



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Wireless PCI Express Adapter

**Model:
WPE71RL**

Trade Name: PRO-NETS / Speed Com+ / Jet Com

Issued to

PRO-NETS TECHNOLOGY CORPORATION
7F, No.95, Li-De St., Chung Ho City 235, Taipei, 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: PRO-NETS TECHNOLOGY CORPORATION
7F, No.95, Li-De St., Chung Ho City 235, Taipei, Taiwan R.O.C.

Equipment Under Test: Wireless PCI Express Adapter

Trade Name: PRO-NETS / Speed Com+ / Jet Com

Model: WPE71RL

Date of Test: February 9 ~ March 2, 2010

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 15 Subpart C	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.

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	Wireless PCI Express Adapter
Trade Name	PRO-NETS / Speed Com+ / Jet Com
Model Number	WPE71RL
Model Discrepancy	N/A
Power Rating	Power from host device.
Frequency Range	2412 ~ 2462 MHz
Transmit Power	IEEE 802.11b mode: 12.70 dBm IEEE 802.11g mode: 13.58 dBm draft 802.11n Standard-20 MHz Channel mode: 13.74 dBm draft 802.11n Wide-40 MHz Channel mode: 13.57 dBm
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, 14.44, 19.5, 21.67, 26, 28.89, 39, 43.33 52, 57.78, 58.5, 65.0, 72.22Mbps) 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, 150Mbps)
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	Dipole Antenna / Gain: 2dBi

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: RXZ-WPE71RL** 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.

3.1 EUT CONFIGURATION

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

3.2 EUT EXERCISE

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

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

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 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: WPE71RL) had been tested under operating condition.

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

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link 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	02/22/2011
Spectrum Analyzer	R&S	FSEK30	100264	04/14/2010

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	11/28/2010
Switch Controller	TRC	Switch Controller	SC94050010	05/02/2010
4 Port Switch	TRC	4 Port Switch	SC94050020	05/02/2010
Loop Antenna	EMCO	6502	8905/2356	05/28/2010
Horn-Antenna	TRC	HA-0502	06	06/03/2010
Horn-Antenna	TRC	HA-0801	04	06/18/2010
Horn-Antenna	TRC	HA-1201A	01	08/10/2010
Horn-Antenna	TRC	HA-1301A	01	08/10/2010
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/27/2010
Loop Antenna	EMCO	6502	8905/2356	05/28/2010
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				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESHS30	828144/003	12/06/2010
LISN	EMCO	3825/2	9106-1809	05/03/2010
LISN	SCHAFFNER	NNB 41	03/10013	12/03/2010
ISN	FCC	FCC-TLISN-T4-02	20395	06/21/2010
ISN	FCC	FCC-TLISN-T8-02	20168	04/06/2010
Test S/W	LABVIEW (V 6.1)			



4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/-1.1559
3M Semi Anechoic Chamber / 30M~200M	+/-3.9944
3M Semi Anechoic Chamber / 200M~1000M	+/-3.9285
3M Semi Anechoic Chamber / 1G~8G	+/-2.4734
3M Semi Anechoic Chamber / 8G~18G	+/-2.4878
3M Semi Anechoic Chamber / 18G~26G	+/-2.6215
3M Semi Anechoic Chamber / 26G~40G	+/-2.8603

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



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

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

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

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

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

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

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

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

5.2 EQUIPMENT




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

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

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

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

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

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

* 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

No	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	PC	HP	dx7510	SGH947PR1Y	FCC DoC	N/A	Unshielded, 1.8m
2.	LCD Monitor	Samsung	710V	GS17H9NXA05864E	FCC DoC	VGA Cable: Shielded, 1.8m with two cores	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
3.	USB Keyboard	DELL	Sk-8115	N/A	FCC DoC	Shielded, 1.8m	N/A
4.	USB Mouse	DELL	MO56UC	E1G01GBO	FCC DoC	Shielded, 1.8m	N/A
5.	Printer	EPSON	STYLUS C60	DR3K039633	FCC DoC	Shielded, 1.8m	Unshielded, 1.8m
6.	Modem	ACEEX	DM-1414	0405026757	IFAXDM1414	Shielded, 1.8m	Unshielded, 1.8m
7.	Super a/g 108Mbps Wireless Lan Router (Remote)	PLANEX	BLW-04SAG	40DDA0421	SJ9-BLW54SAG	N/A	Unshielded, 1.8m

Remark:

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



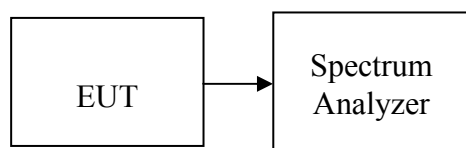
7. FCC PART 15.247 REQUIREMENTS

7.1 6DB BANDWIDTH

LIMIT

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

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 100 kHz, VBW = RBW, Span = 50 MHz, Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

TEST RESULTS

No non-compliance noted

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

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	10170	>500	PASS
Mid	2437	10250		PASS
High	2462	10170		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	16500	>500	PASS
Mid	2437	16500		PASS
High	2462	16500		PASS

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

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	17580	>500	PASS
Mid	2437	17670		PASS
High	2462	17500		PASS

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

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	36250	>500	PASS
Mid	2437	36250		PASS
High	2452	36330		PASS



IEEE 802.11b mode

6dB Bandwidth (CH Low)

Agilent 20:32:47 Mar 2, 2010

R T

 Δ Mkr1 10.17 MHz

-0.95 dB

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

21.5

dB

DI

-11.8

dBm

LgAv

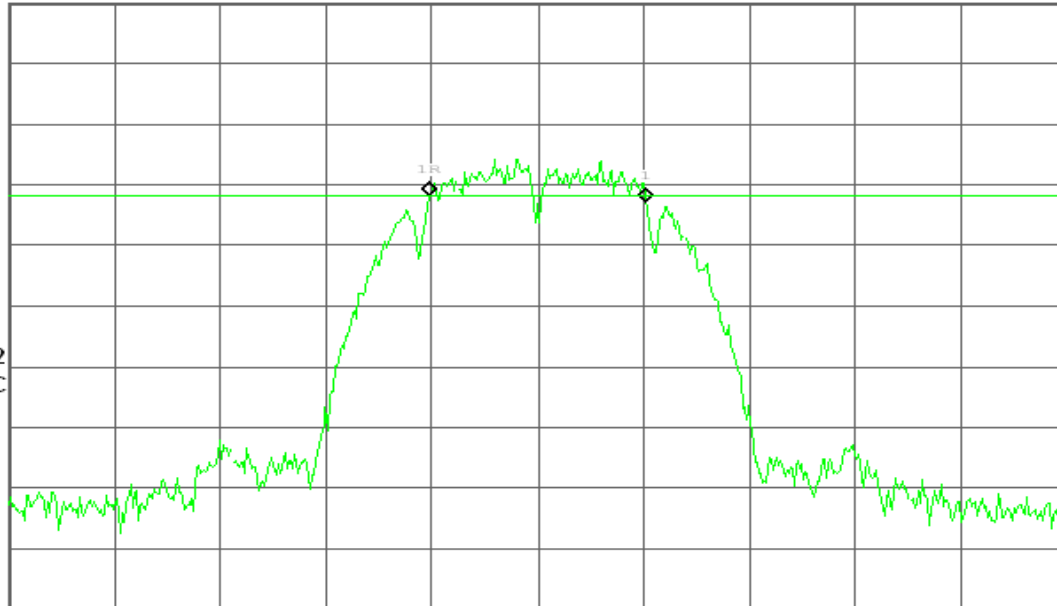
V1 S2

S3 FC

 $\alpha(f)$:

FTun

Swp



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 20:39:05 Mar 2, 2010

R T

 Δ Mkr1 10.25 MHz

0.14 dB

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

21.5

dB

DI

-8.0

dBm

LgAv

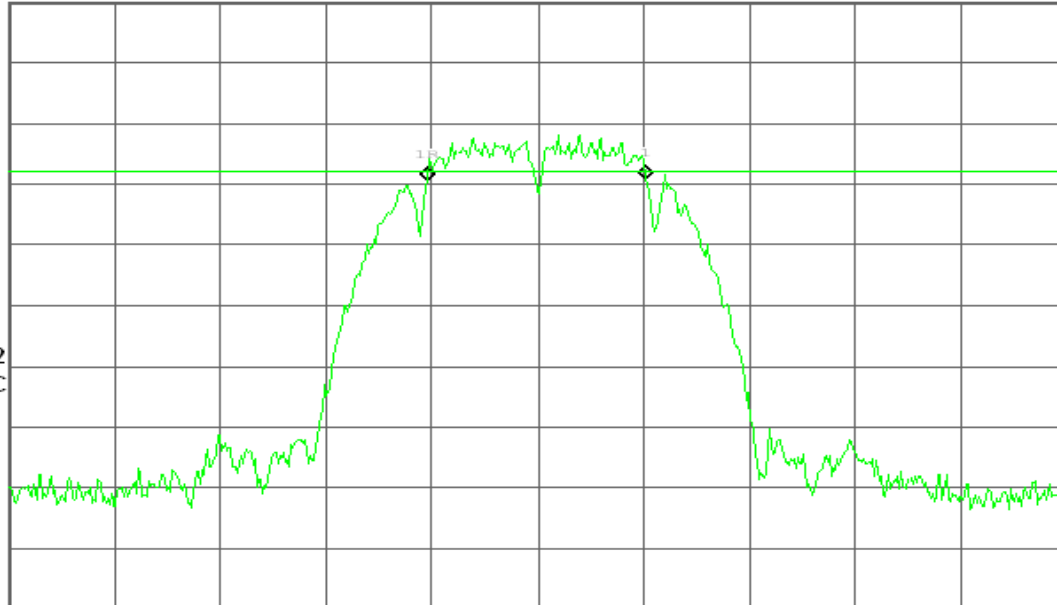
V1 S2

S3 FC

 $\alpha(f)$:

FTun

Swp



Center 2.437 00 GHz

Span 50 MHz

#Res BW 100 kHz

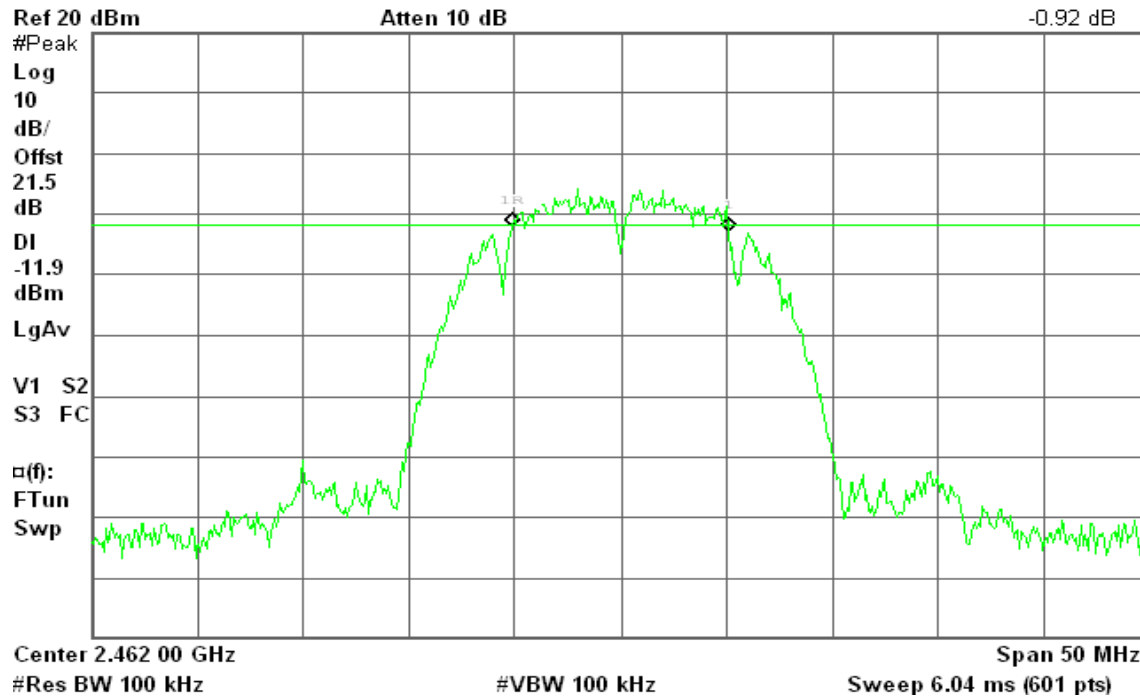
#VBW 100 kHz

Sweep 6.04 ms (601 pts)

**6dB Bandwidth (CH High)**

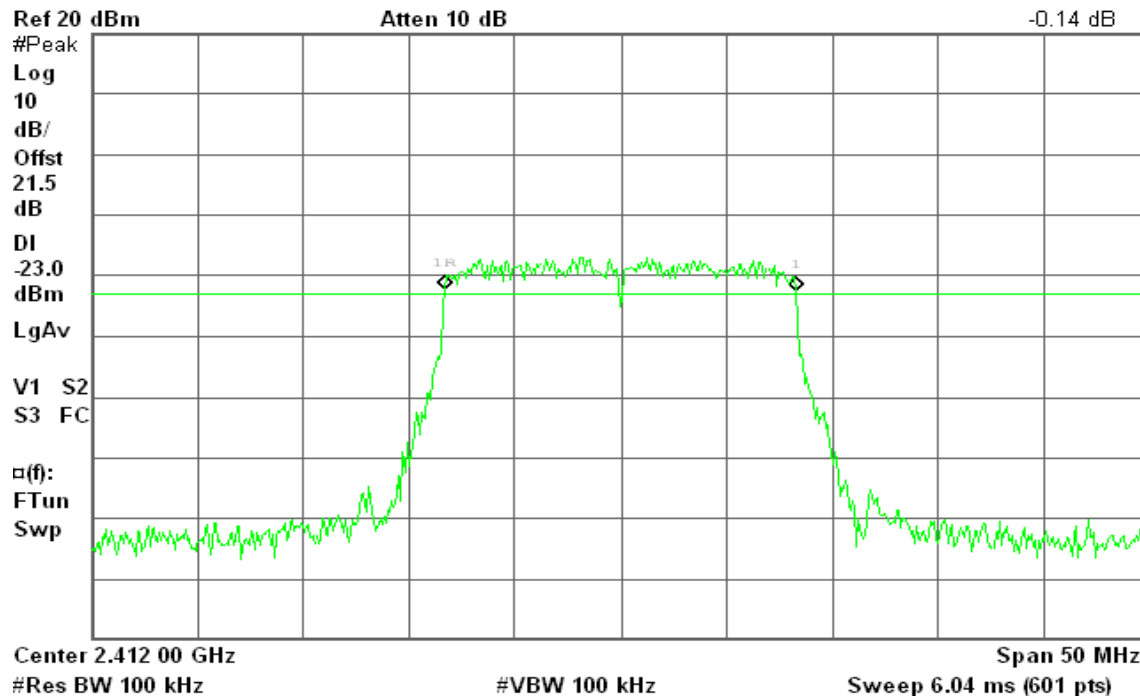
* Agilent 20:44:03 Mar 2, 2010

R T

 Δ Mkr1 10.17 MHz
-0.92 dB**IEEE 802.11g mode****6dB Bandwidth (CH Low)**

* Agilent 21:04:17 Mar 2, 2010

R T

 Δ Mkr1 16.50 MHz
-0.14 dB

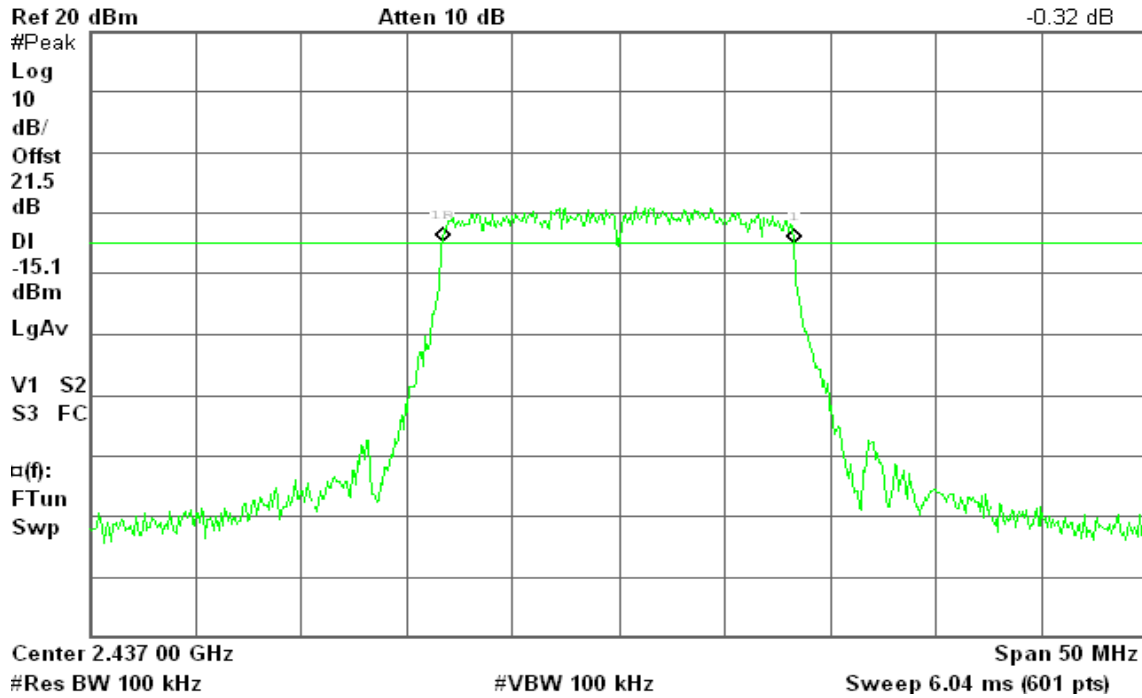
**6dB Bandwidth (CH Mid)**

* Agilent 20:59:58 Mar 2, 2010

R T

 Δ Mkr1 16.50 MHz

-0.32 dB

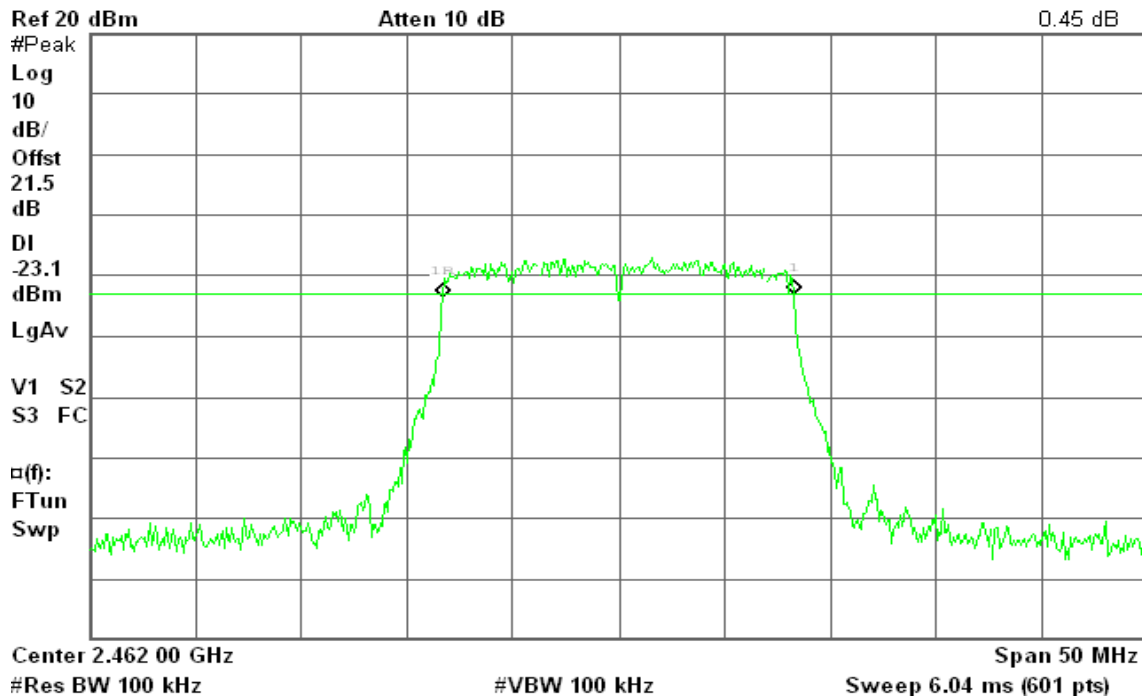
**6dB Bandwidth (CH High)**

* Agilent 20:55:04 Mar 2, 2010

R T

 Δ Mkr1 16.50 MHz

0.45 dB





draft 802.11n Standard-20 MHz Channel mode

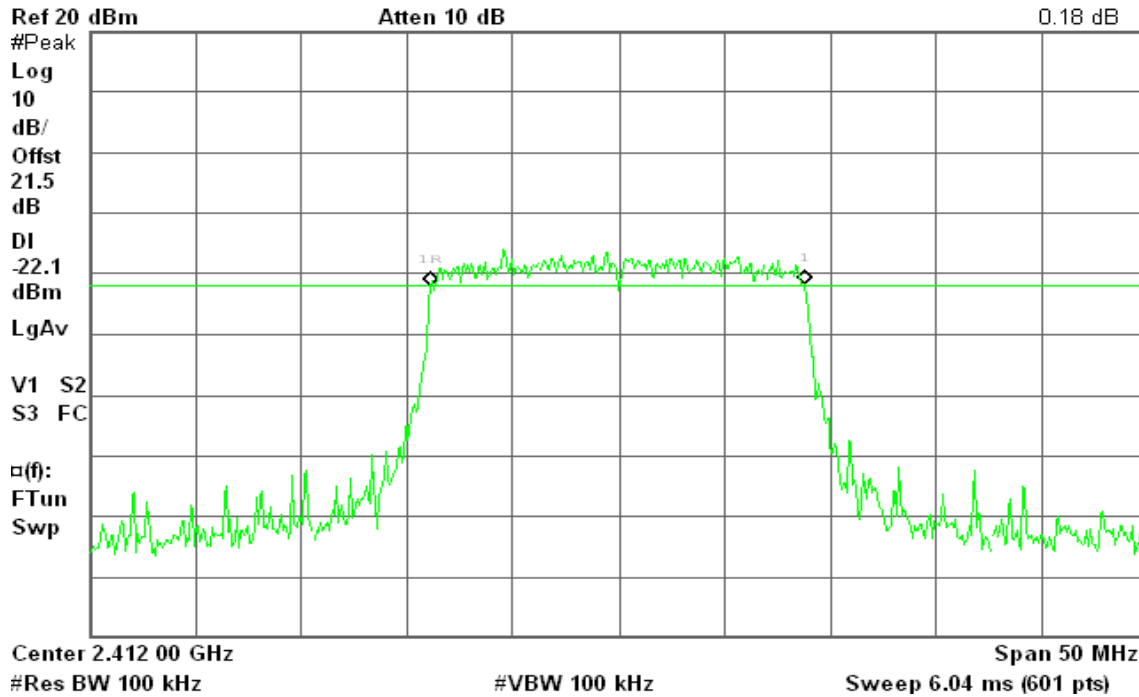
6dB Bandwidth (CH Low)

✱ Agilent 21:11:24 Mar 2, 2010

R T

Δ Mkr1 17.58 MHz

0.18 dB



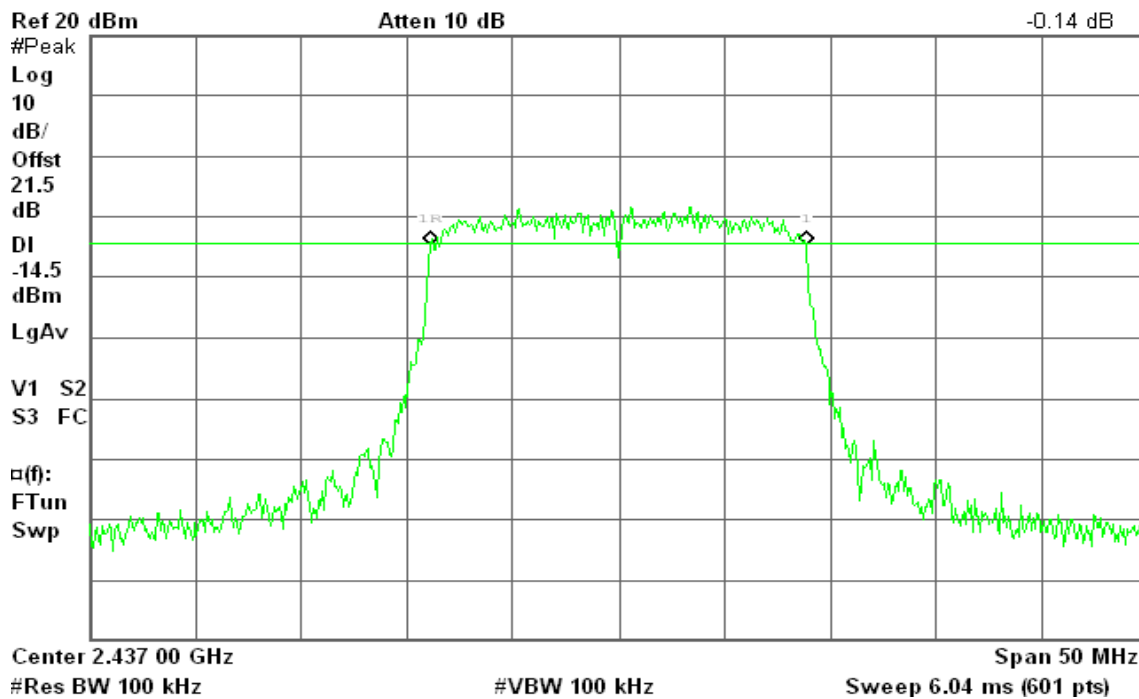
6dB Bandwidth (CH Mid)

✱ Agilent 21:15:49 Mar 2, 2010

R T

Δ Mkr1 17.67 MHz

-0.14 dB



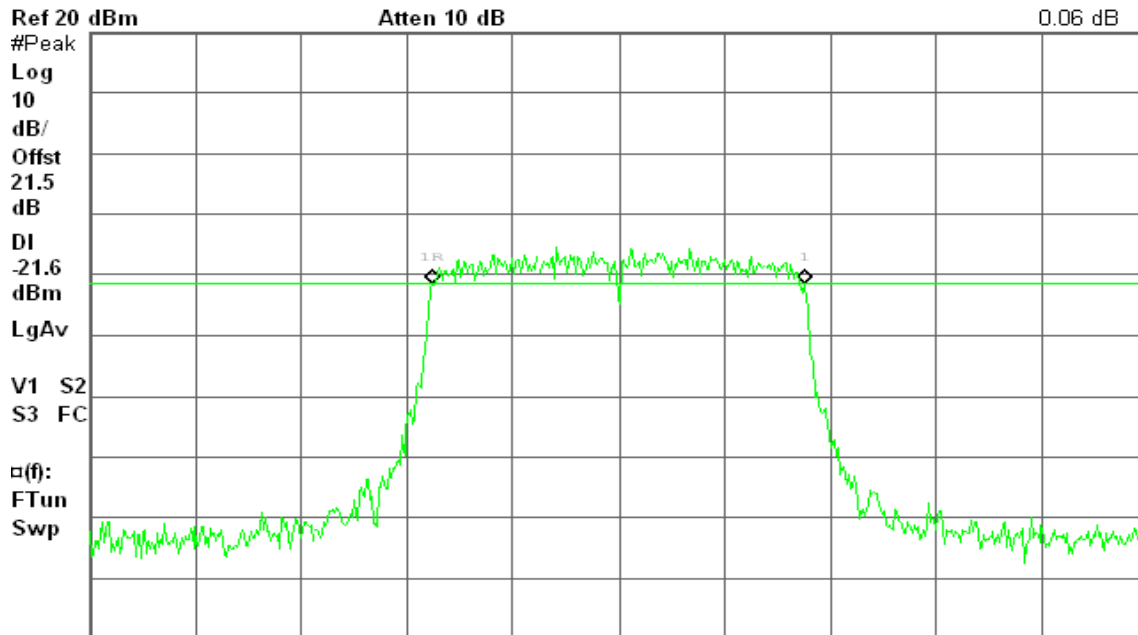
**6dB Bandwidth (CH High)**

* Agilent 21:20:19 Mar 2, 2010

R T

 Δ Mkr1 17.50 MHz

0.06 dB



Center 2.462 00 GHz

Span 50 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 6.04 ms (601 pts)

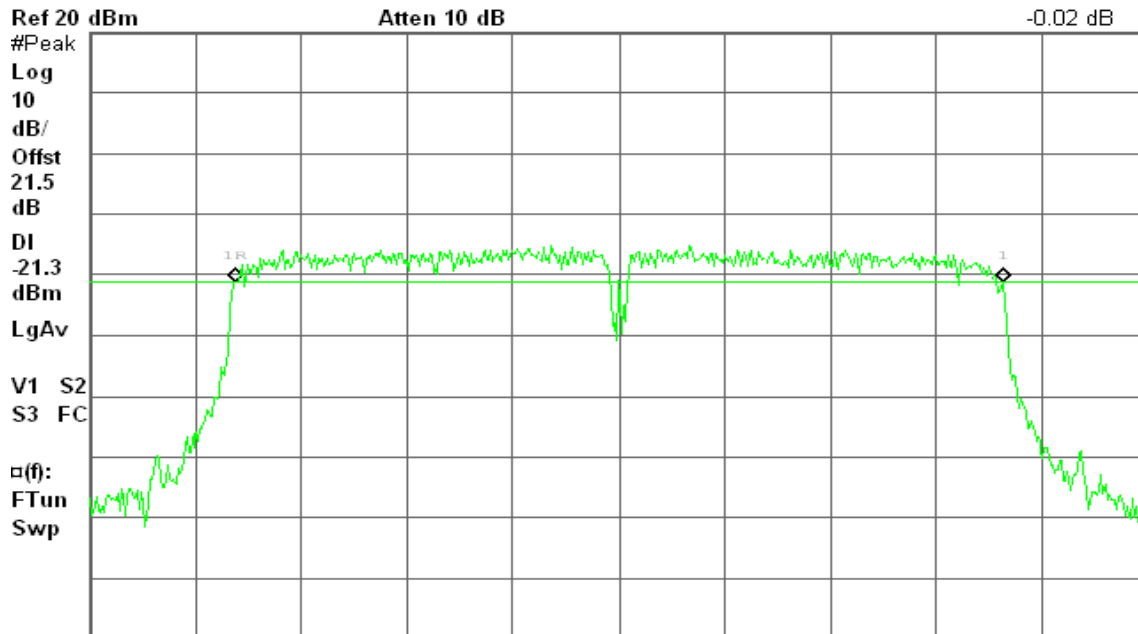
draft 802.11n Wide-40 MHz Channel mode**6dB Bandwidth (CH Low)**

* Agilent 21:25:52 Mar 2, 2010

R T

 Δ Mkr1 36.25 MHz

-0.02 dB



Center 2.422 00 GHz

Span 50 MHz

#Res BW 100 kHz

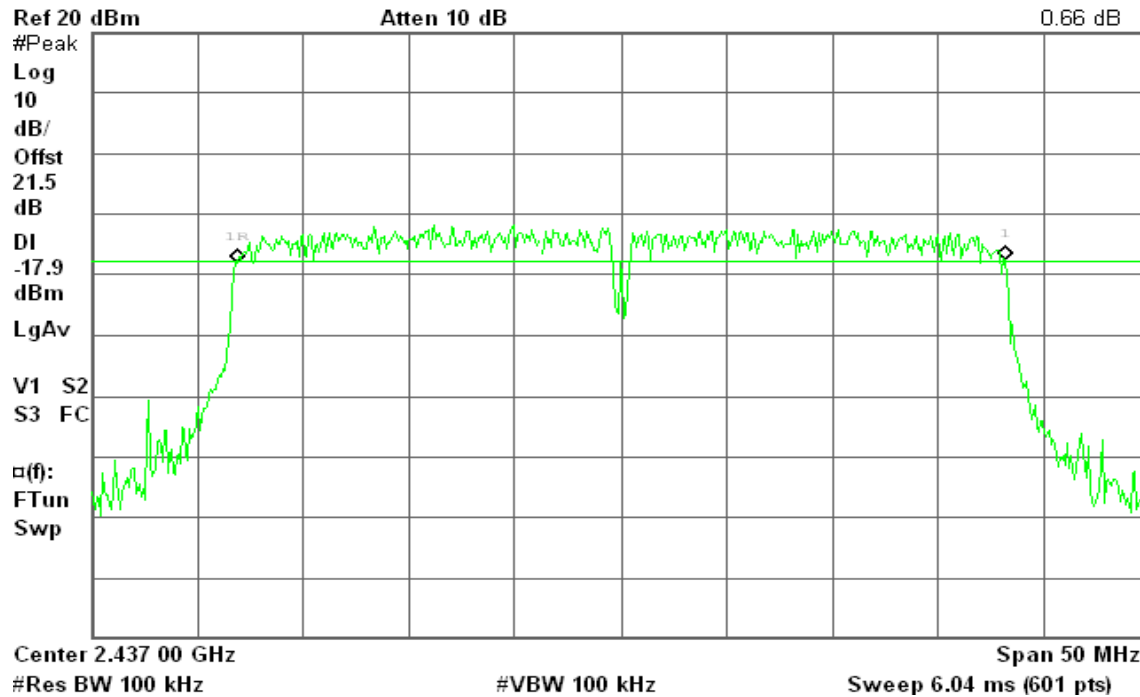
#VBW 100 kHz

Sweep 6.04 ms (601 pts)

**6dB Bandwidth (CH Mid)**

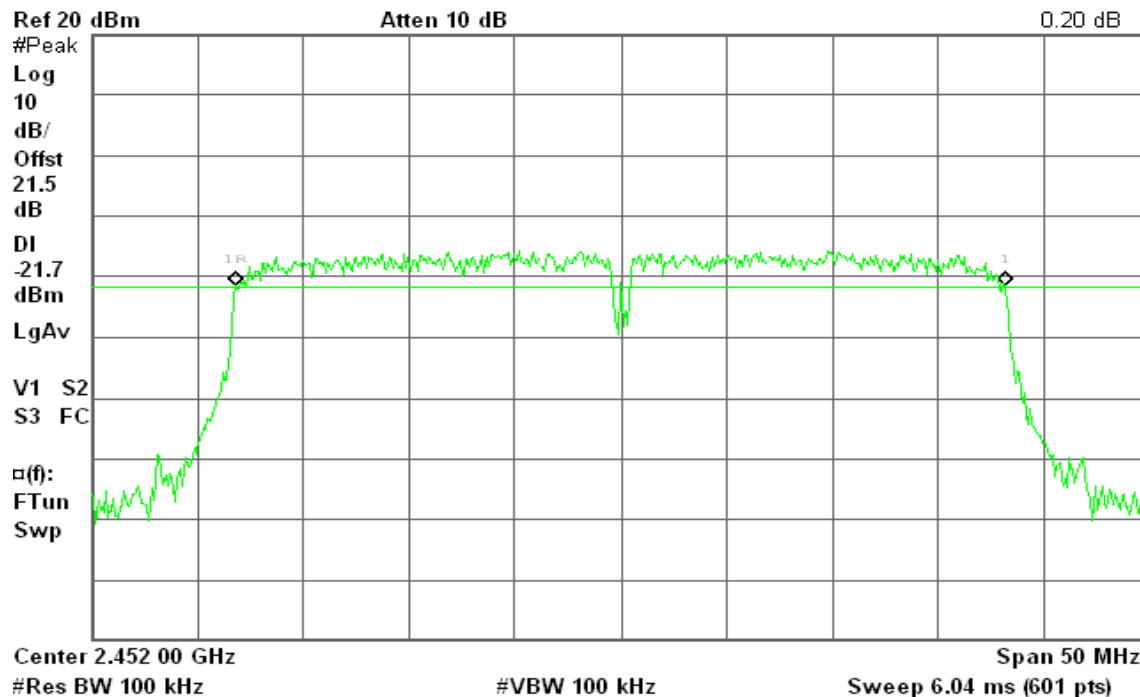
* Agilent 21:30:32 Mar 2, 2010

R T

 Δ Mkr1 36.25 MHz
0.66 dB**6dB Bandwidth (CH High)**

* Agilent 21:34:46 Mar 2, 2010

R T

 Δ Mkr1 36.33 MHz
0.20 dB



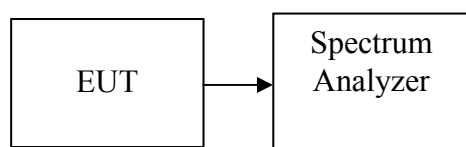
7.2 PEAK POWER

LIMIT

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

1. According to §15.247(b)(3), for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.
2. According to §15.247(b)(4), the conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Configuration



TEST PROCEDURE

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

TEST RESULTS

No non-compliance noted

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

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	8.78	0.00755	1.00	PASS
Mid	2437	12.70	0.01862		PASS
High	2462	8.86	0.00769		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	5.77	0.00378	1.00	PASS
Mid	2437	13.58	0.02280		PASS
High	2462	5.49	0.00354		PASS

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

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	5.81	0.00381	1.00	PASS
Mid	2437	13.74	0.02366		PASS
High	2462	6.44	0.00441		PASS

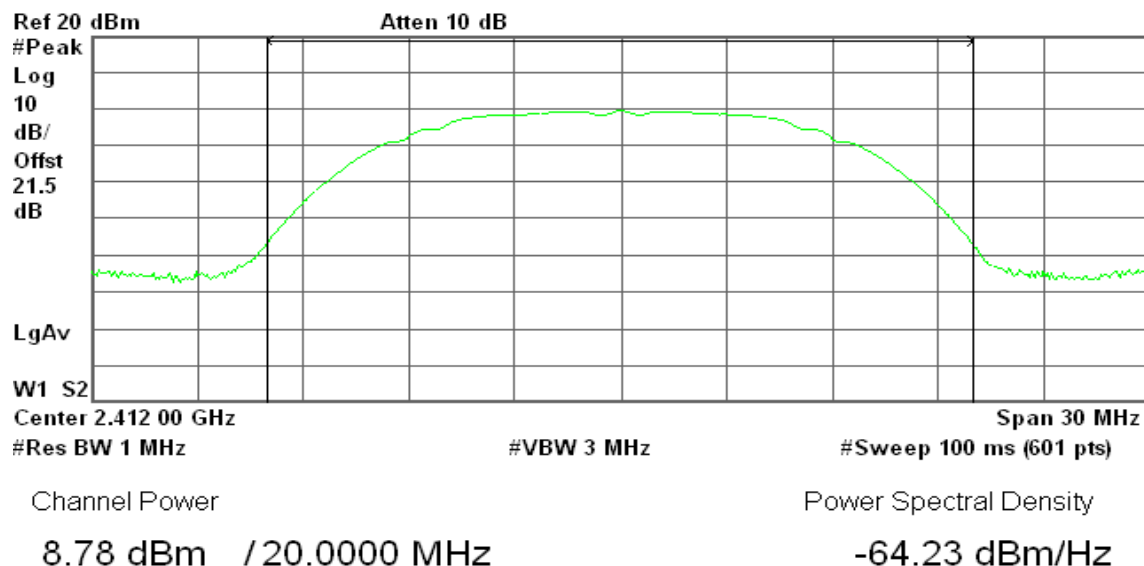
Test mode: draft 802.11n Wide-40 MHz Channel mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	10.14	0.01033	1.00	PASS
Mid	2437	13.57	0.02275		PASS
High	2452	9.81	0.00957		PASS

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

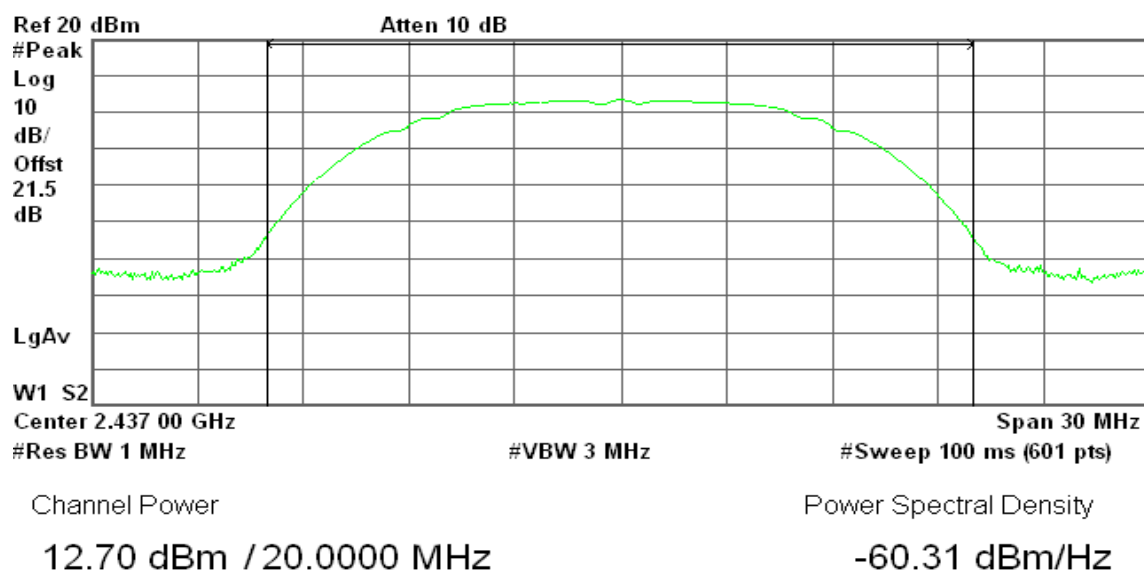
* Agilent 21:58:32 Mar 2, 2010

R T

**Peak Power (CH Mid)**

* Agilent 21:59:40 Mar 2, 2010

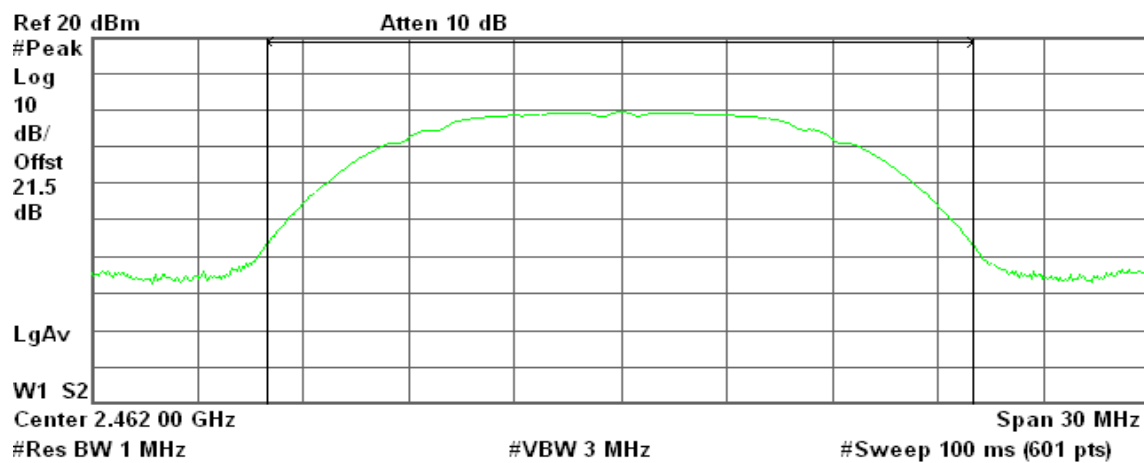
R T



**Peak Power (CH High)**

* Agilent 22:01:16 Mar 2, 2010

R T



Channel Power

8.86 dBm / 20.0000 MHz

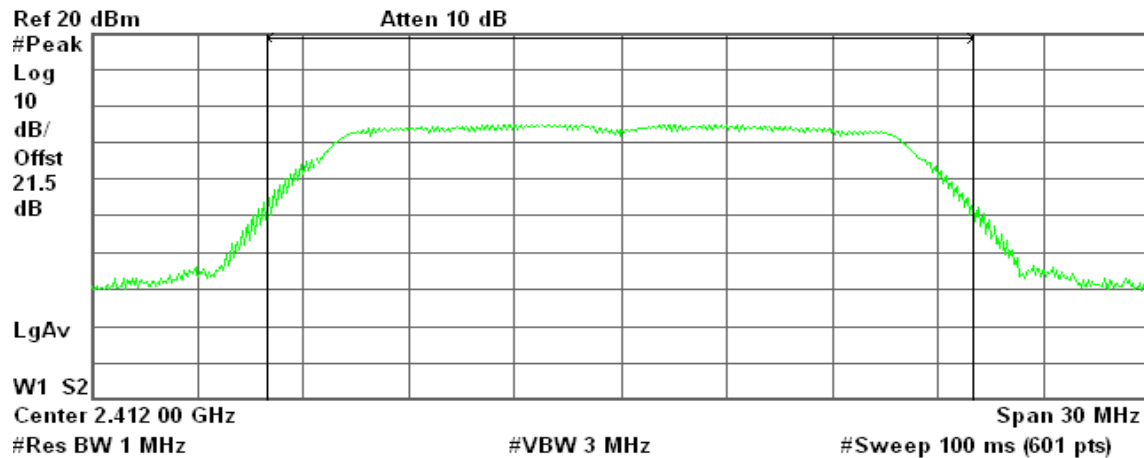
Power Spectral Density

-64.15 dBm/Hz

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

* Agilent 22:04:02 Mar 2, 2010

R T



Channel Power

5.77 dBm / 20.0000 MHz

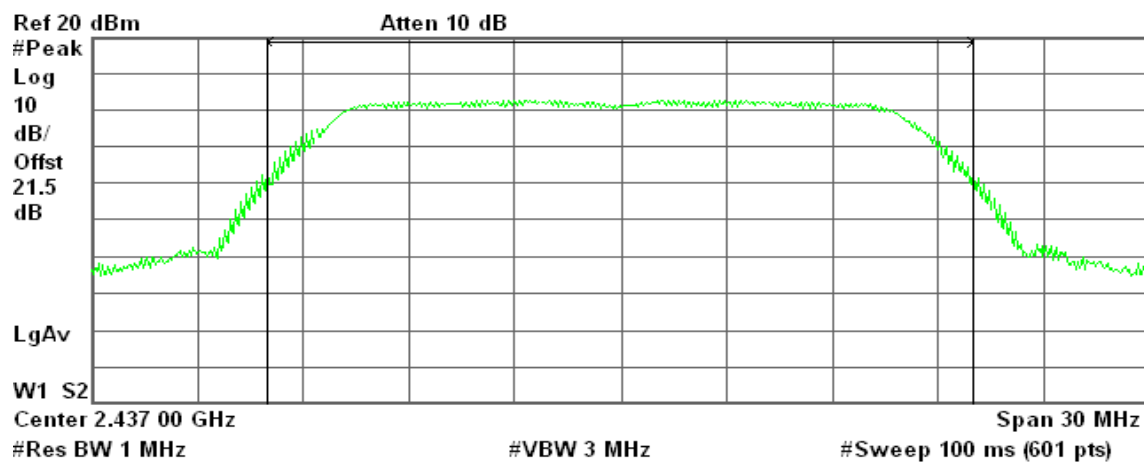
Power Spectral Density

-67.24 dBm/Hz

**Peak Power (CH Mid)**

* Agilent 22:03:27 Mar 2, 2010

R T



Channel Power

13.58 dBm / 20.0000 MHz

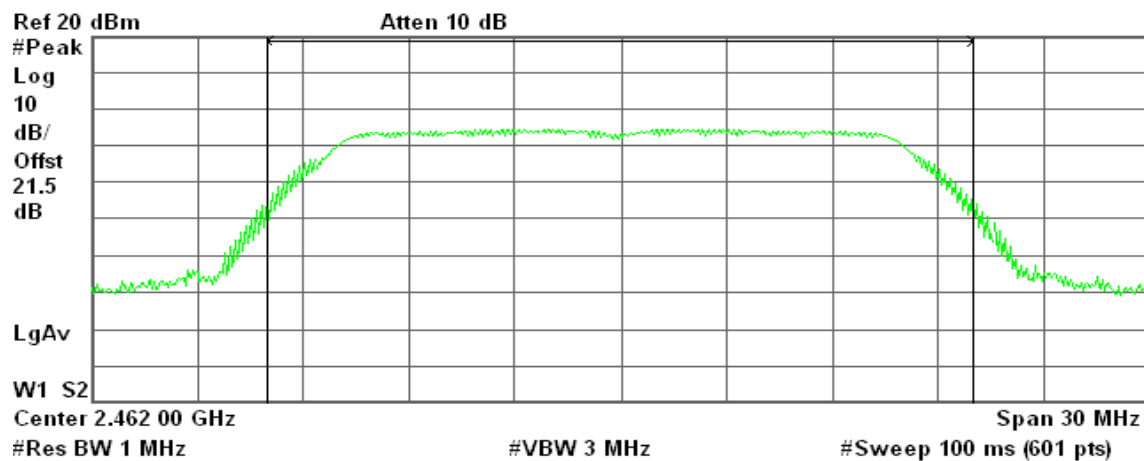
Power Spectral Density

-59.43 dBm/Hz

Peak Power (CH High)

* Agilent 22:02:12 Mar 2, 2010

R T



Channel Power

5.49 dBm / 20.0000 MHz

Power Spectral Density

-67.52 dBm/Hz

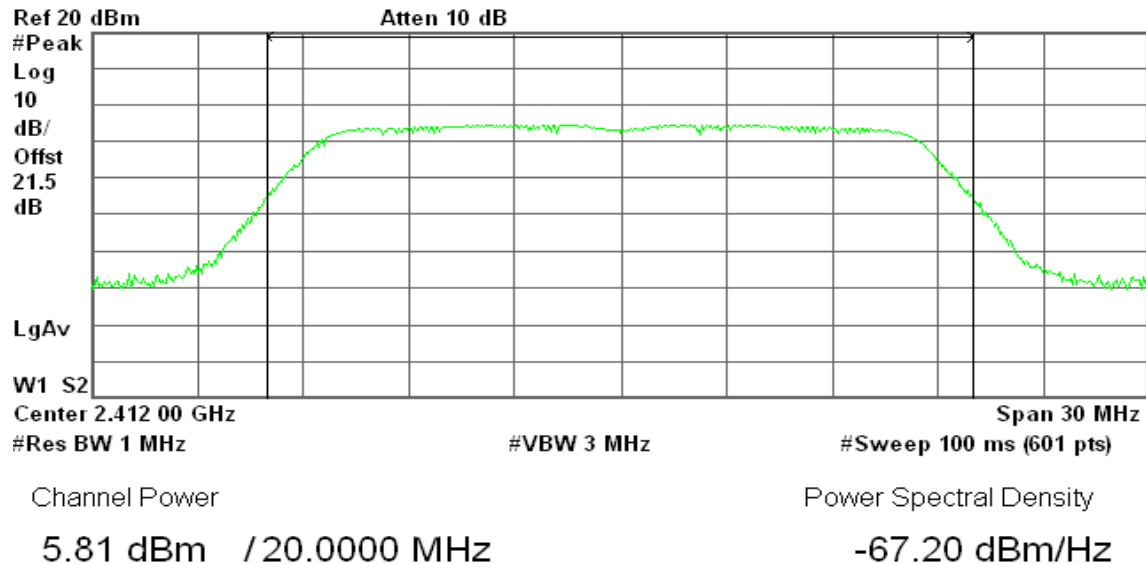


draft 802.11n Standard-20 MHz Channel mode

Peak Power (CH Low)

* Agilent 21:52:39 Mar 2, 2010

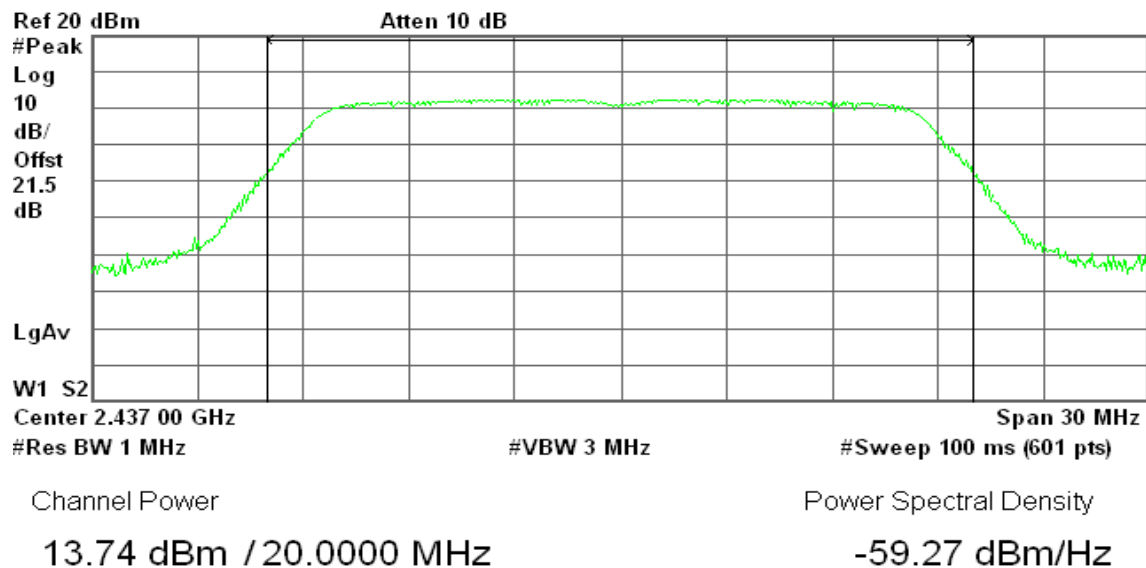
R T



Peak Power (CH Mid)

* Agilent 21:53:44 Mar 2, 2010

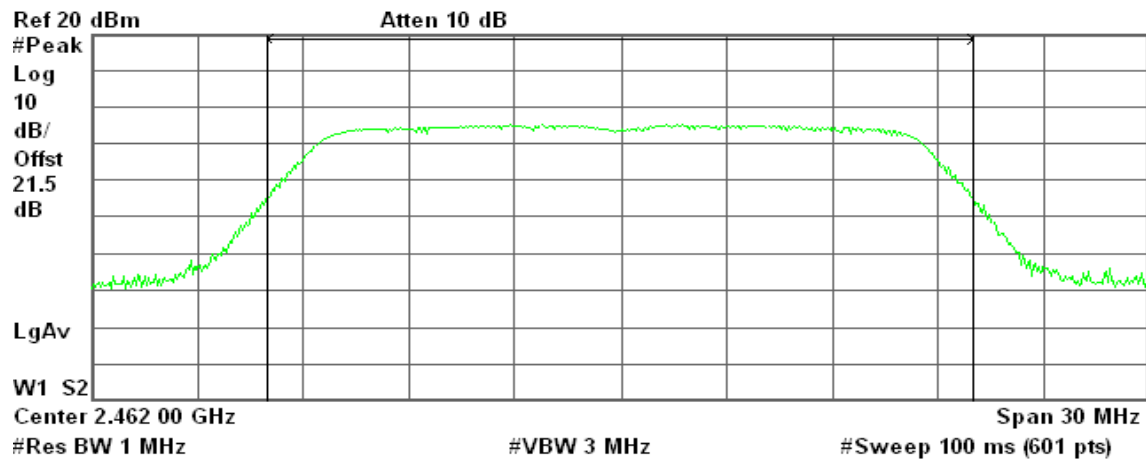
R T



**Peak Power (CH High)**

* Agilent 21:56:05 Mar 2, 2010

R T



Channel Power

6.44 dBm / 20.0000 MHz

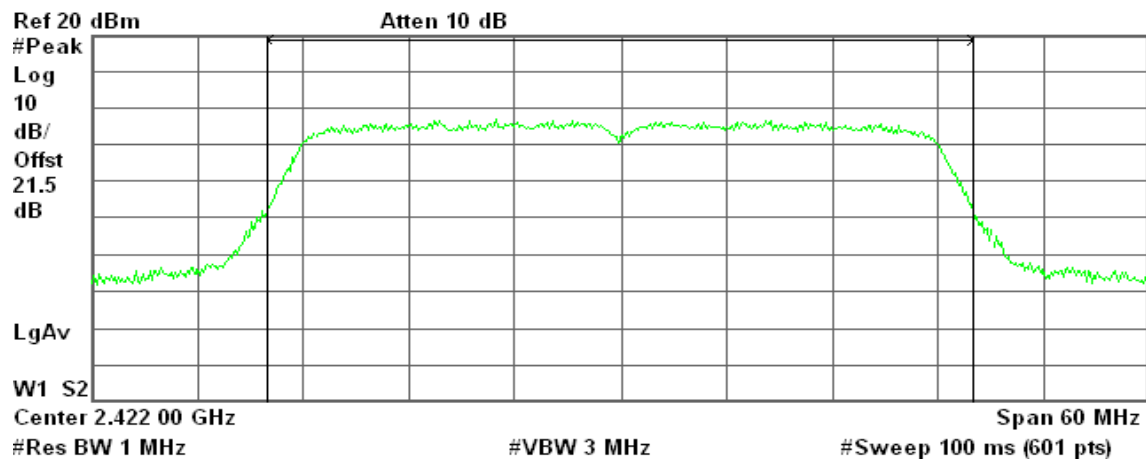
Power Spectral Density

-66.57 dBm/Hz

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

* Agilent 22:06:41 Mar 2, 2010

R T



Channel Power

10.14 dBm / 40.0000 MHz

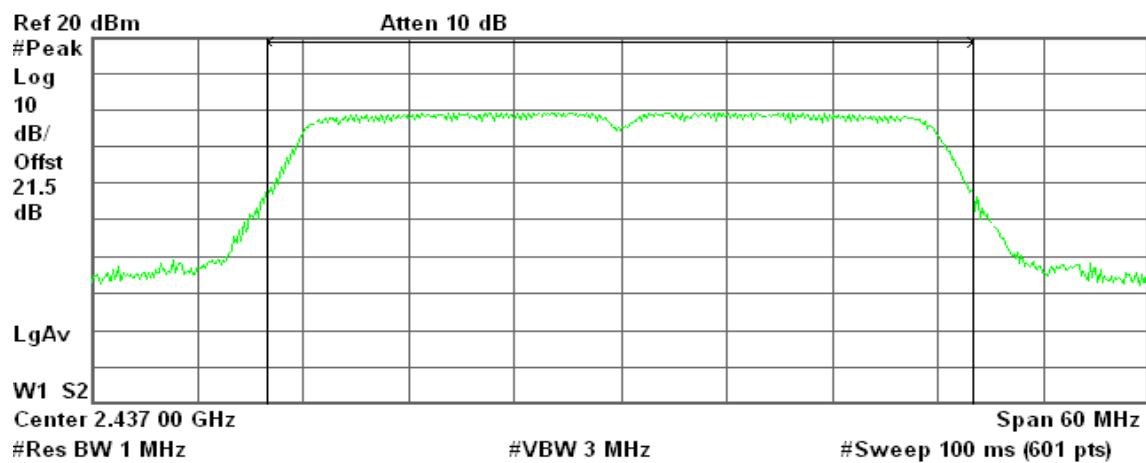
Power Spectral Density

-65.88 dBm/Hz

**Peak Power (CH Mid)**

* Agilent 22:07:19 Mar 2, 2010

R T



Channel Power

13.57 dBm / 40.0000 MHz

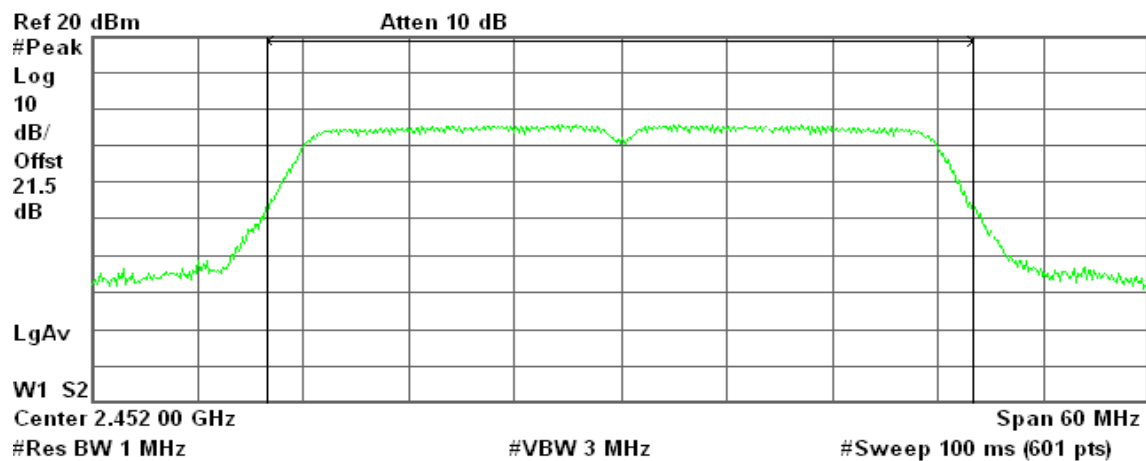
Power Spectral Density

-62.45 dBm/Hz

Peak Power (CH High)

* Agilent 22:08:28 Mar 2, 2010

R T



Channel Power

9.81 dBm / 40.0000 MHz

Power Spectral Density

-66.21 dBm/Hz

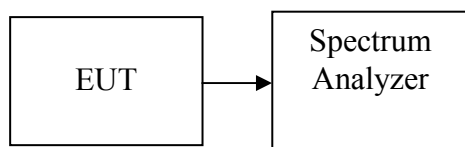


7.3 AVERAGE POWER

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

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



TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	5.86	0.00385
Mid	2437	9.65	0.00904
High	2462	5.92	0.00391

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	-1.57	0.00070
Mid	2437	6.31	0.00428
High	2462	-1.95	0.00064

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

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	-1.93	0.00064
Mid	2437	6.63	0.00460
High	2462	-0.95	0.00080

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

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2422	2.79	0.00190
Mid	2437	6.16	0.00413
High	2452	2.50	0.00178



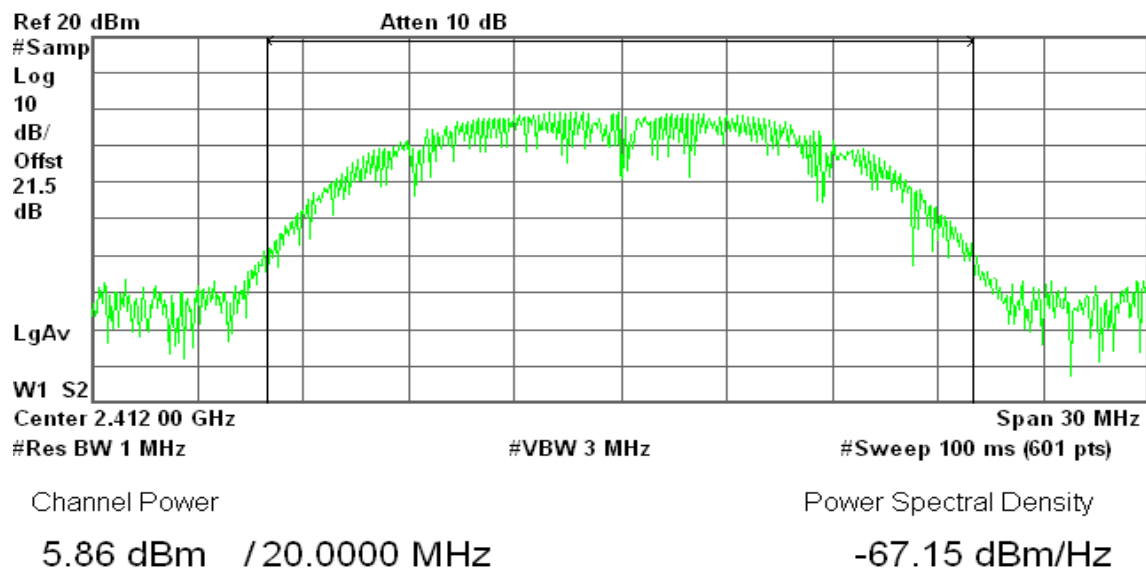
Test Plot

IEEE 802.11b mode

Average Power (CH Low)

* Agilent 21:58:09 Mar 2, 2010

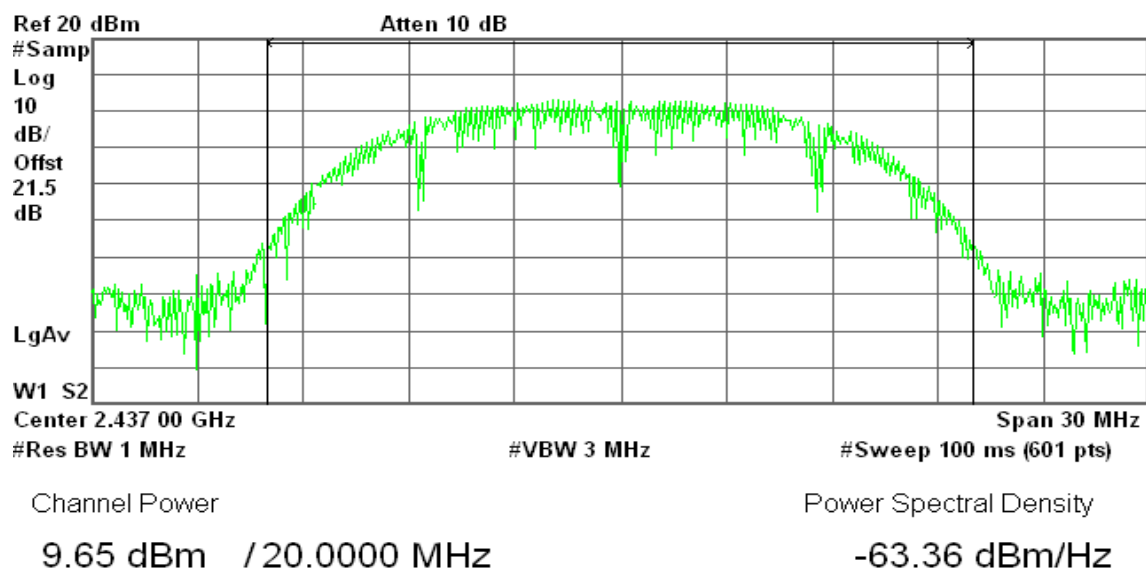
R T



Average Power (CH Mid)

* Agilent 22:00:00 Mar 2, 2010

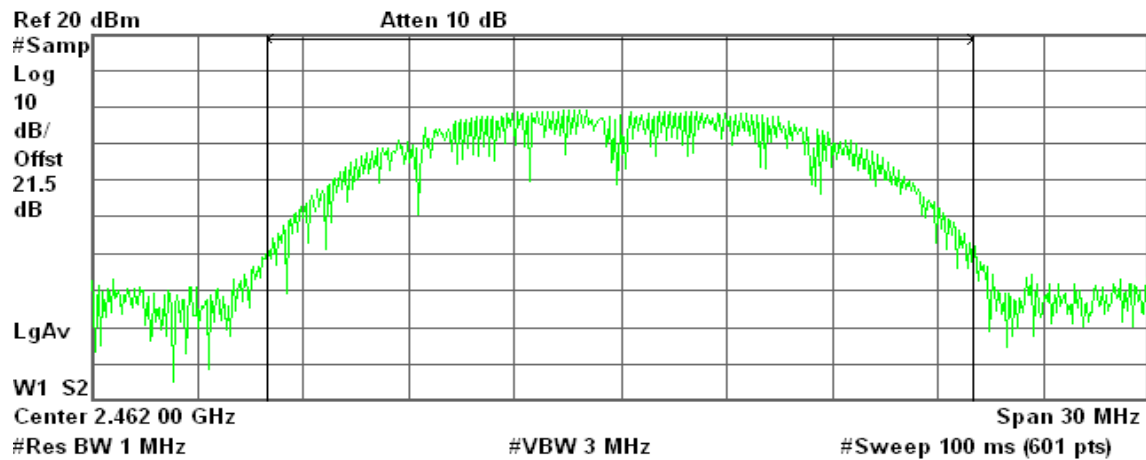
R T



**Average Power (CH High)**

* Agilent 22:00:55 Mar 2, 2010

R T



Channel Power

5.92 dBm / 20.0000 MHz

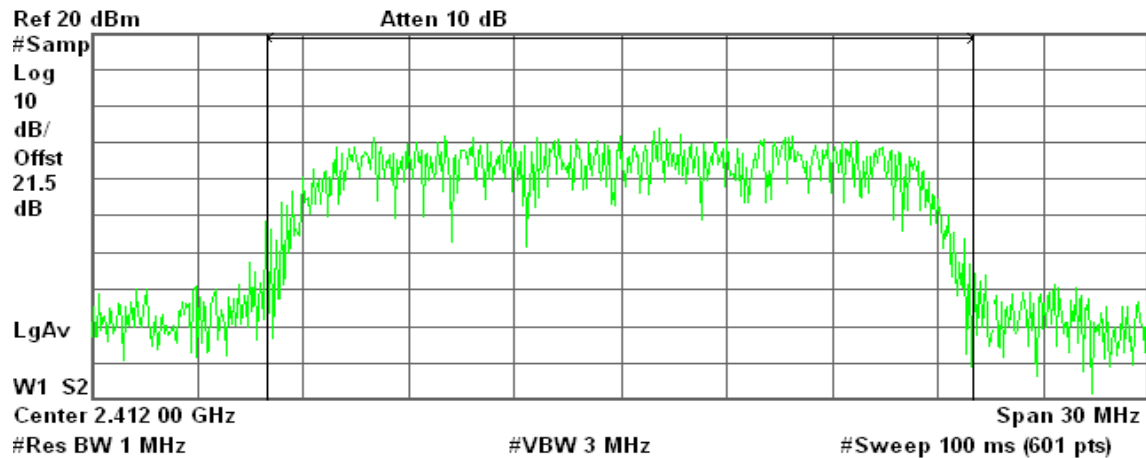
Power Spectral Density

-67.09 dBm/Hz

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

* Agilent 22:04:24 Mar 2, 2010

R T



Channel Power

-1.57 dBm / 20.0000 MHz

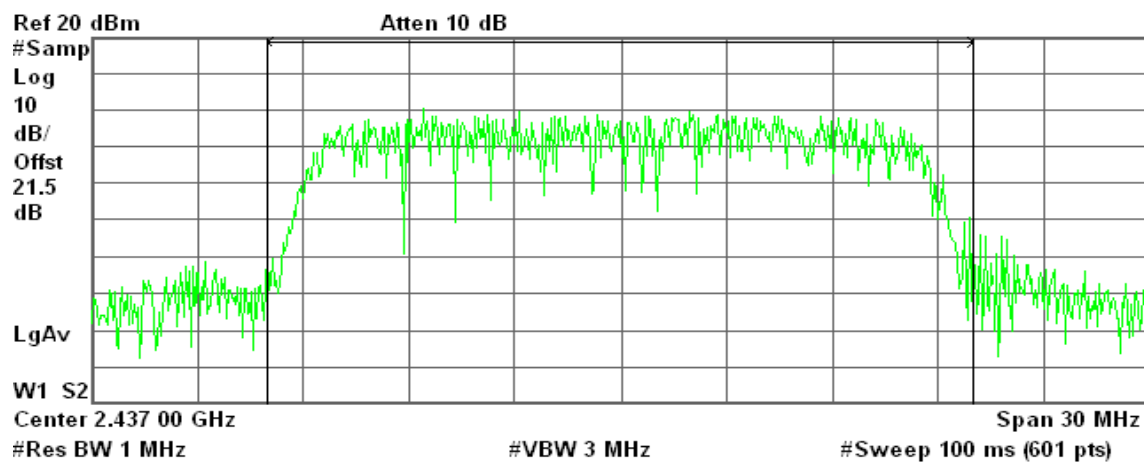
Power Spectral Density

-74.58 dBm/Hz

**Average Power (CH Mid)**

* Agilent 22:03:07 Mar 2, 2010

R T



Channel Power

6.31 dBm / 20.0000 MHz

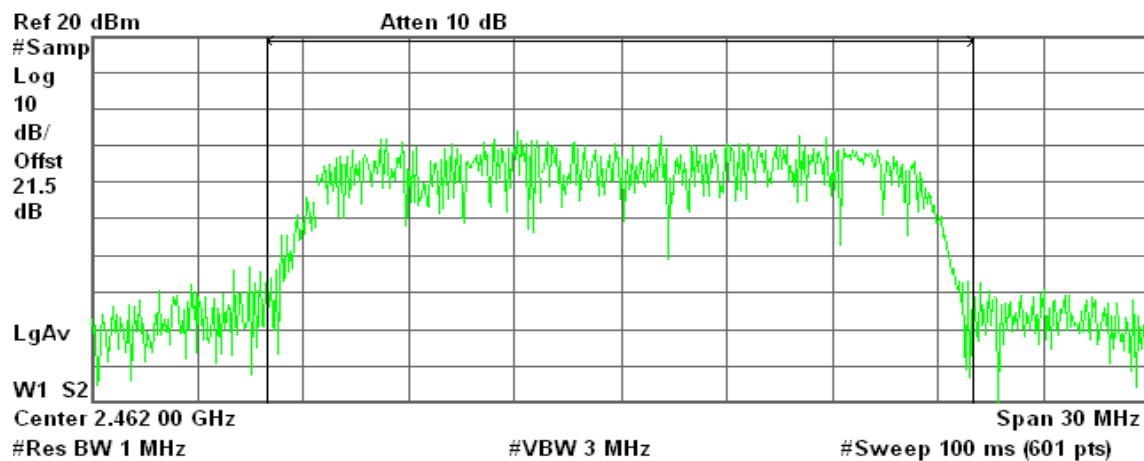
Power Spectral Density

-66.70 dBm/Hz

Average Power (CH High)

* Agilent 22:02:32 Mar 2, 2010

R T



Channel Power

-1.95 dBm / 20.0000 MHz

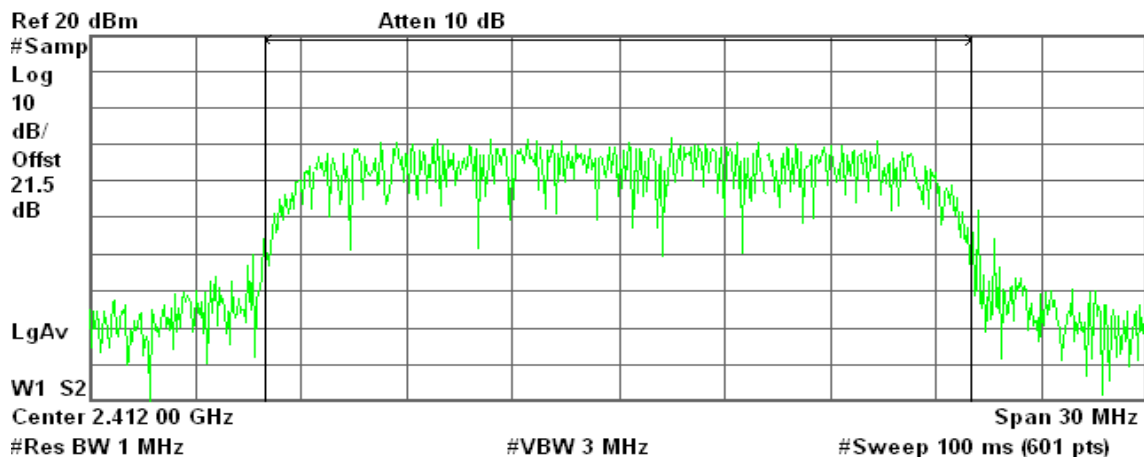
Power Spectral Density

-74.96 dBm/Hz

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

* Agilent 21:56:50 Mar 2, 2010

R T



Channel Power

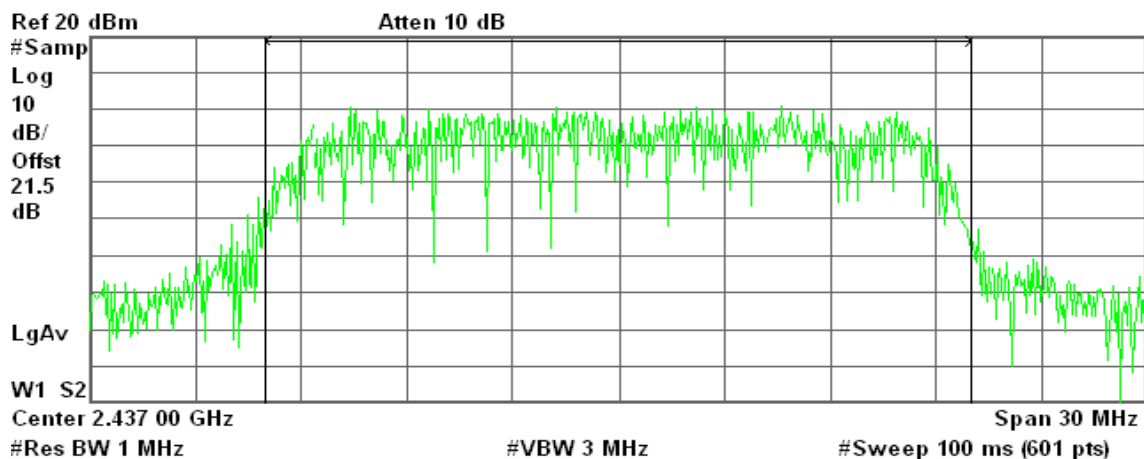
-1.93 dBm / 20.0000 MHz

Power Spectral Density

-74.94 dBm/Hz**Average Power (CH Mid)**

* Agilent 21:54:41 Mar 2, 2010

R T



Channel Power

6.63 dBm / 20.0000 MHz

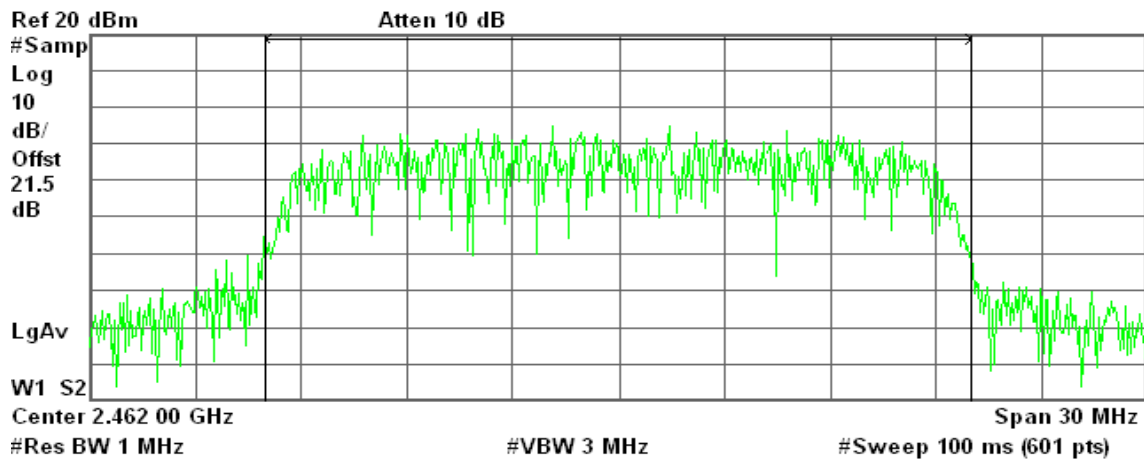
Power Spectral Density

-66.38 dBm/Hz

**Average Power (CH High)**

* Agilent 21:55:43 Mar 2, 2010

R T



Channel Power

-0.95 dBm / 20.0000 MHz

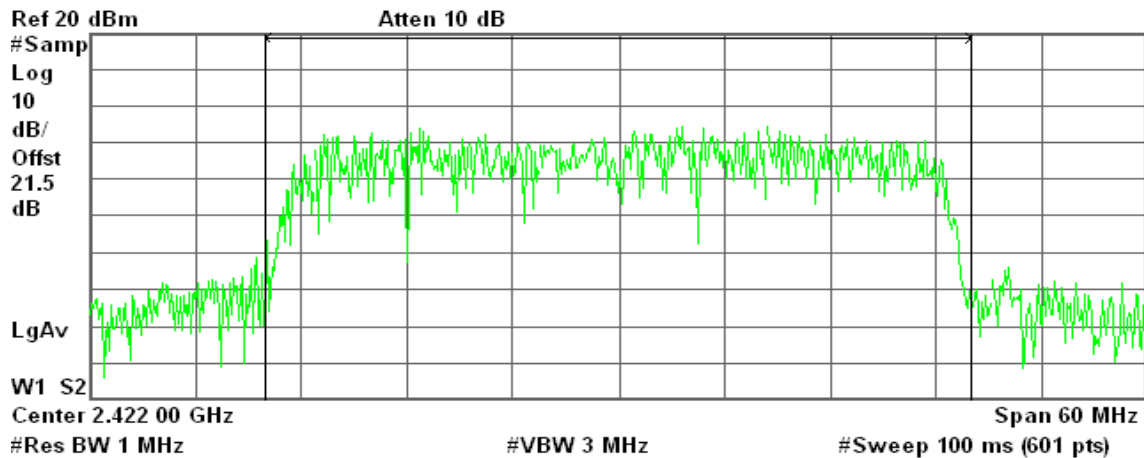
Power Spectral Density

-73.96 dBm/Hz

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

* Agilent 22:06:21 Mar 2, 2010

R T



Channel Power

2.79 dBm / 40.0000 MHz

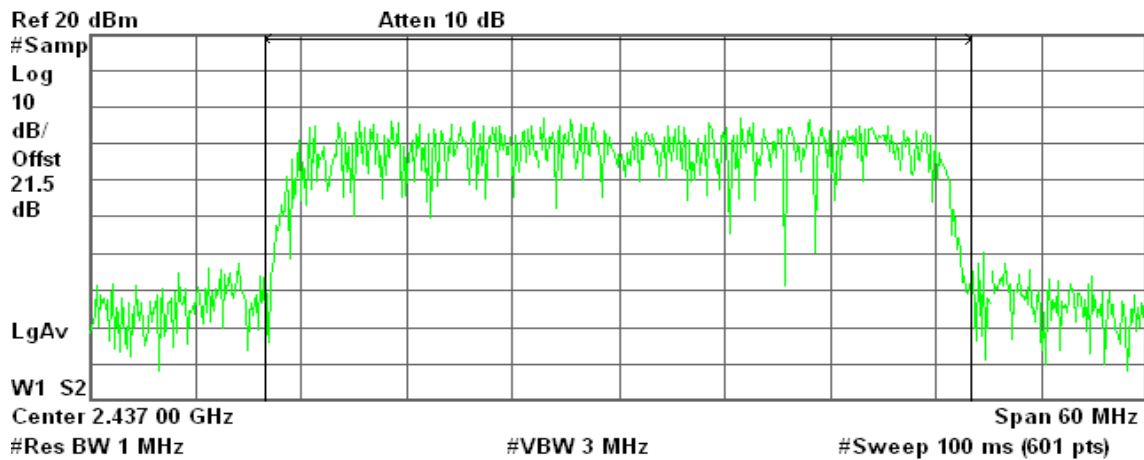
Power Spectral Density

-73.23 dBm/Hz

**Average Power (CH Mid)**

* Agilent 22:07:35 Mar 2, 2010

R T



Channel Power

6.16 dBm / 40.0000 MHz

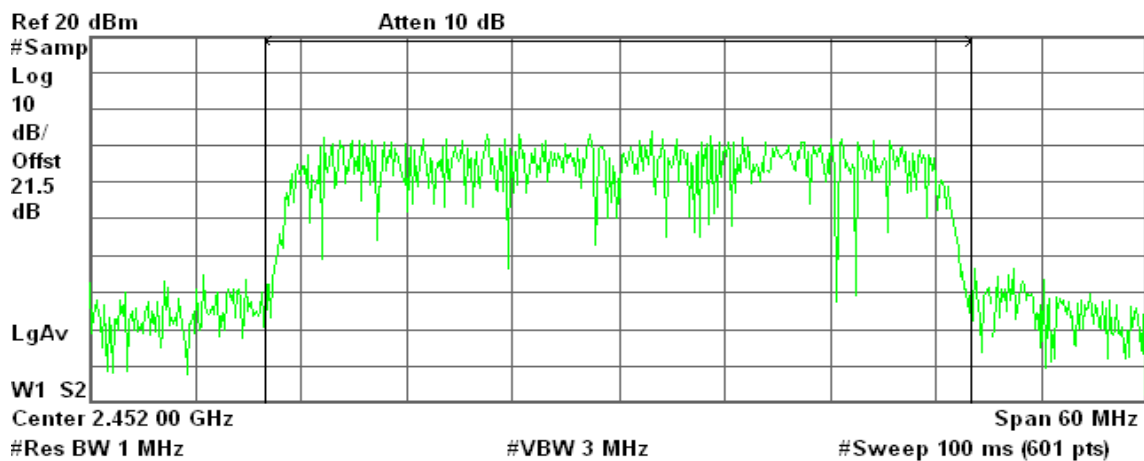
Power Spectral Density

-69.86 dBm/Hz

Average Power (CH High)

* Agilent 22:08:10 Mar 2, 2010

R T



Channel Power

2.50 dBm / 40.0000 MHz

Power Spectral Density

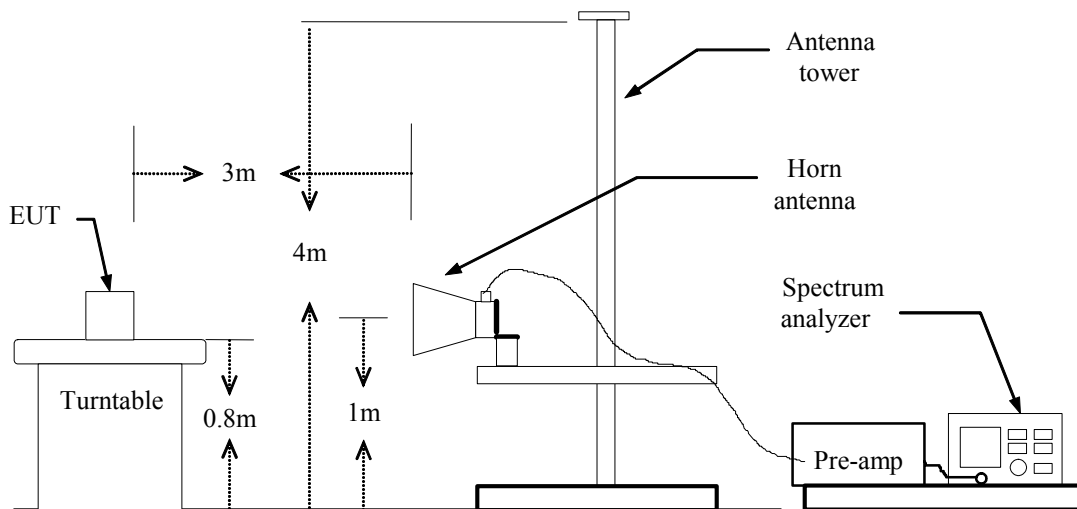
-73.52 dBm/Hz

7.4 BAND EDGES MEASUREMENT

LIMIT

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

Test Configuration



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

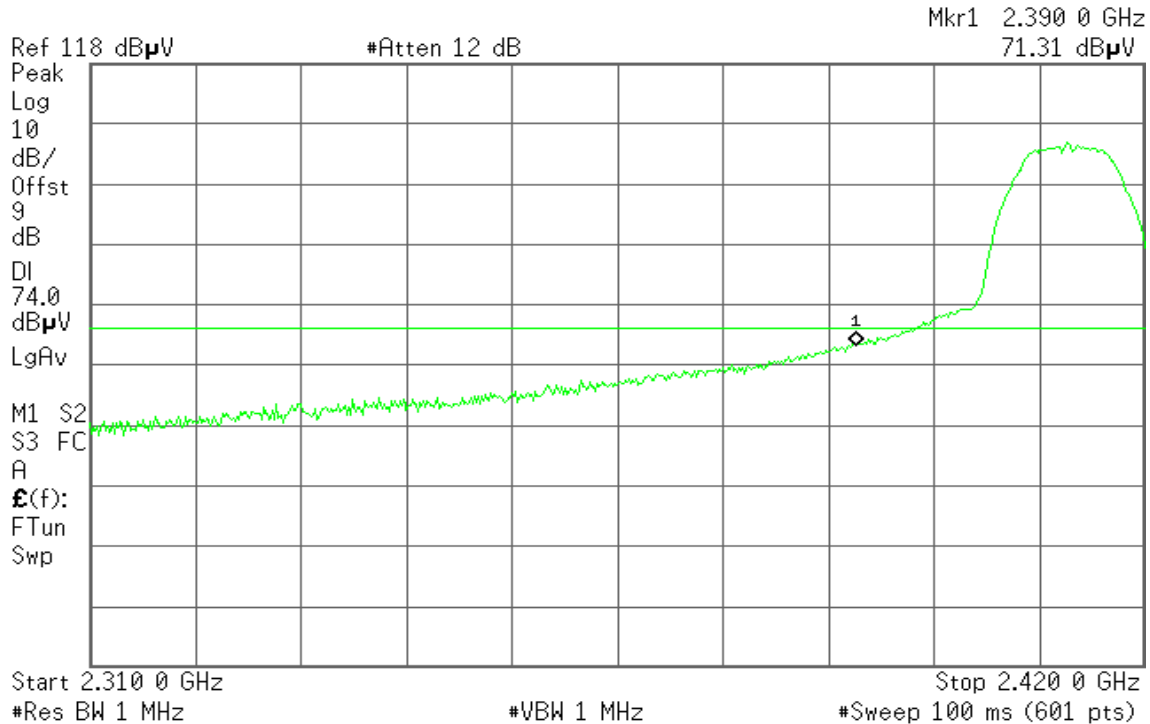
TEST RESULTS

Refer to attach spectrum analyzer data chart.

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

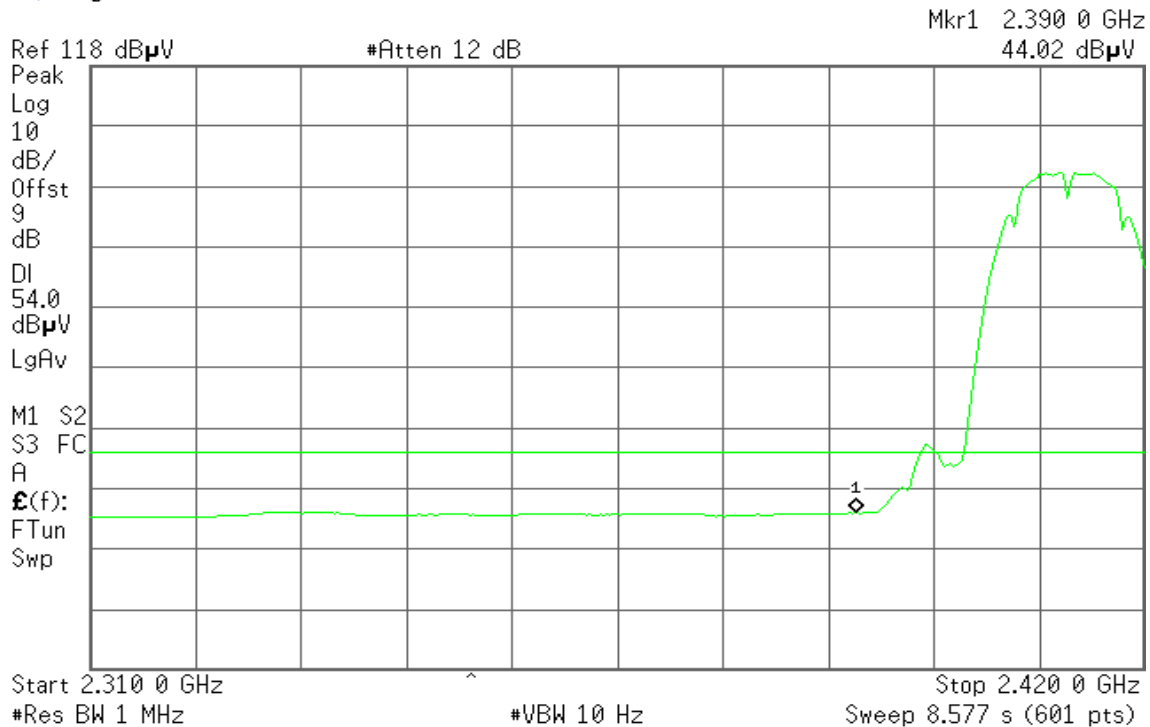
* Agilent 17:01:26 Feb 9, 2010

R T

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

* Agilent 17:01:47 Feb 9, 2010

R T



**Detector mode: Peak****Polarity: Horizontal**

* Agilent 17:57:07 Feb 9, 2010

R T

Mkr1 2.390 0 GHz
55.05 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average**Polarity: Horizontal**

* Agilent 17:57:33 Feb 9, 2010

R T

Mkr1 2.390 0 GHz
42.99 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)

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

* Agilent 11:21:56 Feb 23, 2010

R L

Mkr1 2.483 50 GHz
71.90 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

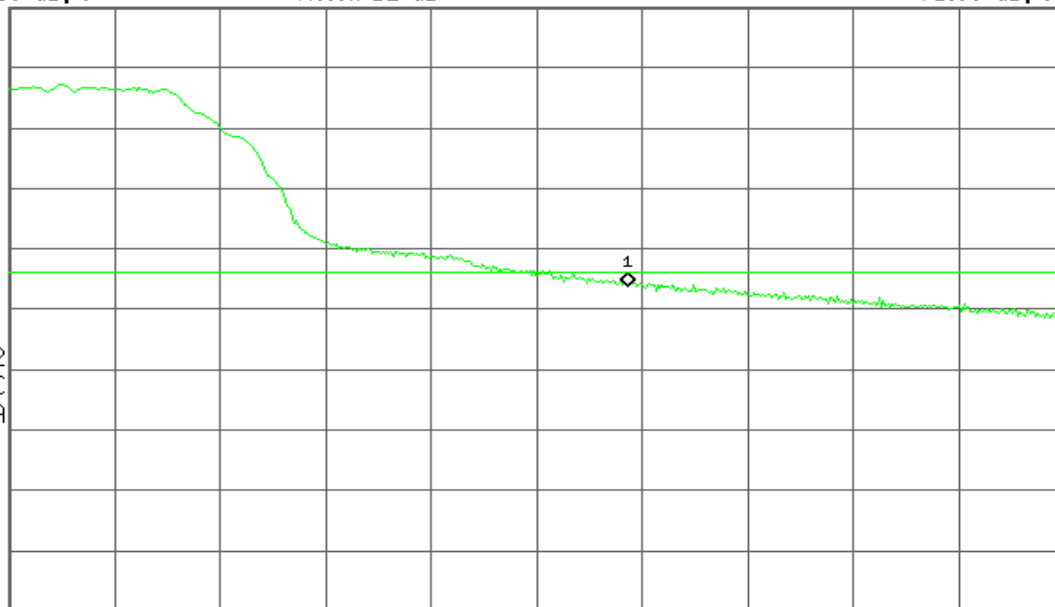
S3 FC

A AA

 $\mathcal{E}(f)$:

FTun

Swp



Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average**Polarity: Vertical**

* Agilent 11:22:09 Feb 23, 2010

R L

Mkr1 2.483 50 GHz
44.25 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

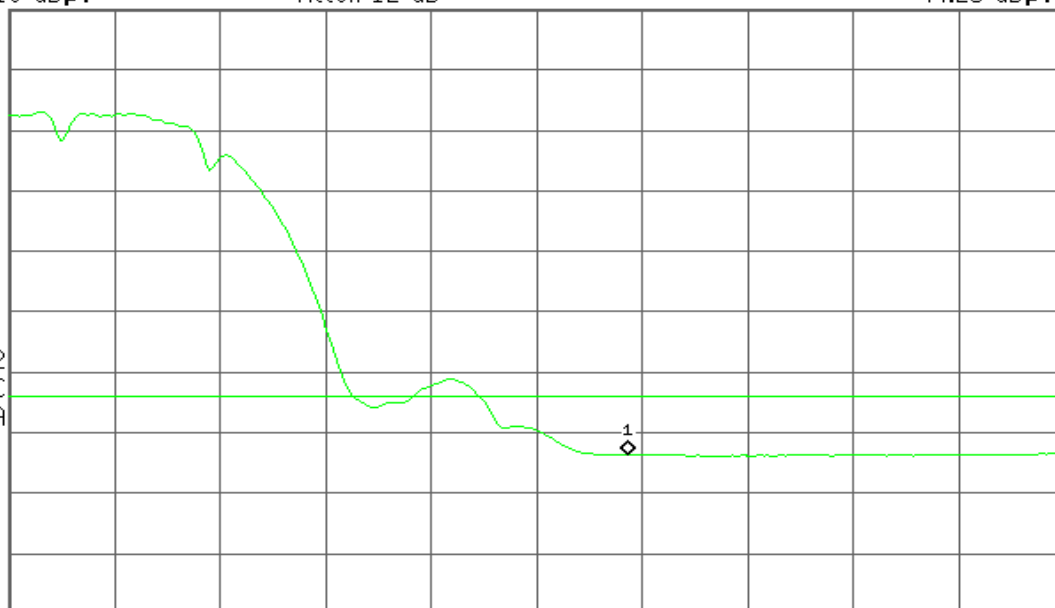
S3 FC

A AA

 $\mathcal{E}(f)$:

FTun

Swp



Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

^ Stop 2.500 00 GHz

Sweep 3.119 s (601 pts)

**Detector mode: Peak****Polarity: Horizontal**

* Agilent 11:42:04 Feb 23, 2010

R L

Mkr1 2.483 50 GHz
56.34 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

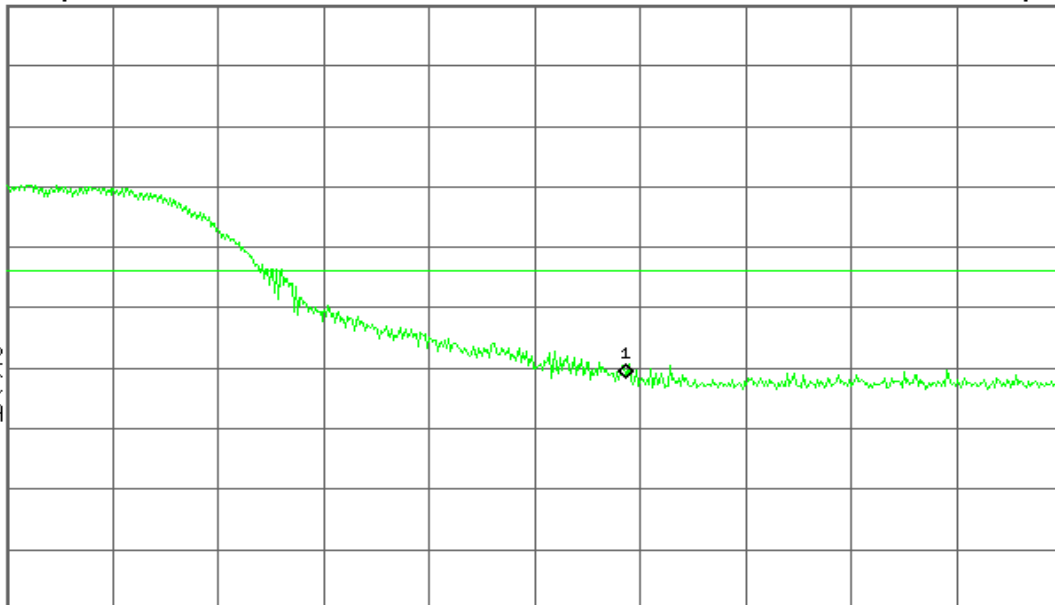
S3 FC

A AA

E(f):

FTun

Swp



Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average**Polarity: Horizontal**

* Agilent 11:42:17 Feb 23, 2010

R L

Mkr1 2.483 50 GHz
43.45 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

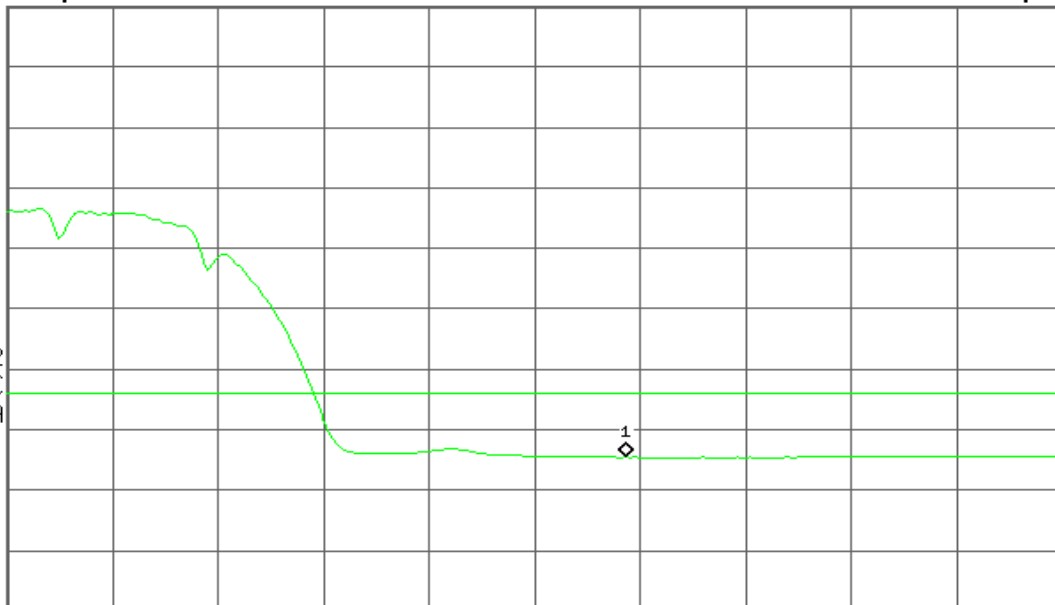
S3 FC

A AA

E(f):

FTun

Swp



Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

Sweep 3.119 s (601 pts)

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

* Agilent 16:57:06 Feb 9, 2010

R T

Mkr1 2.390 0 GHz
72.35 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average**Polarity: Vertical**

* Agilent 16:57:39 Feb 9, 2010

R T

Mkr1 2.390 0 GHz
43.86 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)



Detector mode: Peak

Polarity: Horizontal

* Agilent 17:54:38 Feb 9, 2010

R T

Mkr1 2.390 0 GHz
56.88 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

* Agilent 17:53:39 Feb 9, 2010

R T

Mkr1 2.390 0 GHz
42.98 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)

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

* Agilent 11:18:13 Feb 23, 2010

R L

Mkr1 2.485 73 GHz
72.13 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average**Polarity: Vertical**

* Agilent 11:18:36 Feb 23, 2010

R L

Mkr1 2.485 73 GHz
43.99 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

Sweep 3.119 s (601 pts)

**Detector mode: Peak****Polarity: Horizontal**

* Agilent 11:41:07 Feb 23, 2010

R L

Mkr1 2.483 50 GHz
56.38 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average**Polarity: Horizontal**

* Agilent 11:40:52 Feb 23, 2010

R L

Mkr1 2.483 50 GHz
43.46 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A AA

E(f):

FTun

Swp

Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

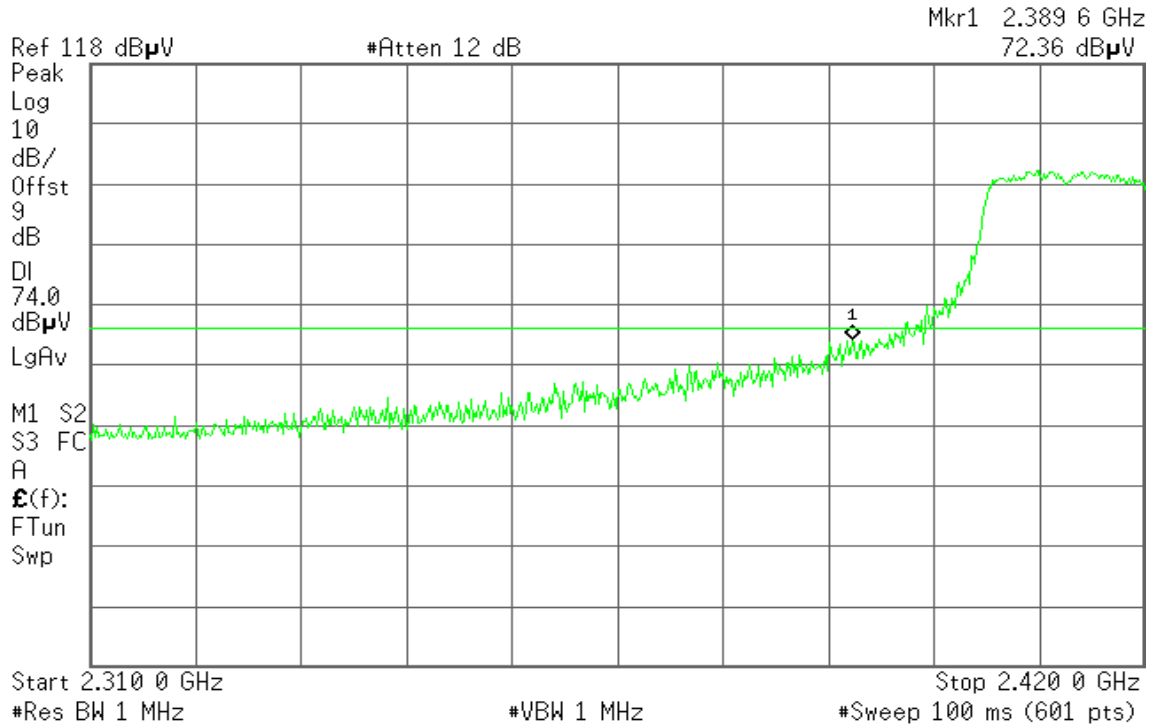
Stop 2.500 00 GHz

Sweep 3.119 s (601 pts)

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

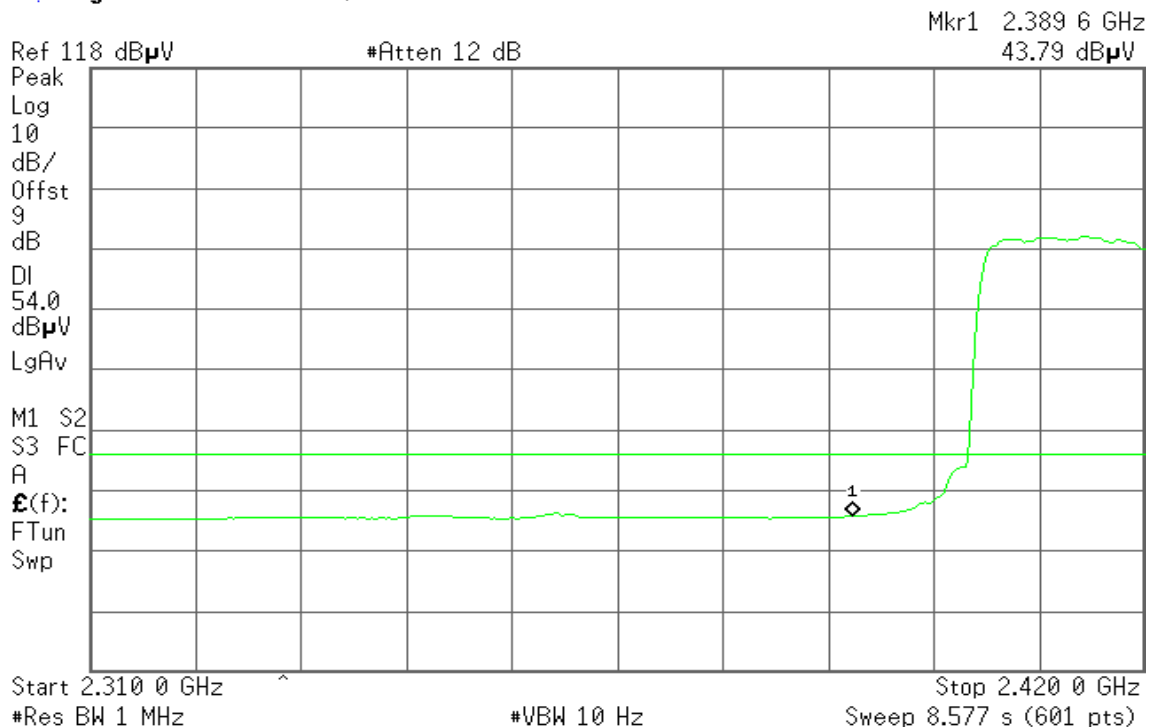
* Agilent 17:05:49 Feb 9, 2010

R T

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

* Agilent 17:06:07 Feb 9, 2010

R T





Detector mode: Peak

Polarity: Horizontal

* Agilent 17:49:46 Feb 9, 2010

R T

Mkr1 2.390 0 GHz
57.63 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A

 $\mathcal{E}(f)$:

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

* Agilent 17:50:01 Feb 9, 2010

R T

Mkr1 2.390 0 GHz
42.98 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A

 $\mathcal{E}(f)$:

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

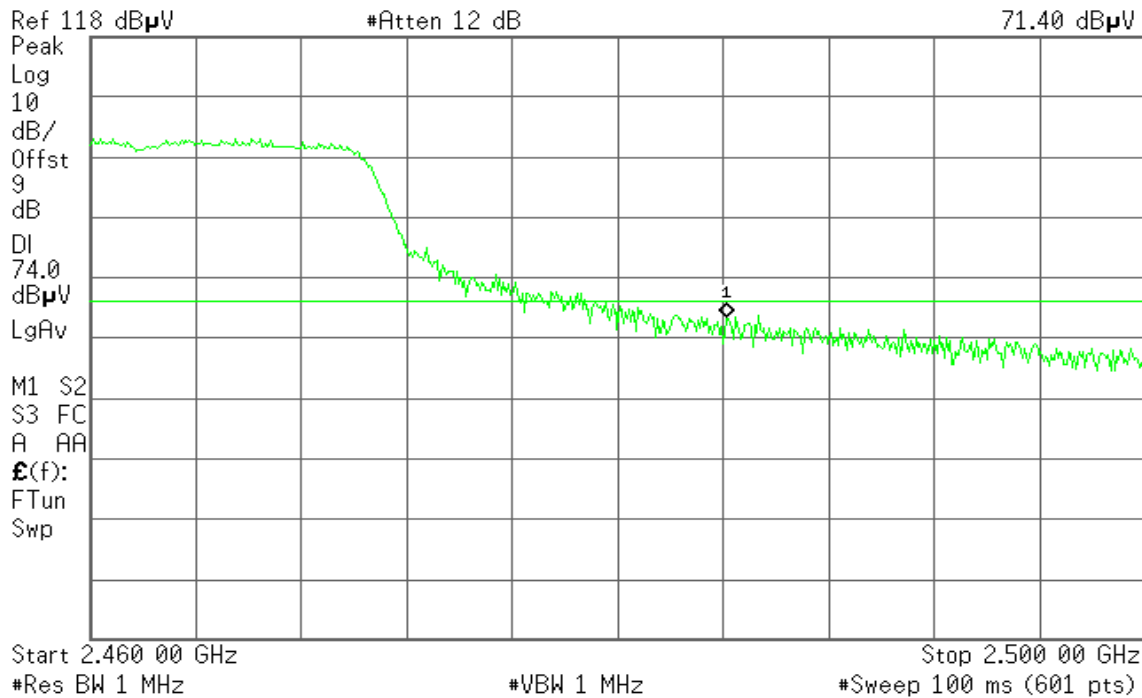
Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)

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

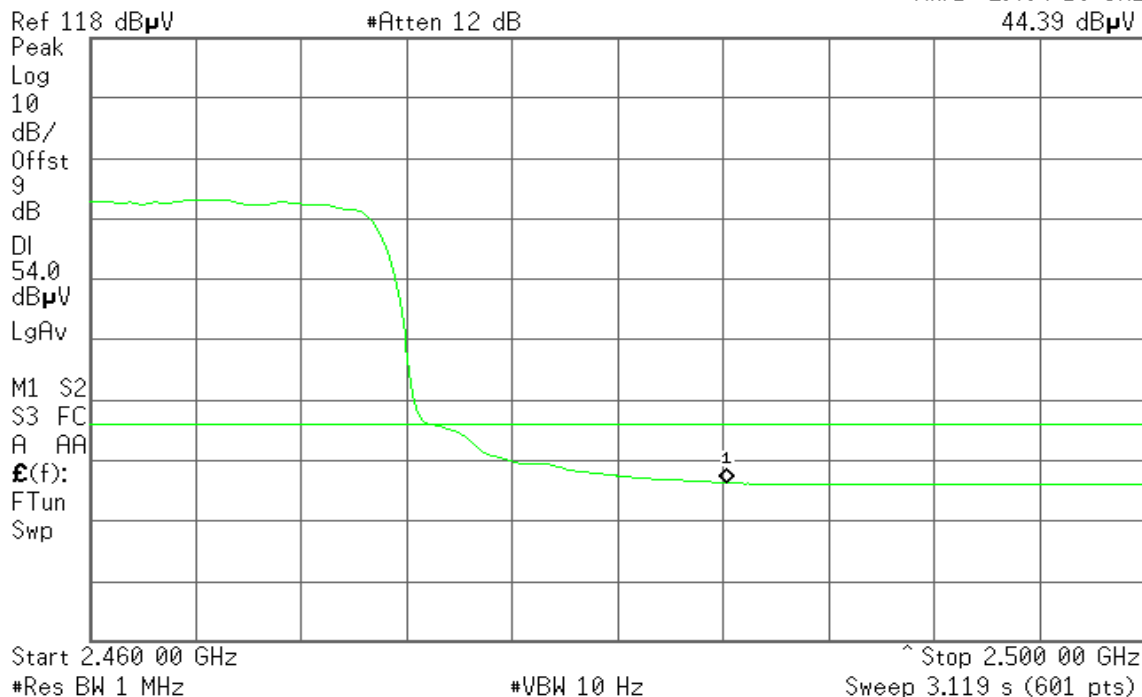
* Agilent 11:25:26 Feb 23, 2010

R L

Mkr1 2.484 10 GHz
71.40 dB μ V**Detector mode: Average****Polarity: Vertical**

* Agilent 11:25:39 Feb 23, 2010

R L

Mkr1 2.484 10 GHz
44.39 dB μ V

**Detector mode: Peak****Polarity: Horizontal**

* Agilent 11:39:42 Feb 23, 2010

R L

Mkr1 2.483 50 GHz
54.63 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

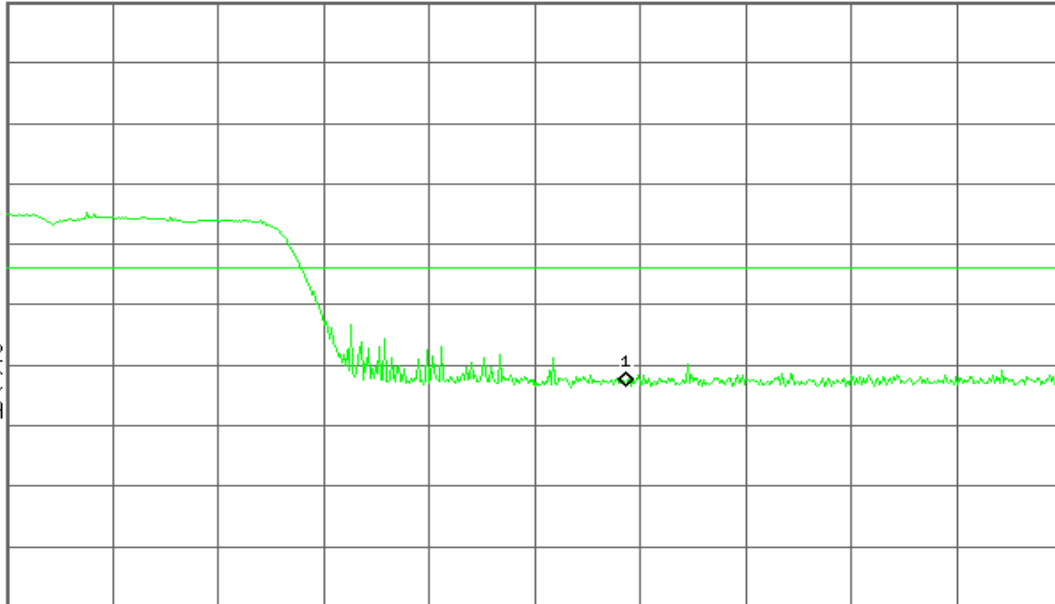
S3 FC

A AA

E(f):

FTun

Swp



Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average**Polarity: Horizontal**

* Agilent 11:39:55 Feb 23, 2010

R L

Mkr1 2.483 50 GHz
43.46 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

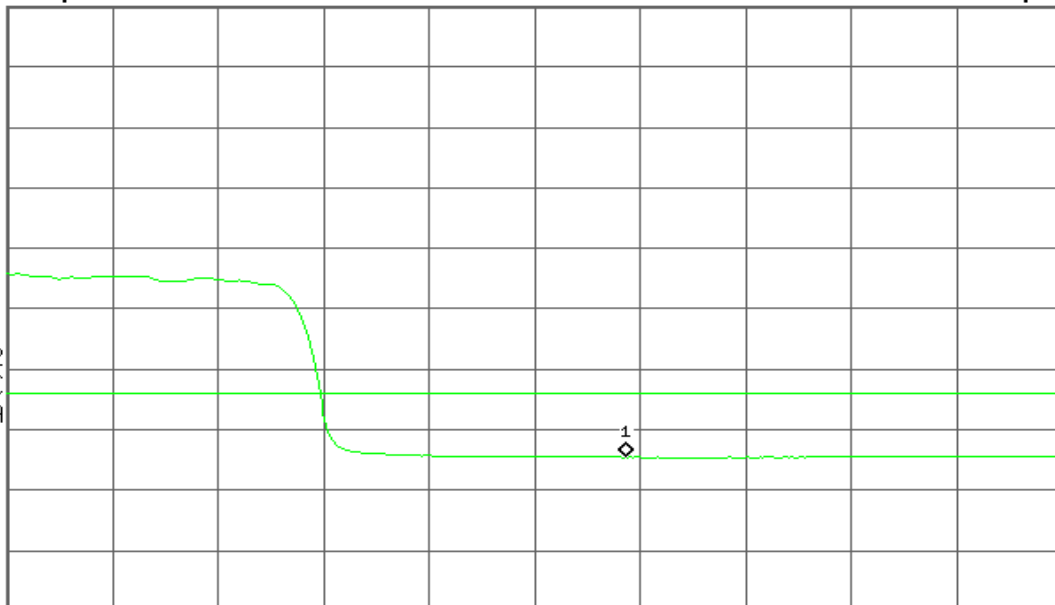
S3 FC

A AA

E(f):

FTun

Swp



Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

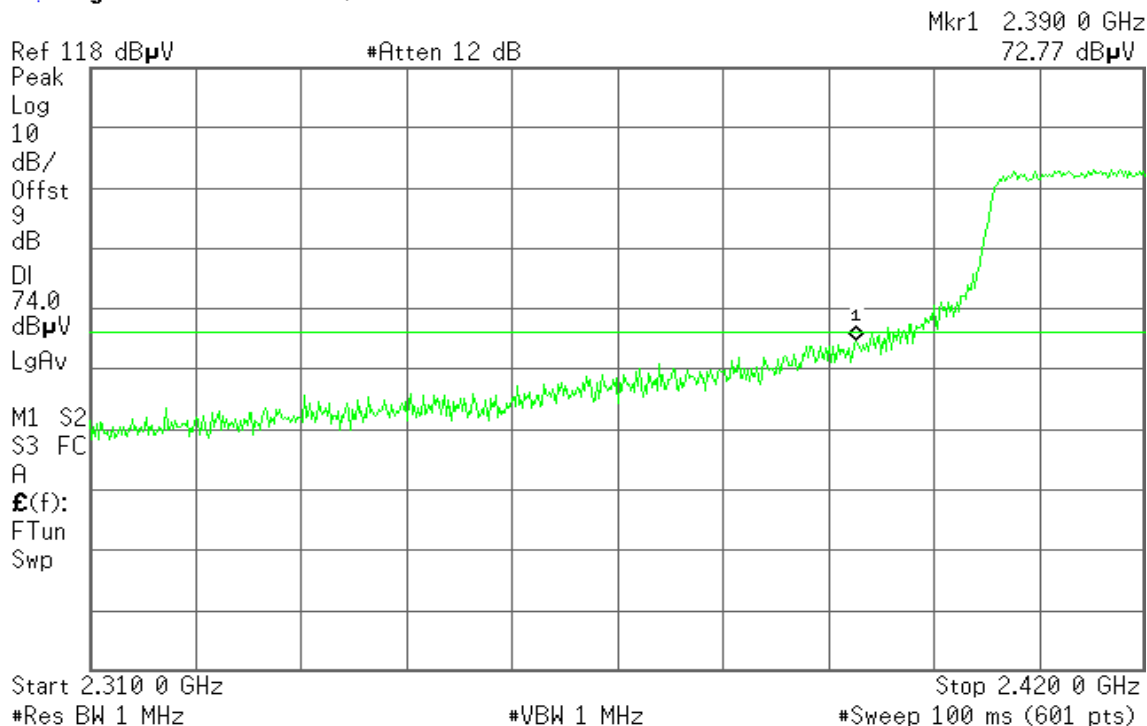
Stop 2.500 00 GHz

Sweep 3.119 s (601 pts)

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

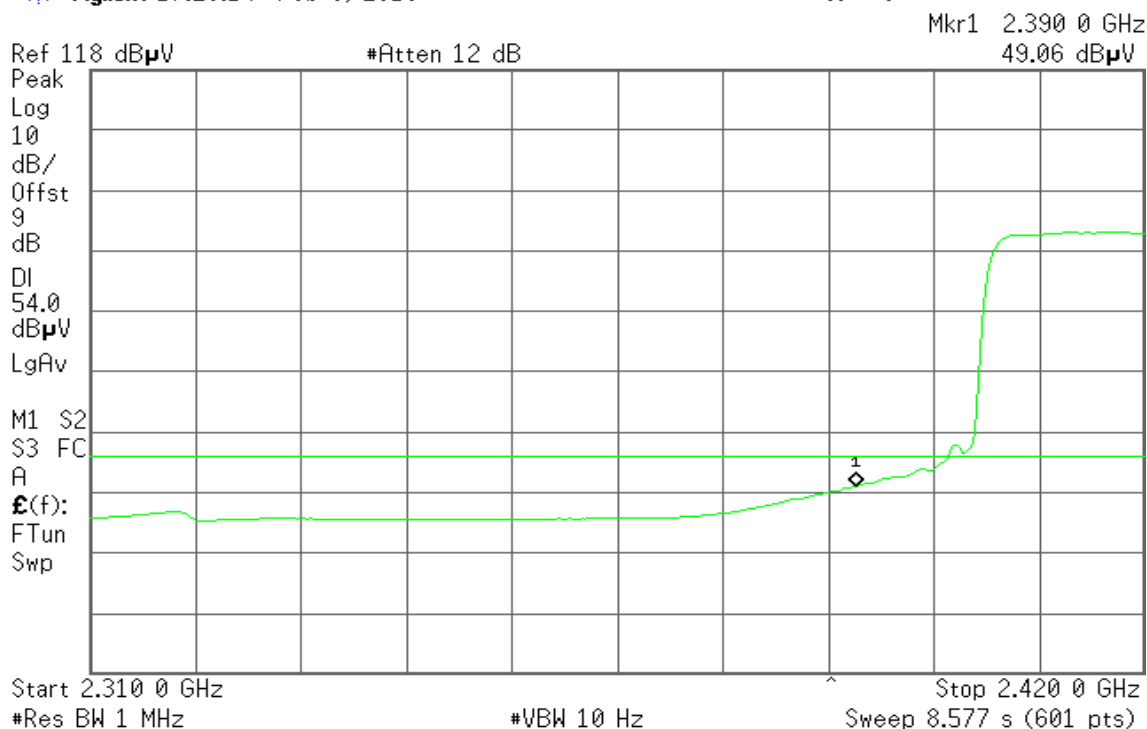
* Agilent 17:19:48 Feb 9, 2010

R T

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

* Agilent 17:20:14 Feb 9, 2010

R T





Detector mode: Peak

Polarity: Horizontal

* Agilent 17:44:02 Feb 9, 2010

R T

Mkr1 2.390 0 GHz
58.89 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

S3 FC

A

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.420 0 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

* Agilent 17:38:39 Feb 9, 2010

R T

Mkr1 2.390 0 GHz
43.35 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

S3 FC

A

E(f):

FTun

Swp

Start 2.310 0 GHz

#Res BW 1 MHz

#VBW 10 Hz

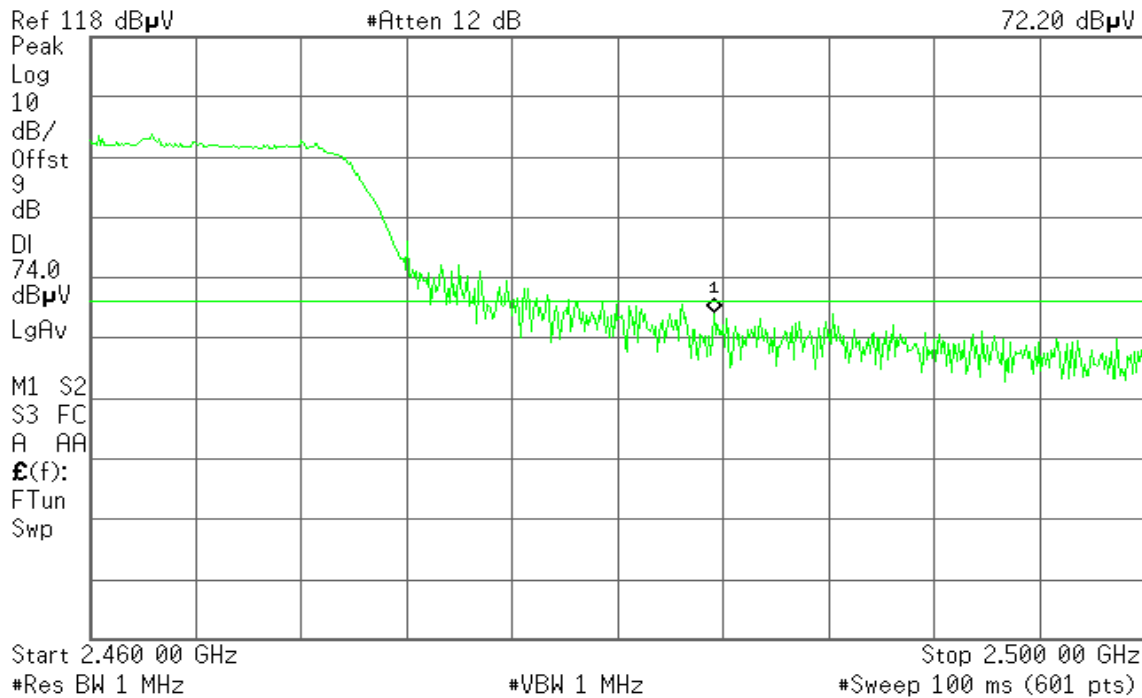
Stop 2.420 0 GHz

Sweep 8.577 s (601 pts)

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

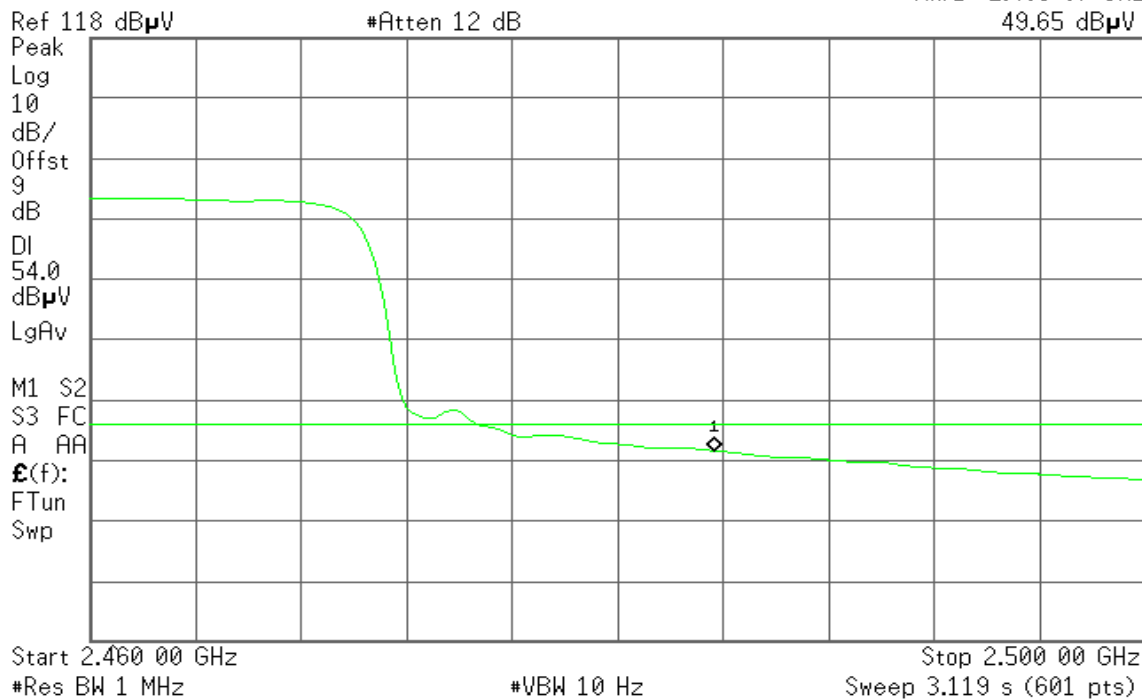
* Agilent 11:28:52 Feb 23, 2010

R L

Mkr1 2.483 67 GHz
72.20 dB μ V**Detector mode: Average****Polarity: Vertical**

* Agilent 11:29:16 Feb 23, 2010

R L

Mkr1 2.483 67 GHz
49.65 dB μ V

**Detector mode: Peak****Polarity: Horizontal**

* Agilent 11:38:43 Feb 23, 2010

R L

Mkr1 2.483 50 GHz
54.87 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

74.0

dB μ V

LgAv

M1 S2

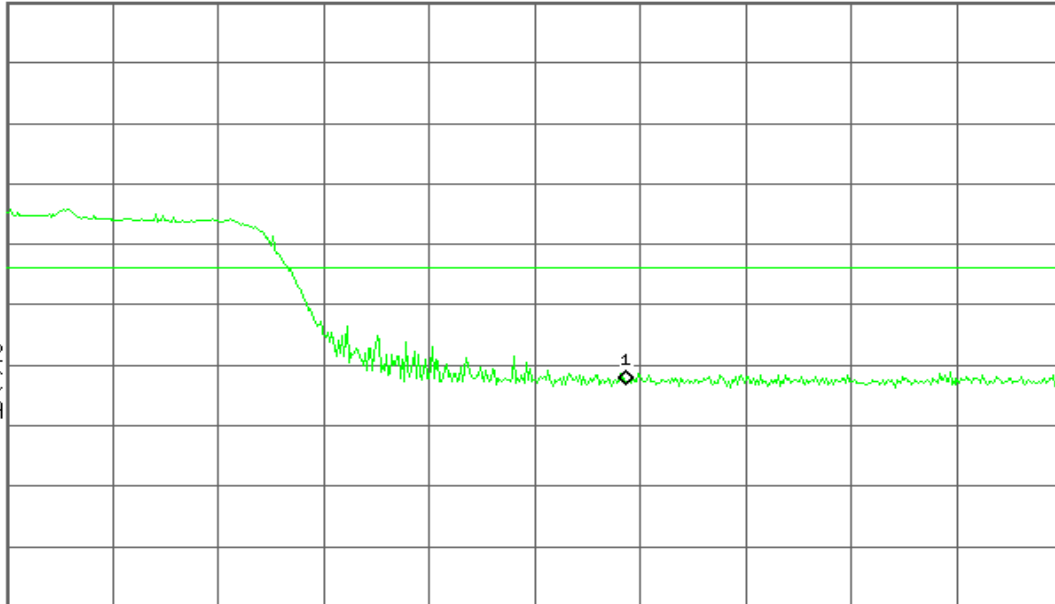
S3 FC

A AA

 $\mathcal{E}(f)$:

FTun

Swp



Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Stop 2.500 00 GHz

#Sweep 100 ms (601 pts)

Detector mode: Average**Polarity: Horizontal**

* Agilent 11:38:29 Feb 23, 2010

R L

Mkr1 2.483 50 GHz
43.57 dB μ VRef 118 dB μ V

#Atten 12 dB

Peak

Log

10

dB/

Offst

9

dB

DI

54.0

dB μ V

LgAv

M1 S2

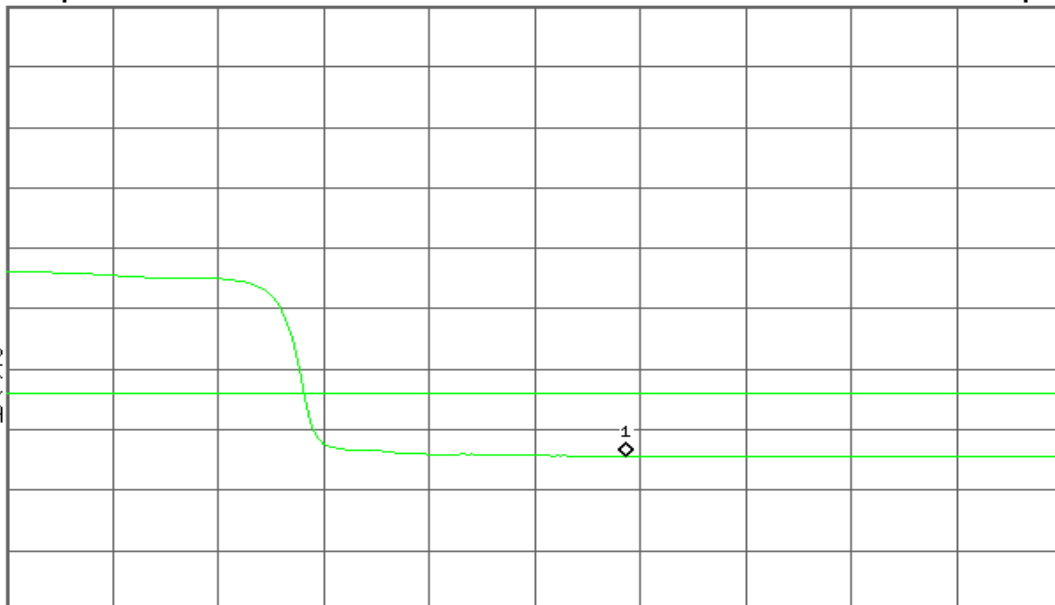
S3 FC

A AA

 $\mathcal{E}(f)$:

FTun

Swp



Start 2.460 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Stop 2.500 00 GHz

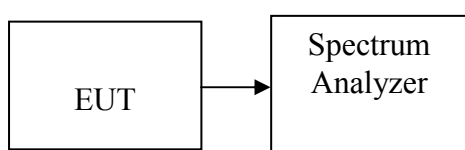
Sweep 3.119 s (601 pts)

7.5 PEAK POWER SPECTRAL DENSITY

LIMIT

1. According to §15.247(e), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
2. According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 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	-23.37	8.00	PASS
Mid	2437	-19.66		PASS
High	2462	-24.04		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-27.35	8.00	PASS
Mid	2437	-19.67		PASS
High	2462	-27.99		PASS

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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-27.38	8.00	PASS
Mid	2437	-19.61		PASS
High	2462	-27.14		PASS

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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2422	-23.66	8.00	PASS
Mid	2437	-20.18		PASS
High	2452	-23.76		PASS



Test Plot

IEEE 802.11b mode

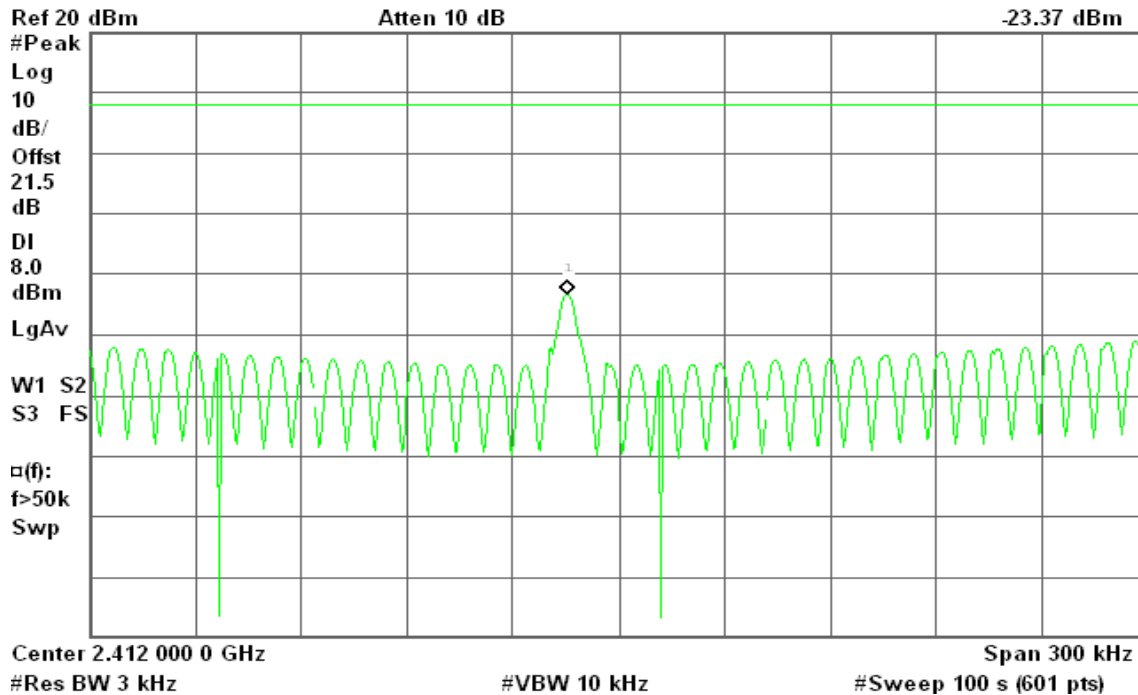
PPSD (CH Low)

* Agilent 20:36:53 Mar 2, 2010

R T

Mkr1 2.411 985 4 GHz

-23.37 dBm



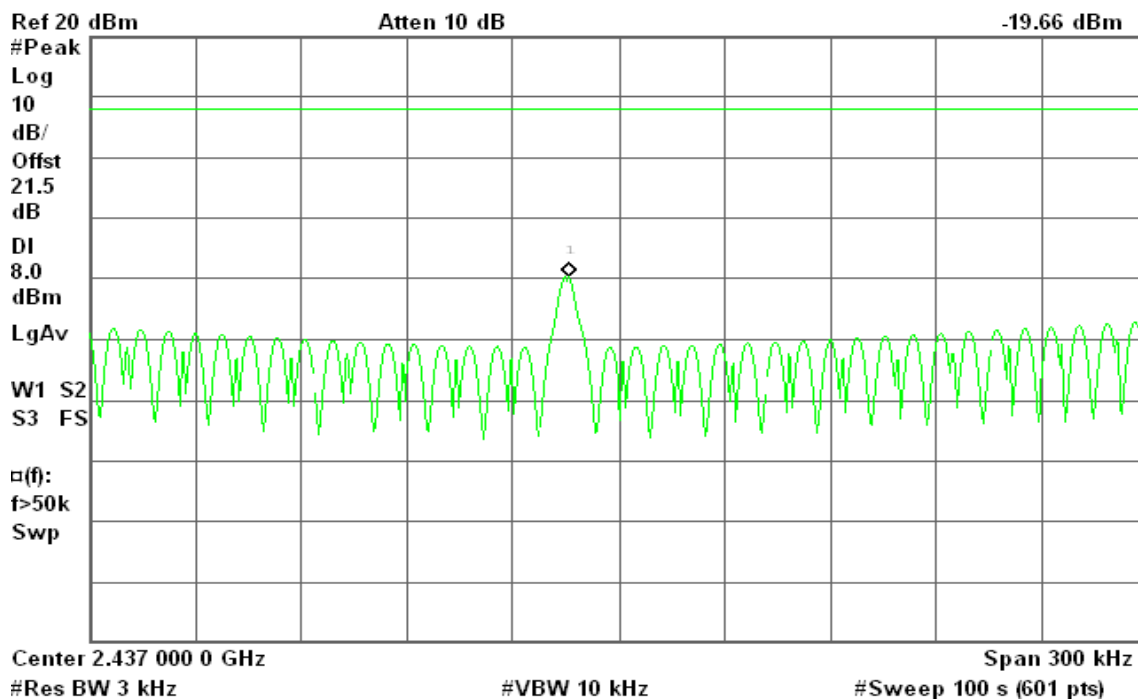
PPSD (CH Mid)

* Agilent 20:42:04 Mar 2, 2010

R T

Mkr1 2.436 985 9 GHz

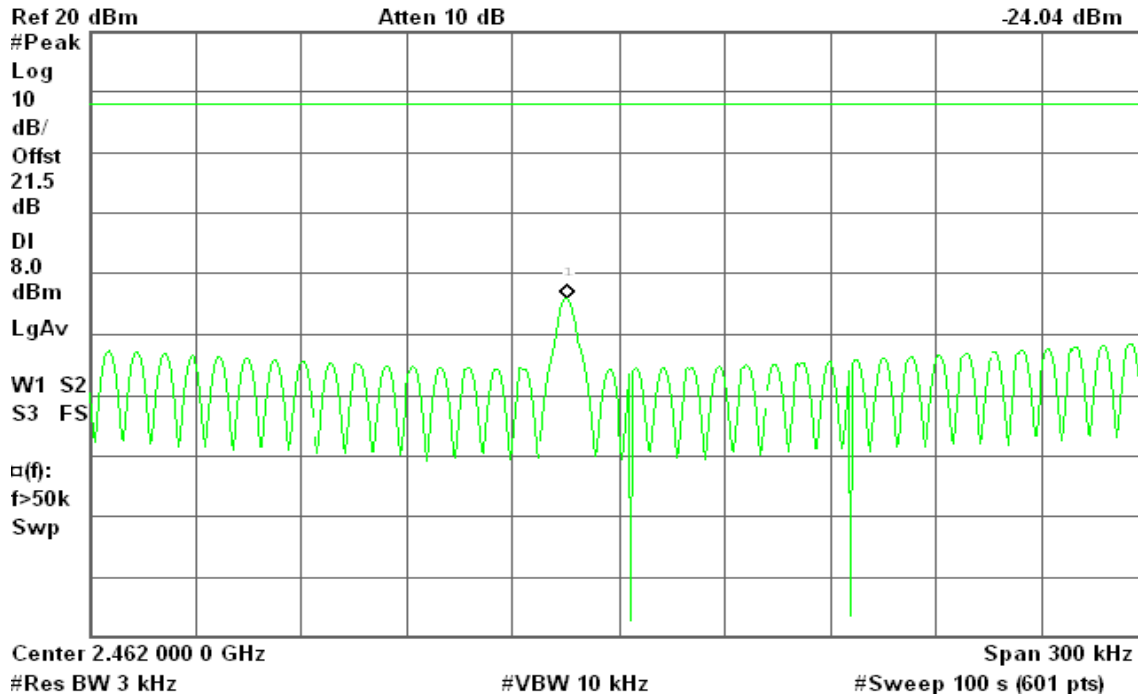
-19.66 dBm



**PPSD (CH High)**

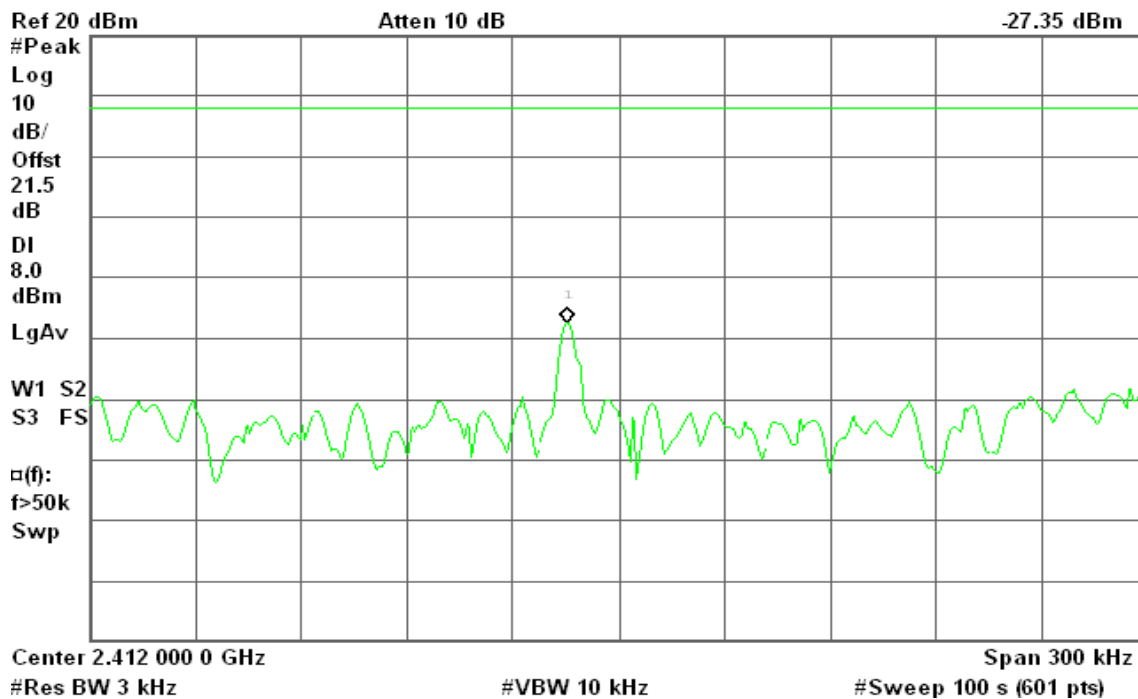
* Agilent 20:46:49 Mar 2, 2010

R T

Mkr1 2.461 985 4 GHz
-24.04 dBm**IEEE 802.11g mode****PPSD (CH Low)**

* Agilent 21:07:01 Mar 2, 2010

R T

Mkr1 2.411 985 4 GHz
-27.35 dBm



PPSD (CH Mid)

* Agilent 21:02:43 Mar 2, 2010

R T

Mkr1 2.436 985 4 GHz

-19.67 dBm

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

21.5

dB

DI

8.0

dBm

LgAv

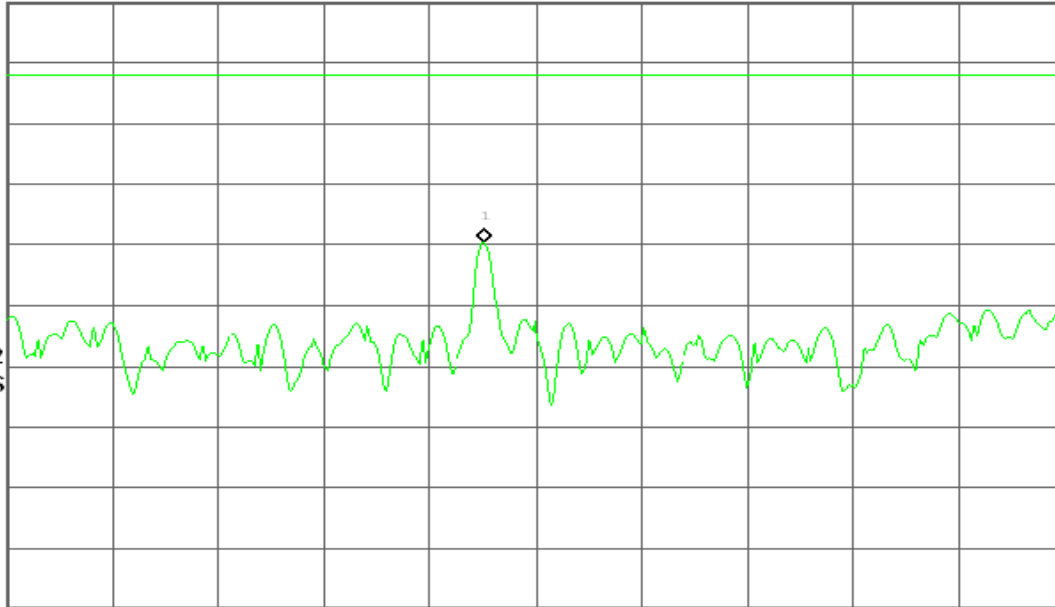
W1 S2

S3 FS

□(f):

f>50k

Swp



Center 2.437 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

PPSD (CH High)

* Agilent 20:57:51 Mar 2, 2010

R T

Mkr1 2.461 985 4 GHz

-27.99 dBm

Ref 20 dBm

Atten 10 dB

#Peak

Log

10

dB/

Offst

21.5

dB

DI

8.0

dBm

LgAv

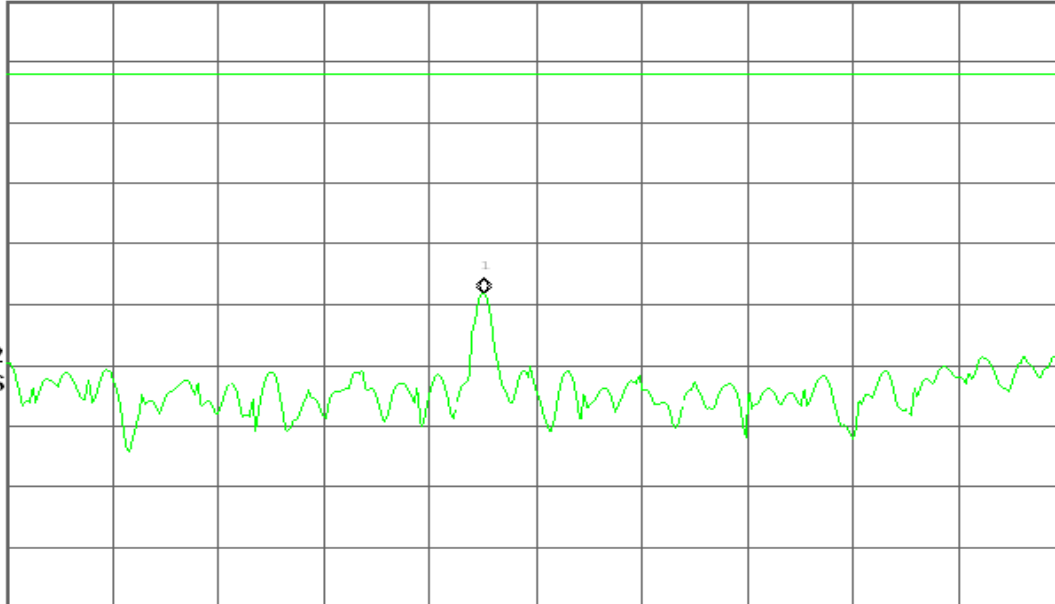
W1 S2

S3 FS

□(f):

f>50k

Swp



Center 2.462 000 0 GHz

Span 300 kHz

#Res BW 3 kHz

#VBW 10 kHz

#Sweep 100 s (601 pts)

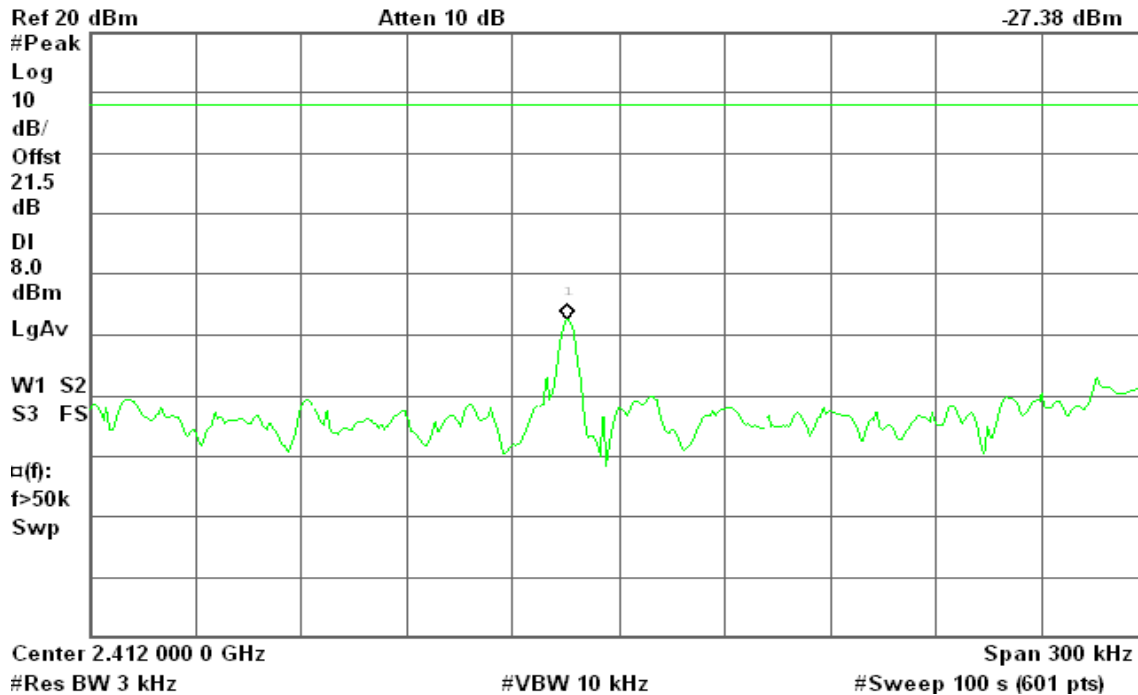


draft 802.11n Standard-20 MHz Channel mode

PPSD (CH Low)

* Agilent 21:14:11 Mar 2, 2010

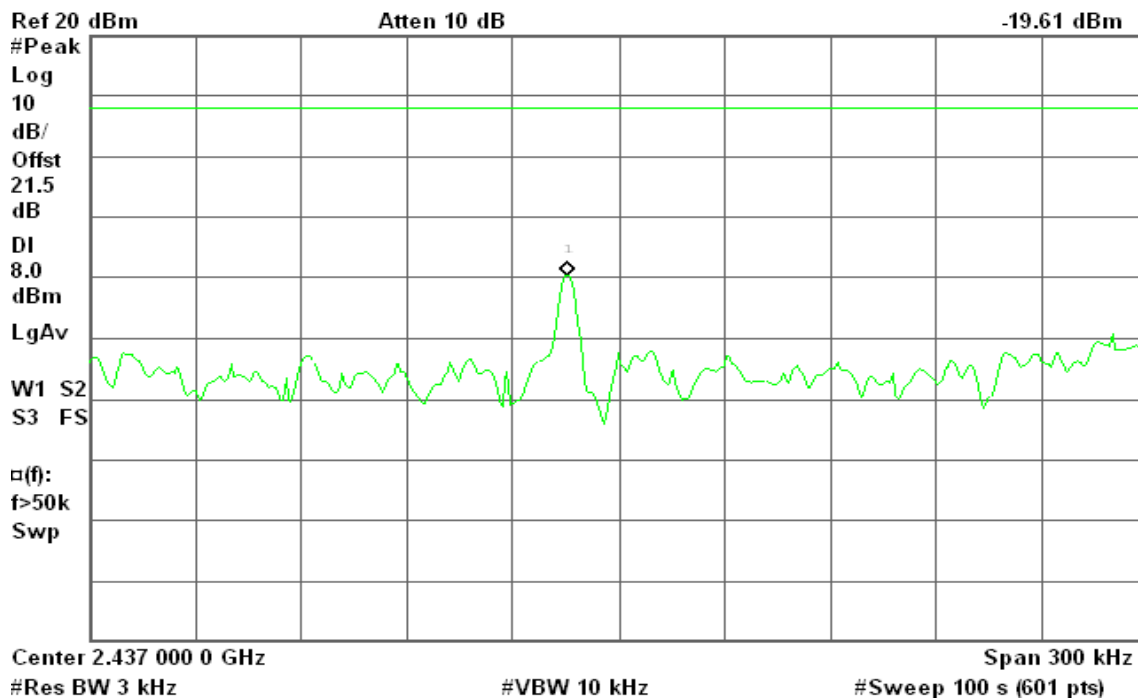
R T

Mkr1 2.411 985 4 GHz
-27.38 dBm

PPSD (CH Mid)

* Agilent 21:18:32 Mar 2, 2010

R T

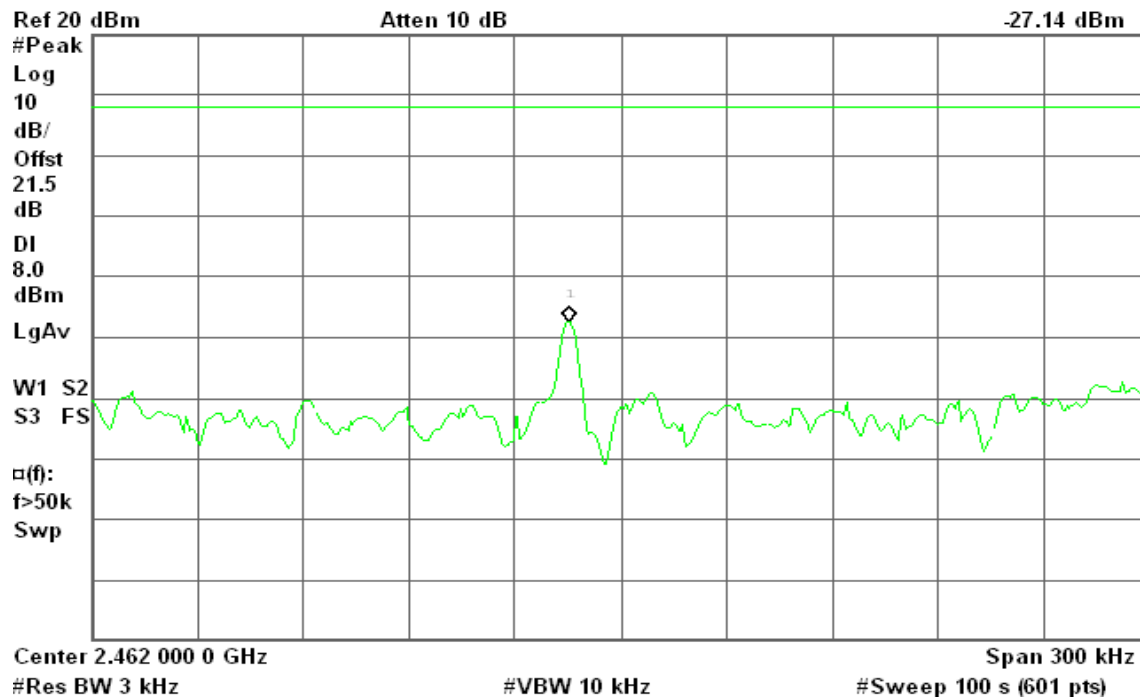
Mkr1 2.436 985 4 GHz
-19.61 dBm



PPSD (CH High)

* Agilent 21:23:02 Mar 2, 2010

R T

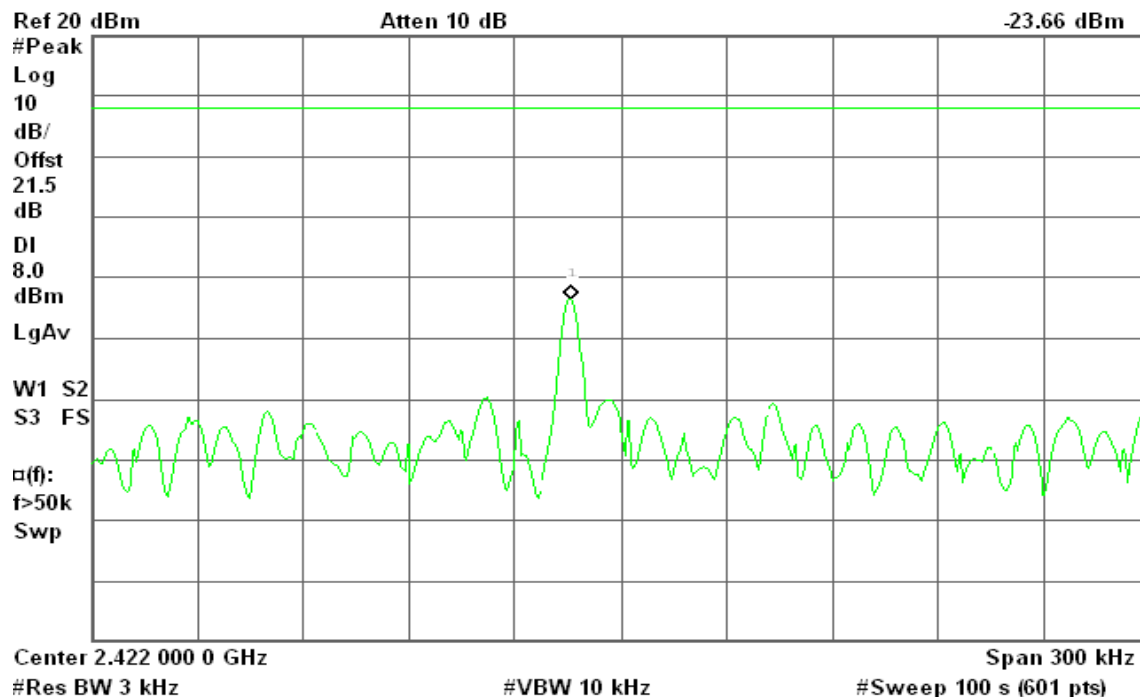
Mkr1 2.461 985 4 GHz
-27.14 dBm

draft 802.11n Wide-40 MHz Channel mode

PPSD (CH Low)

* Agilent 21:28:59 Mar 2, 2010

R T

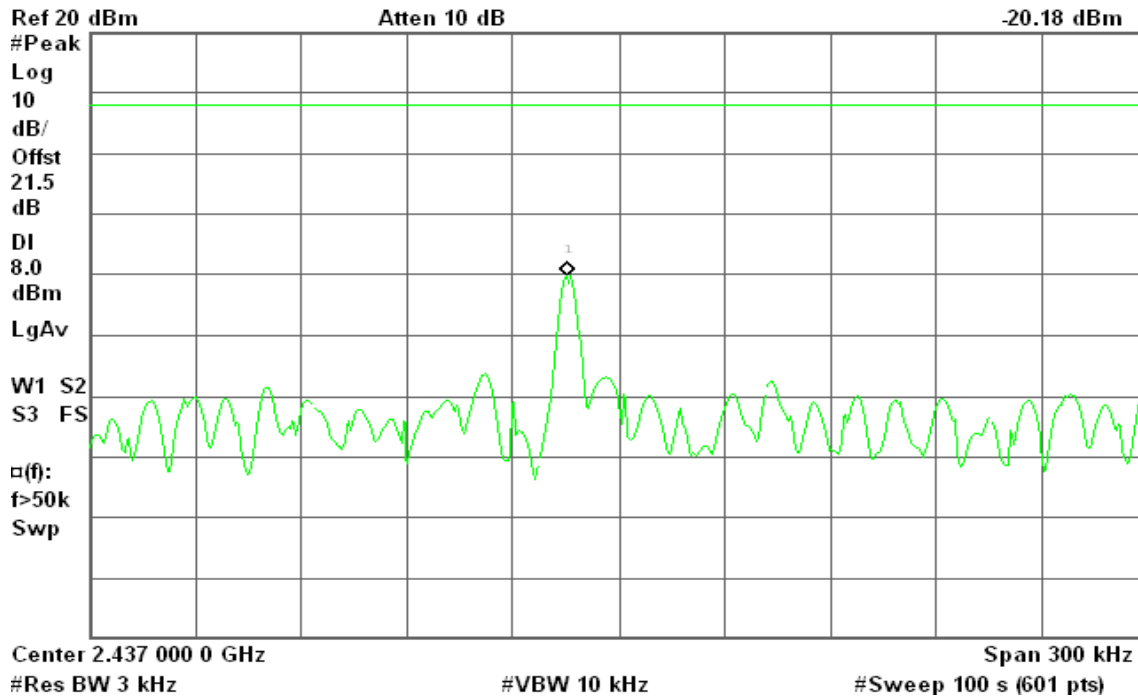
Mkr1 2.421 986 0 GHz
-23.66 dBm



PPSD (CH Mid)

* Agilent 21:33:15 Mar 2, 2010

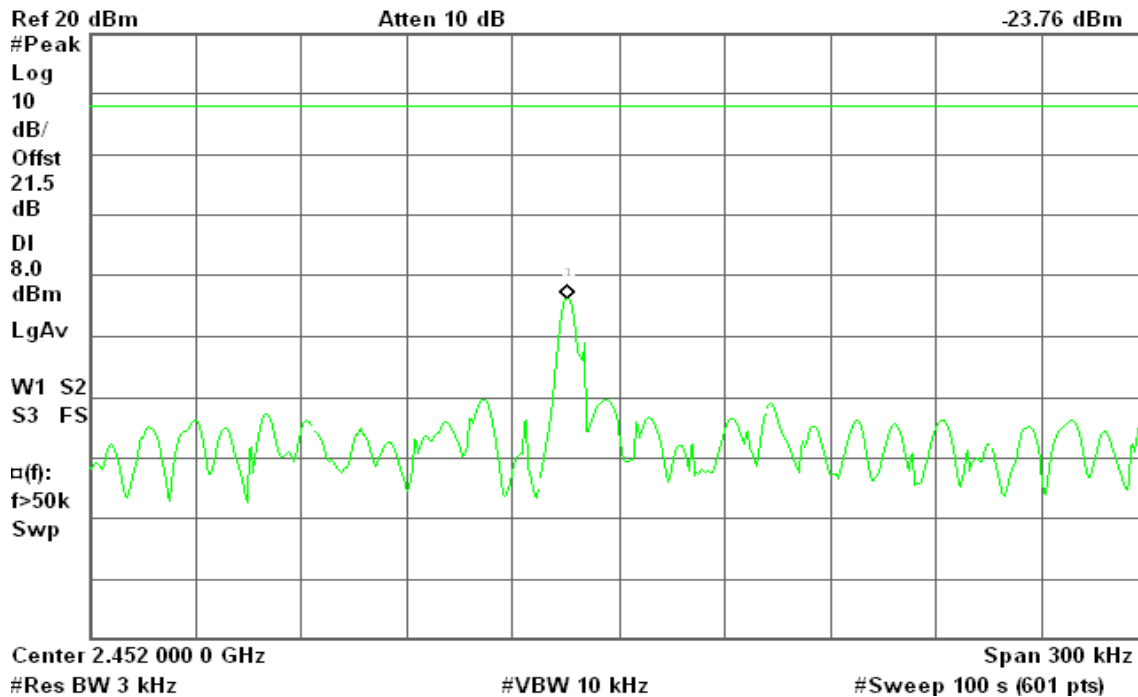
R T

Mkr1 2.436 985 4 GHz
-20.18 dBm

PPSD (CH High)

* Agilent 21:37:27 Mar 2, 2010

R T

Mkr1 2.451 985 4 GHz
-23.76 dBm

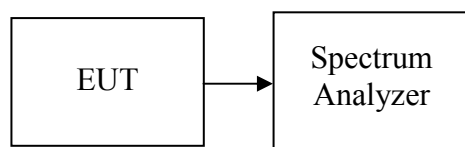
7.6 SPURIOUS EMISSIONS

7.6.1 Conducted Measurement

LIMIT

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

Test Configuration



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

No non-compliance noted



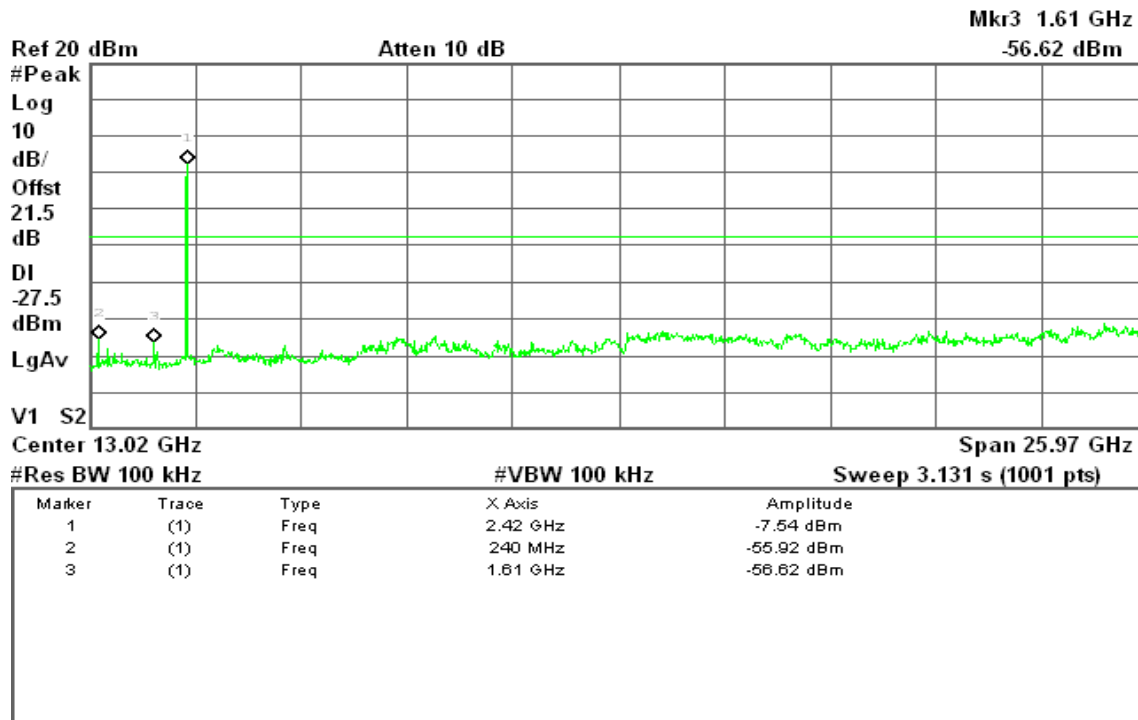
Test Plot

IEEE 802.11b mode

CH Low

* Agilent 20:38:07 Mar 2, 2010

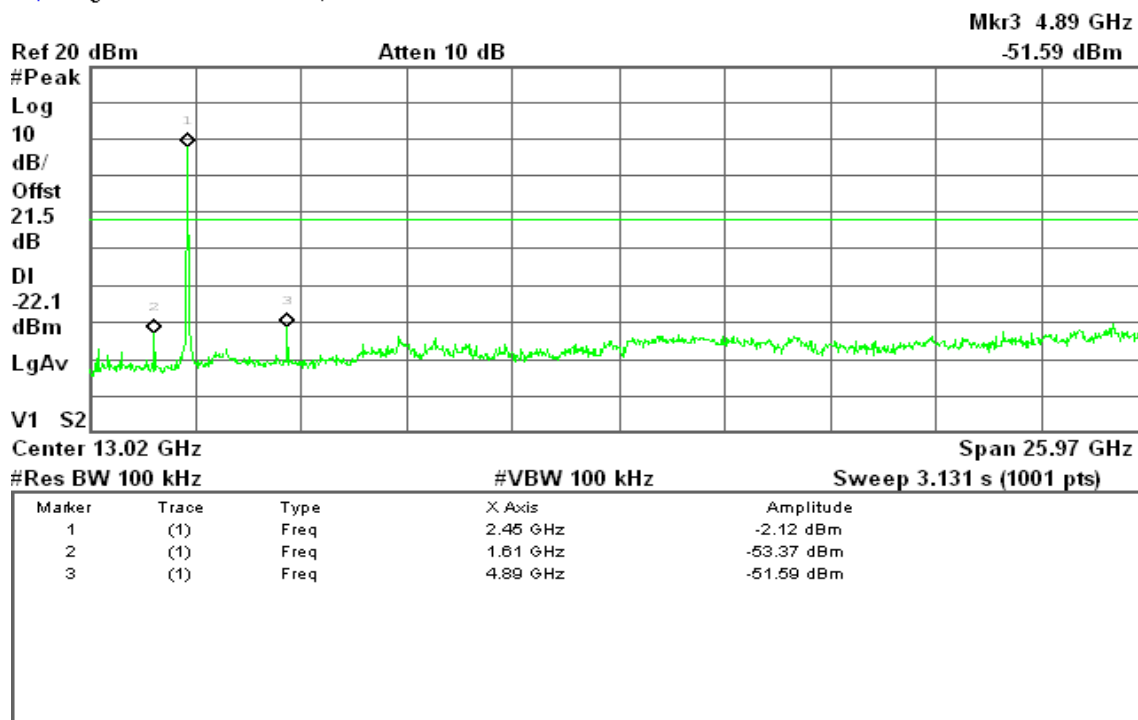
R T



CH Mid

* Agilent 20:43:07 Mar 2, 2010

R T

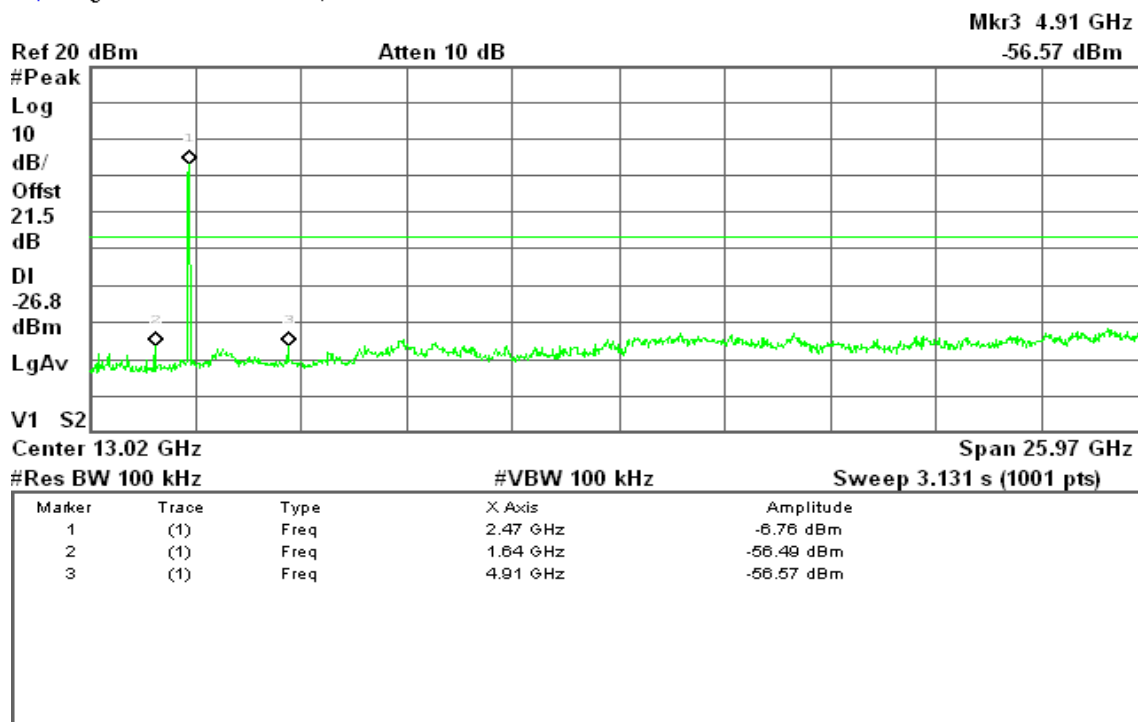




CH High

* Agilent 20:47:49 Mar 2, 2010

R T

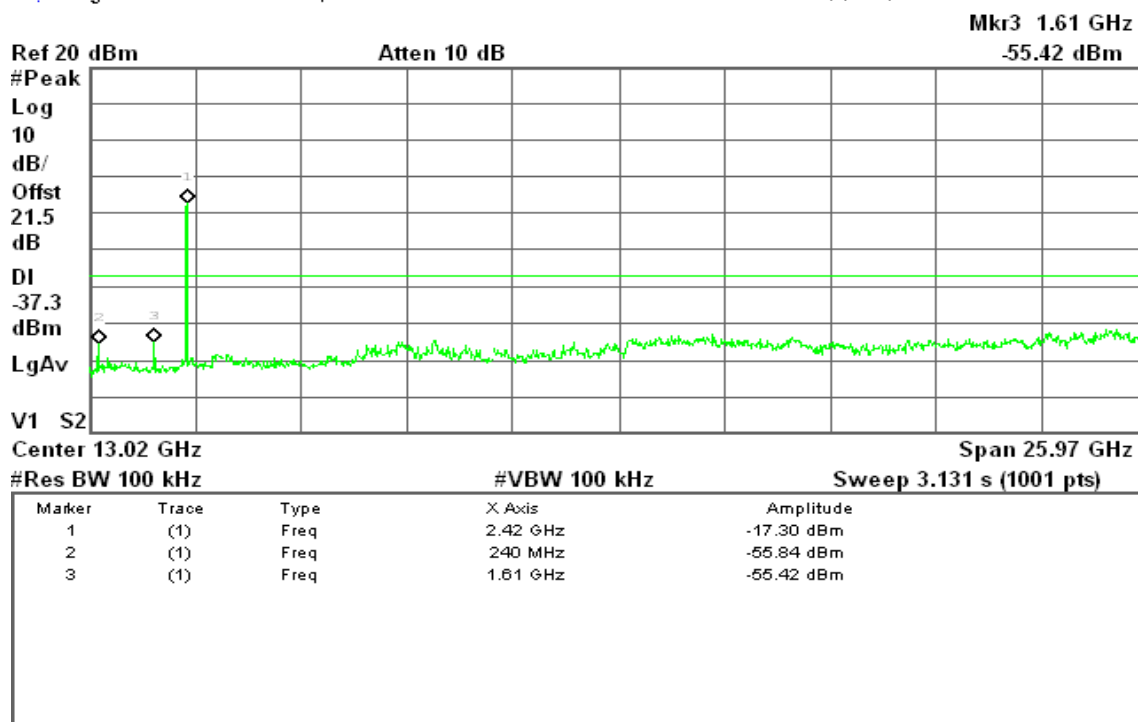


IEEE 802.11g mode

CH Low

* Agilent 21:08:13 Mar 2, 2010

R T

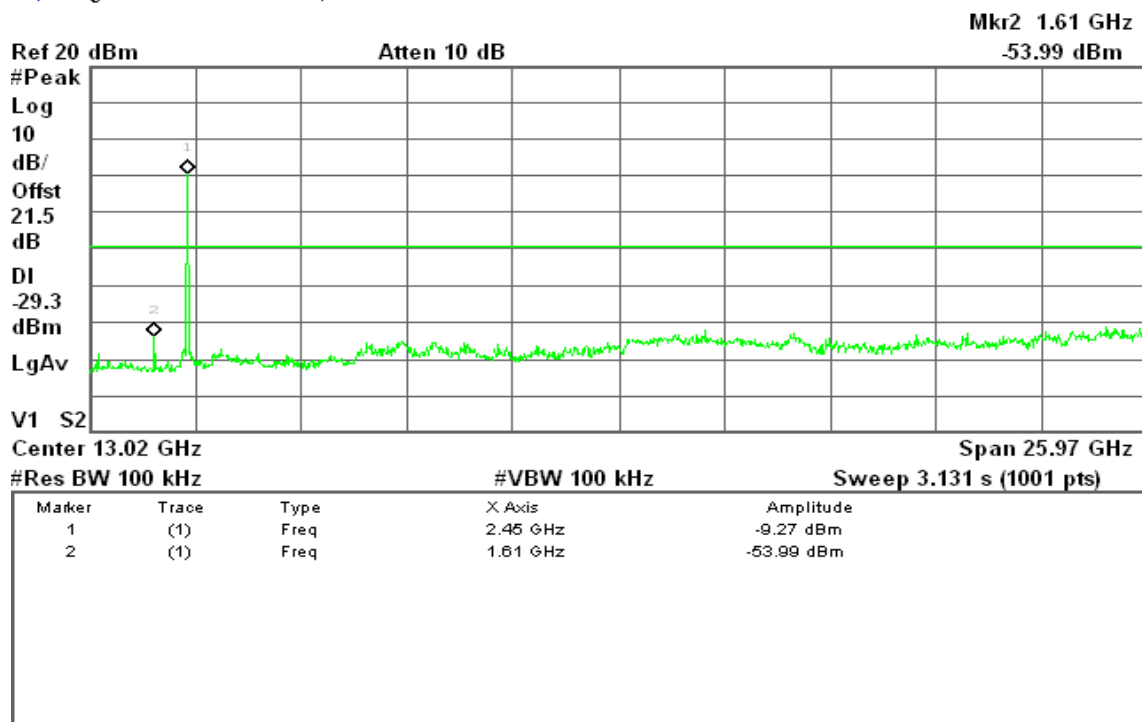




CH Mid

* Agilent 21:03:37 Mar 2, 2010

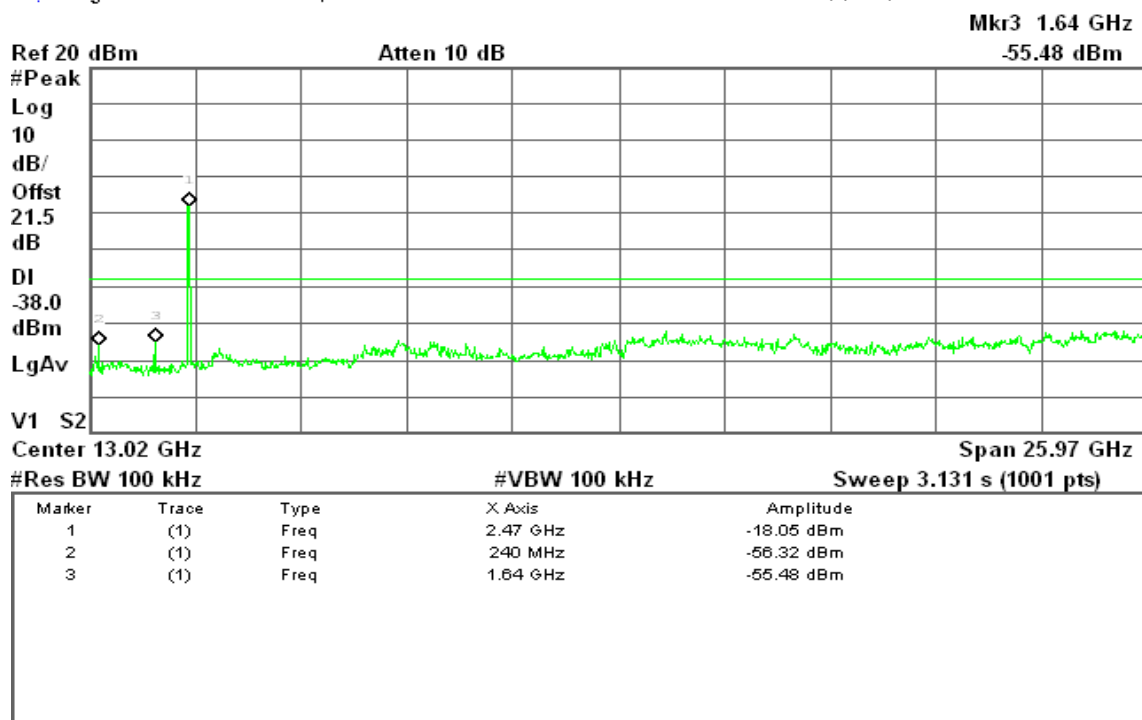
R T



CH High

* Agilent 20:58:51 Mar 2, 2010

R T



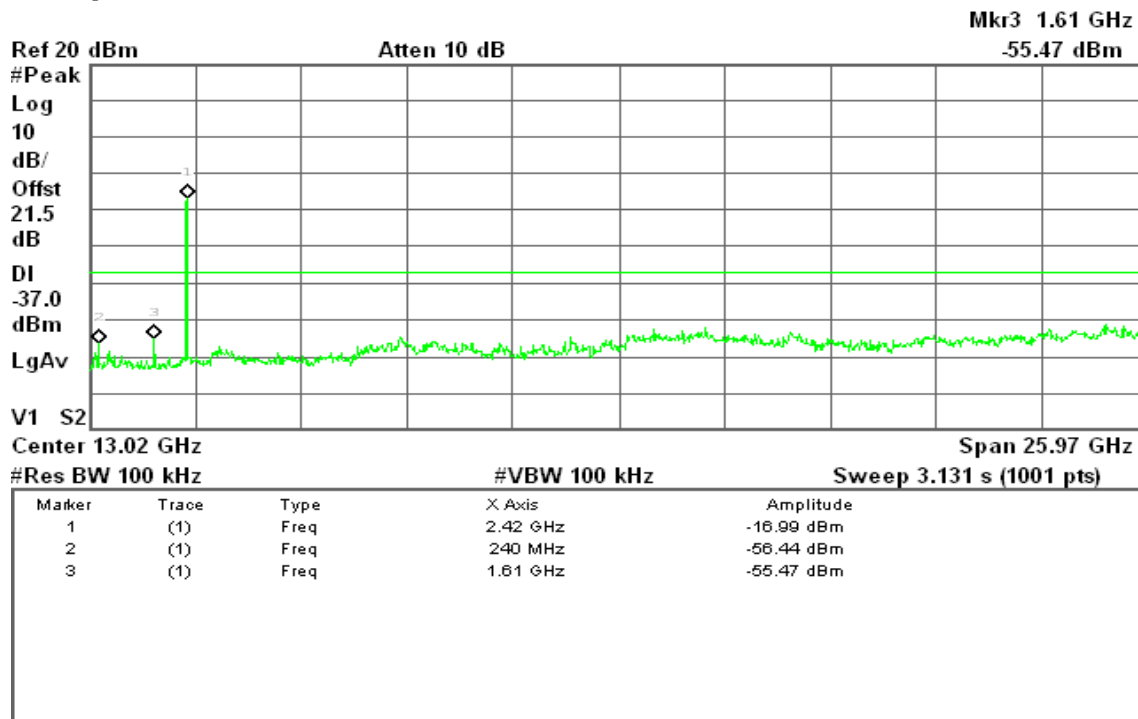


draft 802.11n Standard-20 MHz Channel mode

CH Low

* Agilent 21:15:05 Mar 2, 2010

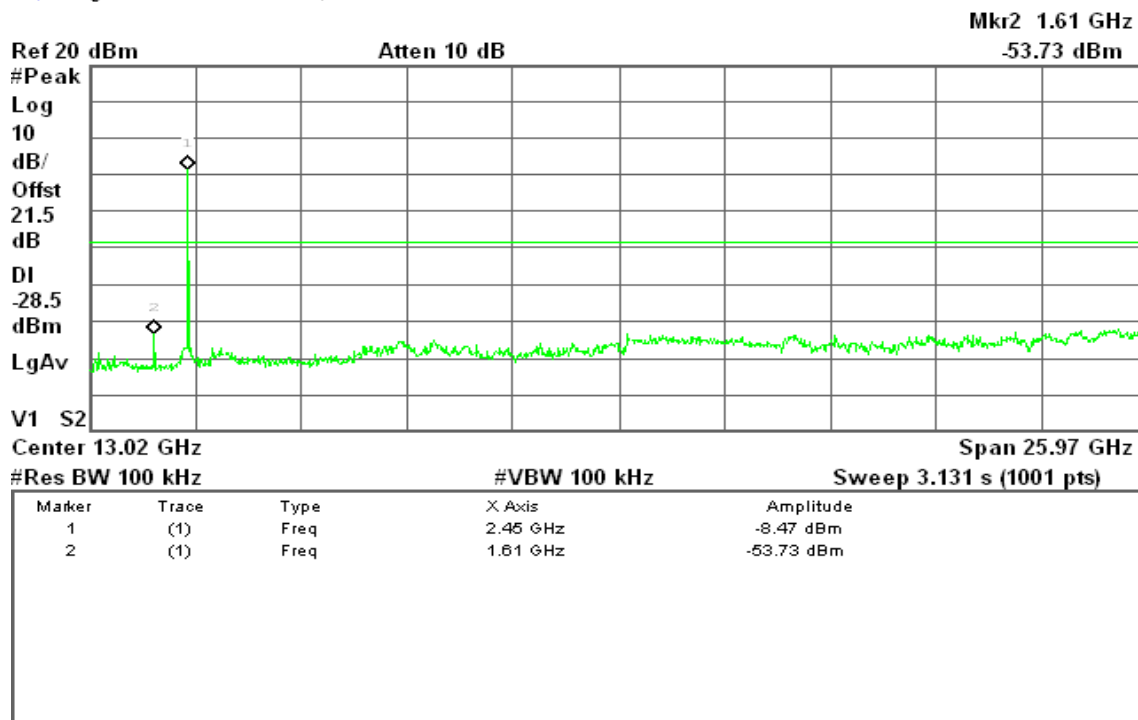
R T



CH Mid

* Agilent 21:19:22 Mar 2, 2010

R T

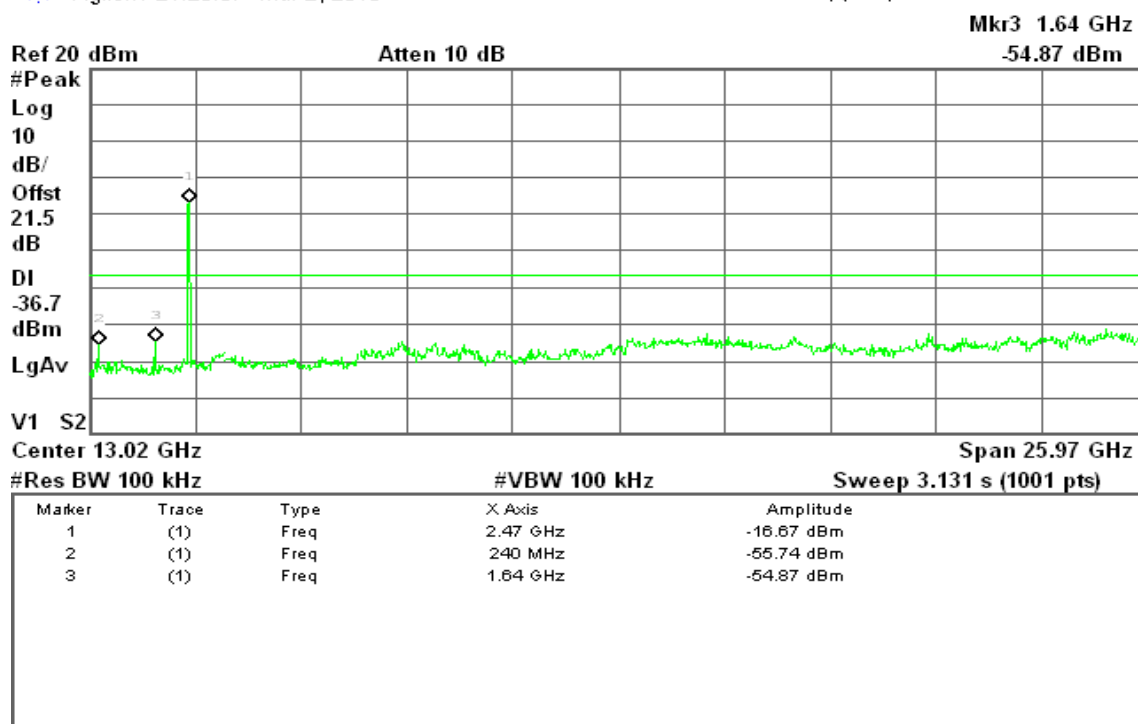




CH High

* Agilent 21:23:57 Mar 2, 2010

R T

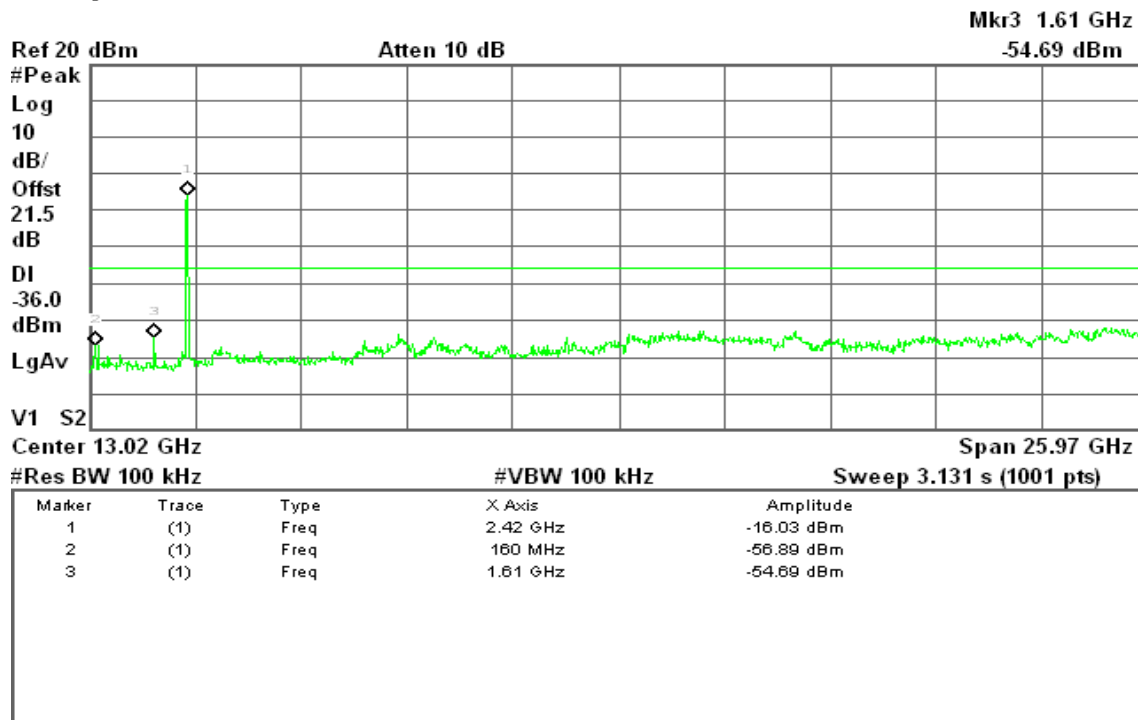


draft 802.11n Wide-40 MHz Channel mode

CH Low

* Agilent 21:29:51 Mar 2, 2010

R T

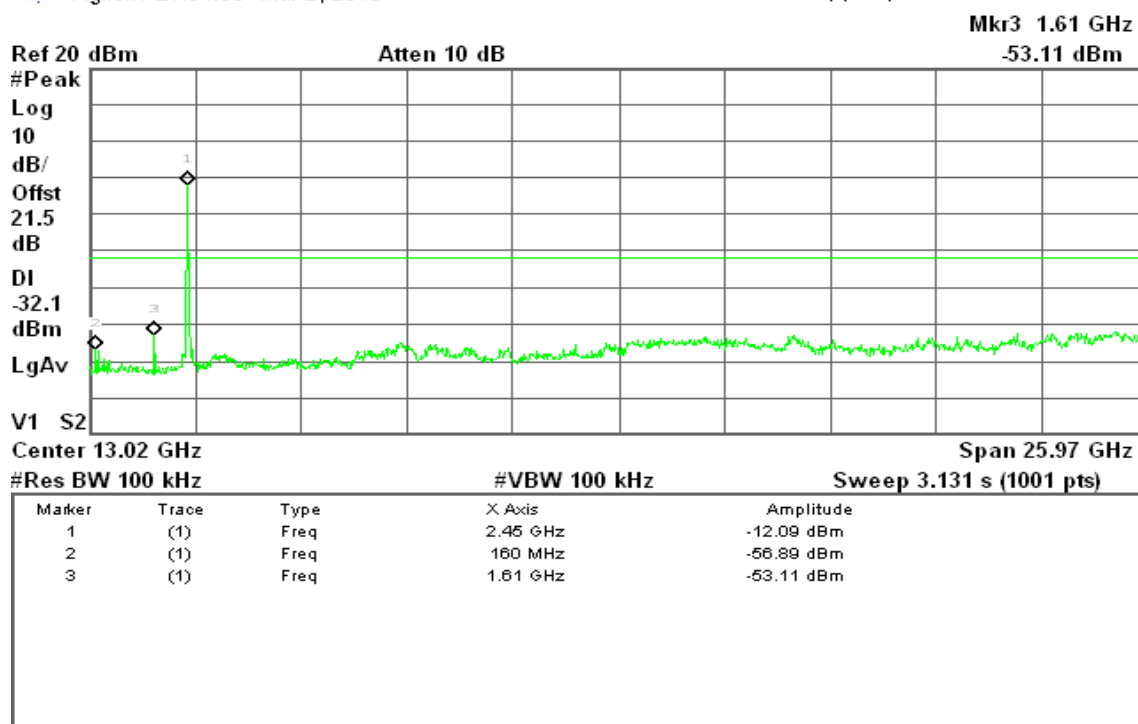




CH Mid

* Agilent 21:34:08 Mar 2, 2010

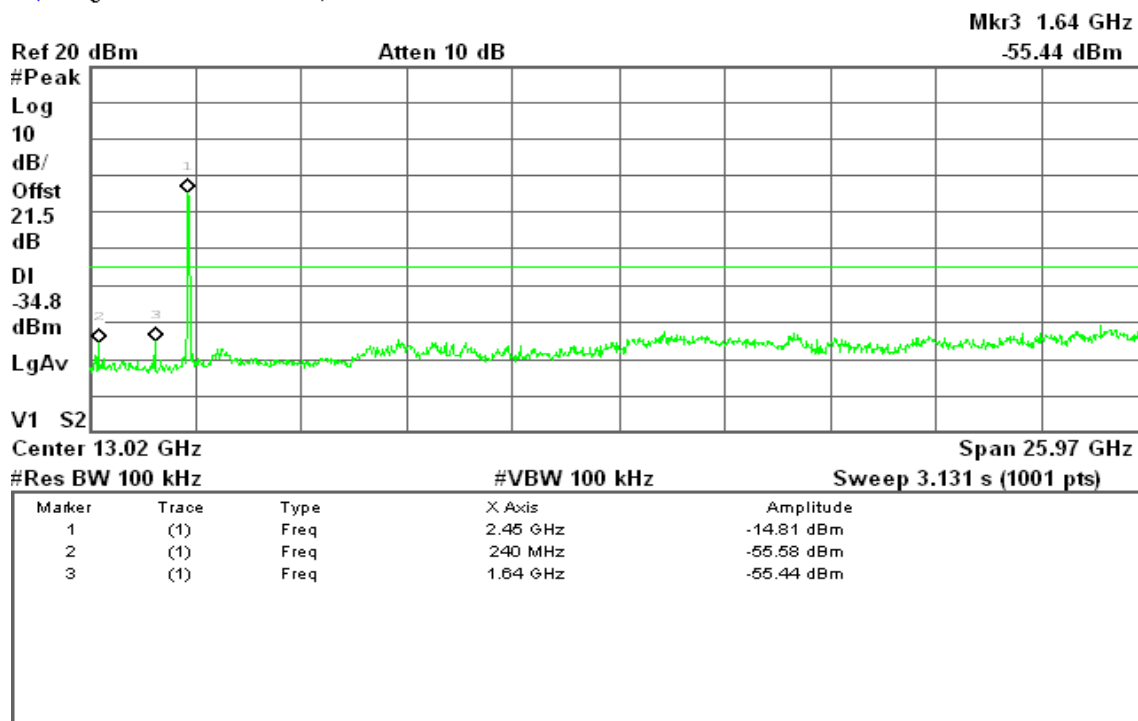
R T



CH High

* Agilent 21:38:18 Mar 2, 2010

R T





7.7 RADIATED EMISSIONS

LIMIT

1. According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

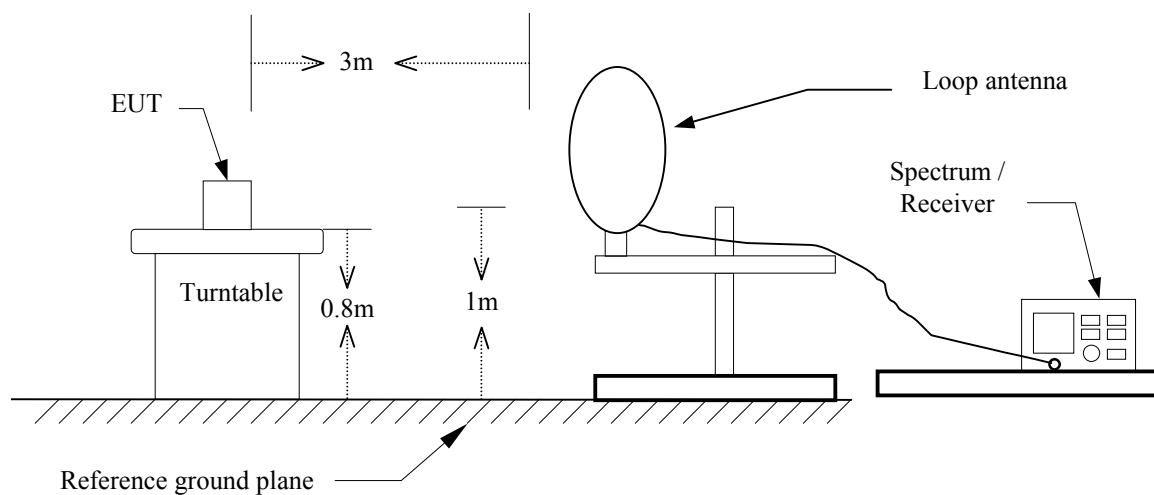
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

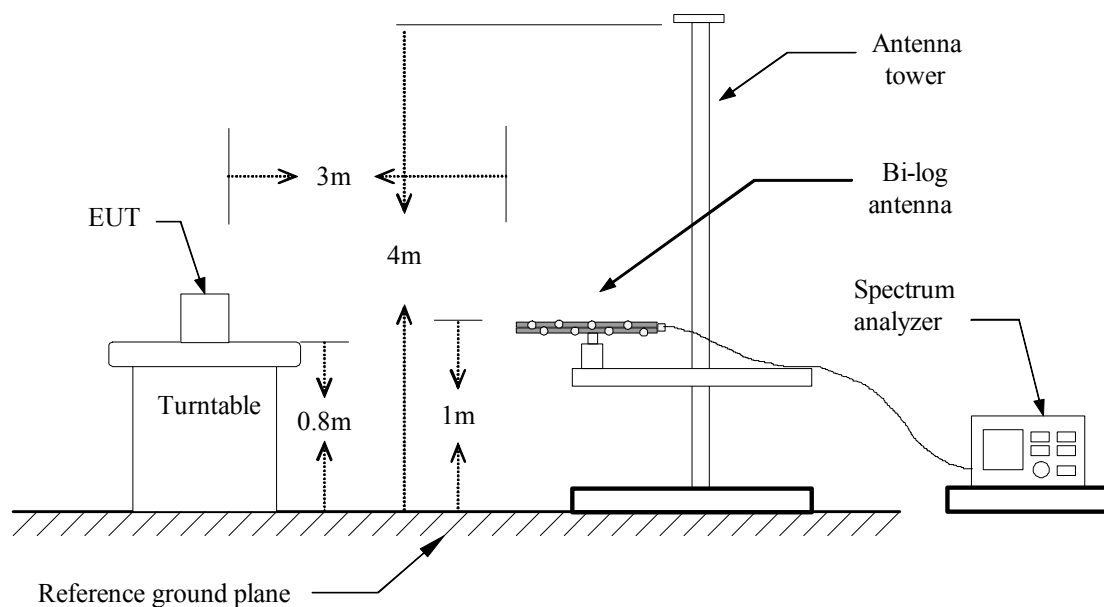
Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

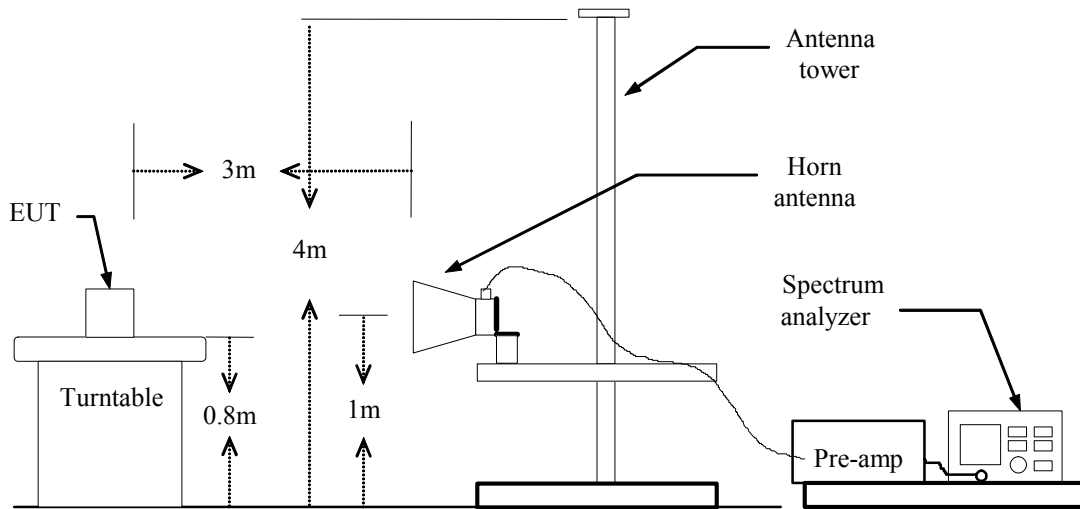
Test Configuration

9kHz ~ 30MHz



30MHz ~ 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.

**TEST RESULTS****Below 1GHz****Operation Mode:** Normal Link**Test Date:** February 23, 2010**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
337.17	V	35.42	-8.36	27.07	46.00	-18.93	Peak
371.12	V	35.24	-7.64	27.59	46.00	-18.41	Peak
405.07	V	35.76	-6.97	28.79	46.00	-17.21	Peak
439.02	V	44.74	-6.13	38.61	46.00	-7.39	Peak
647.57	V	31.75	-2.95	28.80	46.00	-17.20	Peak
747.80	V	37.63	-1.85	35.78	46.00	-10.22	Peak
439.02	H	37.75	-6.13	31.62	46.00	-14.38	Peak
639.48	H	31.21	-3.14	28.08	46.00	-17.92	Peak
749.42	H	35.47	-1.83	33.64	46.00	-12.36	Peak
776.90	H	32.87	-1.56	31.31	46.00	-14.69	Peak
799.53	H	30.69	-1.34	29.35	46.00	-16.65	Peak
978.98	H	30.13	0.70	30.82	54.00	-23.18	Peak

Remark:

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)
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:** February 23, 2010**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
1676.67	V	61.33	44.44	-7.13	54.20	37.31	74.00	54.00	-16.69	AVG
3750.00	V	51.86	---	-0.31	51.55	---	74.00	54.00	-2.45	Peak
4825.00	V	54.81	51.14	1.18	55.99	52.32	74.00	54.00	-1.68	AVG
N/A										
1416.67	H	60.23	---	-8.90	51.33	---	74.00	54.00	-2.67	Peak
1676.67	H	61.57	44.81	-7.13	54.44	37.68	74.00	54.00	-16.32	AVG
N/A										

Remark:

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

**Operation Mode:** TX / IEEE 802.11b / CH Mid**Test Date:** February 23, 2010**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
2300.00	V	60.99	46.51	-3.26	57.73	43.25	74.00	54.00	-10.75	AVG
2356.67	V	68.31	48.96	-3.09	65.22	45.87	74.00	54.00	-8.13	AVG
2386.67	V	70.39	48.23	-3.00	67.39	45.23	74.00	54.00	-8.77	AVG
2490.00	V	66.13	46.61	-2.69	63.44	43.92	74.00	54.00	-10.08	AVG
3741.67	V	51.48	---	-0.34	51.14	---	74.00	54.00	-2.86	Peak
4875.00	V	53.49	51.28	1.16	54.65	52.44	74.00	54.00	-1.56	AVG
1690.00	H	61.10	44.66	-7.01	54.09	37.65	74.00	54.00	-16.35	AVG
N/A										

Remark:

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

**Operation Mode:** TX / IEEE 802.11b / CH High**Test Date:** February 23, 2010**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
2346.67	V	62.68	45.61	-3.12	59.57	42.49	74.00	54.00	-11.51	AVG
2416.67	V	70.66	44.68	-2.91	67.75	41.77	74.00	54.00	-12.23	AVG
2493.33	V	70.64	44.26	-2.68	67.96	41.58	74.00	54.00	-12.42	AVG
4925.00	V	53.85	50.83	1.14	54.99	51.97	74.00	54.00	-2.03	AVG
N/A										
1686.67	H	61.15	44.90	-7.04	54.11	37.86	74.00	54.00	-16.14	AVG
N/A										

Remark:

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

**Operation Mode:** TX / IEEE 802.11g / CH Low**Test Date:** February 23, 2010**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
1720.00	V	61.66	44.47	-6.73	54.93	37.74	74.00	54.00	-16.26	AVG
2333.33	V	60.70	45.14	-3.16	57.55	41.98	74.00	54.00	-12.02	AVG
2370.00	V	64.57	44.66	-3.05	61.52	41.61	74.00	54.00	-12.39	AVG
2453.33	V	62.85	44.16	-2.80	60.05	41.36	74.00	54.00	-12.64	AVG
N/A										
1676.67	H	62.09	44.72	-7.13	54.96	37.59	74.00	54.00	-16.41	AVG
N/A										

Remark:

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

**Operation Mode:** TX / IEEE 802.11g / CH Mid**Test Date:** February 23, 2010**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
2350.00	V	69.82	48.38	-3.11	66.72	45.27	74.00	54.00	-8.73	AVG
2480.00	V	70.36	46.62	-2.72	67.64	43.90	74.00	54.00	-10.10	AVG
N/A										
1696.67	H	61.73	44.90	-6.95	54.78	37.95	74.00	54.00	-16.05	AVG
N/A										

Remark:

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

**Operation Mode:** TX / IEEE 802.11g / CH High**Test Date:** February 23, 2010**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
2403.33	V	61.80	45.54	-2.95	58.85	42.59	74.00	54.00	-11.41	AVG
2426.67	V	63.86	44.17	-2.88	60.98	41.29	74.00	54.00	-12.71	AVG
2490.00	V	67.51	44.19	-2.69	64.82	41.50	74.00	54.00	-12.50	AVG
N/A										
1683.33	H	61.90	44.73	-7.07	54.83	37.66	74.00	54.00	-16.34	AVG
N/A										

Remark:

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

**Operation Mode:** TX / draft 802.11n Standard-20 MHz Channel mode / CH Low**Test Date:** February 23, 2010**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
2363.33	V	64.27	47.17	-3.07	61.20	44.10	74.00	54.00	-9.90	AVG
2380.00	V	64.18	44.60	-3.02	61.16	41.58	74.00	54.00	-12.42	AVG
2446.67	V	63.63	44.07	-2.82	60.81	41.25	74.00	54.00	-12.75	AVG
N/A										
1703.33	H	61.77	44.22	-6.89	54.88	37.33	74.00	54.00	-16.67	AVG
N/A										

Remark:

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



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

Test Date: February 23, 2010

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
2343.33	V	66.73	47.05	-3.13	63.60	43.92	74.00	54.00	-10.08	AVG
2366.67	V	66.45	48.04	-3.06	63.39	44.98	74.00	54.00	-9.02	AVG
2393.33	V	67.57	46.48	-2.98	64.59	43.50	74.00	54.00	-10.50	AVG
2496.67	V	66.08	50.51	-2.67	63.41	47.84	74.00	54.00	-6.16	AVG
N/A										
1703.33	H	61.77	44.74	-6.89	54.88	37.85	74.00	54.00	-16.15	AVG
N/A										

Remark:

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

**Operation Mode:** TX / draft 802.11n Standard-20 MHz Channel mode / CH High**Test Date:** February 23, 2010**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
2386.67	V	61.72	44.36	-3.00	58.73	41.36	74.00	54.00	-12.64	AVG
2396.67	V	62.63	45.15	-2.97	59.66	42.18	74.00	54.00	-11.82	AVG
2513.33	V	60.95	45.64	-2.62	58.33	43.02	74.00	54.00	-10.98	AVG
N/A										
1693.33	H	61.14	44.77	-6.98	54.16	37.79	74.00	54.00	-16.21	AVG
N/A										

Remark:

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



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

Test Date: February 23, 2010

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
2343.33	V	62.01	44.15	-3.13	58.88	41.02	74.00	54.00	-12.98	AVG
N/A										
1690.00	H	61.36	44.84	-7.01	54.36	37.83	74.00	54.00	-16.17	AVG
N/A										

Remark:

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

**Operation Mode:** TX / draft 802.11n Wide-40 MHz Channel mode
/ CH Mid**Test Date:** February 23, 2010**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
2326.67	V	66.27	47.28	-3.18	63.09	44.10	74.00	54.00	-9.90	AVG
2373.33	V	68.20	46.73	-3.04	65.16	43.69	74.00	54.00	-10.31	AVG
2496.67	V	66.96	46.10	-2.67	64.29	43.43	74.00	54.00	-10.57	AVG
3741.67	V	51.35	---	-0.34	51.01	---	74.00	54.00	-2.99	Peak
N/A										
1690.00	H	61.21	44.78	-7.01	54.20	37.77	74.00	54.00	-16.23	AVG
N/A										

Remark:

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



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

Test Date: February 23, 2010

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
2403.33	V	66.31	46.91	-2.95	63.36	43.96	74.00	54.00	-10.04	AVG
N/A										
1693.33	H	61.18	44.82	-6.98	54.20	37.84	74.00	54.00	-16.16	AVG
N/A										

Remark:

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



7.8 POWERLINE CONDUCTED EMISSIONS

LIMIT

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

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

* Decreases with the logarithm of the frequency.

Test Configuration

See test photographs attached in Appendix 1 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:** February 26, 2010
Temperature: 22°C **Tested by:** Leo Shi
Humidity: 45% 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
0.1500	48.98	40.08	0.22	49.20	40.30	66.00	56.00	-16.80	-15.70	L1
0.2200	34.13	24.83	0.17	34.30	25.00	62.82	52.82	-28.52	-27.82	L1
3.7414	23.49	19.99	0.11	23.60	20.10	56.00	46.00	-32.40	-25.90	L1
7.6110	28.02	23.52	0.38	28.40	23.90	60.00	50.00	-31.60	-26.10	L1
11.8900	21.93	16.23	0.67	22.60	16.90	60.00	50.00	-37.40	-33.10	L1
27.0600	32.27	27.77	0.93	33.20	28.70	60.00	50.00	-26.80	-21.30	L1
0.1500	49.46	41.16	0.24	49.70	41.40	66.00	56.00	-16.30	-14.60	L2
0.2200	33.01	24.21	0.19	33.20	24.40	62.82	52.82	-29.62	-28.42	L2
3.7284	19.96	17.66	0.14	20.10	17.80	56.00	46.00	-35.90	-28.20	L2
7.5831	25.98	22.68	0.42	26.40	23.10	60.00	50.00	-33.60	-26.90	L2
10.9400	24.03	19.73	0.67	24.70	20.40	60.00	50.00	-35.30	-29.60	L2
26.8000	32.49	28.29	1.01	33.50	29.30	60.00	50.00	-26.50	-20.70	L2

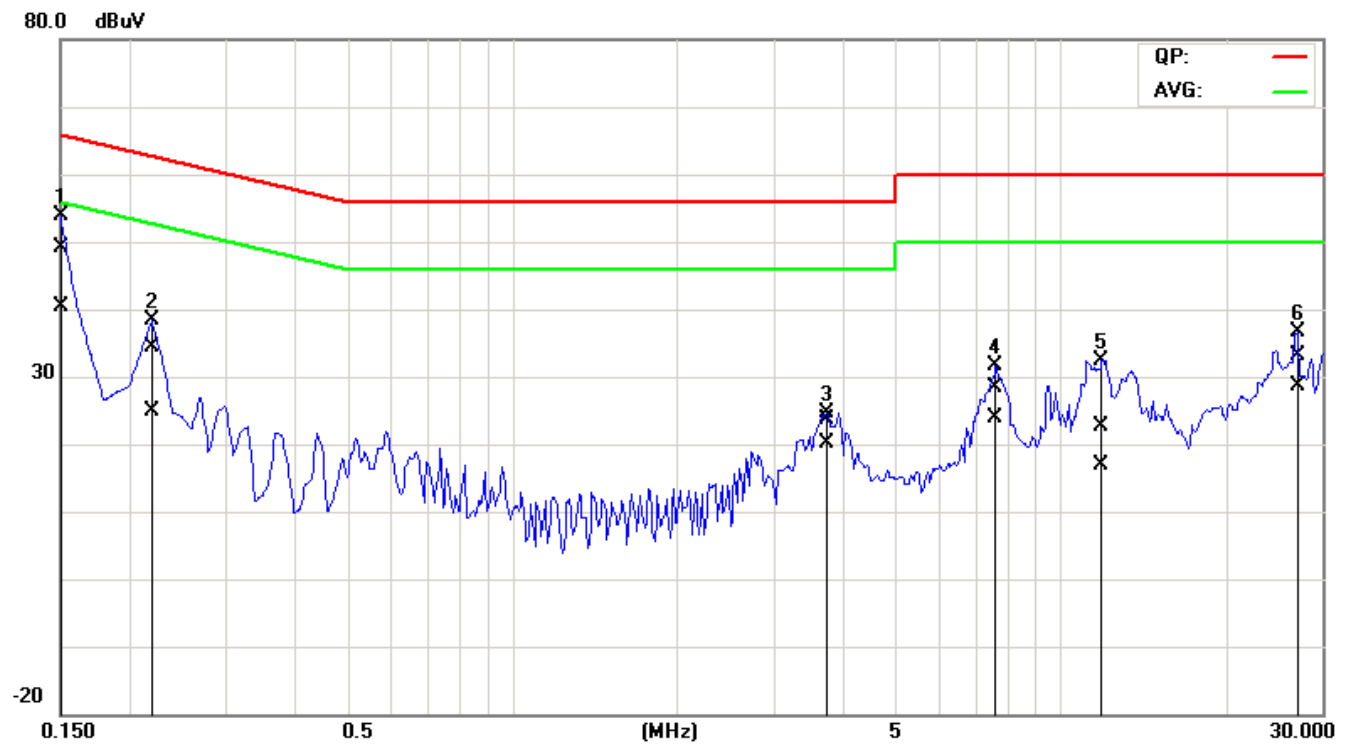
Remark:

1. Measuring frequencies from 0.15 MHz to 30MHz.
2. The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 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)

