



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

7" UMPC

Trade Name / Model:
eo / TK71
VANTAGE / TPT700-1

Issued to

Tabletkiosk
2832 Columbia Street Torrance, California 90503

Issued by



Compliance Certification Services Inc.
No. 11, Wu-Gong 6th Rd., Wugu Industrial Park,
Taipei Hsien 248, Taiwan (R.O.C.)
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1. TEST RESULT CERTIFICATION

Applicant: Tabletkiosk
2832 Columbia Street Torrance, California 90503

Equipment Under Test: 7" UMPC

Trade Name / Model: eo / TK71
VANTAGE / TPT700-1

Date of Test: April 29 ~ August 12, 2009

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	No non-compliance noted
Deviation from Applicable Standard	
None	

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.4: 2003** and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Reviewed by:

Rex Lai
Section Manager
Compliance Certification Services Inc.

Gina Lo
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	7" UMPC
Trade Name / Model	eo / TK71 VANTAGE / TPT700-1
Model Discrepancy	All the specification and layout are identical except they come with different model numbers for marketing purposes.
Power Supply	1. VDC from Power Adapter HIPRO / HP- A0502R3D I/P: 100-240V, 2.4A, 50-60Hz O/P: 12V, 4.16A 2. VDC from Battery a) Model: TK71-2CEL-P Rating: 7.4V, 3200mAh / 23.68Wh b) Model: TK71-4CEL-L Rating: 7.4V, 5200mAh / 38.48W
Frequency Range	IEEE 802.11a mode: 5.745~5.825 GHz IEEE 802.11b/g mode: 2.412~2.462 GHz
Transmit Power	IEEE 802.11a mode: 21.81 dBm draft 802.11n Standard-20 MHz Channel mode: 22.01 dBm draft 802.11n Wide-40 MHz Channel mode: 22.02 dBm IEEE 802.11b mode: 18.19 dBm IEEE 802.11g mode: 22.23 dBm draft 802.11n Standard-20 MHz Channel mode: 21.97 dBm draft 802.11n Wide-40 MHz Channel mode: 22.06 dBm
Modulation Technique	IEEE 802.11a: OFDM (QPSK, BPSK, 16-QAM, 64-QAM) draft 802.11n Standard-20 MHz Channel mode: OFDM (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 Channel mode: OFDM (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) IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps) draft 802.11n Standard-20 MHz Channel mode: OFDM (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 Channel mode: OFDM (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 802.11a mode: 5 Channels draft 802.11n Standard-20 MHz Channel mode : 5 Channels draft 802.11n Wide-40 MHz Channel mode: 2 Channels IEEE 802.11b/g mode: 11 Channels draft 802.11n Standard-20 MHz Channel mode: 11 Channels draft 802.11n Wide-40 MHz Channel mode: 7 Channels
Antenna Specification	Antenna Type: PIFA Antenna Antenna Gain: IEEE 802.11a: 3.56 dBi IEEE 802.11b/g mode: 2.13 dBi

Remark:

1. The sample selected for test was production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **XHF-A7300TK71** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2003 and FCC CFR 47 Part 15.207, 15.209 and 15.247.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003.



3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

- (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



3.5 DESCRIPTION OF TEST MODES

The EUT (model: TK71) had been tested under operating condition.

The EUT is a 1x2 configuration spatial MIMO (1Tx & 2Rx) without beam forming function.

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

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis) and docking mode. The worst emission was found in docking mode for powerline conducted emissions, lie-down position (X axis) for radiation emissions and the worst case was recorded.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

IEEE 802.11a mode:

Channel Low(5745MHz), Channel Mid(5785MHz) and Channel High(5825MHz) with 6Mbps data rate were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode:

Channel Low(5745MHz), Channel Mid(5785MHz) and Channel High(5825MHz) with 6.5Mbps data rate were chosen for full testing.

draft 802.11n Wide-40 MHz Channel mode:

Channel Low(5755MHz) and Channel High(5795MHz) with 13.5Mbps data rate were chosen for full testing.

IEEE 802.11b mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate and cyclic delay diversity were chosen for full testing.

IEEE 802.11g mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate and cyclic delay diversity were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode:

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 mode:

Channel Low (2422MHz), Channel Mid (2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.



4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: Each piece of equipment is scheduled for calibration once a year.

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY43360131	03/05/2010

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	09/10/2009
Test Receiver	Rohde&Schwarz	ESCI	100064	11/29/2009
Switch Controller	TRC	Switch Controller	SC94050010	05/02/2010
4 Port Switch	TRC	4 Port Switch	SC94050020	05/02/2010
Loop Antenna	EMCO	6502	8905/2356	05/28/2010
Horn-Antenna	TRC	HA-0502	06	06/03/2010
Horn-Antenna	TRC	HA-0801	04	06/17/2010
Horn-Antenna	TRC	HA-1201A	01	08/10/2010
Horn-Antenna	TRC	HA-1301A	01	08/10/2010
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/27/2010
Turn Table	Max-Full	MFT-120S	T120S940302	N.C.R.
Antenna Tower	Max-Full	MFA-430	A440940302	N.C.R.
Controller	Max-Full	MF-CM886	CC-C-1F-13	N.C.R.
Site NSA	CCS	N/A	FCC MRA: TW1039 IC: 2324G-1/-2	10/17/2010 11/04/2010
Test S/W	LABVIEW (V 6.1)			

Powerline Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver 9kHz-30MHz	Rohde & Schwarz	ESHS30	828144/003	11/25/2009
Two-Line V-Network 9kHz-30MHz	Schaffner	NNB41	03/10013	06/10/2010
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	04/08/2010
Test S/W	LABVIEW (V 6.1)			



4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/- 2.81
3M Semi Anechoic Chamber / 30MHz ~ 1GHz	+/-3.7046
3M Semi Anechoic Chamber / Above 1GHz	+/-3.0958

Remark: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan

Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.




Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	 FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12.2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method -47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	 Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	 IC 2324G-1 IC 2324G-2



6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1	LCD Monitor	DELL	2407WFPb	CN-0FC255-46633-67 5-22TJS	FCC DoC	Shielded, 1.8m with 2 cores	Unshielded, 1.8m
2	USB Keyboard	DELL	Sk-8115	N/A	FCC DoC	Shielded, 1.8m	N/A
3	USB Keyboard	Compaq	KU-9978	B463AOAGALT097	FCC DoC	Shielded, 1.8m	N/A
4	USB Mouse	HP	MO19UCA	20440964	FCC DoC	Shielded, 1.8m	N/A
5	USB Mouse	Logitech	M-UB48	DZL211137	FCC DoC	Shielded, 1.8m	N/A
6	USB Mouse	Logitech	M-CAA43	LZE03262922	FCC DoC	Shielded, 1.8m	N/A
7	Modem	ACEEX	DM-1414	304012269	IFAXDM1414	Shielded, 1.8m	Unshielded, 1.8m
8	USB 2.0 External HDD	TeraSyS	F12-U	A0100214-2Bq0039	FCC DoC	Shielded, 1.8m	N/A
9	USB 2.0 External HDD	TeraSyS	F12-U	A0100214-31d0014	FCC DoC	Shielded, 1.8m	N/A
10	USB 2.0 External HDD	TeraSyS	F12-U	A0100214-31d0028	FCC DoC	Shielded, 1.8m	N/A
11	USB 2.0 External HDD	TeraSyS	F12-UF(COMBO)	A0100215-42O012	FCC DoC	Shielded, 1.8m	N/A
12	Multimedia Earphone	Labtec	Axis-301	N/A	FCC DoC	Unshielded, 1.8m*2	N/A

Remark:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

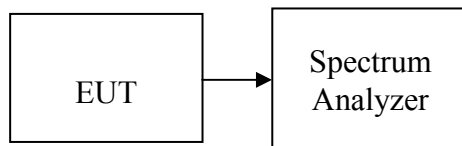
7. FCC PART 15.247 REQUIREMENTS

7.1 6DB BANDWIDTH

LIMIT

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 6dB bandwidth shall be at least 500 kHz.

Test Configuration



TEST PROCEDURE

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 = 100 kHz, VBW = RBW, Span = 50 MHz, Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.



TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	11.17	>500	PASS
Mid	2437	11.00		PASS
High	2462	10.17		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.50	>500	PASS
Mid	2437	16.50		PASS
High	2462	16.50		PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	17.33	>500	PASS
Mid	2437	17.75		PASS
High	2462	17.83		PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode

Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	35.35	>500	PASS
Mid	2437	35.70		PASS
High	2452	35.93		PASS

**Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz**

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Test Result
Low	5745	16.58	>500	PASS
Mid	5785	16.50		PASS
High	5825	16.50		PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	5745	17.67	>500	PASS
Mid	5785	17.75		PASS
High	5825	17.42		PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5755 ~ 5795MHz

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	5755	34.42	>500	PASS
High	5795	35.70		PASS



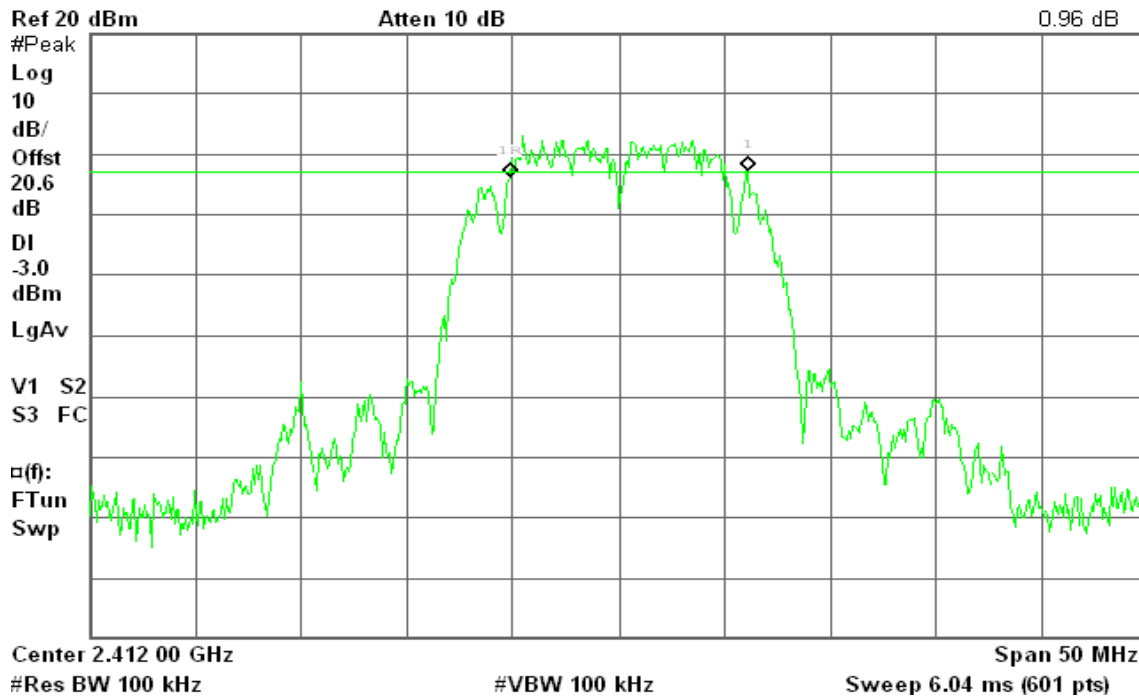
Test Plot

IEEE 802.11b mode

6dB Bandwidth (CH Low)

* Agilent 20:44:08 May 11, 2009

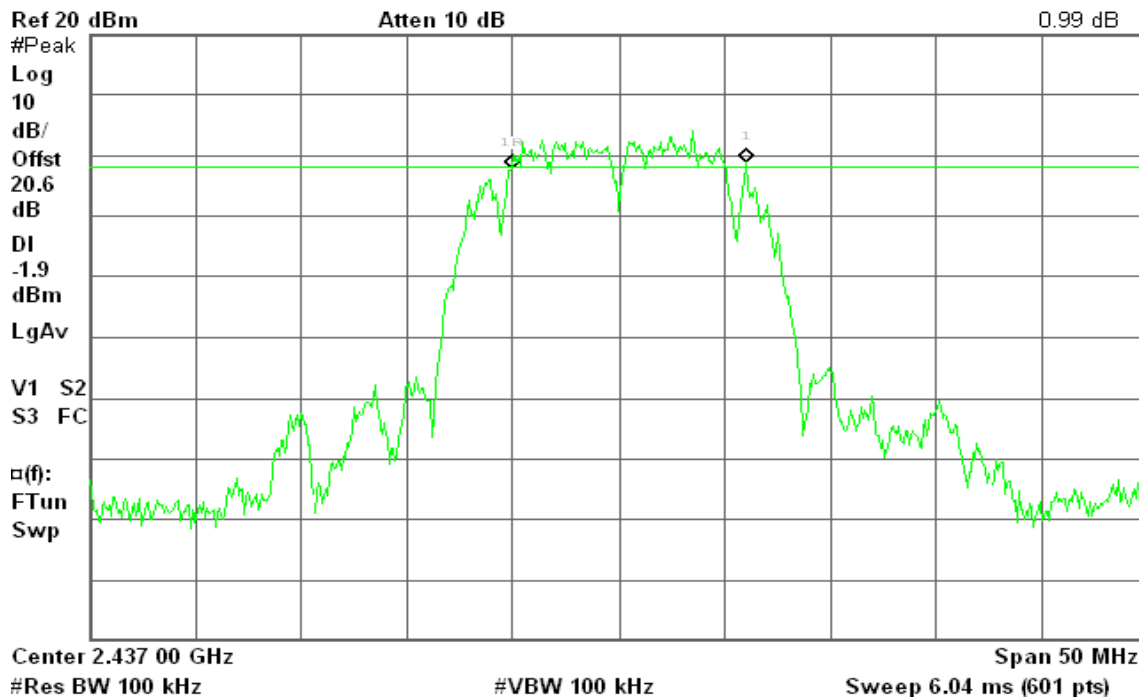
R T

 Δ Mkr1 11.17 MHz
0.96 dB

6dB Bandwidth (CH Mid)

* Agilent 20:56:01 May 11, 2009

R T

 Δ Mkr1 11.00 MHz
0.99 dB

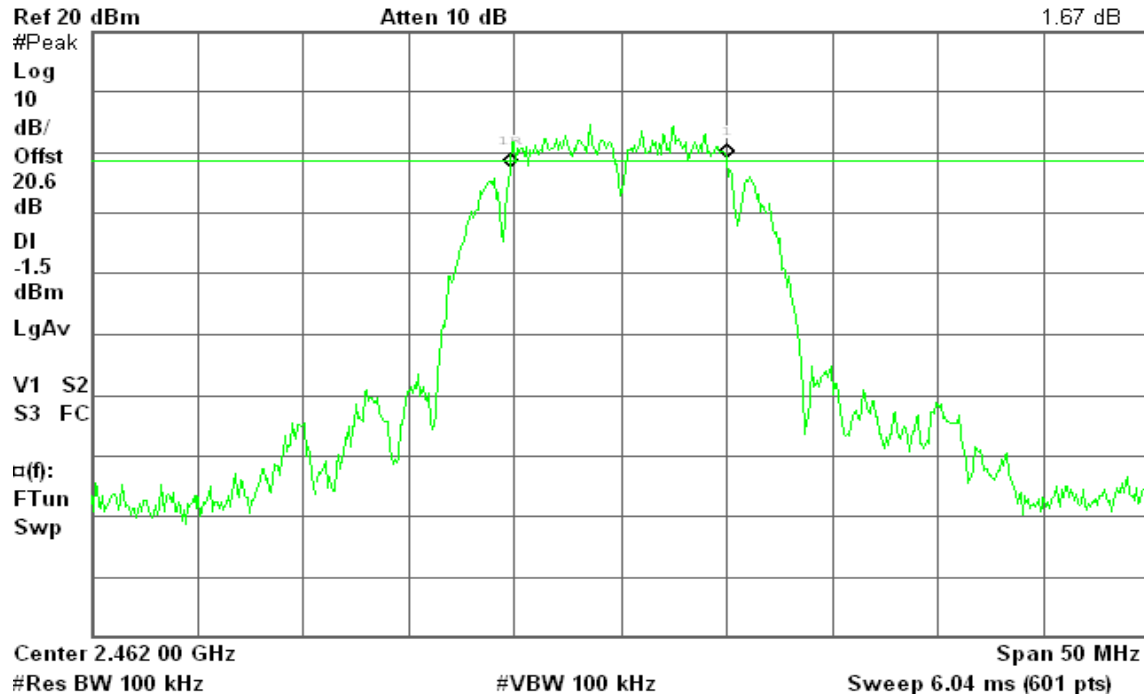
**6dB Bandwidth (CH High)**

* Agilent 21:01:47 May 11, 2009

R T

 Δ Mkr1 10.17 MHz

1.67 dB

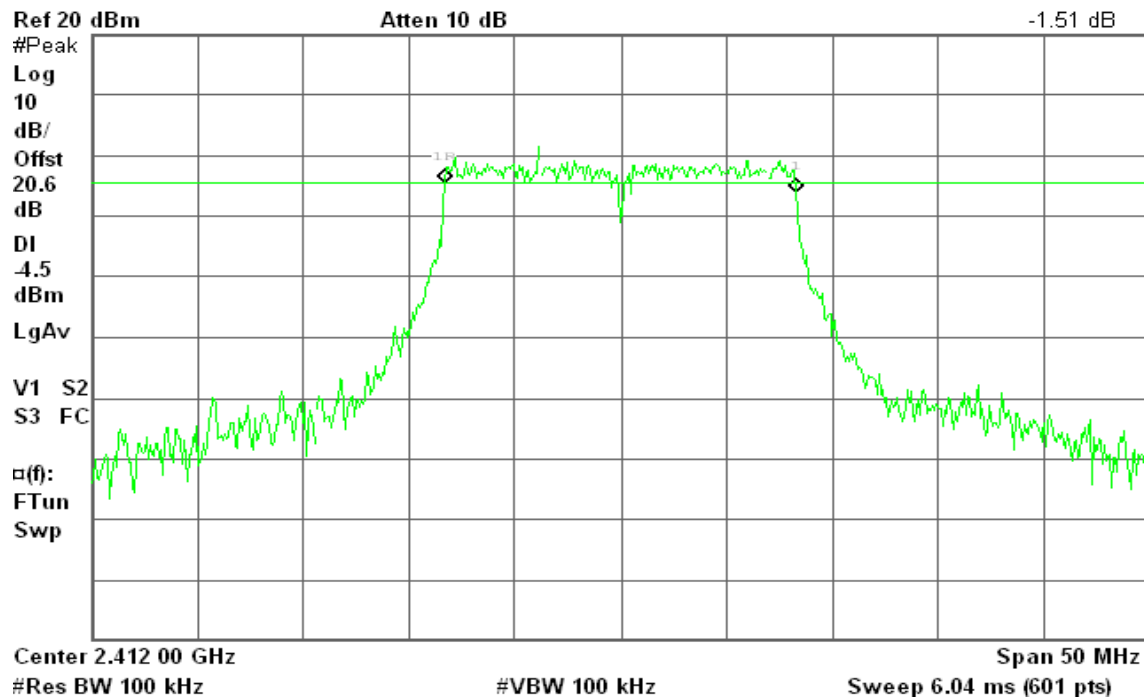
**IEEE 802.11g mode****6dB Bandwidth (CH Low)**

* Agilent 21:39:09 May 11, 2009

R T

 Δ Mkr1 16.50 MHz

-1.51 dB



**6dB Bandwidth (CH Mid)**

* Agilent 21:33:03 May 11, 2009

R T

 Δ Mkr1 16.50 MHz

-0.19 dB

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

20.6

dB

DI

-5.3

dBm

LgAv

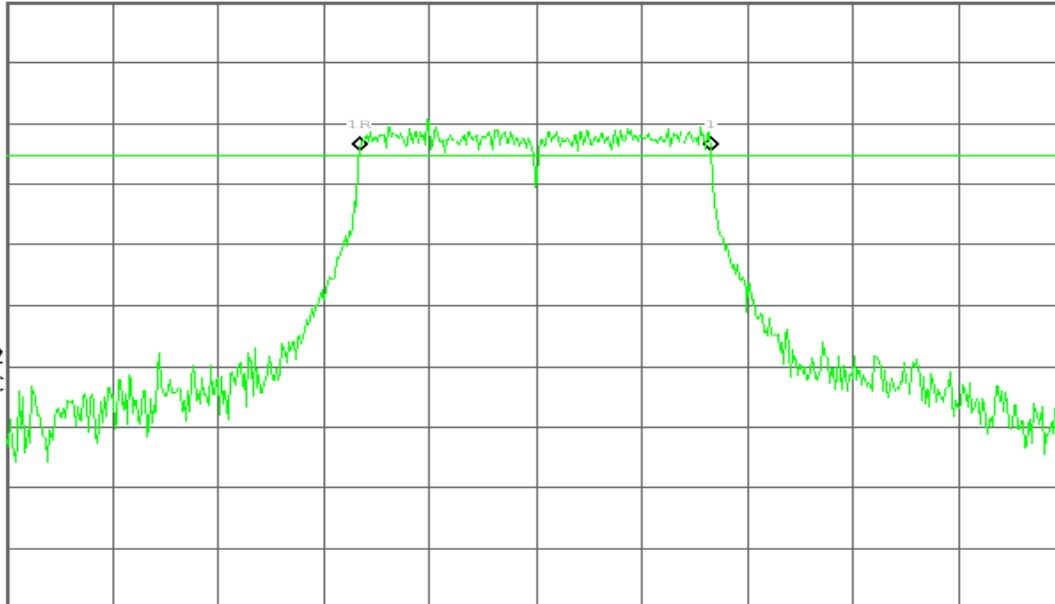
V1 S2

S3 FC

 $\square(f)$:

FTun

Swp



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

6dB Bandwidth (CH High)

* Agilent 21:26:37 May 11, 2009

R T

 Δ Mkr1 16.50 MHz

-0.48 dB

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

20.6

dB

DI

-7.8

dBm

LgAv

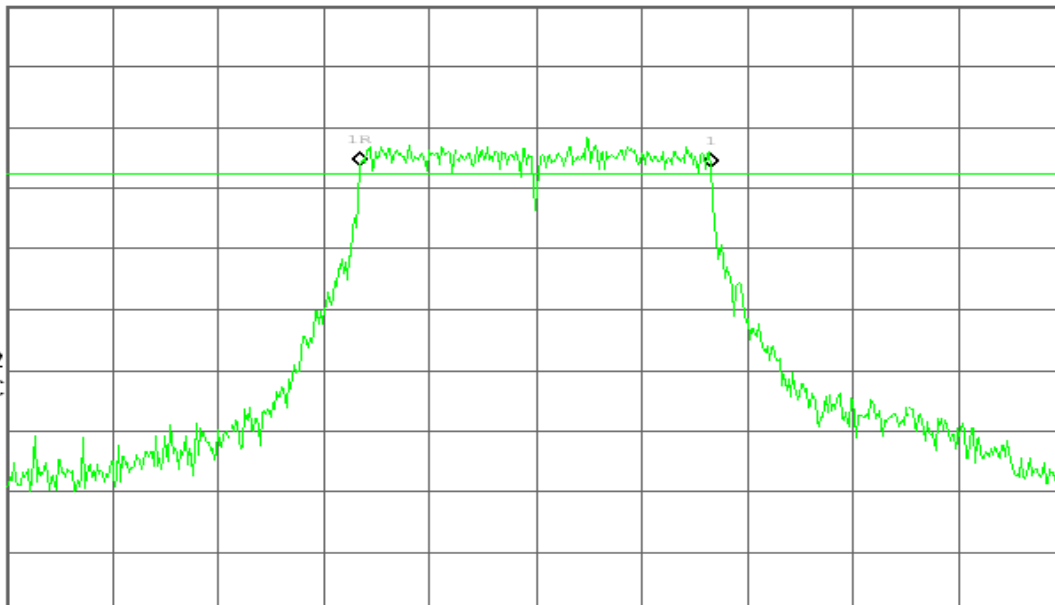
V1 S2

S3 FC

 $\square(f)$:

FTun

Swp



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

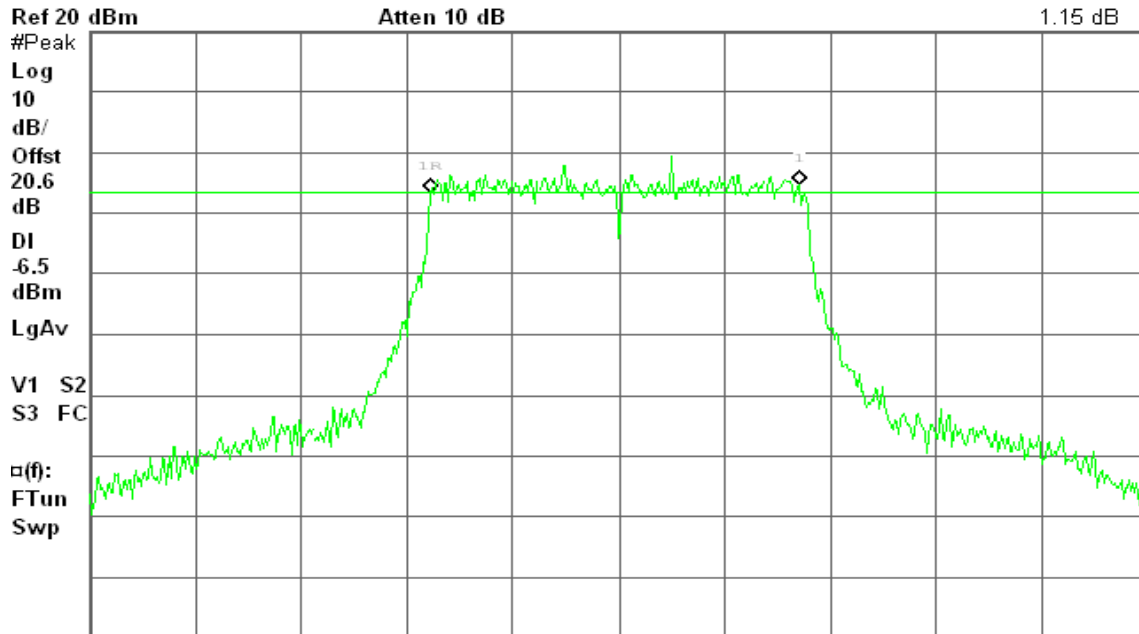
**draft 802.11n Standard-20 MHz Channel mode****6dB Bandwidth (CH Low)**

✱ Agilent 22:07:53 May 11, 2009

R T

Δ Mkr1 17.33 MHz

1.15 dB

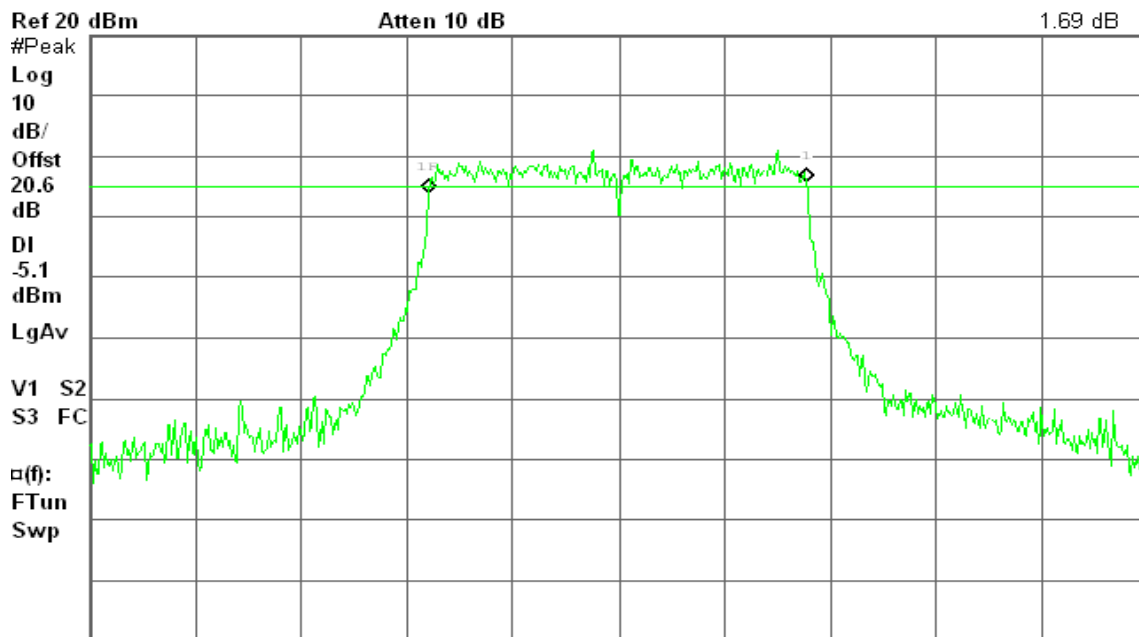
**6dB Bandwidth (CH Mid)**

✱ Agilent 22:03:02 May 11, 2009

R T

Δ Mkr1 17.75 MHz

1.69 dB



**6dB Bandwidth (CH High)**

* Agilent 21:58:22 May 11, 2009

R T

 Δ Mkr1 17.83 MHz

-0.91 dB

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

20.6

dB

DI

-9.9

dBm

LgAv

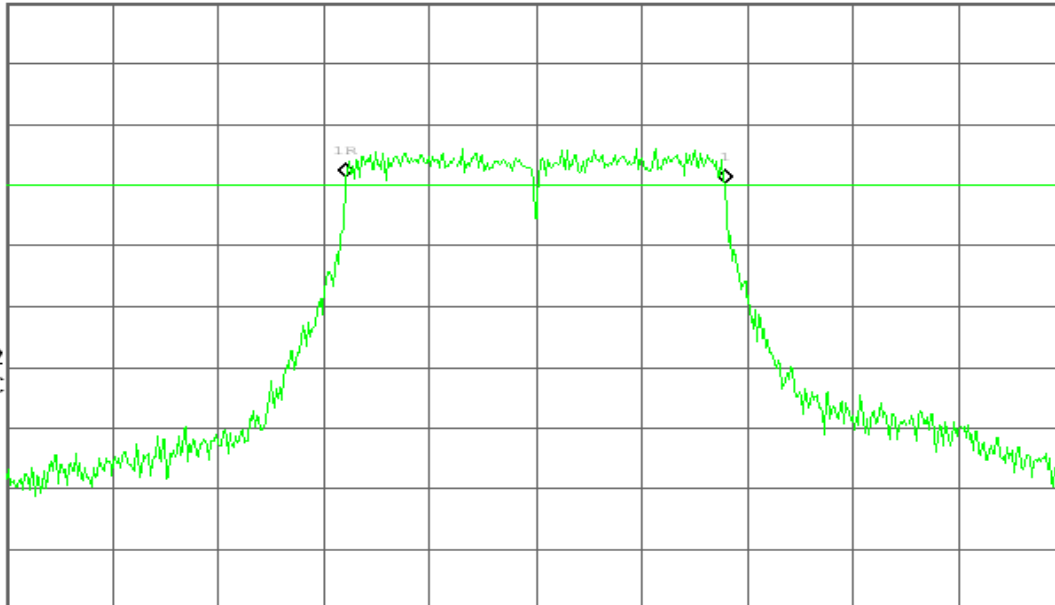
V1 S2

S3 FC

 $\alpha(f)$:

FTun

Swp



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

draft 802.11n Wide-40 MHz Channel mode**6dB Bandwidth (CH Low)**

* Agilent 22:31:49 May 11, 2009

R T

 Δ Mkr1 35.35 MHz

-0.94 dB

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

20.6

dB

DI

-11.0

dBm

LgAv

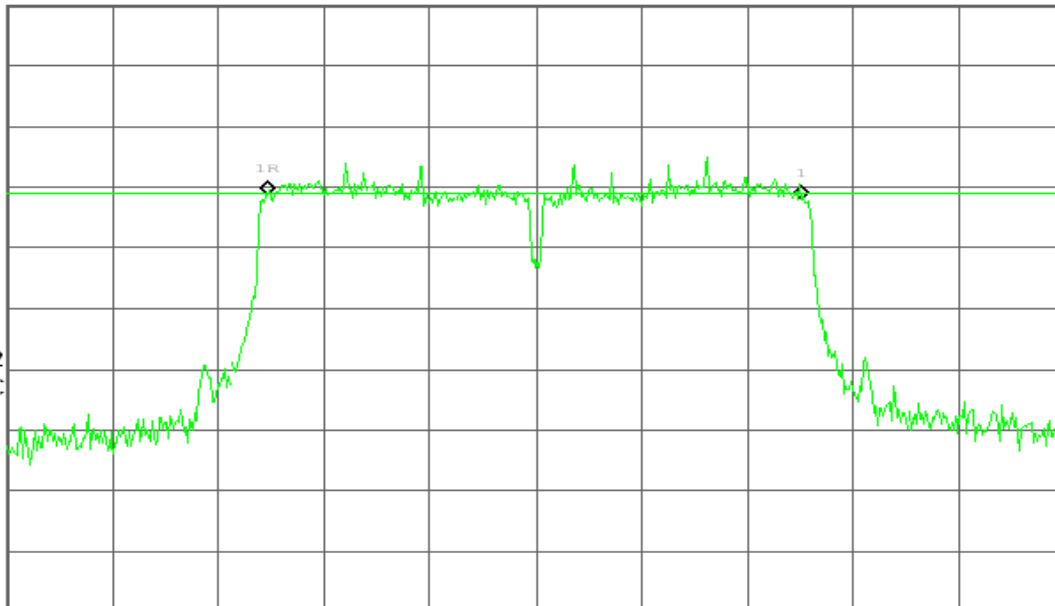
V1 S2

S3 FC

 $\alpha(f)$:

FTun

Swp



Center 2.422 00 GHz

Span 70 MHz

#Res BW 100 kHz

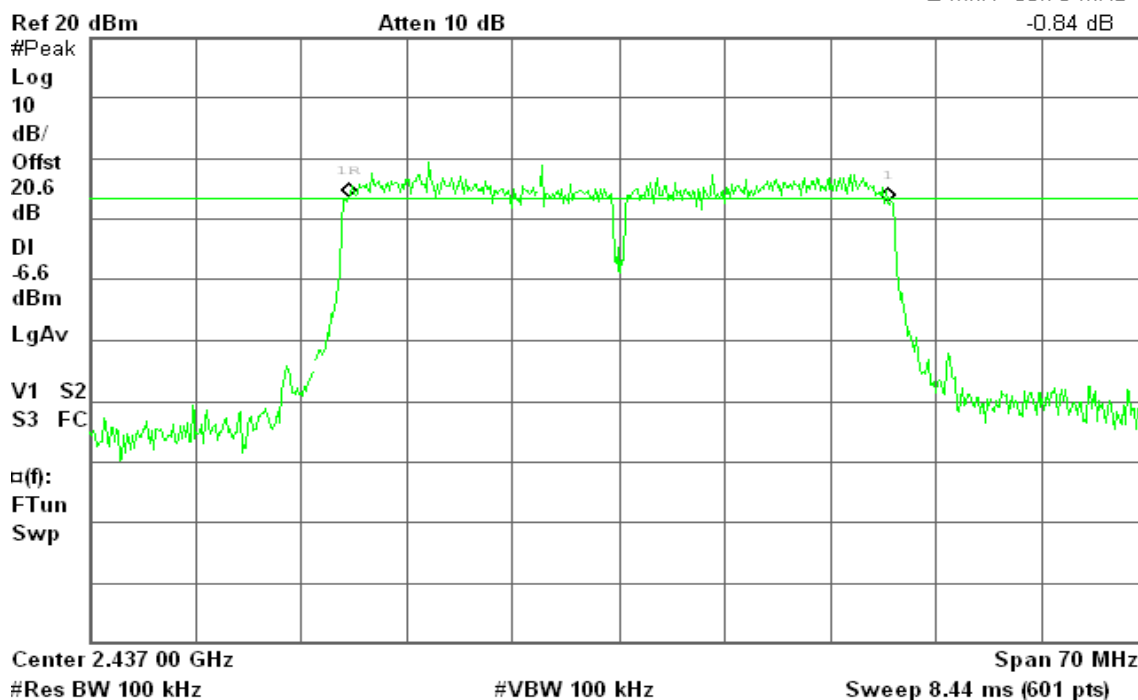
#VBW 100 kHz

Sweep 8.44 ms (601 pts)

**6dB Bandwidth (CH Mid)**

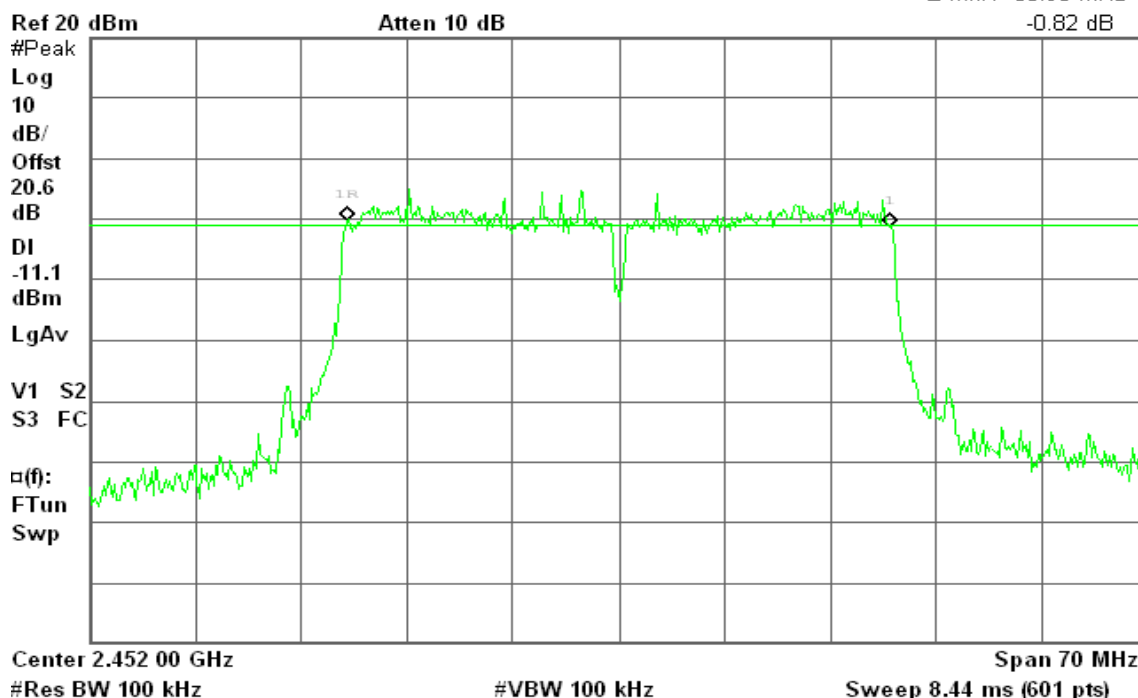
* Agilent 22:26:18 May 11, 2009

R T

 Δ Mkr1 35.70 MHz
-0.84 dB**6dB Bandwidth (CH High)**

* Agilent 22:21:15 May 11, 2009

R T

 Δ Mkr1 35.93 MHz
-0.82 dB

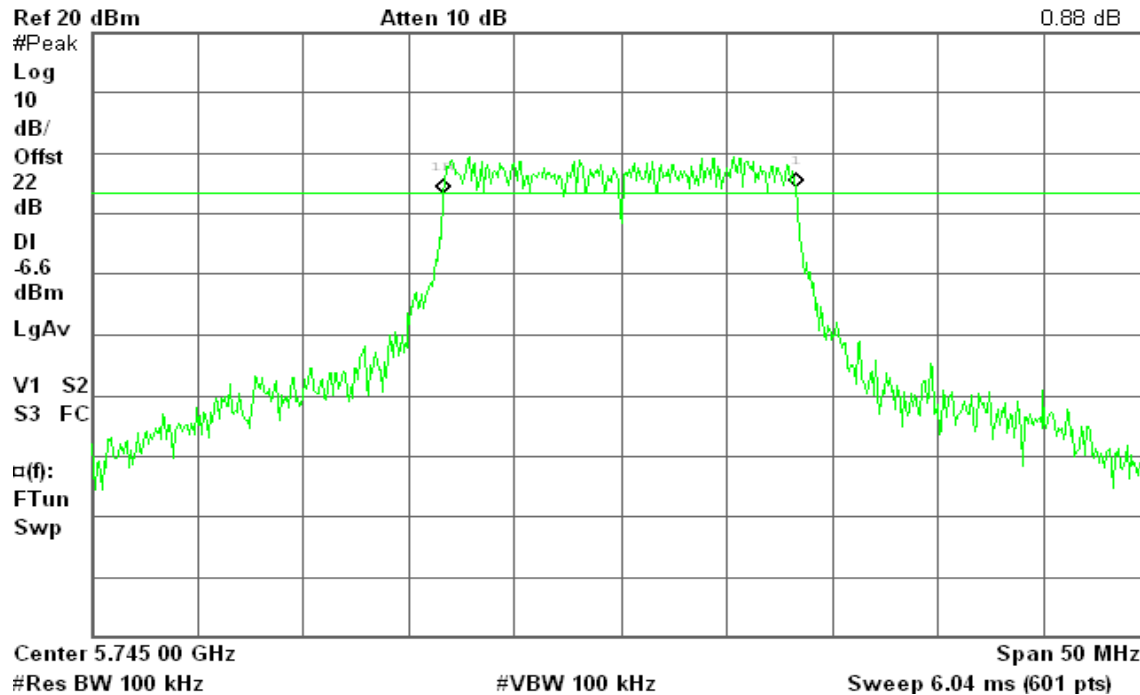
**IEEE 802.11a mode / 5745 ~ 5825MHz****6dB Bandwidth (CH Low)**

* Agilent 19:24:29 May 6, 2009

R T

Δ Mkr1 16.58 MHz

0.88 dB

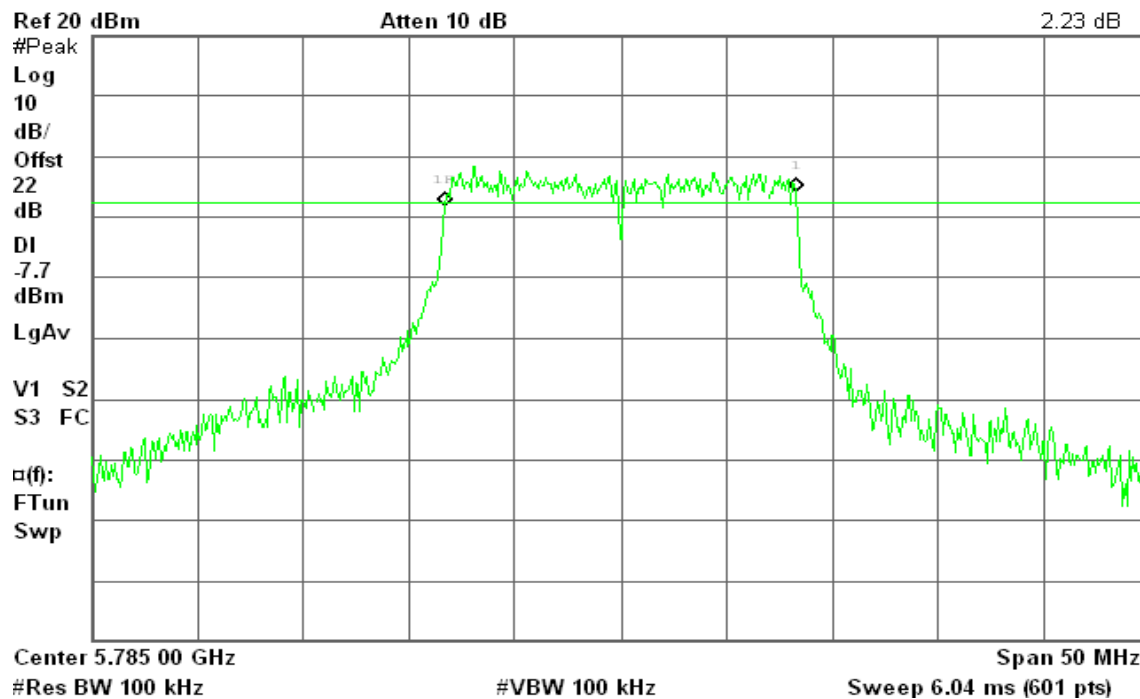
**6dB Bandwidth (CH Mid)**

* Agilent 19:39:57 May 6, 2009

R T

Δ Mkr1 16.50 MHz

2.23 dB



**6dB Bandwidth (CH High)**

* Agilent 19:45:38 May 6, 2009

R T

 Δ Mkr1 16.50 MHz

-2.69 dB

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

22

dB

DI

-7.3

dBm

LgAv

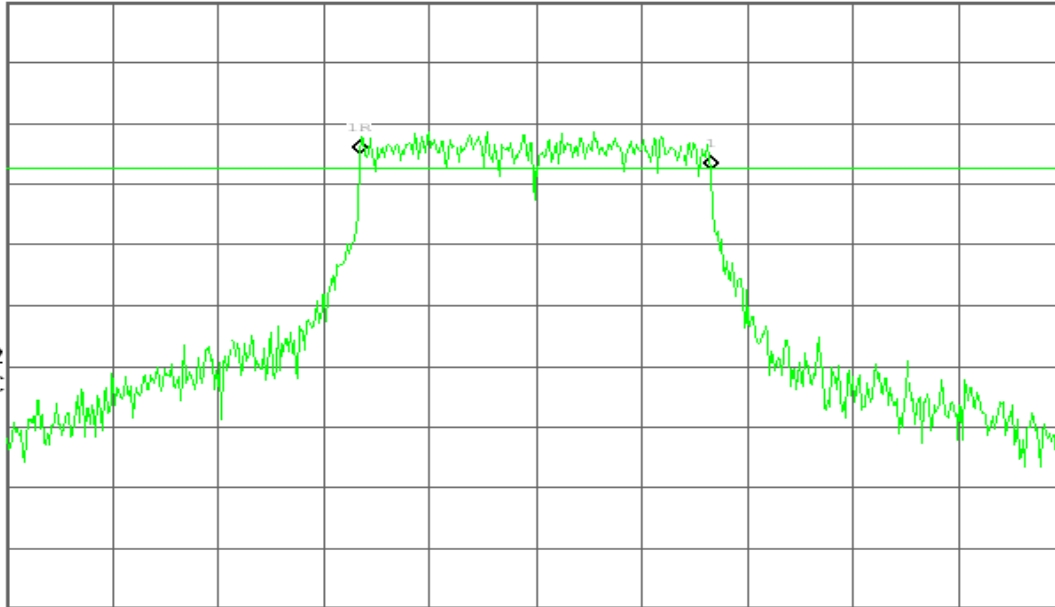
V1 S2

S3 FC

 $\alpha(f)$:

FTun

Swp



Center 5.825 00 GHz

#Res BW 100 kHz

#VBW 100 kHz

Span 50 MHz

Sweep 6.04 ms (601 pts)

draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz**6dB Bandwidth (CH Low)**

* Agilent 23:26:07 May 6, 2009

R T

 Δ Mkr1 17.67 MHz

-1.42 dB

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

22

dB

DI

-7.0

dBm

LgAv

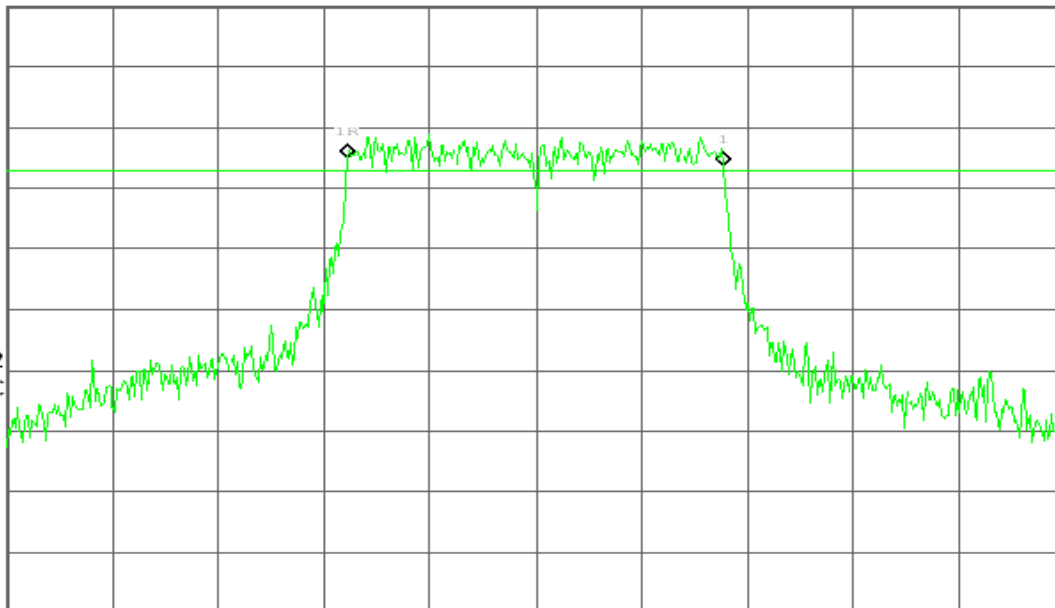
V1 S2

S3 FC

 $\alpha(f)$:

FTun

Swp



Center 5.745 00 GHz

#Res BW 100 kHz

#VBW 100 kHz

Span 50 MHz

Sweep 6.04 ms (601 pts)

**6dB Bandwidth (CH Mid)**

* Agilent 23:37:24 May 6, 2009

R T

 Δ Mkr1 17.75 MHz

1.61 dB

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

22

dB

DI

-8.5

dBm

LgAv

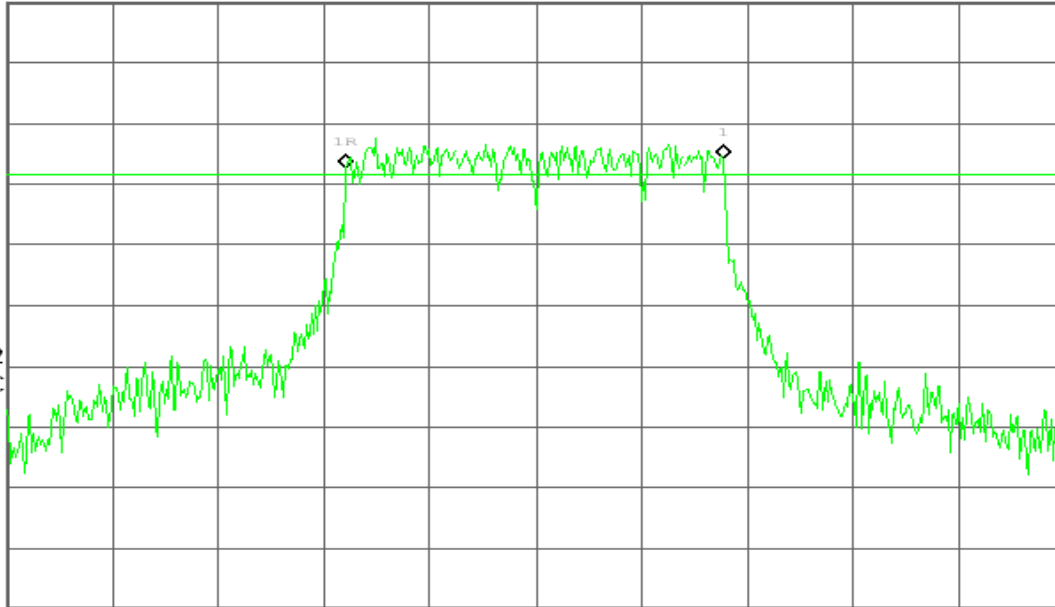
V1 S2

S3 FC

 $\square(f)$:

FTun

Swp



Center 5.785 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

6dB Bandwidth (CH High)

* Agilent 23:44:33 May 6, 2009

R T

 Δ Mkr1 17.42 MHz

-2.15 dB

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

22

dB

DI

-7.0

dBm

LgAv

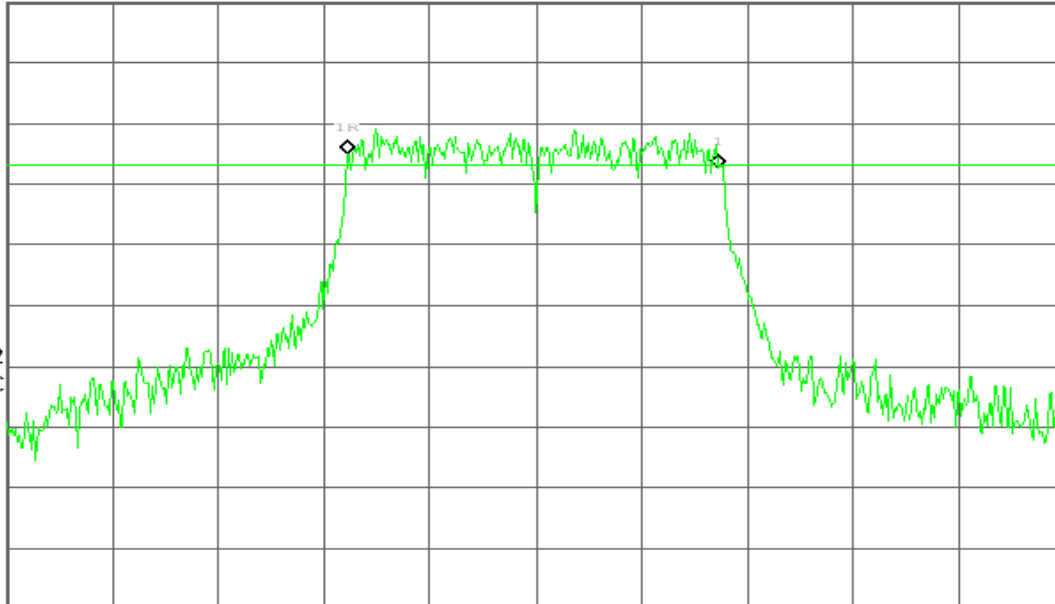
V1 S2

S3 FC

 $\square(f)$:

FTun

Swp



Center 5.825 00 GHz

Span 50 MHz

#Res BW 100 kHz

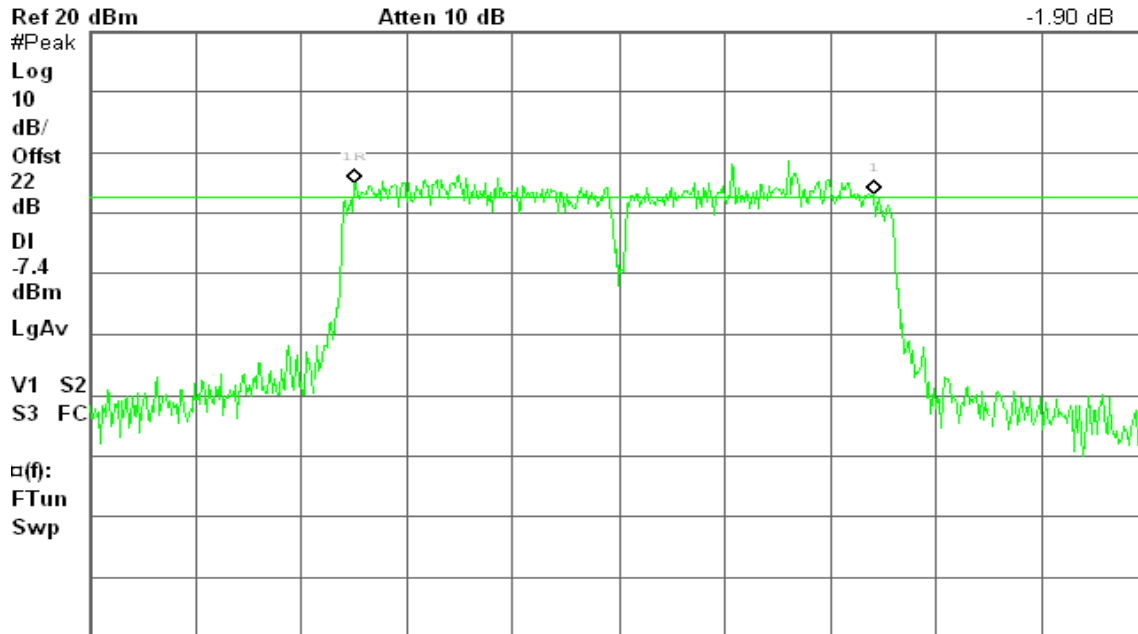
#VBW 100 kHz

Sweep 6.04 ms (601 pts)

**draft 802.11n Wide-40 MHz Channel mode / 5755 ~ 5795MHz****6dB Bandwidth (CH Low)**

* Agilent 01:49:40 May 7, 2009

R T

 Δ Mkr1 34.42 MHz
-1.90 dB

Center 5.755 00 GHz

Span 70 MHz

#Res BW 100 kHz

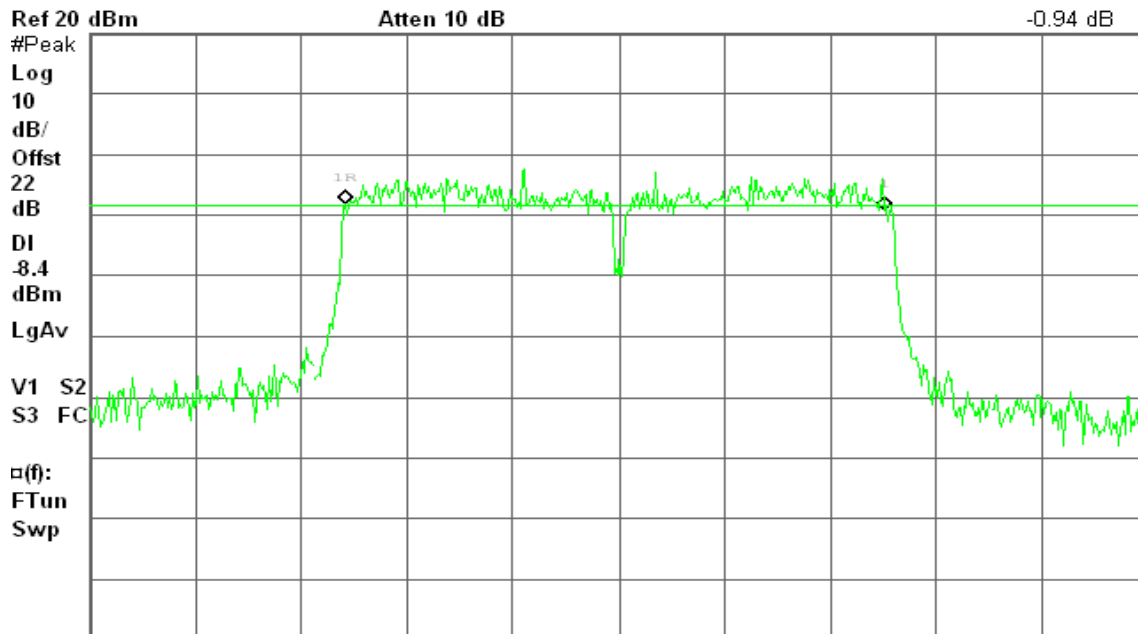
#VBW 100 kHz

Sweep 8.44 ms (601 pts)

6dB Bandwidth (CH High)

* Agilent 01:58:05 May 7, 2009

R T

 Δ Mkr1 35.70 MHz
-0.94 dB

Center 5.795 00 GHz

Span 70 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 8.44 ms (601 pts)



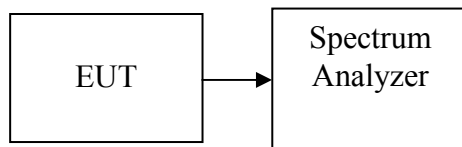
7.2 PEAK POWER

LIMIT

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

1. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
2. According to §15.247(b)(4), 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.

Test Configuration



TEST PROCEDURE

1. Peak power is measured using the spectrum analyzer's internal channel power integration function.
2. Power is integrated over a bandwidth greater than or equal to the 99% bandwidth.



TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	18.19	0.0659	1.00	PASS
Mid	2437	18.12	0.0649		PASS
High	2462	18.15	0.0653		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	22.23	0.1671	1.00	PASS
Mid	2437	21.73	0.1489		PASS
High	2462	19.70	0.0933		PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	19.46	0.0883	1.00	PASS
Mid	2437	21.97	0.1574		PASS
High	2462	18.92	0.0780		PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	16.82	0.0481	1.00	PASS
Mid	2437	22.06	0.1607		PASS
High	2452	17.61	0.0577		PASS

**Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz**

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5745	21.81	0.1517	1.00	PASS
Mid	5785	21.58	0.1439		PASS
High	5825	21.21	0.1321		PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5745	22.01	0.1589	1.00	PASS
Mid	5785	21.03	0.1268		PASS
High	5825	21.83	0.1524		PASS

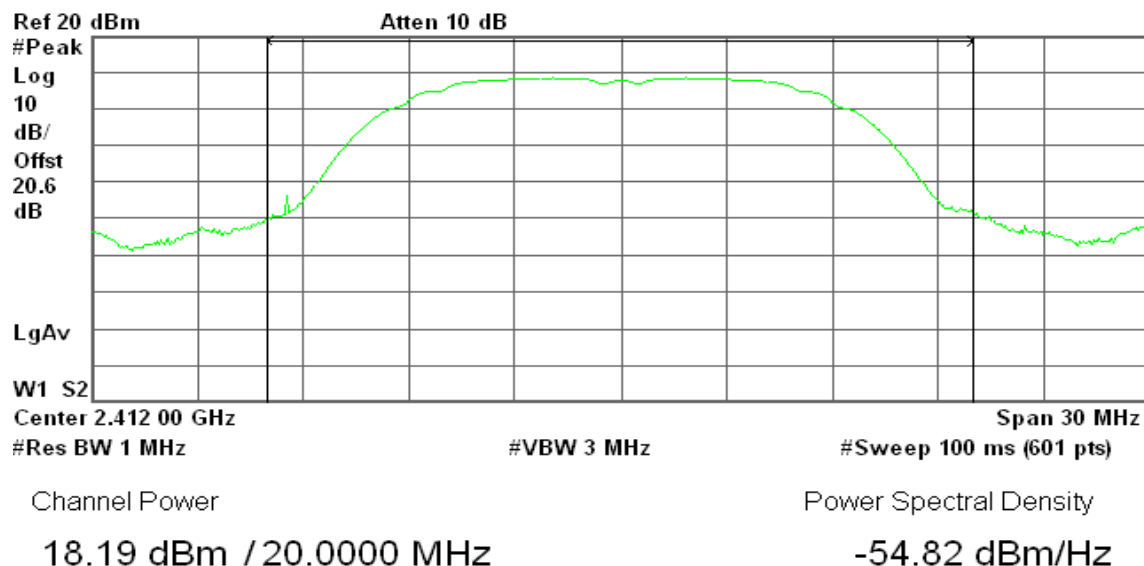
Test mode: draft 802.11n Wide-40 MHz Channel mode / 5755 ~ 5795MHz

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5755	22.02	0.1592	1.00	PASS
Mid	5795	21.91	0.1552		PASS

**Test Plot****IEEE 802.11b mode****Peak Power (CH Low)**

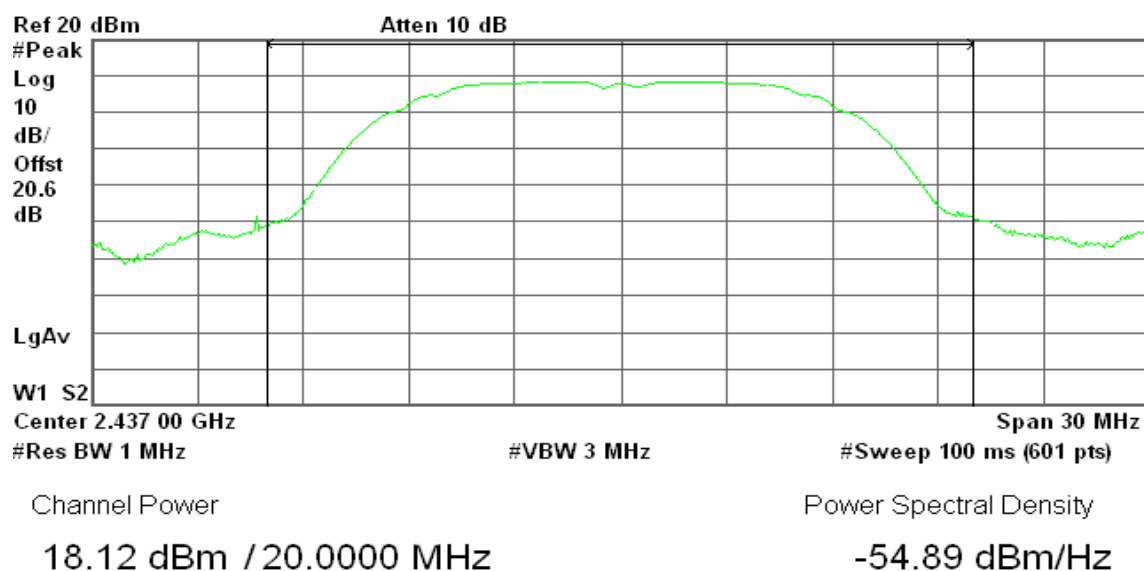
* Agilent 21:13:38 May 11, 2009

R T

**Peak Power (CH Mid)**

* Agilent 21:12:44 May 11, 2009

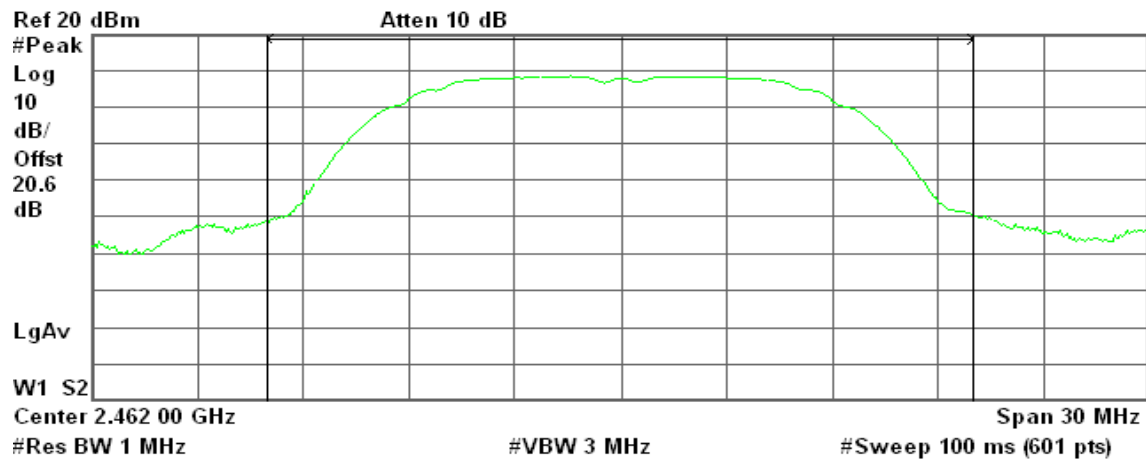
R T



**Peak Power (CH High)**

* Agilent 21:09:29 May 11, 2009

R T



Channel Power

18.15 dBm / 20.0000 MHz

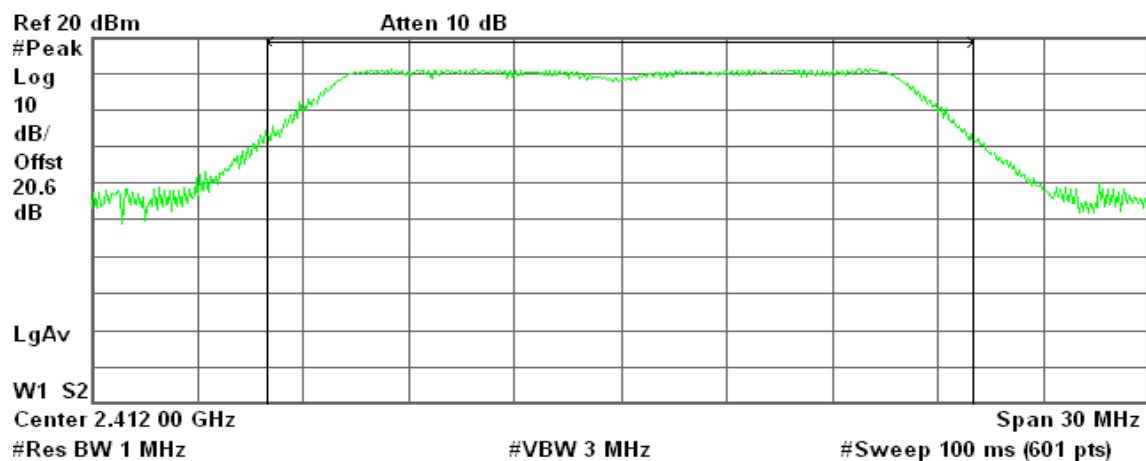
Power Spectral Density

-54.86 dBm/Hz

IEEE 802.11g mode**Peak Power (CH Low)**

* Agilent 21:21:26 May 11, 2009

R T



Channel Power

22.23 dBm / 20.0000 MHz

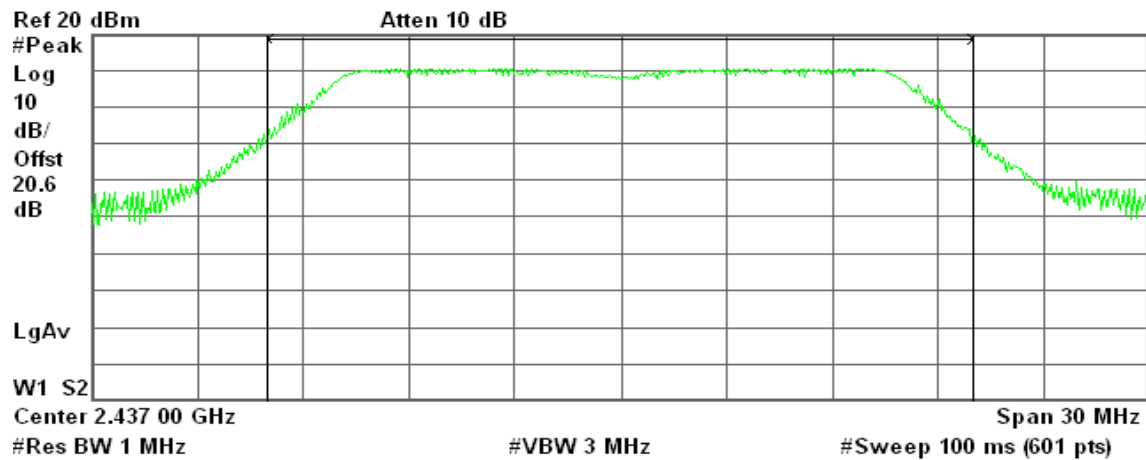
Power Spectral Density

-50.78 dBm/Hz

**Peak Power (CH Mid)**

* Agilent 21:22:54 May 11, 2009

R T



Channel Power

21.73 dBm / 20.0000 MHz

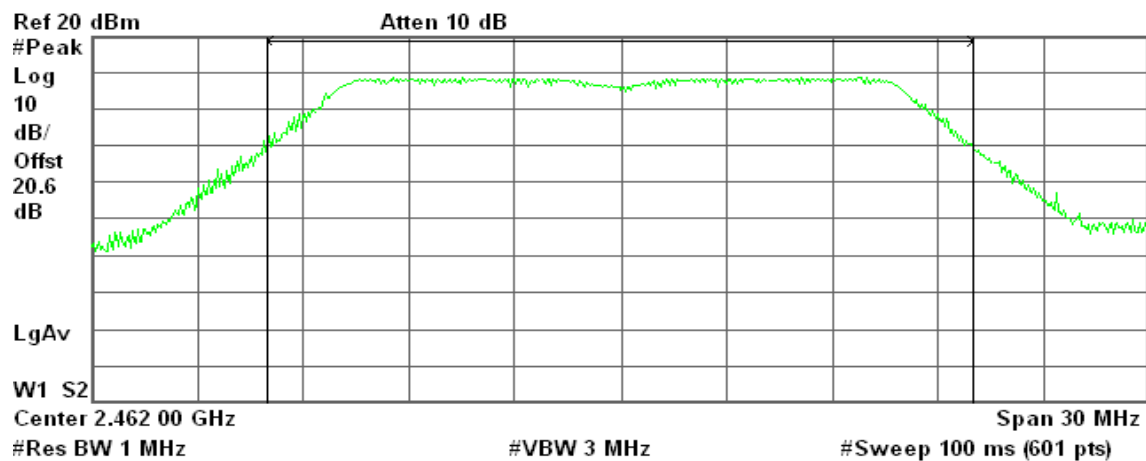
Power Spectral Density

-51.28 dBm/Hz

Peak Power (CH High)

* Agilent 21:25:39 May 11, 2009

R T



Channel Power

19.70 dBm / 20.0000 MHz

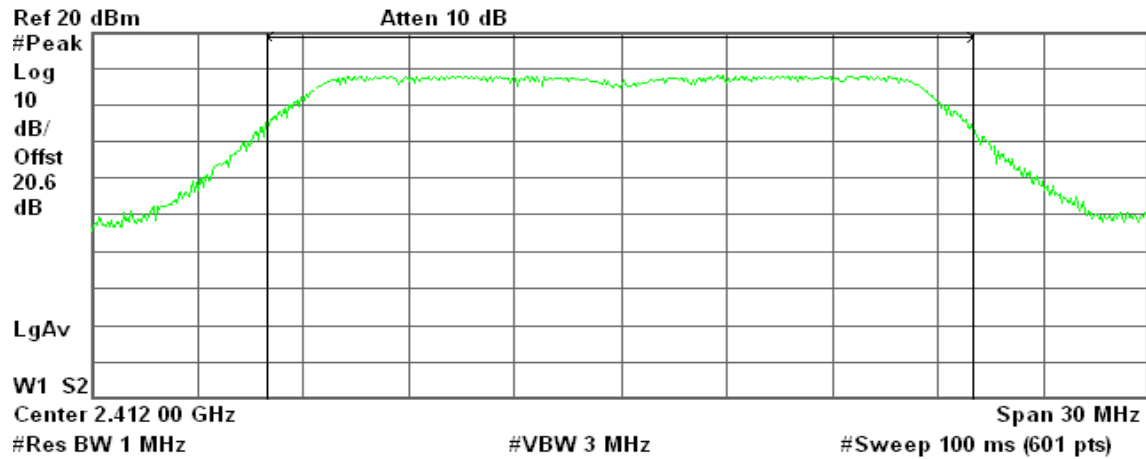
Power Spectral Density

-53.31 dBm/Hz

**draft 802.11n Standard-20 MHz Channel mode****Peak Power (CH Low)**

* Agilent 21:46:33 May 11, 2009

R T



Channel Power

19.46 dBm / 20.0000 MHz

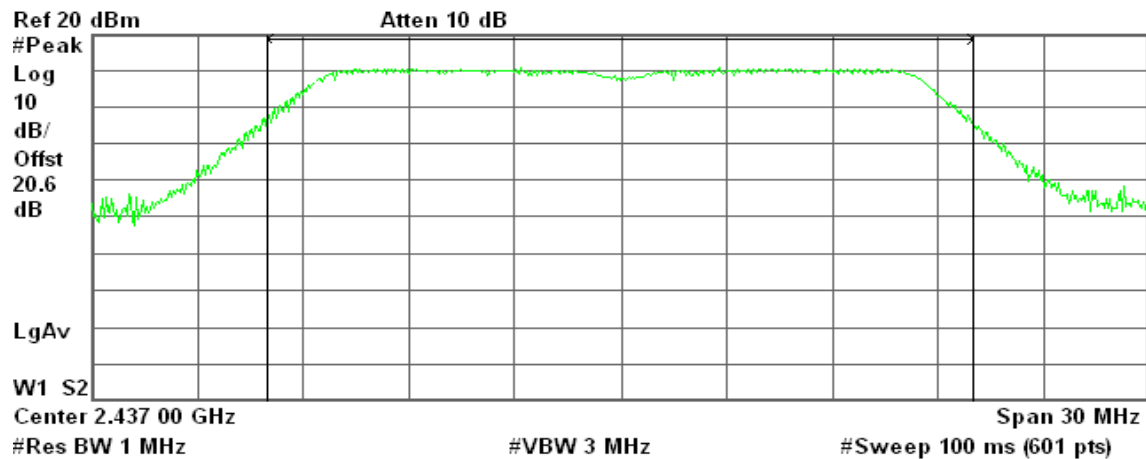
Power Spectral Density

-53.55 dBm/Hz

Peak Power (CH Mid)

* Agilent 21:49:17 May 11, 2009

R T



Channel Power

21.97 dBm / 20.0000 MHz

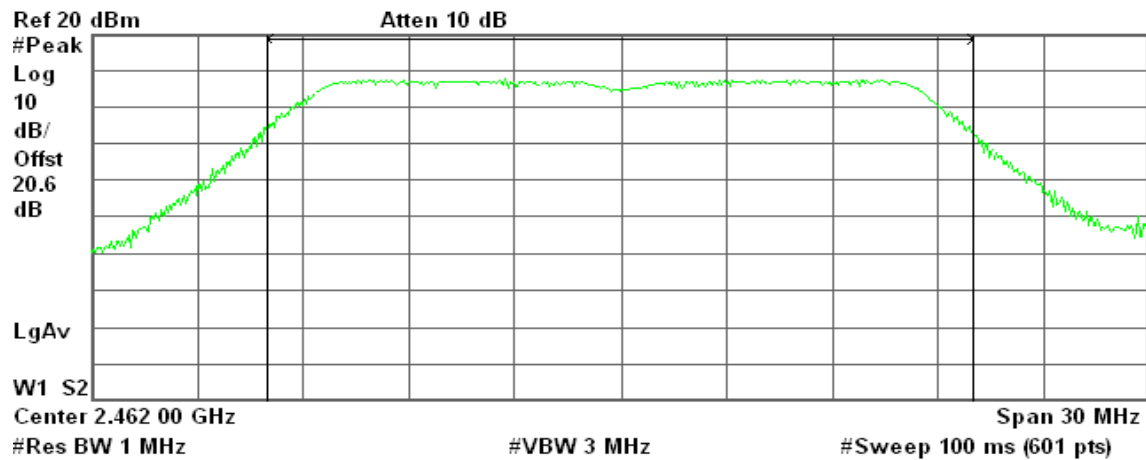
Power Spectral Density

-51.04 dBm/Hz

**Peak Power (CH High)**

* Agilent 21:56:13 May 11, 2009

R T



Channel Power

18.92 dBm / 20.0000 MHz

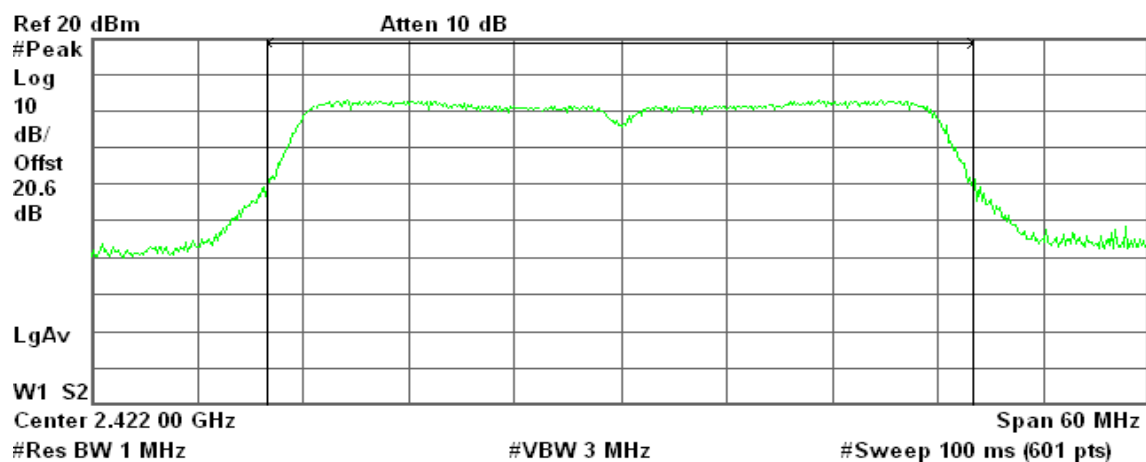
Power Spectral Density

-54.09 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode**Peak Power (CH Low)**

* Agilent 22:15:39 May 11, 2009

R T



Channel Power

16.82 dBm / 40.0000 MHz

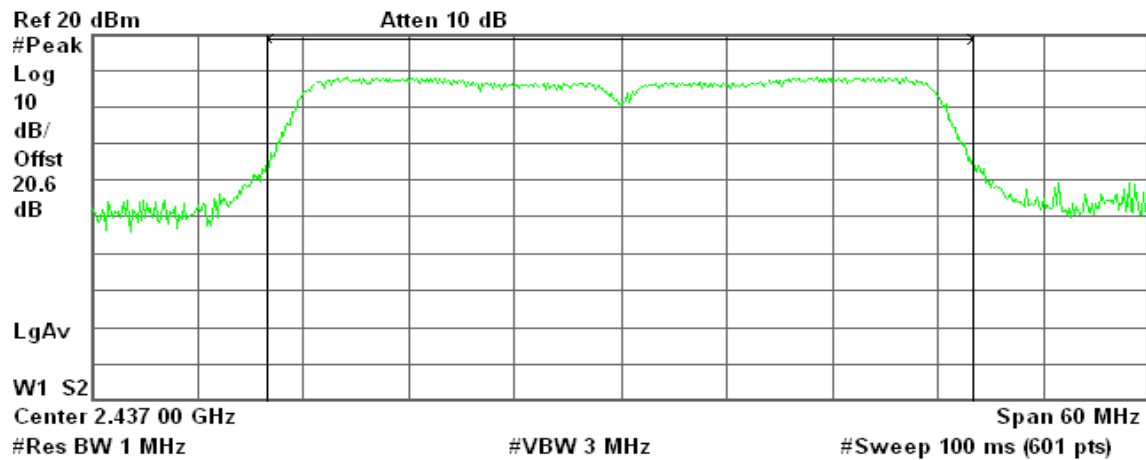
Power Spectral Density

-59.20 dBm/Hz

**Peak Power (CH Mid)**

* Agilent 22:18:07 May 11, 2009

R T



Channel Power

22.06 dBm / 40.0000 MHz

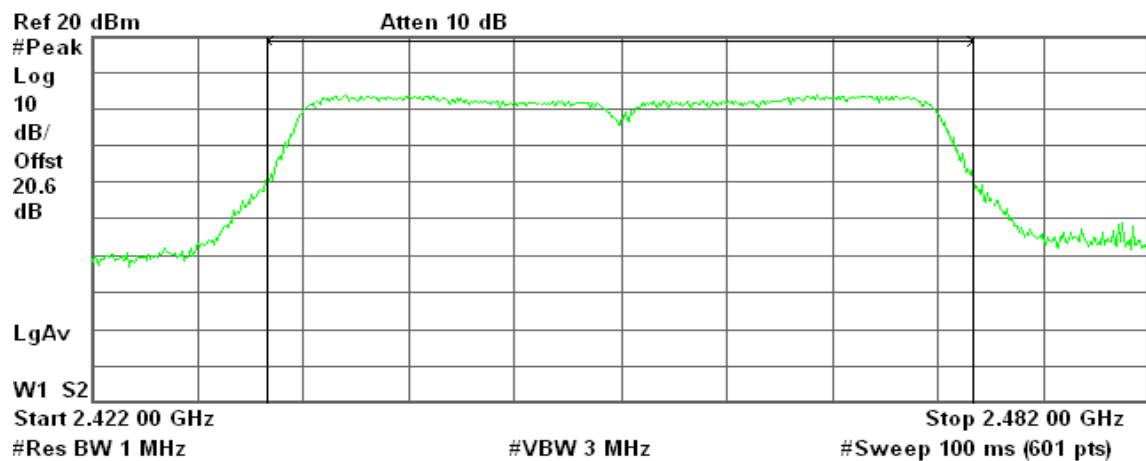
Power Spectral Density

-53.96 dBm/Hz

Peak Power (CH High)

* Agilent 22:18:59 May 11, 2009

R T



Channel Power

17.61 dBm / 40.0000 MHz

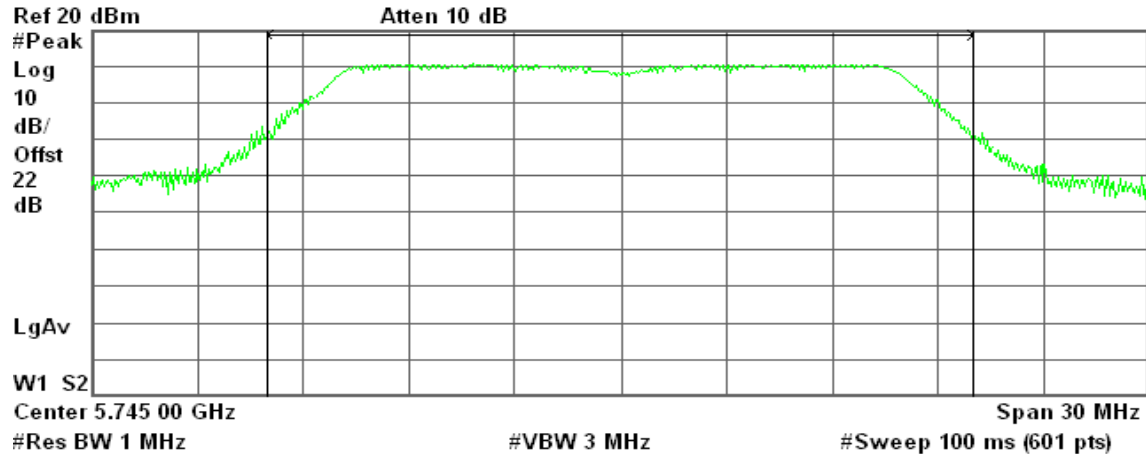
Power Spectral Density

-58.41 dBm/Hz

**IEEE 802.11a mode / 5745 ~ 5825MHz****Peak Power (CH Low)**

* Agilent 19:36:24 May 6, 2009

R T



Channel Power

21.81 dBm / 20.0000 MHz

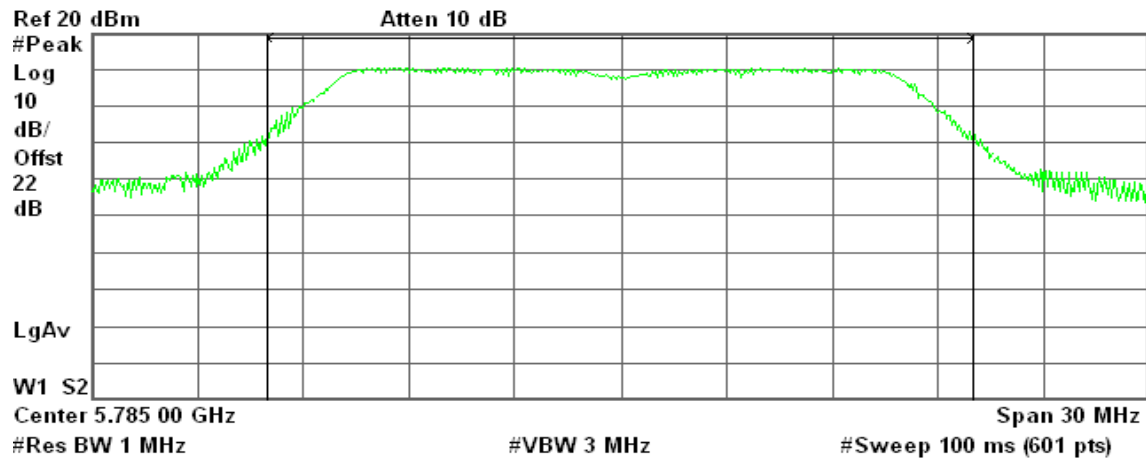
Power Spectral Density

-51.20 dBm/Hz

Peak Power (CH Mid)

* Agilent 19:33:22 May 6, 2009

R T



Channel Power

21.58 dBm / 20.0000 MHz

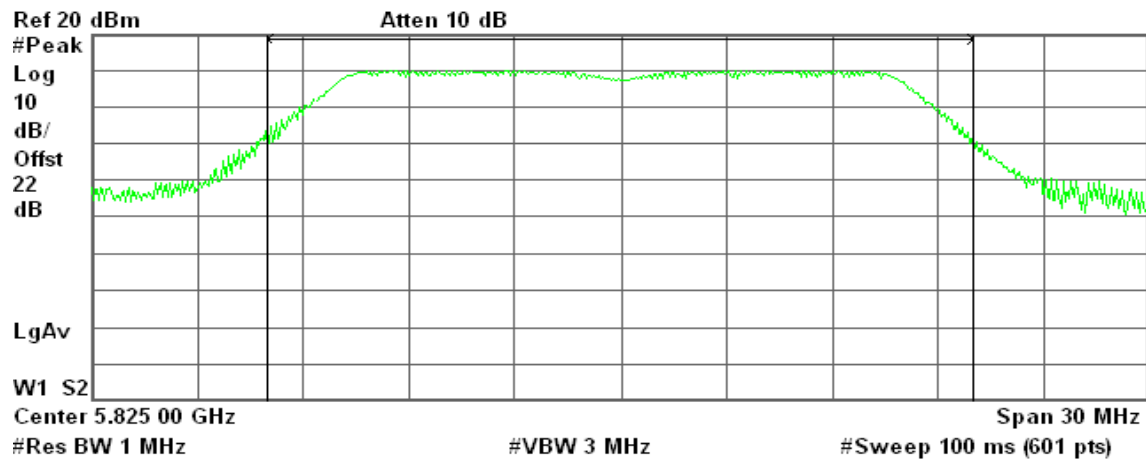
Power Spectral Density

-51.43 dBm/Hz

**Peak Power (CH High)**

* Agilent 19:37:25 May 6, 2009

R T



Channel Power

21.21 dBm / 20.0000 MHz

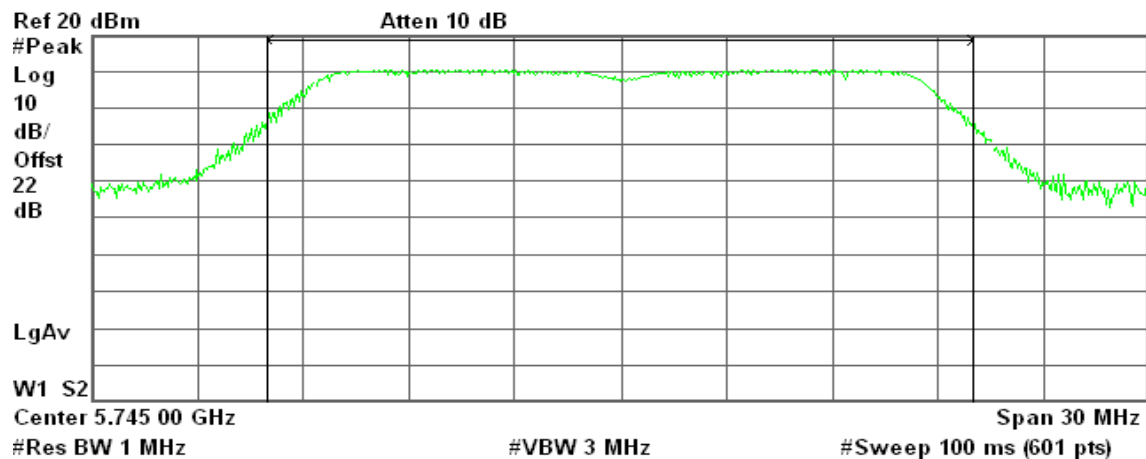
Power Spectral Density

-51.80 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz**Peak Power (CH Low)**

* Agilent 00:02:53 May 7, 2009

R T



Channel Power

22.01 dBm / 20.0000 MHz

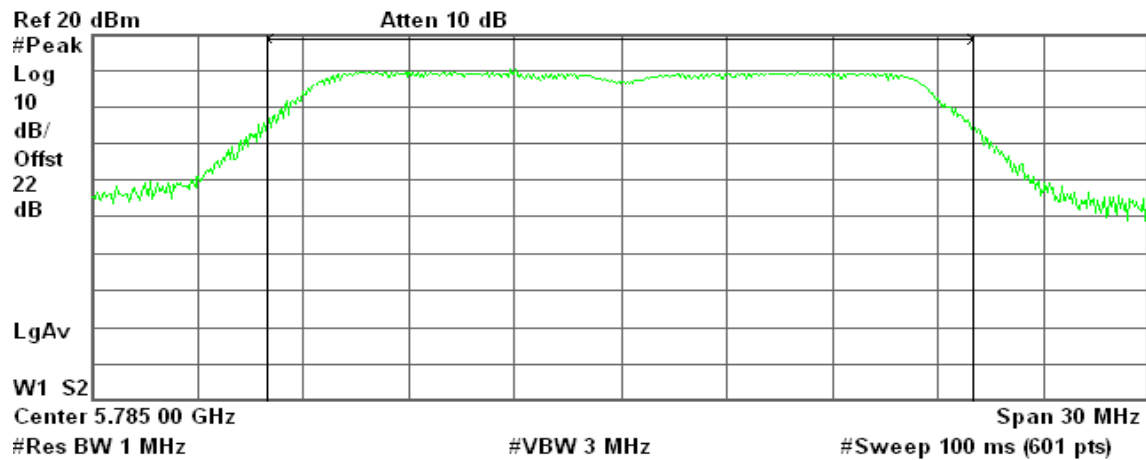
Power Spectral Density

-51.00 dBm/Hz

**Peak Power (CH Mid)**

* Agilent 23:58:36 May 6, 2009

R T



Channel Power

21.03 dBm / 20.0000 MHz

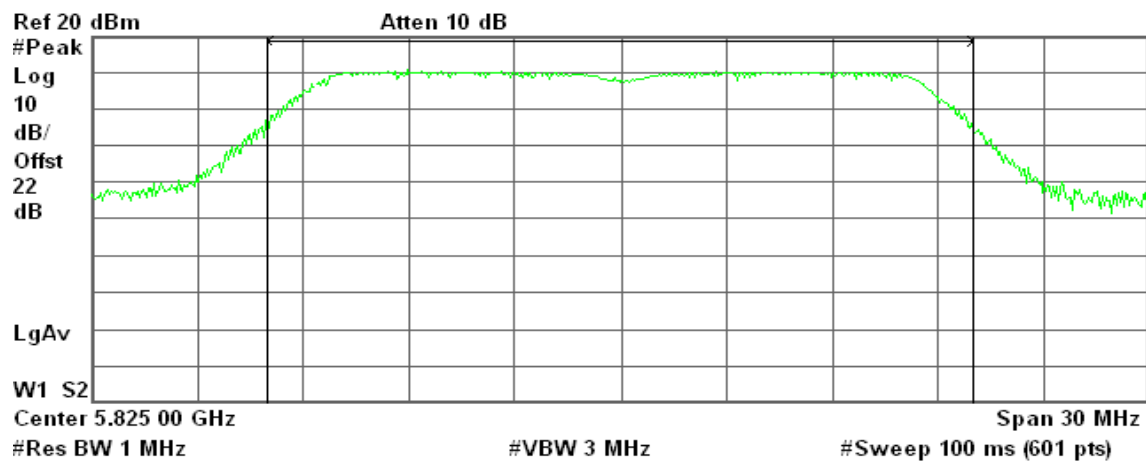
Power Spectral Density

-51.99 dBm/Hz

Peak Power (CH High)

* Agilent 23:54:14 May 6, 2009

R T



Channel Power

21.83 dBm / 20.0000 MHz

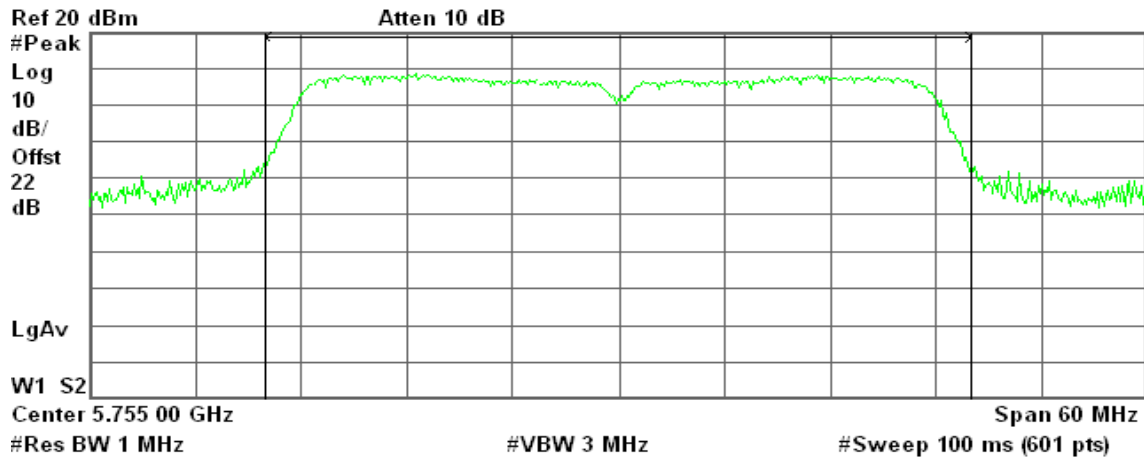
Power Spectral Density

-51.18 dBm/Hz

**draft 802.11n Wide-40 MHz Channel mode / 5755 ~ 5795MHz****Peak Power (CH Low)**

* Agilent 02:06:59 May 7, 2009

R T



Channel Power

22.02 dBm / 40.0000 MHz

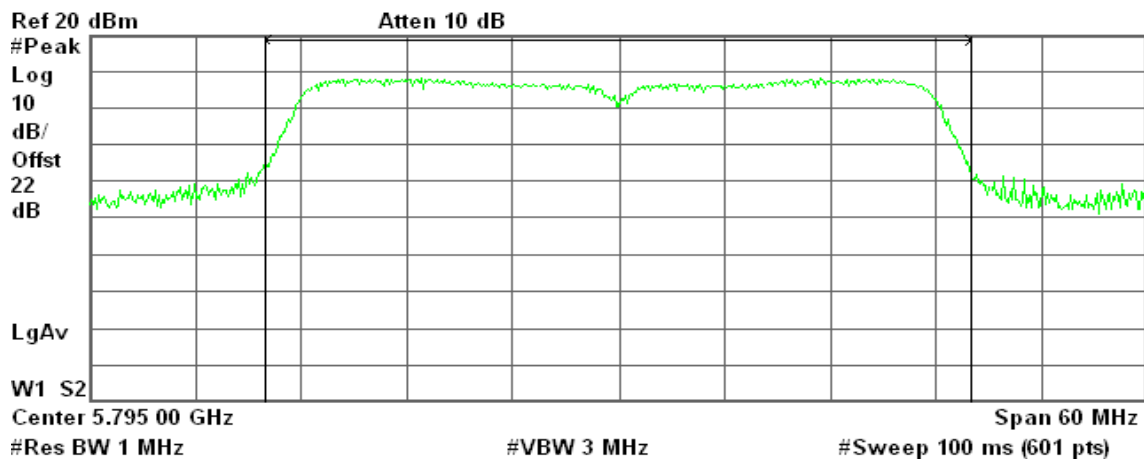
Power Spectral Density

-54.00 dBm/Hz

Peak Power (CH High)

* Agilent 02:04:54 May 7, 2009

R T



Channel Power

21.91 dBm / 40.0000 MHz

Power Spectral Density

-54.11 dBm/Hz

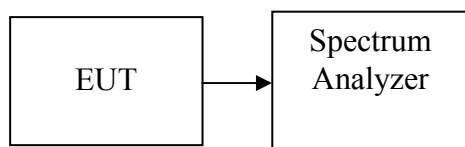


7.3 AVERAGE POWER

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the average power detection.

TEST RESULTS

No non-compliance noted

**Test Data****Test mode: IEEE 802.11b mode**

Channel	Frequency (MHz)	Output Power (dBm)
Low	2412	15.14
Mid	2437	15.25
High	2462	15.19

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)
Low	2412	14.75
Mid	2437	14.41
High	2462	12.21

Test mode: draft 802.11n Standard-20 MHz Channel mode

Channel	Frequency (MHz)	Output Power (dBm)
Low	2412	11.76
Mid	2437	14.50
High	2462	11.63

Test mode: draft 802.11n Wide-40 MHz Channel mode

Channel	Frequency (MHz)	Output Power (dBm)
Low	2422	8.58
Mid	2437	14.54
High	2452	9.90



Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Output Power (dBm)
Low	5745	14.09
Mid	5785	14.26
High	5825	14.32

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Output Power (dBm)
Low	5745	14.81
Mid	5785	14.06
High	5825	14.23

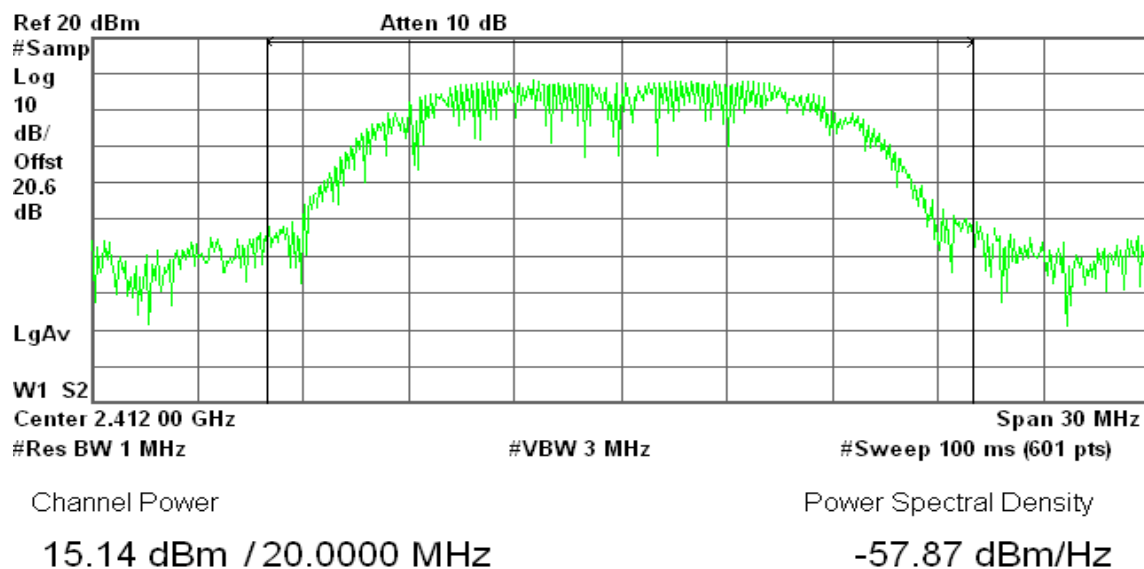
Test mode: draft 802.11n Wide-40 MHz Channel mode / 5755 ~ 5795MHz

Channel	Frequency (MHz)	Output Power (dBm)
Low	5755	14.59
High	5795	14.52

**Test Plot****IEEE 802.11b mode****Average Power (CH Low)**

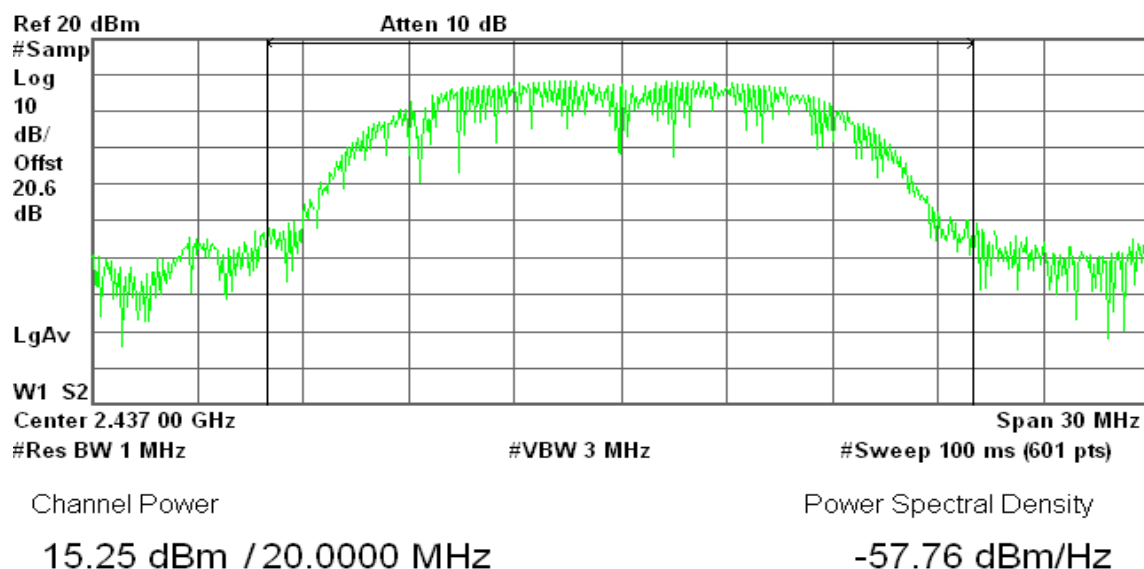
* Agilent 21:14:22 May 11, 2009

R T

**Average Power (CH Mid)**

* Agilent 21:11:29 May 11, 2009

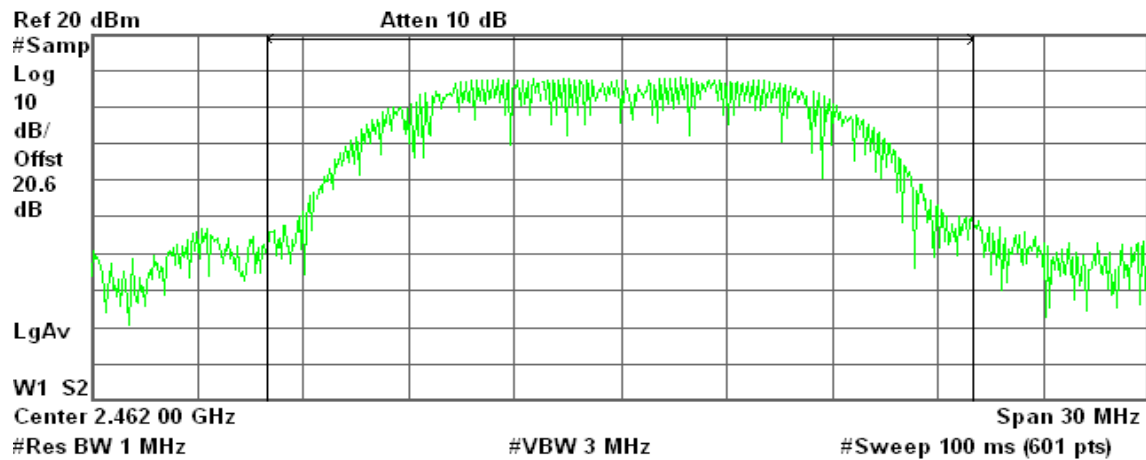
R T



**Average Power (CH High)**

* Agilent 21:10:27 May 11, 2009

R T



Channel Power

15.19 dBm / 20.0000 MHz

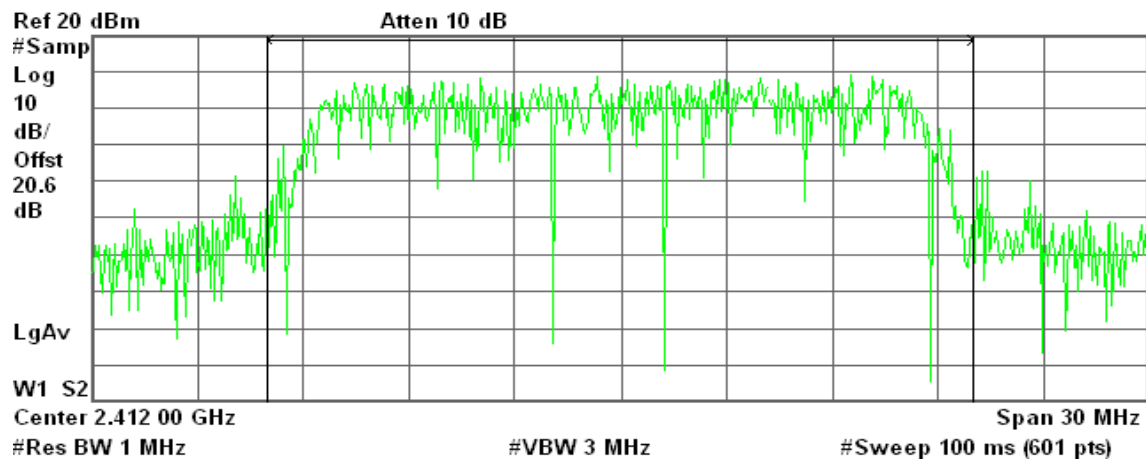
Power Spectral Density

-57.82 dBm/Hz

IEEE 802.11g mode**Average Power (CH Low)**

* Agilent 21:20:49 May 11, 2009

R T



Channel Power

14.75 dBm / 20.0000 MHz

Power Spectral Density

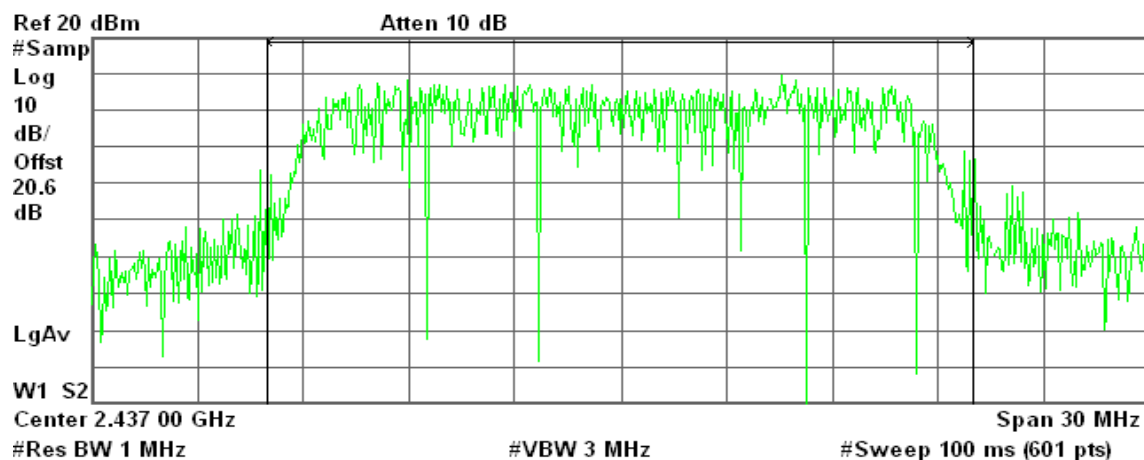
-58.26 dBm/Hz



Average Power (CH Mid)

* Agilent 21:23:56 May 11, 2009

R T



Channel Power

14.41 dBm / 20.0000 MHz

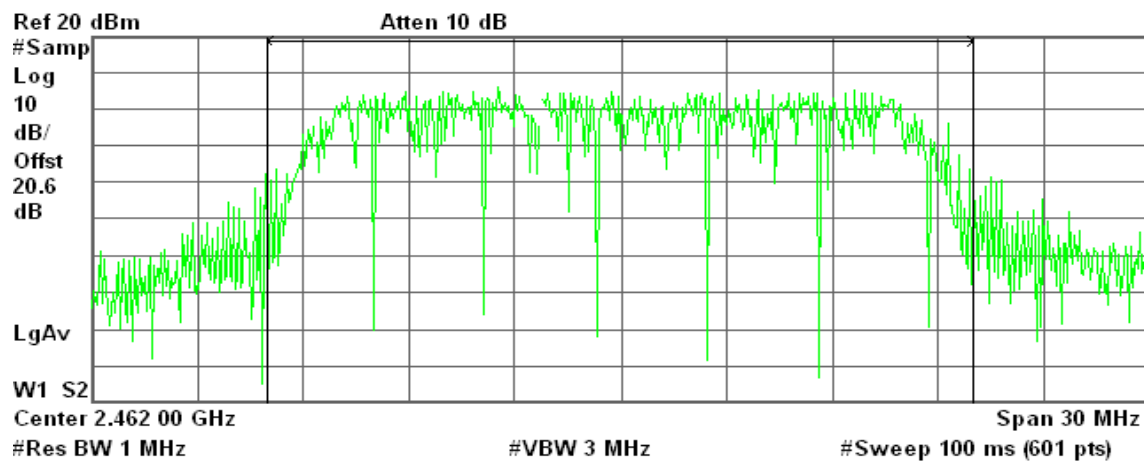
Power Spectral Density

-58.60 dBm/Hz

Average Power (CH High)

* Agilent 21:25:14 May 11, 2009

R T



Channel Power

12.21 dBm / 20.0000 MHz

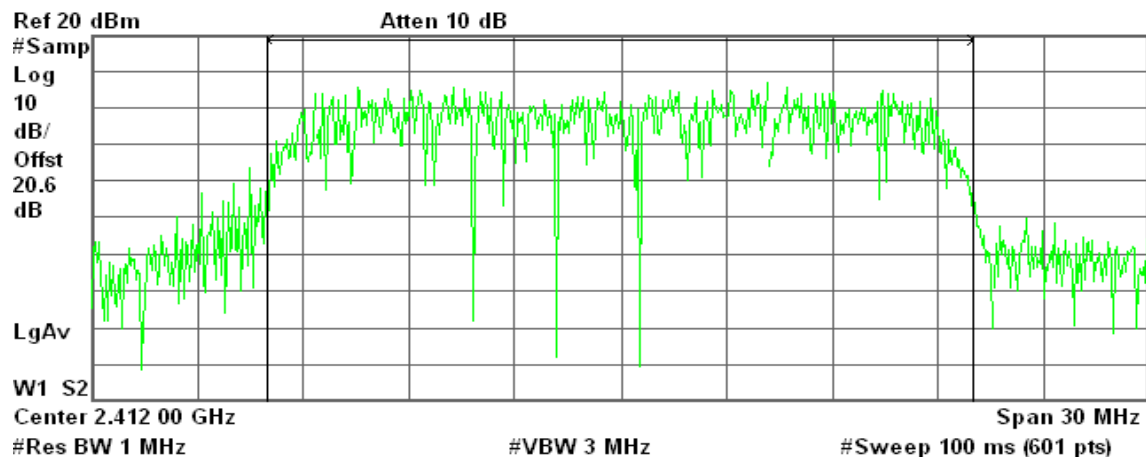
Power Spectral Density

-60.80 dBm/Hz

**draft 802.11n Standard-20 MHz Channel mode****Average Power (CH Low)**

* Agilent 21:47:24 May 11, 2009

R T



Channel Power

11.76 dBm / 20.0000 MHz

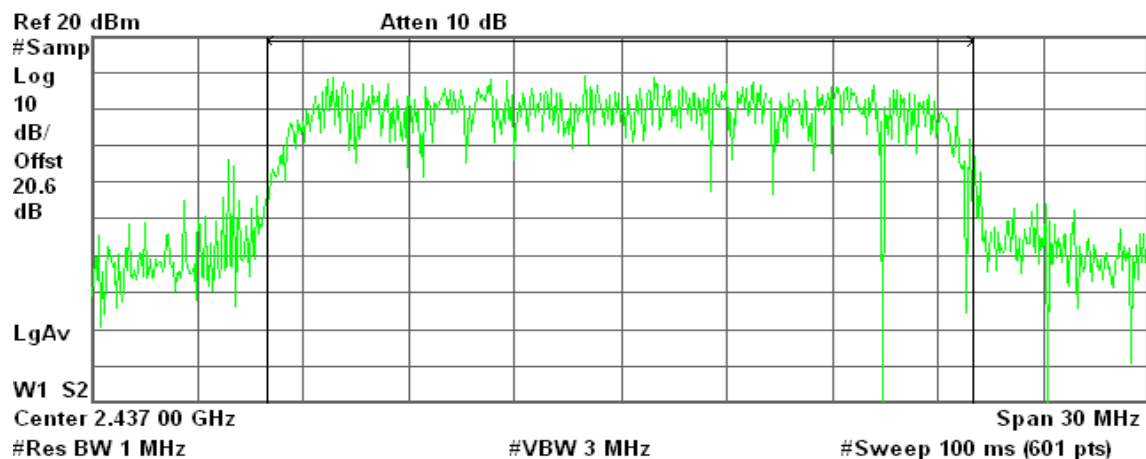
Power Spectral Density

-61.25 dBm/Hz

Average Power (CH Mid)

* Agilent 21:48:43 May 11, 2009

R T



Channel Power

14.50 dBm / 20.0000 MHz

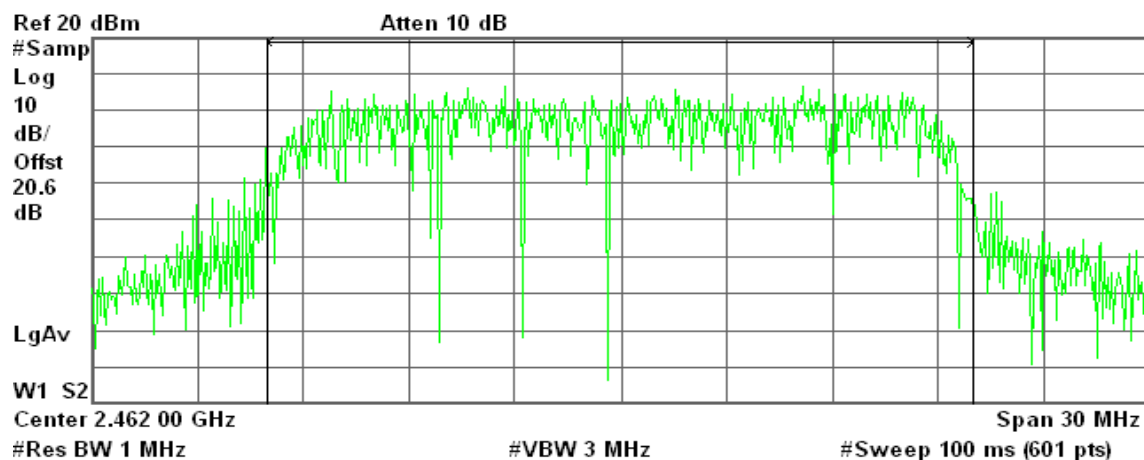
Power Spectral Density

-58.51 dBm/Hz

**Average Power (CH High)**

* Agilent 21:56:46 May 11, 2009

R T



Channel Power

11.63 dBm / 20.0000 MHz

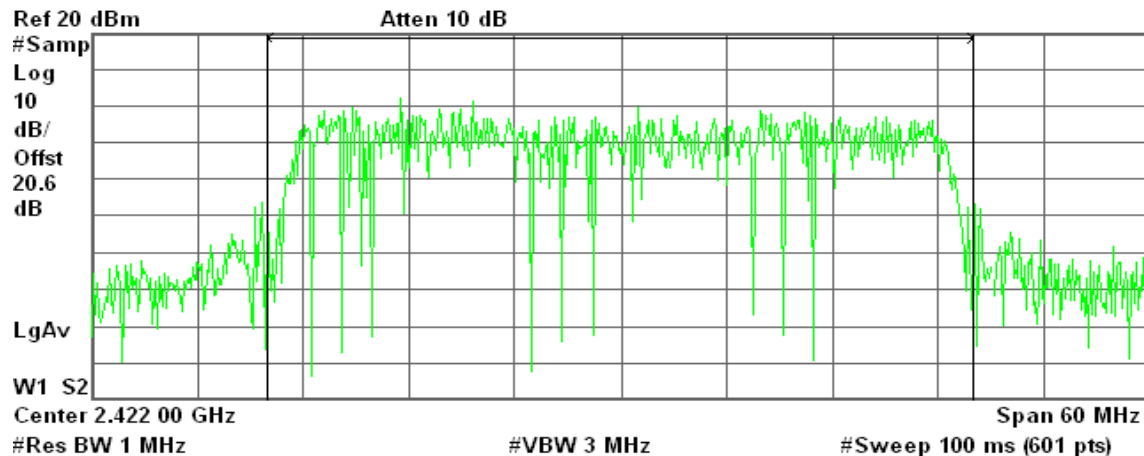
Power Spectral Density

-61.38 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode**Average Power (CH Low)**

* Agilent 22:16:23 May 11, 2009

R T



Channel Power

8.58 dBm / 40.0000 MHz

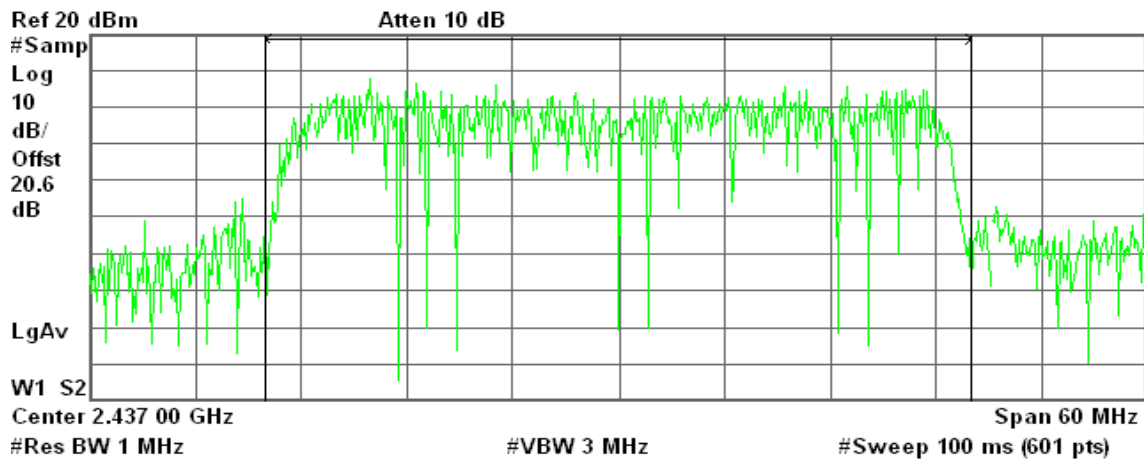
Power Spectral Density

-67.44 dBm/Hz

**Average Power (CH Mid)**

* Agilent 22:17:32 May 11, 2009

R T



Channel Power

14.54 dBm / 40.0000 MHz

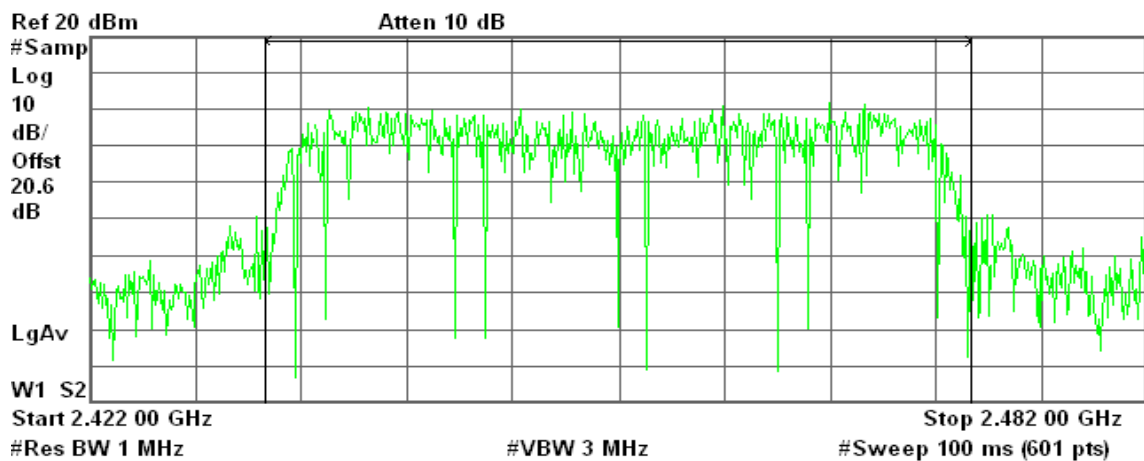
Power Spectral Density

-61.48 dBm/Hz

Average Power (CH High)

* Agilent 22:19:30 May 11, 2009

R T



Channel Power

9.90 dBm / 40.0000 MHz

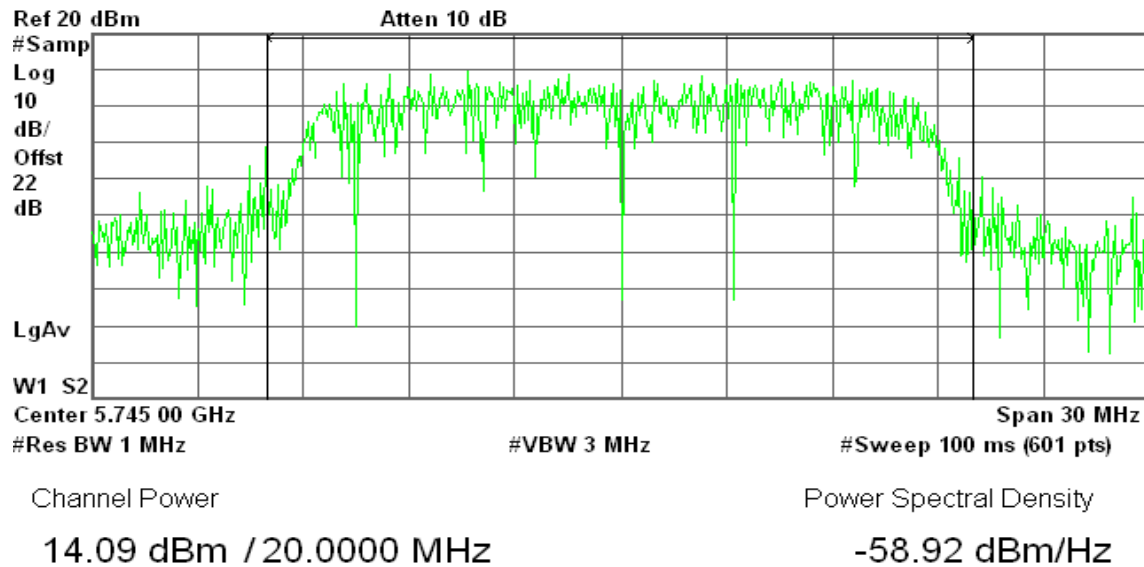
Power Spectral Density

-66.12 dBm/Hz

**IEEE 802.11a mode / 5745 ~ 5825MHz****Average Power (CH Low)**

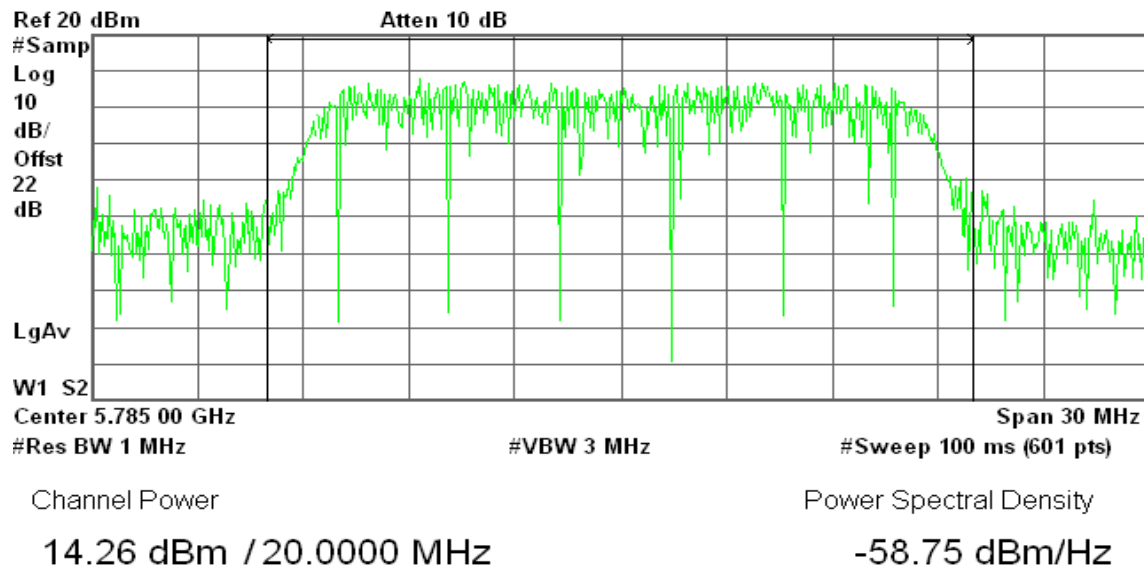
* Agilent 19:35:51 May 6, 2009

R T

**Average Power (CH Mid)**

* Agilent 19:34:25 May 6, 2009

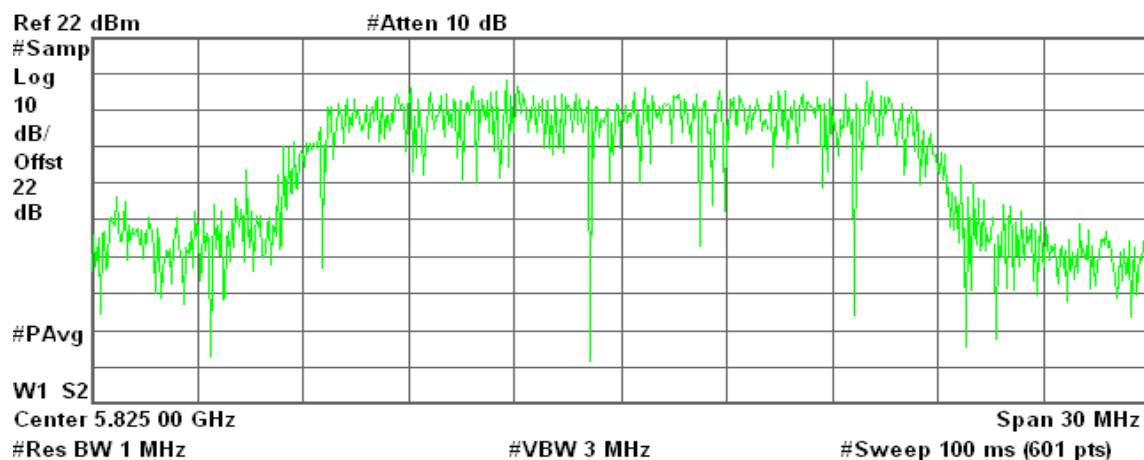
R T



**Average Power (CH High)**

* Agilent 19:36:35 May 11, 2009

R T



Channel Power

14.32 dBm / 20.0000 MHz

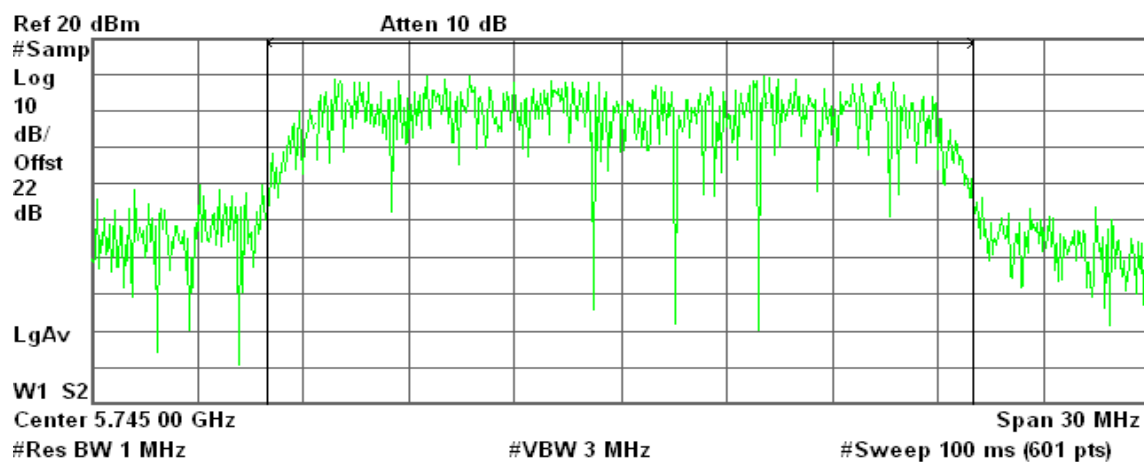
Power Spectral Density

-58.69 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz**Average Power (CH Low)**

* Agilent 00:03:42 May 7, 2009

R T



Channel Power

14.81 dBm / 20.0000 MHz

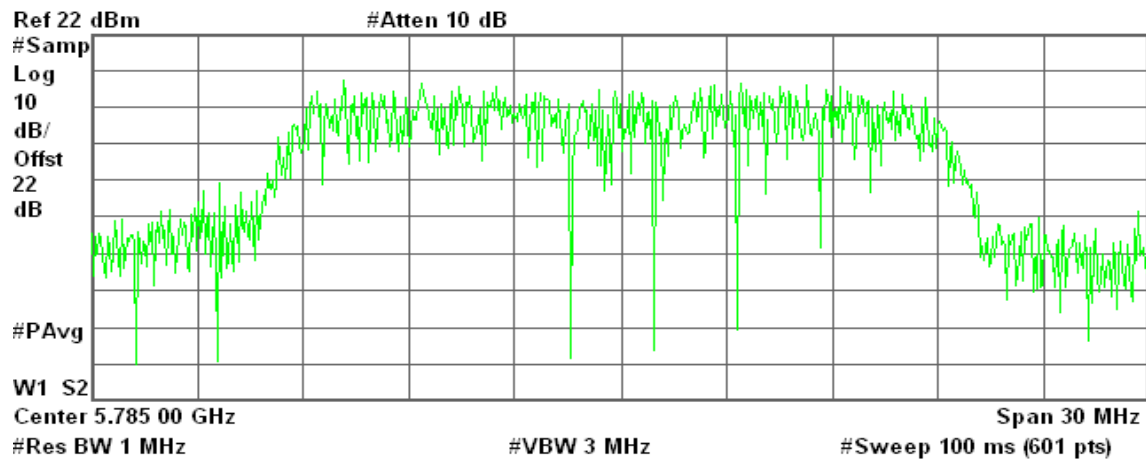
Power Spectral Density

-58.20 dBm/Hz

**Average Power (CH Mid)**

* Agilent 20:16:51 May 11, 2009

R T



Channel Power

14.06 dBm / 20.0000 MHz

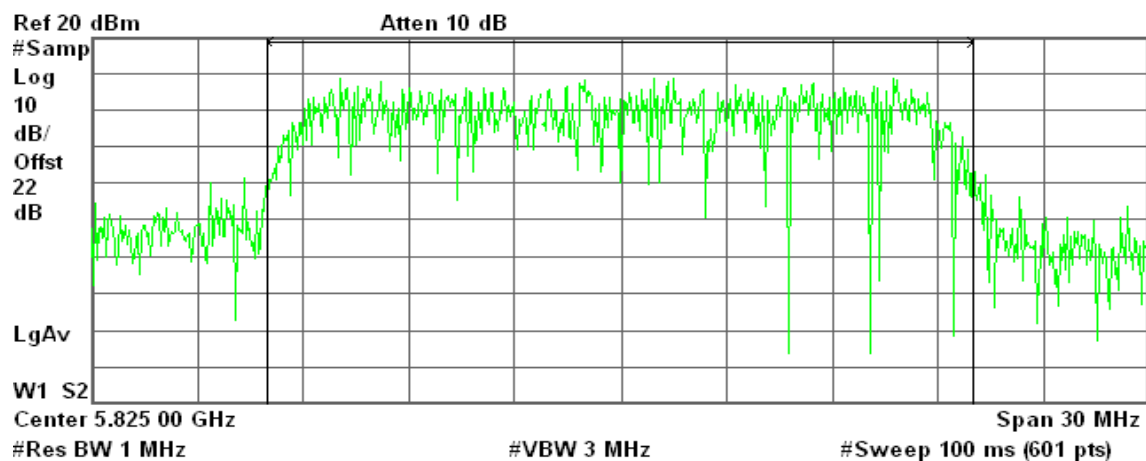
Power Spectral Density

-58.95 dBm/Hz

Average Power (CH High)

* Agilent 23:56:16 May 6, 2009

R T



Channel Power

14.23 dBm / 20.0000 MHz

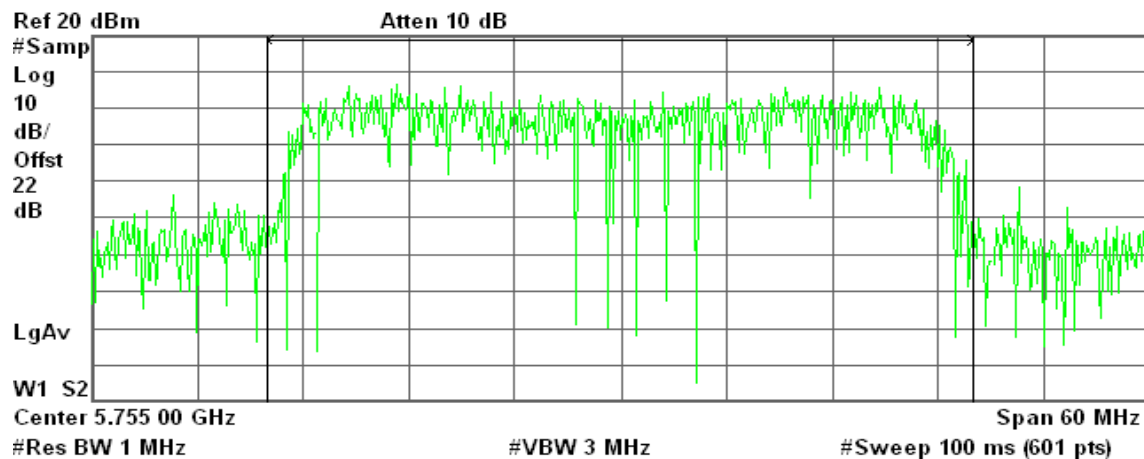
Power Spectral Density

-58.78 dBm/Hz

**draft 802.11n Wide-40 MHz Channel mode / 5755 ~ 5795MHz****Average Power (CH Low)**

* Agilent 02:06:32 May 7, 2009

R T



Channel Power

14.59 dBm / 40.0000 MHz

Power Spectral Density

-61.43 dBm/Hz

Average Power (CH High)

* Agilent 02:05:39 May 7, 2009

R T



Channel Power

14.52 dBm / 40.0000 MHz

Power Spectral Density

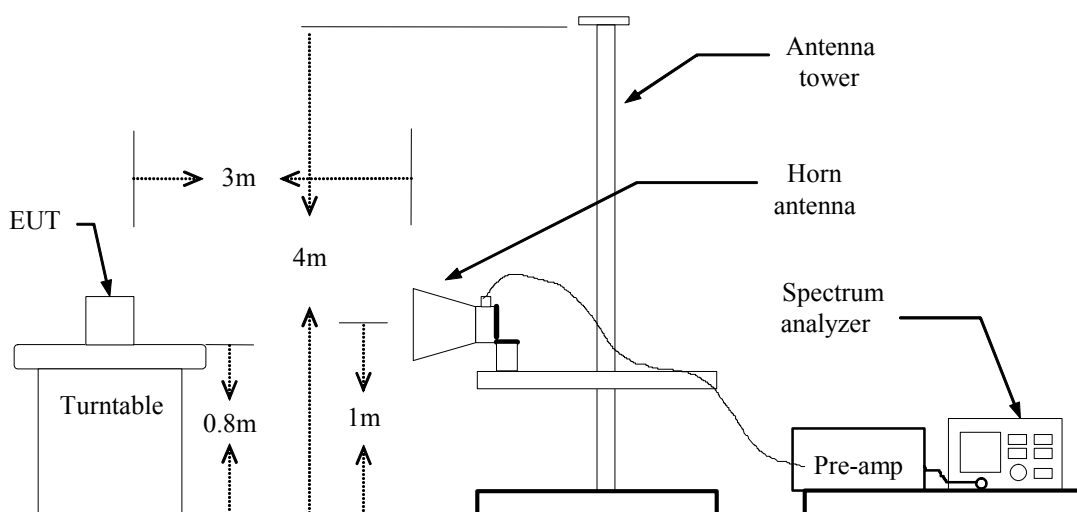
-61.50 dBm/Hz

7.4 BAND EDGES MEASUREMENT

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

Test Configuration



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the 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 emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

TEST RESULTS

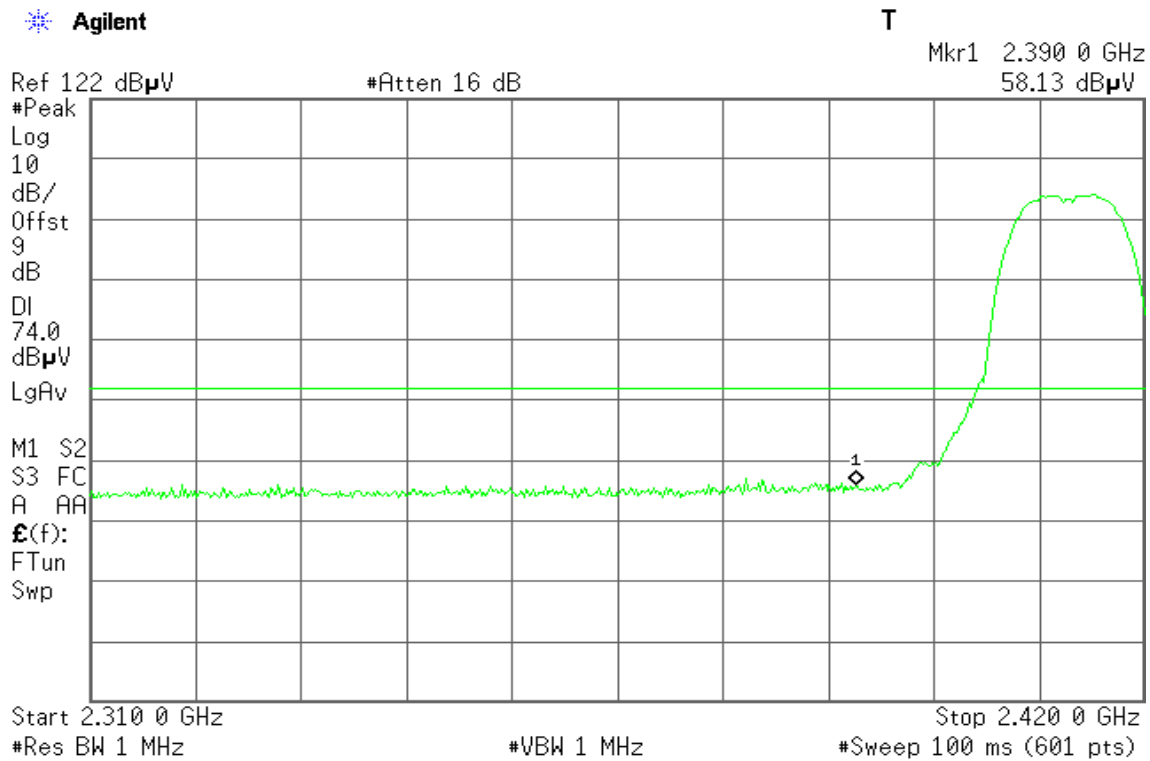
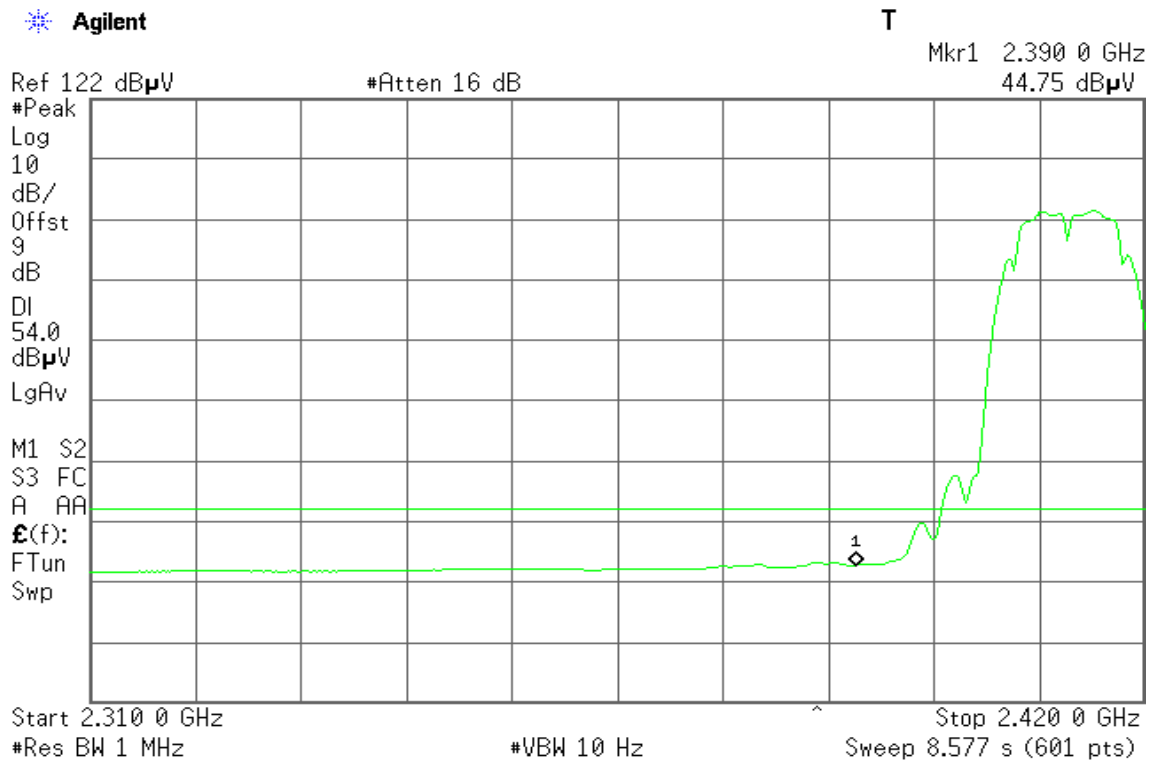
Refer to attach spectrum analyzer data chart.



802.11a Mode

1. Operating Frequency: 5725-5875MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 6dB bandwidth: CH Low: 15.58MHz, CH High: 16.50MHz

Because the mentioned conditions, the test is not applicable.

**Band Edges (IEEE 802.11b mode / CH Low)****Detector mode: Peak****Polarity: Vertical****Detector mode: Average****Polarity: Vertical**



Detector mode: Peak

Polarity: Horizontal

Agilent

T

Ref 122 dB μ V

#Atten 16 dB

Mkr1 2.390 0 GHz
56.52 dB μ V

#Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

T

Ref 122 dB μ V

#Atten 16 dB

Mkr1 2.390 0 GHz
44.28 dB μ V

#Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

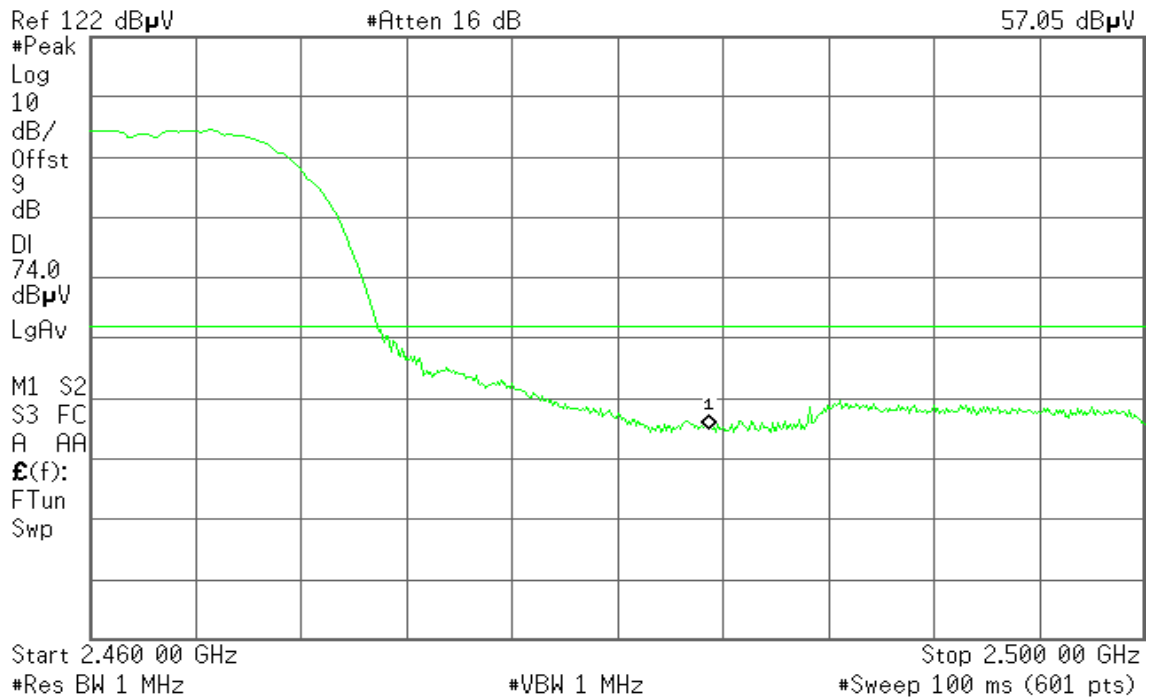
Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)

**Band Edges (IEEE 802.11b mode / CH High)****Detector mode: Peak****Polarity: Vertical**

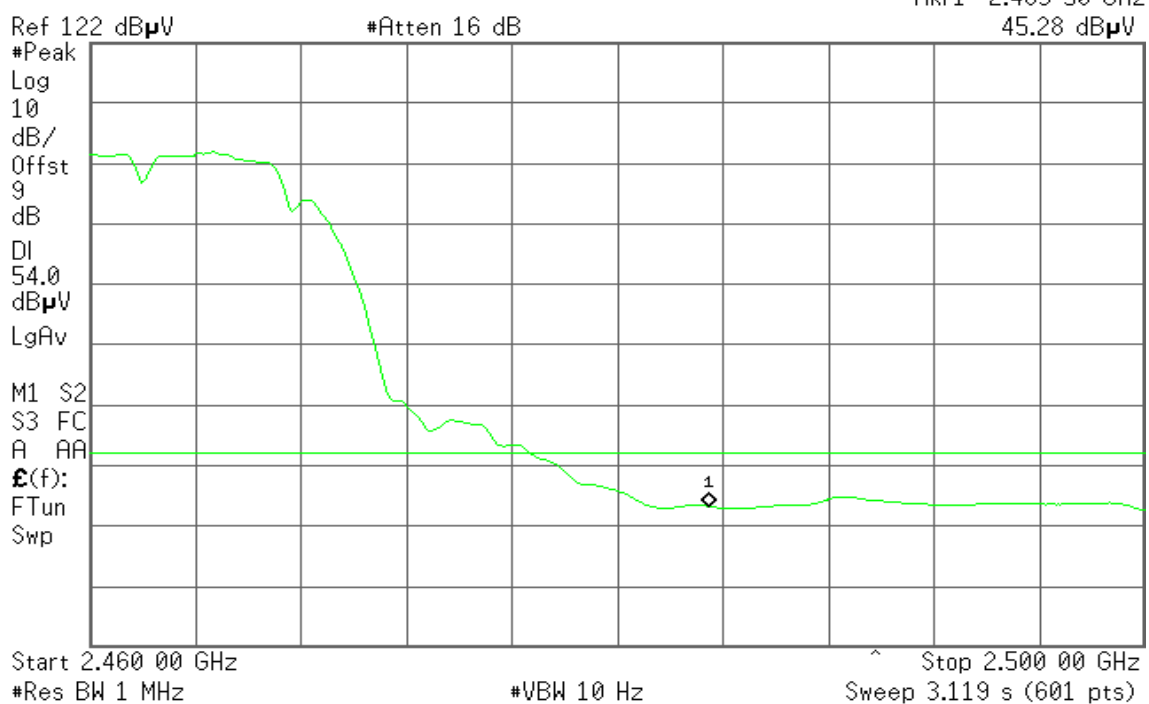
Agilent

T

**Detector mode: Average****Polarity: Vertical**

Agilent

T





Detector mode: Peak

Polarity: Horizontal

Agilent

T

Mkr1 2.483 50 GHz
56.45 dB μ VRef 122 dB μ V

#Atten 16 dB

#Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

T

Mkr1 2.483 50 GHz
44.28 dB μ VRef 122 dB μ V

#Atten 16 dB

#Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

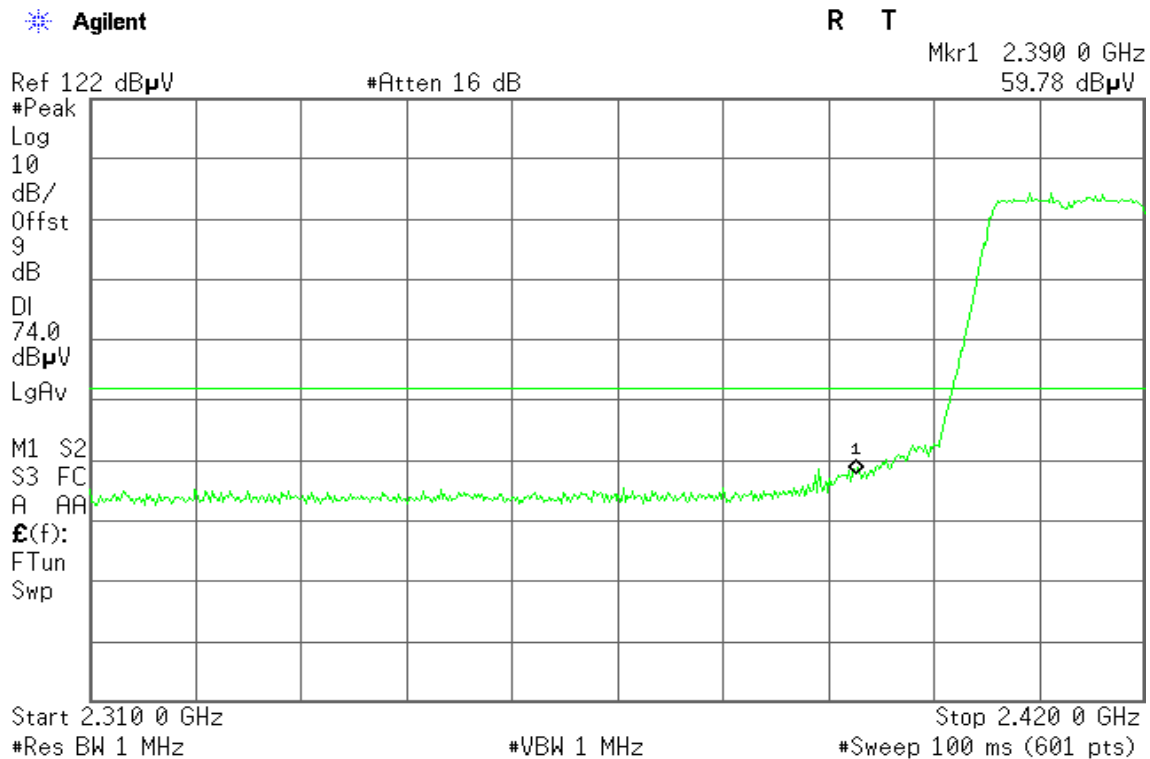
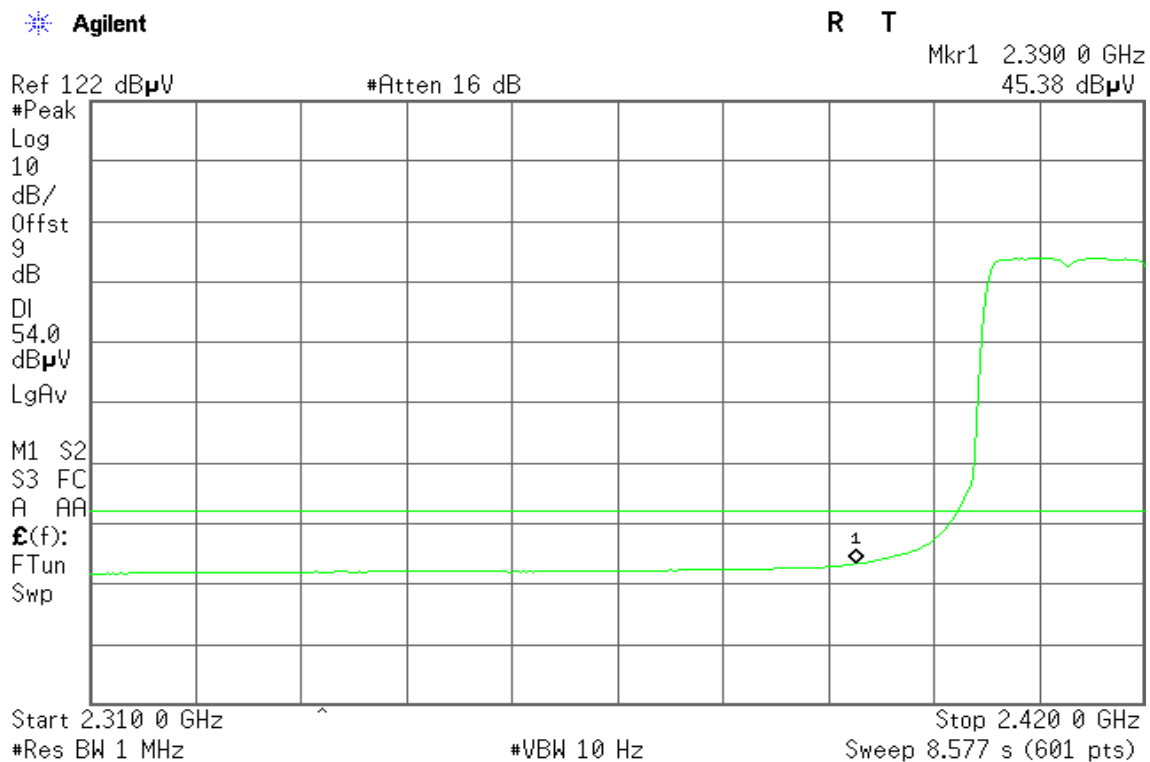
Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

Sweep 3.119 s (601 pts)

**Band Edges (IEEE 802.11g mode / CH Low)****Detector mode: Peak****Polarity: Vertical****Detector mode: Average****Polarity: Vertical**



Detector mode: Peak

Polarity: Horizontal

Agilent

R T

Mkr1 2.390 0 GHz
58.45 dB μ VRef 122 dB μ V

#Atten 16 dB

#Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 2.390 0 GHz
45.00 dB μ VRef 122 dB μ V

#Atten 16 dB

#Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

^ Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)

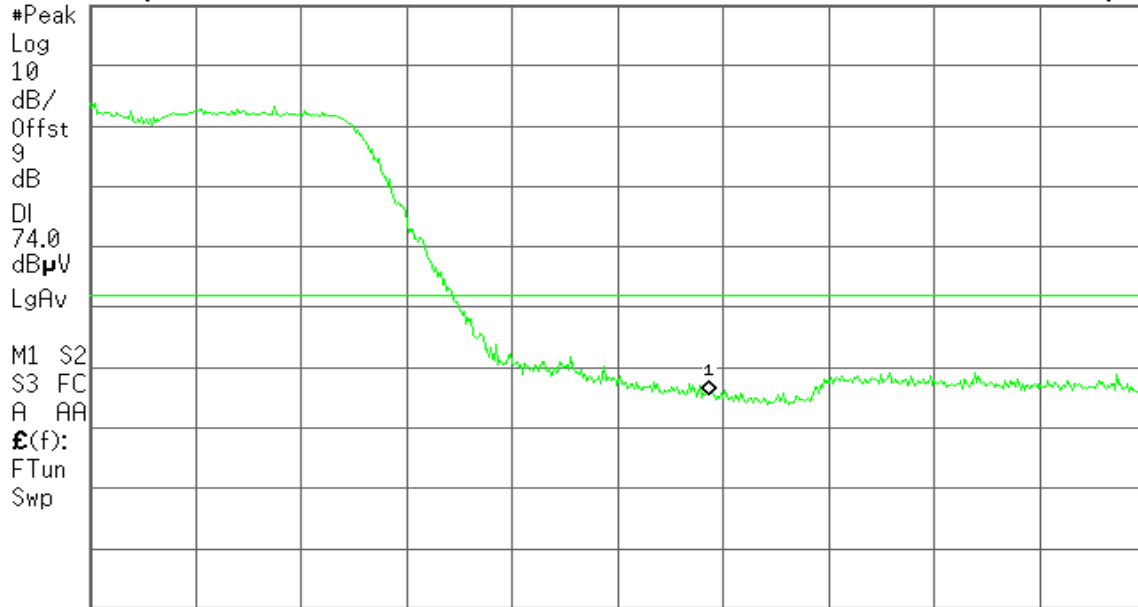
**Band Edges (IEEE 802.11g mode / CH High)****Detector mode: Peak****Polarity: Vertical**

Agilent

T

Ref 122 dB μ V

#Atten 16 dB

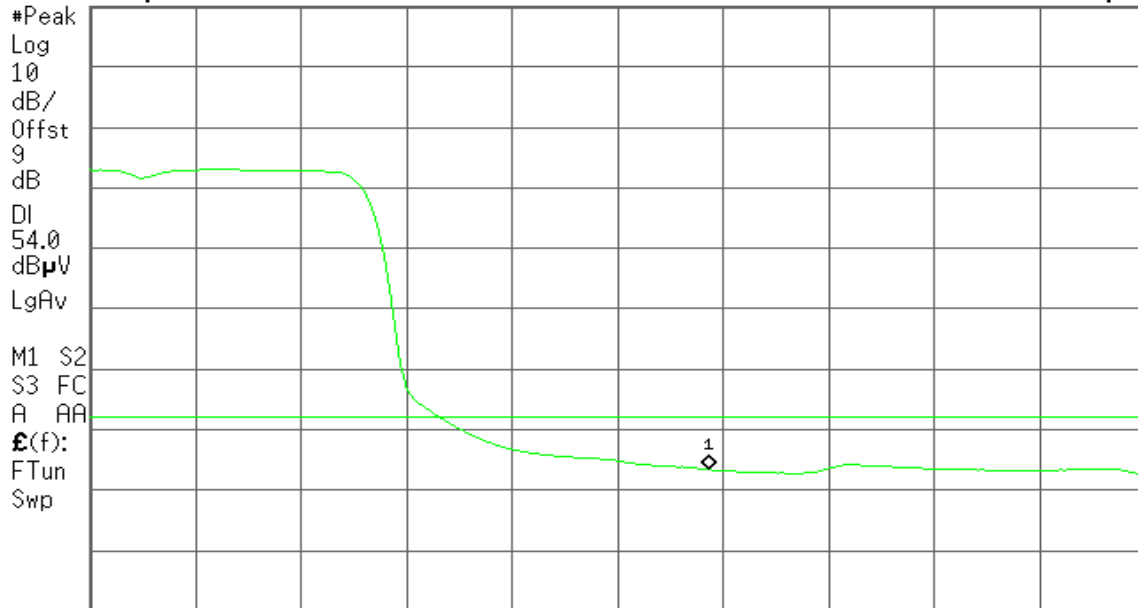
Mkr1 2.483 50 GHz
57.55 dB μ V**Detector mode: Average****Polarity: Vertical**

Agilent

T

Ref 122 dB μ V

#Atten 16 dB

Mkr1 2.483 50 GHz
45.42 dB μ V



Detector mode: Peak

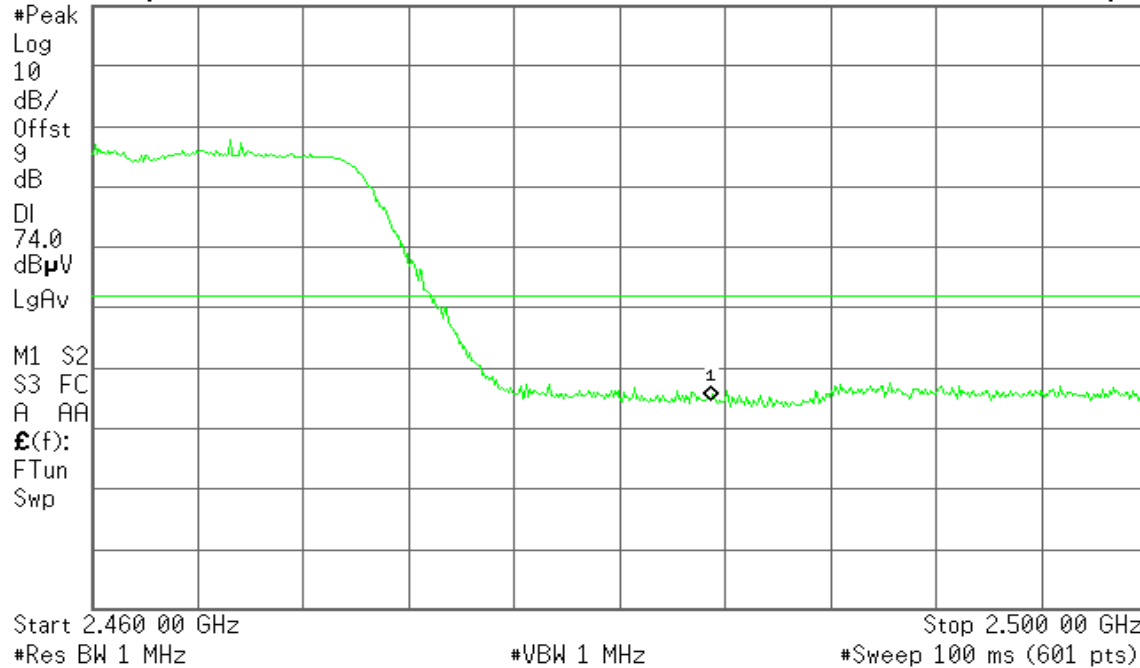
Polarity: Horizontal

Agilent

T

Ref 122 dB μ V

#Atten 16 dB

Mkr1 2.483 50 GHz
56.62 dB μ V

Detector mode: Average

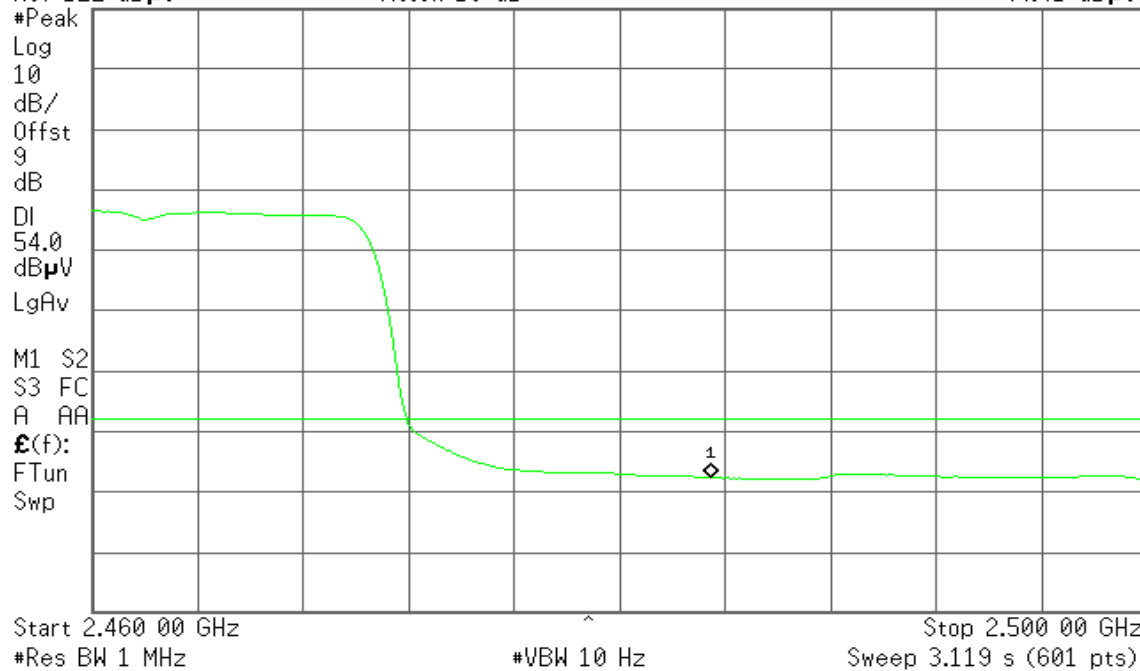
Polarity: Horizontal

Agilent

T

Ref 122 dB μ V

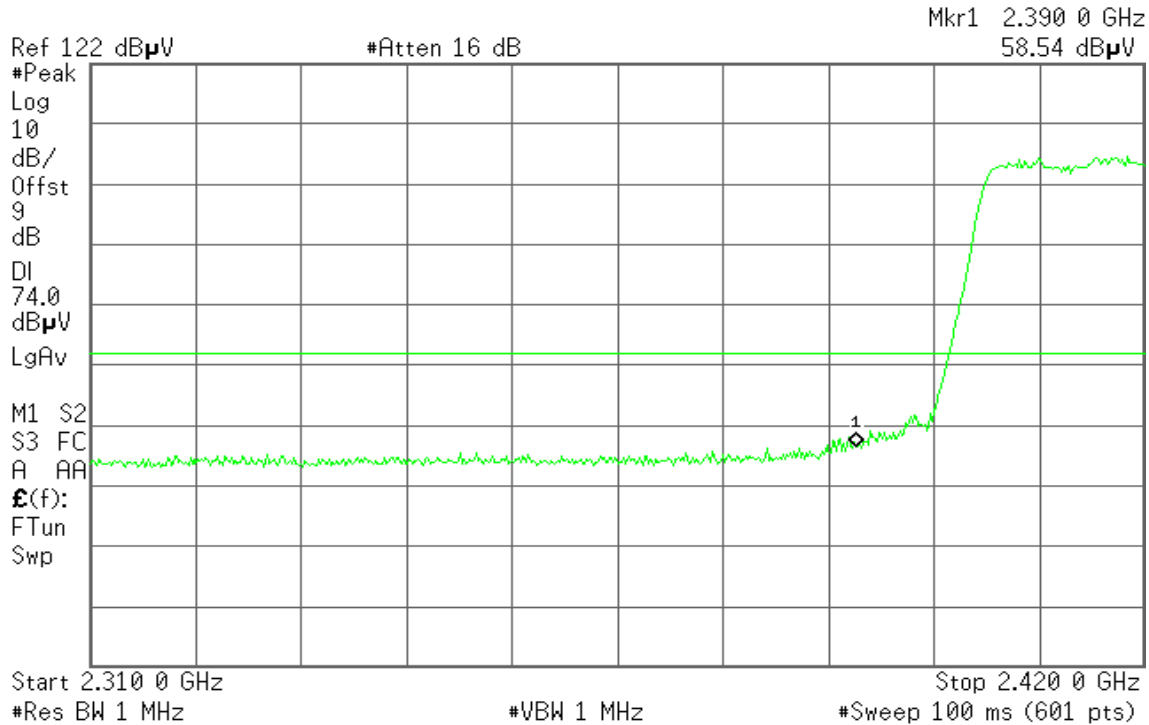
#Atten 16 dB

Mkr1 2.483 50 GHz
44.41 dB μ V

**Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH Low)****Detector mode: Peak****Polarity: Vertical**

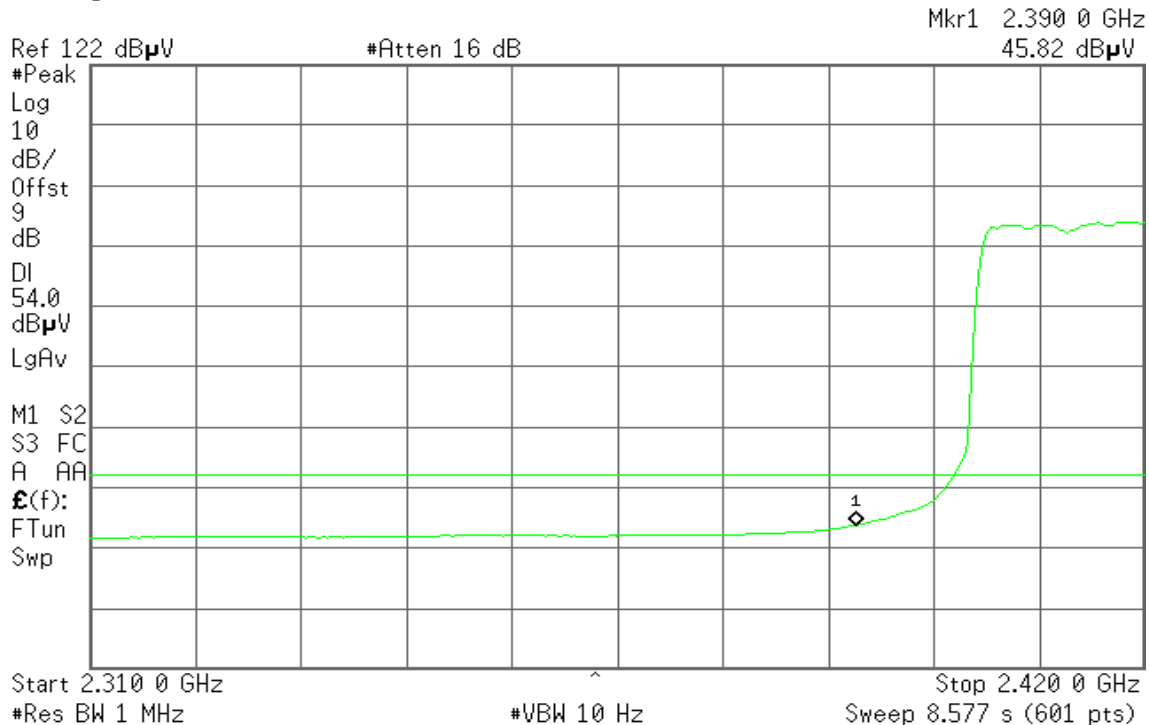
* Agilent

T

**Detector mode: Average****Polarity: Vertical**

* Agilent

T





Detector mode: Peak

Polarity: Horizontal

Agilent

T

Ref 122 dB μ V

#Atten 16 dB

Mkr1 2.390 0 GHz
57.98 dB μ V

#Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

T

Ref 122 dB μ V

#Atten 16 dB

Mkr1 2.390 0 GHz
45.25 dB μ V

#Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

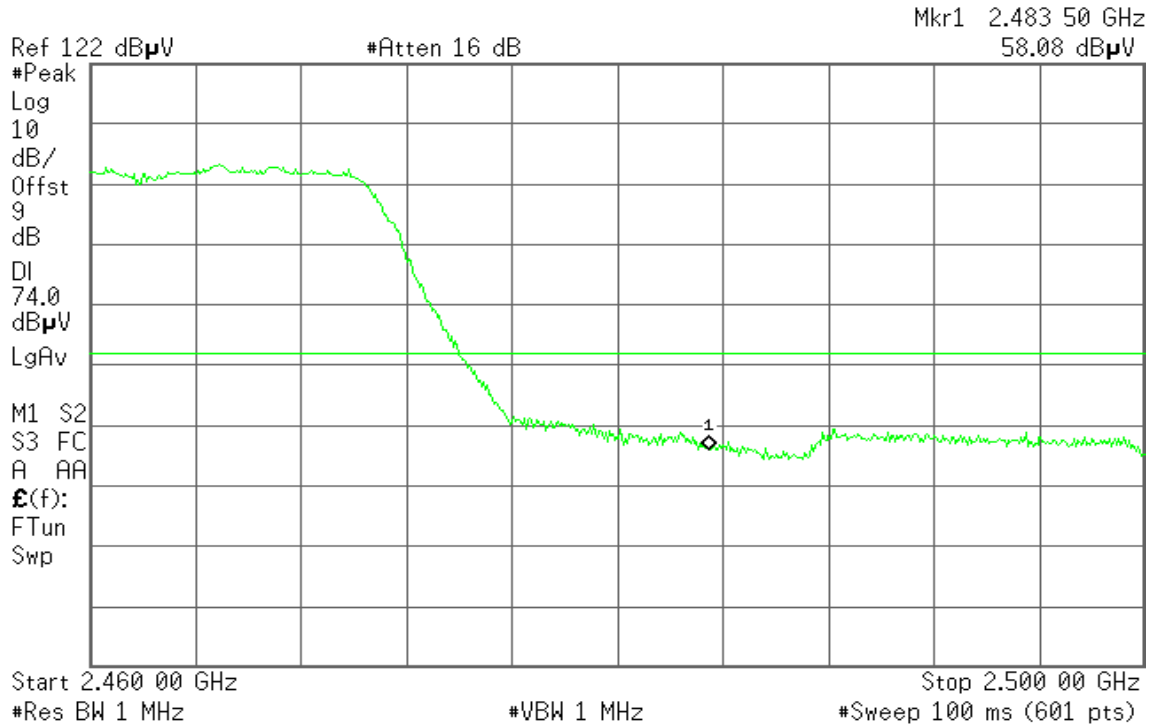
Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)

**Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH High)****Detector mode: Peak****Polarity: Vertical**

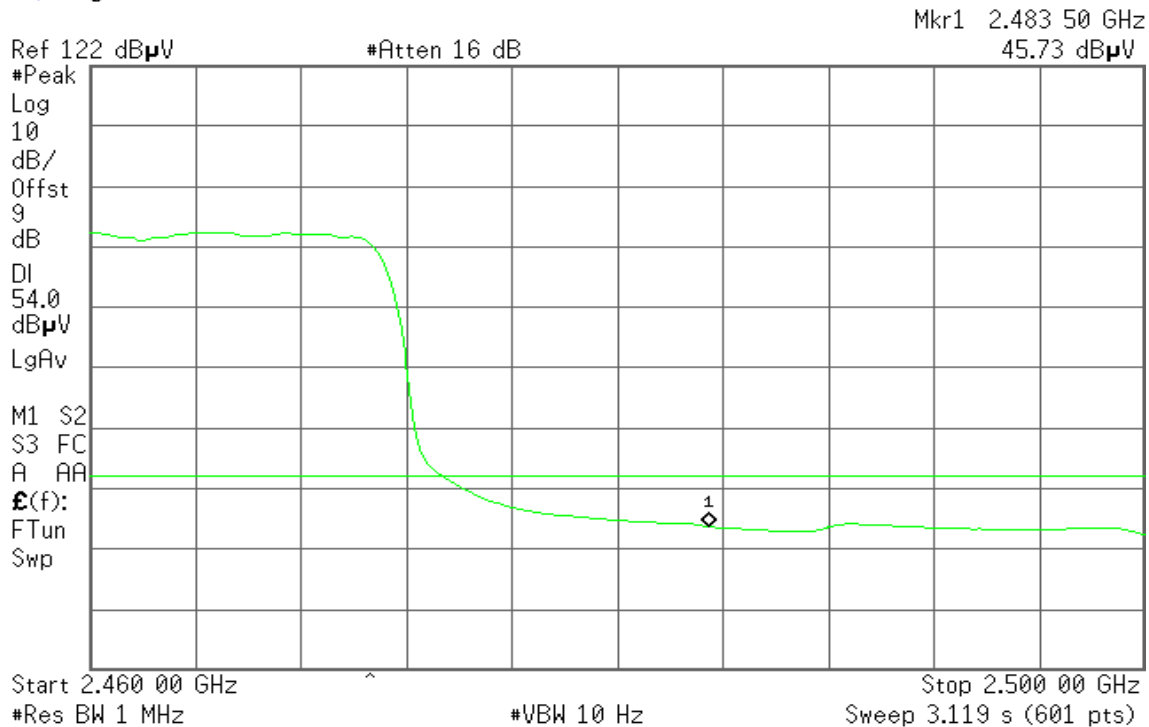
* Agilent

T

**Detector mode: Average****Polarity: Vertical**

* Agilent

T





Detector mode: Peak

Polarity: Horizontal

Agilent

T

Mkr1 2.483 50 GHz
57.73 dB μ VRef 122 dB μ V

#Atten 16 dB

#Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

T

Mkr1 2.483 50 GHz
44.61 dB μ VRef 122 dB μ V

#Atten 16 dB

#Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

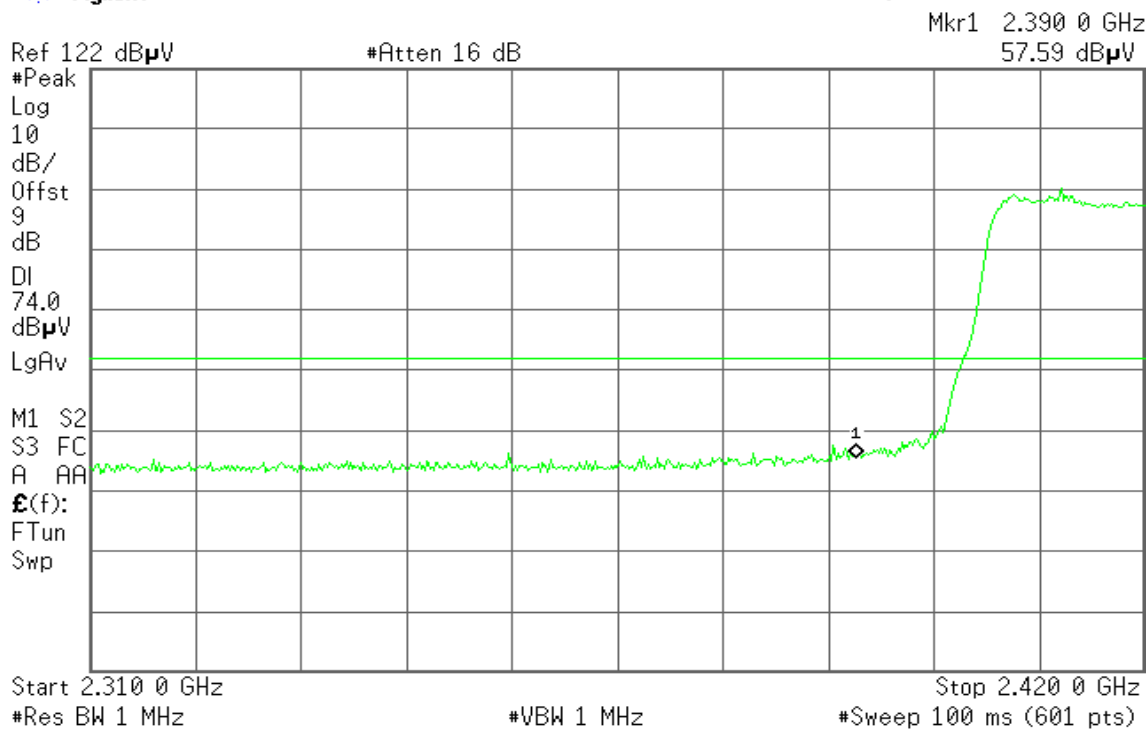
^ Stop 2.500 00 GHz

Sweep 3.119 s (601 pts)

**Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH Low)****Detector mode: Peak****Polarity: Vertical**

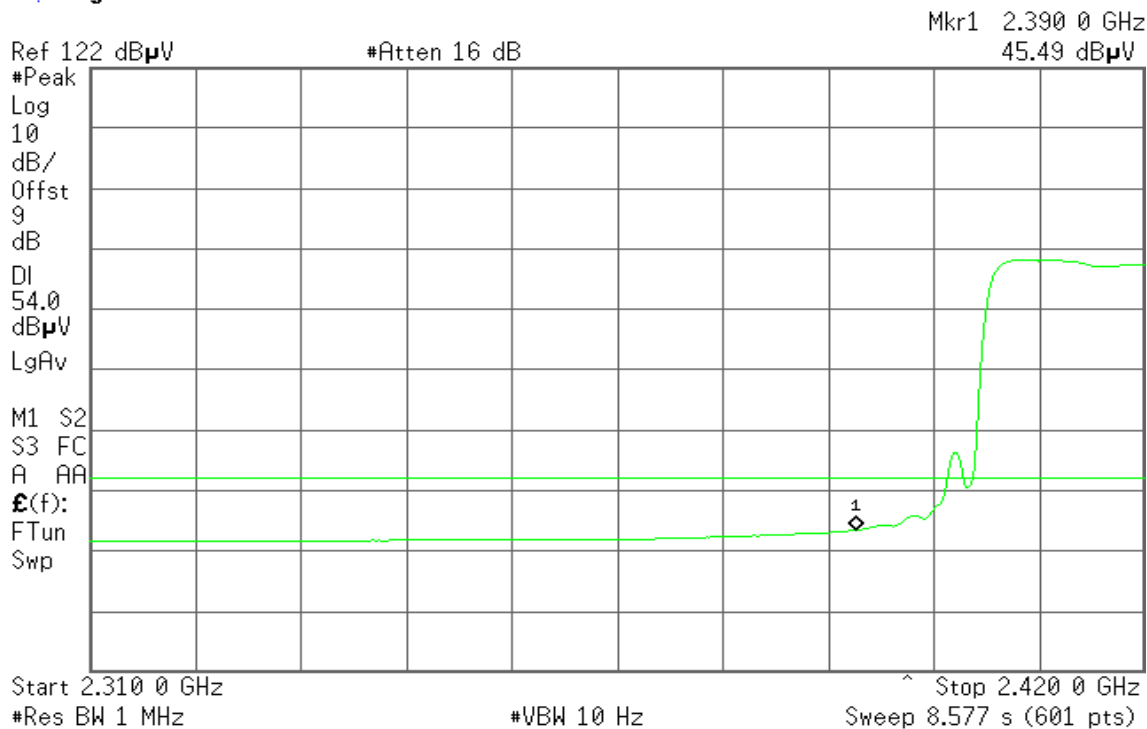
Agilent

T

**Detector mode: Average****Polarity: Vertical**

Agilent

T





Detector mode: Peak

Polarity: Horizontal

Agilent

T

Ref 122 dB μ V

#Atten 16 dB

Mkr1 2.390 0 GHz
57.77 dB μ V

#Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.430 0 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

T

Ref 122 dB μ V

#Atten 16 dB

Mkr1 2.390 0 GHz
45.44 dB μ V

#Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

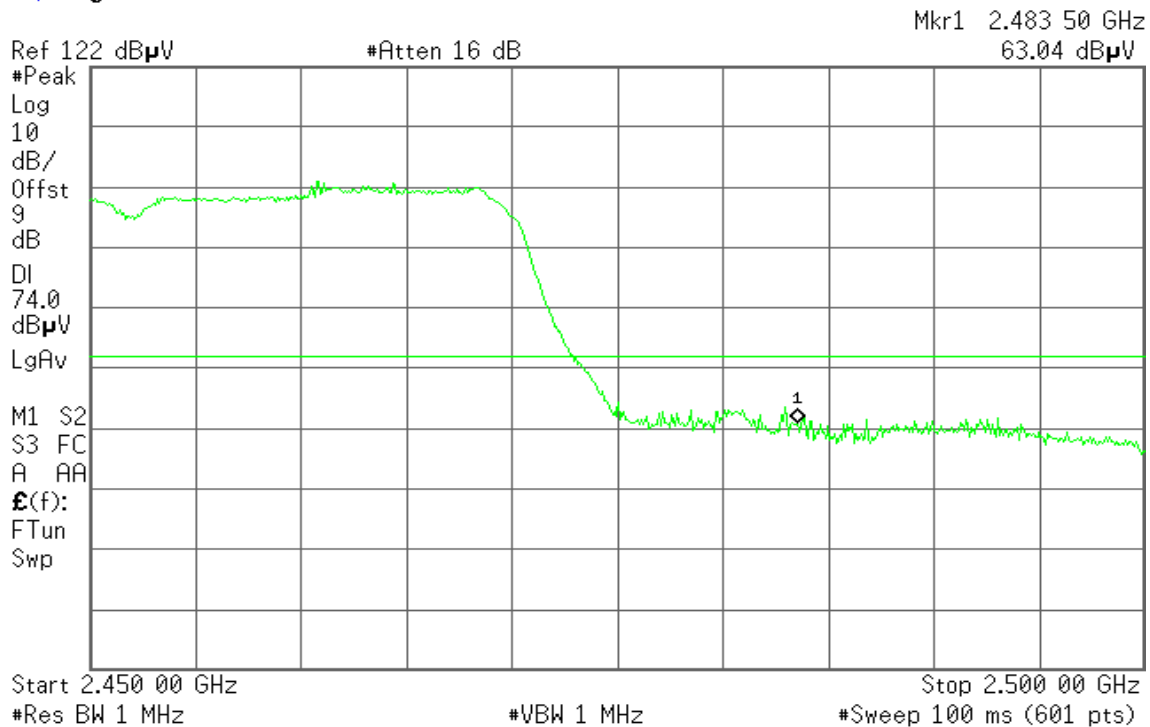
Stop 2.430 0 GHz

Sweep 9.357 s (601 pts)

**Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH High)****Detector mode: Peak****Polarity: Vertical**

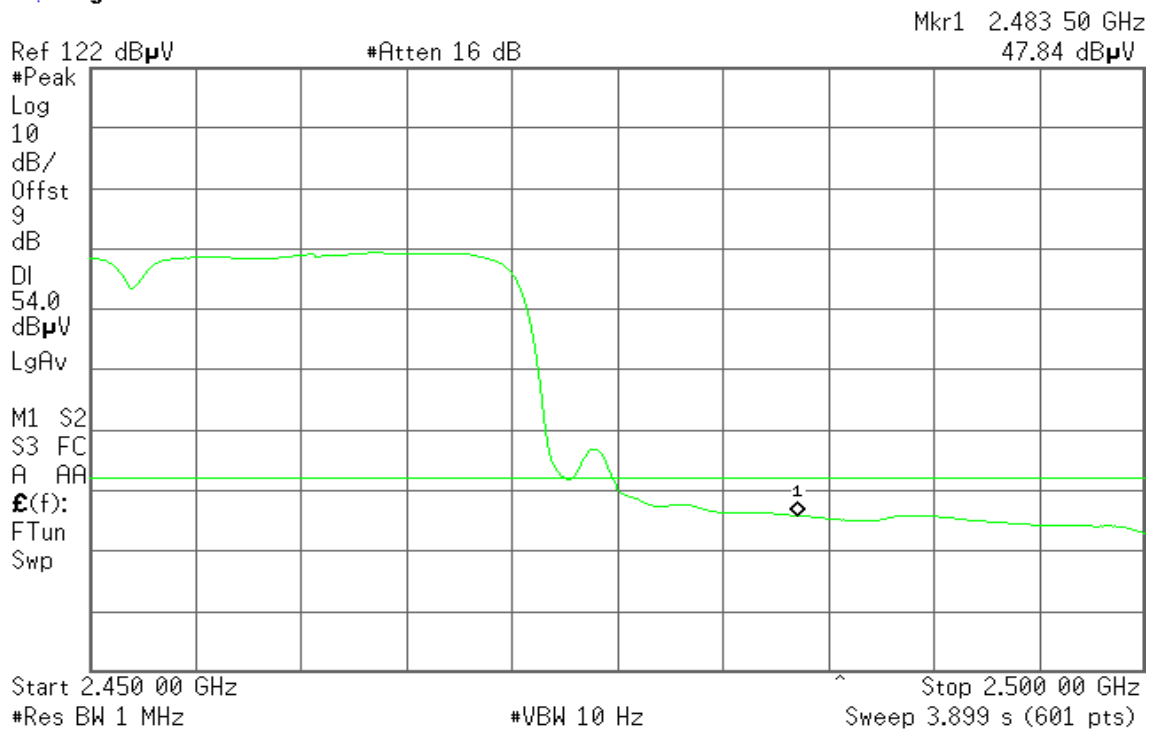
* Agilent

T

**Detector mode: Average****Polarity: Vertical**

* Agilent

T





Detector mode: Peak

Polarity: Horizontal

Agilent

T

Mkr1 2.483 50 GHz
57.98 dB μ VRef 122 dB μ V

#Atten 16 dB

#Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.450 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

T

Mkr1 2.483 50 GHz
45.55 dB μ VRef 122 dB μ V

#Atten 16 dB

#Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.450 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

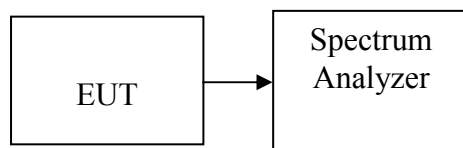
Sweep 3.899 s (601 pts)

7.5 PEAK POWER SPECTRAL DENSITY

LIMIT

1. According to §15.247(e), 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.
2. According to §15.247(f), 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.

Test Configuration



TEST PROCEDURE

1. 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.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.

TEST RESULTS

No non-compliance noted

**Test Data****Test mode: IEEE 802.11b**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-10.37	8.00	PASS
Mid	2437	-9.53		PASS
High	2462	-10.10		PASS

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-11.50	8.00	PASS
Mid	2437	-12.33		PASS
High	2462	-11.26		PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-13.23	8.00	PASS
Mid	2437	-11.44		PASS
High	2462	-13.11		PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-18.50	8.00	PASS
Mid	2437	-12.83		PASS
High	2462	-16.89		PASS

**Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	5745	-12.00	8	PASS
Mid	5785	-10.80		PASS
High	5825	-11.03		PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	5745	-11.94	8	PASS
Mid	5785	-11.43		PASS
High	5825	-11.87		PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / 5755 ~ 5795MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	5755	-14.95	8	PASS
High	5795	-14.60		PASS

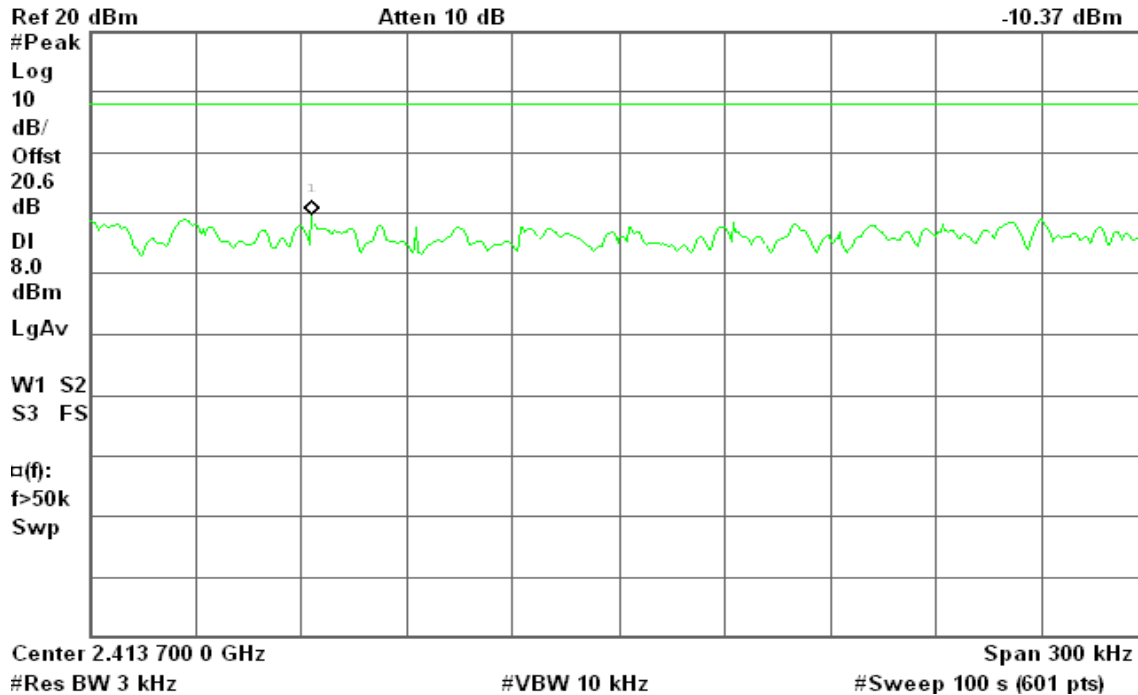
**Test Plot****IEEE 802.11b mode****PPSD (CH Low)**

* Agilent 20:47:25 May 11, 2009

R T

Mkr1 2.413 612 4 GHz

-10.37 dBm

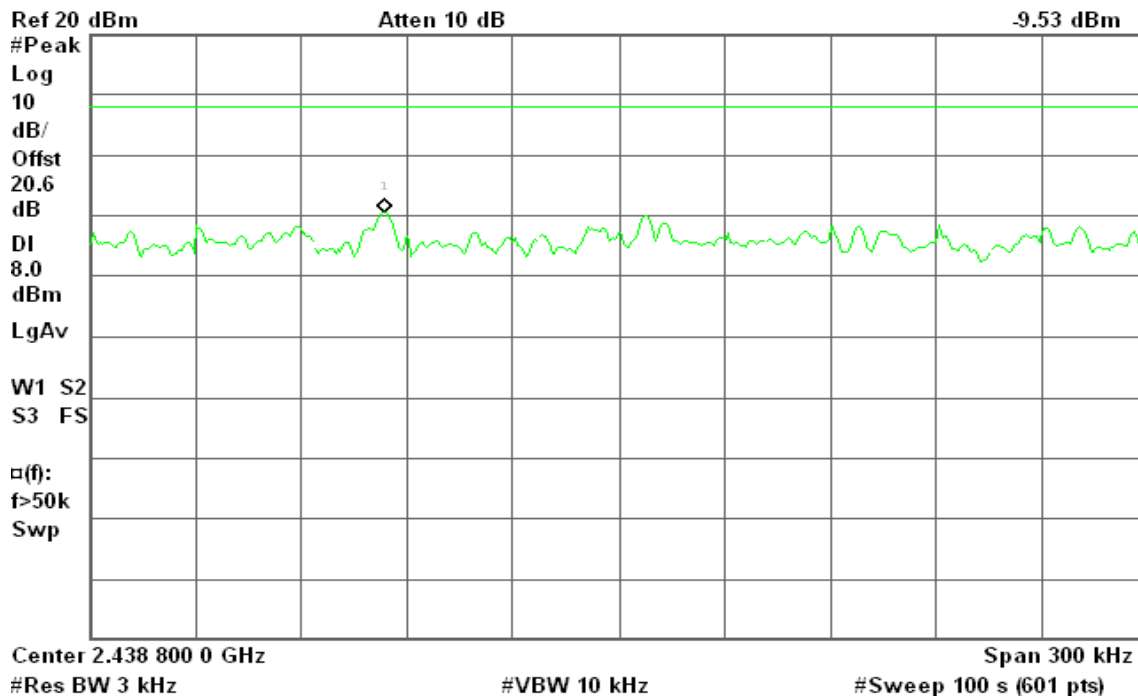
**PPSD (CH Mid)**

* Agilent 20:59:56 May 11, 2009

R T

Mkr1 2.438 733 3 GHz

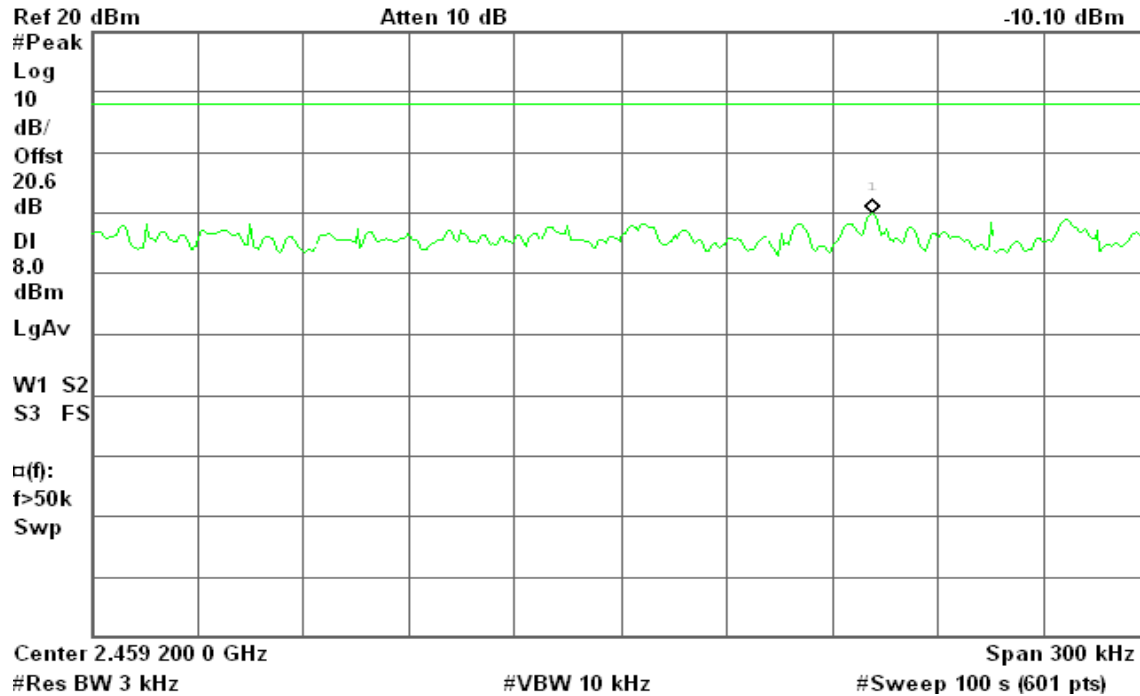
-9.53 dBm



**PPSD (CH High)**

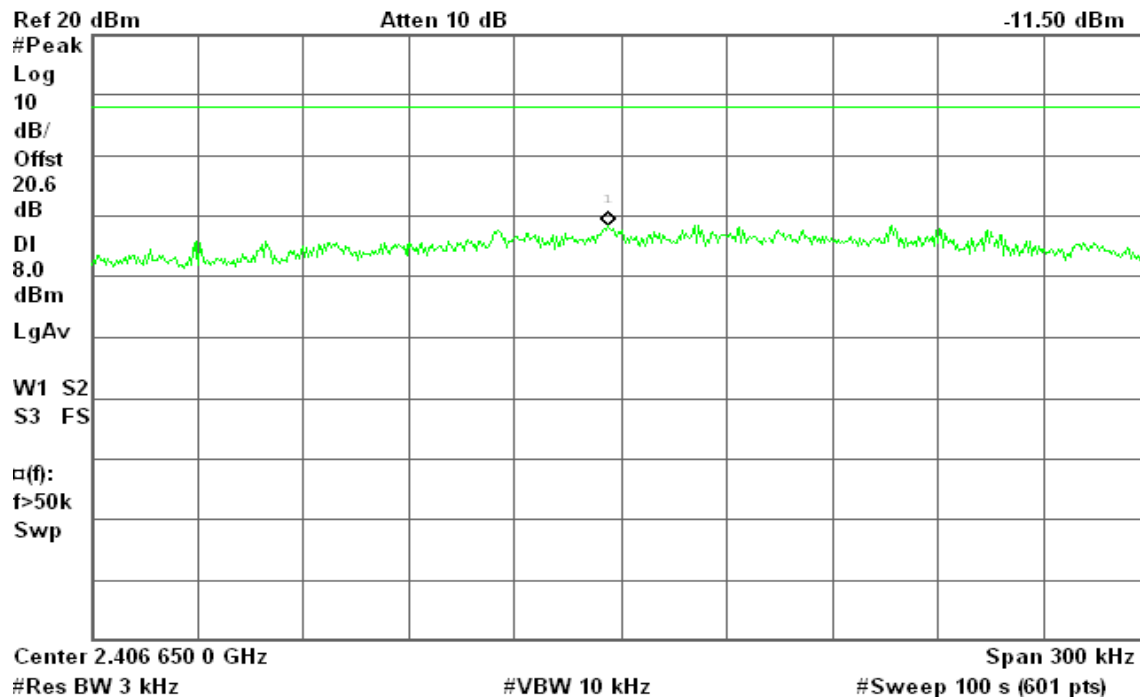
* Agilent 21:04:50 May 11, 2009

R T

Mkr1 2.459 271 7 GHz
-10.10 dBm**IEEE 802.11g mode****PPSD (CH Low)**

* Agilent 21:41:57 May 11, 2009

R T

Mkr1 2.406 646 0 GHz
-11.50 dBm



PPSD (CH Mid)

* Agilent 21:36:57 May 11, 2009

R T

Mkr1 2.435 469 1 GHz

-12.33 dBm

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

20.6

dB

DI

8.0

dBm

LgAv

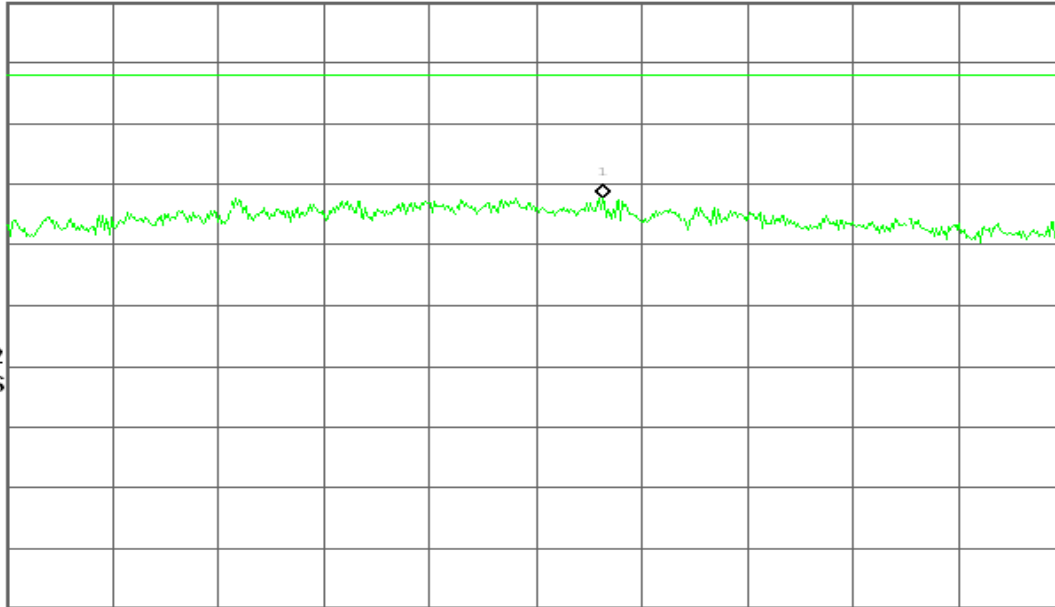
W1 S2

S3 FS

□(f):

f>50k

Swp



Center 2.435 450 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

PPSD (CH High)

* Agilent 21:29:47 May 11, 2009

R T

Mkr1 2.467 615 5 GHz

-11.26 dBm

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

20.6

dB

DI

8.0

dBm

LgAv

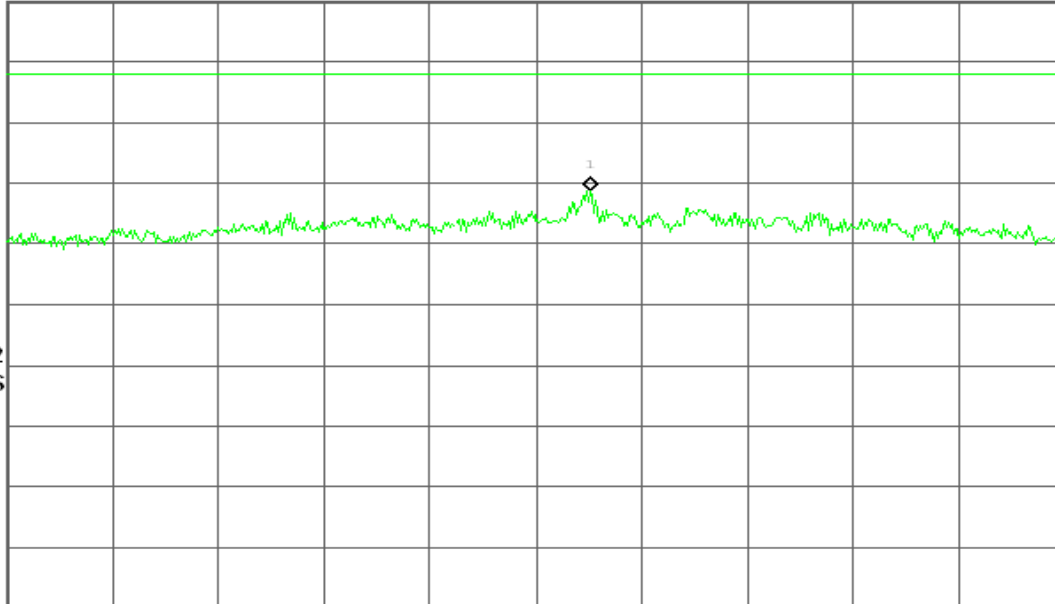
W1 S2

S3 FS

□(f):

f>50k

Swp



Center 2.467 600 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

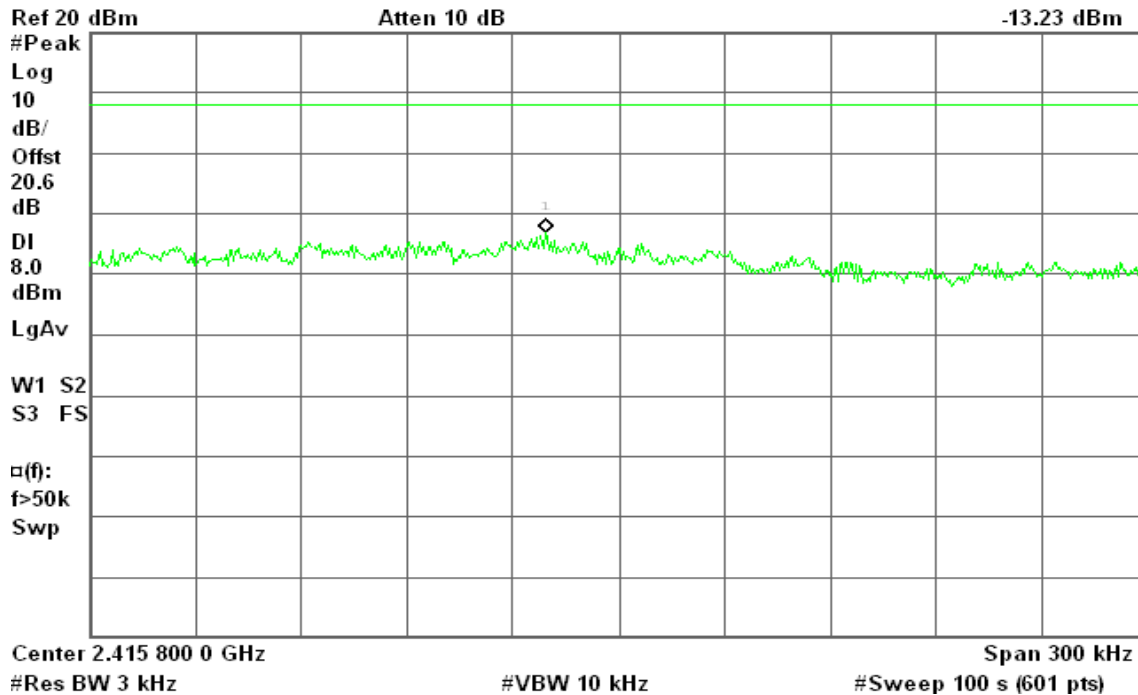
**draft 802.11n Standard-20 MHz Channel mode****PPSD (CH Low)**

* Agilent 22:10:52 May 11, 2009

R T

Mkr1 2.415 779 4 GHz

-13.23 dBm

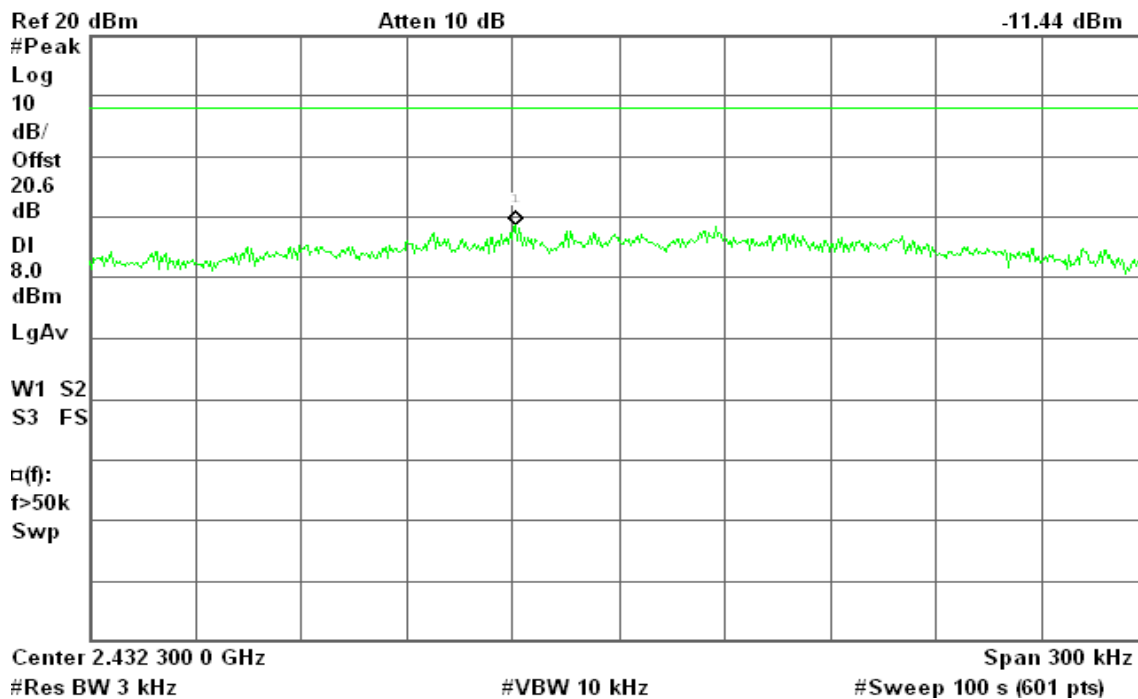
**PPSD (CH Mid)**

* Agilent 22:05:53 May 11, 2009

R T

Mkr1 2.432 270 9 GHz

-11.44 dBm



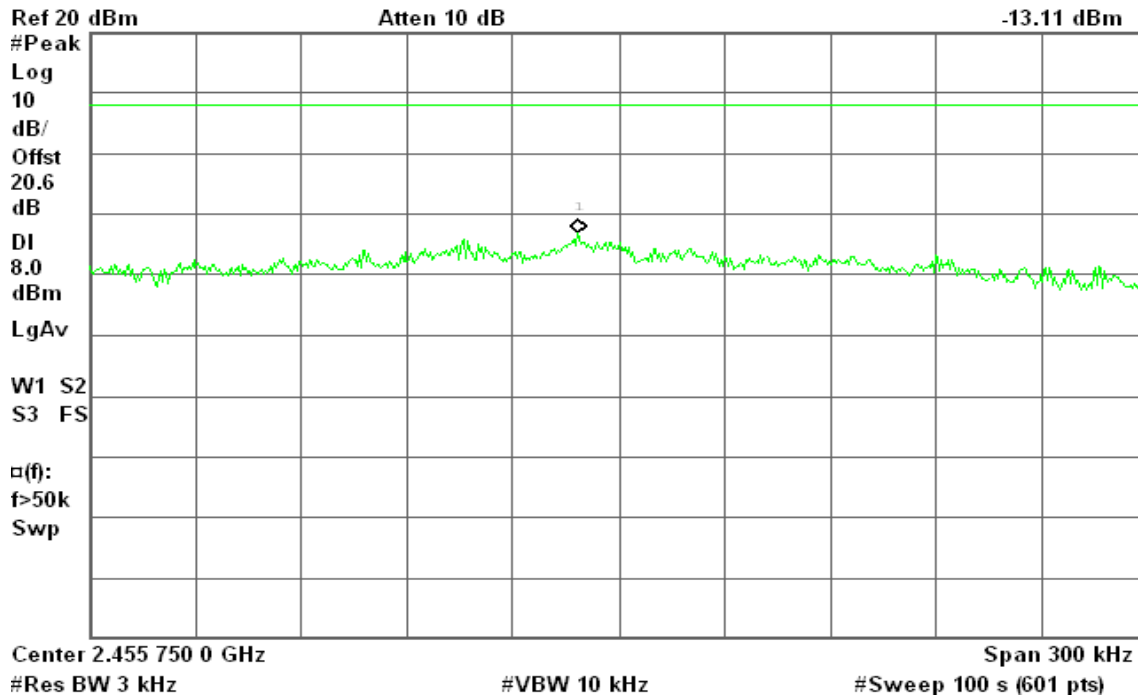
**PPSD (CH High)**

* Agilent 22:01:27 May 11, 2009

R T

Mkr1 2.455 738 5 GHz

-13.11 dBm

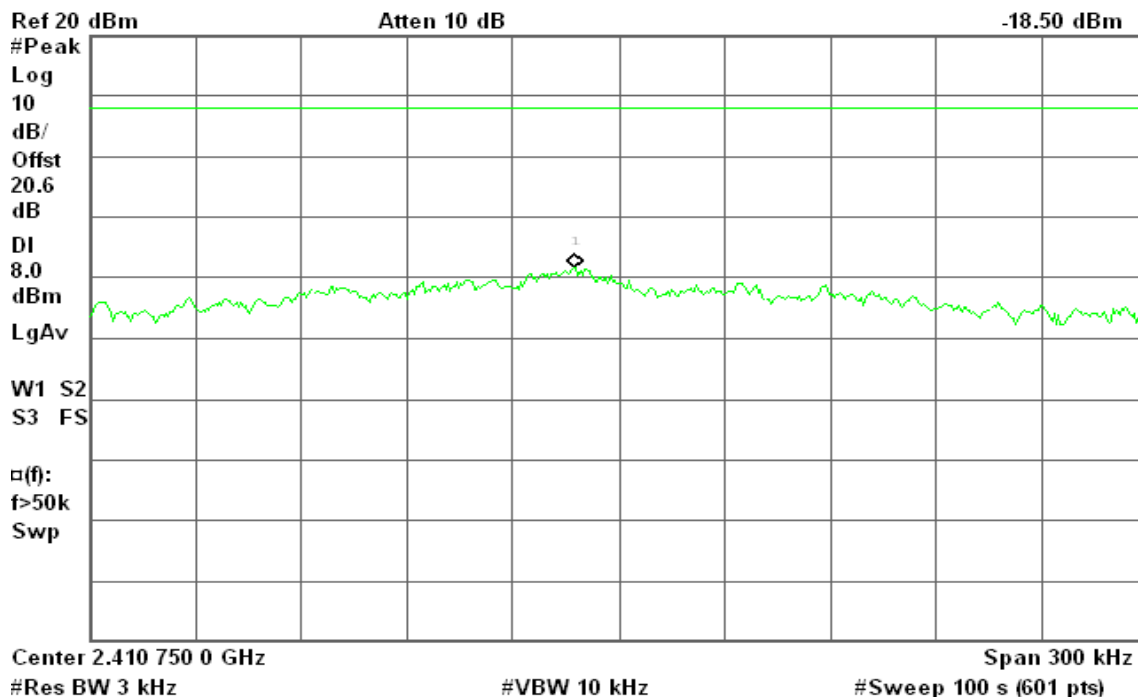
**draft 802.11n Wide-40 MHz Channel mode****PPSD (CH Low)**

* Agilent 22:34:43 May 11, 2009

R T

Mkr1 2.410 737 4 GHz

-18.50 dBm

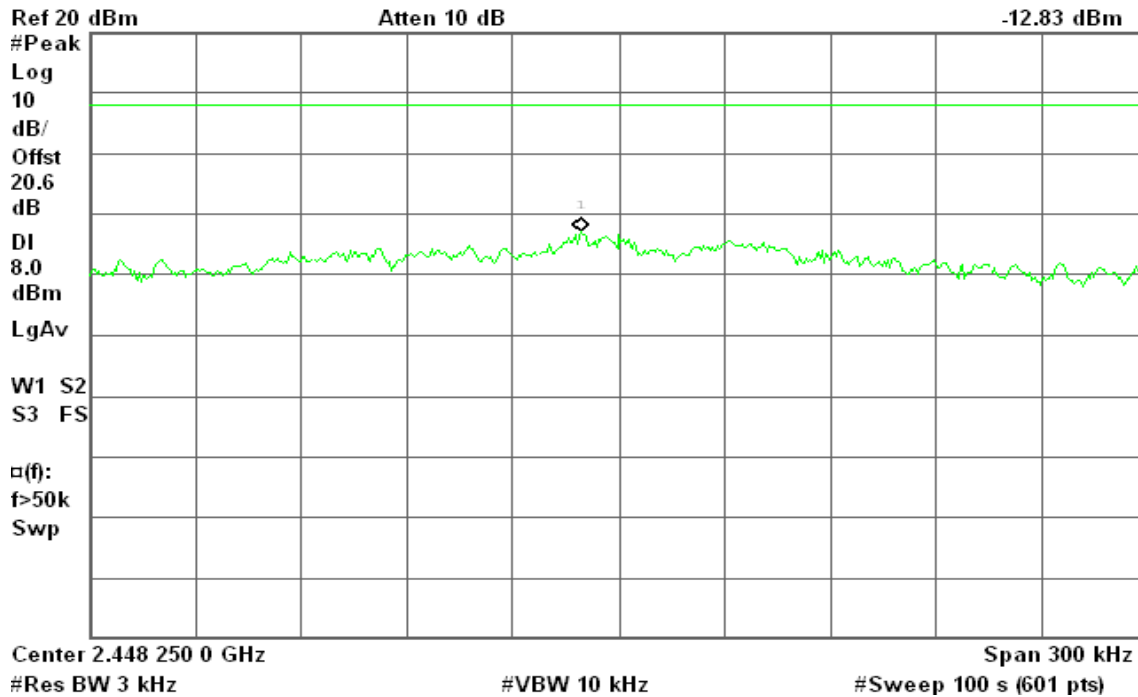




PPSD (CH Mid)

* Agilent 22:29:12 May 11, 2009

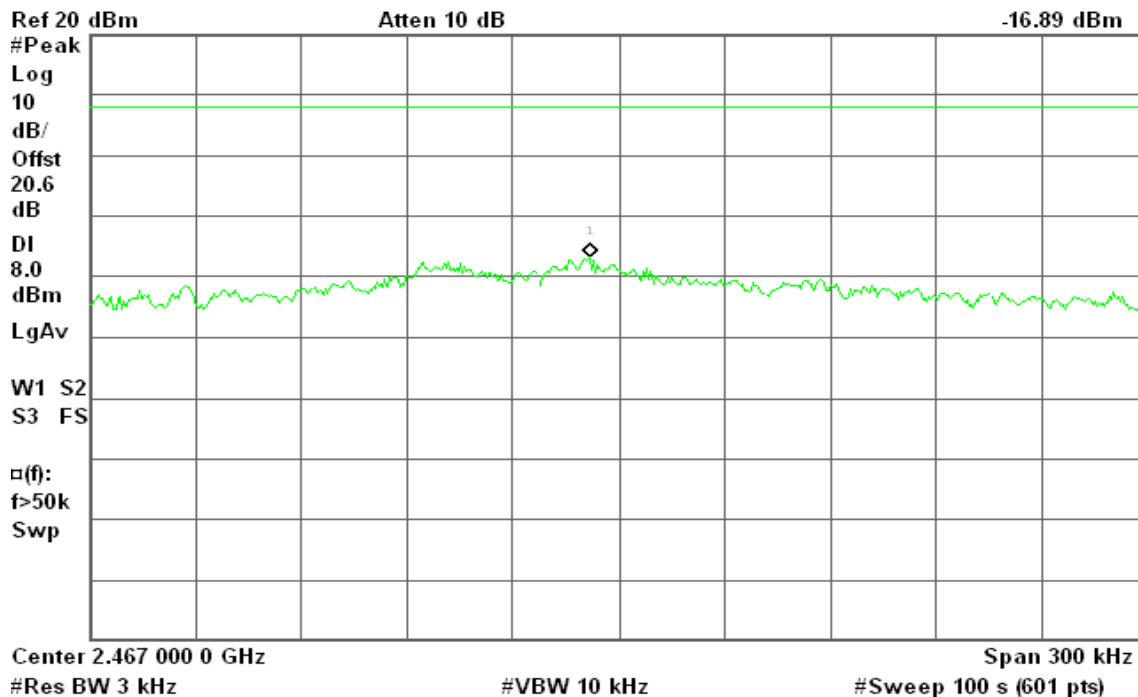
R T

Mkr1 2.448 239 0 GHz
-12.83 dBm

PPSD (CH High)

* Agilent 22:24:13 May 11, 2009

R T

Mkr1 2.466 991 5 GHz
-16.89 dBm

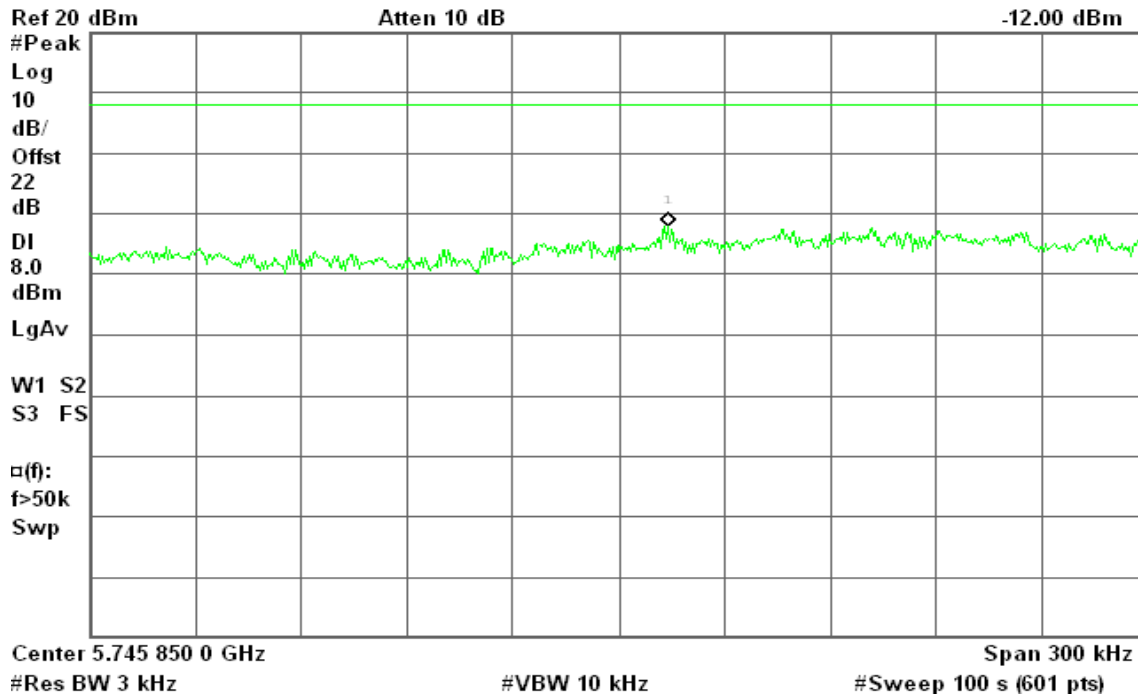
**Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz****PPSD (CH Low)**

* Agilent 19:29:22 May 6, 2009

R T

Mkr1 5.745 864 1 GHz

-12.00 dBm

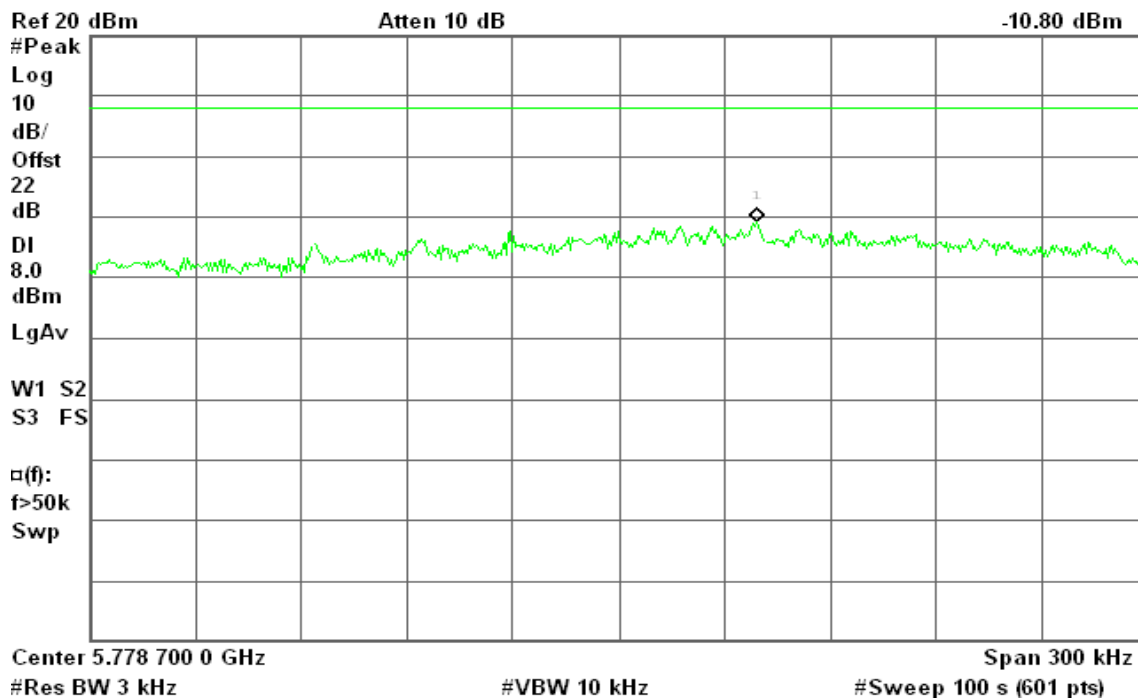
**PPSD (CH Mid)**

* Agilent 19:43:11 May 6, 2009

R T

Mkr1 5.778 739 1 GHz

-10.80 dBm



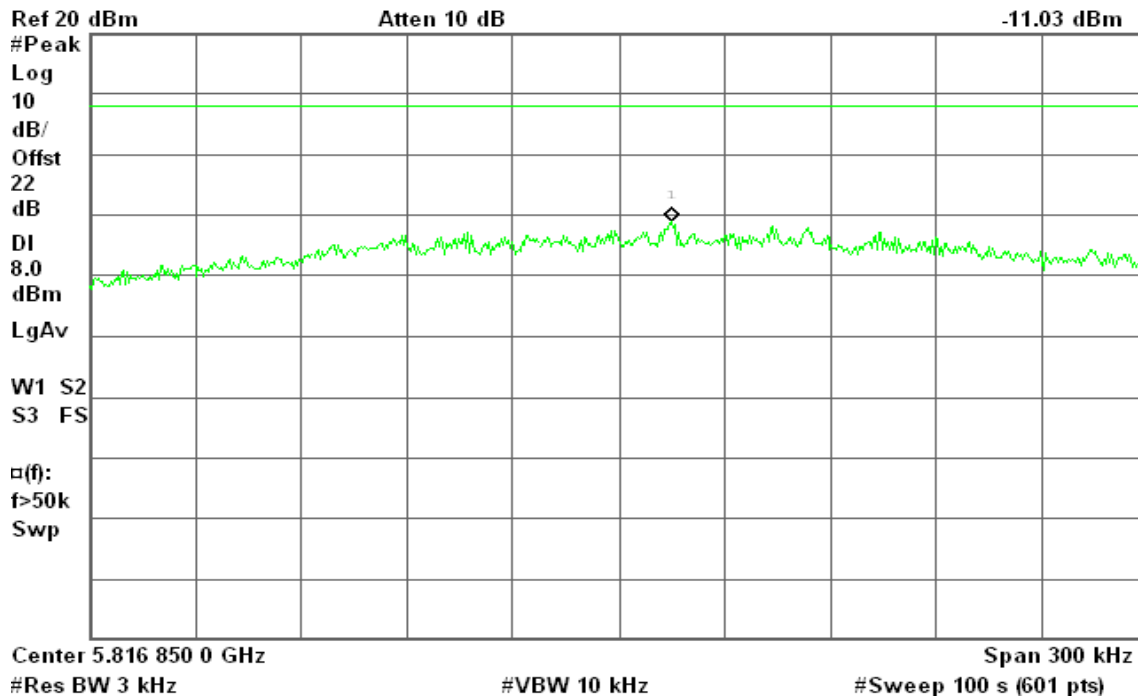
**PPSD (CH High)**

Agilent 19:49:27 May 6, 2009

R T

Mkr1 5.816 865 0 GHz

-11.03 dBm

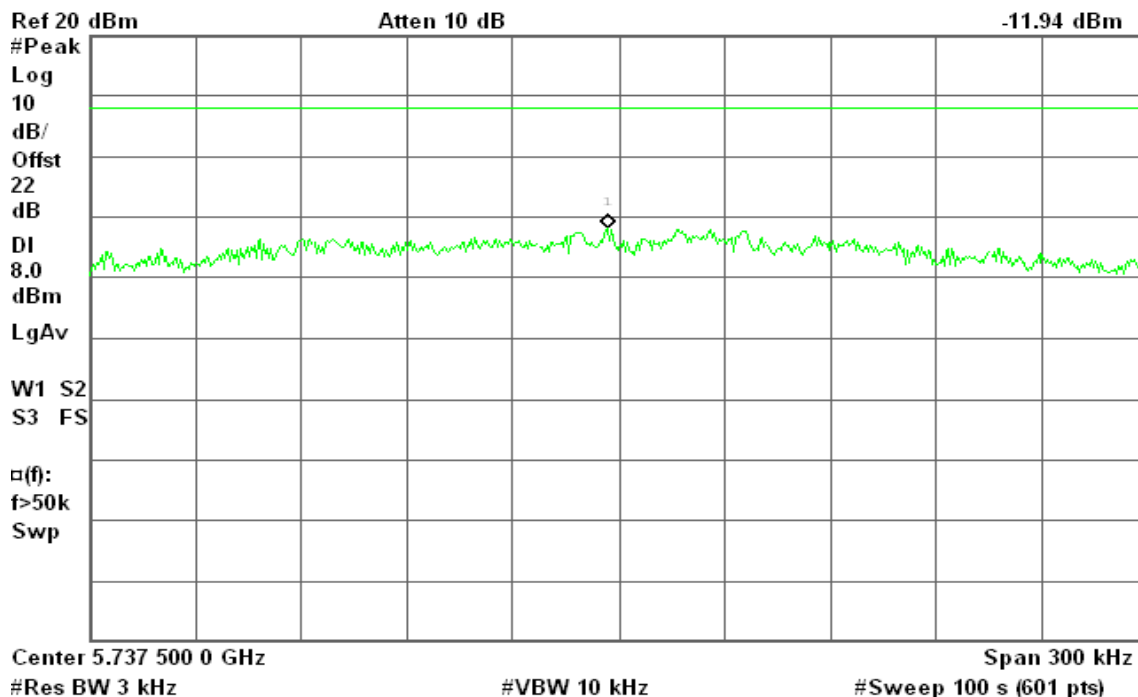
**draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz****PPSD (CH Low)**

Agilent 23:30:24 May 6, 2009

R T

Mkr1 5.737 496 5 GHz

-11.94 dBm

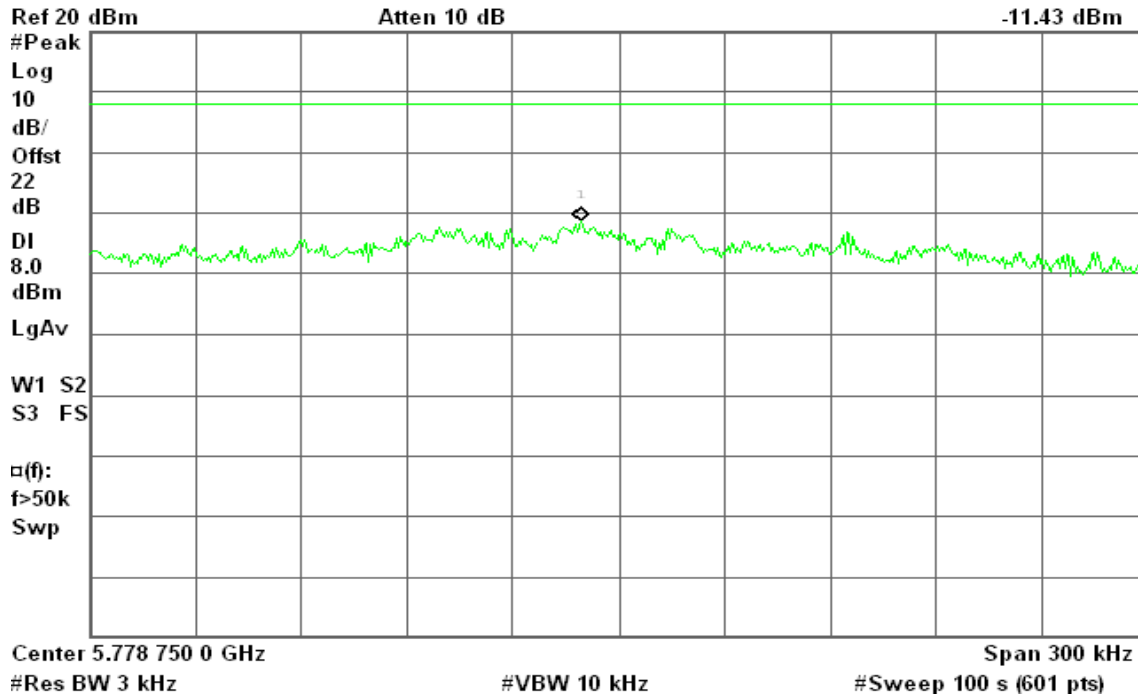




PPSD (CH Mid)

* Agilent 23:41:20 May 6, 2009

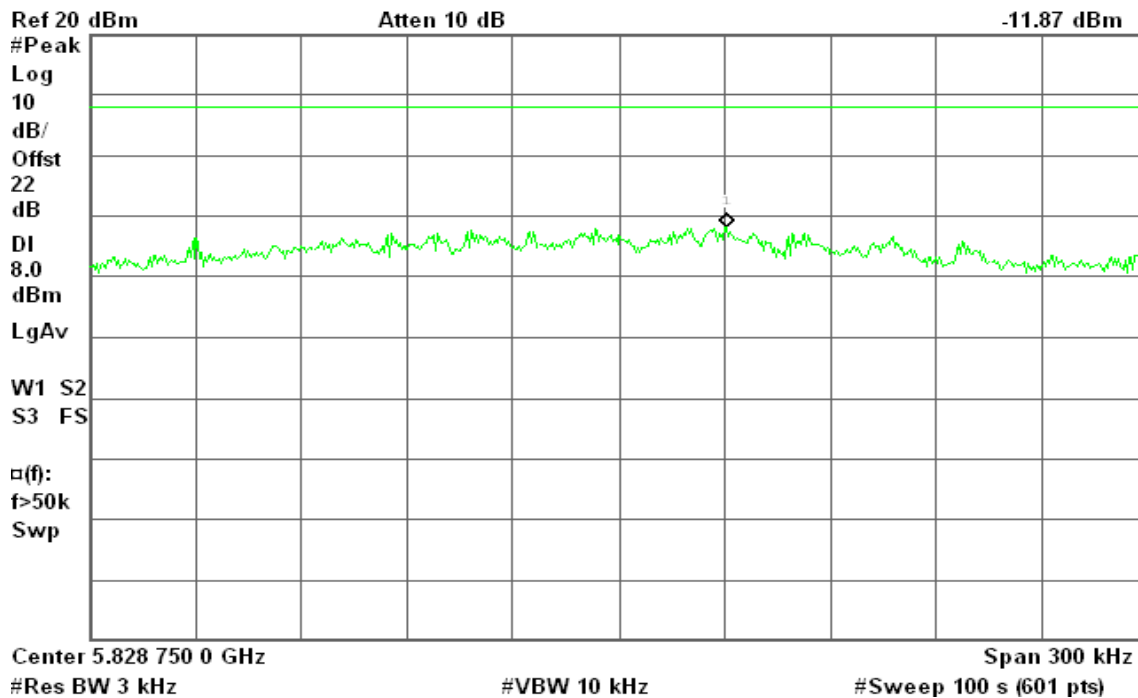
R T

Mkr1 5.778 739 0 GHz
-11.43 dBm

PPSD (CH High)

* Agilent 23:49:15 May 6, 2009

R T

Mkr1 5.828 780 7 GHz
-11.87 dBm

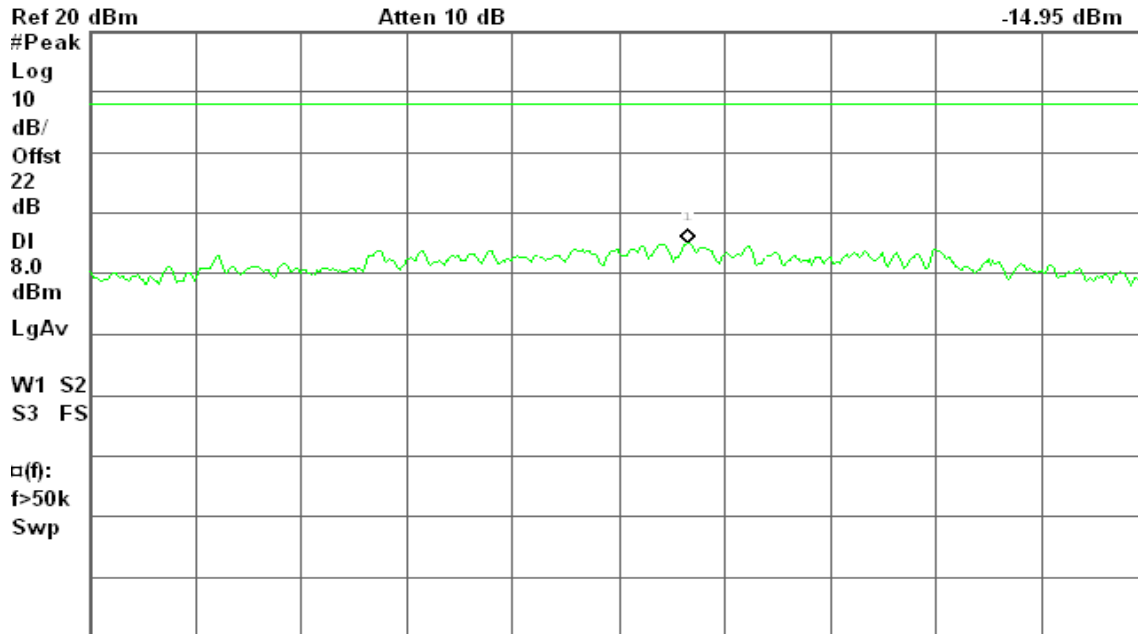
**draft 802.11n Wide-40 MHz Channel mode / 5755 ~ 5795MHz****PPSD (CH Low)**

* Agilent 01:57:18 May 7, 2009

R T

Mkr1 5.768 119 6 GHz

-14.95 dBm

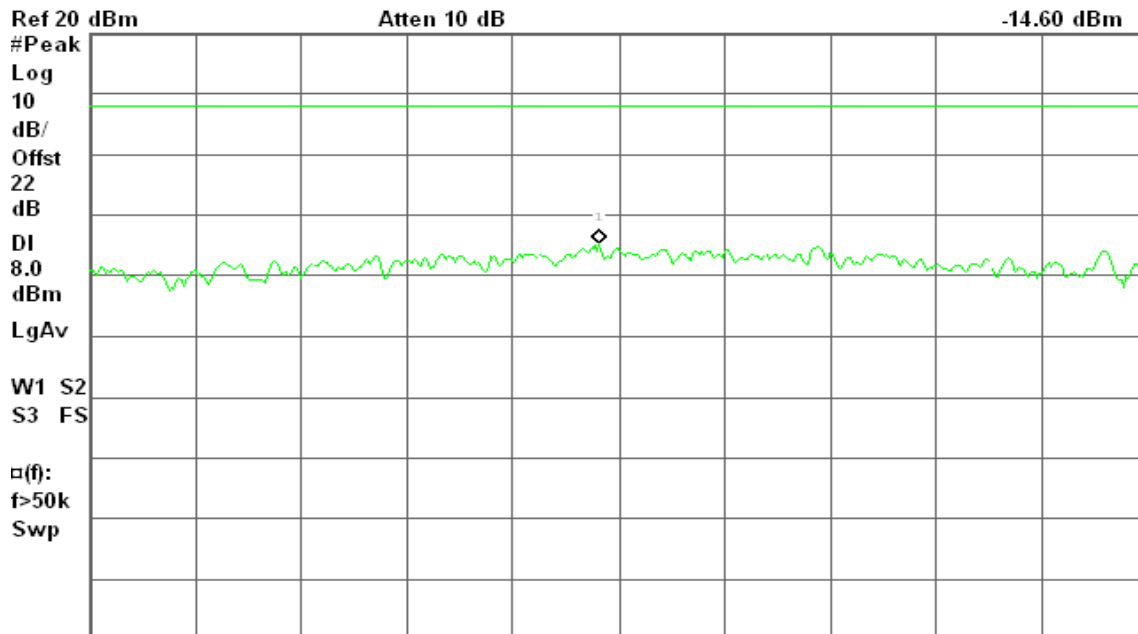
**PPSD (CH High)**

* Agilent 02:01:18 May 7, 2009

R T

Mkr1 5.783 094 0 GHz

-14.60 dBm



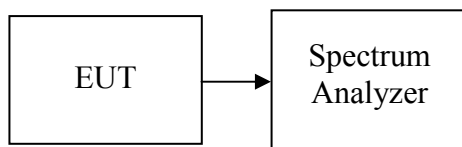
7.6 SPURIOUS EMISSIONS

7.6.1 Conducted Measurement

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

Test Configuration



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.

TEST RESULTS

No non-compliance noted



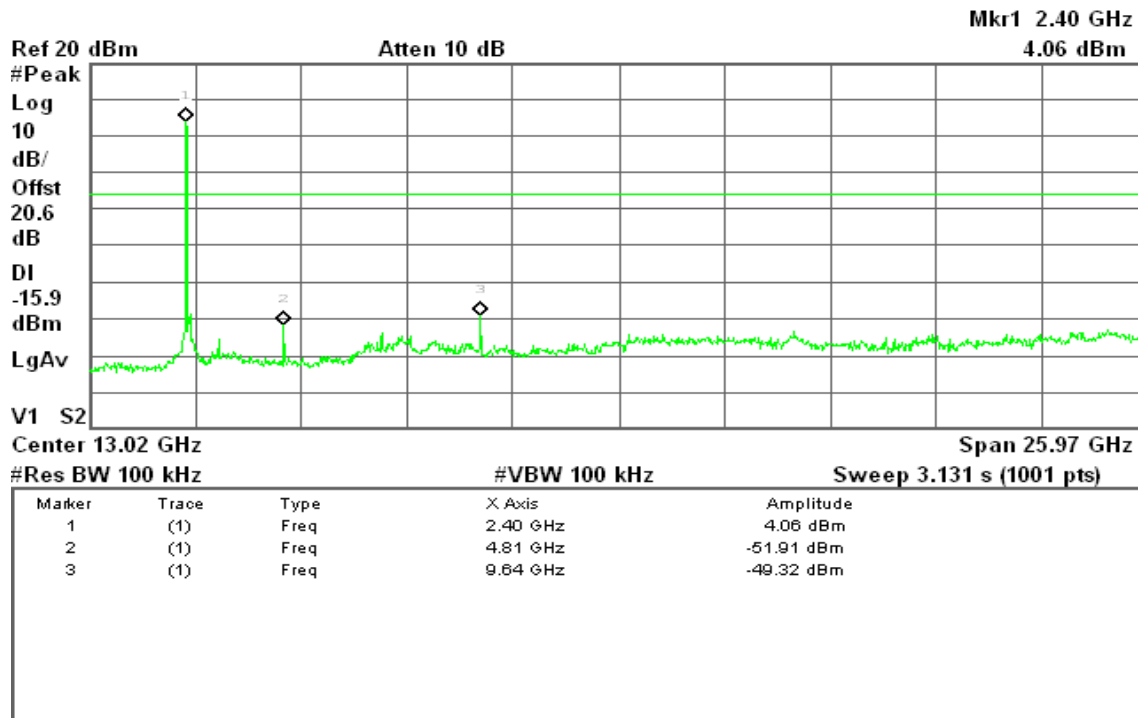
Test Plot

IEEE 802.11b mode

CH Low

* Agilent 20:55:12 May 11, 2009

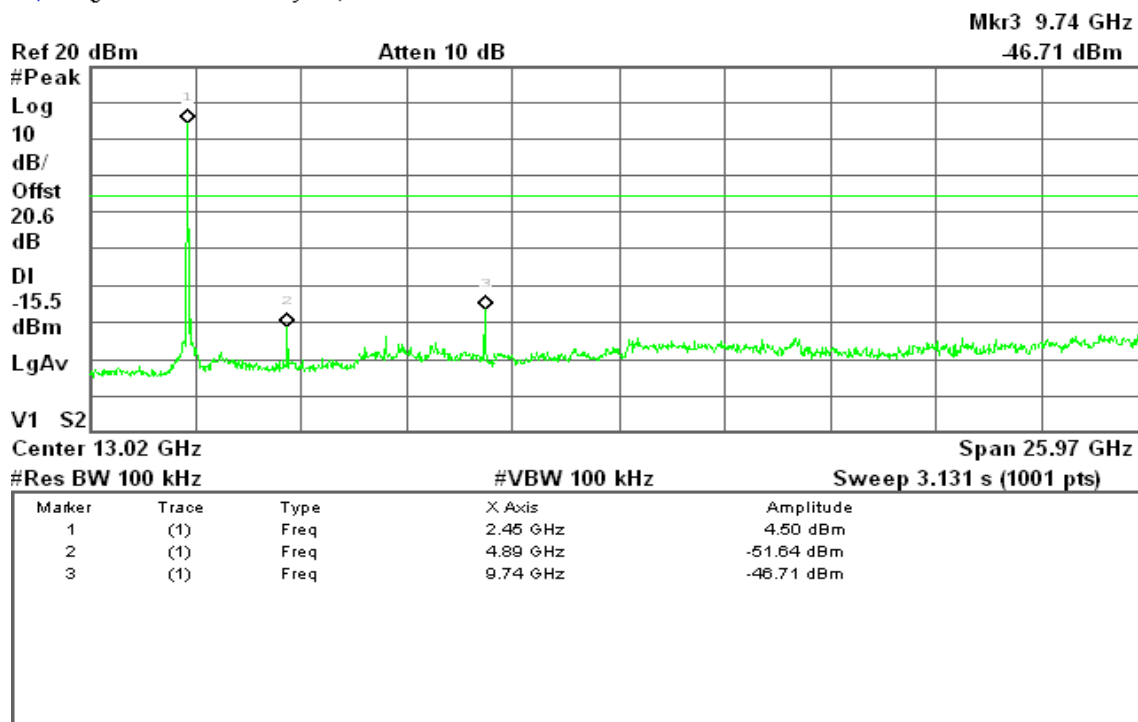
R T



CH Mid

* Agilent 21:01:06 May 11, 2009

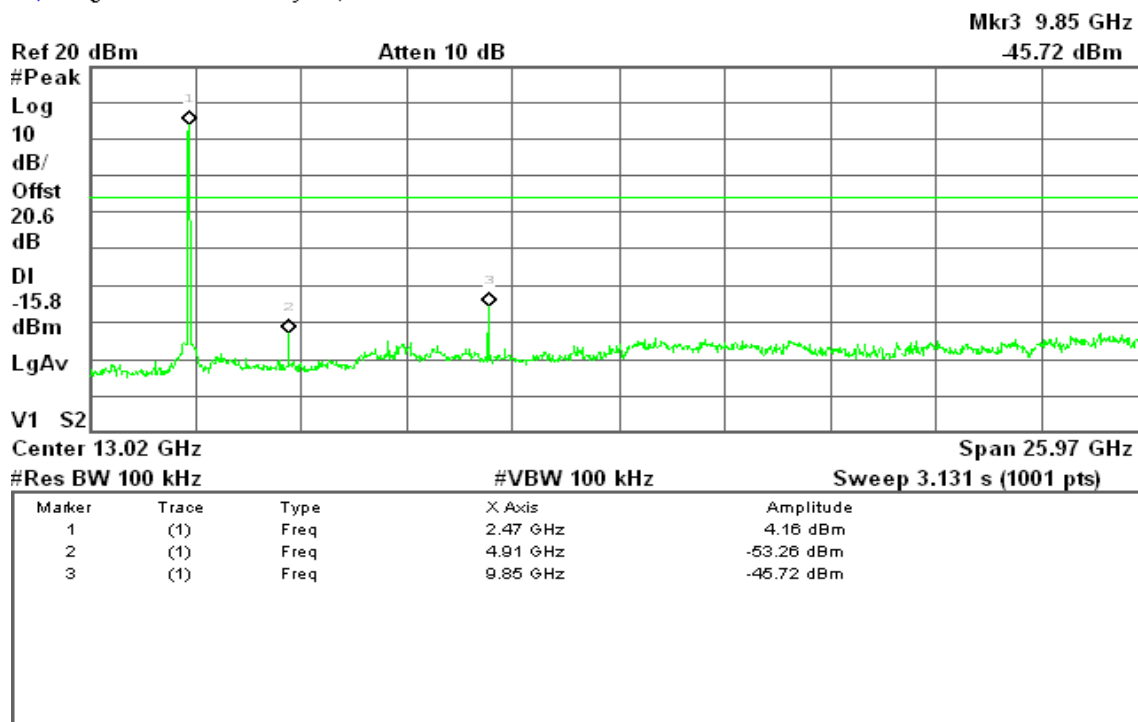
R T



**CH High**

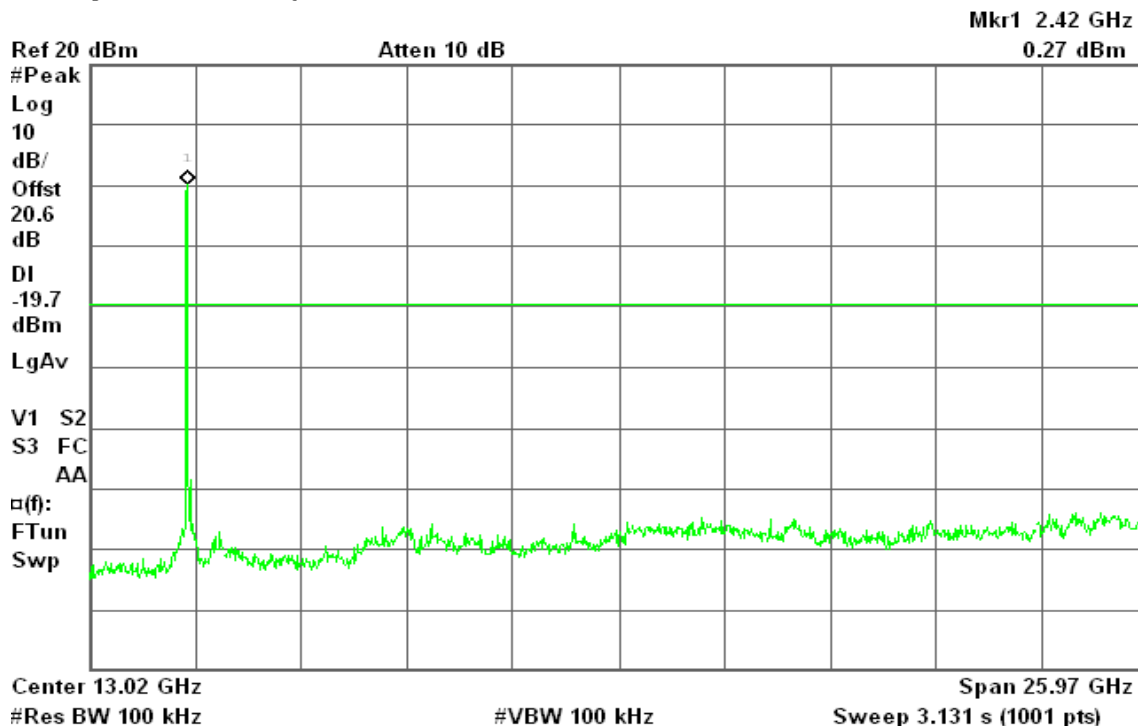
* Agilent 21:06:14 May 11, 2009

R T

**IEEE 802.11g mode****CH Low**

* Agilent 21:42:55 May 11, 2009

R T

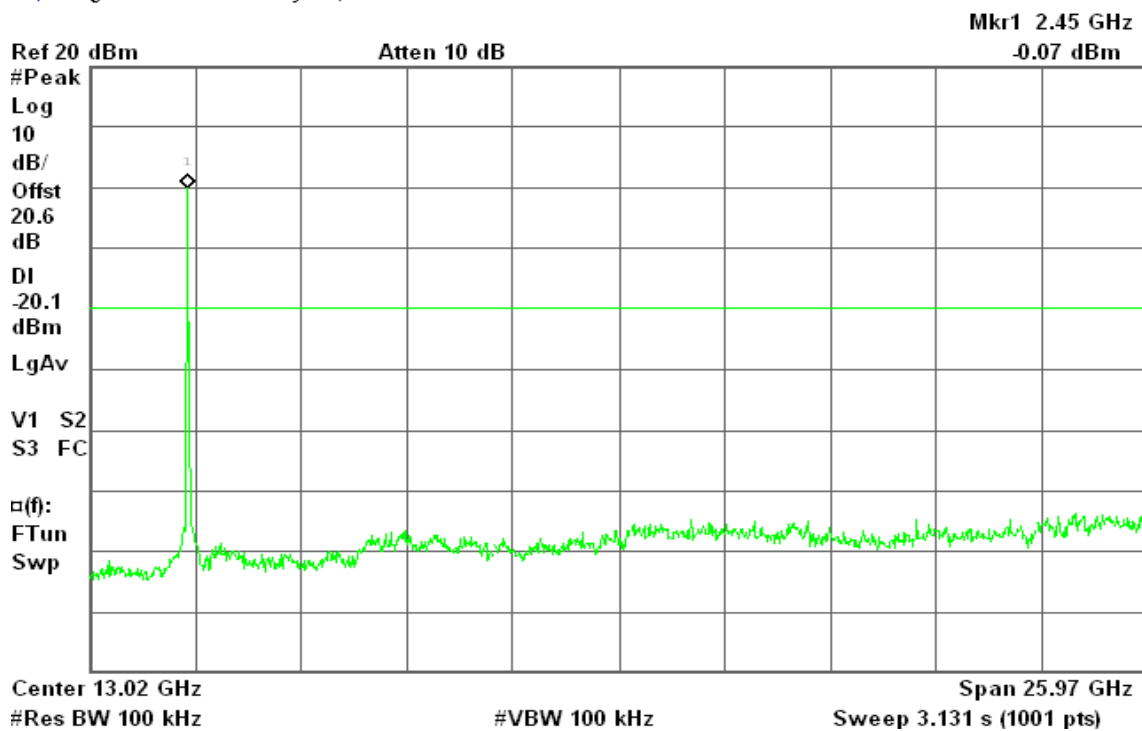




CH Mid

Agilent 21:38:03 May 11, 2009

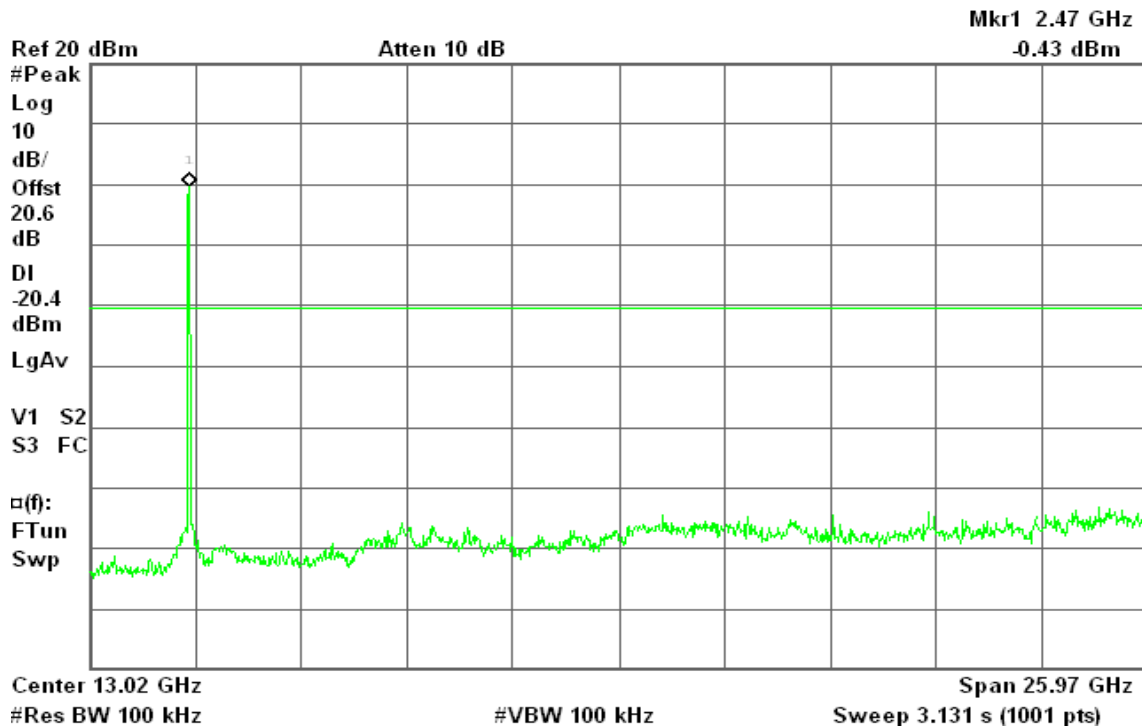
R T



CH High

Agilent 21:31:42 May 11, 2009

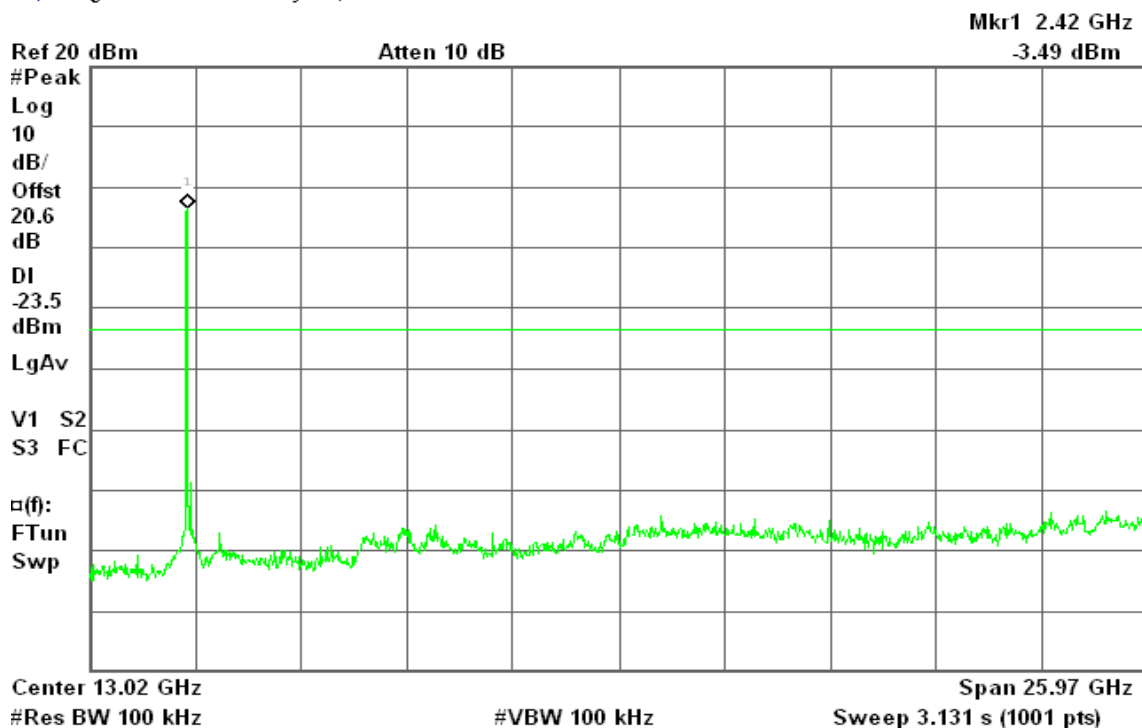
R T



**draft 802.11n Standard-20 MHz Channel mode****CH Low**

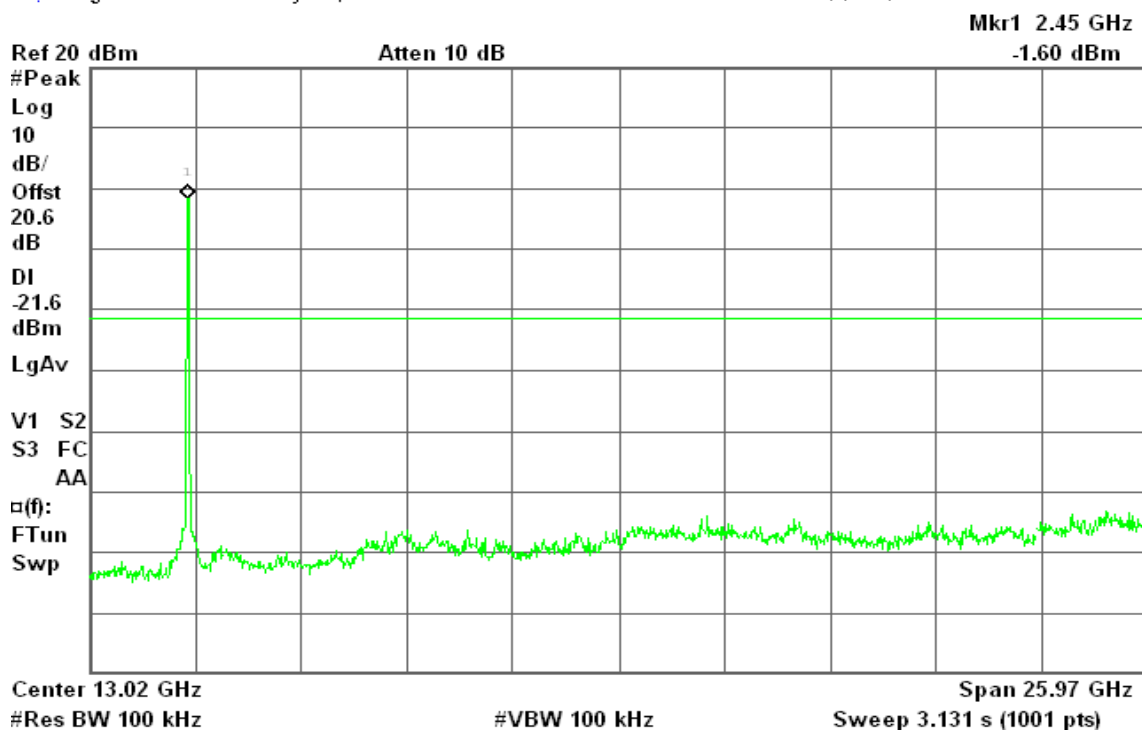
* Agilent 22:12:50 May 11, 2009

R T

**CH Mid**

* Agilent 22:07:08 May 11, 2009

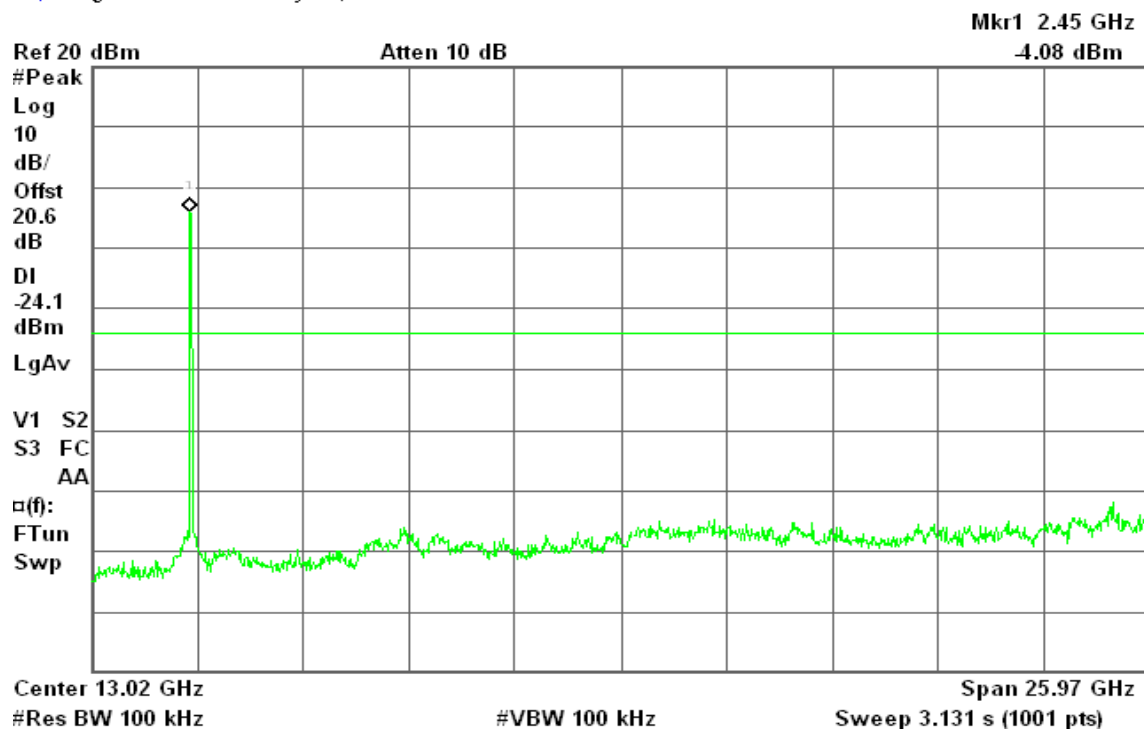
R T



**CH High**

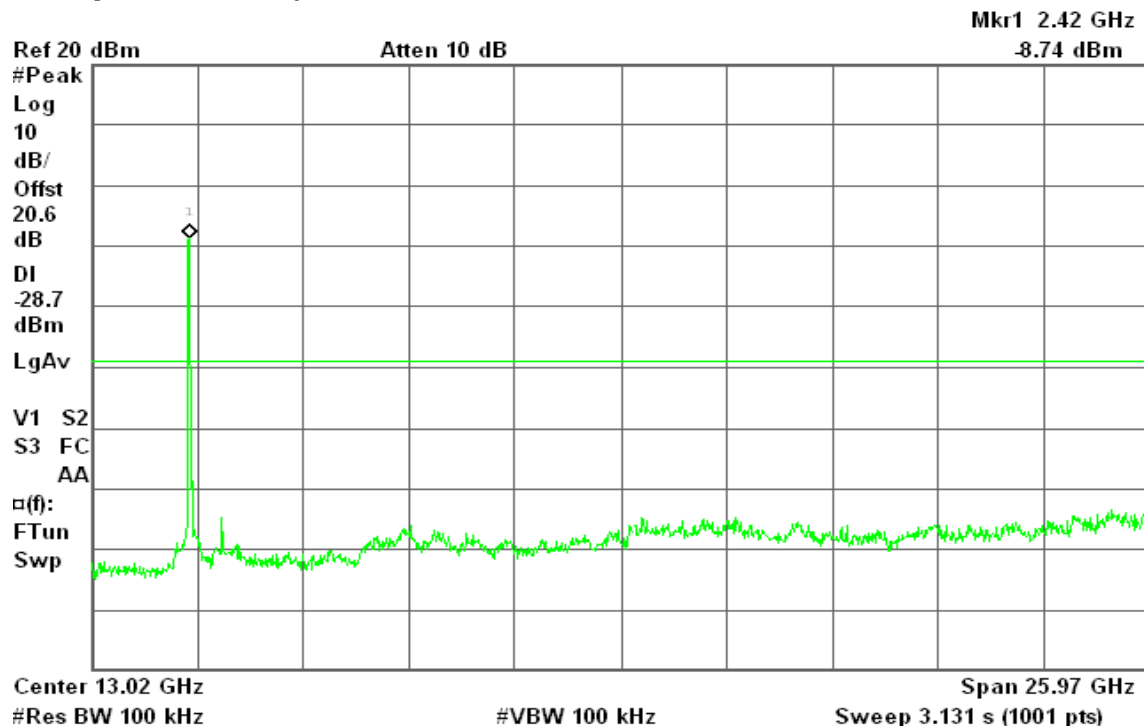
✱ Agilent 22:02:27 May 11, 2009

R T

**draft 802.11n Wide-40 MHz Channel mode****CH Low**

✱ Agilent 22:36:00 May 11, 2009

R T

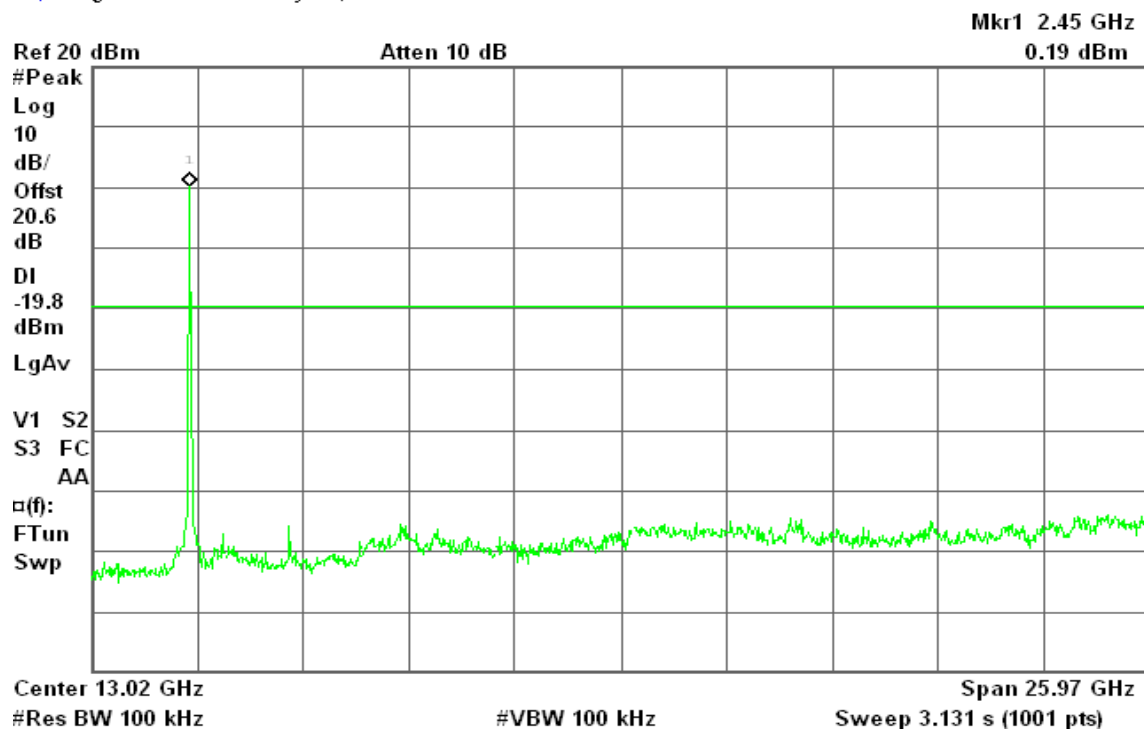




CH Mid

* Agilent 22:30:49 May 11, 2009

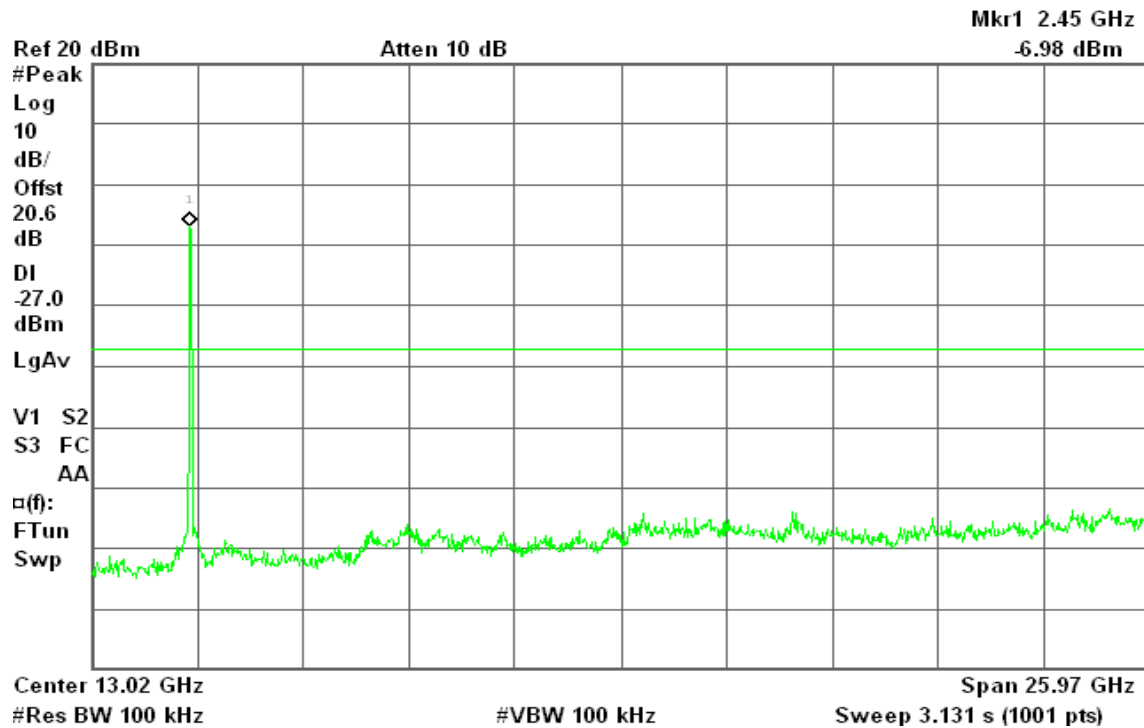
R T



CH High

* Agilent 22:25:36 May 11, 2009

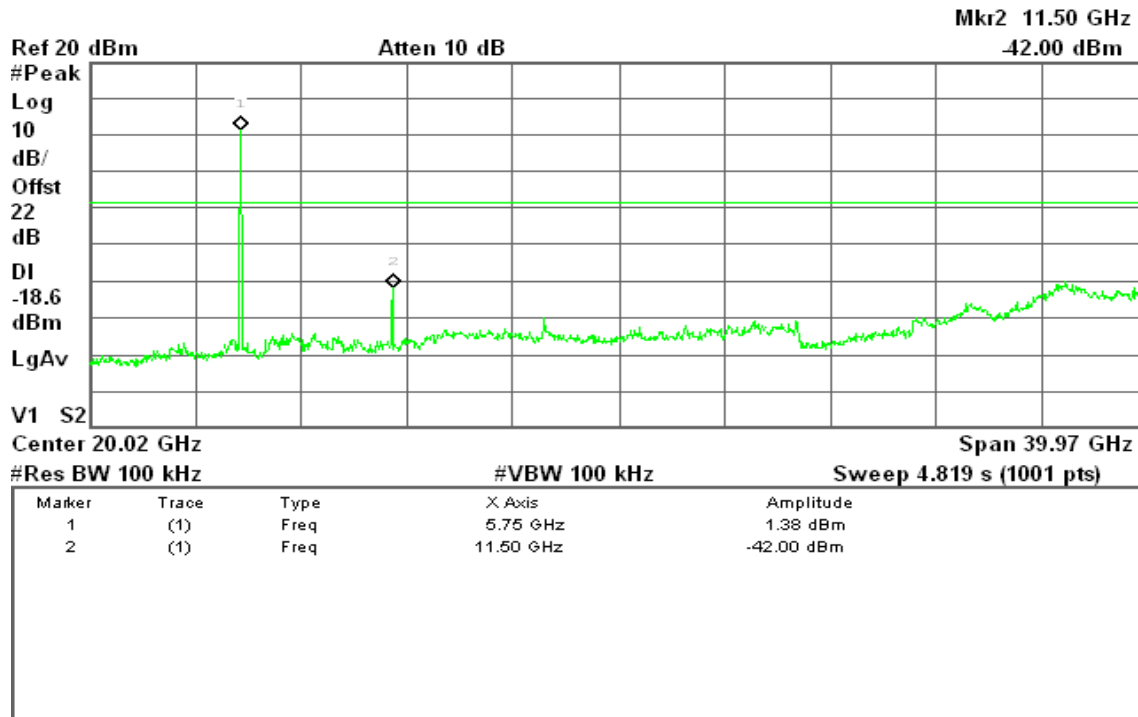
R T



**IEEE 802.11a mode / 5745 ~ 5825MHz****CH Low**

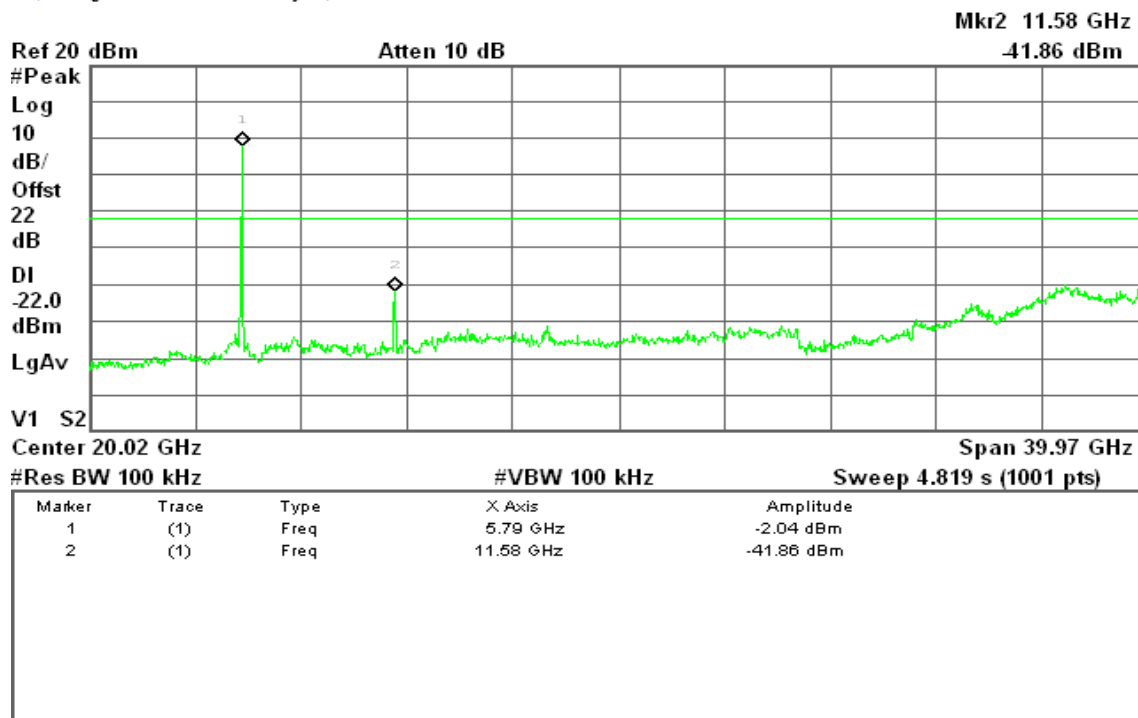
* Agilent 19:30:41 May 6, 2009

R T

**CH Mid**

* Agilent 19:44:29 May 6, 2009

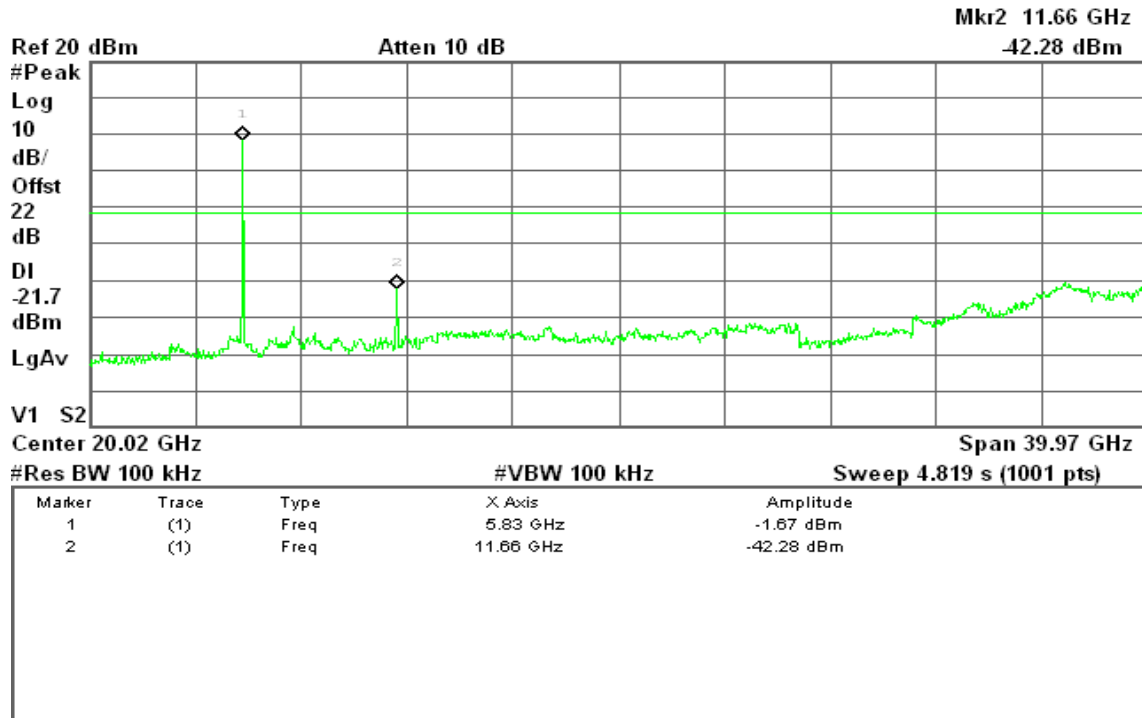
R T



**CH High**

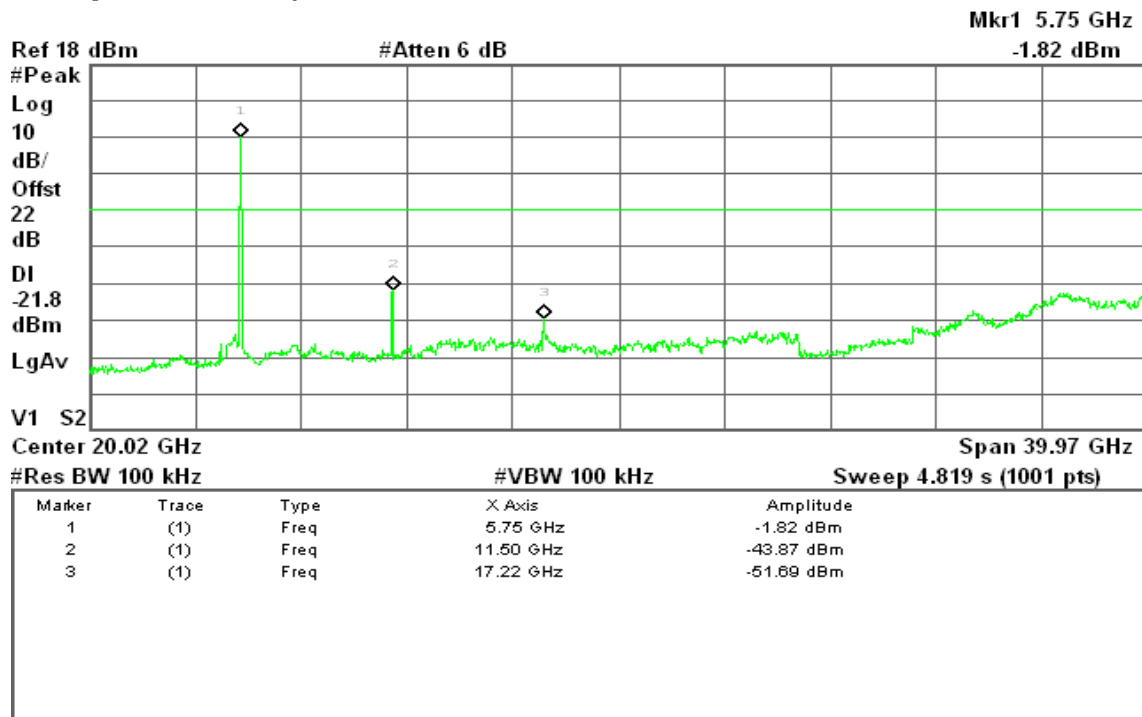
* Agilent 19:50:35 May 6, 2009

R T

**draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz****CH Low**

* Agilent 23:34:20 May 6, 2009

R T

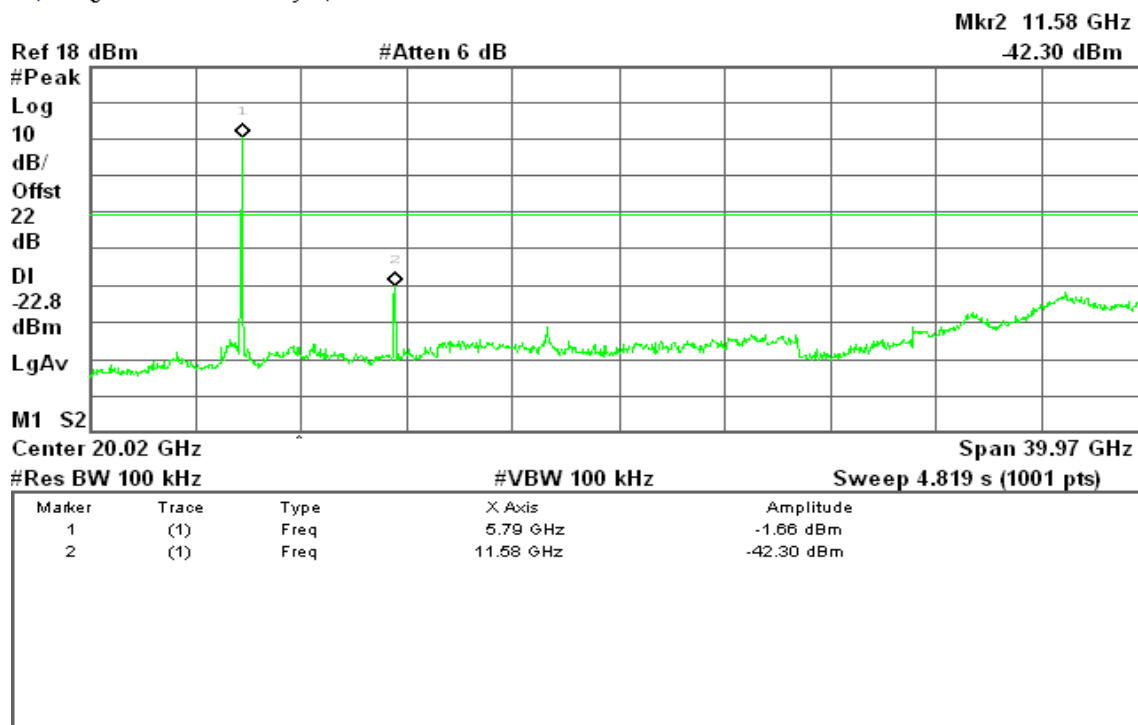




CH Mid

* Agilent 23:43:16 May 6, 2009

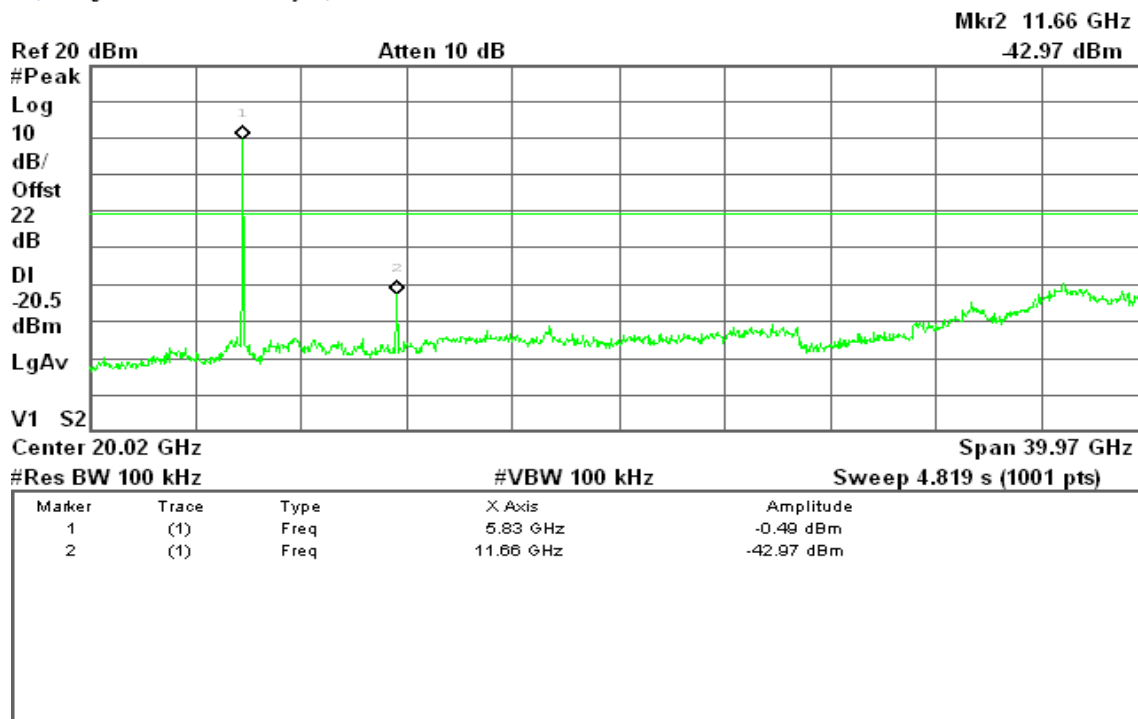
R T



CH High

* Agilent 23:50:31 May 6, 2009

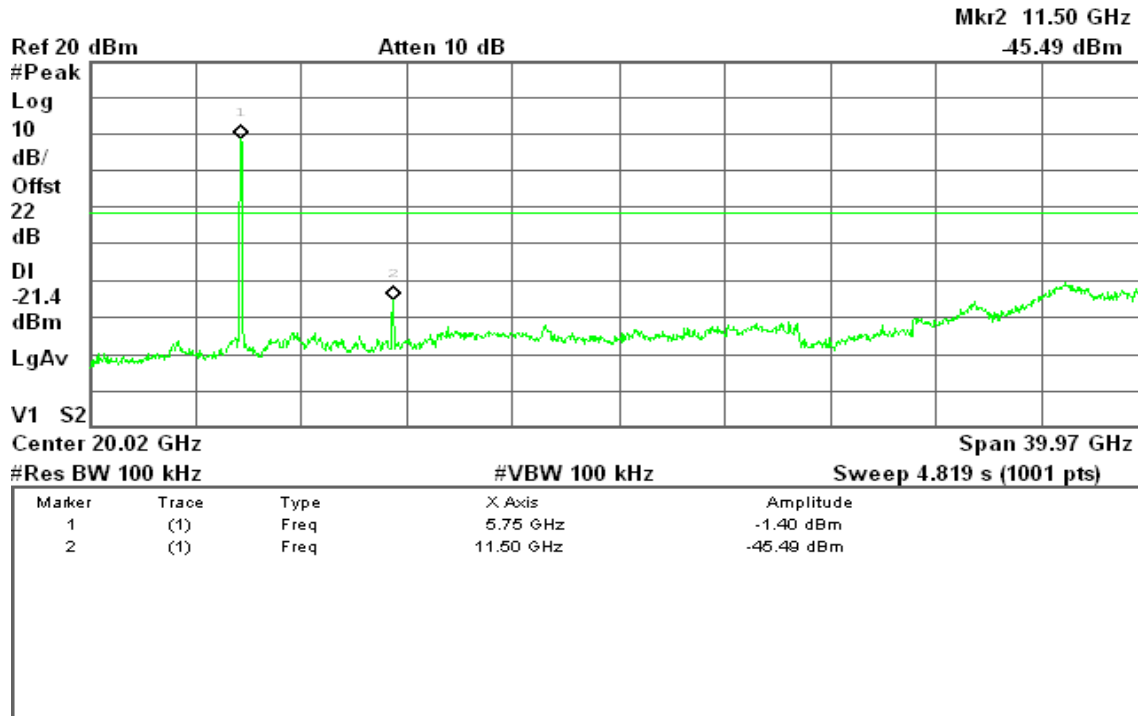
R T



**draft 802.11n Wide-40 MHz Channel mode / 5755 ~ 5795MHz****CH Low**

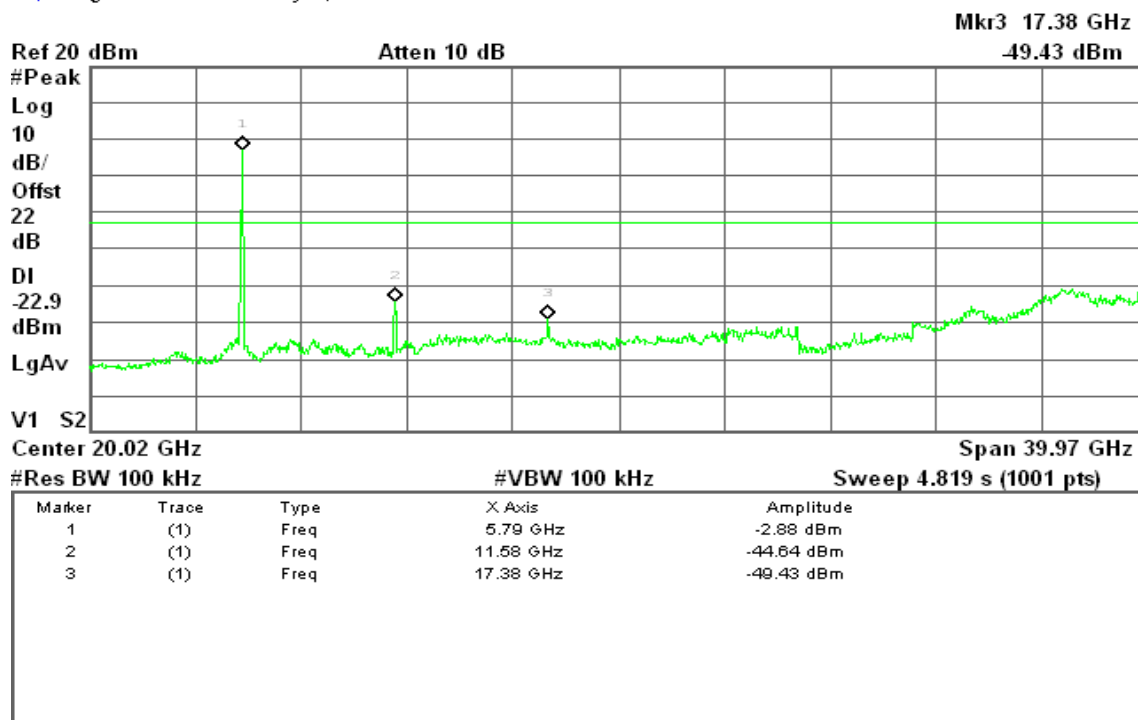
* Agilent 01:53:54 May 7, 2009

R T

**CH High**

* Agilent 02:02:41 May 7, 2009

R T





7.7 RADIATED EMISSIONS

LIMIT

1. According to §15.209(a), 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 ($\mu\text{V/m}$)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

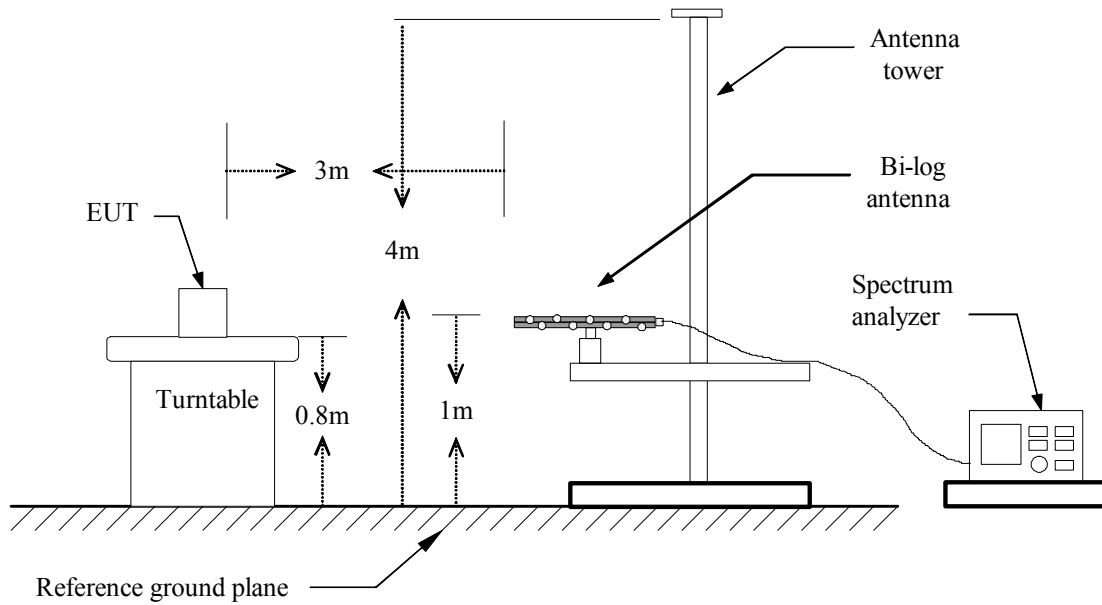
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

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

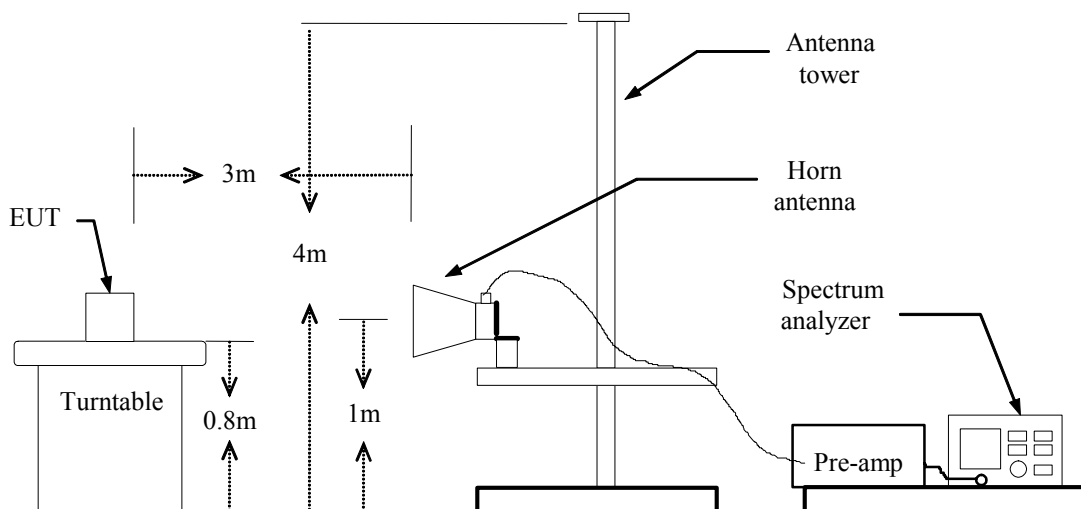
Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

Below 1 GHz



Above 1 GHz





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.

**Below 1GHz****Operation Mode:** Normal Link**Test Date:** May 11, 2009**Temperature:** 25°C**Tested by:** Nan Tsai**Humidity:** 50 % RH**Polarity:** Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
59.10	V	41.90	-14.75	27.15	40.00	-12.85	Peak
165.80	V	39.25	-10.61	28.64	43.50	-14.86	Peak
366.27	V	37.28	-7.26	30.02	46.00	-15.98	Peak
432.55	V	35.79	-5.84	29.96	46.00	-16.04	Peak
629.78	V	40.90	-2.39	38.51	46.00	-7.49	Peak
699.30	V	32.50	-2.03	30.47	46.00	-15.53	Peak
165.80	H	43.20	-10.61	32.58	43.50	-10.92	Peak
233.70	H	45.63	-9.95	35.68	46.00	-10.32	Peak
366.27	H	44.10	-7.26	36.84	46.00	-9.16	Peak
432.55	H	42.02	-5.84	36.18	46.00	-9.82	Peak
629.78	H	36.74	-2.39	34.35	46.00	-11.65	Peak
830.25	H	32.24	0.26	32.50	46.00	-13.50	Peak

Remark:

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).
2. Radiated emissions measured were made with an instrument using peak/quasi-peak detector mode.
3. Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.
4. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
5. Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).

**Above 1 GHz****Operation Mode:** TX / IEEE 802.11b / CH Low**Test Date:** April 29, 2009**Temperature:** 24°C**Tested by:** Wolf Huang**Humidity:** 48 % RH**Polarity:** Ver. / Hor.

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
1330.00	V	74.40	50.56	-7.35	67.05	43.21	74.00	54.00	-10.79	AVG
N/A										
1326.67	H	67.28	47.43	-7.35	59.93	40.08	74.00	54.00	-13.92	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11b / CH Mid**Test Date:** April 29, 2009**Temperature:** 24°C**Tested by:** Wolf Huang**Humidity:** 48 % RH**Polarity:** Ver. / Hor.

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
1330.00	V	72.30	48.36	-7.35	64.95	41.01	74.00	54.00	-12.99	AVG
N/A										
1333.33	H	63.40	46.69	-7.34	56.06	39.35	74.00	54.00	-14.65	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11b / CH High**Test Date:** April 29, 2009**Temperature:** 24°C**Tested by:** Wolf Huang**Humidity:** 48 % RH**Polarity:** Ver. / Hor.

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
1330.00	V	72.50	49.30	-7.35	65.15	41.95	74.00	54.00	-12.05	AVG
N/A										
1330.00	H	66.90	46.86	-7.35	59.55	39.51	74.00	54.00	-14.49	AVG
4916.67	H	49.09	---	1.01	50.10	---	74.00	54.00	-3.90	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11g / CH Low**Test Date:** April 29, 2009**Temperature:** 24°C**Tested by:** Wolf Huang**Humidity:** 48 % RH**Polarity:** Ver. / Hor.

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
1333.33	V	73.75	49.73	-7.34	66.41	42.39	74.00	54.00	-11.61	AVG
N/A										
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11g / CH Mid**Test Date:** April 29, 2009**Temperature:** 24°C**Tested by:** Wolf Huang**Humidity:** 48 % RH**Polarity:** Ver. / Hor.

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
1333.33	V	70.80	47.21	-7.34	63.46	39.87	74.00	54.00	-14.13	AVG
N/A										
1333.33	H	68.50	46.98	-7.34	61.16	39.64	74.00	54.00	-14.36	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / IEEE 802.11g / CH High**Test Date:** April 29, 2009**Temperature:** 24°C**Tested by:** Wolf Huang**Humidity:** 48 % RH**Polarity:** Ver. / Hor.

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
1333.33	V	74.46	49.54	-7.34	67.12	42.20	74.00	54.00	-11.80	AVG
N/A										
1330.00	H	69.59	48.40	-7.35	62.24	41.05	74.00	54.00	-12.95	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser; with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / draft 802.11n Standard-20 MHz Channel mode / CH Low

Test Date: April 29, 2009

Temperature: 24°C

Tested by: Wolf Huang

Humidity: 48 % RH

Polarity: Ver. / Hor.

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
1326.67	V	72.21	49.01	-7.35	64.86	41.66	74.00	54.00	-12.34	AVG
N/A										
1330.00	H	69.91	48.01	-7.35	62.56	40.66	74.00	54.00	-13.34	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / draft 802.11n Standard-20 MHz Channel mode / CH Mid

Test Date: April 29, 2009

Temperature: 24°C

Tested by: Wolf Huang

Humidity: 48 % RH

Polarity: Ver. / Hor.

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
1326.67	V	70.36	48.36	-7.35	63.01	41.01	74.00	54.00	-12.99	AVG
N/A										
1330.00	H	66.36	48.32	-7.35	59.01	40.97	74.00	54.00	-13.03	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / draft 802.11n Standard-20 MHz Channel mode / CH High

Test Date: April 29, 2009

Temperature: 24°C

Tested by: Wolf Huang

Humidity: 48 % RH

Polarity: Ver. / Hor.

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
1330.00	V	74.54	49.49	-7.35	67.19	42.14	74.00	54.00	-11.86	AVG
N/A										
1330.00	H	66.67	46.69	-7.35	59.32	39.34	74.00	54.00	-14.66	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / draft 802.11n Wide-40 MHz Channel mode
/ CH Low

Test Date: April 29, 2009

Temperature: 24°C

Tested by: Wolf Huang

Humidity: 48 % RH

Polarity: Ver. / Hor.

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
1330.00	V	72.95	49.53	-7.35	65.60	42.18	74.00	54.00	-11.82	AVG
N/A										
1333.33	H	71.06	48.94	-7.34	63.72	41.60	74.00	54.00	-12.40	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

**Operation Mode:** TX / draft 802.11n Wide-40 MHz Channel mode
/ CH Mid**Test Date:** April 29, 2009**Temperature:** 24°C**Tested by:** Wolf Huang**Humidity:** 48 % RH**Polarity:** Ver. / Hor.

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
1330.00	V	72.36	49.36	-7.35	65.01	42.01	74.00	54.00	-11.99	AVG
N/A										
1326.67	H	66.21	48.21	-7.35	58.86	40.86	74.00	54.00	-13.14	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: TX / draft 802.11n Wide-40 MHz Channel mode
/ CH High

Test Date: April 29, 2009

Temperature: 24°C

Tested by: Wolf Huang

Humidity: 48 % RH

Polarity: Ver. / Hor.

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
1326.67	V	74.12	49.56	-7.35	66.77	42.21	74.00	54.00	-11.79	AVG
N/A										
1333.33	H	65.69	47.34	-7.34	58.35	40.00	74.00	54.00	-14.00	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / IEEE 802.11a mode / 5745 ~ 5825MHz / CH Low **Test Date:** April 30, 2009

Temperature: 24°C **Tested by:** Wolf Huang

Humidity: 47 % RH **Polarity:** Ver. / Hor.

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
1063.33	V	56.04	---	-7.84	48.19	---	74.00	54.00	-5.81	Peak
1330.00	V	70.32	46.32	-7.35	62.97	38.97	74.00	54.00	-15.03	AVG
2123.33	V	50.85	---	-2.05	48.81	---	74.00	54.00	-5.19	Peak
2653.33	V	52.14	---	-1.12	51.03	---	74.00	54.00	-2.97	Peak
N/A										
1063.33	H	53.35	---	-7.84	45.51	---	74.00	54.00	-8.49	Peak
1333.33	H	66.54	42.37	-7.34	59.20	35.03	74.00	54.00	-18.97	AVG
2133.33	H	52.14	---	-2.03	50.11	---	74.00	54.00	-3.89	Peak
2653.33	H	51.10	---	-1.12	49.98	---	74.00	54.00	-4.02	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / IEEE 802.11a mode / 5745 ~ 5825MHz / CH Mid **Test Date:** April 30, 2009
Temperature: 24°C **Tested by:** Wolf Huang
Humidity: 47 % RH **Polarity:** Ver. / Hor.

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
1066.67	V	56.61	---	-7.84	48.77	---	74.00	54.00	-5.23	Peak
1326.67	V	72.21	45.32	-7.35	64.86	37.97	74.00	54.00	-16.03	AVG
2126.67	V	50.46	---	-2.04	48.42	---	74.00	54.00	-5.58	Peak
2653.33	V	52.04	---	-1.12	50.92	---	74.00	54.00	-3.08	Peak
N/A										
1330.00	H	63.26	42.02	-7.35	55.91	34.67	74.00	54.00	-19.33	AVG
2133.33	H	52.44	---	-2.03	50.41	---	74.00	54.00	-3.59	Peak
2656.67	H	51.15	---	-1.11	50.04	---	74.00	54.00	-3.96	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / IEEE 802.11a mode / 5745 ~ 5825MHz / CH High
Temperature: 25°C
Humidity: 50% RH

Test Date: April 30, 2009
Tested by: Wolf Huang
Polarity: Ver. / Hor.

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
1066.67	V	58.78	---	-7.84	50.94	---	74.00	54.00	-3.06	Peak
1326.67	V	69.59	44.95	-7.35	62.24	37.60	74.00	54.00	-16.40	AVG
2126.67	V	50.06	---	-2.04	48.02	---	74.00	54.00	-5.98	Peak
2653.33	V	52.31	---	-1.12	51.19	---	74.00	54.00	-2.81	Peak
N/A										
1326.67	H	66.36	42.23	-7.35	59.01	34.88	74.00	54.00	-19.12	AVG
2123.33	H	52.39	---	-2.05	50.34	---	74.00	54.00	-3.66	Peak
2660.00	H	50.43	---	-1.10	49.32	---	74.00	54.00	-4.68	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / draft 802.11n Standard-20 MHz Channel
mode / 5745 ~ 5825MHz / CH Low

Test Date: May 4, 2009

Temperature: 23°C

Tested by: Nan Tsai

Humidity: 49 % RH

Polarity: Ver. / Hor.

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
1326.67	V	69.73	46.87	-7.35	62.38	39.52	74.00	54.00	-14.48	AVG
2660.00	V	50.90	---	-1.10	49.80	---	74.00	54.00	-4.20	Peak
N/A										
1326.67	H	60.84	42.28	-7.35	53.49	34.93	74.00	54.00	-19.07	AVG
2133.33	H	51.71	---	-2.03	49.68	---	74.00	54.00	-4.32	Peak
2653.33	H	50.34	---	-1.12	49.23	---	74.00	54.00	-4.77	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / draft 802.11n Standard-20 MHz Channel mode / 5745 ~ 5825MHz / CH Mid **Test Date:** May 4, 2009

Temperature: 23°C **Tested by:** Nan Tsai

Humidity: 49 % RH **Polarity:** Ver. / Hor.

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
1330.00	V	68.51	48.18	-7.35	61.16	40.83	74.00	54.00	-13.17	AVG
2666.67	V	51.39	---	-1.09	50.30	---	74.00	54.00	-3.70	Peak
11566.67	V	44.24	35.42	14.19	58.42	49.61	74.00	54.00	-4.39	AVG
N/A										
1326.67	H	62.69	43.62	-7.35	55.34	36.27	74.00	54.00	-17.73	AVG
2123.33	H	53.56	---	-2.05	51.52	---	74.00	54.00	-2.48	Peak
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / draft 802.11n Standard-20 MHz Channel
mode / 5745 ~ 5825MHz / CH High

Test Date: May 4, 2009

Temperature: 23°C

Tested by: Wolf Huang

Humidity: 49 % RH

Polarity: Ver. / Hor.

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
1326.67	V	63.70	46.17	-7.35	56.35	38.82	74.00	54.00	-15.18	AVG
1863.33	V	51.92	---	-3.56	48.36	---	74.00	54.00	-5.64	Peak
2653.33	V	51.76	---	-1.12	50.64	---	74.00	54.00	-3.36	Peak
11650.00	V	47.25	35.43	14.35	61.60	49.78	74.00	54.00	-4.22	AVG
N/A										
1326.67	H	63.88	43.60	-7.35	56.52	36.25	74.00	54.00	-17.75	AVG
2126.67	H	53.23	---	-2.04	51.19	---	74.00	54.00	-2.81	Peak
11650.00	H	45.21	33.87	14.35	59.56	48.22	74.00	54.00	-5.78	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / draft 802.11n Wide-40 MHz Channel
mode / 5755 ~ 5795MHz / CH Low

Test Date: May 4, 2009

Temperature: 23°C

Tested by: Nan Tsai

Humidity: 49 % RH

Polarity: Ver. / Hor.

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
1333.33	V	65.82	46.15	-7.34	58.48	38.81	74.00	54.00	-15.19	AVG
2123.33	V	51.04	---	-2.05	49.00	---	74.00	54.00	-5.00	Peak
2656.67	V	49.94	---	-1.11	48.83	---	74.00	54.00	-5.17	Peak
N/A										
1333.33	H	61.58	43.61	-7.34	54.24	36.27	74.00	54.00	-17.73	AVG
2123.33	H	54.39	38.63	-2.05	52.34	36.58	74.00	54.00	-17.42	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).



Operation Mode: Tx / draft 802.11n Wide-40 MHz Channel
mode / 5755 ~ 5795MHz / CH High

Test Date: May 4, 2009

Temperature: 23°C

Tested by: Nan Tsai

Humidity: 49 % RH

Polarity: Ver. / Hor.

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
1063.33	V	59.23	---	-7.84	51.39	---	74.00	54.00	-2.61	Peak
1333.33	V	65.35	46.16	-7.34	58.01	38.82	74.00	54.00	-15.18	AVG
1863.33	V	51.16	---	-3.56	47.61	---	74.00	54.00	-6.39	Peak
2653.33	V	50.95	---	-1.12	49.84	---	74.00	54.00	-4.16	Peak
11616.67	V	45.52	32.55	14.28	59.80	46.83	74.00	54.00	-7.17	AVG
N/A										
1066.67	H	53.17	---	-7.84	45.34	---	74.00	54.00	-8.66	Peak
1330.00	H	59.18	---	-7.35	51.84	---	74.00	54.00	-2.16	Peak
2123.33	H	51.55	---	-2.05	49.50	---	74.00	54.00	-4.50	Peak
11616.67	H	46.14	34.37	14.28	60.43	48.65	74.00	54.00	-5.35	AVG
N/A										

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3. Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
5. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
6. Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).

7.8 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB μ V)	
	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

* Decreases with the logarithm of the frequency.

Test Configuration

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.



TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

Operation Mode: Normal Link

Test Date: August 12, 2009

Temperature: 22°C

Tested by: Snake Shan

Humidity: 45 % RH

Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.2500	46.22	35.52	0.08	46.30	35.60	61.76	51.76	-15.46	-16.16	L1
0.3000	41.92	26.92	0.08	42.00	27.00	60.24	50.24	-18.24	-23.24	L1
0.4450	41.93	28.73	0.07	42.00	28.80	56.97	46.97	-14.97	-18.17	L1
3.0200	32.74	16.74	0.06	32.80	16.80	56.00	46.00	-23.20	-29.20	L1
14.4400	39.70	32.50	0.30	40.00	32.80	60.00	50.00	-20.00	-17.20	L1
16.0550	37.56	30.26	0.34	37.90	30.60	60.00	50.00	-22.10	-19.40	L1
0.2400	36.10	27.40	0.10	36.20	27.50	62.10	52.10	-25.90	-24.60	L2
0.3500	41.51	30.11	0.09	41.60	30.20	58.96	48.96	-17.36	-18.76	L2
0.4500	41.22	30.02	0.08	41.30	30.10	56.88	46.88	-15.58	-16.78	L2
2.7200	40.52	35.62	0.08	40.60	35.70	56.00	46.00	-15.40	-10.30	L2
4.1100	38.31	34.71	0.09	38.40	34.80	56.00	46.00	-17.60	-11.20	L2
14.0100	30.60	25.10	0.20	30.80	25.30	60.00	50.00	-29.20	-24.70	L2

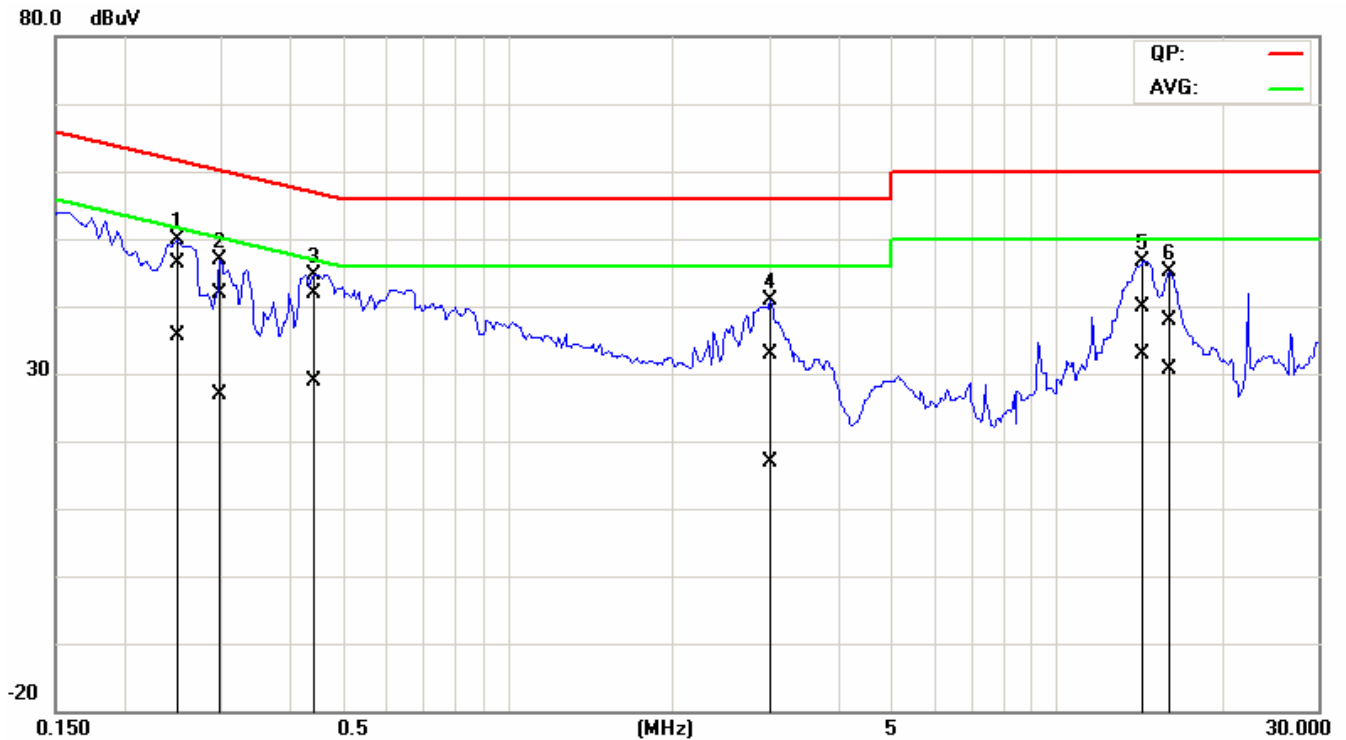
Remark:

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)

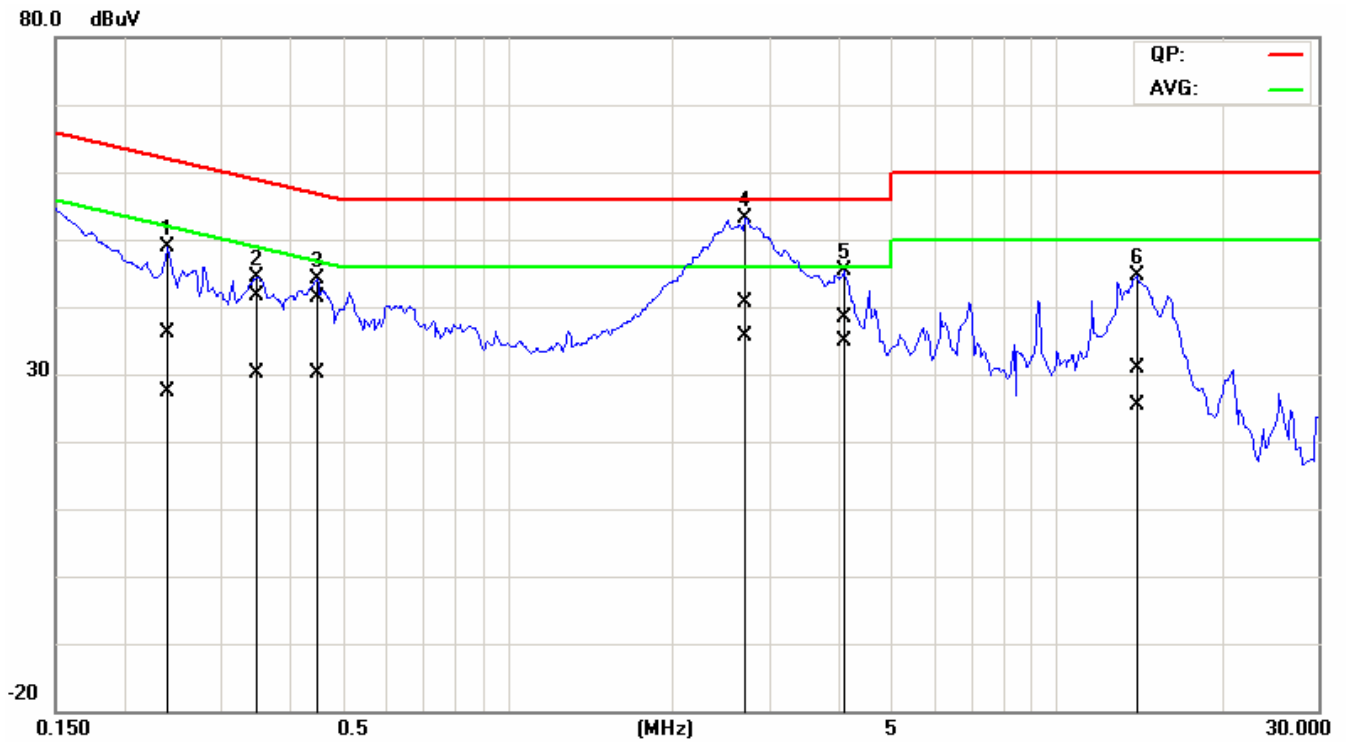


Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)





APPENDIX I

RADIO FREQUENCY EXPOSURE

LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

EUT Specification

EUT	7" UMPC
Frequency band (Operating)	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input type="checkbox"/> Others
Device category	<input checked="" type="checkbox"/> Portable (<20cm separation) <input type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure ($S = 5\text{mW}/\text{cm}^2$) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure ($S=1\text{mW}/\text{cm}^2$)
Antenna diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Max. output power	IEEE 802.11b mode: 18.19 dBm(65.92 mW) IEEE 802.11g mode: 22.23 dBm(167.11 mW) draft 802.11n Standard-20 MHz Channel mode: 21.97 dBm(157.40 mW) draft 802.11n Wide-40 MHz Channel mode: 22.06 dBm(610.69 mW)
Antenna gain (Max)	2.13 dBi (Numeric gain: 1.63)
Evaluation applied	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation* <input type="checkbox"/> N/A

Remark:

1. The maximum output power is 22.23 dBm (167.11mW) at 2412MHz (with 1.63 numeric antenna gain.)
2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.
3. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.

TEST RESULTS

No non-compliance noted.

Remark:

Please refer to the separated SAR report.



EUT	7" UMPC
Frequency band (Operating)	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input checked="" type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input type="checkbox"/> Others: Bluetooth: 2.402GHz ~ 2.480GHz
Device category	<input checked="" type="checkbox"/> Portable (<20cm separation) <input type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Max. output power	IEEE 802.11a mode / 5745 ~ 5825MHz: 21.81 dBm (151.71mW) draft 802.11n Standard-20 MHz Channel mode: 22.01 dBm (158.85mW) draft 802.11n Wide-40 MHz Channel mode: 22.02 dBm (159.22mW)
Antenna gain (Max)	3.56 dBi (Numeric gain: 2.27)
Evaluation applied	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation* <input type="checkbox"/> N/A

Remark:

1. The maximum output power is 22.02dBm (159.22mW) at 5755MHz (with 2.27numeric antenna gain.)
2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.
3. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.

TEST RESULTS

No non-compliance noted.

Remark:

Please refer to the separated SAR report.