FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Notebook Computer

Model: V200

Trade Name: Getac

Issued to

Getac Technology Corp.
4F, No.1, R&D 2nd Road, Hsin-Chu Science-Based Industrial Park, Hsin-Chu Hsien, Taiwan, R.O.C.

Issued by

Compliance Certification Services Inc.
**No.11, Wu-Gong 6th Rd., Wugu Industrial Park,
New Taipei City 248, Taiwan (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
Issued Date: October 15, 2012**

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		October 15, 2012		Initial Issue	ALL	Eunice Shen

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1. TEST RESULT CERTIFICATION

Applicant: Getac Technology Corp.
                             4F, No.1, R&D 2nd Road, Hsin-Chu Science-Based Industrial
                             Park, Hsin-Chu Hsien, Taiwan, R.O.C.

Equipment Under Test: Notebook Computer

Trade Name: Getac

Model: V200

Date of Test: June 16 ~ October 12, 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: 2009 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:*

Miller Lee   Gina Lo
Section Manager   Section Manager
Compliance Certification Services Inc.   Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Notebook Computer
Trade Name	Getac
Model Number	V200
Received Date	July 11, 2012

Power Supply	1. Powered from Power Adapter
	  A) Brand: Getac / Model: ADM-6019M
	    I/P: 100-240V, 50-60Hz, 1.5A
	    O/P: 19V, 3.16A
	  B) Brand: Getac / Model: ADM-9019M-GTK
	    I/P: 100-240V, 50-60Hz, 1.5A
	    O/P: 19V, 4.74A
	  C) Brand: FSP / Model: FSP090-DMBB1
	    I/P: 100-240V, 50-60Hz, 1.5A
	    O/P: 19V, 4.74A
	2. Powered from Battery
	  Model: BP-LC3100/32-01P1
	  Rating: DC10.8V, 6100mAh, 65Wh

Frequency Range	IEEE 802.11a/ IEEE 802.11n HT 20 MHz: 5.725~5.850 GHz IEEE 802.11n HT 40 MHz: 5.755~5.795 GHz IEEE 802.11b/g/ IEEE 802.11n HT 20 MHz: 2.412~2.462 GHz IEEE 802.11n HT 40 MHz: 2.422~2.452 GHz
Transmit Power	IEEE 802.11a mode: 20.10 dBm IEEE 802.11n HT 20 MHz mode: 17.86 dBm IEEE 802.11n HT 40 MHz mode: 16.72 dBm IEEE 802.11b mode: 22.10 dBm IEEE 802.11g mode: 25.65 dBm IEEE 802.11n HT 20 MHz mode: 24.60 dBm IEEE 802.11n HT 40 MHz mode: 25.03 dBm
Modulation Technique & Transmit Data Rate	IEEE 802.11a: OFDM (54, 48, 36, 24, 18, 12, 9, 6 Mbps) IEEE 802.11n HT 20 MHz 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 HT 40 MHz mode: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps) IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps) IEEE 802.11n HT 20 MHz 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 HT 40 MHz mode: OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps)

Number of Channels	IEEE 802.11a mode: 5 Channels IEEE 802.11n HT 20 MHz mode: 5 Channels IEEE 802.11n HT 40 MHz mode: 2 Channels IEEE 802.11b/g mode: 11 Channels IEEE 802.11n HT 20 MHz mode: 11 Channels IEEE 802.11n HT 40 MHz mode: 7 Channels
Antenna Designation	PIFA Antenna
Antenna Specification	**For 2.4G :** Main Antenna Gain: 2.60 dBi Aux Antenna Gain: 1.61 dBi MIMO: 2.60 dBi + 10 log (2) = 5.60 dBi (Numeric gain: 3.63) **For 5G :** Main Antenna Gain: 3.97 dBi Aux Antenna Gain: 2.45 dBi

Remark:

1. *The sample selected for test was production product and was provided by manufacturer.*

2. *This submittal(s) (test report) is intended for FCC ID: __MAU048__ filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.*

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

3.1 EUT CONFIGURATION

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

3.2 EUT EXERCISE

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

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

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

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

Radiated Emissions

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

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

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

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

[2] Above 38.6

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

3.5 DESCRIPTION OF TEST MODES

The EUT (model: V200) comes with three types of power adapter for sale. After the preliminary test, the EUT with adapter (Model: ADM-9019M-GTK) was found to emit the worst emissions and therefore had been tested under operating condition.

For 2.4GHz

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

For 5GHz

The EUT is a 1x1 configuration spatial MIMO (1Tx & 1Rx) without beam forming function that operate in one TX chain and one RX chain. The 1x1 configuration is implemented with one outside TX & RX chains (Aux Antenna).

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 and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

IEEE 802.11b mode:
Channel Low (2412MHz), Channel Mid (2437 MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE 802.11g mode:
Channel Low (2412MHz), Channel Mid (2437 MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT 20 MHz mode:
Channel Low (2412MHz), Channel Mid (2437 MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT 40 MHz mode:
Channel Low (2422MHz), Channel Mid (2437 MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.

IEEE 802.11a mode:
Channel Low (5745MHz), Channel Mid (5785MHz) and Channel High (5825MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT 20 MHz mode:
Channel Low(5745MHz), Channel Mid(5785MHz) and Channel High(5825MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT 40 MHz mode:
Channel Low(5755MHz) and Channel High(5795MHz) 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	MY43360131	03/16/2013
Power Meter	Anritsu	ML2495A	1012009	04/26/2013
Power Sensor	Anritsu	MA2411B	0917072	04/26/2013

966Chamber_B				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	MY46180323	04/22/2013
EMI Receiver	ROHDE & SCHWARZ	ESCS 30	826547/004	10/27/2012
Broadband Hybrid Bi-Log Antenna	Sunol Sciences	JB1	A100209-4	10/01/2013
Double-Ridged Waveguide Horn	ETS-LINDGREN	3117	00078733	12/06/2012
Horn Antenna	COM-POWER	AH-840	03077	12/06/2012
Pre-Amplifier	Agilent	8447D	2944A10052	07/17/2013
Pre-Amplifier	Agilent	8449B	3008A01916	07/17/2013
Notch Filters Band Reject	Micro-Tronics	BRM05702-01	026	N.C.R
Band Reject Filter	Micro-Tronics	BRC50703-01	004	N.C.R.
Band Reject Filter	Micro-Tronics	BRC50704-01	004	N.C.R.
Band Reject Filter	Micro-Tronics	BRC50705-01	007	N.C.R.
LOOP Antenna	EMCO	6502	8905-2356	06/10/2013

Conducted Emission room				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
L.I.S.N	SCHWARZBECK	NSLK 8127	8127-465	08/07/2013
L.I.S.N	SCHWARZBECK	NSLK 8127	8127-473	03/12/2013
EMI Receiver	ROHDE & SCHWARZ	ESCS 30	835418/008	10/20/2012
Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	100117	07/03/2013

4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Conducted Emission (Mains Terminals), 9kHz to 30MHz	+/- 2.48
Conducted Emission (Telecommunication Port), 150kHz to 30MHz	+/- 3.09
3M Semi Anechoic Chamber / 30M~1000M	+/- 3.97
3M Semi Anechoic Chamber / 1G~18G	+/- 3.58
3M Semi Anechoic Chamber / 18G~26G	+/- 3.59
3M Semi Anechoic Chamber / 26G~40G	+/- 3.81

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. 989-1 Wen Shan Rd., Shang Shan Village, Qionglin Shiang Hsinchu County 30741, Taiwan, R.O.C

☒ No.11, Wu-Gong 6th Rd., Wugu Industrial Park, New Taipei City 248, 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, 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 and CISPR Publication 22.

5.2 EQUIPMENT

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

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

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

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

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method –47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	IC 2324G-1 IC 2324G-2

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

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

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

6.2 SUPPORT EQUIPMENT

No.	Product	Manufacturer	Model No.	Serial No.	FCC ID
1	Notebook PC	HP	ProBook 4421s	CNF03242PJ	DoC
2	LCD Monitor	ViewSonic	VA1918wm	R18082200388	DoC
3	Micro SD	SanDisk	SDSDM-1024	BB07251CTE	---
4	External hard drive	TeraSys	F12-U	4912A002	---
5	Modem	ZyXEL	Omni 56K	S1Z4107727	1880MNI56K
6	USB 3.0	ADATA	C103/16GB	---	---
7	CF Adaptor	iEI	1211004-0040	00082900065	---
8	USB 2.0	---	---	---	---

Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*

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

7. FCC PART 15.247 REQUIREMENTS

7.1 DUTY CYCLE

Limit

KDB 789033

Test procedure

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 1 MHz and the VBW is set to 1 MHz. The sweep time is coupled and the span is set to 0 Hz.

Test results

Mode	ON Time (msec)	Period (msec)	Duty Cycle (%)
IEEE 802.11b mode	2.343	2.359	99
IEEE 802.11g mode	2.057	2.057	100
IEEE 802.11n HT 20 MHz mode	0.9744	0.9899	98
IEEE 802.11n HT 40 MHz mode	0.4253	0.4563	93

Mode	ON Time (msec)	Period (msec)	Duty Cycle (%)
IEEE 802.11b mode	2.343	2.359	99
IEEE 802.11g mode	2.057	2.057	100
IEEE 802.11n HT 20 MHz mode	0.9744	0.9899	98
IEEE 802.11n HT 40 MHz mode	0.4253	0.4563	93

Test Plot

IEEE 802.11b mode

❄ **Agilent** 15:42:30 Oct 9, 2012   R T

△ Mkr2   2.359 ms

Ref 14.07 dBm   Atten 30 dB   -47.09 dB
#Peak
Log
10
dB/

LgAv

W1 S2
Center 2.412 000 GHz   Span 0 Hz
Res BW 1 MHz   #VBW 1 MHz   Sweep 4.64 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	1.369 ms	-9.62 dBm
1△	(1)	Time	2.343 ms	-0.22 dB
2R	(1)	Time	1.369 ms	-9.62 dBm
2△	(1)	Time	2.359 ms	-47.09 dB
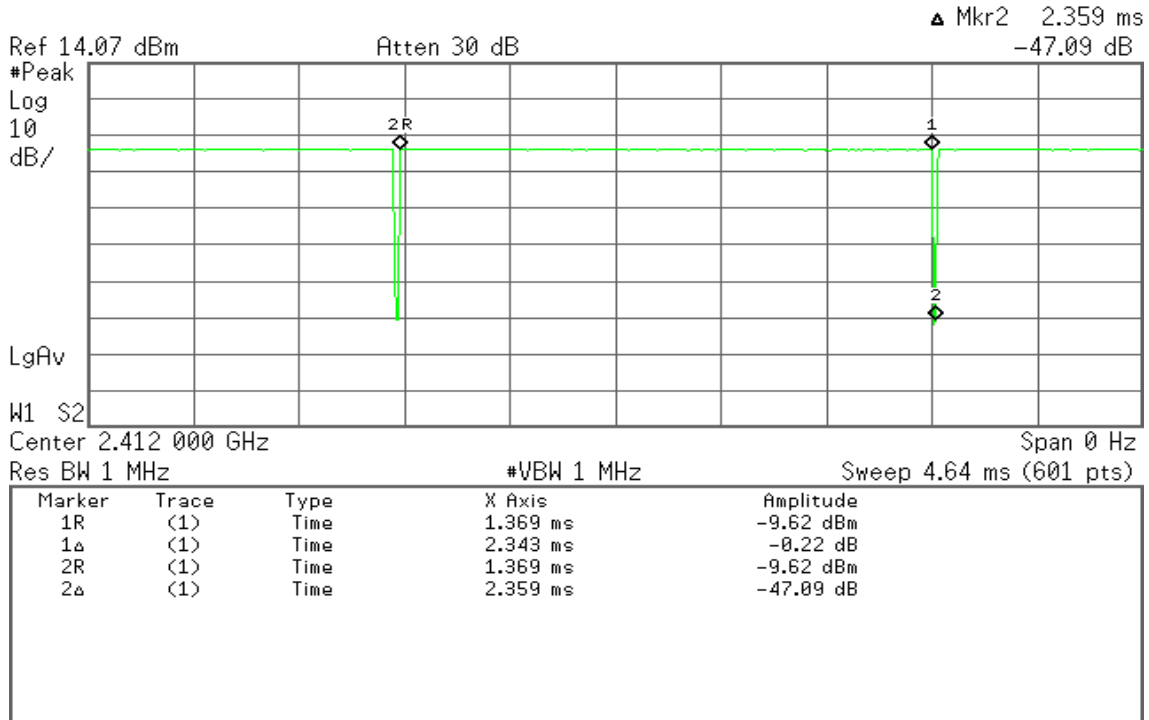
IEEE 802.11g mode

❄ **Agilent** 15:44:30 Oct 9, 2012   R T

△ Mkr2   2.057 ms

Ref 14.07 dBm   Atten 30 dB   -47.05 dB
#Peak
Log
10
dB/

LgAv

W1 S2
Center 2.412 000 GHz   Span 0 Hz
Res BW 1 MHz   #VBW 1 MHz   Sweep 4.64 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	2.281 ms	-10.08 dBm
1△	(1)	Time	2.057 ms	0.97 dB
2R	(1)	Time	2.289 ms	-10.29 dBm
2△	(1)	Time	2.057 ms	-47.05 dB

IEEE 802.11n HT 20 MHz mode

IEEE 802.11n HT 40 MHz mode

7.2 6dB BANDWIDTH

LIMIT

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

Test Configuration

```
┌──────────┐        ┌──────────────┐
│          │        │              │
│   EUT    │───────▶│   Spectrum   │
│          │        │   Analyzer   │
│          │        │              │
└──────────┘        └──────────────┘
```
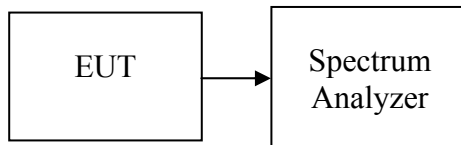
TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. Set the RBW = 1%-5% of the emission bandwidth, VBW ≥ 3 x RBW, Detector = Peak, Trace mode = max hold, Sweep = auto couple. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.4167		PASS
Mid	2437	10.3334	>500	PASS
High	2462	10.3334		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.1666		PASS
Mid	2437	16.1666	>500	PASS
High	2462	16.1666		PASS

Test mode: IEEE 802.11n HT 20 MHz mode / Main Antenna

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.1667		PASS
Mid	2437	16.5833	>500	PASS
High	2462	17.5833		PASS

Test mode: IEEE 802.11n HT 20 MHz mode / Aux Antenna

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.6666		PASS
Mid	2437	17.5833	>500	PASS
High	2462	17.6666		PASS

Test mode: IEEE 802.11n HT 40 MHz mode / Main Antenna

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2422	36.1667		PASS
Mid	2437	36.3334	>500	PASS
High	2452	35.6666		PASS

Test mode: IEEE 802.11n HT 40 MHz mode / Aux Antenna

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	2422	34		PASS
Mid	2437	36.3334	>500	PASS
High	2452	34.9166		PASS

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	5745	16.5833		PASS
Mid	5785	16.5	>500	PASS
High	5825	16.5833		PASS

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	5745	17.8334		PASS
Mid	5785	17.9167	>500	PASS
High	5825	17.75		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (kHz)	Result
Low	5755	26.6	>500	PASS
High	5795	34.8		PASS

Test Plot

IEEE 802.11b mode

6dB Bandwidth (CH Low)
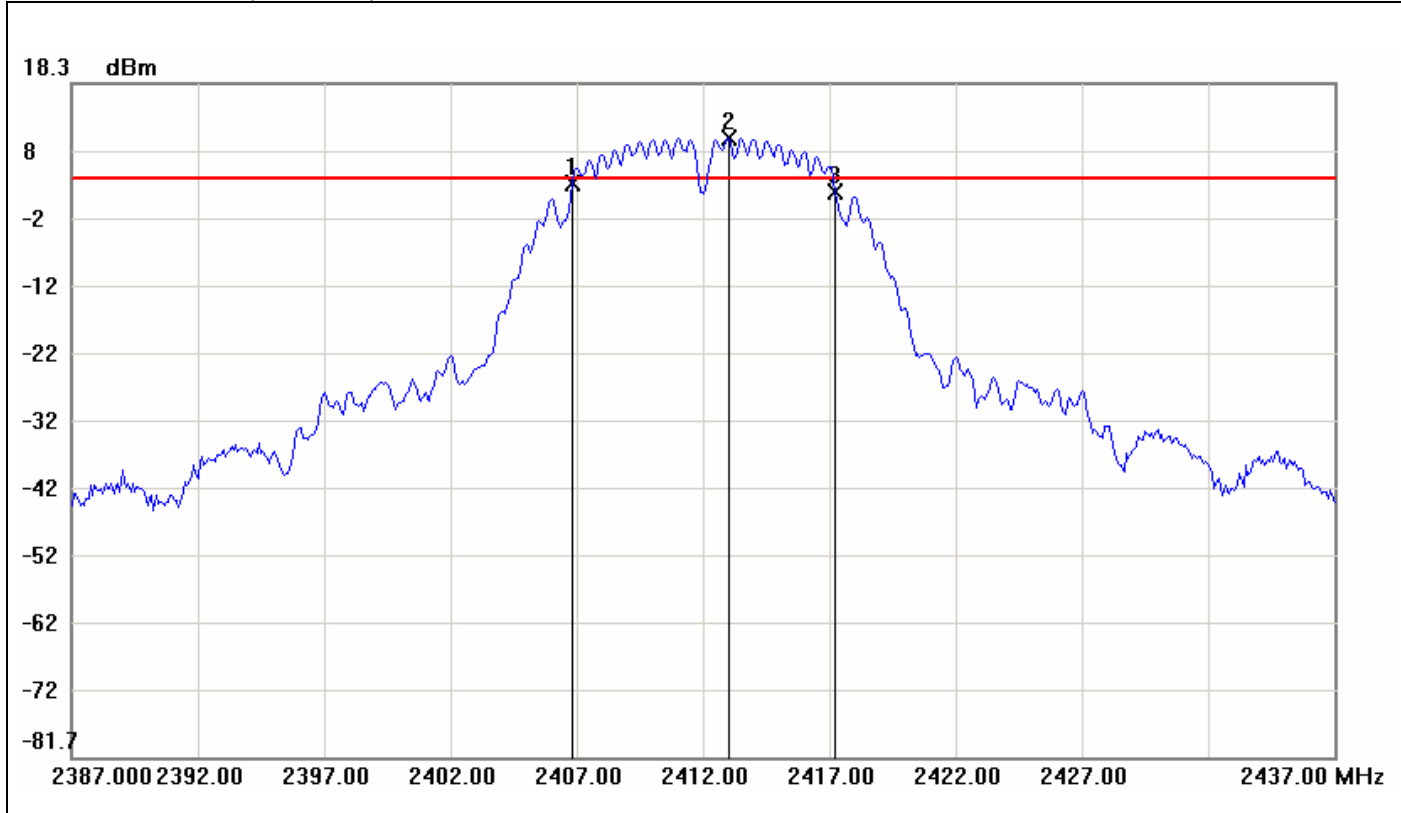
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2406.8333	3.44	4.12	-0.68
2	2413.0000	10.12	4.12	6.00
3	2417.2500	2.25	4.12	-1.87

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	10.4167	-1.19

6dB Bandwidth (CH Mid)
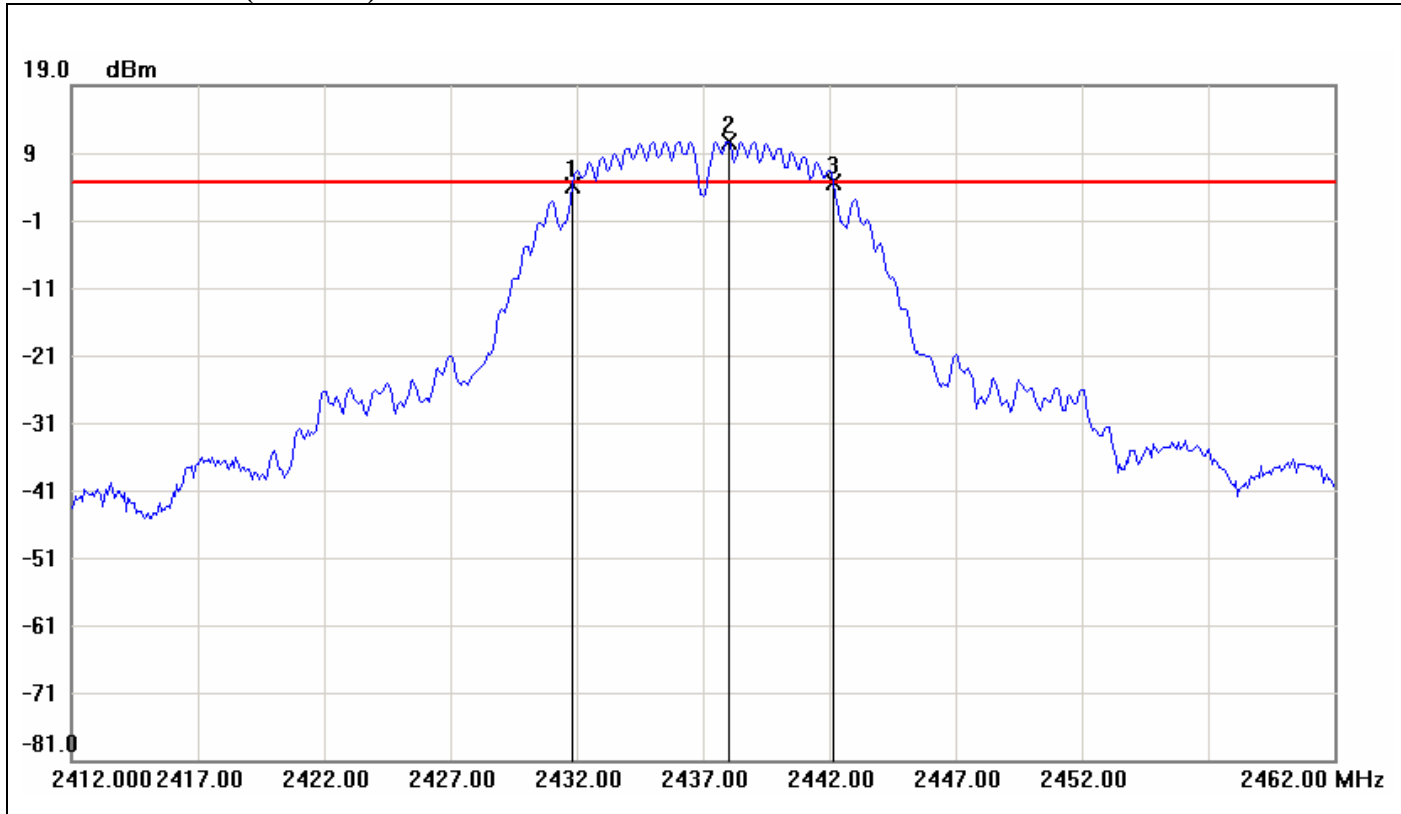
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2431.8333	4.10	4.72	-0.62
2	2438.0000	10.72	4.72	6.00
3	2437 .1667	4.67	4.72	-0.05

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	10.3334	0.57

6dB Bandwidth (CH High)
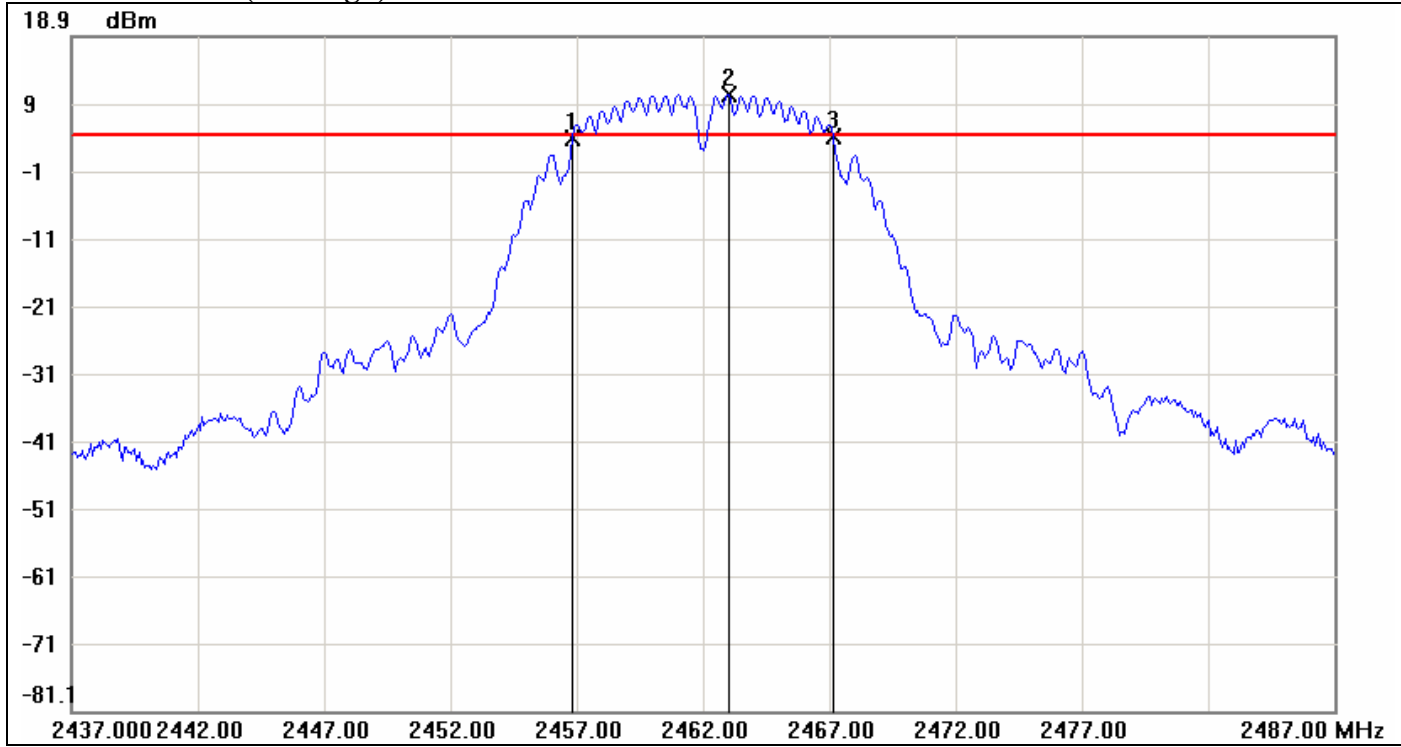
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2456.8333	3.72	4.22	-0.50
2	2463.0000	10.22	4.22	6.00
3	2467.1667	3.95	4.22	-0.27

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	10.3334	0.23

IEEE 802.11g mode

6dB Bandwidth (CH Low)
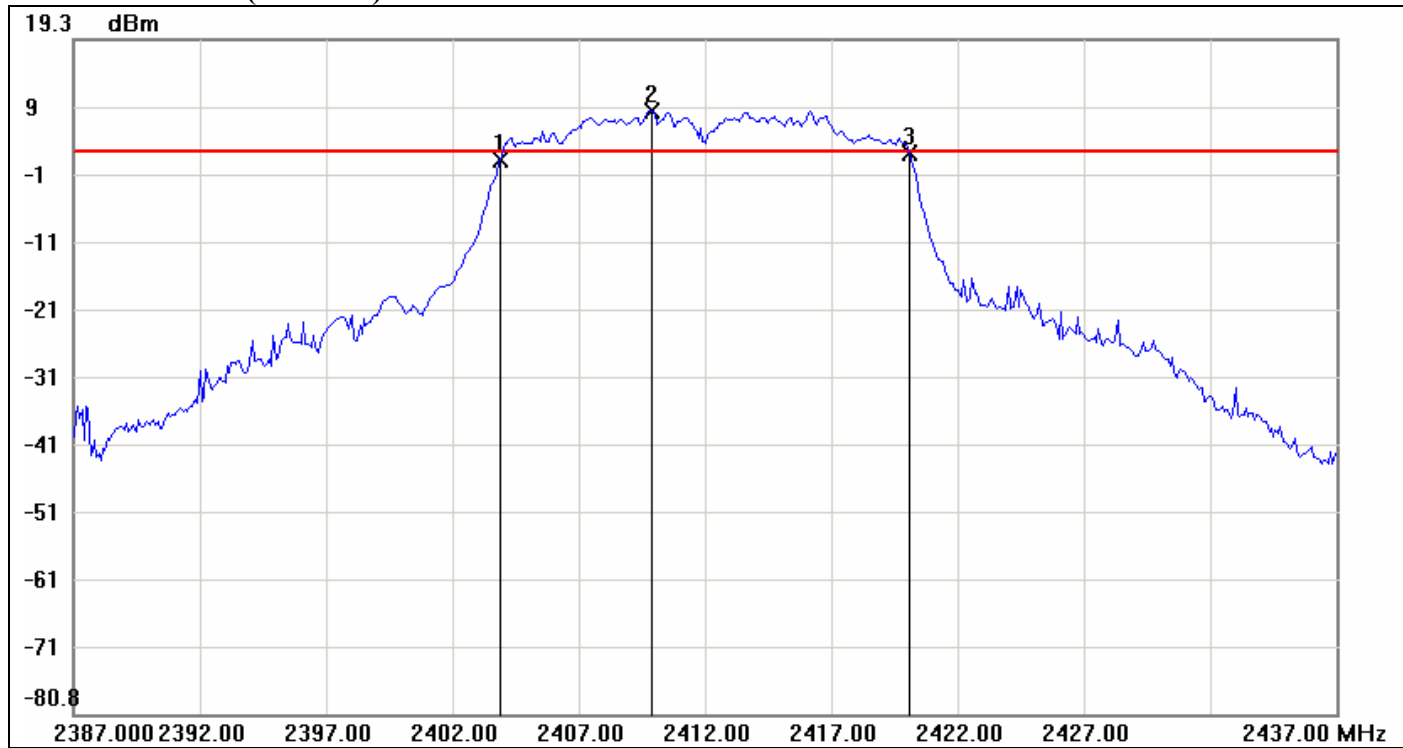
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2403.9167	1.44	2.74	-1.30
2	2409.9167	8.74	2.74	6.00
3	2420.0833	2.37	2.74	-0.37

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	16.1666	0.93

6dB Bandwidth (CH Mid)
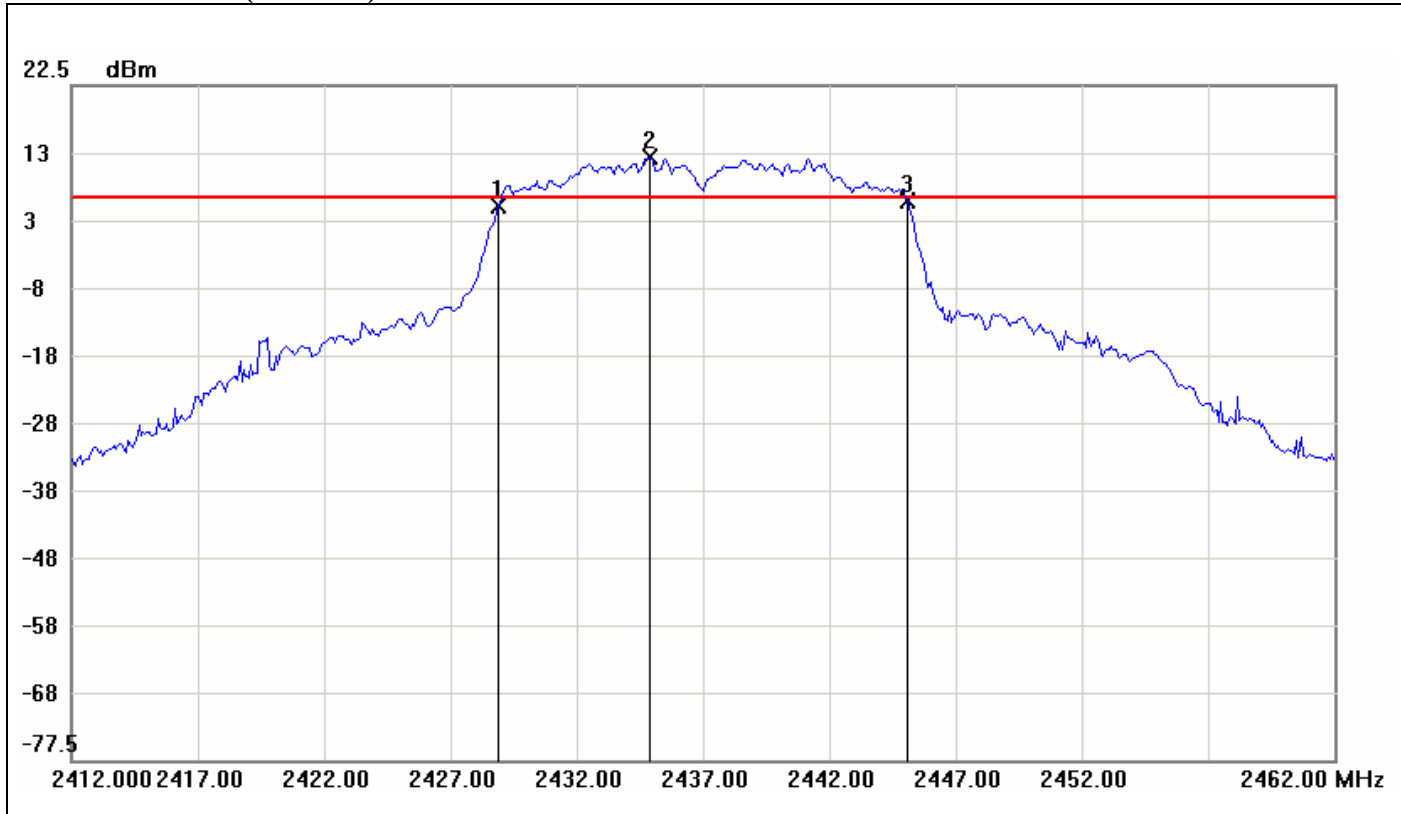
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2428.9167	4.68	5.83	-1.15
2	2434.9167	11.83	5.83	6.00
3	2445.0833	5.36	5.83	-0.47

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	16.1666	0.68

6dB Bandwidth (CH High)
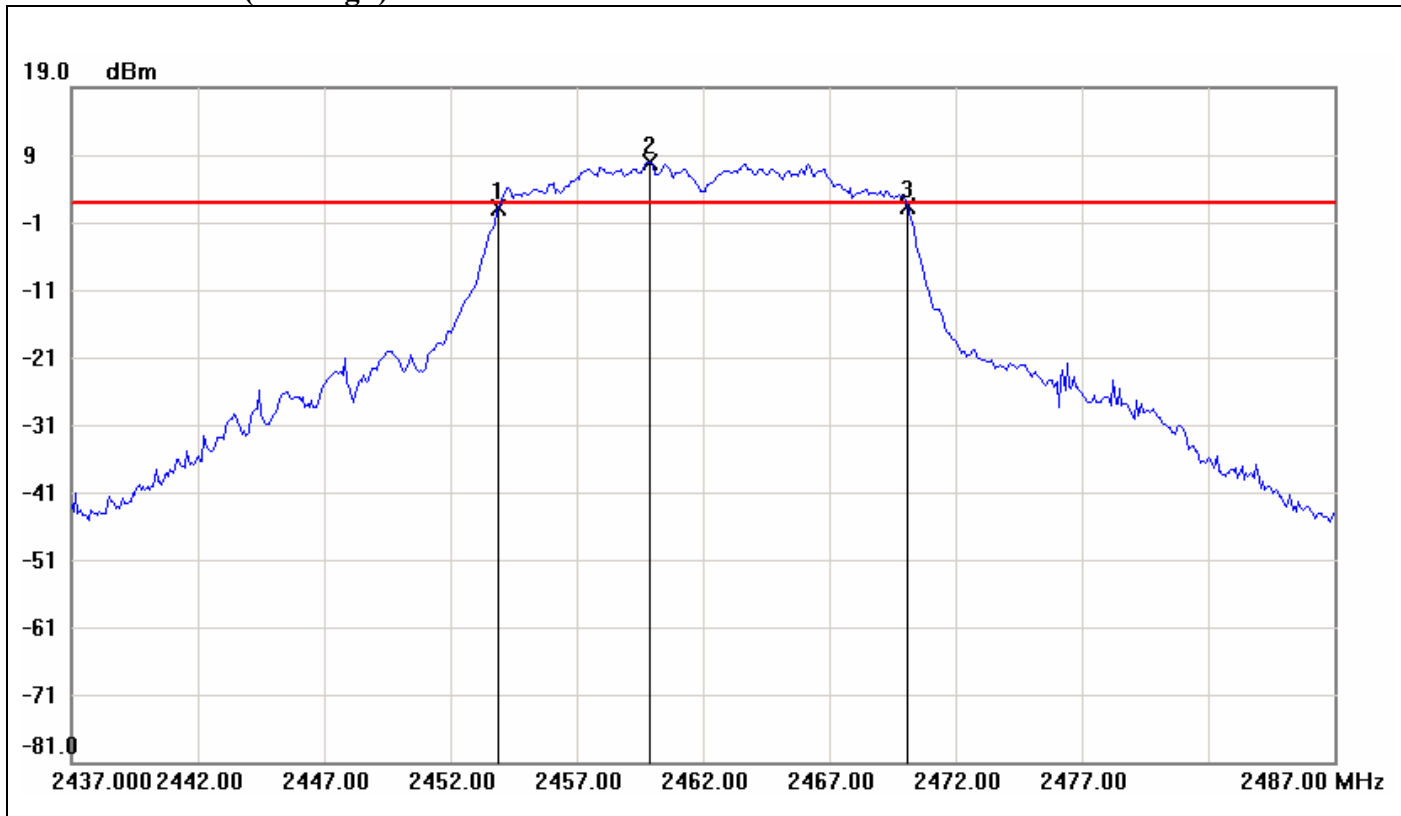
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2453.9167	1.03	1.96	-0.93
2	2459.9167	7.96	1.96	6.00
3	2470.0833	1.35	1.96	-0.61

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	16.1666	0.32

IEEE 802.11n HT 20 MHz mode / Main Anteena

6dB Bandwidth (CH Low)
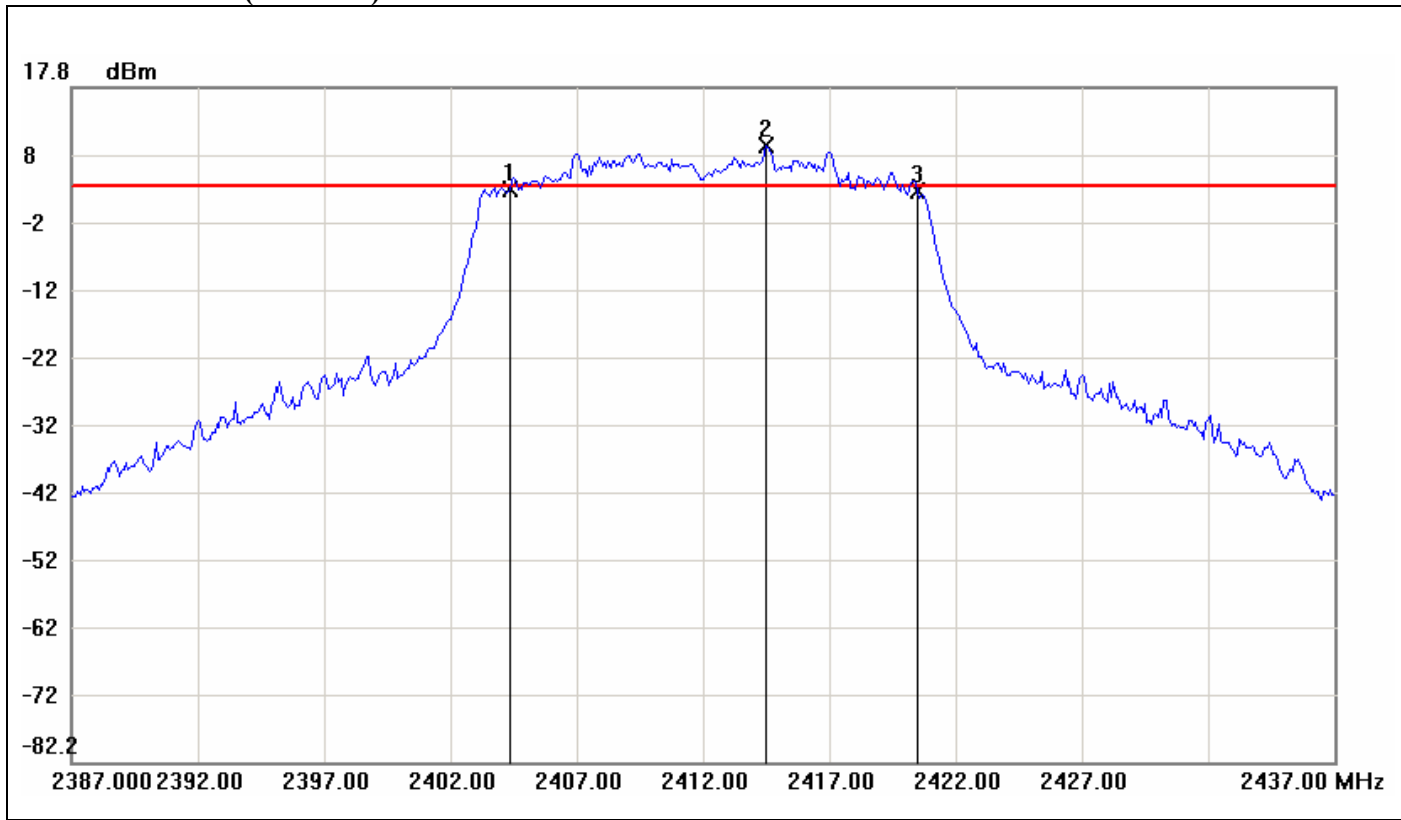
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2404.3333	2.60	3.15	-0.55
2	2414.5000	9.15	3.15	6.00
3	2420.5000	2.41	3.15	-0.74

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	16.1667	-0.19

6dB Bandwidth (CH Mid)
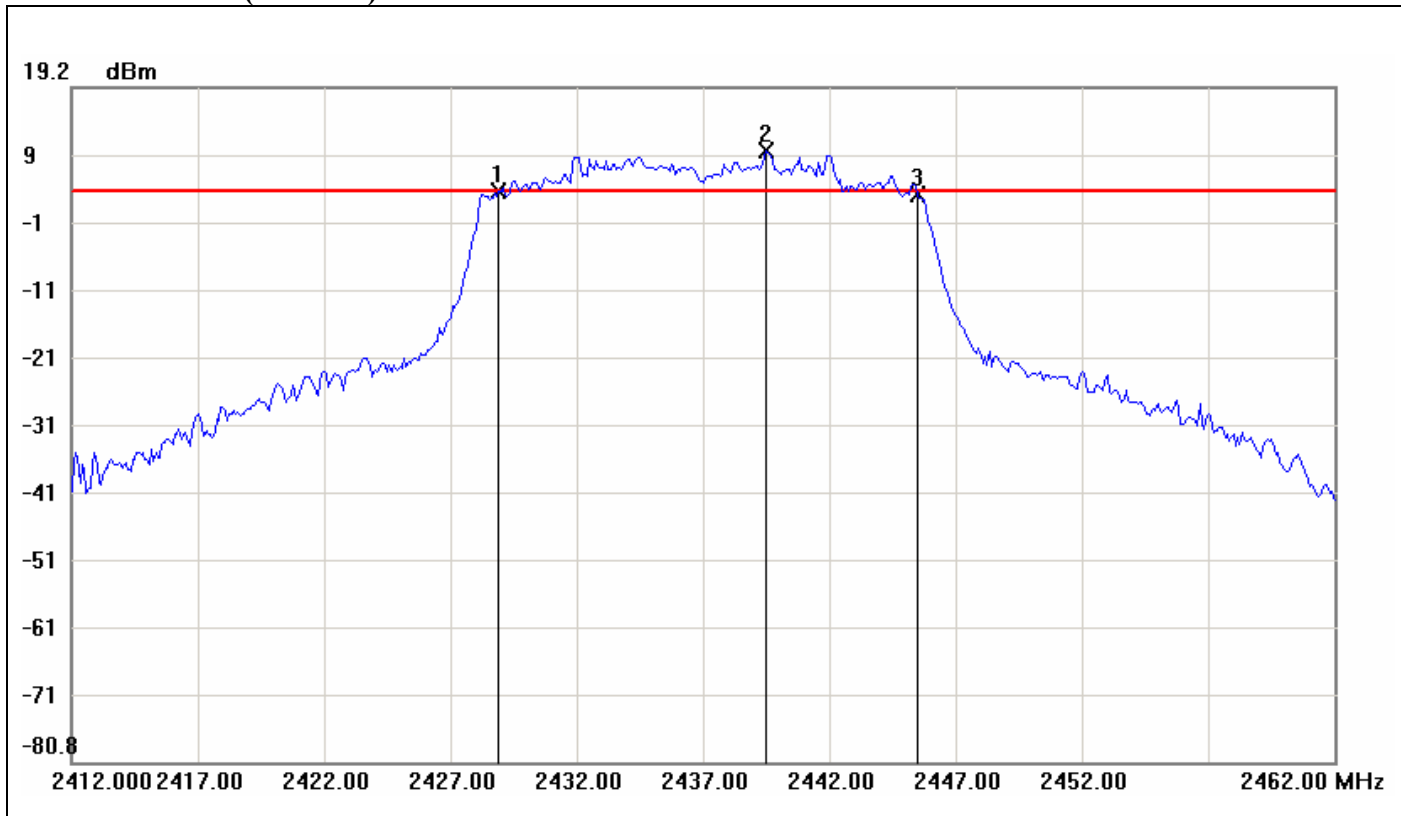
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2428.9167	3.68	3.69	-0.01
2	2439.5000	9.69	3.69	6.00
3	2445.5000	3.34	3.69	-0.35

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	16.5833	-0.34

6dB Bandwidth (CH High)
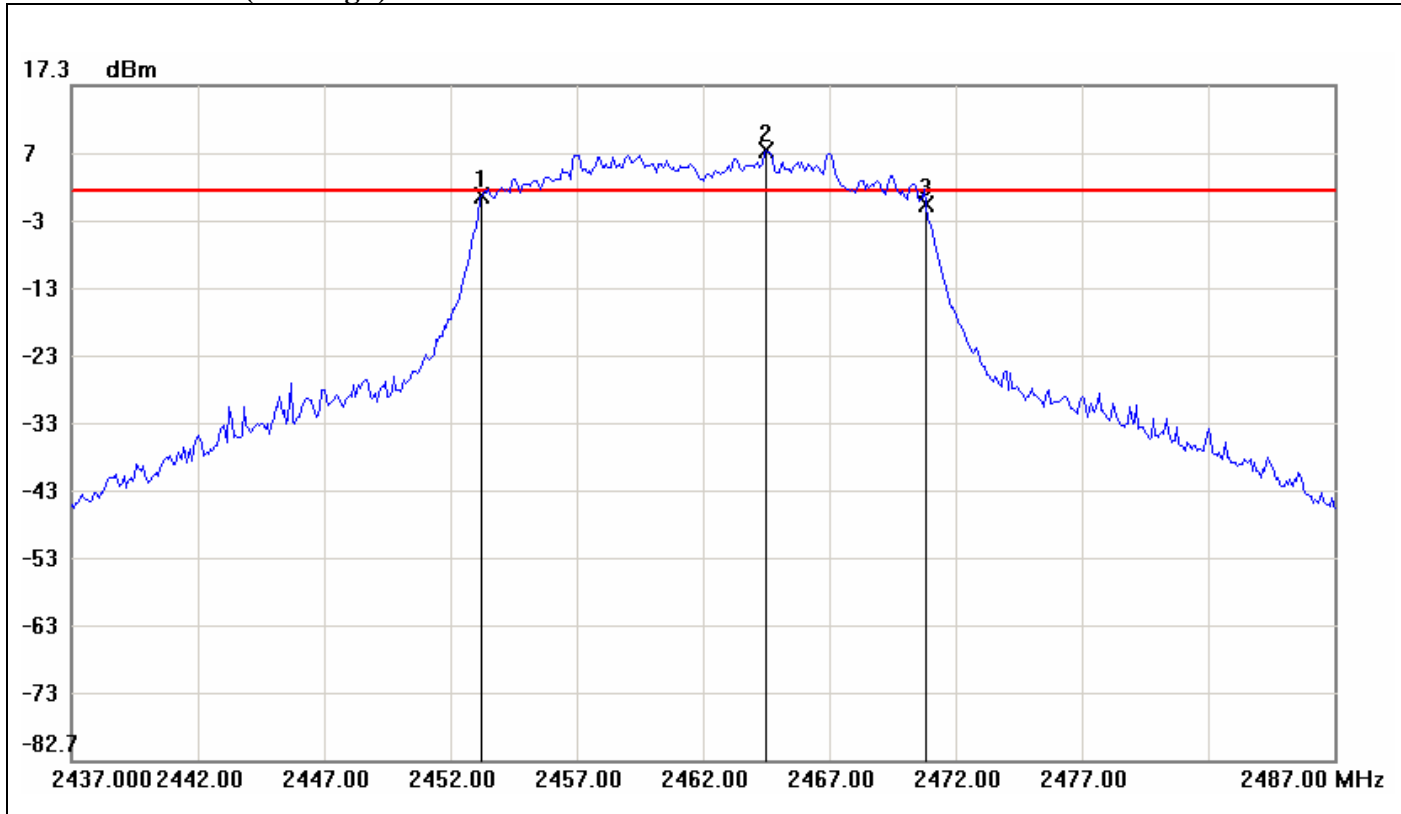
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2453.2500	1.08	1.60	-0.52
2	2464.5000	7.60	1.60	6.00
3	2470.8333	-0.29	1.60	-1.89

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	17.5833	-1.37

IEEE 802.11n HT 20 MHz mode / Aux Antenna

6dB Bandwidth (CH Low)
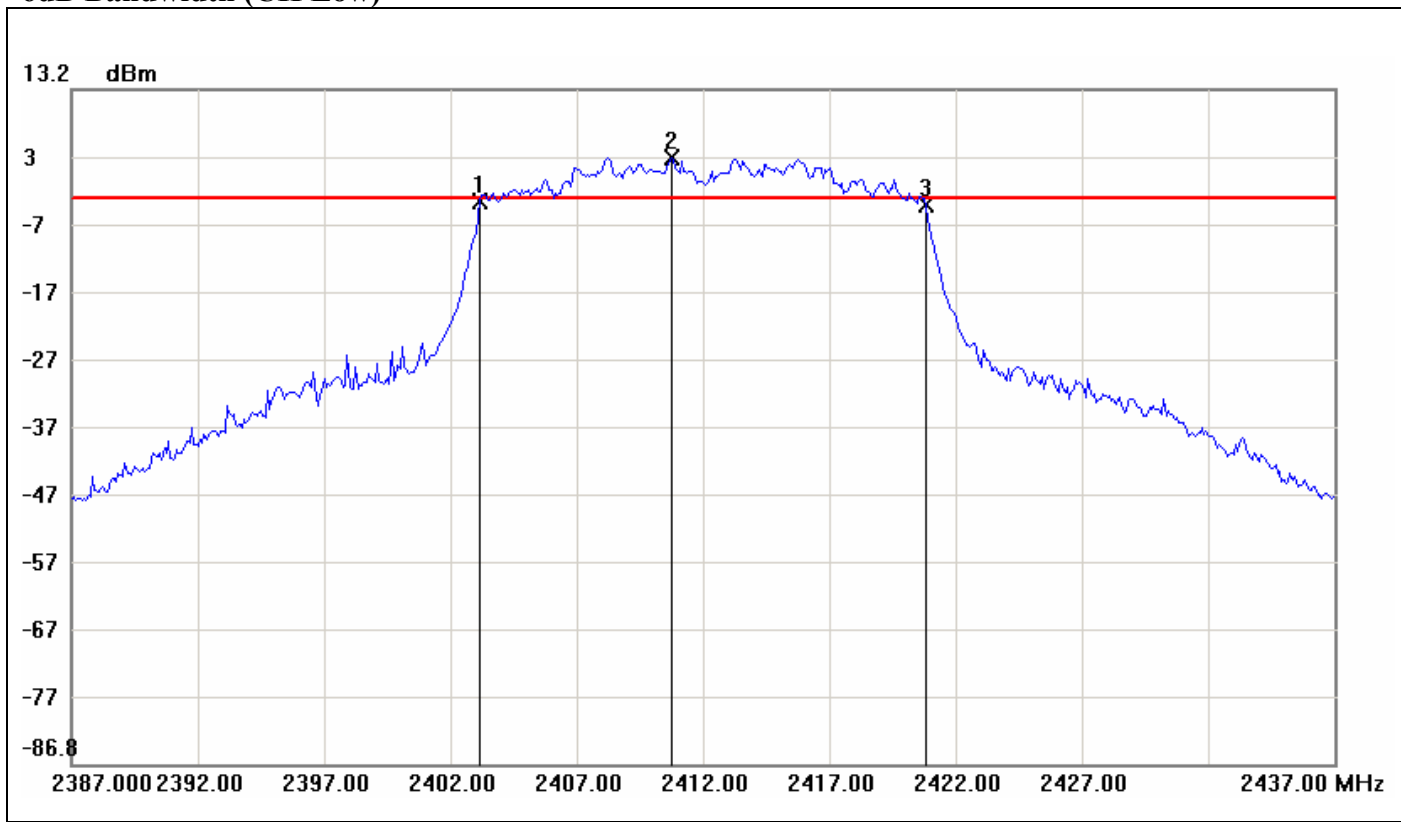
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2403.1667	-3.43	-2.89	-0.54
2	2410.7500	3.11	-2.89	6.00
3	2420.8333	-3.89	-2.89	-1.00

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	17.6666	-0.46

6dB Bandwidth (CH Mid)
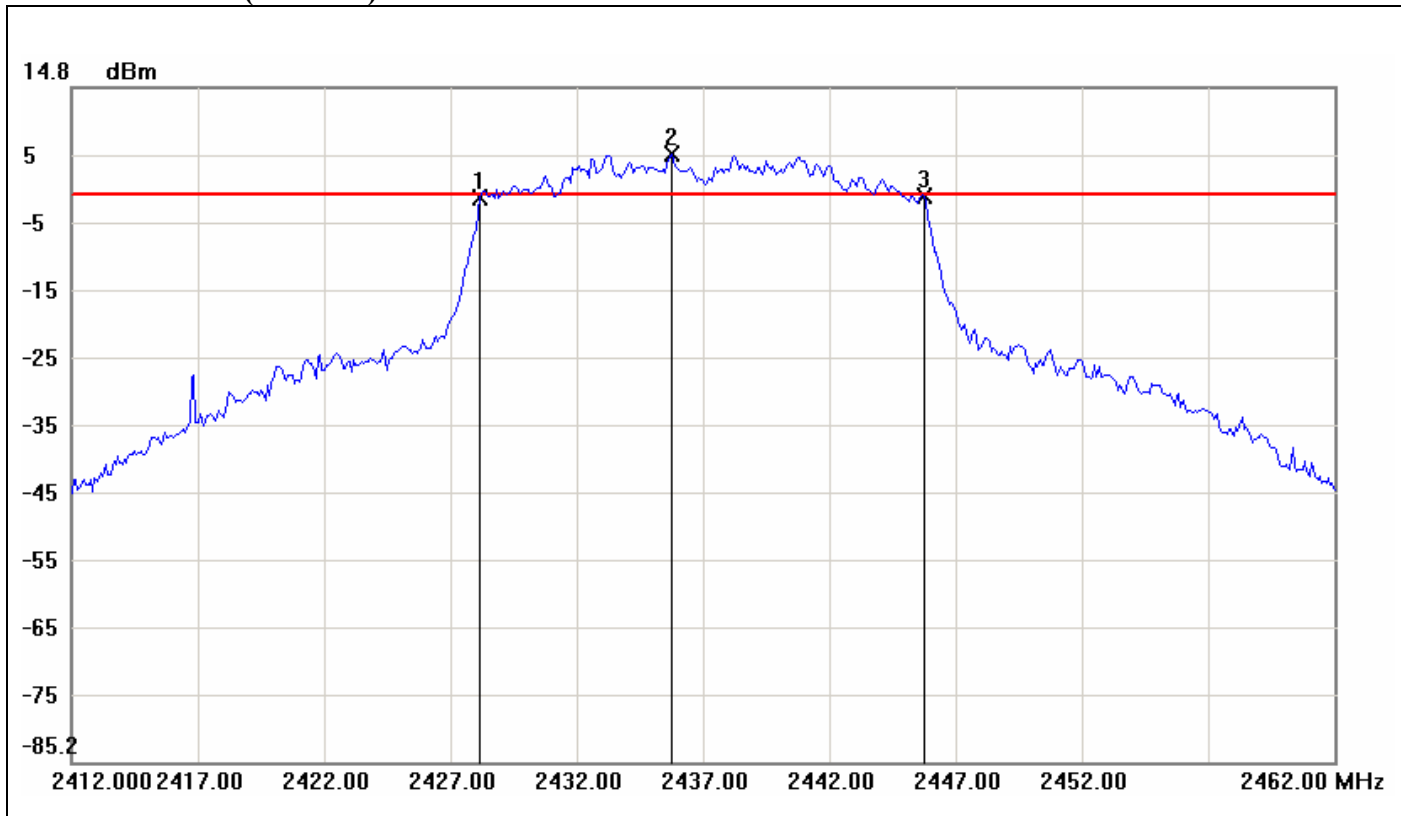
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2428.1667	-1.46	-1.17	-0.29
2	2435.7500	4.83	-1.17	6.00
3	2445.7500	-1.34	-1.17	-0.17

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	17.5833	0.12

6dB Bandwidth (CH High)
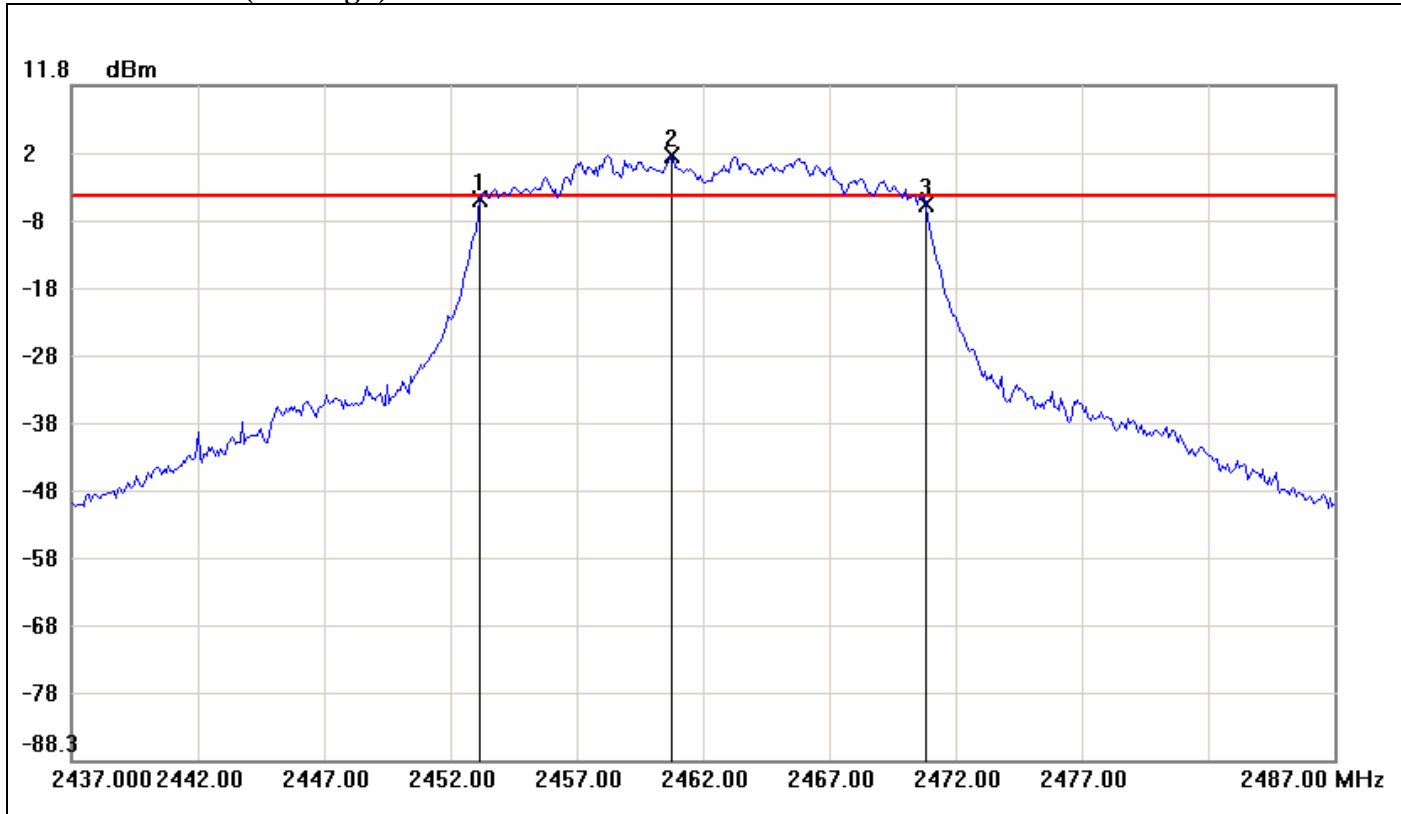
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2453.1667	-5.11	-4.64	-0.47
2	2460.7500	1.36	-4.64	6.00
3	2470.8333	-5.81	-4.64	-1.17

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	17.6666	-0.7

IEEE 802.11n HT 40 MHz mode / Main Anteena

6dB Bandwidth (CH Low)
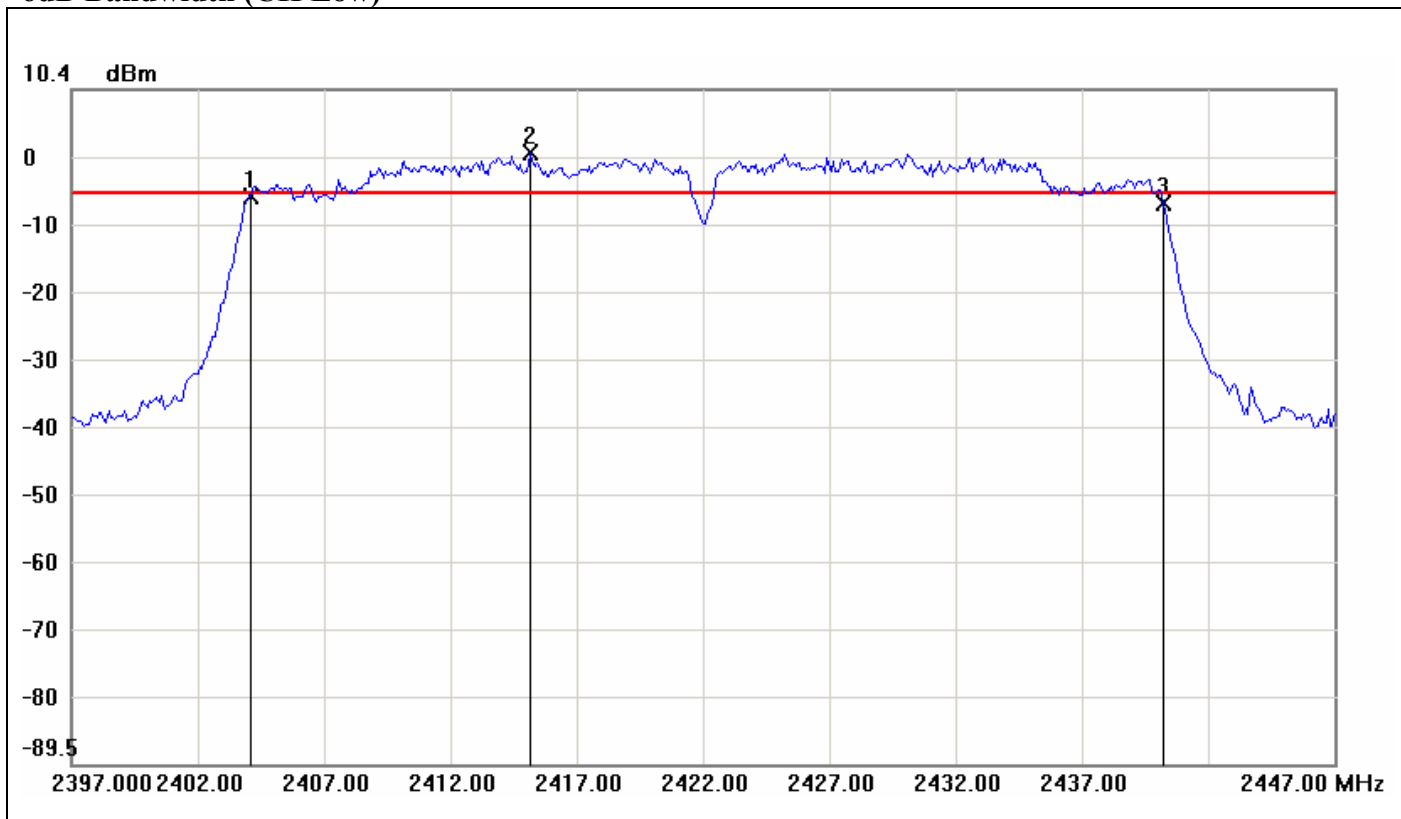
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2404.0833	-5.41	-5.01	-0.40
2	2415.1667	0.99	-5.01	6.00
3	2440.2500	-6.33	-5.01	-1.32

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	36.1667	-0.92

6dB Bandwidth (CH Mid)
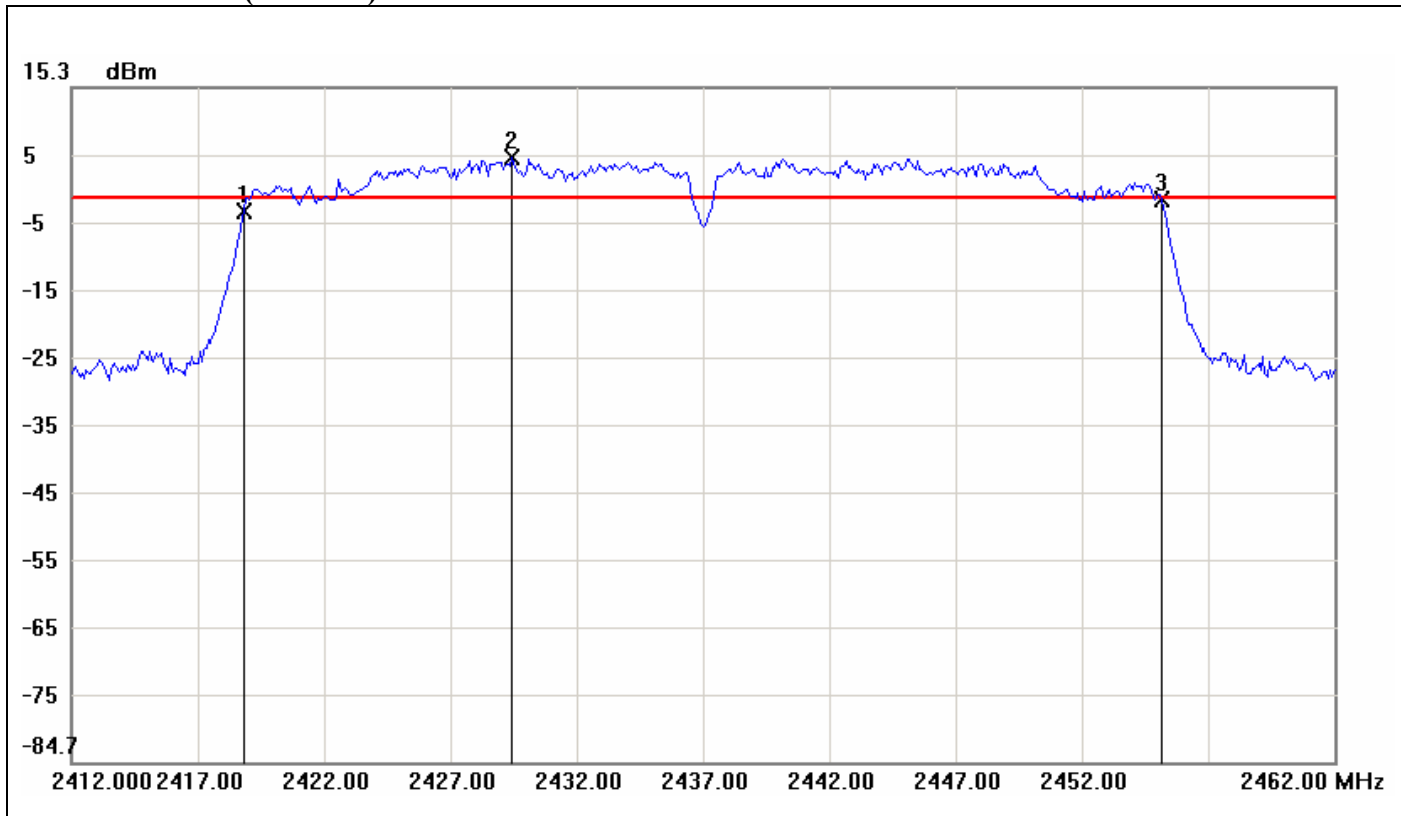
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2418.8333	-3.12	-1.15	-1.97
2	2429.4167	4.85	-1.15	6.00
3	2455.1667	-1.22	-1.15	-0.07

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	36.3334	1.9

6dB Bandwidth (CH High)
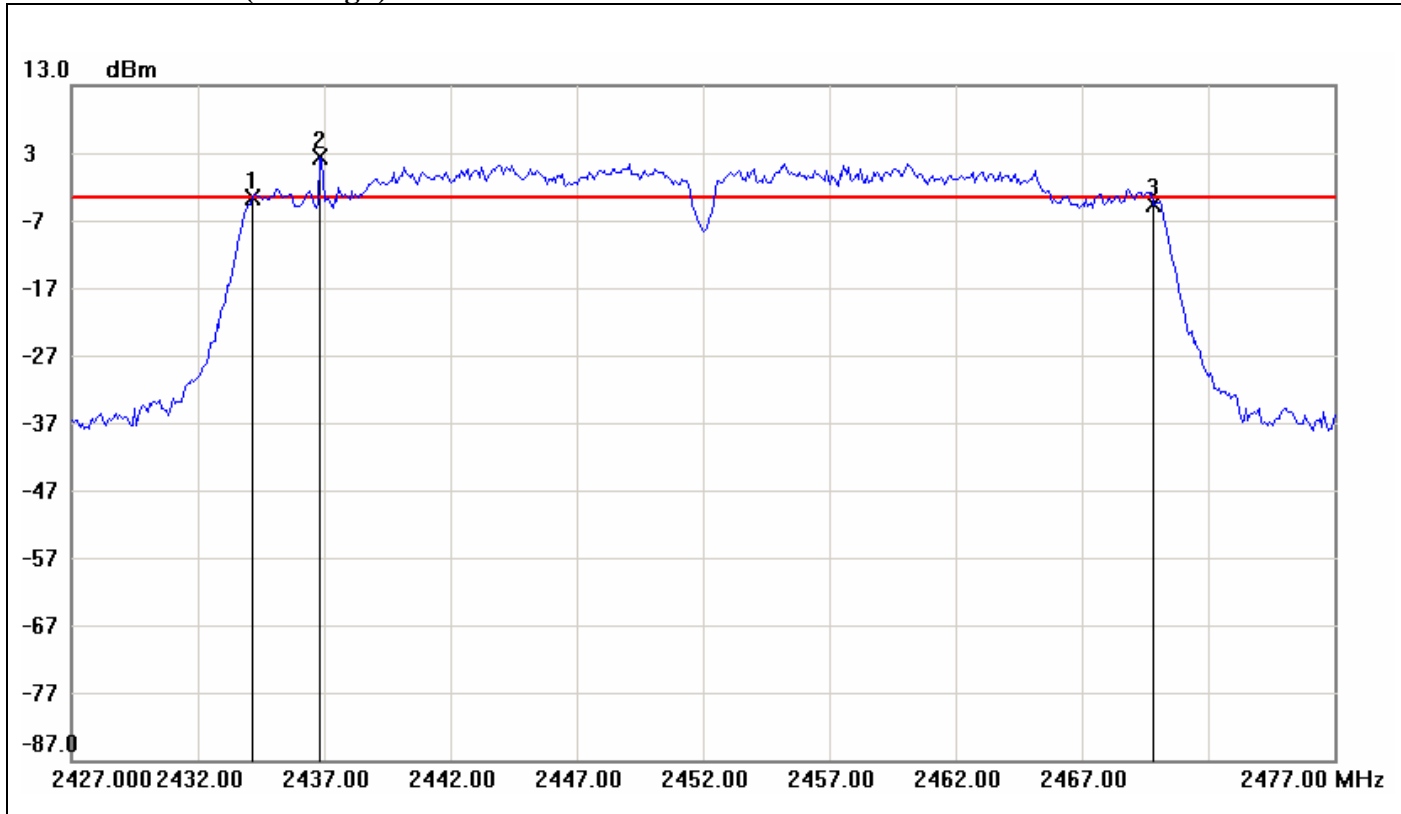
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2434.1667	-3.55	-3.53	-0.02
2	2436.8333	2.47	-3.53	6.00
3	2469.8333	-4.54	-3.53	-1.01

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	35.6666	-0.99

IEEE 802.11n HT 40 MHz mode / Aux Antenna

6dB Bandwidth (CH Low)
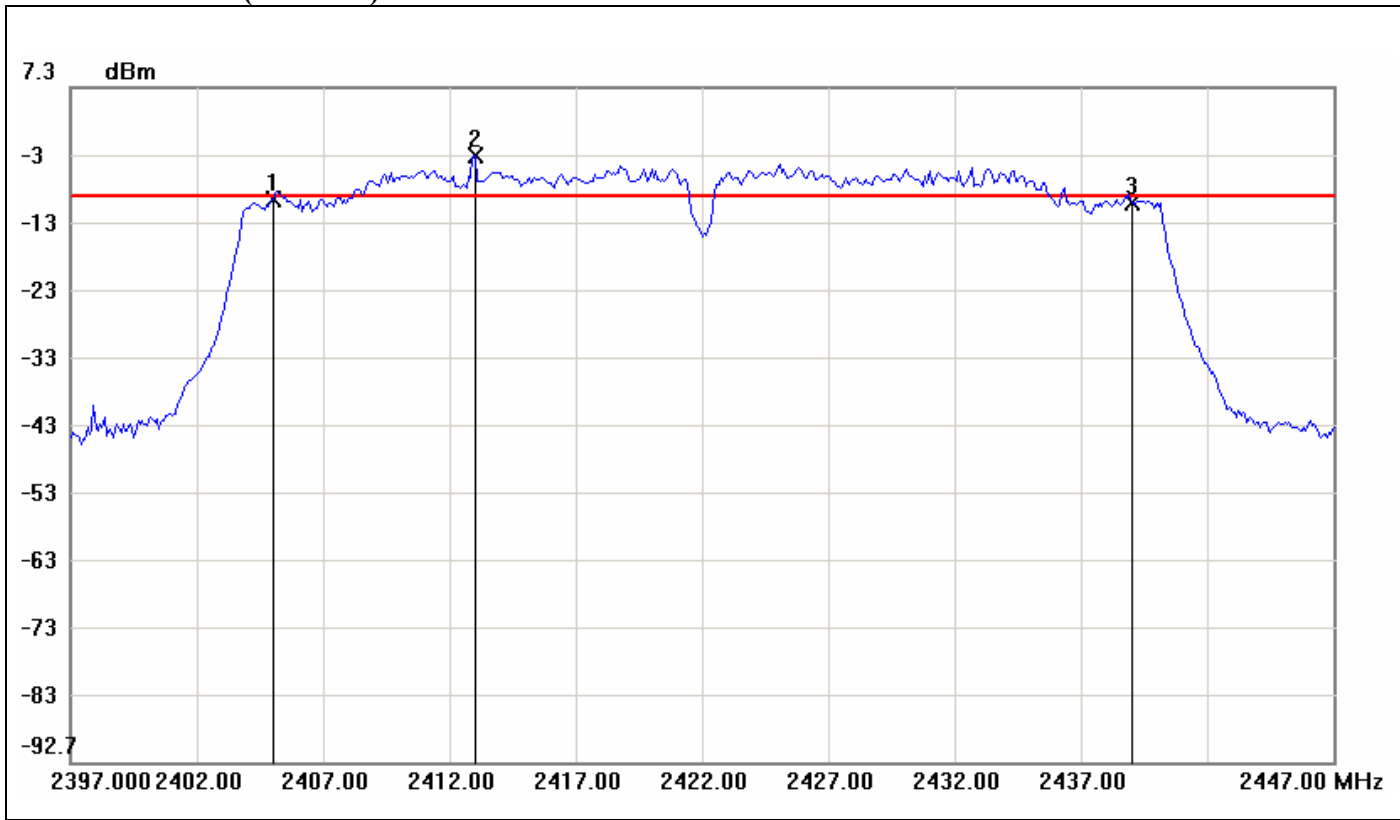
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2405.0000	-9.36	-8.79	-0.57
2	2413.0000	-2.79	-8.79	6.00
3	2439.0000	-9.83	-8.79	-1.04

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	34	-0.47

6dB Bandwidth (CH Mid)
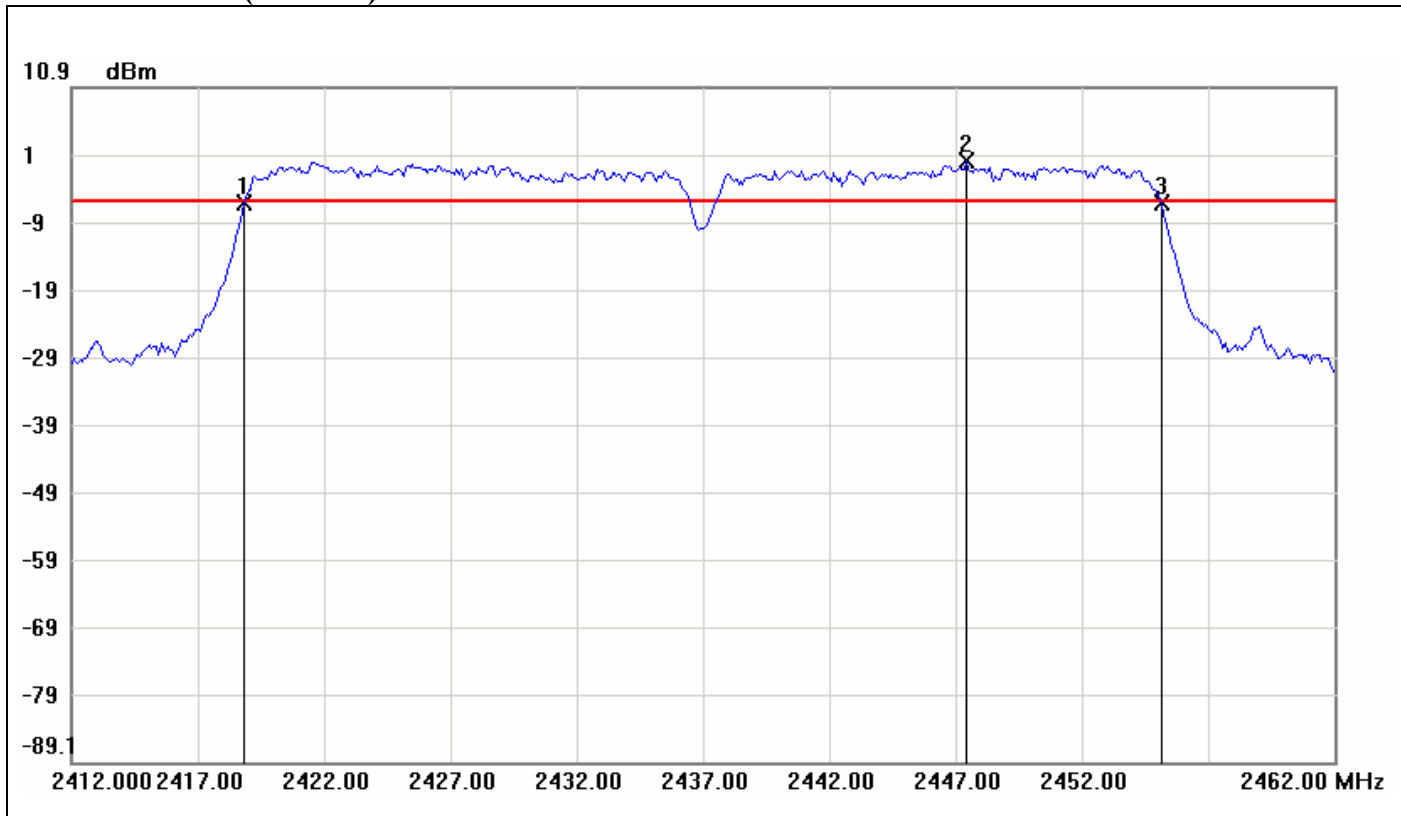
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2418.8333	-6.20	-6.10	-0.10
2	2447.4167	-0.10	-6.10	6.00
3	2455.1667	-6.28	-6.10	-0.18

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	36.3334	-0.08

6dB Bandwidth (CH High)
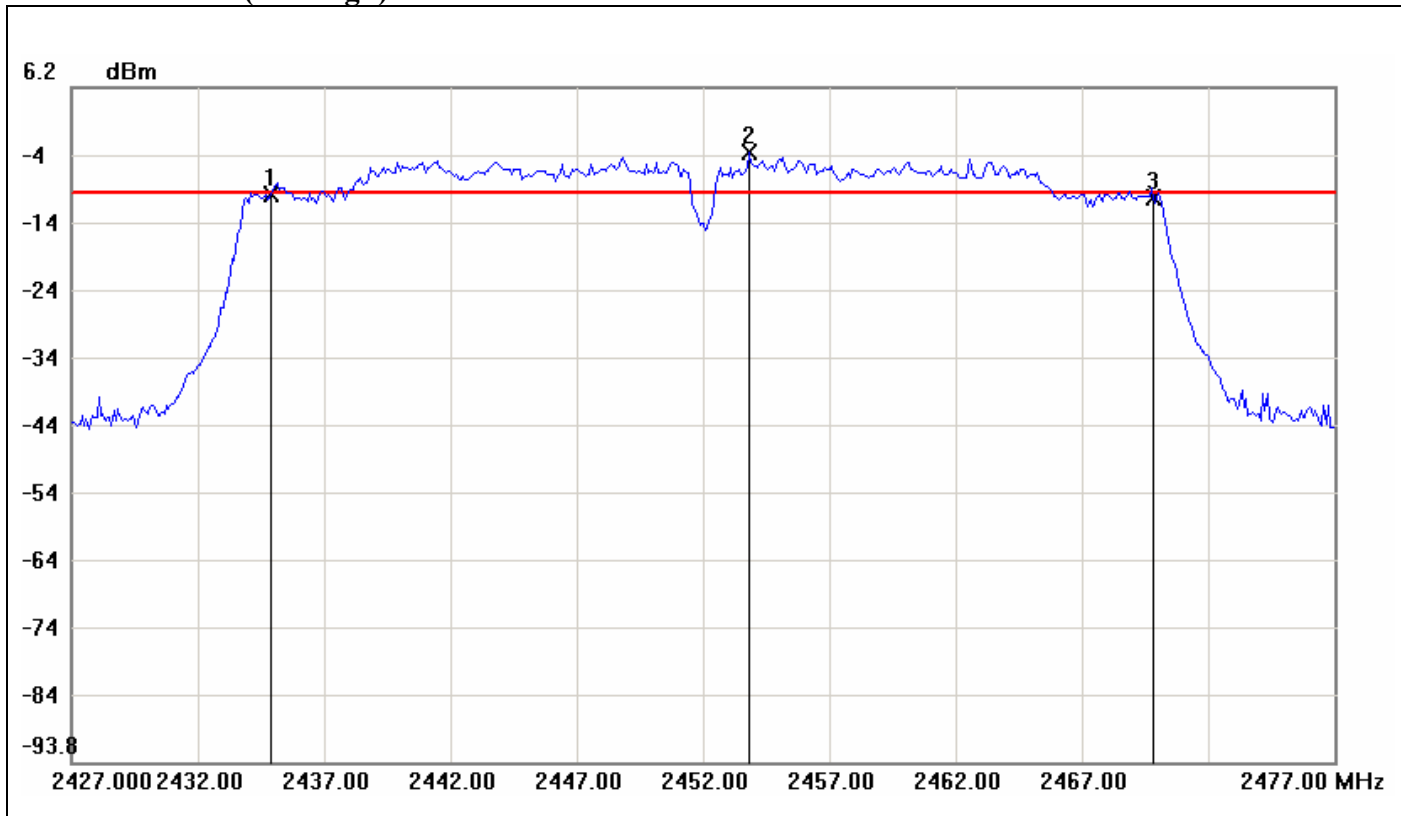
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2434.9167	-9.71	-9.45	-0.26
2	2453.8333	-3.45	-9.45	6.00
3	2469.8333	-10.18	-9.45	-0.73

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	34.9166	-0.47

IEEE 802.11a mode
6dB Bandwidth (CH Low)
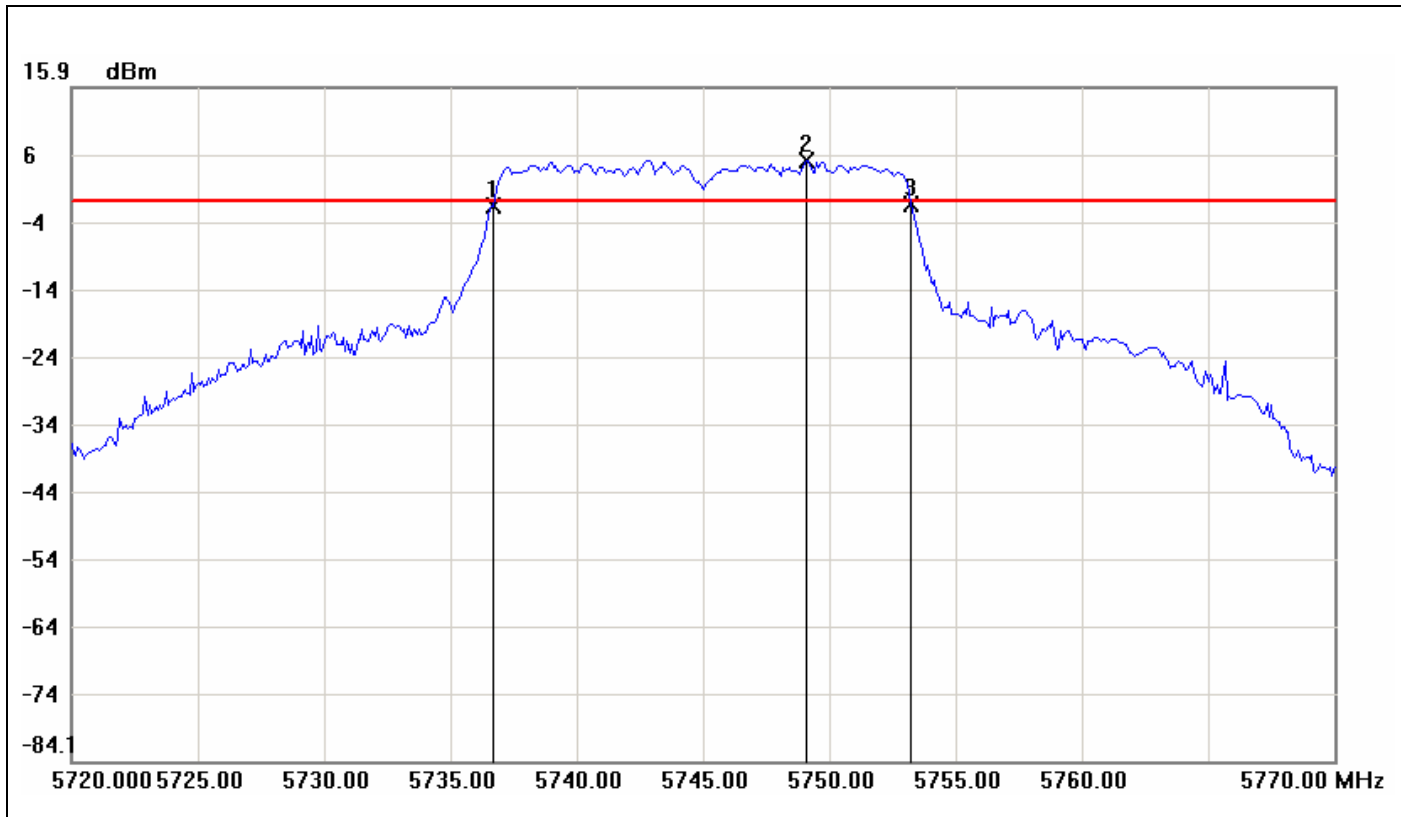
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5736.6667	-1.76	-0.85	-0.91
2	5749.0833	5.15	-0.85	6.00
3	5753.2500	-1.38	-0.85	-0.53

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	16.5833	0.38

6dB Bandwidth (CH Mid)
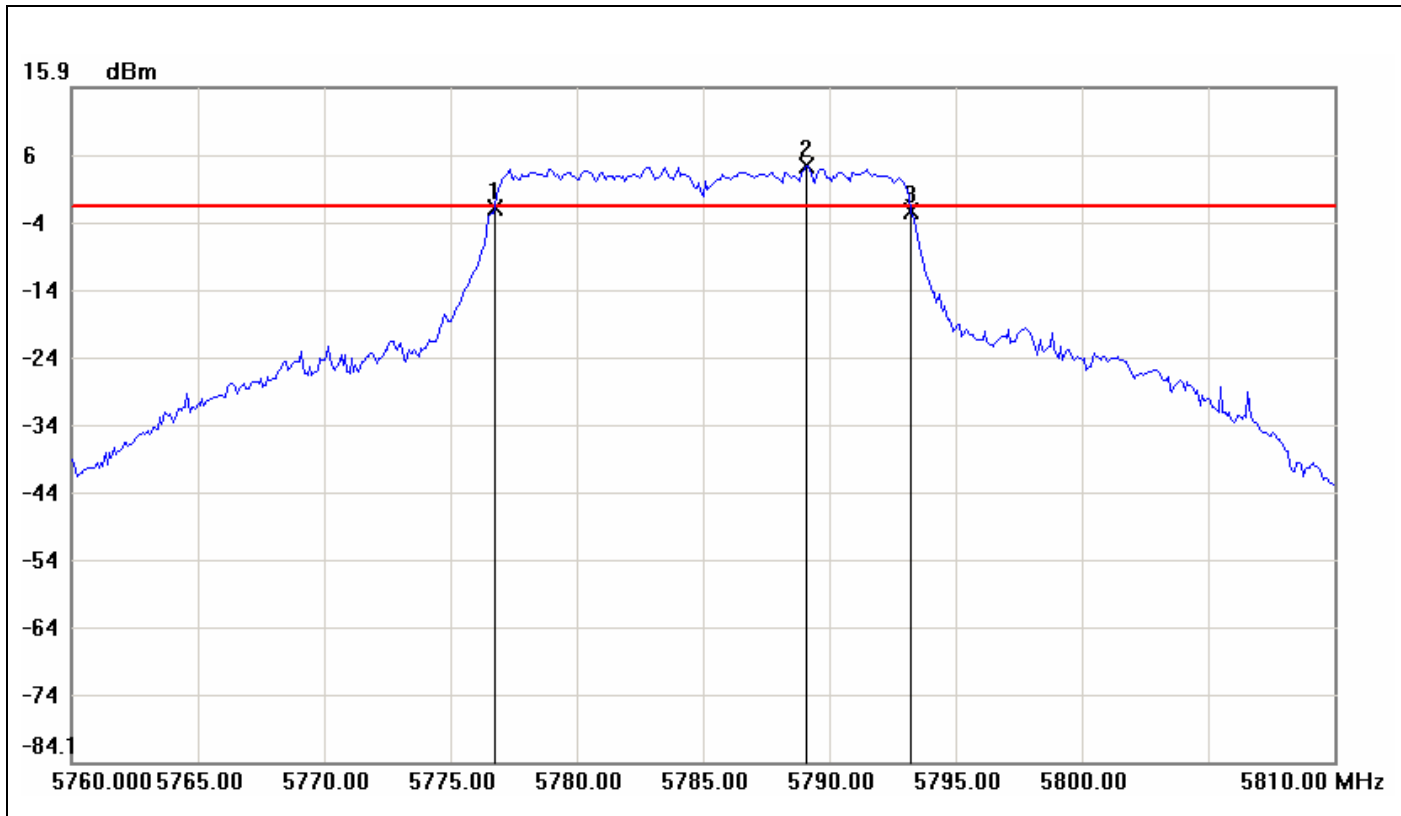
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5776.7500	-1.99	-1.64	-0.35
2	5789.0833	4.36	-1.64	6.00
3	5793.2500	-2.42	-1.64	-0.78

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	16.5	-0.43

6dB Bandwidth (CH High)
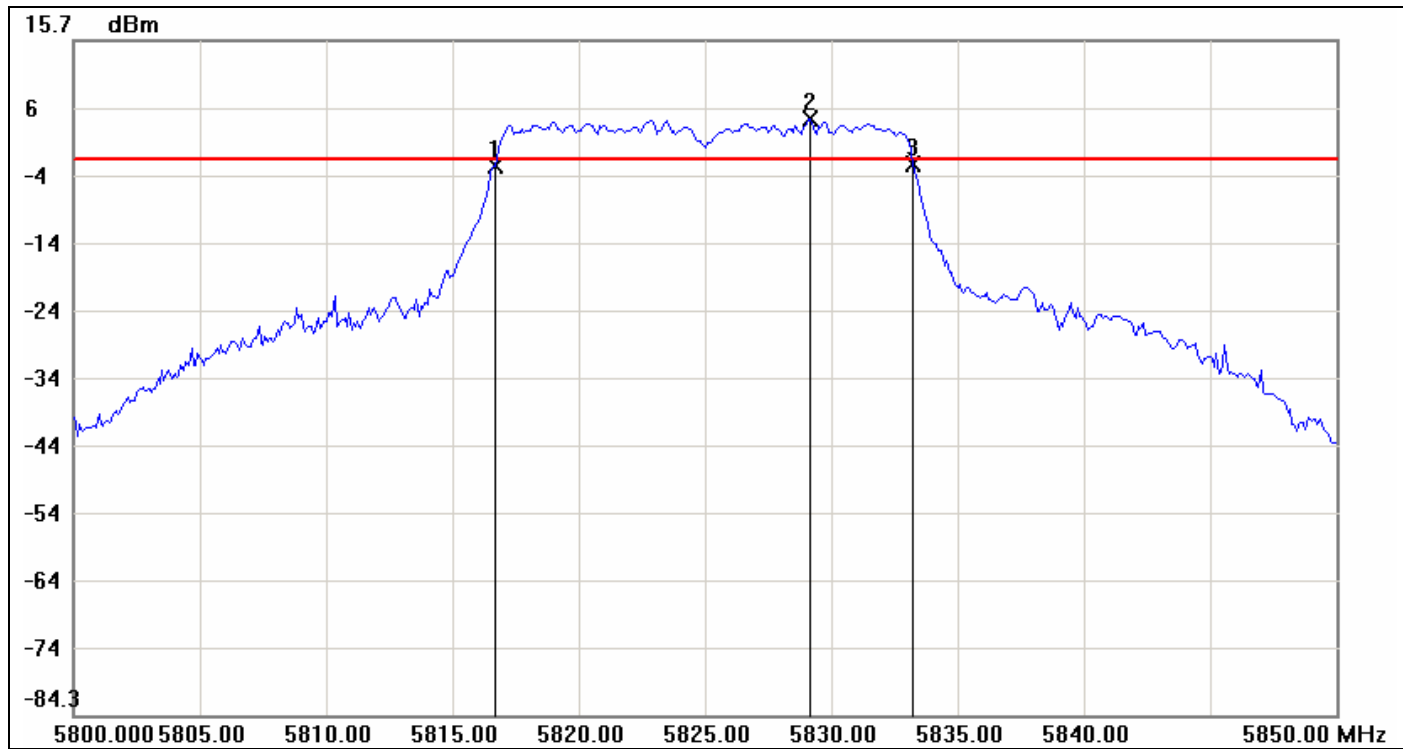
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5816.6667	-2.84	-2.01	-0.83
2	5829.1667	3.99	-2.01	6.00
3	5833.2500	-2.69	-2.01	-0.68

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	16.5833	0.15

IEEE 802.11n HT 20 MHz mode

6dB Bandwidth (CH Low)
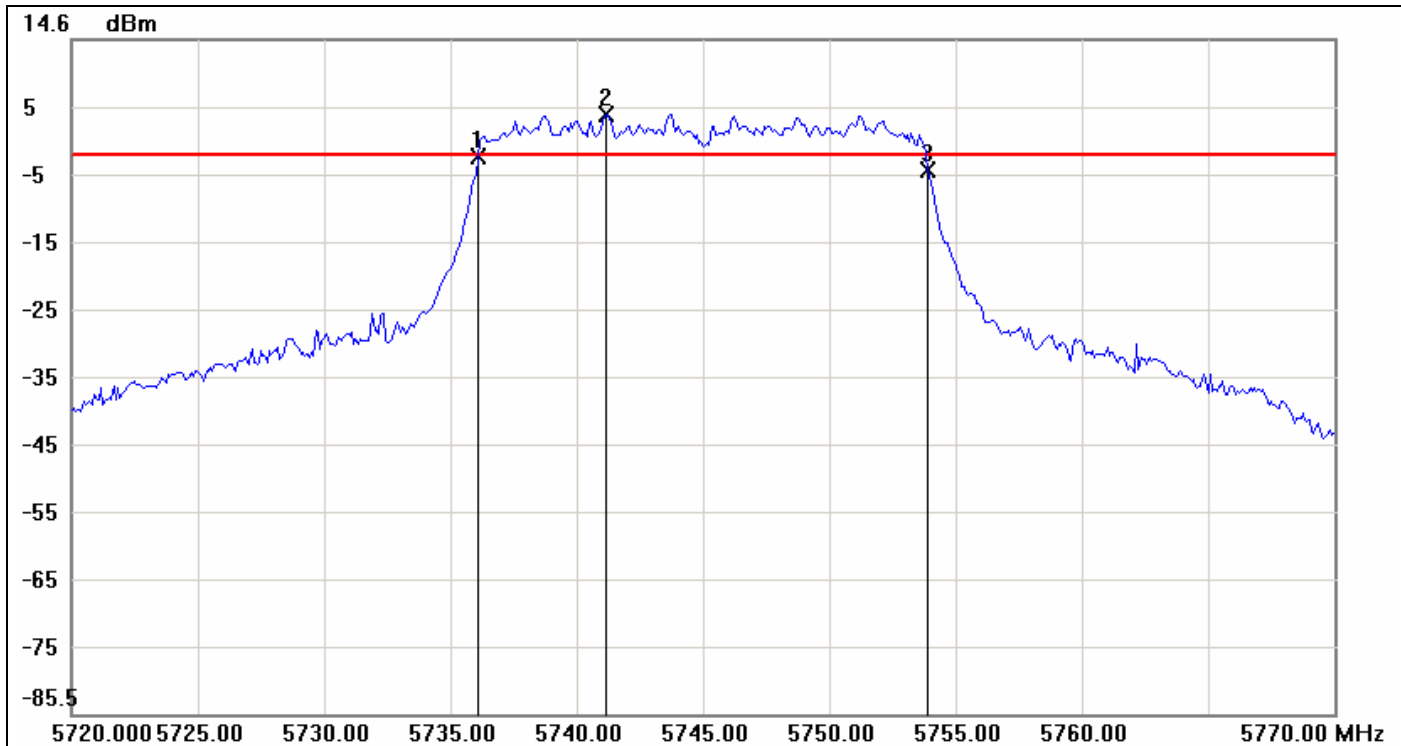
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5736.0833	-2.71	-2.55	-0.16
2	5741.1667	3.45	-2.55	6.00
3	5753.9167	-4.83	-2.55	-2.28

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	17.8334	-2.12

6dB Bandwidth (CH Mid)
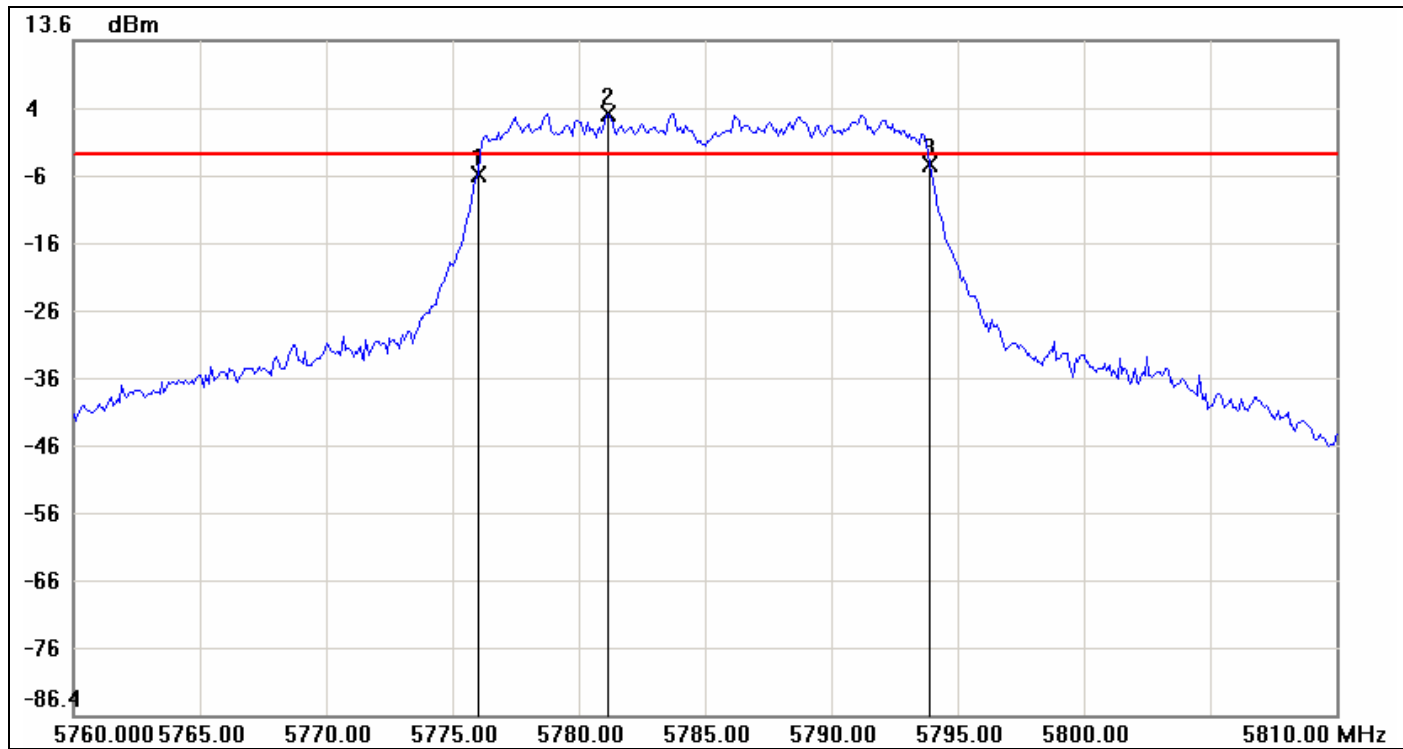
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5776.0000	-6.25	-3.31	-2.94
2	5781.1667	2.69	-3.31	6.00
3	5793.9167	-4.64	-3.31	-1.33

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	17.9167	1.61

6dB Bandwidth (CH High)
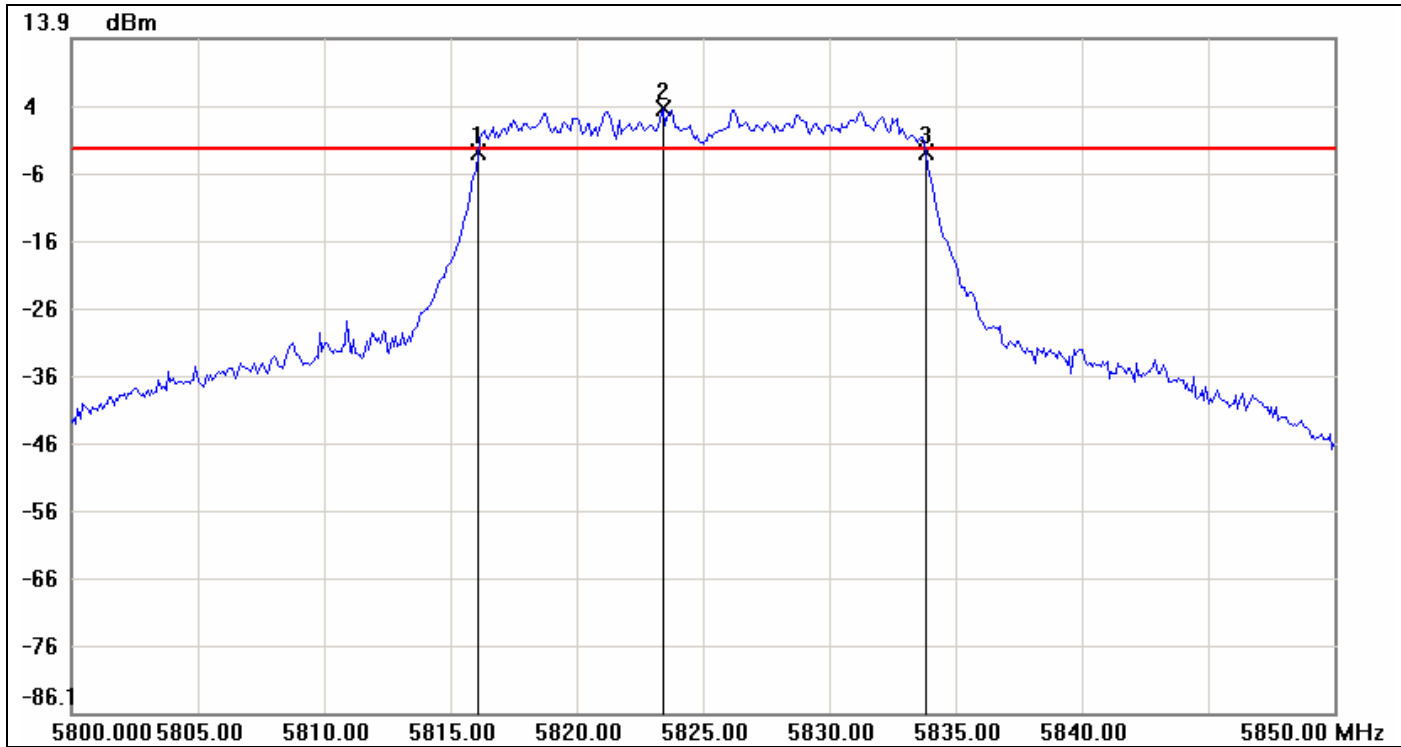
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5816.0833	-3.05	-2.54	-0.51
2	5823.4167	3.46	-2.54	6.00
3	5833.8333	-3.03	-2.54	-0.49

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	17.75	0.02

IEEE 802.11n HT 40 MHz mode

6dB Bandwidth (CH Low)
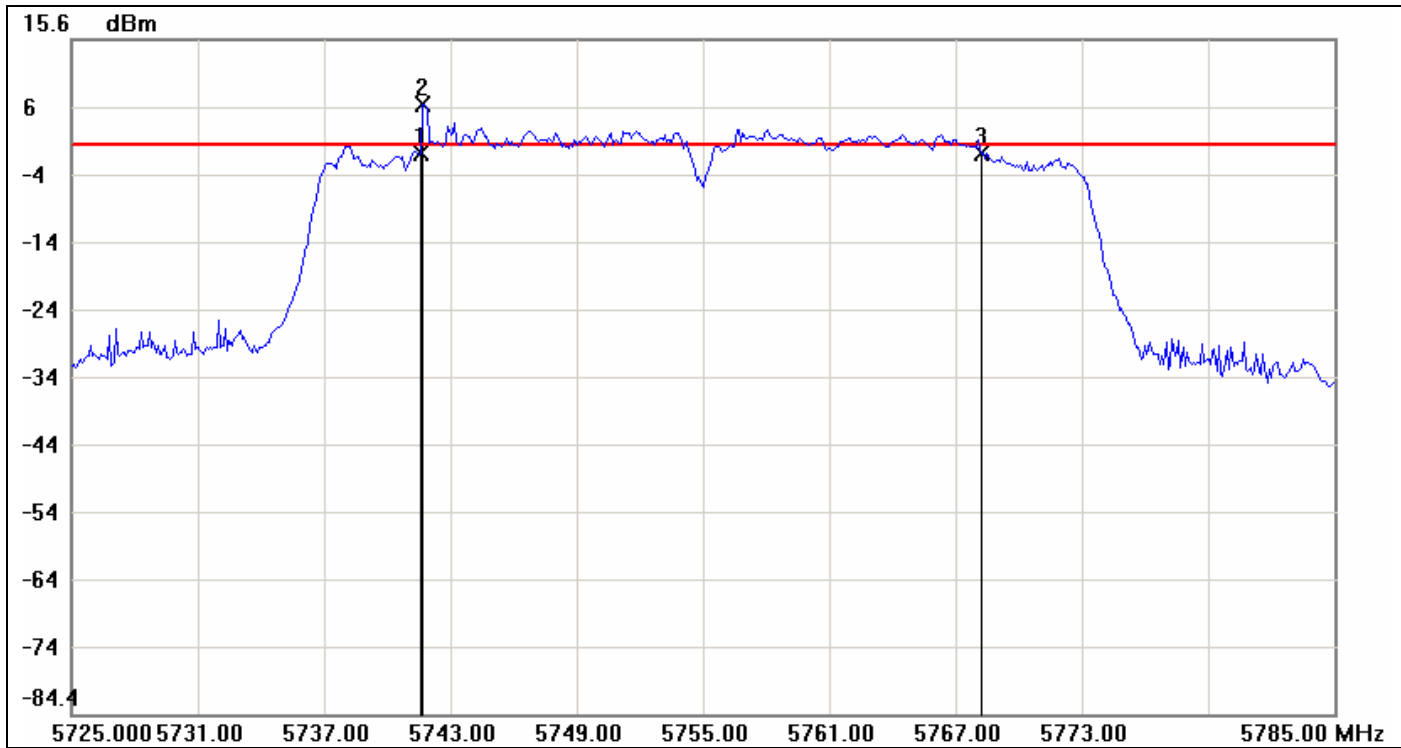
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5741.6000	-1.29	-0.18	-1.11
2	5741.7000	5.82	-0.18	6.00
3	5768.2000	-1.28	-0.18	-1.10

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	26.6	0.01

6dB Bandwidth (CH High)
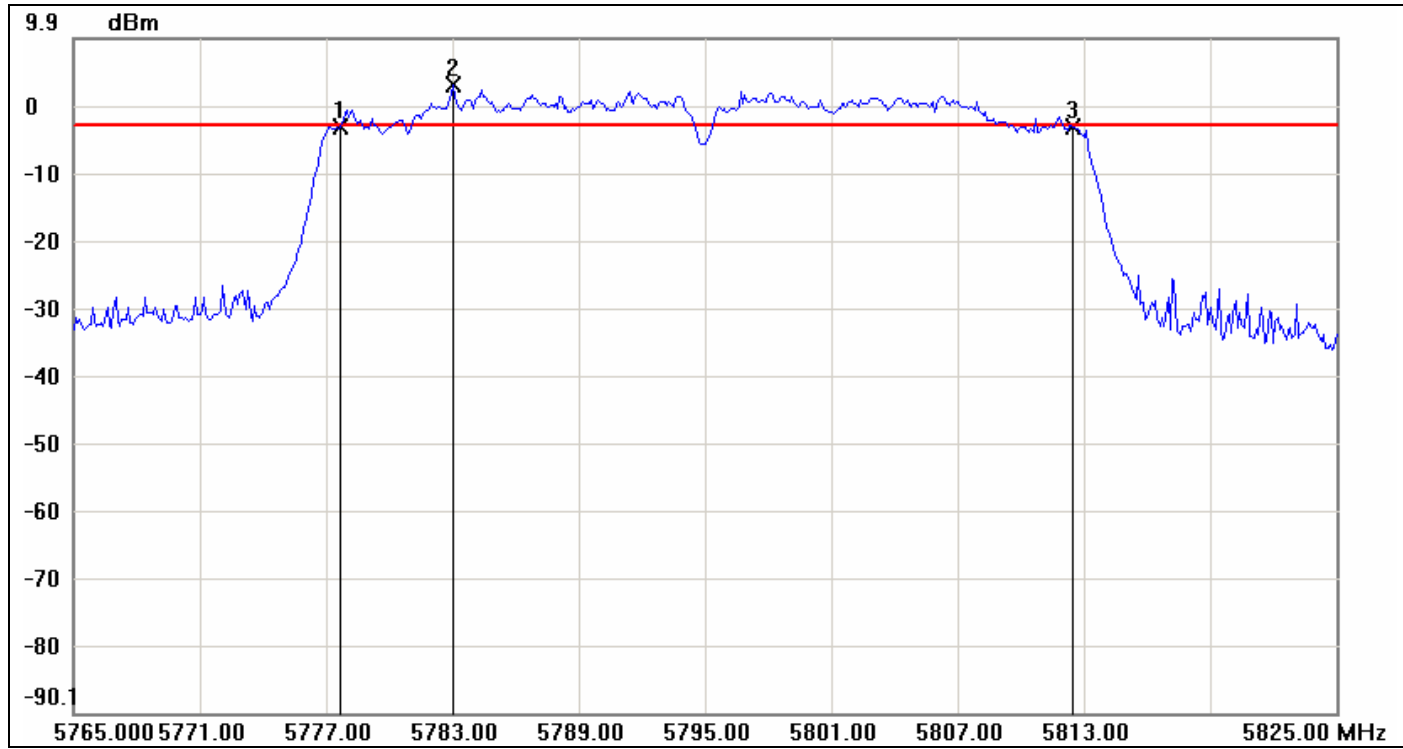
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5777.7000	-3.32	-3.01	-0.31
2	5783.0000	2.99	-3.01	6.00
3	5812.5000	-3.32	-3.01	-0.31

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	34.8	0

7.3 PEAK POWER

LIMIT

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

1. According to §15.247(b)(3), 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
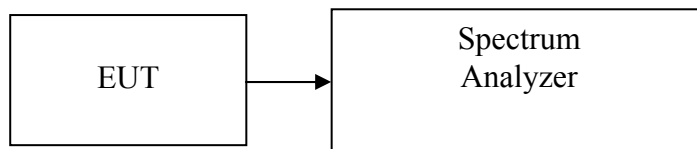
```
┌──────────────┐         ┌──────────────────┐
│              │         │    Spectrum      │
│     EUT      │ ──────► │    Analyzer      │
│              │         │                  │
└──────────────┘         └──────────────────┘
```

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. Set the RBW = 1MHz, VBW = 3MHz, Detector = Peak, Trace mode = max hold, Allow trace to fully stabilize. Sweep = auto couple. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges 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	22.10	0.1622		PASS
Mid	2437	21.65	0.1462	1.00	PASS
High	2462	21.48	0.1406		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	24.22	0.2642		PASS
Mid	2437	25.65	0.3673	1.00	PASS
High	2462	23.65	0.2317		PASS

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	Main Antenna Output Power (dBm)	Aux Antenna Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	22.83	18.06	24.08	0.2558		PASS
Mid	2437	23.49	18.12	24.60	0.2882	1.00	PASS
High	2462	22.51	17.07	23.60	0.2292		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Main Antenna Output Power (dBm)	Aux Antenna Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	21.31	14.63	22.15	0.1642		PASS
Mid	2437	24.02	18.21	25.03	0.3186	1.00	PASS
High	2452	21.74	15.48	22.66	0.1846		PASS

Remark: *Total Output Power (w) = Main Antenna(10^(Output Power /10)/1000)+ Aux Antenna (10^(Output Power /10)/1000)*

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5745	20.10	0.1023		PASS
Mid	5785	19.92	0.0982	1.00	PASS
High	5825	19.56	0.0904		PASS

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5745	17.86	0.0611		PASS
Mid	5785	17.27	0.0533	1.00	PASS
High	5825	16.46	0.0443		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5755	16.72	0.0470		PASS
High	5795	16.69	0.0467	1.00	PASS

IEEE 802.11b mode

Peak power (CH Low)
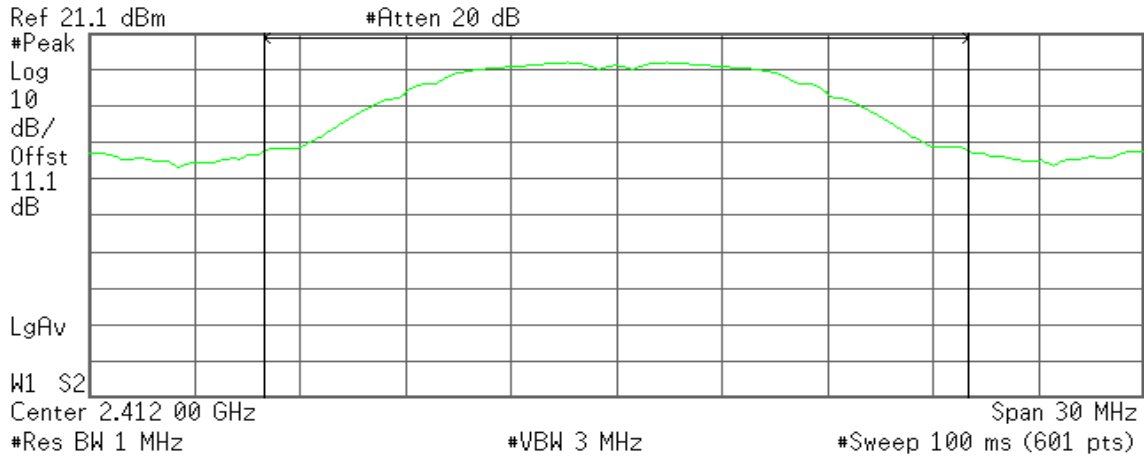
Channel Power

22.10 dBm /20.0000 MHz

Power Spectral Density

−50.92 dBm/Hz

Peak power (CH Mid)
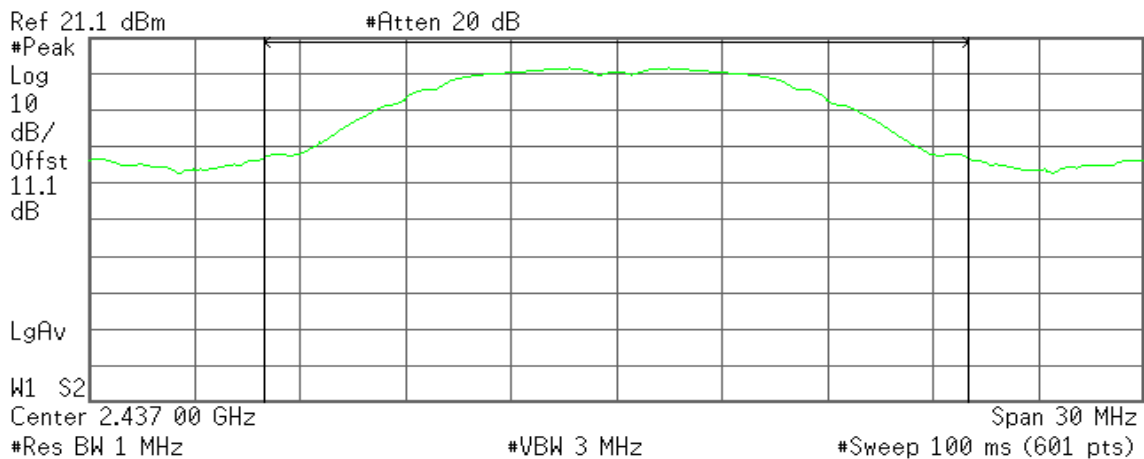
Channel Power

21.65 dBm /20.0000 MHz

Power Spectral Density

−51.36 dBm/Hz

Peak power (CH High)

※ **Agilent** 15:25:14 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.462 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
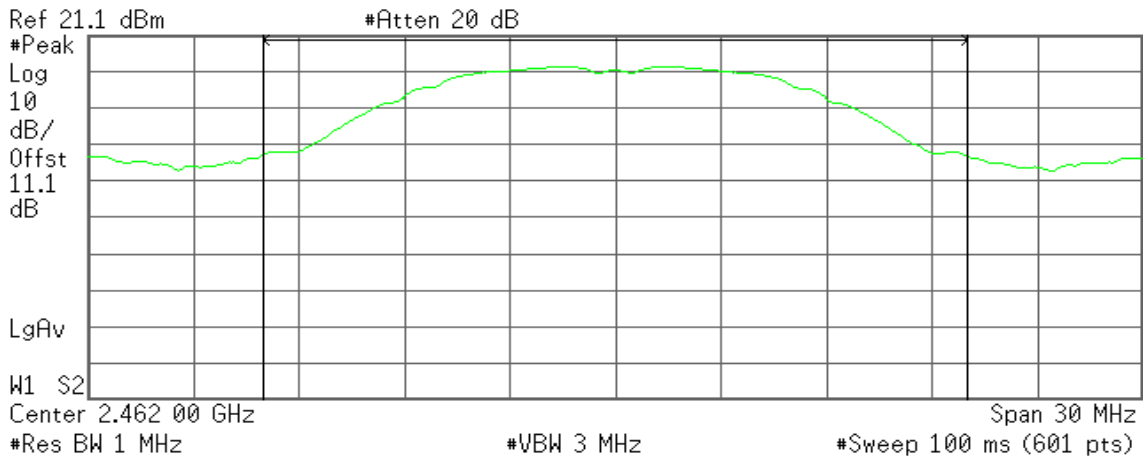
21.48 dBm /20.0000 MHz   −51.53 dBm/Hz

IEEE 802.11g mode

Peak power (CH Low)

※ **Agilent** 15:58:23 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.412 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
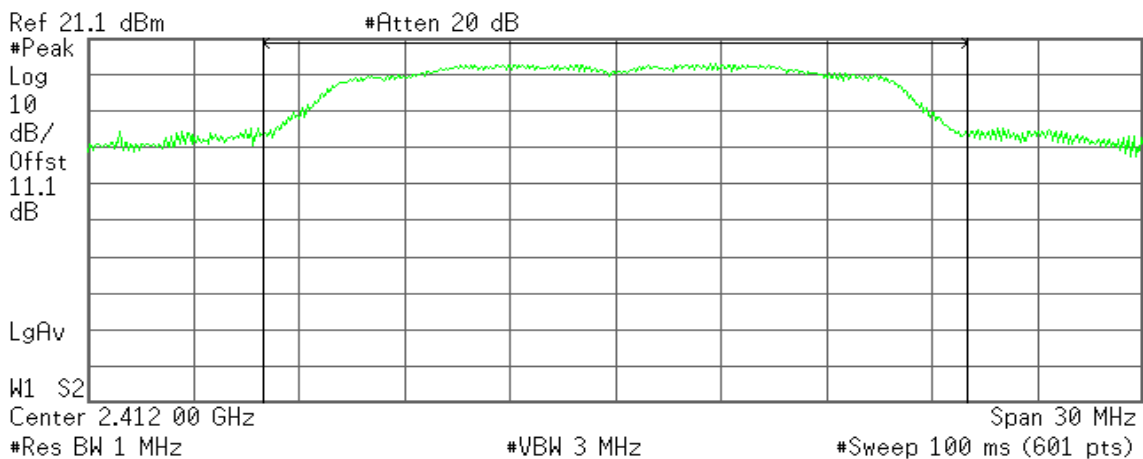
24.22 dBm /20.0000 MHz   −48.79 dBm/Hz

Peak power (CH Mid)

Agilent 15:56:53 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.437 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
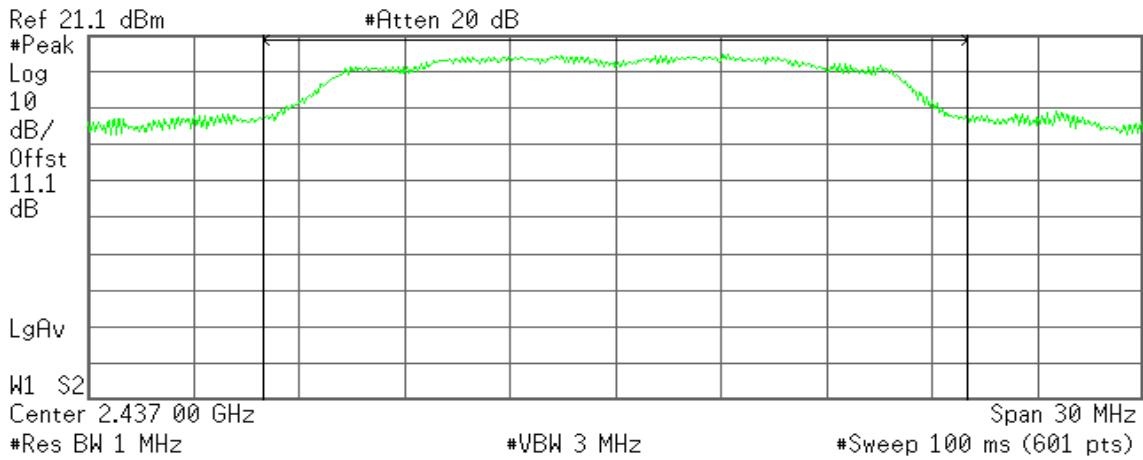
25.65 dBm /20.0000 MHz   −47.36 dBm/Hz

Peak power (CH High)

Agilent 15:54:58 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.462 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
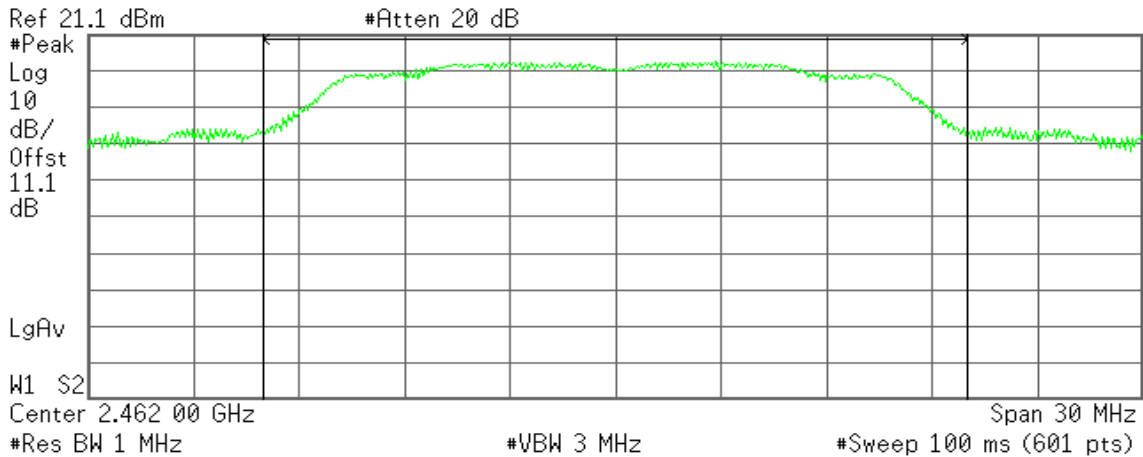
23.65 dBm /20.0000 MHz   −49.36 dBm/Hz

IEEE 802.11n HT20 MHz mode / Main Antenna
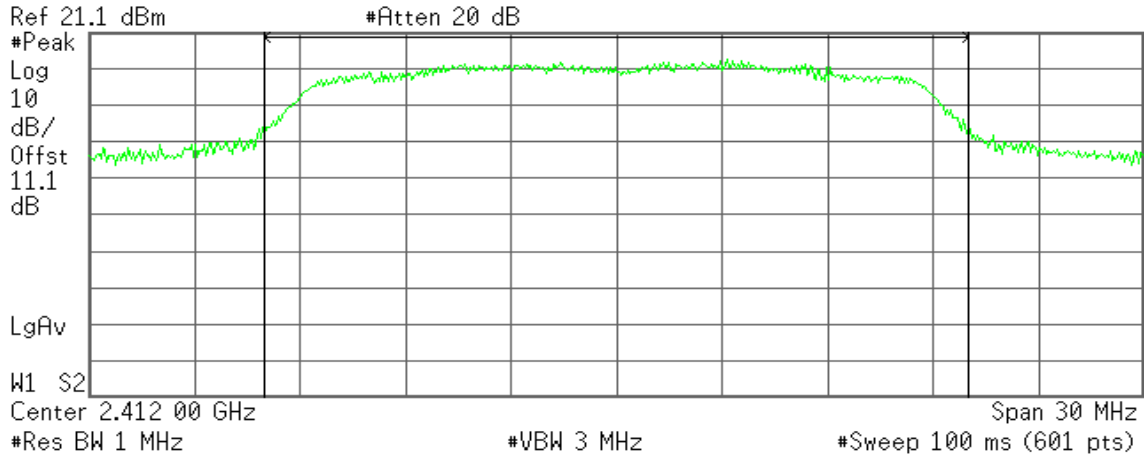
Peak power (CH Low)

Channel Power

22.83 dBm /20.0000 MHz

Power Spectral Density

−50.18 dBm/Hz

Peak power (CH Mid)
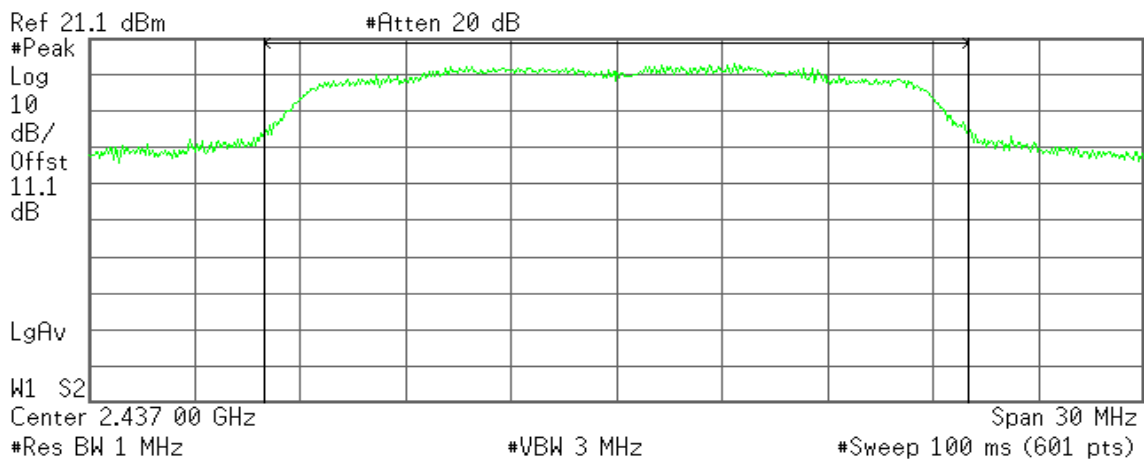
Channel Power

23.49 dBm /20.0000 MHz

Power Spectral Density

−49.52 dBm/Hz

Peak power (CH High)

Agilent 16:34:04 Oct 12, 2012

Ref 21.1 dBm   #Atten 20 dB

Center 2.462 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)
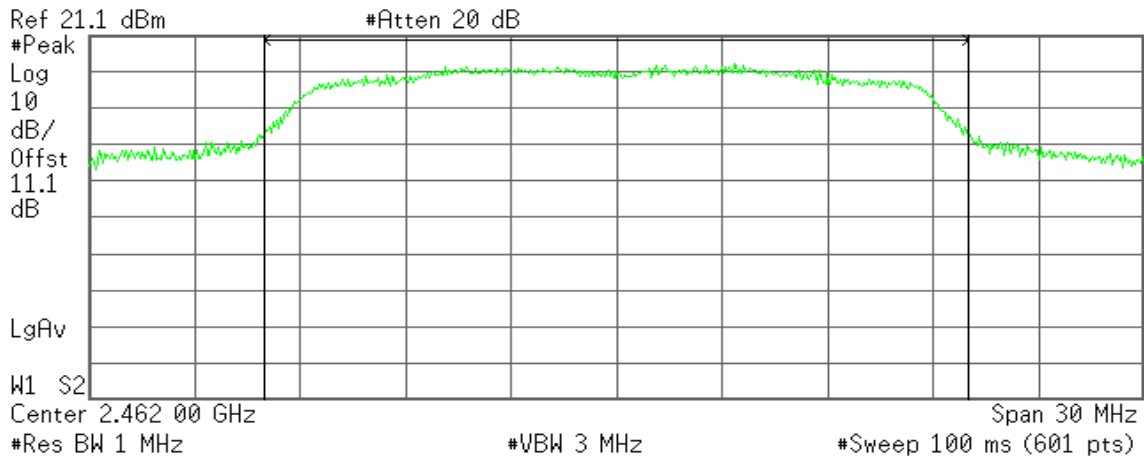
Channel Power

22.51 dBm /20.0000 MHz

Power Spectral Density

−50.50 dBm/Hz

IEEE 802.11n HT20 MHz mode / Aux Anatenna

Peak power (CH Low)

Agilent 19:30:30 Oct 12, 2012

Ref 21.1 dBm   #Atten 20 dB

Center 2.412 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)
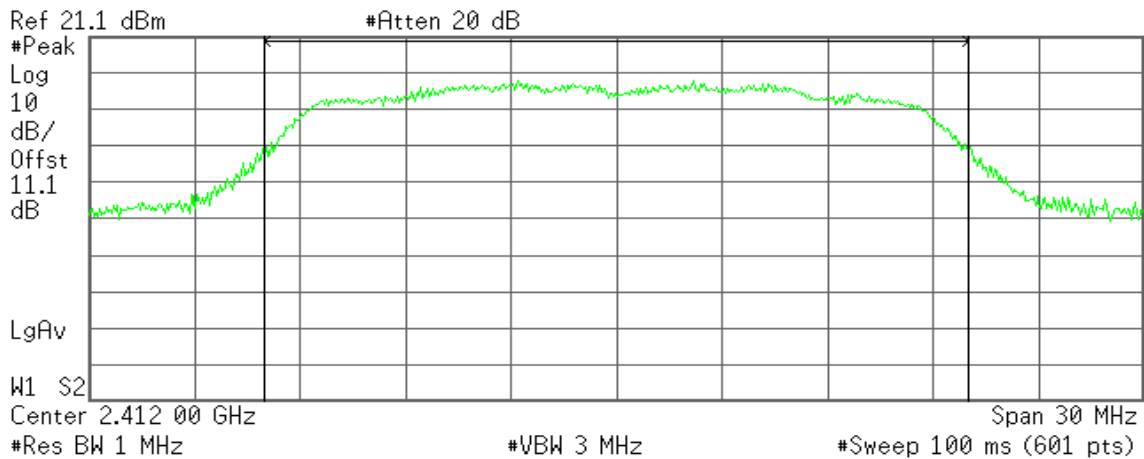
Channel Power

18.06 dBm /20.0000 MHz

Power Spectral Density

−54.95 dBm/Hz

Peak power (CH Mid)

Agilent 19:29:46 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.437 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
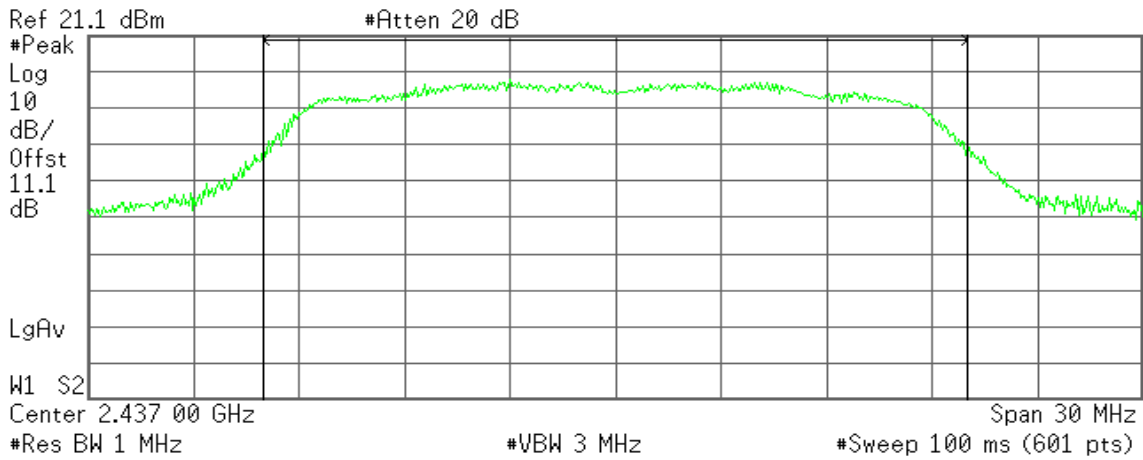
18.12 dBm /20.0000 MHz   −54.89 dBm/Hz

Peak power (CH High)

Agilent 19:28:06 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.462 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
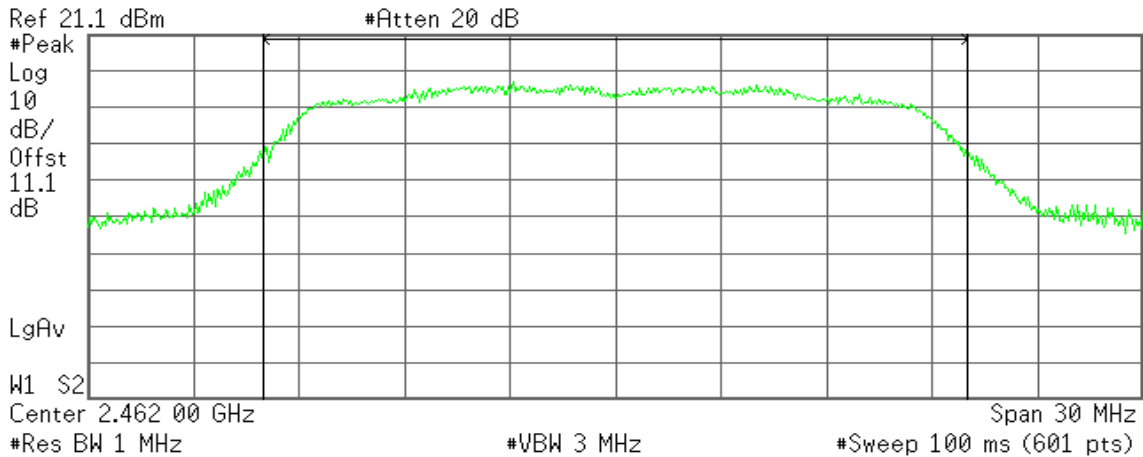
17.07 dBm /20.0000 MHz   −55.94 dBm/Hz

IEEE 802.11n HT40 MHz mode / Main Antenna

Peak power (CH Low)

※ **Agilent** 19:59:50 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.422 00 GHz   Span 60 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
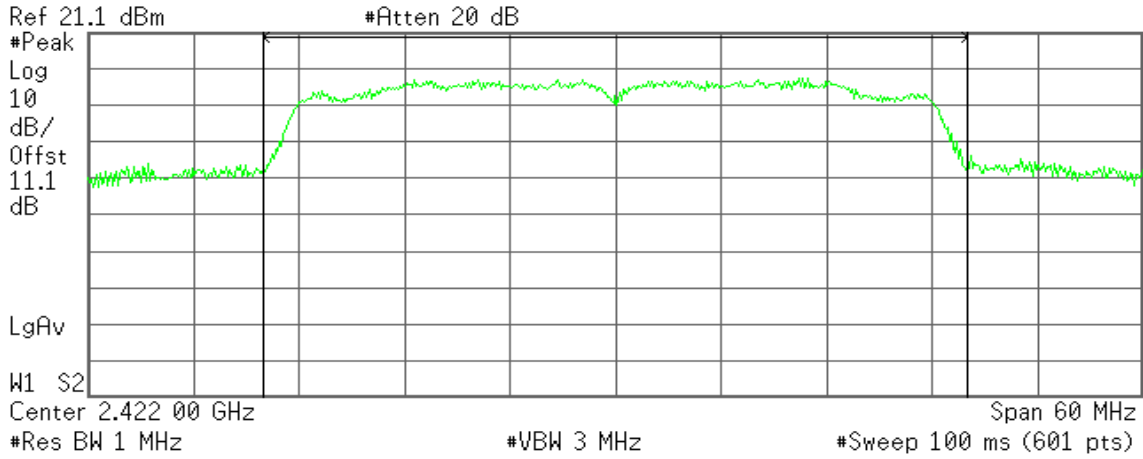
21.31 dBm /40.0000 MHz   −54.71 dBm/Hz

Peak power (CH Mid)

※ **Agilent** 19:57:36 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.437 00 GHz   Span 60 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
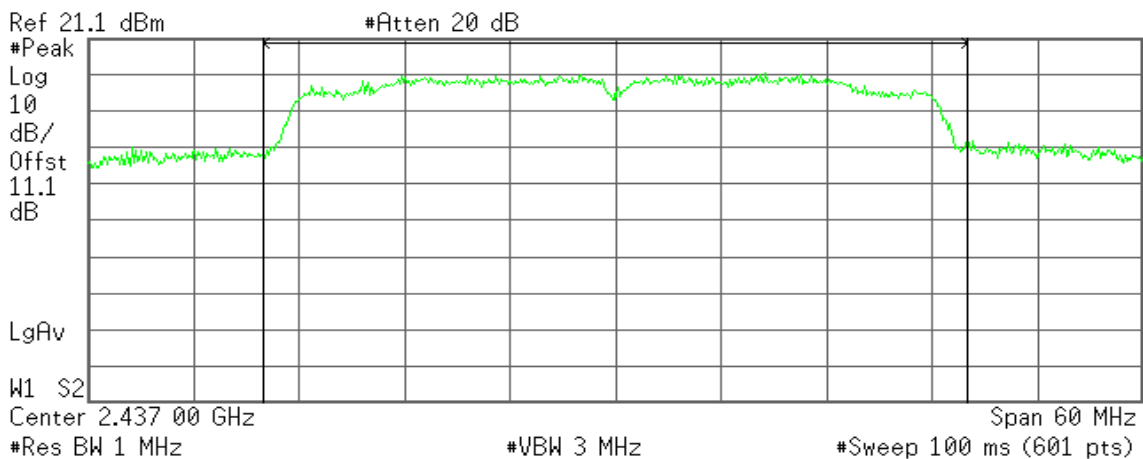
24.02 dBm /40.0000 MHz   −52.00 dBm/Hz

Peak power (CH High)

Agilent 19:54:07 Oct 12, 2012   R T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.452 00 GHz   Span 60 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
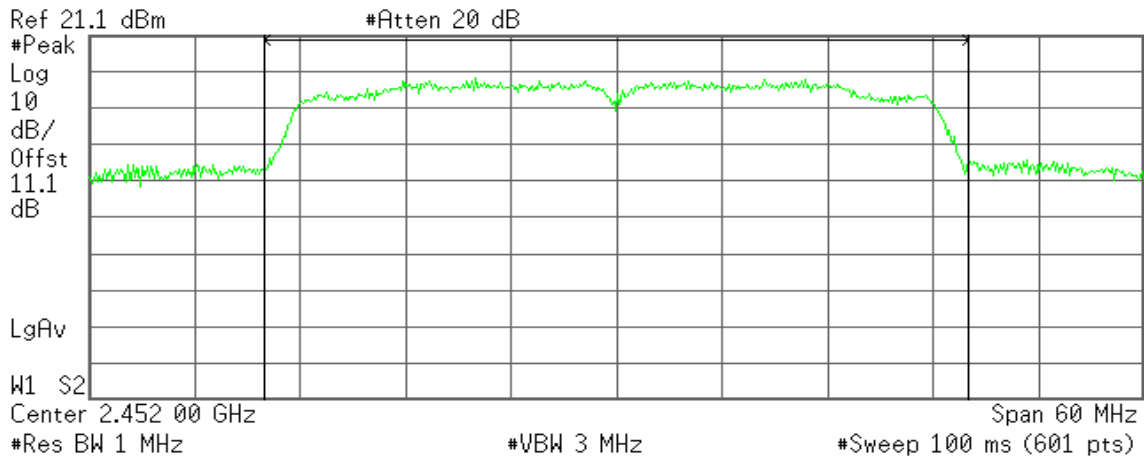
21.74 dBm /40.0000 MHz   −54.28 dBm/Hz

IEEE 802.11n HT40 MHz mode / Aux Antenna

Peak power (CH Low)

Agilent 19:42:35 Oct 12, 2012   R T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.422 00 GHz   Span 60 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
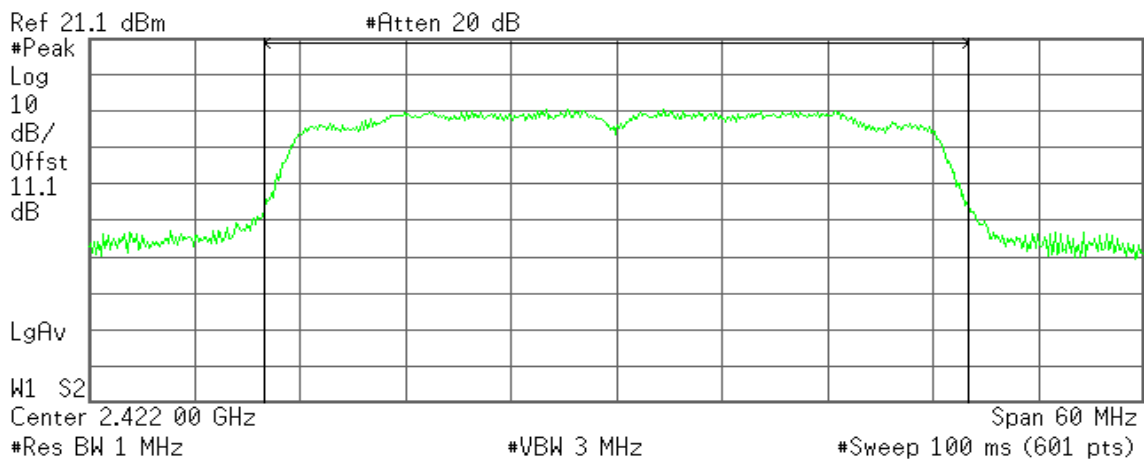
14.63 dBm /40.0000 MHz   −61.39 dBm/Hz

Peak power (CH Mid)

❄️ **Agilent** 19:44:22 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.437 00 GHz   Span 60 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
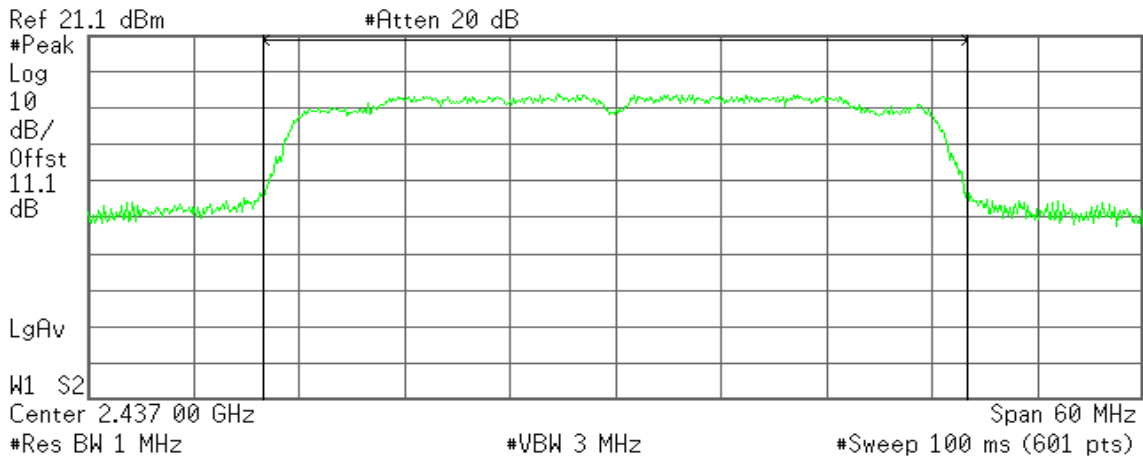
18.21 dBm /40.0000 MHz   −57.81 dBm/Hz

Peak power (CH High)

❄️ **Agilent** 19:50:20 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 2.452 00 GHz   Span 60 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
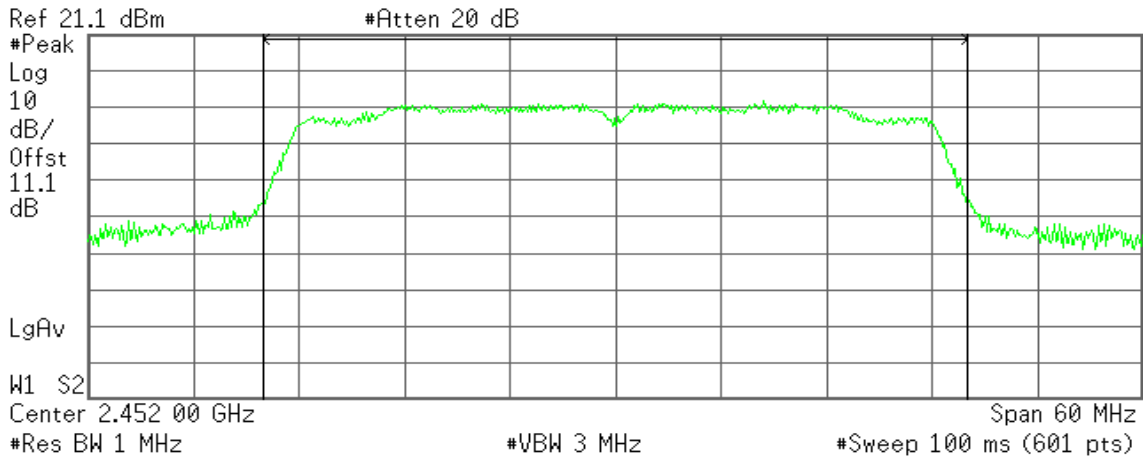
15.48 dBm /40.0000 MHz   −60.54 dBm/Hz

IEEE 802.11a mode

Peak power (CH Low)
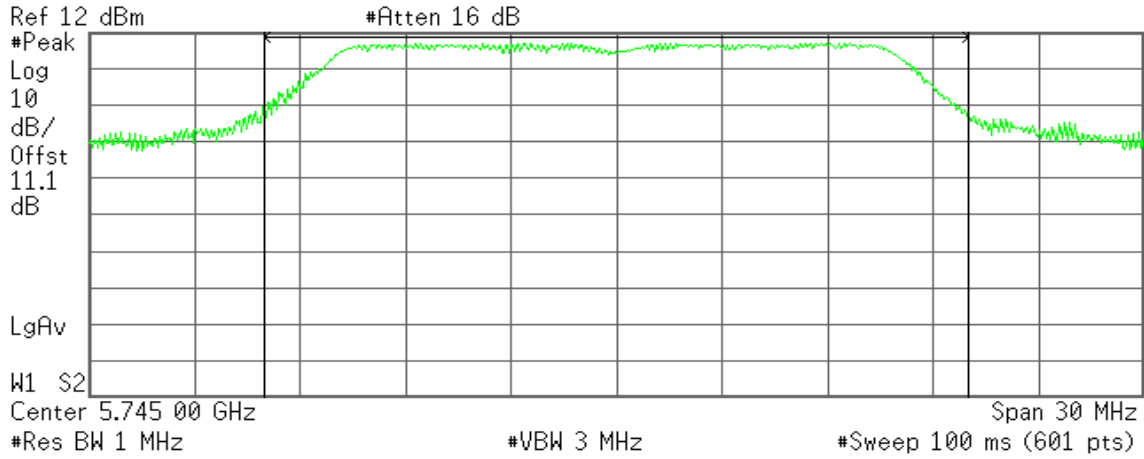
※ **Agilent**   R   T

Ref 12 dBm   #Atten 16 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 5.745 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**

20.01 dBm /20.0000 MHz   **−53.00 dBm/Hz**

Peak power (CH Mid)

※ **Agilent**   R   T

Ref 12 dBm   #Atten 16 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1 S2
Center 5.785 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**

19.92 dBm /20.0000 MHz   **−53.09 dBm/Hz**

Peak power (CH High)


```
※ Agilent                                    R   T

Ref 12 dBm              #Atten 16 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1  S2
Center 5.825 00 GHz                            Span 30 MHz
#Res BW 1 MHz          #VBW 3 MHz    #Sweep 100 ms (601 pts)
```
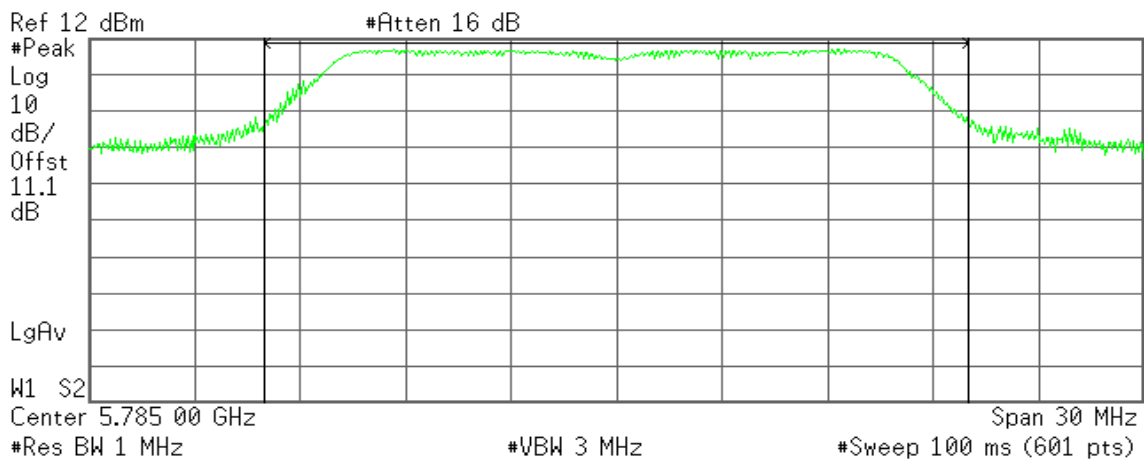
Channel Power   **Power Spectral Density**
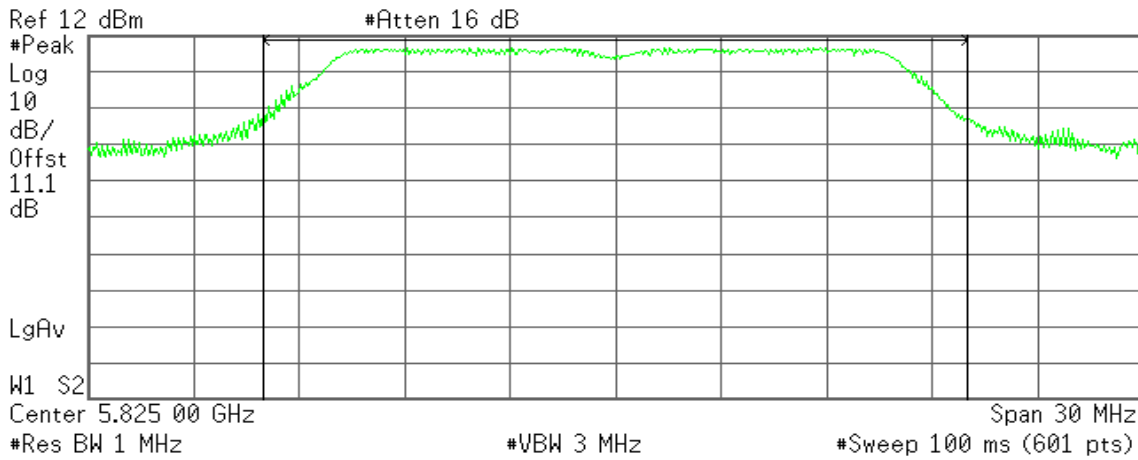
19.56 dBm /20.0000 MHz   −53.45 dBm/Hz

IEEE 802.11n HT 20 MHz mode

Peak power (CH Low)
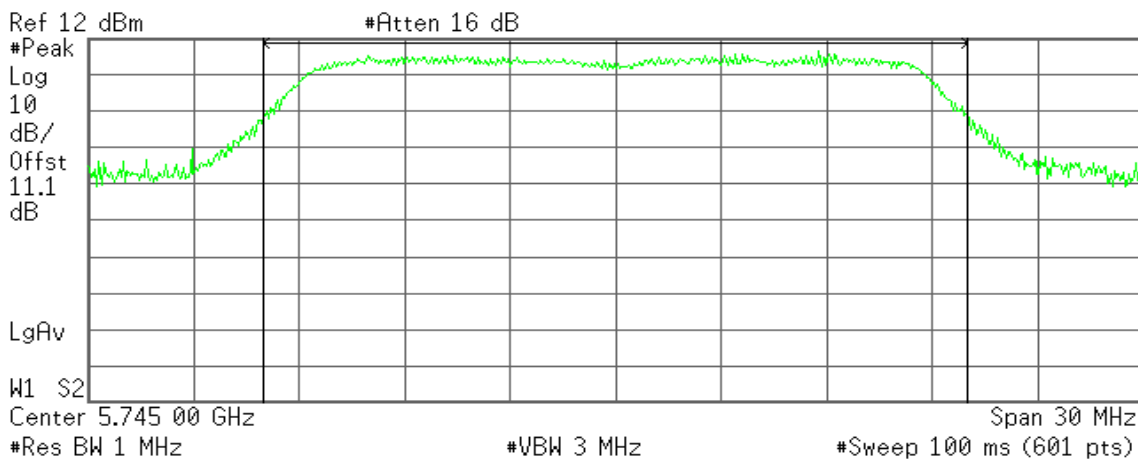

```
※ Agilent                                    R   T

Ref 12 dBm              #Atten 16 dB
#Peak
Log
10
dB/
Offst
11.1
dB

LgAv

W1  S2
Center 5.745 00 GHz                            Span 30 MHz
#Res BW 1 MHz          #VBW 3 MHz    #Sweep 100 ms (601 pts)
```

Channel Power   **Power Spectral Density**

17.86 dBm /20.0000 MHz   −55.15 dBm/Hz

Peak power (CH Mid)

Center 5.785 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
#Sweep 100 ms (601 pts)
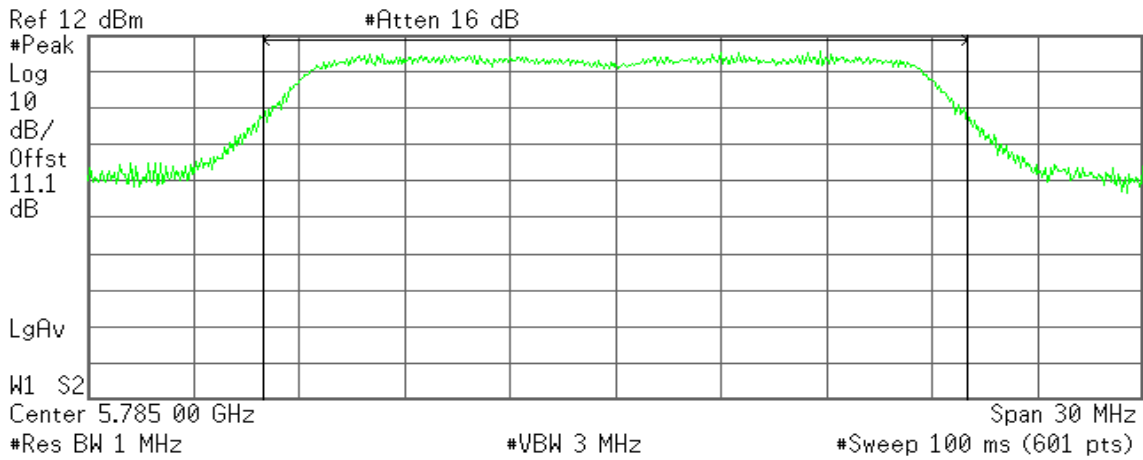
Channel Power

17.27 dBm /20.0000 MHz

Power Spectral Density

−55.74 dBm/Hz

Peak power (CH High)

Center 5.825 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
#Sweep 100 ms (601 pts)
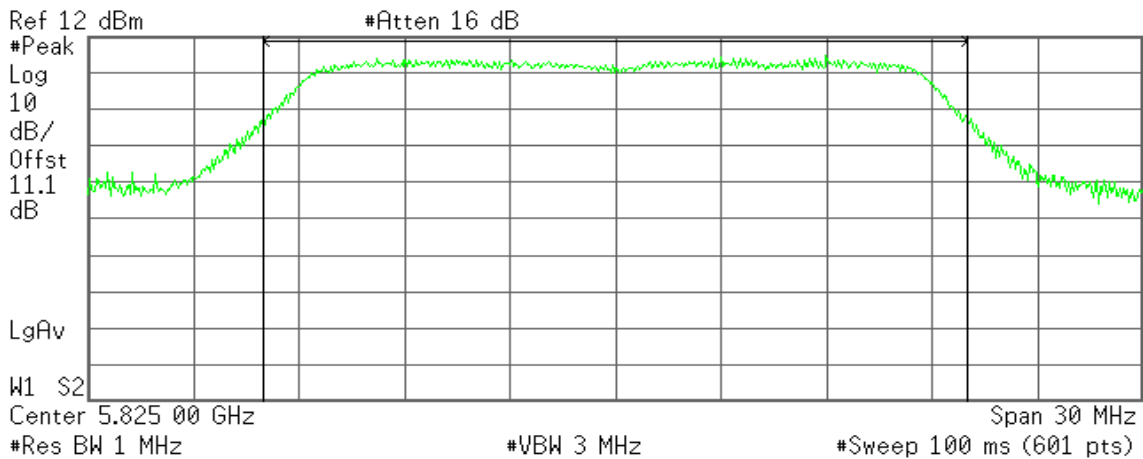
Channel Power

16.46 dBm /20.0000 MHz

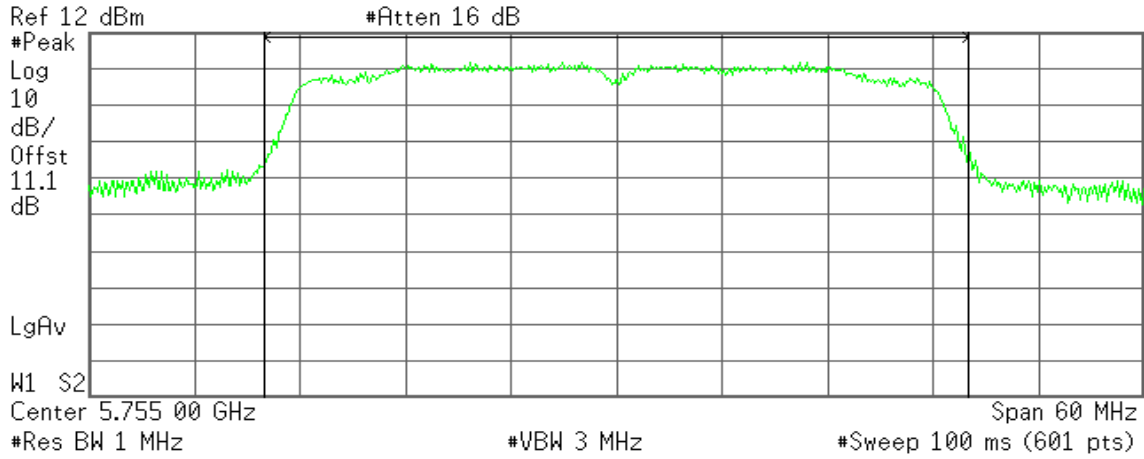**Power Spectral Density**

−56.55 dBm/Hz

IEEE 802.11n HT 40 MHz mode

Peak power (CH Low)
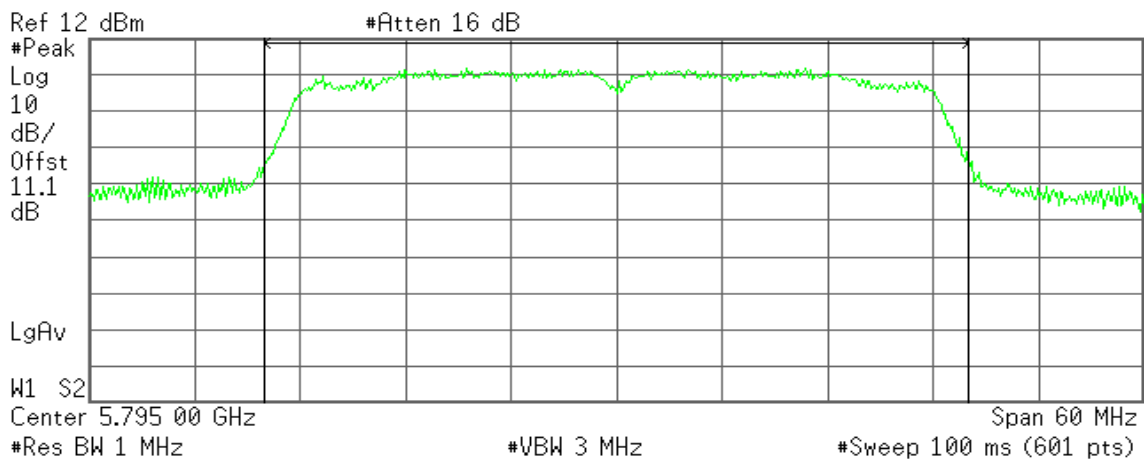

Channel Power

16.72 dBm /40.0000 MHz

Power Spectral Density

−59.30 dBm/Hz

Peak power (CH High)

Channel Power

16.69 dBm /40.0000 MHz

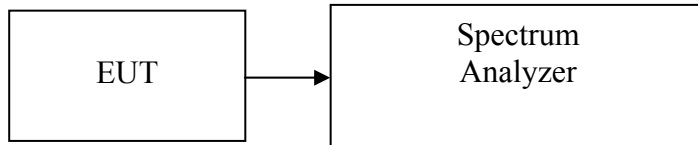**Power Spectral Density**

−59.33 dBm/Hz

7.4 AVERAGE POWER

LIMIT

None; for reporting purposes only.

Test Configuration

```
┌─────────────┐          ┌─────────────────┐
│             │          │    Spectrum     │
│    EUT      │ ───────▶ │    Analyzer     │
│             │          │                 │
└─────────────┘          └─────────────────┘
```

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. Set the RBW = 1MHz, VBW = 3MHz, Detector = Peak, Trace mode = max hold, Allow trace to fully stabilize. Sweep = auto couple. Use the spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges 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	19.16	0.0824		PASS
Mid	2437	19.03	0.0800	1.00	PASS
High	2462	18.18	0.0658		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	16.10	0.0407		PASS
Mid	2437	19.46	0.0883	1.00	PASS
High	2462	15.90	0.0389		PASS

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	Main Antenna Output Power (dBm)	Aux Antenna Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	15.35	9.41	16.34	0.0430		PASS
Mid	2437	15.84	10.45	16.94	0.0495	1.00	PASS
High	2462	14.87	7.37	15.58	0.0361		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Main Antenna Output Power (dBm)	Aux Antenna Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	11.41	5.18	12.34	0.0171		PASS
Mid	2437	15.03	10.61	16.37	0.0433	1.00	PASS
High	2452	12.30	5.50	13.12	0.0205		PASS

Remark: Total Output Power (w) = Main Antenna(10^(Output Power /10)/1000)+ Aux Antenna (10^(Output Power /10)/1000)

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5745	13.08	0.0203		PASS
Mid	5785	12.63	0.0183	1.00	PASS
High	5825	11.91	0.0155		PASS

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5745	9.69	0.0093		PASS
Mid	5785	8.81	0.0076	1.00	PASS
High	5825	8.44	0.0070		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	5755	8.53	0.0071		PASS
High	5795	7.79	0.0060	1.00	PASS

IEEE 802.11b mode

Average power (CH Low)
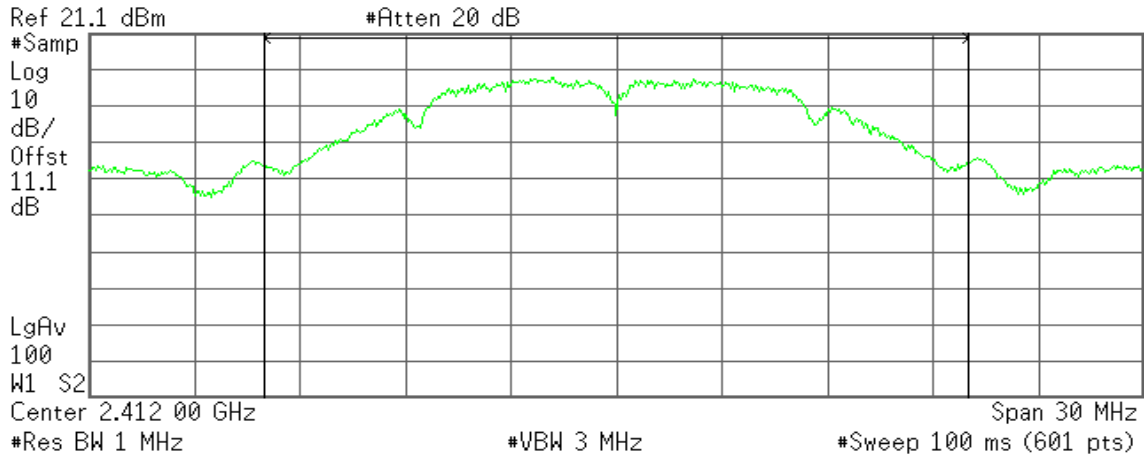
Channel Power	Power Spectral Density
19.16 dBm /20.0000 MHz	−53.85 dBm/Hz

Average power (CH Mid)
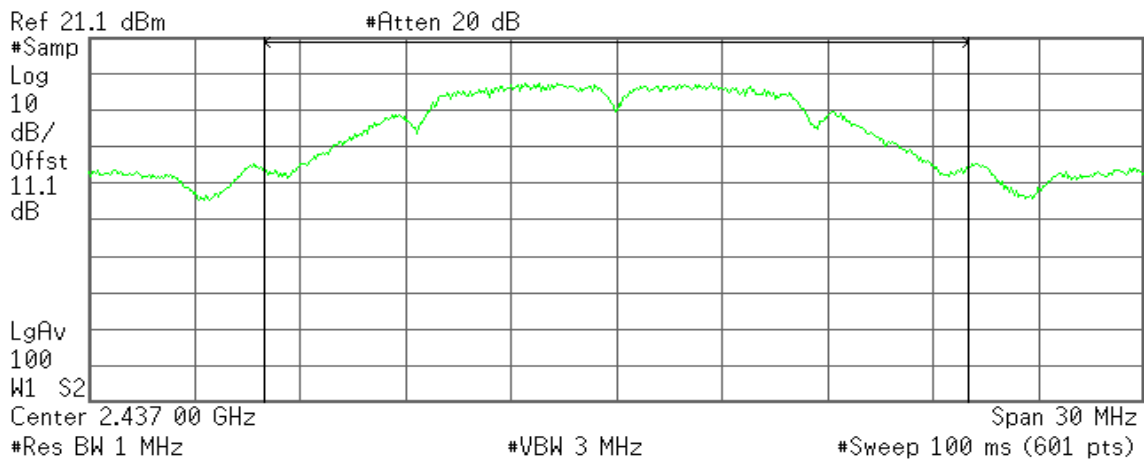
Channel Power	Power Spectral Density
19.03 dBm /20.0000 MHz	−53.98 dBm/Hz

Average power (CH High)

※ **Agilent** 15:22:50 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2

Center 2.462 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
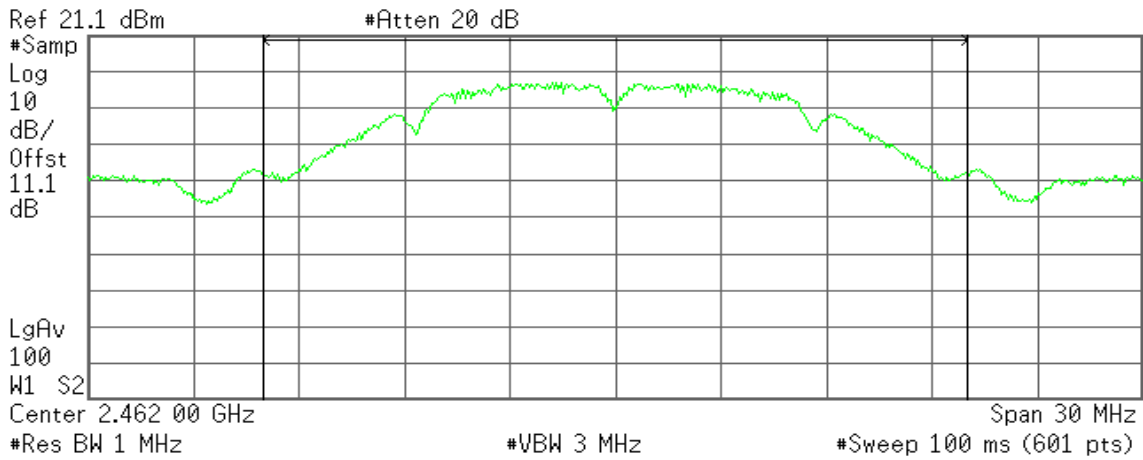
18.18 dBm /20.0000 MHz   −54.83 dBm/Hz

IEEE 802.11g mode

Average power (CH Low)

※ **Agilent** 16:21:48 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2

Center 2.412 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
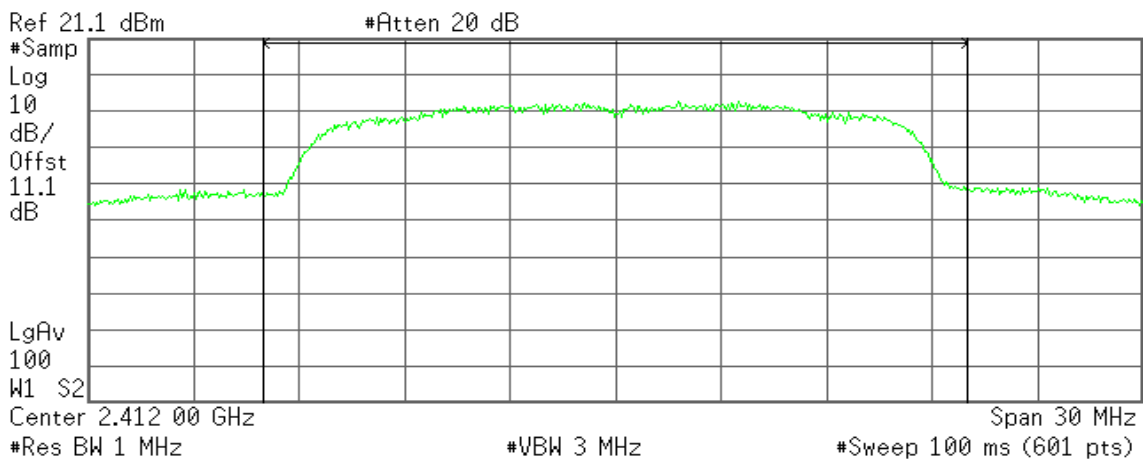
16.10 dBm /20.0000 MHz   −56.91 dBm/Hz

Average power (CH Mid)

Agilent 15:52:11 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2
Center 2.437 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
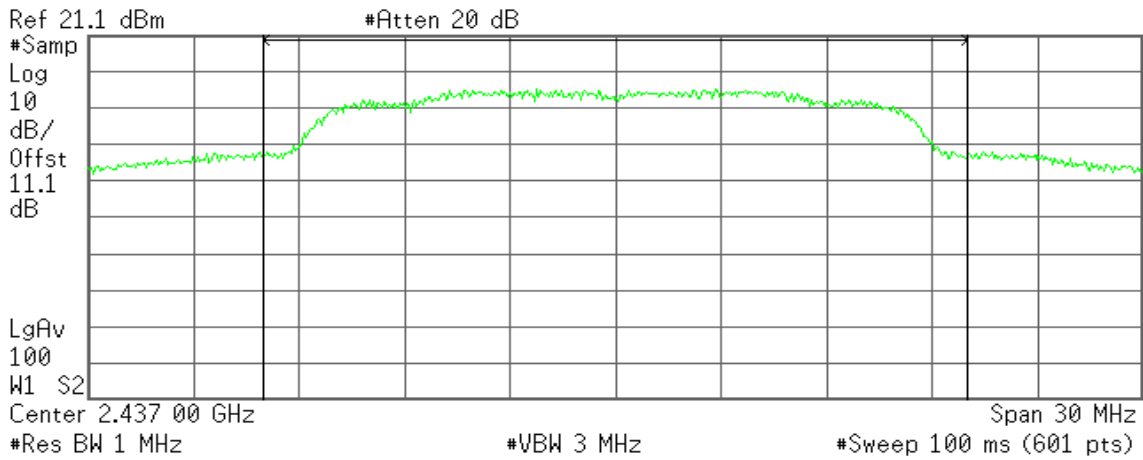
19.46 dBm /20.0000 MHz   −53.55 dBm/Hz

Average power (CH High)

Agilent 15:53:48 Oct 12, 2012   R   T
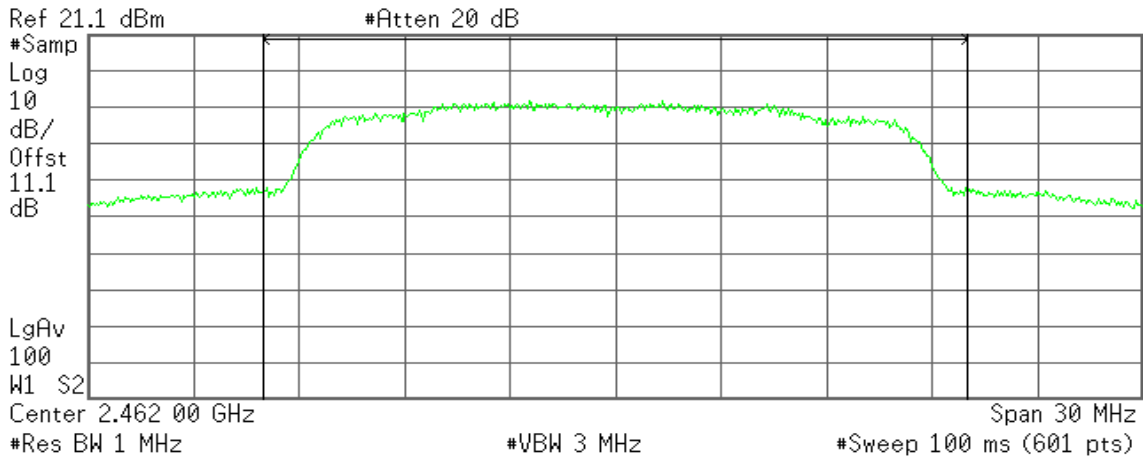
Ref 21.1 dBm   #Atten 20 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2
Center 2.462 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**

15.90 dBm /20.0000 MHz   −57.11 dBm/Hz

IEEE 802.11n HT20 MHz mode / Main Antenna

Average power (CH Low)
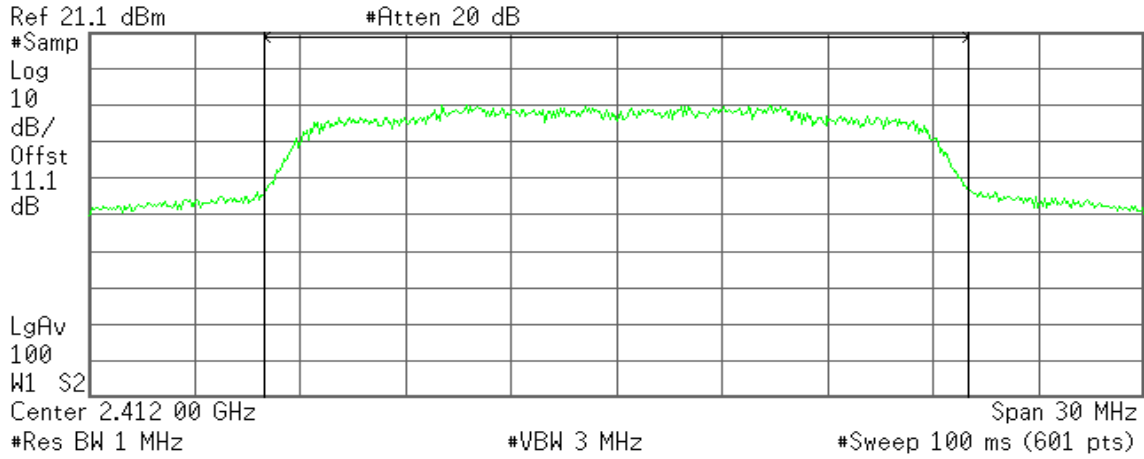
Channel Power

15.35 dBm /20.0000 MHz

Power Spectral Density

−57.66 dBm/Hz

Average power (CH Mid)
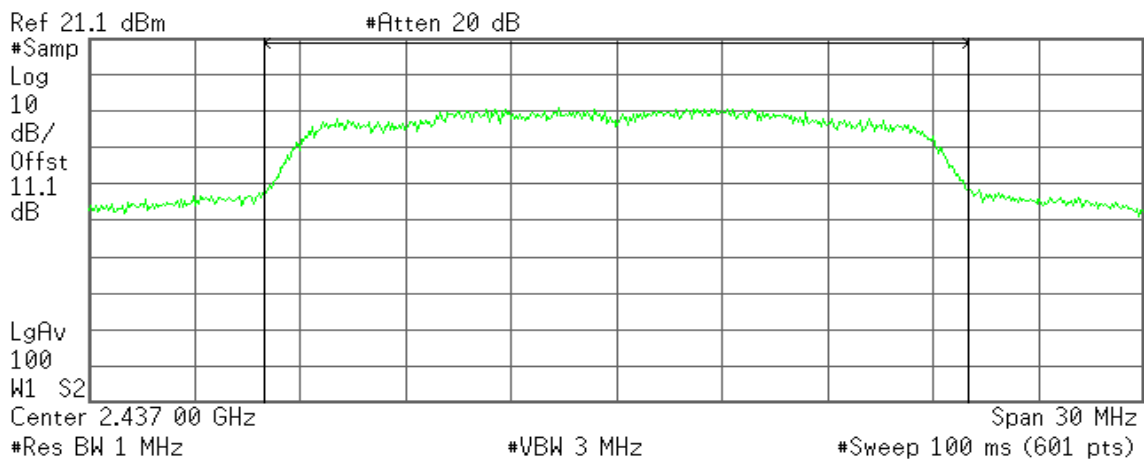
Channel Power

15.84 dBm /20.0000 MHz

Power Spectral Density

−57.17 dBm/Hz

Average power (CH High)


```
Agilent  16:32:27  Oct 12, 2012                    R    T

Ref 21.1 dBm              #Atten 20 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2
Center 2.462 00 GHz                              Span 30 MHz
#Res BW 1 MHz           #VBW 3 MHz      #Sweep 100 ms (601 pts)
```

Channel Power   **Power Spectral Density**
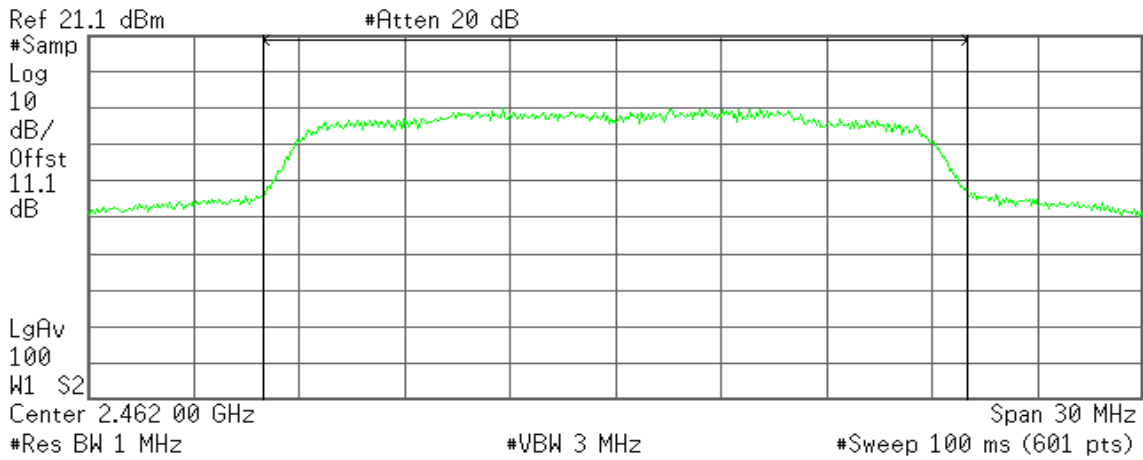
14.87 dBm /20.0000 MHz   −58.14 dBm/Hz

IEEE 802.11n HT20 MHz mode / Aux Antenna

Average power (CH Low)


```
Agilent  17:57:03  Oct 12, 2012                    R    T

Ref 21.1 dBm              #Atten 20 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2
Center 2.412 00 GHz                              Span 30 MHz
#Res BW 1 MHz           #VBW 3 MHz      #Sweep 100 ms (601 pts)
```
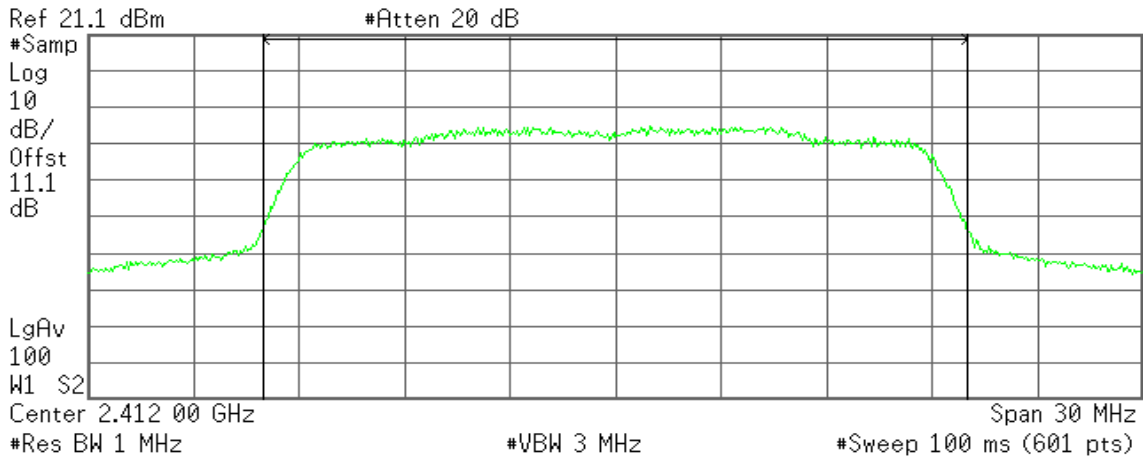
Channel Power   **Power Spectral Density**

9.41 dBm   /20.0000 MHz   −63.60 dBm/Hz

Average power (CH Mid)

※ **Agilent** 17:58:15 Oct 12, 2012   R   T

Ref 21.1 dBm   #Atten 20 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2
Center 2.437 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**
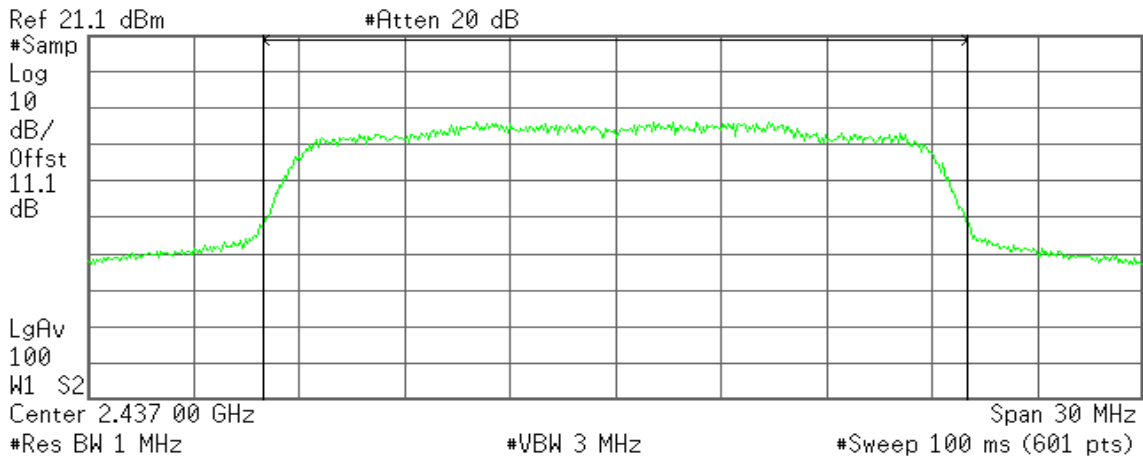
10.45 dBm /20.0000 MHz   −62.56 dBm/Hz

Average power (CH High)

※ **Agilent** 17:59:43 Oct 12, 2012   R   T
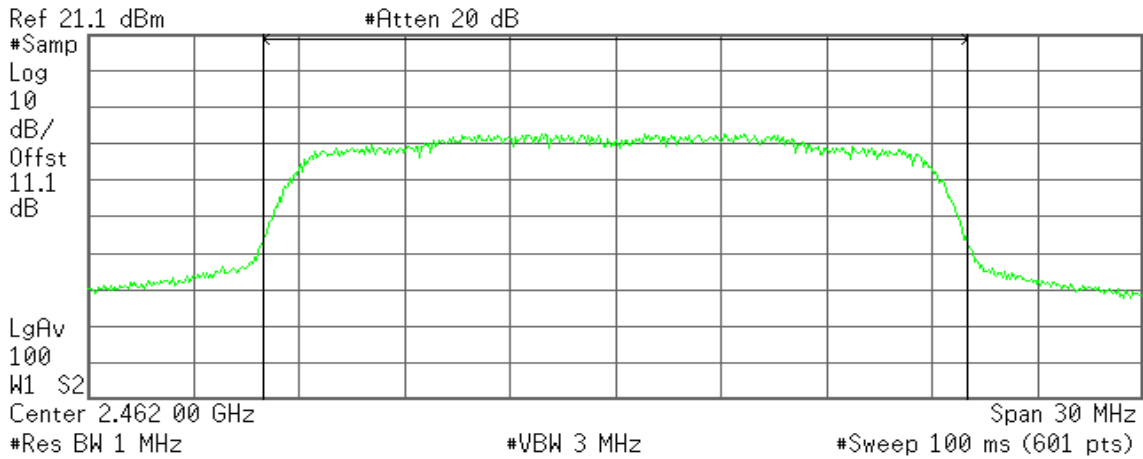
Ref 21.1 dBm   #Atten 20 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2
Center 2.462 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**

7.37 dBm   /20.0000 MHz   −65.64 dBm/Hz

IEEE 802.11n HT40 MHz mode / Main Antenna

Average power (CH Low)
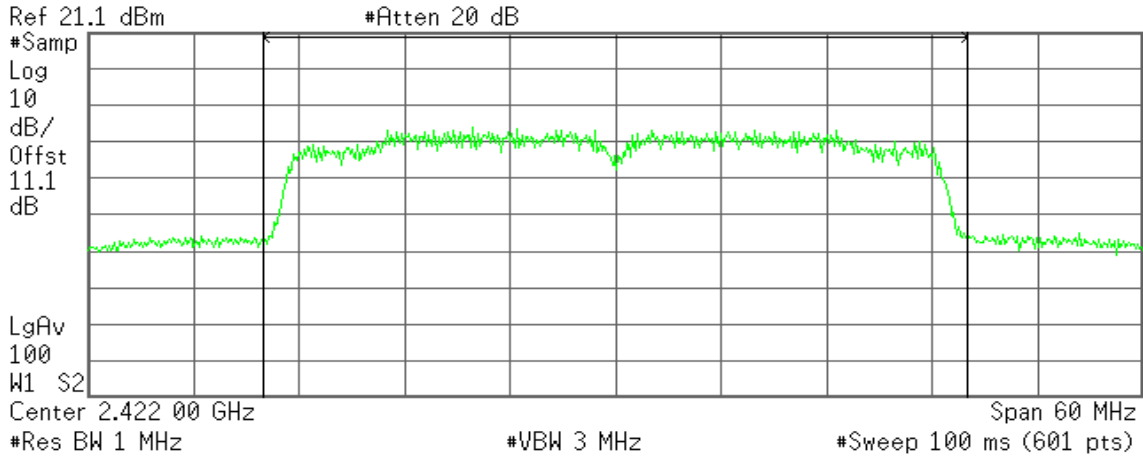
Channel Power

11.41 dBm /40.0000 MHz

Power Spectral Density

−64.61 dBm/Hz

Average power (CH Mid)
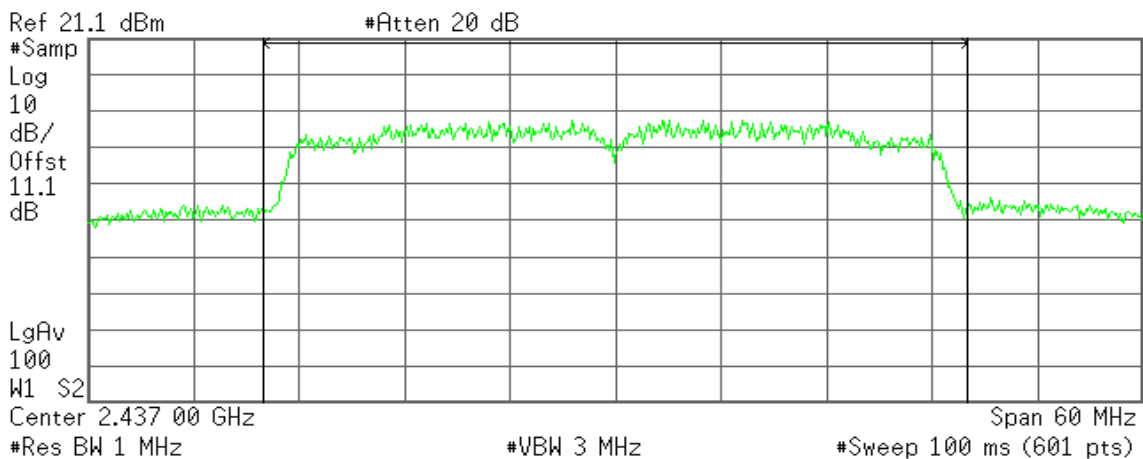
Channel Power

15.03 dBm /40.0000 MHz

Power Spectral Density

−60.99 dBm/Hz

Average power (CH High)

Agilent 20:05:18 Oct 12, 2012   R   T
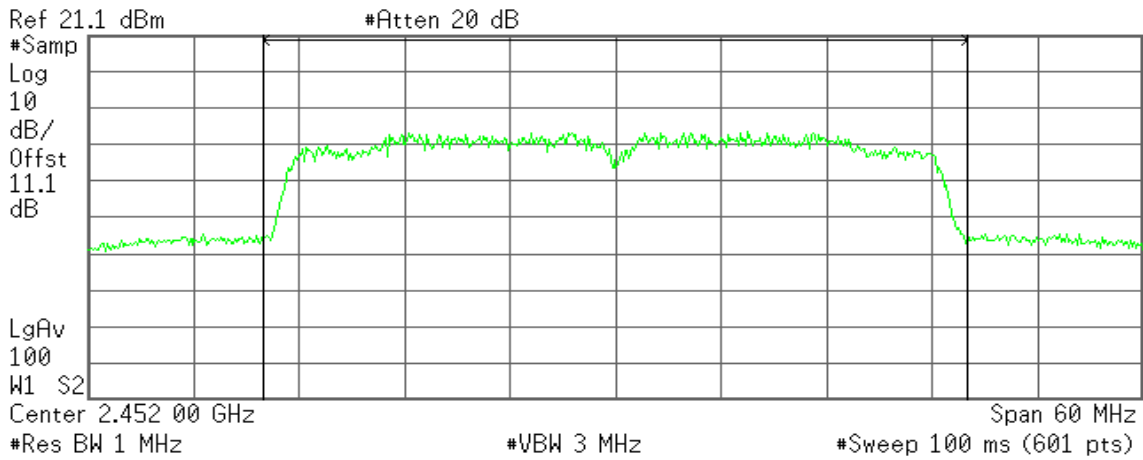
Ref 21.1 dBm   #Atten 20 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2
Center 2.452 00 GHz   Span 60 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**

12.30 dBm /40.0000 MHz   −63.73 dBm/Hz

IEEE 802.11n HT40 MHz mode / Aux Antenna

Average power (CH Low)

Agilent   R   T

Ref 17.06 dBm   #Atten 16 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2
Center 2.422 00 GHz   Span 60 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**

5.18 dBm   /40.0000 MHz   −70.84 dBm/Hz

Average power (CH Mid)

Agilent   R   T

```
Ref 17.06 dBm                    #Atten 16 dB
#Samp
Log
10
dB/
Offst
11.1
dB



LgAv
100
W1  S2
Center 2.437 00 GHz                                      Span 60 MHz
#Res BW 1 MHz              #VBW 3 MHz        #Sweep 100 ms (601 pts)
```

Channel Power   **Power Spectral Density**

10.61 dBm /40.0000 MHz   −65.41 dBm/Hz

Average power (CH High)

Agilent   R   T

```
Ref 17.06 dBm                    #Atten 16 dB
#Samp
Log
10
dB/
Offst
11.1
dB



LgAv
100
W1  S2
Center 2.452 00 GHz                                      Span 60 MHz
#Res BW 1 MHz              #VBW 3 MHz        #Sweep 100 ms (601 pts)
```
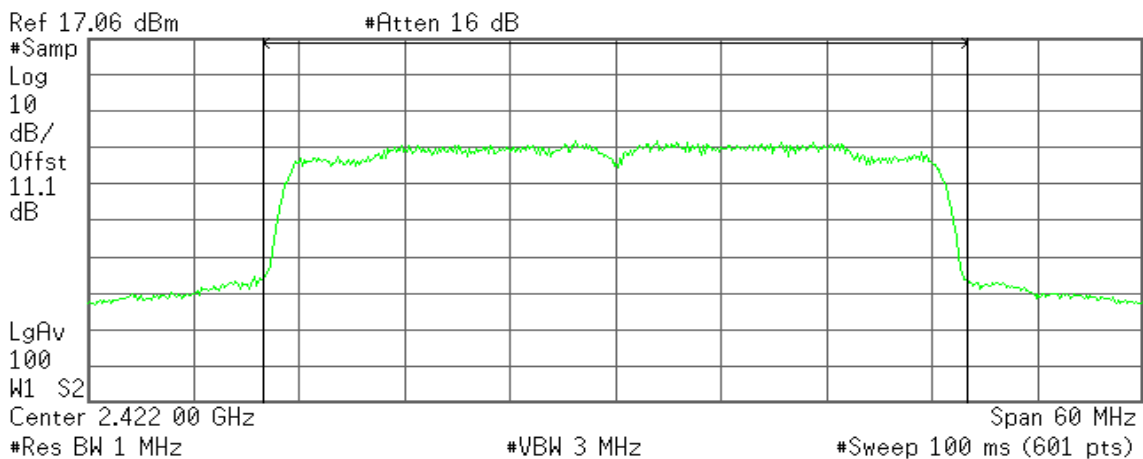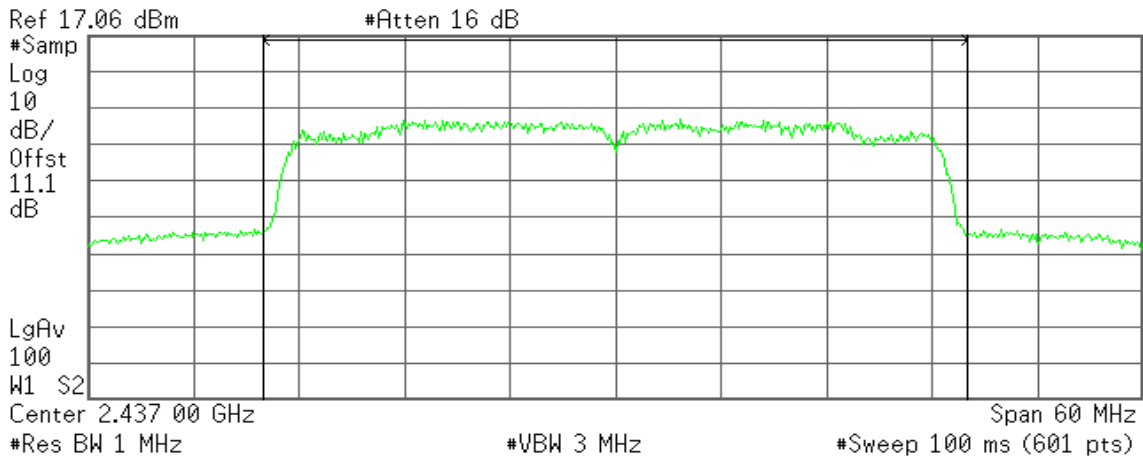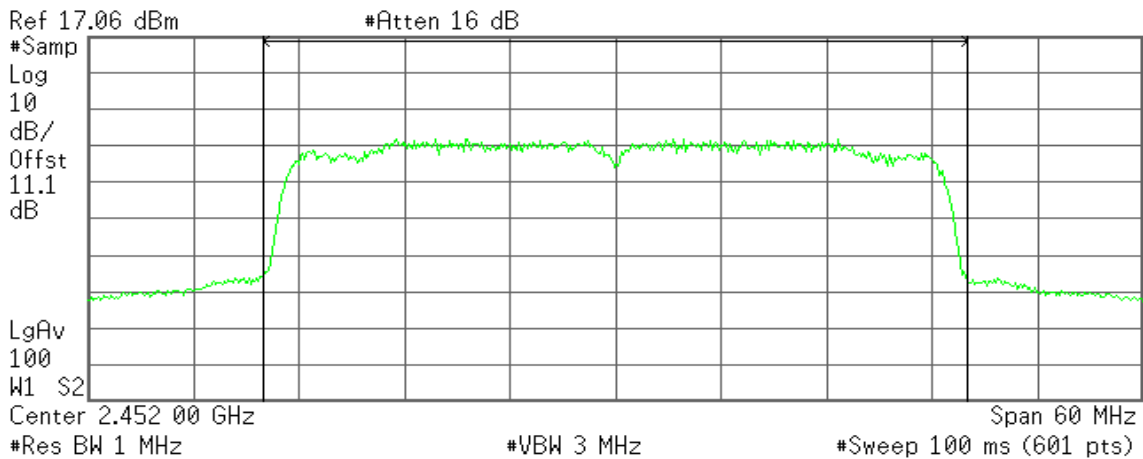
Channel Power   **Power Spectral Density**

5.50 dBm   /40.0000 MHz   −70.52 dBm/Hz

IEEE 802.11a mode

Average power (CH Low)

※ **Agilent**   R   T

```
Ref 12 dBm                    #Atten 16 dB
#Samp
Log
10
dB/
Offst
11.1
dB




LgAv
100
W1  S2
Center 5.745 00 GHz                                Span 30 MHz
#Res BW 1 MHz              #VBW 3 MHz          #Sweep 100 ms (601 pts)
```

Channel Power   **Power Spectral Density**
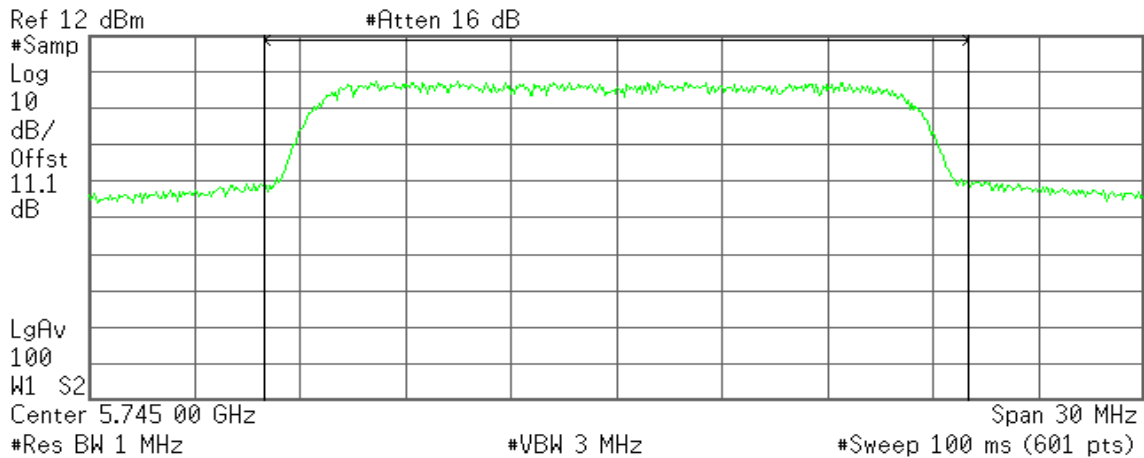
13.08 dBm /20.0000 MHz   −59.93 dBm/Hz

Average power (CH Mid)

※ **Agilent**   R   T

```
Ref 12 dBm                    #Atten 16 dB
#Samp
Log
10
dB/
Offst
11.1
dB




LgAv
100
W1  S2
Center 5.785 00 GHz                                Span 30 MHz
#Res BW 1 MHz              #VBW 3 MHz          #Sweep 100 ms (601 pts)
```
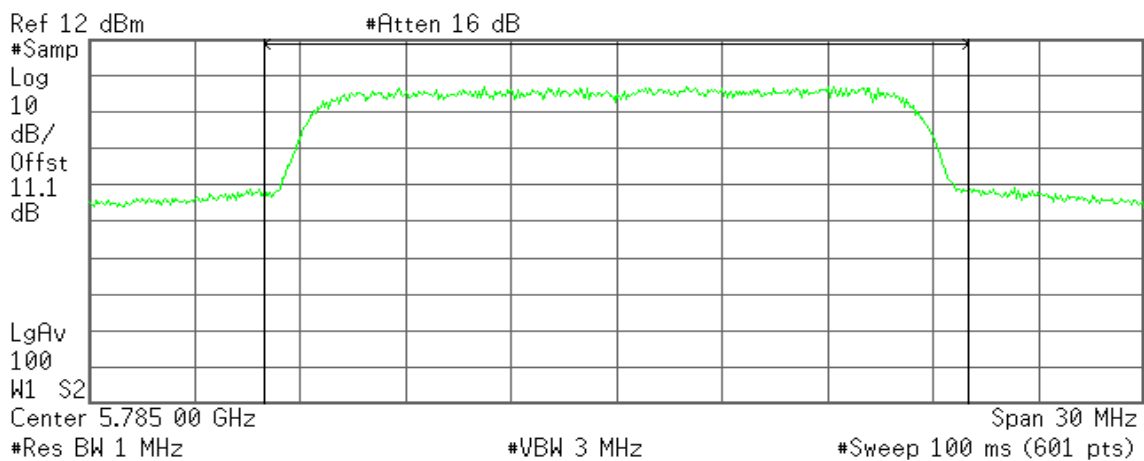
Channel Power   **Power Spectral Density**

12.63 dBm /20.0000 MHz   −60.38 dBm/Hz
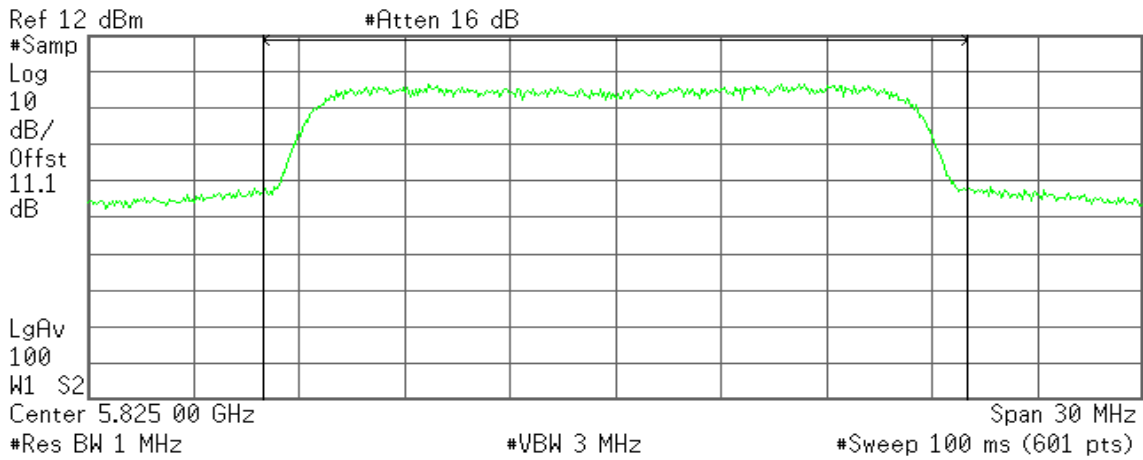
Average power (CH High)

IEEE 802.11n HT 20 MHz mode

Average power (CH Low)
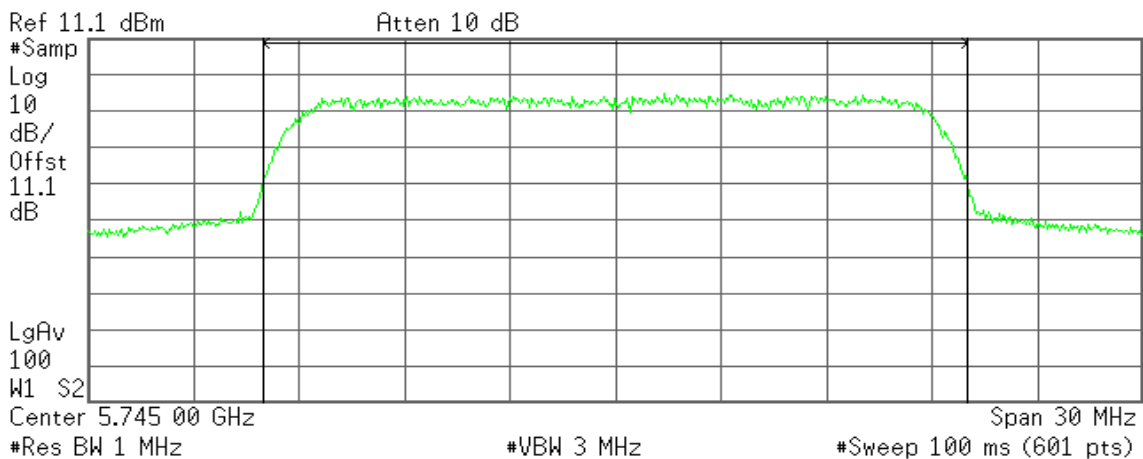
Average power (CH Mid)

R   T

Ref 12 dBm   #Atten 16 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2
Center 5.785 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)

Channel Power   **Power Spectral Density**

8.81 dBm   /20.0000 MHz   −64.20 dBm/Hz

Average power (CH High)

R   T

Ref 12 dBm   #Atten 16 dB
#Samp
Log
10
dB/
Offst
11.1
dB

LgAv
100
W1 S2
Center 5.825 00 GHz   Span 30 MHz
#Res BW 1 MHz   #VBW 3 MHz   #Sweep 100 ms (601 pts)
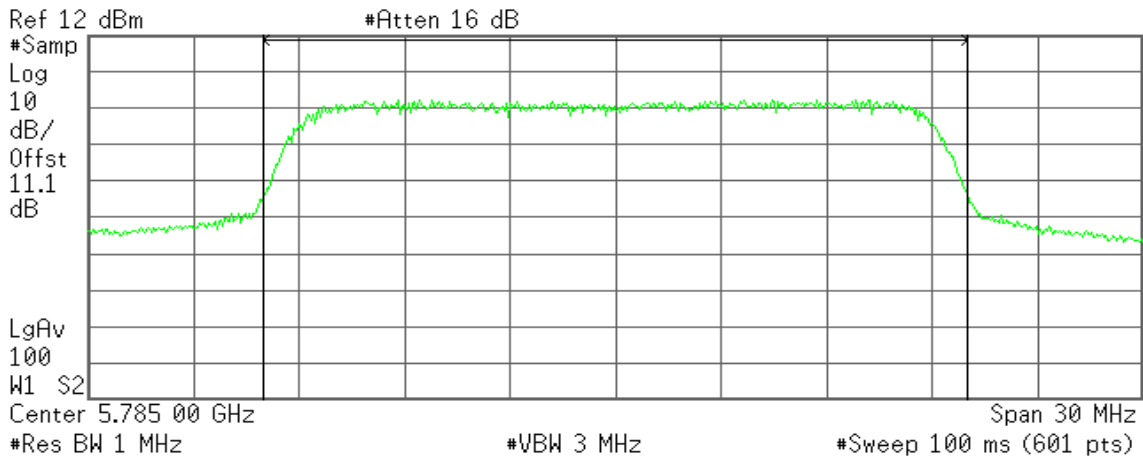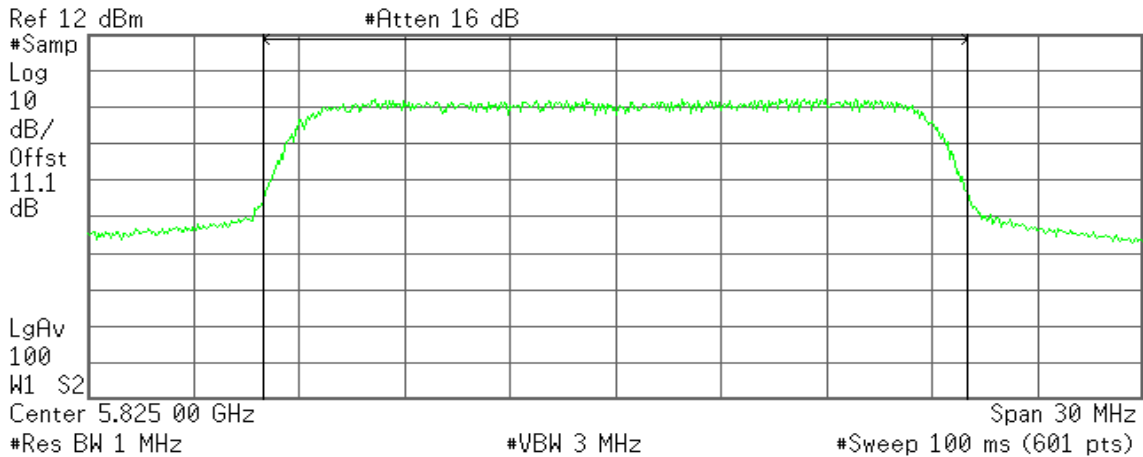
Channel Power   **Power Spectral Density**

8.44 dBm   /20.0000 MHz   −64.57 dBm/Hz

IEEE 802.11n HT 40 MHz mode

Average power (CH Low)
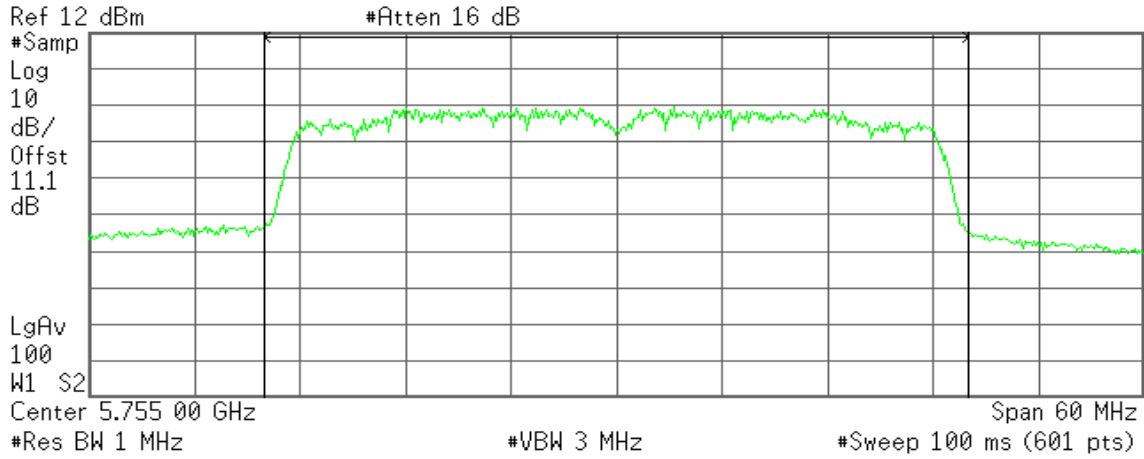
Channel Power

8.53 dBm   /40.0000 MHz

Power Spectral Density

−67.49 dBm/Hz

Average power (CH High)
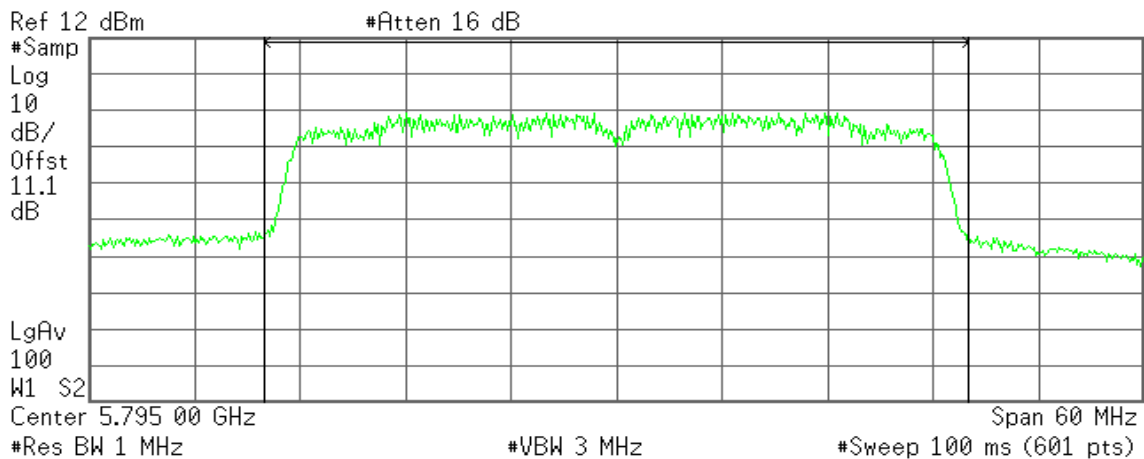
Channel Power

7.79 dBm   /40.0000 MHz

Power Spectral Density

−68.23 dBm/Hz

7.5 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 in 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

For Radiated
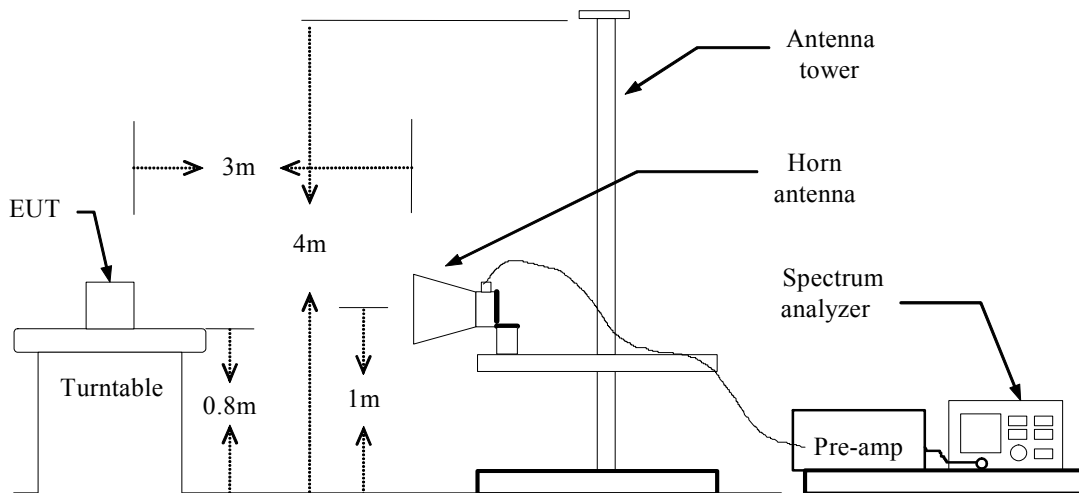
For Conducted
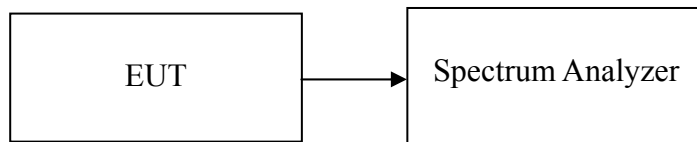
TEST PROCEDURE

For Radiated
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.

For Conducted
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.

TEST RESULTS

Refer to attach spectrum analyzer data chart.

802.11a Mode

1. Operating Frequency: 5725-5875MHz
2. CH Low: 5745MHz, CH High: 5825MHz
3. 6dB bandwidth: CH Low: 16.5833MHz, CH High: 16.5833MHz

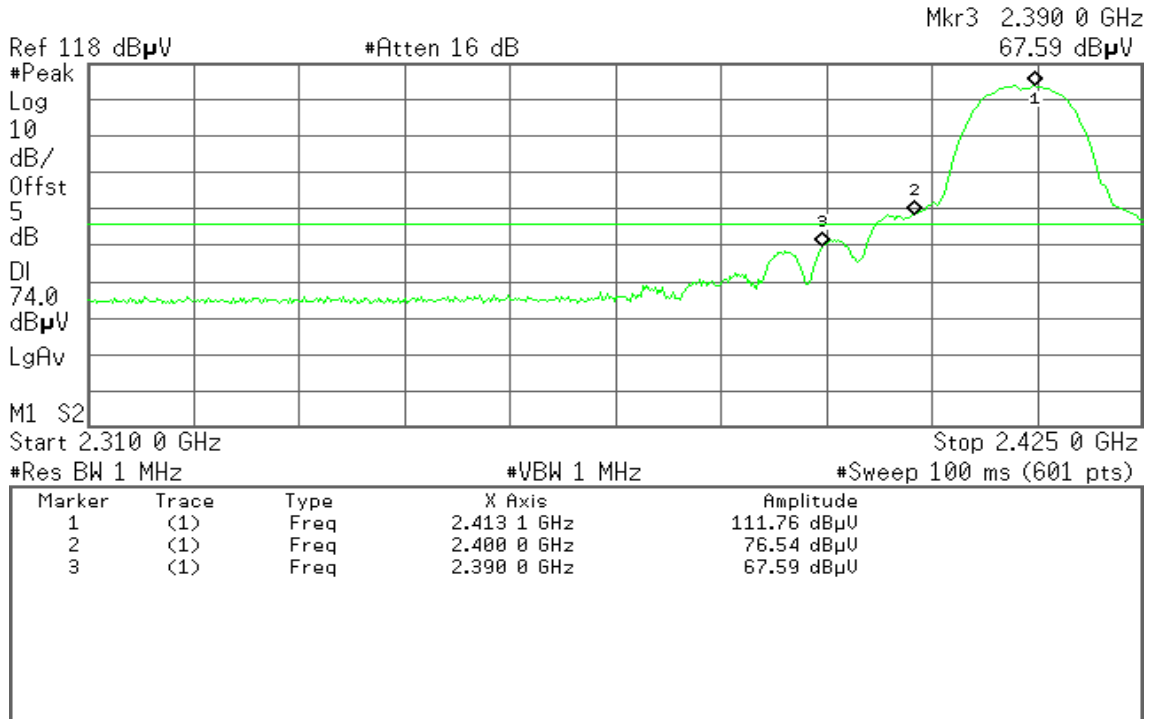Because the mentioned conditions, the test is not applicable.

Band Edges (IEEE 802.11b mode / CH Low)

Detector mode: Peak   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.413 1 GHz	111.76 dBµV
2	(1)	Freq	2.400 0 GHz	76.54 dBµV
3	(1)	Freq	2.390 0 GHz	67.59 dBµV

Detector mode: Average   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.411 2 GHz	108.17 dBµV
2	(1)	Freq	2.400 0 GHz	70.41 dBµV
3	(1)	Freq	2.390 0 GHz	45.65 dBµV

Detector mode: Peak   **Polarity: Horizontal**


```
    Agilent                                        R   T
                                                   Mkr3  2.390 0 GHz
  Ref 118 dBµV            #Atten 16 dB                  67.40 dBµV
  #Peak
  Log
  10
  dB/
  Offst
  5
  dB
  DI
  74.0
  dBµV
  LgAv

  M1 S2
  Start 2.310 0 GHz                              Stop 2.425 0 GHz
  #Res BW 1 MHz           #VBW 1 MHz             #Sweep 100 ms (601 pts)
```

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.411 0 GHz	113.49 dBµV
2	(1)	Freq	2.400 0 GHz	78.15 dBµV
3	(1)	Freq	2.390 0 GHz	67.40 dBµV

Detector mode: Average   **Polarity: Horizontal**


```
    Agilent                                        R   T
                                                   Mkr3  2.390 0 GHz
  Ref 118 dBµV            #Atten 16 dB                  46.32 dBµV
  #Peak
  Log
  10
  dB/
  Offst
  5
  dB
  DI
  54.0
  dBµV
  LgAv

  M1 S2
  Start 2.310 0 GHz                              Stop 2.425 0 GHz
  #Res BW 1 MHz           #VBW 10 Hz             Sweep 8.967 s (601 pts)
```

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.411 2 GHz	110.02 dBµV
2	(1)	Freq	2.400 0 GHz	71.99 dBµV
3	(1)	Freq	2.390 0 GHz	46.32 dBµV
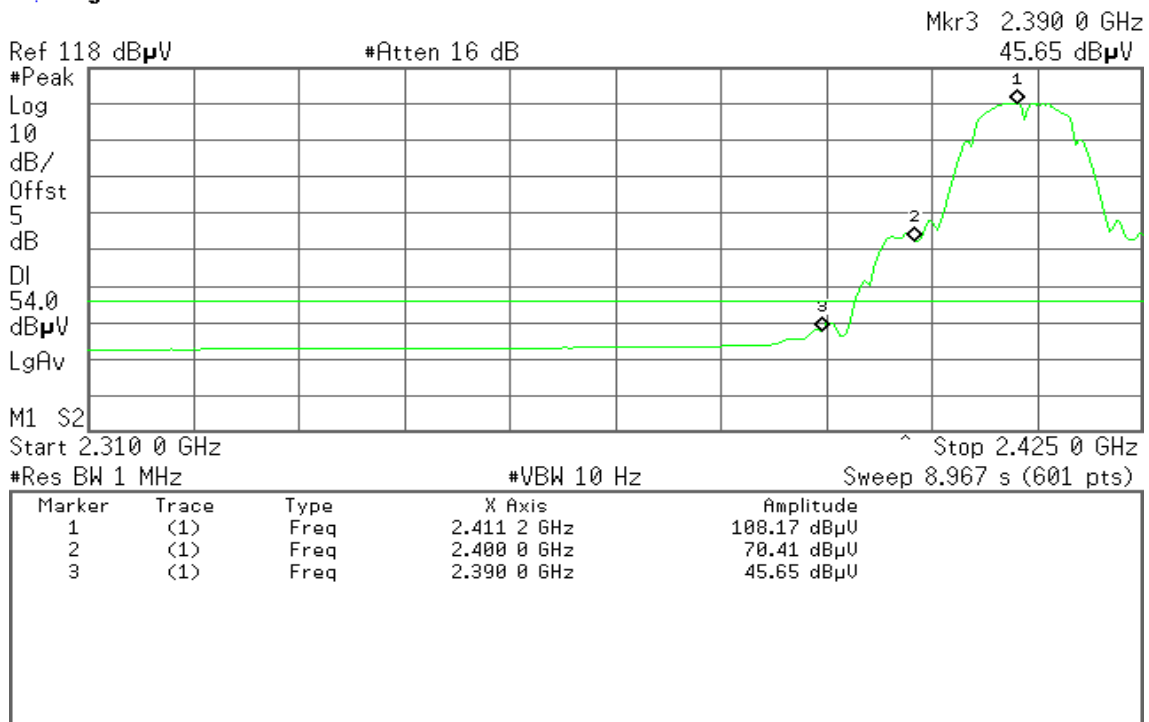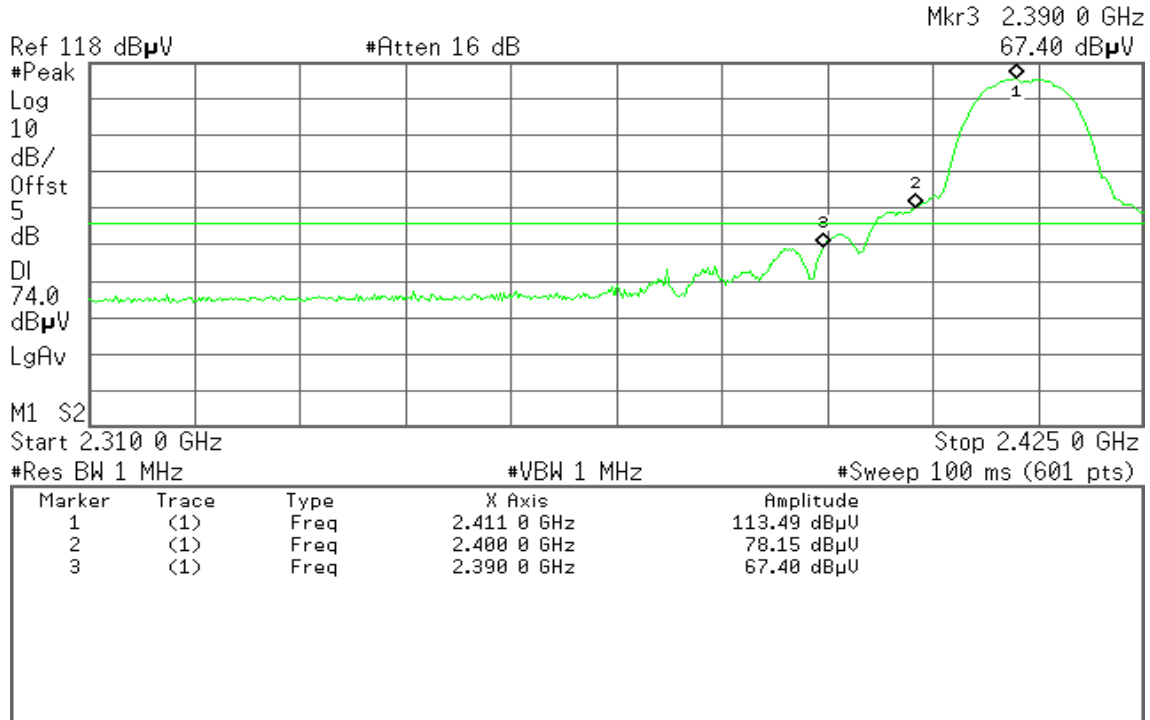
Band Edges (IEEE 802.11b mode / CH High)
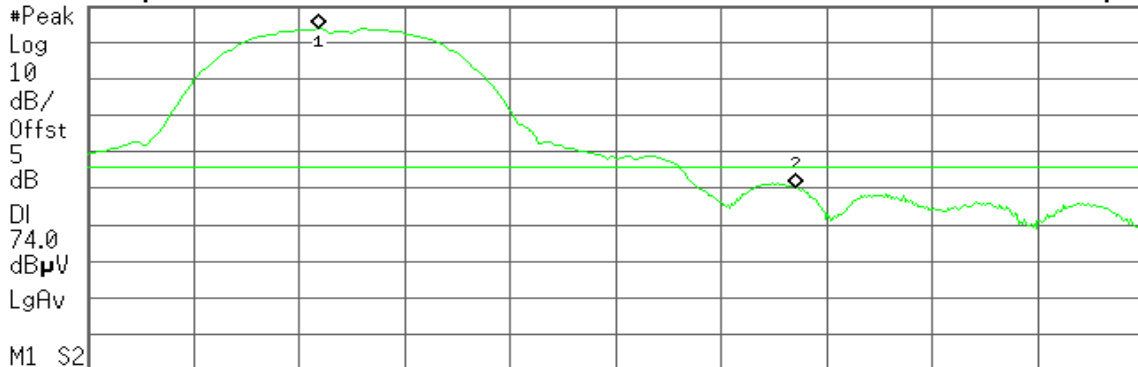
Detector mode: Peak   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.460 92 GHz	111.82 dBµV
2	(1)	Freq	2.483 50 GHz	68.09 dBµV

Detector mode: Average   **Polarity: Vertical**

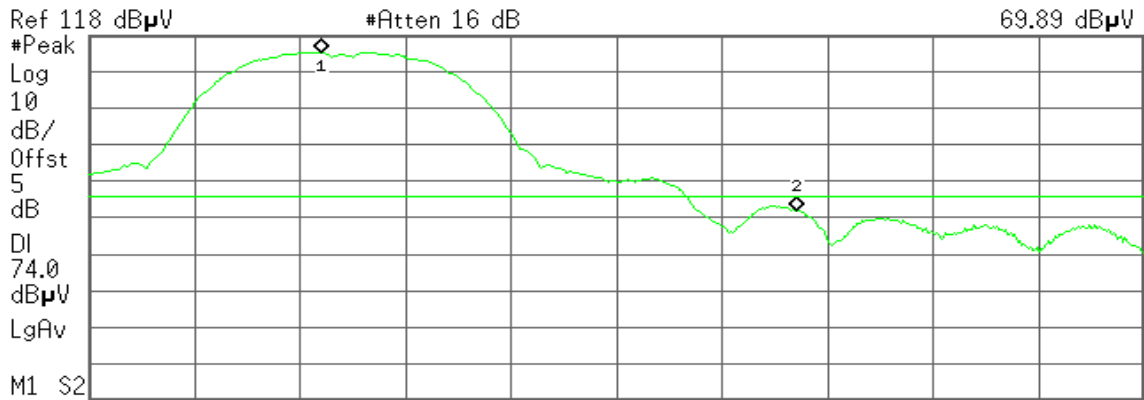| Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.461 25 GHz	108.38 dBµV
2	(1)	Freq	2.483 50 GHz	48.93 dBµV

Detector mode: Peak   **Polarity: Horizontal**


```
            Agilent                              R  T
                                          Mkr2  2.483 50 GHz
Ref 118 dBµV           #Atten 16 dB             69.89 dBµV
#Peak
Log
10
dB/
Offst
5
dB
DI
74.0
dBµV
LgAv

M1 S2
Start 2.450 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    2.461 00 GHz    113.30 dBµV
    2      (1)      Freq    2.483 50 GHz     69.89 dBµV
```
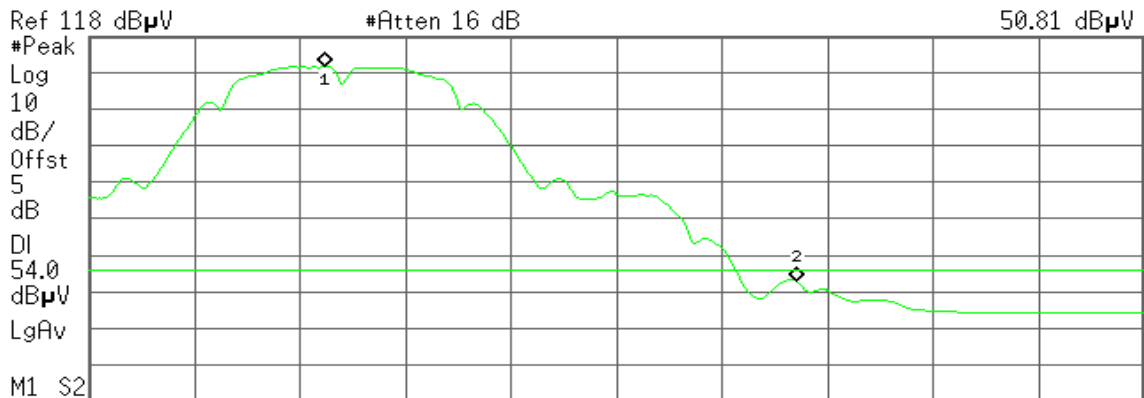
Detector mode: Average   **Polarity: Horizontal**


```
            Agilent                              R  T
                                          Mkr2  2.483 50 GHz
Ref 118 dBµV           #Atten 16 dB             50.81 dBµV
#Peak
Log
10
dB/
Offst
5
dB
DI
54.0
dBµV
LgAv

M1 S2
Start 2.450 00 GHz                      Stop 2.500 00 GHz
#Res BW 1 MHz          #VBW 10 Hz       Sweep 3.899 s (601 pts)

  Marker   Trace    Type      X Axis         Amplitude
    1      (1)      Freq    2.461 17 GHz    109.85 dBµV
    2      (1)      Freq    2.483 50 GHz     50.81 dBµV
```
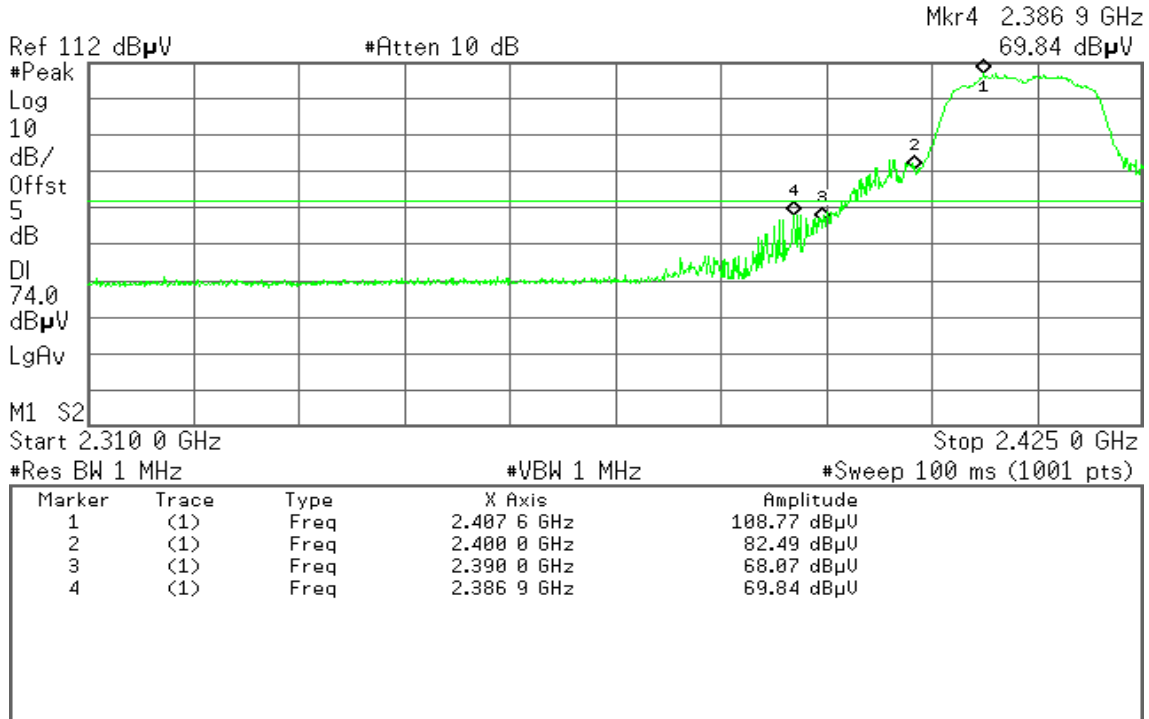
Band Edges (IEEE 802.11g mode / CH Low)

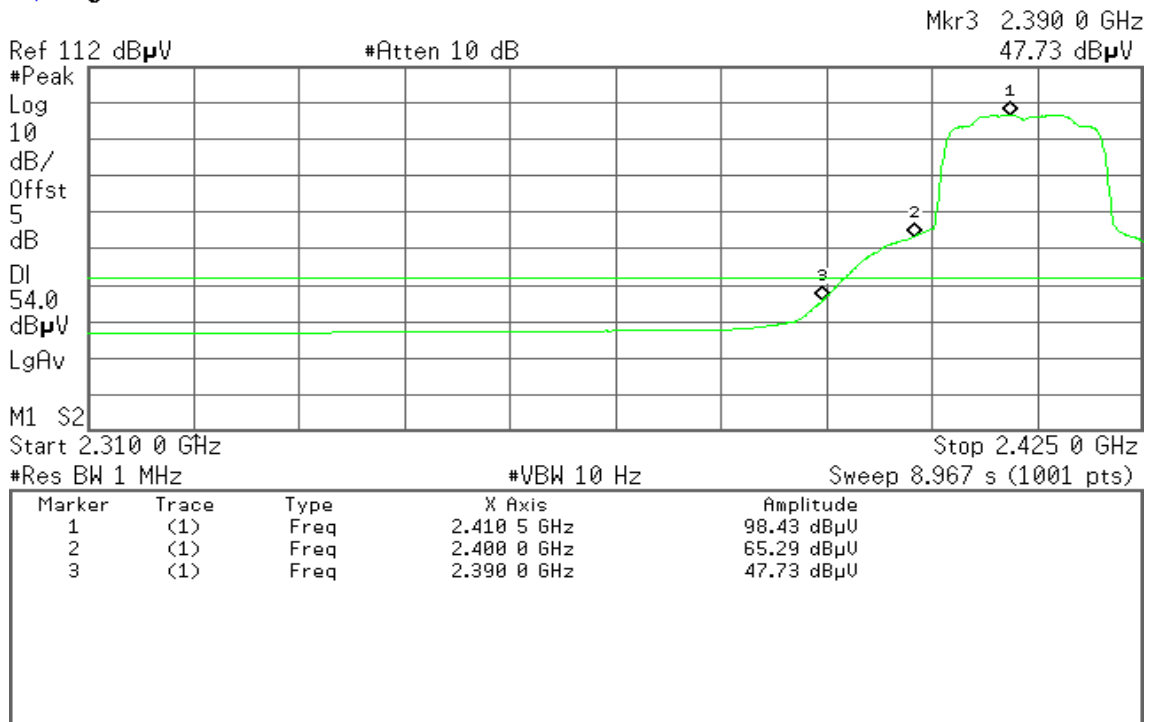**Detector mode: Peak**   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.407 6 GHz	108.77 dBμV
2	(1)	Freq	2.400 0 GHz	82.49 dBμV
3	(1)	Freq	2.390 0 GHz	68.07 dBμV
4	(1)	Freq	2.386 9 GHz	69.84 dBμV

Detector mode: Average   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.410 5 GHz	98.43 dBμV
2	(1)	Freq	2.400 0 GHz	65.29 dBμV
3	(1)	Freq	2.390 0 GHz	47.73 dBμV

Detector mode: Peak   **Polarity: Horizontal**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.416 5 GHz	113.46 dBμV
2	(1)	Freq	2.400 0 GHz	88.50 dBμV
3	(1)	Freq	2.390 0 GHz	72.99 dBμV
4	(1)	Freq	2.387 5 GHz	73.15 dBμV

Detector mode: Average   **Polarity: Horizontal**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.410 6 GHz	103.07 dBμV
2	(1)	Freq	2.400 0 GHz	69.64 dBμV
3	(1)	Freq	2.390 0 GHz	50.77 dBμV

Band Edges (IEEE 802.11g mode / CH High)

Detector mode: Peak   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.459 45 GHz	107.16 dBµV
2	(1)	Freq	2.483 50 GHz	67.01 dBµV
3	(1)	Freq	2.483 75 GHz	69.50 dBµV

Detector mode: Average   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.466 00 GHz	98.11 dBµV
2	(1)	Freq	2.483 50 GHz	48.25 dBµV

Detector mode: Peak   **Polarity: Horizontal**

※ **Agilent**   R   T

Mkr2 2.483 50 GHz
Ref 118 dBμV   #Atten 16 dB   70.18 dBμV
#Peak
Log
10
dB/
Offst
5
dB
DI
74.0
dBμV
LgAv

V1 S2
Start 2.450 00 GHz   Stop 2.500 00 GHz
#Res BW 1 MHz   #VBW 1 MHz   #Sweep 100 ms (1001 pts)
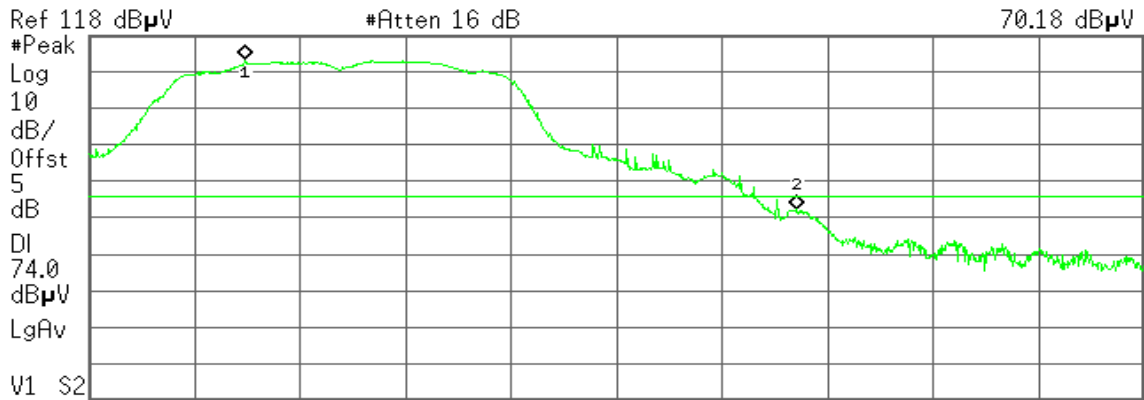
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.457 40 GHz	111.29 dBμV
2	(1)	Freq	2.483 50 GHz	70.18 dBμV

Detector mode: Average   **Polarity: Horizontal**

※ **Agilent**   R   T

Mkr2 2.483 50 GHz
Ref 118 dBμV   #Atten 16 dB   50.90 dBμV
#Peak
Log
10
dB/
Offst
5
dB
DI
54.0
dBμV
LgAv

M1 S2
Start 2.450 00 GHz   Stop 2.500 00 GHz
#Res BW 1 MHz   #VBW 10 Hz   Sweep 3.899 s (1001 pts)
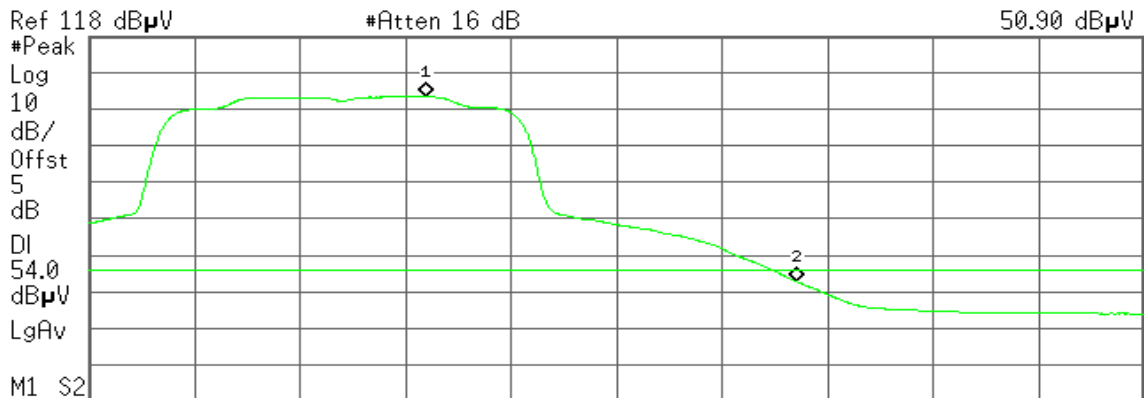
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.466 00 GHz	101.41 dBμV
2	(1)	Freq	2.483 50 GHz	50.90 dBμV

Band Edges (IEEE 802.11n HT 20 MHz mode / CH Low)

Detector mode: Peak   **Polarity: Vertical**
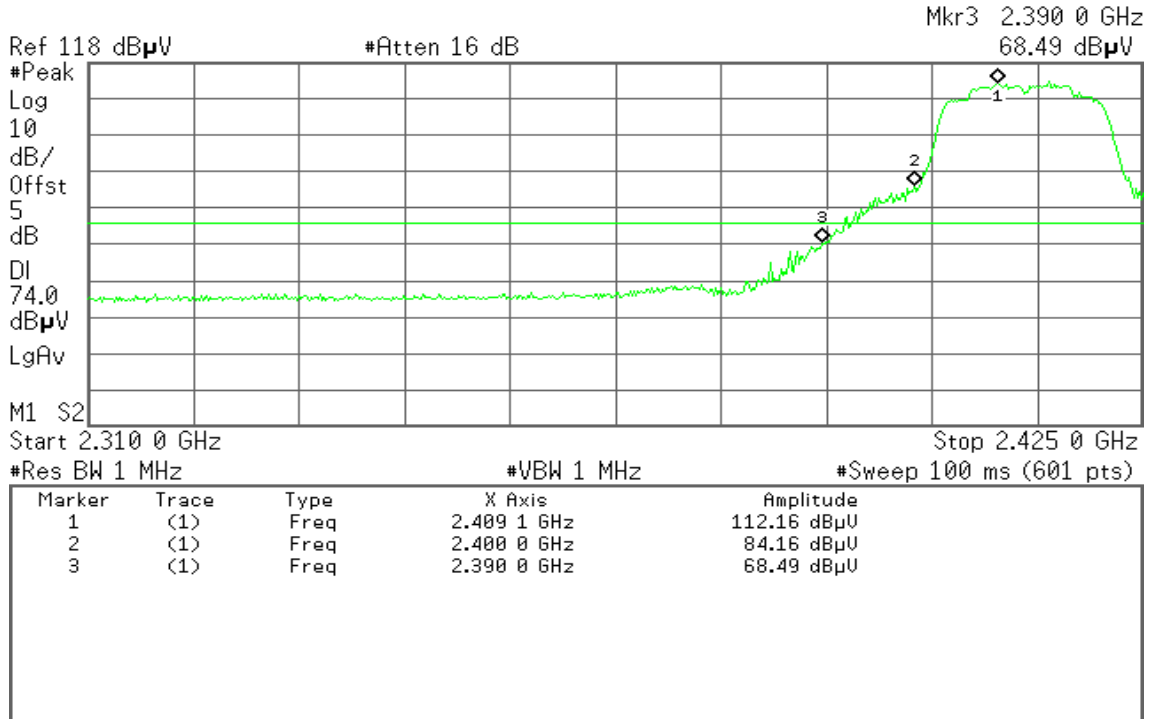
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.409 1 GHz	112.16 dBµV
2	(1)	Freq	2.400 0 GHz	84.16 dBµV
3	(1)	Freq	2.390 0 GHz	68.49 dBµV

Detector mode: Average   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.415 8 GHz	99.59 dBµV
2	(1)	Freq	2.400 0 GHz	65.75 dBµV
3	(1)	Freq	2.390 0 GHz	50.84 dBµV

Detector mode: Peak   **Polarity: Horizontal**


```
☀ Agilent                                              R  T
                                              Mkr3  2.390 0 GHz
Ref 118 dBµV          #Atten 16 dB                 69.29 dBµV
#Peak
Log
10
dB/
Offst
5
dB
DI
74.0
dBµV
LgAv

M1 S2
Start 2.310 0 GHz                        Stop 2.425 0 GHz
#Res BW 1 MHz          #VBW 1 MHz      #Sweep 100 ms (601 pts)
```

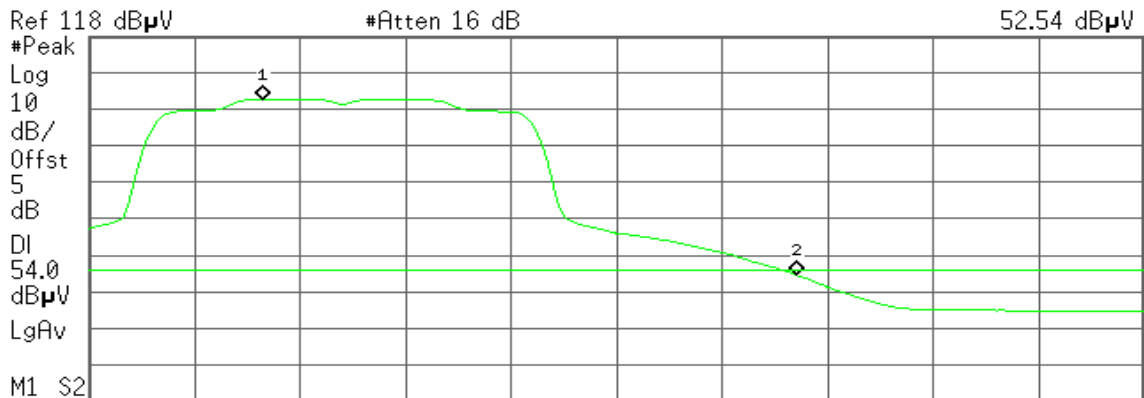| Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.407 6 GHz	114.17 dBµV
2	(1)	Freq	2.400 0 GHz	83.46 dBµV
3	(1)	Freq	2.390 0 GHz	69.29 dBµV

Detector mode: Average   **Polarity: Horizontal**


```
☀ Agilent                                              R  T
                                              Mkr3  2.390 0 GHz
Ref 118 dBµV          #Atten 16 dB                 53.45 dBµV
#Peak
Log
10
dB/
Offst
5
dB
DI
54.0
dBµV
LgAv

M1 S2
Start 2.310 0 GHz                        Stop 2.425 0 GHz
#Res BW 1 MHz          #VBW 10 Hz      Sweep 8.967 s (601 pts)
```

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.410 8 GHz	101.80 dBµV
2	(1)	Freq	2.400 0 GHz	68.62 dBµV
3	(1)	Freq	2.390 0 GHz	53.45 dBµV
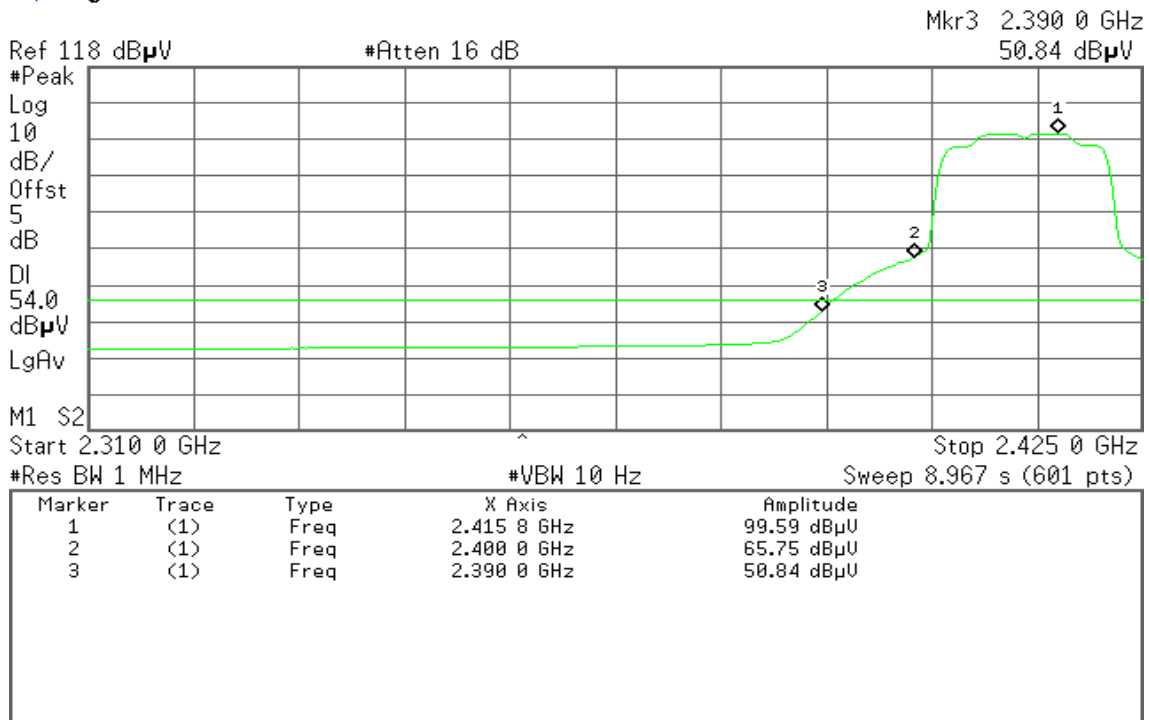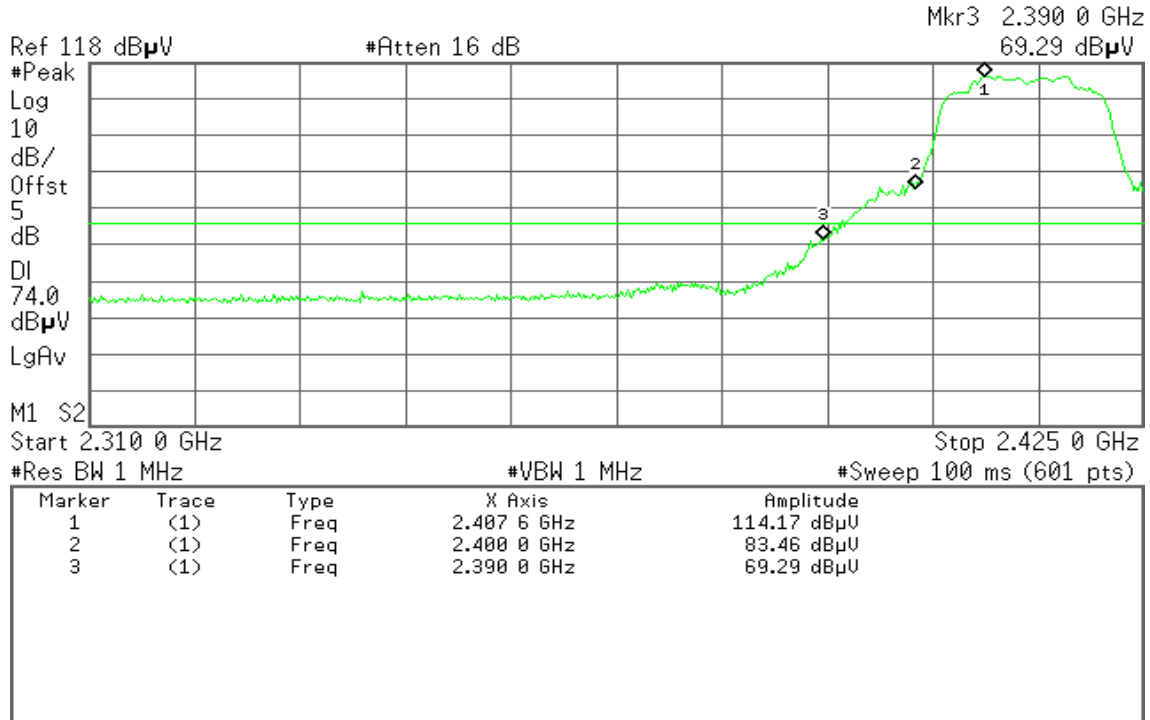
Band Edges (IEEE 802.11n HT 20 MHz mode / CH High)
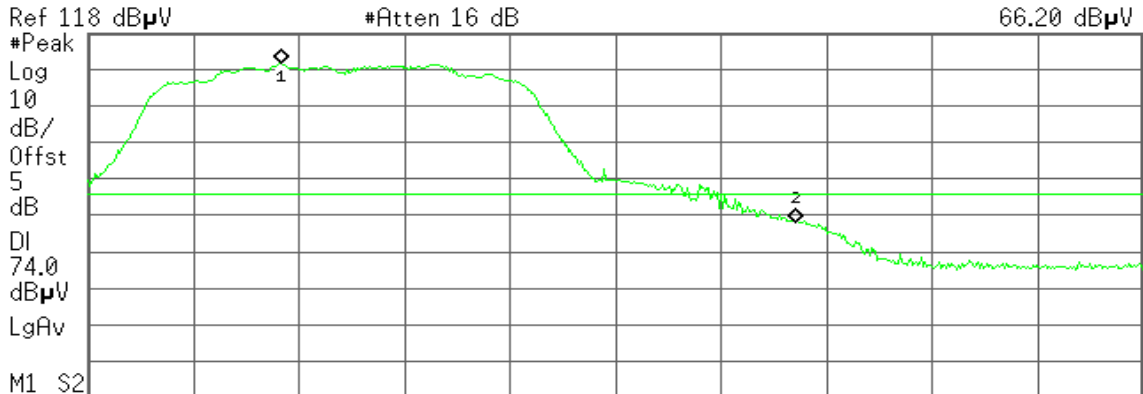
Detector mode: Peak   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.459 17 GHz	109.58 dBµV
2	(1)	Freq	2.483 50 GHz	66.20 dBµV

Detector mode: Average   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.466 08 GHz	97.43 dBµV
2	(1)	Freq	2.483 50 GHz	48.93 dBµV
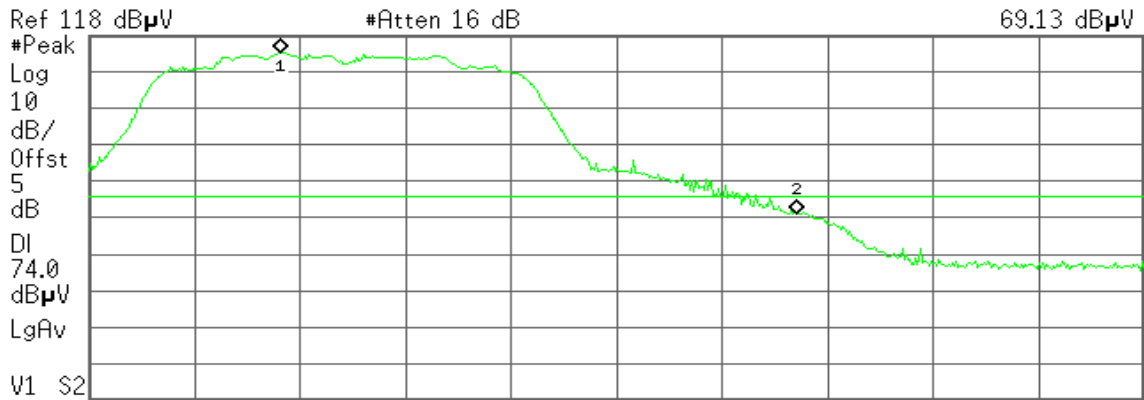
Detector mode: Peak   **Polarity: Horizontal**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.459 08 GHz	113.43 dBµV
2	(1)	Freq	2.483 50 GHz	69.13 dBµV

Detector mode: Average   **Polarity: Horizontal**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.458 25 GHz	100.74 dBµV
2	(1)	Freq	2.483 50 GHz	52.54 dBµV

Band Edges (IEEE 802.11n HT 40 MHz mode / CH Low)

Detector mode: Peak   **Polarity: Vertical**
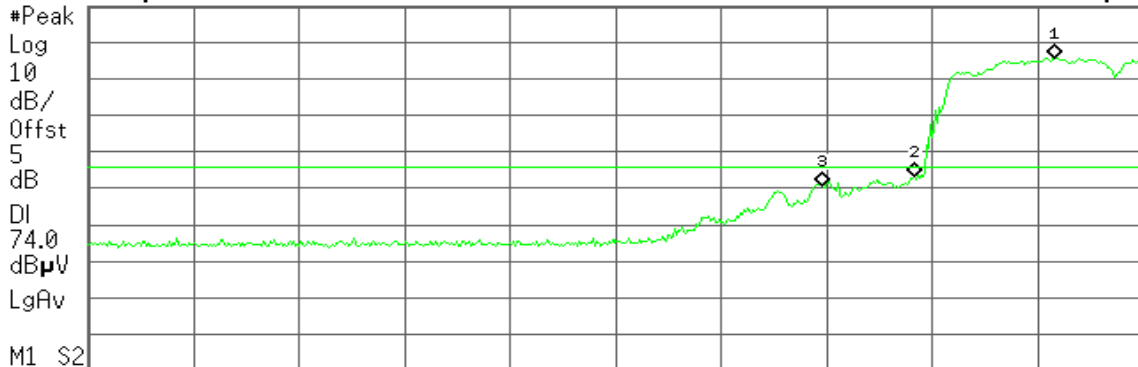
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.415 4 GHz	103.80 dBμV
2	(1)	Freq	2.400 0 GHz	71.10 dBμV
3	(1)	Freq	2.390 0 GHz	68.51 dBμV

Detector mode: Average   **Polarity: Vertical**

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.419 6 GHz	90.60 dBμV
2	(1)	Freq	2.400 0 GHz	55.24 dBμV
3	(1)	Freq	2.390 0 GHz	50.55 dBμV

Detector mode: Peak   **Polarity: Horizontal**
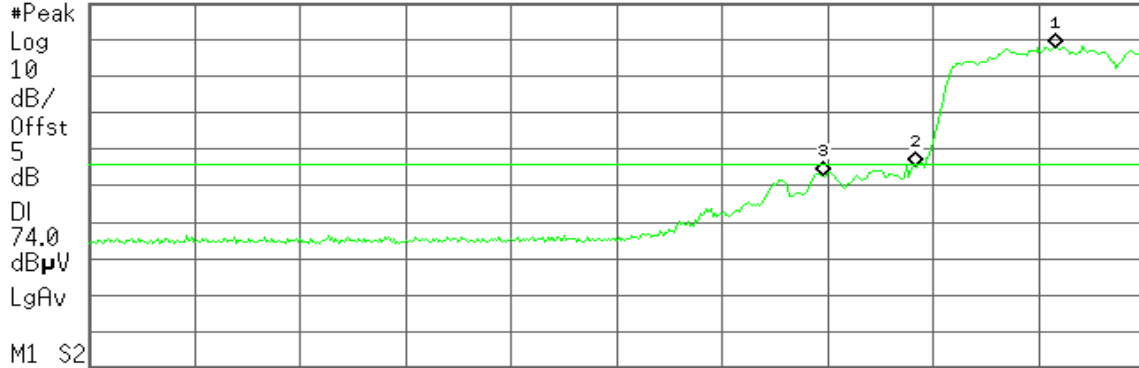


```
                                                    R   T
 ※ Agilent
                                                Mkr3  2.390 0 GHz
 Ref 118 dBµV            #Atten 16 dB             70.70 dBµV
 #Peak
 Log
 10
 dB/
 Offst
 5
 dB
 DI
 74.0
 dBµV
 LgAv

 M1 S2
 Start 2.310 0 GHz                          Stop 2.425 0 GHz
 #Res BW 1 MHz          #VBW 1 MHz       #Sweep 100 ms (601 pts)
```

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.415 4 GHz	105.83 dBµV
2	(1)	Freq	2.400 0 GHz	73.22 dBµV
3	(1)	Freq	2.390 0 GHz	70.70 dBµV

Detector mode: Average   **Polarity: Horizontal**
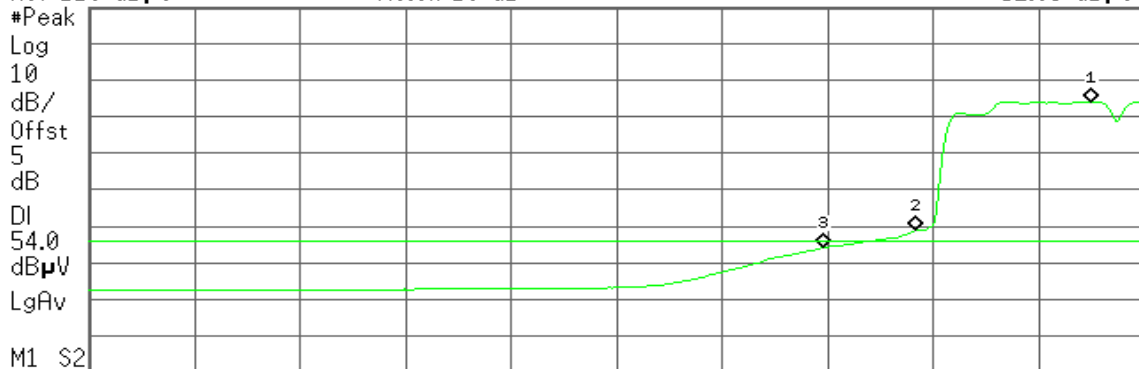


```
                                                    R   T
 ※ Agilent
                                                Mkr3  2.390 0 GHz
 Ref 118 dBµV            #Atten 16 dB             52.03 dBµV
 #Peak
 Log
 10
 dB/
 Offst
 5
 dB
 DI
 54.0
 dBµV
 LgAv

 M1 S2
 Start 2.310 0 GHz                          Stop 2.425 0 GHz
 #Res BW 1 MHz          #VBW 10 Hz       Sweep 8.967 s (601 pts)
```

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.419 2 GHz	92.21 dBµV
2	(1)	Freq	2.400 0 GHz	56.79 dBµV
3	(1)	Freq	2.390 0 GHz	52.03 dBµV

Band Edges (IEEE 802.11n HT 40 MHz mode / CH High)

Detector mode: Peak   **Polarity: Vertical**
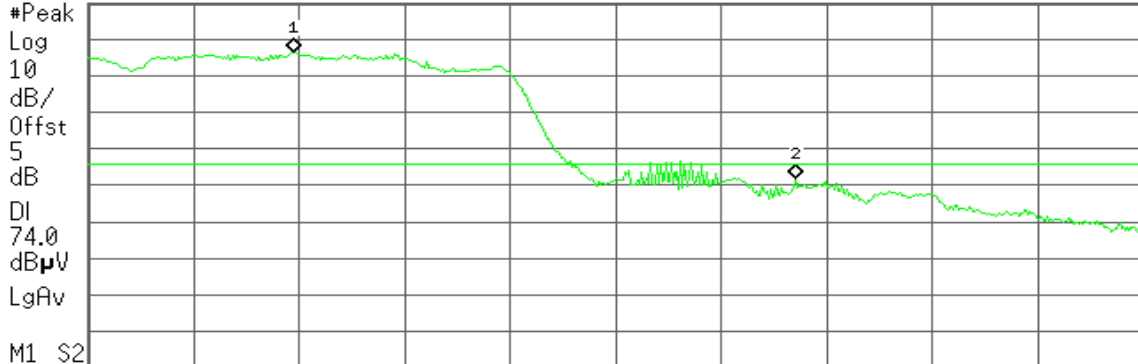
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.459 75 GHz	104.37 dBµV
2	(1)	Freq	2.483 50 GHz	69.98 dBµV

Detector mode: Average   **Polarity: Vertical**
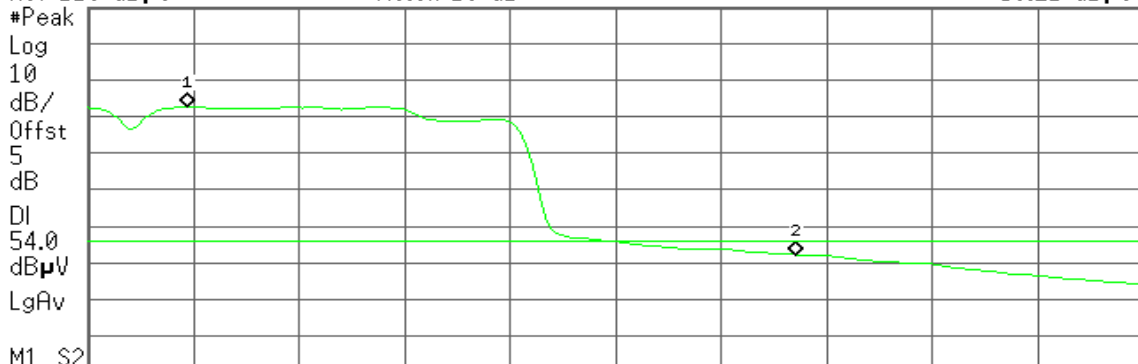
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.454 67 GHz	90.67 dBµV
2	(1)	Freq	2.483 50 GHz	50.21 dBµV

Detector mode: Peak   **Polarity: Horizontal**

Detector mode: Average   **Polarity: Horizontal**

Conducted Band Edges (IEEE 802.11b mode / CH High)

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2463.5000	8.99	-11.01	20.00
2	2485.5000	-46.48	-11.01	-35.47

Conducted Band Edges (IEEE 802.11g mode / CH Low)
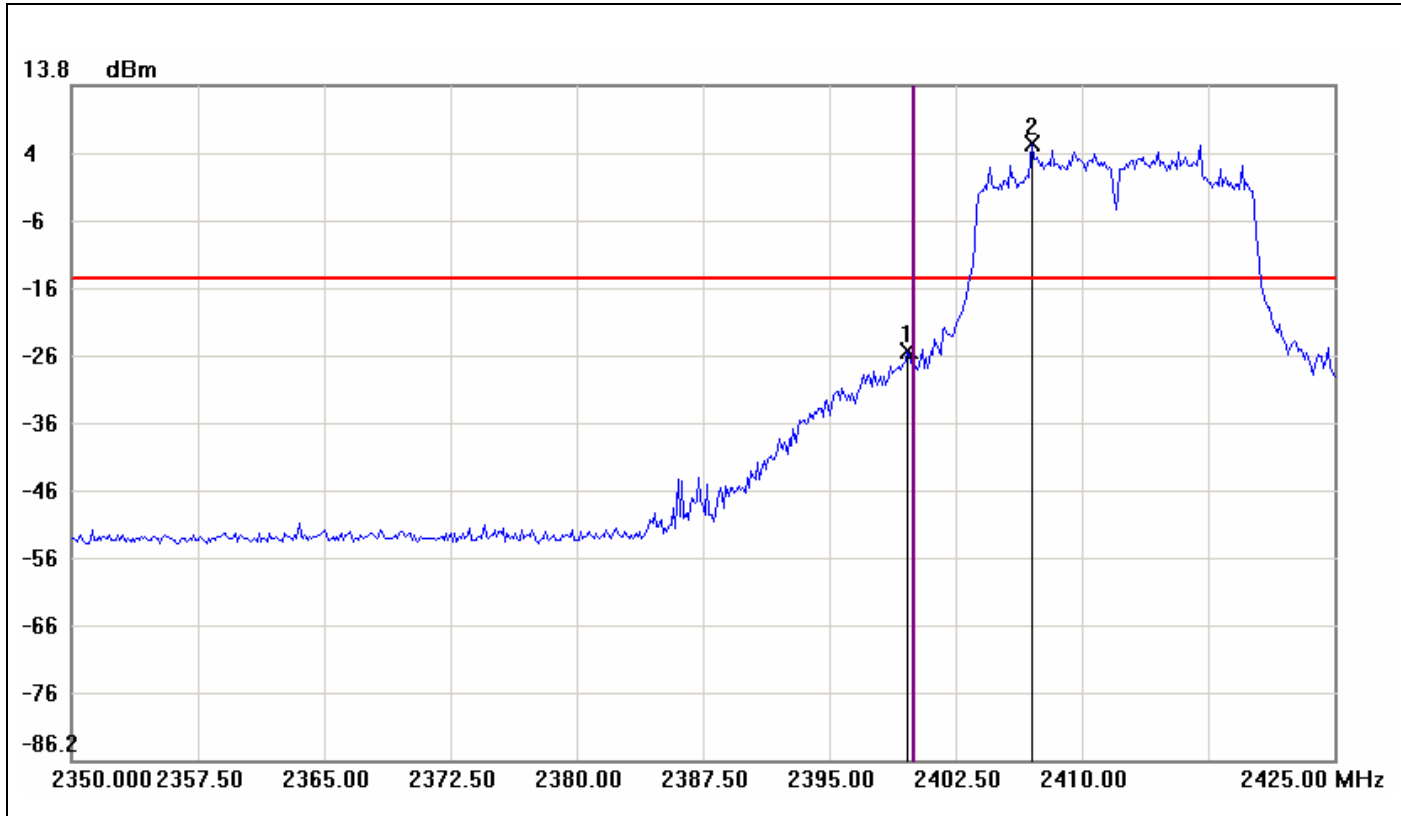
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2399.6250	-25.72	-14.97	-10.75
2	2407.0000	5.03	-14.97	20.00

Conducted Band Edges (IEEE 802.11g mode / CH High)
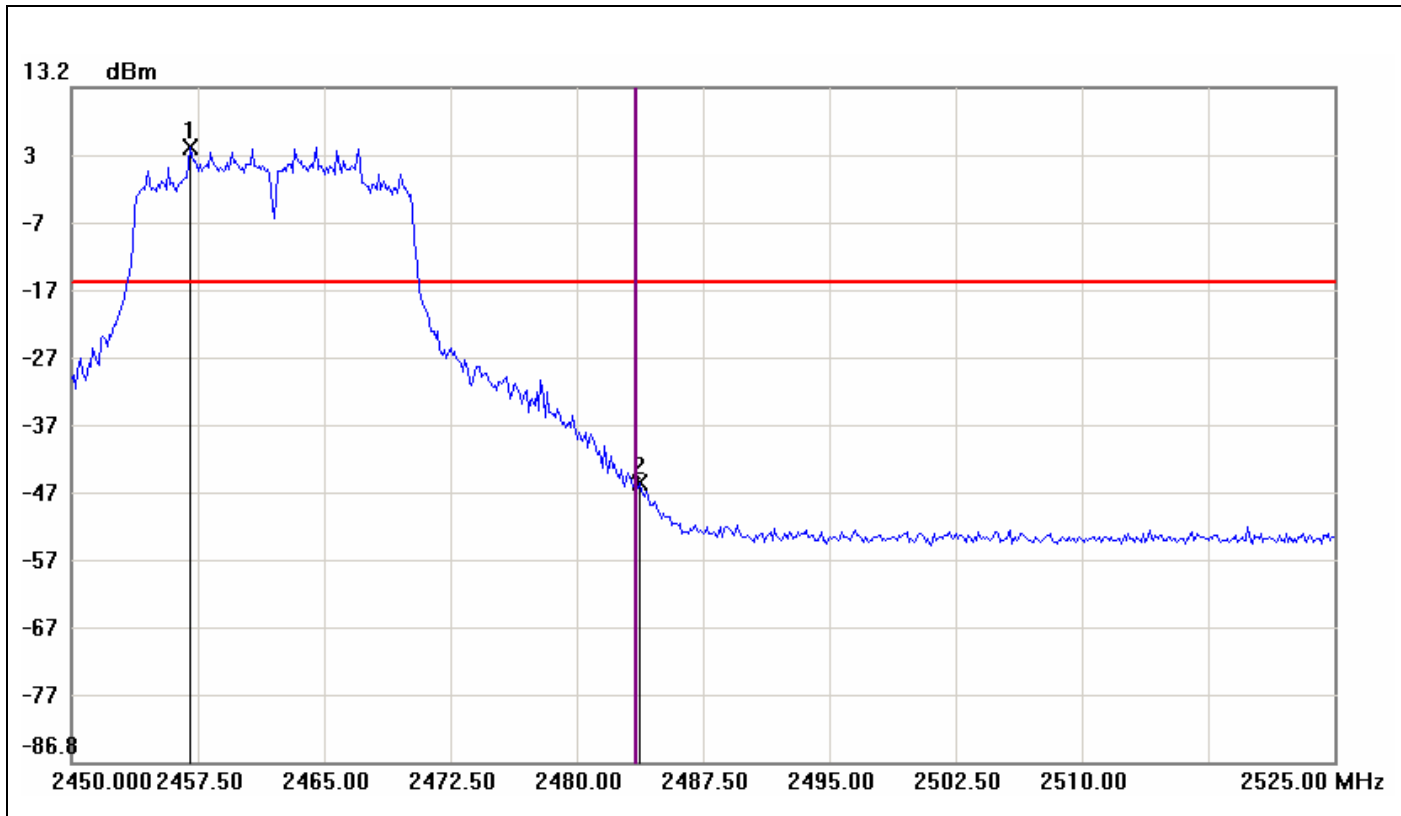
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2457.0000	4.39	-15.61	20.00
2	2483.7500	-45.54	-15.61	-29.93

Conducted Band Edges (IEEE 802.11n HT20 MHz mode / CH Low)
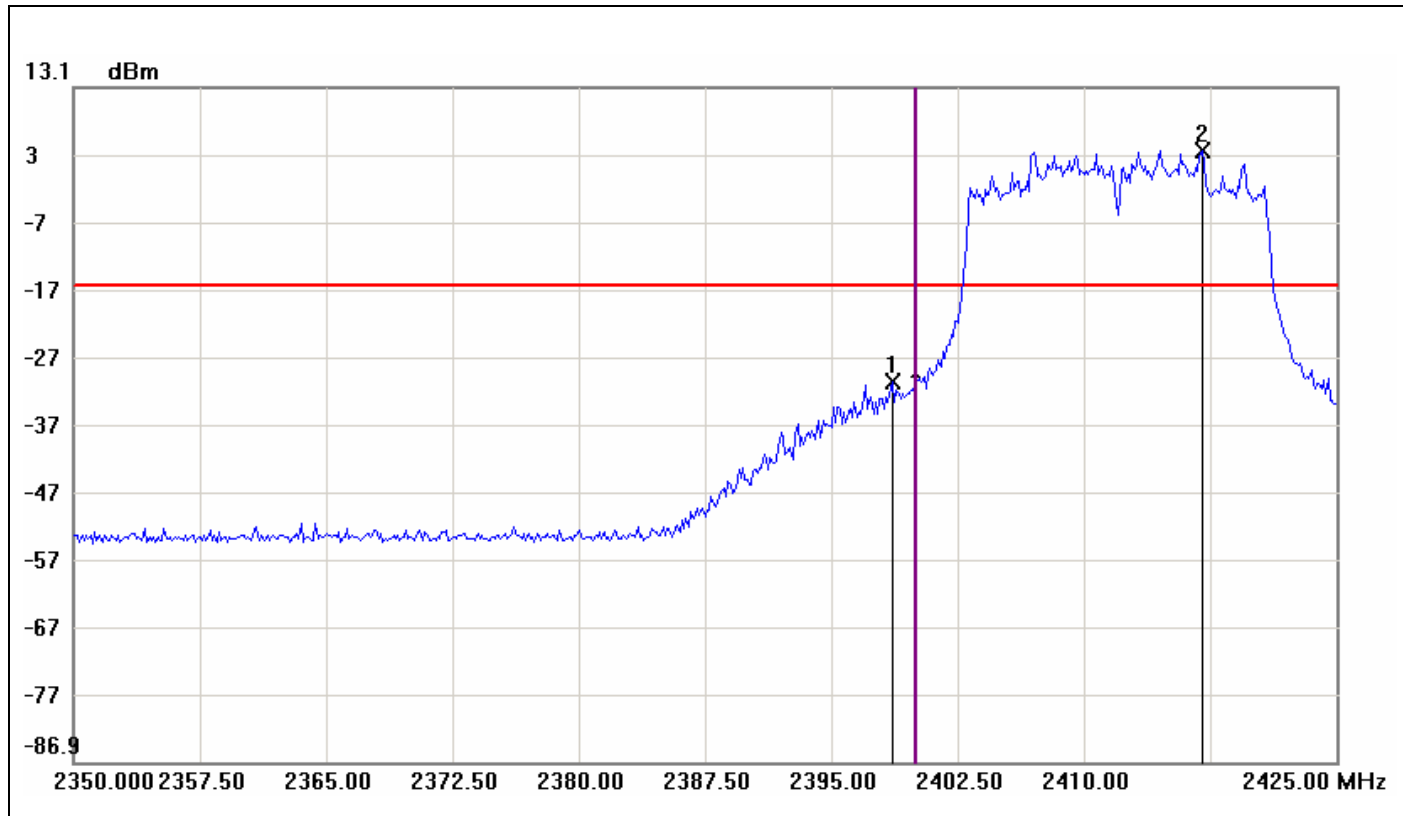
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2398.6250	-30.43	-16.34	-14.09
2	2417.0000	3.66	-16.34	20.00

Conducted Band Edges (IEEE 802.11n HT20 MHz mode / CH High)
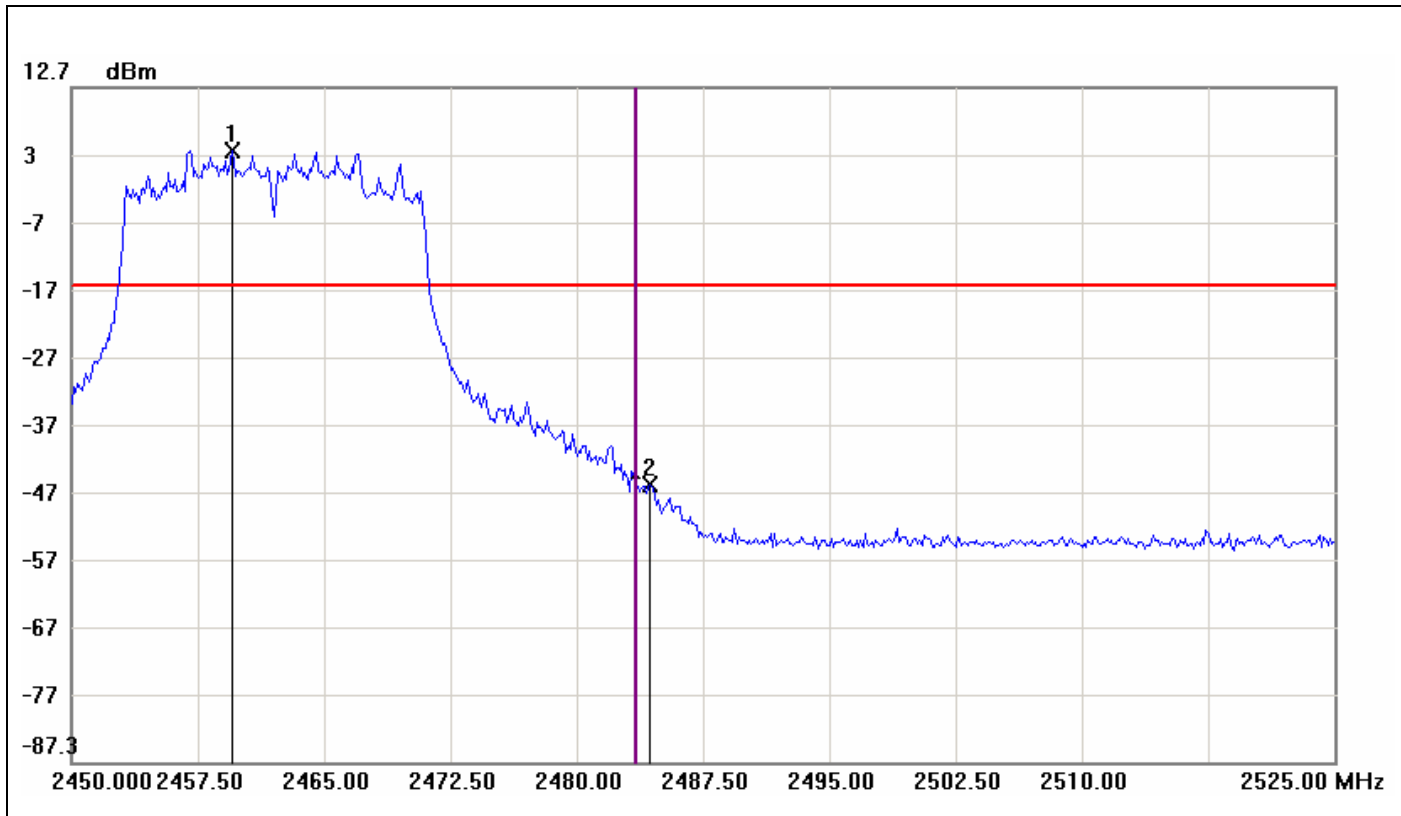
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2459.5000	3.38	-16.62	20.00
2	2484.3750	-46.15	-16.62	-29.53

Conducted Band Edges (IEEE 802.11n HT40 MHz mode / CH Low)
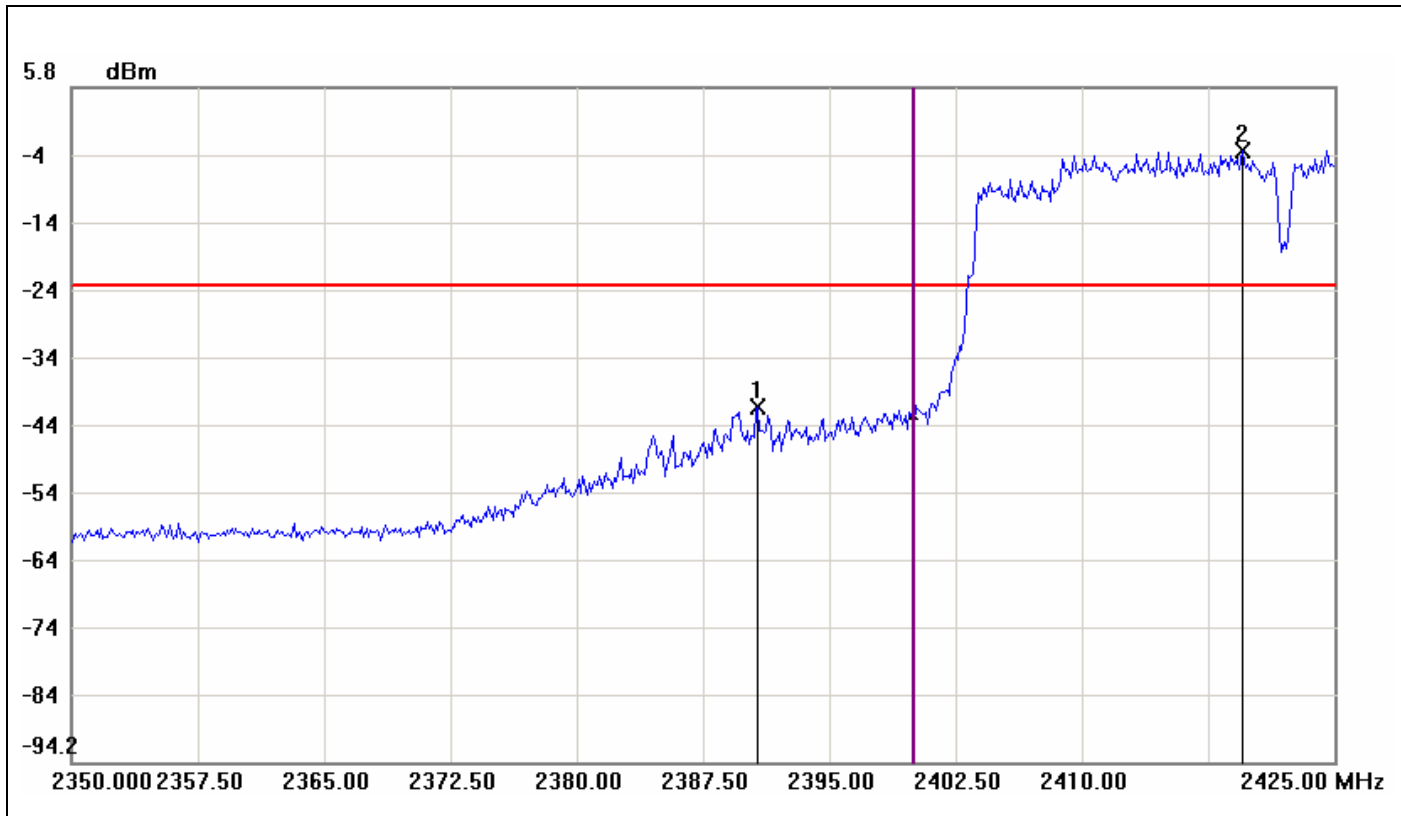
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2390.7500	-41.63	-23.50	-18.13
2	2419.5000	-3.50	-23.50	20.00

Conducted Band Edges (IEEE 802.11n HT40 MHz mode / CH High)
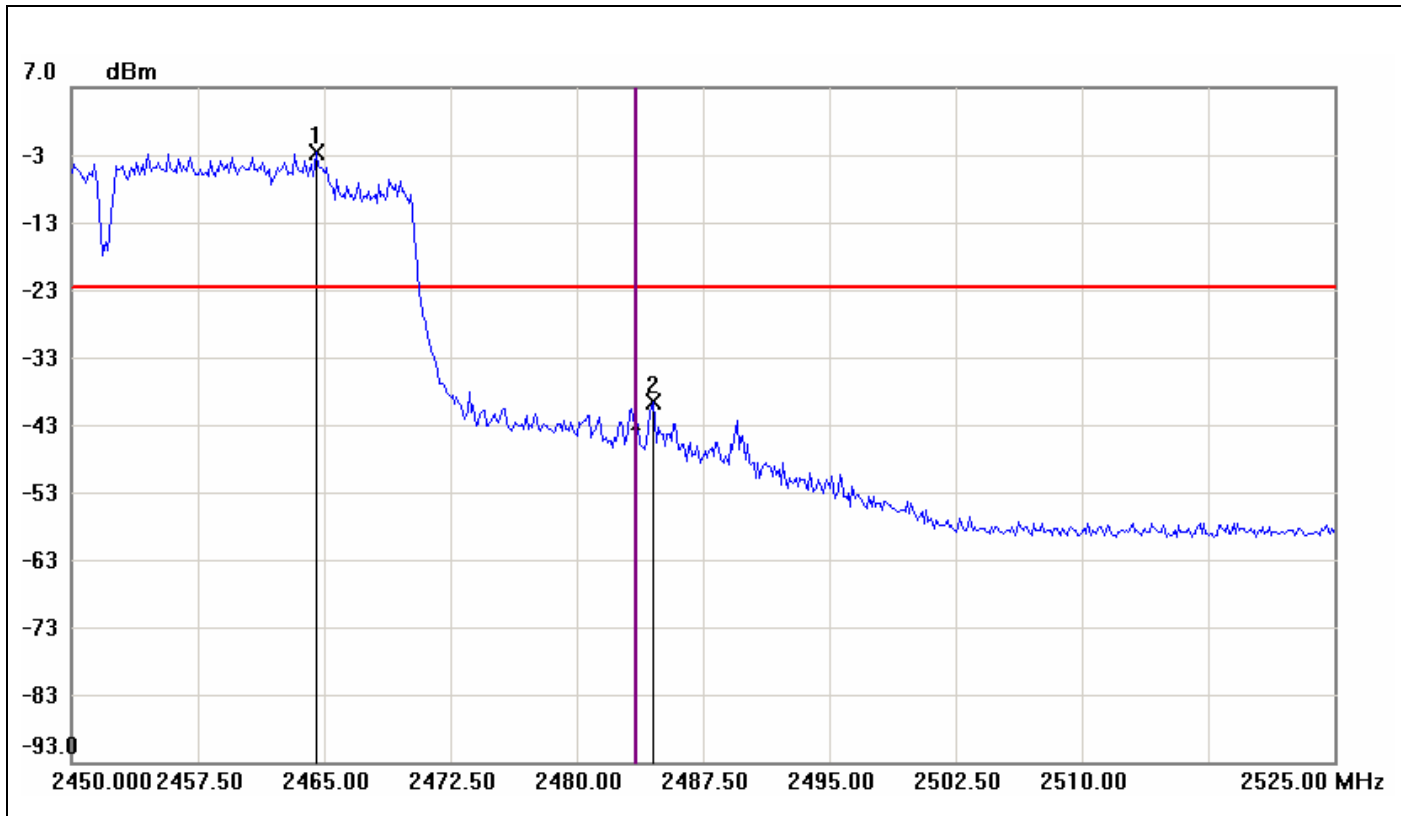
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2464.5000	-2.68	-22.68	20.00
2	2484.5000	-39.62	-22.68	-16.94

7.6 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
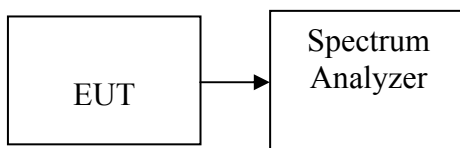
TEST PROCEDURE

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 = 10log (3 kHz/100 kHz = -15.2 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	-6.88	-22.08		PASS
Mid	2437	-6.45	-21.65	8	PASS
High	2462	-6.68	-21.88		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	100kHz PPSD (dBm)	3kHz PPSD (dBm)	Limit (dBm)	Result
Low	2412	-10.13	-25.33		PASS
Mid	2437	-6.94	-22.14	8	PASS
High	2462	-10.88	-26.08		PASS

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	Main Antenna PPSD	Aux Antenna PPSD	100kHz PPSD (dBm)	3kHz PPSD (dBm)	Limit (dBm)	Result
Low	2412	-11.28	-14.40	-9.56	-24.76		PASS
Mid	2437	-10.72	-12.59	-8.54	-23.74	4.89	PASS
High	2462	-12.14	-16.18	-10.70	-25.9		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Main Antenna PPSD	Aux Antenna PPSD	100kHz PPSD (dBm)	3kHz PPSD (dBm)	Limit (dBm)	Result
Low	2422	-18.02	-21.95	-16.54	-31.74		PASS
Mid	2437	-9.51	-17.84	-8.91	-24.11	4.89	PASS
High	2452	-17.64	-22.83	-16.49	-31.69		PASS

Remark: Total Output Power (w) = Main Antenna(10^(Output Power /10)/1000)+ Aux Antenna (10^(Output Power /10)/1000)

Test mode: IEEE 802.11a mode

Channel	Frequency (MHz)	100kHz (dBm)	3kHz (dBm)	Limit (dBm)	Result
Low	5745	-12.36	-27.56		PASS
Mid	5785	-13.81	-29.01	8	PASS
High	5825	-13.47	-28.67		PASS

Test mode: IEEE 802.11n HT 20 MHz mode

Channel	Frequency (MHz)	100kHz (dBm)	3kHz (dBm)	Limit (dBm)	Result
Low	5745	-14.70	-29.90		PASS
Mid	5785	-15.03	-30.23	8	PASS
High	5825	-14.79	-29.99		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	100kHz (dBm)	3kHz (dBm)	Limit (dBm)	Result
Low	5755	-18.92	-34.12	8	PASS
High	5795	-19.23	-34.43		PASS

Test Plot

IEEE 802.11b mode

PPSD (CH Low)
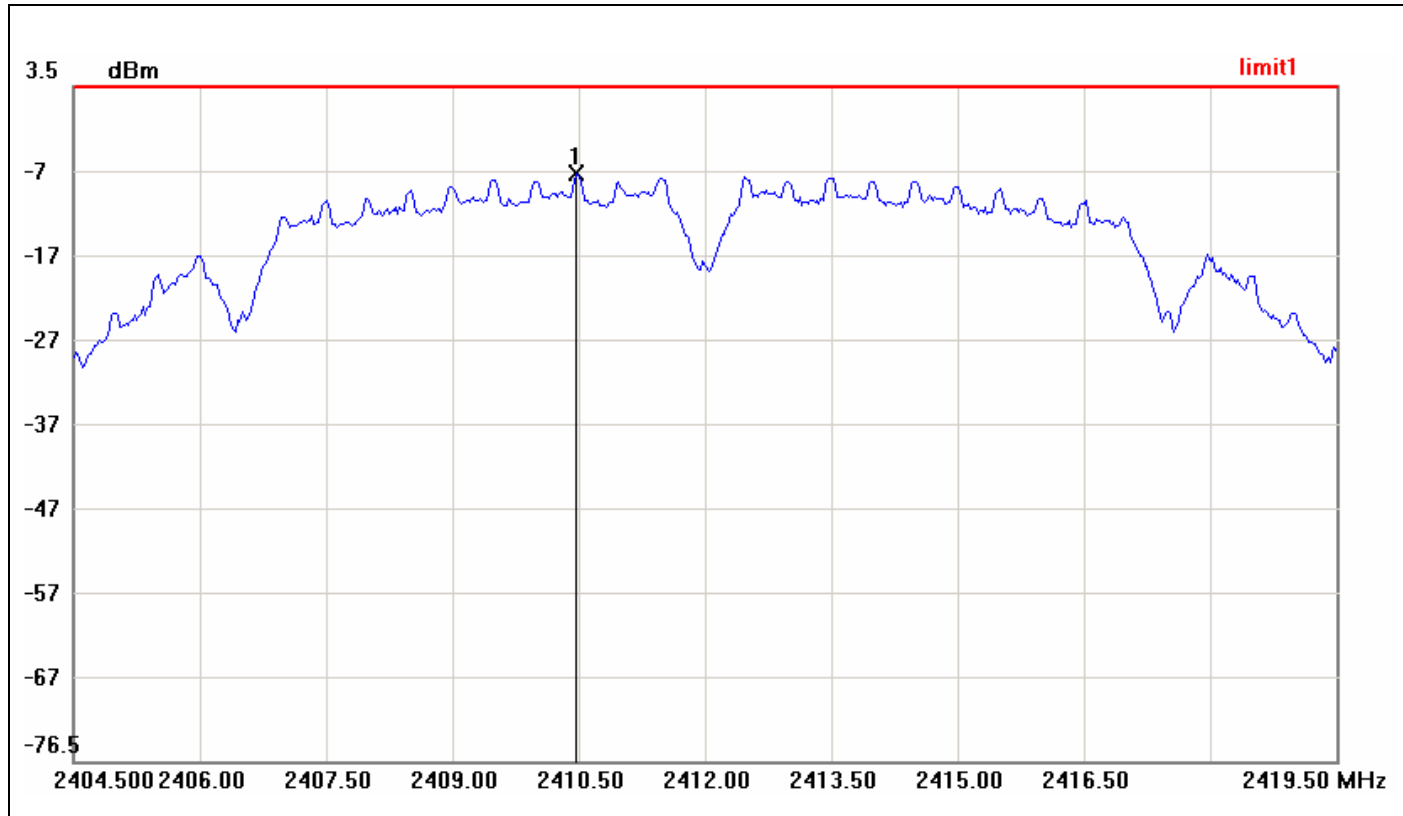
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2410.4750	-6.88	8.00	-14.88

PPSD (CH Mid)
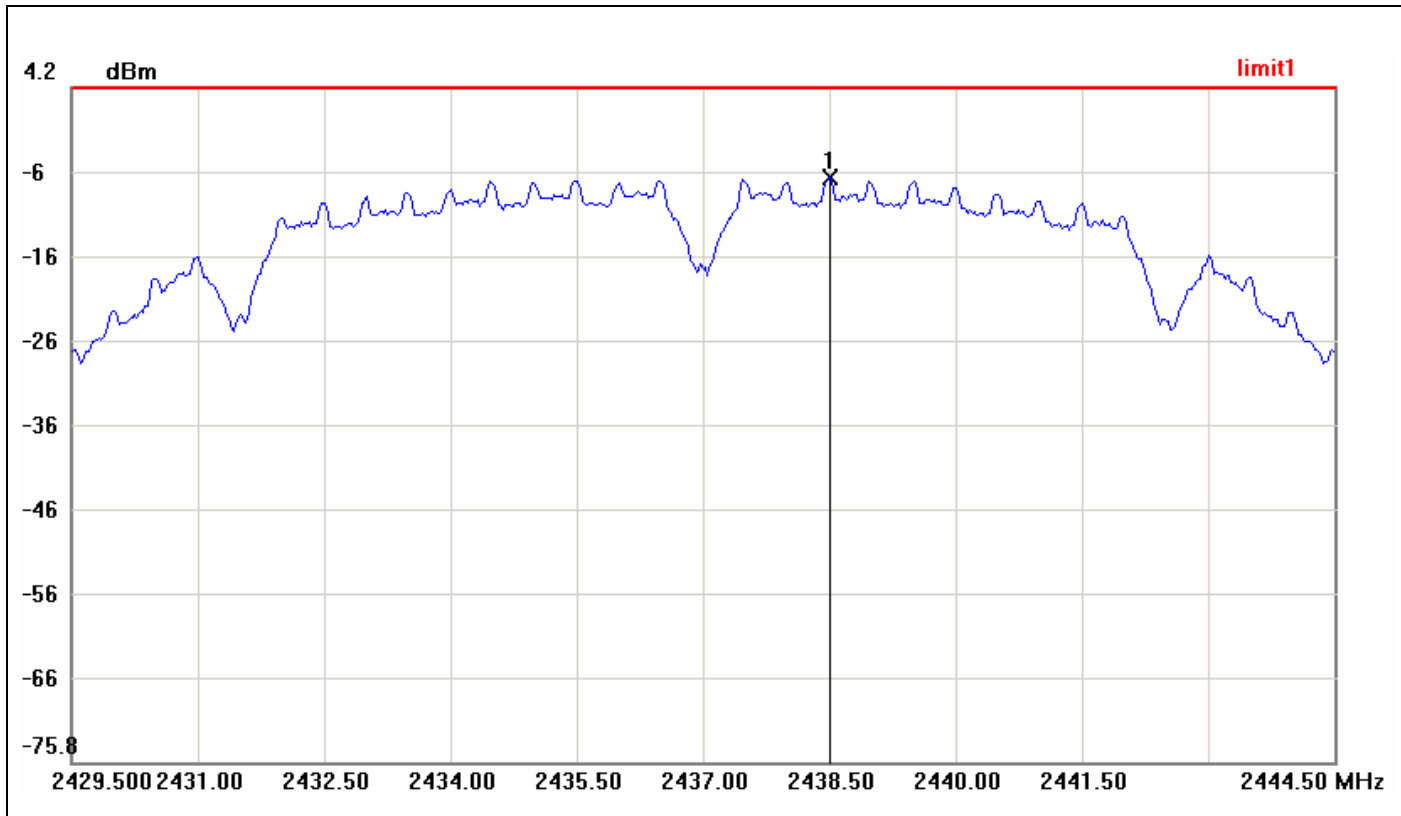
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2438.5000	-6.45	8.00	-14.45

PPSD (CH High)
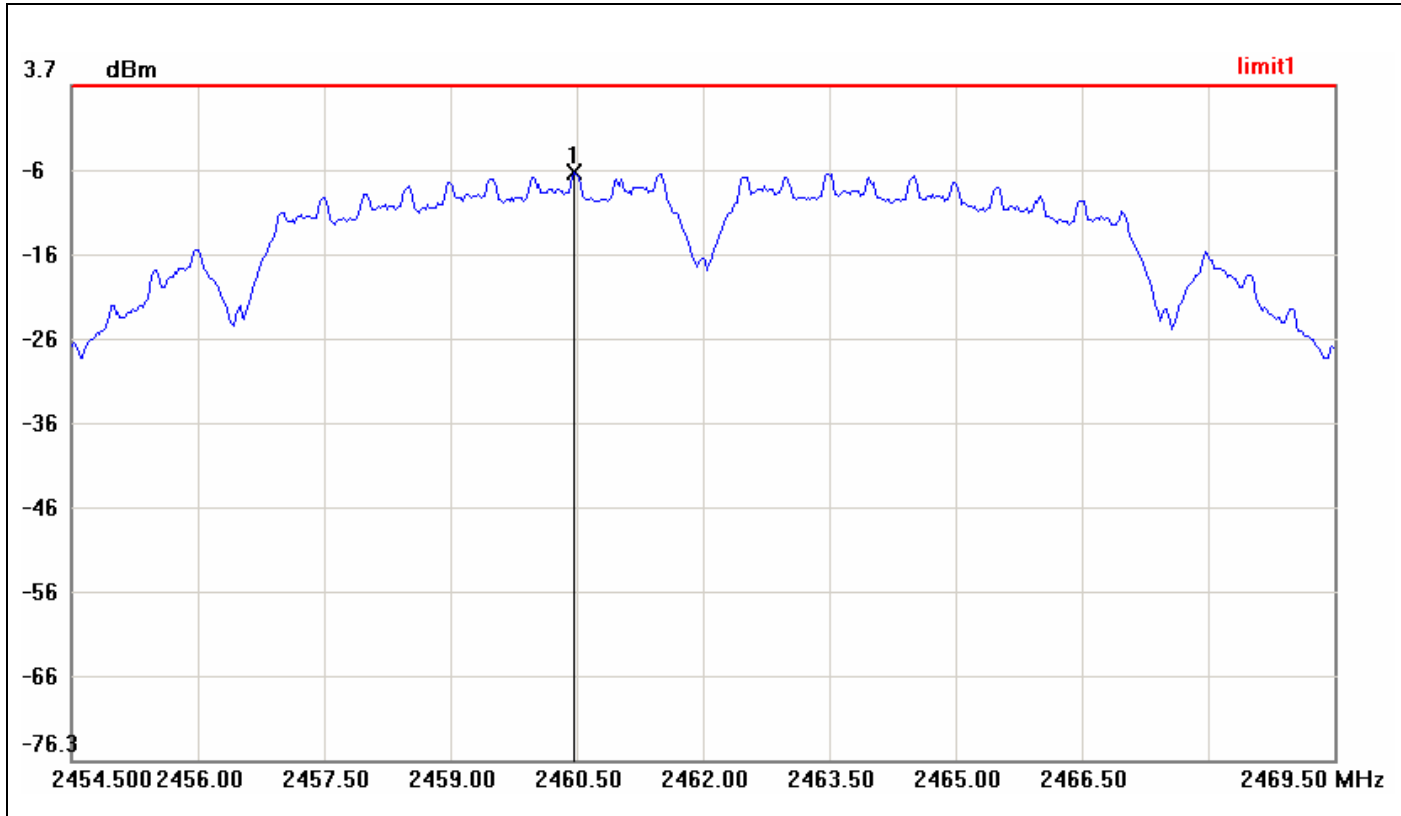
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2460.4750	-6.68	8.00	-14.68

IEEE 802.11g mode

PPSD (CH Low)
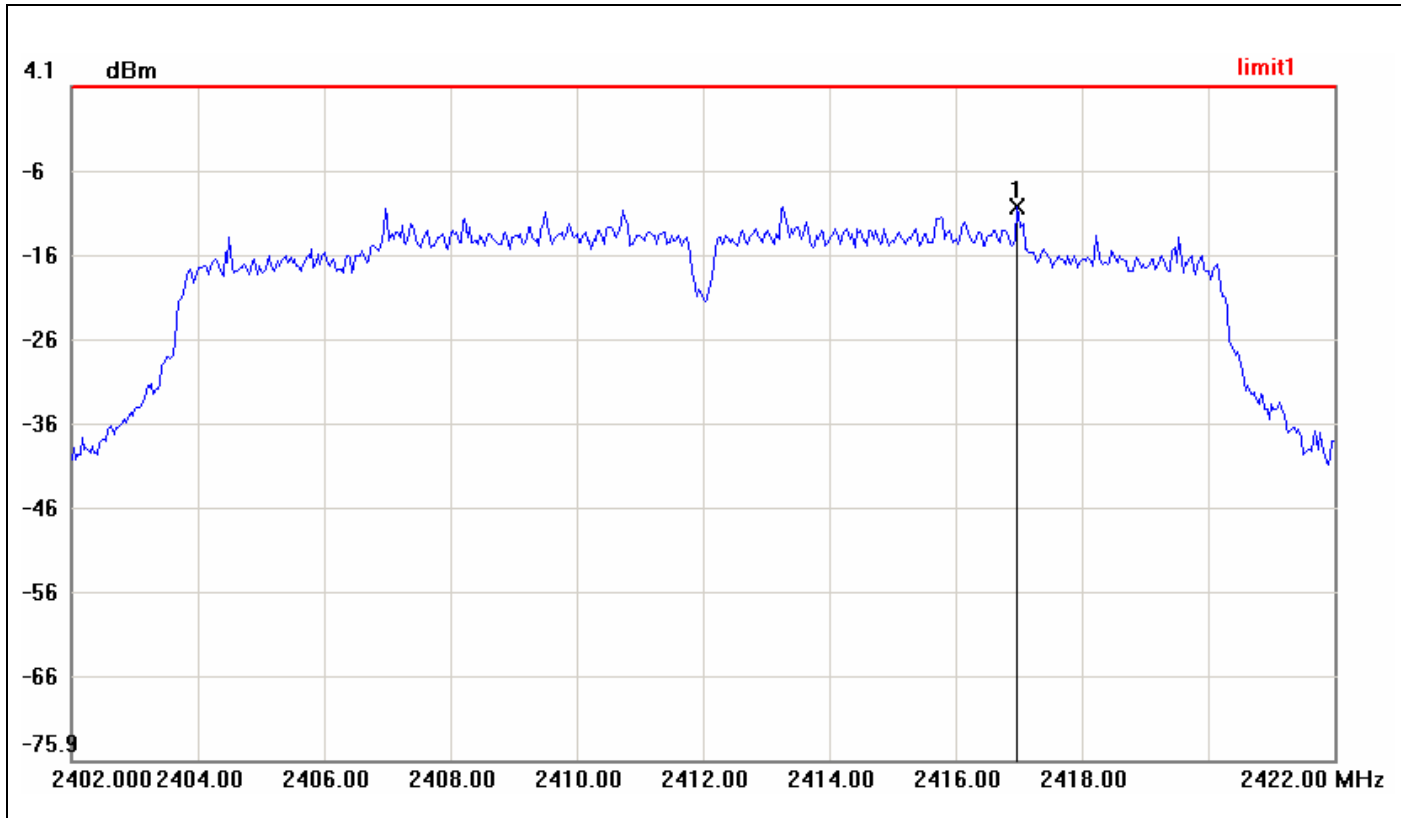
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2416.9667	-10.13	8.00	-18.13

PPSD (CH Mid)
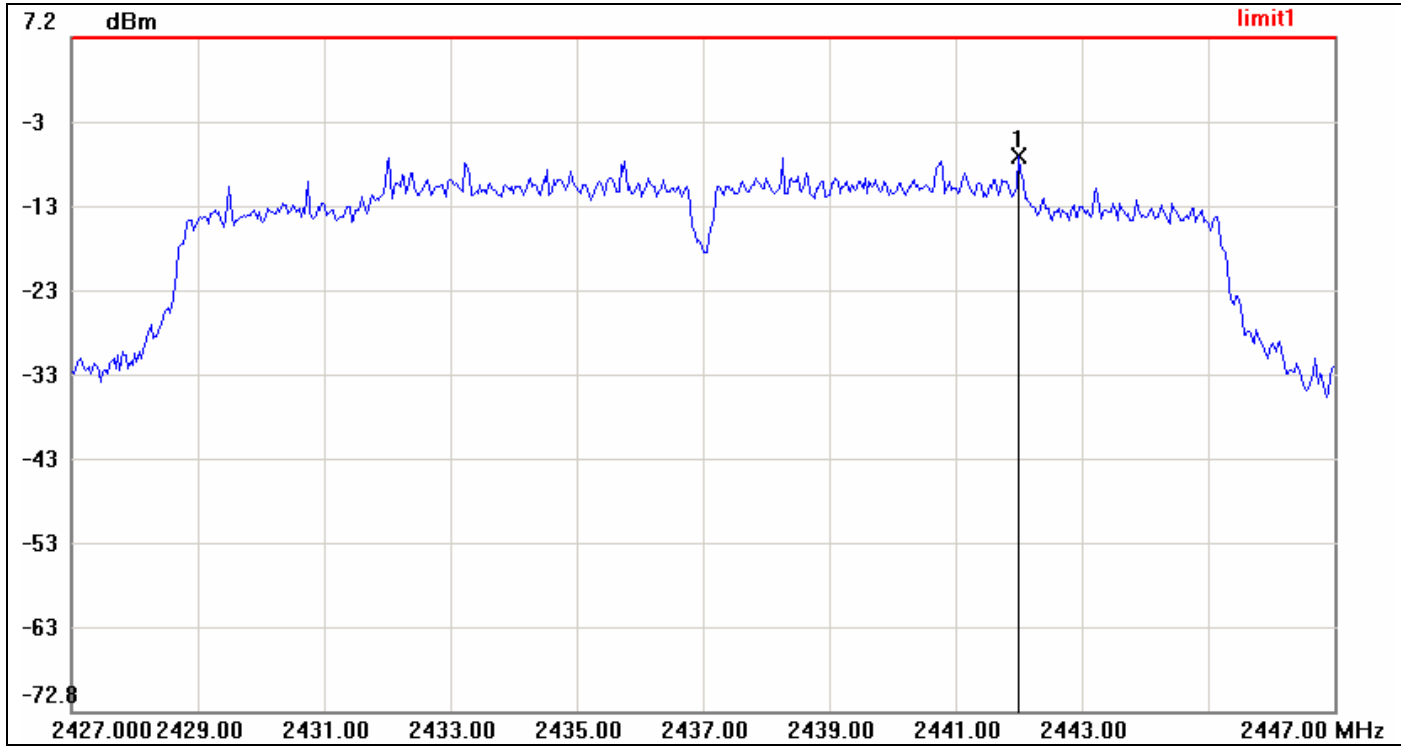
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2437 .0000	-6.94	8.00	-14.94

PPSD (CH High)
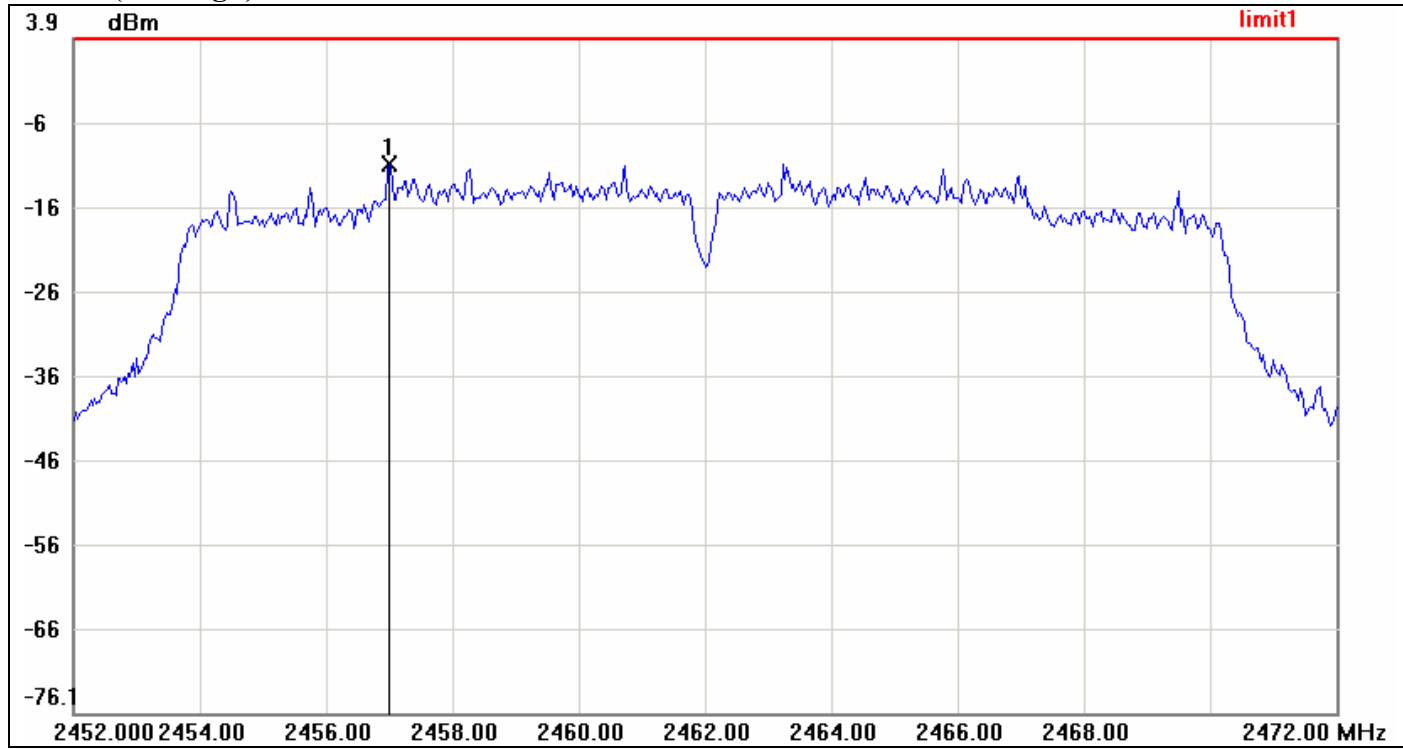
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2457.0000	-10.88	8.00	-18.88

IEEE 802.11n HT 20 MHz mode / Main Antenna

PPSD (CH Low)
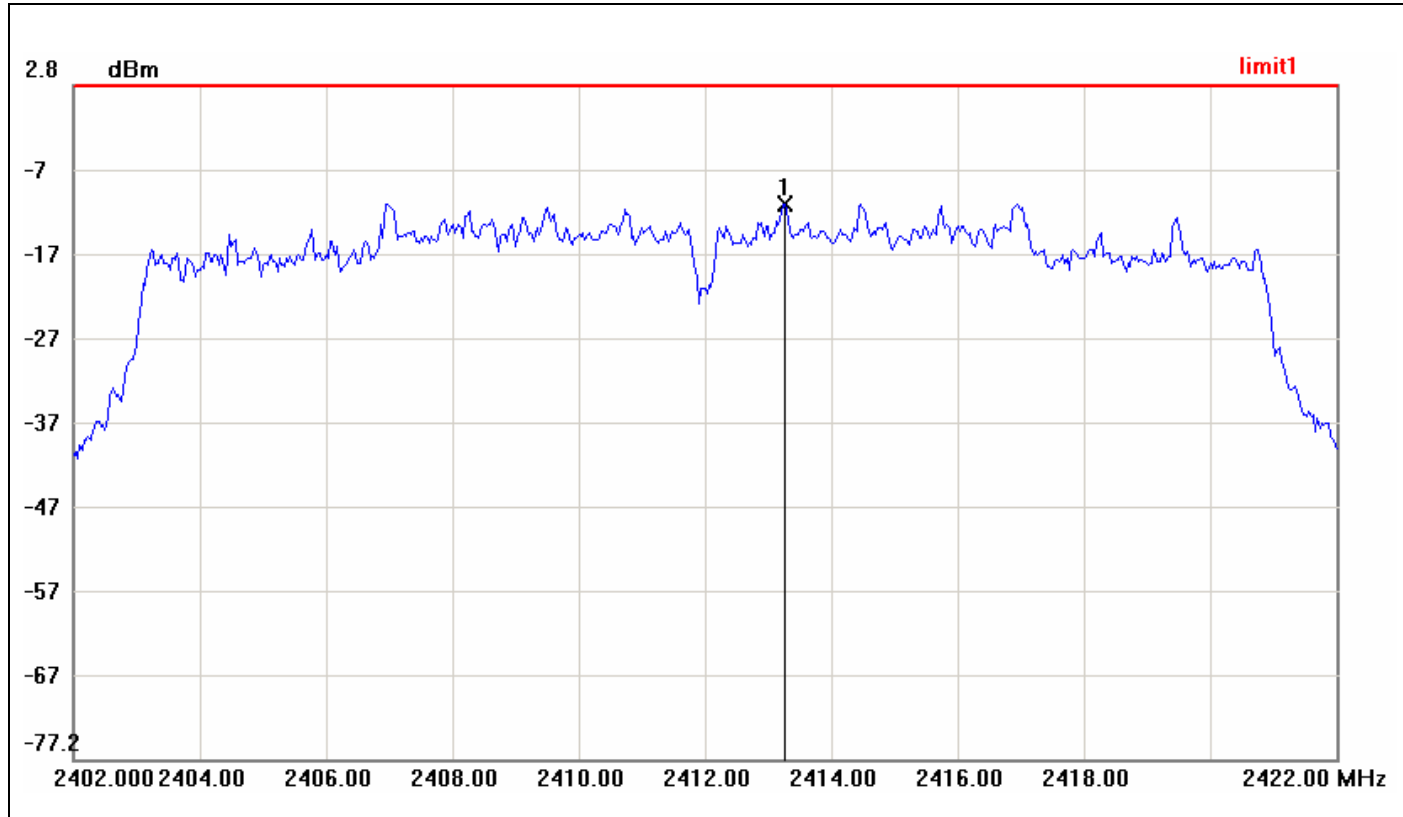
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2413.2667	-11.28	8.00	-19.28

PPSD (CH Mid)
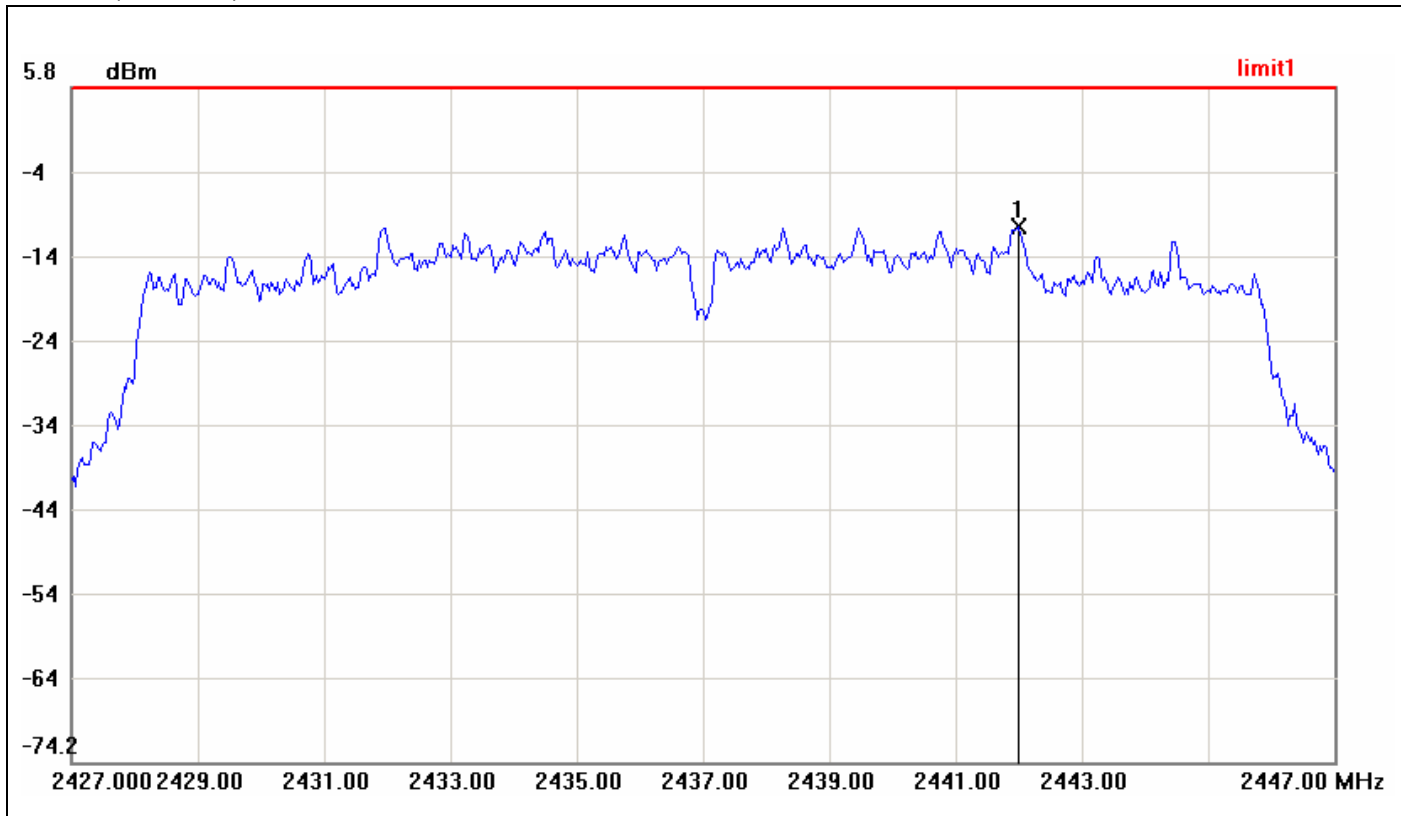
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2437 .0000	-10.72	8.00	-18.72

PPSD (CH High)
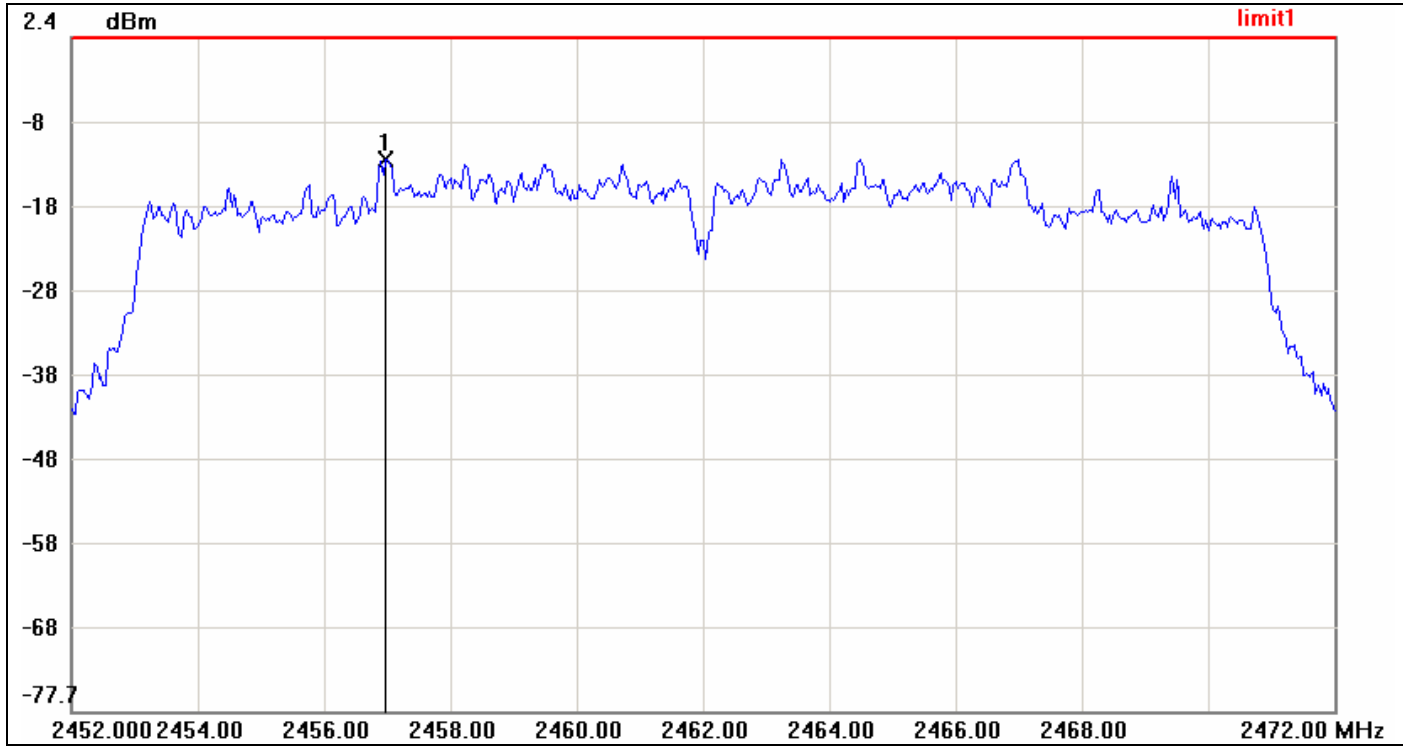
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2456.9667	-12.14	8.00	-20.14

IEEE 802.11n HT 20 MHz mode / Aux Antenna

PPSD (CH Low)
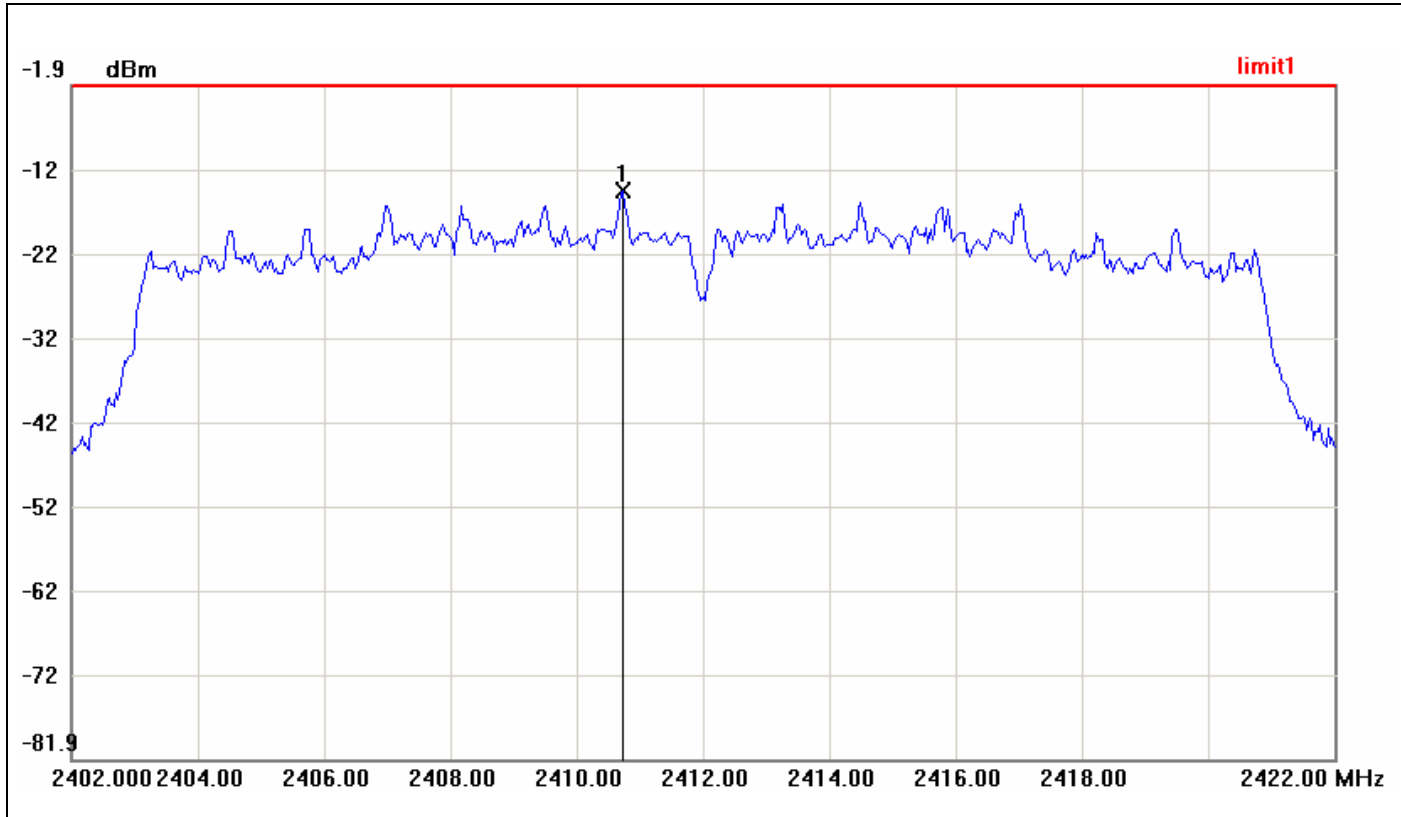
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2410.7333	-14.40	8.00	-22.40

PPSD (CH Mid)
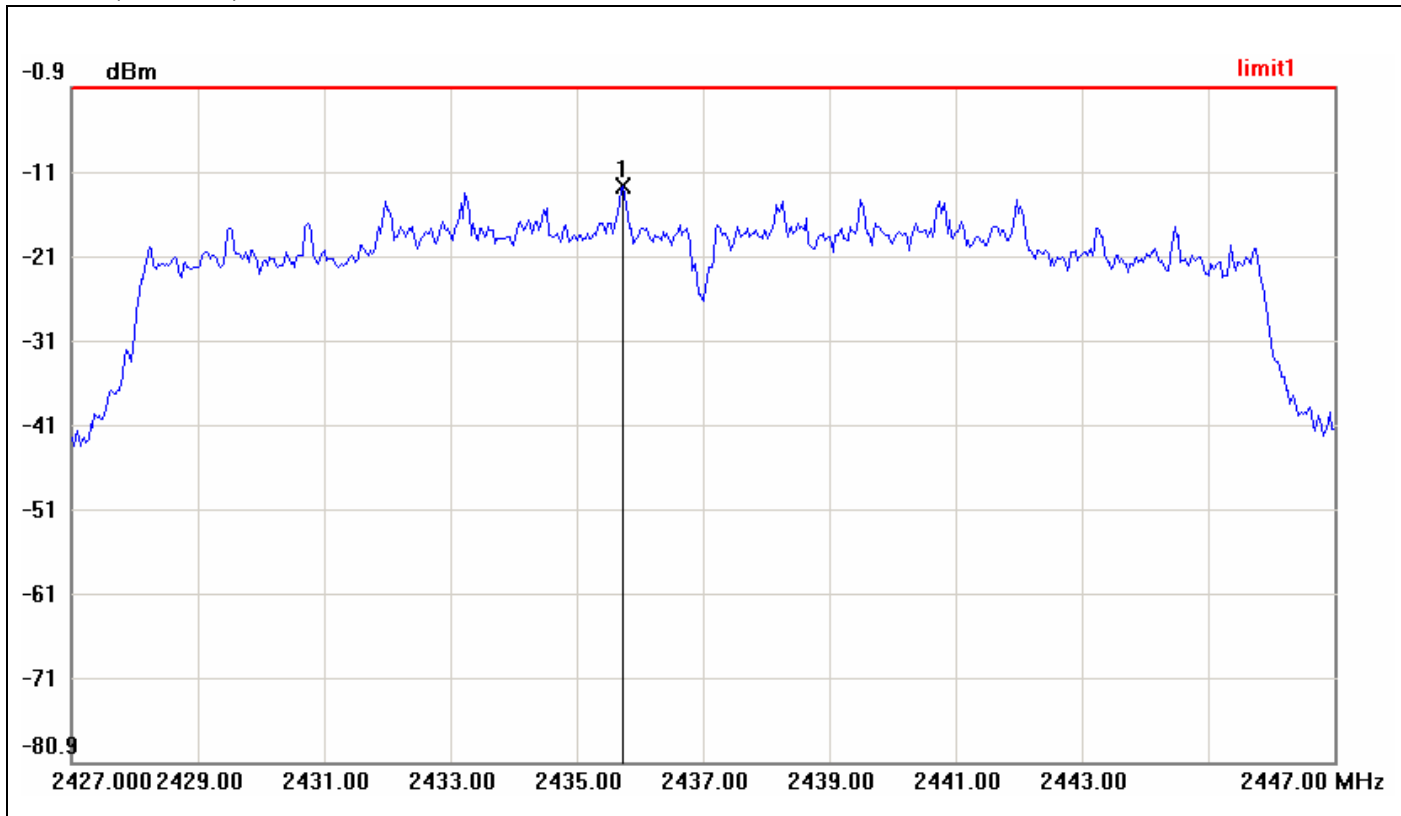
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2435.7333	-12.59	8.00	-20.59

PPSD (CH High)
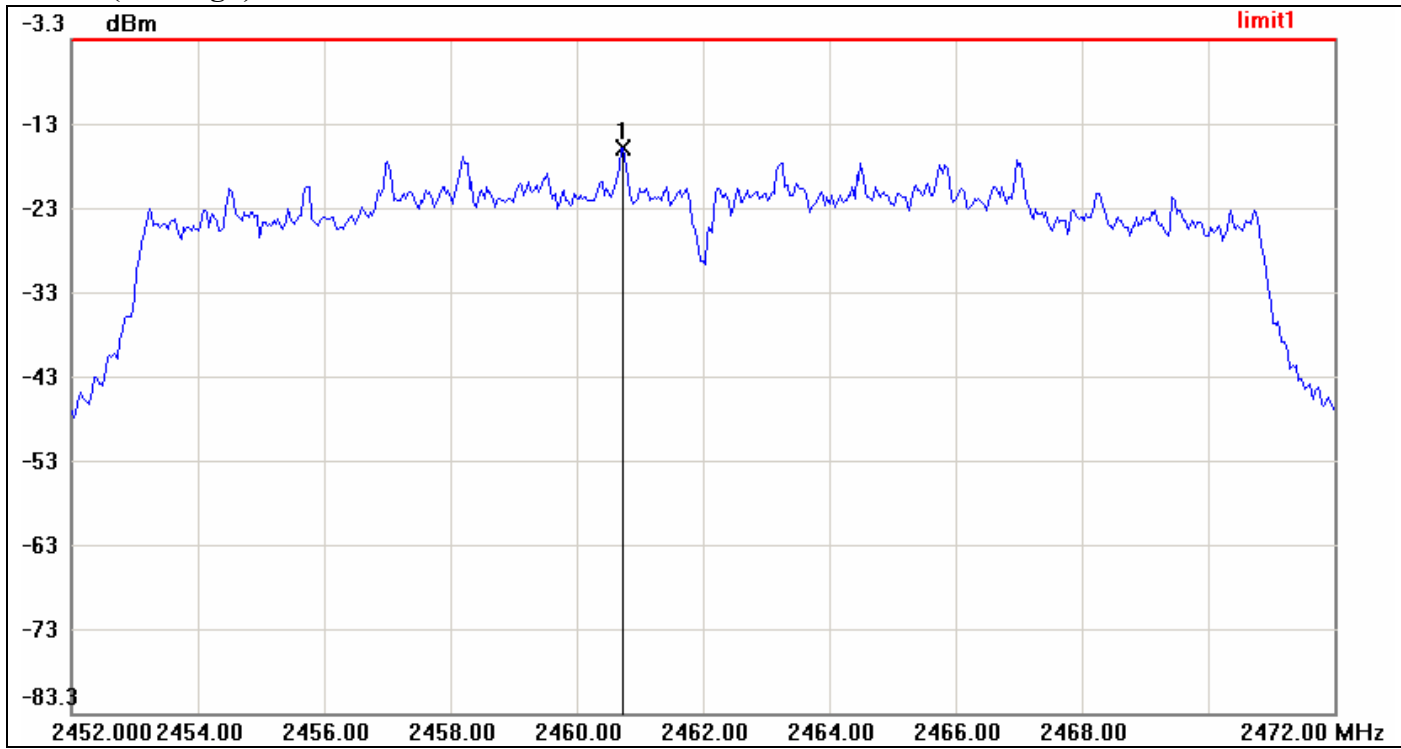
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2460.7333	-16.18	8.00	-24.18

IEEE 802.11n HT 40 MHz mode / Main Antenna

PPSD (CH Low)
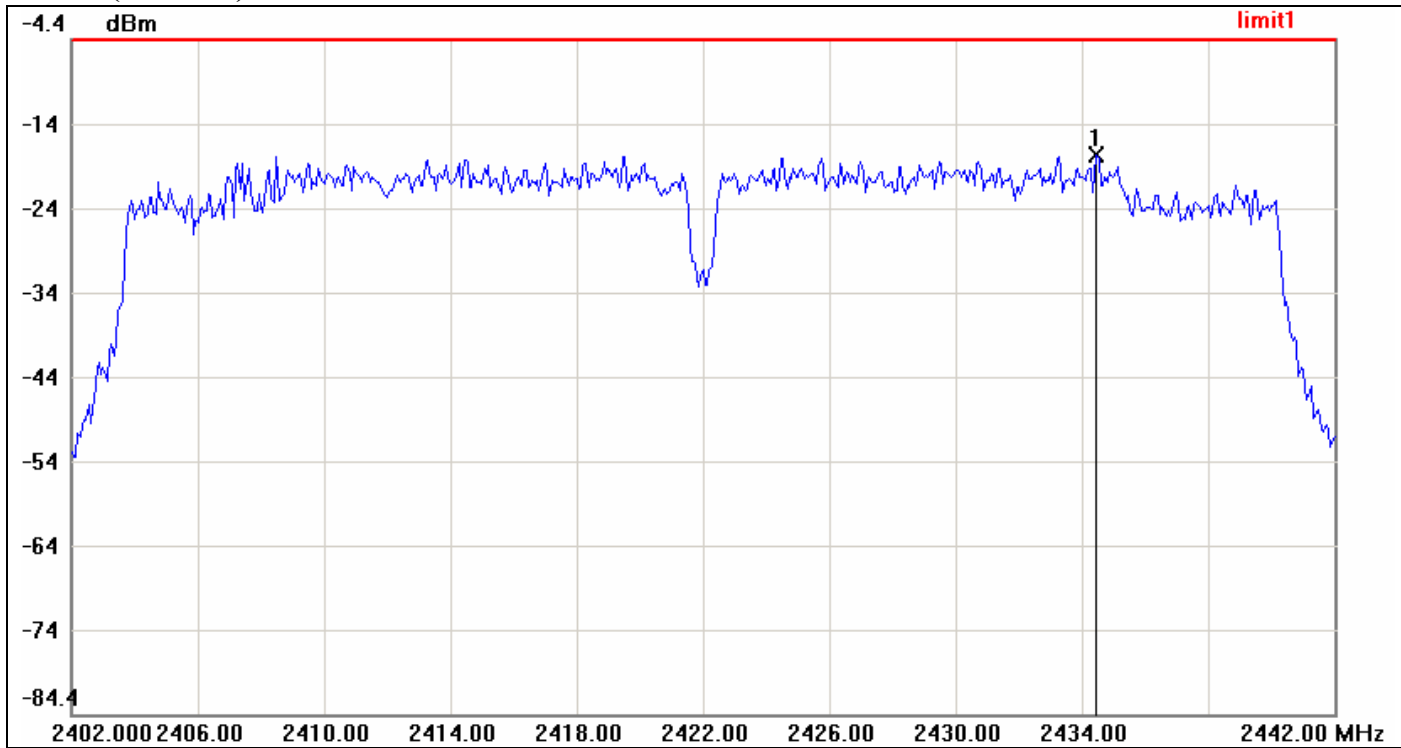
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2434.4667	-18.02	8.00	-26.02

PPSD (CH Mid)
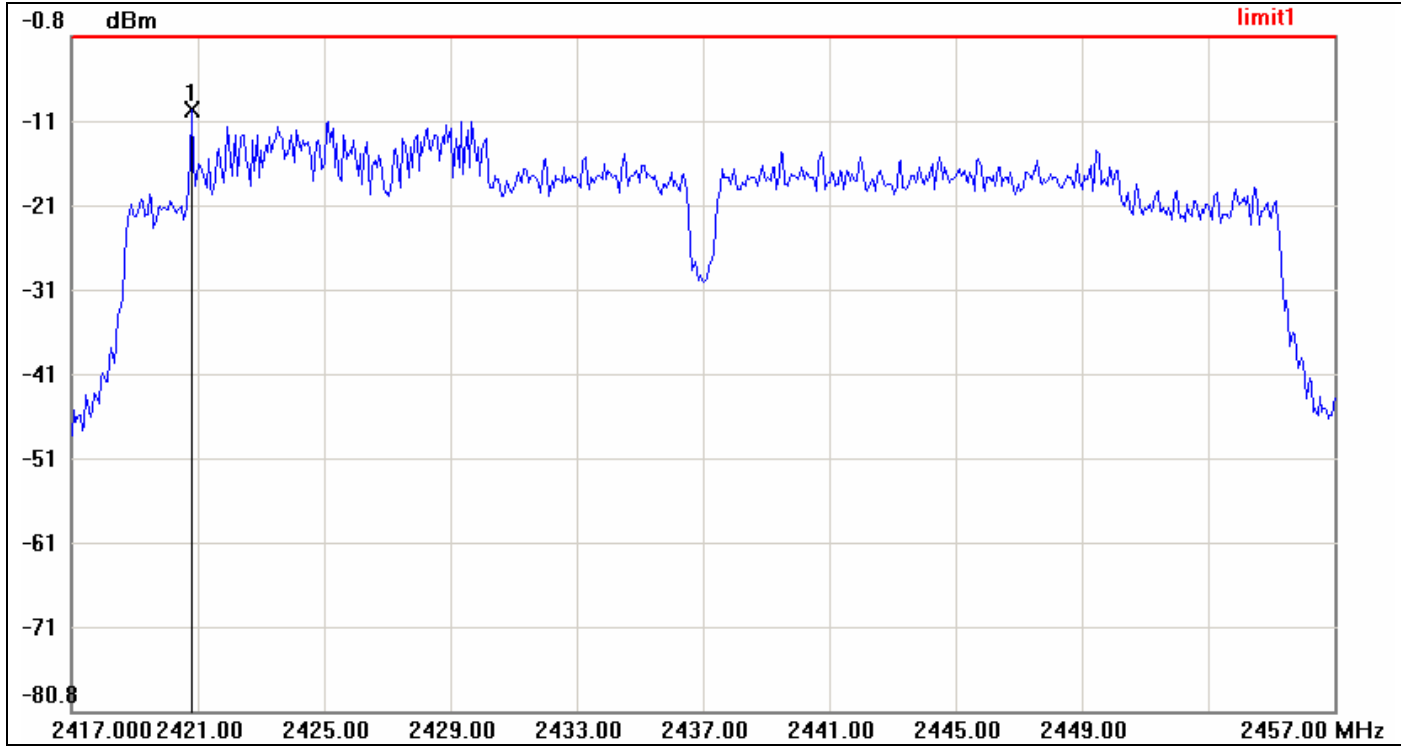
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2420.8000	-9.51	8.00	-17.51

PPSD (CH High)
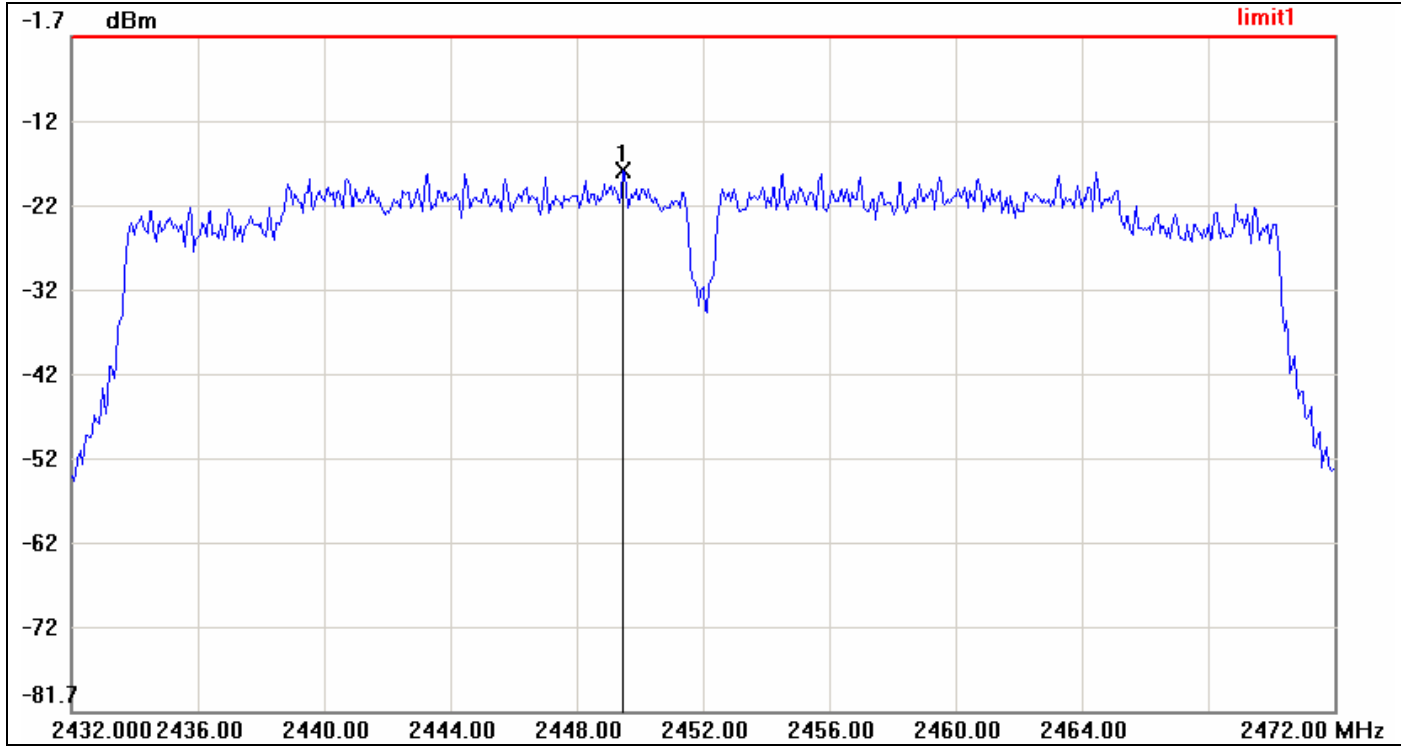
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2449.4667	-17.64	8.00	-25.64

IEEE 802.11n HT 40 MHz mode / Aux Antenna

PPSD (CH Low)
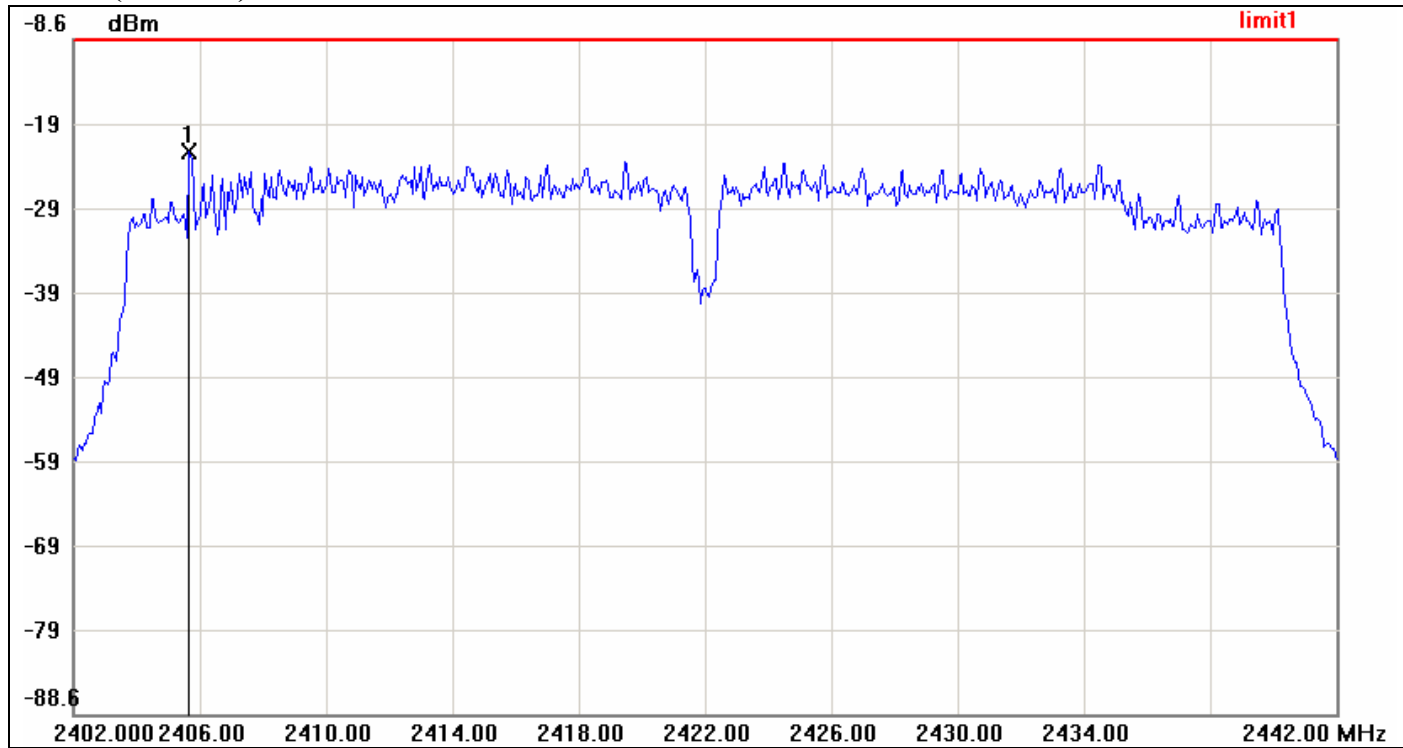
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2405.6667	-21.95	8.00	-29.95

PPSD (CH Mid)
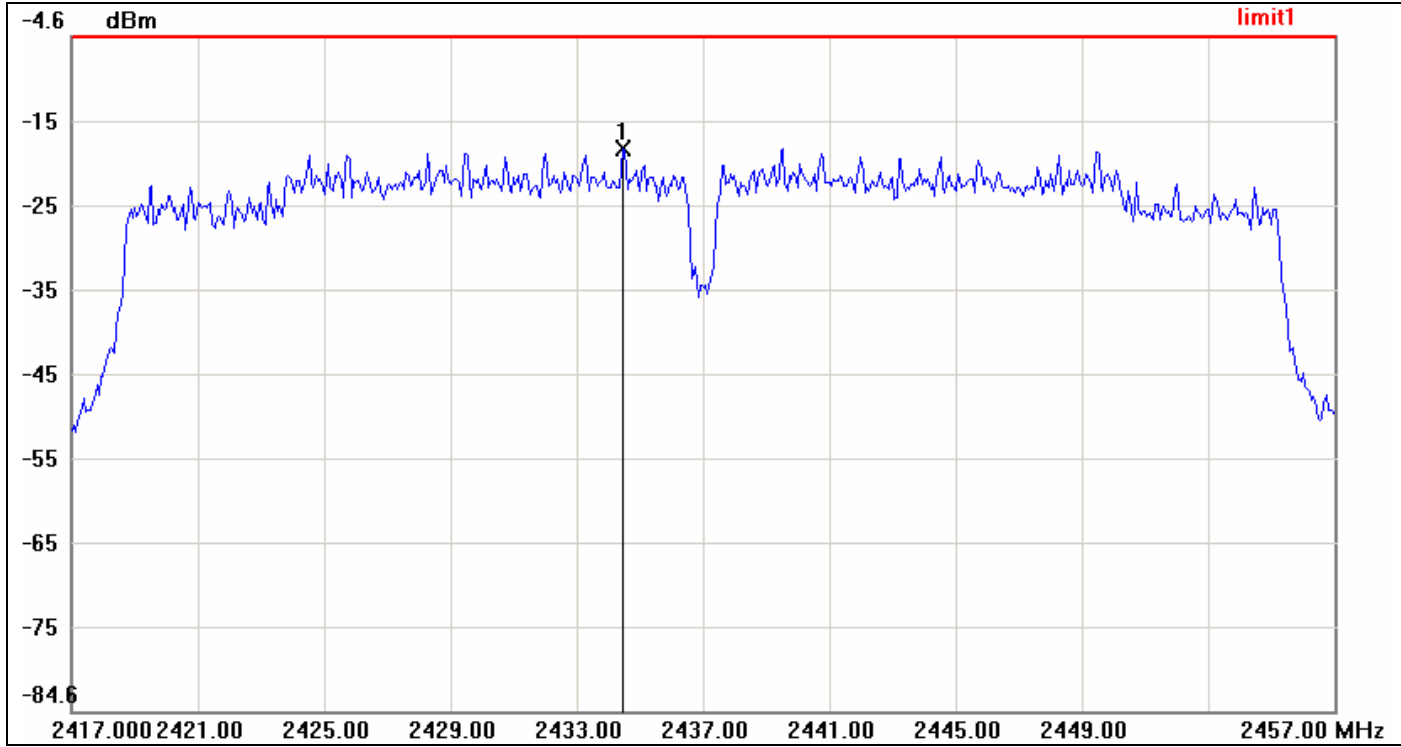
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2434.4667	-17.84	8.00	-25.84

PPSD (CH High)
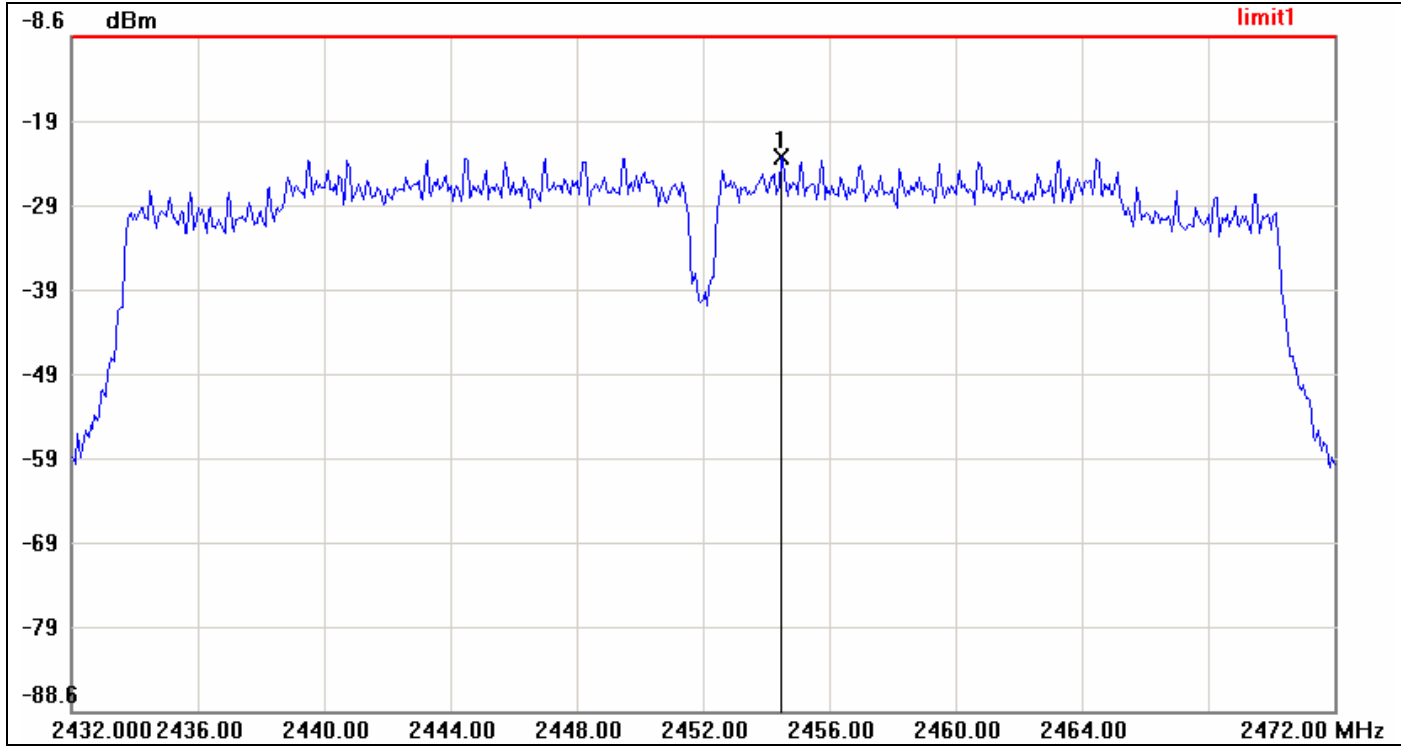
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2454.4667	-22.83	8.00	-30.83

IEEE 802.11a mode

PPSD (CH Low)
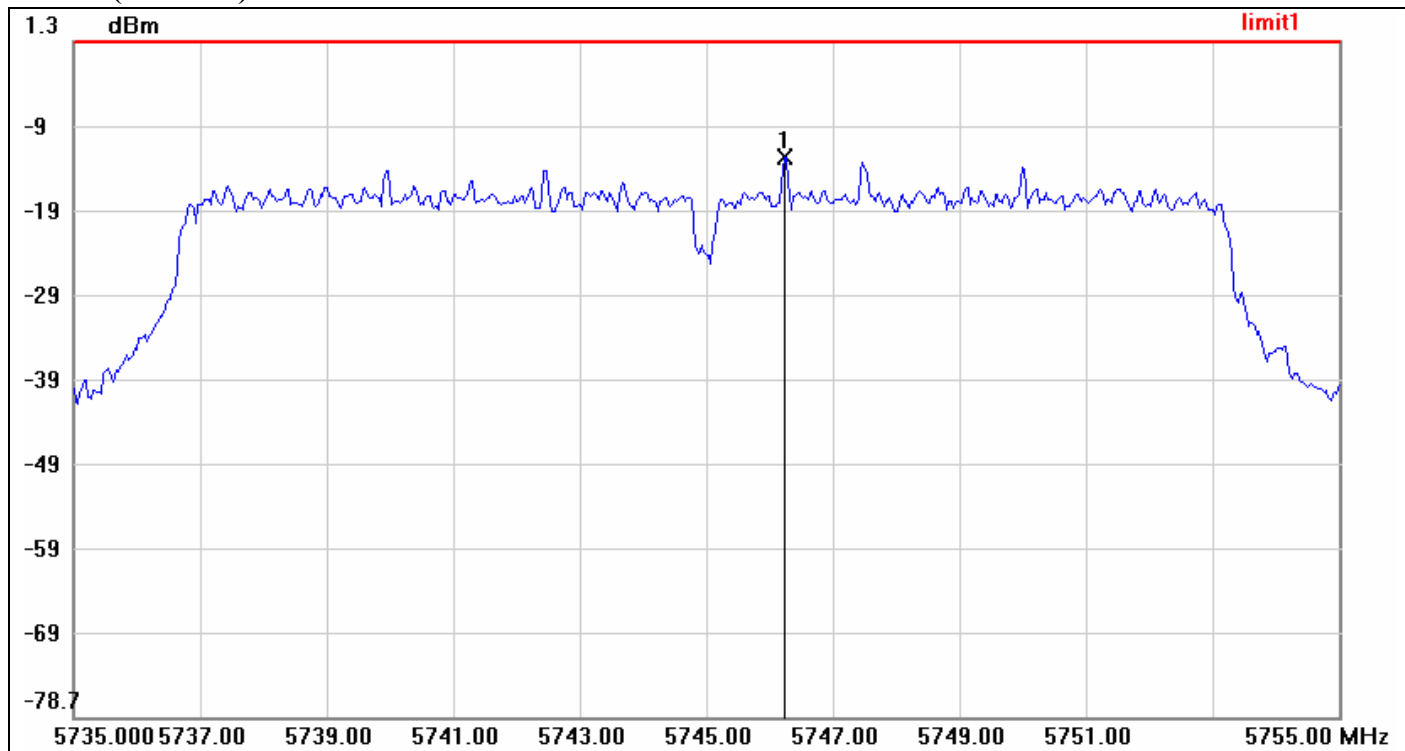
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5746.2333	-12.36	8	-20.36

PPSD (CH Mid)
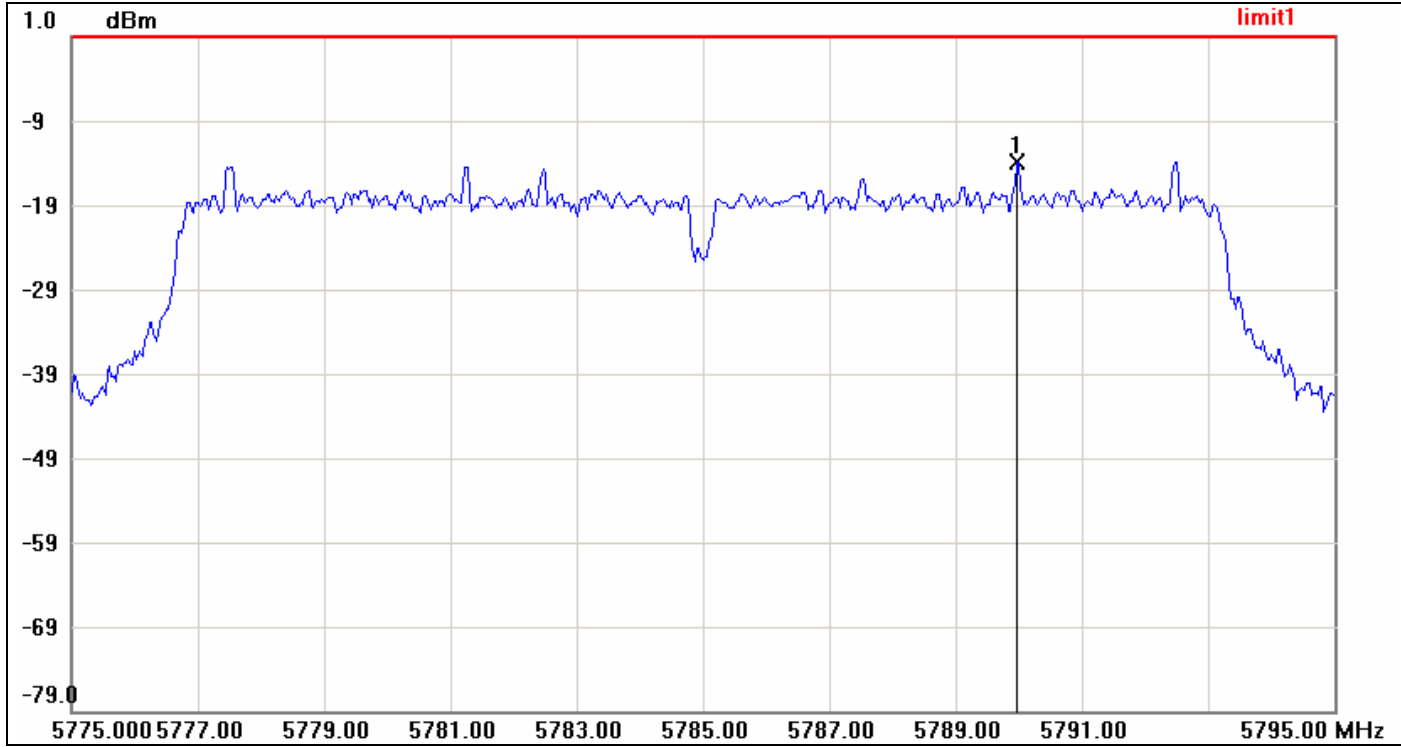
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5789.9667	-13.81	8.00	-21.81

PPSD (CH High)
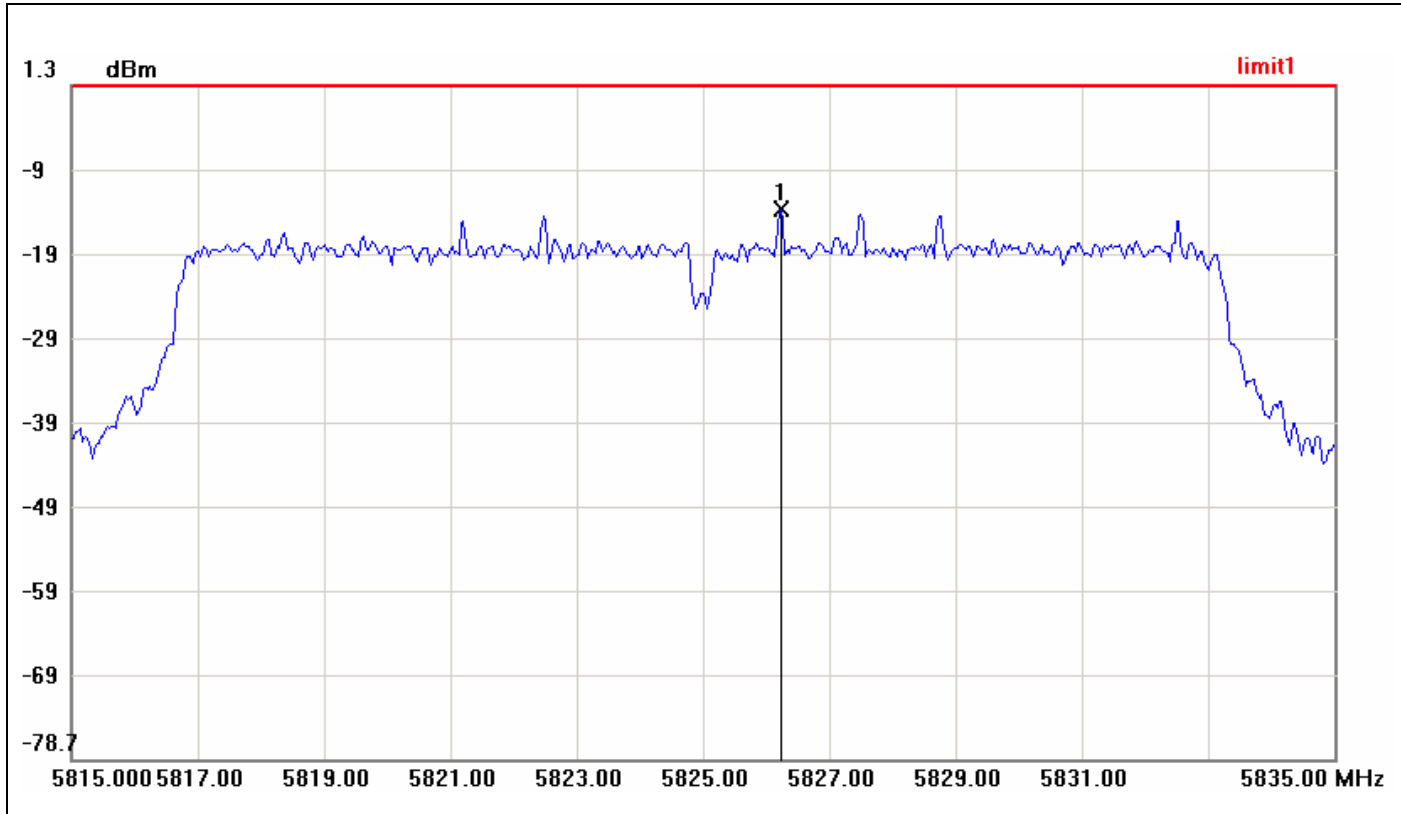
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5826.2333	-13.47	8.00	-21.47

IEEE 802.11n HT 20 MHz mode

PPSD (CH Low)
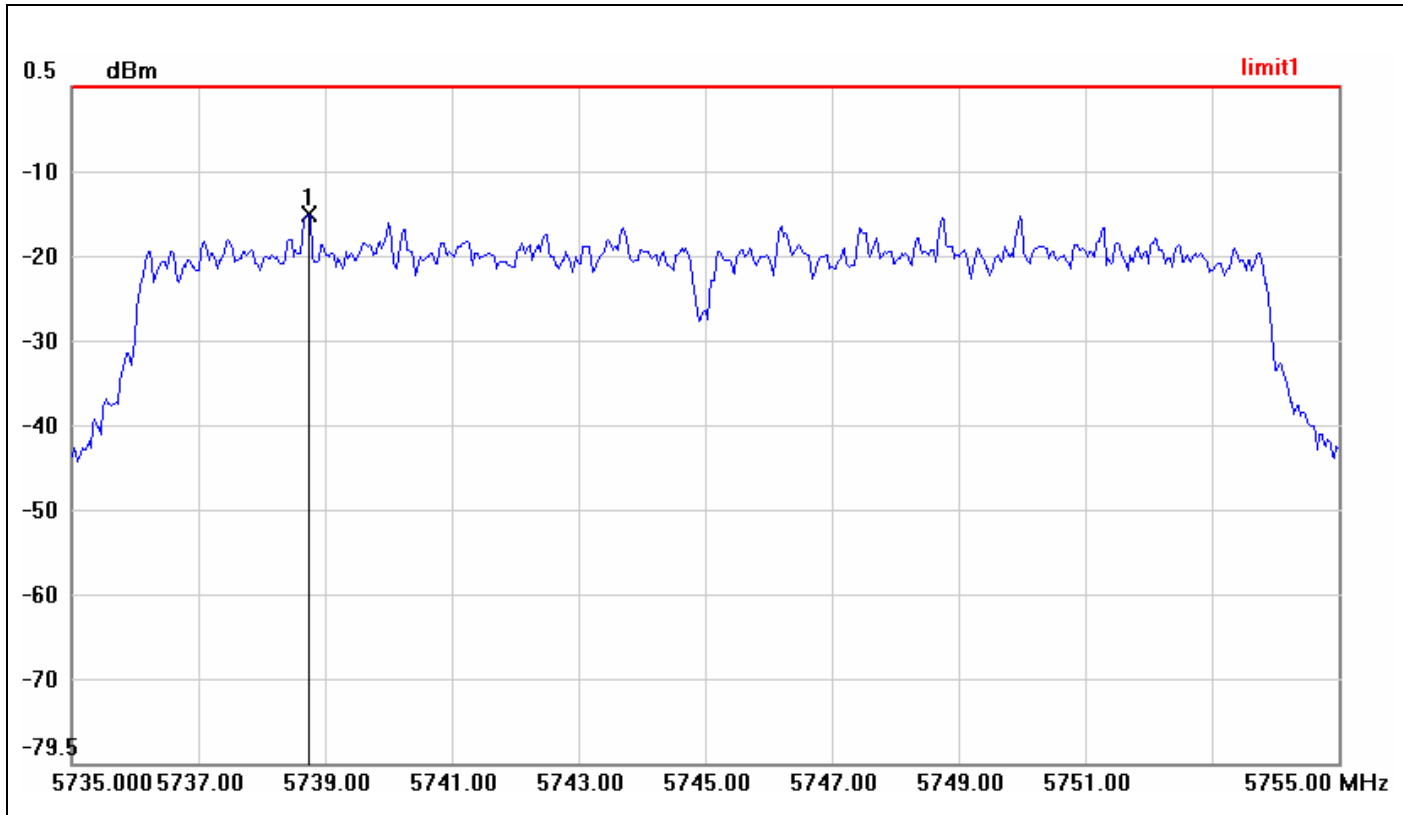
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5738.7333	-14.70	8	-22.70

PPSD (CH Mid)
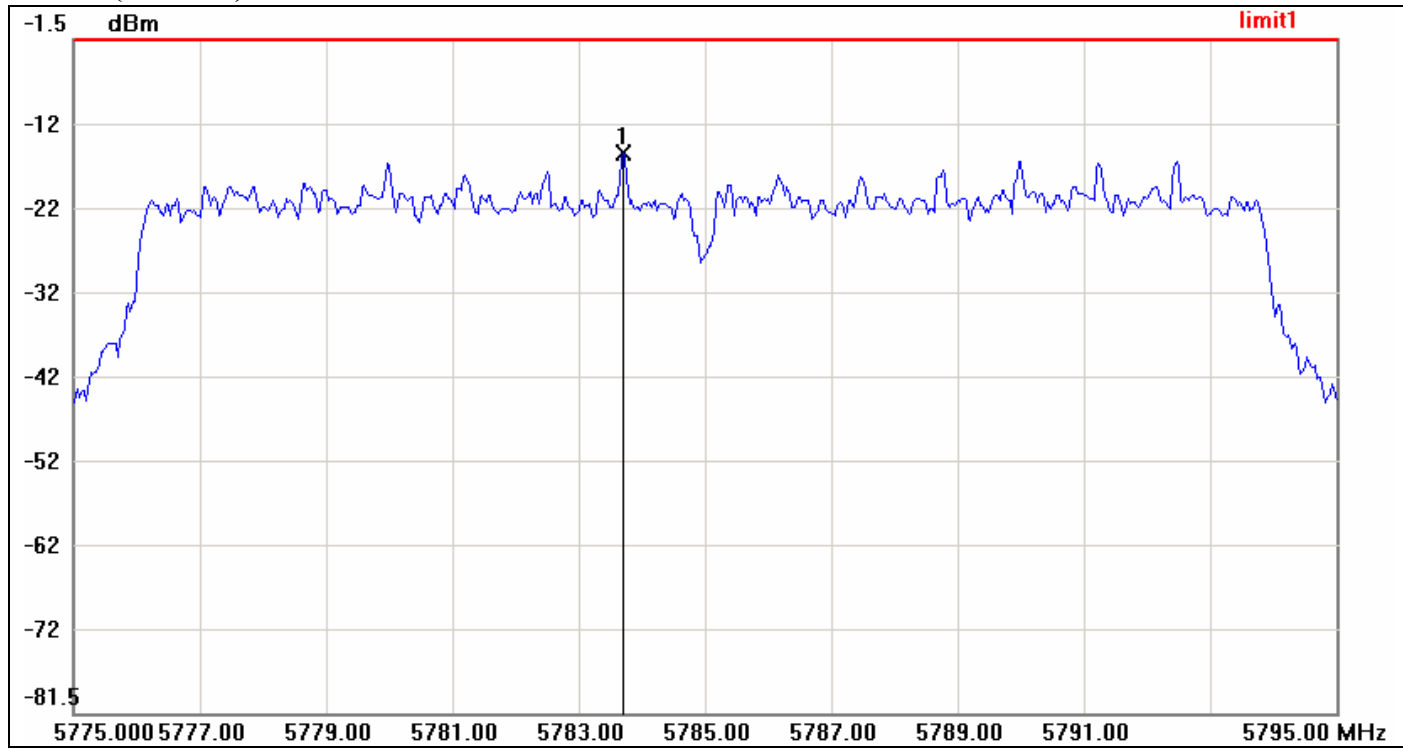
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5783.7000	-15.03	8.00	-23.03

PPSD (CH High)
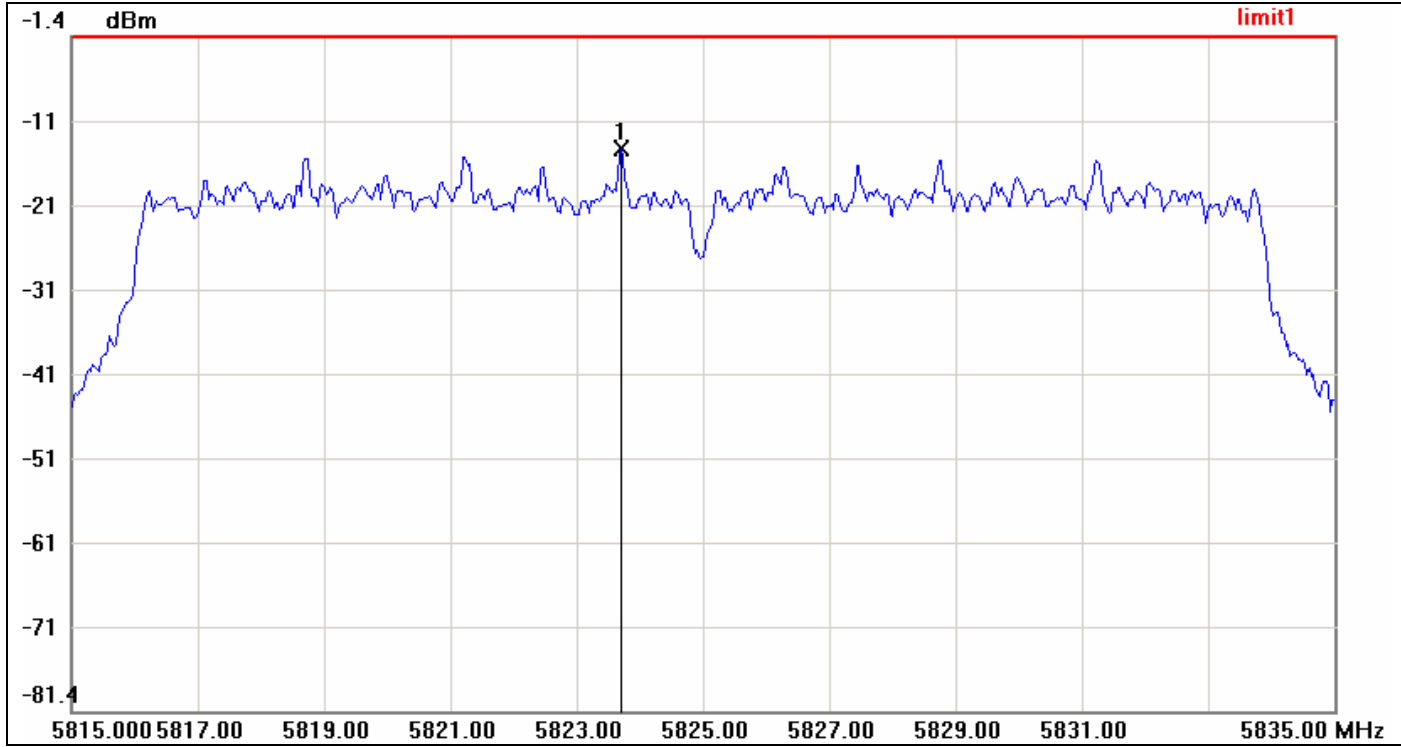
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5823.7000	-14.79	8.00	-22.79

IEEE 802.11n HT 40 MHz mode

PPSD (CH Low)
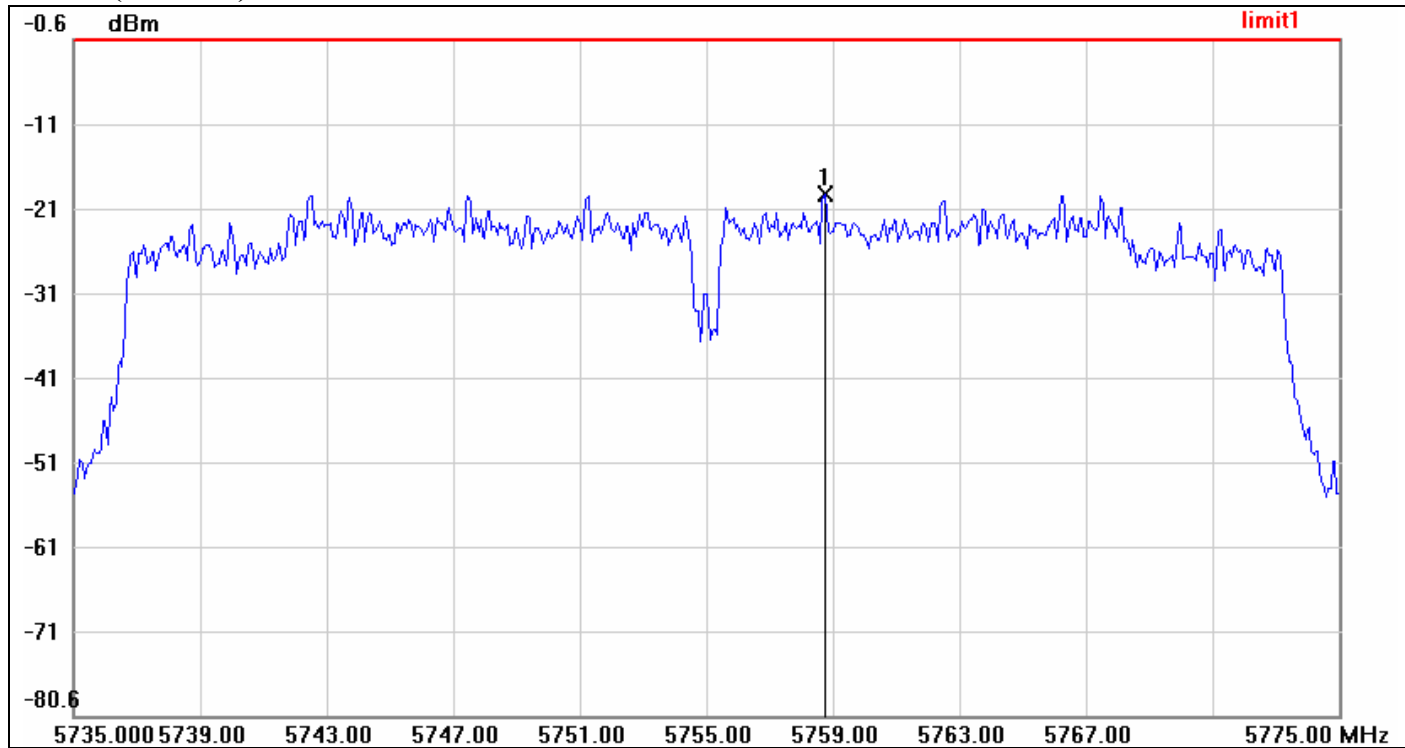
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5758.7333	-18.92	8	-26.92

PPSD (CH High)
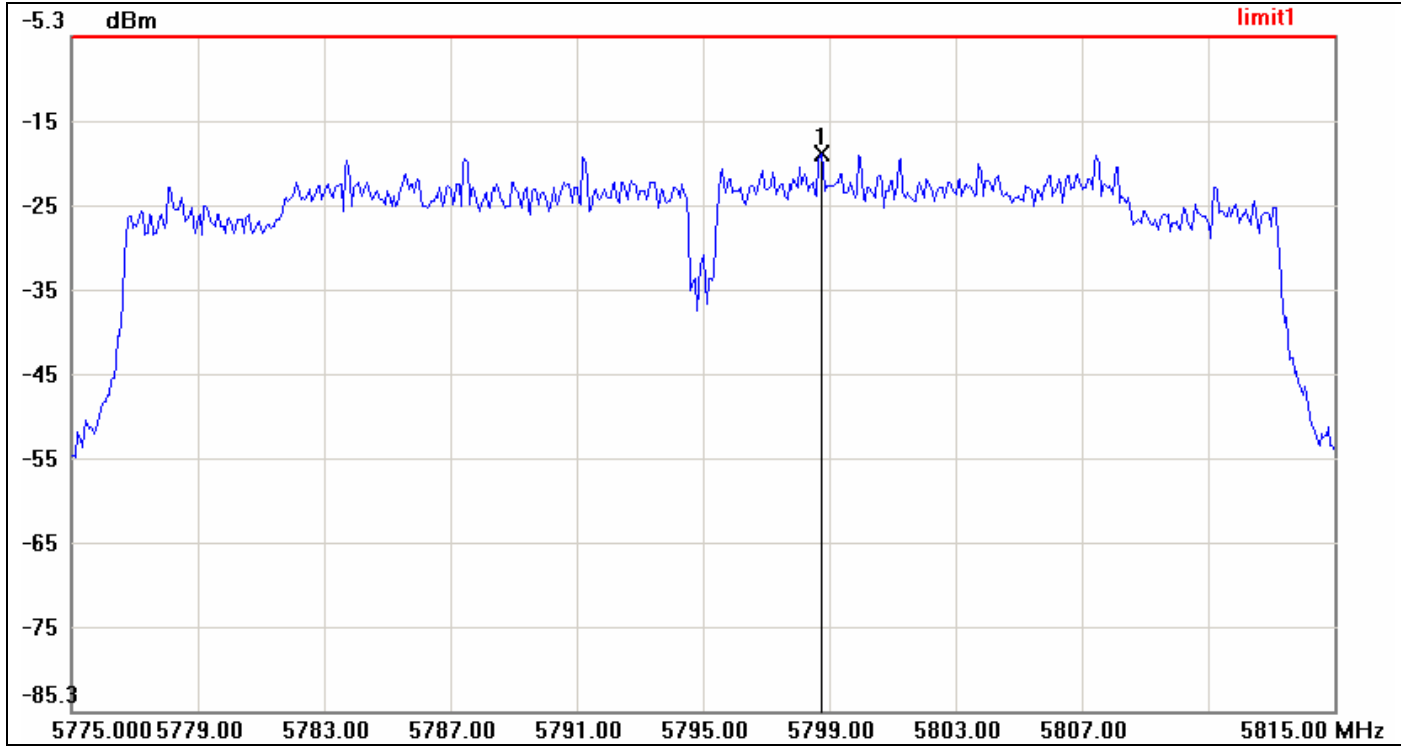
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5798.7333	-19.23	8.00	-27.23

7.7 SPURIOUS EMISSIONS

7.7.1 Conducted Measurement

LIMIT

According to §15.247(d) & RSS-210 §A8.5, in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in 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

```
┌──────────┐      ┌──────────┐
│          │      │ Spectrum │
│   EUT    │─────▶│ Analyzer │
│          │      │          │
└──────────┘      └──────────┘
```
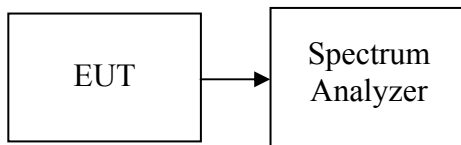
TEST PROCEDURE

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 for IEEE 802.11b/g, 30MHz to 40GHz range for IEEE 802.11a with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

No non-compliance noted

Test Plot

IEEE 802.11b mode

CH Low
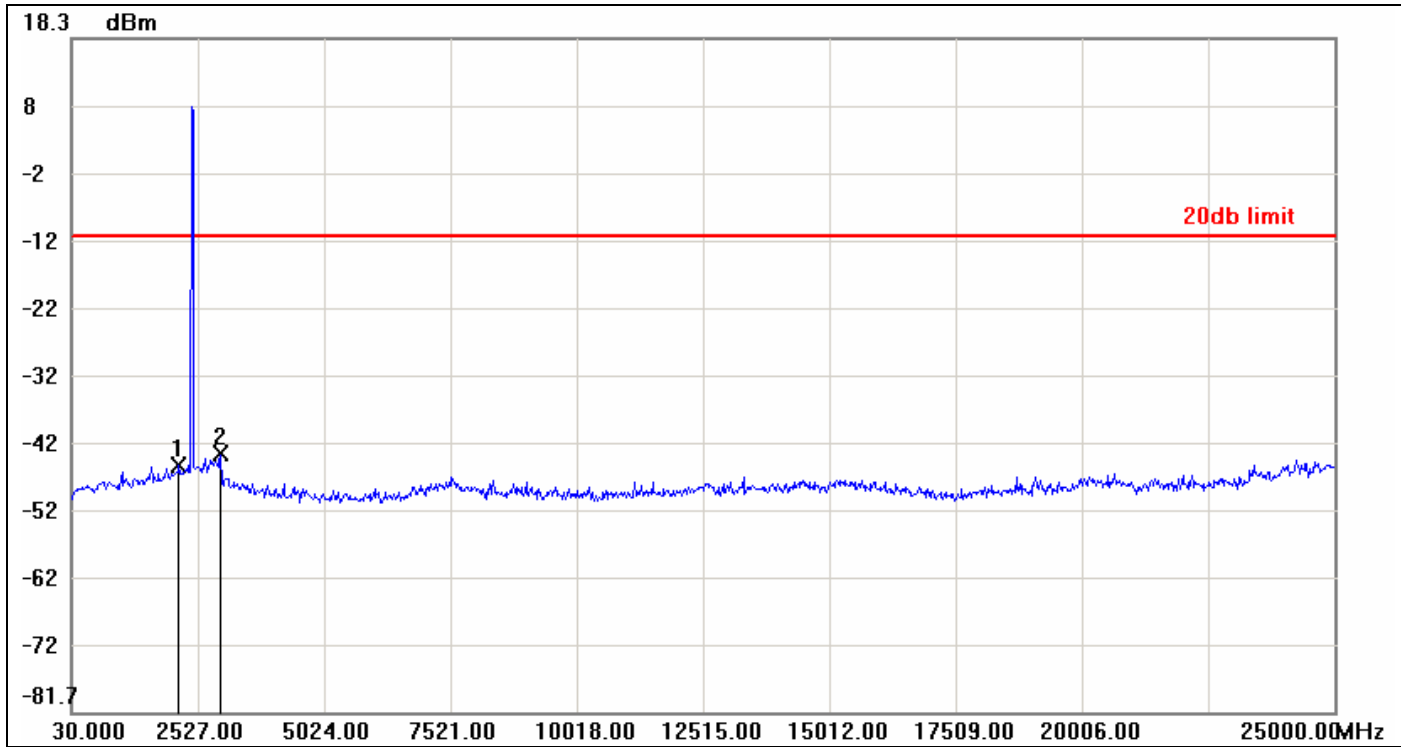
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2152.4500	-45.01	-10.96	-34.05
2	2976.4600	-43.46	-10.96	-32.50

CH Mid
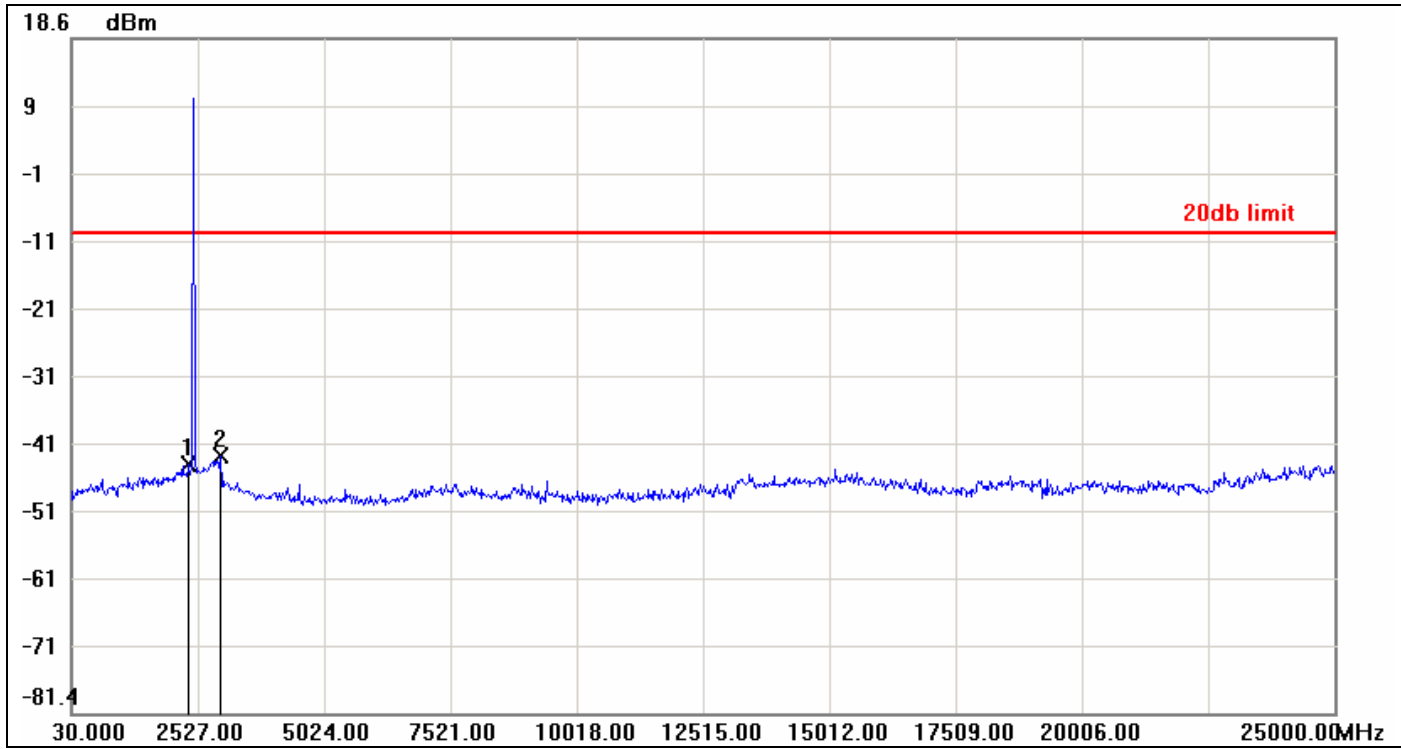
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2352.2100	-44.44	-10.34	-34.10
2	2976.4600	-43.36	-10.34	-33.02

CH High
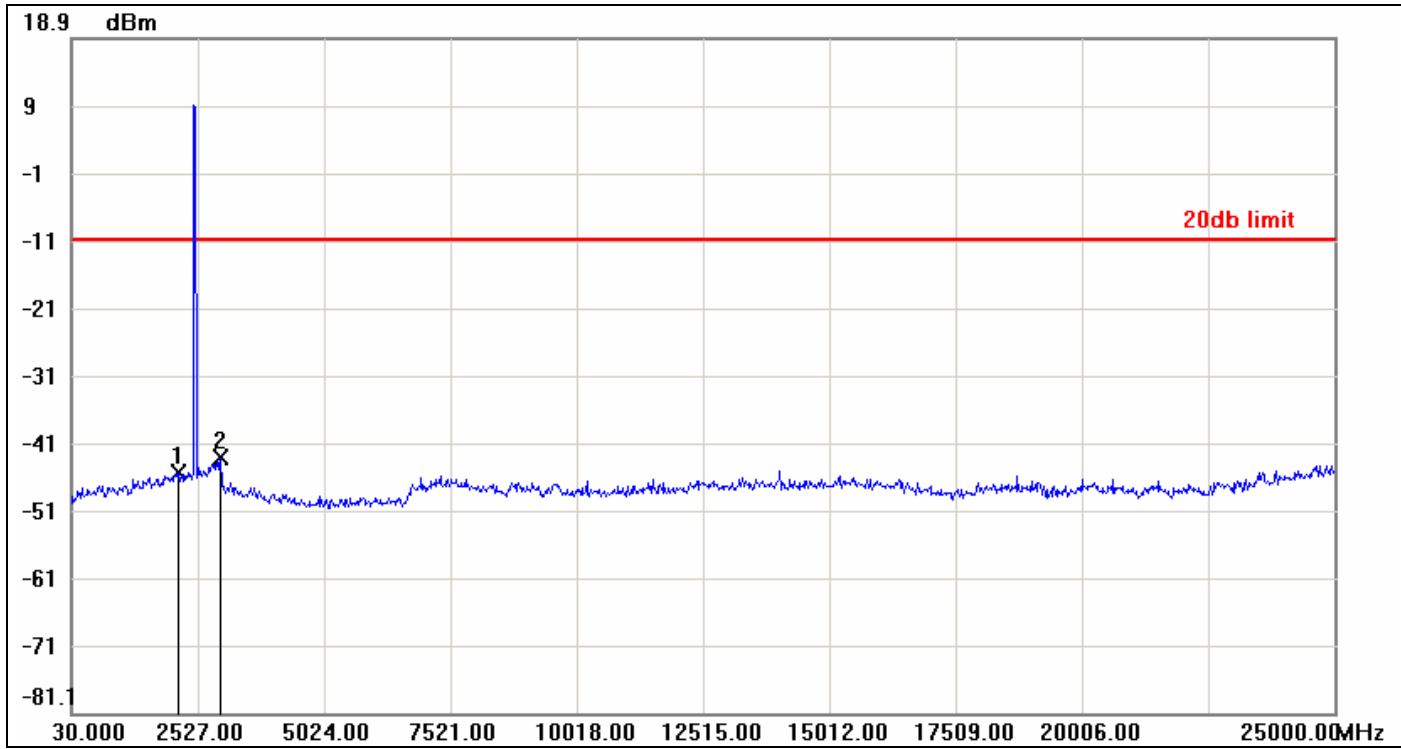
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2152.4500	-45.39	-10.96	-34.43
2	2976.4600	-43.24	-10.96	-32.28

IEEE 802.11g mode

CH Low
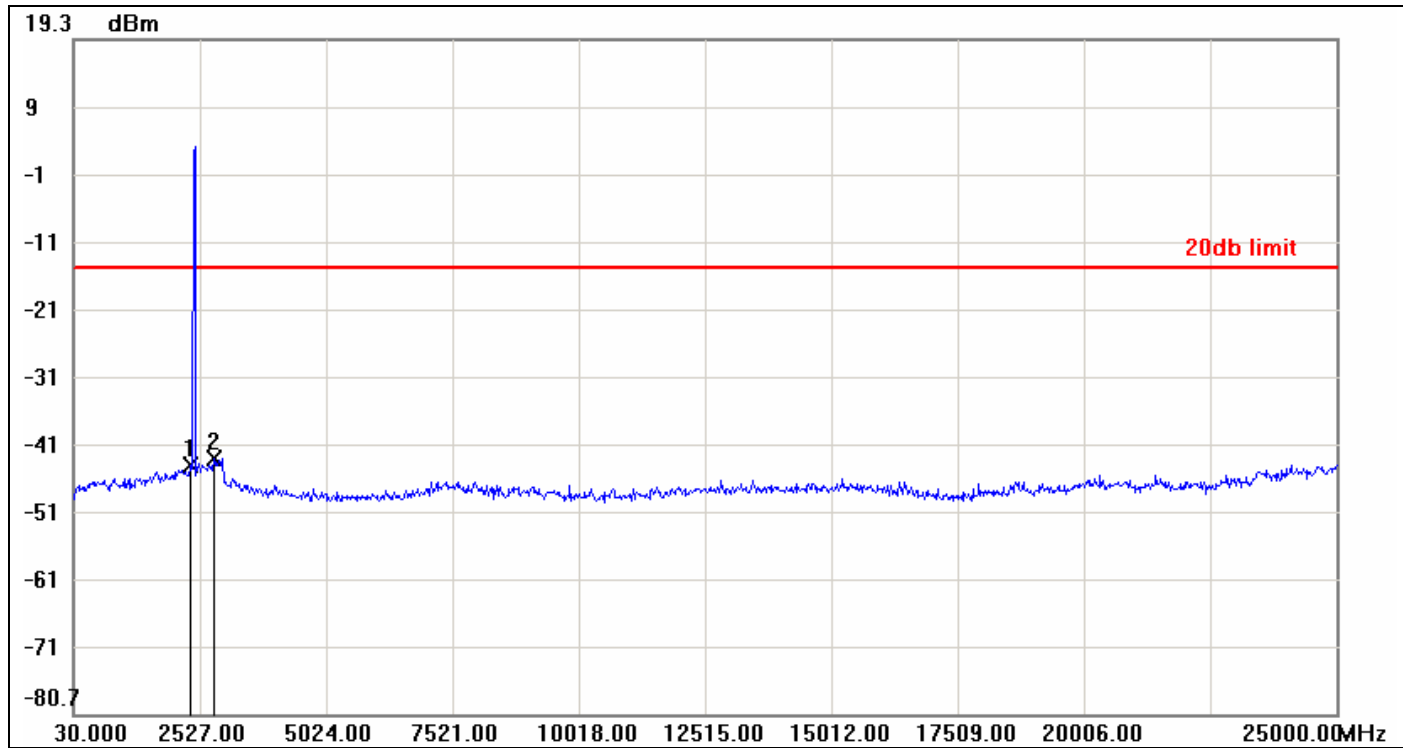
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2352.2100	-43.83	-14.49	-29.34
2	2801.6700	-42.84	-14.49	-28.35

CH Mid
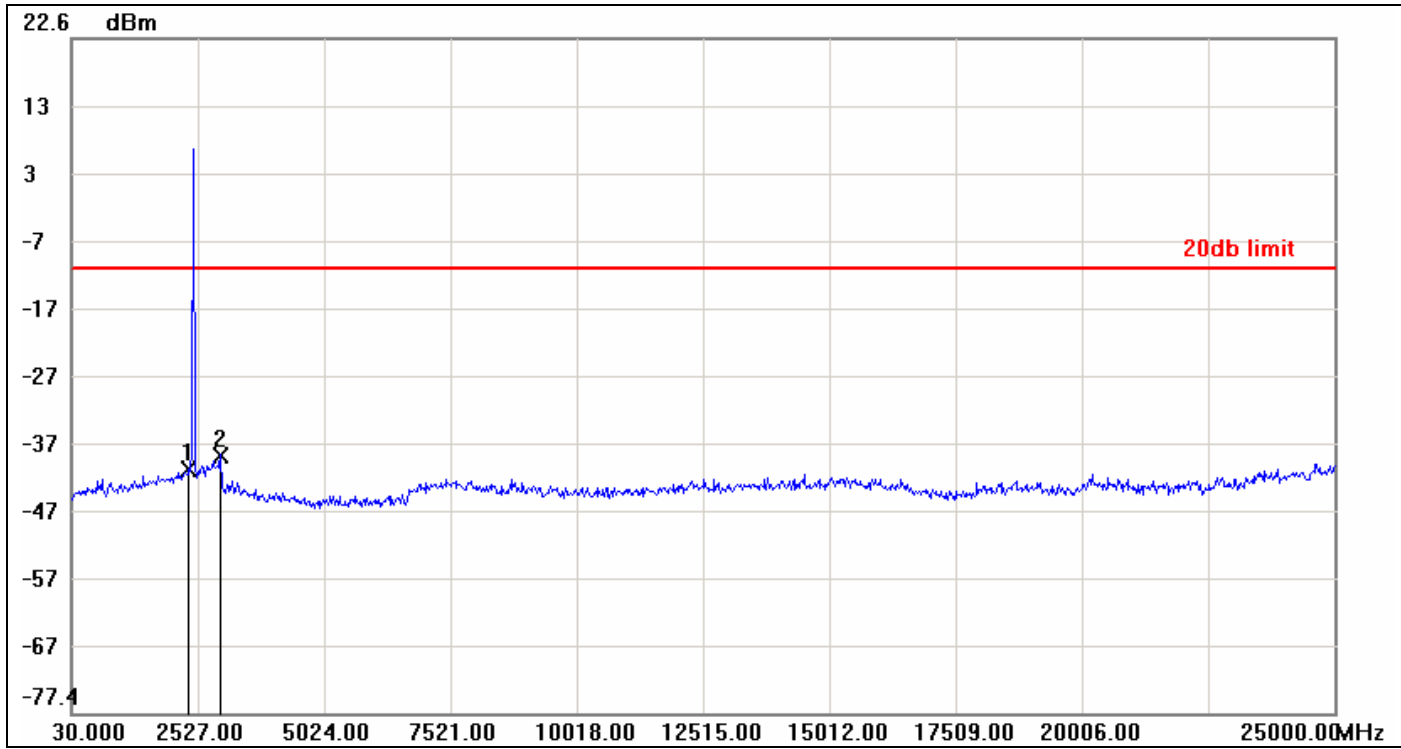
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2352.2100	-41.36	-11.44	-29.92
2	2976.4600	-39.13	-11.44	-27.69

CH High
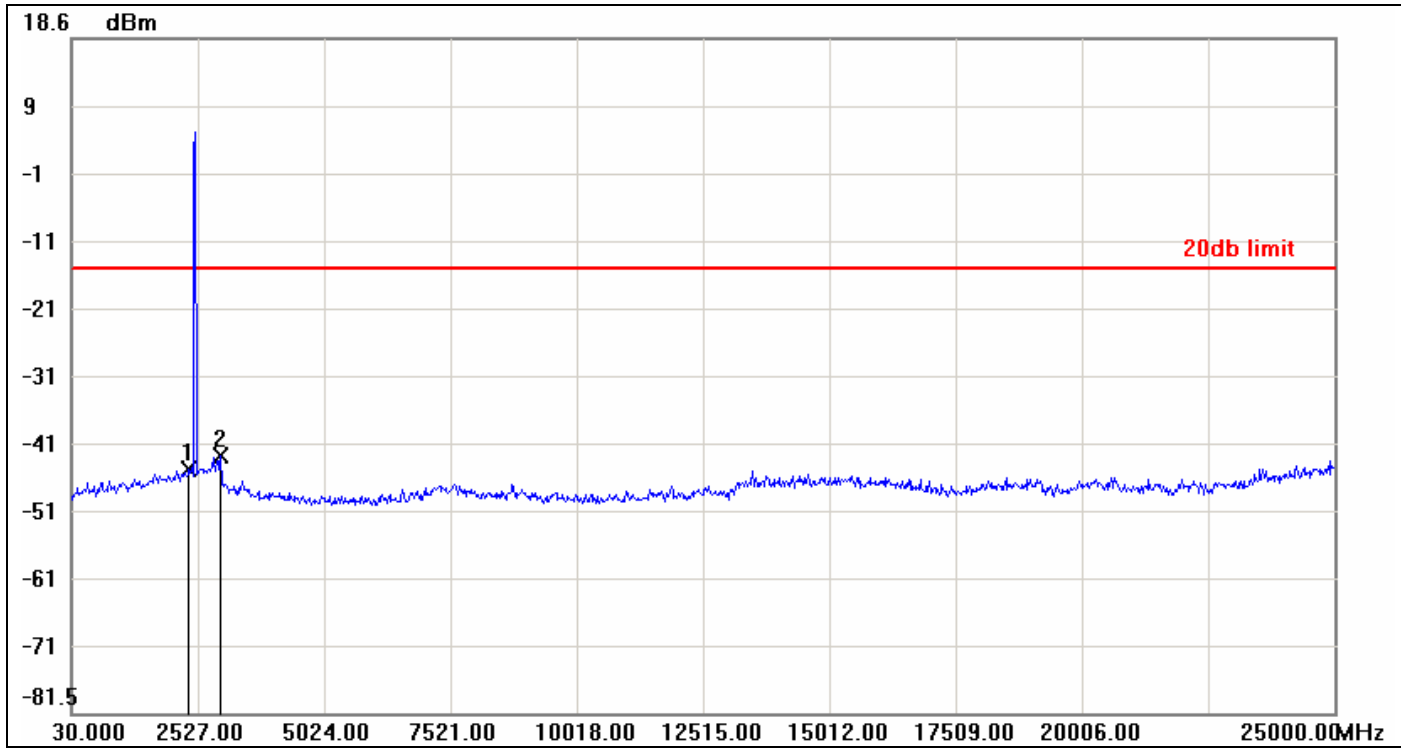
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2352.2100	-45.29	-15.60	-29.69
2	2976.4600	-43.30	-15.60	-27.70

IEEE 802.11n HT 20 MHz mode / Main Antenna

CH Low

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2377.1800	-45.94	-15.82	-30.12
2	2926.5200	-44.48	-15.82	-28.66

CH Mid

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2377.1800	-44.33	-14.46	-29.87
2	2826.6400	-42.07	-14.46	-27.61

CH High

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2352.2100	-46.22	-16.24	-29.98
2	2976.4600	-44.66	-16.24	-28.42

IEEE 802.11n HT 20 MHz mode / Aux Antenna

CH Low

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2377.1800	-45.94	-15.82	-30.12
2	2926.5200	-44.48	-15.82	-28.66

CH Mid

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2377.1800	-44.33	-14.46	-29.87
2	2826.6400	-42.07	-14.46	-27.61

CH High

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2352.2100	-46.22	-16.24	-29.98
2	2976.4600	-44.66	-16.24	-28.42

IEEE 802.11n HT 40 MHz mode / Main Antenna

CH Low

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2377.1800	-45.35	-22.84	-22.51
2	2976.4600	-52.07	-22.84	-29.23

CH Mid

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2377.1800	-48.18	-13.71	-34.47
2	2976.4600	-47.21	-13.71	-33.50

CH High

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2277.3000	-51.78	-22.19	-29.59
2	2502.0300	-44.60	-22.19	-22.41

IEEE 802.11n HT 40 MHz mode / Aux Antenna

CH Low

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2377.1800	-45.35	-22.84	-22.51
2	2976.4600	-52.07	-22.84	-29.23

CH Mid
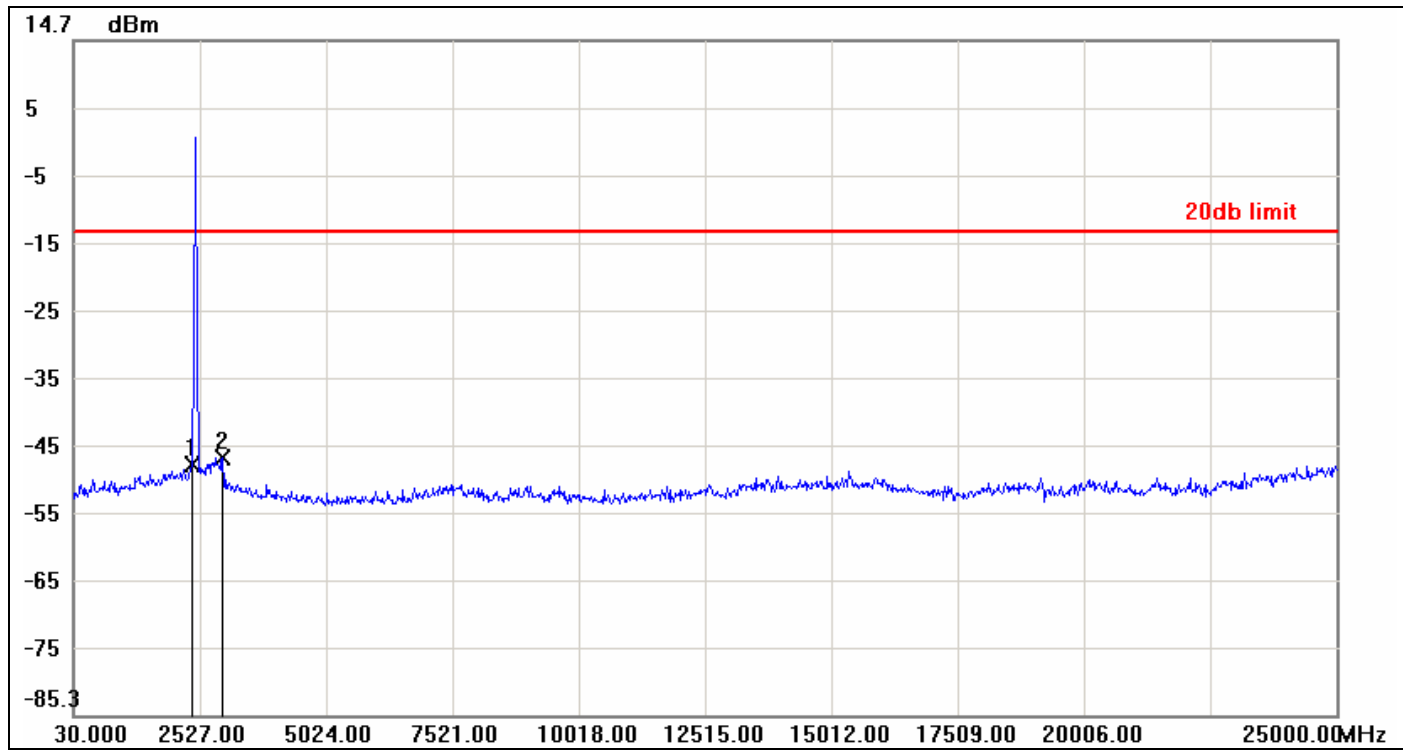
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2377.1800	-48.18	-13.71	-34.47
2	2976.4600	-47.21	-13.71	-33.50

CH High
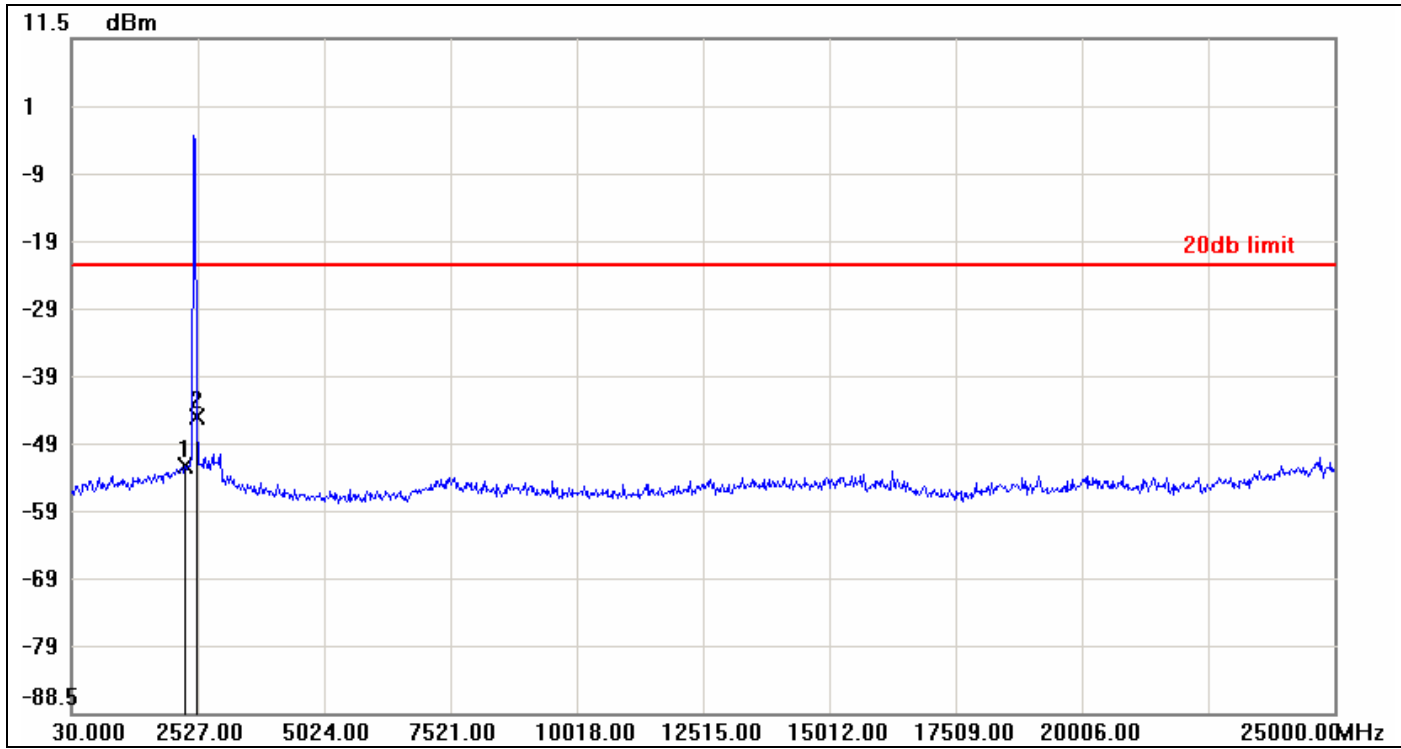
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	2277.3000	-51.78	-22.19	-29.59
2	2502.0300	-44.60	-22.19	-22.41

IEEE 802.11a mode

CH Low
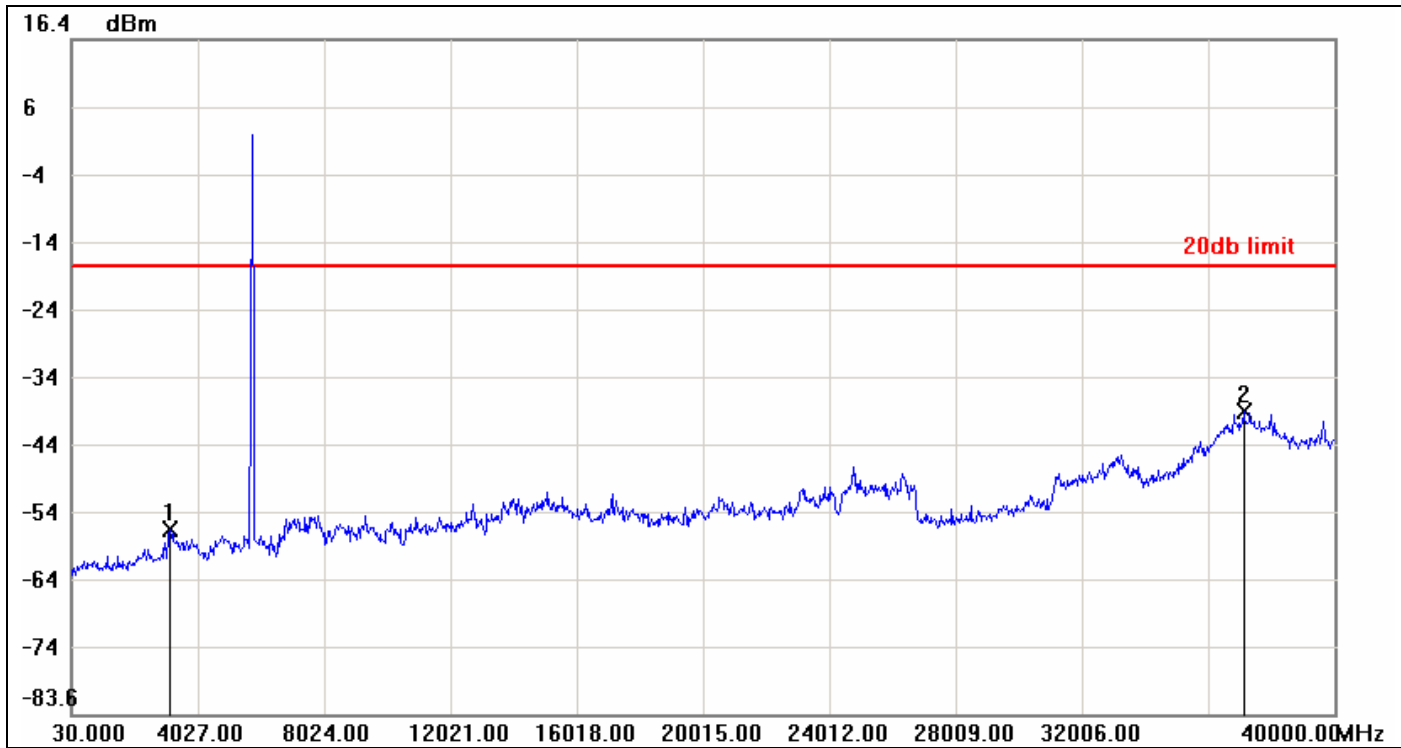
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	3147.6600	-56.31	-17.18	-39.13
2	37122.1600	-38.74	-17.18	-21.56

CH Mid
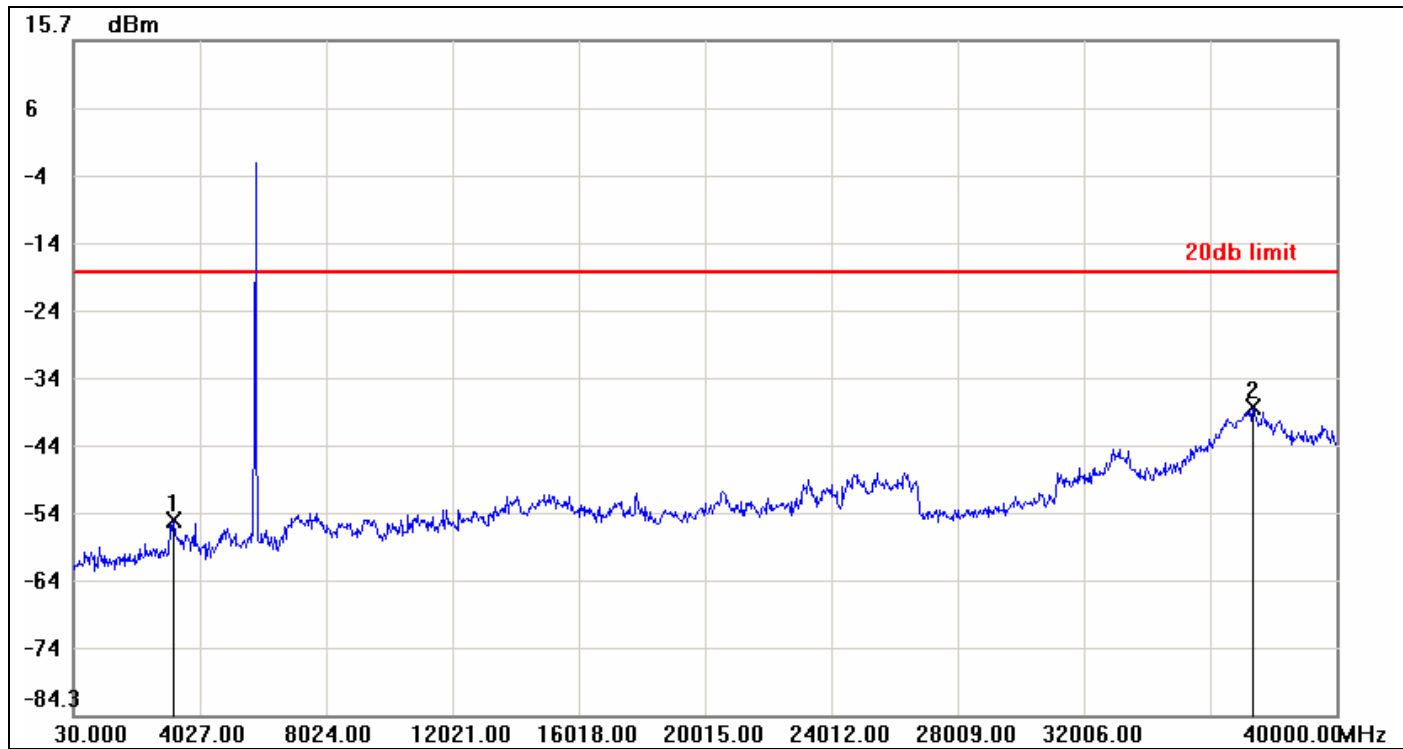
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	3187.6300	-55.50	-18.79	-36.71
2	37361.9800	-38.57	-18.79	-19.78

CH High
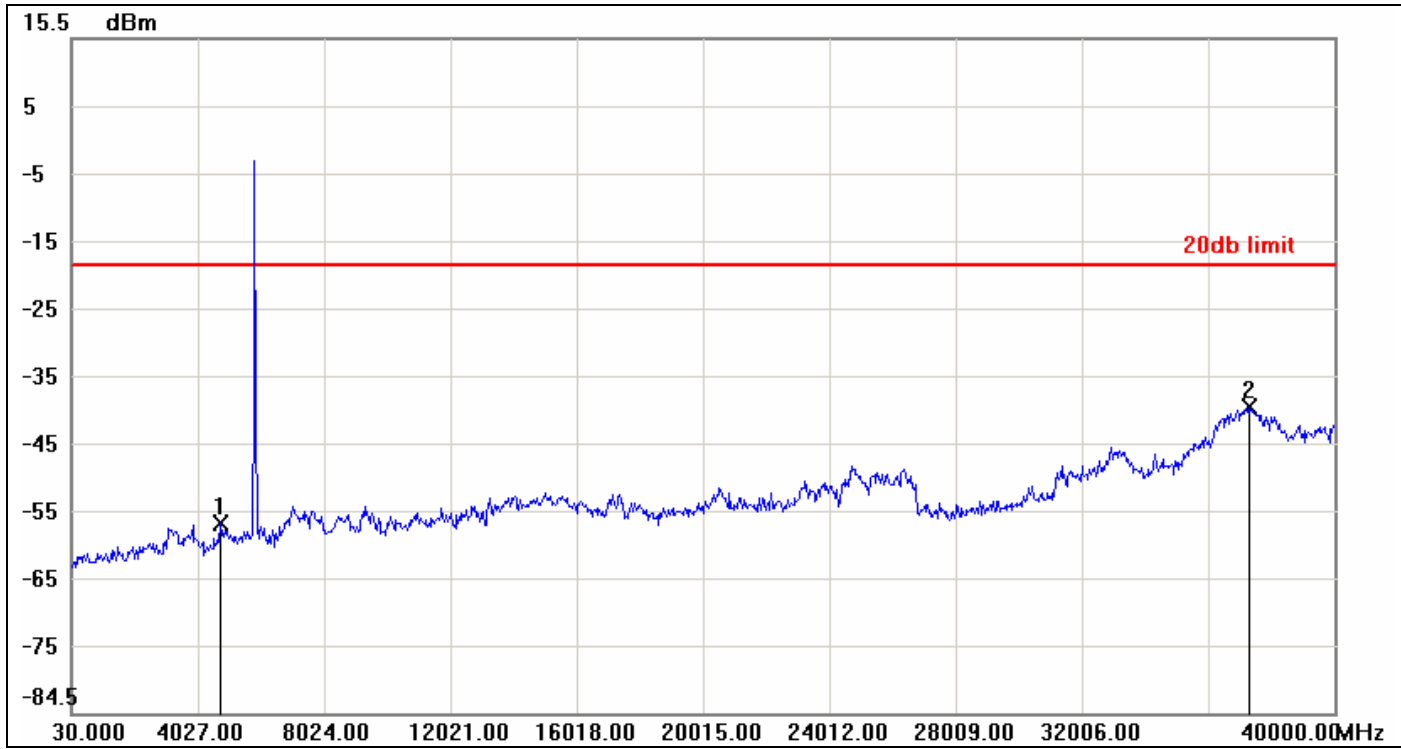
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	4746.4600	-56.50	-18.17	-38.33
2	37322.0100	-39.13	-18.17	-20.96

IEEE 802.11n HT 20 MHz mode

CH Low
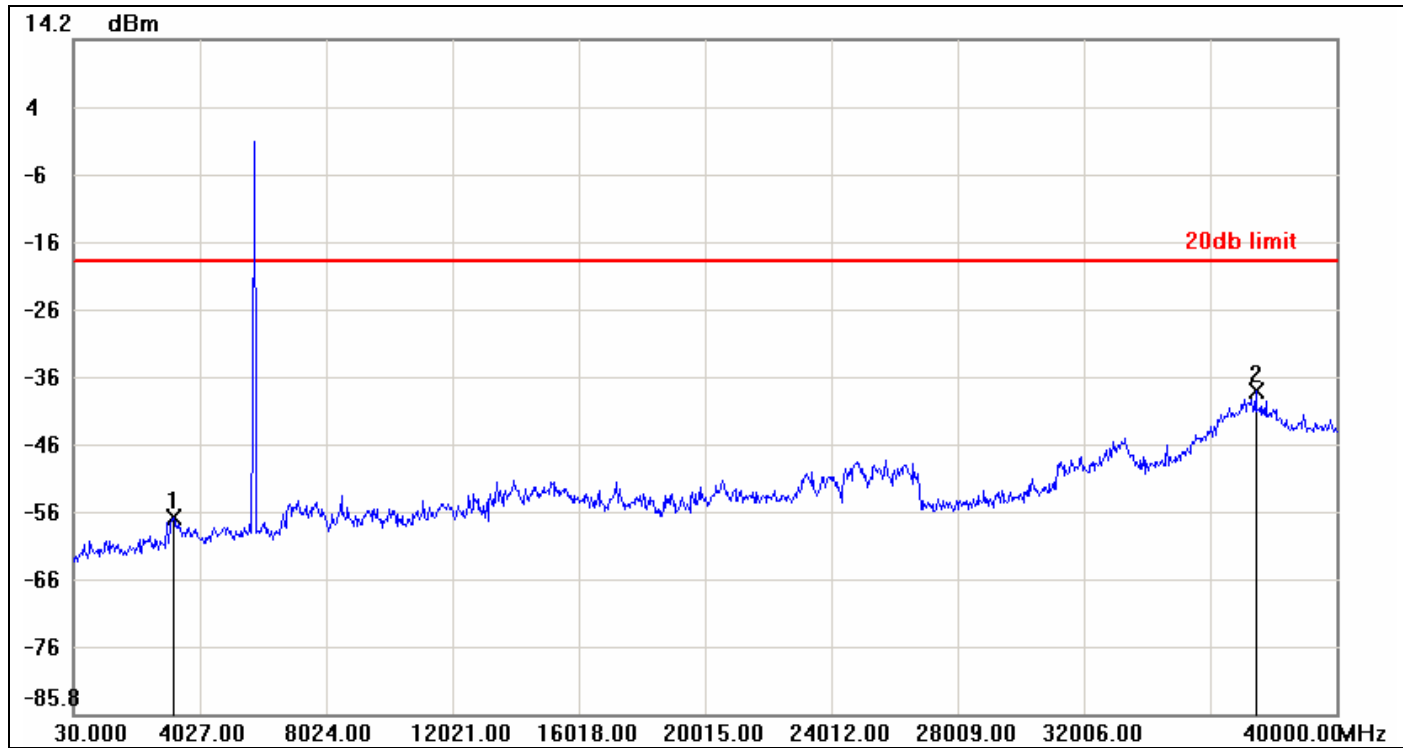
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	3187.6300	-56.70	-18.69	-38.01
2	37441.9200	-37.84	-18.69	-19.15

CH Mid

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	3107.6900	-55.80	-20.08	-35.72
2	37242.0700	-38.53	-20.08	-18.45

CH High
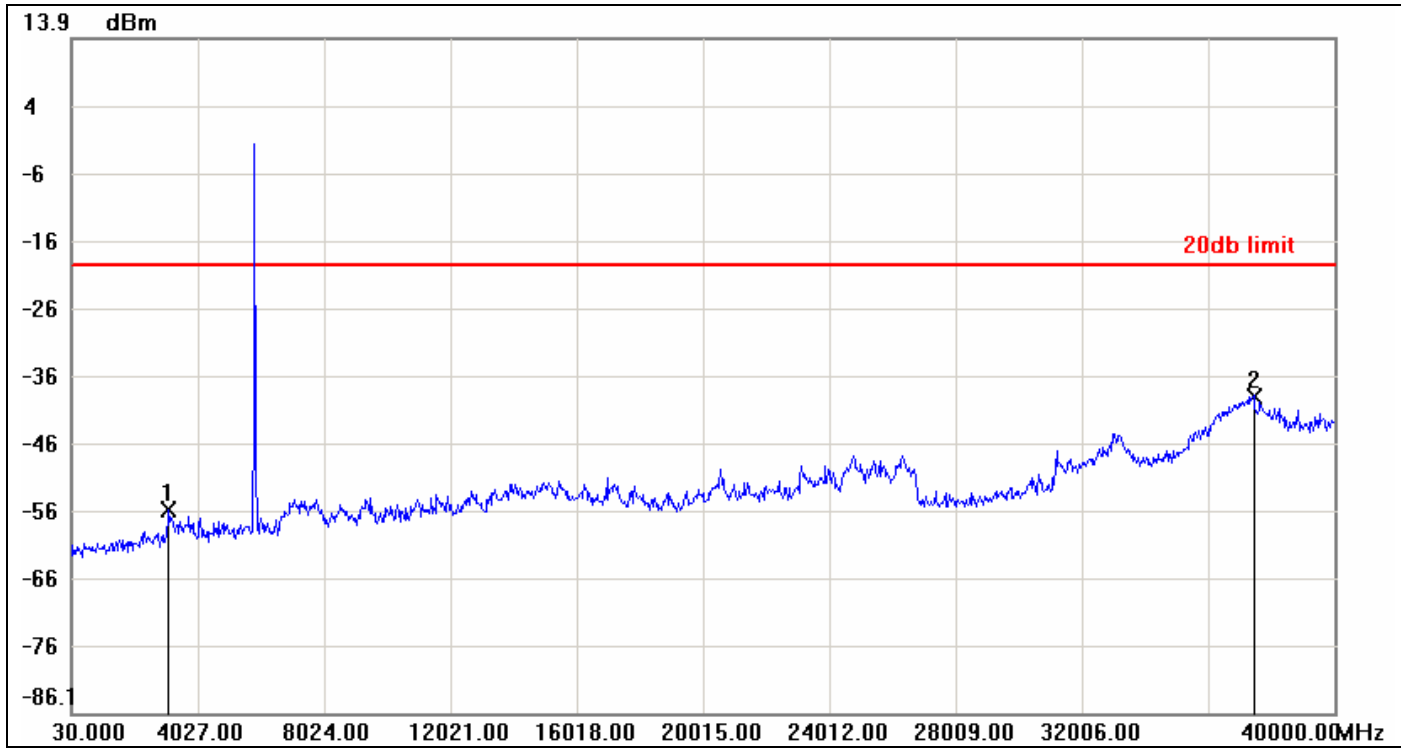
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	3107.6900	-55.97	-19.66	-36.31
2	37441.9200	-39.11	-19.66	-19.45

IEEE 802.11n HT 40 MHz mode

CH Low
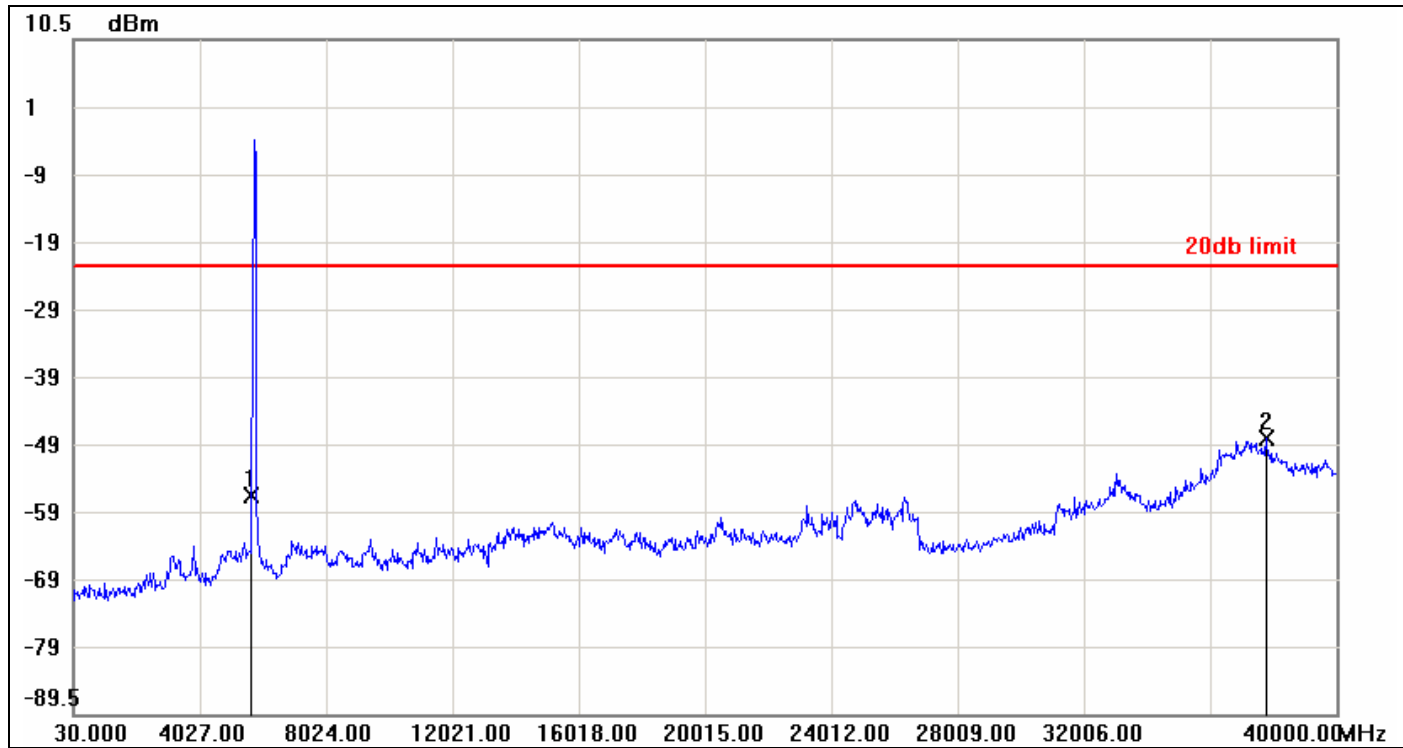
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5665.7700	-57.06	-23.18	-33.88
2	37761.6800	-48.49	-23.18	-25.31

CH High

No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	3867.1200	-61.58	-23.78	-37.80
2	37122.1600	-48.86	-23.78	-25.08

7.7.2 Radiated Emissions

<u>LIMIT</u>

1. 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 (µV/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 above emission table, the tighter limit applies at the band edges.

Frequency (MHz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

9kHz ~ 30MHz
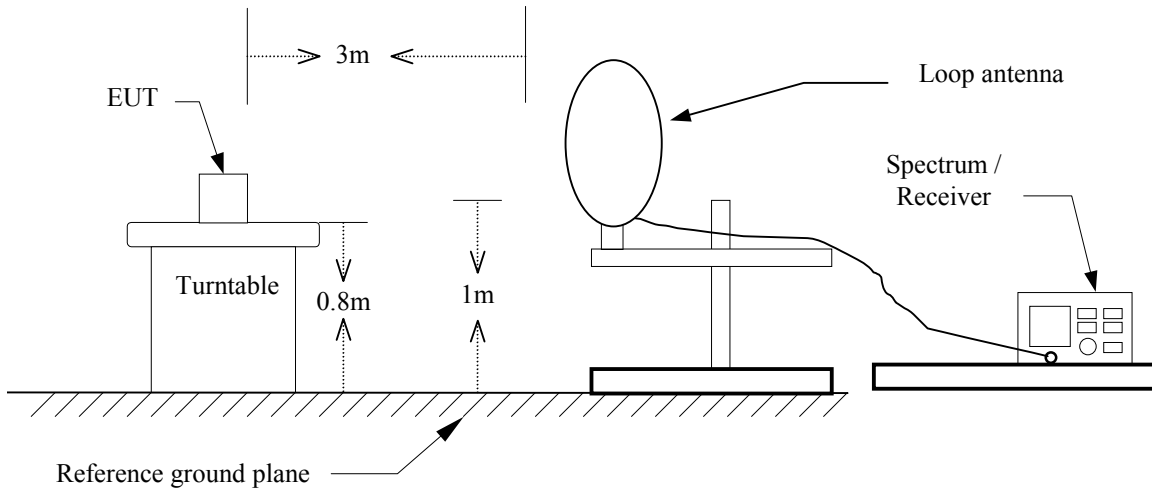
30MHz ~ 1 GHz
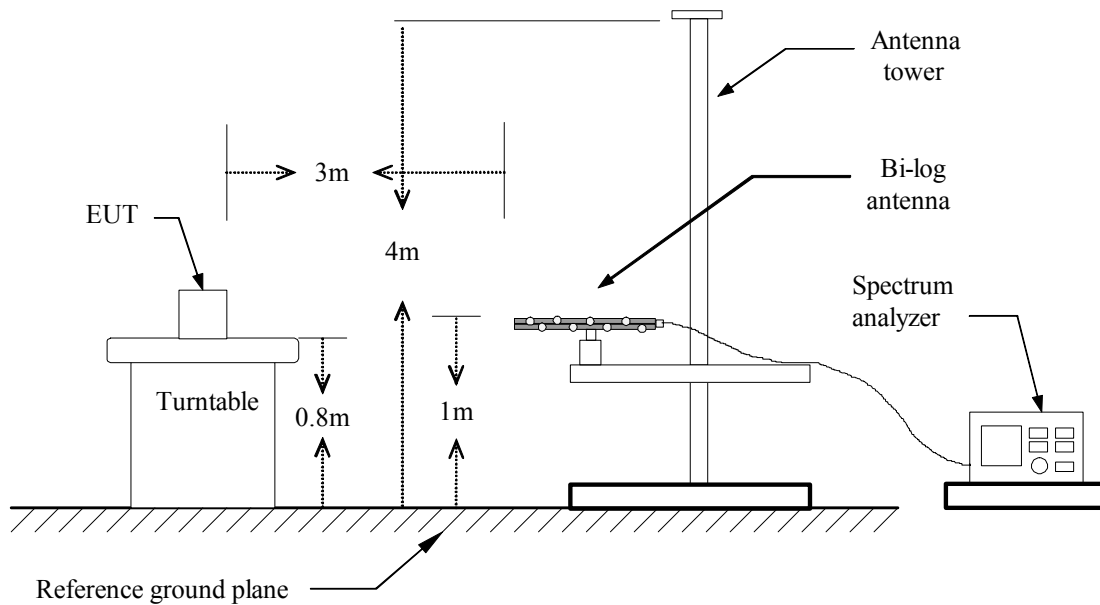
Above 1 GHz
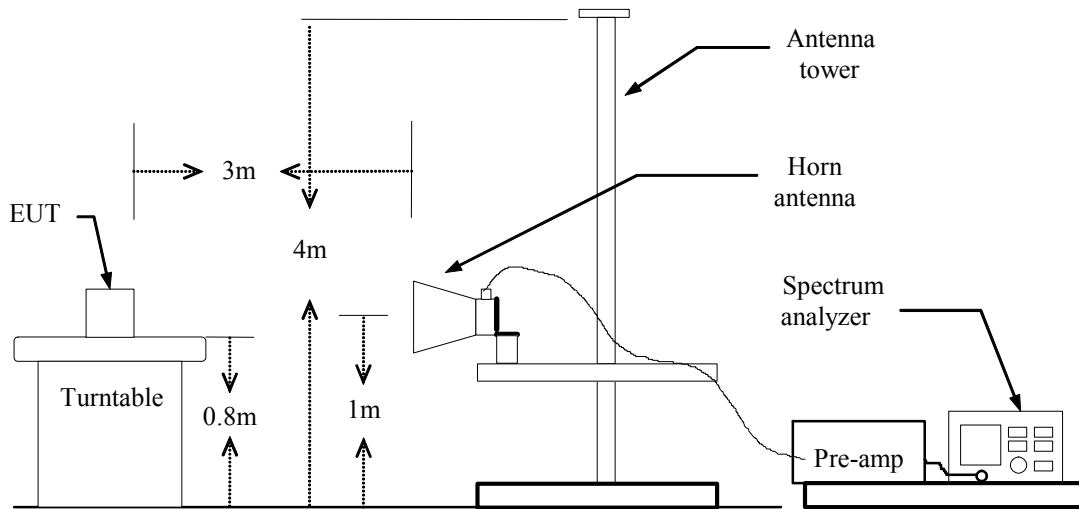
TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

6. Set the spectrum analyzer in the following setting as:

    Below 1GHz:

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

    Above 1GHz:

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

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

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

Below 1 GHz

Operation Mode:	Normal Link	**Test Date:**	August 1, 2012
Temperature:	28°C	**Tested by:**	Waternil Guan
Humidity:	62 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
36.79	48.50	-10.64	37.86	40.00	-2.14	QP	V
150.28	52.60	-13.73	38.87	43.50	-4.63	Peak	V
348.16	54.52	-10.49	44.03	46.00	-1.97	Peak	V
474.26	50.12	-8.22	41.90	46.00	-4.10	QP	V
497.54	50.12	-7.74	42.38	46.00	-3.62	QP	V
928.22	40.84	-1.20	39.65	46.00	-6.35	Peak	V
125.06	47.91	-13.27	34.64	43.50	-8.86	Peak	H
350.10	54.26	-10.46	42.80	46.00	-2.20	QP	H
450.01	48.06	-8.72	39.34	46.00	-6.66	Peak	H
494.63	48.19	-7.80	40.39	46.00	-5.61	Peak	H
666.32	46.45	-5.26	41.18	46.00	-4.82	Peak	H
928.22	42.29	-1.20	41.10	46.00	-4.90	Peak	H

Remark:

1. *Measuring frequencies from 30 MHz to the 1GHz.*

2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*

3. *Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.*

4. *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) – Quasi-peak limit (dBuV/m).*

Above 1 GHz

Operation Mode: Tx / IEEE 802.11b mode / CH Low **Test Date:** July 28, 2012

Temperature: 27°C **Tested by:** Alan Wu

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

Frequency (MHz)	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	Ant. Pol. (H/V)
1076.00	51.47	---	-3.73	47.73	---	74.00	54.00	-6.27	Peak	V
1328.00	61.24	45.19	-2.85	58.39	42.34	74.00	54.00	-11.66	AVG	V
2022.00	50.53	---	2.32	52.85	---	74.00	54.00	-1.15	Peak	V
3225.00	40.80	---	5.46	46.26	---	74.00	54.00	-7.74	Peak	V
4860.00	38.55	---	9.32	47.87	---	74.00	54.00	-6.13	Peak	V
6705.00	38.06	---	12.82	50.88	---	74.00	54.00	-3.12	Peak	V
1138.00	50.49	---	-3.52	46.97	---	74.00	54.00	-7.03	Peak	H
1328.00	50.56	---	-2.85	47.71	---	74.00	54.00	-6.29	Peak	H
1656.00	50.33	---	-0.85	49.48	---	74.00	54.00	-4.52	Peak	H
3135.00	41.83	---	5.28	47.11	---	74.00	54.00	-6.89	Peak	H
4965.00	39.22	---	9.60	48.82	---	74.00	54.00	-5.18	Peak	H
6645.00	38.61	---	12.76	51.37	---	74.00	54.00	-2.63	Peak	H

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 mode / CH Mid   **Test Date:** July 28, 2012

Temperature: 27°C   **Tested by:** Alan Wu

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

Frequency (MHz)	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	Ant. Pol. (H/V)
1058.00	51.32	---	-3.80	47.52	---	74.00	54.00	-6.48	Peak	V
1590.00	50.19	---	-1.44	48.75	---	74.00	54.00	-5.25	Peak	V
2482.00	56.08	40.47	3.89	59.97	44.36	74.00	54.00	-9.64	AVG	V
3180.00	40.89	---	5.37	46.26	---	74.00	54.00	-7.74	Peak	V
4935.00	39.01	---	9.52	48.53	---	74.00	54.00	-5.47	Peak	V
6780.00	38.95	---	12.90	51.85	---	74.00	54.00	-2.15	Peak	V
1108.00	51.44	---	-3.62	47.82	---	74.00	54.00	-6.18	Peak	H
1290.00	50.93	---	-2.98	47.95	---	74.00	54.00	-6.05	Peak	H
1836.00	48.84	---	0.77	49.62	---	74.00	54.00	-4.38	Peak	H
3210.00	41.05	---	5.43	46.48	---	74.00	54.00	-7.52	Peak	H
4920.00	39.49	---	9.48	48.97	---	74.00	54.00	-5.03	Peak	H
7170.00	38.35	---	13.24	51.58	---	74.00	54.00	-2.42	Peak	H

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 mode / CH High   **Test Date:**   July 28, 2012

Temperature: 27°C   **Tested by:**   Alan Wu

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

Frequency (MHz)	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	Ant. Pol. (H/V)
1030.00	51.73	---	-3.89	47.84	---	74.00	54.00	-6.16	Peak	V
1332.00	55.52	---	-2.84	52.68	---	74.00	54.00	-1.32	Peak	V
1868.00	51.11	---	1.06	52.17	---	74.00	54.00	-1.83	Peak	V
3480.00	41.03	---	5.98	47.01	---	74.00	54.00	-6.99	Peak	V
4920.00	40.05	---	9.48	49.53	---	74.00	54.00	-4.47	Peak	V
6450.00	38.78	---	12.51	51.29	---	74.00	54.00	-2.71	Peak	V
1122.00	51.18	---	-3.57	47.60	---	74.00	54.00	-6.40	Peak	H
1554.00	50.42	---	-1.76	48.66	---	74.00	54.00	-5.34	Peak	H
1836.00	50.22	---	0.77	51.00	---	74.00	54.00	-3.00	Peak	H
3390.00	40.82	---	5.80	46.62	---	74.00	54.00	-7.38	Peak	H
4950.00	39.44	---	9.56	49.00	---	74.00	54.00	-5.00	Peak	H
5910.00	39.09	---	11.36	50.45	---	74.00	54.00	-3.55	Peak	H

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 mode / CH Low   **Test Date:** July 28, 2012

Temperature: 27°C   **Tested by:** Alan Wu

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

Frequency (MHz)	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	Ant. Pol. (H/V)
1040.00	51.56	---	-3.86	47.70	---	74.00	54.00	-6.30	Peak	V
1646.00	50.76	---	-0.94	49.82	---	74.00	54.00	-4.18	Peak	V
1964.00	49.75	---	1.93	51.68	---	74.00	54.00	-2.32	Peak	V
3870.00	39.84	---	6.88	46.72	---	74.00	54.00	-7.28	Peak	V
4965.00	38.86	---	9.60	48.46	---	74.00	54.00	-5.54	Peak	V
6465.00	38.33	---	12.54	50.86	---	74.00	54.00	-3.14	Peak	V
1044.00	50.99	---	-3.85	47.14	---	74.00	54.00	-6.86	Peak	H
1360.00	50.95	---	-2.74	48.21	---	74.00	54.00	-5.79	Peak	H
1682.00	50.23	---	-0.61	49.61	---	74.00	54.00	-4.39	Peak	H
1890.00	50.06	---	1.26	51.32	---	74.00	54.00	-2.68	Peak	H
4905.00	39.44	---	9.44	48.88	---	74.00	54.00	-5.12	Peak	H
6585.00	38.48	---	12.70	51.17	---	74.00	54.00	-2.83	Peak	H

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 mode / CH Mid   **Test Date:** July 28, 2012

Temperature: 27°C   **Tested by:** Alan Wu

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

Frequency (MHz)	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	Ant. Pol. (H/V)
1094.00	50.65	---	-3.67	46.98	---	74.00	54.00	-7.02	Peak	V
1332.00	61.45	46.87	-2.84	58.61	44.03	74.00	54.00	-9.97	AVG	V
1852.00	50.23	---	0.92	51.15	---	74.00	54.00	-2.85	Peak	V
3420.00	41.26	---	5.86	47.12	---	74.00	54.00	-6.88	Peak	V
4875.00	39.22	---	9.36	48.58	---	74.00	54.00	-5.42	Peak	V
7080.00	38.56	---	13.17	51.74	---	74.00	54.00	-2.26	Peak	V
1090.00	50.46	---	-3.68	46.78	---	74.00	54.00	-7.22	Peak	H
1530.00	50.51	---	-1.98	48.53	---	74.00	54.00	-5.47	Peak	H
1802.00	49.39	---	0.47	49.86	---	74.00	54.00	-4.14	Peak	H
3675.00	40.11	---	6.43	46.54	---	74.00	54.00	-7.46	Peak	H
4950.00	39.93	---	9.56	49.49	---	74.00	54.00	-4.51	Peak	H
6450.00	38.26	---	12.51	50.77	---	74.00	54.00	-3.23	Peak	H

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 mode / CH High   **Test Date:** July 28, 2012

Temperature: 27°C   **Tested by:** Alan Wu

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

Frequency (MHz)	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	Ant. Pol. (H/V)
1140.00	51.13	---	-3.51	47.62	---	74.00	54.00	-6.38	Peak	V
1582.00	52.58	---	-1.51	51.07	---	74.00	54.00	-2.93	Peak	V
1948.00	49.89	---	1.78	51.67	---	74.00	54.00	-2.33	Peak	V
3225.00	42.39	---	5.46	47.85	---	74.00	54.00	-6.15	Peak	V
4920.00	40.09	---	9.48	49.57	---	74.00	54.00	-4.43	Peak	V
6540.00	38.86	---	12.65	51.51	---	74.00	54.00	-2.49	Peak	V
1108.00	51.02	---	-3.62	47.40	---	74.00	54.00	-6.60	Peak	H
1562.00	51.48	---	-1.69	49.79	---	74.00	54.00	-4.21	Peak	H
1870.00	50.56	---	1.08	51.64	---	74.00	54.00	-2.36	Peak	H
3420.00	40.33	---	5.86	46.19	---	74.00	54.00	-7.81	Peak	H
4965.00	39.10	---	9.60	48.70	---	74.00	54.00	-5.30	Peak	H
6600.00	39.07	---	12.71	51.78	---	74.00	54.00	-2.22	Peak	H

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 802.11n HT 20 MHz mode / CH Low   **Test Date:** July 28, 2012

Temperature: 27°C   **Tested by:** Alan Wu

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

Frequency (MHz)	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	Ant. Pol. (H/V)
1328.00	54.13	---	-2.85	51.28	---	74.00	54.00	-2.72	Peak	V
1752.00	51.32	---	0.02	51.34	---	74.00	54.00	-2.66	Peak	V
2030.00	50.60	---	2.35	52.95	---	74.00	54.00	-1.05	Peak	V
3300.00	40.79	---	5.61	46.40	---	74.00	54.00	-7.60	Peak	V
4875.00	39.02	---	9.36	48.38	---	74.00	54.00	-5.62	Peak	V
6690.00	38.35	---	12.80	51.15	---	74.00	54.00	-2.85	Peak	V
1248.00	50.55	---	-3.13	47.42	---	74.00	54.00	-6.58	Peak	H
1622.00	50.25	---	-1.15	49.10	---	74.00	54.00	-4.90	Peak	H
2030.00	49.39	---	2.35	51.75	---	74.00	54.00	-2.25	Peak	H
3165.00	41.11	---	5.34	46.45	---	74.00	54.00	-7.55	Peak	H
4890.00	38.56	---	9.40	47.96	---	74.00	54.00	-6.04	Peak	H
6645.00	38.47	---	12.76	51.23	---	74.00	54.00	-2.77	Peak	H

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 802.11n HT 20 MHz mode / CH Mid

Test Date: July 28, 2012

Temperature: 27°C

Tested by: Alan Wu

Humidity: 49% RH

Polarity: Ver. / Hor.

Frequency (MHz)	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	Ant. Pol. (H/V)
1328.00	59.00	42.12	-2.85	56.15	39.27	74.00	54.00	-14.73	AVG	V
1622.00	50.59	---	-1.15	49.43	---	74.00	54.00	-4.57	Peak	V
1968.00	49.94	---	1.96	51.90	---	74.00	54.00	-2.10	Peak	V
3300.00	41.15	---	5.61	46.76	---	74.00	54.00	-7.24	Peak	V
4845.00	39.06	---	9.28	48.34	---	74.00	54.00	-5.66	Peak	V
6735.00	37.88	---	12.85	50.73	---	74.00	54.00	-3.27	Peak	V
1248.00	50.35	---	-3.13	47.22	---	74.00	54.00	-6.78	Peak	H
1516.00	50.02	---	-2.11	47.91	---	74.00	54.00	-6.09	Peak	H
1870.00	49.70	---	1.08	50.78	---	74.00	54.00	-3.22	Peak	H
3615.00	40.22	---	6.29	46.51	---	74.00	54.00	-7.49	Peak	H
4815.00	38.83	---	9.20	48.03	---	74.00	54.00	-5.97	Peak	H
5985.00	38.35	---	11.54	49.90	---	74.00	54.00	-4.10	Peak	H

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 802.11n HT 20 MHz mode / CH High

Test Date: July 28, 2012

Temperature: 27°C

Tested by: Alan Wu

Humidity: 49% RH

Polarity: Ver. / Hor.

Frequency (MHz)	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	Ant. Pol. (H/V)
1082.00	50.92	---	-3.71	47.21	---	74.00	54.00	-6.79	Peak	V
1330.00	58.64	41.87	-2.85	55.79	39.02	74.00	54.00	-14.98	AVG	V
1838.00	49.98	---	0.79	50.77	---	74.00	54.00	-3.23	Peak	V
3435.00	41.18	---	5.89	47.07	---	74.00	54.00	-6.93	Peak	V
4860.00	39.02	---	9.32	48.34	---	74.00	54.00	-5.66	Peak	V
6120.00	37.67	---	11.83	49.50	---	74.00	54.00	-4.50	Peak	V
1092.00	51.09	---	-3.68	47.41	---	74.00	54.00	-6.59	Peak	H
1544.00	51.45	---	-1.85	49.59	---	74.00	54.00	-4.41	Peak	H
1908.00	51.09	---	1.42	52.51	---	74.00	54.00	-1.49	Peak	H
3300.00	40.97	---	5.61	46.59	---	74.00	54.00	-7.41	Peak	H
4785.00	38.92	---	9.12	48.04	---	74.00	54.00	-5.96	Peak	H
5835.00	39.10	---	11.18	50.29	---	74.00	54.00	-3.71	Peak	H

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 802.11n HT 40 MHz mode / CH Low

Temperature: 27°C

Humidity: 49% RH

Test Date: July 28, 2012

Tested by: Alan Wu

Polarity: Ver. / Hor.

Frequency (MHz)	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	Ant. Pol. (H/V)
1112.00	51.31	---	-3.61	47.70	---	74.00	54.00	-6.30	Peak	V
1328.00	54.72	---	-2.85	51.87	---	74.00	54.00	-2.13	Peak	V
1778.00	50.42	---	0.25	50.67	---	74.00	54.00	-3.33	Peak	V
3435.00	40.65	---	5.89	46.54	---	74.00	54.00	-7.46	Peak	V
4950.00	38.97	---	9.56	48.53	---	74.00	54.00	-5.47	Peak	V
6750.00	38.84	---	12.86	51.71	---	74.00	54.00	-2.29	Peak	V
1146.00	51.29	---	-3.49	47.80	---	74.00	54.00	-6.20	Peak	H
1358.00	51.25	---	-2.75	48.51	---	74.00	54.00	-5.49	Peak	H
1850.00	50.56	---	0.90	51.46	---	74.00	54.00	-2.54	Peak	H
3210.00	41.53	---	5.43	46.96	---	74.00	54.00	-7.04	Peak	H
4845.00	39.22	---	9.28	48.50	---	74.00	54.00	-5.50	Peak	H
6690.00	38.87	---	12.80	51.68	---	74.00	54.00	-2.32	Peak	H

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 802.11n HT 40 MHz mode / CH Mid

Test Date: July 28, 2012

Temperature: 27°C

Tested by: Alan Wu

Humidity: 49% RH

Polarity: Ver. / Hor.

Frequency (MHz)	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	Ant. Pol. (H/V)
1076.00	50.74	---	-3.73	47.01	---	74.00	54.00	-6.99	Peak	V
1330.00	52.42	---	-2.85	49.58	---	74.00	54.00	-4.42	Peak	V
1808.00	49.44	---	0.52	49.96	---	74.00	54.00	-4.04	Peak	V
4200.00	40.18	---	7.66	47.84	---	74.00	54.00	-6.16	Peak	V
4920.00	38.91	---	9.48	48.39	---	74.00	54.00	-5.61	Peak	V
6375.00	38.16	---	12.35	50.51	---	74.00	54.00	-3.49	Peak	V
1042.00	50.51	---	-3.85	46.66	---	74.00	54.00	-7.34	Peak	H
1436.00	49.48	---	-2.47	47.00	---	74.00	54.00	-7.00	Peak	H
1820.00	50.58	---	0.63	51.21	---	74.00	54.00	-2.79	Peak	H
3195.00	41.72	---	5.40	47.12	---	74.00	54.00	-6.88	Peak	H
4860.00	38.55	---	9.32	47.87	---	74.00	54.00	-6.13	Peak	H
6630.00	38.47	---	12.74	51.21	---	74.00	54.00	-2.79	Peak	H

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 802.11n HT 40 MHz mode / CH High   **Test Date:** July 28, 2012

Temperature: 27°C   **Tested by:** Alan Wu

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

Frequency (MHz)	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	Ant. Pol. (H/V)
1018.00	51.50	---	-3.94	47.56	---	74.00	54.00	-6.44	Peak	V
1332.00	58.83	41.96	-2.84	55.99	39.12	74.00	54.00	-14.88	AVG	V
1834.00	50.60	---	0.76	51.35	---	74.00	54.00	-2.65	Peak	V
3105.00	40.50	---	5.21	45.71	---	74.00	54.00	-8.29	Peak	V
3990.00	39.87	---	7.16	47.03	---	74.00	54.00	-6.97	Peak	V
4770.00	39.95	---	9.08	49.03	---	74.00	54.00	-4.97	Peak	V
1222.00	50.64	---	-3.22	47.42	---	74.00	54.00	-6.58	Peak	H
1540.00	50.16	---	-1.89	48.27	---	74.00	54.00	-5.73	Peak	H
1890.00	49.97	---	1.26	51.23	---	74.00	54.00	-2.77	Peak	H
3315.00	41.06	---	5.64	46.70	---	74.00	54.00	-7.30	Peak	H
4920.00	39.59	---	9.48	49.07	---	74.00	54.00	-4.93	Peak	H
5955.00	39.03	---	11.47	50.50	---	74.00	54.00	-3.50	Peak	H

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*

3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*

4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*

5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: Tx / IEEE 802.11a mode / CH Low   **Test Date:** September 7, 2012

Temperature: 26°C   **Tested by:** Shawn Wu

Humidity: 60% RH   **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
2773.333	55.99	-6.01	49.98	74.00	-24.02	peak	V
N/A							
2878.333	55.99	-5.74	50.25	74.00	-23.75	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*

3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*

4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*

5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: Tx / IEEE 802.11a mode / CH Mid   **Test Date:** September 7, 2012

Temperature: 26°C   **Tested by:** Shawn Wu

Humidity: 60% RH   **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
2668.333	55.90	-6.27	49.63	74.00	-24.37	peak	V
N/A							
2540.000	56.32	-6.59	49.73	68.30	-18.57	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*

3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*

4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*

5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: Tx / IEEE 802.11a mode / CH High   **Test Date:** September 7, 2012

Temperature: 26°C   **Tested by:** Shawn Wu

Humidity: 60% RH   **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
2691.667	55.83	-6.21	49.62	74.00	-24.38	peak	V
N/A							
2680.000	55.90	-6.24	49.66	74.00	-24.34	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*

3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*

4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*

5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	TX / IEEE 802.11n HT 20 MHz mode / CH Low	**Test Date:** September 7, 2012
Temperature:	26°C	**Tested by:** Shawn Wu
Humidity:	60% RH	**Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
2796.667	55.93	-5.95	49.98	74.00	-24.02	peak	V
N/A							
2703.333	56.26	-6.18	50.08	74.00	-23.92	peak	H
N/A							

Remark:

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

Operation Mode:	TX / IEEE 802.11n HT 20 MHz mode / CH Mid			**Test Date:**	September 7, 2012		
Temperature:	26°C			**Tested by:**	Shawn Wu		
Humidity:	60% RH			**Polarity:**	Ver. / Hor.		

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
2470.000	57.72	-6.67	51.05	68.30	-17.25	peak	V
N/A							
2225.000	56.46	-7.01	49.45	74.00	-24.55	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*

3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*

4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*

5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: TX / IEEE 802.11n HT 20 MHz mode / CH High   **Test Date:** September 7, 2012

Temperature: 26°C   **Tested by:** Shawn Wu

Humidity: 60% RH   **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
2855.000	56.25	-5.80	50.45	74.00	-23.55	peak	V
N/A							
2586.667	56.66	-6.47	50.19	68.30	-18.11	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*

3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*

4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*

5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: TX / IEEE 802.11n HT 40 MHz mode / CH Low   **Test Date:** September 7, 2012

Temperature: 26°C   **Tested by:** Shawn Wu

Humidity: 60% RH   **Polarity:** Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
1968.333	58.64	-7.36	51.28	68.30	-17.02	peak	V
N/A							
2866.667	55.77	-5.77	50.00	74.00	-24.00	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*

3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*

4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*

5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	TX / IEEE 802.11n HT 40 MHz mode / CH High	**Test Date:**	September 7, 2012
Temperature:	26°C	**Tested by:**	Shawn Wu
Humidity:	60% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant. Pol. (H/V)
2866.667	55.73	-5.77	49.96	74.00	-24.04	peak	V
N/A							
2575.000	56.36	-6.50	49.86	68.30	-18.44	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*

2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*

3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*

4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*

5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*

6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

7.8 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/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 (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

Test Configuration

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

TEST PROCEDURE

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

TEST RESULTS

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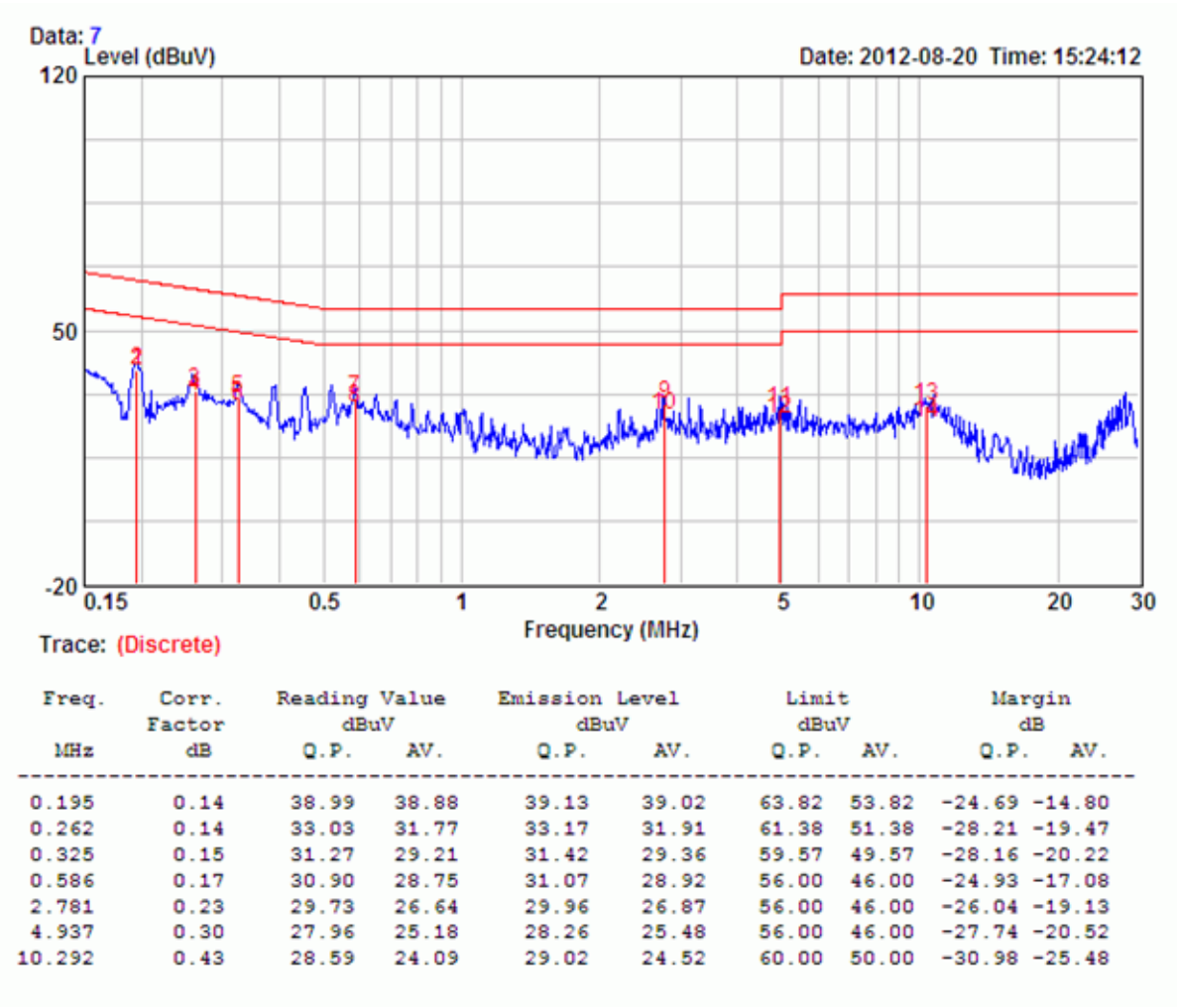
Test Data

Operation Mode:	Normal Link	**Test Date:**	August 20, 2012
Temperature:	22°C	**Tested by:**	Alan Wu
Humidity:	58% RH		

Conducted emissions (Line 1)

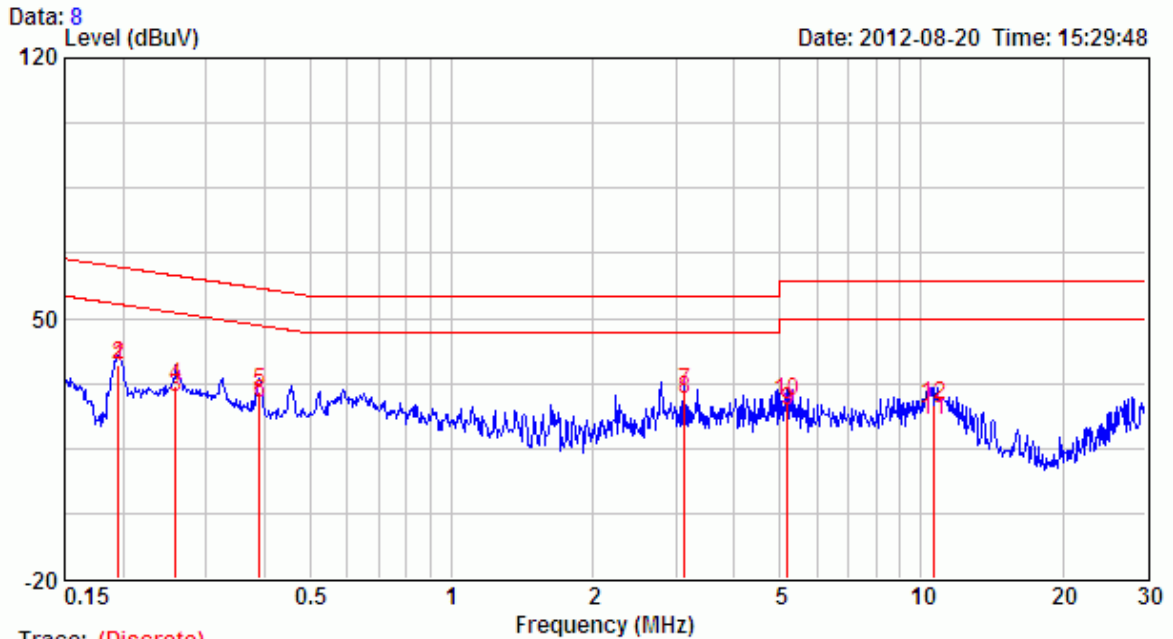| Freq.	Corr. Factor	Reading Value dBuV		Emission Level dBuV		Limit dBuV		Margin dB	
MHz	dB	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.195	0.14	38.99	38.88	39.13	39.02	63.82	53.82	-24.69	-14.80
0.262	0.14	33.03	31.77	33.17	31.91	61.38	51.38	-28.21	-19.47
0.325	0.15	31.27	29.21	31.42	29.36	59.57	49.57	-28.16	-20.22
0.586	0.17	30.90	28.75	31.07	28.92	56.00	46.00	-24.93	-17.08
2.781	0.23	29.73	26.64	29.96	26.87	56.00	46.00	-26.04	-19.13
4.937	0.30	27.96	25.18	28.26	25.48	56.00	46.00	-27.74	-20.52
10.292	0.43	28.59	24.09	29.02	24.52	60.00	50.00	-30.98	-25.48

Remarks: 1. The emission levels of other frequencies were very low against the limits .
2. Correction Factor = Insertion loss + Cable loss
3. Margin value = Emission level - Limit value

Conducted emissions (Line 2)

Data: 8

Trace: (Discrete)

```
   Freq.      Corr.     Reading Value    Emission Level       Limit           Margin
             Factor         dBuV             dBuV              dBuV              dB
    MHz        dB       Q.P.     AV.      Q.P.     AV.      Q.P.    AV.      Q.P.      AV.
--------------------------------------------------------------------------------------
   0.195      0.11     37.33    36.84    37.44    36.95    63.80   53.80    -26.36   -16.85
   0.259      0.12     31.81    28.75    31.93    28.87    61.47   51.47    -29.54   -22.60
   0.389      0.13     30.21    27.17    30.34    27.30    58.08   48.08    -27.74   -20.78
   3.130      0.22     30.13    28.04    30.35    28.26    56.00   46.00    -25.65   -17.74
   5.180      0.27     27.32    25.01    27.59    25.28    60.00   50.00    -32.41   -24.72
  10.602      0.38     26.26    22.12    26.64    22.50    60.00   50.00    -33.36   -27.50
```

Remarks: 1. The emission levels of other frequencies were very low against the limits .
         2. Correction Factor = Insertion loss + Cable loss
         3. Margin value = Emission level - Limit value