



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Wireless Service Platform

Model: WiSP

Trade Name: Portwell

Issued to

Portwell, Inc.

No. 242, Bo-Ai St., Shu-Lin Dist., New Taipei City 238, Taiwan

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: February 2, 2012



Testing Laboratory
1309

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	February 2, 2012	Initial Issue	ALL	Angel Cheng



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1. TEST RESULT CERTIFICATION

Applicant: Portwell, Inc.
 No. 242, Bo-Ai St., Shu-Lin Dist., New Taipei City 238, Taiwan

Equipment Under Test: Wireless Service Platform

Trade Name: Portwell

Model Number: WiSP

Date of Test: August 12, 2011 ~ January 30, 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: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

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

Approved by:

Reviewed by:

Jason Lin

Gina Lo

Jason Lin
 Section Manager
 Compliance Certification Services Inc.

Gina Lo
 Section Manager
 Compliance Certification Services Inc.



2. EUT DESCRIPTION

Product	Wireless Service Platform			
Trade Name	Portwell			
Model Number	WiSP			
Model Discrepancy	N/A			
Received Date	March 19, 2009			
Power Supply	1. EUT power Rating: 100-240V 2. Internal Battery Pack Rating: 11.1V ,2500mAh/28Wh			
Frequency Range	2412 ~ 2462 MHz			
Transmit Power	Mode	Frequency Range	Output Power (dBm)	Output Power (mW)
	802.11b	2412 - 2462	18.86	76.9
	802.11g	2412 - 2462	22.77	189.2
	For Mimo:			
	Mode	Frequency Range	Output Power (dBm)	Output Power (mW)
	802.11n Standard-20 MHz	2412 - 2462	22.18	165.2
	802.11n Standard-40 MHz	2422 - 2452	23.67	232.6
	For Single:			
	Mode	Frequency Range	Output Power (dBm)	Output Power (mW)
	802.11n Standard-20 MHz	2412 - 2462	22.02	159.22
802.11n Standard-40 MHz	2422 - 2452	21.72	148.59	
Modulation Technique	IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps) IEEE 802.11g mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps) IEEE 802.11n HT 20 MHz mode Channel mode: OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps) 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 802.11b/g mode: 11 Channels IEEE 802.11n HT 20 MHz mode Channel mode: 11 Channels IEEE 802.11n HT 40 MHz mode: 7 Channels			
Antenna Specification	Gain: 2 dBi			
Antenna Designation	Dipole Antenna			

Remark:

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: A43-WISP filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. TEST METHODOLOGY

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

3.1 EUT CONFIGURATION

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

3.2 EUT EXERCISE

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

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

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

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

Radiated Emissions

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



3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

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

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

² Above 38.6

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



3.5 DESCRIPTION OF TEST MODES

The EUT (model: WiSP) had been tested under operating condition.

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

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

After verification, all tests carried out are with the worst-case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode and receiving radiated spurious emission above 1GHz, which worst case was in CH Mid mode only.

IEEE 802.11b mode:

Channel Low(2412MHz), Channel Mid(2442MHz) and Channel High(2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE 802.11g mode:

Channel Low(2412MHz), Channel Mid(2442MHz) and Channel High(2462MHz) with 6Mbps data rate were chosen for full testing.

MIMO

IEEE 802.11n HT 20 MHz mode Channel mode:

Channel Low (2412MHz), Channel Mid (2442MHz) and Channel High (2462MHz) with MCS8 data rate were chosen for full testing.

IEEE 802.11n HT 40 MHz mode:

Channel Low (2422MHz), Channel Mid (2442MHz) and Channel High (2452MHz) with MCS8 data rate were chosen for full testing.

Single

IEEE 802.11n HT 20 MHz mode Channel mode:

Channel Low (2412MHz), Channel Mid (2442MHz) and Channel High (2462MHz) with MCS0 data rate and chain 0 were chosen for full testing.

IEEE 802.11n HT 40 MHz mode:

Channel Low (2422MHz), Channel Mid (2442MHz) and Channel High (2452MHz) with MCS0 data rate and chain 0 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	03/17/2012
Power Meter	Anritsu	ML2495A	1012009	04/27/2012
Power Sensor	Anritsu	MA2411B	0917072	04/27/2012

Wugu 966 Chamber A				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer	Agilent	E4446A	US42510252	11/02/2012
EMI Test Receiver	R&S	ESCI	100064	02/17/2012
Pre-Amplifier	Mini-Circuits	ZFL-1000LN	SF350700823	01/12/2013
Pre-Amplifier	MITEQ	AFS44-00102650-42-10P-44	1415367	11/19/2012
Bilog Antenna	Sunol Sciences	JB3	A030105	10/03/2012
Horn Antenna	EMCO	3117	00055165	01/13/2013
Horn Antenna	EMCO	3116	00026370	10/13/2013
Loop Antenna	EMCO	6502	8905/2356	06/10/2013
Turn Table	CCS	CC-T-1F	N/A	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R
Site NSA	CCS	N/A	N/A	12/25/2012
Test S/W	EZ-EMC (CCS-3A1RE)			

Conducted Emission room # A				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
TEST RECEIVER	R&S	ESHS20	840455/006	02/22/2012
LISN (EUT)	SCHWARZBECK	NSLK 8127	8127527	12/12/2012
LISN	SCHWARZBECK	NSLK 8127	8127526	12/12/2012
BNC CABLE	MIYAZAKI	5D-FB	BNC A5	02/07/2012
THERMO-HYGRO METER	TECPEL	DTM-303	NO.3	11/17/2012
Test S/W	CCS-3A1-CE			



4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/- 1.0717
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683

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



5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

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

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

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

*Remark: The Powerline Conducted Emissions was tested at Compliance Certification Services. (Hsintien Lab.)
The test equipments were listed in page 9 and the test data were recorded in page 166-167.*

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

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



6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

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

6.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1	USB 2.0 HDD	TeraSys	F12-U	N/A	N/A	Shielded, 1.8m	N/A
2	HUB	D-Link	DGS-1008D	N/A	N/A	Unshielded, 0.5m	Unshielded, 1.8m
3	LCD Monitor	DELL	3008WFP	CN-0XK290-7161 8-846-169L	FCC DoC	Unshielded, 1.8m	shielded, 1.8m
4	USB Keyboard	DELL	Sk-8115	N/A	FCC DoC	Shielded, 1.8m	N/A
5	USB Mouse	DELL	MO56UO	408031121	FCC DoC	Shielded, 1.8m	N/A
6	Server Notebook (Remote)	HP	2210B	CNV7472KG5	N/A	Unshielded, 20m	Unshielded, 1.8m

Remark:

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



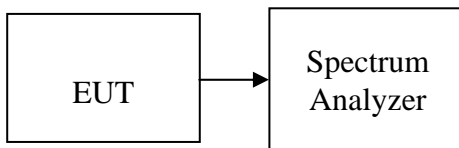
7. FCC PART 15.247 REQUIREMENTS

7.1 6DB BANDWIDTH

LIMIT

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

Test Configuration



TEST PROCEDURE

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

TEST RESULTS

No non-compliance noted.



Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	10333.4	>500	PASS
Mid	2442	10250		PASS
High	2462	10333.4		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	16416.7	>500	PASS
Mid	2442	16416.7		PASS
High	2462	16416.7		PASS

For Mimo

Test mode: IEEE 802.11n HT 20 MHz mode Channel mode / Chin 0

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	16500	>500	PASS
Mid	2442	16416.7		PASS
High	2462	16416.7		PASS

Test mode: IEEE 802.11n HT 20 MHz mode Channel mode / Chin 1

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	16500	>500	PASS
Mid	2442	16666.7		PASS
High	2462	16666.7		PASS

Test mode: IEEE 802.11n HT 40 MHz mode / Chin 0

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	35250	>500	PASS
Mid	2442	35250		PASS
High	2452	35250		PASS

Test mode: IEEE 802.11n HT 40 MHz mode / Chin 1

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	35250	>500	PASS
Mid	2442	35250		PASS
High	2452	35250		PASS



For Single

Test mode: IEEE 802.11n HT 20 MHz mode Channel mode / Chin 0

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	17666.6	>500	PASS
Mid	2442	17666.6		PASS
High	2462	17666.6		PASS

Test mode: IEEE 802.11n HT 20 MHz mode Channel mode / Chin 1

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2412	17083.3	>500	PASS
Mid	2442	17083.3		PASS
High	2462	17083.3		PASS

Test mode: IEEE 802.11n HT 40 MHz mode / Chin 0

Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	35333.3	>500	PASS
Mid	2442	35333.3		PASS
High	2452	35500		PASS

Test mode: IEEE 802.11n HT 40 MHz mode / Chin 1

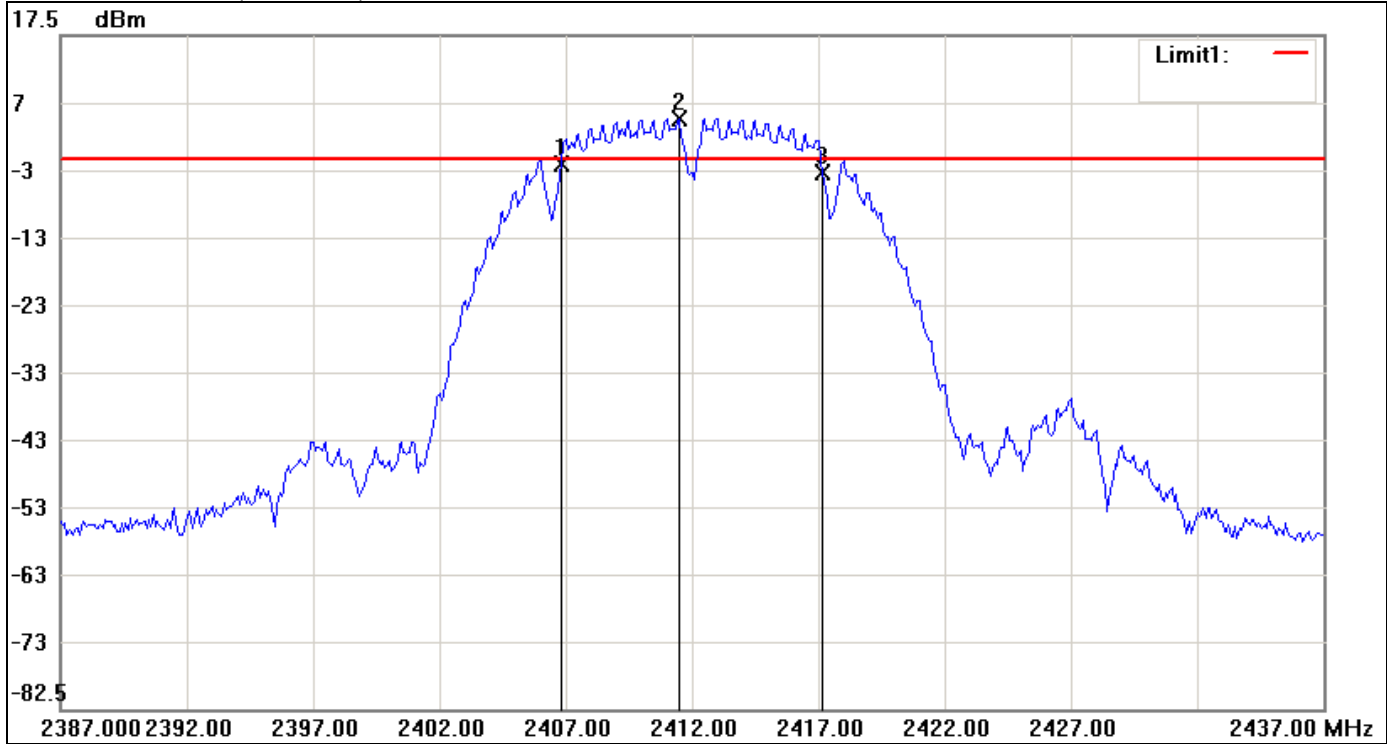
Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit (kHz)	Result
Low	2422	36000	>500	PASS
Mid	2442	36000		PASS
High	2452	36000		PASS



Test Plot

IEEE 802.11b mode

6dB Bandwidth (CH Low)

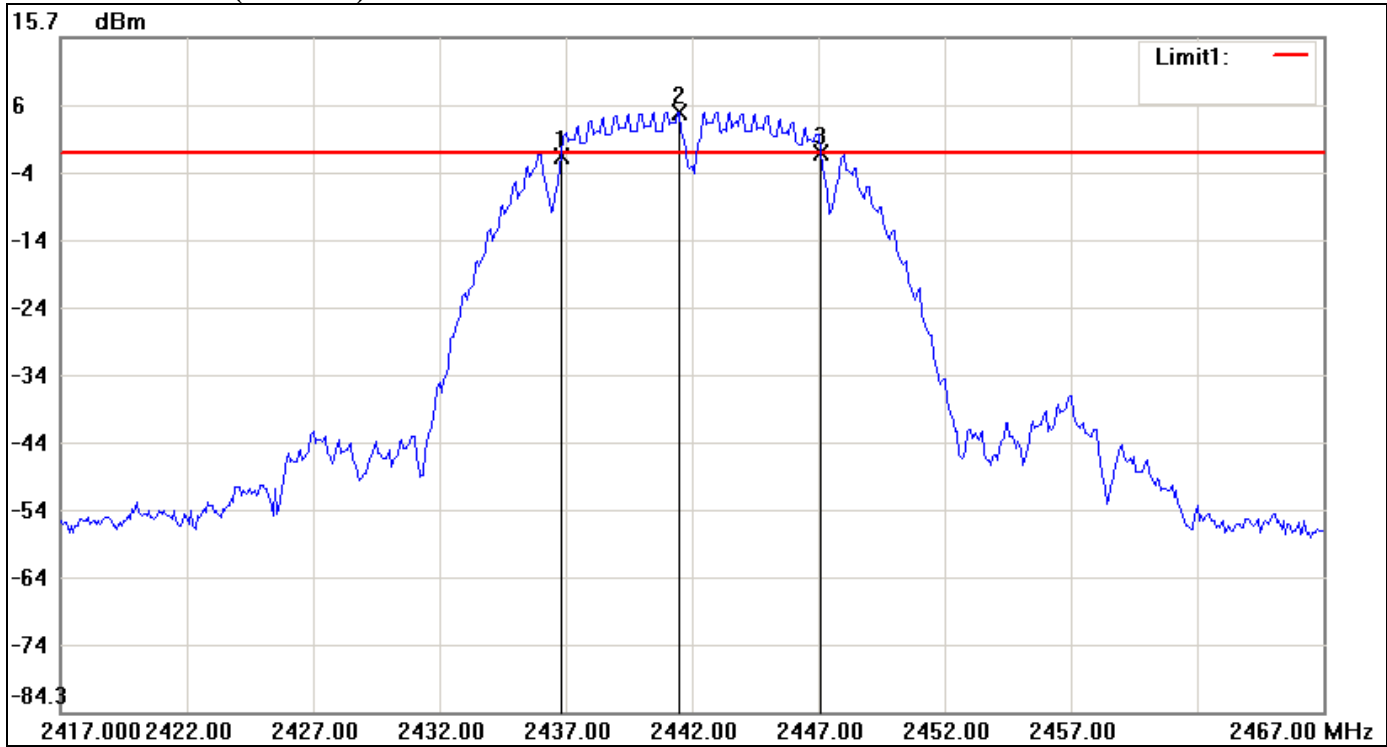


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2406.8333	-1.56	-0.94	-0.62
2	2411.5000	5.06	-0.94	6.00
3	2417.1667	-2.79	-0.94	-1.85

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	10.3334	-1.23



6dB Bandwidth (CH Mid)

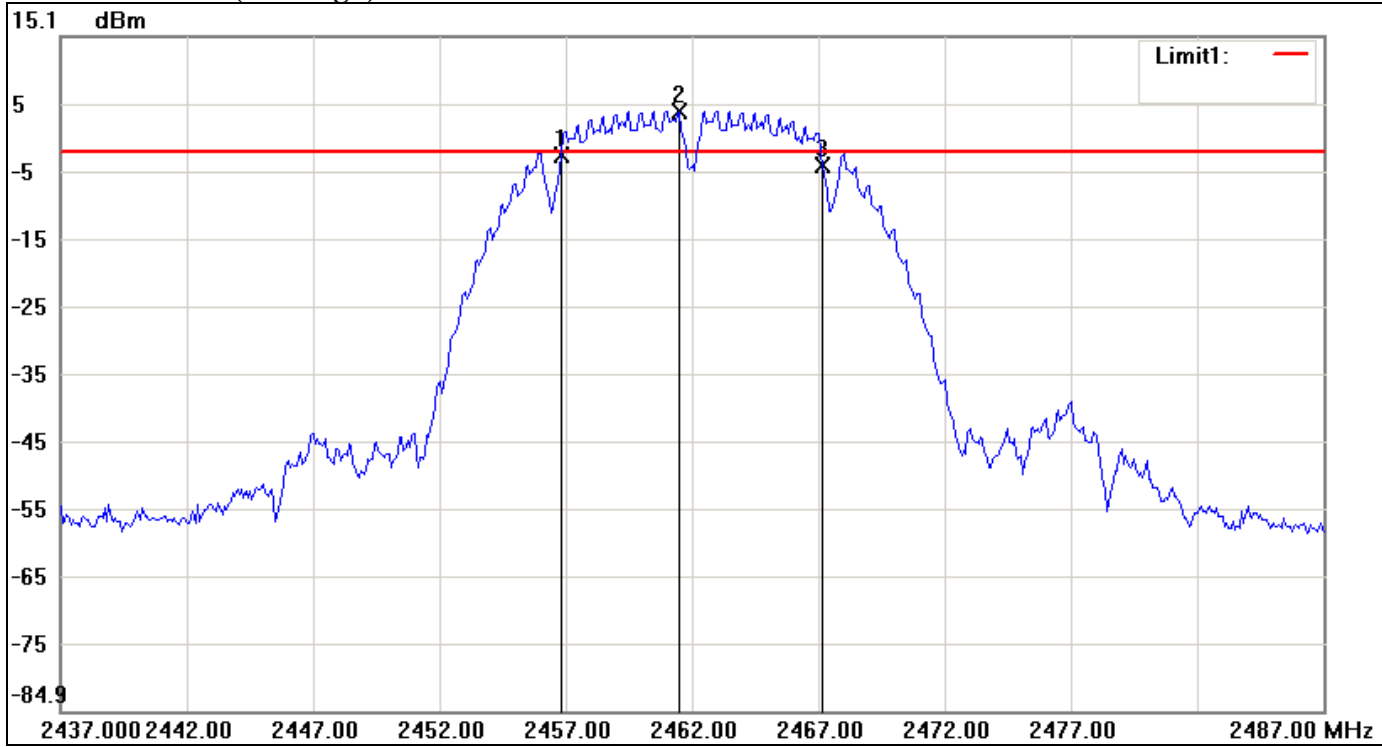


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2436.8333	-1.98	-1.30	-0.68
2	2441.5000	4.70	-1.30	6.00
3	2447.0833	-1.37	-1.30	-0.07

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	10.25	0.61



6dB Bandwidth (CH High)



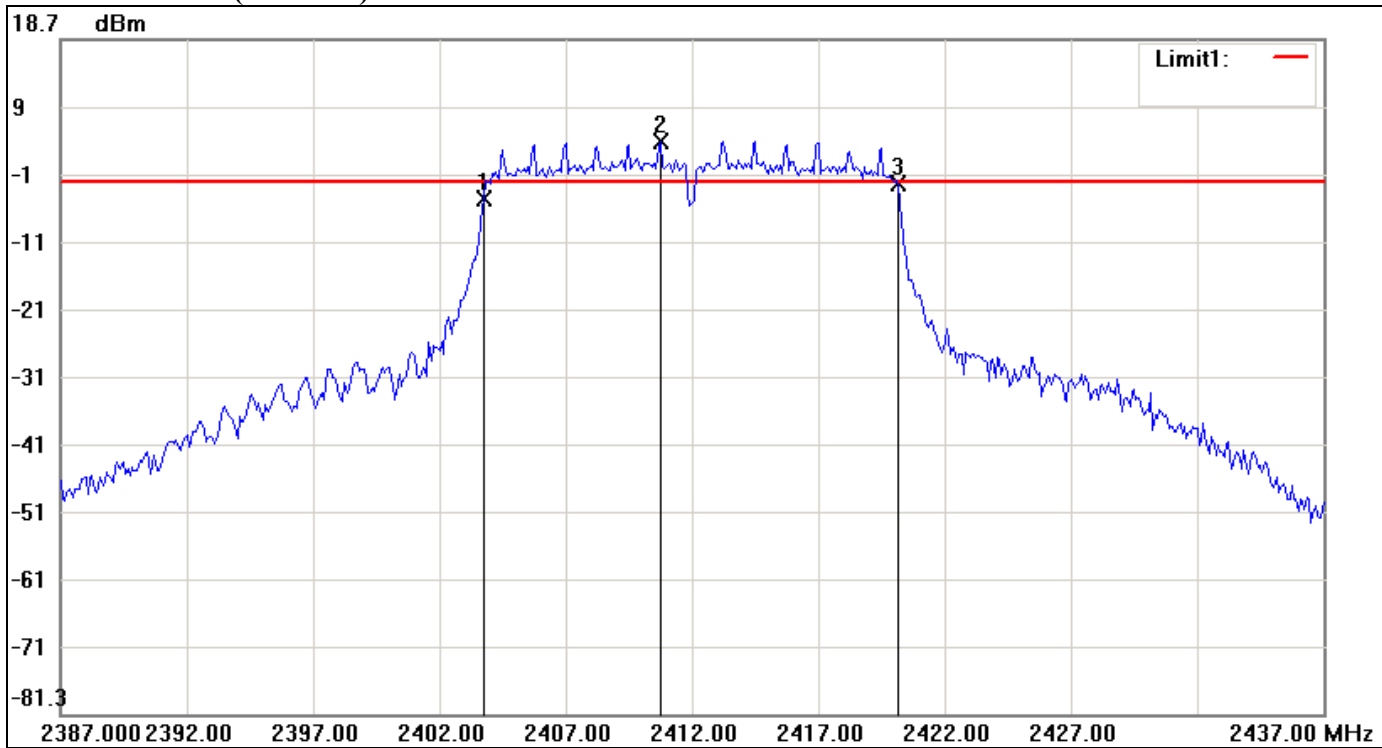
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2456.8333	-2.61	-1.96	-0.65
2	2461.5000	4.04	-1.96	6.00
3	2467.1667	-3.90	-1.96	-1.94

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	10.3334	-1.29



IEEE 802.11g mode

6dB Bandwidth (CH Low)

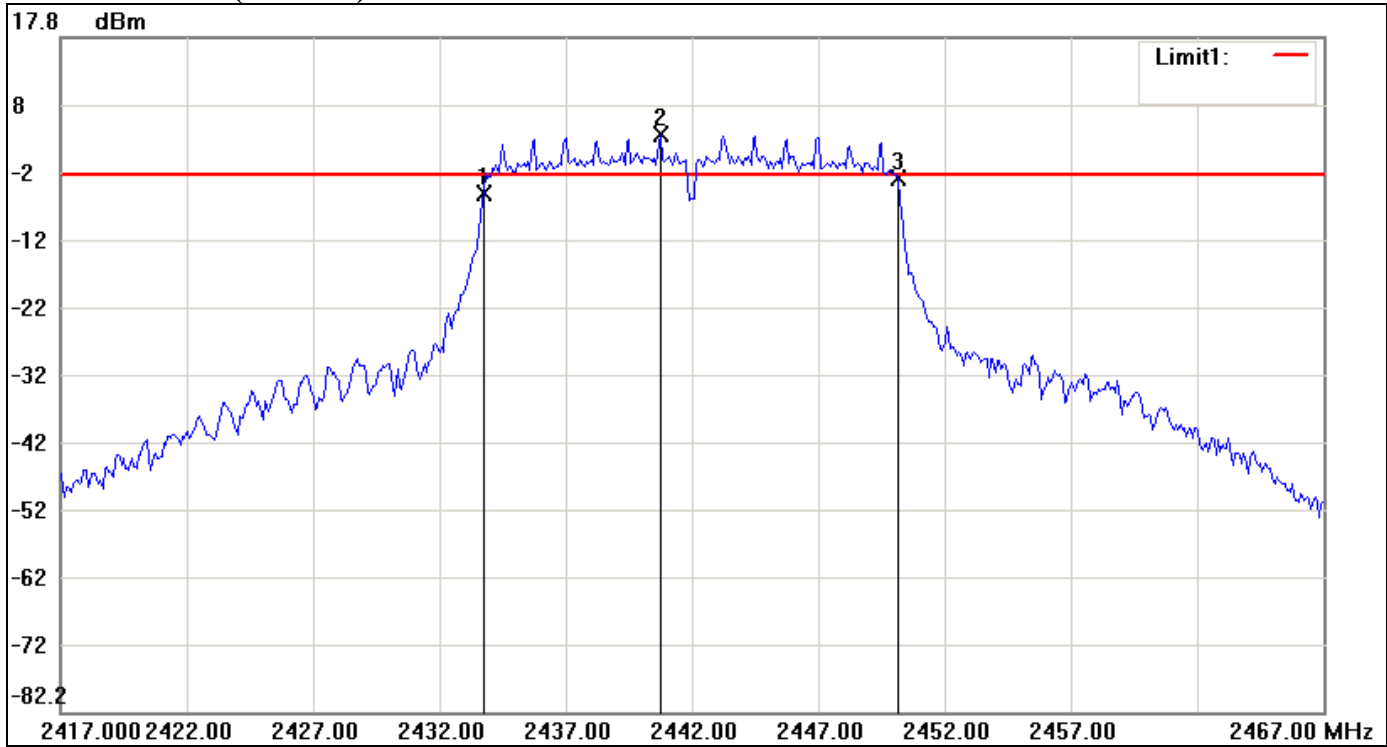


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2403.7500	-4.77	-2.26	-2.51
2	2410.7500	3.74	-2.26	6.00
3	2420.1667	-2.58	-2.26	-0.32

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.4167	2.19



6dB Bandwidth (CH Mid)

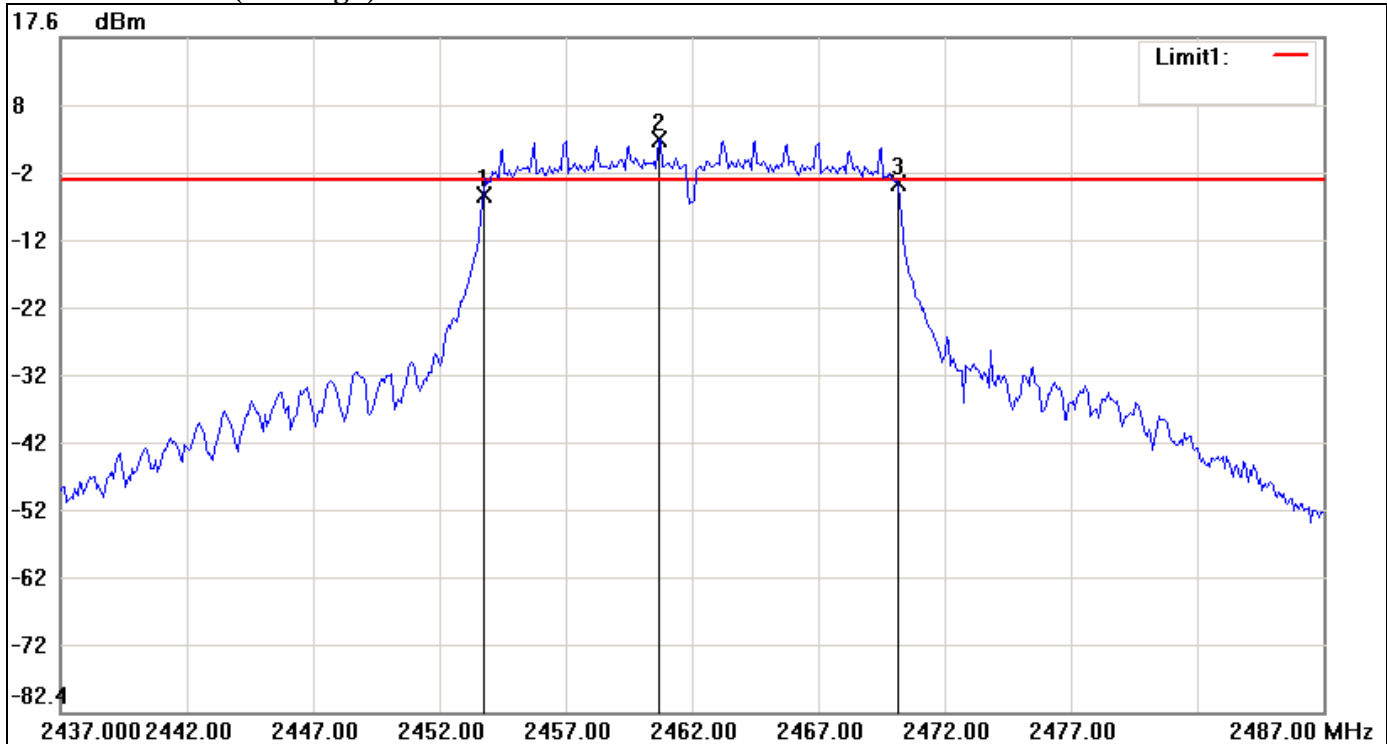


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2433.7500	-5.22	-2.67	-2.55
2	2440.7500	3.33	-2.67	6.00
3	2450.1667	-3.13	-2.67	-0.46

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.4167	2.09



6dB Bandwidth (CH High)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2453.7500	-5.85	-3.59	-2.26
2	2460.6667	2.41	-3.59	6.00
3	2470.1667	-3.94	-3.59	-0.35

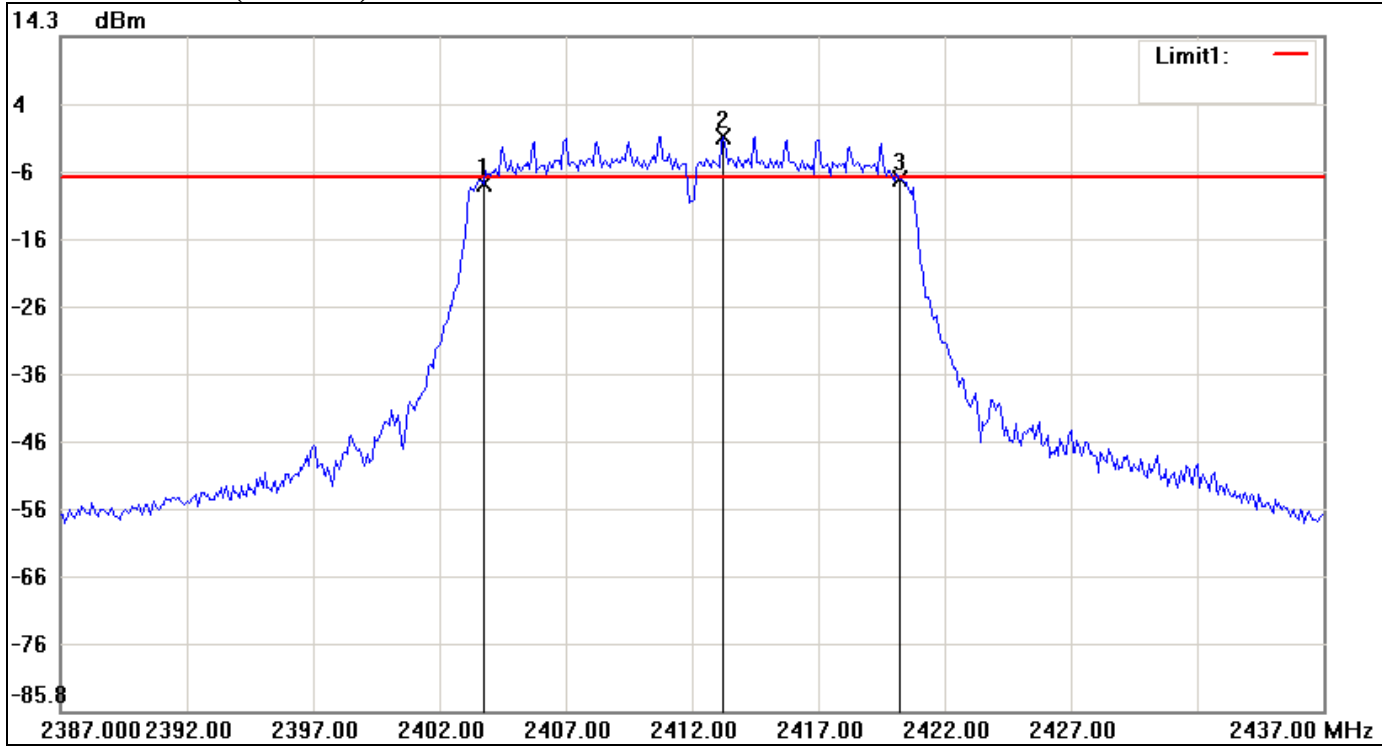
No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.4167	1.91



For MIMO

IEEE 802.11n HT 20 MHz mode Channel mode / Chin 0

6dB Bandwidth (CH Low)

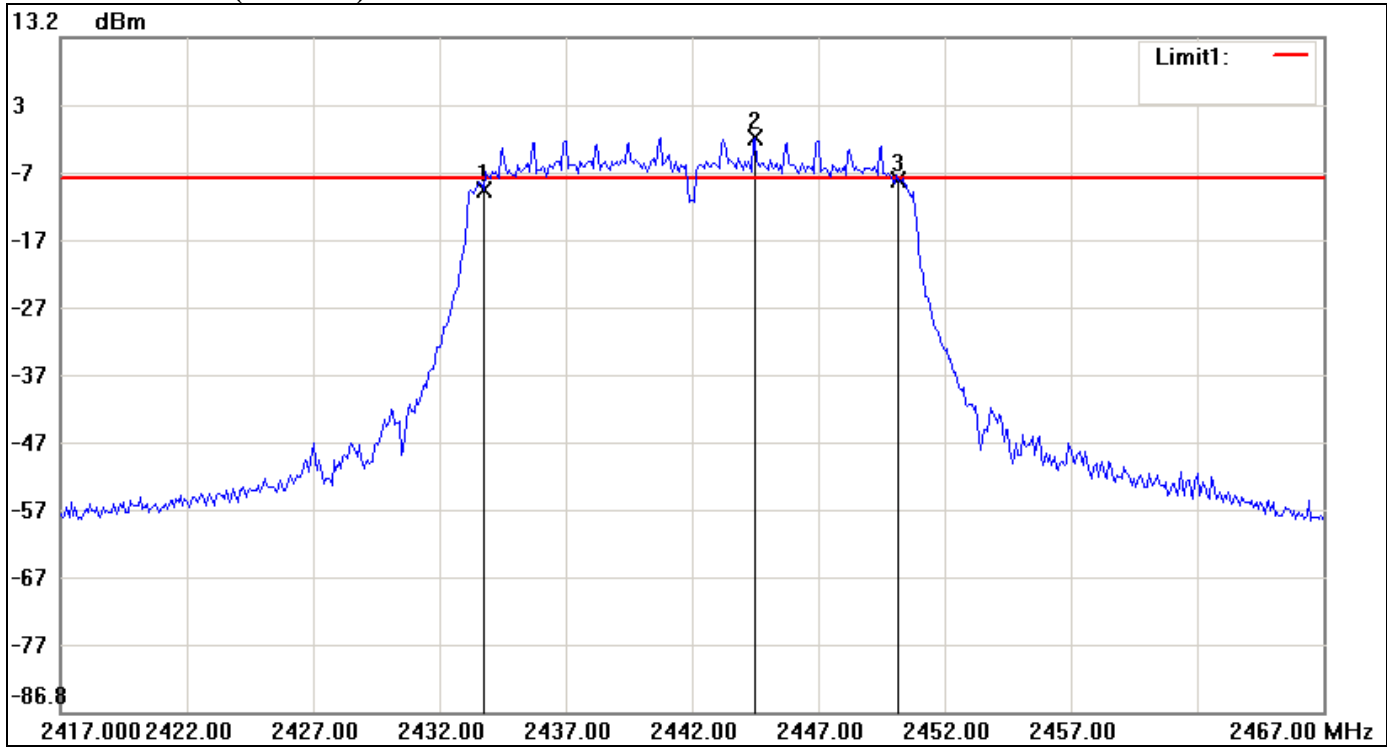


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2403.7500	-7.56	-6.58	-0.98
2	2413.2500	-0.58	-6.58	6.00
3	2420.2500	-6.87	-6.58	-0.29

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.5	0.69



6dB Bandwidth (CH Mid)

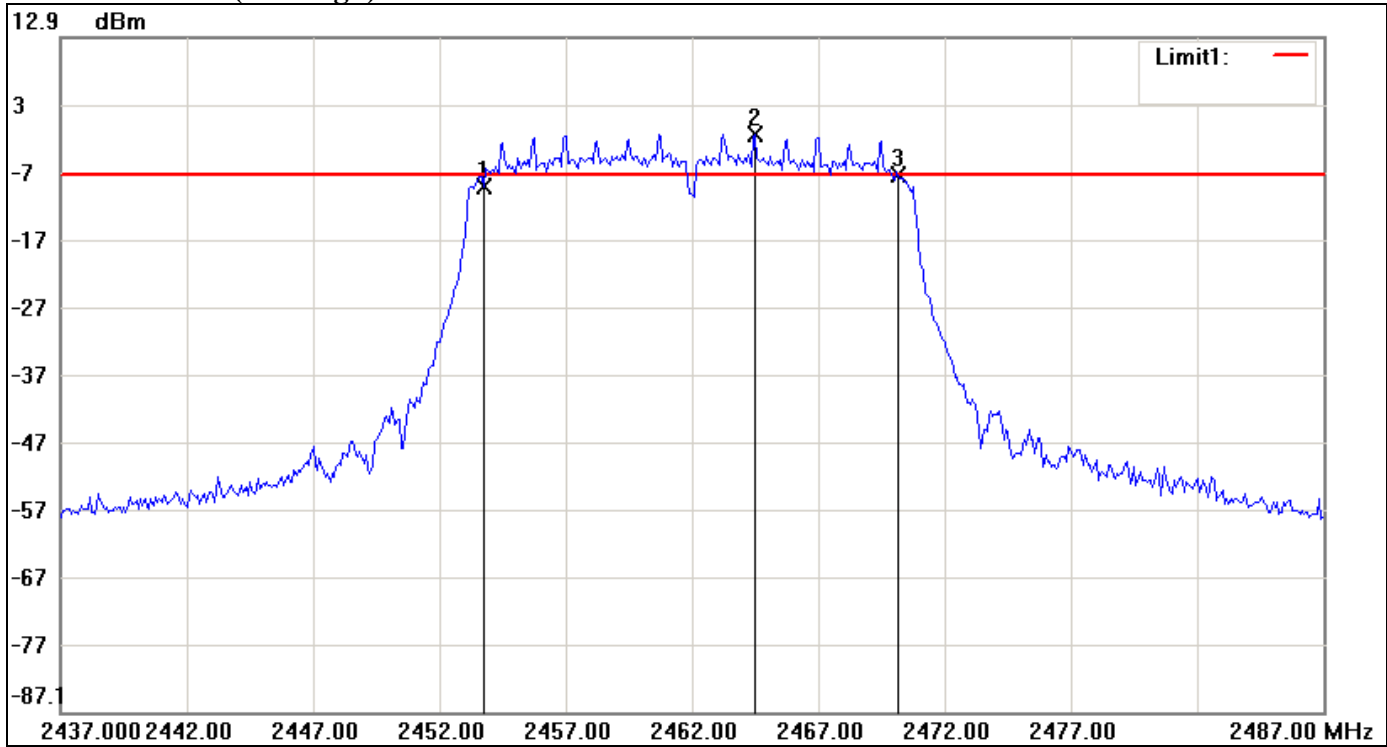


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2433.7500	-9.54	-7.79	-1.75
2	2444.5000	-1.79	-7.79	6.00
3	2450.1667	-8.04	-7.79	-0.25

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.4167	1.5



6dB Bandwidth (CH High)



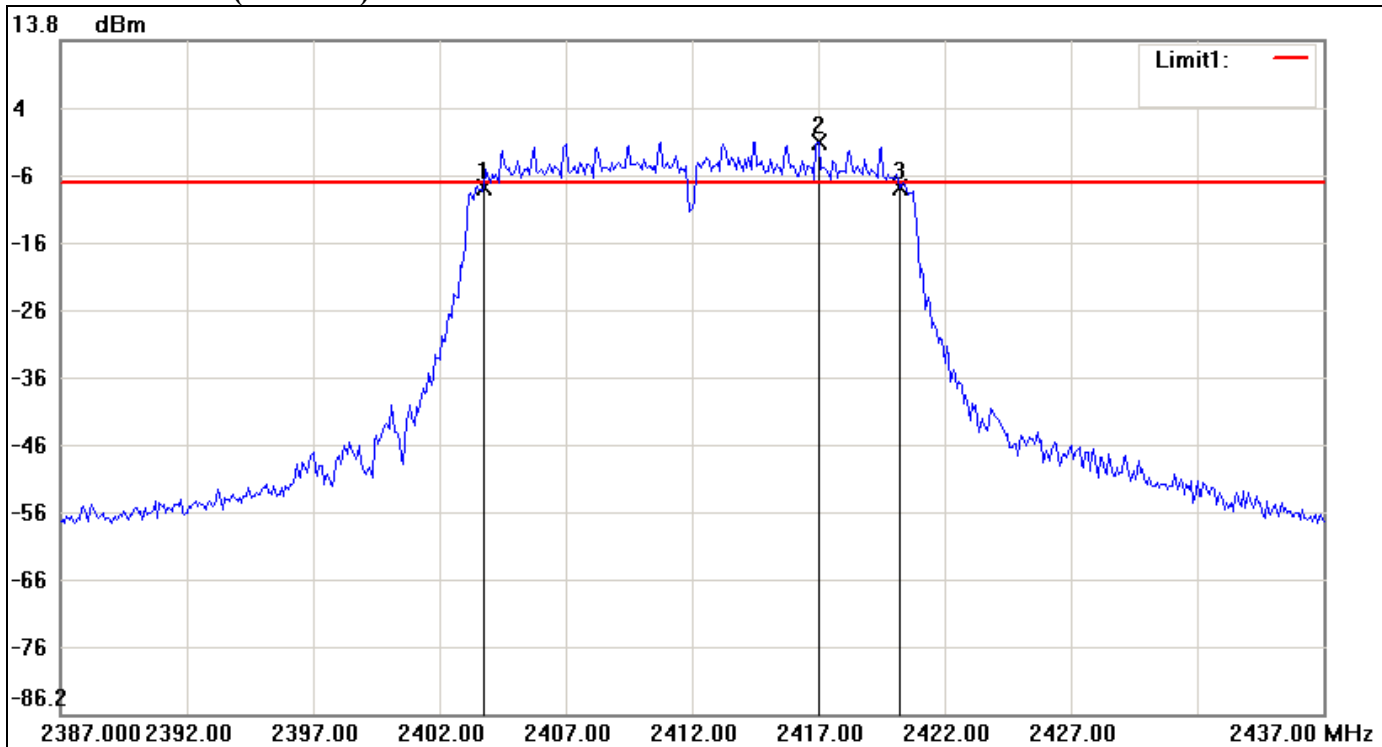
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2453.7500	-9.33	-7.45	-1.88
2	2464.5000	-1.45	-7.45	6.00
3	2470.1667	-7.51	-7.45	-0.06

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.4167	1.82



IEEE 802.11n HT 20 MHz mode Channel mode / Chain 1

6dB Bandwidth (CH Low)

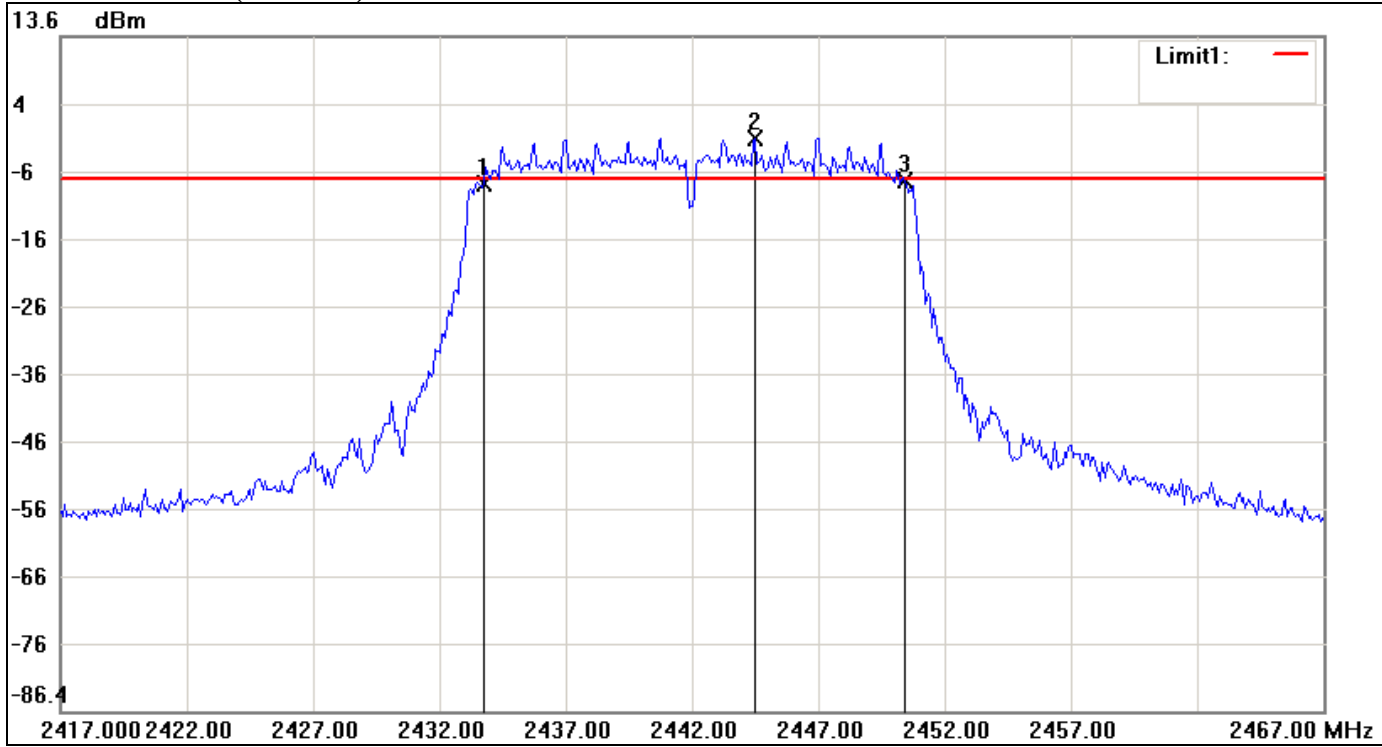


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2403.7500	-8.07	-7.21	-0.86
2	2417.0000	-1.21	-7.21	6.00
3	2420.2500	-7.96	-7.21	-0.75

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.5	0.11



6dB Bandwidth (CH Mid)

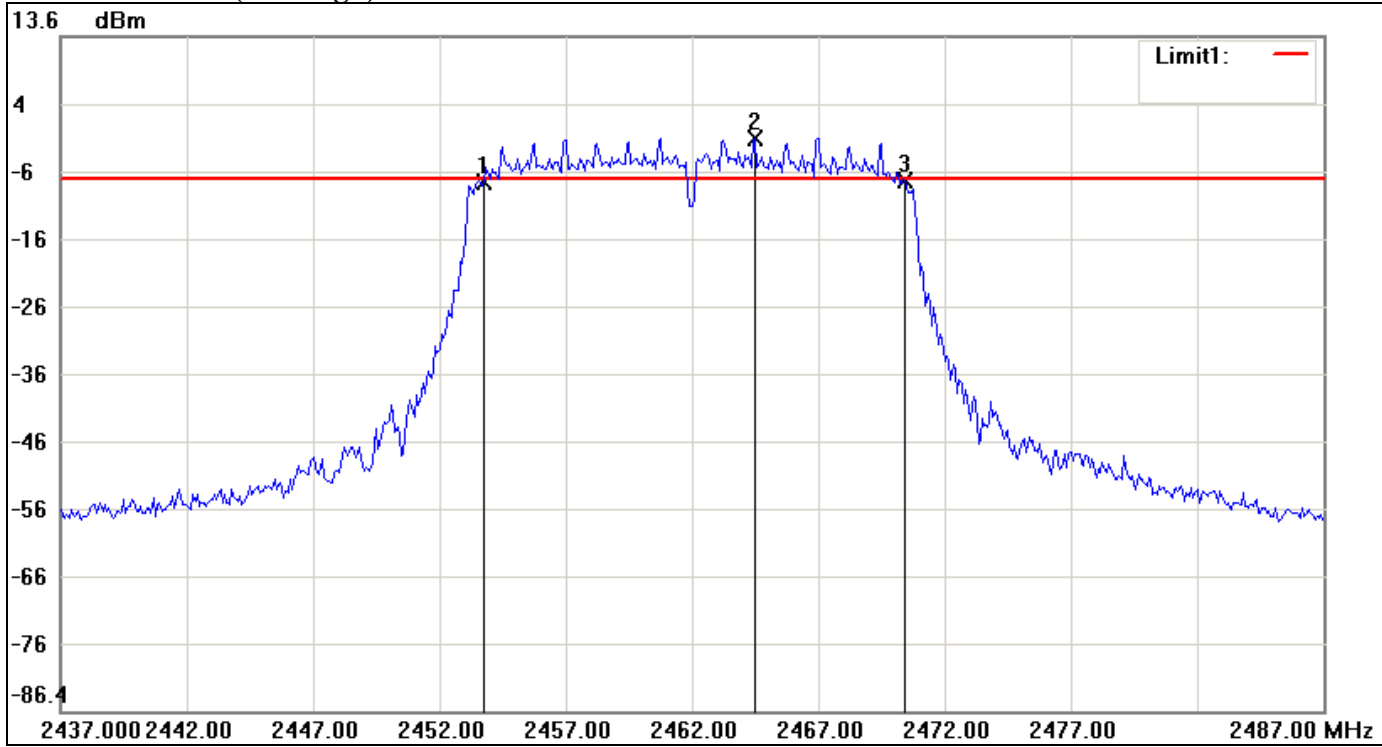


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2433.7500	-8.37	-7.56	-0.81
2	2444.5000	-1.56	-7.56	6.00
3	2450.4167	-7.75	-7.56	-0.19

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.6667	0.62



6dB Bandwidth (CH High)



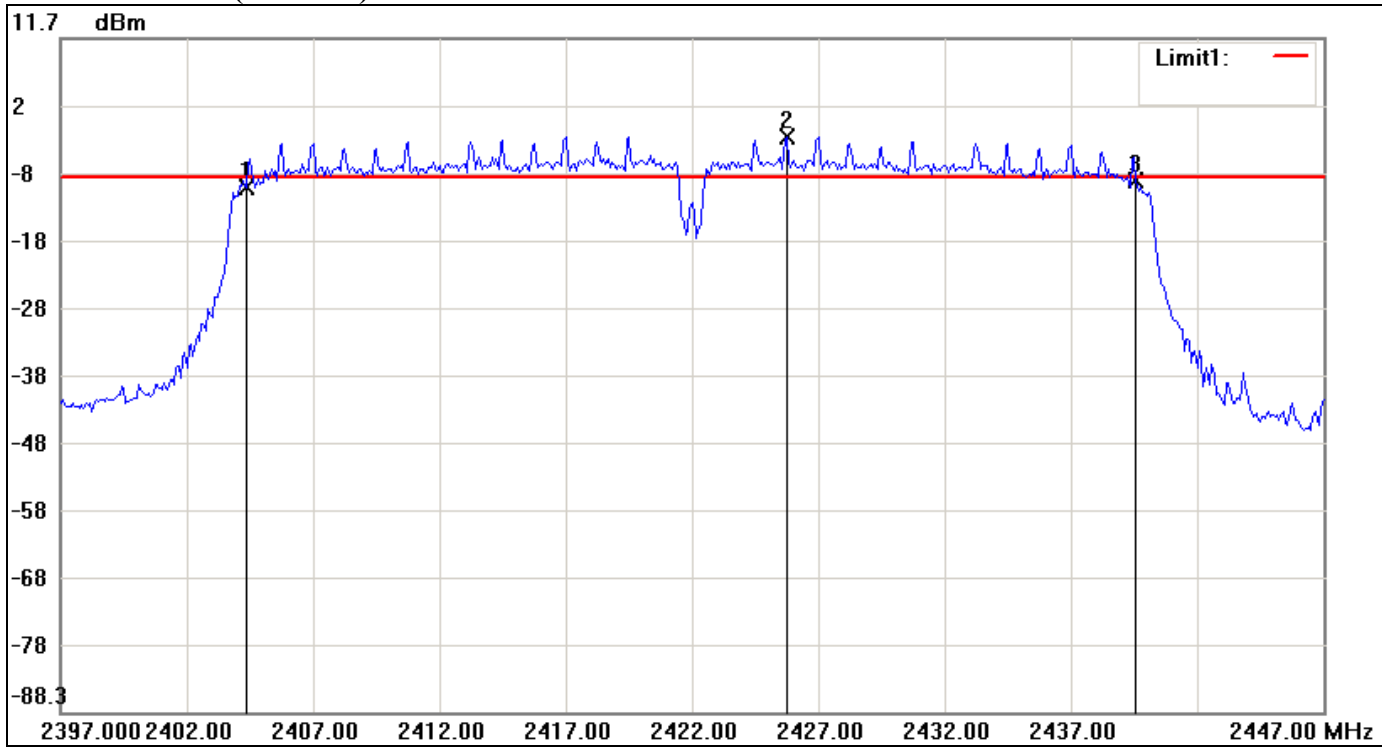
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2453.7500	-8.07	-7.54	-0.53
2	2464.5000	-1.54	-7.54	6.00
3	2470.4167	-7.89	-7.54	-0.35

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	16.6667	0.18



IEEE 802.11n HT 40 MHz mode / Chain 0

6dB Bandwidth (CH Low)

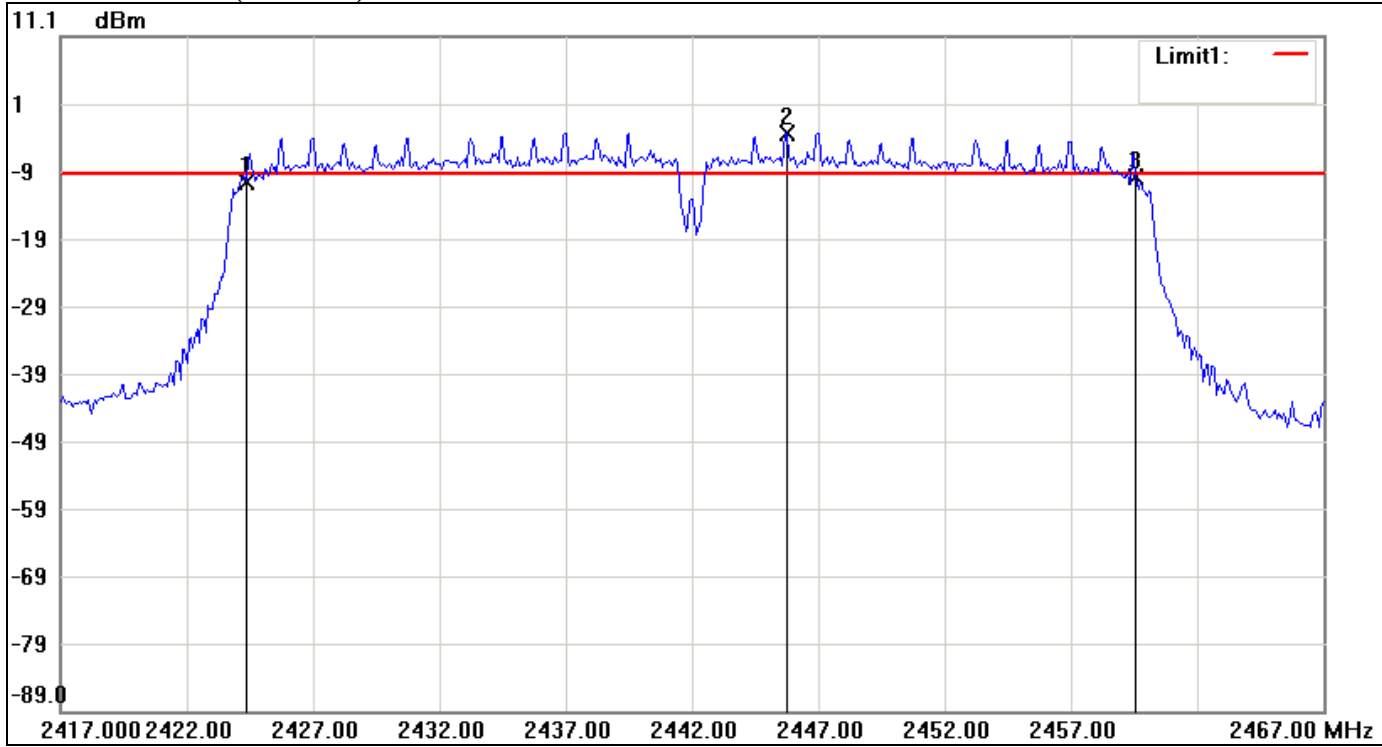


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2404.3333	-10.50	-8.93	-1.57
2	2425.7500	-2.93	-8.93	6.00
3	2439.5833	-9.45	-8.93	-0.52

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	35.25	1.05



6dB Bandwidth (CH Mid)

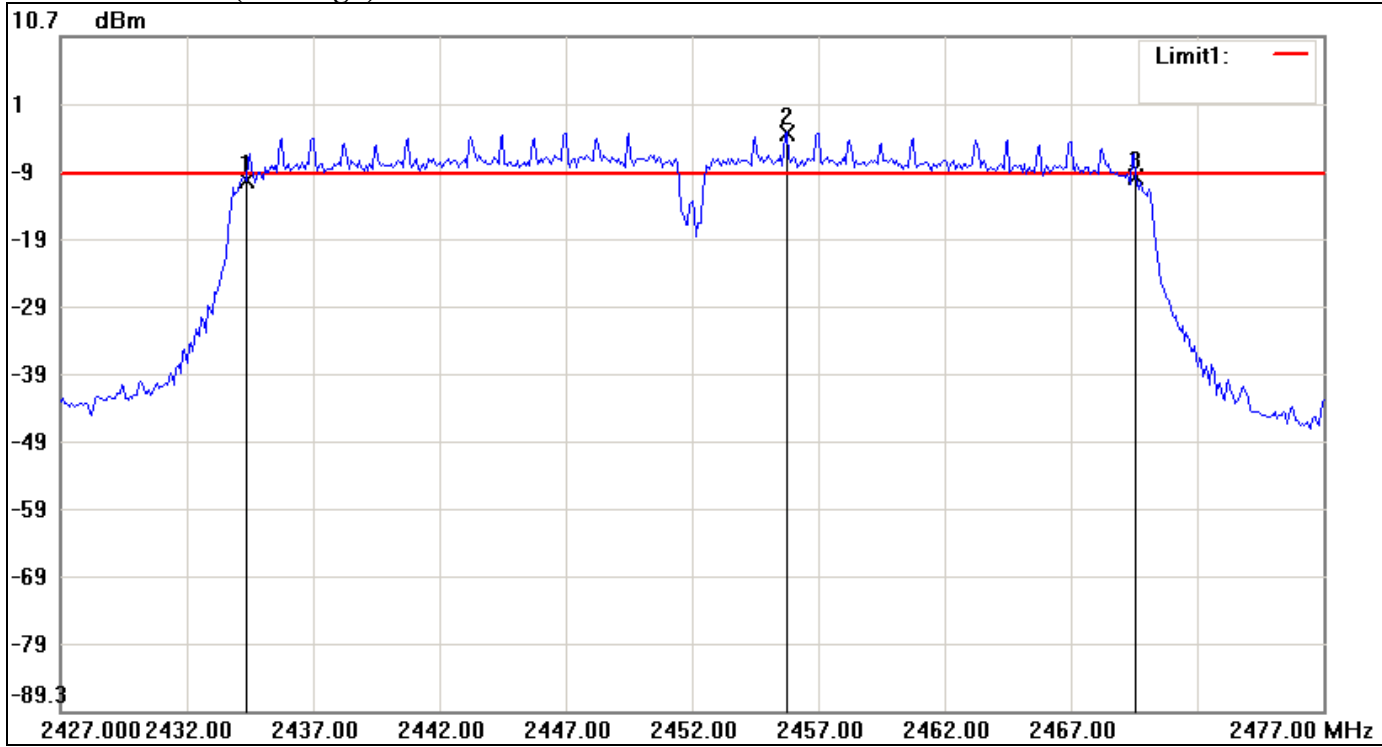


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2424.3333	-10.45	-9.24	-1.21
2	2445.7500	-3.24	-9.24	6.00
3	2459.5833	-9.72	-9.24	-0.48

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	35.25	0.73



6dB Bandwidth (CH High)



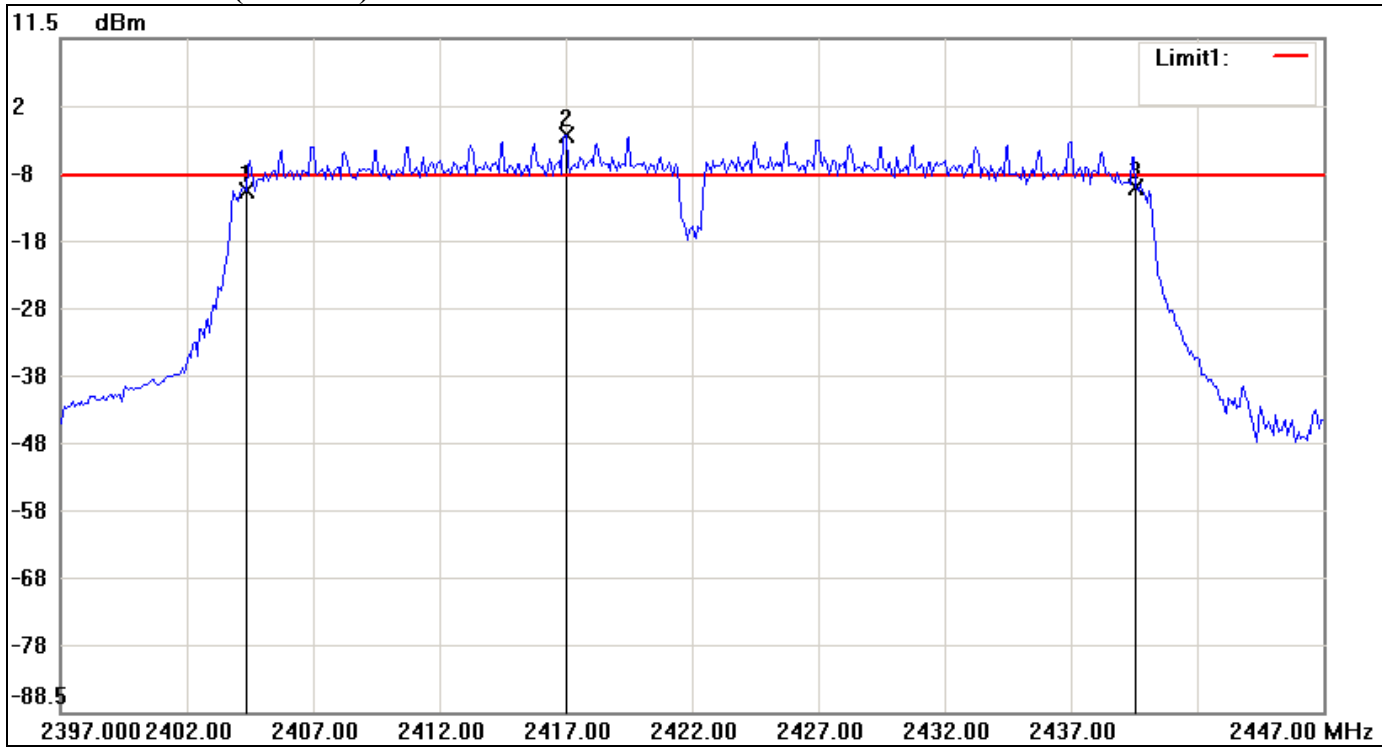
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2434.3333	-10.79	-9.60	-1.19
2	2455.7500	-3.60	-9.60	6.00
3	2469.5833	-10.23	-9.60	-0.63

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	35.25	0.56



IEEE 802.11n HT 40 MHz mode / Chain 1

6dB Bandwidth (CH Low)

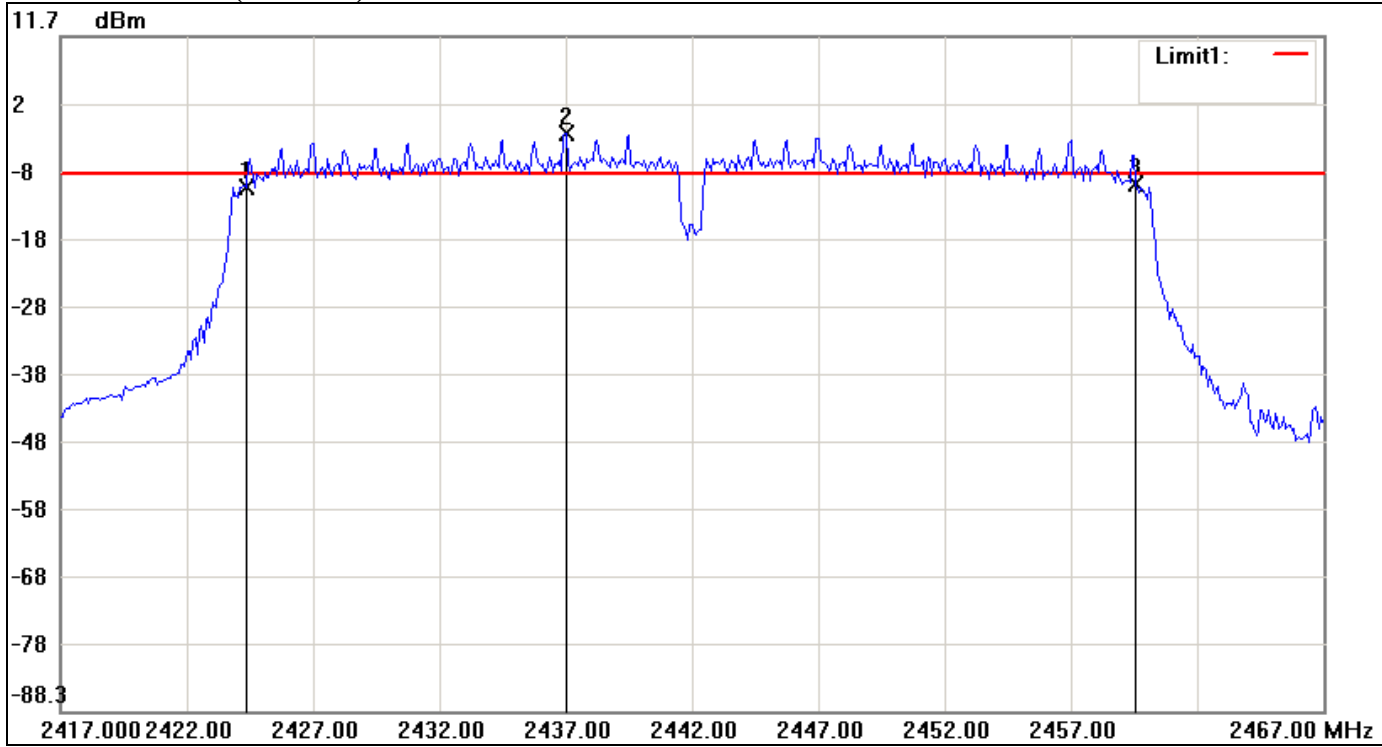


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2404.3333	-11.00	-8.85	-2.15
2	2417.0000	-2.85	-8.85	6.00
3	2439.5833	-10.66	-8.85	-1.81

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	35.25	0.34



6dB Bandwidth (CH Mid)

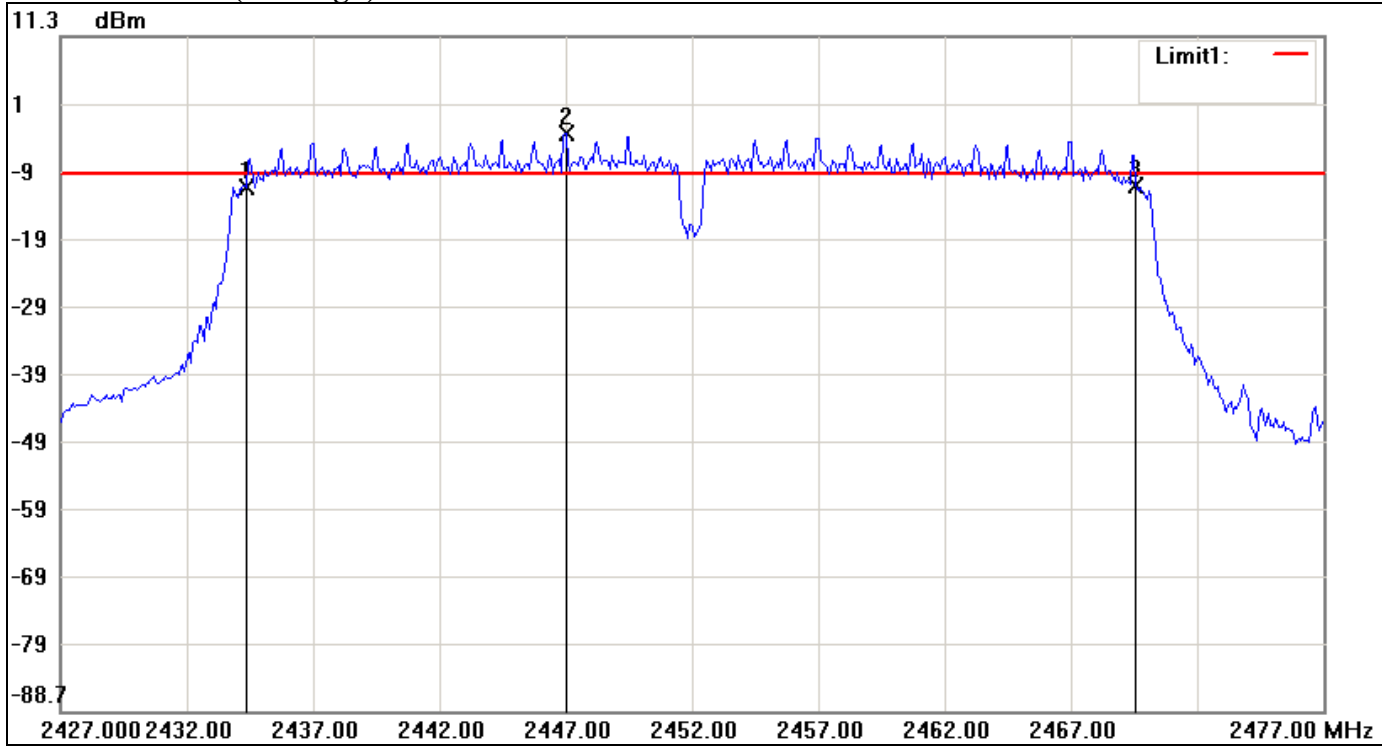


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2424.3333	-10.78	-8.65	-2.13
2	2437.0000	-2.65	-8.65	6.00
3	2459.5833	-10.15	-8.65	-1.50

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	35.25	0.63



6dB Bandwidth (CH High)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2434.3333	-11.12	-9.04	-2.08
2	2447.0000	-3.04	-9.04	6.00
3	2469.5833	-10.83	-9.04	-1.79

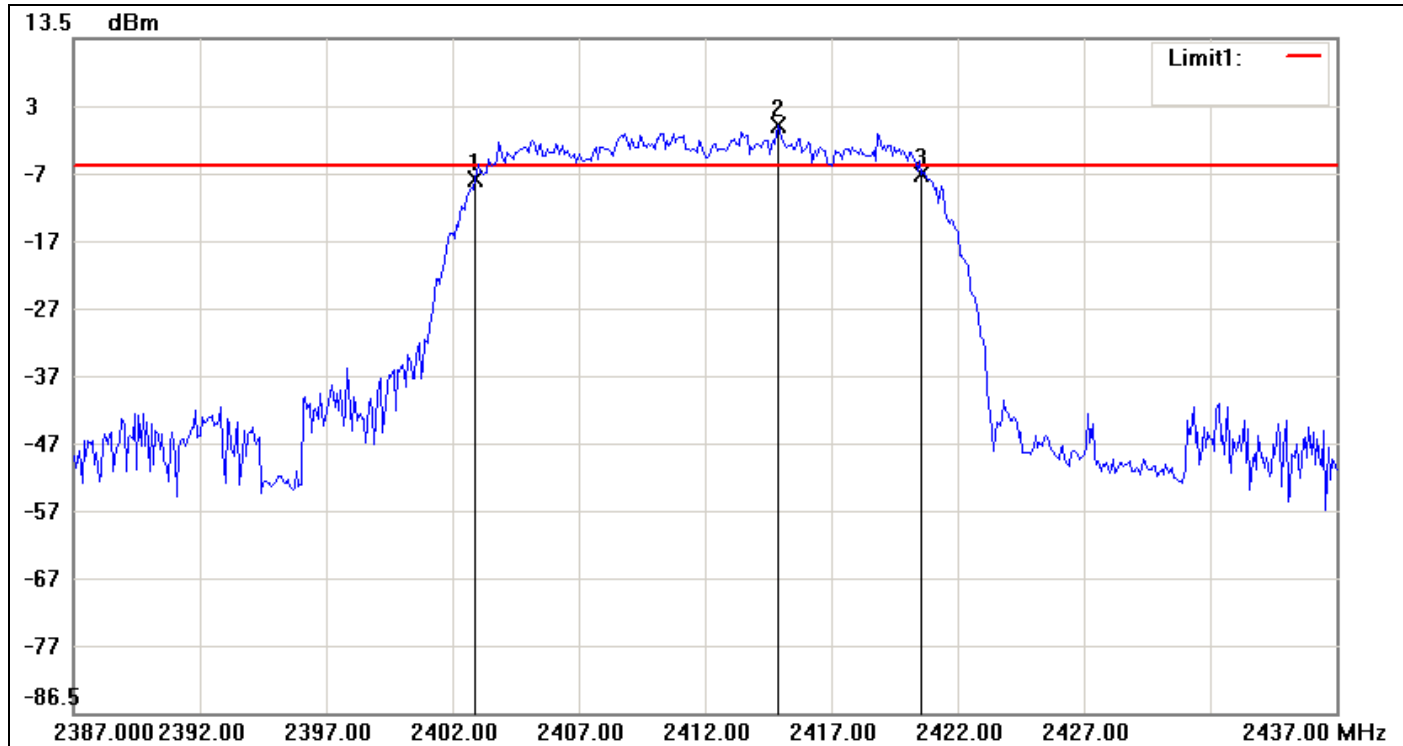
No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	35.25	0.29



For Single

IEEE 802.11n HT 20 MHz mode Channel mode / Chin 0

6dB Bandwidth (CH Low)

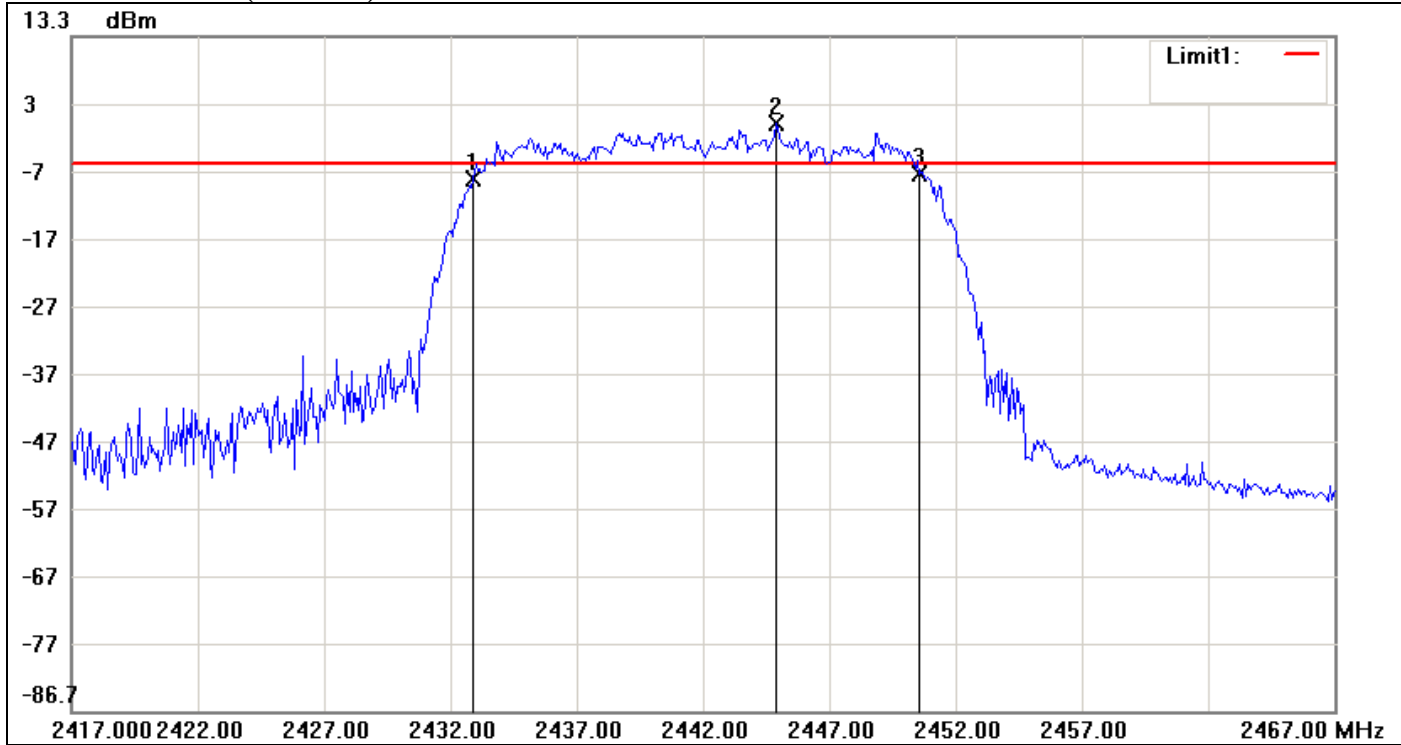


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2402.9167	-7.49	-5.31	-2.18
2	2414.9167	0.69	-5.31	6.00
3	2420.5833	-6.70	-5.31	-1.39

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.6666	0.79



6dB Bandwidth (CH Mid)

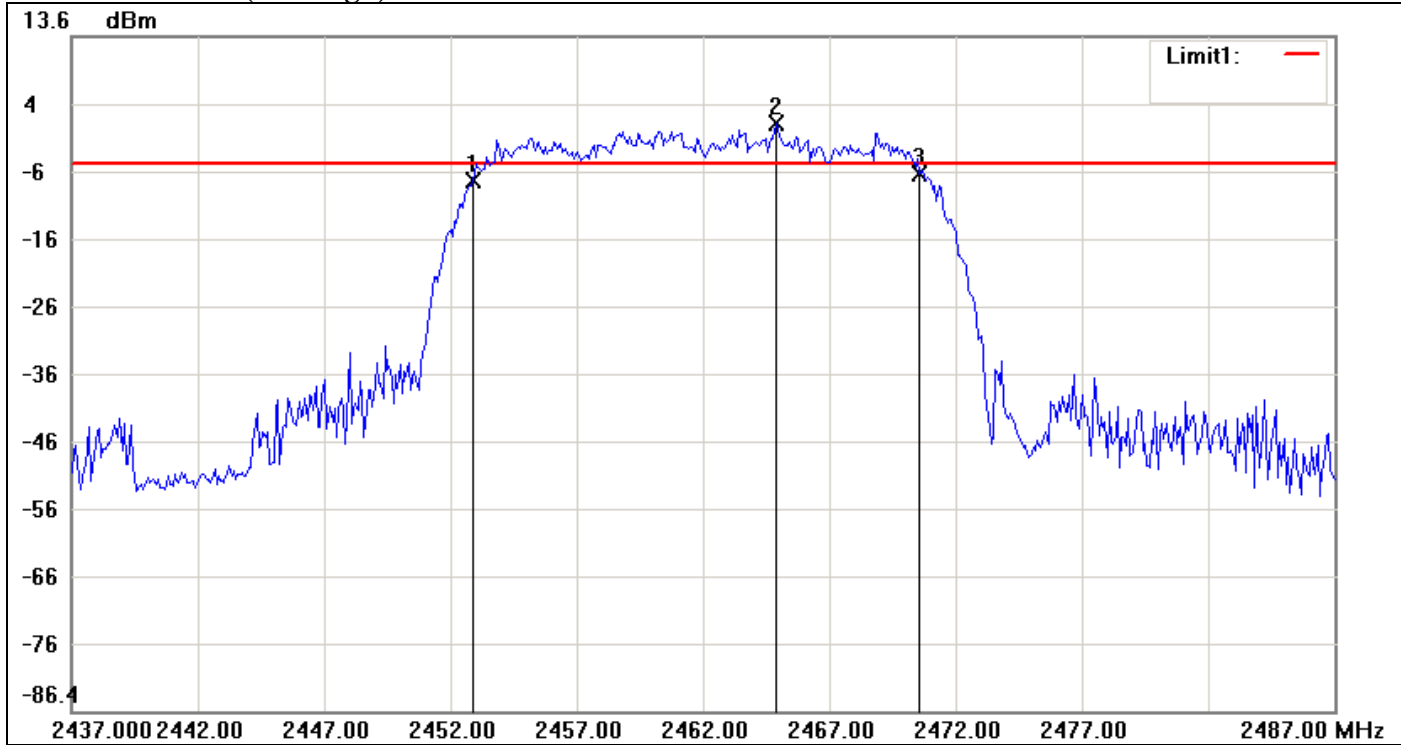


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2432.9167	-7.75	-5.63	-2.12
2	2444.9167	0.37	-5.63	6.00
3	2450.5833	-7.09	-5.63	-1.46

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.6666	0.66



6dB Bandwidth (CH High)



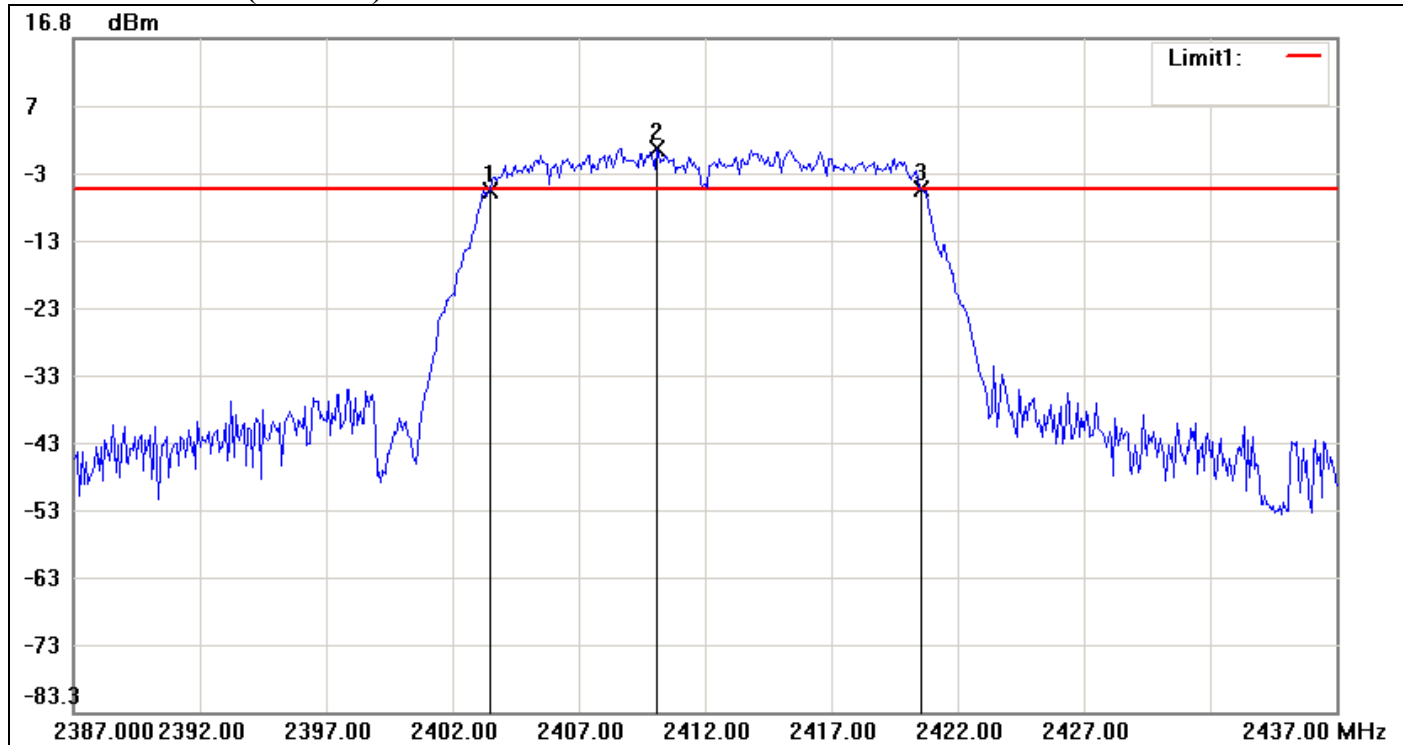
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2452.9167	-7.63	-5.28	-2.35
2	2464.9167	0.72	-5.28	6.00
3	2470.5833	-6.70	-5.28	-1.42

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.6666	0.93



IEEE 802.11n HT 20 MHz mode Channel mode / Chain 1

6dB Bandwidth (CH Low)

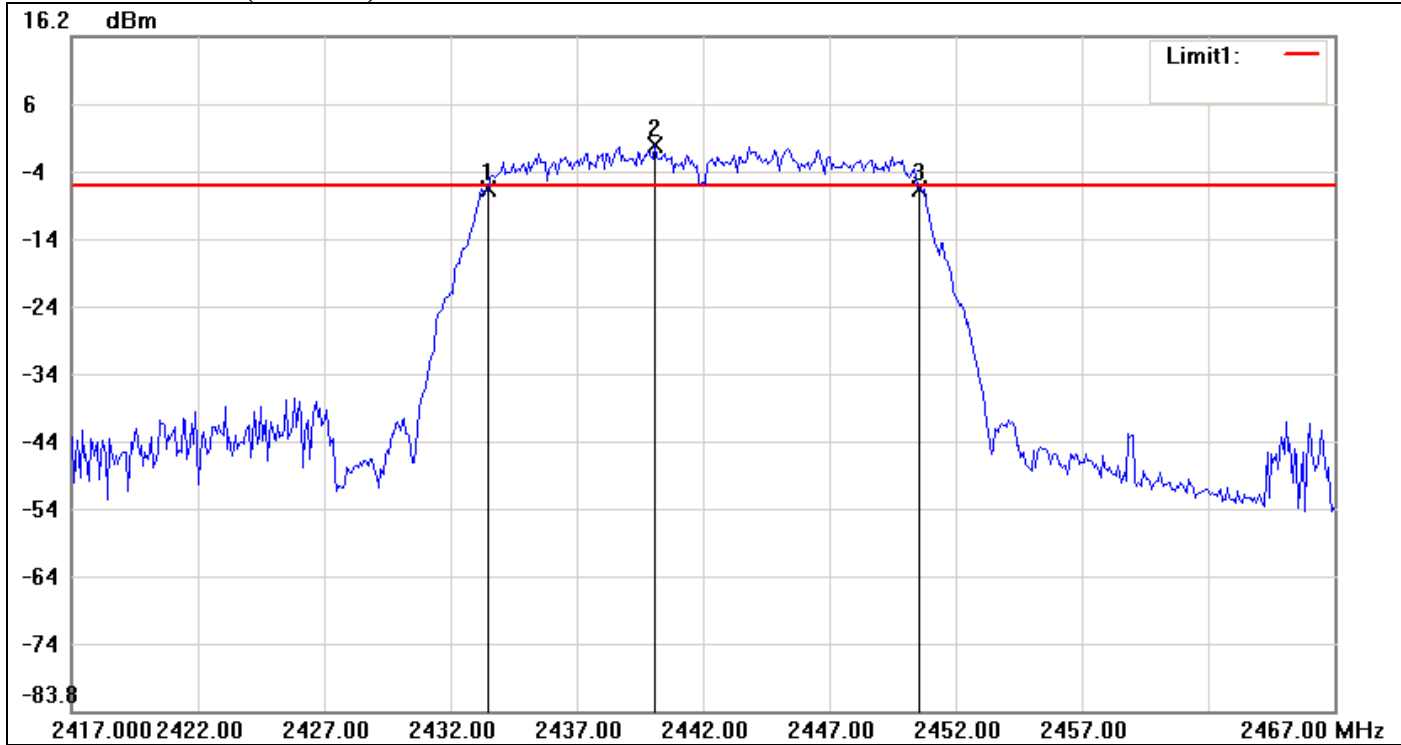


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2403.5000	-5.86	-5.51	-0.35
2	2410.0833	0.49	-5.51	6.00
3	2420.5833	-5.71	-5.51	-0.20

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.0833	0.15



6dB Bandwidth (CH Mid)

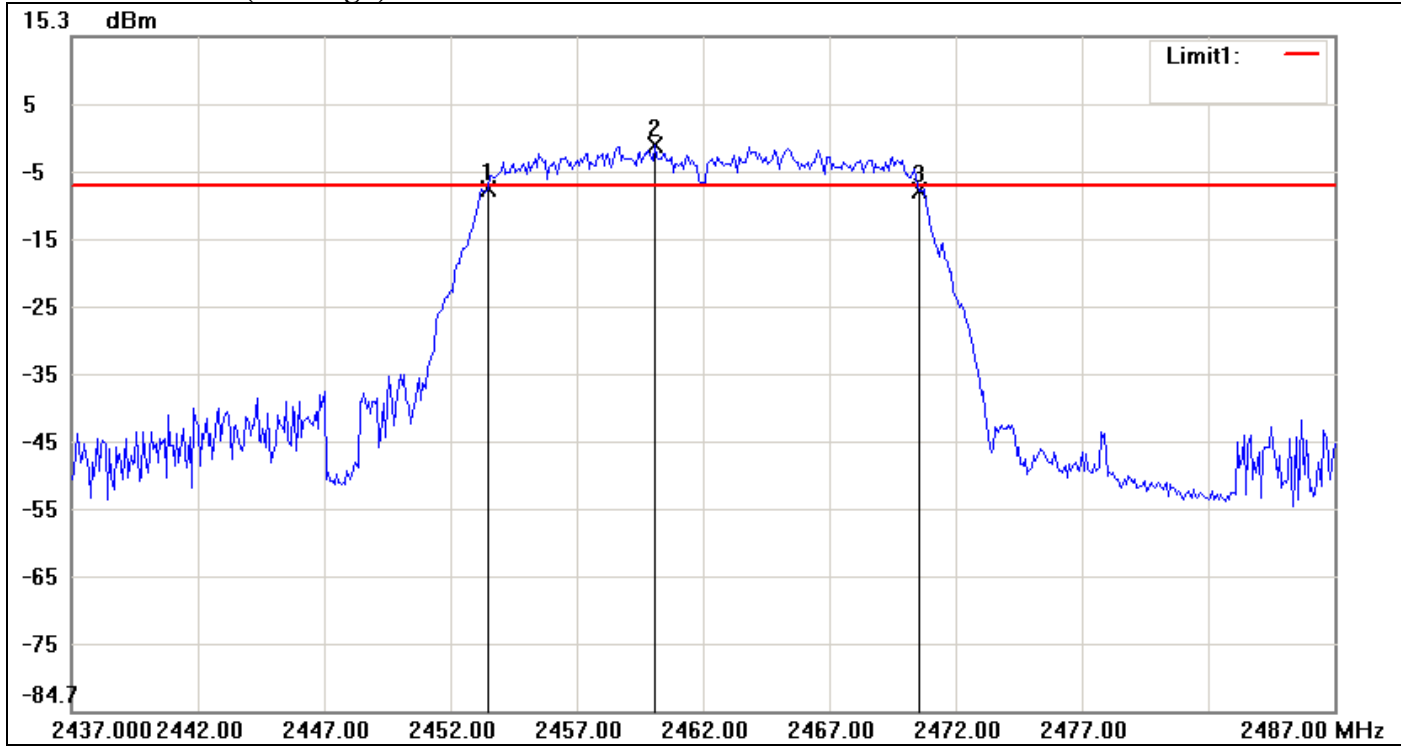


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2433.5000	-6.42	-6.07	-0.35
2	2440.0833	-0.07	-6.07	6.00
3	2450.5833	-6.54	-6.07	-0.47

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.0833	-0.12



6dB Bandwidth (CH High)



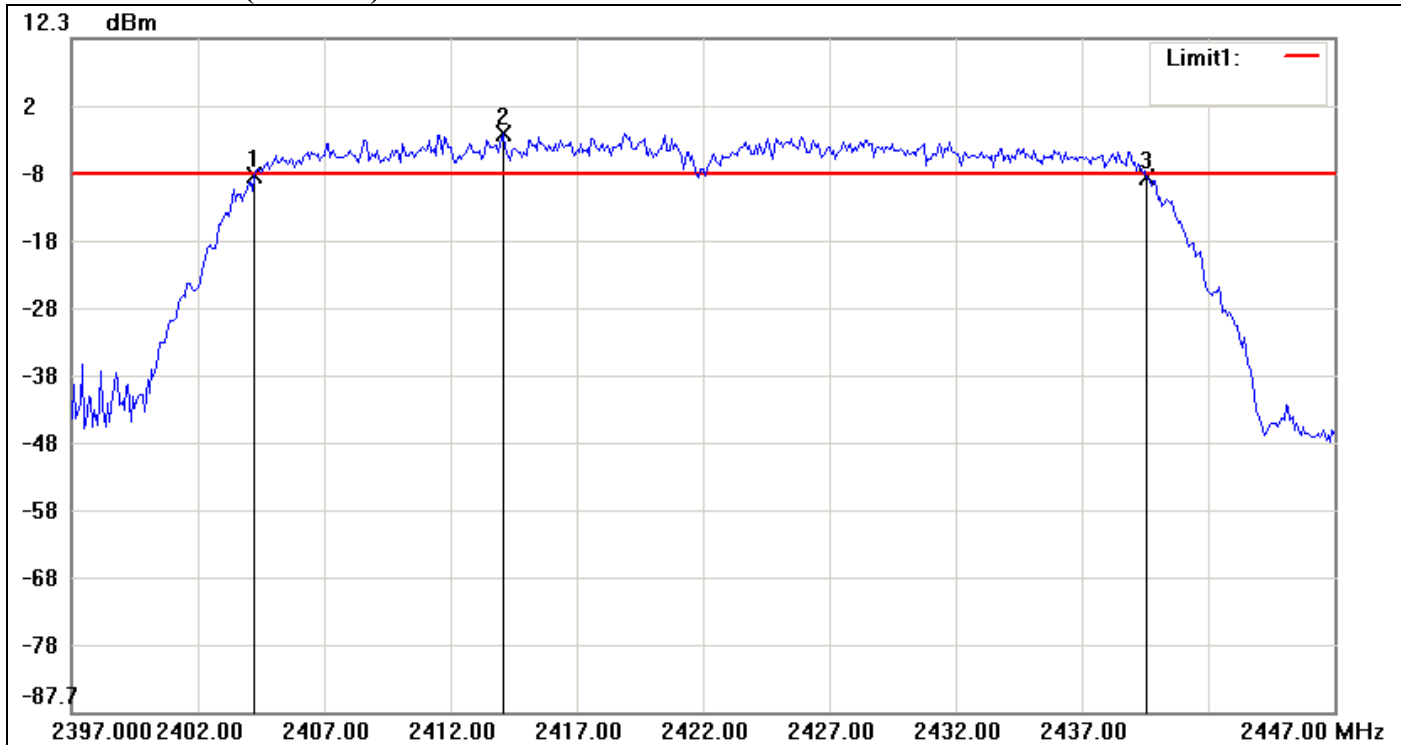
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2453.5000	-7.32	-6.89	-0.43
2	2460.0833	-0.89	-6.89	6.00
3	2470.5833	-7.54	-6.89	-0.65

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	17.0833	-0.22



IEEE 802.11n HT 40 MHz mode / Chain 0

6dB Bandwidth (CH Low)

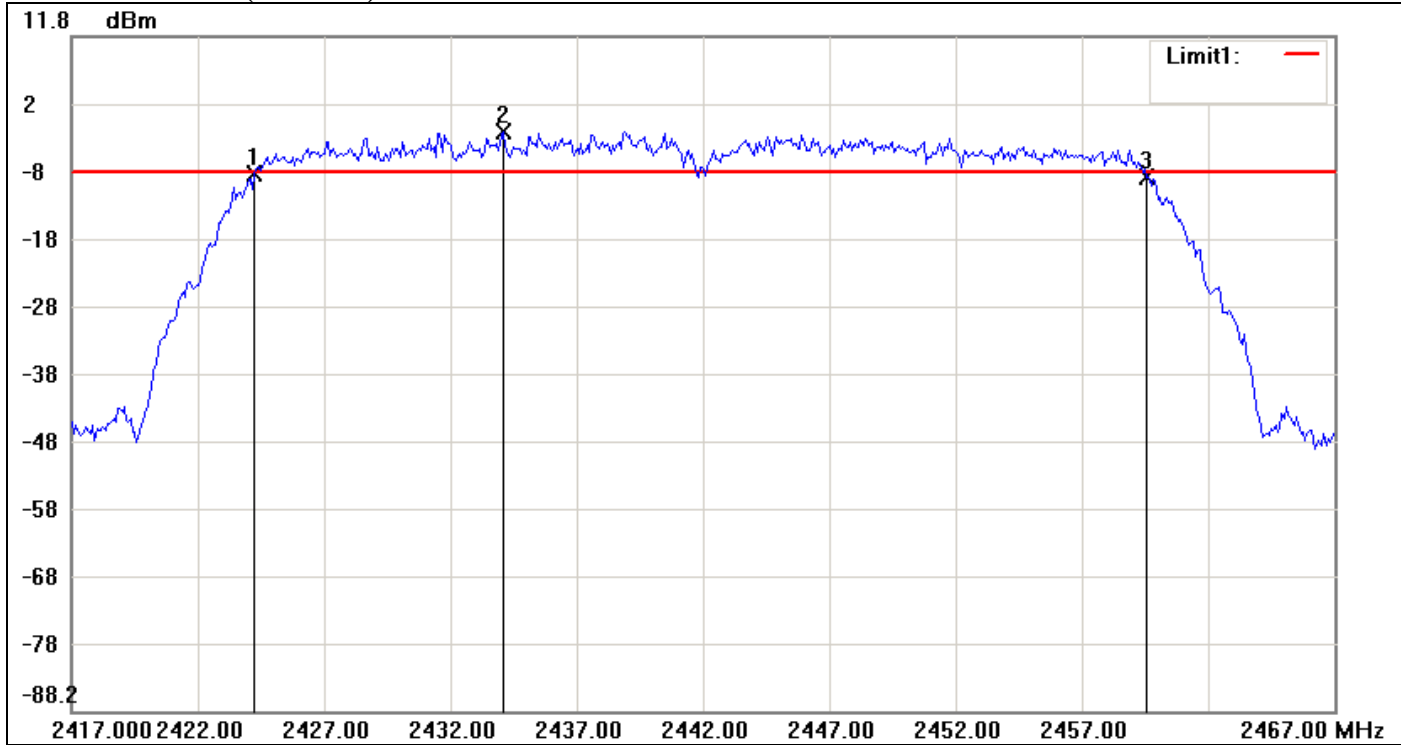


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2404.2500	-7.99	-7.84	-0.15
2	2414.0833	-1.84	-7.84	6.00
3	2439.5833	-8.32	-7.84	-0.48

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	35.3333	-0.33



6dB Bandwidth (CH Mid)

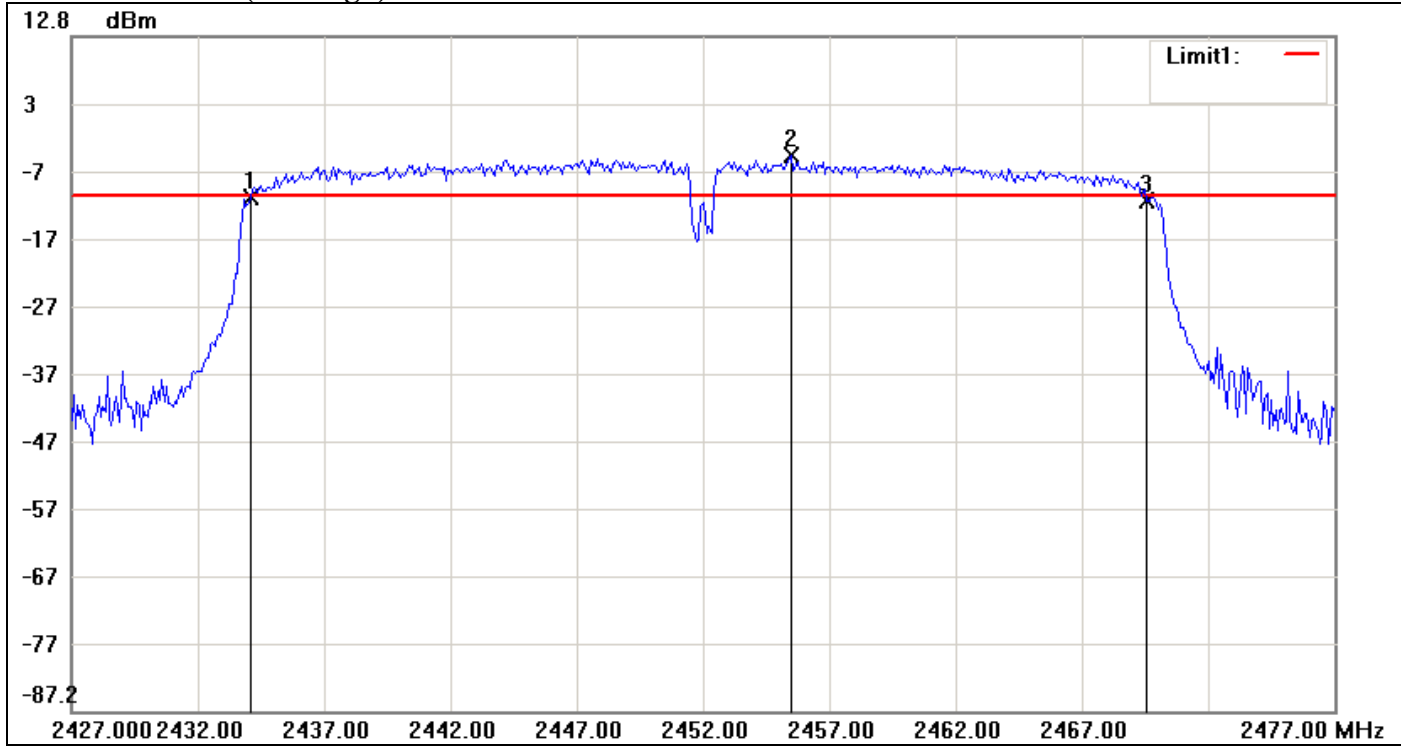


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2424.2500	-8.47	-8.22	-0.25
2	2434.0833	-2.22	-8.22	6.00
3	2459.5833	-8.99	-8.22	-0.77

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	35.3333	-0.52



6dB Bandwidth (CH High)



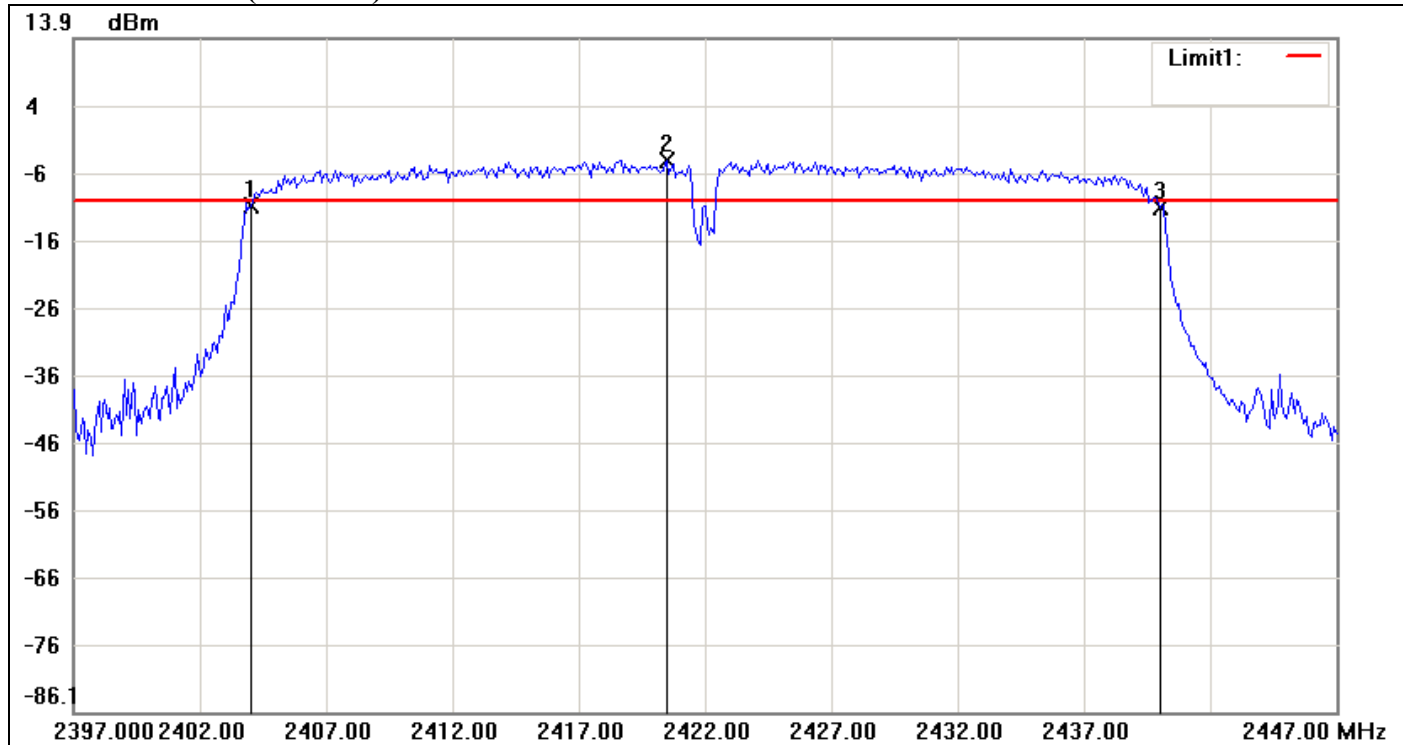
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2434.0833	-11.06	-10.91	-0.15
2	2455.5000	-4.91	-10.91	6.00
3	2469.5833	-11.63	-10.91	-0.72

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	35.5	-0.57



IEEE 802.11n HT 40 MHz mode / Chain 1

6dB Bandwidth (CH Low)

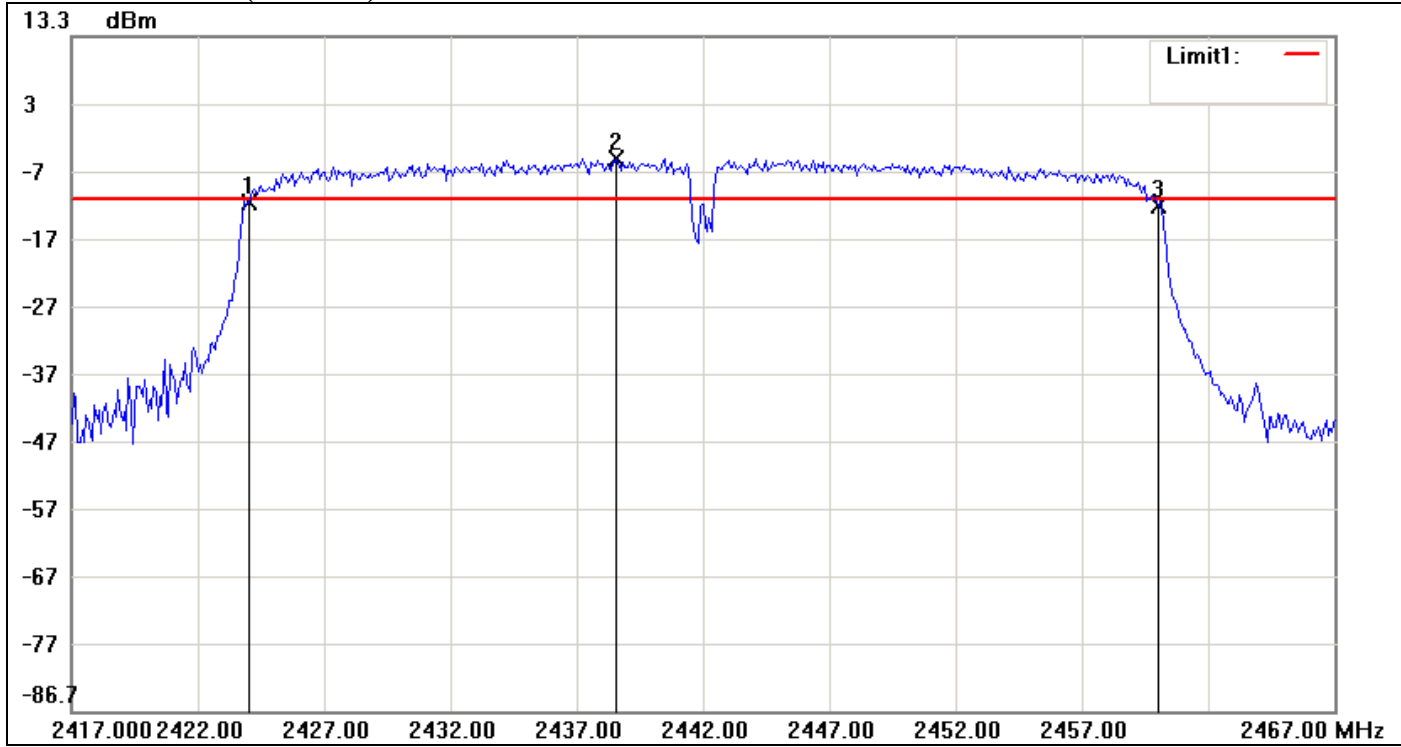


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2404.0000	-11.03	-10.33	-0.70
2	2420.5000	-4.33	-10.33	6.00
3	2440.0000	-11.31	-10.33	-0.98

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	36	-0.28



6dB Bandwidth (CH Mid)

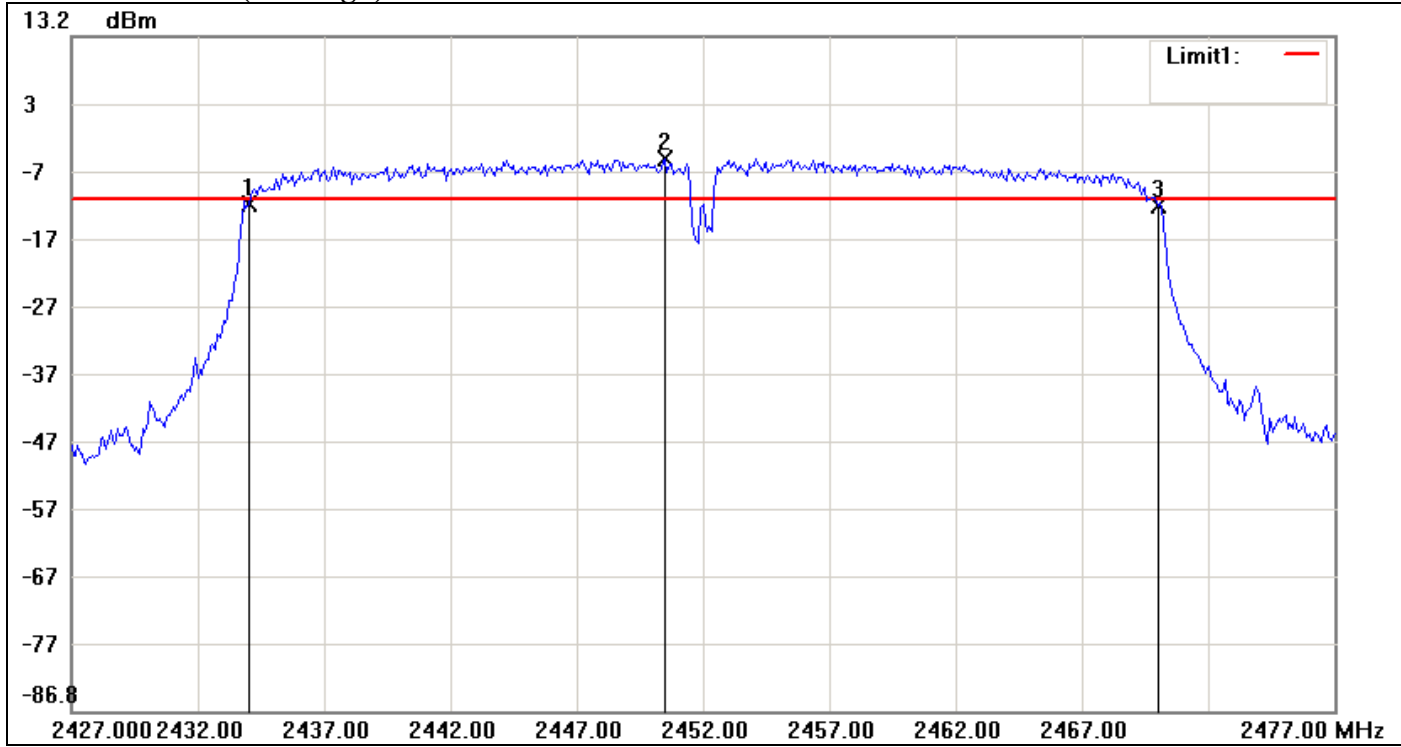


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2424.0000	-11.40	-10.72	-0.68
2	2438.5833	-4.72	-10.72	6.00
3	2460.0000	-11.78	-10.72	-1.06

No.	Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	36
		-0.38



6dB Bandwidth (CH High)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2434.0000	-11.63	-11.00	-0.63
2	2450.5000	-5.00	-11.00	6.00
3	2470.0000	-12.04	-11.00	-1.04

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	36	-0.41



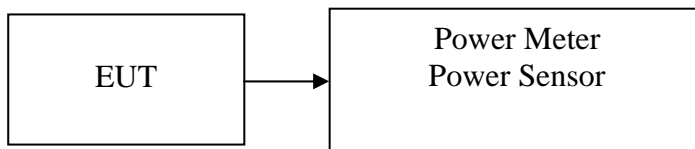
7.2 PEAK POWER

LIMIT

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

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

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Power Meter. The Power Meter is set to the peak power detection.

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

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	18.86	0.0769	1.00	PASS
Mid	2442	18.52	0.0711		PASS
High	2462	18.32	0.0679		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	22.58	0.1811	1.00	PASS
Mid	2442	22.77	0.1892		PASS
High	2462	22.68	0.1854		PASS

For MIMO**Test mode: IEEE 802.11n HT 20 MHz mode Channel mode**

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	18.81	19.36	22.10	0.1623	1.00	PASS
Mid	2442	18.71	19.41	22.08	0.1616		PASS
High	2462	18.94	19.39	22.18	0.1652		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	20.95	20.27	23.63	0.2309	1.00	PASS
Mid	2442	20.87	20.43	23.67	0.2326		PASS
High	2452	20.49	20.16	23.34	0.2157		PASS

Remark: Total Output Power (w) = Chain 0 ($10^{(Output Power / 10) / 1000}$) + Chain 1 ($10^{(Output Power / 10) / 1000}$)



For Single

Test mode: IEEE 802.11n HT 20 MHz mode Channel mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	21.92	0.1556	1.00	PASS
Mid	2442	21.72	0.1486		PASS
High	2462	21.87	0.1538		PASS

Channel	Frequency (MHz)	Chain 1 Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2412	21.87	0.1538	1.00	PASS
Mid	2442	21.84	0.1528		PASS
High	2462	22.02	0.1592		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	21.35	0.1365	1.00	PASS
Mid	2442	21.72	0.1486		PASS
High	2452	21.35	0.1365		PASS

Channel	Frequency (MHz)	Chain 1 Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2422	21.48	0.1406	1.00	PASS
Mid	2442	21.42	0.1387		PASS
High	2452	21.45	0.1396		PASS

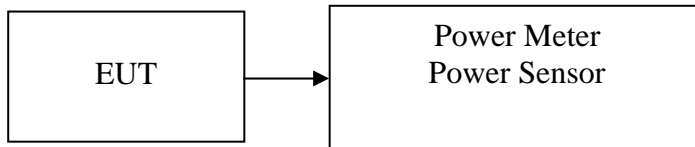


7.3 AVERAGE POWER

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Power Meter. The Power Meter is set to the peak power detection.

TEST RESULTS

No non-compliance noted.



Test Data

Test mode: IEEE 802.11b mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	16.32	0.0429
Mid	2442	15.98	0.0396
High	2462	15.83	0.0383

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2412	13.11	0.0205
Mid	2442	13.17	0.0207
High	2462	13.24	0.0211

For MIMO

Test mode: IEEE 802.11n HT 20 MHz mode Channel mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Total Output Power (W)
Low	2412	9.02	9.08	12.06	0.0161
Mid	2442	8.94	9.06	12.01	0.0159
High	2462	9.09	9.15	12.13	0.0163

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Output Power (dBm)	Total Output Power (W)
Low	2422	8.98	8.79	11.90	0.0155
Mid	2442	9.14	9.03	12.10	0.0162
High	2452	8.87	8.78	11.84	0.0153

Remark: Total Output Power (w) = Chain 0 (10^(Output Power /10)/1000) + Chain 1 (10^(Output Power /10)/1000)



For Single

Test mode: IEEE 802.11n HT 20 MHz mode Channel mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Output Power (W)
Low	2412	11.54	0.0143
Mid	2442	11.12	0.0129
High	2462	11.56	0.0143

Channel	Frequency (MHz)	Chain 1 Output Power (dBm)	Output Power (W)
Low	2412	11.64	0.0146
Mid	2442	11.62	0.0145
High	2462	11.71	0.0148

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Output Power (W)
Low	2422	11.38	0.0137
Mid	2442	11.89	0.0155
High	2452	11.62	0.0145

Channel	Frequency (MHz)	Chain 1 Output Power (dBm)	Output Power (W)
Low	2422	11.84	0.0153
Mid	2442	11.63	0.0146
High	2452	11.73	0.0149

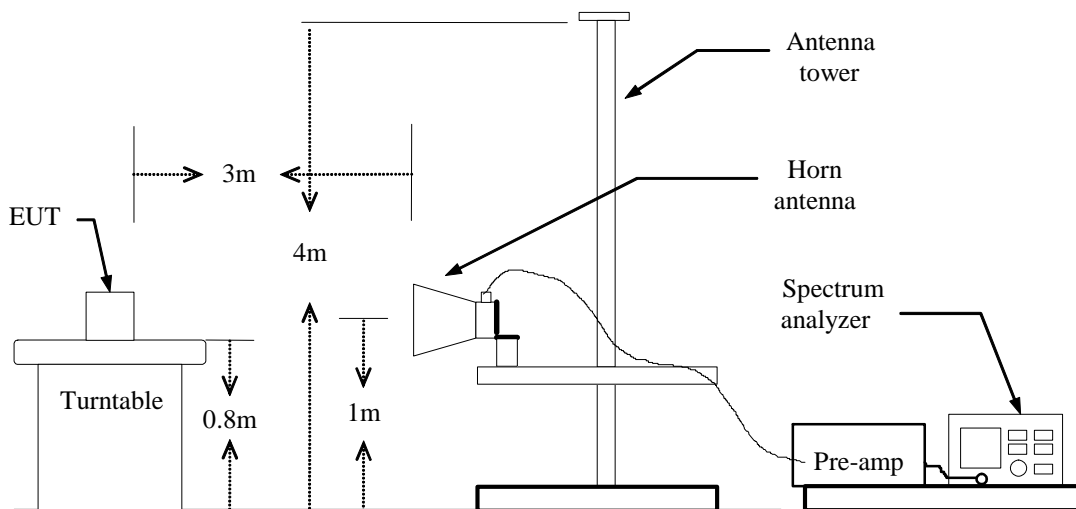


7.4 BAND EDGES MEASUREMENT

LIMIT

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

Test Configuration



TEST PROCEDURE

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

TEST RESULTS

Refer to attach spectrum analyzer data chart.



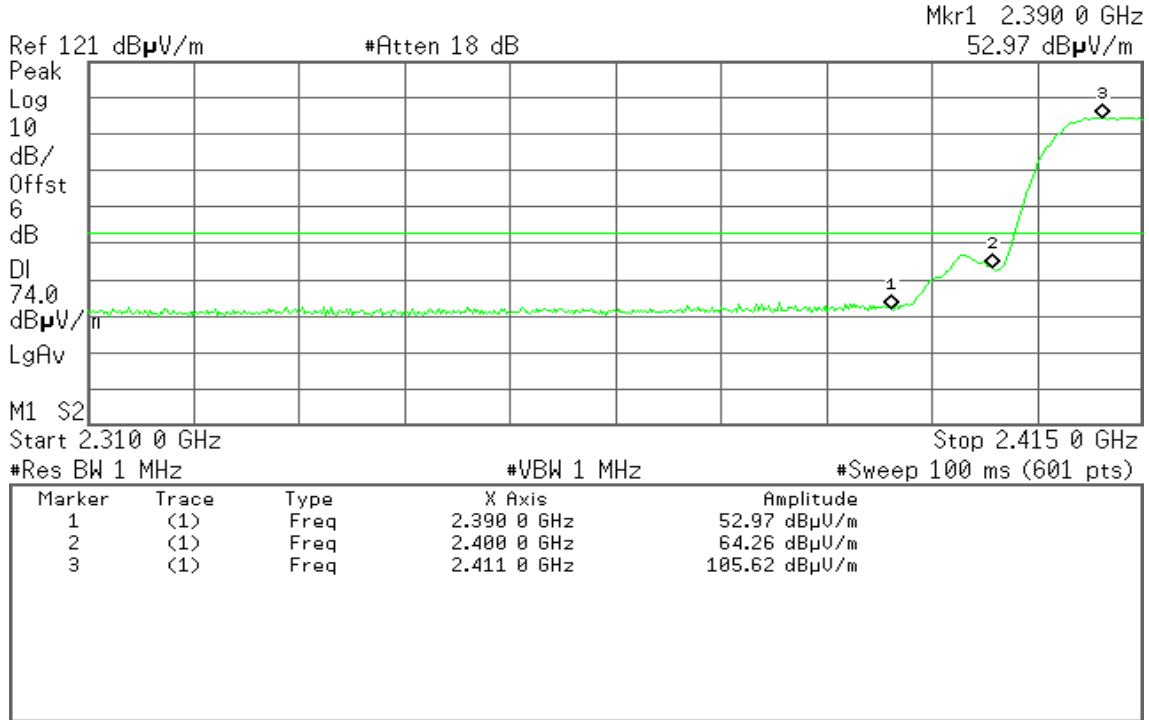
Band Edges (IEEE 802.11b mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 13:52:00 Aug 12, 2011

R T

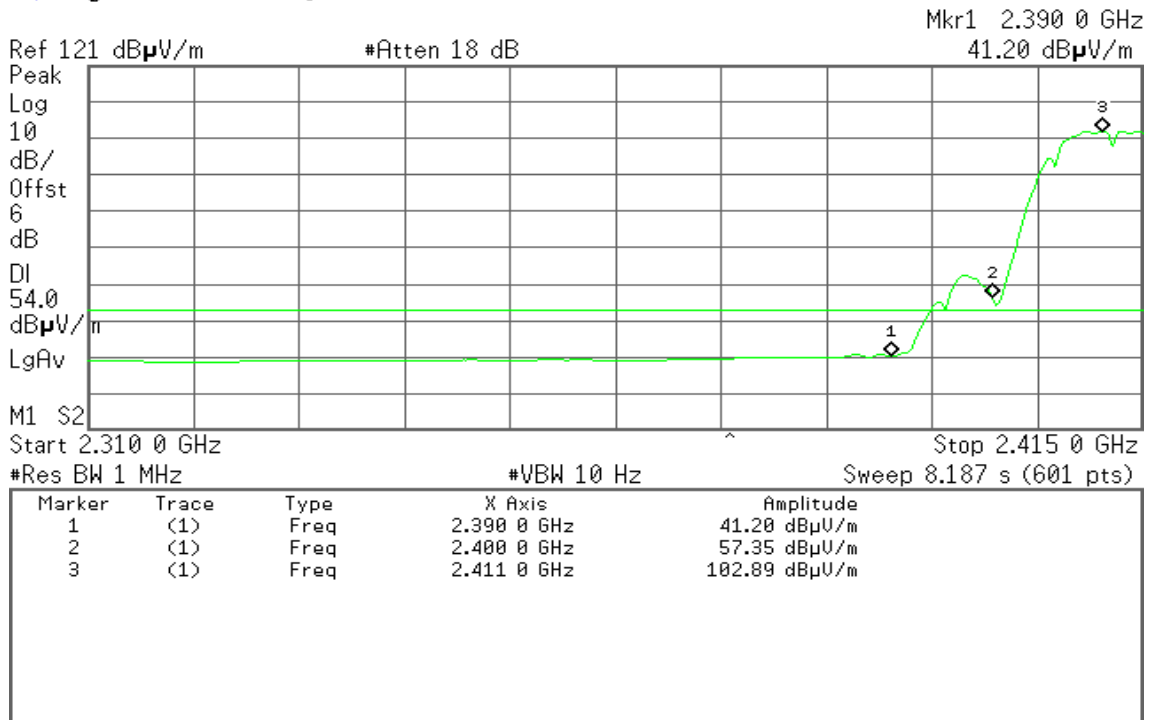


Detector mode: Average

Polarity: Vertical

Agilent 13:52:44 Aug 12, 2011

R T





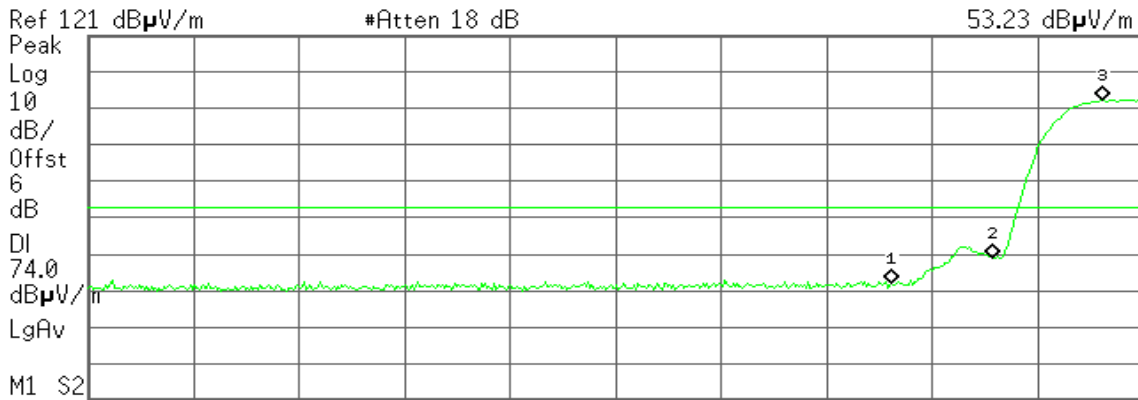
Detector mode: Peak

Polarity: Horizontal

Agilent 13:46:13 Aug 12, 2011

R T

Mkr1 2.390 0 GHz
53.23 dBµV/m



Start 2.310 0 GHz Stop 2.415 0 GHz
#Res BW 1 MHz #VBW 1 MHz #Sweep 100 ms (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 0 GHz	53.23 dBµV/m
2	(1)	Freq	2.400 0 GHz	59.85 dBµV/m
3	(1)	Freq	2.411 0 GHz	103.23 dBµV/m

Detector mode: Average

Polarity: Horizontal

Agilent 13:46:56 Aug 12, 2011

R T

Mkr1 2.390 0 GHz
40.66 dBµV/m



Start 2.310 0 GHz Stop 2.415 0 GHz
#Res BW 1 MHz #VBW 10 Hz Sweep 8.187 s (601 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 0 GHz	40.66 dBµV/m
2	(1)	Freq	2.400 0 GHz	52.17 dBµV/m
3	(1)	Freq	2.411 0 GHz	100.52 dBµV/m



Band Edges (IEEE 802.11b mode / CH High)

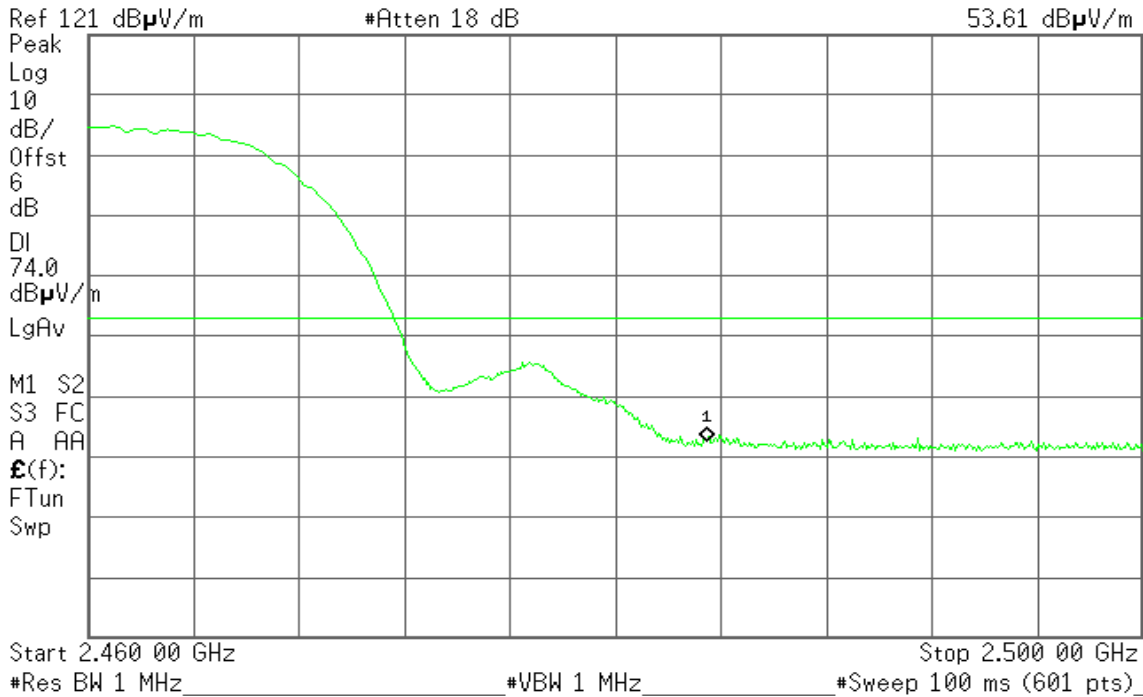
Detector mode: Peak

Polarity: Vertical

Agilent 14:42:20 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
53.61 dB μ V/m



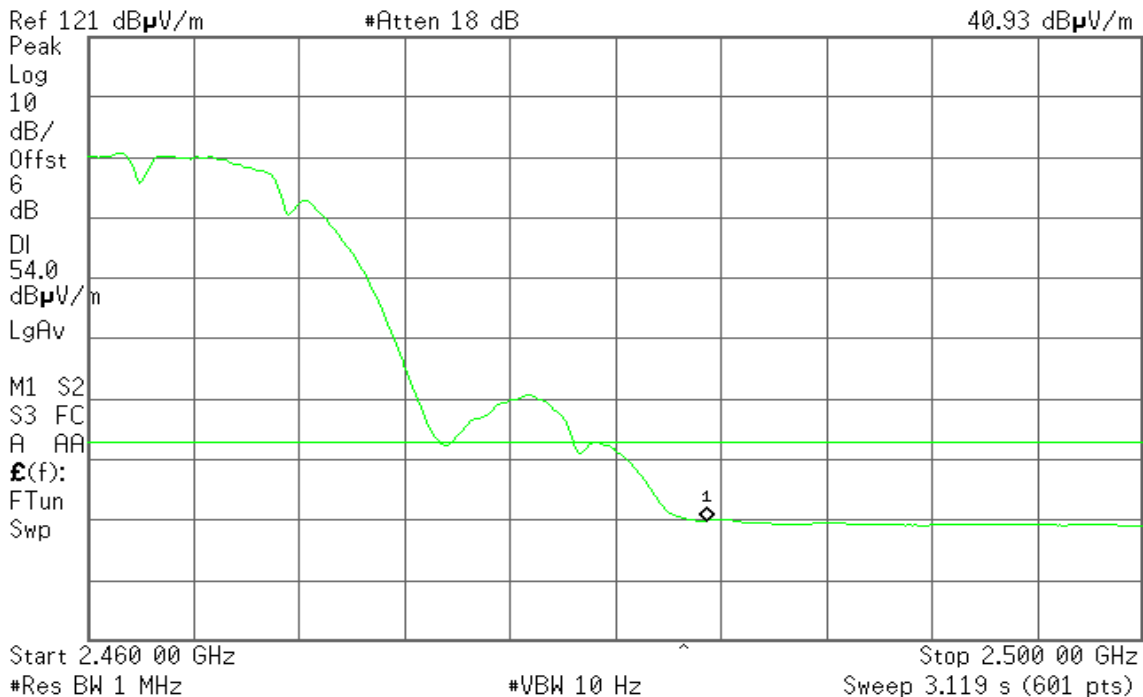
Detector mode: Average

Polarity: Vertical

Agilent 14:42:46 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
40.93 dB μ V/m





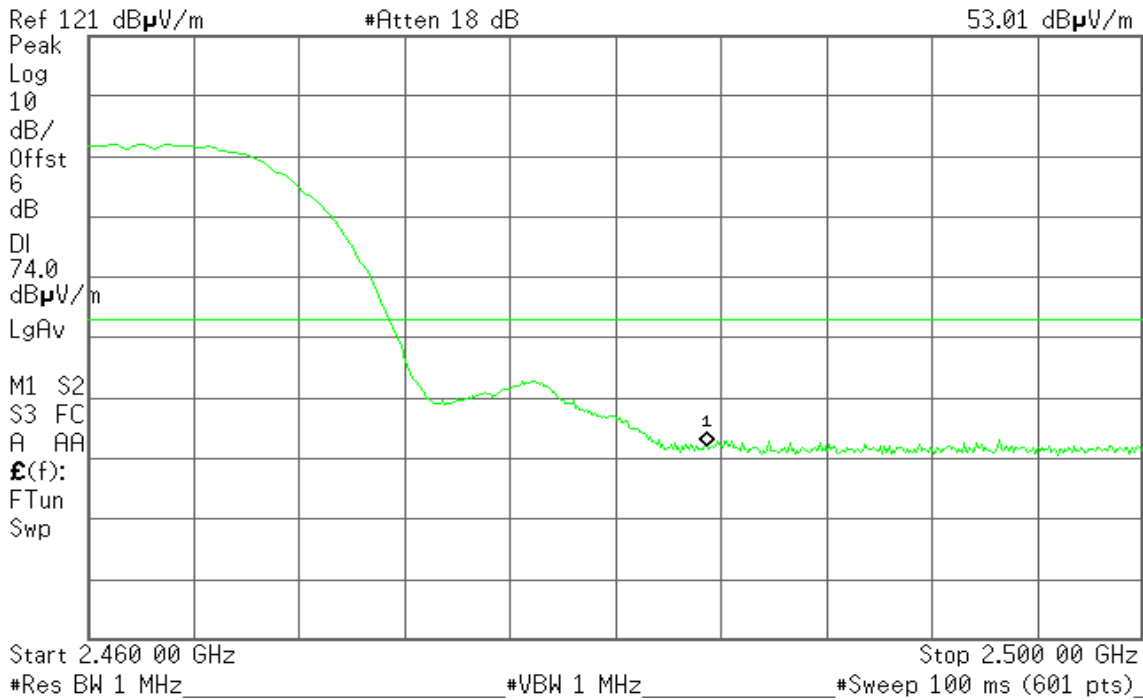
Detector mode: Peak

Polarity: Horizontal

Agilent 14:46:33 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
53.01 dB μ V/m



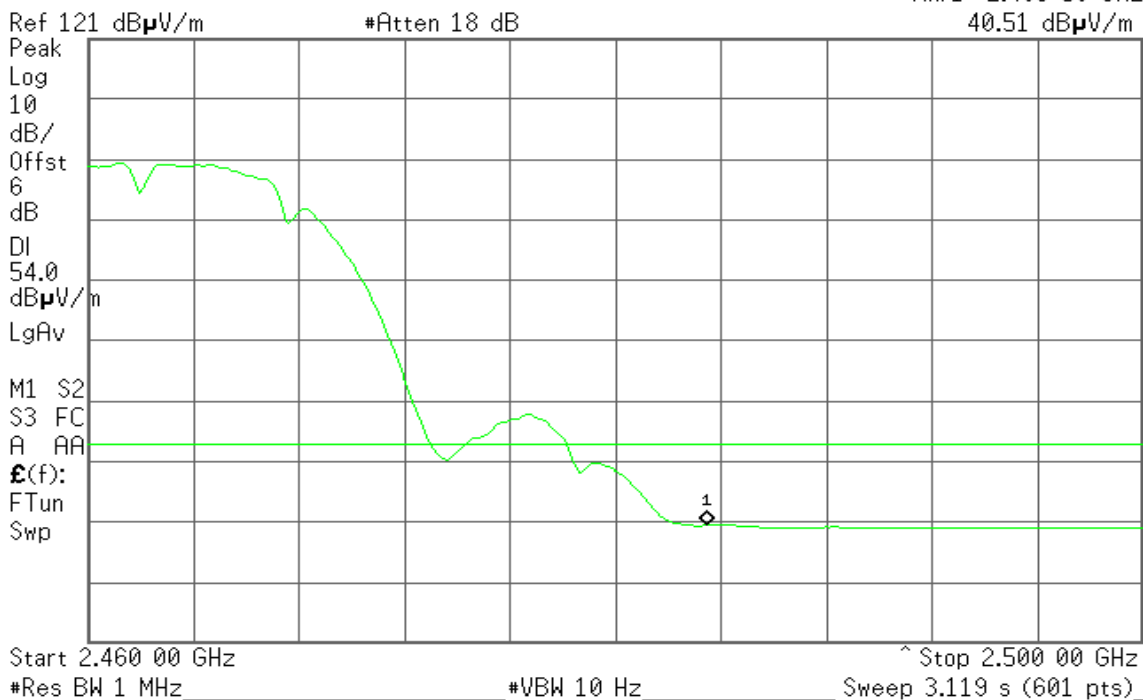
Detector mode: Average

Polarity: Horizontal

Agilent 14:46:59 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
40.51 dB μ V/m





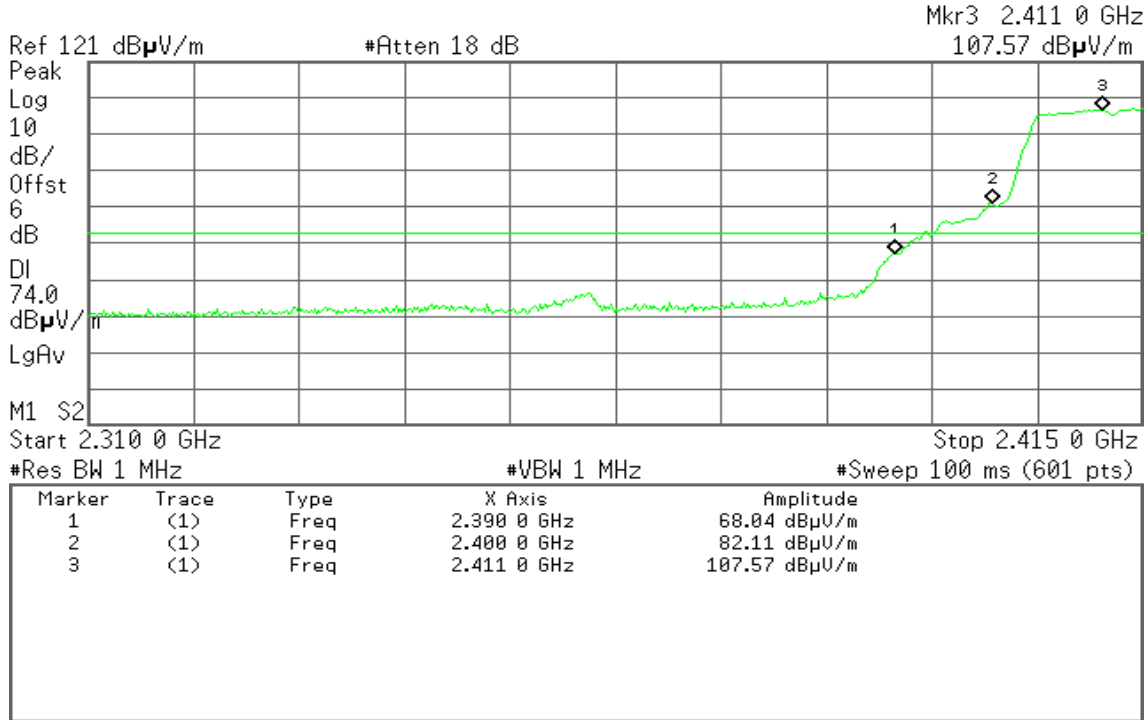
Band Edges (IEEE 802.11g mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 13:35:37 Aug 12, 2011

R T

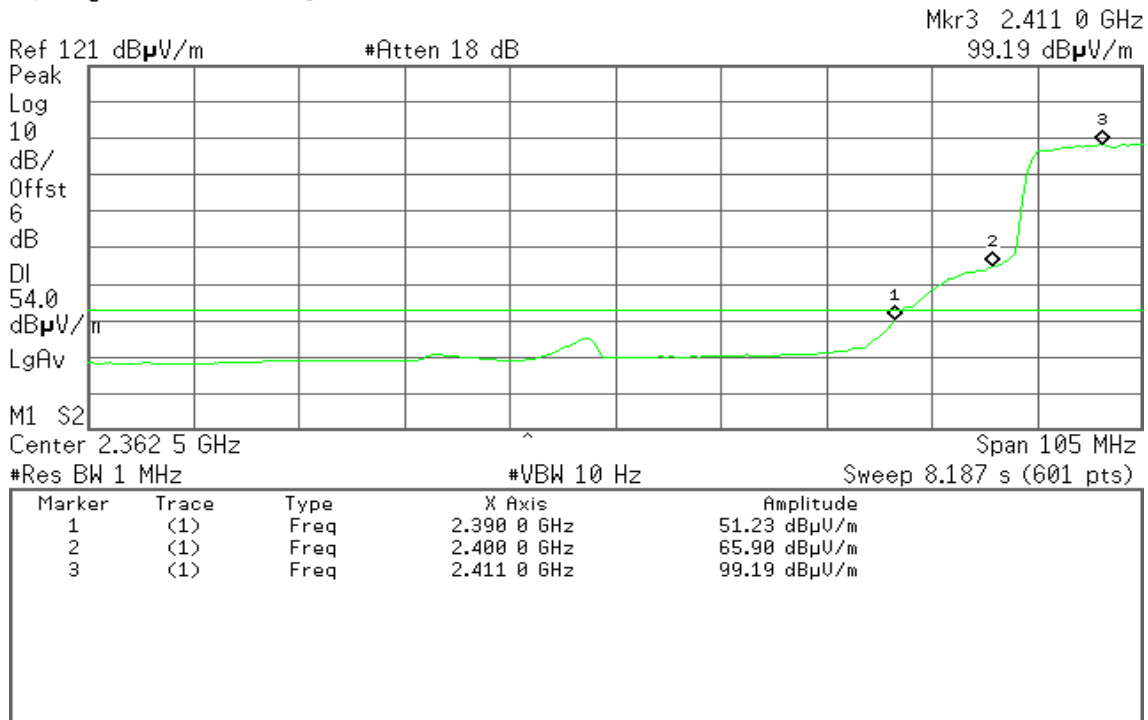


Detector mode: Average

Polarity: Vertical

Agilent 13:34:54 Aug 12, 2011

R T



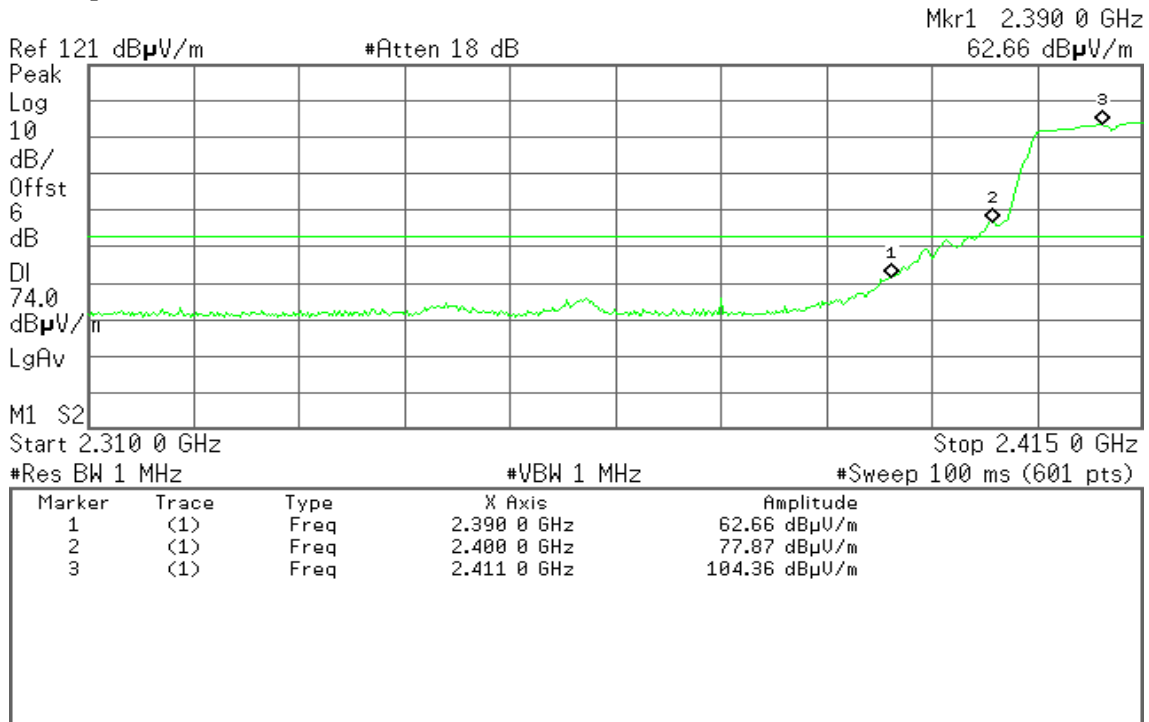


Detector mode: Peak

Polarity: Horizontal

Agilent 13:40:11 Aug 12, 2011

R T

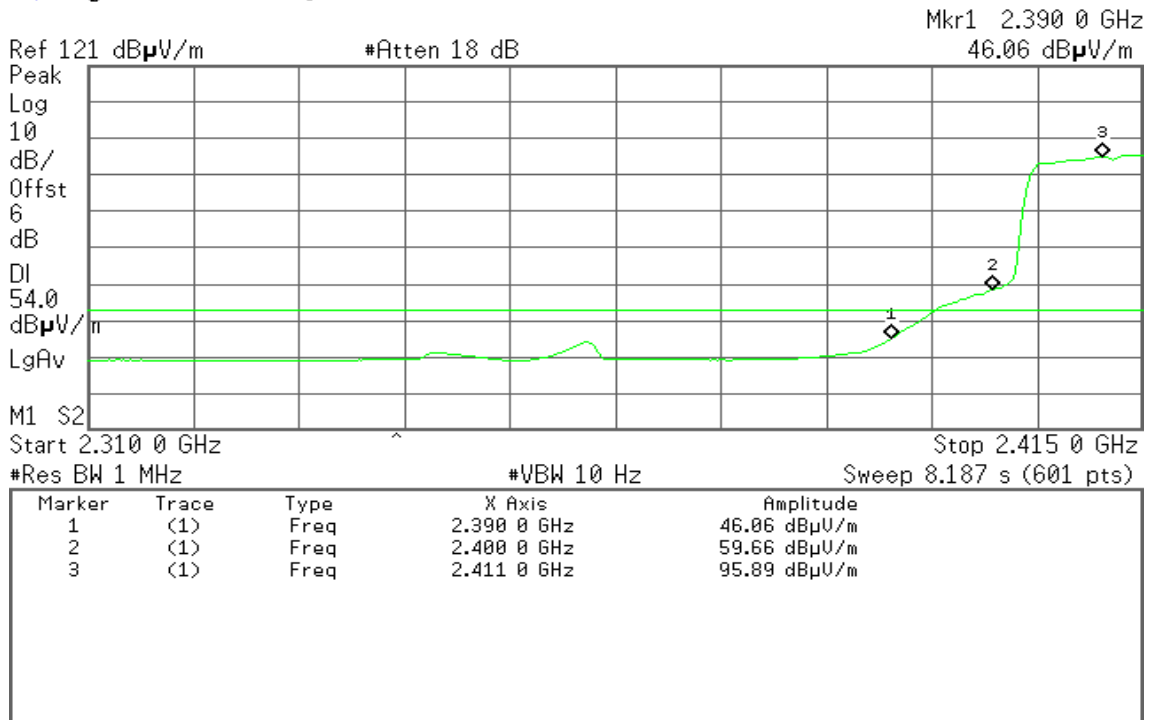


Detector mode: Average

Polarity: Horizontal

Agilent 13:40:51 Aug 12, 2011

R T





Band Edges (IEEE 802.11g mode / CH High)

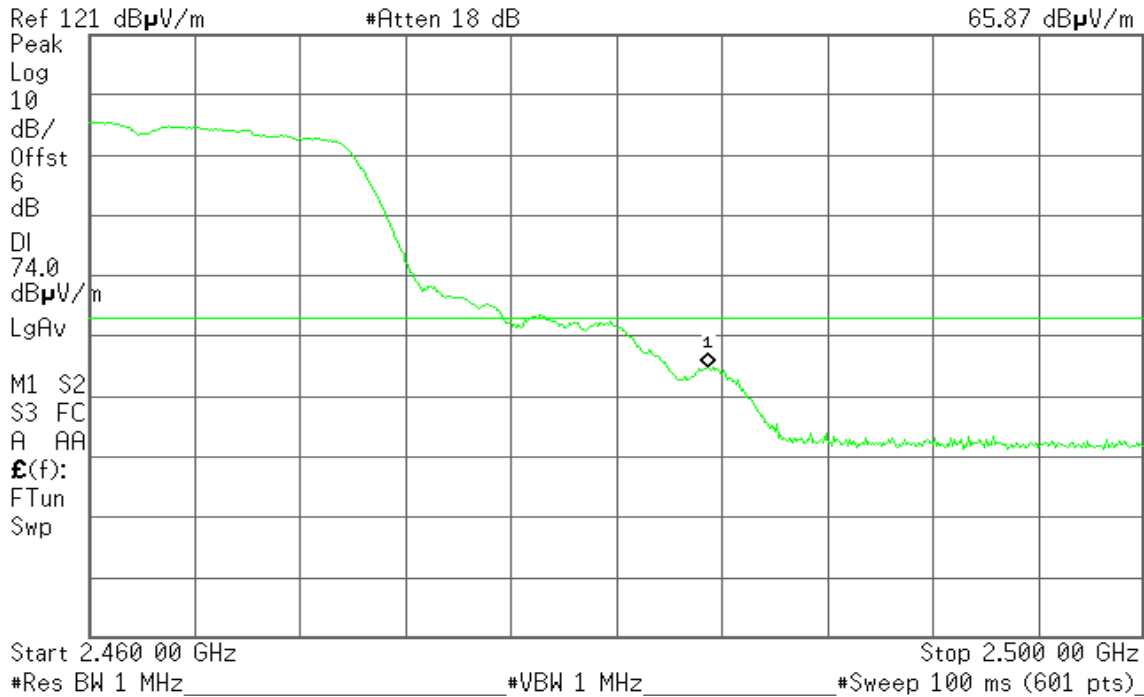
Detector mode: Peak

Polarity: Vertical

Agilent 14:28:33 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
65.87 dB μ V/m



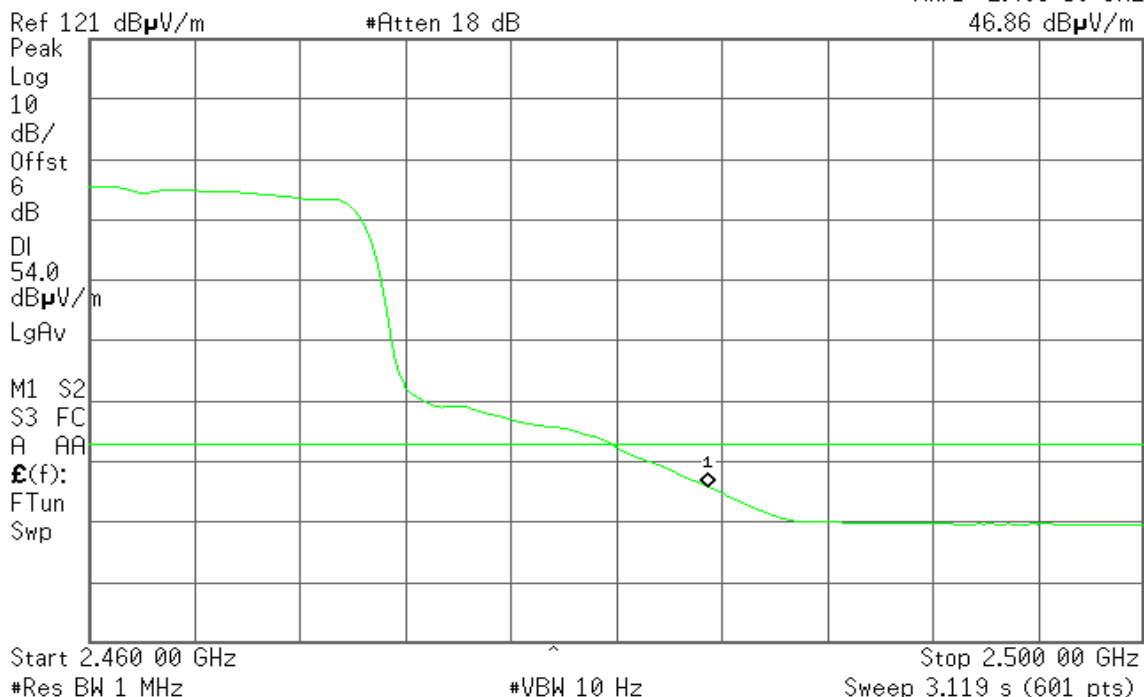
Detector mode: Average

Polarity: Vertical

Agilent 14:28:56 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
46.86 dB μ V/m





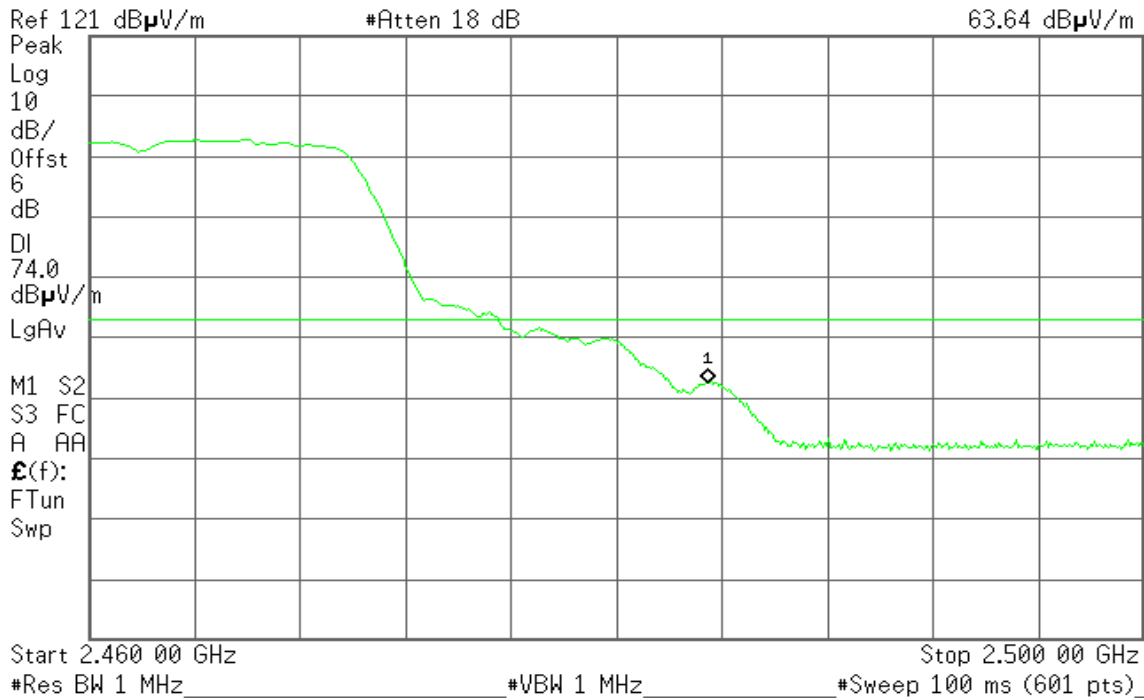
Detector mode: Peak

Polarity: Horizontal

Agilent 14:35:55 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
63.64 dB μ V/m



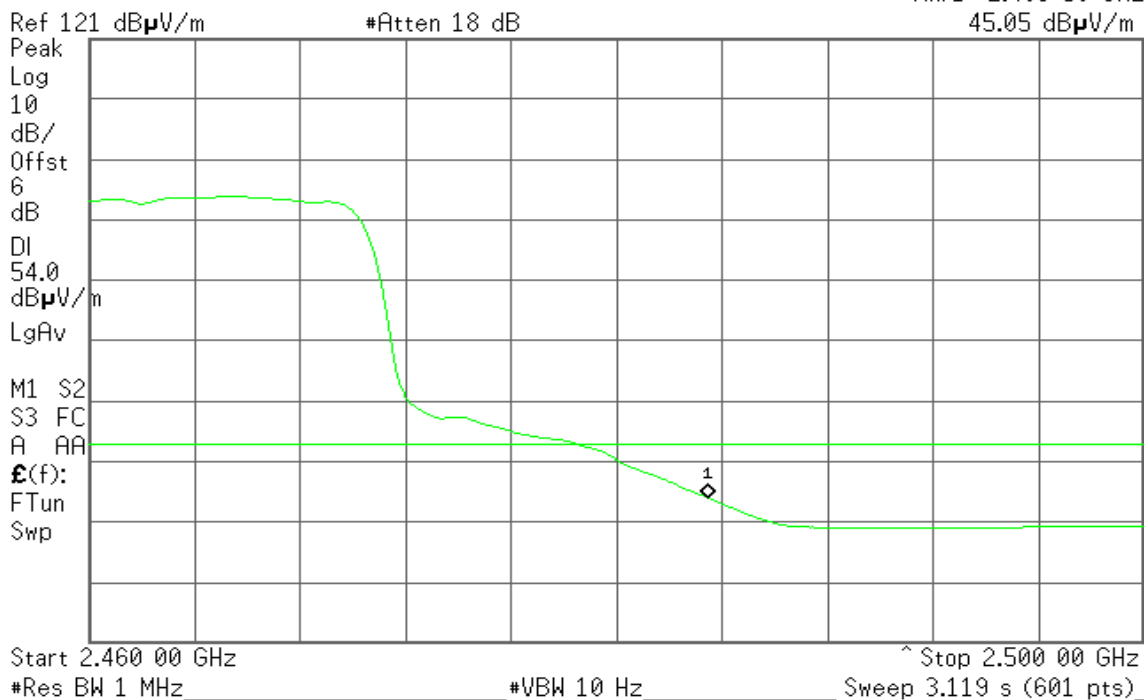
Detector mode: Average

Polarity: Horizontal

Agilent 14:36:27 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
45.05 dB μ V/m





For Mimo

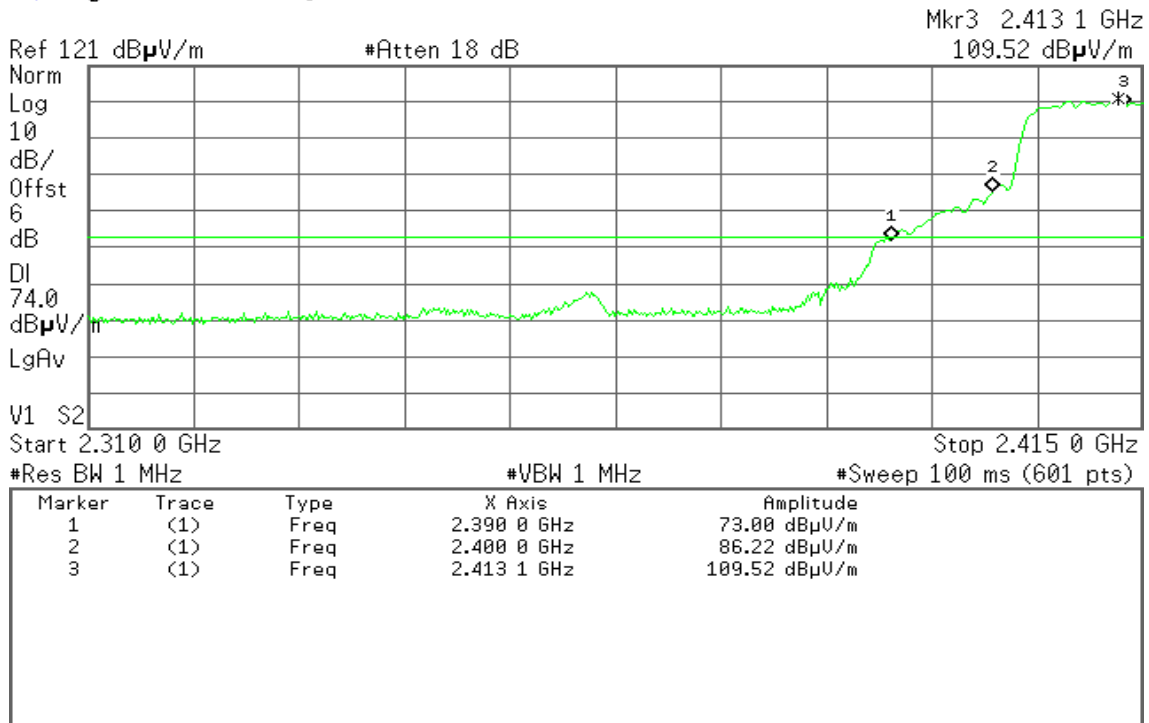
Band Edges (IEEE 802.11n HT 20 MHz mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 11:54:55 Aug 12, 2011

R T

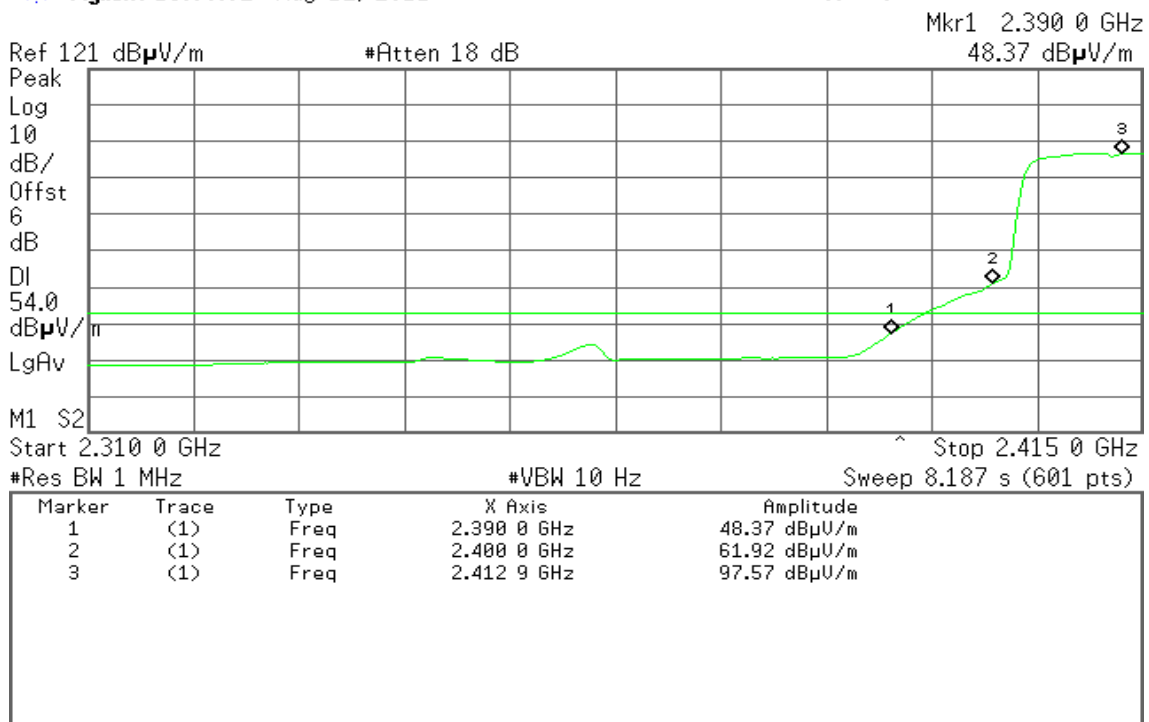


Detector mode: Average

Polarity: Vertical

Agilent 13:09:02 Aug 12, 2011

R T



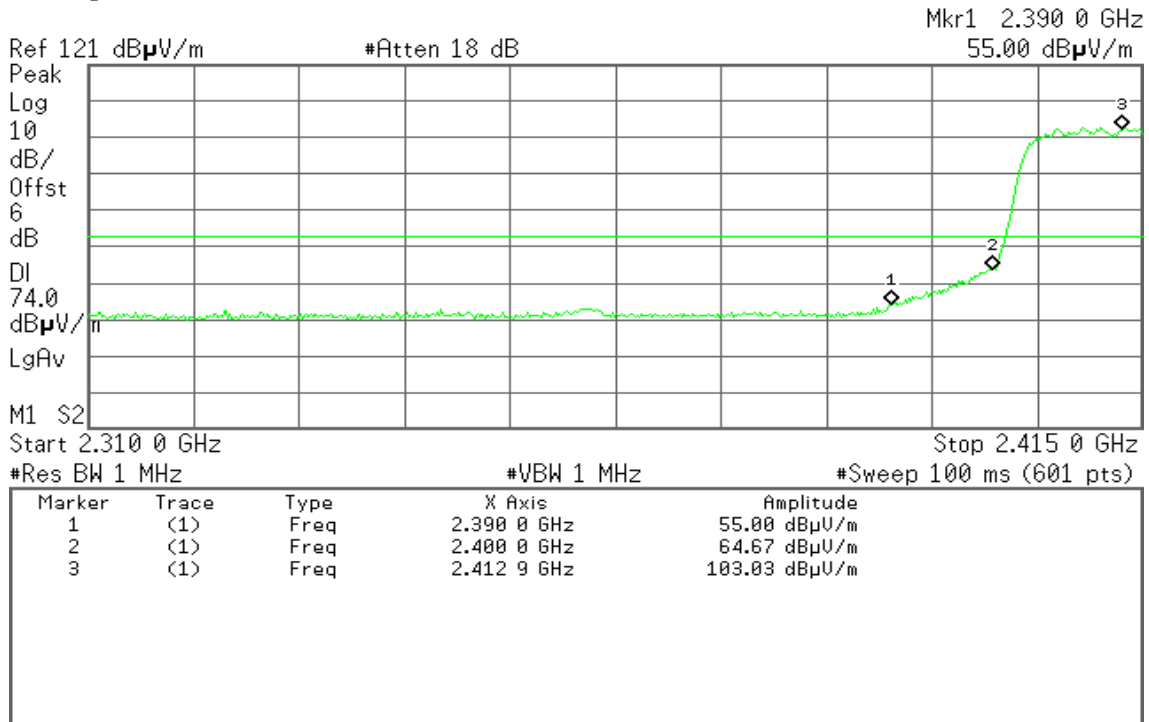


Detector mode: Peak

Polarity: Horizontal

Agilent 13:13:30 Aug 12, 2011

R T

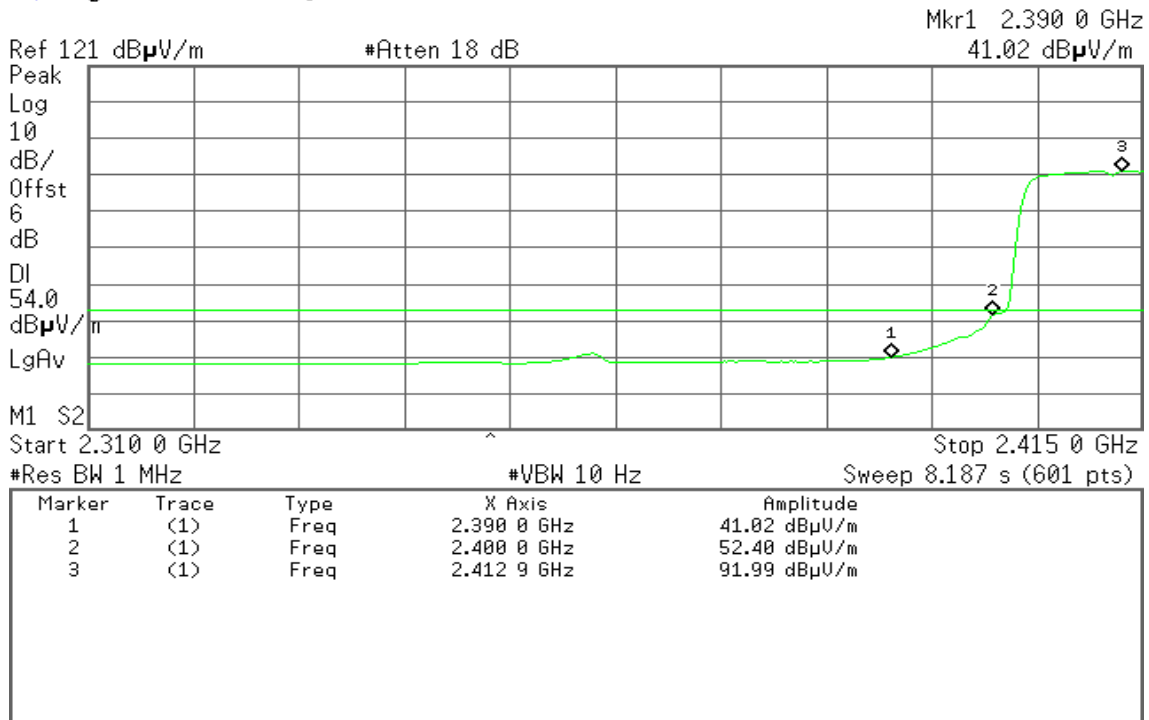


Detector mode: Average

Polarity: Horizontal

Agilent 13:13:59 Aug 12, 2011

R T





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

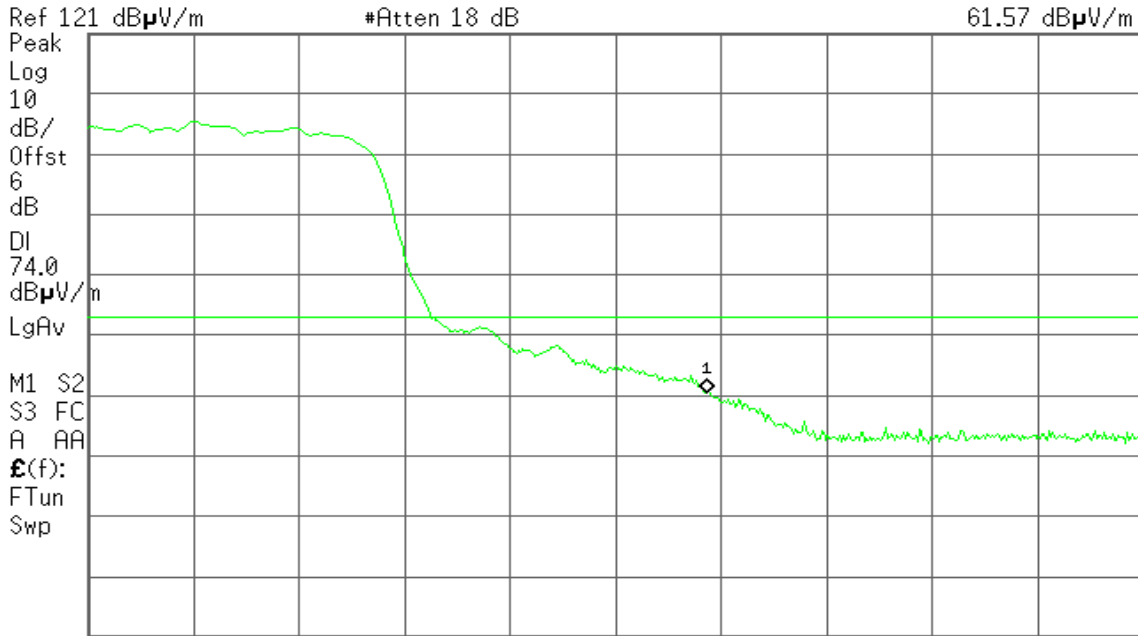
Detector mode: Peak

Polarity: Vertical

Agilent 14:18:58 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
61.57 dB μ V/m



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

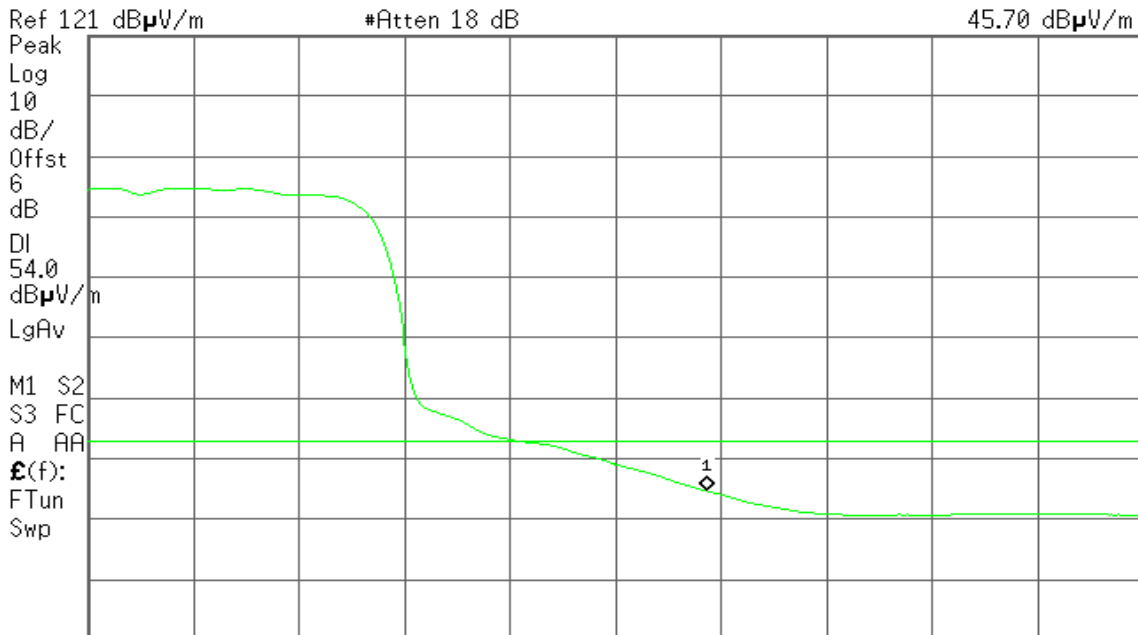
Detector mode: Average

Polarity: Vertical

Agilent 14:19:24 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
45.70 dB μ V/m



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



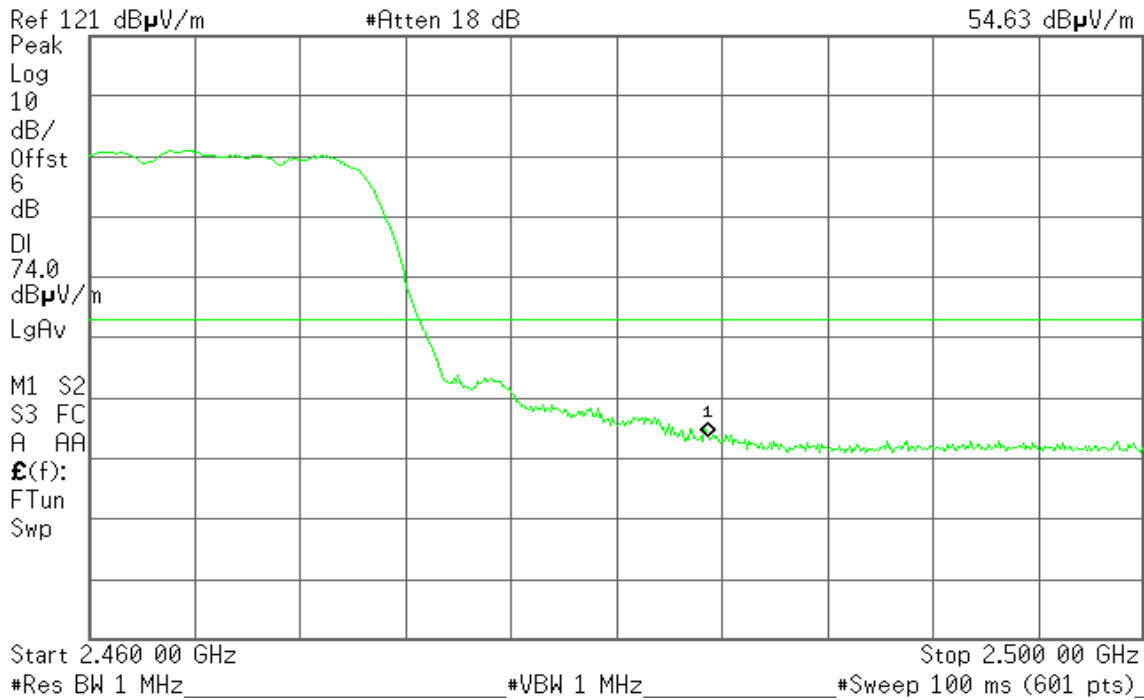
Detector mode: Peak

Polarity: Horizontal

Agilent 14:23:03 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
54.63 dB μ V/m



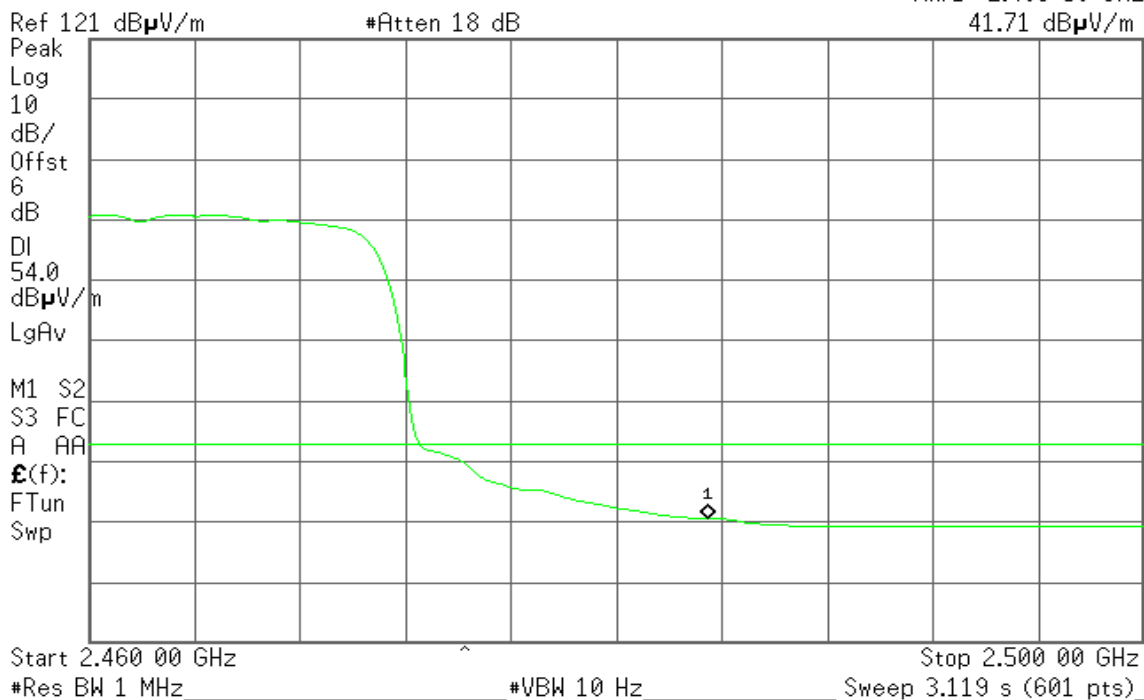
Detector mode: Average

Polarity: Horizontal

Agilent 14:23:29 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
41.71 dB μ V/m





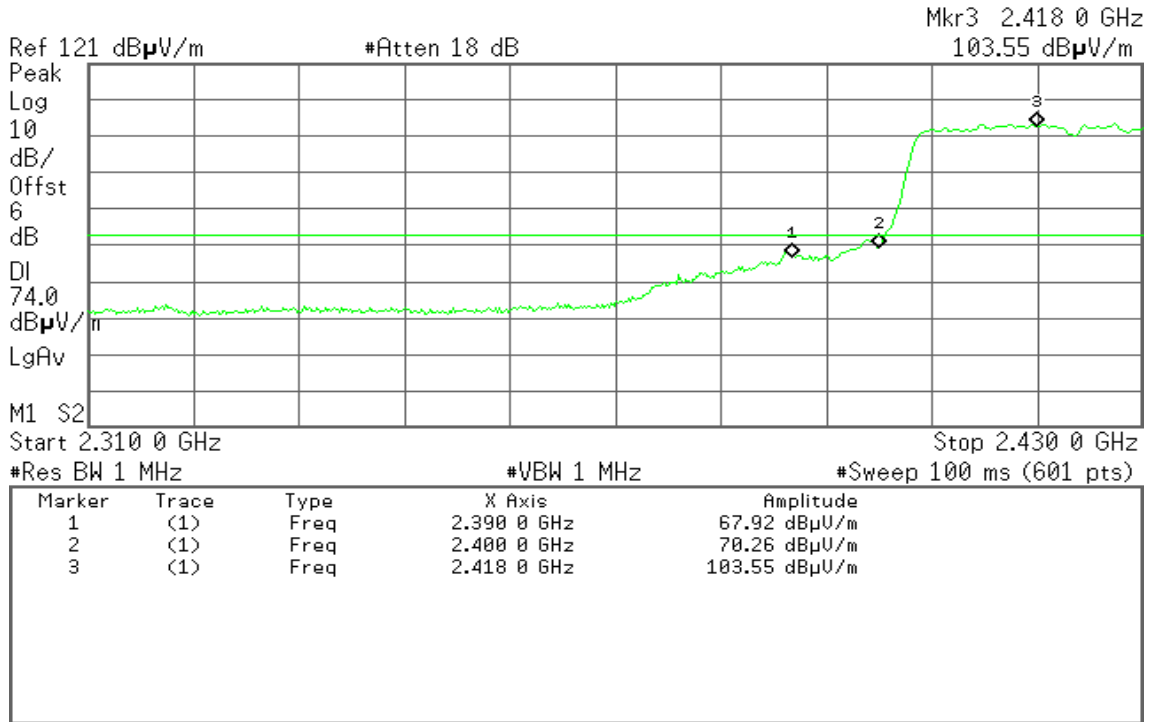
Band Edges (IEEE 802.11n HT 40 MHz mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent 13:59:53 Aug 12, 2011

R T

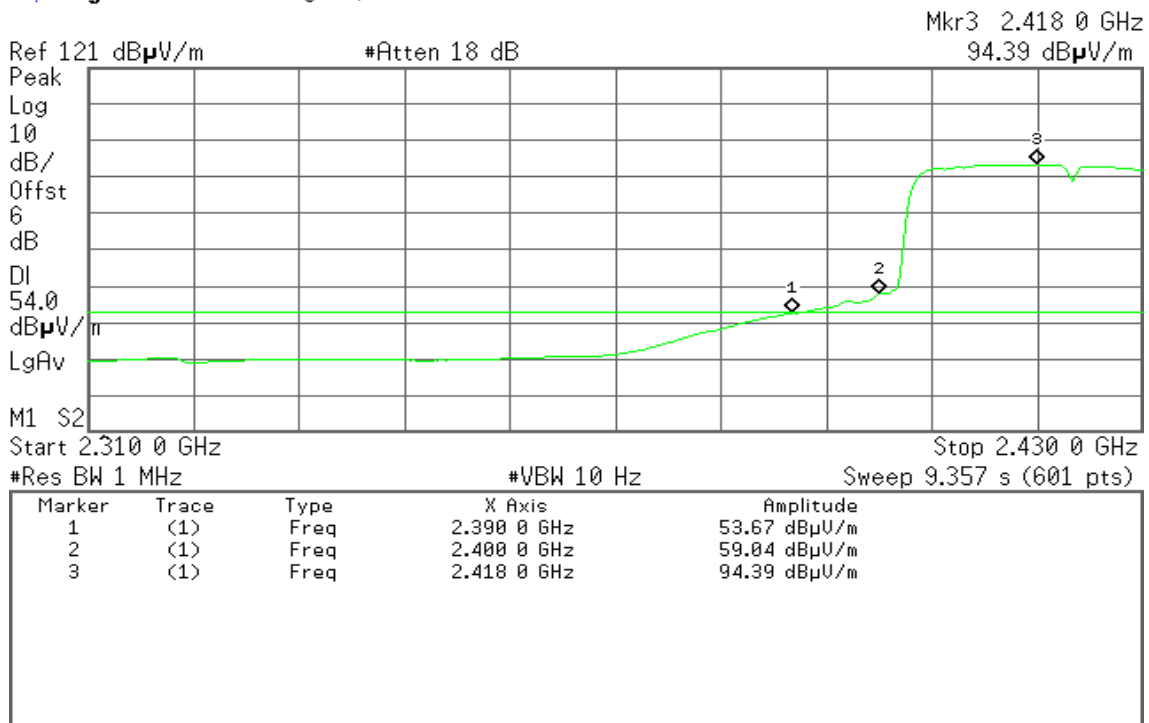


Detector mode: Average

Polarity: Vertical

Agilent 13:59:02 Aug 12, 2011

R T



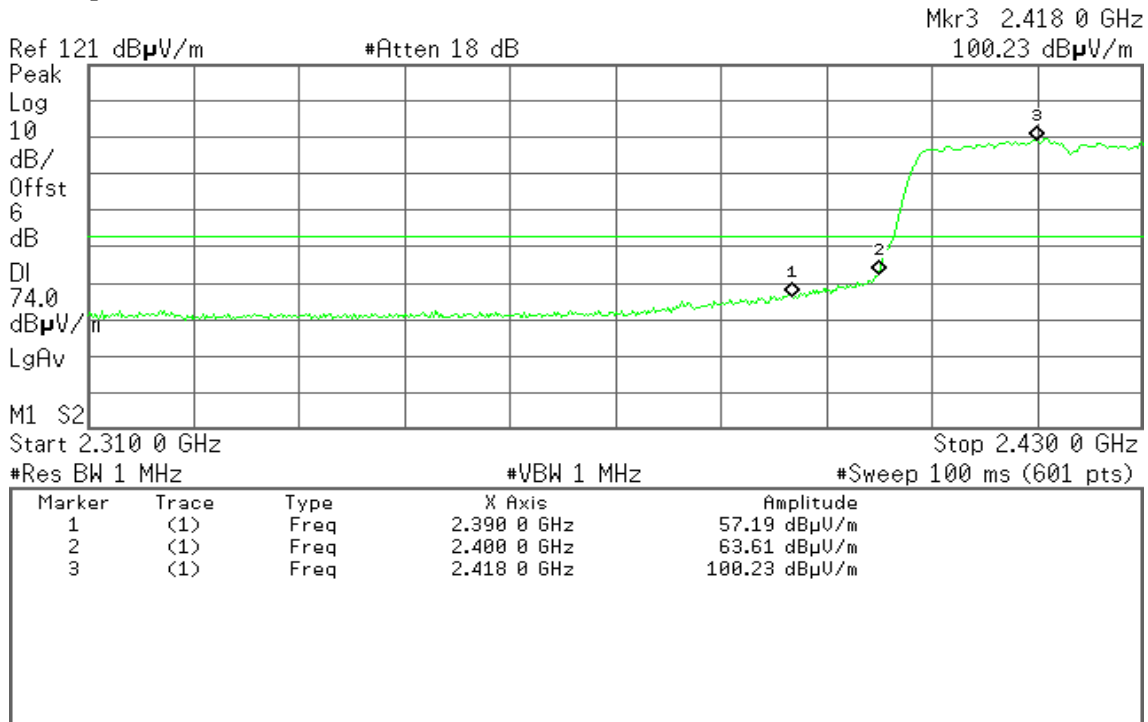


Detector mode: Peak

Polarity: Horizontal

Agilent 14:03:58 Aug 12, 2011

R T

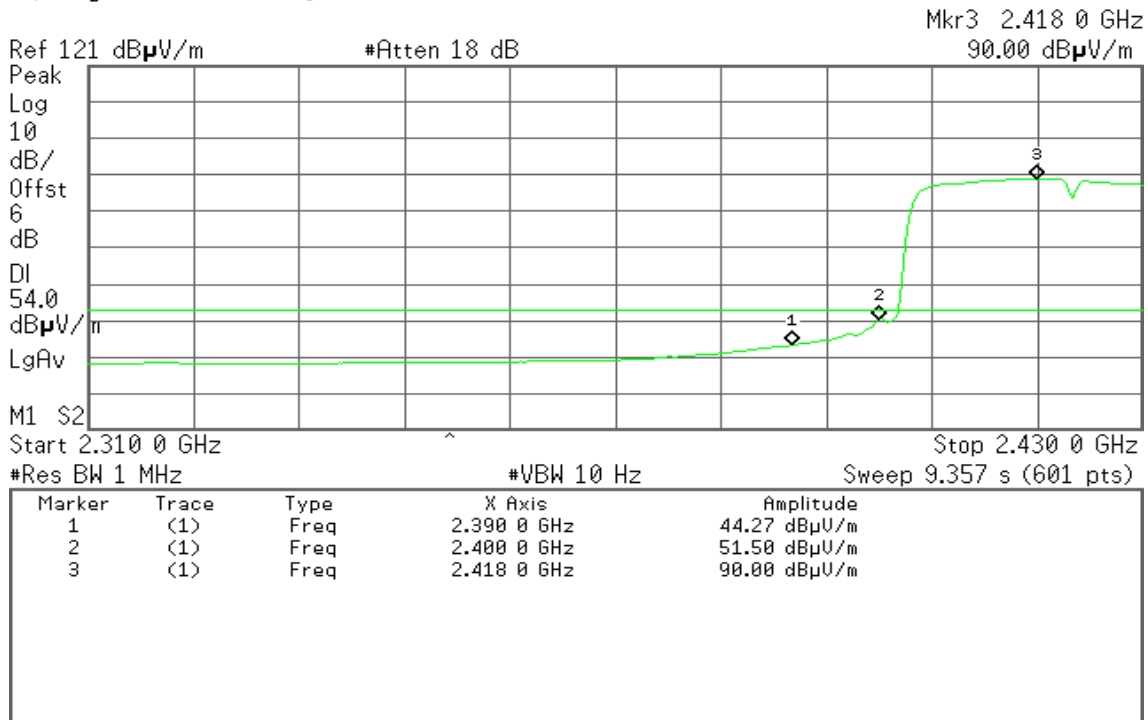


Detector mode: Average

Polarity: Horizontal

Agilent 14:04:29 Aug 12, 2011

R T





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

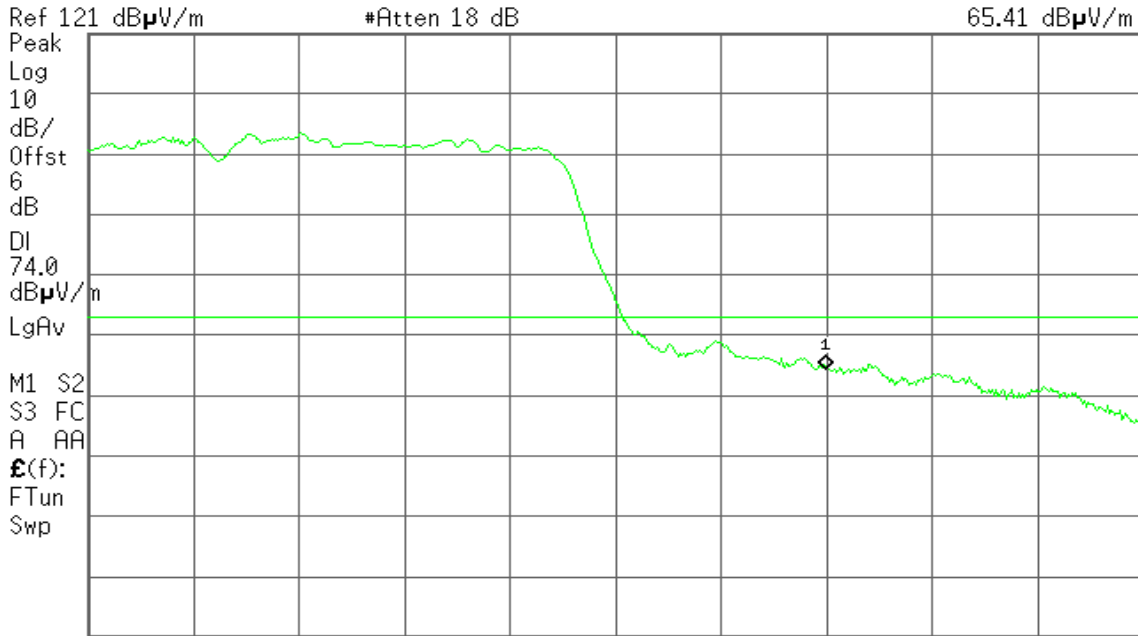
Detector mode: Peak

Polarity: Vertical

Agilent 14:09:03 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
65.41 dBμV/m



Start 2.445 00 GHz #Res BW 1 MHz #VBW 1 MHz Stop 2.500 00 GHz #Sweep 100 ms (601 pts)

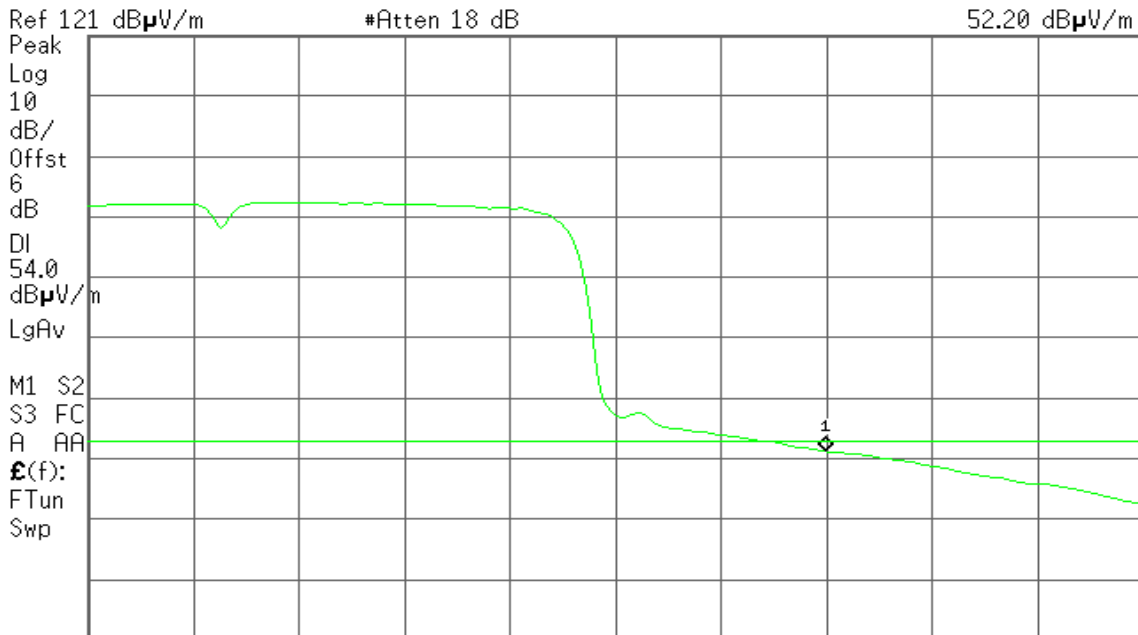
Detector mode: Average

Polarity: Vertical

Agilent 14:09:34 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
52.20 dBμV/m



Start 2.445 00 GHz ^ #Res BW 1 MHz #VBW 10 Hz Sweep 4.289 s (601 pts) Stop 2.500 00 GHz



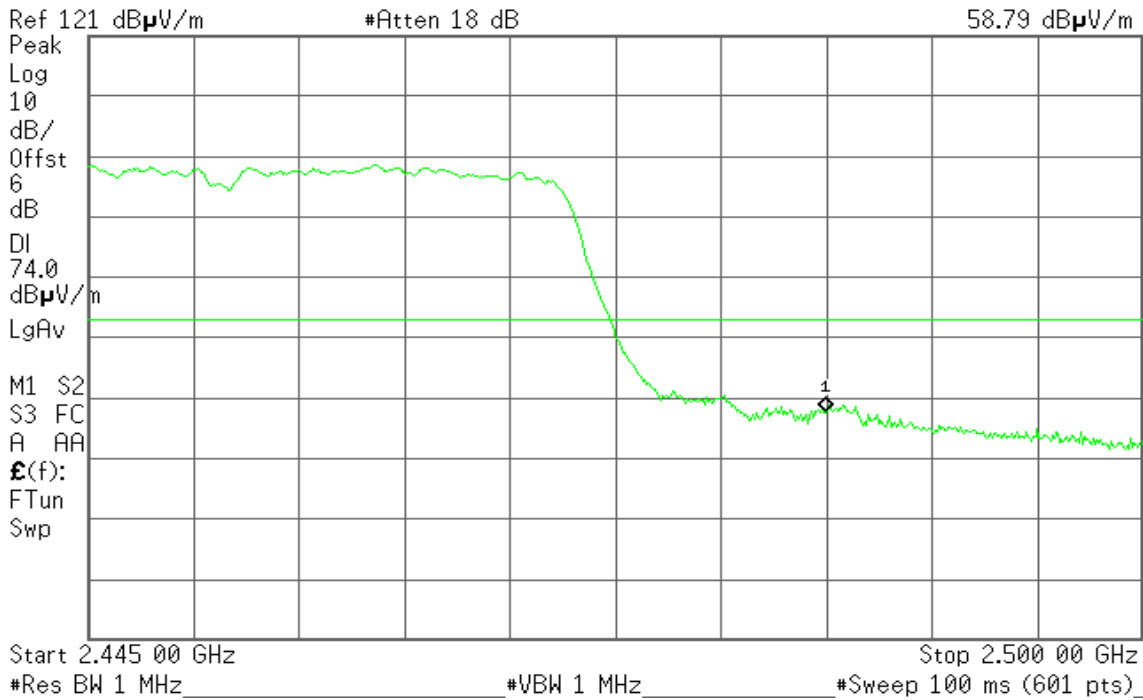
Detector mode: Peak

Polarity: Horizontal

Agilent 14:12:57 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
58.79 dB μ V/m



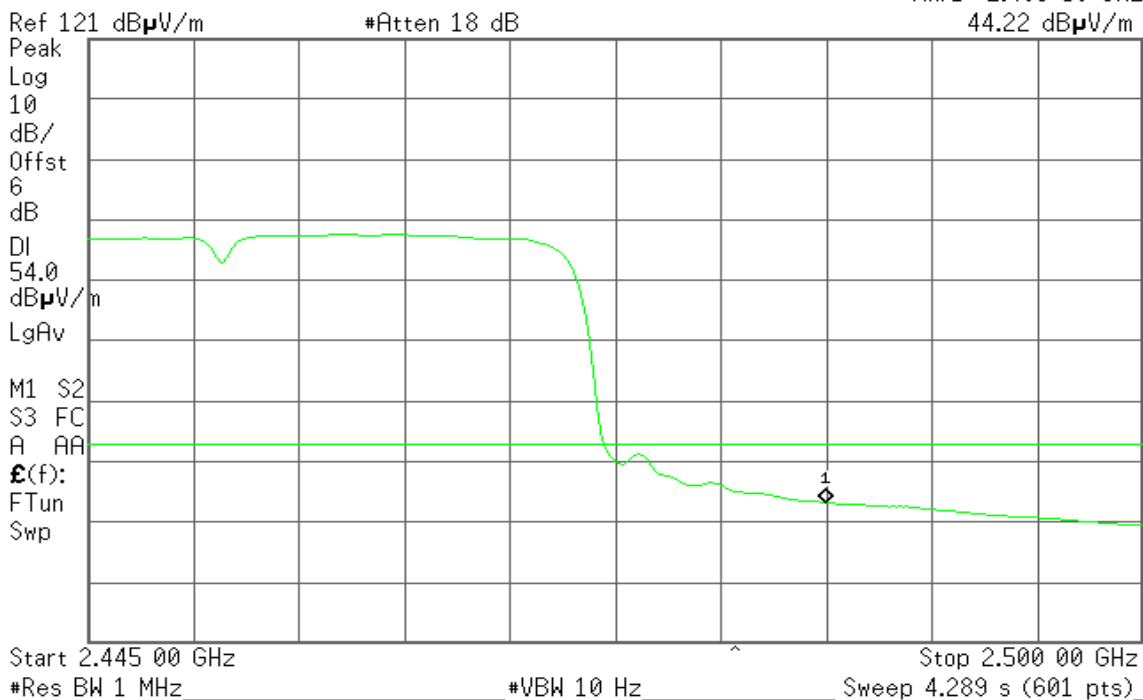
Detector mode: Average

Polarity: Horizontal

Agilent 14:13:22 Aug 12, 2011

R T

Mkr1 2.483 50 GHz
44.22 dB μ V/m





For Single

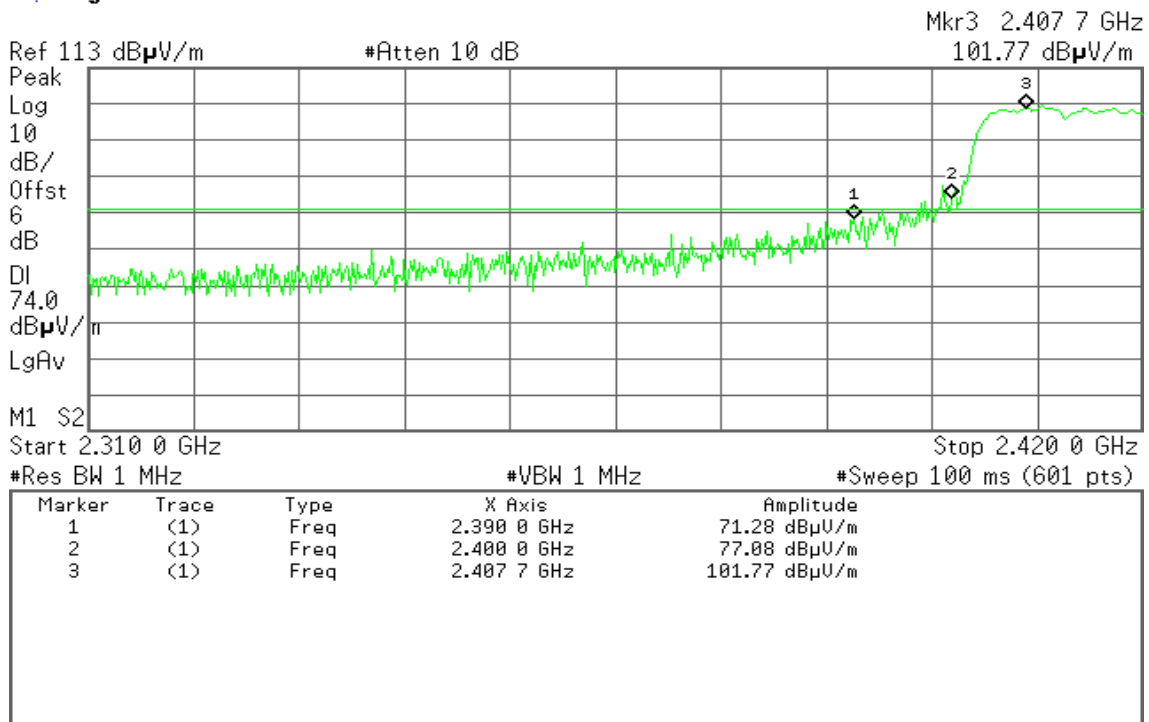
Band Edges (IEEE 802.11n HT 20 MHz mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent

T

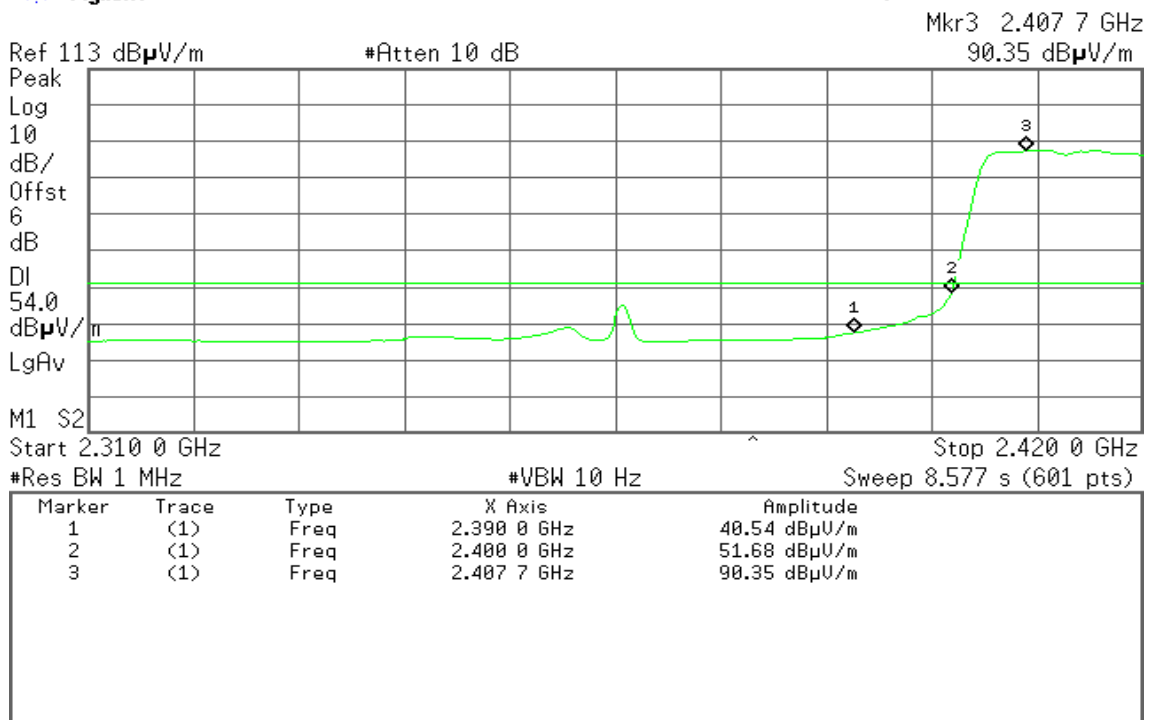


Detector mode: Average

Polarity: Vertical

Agilent

T



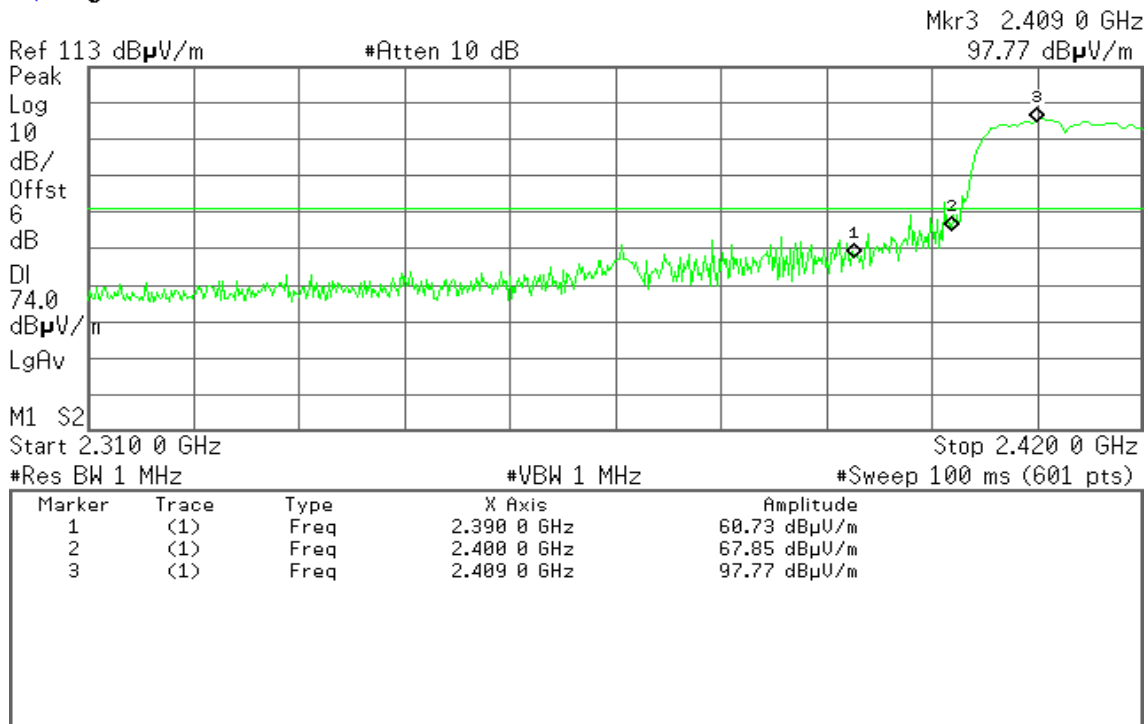


Detector mode: Peak

Polarity: Horizontal

Agilent

T

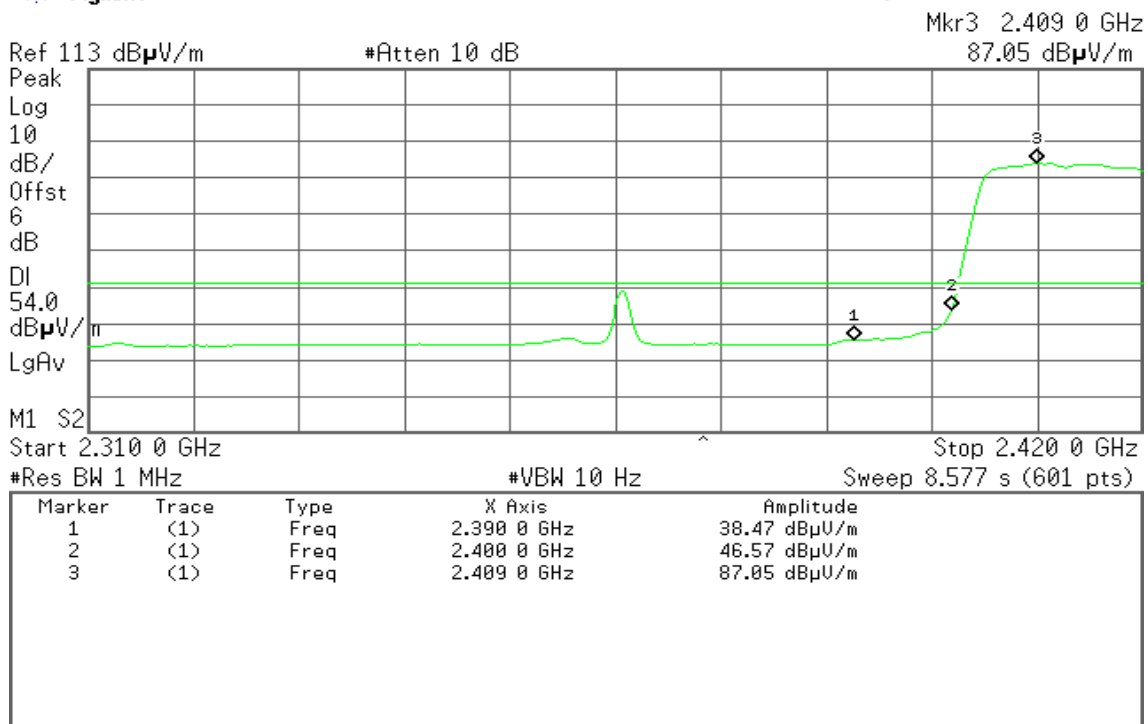


Detector mode: Average

Polarity: Horizontal

Agilent

T





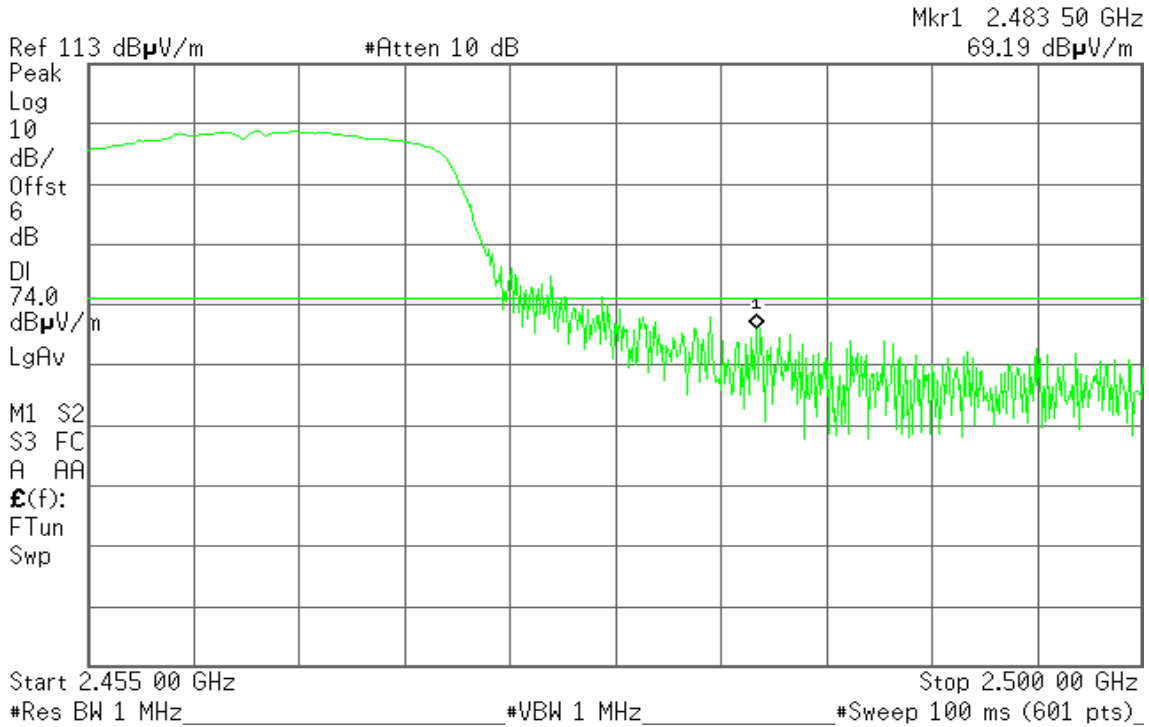
Band Edges (IEEE 802.11n HT 20 MHz mode / CH High)

Detector mode: Peak

Polarity: Vertical

Agilent

T

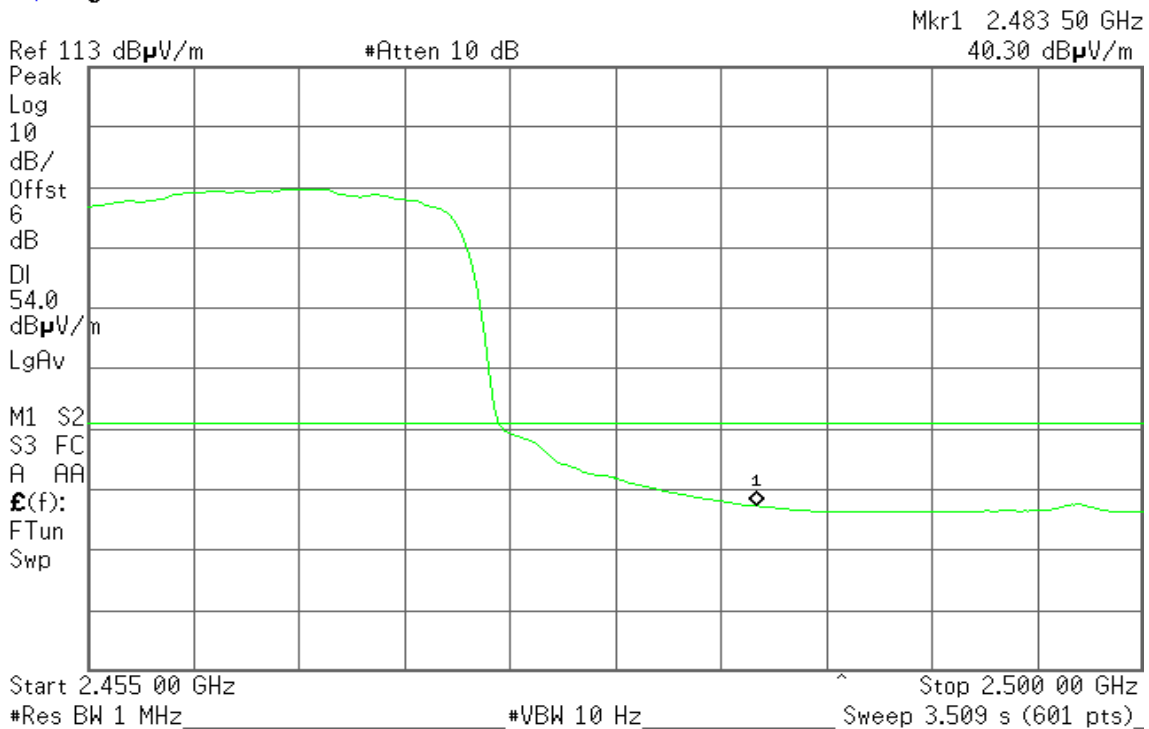


Detector mode: Average

Polarity: Vertical

Agilent

T





Detector mode: Peak

Polarity: Horizontal

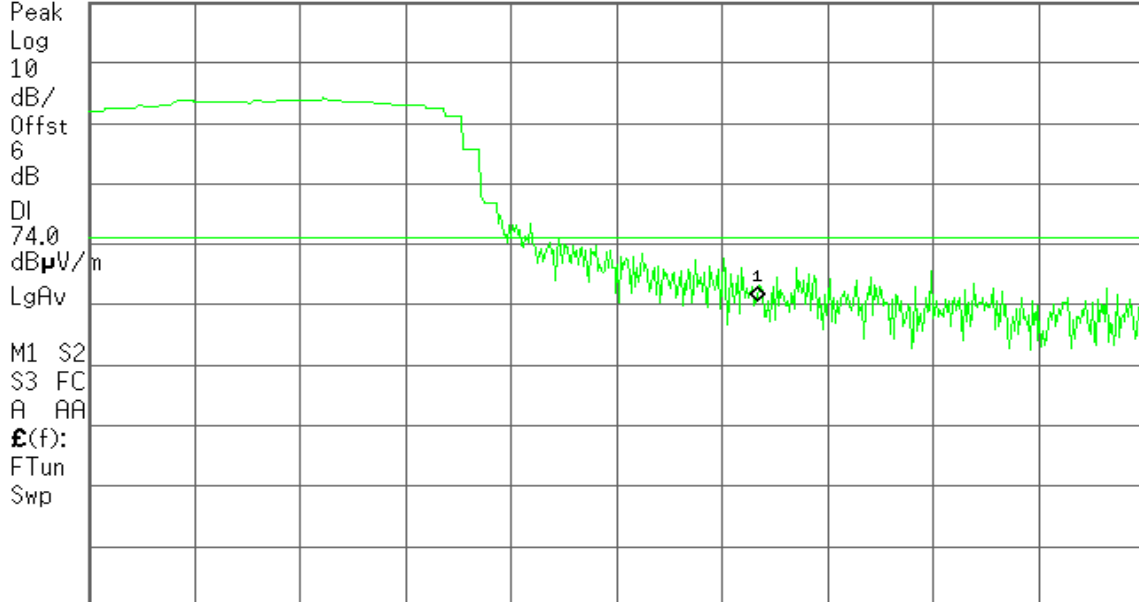
Agilent

T

Mkr1 2.483 50 GHz
63.77 dB μ V/m

Ref 113 dB μ V/m

#Atten 10 dB



Start 2.455 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

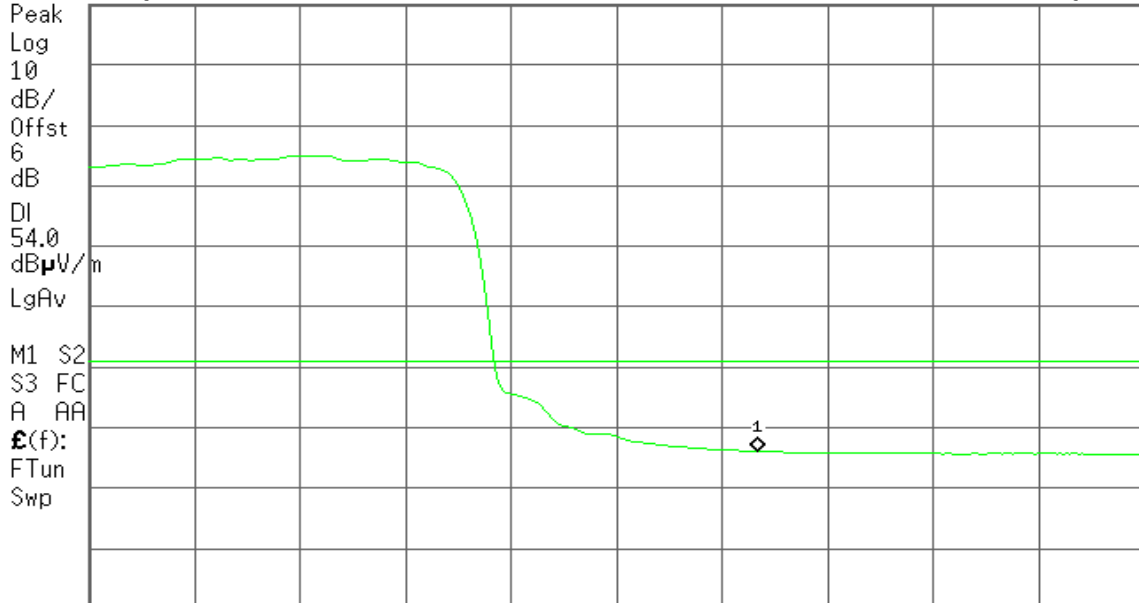
Agilent

T

Mkr1 2.483 50 GHz
39.12 dB μ V/m

Ref 113 dB μ V/m

#Atten 10 dB



Start 2.455 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 3.509 s (601 pts)



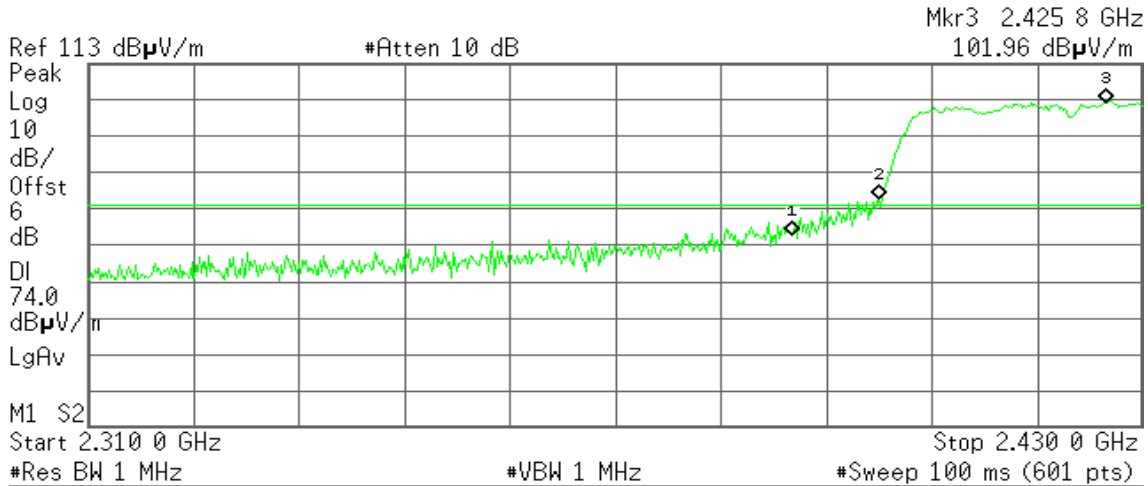
Band Edges (IEEE 802.11n HT 40 MHz mode / CH Low)

Detector mode: Peak

Polarity: Vertical

Agilent

R T



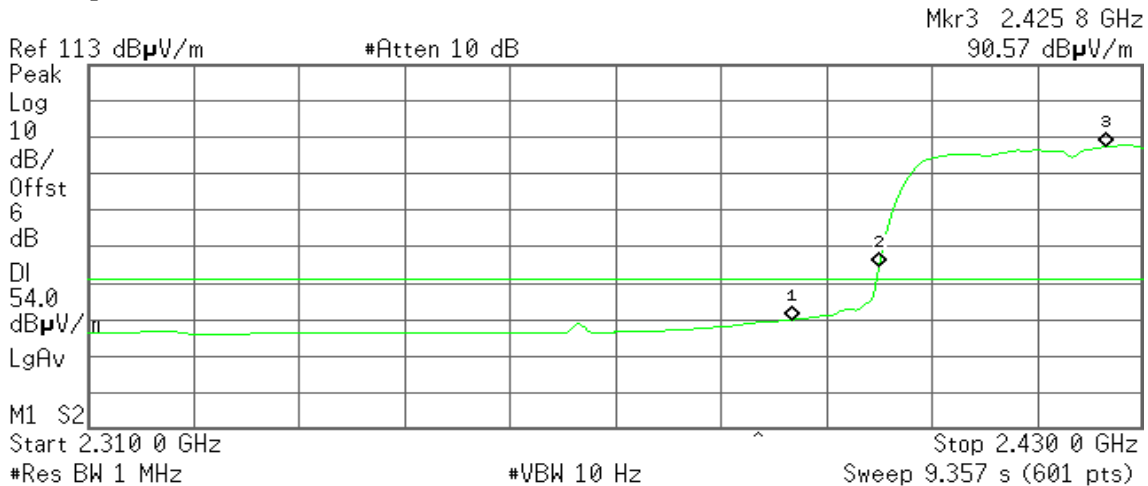
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 0 GHz	65.95 dB μ V/m
2	(1)	Freq	2.400 0 GHz	75.54 dB μ V/m
3	(1)	Freq	2.425 8 GHz	101.96 dB μ V/m

Detector mode: Average

Polarity: Vertical

Agilent

R T



Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.390 0 GHz	43.00 dB μ V/m
2	(1)	Freq	2.400 0 GHz	57.54 dB μ V/m
3	(1)	Freq	2.425 8 GHz	90.57 dB μ V/m

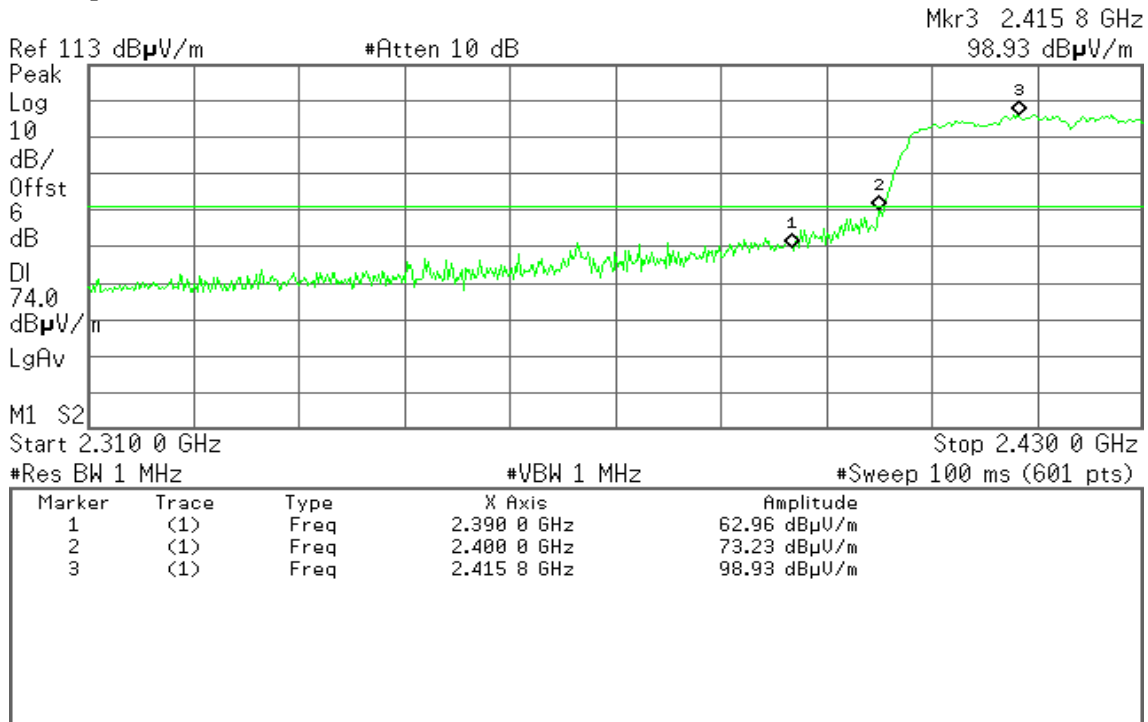


Detector mode: Peak

Polarity: Horizontal

Agilent

R T

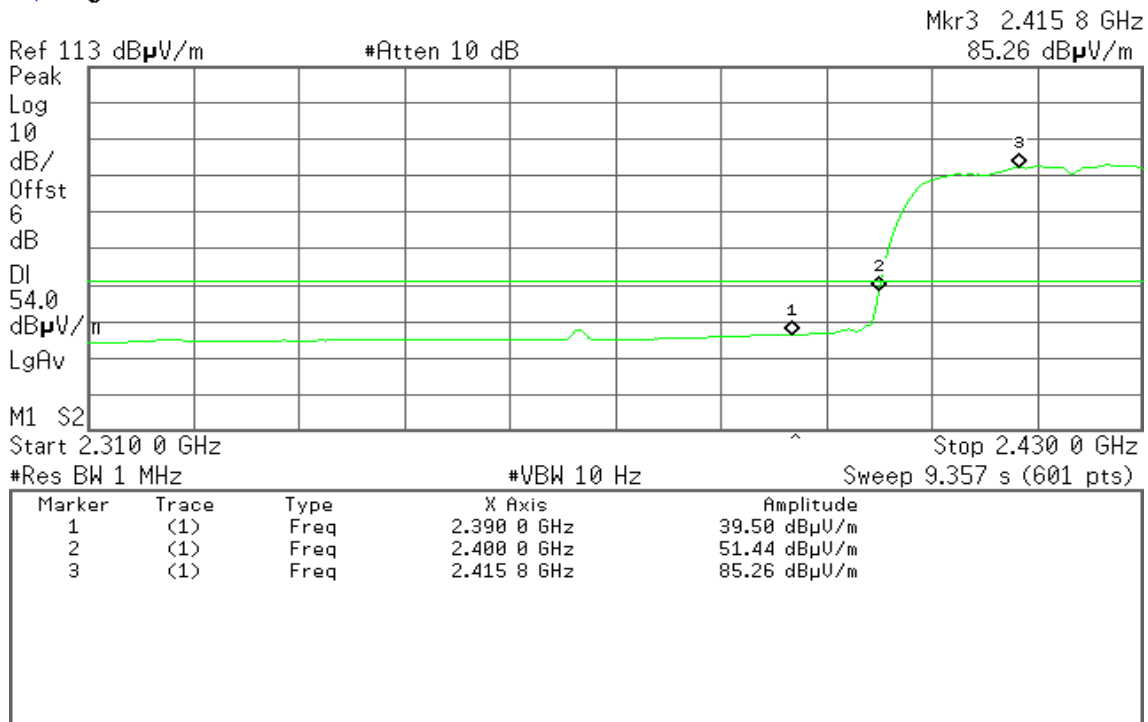


Detector mode: Average

Polarity: Horizontal

Agilent

R T





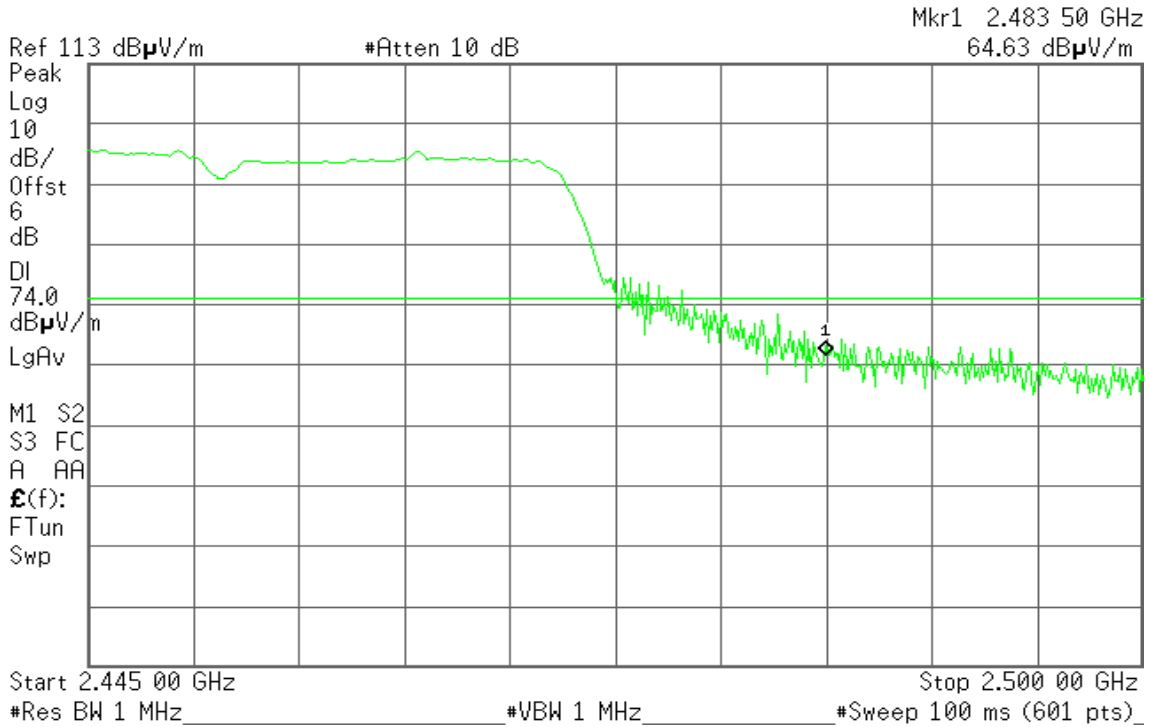
Band Edges (IEEE 802.11n HT 40 MHz mode / CH High)

Detector mode: Peak

Polarity: Vertical

Agilent

T

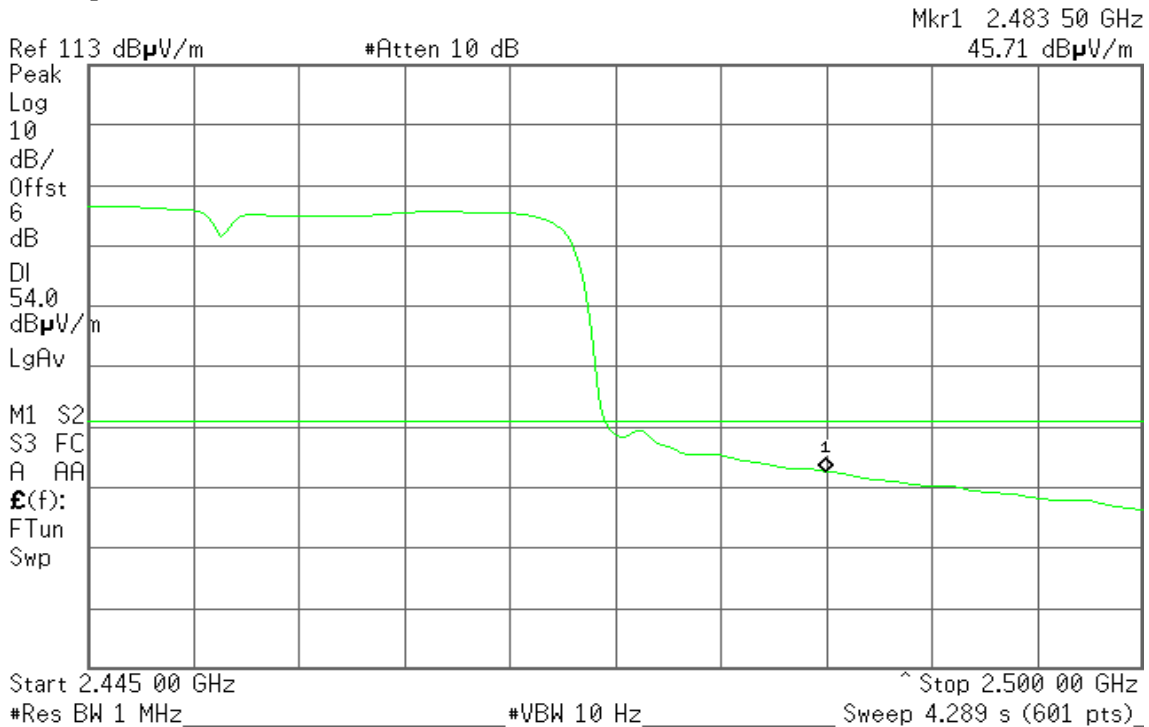


Detector mode: Average

Polarity: Vertical

Agilent

T





Detector mode: Peak

Polarity: Horizontal

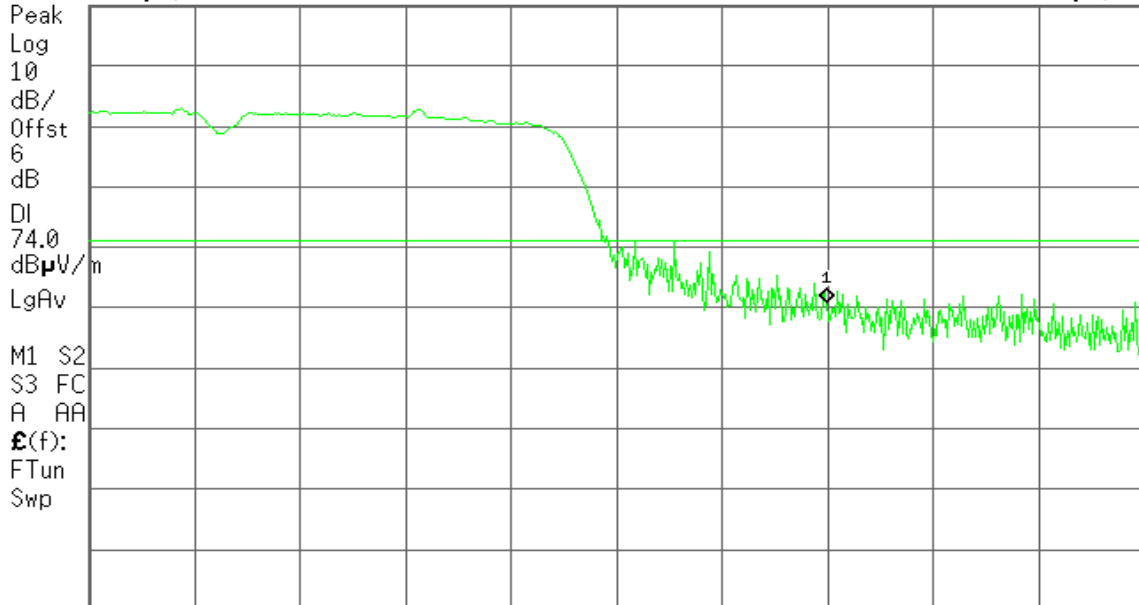
Agilent

T

Mkr1 2.483 50 GHz
63.94 dB μ V/m

Ref 113 dB μ V/m

#Atten 10 dB



Start 2.445 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

#Sweep 100 ms (601 pts)

Detector mode: Average

Polarity: Horizontal

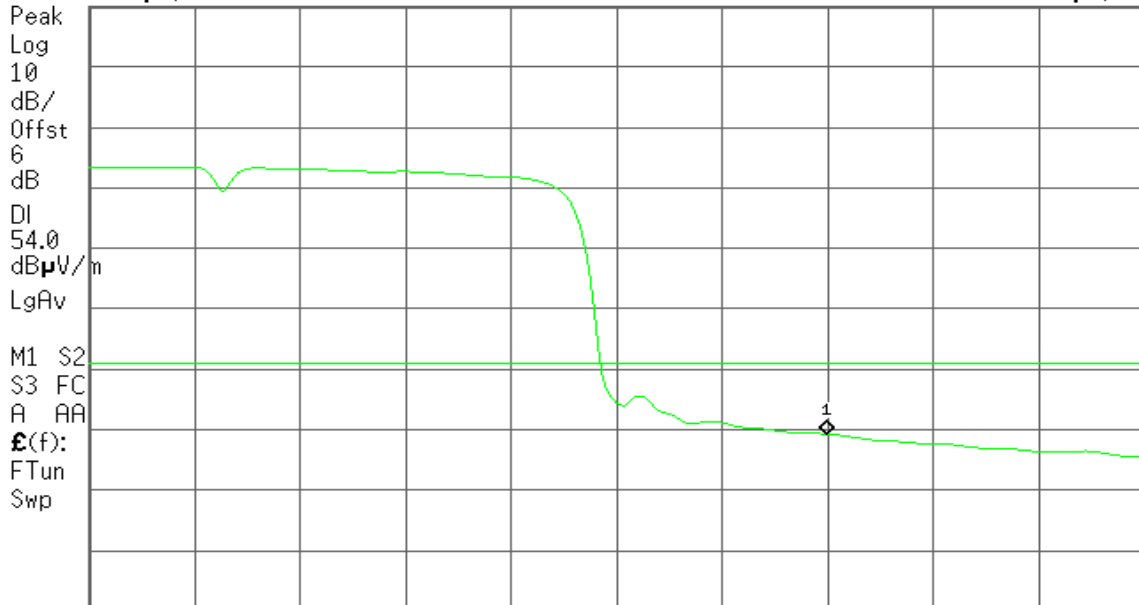
Agilent

T

Mkr1 2.483 50 GHz
42.26 dB μ V/m

Ref 113 dB μ V/m

#Atten 10 dB



Start 2.445 00 GHz

Stop 2.500 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Sweep 4.289 s (601 pts)

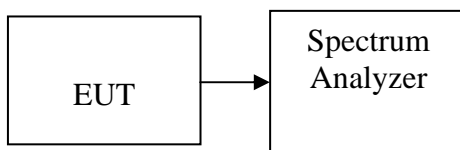


7.5 PEAK POWER SPECTRAL DENSITY

LIMIT

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

Test Configuration



TEST PROCEDURE

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

TEST RESULTS

No non-compliance noted.

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

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	3.79	8.00	PASS
Mid	2442	2.65		PASS
High	2462	2.58		PASS

Test mode: IEEE 802.11g mode

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-15.07	8.00	PASS
Mid	2442	-15.35		PASS
High	2462	-13.69		PASS

For Mimo**Test mode: IEEE 802.11n HT 20 MHz mode Channel mode**

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Result
Low	2412	-15.91	-16.23	-13.06	8.00	PASS
Mid	2442	-16.93	-17.28	-14.09		PASS
High	2462	-16.61	-17.4	-13.98		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	PPSD (dBm)	Limit (dBm)	Result
Low	2422	-19.38	-19.02	-16.19	8.00	PASS
Mid	2442	-19.35	-18.87	-16.09		PASS
High	2452	-18.66	-19.54	-16.07		PASS

Remark: Total PPSD (dBm) = $10 * \text{LOG}(10^{(\text{Chain 0 PPSD} / 10)} + 10^{(\text{Chain 1 PPSD} / 10)})$



For Single

Test mode: IEEE 802.11n HT 20 MHz mode Channel mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Limit (dBm)	Result
Low	2412	-13.99	8.00	PASS
Mid	2442	-15.81		PASS
High	2462	-15.78		PASS

Channel	Frequency (MHz)	Chain 1 PPSD (dBm)	Limit (dBm)	Result
Low	2412	-15.13	8.00	PASS
Mid	2442	-15.71		PASS
High	2462	-16.58		PASS

Test mode: IEEE 802.11n HT 40 MHz mode

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Limit (dBm)	Result
Low	2422	-17.75	8.00	PASS
Mid	2442	-18.07		PASS
High	2452	-17.10		PASS

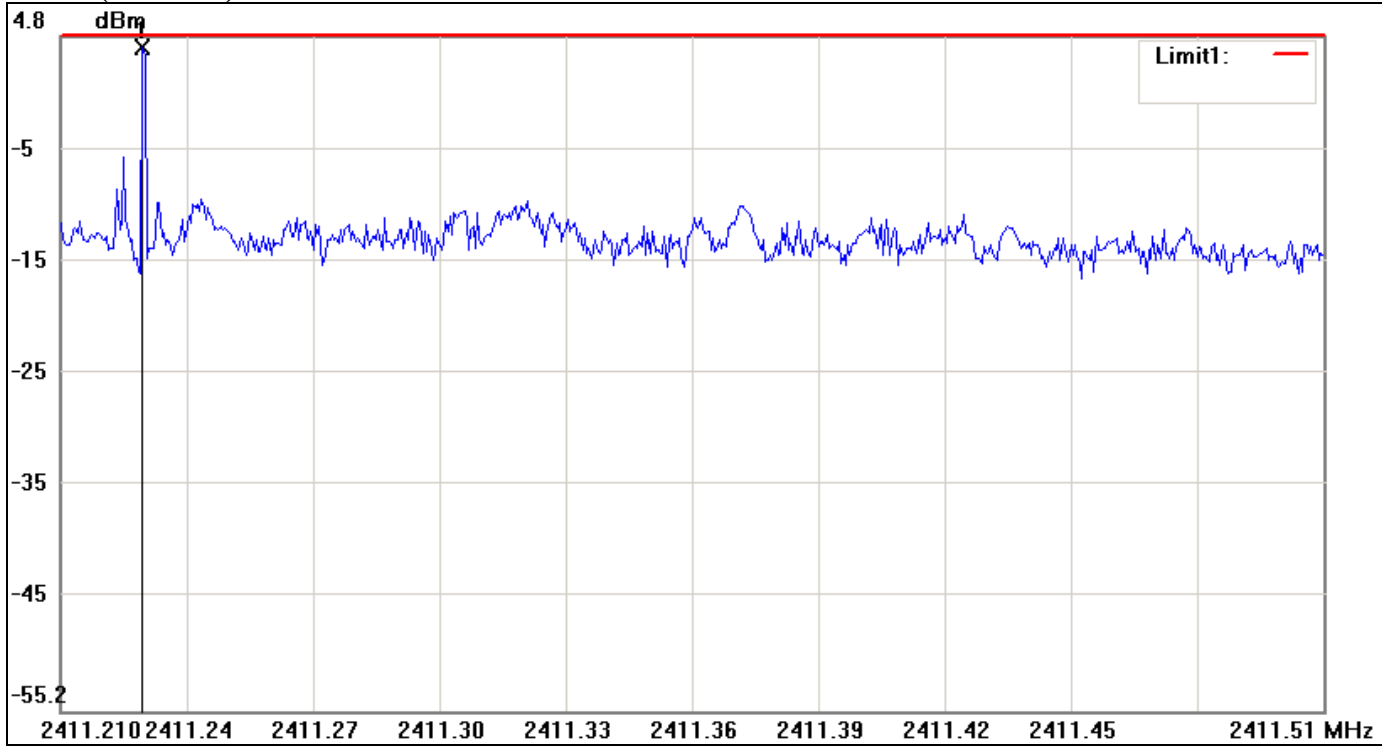
Channel	Frequency (MHz)	Chain 1 PPSD (dBm)	Limit (dBm)	Result
Low	2422	-17.25	8.00	PASS
Mid	2442	-18.95		PASS
High	2452	-19.15		PASS



Test Plot

IEEE 802.11b mode

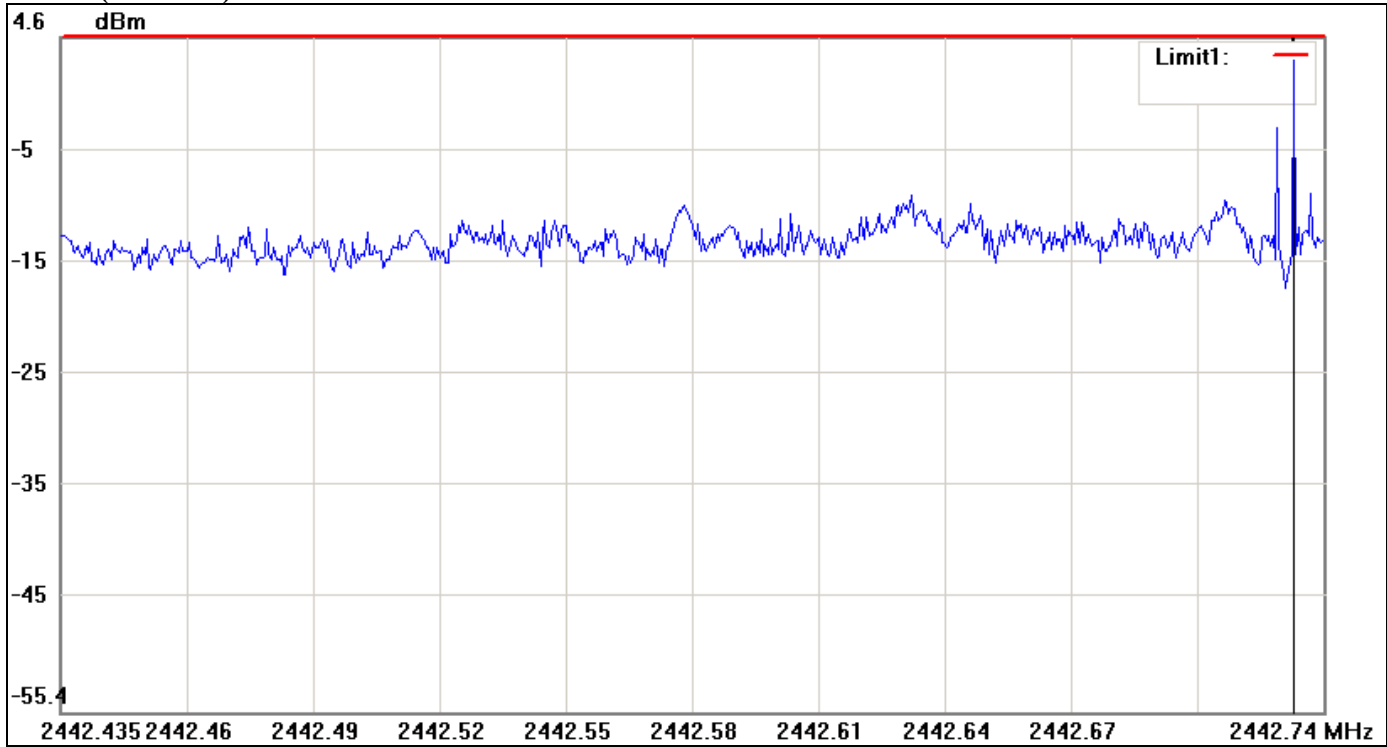
PPSD (CH Low)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2411.2296	3.79	8.00	-4.21



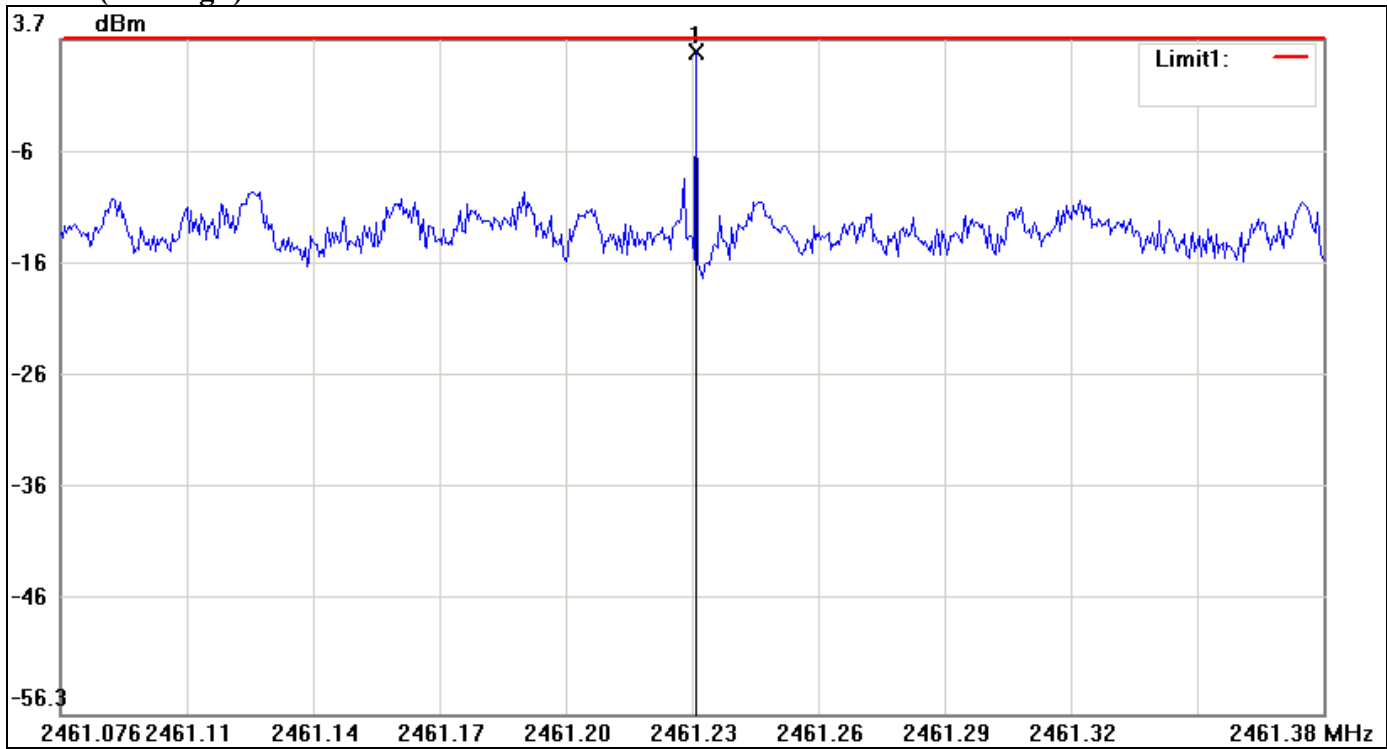
PPSD (CH Mid)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2442.7277	2.65	8.00	-5.35



PPSD (CH High)

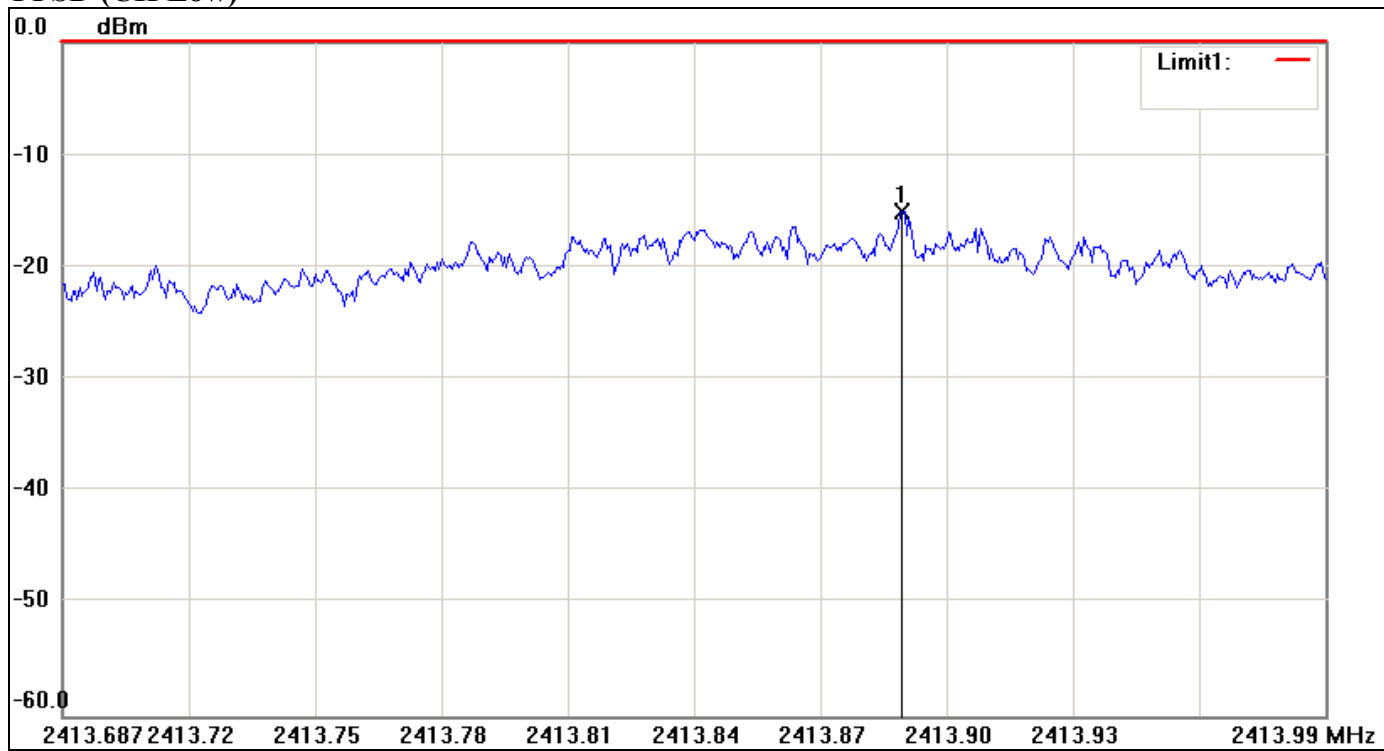


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2461.2268	2.58	8.00	-5.42



IEEE 802.11g mode

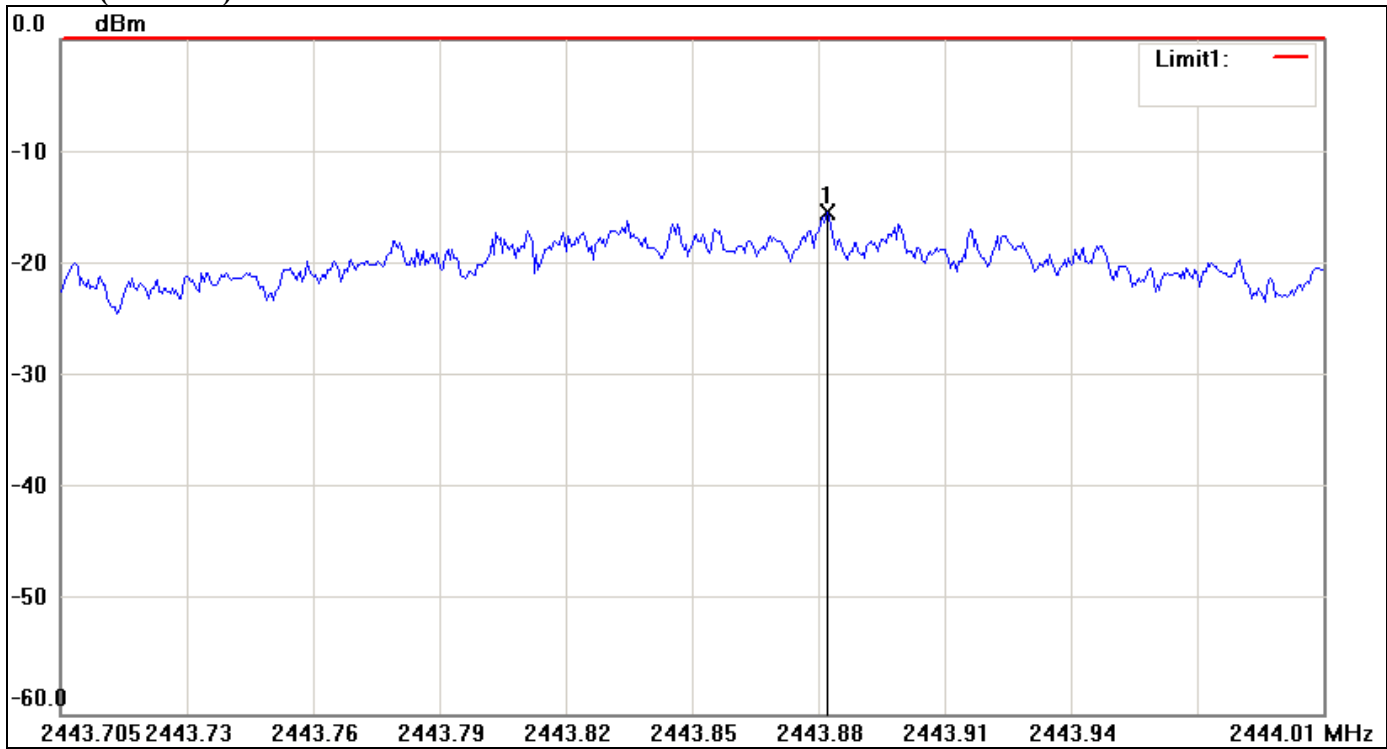
PPSD (CH Low)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2413.8863	-15.07	8.00	-23.07



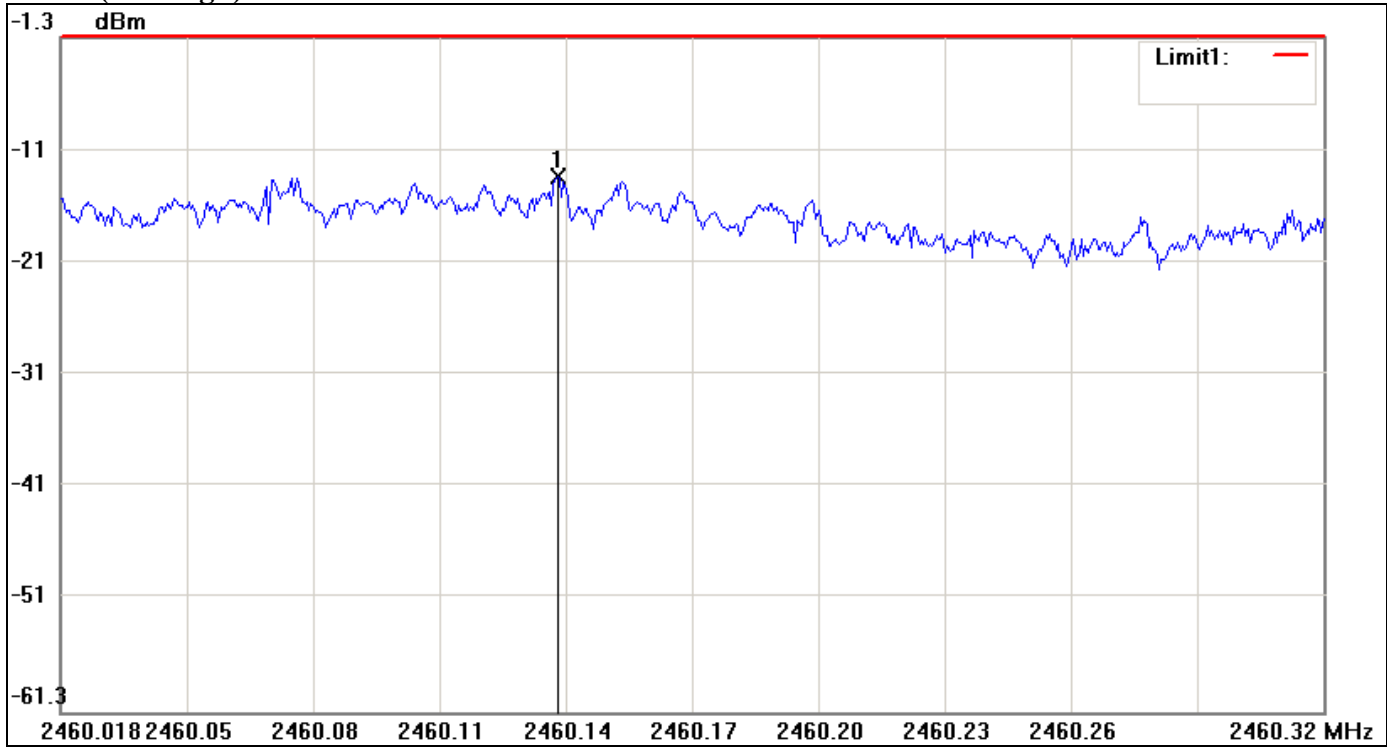
PPSD (CH Mid)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2443.8866	-15.35	8.00	-23.35



PPSD (CH High)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2460.1360	-13.69	8.00	-21.69



For Mimo

IEEE 802.11n HT 20 MHz mode Channel mode / Chain 0

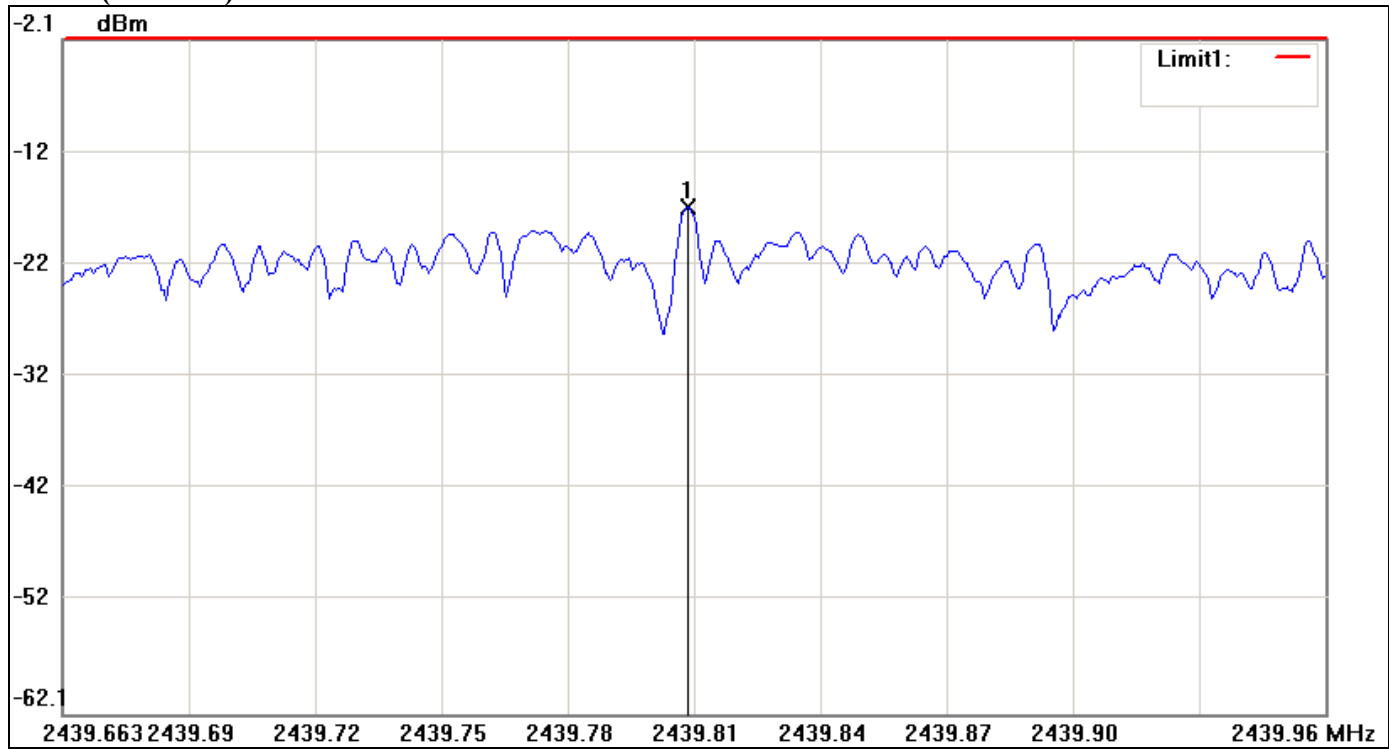
PPSD (CH Low)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2412.6172	-15.91	8.00	-23.91



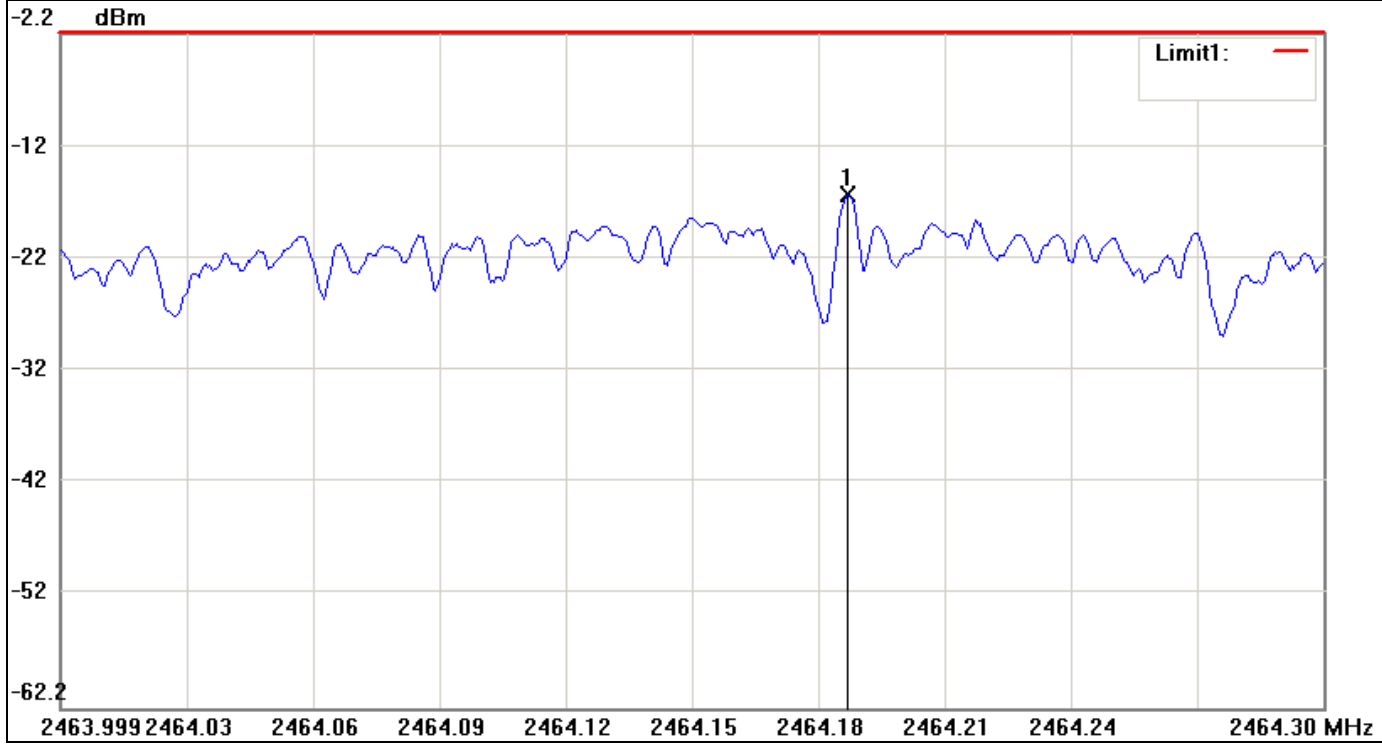
PPSD (CH Mid)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2439.8113	-16.93	8.00	-24.93



PPSD (CH High)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2464.1859	-16.61	8.00	-24.61



IEEE 802.11n HT 20 MHz mode Channel mode / Chain 1

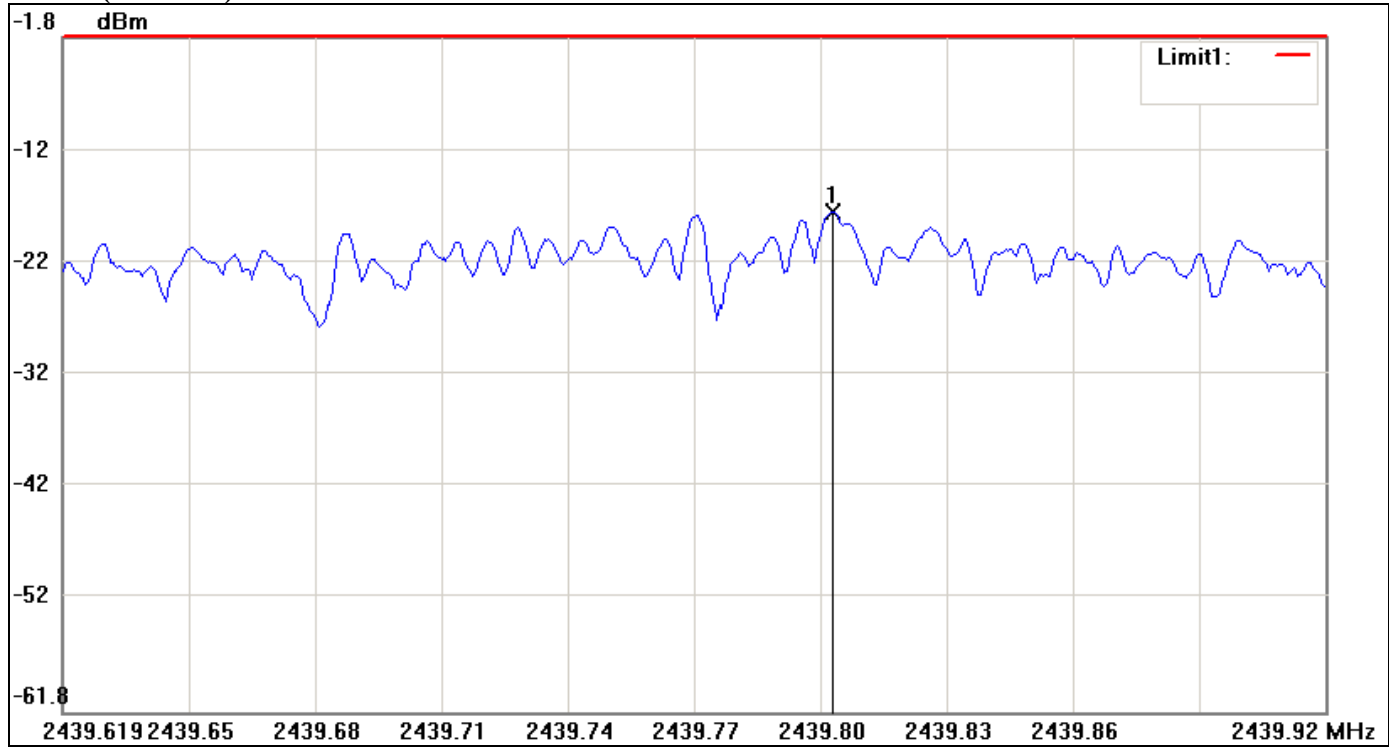
PPSD (CH Low)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2410.7187	-16.23	8.00	-24.23



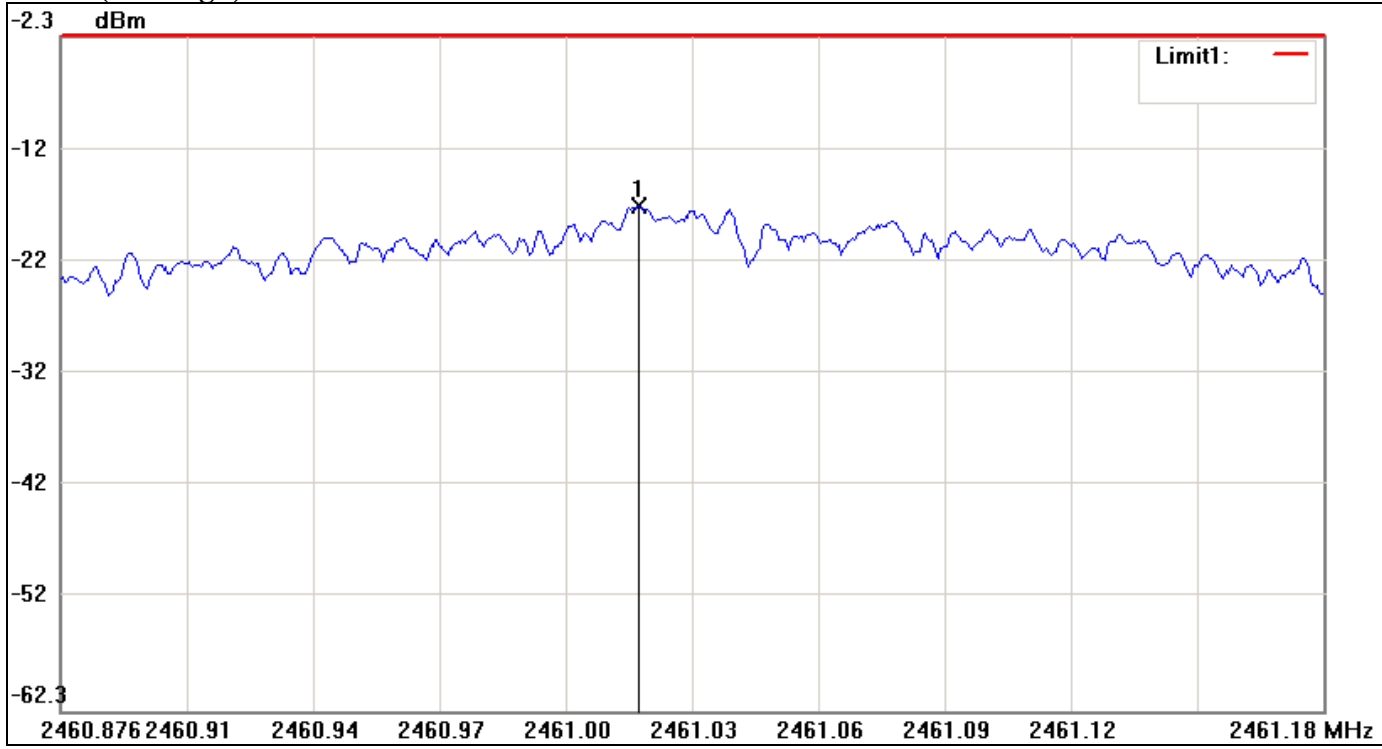
PPSD (CH Mid)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2439.8025	-17.28	8.00	-25.28



PPSD (CH High)

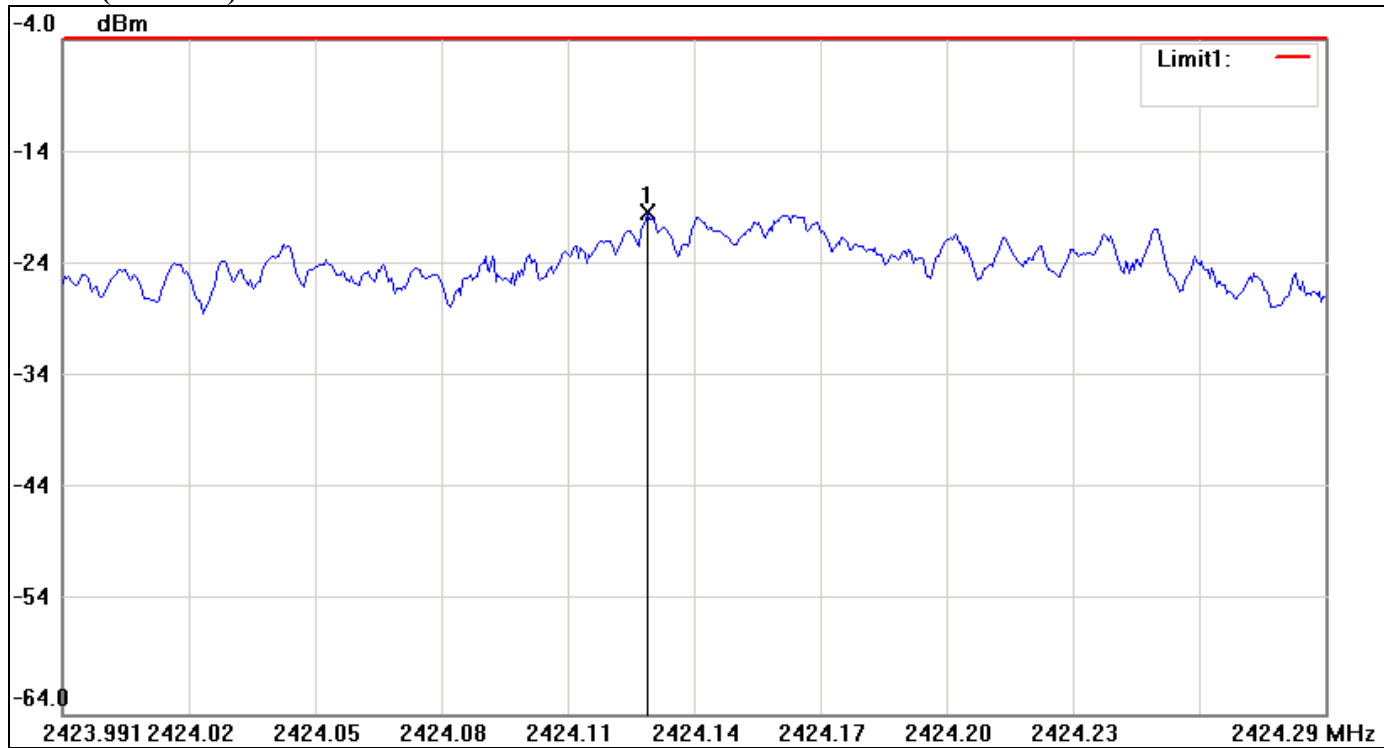


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2461.0137	-17.40	8.00	-25.40



IEEE 802.11n HT 40 MHz mode / Chain 0

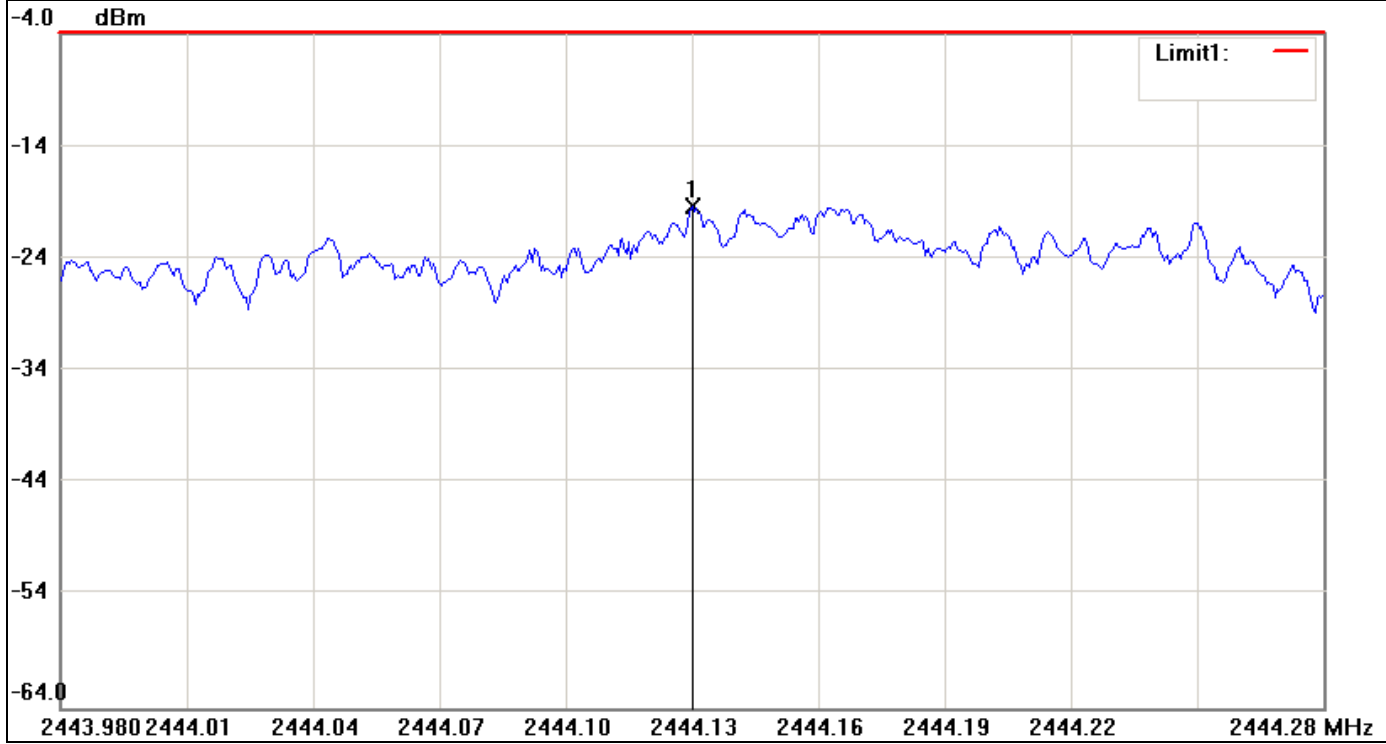
PPSD (CH Low)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2424.1304	-19.38	8.00	-27.38



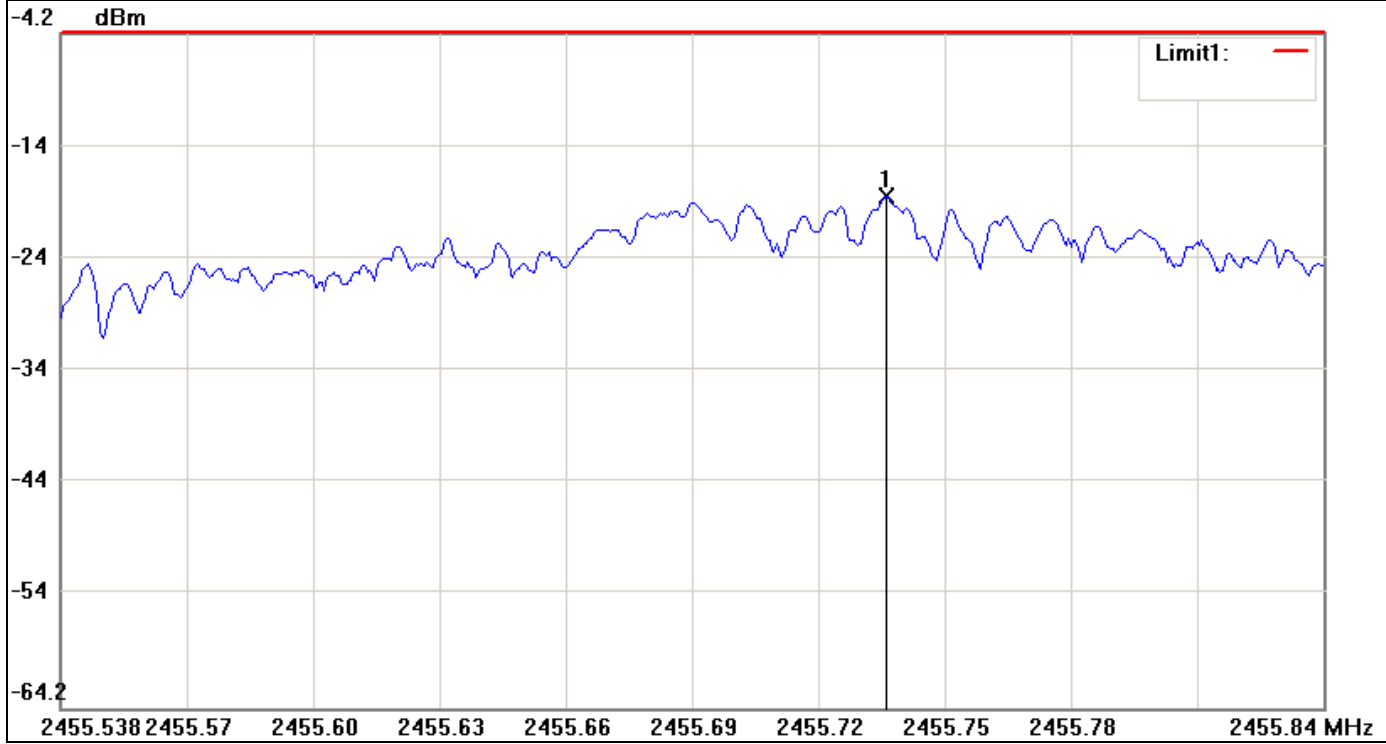
PPSD (CH Mid)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2444.1299	-19.35	8.00	-27.35



PPSD (CH High)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2455.7344	-18.66	8.00	-26.66



IEEE 802.11n HT 40 MHz mode / Chain 1

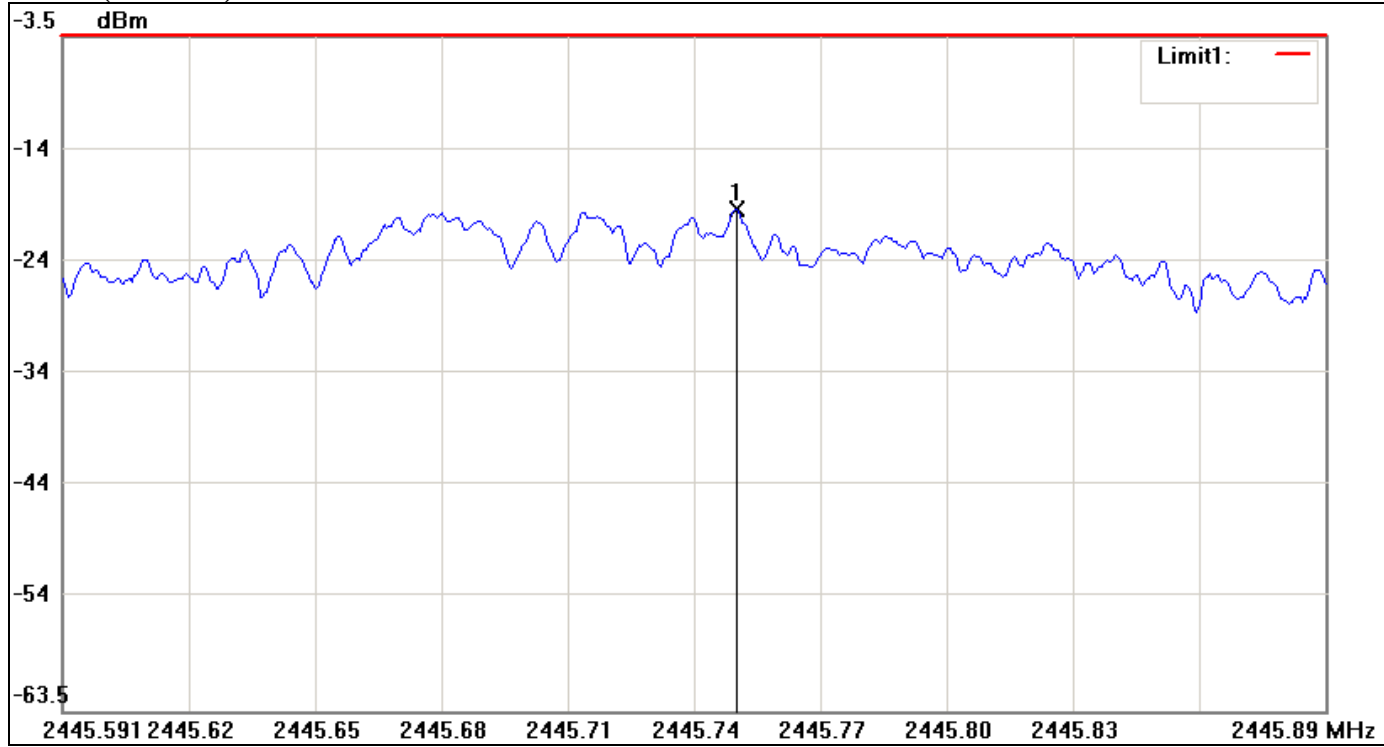
PPSD (CH Low)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2427.2885	-19.02	8.00	-27.02



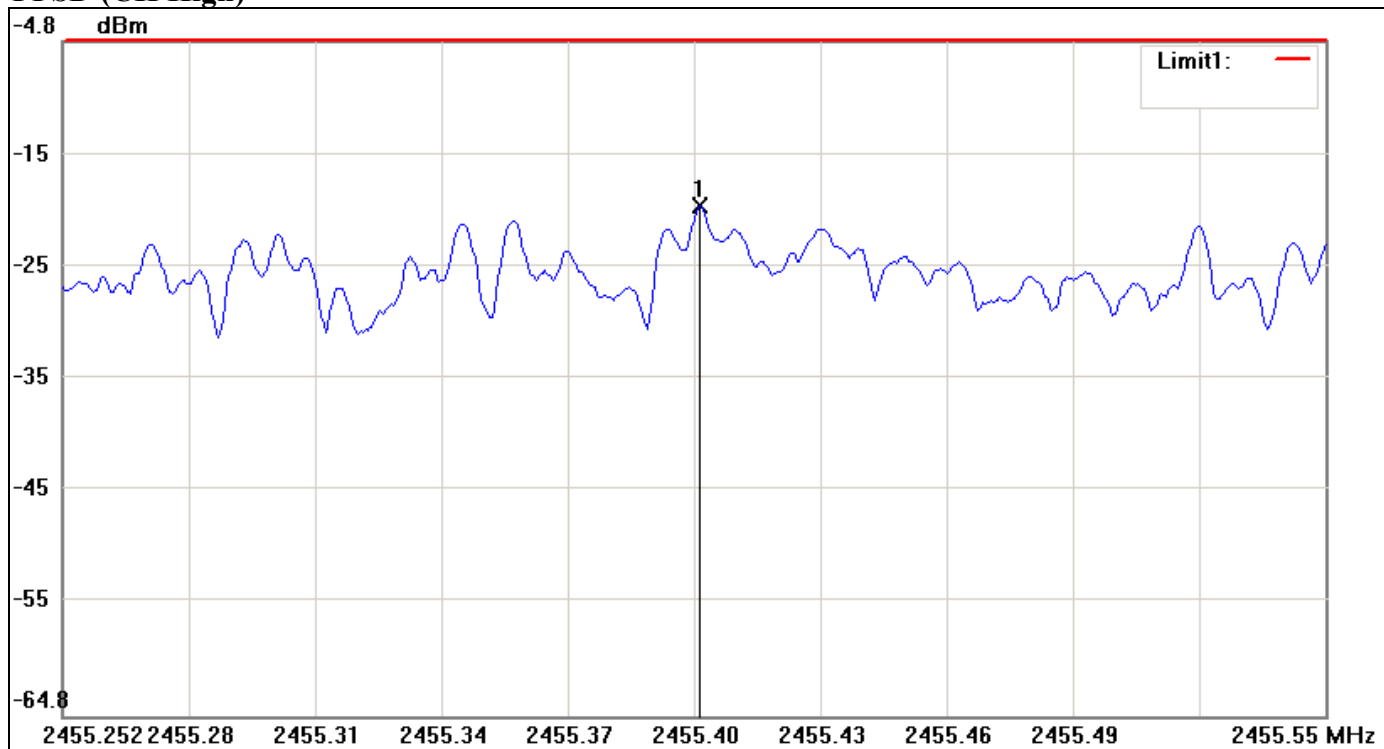
PPSD (CH Mid)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2445.7509	-18.87	8.00	-26.87



PPSD (CH High)



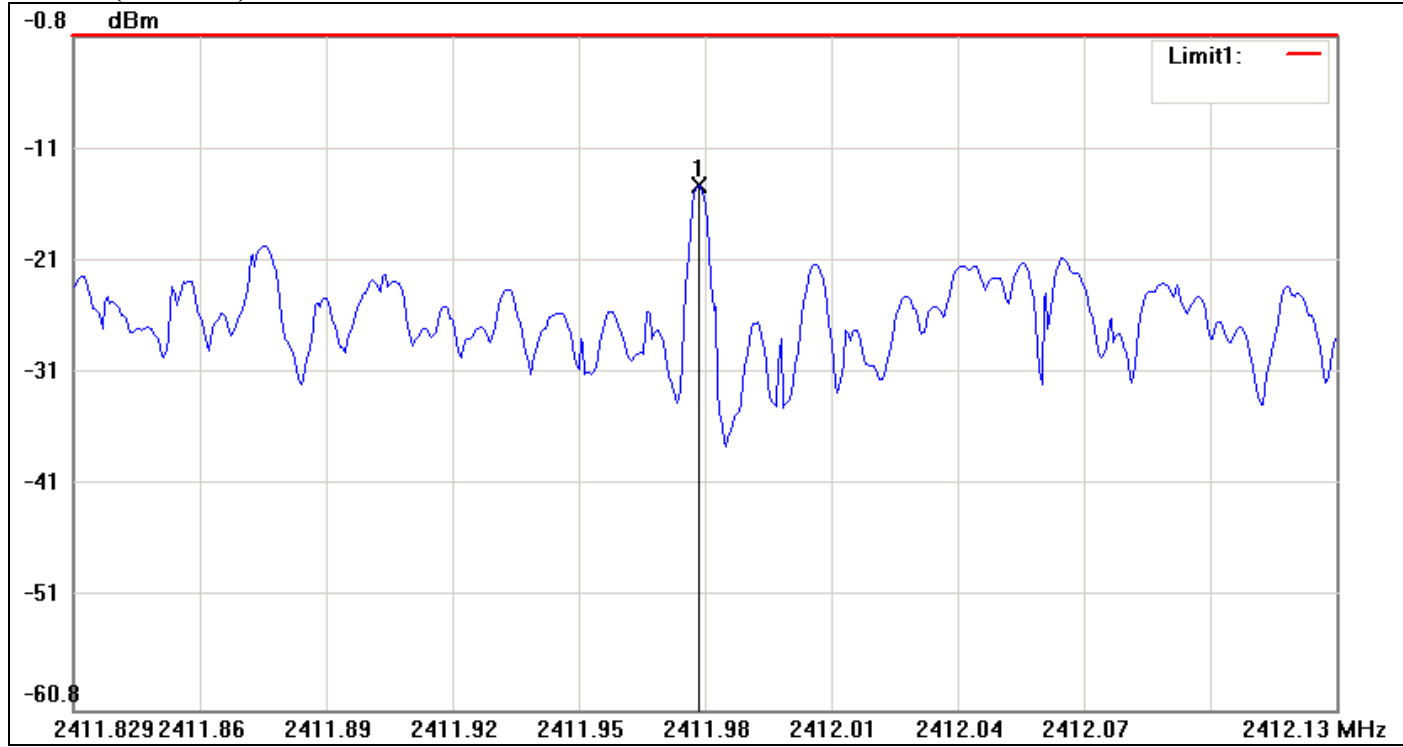
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2455.4031	-19.54	8.00	-27.54



For Single

IEEE 802.11n HT 20 MHz mode Channel mode / Chain 0

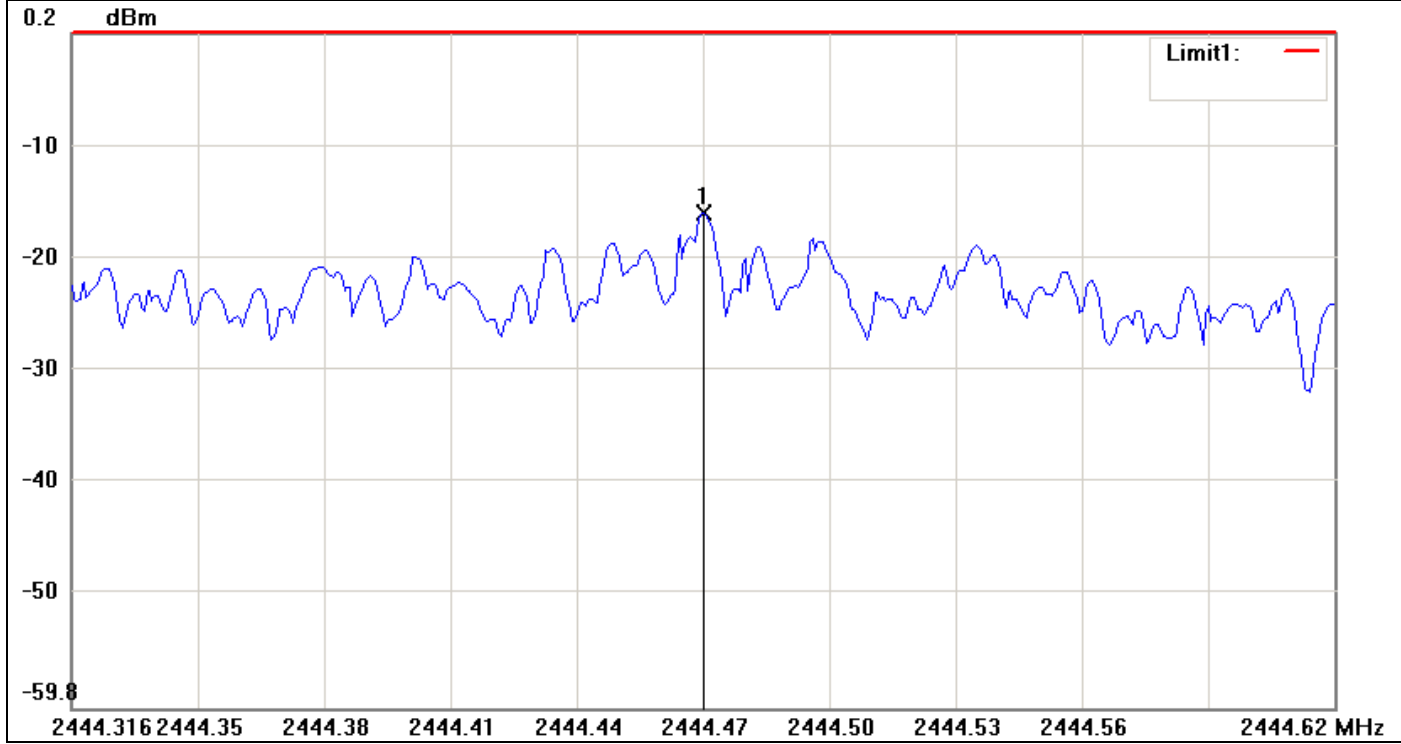
PPSD (CH Low)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2411.9771	-13.99	8.00	-21.99



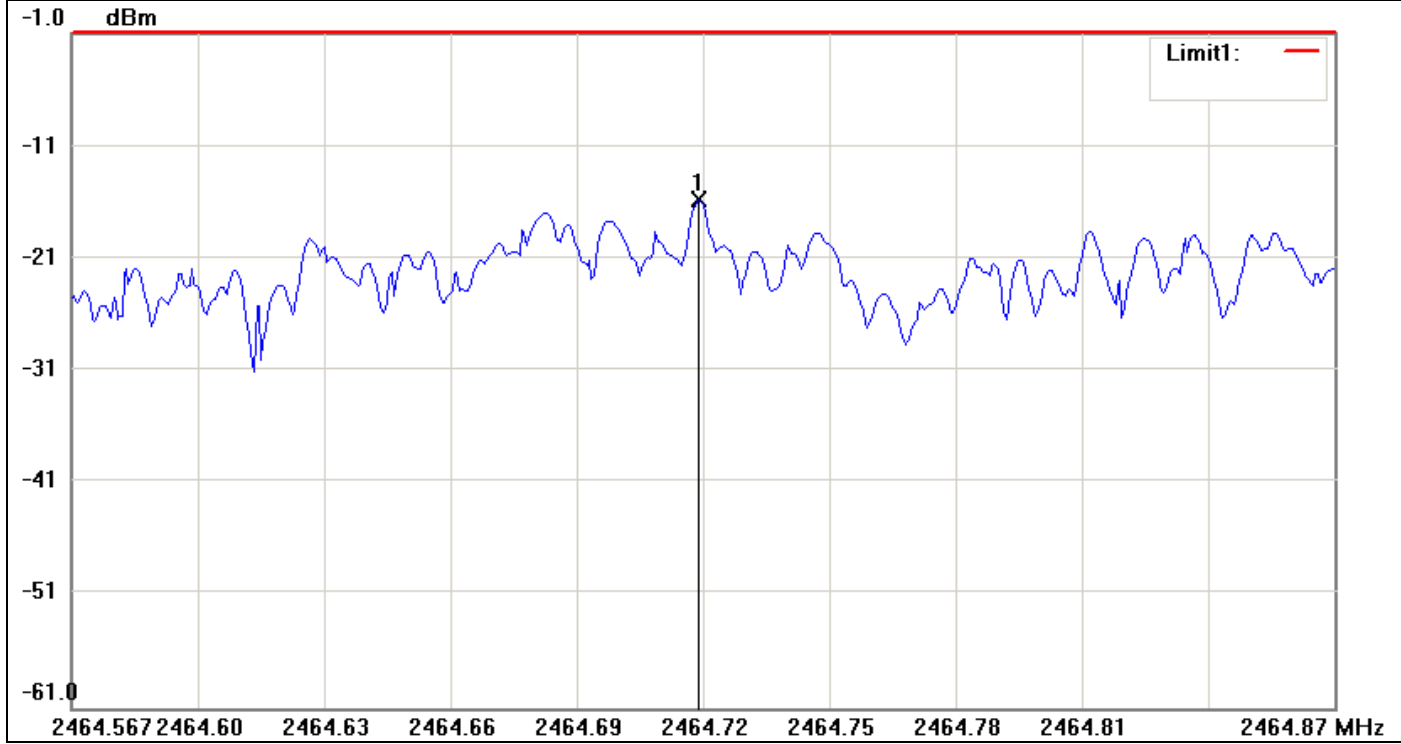
PPSD (CH Mid)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2444.4665	-15.81	8.00	-23.81



PPSD (CH High)

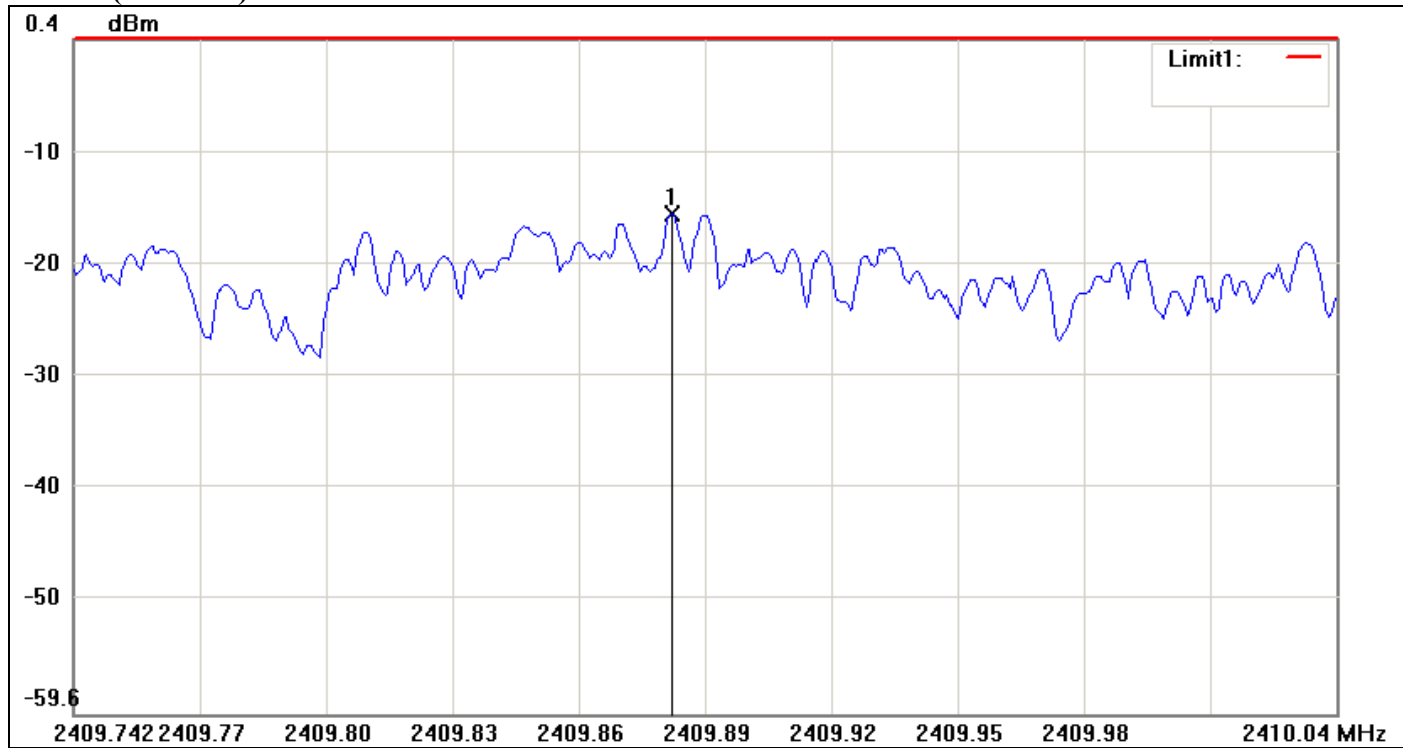


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2464.7163	-15.78	8.00	-23.78



IEEE 802.11n HT 20 MHz mode Channel mode / Chain 1

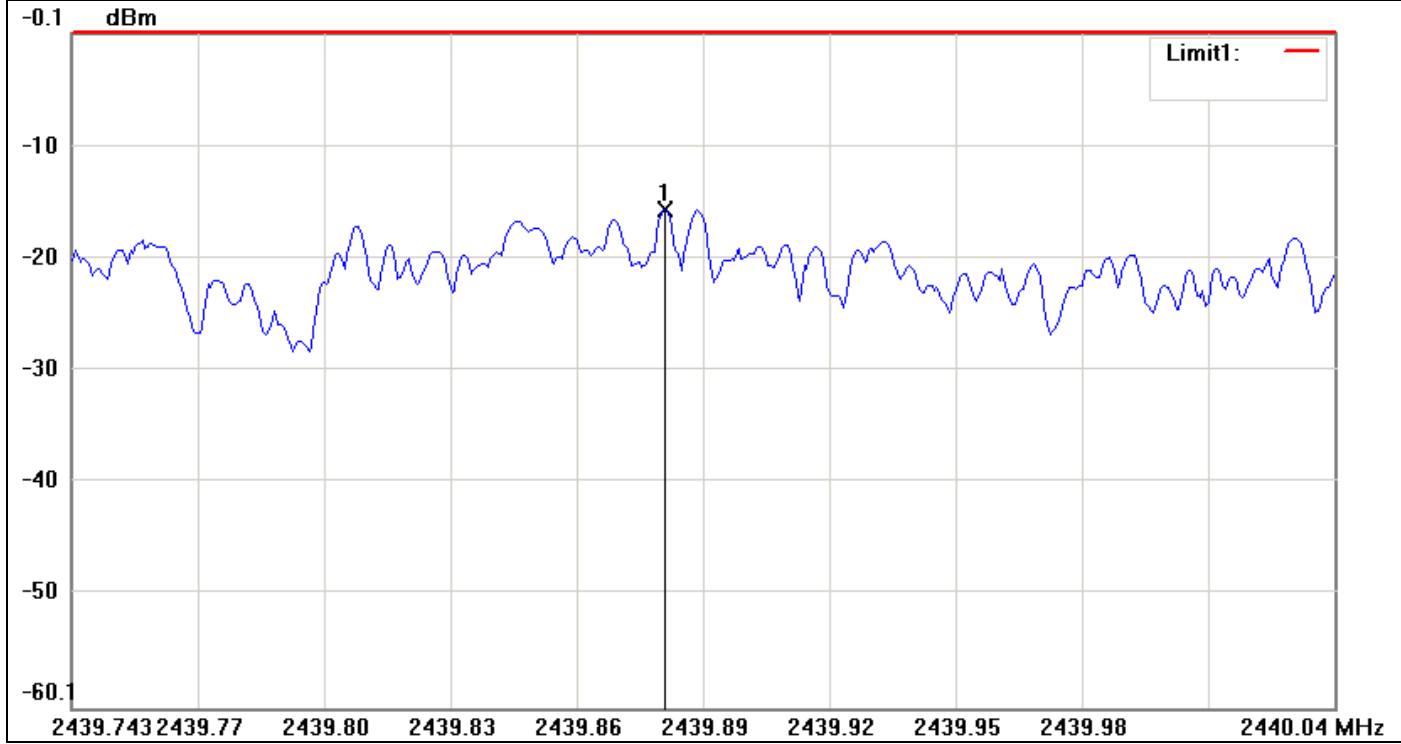
PPSD (CH Low)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2409.8843	-15.13	8.00	-23.13



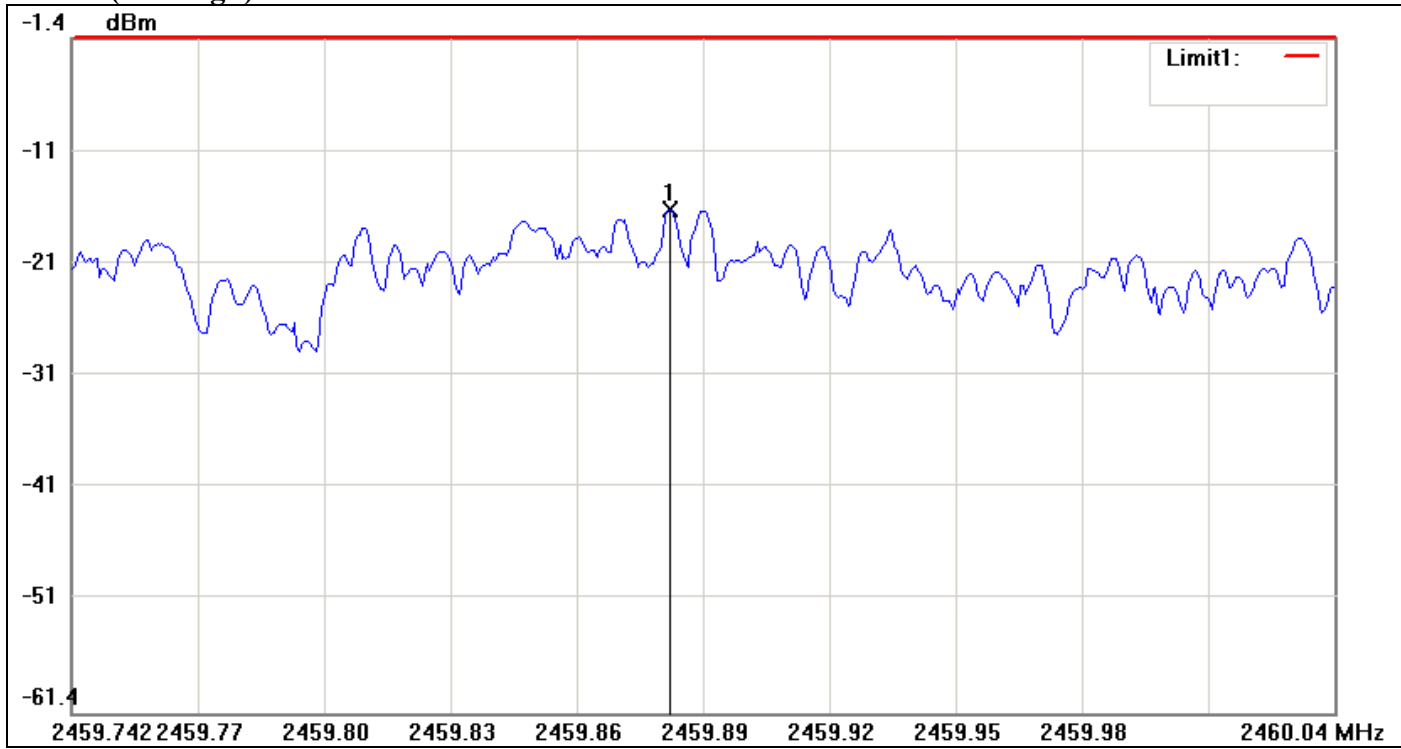
PPSD (CH Mid)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2439.8843	-15.71	8.00	-23.71



PPSD (CH High)

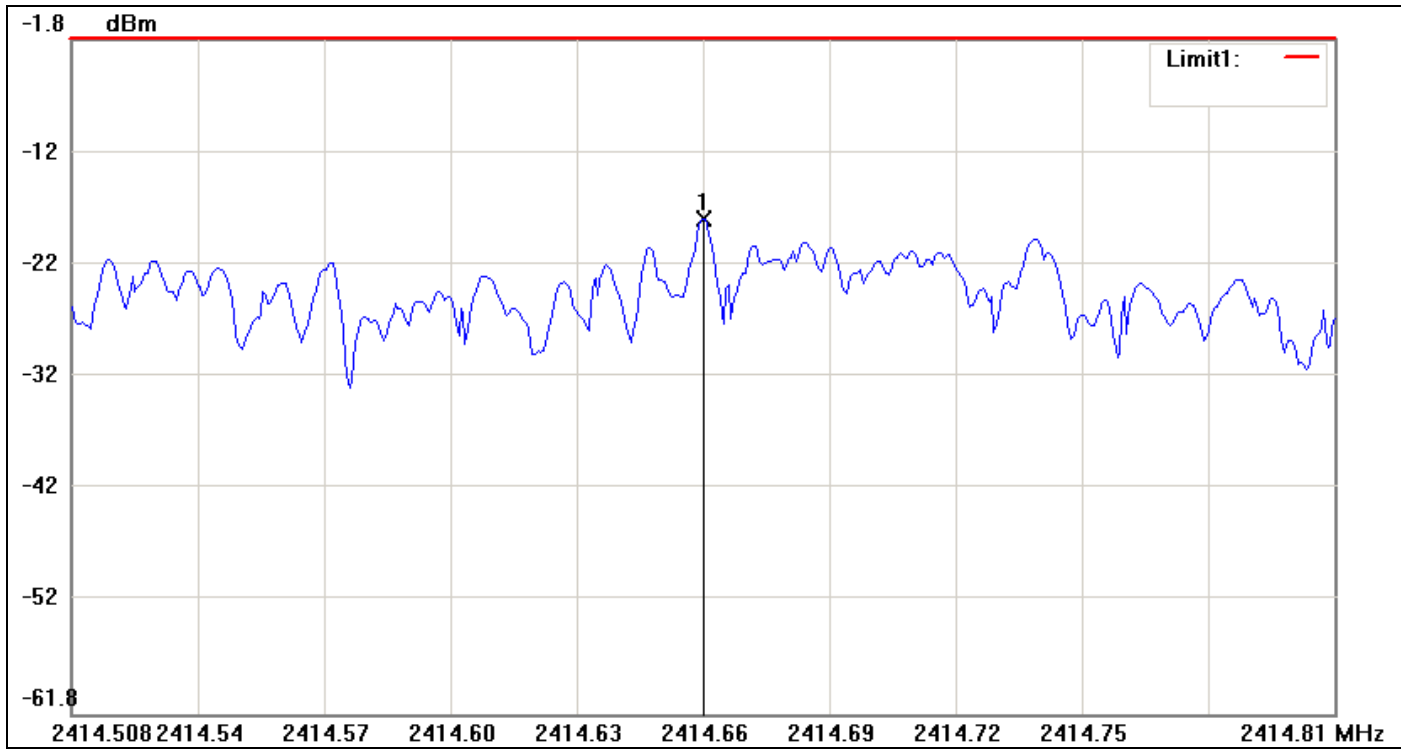


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2459.8838	-16.58	8.00	-24.58



IEEE 802.11n HT 40 MHz mode / Chain 0

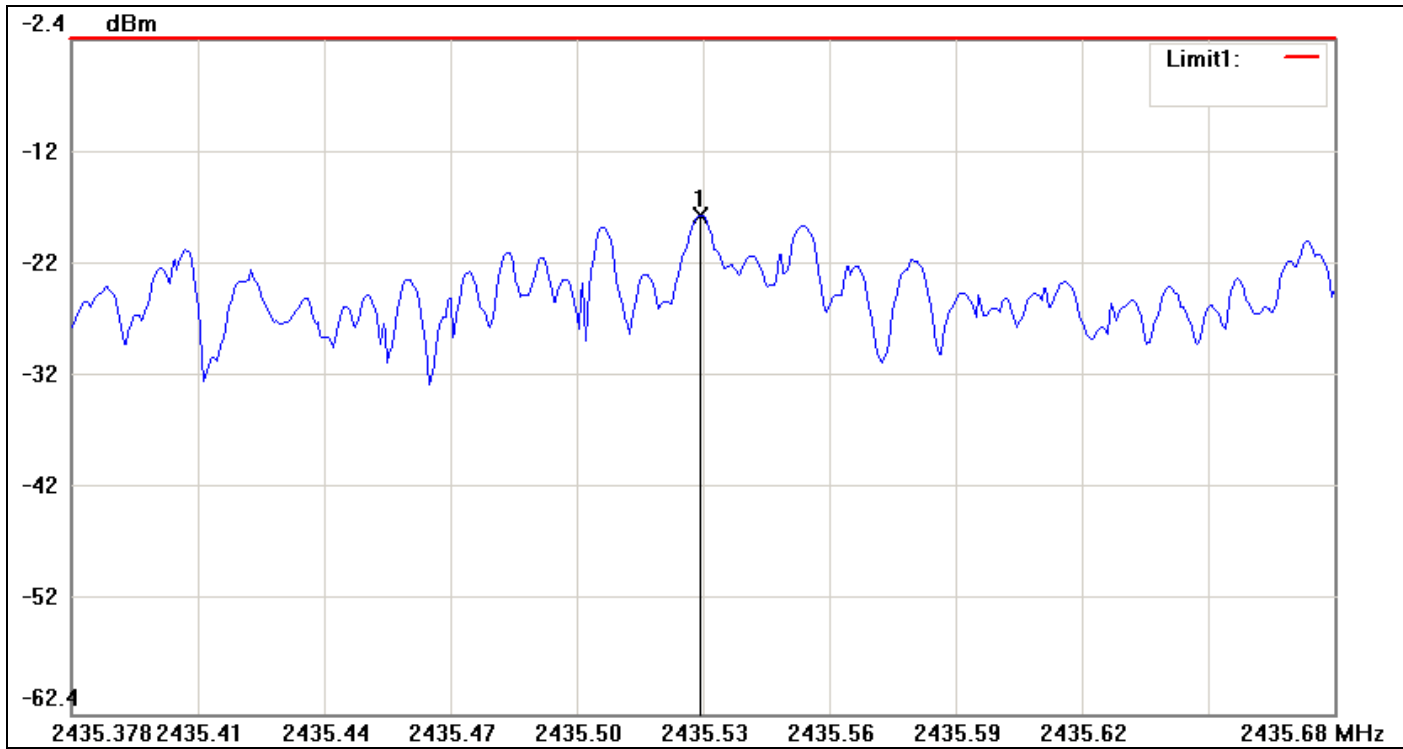
PPSD (CH Low)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2414.6575	-17.75	8.00	-25.75



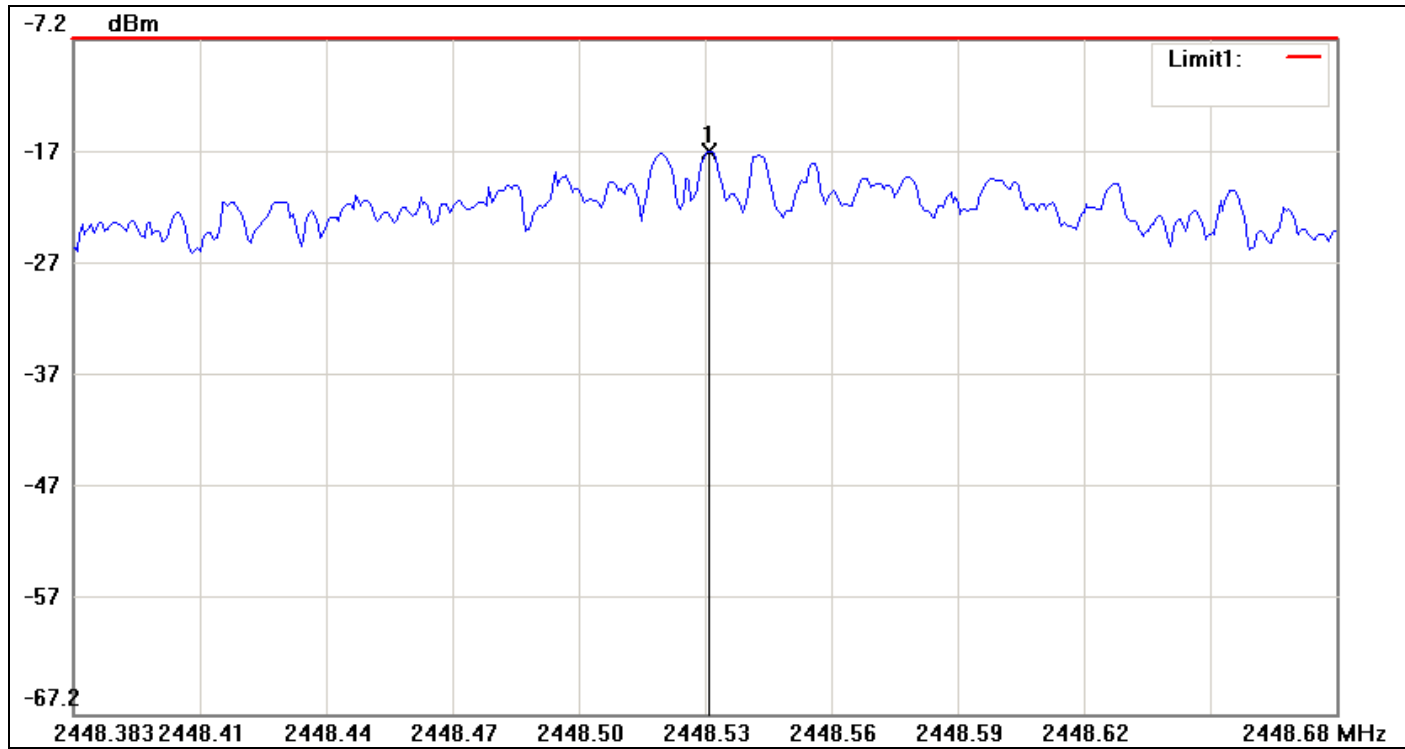
PPSD (CH Mid)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2435.5270	-18.07	8.00	-26.07



PPSD (CH High)

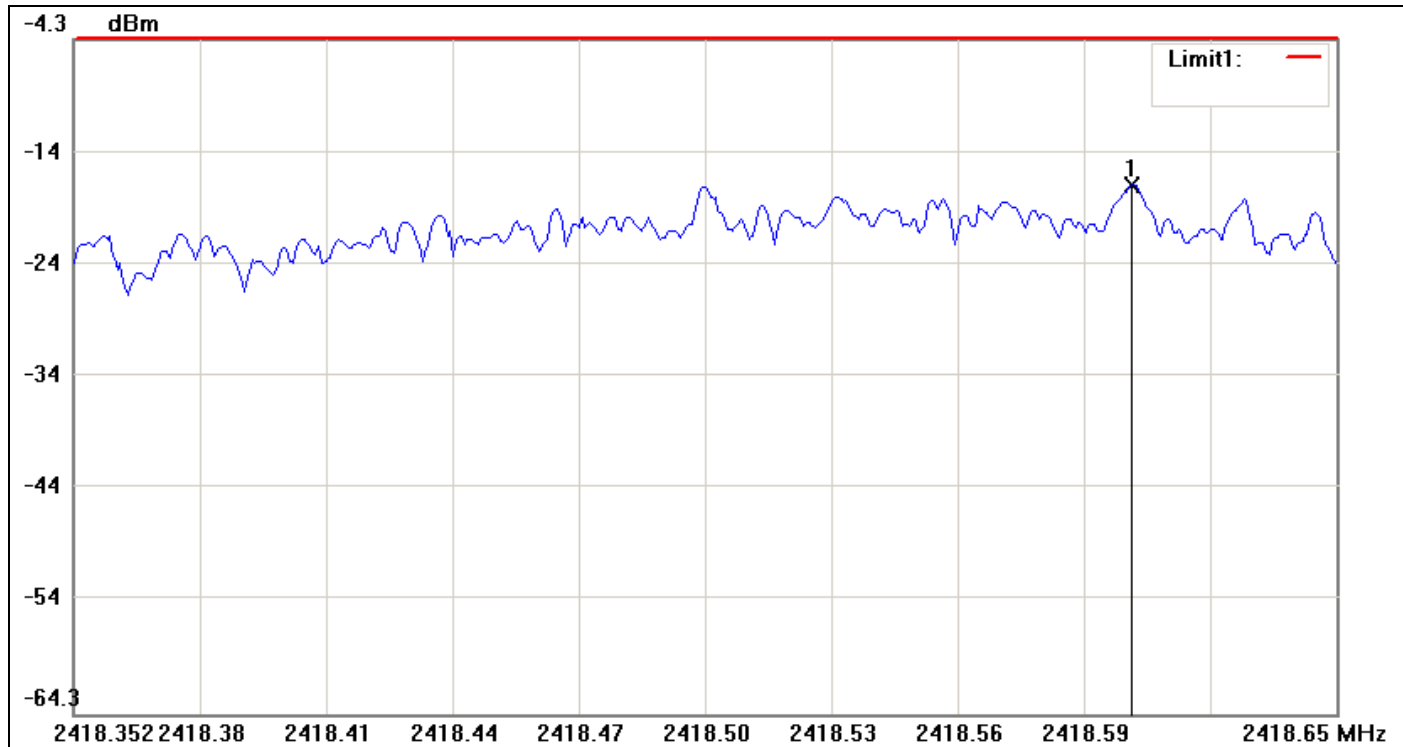


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2448.5339	-17.10	8.00	-25.10



IEEE 802.11n HT 40 MHz mode / Chain 1

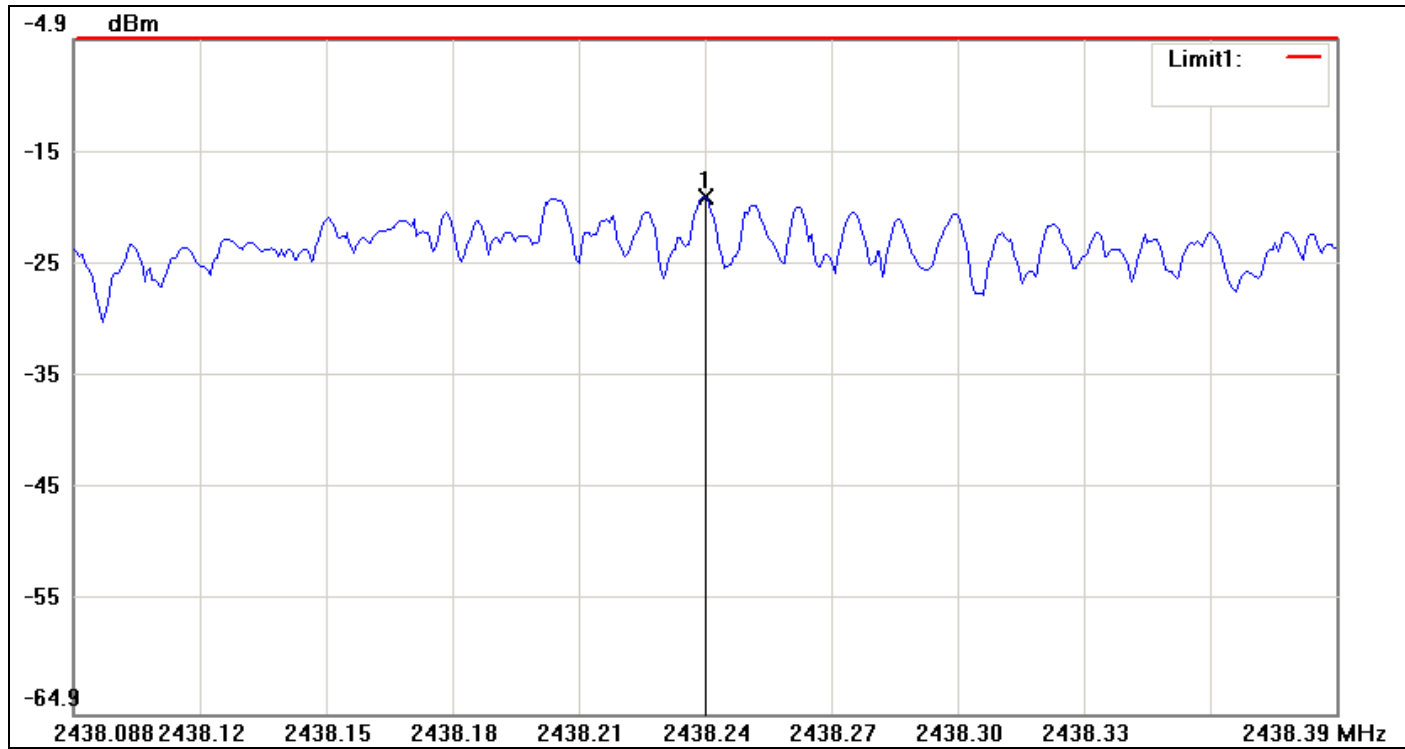
PPSD (CH Low)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2418.6032	-17.25	8.00	-25.25



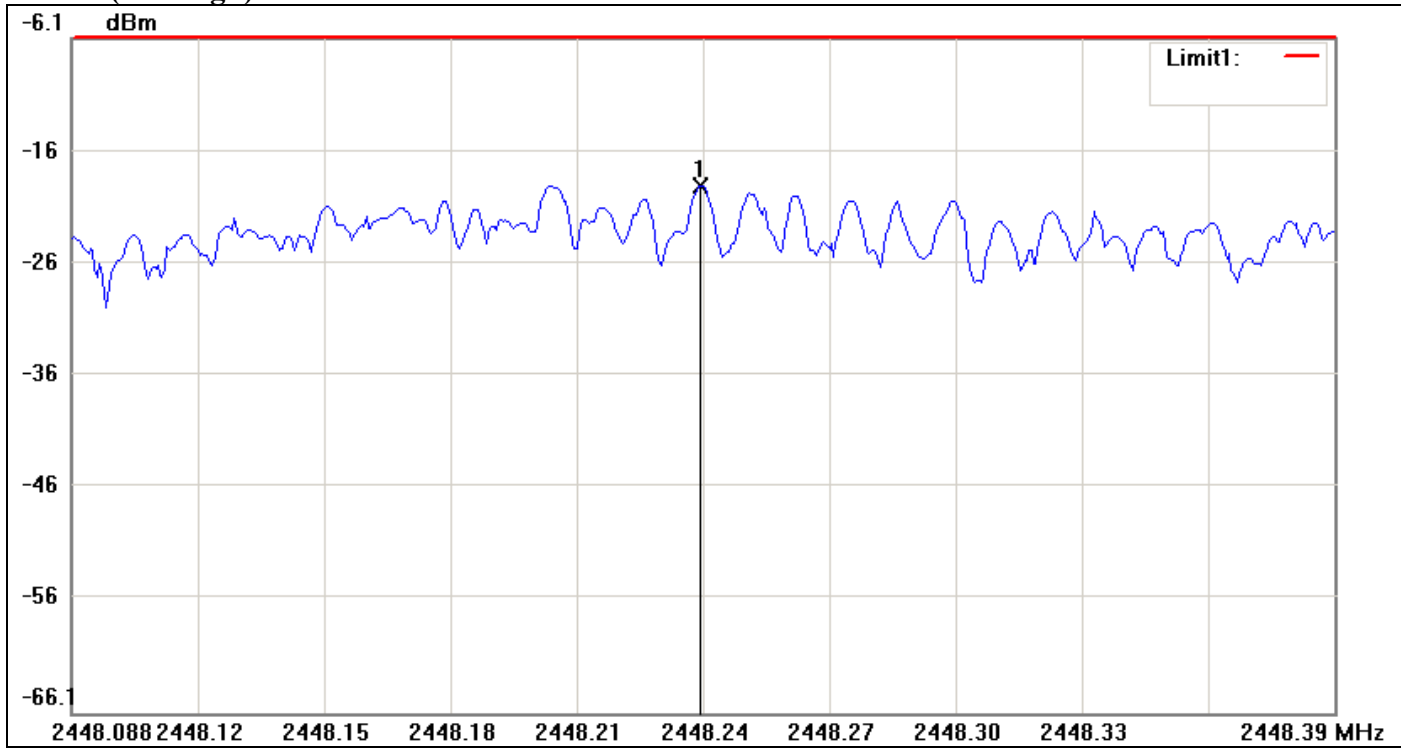
PPSD (CH Mid)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2438.2375	-18.95	8.00	-26.95



PPSD (CH High)



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2448.2371	-19.15	8.00	-27.15



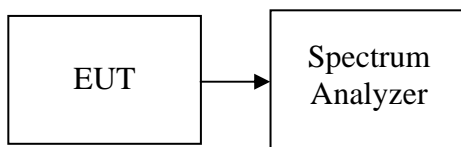
7.6 SPURIOUS EMISSIONS

7.6.1 Conducted Measurement

LIMIT

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

Test Configuration



TEST PROCEDURE

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

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

Measurements are made over the 13GHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

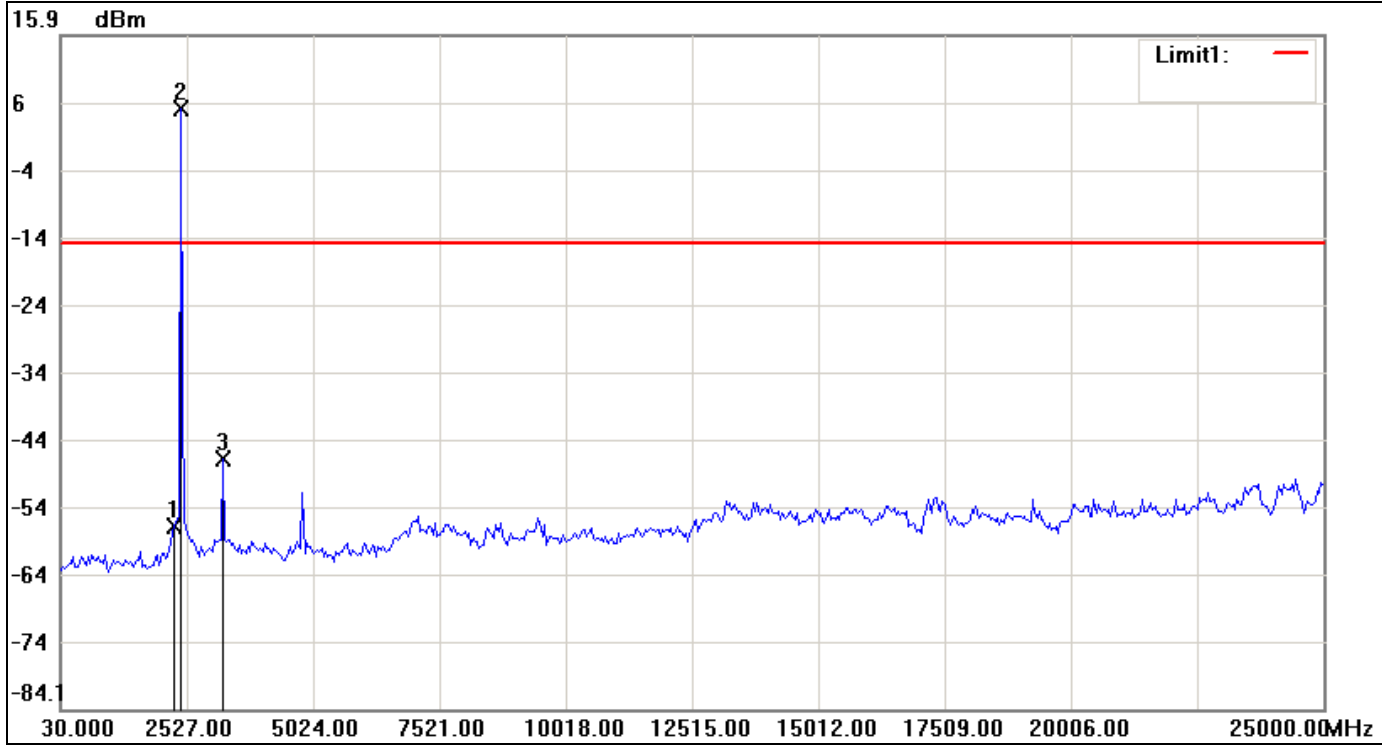
No non-compliance noted.



Test Plot

IEEE 802.11b mode

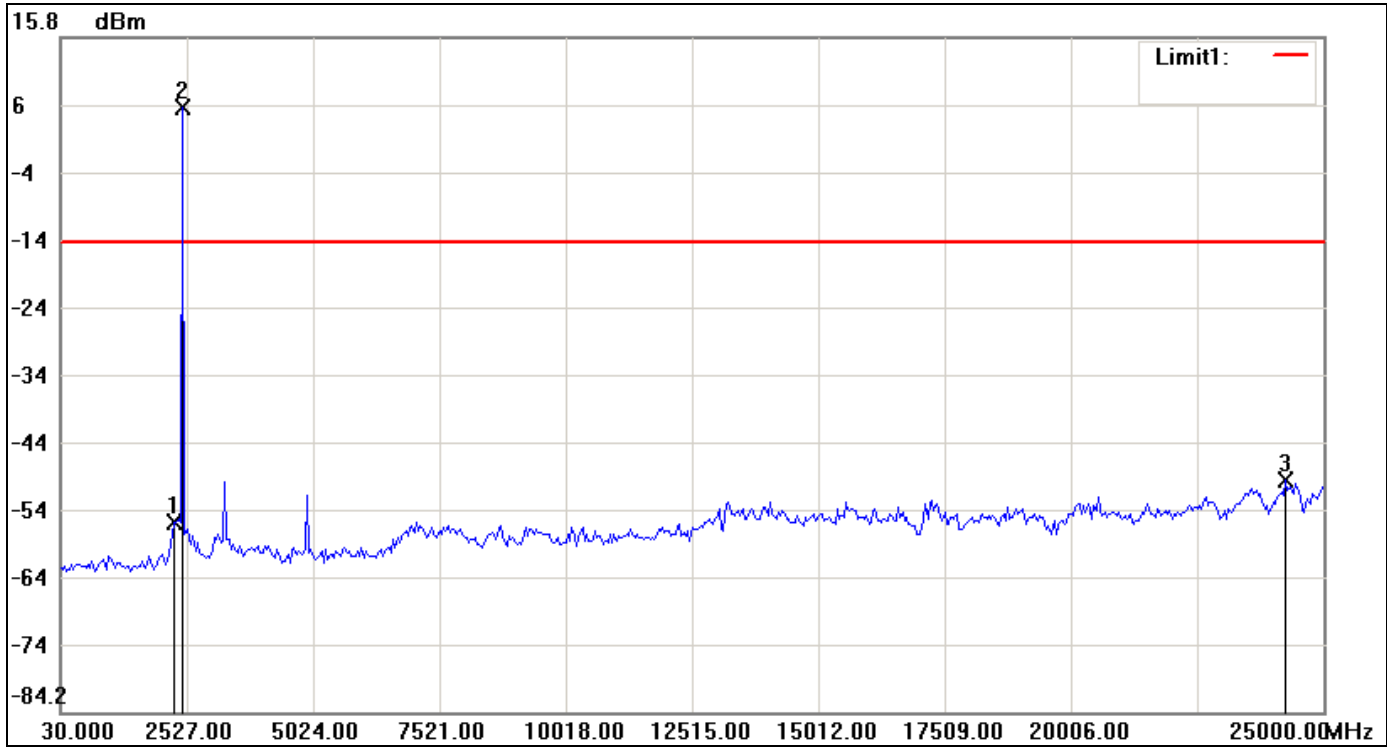
CH Low



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2277.3000	-57.09	-15.10	-41.99
2	2402.1500	4.90	-15.10	20.00
3	3234.4833	-46.93	-15.10	-31.83



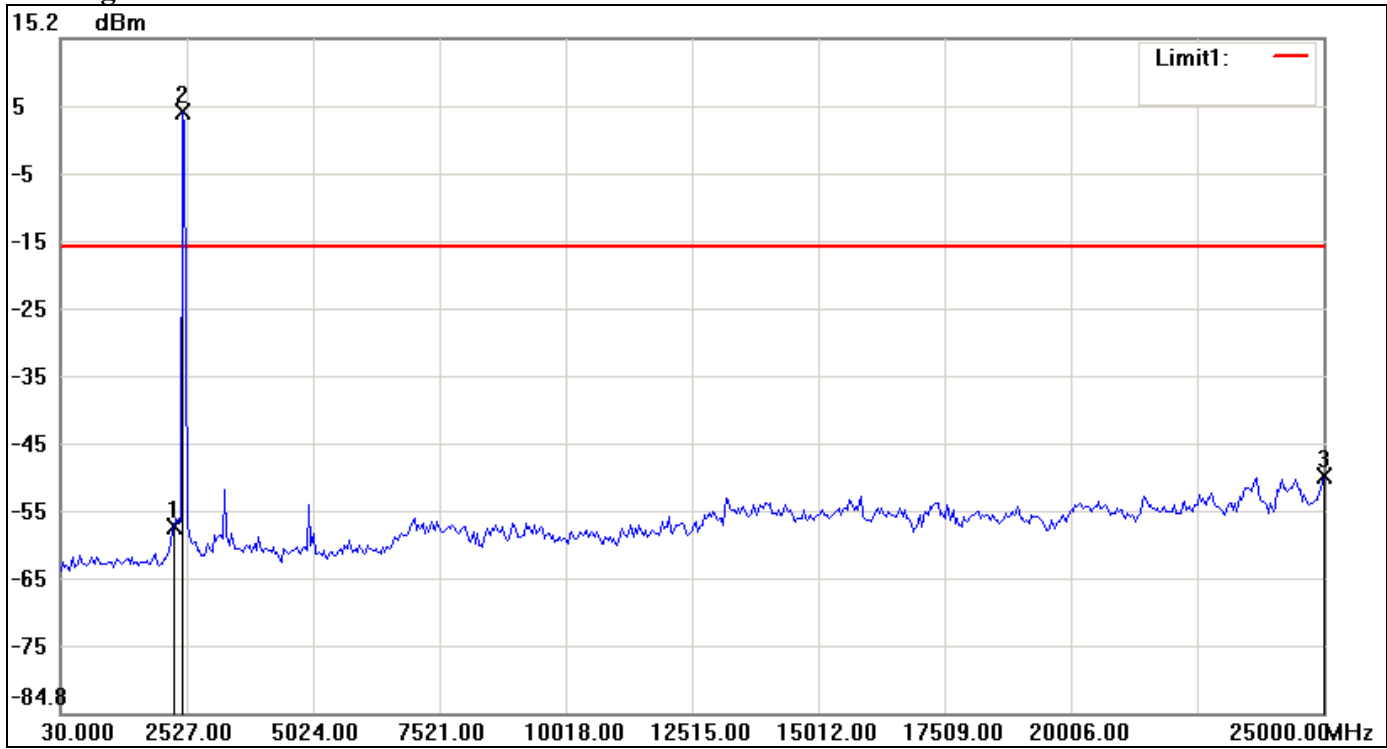
CH Mid



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2277.3000	-56.23	-14.71	-41.52
2	2443.7667	5.29	-14.71	20.00
3	24250.9000	-49.87	-14.71	-35.16



CH High

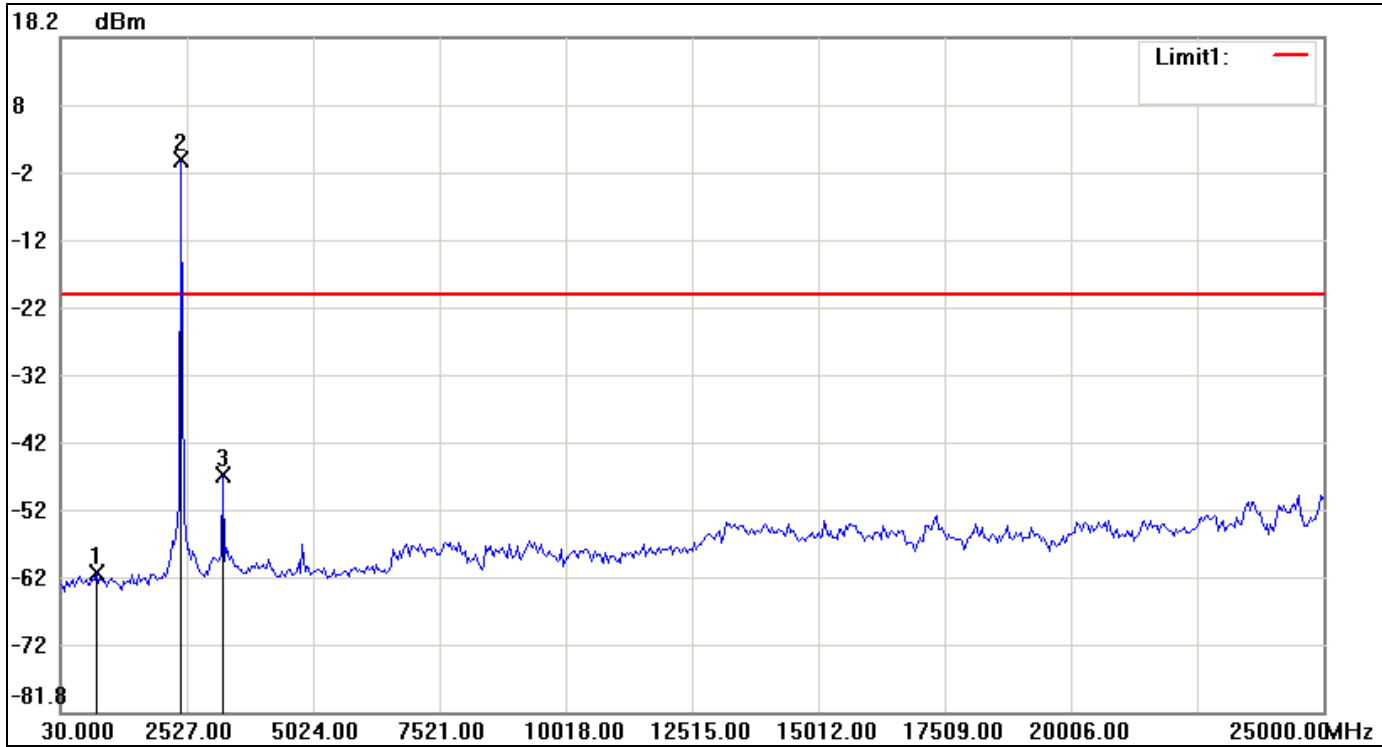


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	2277.3000	-57.12	-15.79	-41.33
2	2443.7667	4.21	-15.79	20.00
3	25000.0000	-49.84	-15.79	-34.05



IEEE 802.11g mode

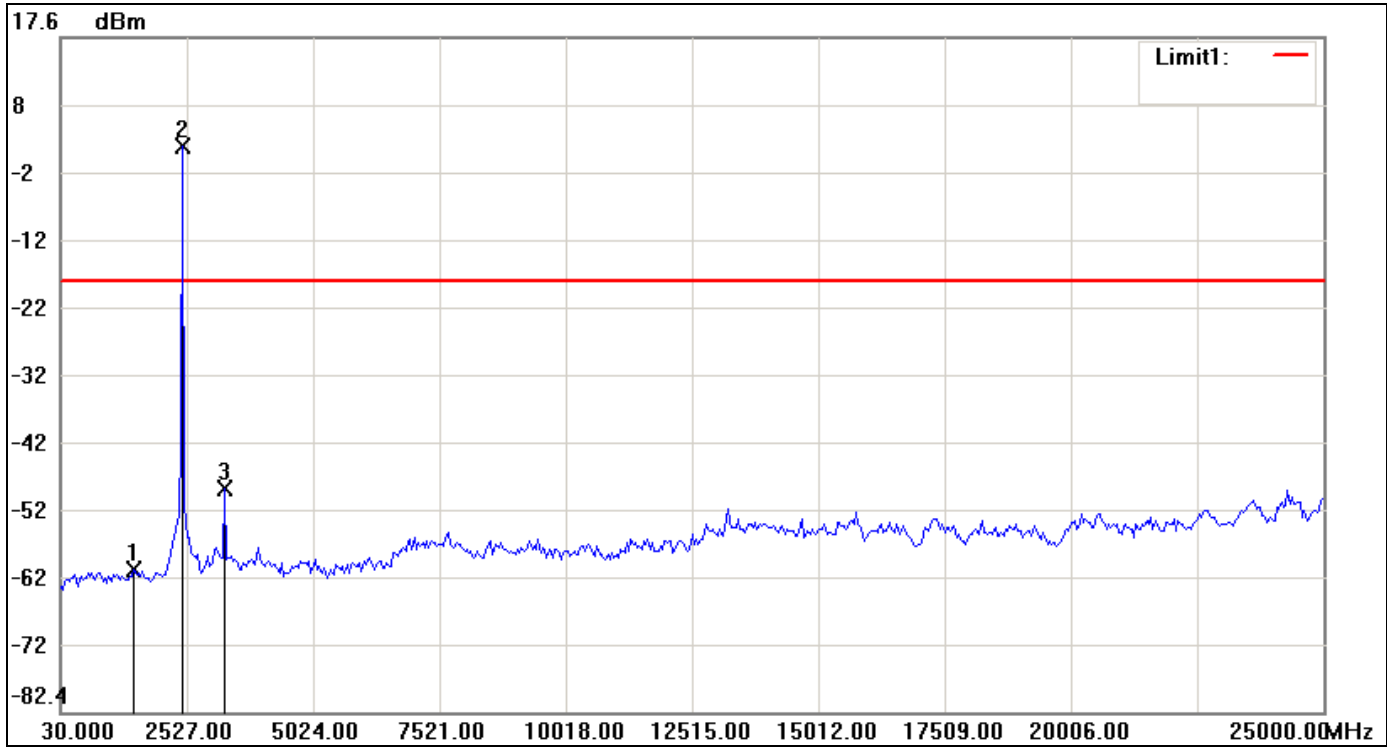
CH Low



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	737.4833	-61.03	-19.96	-41.07
2	2402.1500	0.04	-19.96	20.00
3	3234.4833	-46.63	-19.96	-26.67



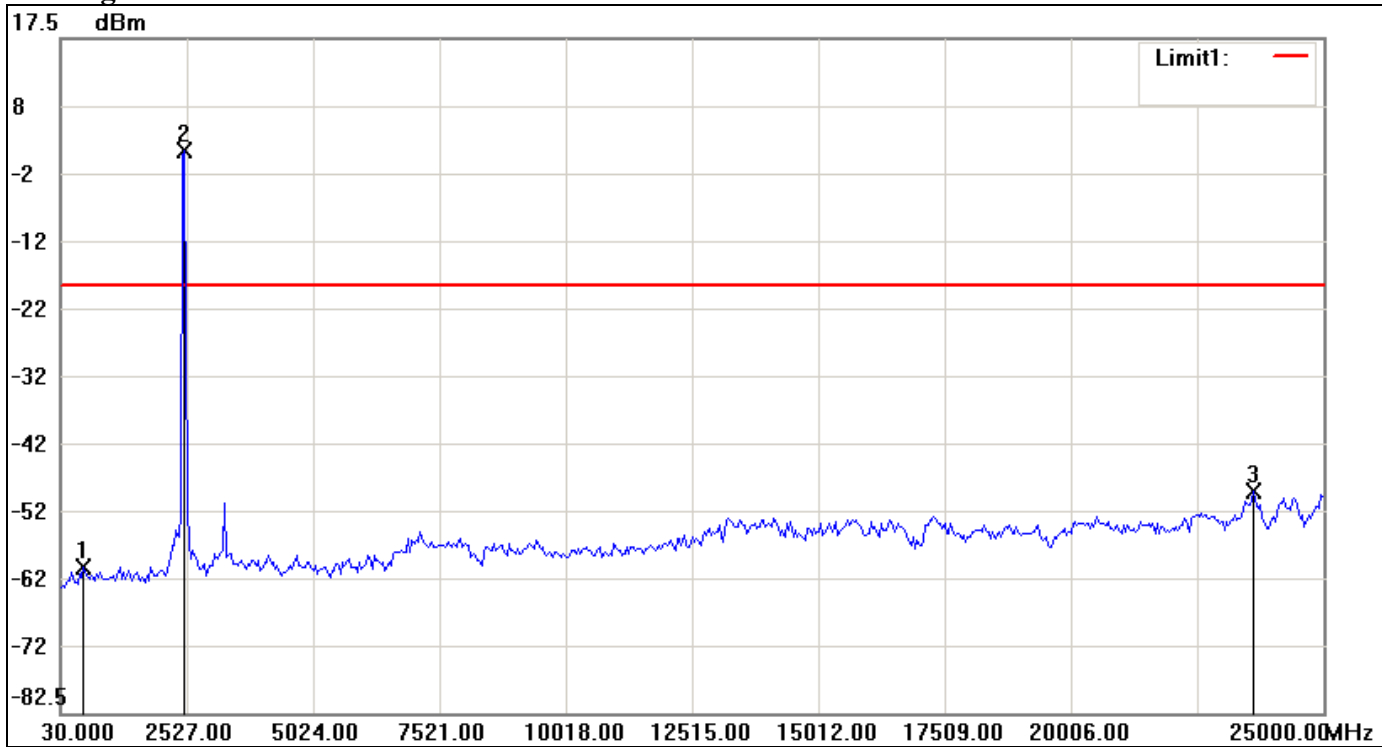
CH Mid



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	1486.5833	-61.17	-18.43	-42.74
2	2443.7667	1.57	-18.43	20.00
3	3276.1000	-49.26	-18.43	-30.83



CH High



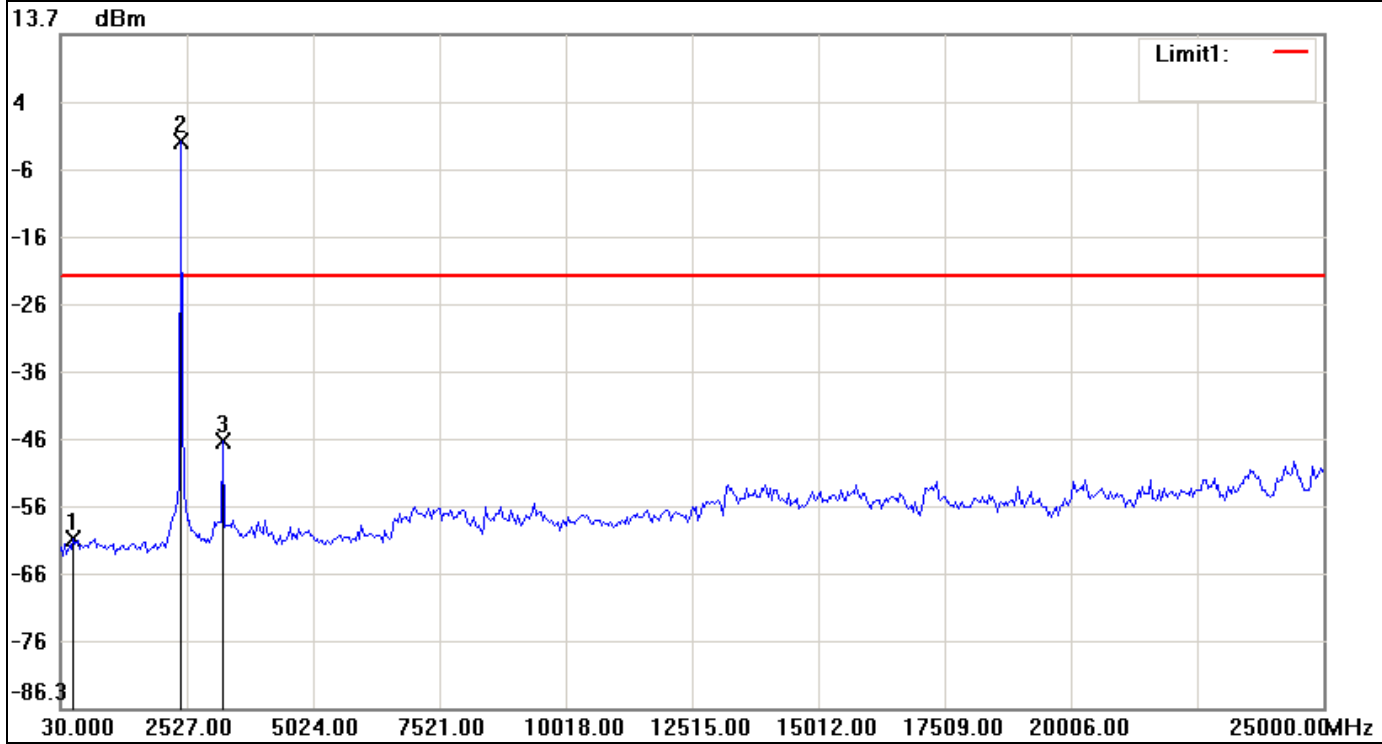
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	487.7833	-60.94	-19.11	-41.83
2	2485.3833	0.89	-19.11	20.00
3	23626.6500	-49.73	-19.11	-30.62



For MIMO

IEEE 802.11n HT 20 MHz mode Channel mode / Chain 0

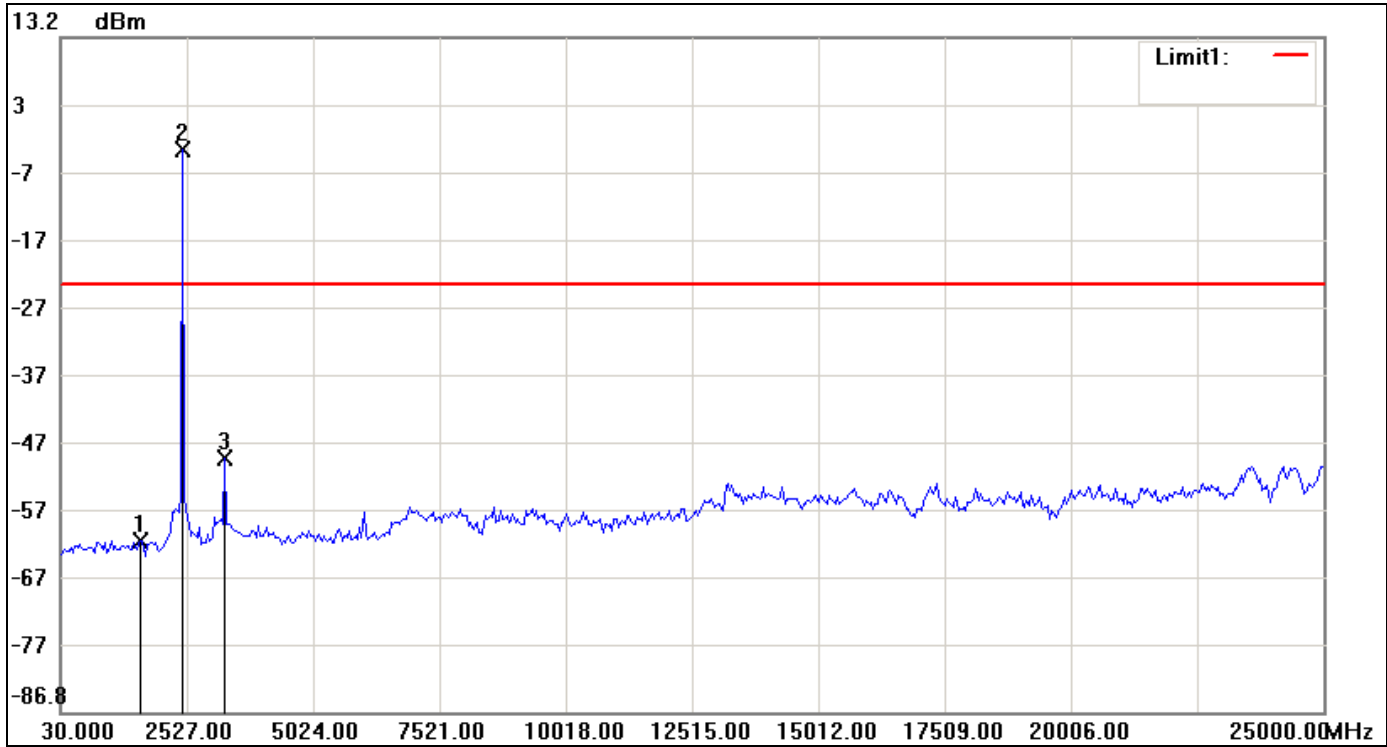
CH Low



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	279.7000	-61.12	-22.26	-38.86
2	2402.1500	-2.26	-22.26	20.00
3	3234.4833	-46.70	-22.26	-24.44



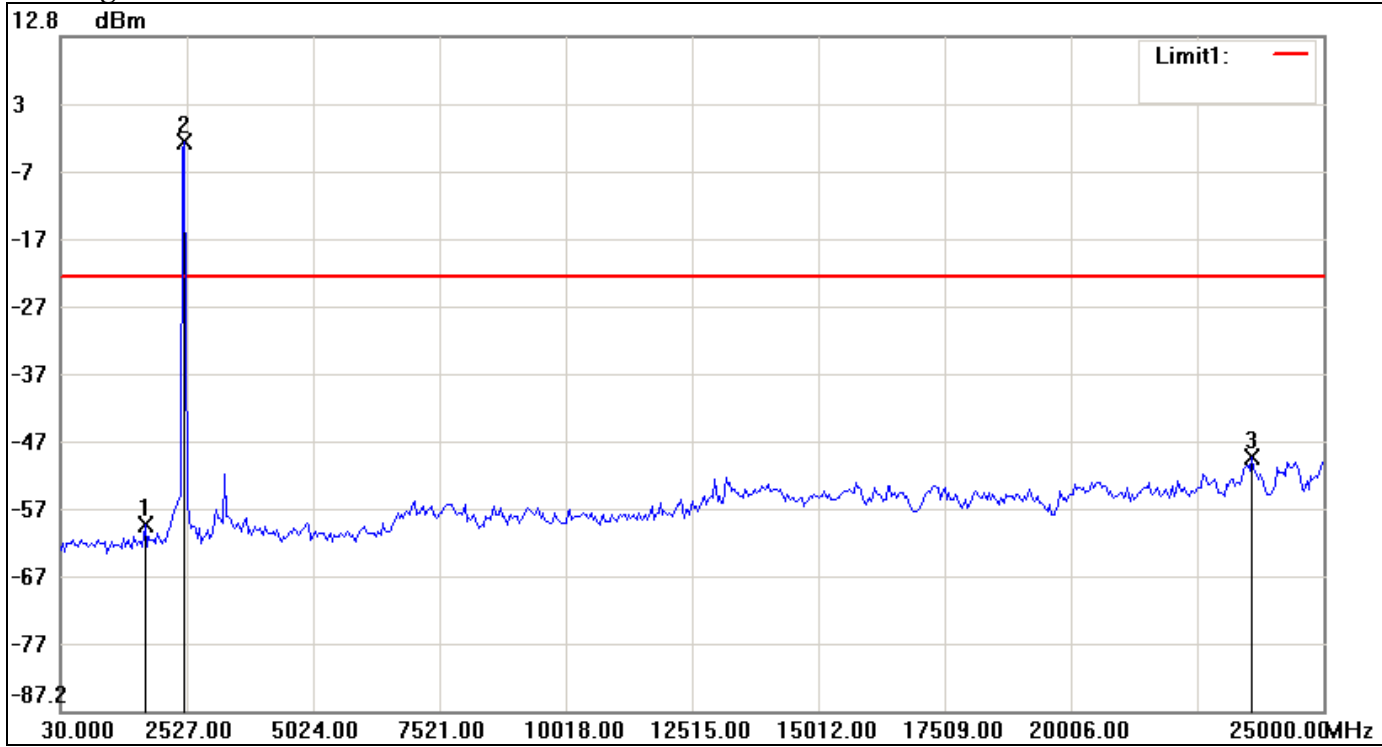
CH Mid



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	1611.4333	-61.41	-23.34	-38.07
2	2443.7667	-3.34	-23.34	20.00
3	3276.1000	-49.24	-23.34	-25.90



CH High

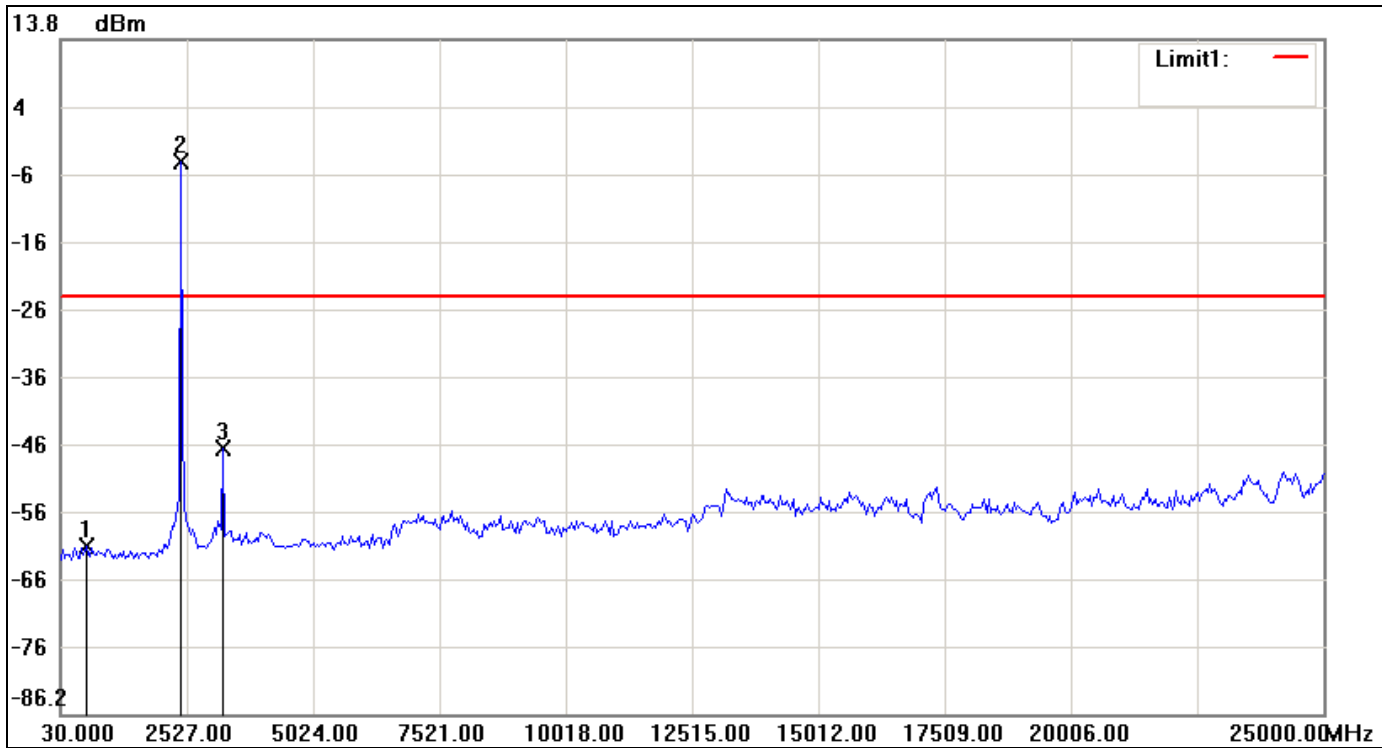


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	1694.6667	-59.64	-22.77	-36.87
2	2485.3833	-2.77	-22.77	20.00
3	23585.0333	-49.71	-22.77	-26.94



IEEE 802.11n HT 20 MHz mode Channel mode / Chain 1

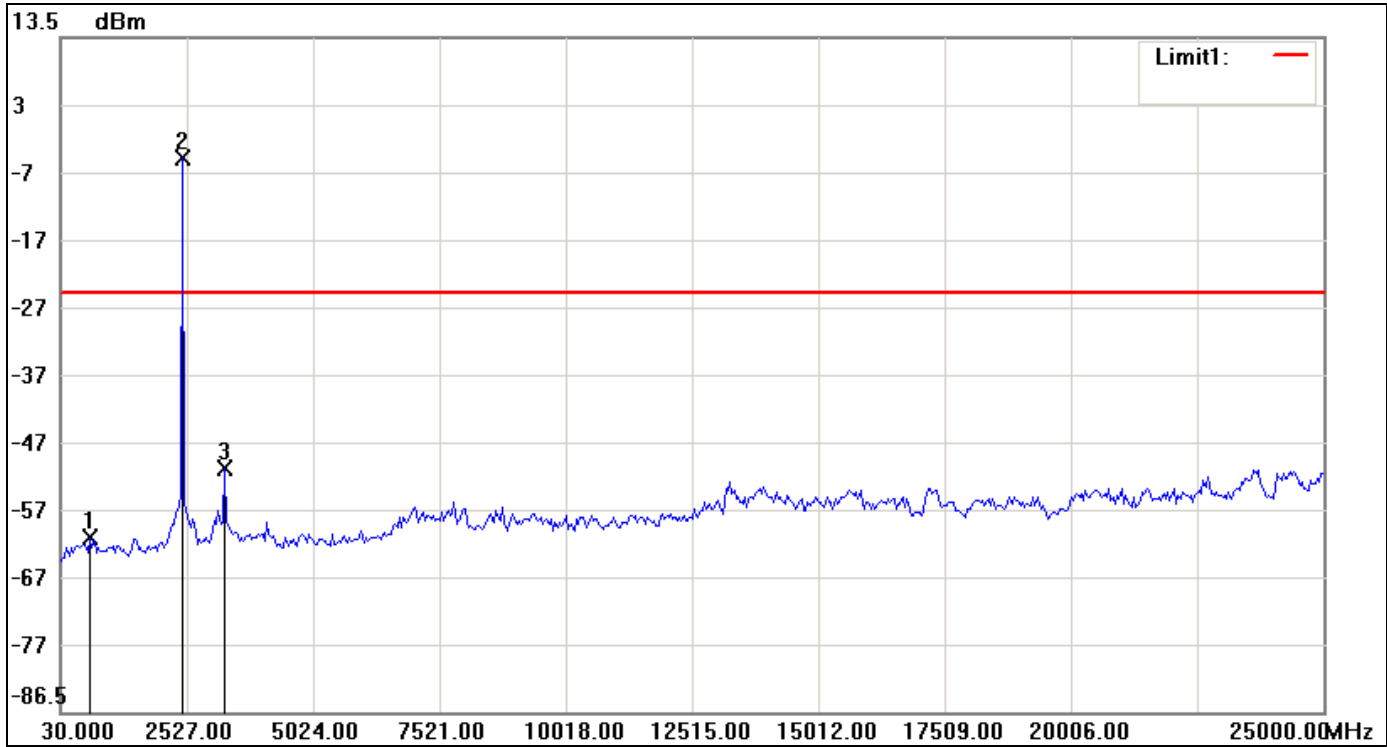
CH Low



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	529.4000	-61.25	-24.28	-36.97
2	2402.1500	-4.28	-24.28	20.00
3	3234.4833	-46.92	-24.28	-22.64



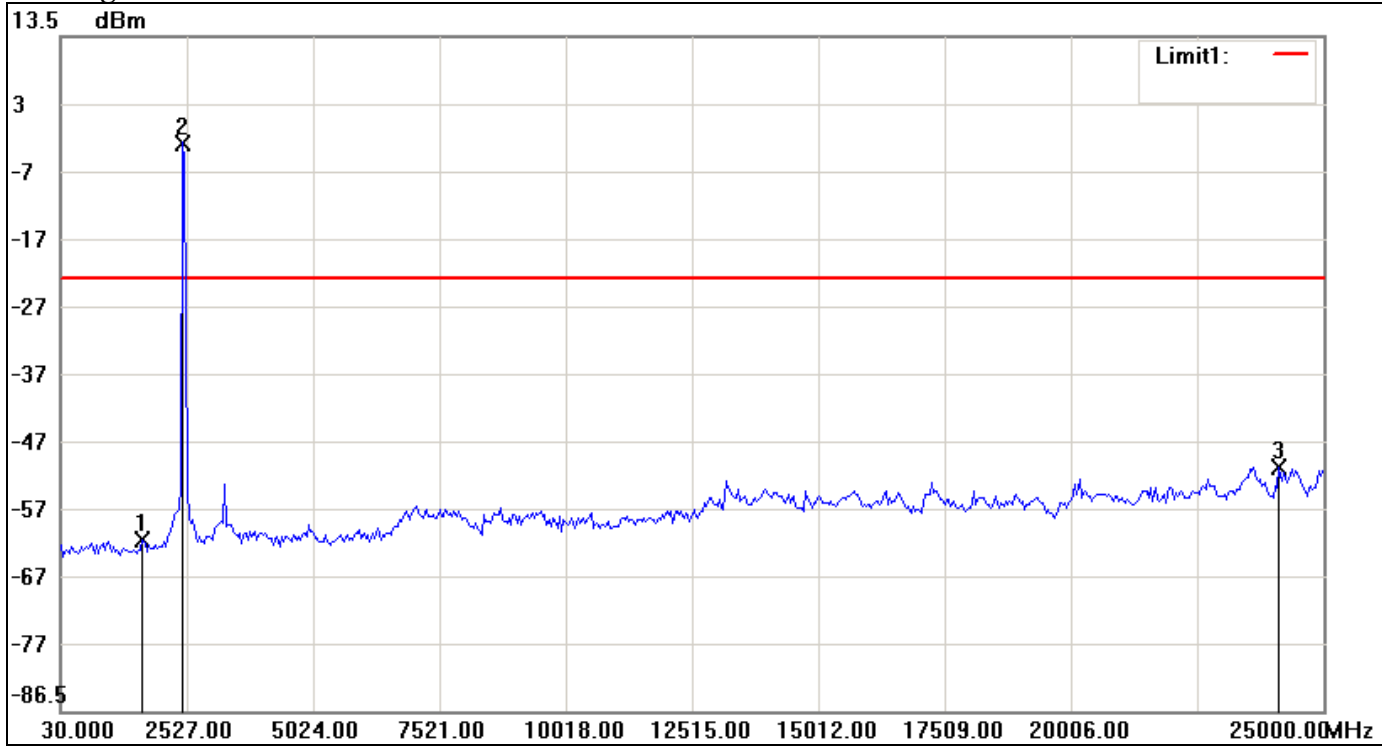
CH Mid



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	612.6333	-60.57	-24.33	-36.24
2	2443.7667	-4.33	-24.33	20.00
3	3276.1000	-50.33	-24.33	-26.00



CH High

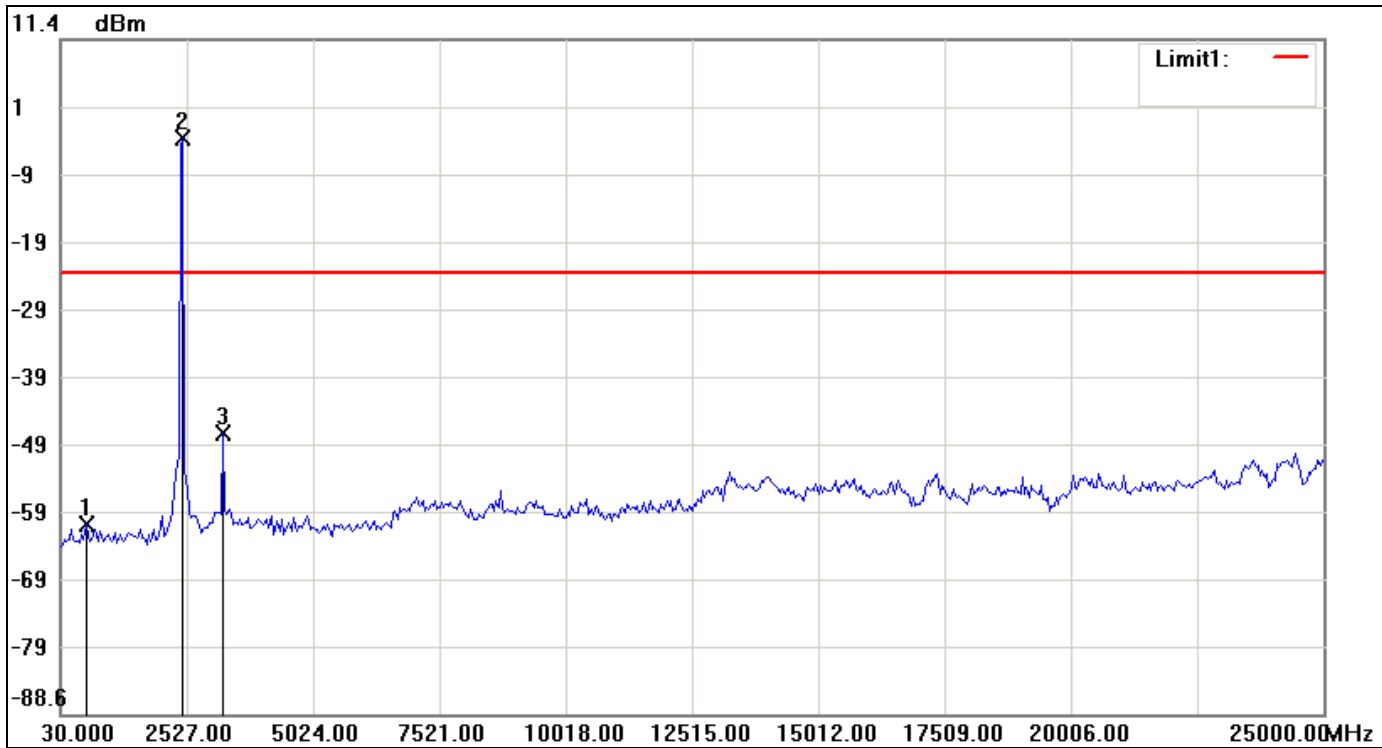


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	1653.0500	-61.24	-22.29	-38.95
2	2443.7667	-2.29	-22.29	20.00
3	24126.0500	-50.38	-22.29	-28.09



IEEE 802.11n HT 40 MHz mode / Chain 0

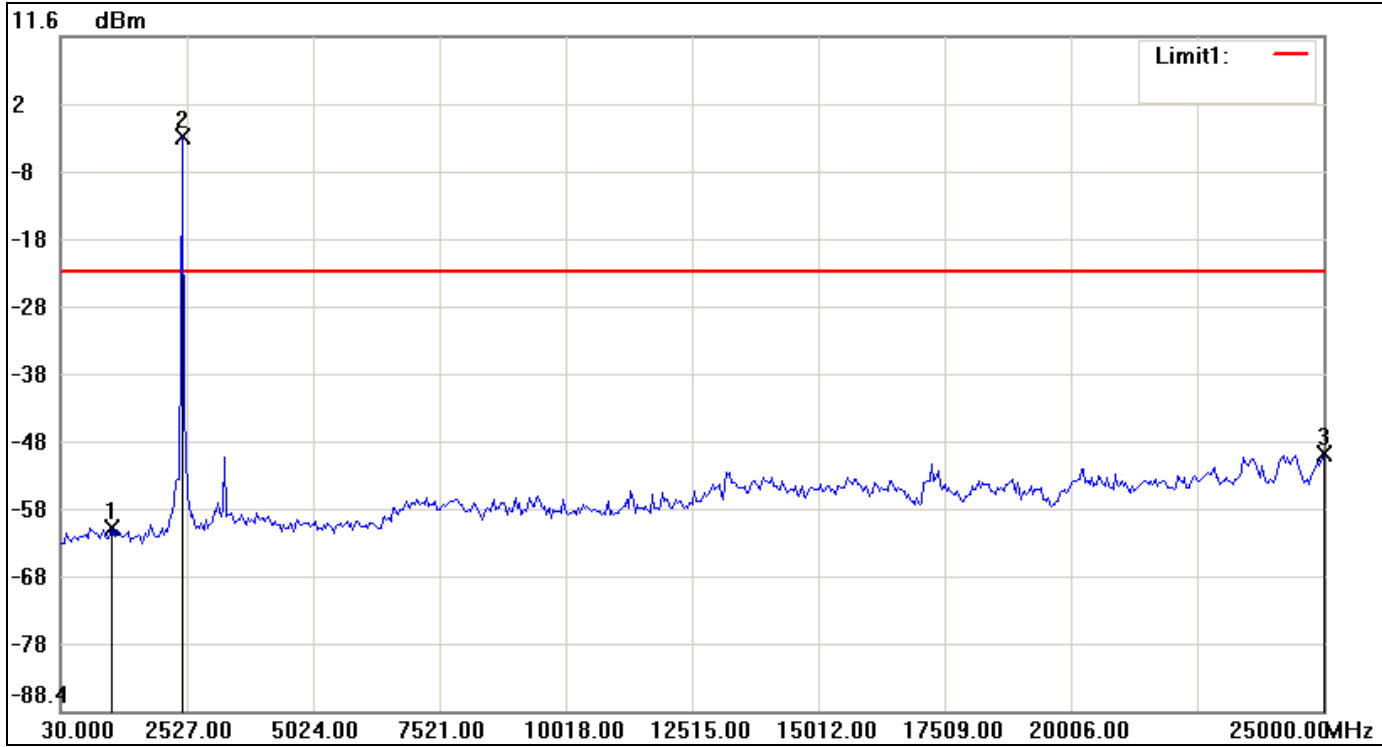
CH Low



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	529.4000	-60.45	-23.08	-37.37
2	2443.7667	-3.08	-23.08	20.00
3	3234.4833	-46.97	-23.08	-23.89



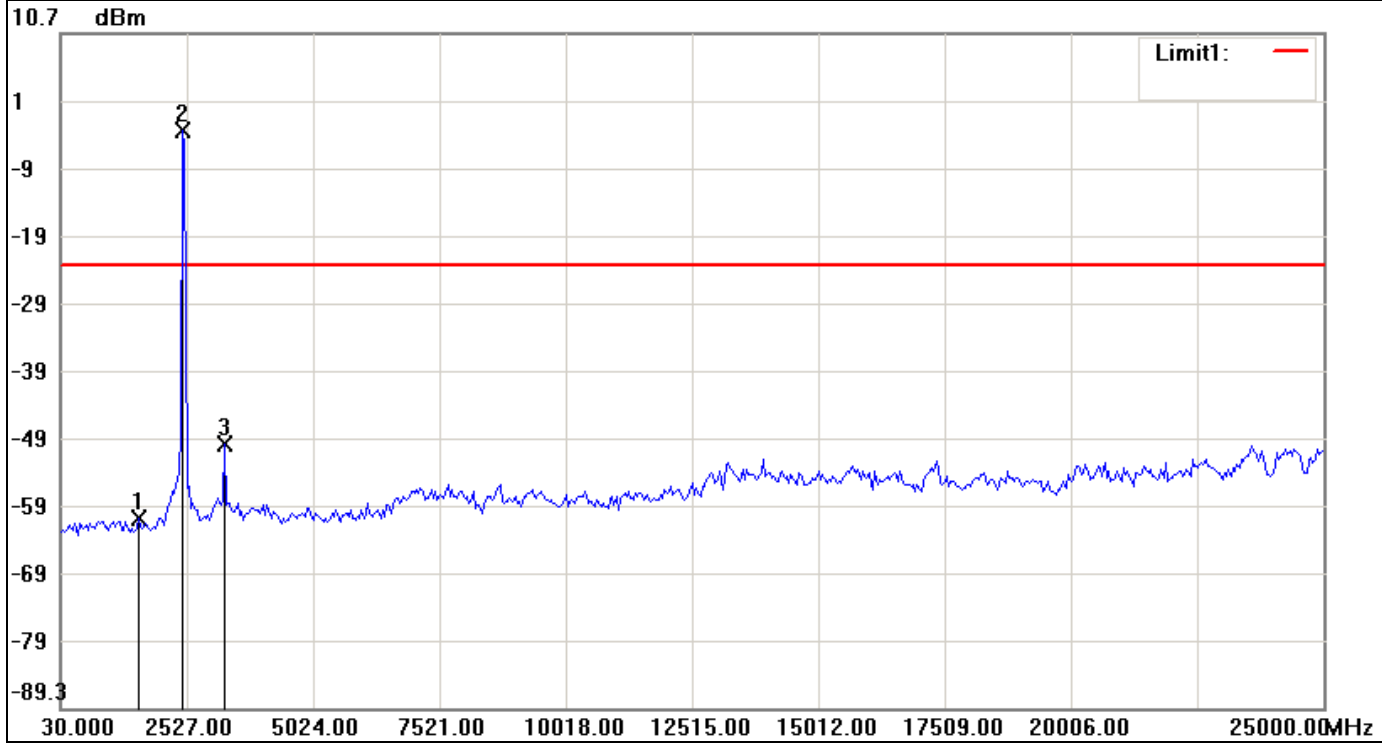
CH Mid



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	1028.8000	-61.37	-23.38	-37.99
2	2443.7667	-3.38	-23.38	20.00
3	25000.0000	-50.33	-23.38	-26.95



CH High

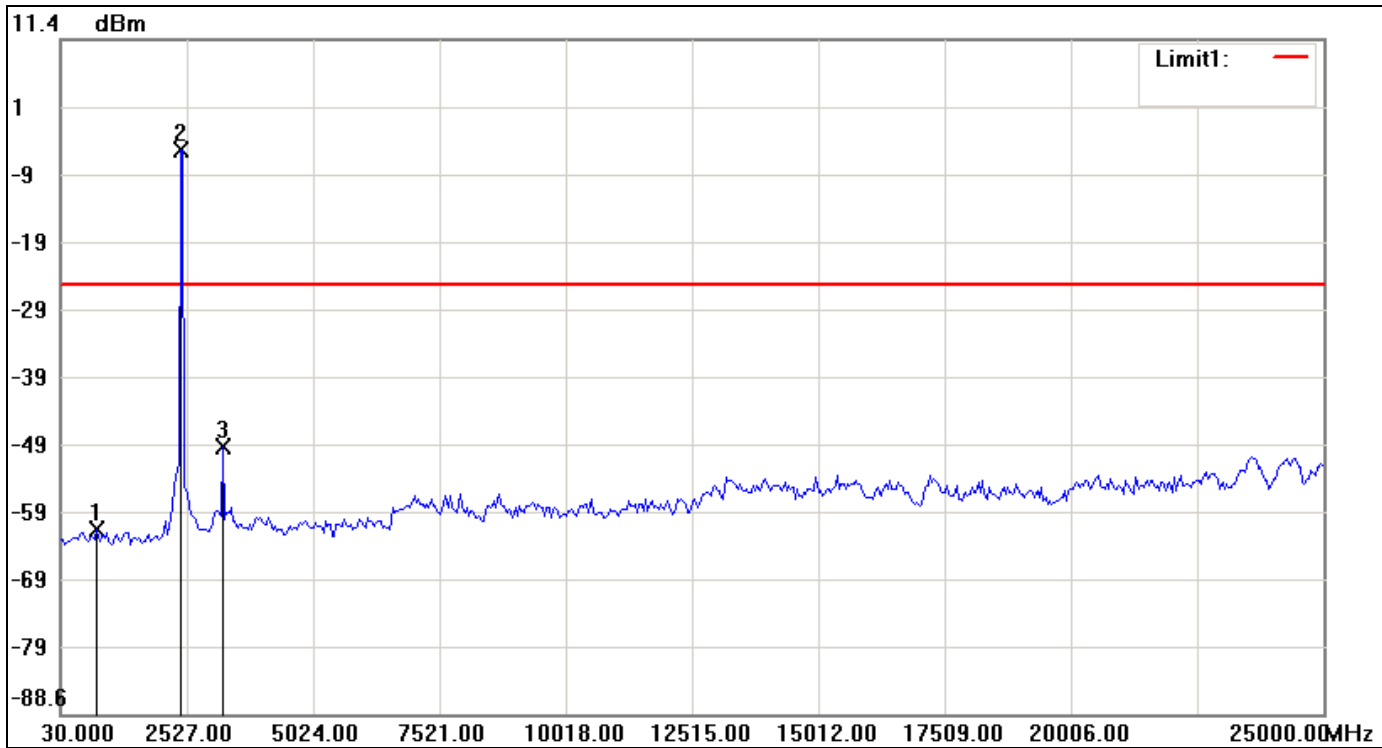


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	1569.8167	-61.14	-23.75	-37.39
2	2443.7667	-3.75	-23.75	20.00
3	3276.1000	-50.28	-23.75	-26.53



IEEE 802.11n HT 40 MHz mode / Chain 1

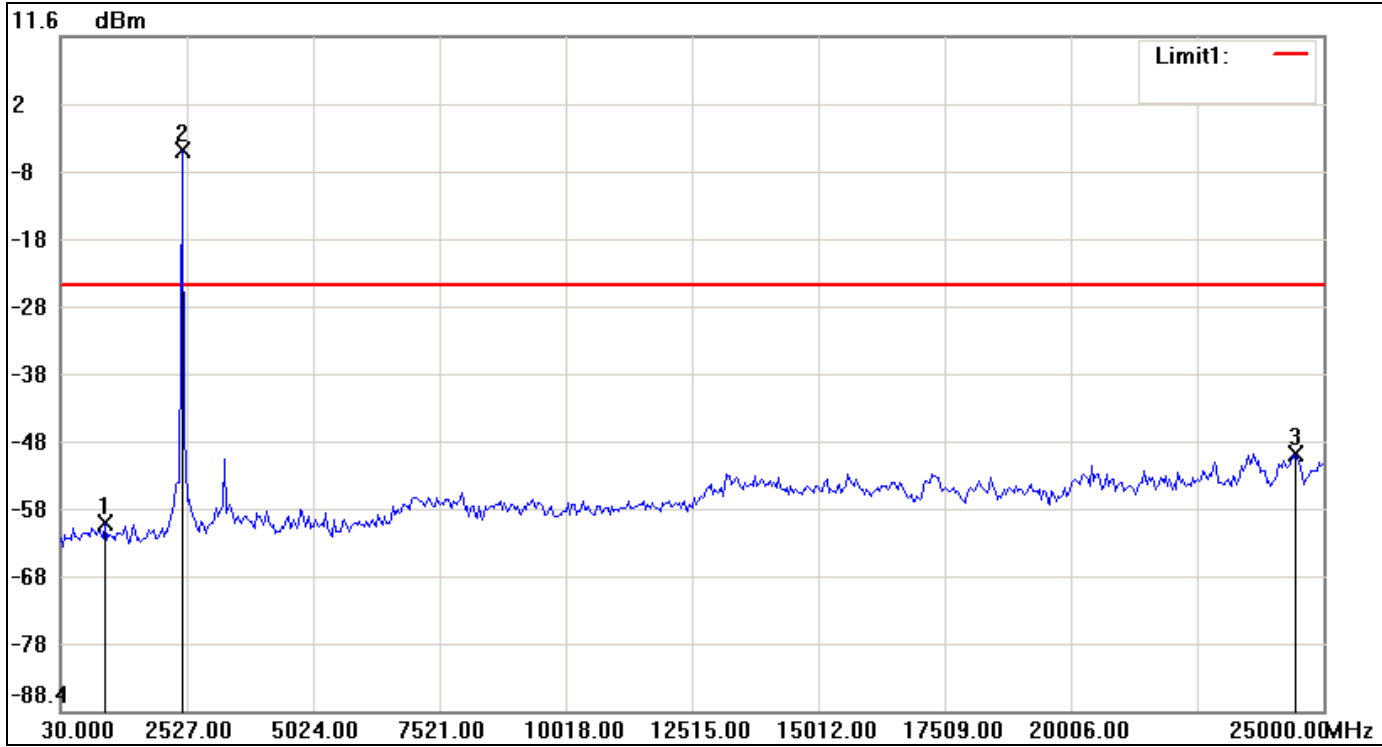
CH Low



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	737.4833	-61.17	-24.92	-36.25
2	2402.1500	-4.92	-24.92	20.00
3	3234.4833	-49.03	-24.92	-24.11



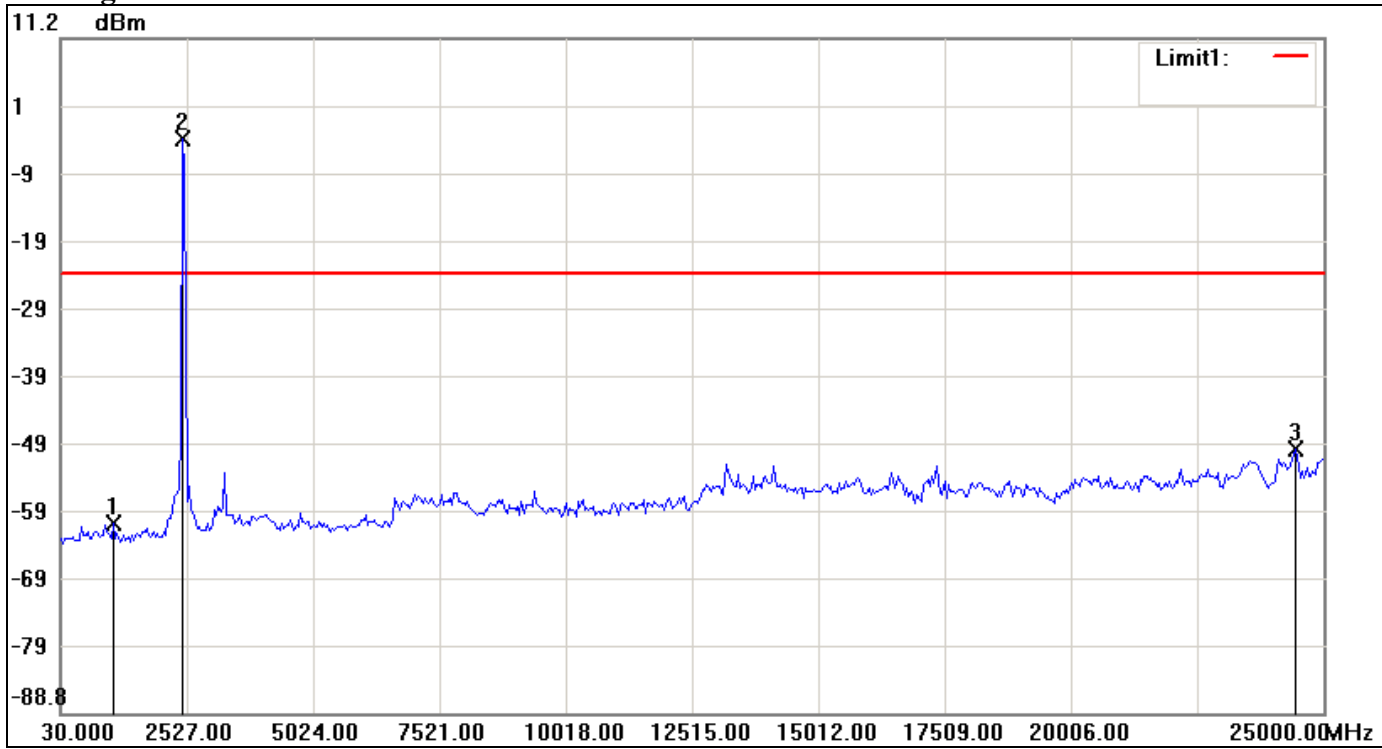
CH Mid



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	903.9500	-60.55	-25.25	-35.30
2	2443.7667	-5.25	-25.25	20.00
3	24458.9833	-50.22	-25.25	-24.97



CH High



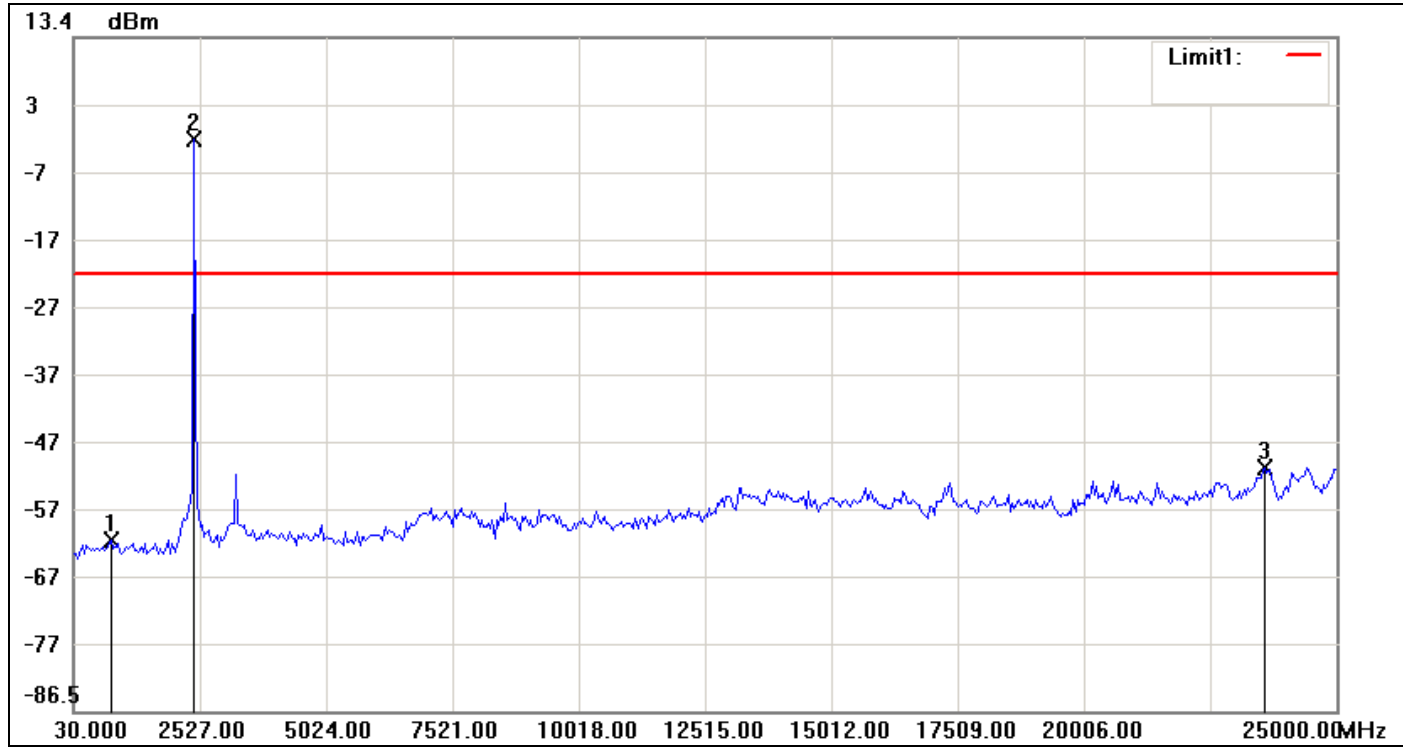
No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	1070.4167	-60.70	-23.70	-37.00
2	2443.7667	-3.70	-23.70	20.00
3	24458.9833	-49.73	-23.70	-26.03



For Single

IEEE 802.11n HT 20 MHz mode Channel mode / Chain 0

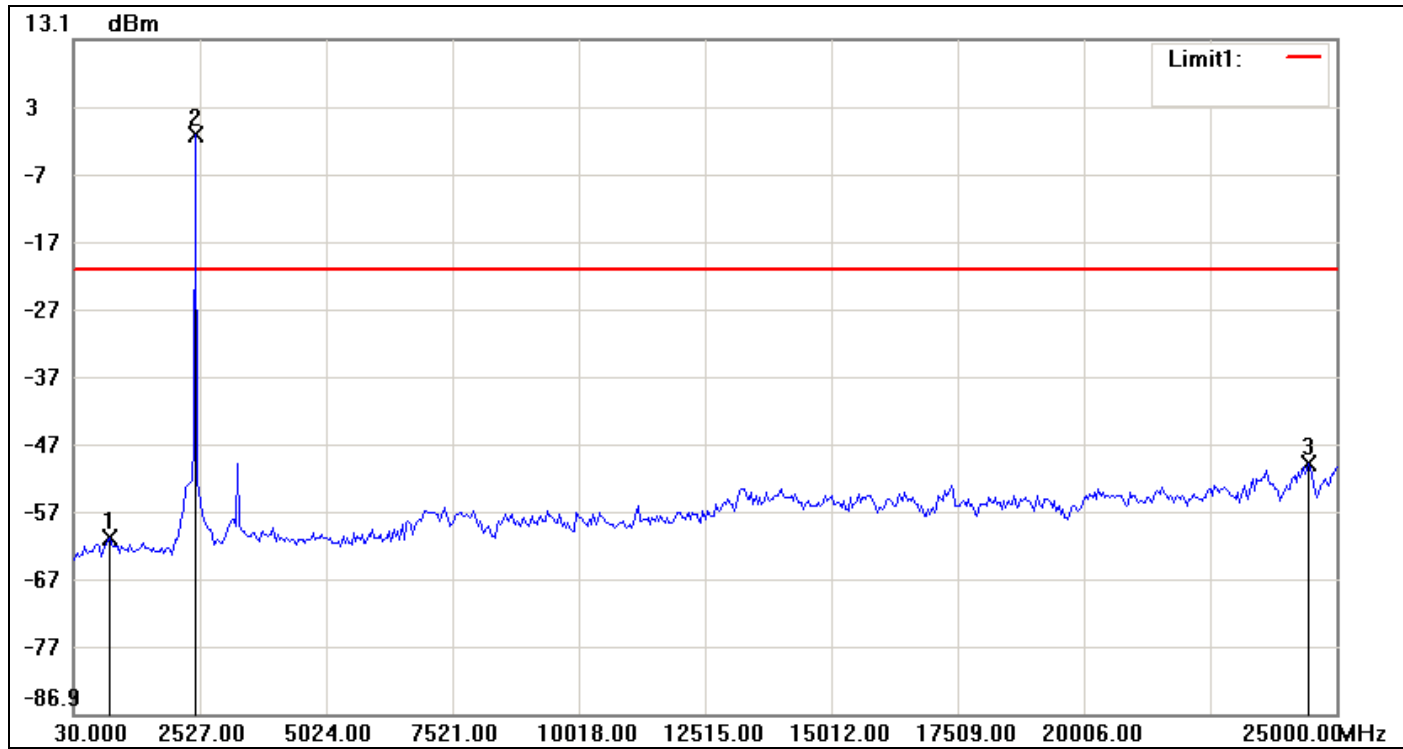
CH Low



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	779.1000	-61.18	-21.69	-39.49
2	2402.1500	-1.69	-21.69	20.00
3	23585.0333	-50.40	-21.69	-28.71



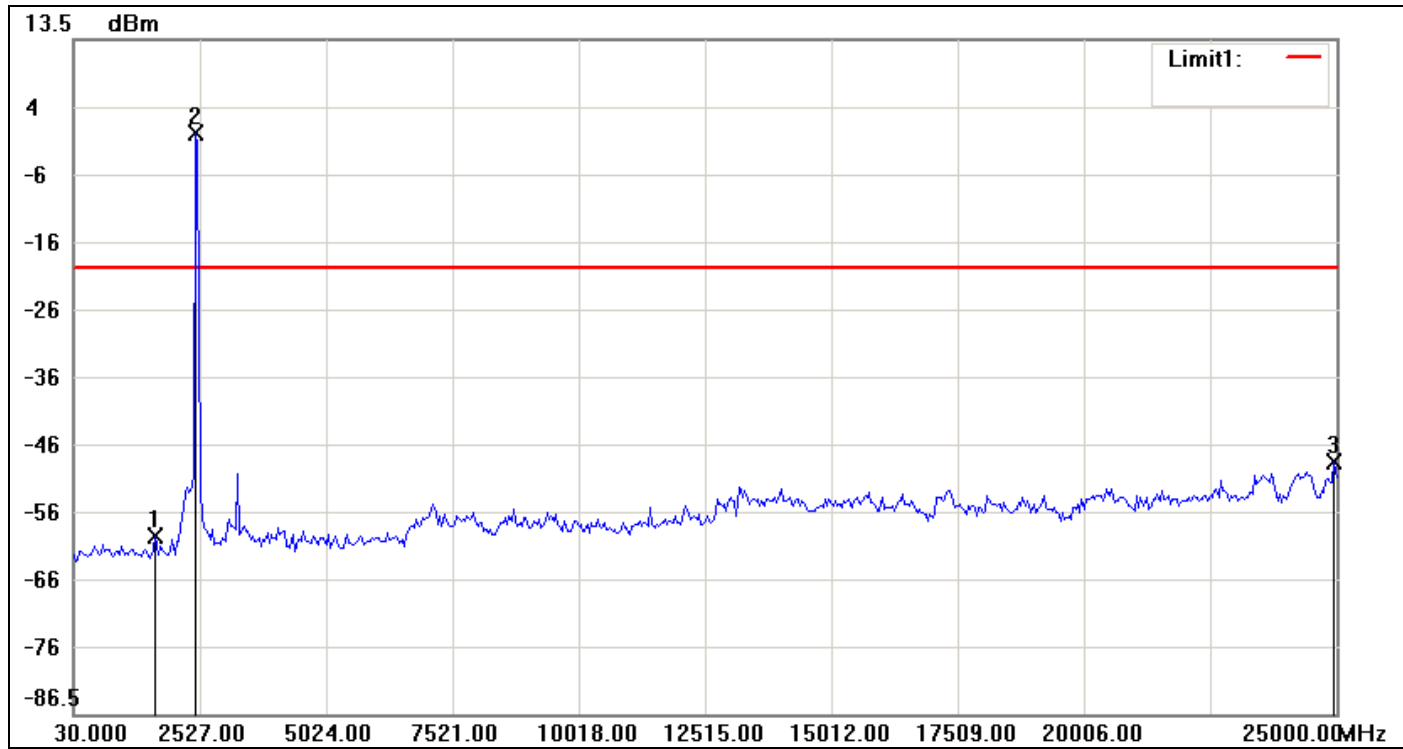
CH Mid



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	737.4833	-60.85	-20.92	-39.93
2	2443.7667	-0.92	-20.92	20.00
3	24458.9833	-49.75	-20.92	-28.83



CH High

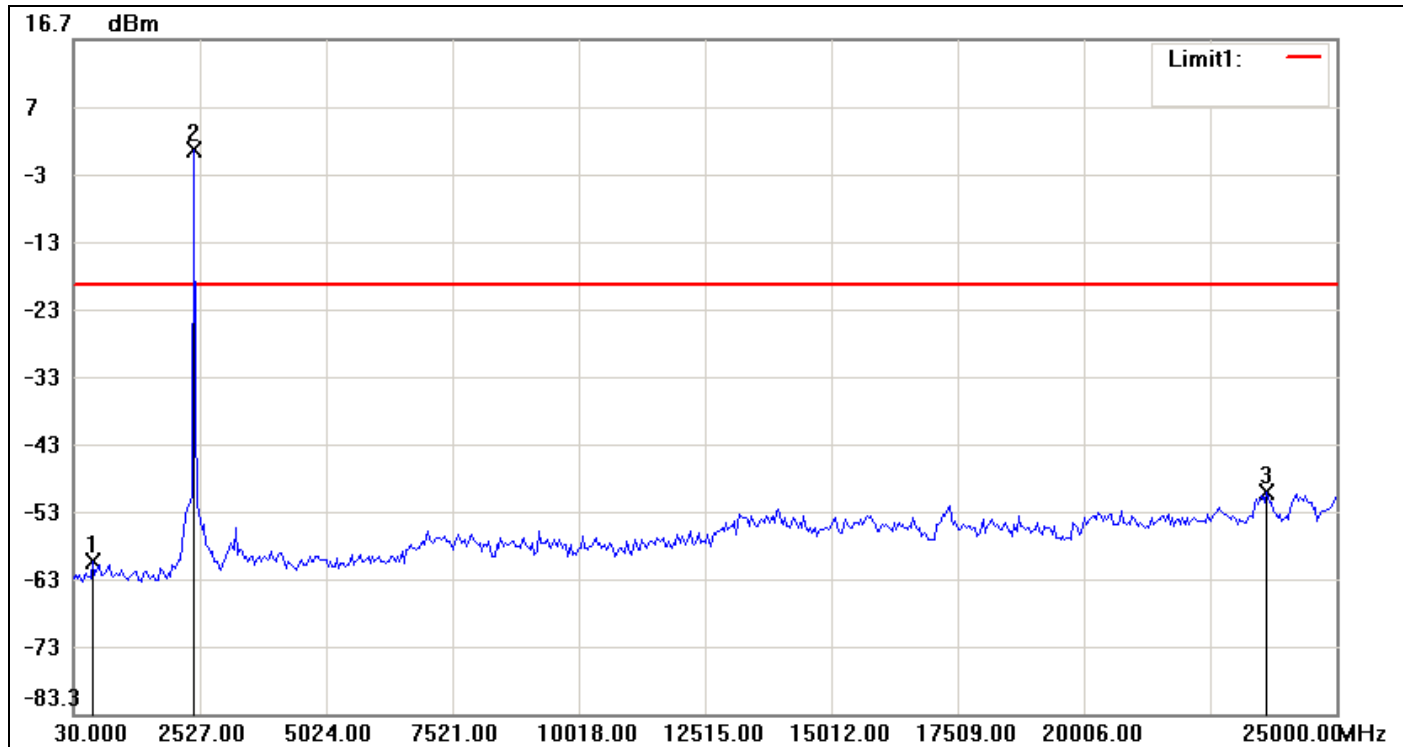


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	1653.0500	-60.21	-20.28	-39.93
2	2443.7667	-0.28	-20.28	20.00
3	24958.3833	-49.17	-20.28	-28.89



IEEE 802.11n HT 20 MHz mode Channel mode / Chain 1

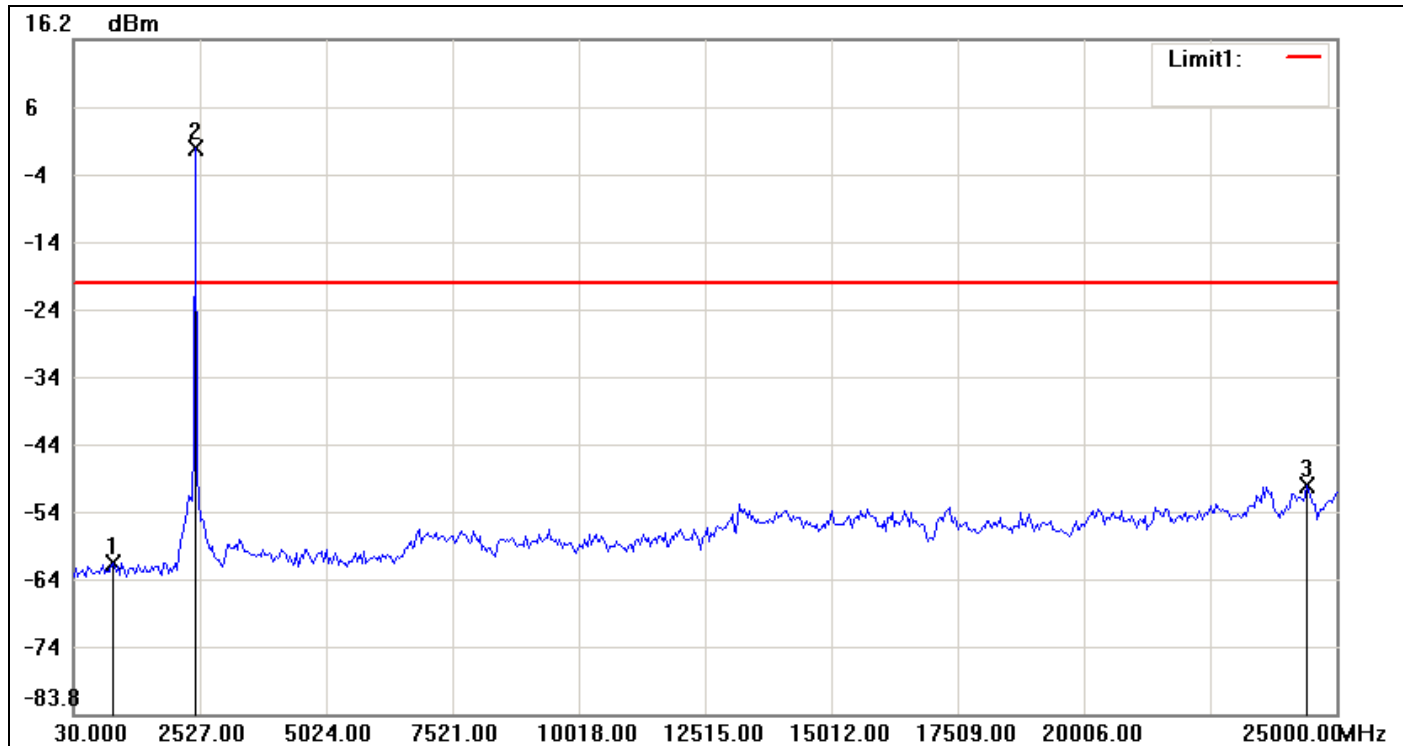
CH Low



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	404.5500	-60.74	-19.65	-41.09
2	2402.1500	0.35	-19.65	20.00
3	23626.6500	-50.50	-19.65	-30.85



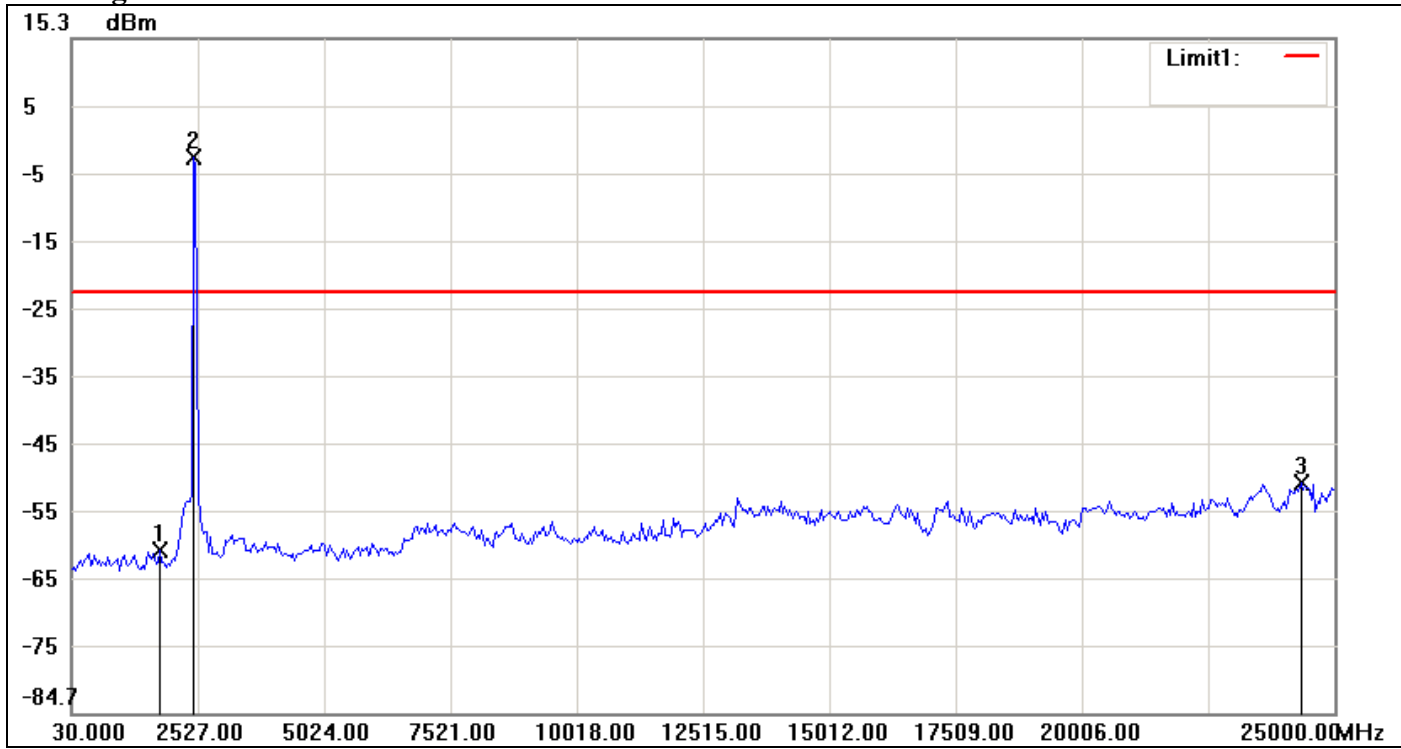
CH Mid



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	820.7167	-61.41	-19.95	-41.46
2	2443.7667	0.05	-19.95	20.00
3	24417.3667	-50.06	-19.95	-30.11



CH High

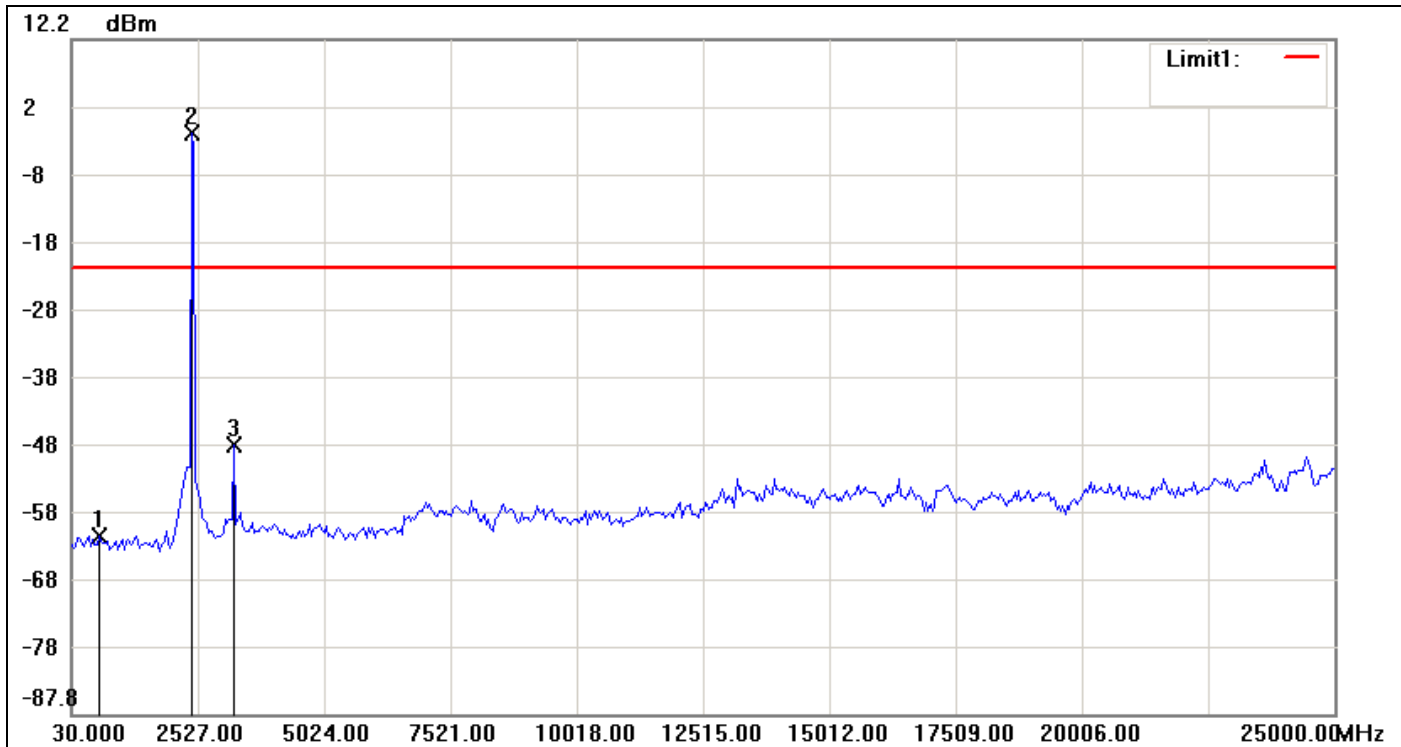


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	1777.9000	-60.59	-22.37	-38.22
2	2443.7667	-2.37	-22.37	20.00
3	24334.1333	-50.67	-22.37	-28.30



IEEE 802.11n HT 40 MHz mode / Chain 0

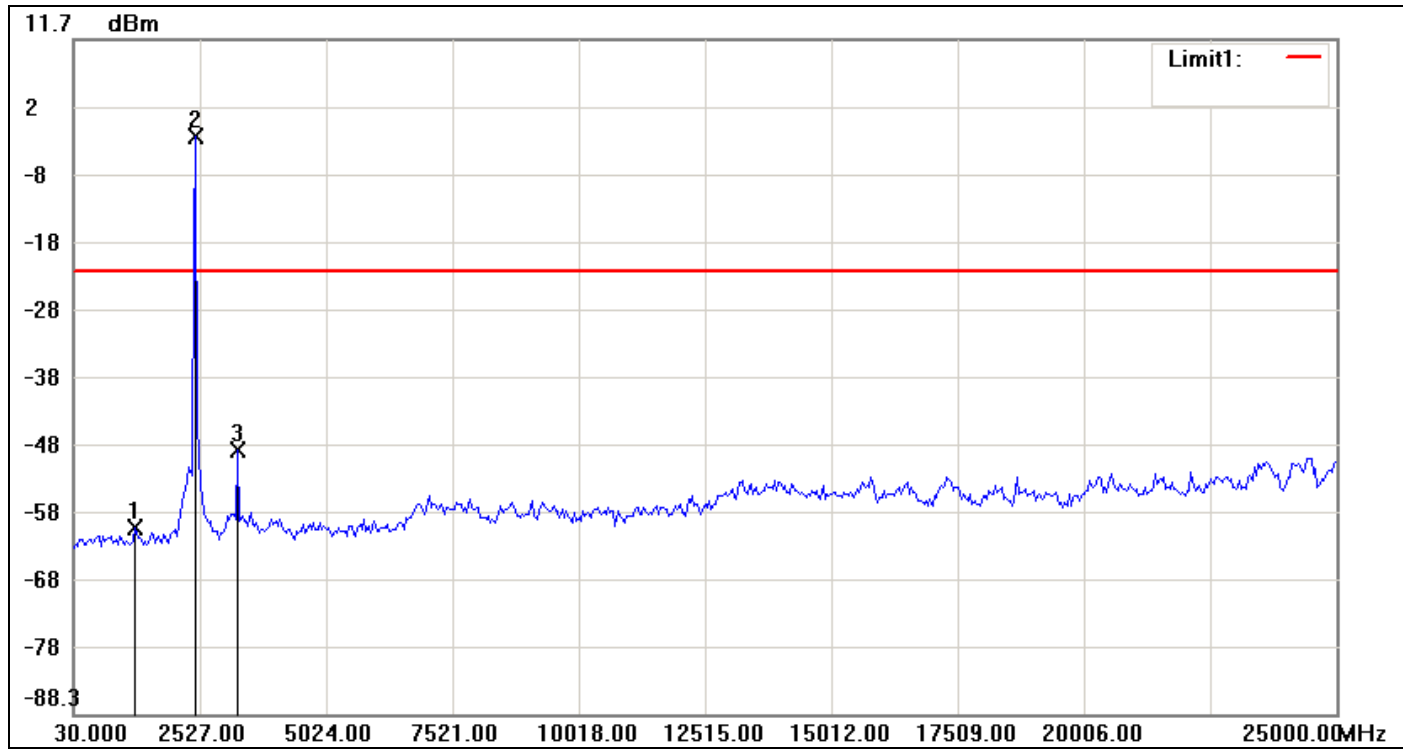
CH Low



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	571.0167	-61.34	-21.72	-39.62
2	2402.1500	-1.72	-21.72	20.00
3	3234.4833	-47.78	-21.72	-26.06



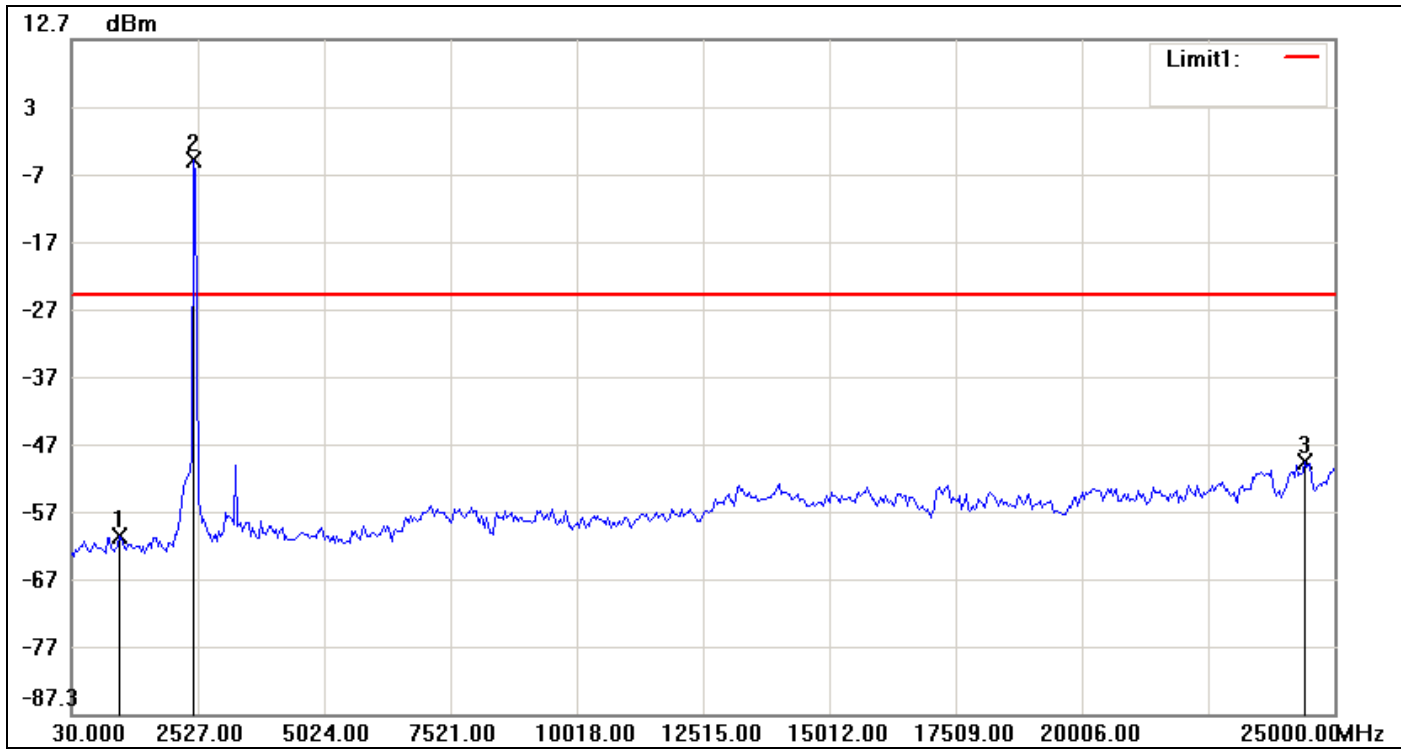
CH Mid



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	1236.8833	-60.75	-22.65	-38.10
2	2443.7667	-2.65	-22.65	20.00
3	3276.1000	-49.16	-22.65	-26.51



CH High

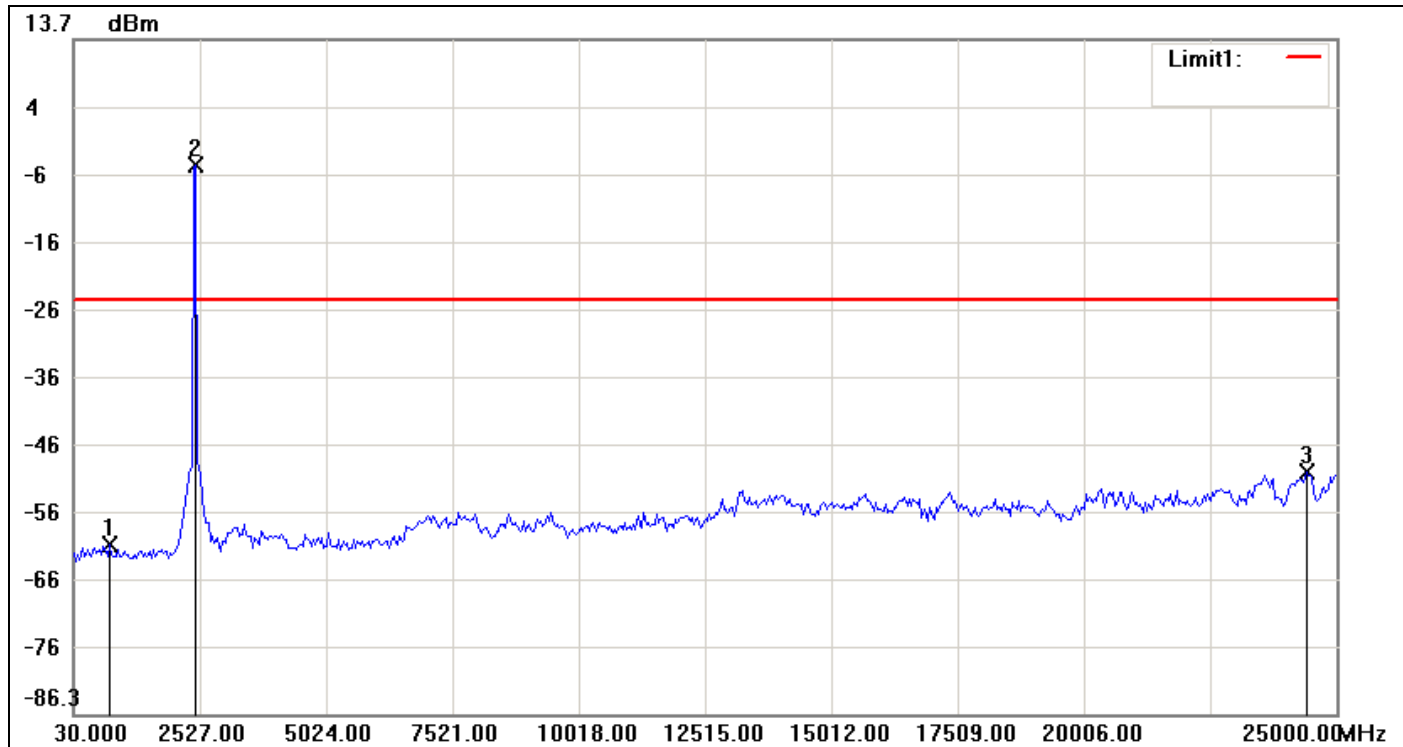


No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	987.1833	-60.97	-25.05	-35.92
2	2443.7667	-5.05	-25.05	20.00
3	24417.3667	-50.00	-25.05	-24.95



IEEE 802.11n HT 40 MHz mode / Chain 1

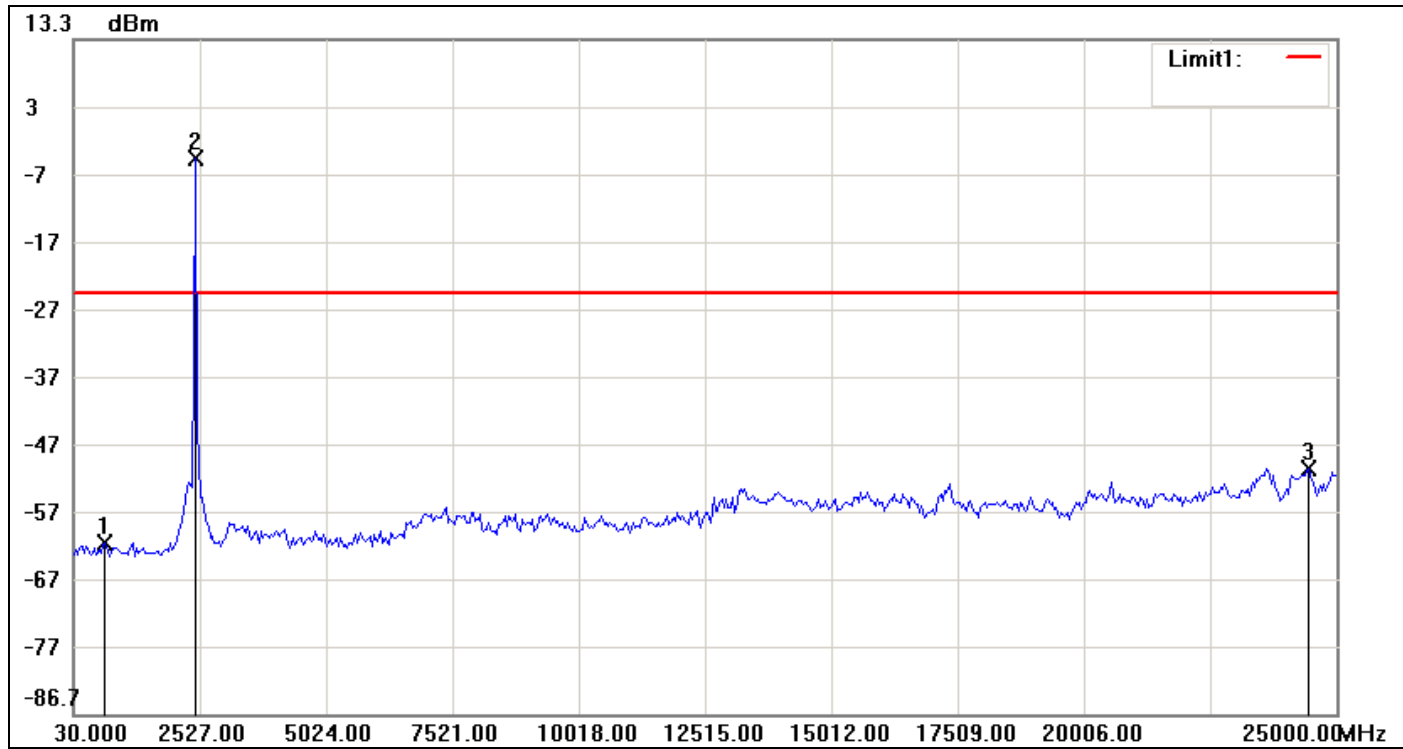
CH Low



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	737.4833	-61.05	-24.83	-36.22
2	2443.7667	-4.83	-24.83	20.00
3	24417.3667	-50.40	-24.83	-25.57



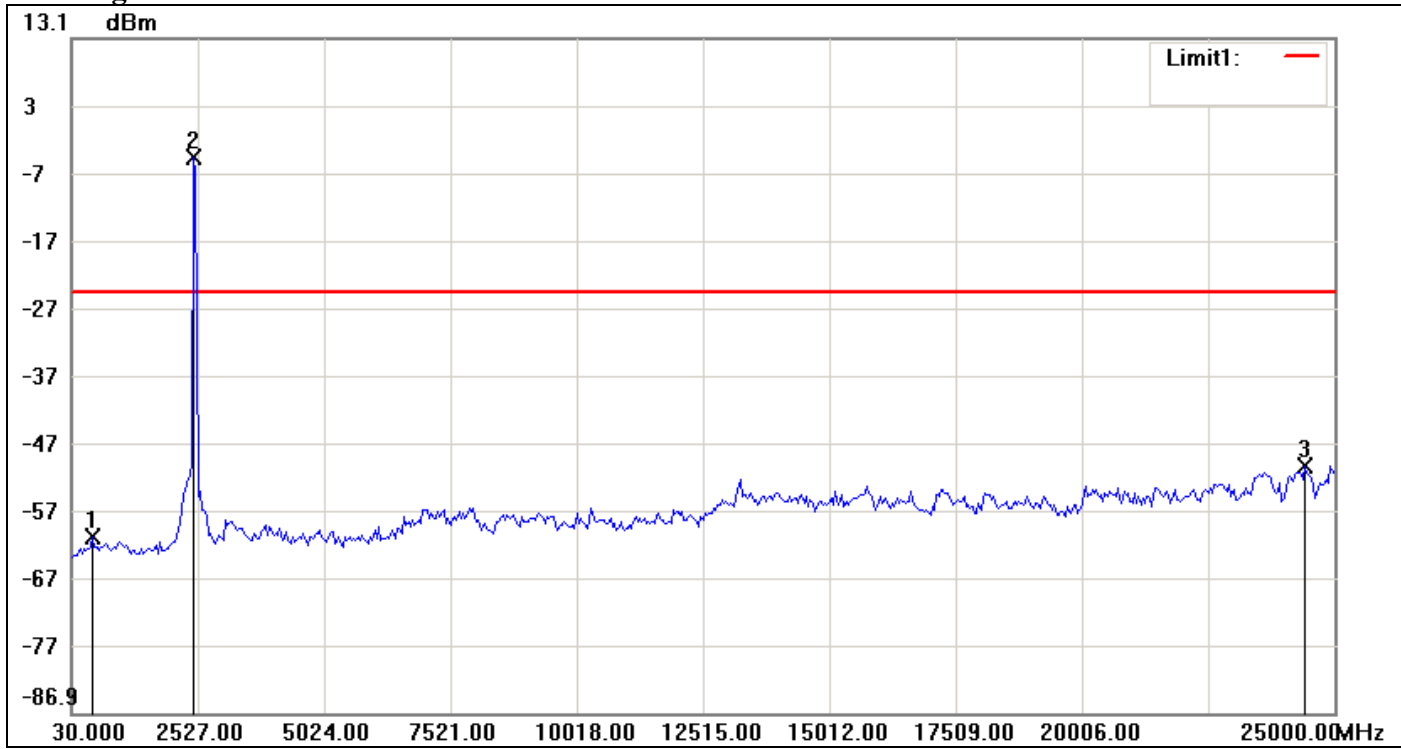
CH Mid



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	654.2500	-61.39	-24.39	-37.00
2	2443.7667	-4.39	-24.39	20.00
3	24458.9833	-50.30	-24.39	-25.91



CH High



No.	Frequency(MHz)	Level(dBm)	Limit(dBm)	Margin(dBm)
1	446.1667	-60.74	-24.39	-36.35
2	2443.7667	-4.39	-24.39	20.00
3	24417.3667	-50.30	-24.39	-25.91



7.7 RADIATED EMISSIONS

LIMIT

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

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

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

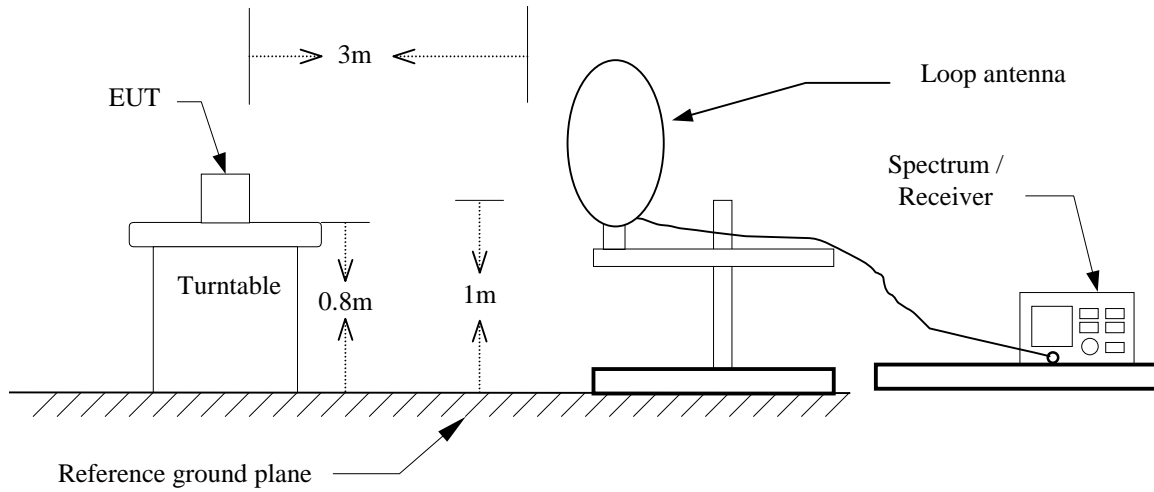
2. In the emission table above, the tighter limit applies at the band edges.

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

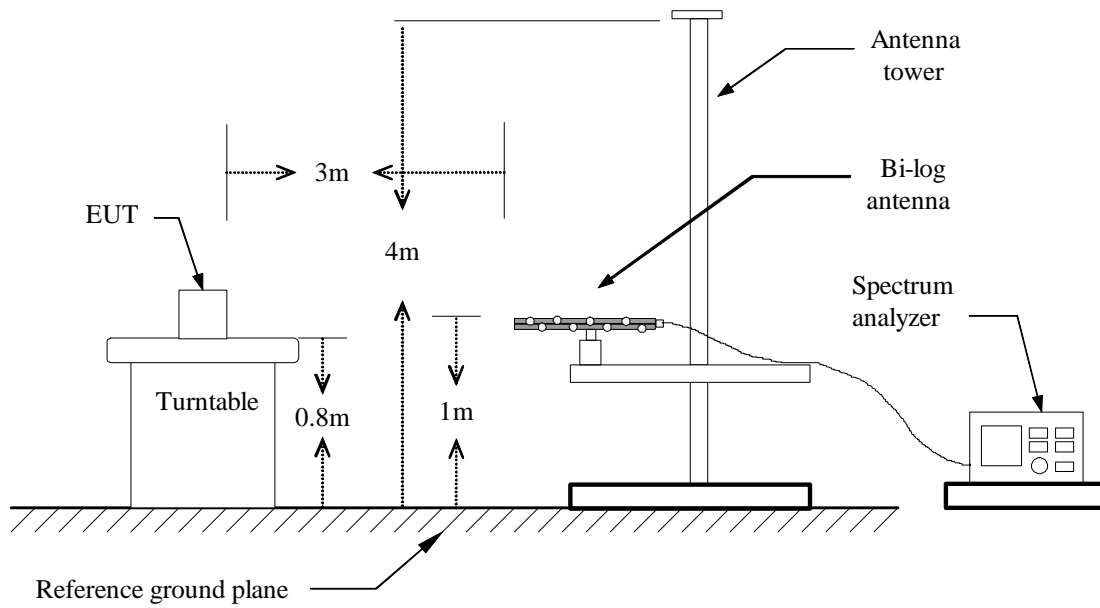


Test Configuration

9kHz ~ 30MHz

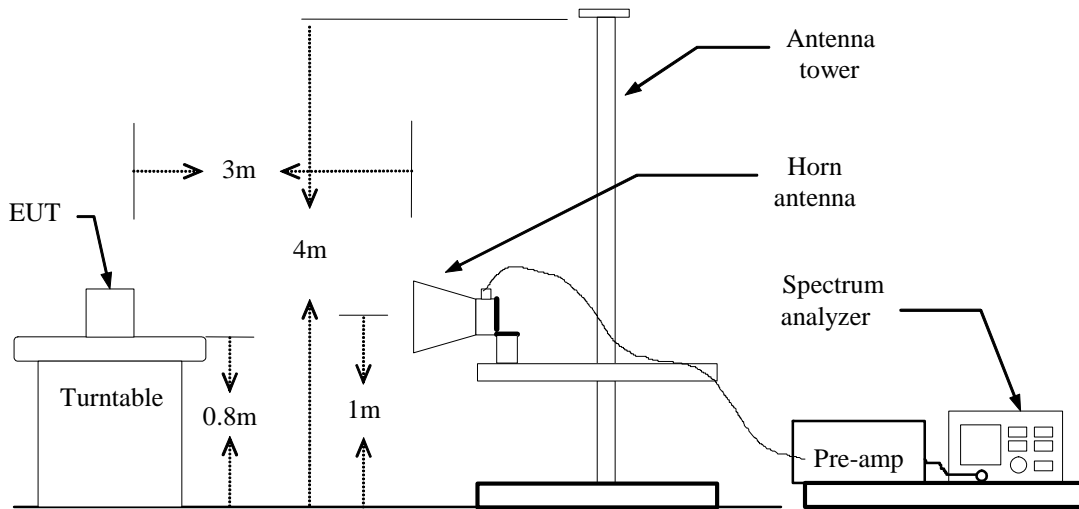


30MHz ~ 1GHz





Above 1 GHz





TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:
Below 1GHz:
RBW=100kHz / VBW=300kHz / Sweep=AUTO
Above 1GHz:
(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

No non-compliance noted.

**Below 1GHz****Operation Mode:** Normal Link**Test Date:** September 9, 2011**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50% 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)
120.53	48.00	-9.57	38.43	43.50	-5.07	QP	V
224.00	49.50	-11.39	38.11	46.00	-7.89	Peak	V
324.23	48.18	-8.66	39.51	46.00	-6.49	Peak	V
359.80	48.53	-7.86	40.67	46.00	-5.33	QP	V
479.43	43.30	-5.44	37.86	46.00	-8.14	Peak	V
772.05	39.33	-1.61	37.72	46.00	-8.28	Peak	V
199.75	48.02	-9.94	38.08	43.50	-5.42	Peak	H
225.62	48.15	-11.36	36.79	46.00	-9.21	Peak	H
324.23	48.74	-8.66	40.08	46.00	-5.92	Peak	H
400.22	45.44	-7.08	38.35	46.00	-7.65	Peak	H
424.47	42.45	-6.49	35.96	46.00	-10.04	Peak	H
799.53	39.60	-1.34	38.26	46.00	-7.74	QP	H

Remark:

1. No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.
3. 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.
4. Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).

**Above 1 GHz****Operation Mode:** TX / IEEE 802.11b / CH Low**Test Date:** August 12, 2011**Temperature:** 25°C**Tested by:** Ali Shu**Humidity:** 53 % 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)
1103.33	64.81	54.91	-10.96	53.85	43.95	74.00	54.00	-10.05	AVG	V
1183.33	67.65	52.69	-10.88	56.77	41.81	74.00	54.00	-12.19	AVG	V
1830.00	62.97	48.15	-7.20	55.77	40.95	74.00	54.00	-13.05	AVG	V
1970.00	62.39	45.82	-5.77	56.62	40.05	74.00	54.00	-13.95	AVG	V
2050.00	58.02	51.54	-5.34	52.68	46.20	74.00	54.00	-7.80	AVG	V
3216.67	53.79	51.05	-1.60	52.20	49.45	74.00	54.00	-4.55	AVG	V
1103.33	63.17	55.71	-10.96	52.21	44.75	74.00	54.00	-9.25	AVG	H
1576.67	64.92	56.81	-9.77	55.15	47.04	74.00	54.00	-6.96	AVG	H
1970.00	64.92	51.23	-5.77	59.14	45.46	74.00	54.00	-8.54	AVG	H
2680.00	58.95	46.45	-3.26	55.69	43.19	74.00	54.00	-10.81	AVG	H
2760.00	59.59	50.14	-2.99	56.60	47.15	74.00	54.00	-6.85	AVG	H
3216.67	50.86	---	-1.60	49.26	---	74.00	54.00	-4.74	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 / CH Mid

Test Date: August 12, 2011

Temperature: 25°C

Tested by: Ali Shu

Humidity: 53 % 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)
1103.33	66.71	55.12	-10.96	55.75	44.16	74.00	54.00	-9.84	AVG	V
1183.33	67.26	51.93	-10.88	56.38	41.05	74.00	54.00	-12.95	AVG	V
1576.67	62.69	56.10	-9.77	52.92	46.33	74.00	54.00	-7.67	AVG	V
1970.00	59.69	48.46	-5.77	53.92	42.69	74.00	54.00	-11.31	AVG	V
1996.67	60.21	45.85	-5.50	54.71	40.35	74.00	54.00	-13.65	AVG	V
3258.33	53.06	---	-1.49	51.57	---	74.00	54.00	-2.43	Peak	V
1403.33	60.33	---	-10.65	49.68	---	74.00	54.00	-4.32	Peak	H
1560.00	59.05	---	-9.94	49.11	---	74.00	54.00	-4.89	Peak	H
1726.67	62.03	55.40	-8.25	53.78	47.15	74.00	54.00	-6.85	AVG	H
1836.67	60.72	52.73	-7.13	53.59	45.60	74.00	54.00	-8.40	AVG	H
1943.33	58.89	53.08	-6.05	52.84	47.03	74.00	54.00	-6.97	AVG	H
3258.33	49.76	---	-1.49	48.28	---	74.00	54.00	-5.72	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 / CH High**Test Date:** August 12, 2011**Temperature:** 20°C**Tested by:** Ali Shu**Humidity:** 51 % 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)
1080.00	65.78	61.36	-10.99	54.79	50.37	74.00	54.00	-3.63	AVG	V
1320.00	62.34	---	-10.74	51.60	---	74.00	54.00	-2.40	Peak	V
1403.33	60.94	---	-10.65	50.29	---	74.00	54.00	-3.71	Peak	V
1620.00	60.43	---	-9.33	51.10	---	74.00	54.00	-2.90	Peak	V
1726.67	60.17	---	-8.25	51.92	---	74.00	54.00	-2.08	Peak	V
4925.00	48.67	---	2.81	51.48	---	74.00	54.00	-2.52	Peak	V
1080.00	68.40	62.87	-10.99	57.42	51.88	74.00	54.00	-2.12	AVG	H
1510.00	62.07	---	-10.45	51.62	---	74.00	54.00	-2.38	Peak	H
1560.00	60.55	---	-9.94	50.61	---	74.00	54.00	-3.39	Peak	H
1726.67	60.87	60.41	-8.25	52.63	52.16	74.00	54.00	-1.84	AVG	H
4275.00	48.51	---	1.29	49.81	---	74.00	54.00	-4.19	Peak	H
4908.33	49.17	---	2.78	51.95	---	74.00	54.00	-2.05	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 / CH Low

Test Date: August 12, 2011

Temperature: 25°C

Tested by: Ali Shu

Humidity: 53 % 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)
1103.33	66.89	57.46	-10.96	55.93	46.50	74.00	54.00	-7.50	AVG	V
1576.67	62.39	56.07	-9.77	52.62	46.30	74.00	54.00	-7.70	AVG	V
2360.00	60.12	51.40	-4.44	55.68	46.96	74.00	54.00	-7.04	AVG	V
2466.67	58.09	49.30	-4.01	54.09	45.29	74.00	54.00	-8.71	AVG	V
3216.67	53.54	---	-1.60	51.95	---	74.00	54.00	-2.05	Peak	V
4183.33	48.70	---	1.02	49.72	---	74.00	54.00	-4.28	Peak	V
1103.33	63.86	54.63	-10.96	52.89	43.67	74.00	54.00	-10.33	AVG	H
1576.67	65.00	58.46	-9.77	55.23	48.69	74.00	54.00	-5.31	AVG	H
1813.33	60.31	51.68	-7.37	52.94	44.31	74.00	54.00	-9.69	AVG	H
1893.33	60.36	52.78	-6.55	53.80	46.23	74.00	54.00	-7.77	AVG	H
1970.00	65.51	49.98	-5.77	59.74	44.21	74.00	54.00	-9.79	AVG	H
2680.00	58.83	49.85	-3.26	55.58	46.59	74.00	54.00	-7.41	AVG	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 / CH Mid**Test Date:** August 12, 2011**Temperature:** 25°C**Tested by:** Ali Shu**Humidity:** 53 % 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)
1103.33	67.46	56.17	-10.96	56.50	45.21	74.00	54.00	-8.79	AVG	V
1183.33	66.30	51.02	-10.88	55.42	40.14	74.00	54.00	-13.86	AVG	V
1970.00	59.74	44.97	-5.77	53.97	39.20	74.00	54.00	-14.8	AVG	V
2386.67	59.77	51.16	-4.33	55.44	46.83	74.00	54.00	-7.17	AVG	V
2680.00	57.47	46.08	-3.26	54.21	42.82	74.00	54.00	-11.18	AVG	V
3258.33	52.36	---	-1.49	50.87	---	74.00	54.00	-3.13	Peak	V
1103.33	63.98	56.55	-10.96	53.02	45.59	74.00	54.00	-8.41	AVG	H
1813.33	60.33	56.72	-7.37	52.96	49.35	74.00	54.00	-4.65	AVG	H
1893.33	59.45	51.87	-6.55	52.90	45.32	74.00	54.00	-8.68	AVG	H
1970.00	65.08	51.54	-5.77	59.30	45.77	74.00	54.00	-8.23	AVG	H
2760.00	59.09	48.64	-2.99	56.10	45.65	74.00	54.00	-8.35	AVG	H
3258.33	50.28	---	-1.49	48.80	---	74.00	54.00	-5.20	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 / CH High**Test Date:** August 12, 2011**Temperature:** 25°C**Tested by:** Ali Shu**Humidity:** 53 % 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)
1103.33	66.63	52.15	-10.96	55.67	41.19	74.00	54.00	-12.81	AVG	V
1576.67	64.00	51.70	-9.77	54.23	41.93	74.00	54.00	-12.07	AVG	V
2410.00	61.89	49.92	-4.24	57.65	45.68	74.00	54.00	-8.32	AVG	V
2760.00	57.15	44.47	-2.99	54.16	41.48	74.00	54.00	-12.52	AVG	V
3283.33	51.76	---	-1.42	50.33	---	74.00	54.00	-3.67	Peak	V
4733.33	48.73	---	2.43	51.16	---	74.00	54.00	-2.84	Peak	V
1103.33	64.74	52.52	-10.96	53.78	41.56	74.00	54.00	-12.44	AVG	H
1420.00	62.79	57.59	-10.63	52.16	46.96	74.00	54.00	-7.04	AVG	H
1576.67	63.03	59.46	-9.77	53.26	49.69	74.00	54.00	-4.31	AVG	H
1970.00	63.56	48.68	-5.77	57.78	42.91	74.00	54.00	-11.09	AVG	H
1993.33	62.71	46.80	-5.54	57.17	41.26	74.00	54.00	-12.74	AVG	H
4791.67	48.78	---	2.54	51.32	---	74.00	54.00	-2.68	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).

**For Mimo****Operation Mode:** TX / IEEE 802.11n HT 20 MHz mode Channel mode / CH Low**Test Date:** August 12, 2011**Temperature:** 25°C**Tested by:** Ali Shu**Humidity:** 53 % 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)
1103.33	62.83	---	-10.96	51.86	---	74.00	54.00	-2.14	Peak	V
1320.00	61.02	---	-10.74	50.28	---	74.00	54.00	-3.72	Peak	V
1600.00	58.08	---	-9.53	48.54	---	74.00	54.00	-5.46	Peak	V
1813.33	58.31	---	-7.37	50.94	---	74.00	54.00	-3.06	Peak	V
1893.33	59.66	50.50	-6.55	53.11	43.95	74.00	54.00	-10.05	AVG	V
2463.33	59.43	53.55	-4.02	55.41	49.53	74.00	54.00	-4.47	AVG	V
1560.00	60.68	---	-9.94	50.74	---	74.00	54.00	-3.26	Peak	H
1576.67	63.24	58.54	-9.77	53.47	48.77	74.00	54.00	-5.23	AVG	H
1813.33	59.45	53.59	-7.37	52.09	46.22	74.00	54.00	-7.78	AVG	H
1893.33	59.54	53.04	-6.55	52.99	46.49	74.00	54.00	-7.51	AVG	H
2760.00	57.16	49.86	-2.99	54.17	46.87	74.00	54.00	-7.13	AVG	H
3216.67	53.65	51.50	-1.60	52.05	49.90	74.00	54.00	-4.10	AVG	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 Channel mode / CH Mid

Test Date: August 12, 2011

Temperature: 25°C

Tested by: Ali Shu

Humidity: 53 % 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)
1103.33	62.73	---	-10.96	51.77	---	74.00	54.00	-2.23	Peak	V
1320.00	61.42	---	-10.74	50.68	---	74.00	54.00	-3.32	Peak	V
1893.33	60.50	54.69	-6.55	53.94	48.14	74.00	54.00	-5.86	AVG	V
2390.00	61.96	52.29	-4.32	57.64	47.97	74.00	54.00	-6.03	AVG	V
3258.33	58.31	54.22	-1.49	56.82	52.73	74.00	54.00	-1.27	AVG	V
4333.33	48.62	---	1.47	50.09	---	74.00	54.00	-3.91	Peak	V
1023.33	61.44	---	-11.05	50.40	---	74.00	54.00	-3.60	Peak	H
1560.00	61.31	---	-9.94	51.37	---	74.00	54.00	-2.63	Peak	H
1576.67	63.97	56.40	-9.77	54.20	46.63	74.00	54.00	-7.37	AVG	H
1813.33	59.14	---	-7.37	51.78	---	74.00	54.00	-2.22	Peak	H
1970.00	61.99	50.25	-5.77	56.22	44.48	74.00	54.00	-9.52	AVG	H
3258.33	51.79	---	-1.49	50.31	---	74.00	54.00	-3.69	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 Channel mode / CH High

Test Date: August 12, 2011

Temperature: 25°C

Tested by: Ali Shu

Humidity: 53 % 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)
1080.00	67.51	48.06	-10.99	56.53	37.07	74.00	54.00	-16.93	AVG	V
1320.00	61.95	---	-10.74	51.21	---	74.00	54.00	-2.79	Peak	V
1576.67	59.14	---	-9.77	49.36	---	74.00	54.00	-4.64	Peak	V
1893.33	59.84	50.48	-6.55	53.29	43.93	74.00	54.00	-10.07	AVG	V
1970.00	61.34	49.51	-5.77	55.57	43.74	74.00	54.00	-10.26	AVG	V
3283.33	57.11	54.04	-1.42	55.69	52.62	74.00	54.00	-1.38	AVG	V
1103.33	61.58	---	-10.96	50.62	---	74.00	54.00	-3.38	Peak	H
1183.33	64.55	51.63	-10.88	53.67	40.75	74.00	54.00	-13.25	AVG	H
1560.00	60.53	---	-9.94	50.59	---	74.00	54.00	-3.41	Peak	H
1893.33	59.51	49.42	-6.55	52.95	42.87	74.00	54.00	-11.13	AVG	H
1970.00	62.23	49.04	-5.77	56.45	43.27	74.00	54.00	-10.73	AVG	H
2000.00	58.47	45.87	-5.47	53.00	40.40	74.00	54.00	-13.6	AVG	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

Test Date: August 12, 2011

Temperature: 25°C

Tested by: Ali Shu

Humidity: 53 % 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)
1103.33	63.44	57.36	-10.96	52.48	46.40	74.00	54.00	-7.60	AVG	V
1183.33	66.87	54.92	-10.88	55.99	44.04	74.00	54.00	-9.96	AVG	V
1973.33	61.37	46.98	-5.74	55.63	41.24	74.00	54.00	-12.76	AVG	V
2000.00	59.95	45.02	-5.47	54.48	39.55	74.00	54.00	-14.45	AVG	V
2370.00	60.78	48.56	-4.40	56.37	44.12	74.00	54.00	-9.88	AVG	V
2680.00	57.53	46.25	-3.26	54.28	42.99	74.00	54.00	-11.01	AVG	V
1576.67	62.28	59.22	-9.77	52.51	49.45	74.00	54.00	-4.55	AVG	H
1813.33	59.81	52.20	-7.37	52.44	44.83	74.00	54.00	-9.17	AVG	H
1893.33	59.06	52.12	-6.55	52.50	45.57	74.00	54.00	-8.43	AVG	H
1970.00	62.53	49.38	-5.77	56.76	43.61	74.00	54.00	-10.39	AVG	H
2760.00	56.95	48.72	-2.99	53.96	45.75	74.00	54.00	-8.27	AVG	H
3233.33	53.13	---	-1.55	51.57	---	74.00	54.00	-2.43	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: August 12, 2011

Temperature: 25°C

Tested by: Ali Shu

Humidity: 53 % 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)
1103.33	63.22	56.63	-10.96	52.26	45.67	74.00	54.00	-8.33	AVG	V
1183.33	66.73	51.82	-10.88	55.85	40.94	74.00	54.00	-13.06	AVG	V
1893.33	60.10	44.17	-6.55	53.55	37.62	74.00	54.00	-16.38	AVG	V
1970.00	61.39	44.42	-5.77	55.61	38.68	74.00	54.00	-15.35	AVG	V
2000.00	60.75	44.37	-5.47	55.28	38.90	74.00	54.00	-15.10	AVG	V
3258.33	58.03	54.43	-1.49	56.54	52.94	74.00	54.00	-1.06	AVG	V
1080.00	66.42	49.20	-10.99	55.43	38.21	74.00	54.00	-15.79	AVG	H
1813.33	59.85	57.80	-7.37	52.48	50.43	74.00	54.00	-3.57	AVG	H
1893.33	60.63	52.13	-6.55	54.07	45.58	74.00	54.00	-8.42	AVG	H
1970.00	63.51	51.52	-5.77	57.73	45.75	74.00	54.00	-8.25	AVG	H
1993.33	59.59	55.22	-5.54	54.06	49.68	74.00	54.00	-4.32	AVG	H
3258.33	51.52	---	-1.49	50.03	---	74.00	54.00	-3.97	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: August 12, 2011

Temperature: 25°C

Tested by: Ali Shu

Humidity: 53 % 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)
1183.33	66.78	48.89	-10.88	55.90	38.01	74.00	54.00	-15.99	AVG	V
1893.33	59.89	51.70	-6.55	53.33	45.15	74.00	54.00	-8.85	AVG	V
1970.00	61.67	46.28	-5.77	55.89	40.51	74.00	54.00	-13.49	AVG	V
1993.33	59.54	45.19	-5.54	54.00	39.65	74.00	54.00	-14.35	AVG	V
3266.67	53.11	---	-1.47	51.64	---	74.00	54.00	-2.36	Peak	V
4183.33	48.84	---	1.02	49.86	---	74.00	54.00	-4.14	Peak	V
1183.33	65.50	51.44	-10.88	54.62	40.56	74.00	54.00	-13.44	AVG	H
1560.00	62.54	59.46	-9.94	52.60	49.52	74.00	54.00	-4.48	AVG	H
1893.33	60.12	48.22	-6.55	53.57	41.67	74.00	54.00	-12.33	AVG	H
1970.00	61.46	48.68	-5.77	55.69	42.91	74.00	54.00	-11.09	AVG	H
1996.67	58.90	46.80	-5.50	53.40	41.30	74.00	54.00	-12.70	AVG	H
3266.67	50.98	---	-1.47	49.51	---	74.00	54.00	-4.49	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).

**For Single****Operation Mode:** TX / IEEE 802.11n HT 20 MHz mode Channel mode / CH Low**Test Date:** January 30, 2012**Temperature:** 25°C**Tested by:** Sehni Hu**Humidity:** 50 % 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)
1103.33	68.64	56.22	-10.96	57.68	45.26	74.00	54.00	-8.74	AVG	V
1183.33	63.43	50.36	-10.88	52.55	39.48	74.00	54.00	-14.52	AVG	V
1576.67	66.69	60.64	-9.77	56.92	50.87	74.00	54.00	-3.13	AVG	V
1970.00	65.02	52.56	-5.77	59.24	46.79	74.00	54.00	-7.21	AVG	V
2050.00	59.40	51.82	-5.34	54.06	46.48	74.00	54.00	-7.52	AVG	V
3216.67	51.61	---	-1.60	50.02	---	74.00	54.00	-3.98	Peak	V
1026.67	65.90	57.68	-11.04	54.85	46.64	74.00	54.00	-7.36	AVG	H
1103.33	69.66	58.01	-10.96	58.70	47.05	74.00	54.00	-6.95	AVG	H
1340.00	63.69	57.63	-10.72	52.97	46.91	74.00	54.00	-7.09	AVG	H
1576.67	65.24	57.16	-9.77	55.47	47.39	74.00	54.00	-6.61	AVG	H
1970.00	67.62	56.01	-5.77	61.85	50.24	74.00	54.00	-3.76	AVG	H
3150.00	53.00	---	-1.77	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 Channel mode / CH Mid

Test Date: January 30, 2012

Temperature: 25°C

Tested by: Sehni Hu

Humidity: 50% 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)
1026.67	62.92	56.18	-11.04	51.88	45.14	74.00	54.00	-8.86	AVG	V
1103.33	68.50	56.48	-10.96	57.54	45.52	74.00	54.00	-8.48	AVG	V
1576.67	66.69	59.67	-9.77	56.92	49.90	74.00	54.00	-4.10	AVG	V
1970.00	65.32	52.34	-5.77	59.55	46.57	74.00	54.00	-7.43	AVG	V
2840.00	56.04	47.75	-2.71	53.32	45.04	74.00	54.00	-8.96	AVG	V
3258.33	54.48	50.79	-1.49	53.00	49.30	74.00	54.00	-4.70	AVG	V
1103.33	69.64	57.88	-10.96	58.68	46.92	74.00	54.00	-7.08	AVG	H
1893.33	64.20	56.00	-6.55	57.65	49.45	74.00	54.00	-4.55	AVG	H
1970.00	67.93	55.98	-5.77	62.15	50.21	74.00	54.00	-3.79	AVG	H
2366.67	63.89	55.83	-4.42	59.48	51.41	74.00	54.00	-2.59	AVG	H
3233.33	52.26	---	-1.55	50.70	---	74.00	54.00	-3.30	Peak	H
5033.33	47.38	---	2.96	50.33	---	74.00	54.00	-3.67	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 Channel mode / CH High

Test Date: January 30, 2012

Temperature: 25°C

Tested by: Sehni Hu

Humidity: 50 % 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)
1576.67	66.15	55.65	-9.77	56.38	45.88	74.00	54.00	-8.12	AVG	V
1893.33	60.64	52.71	-6.55	54.09	46.16	74.00	54.00	-7.84	AVG	V
1970.00	65.75	53.39	-5.77	59.97	47.62	74.00	54.00	-6.38	AVG	V
2050.00	59.37	51.14	-5.34	54.03	45.80	74.00	54.00	-8.20	AVG	V
3283.33	51.38	---	-1.42	49.96	---	74.00	54.00	-4.04	Peak	V
3550.00	50.19	---	-0.72	49.47	---	74.00	54.00	-4.53	Peak	V
1026.67	67.07	62.97	-11.04	56.03	51.93	74.00	54.00	-2.07	AVG	H
1893.33	64.25	57.41	-6.55	57.70	50.86	74.00	54.00	-3.14	AVG	H
1970.00	69.32	57.06	-5.77	63.54	51.29	74.00	54.00	-2.71	AVG	H
2366.67	63.56	55.92	-4.42	59.15	51.50	74.00	54.00	-2.50	AVG	H
3150.00	52.15	---	-1.77	50.38	---	74.00	54.00	-3.62	Peak	H
4858.33	47.41	---	2.68	50.09	---	74.00	54.00	-3.91	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

Test Date: January 30, 2012

Temperature: 25°C

Tested by: Sehni Hu

Humidity: 50 % 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)
1103.33	69.20	50.77	-10.96	58.24	39.81	74.00	54.00	-14.19	AVG	V
1183.33	64.85	52.17	-10.88	53.97	41.29	74.00	54.00	-12.71	Peak	V
1576.67	66.50	49.45	-9.77	56.73	39.68	74.00	54.00	-14.32	AVG	V
1973.33	65.52	49.73	-5.74	59.78	43.99	74.00	54.00	-10.01	AVG	V
2326.67	64.46	45.17	-4.58	59.88	40.59	74.00	54.00	-13.41	AVG	V
3233.33	55.11	52.69	-1.55	53.56	51.14	74.00	54.00	-2.86	AVG	V
1026.67	67.88	55.72	-11.04	56.84	44.68	74.00	54.00	-9.32	AVG	H
1103.33	69.91	49.63	-10.96	58.95	38.67	74.00	54.00	-15.33	AVG	H
1733.33	60.85	41.50	-8.18	52.67	33.32	74.00	54.00	-20.68	AVG	H
1893.33	64.91	45.38	-6.55	58.36	38.83	74.00	54.00	-15.17	AVG	H
2050.00	60.73	44.98	-5.34	55.39	39.64	74.00	54.00	-14.36	AVG	H
3308.33	51.71	---	-1.36	50.35	---	74.00	54.00	-3.65	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: January 30, 2012

Temperature: 25°C

Tested by: Sehni Hu

Humidity: 50 % 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)
1103.33	70.06	54.02	-10.96	59.10	43.06	74.00	54.00	-10.94	AVG	V
1183.33	66.59	52.07	-10.88	55.71	41.19	74.00	54.00	-12.81	AVG	V
1576.67	66.41	44.70	-9.77	56.64	34.93	74.00	54.00	-19.07	AVG	V
1973.33	65.03	48.75	-5.74	59.29	43.01	74.00	54.00	-10.99	AVG	V
2300.00	62.96	45.12	-4.69	58.27	40.43	74.00	54.00	-13.57	AVG	V
3258.33	53.07	---	-1.49	51.58	---	74.00	54.00	-2.42	Peak	V
1023.33	66.10	52.65	-11.05	55.06	41.60	74.00	54.00	-12.40	AVG	H
1103.33	70.01	51.92	-10.96	59.05	40.96	74.00	54.00	-13.04	AVG	H
1576.67	65.23	55.67	-9.77	55.46	45.90	74.00	54.00	-8.10	AVG	H
2050.00	60.01	46.55	-5.34	54.67	41.21	74.00	54.00	-12.79	AVG	H
2840.00	56.97	43.17	-2.71	54.26	40.46	74.00	54.00	-13.54	AVG	H
3158.33	53.21	---	-1.75	51.46	---	74.00	54.00	-2.54	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: January 30, 2012

Temperature: 25°C

Tested by: Sehni Hu

Humidity: 50 % 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)
1103.33	70.23	50.65	-10.96	59.27	39.69	74.00	54.00	-14.31	AVG	V
1183.33	64.18	52.01	-10.88	53.30	41.13	74.00	54.00	-12.87	AVG	V
1973.33	64.52	48.30	-5.74	58.78	42.56	74.00	54.00	-11.44	AVG	V
2383.33	68.61	45.02	-4.35	64.26	40.67	74.00	54.00	-13.33	AVG	V
2760.00	57.72	42.67	-2.99	54.74	39.68	74.00	54.00	-14.32	AVG	V
3258.33	53.35	---	-1.49	51.86	---	74.00	54.00	-2.14	Peak	V
1070.00	63.76	42.60	-11.00	52.77	31.60	74.00	54.00	-22.4	Peak	H
1340.00	64.45	58.78	-10.72	53.74	48.06	74.00	54.00	-5.94	Peak	H
1576.67	63.47	55.21	-9.77	53.70	45.44	74.00	54.00	-8.56	Peak	H
1733.33	62.14	49.29	-8.18	53.96	41.11	74.00	54.00	-12.89	Peak	H
1973.33	69.21	57.82	-5.74	63.47	52.08	74.00	54.00	-1.92	AVG	H
3150.00	52.81	---	-1.77	51.04	---	74.00	54.00	-2.96	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).



7.8 POWERLINE CONDUCTED EMISSIONS

LIMIT

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

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

* Decreases with the logarithm of the frequency.

Test Configuration

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

TEST PROCEDURE

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



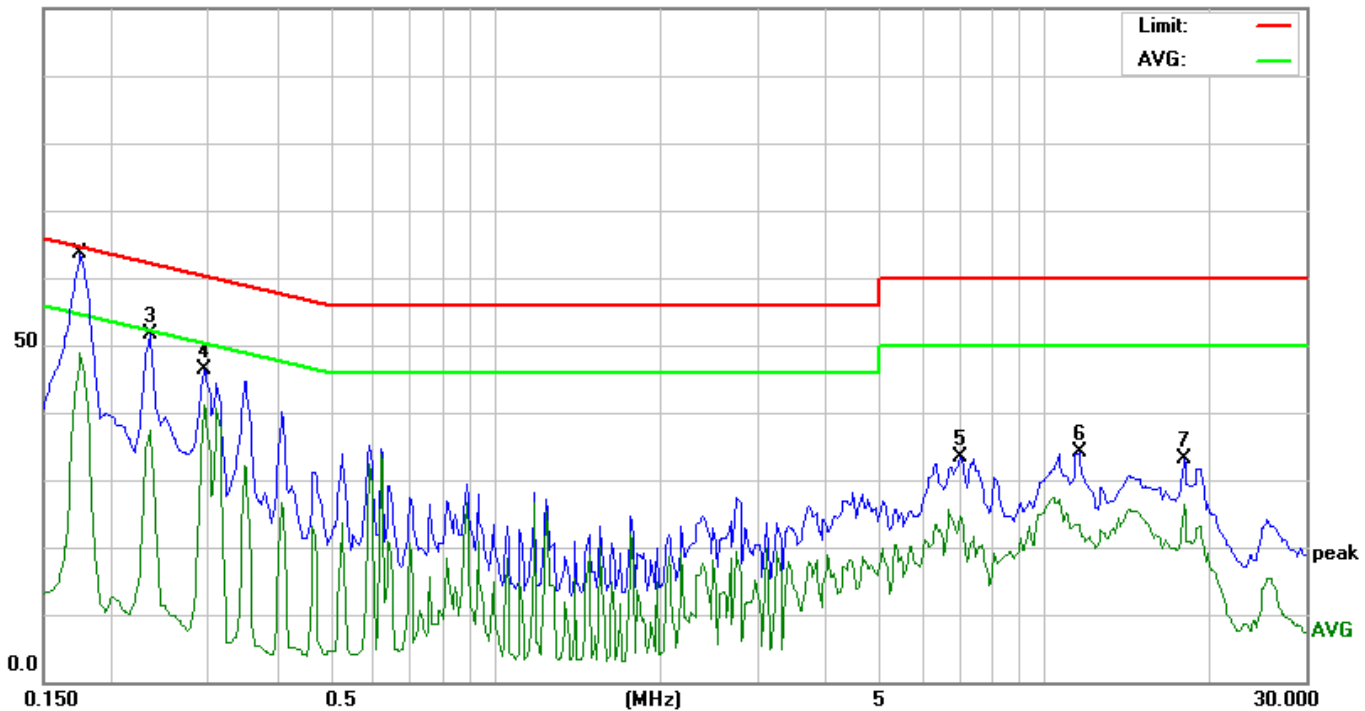
TEST RESULTS

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

Test Data

Operation Mode:	Normal Link	Test Date:	August 22, 2011
Temperature:	22°C	Tested by:	John Yeh
Humidity:	55% RH	Line	L1

100.0 dBuV



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1750	62.10	0.10	62.20	64.72	-2.52	QP
2	0.1750	48.79	0.10	48.89	54.72	-5.83	AVG
3	0.2350	51.44	0.09	51.53	62.27	-10.74	peak
4	0.2950	46.28	0.09	46.37	60.38	-14.01	peak
5	7.0500	33.00	0.42	33.42	60.00	-26.58	peak
6	11.5900	33.50	0.56	34.06	60.00	-25.94	peak
7	18.0000	32.44	0.75	33.19	60.00	-26.81	peak

Remark:

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



Operation Mode: Normal Link

Test Date: August 22, 2011

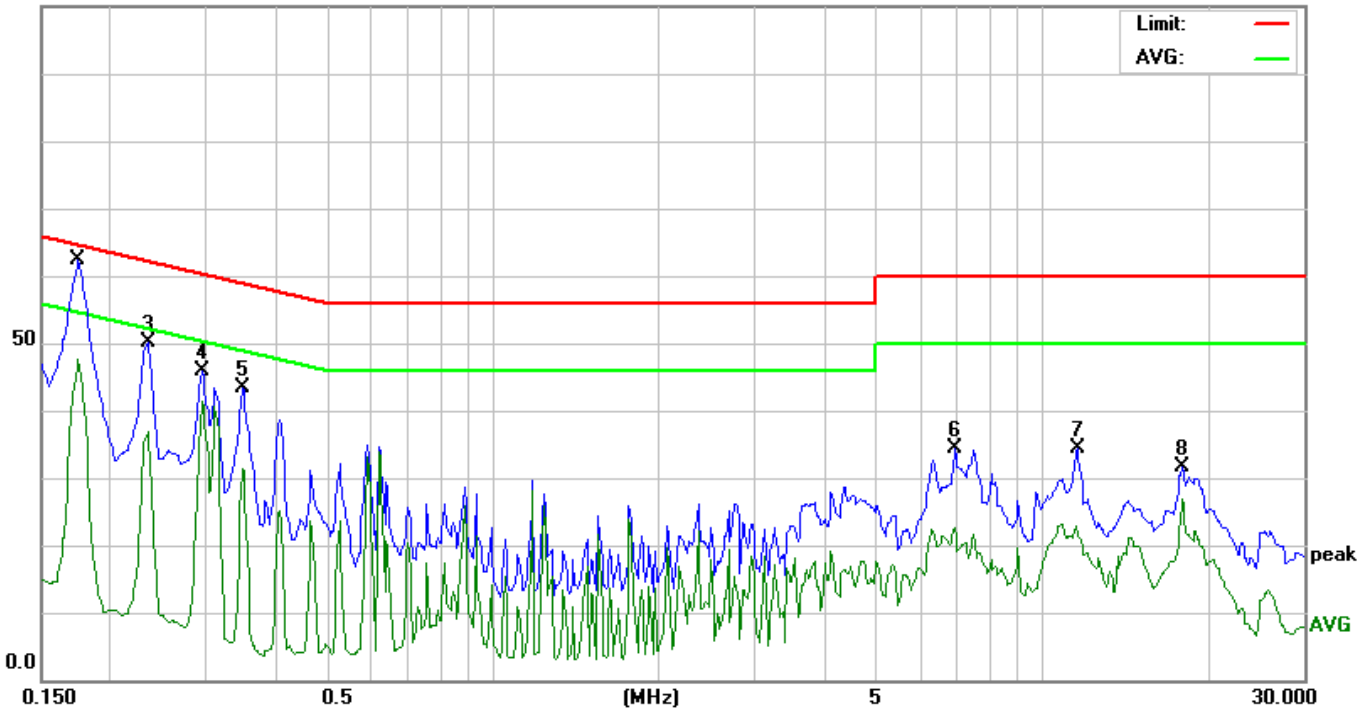
Temperature: 22°C

Tested by: John Yeh

Humidity: 55% RH

Line: L2

100.0 dBuV



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1750	61.42	0.08	61.50	64.72	-3.22	QP
2	0.1750	47.63	0.08	47.71	54.72	-7.01	AVG
3	0.2350	50.14	0.08	50.22	62.27	-12.05	peak
4	0.2950	45.90	0.08	45.98	60.38	-14.40	peak
5	0.3500	43.18	0.08	43.26	58.96	-15.70	peak
6	6.9200	33.94	0.40	34.34	60.00	-25.66	peak
7	11.5700	33.94	0.55	34.49	60.00	-25.51	peak
8	18.0000	30.88	0.73	31.61	60.00	-28.39	peak

Remark:

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