



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

HD Wireless N 360° Home Network Camera

Model: DCS-6010L

Trade Name: D-Link

Issued to

D Link Corporation

17595 Mt. Herrmann, Fountain Valley, California 92708, United States

Issued by

Compliance Certification Services Inc.

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	July 10, 2012	Initial Issue	ALL	Jill Shiao



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1. TEST RESULT CERTIFICATION

Applicant: **D Link Corporation**
17595 Mt. Herrmann, Fountain Valley, California 92708, United States

Manufacturer: **Appro Technology Inc.**
13F, No. 66, Zhongzheng Rd., Xinzhuang District, New Taipei City, Taiwan, R.O.C.

Equipment Under Test: HD Wireless N 360° Home Network Camera

Trade Name: D-Link

Model: DCS-6010L

Date of Test: June 6 ~ July 6, 2012

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 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

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

Approved by:

Reviewed by:

Stan Lin
Section Manager

Jill Shiau
Section Manager



2. EUT DESCRIPTION

Product	HD Wireless N 360° Home Network Camera		
Trade Name	D-Link		
Model Number	DCS-6010L		
Model Discrepancy	N/A		
EUT Power Rating	5VDC, 1.2A		
Power Adapter	D-Link	Model	AMS1-0501200FU
RF Module Manufacturer	Realtek	Model	RTL8188CUS
Operating Frequency Range	IEEE 802.11 b/g/HT 20MHz: 2412 ~ 2462 MHz IEEE 802.11 HT 40MHz: 2422 ~ 2452 MHz		
Transmit Power	IEEE 802.11b mode: 19.64 dBm (0.0920W) IEEE 802.11g mode: 19.96 dBm (0.0991W) IEEE 802.11n HT20 mode: 20.21 dBm (0.1050W) IEEE 802.11n HT40 mode: 19.56 dBm (0.0904W)		
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) IEEE 802.11n HT20 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) IEEE 802.11n HT40 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 IEEE 802.11n HT20 mode: 11 Channels IEEE 802.11n HT40 mode: 7 Channels		
Antenna Specification	Multilayer Chip Antenna / Gain: 0.5dBi		

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: **KA2CS6010LA1** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 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 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

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



3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

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

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

² Above 38.6

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



3.5 DESCRIPTION OF TEST MODES

The EUT is a 1Tx1R SISO transmitter.

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 was chosen for full testing.

IEEE 802.11g mode:

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

IEEE 802.11n HT20 mode:

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

IEEE 802.11n HT40 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 and Loop Antenna is scheduled for calibration once three years.

Conducted Emissions Test Site				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	12/25/2012
Spectrum Analyzer	R&S	FSEB	825829/011	12/18/2012
Power meter	Anritsu	ML2495A	1033009	08/18/2012

3M Semi Anechoic Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY48250064	12/25/2012
Pre-Amplifier	HP	8447D	2944A06530	01/03/2013
Pre-Amplifier	HP	8449B	3008A01738	04/17/2013
EMI Test Receiver	SCHAFFNER	SCR 3501	430	01/11/2013
Loop Antenna	EMCO	6502	2356	06/11/2013
Bilog Antenna	SCHWAZBECK	VULB9160	3084	10/03/2012
Horn Antenna	EMCO	3115	9602-4659	05/20/2013
Horn Antenna	EMCO	3116	00026370	10/12/2012
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-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
EMI Test Receiver	R&S	ESCS30	845552/030	06/03/2013
LISN	R&S	ENV216	100069	06/20/2012
LISN	FCC	FCC-LISN-50/2 50-16-2-07	06013	11/21/2012
Test S/W	EZ-EMC			



4.3 MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Powerline Conducted Emission	± 2.2408
3M Semi Anechoic Chamber / 30MHz ~ 1GHz	± 3.7046
3M Semi Anechoic Chamber / Above 1GHz	± 3.0958

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



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

No. 163-1, Jhongsheng Rd., Sindien District, Taipei City 23151, Taiwan

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

No 11, Wugong 6th Rd, Wugu District, New Taipei City 24891, Taiwan (R.O.C)

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

No.81-1, Lane 210, Bade 2nd Rd., Lujhu Township, Taoyuan County 33841, Taiwan

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

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

5.2 EQUIPMENT

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





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

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

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



5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	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	 TESTING CERT #0824.01
USA	FCC MRA	3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements	
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-1930/1646
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	
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	RSS-Gen Issue 3	

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

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1	Notebook PC (Remote)	DELL	D400	0932RY	E2K24GBRL	LAN Cable: Unshielded, 10m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2	Micro SD (2GB)	N/A	N/A	N/A	Kingmax	N/A	N/A

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



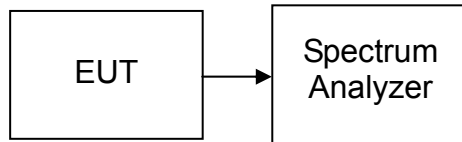
7. FCC PART 15.247 REQUIREMENTS

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
Low	2412	10.238	>500	PASS
Mid	2437	10.220		PASS
High	2462	10.224		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.575	>500	PASS
Mid	2437	16.665		PASS
High	2462	16.545		PASS

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.868	>500	PASS
Mid	2437	17.808		PASS
High	2462	17.808		PASS

Test mode: IEEE 802.11n HT40 mode

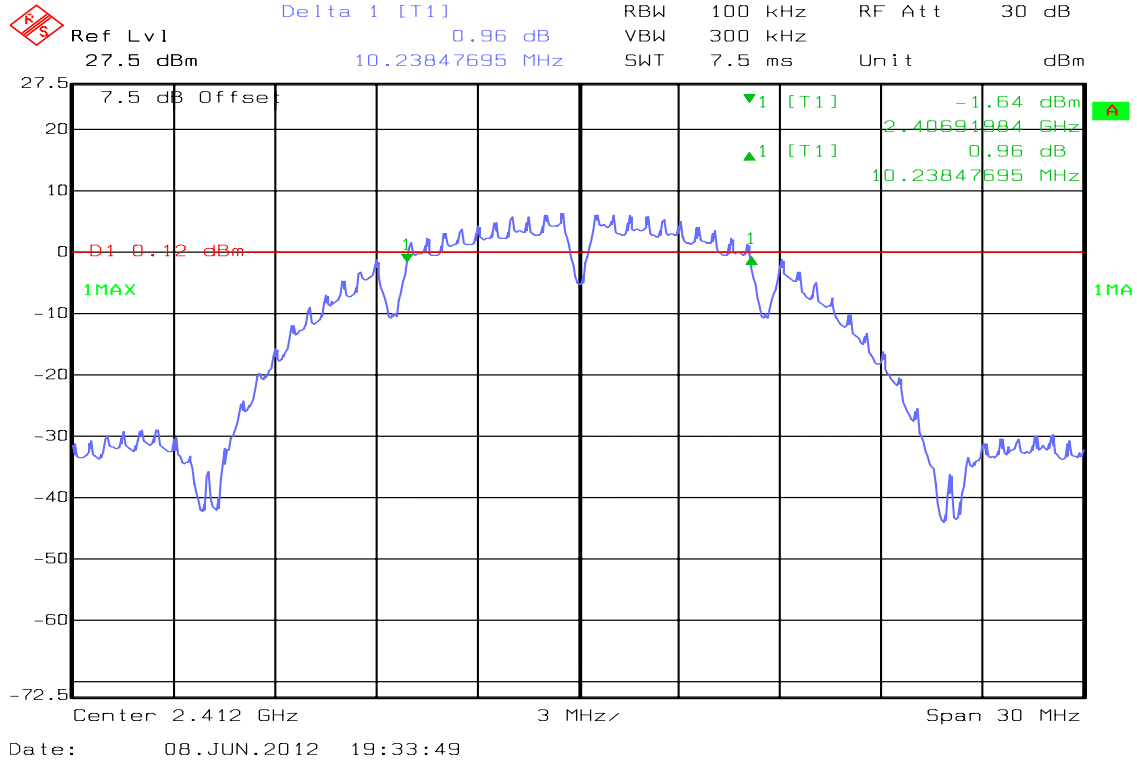
Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Result
Low	2422	36.555	>500	PASS
Mid	2437	36.645		PASS
High	2452	36.595		PASS



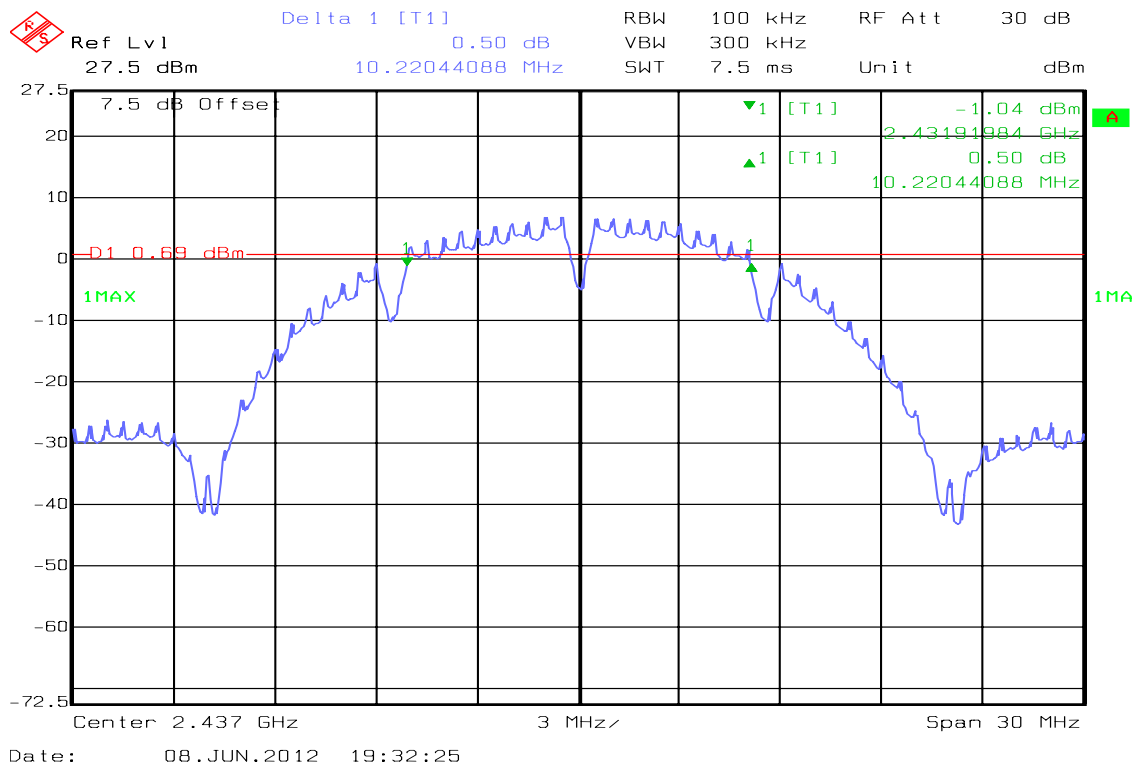
Test Plot

IEEE 802.11b mode

6dB Bandwidth (CH Low)

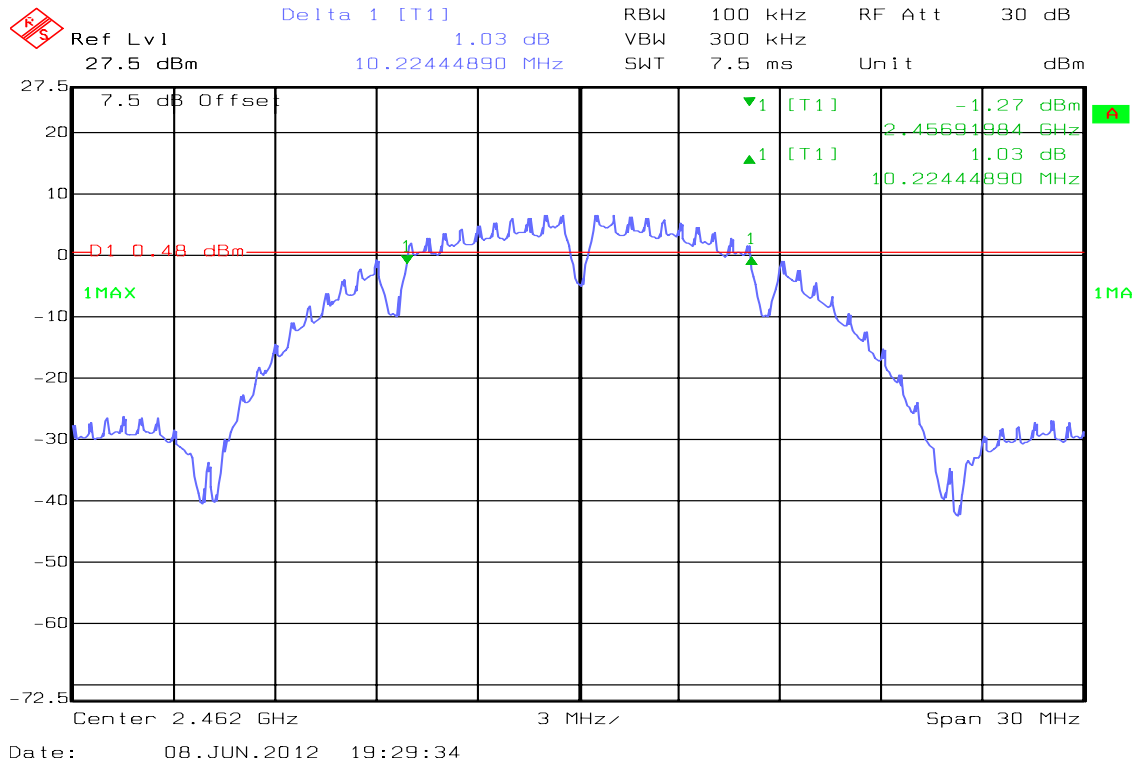


6dB Bandwidth (CH Mid)



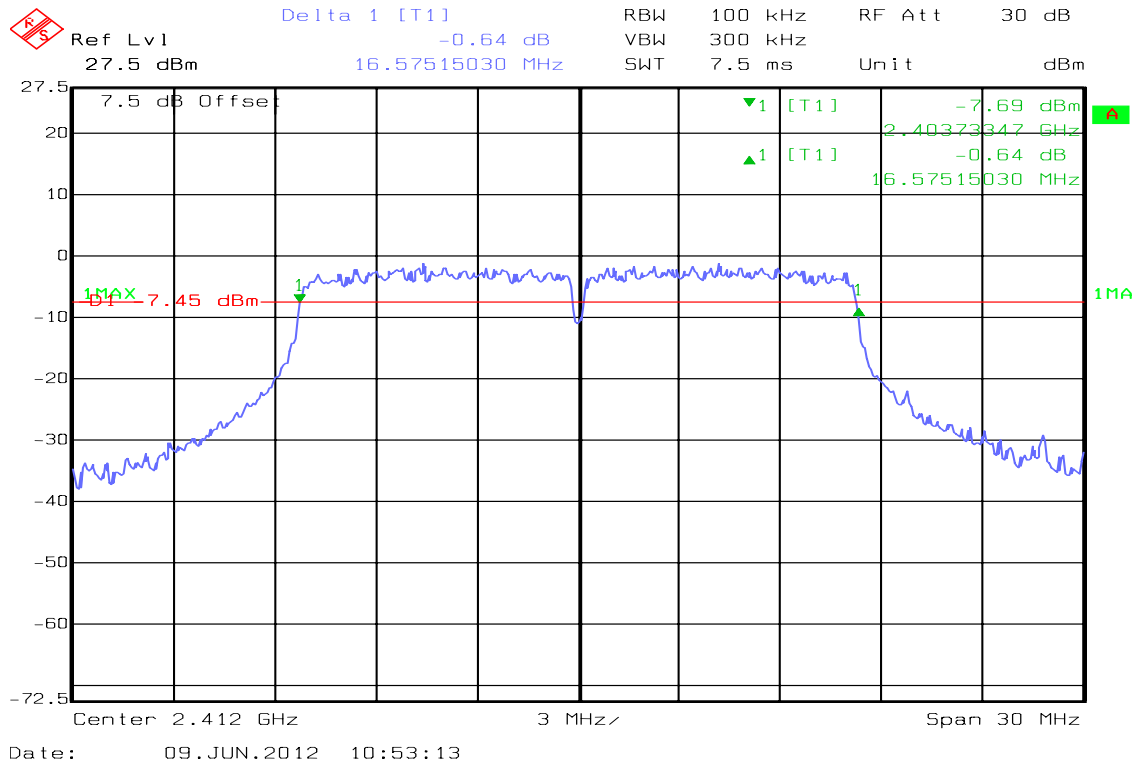


6dB Bandwidth (CH High)



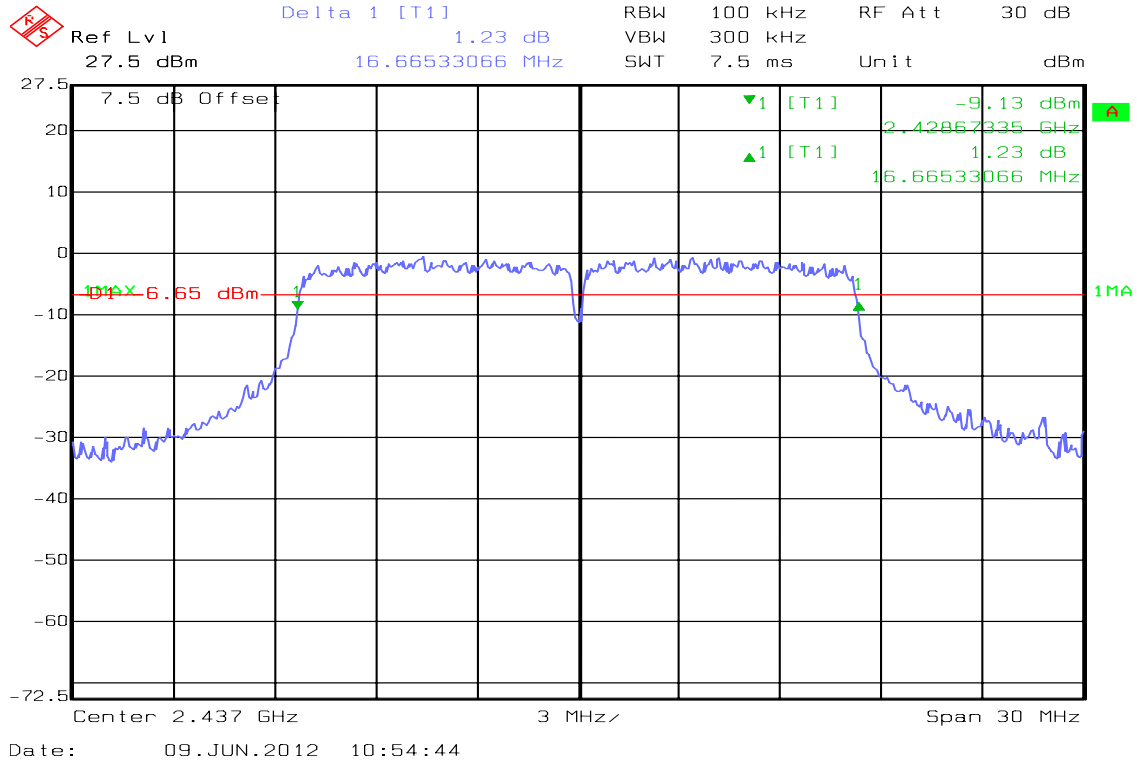
IEEE 802.11g mode

6dB Bandwidth (CH Low)

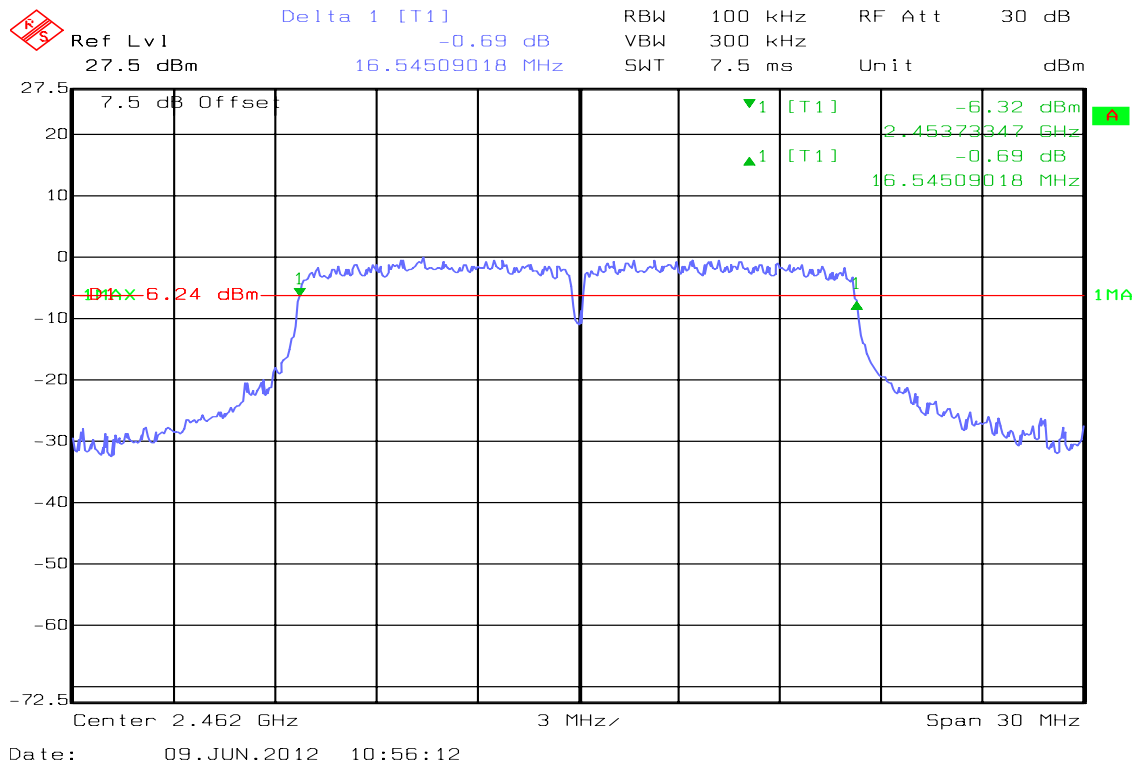




6dB Bandwidth (CH Mid)



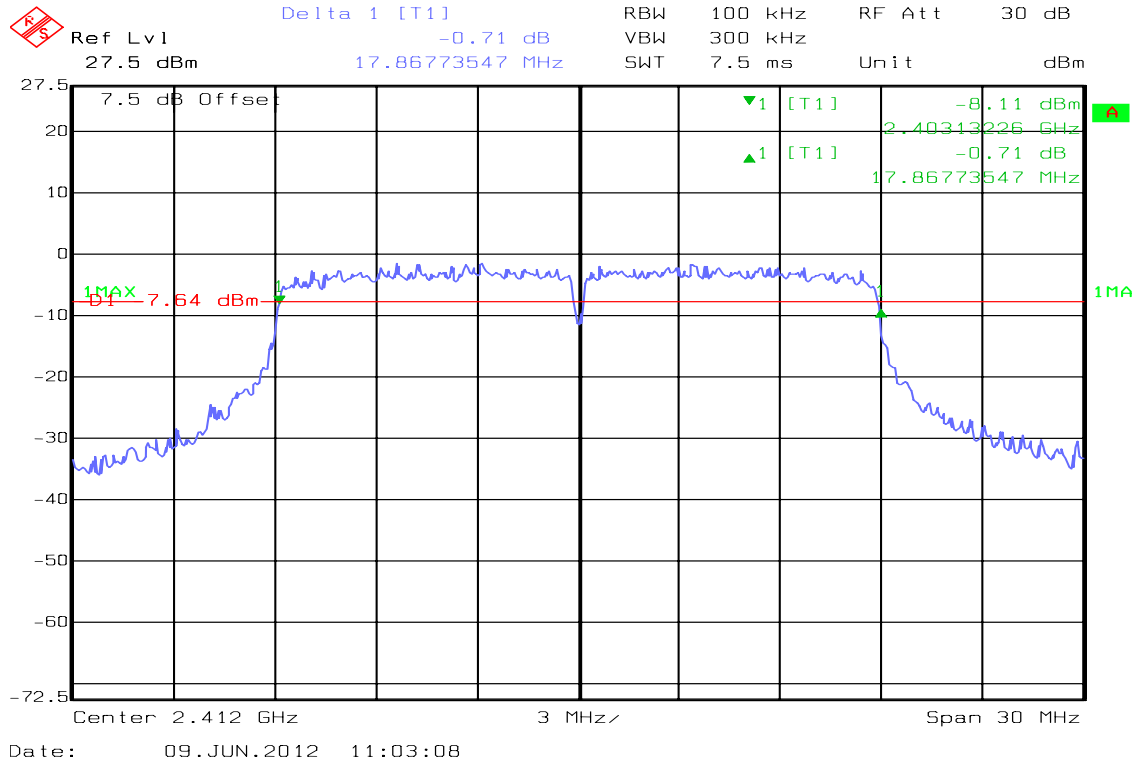
6dB Bandwidth (CH High)



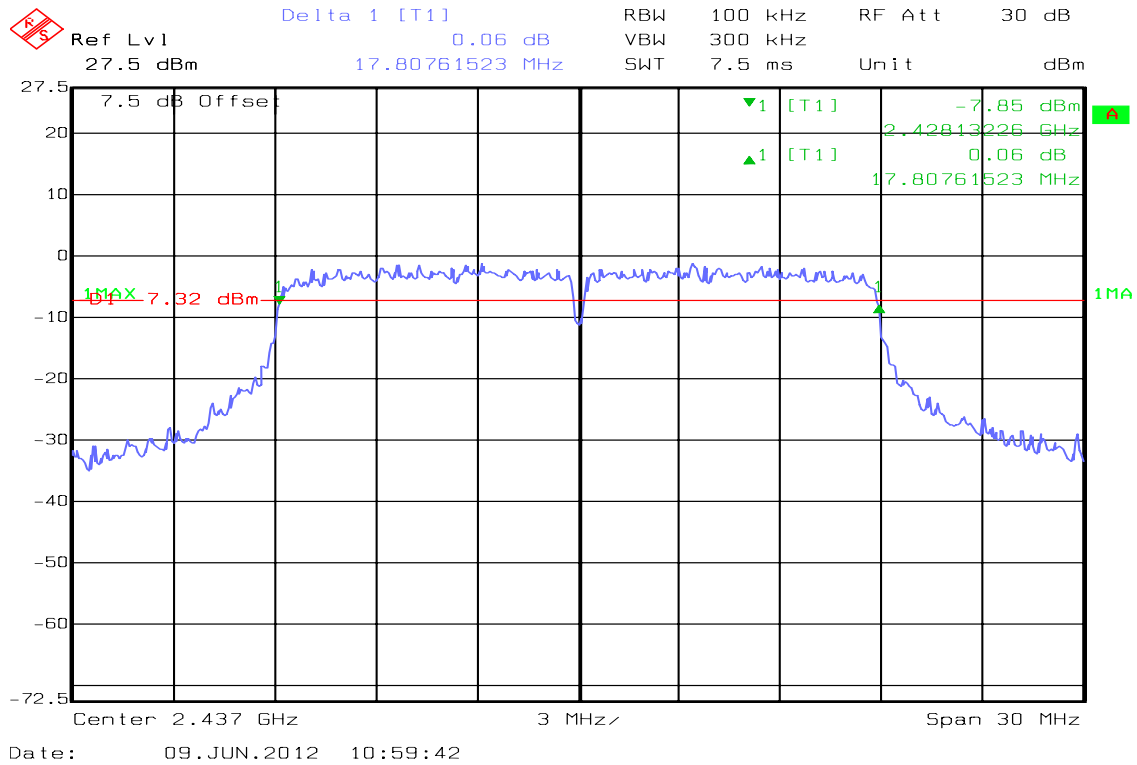


IEEE 802.11n HT20 mode

6dB Bandwidth (CH Low)

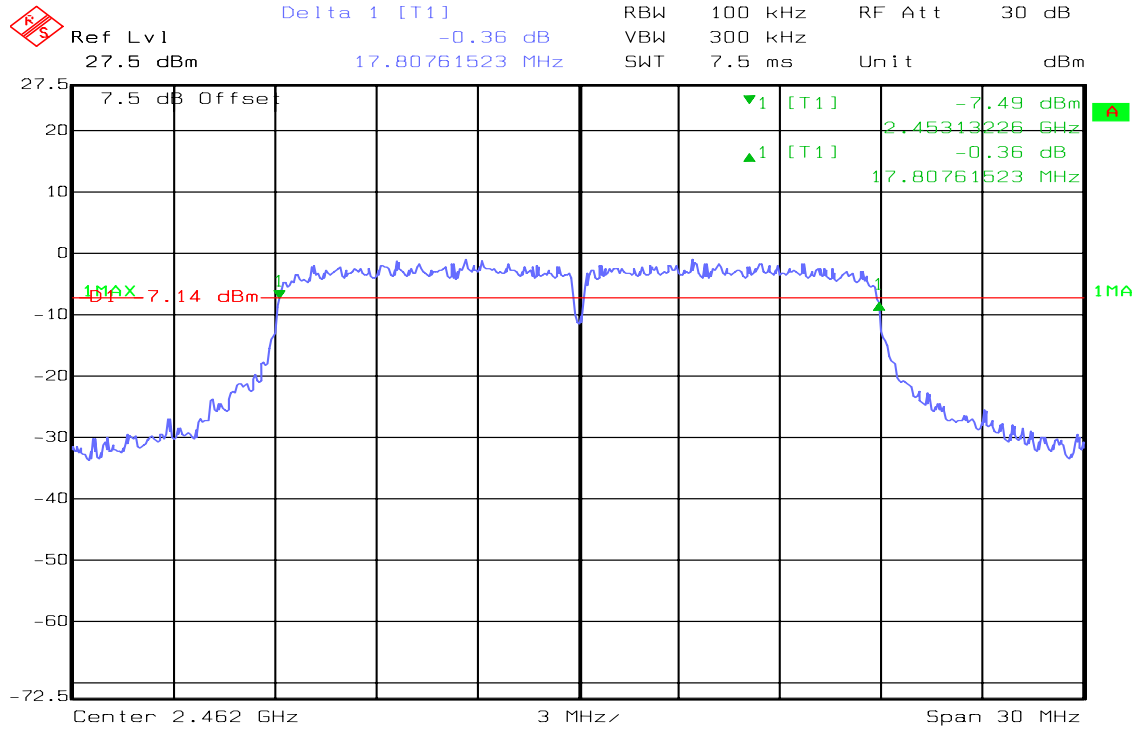


6dB Bandwidth (CH Mid)





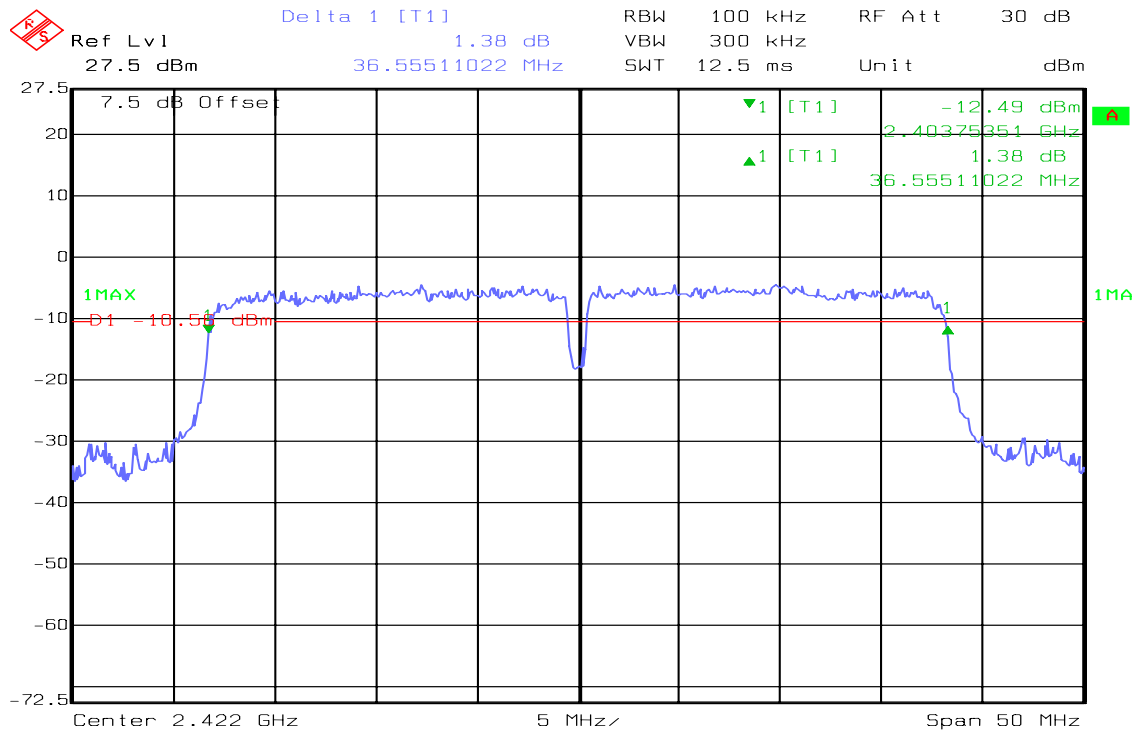
6dB Bandwidth (CH High)



Date: 09.JUN.2012 10:57:45

IEEE 802.11n HT40 mode

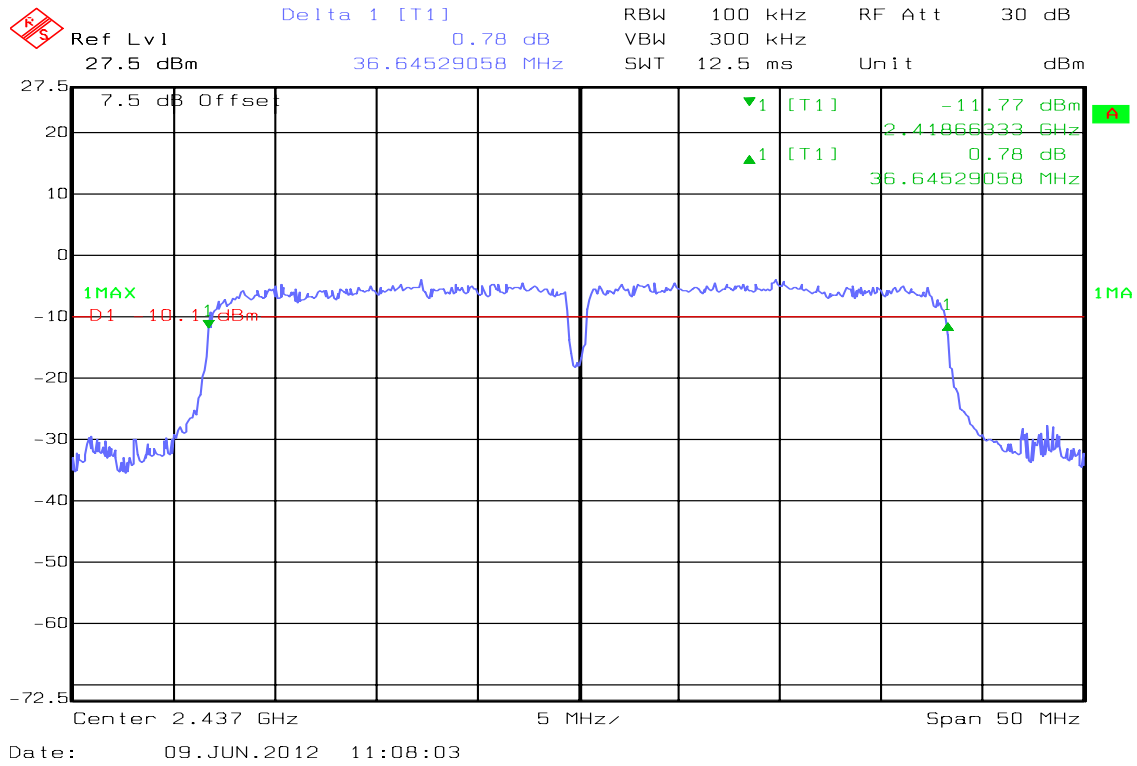
6dB Bandwidth (CH Low)



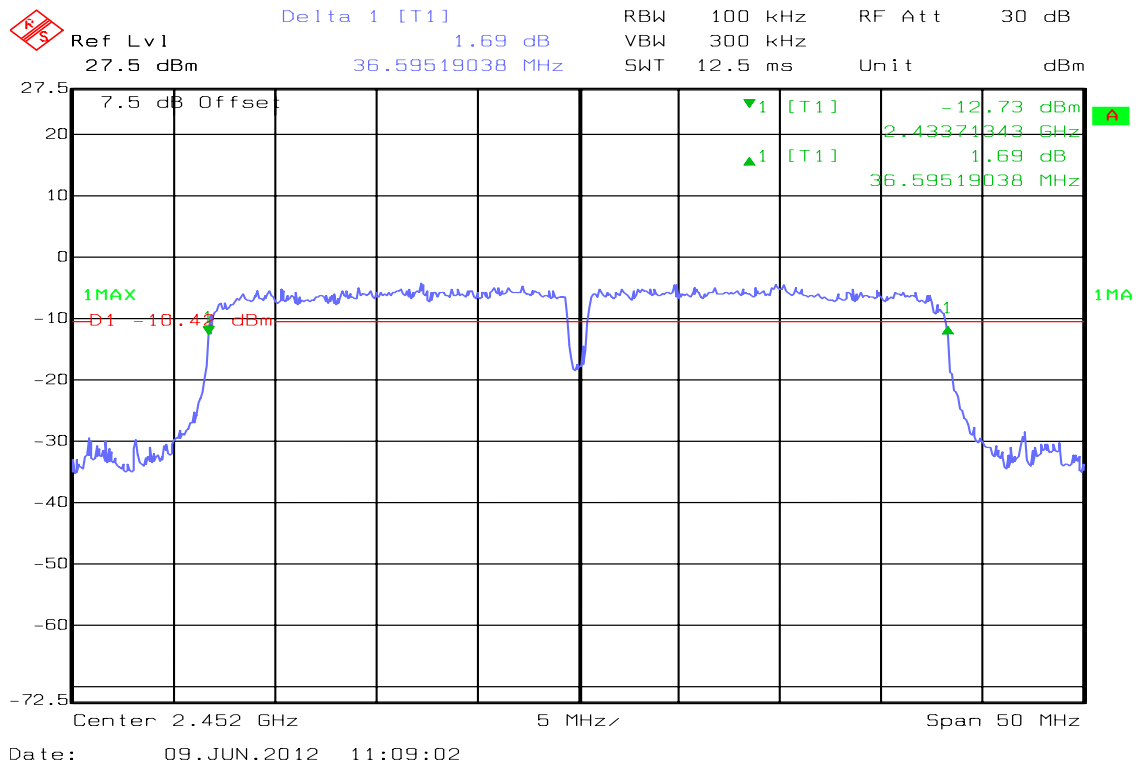
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6dB Bandwidth (CH Mid)



6dB Bandwidth (CH High)





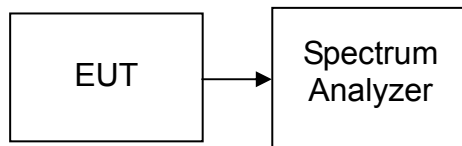
7.2 PEAK POWER

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

Per KDB 558074 5.2.1.2/ or 5.2.2.1.

The transmitter output is connected to the spectrum analyzer. Set the RBW = 1MHz, VBW = 3MHz, Detector = Peak, Trace mode = max hold, Sweep = auto couple. Record the max reading.

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)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	19.10	0.0813	1.00	PASS
Mid	2437	19.56	0.0904		PASS
High	2462	19.64	0.0920		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	19.64	0.0920	1.00	PASS
Mid	2437	19.64	0.0920		PASS
High	2462	19.96	0.0991		PASS

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	19.30	0.0851	1.00	PASS
Mid	2437	20.21	0.1050		PASS
High	2462	20.21	0.1050		PASS

Test mode: IEEE 802.11n HT40 mode

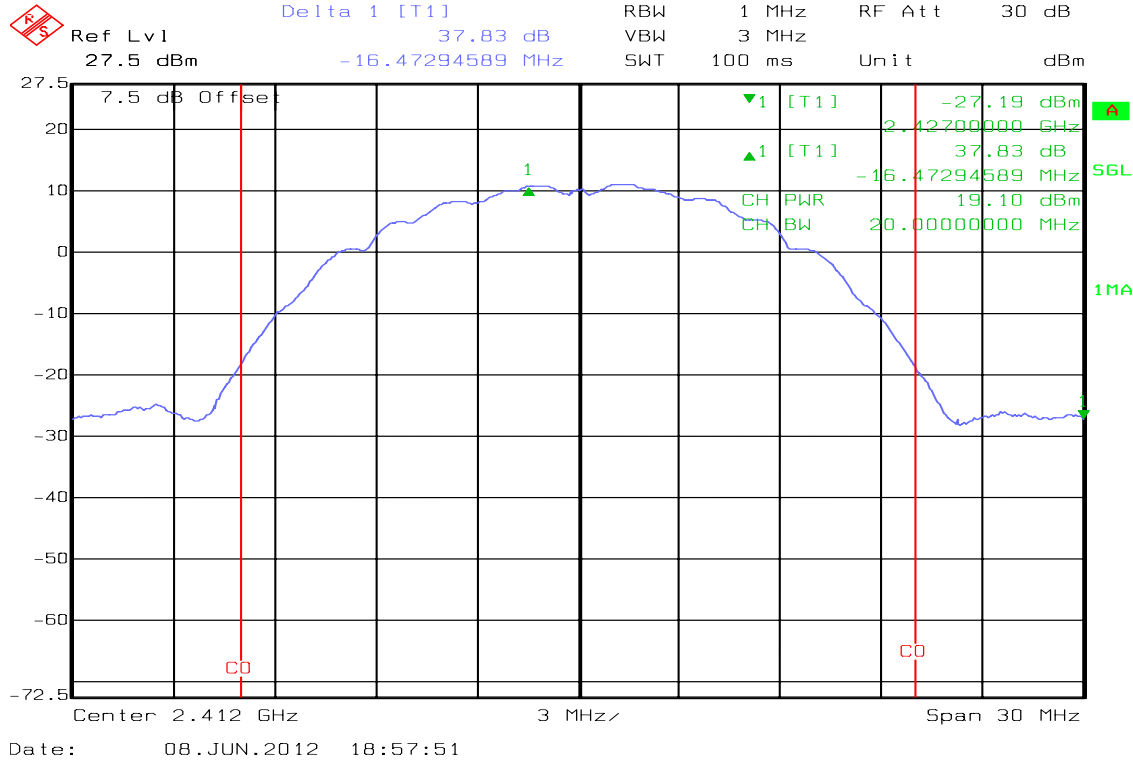
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	19.01	0.0796	1.00	PASS
Mid	2437	19.56	0.0904		PASS
High	2452	19.31	0.0853		PASS



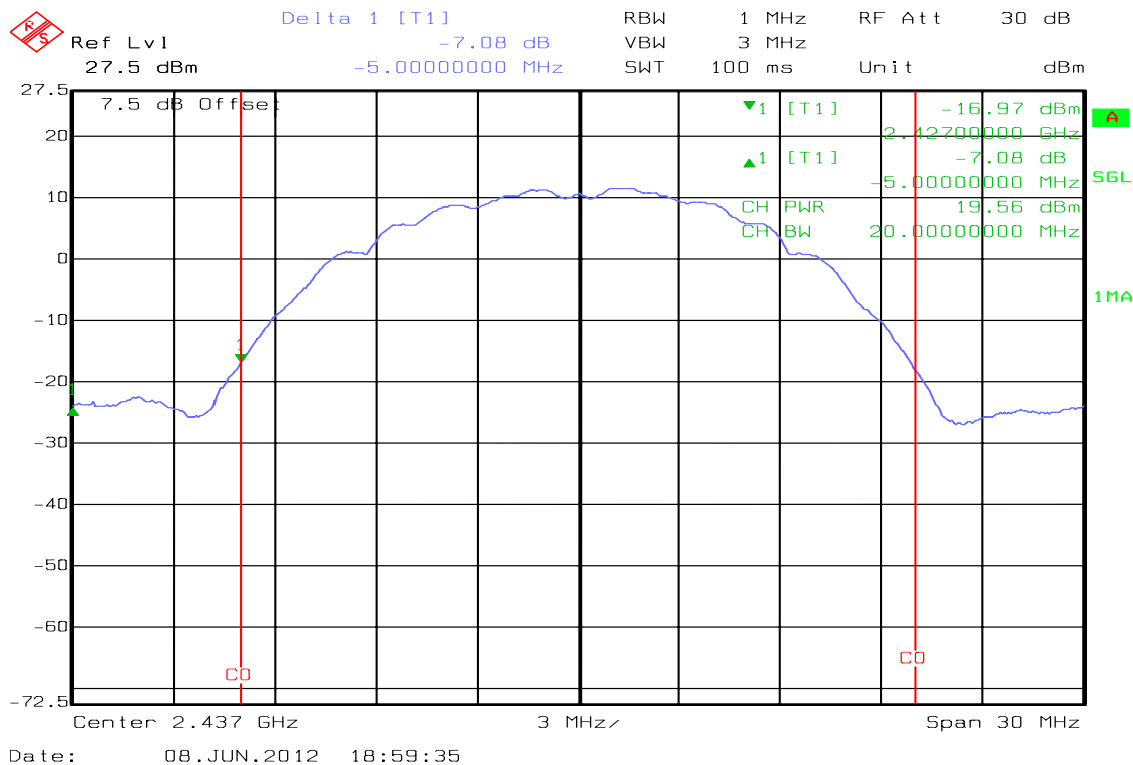
Test Plot

IEEE 802.11b mode

CH Low

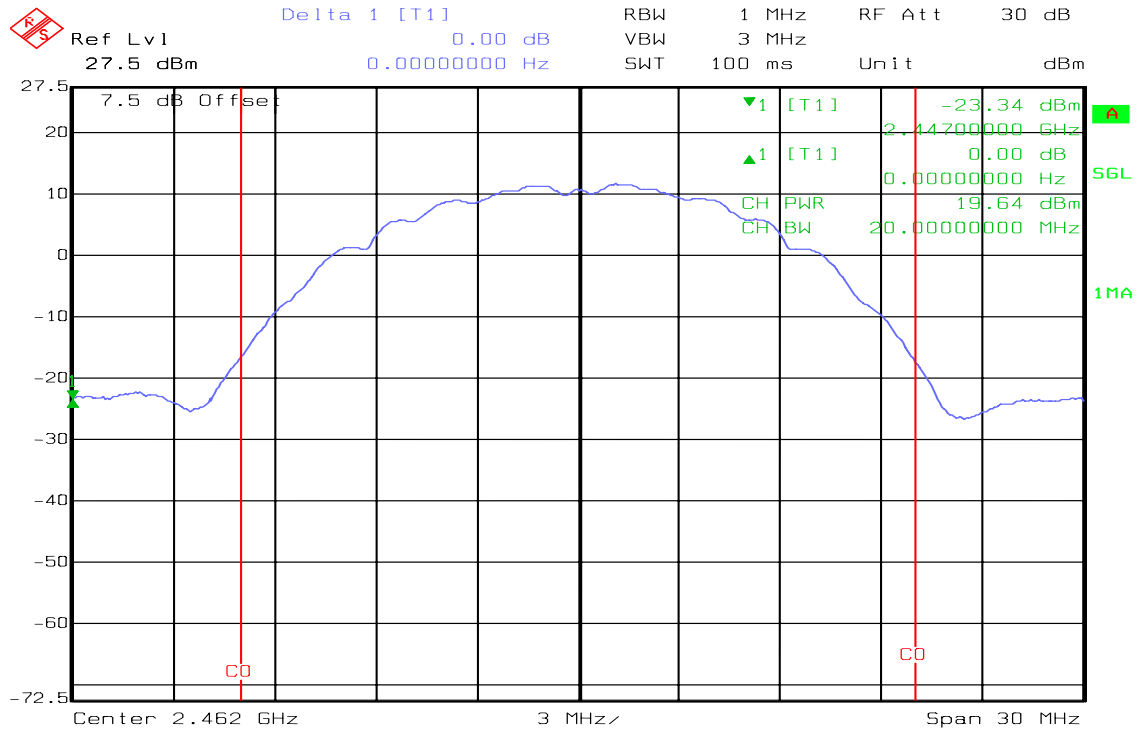


CH Mid





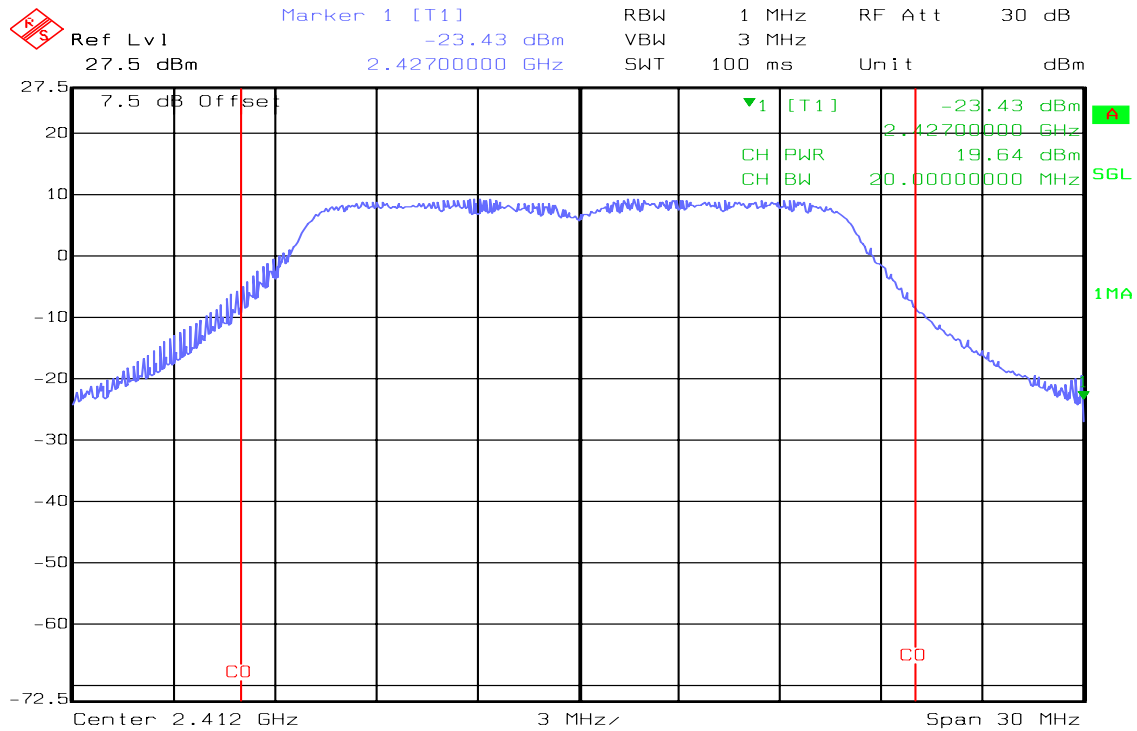
CH High



Date: 08.JUN.2012 19:03:35

IEEE 802.11g mode

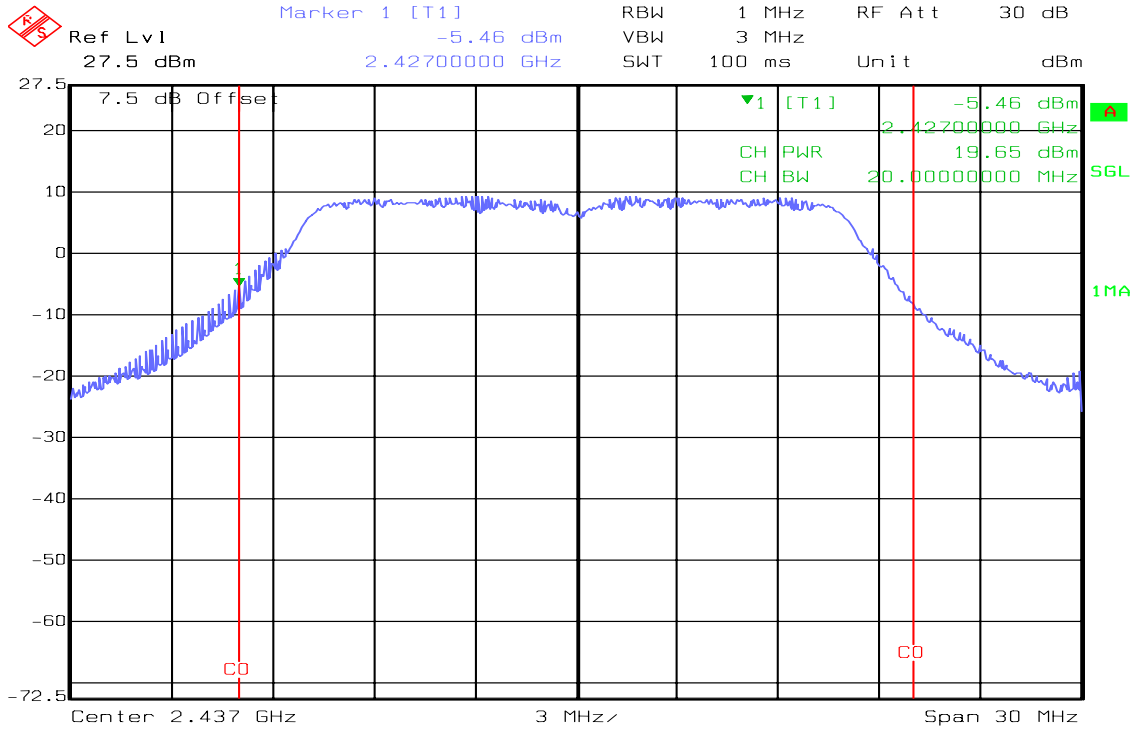
CH Low



Date: 09.JUN.2012 11:43:06

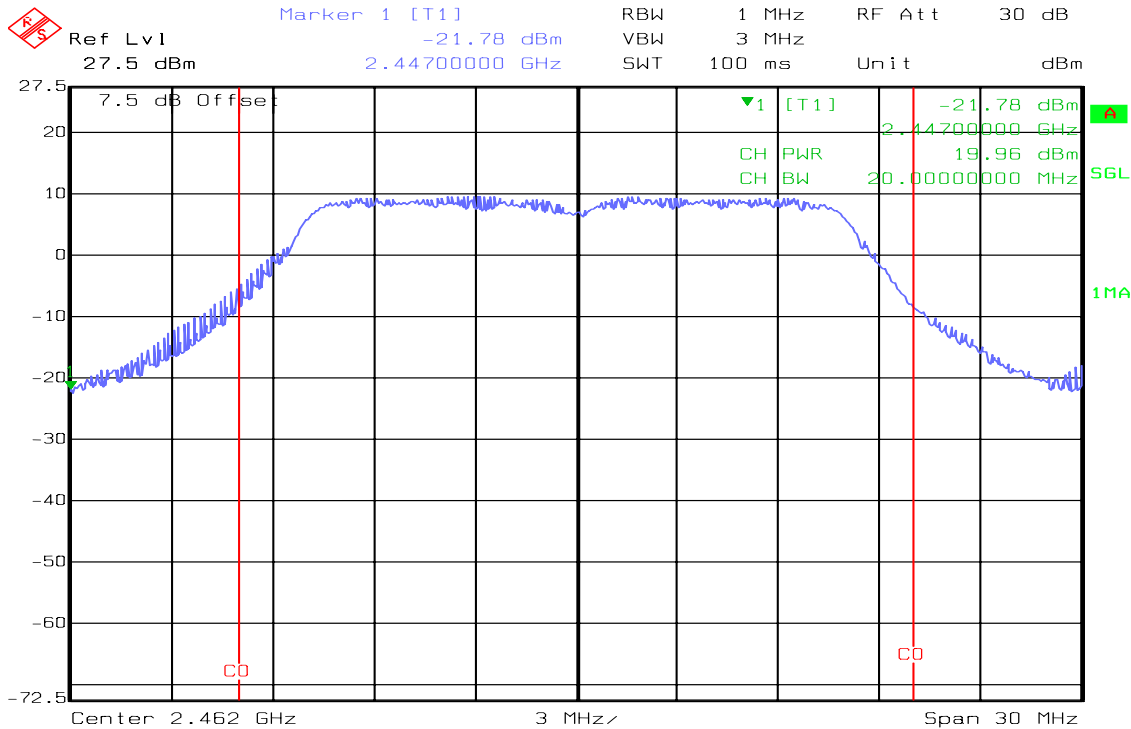


CH Mid



Date: 09.JUN.2012 11:45:56

CH High

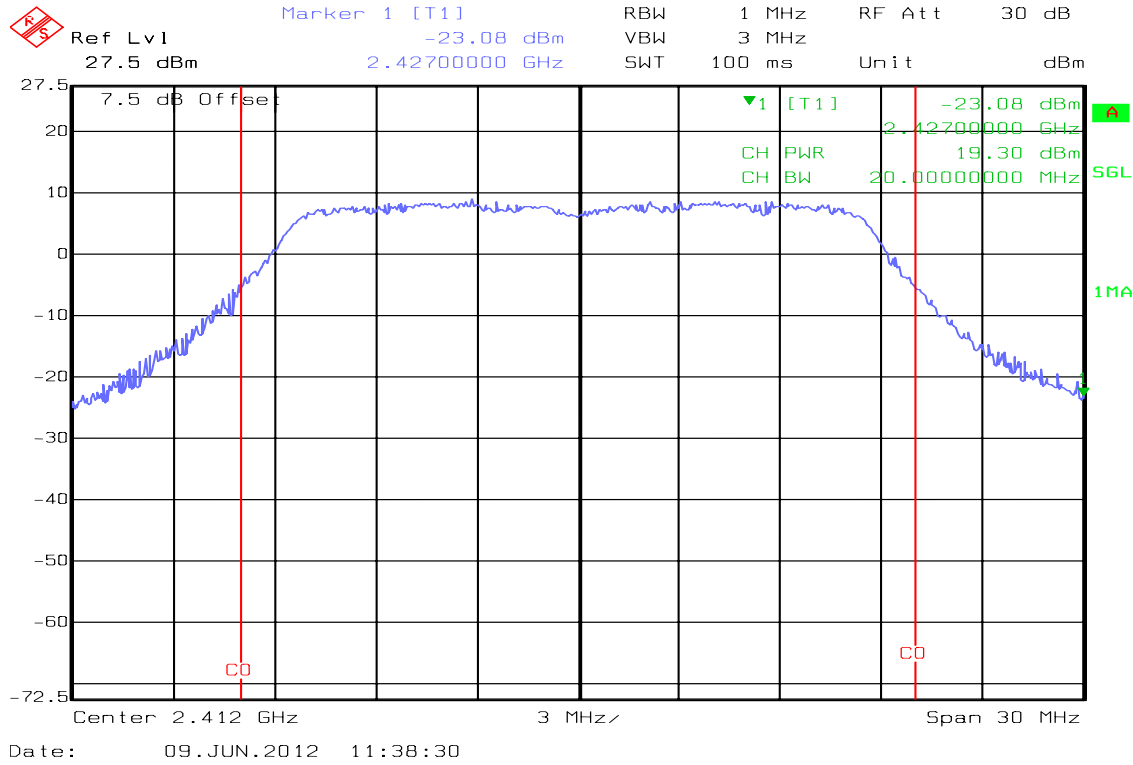


Date: 09.JUN.2012 11:47:01

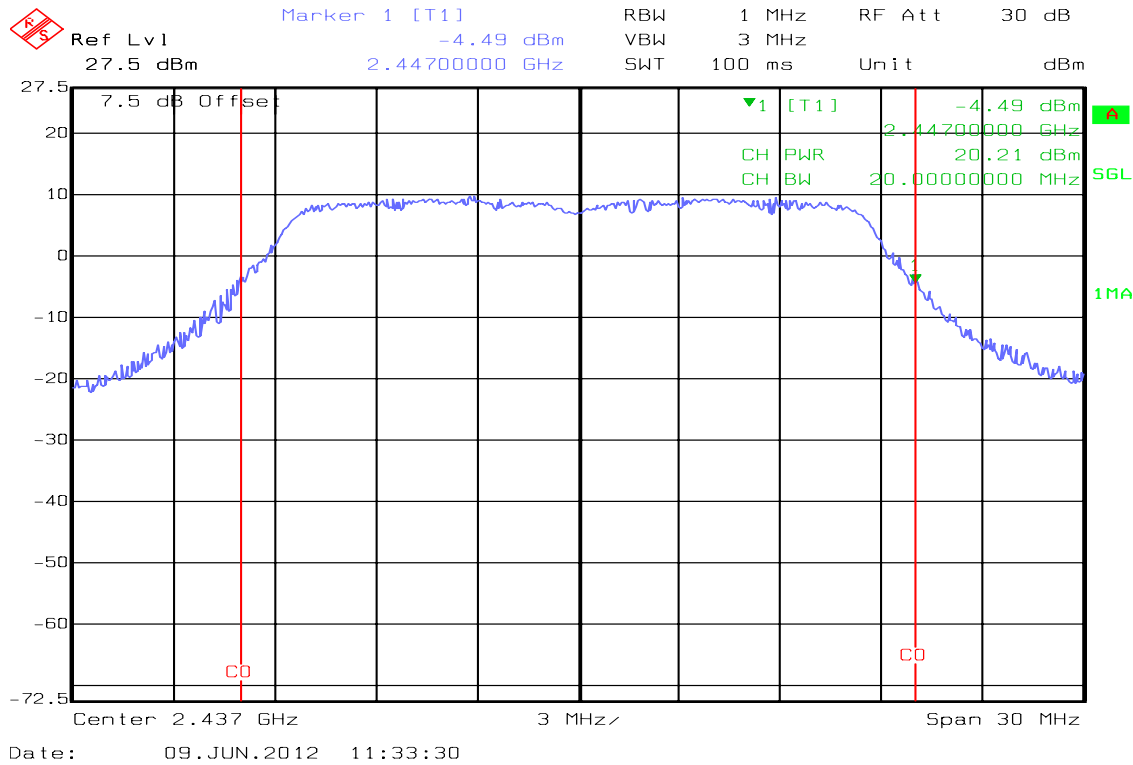


IEEE 802.11n HT20 mode

CH Low

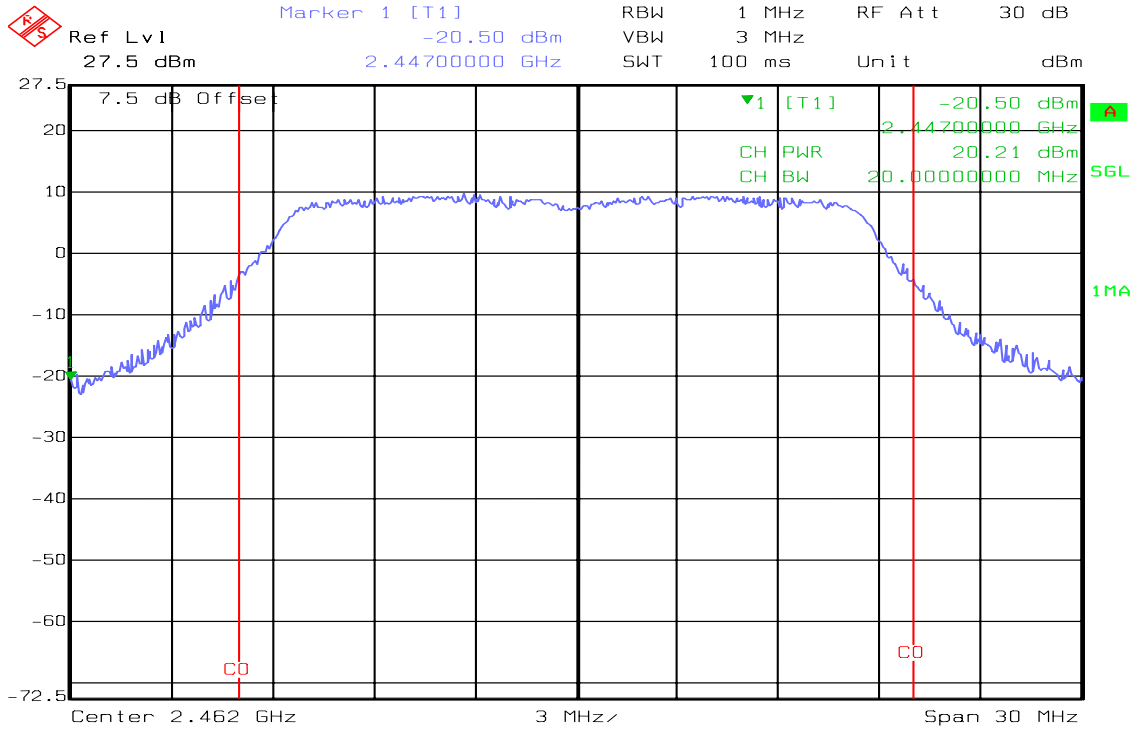


CH Mid





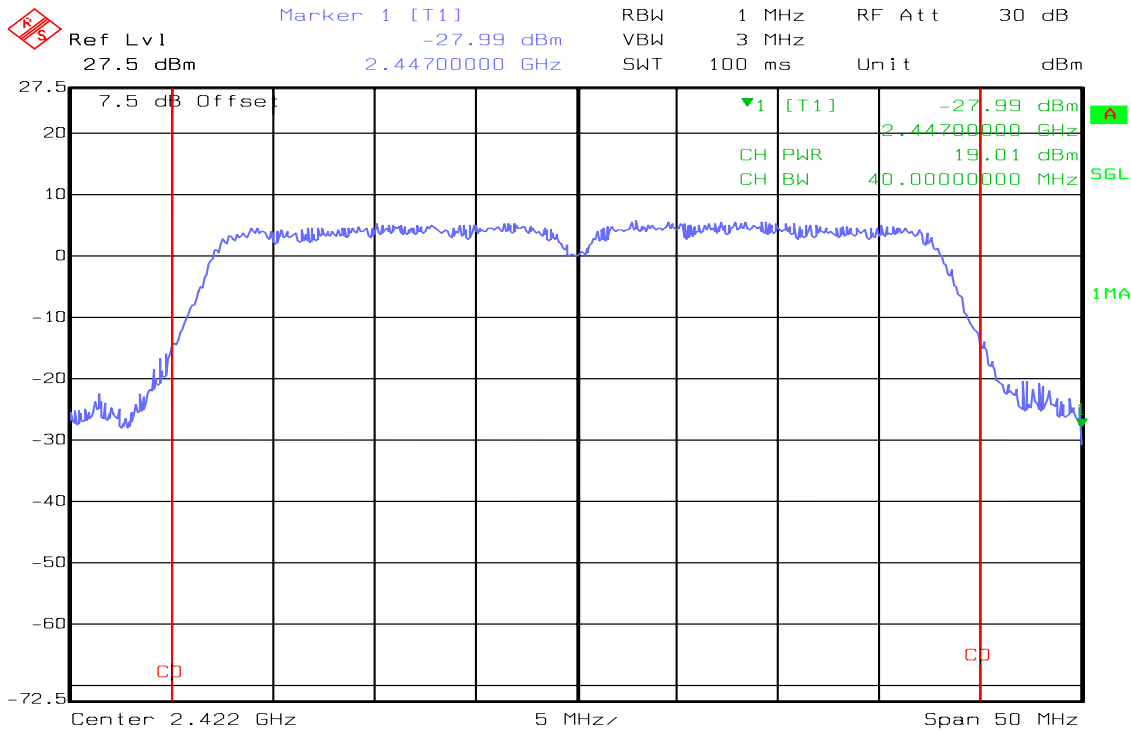
CH High



Date: 09.JUN.2012 11:35:39

IEEE 802.11n HT40 mode

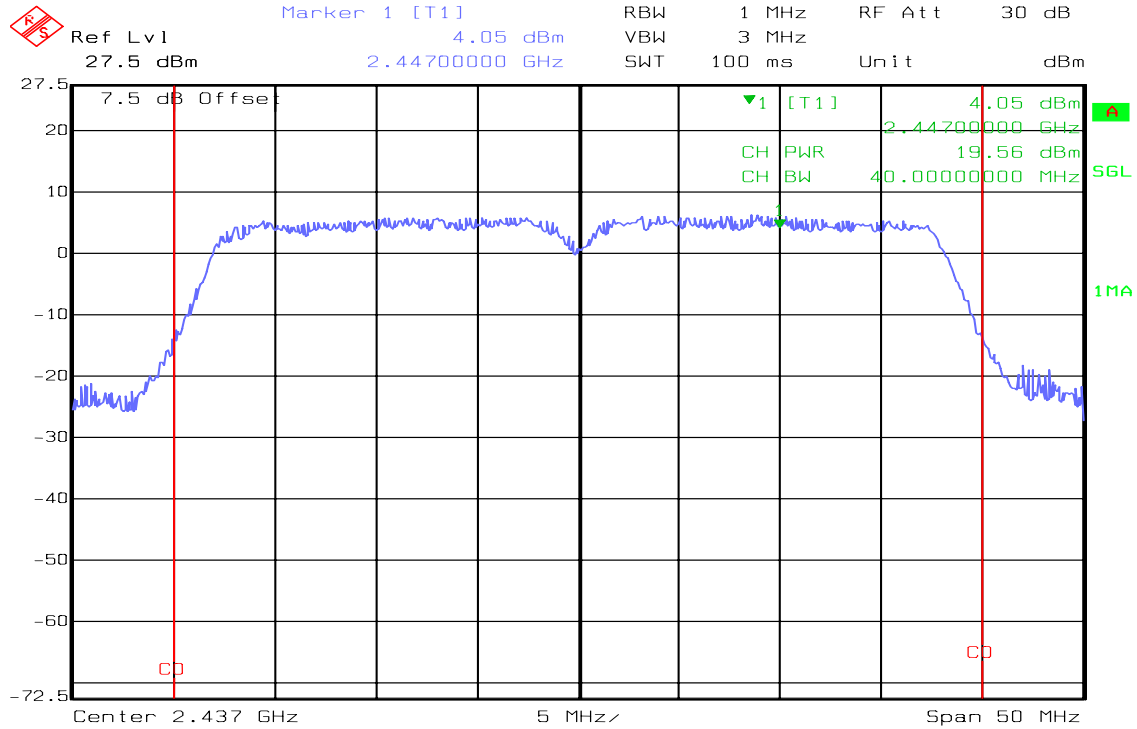
CH Low



Date: 09.JUN.2012 11:51:16

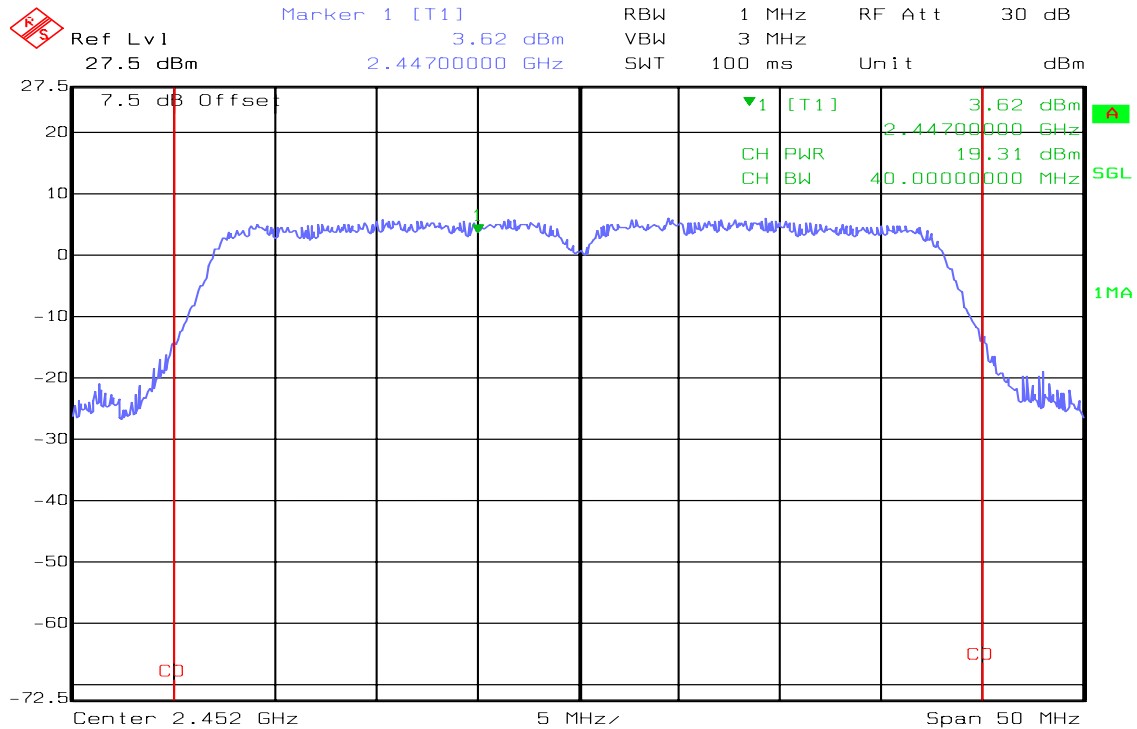


CH Mid



Date: 09.JUN.2012 11:51:56

CH High



Date: 09.JUN.2012 12:12:45

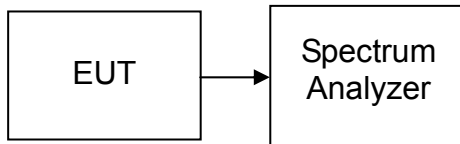


7.3 AVERAGE POWER

LIMIT

None; for reporting purposes only.

TEST CONFIGURATION



TEST PROCEDURE

Per KDB 558074 5.2.1.2/ or 5.2.2.1.

The transmitter output is connected to the spectrum analyzer. Set the RBW = 1MHz, VBW = 3MHz, Detector = Average, Sweep = auto couple. Record the reading.

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)	Output Power (dBm)	Output Power (W)
Low	2412	16.75	0.0473
Mid	2437	16.99	0.0500
High	2462	17.10	0.0513

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	12.19	0.0166
Mid	2437	12.64	0.0184
High	2462	12.78	0.0190

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	12.13	0.0163
Mid	2437	12.25	0.0168
High	2462	12.68	0.0185

Test mode: IEEE 802.11n HT40 mode

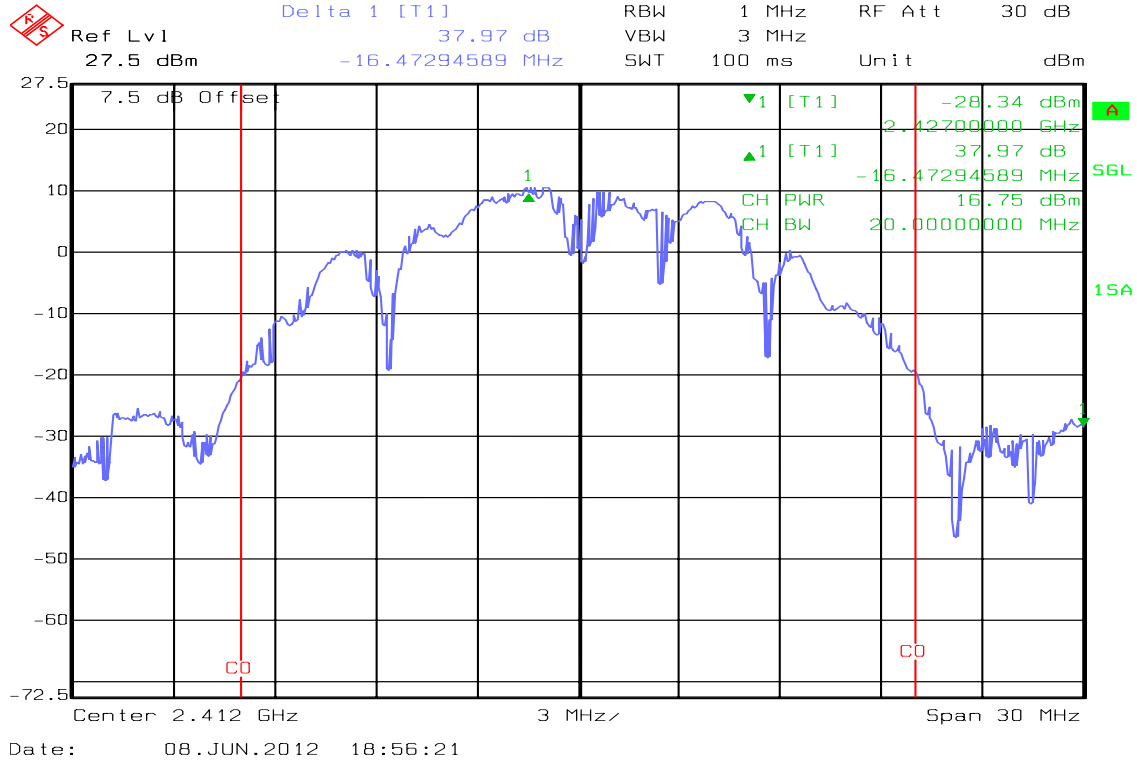
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2422	11.82	0.0152
Mid	2437	11.80	0.0151
High	2452	11.62	0.0145



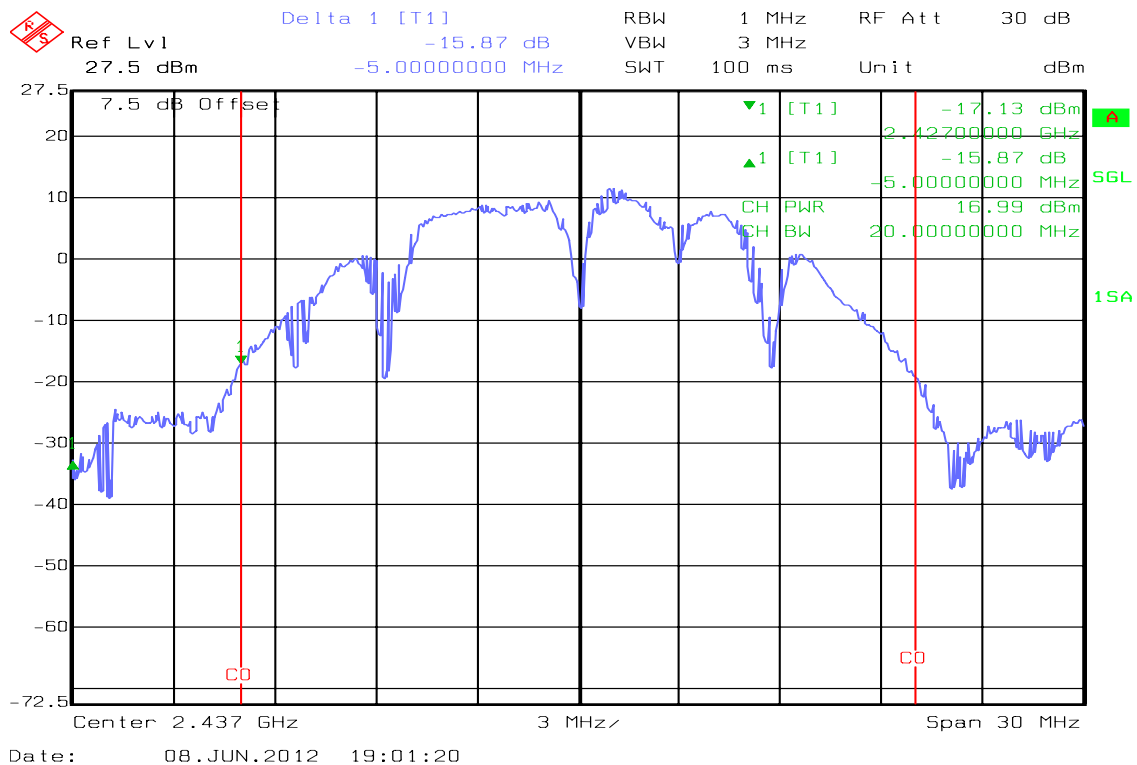
Test Plot

IEEE 802.11b mode

CH Low

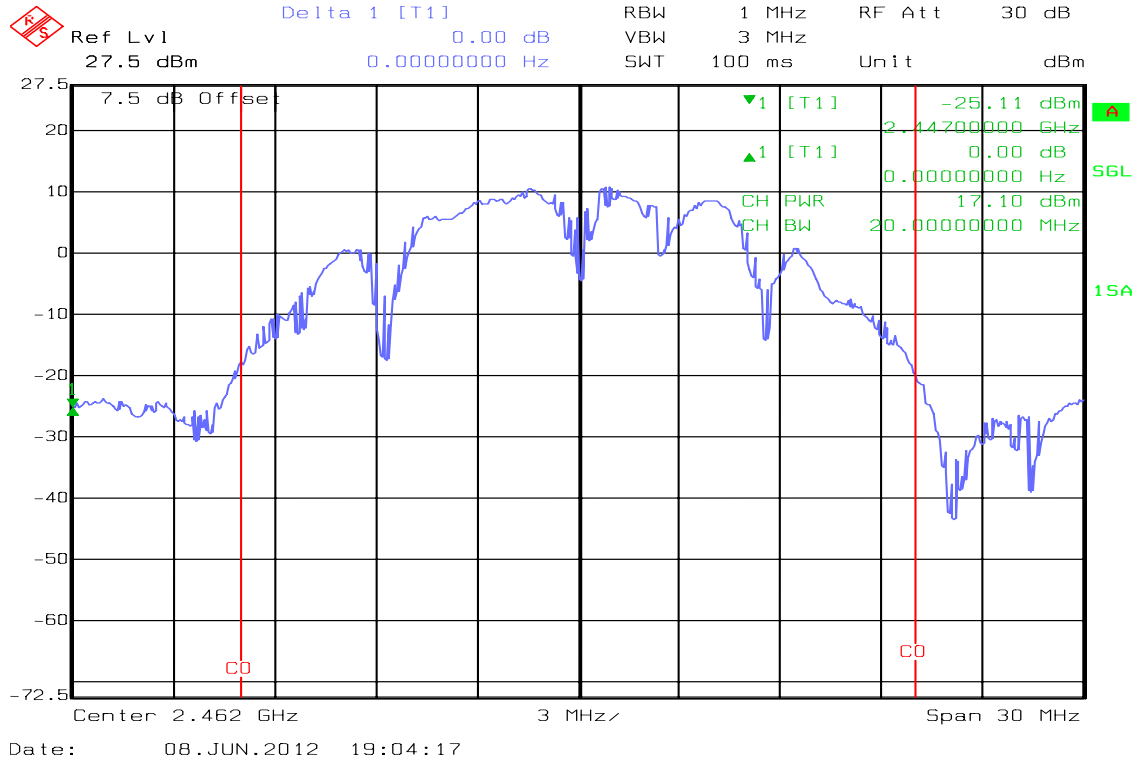


CH Mid



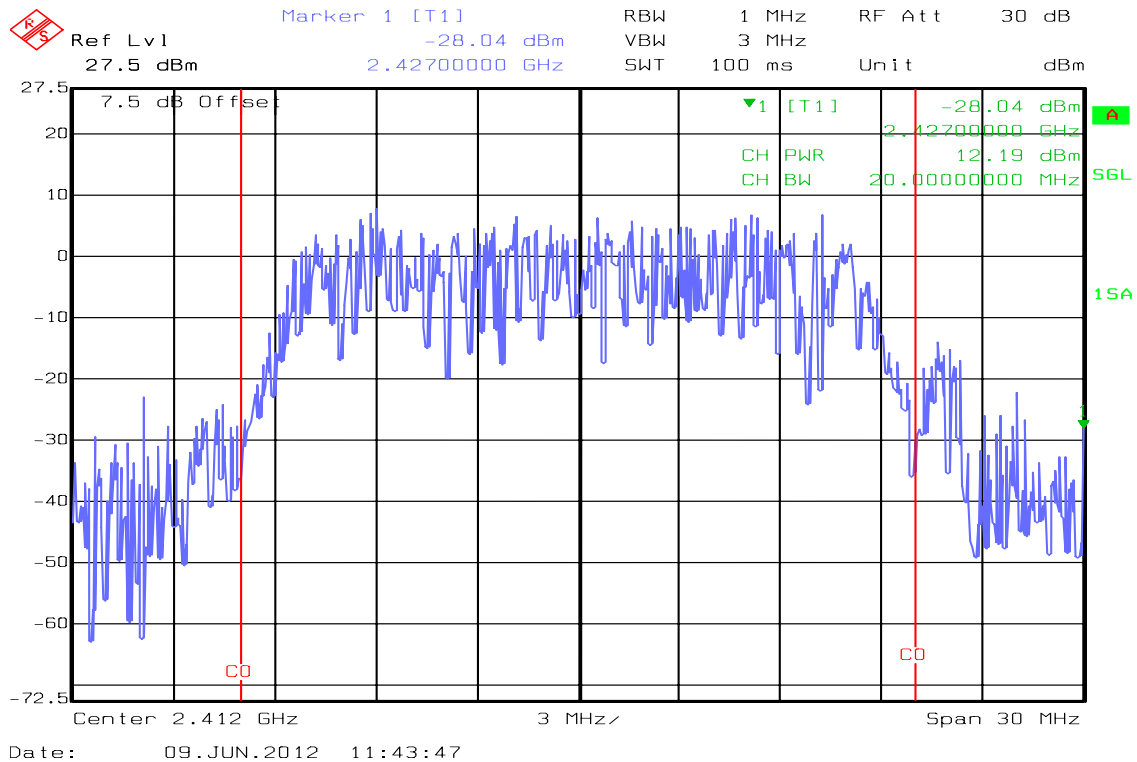


CH High



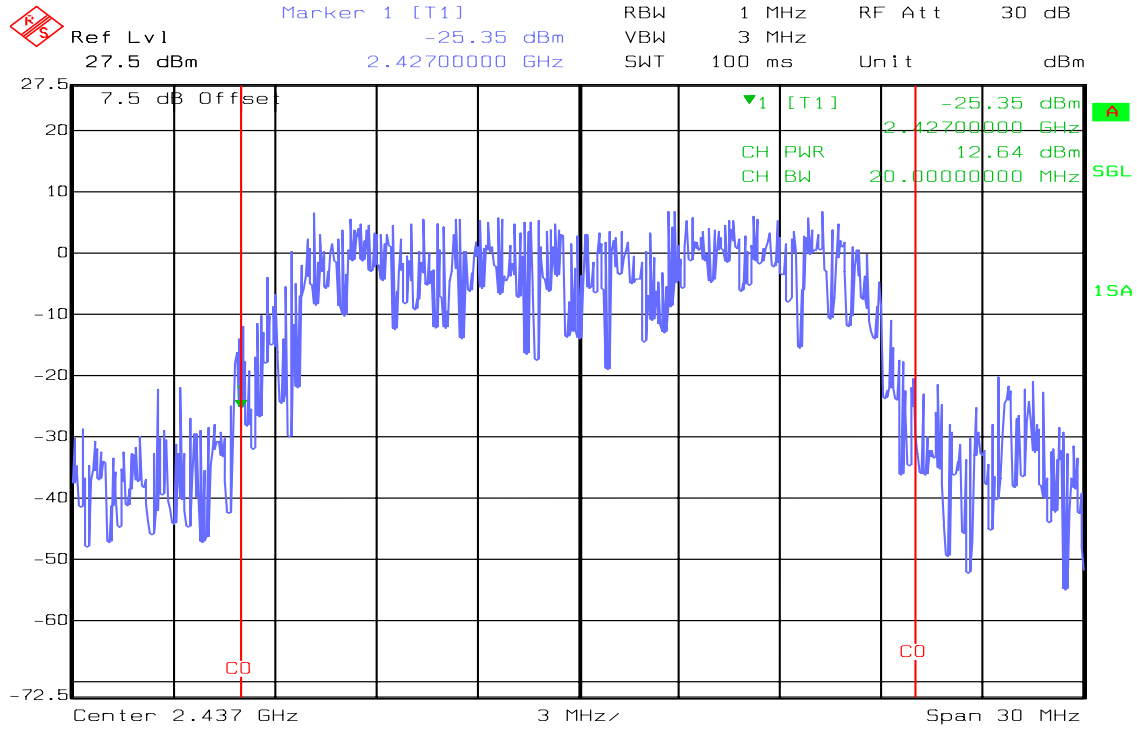
IEEE 802.11g mode

CH Low



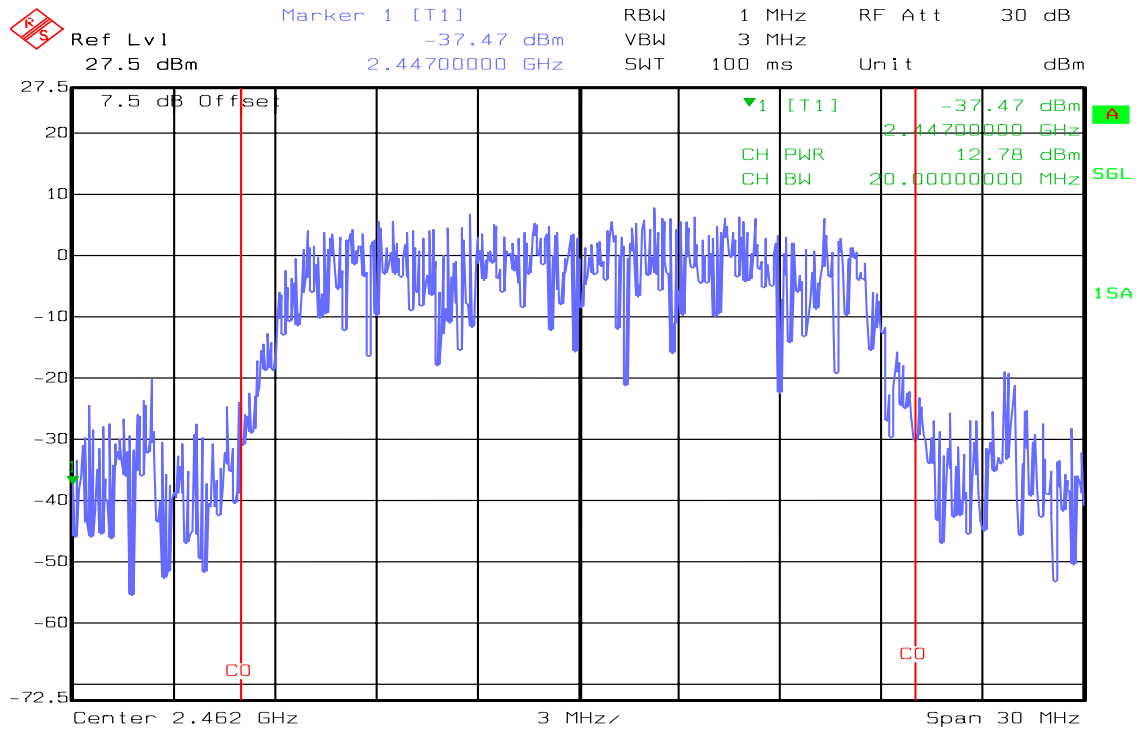


CH Mid



Date: 09.JUN.2012 11:45:18

CH High

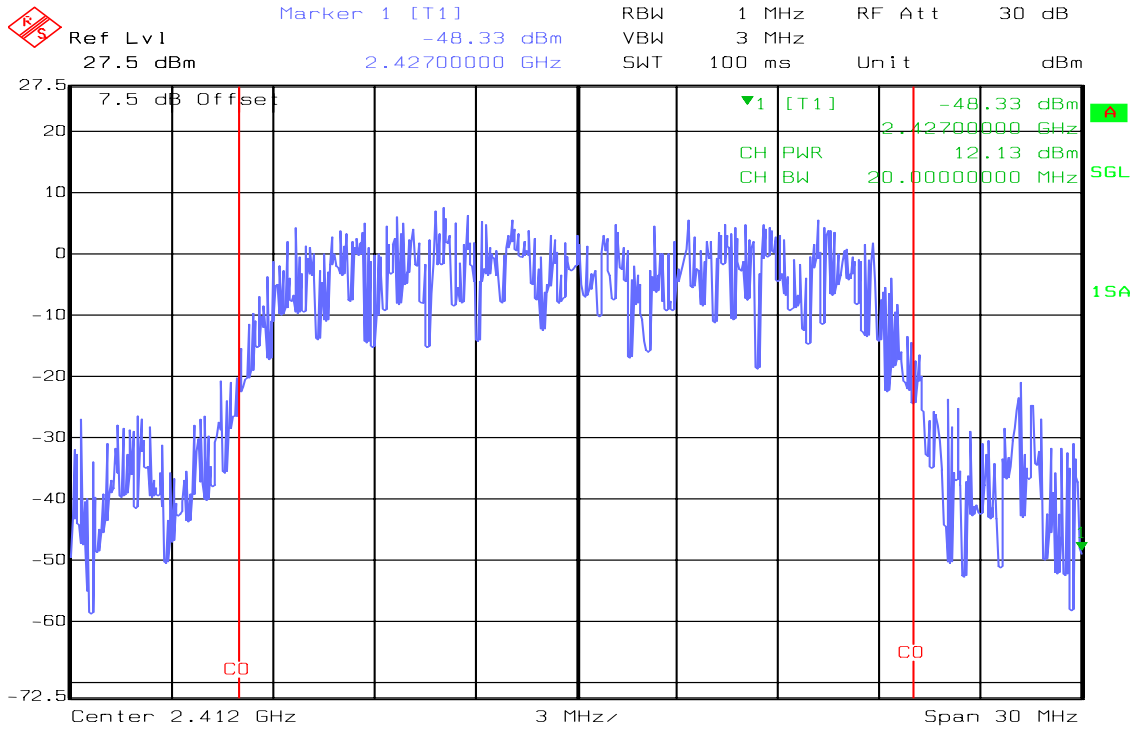


Date: 09.JUN.2012 11:47:45



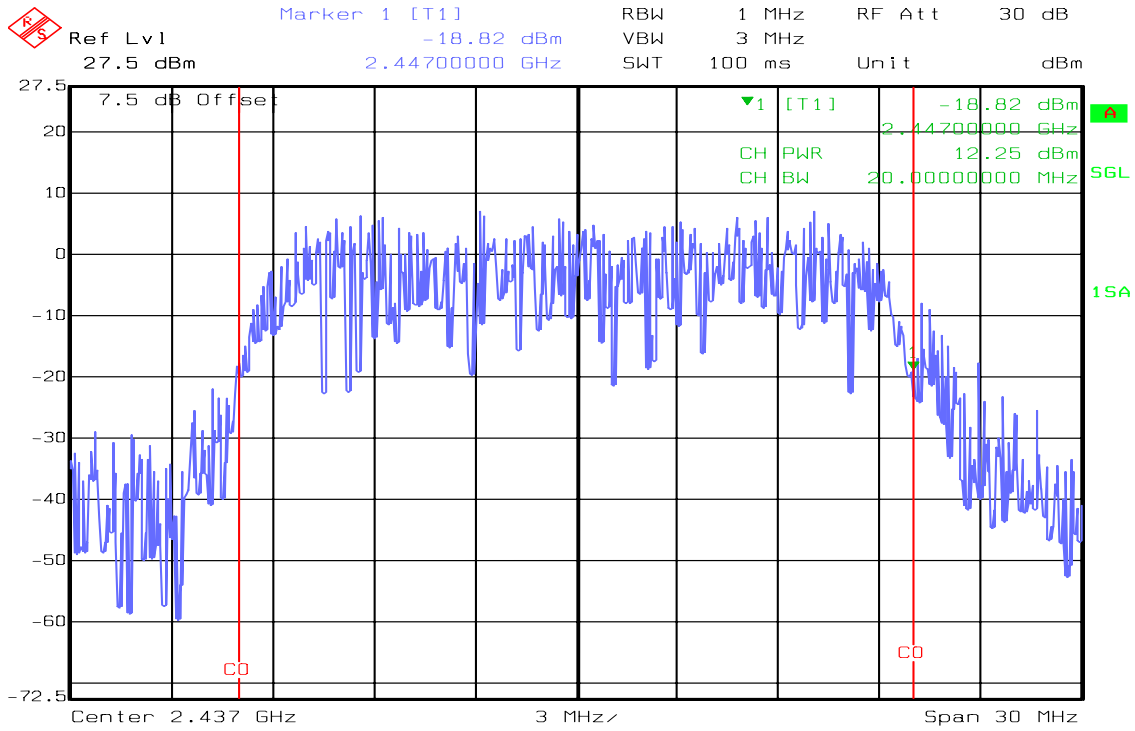
IEEE 802.11n HT20 mode

CH Low



Date: 09.JUN.2012 11:38:01

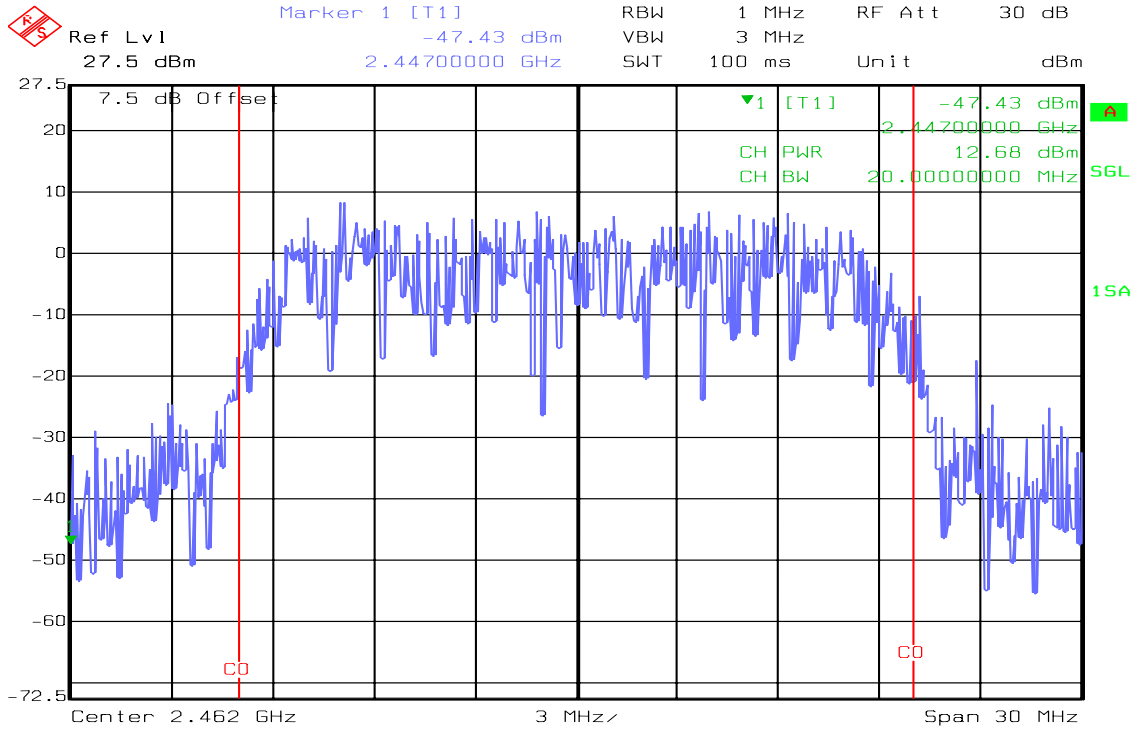
CH Mid



Date: 09.JUN.2012 11:34:17



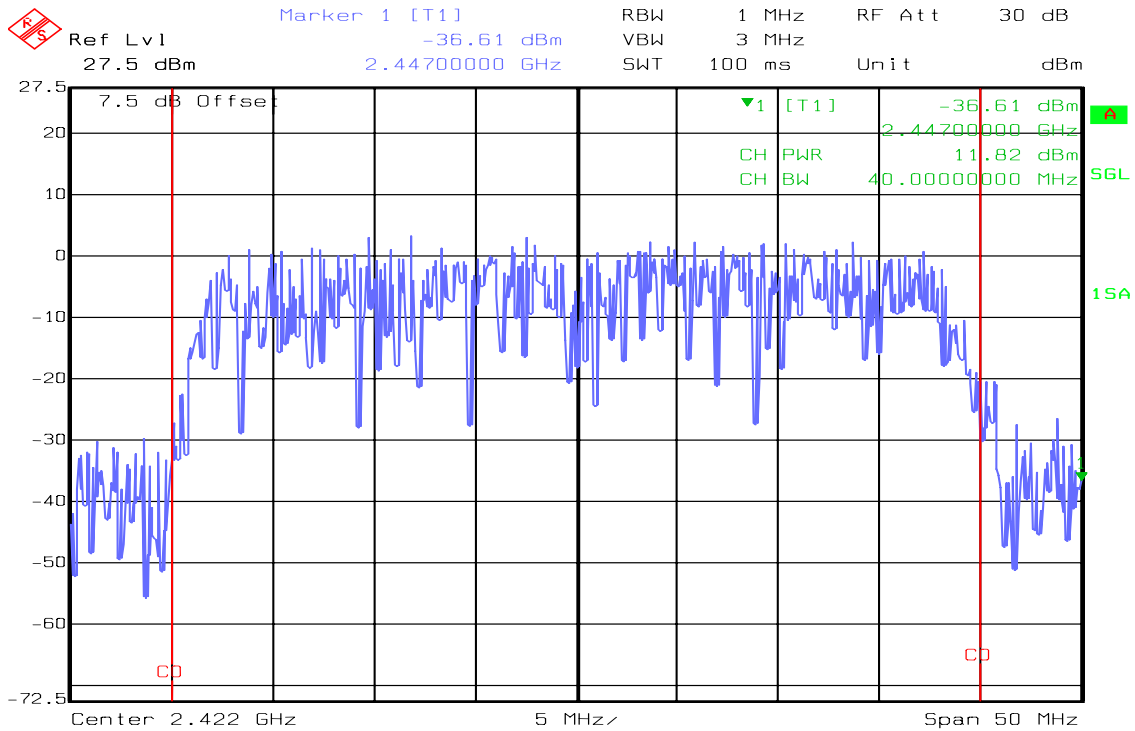
CH High



Date: 09.JUN.2012 11:36:25

IEEE 802.11n HT40 mode

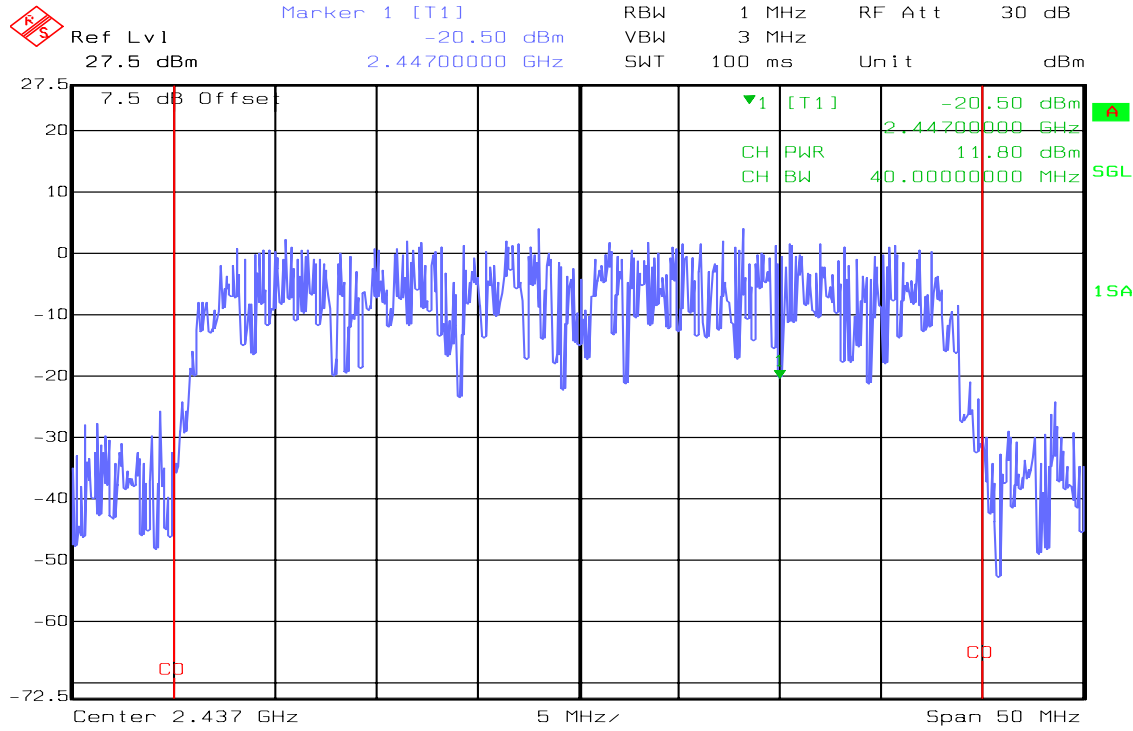
CH Low



Date: 09.JUN.2012 11:50:51

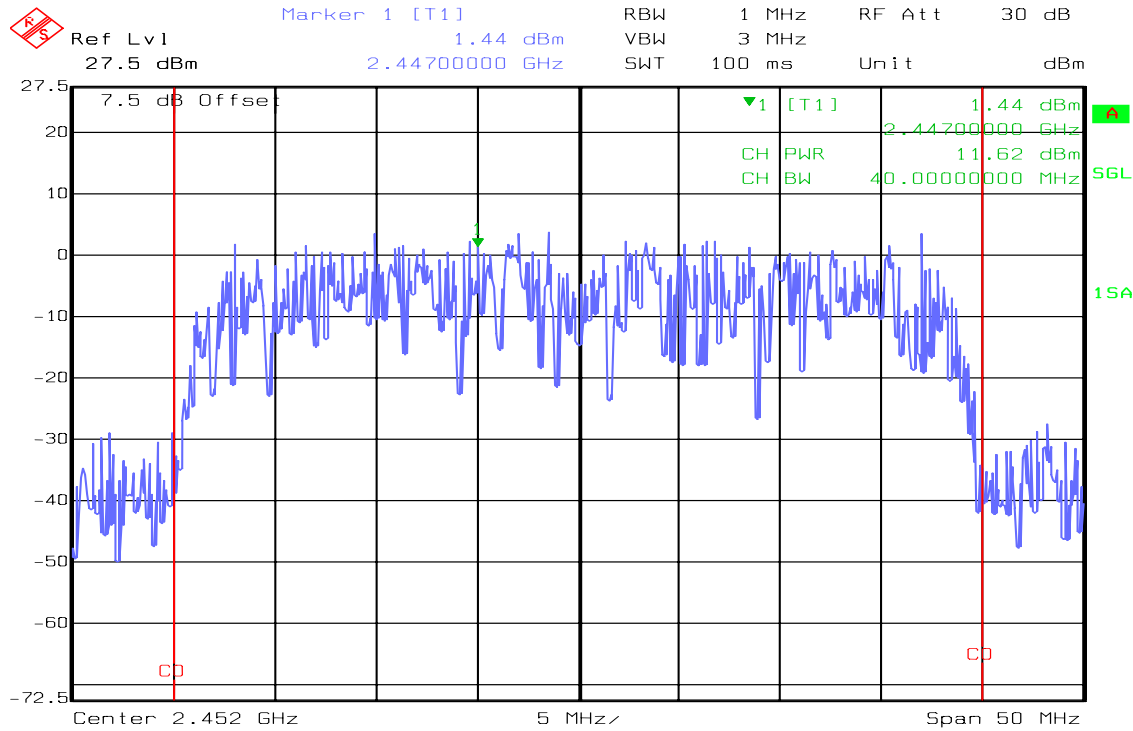


CH Mid



Date: 09.JUN.2012 12:11:04

CH High



Date: 09.JUN.2012 12:13:19

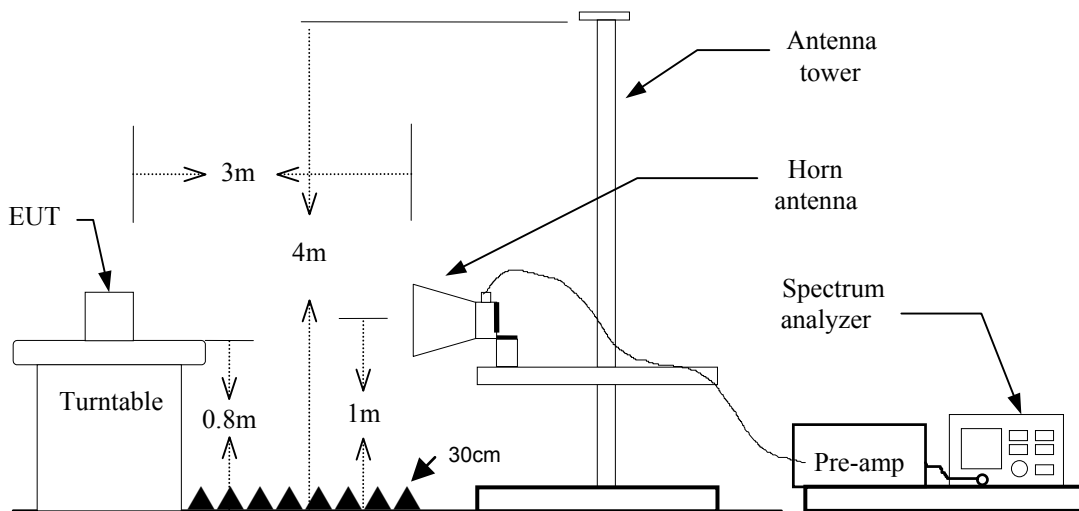


7.4 BAND EDGES MEASUREMENT

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=100ms
 - (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)

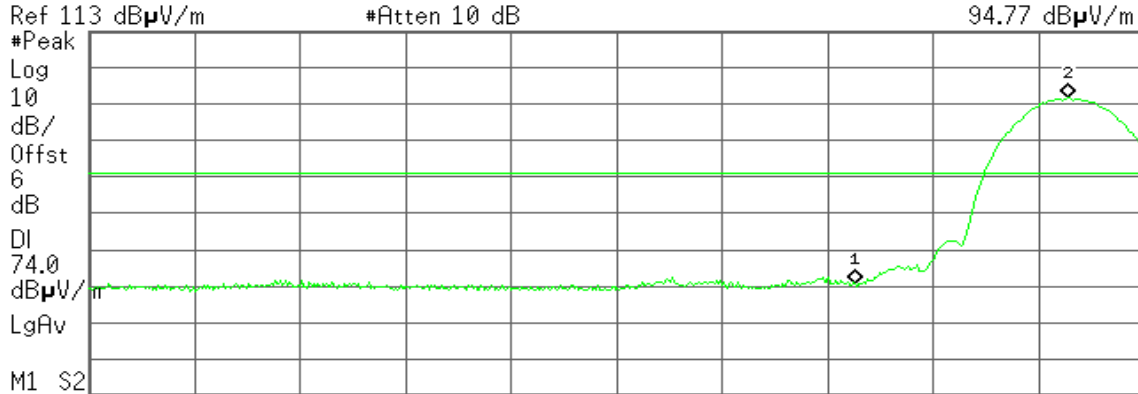
Detector mode: Peak

Polarity: Vertical

Agilent 21:47:55 Jun 7, 2012

R L

Mkr2 2.412 12 GHz
94.77 dBµV/m



Start 2.310 00 GHz Stop 2.420 00 GHz
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	43.62 dBµV/m
2	(1)	Freq	2.412 12 GHz	94.77 dBµV/m

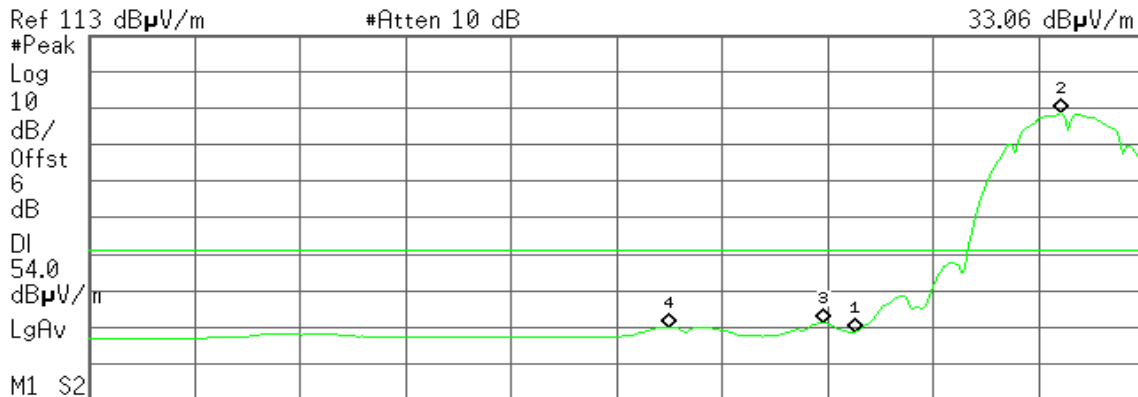
Detector mode: Average

Polarity: Vertical

Agilent 21:54:56 Jun 7, 2012

R L

Mkr4 2.370 50 GHz
33.06 dBµV/m



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	31.65 dBµV/m
2	(1)	Freq	2.411 38 GHz	91.58 dBµV/m
3	(1)	Freq	2.386 45 GHz	34.12 dBµV/m
4	(1)	Freq	2.370 50 GHz	33.06 dBµV/m



Detector mode: Peak

Polarity: Horizontal

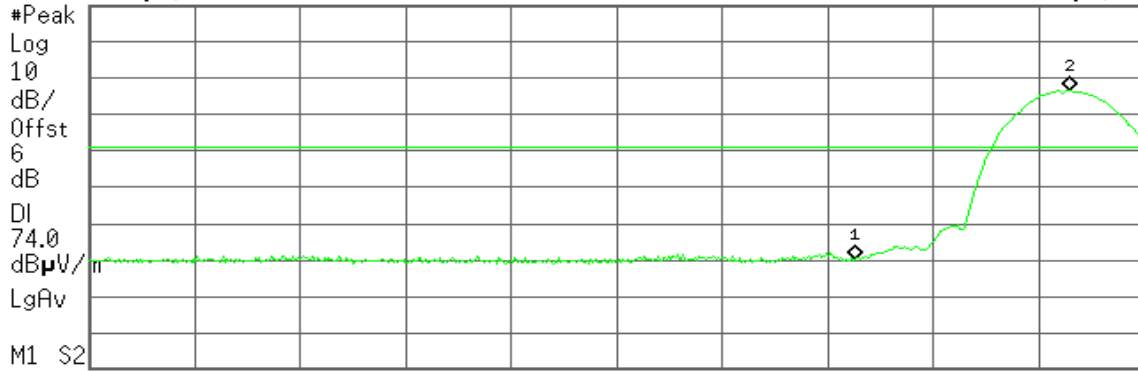
Agilent 20:37:58 Jun 7, 2012

R L

Mkr2 2.412 30 GHz
89.75 dBµV/m

Ref 113 dBµV/m

#Atten 10 dB



M1 S2
Start 2.310 00 GHz

Stop 2.420 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	43.17 dBµV/m
2	(1)	Freq	2.412 30 GHz	89.75 dBµV/m

Detector mode: Average

Polarity: Horizontal

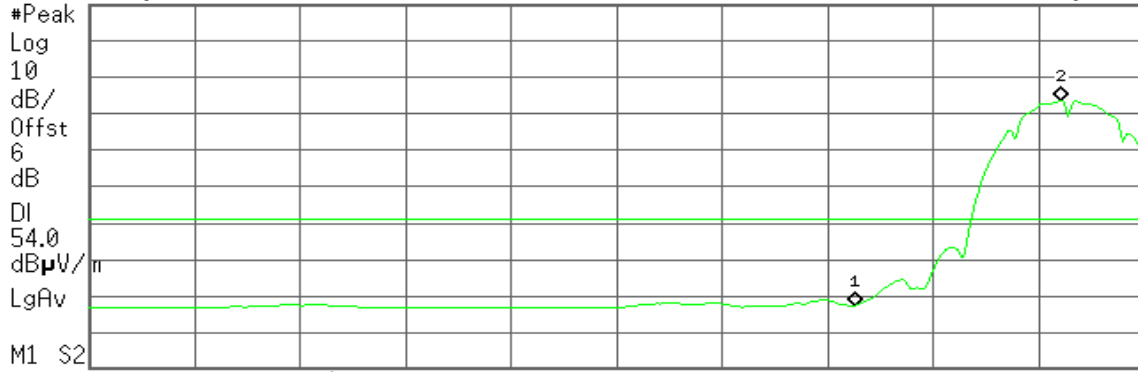
Agilent 20:41:00 Jun 7, 2012

R L

Mkr2 2.411 38 GHz
86.65 dBµV/m

Ref 113 dBµV/m

#Atten 10 dB



M1 S2
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	38.51 dBµV/m
2	(1)	Freq	2.411 38 GHz	86.65 dBµV/m



Band Edges (IEEE 802.11b mode / CH High)

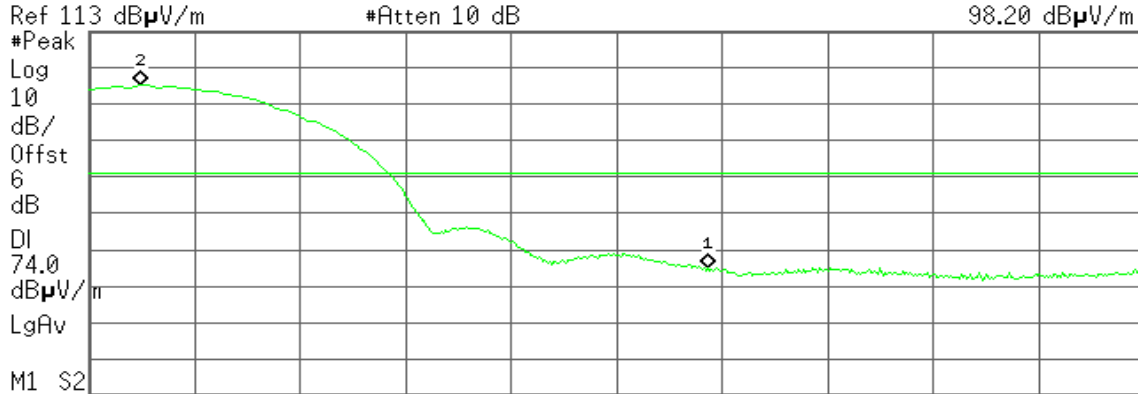
Detector mode: Peak

Polarity: Vertical

Agilent 23:51:06 Jun 7, 2012

R L

Mkr2 2.461 93 GHz
98.20 dBµV/m



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	48.15 dBµV/m
2	(1)	Freq	2.461 93 GHz	98.20 dBµV/m

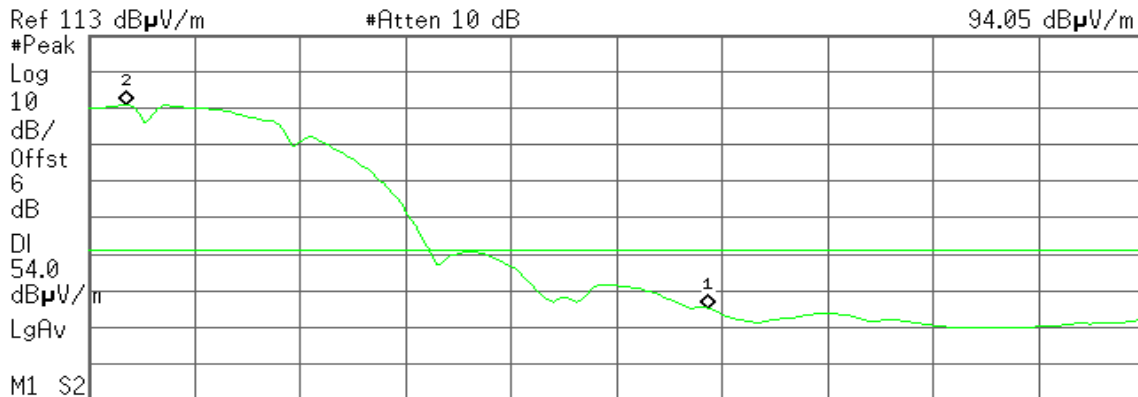
Detector mode: Average

Polarity: Vertical

Agilent 23:52:36 Jun 7, 2012

R L

Mkr2 2.461 40 GHz
94.05 dBµV/m



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	38.27 dBµV/m
2	(1)	Freq	2.461 40 GHz	94.05 dBµV/m



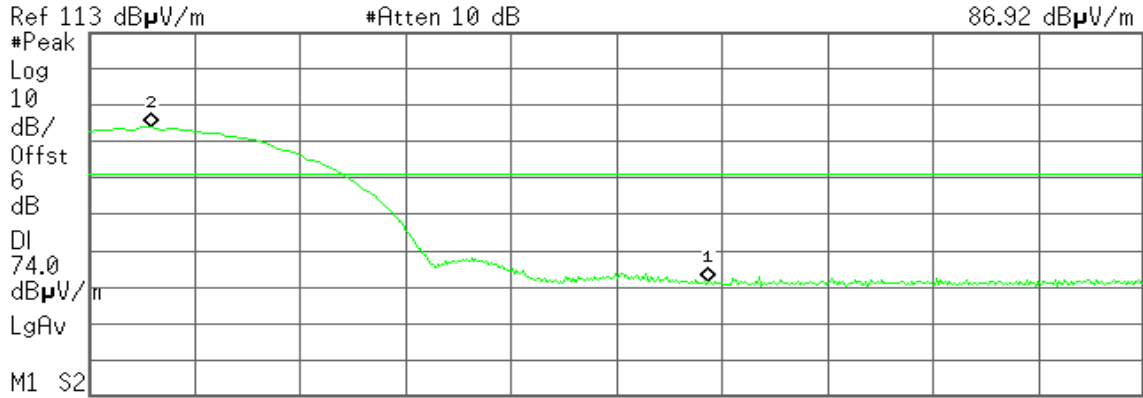
Detector mode: Peak

Polarity: Horizontal

Agilent 23:55:22 Jun 7, 2012

R L

Mkr2 2.462 33 GHz
86.92 dB μ V/m



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	44.77 dB μ V/m
2	(1)	Freq	2.462 33 GHz	86.92 dB μ V/m

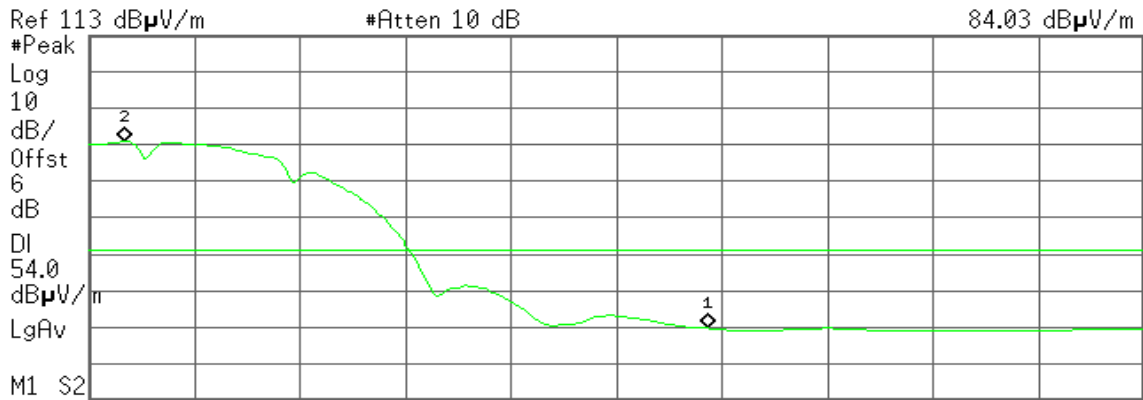
Detector mode: Average

Polarity: Horizontal

Agilent 23:56:35 Jun 7, 2012

R L

Mkr2 2.461 33 GHz
84.03 dB μ V/m



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	32.74 dB μ V/m
2	(1)	Freq	2.461 33 GHz	84.03 dB μ V/m



Band Edges (IEEE 802.11g mode / CH Low)

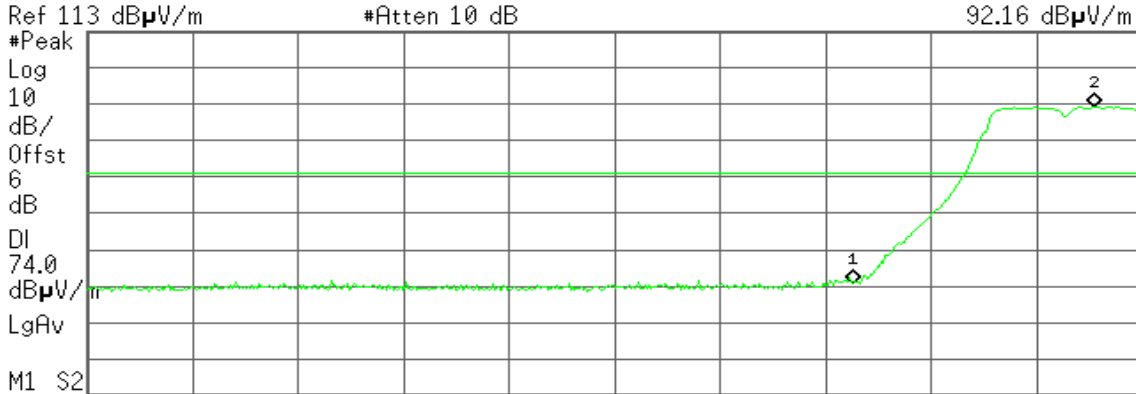
Detector mode: Peak

Polarity: Vertical

Agilent 21:21:11 Jun 7, 2012

R L

Mkr2 2.415 05 GHz
92.16 dBµV/m



Ref 113 dBµV/m #Atten 10 dB

Start 2.310 00 GHz Stop 2.420 00 GHz

#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.398 00 GHz	43.79 dBµV/m
2	(1)	Freq	2.415 05 GHz	92.16 dBµV/m

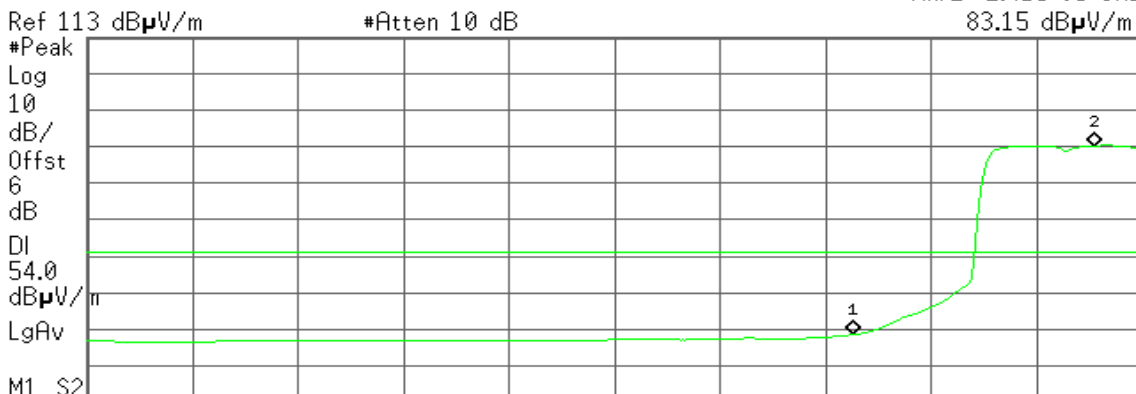
Detector mode: Average

Polarity: Vertical

Agilent 21:41:23 Jun 7, 2012

R L

Mkr2 2.415 05 GHz
83.15 dBµV/m



Ref 113 dBµV/m #Atten 10 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	31.57 dBµV/m
2	(1)	Freq	2.415 05 GHz	83.15 dBµV/m



Detector mode: Peak

Polarity: Horizontal

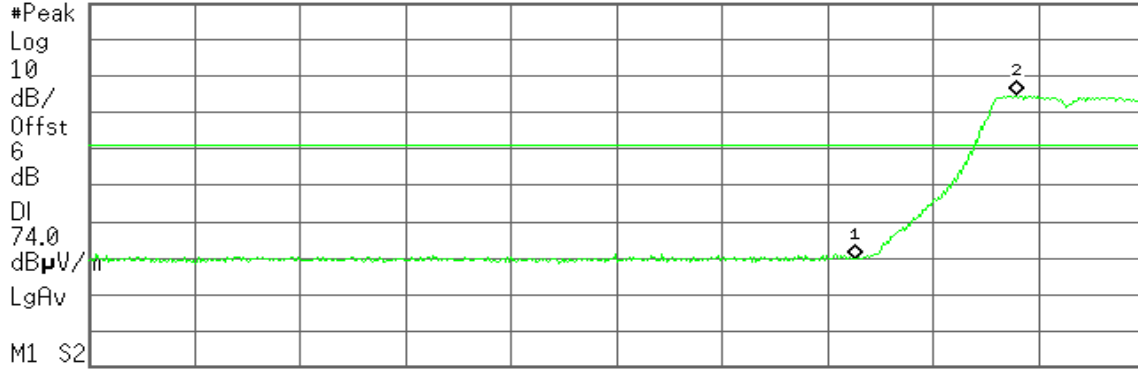
Agilent 20:47:18 Jun 7, 2012

R L

Mkr2 2.406 62 GHz
87.67 dBµV/m

Ref 113 dBµV/m

#Atten 10 dB



Start 2.310 00 GHz

Stop 2.420 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	42.76 dBµV/m
2	(1)	Freq	2.406 62 GHz	87.67 dBµV/m

Detector mode: Average

Polarity: Horizontal

Agilent 20:48:41 Jun 7, 2012

R L

Mkr2 2.407 35 GHz
77.08 dBµV/m

Ref 113 dBµV/m

#Atten 10 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	2.390 00 GHz	38.36 dBµV/m
2	(1)	Freq	2.407 35 GHz	77.08 dBµV/m



Band Edges (IEEE 802.11g mode / CH High)

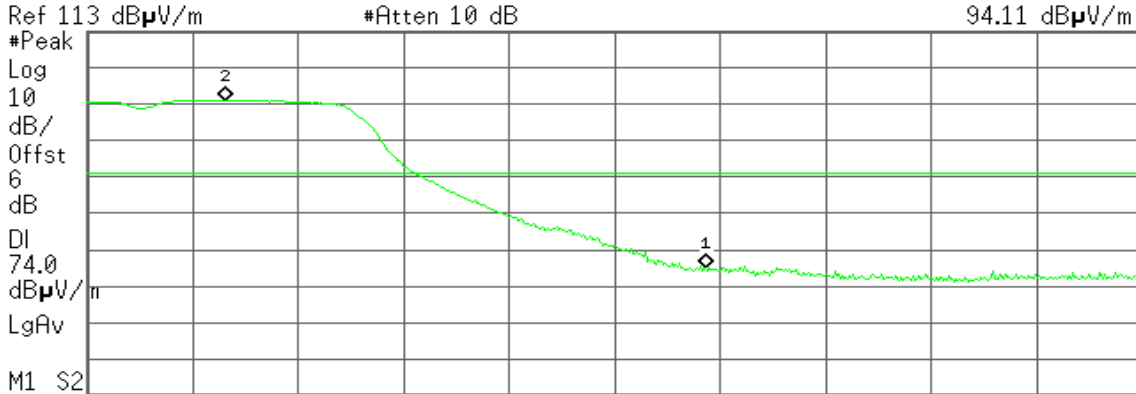
Detector mode: Peak

Polarity: Vertical

Agilent 23:38:44 Jun 7, 2012

R L

Mkr2 2.465 27 GHz
94.11 dBµV/m



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

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	48.83 dBµV/m
2	(1)	Freq	2.465 27 GHz	94.11 dBµV/m

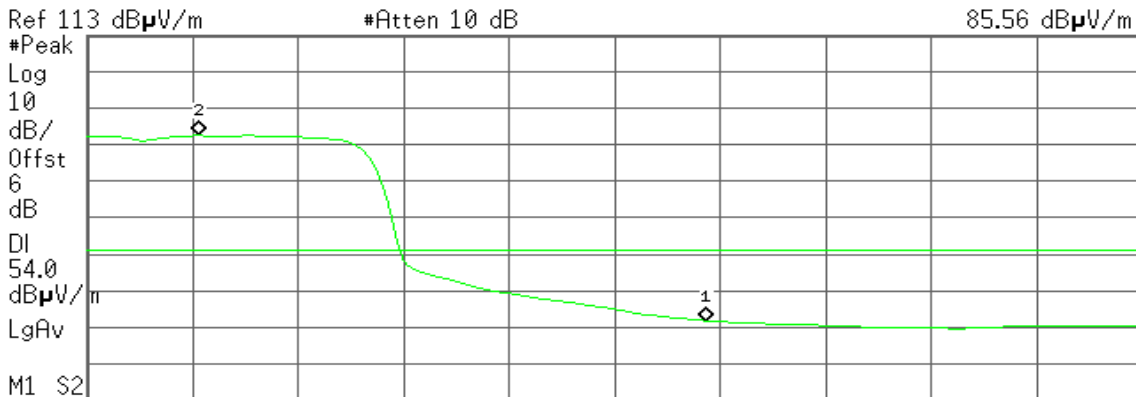
Detector mode: Average

Polarity: Vertical

Agilent 23:46:00 Jun 7, 2012

R L

Mkr2 2.464 27 GHz
85.56 dBµV/m



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 50 GHz	34.79 dBµV/m
2	(1)	Freq	2.464 27 GHz	85.56 dBµV/m



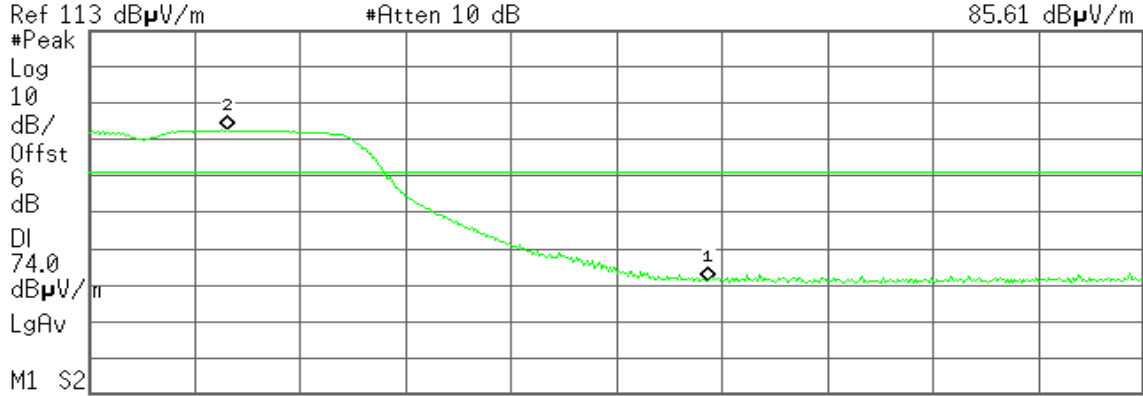
Detector mode: Peak

Polarity: Horizontal

Agilent 23:27:23 Jun 7, 2012

R T

Mkr2 2.465 27 GHz
85.61 dBµV/m



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	43.99 dBµV/m
2	(1)	Freq	2.465 27 GHz	85.61 dBµV/m

#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

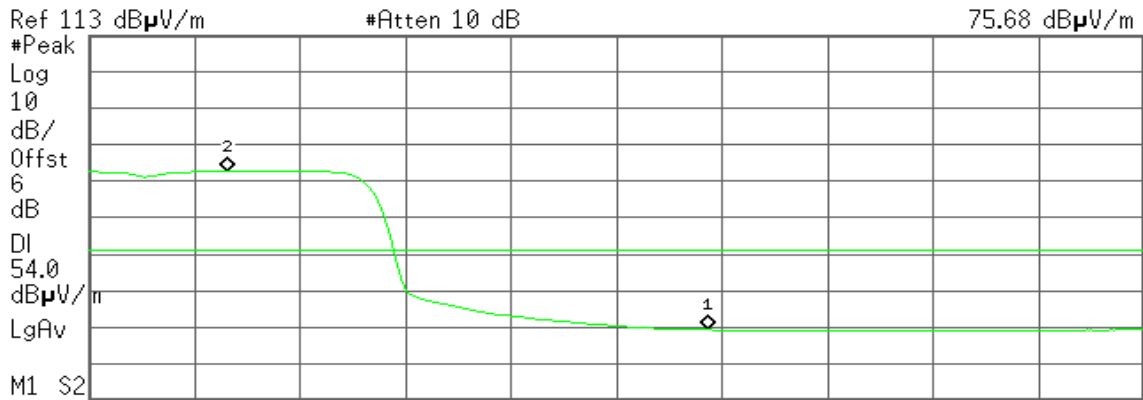
Detector mode: Average

Polarity: Horizontal

Agilent 23:35:29 Jun 7, 2012

R L

Mkr2 2.465 27 GHz
75.68 dBµV/m



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	32.27 dBµV/m
2	(1)	Freq	2.465 27 GHz	75.68 dBµV/m

#Res BW 1 MHz #VBW 10 Hz Sweep 3.119 s (601 pts)



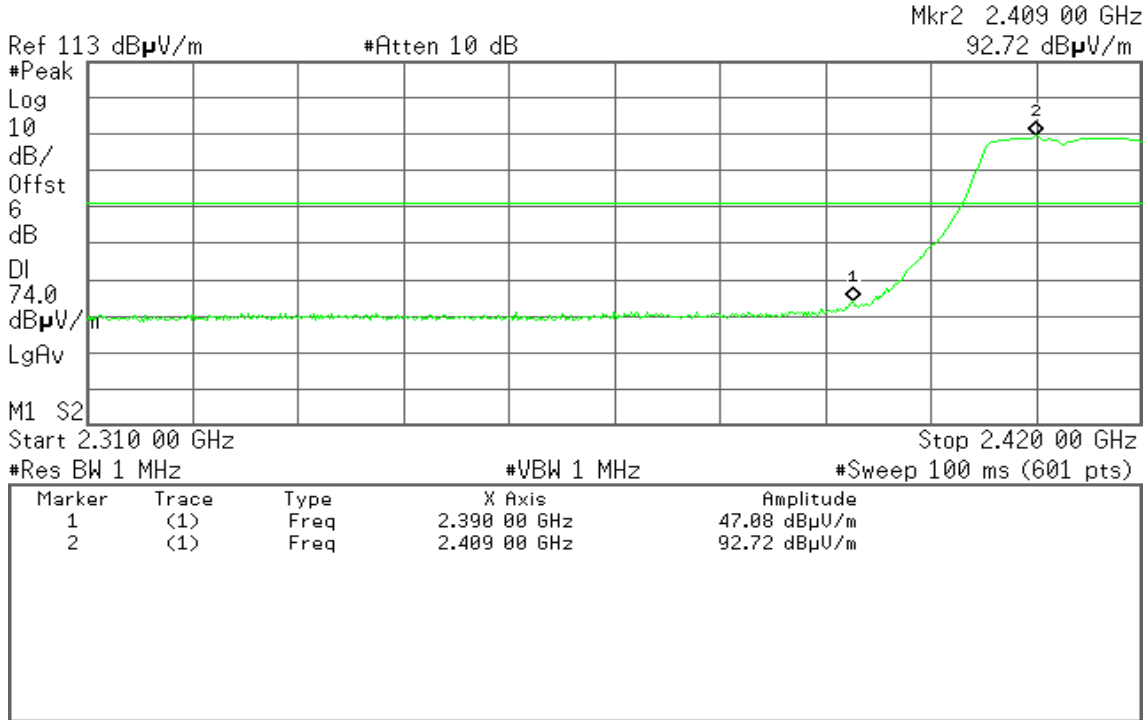
Band Edges (IEEE 802.11n HT20 mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 21:04:31 Jun 7, 2012

R L

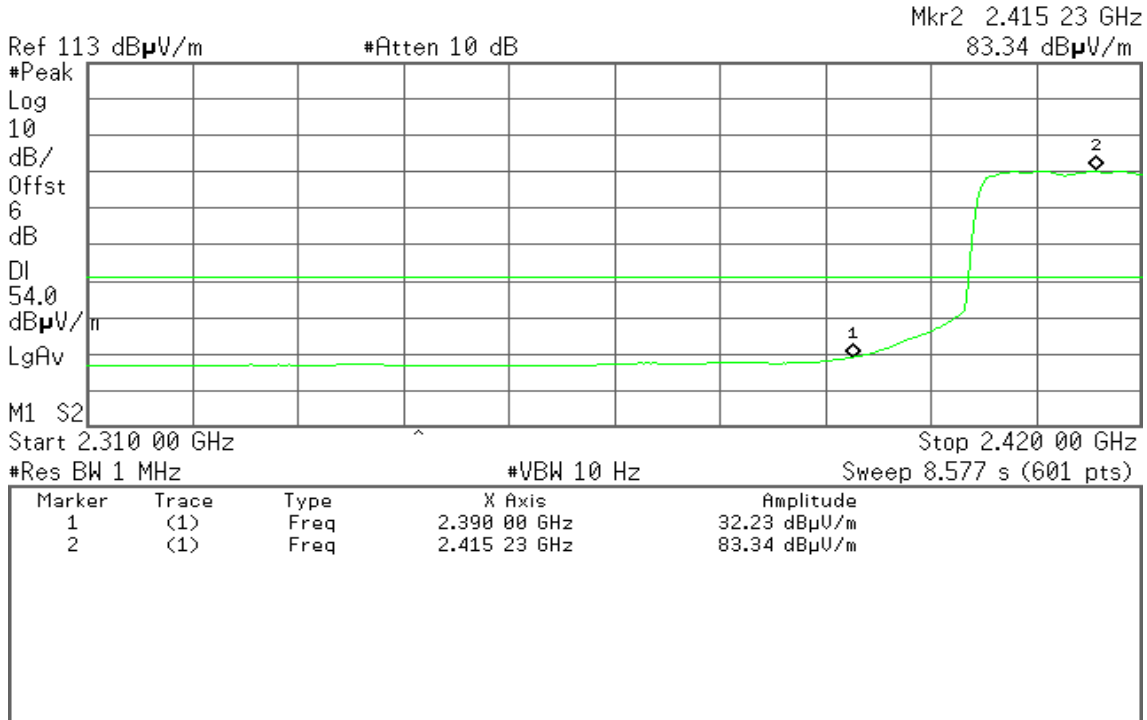


Detector mode: Average

Polarity: Vertical

Agilent 21:06:08 Jun 7, 2012

R L





Detector mode: Peak

Polarity: Horizontal

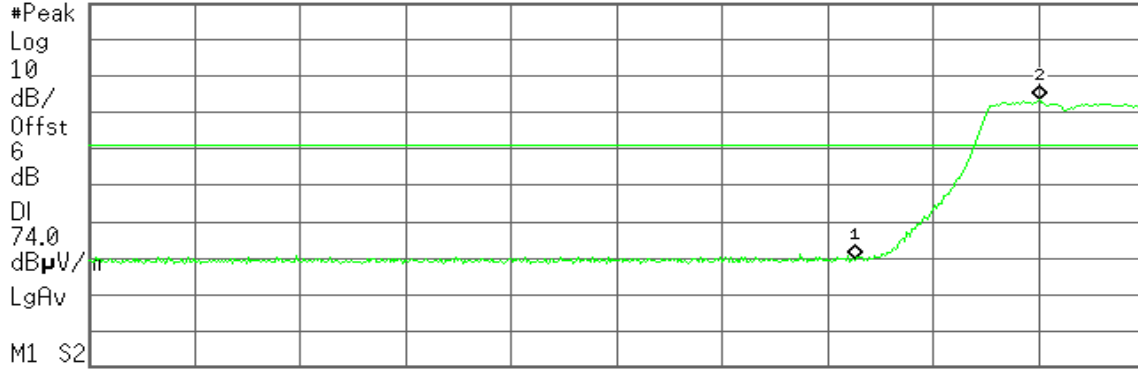
Agilent 20:51:09 Jun 7, 2012

R L

Mkr2 2.409 18 GHz
86.55 dBµV/m

Ref 113 dBµV/m

#Atten 10 dB



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	42.64 dBµV/m
2	(1)	Freq	2.409 18 GHz	86.55 dBµV/m

Detector mode: Average

Polarity: Horizontal

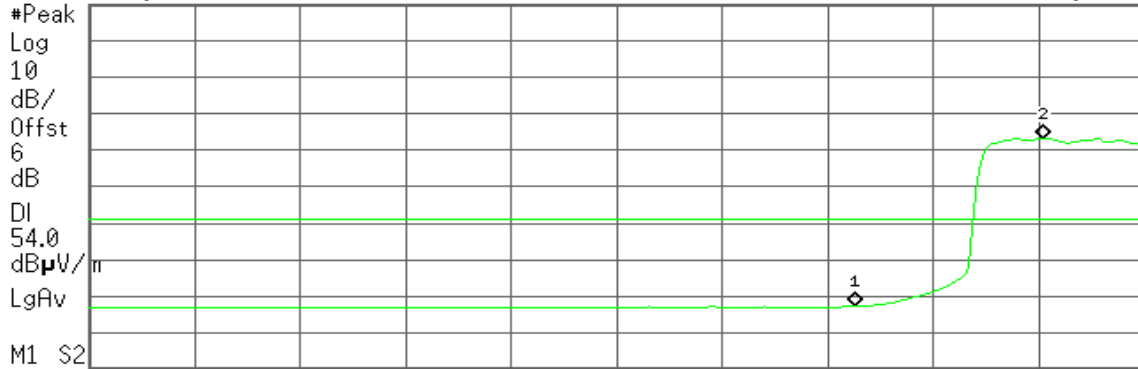
Agilent 20:55:26 Jun 7, 2012

R T

Mkr2 2.409 55 GHz
76.16 dBµV/m

Ref 113 dBµV/m

#Atten 10 dB



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 00 GHz	38.22 dBµV/m
2	(1)	Freq	2.409 55 GHz	76.16 dBµV/m



Band Edges (IEEE 802.11n HT20 mode / CH High)

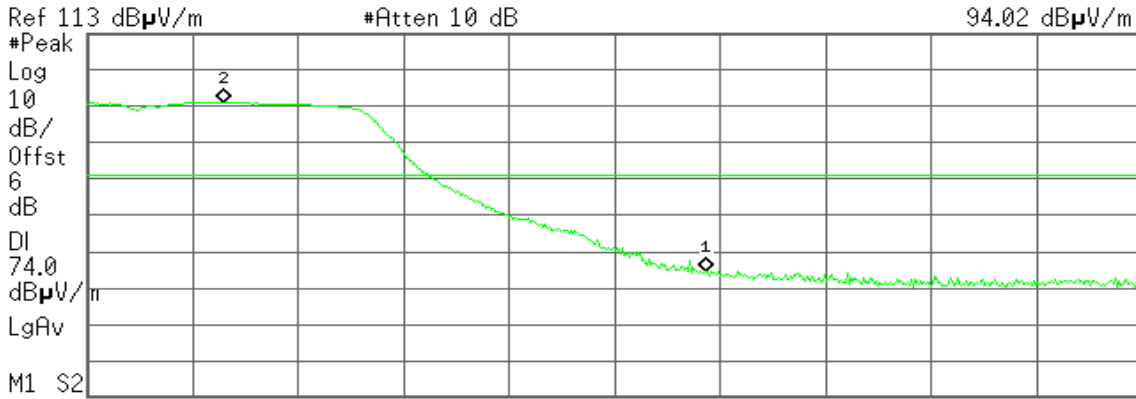
Detector mode: Peak

Polarity: Vertical

Agilent 22:41:08 Jun 7, 2012

R L

Mkr2 2.465 20 GHz
94.02 dBµV/m



Ref 113 dBµV/m #Atten 10 dB

Start 2.460 00 GHz Stop 2.500 00 GHz

#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	47.53 dBµV/m
2	(1)	Freq	2.465 20 GHz	94.02 dBµV/m

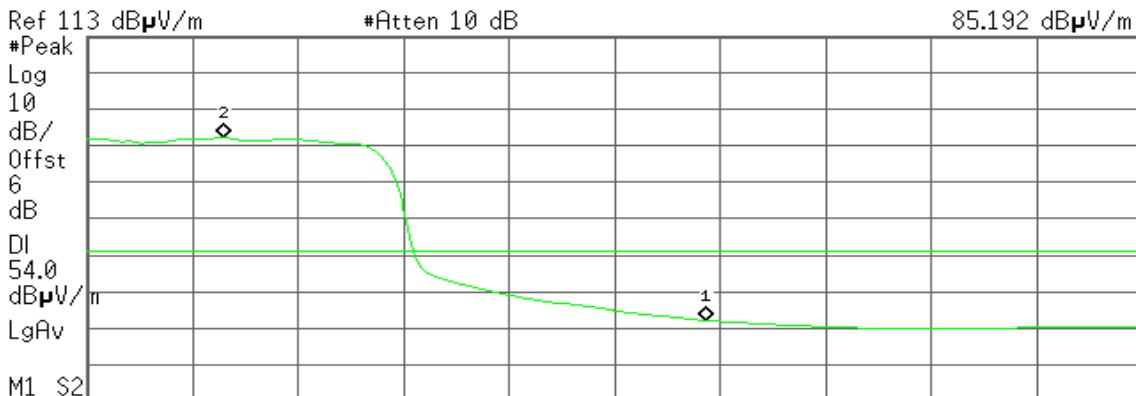
Detector mode: Average

Polarity: Vertical

Agilent 22:51:09 Jun 7, 2012

R L

Mkr2 2.465 20 GHz
85.192 dBµV/m



Ref 113 dBµV/m #Atten 10 dB

Start 2.460 00 GHz Stop 2.500 00 GHz

#Res BW 1 MHz #VBW 10 Hz Sweep 3.119 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	35.12 dBµV/m
2	(1)	Freq	2.465 20 GHz	85.19 dBµV/m



Detector mode: Peak

Polarity: Horizontal

Agilent 23:19:03 Jun 7, 2012

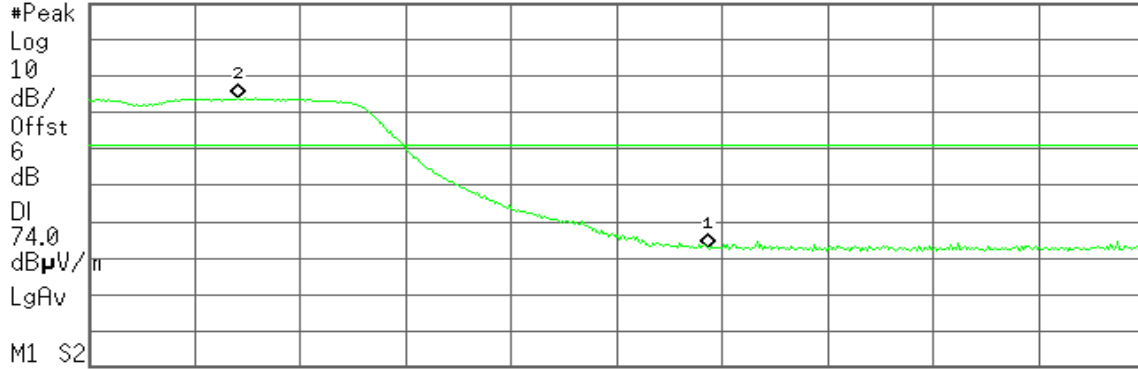
R T

Mkr2 2.465 67 GHz

Ref 113 dBµV/m

#Atten 10 dB

86.84 dBµV/m



Start 2.460 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

VBW 8 MHz

#Sweep 100 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	45.69 dBµV/m
2	(1)	Freq	2.465 67 GHz	86.84 dBµV/m

Detector mode: Average

Polarity: Horizontal

Agilent 23:20:20 Jun 7, 2012

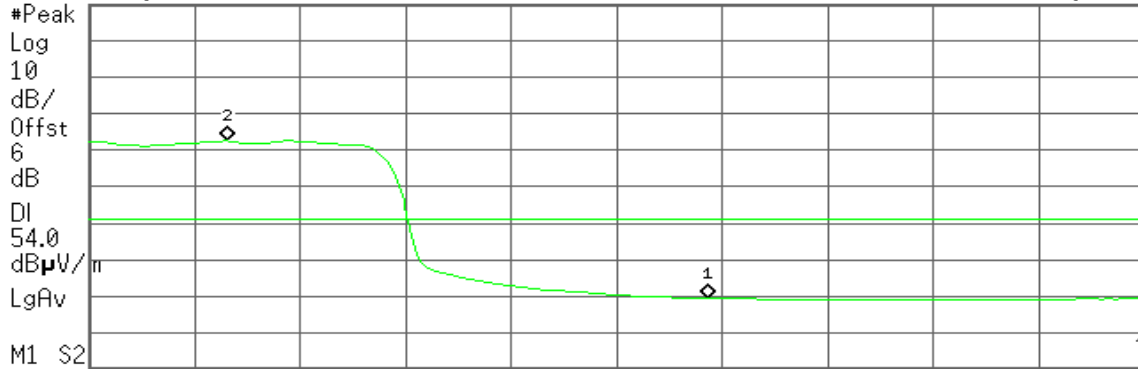
R L

Mkr2 2.465 27 GHz

Ref 113 dBµV/m

#Atten 10 dB

75.56 dBµV/m



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 50 GHz	32.44 dBµV/m
2	(1)	Freq	2.465 27 GHz	75.56 dBµV/m



Band Edges (IEEE 802.11n HT40 mode / CH Low)

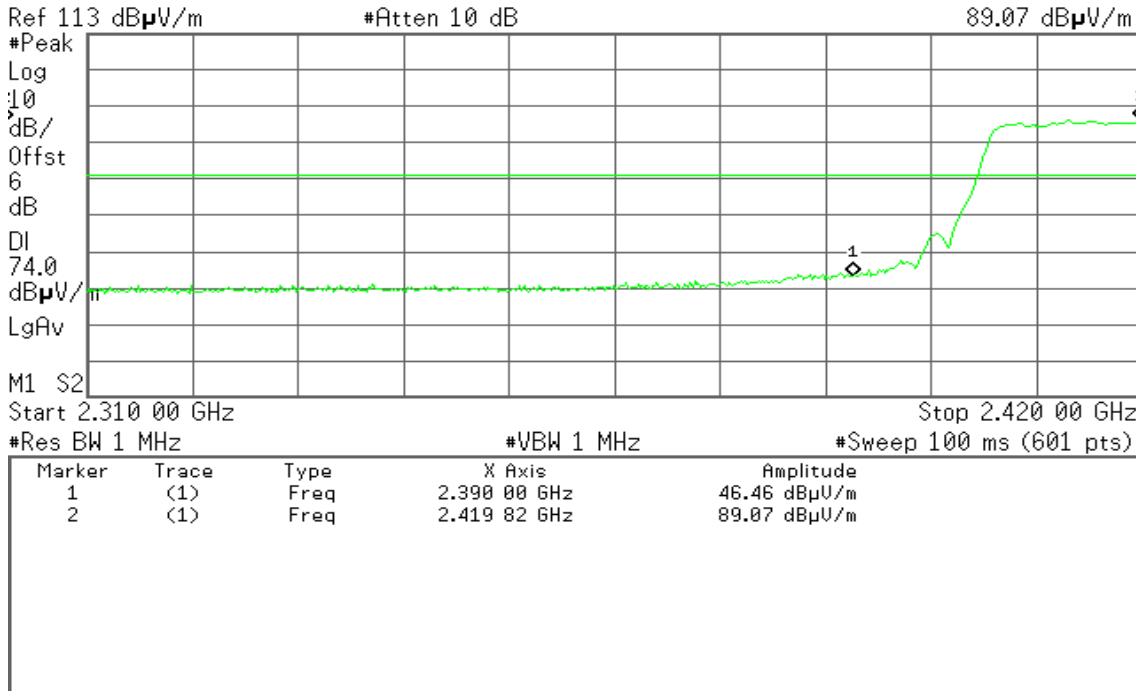
Detector mode: Peak

Polarity: Vertical

Agilent 22:03:55 Jun 7, 2012

R L

Mkr2 2.419 82 GHz
89.07 dBµV/m



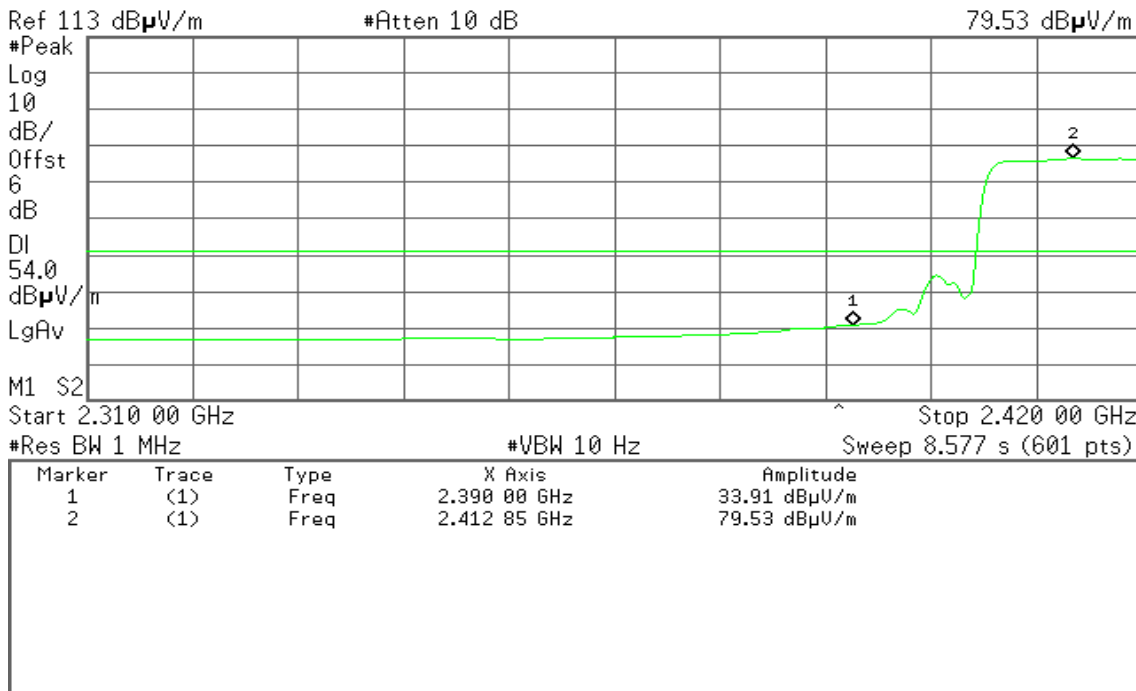
Detector mode: Average

Polarity: Vertical

Agilent 22:06:10 Jun 7, 2012

R L

Mkr2 2.412 85 GHz
79.53 dBµV/m



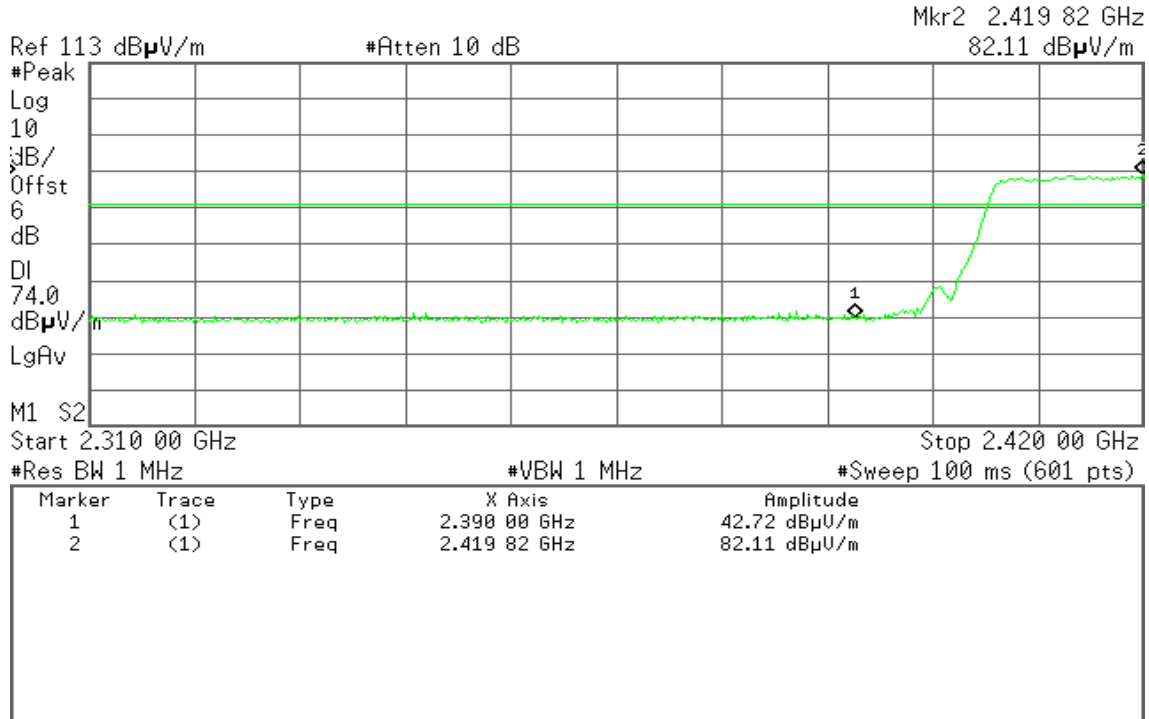


Detector mode: Peak

Polarity: Horizontal

Agilent 22:11:06 Jun 7, 2012

R L

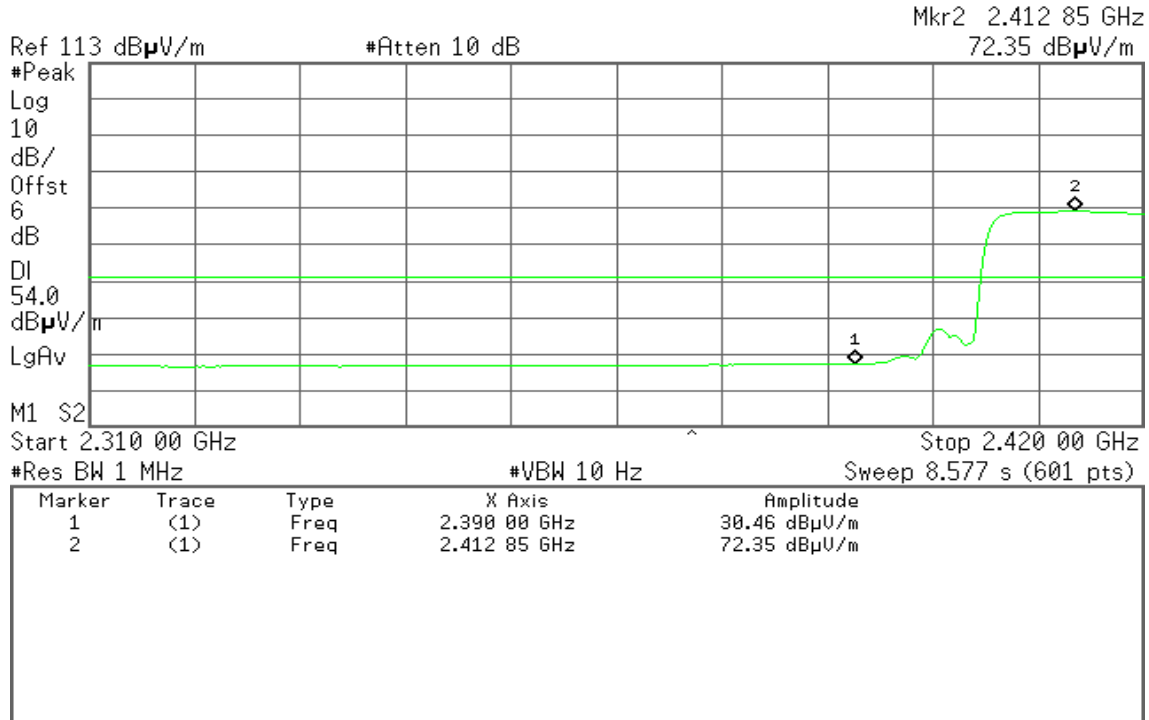


Detector mode: Average

Polarity: Horizontal

Agilent 22:12:44 Jun 7, 2012

R L





Band Edges (IEEE 802.11n HT40 mode / CH High)

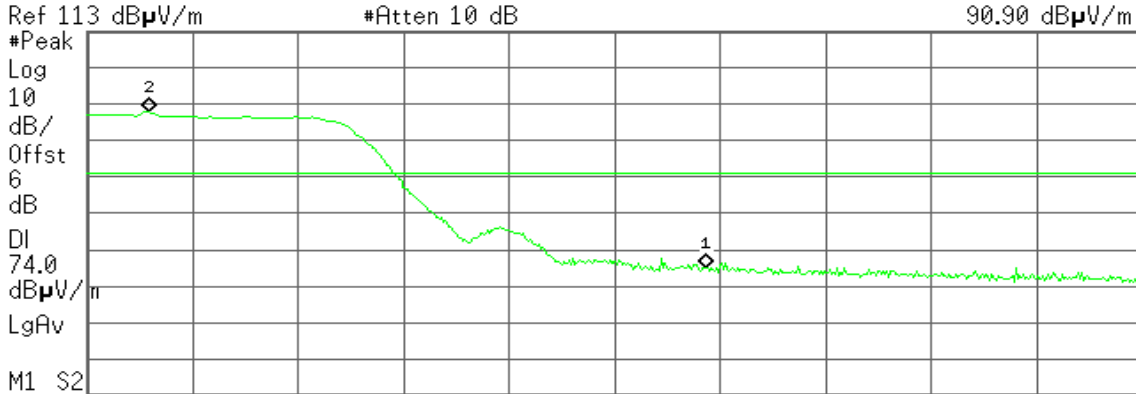
Detector mode: Peak

Polarity: Vertical

Agilent 22:30:33 Jun 7, 2012

R L

Mkr2 2.462 33 GHz
90.90 dBµV/m



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

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	47.86 dBµV/m
2	(1)	Freq	2.462 33 GHz	90.90 dBµV/m

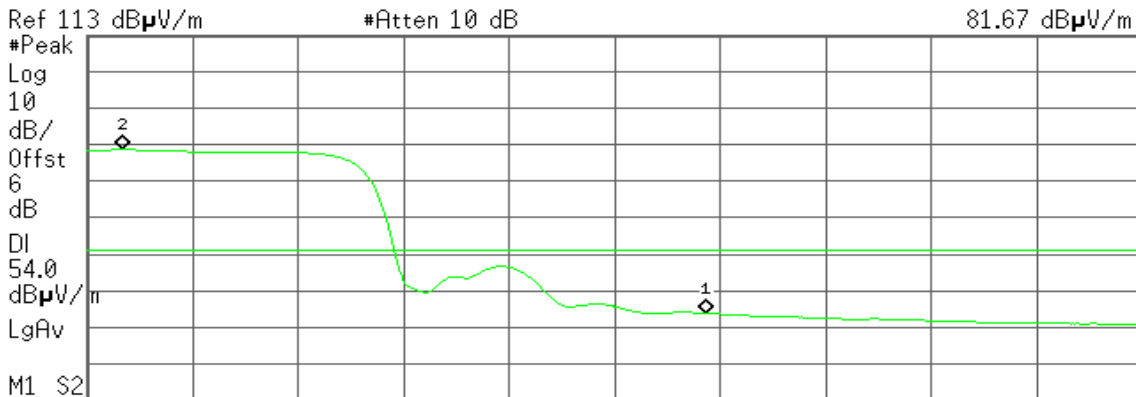
Detector mode: Average

Polarity: Vertical

Agilent 22:34:00 Jun 7, 2012

R L

Mkr2 2.461 33 GHz
81.67 dBµV/m



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 50 GHz	36.77 dBµV/m
2	(1)	Freq	2.461 33 GHz	81.67 dBµV/m



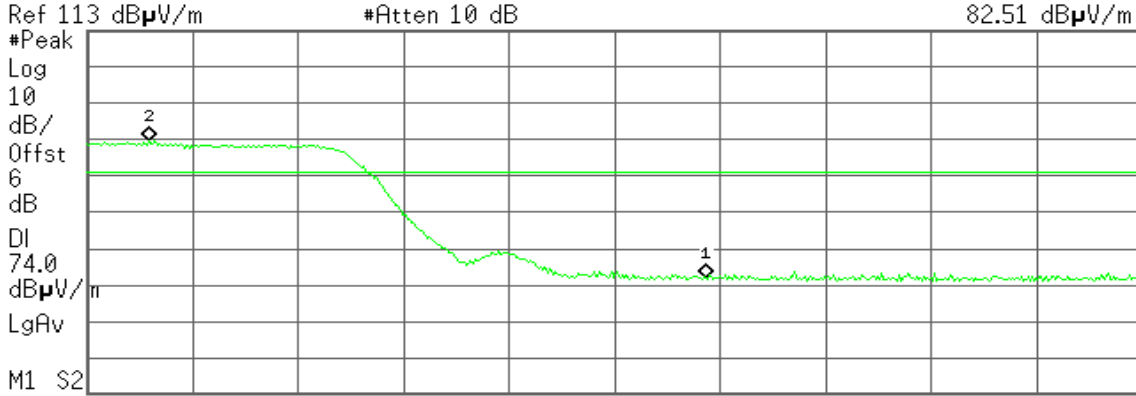
Detector mode: Peak

Polarity: Horizontal

Agilent 22:24:51 Jun 7, 2012

R L

Mkr2 2.462 33 GHz
82.51 dBµV/m



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	45.04 dBµV/m
2	(1)	Freq	2.462 33 GHz	82.51 dBµV/m

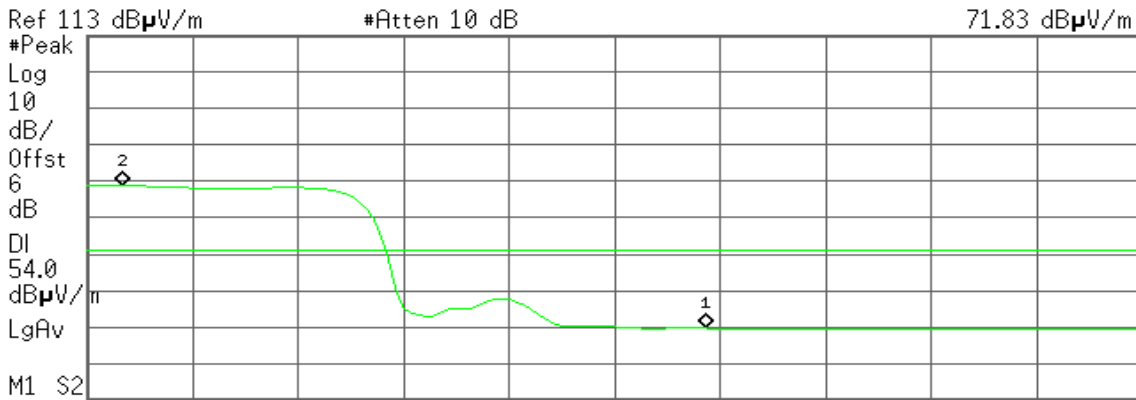
Detector mode: Average

Polarity: Horizontal

Agilent 22:26:45 Jun 7, 2012

R L

Mkr2 2.461 33 GHz
71.83 dBµV/m



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.483 50 GHz	32.69 dBµV/m
2	(1)	Freq	2.461 33 GHz	71.83 dBµV/m

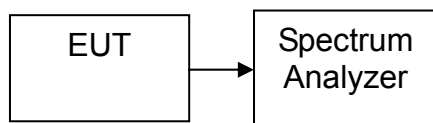


7.5 PEAK POWER SPECTRAL DENSITY

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

Per KDB 558074 5.2.1.2/ or 5.2.2.1.

The transmitter output is connected to a spectrum analyzer. Set the RBW = 100 kHz, VBW ≥ 300 kHz, span 5-30% greater than EBW, Detector = peak, Trace mode = max hold, Sweep = auto couple. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100\text{ kHz} = -15.2\text{ dB})$. Record the maximum reading. 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)	100kHz PPSD (dBm)	3kHz PPSD (dBm)	Limit (dBm)	Result
Low	2412	6.81	-8.39	8.00	PASS
Mid	2437	6.69	-8.51		
High	2462	6.97	-8.23		

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	100kHz PPSD (dBm)	3kHz PPSD (dBm)	Limit (dBm)	Result
Low	2412	-1.53	-16.73	8.00	PASS
Mid	2437	-0.98	-16.18		
High	2462	-0.83	-16.03		

Test mode: IEEE 802.11n HT20 mode

Channel	Frequency (MHz)	100kHz PPSD (dBm)	3kHz PPSD (dBm)	Limit (dBm)	Result
Low	2412	-1.36	-16.56	8.00	PASS
Mid	2437	-1.19	-16.39		
High	2462	-0.69	-15.89		

Test mode: IEEE 802.11n HT40 mode

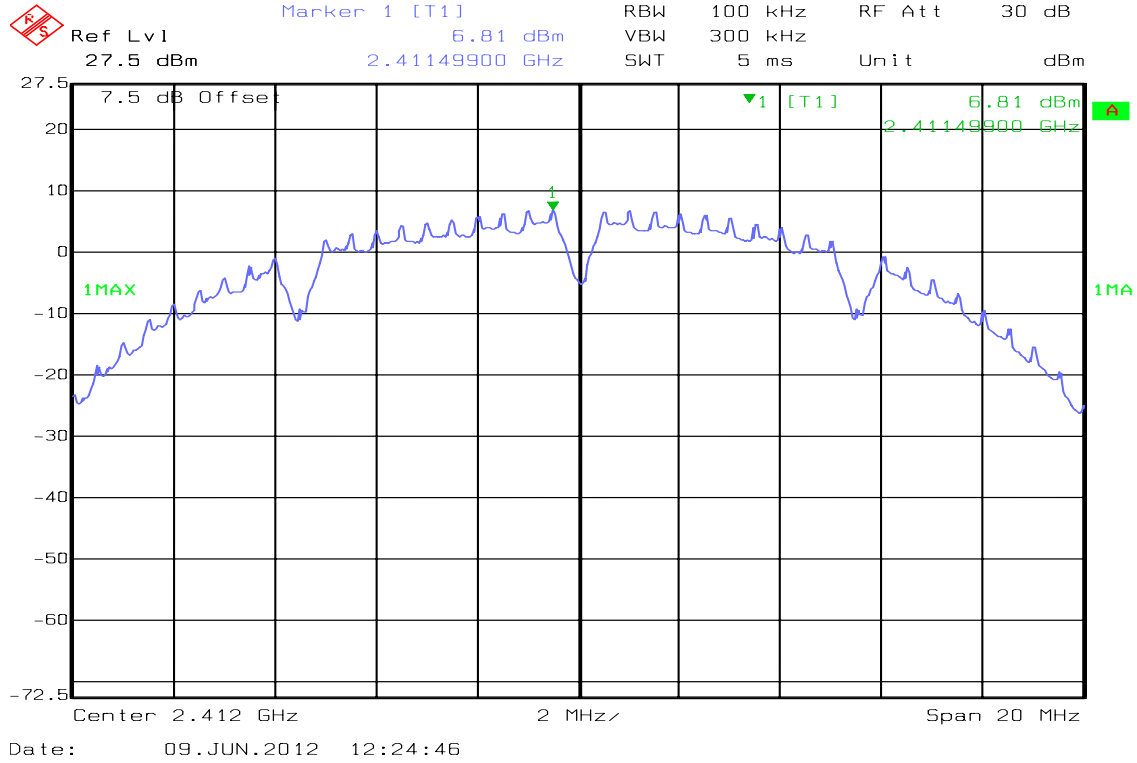
Channel	Frequency (MHz)	100kHz PPSD (dBm)	3kHz PPSD (dBm)	Limit (dBm)	Result
Low	2422	-5.56	-20.76	8.00	PASS
Mid	2437	-5.24	-20.44		
High	2452	-5.09	-20.29		



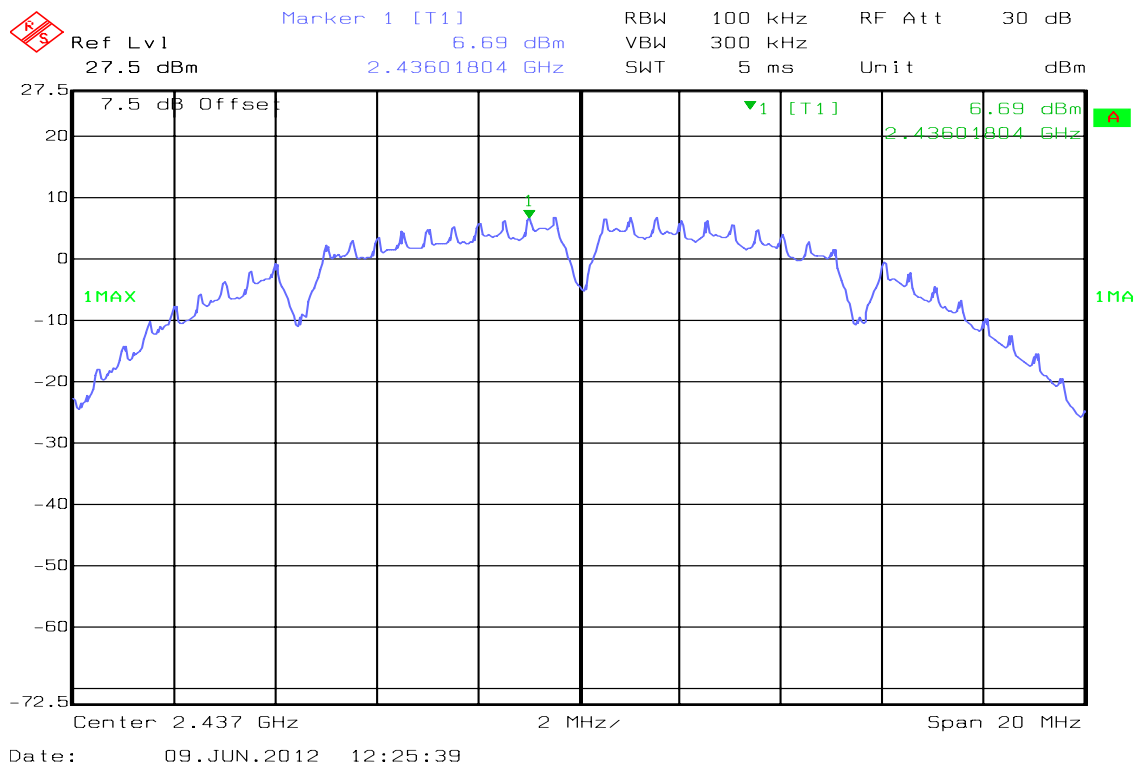
Test Plot

IEEE 802.11b mode

PPSD (CH Low)

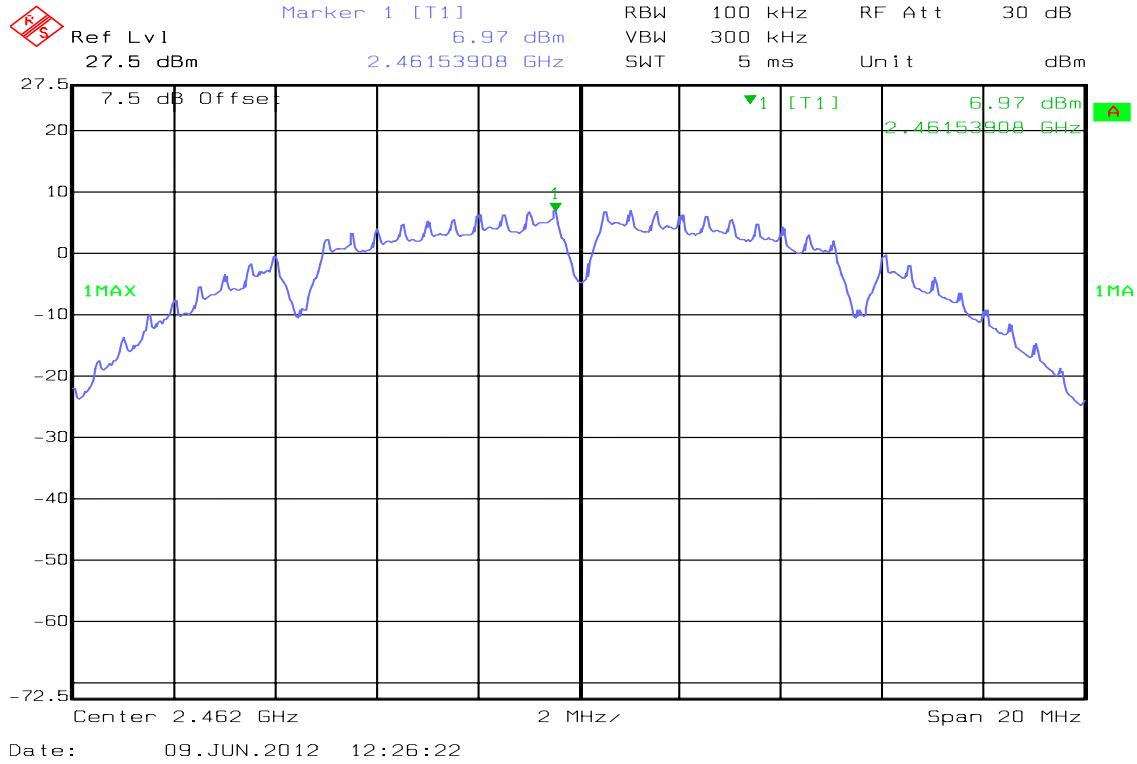


PPSD (CH Mid)



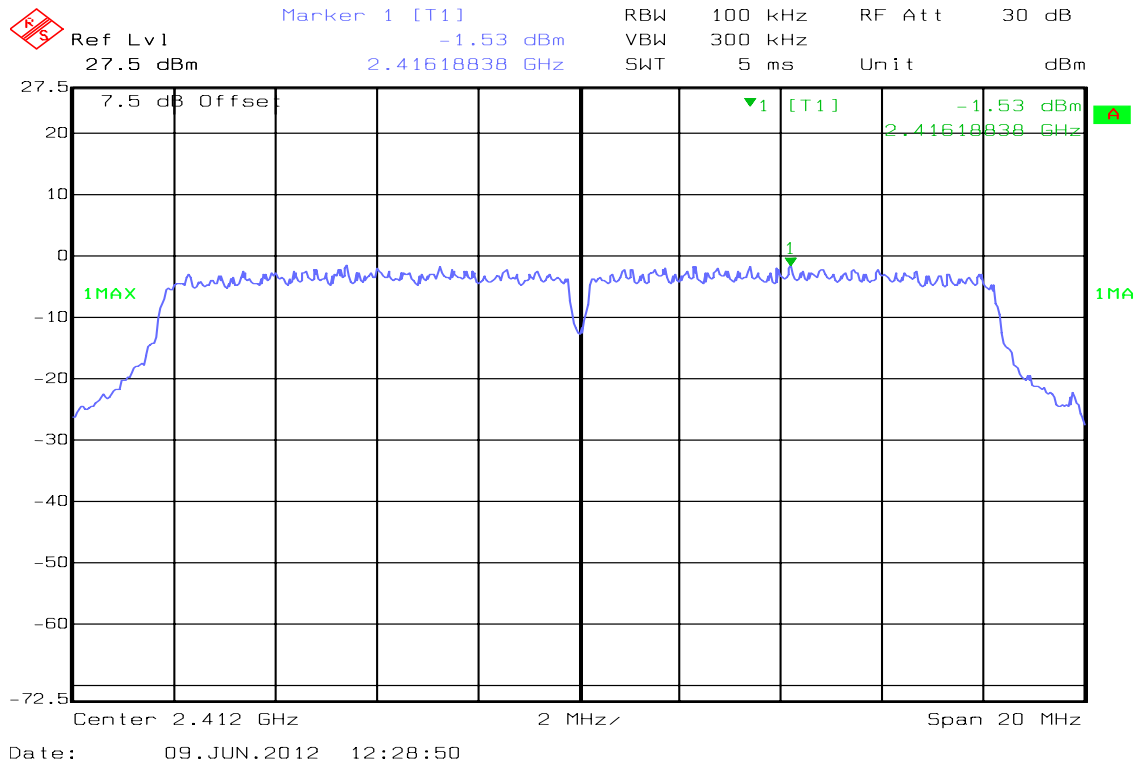


PPSD (CH High)



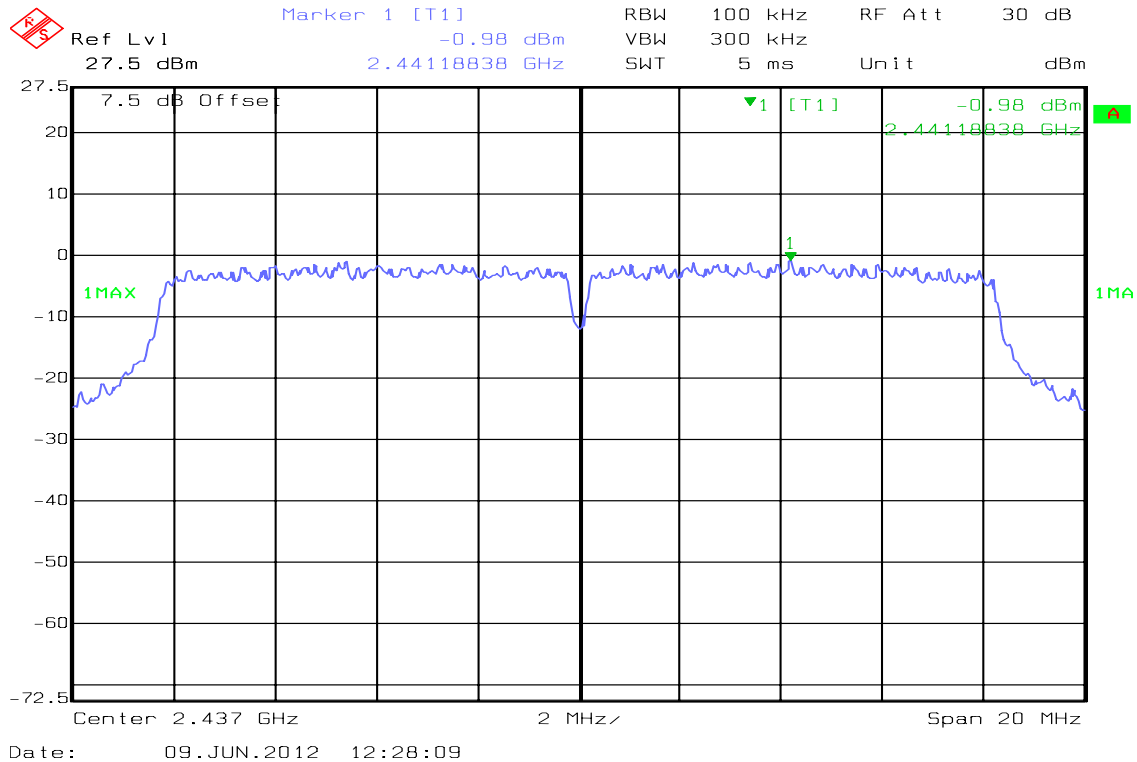
IEEE 802.11g mode

PPSD (CH Low)

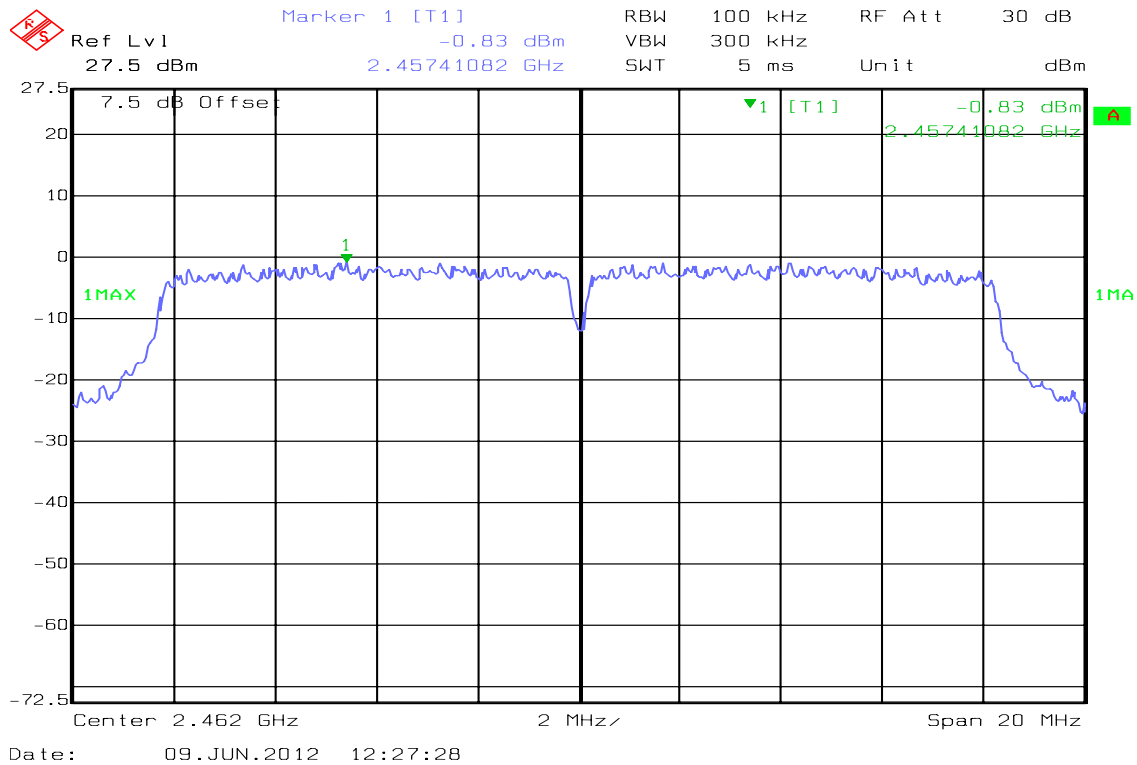




PPSD (CH Mid)



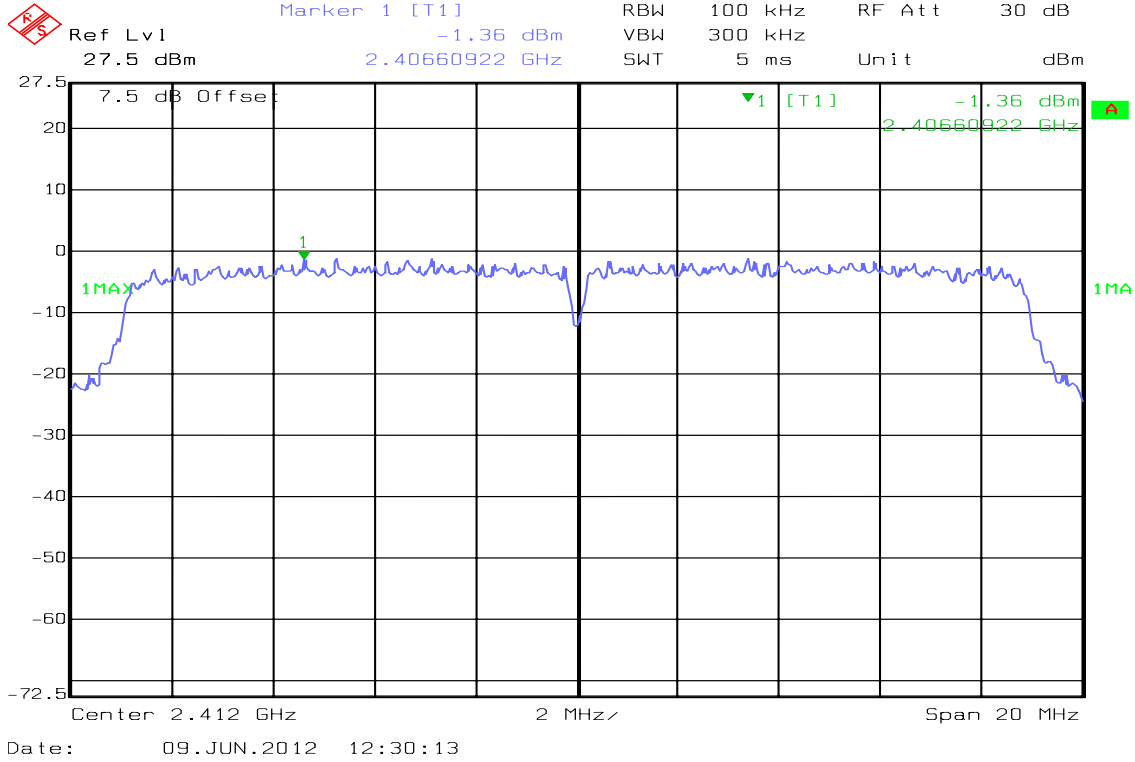
PPSD (CH High)



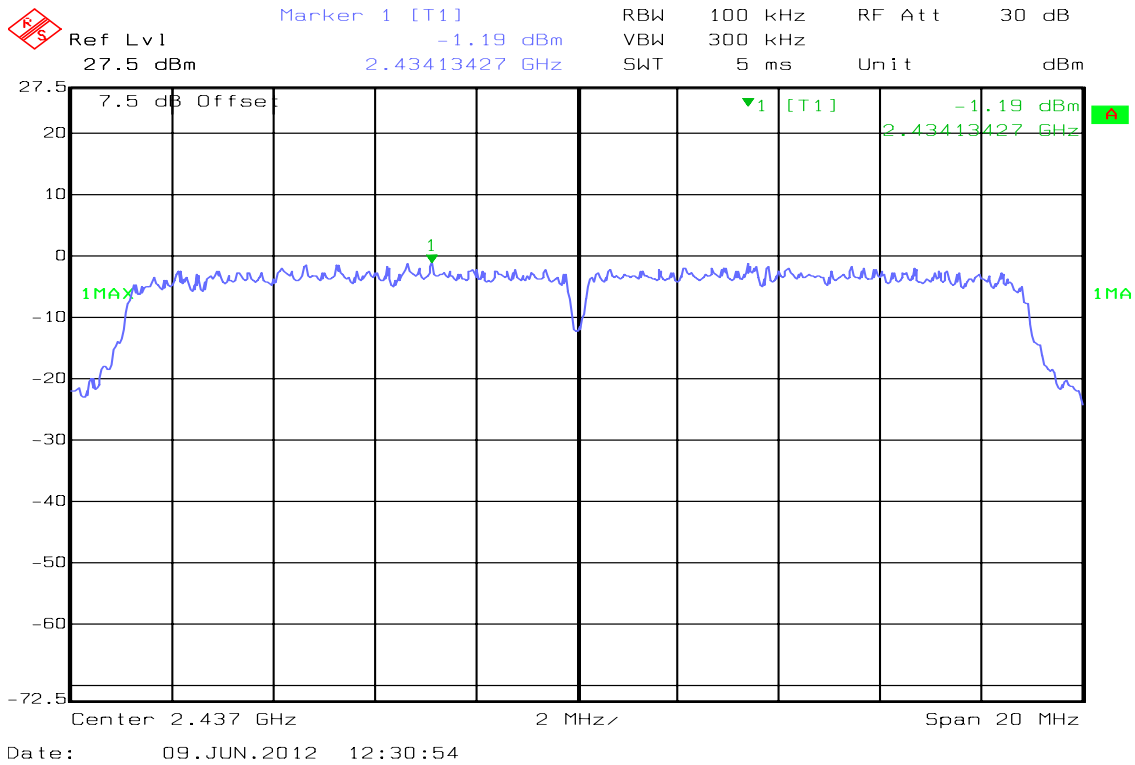


IEEE 802.11n HT20 mode

PPSD (CH Low)

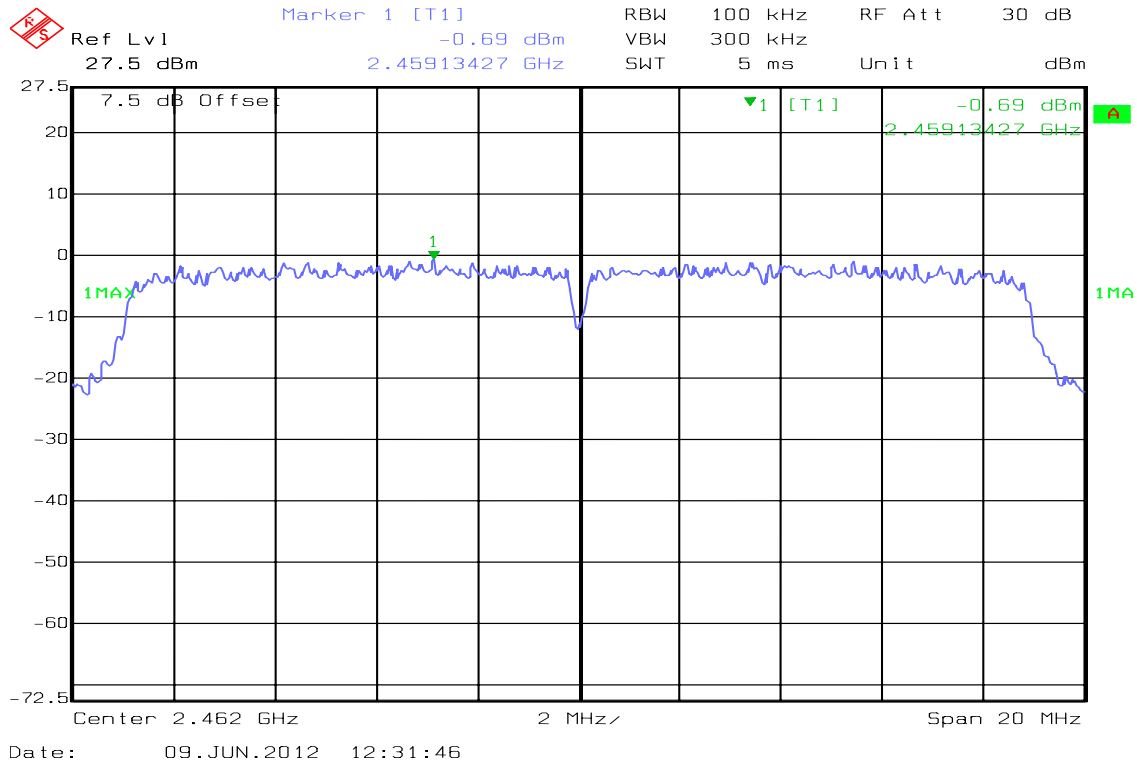


PPSD (CH Mid)



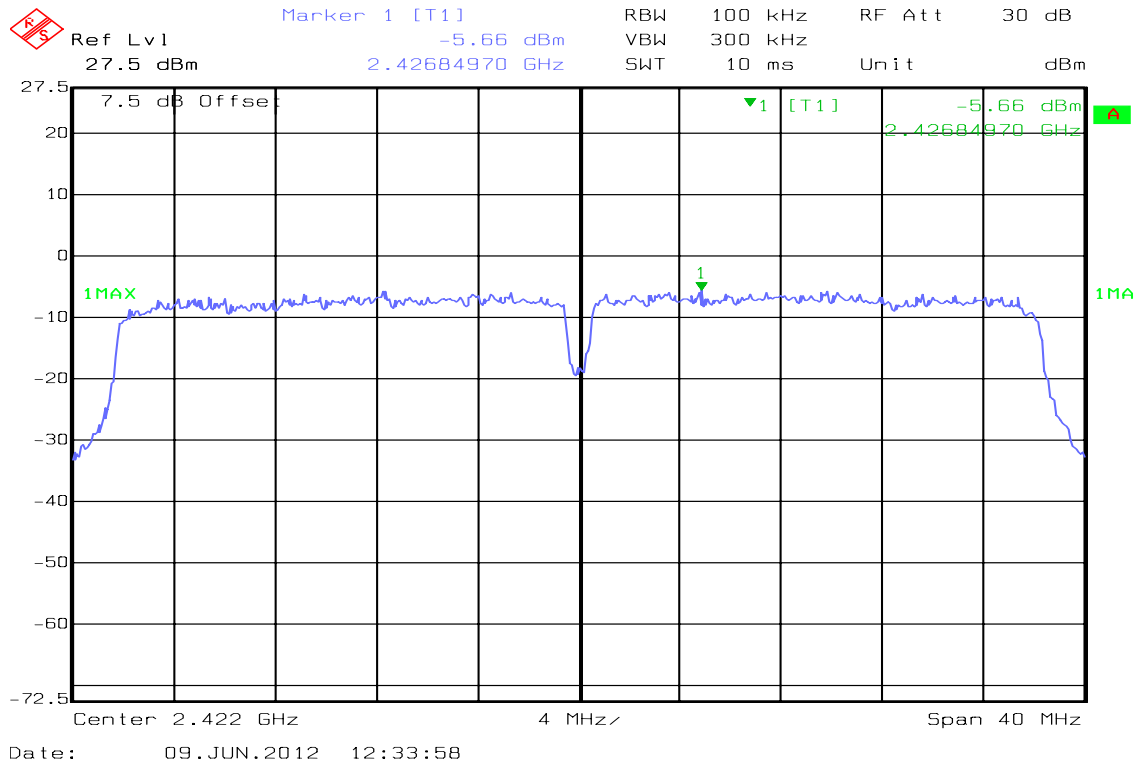


PPSD (CH High)



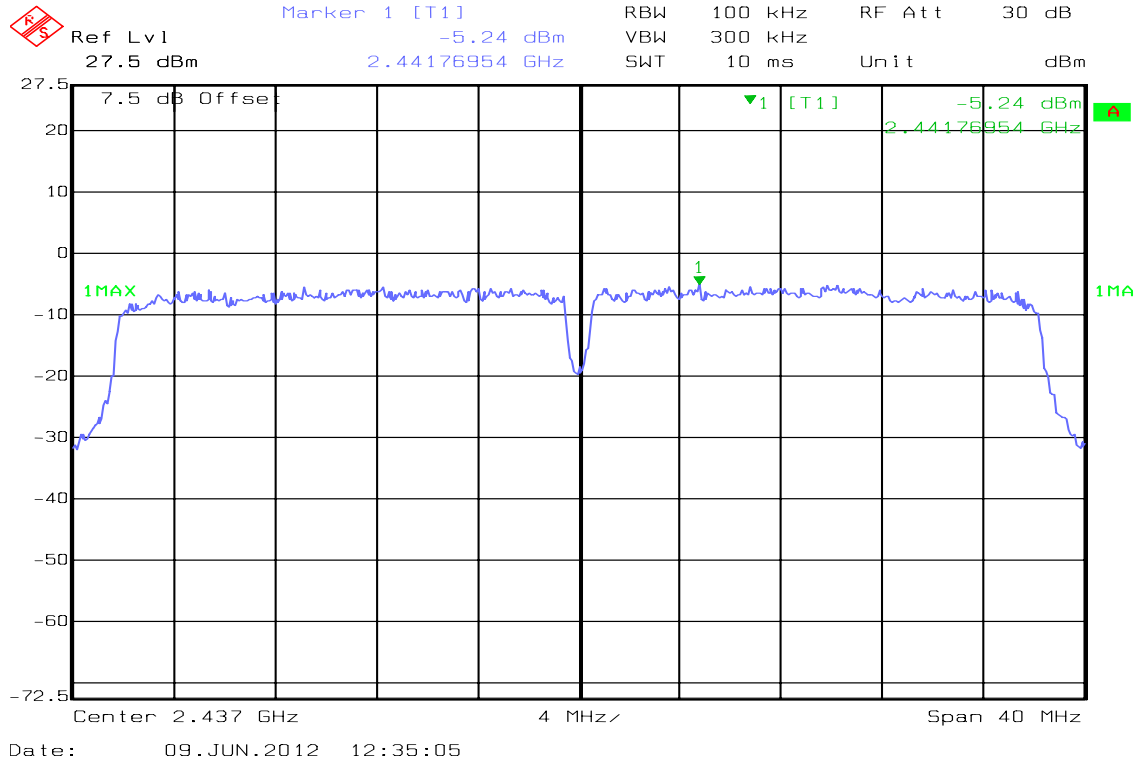
IEEE 802.11n HT40 mode

PPSD (CH Low)

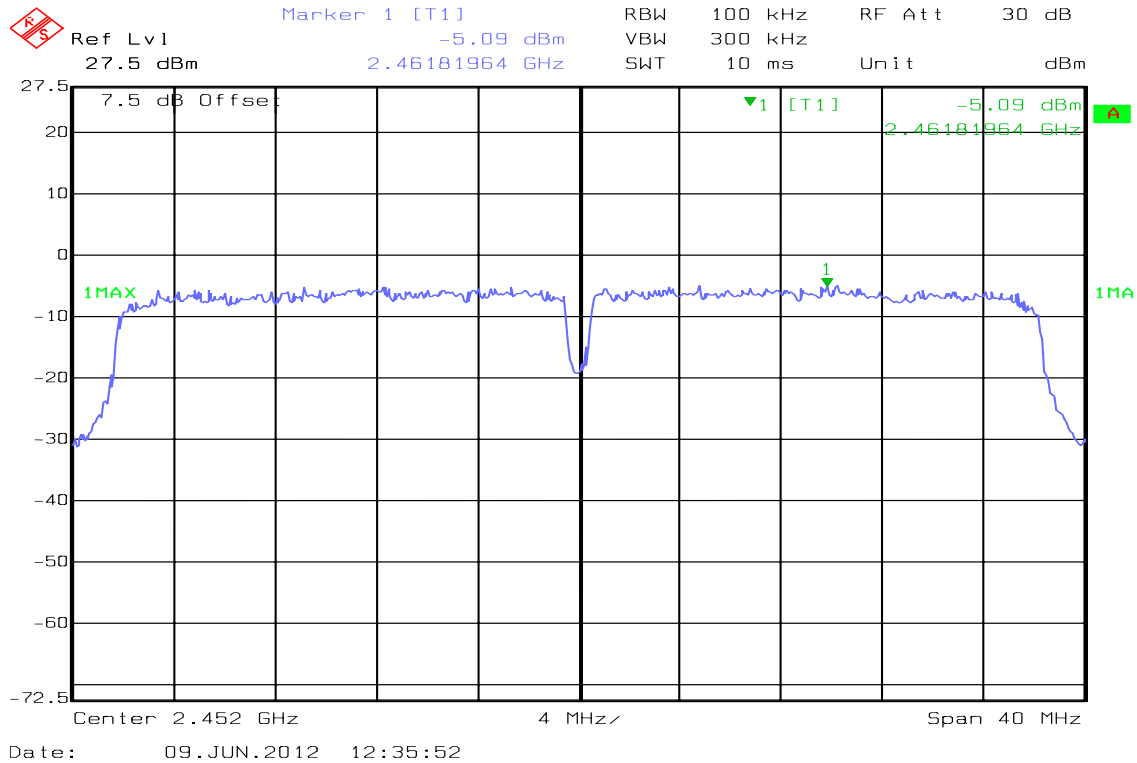




PPSD (CH Mid)



PPSD (CH High)





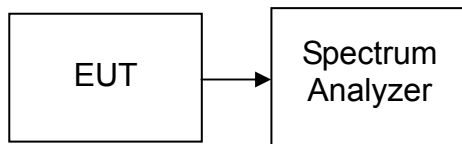
7.6 SPURIOUS EMISSIONS

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.



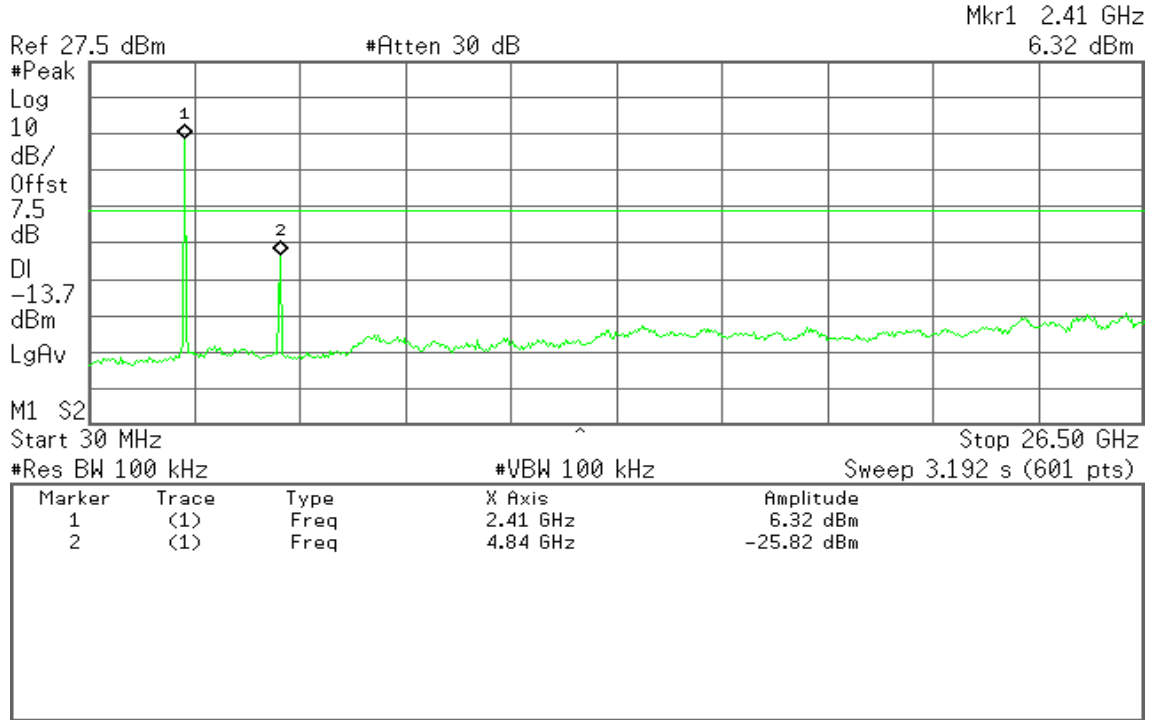
Test Plot

Spurious Emissions

IEEE 802.11b mode

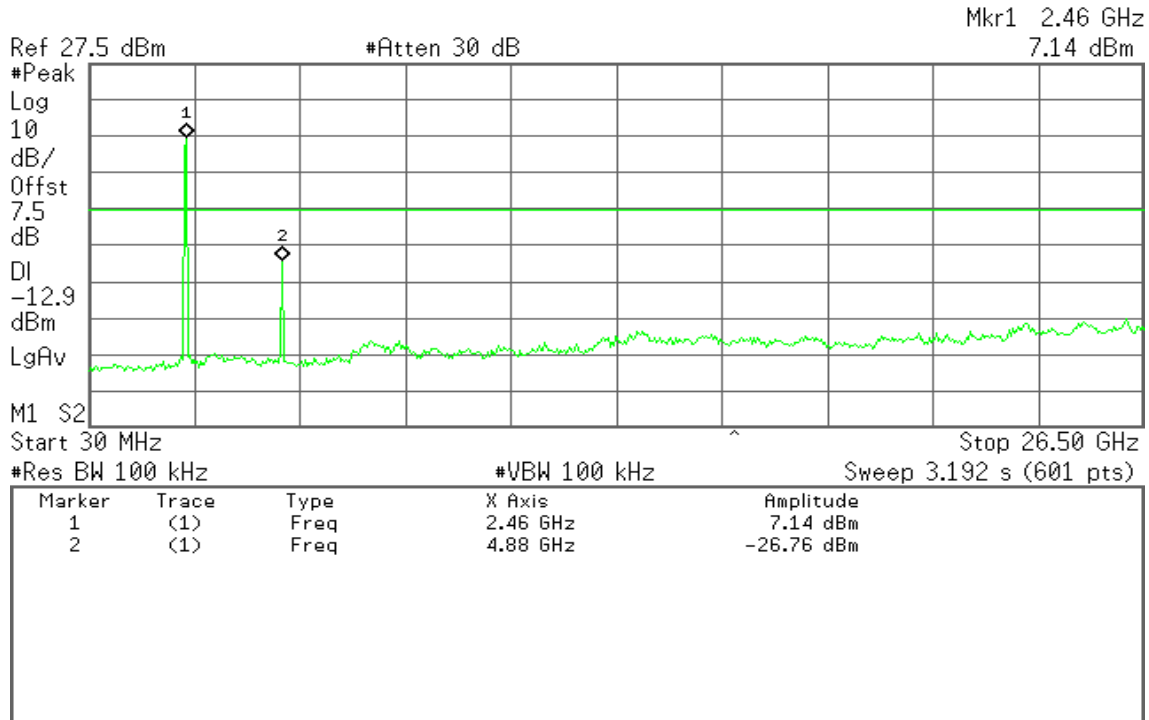
Agilent 10:40:05 Jun 11, 2012

R L



Agilent 10:41:27 Jun 11, 2012

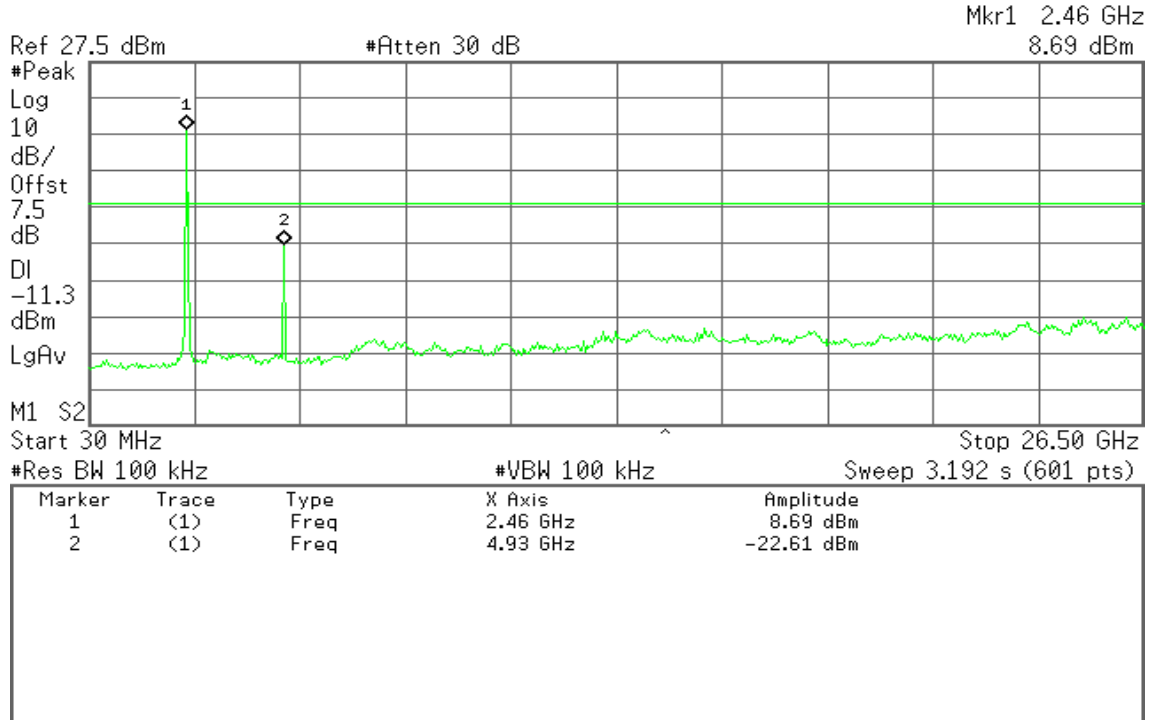
R L





Agilent 10:44:52 Jun 11, 2012

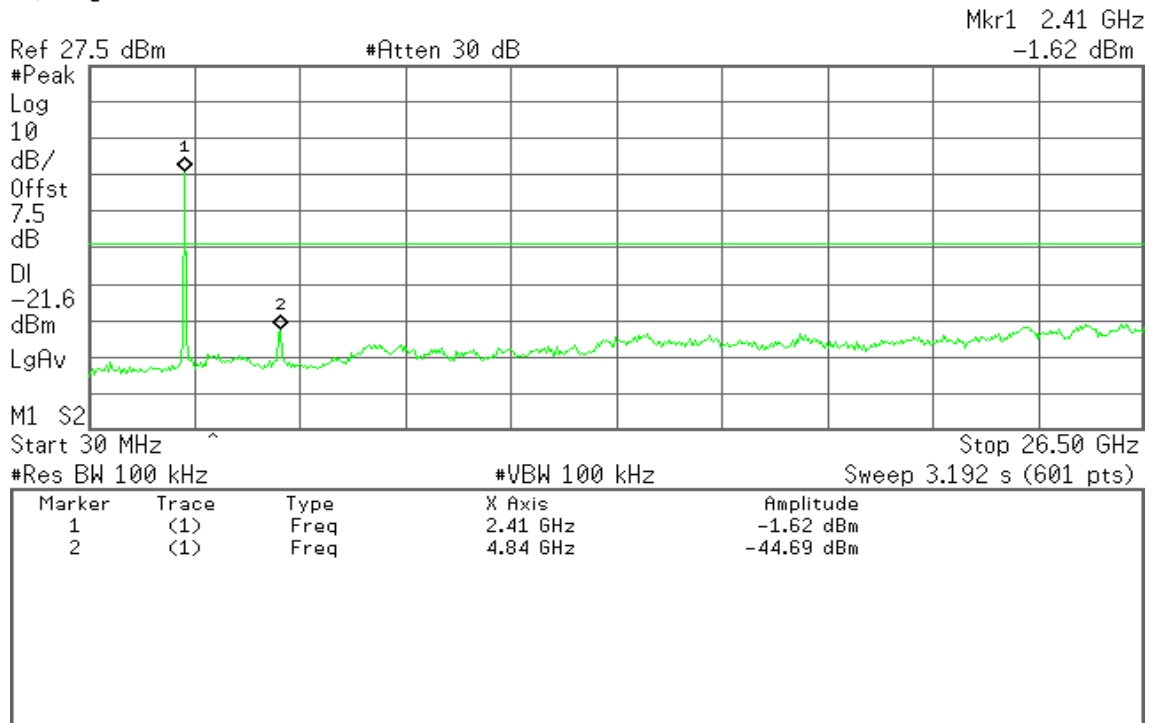
R L



IEEE 802.11g mode

Agilent 11:00:56 Jun 11, 2012

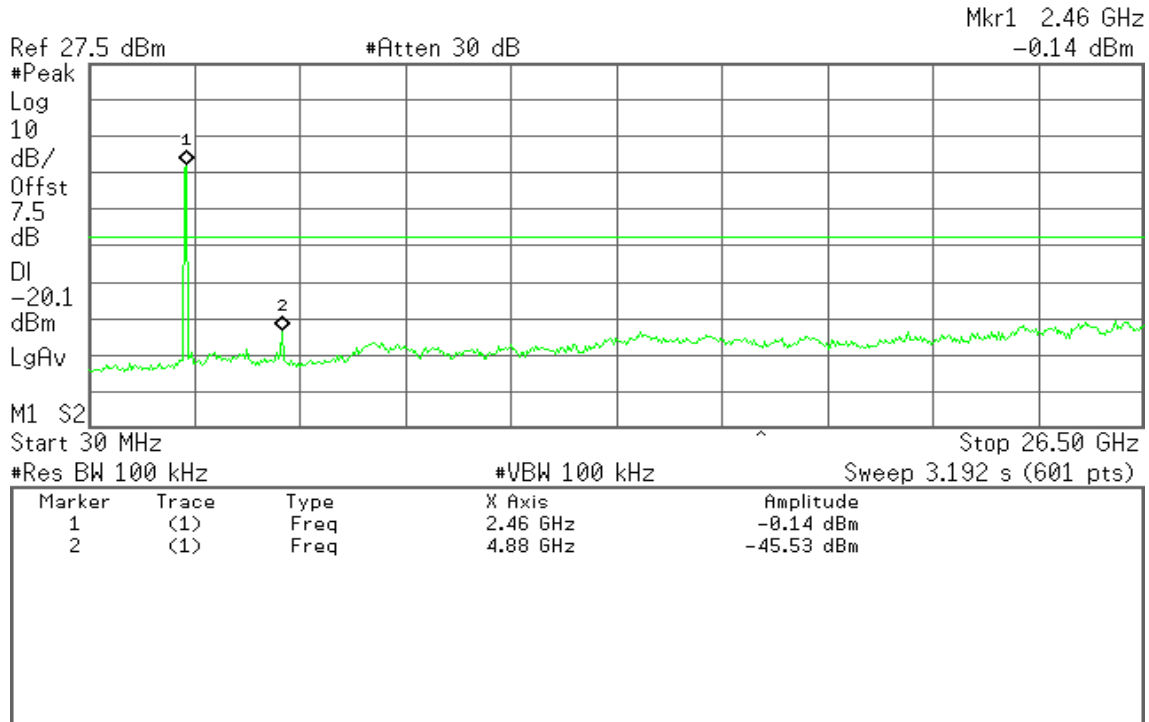
R L





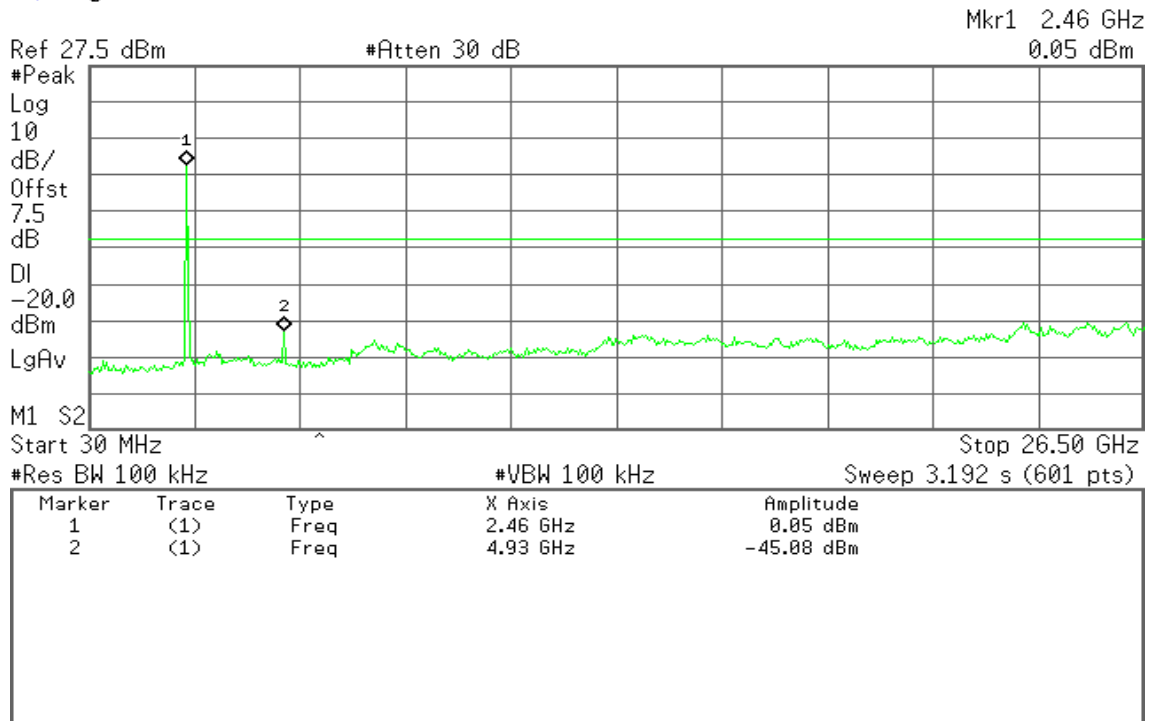
Agilent 10:48:48 Jun 11, 2012

R L



Agilent 10:47:15 Jun 11, 2012

R L



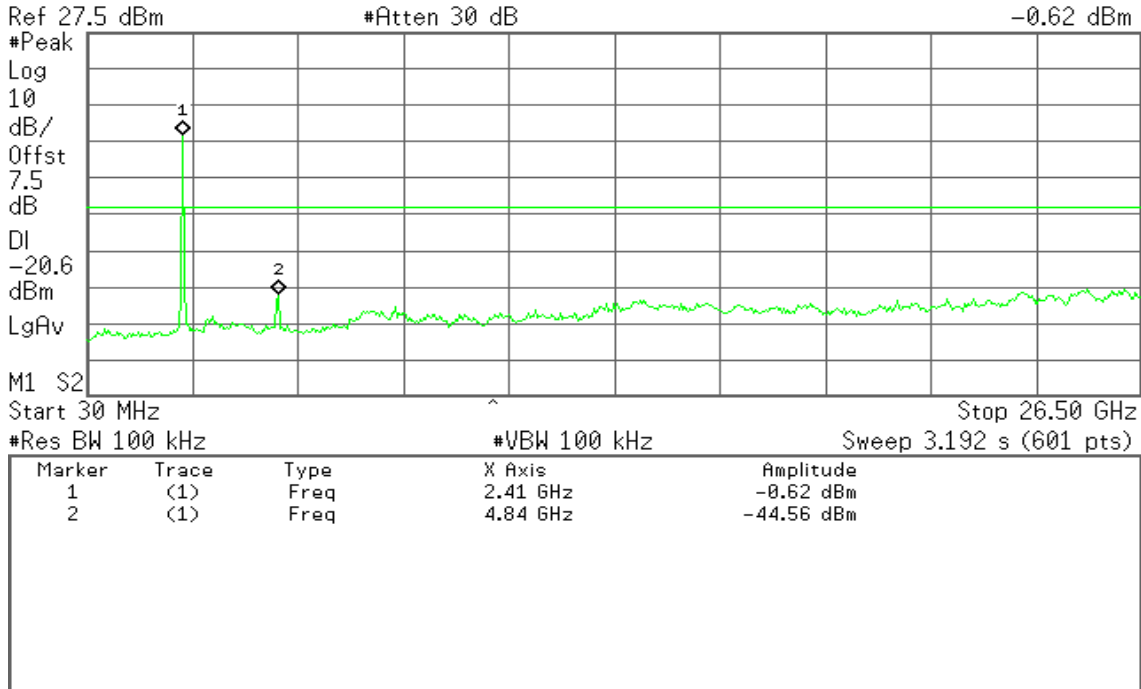


IEEE 802.11n HT20 mode

Agilent 10:53:54 Jun 11, 2012

R L

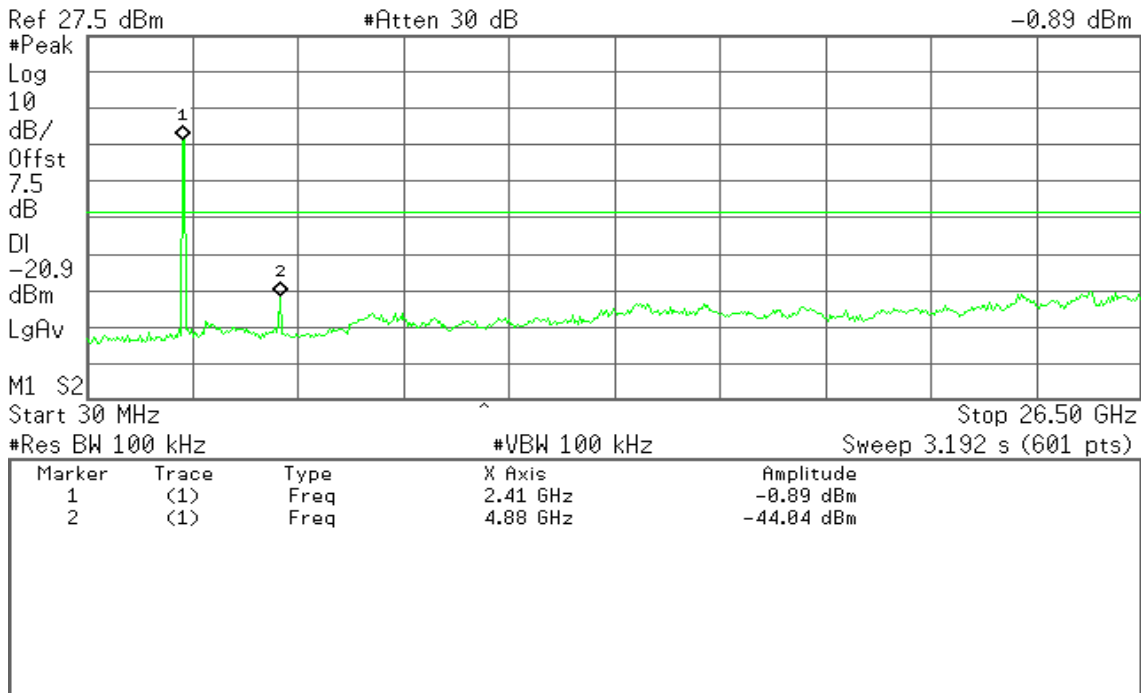
Mkr1 2.41 GHz
-0.62 dBm



Agilent 10:55:37 Jun 11, 2012

R L

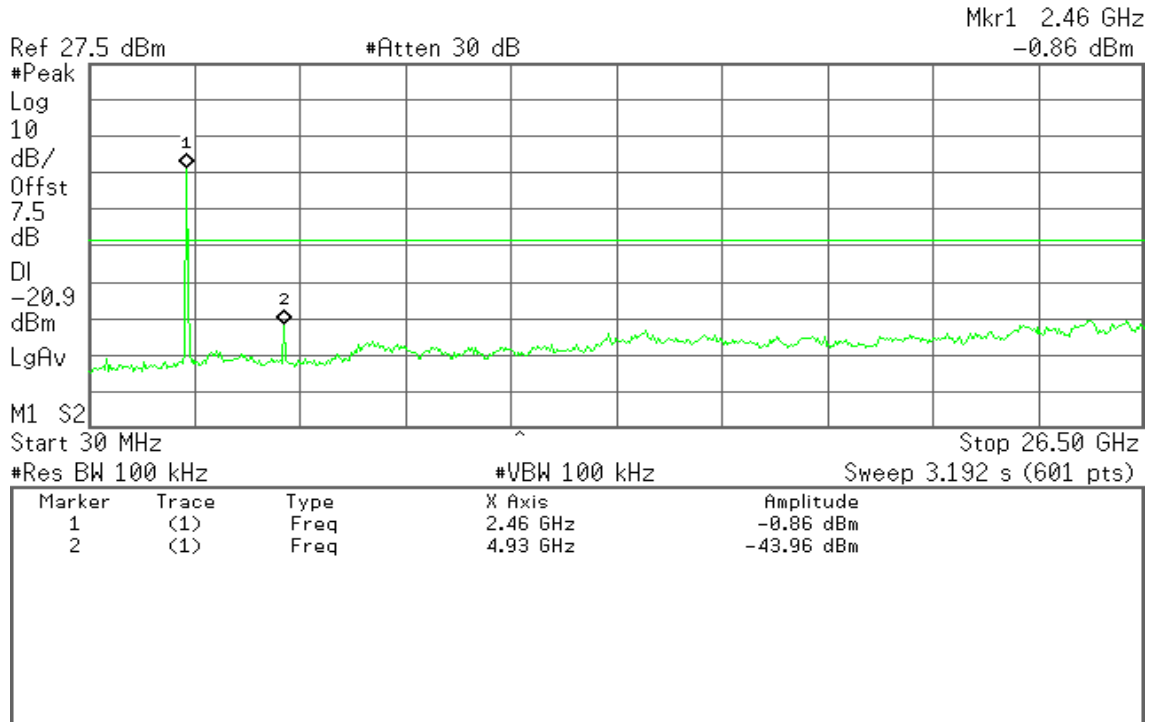
Mkr1 2.41 GHz
-0.89 dBm





Agilent 10:57:10 Jun 11, 2012

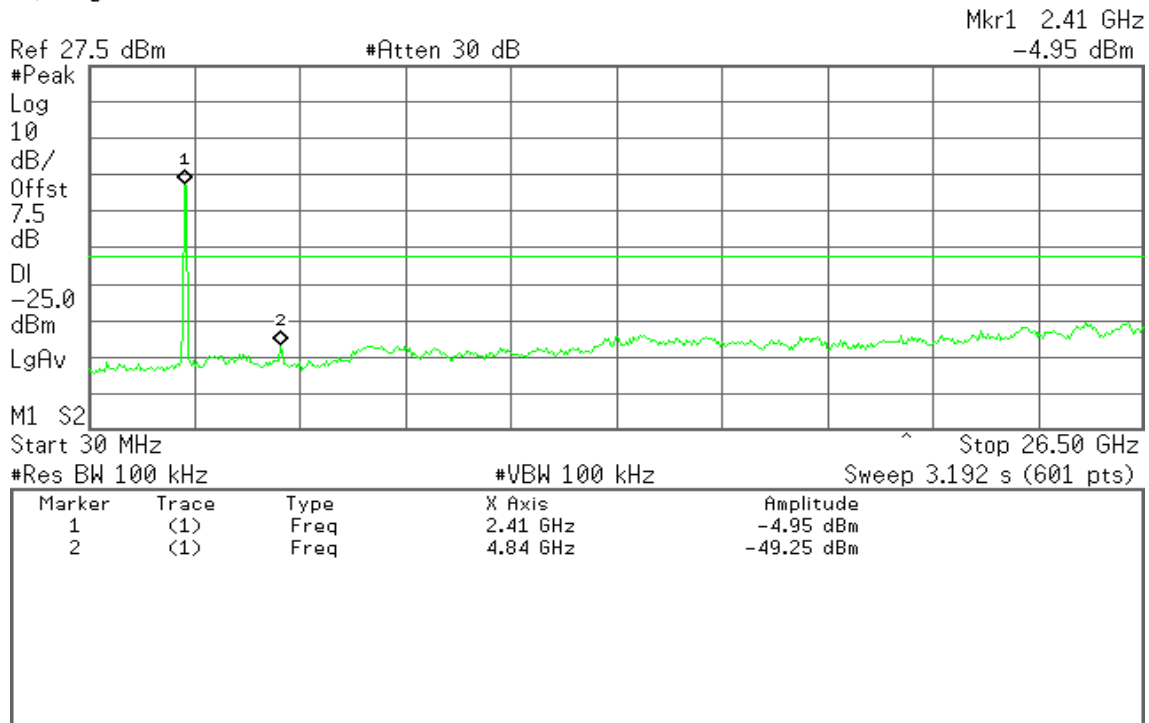
R L



IEEE 802.11n HT40 mode

Agilent 11:03:50 Jun 11, 2012

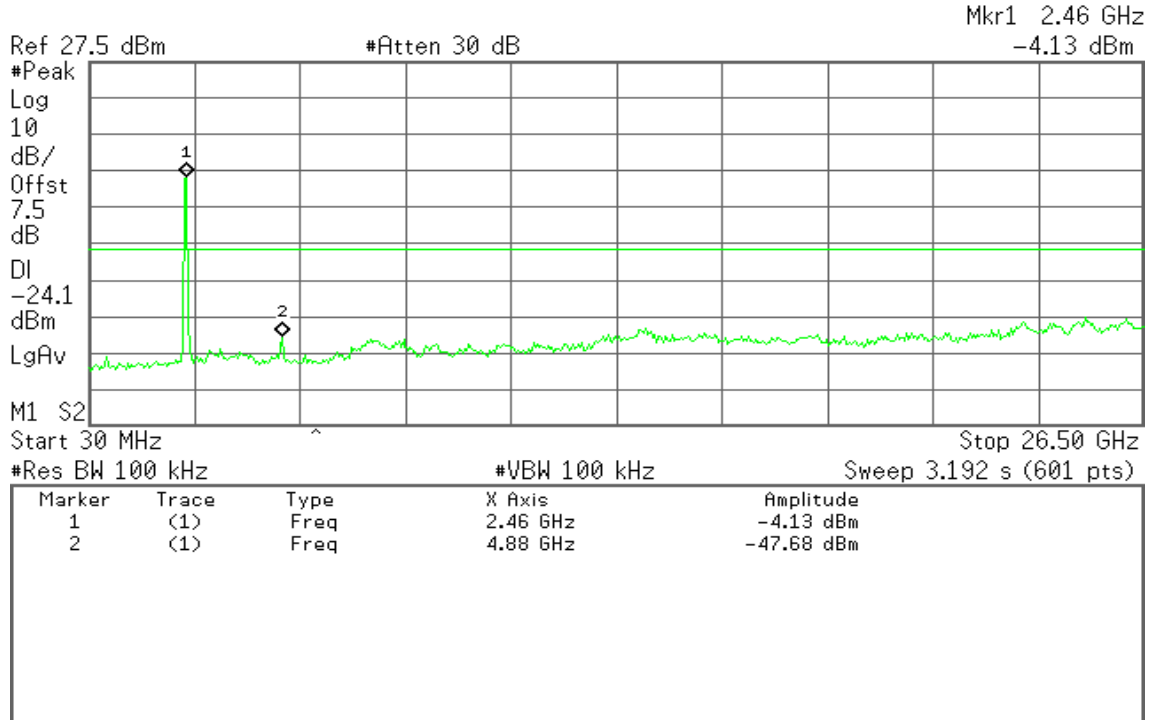
R L





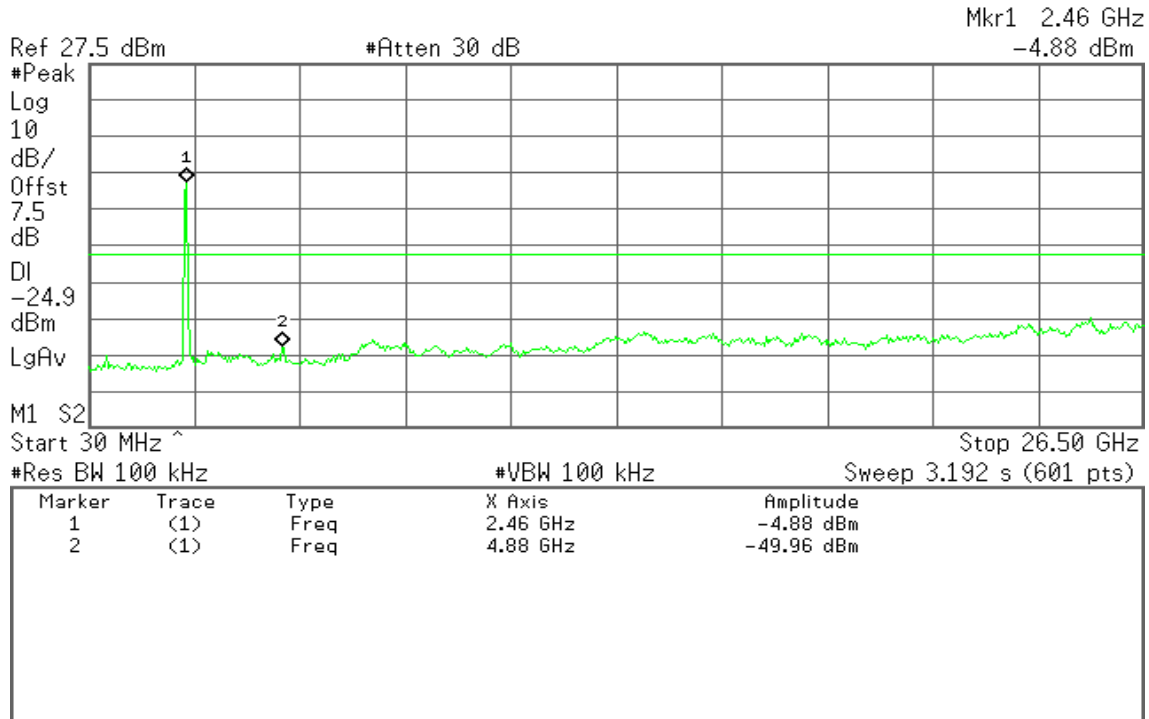
Agilent 11:05:19 Jun 11, 2012

R L



Agilent 11:08:07 Jun 11, 2012

R L

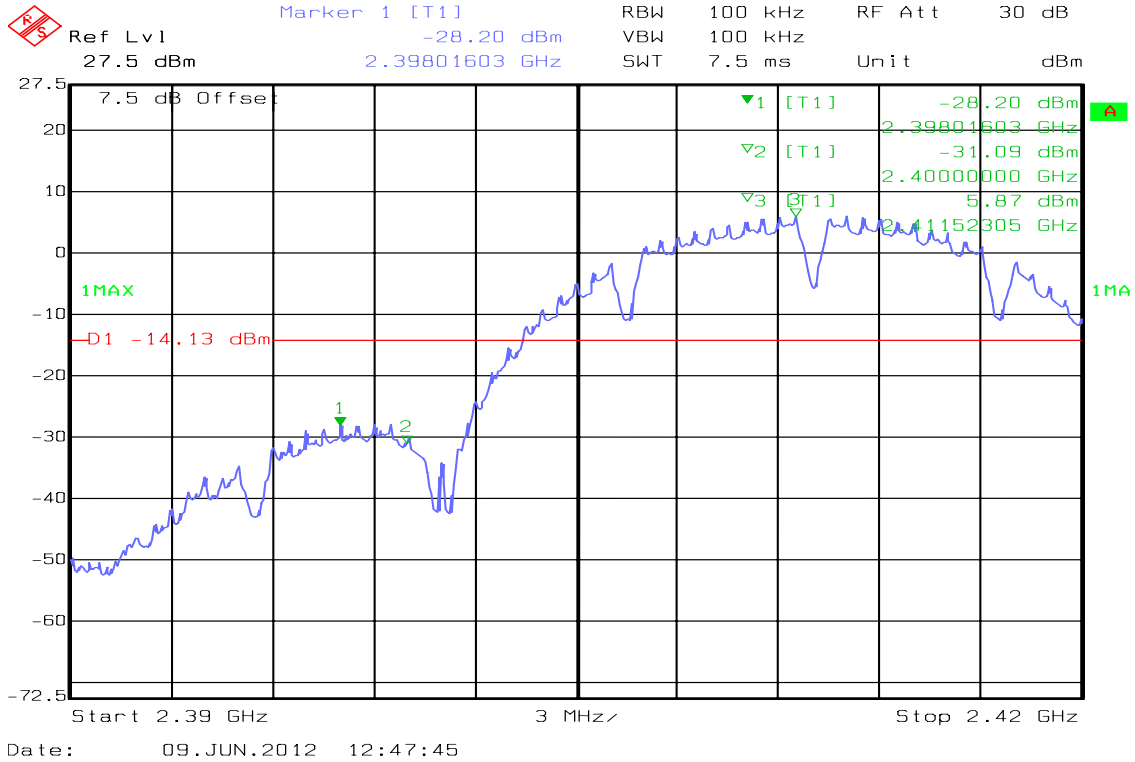




Conducted band-edge

IEEE 802.11b mode

CH Low



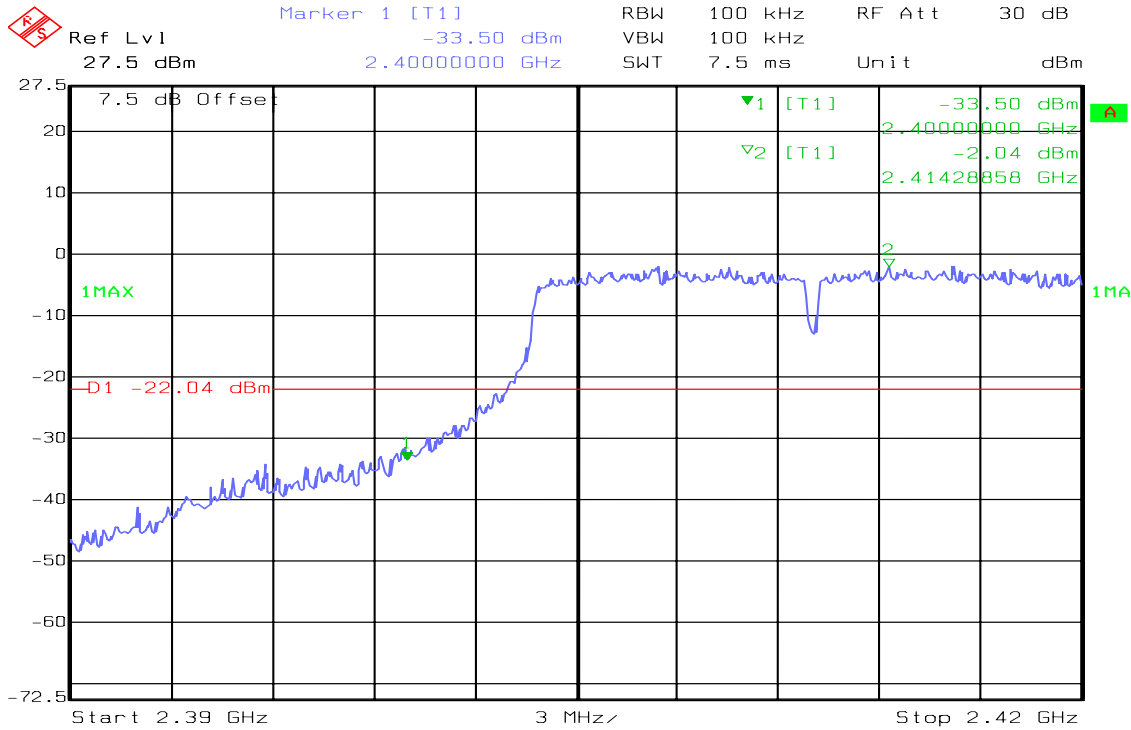
CH High





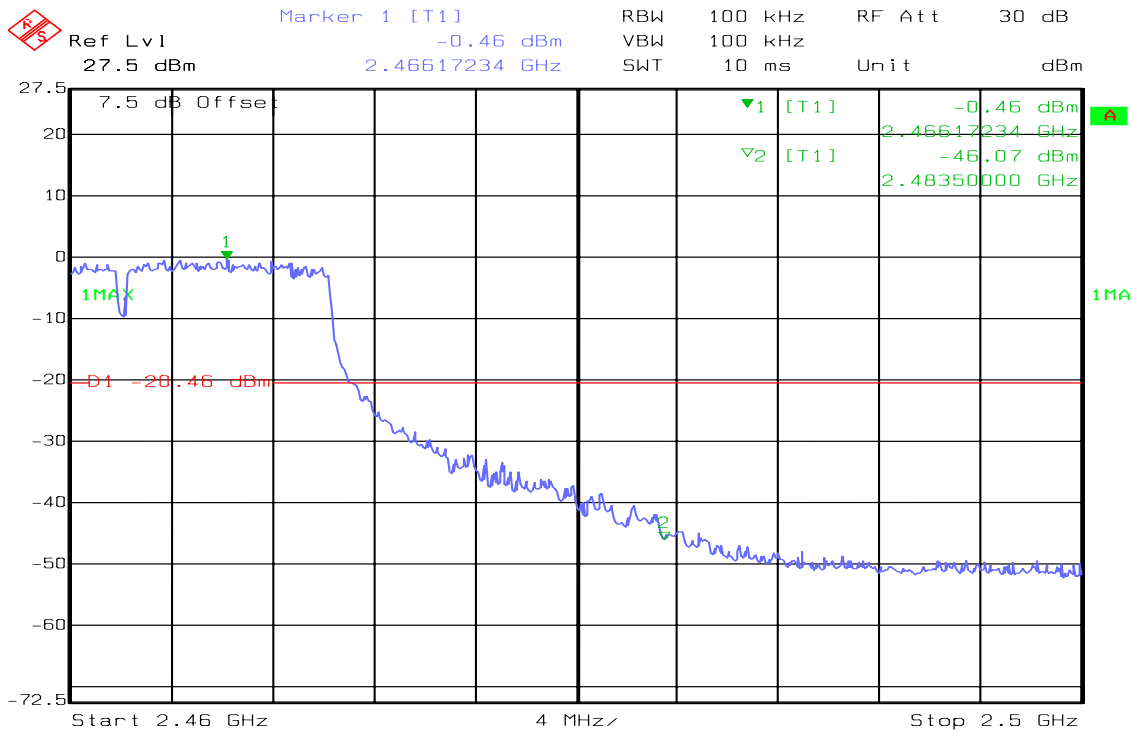
IEEE 802.11g mode

CH Low



Date: 09.JUN.2012 12:46:18

CH High

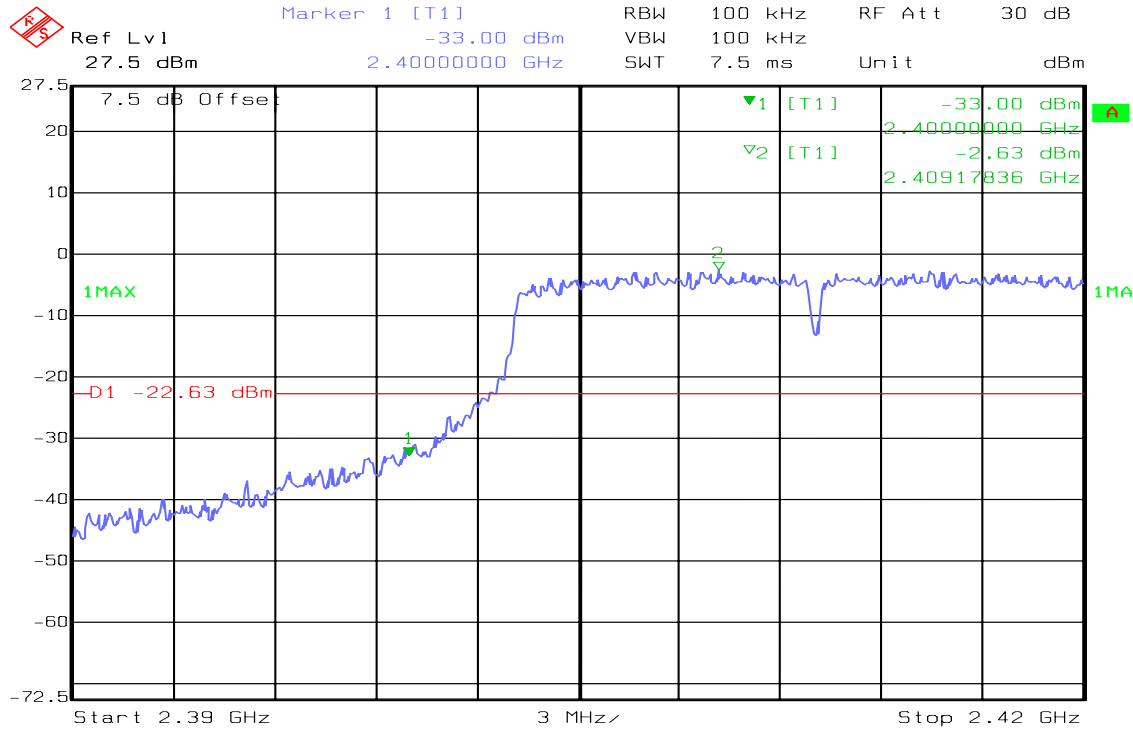


Date: 06.JUL.2012 17:41:15



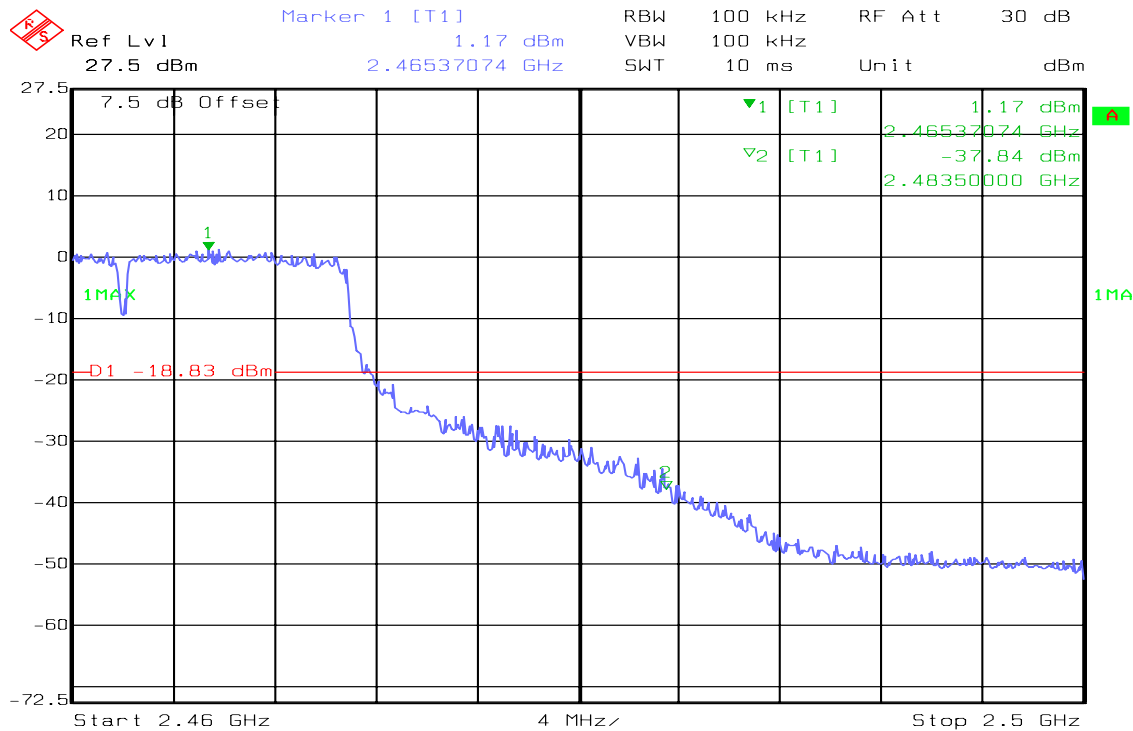
IEEE 802.11n HT20 mode

CH Low



Date: 09.JUN.2012 12:44:45

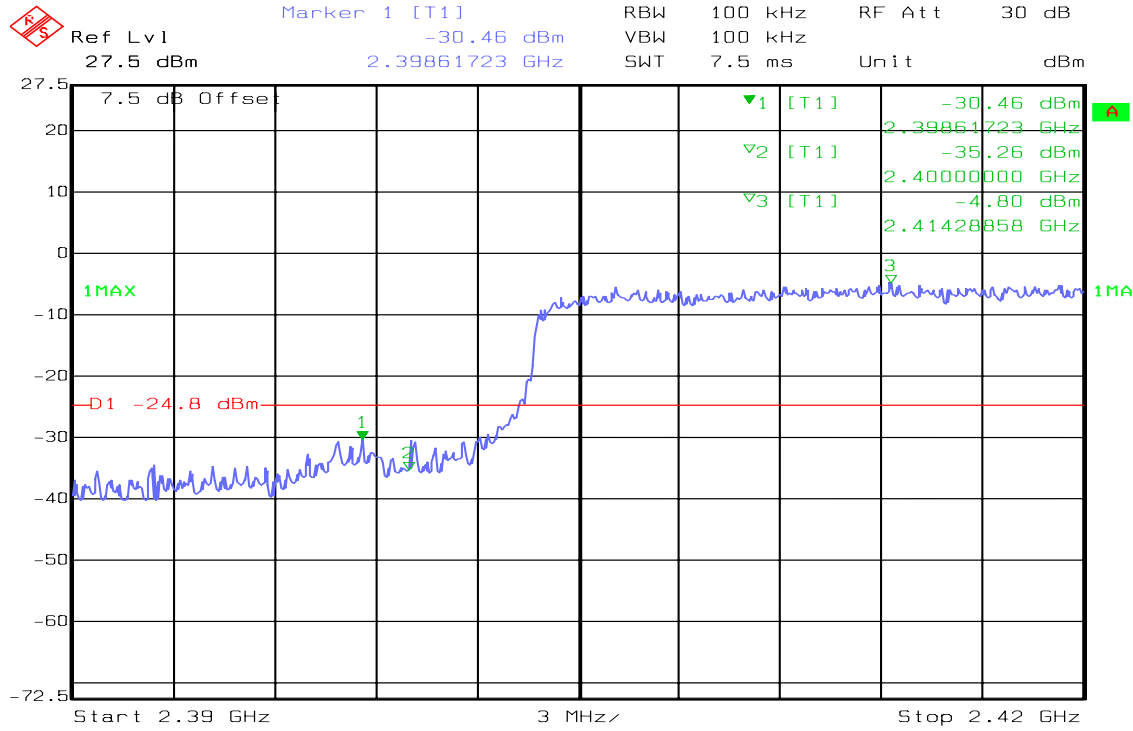
CH High



Date: 06.JUL.2012 17:46:06

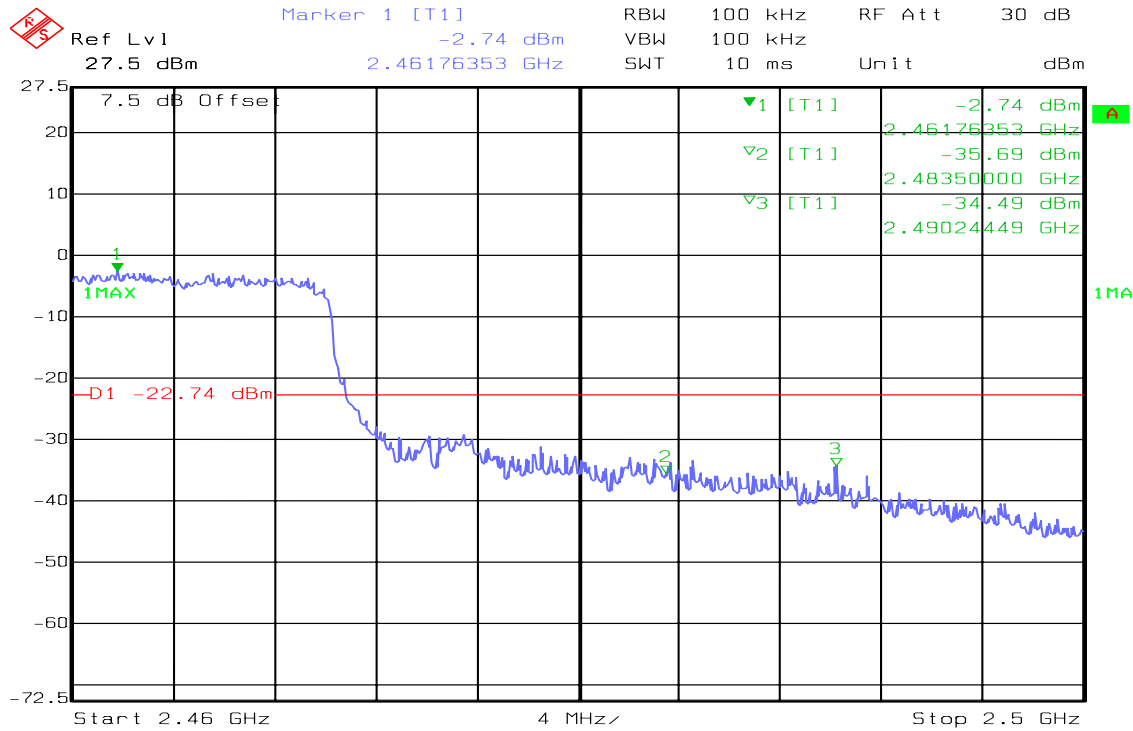


IEEE 802.11n HT40 mode



Date: 09.JUN.2012 12:40:43

CH High



Date: 06.JUL.2012 17:48:02



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.

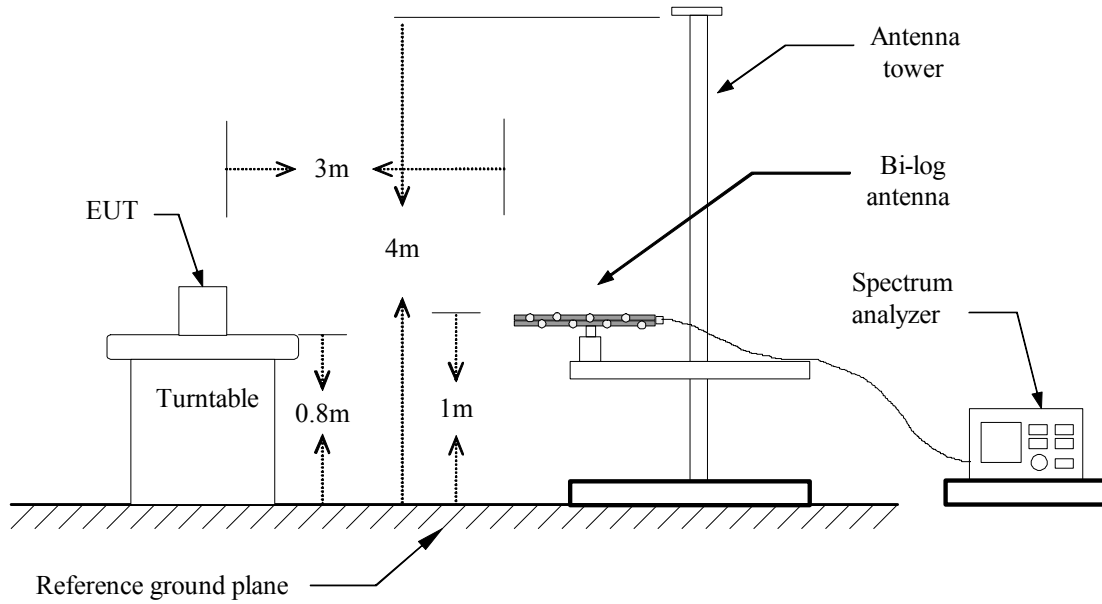
2. In the emission table above, the tighter limit applies at the band edges.

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

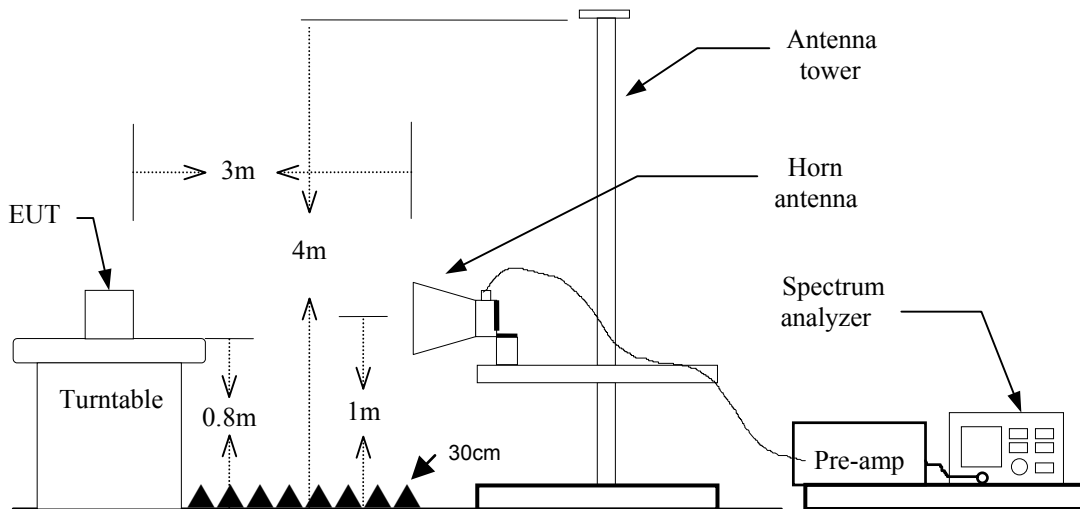


TEST CONFIGURATION

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 30MHz

RBW=9kHz / VBW=300kHz / Sweep=AUTO

30 ~ 1000MHz:

RBW=120kHz / VBW=3MHz / 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: Data Link **Test Date:** June 11, 2012
Temperature: 22°C **Tested by:** Rick Lu
Humidity: 57% RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol. (H/V)	Remark
37.7600	50.45	-13.72	36.73	40.00	-3.27	V	QP
250.1900	54.92	-12.46	42.46	46.00	-3.54	V	QP
324.8800	50.67	-9.63	41.04	46.00	-4.96	V	QP
375.3200	52.95	-10.06	42.89	46.00	-3.11	V	QP
399.5700	49.97	-9.72	40.25	46.00	-5.75	V	QP
500.4500	48.03	-6.85	41.18	46.00	-4.82	V	QP
575.1400	45.43	-5.43	40.00	46.00	-6.00	V	QP
35.8200	50.66	-13.79	36.87	40.00	-3.13	H	QP
250.1900	54.59	-12.46	42.13	46.00	-3.87	H	QP
299.6600	50.06	-8.88	41.18	46.00	-4.82	H	QP
324.8800	51.49	-9.63	41.86	46.00	-4.14	H	QP
375.3200	52.59	-10.06	42.53	46.00	-3.47	H	QP
399.5700	50.72	-9.72	41.00	46.00	-5.00	H	QP
475.2300	46.62	-7.06	39.56	46.00	-6.44	H	QP
500.4500	49.25	-6.85	42.40	46.00	-3.60	H	QP

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: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1124.000	54.29	-10.24	44.05	74.00	-29.95	V	Peak
2024.000	49.31	-1.84	47.47	74.00	-26.53	V	Peak
2614.000	49.54	-2.07	47.47	74.00	-26.53	V	Peak
4050.000	49.02	3.31	52.33	74.00	-21.67	V	Peak
4052.617	38.96	3.30	42.26	54.00	-11.74	V	AVG
4825.000	45.44	2.68	48.12	74.00	-25.88	V	Peak
7235.000	44.22	10.21	54.43	74.00	-19.57	V	Peak
7237.568	31.38	10.22	41.60	54.00	-12.40	V	AVG
1124.000	53.68	-10.40	43.28	74.00	-30.72	H	Peak
1350.000	52.15	-8.19	43.96	74.00	-30.04	H	Peak
2862.000	48.78	-2.01	46.77	74.00	-27.23	H	Peak
4045.000	45.51	5.11	50.62	74.00	-23.38	H	Peak
4825.000	43.78	5.88	49.66	74.00	-24.34	H	Peak
N/A							

Remark:

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



Operation Mode: TX / IEEE 802.11b / CH Mid

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1124.000	56.22	-10.24	45.98	74.00	-28.02	V	Peak
1350.000	52.22	-7.63	44.59	74.00	-29.41	V	Peak
1964.000	50.47	-1.87	48.60	74.00	-25.40	V	Peak
2514.000	50.33	-1.10	49.23	74.00	-24.77	V	Peak
4050.000	48.57	3.31	51.88	74.00	-22.12	V	Peak
4050.000	38.15	3.31	41.46	54.00	-12.54	V	AVG
4875.000	46.95	3.81	50.76	74.00	-23.24	V	Peak
7310.000	43.39	10.56	53.95	74.00	-20.05	V	Peak
7311.595	31.45	10.58	42.03	54.00	-11.97	V	AVG
1124.000	57.03	-10.40	46.63	74.00	-27.37	H	Peak
1250.000	53.78	-10.16	43.62	74.00	-30.38	H	Peak
1350.000	53.35	-8.19	45.16	74.00	-28.84	H	Peak
2882.000	48.55	-1.86	46.69	74.00	-27.31	H	Peak
4050.000	45.51	5.14	50.65	74.00	-23.35	H	Peak
4875.000	43.96	6.73	50.69	74.00	-23.31	H	Peak
N/A							

Remark:

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



Operation Mode: TX / IEEE 802.11b / CH High

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1126.000	56.85	-10.19	46.66	74.00	-27.34	V	Peak
1348.000	52.68	-7.66	45.02	74.00	-28.98	V	Peak
1546.000	50.98	-5.04	45.94	74.00	-28.06	V	Peak
2628.000	50.44	-1.97	48.47	74.00	-25.53	V	Peak
4050.000	46.88	3.31	50.19	74.00	-23.81	V	Peak
4925.000	46.16	4.61	50.77	74.00	-23.23	V	Peak
N/A							
1124.000	55.49	-10.40	45.09	74.00	-28.91	H	Peak
1350.000	52.49	-8.19	44.30	74.00	-29.70	H	Peak
2132.000	50.13	-3.71	46.42	74.00	-27.58	H	Peak
2980.000	49.00	-0.87	48.13	74.00	-25.87	H	Peak
4050.000	45.74	5.14	50.88	74.00	-23.12	H	Peak
4925.000	45.10	7.26	52.36	74.00	-21.64	H	Peak
4925.000	38.65	7.26	45.91	54.00	-8.09	H	AVG
7160.000	43.67	10.44	54.11	74.00	-19.89	H	Peak
7160.000	32.10	10.44	42.54	54.00	-11.46	H	AVG

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.



Operation Mode: TX / IEEE 802.11g / CH Low

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1126.000	57.34	-10.19	47.15	74.00	-26.85	V	Peak
1348.000	53.15	-7.66	45.49	74.00	-28.51	V	Peak
1570.000	51.17	-4.93	46.24	74.00	-27.76	V	Peak
2952.000	48.92	-0.99	47.93	74.00	-26.07	V	Peak
4050.000	48.85	3.31	52.16	74.00	-21.84	V	Peak
4050.000	42.60	3.31	45.91	54.00	-8.09	V	AVG
N/A							
1124.000	56.54	-10.40	46.14	74.00	-27.86	H	Peak
1348.000	53.24	-8.24	45.00	74.00	-29.00	H	Peak
2692.000	50.08	-3.37	46.71	74.00	-27.29	H	Peak
4050.000	45.59	5.14	50.73	74.00	-23.27	H	Peak
N/A							

Remark:

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



Operation Mode: TX / IEEE 802.11g / CH Mid

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1126.000	57.14	-10.19	46.95	74.00	-27.05	V	Peak
1348.000	52.72	-7.66	45.06	74.00	-28.94	V	Peak
1402.000	51.87	-6.60	45.27	74.00	-28.73	V	Peak
2890.000	49.08	-0.80	48.28	74.00	-25.72	V	Peak
4045.000	47.46	3.32	50.78	74.00	-23.22	V	Peak
N/A							
1124.000	56.13	-10.40	45.73	74.00	-28.27	H	Peak
1348.000	52.59	-8.24	44.35	74.00	-29.65	H	Peak
2952.000	48.85	-1.17	47.68	74.00	-26.32	H	Peak
4050.000	45.81	5.14	50.95	74.00	-23.05	H	Peak
N/A							

Remark:

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



Operation Mode: TX / IEEE 802.11g / CH High

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1126.000	57.95	-10.19	47.76	74.00	-26.24	V	Peak
1352.000	52.15	-7.59	44.56	74.00	-29.44	V	Peak
2656.000	49.12	-1.78	47.34	74.00	-26.66	V	Peak
4050.000	49.10	3.31	52.41	74.00	-21.59	V	Peak
4050.000	38.86	3.31	42.17	54.00	-11.83	V	AVG
N/A							
1124.000	56.30	-10.40	45.90	74.00	-28.10	H	Peak
1352.000	53.30	-8.13	45.17	74.00	-28.83	H	Peak
2606.000	49.47	-3.36	46.11	74.00	-27.89	H	Peak
4050.000	45.61	5.14	50.75	74.00	-23.25	H	Peak
N/A							

Remark:

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



Operation Mode: TX / IEEE 802.11n HT20 / CH Low

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1124.000	57.13	-10.24	46.89	74.00	-27.11	V	Peak
1348.000	52.18	-7.66	44.52	74.00	-29.48	V	Peak
1640.000	51.30	-5.13	46.17	74.00	-27.83	V	Peak
2900.000	48.36	-0.66	47.70	74.00	-26.30	V	Peak
4045.000	47.33	3.32	50.65	74.00	-23.35	V	Peak
N/A							
1126.000	55.65	-10.42	45.23	74.00	-28.77	H	Peak
1348.000	53.23	-8.24	44.99	74.00	-29.01	H	Peak
2196.000	49.91	-3.57	46.34	74.00	-27.66	H	Peak
2970.000	49.13	-0.98	48.15	74.00	-25.85	H	Peak
4050.000	45.75	5.14	50.89	74.00	-23.11	H	Peak
N/A							

Remark:

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



Operation Mode: TX / IEEE 802.11n HT20 / CH Mid

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1126.000	56.29	-10.19	46.10	74.00	-27.90	V	Peak
1352.000	52.51	-7.59	44.92	74.00	-29.08	V	Peak
2926.000	48.78	-0.82	47.96	74.00	-26.04	V	Peak
4050.000	47.61	3.31	50.92	74.00	-23.08	V	Peak
N/A							
1126.000	56.69	-10.42	46.27	74.00	-27.73	H	Peak
1350.000	53.25	-8.19	45.06	74.00	-28.94	H	Peak
2922.000	48.91	-1.49	47.42	74.00	-26.58	H	Peak
4055.000	45.27	5.17	50.44	74.00	-23.56	H	Peak
N/A							

Remark:

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



Operation Mode: TX / IEEE 802.11n HT20 / CH High

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1126.000	56.88	-10.19	46.69	74.00	-27.31	V	Peak
1352.000	52.18	-7.59	44.59	74.00	-29.41	V	Peak
2700.000	49.37	-1.47	47.90	74.00	-26.10	V	Peak
4055.000	47.35	3.29	50.64	74.00	-23.36	V	Peak
N/A							
1126.000	56.80	-10.42	46.38	74.00	-27.62	H	Peak
1350.000	54.36	-8.19	46.17	74.00	-27.83	H	Peak
2852.000	49.11	-2.09	47.02	74.00	-26.98	H	Peak
4045.000	45.77	5.11	50.88	74.00	-23.12	H	Peak
N/A							

Remark:

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



Operation Mode: TX / IEEE 802.11n HT40 / CH Low

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1126.000	56.87	-10.19	46.68	74.00	-27.32	V	Peak
1352.000	52.19	-7.59	44.60	74.00	-29.40	V	Peak
1406.000	51.21	-6.55	44.66	74.00	-29.34	V	Peak
2786.000	49.38	-2.01	47.37	74.00	-26.63	V	Peak
4050.000	47.58	3.31	50.89	74.00	-23.11	V	Peak
N/A							
1124.000	56.26	-10.40	45.86	74.00	-28.14	H	Peak
1352.000	53.63	-8.13	45.50	74.00	-28.50	H	Peak
2902.000	48.50	-1.71	46.79	74.00	-27.21	H	Peak
1124.000	56.26	-10.40	45.86	74.00	-28.14	H	Peak
4050.000	45.85	5.14	50.99	74.00	-23.01	H	Peak
N/A							

Remark:

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



Operation Mode: TX / IEEE 802.11n HT40 / CH Mid

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1126.000	57.17	-10.19	46.98	74.00	-27.02	V	Peak
1250.000	52.51	-8.52	43.99	74.00	-30.01	V	Peak
1350.000	52.86	-7.63	45.23	74.00	-28.77	V	Peak
2880.000	49.11	-0.95	48.16	74.00	-25.84	V	Peak
4050.000	47.15	3.31	50.46	74.00	-23.54	V	Peak
N/A							
1124.000	55.70	-10.40	45.30	74.00	-28.70	H	Peak
1350.000	53.17	-8.19	44.98	74.00	-29.02	H	Peak
2686.000	49.81	-3.37	46.44	74.00	-27.56	H	Peak
4050.000	45.18	5.14	50.32	74.00	-23.68	H	Peak
N/A							

Remark:

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



Operation Mode: TX / IEEE 802.11n HT40 / CH Mid

Test Date: June 11, 2012

Temperature: 22°C

Tested by: Rick Lu

Humidity: 57 % RH

Polarity: Ver. / Hor.

Freq. (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Pol H/V	Remark
1126.000	56.80	-10.19	46.61	74.00	-27.39	V	Peak
1350.000	52.90	-7.62	45.28	74.00	-28.72	V	Peak
1504.000	51.31	-5.24	46.07	74.00	-27.93	V	Peak
2884.000	48.43	-0.89	47.54	74.00	-26.46	V	Peak
4050.000	47.22	3.31	50.53	74.00	-23.47	V	Peak
N/A							
1124.000	56.18	-10.40	45.78	74.00	-28.22	H	Peak
1348.000	53.56	-8.24	45.32	74.00	-28.68	H	Peak
2140.000	50.03	-3.69	46.34	74.00	-27.66	H	Peak
2912.000	48.88	-1.60	47.28	74.00	-26.72	H	Peak
4050.000	45.63	5.14	50.77	74.00	-23.23	H	Peak
N/A							

Remark:

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



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: Data Link

Test Date: June 6, 2012

Temperature: 25°C

Tested by: Ken Jung

Humidity: 57% RH

Freq. (MHz)	QP Reading	AV Reading	Corr. factor	QP Result	AV Result	QP Limit	AV Limit	QP Margin	AV Margin	Note
0.4195	33.57	21.67	0.13	33.70	21.80	57.46	47.46	-23.76	-25.66	L1
1.1969	28.40	18.90	0.20	28.60	19.10	56.00	46.00	-27.40	-26.90	L1
1.7945	32.78	20.48	0.22	33.00	20.70	56.00	46.00	-23.00	-25.30	L1
3.4078	36.14	21.54	0.26	36.40	21.80	56.00	46.00	-19.60	-24.20	L1
3.5289	36.14	21.24	0.26	36.40	21.50	56.00	46.00	-19.60	-24.50	L1
12.7906	29.67	15.37	0.53	30.20	15.90	60.00	50.00	-29.80	-34.10	L1
0.1773	39.97	24.87	0.23	40.20	25.10	64.61	54.61	-24.41	-29.51	L2
0.5367	36.12	20.62	0.18	36.30	20.80	56.00	46.00	-19.70	-25.20	L2
0.8375	33.68	17.68	0.22	33.90	17.90	56.00	46.00	-22.10	-28.10	L2
3.3492	37.30	20.80	0.30	37.60	21.10	56.00	46.00	-18.40	-24.90	L2
3.5875	34.89	18.39	0.31	35.20	18.70	56.00	46.00	-20.80	-27.30	L2
12.3766	31.46	17.36	0.64	32.10	18.00	60.00	50.00	-27.90	-32.00	L2

Remark:

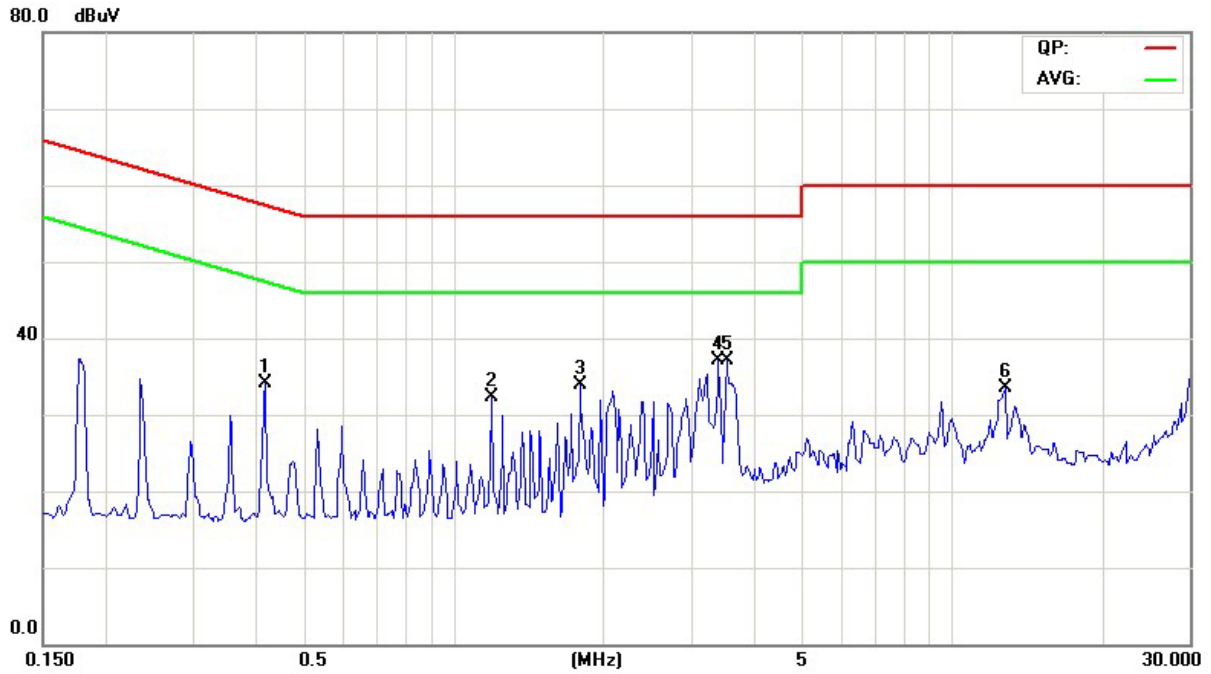
1. The measuring frequencies range between 0.15 MHz and 30 MHz.
2. The emissions measured in the frequency range between 0.15 MHz and 30MHz were made with an instrument using Quasi-peak detector and Average detector.
3. The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz. The IF bandwidth of 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)

Peak



Conducted emissions (Line 2)

Peak

