



**FCC 47 CFR PART 15 SUBPART C &
INDUSTRY CANADA RSS-210**

TEST REPORT

For

RV120W Wireless N VPN Router

Model: RV120W, RV150W

Trade Name: Cisco

Issued to

**SerComm Corporation
8F, No. 3-1, YuanQu St., NanKang,
Taipei 115, Taiwan, R.O.C.**

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: SerComm Corporation
8F, No. 3-1, YuanQu St., NanKang,
Taipei 115, Taiwan, R.O.C.

Manufacturer: SerComm Corporation
8F, No. 3-1, YuanQu St., NanKang,
Taipei 115, Taiwan, R.O.C.

Equipment Under Test: RV120W Wireless N VPN Router

Trade Name: Cisco

Model: RV120W, RV150W

Date of Test: August 24 ~ November 21, 2009

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C & INDUSTRY CANADA RSS-210	No non-compliance noted

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 and Industry Canada RSS-210.

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	RV120W Wireless N VPN Router			
Trade Name	Cisco			
Model Number	RV120W, RV150W			
Model Discrepancy	All the specification and layout are identical except they come with different model numbers for marketing purposes.			
Power Supply	Powered by Power Adapter 1. LEADER / Model:MU12-G120100-A1 Input:100-240V, 50/60Hz, 0.5A Output:12V, 1A 2. Sunny / Model:SYS1381-1212-W2 Input:100-240V, 50/60Hz, 0.5A MAX Output:12V, 1A			
Frequency Range	2412 ~ 2462 MHz			
Transmit Power	Mode	Frequency Range	Output Power (dBm)	Output Power (mW)
	802.11b	2412 - 2462	16.51	44.7713
	802.11g	2412 - 2462	16.12	40.9261
	802.11n Standard-20 MHz	2412 - 2462	16.90	48.9779
	802.11n Standard-40 MHz	2422 - 2452	16.26	42.2669
Modulation Technique	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 802.11b/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	Omni Antenna / Gain: 1.8 dBi			

Remark:

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **P27-RV120W** 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 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

The tests documented in this report were performed in accordance with IC RSS-210, IC RSS-Gen, IC RSS-102, IC RSS-212, and ANSI C63.4.

This submittal(s) (test report) is intended for IC Certification with Industry Canada RSS-210.

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.

The tests documented in this report were performed in accordance with IC RSS-210, IC RSS-Gen, IC RSS-102, and ANSI C63.4.

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 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.



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: RV120W) comes with two types of power adapter (MU12-G120100-A1 & SYS1381-1212-W2) for sale. After the preliminary test, the EUT with power adapter (Model: SYS1381-1212-W2) was found to emit the worst emissions and therefore had been tested under operating condition.

The EUT is a 2x2 configuration spatial MIMO (2Tx & 2Rx) without beam forming function that operate in double TX chains and double RX chains. The 2x2 configuration is implemented with two outside TX & RX chains (Chain 0 and 1).

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

After verification, all tests carried out are 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 and receiving radiated spurious emission above 1GHz, which worst case was in CH Mid mode only.

IEEE 802.11b mode:

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

IEEE 802.11g mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate 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	02/23/2010

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	09/09/2010
Test Receiver	Rohde&Schwarz	ESCI	100064	11/30/2009
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	05/29/2010
Horn-Antenna	TRC	HA-0502	06	06/03/2010
Horn-Antenna	TRC	HA-0801	04	06/17/2010
Horn-Antenna	TRC	HA-1201A	01	08/09/2010
Horn-Antenna	TRC	HA-1301A	01	08/10/2010
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/28/2010
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 # A				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
TEST RECEIVER	R&S	ESHS20	840455/006	02/12/2010
LISN (EUT)	SCHWARZBECK	NSLK 8127	8127382	12/09/2009
LISN	SOLAR	8012-50-R-24-BNC	8305114	12/09/2009
BNC CABLE	MIYAZAKI	5D-FB	BNC A4	05/11/2010
THERMO-HYGRO METER	TECPEL	DTM-303	No.7	11/23/2010
Test S/W	EMI 32.exe			



4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/- 1.73
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

*Remark: The radiated emissions test items was tested at Compliance Certification Services Inc. (Hsintien Lab.)
The test equipments were listed in page 8 and the test data, please refer page 126-127.*

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 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 0824-01 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC 2324G-1 for 3M Semi Anechoic Chamber A, 2324G-2 for 3M Semi Anechoic Chamber B.

5.4 TABLE OF ACCREDITATIONS AND LISTINGS

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	
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	 IC 2324G-1 IC 2324G-2

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



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

WuGu Lab

No	Equipment	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1	Notebook PC	IBM	1951-IBV(T60)	L3B2188	FCC DoC	LAN Cable: Unshielded, 10m Line Cable: Unshielded, 10m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2	Test Kit	N/A	N/A	N/A	N/A	N/A	N/A

Hsintien Lab

No.	Equipment	Model No.	Serial No.	FCC ID/ BSMI ID	Trade Name	Data Cable	Power Cord
1	PS/2 Mouse	M071KC	443029525	DOC	DELL	Shielded, 1.8m	N/A
2	PS/2 Keyboard	SK-8110	N/A	DOC	DELL	Shielded, 1.8m	N/A
3	Printer	C60	DR3K039417	3902E006	EPSON	Shielded, 1.8m	Unshielded, 1.8m
4	Monitor	710V	GS17H9NXA05 853A	DOC	SAMSUNG	Shielded, 1.8m with two cores	Unshielded, 1.8m
5	Host PC	xw4400	N/A	DOC	HP	Unshielded, 1.0m	Unshielded, 1.8m
6	Modem	1414	N/A	IFAXDM1414	ACEEX	Shielded, 1.8m	Unshielded, 1.8m
7	Server Notebook	2210B	CNV7472KG5	DOC	HP	Unshielded, 20m	Unshielded, 1.8m
8-10	LAN Cable	N/A	N/A	N/A	N/A	Unshielded, 3.0m	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. APPLICABLE RULES FOR INDUSTRY CANADA RSS-210

RSS-210 §2 General Certification Requirements and Specifications

RSS-210 §2.1 Frequency Stability

When the carrier frequency stability is not specified, it need not be tested, provided that the carrier frequency is chosen such that the fundamental modulation products (meaning the nominal bandwidth) lie totally within the bands listed in Tables 2, 3, 4 and 5 and do not fall into any restricted band listed in Table 1. Due account shall be taken of carrier frequency drift as a result of aging, temperature, humidity, and supply voltage variations when using frequencies near the band edges.

RSS-210 §2.2 Restricted Bands and Unwanted Emission Frequencies

Restricted bands, identified in Table 1, are designated primarily for safety-of-life services (distress calling and certain aeronautical bands), certain satellite downlinks, radio astronomy, and some government uses. Except where otherwise indicated, the following restrictions apply:

- (a) Fundamental components of modulation of LPDs shall not fall within the restricted bands of Table 1.
- (b) Unwanted emissions falling into restricted bands of Table 1 shall meet Tables 2 and 3 limits. It should also be noted that unwanted emissions falling in non-restricted bands do not need to be suppressed to a level lower than the Table 2 and 3 limits.
- (c) Unwanted emissions not falling within restricted frequency bands may also use the limits specified in the applicable annex.

RSS-210 §2.3 Licence-exempt Receivers

Category I licence-exempt receivers are required to have their spurious emissions comply with Section 7.2.3 of RSS-Gen.

RSS-210 §2.6 General Field Strength Limits

Table 2 and 3 list the permissible levels of unwanted emissions of transmitters and receivers. However, transmitters with field strengths that do not exceed the limits in these tables may also operate in these frequency bands, other than the restricted bands of Table 1 and the TV bands (i.e. unwanted emissions of transmitters and receivers are permitted to fall into Table 1 and TV frequencies but intentional emissions are prohibited). See the note of Table 2 for further details.



RSS-210 §2.7 Tables

RSS-210 Table 1: Restricted Frequency Bands ^(Note)

MHz	MHz	MHz	MHz	GHz
0.090-0.110	8.37625-8.38675	--	1718.8-1722.2	9.0-9.2
--	8.41425-8.41475	156.52475-156.52525	2200-2300	9.3-9.5
2.1735-2.1905	12.29-12.293	156.7-156.9	2310-2390	10.6-12.7
3.020-3.026	12.51975-12.52025	--	--	13.25-13.4
4.125-4.128	12.57675-12.57725	--	2655-2900	14.47-14.5
4.17725-4.17775	13.36-13.41	240-285	3260-3267	15.35-16.2
4.20725-4.20775	16.42-16.423	322-335.4	3332-3339	17.7-21.4
5.677-5.683	16.69475-16.69525	399.9-410	3345.8-3358	22.01-23.12
6.215-6.218	16.80425-16.80475	608-614	3500-4400	23.6-24.0
6.26775-6.26825	25.5-25.67	960-1427	4500-5150	31.2-31.8
6.31175-6.31225	37.5-38.25	1435-1626.5	5350-5460	36.43-36.5
8.291-8.294	73-74.6; 74.8-75.2	1645.5-1646.5	7250-7750	Above 38.6
8.362-8.366	108-138	1660-1710	8025-8500	

Note: Certain frequency bands listed in Table 2 and above 38.6 GHz are designated for low-power licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in this Standard as well as RSS-310.

RSS-210 Table 2: General Field Strength Limits for Transmitters and Receivers at Frequencies Above 30 MHz ^(Note)

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Note: Transmitting devices are not permitted in Table 1 bands or in TV bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz, and 614-806 MHz). Prohibition of operation in TV bands does not apply to momentary devices, or to medical telemetry devices in the band 174-216 MHz, and to perimeter protection systems in the bands 54-72 and 76-88 MHz. The perimeter protection devices are to meet Table 3 field strengths limits.

**RSS-210 Table 3: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)**

Frequency (fundamental or spurious)	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/377F (F in Hz)	300
490-1.705 kHz	24,000/F (F in kHz)	24,000/377F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Note: The emission limits for the bands 9-90 kHz and 110-490 kHz are based on measurements employing an average detector.

RSS-210 §Annex 8: Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands

This section applies to systems that employ frequency hopping (FH) and digital modulation technology in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands. Systems in these bands may employ frequency hopping, digital modulation and or a combination (hybrid) of both techniques.

A frequency hopping system that synchronizes with another or several other systems (to avoid frequency collision among them) via off-air sensing or via connecting cables is not hopping randomly and therefore is not in compliance with RSS-210.

RSS-210 §A8.2 Digital Modulation Systems

These include systems employing digital modulation techniques resulting in spectral characteristics similar to direct sequence systems. The following applies to all three bands.

RSS-210 §A8.4 Transmitter Output Power and e.i.r.p. Requirements

(4) For systems employing digital modulation techniques operating in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands, the maximum peak conducted power shall not exceed 1 W. Except as provided in Section A8.4(5), the e.i.r.p. shall not exceed 4 W.

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power (see RSS-Gen)

(5) Point-to-point systems in the bands 2400-2483.5 MHz and 5725-5850 MHz are permitted to have an e.i.r.p. higher than 4 W, provided that the higher e.i.r.p. is achieved by employing higher gain directional antennas and not higher transmitter output powers. Point-to-multipoint systems, omni-directional applications and multiple co-located transmitters transmitting the same information are prohibited from exceeding 4 W e.i.r.p. However, remote stations of point-to-multipoint systems shall be allowed to operate at greater than 4 W e.i.r.p. under the same conditions as for point-to-point systems.

Note: "Fixed, point-to-point operation", excludes point-to-multipoint systems, omnidirectional applications and multiple co-located transmitters transmitting the same information.



RSS-210 §A8.5 Out-of-band Emissions

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

RSS-Gen §2 General Information

Unless otherwise indicated, radiocommunications equipment is subject to licensing pursuant to subsection 4(1) of the *Radiocommunication Act*.

RSS-Gen §2.1.2 Category II Equipment

Category II equipment comprises radio devices where a standard has been prescribed but for which a TAC is not required, that is, equipment certification by Industry Canada or a Certification Body (CB) is not required (certification exempt), pursuant to subsection 4(3) of the *Radiocommunication Act*. The manufacturer or importer shall nevertheless ensure that the standards are complied with. A test report shall be available on request and the device shall be properly labelled.

RSS-Gen §2.2 Receivers

Radiocommunication receivers are defined as Category I equipment or Category II equipment by the characteristics outlined below.

RSS-Gen §2.2.1 Category I Equipment Receivers

A receiver is classified as Category I equipment if it meets one of the following conditions:

- (a) is a stand-alone receiver that is tunable to any frequency in the band 30-960 MHz;
- (b) is a receiver that is associated with Category I transmitters; or
- (c) is a scanner receiver.

Except for scanner receivers, which have their own RSSs, Category I receivers shall comply with the limits for receiver spurious emissions set out in Section 6 of this RSS-Gen, and shall be certified under the RSS applicable to the transmitter type with which the receiver is associated or designed to operate (NOT under RSS-Gen).

RSS-Gen §2.2.2 Category II Equipment Receivers

A receiver is classified as Category II equipment if it is not meeting the conditions of Section 2.2.1.

RSS-Gen §2.2.3 Licence-exempt Receivers

Paging receivers, “receive-only” earth stations operating with satellites approved by Industry Canada, and stand-alone receivers which are exempted from licensing, can be classified as either Category I or Category II. These receivers shall comply with the requirements of RSS-210 or RSS-310, respectively.



RSS-Gen §2.3 Licence-exempt Low-power Radiocommunication Devices (LPDs)

Licence-exempt low-power radiocommunication devices are devices which have intentional and unwanted emissions of very low signal levels such that they can co-exist with licensed radio services. LPDs are required to operate on a “no-interference no-protection” basis (i.e. they may not cause radio interference and cannot claim protection from interference). The requirements for LPDs are generally described in Section 7.

RSS-Gen §5.5 Exposure of Humans to RF Fields

Before equipment certification is granted, the applicable requirements of RSS-102 shall be met.

RSS-Gen §6 Receiver Spurious Emission Standard

The following receiver spurious emission limits shall be complied with:

(a) If a radiated measurement is made, all spurious emissions shall comply with the limits of Table 1.

RSS-Gen Table 1 - Spurious Emission Limits for Receivers

Frequency (MHz)	Field Strength microvolts/m at 3 metres
30-88	100
88-216	150
216-960	200
Above 960	500

(b) If a conducted measurement is made, no spurious output signals appearing at the antenna terminals shall exceed 2 nanowatts per any 4 kHz spurious frequency in the band 30-1000 MHz, or 5 nanowatts above 1 GHz.

RSS-Gen §7.1.4 Transmitter Antenna

A transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.

When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in RSS-210 or RSS-310 for devices of RF output powers of 10 milliwatts or less. For devices of output powers greater than 10 milliwatts, except devices subject to RSS-210 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands) or RSS-210 Annex 9 (Local Area Network Devices), the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.



RSS-Gen §7.2.2 Transmitter and Receiver AC Power Lines Conducted Emission Limits

Except when the requirements applicable to a given device state otherwise, for any licence-exempt radiocommunication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in Table 2. The tighter limit applies at the frequency range boundaries.

RSS-Gen Table 2 – AC Power Lines Conducted Emission Limits

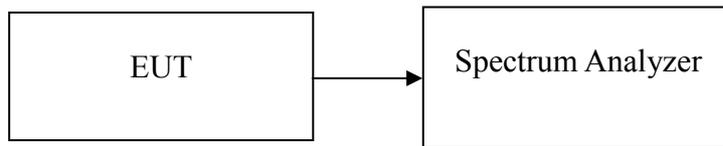
Frequency Range (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

**Decreases with the logarithm of the frequency*

8. FCC PART 15.247 REQUIREMENTS & RSS-210 REQUIREMENTS

8.1 99% BANDWIDTH

Test Configuration



TEST PROCEDURE

The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or peak hold.

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

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.1734
Mid	2437	13.1823
High	2462	13.1651

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.1858
Mid	2437	16.9460
High	2462	16.9311

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.9272
Mid	2437	18.0458
High	2462	17.8870

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.8743
Mid	2437	17.9737
High	2462	17.8622

Test mode: draft 802.11n Standard-40 MHz Channel mode / Chain 0

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2422	36.2770
Mid	2437	36.2406
High	2452	36.3152

Test mode: draft 802.11n Standard-40 MHz Channel mode / Chain 1

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2422	36.2007
Mid	2437	36.2828
High	2452	36.2216

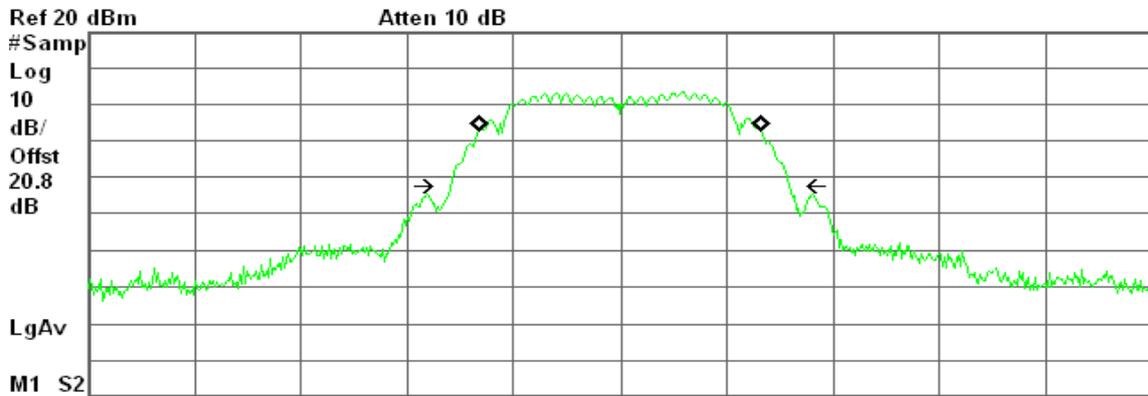


Test Plot

IEEE 802.11b mode 99% Bandwidth (CH Low)

Agilent 12:09:42 Nov 21, 2009

R T



Center 2.412 00 GHz Span 50 MHz
 #Res BW 510 kHz #VBW 1.6 MHz Sweep 1 ms (601 pts)

Occupied Bandwidth
13.1734 MHz

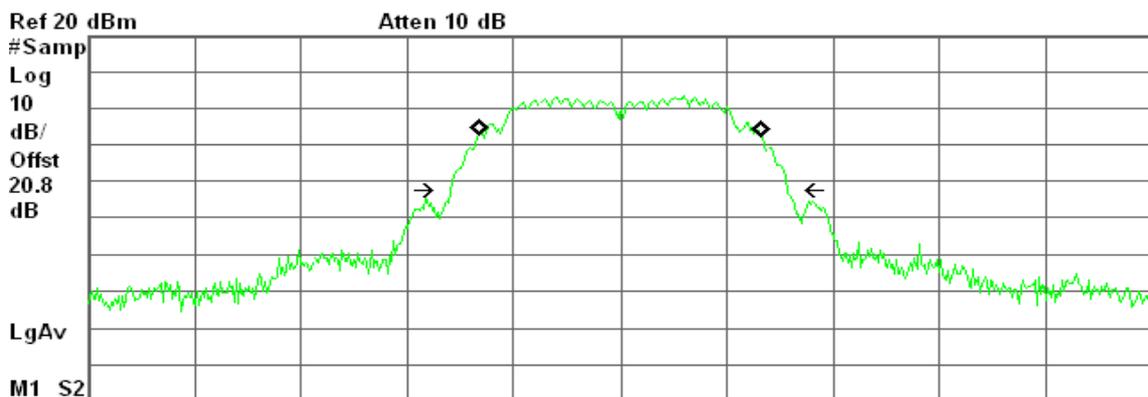
Occ BW % Pwr 99.00 %
 x dB -26.00 dB

Transmit Freq Error 13.548 kHz
 Occupied Bandwidth 15.855 MHz*

99% Bandwidth (CH Mid)

Agilent 12:16:18 Nov 21, 2009

R T



Center 2.437 00 GHz Span 50 MHz
 #Res BW 510 kHz #VBW 1.6 MHz Sweep 1 ms (601 pts)

Occupied Bandwidth
13.1823 MHz

Occ BW % Pwr 99.00 %
 x dB -26.00 dB

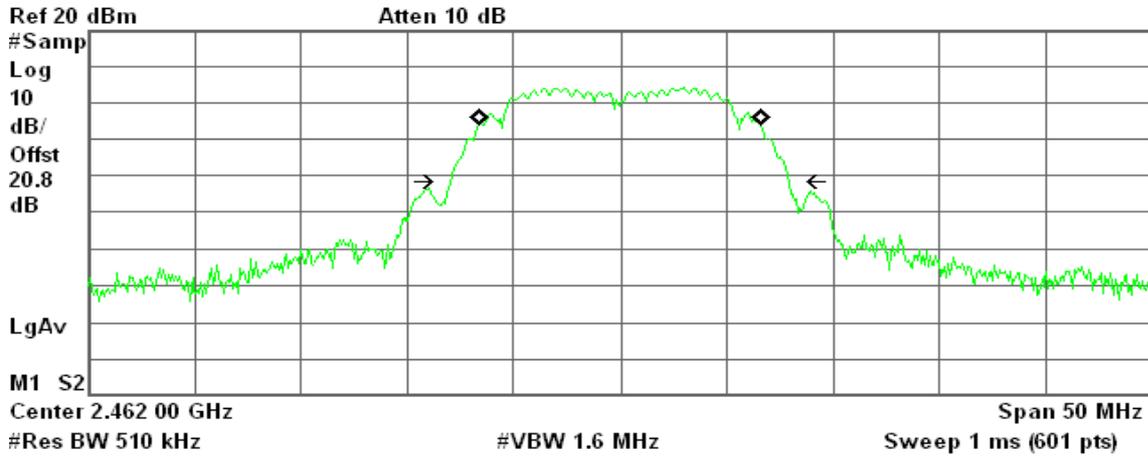
Transmit Freq Error 4.077 kHz
 Occupied Bandwidth 15.746 MHz*



99% Bandwidth (CH High)

Agilent 12:24:29 Nov 21, 2009

R T



Occupied Bandwidth
13.1651 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

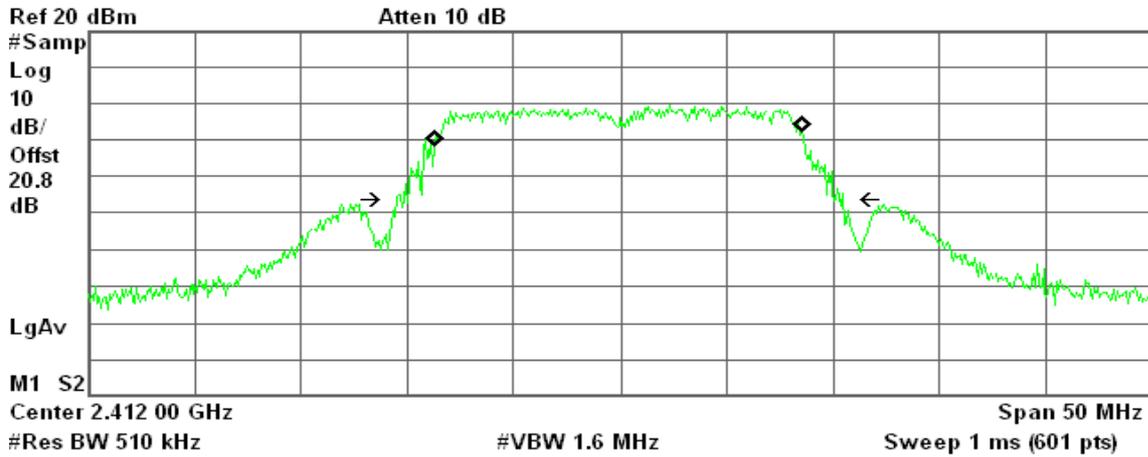
Transmit Freq Error -5.099 kHz
Occupied Bandwidth 15.824 MHz*

IEEE 802.11g mode

99% Bandwidth (CH Low)

Agilent 12:32:07 Nov 21, 2009

R T



Occupied Bandwidth
17.1858 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

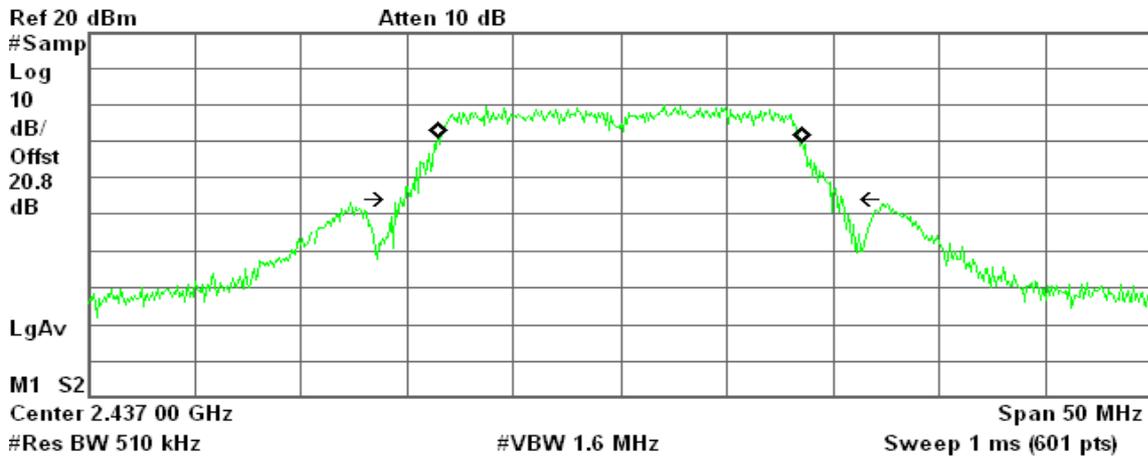
Transmit Freq Error -66.570 kHz
Occupied Bandwidth 21.060 MHz*



99% Bandwidth (CH Mid)

Agilent 12:37:43 Nov 21, 2009

R T



Occupied Bandwidth
16.9460 MHz

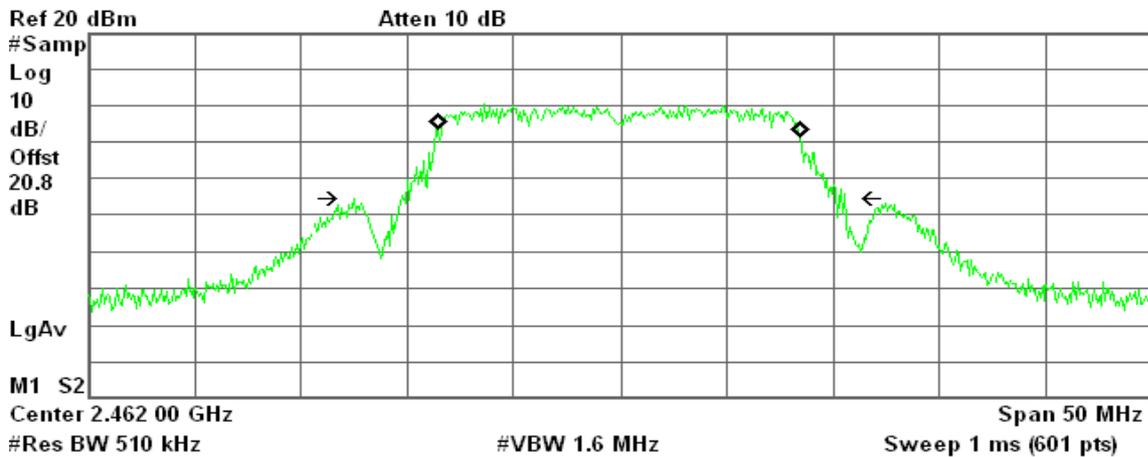
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -13.527 kHz
Occupied Bandwidth 20.861 MHz*

99% Bandwidth (CH High)

Agilent 12:44:01 Nov 21, 2009

R T



Occupied Bandwidth
16.9311 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -71.879 kHz
Occupied Bandwidth 23.123 MHz*

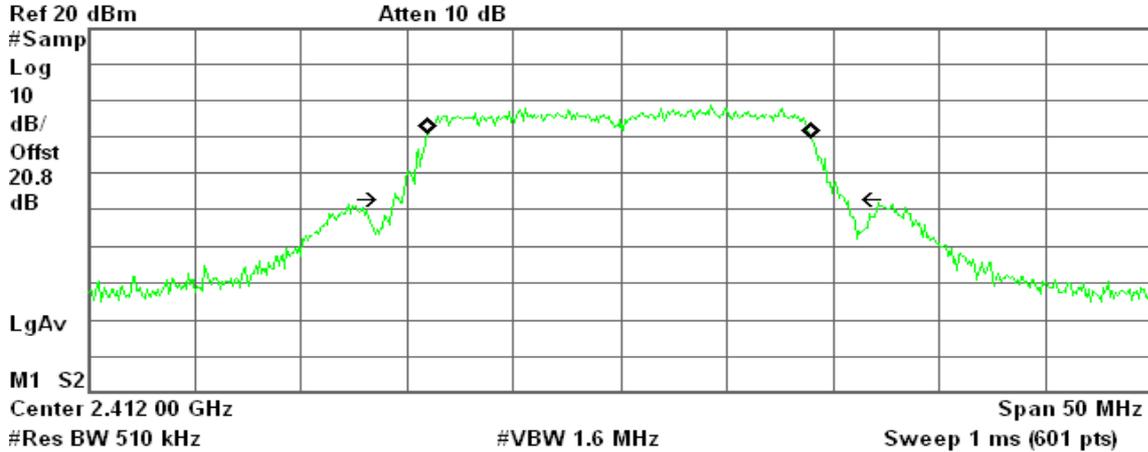


draft 802.11n Standard-20 MHz Channel mode / Chain 0

99% Bandwidth (CH Low)

Agilent 12:51:25 Nov 21, 2009

R T



Occupied Bandwidth
17.9272 MHz

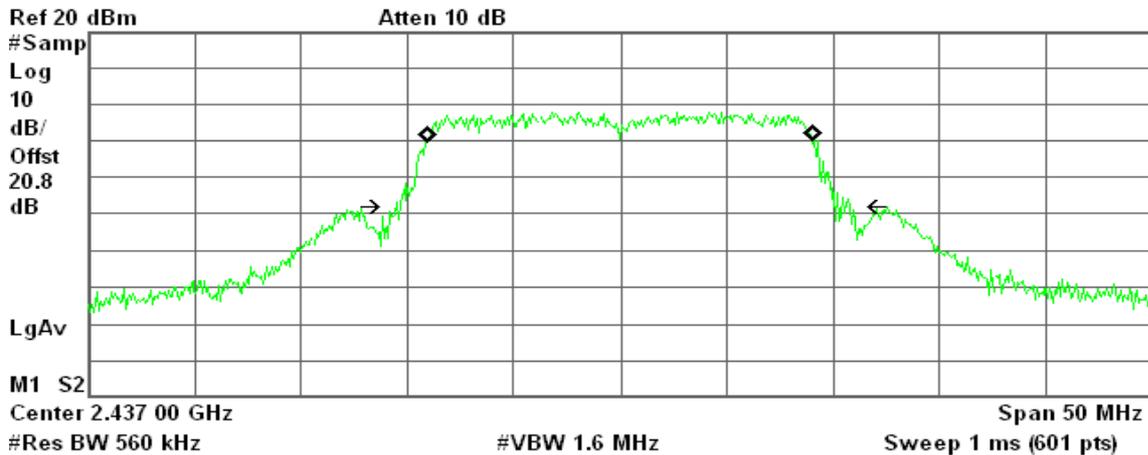
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -26.768 kHz
Occupied Bandwidth 21.257 MHz*

99% Bandwidth (CH Mid)

Agilent 12:56:36 Nov 21, 2009

R T



Occupied Bandwidth
18.0458 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

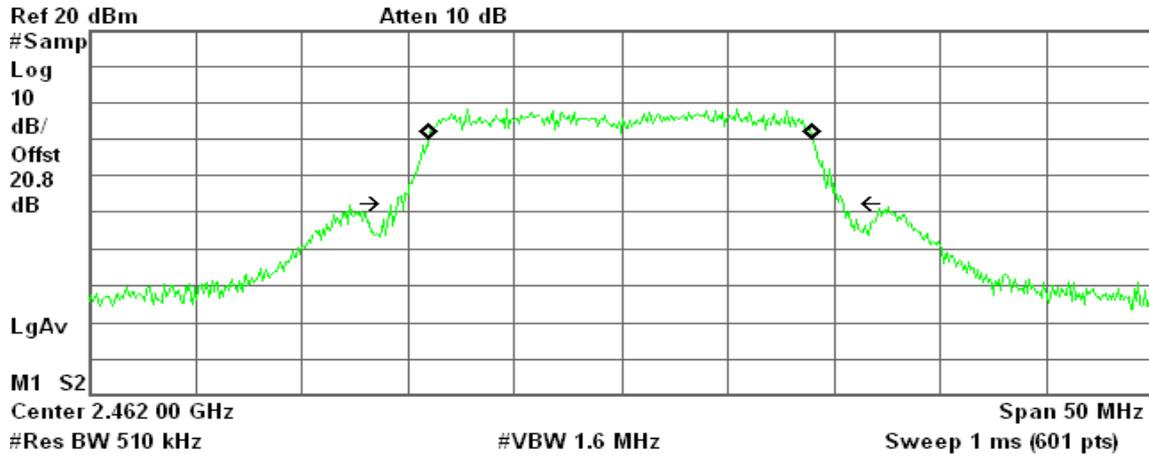
Transmit Freq Error 14.342 kHz
Occupied Bandwidth 21.364 MHz*



99% Bandwidth (CH High)

Agilent 13:01:44 Nov 21, 2009

R T



Occupied Bandwidth
17.8870 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

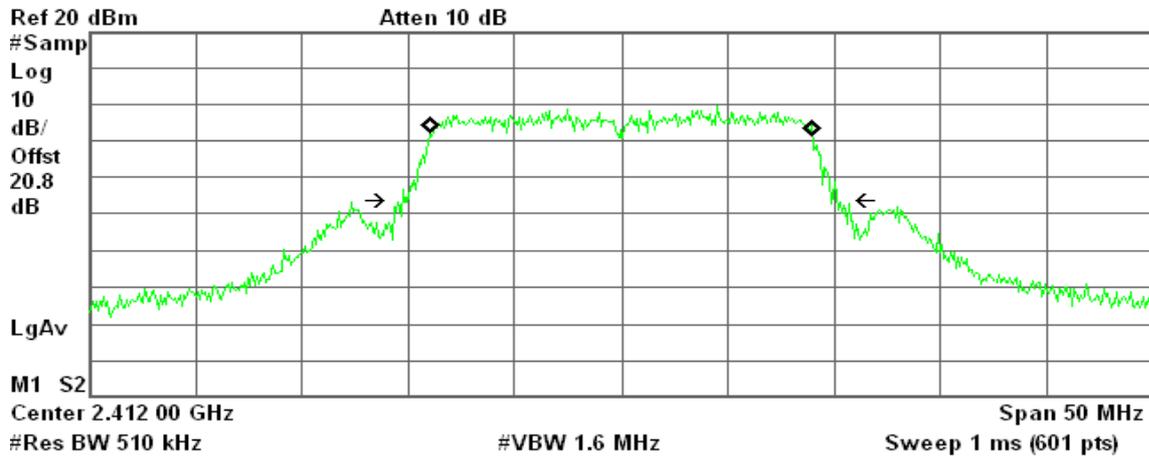
Transmit Freq Error -16.902 kHz
Occupied Bandwidth 21.048 MHz*

draft 802.11n Standard-20 MHz Channel mode / Chain 1

99% Bandwidth (CH Low)

Agilent 13:20:36 Nov 21, 2009

R T



Occupied Bandwidth
17.8743 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

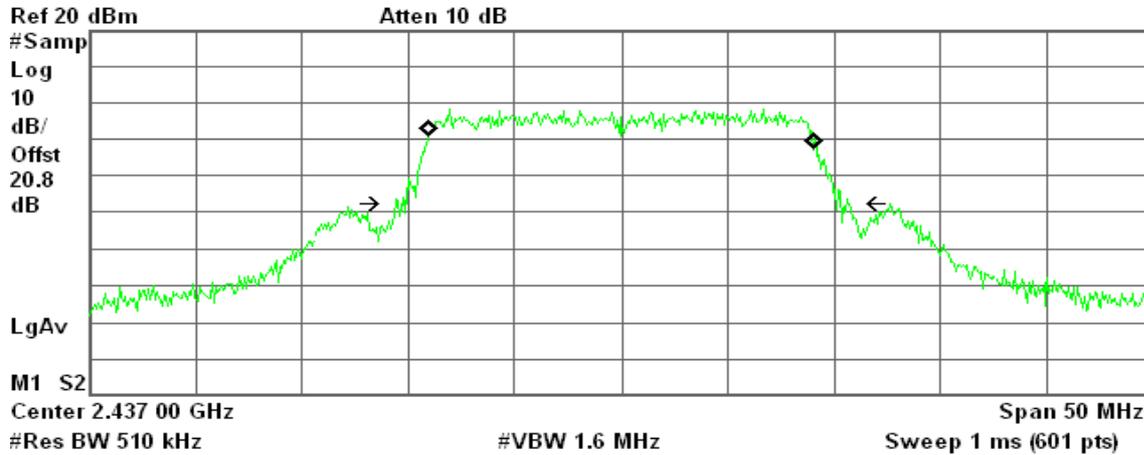
Transmit Freq Error 18.246 kHz
Occupied Bandwidth 20.513 MHz*



99% Bandwidth (CH Mid)

Agilent 13:12:30 Nov 21, 2009

R T



Occupied Bandwidth
17.9737 MHz

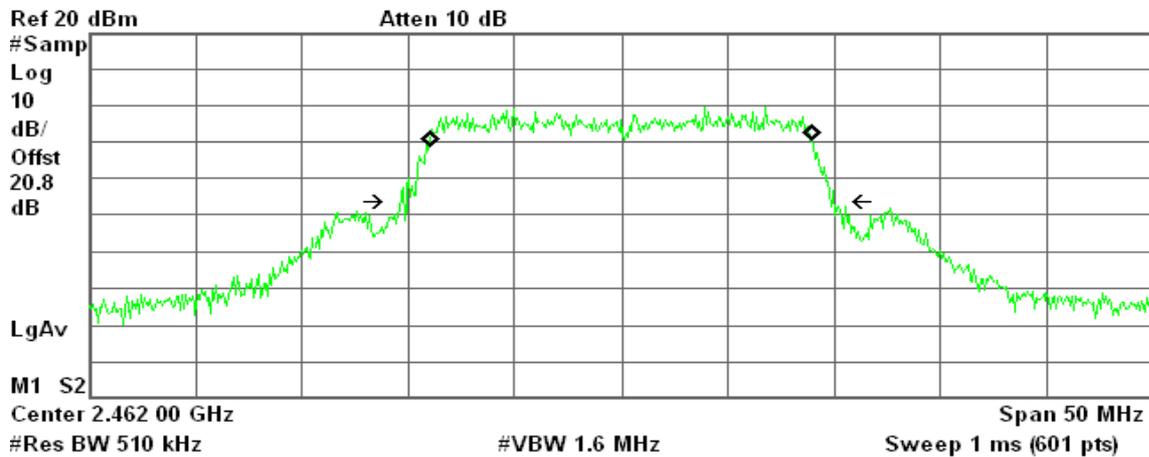
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 21.254 kHz
Occupied Bandwidth 21.340 MHz*

99% Bandwidth (CH High)

Agilent 13:07:20 Nov 21, 2009

R T



Occupied Bandwidth
17.8622 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -22.236 kHz
Occupied Bandwidth 20.431 MHz*

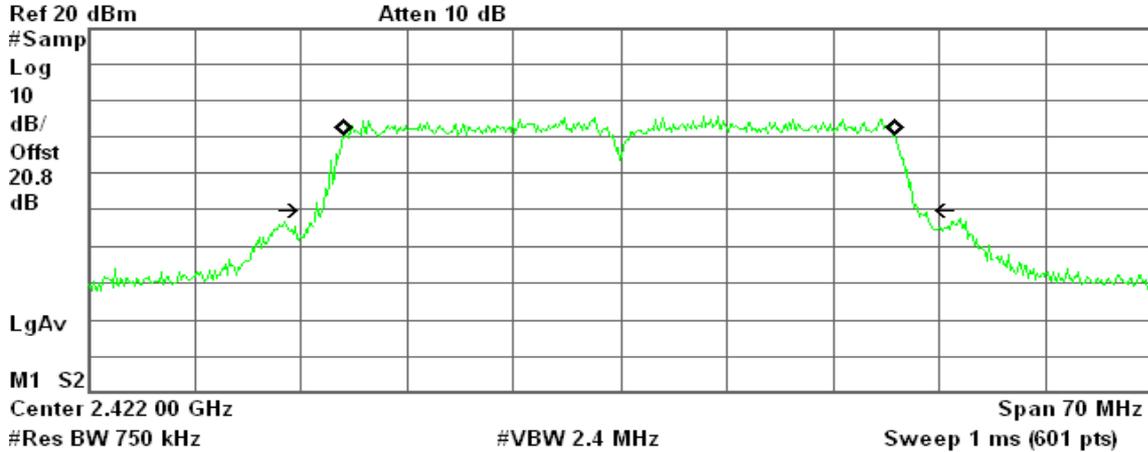


draft 802.11n Wide-40 MHz Channel mode / Chain 0

99% Bandwidth (CH Low)

Agilent 13:52:00 Nov 21, 2009

R T



Occupied Bandwidth
36.2770 MHz

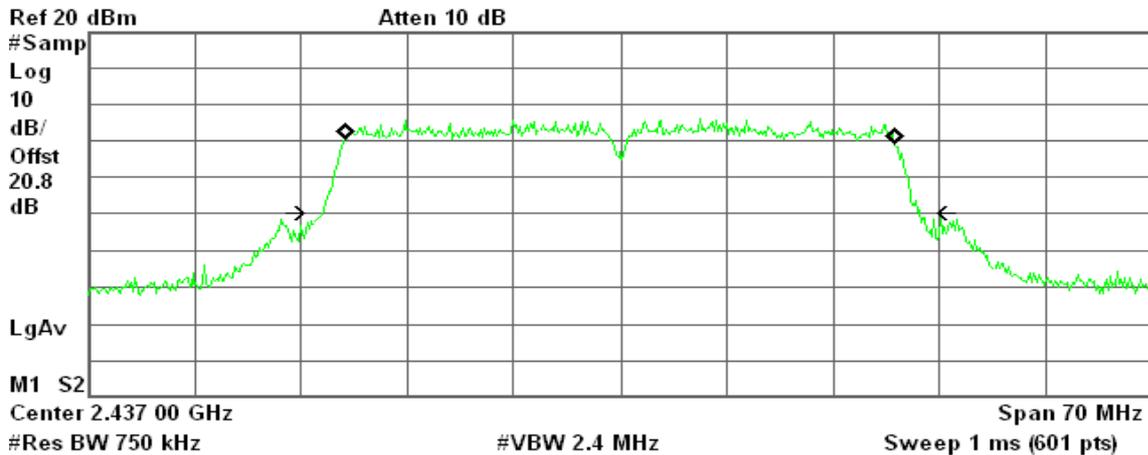
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -28.562 kHz
Occupied Bandwidth 39.667 MHz*

99% Bandwidth (CH Mid)

Agilent 13:57:34 Nov 21, 2009

R T



Occupied Bandwidth
36.2406 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

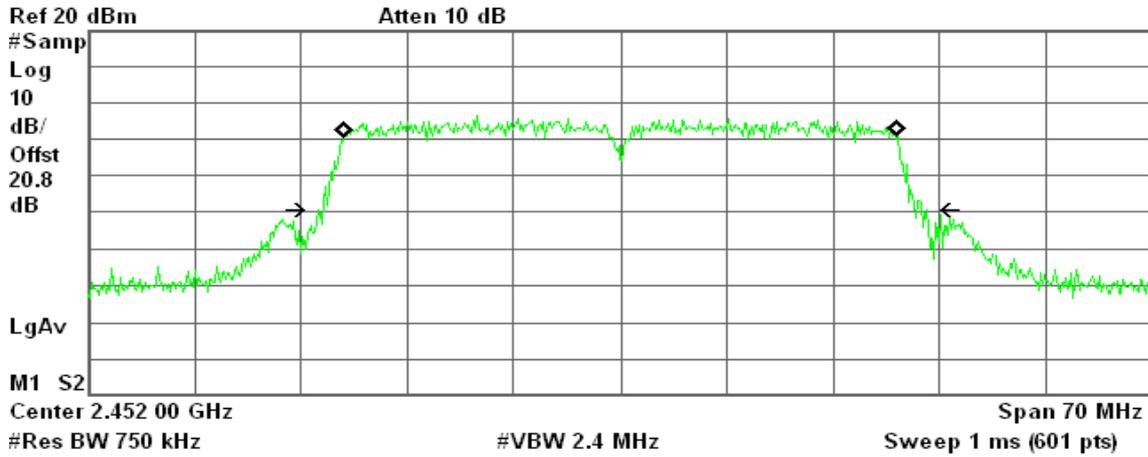
Transmit Freq Error -7.980 kHz
Occupied Bandwidth 39.298 MHz*



99% Bandwidth (CH High)

Agilent 13:46:47 Nov 21, 2009

R T



Occupied Bandwidth

36.3152 MHz

Occ BW % Pwr	99.00 %
x dB	-26.00 dB

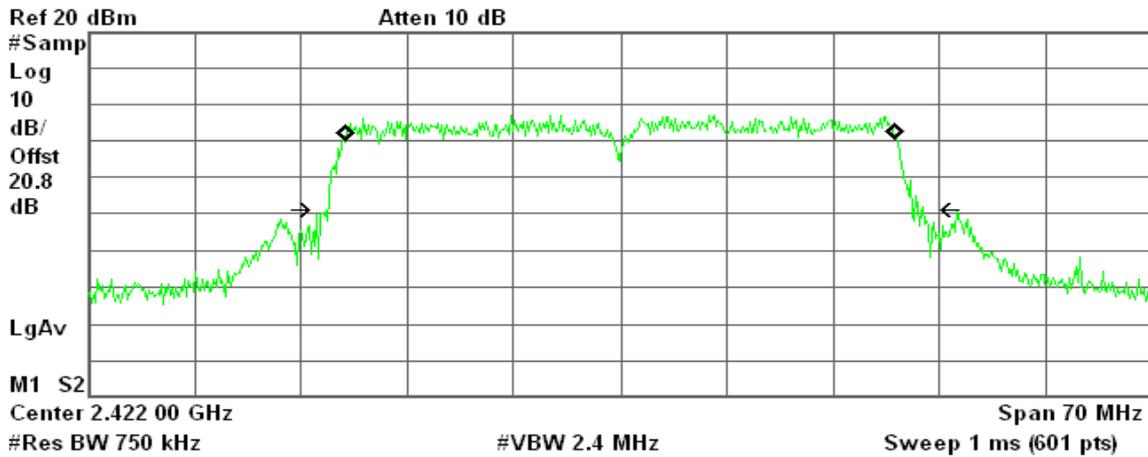
Transmit Freq Error	8.769 kHz
Occupied Bandwidth	39.451 MHz*

draft 802.11n Wide-40 MHz Channel mode / Chain 1

99% Bandwidth (CH Low)

Agilent 13:28:43 Nov 21, 2009

R T



Occupied Bandwidth

36.2007 MHz

Occ BW % Pwr	99.00 %
x dB	-26.00 dB

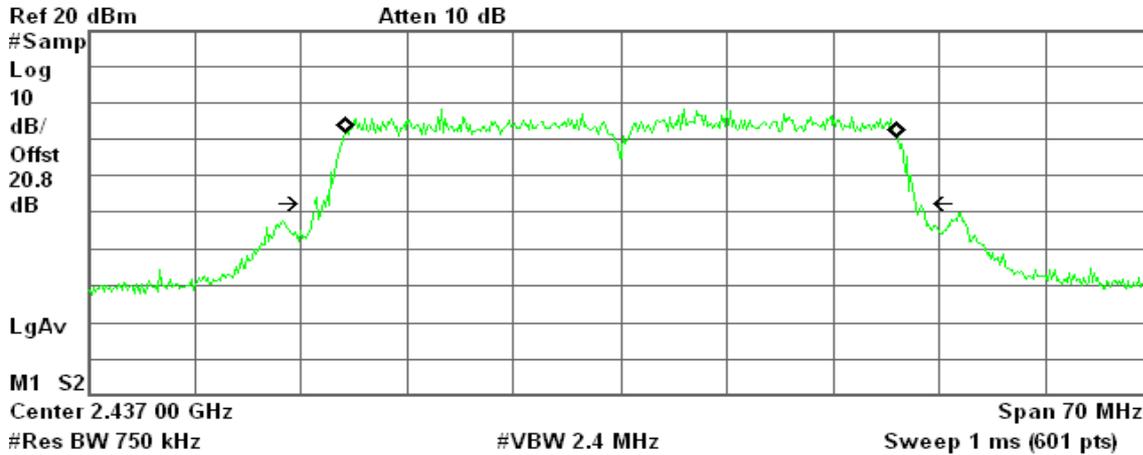
Transmit Freq Error	-18.008 kHz
Occupied Bandwidth	39.190 MHz*



99% Bandwidth (CH Mid)

Agilent 13:33:26 Nov 21, 2009

R T



Occupied Bandwidth
36.2828 MHz

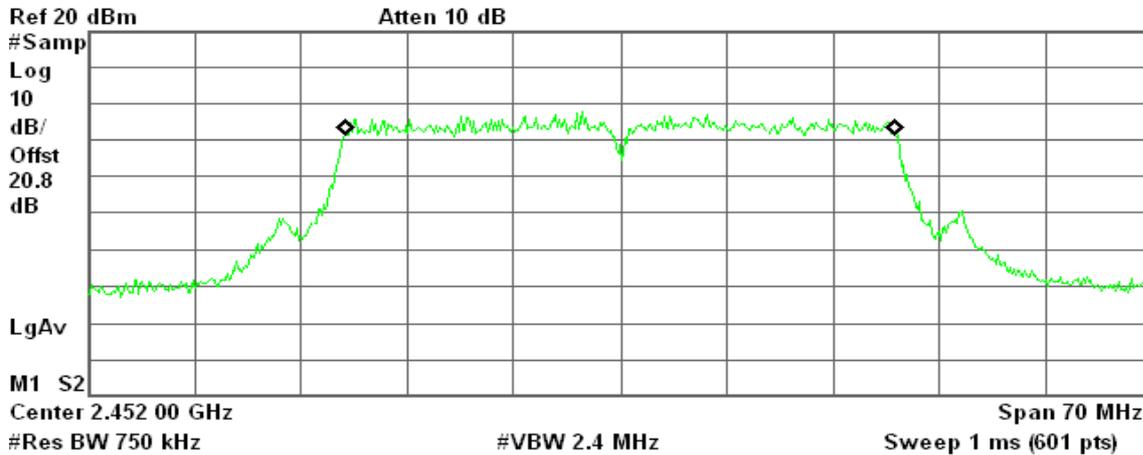
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 68.271 kHz
Occupied Bandwidth 39.532 MHz*

99% Bandwidth (CH High)

Agilent 13:39:31 Nov 21, 2009

R L



Occupied Bandwidth
36.2216 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

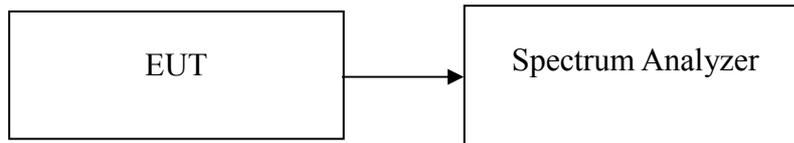
Transmit Freq Error 29.804 kHz
x dB Bandwidth 39.265 MHz*

8.2 6DB BANDWIDTH

LIMIT

According to §15.247(a)(2) & RSS-210 §A8.2(a), 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)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.00	>500	PASS
Mid	2437	10.25		PASS
High	2462	10.17		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.33	>500	PASS
Mid	2437	16.58		PASS
High	2462	16.50		PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.83	>500	PASS
Mid	2437	17.67		PASS
High	2462	17.75		PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.75	>500	PASS
Mid	2437	17.58		PASS
High	2462	17.67		PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2422	35.70	>500	PASS
Mid	2437	35.47		PASS
High	2452	35.70		PASS

Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	36.05	>500	PASS
Mid	2437	36.05		PASS
High	2452	36.17		PASS



Test Plot

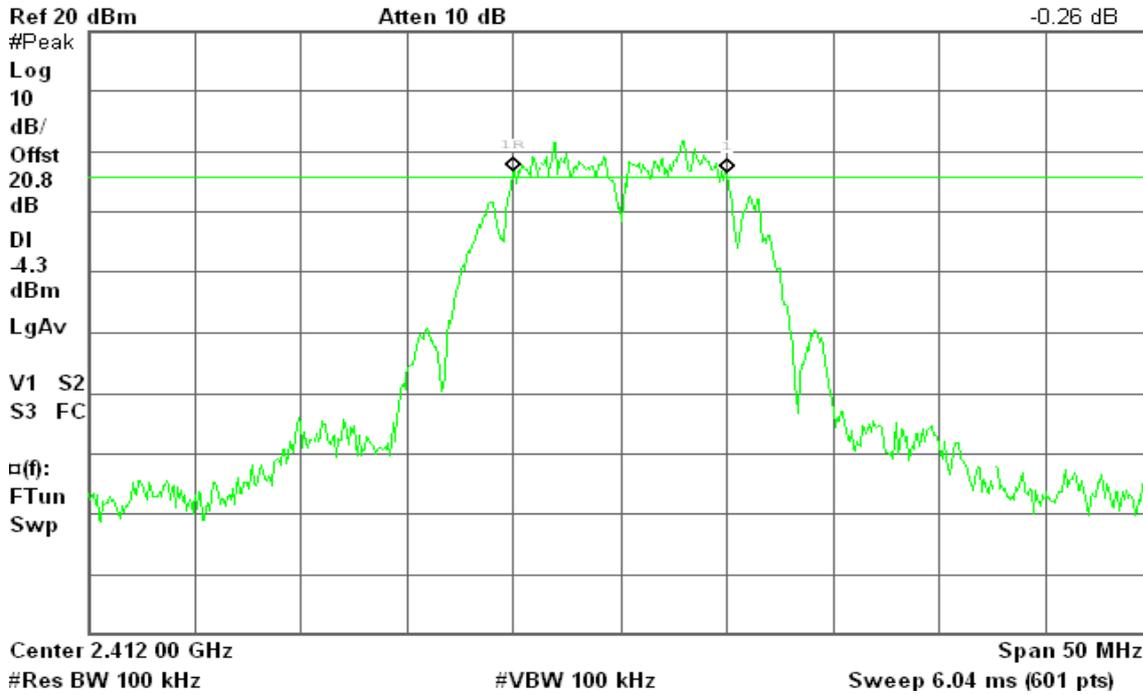
IEEE 802.11b mode

6dB Bandwidth (CH Low)

Agilent 12:08:58 Nov 21, 2009

R T

Δ Mkr1 10.00 MHz
-0.26 dB

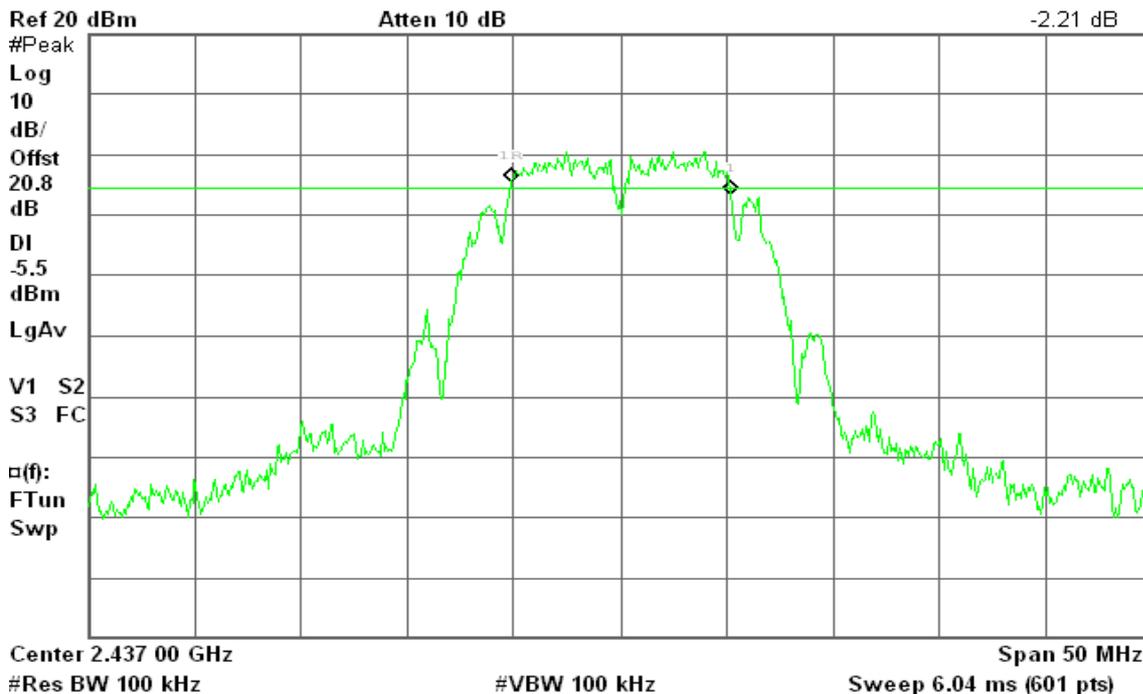


6dB Bandwidth (CH Mid)

Agilent 12:15:40 Nov 21, 2009

R T

Δ Mkr1 10.25 MHz
-2.21 dB



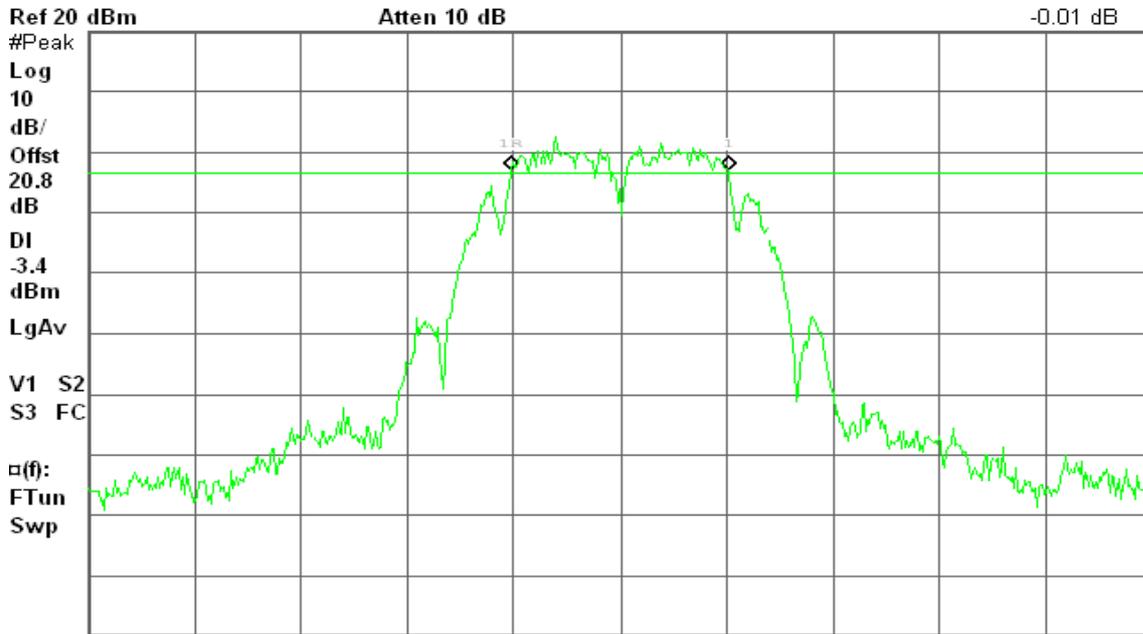


6dB Bandwidth (CH High)

Agilent 12:23:54 Nov 21, 2009

R T

Δ Mkr1 10.17 MHz
-0.01 dB



Center 2.462 00 GHz Span 50 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 6.04 ms (601 pts)

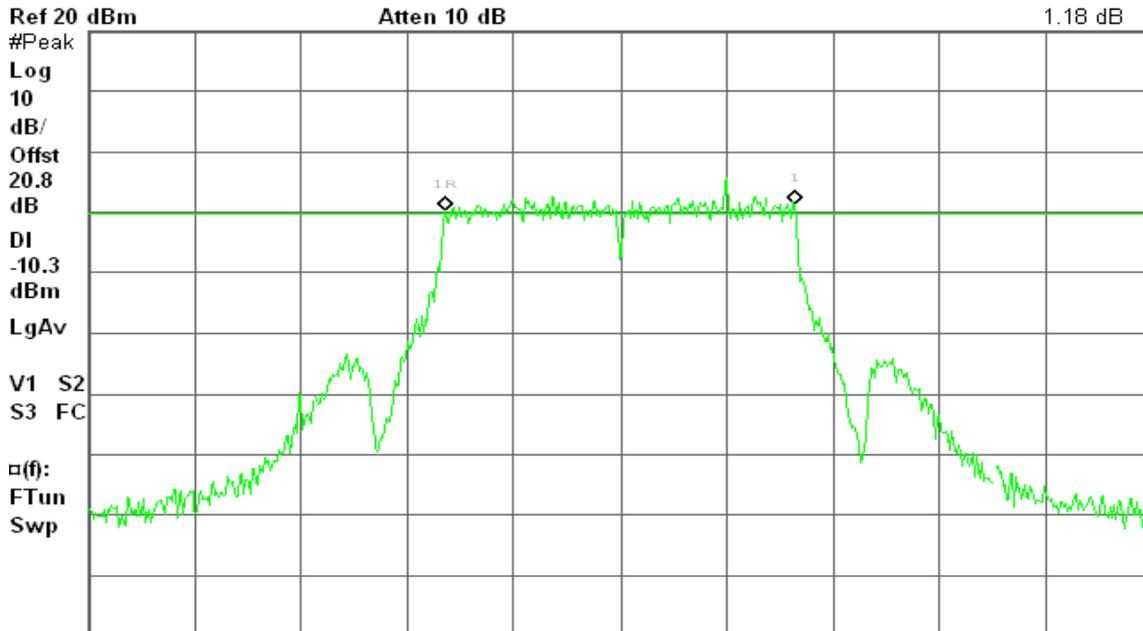
IEEE 802.11g mode

6dB Bandwidth (CH Low)

Agilent 12:31:21 Nov 21, 2009

R T

Δ Mkr1 16.33 MHz
1.18 dB



Center 2.412 00 GHz Span 50 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 6.04 ms (601 pts)

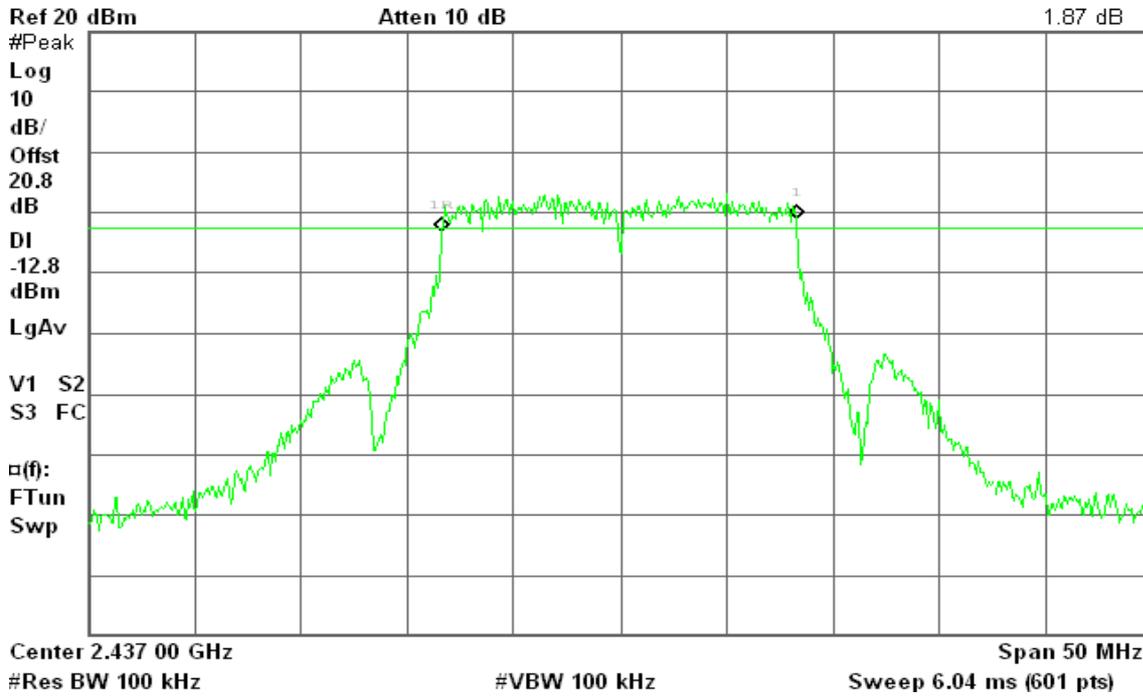


6dB Bandwidth (CH Mid)

Agilent 12:37:03 Nov 21, 2009

R T

Δ Mkr1 16.58 MHz
1.87 dB

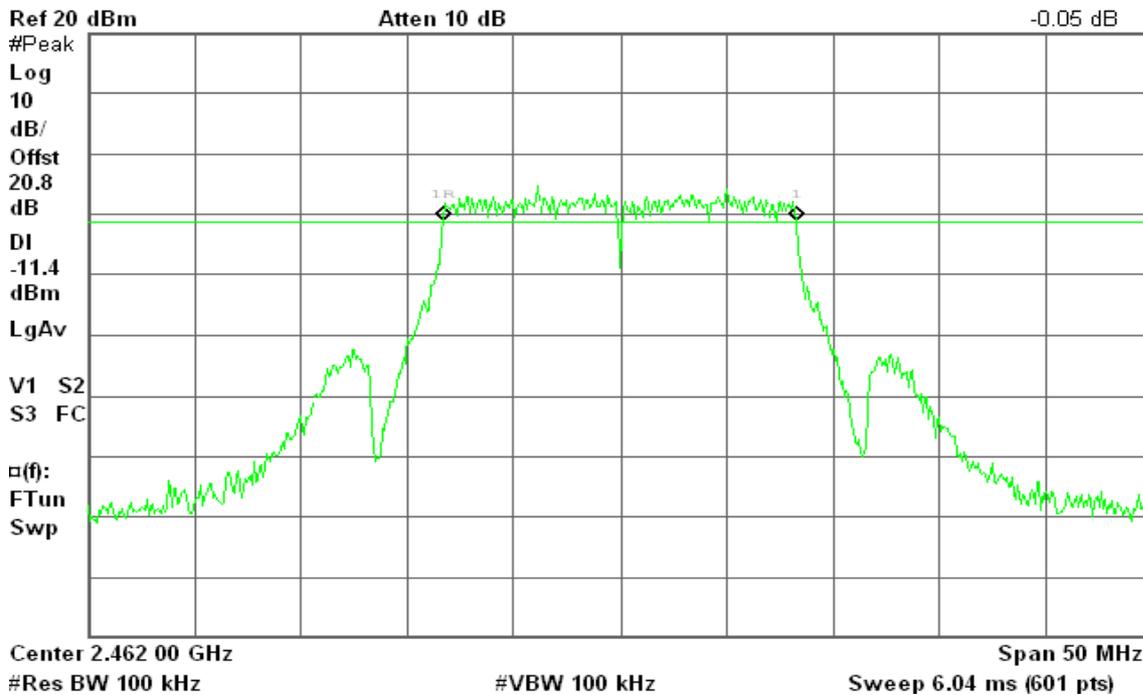


6dB Bandwidth (CH High)

Agilent 12:43:19 Nov 21, 2009

R T

Δ Mkr1 16.50 MHz
-0.05 dB





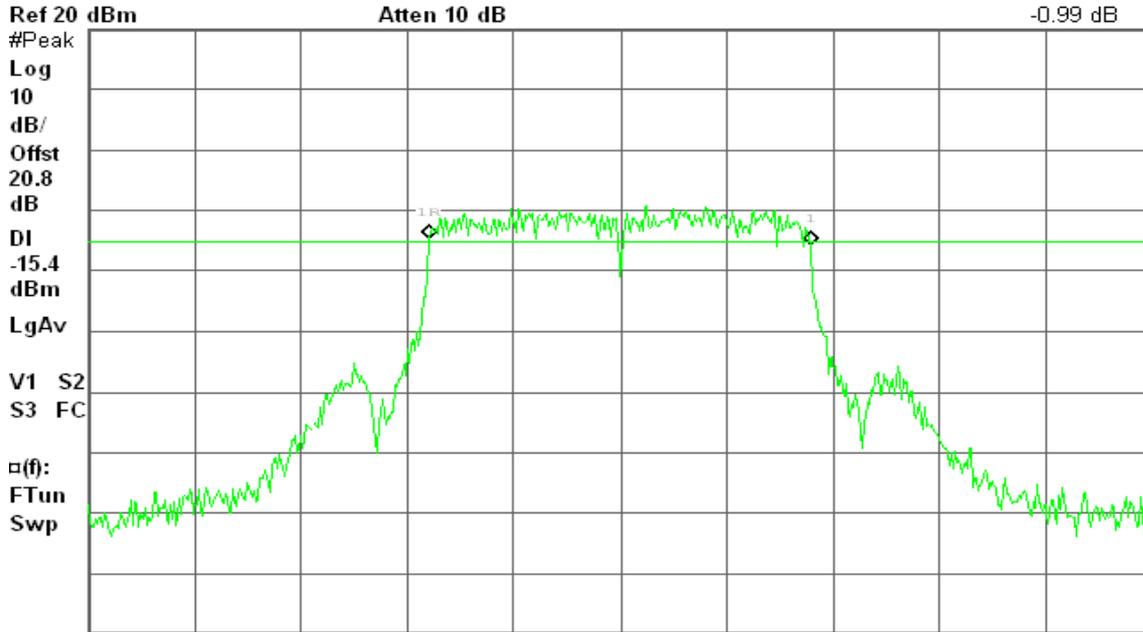
draft 802.11n Standard-20 MHz Channel mode / Chain 0

6dB Bandwidth (CH Low)

Agilent 12:50:38 Nov 21, 2009

R L

Δ Mkr1 17.83 MHz
-0.99 dB



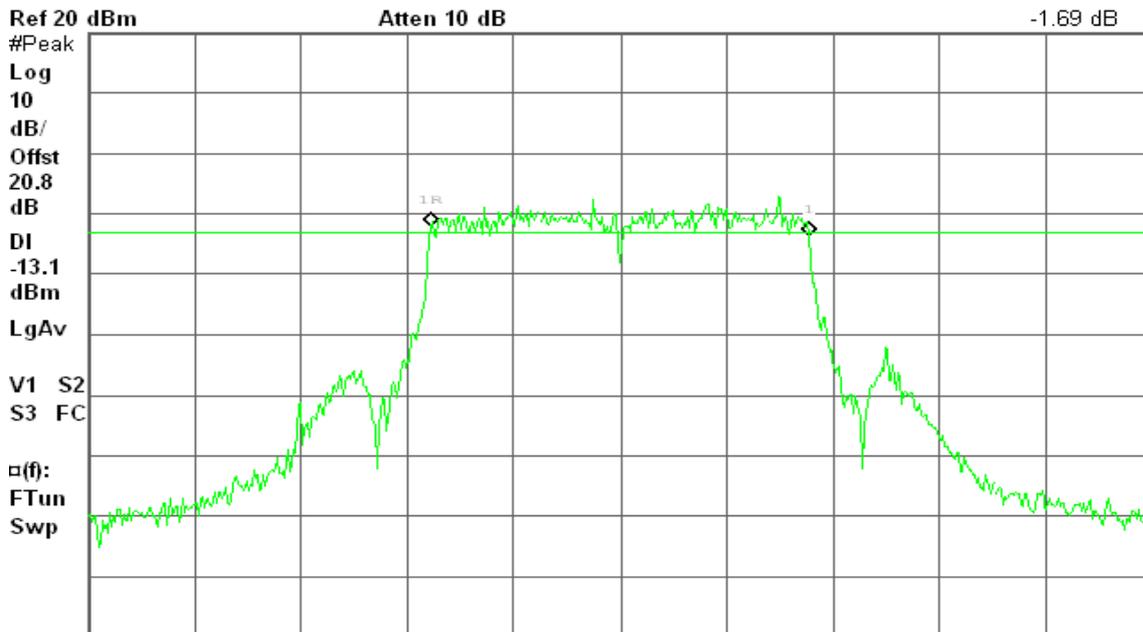
Center 2.412 00 GHz Span 50 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 6.04 ms (601 pts)

6dB Bandwidth (CH Mid)

Agilent 12:55:55 Nov 21, 2009

R T

Δ Mkr1 17.67 MHz
-1.69 dB



Center 2.437 00 GHz Span 50 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 6.04 ms (601 pts)

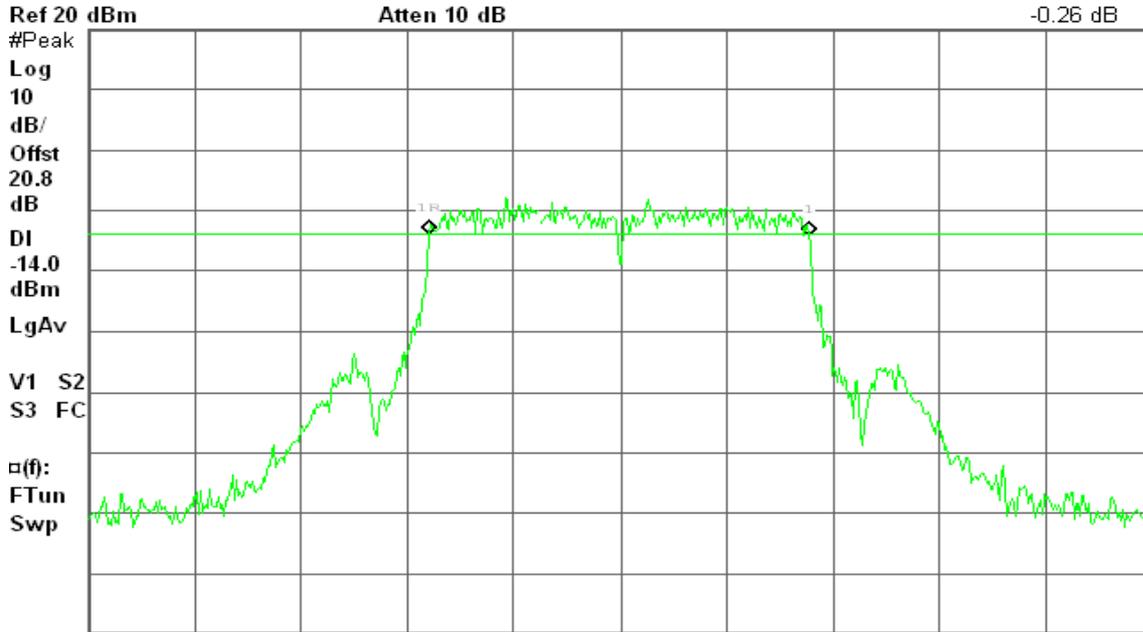


6dB Bandwidth (CH High)

Agilent 13:01:06 Nov 21, 2009

R T

Δ Mkr1 17.75 MHz
-0.26 dB



Center 2.462 00 GHz Span 50 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 6.04 ms (601 pts)

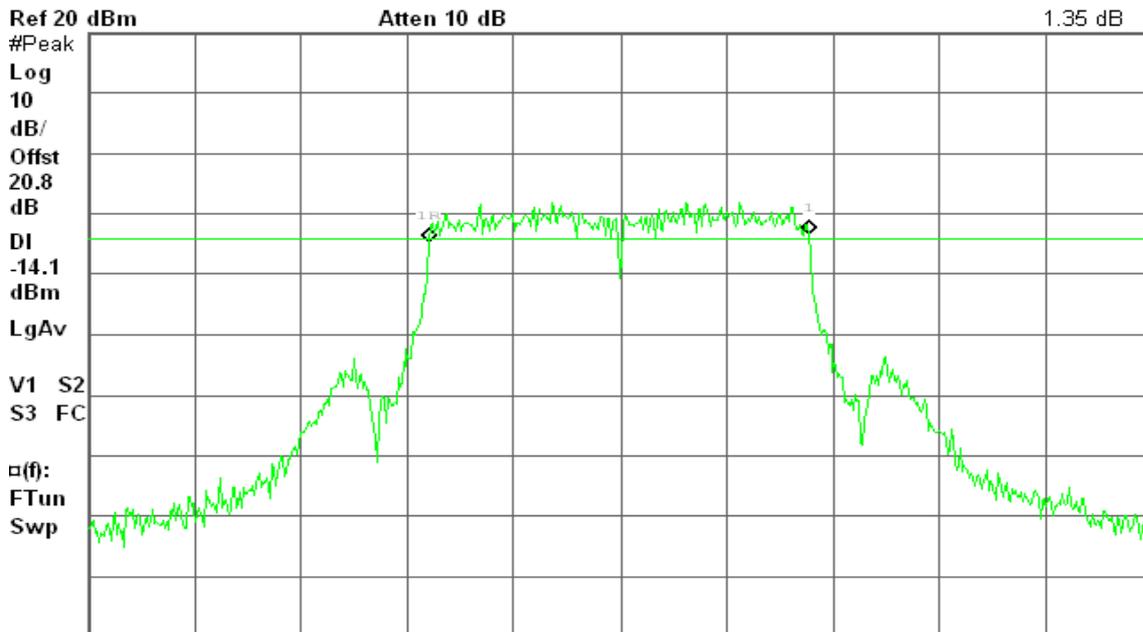
draft 802.11n Standard-20 MHz Channel mode / Chain 1

6dB Bandwidth (CH Low)

Agilent 13:19:50 Nov 21, 2009

R T

Δ Mkr1 17.75 MHz
1.35 dB



Center 2.412 00 GHz Span 50 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 6.04 ms (601 pts)

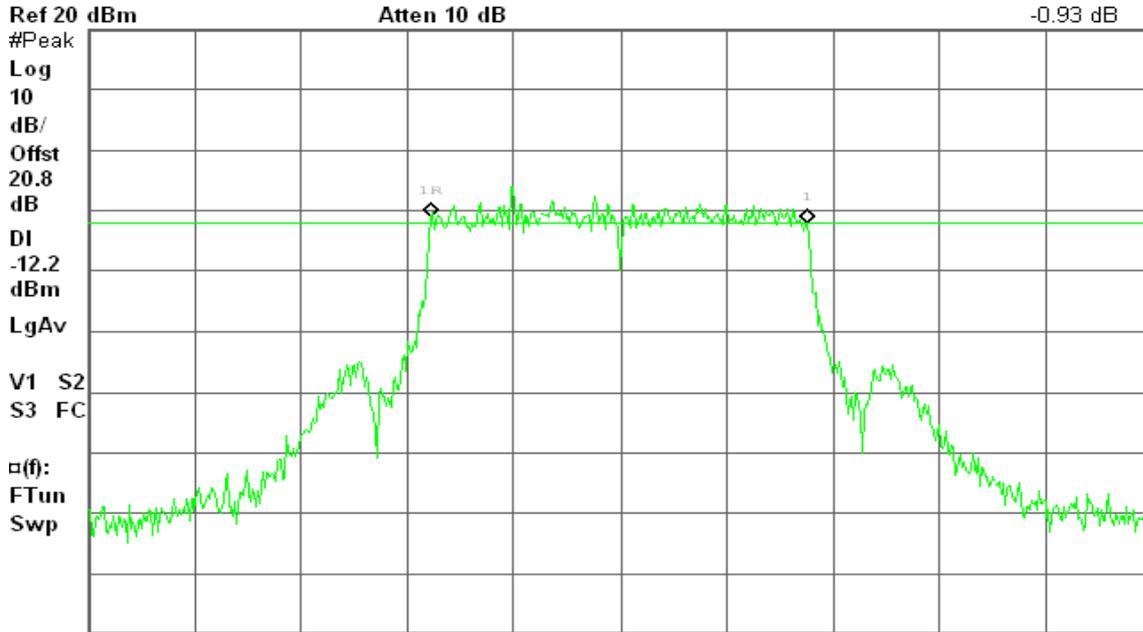


6dB Bandwidth (CH Mid)

Agilent 13:11:48 Nov 21, 2009

R T

Δ Mkr1 17.58 MHz
-0.93 dB



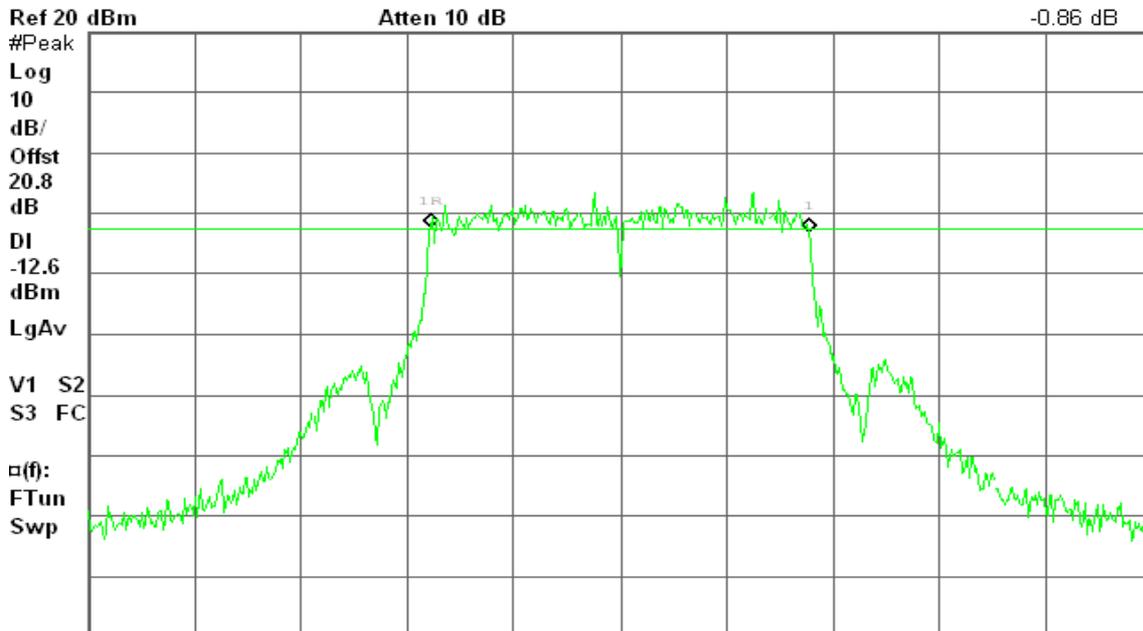
Center 2.437 00 GHz Span 50 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 6.04 ms (601 pts)

6dB Bandwidth (CH High)

Agilent 13:06:27 Nov 21, 2009

R T

Δ Mkr1 17.67 MHz
-0.86 dB



Center 2.462 00 GHz Span 50 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 6.04 ms (601 pts)



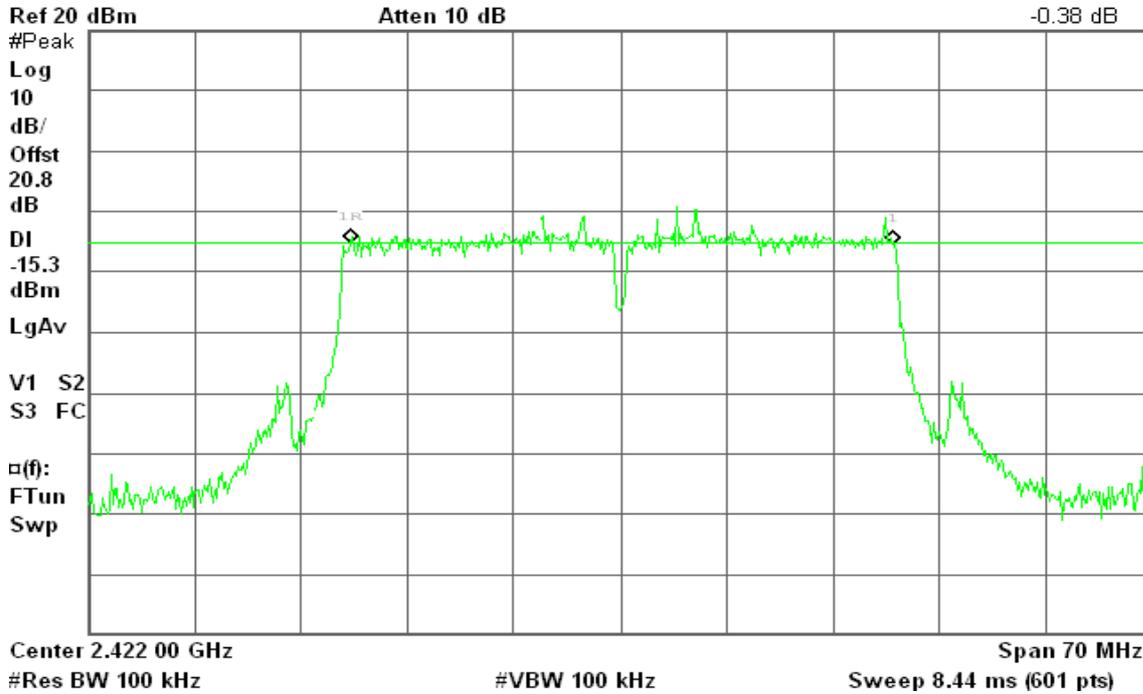
draft 802.11n Wide-40 MHz Channel mode / Chain 0

6dB Bandwidth (CH Low)

Agilent 13:51:21 Nov 21, 2009

R T

Δ Mkr1 35.70 MHz
-0.38 dB

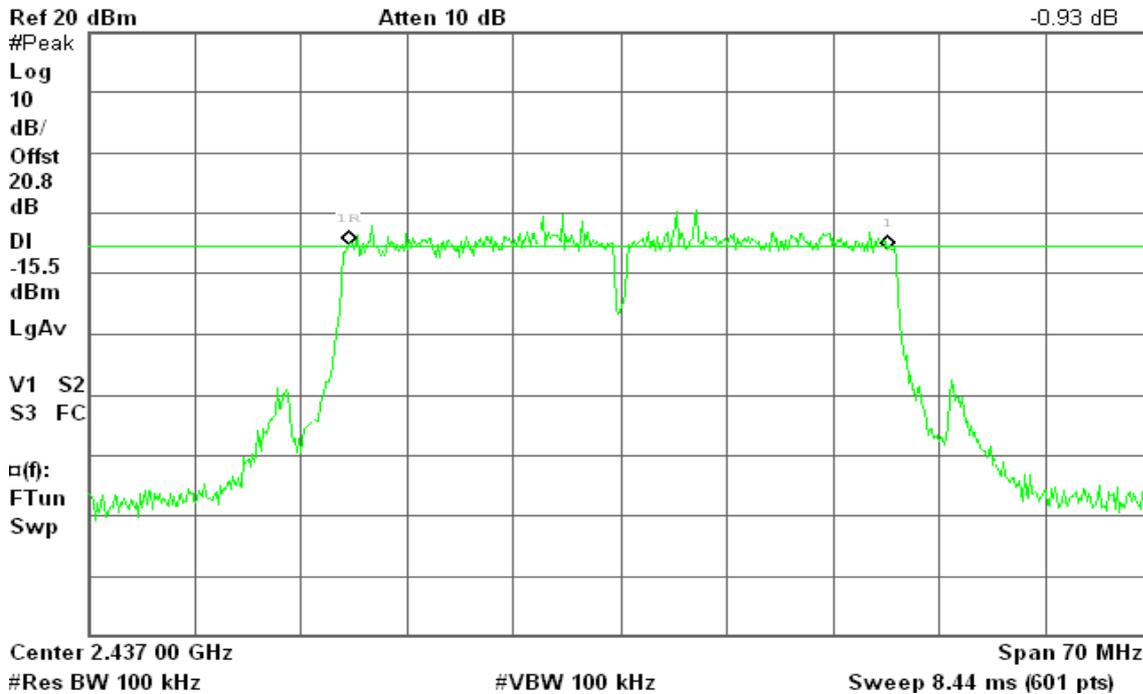


6dB Bandwidth (CH Mid)

Agilent 13:56:52 Nov 21, 2009

R T

Δ Mkr1 35.47 MHz
-0.93 dB



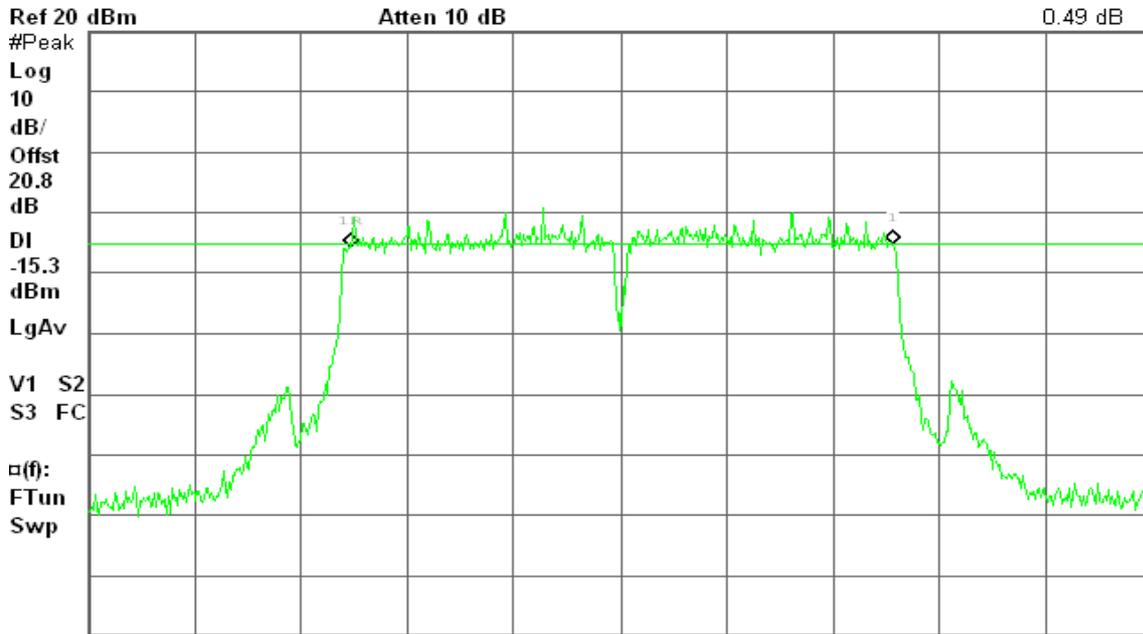


6dB Bandwidth (CH High)

Agilent 13:44:57 Nov 21, 2009

R T

Δ Mkr1 35.70 MHz
0.49 dB



Center 2.452 00 GHz Span 70 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 8.44 ms (601 pts)

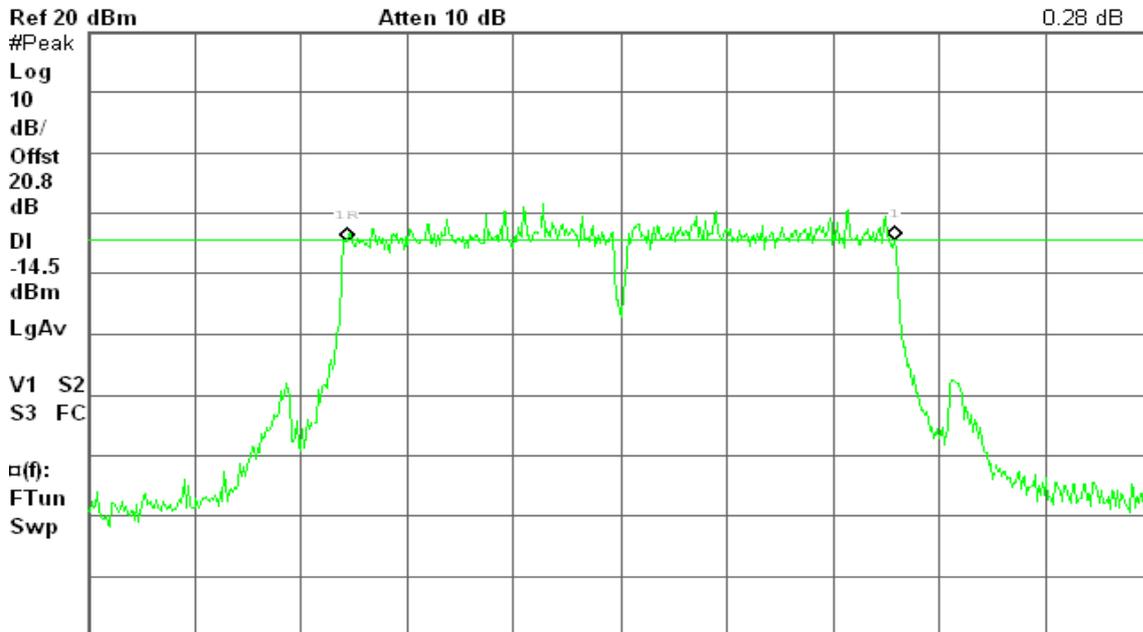
draft 802.11n Wide-40 MHz Channel mode / Chain 1

6dB Bandwidth (CH Low)

Agilent 13:27:07 Nov 21, 2009

R T

Δ Mkr1 36.05 MHz
0.28 dB



Center 2.422 00 GHz Span 70 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 8.44 ms (601 pts)

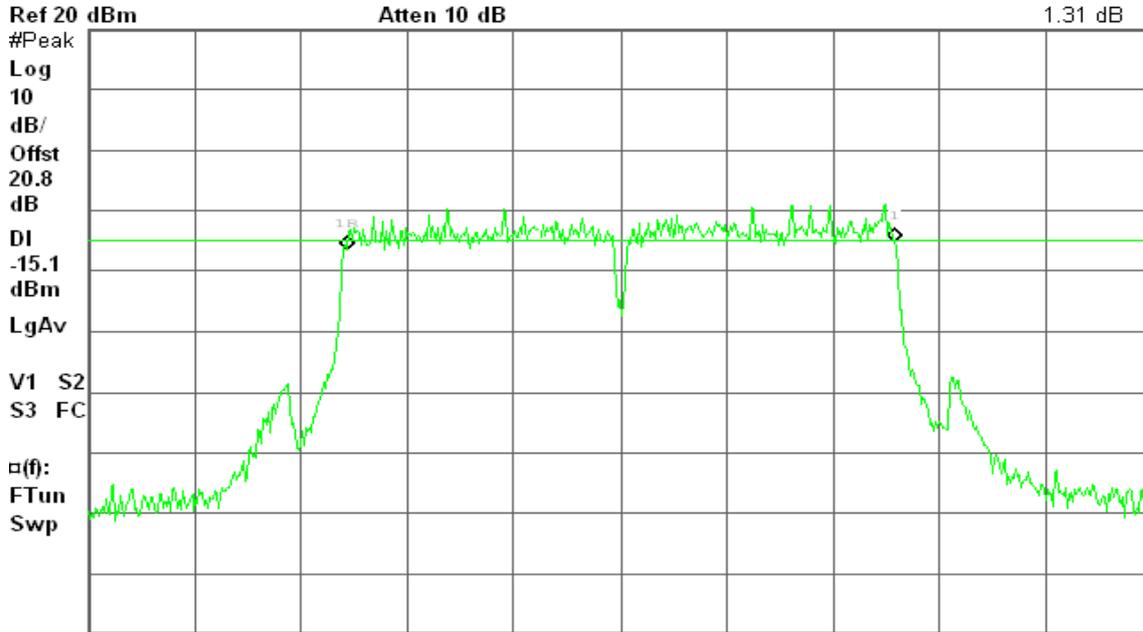


6dB Bandwidth (CH Mid)

Agilent 13:32:48 Nov 21, 2009

R T

Δ Mkr1 36.05 MHz
1.31 dB



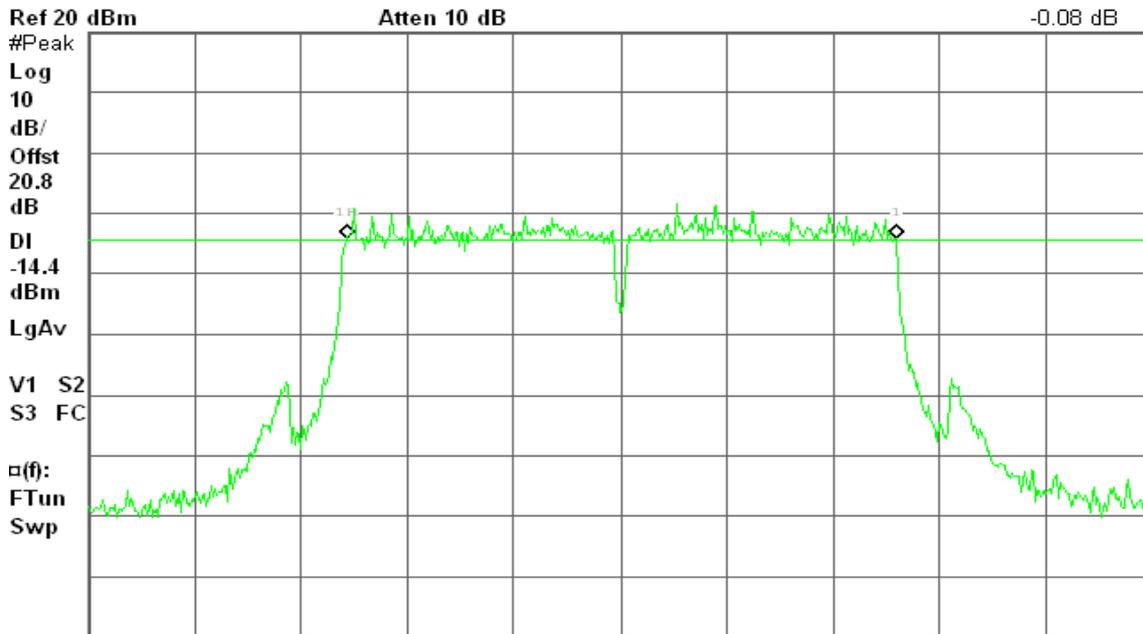
Center 2.437 00 GHz Span 70 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 8.44 ms (601 pts)

6dB Bandwidth (CH High)

Agilent 13:38:41 Nov 21, 2009

R T

Δ Mkr1 36.17 MHz
-0.08 dB



Center 2.452 00 GHz Span 70 MHz
#Res BW 100 kHz #VBW 100 kHz Sweep 8.44 ms (601 pts)

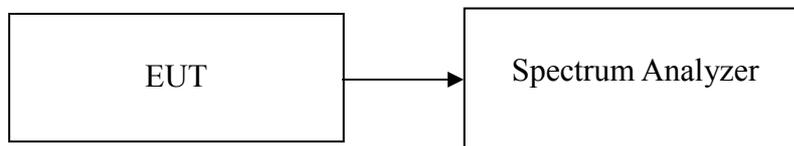
8.3 PEAK POWER

LIMIT

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

1. According to §15.247(b)(3) & RSS-210 §A8.4(4), 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	15.66	0.0368	1.00	PASS
Mid	2437	15.67	0.0369		PASS
High	2462	16.51	0.0448		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	13.71	0.0235	1.00	PASS
Mid	2437	14.26	0.0267		PASS
High	2462	16.12	0.0409		PASS

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

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	13.18	13.65	16.43	0.0440	1.00	PASS
Mid	2437	13.73	14.05	16.90	0.0490		PASS
High	2462	12.52	14.06	16.37	0.0433		PASS

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

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	12.33	13.52	15.98	0.0396	1.00	PASS
Mid	2437	12.60	13.63	16.16	0.0413		PASS
High	2452	12.68	13.75	16.26	0.0422		PASS



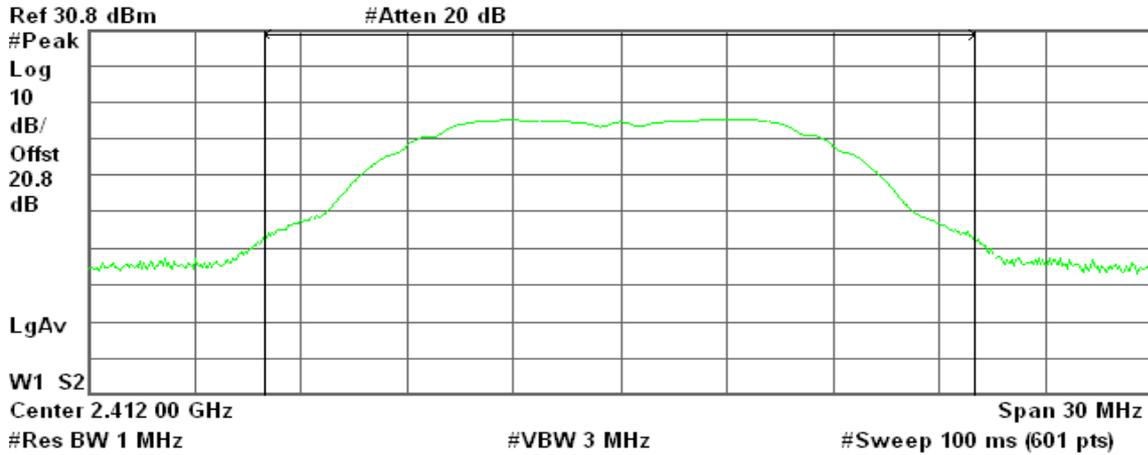
Test Plot

IEEE 802.11b mode

Peak Power (CH Low)

Agilent 14:15:55 Nov 20, 2009

R T



Channel Power

15.66 dBm / 20.0000 MHz

Power Spectral Density

-57.35 dBm/Hz

Peak Power (CH Mid)

Agilent 14:27:25 Nov 20, 2009

R T



Channel Power

15.67 dBm / 20.0000 MHz

Power Spectral Density

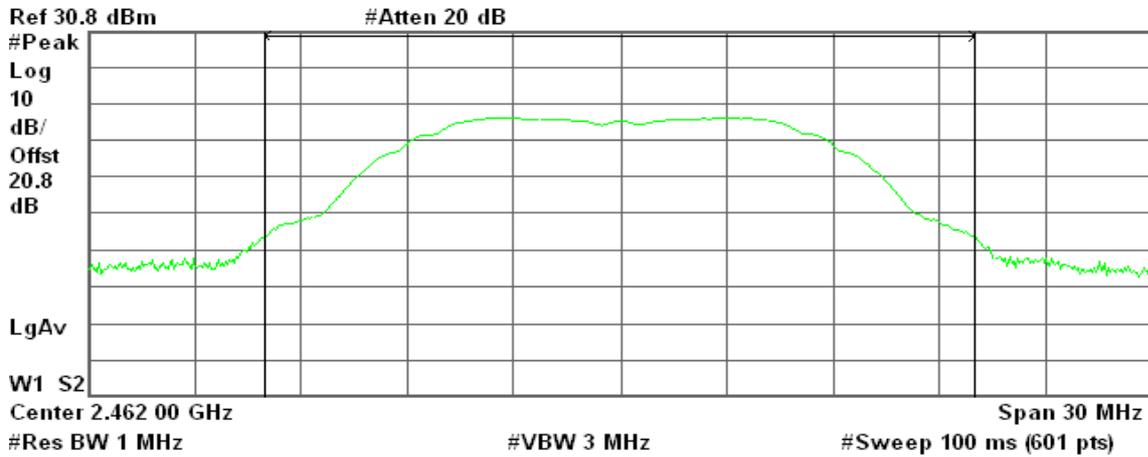
-57.34 dBm/Hz



Peak Power (CH High)

Agilent 14:34:20 Nov 20, 2009

R T



Channel Power

16.51 dBm / 20.0000 MHz

Power Spectral Density

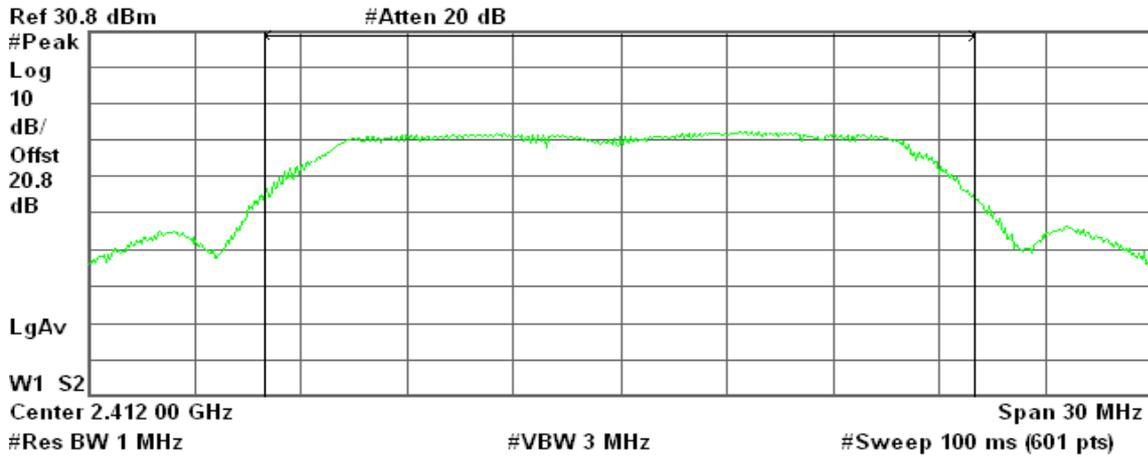
-56.51 dBm/Hz

IEEE 802.11g mode

Peak Power (CH Low)

Agilent 14:38:01 Nov 20, 2009

R T



Channel Power

13.71 dBm / 20.0000 MHz

Power Spectral Density

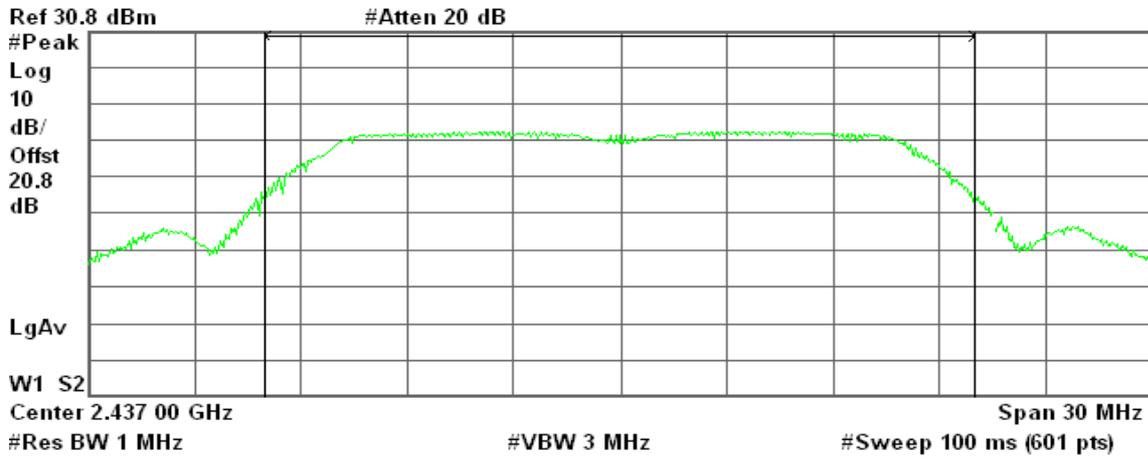
-59.30 dBm/Hz



Peak Power (CH Mid)

Agilent 14:43:58 Nov 20, 2009

R T



Channel Power

14.26 dBm / 20.0000 MHz

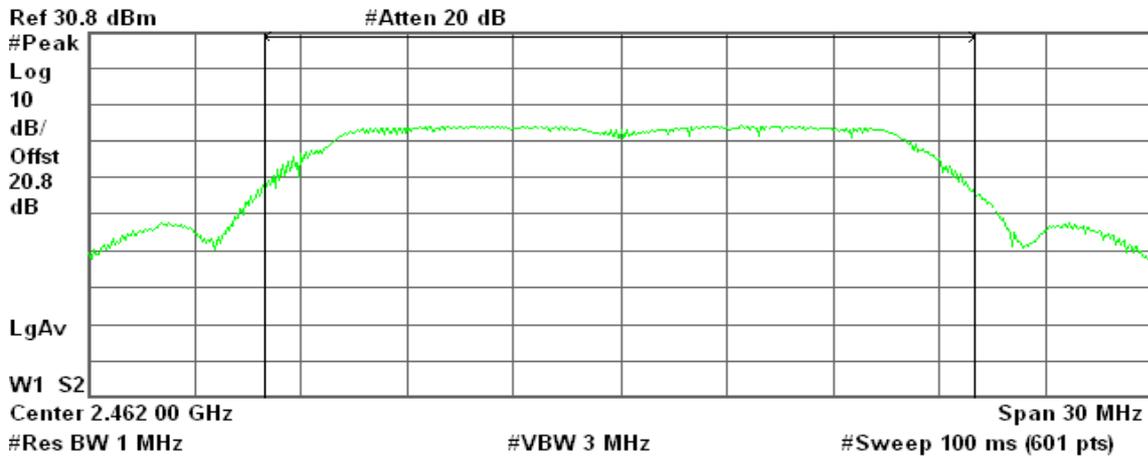
Power Spectral Density

-58.75 dBm/Hz

Peak Power (CH High)

Agilent 14:47:30 Nov 20, 2009

R T



Channel Power

16.12 dBm / 20.0000 MHz

Power Spectral Density

-56.89 dBm/Hz

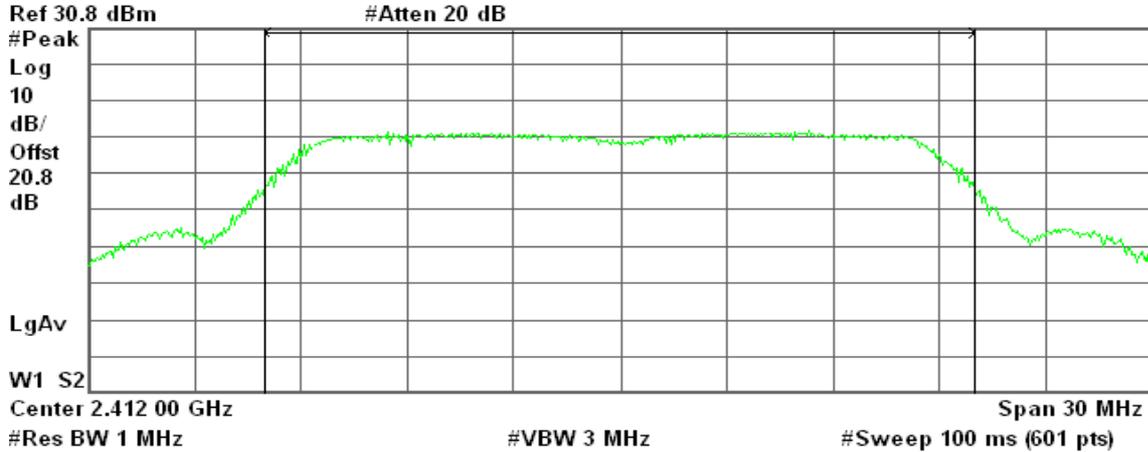


draft 802.11n Standard-20 MHz Channel mode / Chain 0

Peak Power (CH Low)

Agilent 14:55:59 Nov 20, 2009

R T



Channel Power

13.18 dBm / 20.0000 MHz

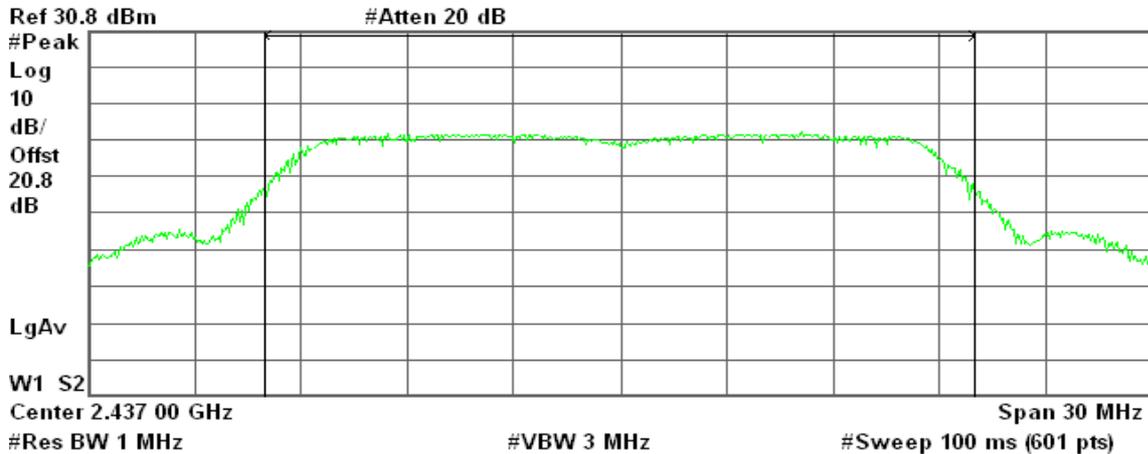
Power Spectral Density

-59.83 dBm/Hz

Peak Power (CH Mid)

Agilent 15:16:17 Nov 20, 2009

R T



Channel Power

13.73 dBm / 20.0000 MHz

Power Spectral Density

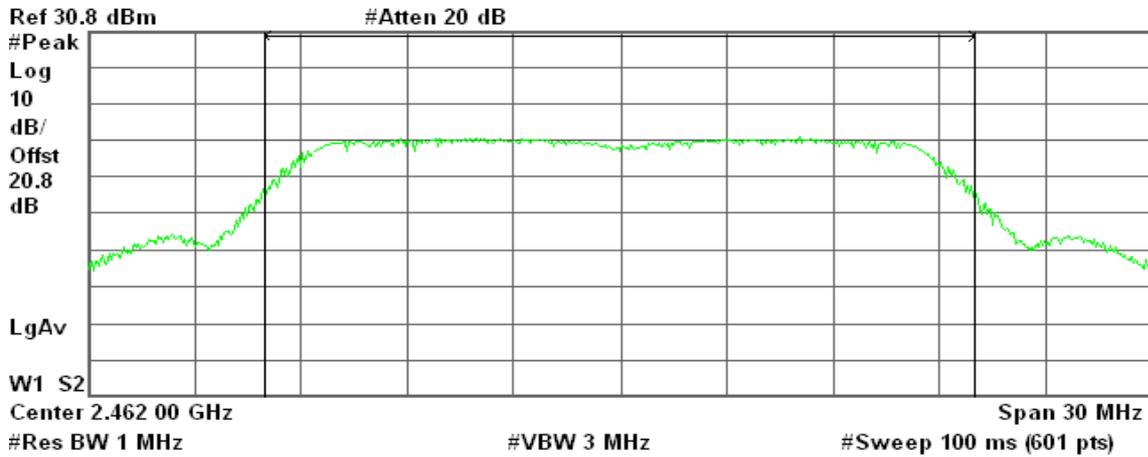
-59.28 dBm/Hz



Peak Power (CH High)

Agilent 15:19:16 Nov 20, 2009

R T



Channel Power

12.52 dBm / 20.0000 MHz

Power Spectral Density

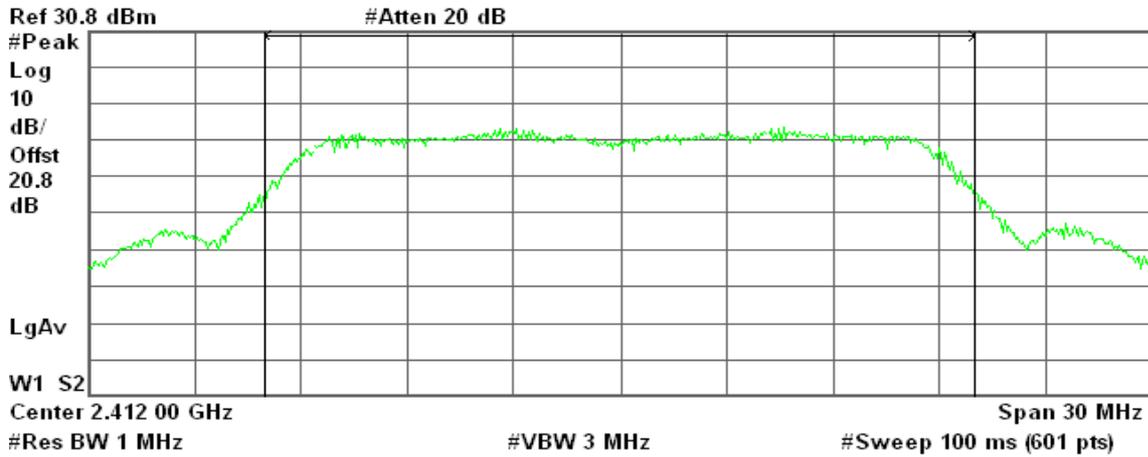
-60.49 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / Chain 1

Peak Power (CH Low)

Agilent 15:50:46 Nov 20, 2009

R T



Channel Power

13.65 dBm / 20.0000 MHz

Power Spectral Density

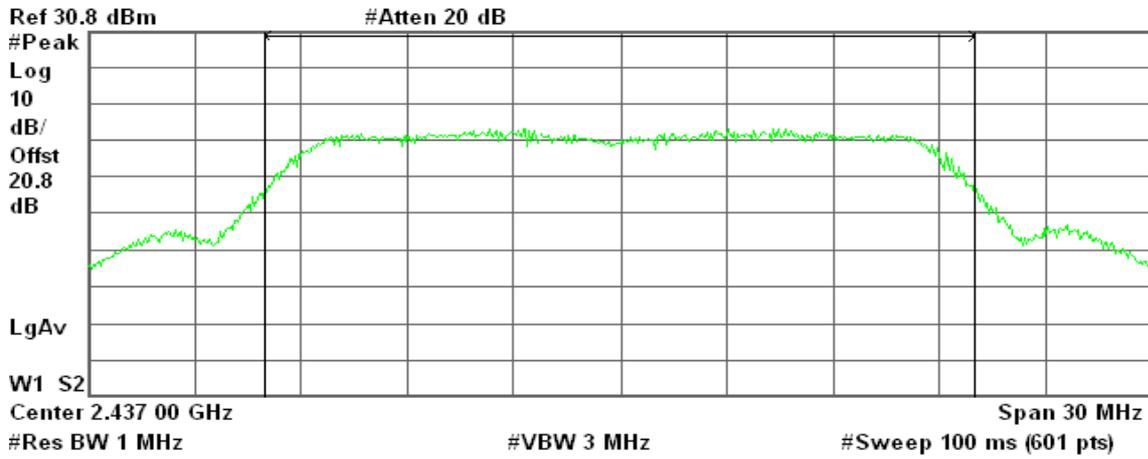
-59.36 dBm/Hz



Peak Power (CH Mid)

Agilent 15:33:29 Nov 20, 2009

R T



Channel Power

14.05 dBm / 20.0000 MHz

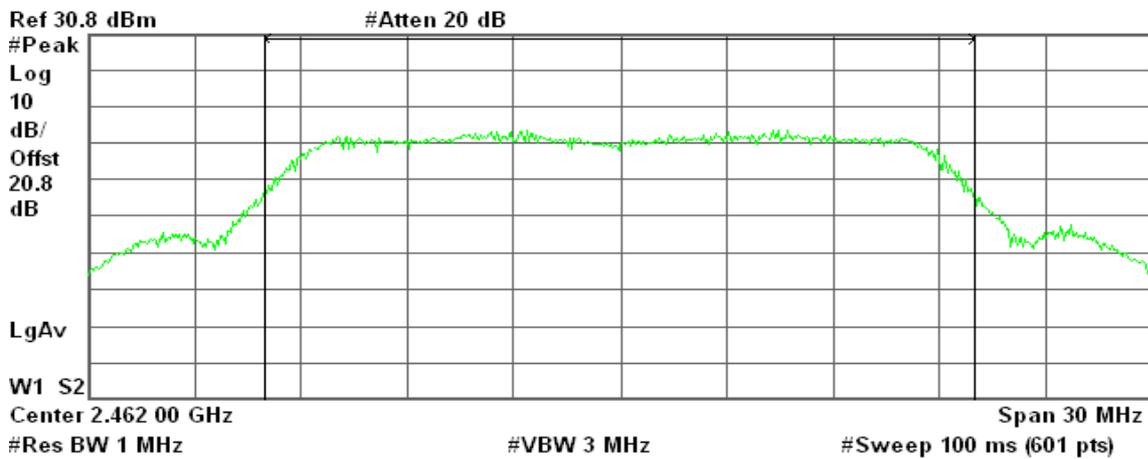
Power Spectral Density

-58.96 dBm/Hz

Peak Power (CH High)

Agilent 15:26:02 Nov 20, 2009

R T



Channel Power

14.06 dBm / 20.0000 MHz

Power Spectral Density

-58.95 dBm/Hz

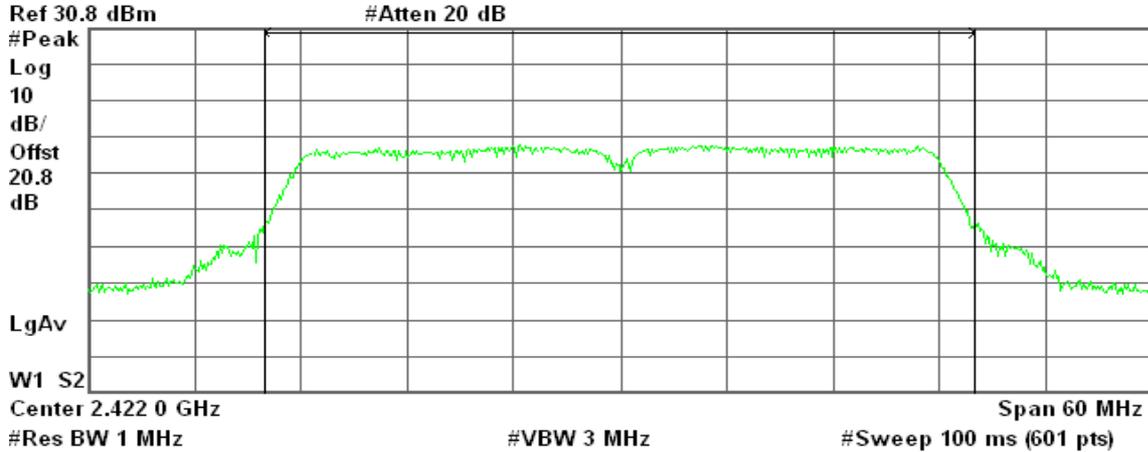


draft 802.11n Wide-40 MHz Channel mode / Chain 0

Peak Power (CH Low)

Agilent 16:32:51 Nov 20, 2009

R T



Channel Power

12.33 dBm / 40.0000 MHz

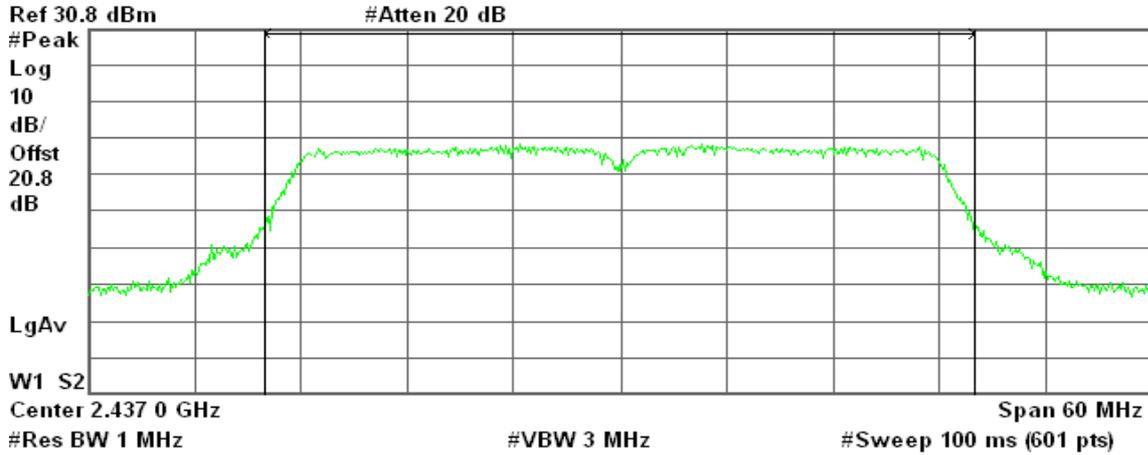
Power Spectral Density

-63.69 dBm/Hz

Peak Power (CH Mid)

Agilent 16:37:16 Nov 20, 2009

R T



Channel Power

12.60 dBm / 40.0000 MHz

Power Spectral Density

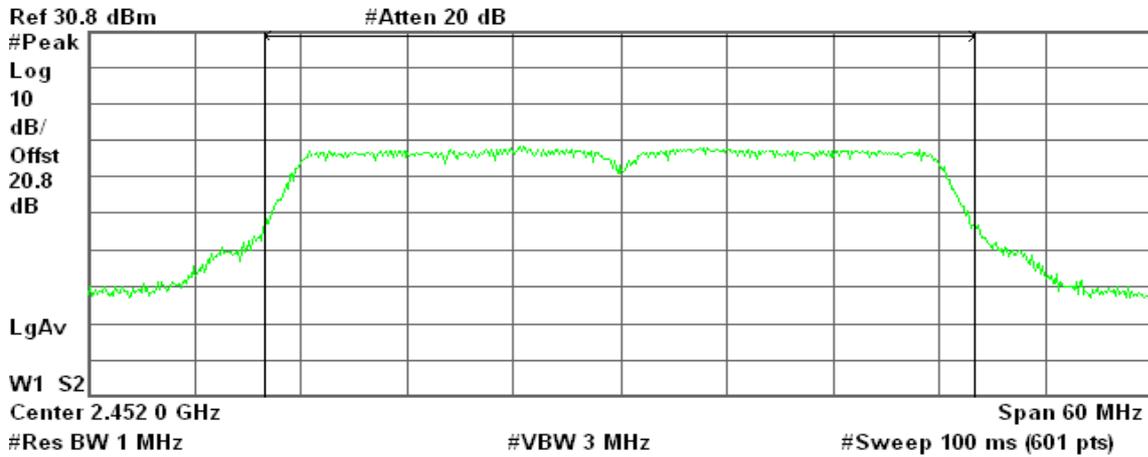
-63.42 dBm/Hz



Peak Power (CH High)

Agilent 16:40:07 Nov 20, 2009

R T



Channel Power

12.68 dBm / 40.0000 MHz

Power Spectral Density

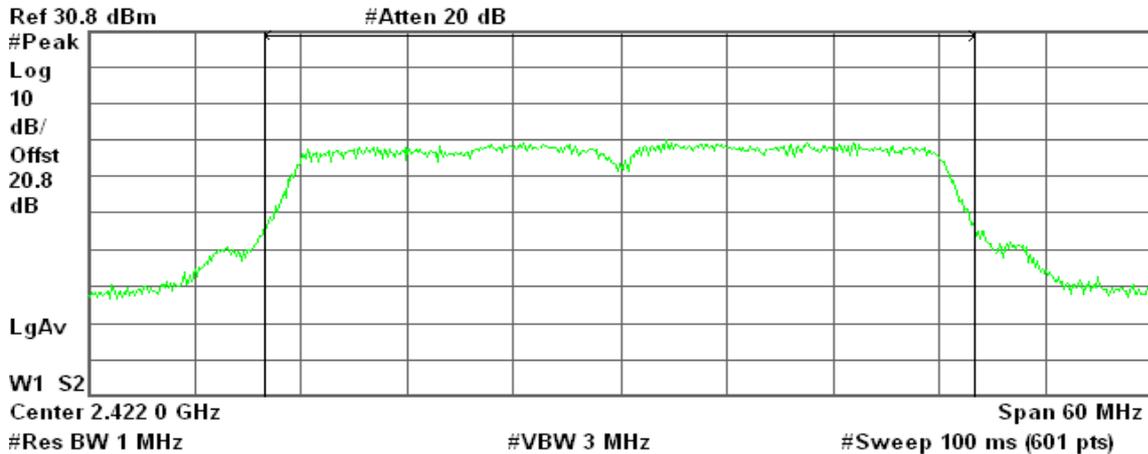
-63.34 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / Chain 1

Peak Power (CH Low)

Agilent 16:54:38 Nov 20, 2009

R T



Channel Power

13.52 dBm / 40.0000 MHz

Power Spectral Density

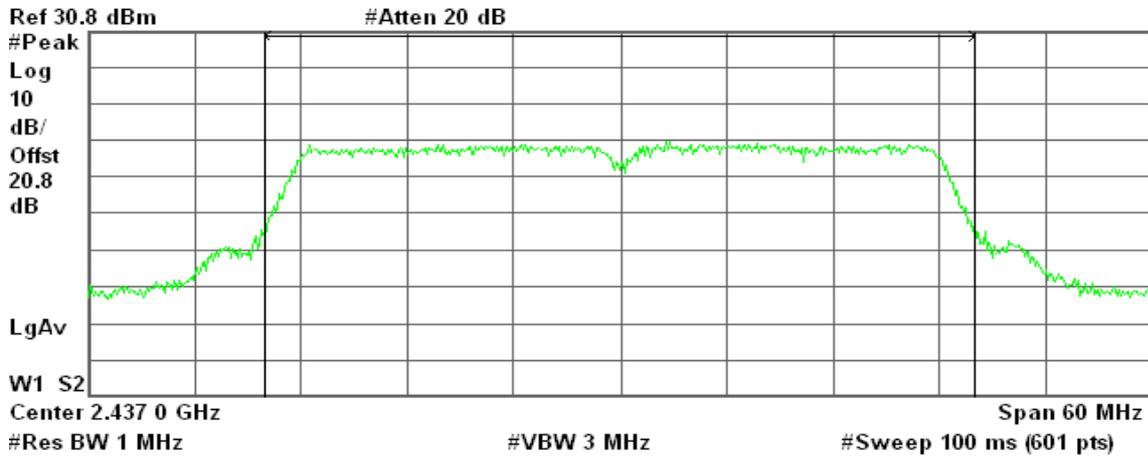
-62.50 dBm/Hz



Peak Power (CH Mid)

Agilent 16:44:01 Nov 20, 2009

R T



Channel Power

13.63 dBm / 40.0000 MHz

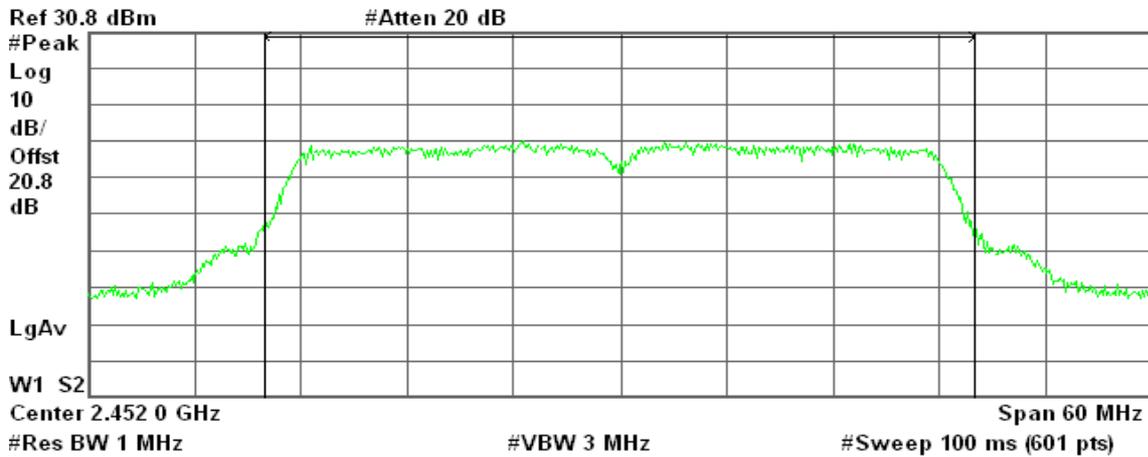
Power Spectral Density

-62.39 dBm/Hz

Peak Power (CH High)

Agilent 16:43:00 Nov 20, 2009

R T



Channel Power

13.75 dBm / 40.0000 MHz

Power Spectral Density

-62.28 dBm/Hz

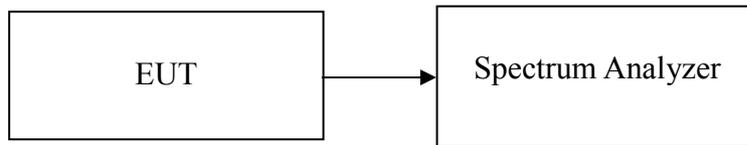


8.4 AVERAGE POWER

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)	Output Power (W)
Low	2412	12.59	0.0182
Mid	2437	12.56	0.0180
High	2462	13.56	0.0227

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	6.31	0.0043
Mid	2437	6.82	0.0048
High	2462	8.74	0.0075

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

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	5.60	6.04	8.84	0.0076	1.00	PASS
Mid	2437	6.21	6.05	9.14	0.0082		PASS
High	2462	5.06	6.03	8.58	0.0072		PASS

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

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	4.72	5.55	8.17	0.0066	1.00	PASS
Mid	2437	4.90	5.72	8.34	0.0068		PASS
High	2452	4.72	5.55	8.17	0.0066		PASS



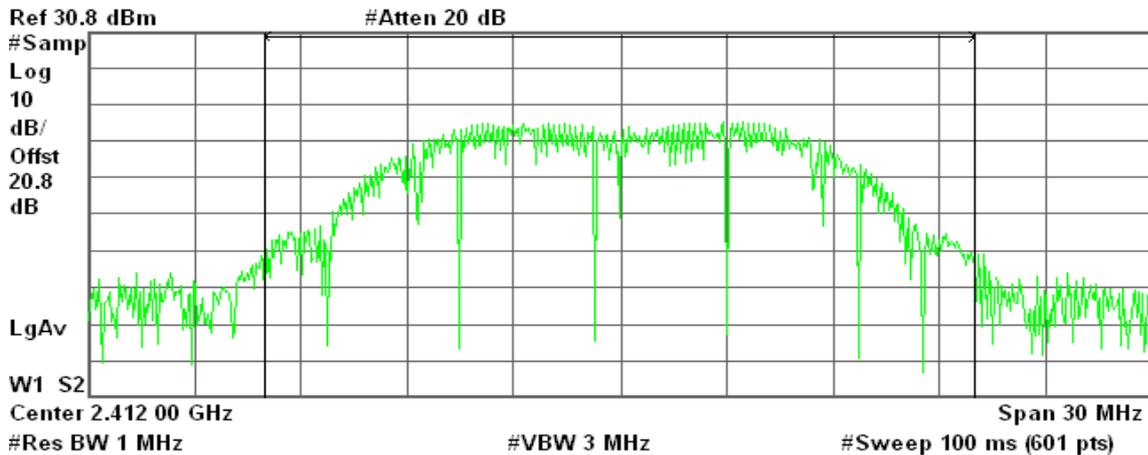
Test Plot

IEEE 802.11b mode

Average Power (CH Low)

Agilent 14:25:05 Nov 20, 2009

R T



Channel Power

12.59 dBm / 20.0000 MHz

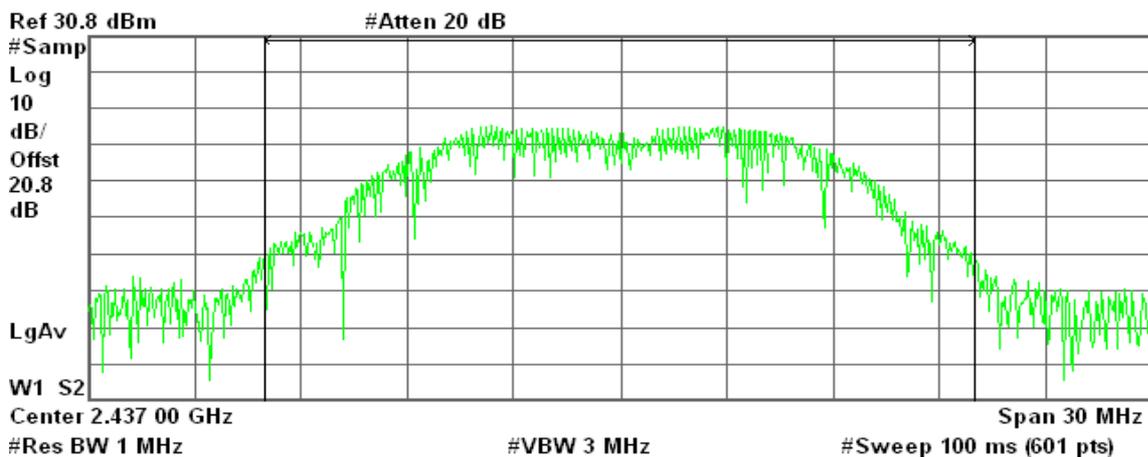
Power Spectral Density

-60.42 dBm/Hz

Average Power (CH Mid)

Agilent 14:28:28 Nov 20, 2009

R T



Channel Power

12.56 dBm / 20.0000 MHz

Power Spectral Density

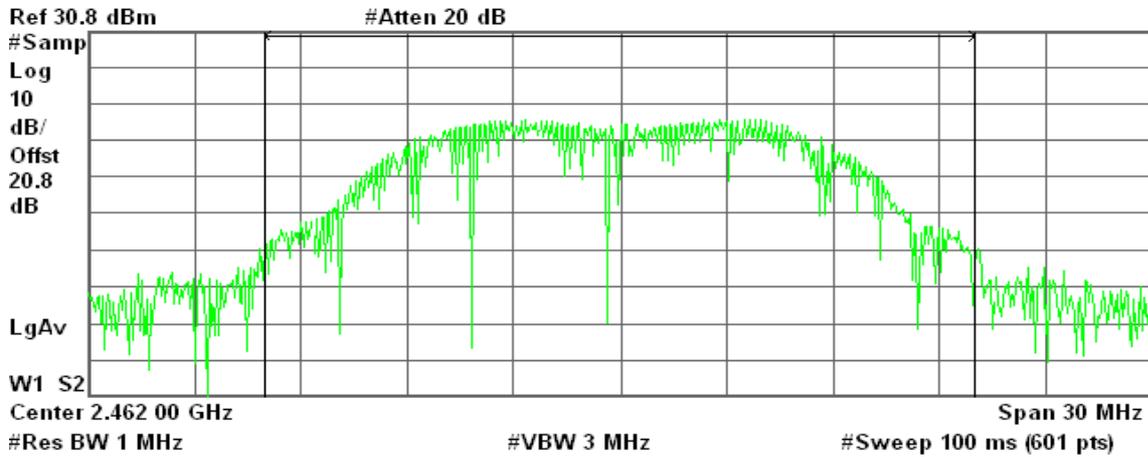
-60.45 dBm/Hz



Average Power (CH High)

Agilent 14:32:25 Nov 20, 2009

R T



Channel Power

13.56 dBm / 20.0000 MHz

Power Spectral Density

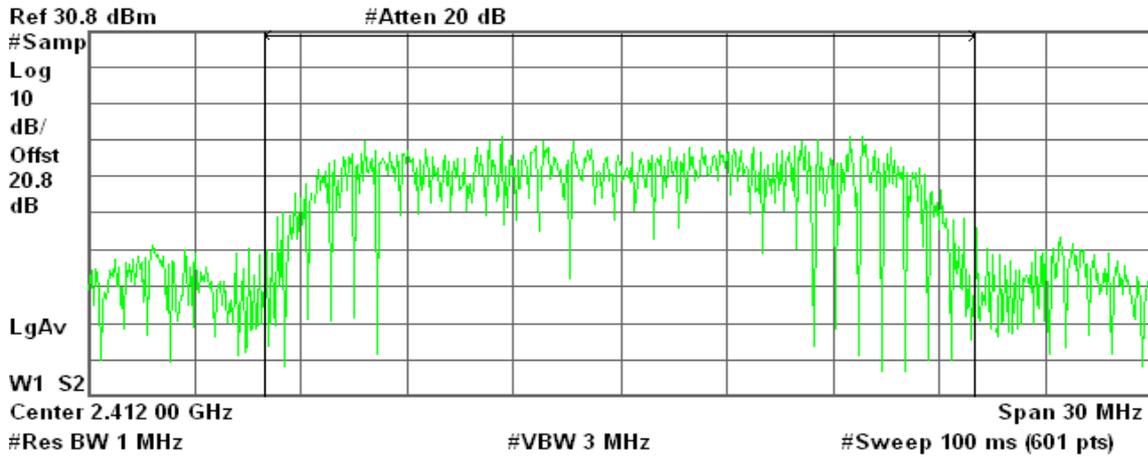
-59.45 dBm/Hz

IEEE 802.11g mode

Average Power (CH Low)

Agilent 14:40:01 Nov 20, 2009

R T



Channel Power

6.31 dBm / 20.0000 MHz

Power Spectral Density

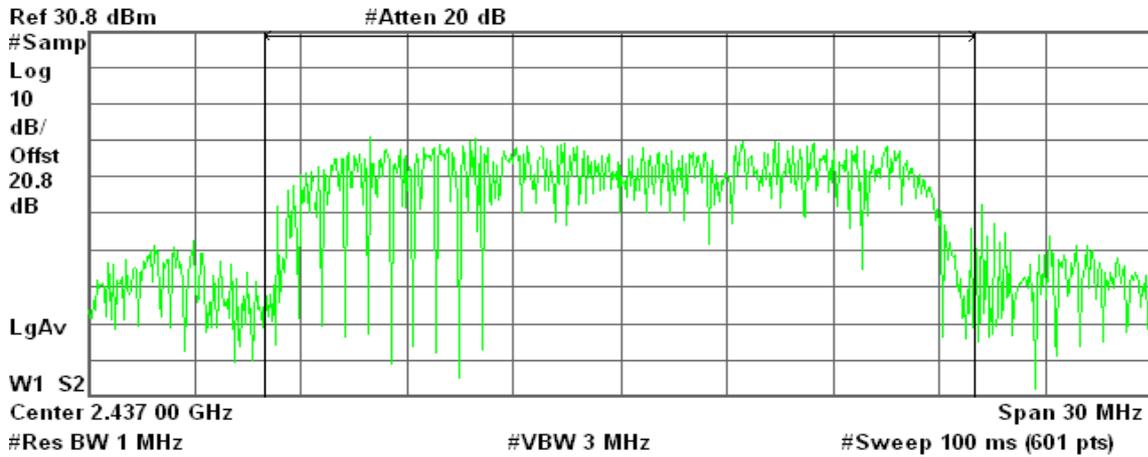
-66.70 dBm/Hz



Average Power (CH Mid)

Agilent 14:44:34 Nov 20, 2009

R T



Channel Power

6.82 dBm / 20.0000 MHz

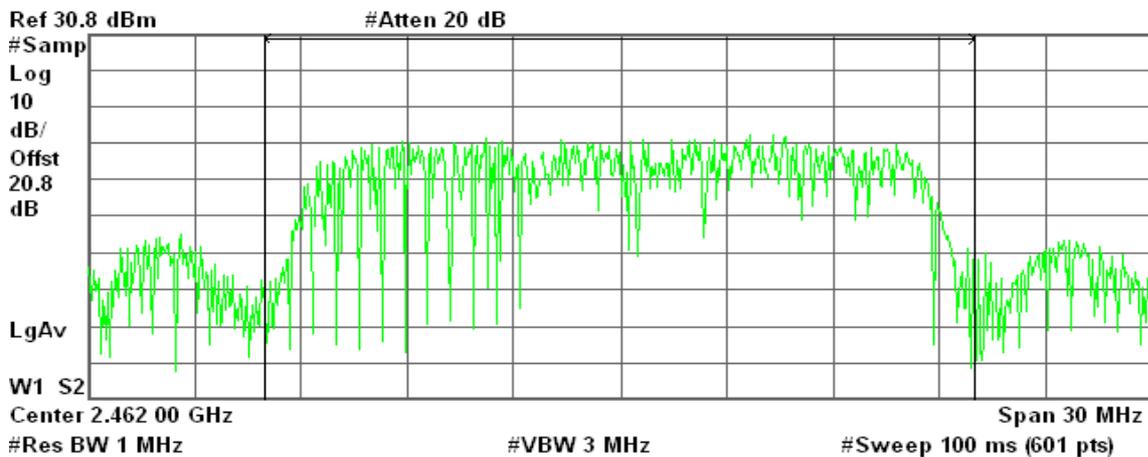
Power Spectral Density

-66.19 dBm/Hz

Average Power (CH High)

Agilent 14:46:42 Nov 20, 2009

R T



Channel Power

8.74 dBm / 20.0000 MHz

Power Spectral Density

-64.27 dBm/Hz

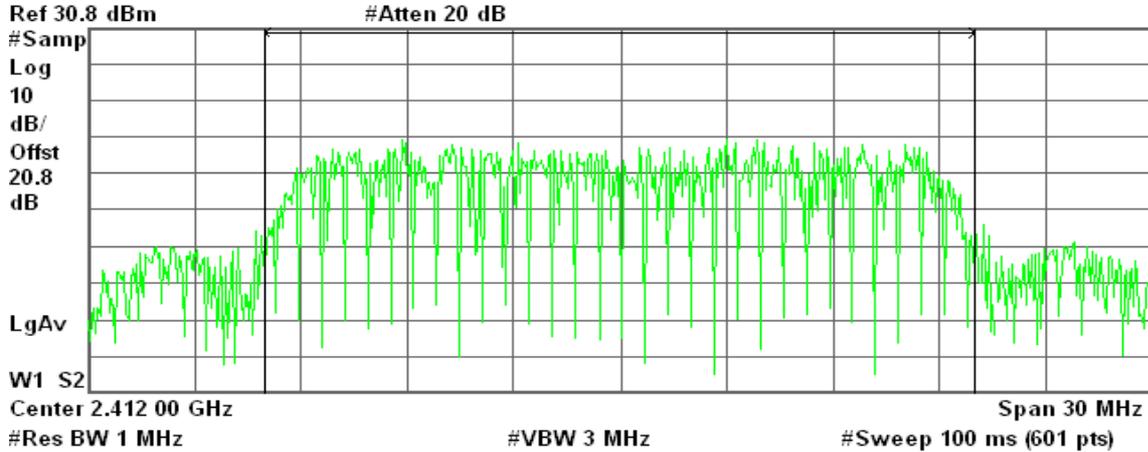


draft 802.11n Standard-20 MHz Channel mode / Chain 0

Average Power (CH Low)

Agilent 15:12:49 Nov 20, 2009

R T



Channel Power

5.60 dBm / 20.0000 MHz

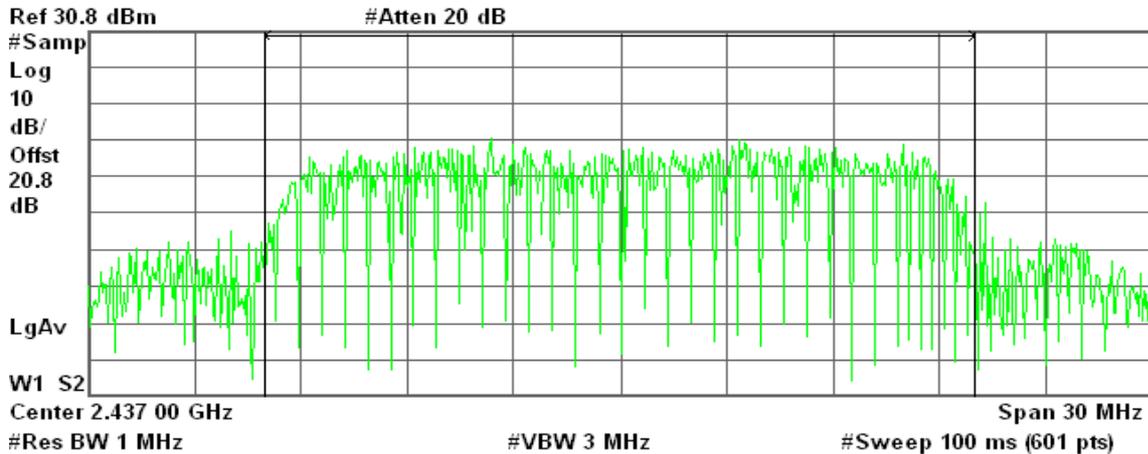
Power Spectral Density

-67.41 dBm/Hz

Average Power (CH Mid)

Agilent 15:15:00 Nov 20, 2009

R T



Channel Power

6.21 dBm / 20.0000 MHz

Power Spectral Density

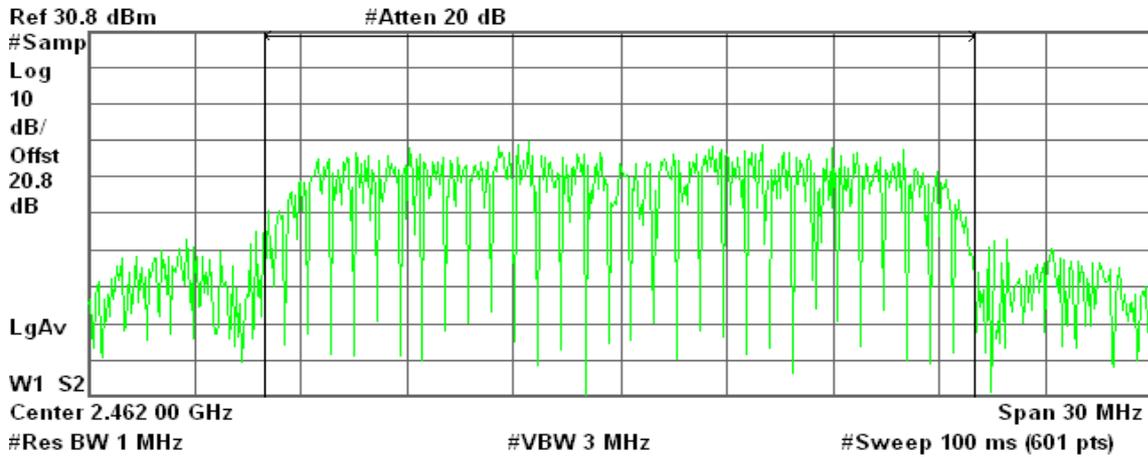
-66.80 dBm/Hz



Average Power (CH High)

Agilent 15:20:21 Nov 20, 2009

R T



Channel Power

5.06 dBm / 20.0000 MHz

Power Spectral Density

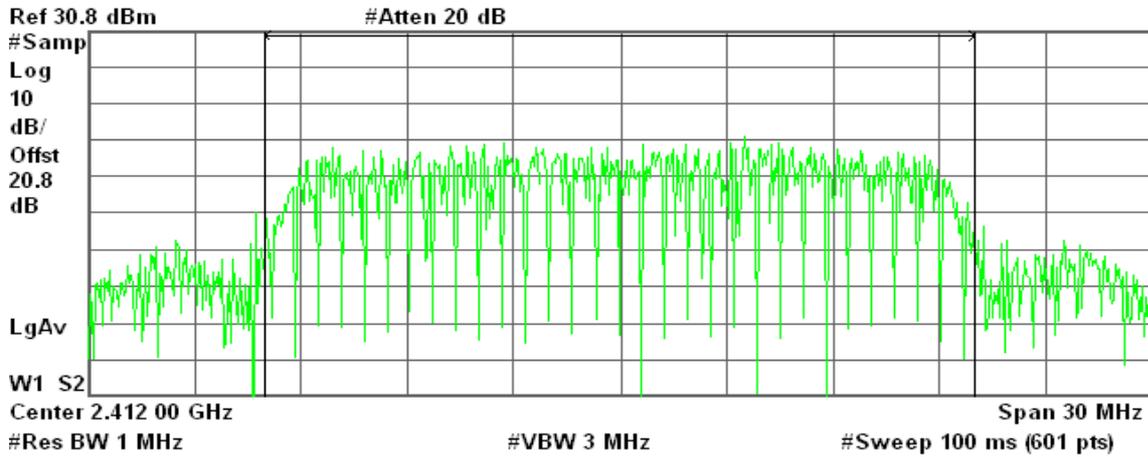
-67.95 dBm/Hz

draft 802.11n Standard-20 MHz Channel mode / Chain 1

Average Power (CH Low)

Agilent 15:37:06 Nov 20, 2009

R T



Channel Power

6.04 dBm / 20.0000 MHz

Power Spectral Density

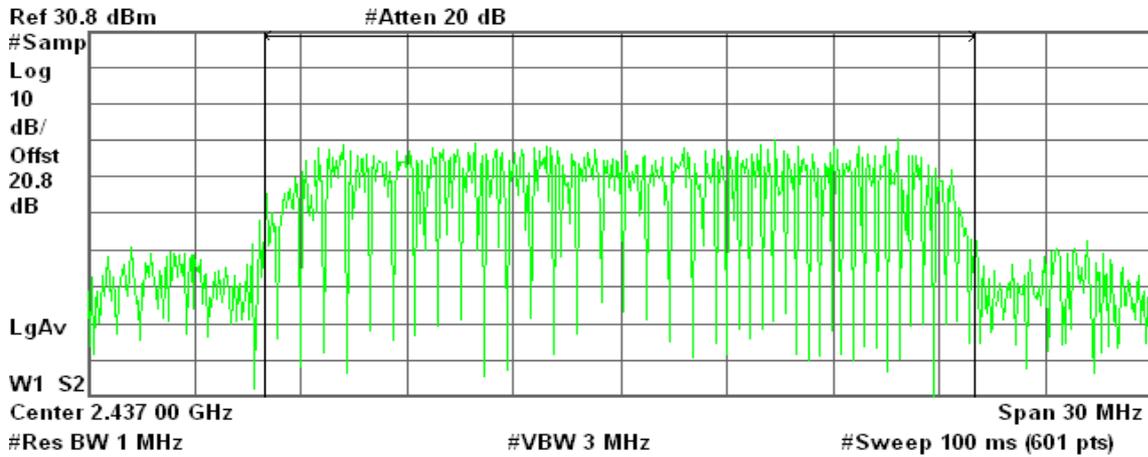
-66.97 dBm/Hz



Average Power (CH Mid)

Agilent 15:35:08 Nov 20, 2009

R T



Channel Power

6.05 dBm / 20.0000 MHz

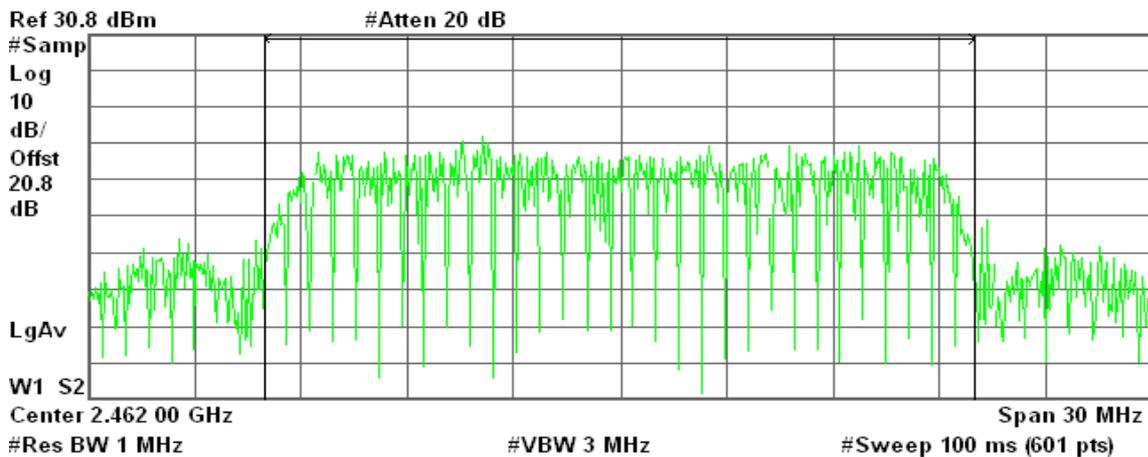
Power Spectral Density

-66.96 dBm/Hz

Average Power (CH High)

Agilent 15:25:07 Nov 20, 2009

R T



Channel Power

6.03 dBm / 20.0000 MHz

Power Spectral Density

-66.98 dBm/Hz

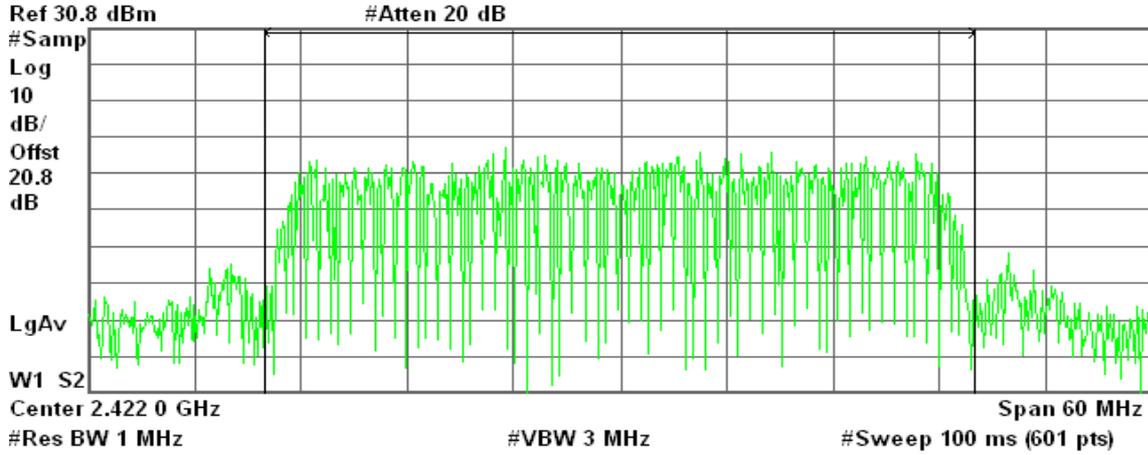


draft 802.11n Wide-40 MHz Channel mode / Chain 0

Average Power (CH Low)

Agilent 16:34:40 Nov 20, 2009

R T



Channel Power

4.72 dBm / 40.0000 MHz

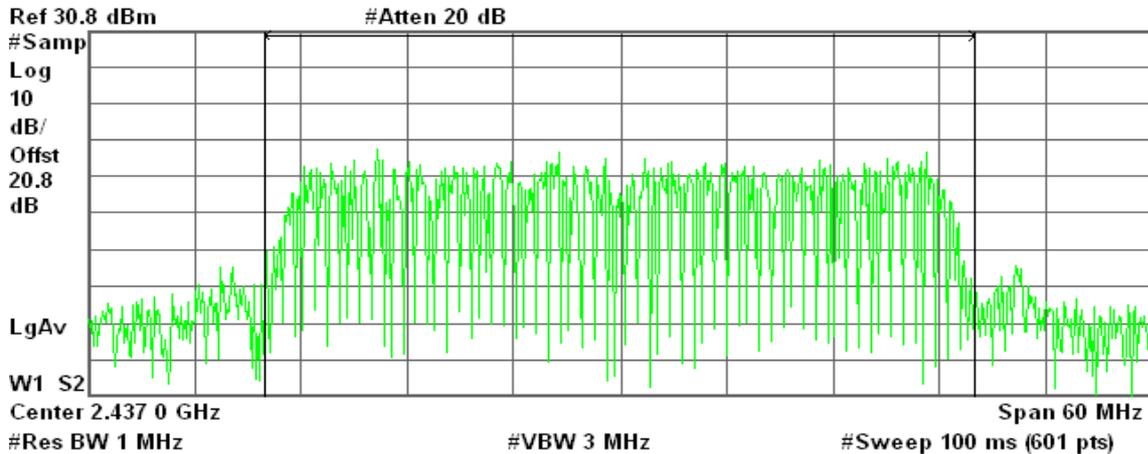
Power Spectral Density

-71.31 dBm/Hz

Average Power (CH Mid)

Agilent 16:36:40 Nov 20, 2009

R T



Channel Power

4.90 dBm / 40.0000 MHz

Power Spectral Density

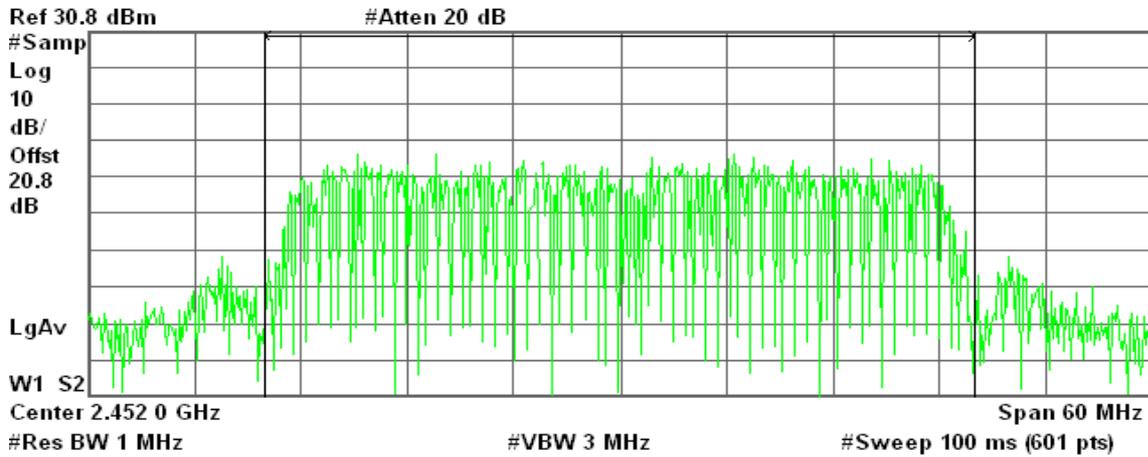
-71.12 dBm/Hz



Average Power (CH High)

Agilent 16:40:56 Nov 20, 2009

R T



Channel Power

4.72 dBm / 40.0000 MHz

Power Spectral Density

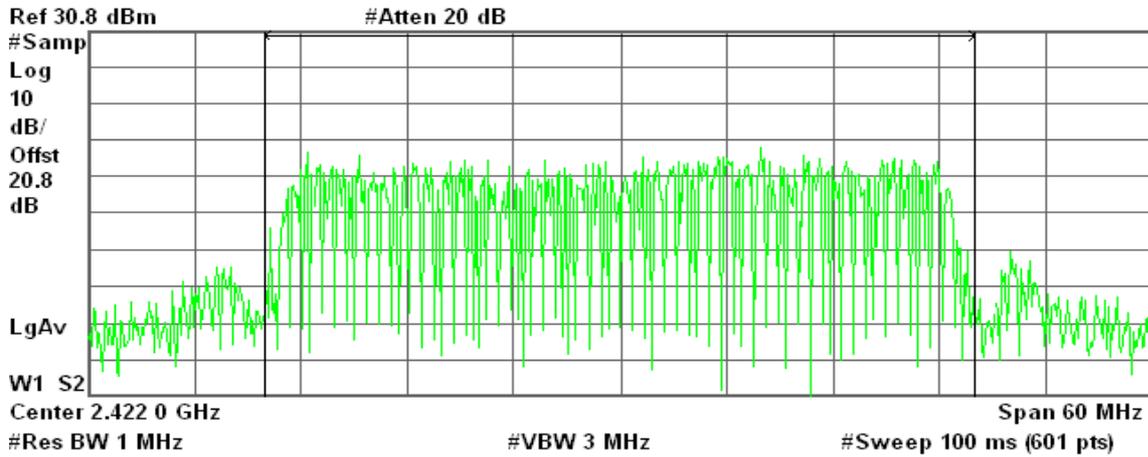
-71.30 dBm/Hz

draft 802.11n Wide-40 MHz Channel mode / Chain 1

Average Power (CH Low)

Agilent 16:54:14 Nov 20, 2009

R T



Channel Power

5.55 dBm / 40.0000 MHz

Power Spectral Density

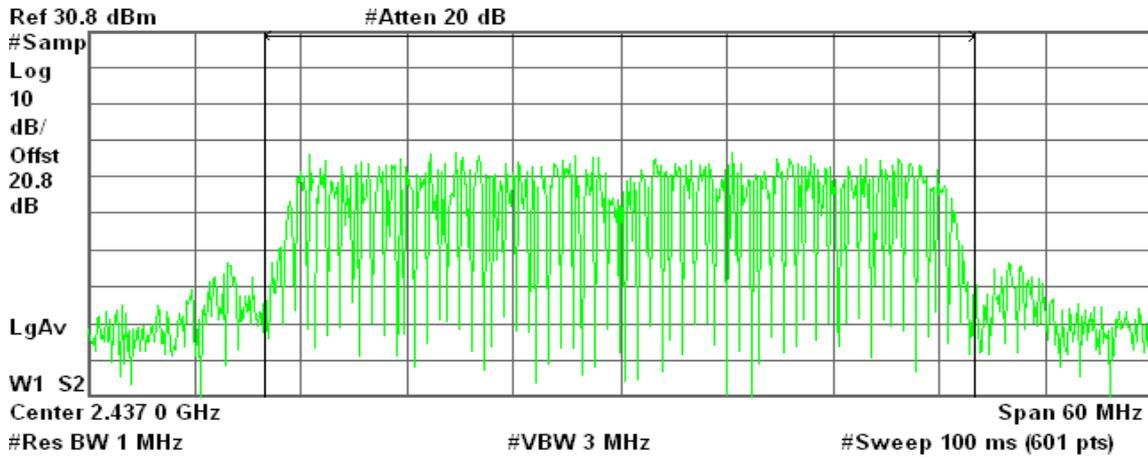
-70.47 dBm/Hz



Average Power (CH Mid)

Agilent 16:52:51 Nov 20, 2009

R T



Channel Power

5.72 dBm / 40.0000 MHz

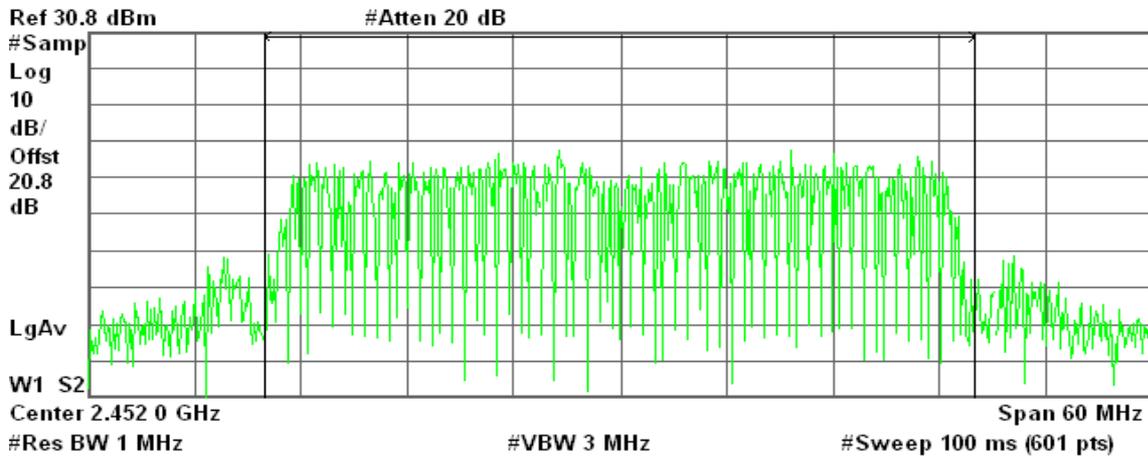
Power Spectral Density

-70.30 dBm/Hz

Average Power (CH High)

Agilent 16:42:27 Nov 20, 2009

R T



Channel Power

5.55 dBm / 40.0000 MHz

Power Spectral Density

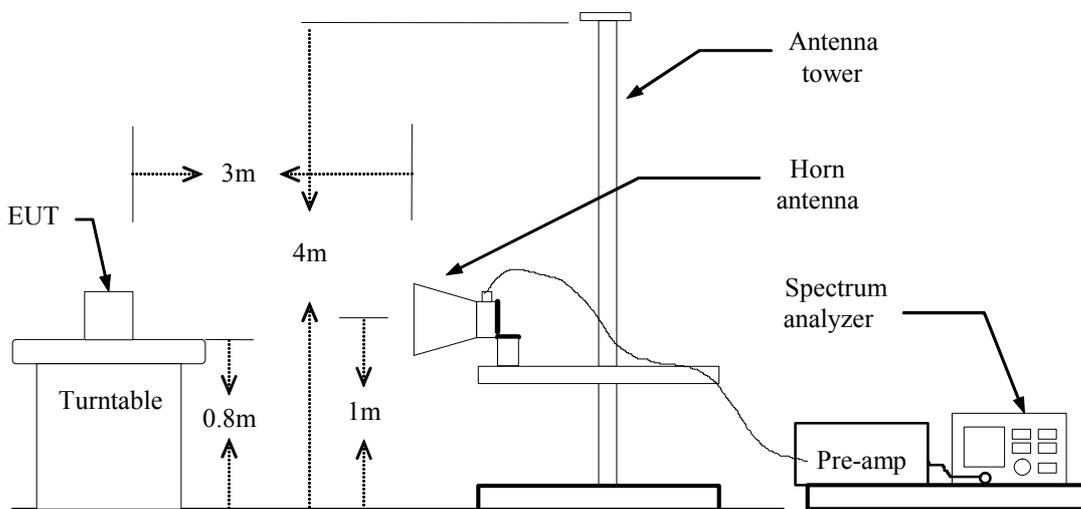
-70.47 dBm/Hz

8.5 BAND EDGES MEASUREMENT

LIMIT

According to §15.247(d) & RSS-210 §A8.5, 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.



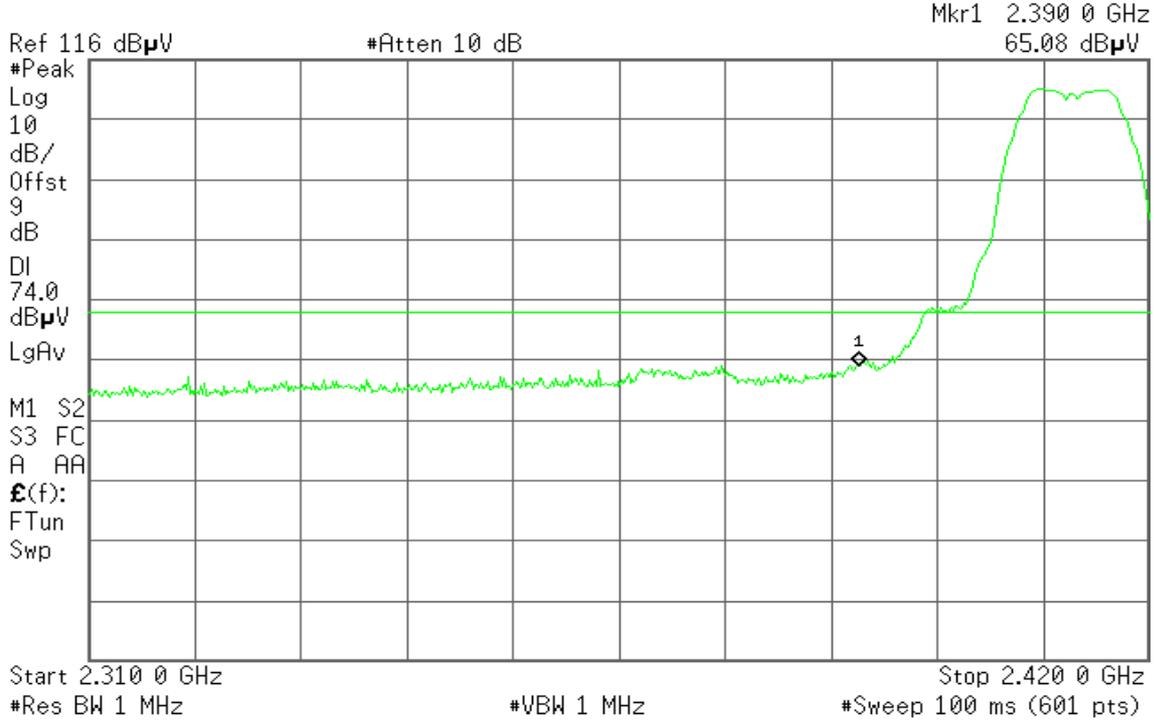
Band Edges (IEEE 802.11b mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent

R T

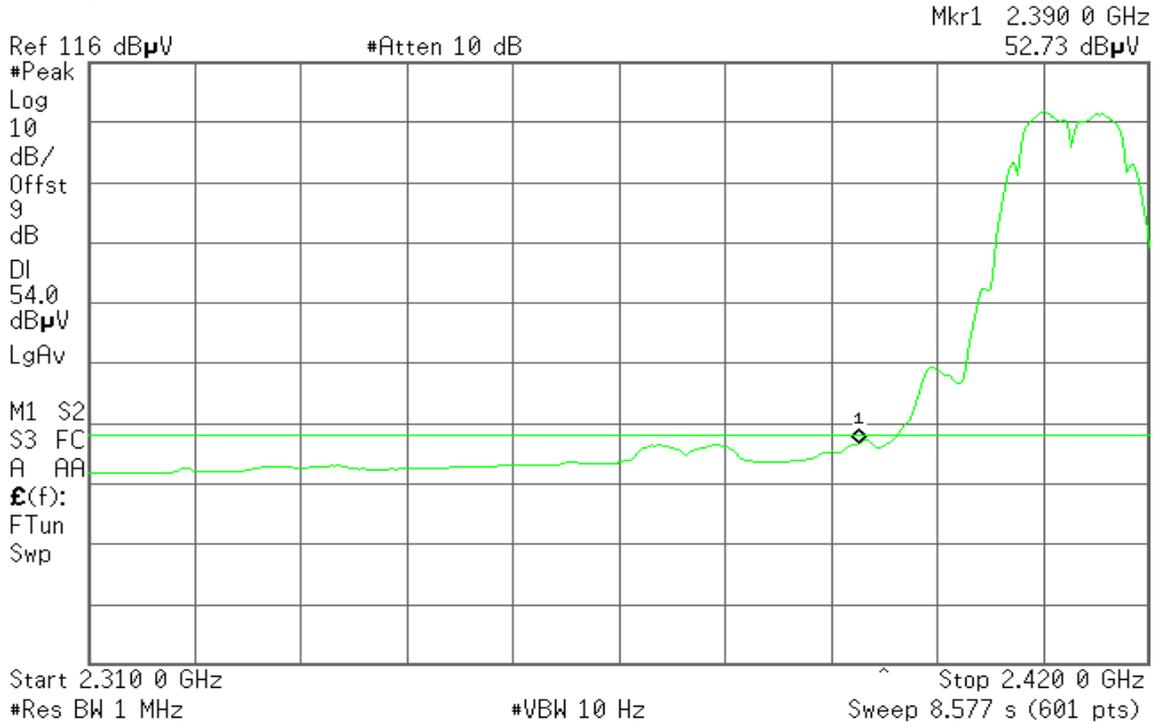


Detector mode: Average

Polarity: Vertical

Agilent

R T





Detector mode: Peak

Polarity: Horizontal

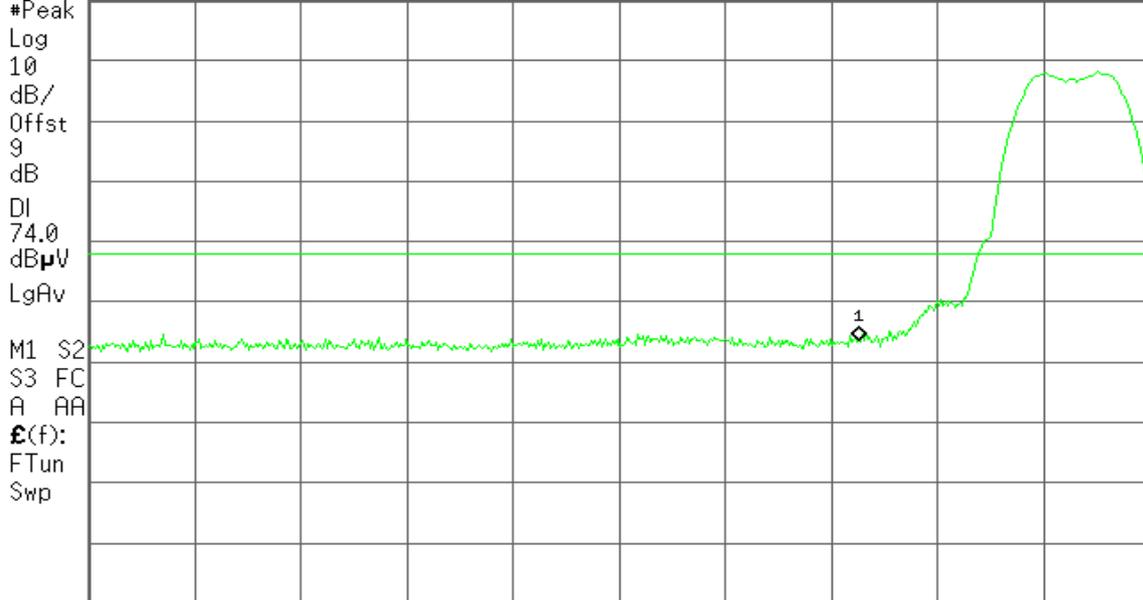
Agilent

R T

Mkr1 2.390 0 GHz
59.65 dBµV

Ref 116 dBµV

#Atten 10 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 2.390 0 GHz
47.90 dBµV

Ref 116 dBµV

#Atten 10 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 8.577 s (601 pts)



Band Edges (IEEE 802.11b mode / CH High)

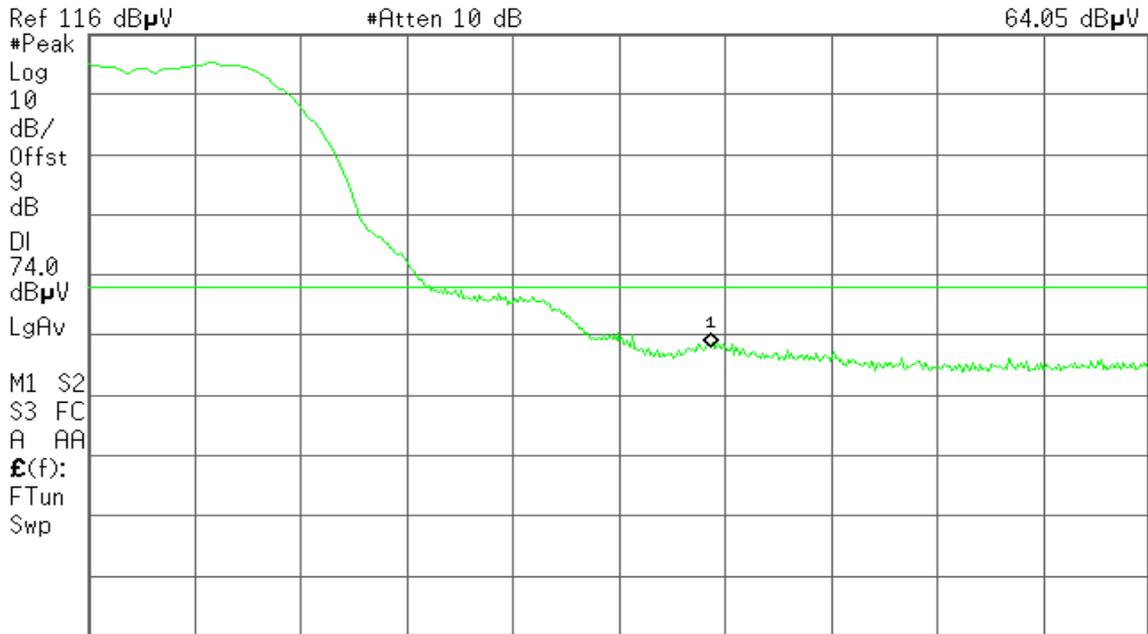
Detector mode: Peak

Polarity: Vertical

Agilent

R T

Mkr1 2.483 50 GHz
64.05 dB μ V



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

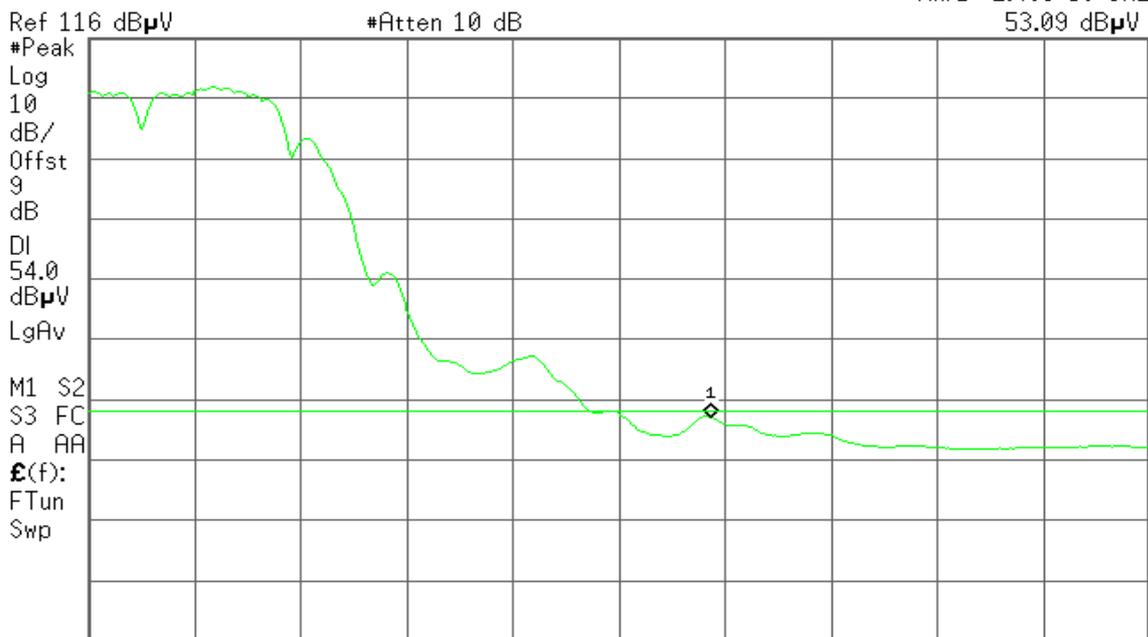
Detector mode: Average

Polarity: Vertical

Agilent

R T

Mkr1 2.483 50 GHz
53.09 dB μ V



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 11.03 s (601 pts)



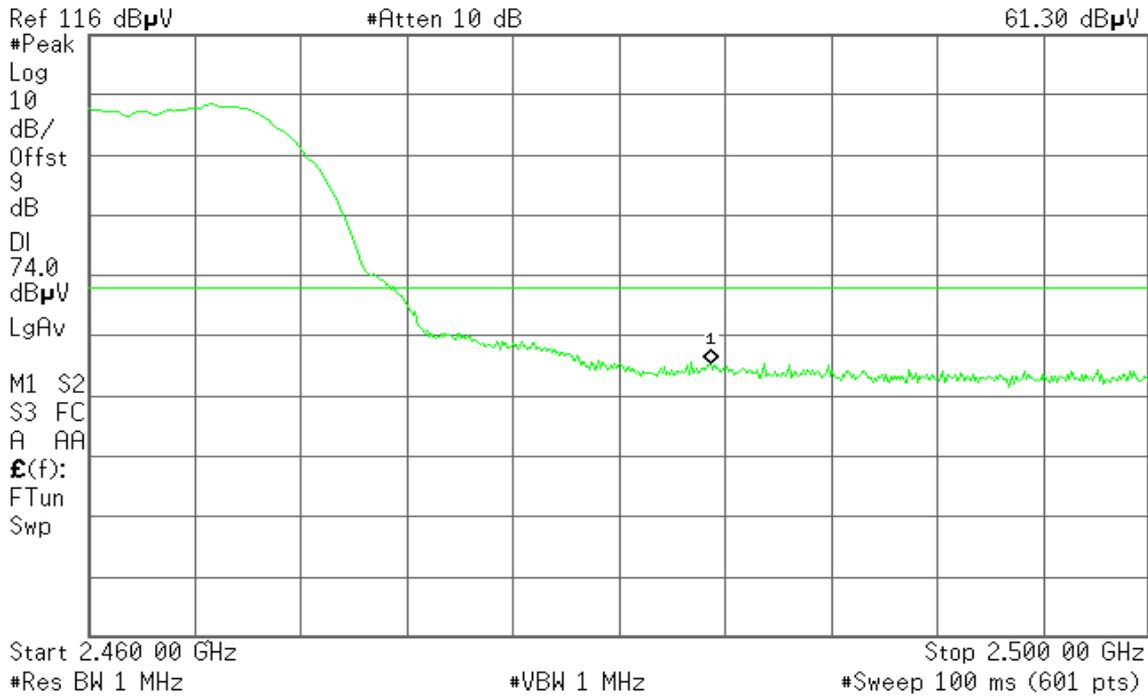
Detector mode: Peak

Polarity: Horizontal

Agilent

R T

Mkr1 2.483 50 GHz
61.30 dBμV



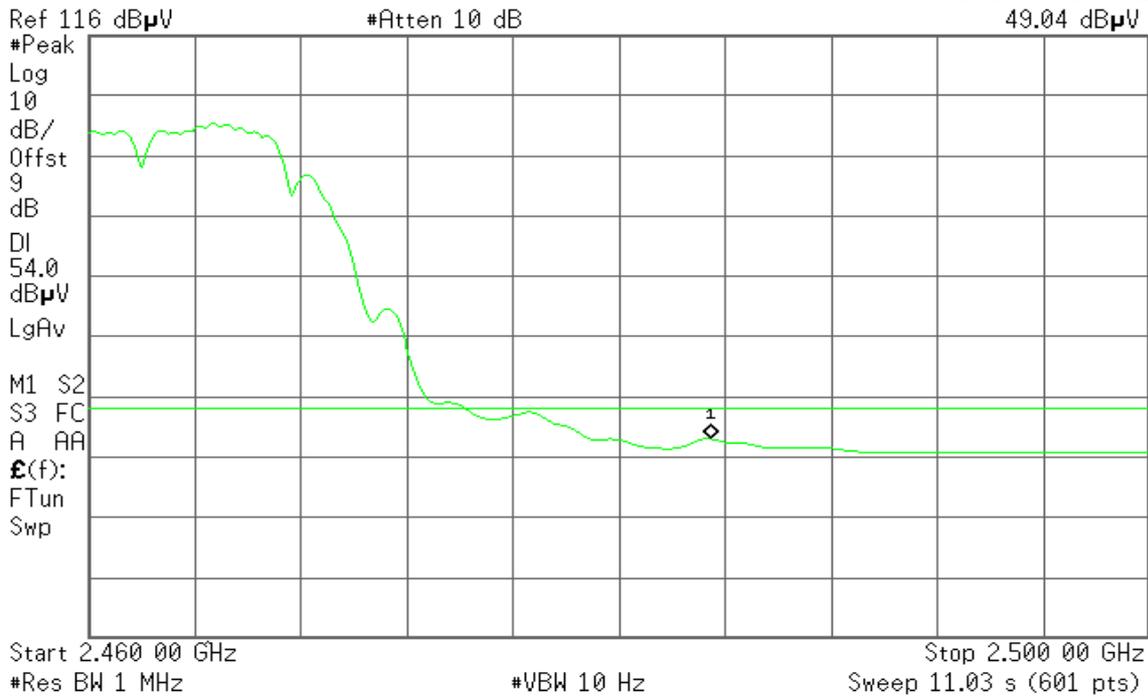
Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 2.483 50 GHz
49.04 dBμV





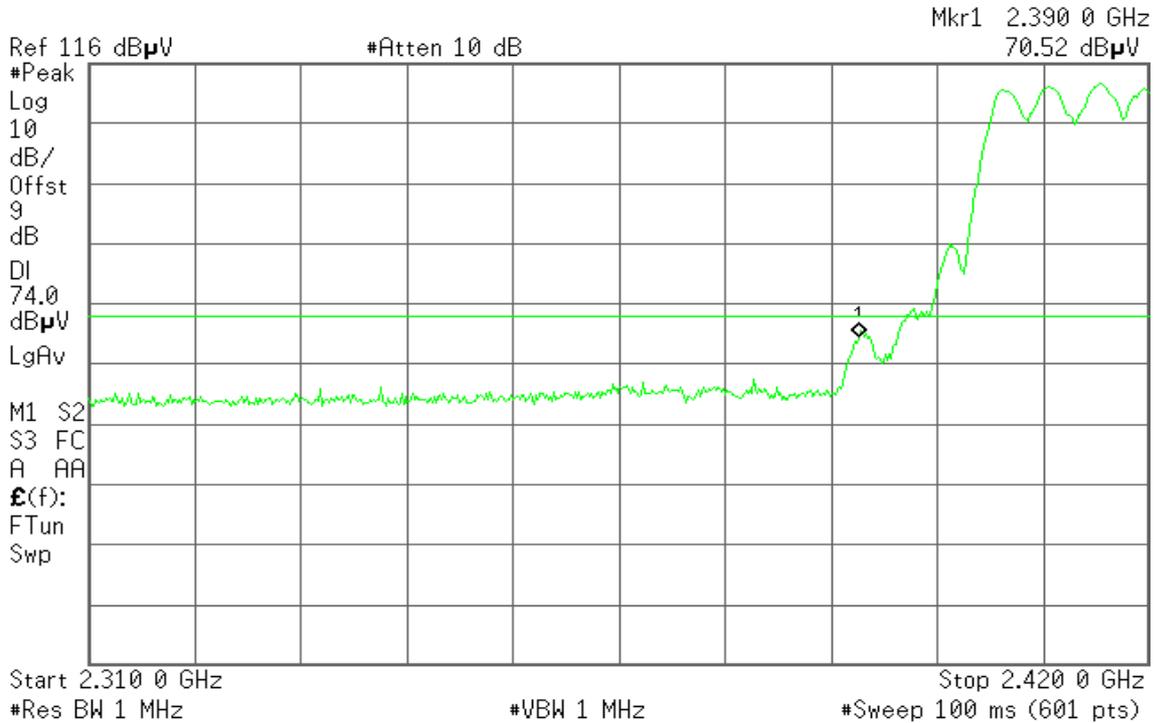
Band Edges (IEEE 802.11g mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent

R T

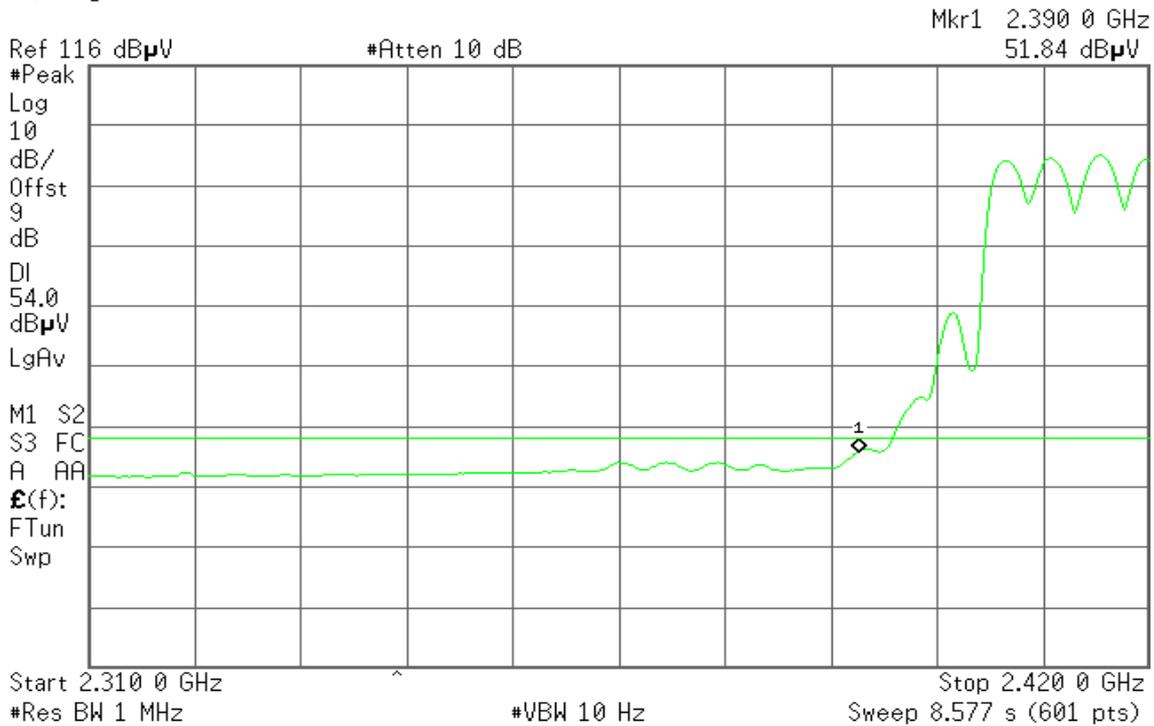


Detector mode: Average

Polarity: Vertical

Agilent

R T





Detector mode: Peak

Polarity: Horizontal

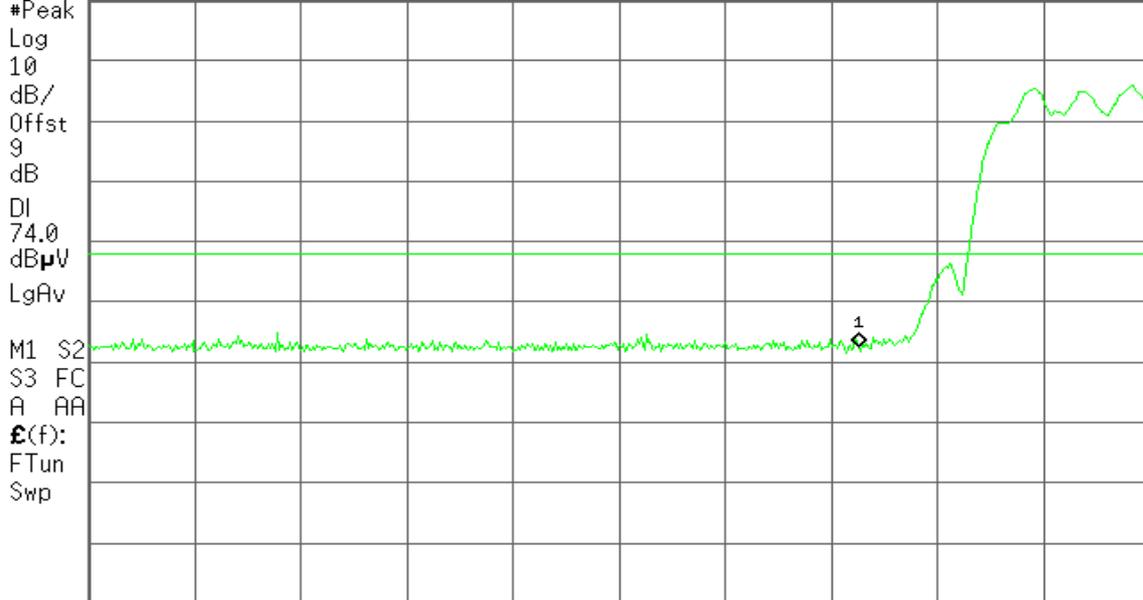
Agilent

R T

Mkr1 2.390 0 GHz
58.44 dBμV

Ref 116 dBμV

#Atten 10 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 2.390 0 GHz
46.83 dBμV

Ref 116 dBμV

#Atten 10 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 8.577 s (601 pts)



Band Edges (IEEE 802.11g mode / CH High)

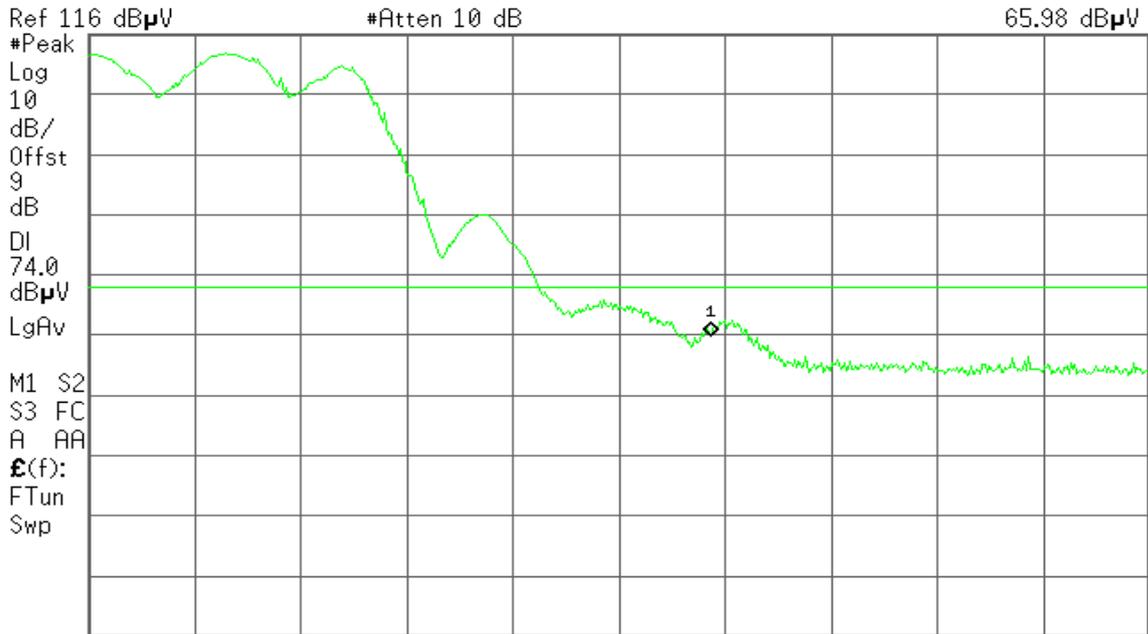
Detector mode: Peak

Polarity: Vertical

Agilent

R T

Mkr1 2.483 50 GHz
65.98 dB μ V



Start 2.460 00 GHz Stop 2.500 00 GHz
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

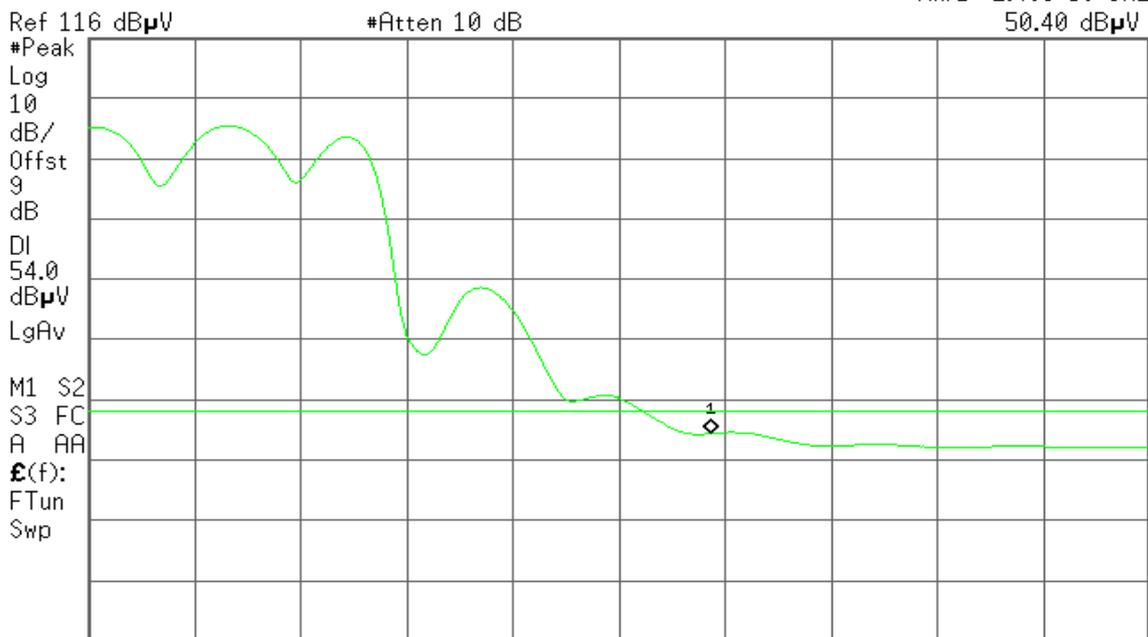
Detector mode: Average

Polarity: Vertical

Agilent

R T

Mkr1 2.483 50 GHz
50.40 dB μ V



Start 2.460 00 GHz Stop 2.500 00 GHz
#Res BW 1 MHz #VBW 10 Hz Sweep 3.119 s (601 pts)



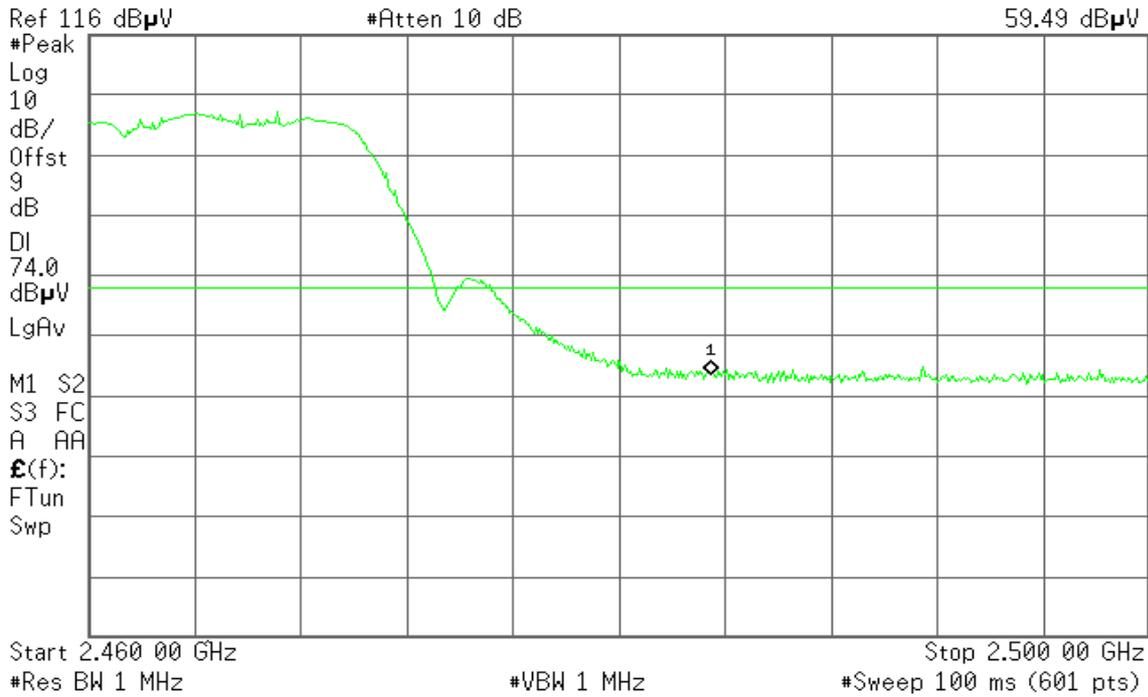
Detector mode: Peak

Polarity: Horizontal

Agilent

R T

Mkr1 2.483 50 GHz
59.49 dB μ V



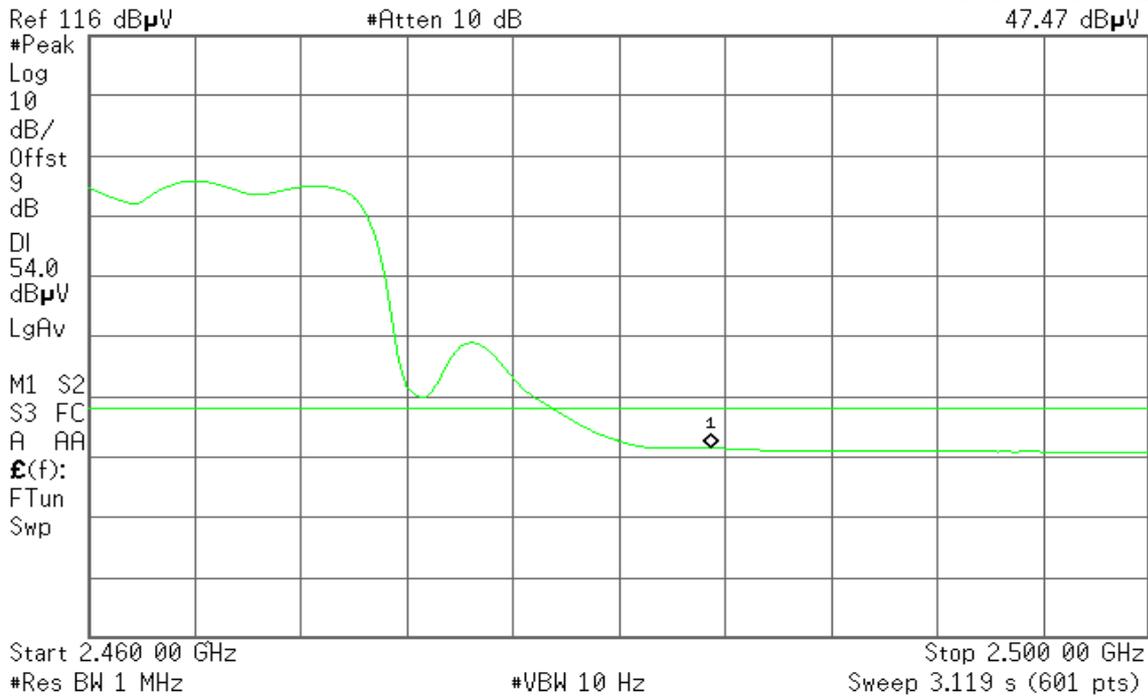
Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 2.483 50 GHz
47.47 dB μ V





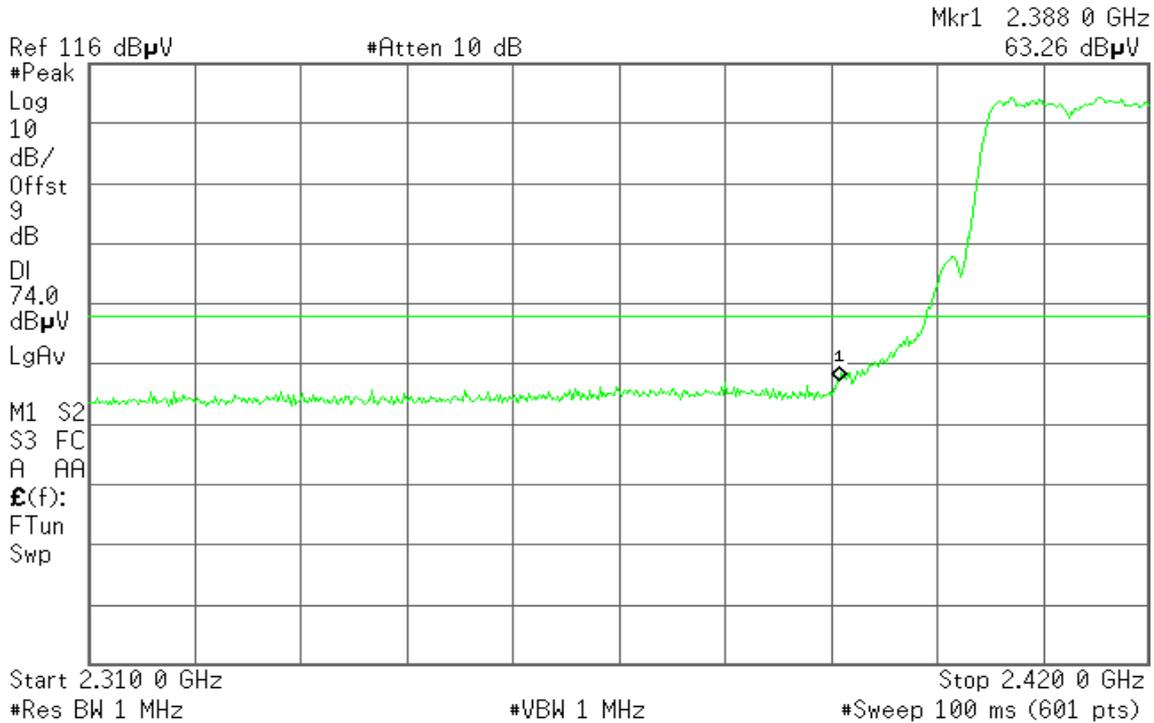
Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent

R T

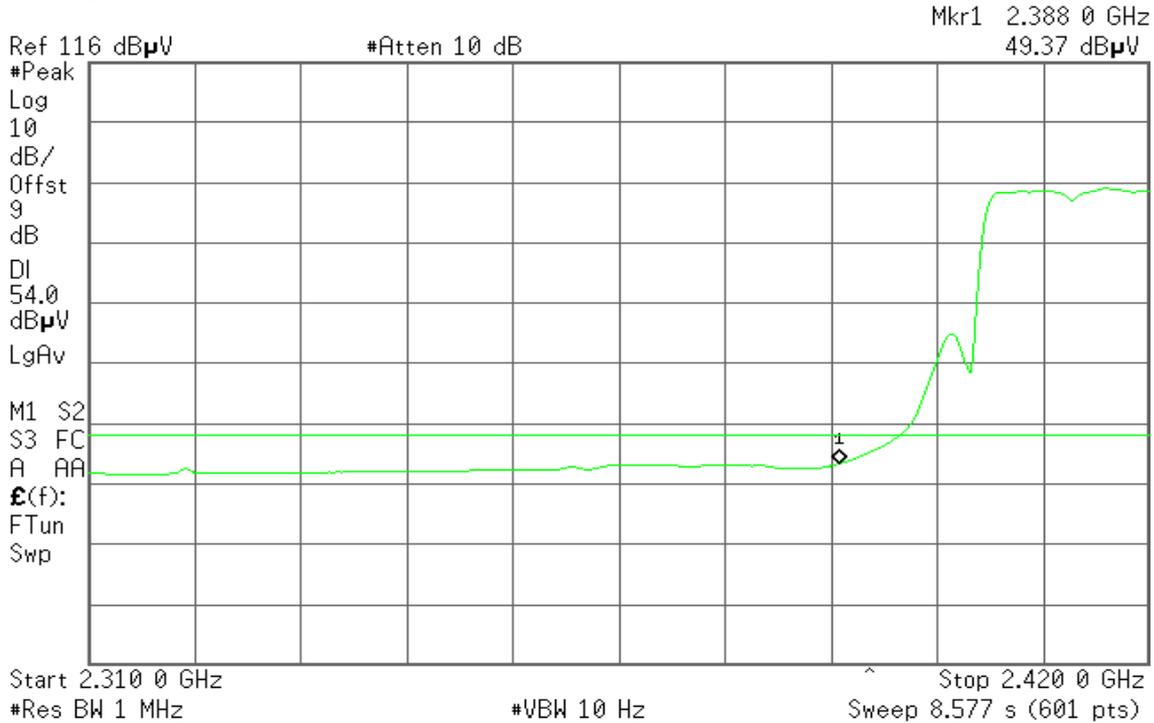


Detector mode: Average

Polarity: Vertical

Agilent

R T





Detector mode: Peak

Polarity: Horizontal

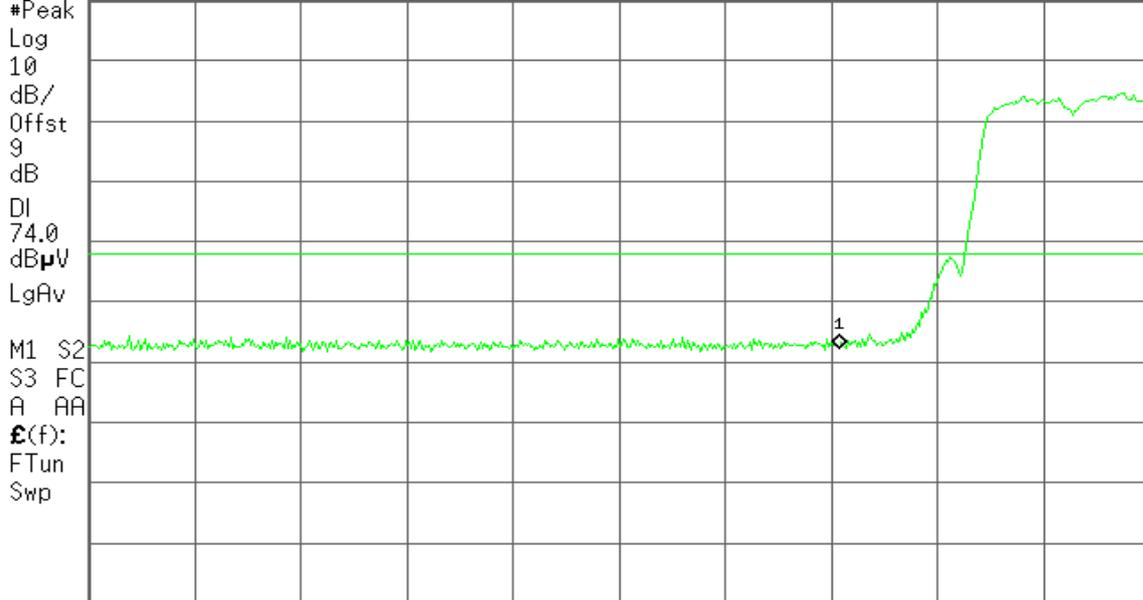
Agilent

R L

Mkr1 2.388 0 GHz
58.19 dBµV

Ref 116 dBµV

#Atten 10 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 2.388 0 GHz
46.89 dBµV

Ref 116 dBµV

#Atten 10 dB



Start 2.310 0 GHz ^

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 8.577 s (601 pts)



Band Edges (draft 802.11n Standard-20 MHz Channel mode / CH High)

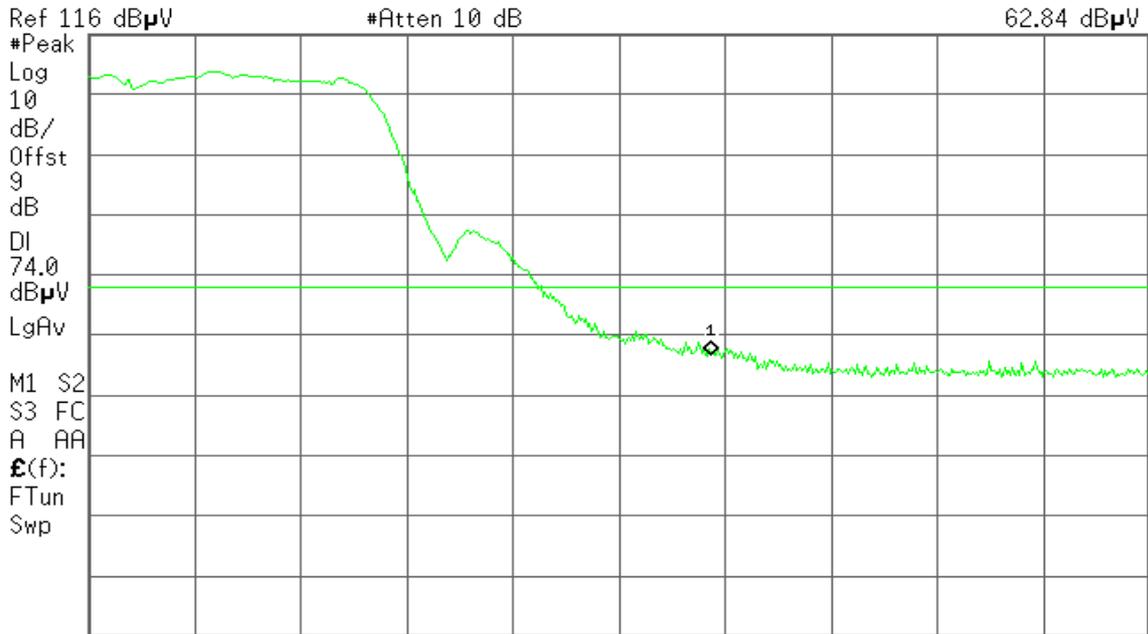
Detector mode: Peak

Polarity: Vertical

Agilent

R T

Mkr1 2.483 50 GHz
62.84 dB μ V



Start 2.460 00 GHz #Res BW 1 MHz #VBW 1 MHz Stop 2.500 00 GHz #Sweep 100 ms (601 pts)

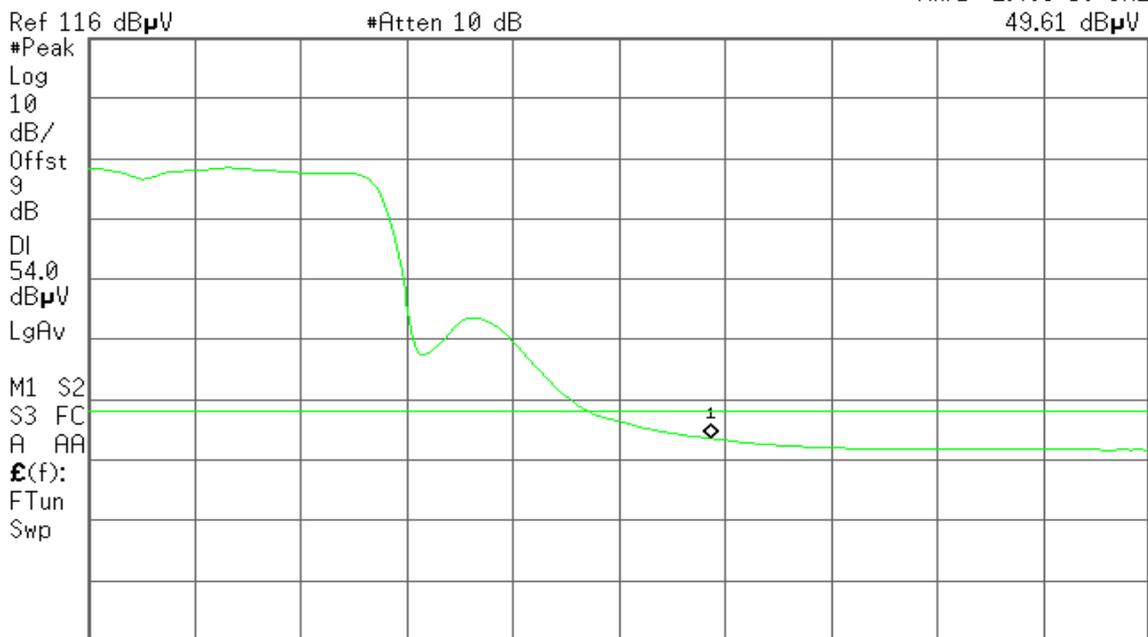
Detector mode: Average

Polarity: Vertical

Agilent

R T

Mkr1 2.483 50 GHz
49.61 dB μ V



Start 2.460 00 GHz #Res BW 1 MHz #VBW 10 Hz Stop 2.500 00 GHz Sweep 3.119 s (601 pts)



Detector mode: Peak

Polarity: Horizontal

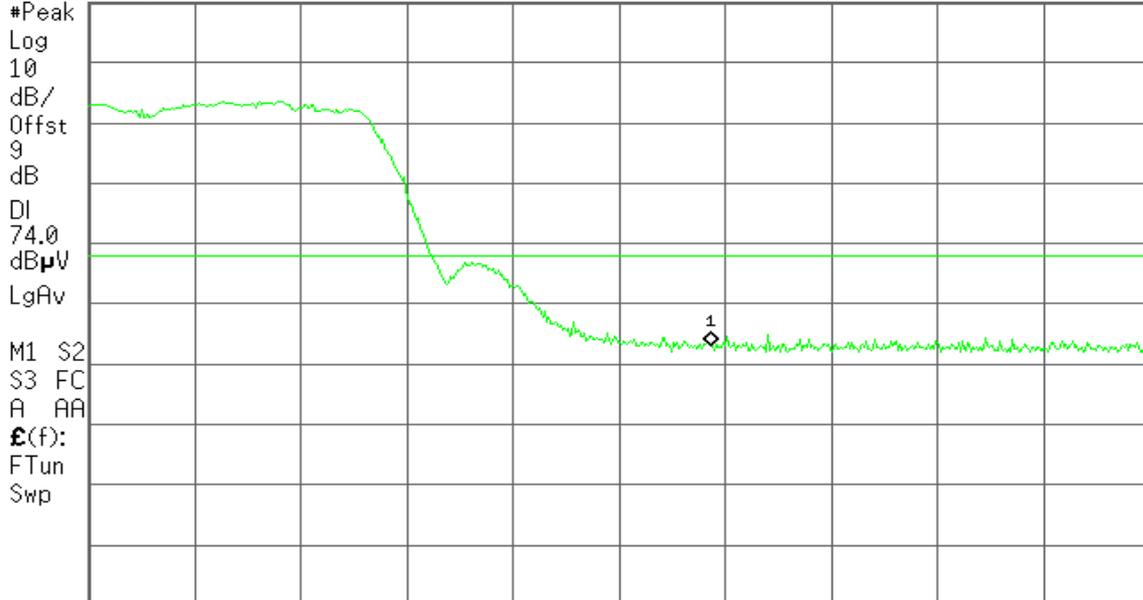
Agilent

R T

Mkr1 2.483 50 GHz
59.00 dBµV

Ref 116 dBµV

#Atten 10 dB



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

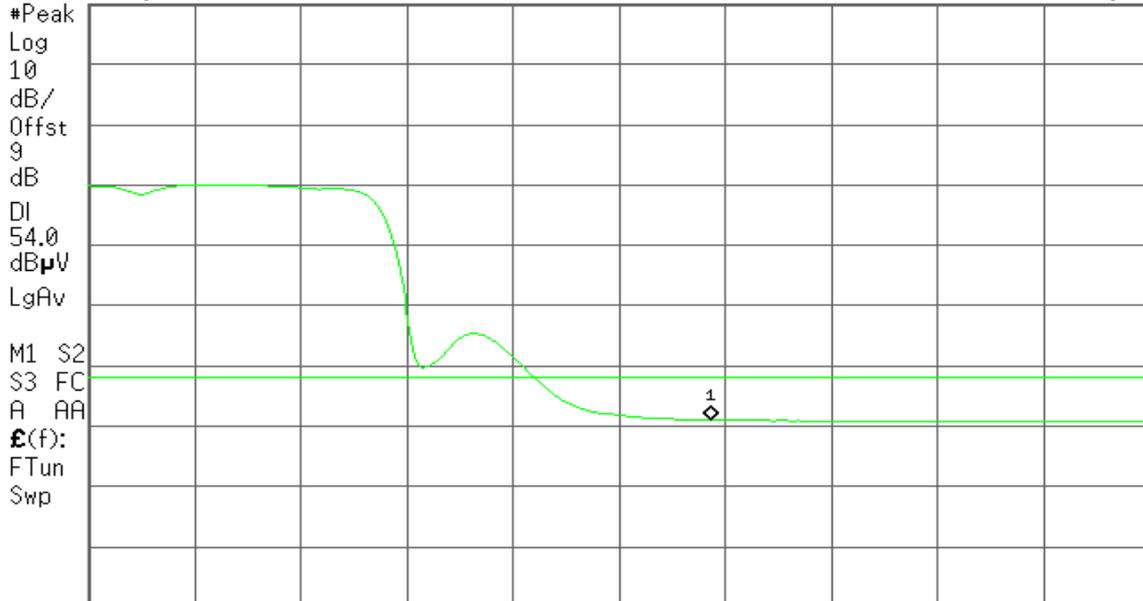
Agilent

R T

Mkr1 2.483 50 GHz
47.09 dBµV

Ref 116 dBµV

#Atten 10 dB



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.119 s (601 pts)



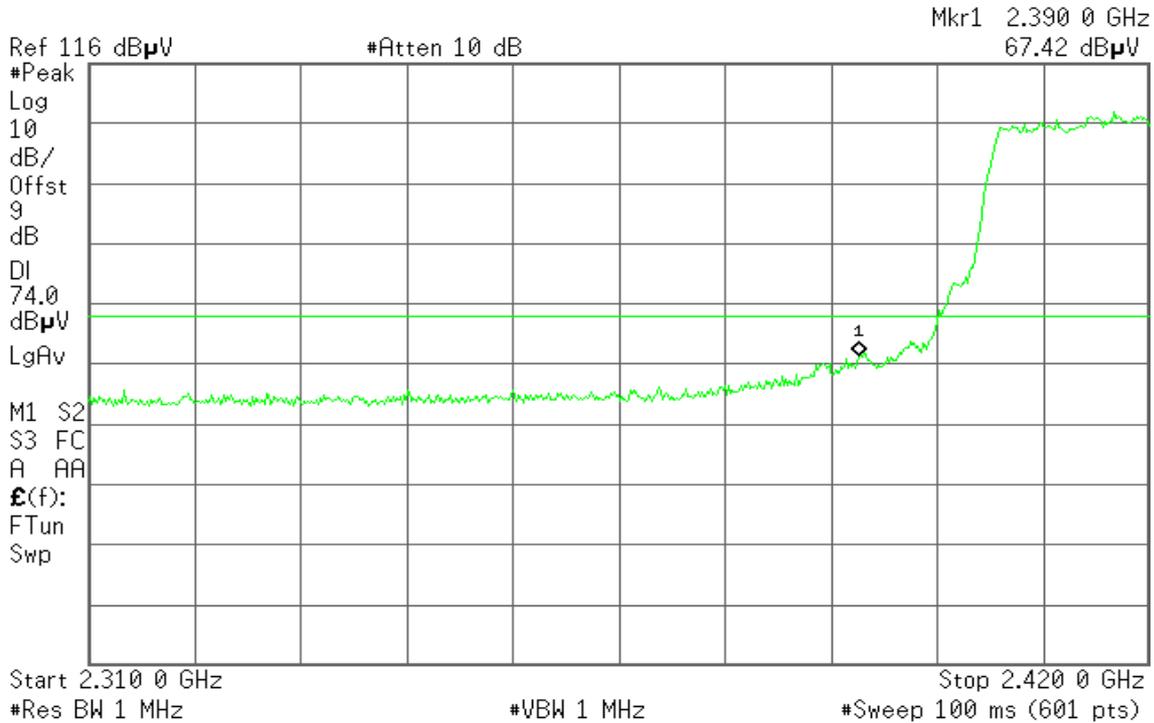
Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent

R T

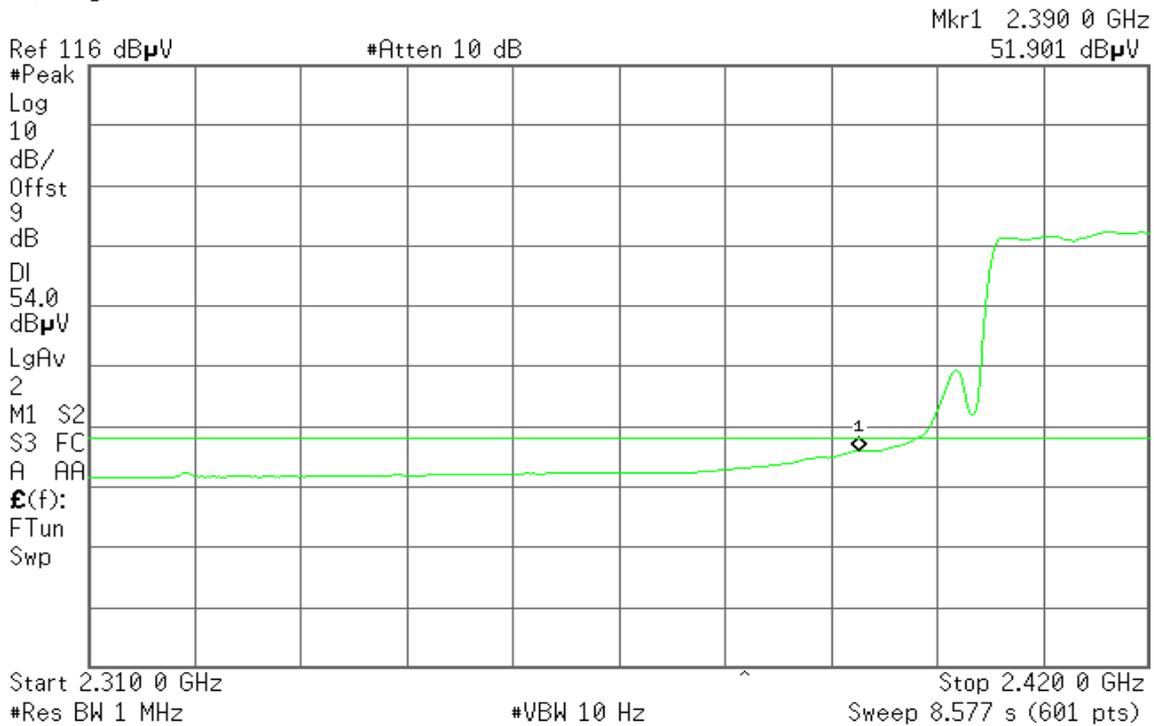


Detector mode: Average

Polarity: Vertical

Agilent

R T





Detector mode: Peak

Polarity: Horizontal

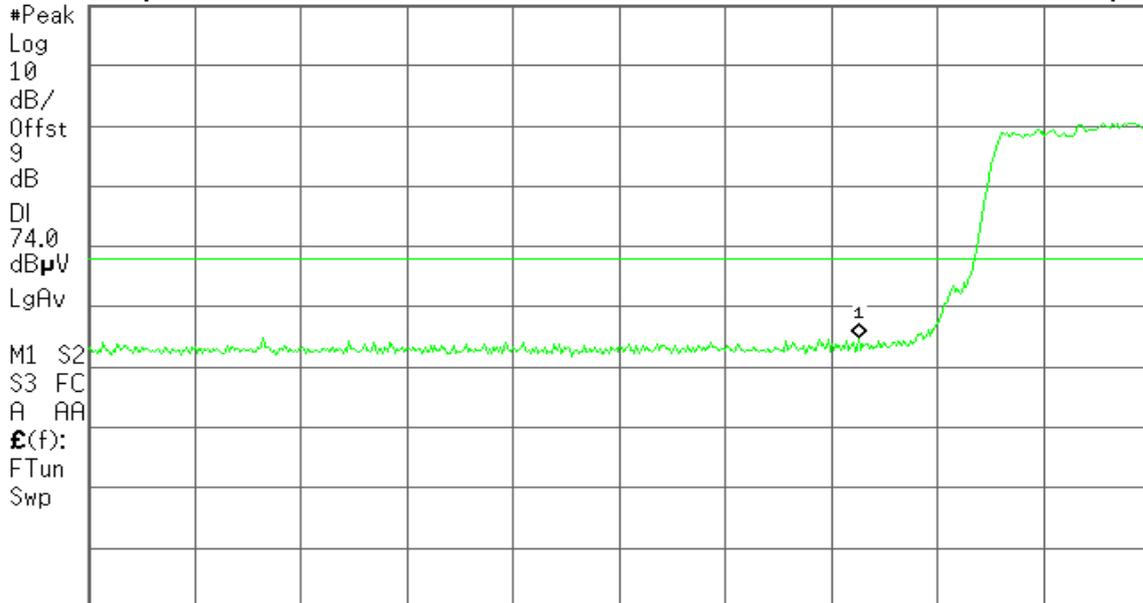
Agilent

R T

Mkr1 2.390 0 GHz
60.77 dBµV

Ref 116 dBµV

#Atten 10 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

Agilent

R T

Mkr1 2.390 0 GHz
47.20 dBµV

Ref 116 dBµV

#Atten 10 dB



Start 2.310 0 GHz

Stop 2.420 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 8.577 s (601 pts)



Band Edges (draft 802.11n Wide-40 MHz Channel mode / CH High)

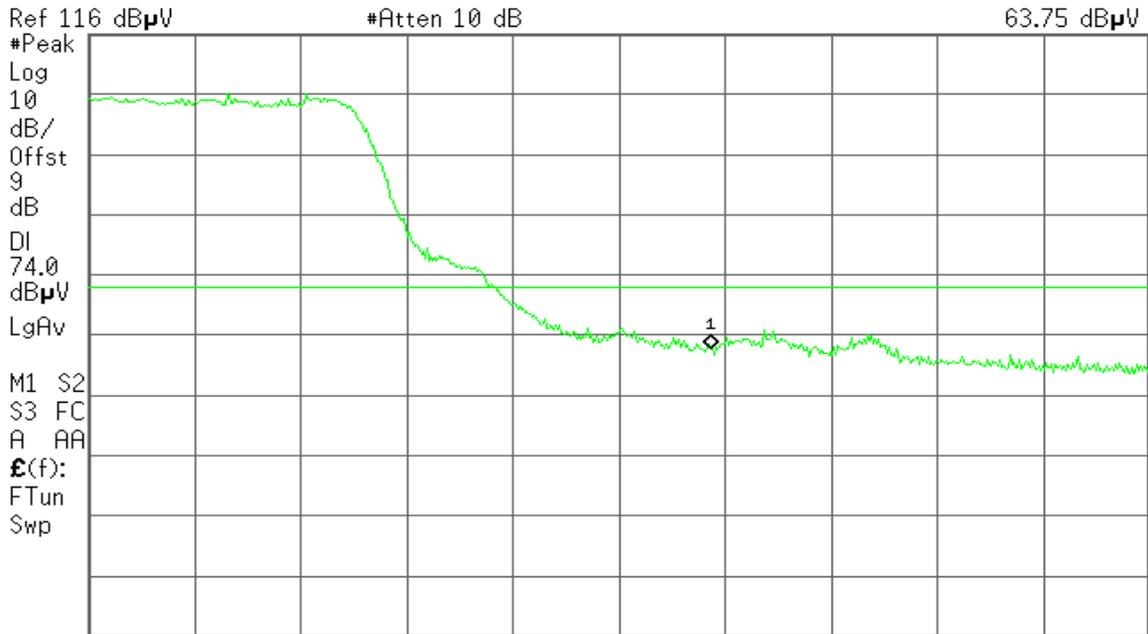
Detector mode: Peak

Polarity: Vertical

Agilent

R T

Mkr1 2.483 50 GHz
63.75 dB μ V



Start 2.460 00 GHz Stop 2.500 00 GHz
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

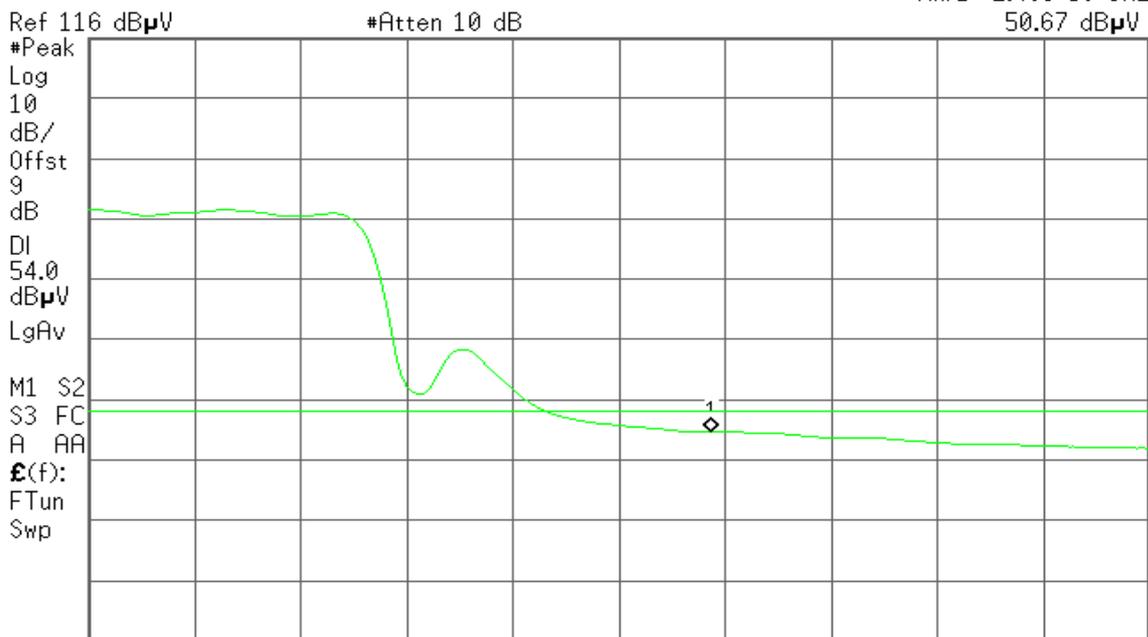
Detector mode: Average

Polarity: Vertical

Agilent

R T

Mkr1 2.483 50 GHz
50.67 dB μ V



Start 2.460 00 GHz Stop 2.500 00 GHz
#Res BW 1 MHz #VBW 10 Hz Sweep 3.119 s (601 pts)



Detector mode: Peak

Polarity: Horizontal

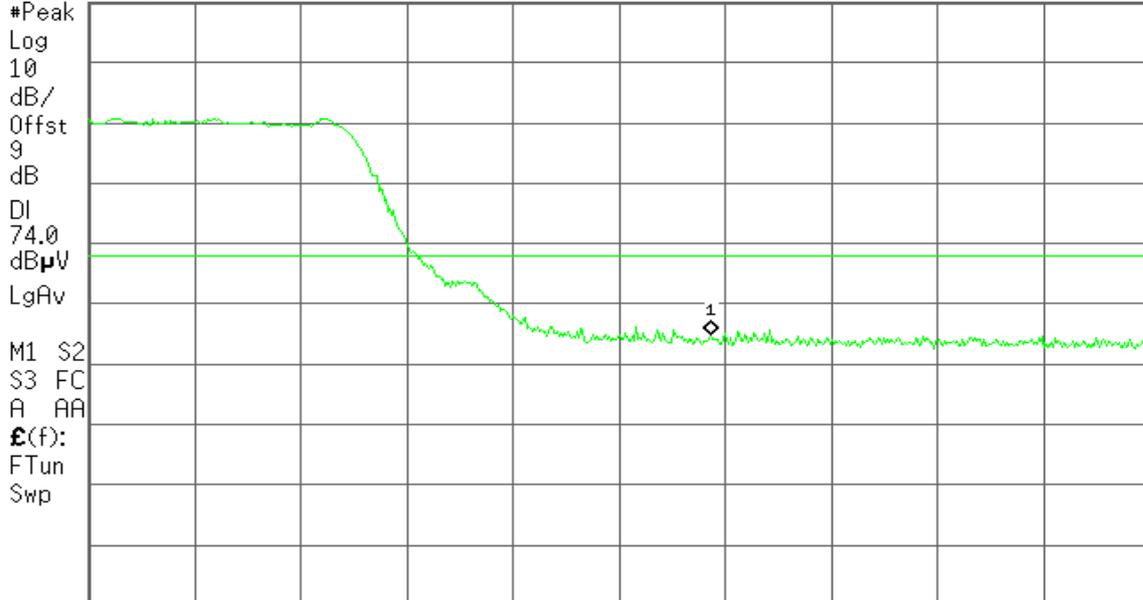
Agilent

R T

Mkr1 2.483 50 GHz
60.86 dBμV

Ref 116 dBμV

#Atten 10 dB



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

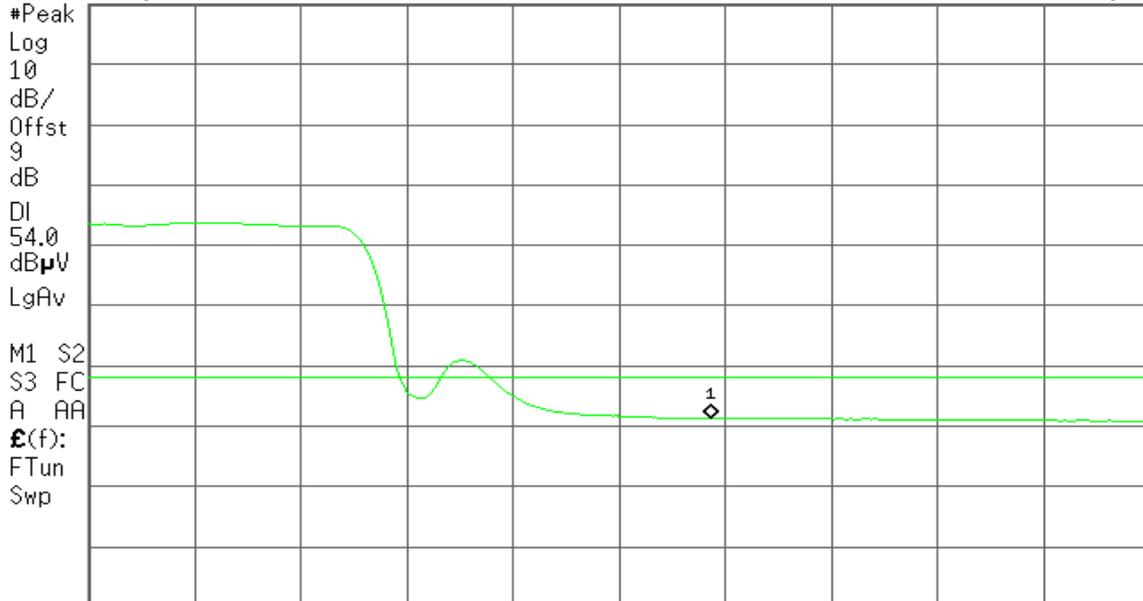
Agilent

R L

Mkr1 2.483 50 GHz
47.39 dBμV

Ref 116 dBμV

#Atten 10 dB



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

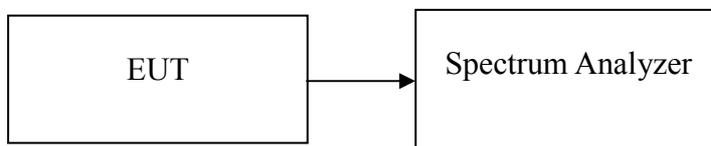
Sweep 3.119 s (601 pts)

8.6 PEAK POWER SPECTRAL DENSITY

LIMIT

1. According to §15.247(e) & RSS-210 §A8.2, 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) & RSS-210 §A8.3, 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 = 3 kHz, VBW = 10 kHz, Span = 300 kHz, Sweep time = 100 s
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 mode**

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-7.37	8.00	PASS
Mid	2437	-3.94		PASS
High	2462	-4.55		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-19.87	8.00	PASS
Mid	2437	-19.87		PASS
High	2462	-18.70		PASS

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

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-21.02	-19.94	-17.44	8.00	PASS
Mid	2437	-20.56	-20.56	-17.55		PASS
High	2462	-19.80	-19.58	-16.68		PASS

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

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Result
Low	2422	-23.80	-22.31	-19.98	8.00	PASS
Mid	2437	-12.69	-21.74	-12.18		PASS
High	2452	-23.98	-24.19	-21.07		PASS



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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-14.50	8.00	PASS
Mid	2437	-15.09		PASS
High	2462	-14..71		PASS

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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2422	-17.18	8.00	PASS
Mid	2437	-17.07		PASS
High	2452	-17.12		PASS



Test Plot

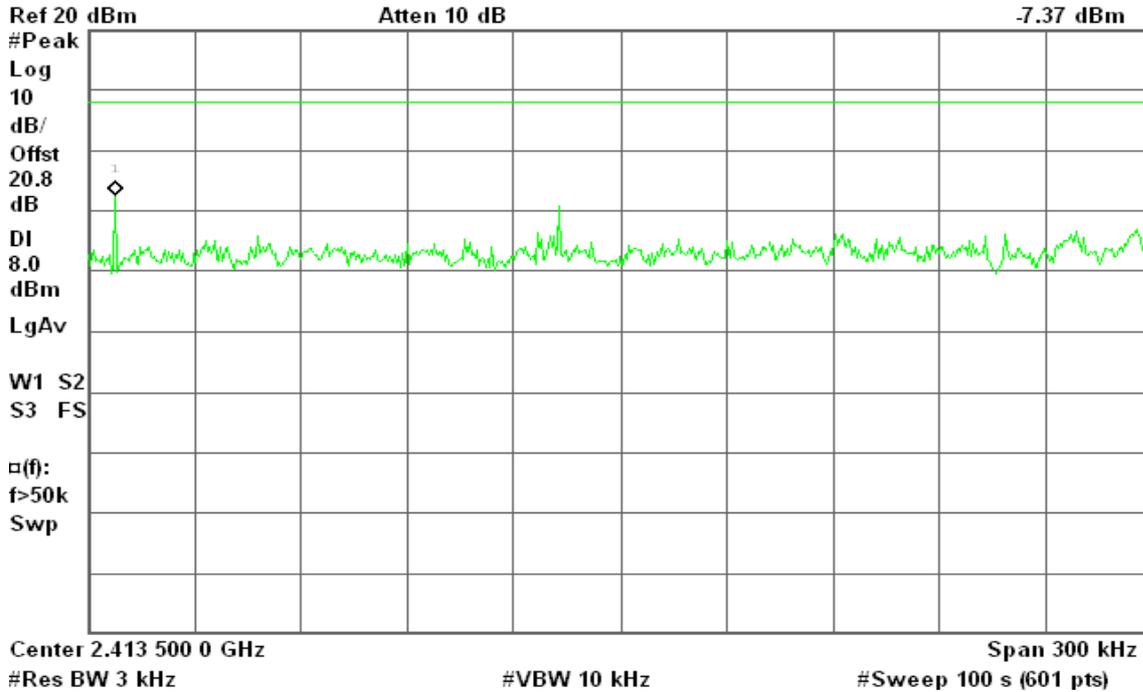
IEEE 802.11b mode

PPSD (CH Low)

Agilent 12:12:06 Nov 21, 2009

R T

Mkr1 2.413 356 4 GHz
-7.37 dBm

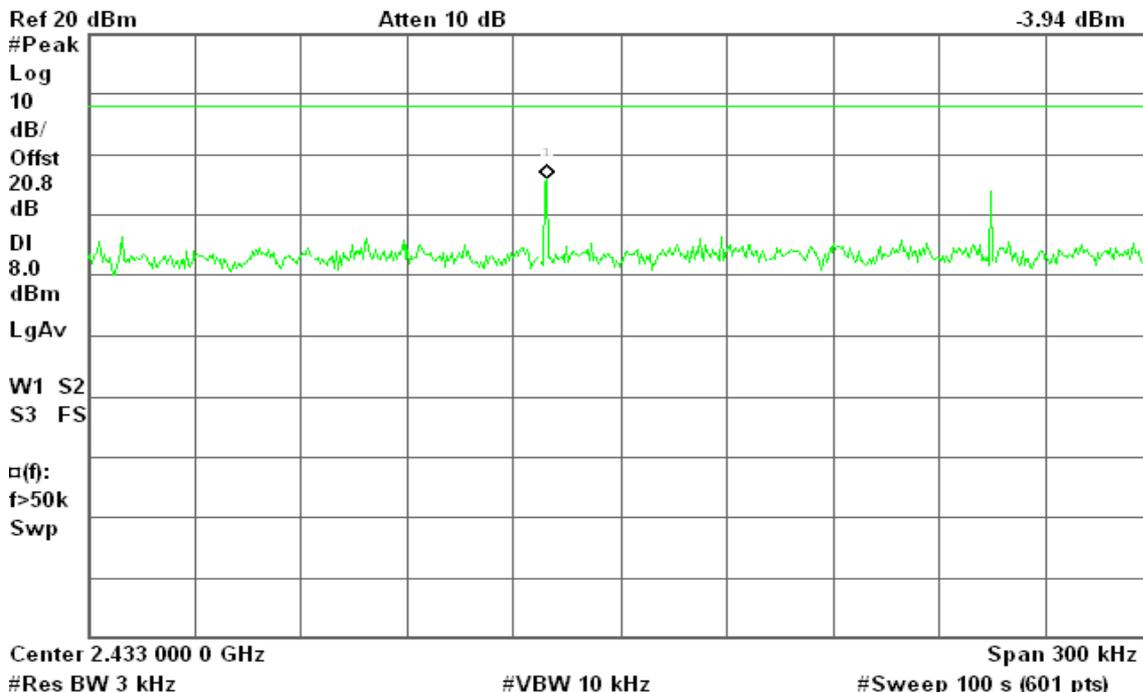


PPSD (CH Mid)

Agilent 12:18:36 Nov 21, 2009

R T

Mkr1 2.432 979 4 GHz
-3.94 dBm



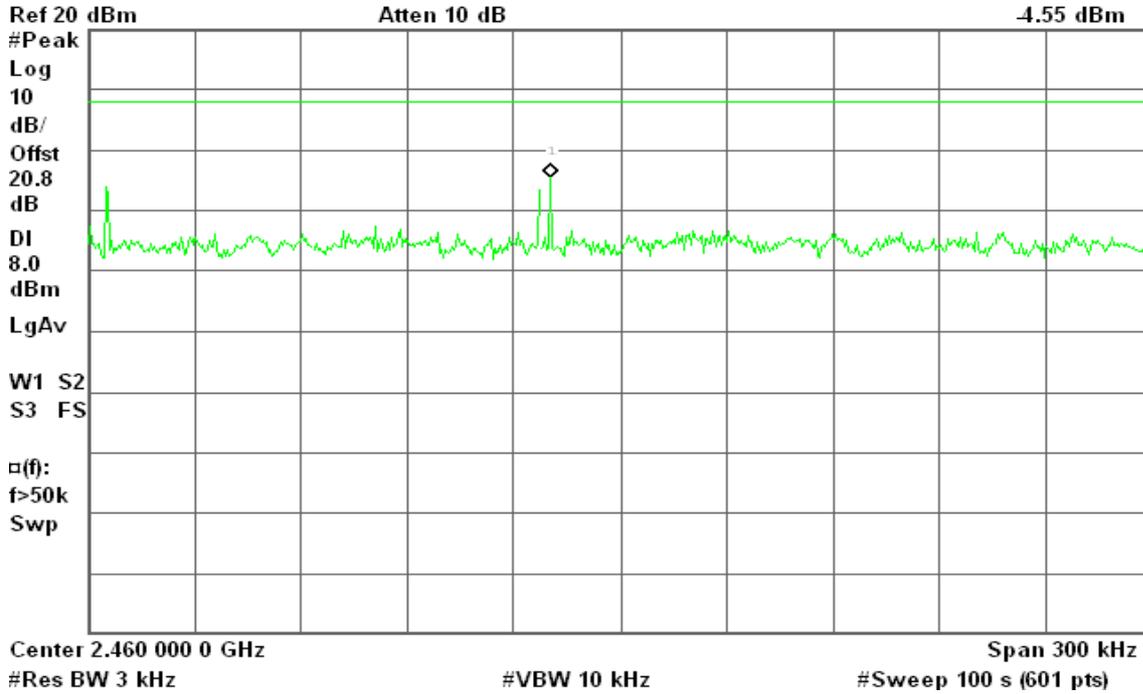


PPSD (CH High)

Agilent 12:26:41 Nov 21, 2009

R T

Mkr1 2.459 980 4 GHz
-4.55 dBm



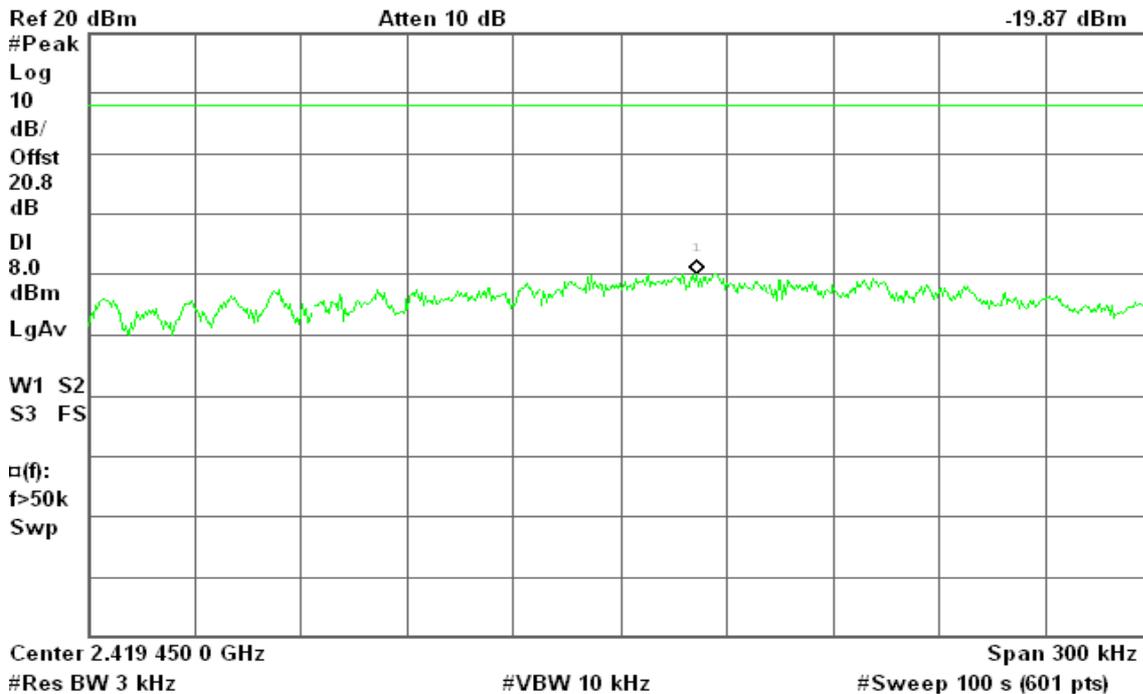
IEEE 802.11g mode

PPSD (CH Low)

Agilent 12:34:40 Nov 21, 2009

R T

Mkr1 2.419 471 6 GHz
-19.87 dBm



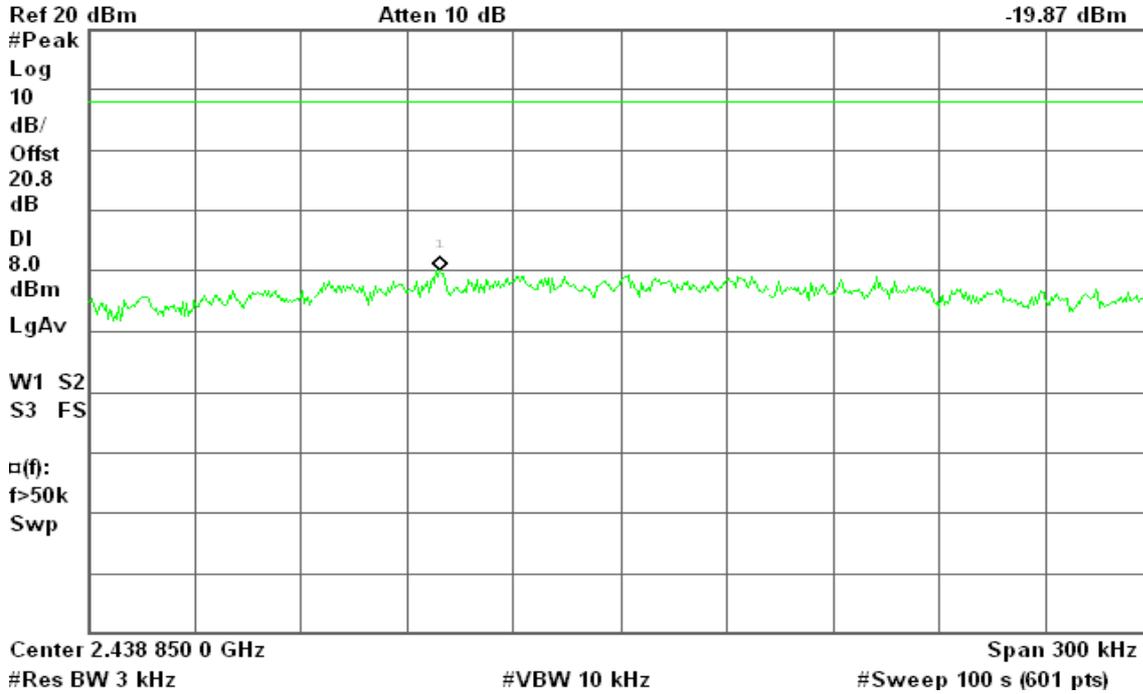


PPSD (CH Mid)

Agilent 12:40:09 Nov 21, 2009

R T

Mkr1 2.438 799 4 GHz
-19.87 dBm

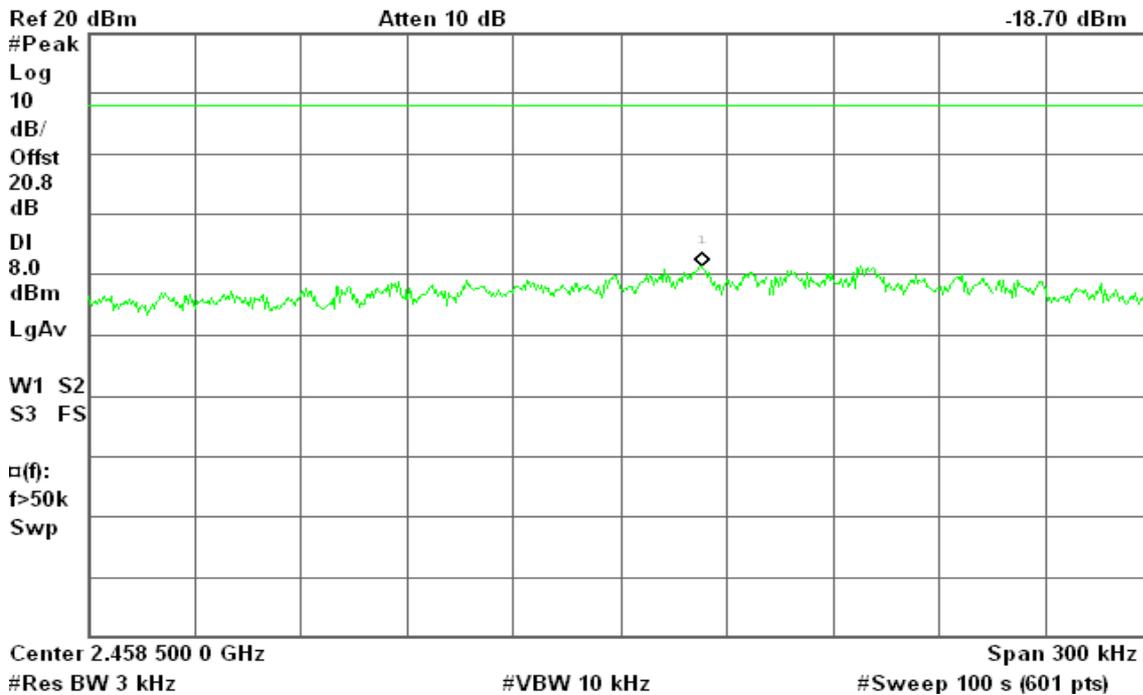


PPSD (CH High)

Agilent 12:47:23 Nov 21, 2009

R T

Mkr1 2.458 523 1 GHz
-18.70 dBm





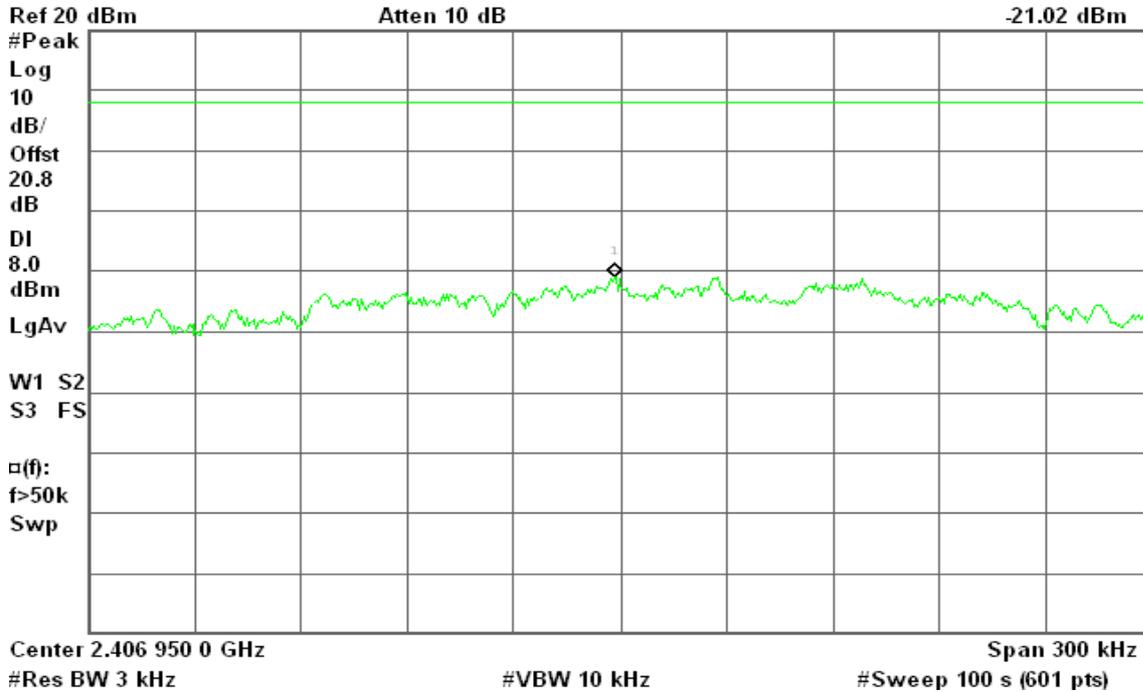
draft 802.11n Standard-20 MHz Channel mode / Chain 0

PPSD (CH Low)

Agilent 12:53:45 Nov 21, 2009

R L

Mkr1 2.406 948 0 GHz
-21.02 dBm

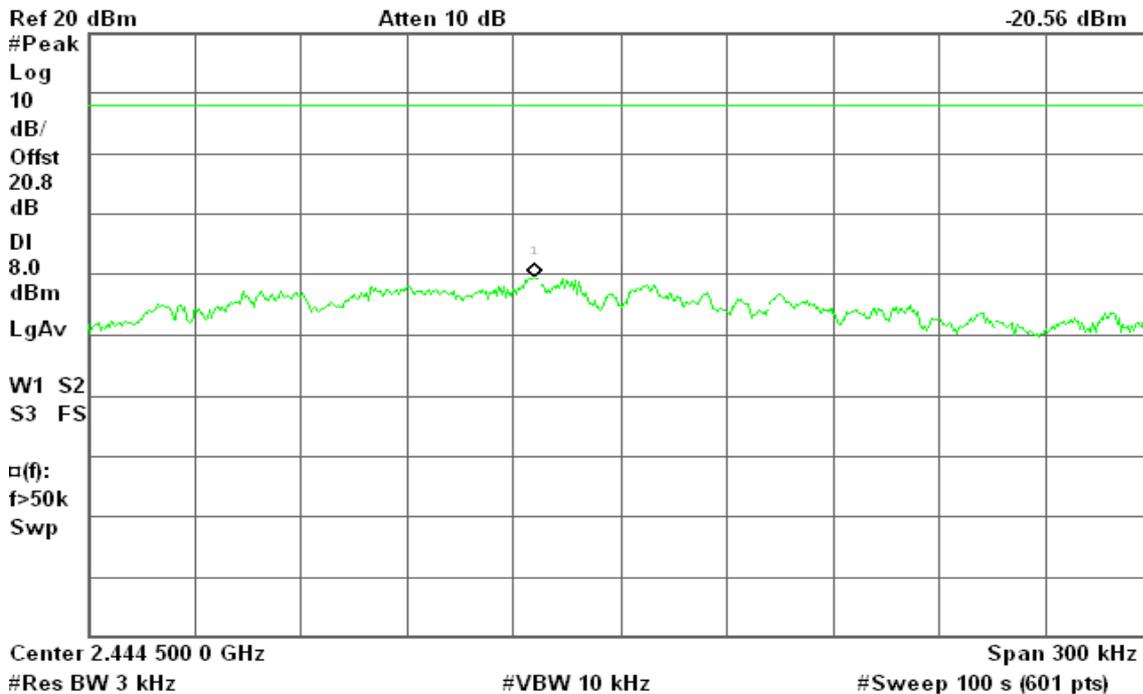


PPSD (CH Mid)

Agilent 12:58:53 Nov 21, 2009

R T

Mkr1 2.444 475 9 GHz
-20.56 dBm



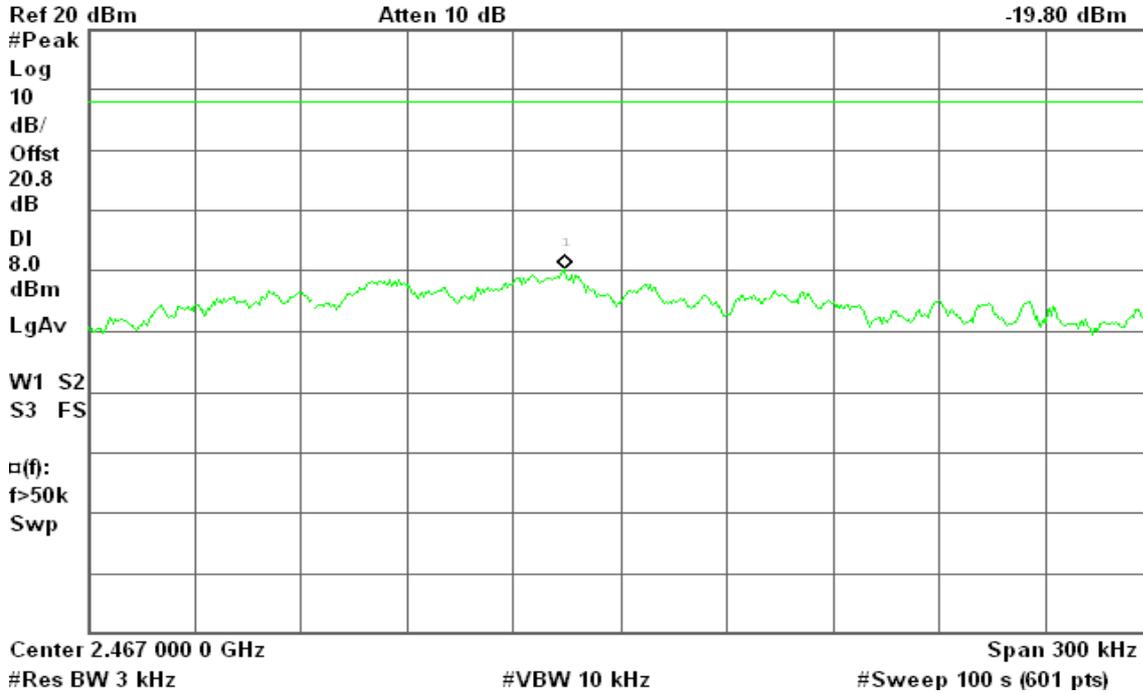


PPSD (CH High)

Agilent 13:03:57 Nov 21, 2009

R T

Mkr1 2.466 984 4 GHz
-19.80 dBm



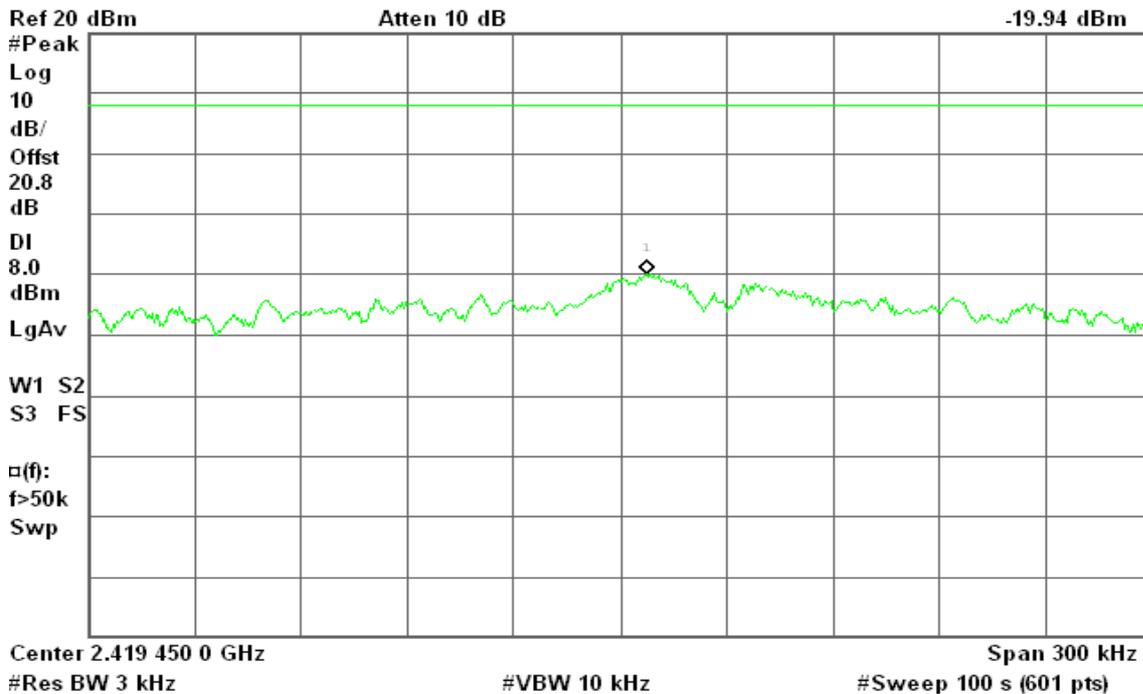
draft 802.11n Standard-20 MHz Channel mode / Chain 1

PPSD (CH Low)

Agilent 13:23:09 Nov 21, 2009

R T

Mkr1 2.419 457 5 GHz
-19.94 dBm



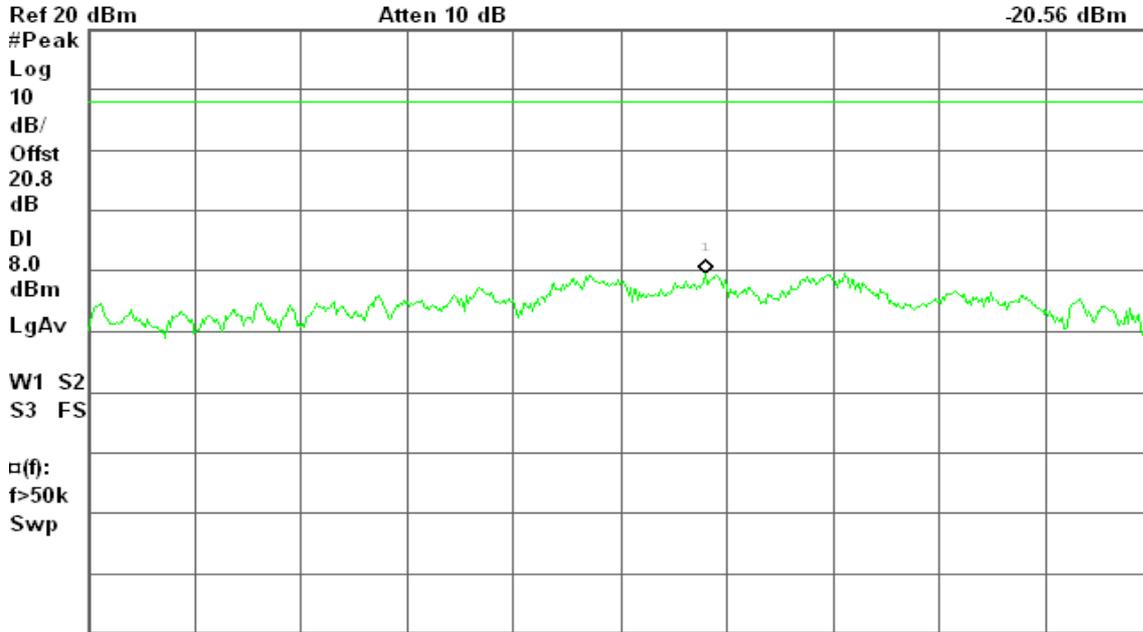


PPSD (CH Mid)

Agilent 13:18:58 Nov 21, 2009

R T

Mkr1 2.431 974 1 GHz
-20.56 dBm



Center 2.431 950 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

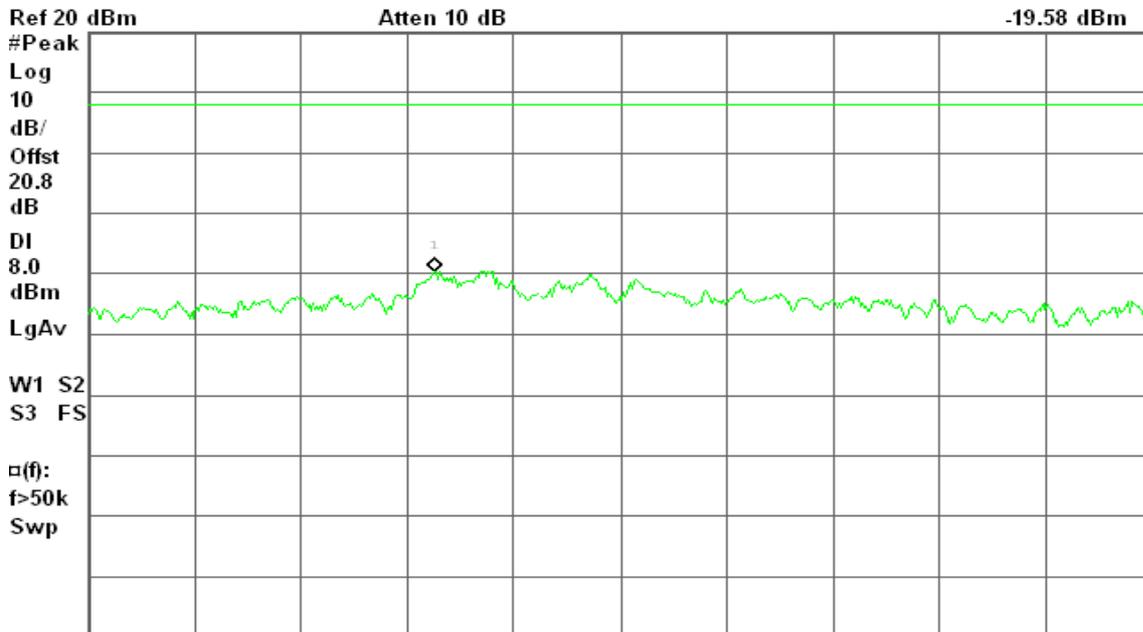
#Sweep 100 s (601 pts)

PPSD (CH High)

Agilent 13:09:46 Nov 21, 2009

R T

Mkr1 2.464 447 9 GHz
-19.58 dBm



Center 2.464 500 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)



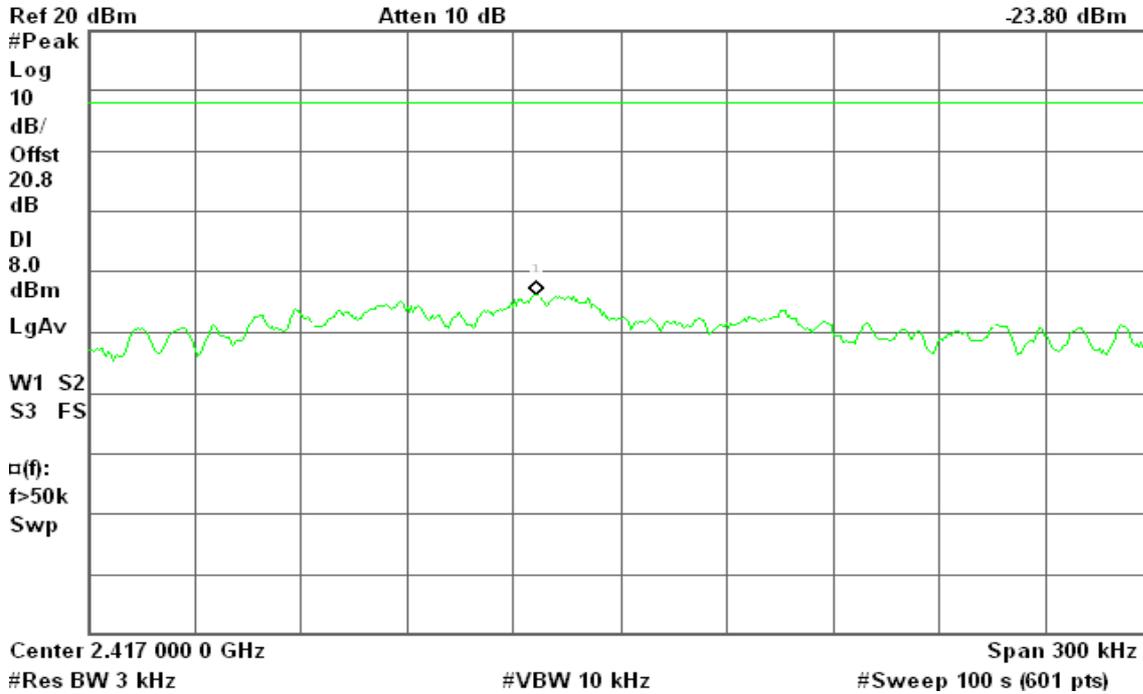
draft 802.11n Wide-40 MHz Channel mode / Chain 0

PPSD (CH Low)

Agilent 13:55:11 Nov 21, 2009

R L

Mkr1 2.416 976 4 GHz
-23.80 dBm

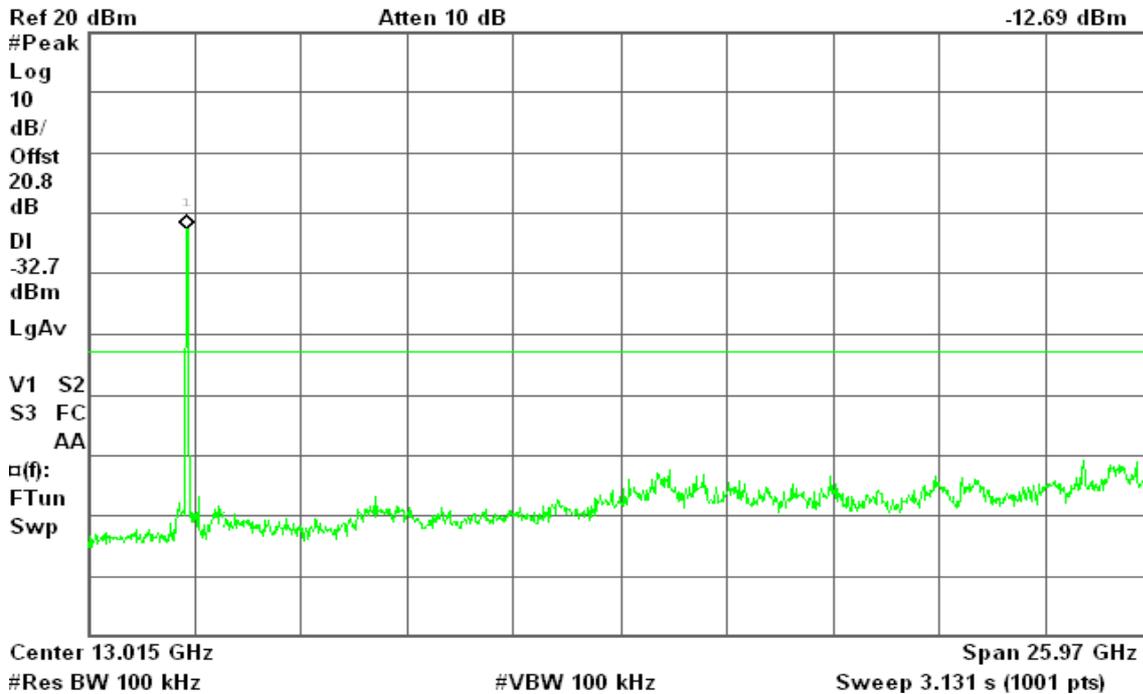


PPSD (CH Mid)

Agilent 14:02:42 Nov 21, 2009

R T

Mkr1 2.419 GHz
-12.69 dBm



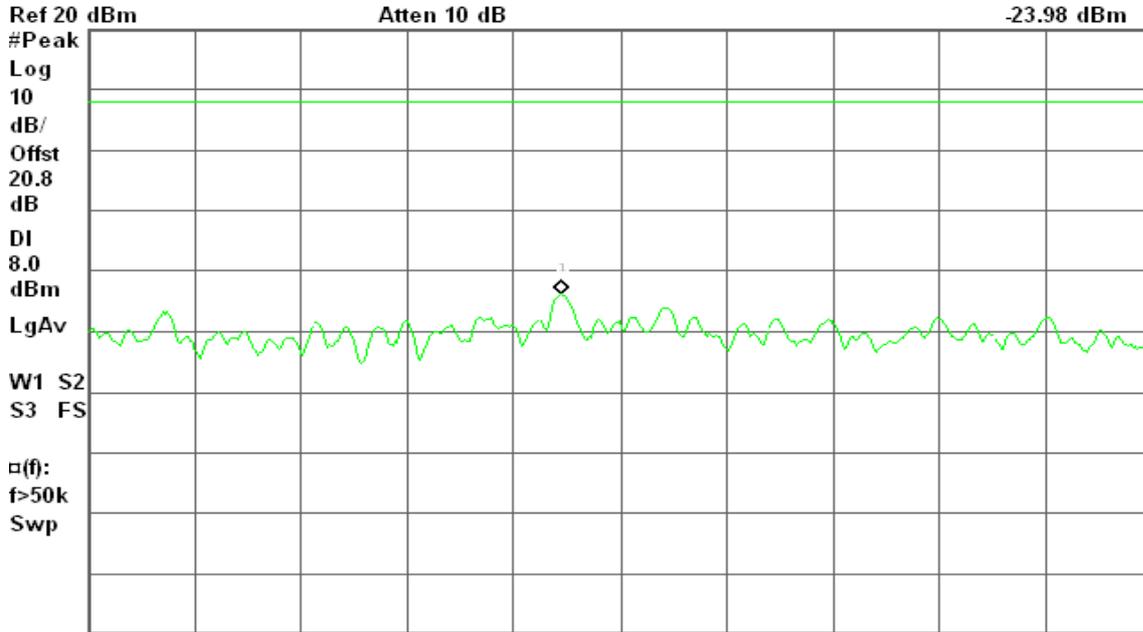


PPSD (CH High)

Agilent 13:49:00 Nov 21, 2009

R T

Mkr1 2.448 533 4 GHz
-23.98 dBm



Center 2.448 550 0 GHz Span 300 kHz
#Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (601 pts)

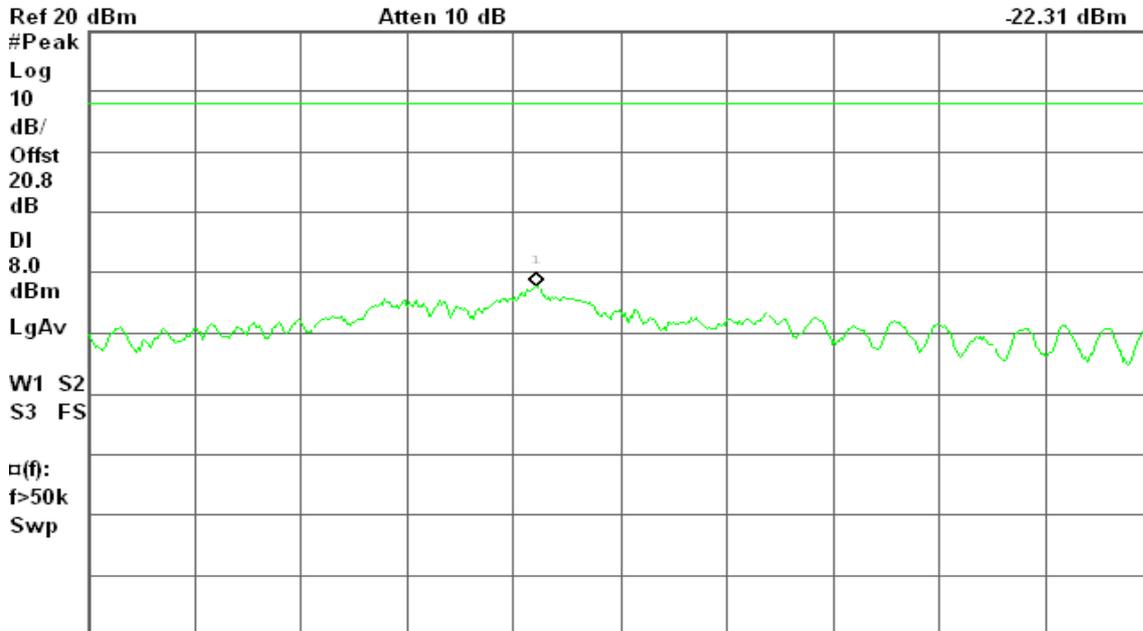
draft 802.11n Wide-40 MHz Channel mode / Chain 1

PPSD (CH Low)

Agilent 13:31:00 Nov 21, 2009

R T

Mkr1 2.416 976 4 GHz
-22.31 dBm



Center 2.417 000 0 GHz Span 300 kHz
#Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (601 pts)

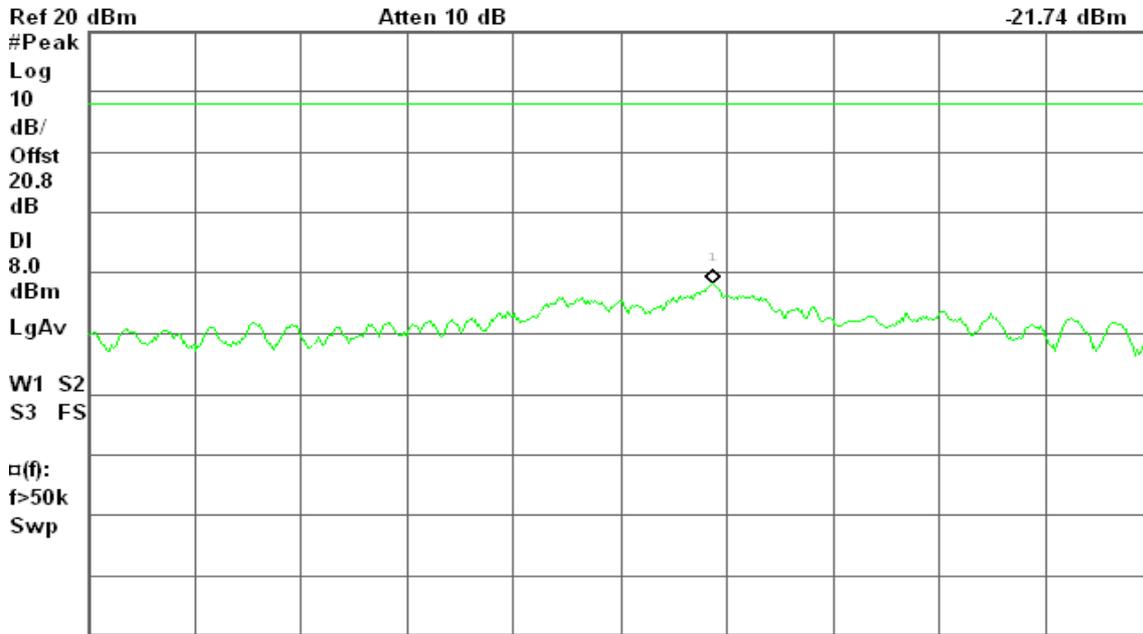


PPSD (CH Mid)

Agilent 13:36:32 Nov 21, 2009

R T

Mkr1 2.431 976 1 GHz
-21.74 dBm



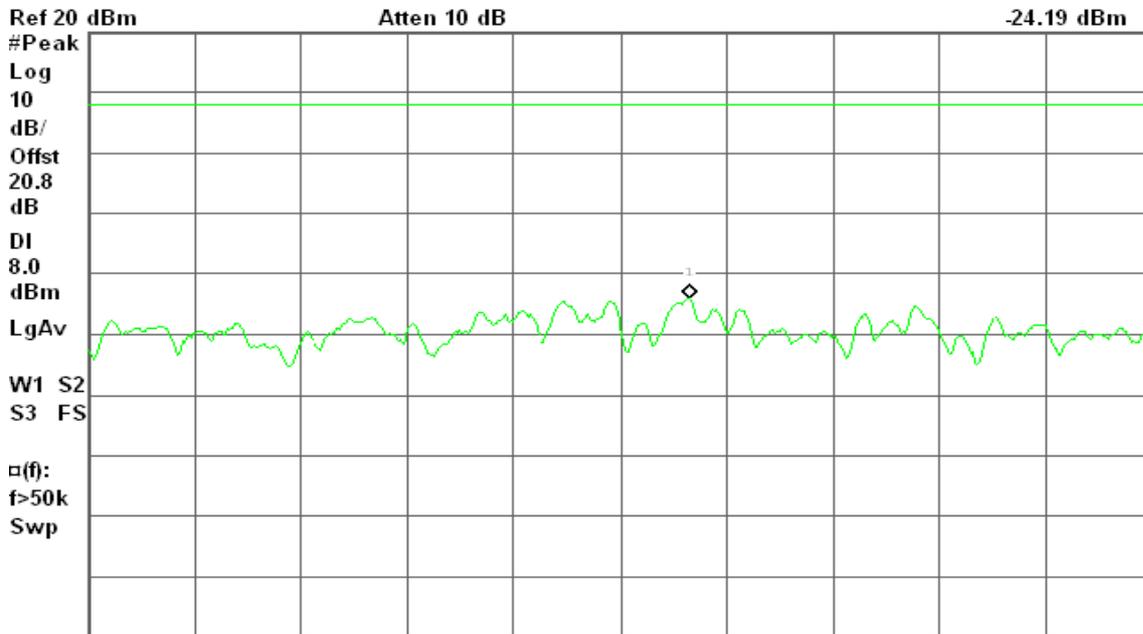
Center 2.431 950 0 GHz Span 300 kHz
#Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (601 pts)

PPSD (CH High)

Agilent 13:41:53 Nov 21, 2009

R T

Mkr1 2.459 819 6 GHz
-24.19 dBm



Center 2.459 800 0 GHz Span 300 kHz
#Res BW 3 kHz #VBW 10 kHz #Sweep 100 s (601 pts)



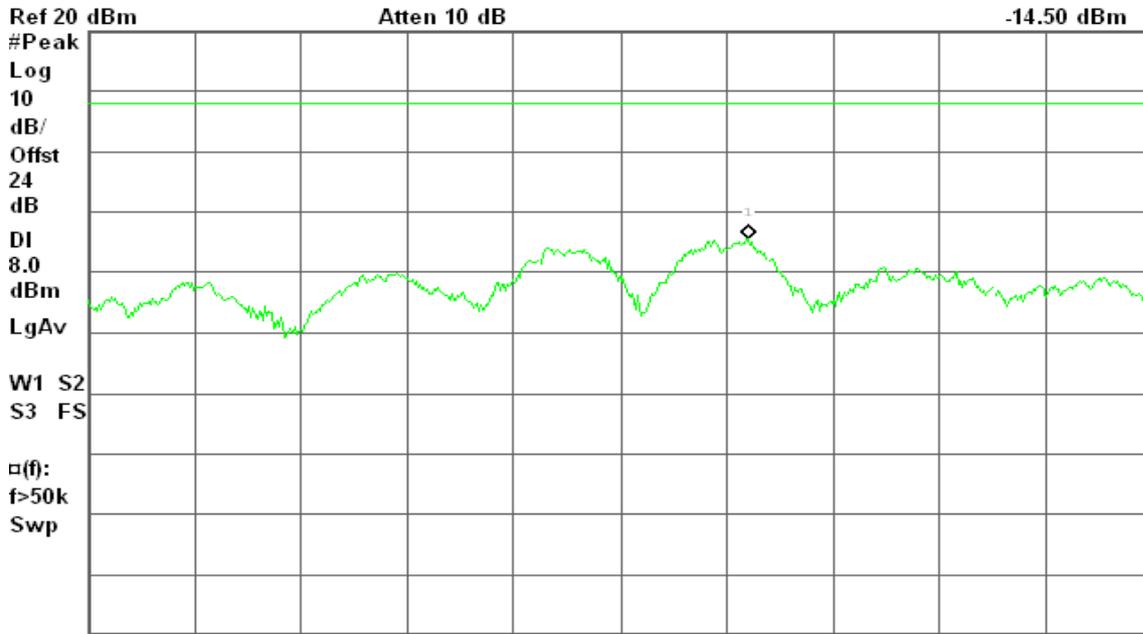
draft 802.11n Standard-20 MHz Channel mode with combiner

PPSD (CH Low)

Agilent 14:28:13 Nov 21, 2009

R T

Mkr1 2.416 986 1 GHz
-14.50 dBm

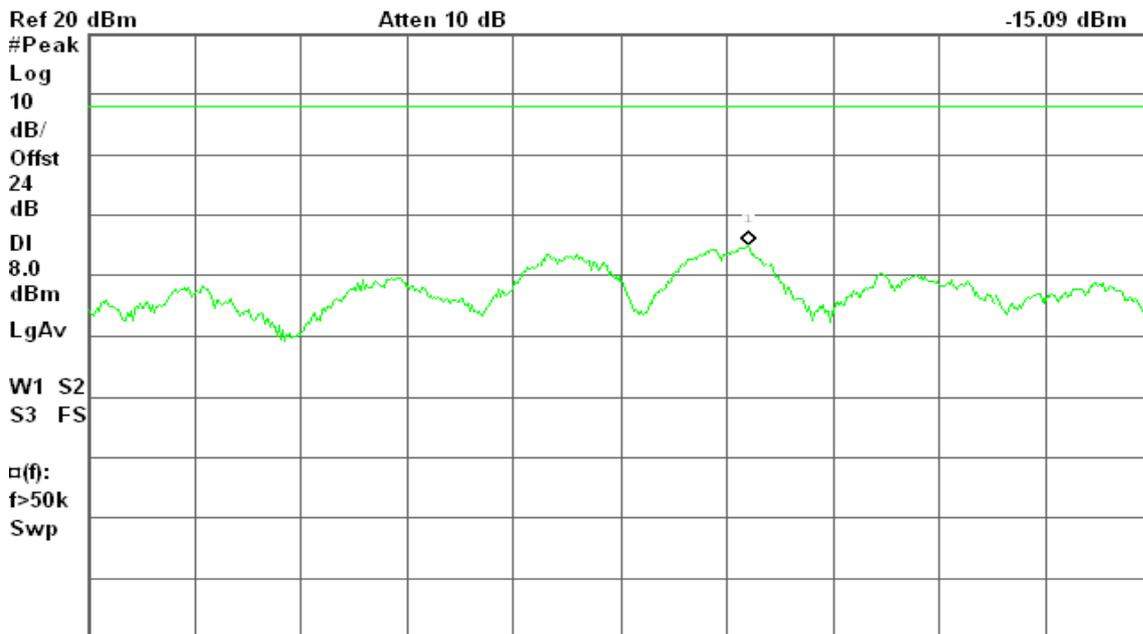


PPSD (CH Mid)

Agilent 14:35:50 Nov 21, 2009

R T

Mkr1 2.441 986 2 GHz
-15.09 dBm



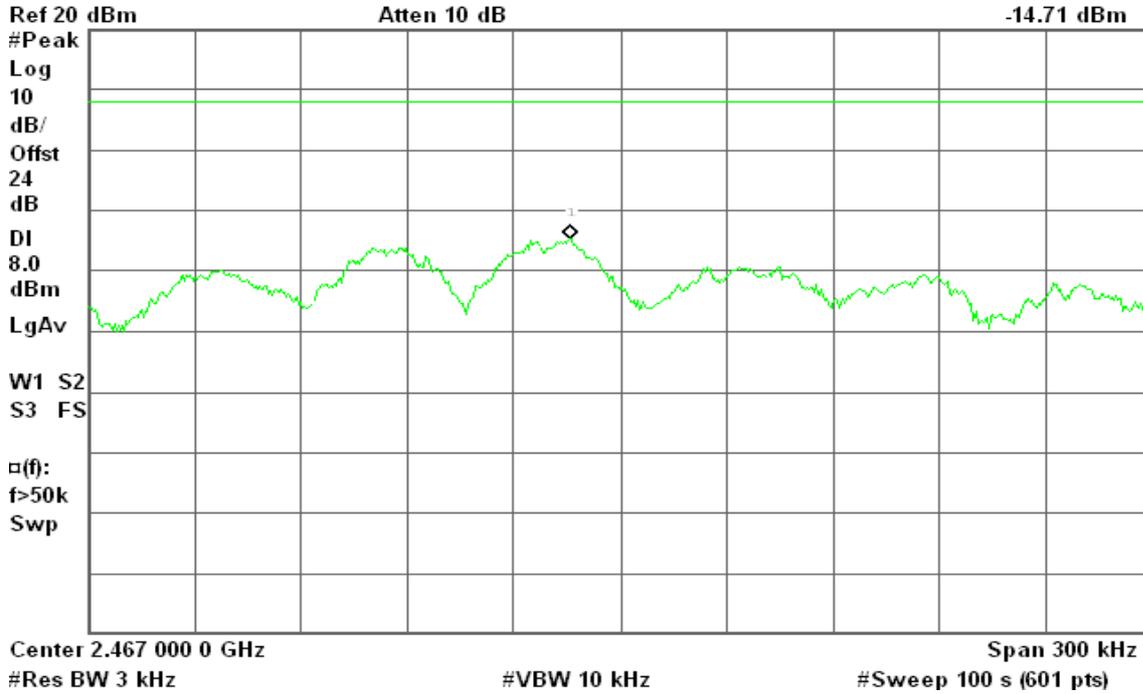


PPSD (CH High)

Agilent 14:41:26 Nov 21, 2009

R T

Mkr1 2.466 985 9 GHz
-14.71 dBm



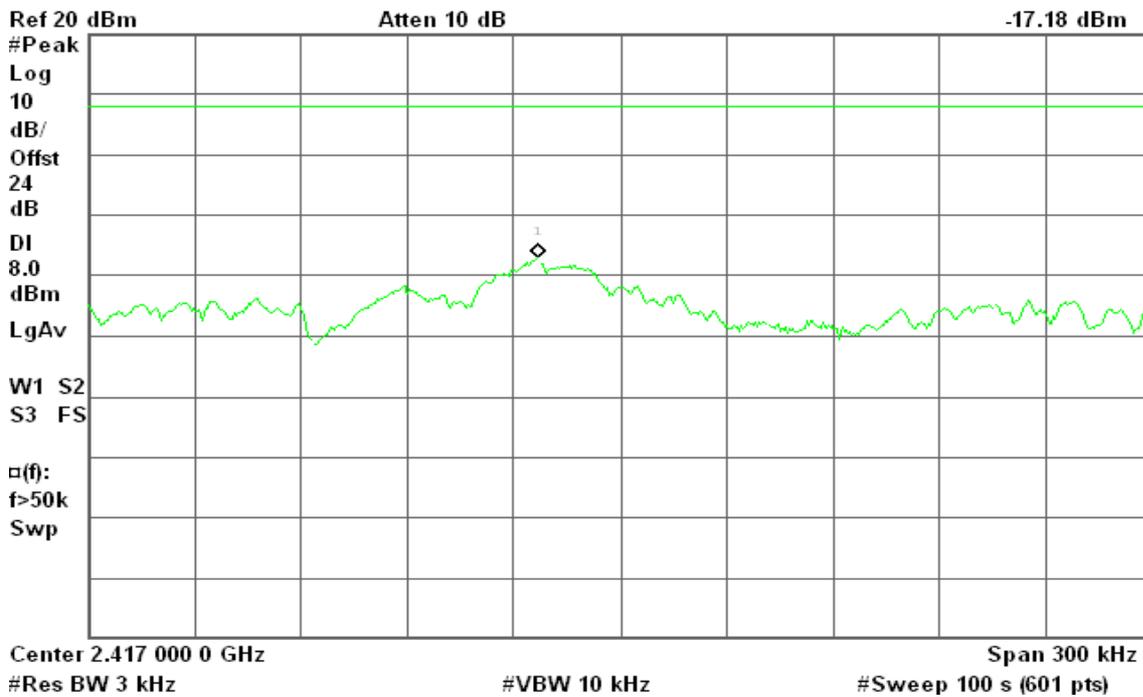
draft 802.11n Wide-40 MHz Channel mode with combiner

PPSD (CH Low)

Agilent 14:17:16 Nov 21, 2009

R T

Mkr1 2.416 976 9 GHz
-17.18 dBm



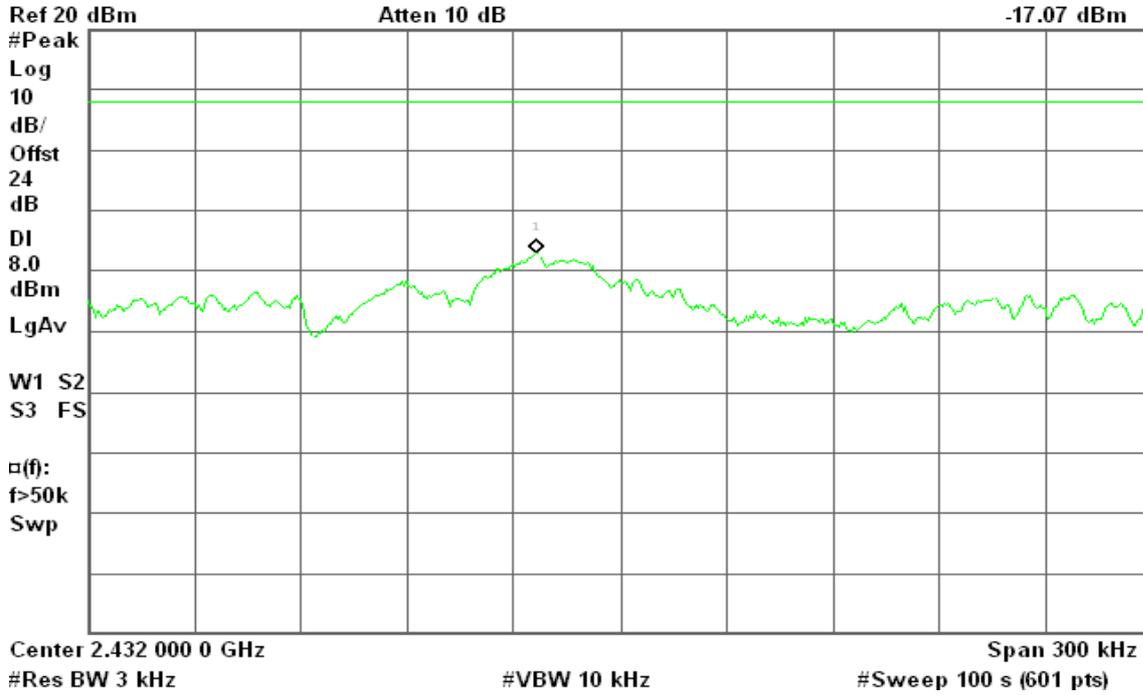


PPSD (CH Mid)

Agilent 14:10:22 Nov 21, 2009

R T

Mkr1 2.431 976 4 GHz
-17.07 dBm

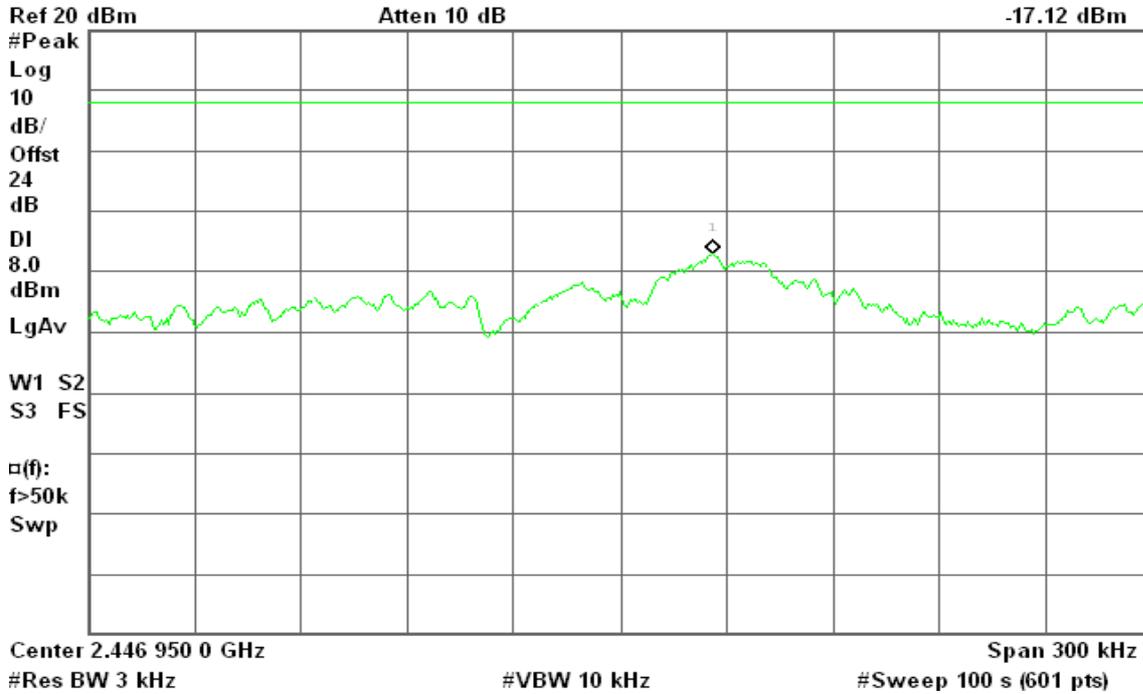


PPSD (CH High)

Agilent 14:21:36 Nov 21, 2009

R T

Mkr1 2.446 976 1 GHz
-17.12 dBm



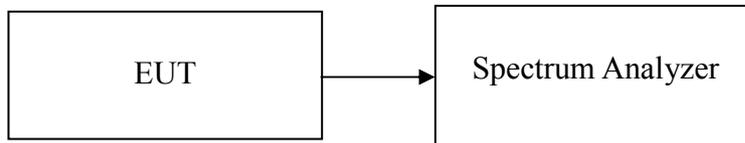
8.7 SPURIOUS EMISSIONS

8.7.1 Conducted Measurement

LIMIT

According to §15.247(d) & RSS-210 §A8.5, 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



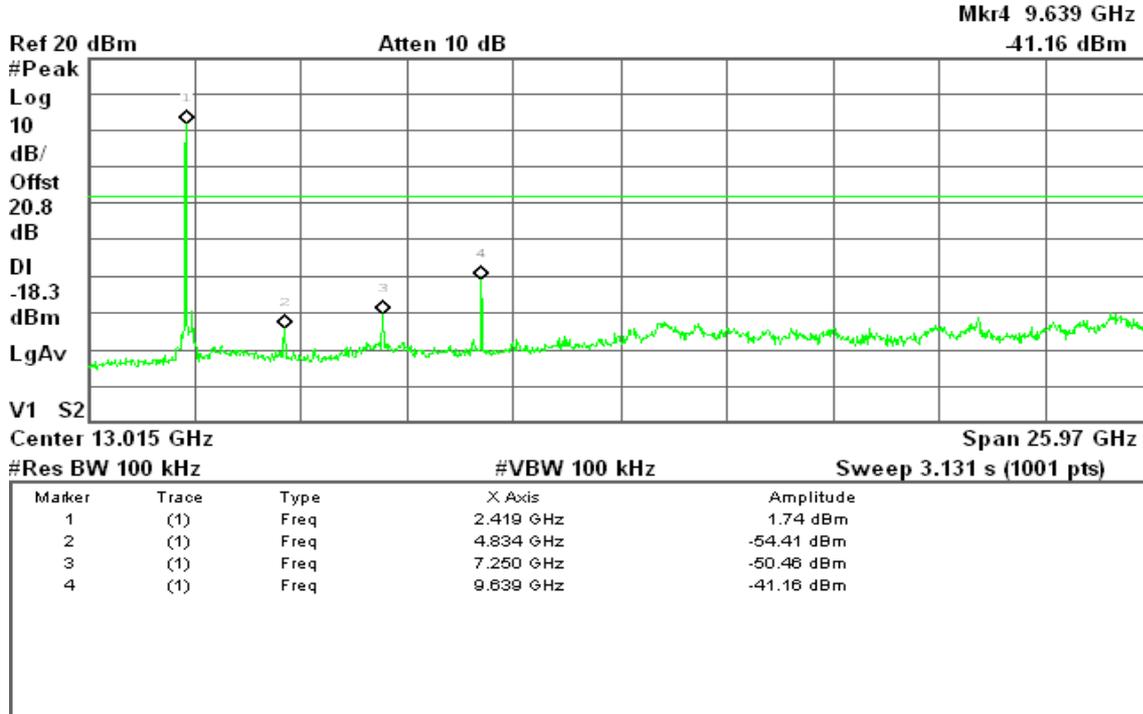
Test Plot

IEEE 802.11b mode

CH Low

Agilent 12:13:22 Nov 21, 2009

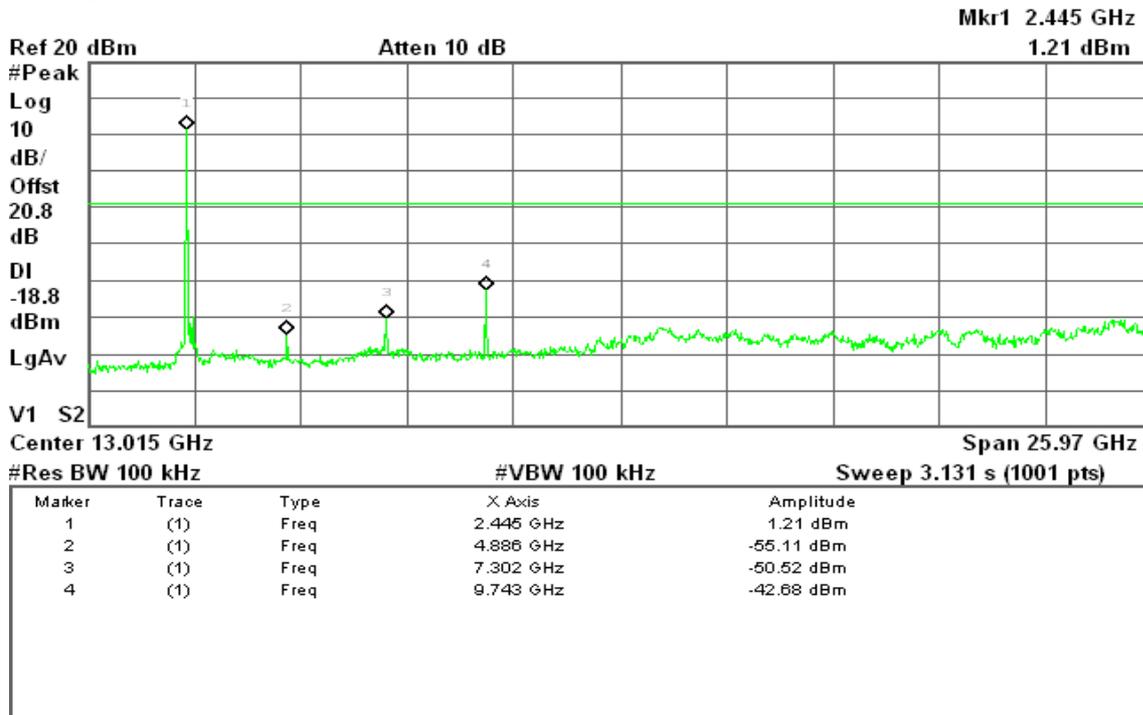
R T



CH Mid

Agilent 12:20:27 Nov 21, 2009

R T

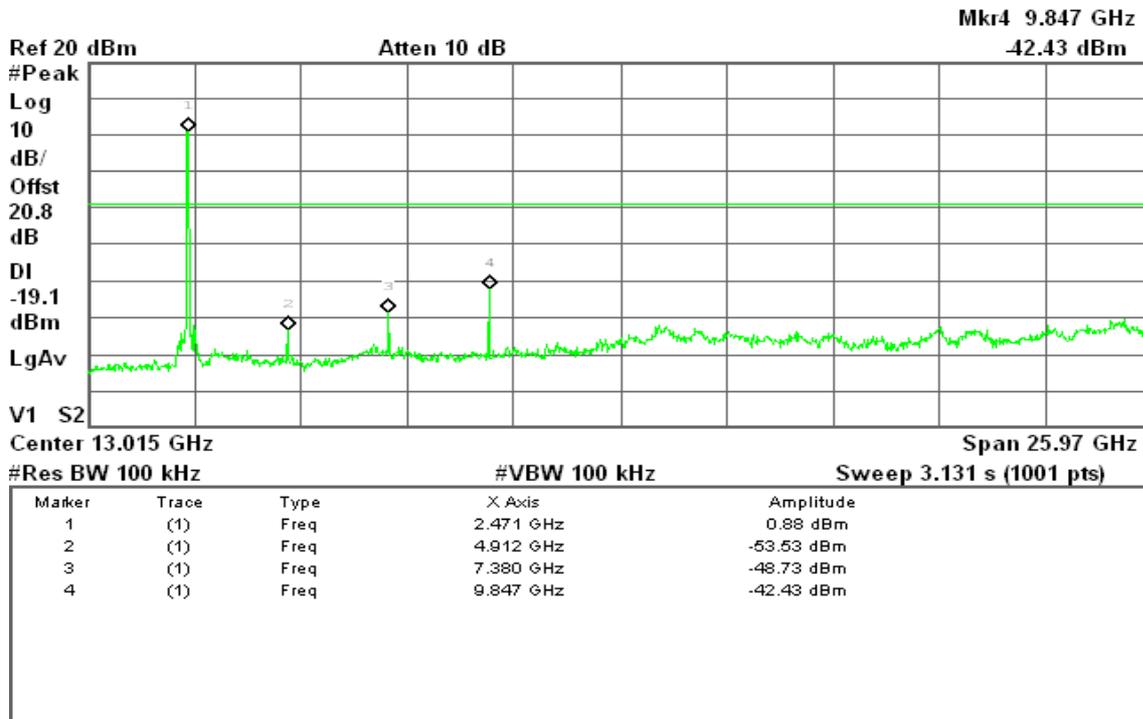




CH High

Agilent 12:27:54 Nov 21, 2009

R T

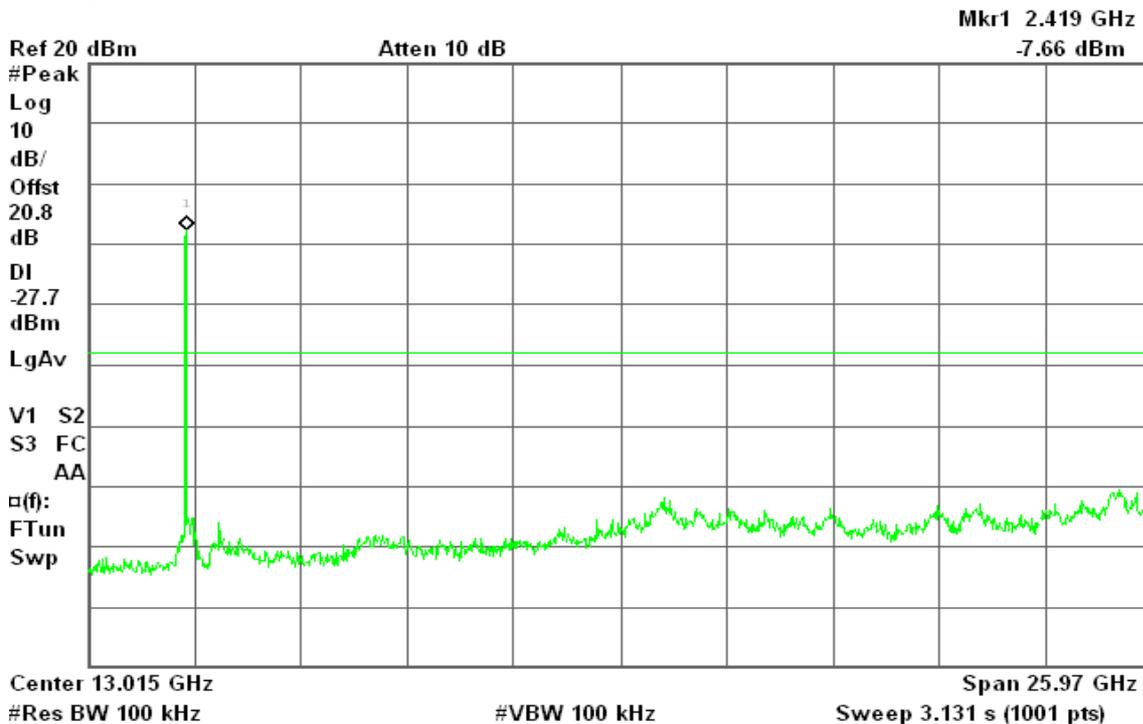


IEEE 802.11g mode

CH Low

Agilent 12:35:44 Nov 21, 2009

R T



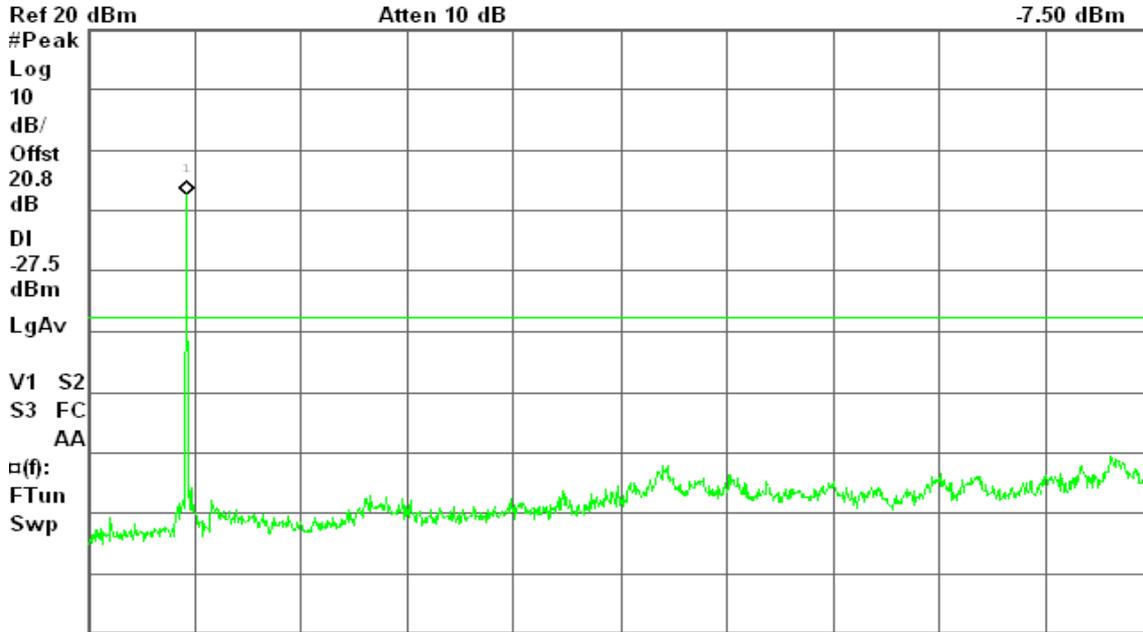


CH Mid

Agilent 12:41:16 Nov 21, 2009

R T

Mkr1 2.445 GHz
-7.50 dBm



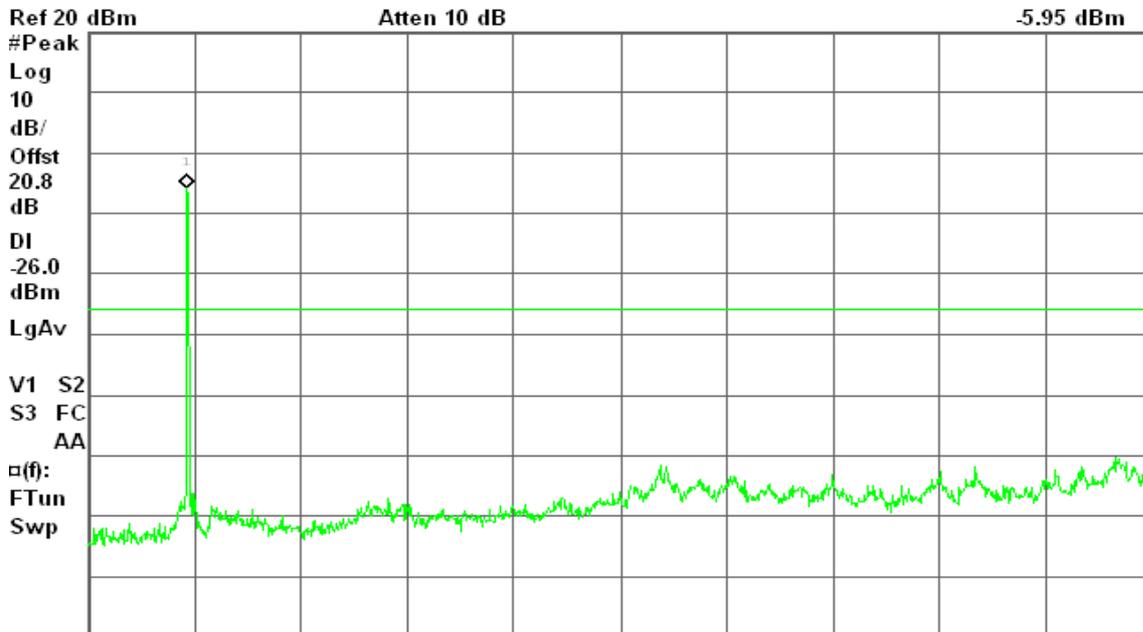
Center 13.015 GHz Span 25.97 GHz
#Res BW 100 kHz #VBW 100 kHz Sweep 3.131 s (1001 pts)

CH High

Agilent 12:48:08 Nov 21, 2009

R T

Mkr1 2.445 GHz
-5.95 dBm



Center 13.015 GHz Span 25.97 GHz
#Res BW 100 kHz #VBW 100 kHz Sweep 3.131 s (1001 pts)

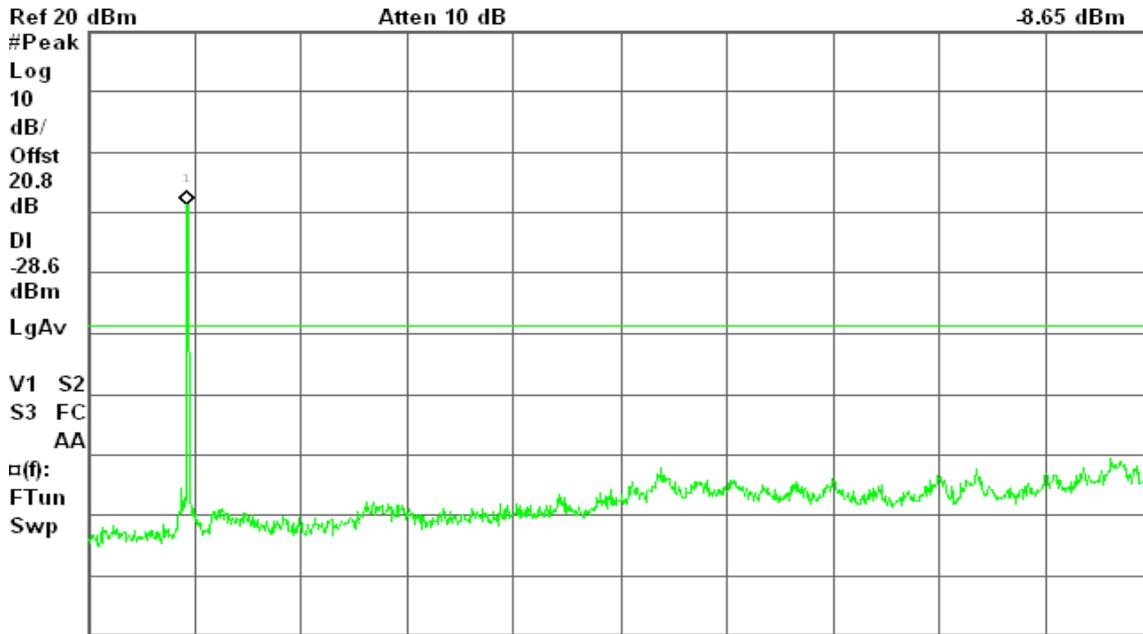


CH High

Agilent 13:04:45 Nov 21, 2009

R T

Mkr1 2.445 GHz
-8.65 dBm



Center 13.015 GHz Span 25.97 GHz
#Res BW 100 kHz #VBW 100 kHz Sweep 3.131 s (1001 pts)

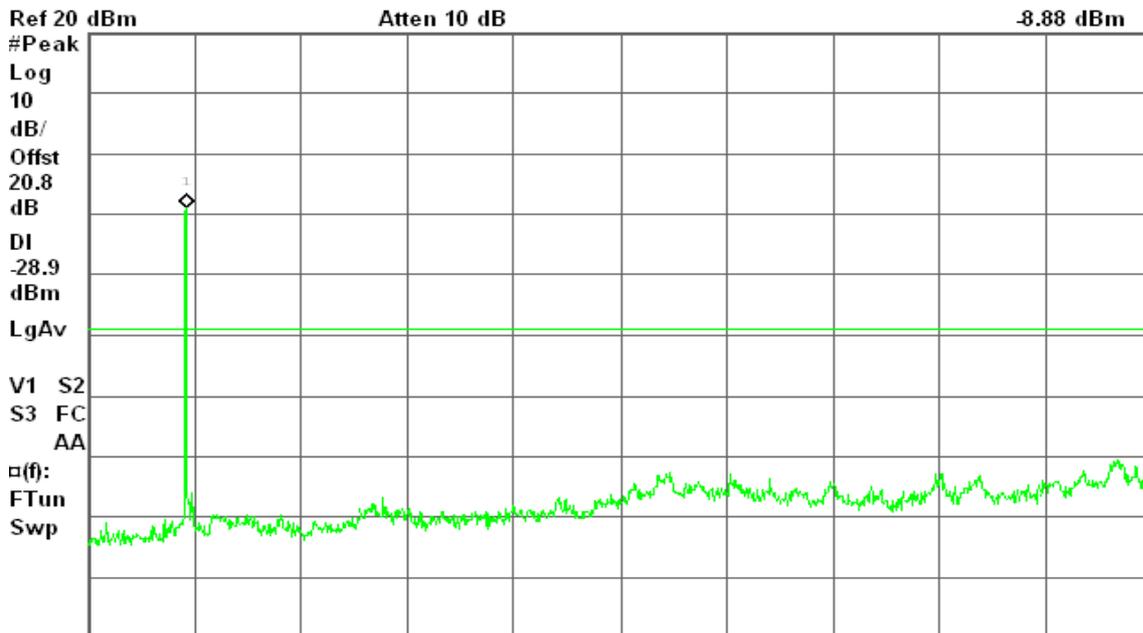
draft 802.11n Standard-20 MHz Channel mode / Chain 1

CH Low

Agilent 13:24:02 Nov 21, 2009

R T

Mkr1 2.419 GHz
-8.88 dBm



Center 13.015 GHz Span 25.97 GHz
#Res BW 100 kHz #VBW 100 kHz Sweep 3.131 s (1001 pts)

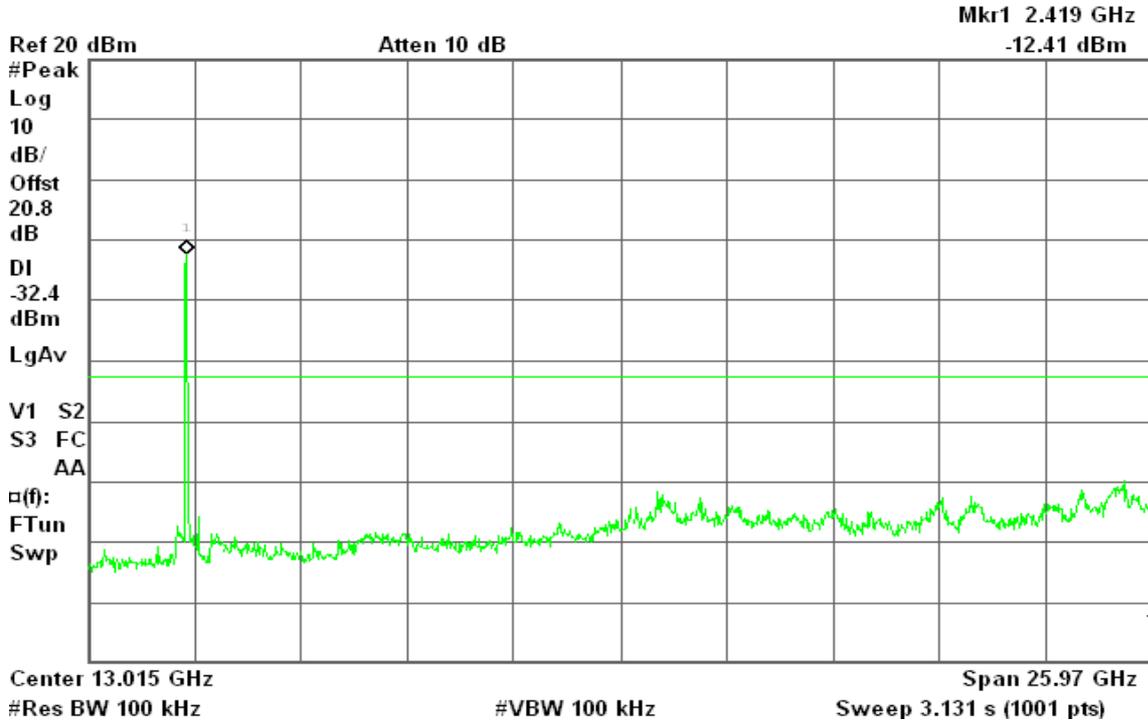


draft 802.11n Wide-40 MHz Channel mode/ Chain 0

CH Low

Agilent 13:56:05 Nov 21, 2009

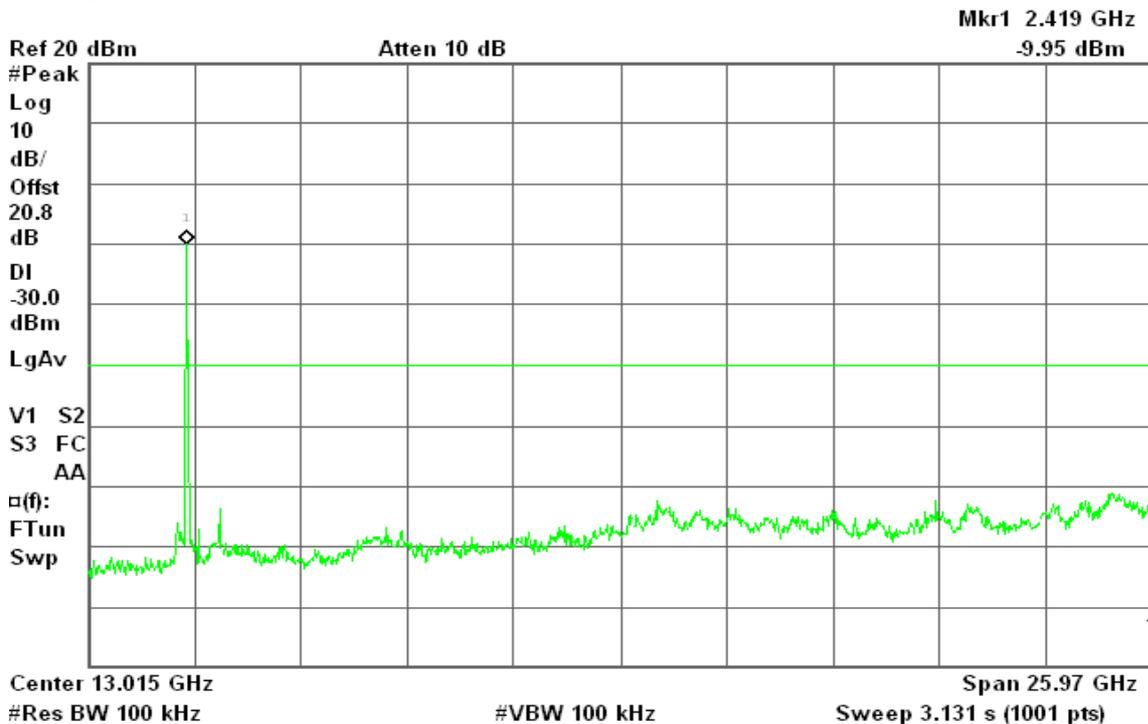
R T



CH Mid

Agilent 14:01:21 Nov 21, 2009

R T



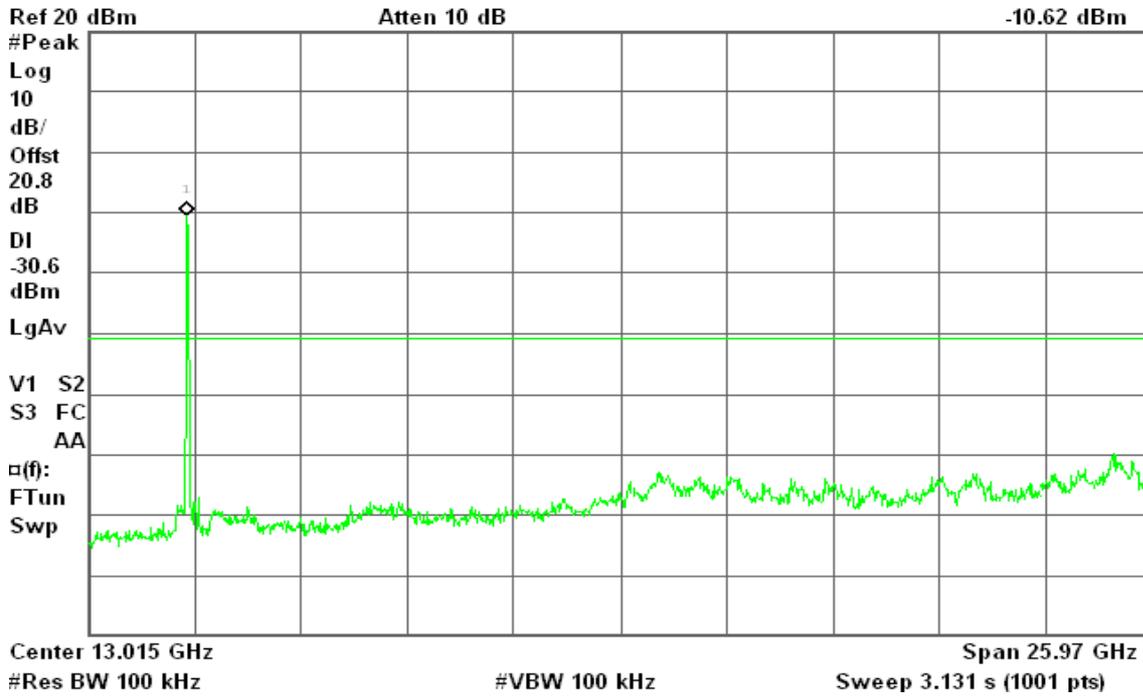


CH High

Agilent 13:49:52 Nov 21, 2009

R T

Mkr1 2.445 GHz
-10.62 dBm



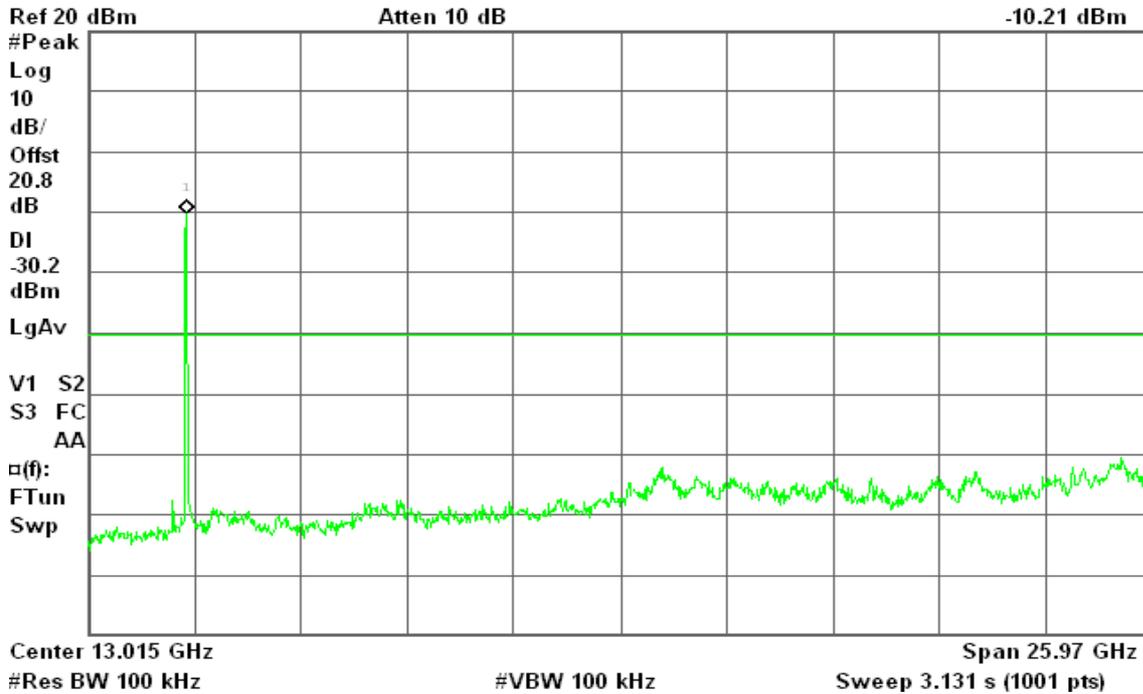
draft 802.11n Wide-40 MHz Channel mode/ Chain 1

CH Low

Agilent 13:31:58 Nov 21, 2009

R T

Mkr1 2.419 GHz
-10.21 dBm



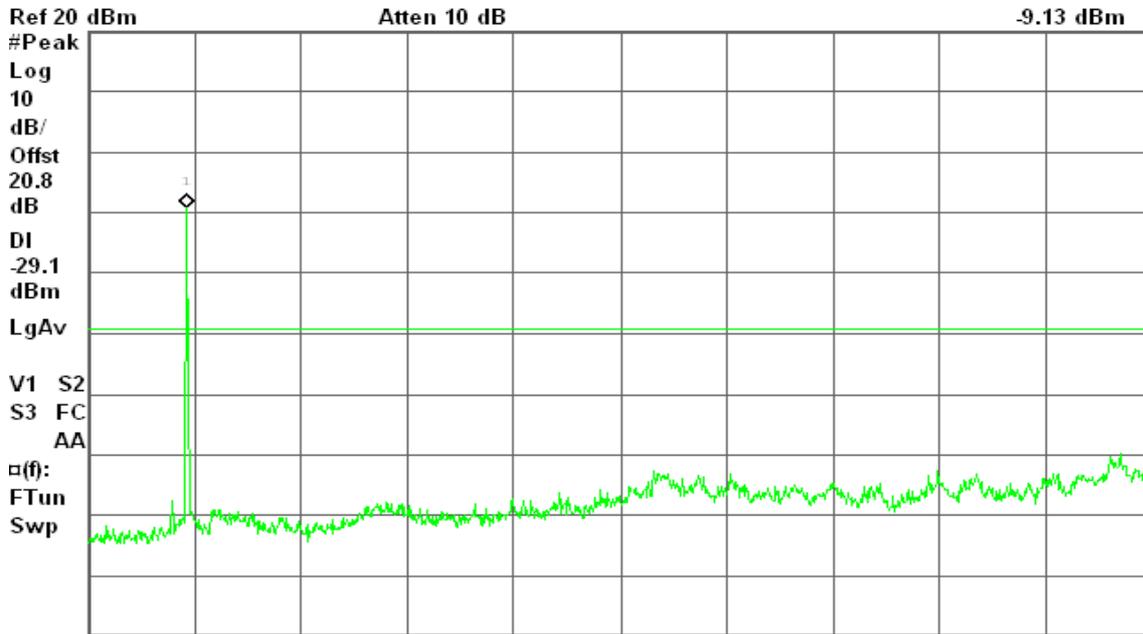


CH Mid

Agilent 13:37:26 Nov 21, 2009

R T

Mkr1 2.445 GHz
-9.13 dBm



Center 13.015 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

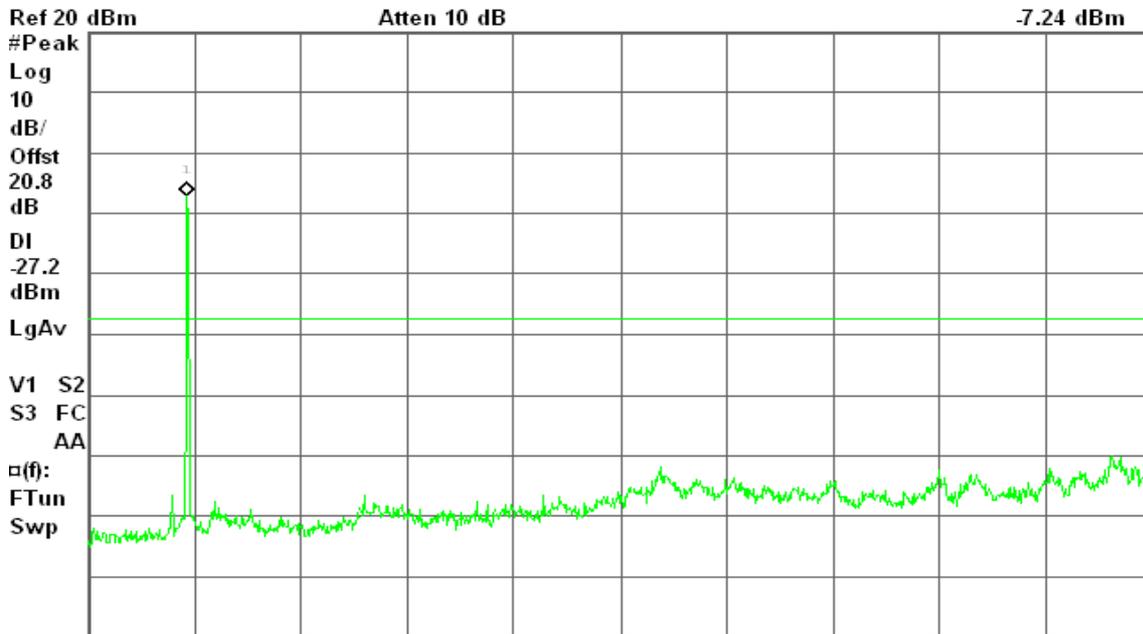
Sweep 3.131 s (1001 pts)

CH High

Agilent 13:43:04 Nov 21, 2009

R T

Mkr1 2.445 GHz
-7.24 dBm



Center 13.015 GHz

Span 25.97 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.131 s (1001 pts)



draft 802.11n Standard-20 MHz Channel mode with combiner

CH Low

Agilent 14:29:42 Nov 21, 2009

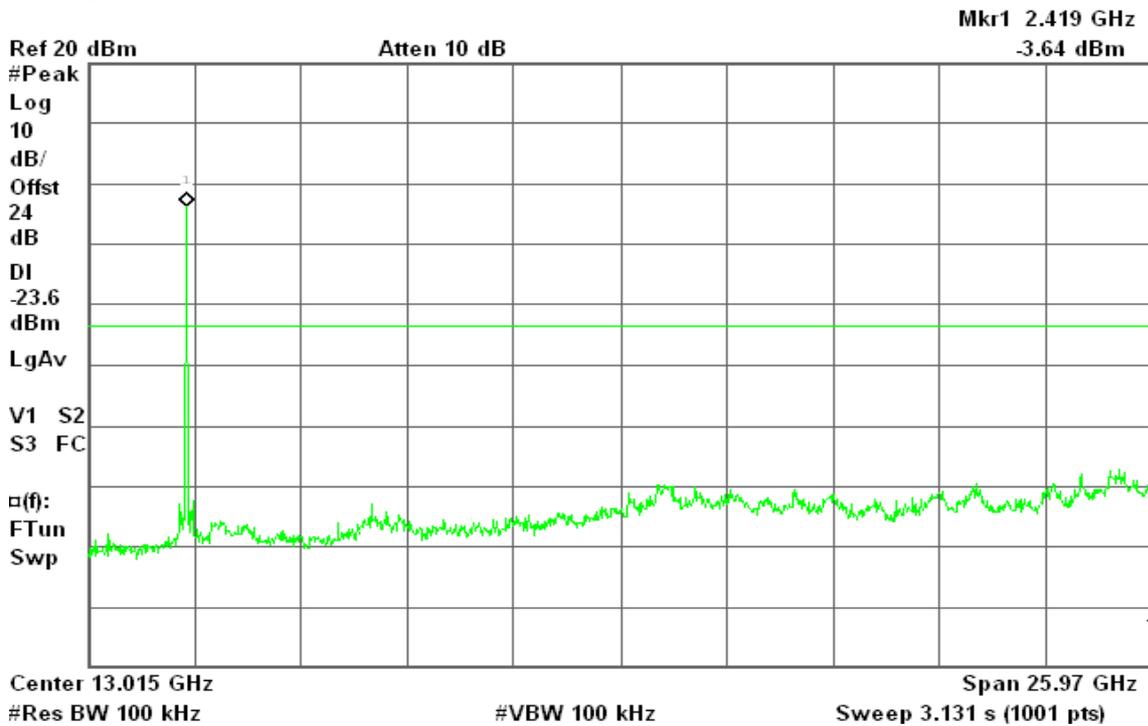
R T



CH Mid

Agilent 14:36:39 Nov 21, 2009

R T





8.8 RADIATED EMISSIONS

LIMIT

1. According to §15.205, 209(a) & RSS-210 Clause 2.6 (Transmitter) and IC RSS-GEN Clause 6 (Receiver), 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

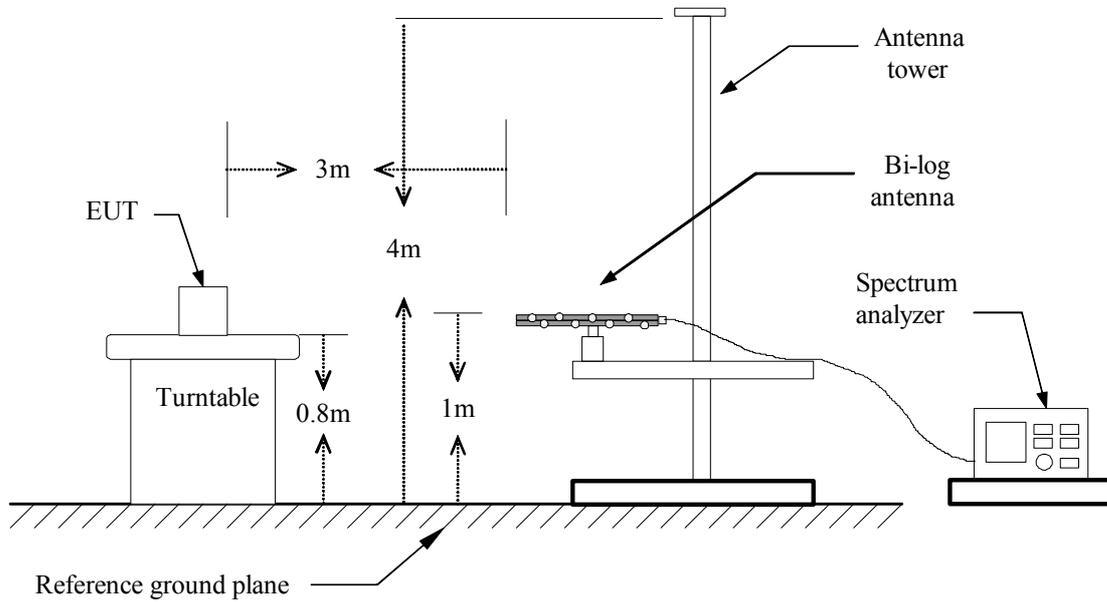
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

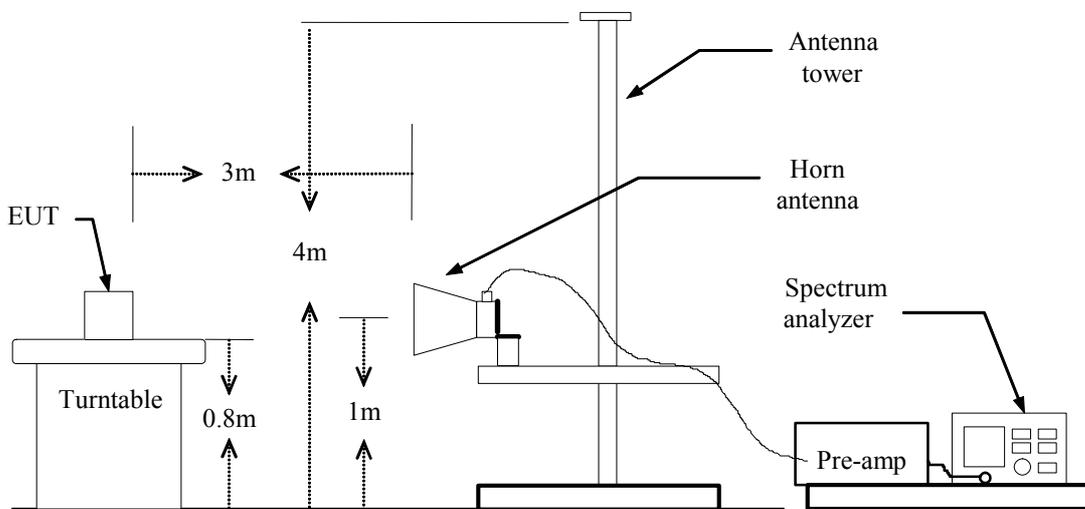
Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

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:** November 16, 2009**Temperature:** 23°C**Tested by:** Mimic Yang**Humidity:** 53% 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
47.78	V	52.89	-13.74	39.15	40.00	-0.85	QP
55.87	V	46.08	-15.44	30.64	40.00	-9.36	QP
400.22	V	41.35	-6.39	34.96	46.00	-11.04	Peak
600.68	V	39.11	-2.92	36.20	46.00	-9.80	Peak
733.25	V	36.39	-0.76	35.62	46.00	-10.38	Peak
865.82	V	33.34	0.72	34.06	46.00	-11.94	Peak
241.78	H	45.74	-10.64	35.09	46.00	-10.91	Peak
400.22	H	43.05	-6.39	36.66	46.00	-9.34	Peak
500.45	H	44.30	-4.20	40.10	46.00	-5.90	Peak
532.78	H	44.35	-3.69	40.67	46.00	-5.33	Peak
600.68	H	42.27	-2.92	39.36	46.00	-6.64	Peak
865.82	H	36.94	0.72	37.66	46.00	-8.34	Peak

Remark:

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz 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) = Result (dBuV/m) – Limit (dBuV/m).

**Above 1 GHz****Operation Mode:** TX / IEEE 802.11b / CH Low**Test Date:** November 16, 2009**Temperature:** 25°C**Tested by:** Mimic Yang**Humidity:** 53 % 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
1593.33	V	58.31	---	-6.14	52.17	---	74.00	54.00	-1.83	Peak
7241.67	V	51.82	46.59	4.07	55.89	50.66	74.00	54.00	-3.34	AVG
9650.00	V	46.67	42.25	10.72	57.39	52.97	74.00	54.00	-1.03	AVG
N/A										
1863.33	H	58.82	---	-3.56	55.26	---	74.00	54.00	1.26	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 802.11b / CH Mid**Test Date:** November 16, 2009**Temperature:** 25°C**Tested by:** Mimic Yang**Humidity:** 53 % 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
2620.00	V	57.09	49.63	-1.18	55.91	48.45	74.00	54.00	-5.55	AVG
4875.00	V	49.44	---	1.02	50.46	---	74.00	54.00	-3.54	Peak
7308.33	V	52.13	48.45	4.03	56.16	52.48	74.00	54.00	-1.52	AVG
N/A										
1356.67	H	55.40	---	-7.30	48.11	---	74.00	54.00	-5.89	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 802.11b / CH High**Test Date:** November 16, 2009**Temperature:** 23°C**Tested by:** Mimic Yang**Humidity:** 53 % 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
2623.33	V	56.95	49.63	-1.18	55.77	48.45	74.00	54.00	-5.55	AVG
4925.00	V	53.83	48.87	1.01	54.84	49.88	74.00	54.00	-4.12	AVG
7383.33	V	52.44	48.70	3.98	56.42	52.68	74.00	54.00	-1.32	AVG
N/A										
1260.00	H	55.36	---	-7.48	47.88	---	74.00	54.00	-6.12	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:** November 16, 2009**Temperature:** 23°C**Tested by:** Mimic Yang**Humidity:** 53 % 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
1633.33	V	58.72	---	-5.76	52.97	---	74.00	54.00	-1.03	Peak
7241.67	V	51.51	39.57	4.07	55.57	43.64	74.00	54.00	-10.36	AVG
N/A										
1550.00	H	58.46	---	-6.55	51.90	---	74.00	54.00	-2.10	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 Mid**Test Date:** November 16, 2009**Temperature:** 23°C**Tested by:** Mimic Yang**Humidity:** 53 % 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
1666.67	V	58.86	---	-5.44	53.42	---	74.00	54.00	-0.58	Peak
7316.67	V	51.15	39.34	4.02	55.17	43.36	74.00	54.00	-10.64	AVG
N/A										
1313.33	H	59.93	---	-7.38	52.55	---	74.00	54.00	-1.45	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 High**Test Date:** November 16, 2009**Temperature:** 23°C**Tested by:** Mimic Yang**Humidity:** 53 % 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
1473.33	V	58.76	---	-7.08	51.68	---	74.00	54.00	-2.32	Peak
7375.00	V	52.14	40.09	3.99	56.12	44.08	74.00	54.00	-9.92	AVG
N/A										
1520.00	H	58.72	---	-6.84	51.88	---	74.00	54.00	-2.12	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 / CH Low

Test Date: November 16, 2009

Temperature: 25°C

Tested by: Mimic Yang

Humidity: 53 % 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
1740.00	V	58.88	---	-4.74	54.14	---	74.00	54.00	0.14	Peak
7241.67	V	50.91	36.12	4.07	54.98	40.19	74.00	54.00	-13.81	AVG
N/A										
1433.33	H	58.83	---	-7.15	51.67	---	74.00	54.00	-2.33	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 / CH Mid**Test Date:** November 16, 2009**Temperature:** 23°C**Tested by:** Mimic Yang**Humidity:** 53 % 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
1460.00	V	59.08	---	-7.10	51.98	---	74.00	54.00	-2.02	Peak
7316.67	V	50.95	37.35	4.02	54.97	41.37	74.00	54.00	-12.63	AVG
N/A										
1780.00	H	58.87	---	-4.35	54.52	---	74.00	54.00	0.52	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 / CH High**Test Date:** November 16, 2009**Temperature:** 25°C**Tested by:** Mimic Yang**Humidity:** 53 % 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
1466.67	V	58.73	---	-7.09	51.64	---	74.00	54.00	-2.36	Peak
N/A										
1623.33	H	58.85	---	-5.85	53.00	---	74.00	54.00	-1.00	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 Wide-40 MHz Channel mode
/ CH Low

Test Date: November 16, 2009

Temperature: 25°C

Tested by: Mimic Yang

Humidity: 53 % 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
1746.67	V	59.44	---	-4.67	54.77	---	74.00	54.00	0.77	Peak
N/A										
1776.67	H	58.37	---	-4.39	53.99	---	74.00	54.00	-0.01	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 Wide-40 MHz Channel mode / CH Mid**Test Date:** November 16, 2009**Temperature:** 25°C**Tested by:** Mimic Yang**Humidity:** 53 % 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
1853.33	V	58.38	---	-3.65	54.72	---	74.00	54.00	0.72	Peak
N/A										
1566.67	H	58.74	---	-6.39	52.35	---	74.00	54.00	-1.65	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 Wide-40 MHz Channel mode / CH High**Test Date:** November 16, 2009**Temperature:** 25°C**Tested by:** Mimic Yang**Humidity:** 53 % 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
1756.67	V	59.32	---	-4.58	54.74	---	74.00	54.00	0.74	Peak
N/A										
1583.33	H	59.19	---	-6.23	52.96	---	74.00	54.00	-1.04	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:** RX / IEEE 802.11g / CH Mid**Test Date:** November 17, 2009**Temperature:** 25°C**Tested by:** Mimic Yang**Humidity:** 50 % 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
1376.67	V	51.21	---	-7.26	43.95	---	74.00	54.00	-10.05	Peak
N/A										
1066.67	H	51.96	---	-7.84	44.13	---	74.00	54.00	-9.87	Peak
1373.33	H	51.91	---	-7.27	44.64	---	74.00	54.00	-9.36	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).



8.9 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a) & RSS-Gen §7.2.2, 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 24, 2009
Temperature: 25°C **Tested by:** Jason Chia
Humidity: 59% RH

Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB/m)	QP Result (dBuV/m)	AV Result (dBuV/m)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.152	58.30	36.07	0.07	58.37	36.14	65.89	55.91	-7.52	-19.77	L1
0.197	56.80	35.13	0.06	56.86	35.19	63.74	53.76	-6.88	-18.56	L1
0.246	57.80	33.73	0.06	57.87	33.79	61.89	51.91	-4.03	-18.12	L1
0.346	53.10	31.11	0.06	53.16	31.17	59.06	49.05	-5.90	-17.88	L1
0.491	47.20	28.82	0.07	47.27	28.89	56.15	46.14	-8.88	-17.25	L1
0.589	44.00	23.63	0.08	44.08	23.71	56.00	46.00	-11.92	-22.29	L1
0.151	54.30	35.07	0.08	54.38	35.15	65.94	55.96	-11.57	-20.81	L2
0.206	53.40	29.88	0.07	53.47	29.95	63.37	53.36	-9.90	-23.41	L2
0.264	47.60	20.81	0.07	47.67	20.88	61.30	51.29	-13.63	-30.41	L2
0.300	48.20	27.02	0.07	48.27	27.09	60.24	50.24	-11.97	-23.15	L2
0.461	43.20	23.93	0.08	43.28	24.01	56.67	46.67	-13.40	-22.66	L2
0.507	41.30	23.63	0.08	41.38	23.71	56.00	46.00	-14.62	-22.29	L2

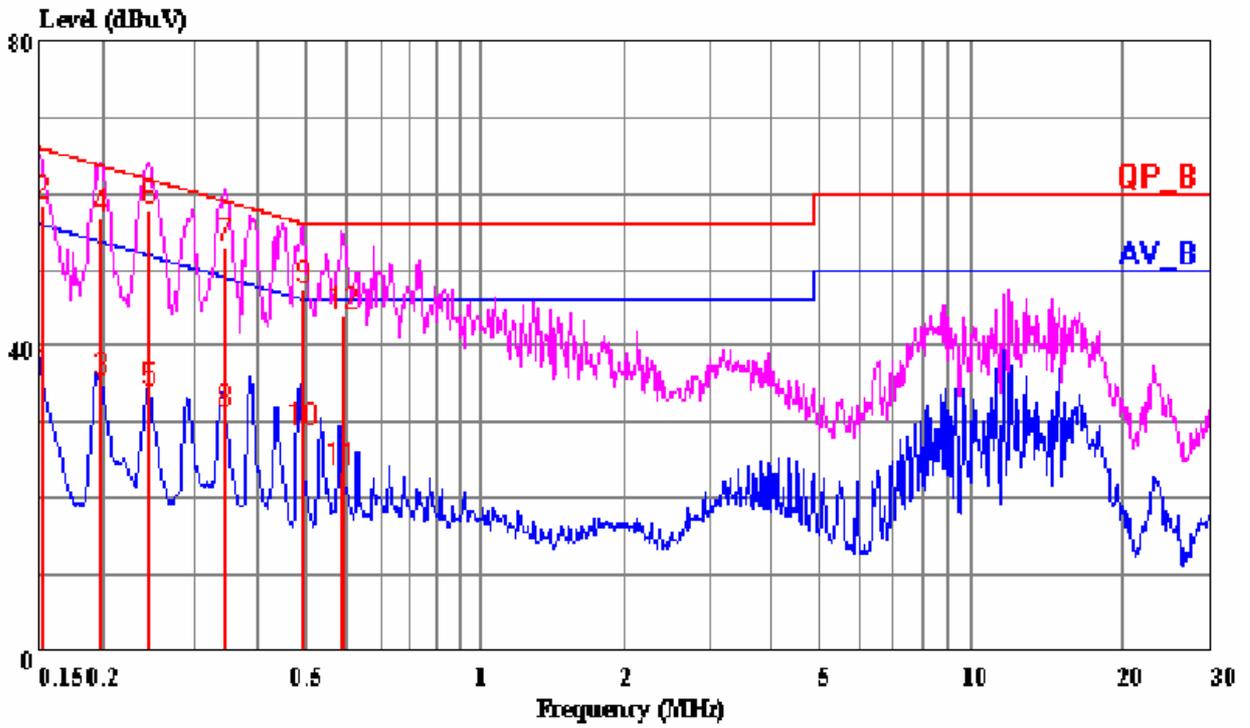
Remark:

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 10 kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9 kHz;
4. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)



Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)

