth Measurement	Pass	Meet the requirement of limit.
Peak Power Measurement	Pass	Meet the requirement of limit.
Band Edges Measurement	Pass	Meet the requirement of limit.
Peak Power Spectral Density	Pass	Meet the requirement of limit.
Spurious Emissions Conducted Measurement Radiated Emissions	Pass	Meet the requirement of limit.
Power line Conducted Emissions	Pass	Meet the requirement of limit.

Note: 1. The test result judgment is decided by the limit of test standard
2. The information of measurement uncertainty is available upon the customer's request.

3. EUT DESCRIPTION

Product	RX3070-A
Trade Name	N/A
Model Number	RX-WL3070-A
Model Discrepancy	All the above models are identical except the model designation for different market.
Power Supply	DC 5V
Frequency Range	IEEE 802.11b: 2412 ~ 2462 MHz IEEE 802.11g: 2412 ~ 2462 MHz Draft 802.11n Standard-20 MHz: 2412 ~ 2462 MHz Draft 802.11n Wide-40 MHz: 2422 ~ 2452 MHz
Transmit Power	IEEE 802.11b:17.25dBm IEEE 802.11g:16.30dBm Draft 802.11n Standard-20 MHz: 16.05dBm Draft 802.11n Wide-40 MHz: 14.70dBm
Modulation Technique	IEEE 802.11b: DSSS IEEE 802.11g: OFDM Draft 802.11n Standard-20 MHz: OFDM Draft 802.11n Wide-40 MHz: OFDM
Transmit Data Rate	IEEE 802.11b: 11, 5.5, 2, 1 Mbps IEEE 802.11g: 54, 48, 36, 24, 18, 12, 9, 6Mbps Draft 802.11n Standard-20 MHz: 6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps Draft 802.11n Wide-40 MHz: 13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps
Number of Channels	IEEE 802.11b/g: 11 Channels Draft 802.11n Standard-20 MHz: 11 Channels Draft 802.11n Wide-40 MHz: 7 Channels
Antenna Specification	2dBi gain (Max)

4. DESCRIPTION OF TEST MODES

The EUT had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz, which worst case was in normal link mode only.

IEEE802.11b: Channel low(2412MHz), Channel middle(2437MHz) and Channel high (2462MHz) with preliminary test 11, 5.5, 2, and 1, After the preliminary scan , the following test mode 1Mbps highest data rate (the worst case) are chosen for the final testing.

IEEE802.11g: Channel low(2412MHz), Channel middle(2437MHz) and Channel high(2462MHz) with preliminary test 54/48/36/24/18/12/9/6, After the preliminary scan , the following test mode 6Mbps data rate (the worst case) are chosen for the final testing.

Draft 802.11n Standard-20 MHz: Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

Draft 802.11n Wide-40 MHz: Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.

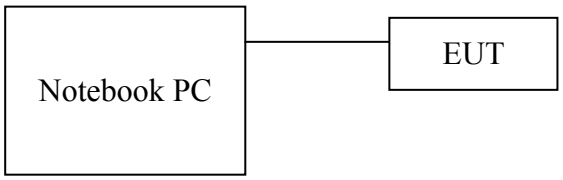
5. SETUP OF EQUIPMENT UNDER TEST

5.1 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	Mouse	M-S48A	LZE14823966AW	DoC	IBM	Shielded, 1.2m	N/A
2	Keyboard	M-S48A	LZE14823966AW	DoC	IBM	Shielded, 1.2m	N/A
3	Earphone	CD-371	N/A	DoC	IBM	Unshielded, 1.8m	N/A
4	Notebook PC	VT422 MT	AUZ2754PPU	DoC	ASUS	N/A	Unshielded, 1.8m

5.2 CONFIGURATION OF SYSTEM UNDER TEST



6 FACILITIES AND UNCERTAINTY

6.1 FACILITIES

Site Description

EMC Lab. : Accredited by CNAS, 2005.11.02
The certificate is valid until 2010.11
The Laboratory has been assessed and proved to be in compliance with CNAS-CL01: 2006(identical to ISO/IEC17025:2005)
The Certificate Registration Number is L2291.
Accredited by TUV Rheinland Shenzhen, 2008.3 The Laboratory has been assessed according to the requirements ISO/IEC 17025
Accredited by FCC, March 18, 2008 The Certificate Registration Number is 709623.
Accredited by Industry Canada, May 24, 2008 The Certificate Registration Number is 46405-4480.

Name of Firm : SHENZHEN EMTEK CO., LTD

Site Location : Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

6.2 MEASUREMENT UNCERTAINTY

Radiation Uncertainty (30M~1GHz)	: Ur = ±4.26dB
Radiation Uncertainty (1G~3GHz)	: Ur = ±2.66dB
Radiation Uncertainty (3G~18GHz)	: Ur = ±2.83dB

7. POWER LINE CONDUCTED EMISSIONS MEASUREMENT

7.1 LIMITS

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

Note:

(1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

(3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

7.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	Mar 30, 2009	1 Year
L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	Mar 30, 2009	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	Mar 30, 2009	1 Year
50Coaxial Switch	Anritsu	MP59B	M20531	Mar 30, 2009	1 Year

7.3 TEST PROCEDURES

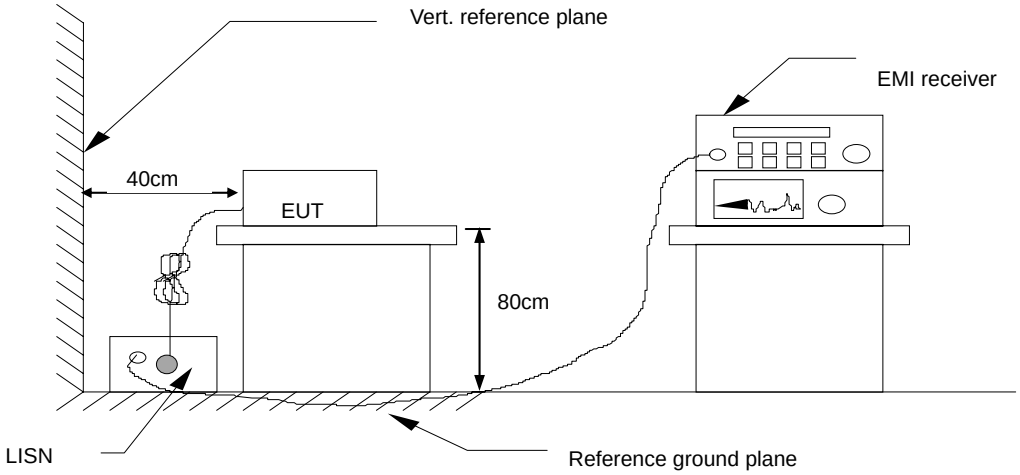
a) The EUT and Support equipment, if needed, was placed on a non-conducted table, which is 0.8m above the ground plane and 0.4m away from the conducted wall.

b) The test equipment EUT installed received AC main power, through a Line Impedance Stabilization Network (LISN), which supplied power source and was grounded to the ground plane. All support equipment power received from a second LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

c) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

d) The frequency range from 150 kHz to 30 MHz was searched. The test data of the worst-case condition(s) was recorded. Emission levels under limit 20dB were not recorded.

7.4 TEST SETUP



- For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

7.5 TEST RESULTS

PASS.

The test data please refer to following page.

Conducted Emission

Operation Mode: Normal Link **Test Date:** March 25, 2010

Temperature: 27°C **Humidity:** 48 % RH

Freq. (MHz)	Q.P. Amptd. (dBuV)	AVG Amptd. (dBuV)	Correction factor(dB)	Q.P. Limit (dBuV)	AVG Limit (dBuV)	Q.P. Margin (dB)	AVG Margin (dB)	Line/ Neutral
0.305	46.78	45.90	0.00	60.11	50.11	13.33	4.21	Line
0.710	43.17	41.43	0.00	56.00	46.00	12.83	4.57	Line
0.910	44.19	42.11	0.00	56.00	46.00	11.81	3.89	Line
3.540	45.28	42.19	0.00	56.00	46.00	10.72	3.81	Line
5.207	46.37	41.95	0.00	60.00	50.00	13.63	8.05	Line
8.295	47.44	40.23	0.00	60.00	50.00	12.56	9.77	Line
0.710	44.40	43.80	0.00	56.00	46.00	11.60	2.20	Neutral
0.910	43.40	42.70	0.00	56.00	46.00	12.60	3.30	Neutral
4.250	45.11	43.74	0.00	56.00	46.00	10.89	2.26	Neutral
5.160	47.10	45.80	0.00	60.00	50.00	12.90	4.20	Neutral
7.840	46.35	45.38	0.00	60.00	50.00	13.65	4.62	Neutral
8.492	51.33	44.26	0.00	60.00	50.00	8.67	5.74	Neutral

8. SPURIOUS EMISSIONS MEASUREMENT

8.1 LIMITS OF CONDUCTED EMISSIONS MEASUREMENT

According to the standard, in any 100 kHz 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 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.

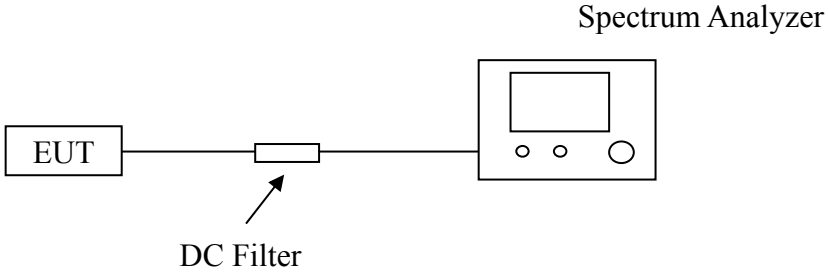
8.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Spectrum Analyzer	Agilent	E4407B	MY41440292	May 29, 2009	1 Year
RF Cable	Hubersuhne	Sucoflex104	FP2RX2	May 29, 2009	1 Year
DC Filter	MPE	23872C	N/A	May 29, 2009	1 Year

8.3 TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.
Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

8.4 TEST SETUP



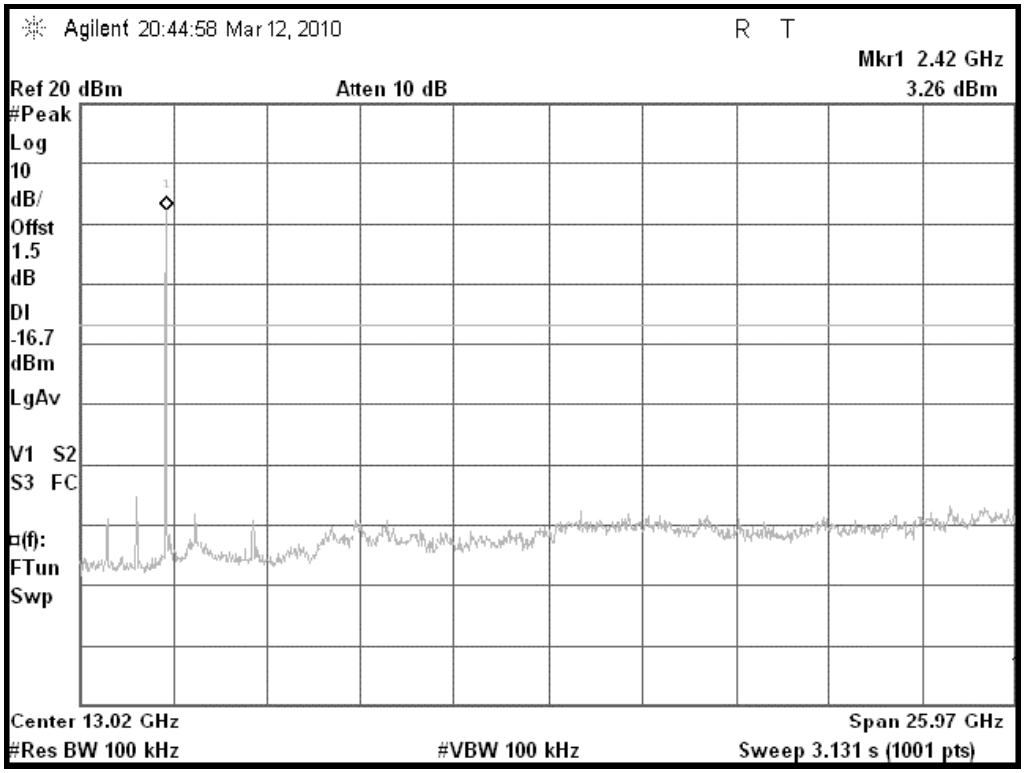
8.5 TEST RESULTS

PASS

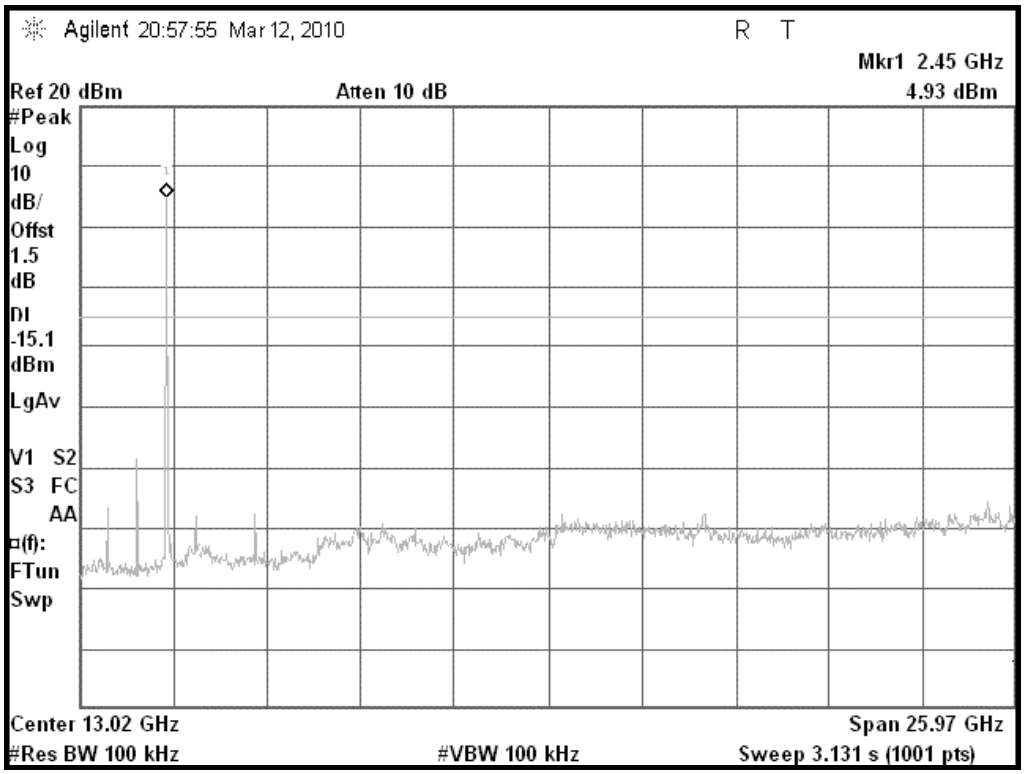
Please refer to the following page.

Test Plot (IEEE 802.11b mode)

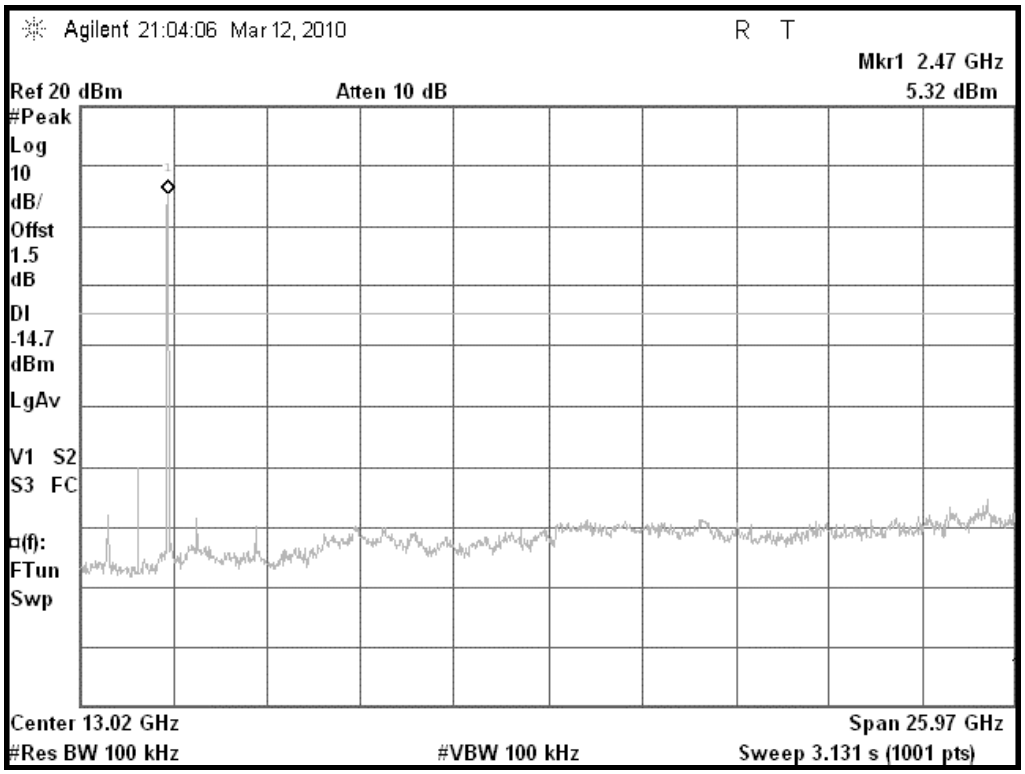
CH Low



CH Mid

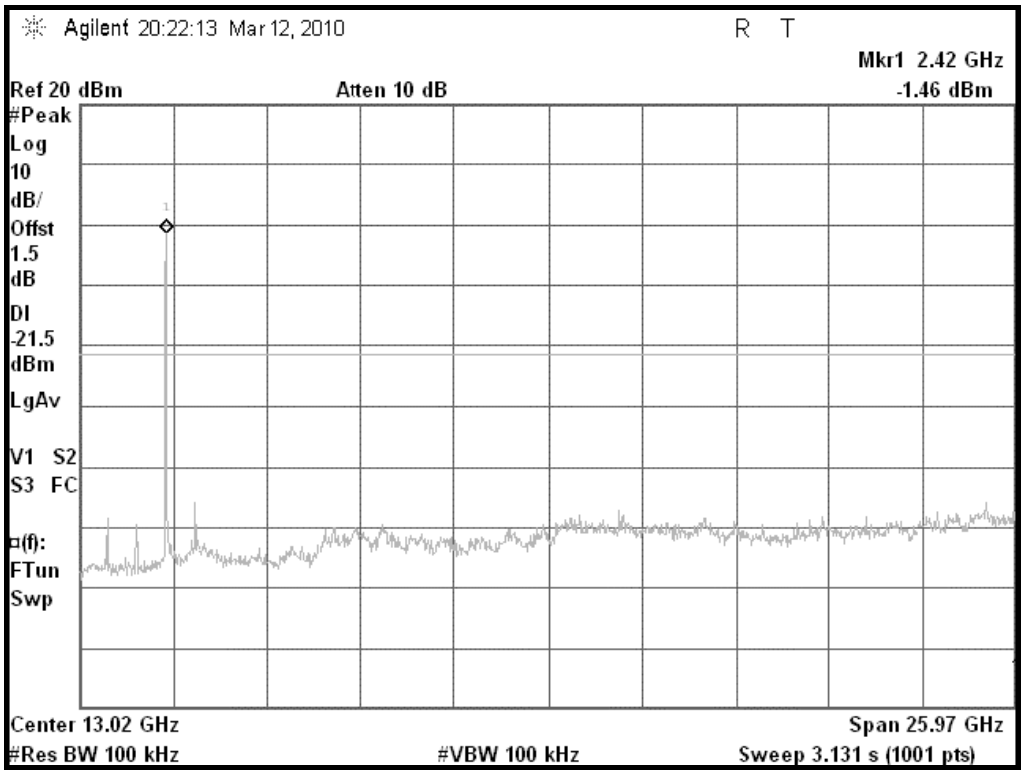


CH High

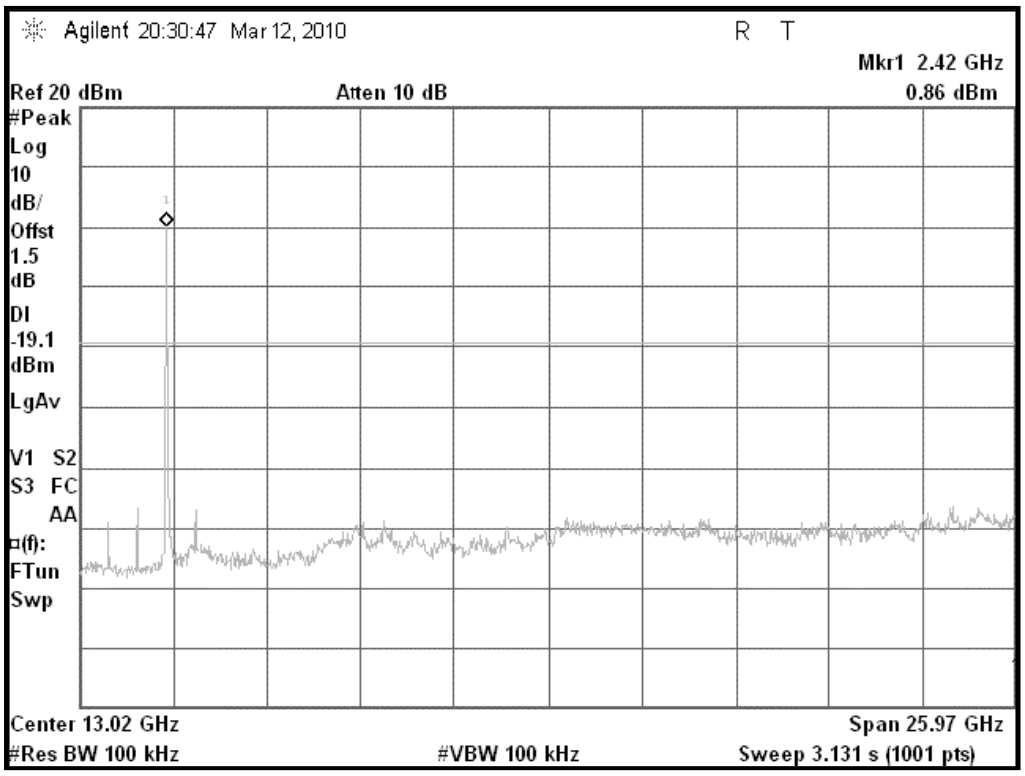


Test Plot (IEEE 802.11g mode)

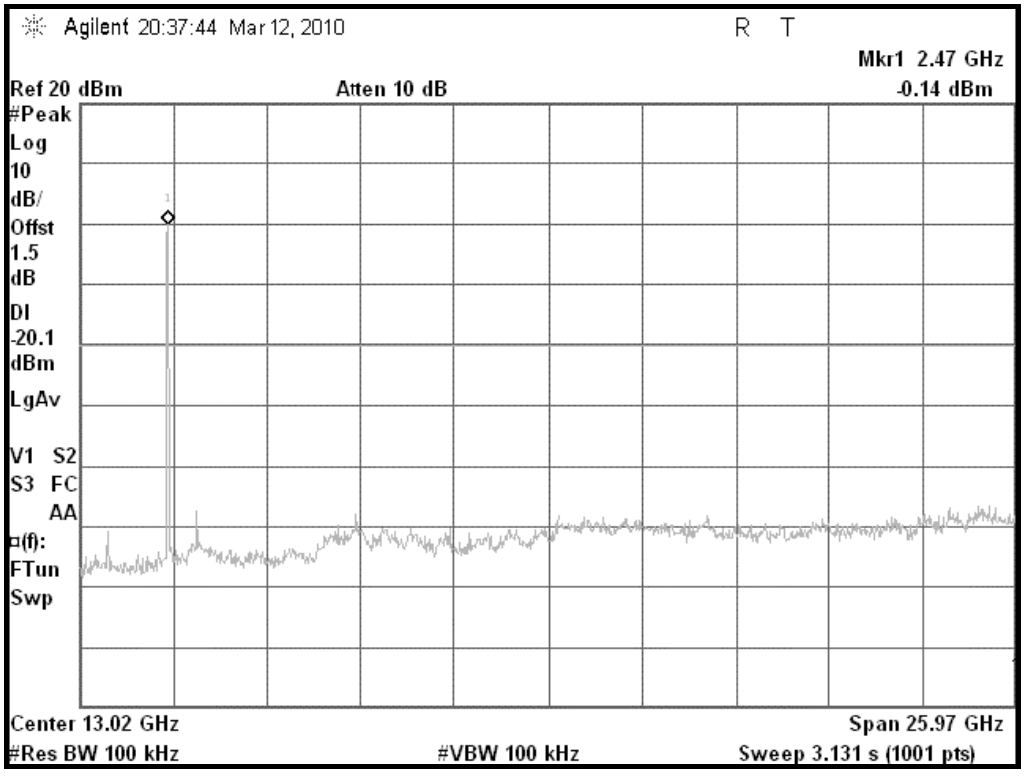
CH Low



CH Mid

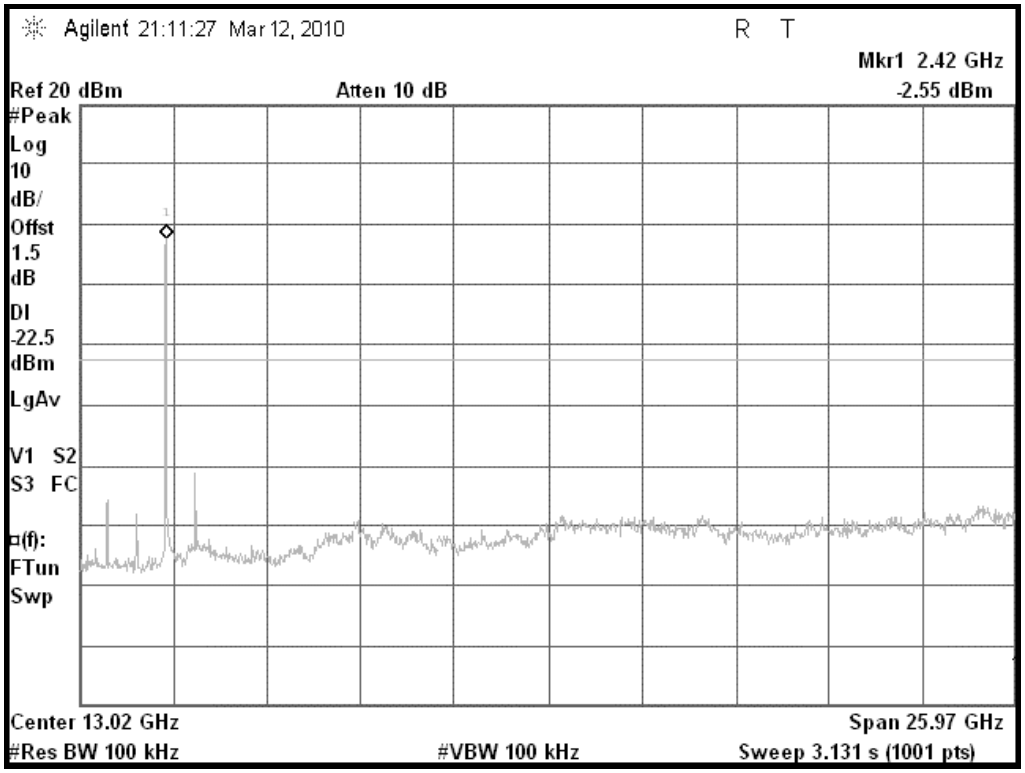


CH High

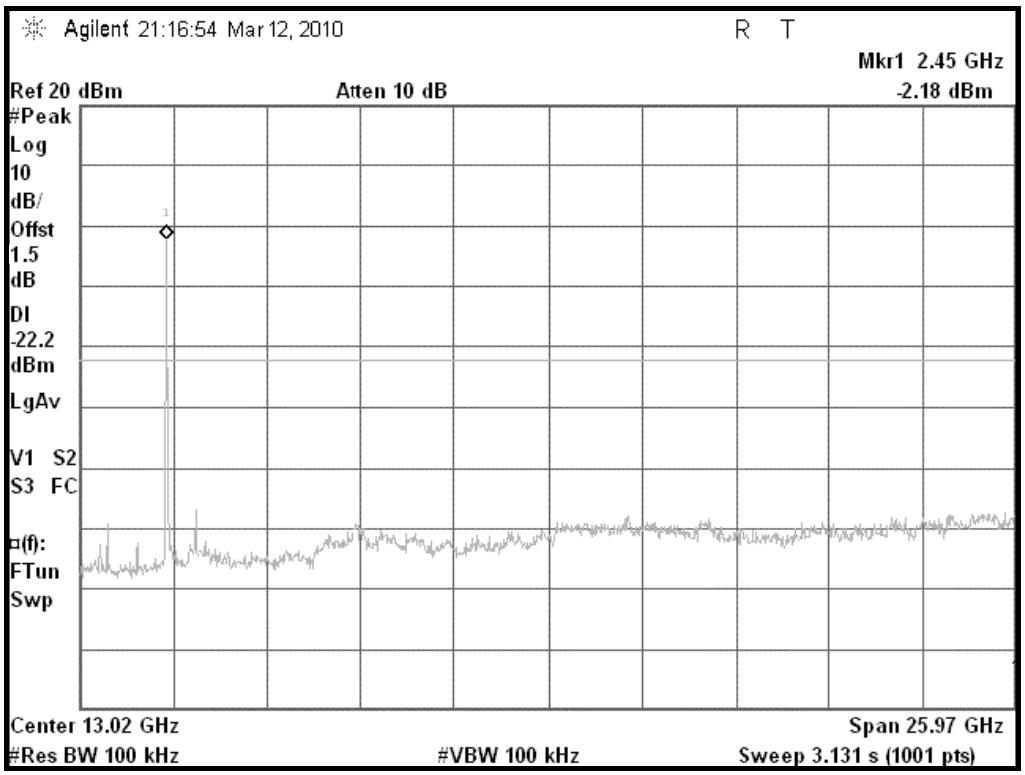


Test Plot (Draft 802.11n Standard-20 MHz)

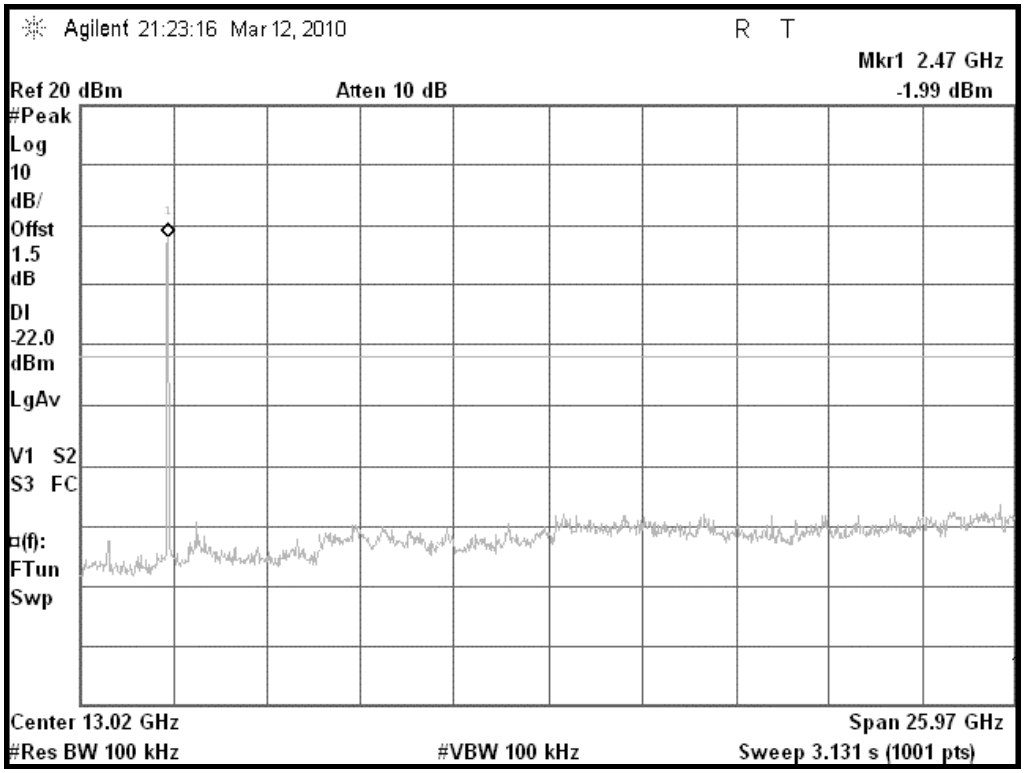
CH Low



CH Mid

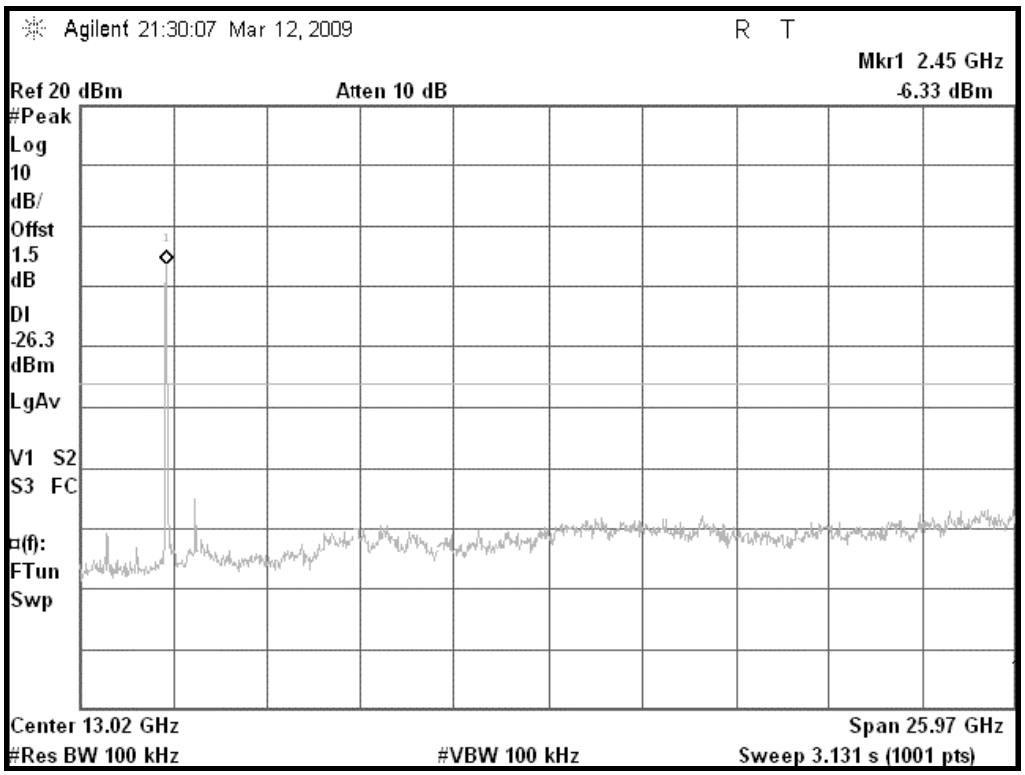


CH High

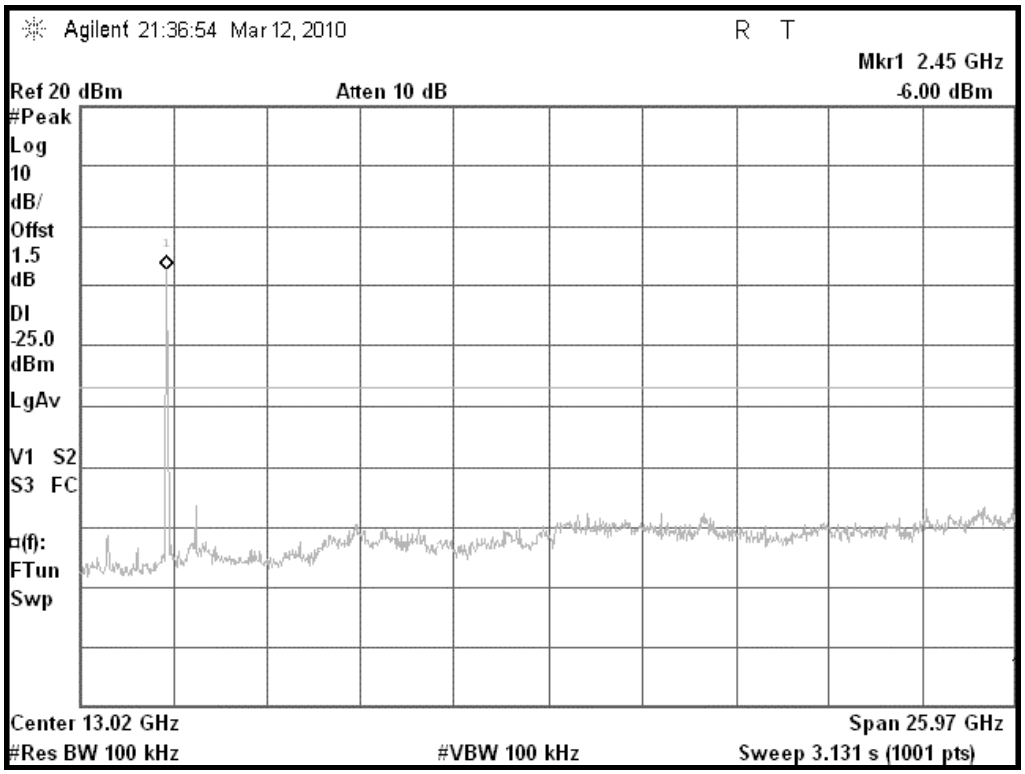


Test Plot (Draft 802.11n Wide-40 MHz)

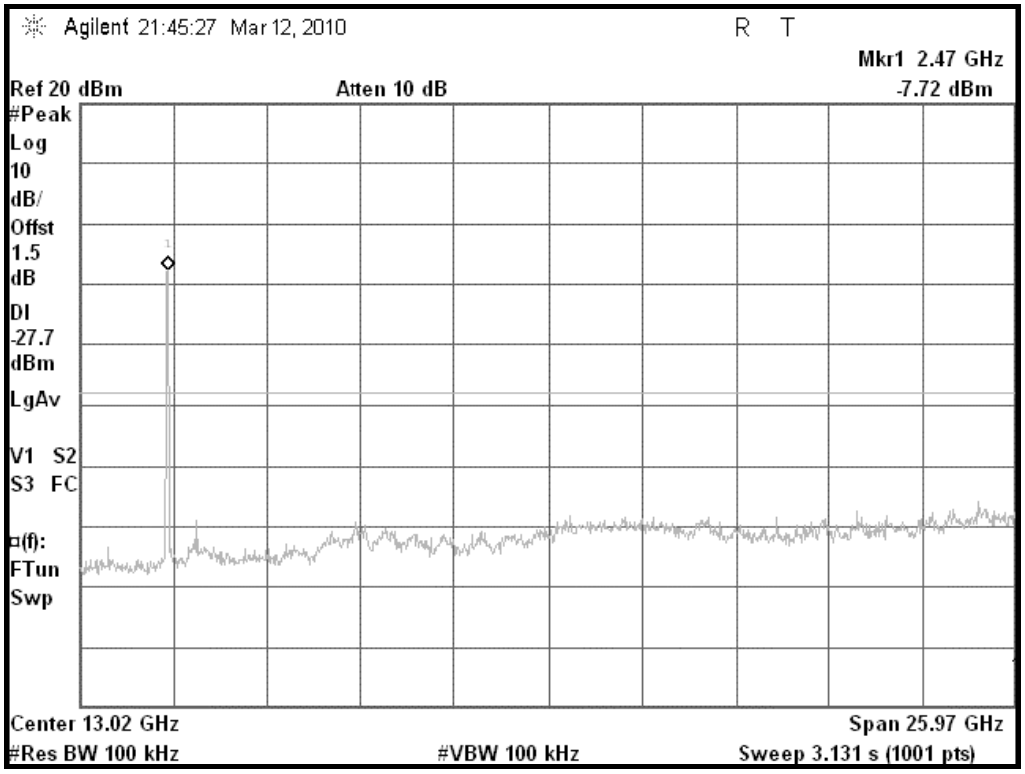
CH Low



CH Mid



CH High



9 RADIATED EMISSIONS

9.1 LIMITS OF RADIATED EMISSIONS MEASUREMENT

9.1.1 Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz.

9.1.2 . In the emission table above, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

NOTE: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

9.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Spectrum Analyzer	ANRITSU	MS2661C	6200140915	May 29, 2009	1 Year
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	May 29, 2009	1 Year
Antenna	Schwarzbeck	VULB9163	142	May 29, 2009	1 Year
Horn-antenna	SCHWARZBECK	BBHA9120D	D:266	May 29, 2009	1 Year
DC Filter	MPE	23872C	N/A	May 29, 2009	1 Year

9.3 TEST PROCEDURE

1) The EUT is placed on a turntable, which is 0.8m above ground plane.
2) The turntable shall be 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 emissions.
4) Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5) And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6) Set the spectrum analyzer in the following setting as:

   Below 1GHz:

   RBW=100kHz / VBW=300kHz / Sweep=AUTO

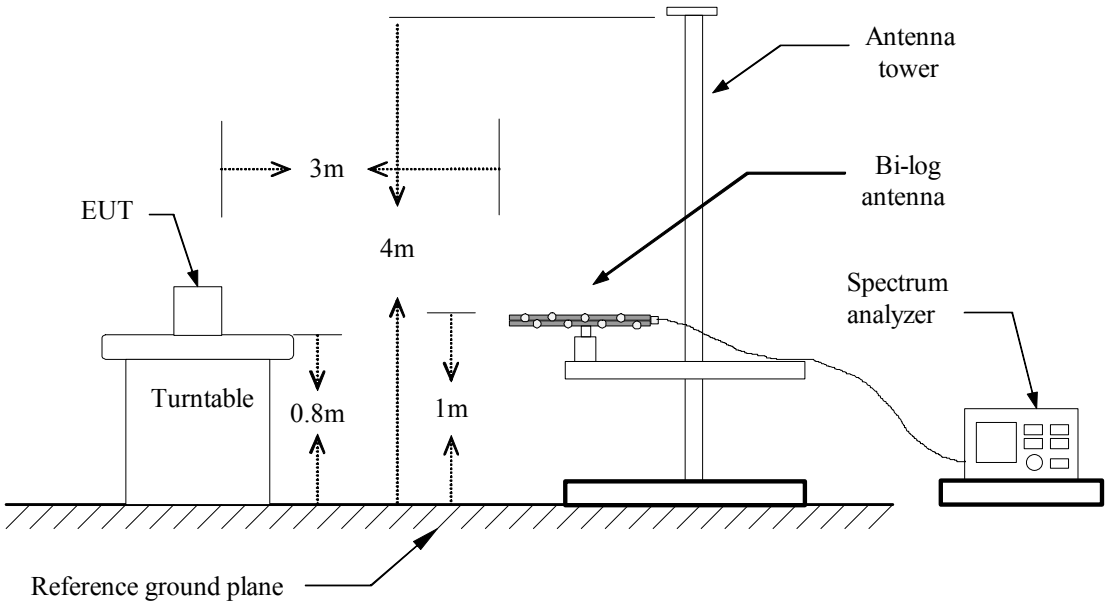
   Above 1GHz:

   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

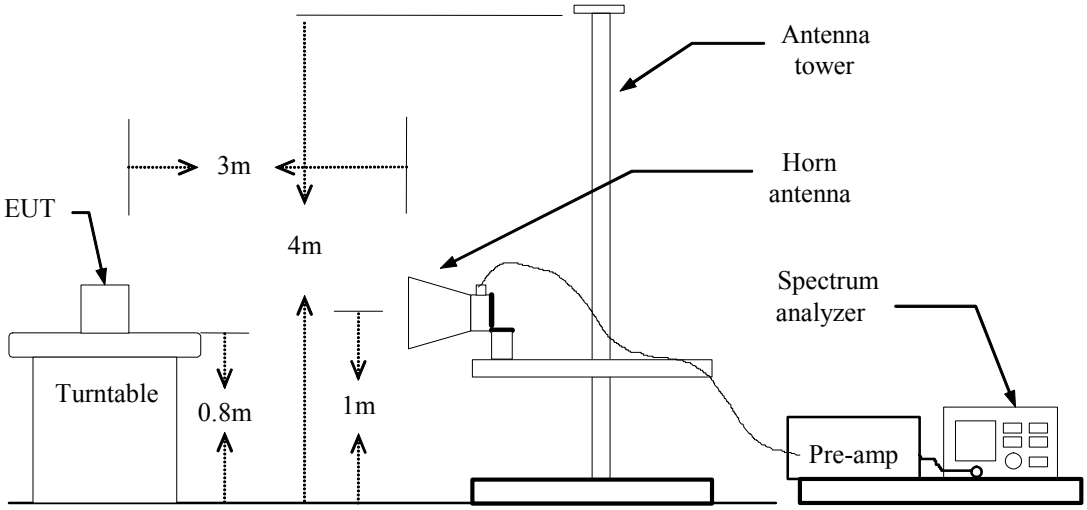
   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7) Repeat above procedures until the measurements for all frequencies are complete.

9.4 TEST SETUP

Below 1 GHz



Above 1 GHz



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

9.5 TEST RESULTS

PASS

The test result please refer to the following pages.

Below 1 GHz

Operation Mode: Normal Link **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50 % RH

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Margin (dB)
98.52	V	Peak	42.15	-12.01	30.14	43.5	13.36
155.37	V	Peak	43.74	-8.97	34.77	43.5	8.73
190.50	V	Peak	45.69	-10.75	34.94	43.5	8.56
296.13	V	Peak	46.17	-7.83	38.34	46.0	7.66
433.27	V	Peak	43.26	-3.99	39.27	46.0	6.73
850.11	V	Peak	35.31	3.02	38.33	46.0	7.67
107.56	H	Peak	43.98	-9.74	34.24	43.5	9.26
198.73	H	Peak	44.15	-10.34	33.81	43.5	9.69
255.12	H	Peak	47.28	-8.37	38.91	46.0	7.09
302.65	H	Peak	46.13	-6.89	39.24	46.0	6.76
602.15	H	Peak	40.28	-1.17	39.11	46.0	6.89
848.60	H	Peak	35.09	2.94	38.03	46.0	7.97

Above 1 GHz

TX

Operation Mode: TX / IEEE 802.11b / CH Low **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1875.19	V	48.19	--	3.69	51.88	--	74.00	54.00	2.12	peak
4825.00	V	45.59	33.12	11.01	56.60	44.13	74.00	54.00	9.87	average
7233.67	V	33.77	--	18.42	52.19	--	74.00	54.00	1.81	peak
1608.52	H	48.10	--	2.95	52.01	--	74.00	54.00	1.99	peak
4824.33	H	45.76	31.92	11.01	57.15	42.93	74.00	54.00	11.07	average
7237.25	H	35.80	--	18.45	50.76	--	74.00	54.00	3.24	peak

Operation Mode: TX / IEEE 802.11b / CH Mid **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1850.75	V	48.63	--	3.54	52.17	--	74.00	54.00	1.83	peak
4875.00	V	46.24	32.12	11.08	57.32	43.20	74.00	54.00	10.80	average
7312.33	V	31.61	--	18.22	49.83	--	74.00	54.00	4.17	peak
1824.33	H	46.9	--	3.21	50.11	--	74.00	54.00	3.89	peak
4875.25	H	45.23	31.07	11.08	56.31	42.15	74.00	54.00	11.85	average
7311.67	H	32.57	--	18.22	50.79	--	74.00	54.00	3.21	peak

Operation Mode: TX / IEEE 802.11b / CH High **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1844.25	V	47.58	--	3.45	51.03	--	74.00	54.00	2.97	peak
4924.00	V	47.19	33.98	11.15	58.34	45.13	74.00	54.00	8.87	average
7387.67	V	32.64	--	17.98	50.62	--	74.00	54.00	3.38	peak
1851.00	H	46.28	--	3.54	49.82	--	74.00	54.00	4.18	peak
4924.67	H	45.93	32.8	11.15	57.08	43.95	74.00	54.00	10.05	average
7386.97	H	33.09	--	17.97	51.06	--	74.00	54.00	2.94	peak

Operation Mode: TX / IEEE 802.11g / CH Low **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1811.45	V	48.25	--	3.12	51.37	--	74.00	54.00	2.63	peak
4824.25	V	45.28	32.63	11.01	56.29	43.64	74.00	54.00	10.36	average
7234.00	V	31.77	--	18.42	50.19	--	74.00	54.00	3.81	peak
1824.25	H	48.25	--	3.21	50.84	--	74.00	54.00	3.16	peak
4825.67	H	45.28	32.80	11.01	57.16	43.81	74.00	54.00	10.19	average
7234.33	H	31.77	--	18.42	51.06	--	74.00	54.00	2.94	peak

Operation Mode: TX / IEEE 802.11g / CH Mid **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1842.35	V	48.38	--	3.44	51.82	--	74.00	54.00	2.18	peak
4874.33	V	45.87	33.3	11.08	56.95	44.38	74.00	54.00	9.62	average
7312.00	V	32.44	--	18.22	50.66	--	74.00	54.00	3.34	peak
1825.00	H	46.89	--	3.21	50.10	--	74.00	54.00	3.90	peak
4875.00	H	45.96	33.64	11.08	57.04	44.72	74.00	54.00	9.28	average
7313.45	H	33.03	--	18.23	51.26	--	74.00	54.00	2.74	peak

Operation Mode: TX / IEEE 802.11g / CH High **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1850.50	V	48.19	--	3.54	51.73	--	74.00	54.00	2.27	peak
4924.67	V	46.03	32.46	11.15	57.18	43.61	74.00	54.00	10.39	average
7385.67	V	32.74	--	17.95	50.69	--	74.00	54.00	3.31	peak
1851.25	H	46.45	--	3.54	49.99	--	74.00	54.00	4.01	peak
4924.00	H	45.69	31.97	11.15	56.84	43.12	74.00	54.00	10.88	average
7386.45	H	32.95	--	17.97	50.92	--	74.00	54.00	3.08	peak

Operation Mode: TX / Draft 802.11n Standard-20 MHz/ CH Low **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1814.20	V	47.16	--	3.13	50.29	--	74.00	54.00	3.71	peak
4824.67	V	44.94	31.77	11.01	55.95	42.78	74.00	54.00	11.22	average
7234.25	V	31.44	--	18.42	49.86	--	74.00	54.00	4.14	peak
1815.03	H	47.16	--	3.13	49.97	--	74.00	54.00	4.03	peak
4825.00	H	44.94	31.85	11.01	57.68	42.86	74.00	54.00	11.14	average
7234.00	H	31.44	--	18.42	50.31	--	74.00	54.00	3.69	peak

Operation Mode: TX / Draft 802.11n Standard-20 MHz / CH Mid **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1844.00	V	46.72	--	3.45	50.17	--	74.00	54.00	3.83	peak
4875.00	V	45.75	31.97	11.08	56.83	43.05	74.00	54.00	10.95	average
7312.67	V	31.95	--	18.23	50.18	--	74.00	54.00	3.82	peak
1845.33	H	46.40	--	3.46	49.86	--	74.00	54.00	4.14	peak
4875.67	H	45.31	31.83	11.08	56.39	42.91	74.00	54.00	11.09	average
7313.00	H	31.64	--	18.23	49.87	--	74.00	54.00	4.13	peak

Operation Mode: TX / Draft 802.11n Standard-20 MHz / CH High **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1851.67	V	47.25	--	3.55	50.80	--	74.00	54.00	3.20	peak
4925.10	V	45.77	31.02	11.15	56.92	42.17	74.00	54.00	11.83	average
7386.00	V	31.66	--	17.96	49.62	--	74.00	54.00	4.38	peak
1850.00	H	46.59	--	3.54	50.13	--	74.00	54.00	3.87	peak
4925.33	H	45.64	31.00	11.15	56.79	42.15	74.00	54.00	11.85	average
7386.67	H	32.31	--	17.97	50.28	--	74.00	54.00	3.72	peak

Operation Mode: TX / Draft 802.11n Wide-40 MHz / CH Low **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1833.25	V	46.43	--	3.34	49.77	--	74.00	54.00	4.23	peak
4845.00	V	45.03	31.91	11.05	56.08	42.96	74.00	54.00	11.04	average
7266.33	V	31.29	--	18.34	49.63	--	74.00	54.00	4.37	peak
1833.00	H	46.43	--	3.13	50.12	--	74.00	54.00	3.88	peak
4845.67	H	45.03	31.97	11.05	57.11	43.02	74.00	54.00	10.98	average
7267.25	H	31.29	--	18.34	50.19	--	74.00	54.00	3.81	peak

Operation Mode: TX / Draft 802.11n Wide-40 MHz / CH Mid **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1844.25	V	45.22	--	3.45	48.67	--	74.00	54.00	5.33	peak
4876.23	V	44.91	31.73	11.08	55.99	42.81	74.00	54.00	11.19	average
7313.33	V	31.15	--	18.23	49.38	--	74.00	54.00	4.62	peak
1845.00	H	45.16	--	3.45	48.61	--	74.00	54.00	5.39	peak
4875.33	H	44.85	30.92	11.08	55.93	42.00	74.00	54.00	12.00	average
7313.25	H	30.65	--	18.23	48.88	--	74.00	54.00	5.12	peak

Operation Mode: TX / Draft 802.11n Wide-40 MHz / CH High **Test Date:** March 11, 2010

Temperature: 23°C **Humidity:** 50% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1840.50	V	46.3	--	3.44	49.74	--	74.00	54.00	4.26	peak
4905.25	V	44.57	31.05	11.11	55.68	42.16	74.00	54.00	11.84	average
7306.67	V	30.78	--	18.23	49.01	--	74.00	54.00	4.99	peak
1844.35	H	46.23	--	3.45	49.68	--	74.00	54.00	4.32	peak
4906.00	H	44.92	31.40	11.11	56.03	42.51	74.00	54.00	11.49	average
7306.25	H	31.34	--	18.23	49.57	--	74.00	54.00	4.43	peak

RX

Operation Mode: RX / IEEE 802.11b / CH Low **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1875.00	V	43.46	--	3.69	47.15	--	74.00	54.00	6.85	peak
4825.35	V	35.17	--	11.01	46.18	--	74.00	54.00	7.82	peak
7234.01	V	27.20	--	18.42	45.62	--	74.00	54.00	8.38	peak
1608.67	H	48.10	--	2.95	46.88	--	74.00	54.00	7.12	peak
4824.95	H	45.76	--	11.01	47.11	--	74.00	54.00	6.89	peak
7237.25	H	35.80	--	18.45	46.78	--	74.00	54.00	7.22	peak

Operation Mode: RX / IEEE 802.11b / CH Mid **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1850.33	V	42.81	--	3.54	46.35	--	74.00	54.00	7.65	peak
4875.25	V	36.84	--	11.08	47.92	--	74.00	54.00	6.08	peak
7312.33	V	27.70	--	18.22	45.92	--	74.00	54.00	8.08	peak
1824.67	H	43.04	--	3.21	46.25	--	74.00	54.00	7.75	peak
4875.00	H	35.9	--	11.08	46.98	--	74.00	54.00	7.02	peak
7311.01	H	27.15	--	18.22	45.37	--	74.00	54.00	8.63	peak

Operation Mode: RX / IEEE 802.11b / CH High **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1845.00	V	42.87	--	3.45	46.32	--	74.00	54.00	7.68	peak
4924.95	V	35.95	--	11.15	47.10	--	74.00	54.00	6.90	peak
7386.67	V	28.13	--	17.98	46.11	--	74.00	54.00	7.89	peak
1850.86	H	42.24	--	3.54	45.78	--	74.00	54.00	8.22	peak
4924.25	H	35.16	--	11.15	46.31	--	74.00	54.00	7.69	peak
7387.00	H	27.58	--	17.97	45.55	--	74.00	54.00	8.45	peak

Operation Mode: RX / IEEE 802.11g / CH Low **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1812.00	V	43.21	--	3.12	46.33	--	74.00	54.00	7.67	peak
4824.25	V	35.28	--	11.01	46.29	--	74.00	54.00	7.71	peak
7234.00	V	27.33	--	18.42	45.75	--	74.00	54.00	8.25	peak
1824.37	H	43.21	--	3.21	45.72	--	74.00	54.00	8.28	peak
4825.76	H	35.28	--	11.01	46.28	--	74.00	54.00	7.72	peak
7234.01	H	27.33	--	18.42	45.33	--	74.00	54.00	8.67	peak

Operation Mode: RX / IEEE 802.11g / CH Mid **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1842.83	V	41.8	--	3.44	45.24	--	74.00	54.00	8.76	peak
4874.16	V	35.8	--	11.08	46.88	--	74.00	54.00	7.12	peak
7312.34	V	27.49	--	18.22	45.71	--	74.00	54.00	8.29	peak
1825.50	H	42.18	--	3.21	45.39	--	74.00	54.00	8.61	peak
4875.91	H	35.76	--	11.08	46.84	--	74.00	54.00	7.16	peak
7313.00	H	26.72	--	18.23	44.95	--	74.00	54.00	9.05	peak

Operation Mode: RX / IEEE 802.11g / CH High **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1850.43	V	41.38	--	3.54	44.92	--	74.00	54.00	9.08	peak
4924.15	V	35.03	--	11.15	46.18	--	74.00	54.00	7.82	peak
7385.26	V	27.12	--	17.95	45.07	--	74.00	54.00	8.93	peak
1851.68	H	41.66	--	3.54	45.20	--	74.00	54.00	8.80	peak
4924.53	H	34.81	--	11.15	45.96	--	74.00	54.00	8.04	peak
7386.42	H	26.9	--	17.97	44.87	--	74.00	54.00	9.13	peak

Operation Mode: RX / Draft 802.11n Standard-20 MHz/ CH Low **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1814.13	V	42.8	--	3.13	45.93	--	74.00	54.00	8.07	peak
4824.06	V	35.26	--	11.01	46.27	--	74.00	54.00	7.73	peak
7234.39	V	27.11	--	18.42	45.53	--	74.00	54.00	8.47	peak
1815.22	H	42.80	--	3.13	46.00	--	74.00	54.00	8.00	peak
4825.38	H	35.26	--	11.01	46.52	--	74.00	54.00	7.48	peak
7234.63	H	27.11	--	18.42	45.38	--	74.00	54.00	8.62	peak

Operation Mode: RX / Draft 802.11n Standard-20 MHz / CH Mid **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1844.52	V	42.57	--	3.45	46.02	--	74.00	54.00	7.98	peak
4875.46	V	35.49	--	11.08	46.57	--	74.00	54.00	7.43	peak
7312.37	V	27.63	--	18.23	45.86	--	74.00	54.00	8.14	peak
1845.01	H	42.37	--	3.46	45.83	--	74.00	54.00	8.17	peak
4875.29	H	35.62	--	11.08	46.70	--	74.00	54.00	7.30	peak
7313.57	H	26.75	--	18.23	44.98	--	74.00	54.00	9.02	peak

Operation Mode: RX / Draft 802.11n Standard-20 MHz / CH High **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1851.44	V	42.25	--	3.55	45.80	--	74.00	54.00	8.20	peak
4925.71	V	35.57	--	11.15	46.72	--	74.00	54.00	7.28	peak
7386.27	V	27.23	--	17.96	45.19	--	74.00	54.00	8.81	peak
1850.38	H	41.79	--	3.54	45.33	--	74.00	54.00	8.67	peak
4925.41	H	35.39	--	11.15	46.54	--	74.00	54.00	7.46	peak
7386.03	H	27.48	--	17.97	45.45	--	74.00	54.00	8.55	peak

Operation Mode: RX / Draft 802.11n Wide-40 MHz / CH Low **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51 % RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1833.84	V	42.51	--	3.34	45.85	--	74.00	54.00	8.15	peak
4845.37	V	35.04	--	11.05	46.09	--	74.00	54.00	7.91	peak
7266.00	V	26.38	--	18.34	44.72	--	74.00	54.00	9.28	peak
1833.18	H	42.51	--	3.13	45.31	--	74.00	54.00	8.69	peak
4845.04	H	35.04	--	11.05	46.05	--	74.00	54.00	7.95	peak
7267.16	H	26.38	--	18.34	44.63	--	74.00	54.00	9.37	peak

Operation Mode: RX / Draft 802.11n Wide-40 MHz / CH Mid **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1845.03	V	41.49	--	3.45	44.94	--	74.00	54.00	9.06	peak
4875.76	V	34.55	--	11.08	45.63	--	74.00	54.00	8.37	peak
7313.98	V	26.04	--	18.23	44.27	--	74.00	54.00	9.73	peak
1845.26	H	41.40	--	3.45	44.85	--	74.00	54.00	9.15	peak
4875.91	H	34.52	--	11.08	45.60	--	74.00	54.00	8.40	peak
7313.17	H	26.29	--	18.23	44.52	--	74.00	54.00	9.48	peak

Operation Mode: RX / Draft 802.11n Wide-40 MHz / CH High **Test Date:** March 12, 2010

Temperature: 22°C **Humidity:** 51% RH

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1840.37	V	40.85	--	3.44	44.29	--	74.00	54.00	9.71	peak
4904.16	V	34.9	--	11.11	46.01	--	74.00	54.00	7.99	peak
7306.50	V	27.11	--	18.23	45.34	--	74.00	54.00	8.66	peak
1844.65	H	41.22	--	3.45	44.67	--	74.00	54.00	9.33	peak
4906.83	H	35.17	--	11.11	46.28	--	74.00	54.00	7.72	peak
7306.71	H	26.77	--	18.23	45.00	--	74.00	54.00	9.00	peak

10 6dB BANDWIDTH MEASUREMENTS

10.1 LIMITS

According to the standard, 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.

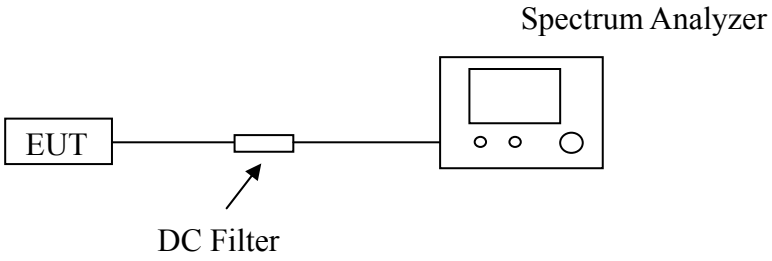
10.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Spectrum Analyzer	Agilent	E4407B	MY41440292	May 29, 2009	1 Year
RF Cable	Hubersuhne	Sucoflex104	FP2RX2	May 29, 2009	1 Year
DC Filter	MPE	23872C	N/A	May 29, 2009	1 Year

10.3 TEST PROCEDURES

1) Place the EUT on the table and set it in the transmitting mode.
2) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3) Set the spectrum analyzer as RBW = 100kHz, VBW = RBW, Span = 20MHz, Sweep = auto.
4) Mark the peak frequency and –6dB (upper and lower) frequency.
5) Repeat until all the rest channels are investigated.

10.4 TEST SETUP



10.5 TEST RESULTS

PASS

The test result please refer to the following page.

6 dB bandwidth Test Date

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	12500	>500	PASS
Mid	2437	11170		PASS
High	2462	12250		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	16580	>500	PASS
Mid	2437	16500		PASS
High	2462	16500		PASS

Test mode: Draft 802.11n Standard-20 MHz

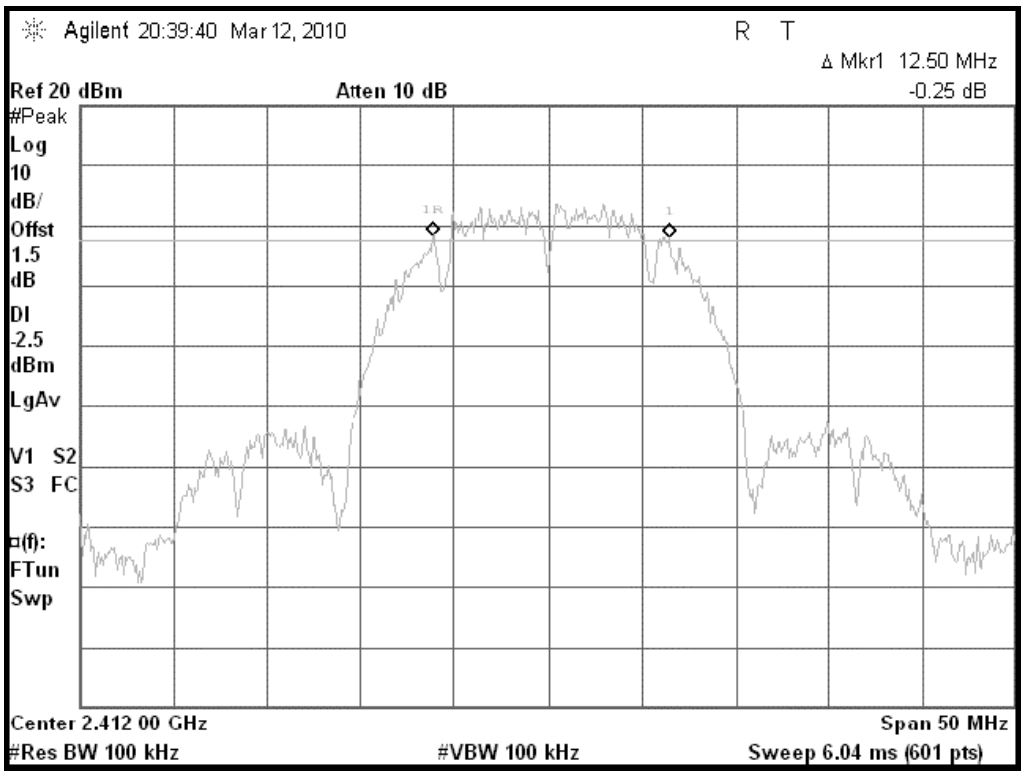
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2412	17830	>500	PASS
Mid	2437	17830		PASS
High	2462	17750		PASS

Test mode: Draft 802.11n Wide-40 MHz

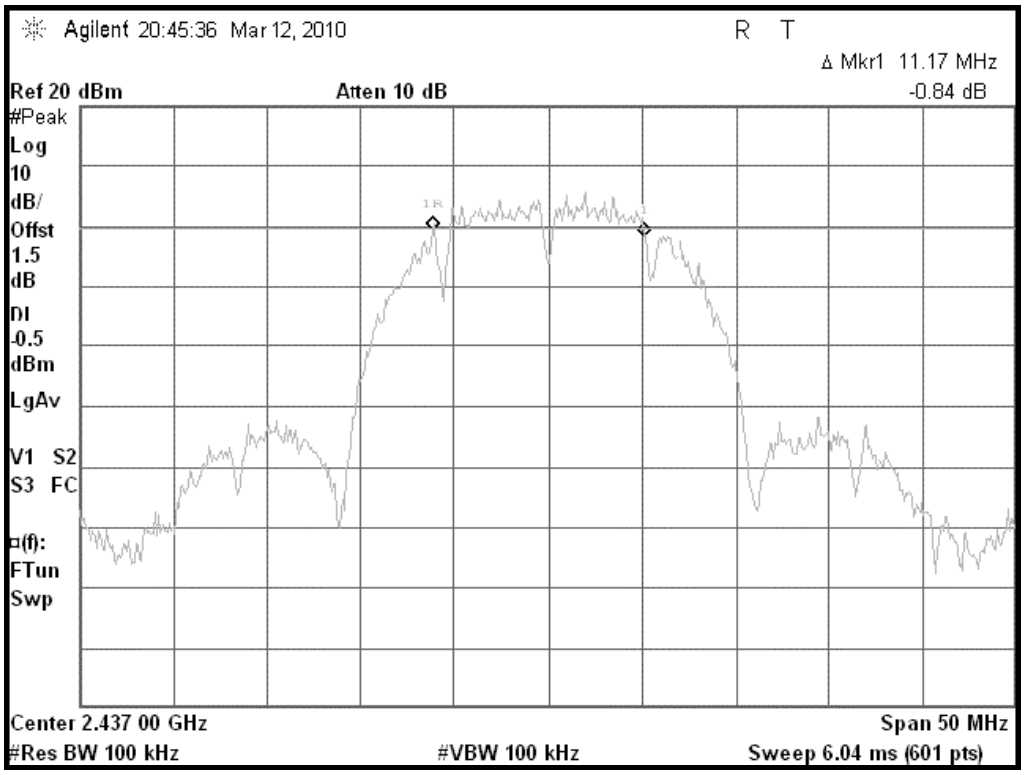
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Low	2422	36080	>500	PASS
Mid	2437	34500		PASS
High	2452	36330		PASS

Test Plot (IEEE 802.11b mode)

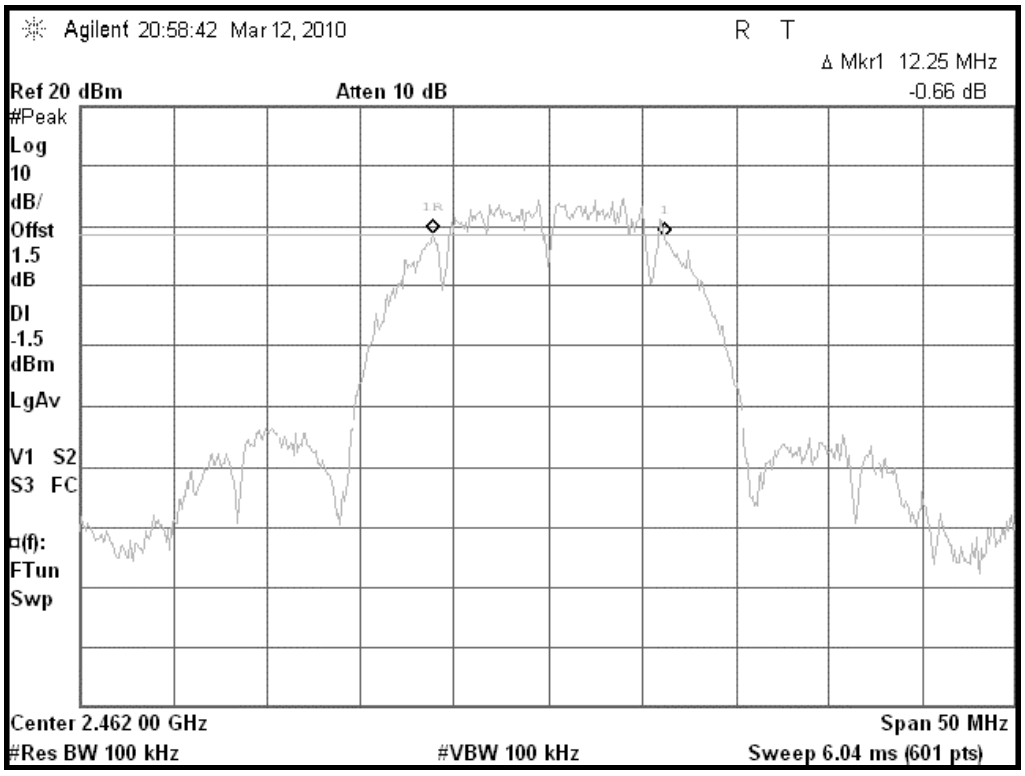
Bandwidth (CH Low)



Bandwidth (CH Mid)

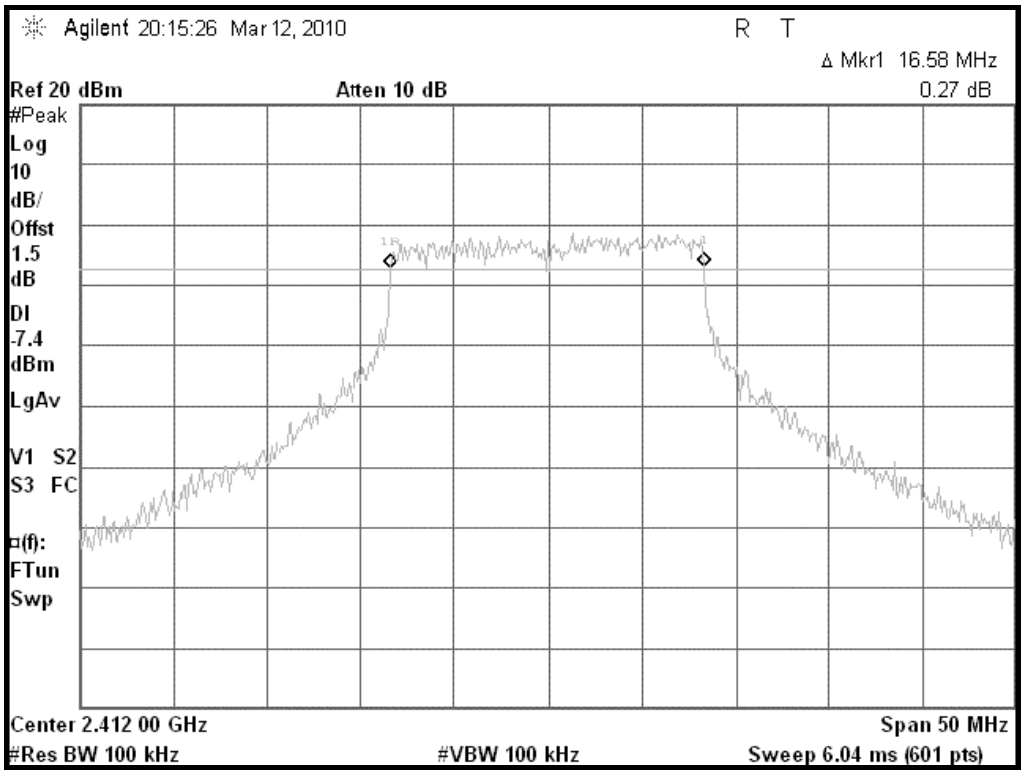


Bandwidth (CH High)

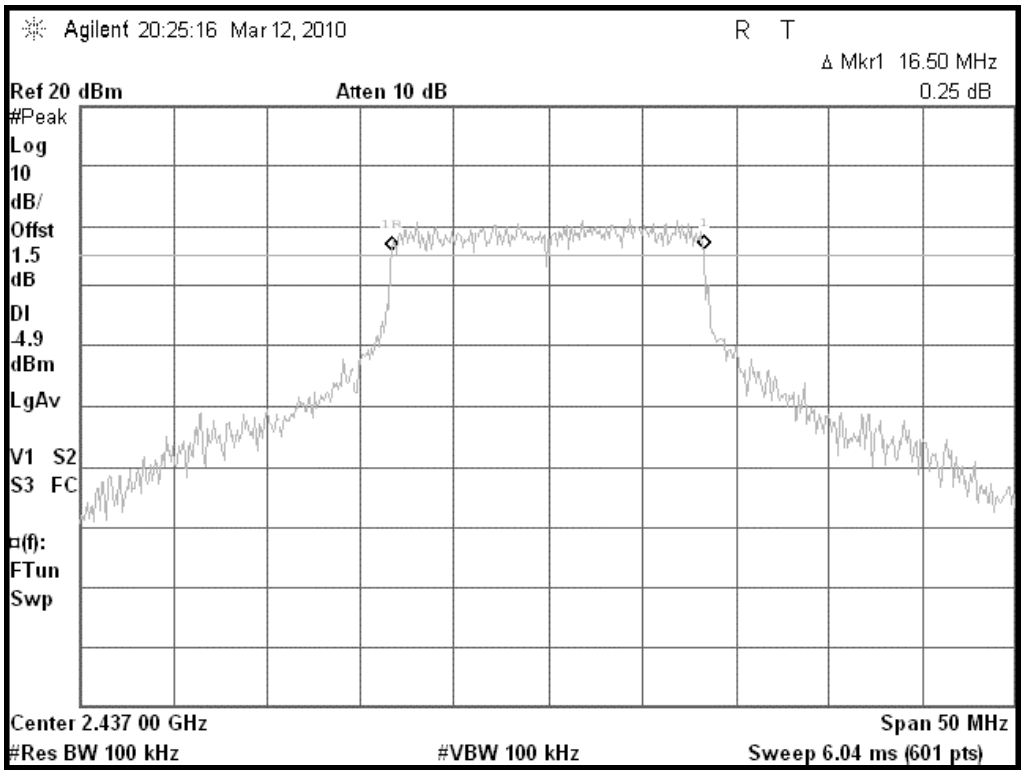


<u>Test Plot</u> (IEEE 802.11g mode)

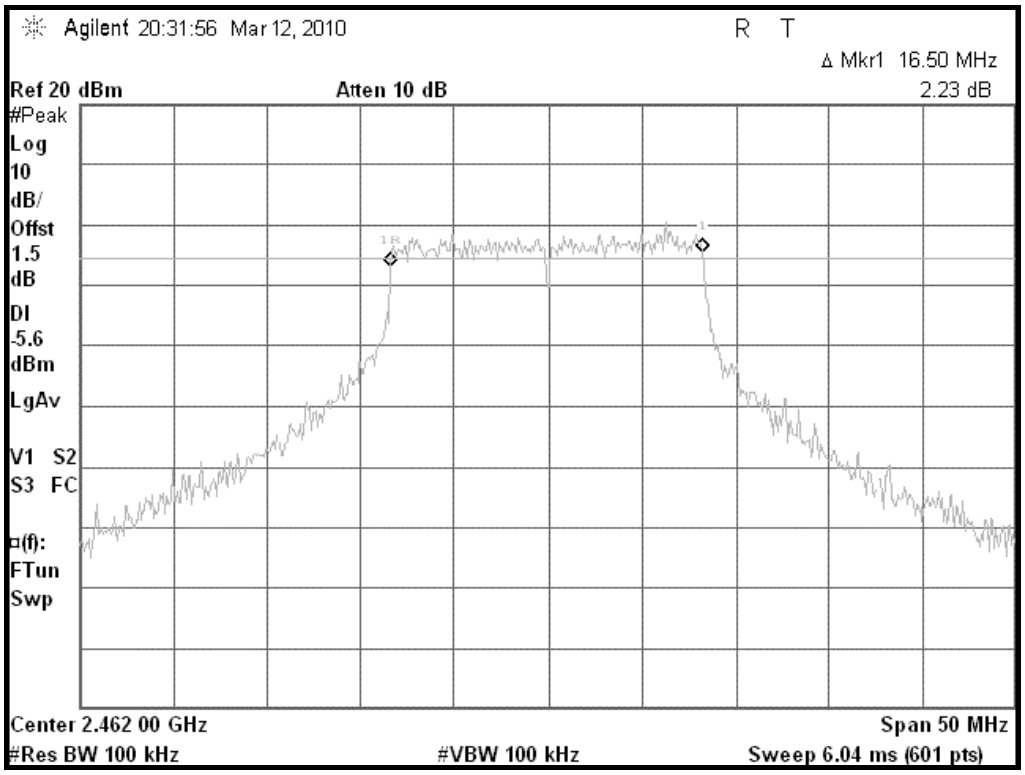
Bandwidth (CH Low)



Bandwidth (CH Mid)

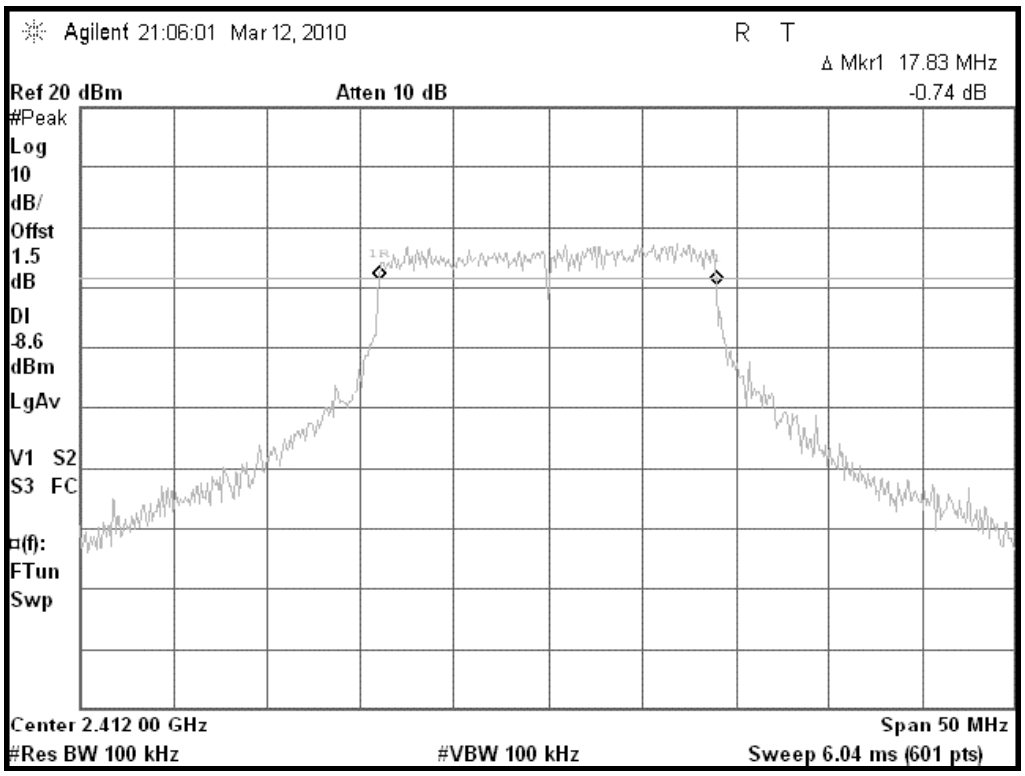


Bandwidth (CH High)

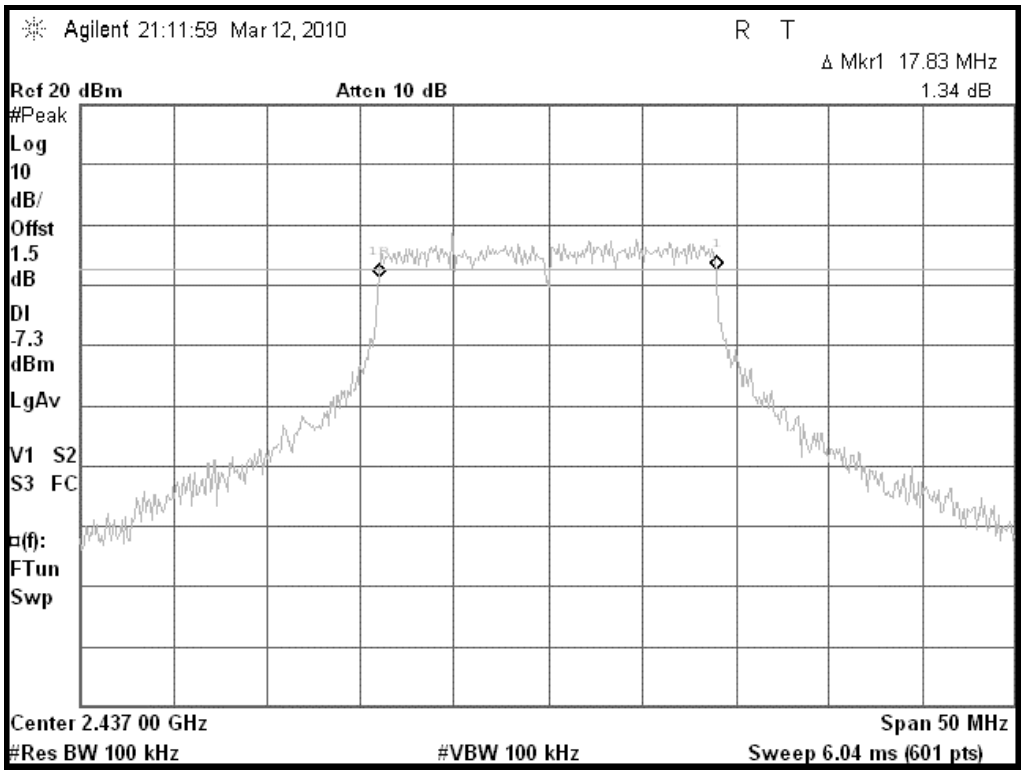


Test Plot (Draft 802.11n Standard-20 MHz)

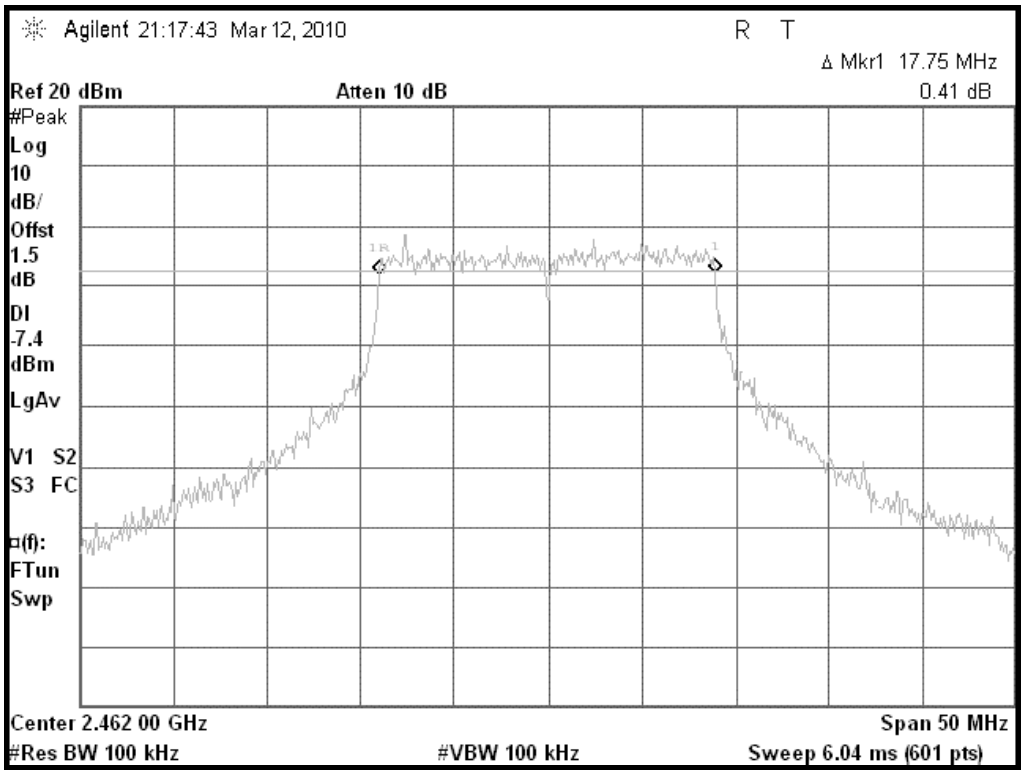
Bandwidth (CH Low)



Bandwidth (CH Mid)

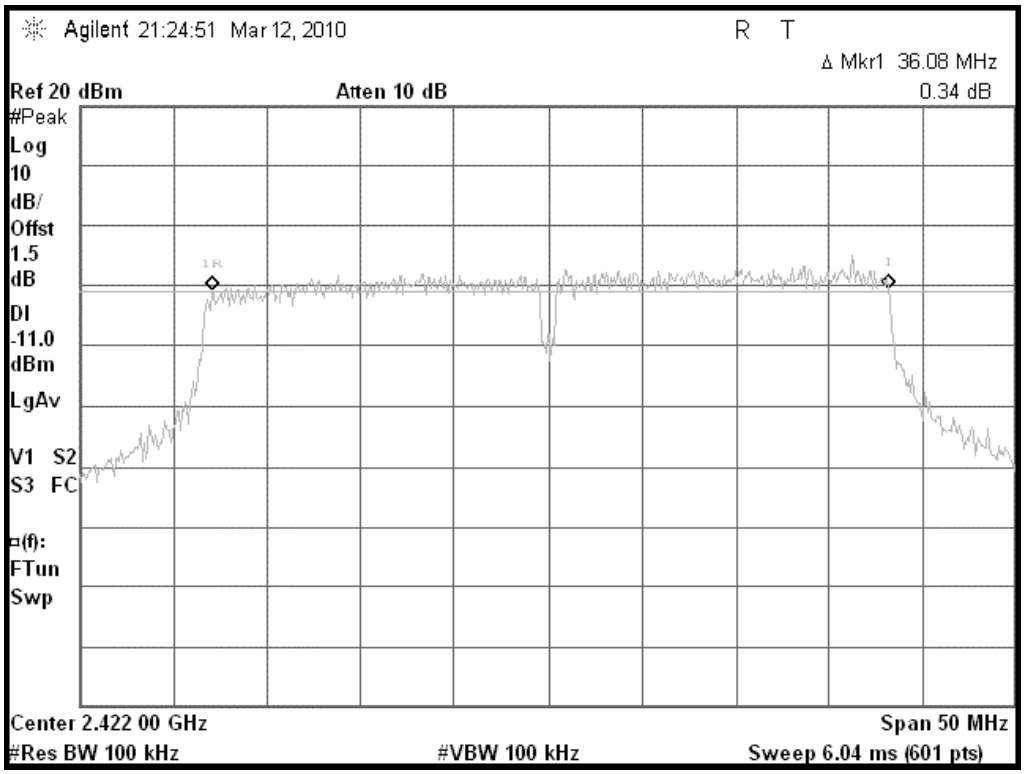


Bandwidth (CH High)

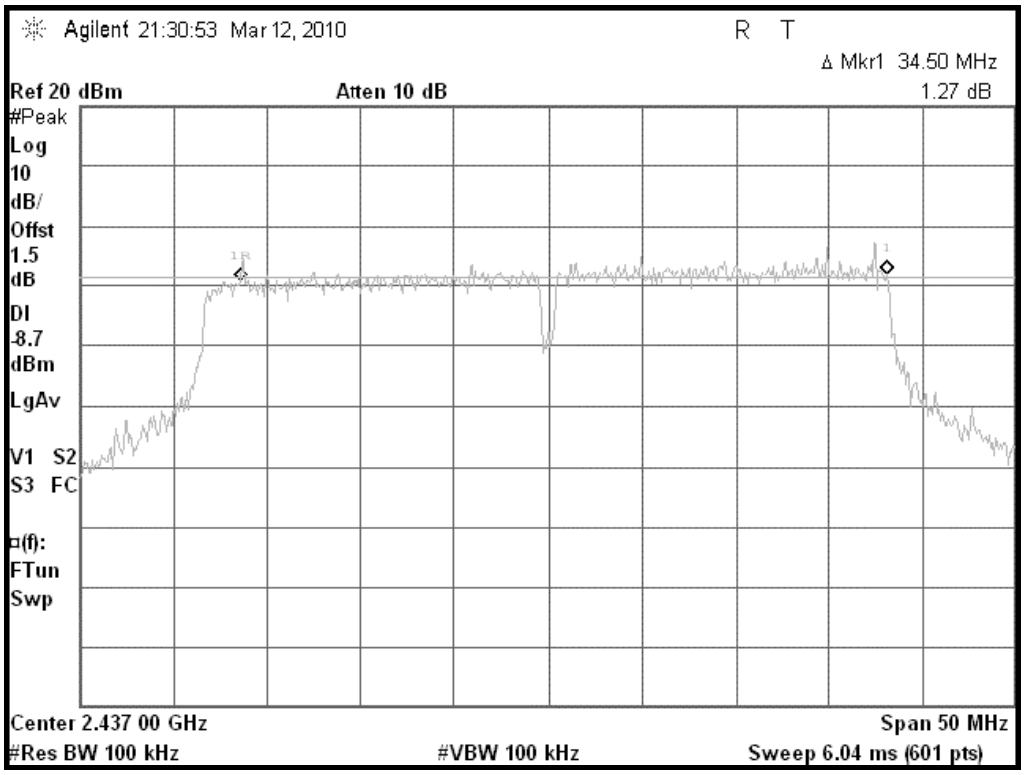


<u>Test Plot</u> (Draft 802.11n Wide-40 MHz)

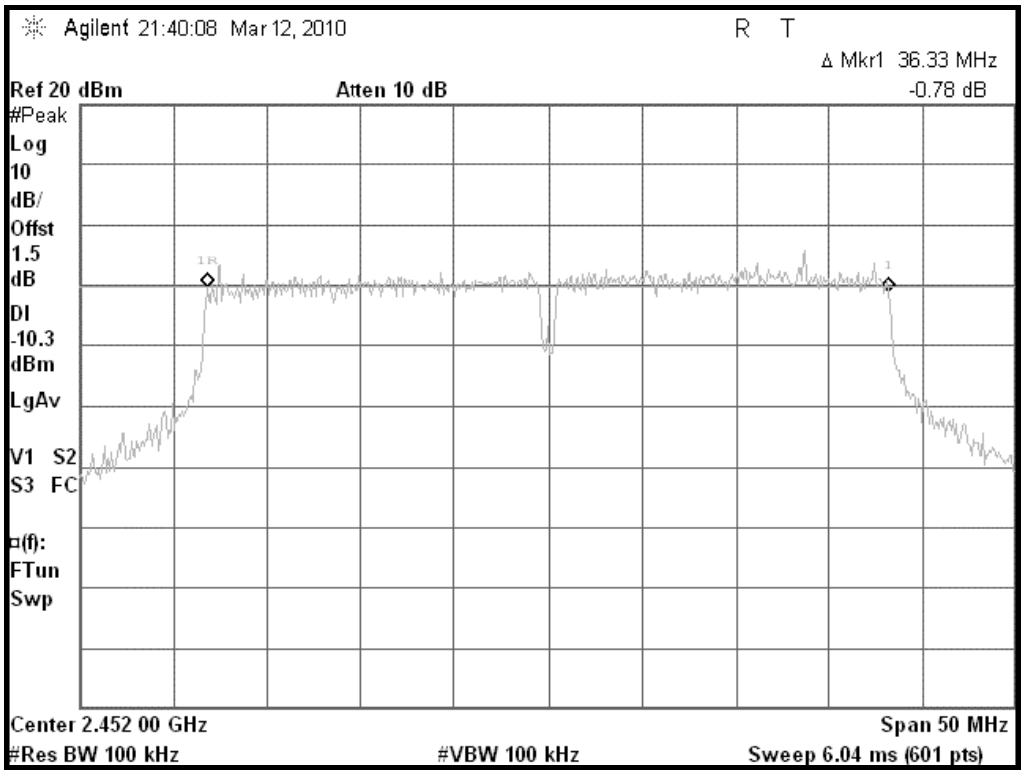
Bandwidth (CH Low)



Bandwidth (CH Mid)



Bandwidth (CH High)



11 99% BANDWIDTH MEASUREMENTS

11.1 LIMITS

None. For reporting purposes only.

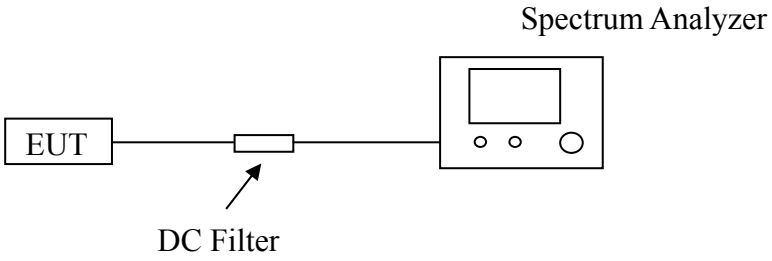
11.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Spectrum Analyzer	Agilent	E4407B	MY41440292	May 29, 2009	1 Year
RF Cable	Hubersuhne	Sucoflex104	FP2RX2	May 29, 2009	1 Year
DC Filter	MPE	23872C	N/A	May 29, 2009	1 Year

11.3 TEST PROCEDURES

1). The spectrum shall be set as follows :
Span : The minimum span to fully display the emission and approximately 20dB below peak level.
RBW : The set to 1% to 3% of the approximate emission width.
2). Compute the combined power of all signal responses contained in the trace by covering all the data points.
3). For 99% occupied BW, place the markers at the frequency at which 0.5% of the power lies to the right of the right marker and 0.5% of the power lies to the left of the left marker.
4). The 99% BW is the bandwidth between the right and left markers.

11.4 TEST SETUP



11.5 TEST RESULTS

PASS

The test result please refer to the following page.

99% dB bandwidth Test Date

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	15.1688
Mid	2437	15.1386
High	2462	15.1445

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	16.6955
Mid	2437	16.7069
High	2462	16.6979

Test mode: Draft 802.11n Standard-20 MHz

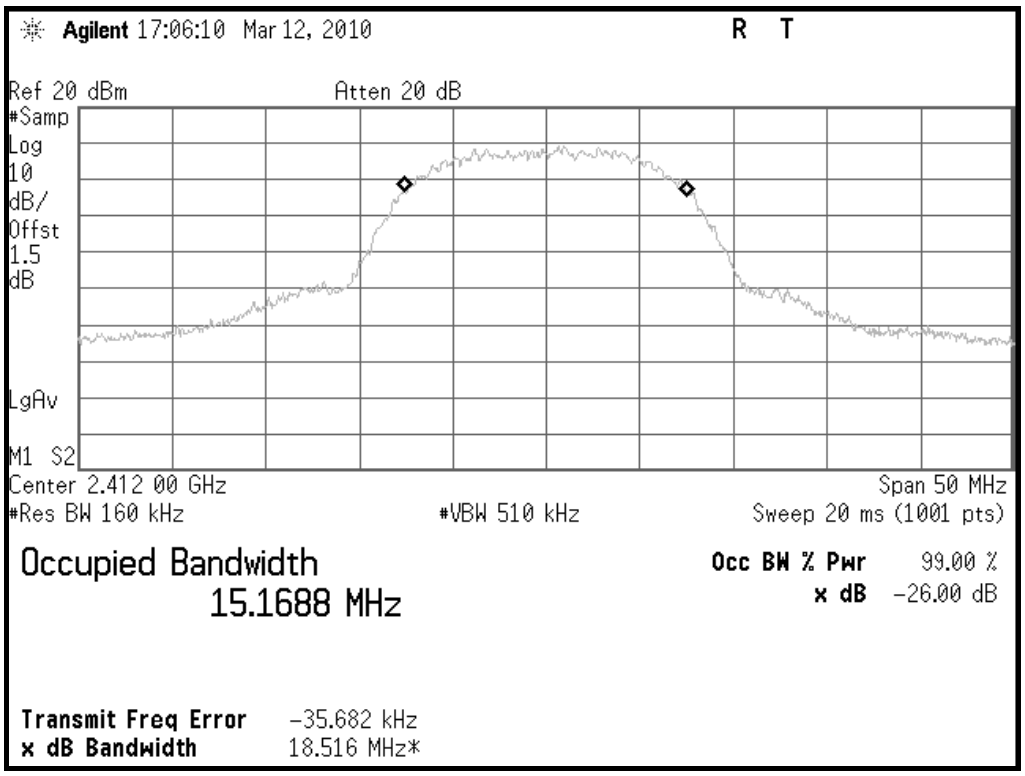
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.5734
Mid	2437	17.5724
High	2462	17.5733

Test mode: Draft 802.11n Wide-40 MHz

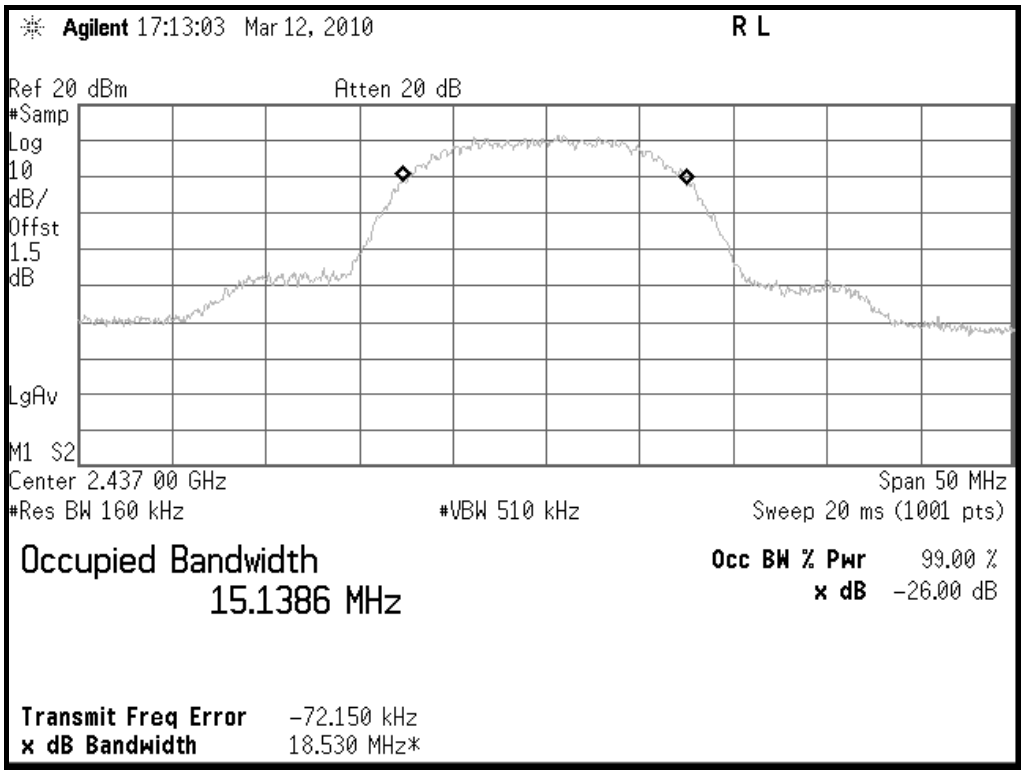
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2422	35.9367
Mid	2437	35.9462
High	2452	35.9532

Test Plot (IEEE 802.11b mode)

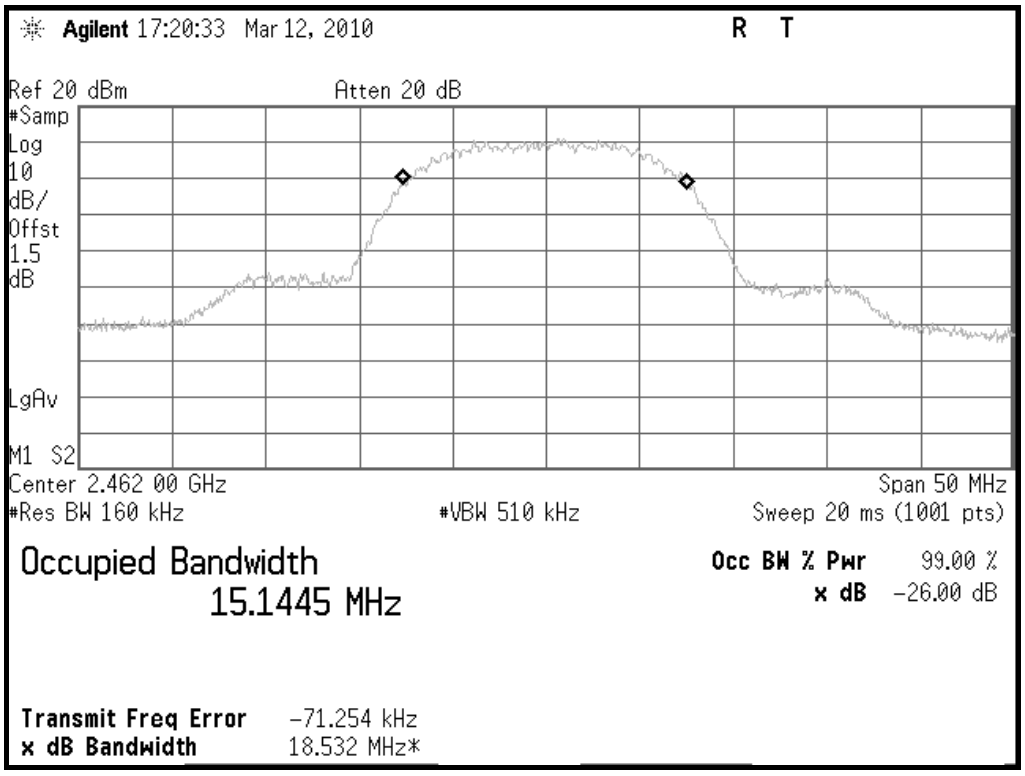
99% Bandwidth (CH Low)



99% Bandwidth (CH Mid)

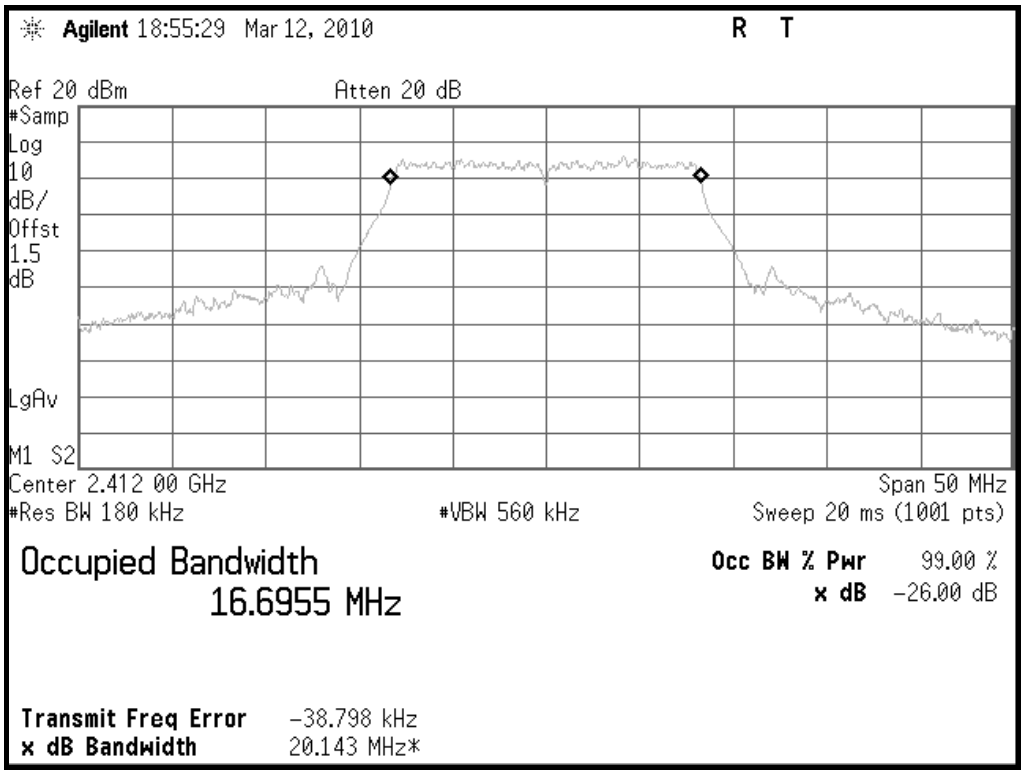


99% Bandwidth (CH High)

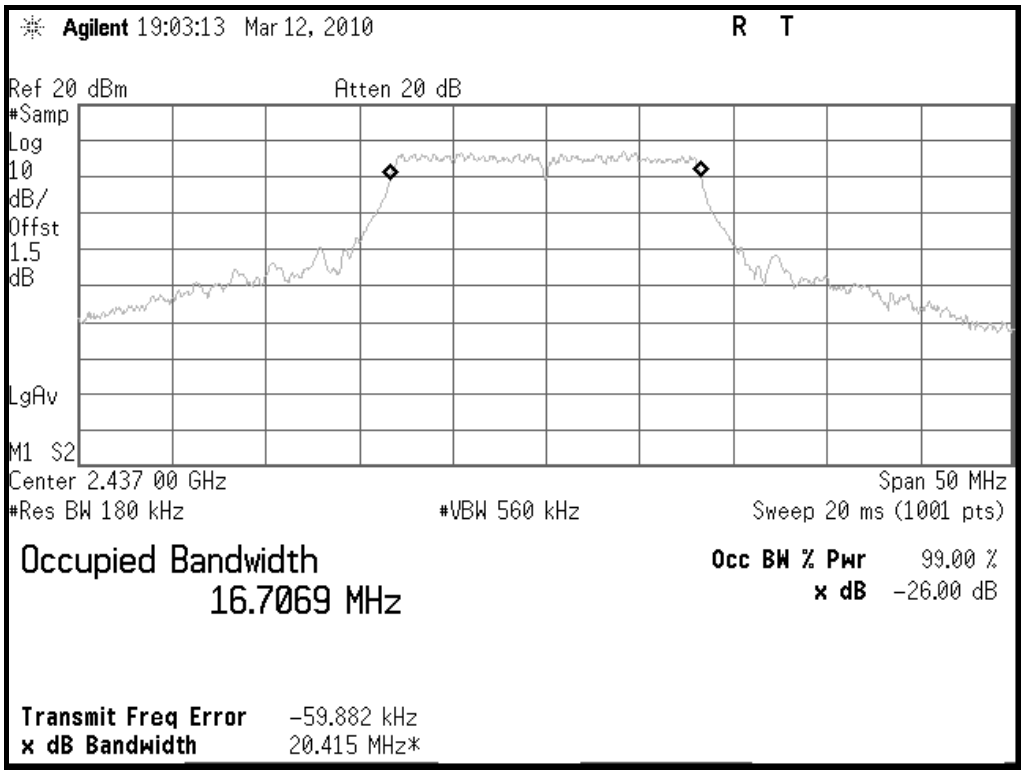


<u>Test Plot</u> (IEEE 802.11g mode)

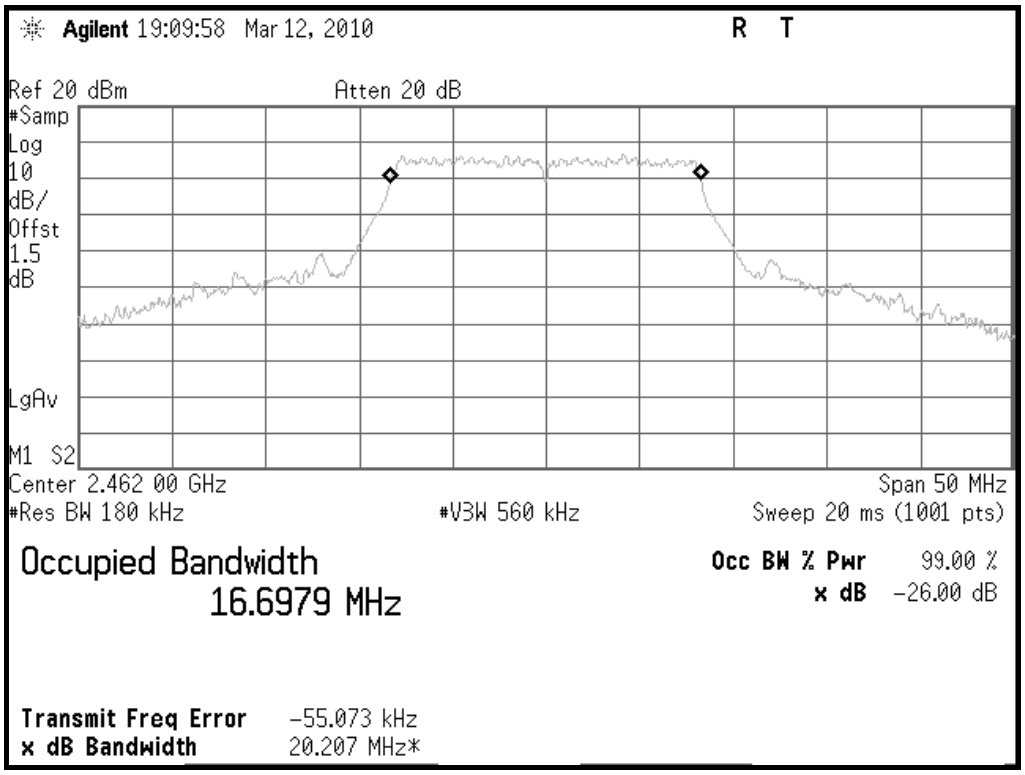
99% Bandwidth (CH Low)



99% Bandwidth (CH Mid)

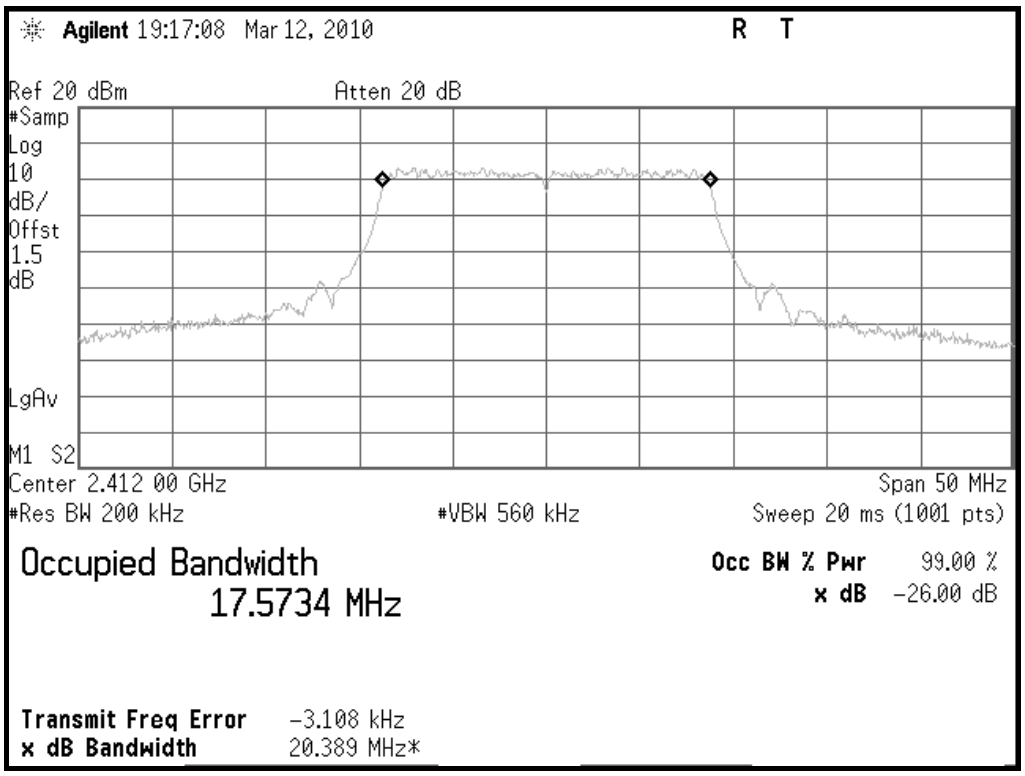


99% Bandwidth (CH High)

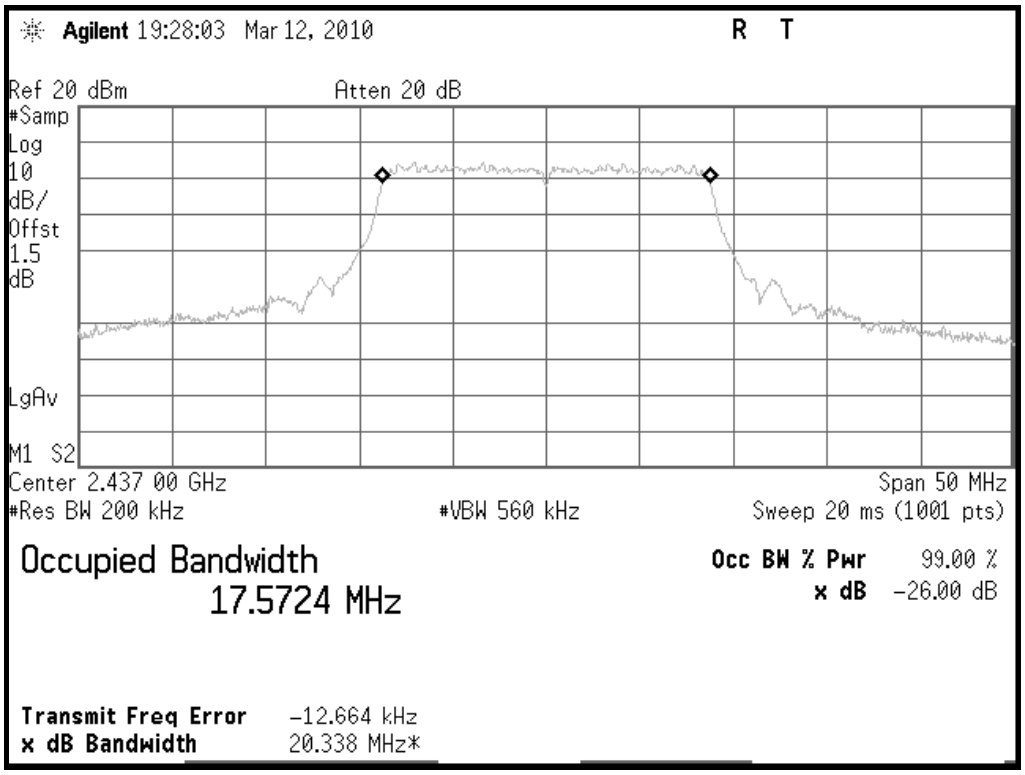


Test Plot (Draft 802.11n Standard-20 MHz)

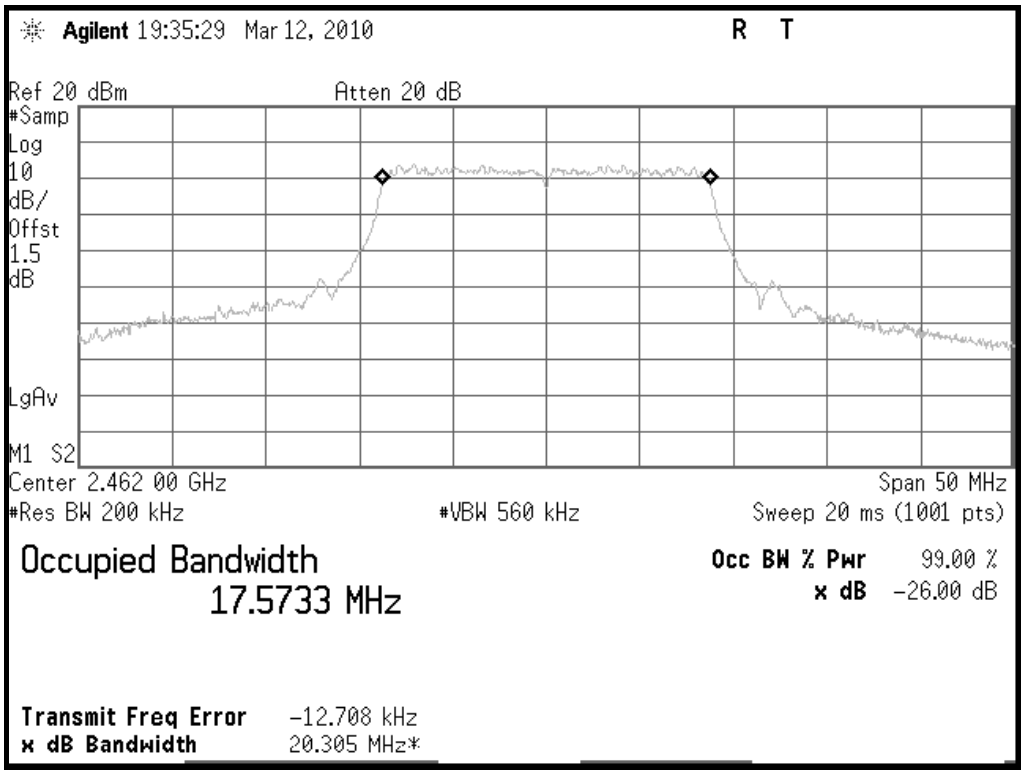
99% Bandwidth (CH Low)



99% Bandwidth (CH Mid)

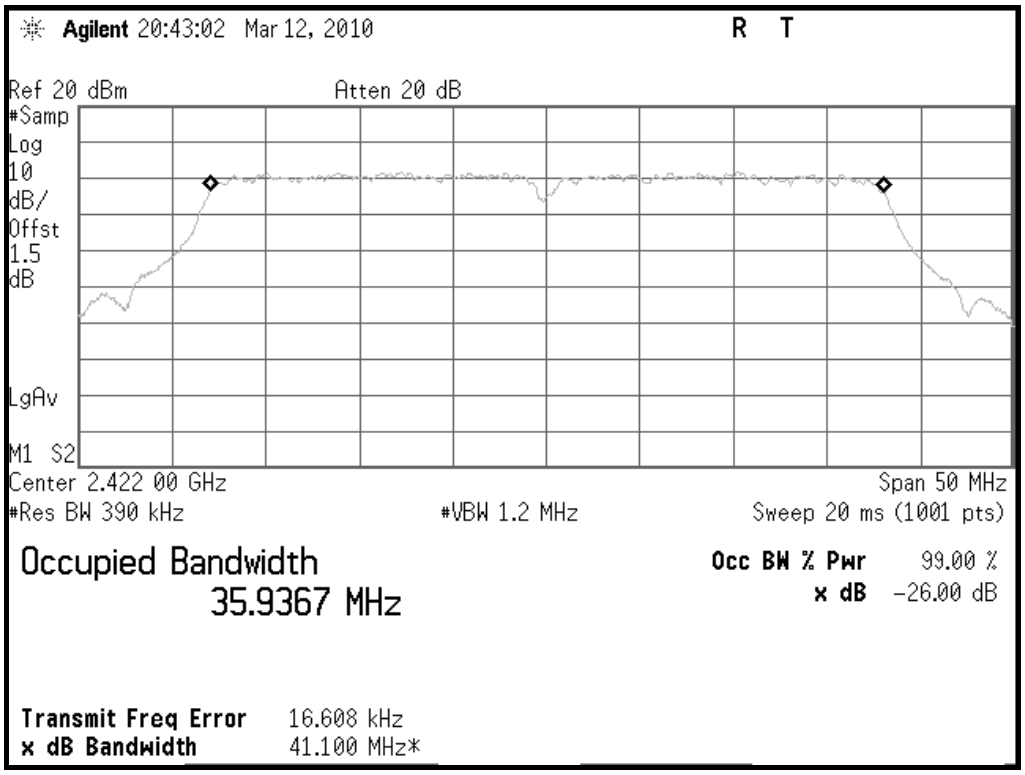


99% Bandwidth (CH High)

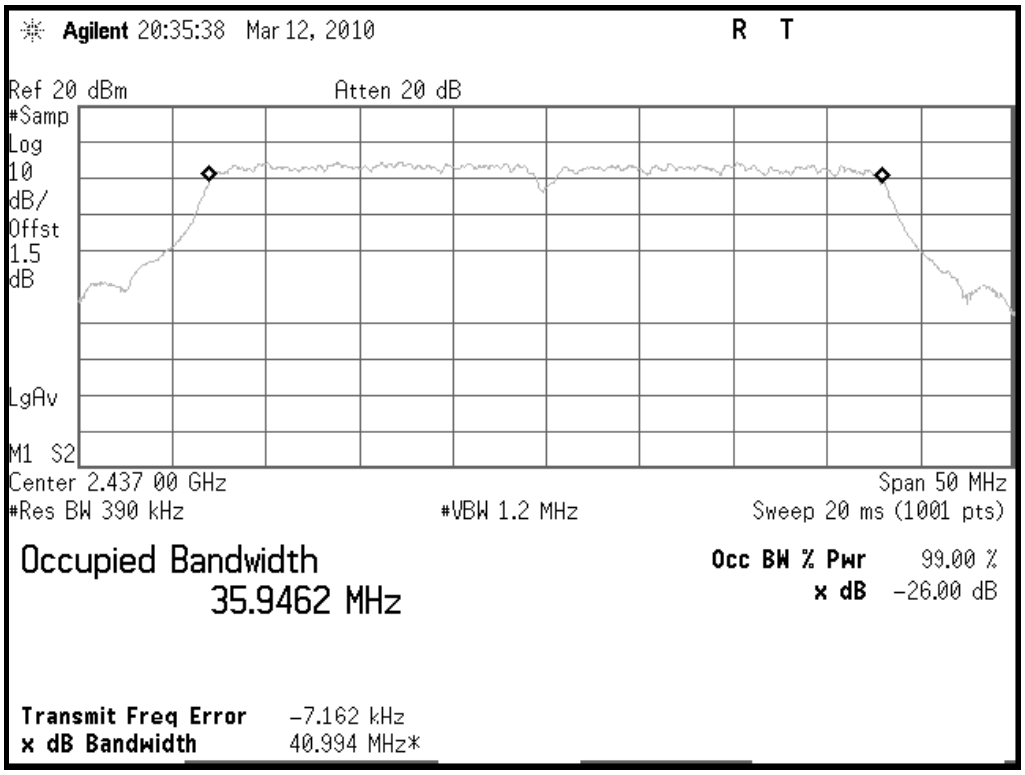


<u>Test Plot</u> (Draft 802.11n Wide-40 MHz)

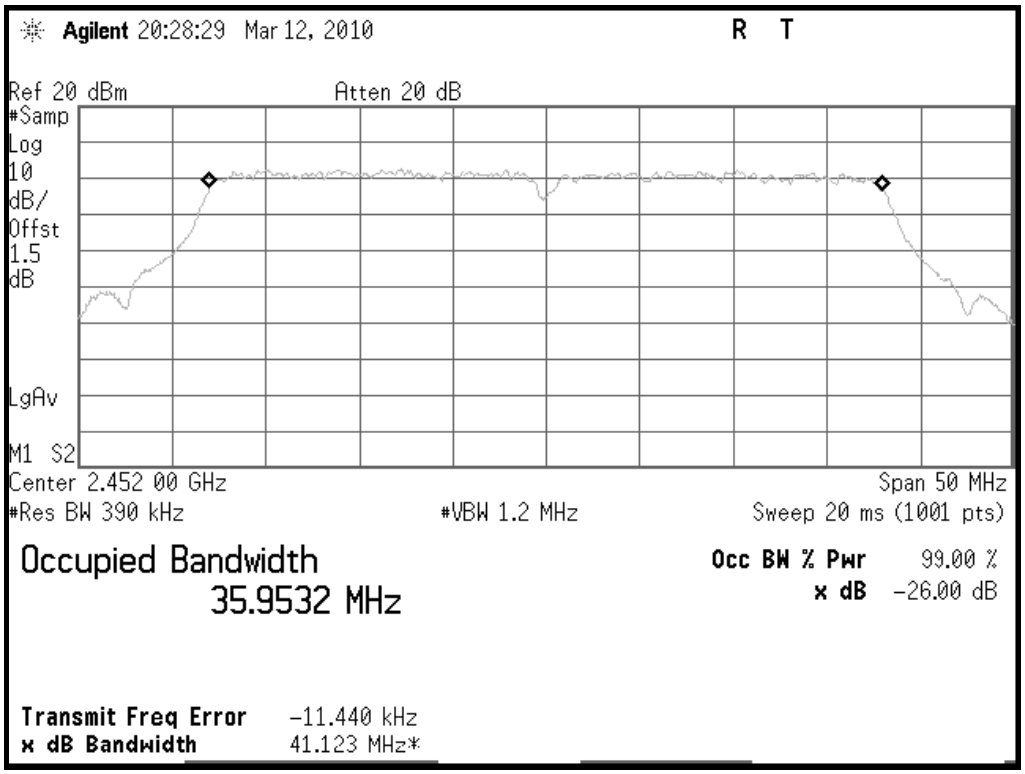
99% Bandwidth (CH Low)



99% Bandwidth (CH Mid)



99% Bandwidth (CH High)



12 PEAK OUTPUT POWER

12.1 LIMITS

The maximum peak output power of the intentional radiator shall not exceed the following:

a) For systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.

b) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

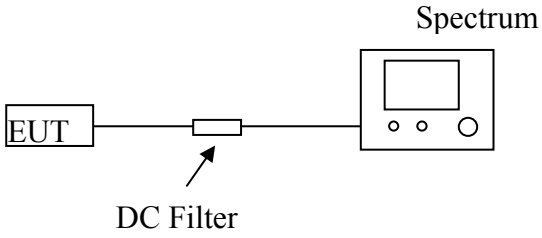
12.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Spectrum Analyzer	Agilent	E4407B	MY41440292	May 29, 2009	1 Year
RF Cable	Hubersuhne	Sucoflex104	FP2RX2	May 29, 2009	1 Year
DC Filter	MPE	23872C	N/A	May 29, 2009	1 Year

12.3 TEST PROCEDURES

a) Set span to encompass the entire emission bandwidth (EBW) of the signal.
b) Set RBW = 1 MHz. VBW ≥ 3 MHz.
c) Use sample detector mode if bin width < 0.5 RBW. Otherwise use peak detector mode.
d) Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to ôhichfree runöhich.
e) Trace average 100 traces in power averaging mode.
f) Compute power by integrating the spectrum across the 26 dB EBW of the signal.
The integration can be performed using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.

12.4 TEST SETUP



12.5 TEST RESULTS

Test Data

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	16.40	0.04365	1	PASS
Mid	2437	16.89	0.04887		PASS
High	2462	17.25	0.05309		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	16.02	0.03999	1	PASS
Mid	2437	16.30	0.04266		PASS
High	2462	15.96	0.03945		PASS

Test mode: Draft 802.11n Standard-20 MHz

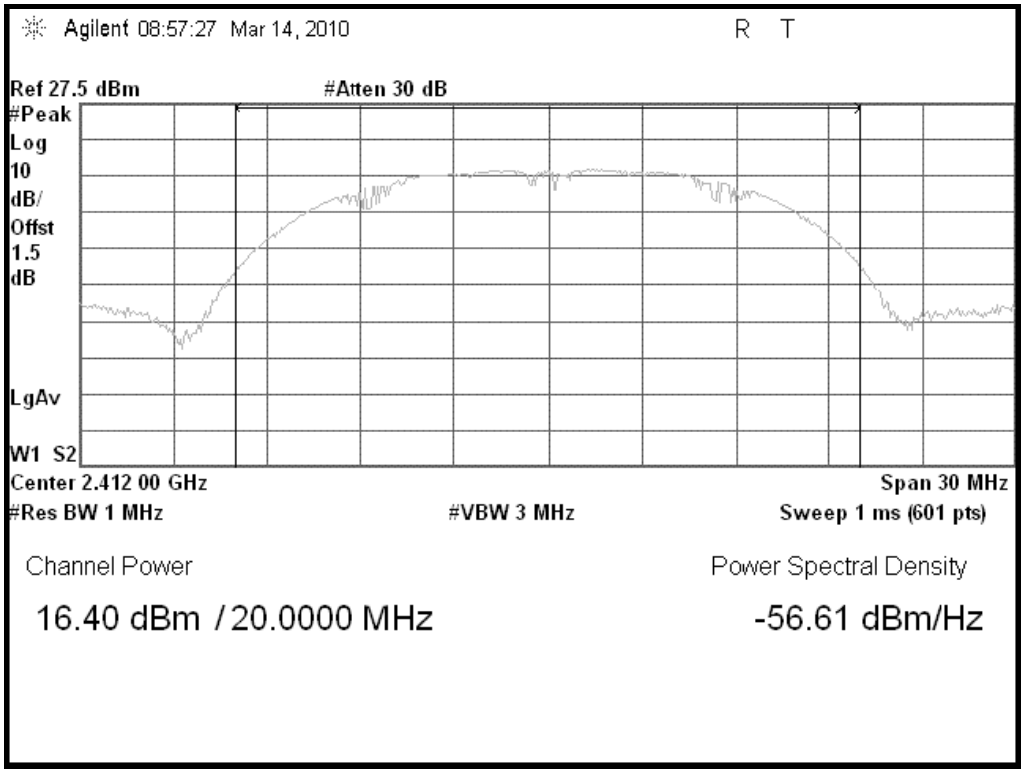
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	15.18	0.03296	1	PASS
Mid	2437	16.05	0.04027		PASS
High	2462	15.13	0.03258		PASS

Test mode: Draft 802.11n Wide-40 MHz

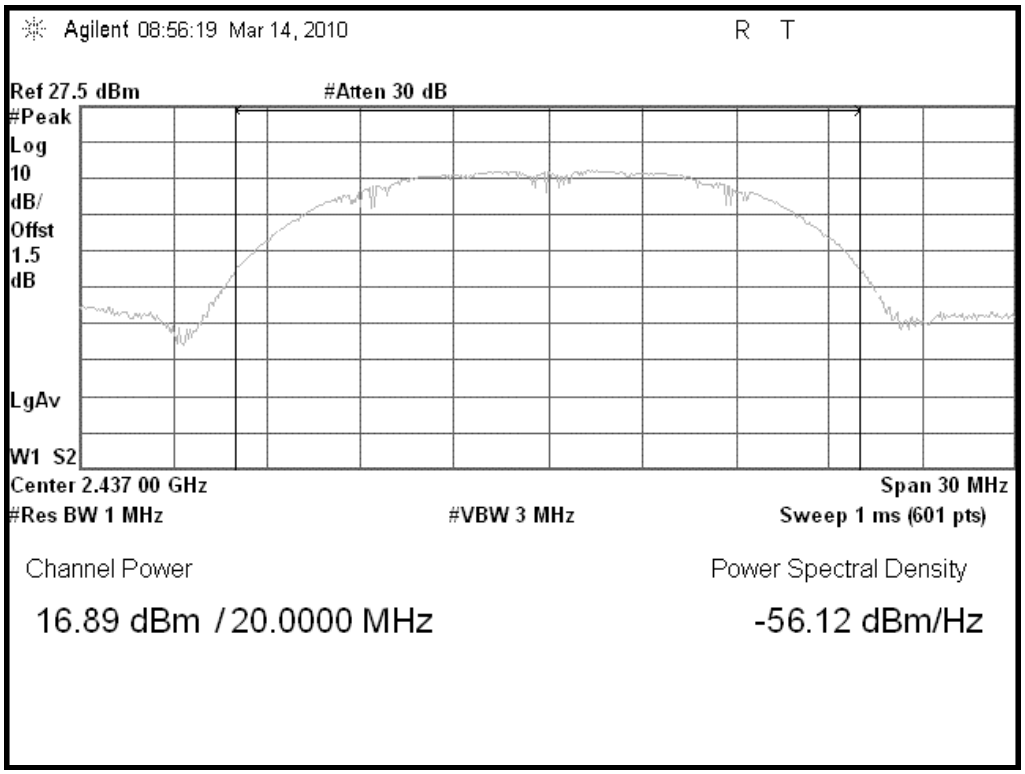
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	14.32	0.02704	1	PASS
Mid	2437	14.70	0.02951		PASS
High	2452	13.85	0.02427		PASS

Test Plot (IEEE 802.11b mode)

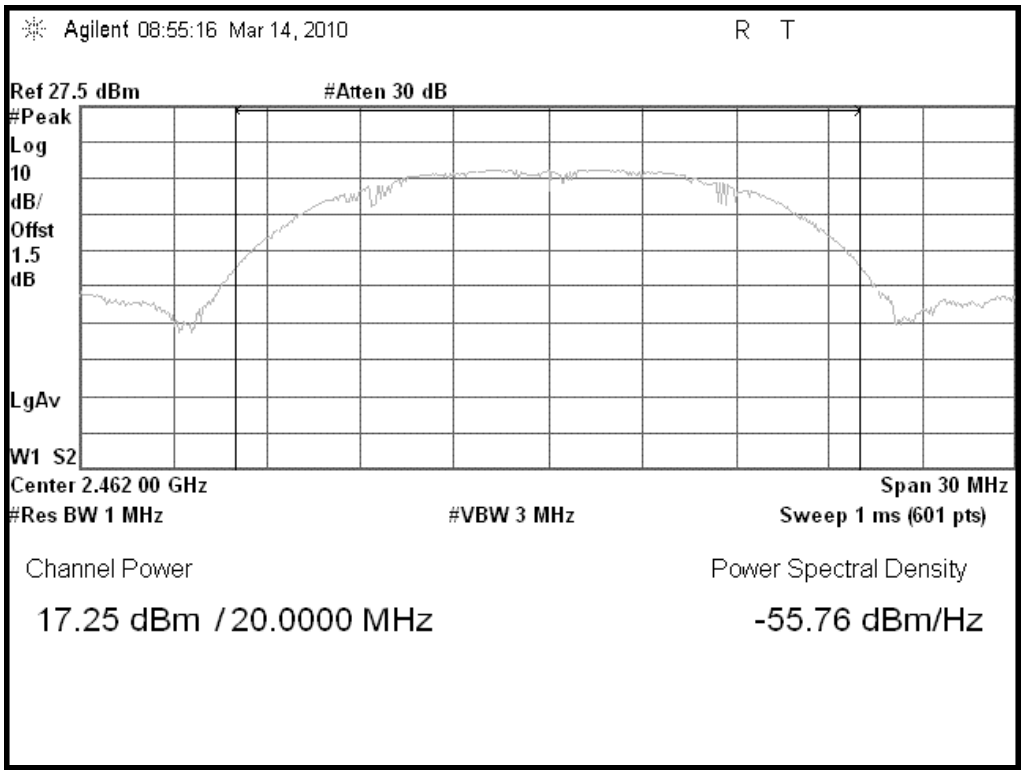
Peak Power (CH Low)



Peak Power (CH Mid)

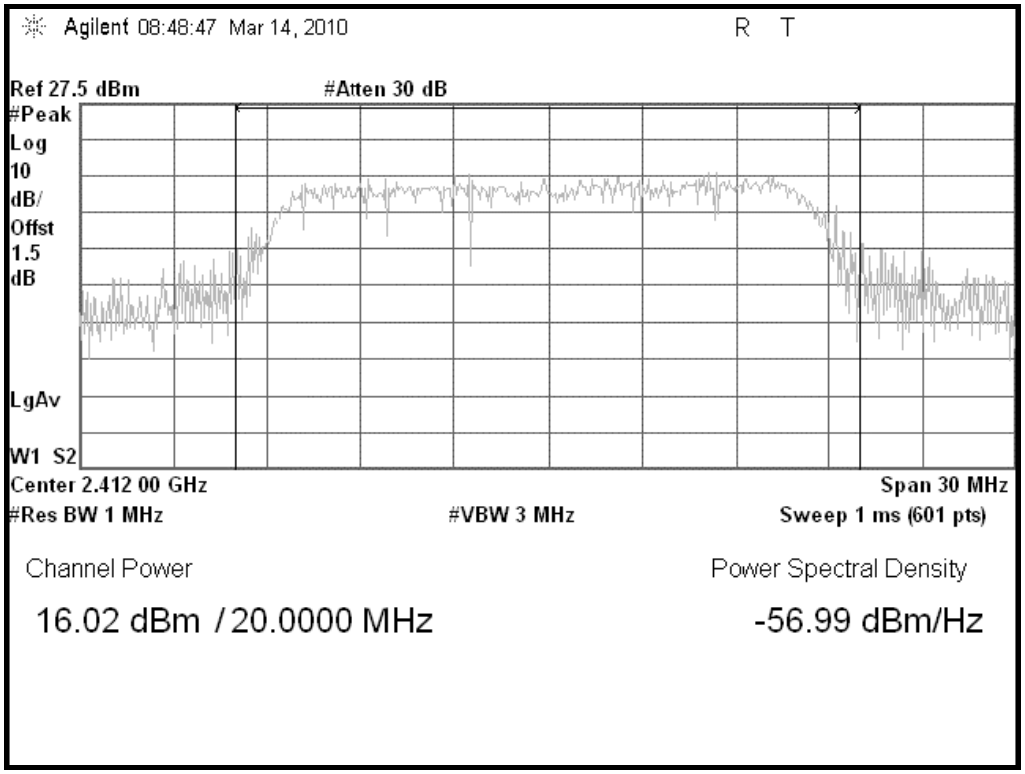


Peak Power (CH High)

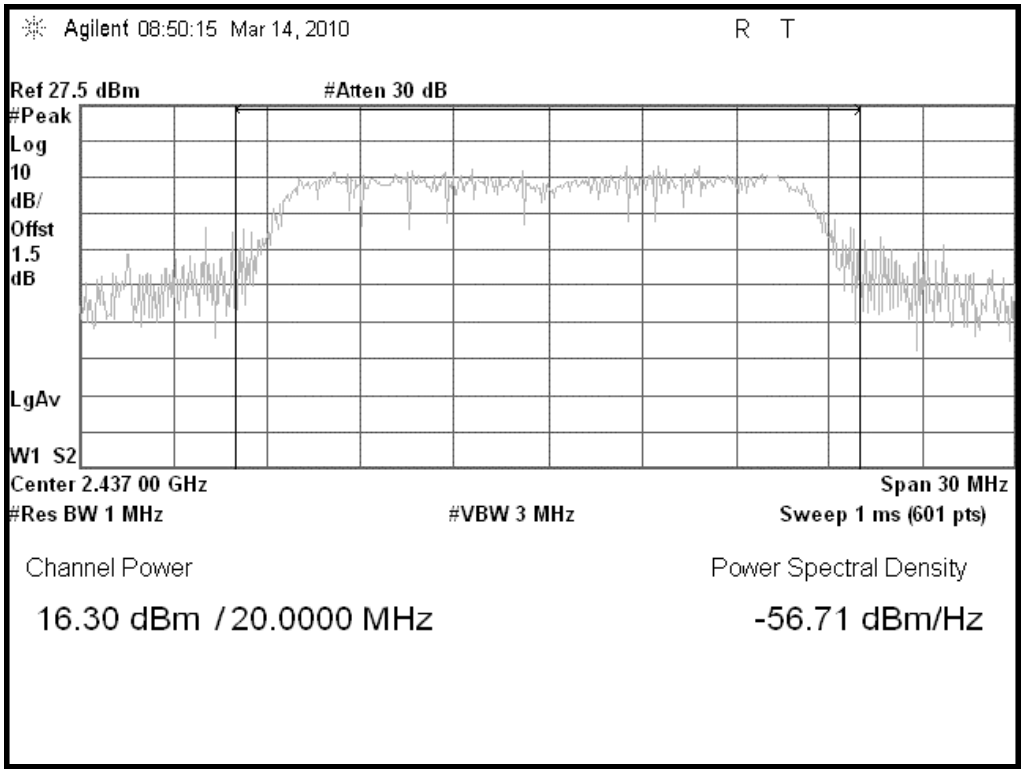


<u>Test Plot</u> (IEEE 802.11g mode)

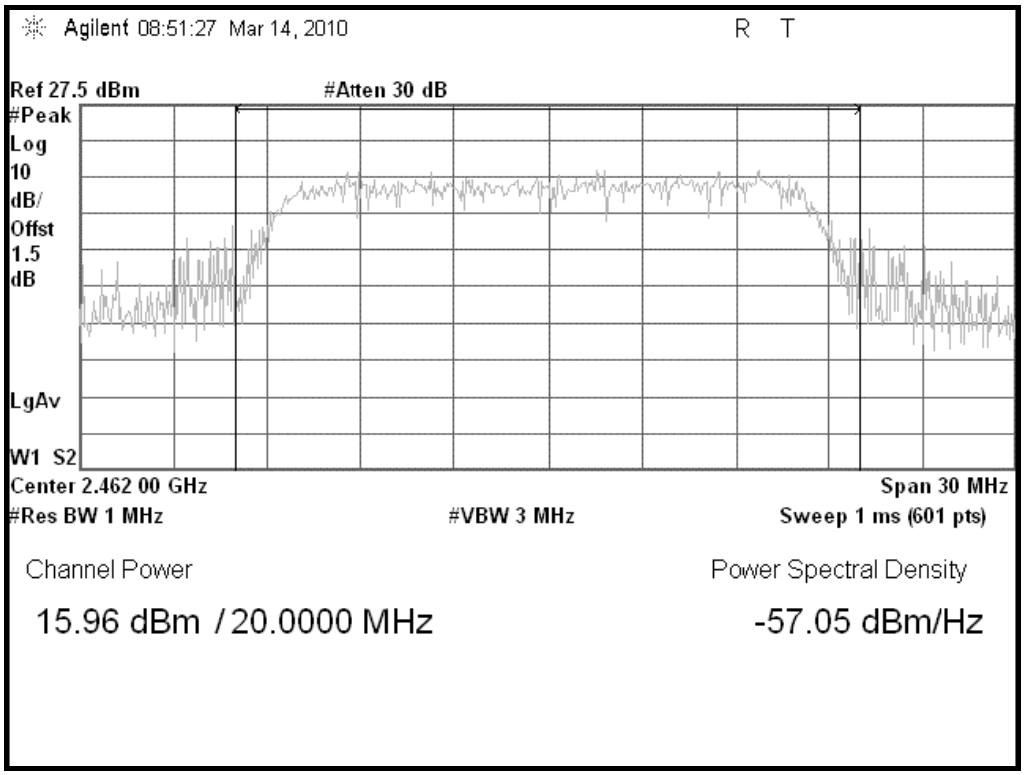
Peak Power (CH Low)



Peak Power (CH Mid)

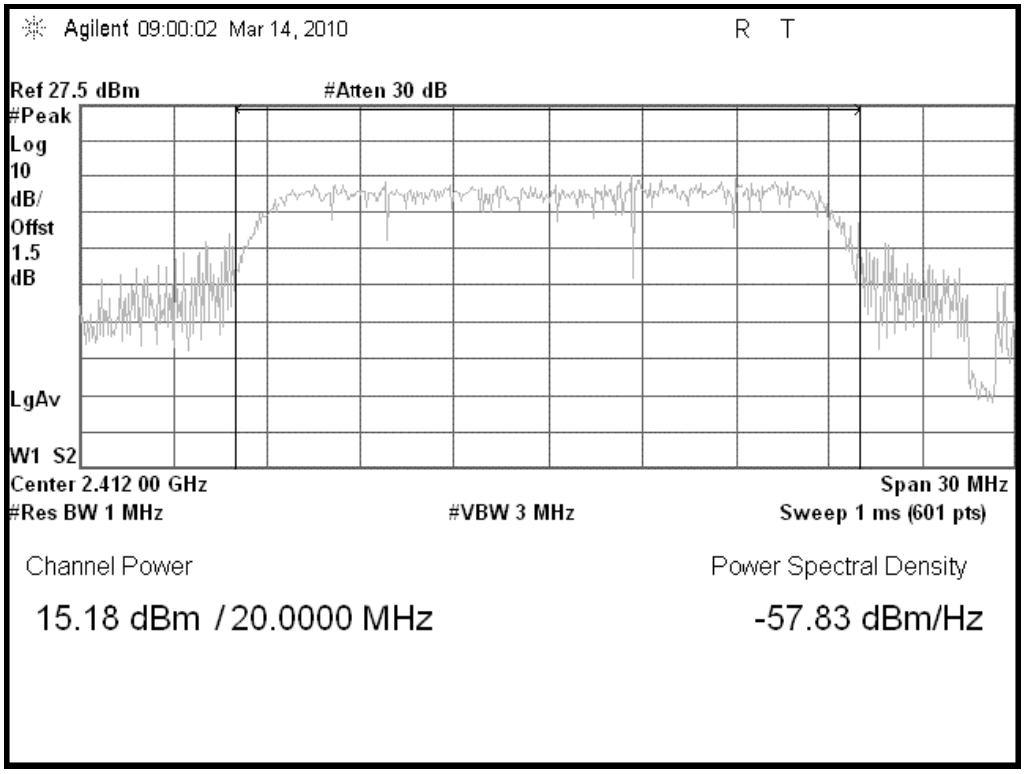


Peak Power (CH High)

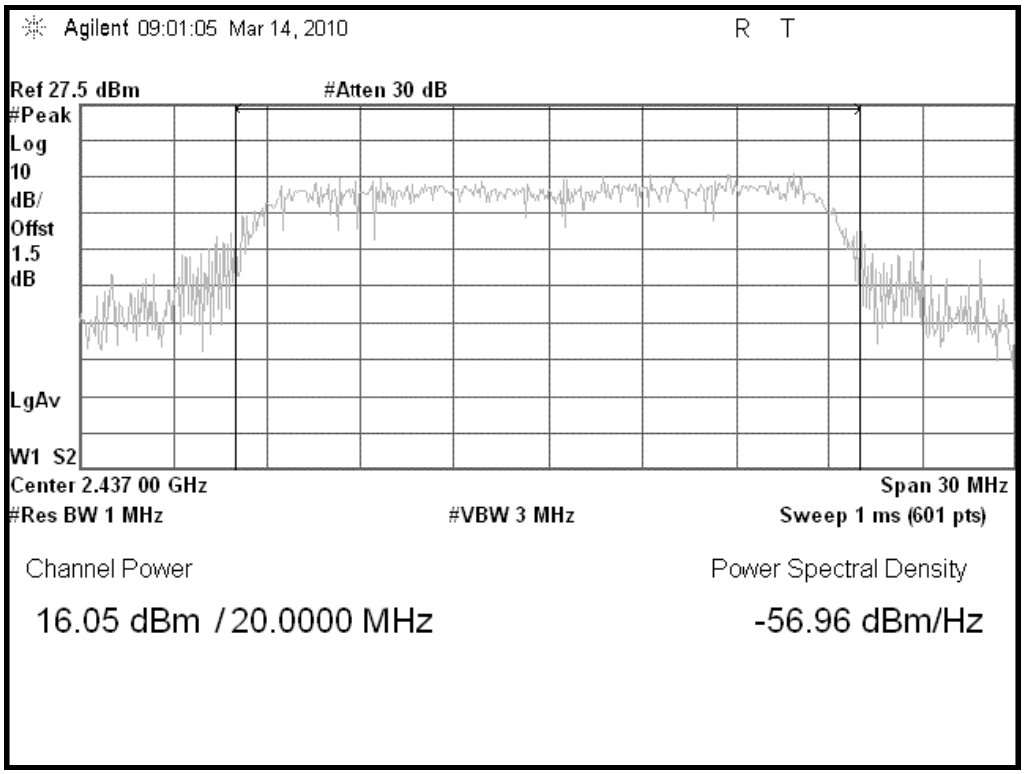


Test Plot (Draft 802.11n Standard-20 MHz)

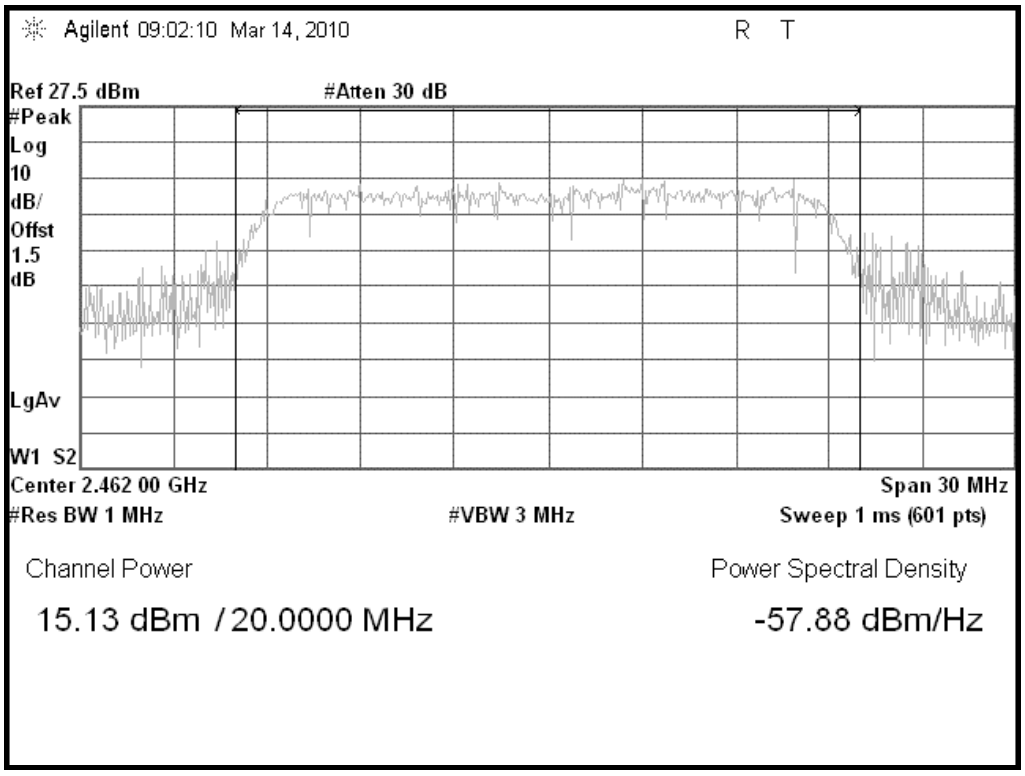
Peak Power (CH Low)



Peak Power (CH Mid)

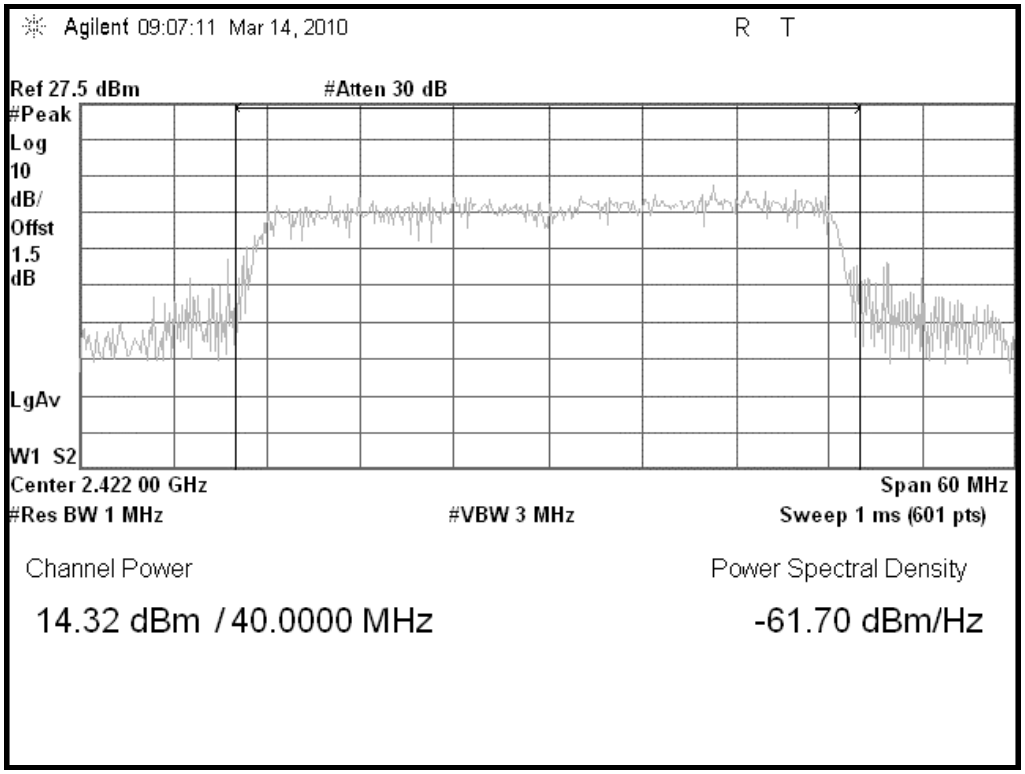


Peak Power (CH High)

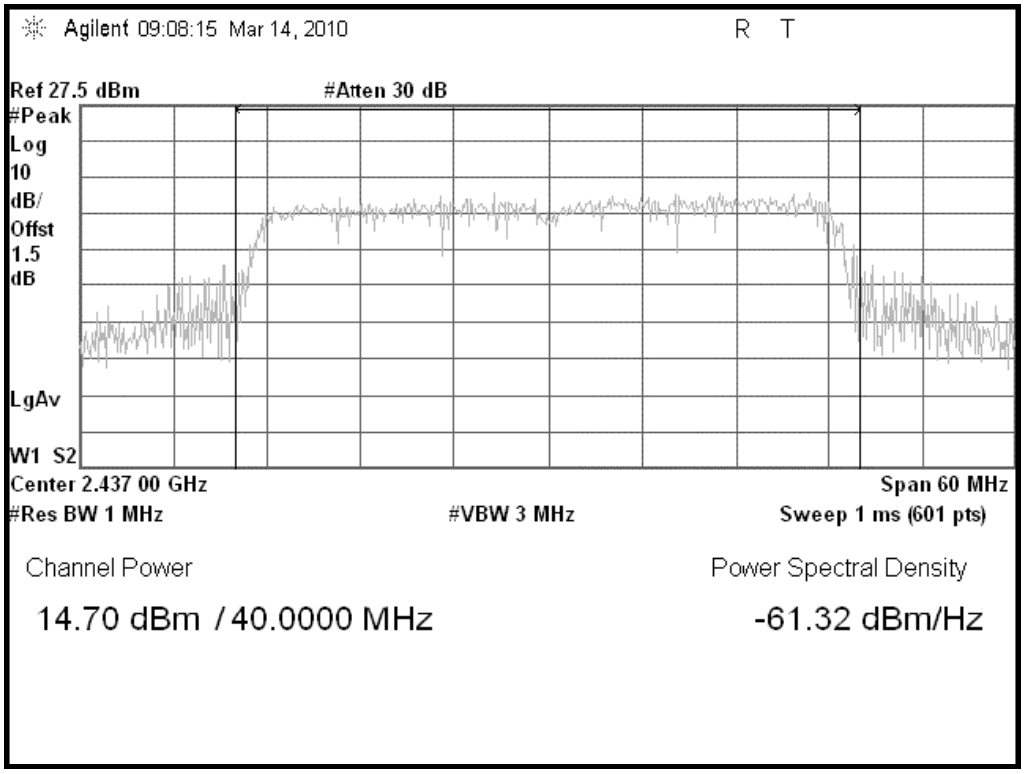


<u>Test Plot</u> (Draft 802.11n Wide-40 MHz)

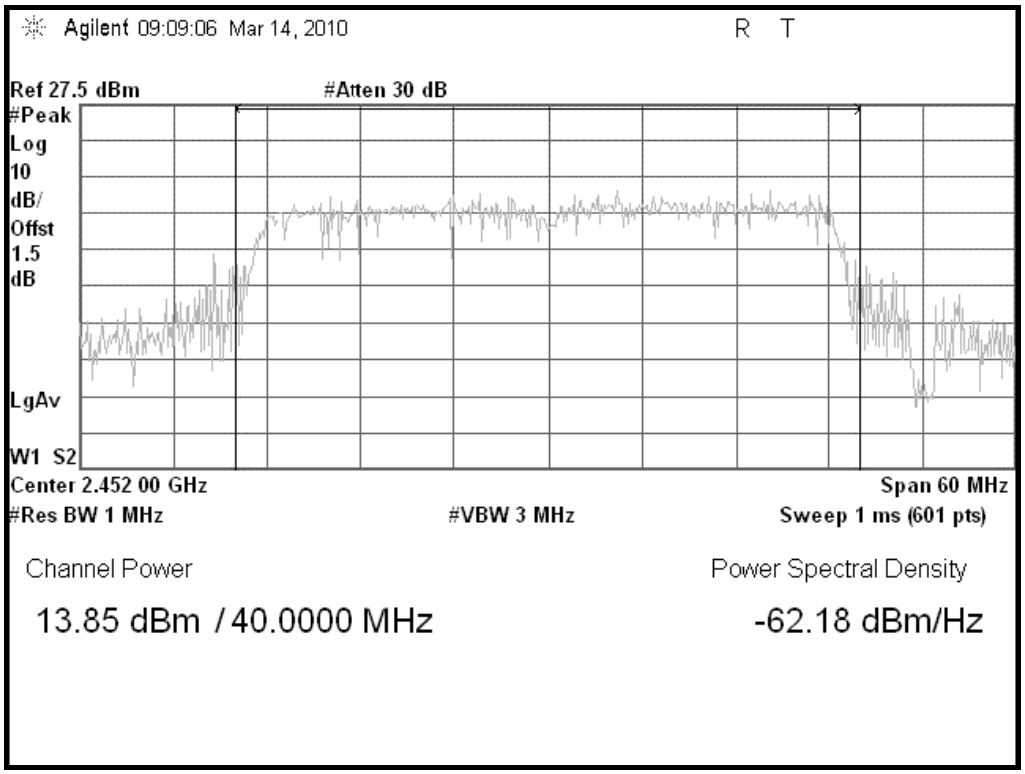
Peak Power (CH Low)



Peak Power (CH Mid)



Peak Power (CH High)



13 BAND EDGES MEASUREMENT

13.1 LIMITS

According to standard, in any 100 kHz 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 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. In addition, radiated emissions which fall in the restricted bands, as defined in standard, must also comply with the radiated emission limits specified.

13.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Spectrum Analyzer	Anritsu	MS2661C	6200140915	May 29, 2009	1 Year
Test Receiver	Rohde&Schwarz	ESCS30	828985/018	May 29, 2009	1 Year
Antenna	Schwarzbeck	VULB9163	142	May 29, 2009	1 Year
Horn-antenna	Schwarzbeck	BBHA9120D	D:266	May 29, 2009	1 Year
DC Filter	MPE	23872C	N/A	May 29, 2009	1 Year

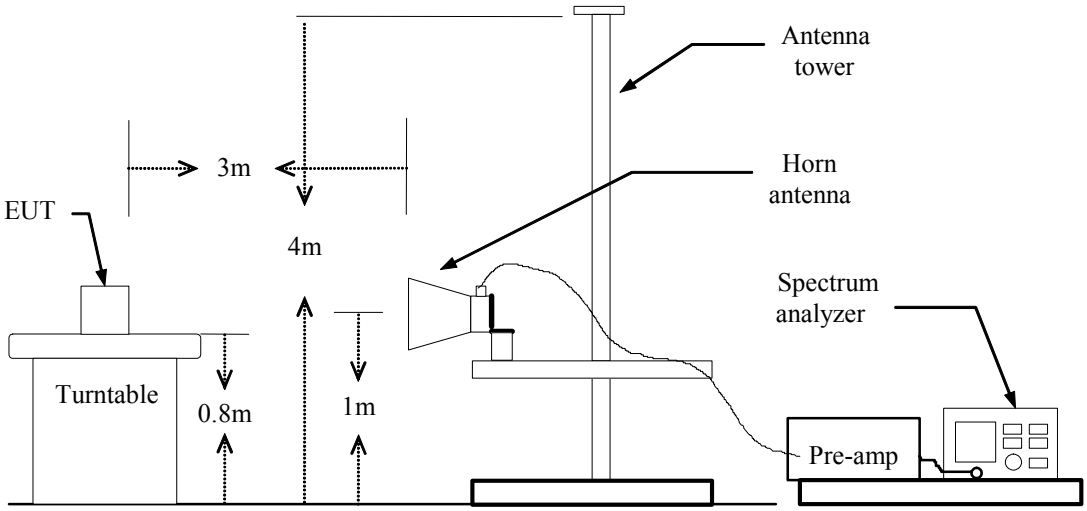
13.3 TEST PROCEDURES

The EUT is placed on a turntable, which is 0.8m above the ground plane. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

Peak: RBW=VBW=1MHz / Sweep=AUTO

Repeat the procedures until the peak versus polarization are measured.

13.4 TEST SETUP



13.5 TEST RESULTS

PASS

Test Data

IEEE 802.11b mode

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs Peak (dBuV/m)	Actual Fs AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
2390.00	V	51.73	39.97	4.92	56.65	44.89	74	54	17.35	9.11
2483.50	V	55.06	46.33	4.92	59.98	51.25	74	54	14.02	2.75
2390.10	H	54.18	45.75	4.92	59.10	50.67	74	54	14.90	3.33
2483.50	H	55.22	46.60	4.92	60.14	51.52	74	54	13.86	2.48

Note : The attenuate 20 below fundamental level is marked in the test data graph.

IEEE 802.11g mode

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs Peak (dBuV/m)	Actual Fs AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
2390.00	V	62.25	44.39	4.92	67.17	49.31	74	54	6.83	4.69
2483.50	V	66.75	46.57	4.92	71.67	51.49	74	54	2.33	2.51
2390.00	H	67.12	46.98	4.92	72.04	51.90	74	54	1.96	2.10
2483.50	H	67.03	46.29	4.92	71.95	51.21	74	54	2.05	2.79

Note : The attenuate 20 below fundamental level is marked in the test data graph.

Test Data

Draft 802.11n Standard-20 MHz

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs Peak (dBuV/m)	Actual Fs AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
2390.00	V	62.88	44.40	4.92	67.80	49.32	74	54	6.20	4.68
2483.50	V	67.45	45.96	4.92	72.37	50.88	74	54	1.63	3.12
2390.00	H	66.18	46.85	4.92	71.10	51.77	74	54	2.90	2.23
2483.50	H	66.99	45.62	4.92	71.91	50.54	74	54	2.09	3.46

Note : The attenuate 20 below fundamental level is marked in the test data graph.

Draft 802.11n Wide-40 MHz

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs Peak (dBuV/m)	Actual Fs AV (dBuV/m)	Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Peak Margin (dB)	AV Margin (dB)
2390.00	V	61.97	44.44	4.92	66.89	49.36	74	54	7.11	4.64
2483.50	V	64.13	46.25	4.92	69.05	51.17	74	54	4.95	2.83
2390.00	H	66.66	47.12	4.92	71.58	52.04	74	54	2.42	1.96
2483.50	H	65.38	47.28	4.92	70.30	52.20	74	54	3.70	1.80

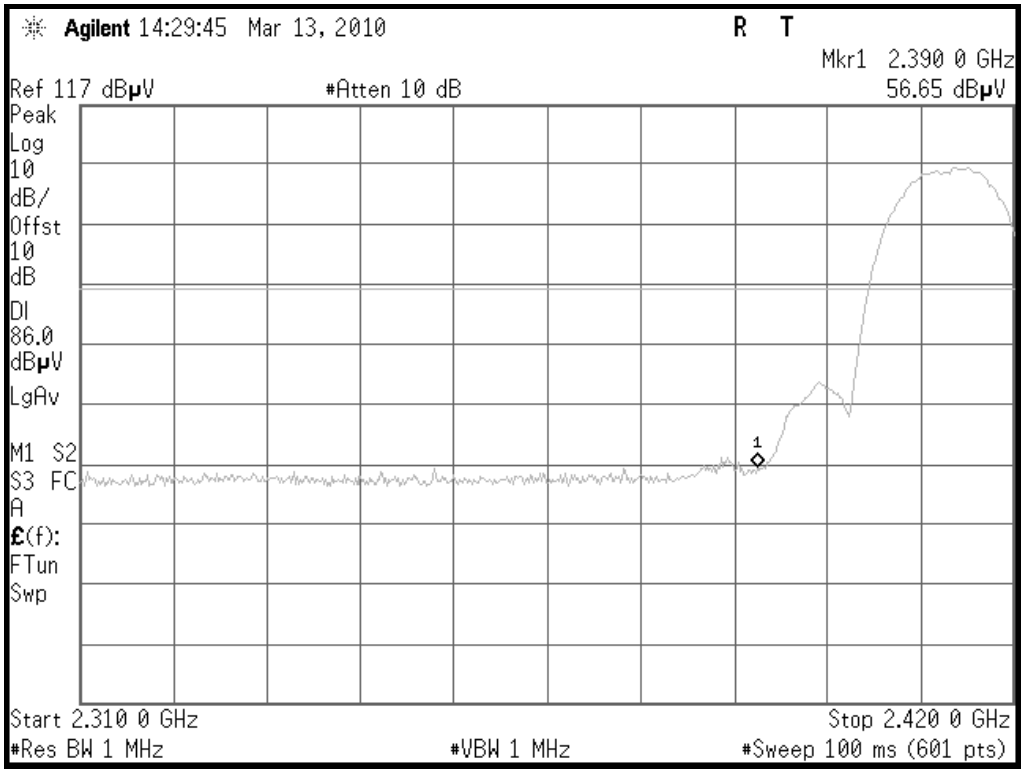
Note : The attenuate 20 below fundamental level is marked in the test data graph.

The test graph please refer to the following page.

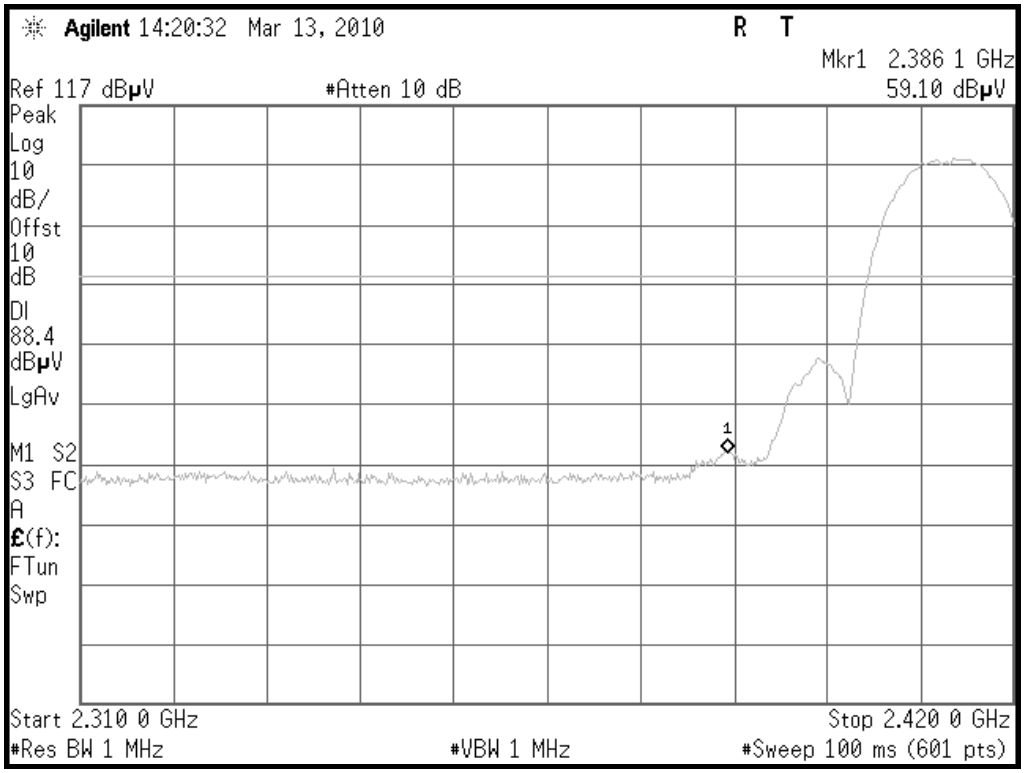
Test Plot (IEEE 802.11b mode)

CH LOW

Detector mode: Peak **Polarity: Vertical**

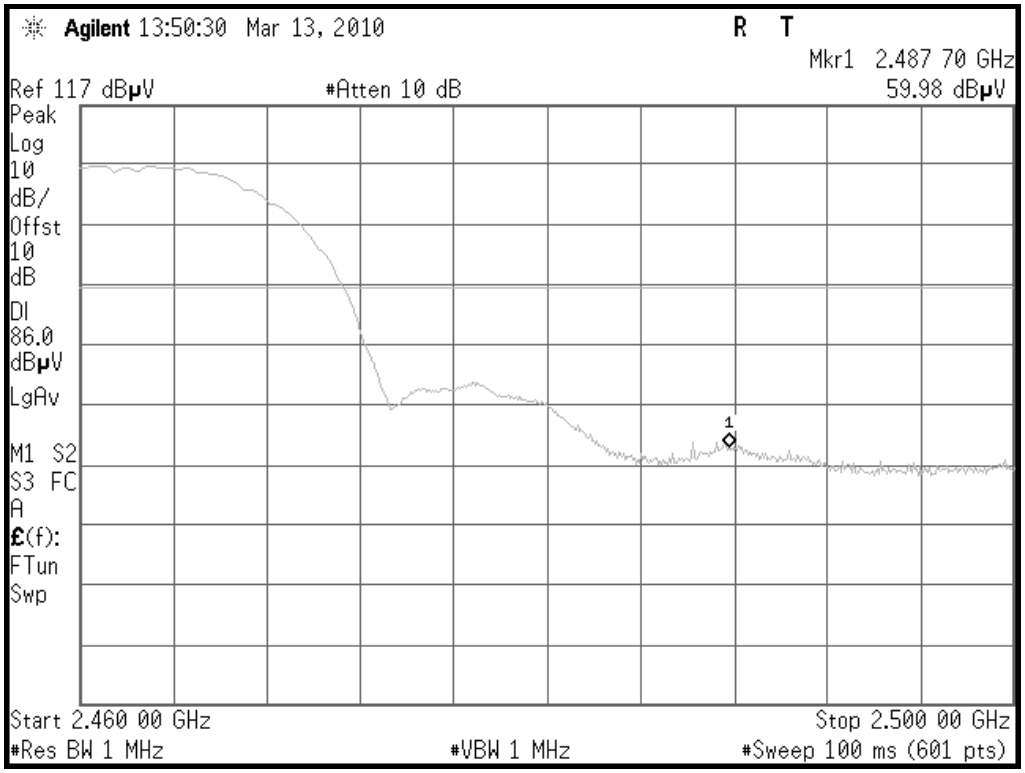


Detector mode: Peak **Polarity: Horizontal**

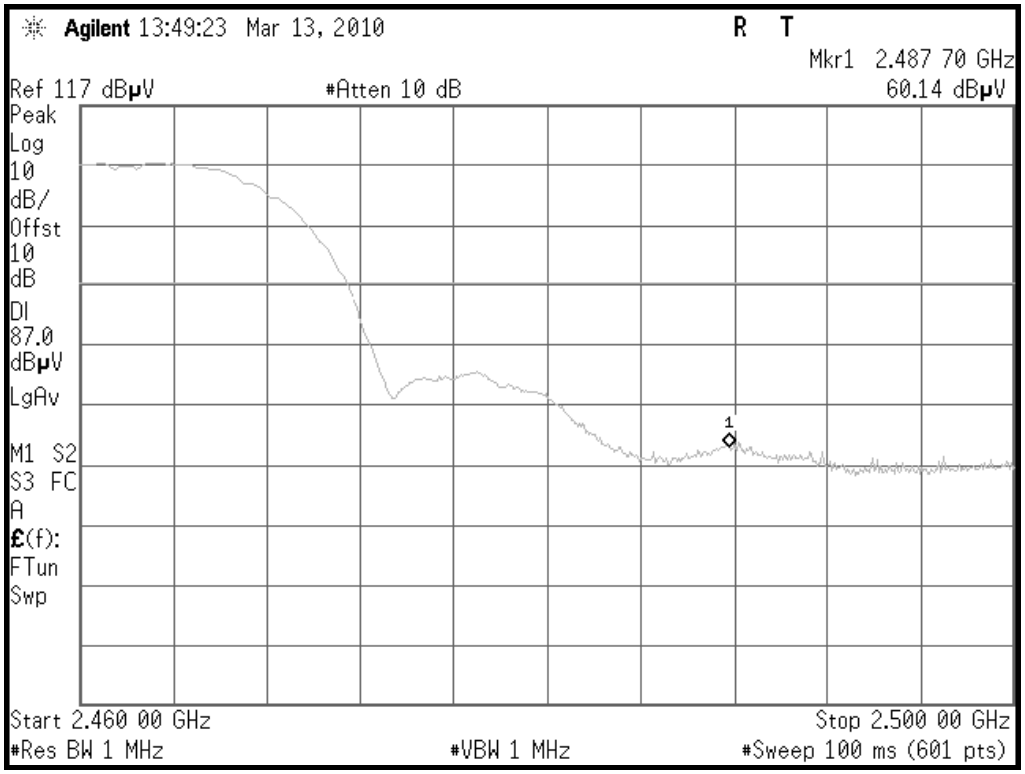


CH HIGH

Detector mode: Peak **Polarity: Vertical**



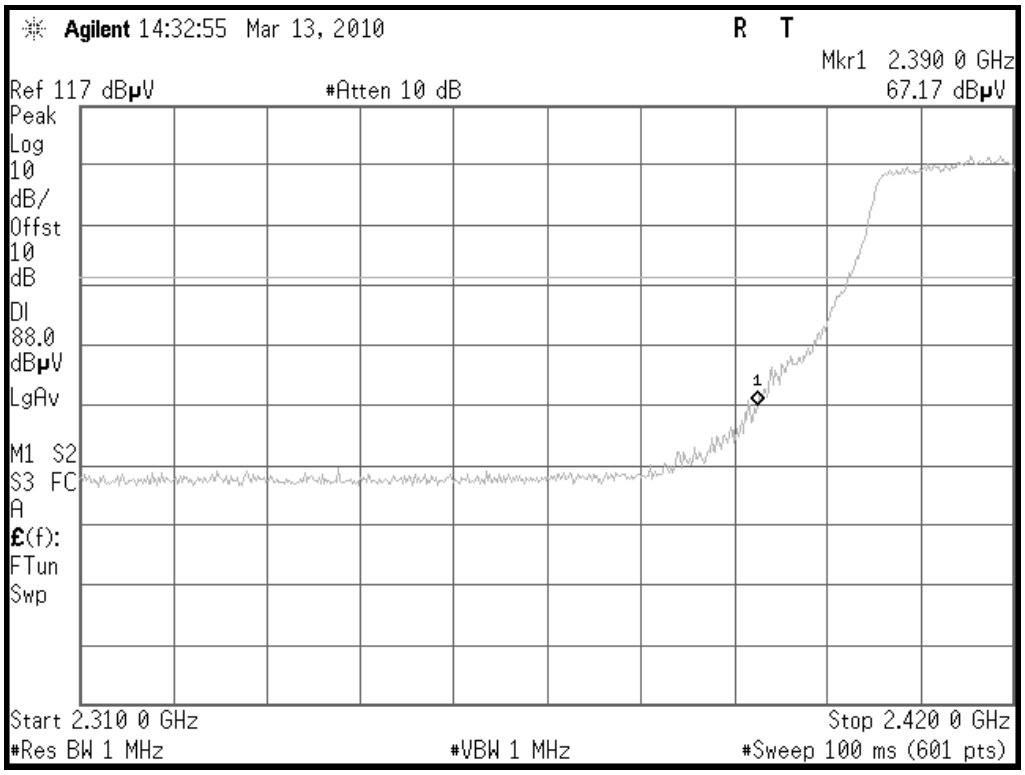
Detector mode: Peak **Polarity: Horizontal**



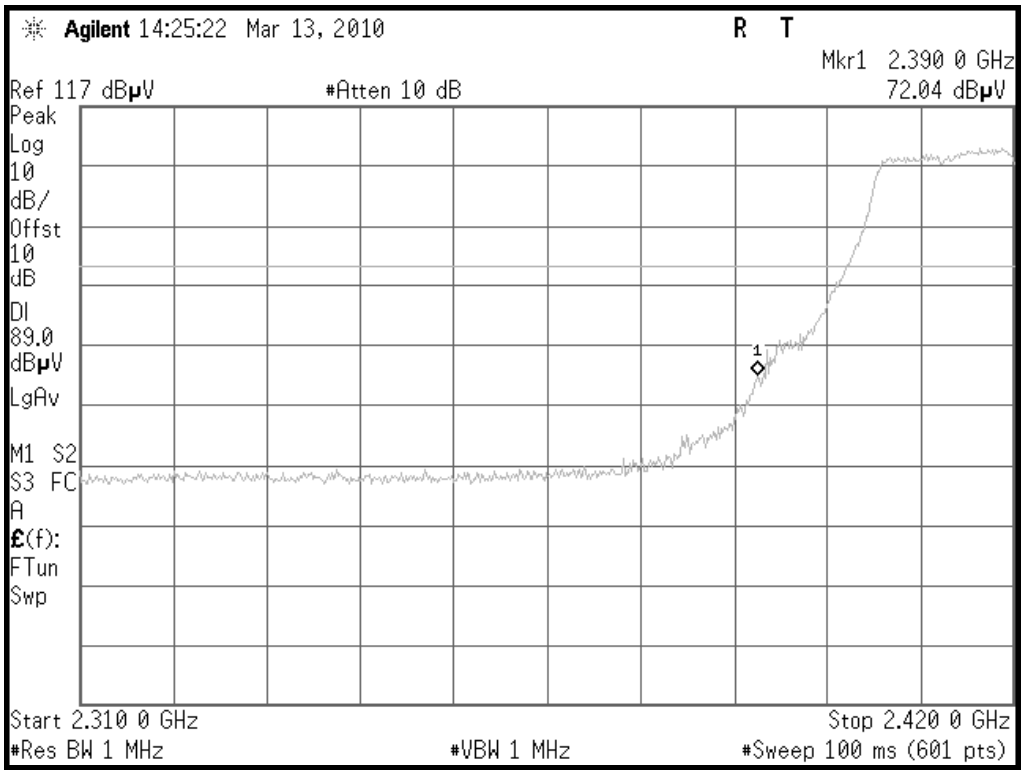
Test Plot (IEEE 802.11g mode)

CH LOW

Detector mode: Peak **Polarity: Vertical**

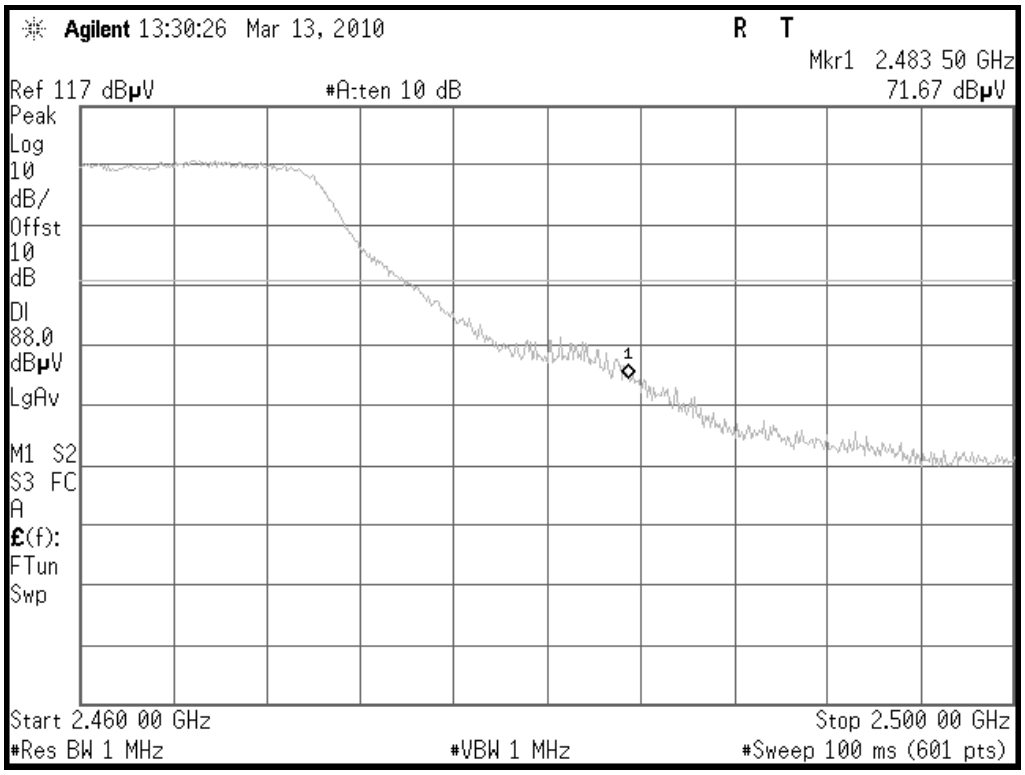


Detector mode: Peak **Polarity: Horizontal**

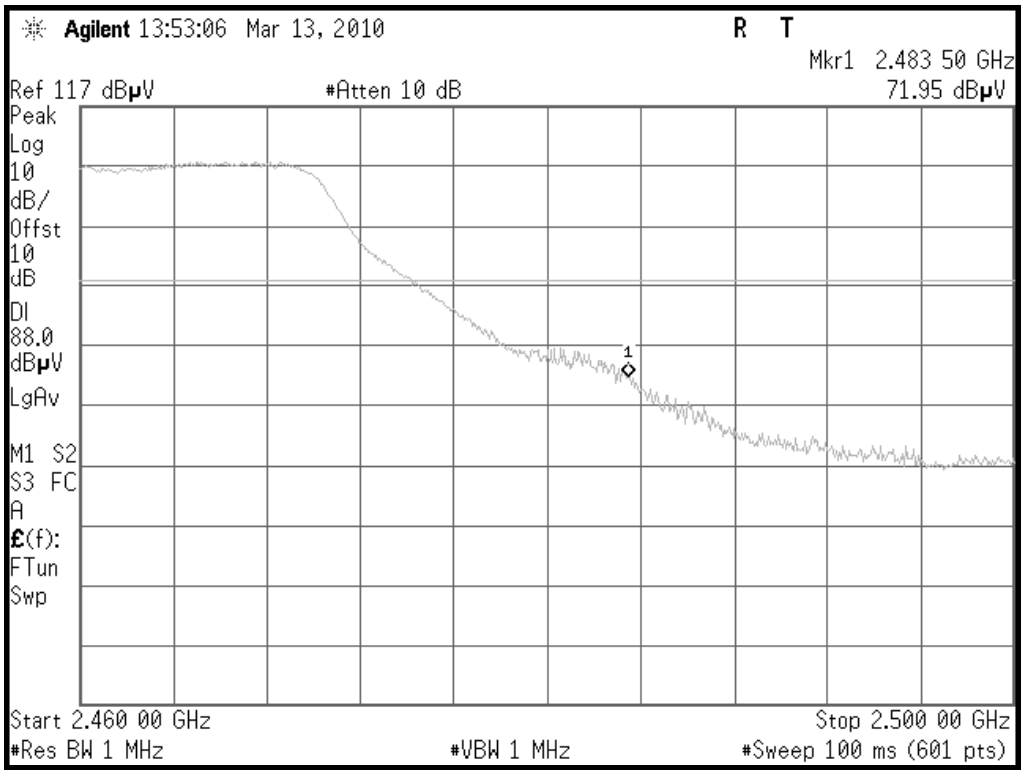


CH HIGH

Detector mode: Peak **Polarity: Vertical**



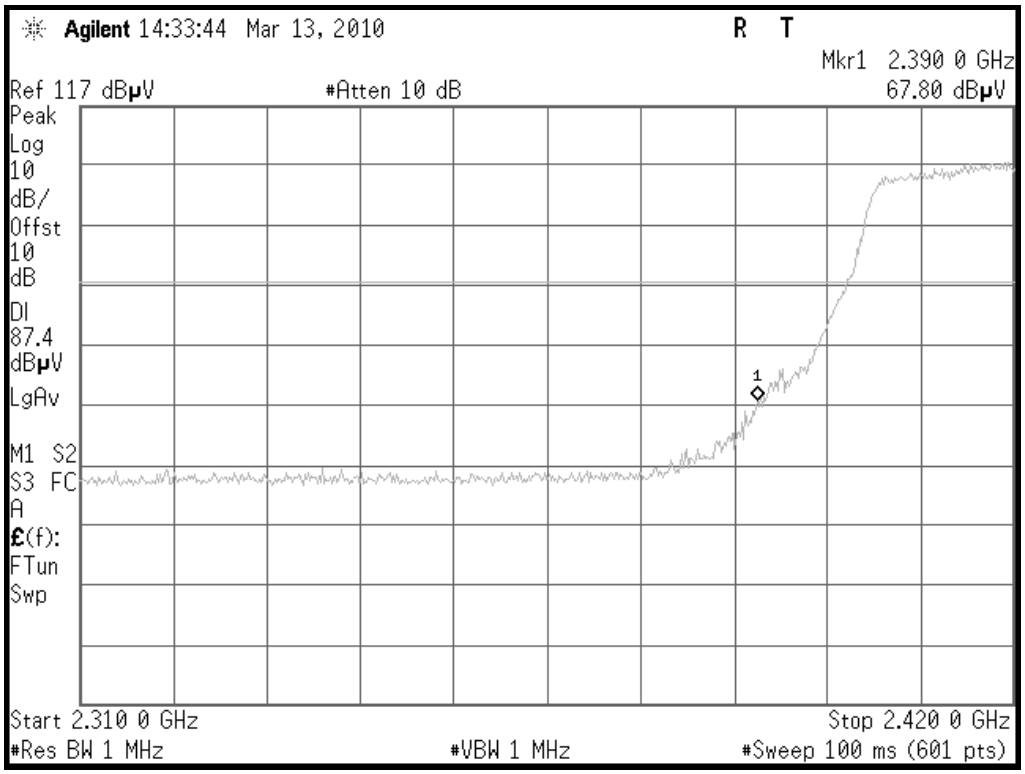
Detector mode: Peak **Polarity: Horizontal**



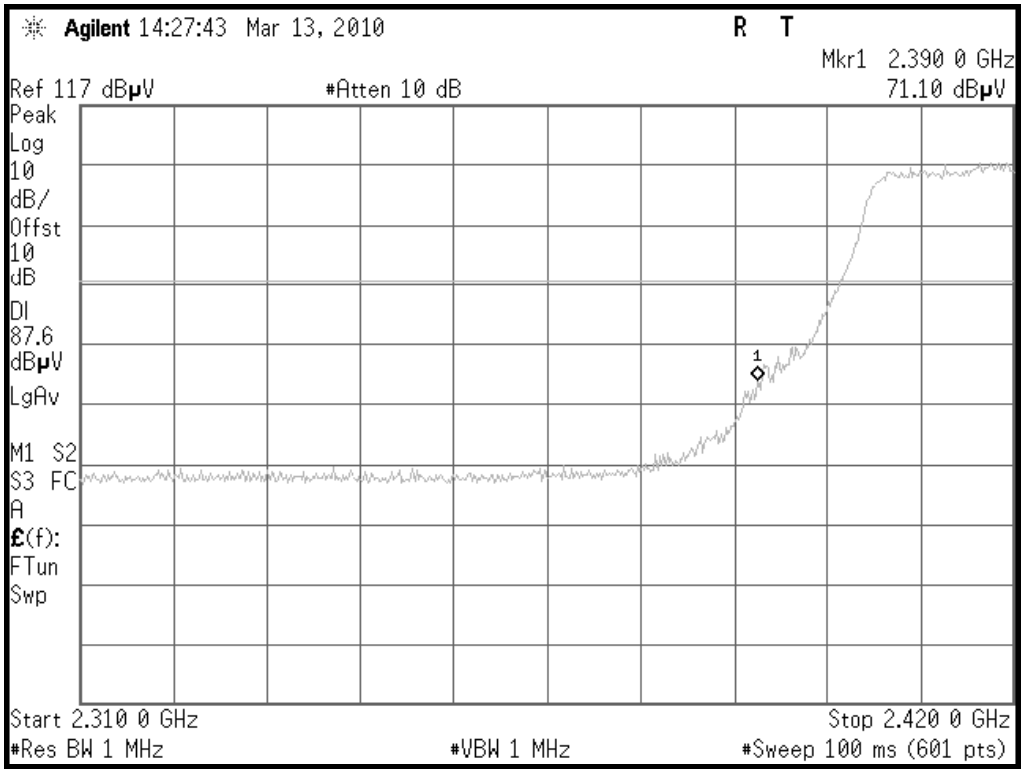
Test Plot (Draft 802.11n Standard-20 MHz)

CH LOW

Detector mode: Peak **Polarity: Vertical**

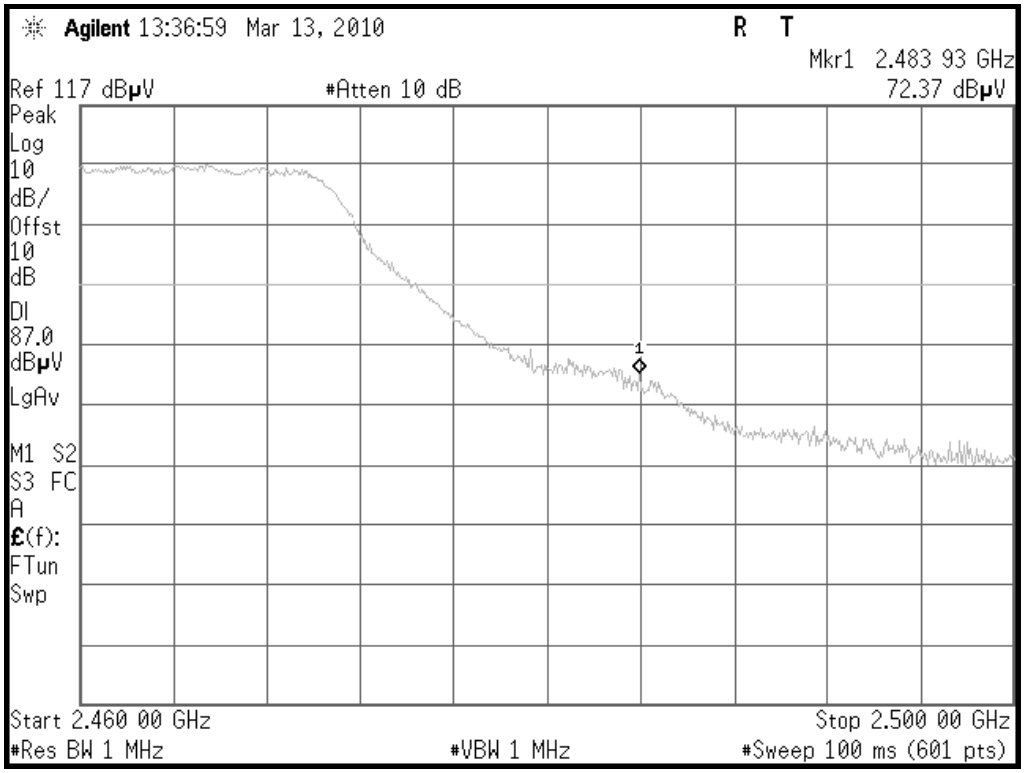


Detector mode: Peak **Polarity: Horizontal**

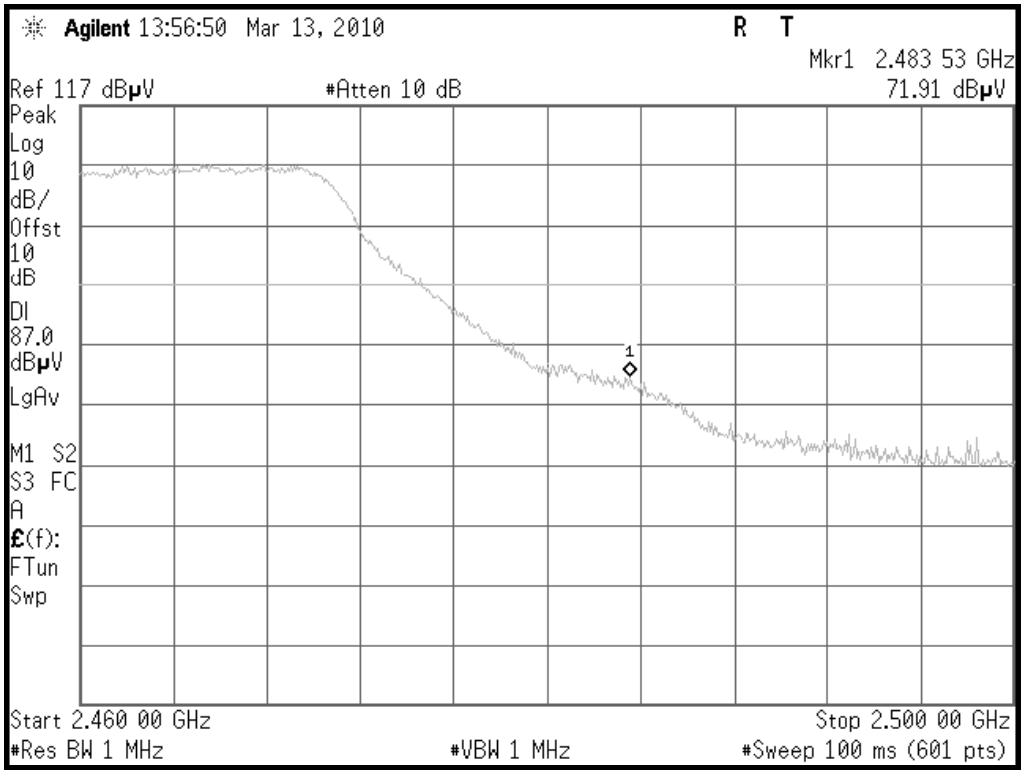


CH HIGH

Detector mode: Peak **Polarity: Vertical**



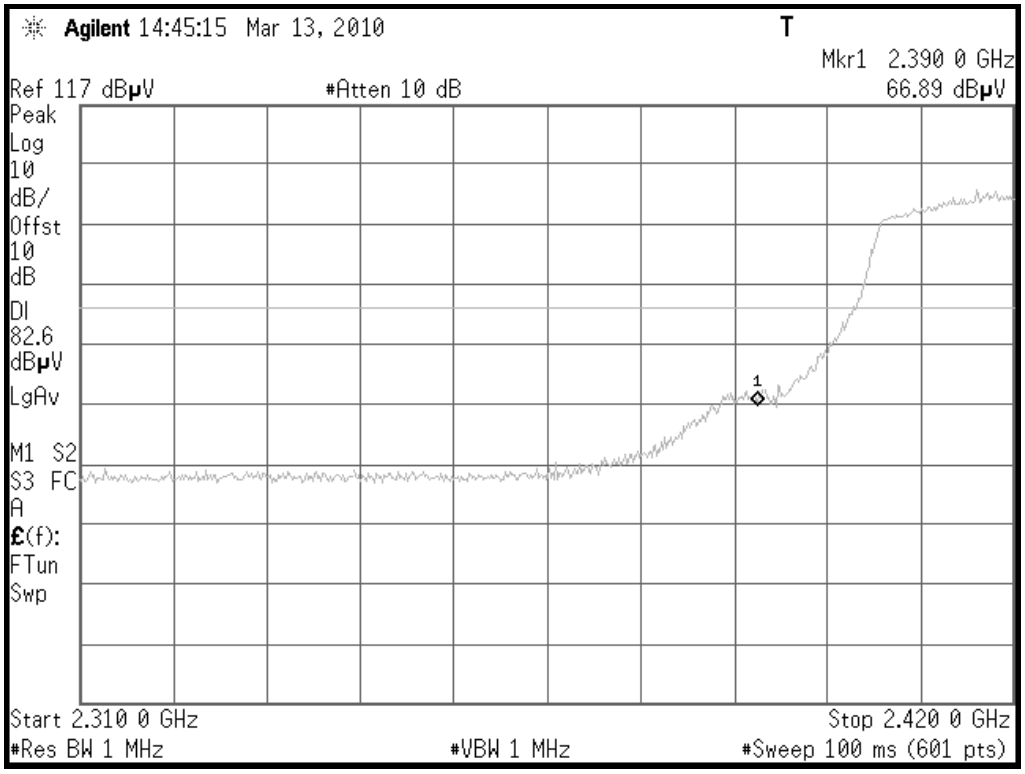
Detector mode: Peak **Polarity: Horizontal**



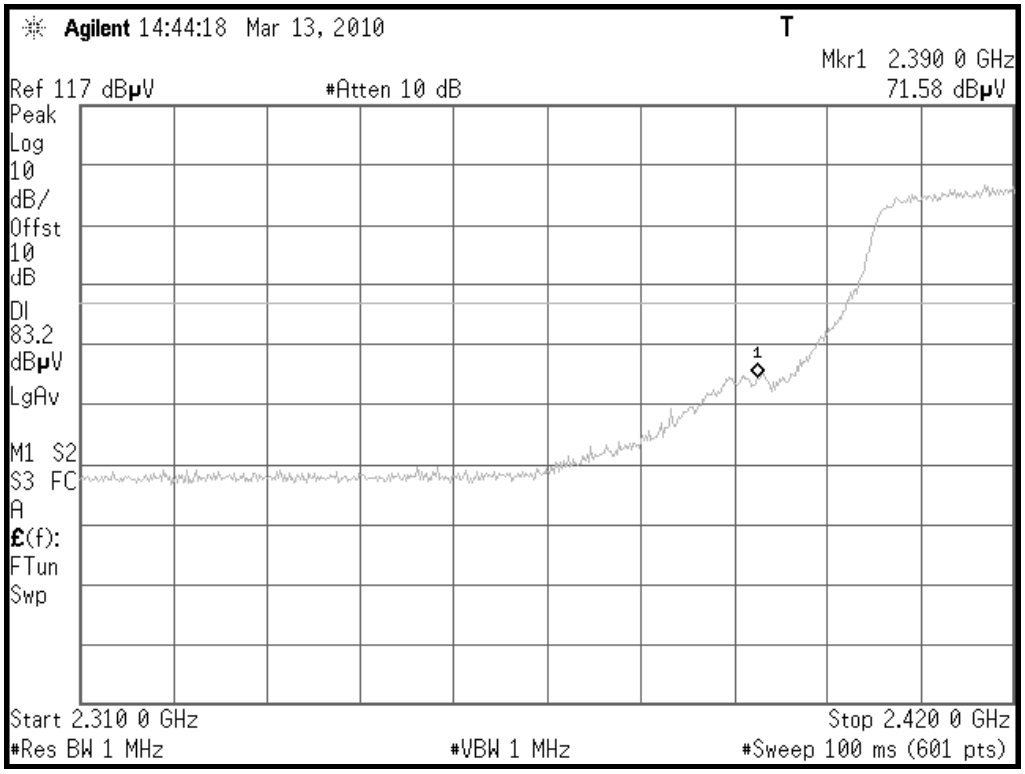
Test Plot (Draft 802.11n Wide-40 MHz)

CH LOW

Detector mode: Peak **Polarity: Vertical**

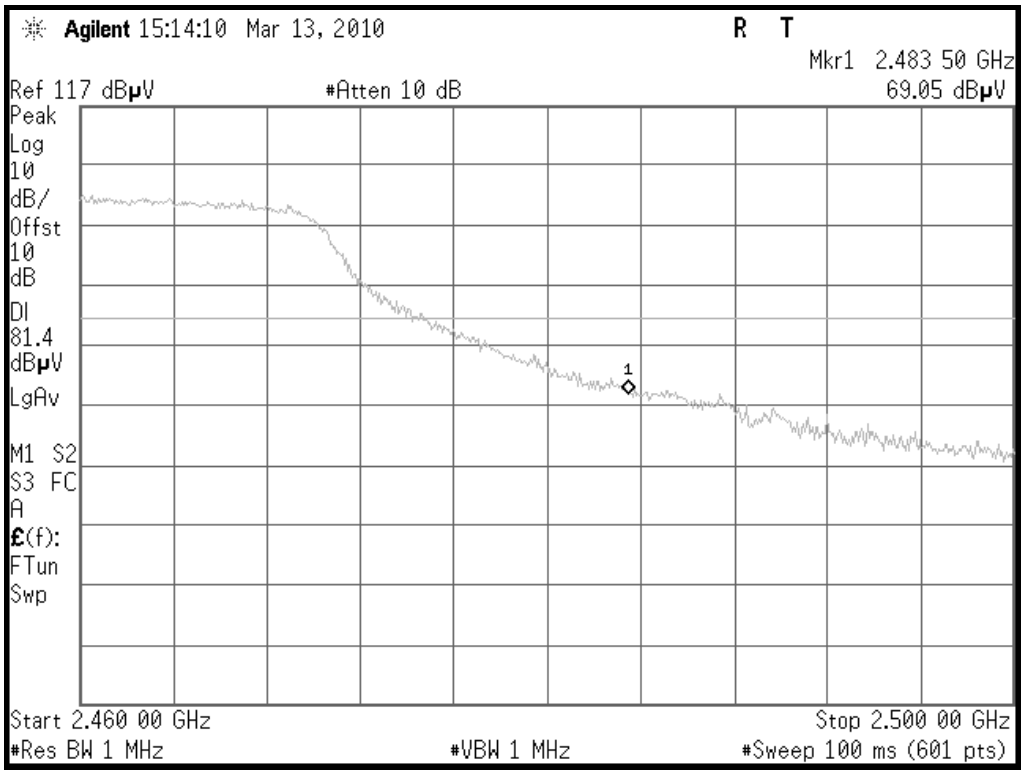


Detector mode: Peak **Polarity: Horizontal**

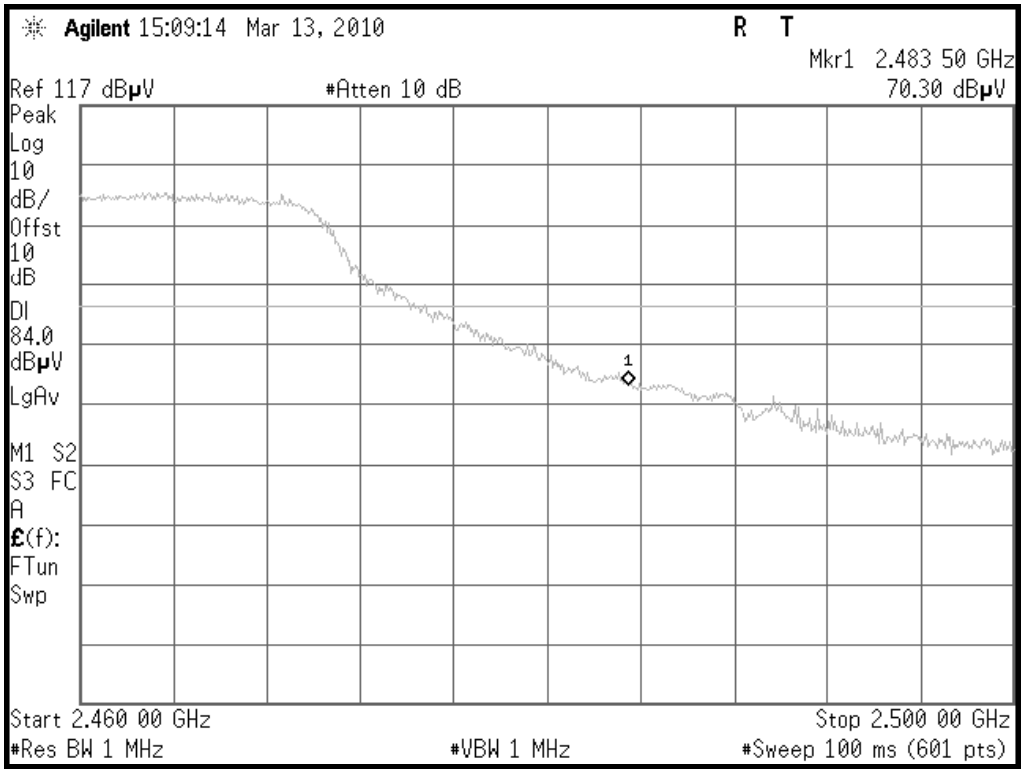


CH HIGH

Detector mode: Peak **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**



14 PEAK POWER SPECTRAL DENSITY MEASUREMENT

14.1 LIMITS

a) 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.

b) The digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

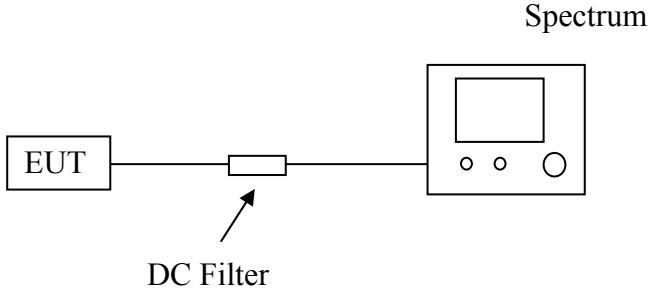
14.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
Spectrum Analyzer	Agilent	E4407B	MY41440292	May 29, 2009	1 Year
RF Cable	Hubersuhne	Sucoflex104	FP2RX2	May 29, 2009	1 Year
DC Filter	MPE	23872C	N/A	May 29, 2009	1 Year

14.3 TEST PROCEDURES

a) Place the EUT on the table and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
b) Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
c) Record the max. reading.
d) Repeat the above procedure until the measurements for all frequencies are completed.

14.4 TEST SETUP



14.5 TEST RESULTS

PASS

The test result please refer to the following page.

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2412	-8.01	8.00	PASS
Mid	2437	-7.56		PASS
High	2462	-6.69		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2412	-4.00	8.00	PASS
Mid	2437	-2.55		PASS
High	2462	-3.10		PASS

Test mode: Draft 802.11n Standard-20 MHz

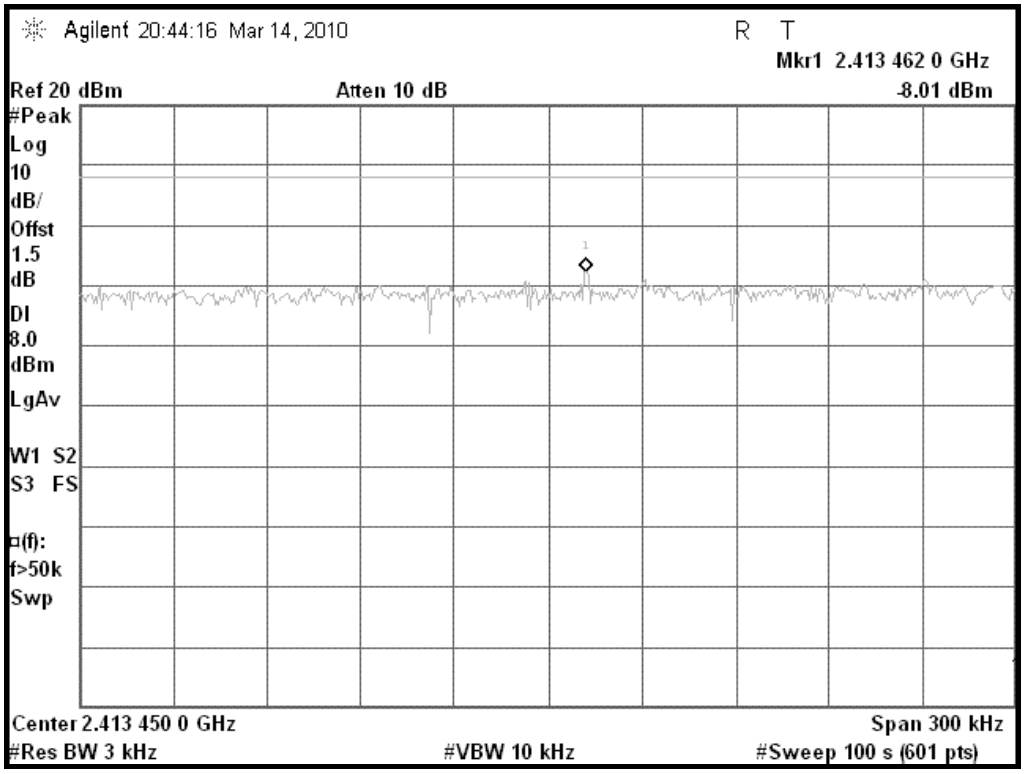
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2412	-12.16	8.00	PASS
Mid	2437	-12.92		PASS
High	2462	-12.92		PASS

Test mode: Draft 802.11n Wide-40 MHz

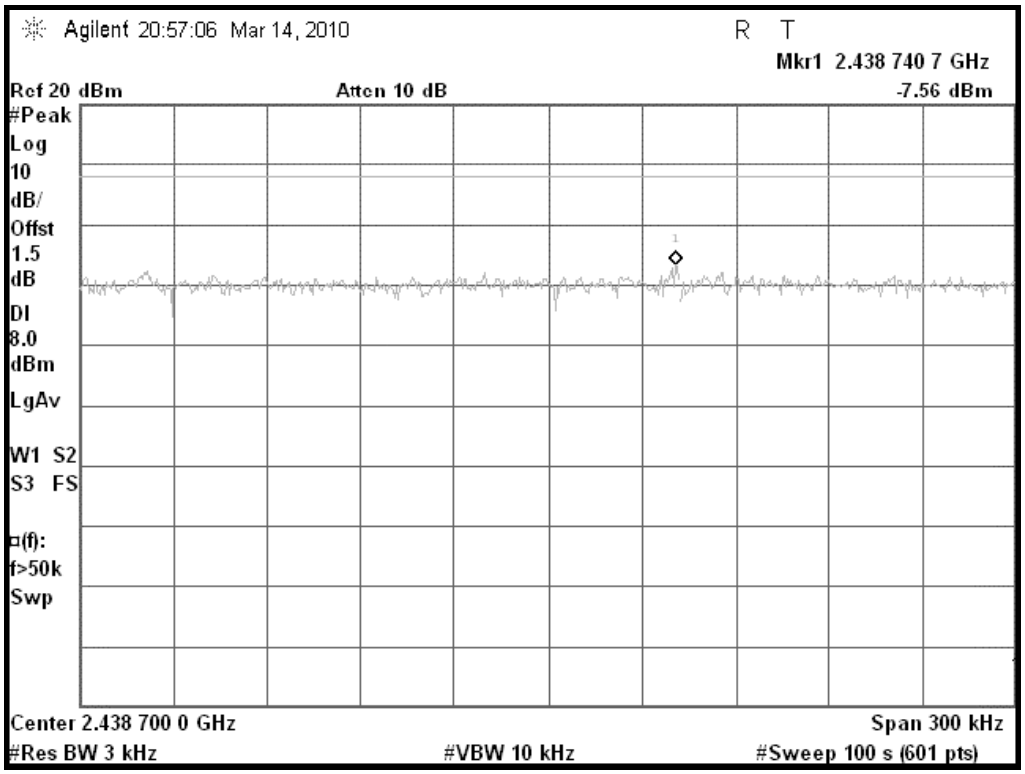
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Test Result
Low	2422	-16.28	8.00	PASS
Mid	2437	-15.29		PASS
High	2452	-17.53		PASS

<u>Test Plot</u> (IEEE 802.11b mode)

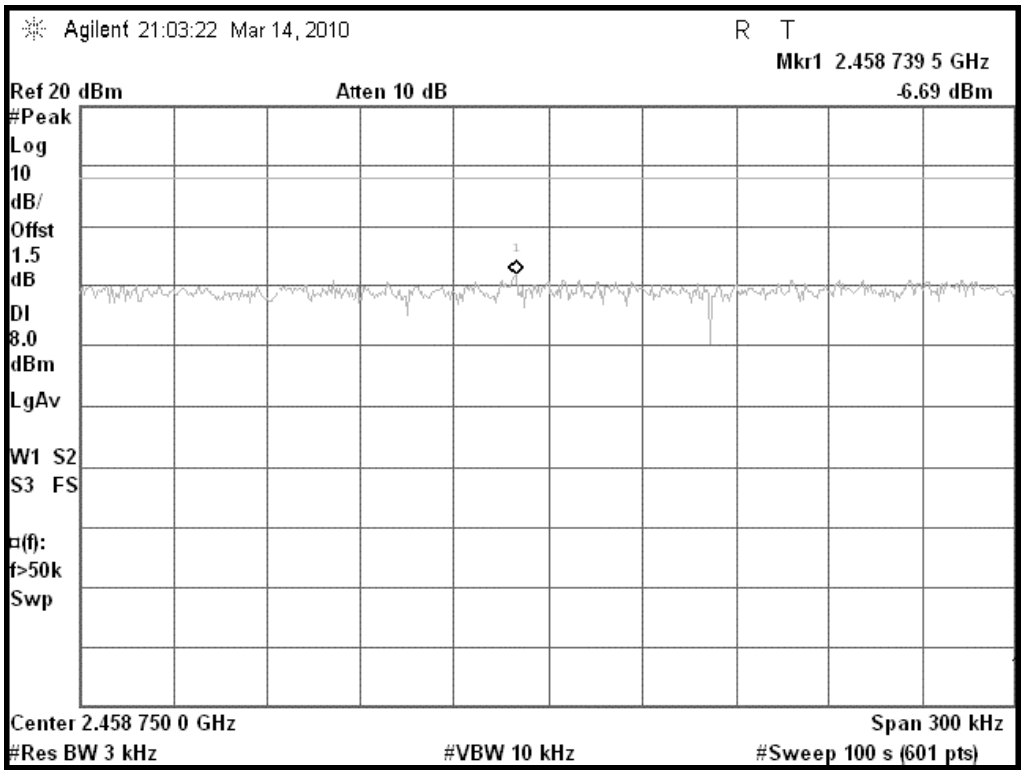
PPSD (CH Low)



PPSD (CH Mid)

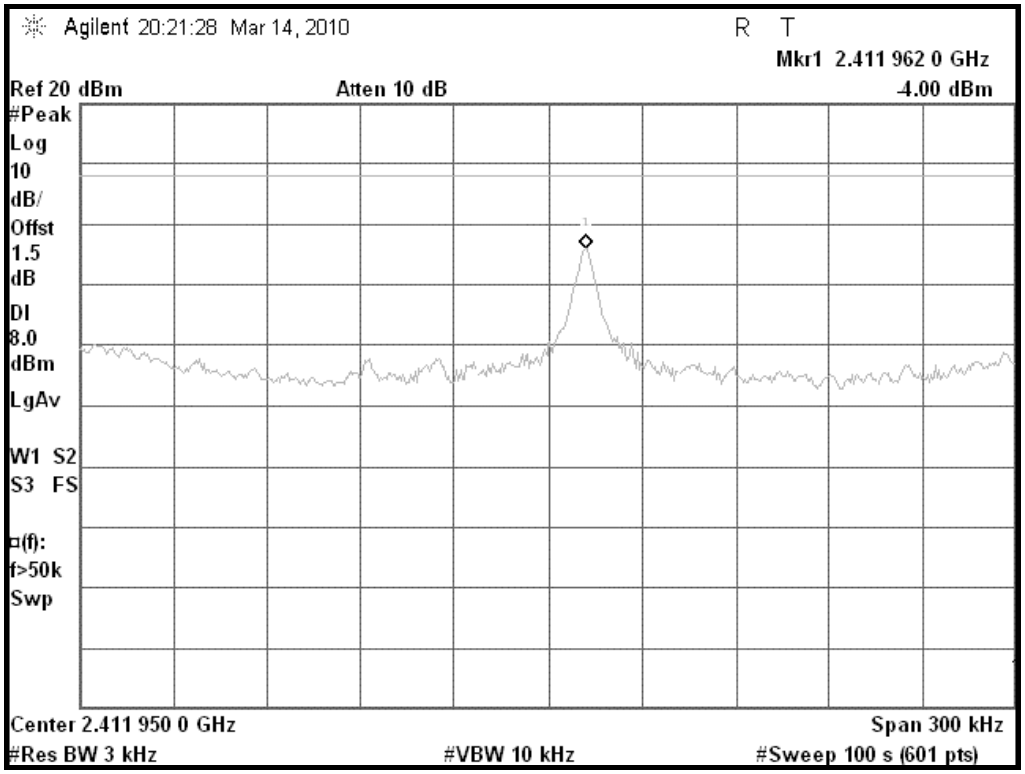


PPSD (CH High)

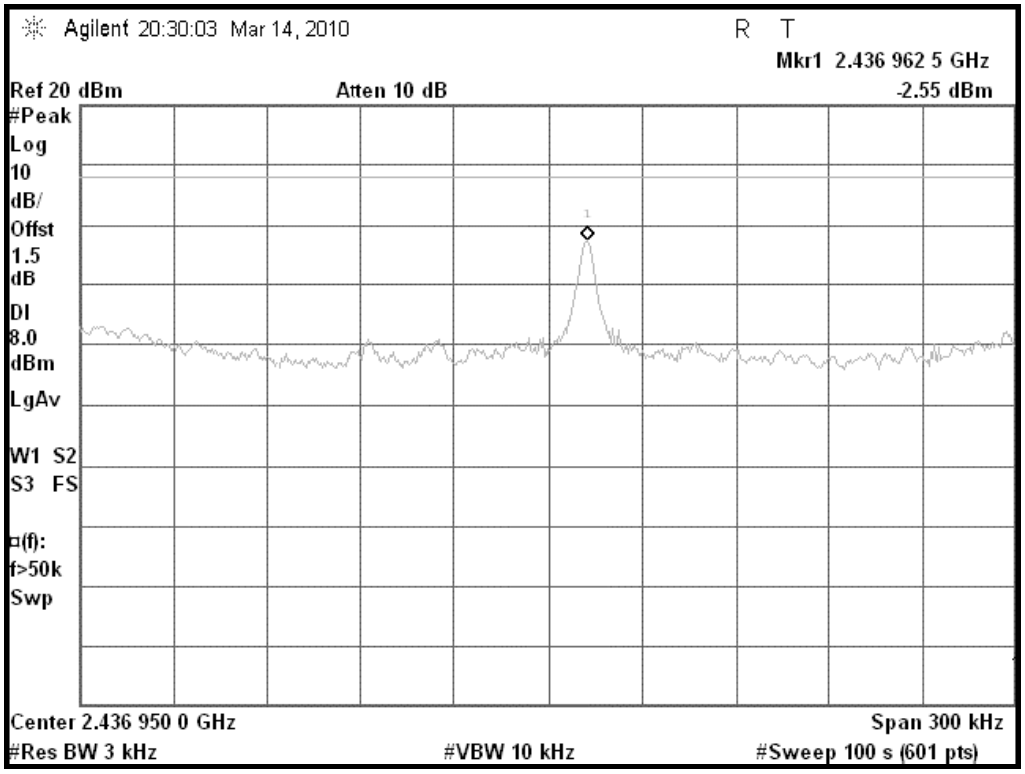


<u>Test Plot</u> (IEEE 802.11g mode)

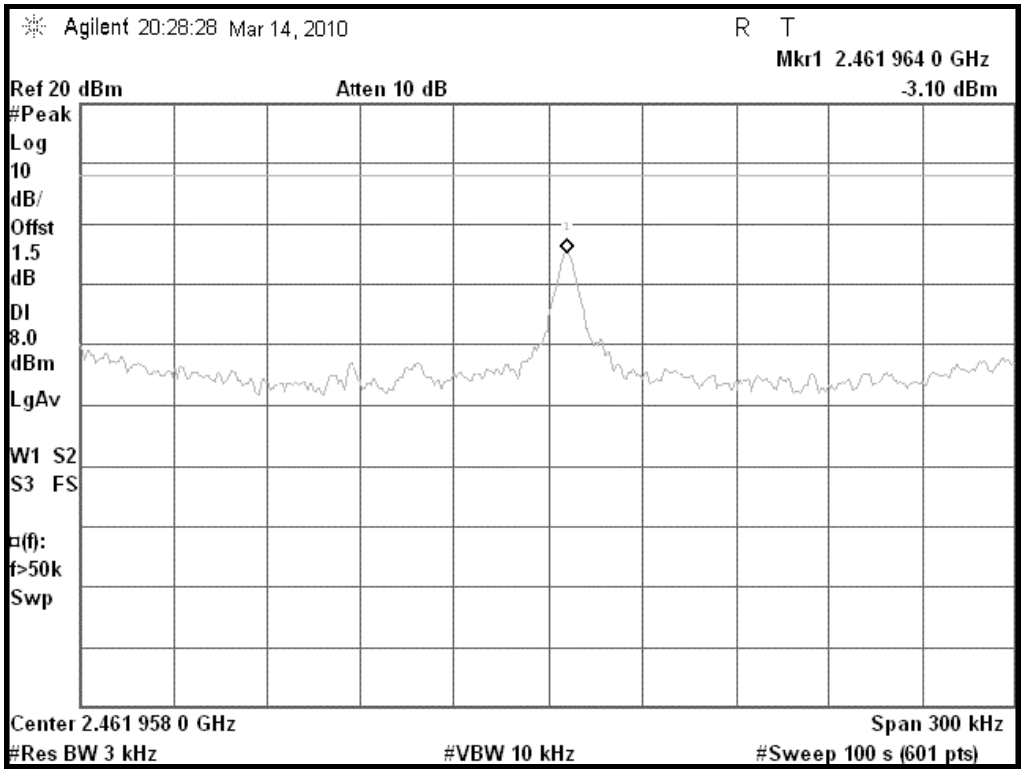
PPSD (CH Low)



PPSD (CH Mid)

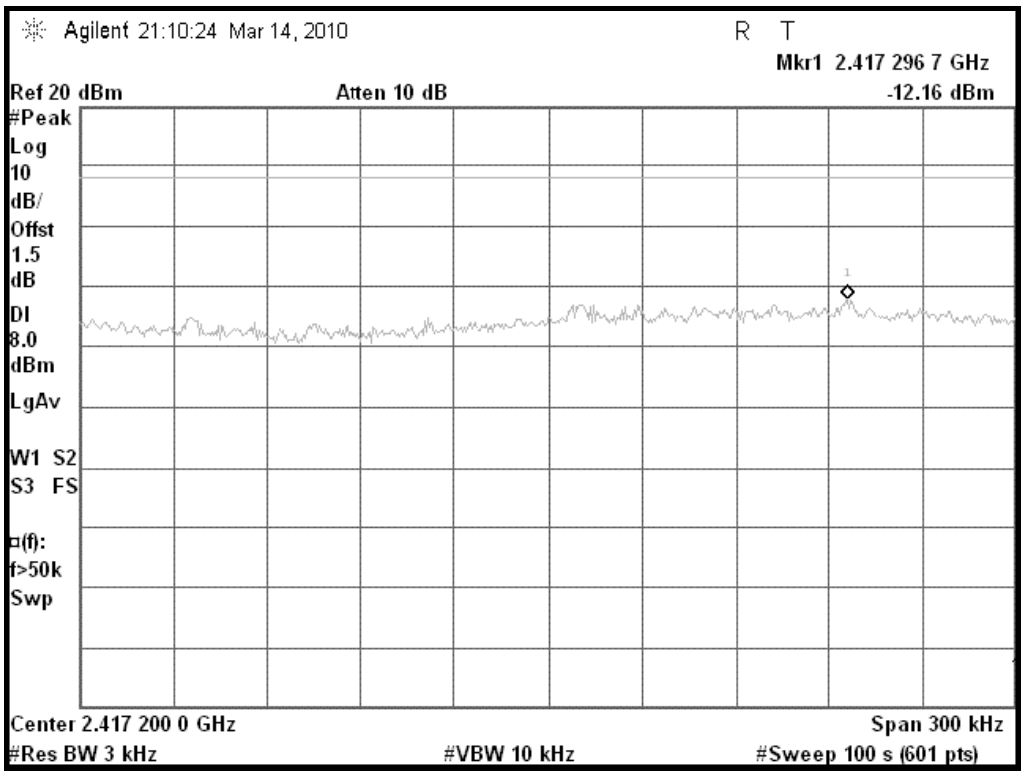


PPSD (CH High)

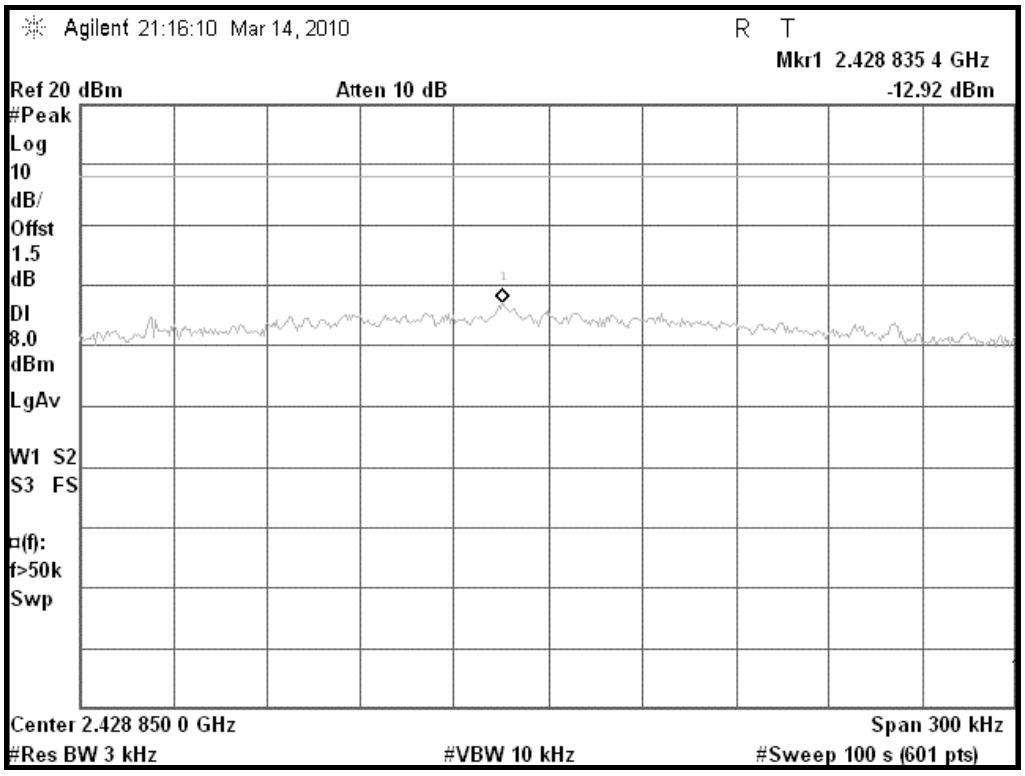


Test Plot (Draft 802.11n Standard-20 MHz)

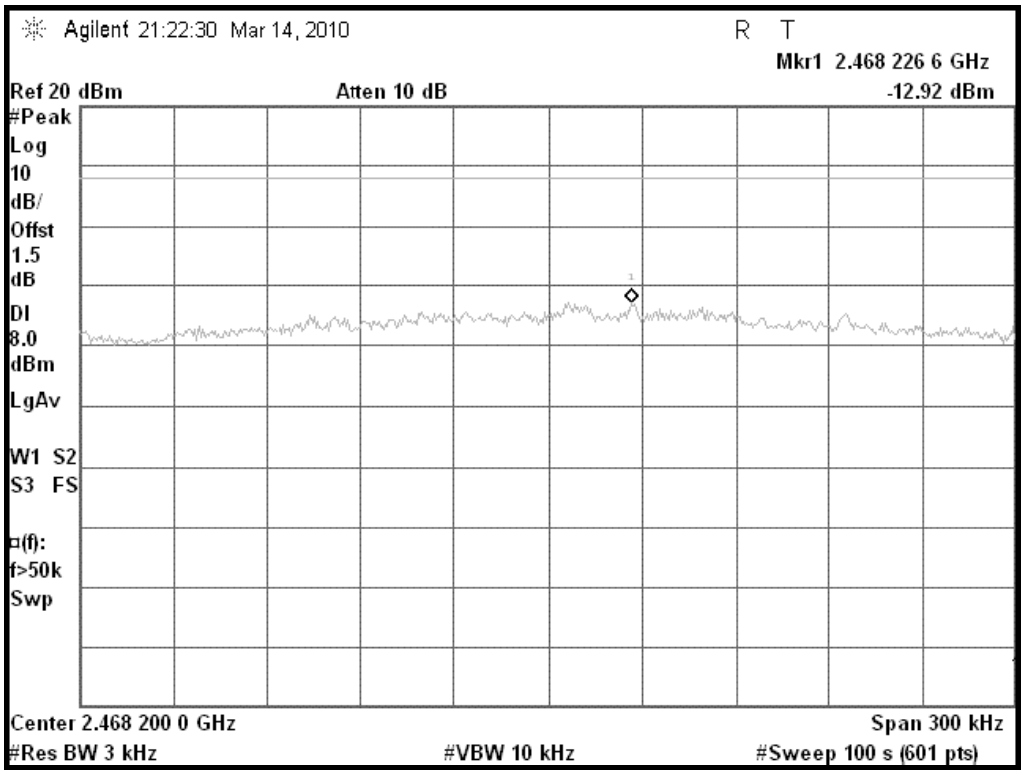
PPSD (CH Low)



PPSD (CH Mid)

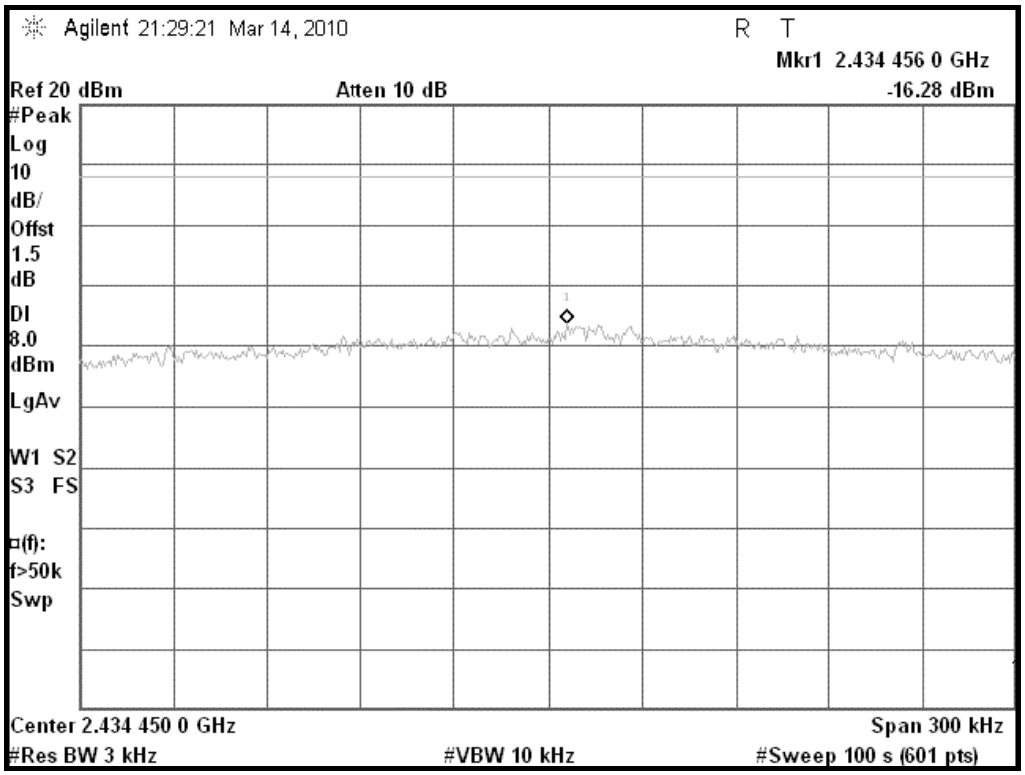


PPSD (CH High)

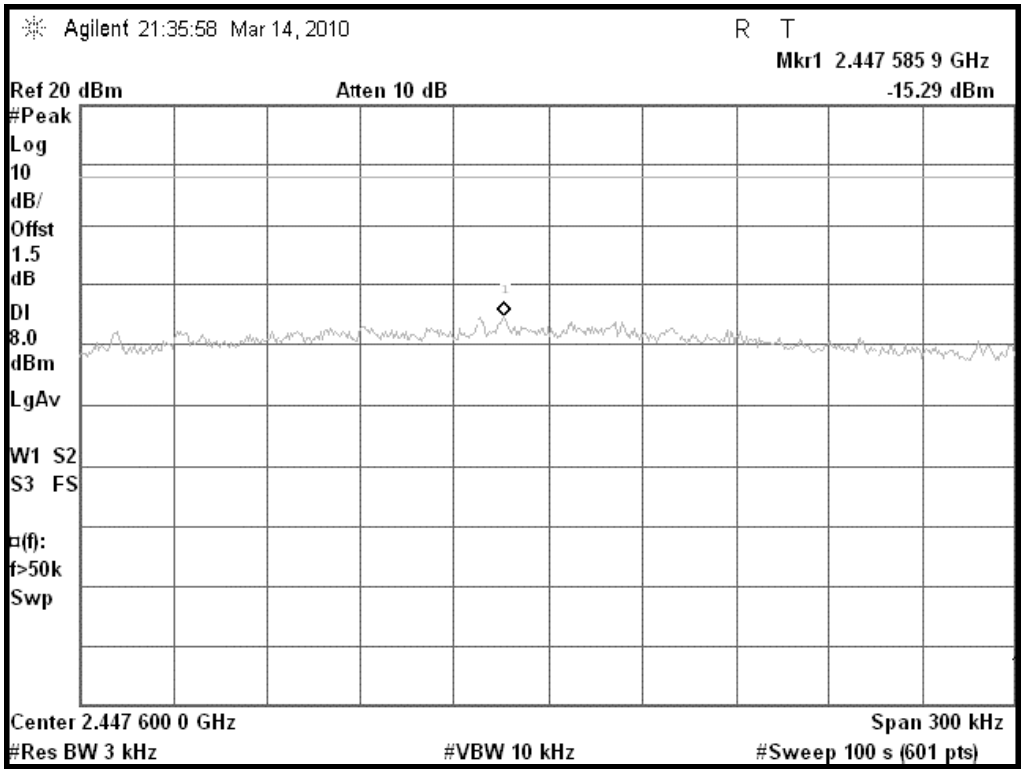


<u>Test Plot</u> (Draft 802.11n Wide-40 MHz)

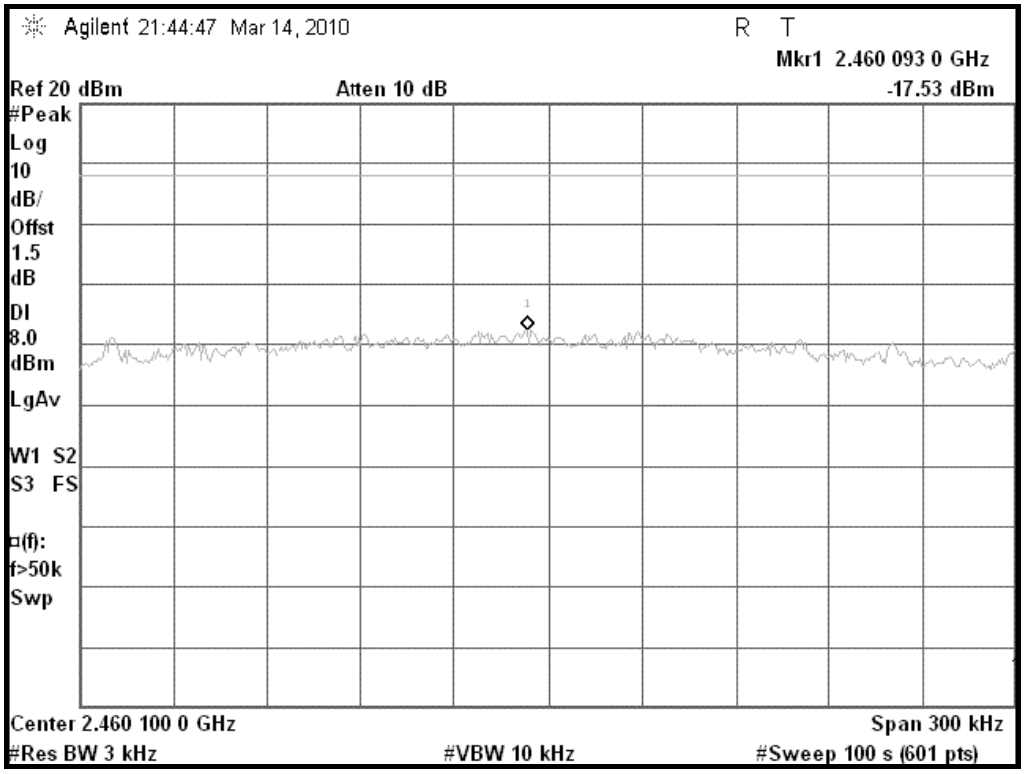
PPSD (CH Low)



PPSD (CH Mid)



PPSD (CH High)



15 ANTENNA REQUIREMENT

15.1 STANDARD APPLICABLE

According to §15.203, Antenna requirement.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the re-sponsible party shall be used with the device. The use of a permanently attached antenna or of an an-tenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be re-placed by the user, but the use of a standard antenna jack or electrical connector is prohibited. This re-quirement does not apply to carrier current devices or to devices operated under the provisions of Sec-tions 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field dis-turbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

And according to §15.247(4)(1), system operating in the 2400-2483.5MHz bands that are used exclu-sively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

15.2 ANTENNA CONNECTED CONSTRUCTION

The directional gains of antenna used for transmitting is 2dBi, and the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

----------END REPORT----------