



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

WIRELESS ROUTER

Model: WR850R; WR850RD

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.
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Taoyuan Shien, (338) Taiwan, R.O.C.**

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	May 18, 2009	Initial Issue	ALL	Celine Chou



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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 ROUTER

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

Model: WR850R; WR850RD

Date of Test: March 30 ~ May 7, 2009

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:

 David Wang
 Director
 Compliance Certification Services Inc.

Reviewed by:

 Ethan Huang
 Section Manager
 Compliance Certification Services Inc.



2. EUT DESCRIPTION

Product	WIRELESS ROUTER								
Trade Name	PRO-NETS; Speed Com+; Jet Com								
Model Number	WR850R; WR850RD								
Model Discrepancy	<p>1. All the model numbers are identical just for marketing purpose only except Antenna, the detail information please see as below.</p> <table border="1"> <thead> <tr> <th>Model</th> <th>Antenna (removable)</th> </tr> </thead> <tbody> <tr> <td>WR850R</td> <td>X</td> </tr> <tr> <td>WR850RD</td> <td>O</td> </tr> </tbody> </table>			Model	Antenna (removable)	WR850R	X	WR850RD	O
Model	Antenna (removable)								
WR850R	X								
WR850RD	O								
EUT Power Rating	12VDC								
Power Adapter	Ktec	Model	KSLFC1200100W1US						
	DVE	Model	DSA-12G-12 FUS 120120						
	OEM	Model	ADS0129-W 120100						
Power Adapter Power Rating	<p>For KSLFC1200100W1US; DSA-12G-12FUS 120120 I/P: 100-240VAC, 50/60Hz, 0.3A O/P: 12VDC, 1.0A For ADS10-W120100 I/P: 100-240VAC, 50/60Hz, 0.5A O/P: 12VDC, 1.0A</p>								
Operating Frequency Range	2412 ~ 2462 MHz								
Transmit Power	IEEE 802.11b mode: 21.43dBm IEEE 802.11g mode: 23.86dBm draft 802.11n 20 MHz Channel mode: 23.89 dBm draft 802.11n 40 MHz Channel mode: 23.8 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 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 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 20 MHz Channel mode: 11 Channels draft 802.11n 40 MHz Channel mode: 7 Channels								
Antenna Specification	Dipole Antenna / Gain: 2dBi								

Remark:

1. The sample selected for test was production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: **RXZ-WR850R** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2003 and FCC CFR 47 Part 2, Part 15.207, 15.209 and 15.247.

3.1 EUT CONFIGURATION

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

3.2 EUT EXERCISE

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

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

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

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

Radiated Emissions

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



3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

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

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

² Above 38.6

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



3.5 DESCRIPTION OF TEST MODES

After verification two EUTs (WR850R and WR850RD), The EUT (model: WR850R) had been tested under operating condition.

After verification, The Adapter (DSA-12G-12 FUS 120120) was selected as the worst case for final test.

The EUT is a 2x2 configuration spatial MIMO (2Tx & 2Rx) without beam forming function but with cyclic delay diversity 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 mode was programmed.

The worst case data rate is determined as the data rate with highest output power.

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

IEEE 802.11b mode:

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

IEEE 802.11g mode:

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

draft 802.11n 20 MHz Channel mode:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 13.5Mbps data rate were chosen for full testing.

draft 802.11n 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	Agilnet	E4446A	MY48250064	10/28/2009
Spectrum Analyzer	R&S	FSEB	825829/011	10/29/2009

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilnet	E4446A	MY48250064	10/28/2009
Spectrum Analyzer	R&S	FSEB	825829/011	10/29/2009
Pre-Amplifier	HP	8447D	2944A06530	12/31/2009
Pre-Amplifier	HP	8449B	3008A01738	04/17/2010
EMI Test Receiver	SCHAFFNER	SCR 3501	436	01/21/2010
Loop Antenna	EMCO	6502	2356	05/28/2010
Bilog Antenna	SCHWAZBECK	VULB9160	3084	09/08/2009
Horn Antenna	EMCO	3115	00022250	05/08/2010
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Test S/W	LabVIEW 6.1 (Wugu Chamber EMI Teat V1_4.5.3)			

Powerline Conducted Emissions Test Site				
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	05/12/2009
THERMO-HYGRO METER	TECPEL	DTM-303	No.7	11/24/2009
Test S/W	EMI 32.exe			



4.3 MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Powerline Conducted Emission	± 1.7376
3M Semi Anechoic Chamber / 30MHz ~ 1GHz	± 3.8856
3M Semi Anechoic Chamber / Above 1GHz	± 3.8721

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, Chungshen 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, Pa-De 2nd Rd., Luchu Hsiang, Taoyuan Shien, (338) Taiwan, R.O.C.

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: 2003 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	A2LA	CFR 47, FCC Part15/18, CISPR 22, EN 55022, ICES-003, AS/NZS CISPR 22, VCCI V-3, EN 55011, CISPR 11, IEC/EN 61000-4-2/3/4/5/6/8/11, EN 61000-6-1/2/3/4, EN 55024, CISPR 24, AS/NZS CISPR 24, AS/NZS 61000.6.2, EN 55014-1/-2, ETSI EN 300 386 v1.3.2/v1.3.3, IEC/EN 61000-3-2, AS/NZS 61000.3.2, IEC/EN 61000-3-3, AS/NZS 61000.3.3	 ACCREDITED No. 0824-01
USA	FCC MRA	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	 FC _{TW1026}
Japan	VCCI	3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements	VCCI R-2882/2541/2798/725/1868 C-402/747/912 T-321/325
Taiwan	TAF	EN 55014-1, CISPR 14, CNS 13781-1, EN 55013, CISPR 13, CNS 13439, EN 55011, CISPR 11, CNS 13803, PLMN09, IS2045-0, LP0002 FCC Part 27/90, Part 15B/C/D/E, RSS-192/193/210/310 ETSI EN 300 328/ 300 220-1/ 300 220-2/ 301 893/ 301 489-01/ 301 489-03/ 301 489-07 / 301 489-17/ 300 440-1/ 300 440-2 AS/NZS 4268, AS/NZS 4771 CISPR 22, EN 55022, CNS 13438, AS/NZS CISPR 22, VCCI, IEC/EN 61000-4-2/3/4/5/6/8/11, CNS 14676-2/3/4/5/6/8, CNS 14934-2/3, CNS 13783-1, CNS 13439, CNS 13803	 IAC-MRA TAF Testing Laboratory 0363
Taiwan	BSMI	CNS 13438, CNS 13783-1, CNS 13439, CNS 14115	SL2-IS-E-0014 / IN-E-0014 /A1-E-0014 /R1-E-0014 /R2-E-0014 /L1-E-0014
Canada	Industry Canada	RSS212, Issue 1	 IC 2324C-3 IC 2324C-5

Note: No part of this report may be used to claim or imply product endorsement by A2LA, TAF or other government agency.



6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

For Radiated and Conducted Measurement							
No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
	N/A						

For Powerline Measurement							
No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	USB Mouse	Dell	MOC5UO	H1606PRO	FCC Doc	Shielded, 1.8m	N/A
2.	USB Keyboard	Dell	SK-8115	N/A	FCC Doc	Shielded, 1.8m with a core	N/A
3.	Modem	TOP-SOLUTION	5JEG4033MKO	L0063CG2D007217	FCC Doc	Shielded, 1.8m	Unshielded, 1.8m
4.	Monitor	SAMSUNG	710V	GS17H9NXA05853A	FCC Doc	Shielded, 1.8m with two cores	Unshielded, 1.8m
5.	Host PC	DELL	DCSM	49QTY1S	FCC Doc	Unshielded, 1.0m	Unshielded, 1.8m
6.	Printer	HP	Deskjet D2360	TH73C1492F	FCC Doc	Shielded, 1.8m	Unshielded, 1.8m
7.	Server Notebook	HP	2210B	CNV7472KG5	FCC Doc	Unshielded, 20m	Unshielded, 1.8m
8.	LAN Load	N/A	N/A	N/A	FCC Doc	Unshielded, 3m X3	N/A

Remark: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



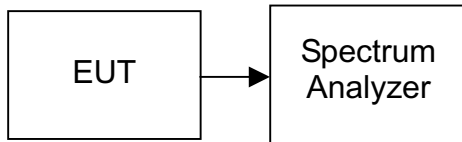
7. FCC PART 15.247 REQUIREMENTS

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 6 dB 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 = 100kHz, VBW = 300kHz, Span = 30MHz, Sweep = auto.
4. Mark the peak frequency and -6dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

TEST RESULTS

No non-compliance noted



TEST DATA

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Bandwidth (MHz)		Limit (kHz)	Result
		Chain 0	Chain 1		
Low	2412	10.16	10.16	>500	PASS
Mid	2437	10.16	10.10		PASS
High	2462	10.22	10.22		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Bandwidth (MHz)		Limit (kHz)	Result
		Chain 0	Chain 1		
Low	2412	16.59	16.59	>500	PASS
Mid	2437	16.59	16.53		PASS
High	2462	16.53	16.53		PASS

Test mode: draft 802.11n 20 MHz Channel mode

Channel	Frequency (MHz)	Bandwidth (MHz)		Limit (kHz)	Result
		Chain 0	Chain 1		
Low	2412	17.80	17.80	>500	PASS
Mid	2437	17.80	17.80		PASS
High	2462	17.80	17.80		PASS

Test mode: draft 802.11n 40 MHz Channel mode

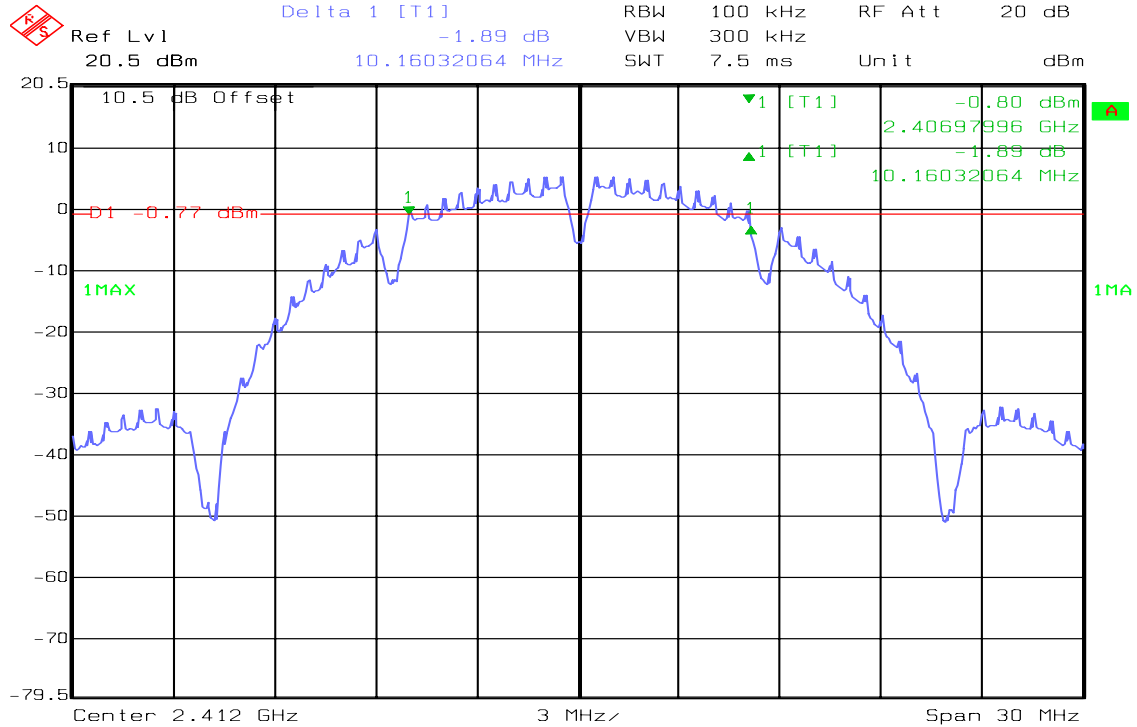
Channel	Frequency (MHz)	Bandwidth (MHz)		Limit (kHz)	Result
		Chain 0	Chain 1		
Low	2422	36.71	36.71	>500	PASS
Mid	2437	36.71	36.71		PASS
High	2452	36.71	36.71		PASS



Test Plot

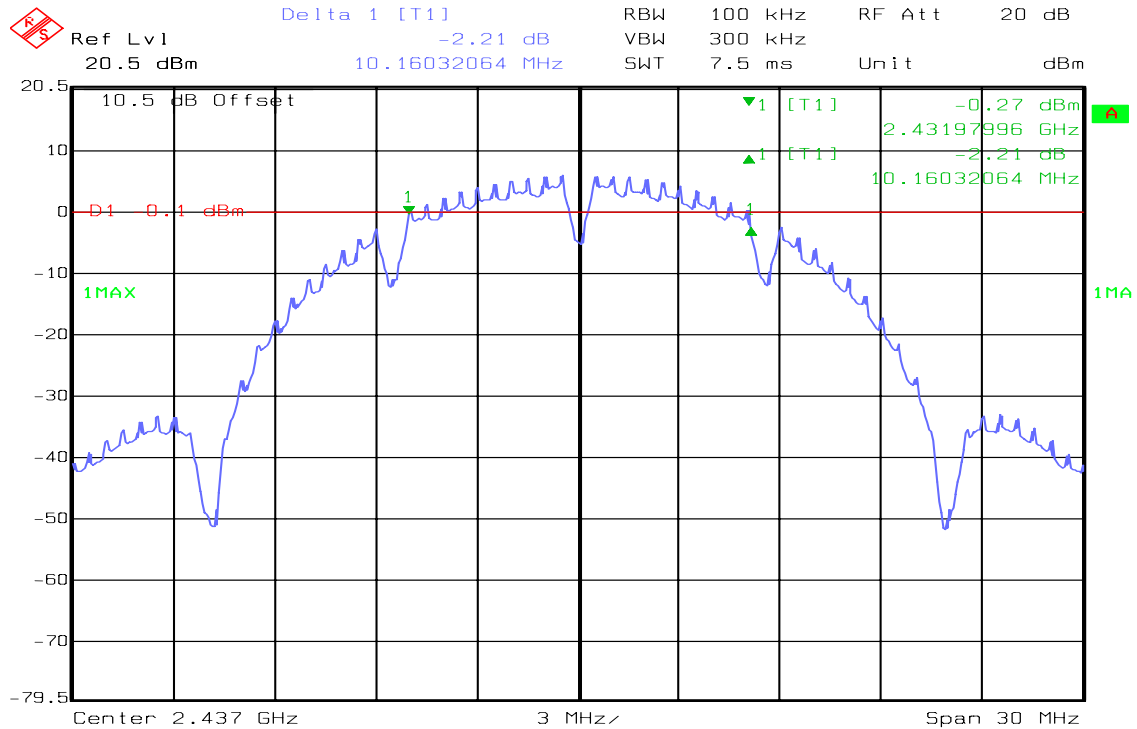
IEEE 802.11b mode / Chain 0

6dB Bandwidth (CH Low)



Date: 06.MAY 2009 13:04:33

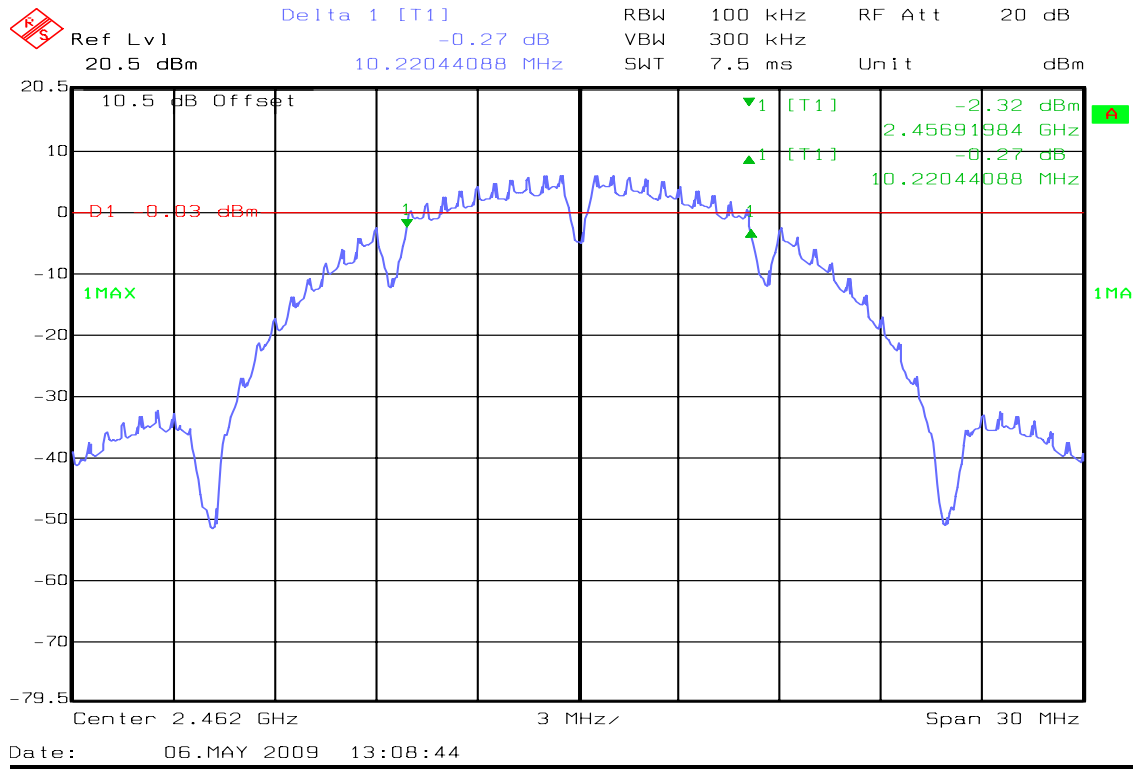
6dB Bandwidth (CH Mid)



Date: 06.MAY 2009 13:07:37

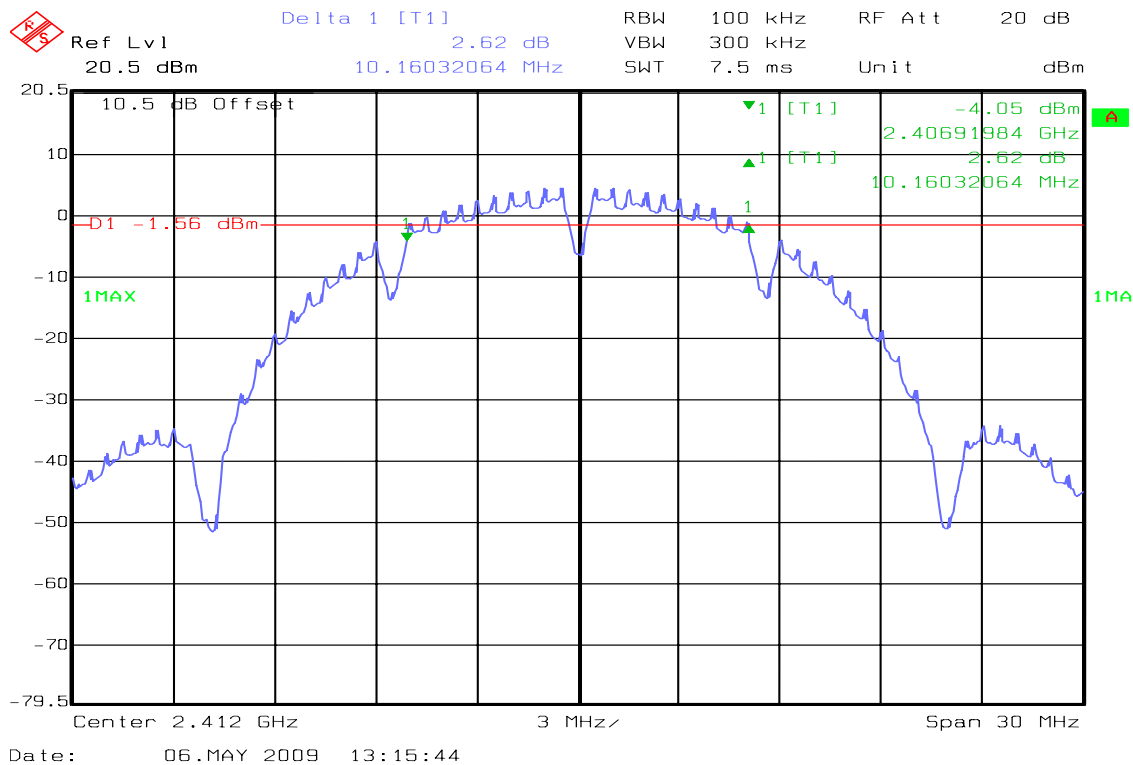


6dB Bandwidth (CH High)



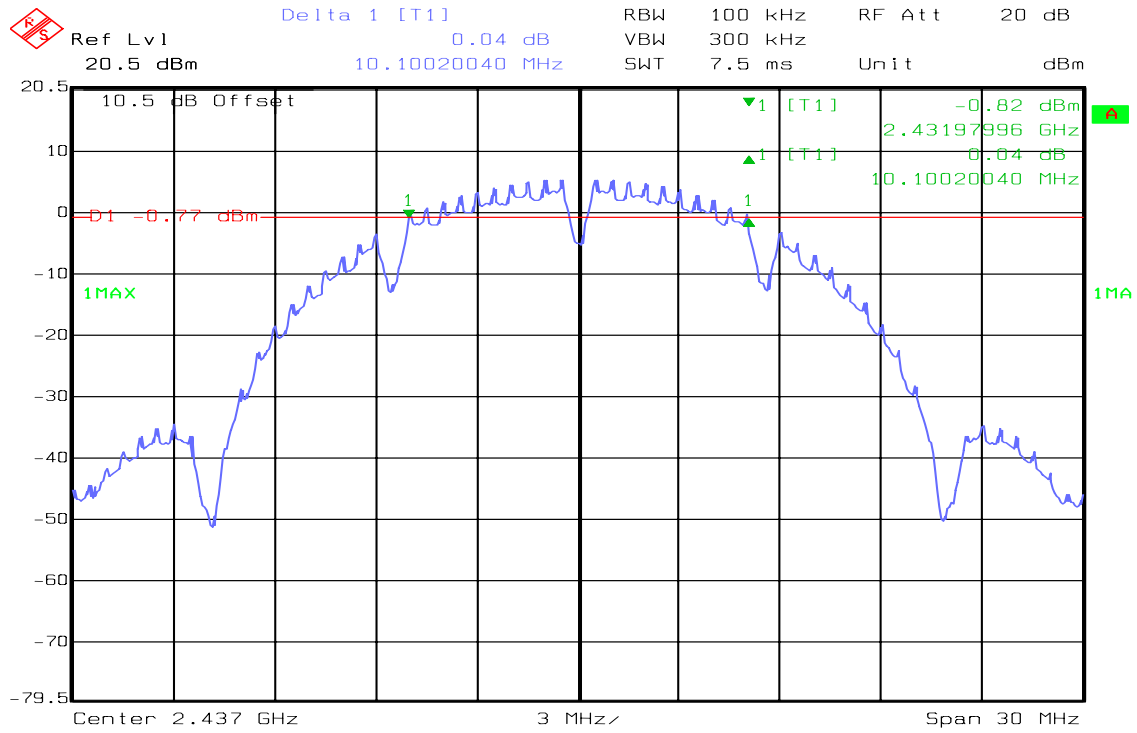
IEEE 802.11b mode / Chain 1

6dB Bandwidth (CH Low)



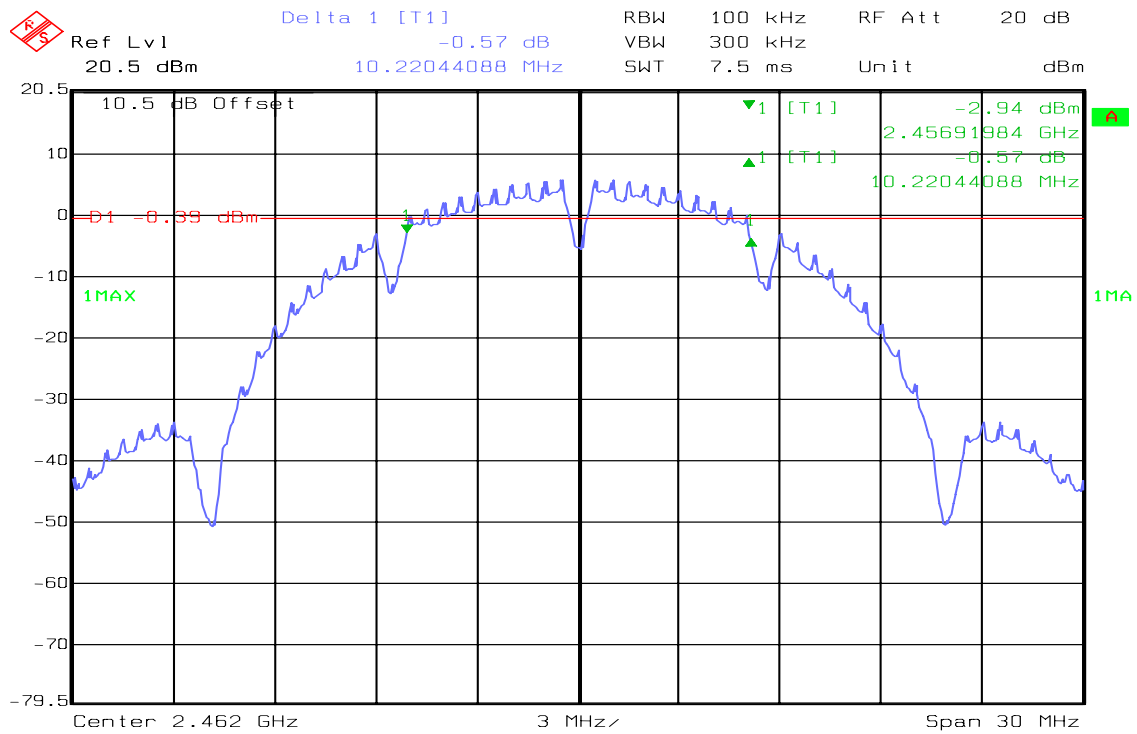


6dB Bandwidth (CH Mid)



Date: 06.MAY 2009 13:14:04

6dB Bandwidth (CH High)

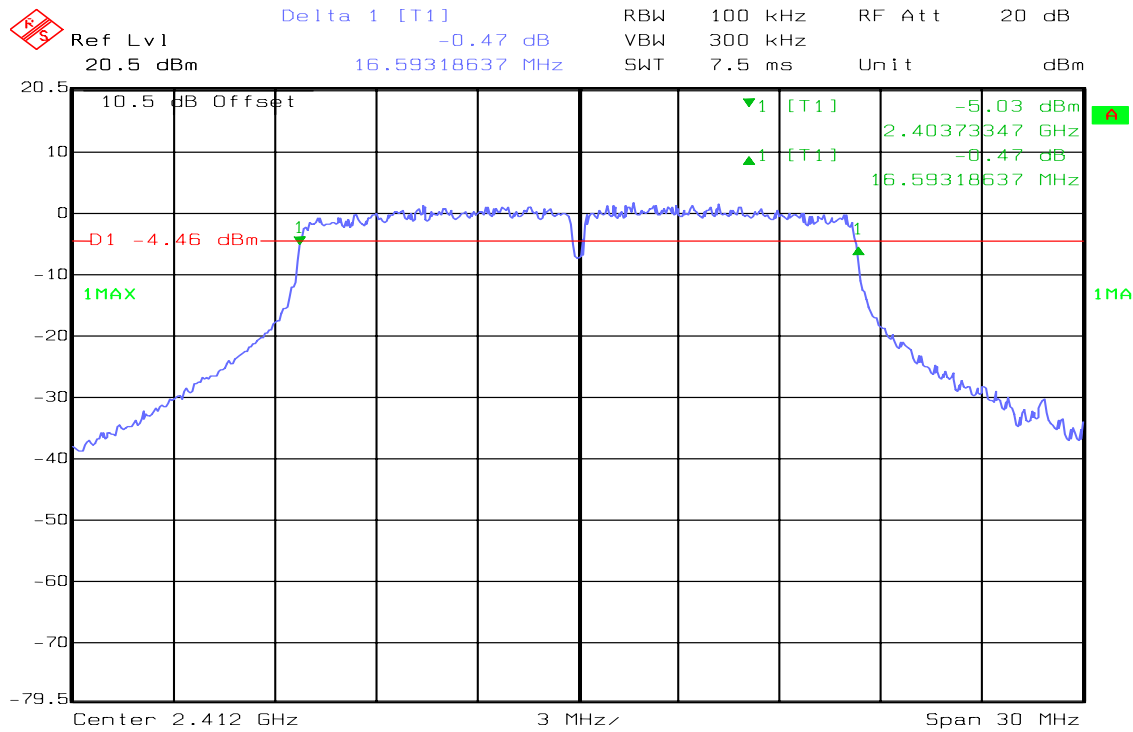


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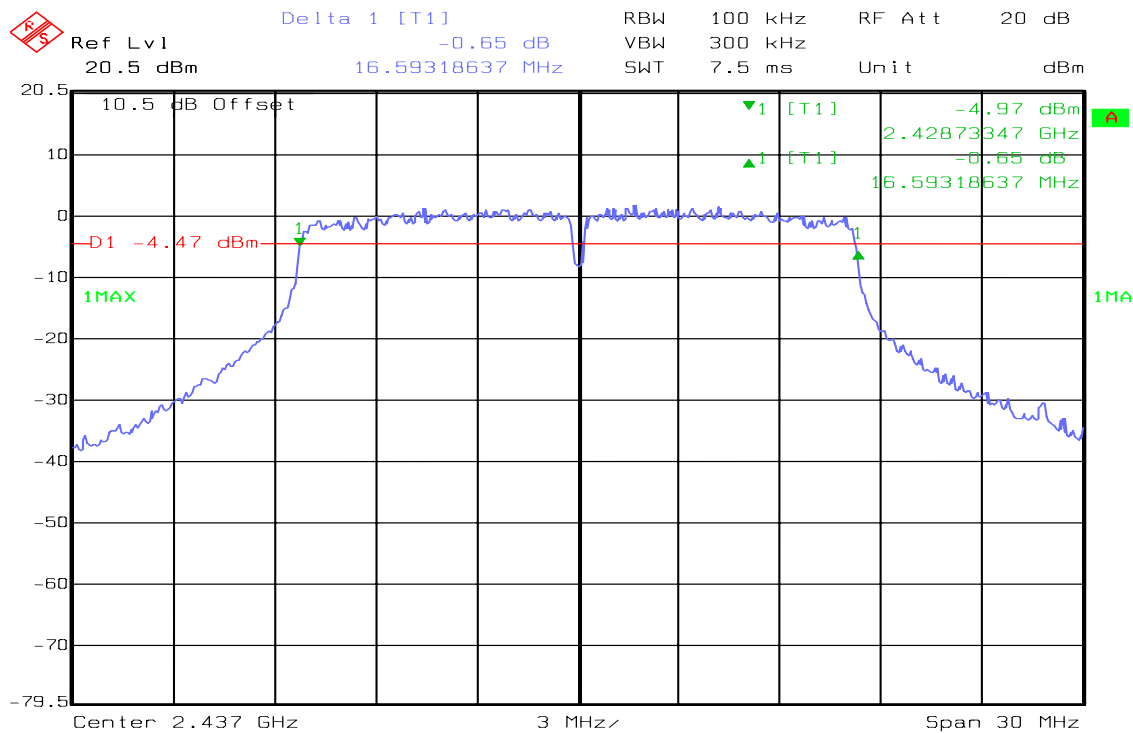
IEEE 802.11g mode / Chain 0

6dB Bandwidth (CH Low)



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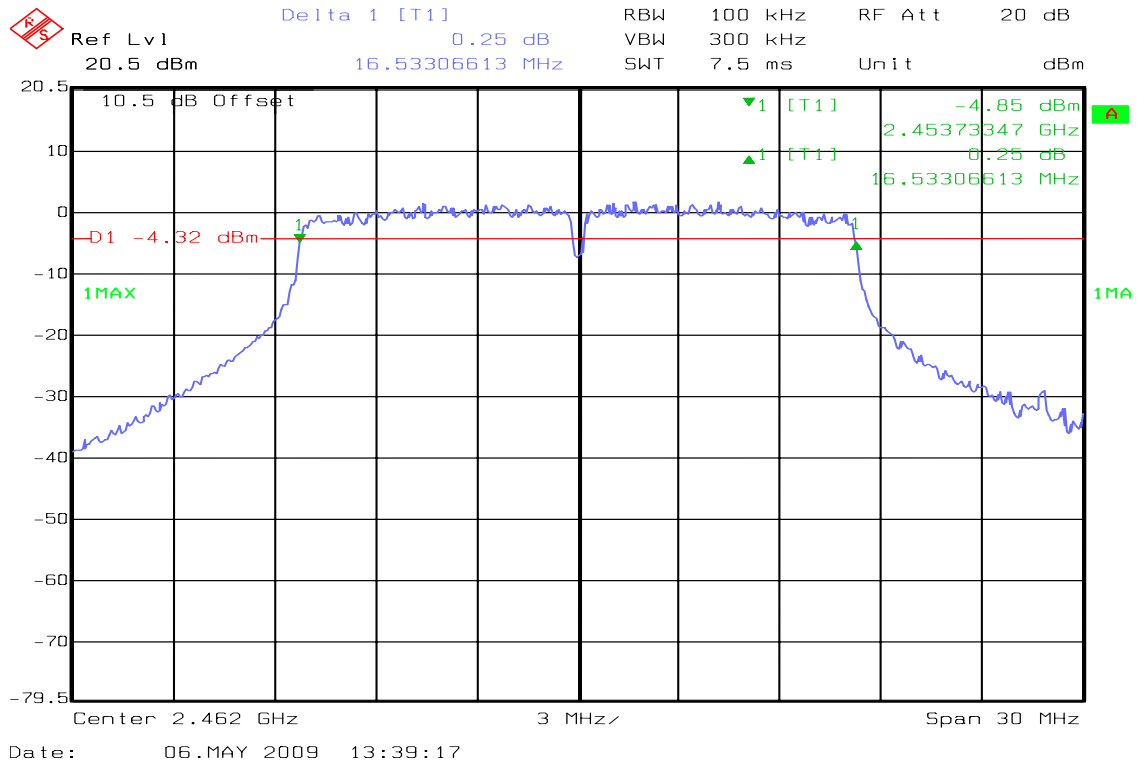
6dB Bandwidth (CH Mid)



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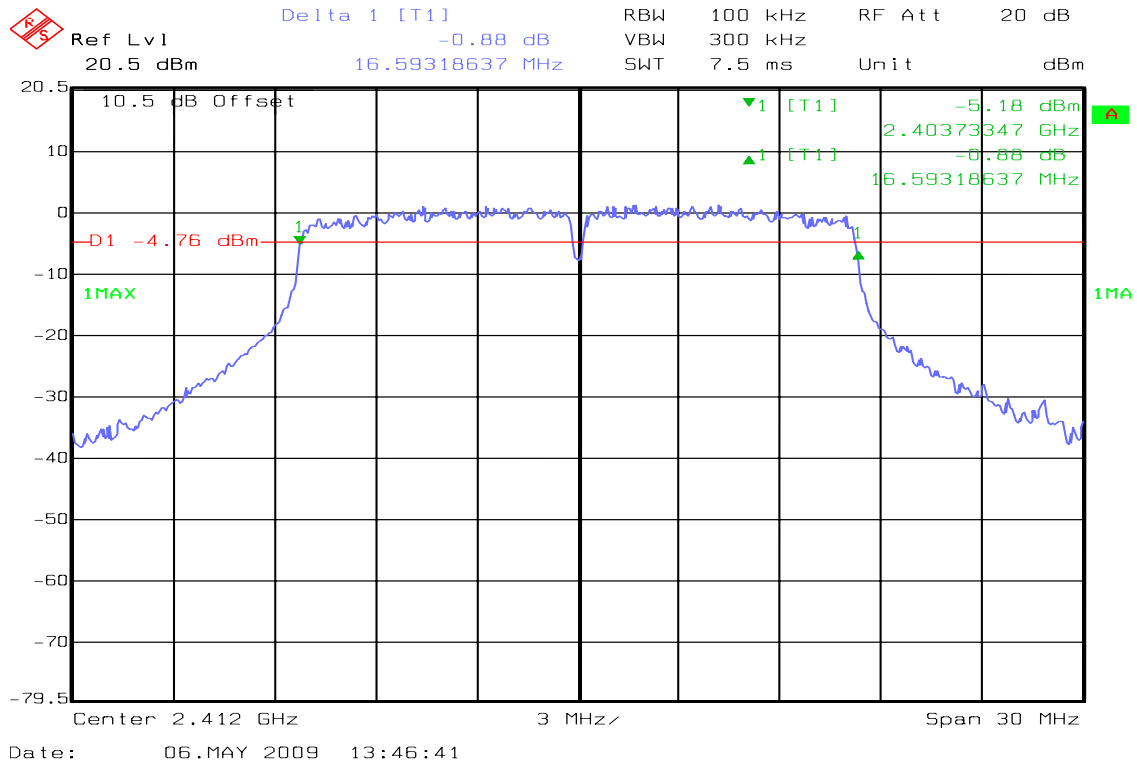


6dB Bandwidth (CH High)



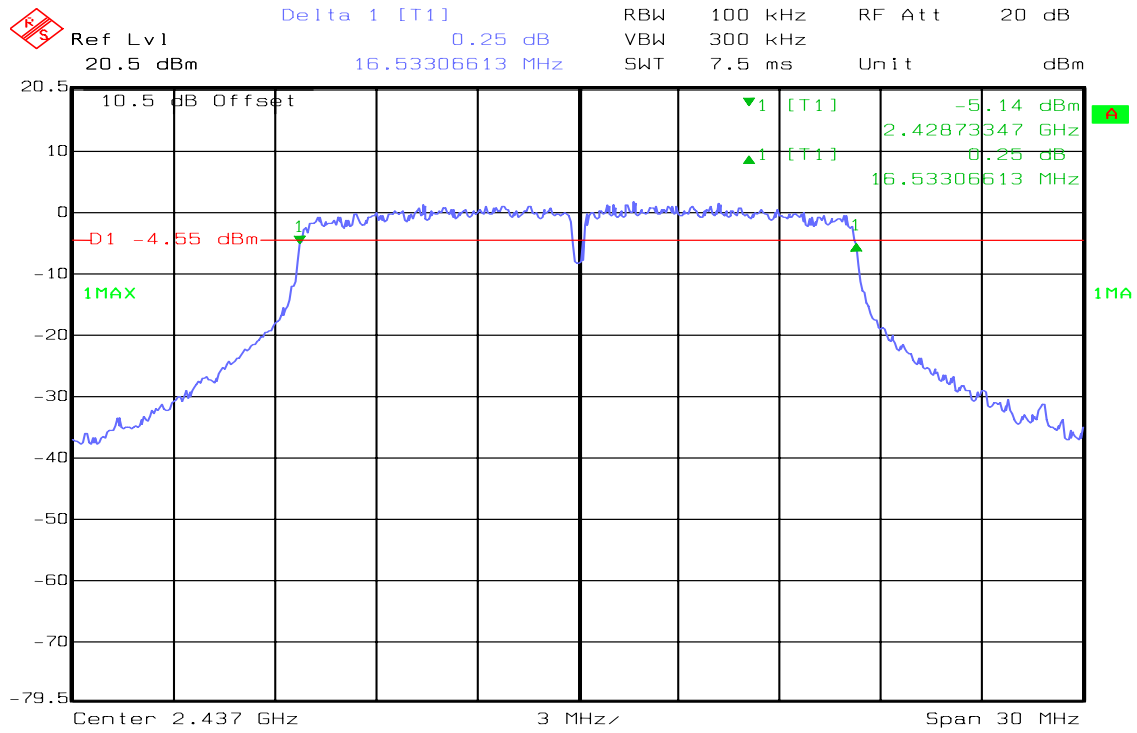
IEEE 802.11g mode / Chain 1

6dB Bandwidth (CH Low)



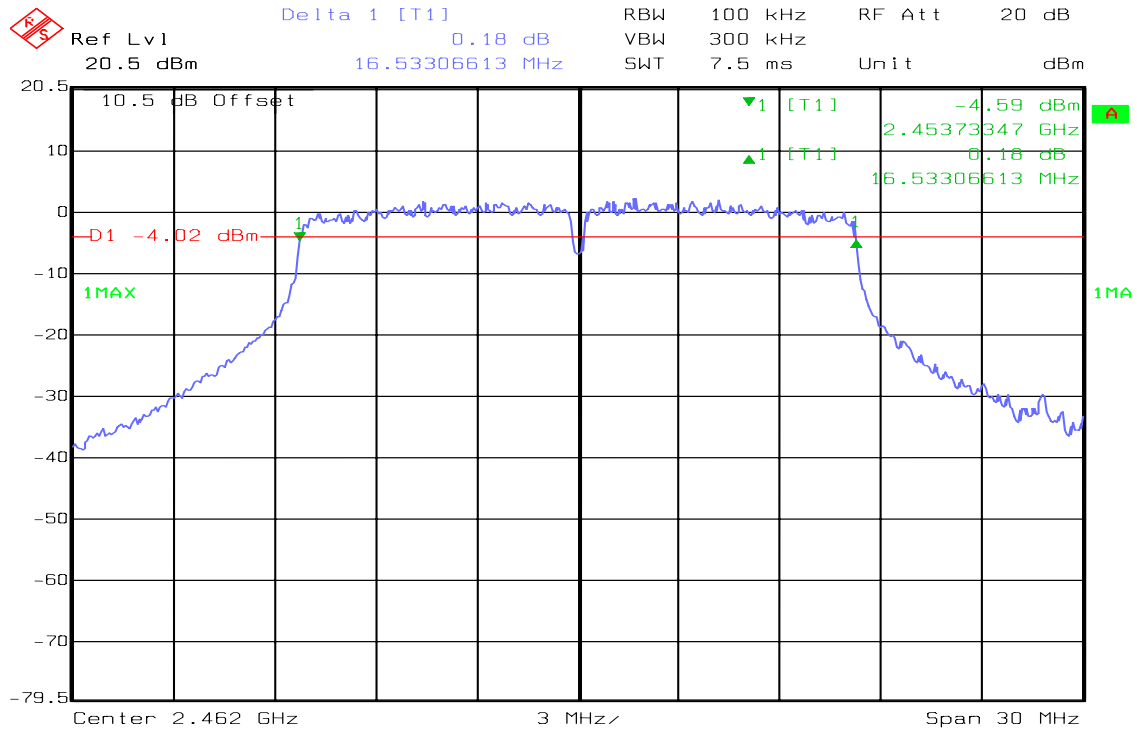


6dB Bandwidth (CH Mid)



Date: 06.MAY 2009 13:43:37

6dB Bandwidth (CH High)

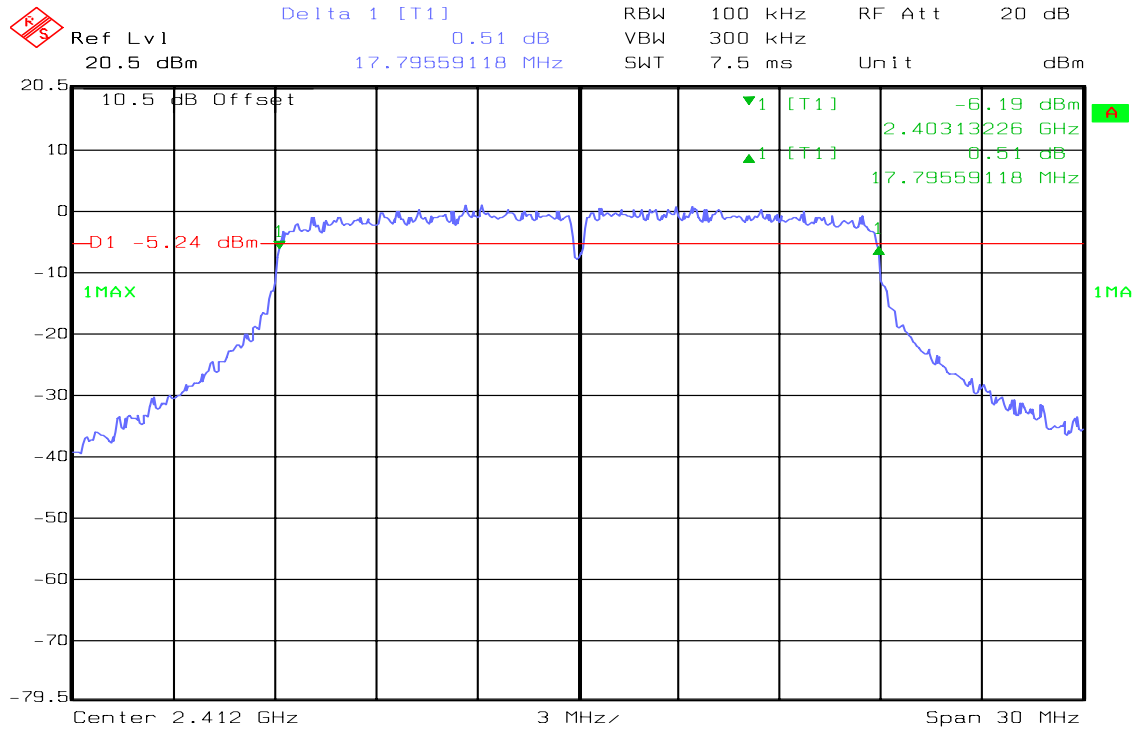


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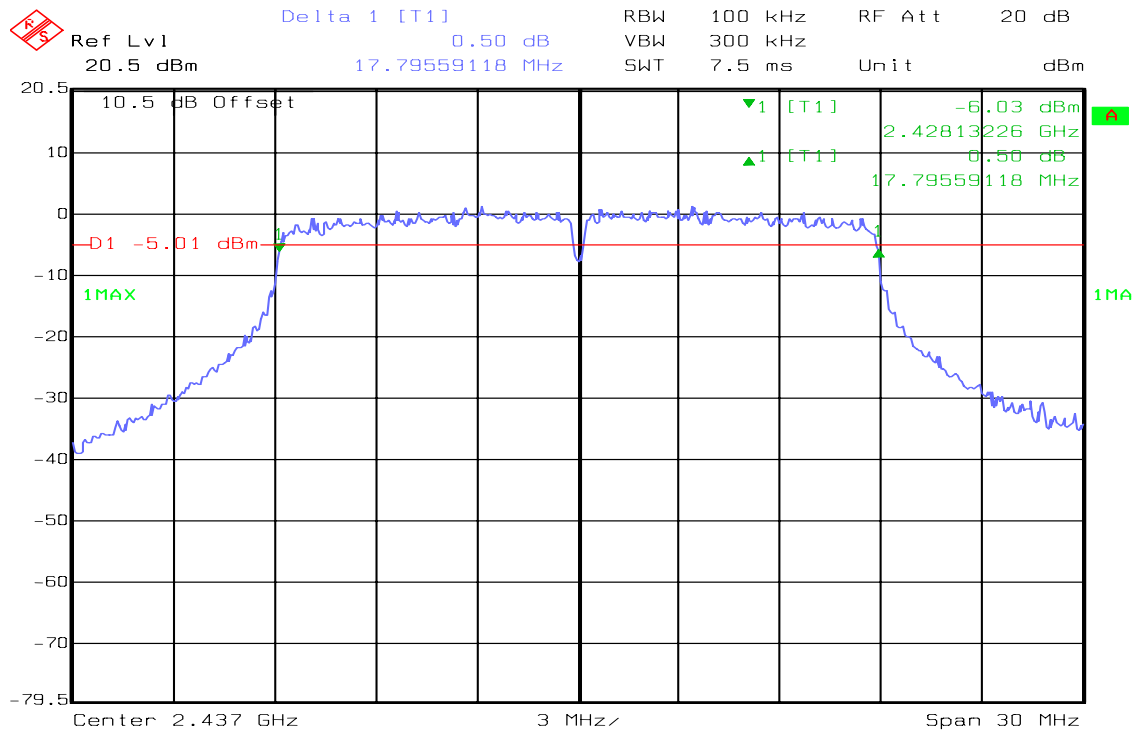
draft 802.11n 20 MHz Channel mode / Chain 0

6dB Bandwidth (CH Low)



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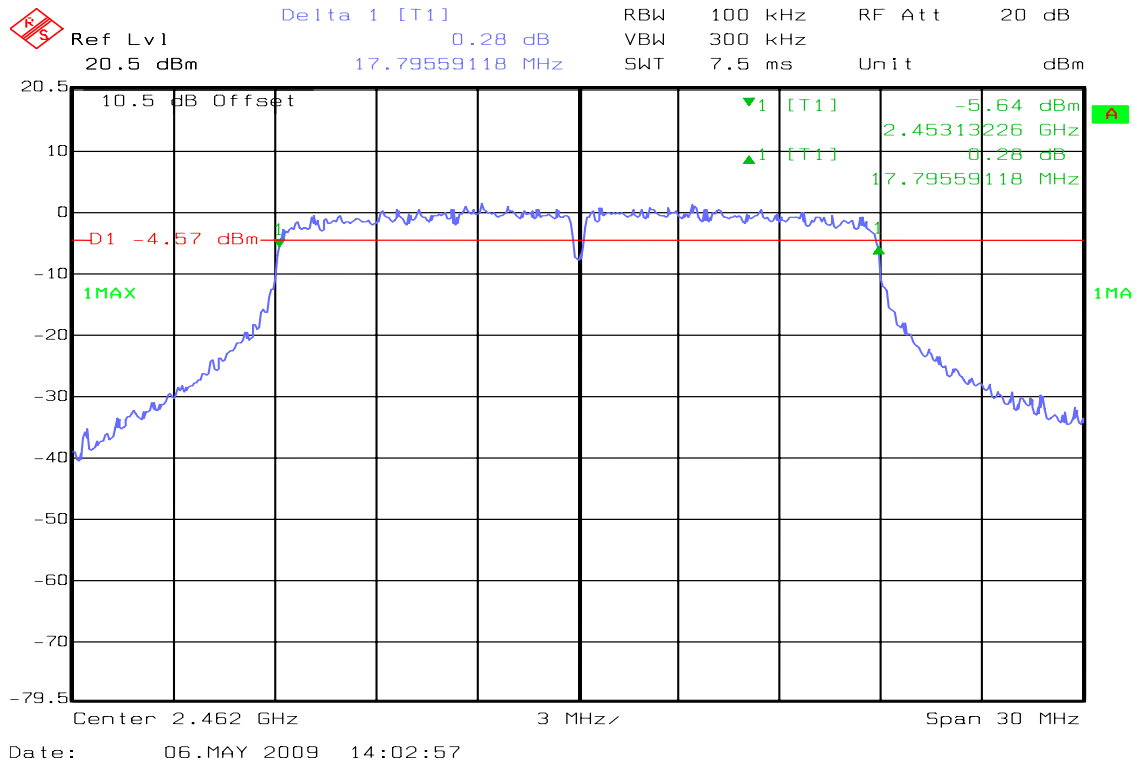
6dB Bandwidth (CH Mid)



Date: 06.MAY 2009 14:00:59

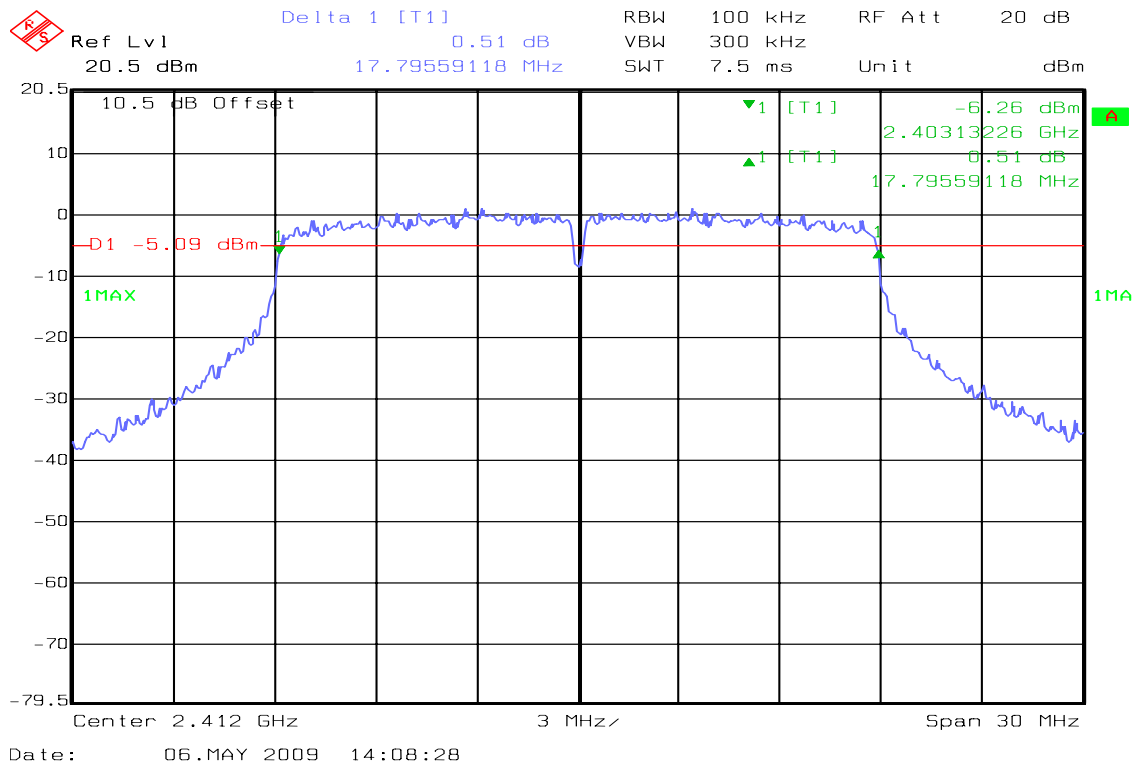


6dB Bandwidth (CH High)



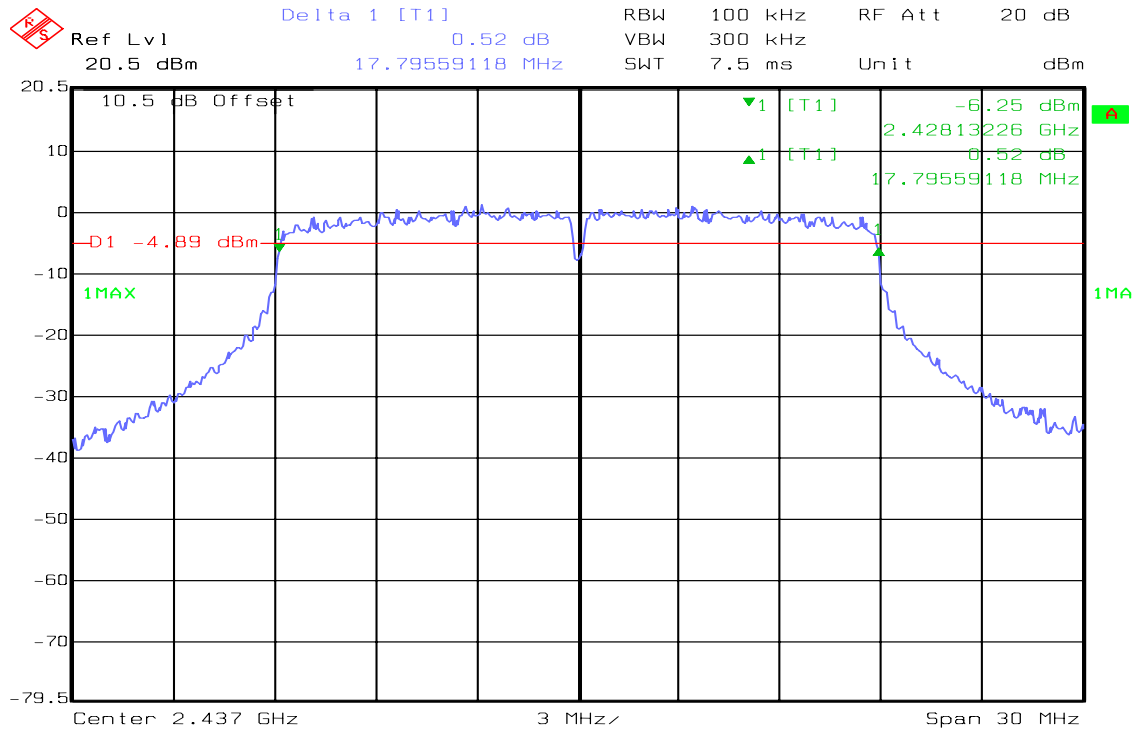
draft 802.11n 20 MHz Channel mode / Chain 1

6dB Bandwidth (CH Low)



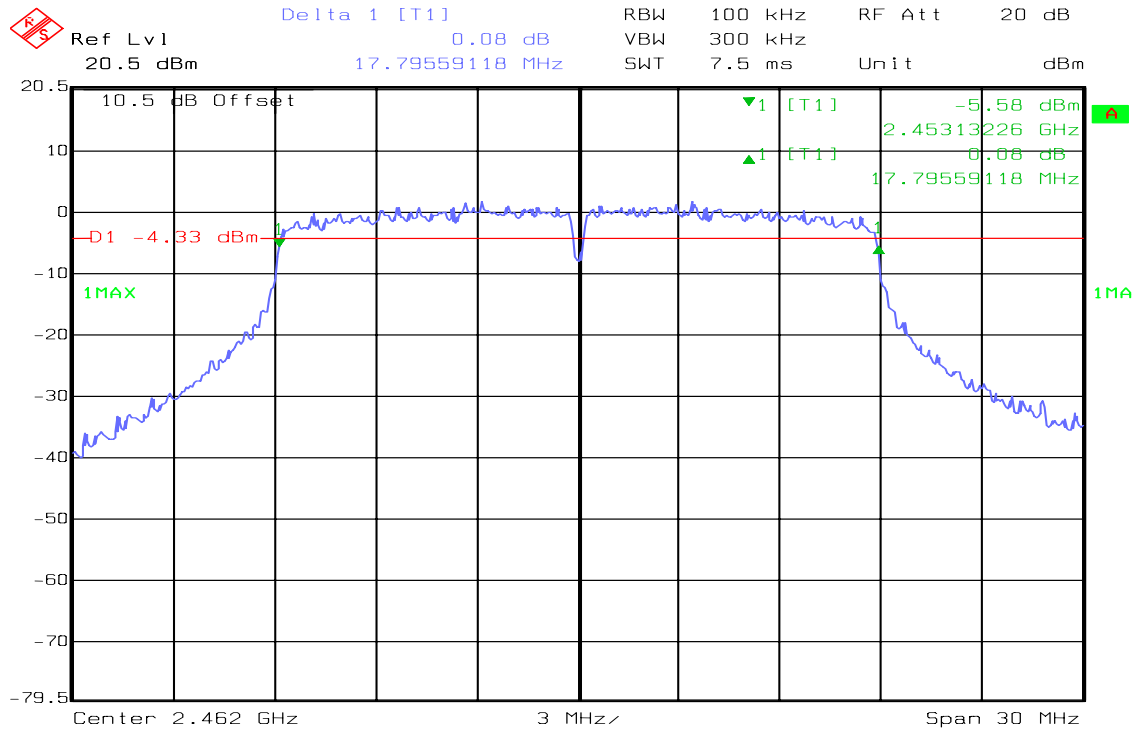


6dB Bandwidth (CH Mid)



Date: 06.MAY 2009 14:06:55

6dB Bandwidth (CH High)

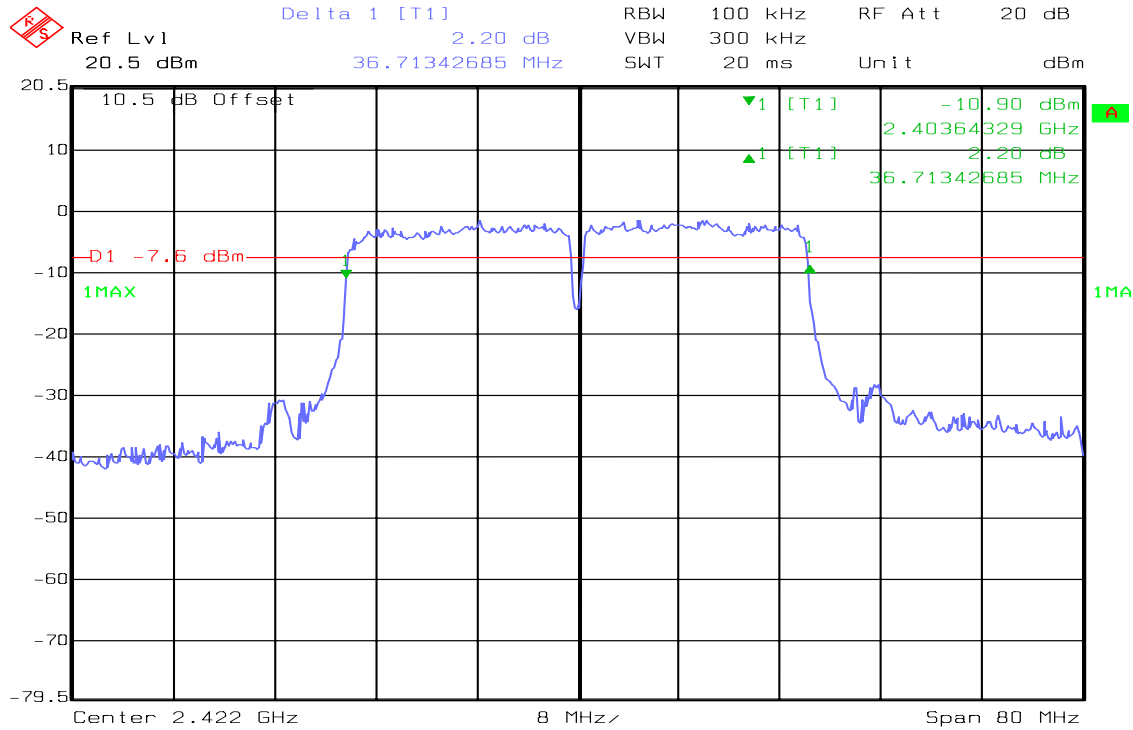


Date: 06.MAY 2009 14:04:29



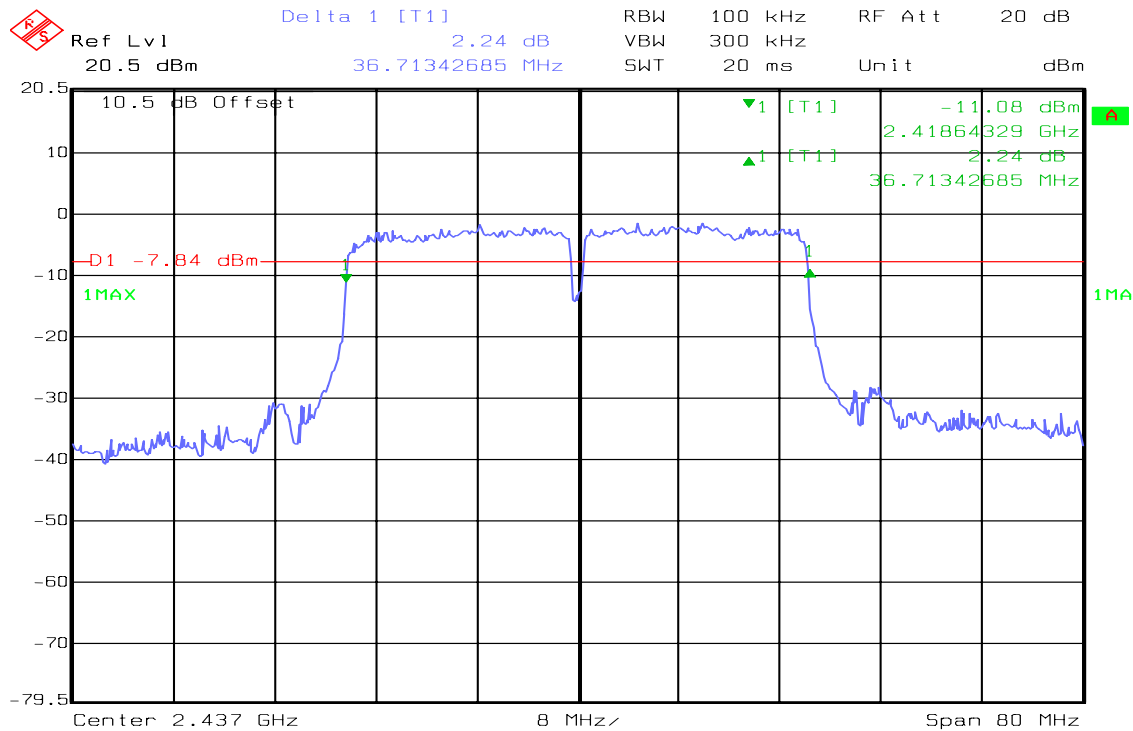
draft 802.11n 40 MHz Channel mode / Chain 0

6dB Bandwidth (CH Low)



Date: 06.MAY 2009 14:18:07

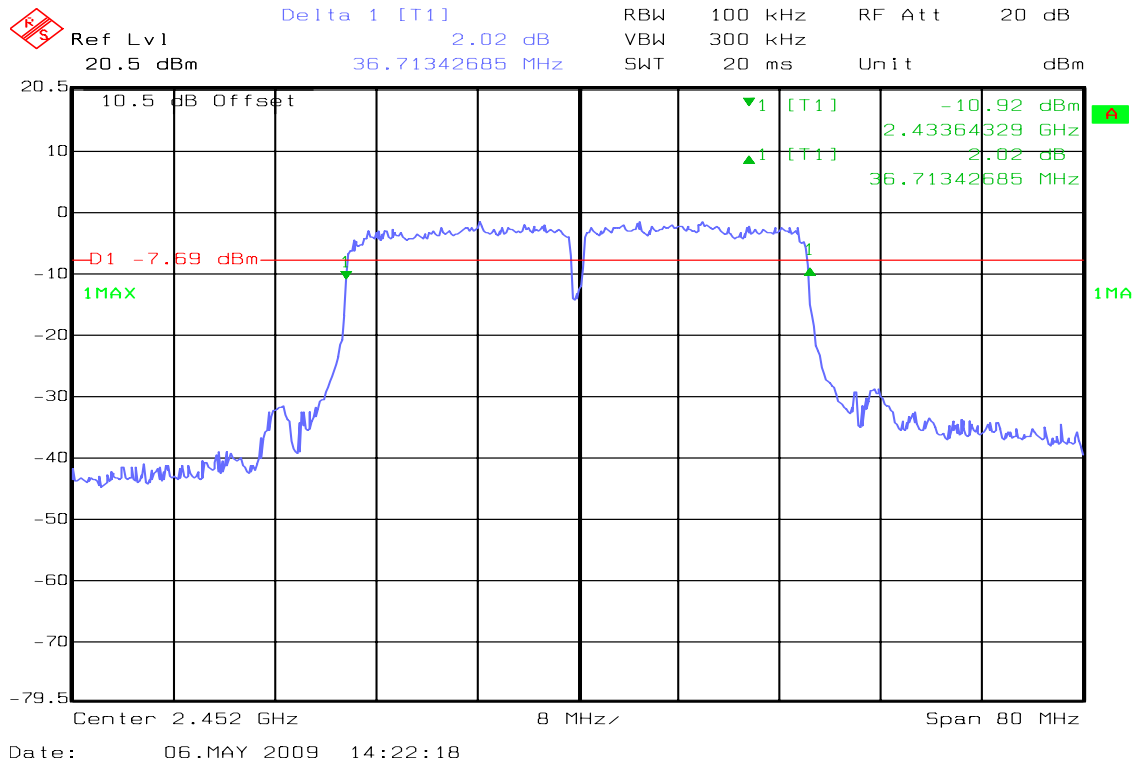
6dB Bandwidth (CH Mid)



Date: 06.MAY 2009 14:20:45

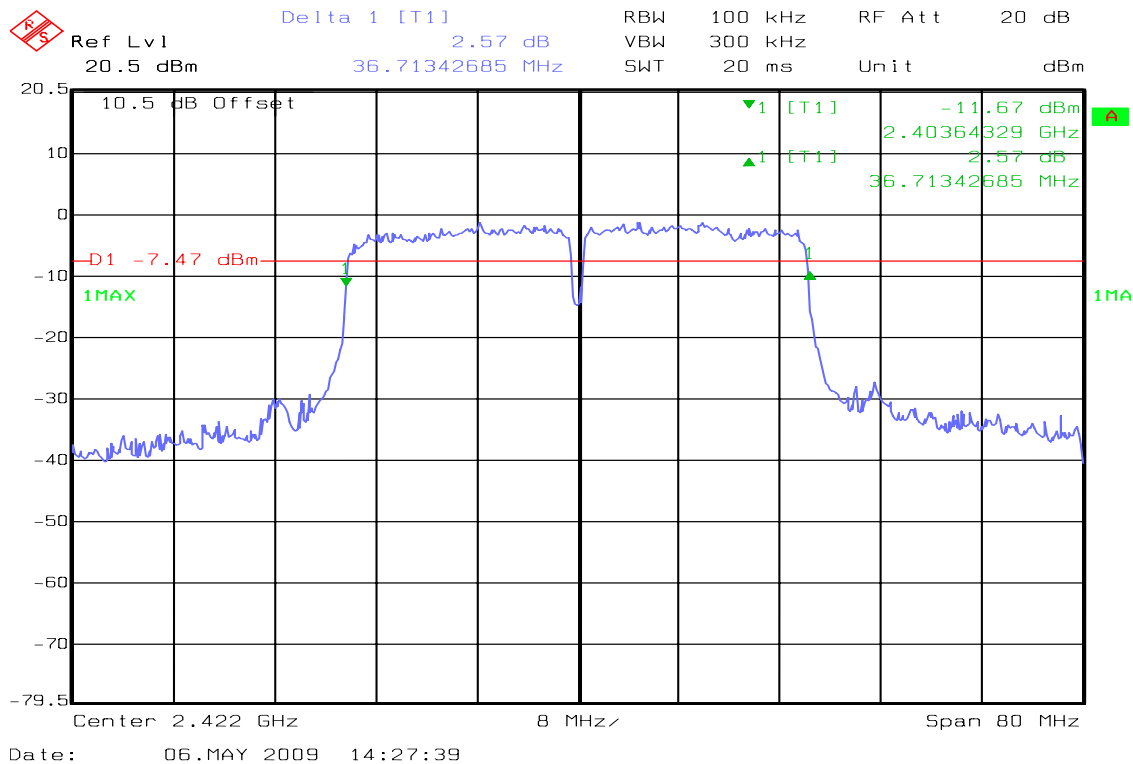


6dB Bandwidth (CH High)



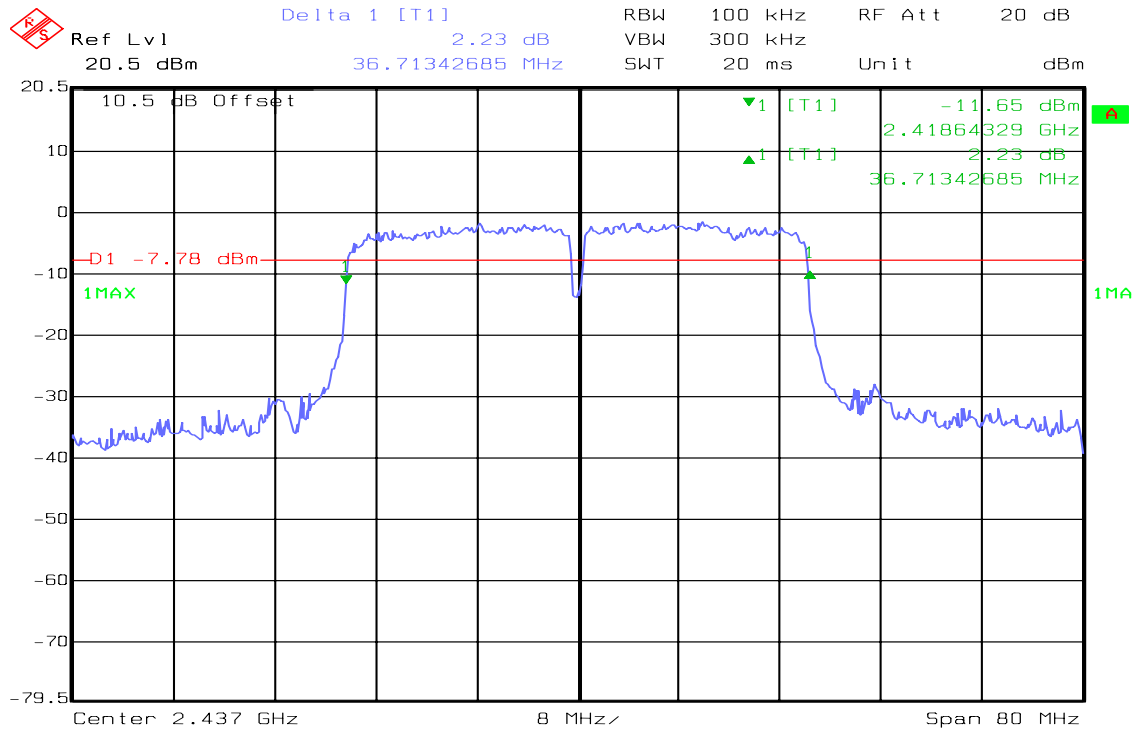
draft 802.11n 40 MHz Channel mode / Chain 1

6dB Bandwidth (CH Low)



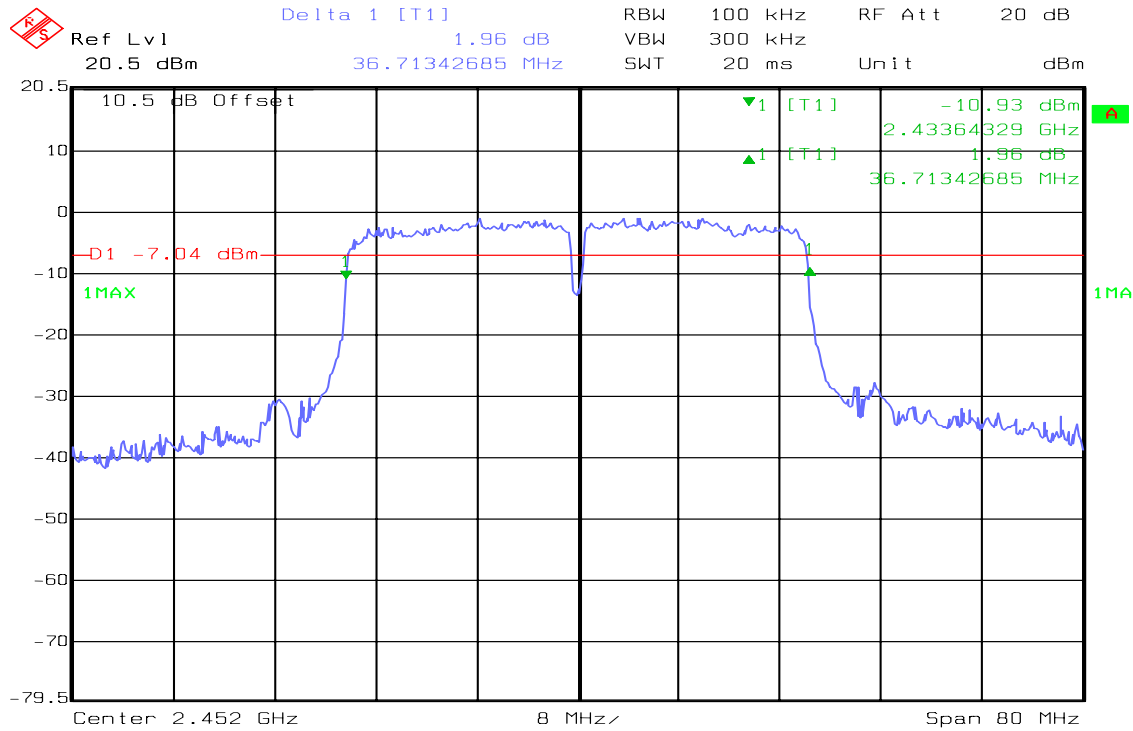


6dB Bandwidth (CH Mid)



Date: 06.MAY 2009 14:25:09

6dB Bandwidth (CH High)



Date: 06.MAY 2009 14:23:59



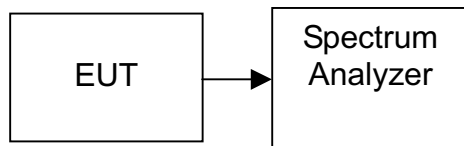
7.2 PEAK POWER

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

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak 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)		Total Power (dBm)	Total Power (W)	Limit (W)	Result
		Chain 0	Chain 1	Chain 0	Chain 1				
Low	2412	17.66	17.50	0.05834	0.05623	20.59	0.1146	1.00	PASS
Mid	2437	18.08	17.81	0.06427	0.06039	20.96	0.1247		PASS
High	2462	18.60	18.23	0.07244	0.06653	21.43	0.1390		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)		Output Power (W)		Total Power (dBm)	Total Power (W)	Limit (W)	Result
		Chain 0	Chain 1	Chain 0	Chain 1				
Low	2412	20.31	20.30	0.10740	0.10715	23.32	0.2146	1.00	PASS
Mid	2437	20.64	20.51	0.11588	0.11246	23.59	0.2283		PASS
High	2462	20.78	20.92	0.11967	0.12359	23.86	0.2433		PASS

Test mode: draft 802.11n 20 MHz Channel mode

Channel	Frequency (MHz)	Output Power (dBm)		Output Power (W)		Total Power (dBm)	Total Power (W)	Limit (W)	Result
		Chain 0	Chain 1	Chain 0	Chain 1				
Low	2412	20.62	20.53	0.11535	0.11298	23.59	0.2283	1.00	PASS
Mid	2437	20.94	20.82	0.12417	0.12078	23.89	0.2449		PASS
High	2462	20.81	20.70	0.12050	0.11749	23.77	0.2380		PASS

Test mode: draft 802.11n 40 MHz Channel mode

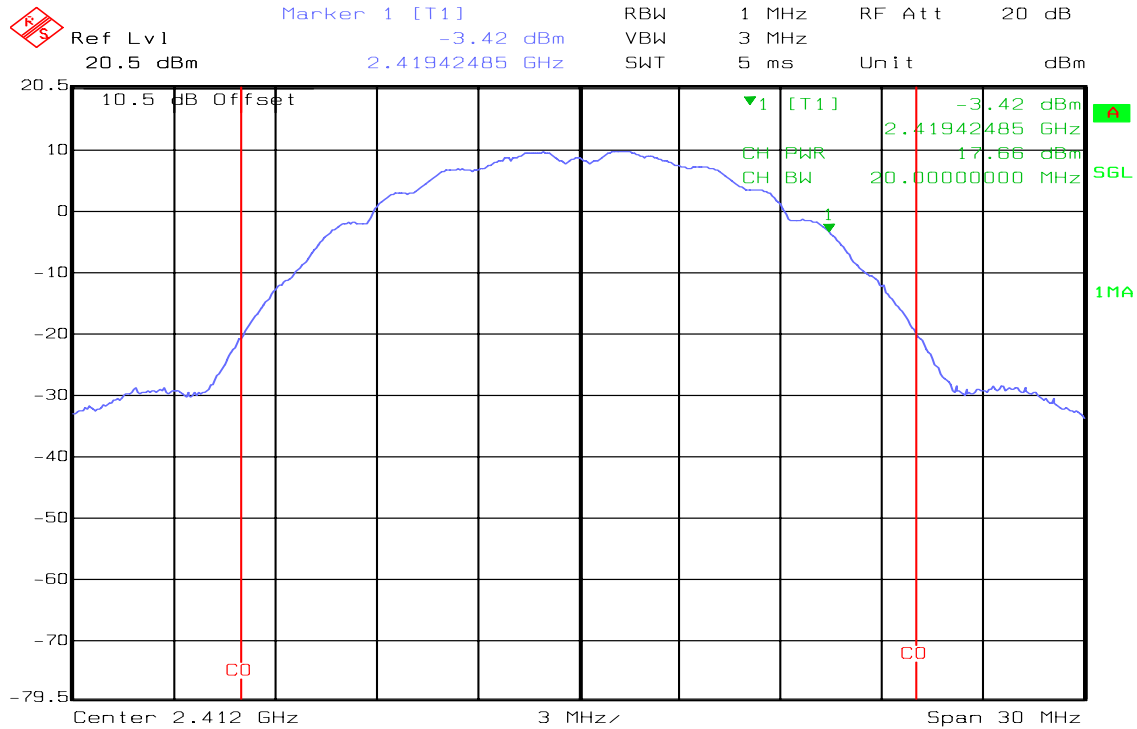
Channel	Frequency (MHz)	Output Power (dBm)		Output Power (W)		Total Power (dBm)	Total Power (W)	Limit (W)	Result
		Chain 0	Chain 1	Chain 0	Chain 1				
Low	2422	20.64	20.80	0.11588	0.12023	23.73	0.2361	1.00	PASS
Mid	2437	20.65	20.57	0.11614	0.11402	23.62	0.2302		PASS
High	2452	20.65	20.93	0.11614	0.12388	23.80	0.2400		PASS



Test Plot

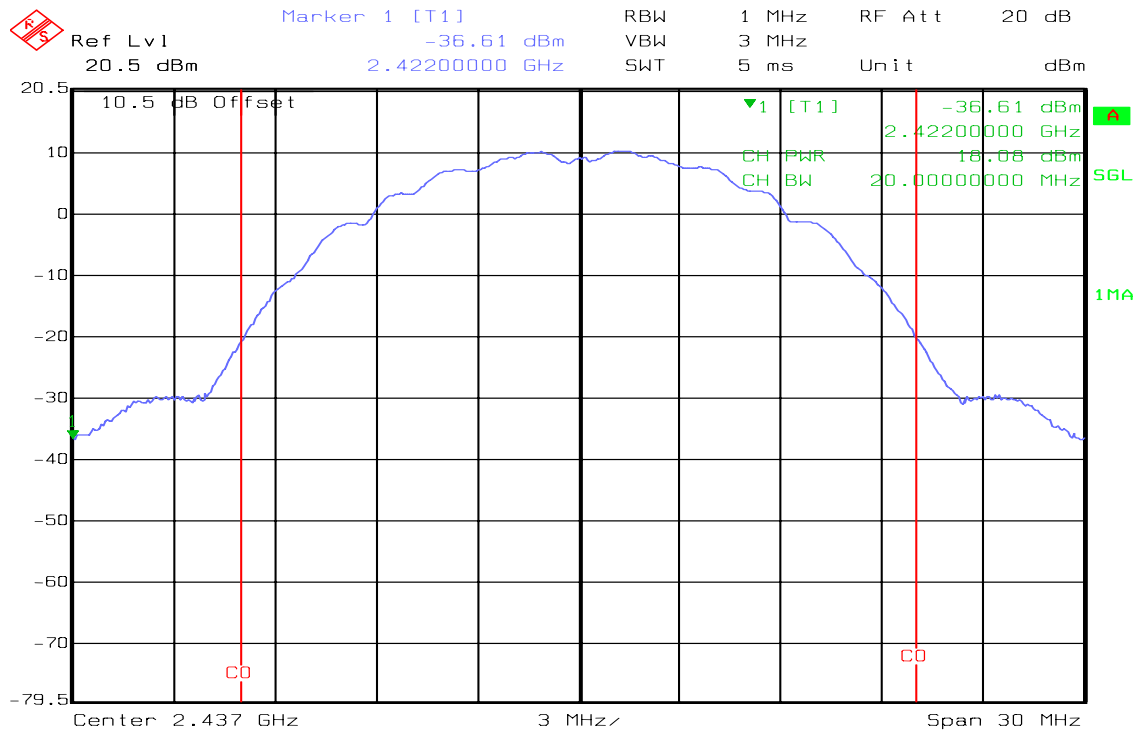
IEEE 802.11b mode / Chain 0

Peak Power (CH Low)



Date: 06.MAY 2009 09:47:47

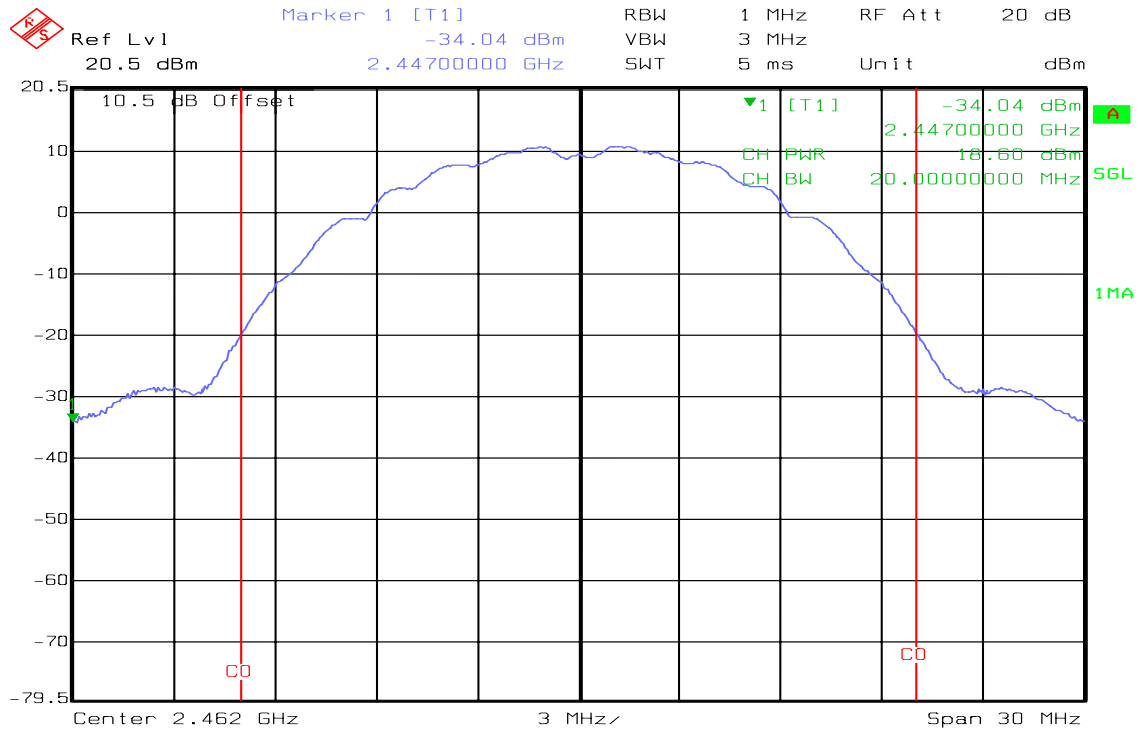
Peak Power (CH Mid)



Date: 06.MAY 2009 10:35:58



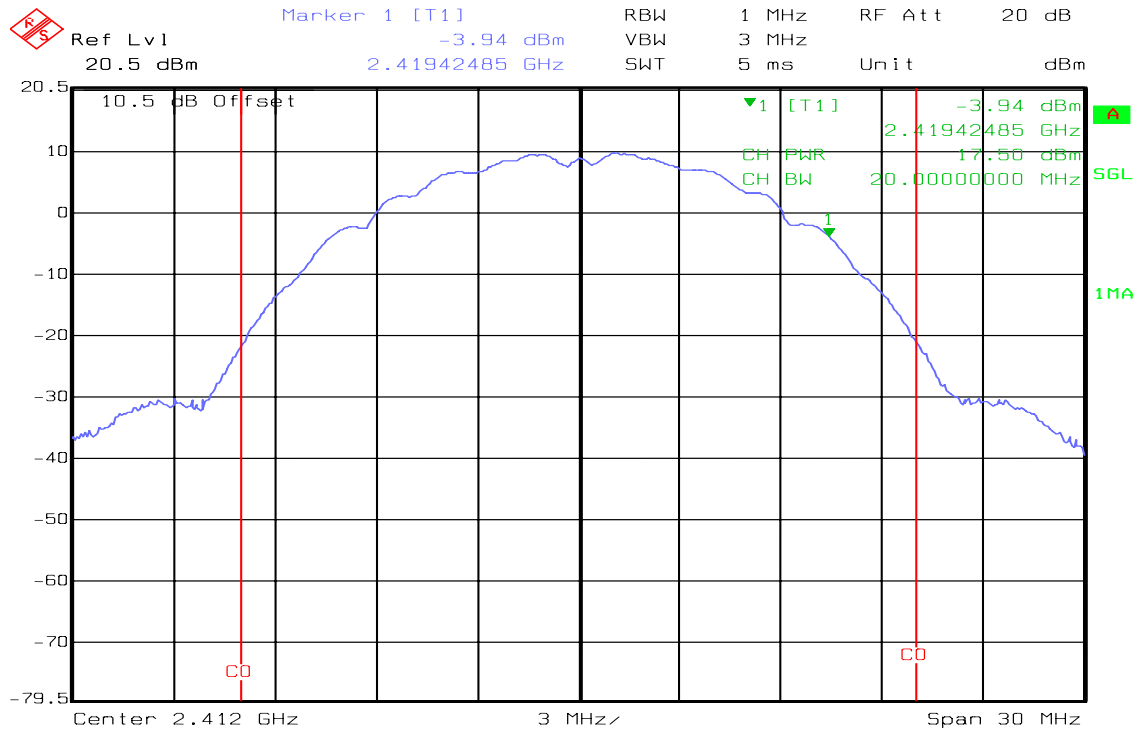
Peak Power (CH High)



Date: 06.MAY 2009 10:44:22

IEEE 802.11b mode / Chain 1

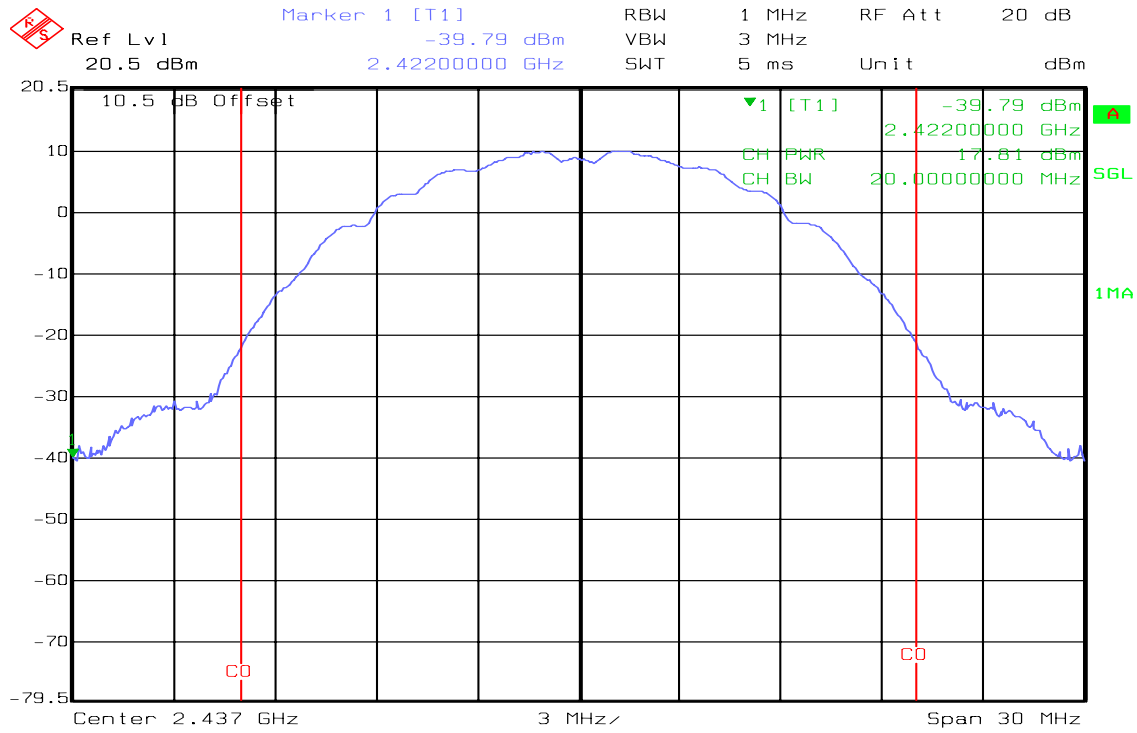
Peak Power (CH Low)



Date: 06.MAY 2009 09:47:11

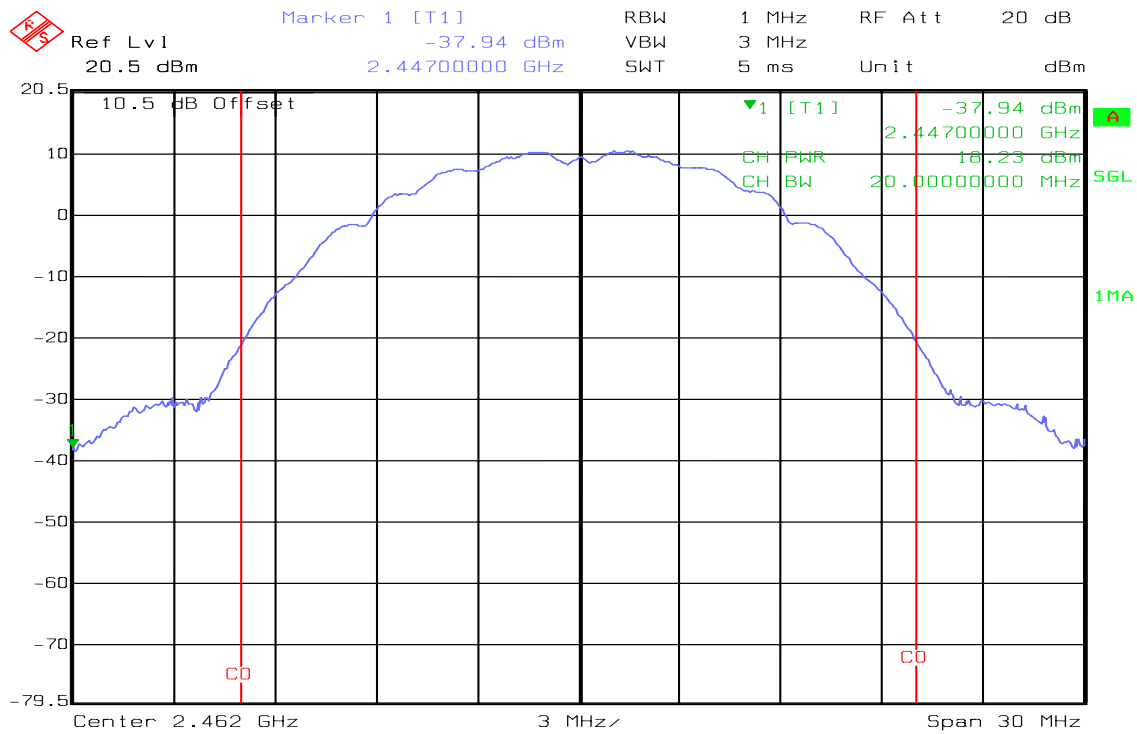


Peak Power (CH Mid)



Date: 06.MAY 2009 10:38:56

Peak Power (CH High)

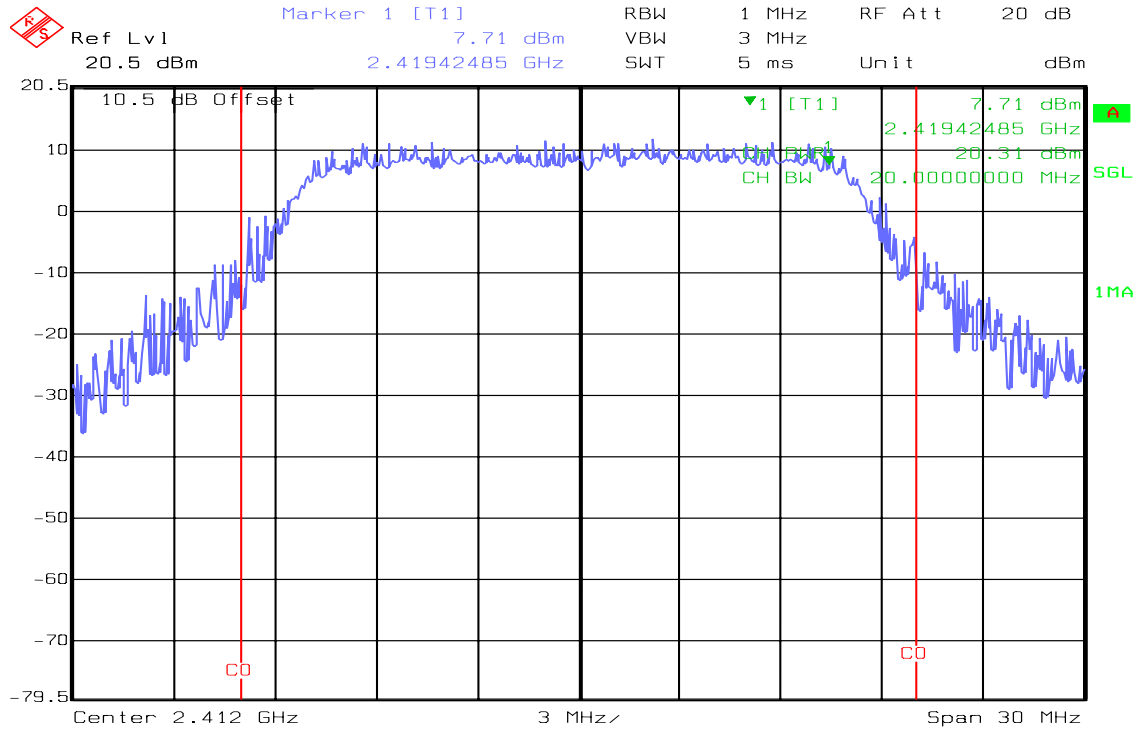


Date: 06.MAY 2009 10:46:38



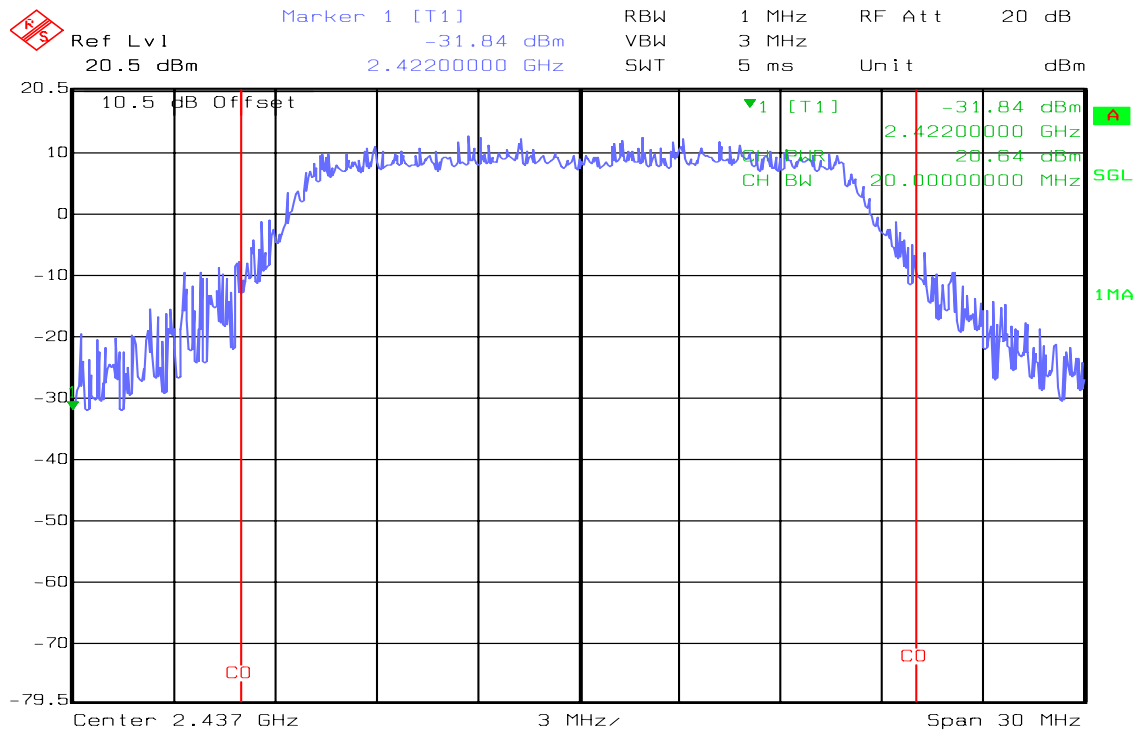
IEEE 802.11g mode / Chain 0

Peak Power (CH Low)



Date: 06.MAY 2009 09:58:46

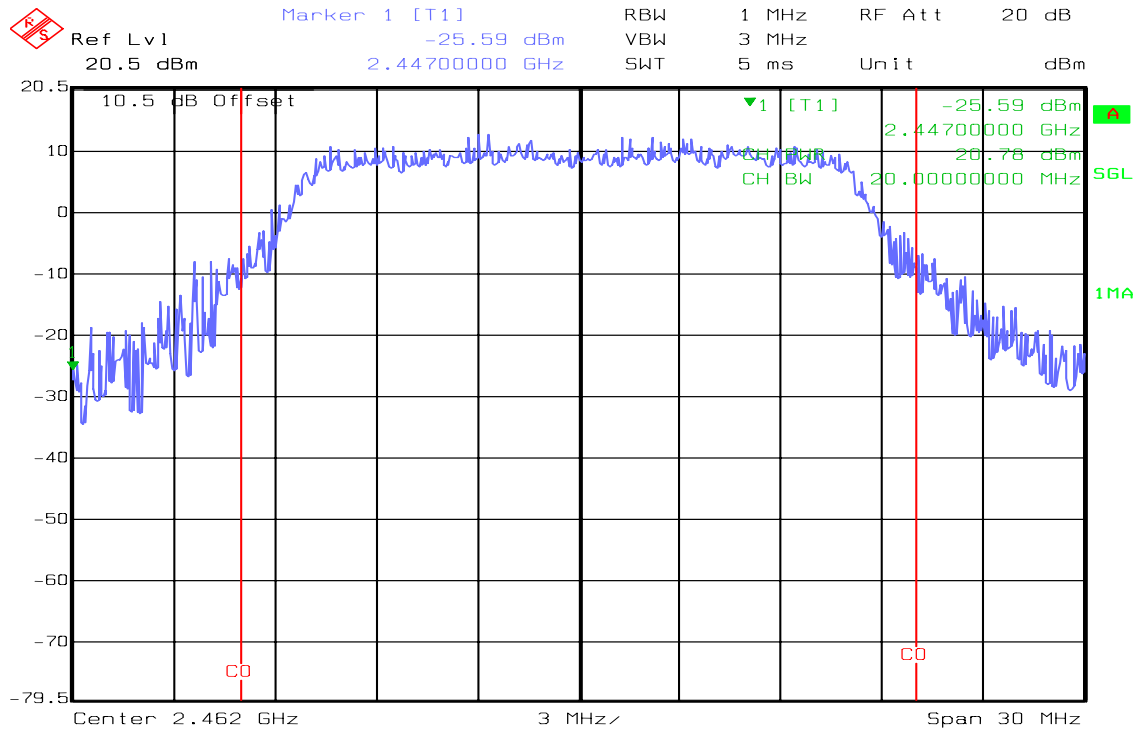
Peak Power (CH Mid)



Date: 06.MAY 2009 10:27:58



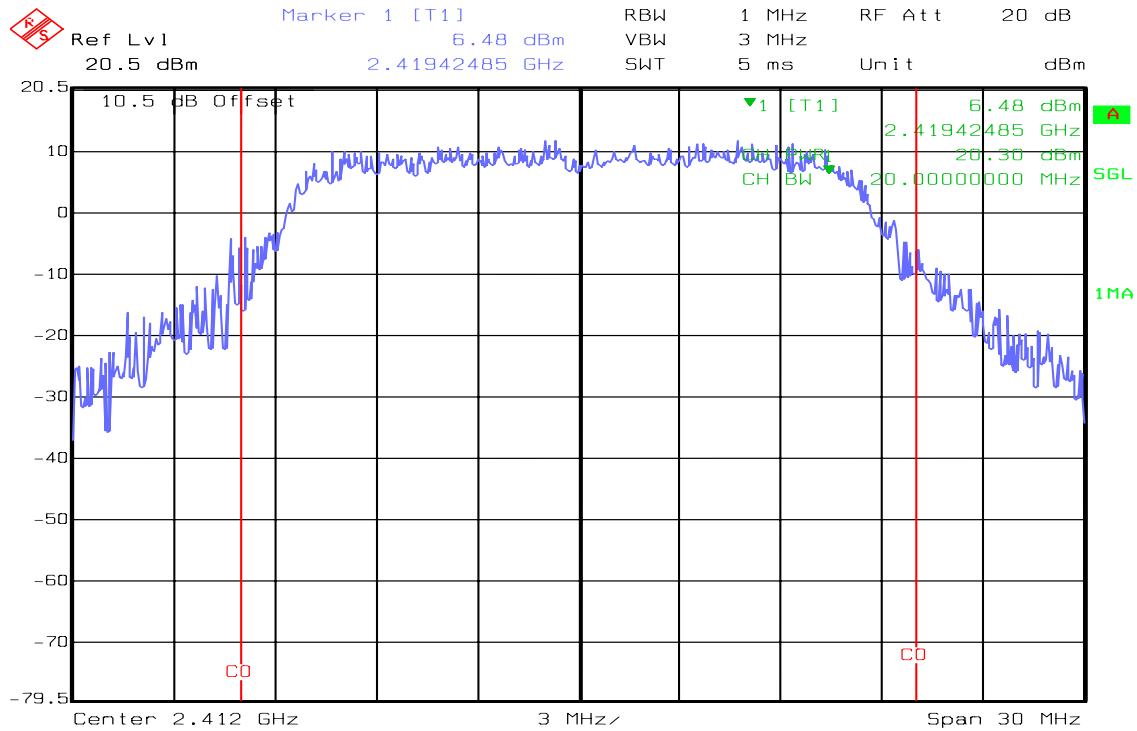
Peak Power (CH High)



Date: 06.MAY 2009 11:07:58

IEEE 802.11g mode / Chain 1

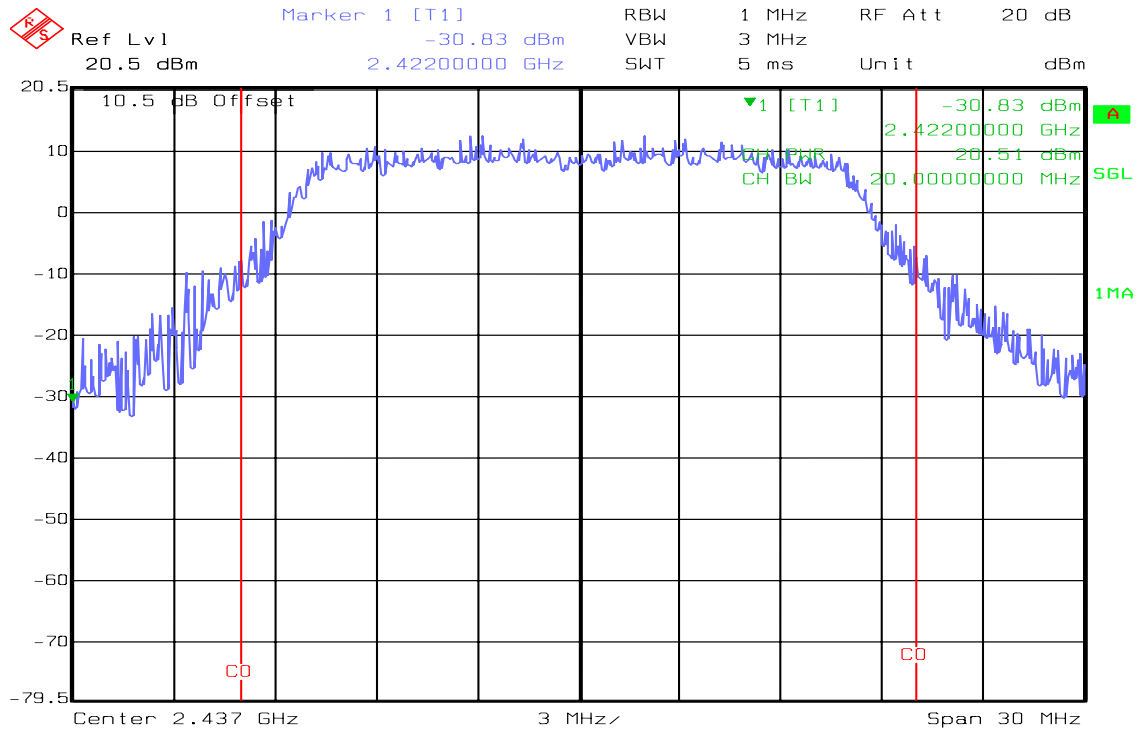
Peak Power (CH Low)



Date: 06.MAY 2009 10:03:37

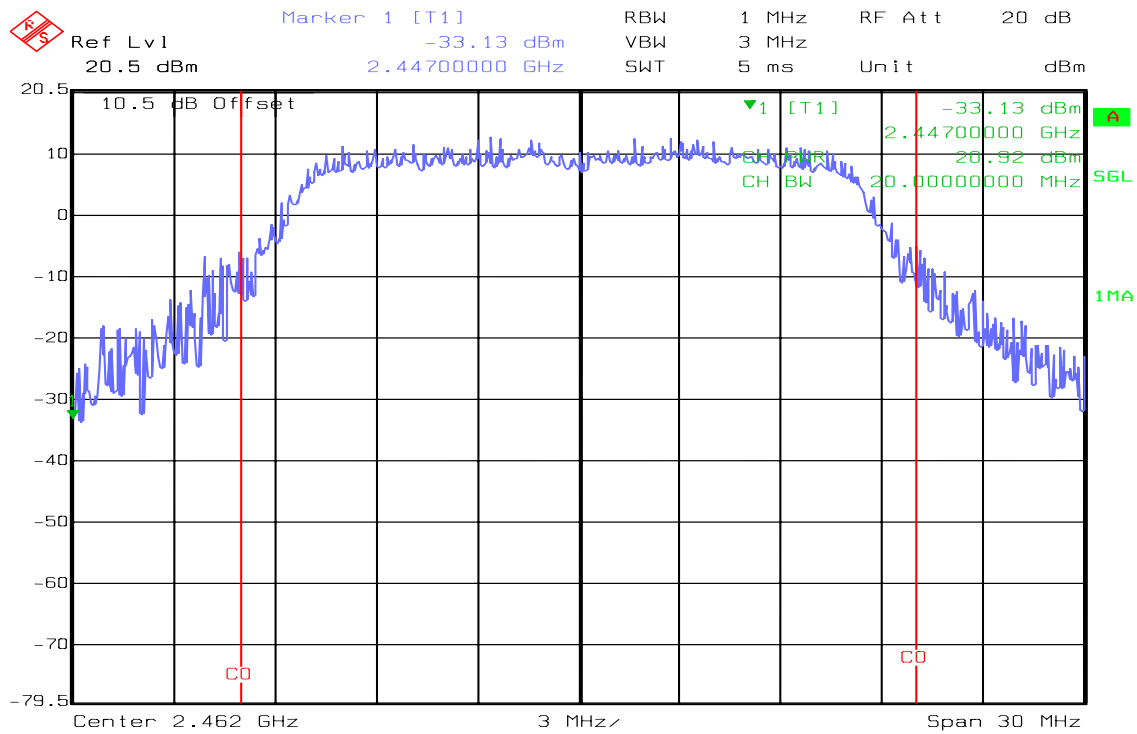


Peak Power (CH Mid)



Date: 06.MAY 2009 10:30:23

Peak Power (CH High)

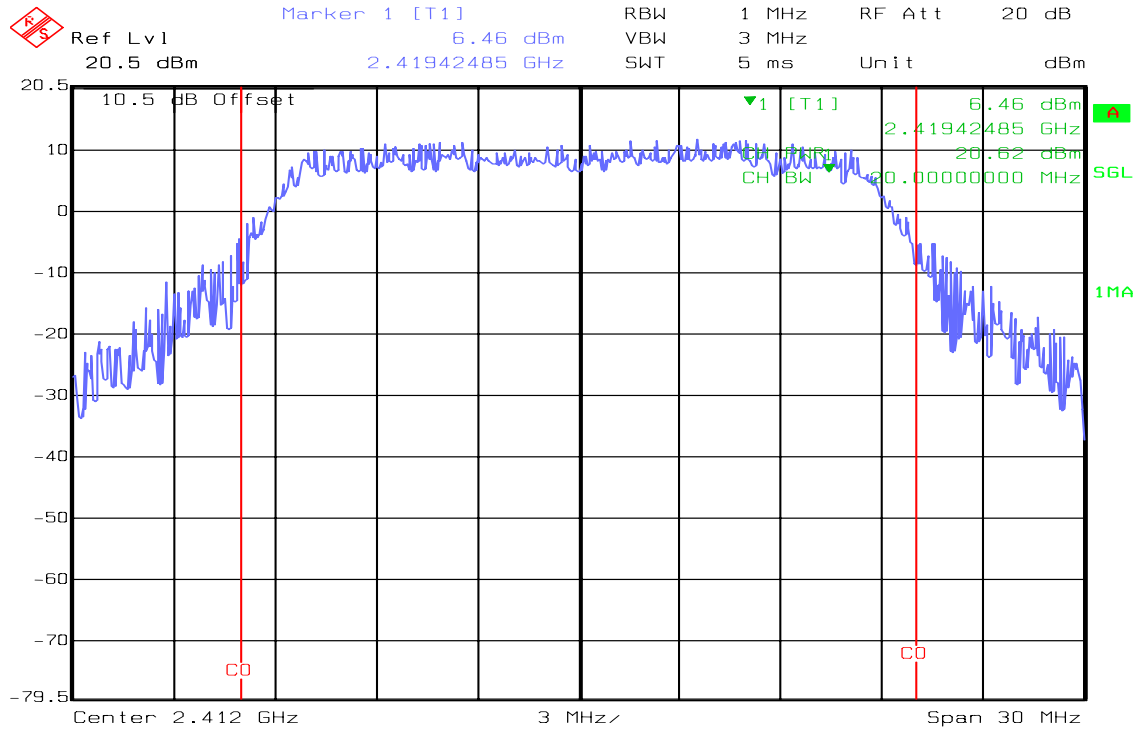


Date: 06.MAY 2009 11:10:09



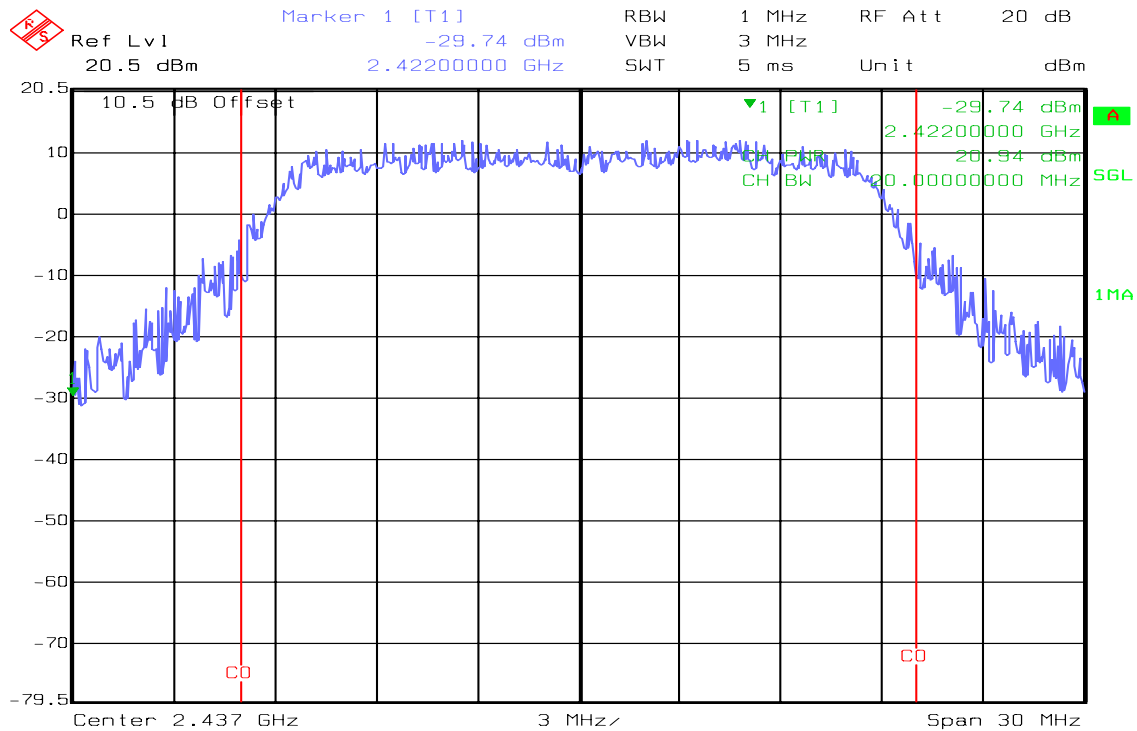
draft 802.11n 20 MHz Channel mode / Chain 0

Peak Power (CH Low)



Date: 06.MAY 2009 10:08:16

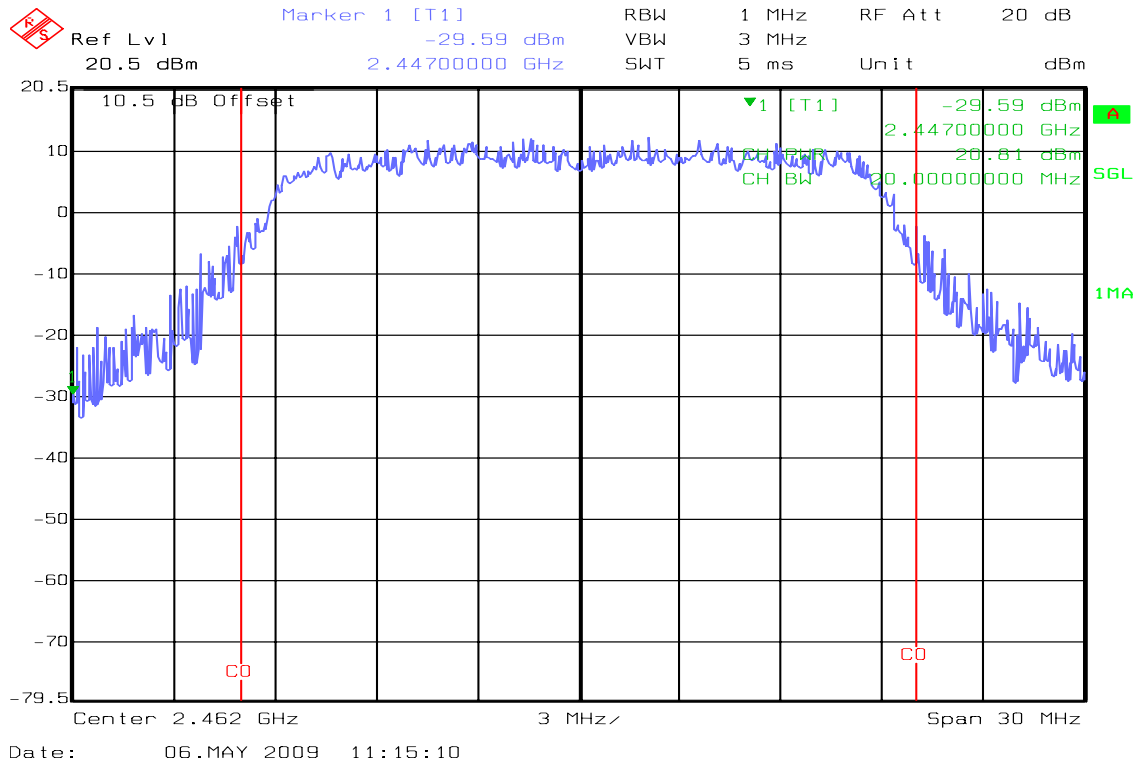
Peak Power (CH Mid)



Date: 06.MAY 2009 10:18:55

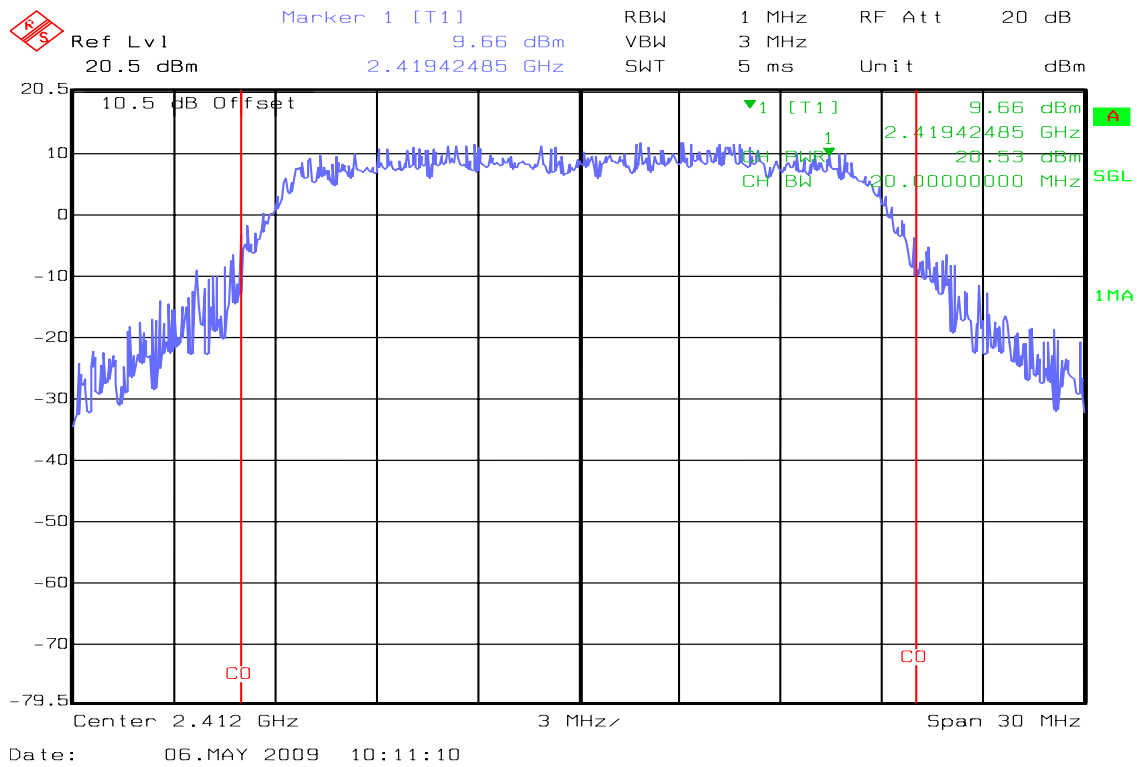


Peak Power (CH High)



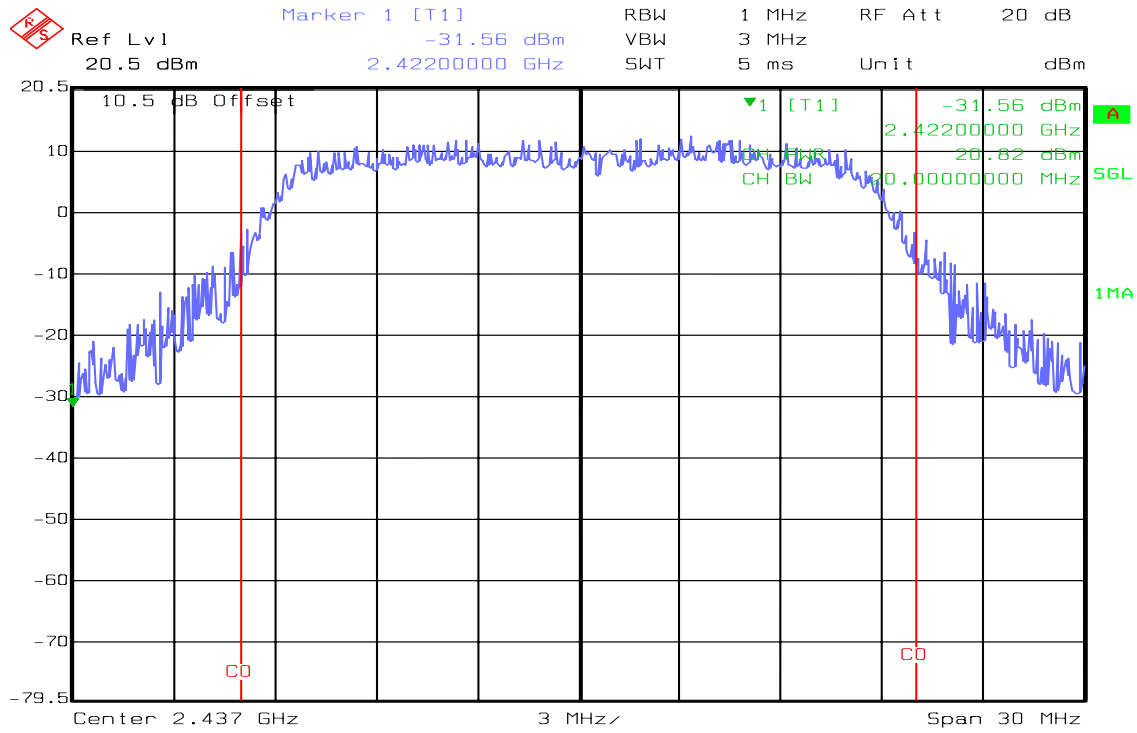
draft 802.11n 20 MHz Channel mode / Chain 1

Peak Power (CH Low)



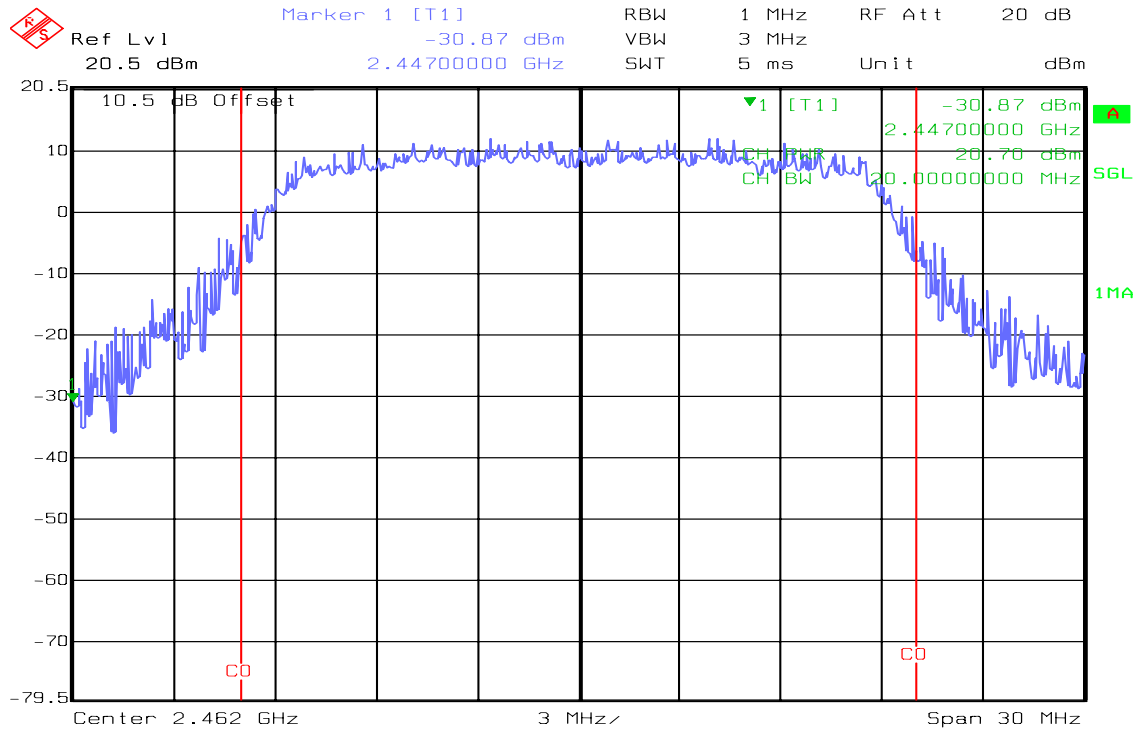


Peak Power (CH Mid)



Date: 06.MAY 2009 10:20:50

Peak Power (CH High)

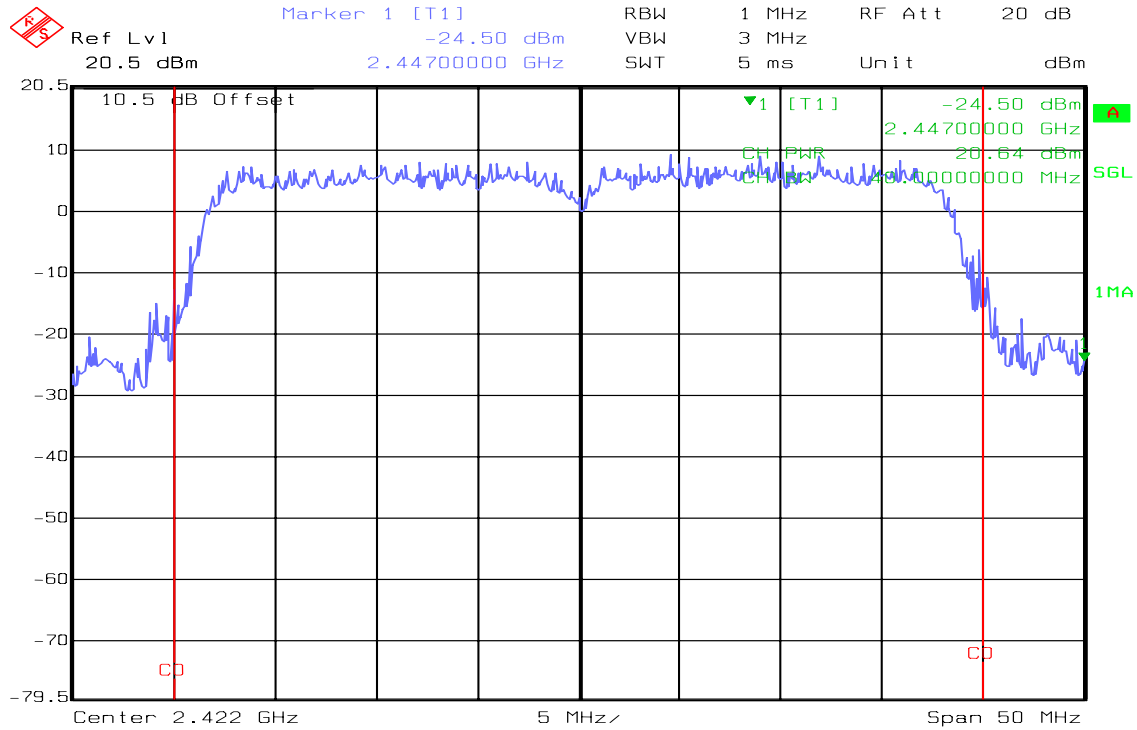


Date: 06.MAY 2009 11:17:34



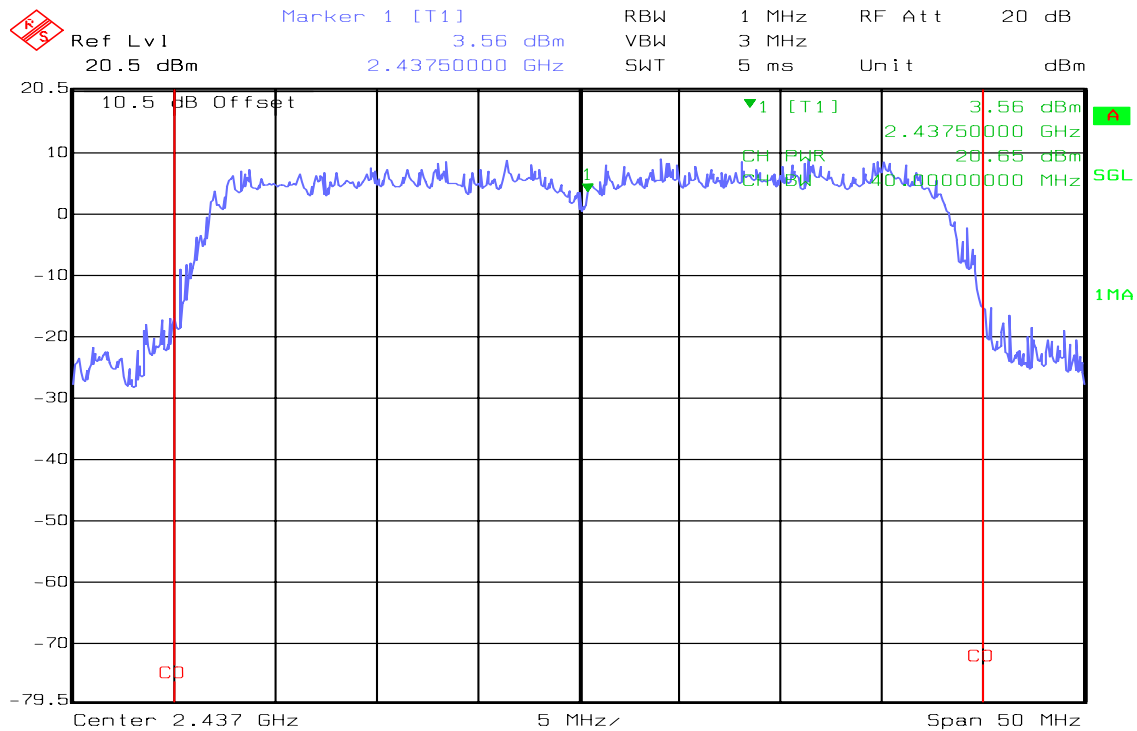
draft 802.11n 40 MHz Channel mode / Chain 0

Peak Power (CH Low)



Date: 06.MAY 2009 11:24:01

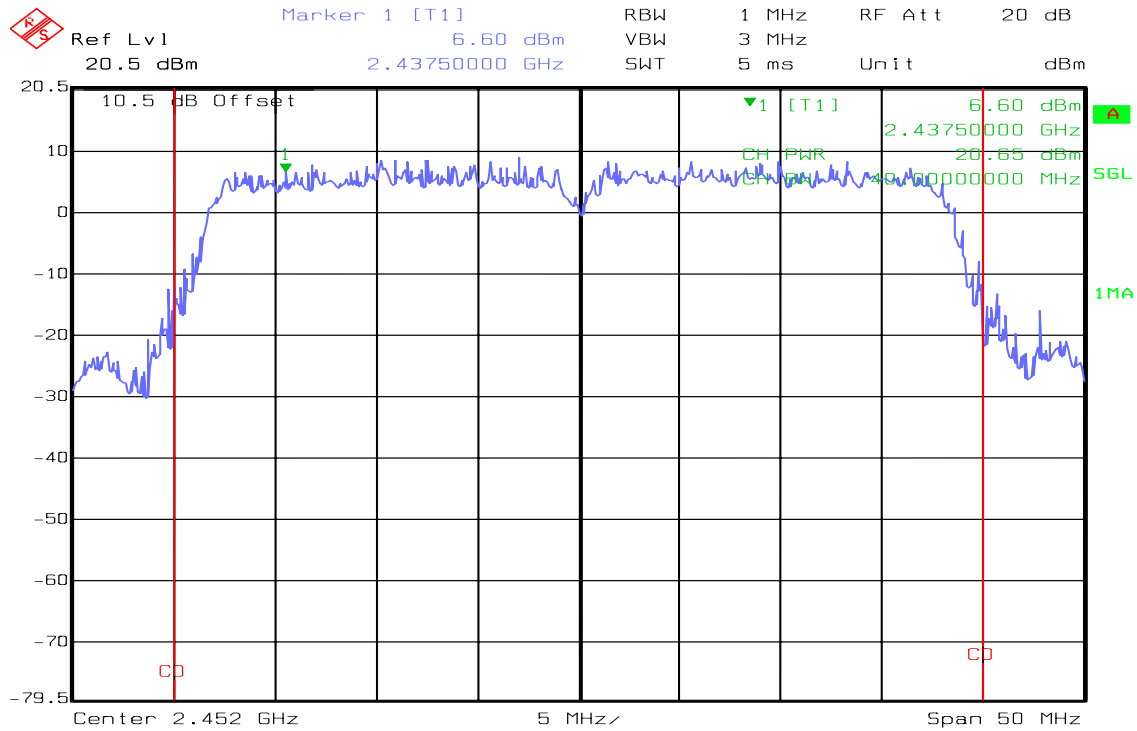
Peak Power (CH Mid)



Date: 06.MAY 2009 11:33:12

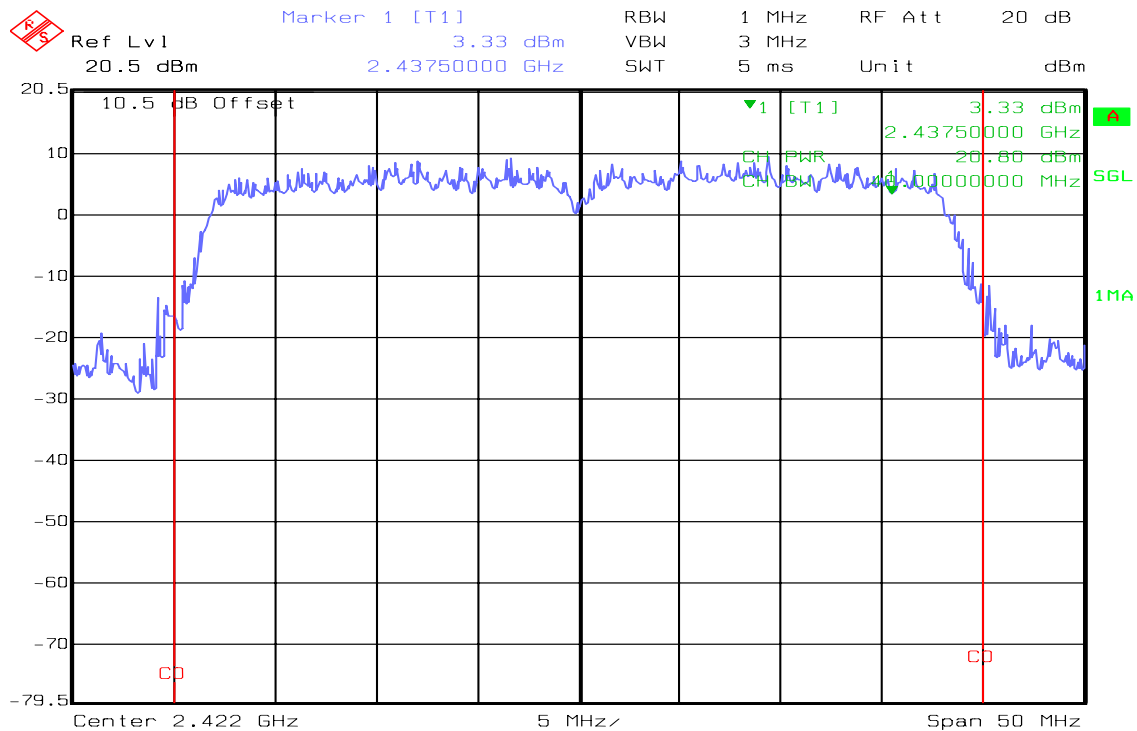


Peak Power (CH High)



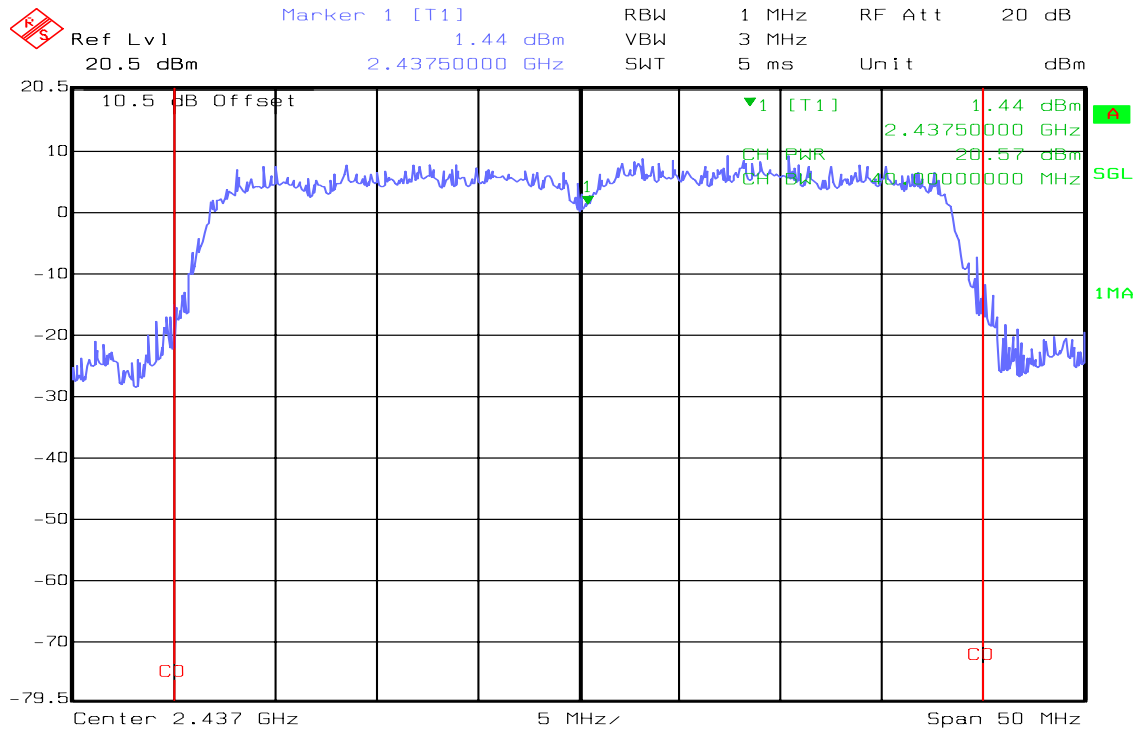
draft 802.11n 40 MHz Channel mode / Chain 1

Peak Power (CH Low)



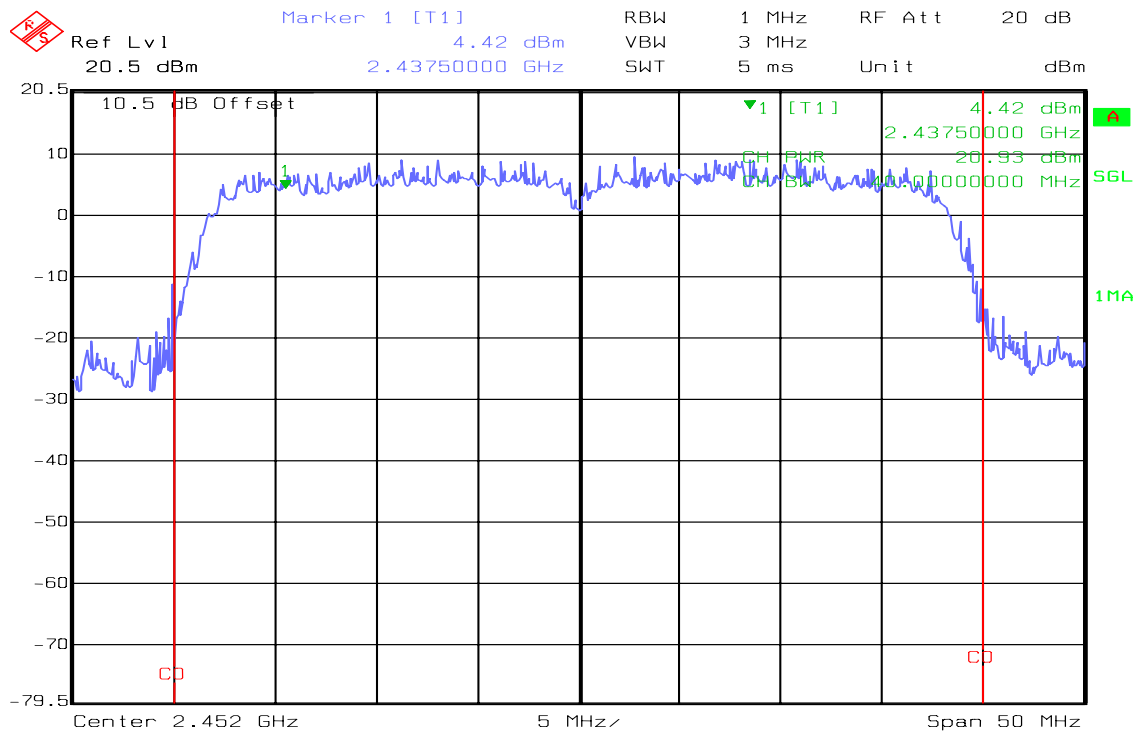


Peak Power (CH Mid)



Date: 06.MAY 2009 11:35:51

Peak Power (CH High)



Date: 06.MAY 2009 11:44:55

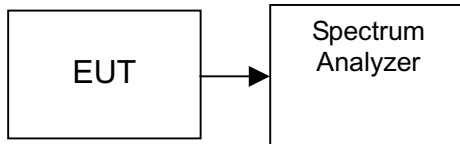


7.3 AVERAGE POWER

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)		Total Power (dBm)	Total Power (W)
		Chain 0	Chain 1	Chain 0	Chain 1		
Low	2412	14.88	14.74	0.03076	0.02979	17.82	0.0605
Mid	2437	15.31	15.11	0.03396	0.03243	18.22	0.0664
High	2462	15.85	15.54	0.03846	0.03581	18.71	0.0743

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)		Output Power (W)		Total Power (dBm)	Total Power (W)
		Chain 0	Chain 1	Chain 0	Chain 1		
Low	2412	15.20	15.09	0.03311	0.03228	18.16	0.0654
Mid	2437	15.24	15.24	0.03342	0.03342	18.25	0.0668
High	2462	15.60	15.72	0.03631	0.03733	18.67	0.0736

Test mode: draft 802.11n 20 MHz Channel mode

Channel	Frequency (MHz)	Output Power (dBm)		Output Power (W)		Total Power (dBm)	Total Power (W)
		Chain 0	Chain 1	Chain 0	Chain 1		
Low	2412	15.31	15.54	0.03396	0.03581	18.44	0.0698
Mid	2437	15.77	15.45	0.03776	0.03508	18.62	0.0728
High	2462	15.82	15.57	0.03819	0.03606	18.71	0.0743

Test mode: draft 802.11n 40 MHz Channel mode

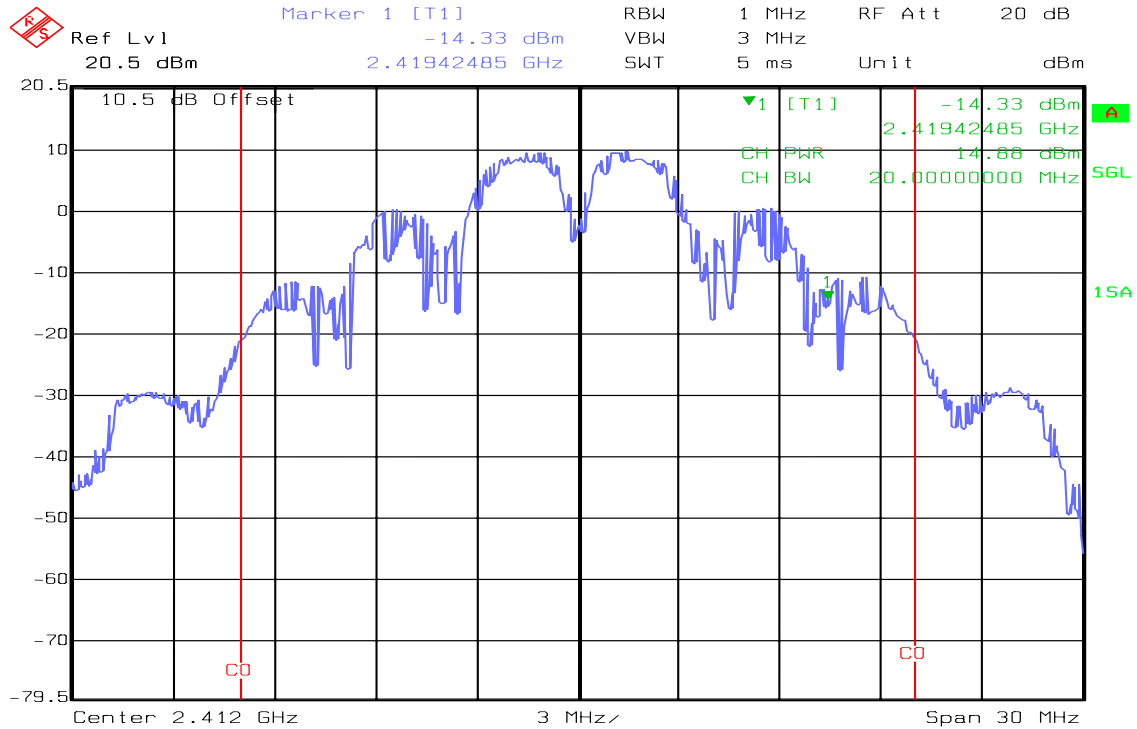
Channel	Frequency (MHz)	Output Power (dBm)		Output Power (W)		Total Power (dBm)	Total Power (W)
		Chain 0	Chain 1	Chain 0	Chain 1		
Low	2422	15.40	15.36	0.03467	0.03436	18.39	0.0690
Mid	2437	15.31	15.32	0.03396	0.03404	18.33	0.0680
High	2452	15.30	15.62	0.03388	0.03648	18.47	0.0704



Test Plot

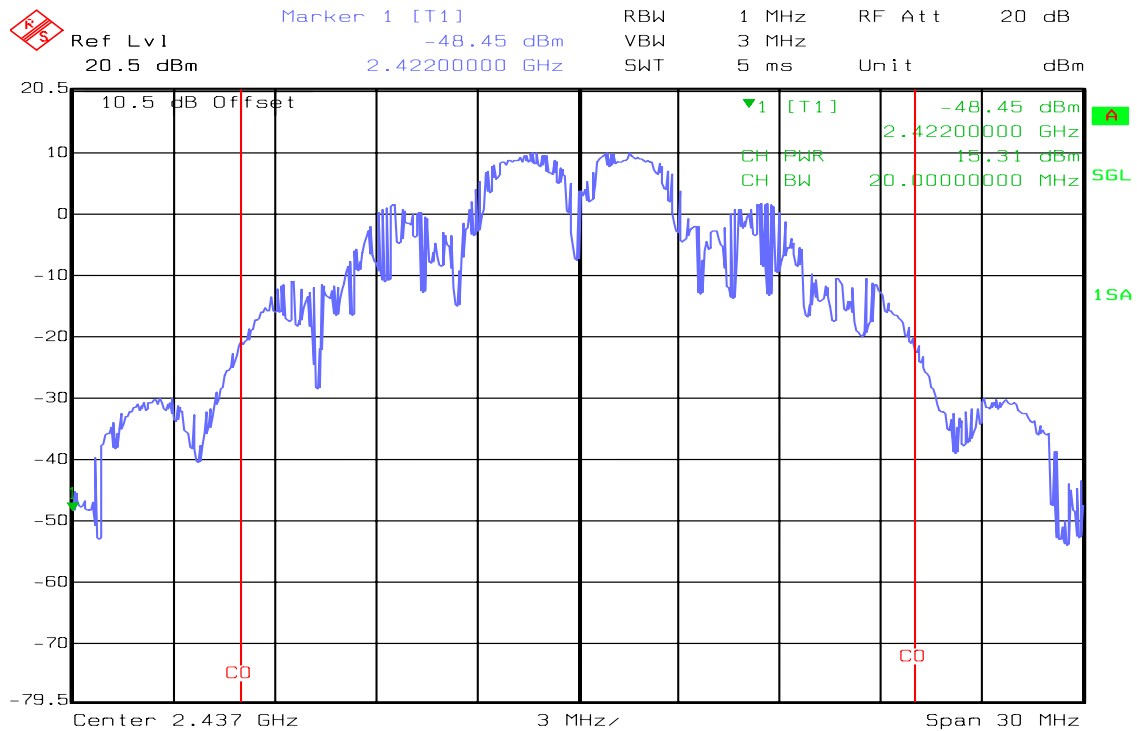
IEEE 802.11b mode / Chain 0

Average power (CH Low)



Date: 06.MAY 2009 09:41:08

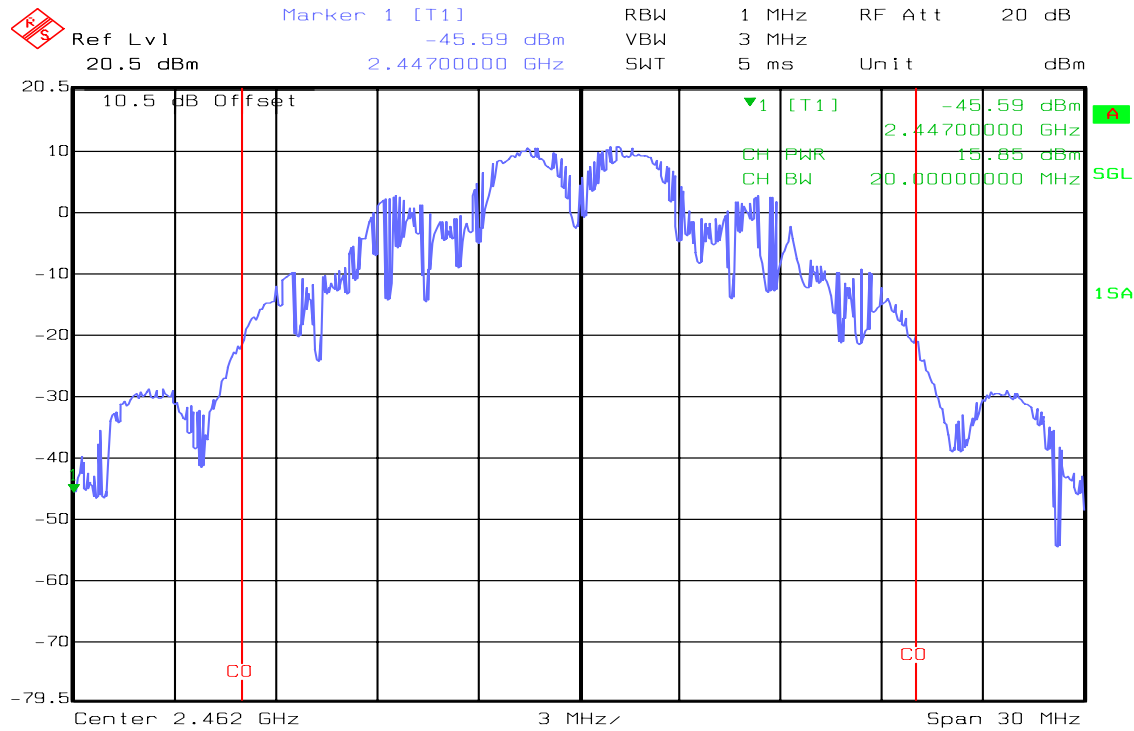
Average power (CH Mid)



Date: 06.MAY 2009 10:35:05



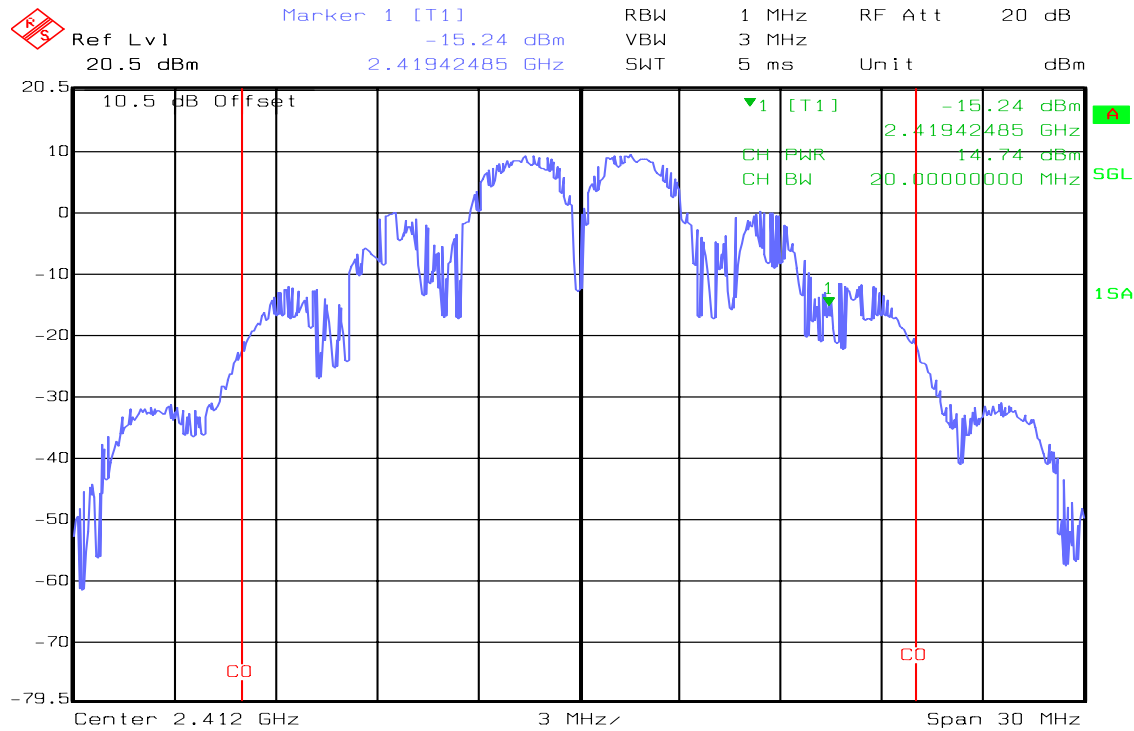
Average power (CH High)



Date: 06.MAY 2009 10:43:14

IEEE 802.11b mode / Chain 1

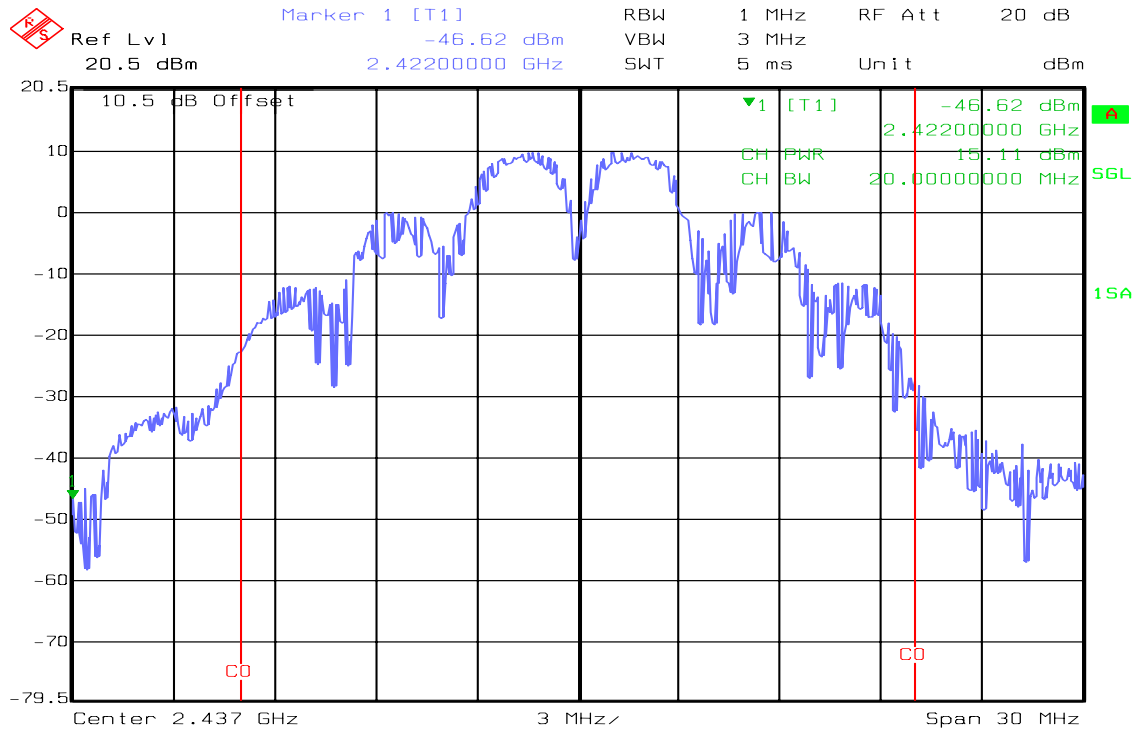
Average power (CH Low)



Date: 06.MAY 2009 09:45:42

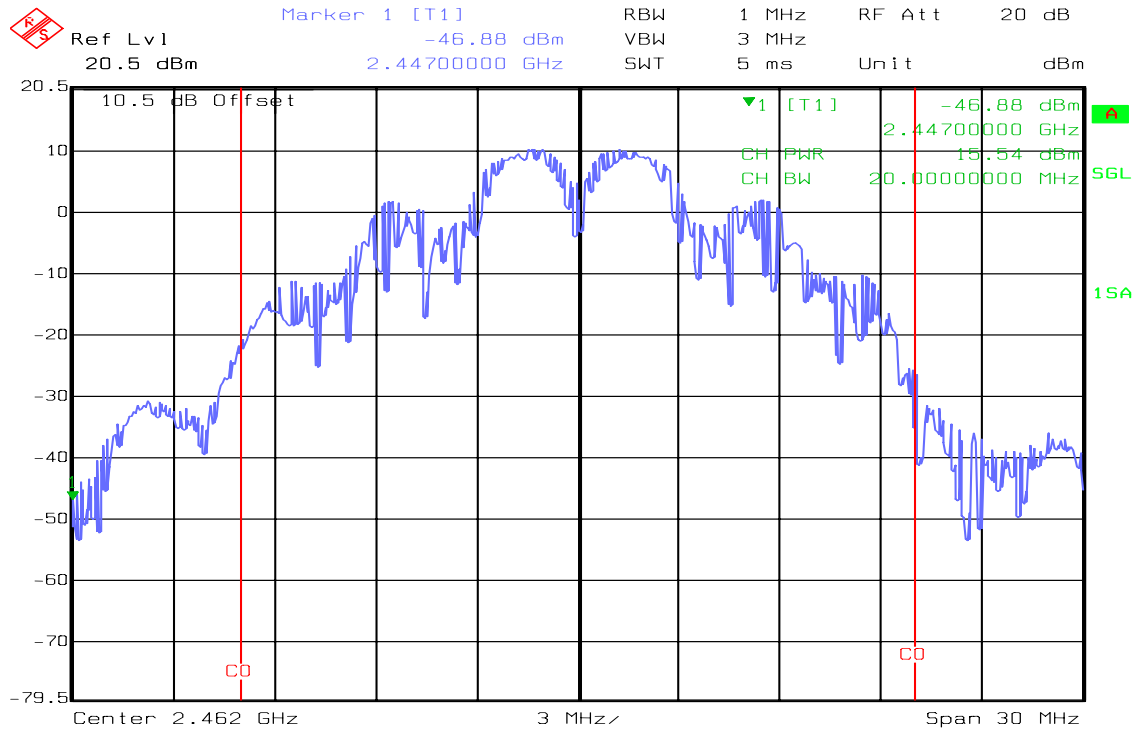


Average power (CH Mid)



Date: 06.MAY 2009 10:38:26

Average power (CH High)

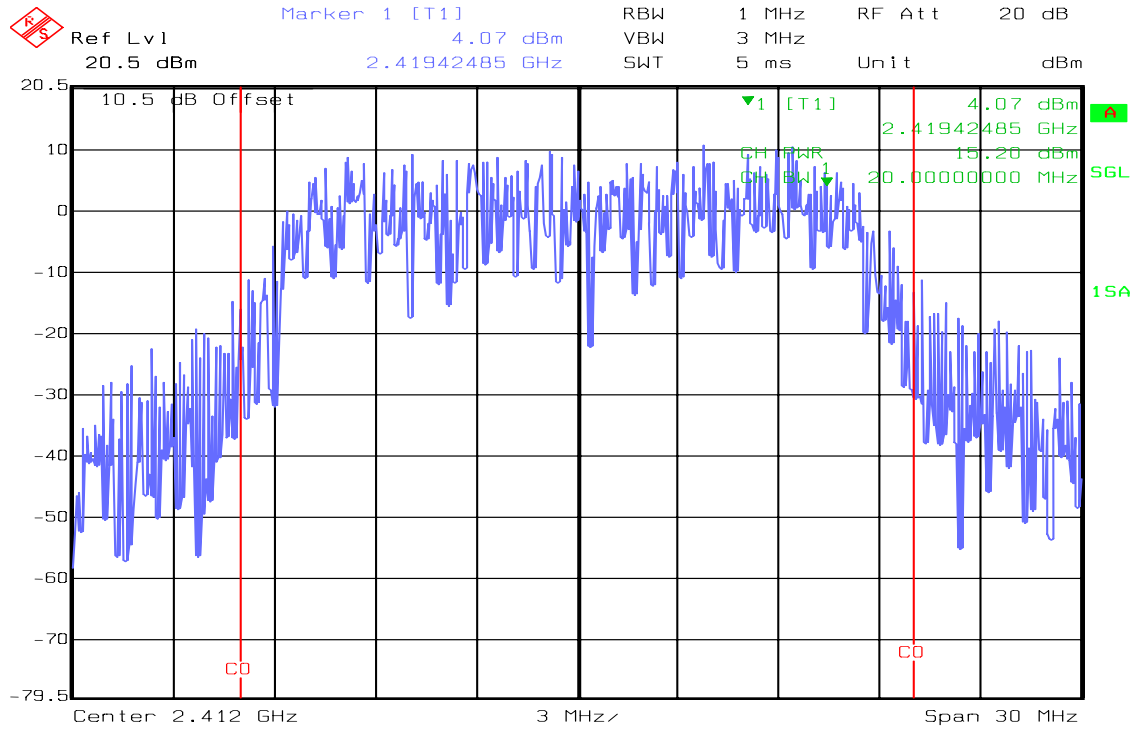


Date: 06.MAY 2009 10:46:07



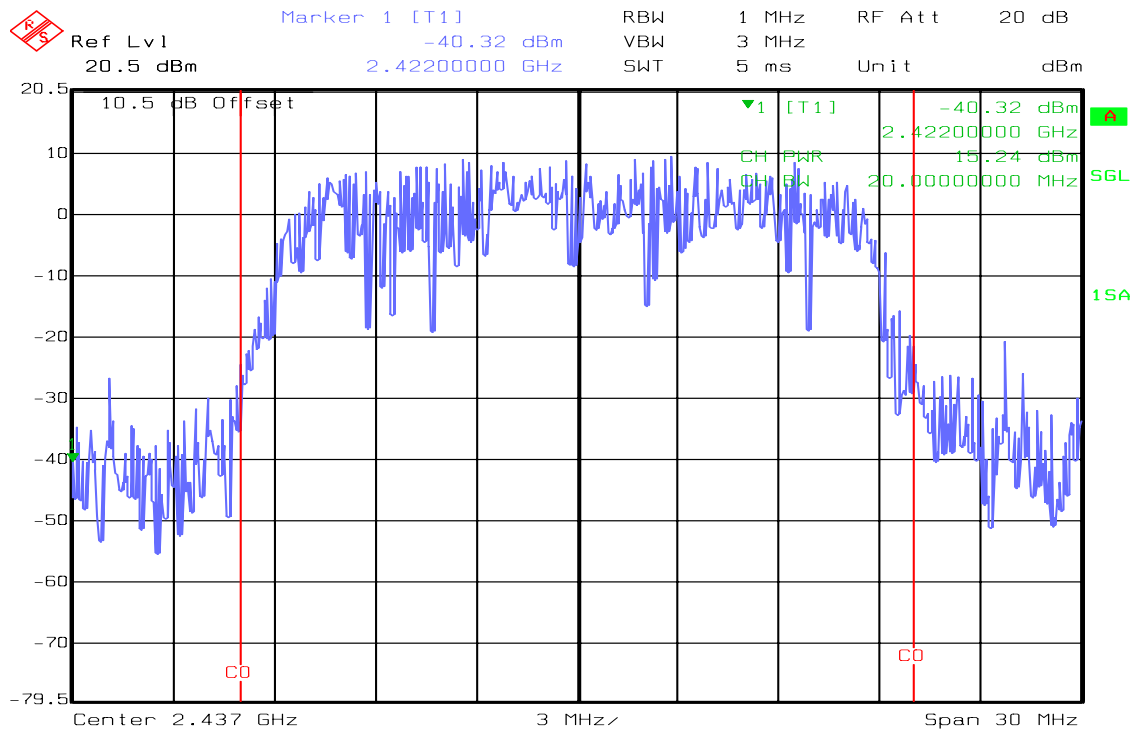
IEEE 802.11g mode / Chain 0

Average power (CH Low)



Date: 06.MAY 2009 09:58:13

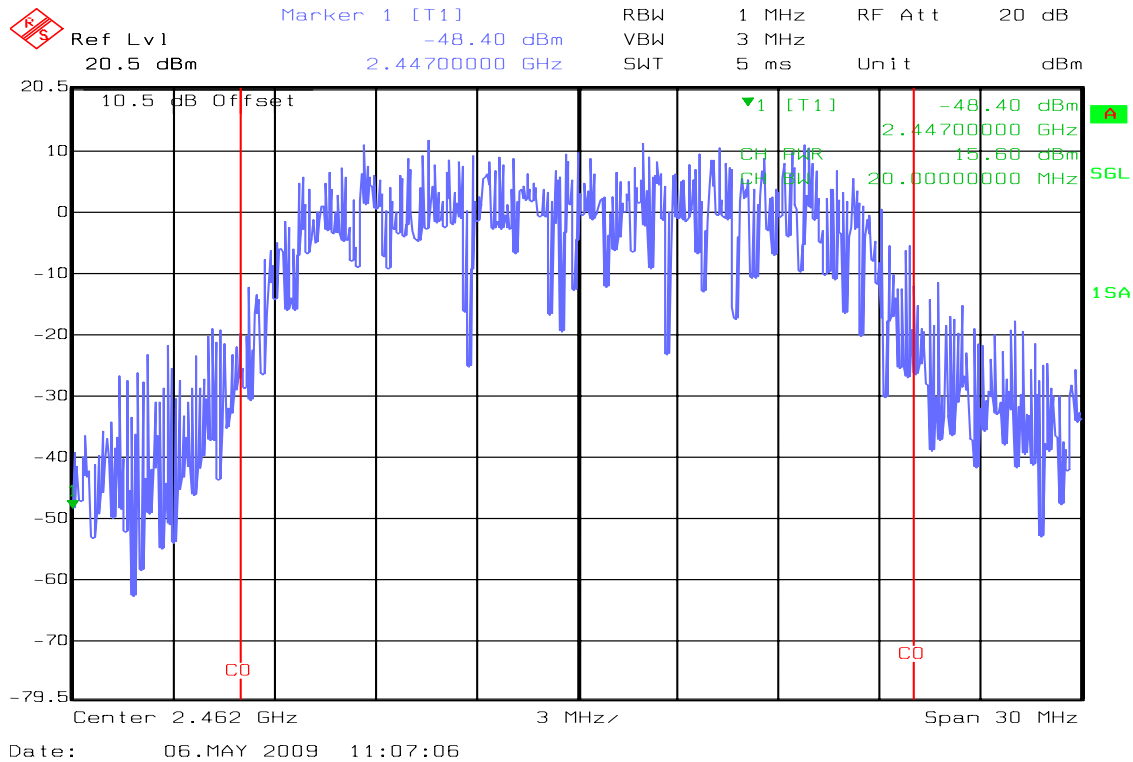
Average power (CH Mid)



Date: 06.MAY 2009 10:27:21

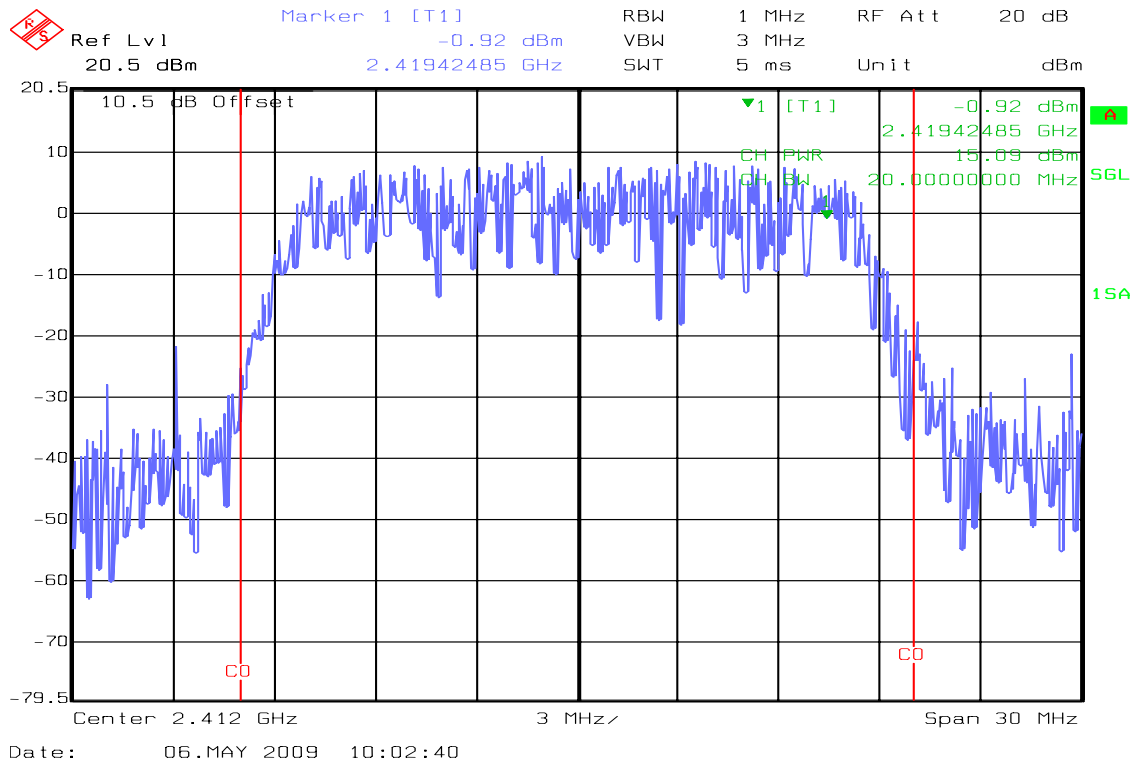


Average power (CH High)



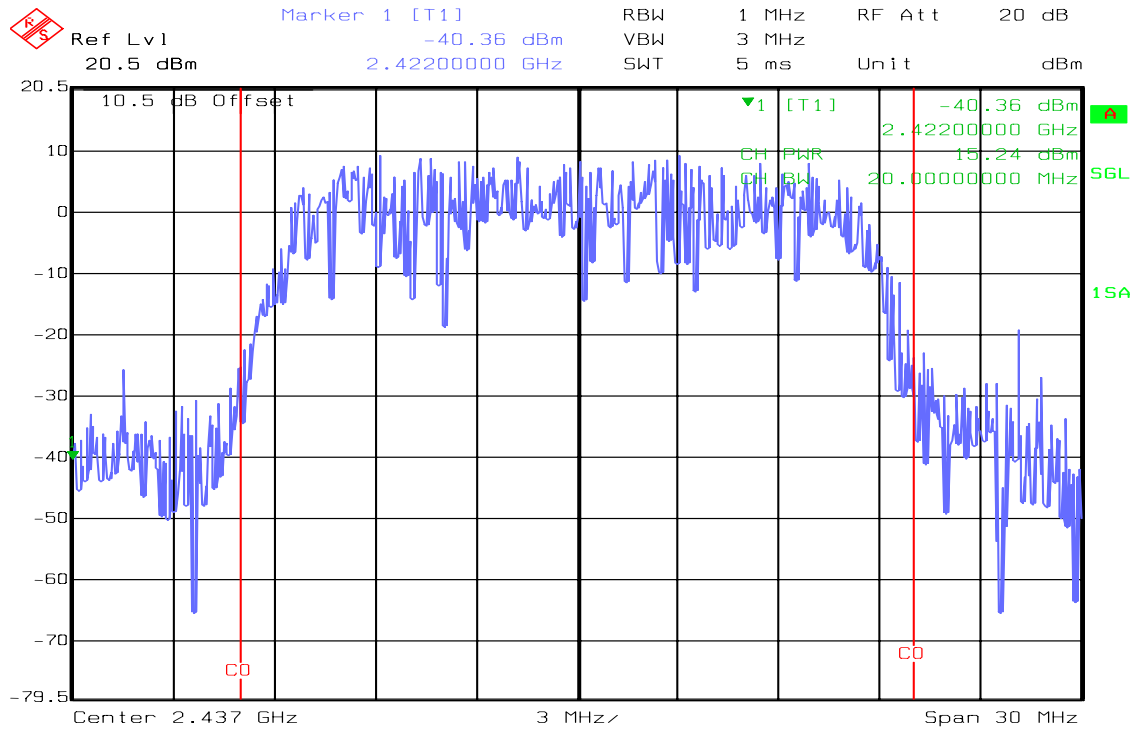
IEEE 802.11g mode / Chain 1

Average power (CH Low)



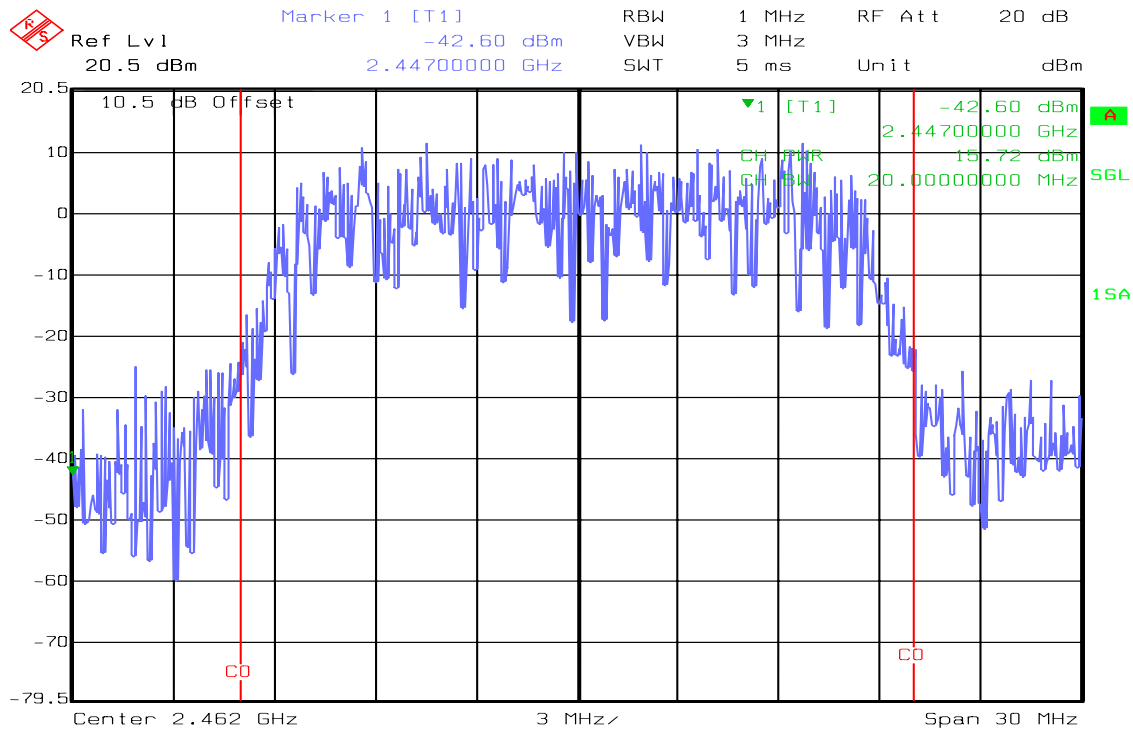


Average power (CH Mid)



Date: 06.MAY 2009 10:29:46

Average power (CH High)

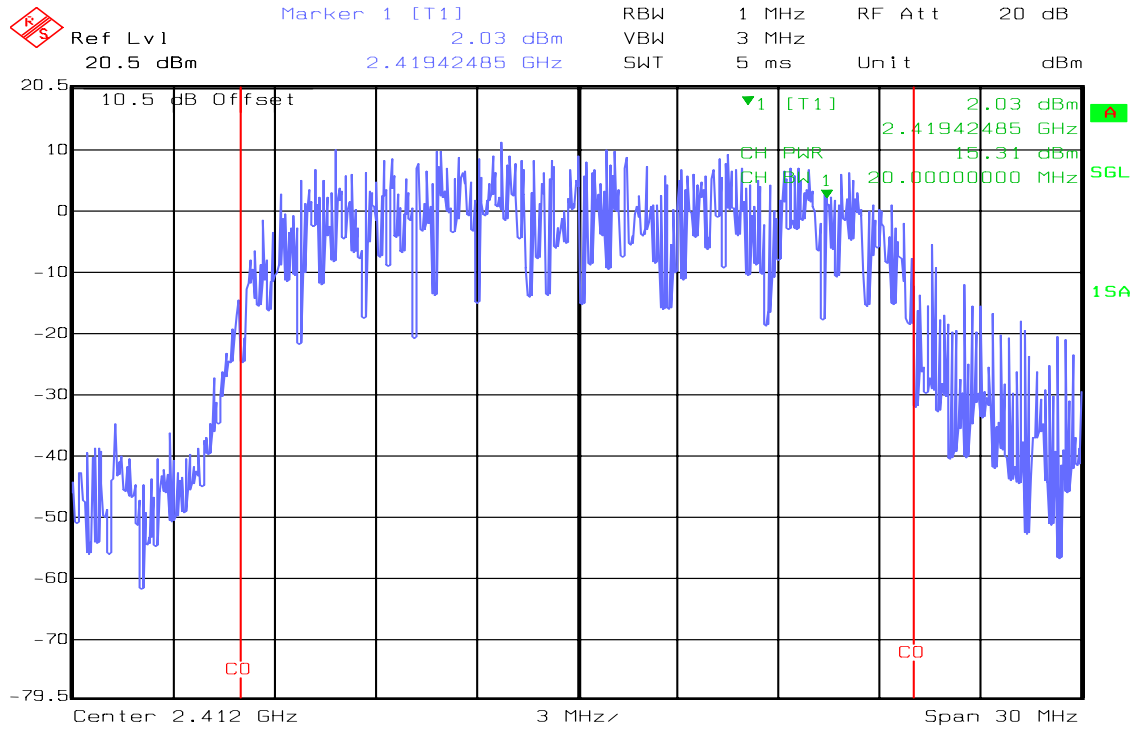


Date: 06.MAY 2009 11:09:37



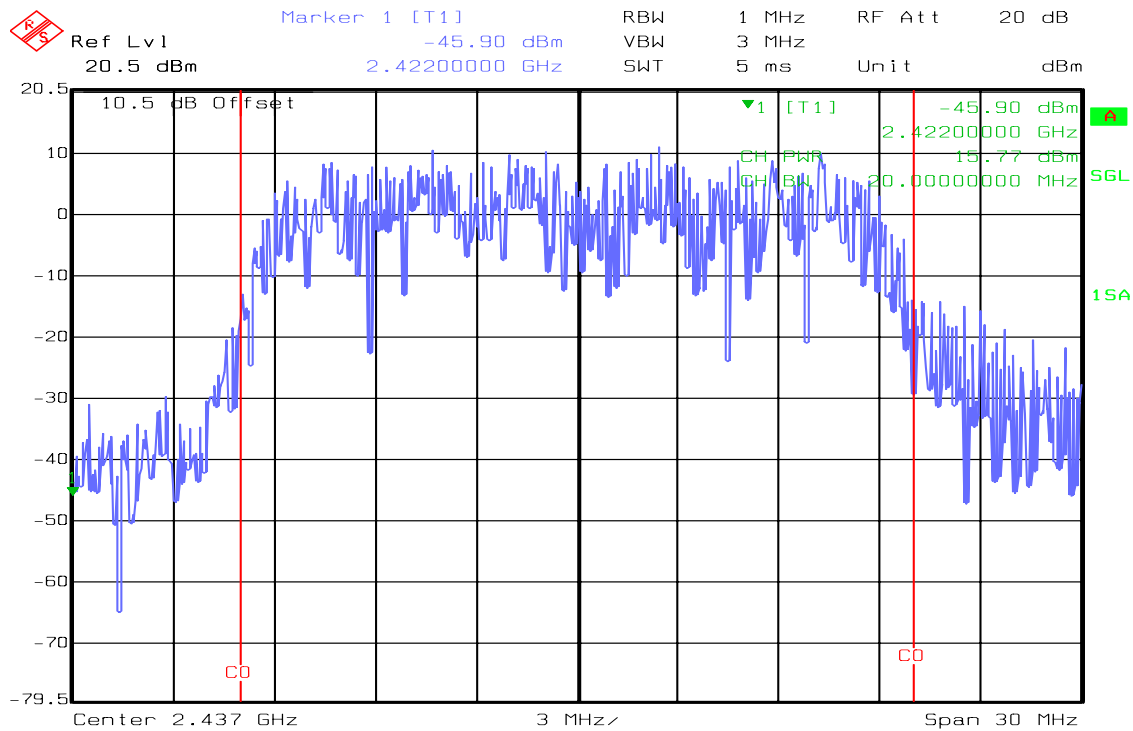
draft 802.11n 20 MHz Channel mode / Chain 0

Average power (CH Low)



Date: 06.MAY 2009 10:07:35

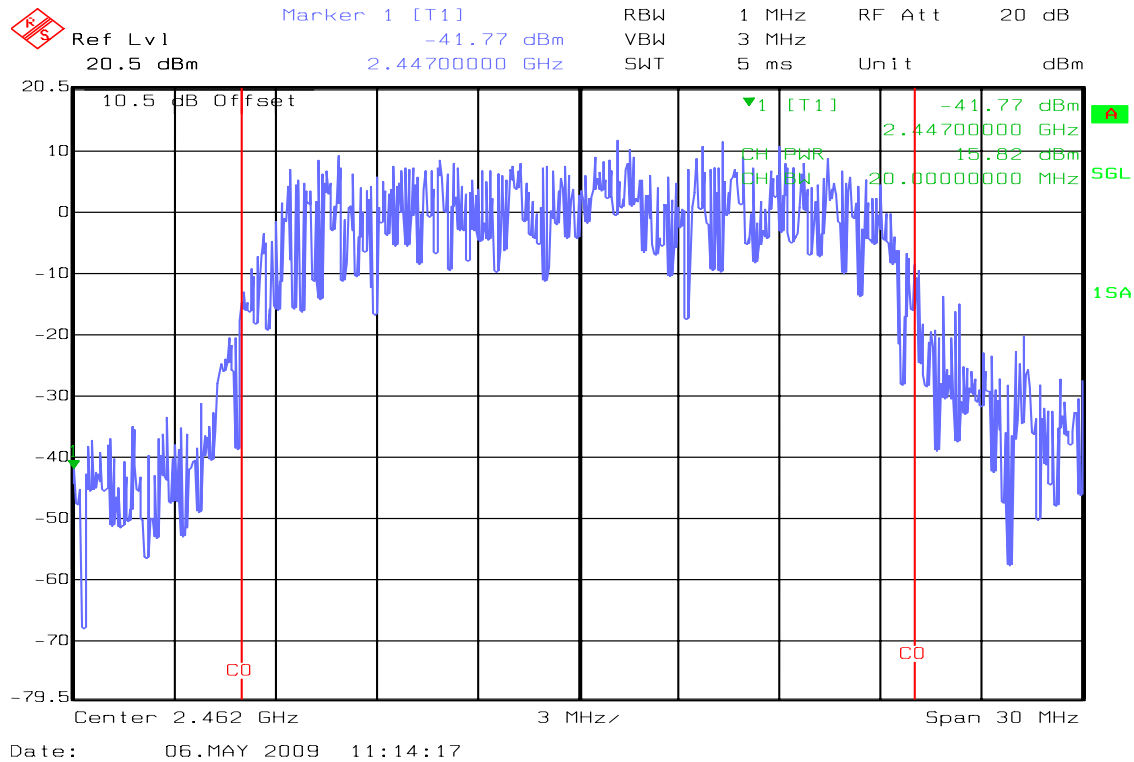
Average power (CH Mid)



Date: 06.MAY 2009 10:17:49

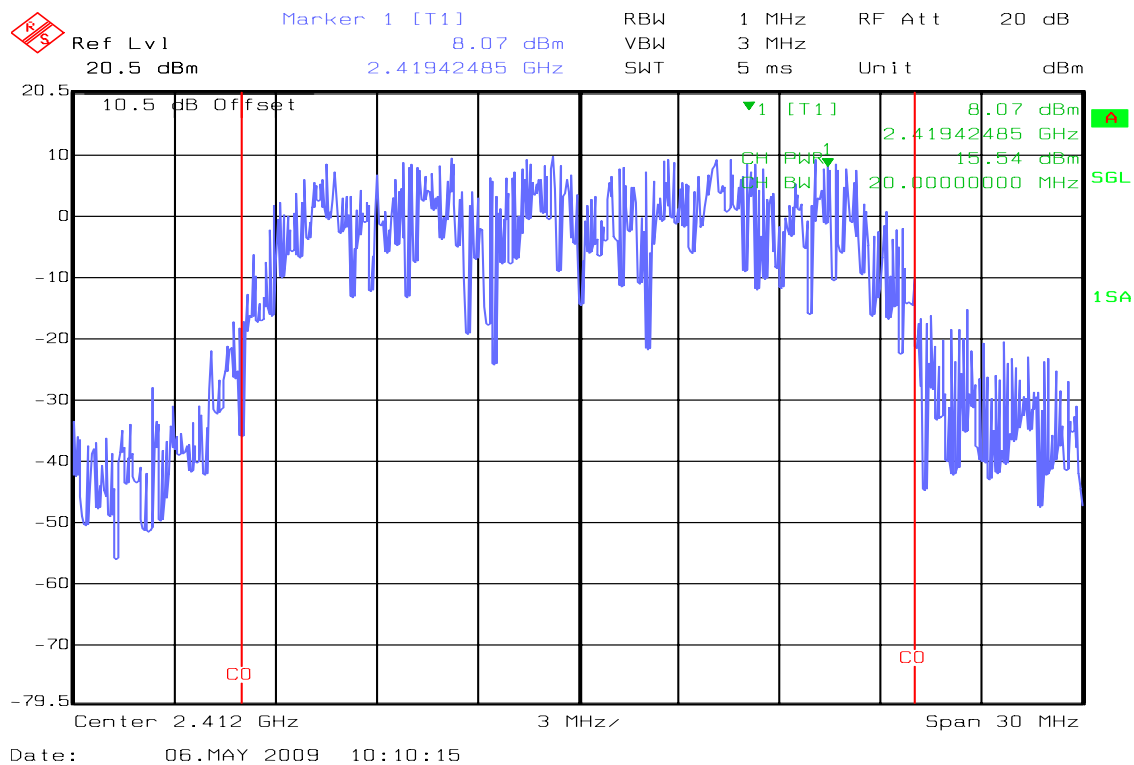


Average power (CH High)



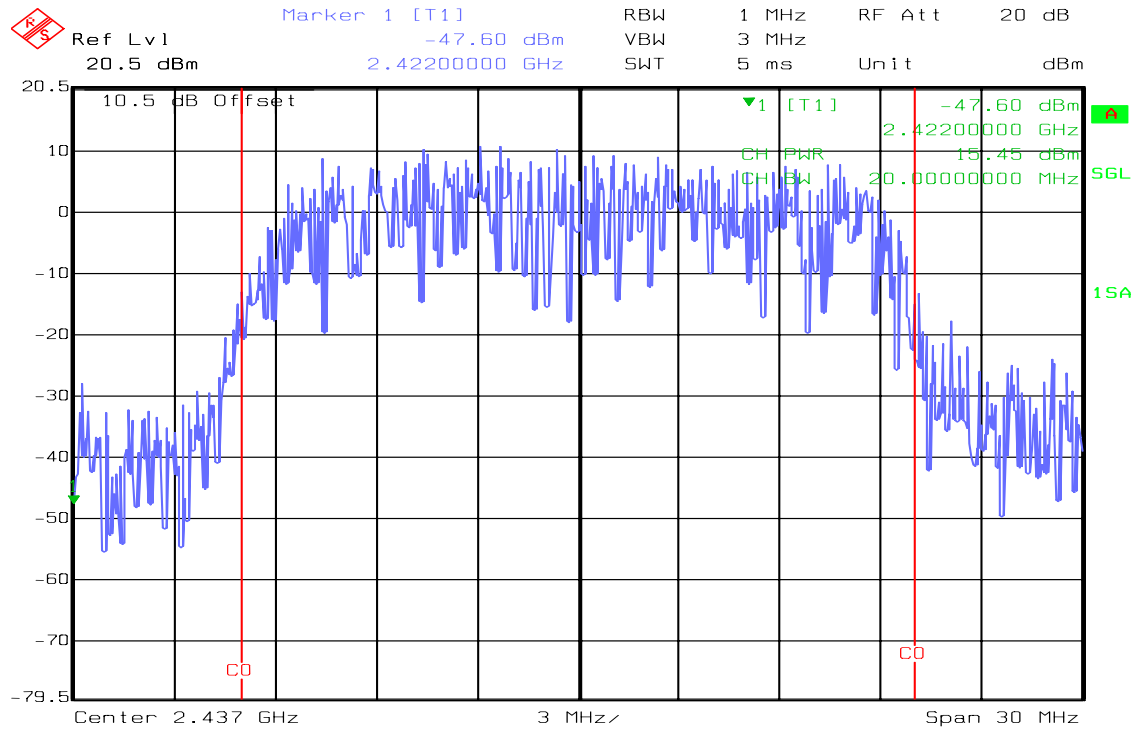
draft 802.11n 20 MHz Channel mode / Chain 1

Average power (CH Low)



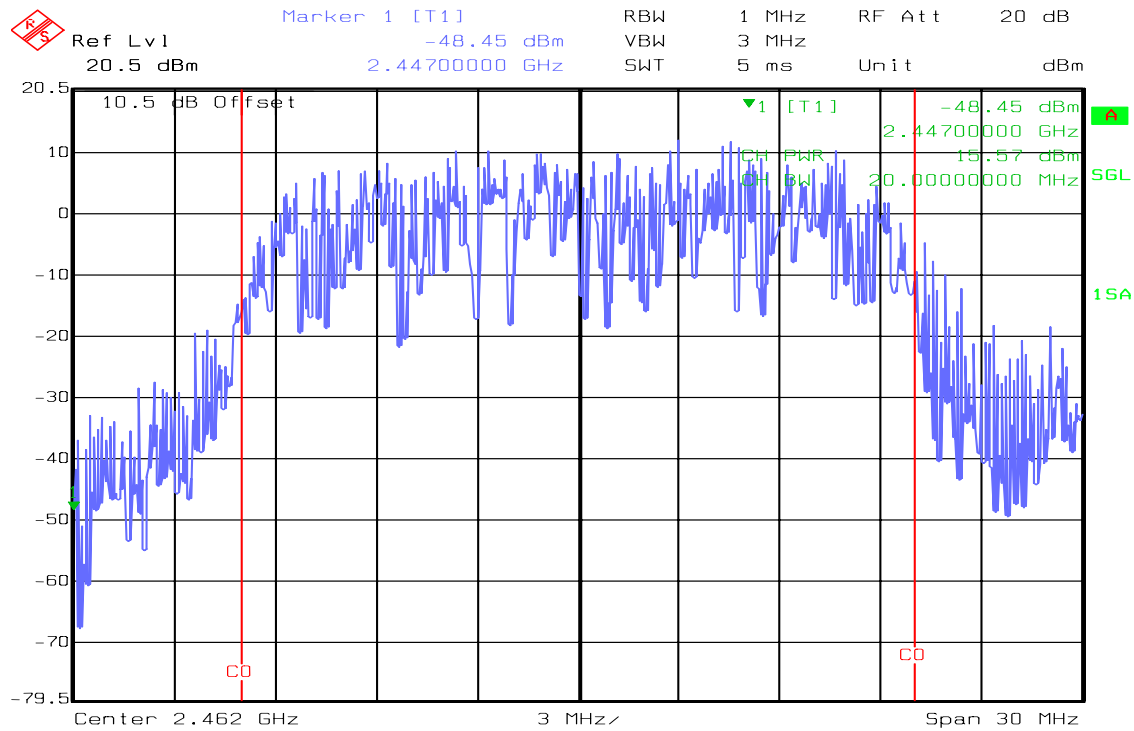


Average power (CH Mid)



Date: 06.MAY 2009 10:20:16

Average power (CH High)

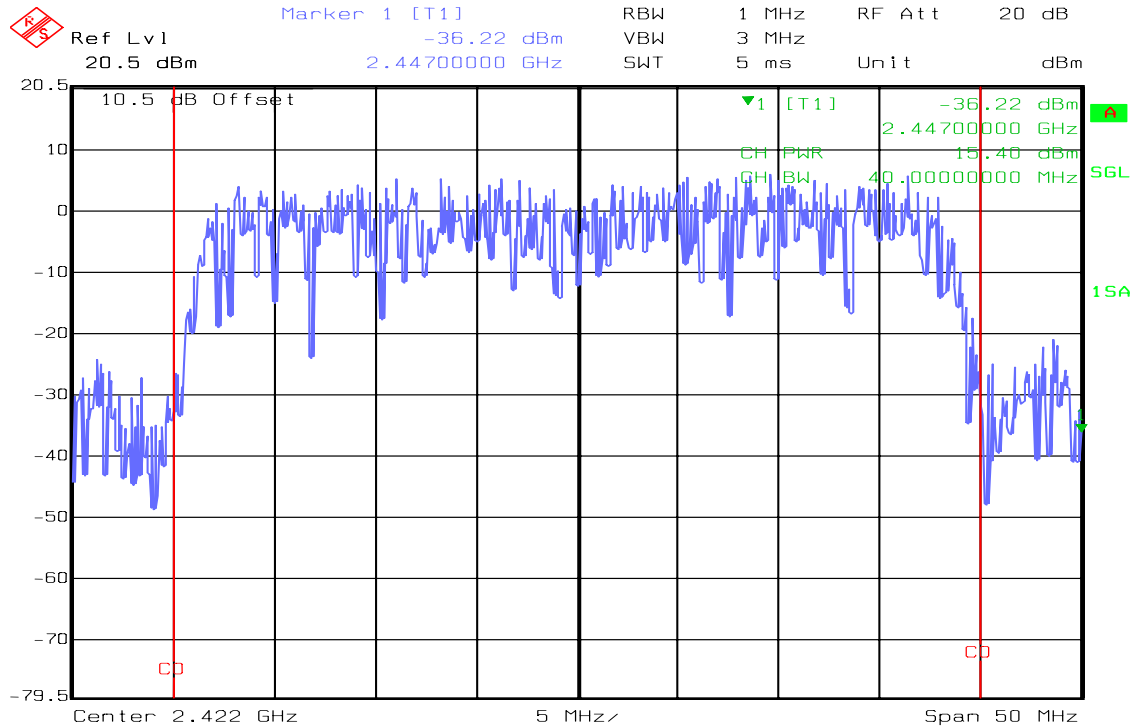


Date: 06.MAY 2009 11:16:47



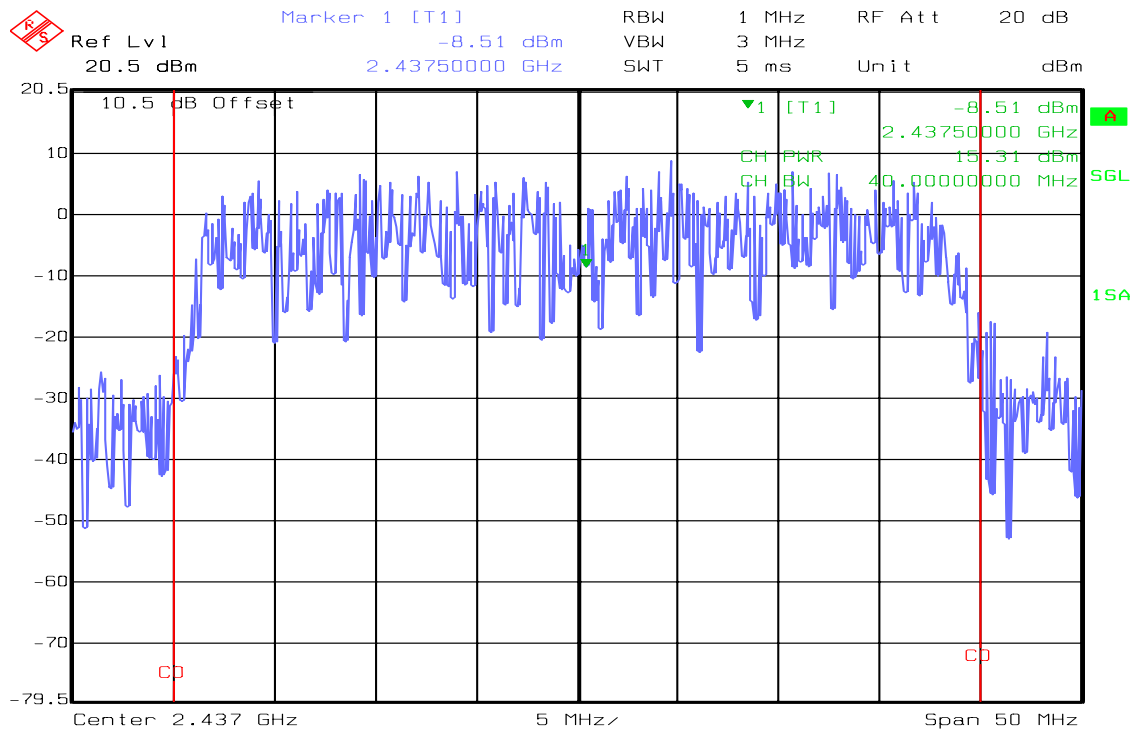
draft 802.11n 40 MHz Channel mode / Chain 0

Average power (CH Low)



Date: 06.MAY 2009 11:23:23

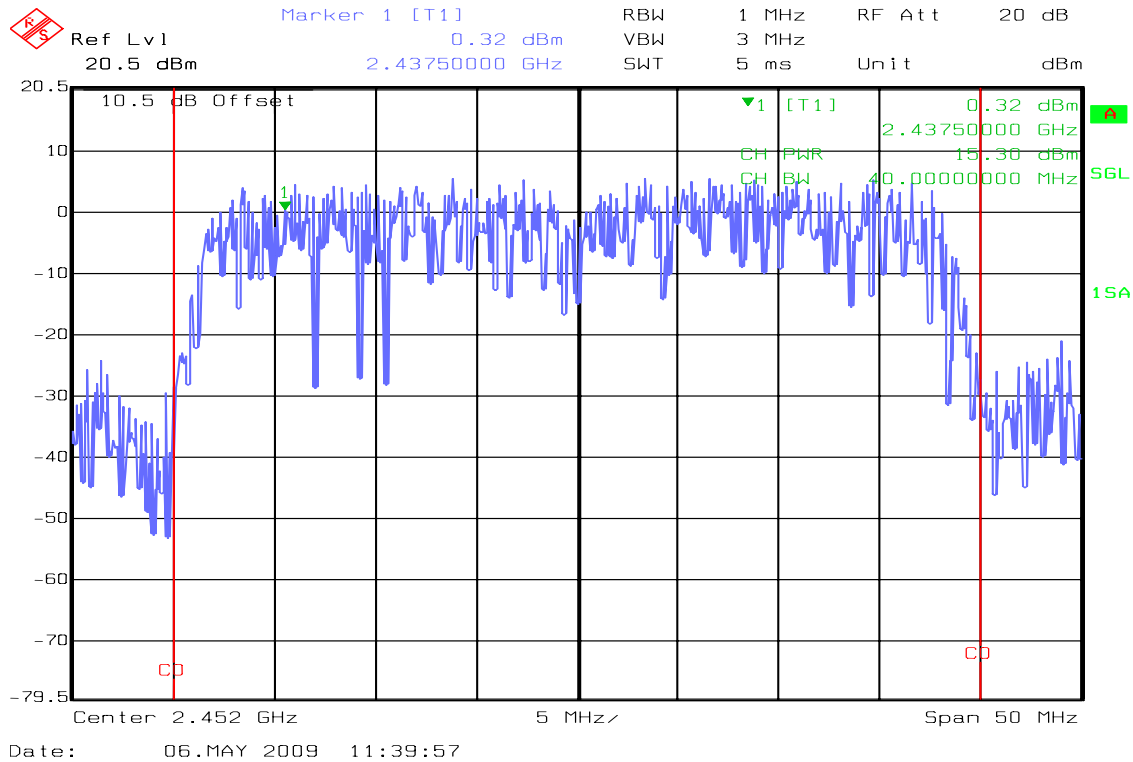
Average power (CH Mid)



Date: 06.MAY 2009 11:32:39

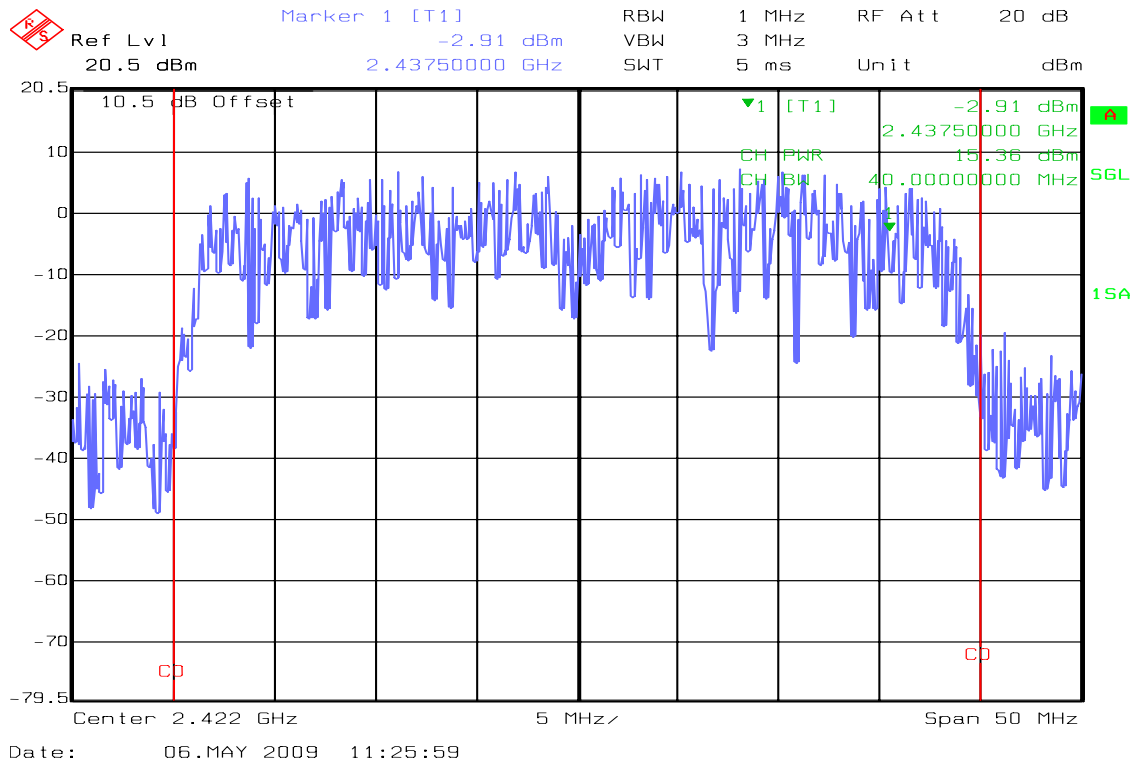


Average power (CH High)



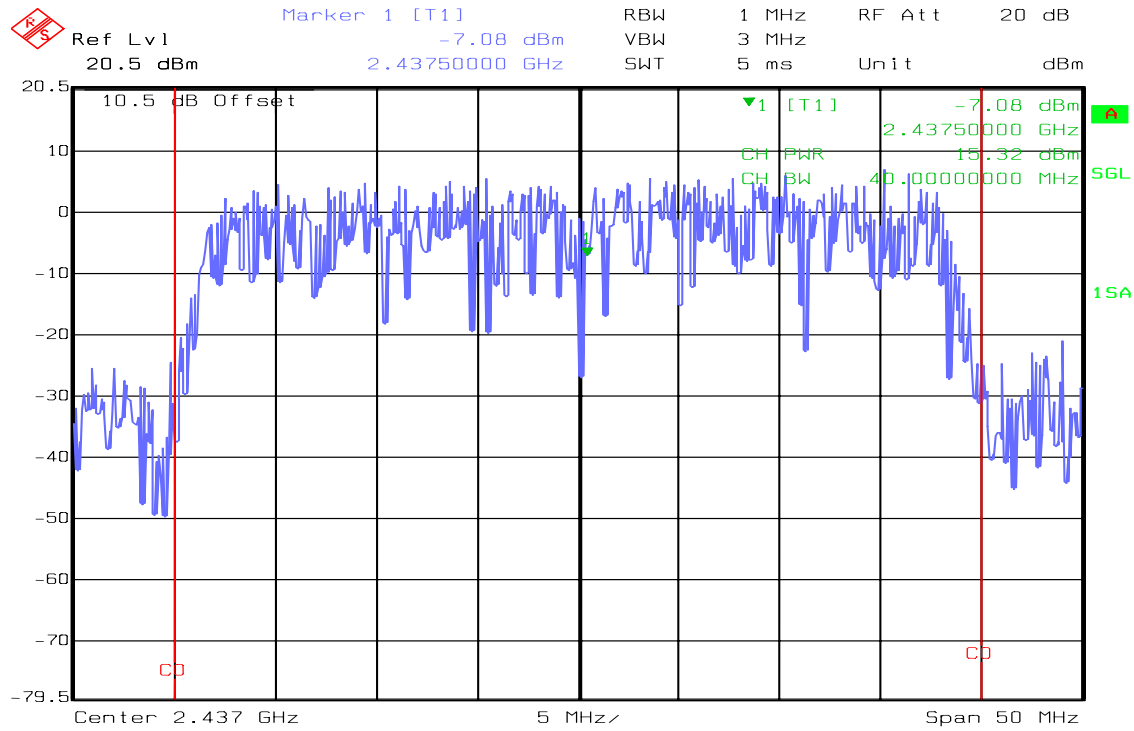
draft 802.11n 40 MHz Channel mode / Chain 1

Average power (CH Low)



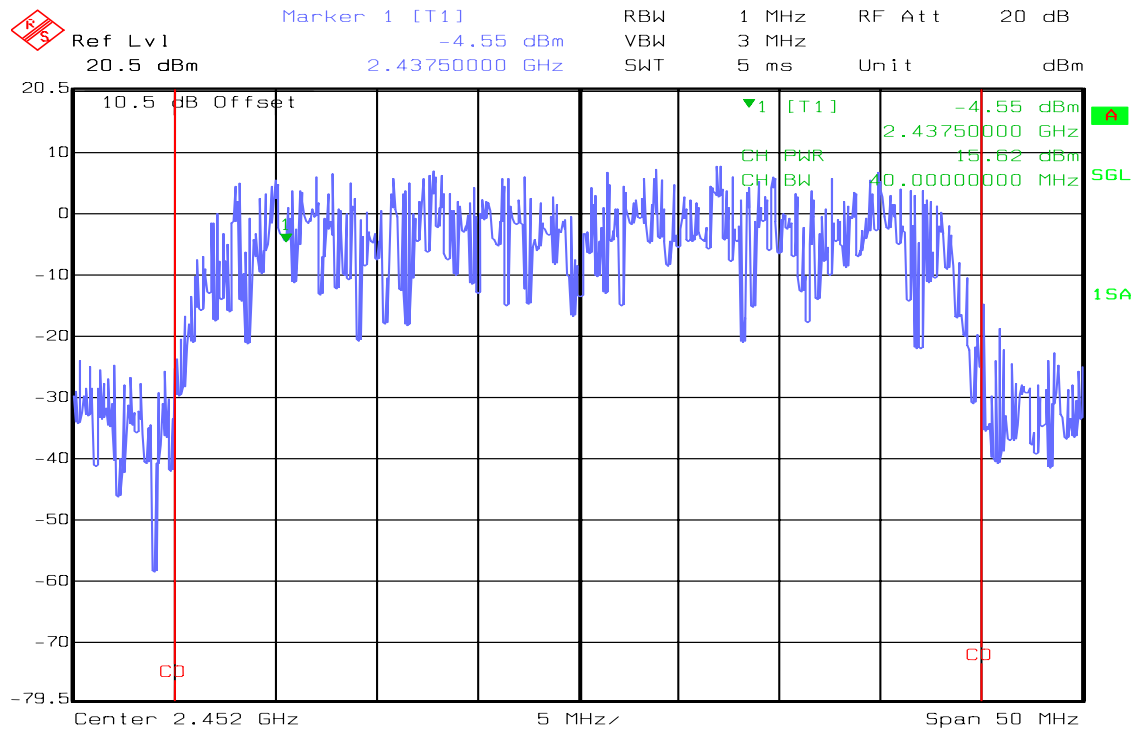


Average power (CH Mid)



Date: 06.MAY 2009 11:35:25

Average power (CH High)



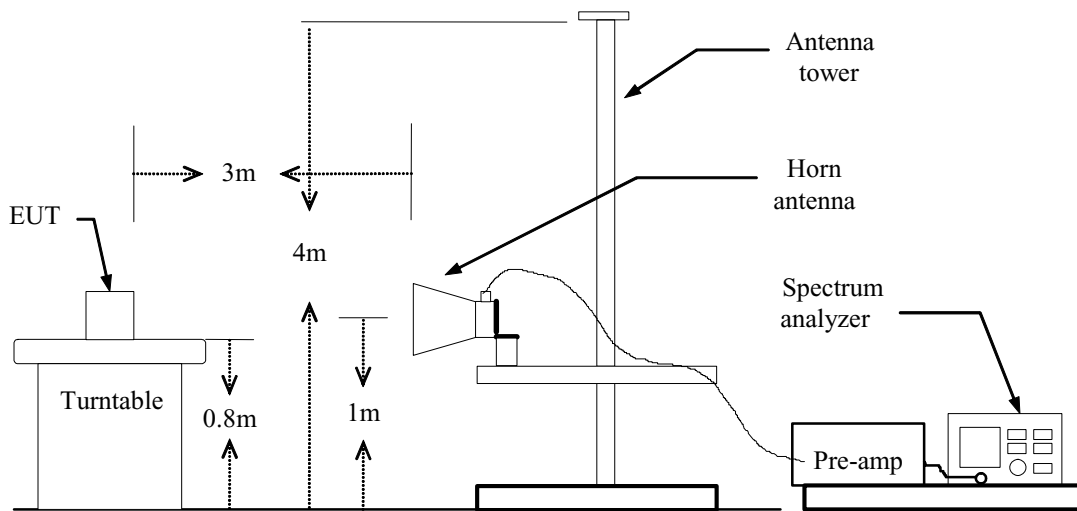
Date: 06.MAY 2009 11:43:42

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.



Test Plot

Band Edges (IEEE 802.11b mode / CH Low)

Detector mode: Peak

Polarity: Vertical

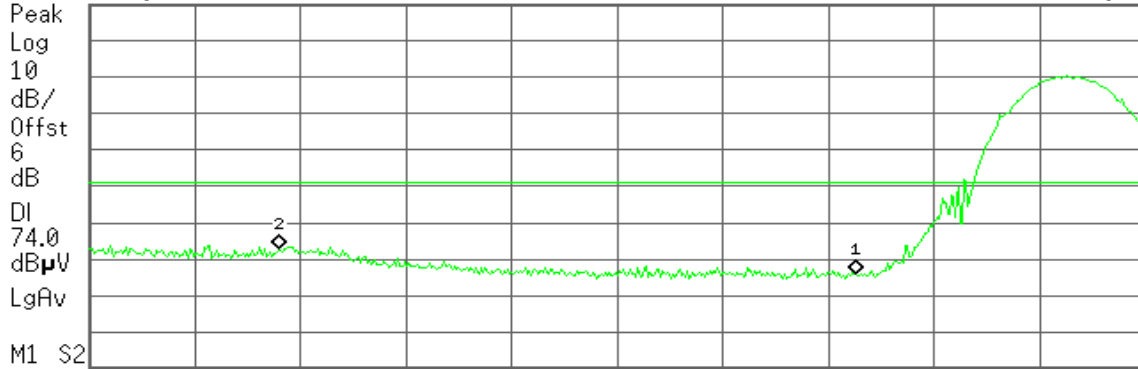
Agilent 18:15:27 May 4, 2009

R T

Mkr2 2.329 80 GHz
55.75 dB μ V

Ref 123 dB μ V

#Atten 20 dB



Start 2.310 00 GHz

Stop 2.420 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.398 00 GHz	49.15 dB μ V
2	(1)	Freq	2.329 80 GHz	55.75 dB μ V

Detector mode: Average

Polarity: Vertical

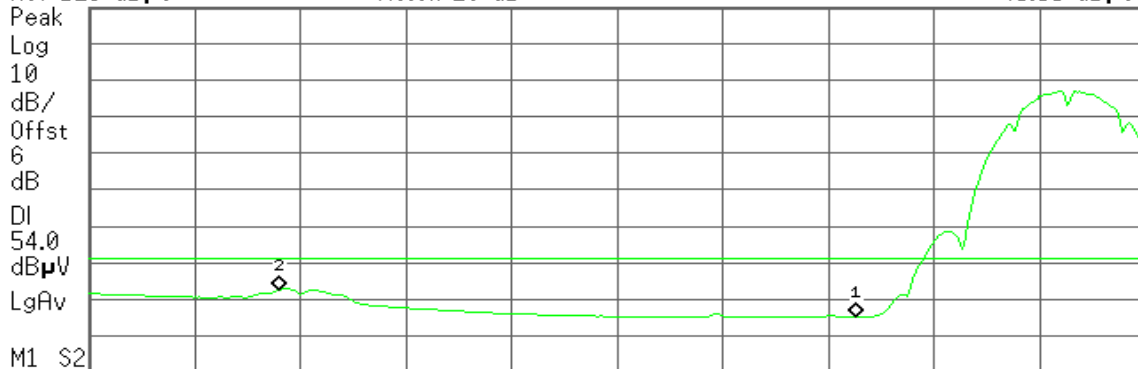
Agilent 18:14:54 May 4, 2009

R T

Mkr2 2.329 80 GHz
45.55 dB μ V

Ref 123 dB μ V

#Atten 20 dB



Start 2.310 00 GHz

Stop 2.420 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 8.577 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.398 00 GHz	38.20 dB μ V
2	(1)	Freq	2.329 80 GHz	45.55 dB μ V



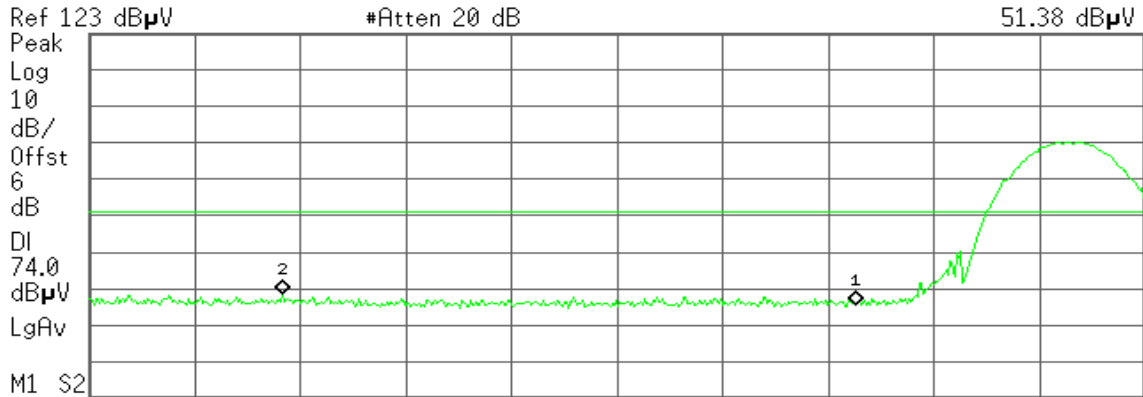
Detector mode: Peak

Polarity: Horizontal

Agilent 18:17:57 May 4, 2009

R T

Mkr2 2.330 17 GHz



Start 2.310 00 GHz Stop 2.420 00 GHz

#Res BW 1 MHz #VBW 1 MHz Sweep 1 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	48.64 dBµV
2	(1)	Freq	2.330 17 GHz	51.38 dBµV

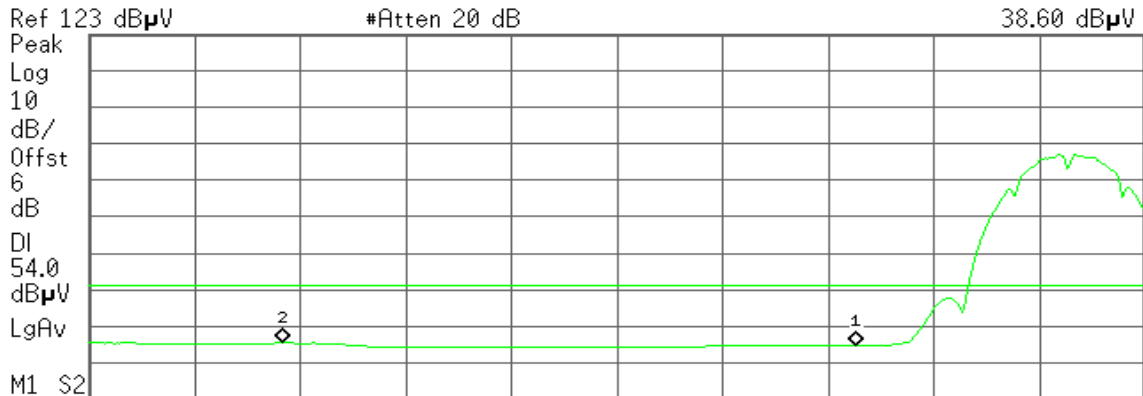
Detector mode: Average

Polarity: Horizontal

Agilent 18:18:30 May 4, 2009

R T

Mkr2 2.330 17 GHz



Start 2.310 00 GHz Stop 2.420 00 GHz

#Res BW 1 MHz #VBW 10 Hz Sweep 8.577 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	37.57 dBµV
2	(1)	Freq	2.330 17 GHz	38.60 dBµV



Band Edges (IEEE 802.11b mode / CH High)

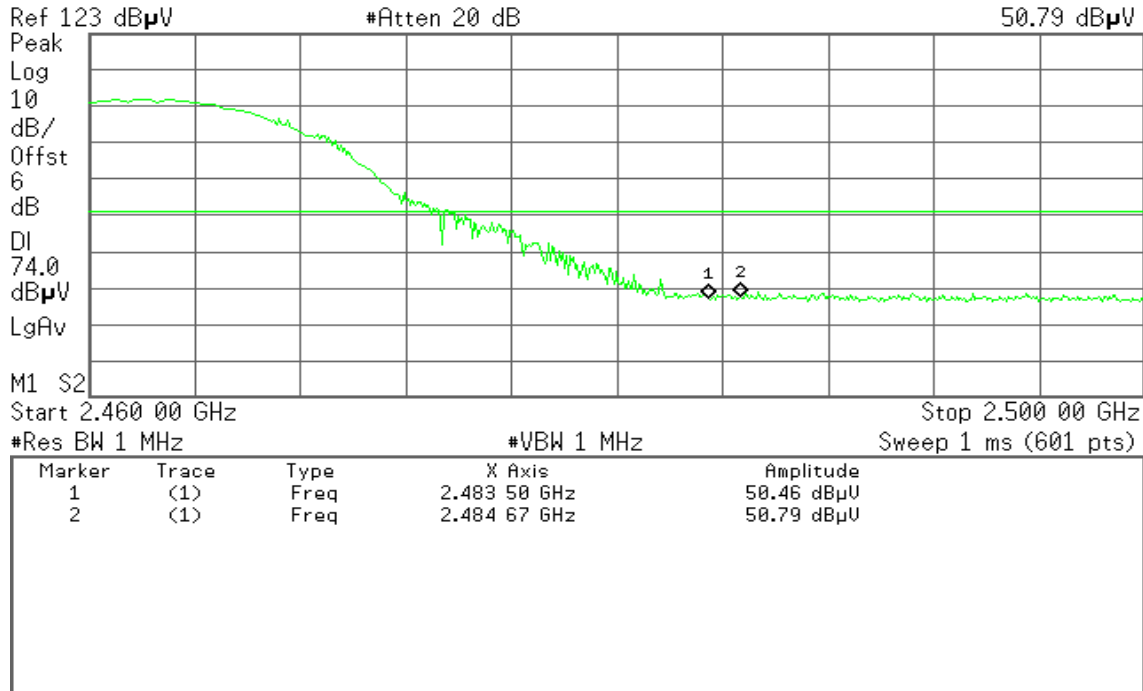
Detector mode: Peak

Polarity: Vertical

Agilent 19:36:54 May 4, 2009

R T

Mkr2 2.484 67 GHz
50.79 dB μ V



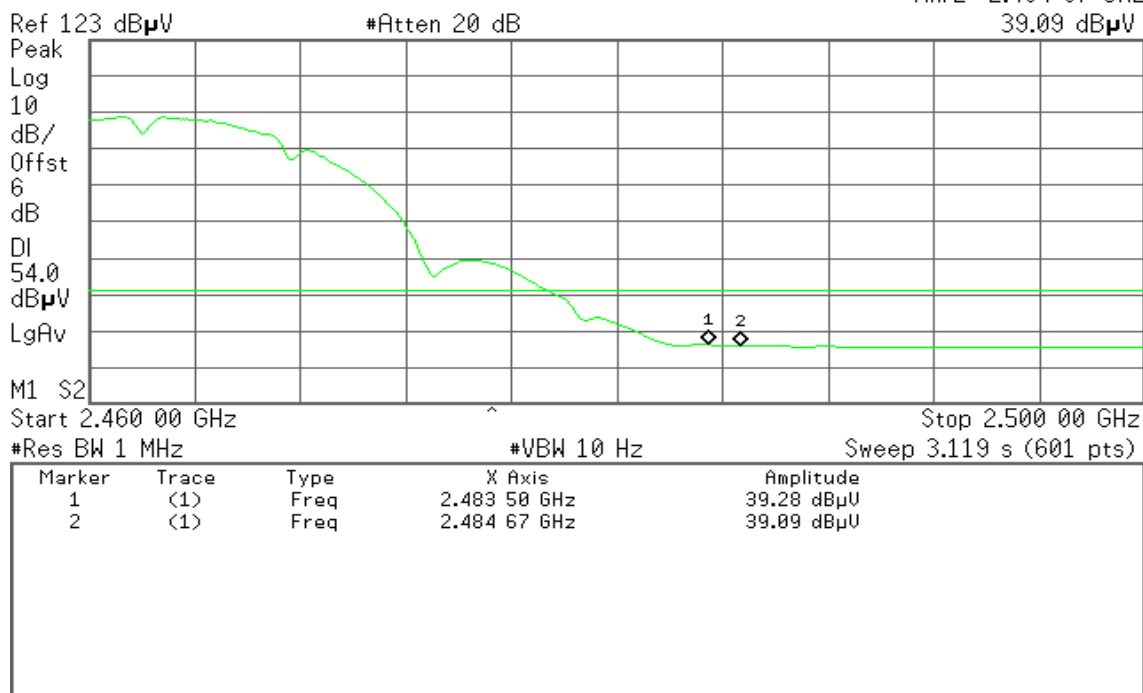
Detector mode: Average

Polarity: Vertical

Agilent 19:37:23 May 4, 2009

R T

Mkr2 2.484 67 GHz
39.09 dB μ V





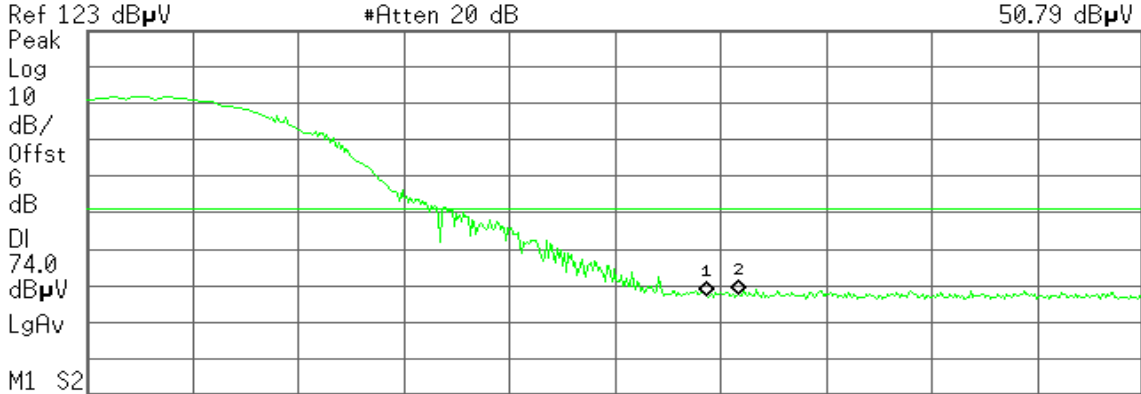
Detector mode: Peak

Polarity: Horizontal

Agilent 19:36:54 May 4, 2009

R T

Mkr2 2.484 67 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	50.46 dBµV
2	(1)	Freq	2.484 67 GHz	50.79 dBµV

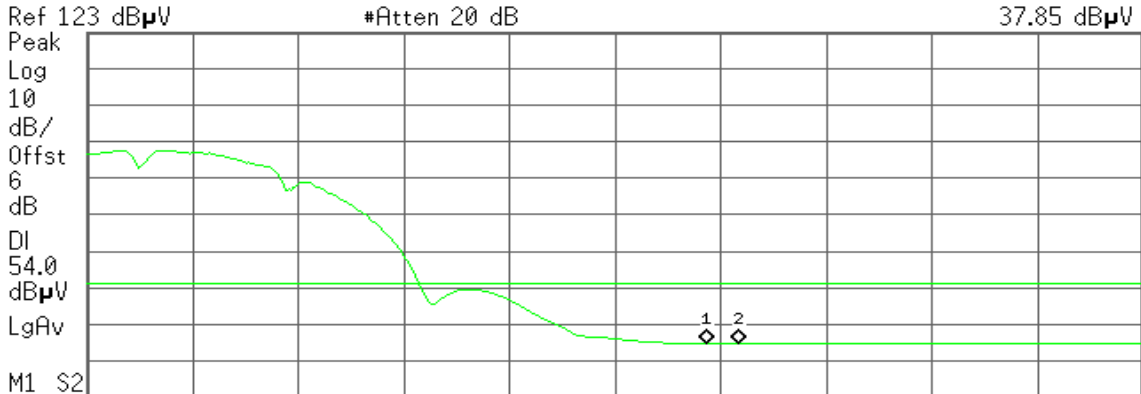
Detector mode: Average

Polarity: Horizontal

Agilent 19:32:02 May 4, 2009

R T

Mkr2 2.484 67 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	37.89 dBµV
2	(1)	Freq	2.484 67 GHz	37.85 dBµV



Band Edges (IEEE 802.11g mode / CH Low)

Detector mode: Peak

Polarity: Vertical

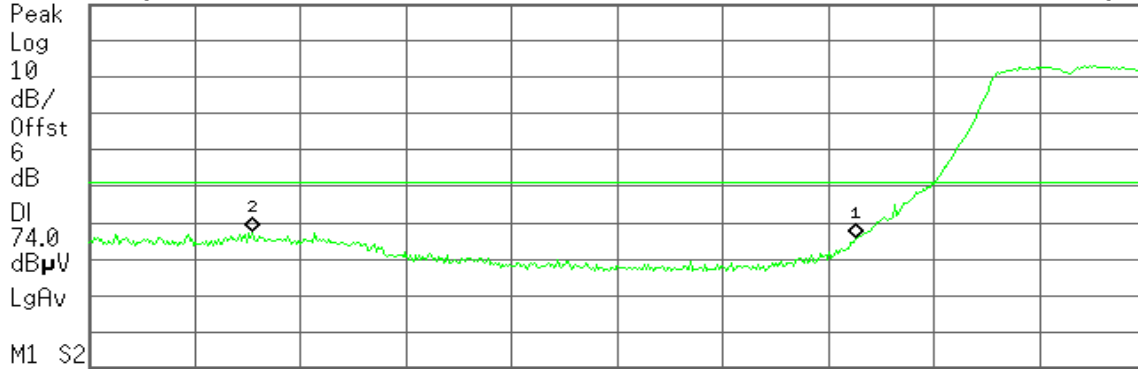
Agilent 18:26:38 May 4, 2009

R T

Mkr2 2.327 05 GHz
60.65 dB μ V

Ref 123 dB μ V

#Atten 20 dB



Start 2.310 00 GHz

Stop 2.420 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.398 00 GHz	59.89 dB μ V
2	(1)	Freq	2.327 05 GHz	60.65 dB μ V

Detector mode: Average

Polarity: Vertical

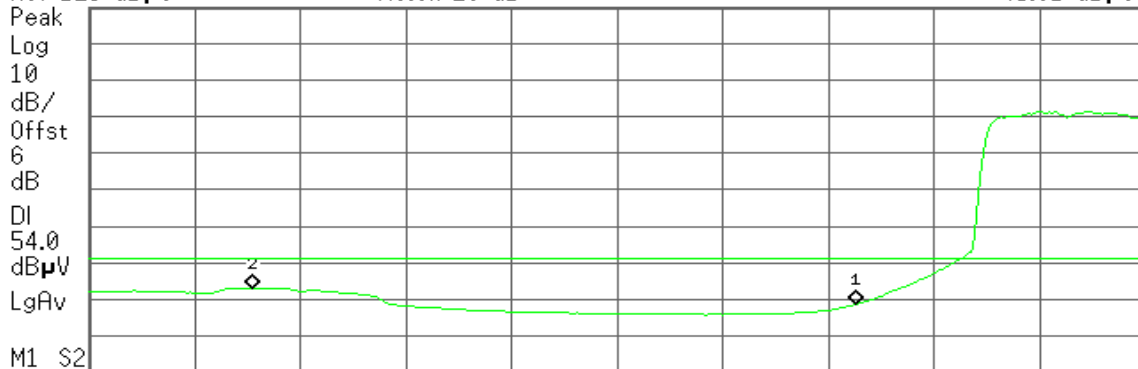
Agilent 18:27:20 May 4, 2009

R T

Mkr2 2.327 05 GHz
45.91 dB μ V

Ref 123 dB μ V

#Atten 20 dB



Start 2.310 00 GHz

Stop 2.420 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 8.577 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.398 00 GHz	41.62 dB μ V
2	(1)	Freq	2.327 05 GHz	45.91 dB μ V



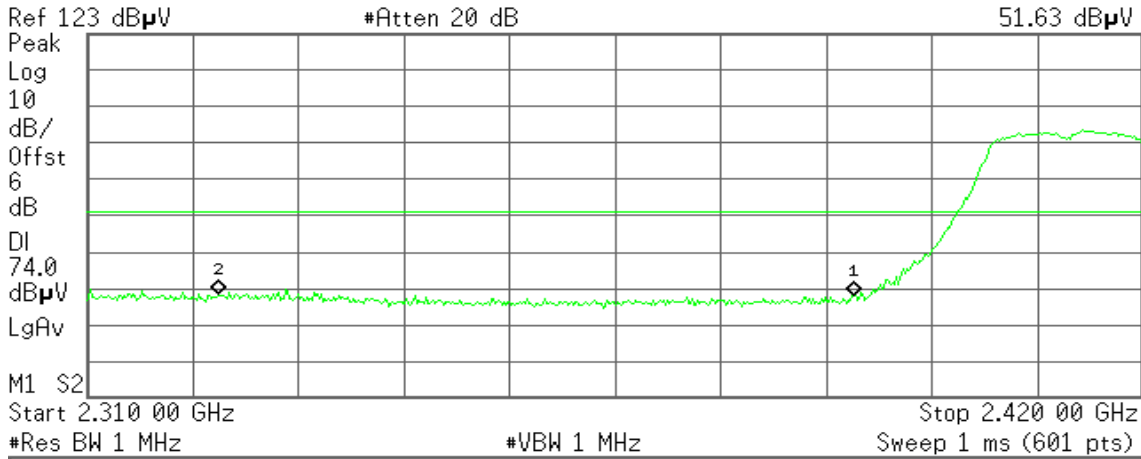
Detector mode: Peak

Polarity: Horizontal

Agilent 18:22:45 May 4, 2009

R T

Mkr2 2.323 75 GHz
51.63 dBµV



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	51.16 dBµV
2	(1)	Freq	2.323 75 GHz	51.63 dBµV

Detector mode: Average

Polarity: Horizontal

Agilent 18:23:45 May 4, 2009

R T

Mkr2 2.323 75 GHz
39.18 dBµV



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	38.14 dBµV
2	(1)	Freq	2.323 75 GHz	39.18 dBµV



Band Edges (IEEE 802.11g mode / CH High)

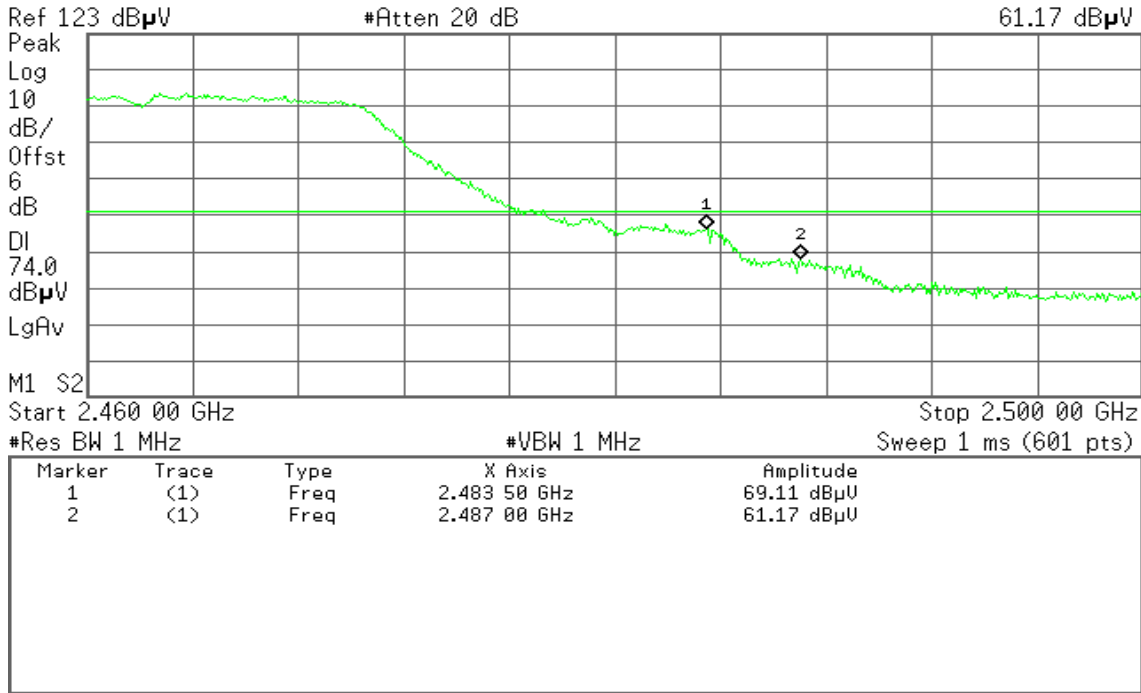
Detector mode: Peak

Polarity: Vertical

Agilent 19:23:22 May 4, 2009

R T

Mkr2 2.487 00 GHz
61.17 dB μ V



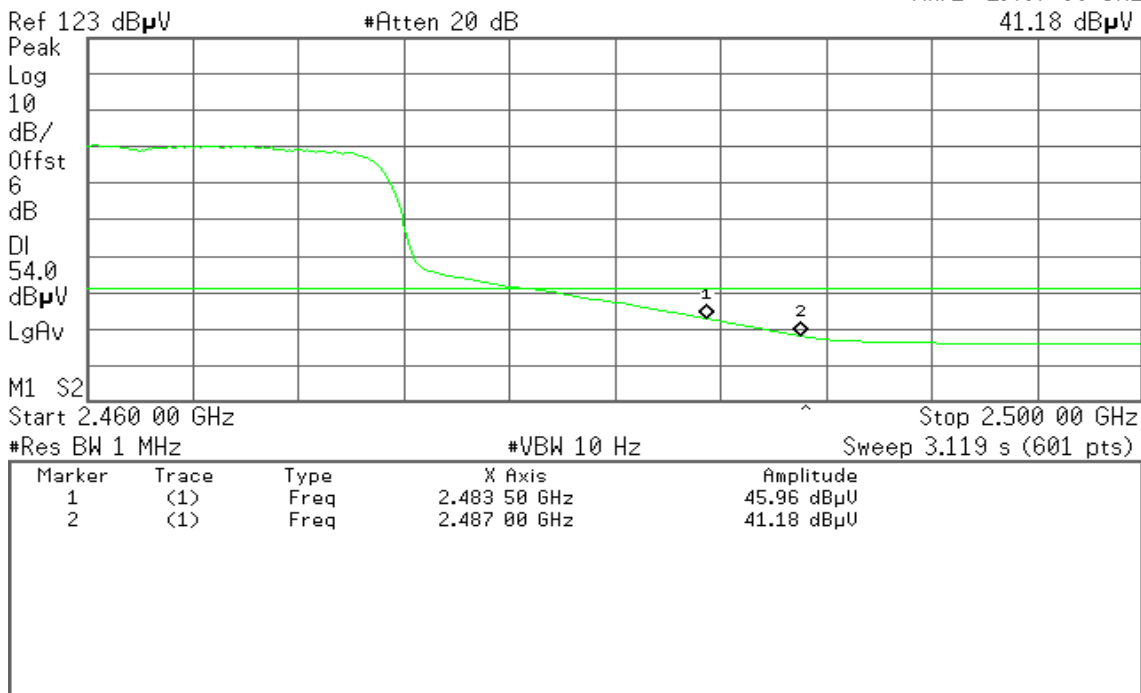
Detector mode: Average

Polarity: Vertical

Agilent 19:24:05 May 4, 2009

R T

Mkr2 2.487 00 GHz
41.18 dB μ V





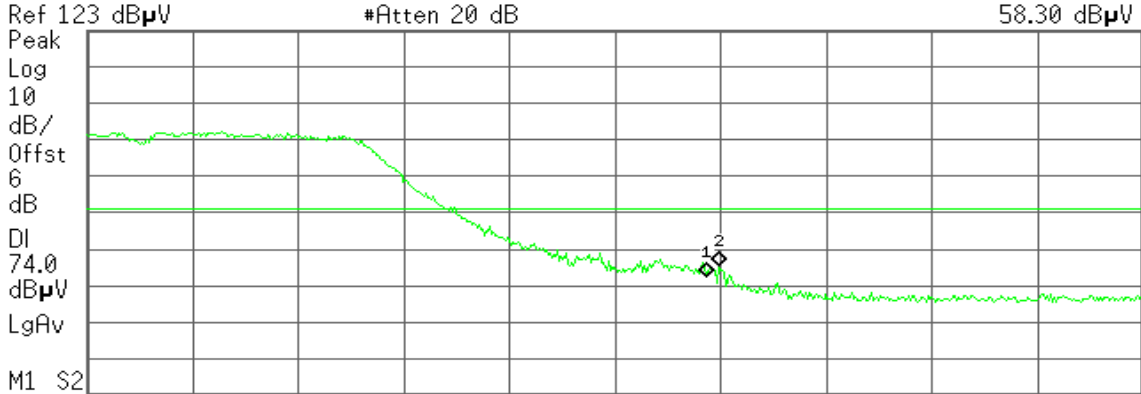
Detector mode: Peak

Polarity: Horizontal

Agilent 19:27:02 May 4, 2009

R T

Mkr2 2.483 93 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	55.51 dBµV
2	(1)	Freq	2.483 93 GHz	58.30 dBµV

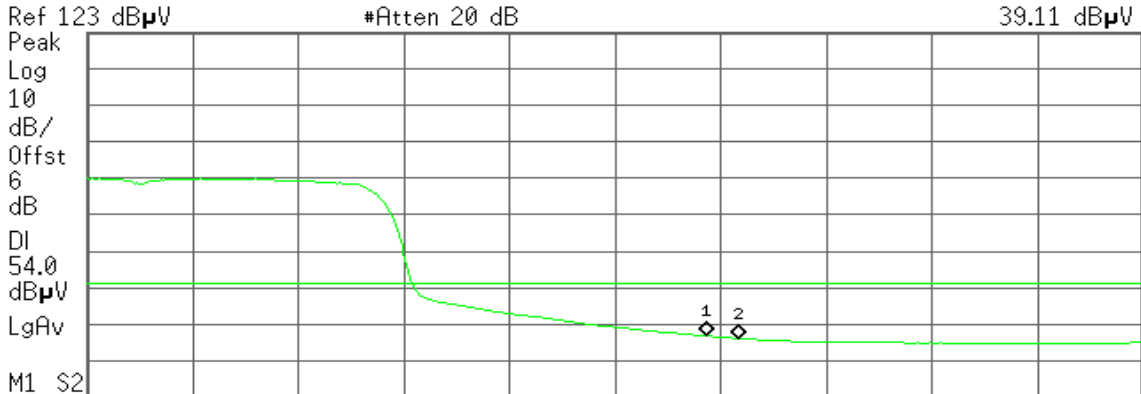
Detector mode: Average

Polarity: Horizontal

Agilent 19:28:11 May 4, 2009

R T

Mkr2 2.484 67 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	39.80 dBµV
2	(1)	Freq	2.484 67 GHz	39.11 dBµV



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

Detector mode: Peak

Polarity: Vertical

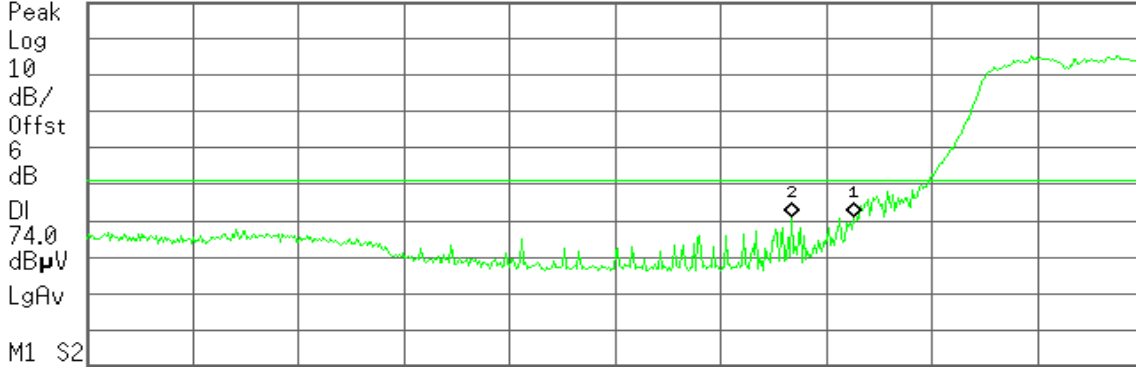
Agilent 18:31:58 May 4, 2009

R T

Mkr2 2.383 33 GHz
64.29 dBµV

Ref 123 dBµV

#Atten 20 dB



Start 2.310 00 GHz

Stop 2.420 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.398 00 GHz	63.94 dBµU
2	(1)	Freq	2.383 33 GHz	64.29 dBµU

Detector mode: Average

Polarity: Vertical

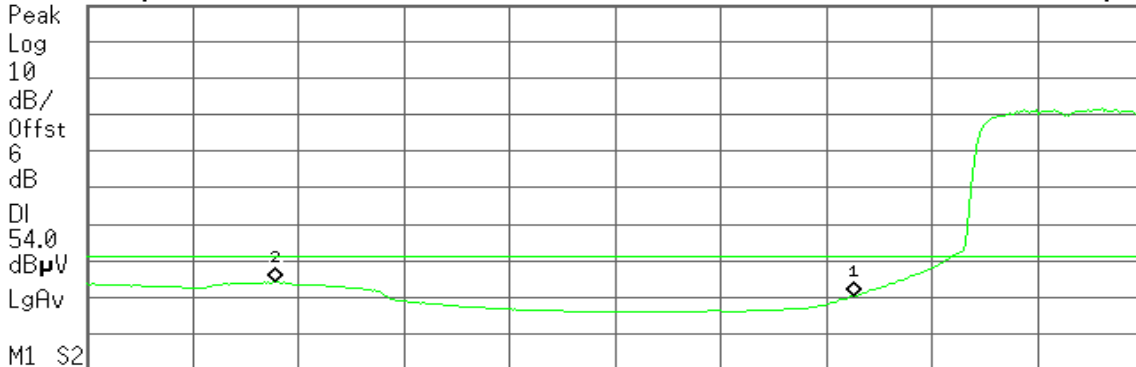
Agilent 18:33:01 May 4, 2009

R T

Mkr2 2.329 62 GHz
47.20 dBµV

Ref 123 dBµV

#Atten 20 dB



Start 2.310 00 GHz

Stop 2.420 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 8.577 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.398 00 GHz	43.24 dBµU
2	(1)	Freq	2.329 62 GHz	47.20 dBµU



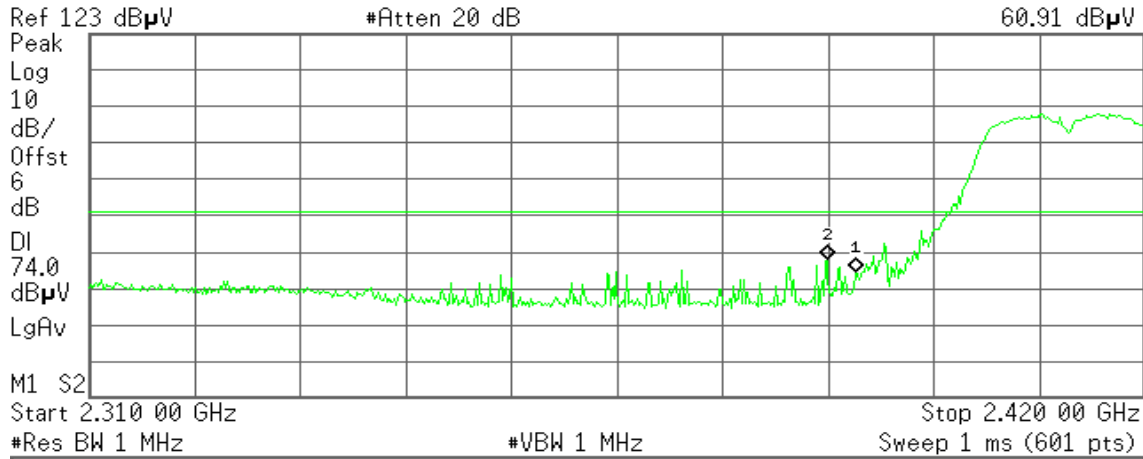
Detector mode: Peak

Polarity: Horizontal

Agilent 18:38:04 May 4, 2009

R T

Mkr2 2.386 82 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	57.75 dBµV
2	(1)	Freq	2.386 82 GHz	60.91 dBµV

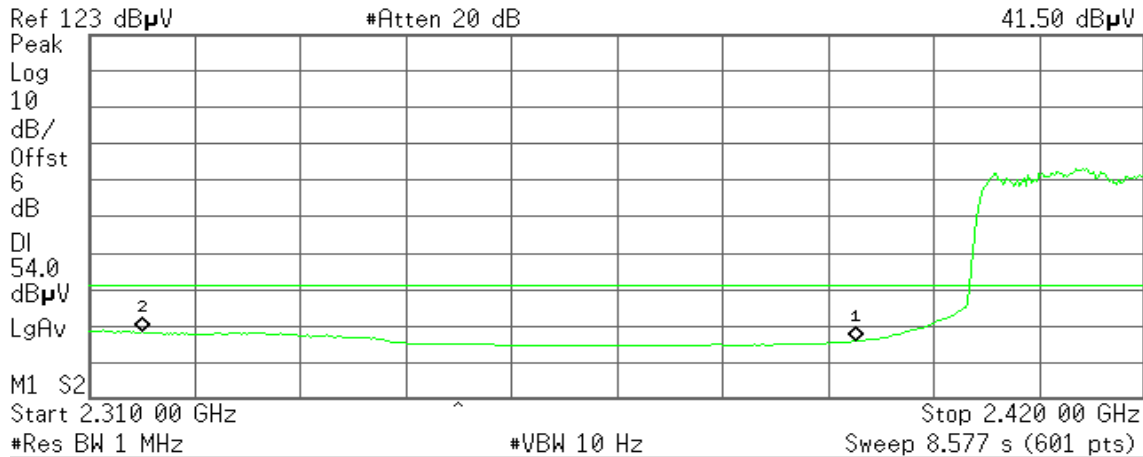
Detector mode: Average

Polarity: Horizontal

Agilent 18:38:55 May 4, 2009

R T

Mkr2 2.315 50 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	38.90 dBµV
2	(1)	Freq	2.315 50 GHz	41.50 dBµV



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

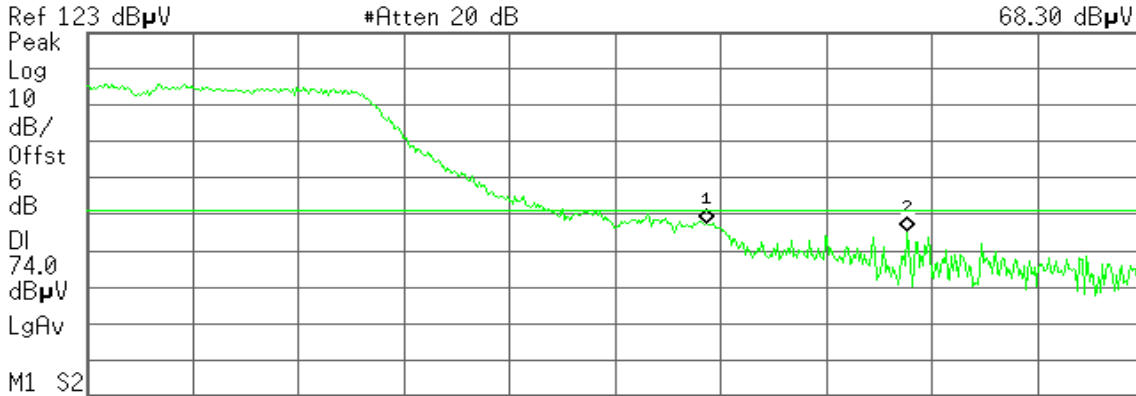
Detector mode: Peak

Polarity: Vertical

Agilent 19:19:26 May 4, 2009

R T

Mkr2 2.491 07 GHz
68.30 dBµV



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

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 58 GHz	70.72 dBµV
2	(1)	Freq	2.491 07 GHz	68.30 dBµV

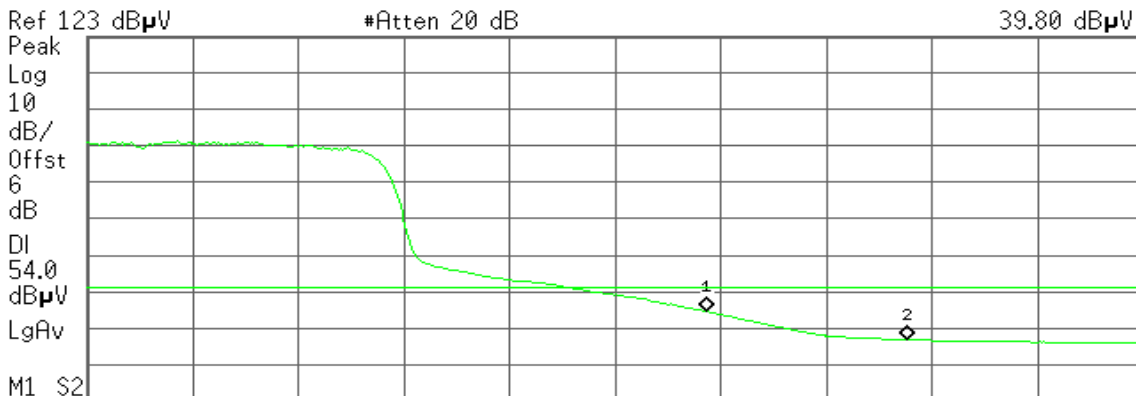
Detector mode: Average

Polarity: Vertical

Agilent 19:20:05 May 4, 2009

R T

Mkr2 2.491 07 GHz
39.80 dBµV



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

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 58 GHz	47.52 dBµV
2	(1)	Freq	2.491 07 GHz	39.80 dBµV



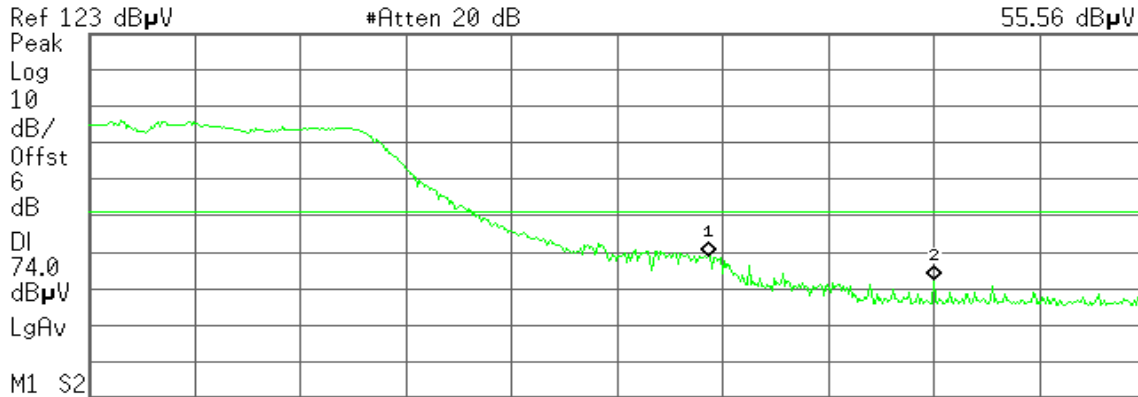
Detector mode: Peak

Polarity: Horizontal

Agilent 19:14:19 May 4, 2009

R T

Mkr2 2.492 00 GHz
55.56 dBµV



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	61.76 dBµV
2	(1)	Freq	2.492 00 GHz	55.56 dBµV

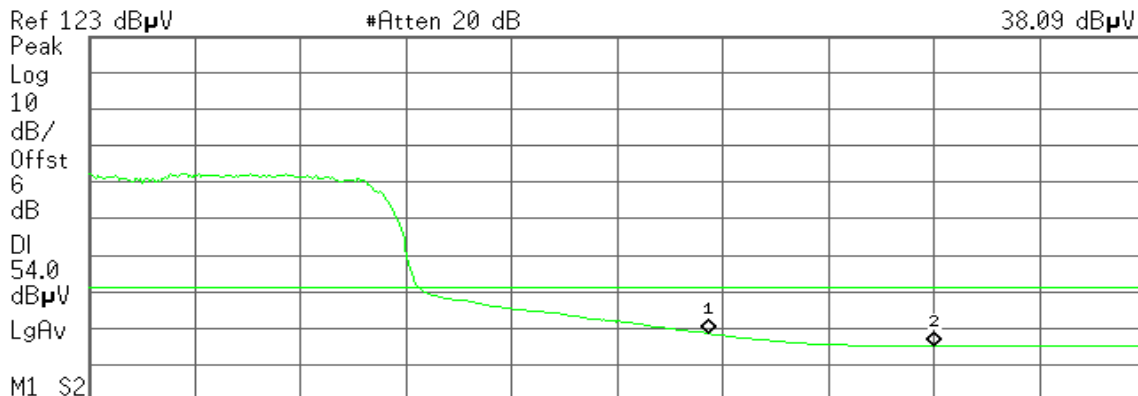
Detector mode: Average

Polarity: Horizontal

Agilent 19:15:09 May 4, 2009

R T

Mkr2 2.492 00 GHz
38.09 dBµV



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	41.55 dBµV
2	(1)	Freq	2.492 00 GHz	38.09 dBµV



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

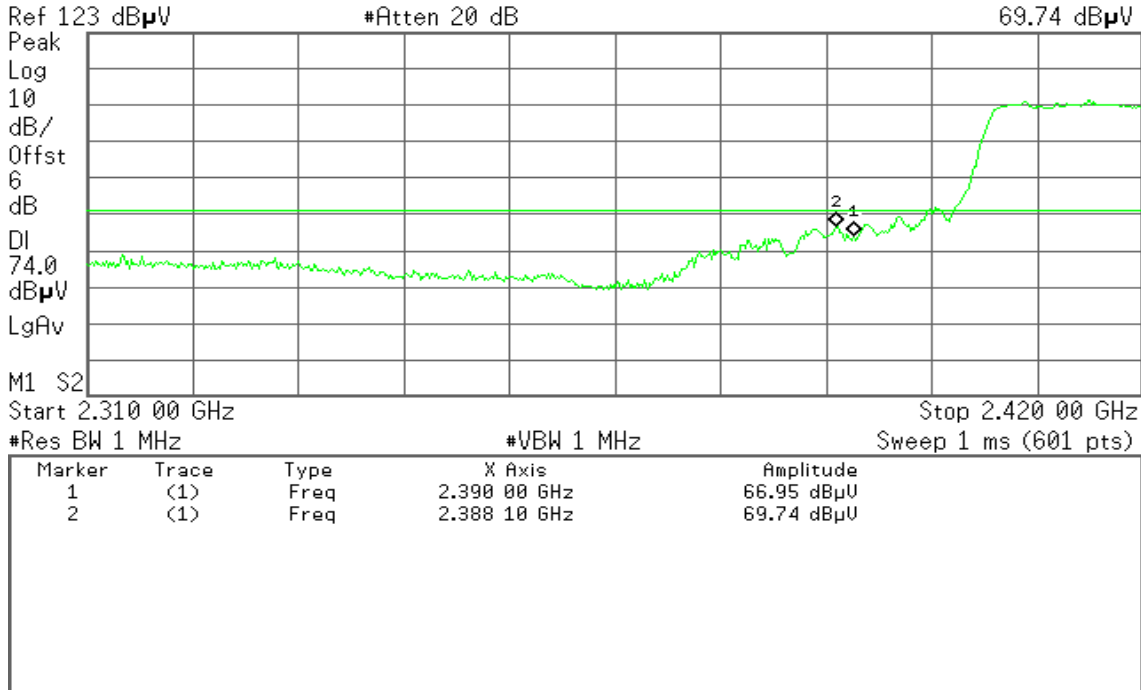
Detector mode: Peak

Polarity: Vertical

Agilent 18:46:53 May 4, 2009

R T

Mkr2 2.388 10 GHz
69.74 dBµV



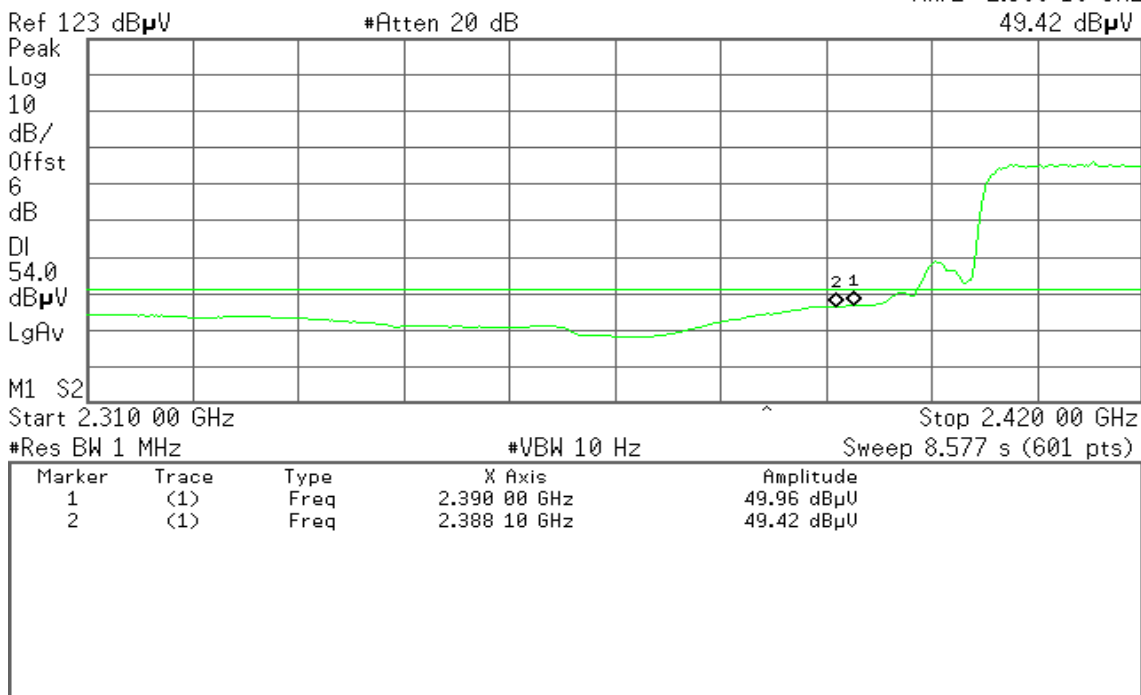
Detector mode: Average

Polarity: Vertical

Agilent 18:48:45 May 4, 2009

R T

Mkr2 2.388 10 GHz
49.42 dBµV





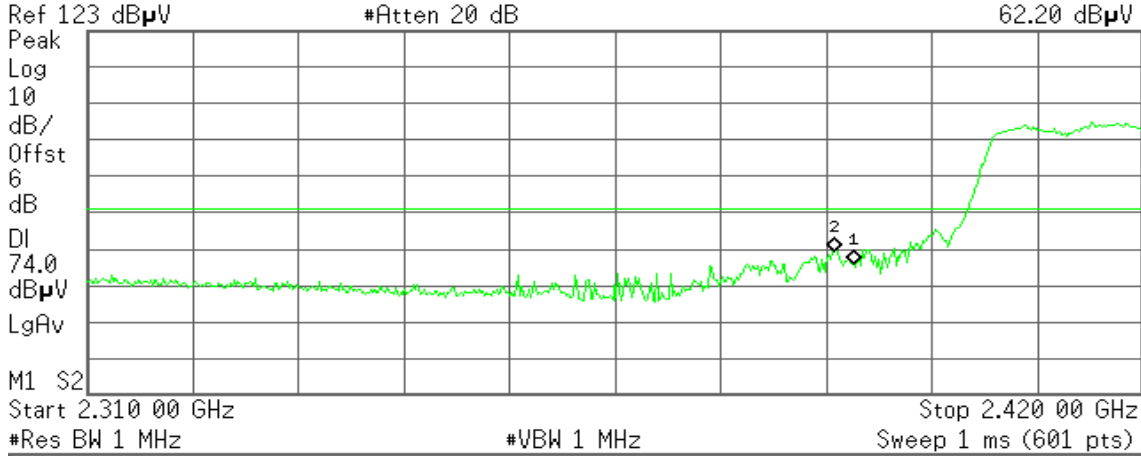
Detector mode: Peak

Polarity: Horizontal

Agilent 18:42:24 May 4, 2009

R T

Mkr2 2.387 92 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	58.91 dBµV
2	(1)	Freq	2.387 92 GHz	62.20 dBµV

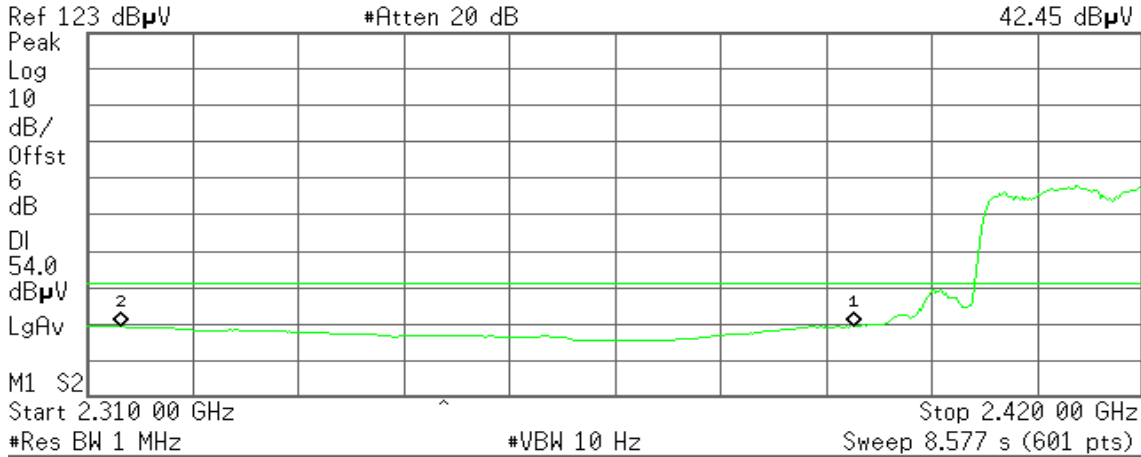
Detector mode: Average

Polarity: Horizontal

Agilent 18:43:34 May 4, 2009

R T

Mkr2 2.313 48 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	42.54 dBµV
2	(1)	Freq	2.313 48 GHz	42.45 dBµV



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

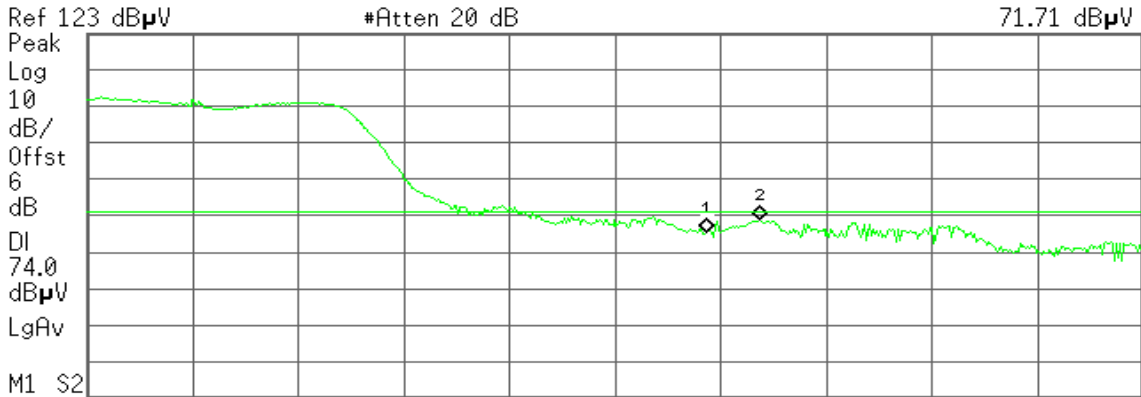
Detector mode: Peak

Polarity: Vertical

Agilent 18:56:16 May 4, 2009

R T

Mkr2 2.485 47 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	68.59 dBμU
2	(1)	Freq	2.485 47 GHz	71.71 dBμU

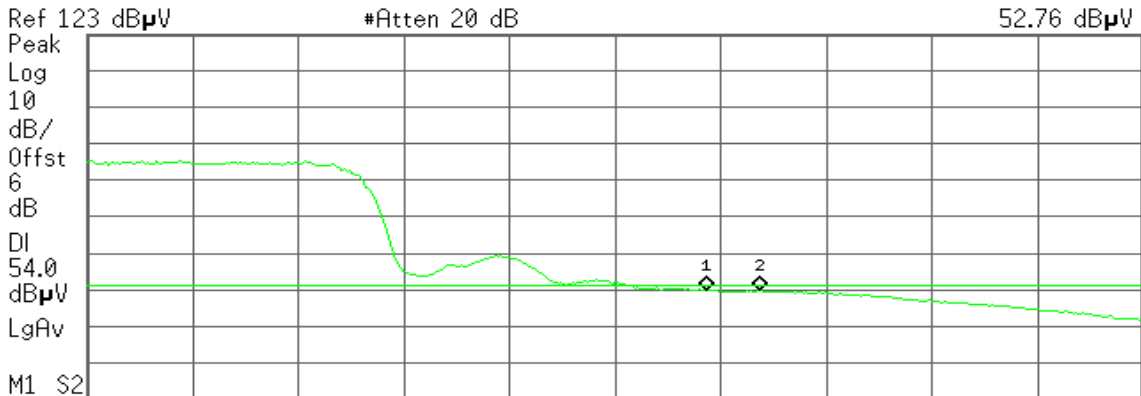
Detector mode: Average

Polarity: Vertical

Agilent 18:57:50 May 4, 2009

R T

Mkr2 2.485 47 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	52.89 dBμU
2	(1)	Freq	2.485 47 GHz	52.76 dBμU



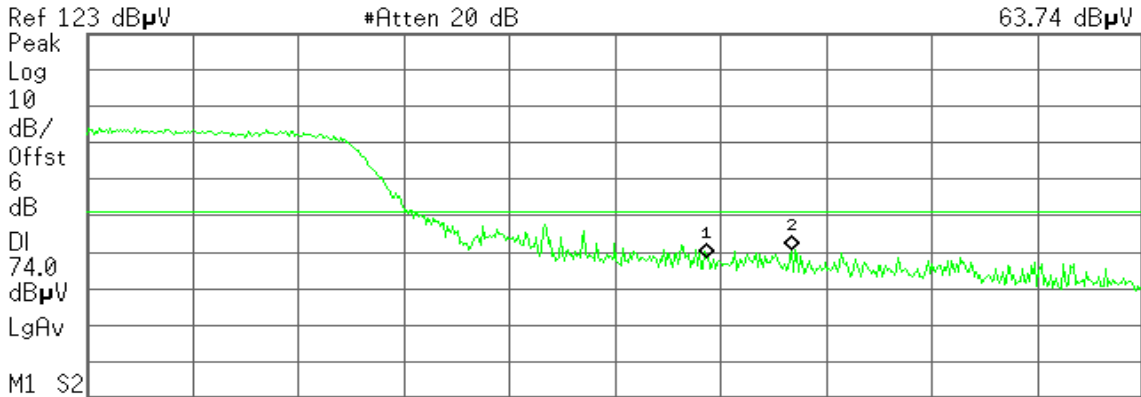
Detector mode: Peak

Polarity: Horizontal

Agilent 19:05:09 May 4, 2009

R T

Mkr2 2.486 67 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	61.40 dBμV
2	(1)	Freq	2.486 67 GHz	63.74 dBμV

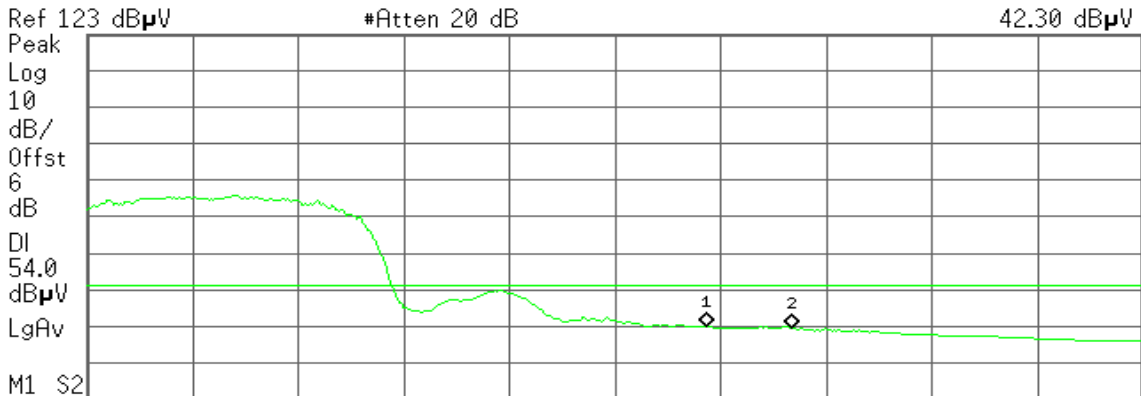
Detector mode: Average

Polarity: Horizontal

Agilent 19:06:02 May 4, 2009

R T

Mkr2 2.486 67 GHz



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	42.74 dBμV
2	(1)	Freq	2.486 67 GHz	42.30 dBμV

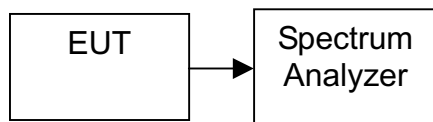


7.5 PEAK POWER SPECTRAL DENSITY

LIMIT

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

TEST CONFIGURATION



TEST PROCEDURE

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

TEST RESULTS

No non-compliance noted



TEST DATA

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Result
		Chain 0	Chain 1	Combiner		
Low	2412	-15.32	-15.47	-14.88	8.00	PASS
Mid	2437	-14.51	-14.70	-14.06		PASS
High	2462	-14.09	-14.39	-15.39		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Result
		Chain 0	Chain 1	Combiner		
Low	2412	-13.10	-13.58	-10.30	8.00	PASS
Mid	2437	-13.21	-13.05	-10.47		PASS
High	2462	-13.11	-12.45	-11.09		PASS

Test mode: draft 802.11n 20 MHz Channel mode

Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Result
		Chain 0	Chain 1	Combiner		
Low	2412	-13.29	-13.40	-10.56	8.00	PASS
Mid	2437	-12.83	-13.04	-11.77		PASS
High	2462	-12.79	-12.64	-10.35		PASS

Test mode: draft 802.11n 40 MHz Channel mode

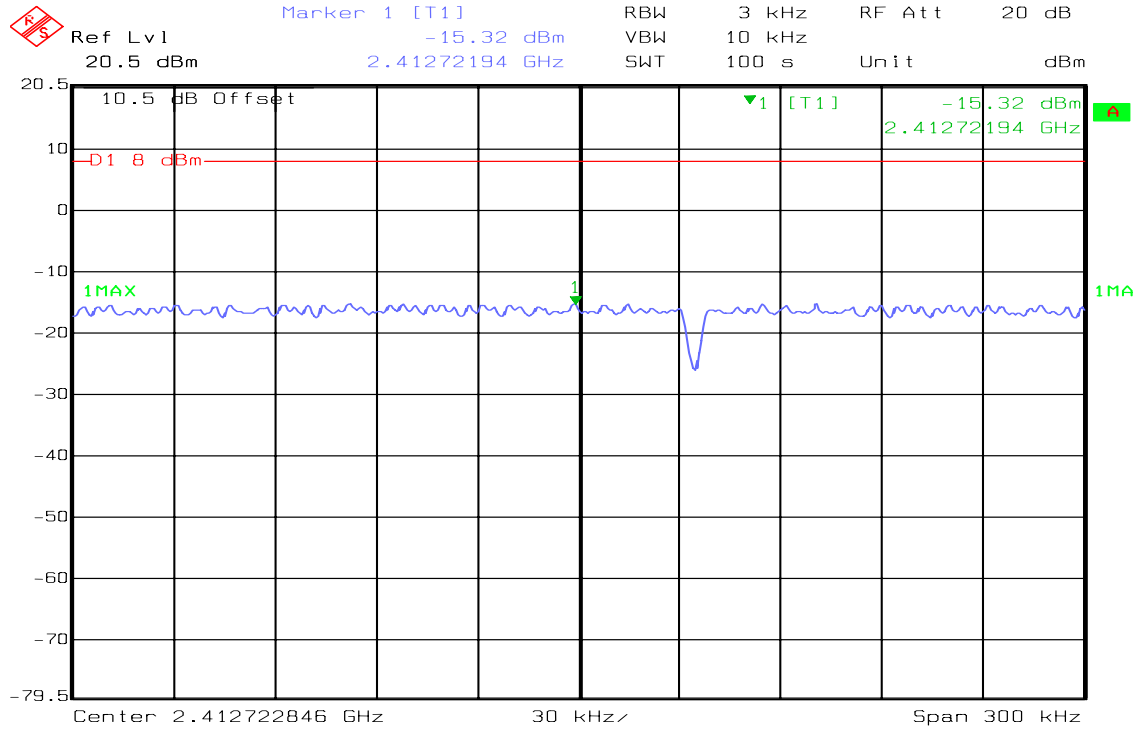
Channel	Frequency (MHz)	PPSD (dBm)			Limit (dBm)	Result
		Chain 0	Chain 1	Combiner		
Low	2422	-13.87	-12.66	-11.32	8.00	PASS
Mid	2437	-12.81	-12.73	-12.29		PASS
High	2452	-12.97	-12.49	-9.73		PASS



Test Plot

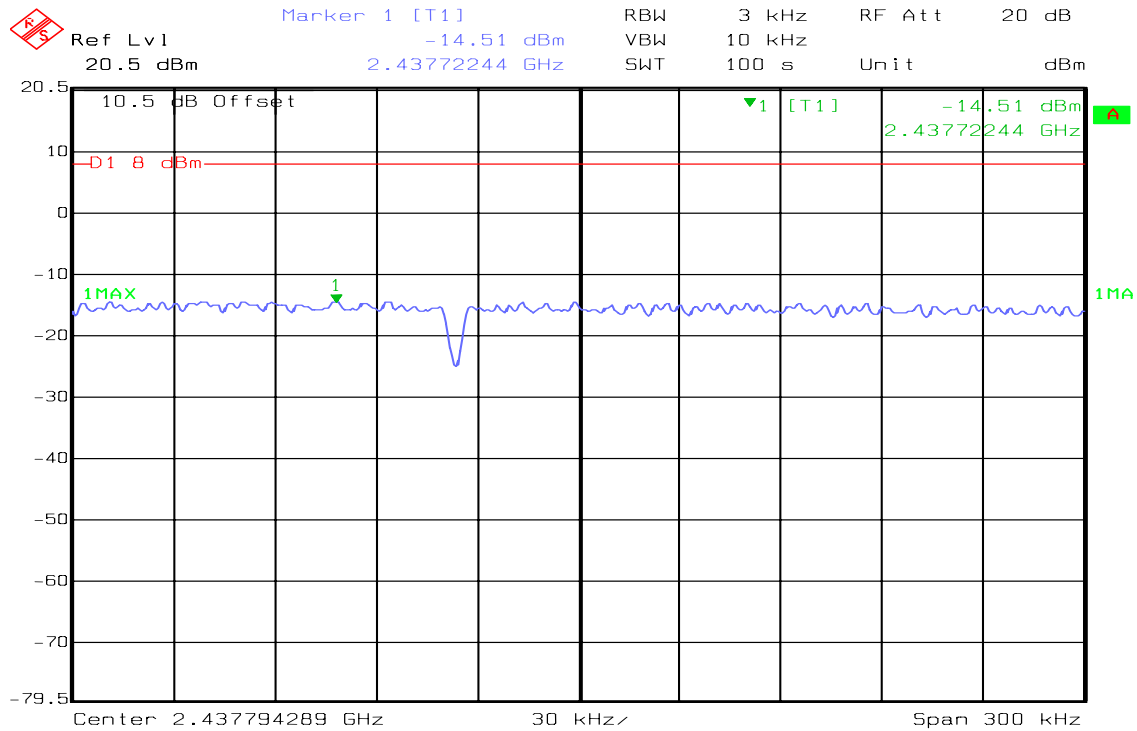
IEEE 802.11b mode / Chain 0

PPSD (CH Low)



Date: 06.MAY 2009 16:58:14

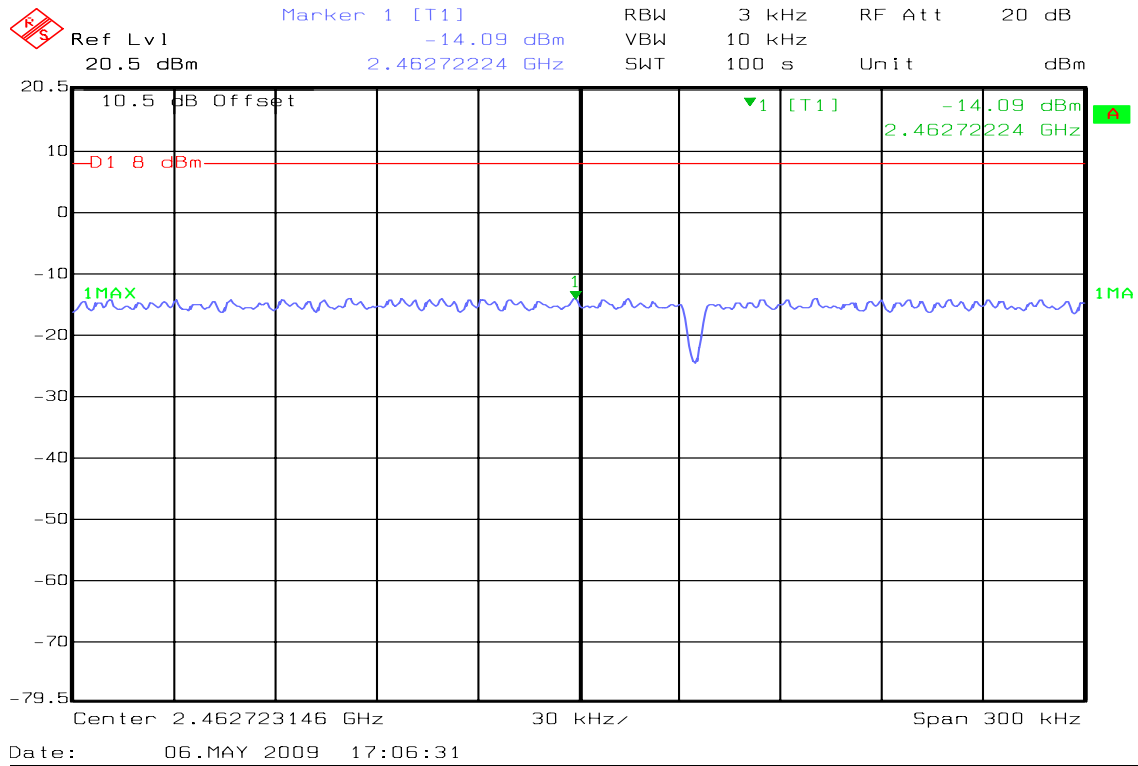
PPSD (CH Mid)



Date: 06.MAY 2009 17:02:29

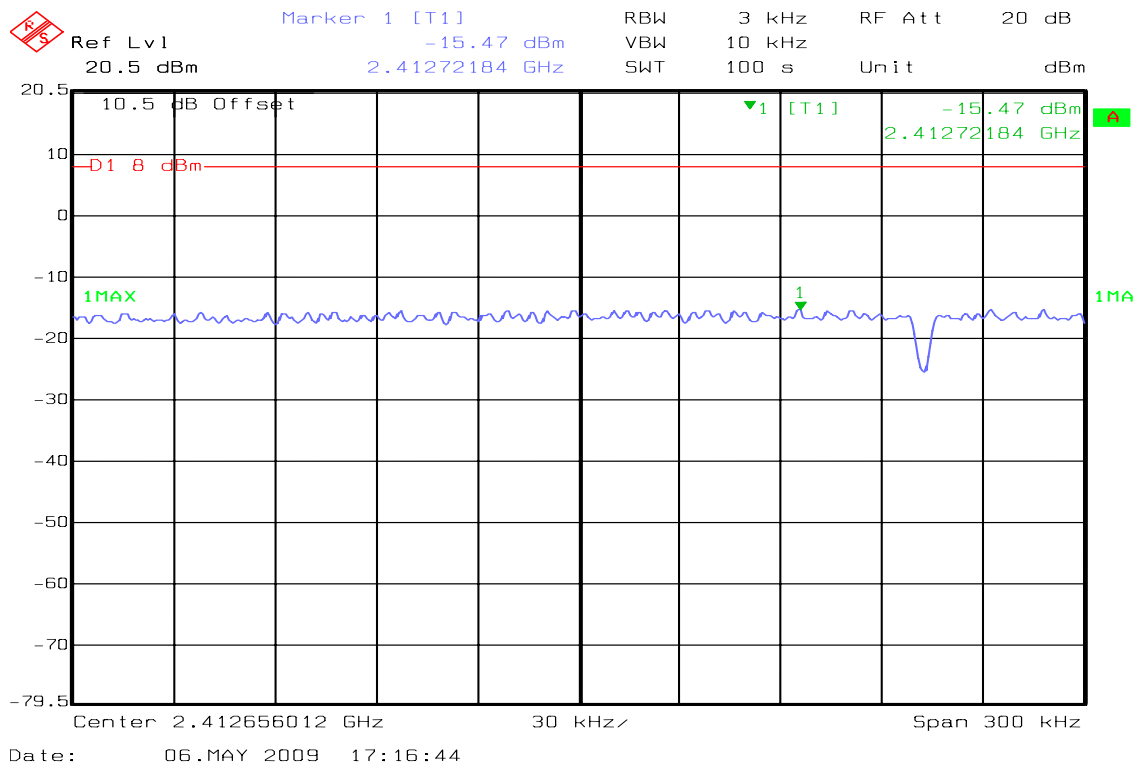


PPSD (CH High)



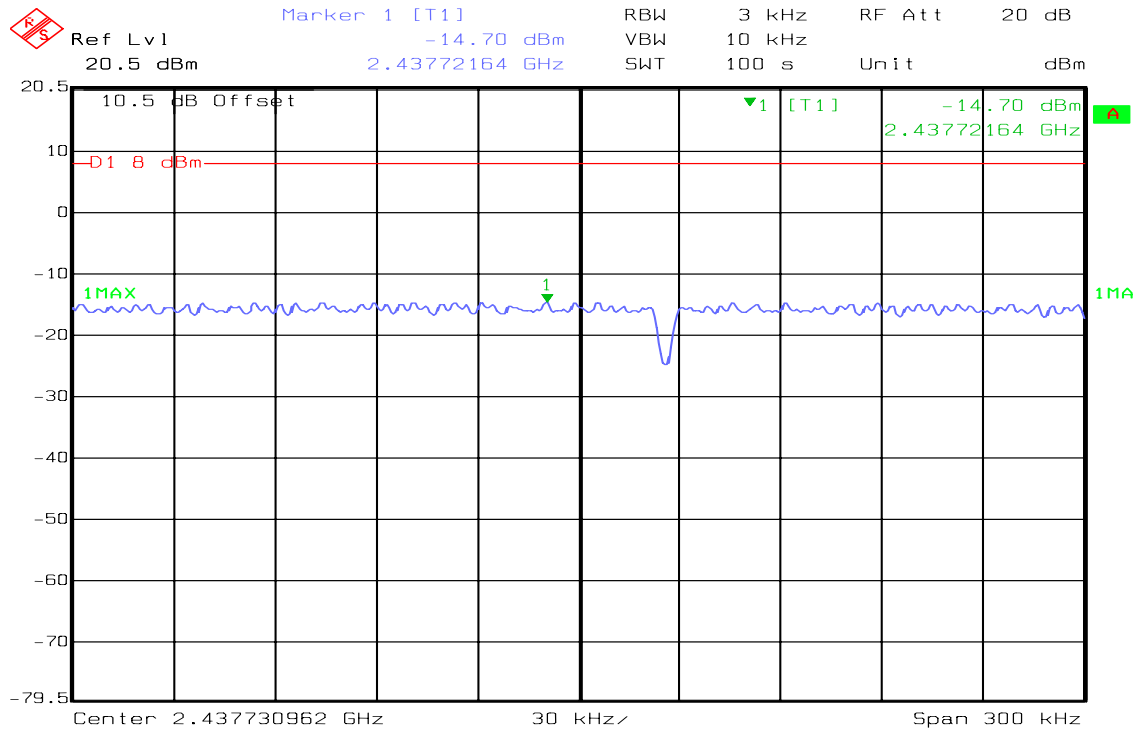
IEEE 802.11b mode / Chain 1

PPSD (CH Low)



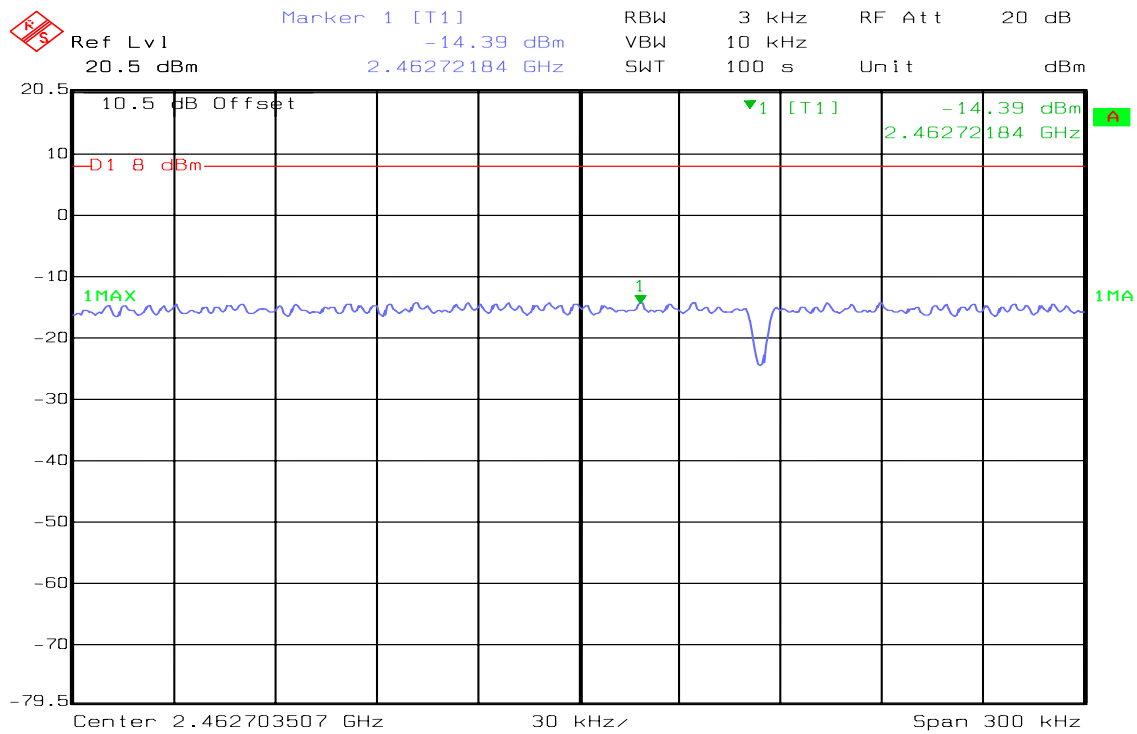


PPSD (CH Mid)



Date: 06.MAY 2009 17:13:41

PPSD (CH High)

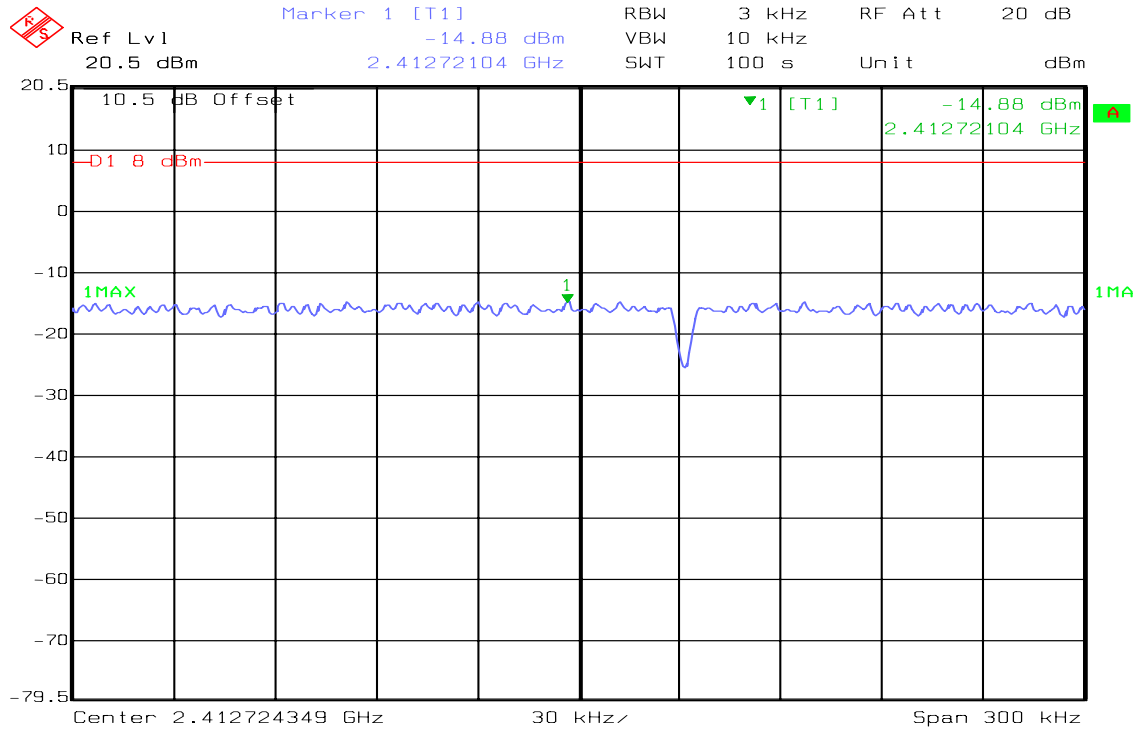


Date: 06.MAY 2009 17:10:25



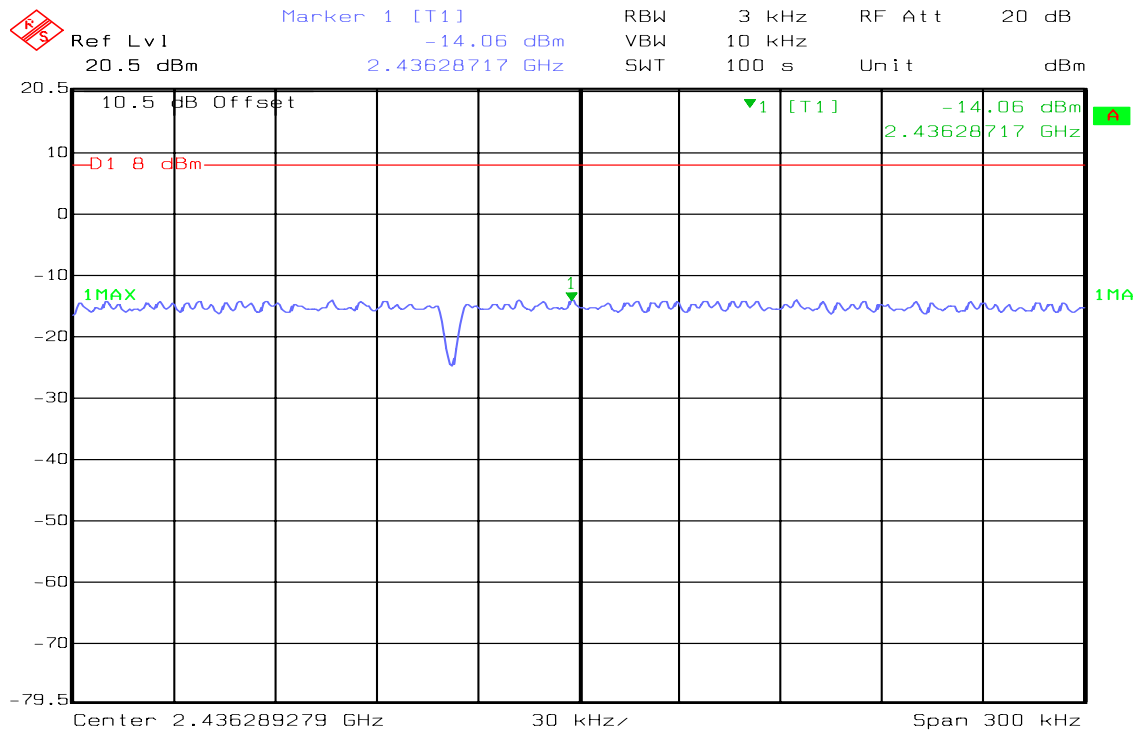
IEEE 802.11b mode / Combiner

PPSD (CH Low)



Date: 06.MAY 2009 17:20:38

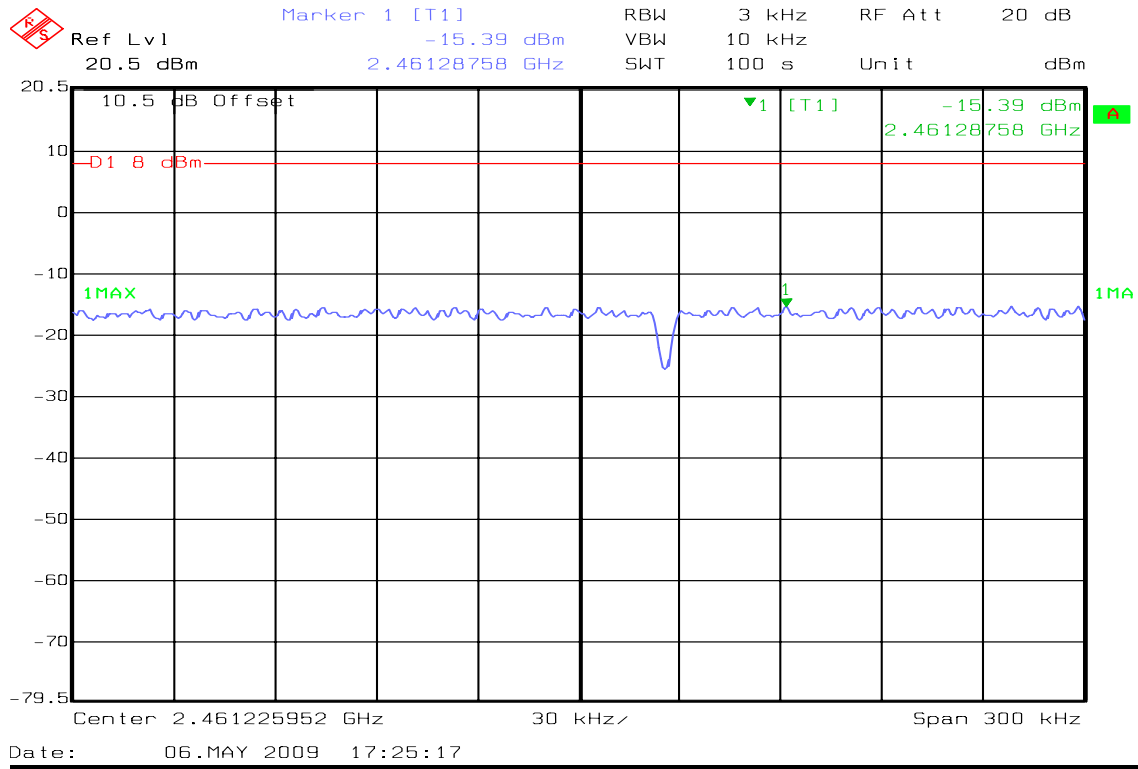
PPSD (CH Mid)



Date: 06.MAY 2009 17:31:47



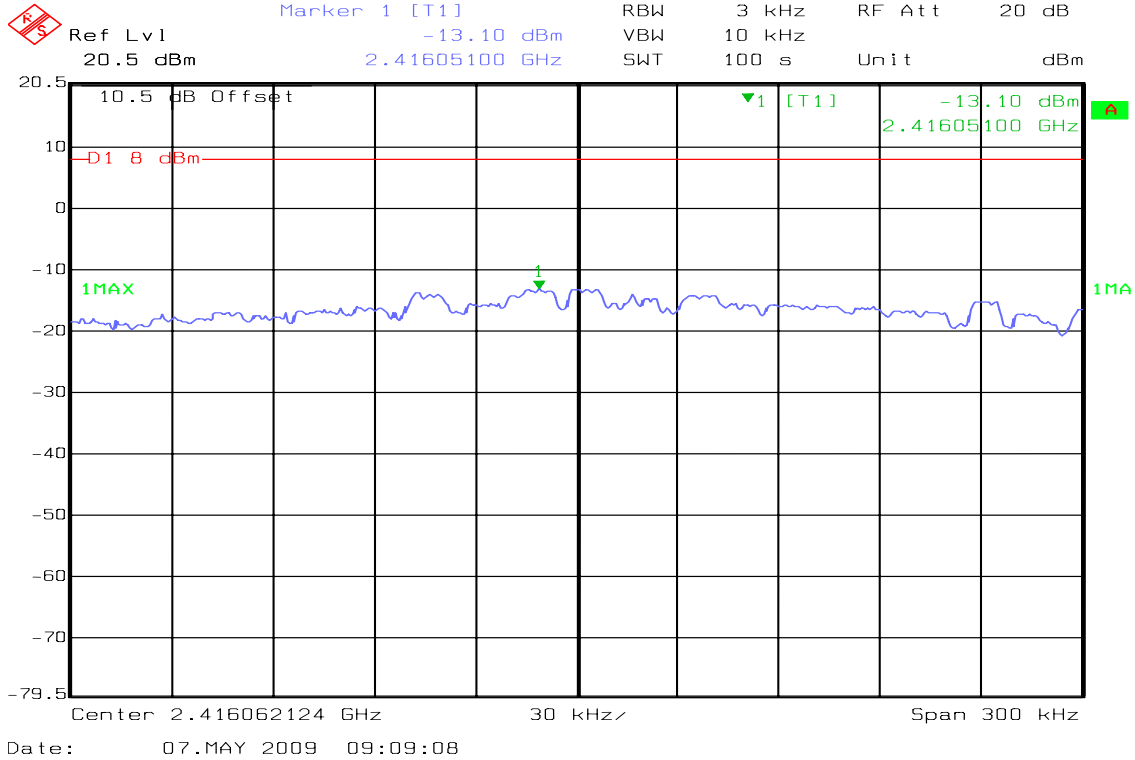
PPSD (CH High)



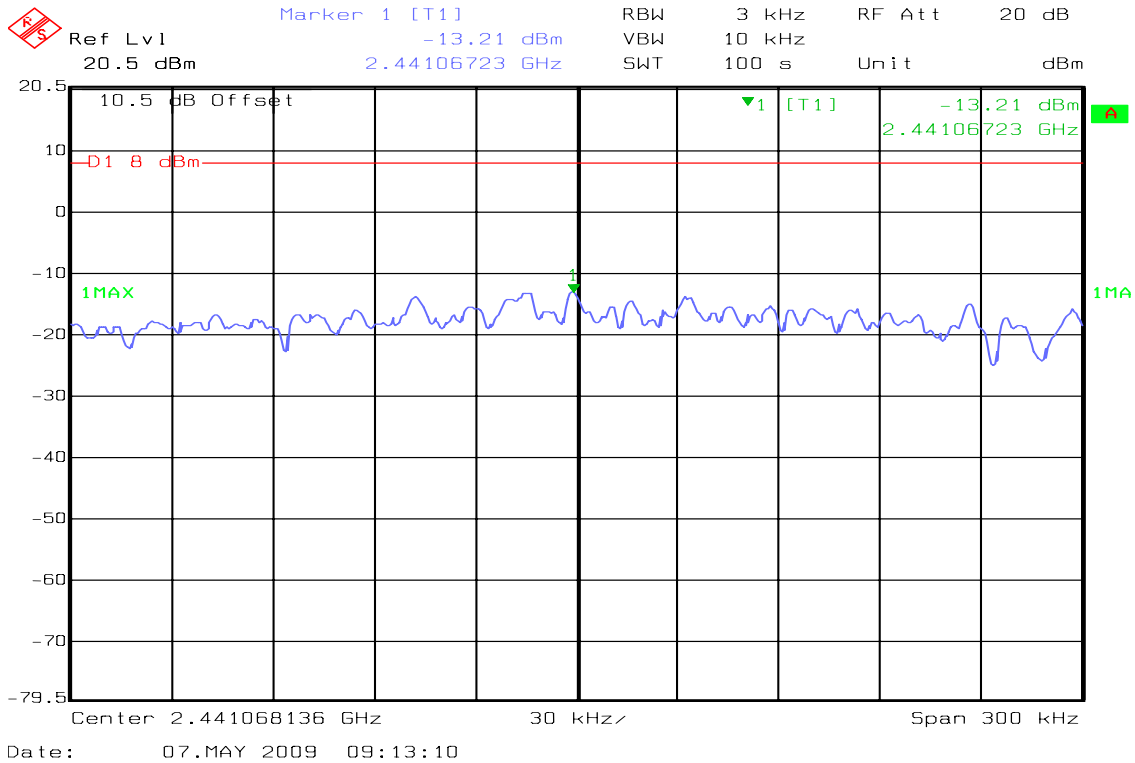


IEEE 802.11g mode / Chain 0

PPSD (CH Low)

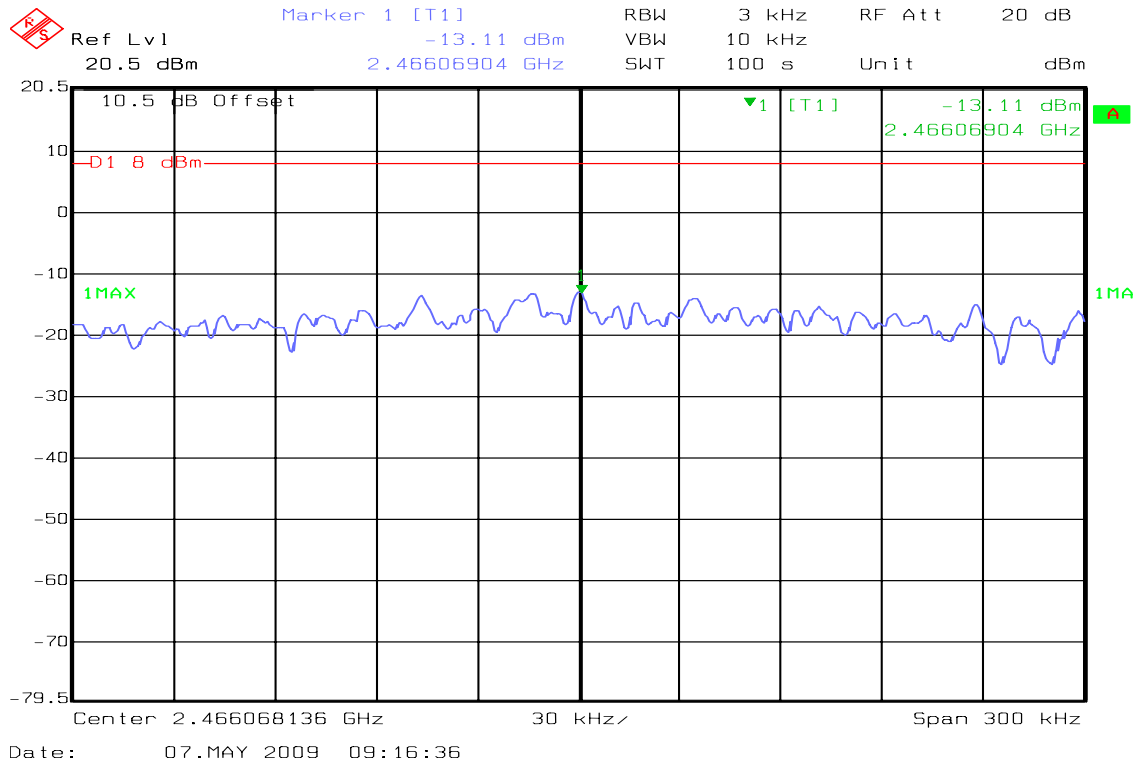


PPSD (CH Mid)



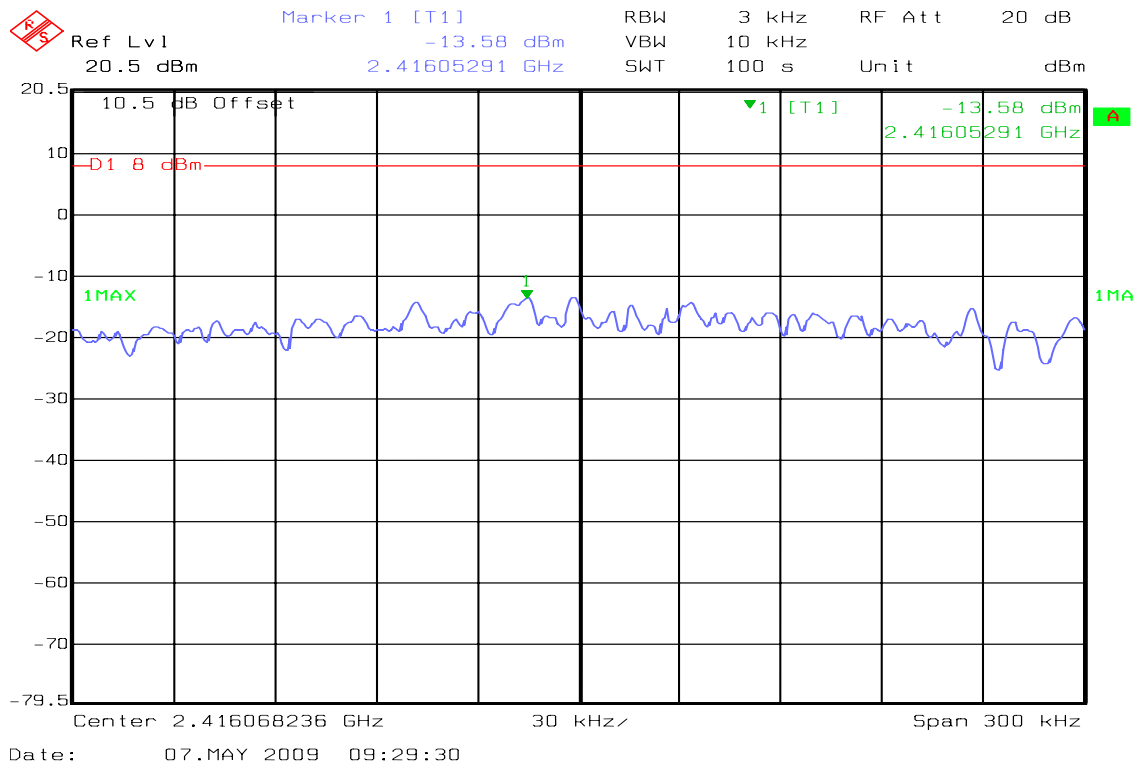


PPSD (CH High)



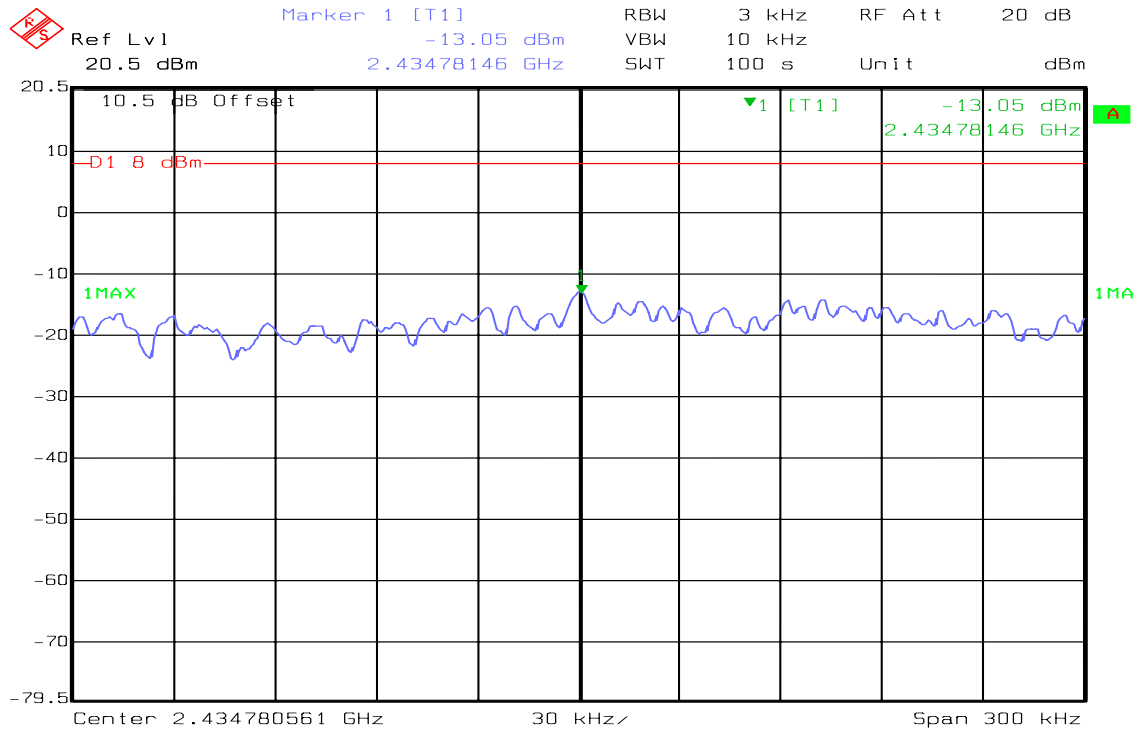
IEEE 802.11g mode / Chain 1

PPSD (CH Low)



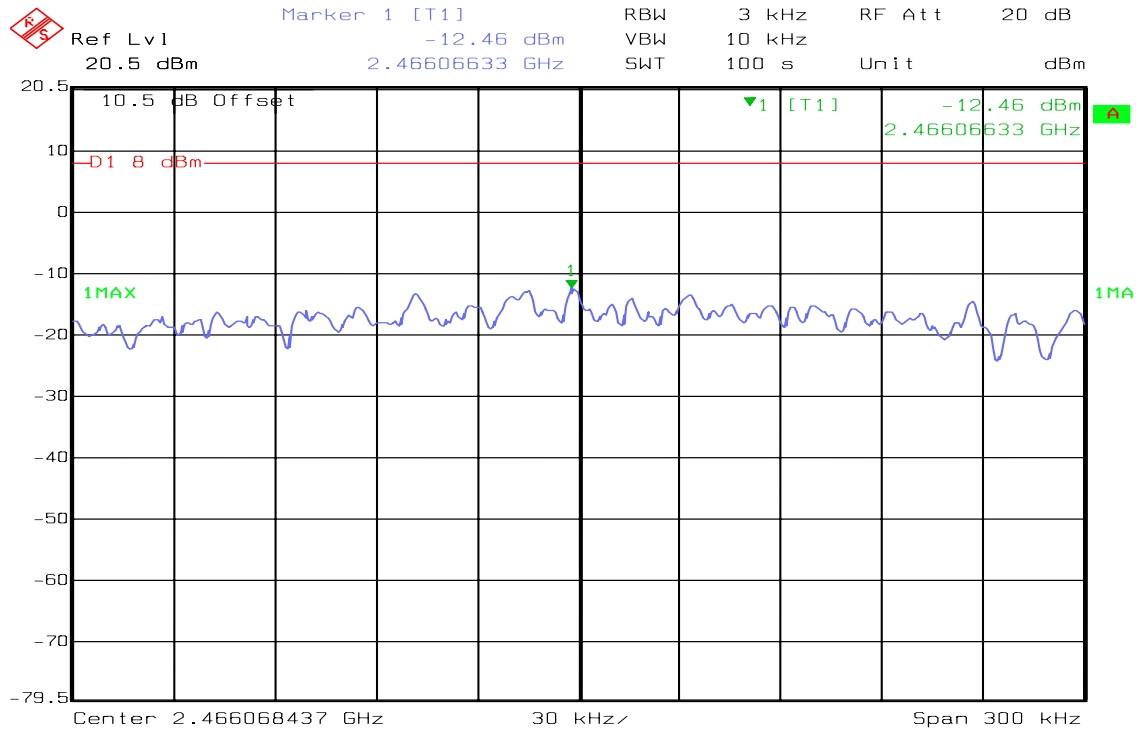


PPSD (CH Mid)



Date: 07.MAY 2009 09:24:56

PPSD (CH High)

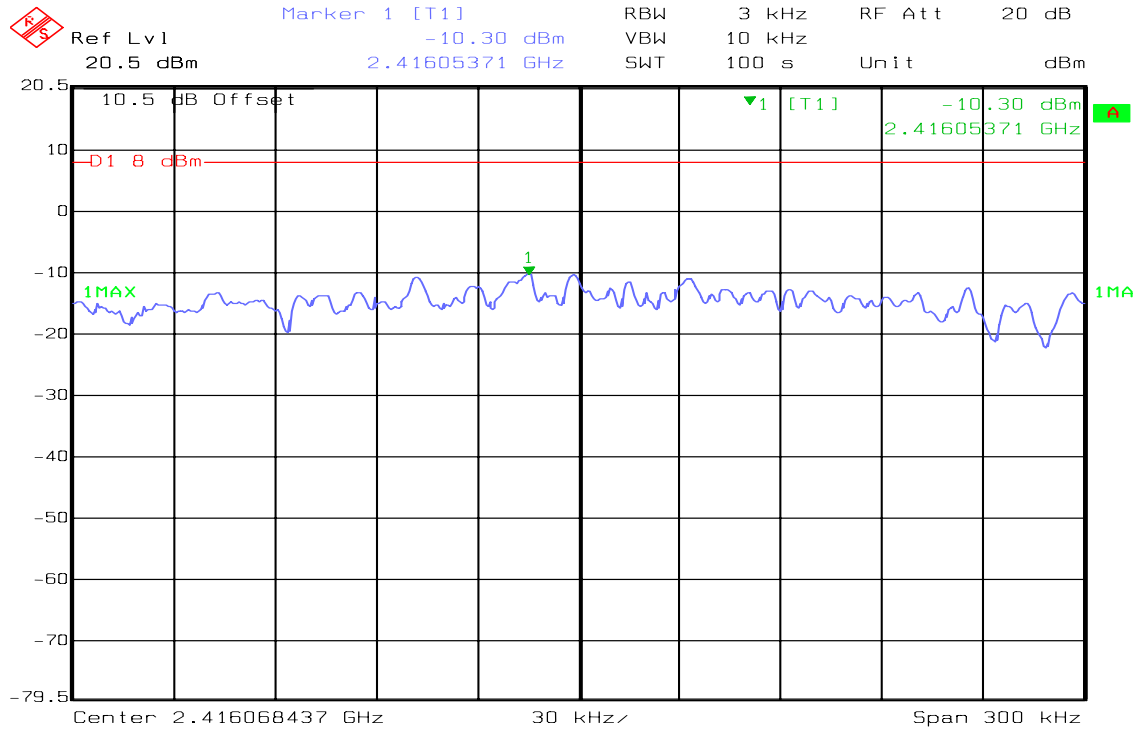


Date: 07.MAY 2009 09:20:53



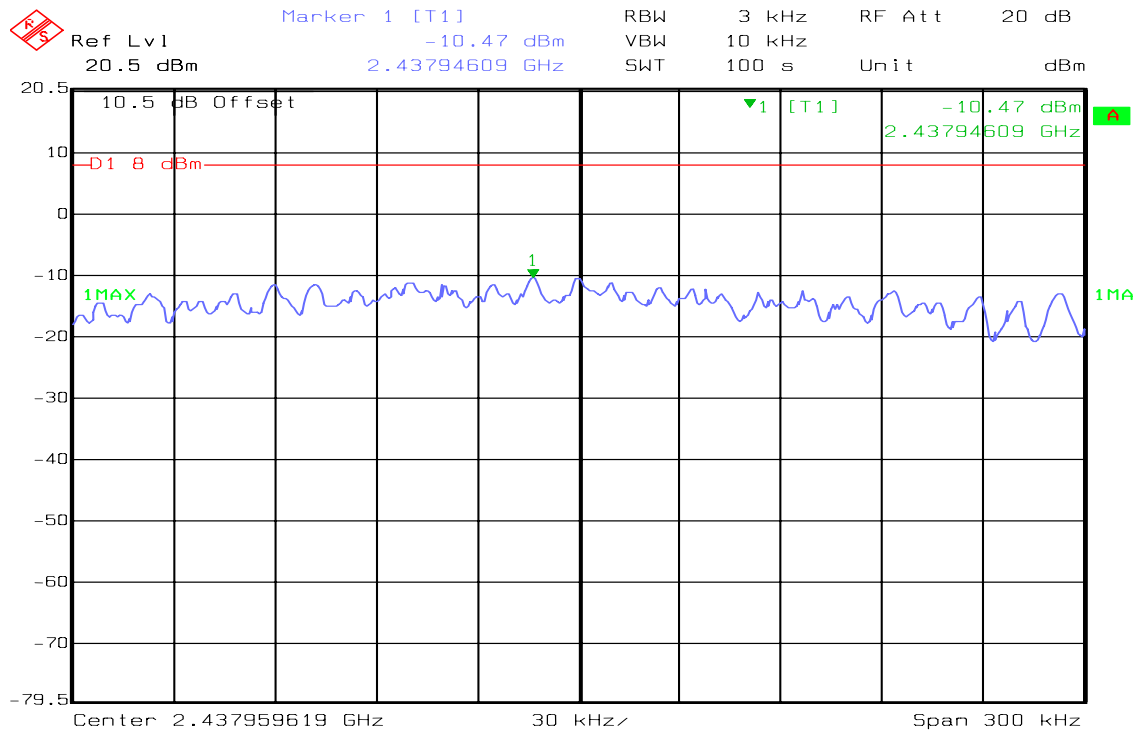
IEEE 802.11g mode / Combiner

PPSD (CH Low)



Date: 07.MAY 2009 09:36:27

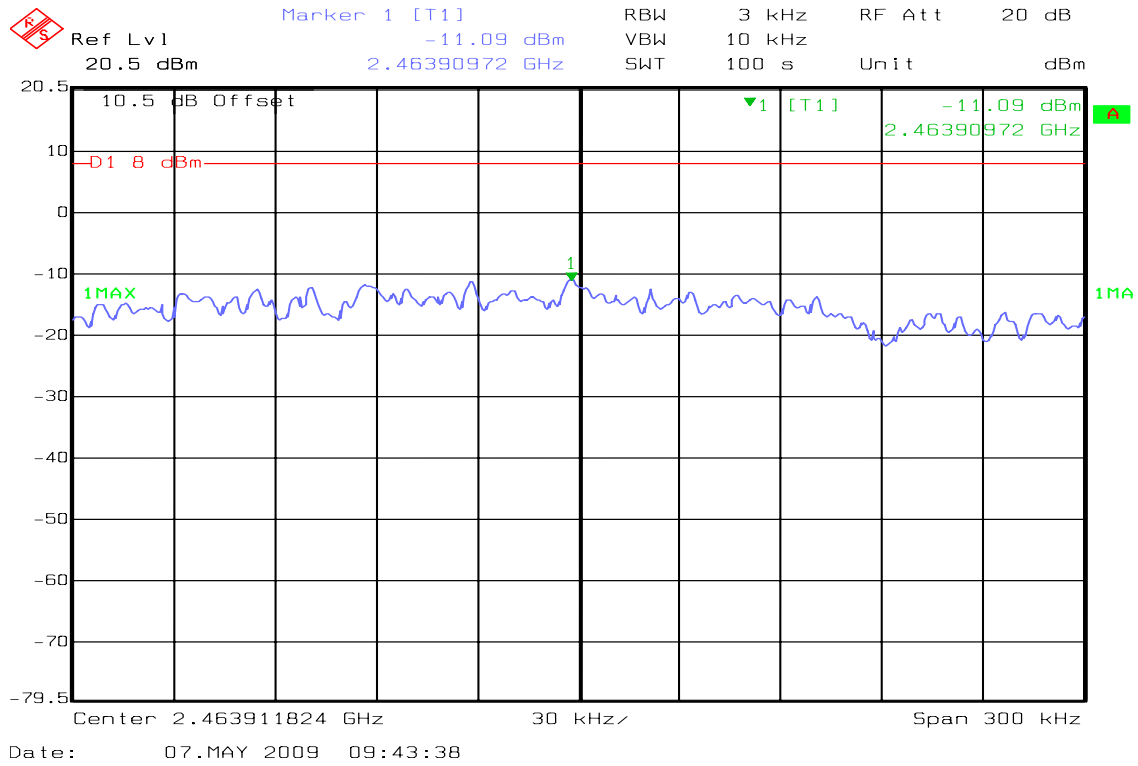
PPSD (CH Mid)



Date: 07.MAY 2009 09:40:05



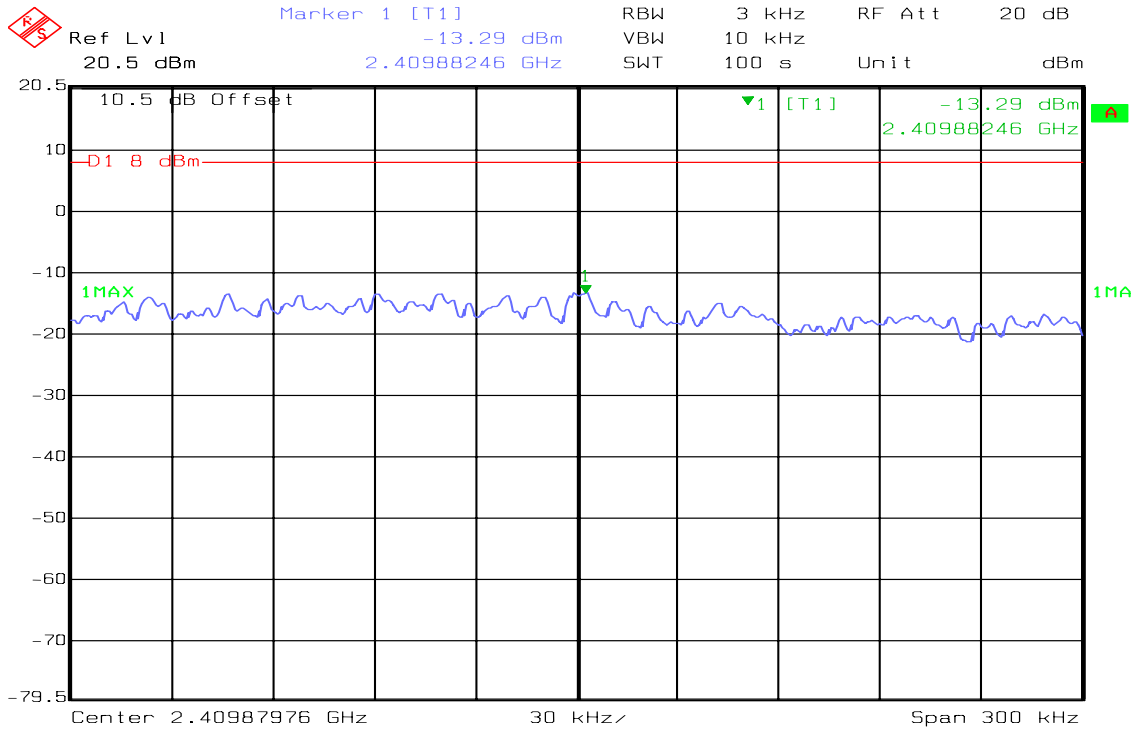
PPSD (CH High)





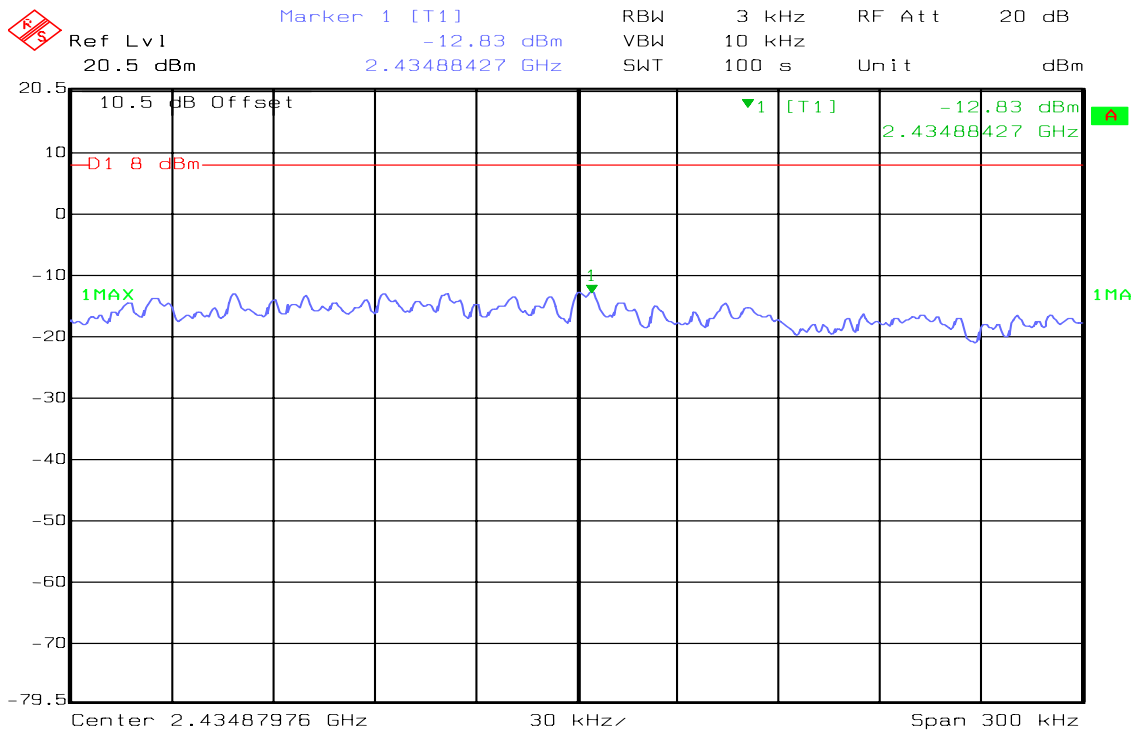
draft 802.11n 20 MHz Channel mode / Chain 0

PPSD (CH Low)



Date: 07.MAY 2009 09:48:18

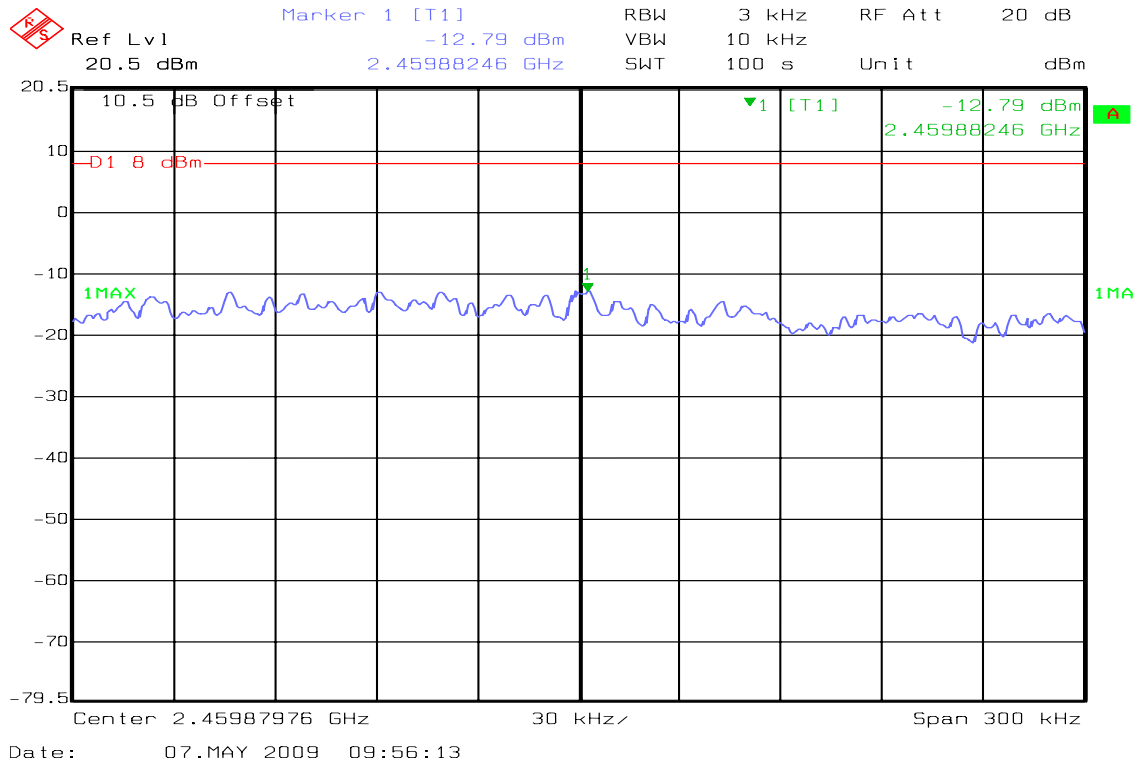
PPSD (CH Mid)



Date: 07.MAY 2009 09:52:45

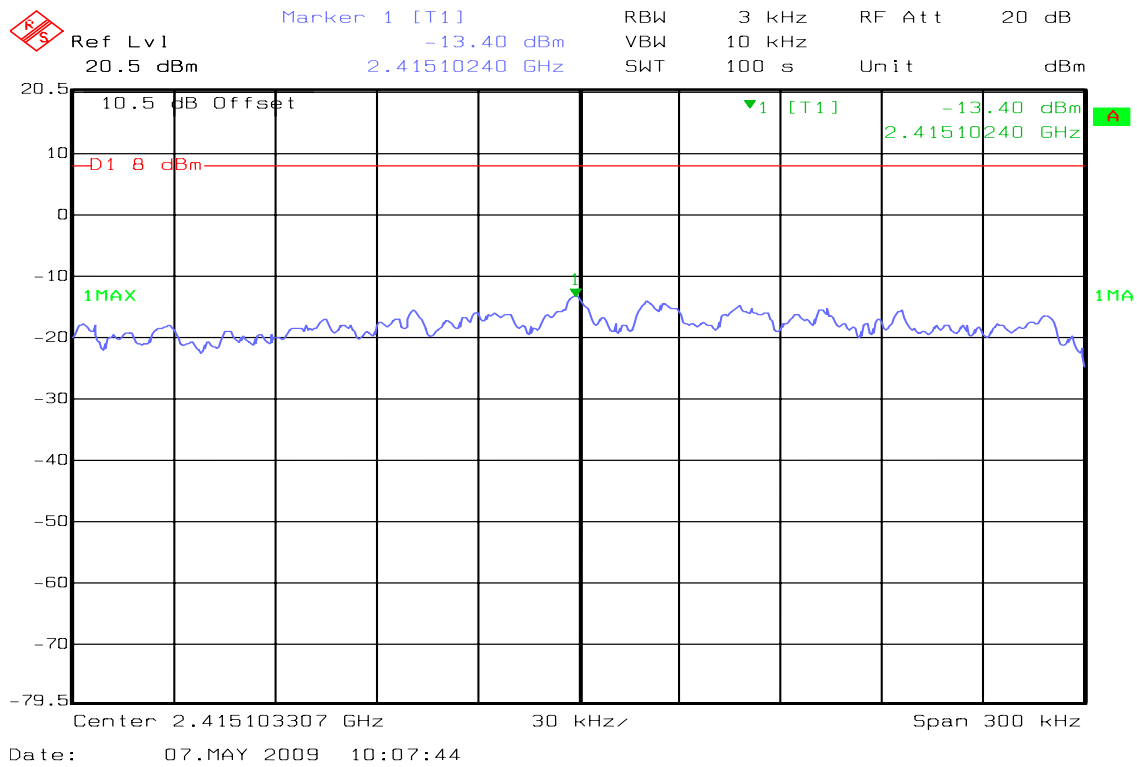


PPSD (CH High)



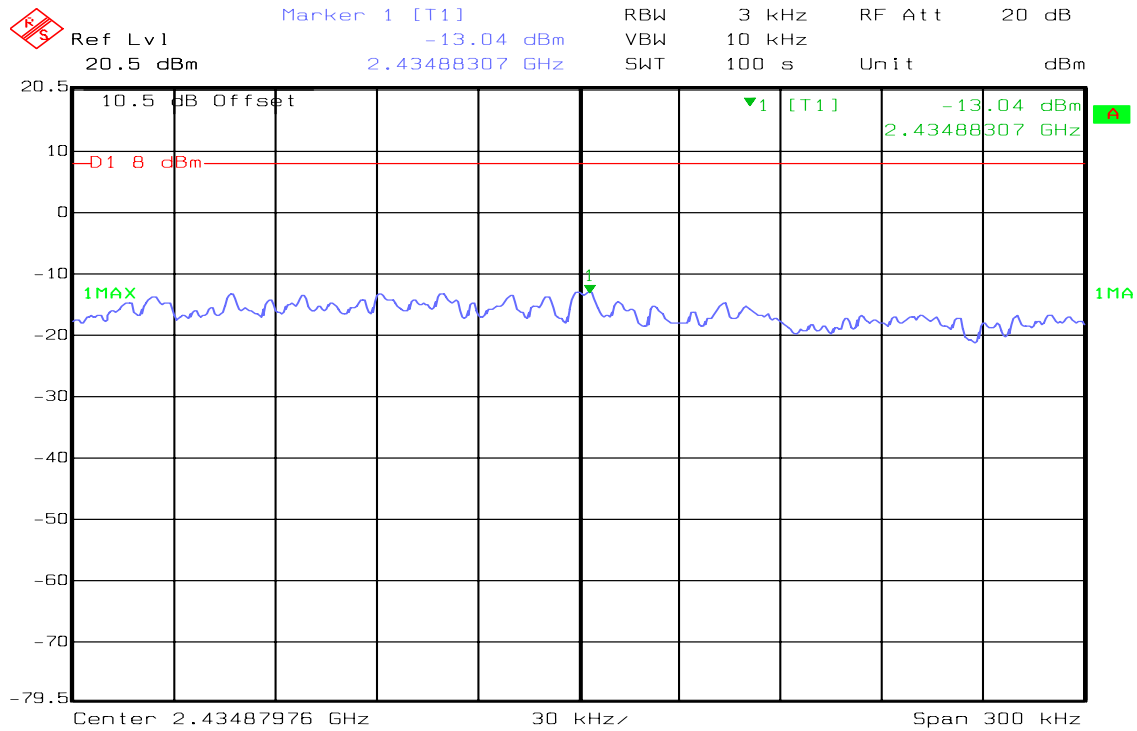
draft 802.11n 20 MHz Channel mode / Chain 1

PPSD (CH Low)



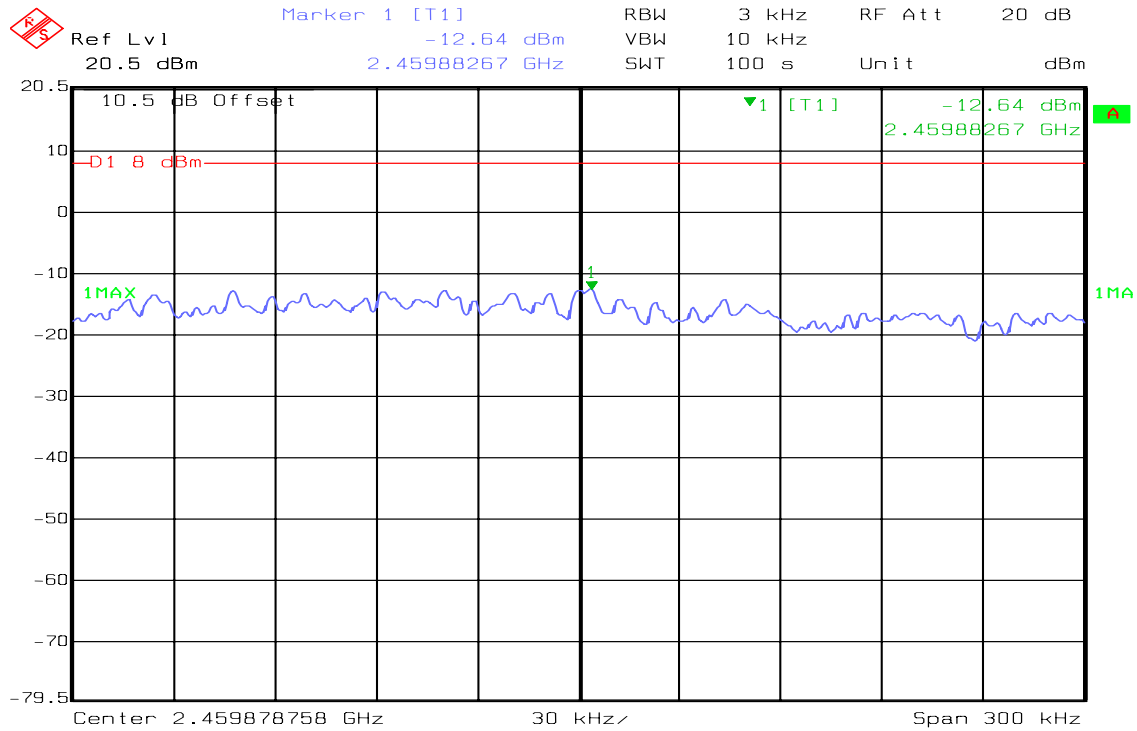


PPSD (CH Mid)



Date: 07.MAY 2009 10:03:32

PPSD (CH High)

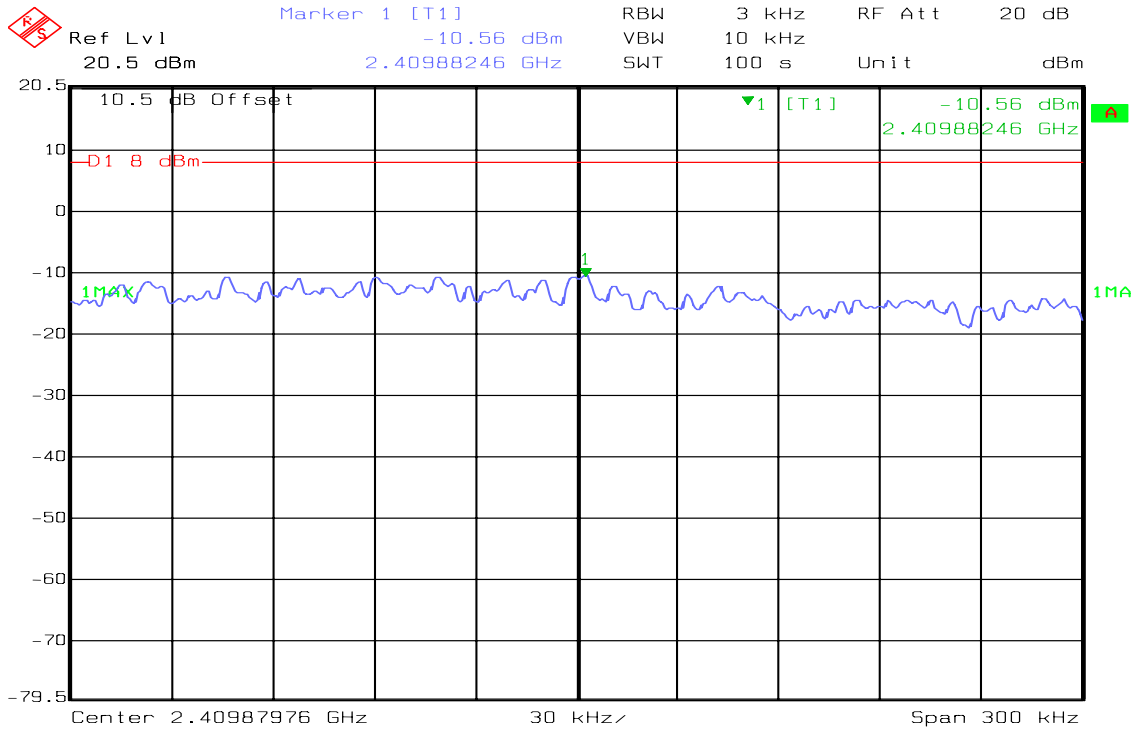


Date: 07.MAY 2009 10:00:06



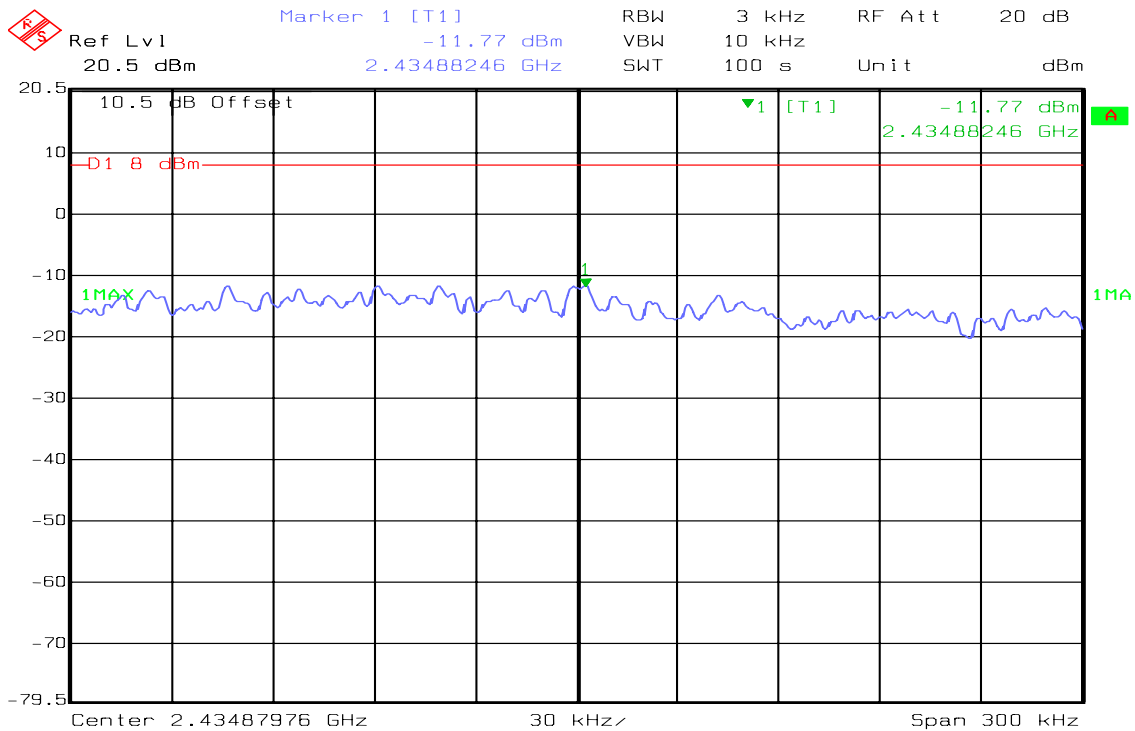
draft 802.11n 20 MHz Channel mode / Combiner

PPSD (CH Low)



Date: 07.MAY 2009 10:11:57

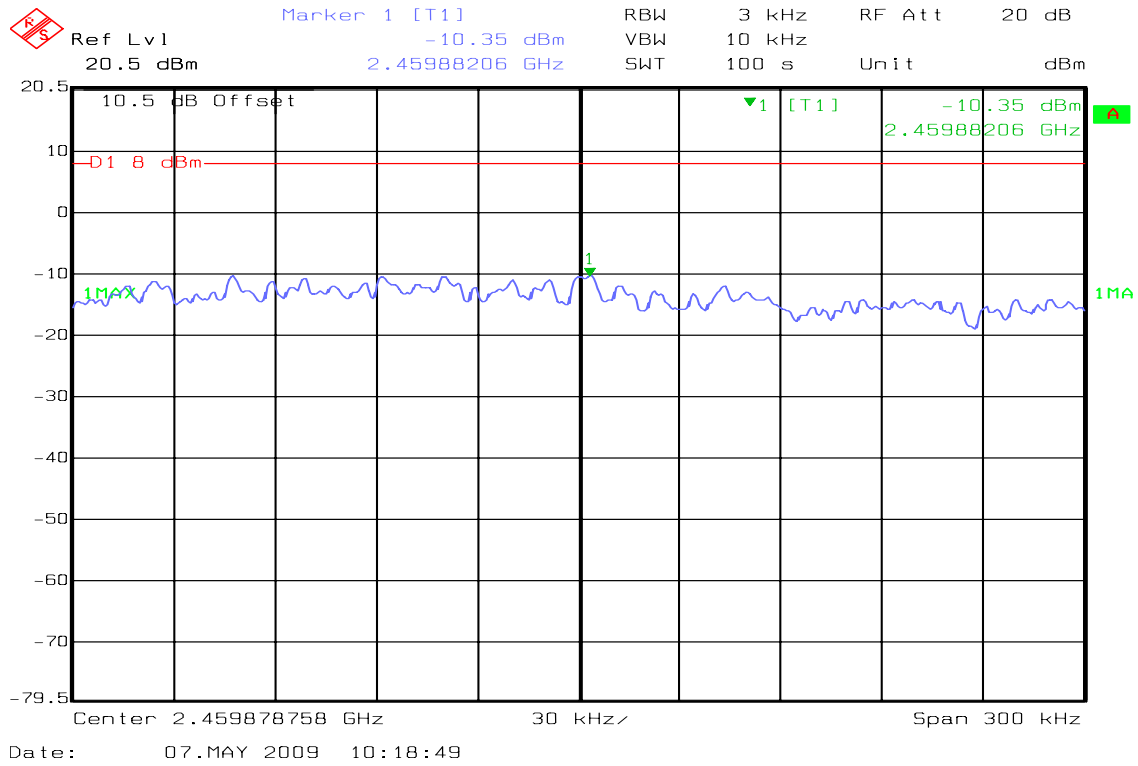
PPSD (CH Mid)



Date: 07.MAY 2009 10:15:25



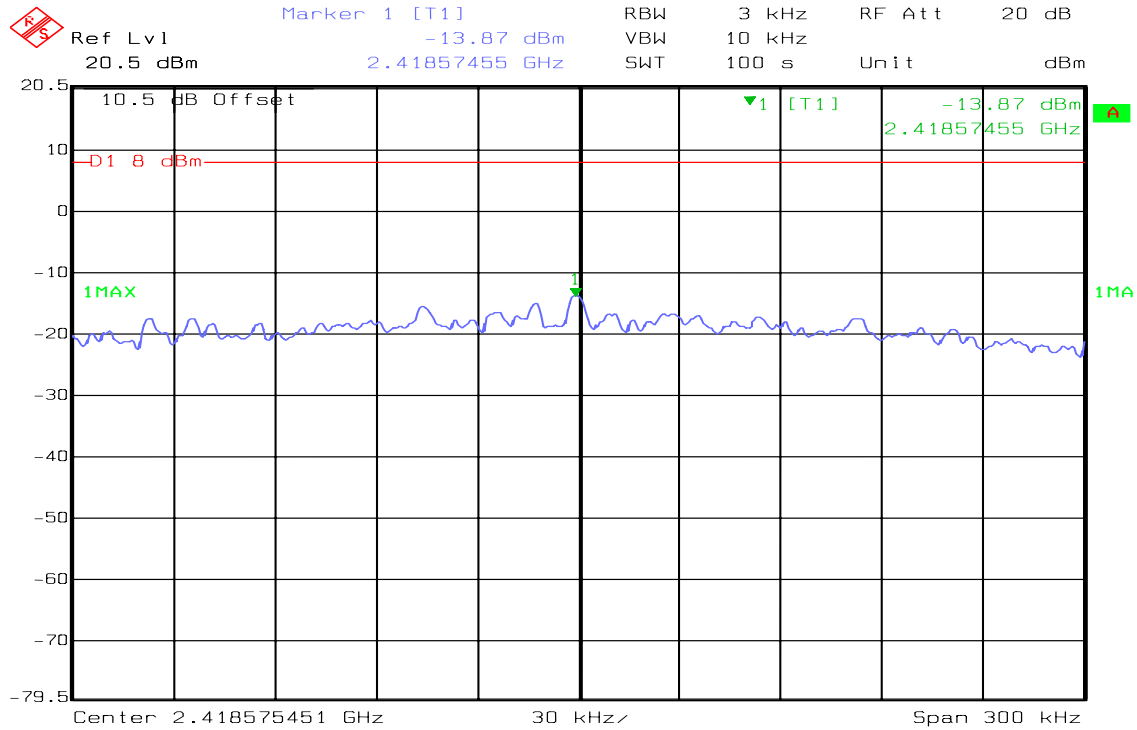
PPSD (CH High)





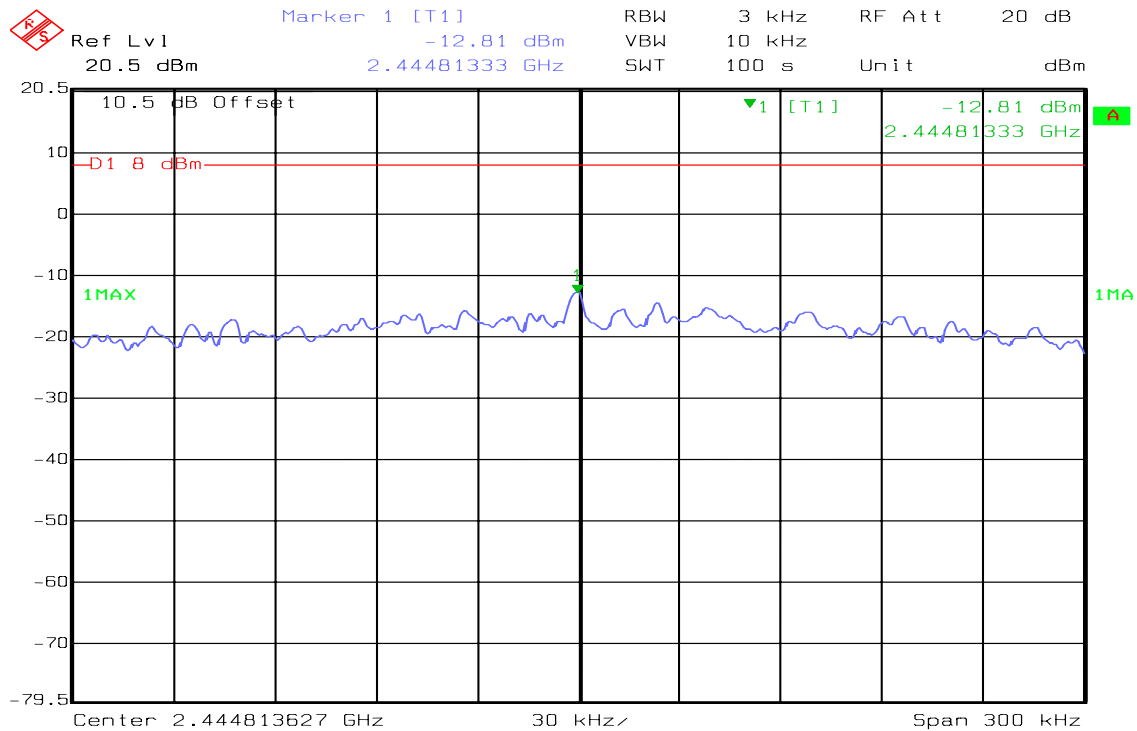
draft 802.11n 40 MHz Channel mode / Chain 0

PPSD (CH Low)



Date: 07.MAY 2009 10:23:09

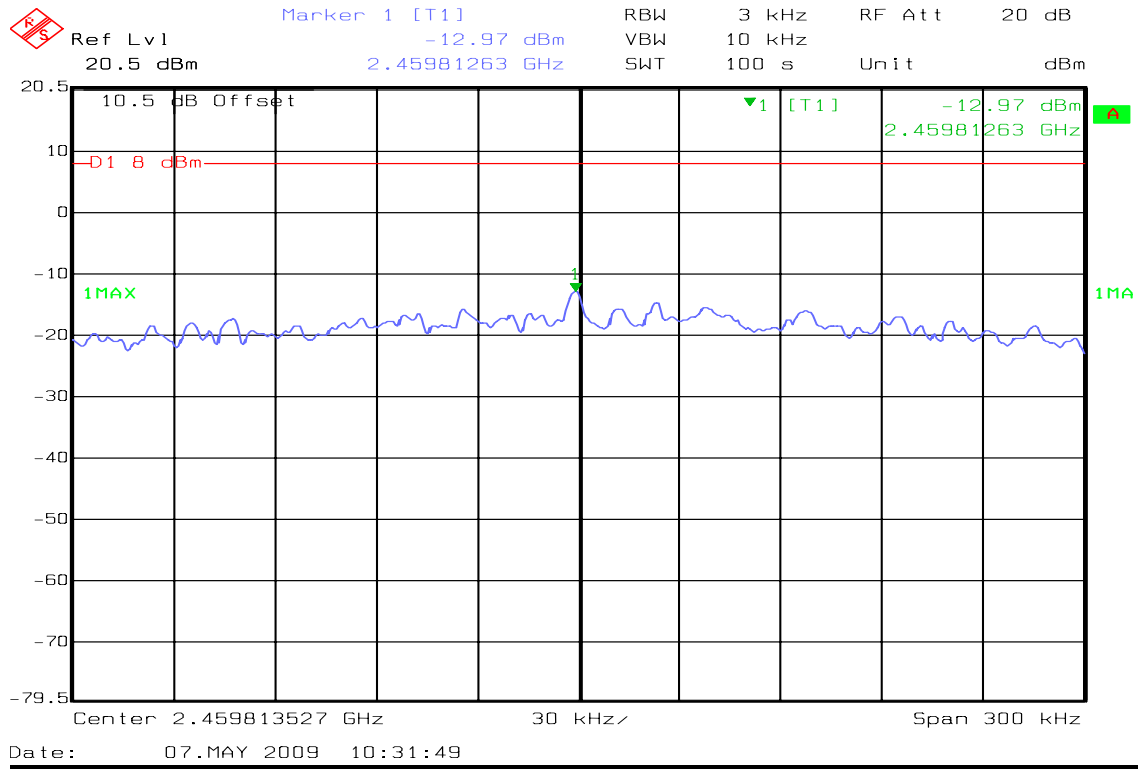
PPSD (CH Mid)



Date: 07.MAY 2009 10:27:57

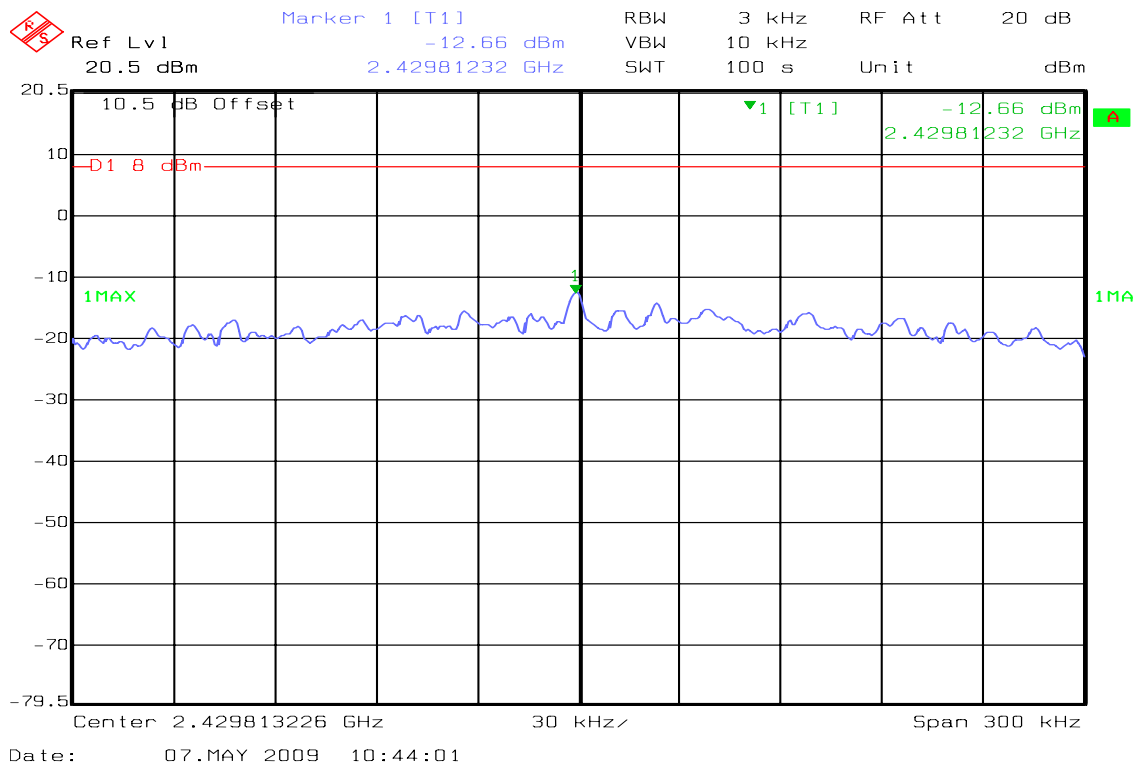


PPSD (CH High)



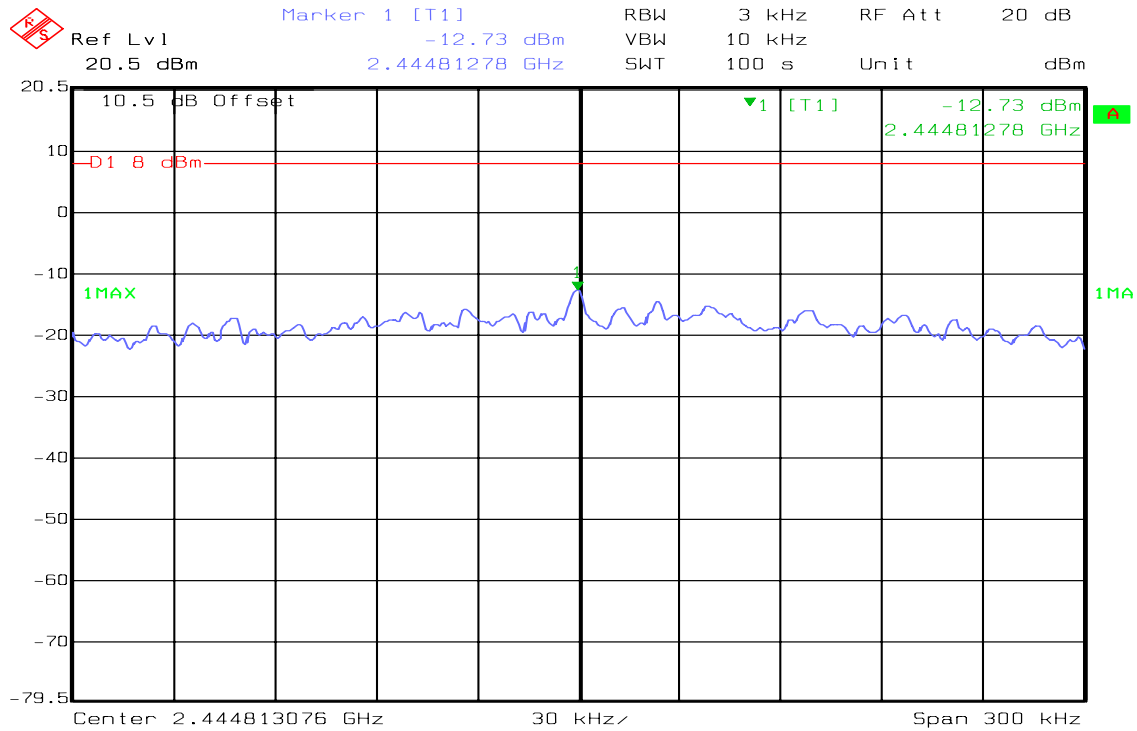
draft 802.11n 40 MHz Channel mode / Chain 1

PPSD (CH Low)



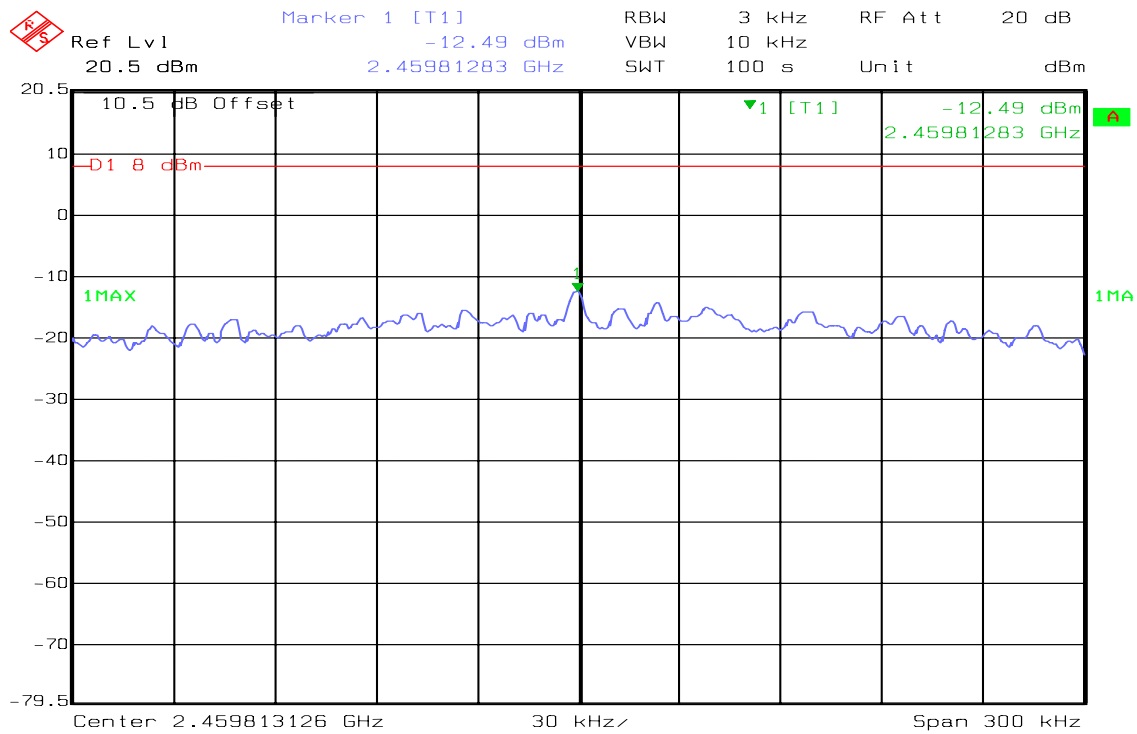


PPSD (CH Mid)



Date: 07.MAY 2009 10:39:39

PPSD (CH High)

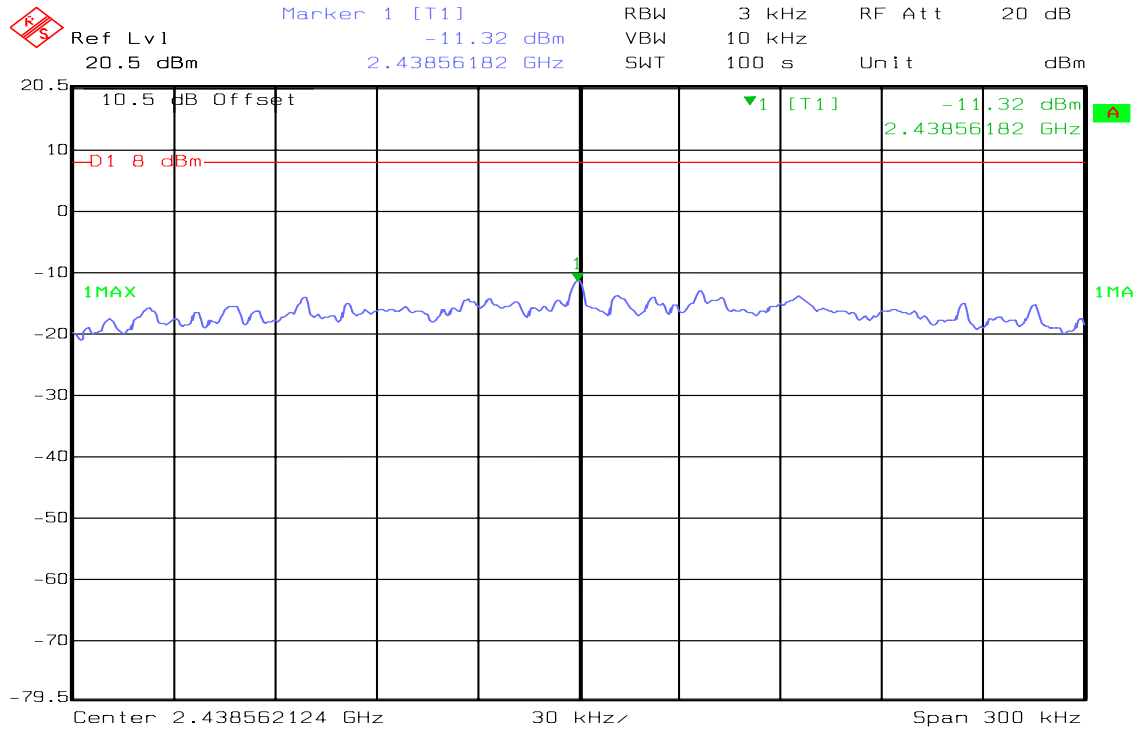


Date: 07.MAY 2009 10:35:27



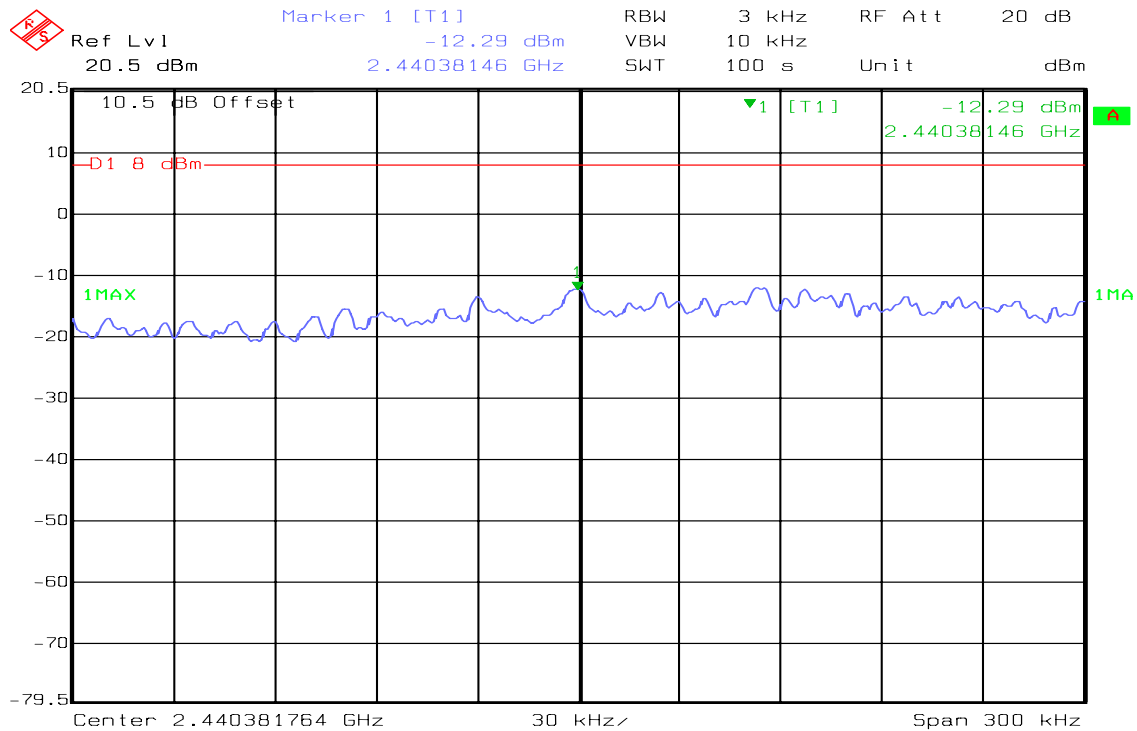
draft 802.11n 40 MHz Channel mode / Combiner

PPSD (CH Low)



Date: 07.MAY 2009 10:48:38

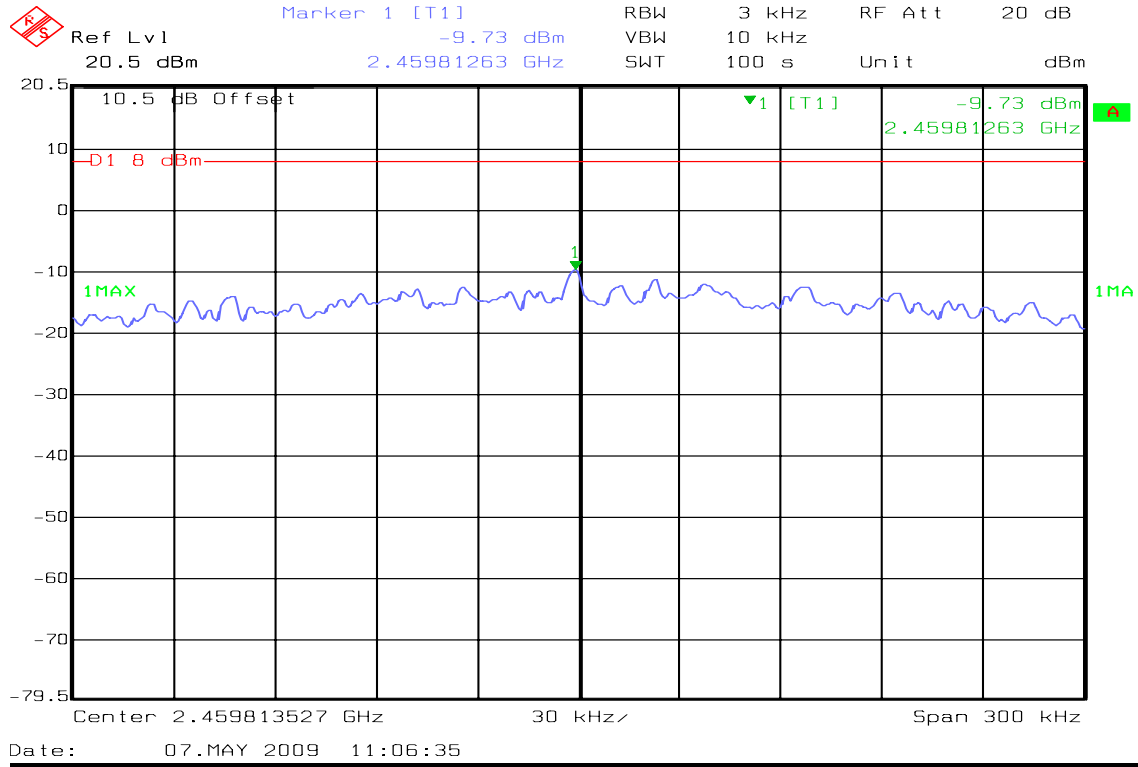
PPSD (CH Mid)



Date: 07.MAY 2009 10:52:23



PPSD (CH High)





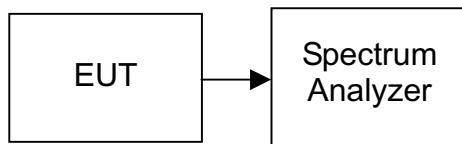
7.6 SPURIOUS EMISSIONS

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.



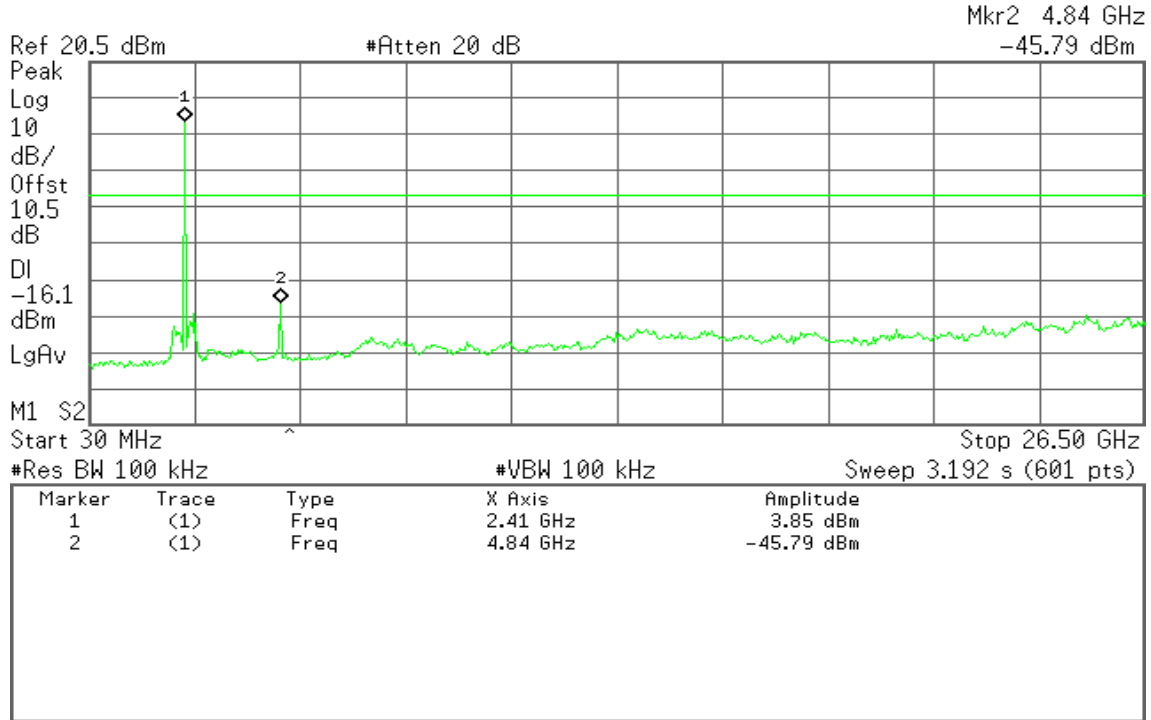
Test Plot

IEEE 802.11b mode / Chain 0

CH Low

Agilent 11:22:04 May 7, 2009

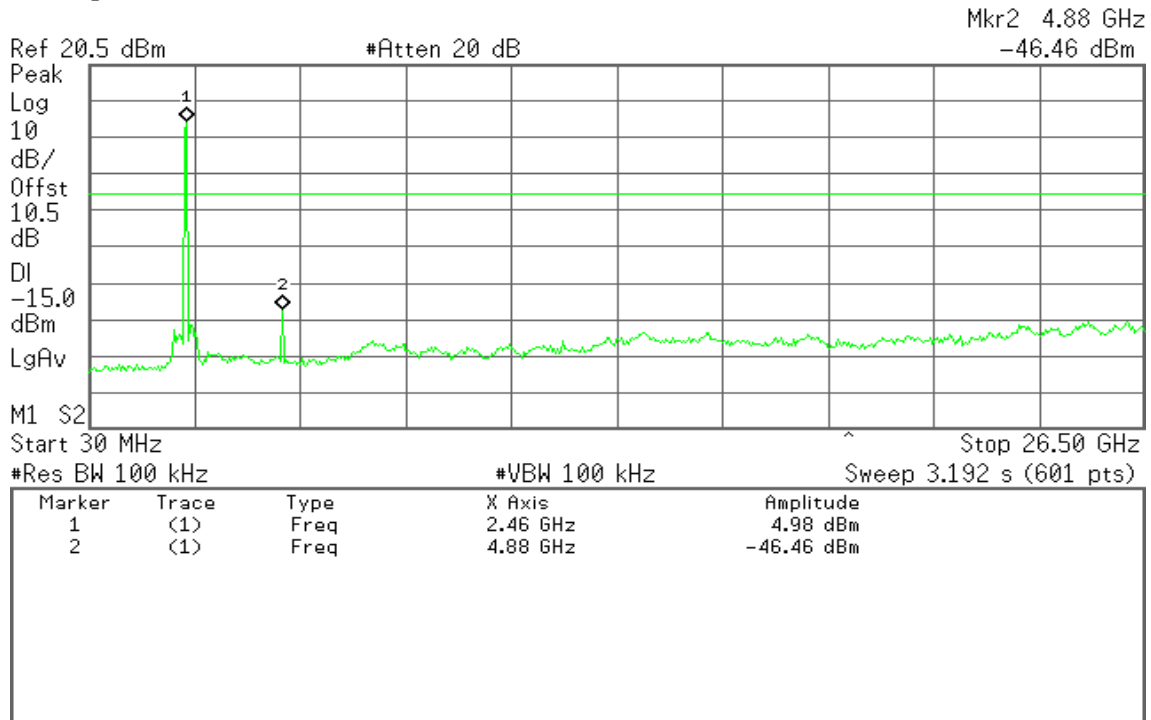
R L



CH Mid

Agilent 11:25:34 May 7, 2009

R L



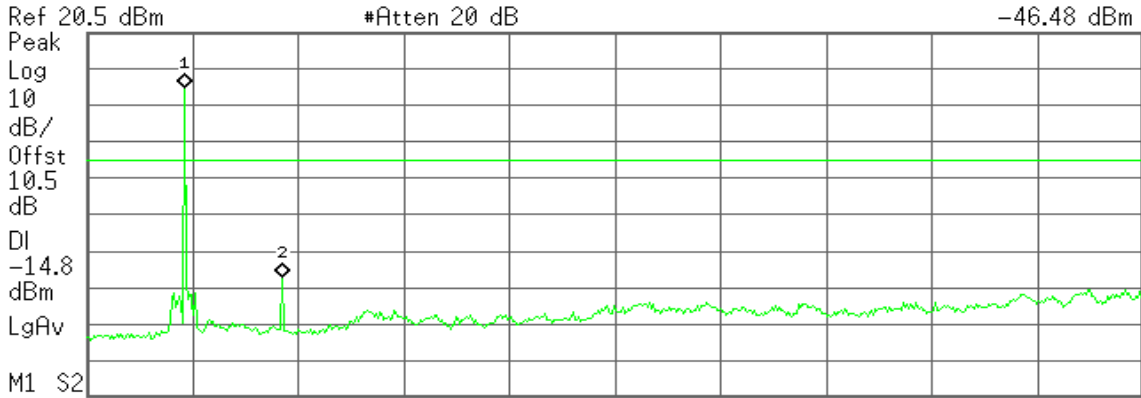


CH High

Agilent 11:30:36 May 7, 2009

R L

Mkr2 4.93 GHz
-46.48 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.46 GHz	5.22 dBm
2	(1)	Freq	4.93 GHz	-46.48 dBm

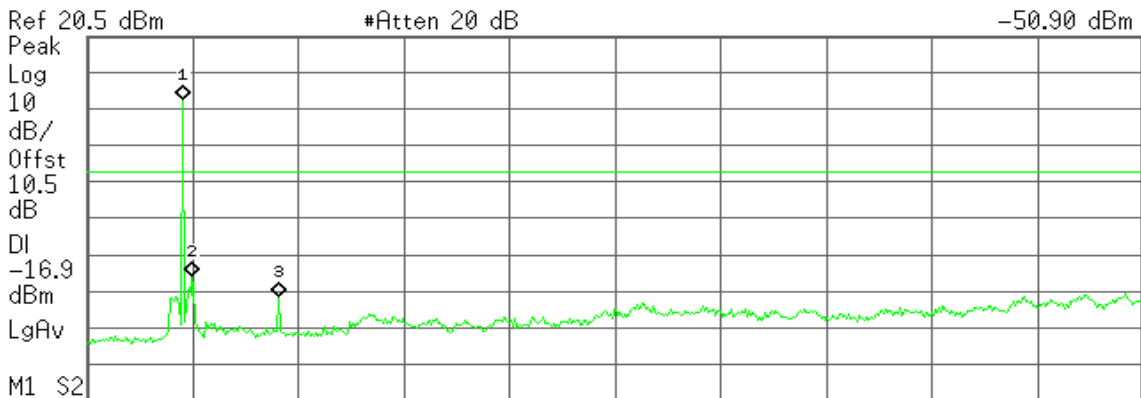
IEEE 802.11b mode / Chain 1

CH Low

Agilent 11:36:38 May 7, 2009

R L

Mkr3 4.84 GHz
-50.90 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.41 GHz	3.09 dBm
2	(1)	Freq	2.68 GHz	-45.12 dBm
3	(1)	Freq	4.84 GHz	-50.90 dBm

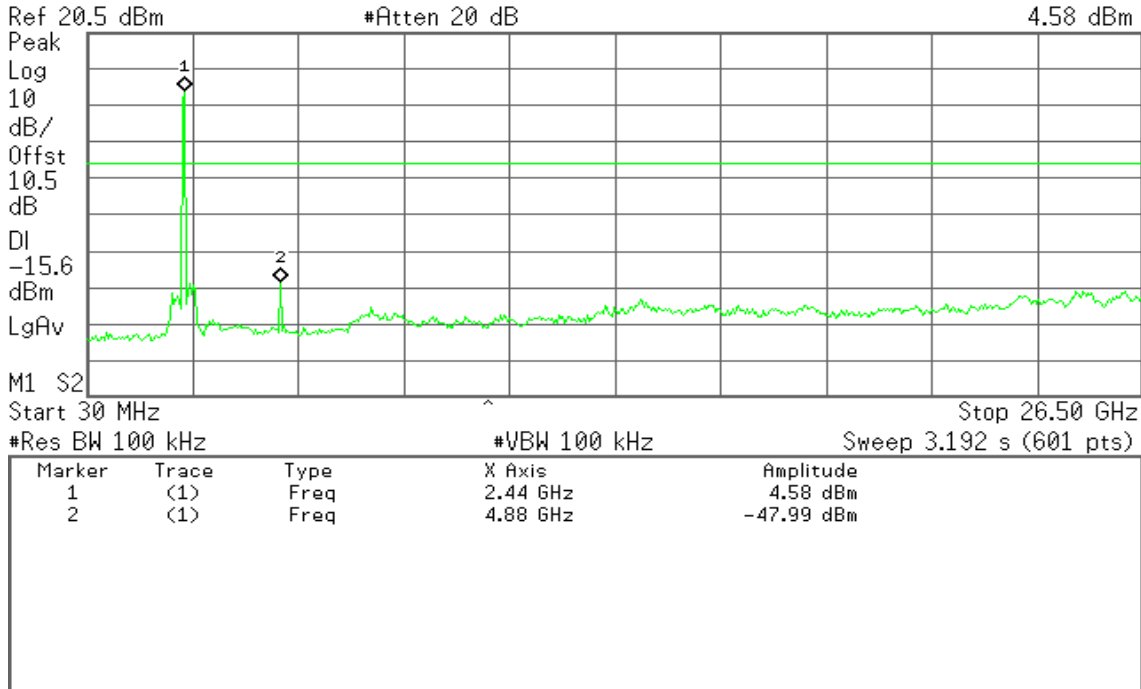


CH Mid

Agilent 11:33:58 May 7, 2009

R L

Mkr1 2.44 GHz
4.58 dBm

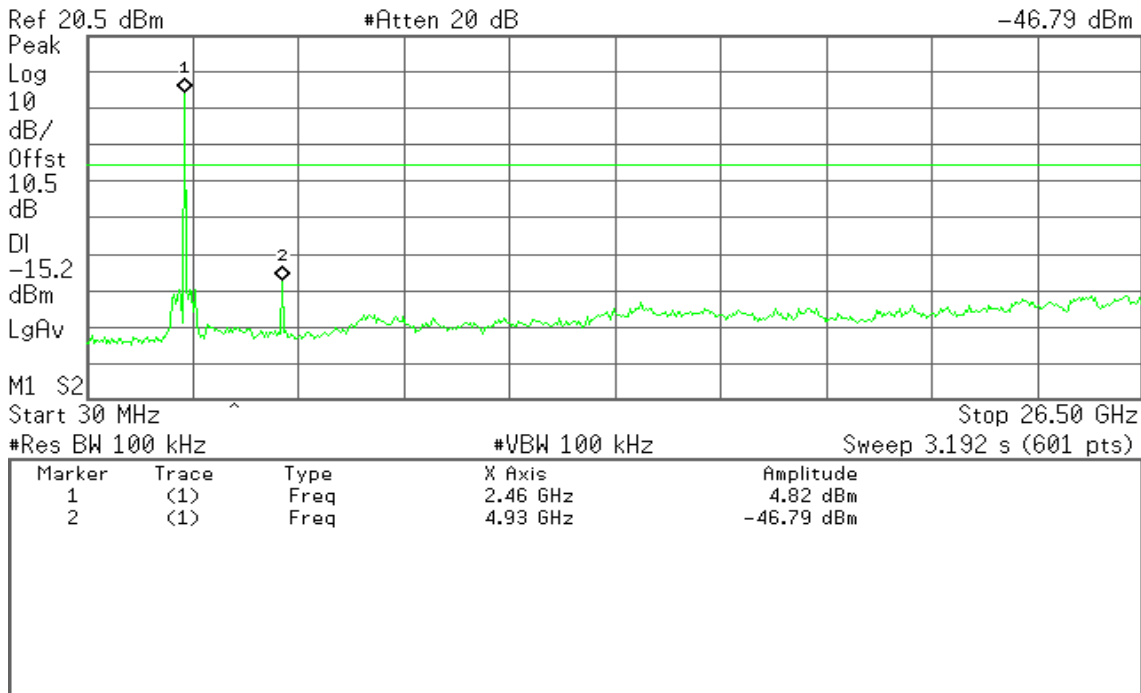


CH High

Agilent 11:32:10 May 7, 2009

R L

Mkr2 4.93 GHz
-46.79 dBm





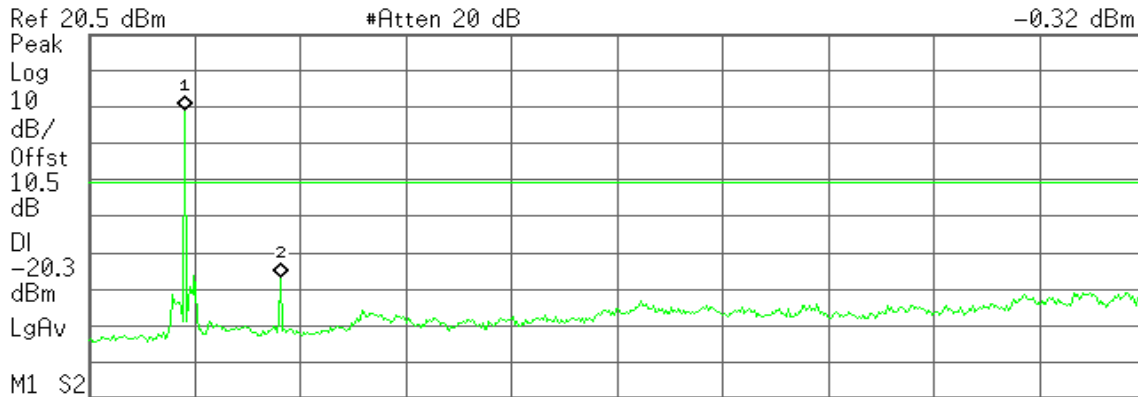
IEEE 802.11b mode / Combiner

CH Low

Agilent 11:46:55 May 7, 2009

R L

Mkr1 2.41 GHz
-0.32 dBm



Start 30 MHz Stop 26.50 GHz
#Res BW 100 kHz #VBW 100 kHz Sweep 3.192 s (601 pts)

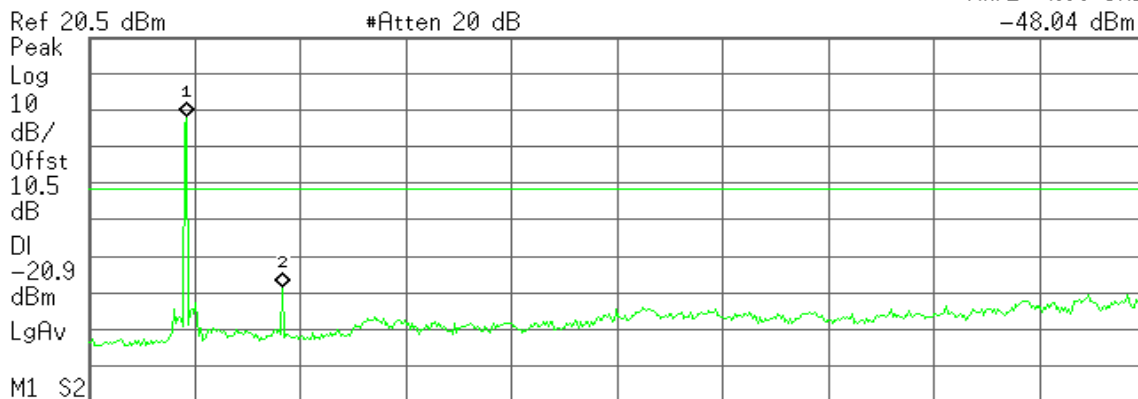
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.41 GHz	-0.32 dBm
2	(1)	Freq	4.84 GHz	-46.16 dBm

CH Mid

Agilent 11:43:30 May 7, 2009

R L

Mkr2 4.88 GHz
-48.04 dBm



Start 30 MHz Stop 26.50 GHz
#Res BW 100 kHz #VBW 100 kHz Sweep 3.192 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.44 GHz	-0.94 dBm
2	(1)	Freq	4.88 GHz	-48.04 dBm

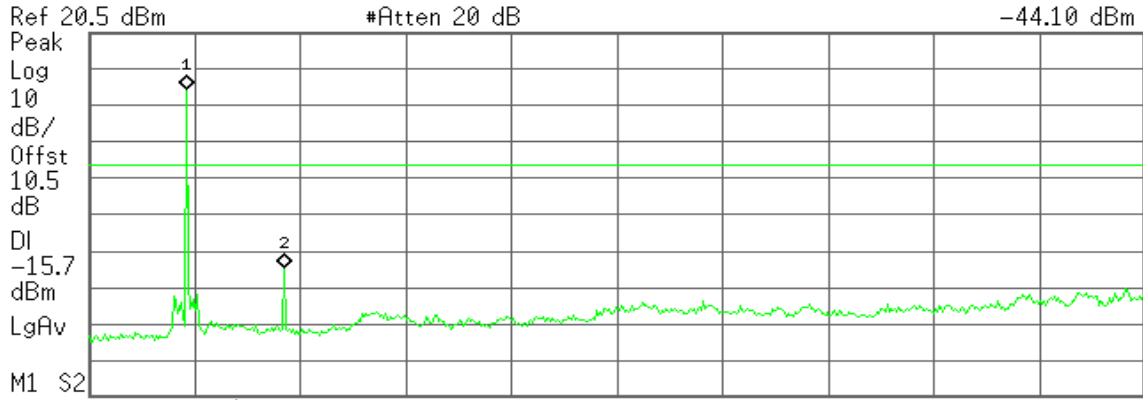


CH High

Agilent 11:40:24 May 7, 2009

R L

Mkr2 4.93 GHz
-44.10 dBm



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.46 GHz	5.06 dBm
2	(1)	Freq	4.93 GHz	-44.10 dBm



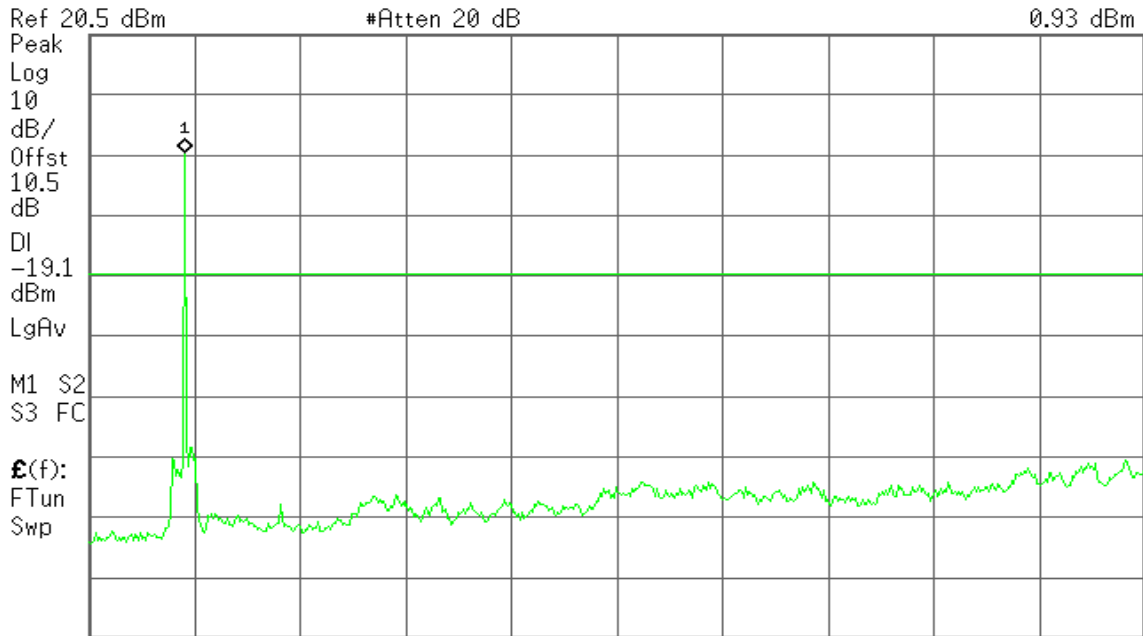
IEEE 802.11g mode / Chain 0

CH Low

Agilent 13:16:32 May 7, 2009

R L

Mkr1 2.41 GHz
0.93 dBm



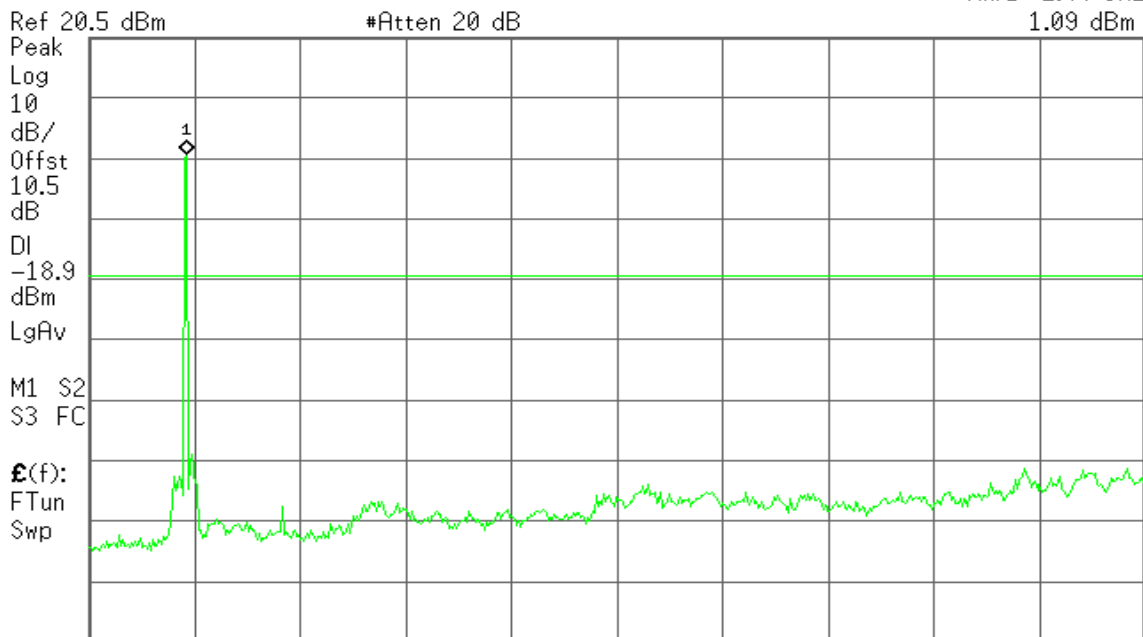
Start 30 MHz Stop 26.50 GHz
#Res BW 100 kHz #VBW 100 kHz Sweep 3.192 s (601 pts)

CH Mid

Agilent 13:22:21 May 7, 2009

R L

Mkr1 2.44 GHz
1.09 dBm



Start 30 MHz Stop 26.50 GHz
#Res BW 100 kHz #VBW 100 kHz Sweep 3.192 s (601 pts)

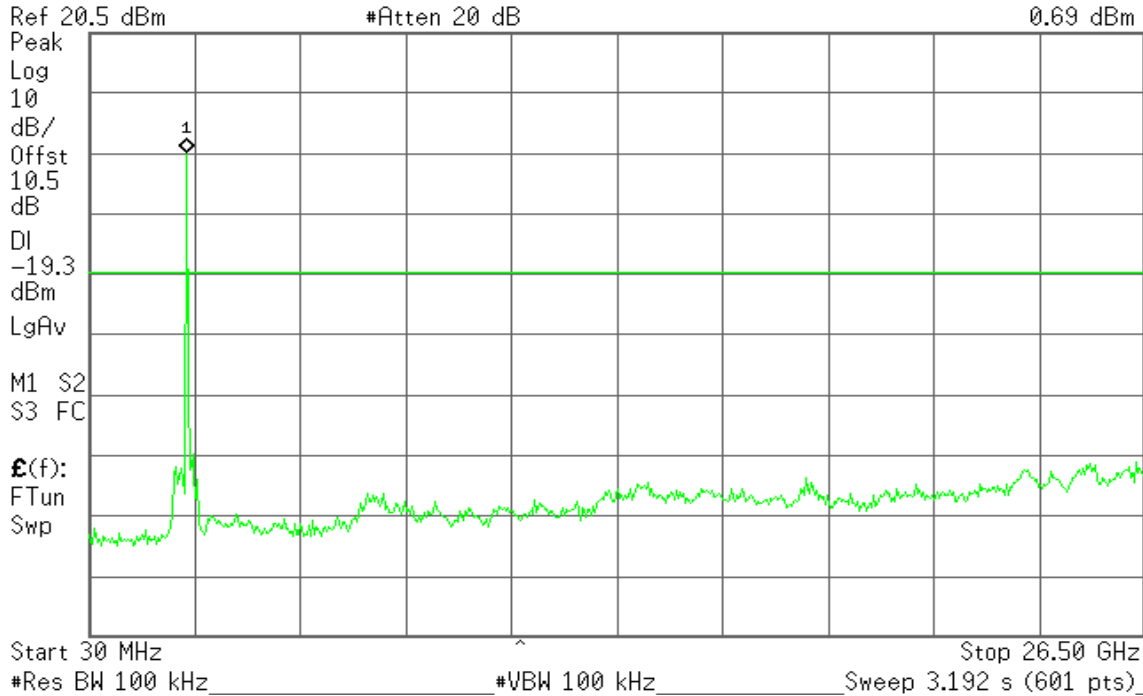


CH High

Agilent 13:23:39 May 7, 2009

R L

Mkr1 2.46 GHz
0.69 dBm



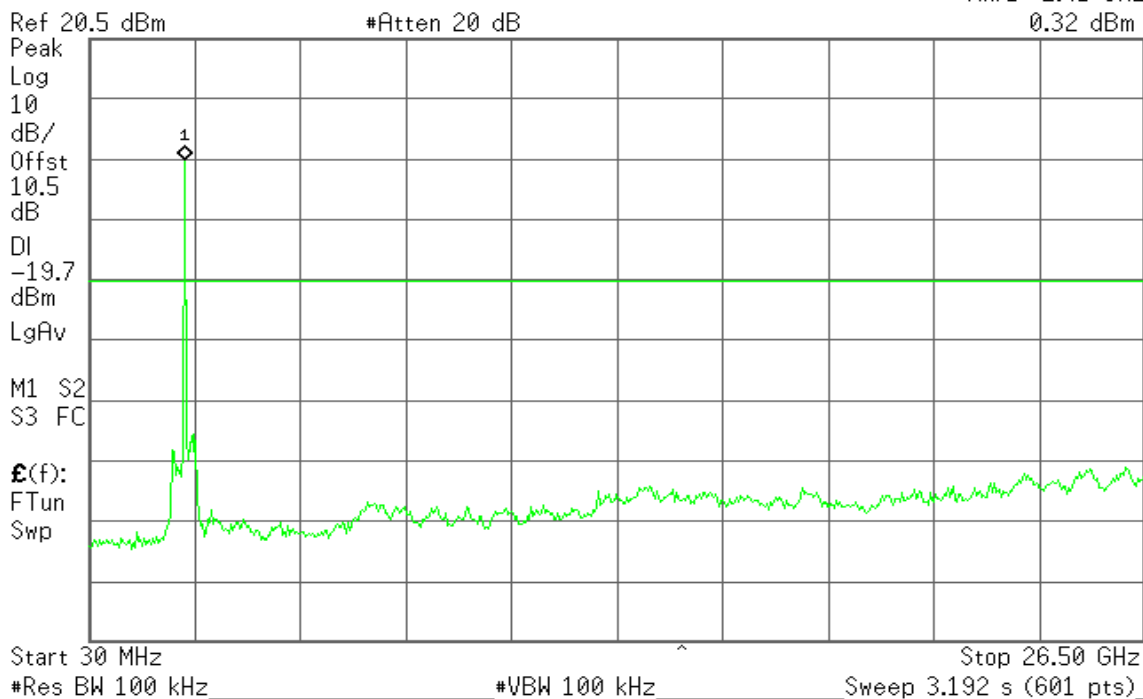
IEEE 802.11g mode / Chain 1

CH Low

Agilent 13:29:18 May 7, 2009

R L

Mkr1 2.41 GHz
0.32 dBm



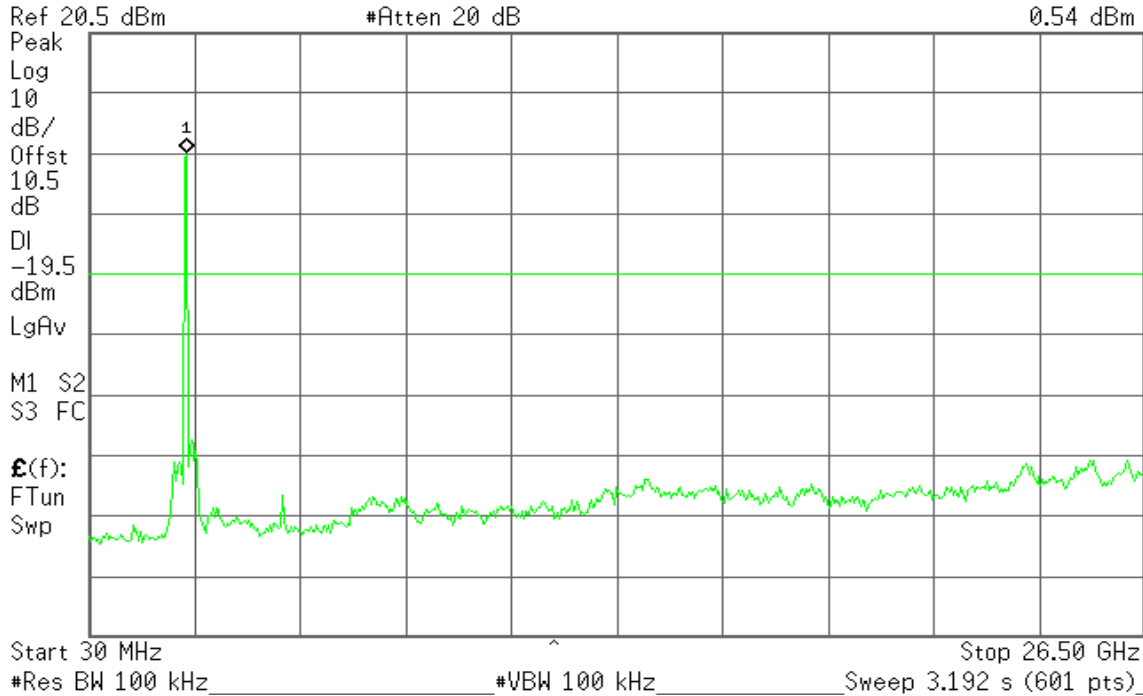


CH Mid

Agilent 13:27:17 May 7, 2009

R L

Mkr1 2.44 GHz
0.54 dBm

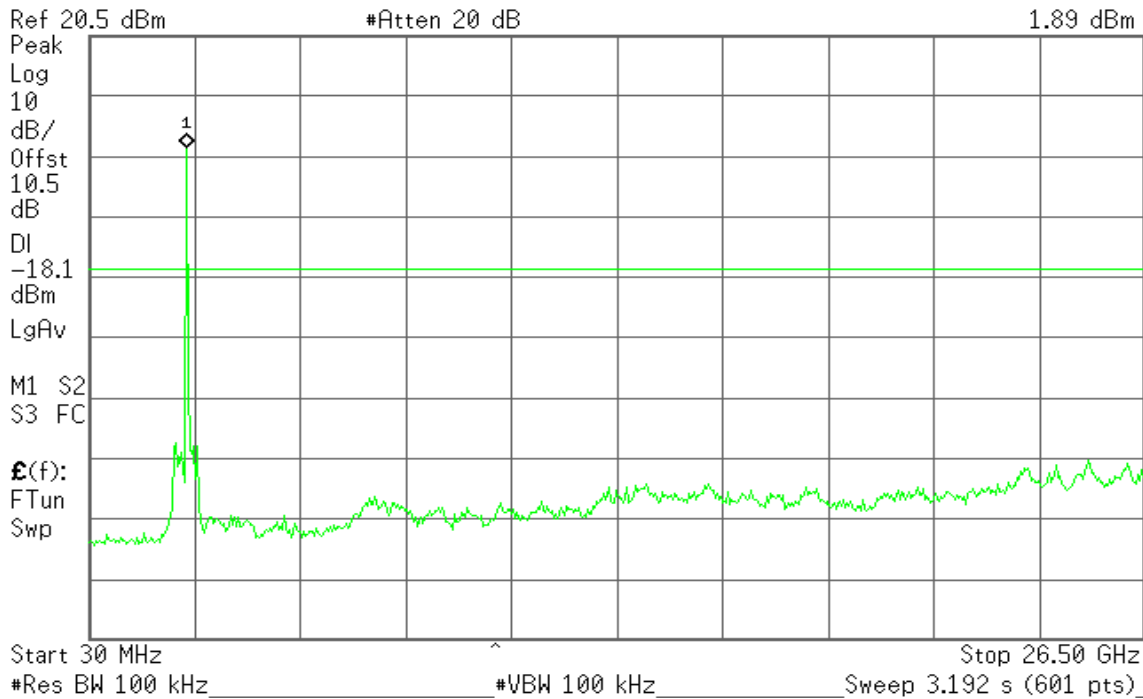


CH High

Agilent 13:26:03 May 7, 2009

R L

Mkr1 2.46 GHz
1.89 dBm



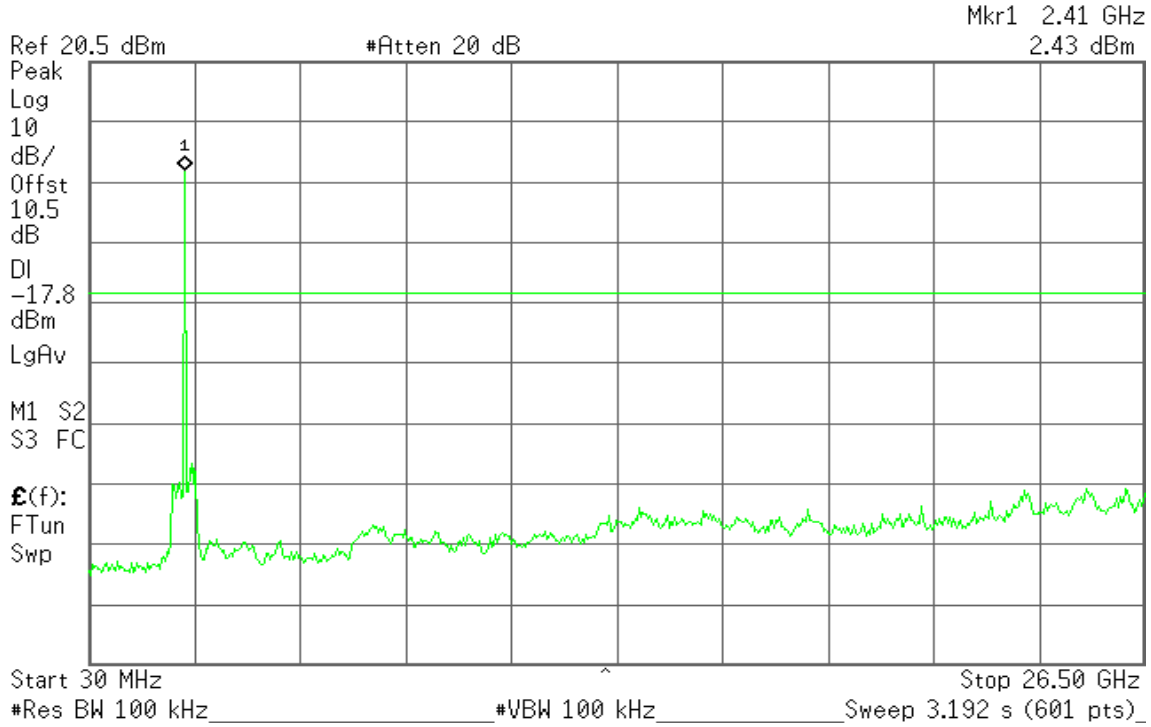


IEEE 802.11g mode / Combiner

CH Low

Agilent 13:30:46 May 7, 2009

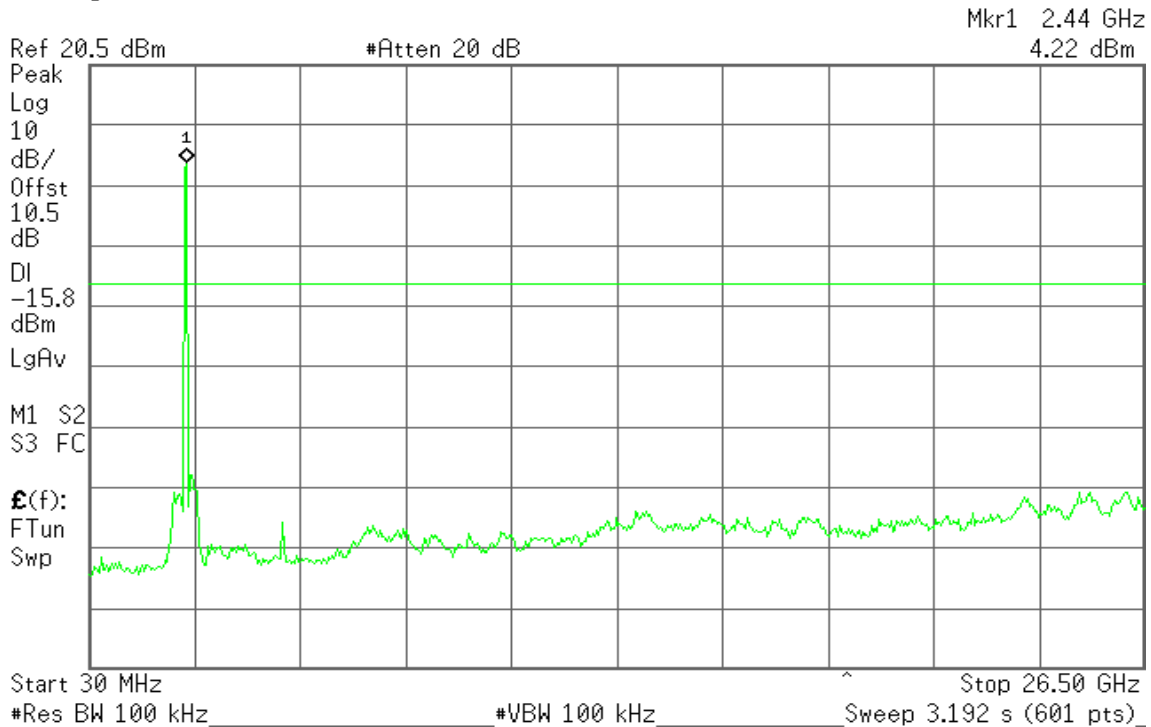
R L



CH Mid

Agilent 13:32:33 May 7, 2009

R T



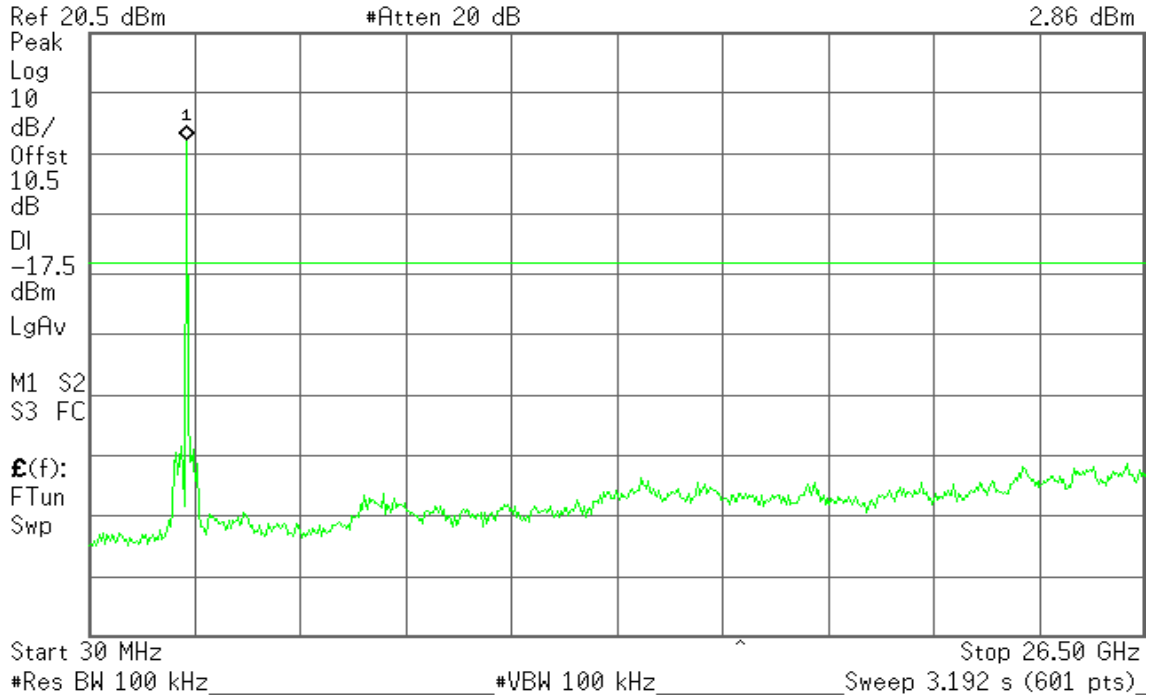


CH High

Agilent 13:33:29 May 7, 2009

R L

Mkr1 2.46 GHz
2.86 dBm





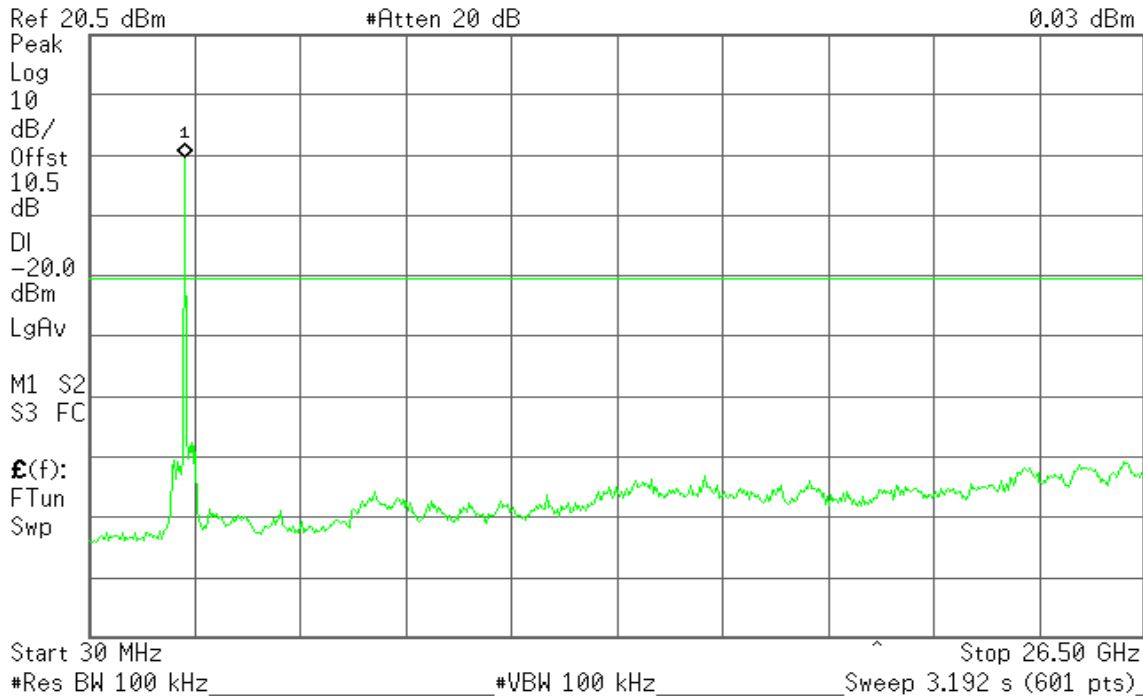
draft 802.11n 20 MHz Channel mode / Chain 0

CH Low

Agilent 13:37:01 May 7, 2009

R L

Mkr1 2.41 GHz
0.03 dBm

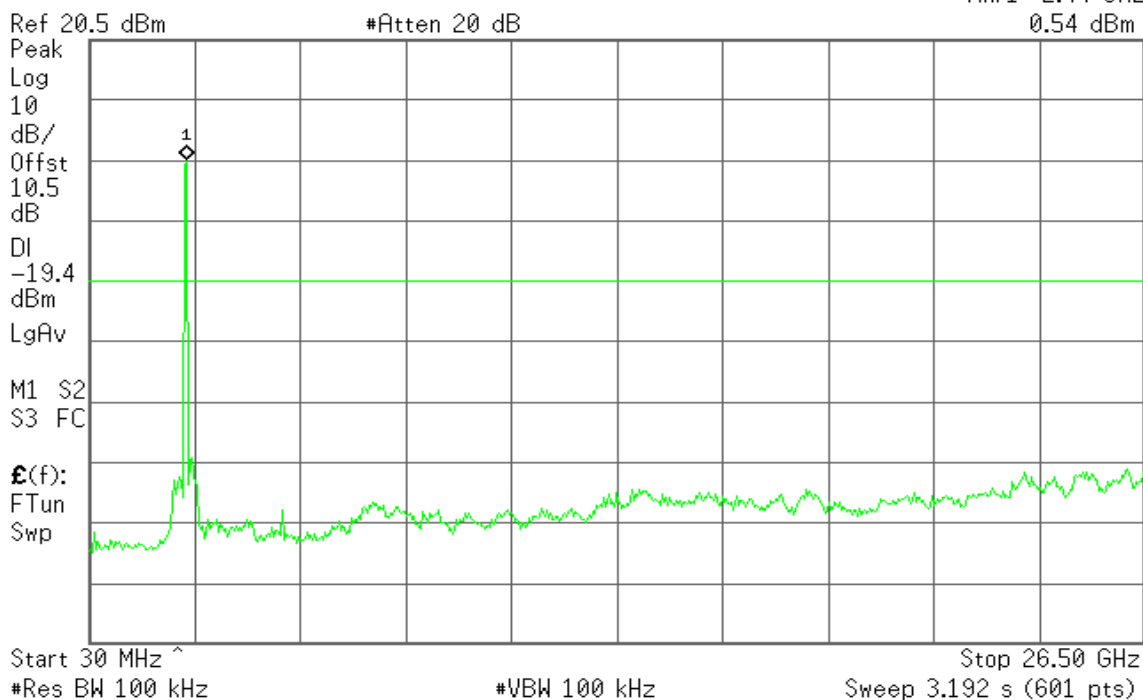


CH Mid

Agilent 13:37:59 May 7, 2009

R L

Mkr1 2.44 GHz
0.54 dBm



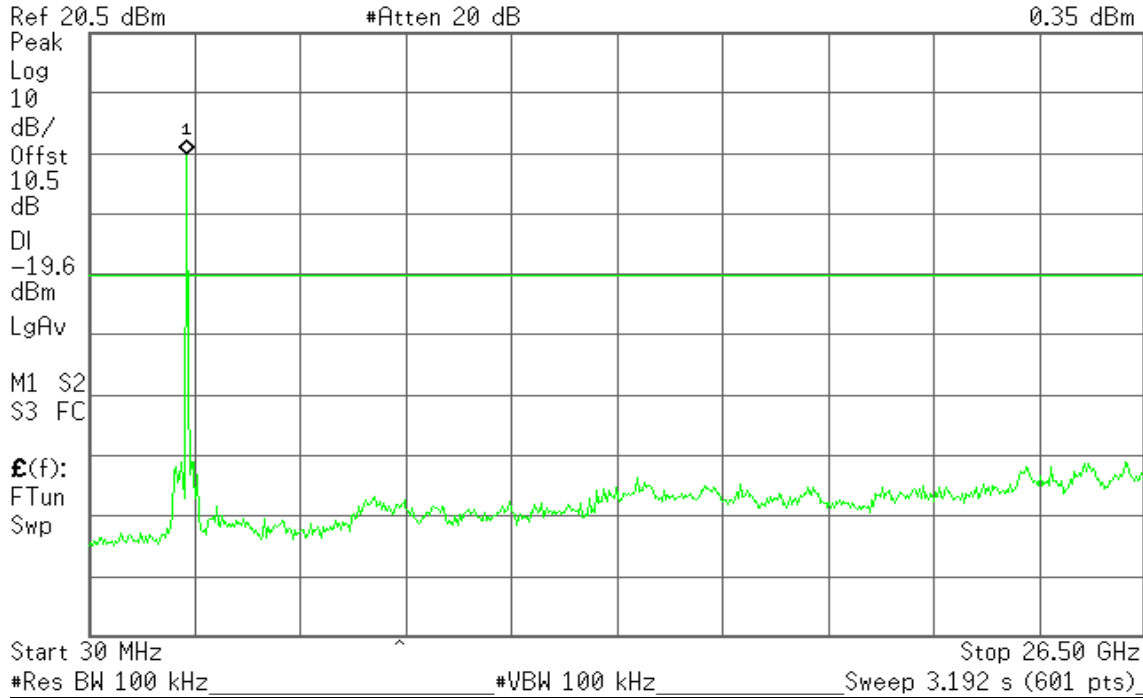


CH High

Agilent 13:39:13 May 7, 2009

R L

Mkr1 2.46 GHz
0.35 dBm



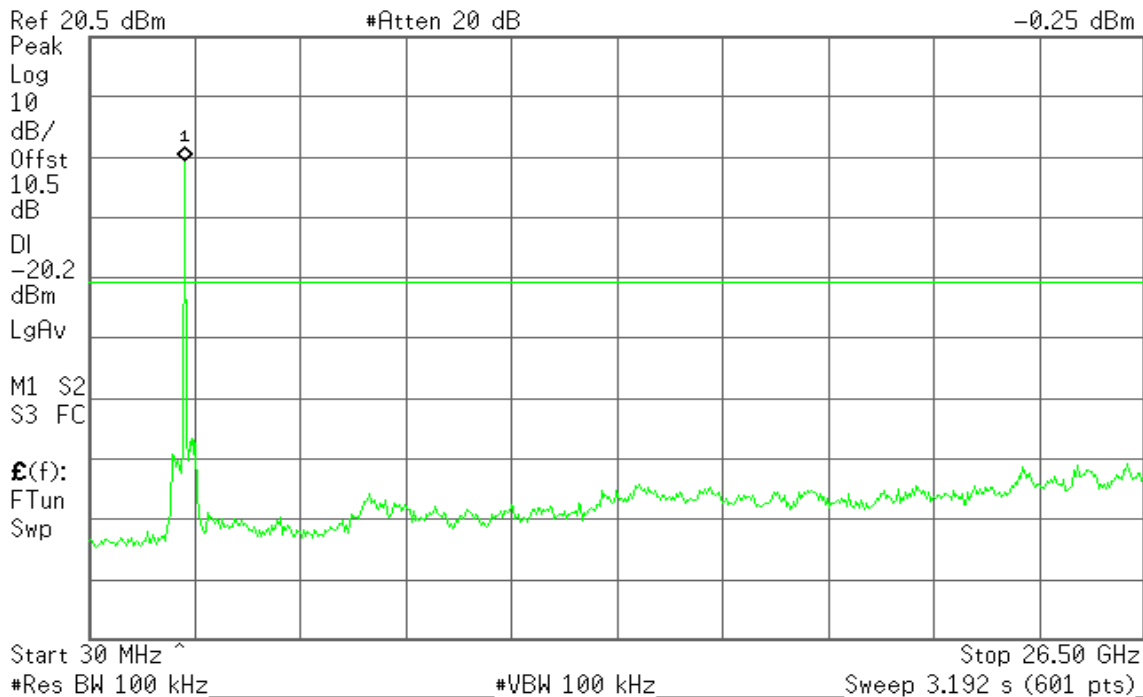
draft 802.11n 20 MHz Channel mode / Chain 1

CH Low

Agilent 13:43:23 May 7, 2009

R L

Mkr1 2.41 GHz
-0.25 dBm



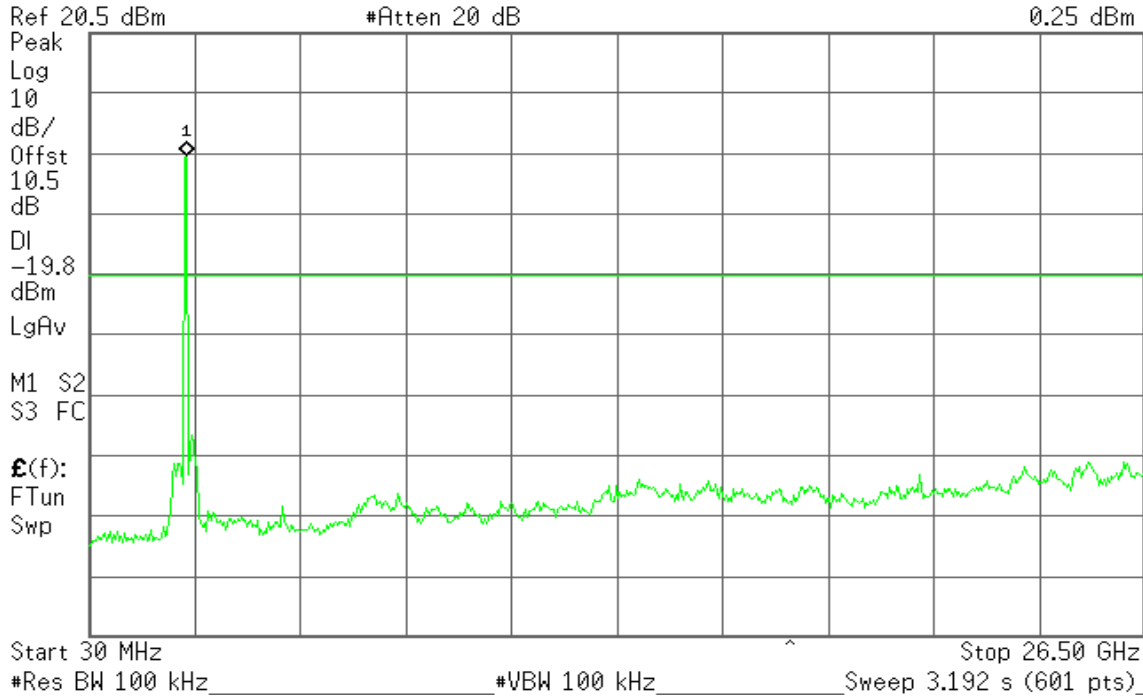


CH Mid

Agilent 13:42:03 May 7, 2009

R L

Mkr1 2.44 GHz
0.25 dBm

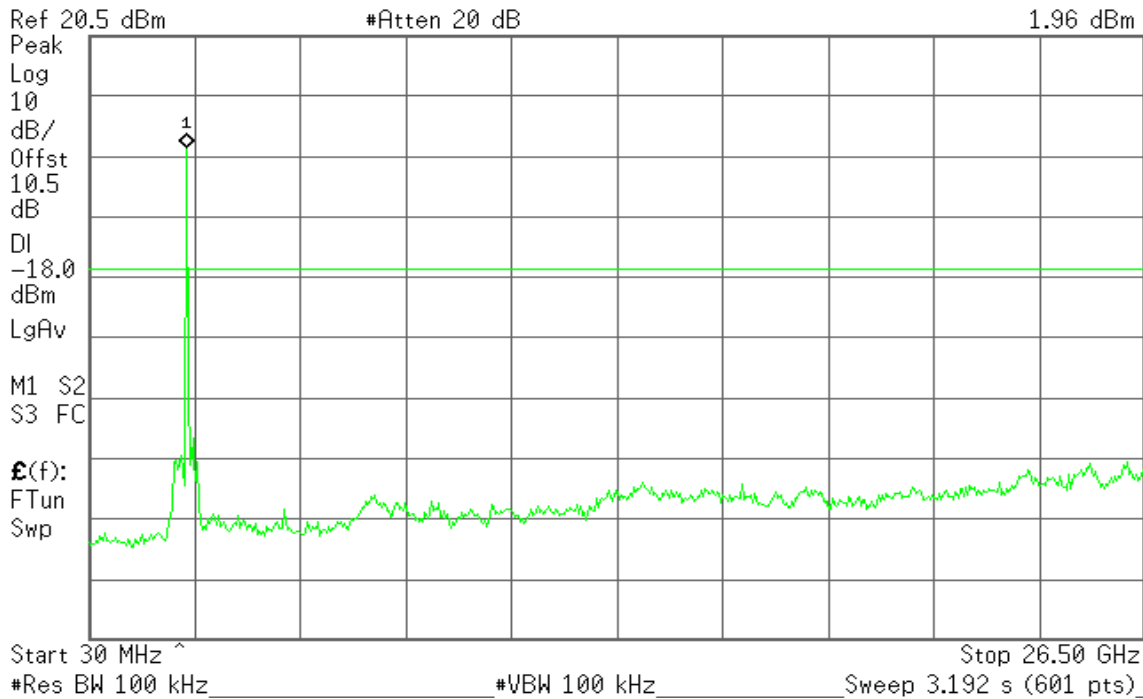


CH High

Agilent 13:40:47 May 7, 2009

R L

Mkr1 2.46 GHz
1.96 dBm



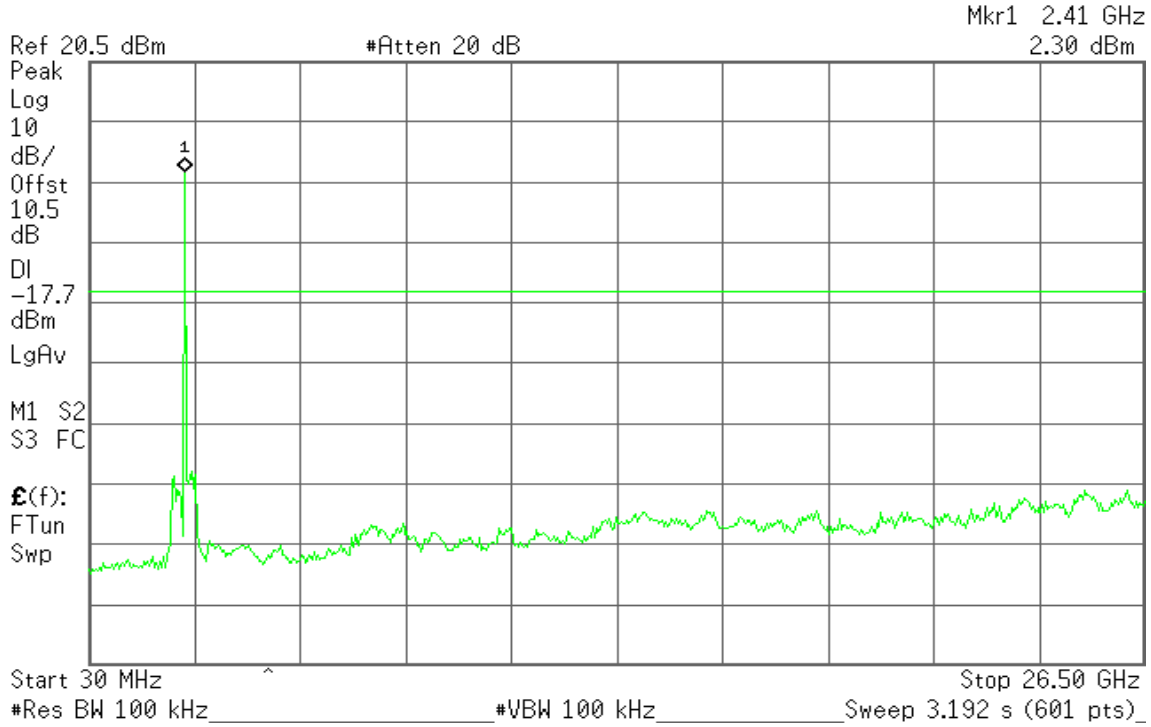


draft 802.11n 20 MHz Channel mode / Combiner

CH Low

Agilent 13:44:51 May 7, 2009

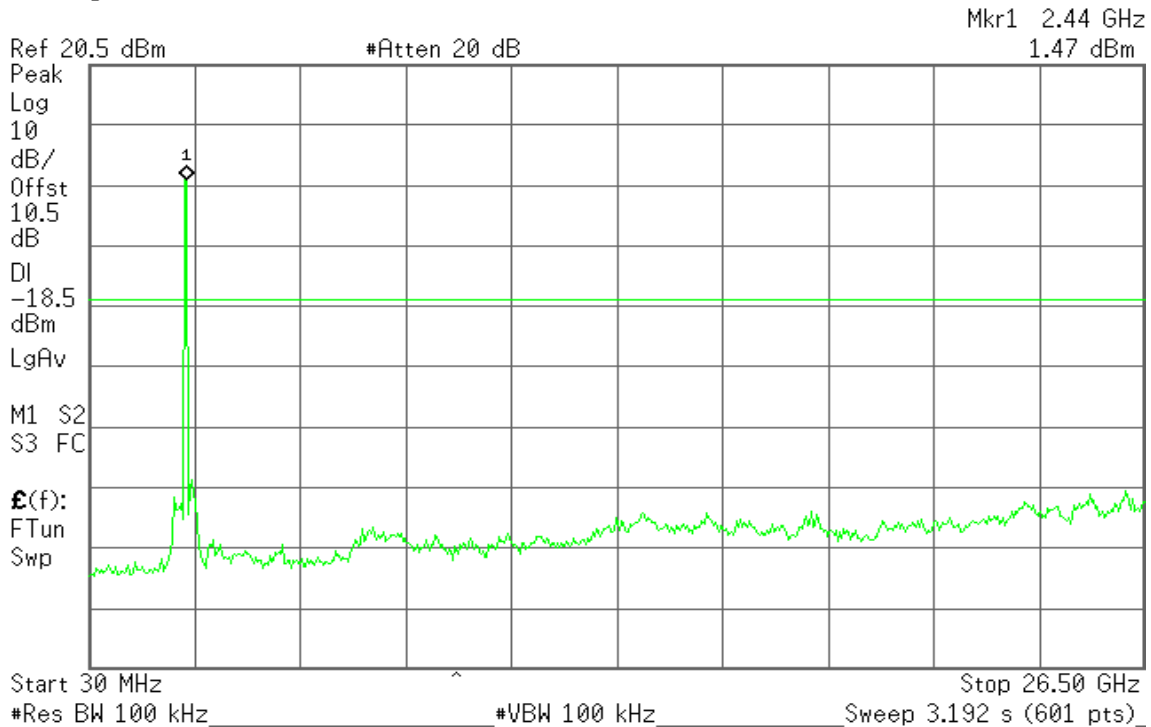
R L



CH Mid

Agilent 13:45:50 May 7, 2009

R L





CH High

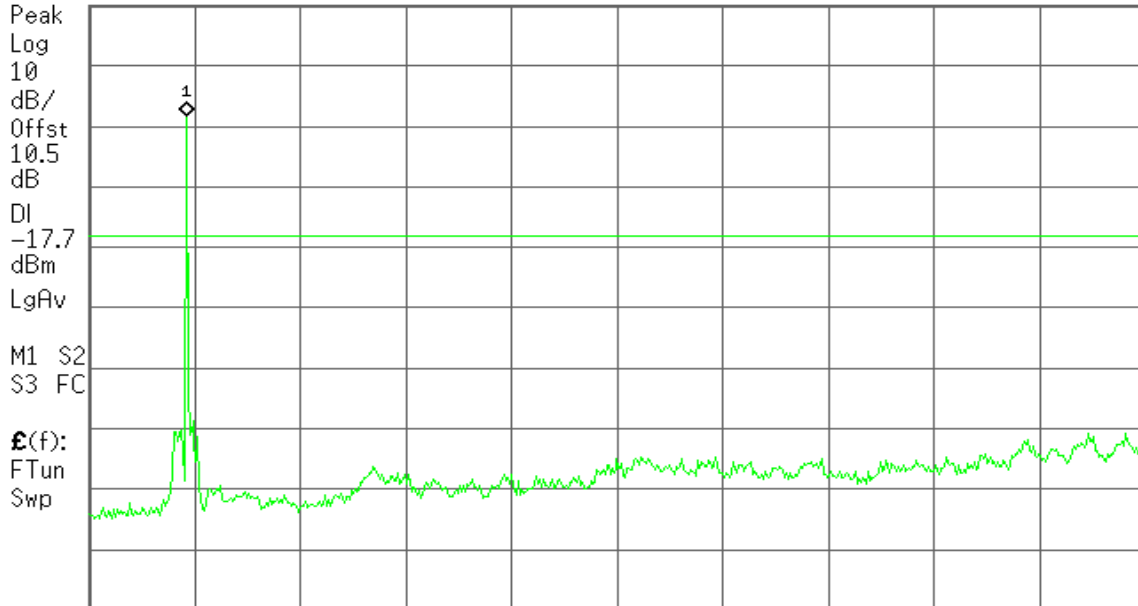
Agilent 13:50:11 May 7, 2009

R L

Mkr1 2.46 GHz
2.30 dBm

Ref 20.5 dBm

#Atten 20 dB



Start 30 MHz

Stop 26.50 GHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 3.192 s (601 pts)



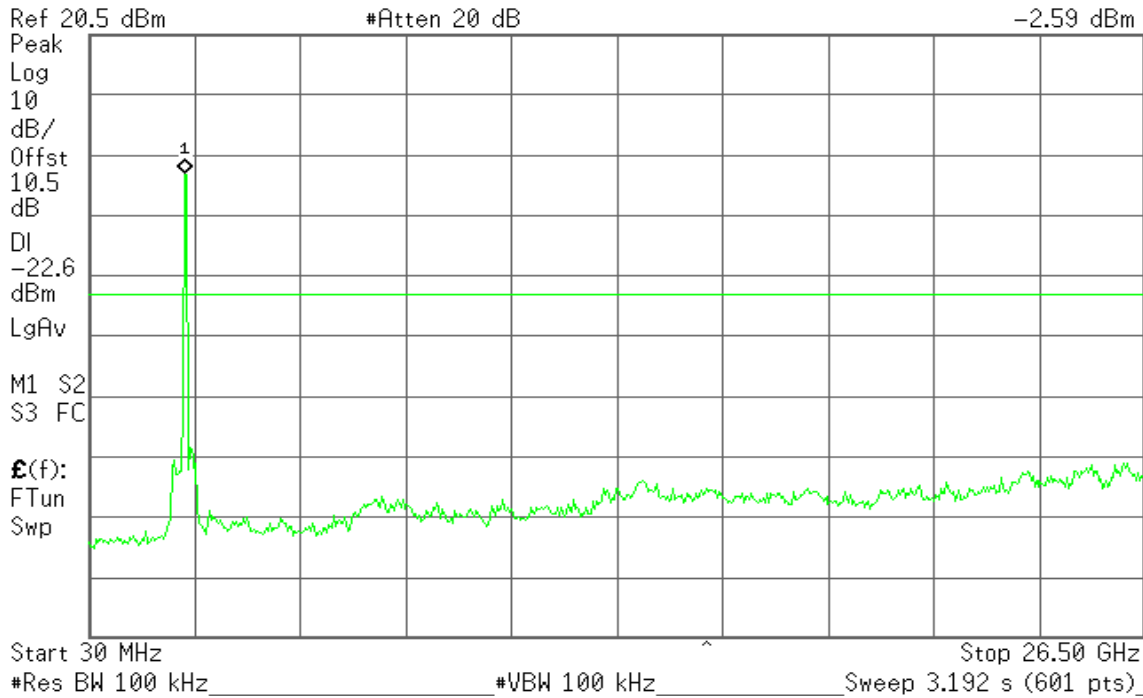
draft 802.11n 40 MHz Channel mode / Chain 0

CH Low

Agilent 13:52:20 May 7, 2009

R L

Mkr1 2.42 GHz
-2.59 dBm

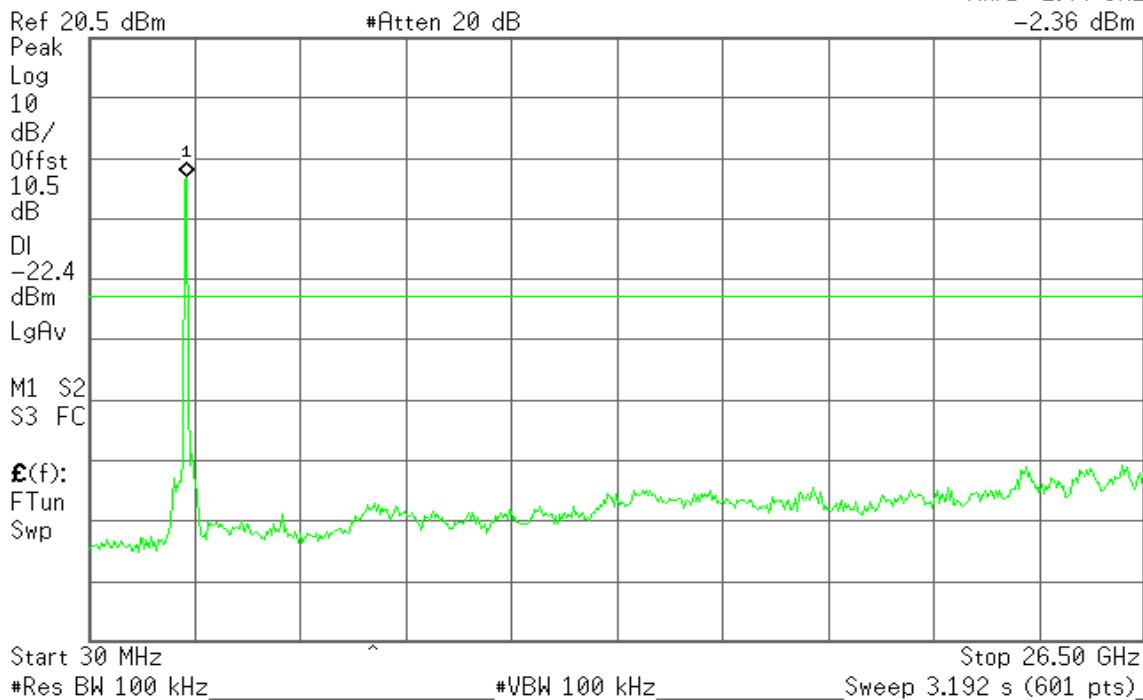


CH Mid

Agilent 13:53:20 May 7, 2009

R L

Mkr1 2.44 GHz
-2.36 dBm



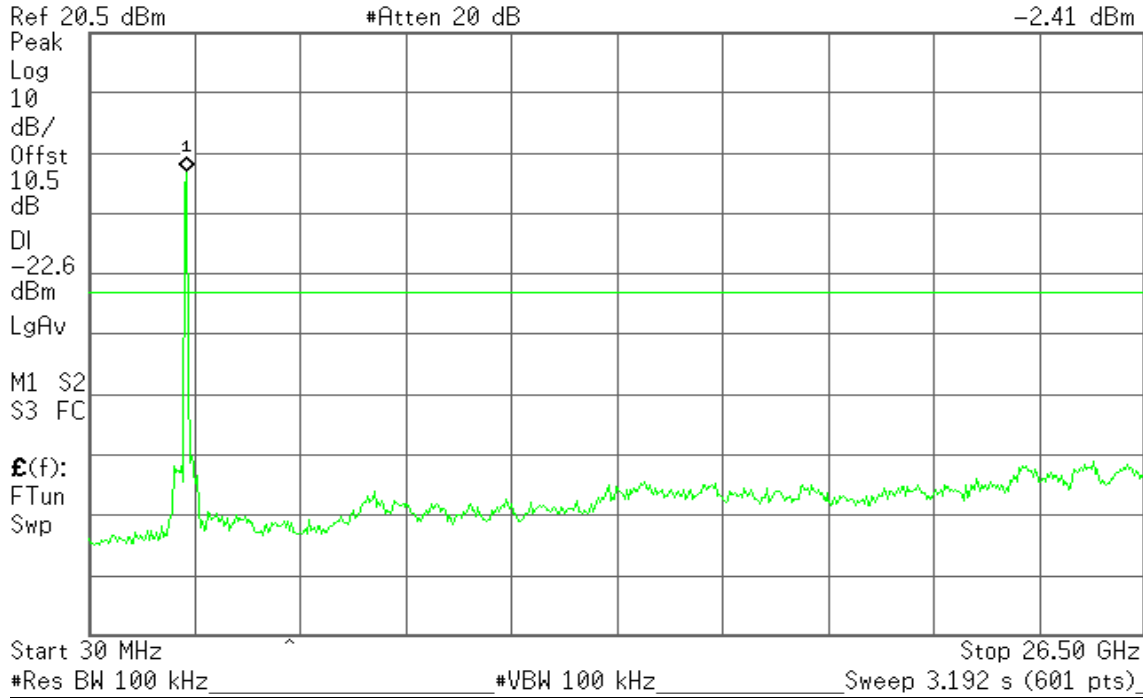


CH High

Agilent 13:54:54 May 7, 2009

R L

Mkr1 2.45 GHz
-2.41 dBm



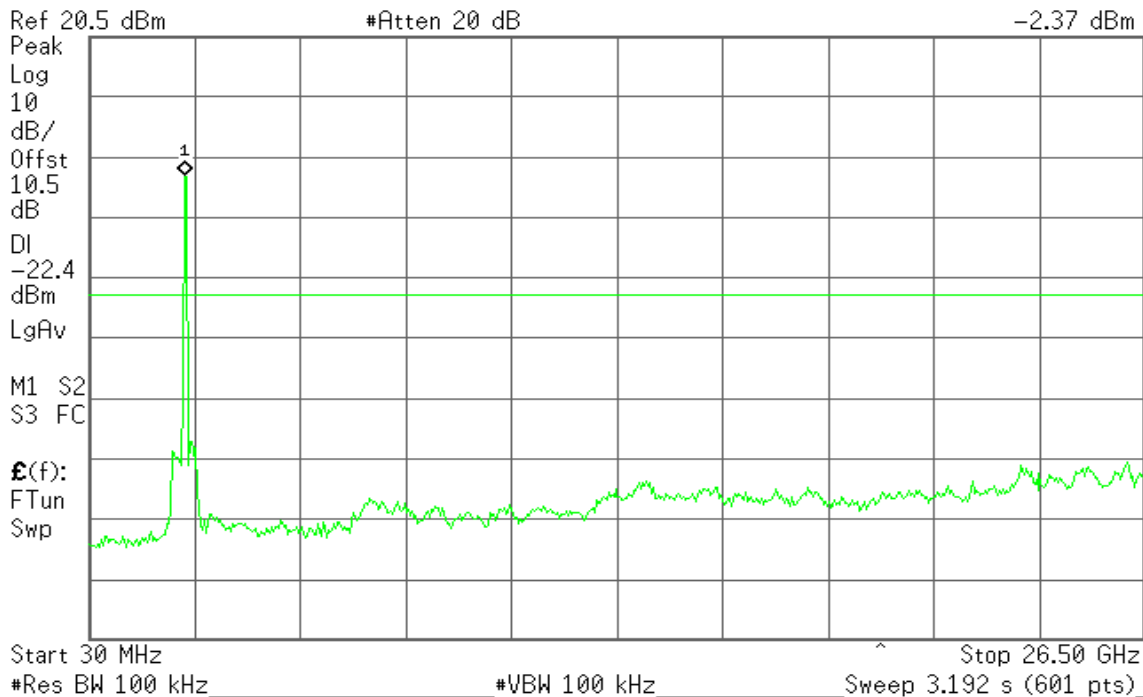
draft 802.11n 40 MHz Channel mode / Chain 1

CH Low

Agilent 13:58:48 May 7, 2009

R L

Mkr1 2.42 GHz
-2.37 dBm



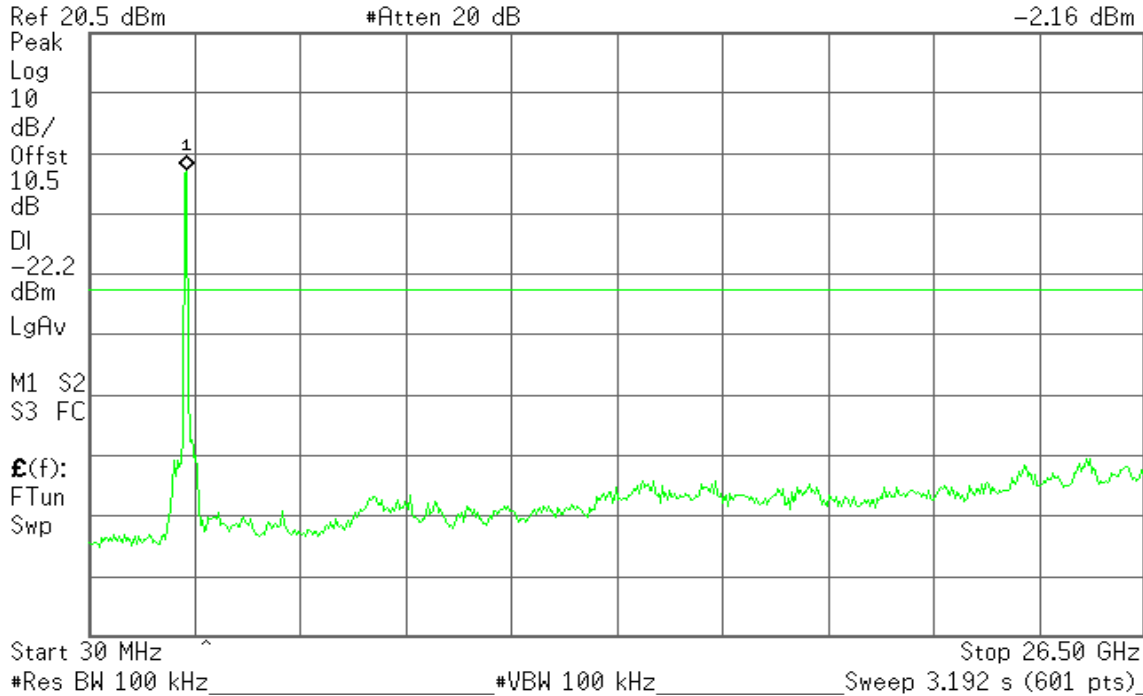


CH Mid

Agilent 13:57:26 May 7, 2009

R L

Mkr1 2.44 GHz
-2.16 dBm

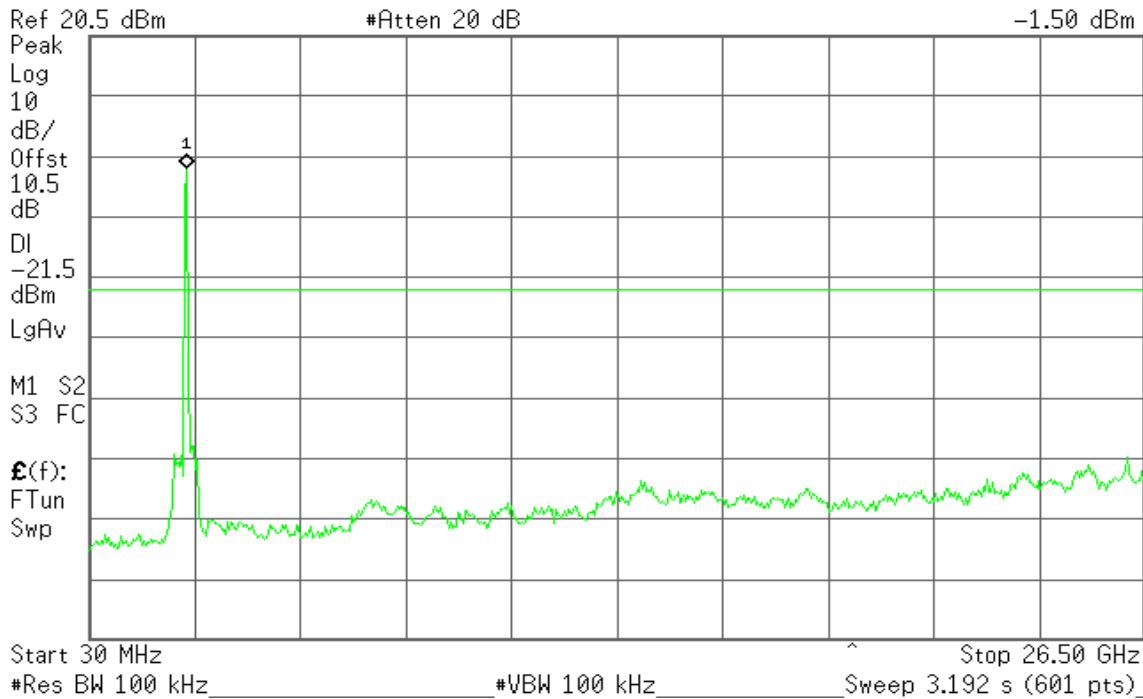


CH High

Agilent 13:56:05 May 7, 2009

R L

Mkr1 2.45 GHz
-1.50 dBm





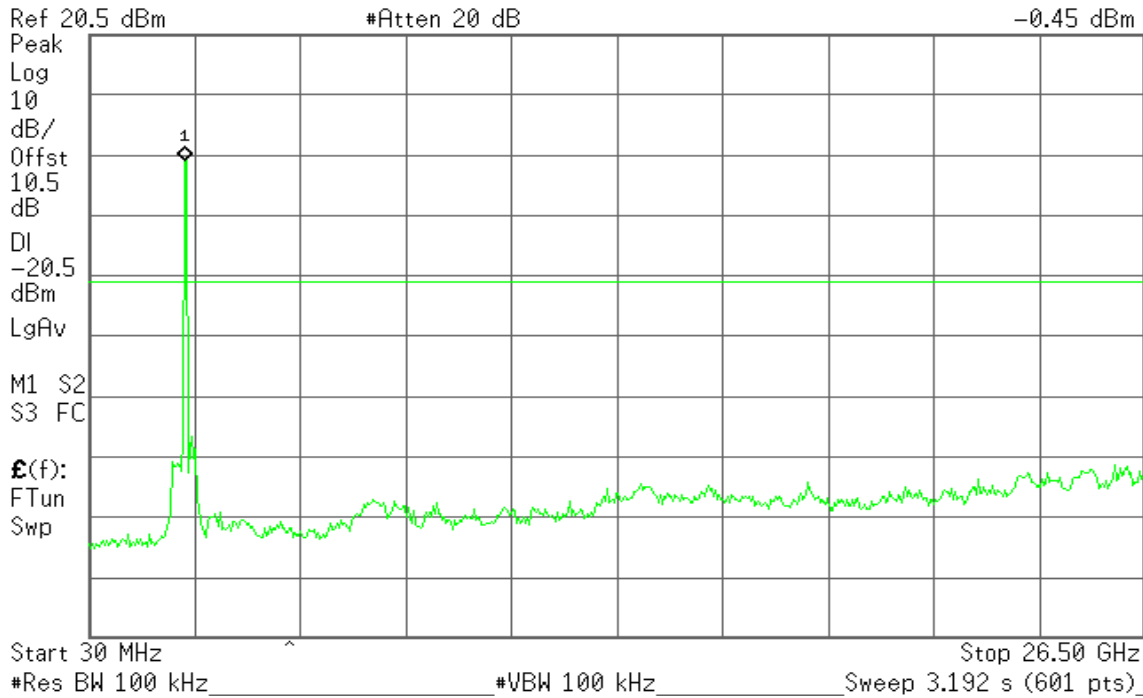
draft 802.11n 40 MHz Channel mode / Combiner

CH Low

Agilent 14:02:21 May 7, 2009

R L

Mkr1 2.42 GHz
-0.45 dBm

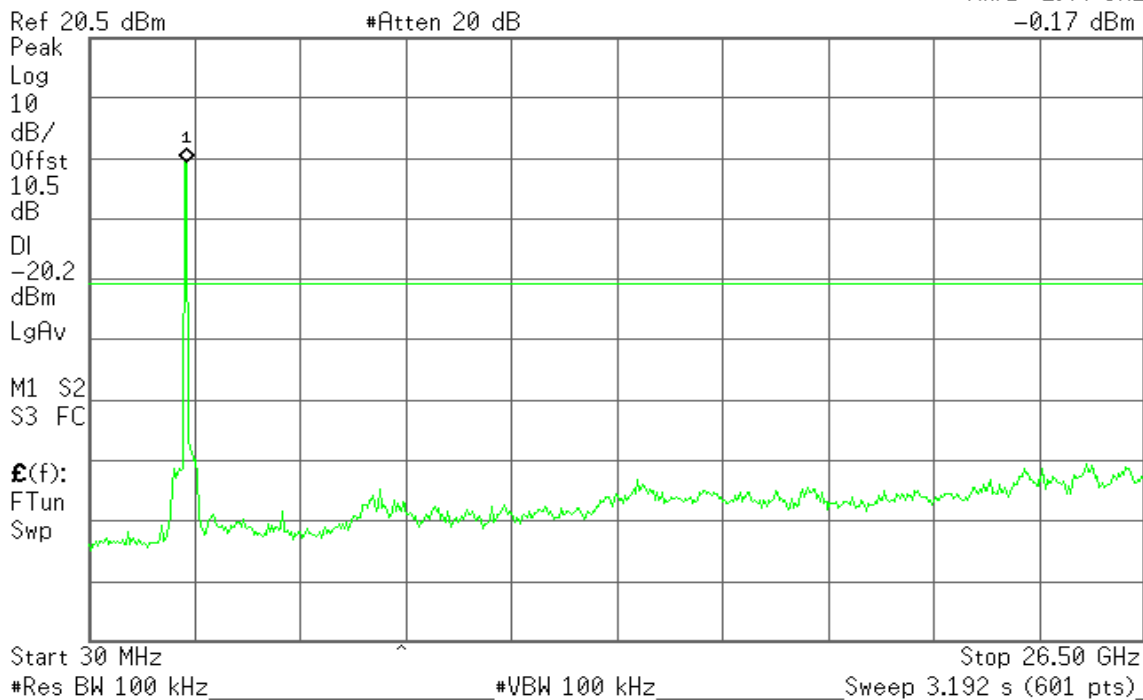


CH Mid

Agilent 14:01:37 May 7, 2009

R L

Mkr1 2.44 GHz
-0.17 dBm



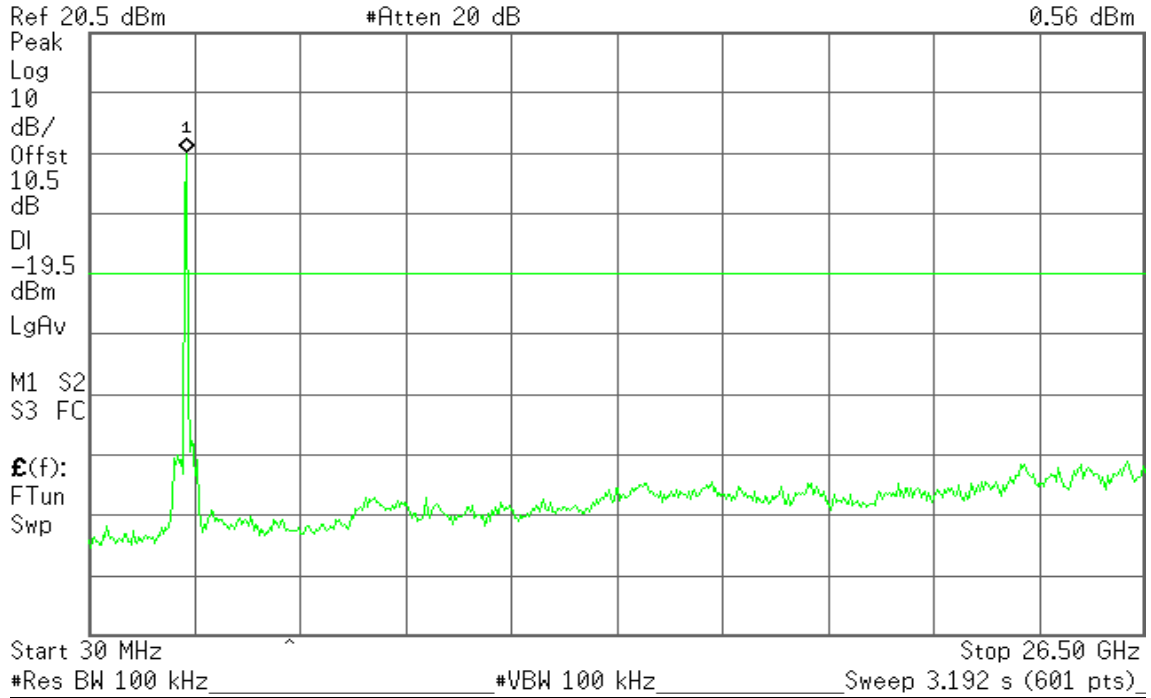


CH High

Agilent 14:03:10 May 7, 2009

R L

Mkr1 2.45 GHz
0.56 dBm





7.6.2 RADIATED EMISSIONS

LIMIT

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

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

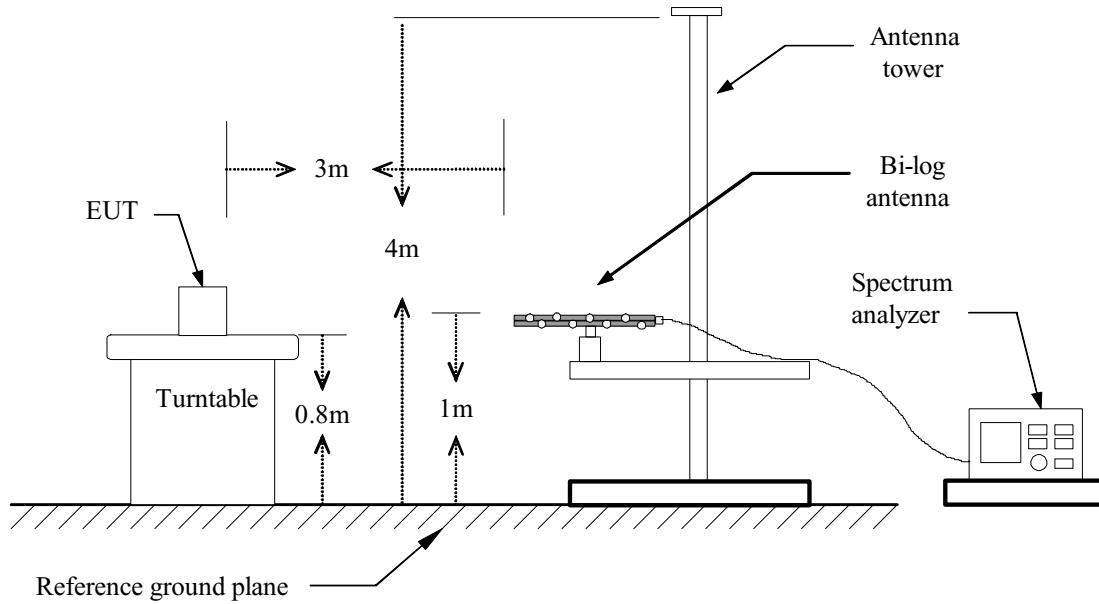
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

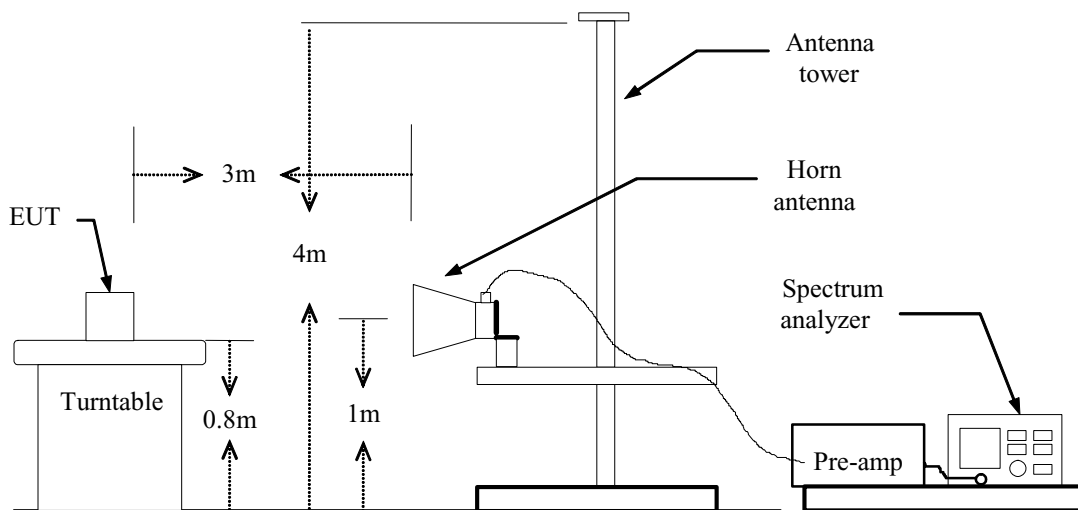
Frequency (MHz)	Field Strength ($\mu\text{V/m}$ at 3-meter)	Field Strength (dB $\mu\text{V/m}$ at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

TEST CONFIGURATION

Below 1 GHz



Above 1 GHz





TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

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

Above 1GHz:

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

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

No non-compliance noted.



TEST DATA

Below 1GHz

Operation Mode: Normal Link **Test Date:** May 11, 2009
Temperature: 18°C **Tested by:** Stan Lin
Humidity: 60% 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
45.6948	V	52.07	-14.44	37.63	40.00	-2.37	peak
61.5250	V	52.18	-14.92	37.26	40.00	-2.74	peak
90.6250	V	59.84	-18.91	40.93	43.50	-2.57	peak
112.4500	V	55.92	-14.78	41.14	43.50	-2.36	peak
124.5750	V	54.68	-13.44	41.24	43.50	-2.26	peak
160.9500	V	53.58	-12.34	41.24	43.50	-2.26	peak
190.0500	V	55.99	-14.52	41.47	43.50	-2.03	peak
250.6750	V	54.14	-13.40	40.74	46.00	-5.26	peak
481.0500	V	51.72	-8.67	43.05	46.00	-2.95	peak
124.5750	H	53.15	-13.44	39.71	43.50	-3.79	peak
160.9500	H	53.33	-12.34	40.99	43.50	-2.51	peak
190.0500	H	53.55	-14.52	39.03	43.50	-4.47	peak
250.6750	H	55.72	-13.40	42.32	46.00	-3.68	peak
374.3500	H	52.64	-11.53	41.11	46.00	-4.89	peak
481.0500	H	48.95	-8.67	40.28	46.00	-5.72	peak
641.1000	H	43.47	-5.82	37.65	46.00	-8.35	peak

Remark:

1. No emission found between lowest internal used / generated frequency to 30 MHz. (9kHz ~ 30MHz)
2. Measuring frequencies from 9 kHz to the 1GHz.
3. Radiated emissions measured in the measured frequency range were made with an instrument using peak detector or quasi-peak detector mode.
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. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.



Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low

Test Date: May 4, 2009

Temperature: 17°C

Tested by: Alonso Lu

Humidity: 51 % 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
1120.00	V	55.27	---	-6.36	48.91	---	74.00	54.00	-5.09	Peak
2130.00	V	58.06	53.65	-2.13	55.93	51.52	74.00	54.00	-2.48	AVG
2293.33	V	61.13	50.45	-0.15	60.99	50.30	74.00	54.00	-3.70	AVG
2570.00	V	63.07	52.85	-0.16	62.90	52.69	74.00	54.00	-1.31	AVG
2693.33	V	60.57	53.87	-0.31	60.26	53.56	74.00	54.00	-0.44	AVG
4825.00	V	47.57	46.19	7.72	55.30	53.91	74.00	54.00	-0.09	AVG
7233.33	V	41.32	32.45	12.84	54.16	45.29	74.00	54.00	-8.71	AVG
1120.00	H	54.31	---	-6.82	47.49	---	74.00	54.00	-6.51	Peak
1923.33	H	51.12	---	-3.84	47.28	---	74.00	54.00	-6.72	Peak
2110.00	H	53.53	46.48	-1.43	52.09	45.05	74.00	54.00	-8.95	AVG
2693.33	H	53.14	46.72	0.04	53.18	46.76	74.00	54.00	-7.24	AVG
5116.67	H	40.54	---	8.80	49.35	---	74.00	54.00	-4.65	Peak
6933.33	H	39.96	---	10.66	50.62	---	74.00	54.00	-3.38	Peak
12016.67	H	41.06	---	10.77	51.83	---	74.00	54.00	-2.17	Peak

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: May 4, 2009

Temperature: 17°C

Tested by: Alonso Lu

Humidity: 51 % 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
1120.00	V	53.91	---	-6.36	47.55	---	74.00	54.00	-6.45	Peak
2133.33	V	54.85	49.36	-2.00	52.86	47.36	74.00	54.00	-6.64	AVG
2316.67	V	61.70	49.50	-0.23	61.48	49.27	74.00	54.00	-4.73	AVG
2580.00	V	59.43	52.12	-0.37	59.06	51.75	74.00	54.00	-2.25	AVG
2740.00	V	56.91	50.63	-0.65	56.26	49.98	74.00	54.00	-4.02	AVG
4108.33	V	41.82	---	5.78	47.61	---	74.00	54.00	-6.39	Peak
4875.00	V	45.64	41.18	7.95	53.59	49.13	74.00	54.00	-4.87	AVG
1120.00	H	53.20	---	-6.82	46.38	---	74.00	54.00	-7.62	Peak
2130.00	H	52.62	---	-1.80	50.81	---	74.00	54.00	-3.19	Peak
2276.67	H	53.73	---	-1.93	51.79	---	74.00	54.00	-2.21	Peak
2556.67	H	52.36	---	-0.38	51.98	---	74.00	54.00	-2.02	Peak
2723.33	H	51.55	---	-0.02	51.53	---	74.00	54.00	-2.47	Peak
4875.00	H	43.39	---	7.35	50.74	---	74.00	54.00	-3.26	Peak
5450.00	H	41.57	---	8.50	50.07	---	74.00	54.00	-3.93	Peak

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: May 4, 2009

Temperature: 17°C

Tested by: Alonso Lu

Humidity: 51 % 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
1120.00	V	53.65	---	-6.36	47.29	---	74.00	54.00	-6.71	Peak
2170.00	V	55.29	50.79	-0.57	54.72	50.22	74.00	54.00	-3.78	AVG
2300.00	V	62.33	52.64	-0.20	62.13	52.44	74.00	54.00	-1.56	AVG
2620.00	V	60.92	51.50	-0.67	60.25	50.83	74.00	54.00	-3.17	AVG
2753.33	V	55.61	50.29	-0.78	54.83	49.51	74.00	54.00	-4.49	AVG
4125.00	V	41.31	---	5.45	46.76	---	74.00	54.00	-7.24	Peak
4925.00	V	43.58	---	7.90	51.48	---	74.00	54.00	-2.52	Peak
1120.00	H	52.52	---	-6.82	45.70	---	74.00	54.00	-8.30	Peak
2093.33	H	50.26	---	-1.36	48.91	---	74.00	54.00	-5.09	Peak
2156.67	H	52.69	---	-2.30	50.39	---	74.00	54.00	-3.61	Peak
2306.67	H	53.15	---	-1.55	51.60	---	74.00	54.00	-2.40	Peak
2576.67	H	51.82	---	-0.30	51.52	---	74.00	54.00	-2.48	Peak
2626.67	H	51.96	---	-0.15	51.82	---	74.00	54.00	-2.18	Peak
4008.33	H	41.12	---	8.00	49.13	---	74.00	54.00	-4.87	Peak
5308.33	H	40.47	---	8.91	49.39	---	74.00	54.00	-4.61	Peak
6891.67	H	40.09	---	10.48	50.57	---	74.00	54.00	-3.43	Peak

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: May 4, 2009

Temperature: 17°C

Tested by: Alonso Lu

Humidity: 51 % 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
1120.00	V	54.22	---	-6.36	47.85	---	74.00	54.00	-6.15	Peak
1440.00	V	52.19	---	-5.52	46.67	---	74.00	54.00	-7.33	Peak
2133.33	V	59.47	49.27	-2.00	57.48	47.27	74.00	54.00	-6.73	AVG
2326.67	V	63.78	48.39	-0.24	63.54	48.15	74.00	54.00	-5.85	AVG
2566.67	V	66.40	53.41	-0.10	66.30	53.31	74.00	54.00	-0.69	AVG
2693.33	V	63.12	50.95	-0.31	62.81	50.64	74.00	54.00	-3.36	AVG
4925.00	V	41.50	---	7.90	49.40	---	74.00	54.00	-4.60	Peak
6841.67	V	40.65	---	10.42	51.07	---	74.00	54.00	-2.93	Peak
1120.00	H	53.73	---	-6.82	46.91	---	74.00	54.00	-7.09	Peak
2123.33	H	55.87	46.72	-1.68	54.19	45.04	74.00	54.00	-8.96	AVG
2546.67	H	56.08	44.41	-0.41	55.66	44.00	74.00	54.00	-10.00	AVG
2696.67	H	54.60	44.60	0.05	54.65	44.65	74.00	54.00	-9.35	AVG
4925.00	H	42.23	---	7.71	49.94	---	74.00	54.00	-4.06	Peak
5450.00	H	41.12	---	8.50	49.62	---	74.00	54.00	-4.38	Peak

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: May 4, 2009

Temperature: 17°C

Tested by: Alonso Lu

Humidity: 51 % 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
1120.00	V	54.29	---	-6.36	47.92	---	74.00	54.00	-6.08	Peak
2156.67	V	57.35	44.84	-1.09	56.25	43.75	74.00	54.00	-10.25	AVG
2280.00	V	62.72	49.62	-0.04	62.68	49.58	74.00	54.00	-4.42	AVG
2596.67	V	64.96	51.95	-0.70	64.25	51.25	74.00	54.00	-2.75	AVG
2720.00	V	59.66	48.42	-0.47	59.20	47.95	74.00	54.00	-6.05	AVG
4091.67	V	40.78	---	5.81	46.59	---	74.00	54.00	-7.41	Peak
4875.00	V	44.40	35.55	7.95	52.35	43.50	74.00	54.00	-10.50	AVG
1120.00	H	53.25	---	-6.82	46.43	---	74.00	54.00	-7.57	Peak
2136.67	H	54.63	46.96	-1.93	52.70	45.03	74.00	54.00	-8.97	AVG
2280.00	H	54.79	46.23	-1.88	52.91	44.35	74.00	54.00	-9.65	AVG
2583.33	H	54.11	44.36	-0.28	53.83	44.08	74.00	54.00	-9.92	AVG
2723.33	H	52.43	41.90	-0.02	52.41	41.88	74.00	54.00	-12.12	AVG
3841.67	H	41.59	---	6.44	48.03	---	74.00	54.00	-5.97	Peak
5116.67	H	40.76	---	8.80	49.57	---	74.00	54.00	-4.43	Peak

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: May 4, 2009

Temperature: 17°C

Tested by: Alonso Lu

Humidity: 51 % 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
1126.67	V	54.73	---	-6.34	48.40	---	74.00	54.00	-5.60	Peak
2173.33	V	59.68	48.64	-0.44	59.23	48.20	74.00	54.00	-5.80	AVG
2306.67	V	66.41	52.62	-0.21	66.20	52.41	74.00	54.00	-1.59	AVG
2620.00	V	64.71	51.86	-0.67	64.04	51.19	74.00	54.00	-2.81	AVG
2750.00	V	58.11	47.03	-0.75	57.36	46.28	74.00	54.00	-7.72	AVG
4925.00	V	41.96	---	7.90	49.86	---	74.00	54.00	-4.14	Peak
6658.33	V	40.24	---	10.57	50.81	---	74.00	54.00	-3.19	Peak
1123.33	H	53.79	---	-6.86	46.92	---	74.00	54.00	-7.08	Peak
2176.67	H	56.82	43.43	-2.67	54.15	40.76	74.00	54.00	-13.24	AVG
2306.67	H	56.55	44.94	-1.55	55.00	43.39	74.00	54.00	-10.61	AVG
2623.33	H	56.65	44.17	-0.15	56.49	44.02	74.00	54.00	-9.98	AVG
2756.67	H	51.74	---	-0.14	51.60	---	74.00	54.00	-2.40	Peak
5133.33	H	40.15	---	8.75	48.89	---	74.00	54.00	-5.11	Peak
7375.00	H	41.15	---	10.75	51.91	---	74.00	54.00	-2.09	Peak

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 20 MHz Channel mode / CH Low **Test Date:** May 4, 2009
Temperature: 17°C **Tested by:** Alonso Lu
Humidity: 51 % 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
1120.00	V	53.63	---	-6.36	47.27	---	74.00	54.00	-6.73	Peak
2130.00	V	56.20	48.01	-2.13	54.08	45.88	74.00	54.00	-8.12	AVG
2300.00	V	60.94	48.49	-0.20	60.74	48.29	74.00	54.00	-5.71	AVG
2563.33	V	63.81	50.19	-0.03	63.78	50.16	74.00	54.00	-3.84	AVG
2693.33	V	60.52	49.32	-0.31	60.21	49.01	74.00	54.00	-4.99	AVG
4825.00	V	42.83	---	7.72	50.56	---	74.00	54.00	-3.44	Peak
6600.00	V	39.87	---	11.38	51.25	---	74.00	54.00	-2.75	Peak
9250.00	V	41.75	---	8.03	49.78	---	74.00	54.00	-4.22	Peak
1120.00	H	53.86	---	-6.82	47.04	---	74.00	54.00	-6.96	Peak
2120.00	H	53.24	---	-1.62	51.62	---	74.00	54.00	-2.38	Peak
2300.00	H	52.68	---	-1.58	51.10	---	74.00	54.00	-2.90	Peak
2576.67	H	53.86	43.69	-0.30	53.55	43.39	74.00	54.00	-10.61	AVG
2696.67	H	52.64	41.38	0.05	52.69	41.43	74.00	54.00	-12.57	AVG
4166.67	H	41.52	---	8.18	49.70	---	74.00	54.00	-4.30	Peak
4933.33	H	41.15	---	7.76	48.91	---	74.00	54.00	-5.09	Peak

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 20 MHz Channel mode / CH Mid **Test Date:** May 4, 2009
Temperature: 17°C **Tested by:** Alonso Lu
Humidity: 51 % 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
1120.00	V	54.29	---	-6.36	47.93	---	74.00	54.00	-6.07	Peak
1440.00	V	52.53	---	-5.52	47.01	---	74.00	54.00	-6.99	Peak
2130.00	V	56.20	47.27	-2.13	54.08	45.14	74.00	54.00	-8.86	AVG
2303.33	V	61.35	47.23	-0.21	61.15	47.02	74.00	54.00	-6.98	AVG
2566.67	V	60.71	46.70	-0.10	60.61	46.60	74.00	54.00	-7.40	AVG
2716.67	V	57.40	46.34	-0.44	56.96	45.90	74.00	54.00	-8.10	AVG
4150.00	V	41.87	---	4.96	46.83	---	74.00	54.00	-7.17	Peak
4875.00	V	44.92	34.25	7.95	52.87	42.20	74.00	54.00	-11.80	AVG
6608.33	V	39.89	---	11.26	51.15	---	74.00	54.00	-2.85	Peak
1120.00	H	53.45	---	-6.82	46.64	---	74.00	54.00	-7.36	Peak
2133.33	H	52.17	---	-1.87	50.30	---	74.00	54.00	-3.70	Peak
2323.33	H	52.62	---	-1.48	51.14	---	74.00	54.00	-2.86	Peak
2596.67	H	53.06	44.08	-0.23	52.82	43.85	74.00	54.00	-10.15	AVG
2720.00	H	50.66	---	-0.01	50.65	---	74.00	54.00	-3.35	Peak
4058.33	H	41.23	---	8.15	49.38	---	74.00	54.00	-4.62	Peak
5500.00	H	41.58	---	8.80	50.38	---	74.00	54.00	-3.62	Peak
7175.00	H	41.22	---	10.64	51.87	---	74.00	54.00	-2.13	Peak

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 20 MHz Channel mode / CH High **Test Date:** May 4, 2009
Temperature: 17°C **Tested by:** Alonso Lu
Humidity: 51 % 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
1120.00	V	53.80	---	-6.36	47.44	---	74.00	54.00	-6.56	Peak
2176.67	V	65.55	52.59	-0.32	65.24	52.27	74.00	54.00	-1.73	AVG
2303.33	V	65.74	53.39	-0.21	65.53	53.18	74.00	54.00	-0.82	AVG
2623.33	V	64.23	51.11	-0.66	63.57	50.45	74.00	54.00	-3.55	AVG
2756.67	V	60.33	49.35	-0.81	59.53	48.54	74.00	54.00	-5.46	AVG
4925.00	V	42.39	---	7.90	50.29	---	74.00	54.00	-3.71	Peak
6633.33	V	39.84	---	10.92	50.75	---	74.00	54.00	-3.25	Peak
1120.00	H	53.83	---	-6.82	47.01	---	74.00	54.00	-6.99	Peak
2173.33	H	57.57	46.82	-2.61	54.96	44.21	74.00	54.00	-9.79	AVG
2300.00	H	60.29	48.87	-1.58	58.71	47.29	74.00	54.00	-6.71	AVG
2626.67	H	59.29	47.51	-0.15	59.15	47.36	74.00	54.00	-6.64	AVG
2753.33	H	56.11	43.80	-0.13	55.98	43.67	74.00	54.00	-10.33	AVG
5825.00	H	41.38	---	7.52	48.90	---	74.00	54.00	-5.10	Peak
6216.67	H	40.80	---	8.03	48.83	---	74.00	54.00	-5.17	Peak
7191.67	H	40.37	---	10.90	51.27	---	74.00	54.00	-2.73	Peak

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 40 MHz Channel mode / CH Low Test Date: May 4, 2009

Temperature: 17°C Tested by: Alonso Lu

Humidity: 51 % 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
1120.00	V	53.47	---	-6.36	47.11	---	74.00	54.00	-6.89	Peak
2150.00	V	62.04	49.98	-1.35	60.69	48.63	74.00	54.00	-5.37	AVG
2266.67	V	66.04	52.88	0.06	66.10	52.94	74.00	54.00	-1.06	AVG
2573.33	V	65.29	52.12	-0.23	65.06	51.89	74.00	54.00	-2.11	AVG
2720.00	V	63.73	49.71	-0.47	63.26	49.24	74.00	54.00	-4.76	AVG
4100.00	V	41.09	---	5.95	47.04	---	74.00	54.00	-6.96	Peak
4841.67	V	41.85	---	7.80	49.65	---	74.00	54.00	-4.35	Peak
5300.00	V	41.11	---	7.49	48.60	---	74.00	54.00	-5.40	Peak
1120.00	H	53.72	---	-6.82	46.90	---	74.00	54.00	-7.10	Peak
2123.33	H	59.11	44.97	-1.68	57.43	43.29	74.00	54.00	-10.71	AVG
2273.33	H	60.29	47.96	-1.99	58.30	45.97	74.00	54.00	-8.03	AVG
2586.67	H	60.15	45.86	-0.27	59.88	45.59	74.00	54.00	-8.41	AVG
2720.00	H	56.93	44.69	-0.01	56.92	44.68	74.00	54.00	-9.32	AVG
4141.67	H	41.52	---	8.22	49.73	---	74.00	54.00	-4.27	Peak
5600.00	H	41.78	---	7.64	49.42	---	74.00	54.00	-4.58	Peak

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 40 MHz Channel mode / CH Mid **Test Date:** May 4, 2009
Temperature: 17°C **Tested by:** Alonso Lu
Humidity: 51 % 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
1123.33	V	54.03	---	-6.35	47.68	---	74.00	54.00	-6.32	Peak
1443.33	V	52.57	---	-5.54	47.03	---	74.00	54.00	-6.97	Peak
2140.00	V	62.49	50.53	-1.74	60.75	48.79	74.00	54.00	-5.21	AVG
2283.33	V	64.66	52.03	-0.07	64.59	51.96	74.00	54.00	-2.04	AVG
2600.00	V	63.97	49.99	-0.77	63.20	49.22	74.00	54.00	-4.78	AVG
2726.67	V	60.78	47.57	-0.53	60.25	47.04	74.00	54.00	-6.96	AVG
4091.67	V	41.45	---	5.81	47.26	---	74.00	54.00	-6.74	Peak
4875.00	V	43.93	---	7.95	51.88	---	74.00	54.00	-2.12	Peak
6608.33	V	40.24	---	11.26	51.51	---	74.00	54.00	-2.49	Peak
1120.00	H	53.49	---	-6.82	46.67	---	74.00	54.00	-7.33	Peak
2140.00	H	56.85	42.24	-1.99	54.86	40.25	74.00	54.00	-13.75	AVG
2286.67	H	60.09	46.31	-1.78	58.31	44.53	74.00	54.00	-9.47	AVG
2610.00	H	59.34	44.92	-0.19	59.15	44.73	74.00	54.00	-9.27	AVG
2726.67	H	55.40	43.01	-0.03	55.37	42.98	74.00	54.00	-11.02	AVG
3833.33	H	41.94	---	6.48	48.42	---	74.00	54.00	-5.58	Peak
4641.67	H	41.32	---	7.48	48.80	---	74.00	54.00	-5.20	Peak
5491.67	H	41.14	---	8.75	49.89	---	74.00	54.00	-4.11	Peak

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 40 MHz Channel mode / CH High Test Date: May 4, 2009

Temperature: 17°C Tested by: Alonso Lu

Humidity: 51 % 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
1120.00	V	53.68	---	-6.36	47.32	---	74.00	54.00	-6.68	Peak
1440.00	V	51.92	---	-5.52	46.40	---	74.00	54.00	-7.60	Peak
2153.33	V	64.30	51.81	-1.22	63.08	50.59	74.00	54.00	-3.41	AVG
2270.00	V	67.57	52.81	0.04	67.60	52.85	74.00	54.00	-1.15	AVG
2610.00	V	63.73	50.67	-0.72	63.01	49.95	74.00	54.00	-4.05	AVG
2743.33	V	61.78	47.75	-0.68	61.10	47.07	74.00	54.00	-6.93	AVG
3966.67	V	42.09	---	4.29	46.38	---	74.00	54.00	-7.62	Peak
4266.67	V	42.38	---	4.22	46.60	---	74.00	54.00	-7.40	Peak
4916.67	V	41.30	---	7.96	49.26	---	74.00	54.00	-4.74	Peak
6583.33	V	39.74	---	10.97	50.71	---	74.00	54.00	-3.29	Peak
1120.00	H	53.72	---	-6.82	46.91	---	74.00	54.00	-7.09	Peak
2150.00	H	58.61	45.20	-2.17	56.43	43.03	74.00	54.00	-10.97	AVG
2283.33	H	60.31	44.04	-1.83	58.48	42.21	74.00	54.00	-11.79	AVG
2623.33	H	60.73	45.53	-0.15	60.58	45.38	74.00	54.00	-8.62	AVG
2750.00	H	56.02	43.08	-0.11	55.91	42.97	74.00	54.00	-11.03	AVG
4366.67	H	41.30	---	7.15	48.45	---	74.00	54.00	-5.55	Peak
5466.67	H	40.74	---	8.60	49.34	---	74.00	54.00	-4.66	Peak

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).



7.7 POWERLINE CONDUCTED EMISSIONS

LIMIT

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

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

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION

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

TEST PROCEDURE

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

TEST RESULTS

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



TEST DATA

Operation Mode: Normal Link

Test Date: March 30, 2009

Temperature: 22°C

Tested by: Jin Liao

Humidity: 55% RH

Freq. (MHz)	QP Reading	AV Reading	Corr. factor	QP Result	AV Result	QP Limit	AV Limit	QP Margin	AV Margin	Note
0.158	58.49	35.28	0.07	58.56	35.35	65.56	55.56	-7.07	-20.21	L1
0.207	52.86	--	0.07	52.93	--	63.32	53.32	-10.46	--	L1
0.266	49.61	30.38	0.07	49.68	--	61.25	51.25	-11.64	--	L1
0.312	47.18	31.51	0.07	47.25	--	59.93	49.93	-12.75	--	L1
0.456	40.89	32.11	0.08	40.97	--	56.76	46.76	-15.87	--	L1
10.905	44.56	19.7	0.67	45.23	--	60.00	50.00	-15.44	--	L1
0.162	48.5	42.5	0.08	48.58	42.58	65.36	55.36	-16.86	-12.78	L2
0.207	58.12	39.75	0.08	58.20	39.83	63.32	53.32	-5.2	-13.49	L2
0.260	52.14	36.07	0.08	52.22	36.15	61.42	51.42	-9.28	-15.27	L2
0.312	51.39	36.68	0.08	51.47	36.76	59.93	49.93	-8.54	-13.17	L2
0.363	45.21	--	0.09	45.30	--	58.65	48.65	-13.44	--	L2
0.469	44.24	--	0.09	44.33	--	56.54	46.54	-12.3	--	L2
0.518	43.4	--	0.09	43.49	--	56.00	46.00	-12.6	--	L2

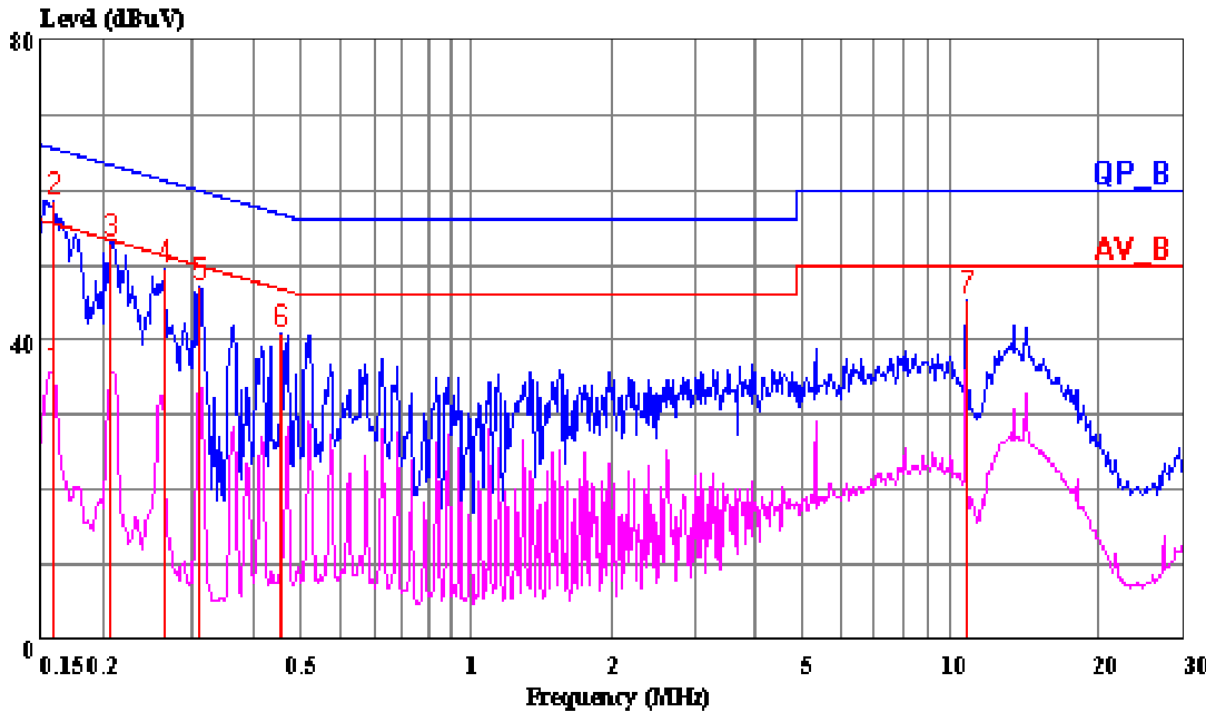
Remark:

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



Test Plot

Conducted emissions (Line 1)



(Conducted A)

Trace: 21 22

Ref Trace:

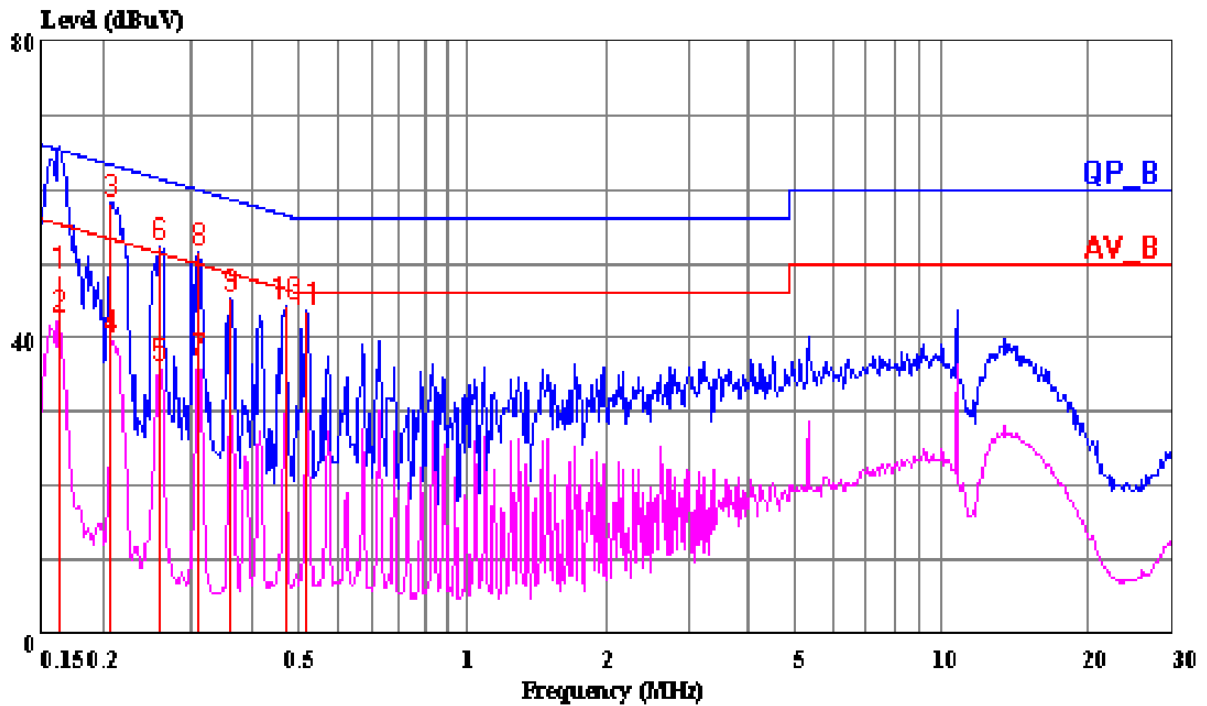
Condition: LINE(Red: Average; Blue: Peak)
 Report No. : 90330201
 Test Engineer: JIN LIAO
 Company : PRO-NETS TECHNOLOGY CORPORATION
 EUT : WR850R
 Test Config : EUT / ALL PERIPHERALS
 Type of Test : FCC CLASS B
 Mode of Op. : DVE / DSA-12G-12 FUS 120120
 : NORMAL MODE / WORST

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.158	35.28	0.07	35.35	55.56	-20.21	Average
2	0.158	58.46	0.07	58.53	65.56	-7.03	Peak
3	0.207	52.86	0.07	52.93	63.32	-10.39	Peak
4	0.266	49.61	0.07	49.68	61.25	-11.57	Peak
5	0.312	47.18	0.07	47.25	59.93	-12.68	Peak
6	0.456	40.89	0.08	40.97	56.76	-15.79	Peak
7	10.905	44.56	0.67	45.23	60.00	-14.77	Peak



Conducted emissions (Line 2)



(Conducted A)

Trace: 14 15

Ref Trace:

Condition: NEUTRAL(Red: Average; Blue: Peak)
 Report No. : 90330201
 Test Engineer: JIN LIAO
 Company : PRO-NETS TECHNOLOGY CORPORATION
 EUT : WR850R
 Test Config : EUT / ALL PERIPHERALS
 Type of Test : FCC CLASS B
 Mode of Op. : DVE / DSA-12G-12 FUS 120120
 : NORMAL MODE / WORST

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	Read			Limit	Over	
Freq	Level	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.162	48.50	0.08	48.58	65.36	-16.78 QP
2	0.162	42.50	0.08	42.58	55.34	-12.76 Average
3	0.207	58.12	0.08	58.20	63.32	-5.12 Peak
4	0.207	39.75	0.08	39.83	53.32	-13.49 Average
5	0.260	36.07	0.08	36.15	51.42	-15.27 Average
6	0.260	52.14	0.08	52.22	61.42	-9.20 Peak
7	0.312	36.68	0.08	36.76	49.93	-13.17 Average
8	0.312	51.39	0.08	51.47	59.93	-8.46 Peak
9	0.363	45.21	0.09	45.30	58.65	-13.35 Peak
10	0.469	44.24	0.09	44.33	56.54	-12.21 Peak
11	0.518	43.40	0.09	43.49	56.00	-12.51 Peak



8. APPENDIX I RADIO FREQUENCY EXPOSURE

LIMIT

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

EUT Specification

EUT	WIRELESS ROUTER
Frequency band (Operating)	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input type="checkbox"/> Others
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas (2 for TX/RX function) <ul style="list-style-type: none"> <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity
Max. output power	IEEE 802.11b mode: 21.43 dBm (139.00mW) IEEE 802.11g mode: 23.86dBm (243.22 mW) draft 802.11n 20 MHz Channel mode: 23.89 dBm (244.91mW) draft 802.11n 40 MHz Channel mode: 23.80 dBm (239.88mW)
Antenna gain (Max)	2dBi (including cable loss) (Numeric gain: 1.58)
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A

Remark:

1. The maximum output power is 23.89dBm (244.91mW) at 2437MHz (with 1.58numeric antenna gain.)
2. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.

TEST RESULTS

No non-compliance noted.



Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

Where E = Field strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770d^2}$$

Changing to units of mW and cm, using:

$$P (mW) = P (W) / 1000 \text{ and}$$

$$d (cm) = d(m) / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

Maximum Permissible Exposure

EUT output power = 244.91mW

Numeric Antenna gain = 1.58

Substituting the MPE safe distance using $d = 20$ cm into Equation 1:

Yields

$$S = 0.000199 \times P \times G$$

Where P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm²

→ Power density = 0.077 mW / cm²

(For mobile or fixed location transmitters, the maximum power density is 1.0 mW/cm² even if the calculation indicates that the power density would be larger.)