FCC 47 CFR PART 15 SUBPART E &
INDUSTRY CANADA RSS-210

TEST REPORT

For

Wifi Module

Model: WDF710Q

Trade Name: Samsung

Issued to

For FCC
SAMSUNG ELECTRONICS CO., LTD.
19 Chapin Rd., Building D Pine Brook, New Jersey, United States, 07058
For IC:
SAMSUNG ELECTRONICS CO., LTD.
#129 Samsung-Ro, Yeongtong-Gu
Suwon-Si, Gyeonggi-Do 443-742 Korea, Republic of

Issued by

Compliance Certification Services Inc.
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
http://www.ccsrf.com
service@ccsrf.com
Issued Date: August 28, 2013

Testing Laboratory
1309

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		August 28, 2013		Initial Issue	ALL	Eunice Shen

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1. TEST RESULT CERTIFICATION

Applicant:	**For FCC** SAMSUNG ELECTRONICS CO., LTD. 19 Chapin Rd., Building D Pine Brook, New Jersey, United States, 07058 **For IC** #129 Samsung-Ro, Yeongtong-Gu Suwon-Si, Gyeonggi-Do 443-742 Korea, Republic of
Manufacturer:	SAMSUNG ELECTRONICS CO., LTD. 19 Chapin Rd., Building D Pine Brook, New Jersey, United States, 07058
Equipment Under Test:	Wifi Module
Trade Name:	Samsung
Model:	WDF710Q
Date of Test:	July 22~ August 28, 2013

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart E & Industry Canada RSS-210 Issue 8 December, 2010	No non-compliance noted

We hereby certify that:

Compliance Certification Services Inc. tested the above equipment. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.4: 2009** and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.407 and Industry Canada RSS-210 Issue 8.

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

Approved by:

Miller Lee
Section Manager
Compliance Certification Services Inc.

Reviewed by:

Gina Lo
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

<table>
<tr><td>Product</td><td>Wifi Module</td></tr>
<tr><td>Trade Name</td><td>Samsung</td></tr>
<tr><td>Model Number</td><td>WDF710Q</td></tr>
<tr><td>Model Discrepancy</td><td>N/A</td></tr>
<tr><td>Power Supply</td><td>Powered from host device</td></tr>
<tr><td>Received Date</td><td>July 11, 2013</td></tr>
<tr><td>Operating Frequency Range &
Number of Channels</td><td>
<table>
<tr><th></th><th>Mode</th><th>Frequency Range (MHz)</th><th>Number of Channels</th></tr>
<tr><td rowspan="3">UNII Band I</td><td>IEEE 802.11a</td><td>5180 – 5240</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5180 – 5240</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5190 ~ 5230</td><td>2 Channels</td></tr>
<tr><td rowspan="3">UNII Band II</td><td>IEEE 802.11a</td><td>5260 - 5320</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5260 - 5320</td><td>4 Channels</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5270 - 5310</td><td>2 Channels</td></tr>
<tr><td rowspan="3">UNII Band III</td><td>IEEE 802.11a</td><td>5500 - 5700</td><td>8 Channels</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5500 – 5700</td><td>8 Channels</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5510 - 5670</td><td>3 Channels</td></tr>
</table>
</td></tr>
<tr><td>Transmit Power</td><td>
<table>
<tr><th></th><th>Mode</th><th>Frequency Range (MHz)</th><th>Output Power (dBm)</th><th>Output Power (w)</th></tr>
<tr><td rowspan="3">UNII Band I</td><td>IEEE 802.11a</td><td>5180 – 5240</td><td>16.57</td><td>0.0454</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5180 – 5240</td><td>14.43</td><td>0.0277</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5190 ~ 5230</td><td>14.34</td><td>0.0272</td></tr>
<tr><td rowspan="3">UNII Band II</td><td>IEEE 802.11a</td><td>5260 - 5320</td><td>15.14</td><td>0.0327</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5260 - 5320</td><td>14.41</td><td>0.0276</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5270 - 5310</td><td>14.19</td><td>0.0262</td></tr>
<tr><td rowspan="3">UNII Band III</td><td>IEEE 802.11a</td><td>5500 - 5700</td><td>14.87</td><td>0.0307</td></tr>
<tr><td>IEEE 802.11n HT 20 MHz</td><td>5500 – 5700</td><td>14.46</td><td>0.0279</td></tr>
<tr><td>IEEE 802.11n HT 40 MHz</td><td>5510 - 5670</td><td>14.38</td><td>0.0274</td></tr>
</table>
</td></tr>
<tr><td>Modulation Technique</td><td>OFDM (QPSK, BPSK, 16-QAM, 64-QAM)</td></tr>
<tr><td>Transmit Data Rate</td><td>IEEE 802.11a mode: OFDM (54, 48, 36, 24, 18, 12, 9, 6 Mbps)
IEEE 802.11n HT 20 MHz: 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: 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)</td></tr>
<tr><td>Antenna Specification</td><td>2.6 dBi</td></tr>
<tr><td>Antenna Designation</td><td>PIFA Antenna</td></tr>
</table>

Operation Frequency:

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)	
CHANNEL	**MHz**
36	5180
38	5190
40	5200
44	5220
46	5230
48	5240
52	5260
54	5270
56	5280
60	5300
62	5310
64	5320
100	5500
102	5510
104	5520
108	5540
110	5550
112	5560
116	5580
118	5590
132	5660
134	5670
136	5680
140	5700

Remark: *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*

3. TEST METHODOLOGY

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4: 2009 Radiated testing was performed at an antenna to EUT distance 3 meters.

The tests documented in this report were performed in accordance with ANSI C63.4: 2009 and FCC CFR 47 Part 15.207, 15.209 and 15.407, RSS-GEN Issue 2, and RSS-210 Issue 8.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed for RF field strength measurement to meet the Commissions requirement, and is operated in a manner intended to generate the maximum emission in a continuous normal application.

3.2 EUT EXERCISE

The EUT is operated in the engineering mode to fix the Tx frequency for the purposes of measurement.

According to its specifications, the EUT must comply with the requirements of Section 15.407 under the FCC Rules Part 15 Subpart E.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is positioned at 0.8 m above the ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4, the conducted emission from the EUT is measured in the frequency range between 0.15 MHz and 30MHz, using the CISPR Quasi-Peak detector mode.

Radiated Emissions

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

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

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

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

[2] Above 38.6

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

3.5 DESCRIPTION OF TEST MODES

The EUT (model: WDF710Q) had been tested under operating condition.

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

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

UNII Band I:

IEEE 802.11a for 5180 ~ 5240MHz:
Channel Low (5180MHz), Channel Mid (5220MHz) and Channel High (5240MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT 20 MHz for 5180 ~ 5240MHz:
Channel Low (5180MHz), Channel Mid (5220MHz) and Channel High (5240MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT 40 MHz Channel for 5190 ~ 5230MHz:
Channel Low (5190MHz) and Channel High (5230MHz) with 13.5Mbps data rate were chosen for full testing.

UNII Band II:

IEEE 802.11a for 5260 ~ 5320MHz:
Channel Low (5260MHz), Channel Mid (5280MHz) and Channel High (5320MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT 20 MHz for 5260 ~ 5320MHz:
Channel Low (5260MHz), Channel Mid (5280MHz) and Channel High (5320MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT 40 MHz for 5270 ~ 5310MHz:

Channel Low (5270MHz) and Channel High (5310MHz) with 13.5Mbps data rate were chosen for full testing.

UNII Band III:

IEEE 802.11a for 5500 ~ 5700MHz:
Channel Low (5500MHz), Channel Mid (5580MHz) and Channel High (5700MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT 20 MHz for 5500 ~ 5700MHz:
Channel Low (5500MHz), Channel Mid (5580MHz) and Channel High (5700MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT 40 MHz for 5510 ~ 5670MHz:
Channel Low (5510MHz), Channel Mid (5590MHz) and Channel High (5670MHz) with 13.5Mbps data rate were chosen for full testing.

4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: *Each piece of equipment is scheduled for calibration once a year and Loop Antenna is scheduled for calibration once three years.*

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY43360131	03/27/2014
Power Meter	Anritsu	ML2495A	1012009	06/04/2014
Power Sensor	Anritsu	MA2411A	0917072	06/04/2014

3M Chamber Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510268	11/06/2013
EMI Test Receiver	R&S	ESCI	100064	02/17/2014
Pre-Amplifier	Mini-Circults	ZFL-1000LN	SF350700823	01/13/2014
Bilog Antenna	Sunol Sciences	JB3	A030105	10/02/2013
Horn Antenna	EMCO	3117	00055165	02/17/2014
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	12/22/2013
Test S/W	EZ-EMC (CCS-3A1RE)			

Conducted Emission room # A				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
TEST RECEIVER	R&S	ESCI	101201	09/10/2013
LISN (EUT)	SCHWARZBECK	NSLK 8127	8127527	12/11/2013
LISN	SCHWARZBECK	NSLK 8127	8127526	12/11/2013
BNC CABLE	EMCI	5Dr	BNC A6	12/11/2013
Pulse Limiter	R&S	ESH3-Z2	C3010026-2	09/07/2013
Test S/W	EZ-EMC			

Dynamic Frequency Selection				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Rohde&Schwarz	FSEK 30	100264	05/22/2014
Signal Generator	Agilent	E8267C	US42340162	08/06/2014

4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/- 1.56
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, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

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

***Remark**: The powerline conducted emissions test items was tested at Compliance Certification Services Inc. (Hsintien Lab.) The test equipments were listed in page 11 and the test data, please refer page 163-164.*

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

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

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

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

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

5.2 EQUIPMENT

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

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

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

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

5.3 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 0824-01 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC 2324G-1 for 3M Semi Anechoic Chamber A, 2324G-2 for 3M Semi Anechoic Chamber B.

5.4 TABLE OF ACCREDITATIONS AND LISTINGS

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

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

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

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

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	Notebook PC	IBM	1951-I3V(T60)	L3B2188	FCC DoC	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2.	Notebook PC	DELL	PP19L	61G6Q1S	FCC DoC	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
3.	USB Mouse	Hp	KU-0316	BC3870FVBWH079	FCC DoC	Shielded, 1.8m	N/A
4.	Earphone & Microphone	Atayal	SEP912	N/A	N/A	Unshielded, 1.8m	N/A
5.	Notebook	Hp	HP 2140	N/A	FCC DoC	Shielded, 1.8m	Unshielded, 1.8m
6.	IP DSLAM	ZYXEL	IES-1000	N/A	N/A	N/A	Unshielded, 1.8m

Remark:

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

7. APPLICABLE RULES

RSS-210 §2 General Certification Requirements and Specifications

RSS-210 §2.1 RSS-Gen Compliance

In addition to RSS-210, the requirements in RSS-Gen, *General Requirements and Information for the Certification of Radio Apparatus*, must be met.

RSS-210 §2.2 Emissions Falling Within Restricted Frequency Bands

Category I licence-exempt equipment is required to comply with the provisions in RSS-Gen with respect to emissions falling within restricted frequency bands. These restricted frequency bands are listed in RSS-Gen.

RSS-210 §2.3 Receivers

Category I equipment receivers for use with transmitters subject to RSS-210 must comply with the applicable requirements set out in RSS-Gen and be certified under RSS-210. Category II equipment receivers for use with transmitters subject to RSS-210 are exempt from certification, but are subject to compliance with RSS-Gen and RSS-310.

RSS-210 §2.5 General Field Strength Limits

RSS-Gen includes the general field strength limits of unwanted emissions, where applicable, for transmitters and receivers operating in accordance with the provisions specified in this standard. Unwanted emissions of transmitters and receivers are permitted to fall within the restricted bands listed in RSS-Gen, and including the TV bands, but fundamental emissions are prohibited in the restricted bands.

RSS-210 §2.5.1 Transmitters with Wanted Emissions that are Within the General Field Strength Limits

Whether or not their operation is addressed by published RSS standards, transmitters whose wanted and unwanted emissions are within the general field strength limits shown in RSS-Gen, they may operate in any of the frequency bands, other than the restricted bands listed in RSS-Gen and including the TV bands, and shall be certified under RSS-210. Under no conditions may the level of any unwanted emissions exceed the level of the fundamental emission.

Note: Devices operating below 490 kHz in which all emissions are at least 40 dB below the limit listed in RSS-Gen (*General Field Strength Limits for Transmitters at Frequencies below 30 MHz*) are Category II devices and are subject to RSS-310.

RSS-210 §2.7 Tables

RSS-210 §Annex 8: Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands

This section applies to systems that employ frequency hopping (FH) and digital modulation technology in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands. Systems in these bands may employ frequency hopping, digital modulation and or a combination (hybrid) of both techniques.
A frequency hopping system that synchronizes with another or several other systems (to avoid frequency collision among them) via off-air sensing or via connecting cables is not hopping randomly and therefore is not in compliance with RSS-210.

RSS-210 §A8.1 Frequency Hopping Systems

Frequency hopping systems are spread spectrum systems in which the carrier is modulated with coded information in a conventional manner causing a conventional spreading of the RF energy about the carrier frequency. The frequency of the carrier is not fixed but changes at fixed intervals under the direction of a coded sequence.
Frequency hopping systems are not required to employ all available hopping frequencies during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream.
Incorporation of intelligence into a frequency hopping system that enables it to recognize other users of the band and to avoid occupied frequencies is permitted, provided that the frequency hopping system does it individually, and independently chooses or adapts its hopset. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.
The following applies to frequency hopping systems in each of the three bands.
(a) The bandwidth of a frequency hopping channel is the 20 dB emission bandwidth, measured with the hopping stopped. The system RF bandwidth is equal to the channel bandwidth multiplied by the number of channels in the hopset. The hopset shall be such that the near term distribution of frequencies appears random, with sequential hops randomly distributed in both direction and magnitude of change in the hopset while the long term distribution appears evenly distributed.

(b) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125 W. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.
(d) Frequency hopping systems operating in the 2400-2483.5 MHz band shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that a minimum of 15 hopping channels are used.

RSS-210 §A8.2 Digital Modulation Systems

These include systems employing digital modulation techniques resulting in spectral characteristics similar to direct sequence systems. The following applies to all three bands.

RSS-210 §A8.4 Transmitter Output Power and e.i.r.p. Requirements

(4) For systems employing digital modulation techniques operating in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands, the maximum peak conducted power shall not exceed 1 W. Except as provided in Section A8.4(5), the e.i.r.p. shall not exceed 4 W.
As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power (see RSS-Gen)
(5) Point-to-point systems in the bands 2400-2483.5 MHz and 5725-5850 MHz are permitted to have an e.i.r.p. higher than 4 W, provided that the higher e.i.r.p. is achieved by employing higher gain directional antennas and not higher transmitter output powers. Point-to-multipoint systems, omni-directional applications and multiple co-located transmitters transmitting the same information are prohibited from exceeding 4 W e.i.r.p. However, remote stations of point-to-multipoint systems shall be allowed to operate at greater than 4 W e.i.r.p, under the same conditions as for point-to- point systems.
Note: "Fixed, point-to-point operation", excludes point-to-multipoint systems, omnidirectional applications and multiple co-located transmitters transmitting the same information.

RSS-210 §A8.5 Out-of-band Emissions

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

RSS-Gen §2 General Information

RSS-Gen §2.1.2 Category II Equipment

Category II equipment comprises radio devices where a standard has been prescribed but for which a TAC is not required, that is, equipment certification by Industry Canada or a Certification Body (CB) is not required (certification exempt), pursuant to subsection 4(3) of the Radiocommunication Act. The manufacturer or importer shall nevertheless ensure that the standards are complied with. A test report shall be available on request and the device shall be properly labelled.

RSS-Gen §2.2 Receivers

Receivers that are used for radiocommunication other than broadcasting are defined as Category I equipment or Category II equipment, subject to compliance with applicable Industry Canada standards.
Receivers shall be capable of operation only with transmitters for which RSSs are published. Receivers are classified as described in sections 2.2.1 and 2.2.2.

RSS-Gen §2.2.1 Category I Equipment Receivers

A receiver is classified as Category I equipment if it meets one of the following conditions:
(a) a stand-alone receiver (see Note 1, below), which operates on any frequency in the band 30-960 MHz, and is used for the reception of signals in that frequency band from a transmitter classified as Category I equipment;
(b) a Citizen's Band (CB) receiver (26.96-27.410 MHz);
(c) a scanner receiver.
Note 1: A *stand-alone receiver* is defined as any receiver that is not permanently combined together with a transmitter in a single case (transceiver), in which it functions as the receiver component of the transceiver.
Receivers classified as Category I equipment shall comply with the limits for receiver spurious emissions set out in RSS-Gen; however, equipment certification is granted under the applicable RSS standard along with the associated transmitter classified as Category I equipment. Scanner receivers are covered under their own specific RSS.

RSS-Gen §2.2.2 Category II Equipment Receivers

A receiver is classified as Category II equipment if it does not meet any of the conditions of Section 2.2.1.
Category II receivers shall comply with the applicable testing, labelling and user manual requirements in RSS-310.

RSS-Gen §5.6 Exposure of Humans to RF Fields

Category I and Category II equipment shall comply with the applicable requirements of RSS-102.

RSS-Gen §6 Receiver Spurious Emission Standard

Receivers shall comply with the limits of spurious emissions set out in this section, measured over the frequency range determined in accordance with Section 4.10.

RSS-Gen §6.1 Radiated Limits

Radiated spurious emission measurements shall be performed with the receiver antenna connected to the receiver antenna terminals.

Spurious emissions from receivers shall not exceed the radiated limits shown in the table below:

RSS-Gen Table 2 - Spurious Emission Limits for Receivers

Frequency (MHz)	Field Strength microvolts/m at 3 metres
30-88	100
88-216	150
216-960	200
Above 960	500

*Measurements for compliance with limits in the above table may be performed at distances other than 3 metres, in accordance with Section 7.2.7.

RSS- Gen Table 3: Restricted Frequency Bands (Note)

MHz	MHz	MHz	MHz	GHz
0.090-0.110	8.37625-8.38675	--	1718.8-1722.2	9.0-9.2
--	8.41425-8.41475	156.52475-156.52525	2200-2300	9.3-9.5
2.1735-2.1905	12.29-12.293	156.7-156.9	2310-2390	10.6-12.7
3.020-3.026	12.51975-12.52025	--	--	13.25-13.4
4.125-4.128	12.57675-12.57725	--	2655-2900	14.47-14.5
4.17725-4.17775	13.36-13.41	240-285	3260-3267	15.35-16.2
4.20725-4.20775	16.42-16.423	322-335.4	3332-3339	17.7-21.4
5.677-5.683	16.69475-16.69525	399.9-410	3345.8-3358	22.01-23.12
6.215-6.218	16.80425-16.80475	608-614	3500-4400	23.6-24.0
6.26775-6.26825	25.5-25.67	960-1427	4500-5150	31.2-31.8
6.31175-6.31225	37.5-38.25	1435-1626.5	5350-5460	36.43-36.5
8.291-8.294	73-74.6; 74.8-75.2	1645.5-1646.5	7250-7750	Above 38.6
8.362-8.366	108-138	1660-1710	8025-8500	

Note: *Certain frequency bands listed in Table 2 and above 38.6 GHz are designated for low-power licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in this Standard as well as RSS-310.*

RSS- Gen Table 5: General Field Strength Limits for Transmitters at Frequencies Above 30 MHz

Frequency (MHz)	Field Strength (microvolt/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

Note: *Transmitting devices are not permitted in Table 1 bands or, unless stated otherwise, in TV bands(54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz and 614-806 MHz).*

RSS- Gen Table 6: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)

Frequency (fundamental or spurious)	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/377F (F in Hz)	300
490-1.705 kHz	24,000/F (F in kHz)	24,000/377F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Note: *The emission limits for the bands 9-90 kHz and 110-490 kHz are based on measurements employing an average detector.*

RSS-Gen §7.1.2 Transmitter Antenna

A transmitter can only be sold or operated with antennas with which it was approved. Transmitter may be approved with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest gain antenna of each combination of transmitter and antenna type for which approval is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type having equal or lesser gain as an antenna that had been successfully tested with the transmitter, will also be considered approved with the transmitter, and may be used and marketed with the transmitter. For Category I transmitters, the manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.

When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer.
For transmitters of RF output power of 10 milliwatts or less, only the portion of the antenna gain that is in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power to demonstrate compliance with the radiated power limits specified in the applicable standard. For transmitters of output power greater than 10 milliwatts, the total antenna gain shall be added to the measured RF output power to demonstrate compliance to the specified radiated power limits.User manuals for transmitters shall display the following notice in a conspicuous location:

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

The above notice may be affixed to the device instead of displayed in the user manual.

User manuals for transmitters equipped with detachable antennas shall also contain the following notice in a conspicuous location:

This radio transmitter (identify the device by certification number, or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi) and required impedance for each.

RSS-Gen §7.2.4 Transmitter and Receiver AC Power Lines Conducted Emission Limits

Except when the requirements applicable to a given device state otherwise, for any radio apparatus equipped to operate from the public utility AC power supply, either directly or indirectly (such as with a battery charger), the radio frequency voltage of emissions conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the table below. The more stringent limit applies at the frequency range boundaries.

The conducted emissions shall be measured with a 50 ohm/50 microhenry line impedance stabilization network (LISN).

RSS-Gen Table 4 – AC Power Line Conducted Emission Limits

Frequency Range (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

**Decreases with the logarithm of the frequency.*

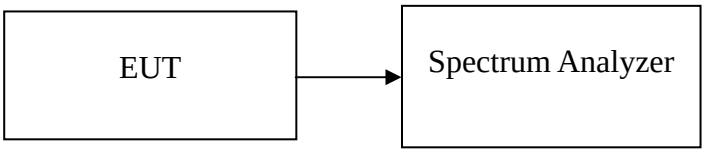
8. FCC PART 15 REQUIREMENTS & RSS 210 REQUIREMENTS

8.1 99% BANDWIDTH

Test Configuration

TEST PROCEDURE

The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without



being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold.

TEST RESULTS

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5180	18.4046
Mid	5220	17.5051
High	5240	17.5881

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5180	18.3935
Mid	5220	18.4145
High	5240	18.3608

Test mode: IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5190	36.5105
High	5230	36.5399

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5260	17.3135
Mid	5280	17.2150
High	5320	17.0972

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5260	18.1906
Mid	5280	18.1194
High	5320	18.1645

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5270	36.4488
High	5310	36.4266

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5500	17.5415
Mid	5600	17.4855
High	5700	17.0013

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5500	18.5318
Mid	5600	18.3520
High	5700	18.2236

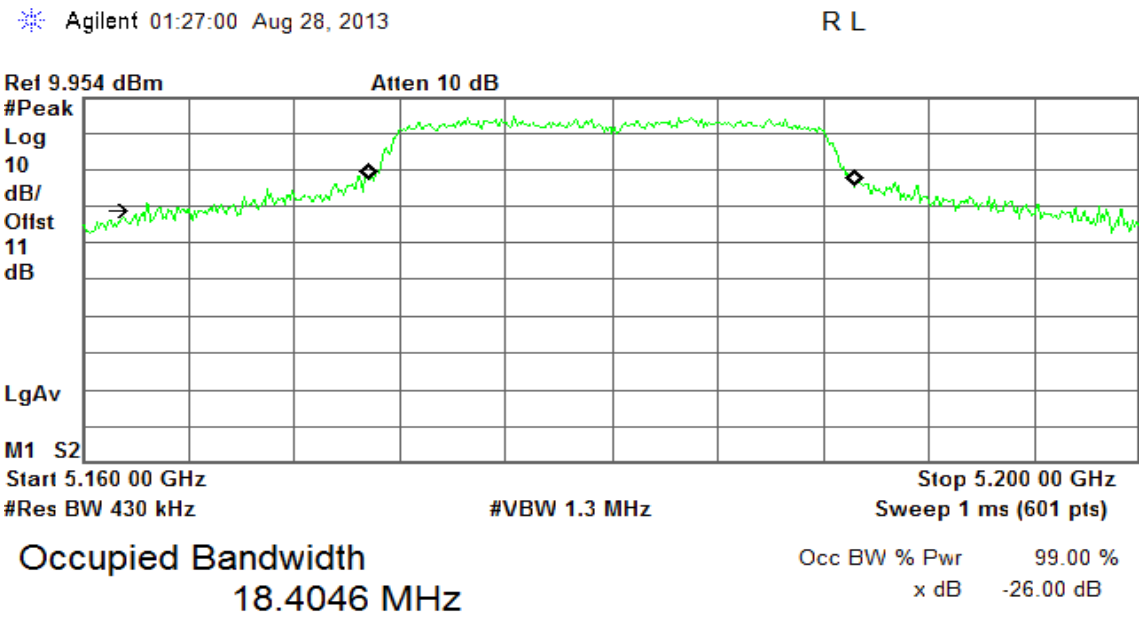
Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	Bandwidth (MHz)
Low	5510	36.6087
Mid	5590	36.5522
High	5670	36.5190

Test Plot

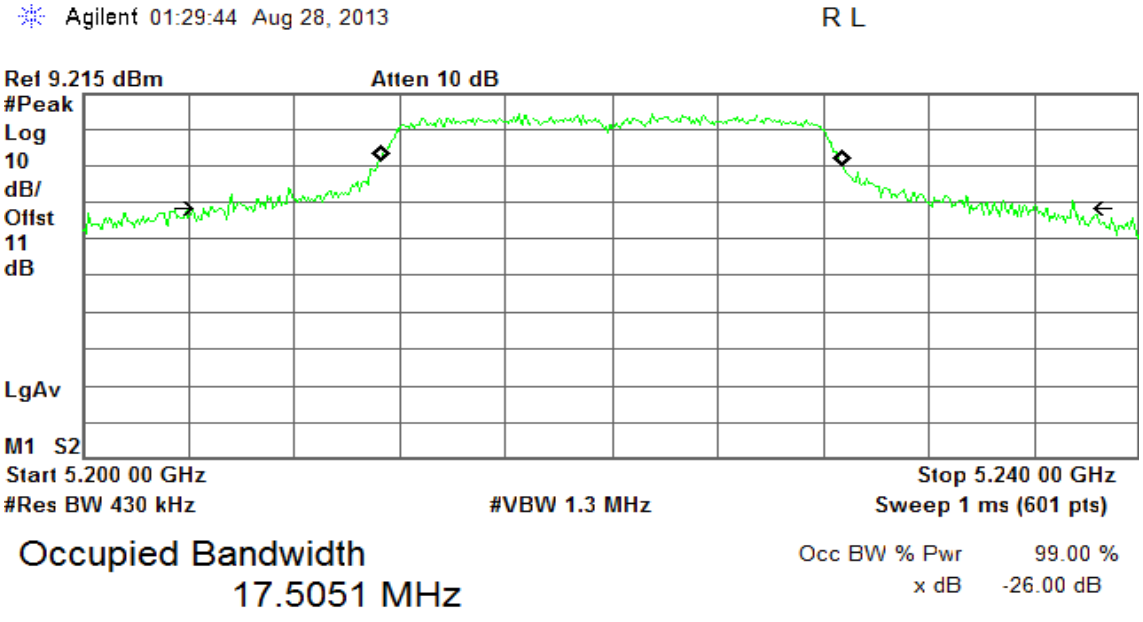
IEEE 802.11a mode / 5180 ~ 5240MHz

99% Bandwidth (CH Low)



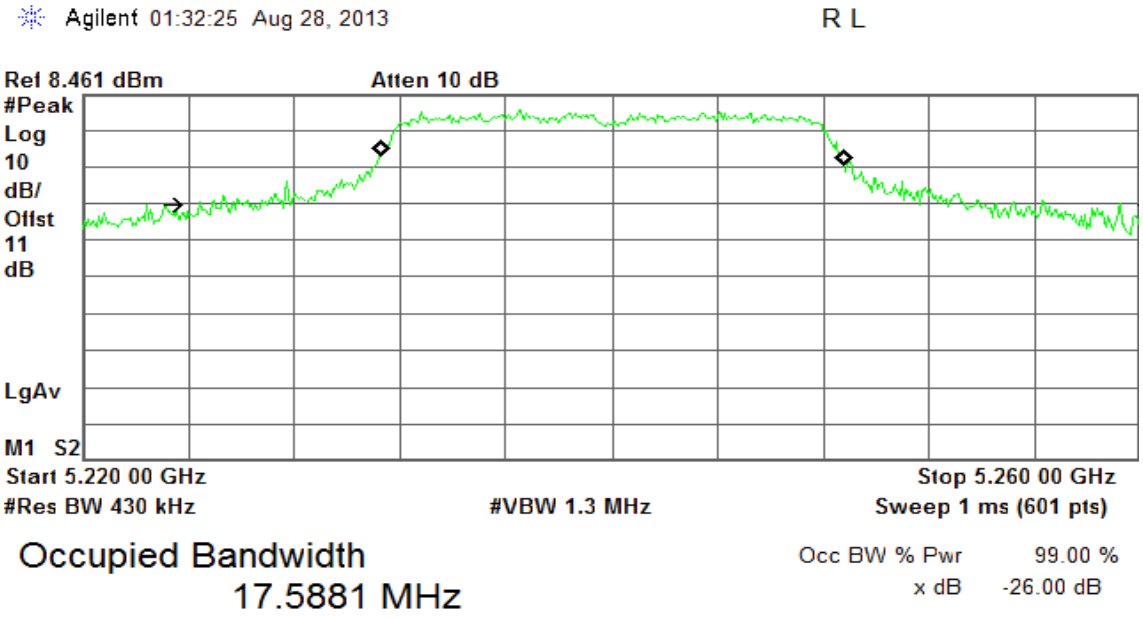
Transmit Freq Error	5.144 kHz
x dB Bandwidth	36.986 MHz

99% Bandwidth (CH Mid)



Transmit Freq Error	4.889 kHz
x dB Bandwidth	32.713 MHz

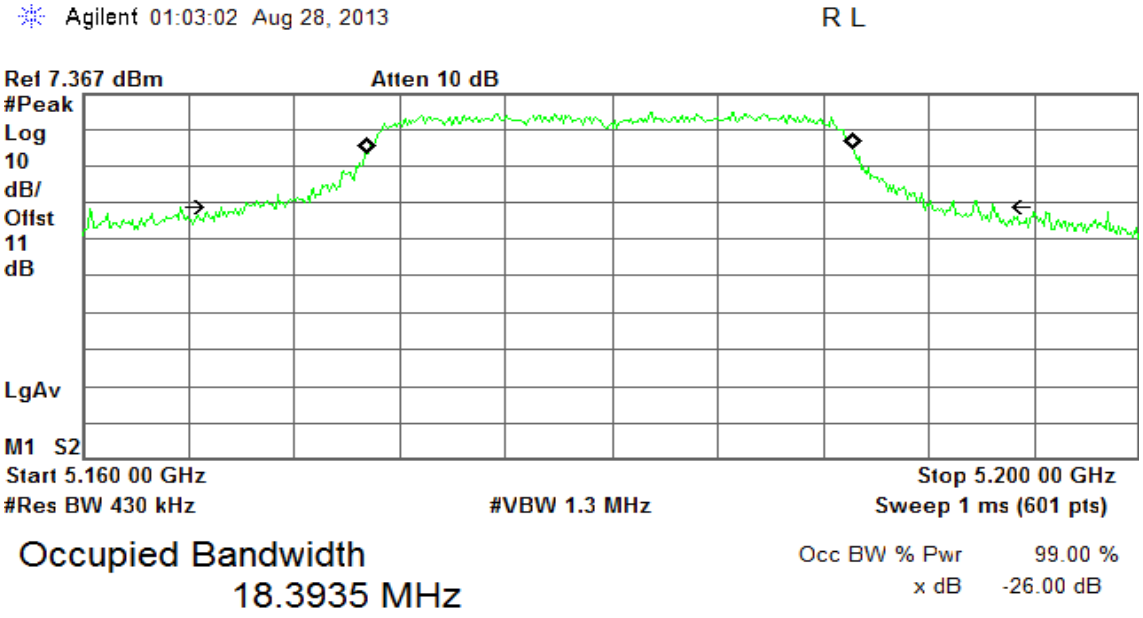
99% Bandwidth (CH High)



Transmit Freq Error	27.861 kHz
x dB Bandwidth	34.825 MHz

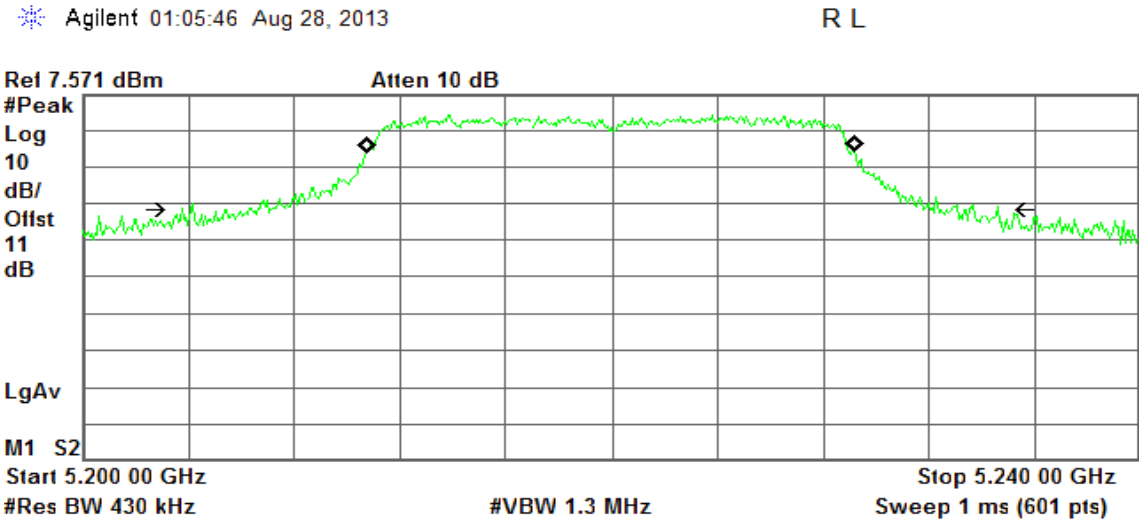
IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

99% Bandwidth (CH Low)



Transmit Freq Error	-50.884 kHz
x dB Bandwidth	29.190 MHz

99% Bandwidth (CH Mid)

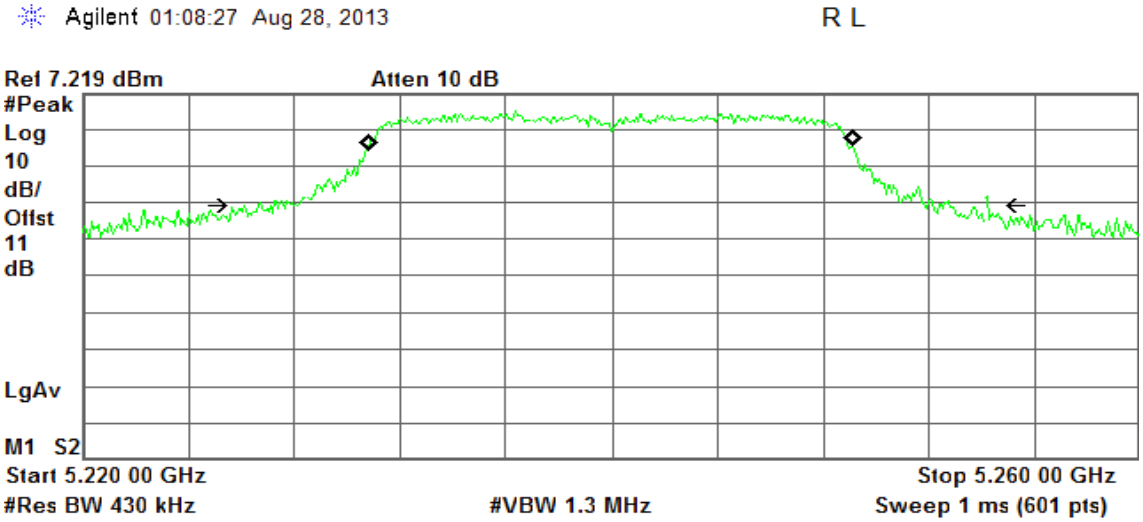


Occupied Bandwidth
18.4145 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -31.410 kHz
x dB Bandwidth 30.884 MHz

99% Bandwidth (CH High)



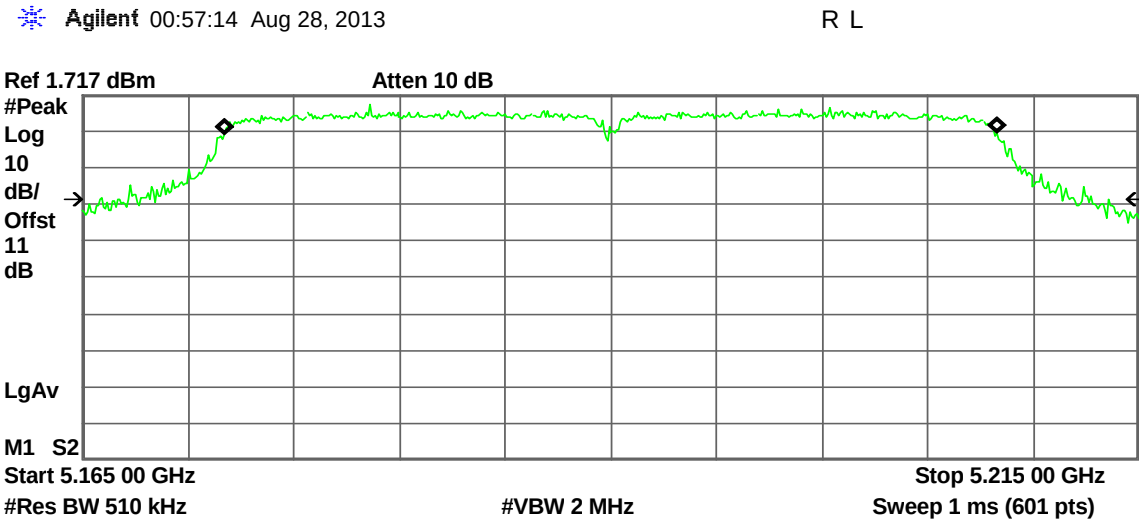
Occupied Bandwidth
18.3608 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -45.905 kHz
x dB Bandwidth 28.106 MHz

IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

99% Bandwidth (CH Low)

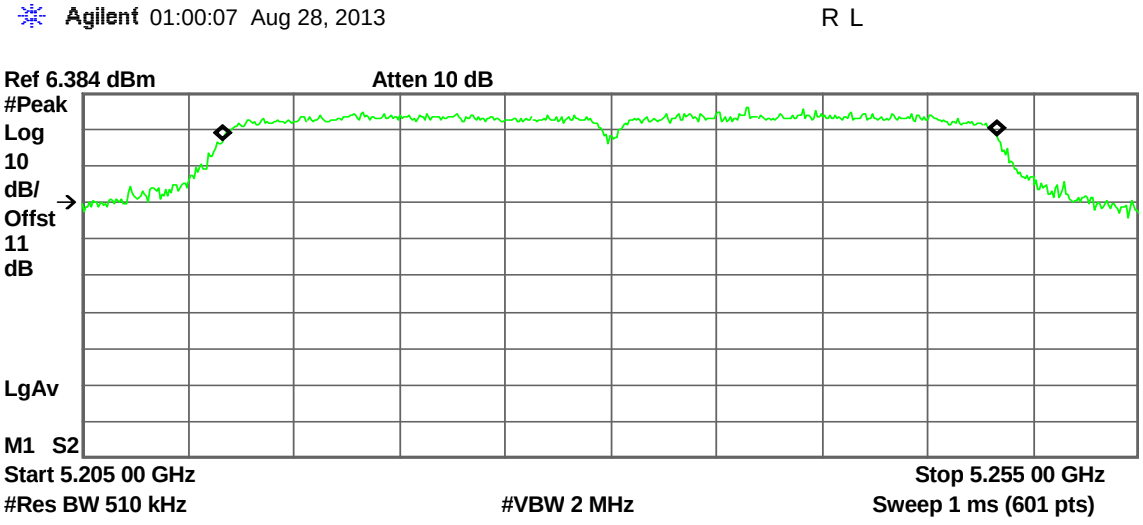


Occupied Bandwidth
36.5105 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -852.961 Hz
x dB Bandwidth 47.767 MHz

99% Bandwidth (CH High)



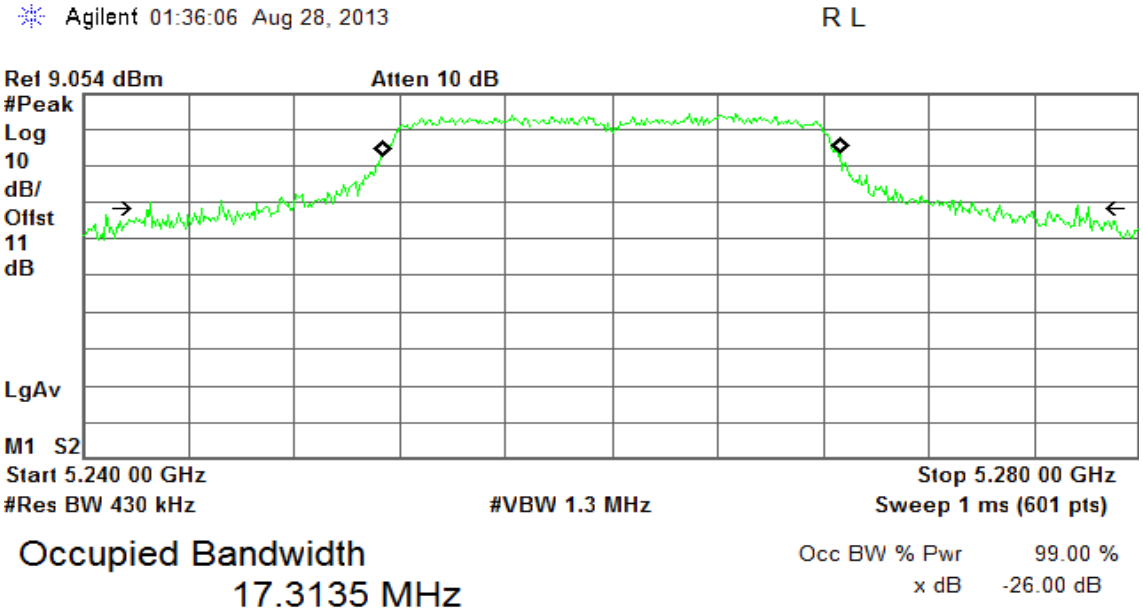
Occupied Bandwidth
36.5399 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -56.322 kHz
x dB Bandwidth 49.235 MHz

IEEE 802.11a mode / 5260 ~ 5320MHz

99% Bandwidth (CH Low)

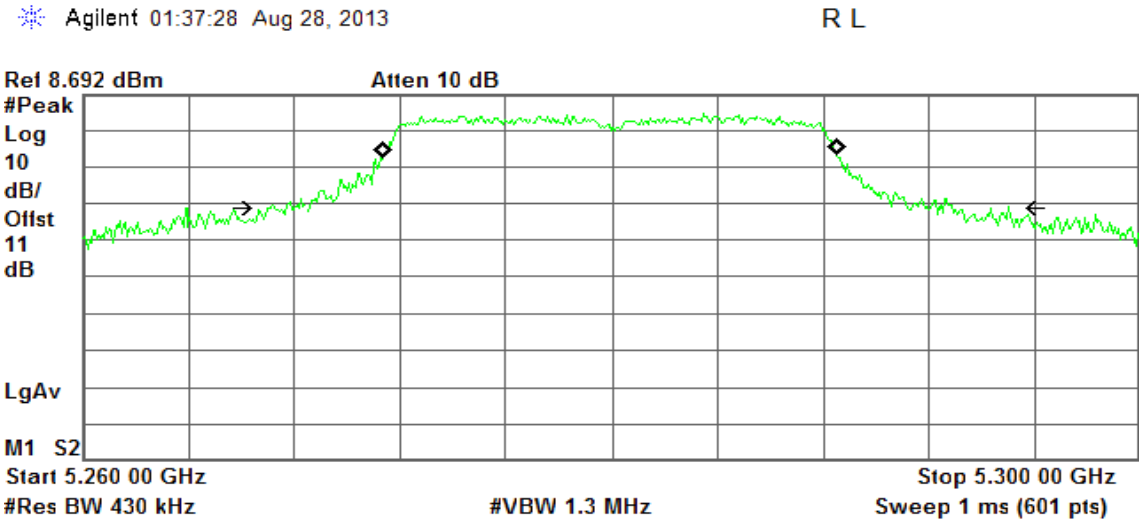


Occupied Bandwidth
17.3135 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -3.221 kHz
x dB Bandwidth 35.581 MHz

99% Bandwidth (CH Mid)

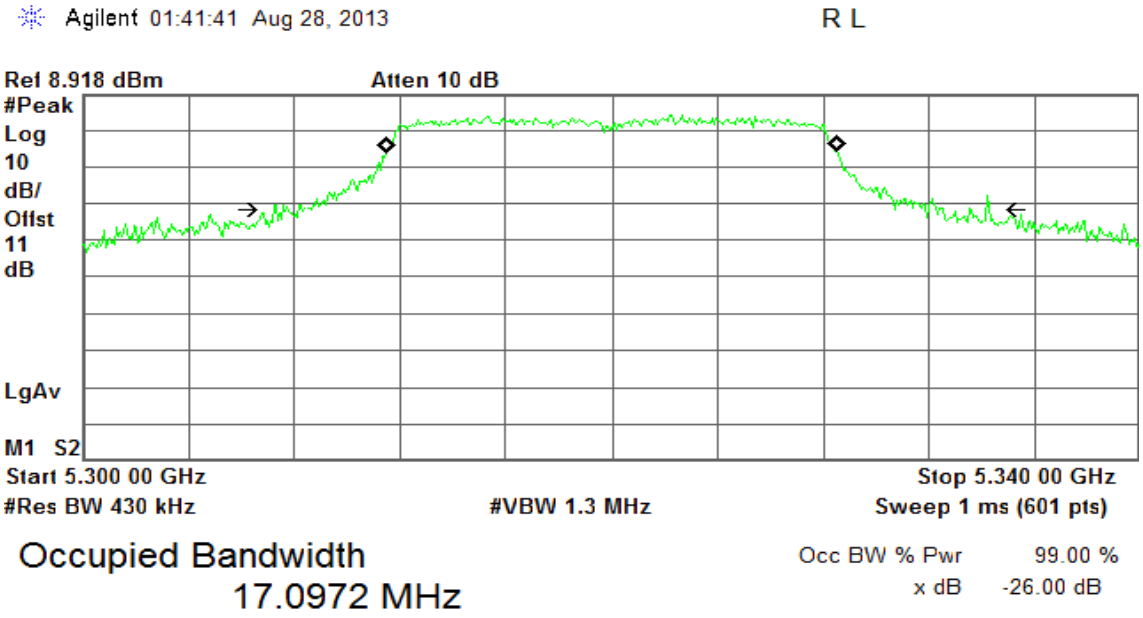


Occupied Bandwidth
17.2150 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -51.663 kHz
x dB Bandwidth 27.908 MHz

99% Bandwidth (CH High)



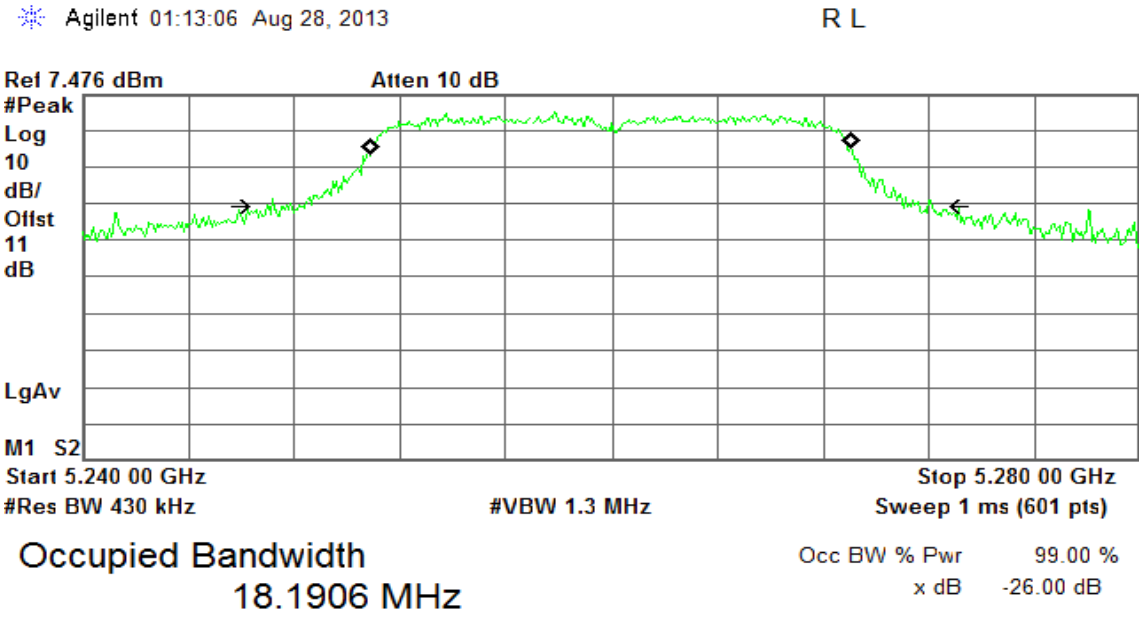
Occupied Bandwidth
17.0972 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 11.583 kHz
x dB Bandwidth 27.051 MHz

IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

99% Bandwidth (CH Low)

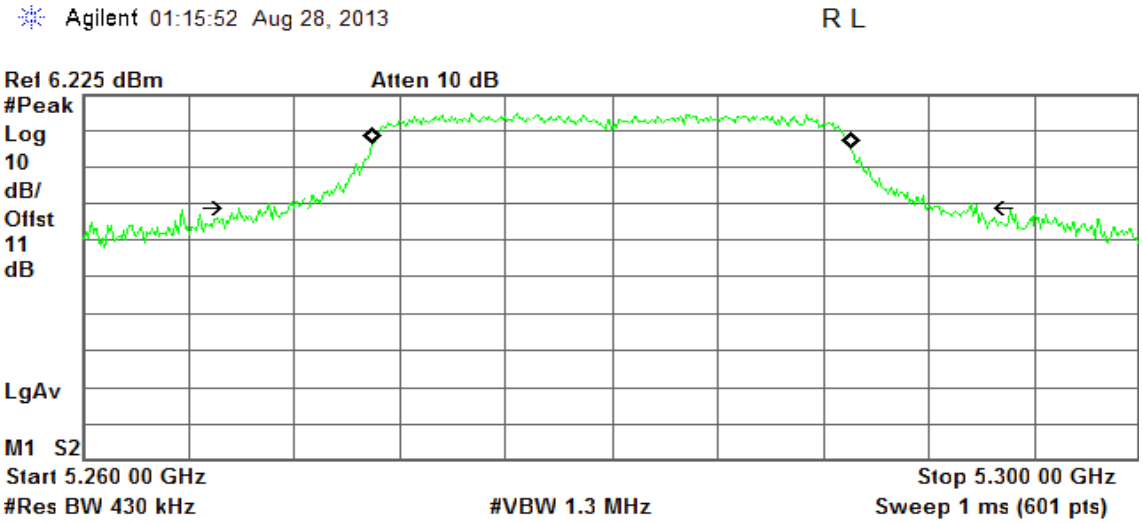


Occupied Bandwidth
18.1906 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -55.654 kHz
x dB Bandwidth 25.151 MHz

99% Bandwidth (CH Mid)

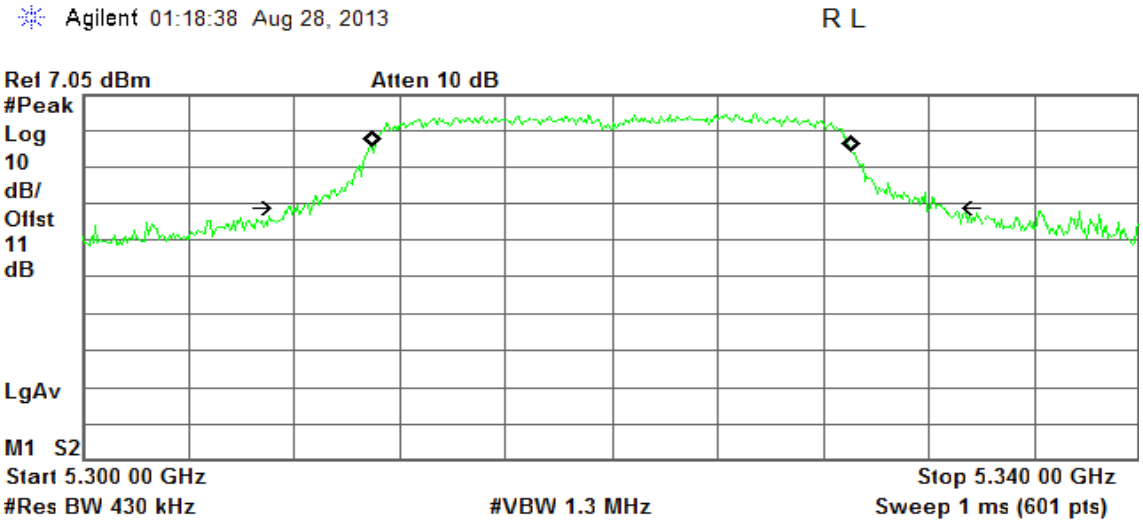


Occupied Bandwidth
18.1194 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 4.879 kHz
x dB Bandwidth 27.894 MHz

99% Bandwidth (CH High)



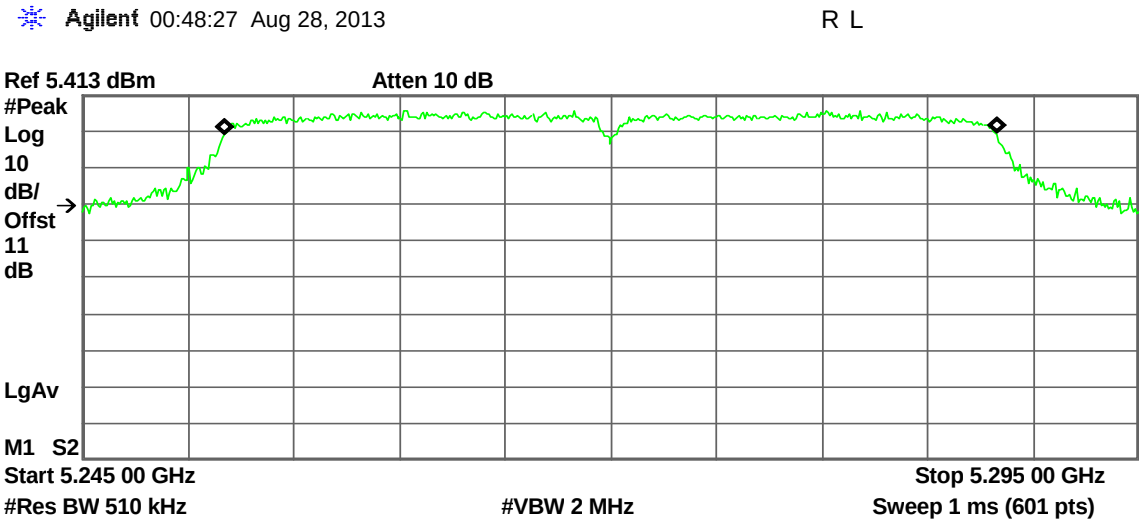
Occupied Bandwidth
18.1645 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -5.332 kHz
x dB Bandwidth 24.842 MHz

IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

99% Bandwidth (CH Low)

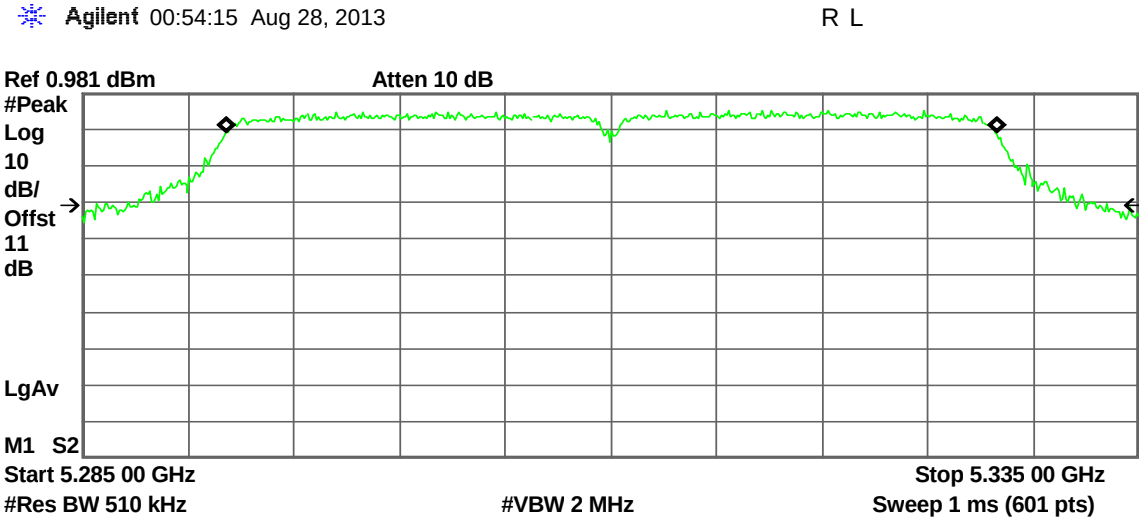


Occupied Bandwidth
36.4488 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -4.160 kHz
x dB Bandwidth 49.144 MHz

99% Bandwidth (CH High)



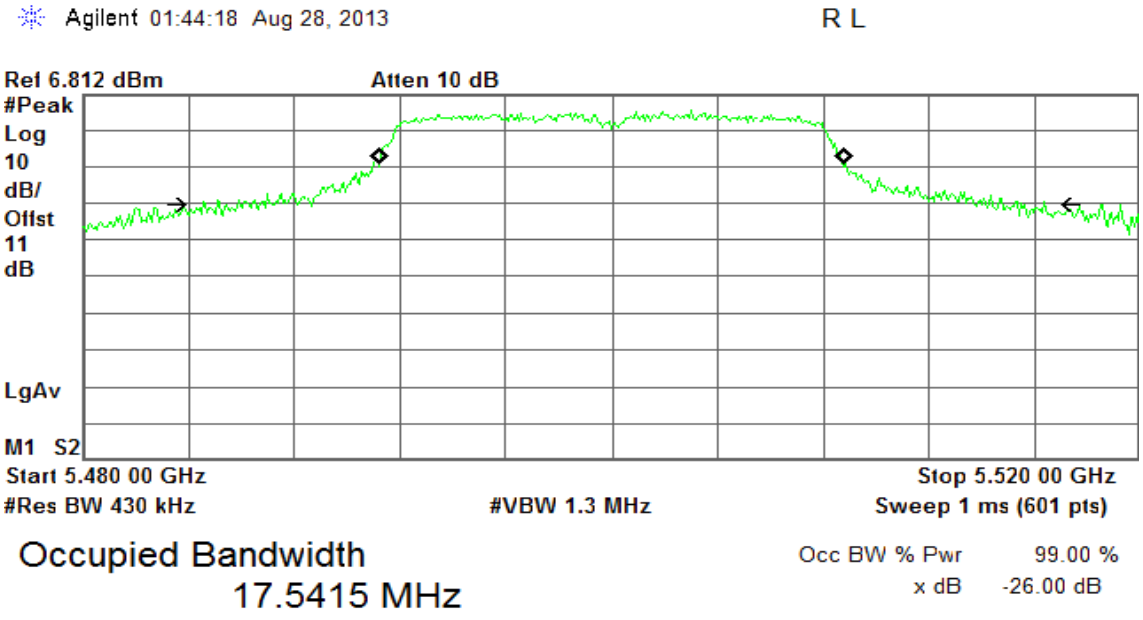
Occupied Bandwidth
36.4266 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 10.238 kHz
x dB Bandwidth 47.858 MHz

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

99% Bandwidth (CH Low)

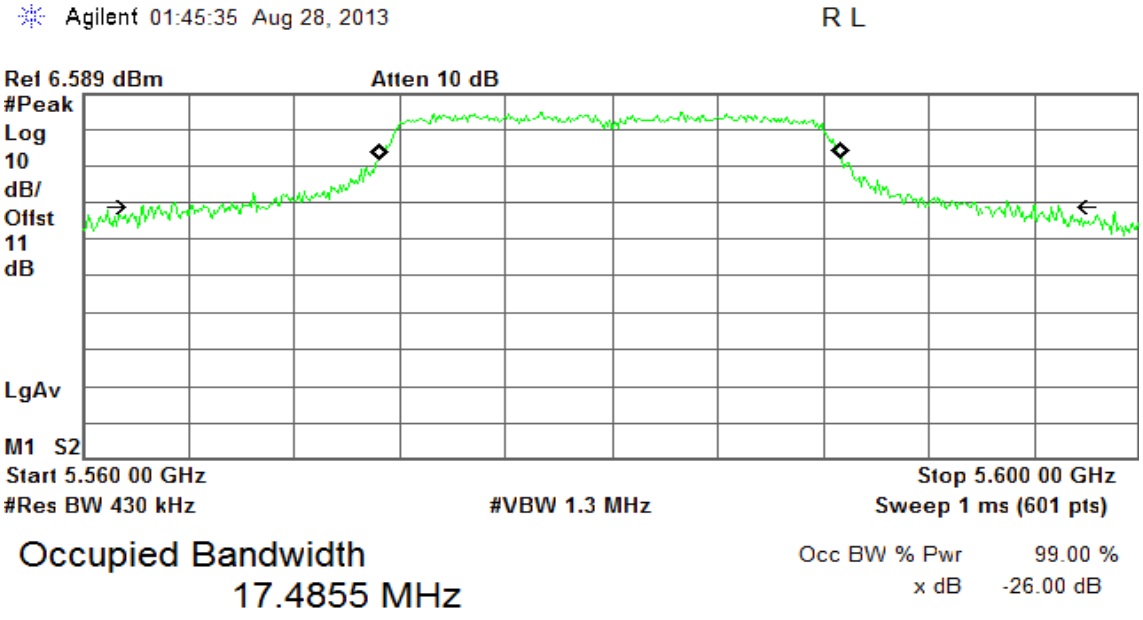


Occupied Bandwidth
17.5415 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -2.917 kHz
x dB Bandwidth 31.841 MHz

99% Bandwidth (CH Mid)

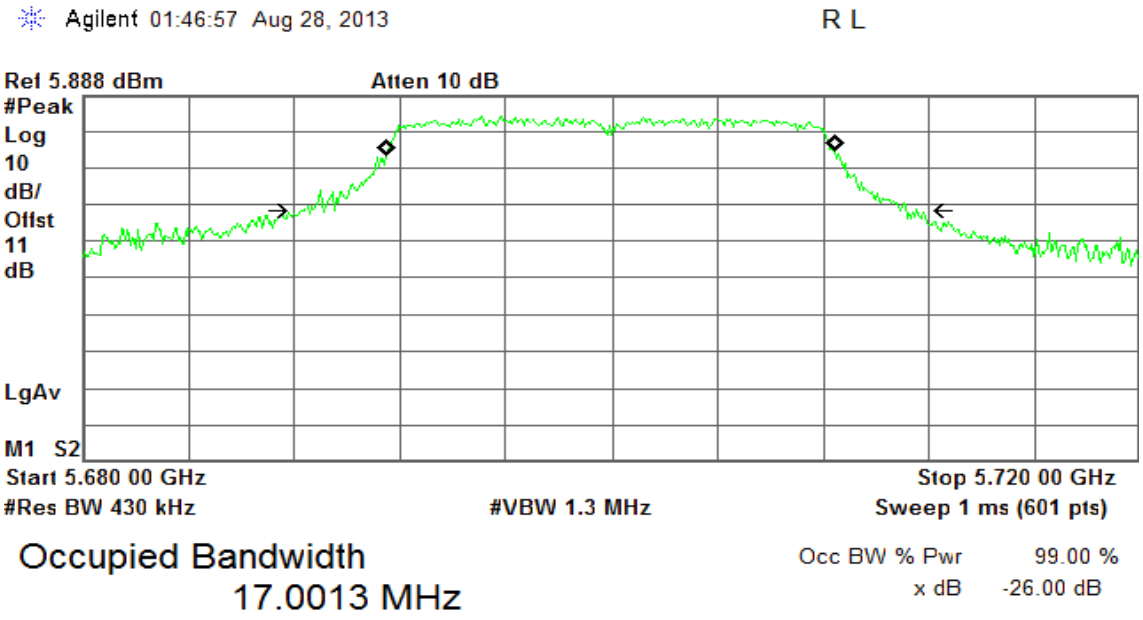


Occupied Bandwidth
17.4855 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -64.202 kHz
x dB Bandwidth 34.732 MHz

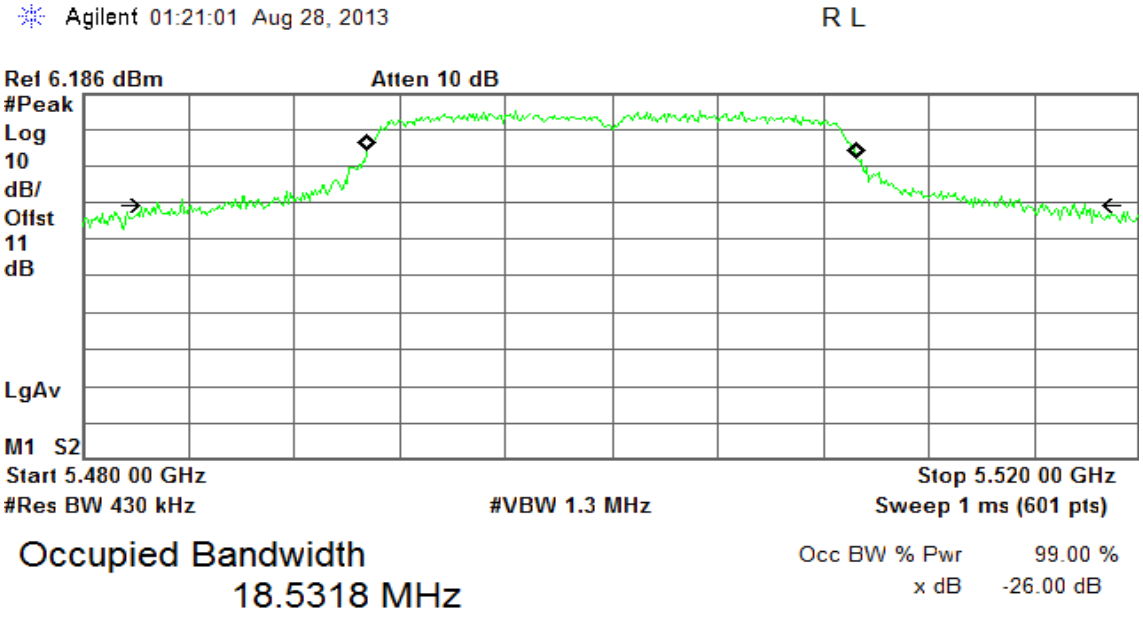
99% Bandwidth (CH High)



Transmit Freq Error	-39.705 kHz
x dB Bandwidth	22.787 MHz

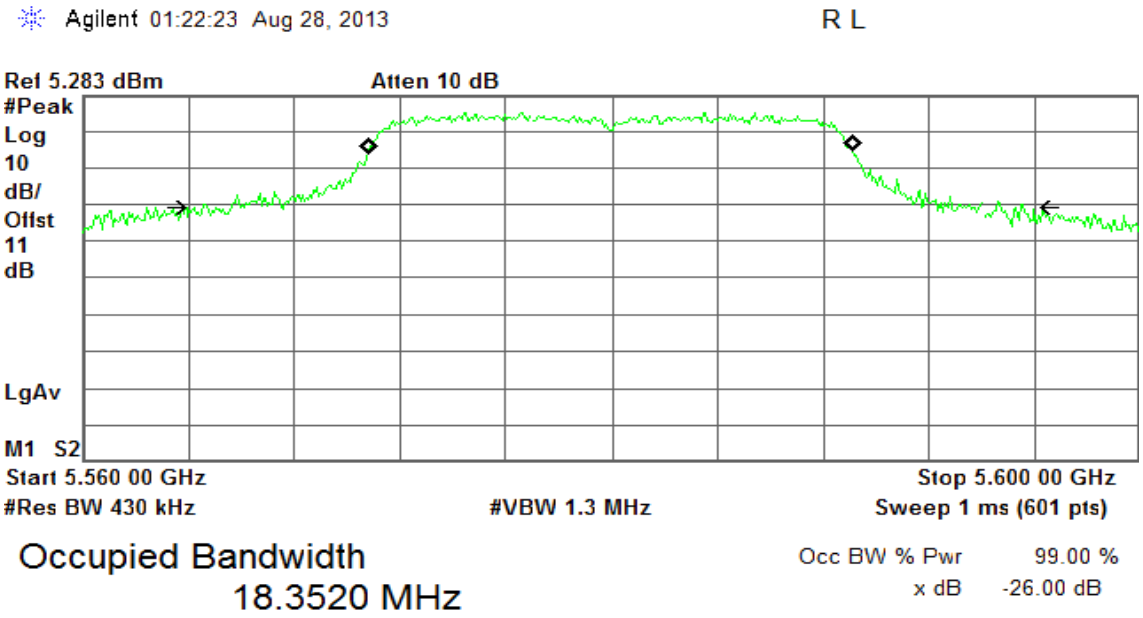
IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

99% Bandwidth (CH Low)



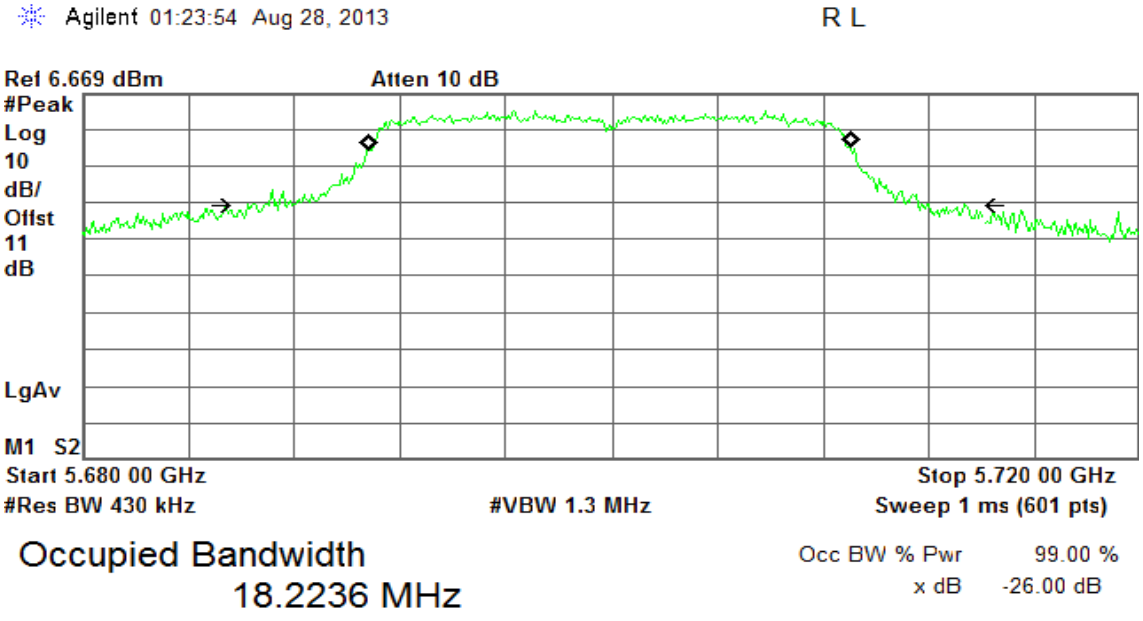
Transmit Freq Error	24.579 kHz
x dB Bandwidth	35.178 MHz

99% Bandwidth (CH Mid)



Transmit Freq Error -37.120 kHz
x dB Bandwidth 30.986 MHz

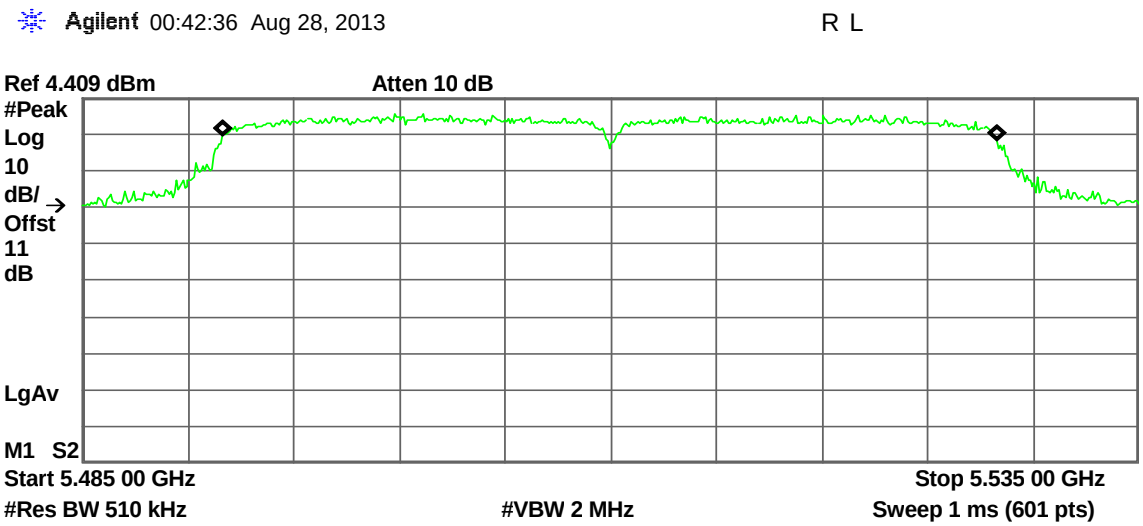
99% Bandwidth (CH High)



Transmit Freq Error -73.617 kHz
x dB Bandwidth 27.180 MHz

IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

99% Bandwidth (CH Low)

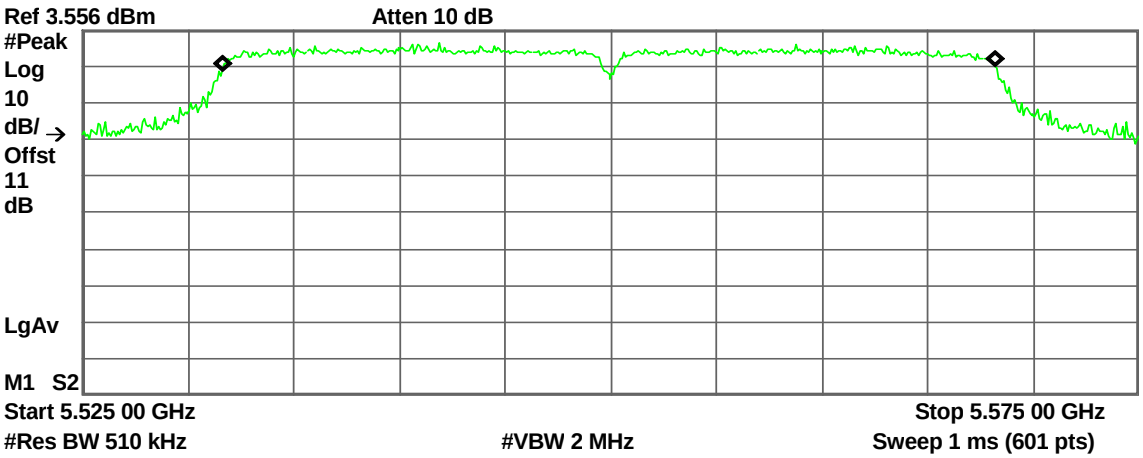


Occupied Bandwidth
36.6087 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -50.390 kHz
x dB Bandwidth 50.000 MHz

99% Bandwidth (CH Mid)

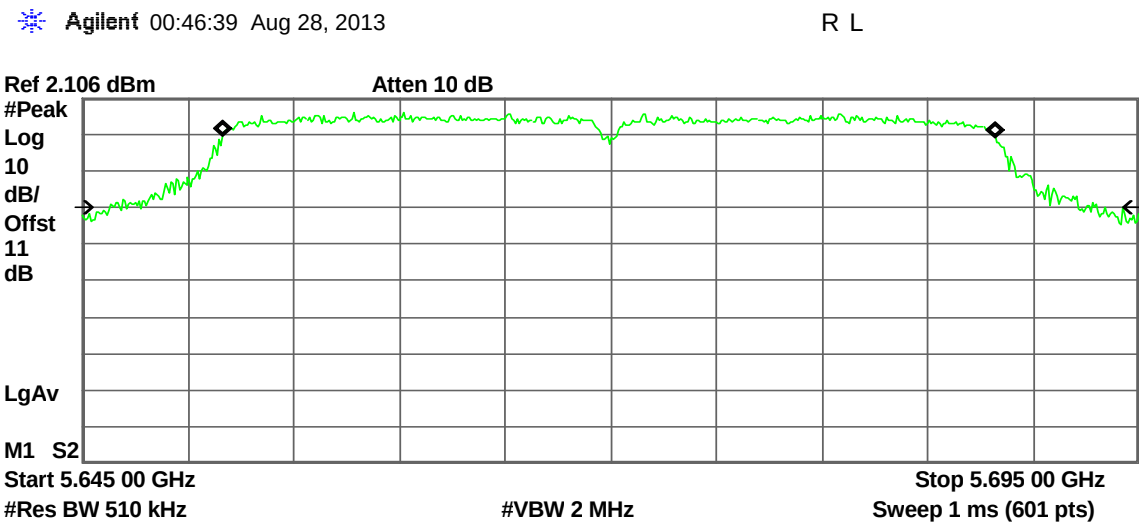


Occupied Bandwidth
36.5522 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -74.209 kHz
x dB Bandwidth 50.000 MHz

99% Bandwidth (CH High)



Occupied Bandwidth
36.5190 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

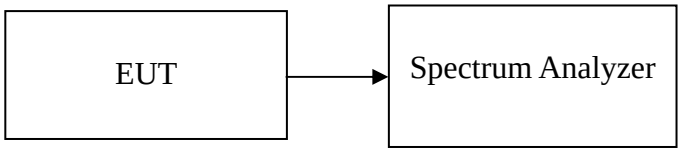
Transmit Freq Error	-61.681 kHz
x dB Bandwidth	47.134 MHz

8.2 26 dB EMISSION BANDWIDTH

LIMIT

According to §15.303(c), for purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Compliance with the emissions limits is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

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 > 1%EBW, VBW > RBW, Span >26dB bandwidth, and Sweep = auto.
4. Mark the peak frequency and –26dB (upper and lower) frequency.
5. Repeat until all the rest channels were investigated.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	38.4
Mid	5220	36.4
High	5240	36.1334

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	32.2
Mid	5220	31.1333
High	5240	32

Test mode: IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	50.7
High	5230	58.7

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5260	35.2
Mid	5280	33.4667
High	5320	35.4666

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	29.3333
Mid	5260	29.6666
High	5320	27.6666

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	55.7
High	5310	49.1

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5500	37.2667
Mid	5600	34.6
High	5700	34.6

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5500	35.6
Mid	5600	32.9333
High	5700	24

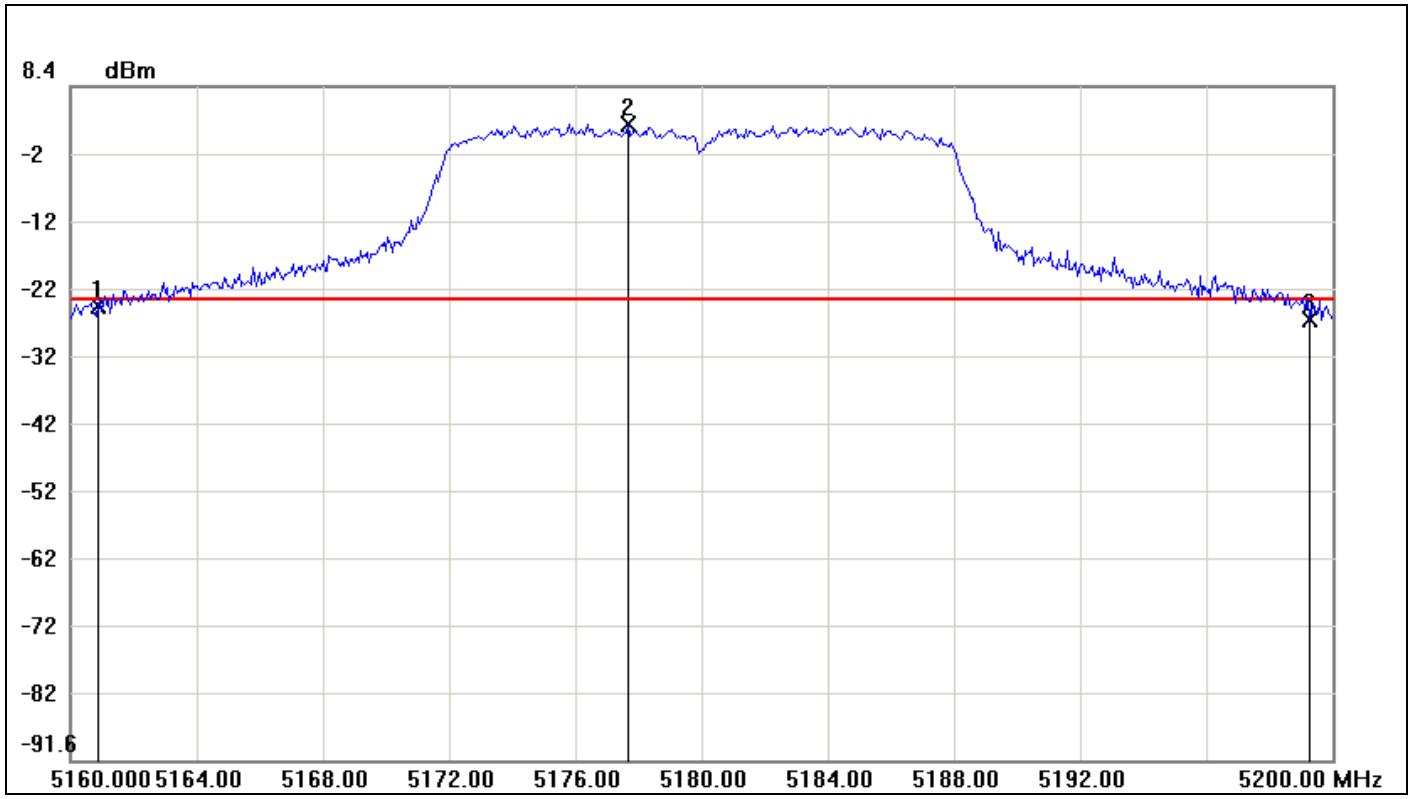
Test mode: IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5510	60
Mid	5590	59.9
High	5670	51.4

Test Plot

IEEE 802.11a for 5180 ~ 5240MHz

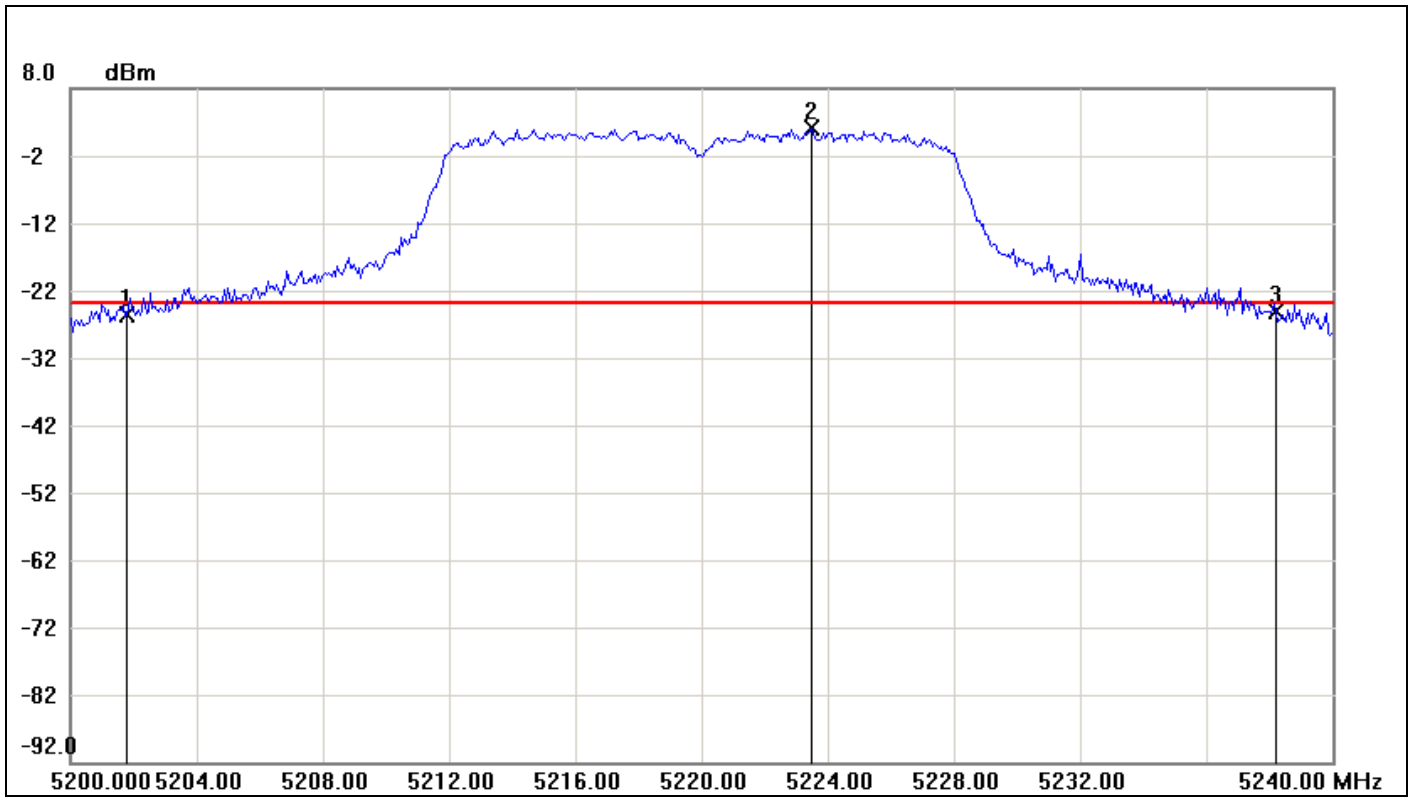
CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5160.8667	-24.30	-23.12	-1.18
2	5177.6667	2.88	-23.12	26.00
3	5199.2667	-26.16	-23.12	-3.04

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	38.4	-1.86

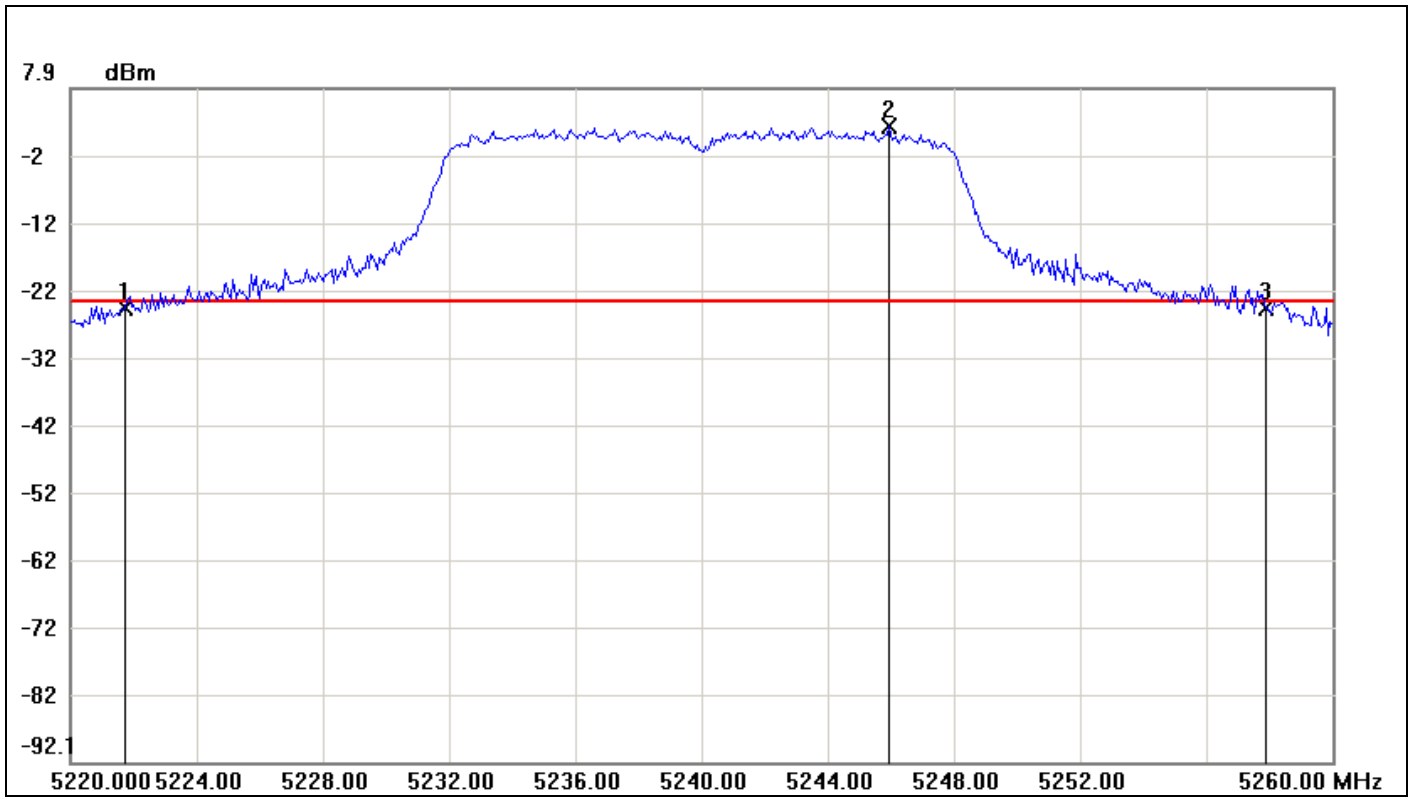
CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5201.8000	-25.63	-23.90	-1.73
2	5223.4667	2.10	-23.90	26.00
3	5238.2000	-25.19	-23.90	-1.29

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	36.4	0.44

CH High

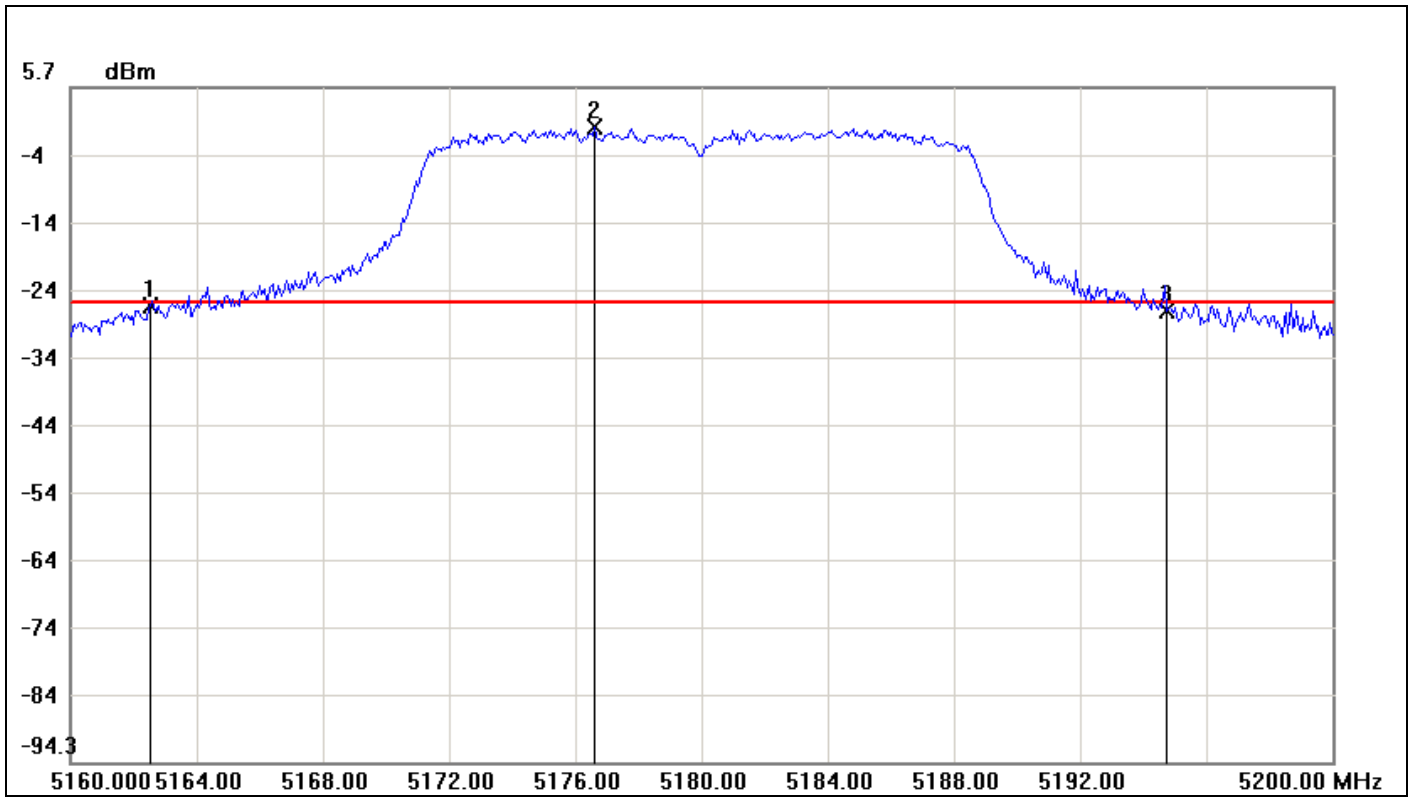


No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5221.7333	-24.70	-23.80	-0.90
2	5245.9333	2.20	-23.80	26.00
3	5257.8667	-24.68	-23.80	-0.88

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	36.1334	0.02

IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

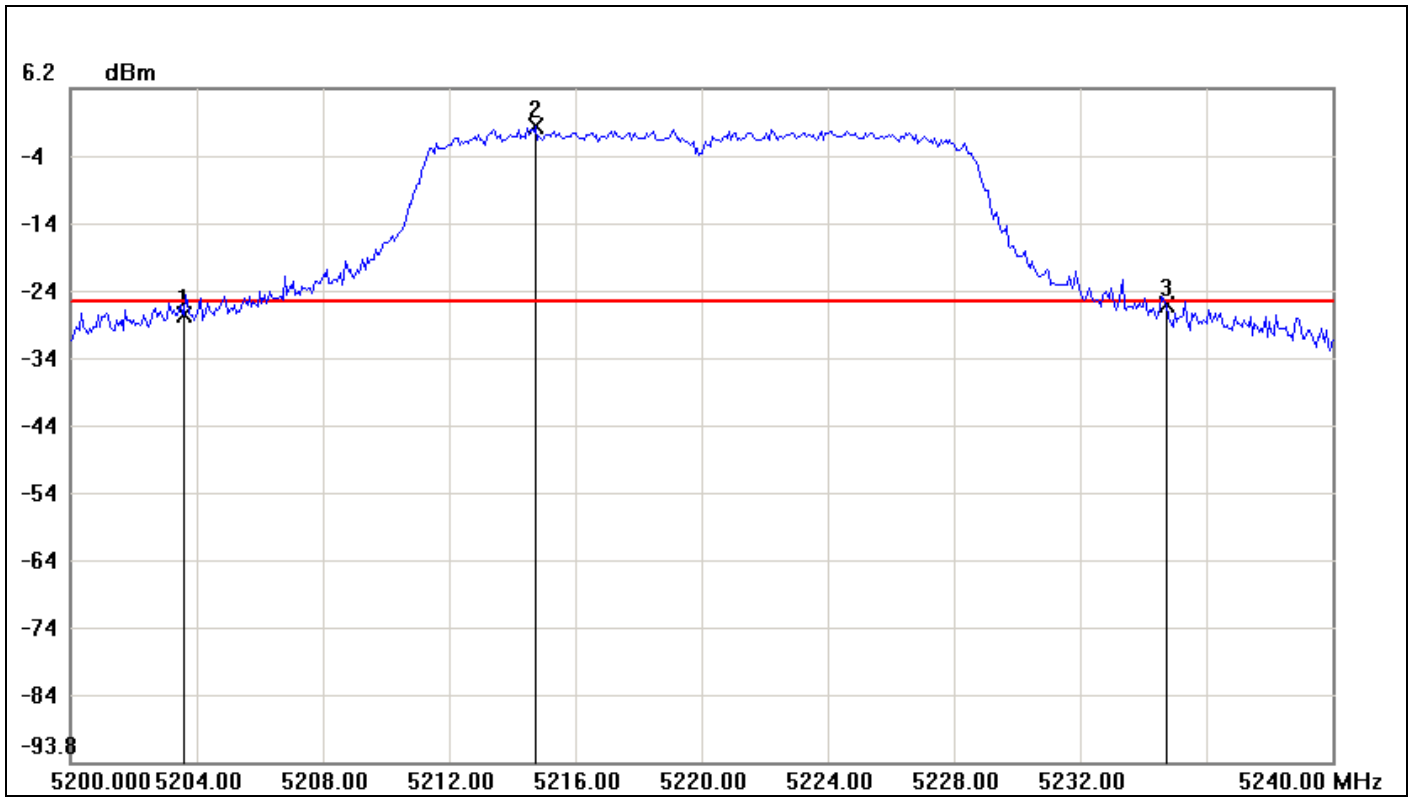
CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5162.5333	-26.62	-26.31	-0.31
2	5176.6000	-0.31	-26.31	26.00
3	5194.7333	-27.53	-26.31	-1.22

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	32.2	-0.91

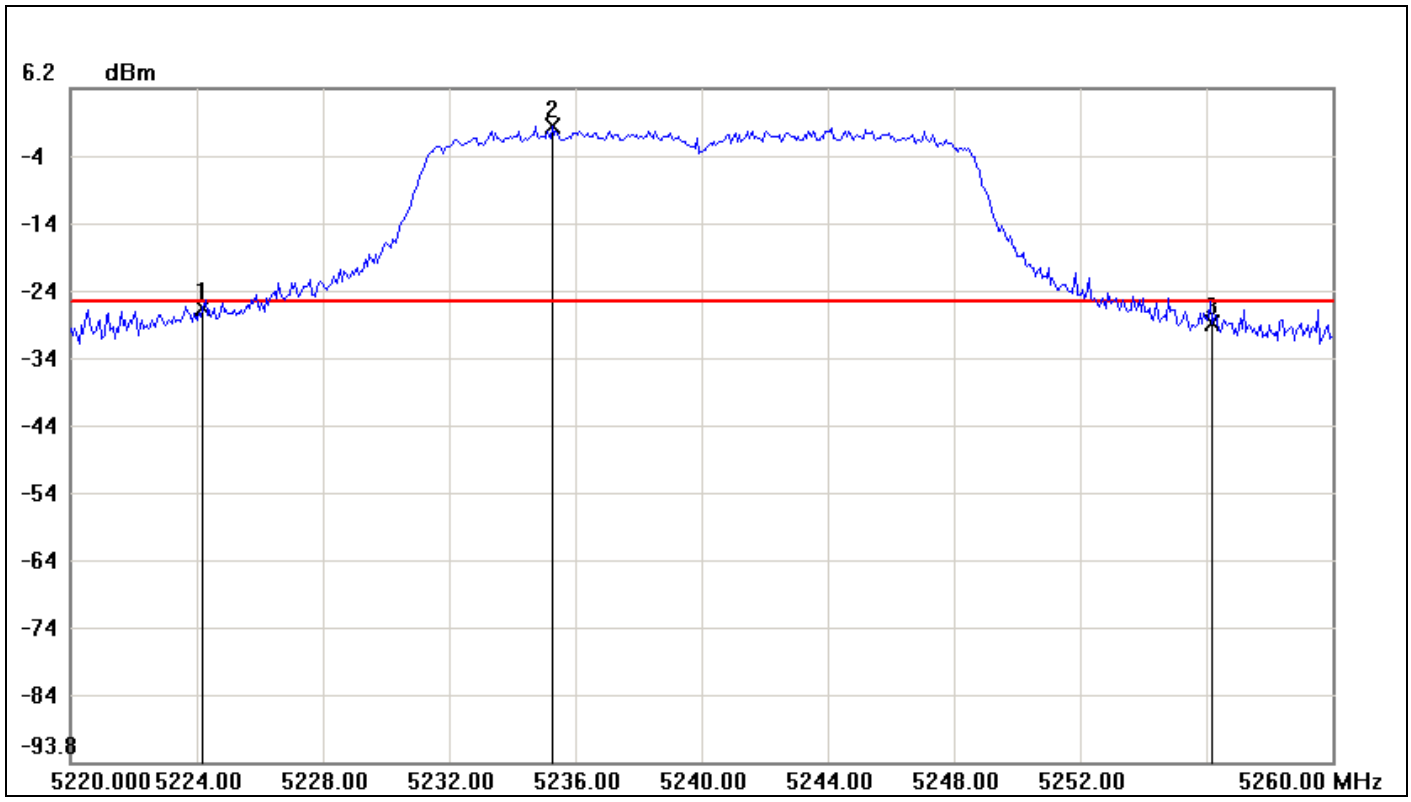
CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5203.6000	-27.32	-25.49	-1.83
2	5214.7333	0.51	-25.49	26.00
3	5234.7333	-25.90	-25.49	-0.41

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	31.1333	1.42

CH High

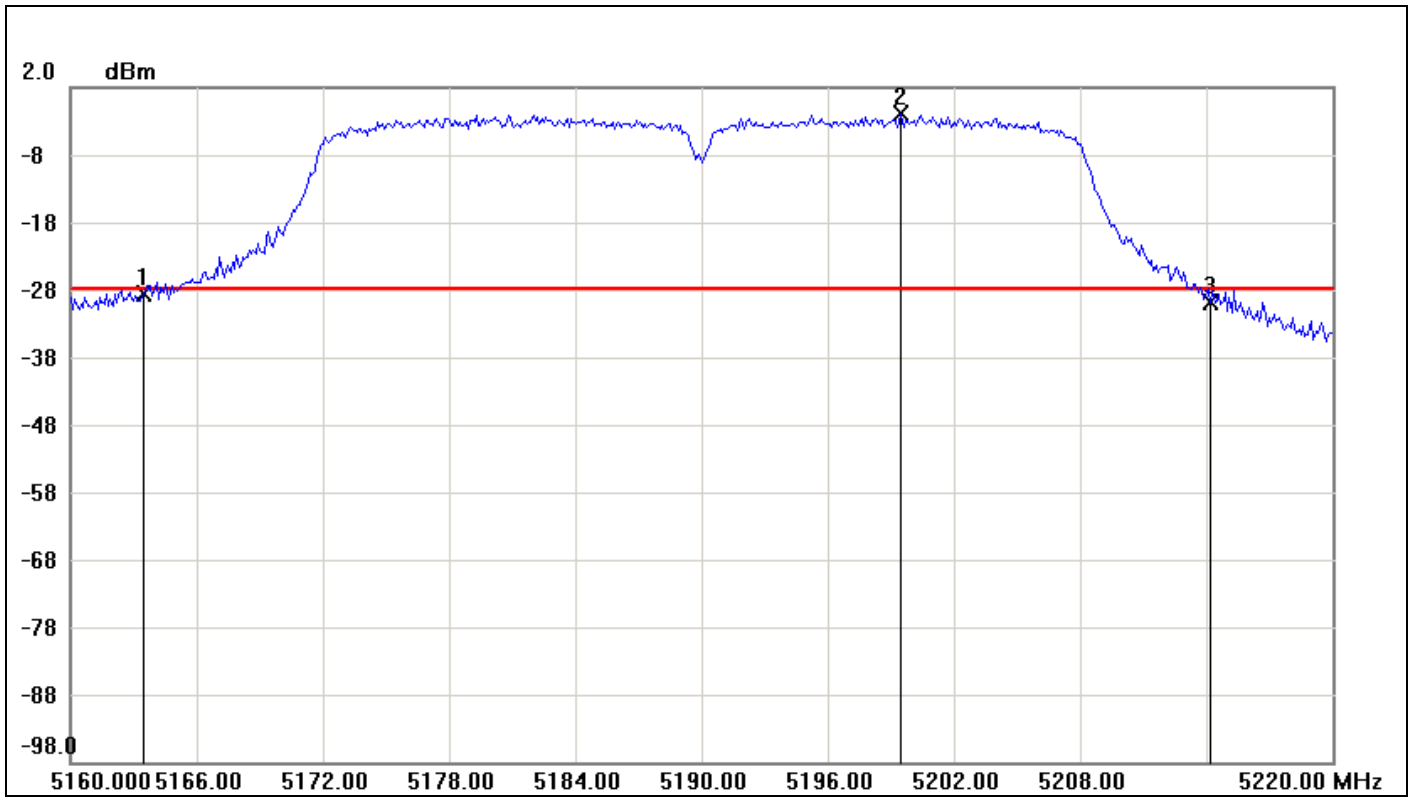


No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5224.2000	-26.50	-25.44	-1.06
2	5235.2667	0.56	-25.44	26.00
3	5256.2000	-28.66	-25.44	-3.22

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	32	-2.16

IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

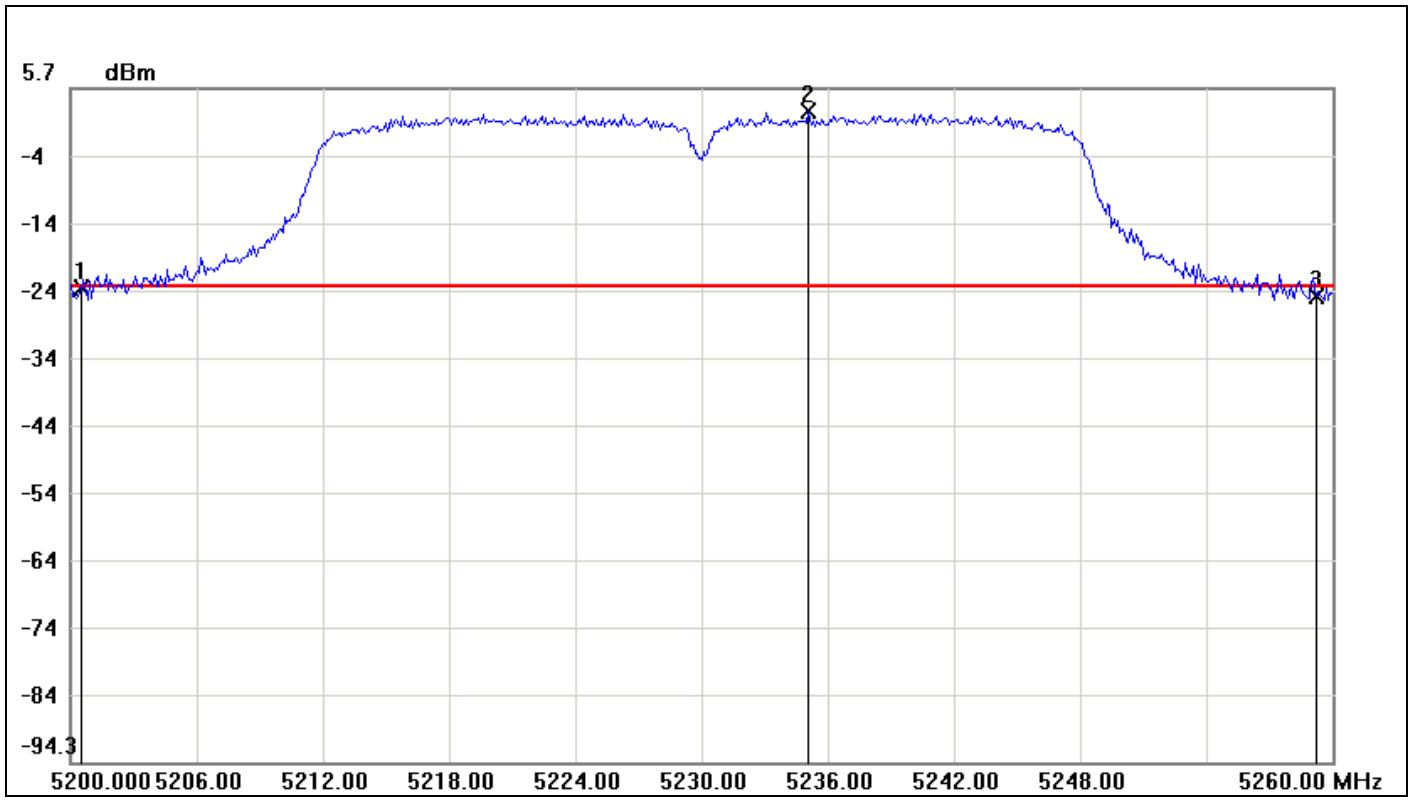
CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5163.5000	-28.56	-27.86	-0.70
2	5199.5000	-1.86	-27.86	26.00
3	5214.2000	-29.89	-27.86	-2.03

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	50.7	-1.33

CH High

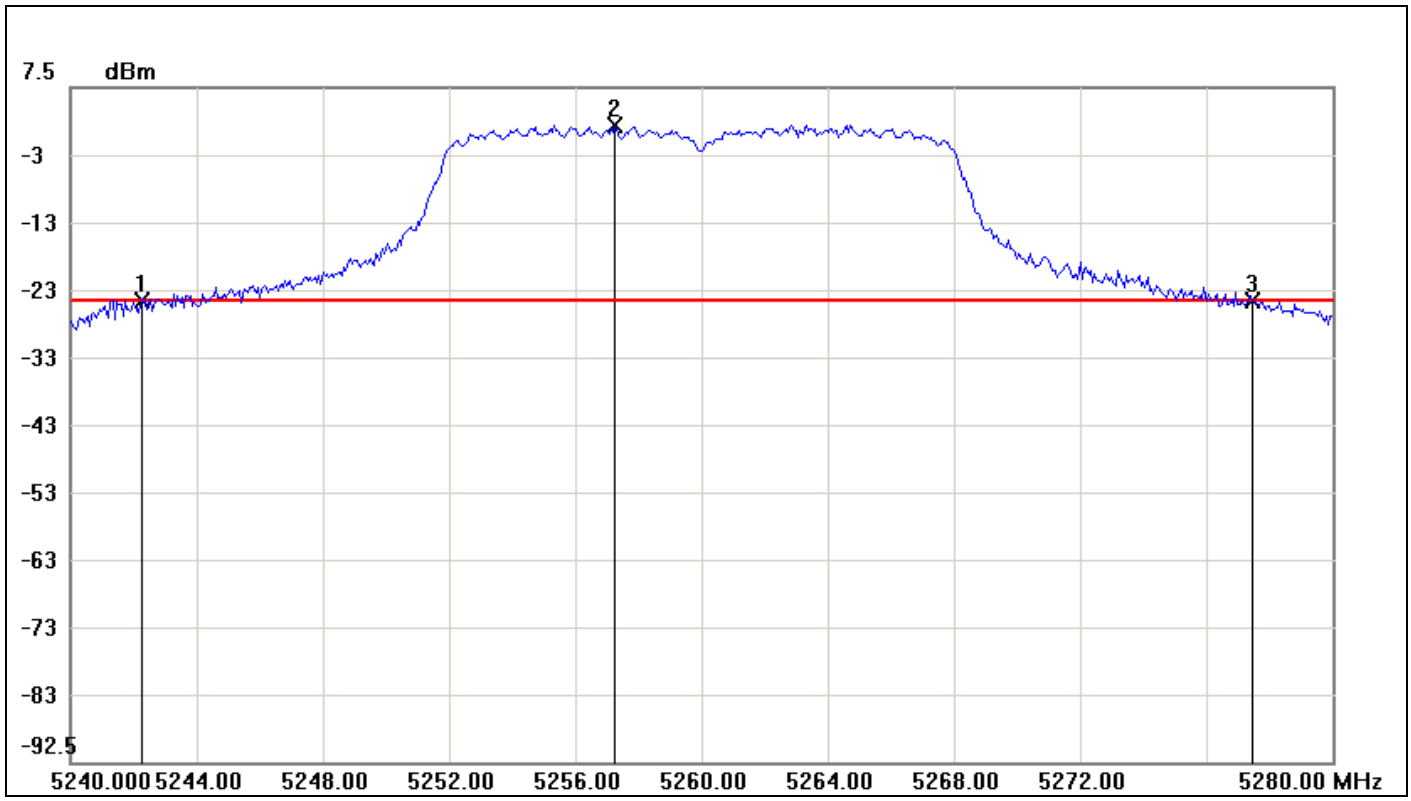


No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5200.5000	-24.03	-23.77	-0.26
2	5235.1000	2.23	-23.77	26.00
3	5259.2000	-25.26	-23.77	-1.49

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	58.7	-1.23

IEEE 802.11a mode / 5260 ~ 5320MHz

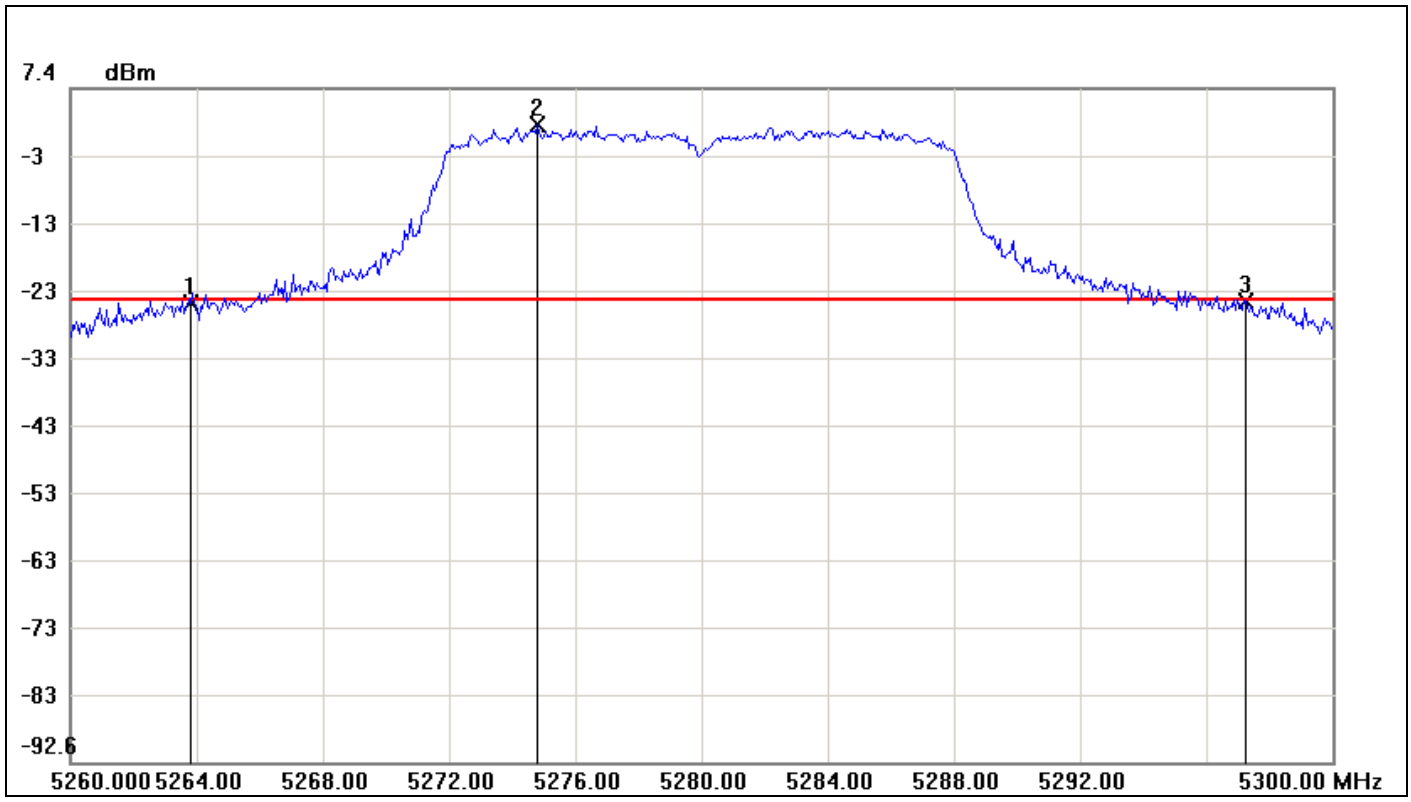
CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5242.2667	-24.06	-24.03	-0.03
2	5257.2667	1.97	-24.03	26.00
3	5277.4667	-24.17	-24.03	-0.14

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	35.2	-0.11

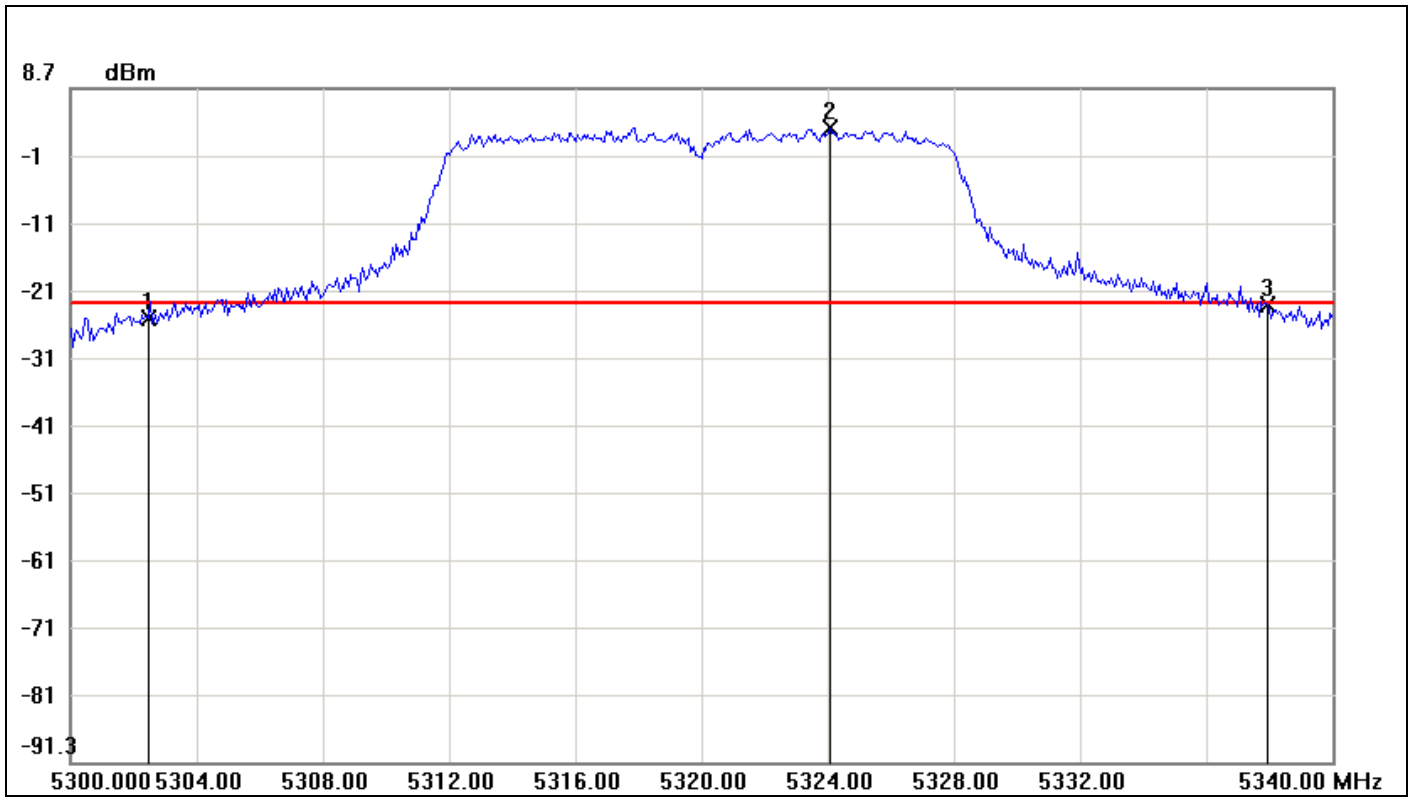
CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5263.8000	-24.49	-23.98	-0.51
2	5274.8000	2.02	-23.98	26.00
3	5297.2667	-24.24	-23.98	-0.26

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	33.4667	0.25

CH High

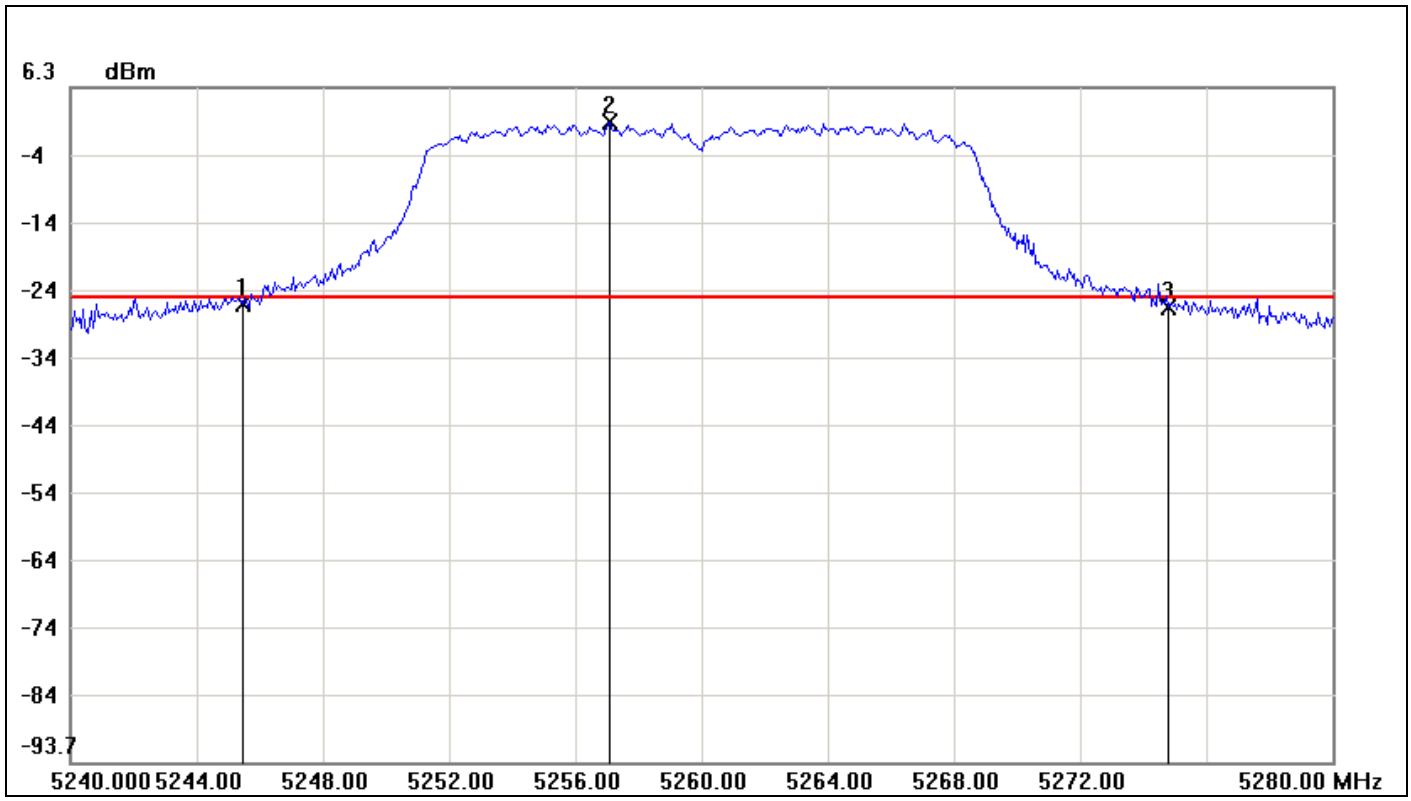


No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5302.4667	-25.35	-23.23	-2.12
2	5324.0667	2.77	-23.23	26.00
3	5337.9333	-23.58	-23.23	-0.35

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	35.4666	1.77

IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

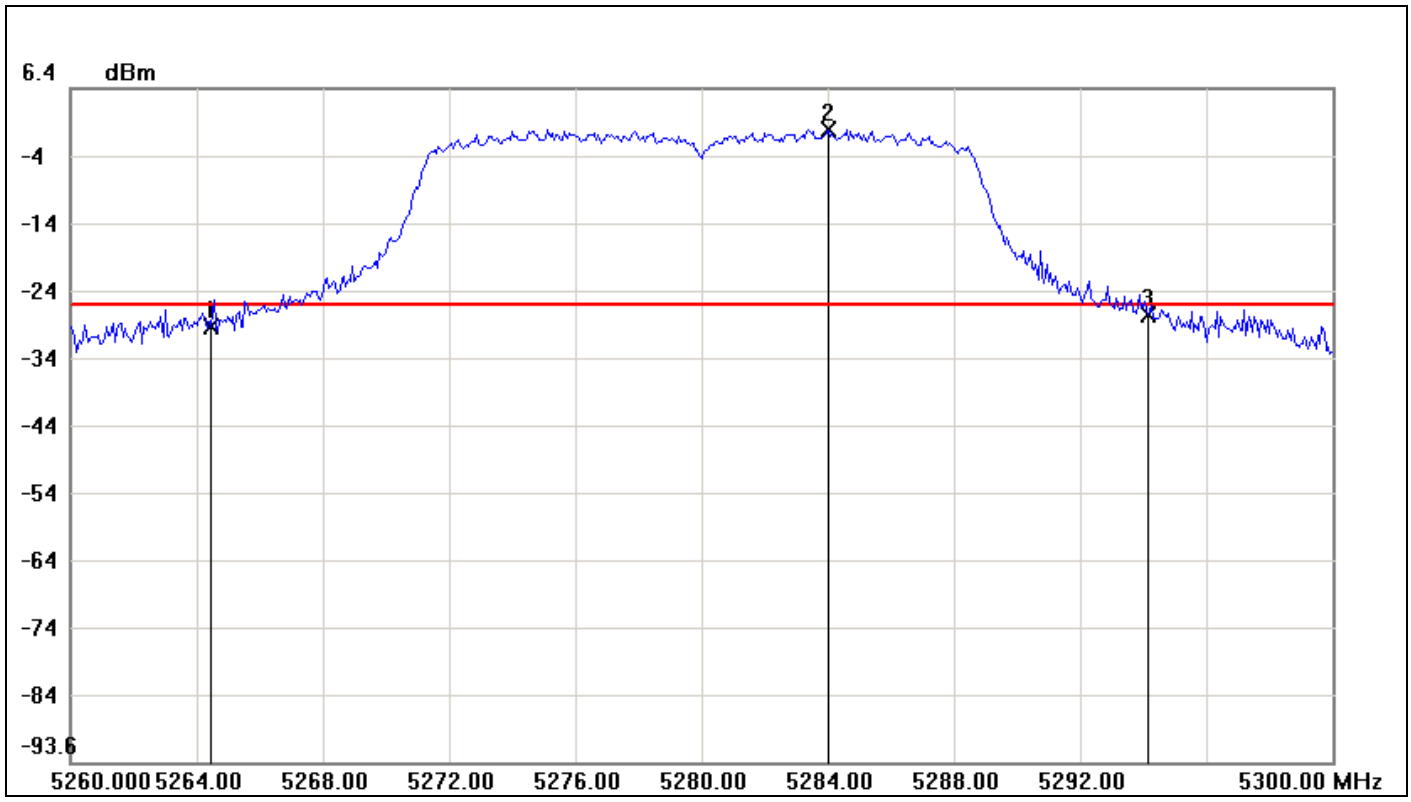
CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5245.4667	-25.85	-24.74	-1.11
2	5257.0667	1.26	-24.74	26.00
3	5274.8000	-26.26	-24.74	-1.52

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	29.3333	-0.41

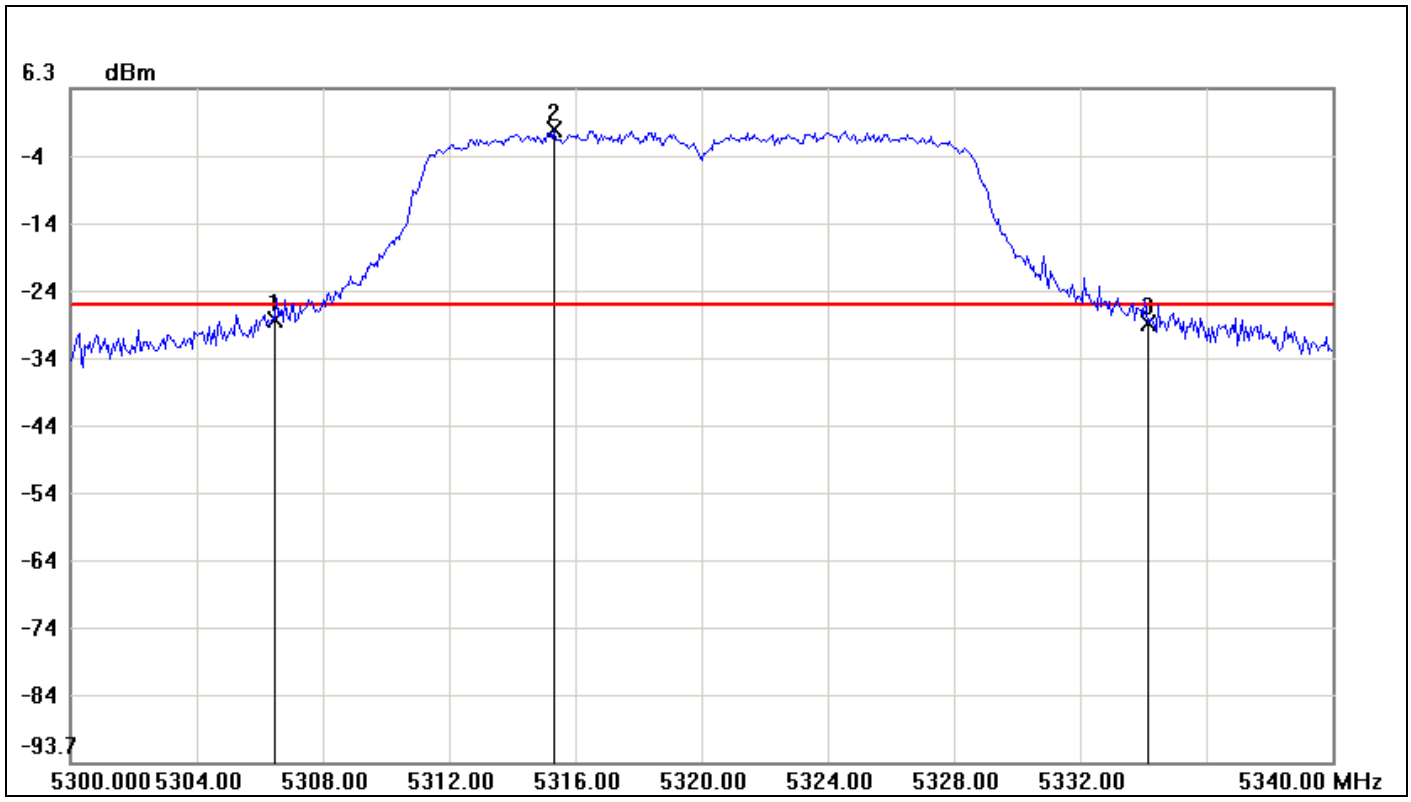
CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5264.4667	-28.93	-25.62	-3.31
2	5284.0000	0.38	-25.62	26.00
3	5294.1333	-27.32	-25.62	-1.70

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	29.6666	1.61

CH High

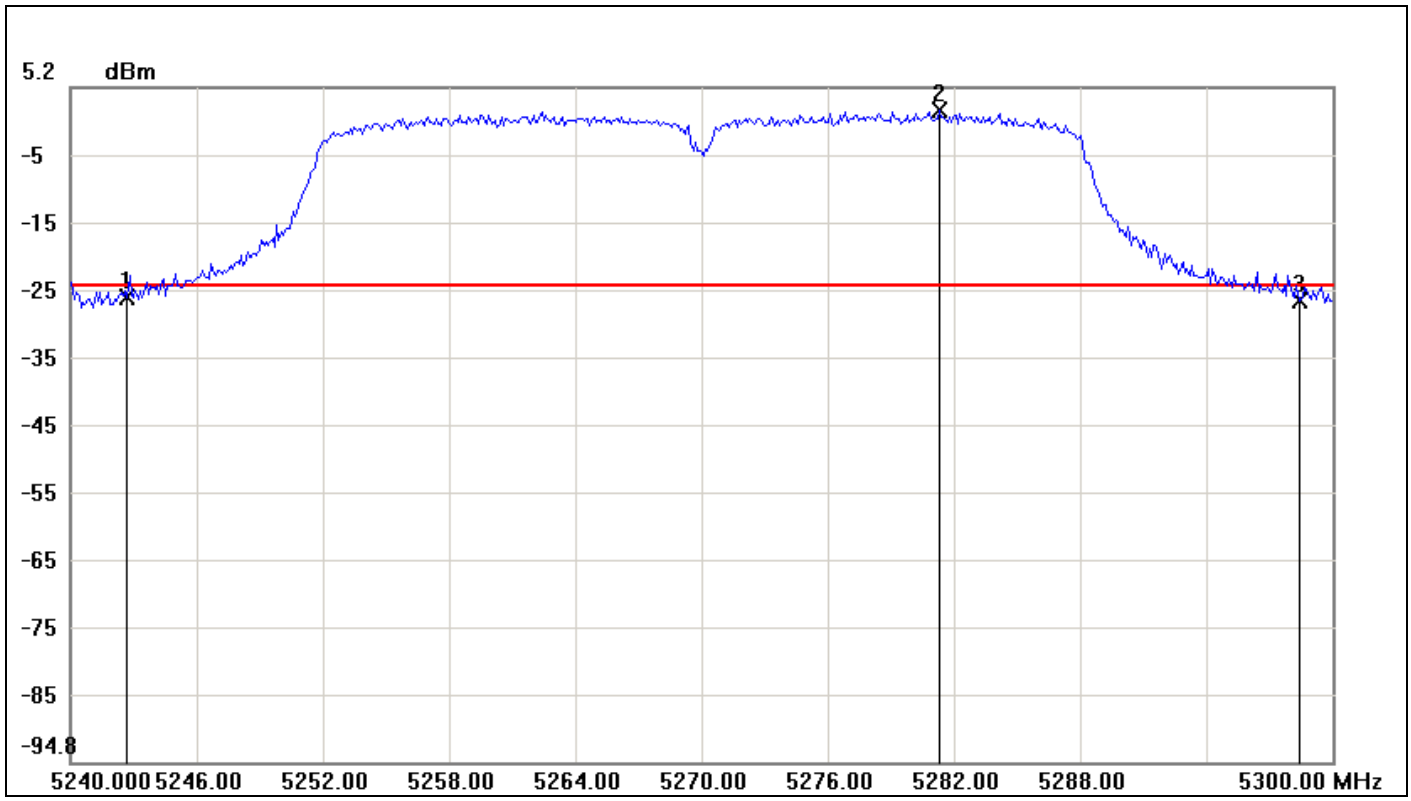


No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5306.4667	-28.08	-25.67	-2.41
2	5315.3333	0.33	-25.67	26.00
3	5334.1333	-28.51	-25.67	-2.84

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	27.6666	-0.43

IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

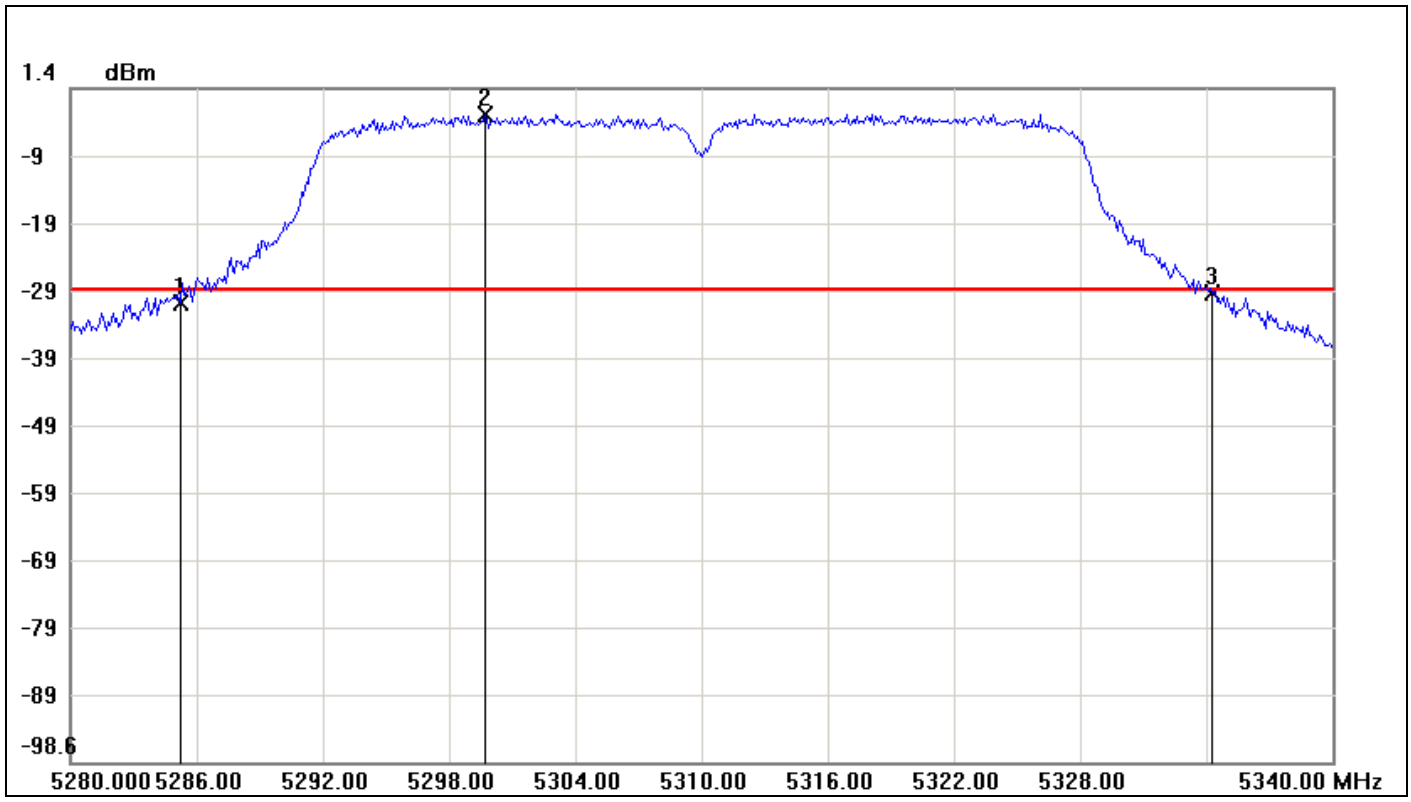
CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5242.7000	-25.80	-24.18	-1.62
2	5281.3000	1.82	-24.18	26.00
3	5298.4000	-26.51	-24.18	-2.33

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	55.7	-0.71

CH High

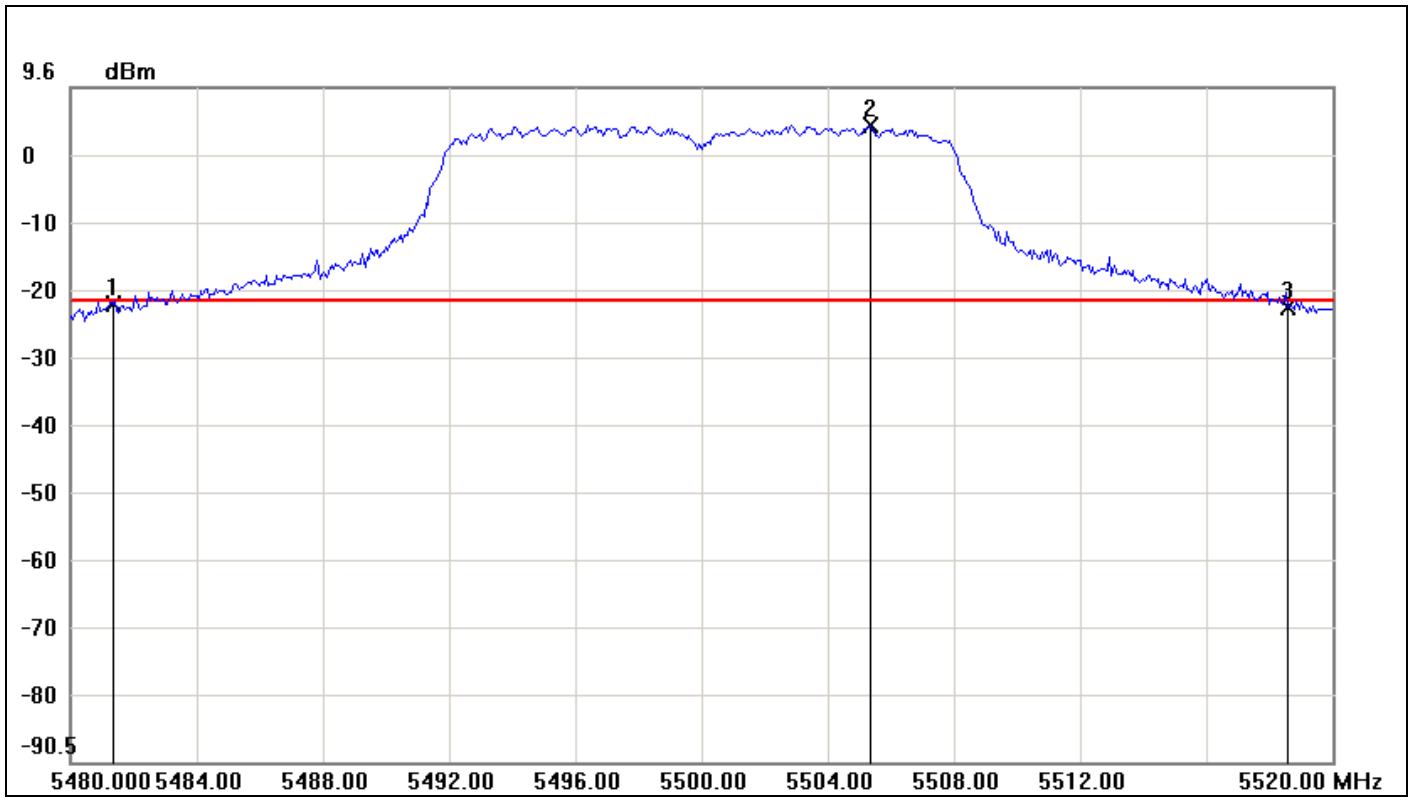


No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5285.2000	-30.44	-28.43	-2.01
2	5299.7000	-2.43	-28.43	26.00
3	5334.3000	-29.03	-28.43	-0.60

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	49.1	1.41

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

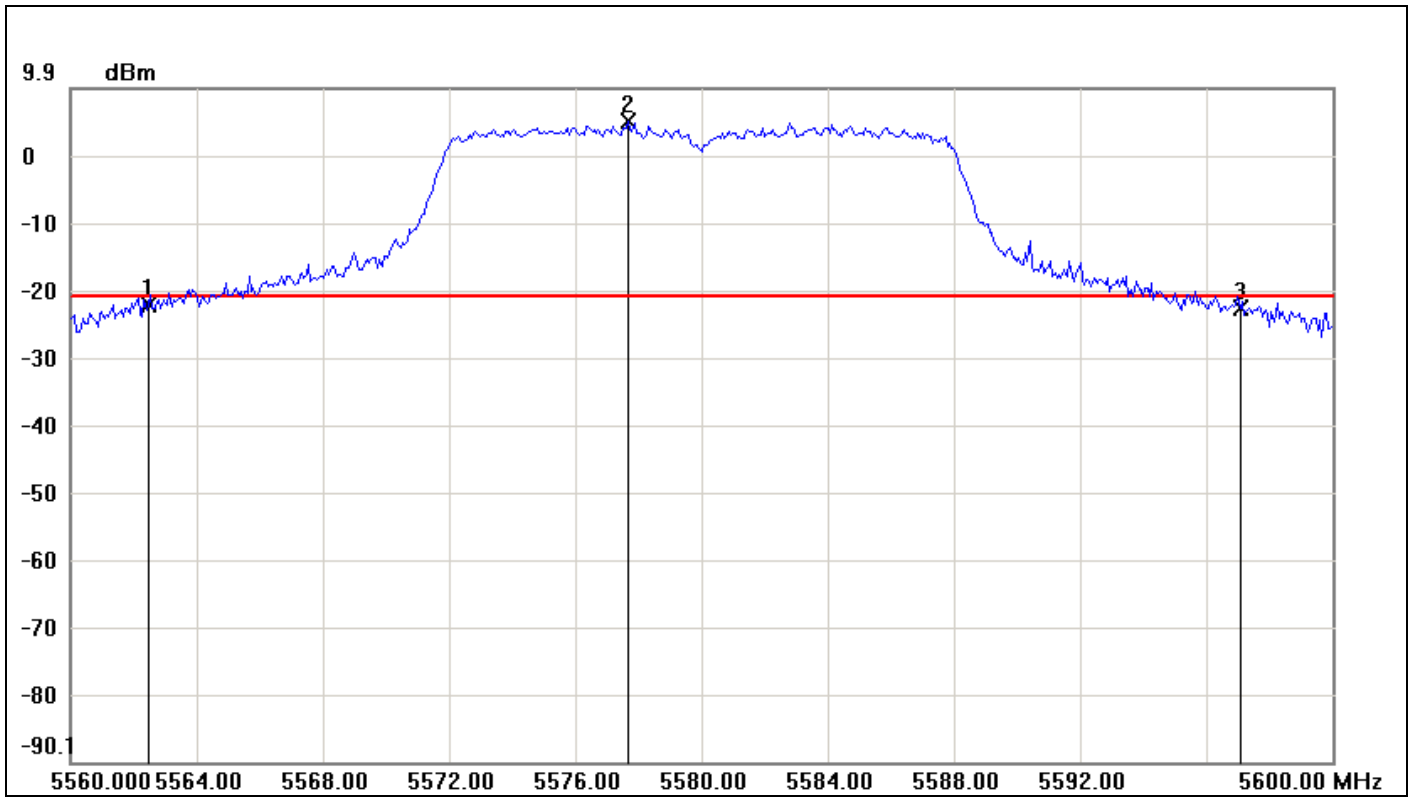
CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5481.3333	-22.46	-22.07	-0.39
2	5505.3333	3.93	-22.07	26.00
3	5518.6000	-23.01	-22.07	-0.94

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	37.2667	-0.55

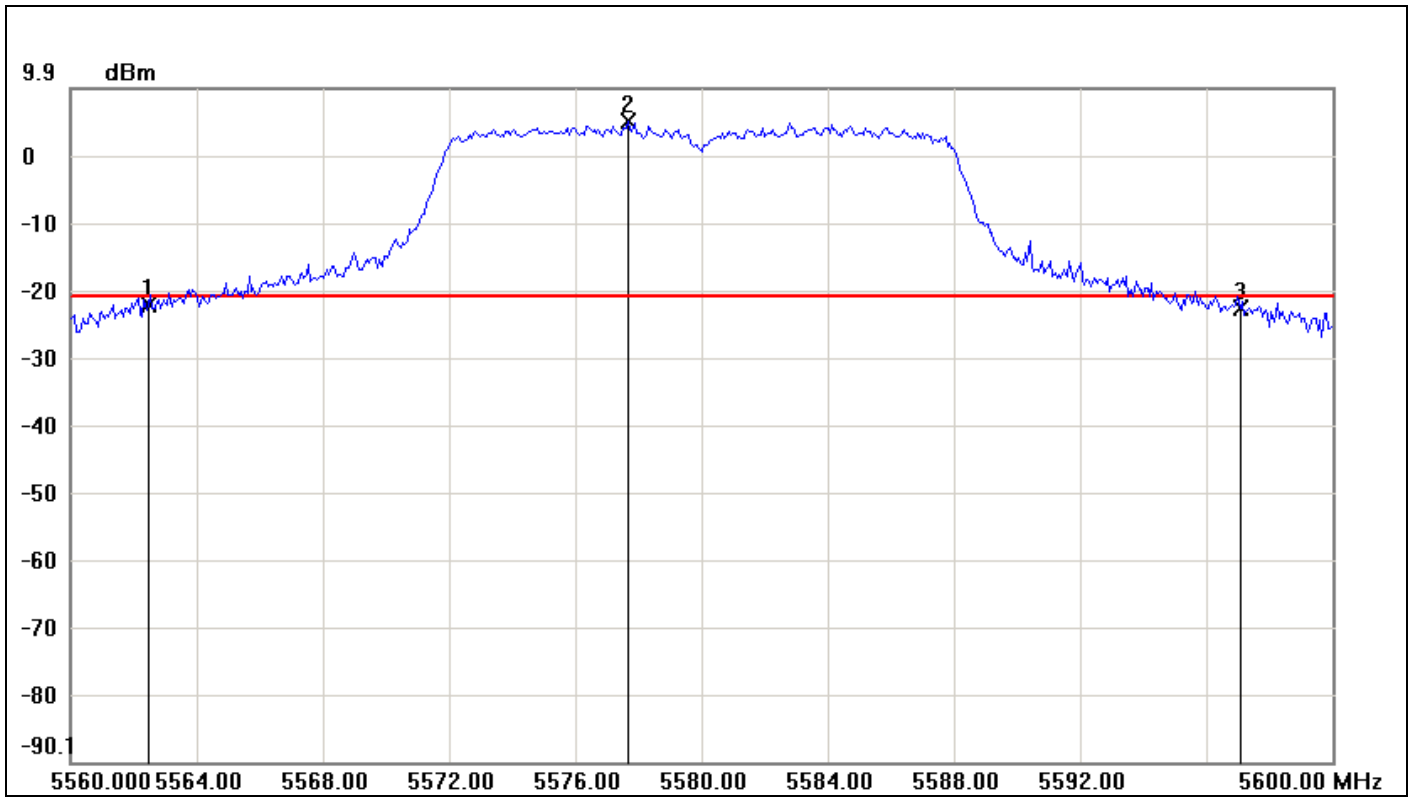
CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5562.4667	-22.28	-21.04	-1.24
2	5577.6667	4.96	-21.04	26.00
3	5597.0667	-22.67	-21.04	-1.63

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	34.6	-0.39

CH High

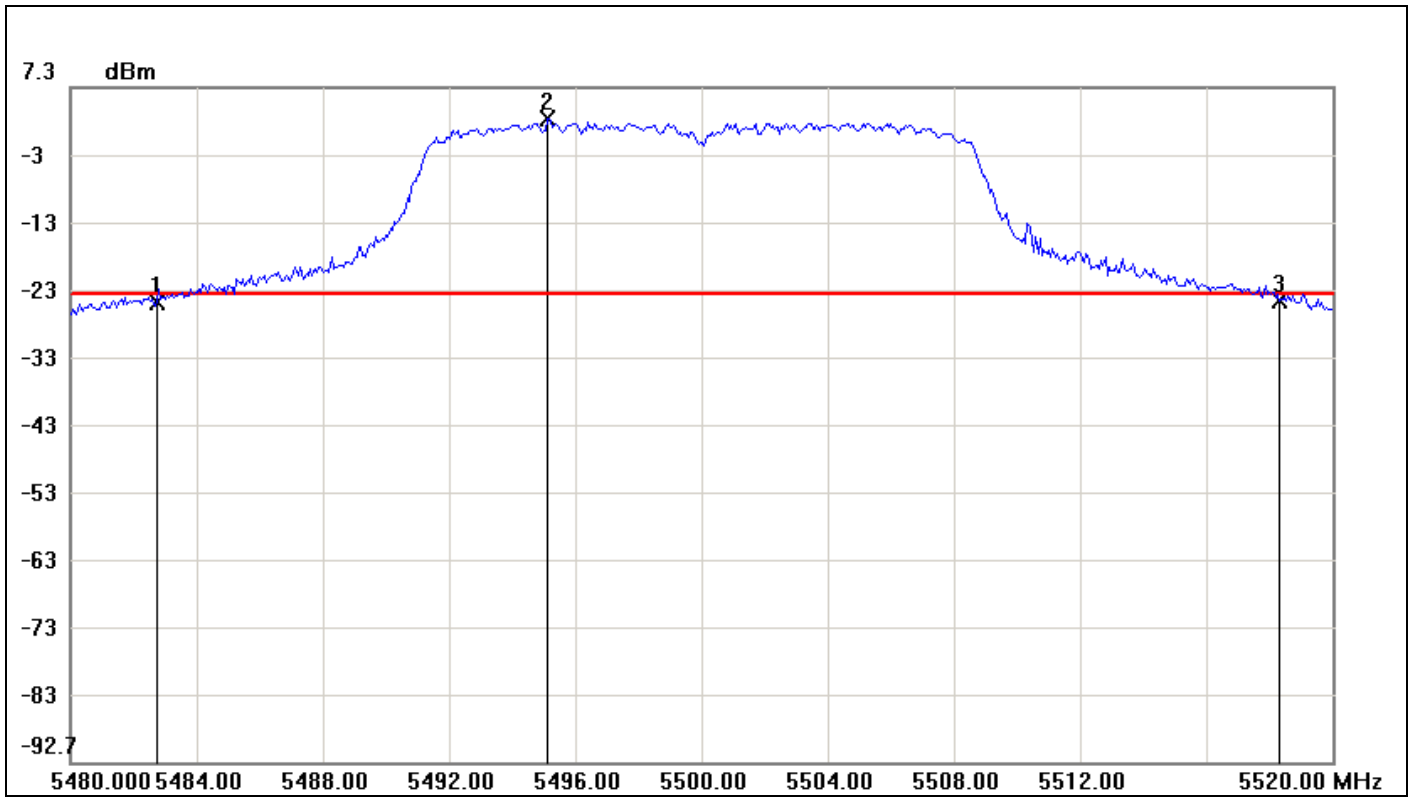


No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5562.4667	-22.28	-21.04	-1.24
2	5577.6667	4.96	-21.04	26.00
3	5597.0667	-22.67	-21.04	-1.63

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	34.6	-0.39

IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

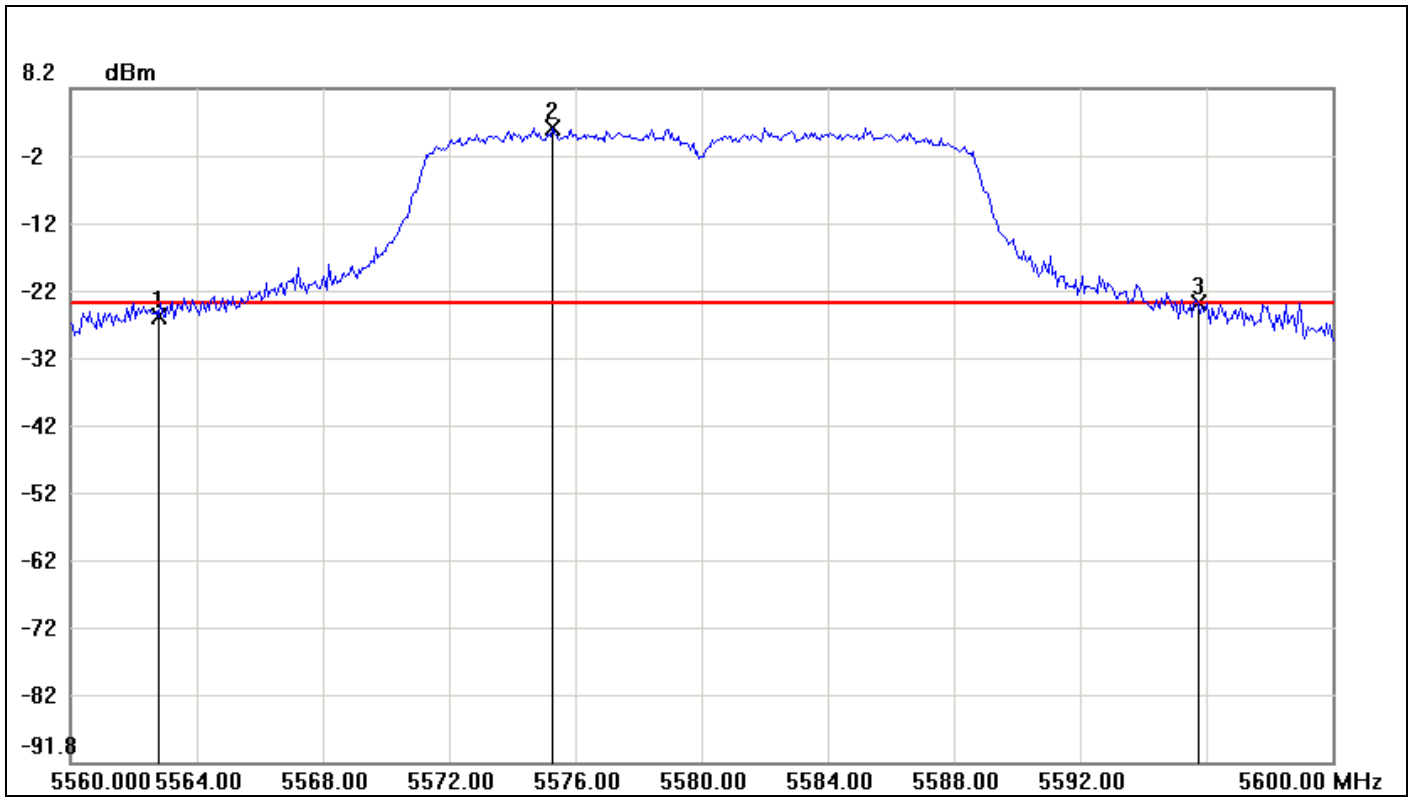
CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5482.7333	-24.48	-23.33	-1.15
2	5495.1333	2.67	-23.33	26.00
3	5518.3333	-24.23	-23.33	-0.90

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	35.6	0.25

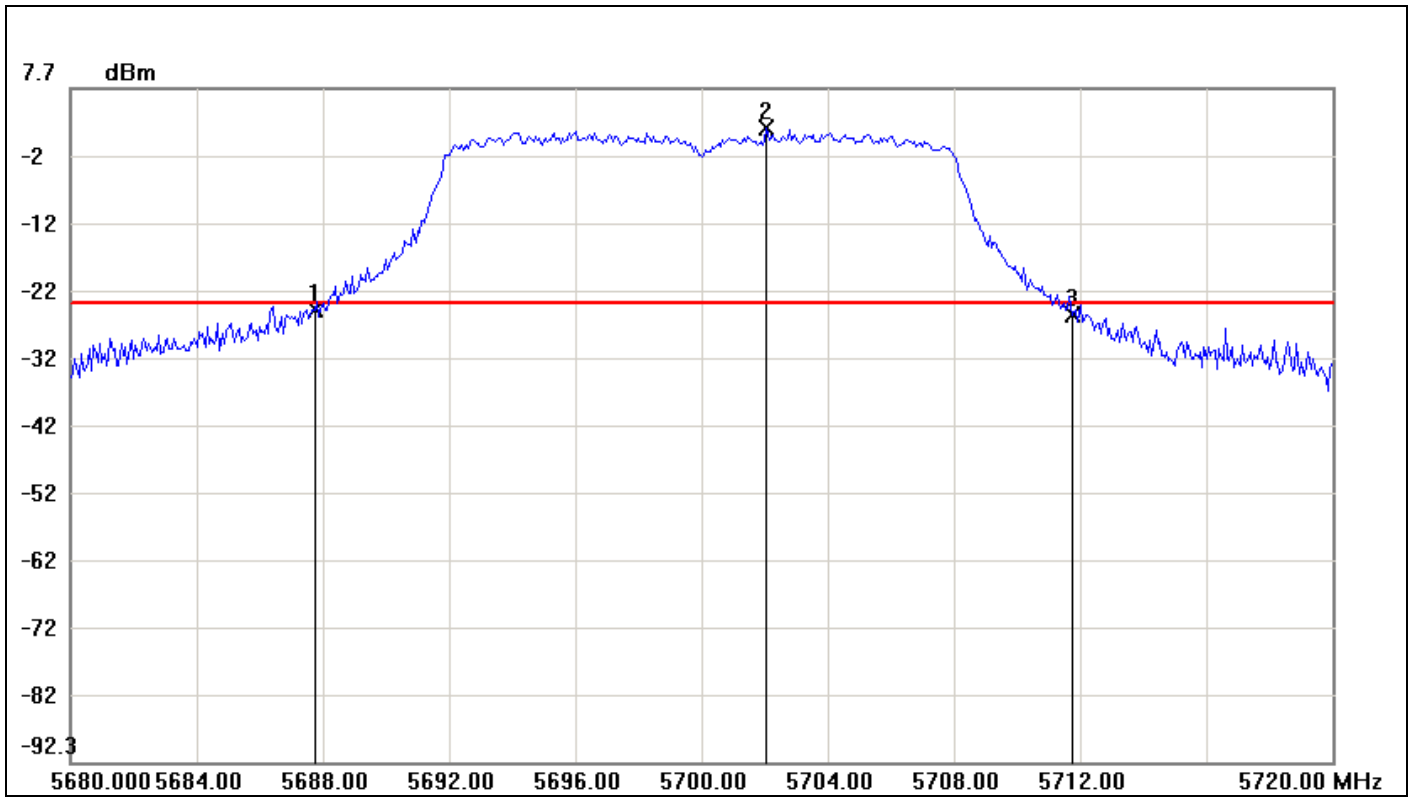
CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5562.8000	-25.74	-23.60	-2.14
2	5575.2667	2.40	-23.60	26.00
3	5595.7333	-23.78	-23.60	-0.18

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	32.9333	1.96

CH High

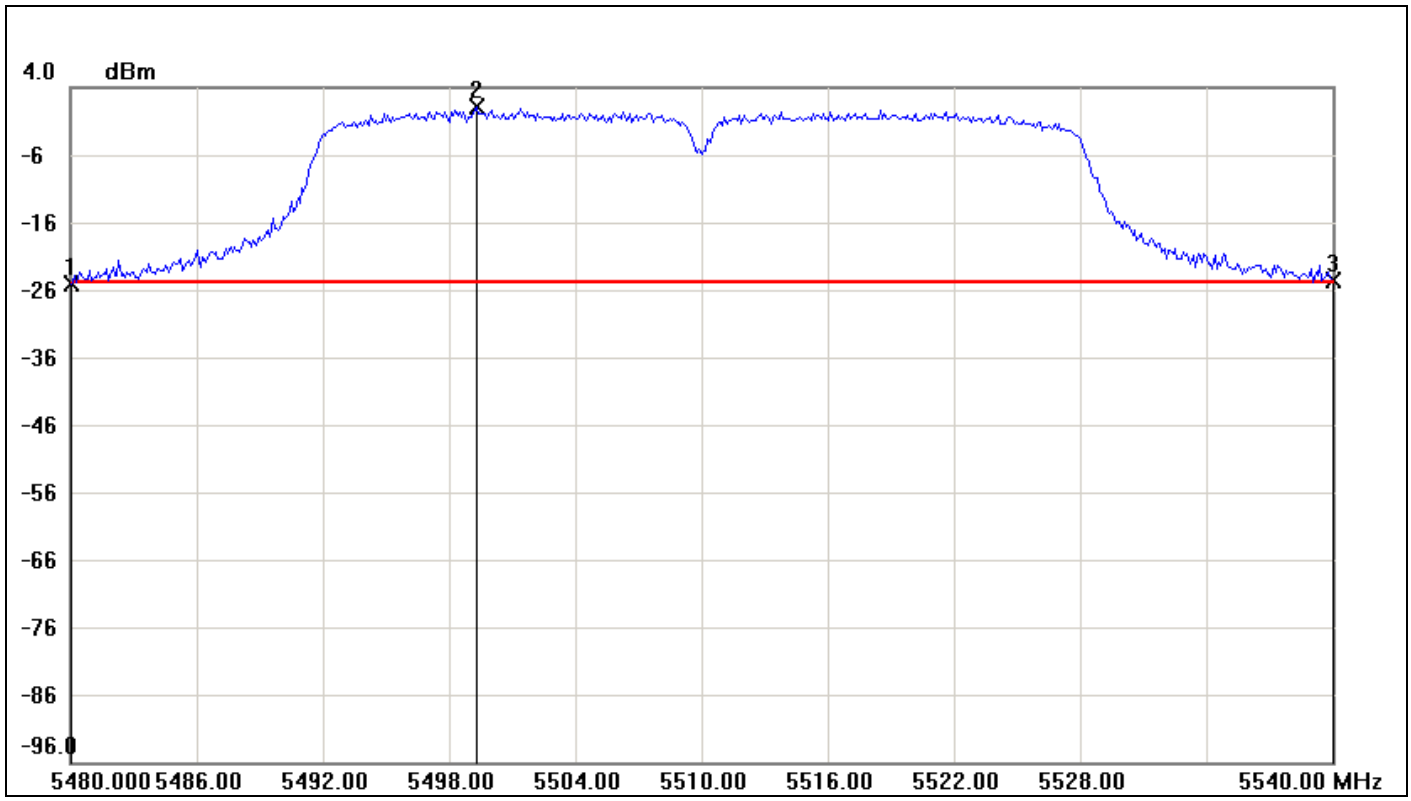


No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5687.7333	-25.13	-24.21	-0.92
2	5702.0667	1.79	-24.21	26.00
3	5711.7333	-26.04	-24.21	-1.83

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	24	-0.91

IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

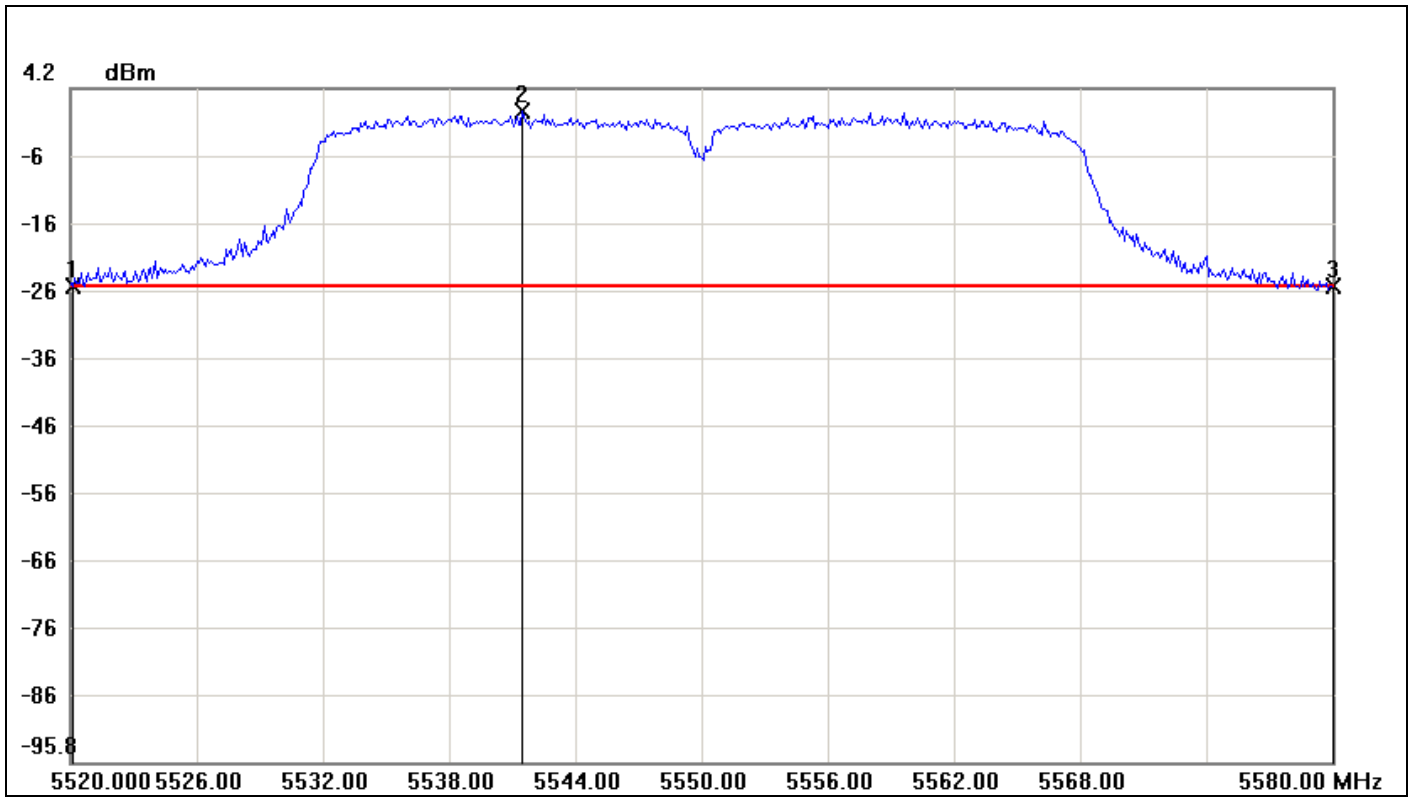
CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5480.0000	-25.27	-24.96	-0.31
2	5499.3000	1.04	-24.96	26.00
3	5540.0000	-24.65	-24.96	0.31

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	60	0.62

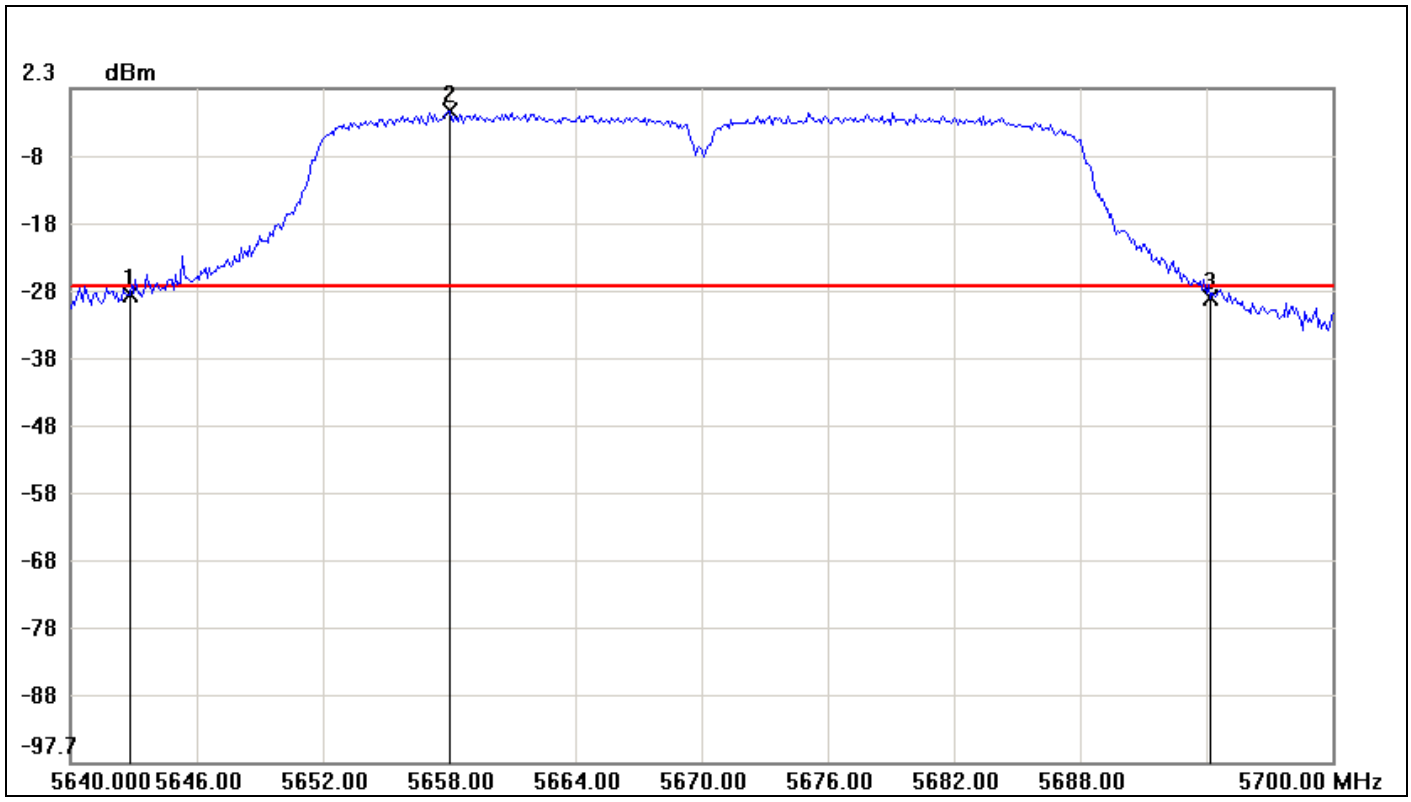
CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5520.1000	-25.20	-25.13	-0.07
2	5541.5000	0.87	-25.13	26.00
3	5580.0000	-25.25	-25.13	-0.12

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	59.9	-0.05

CH High



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5642.8000	-28.22	-27.14	-1.08
2	5658.0000	-1.14	-27.14	26.00
3	5694.2000	-28.77	-27.14	-1.63

No.		△Frequency(MHz)	△Level(dB)
1	mk3-mk1	51.4	-0.55

8.3 MAXIMUM CONDUCTED OUTPUT POWER

LIMIT

According to §15.407(a),

(1) For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26 dB emission bandwidth in MHz.

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

According to RSS-210 §A9.2,

(1) For the band 5150-5250 MHz, the maximum equivalent isotropically radiated power (e.i.r.p.) shall not exceed 200 mW or 10 + 10 Log_{10} B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz. The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

(2) For the band 5250-5350 MHz and 5470-5725 MHz, the maximum conducted output power shall not exceed 250 mW or 11 + 10 Log10 B, dBm, whichever power is less. The power spectral density shall not exceed 11 dBm in any 1.0 MHz band. The maximum e.i.r.p. shall not exceed 1.0 W or 17 + 10 Log10 B, dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

In addition, devices with maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.
The peak power shall not exceed the limit as follow:

Specified Limit of the Peak Power

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5180	38.4	15.84331	19.8433	17.00
Mid	5220	36.4	15.61101	19.6110	17.00
High	5240	36.1334	15.57909	19.5791	17.00

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5180	32.2	15.07856	19.0786	17.00
Mid	5220	31.1333	14.93225	18.9323	17.00
High	5240	32	15.05150	19.0515	17.00

Test mode: IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5190	50.7	17.05008	21.0501	17.00
High	5230	58.7	17.68638	21.6864	17.00

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5260	35.2	15.46543	26.4654	24.00
Mid	5280	33.4667	15.24613	26.2461	24.00
High	5320	35.4666	15.49820	26.4982	24.00

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5260	29.3333	14.67361	25.6736	24.00
Mid	5280	29.6666	14.72268	25.7227	24.00
High	5320	27.6666	14.41956	25.4196	24.00

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5270	55.7	17.45855	28.4586	24.00
High	5310	49.1	16.91081	27.9108	24.00

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5500	37.2667	15.71321	26.7132	24.00
Mid	5600	34.6	15.39076	26.3908	24.00
High	5700	34.6	15.39076	26.3908	24.00

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

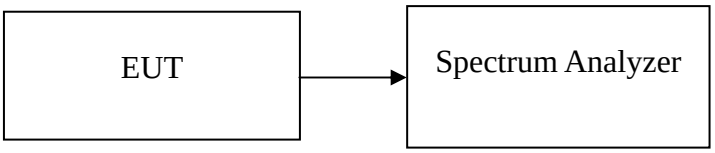
Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5500	35.6	15.51450	26.5145	24.00
Mid	5600	32.9333	15.17635	26.1764	24.00
High	5700	24	13.80211	24.8021	24.00

Test mode: IEEE 802.11n HT 40 MHz mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	11 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5510	60	17.78151	28.7815	24.00
Mid	5590	59.9	17.77427	28.7743	24.00
High	5670	51.4	17.10963	28.1096	24.00

Test Configuration

The EUT was connected to a spectrum analyzer through a 50Ω RF cable.



TEST PROCEDURE

Set span to encompass the entire emission bandwidth (EBW) of the signal.

Set RBW = 1 MHz / Set VBW = 3 MHz.

Use sample detector mode if bin width (i.e., span/number of points in spectrum display) < 0.5 RBW. Otherwise use peak detector mode. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to "free run".·Trace average 100 traces in power averaging mode. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	16.57	17.00
Mid	5220	15.82	17.00
High	5240	15.37	17.00

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	14.28	17.00
Mid	5220	14.21	17.00
High	5240	14.43	17.00

Test mode: IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5190	14.32	17.00
High	5230	14.34	17.00

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	15.14	24.00
Mid	5280	14.64	24.00
High	5320	14.76	24.00

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	14.22	24.00
Mid	5280	14.13	24.00
High	5320	14.41	24.00

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5270	14.19	24.00
High	5310	10.14	24.00

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	14.81	24.00
Mid	5600	14.87	24.00
High	5700	14.82	24.00

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	14.39	24.00
Mid	5600	14.24	24.00
High	5700	14.46	24.00

Test mode: IEEE 802.11n HT 40 MHz mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5510	14.38	24.00
Mid	5590	14.21	24.00
High	5670	14.24	24.00

8.4 BAND EDGES MEASUREMENT

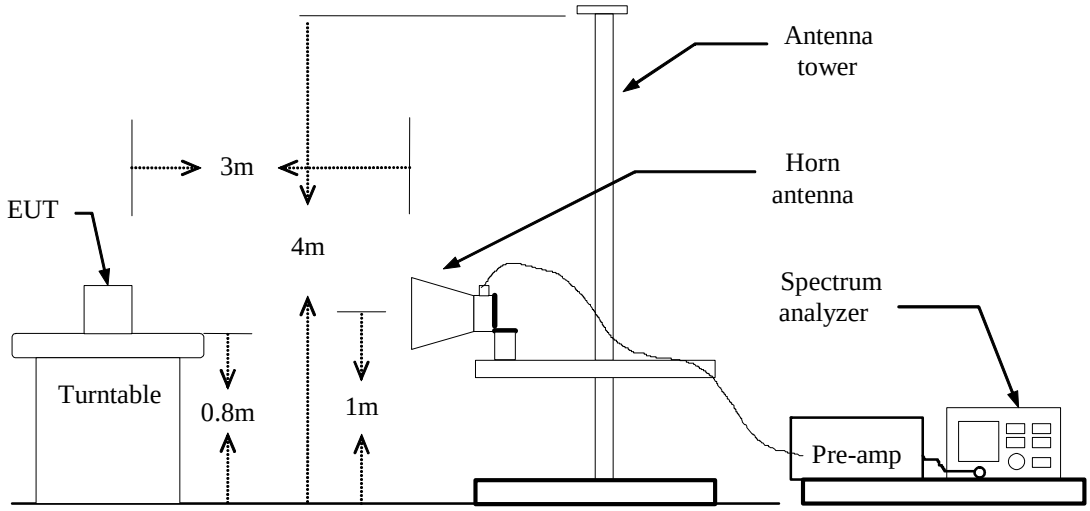
LIMIT

According to §15.407(b) & RSS-210 §A8.5,

(1) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

(2) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

Test Configuration



TEST PROCEDURE

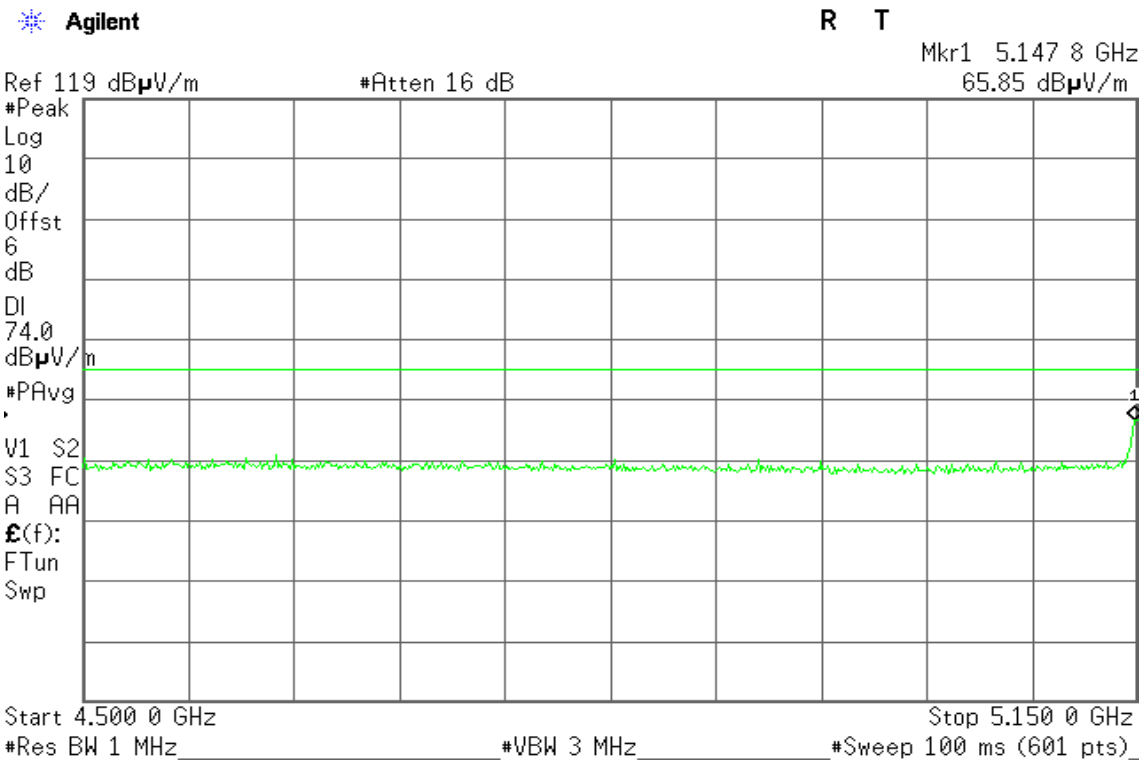
1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the 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=300Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

TEST RESULTS

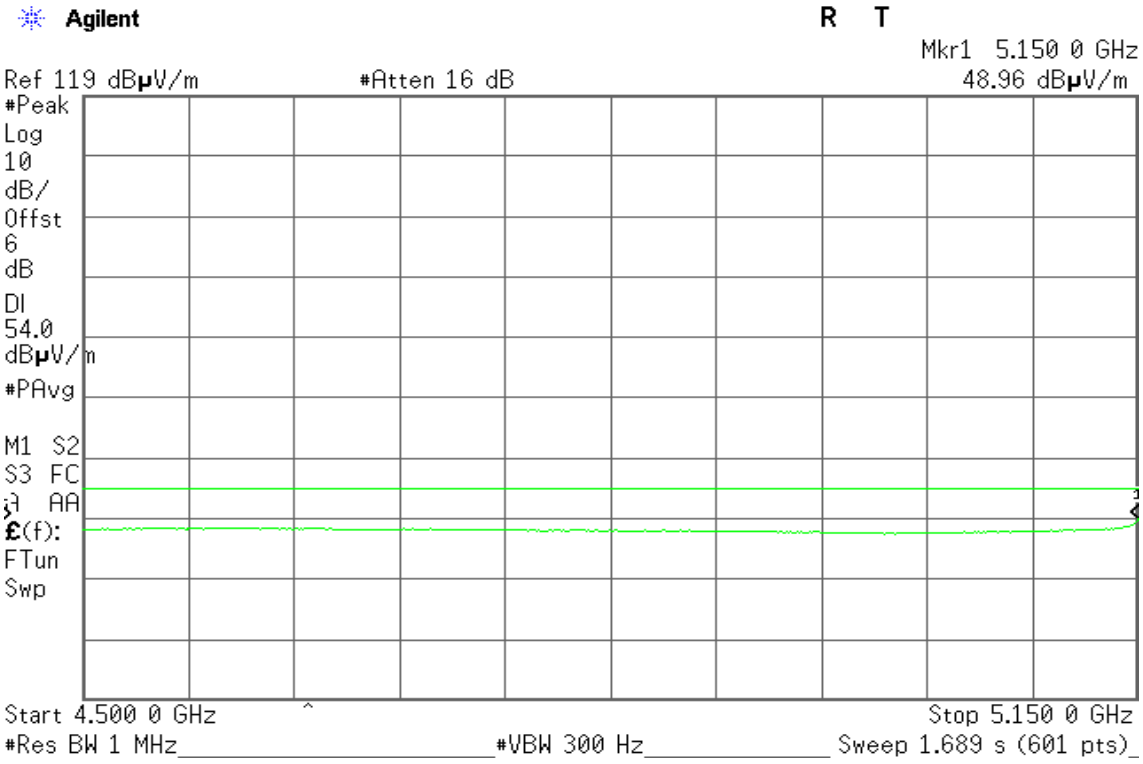
Refer to attach spectrum analyzer data chart.

Band Edges (IEEE 802.11a mode / 5180 MHz)

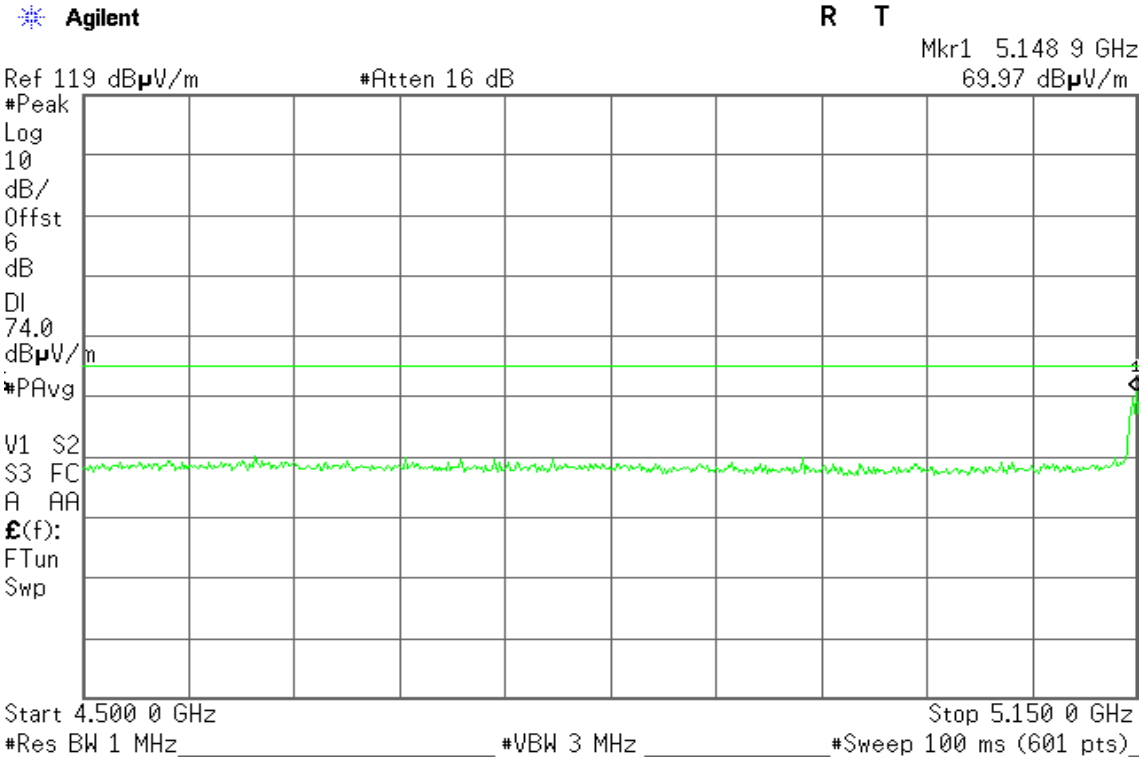
Detector mode: Peak **Polarity: Vertical**



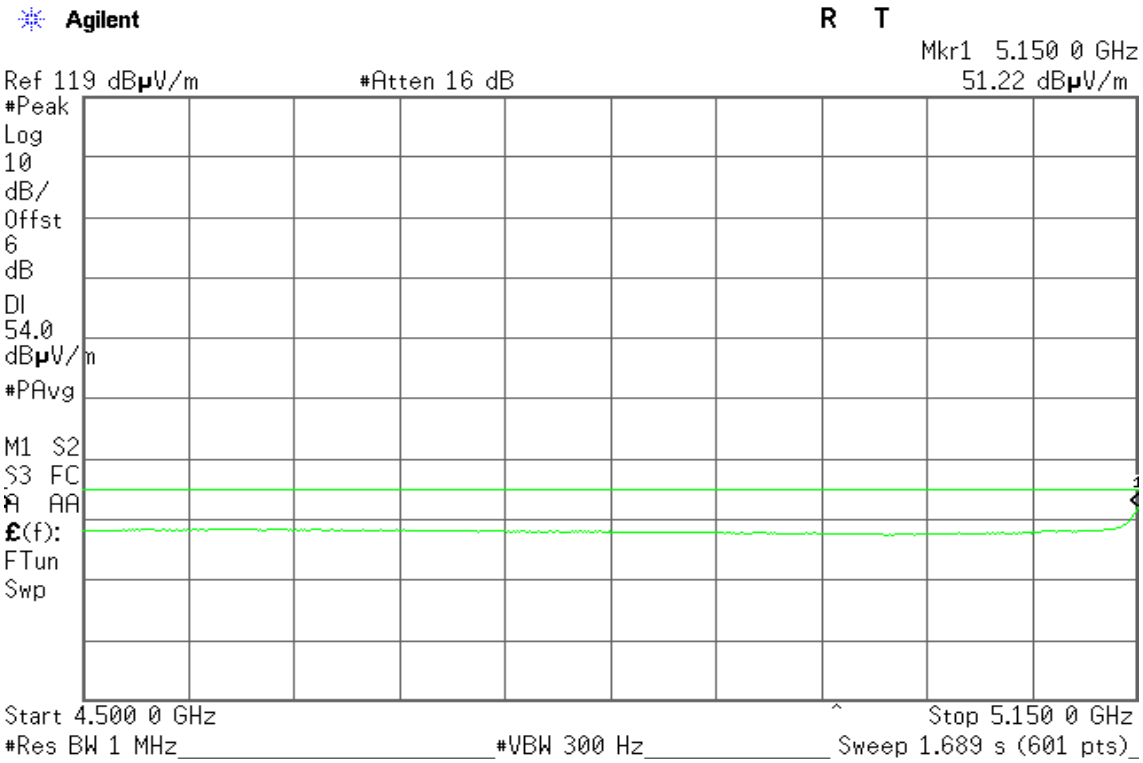
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

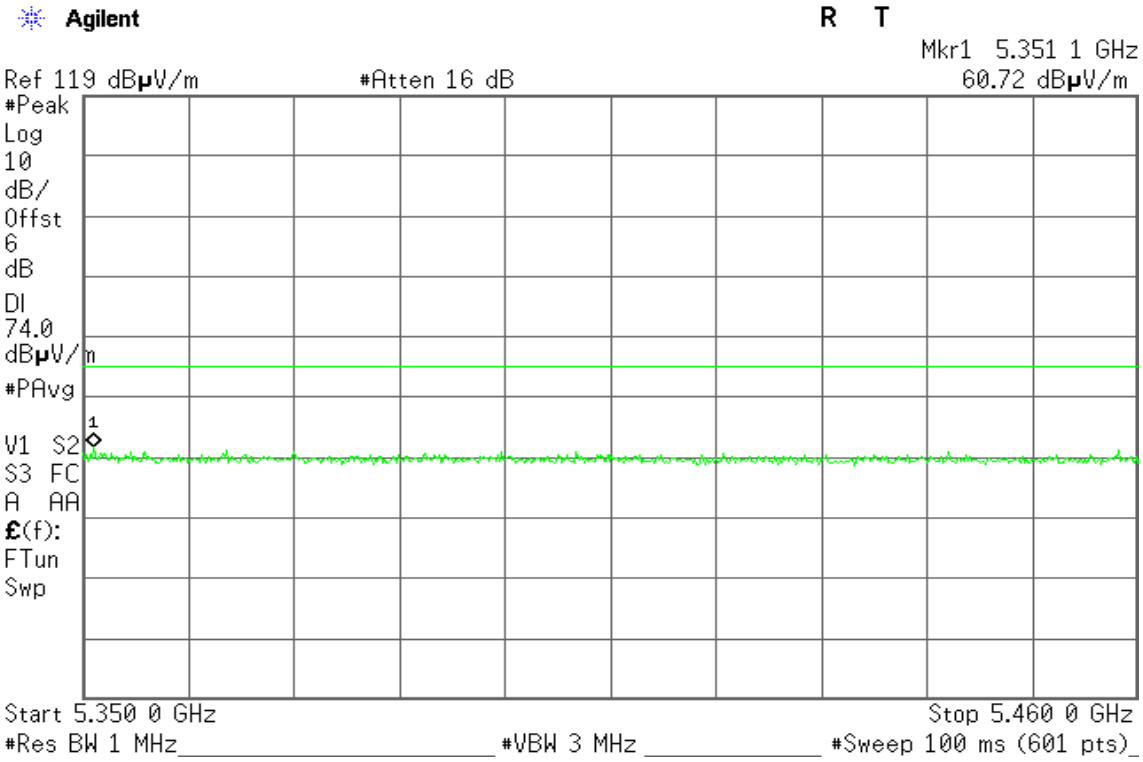


Detector mode: Average **Polarity: Horizontal**

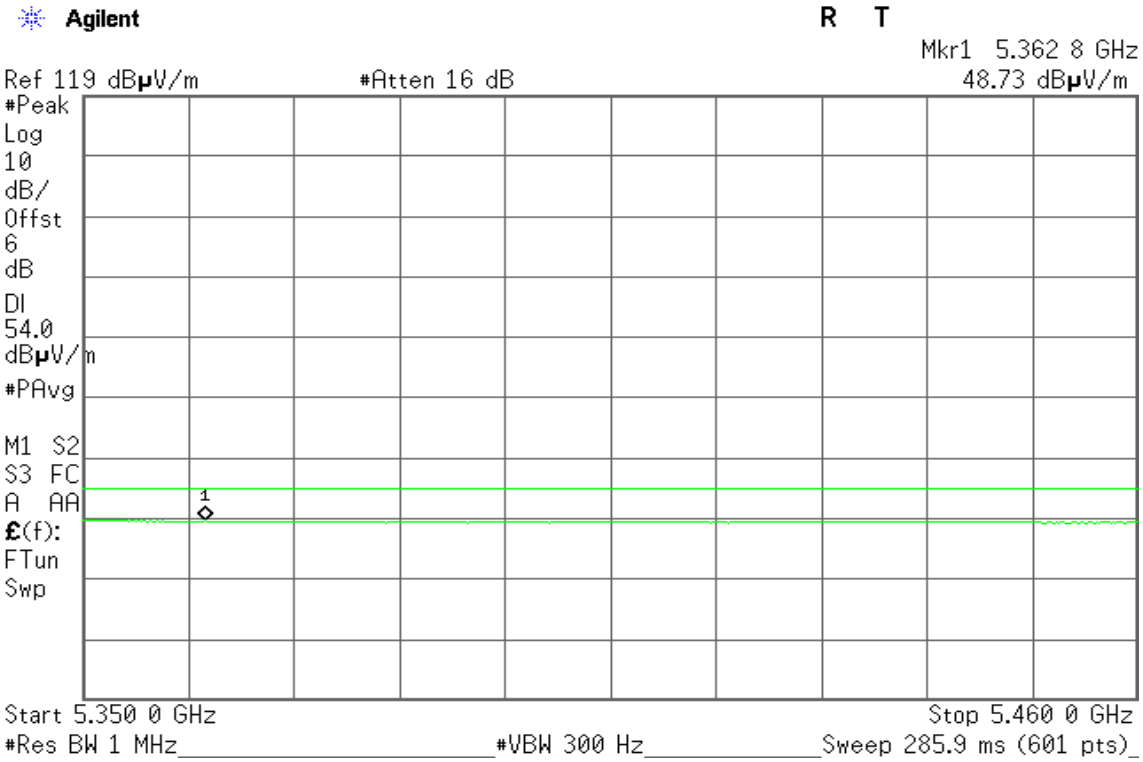


Band Edges (IEEE 802.11a mode / 5320 MHz)

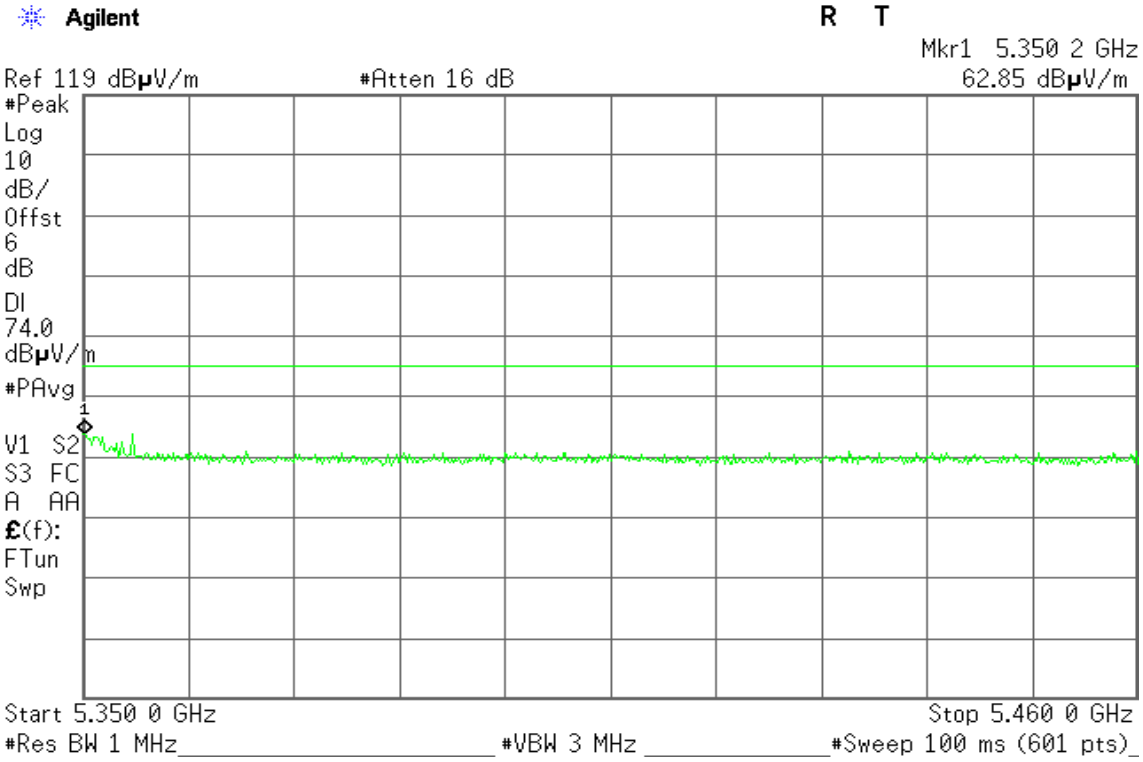
Detector mode: Peak **Polarity: Vertical**



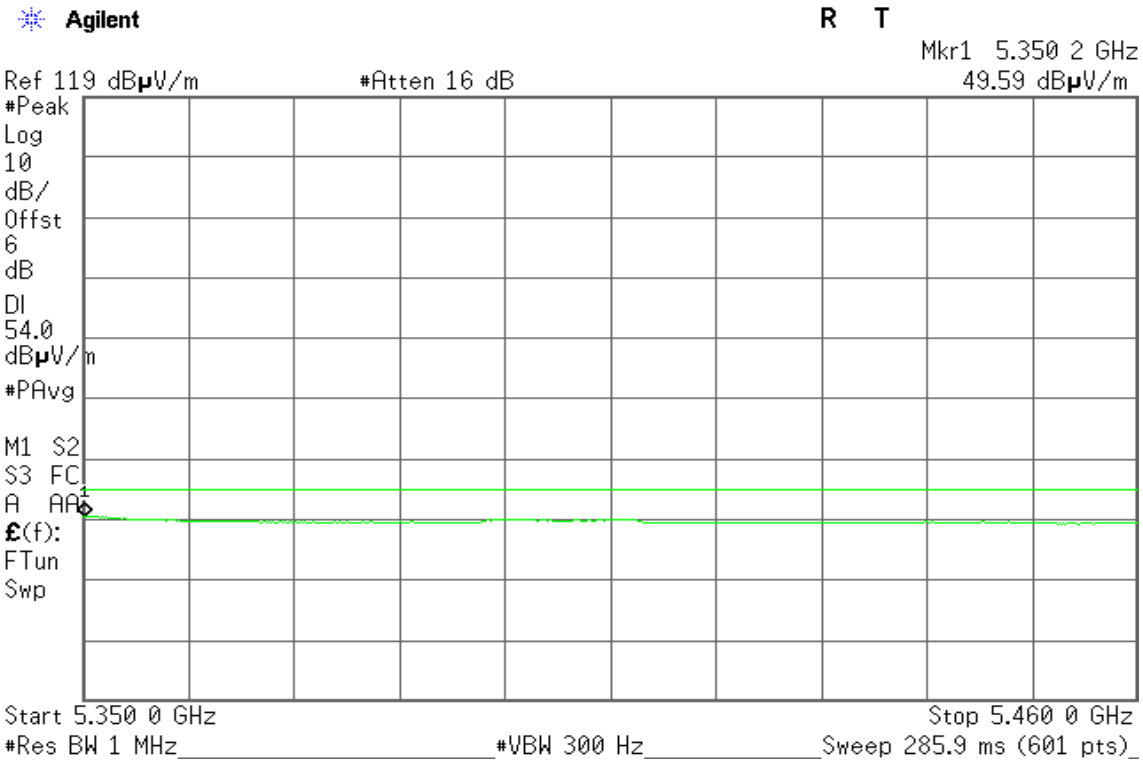
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

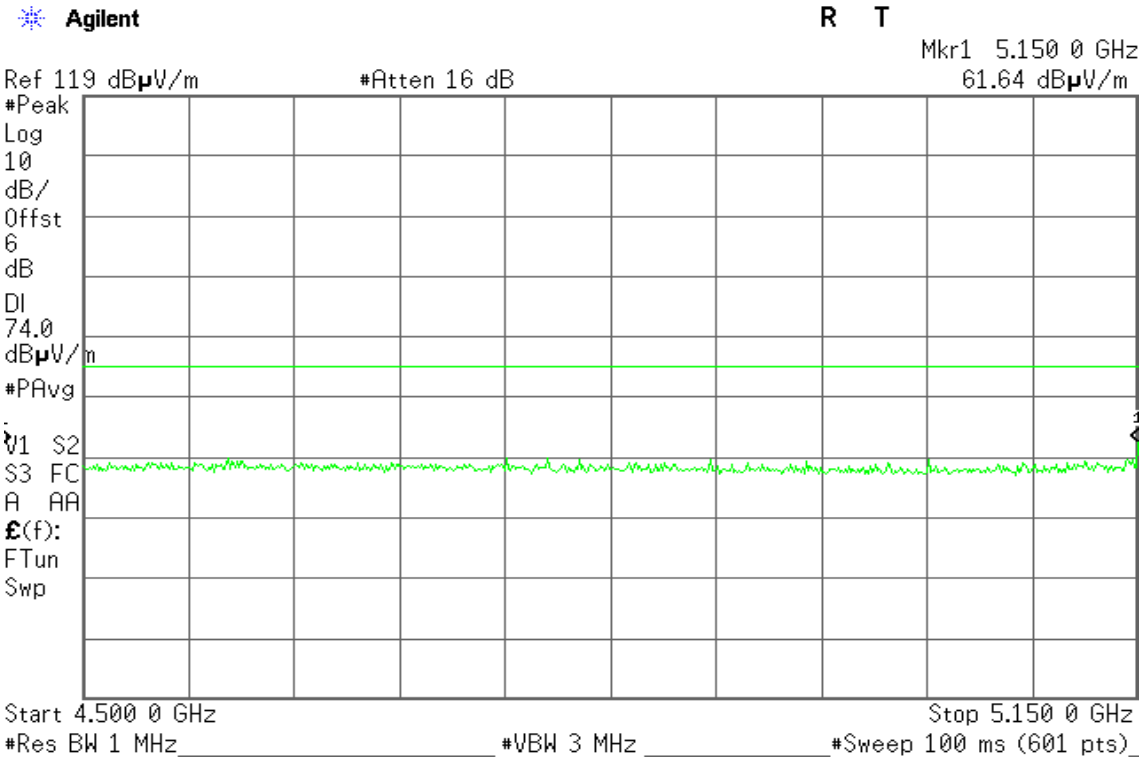


Detector mode: Average **Polarity: Horizontal**

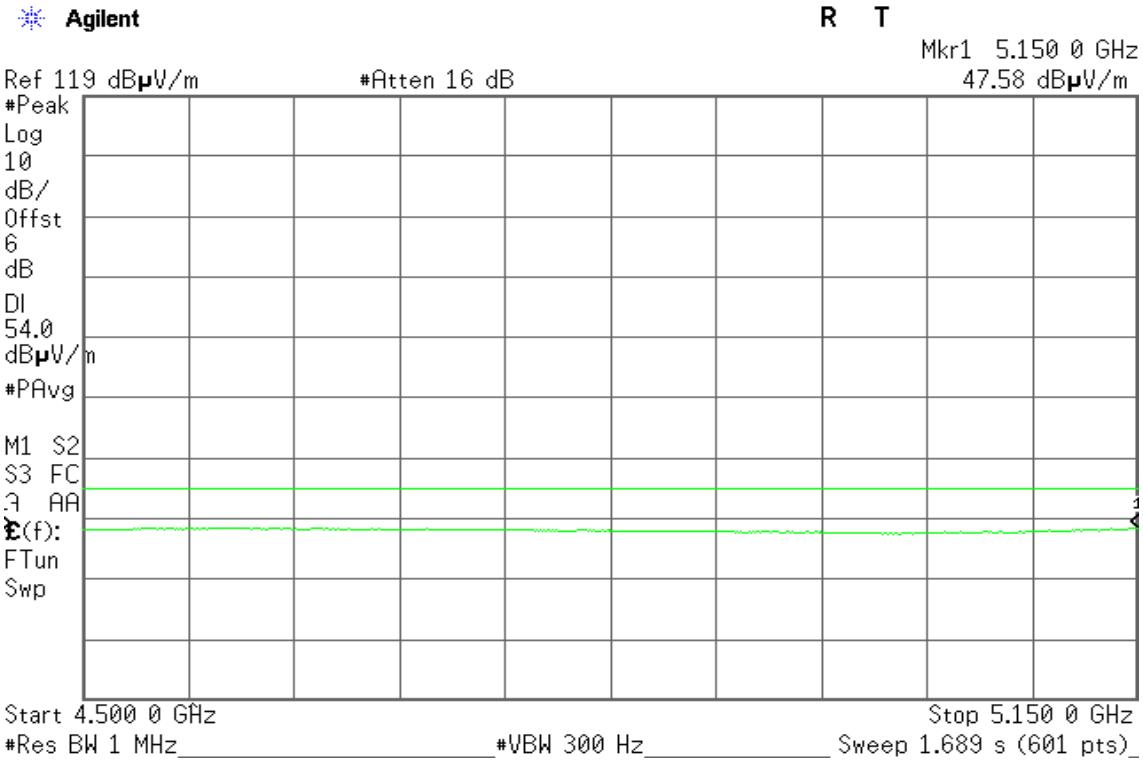


Band Edges (IEEE 802.11n HT 20 MHz Channel mode / 5180 MHz)

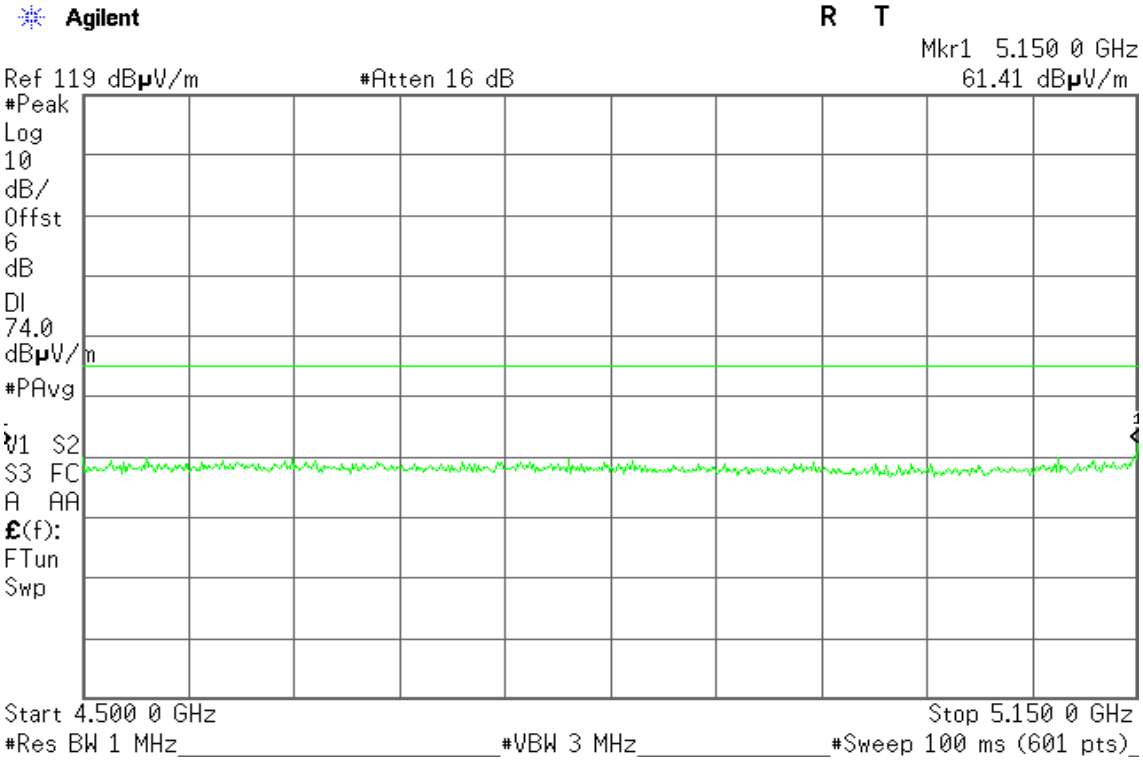
Detector mode: Peak **Polarity: Vertical**



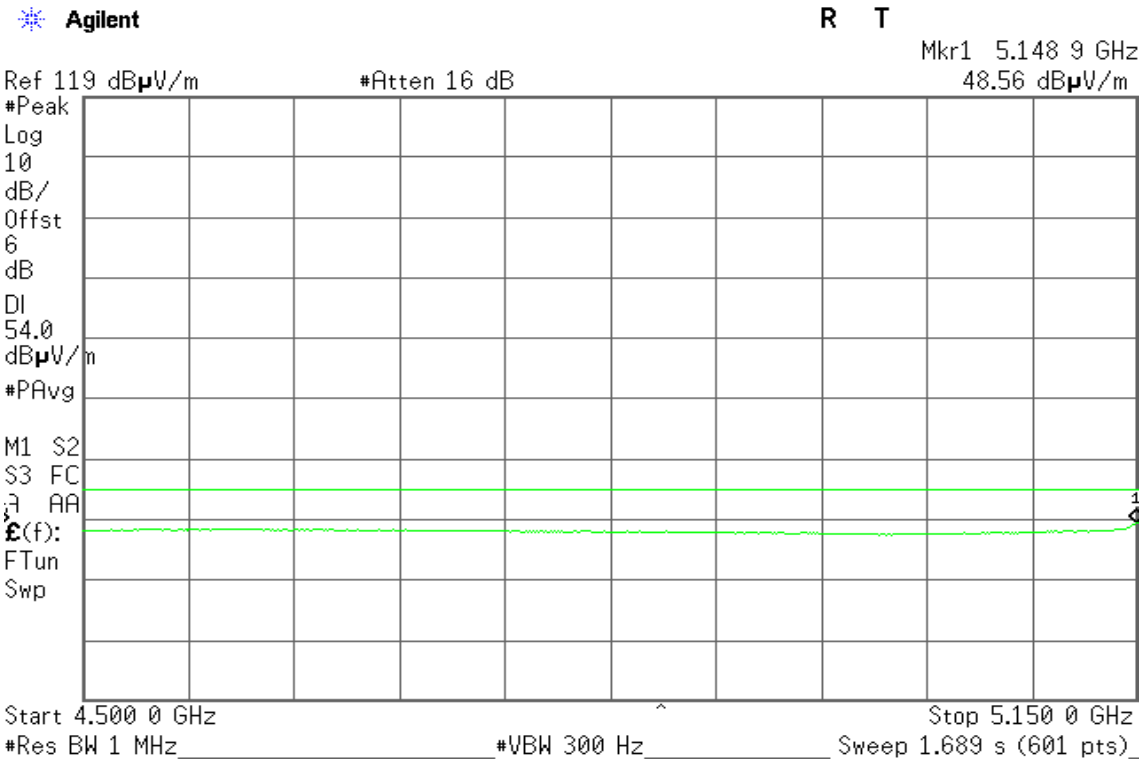
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

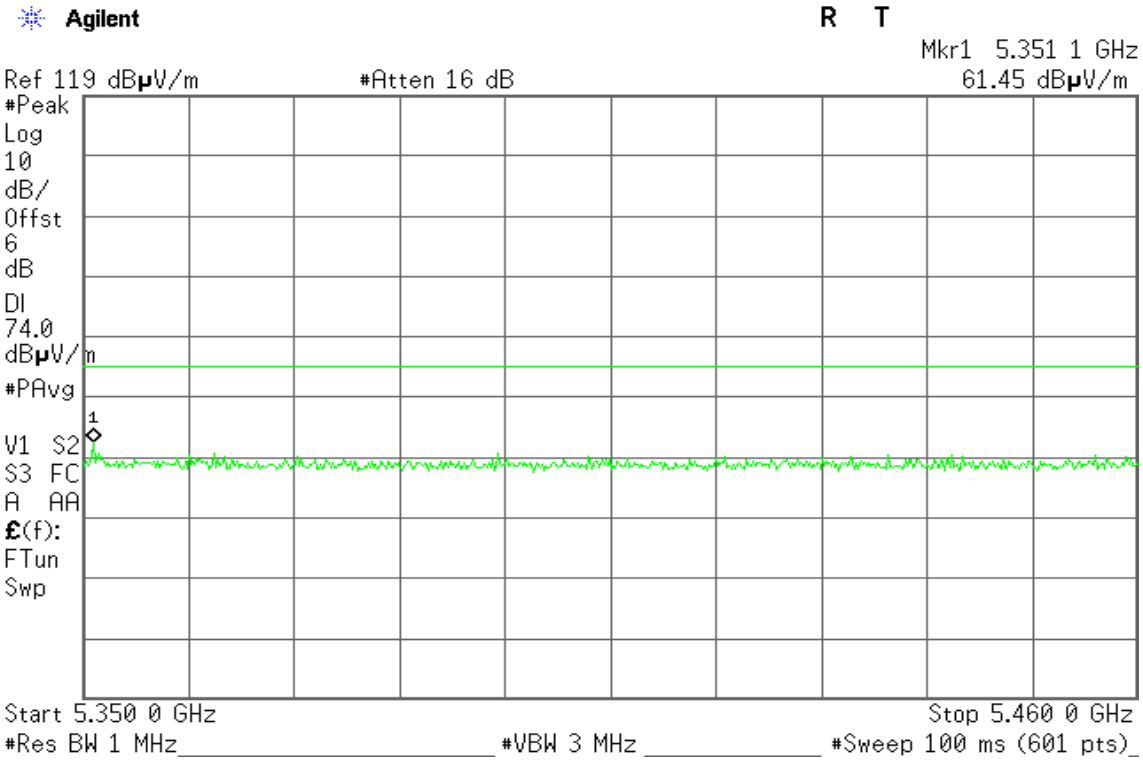


Detector mode: Average **Polarity: Horizontal**

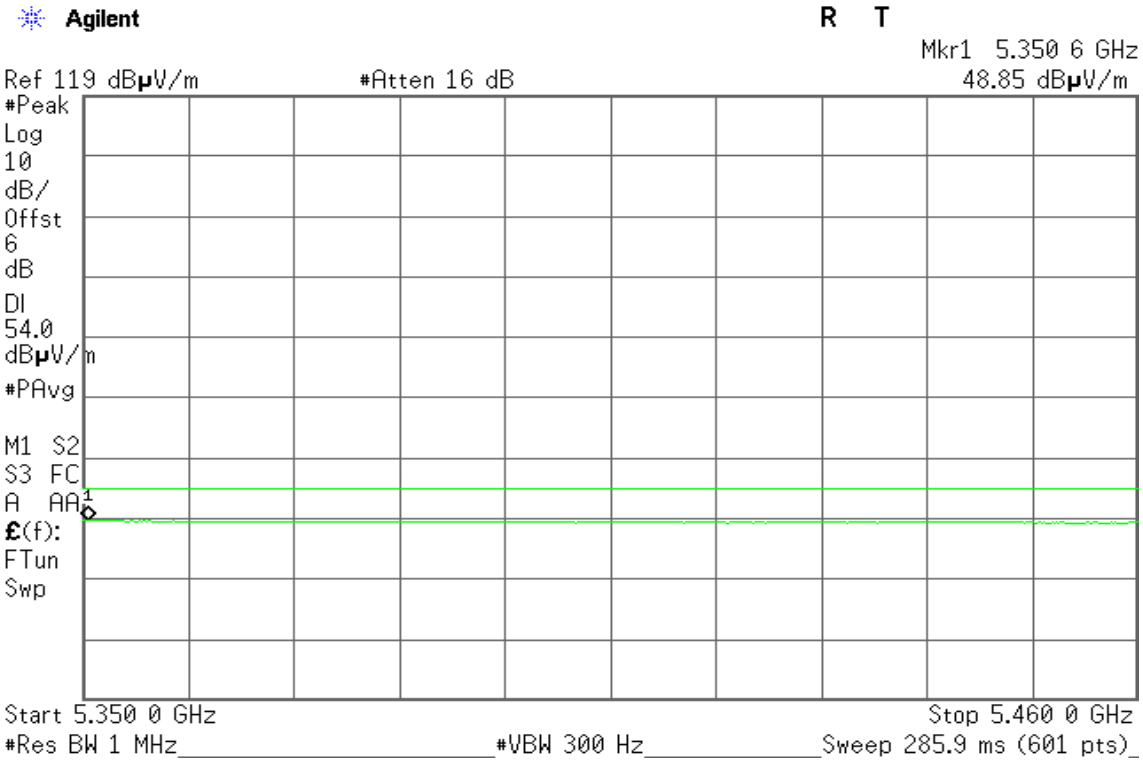


Band Edges (IEEE 802.11n HT 20 MHz Channel mode / 5320 MHz)

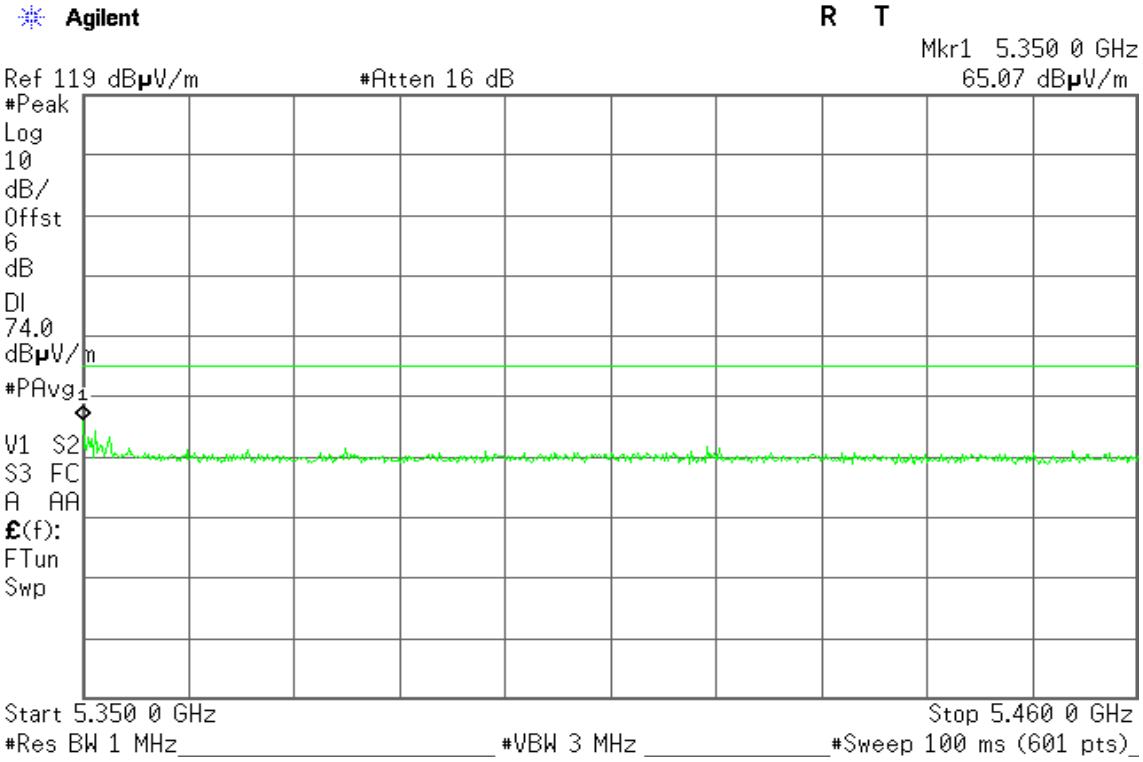
Detector mode: Peak **Polarity: Vertical**



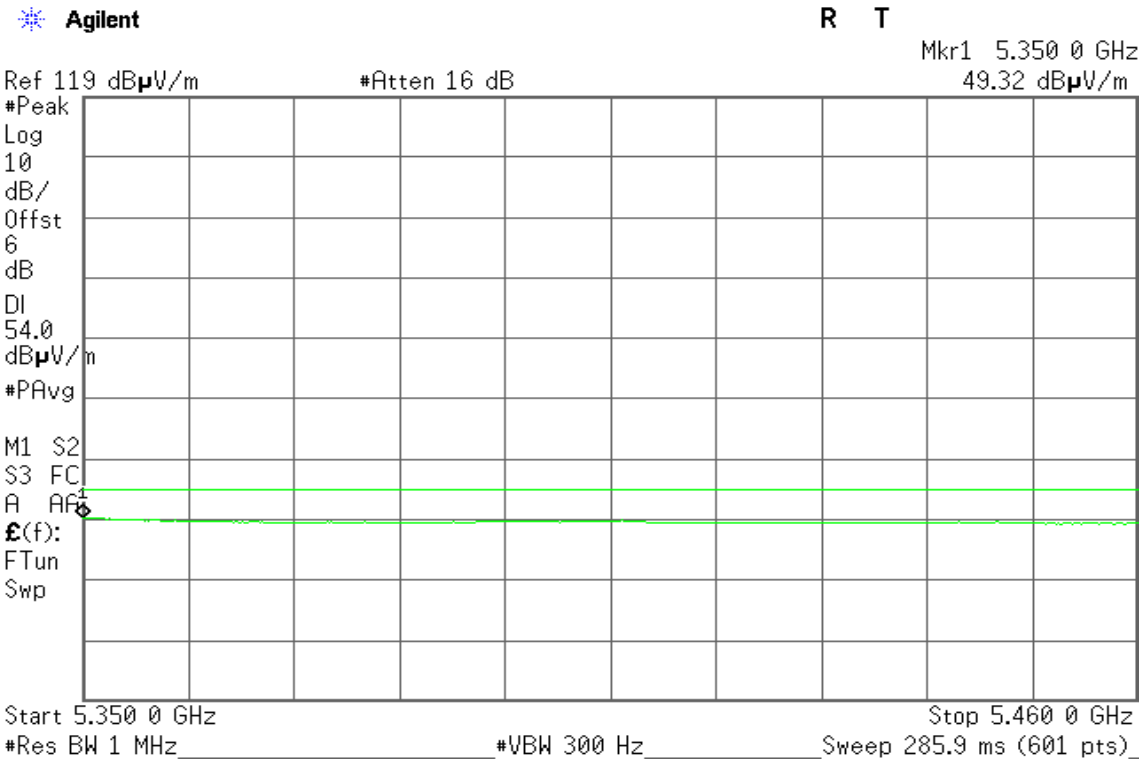
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

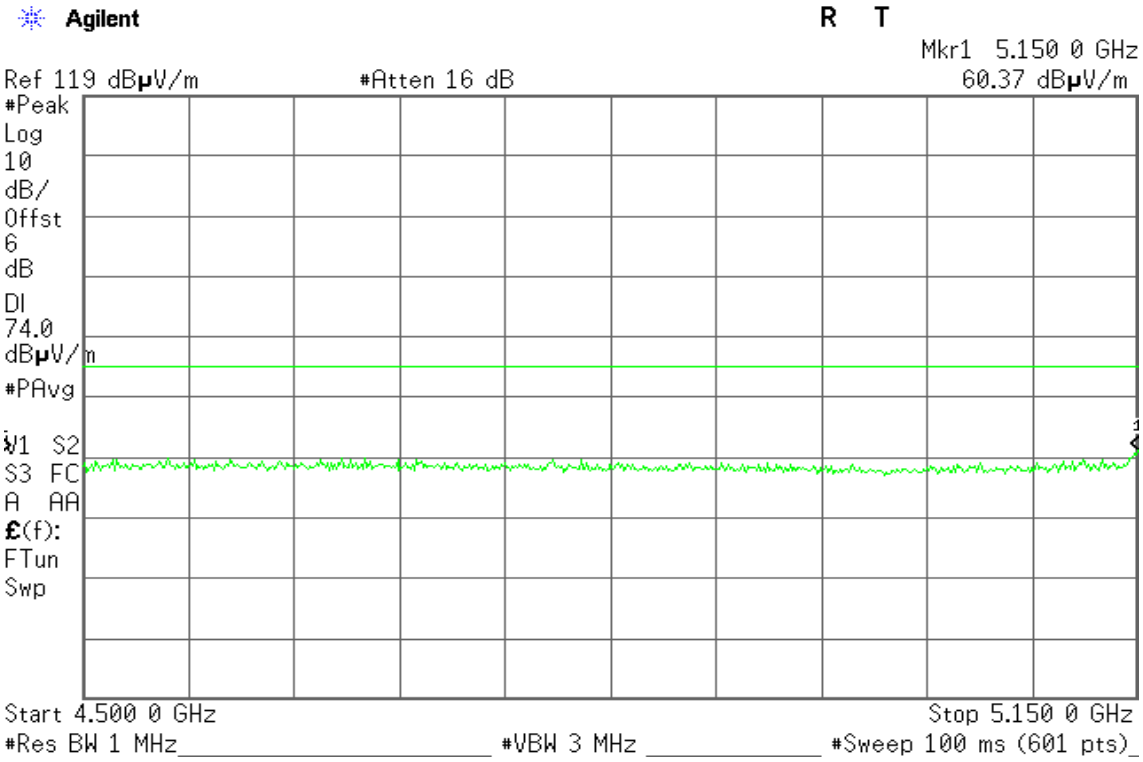


Detector mode: Average **Polarity: Horizontal**

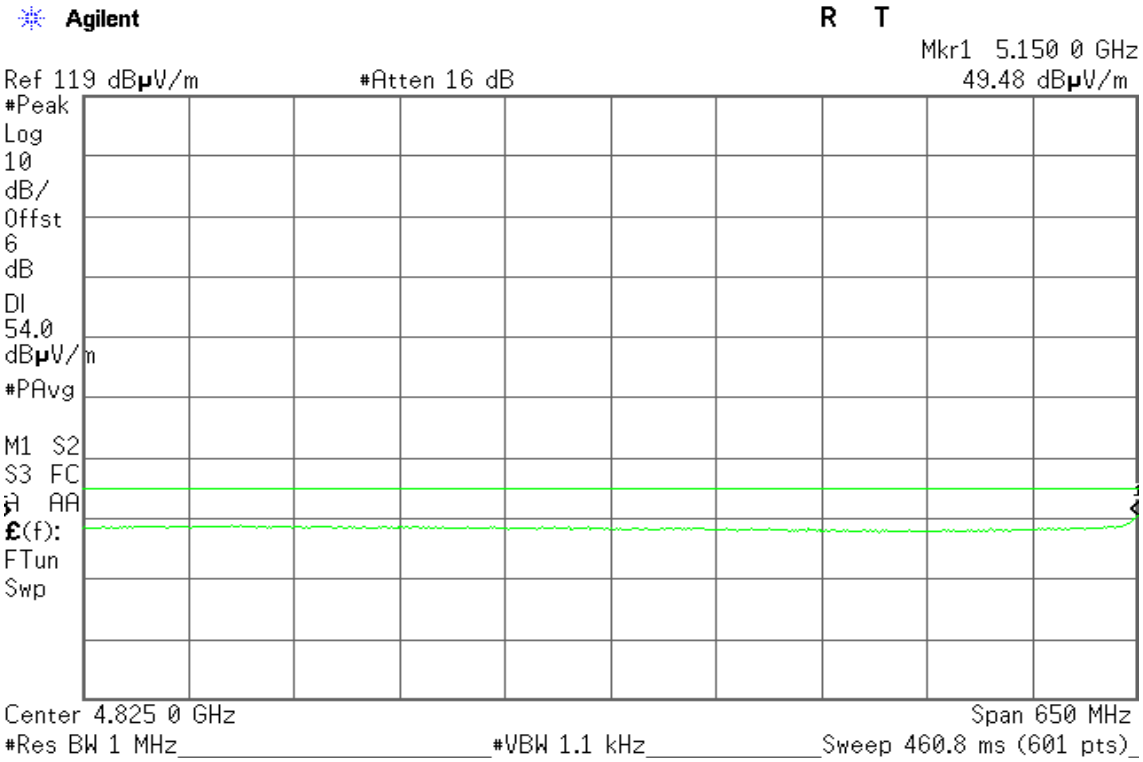


Band Edges (IEEE 802.11n HT 40 MHz mode / 5190 MHz)

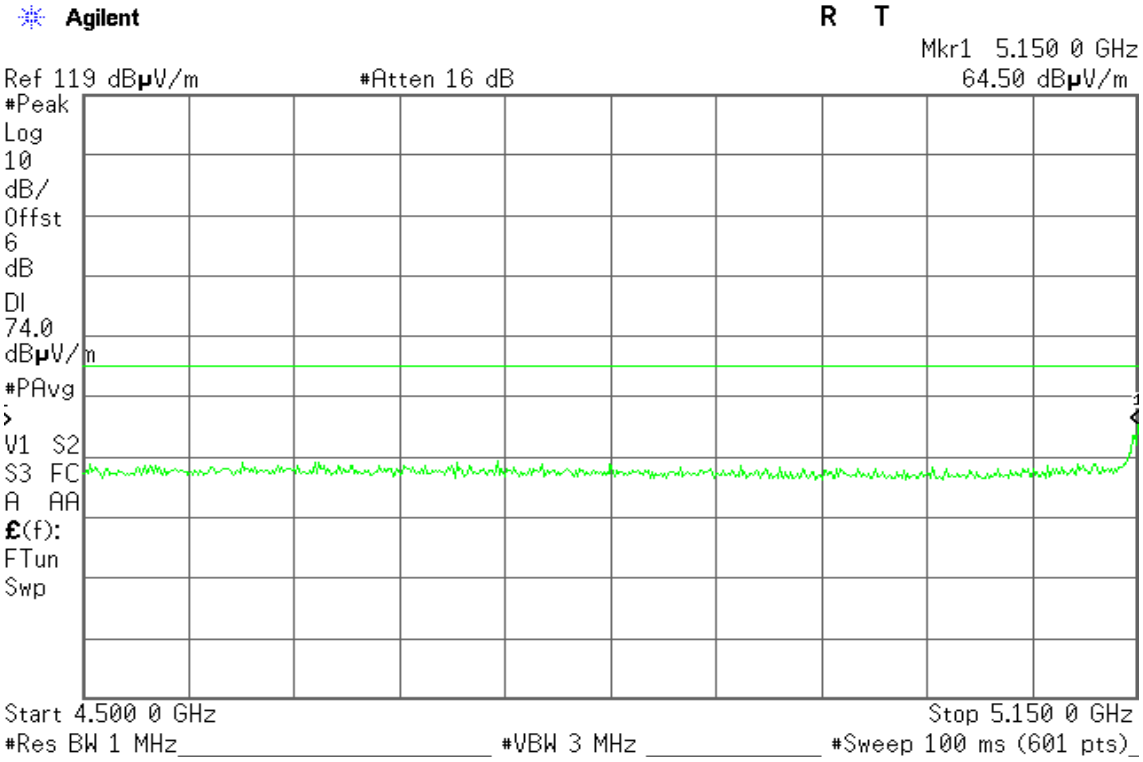
Detector mode: Peak **Polarity: Vertical**



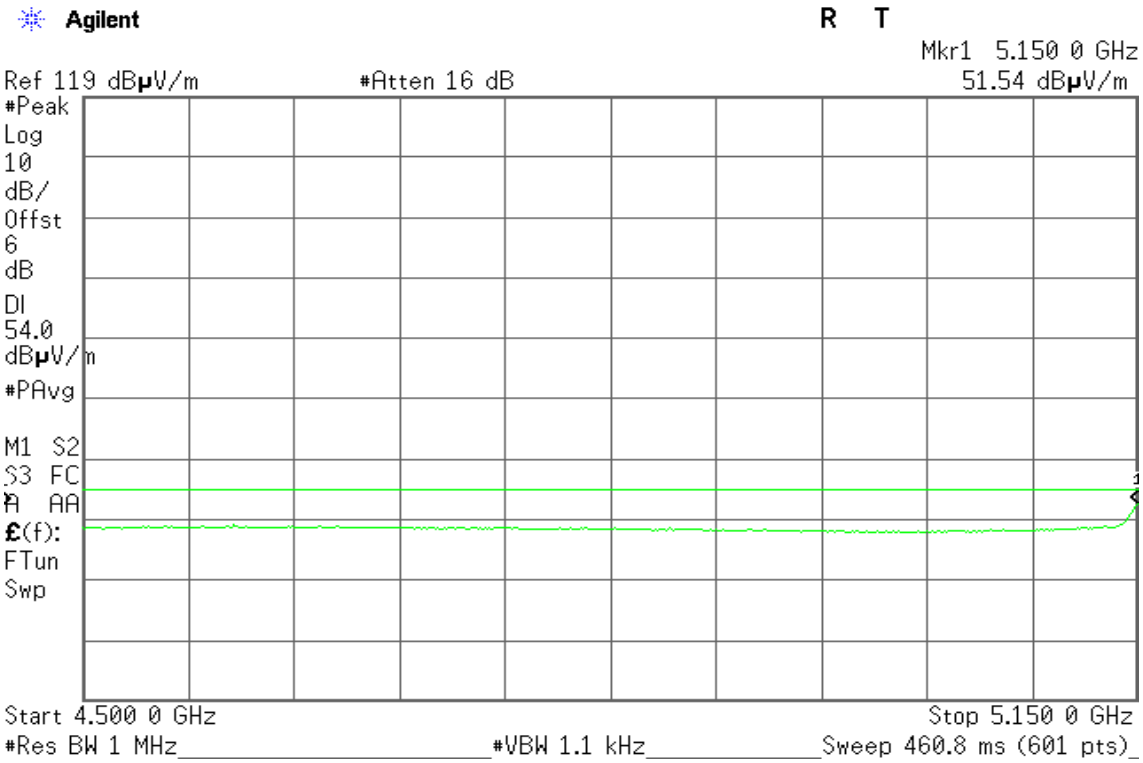
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

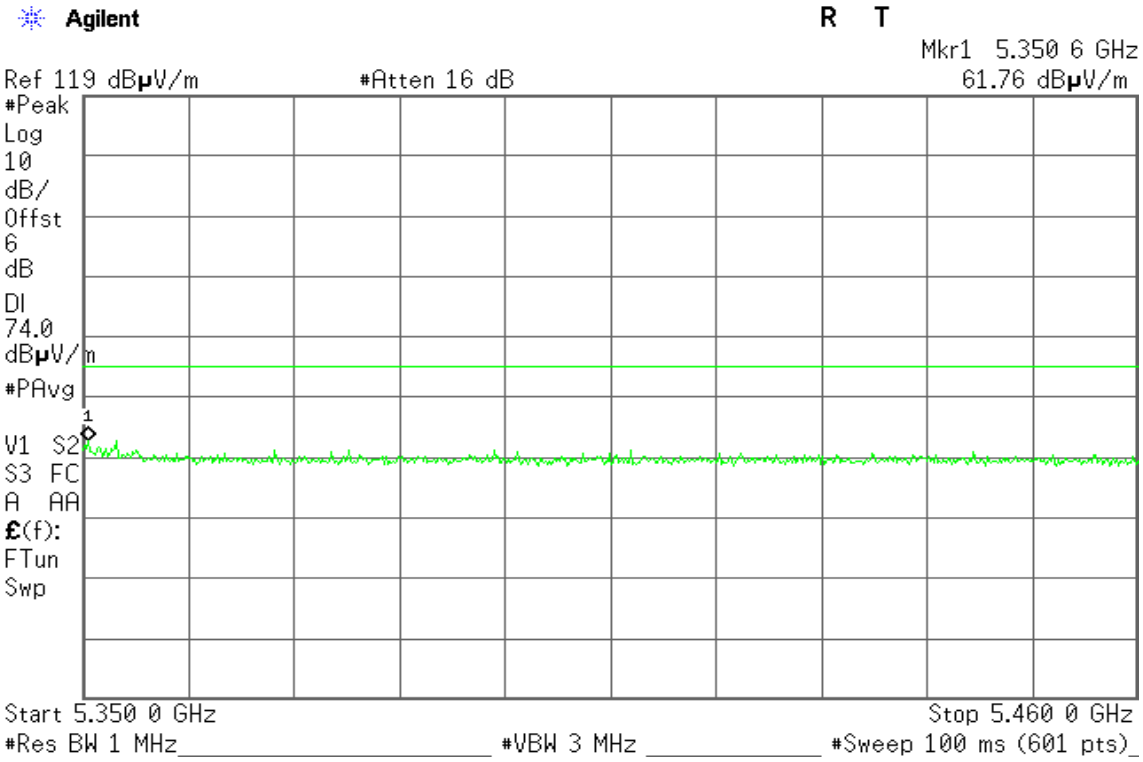


Detector mode: Average **Polarity: Horizontal**

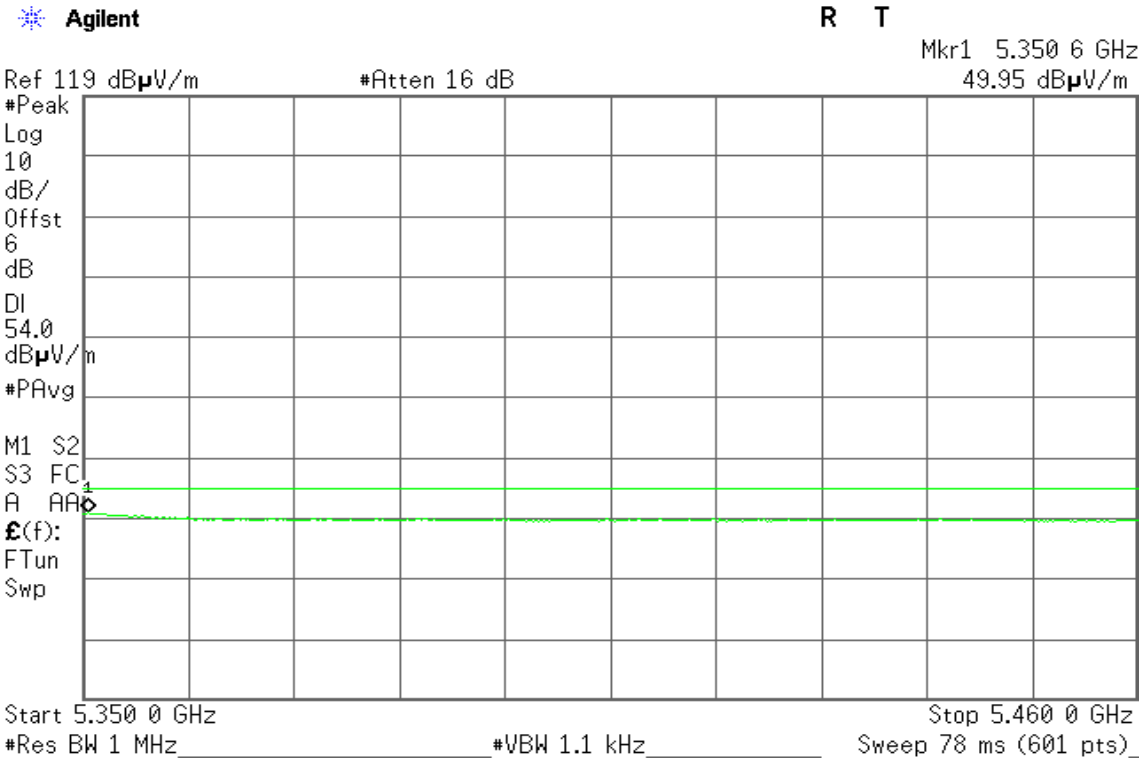


Band Edges (IEEE 802.11n HT 40 MHz mode / CH 5310 MHz)

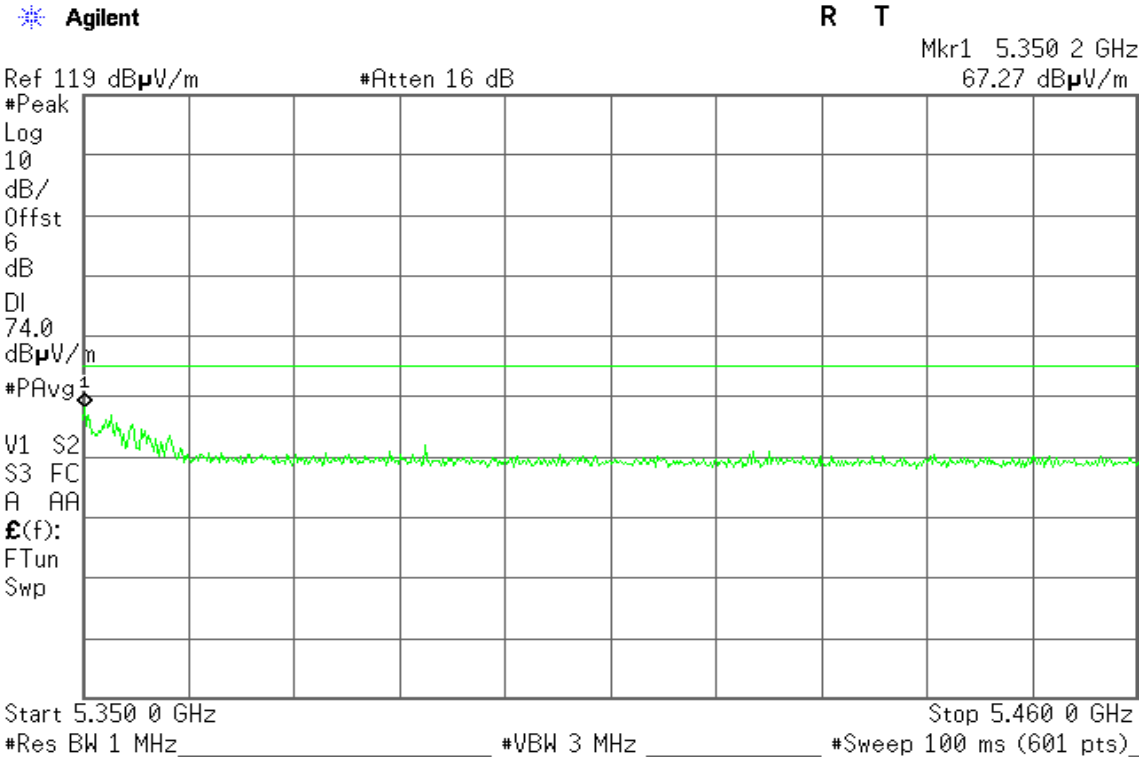
Detector mode: Peak **Polarity: Vertical**



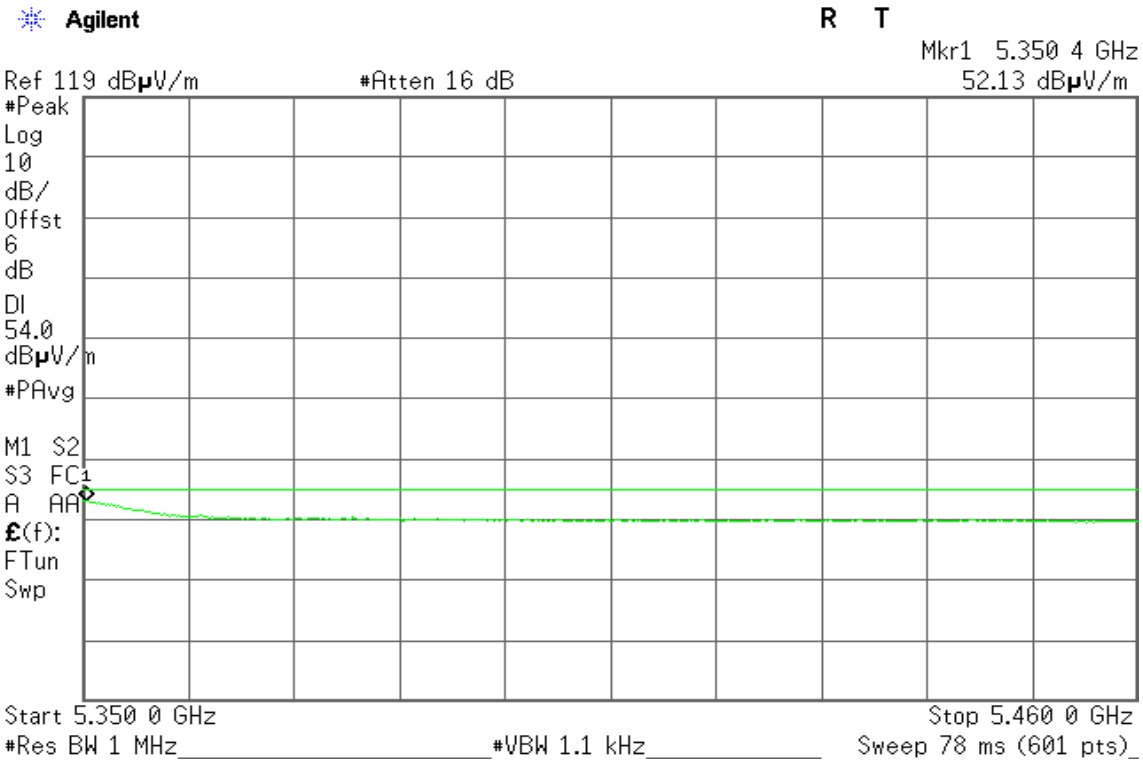
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**



8.5 PEAK POWER SPECTRAL DENSITY

LIMIT

According to §15.407(a)

(1) For the band 5.15-5.25 GHz, the peak power spectral density shall not exceed 4dBm in any 1MHz band.

(2) For the band 5.25-5.35 GHz, the peak power spectral density shall not exceed 11dBm in any 1MHz band.

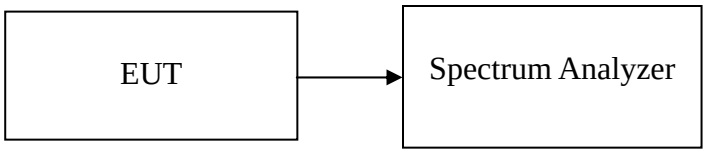
According to RSS-210 §A9.2,

(1) The e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

(2) The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

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 = 1MHz, VBW = 3MHz, Span = Sweep= AUTO
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 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5180	-0.70	4.00	-4.70	PASS
Mid	5220	-1.33	4.00	-5.33	PASS
High	5240	-1.10	4.00	-5.10	PASS

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5180	-3.56	4.00	-7.56	PASS
Mid	5220	-2.91	4.00	-6.91	PASS
High	5240	-2.97	4.00	-6.97	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5190	-7.86	4.00	-11.86	PASS
High	5230	-3.94	4.00	-7.94	PASS

Test mode: IEEE 802.11a mode/ 5260 ~ 5320MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	-1.74	11.00	-12.74	PASS
Mid	5280	-1.61	11.00	-12.61	PASS
High	5320	-0.59	11.00	-11.59	PASS

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	-2.66	11.00	-13.66	PASS
Mid	5280	-2.93	11.00	-13.93	PASS
High	5320	-3.10	11.00	-14.10	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5270	-4.00	11.00	-15.00	PASS
High	5310	-7.78	11.00	-18.78	PASS

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5500	0.32	11.00	-10.68	PASS
Mid	5600	1.33	11.00	-9.67	PASS
High	5700	1.37	11.00	-9.63	PASS

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5500	-1.04	11.00	-12.04	PASS
Mid	5600	-1.01	11.00	-12.01	PASS
High	5700	-1.91	11.00	-12.91	PASS

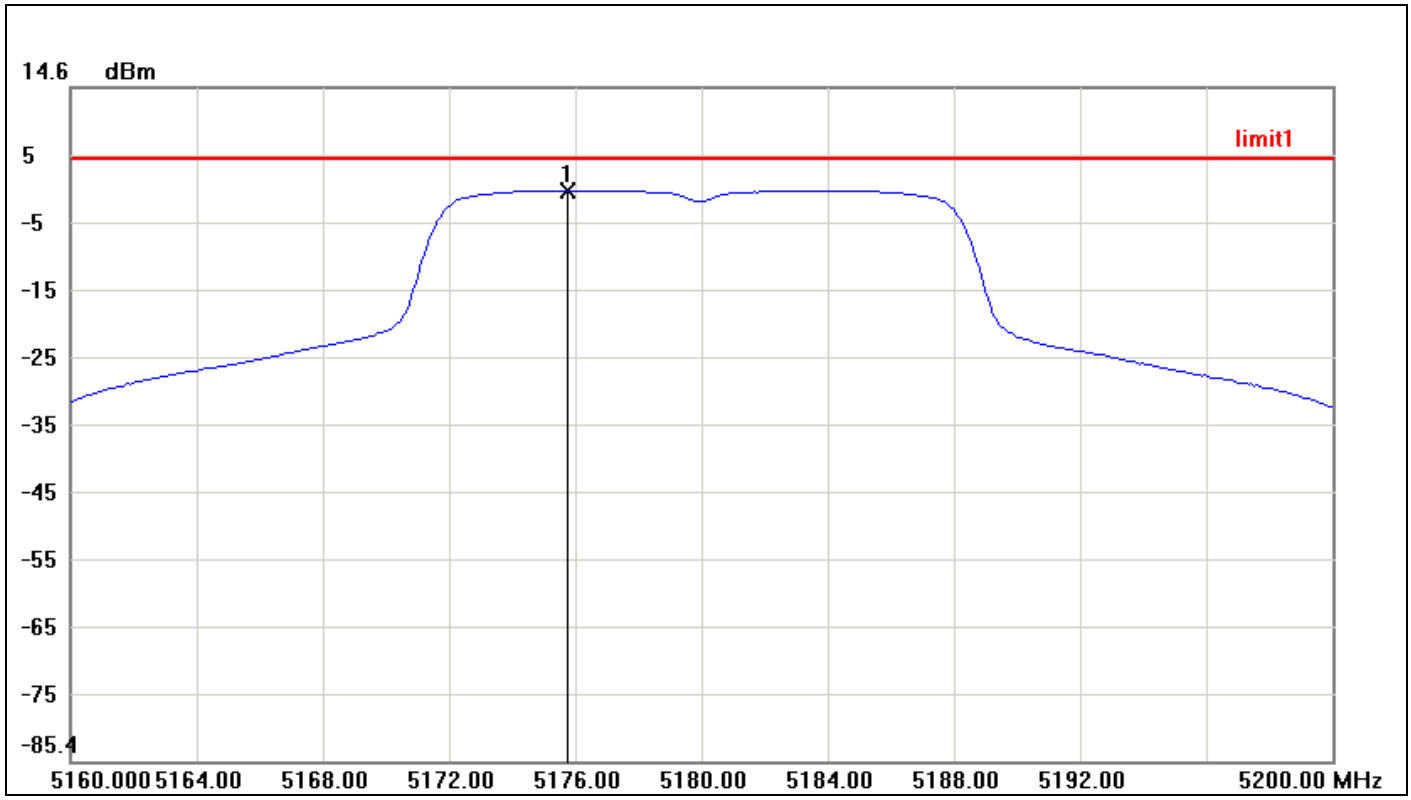
Test mode: IEEE 802.11n HT 40 MHz mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5510	-4.75	11.00	-15.75	PASS
Mid	5590	-5.42	11.00	-16.42	PASS
High	5670	-7.10	11.00	-18.10	PASS

Test Plot

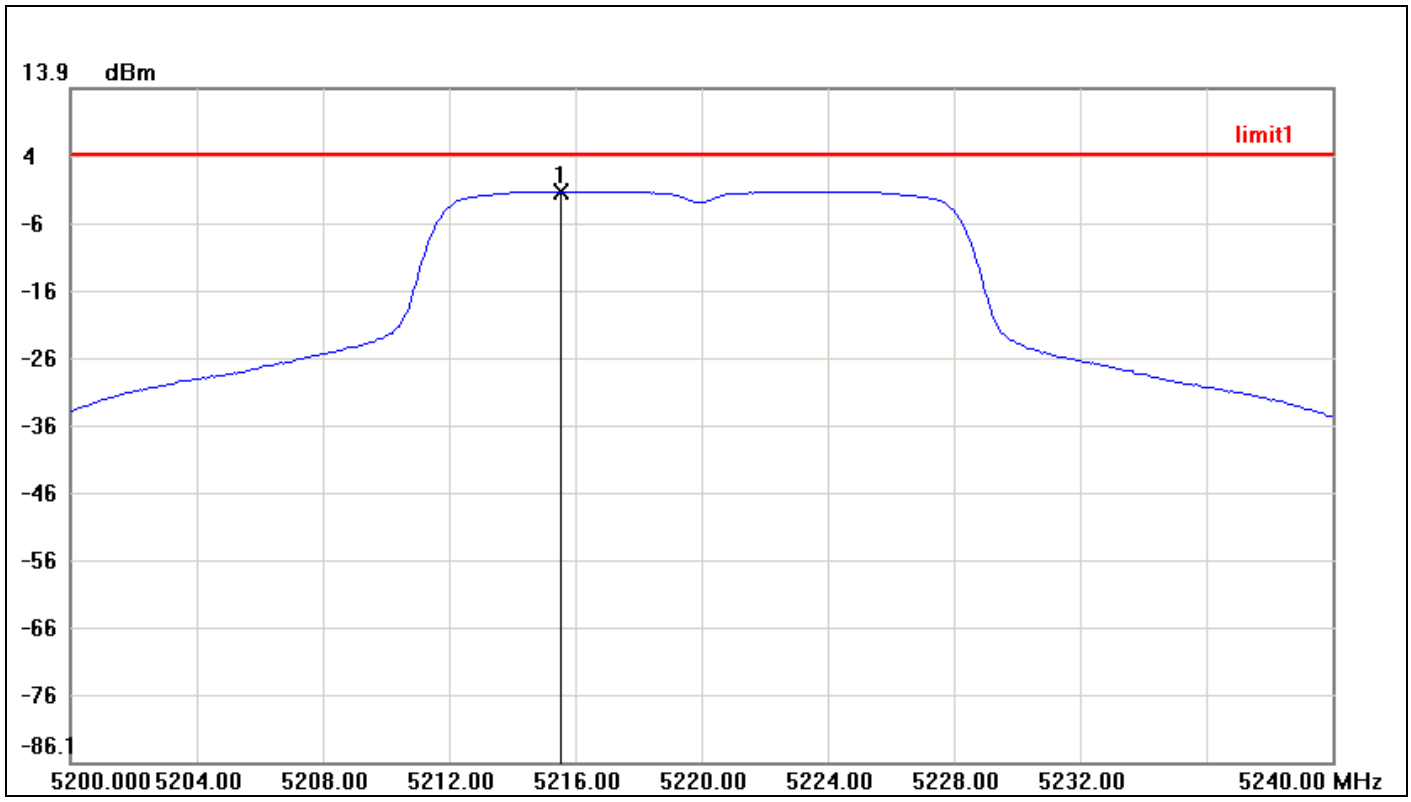
IEEE 802.11a mode / 5180 ~ 5240MHz

CH Low



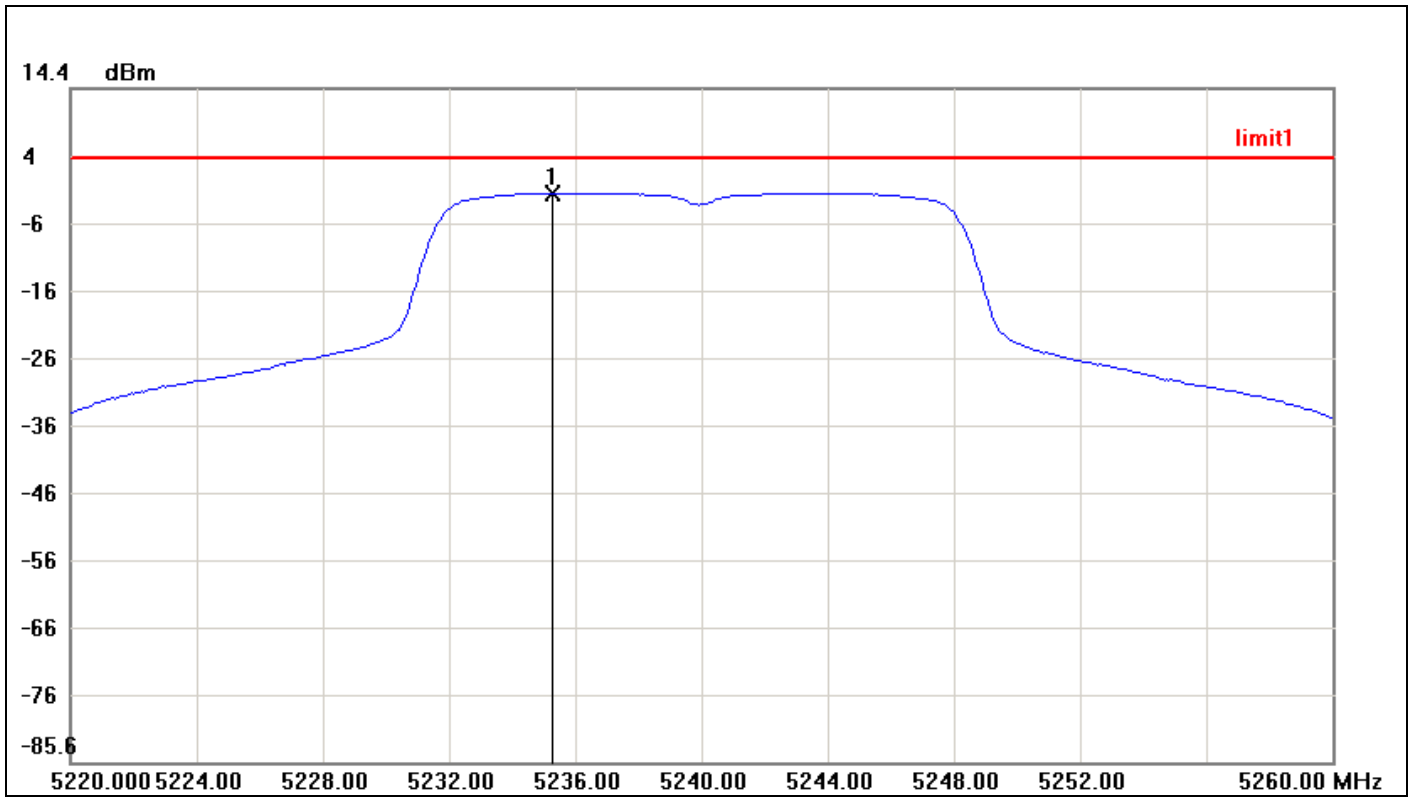
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5175.7333	-0.70	4.00	-4.70

CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5215.5333	-1.33	4.00	-5.33

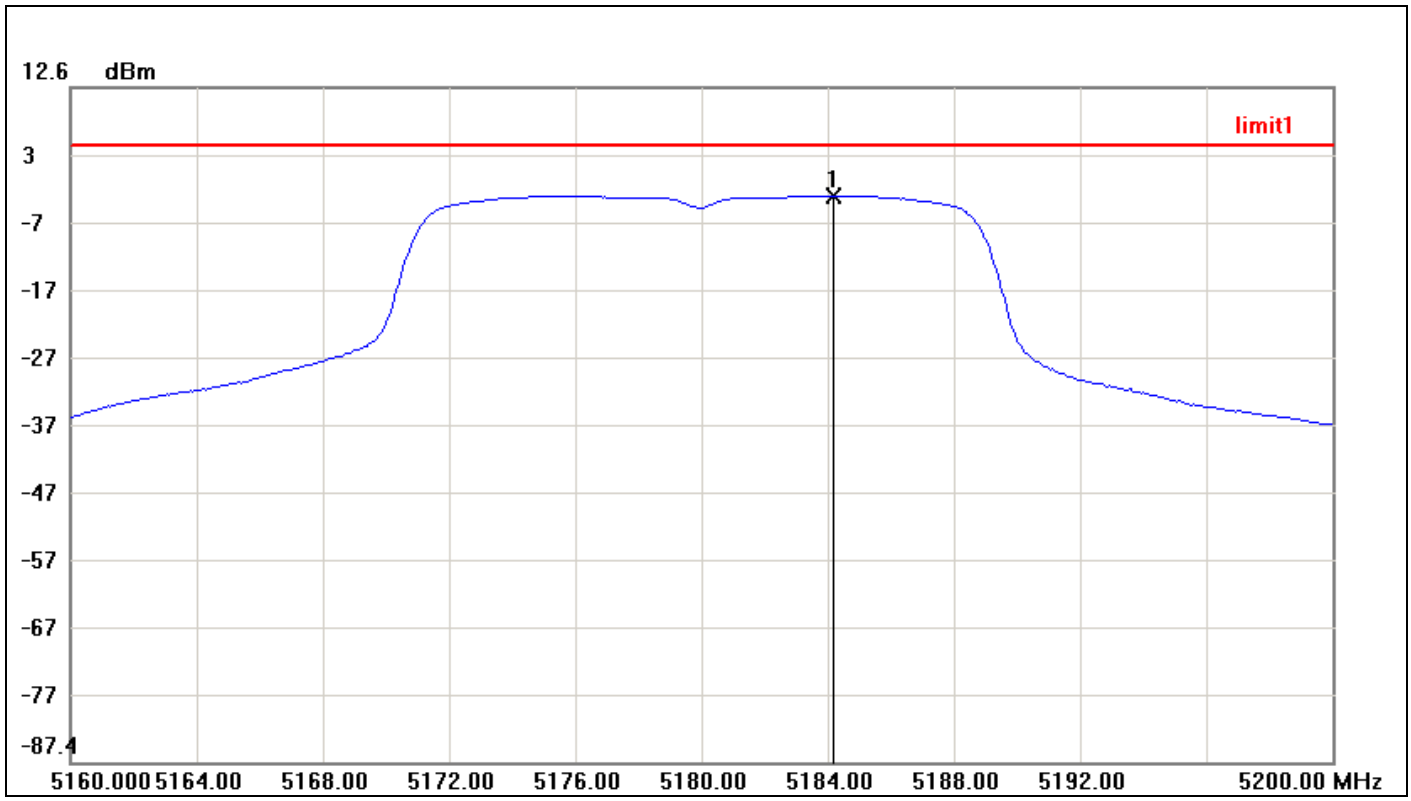
CH High



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5235.2667	-1.10	4.00	-5.10

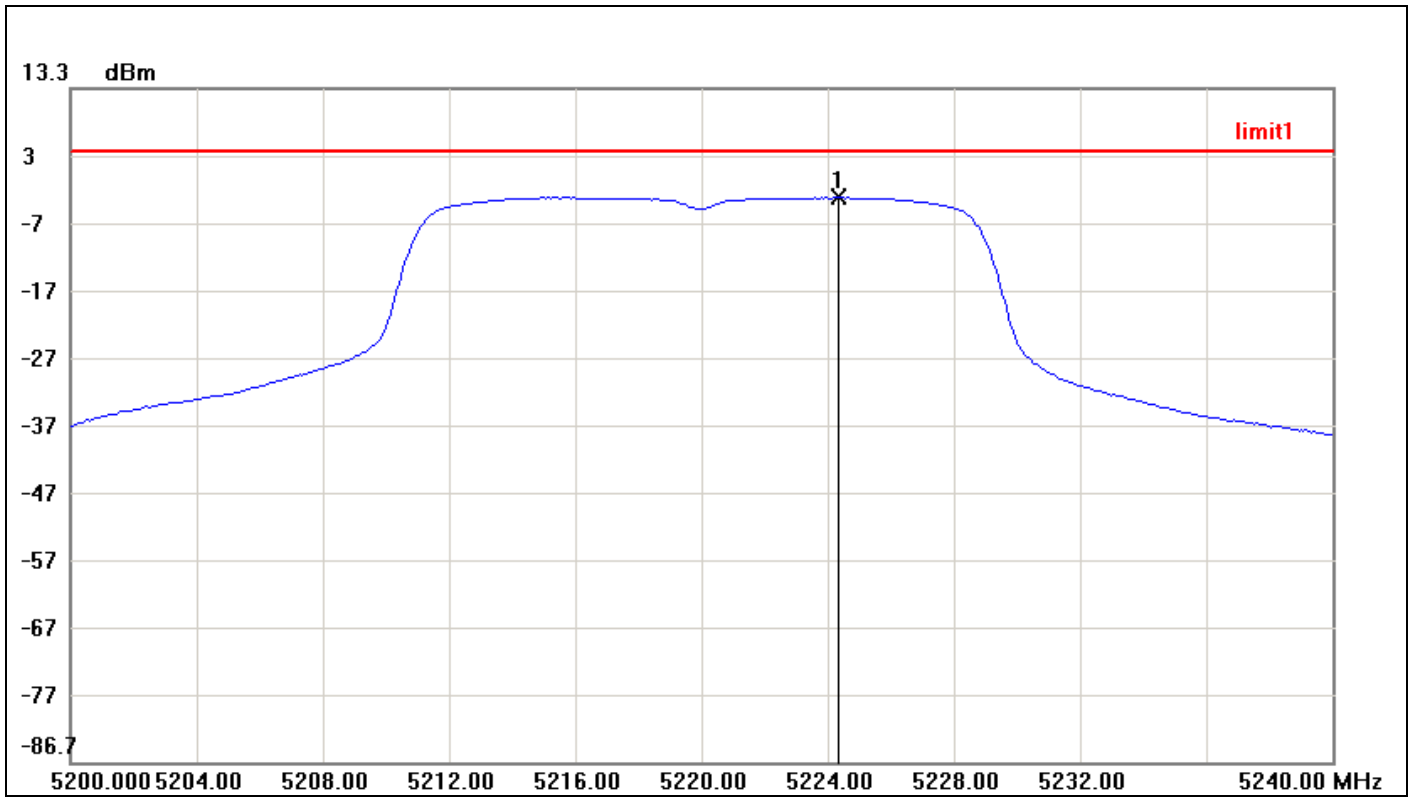
IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

CH Low



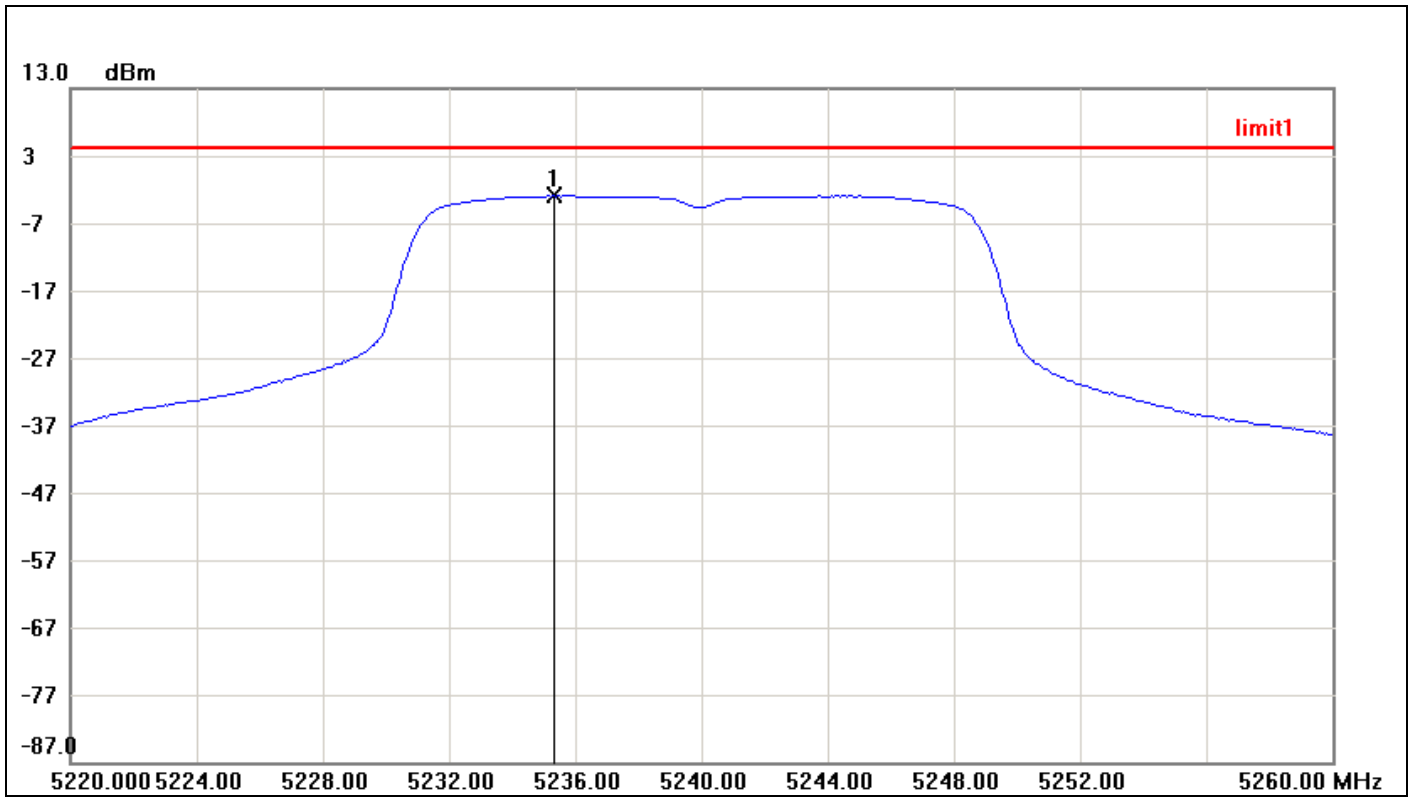
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5184.2000	-3.56	4.00	-7.56

CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5224.3333	-2.91	4.00	-6.91

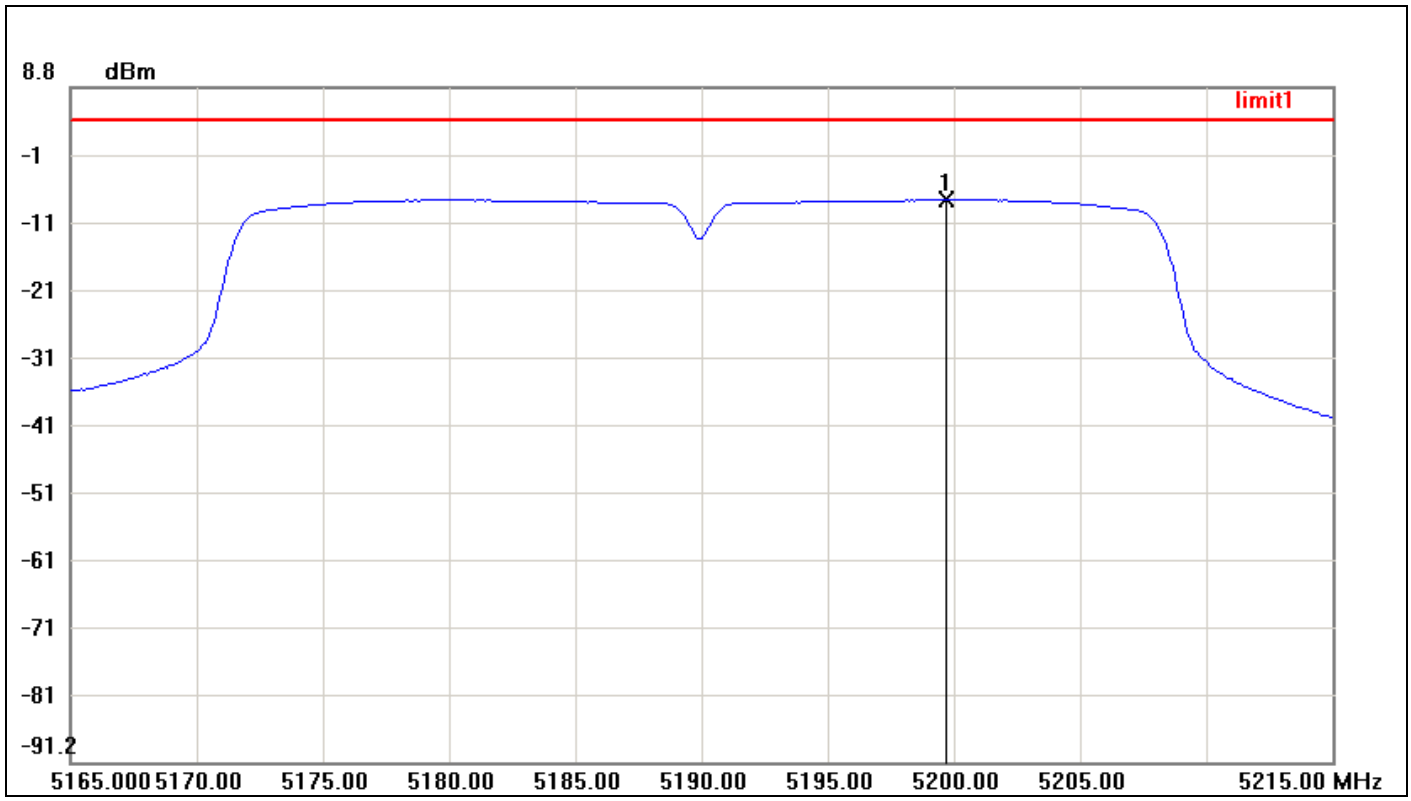
CH High



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5235.3333	-2.97	4.00	-6.97

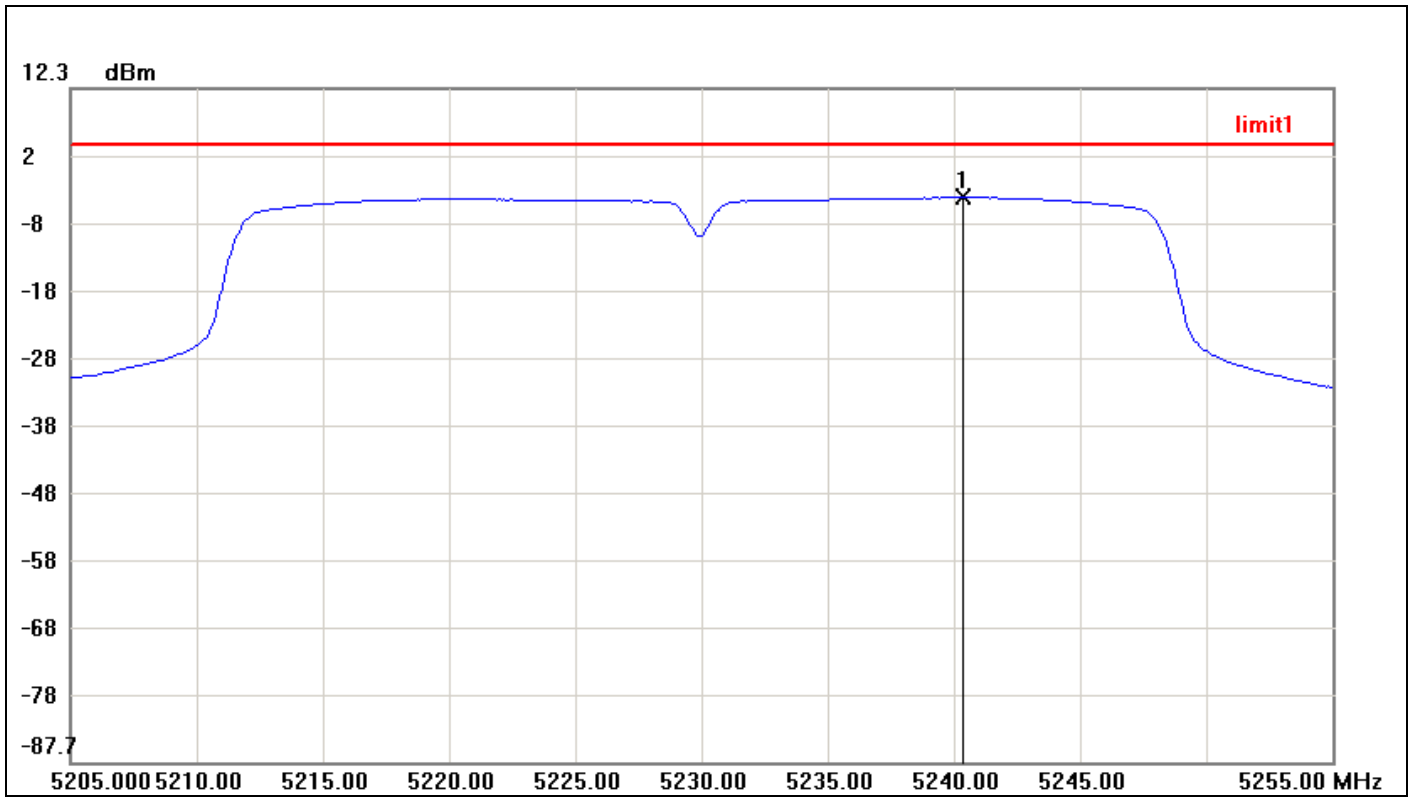
IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5199.6667	-7.86	4.00	-11.86

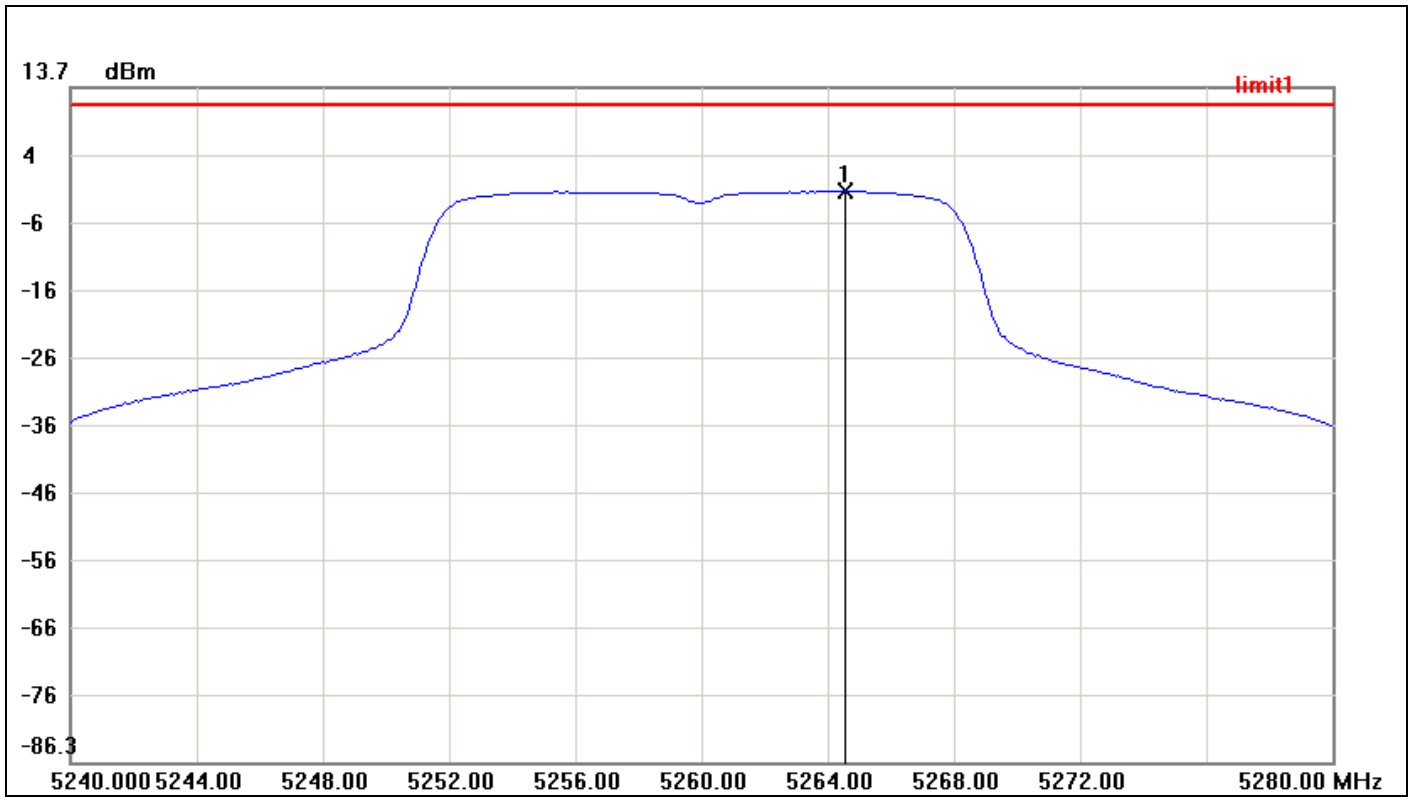
CH High



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5240.3333	-3.94	4.00	-7.94

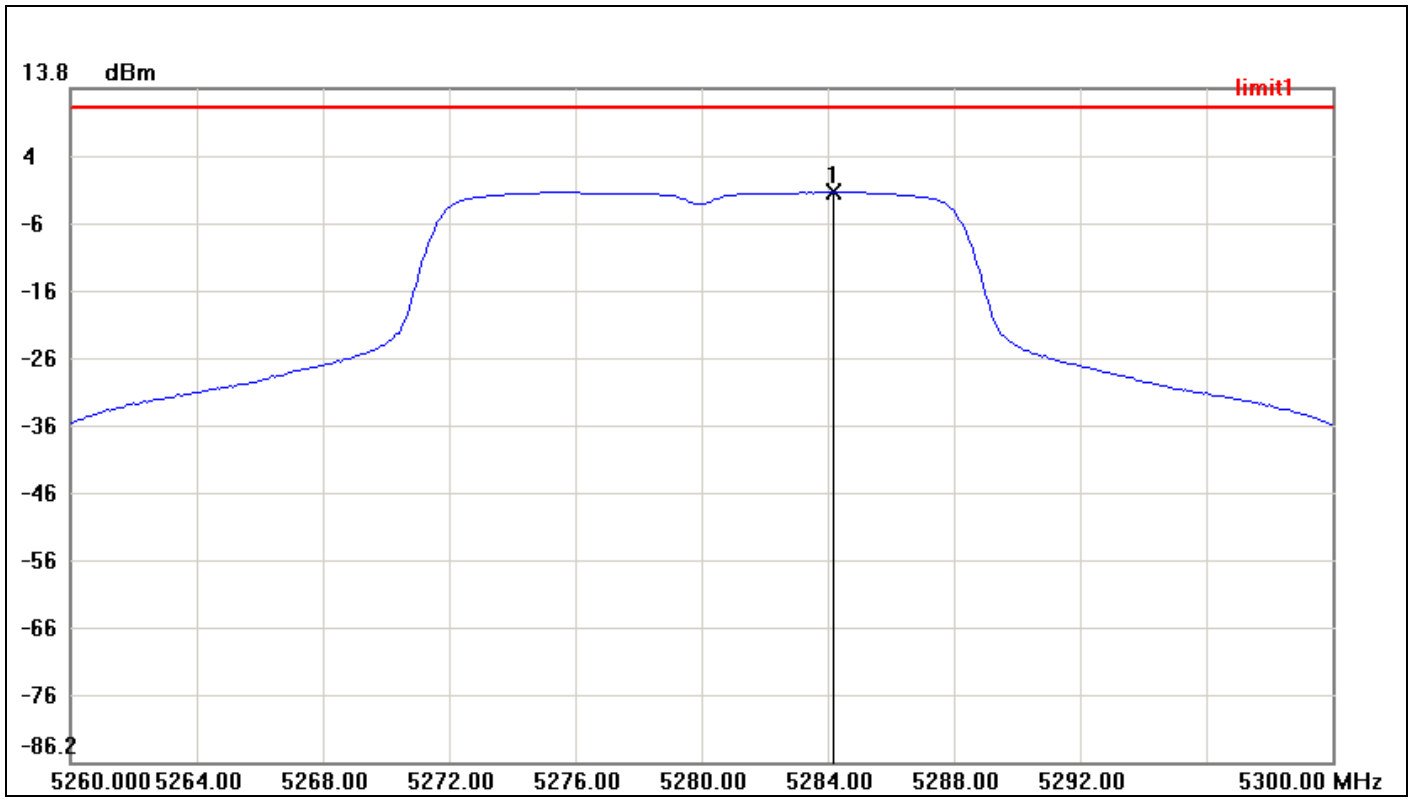
IEEE 802.11a mode / 5260 ~ 5320MHz

CH Low



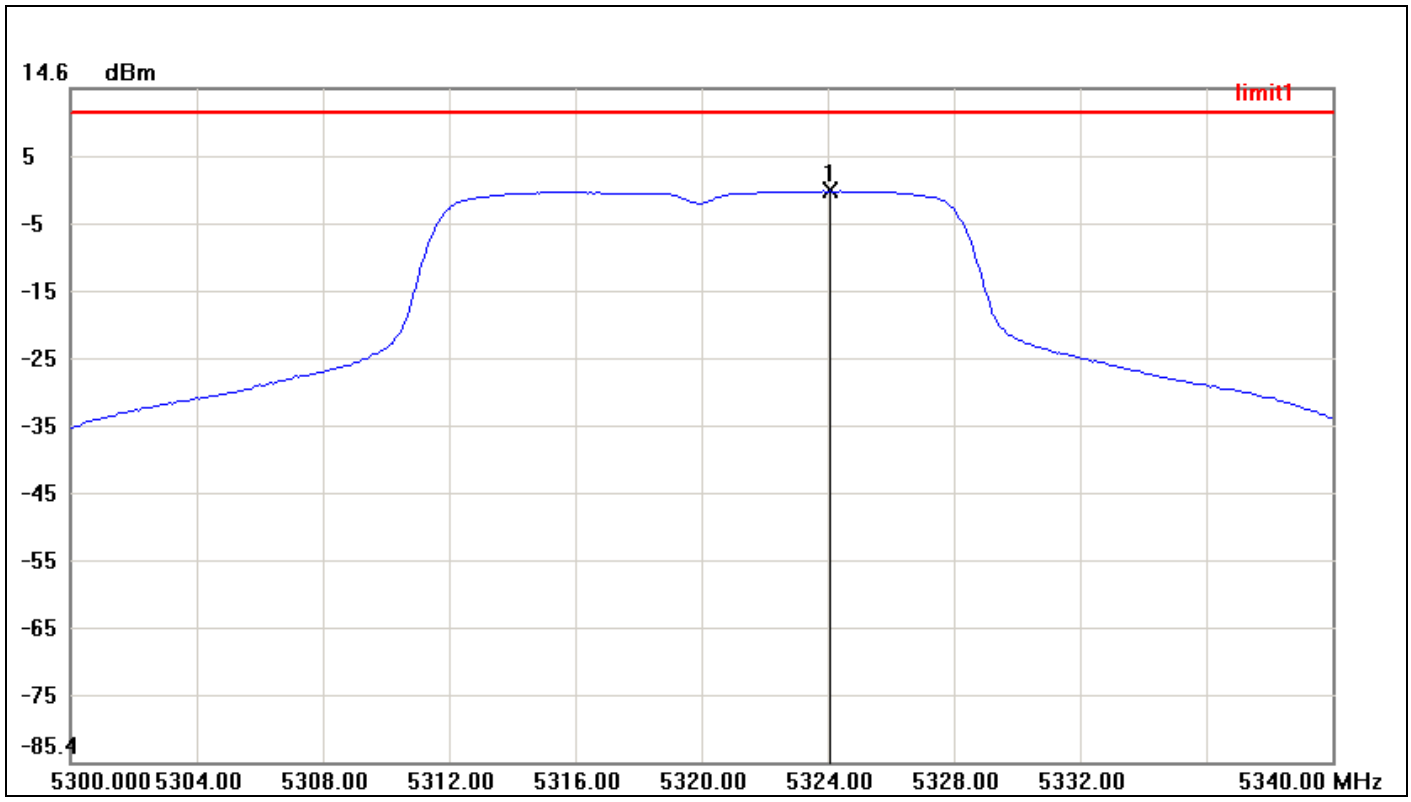
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5264.5333	-1.74	11.00	-12.74

CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5284.2000	-1.61	11.00	-12.61

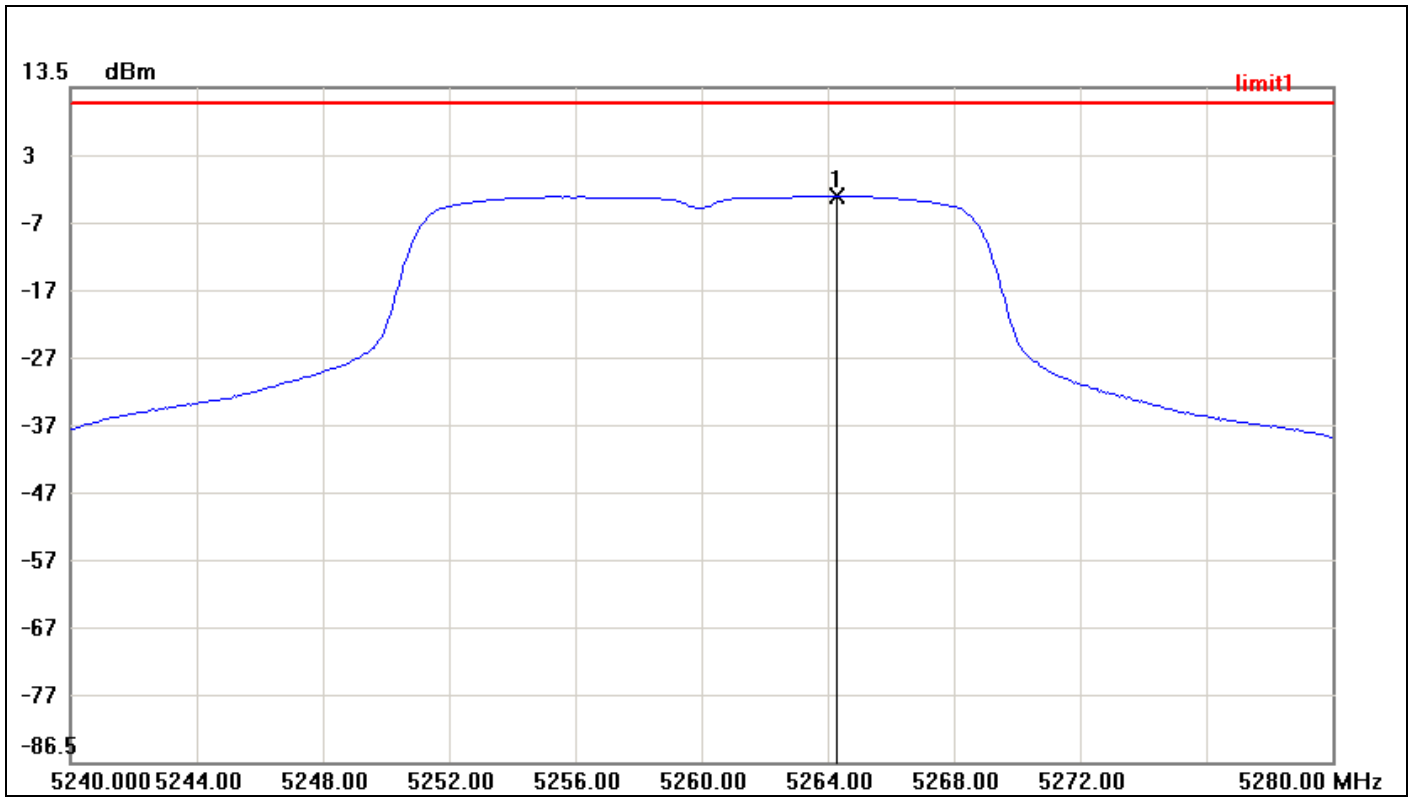
CH High



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5324.0667	-0.59	11.00	-11.59

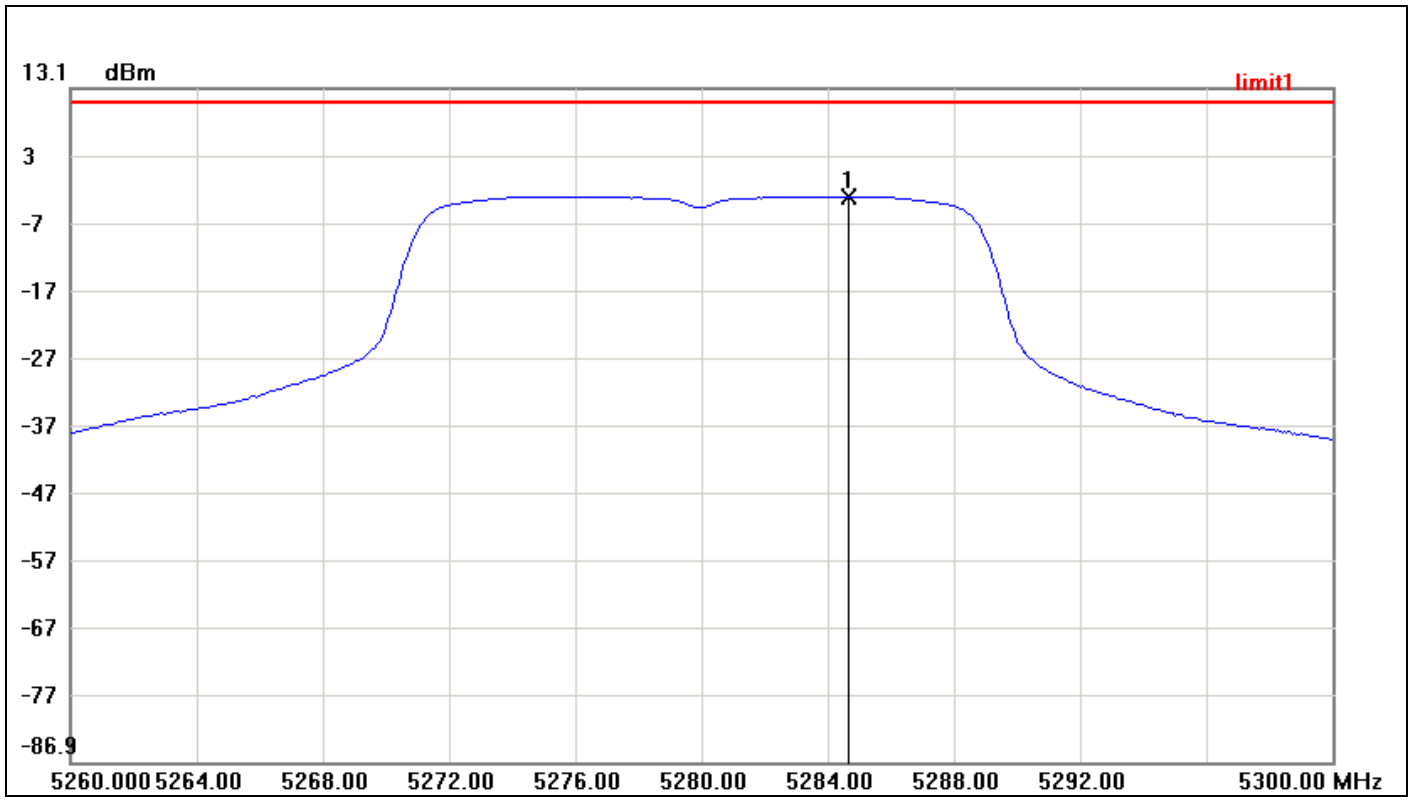
IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

CH Low



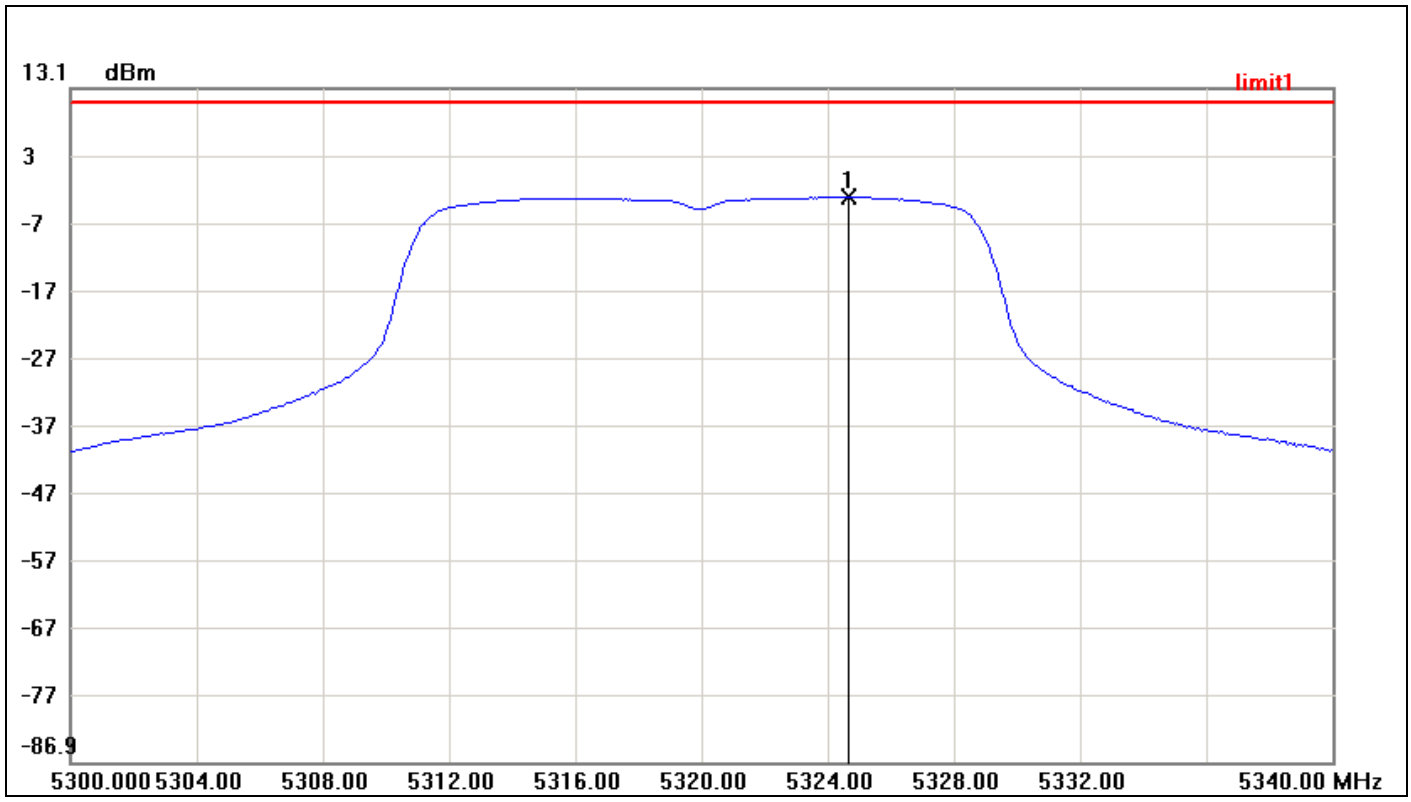
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5264.2667	-2.66	11.00	-13.66

CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5284.6667	-2.93	11.00	-13.93

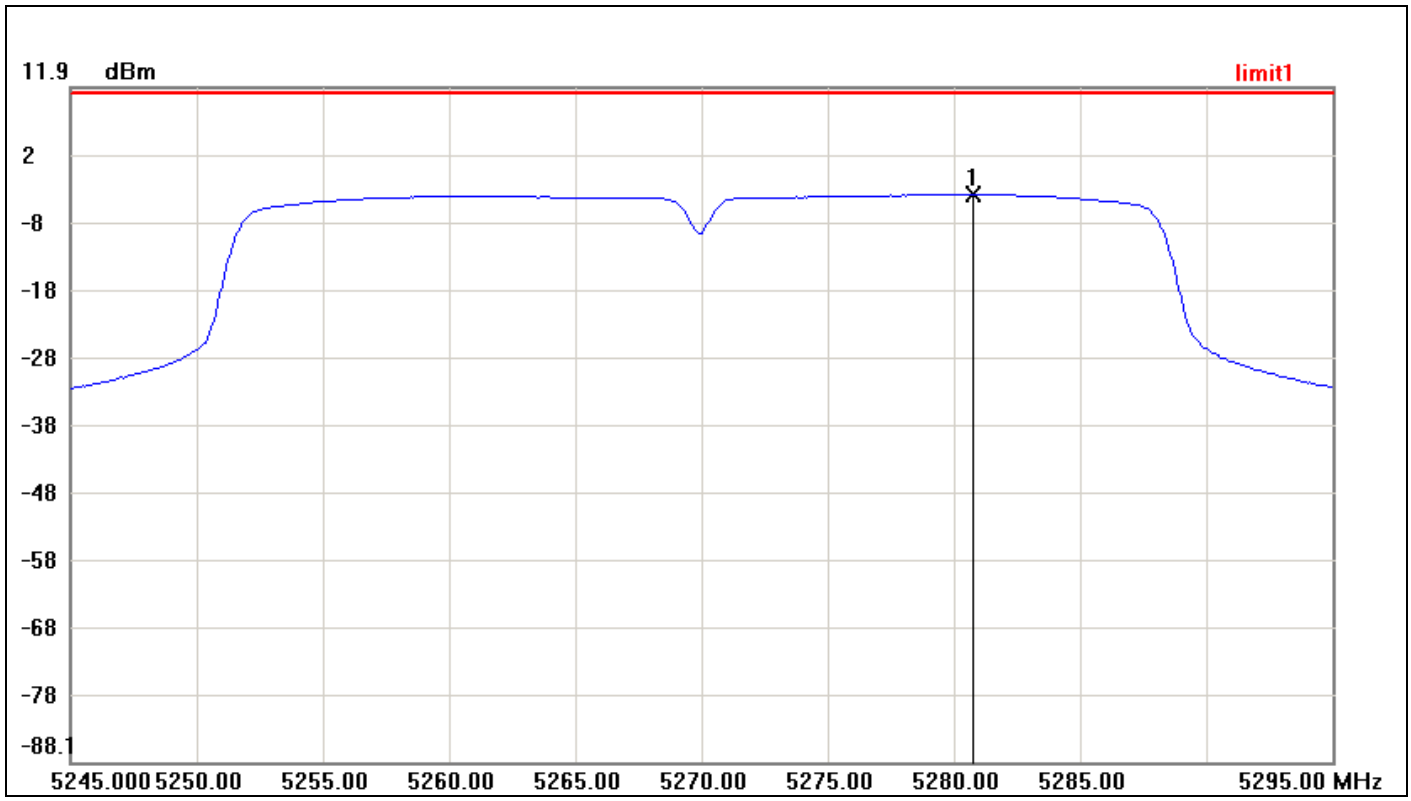
CH High



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5324.6667	-3.10	11.00	-14.10

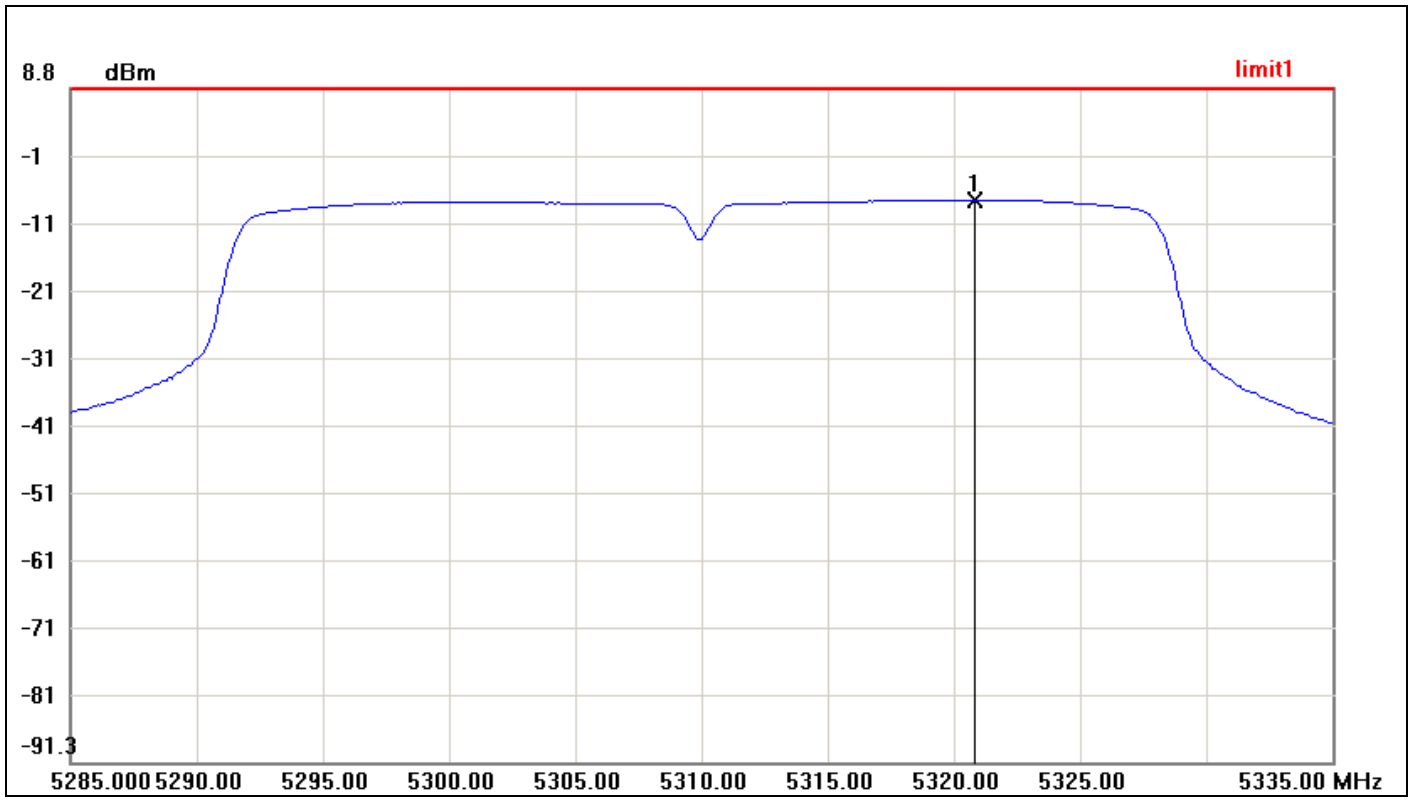
IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

CH Low



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5280.7500	-4.00	11.00	-15.00

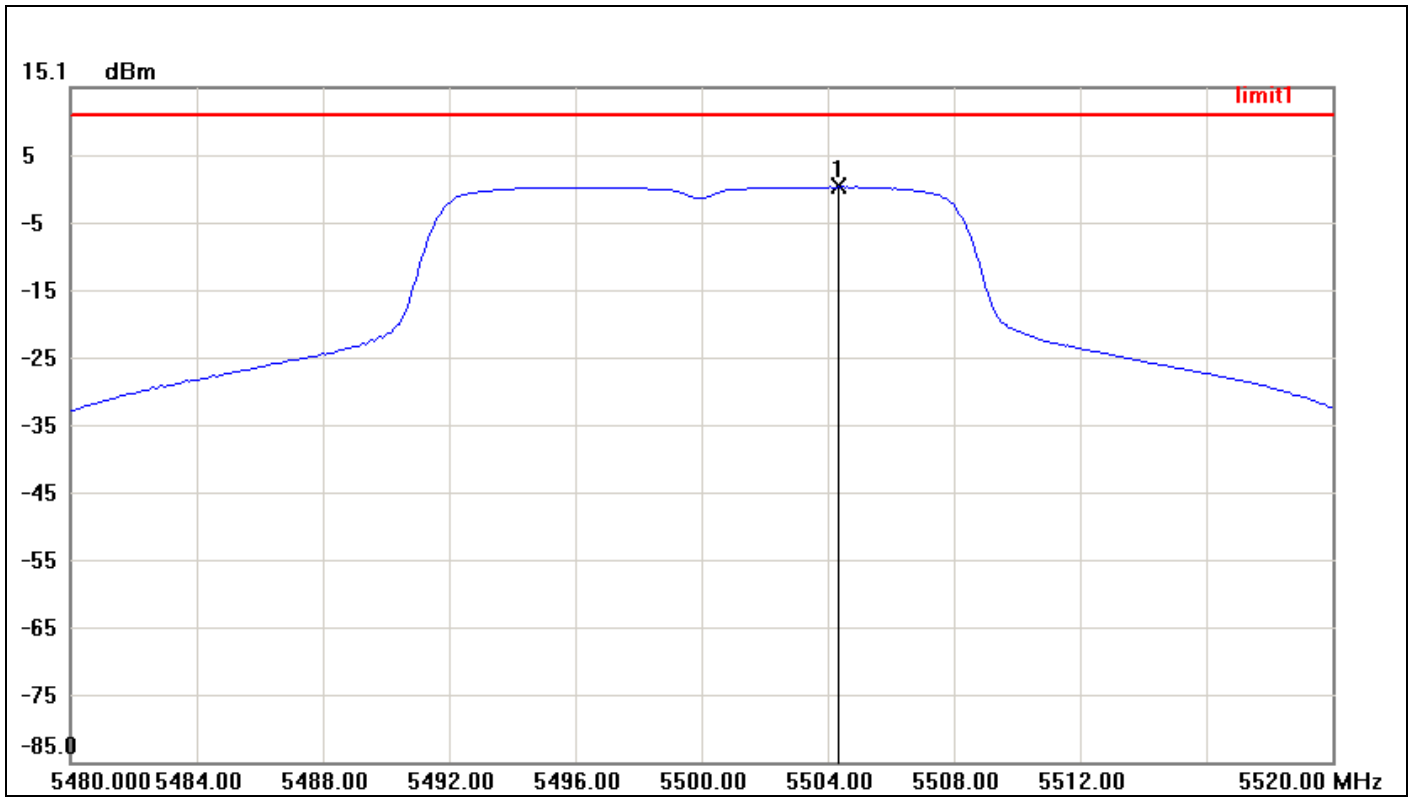
CH High



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5320.8333	-7.78	11.00	-18.78

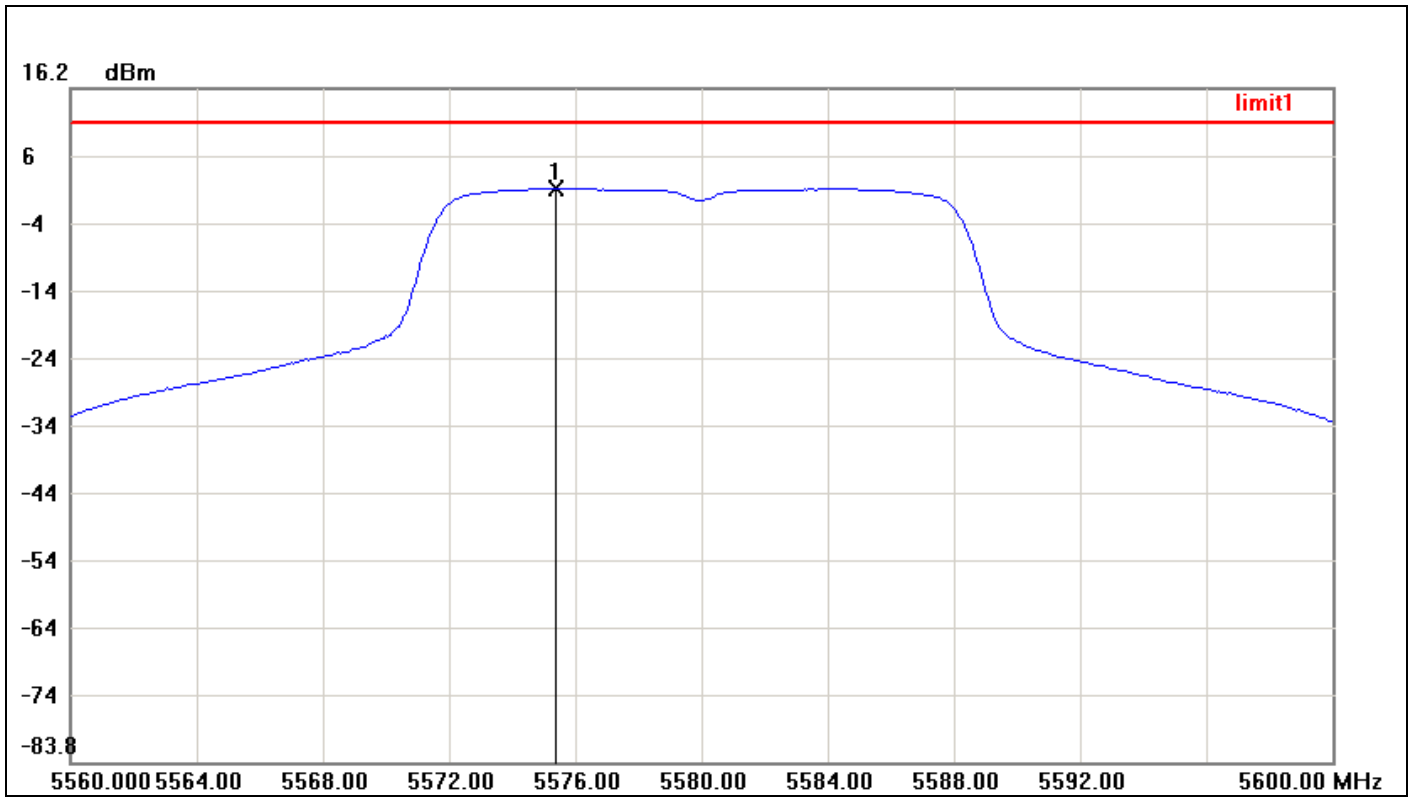
Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

CH Low



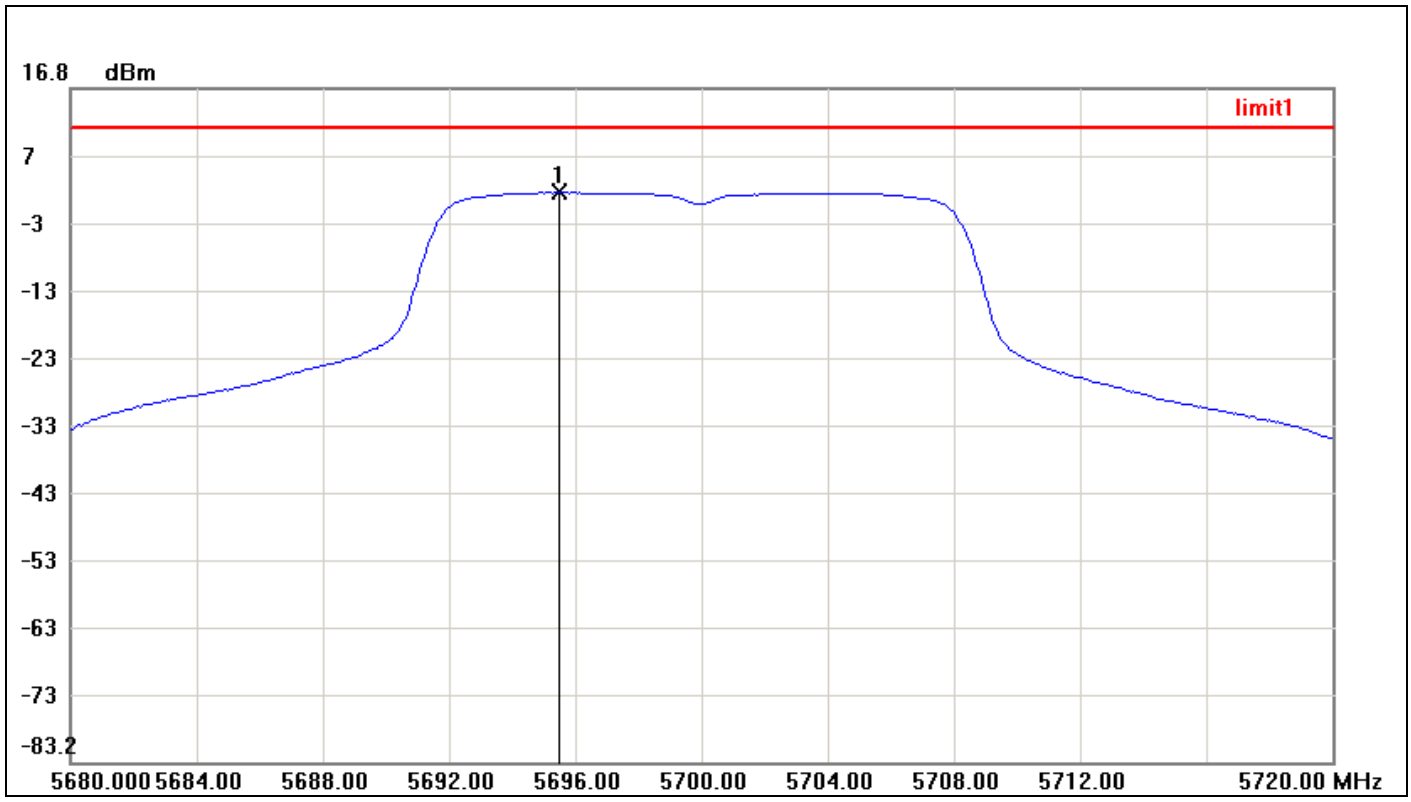
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5504.3333	0.32	11.00	-10.68

CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5575.4000	1.33	11.00	-9.67

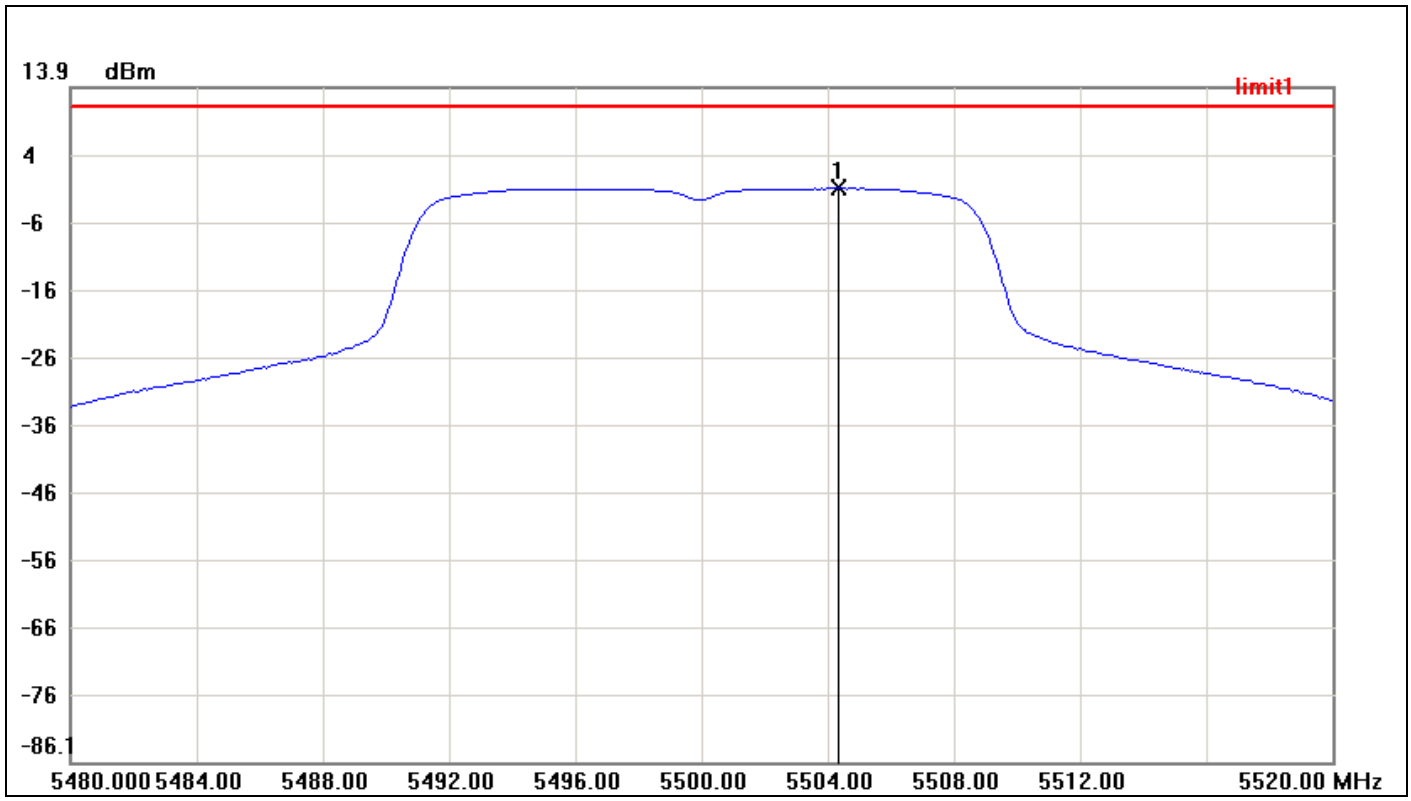
CH High



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5695.4667	1.37	11.00	-9.63

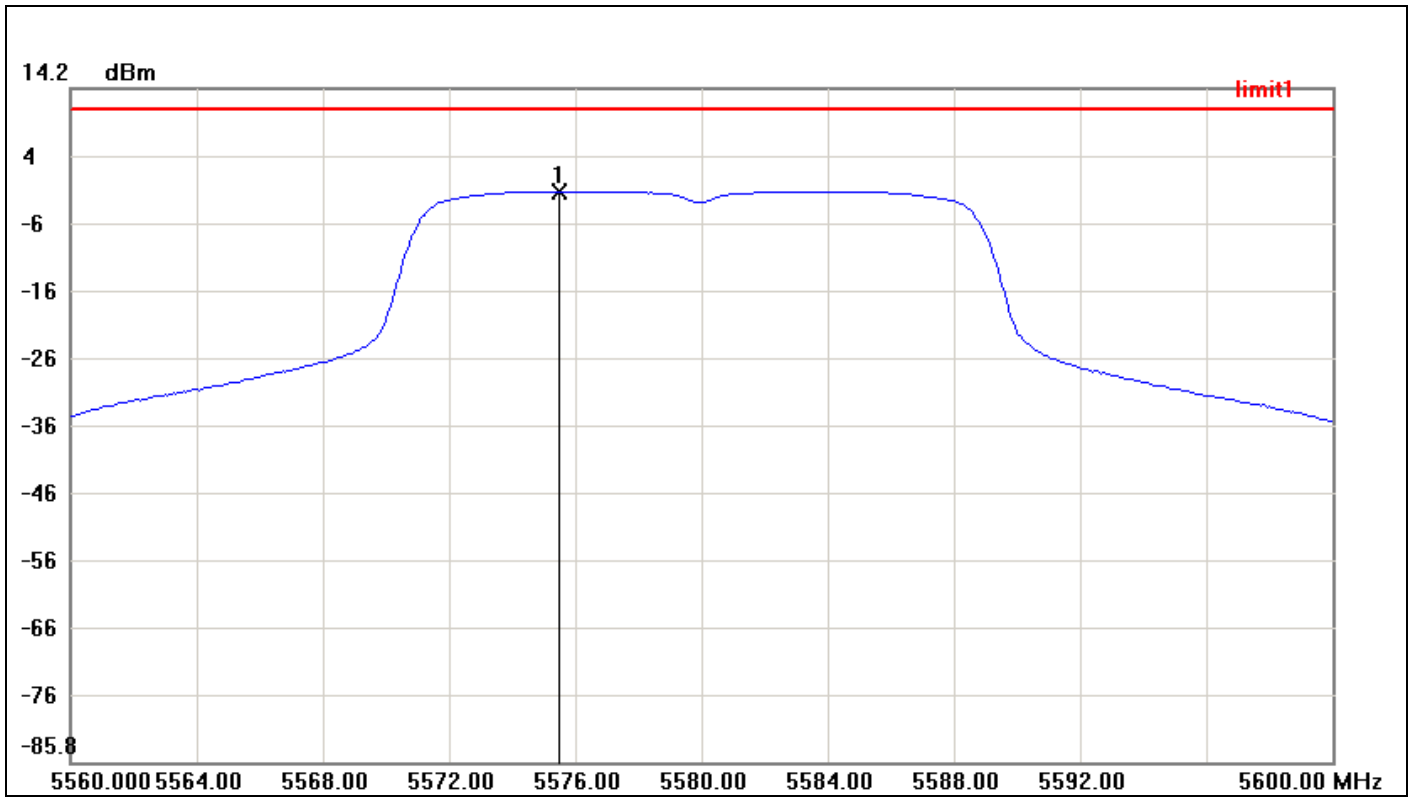
IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

CH Low



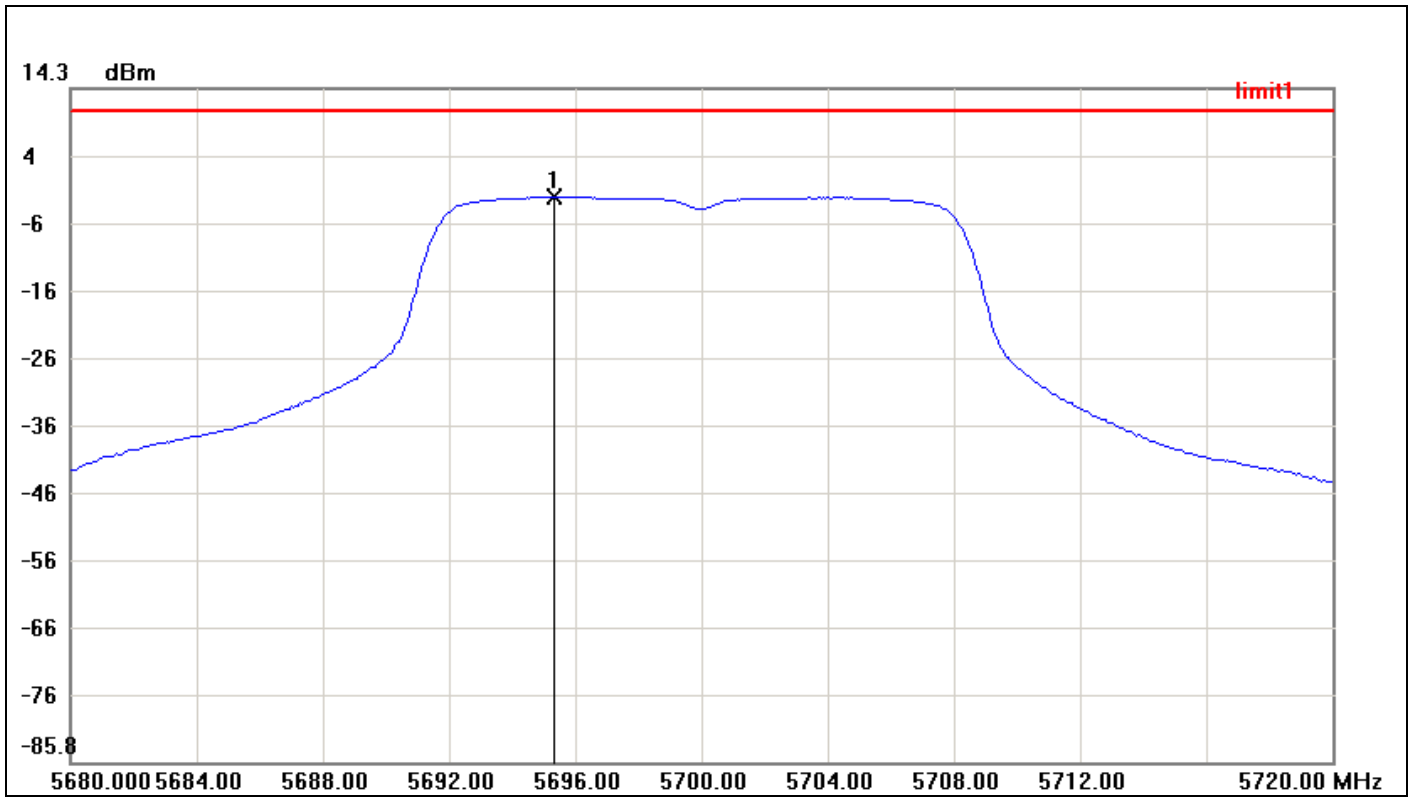
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5504.3333	-1.04	11.00	-12.04

CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5575.4667	-1.01	11.00	-12.01

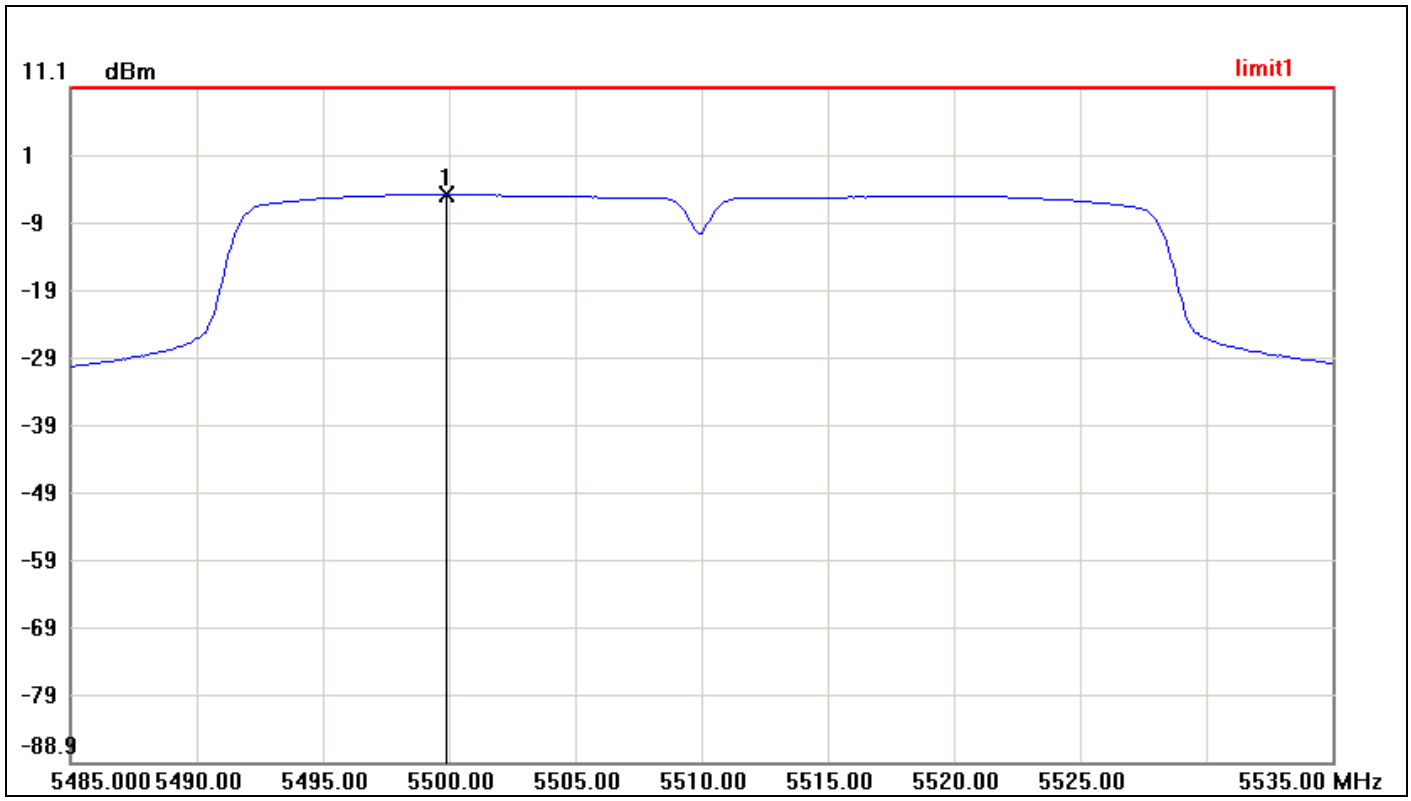
CH High



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5695.3333	-1.91	11.00	-12.91

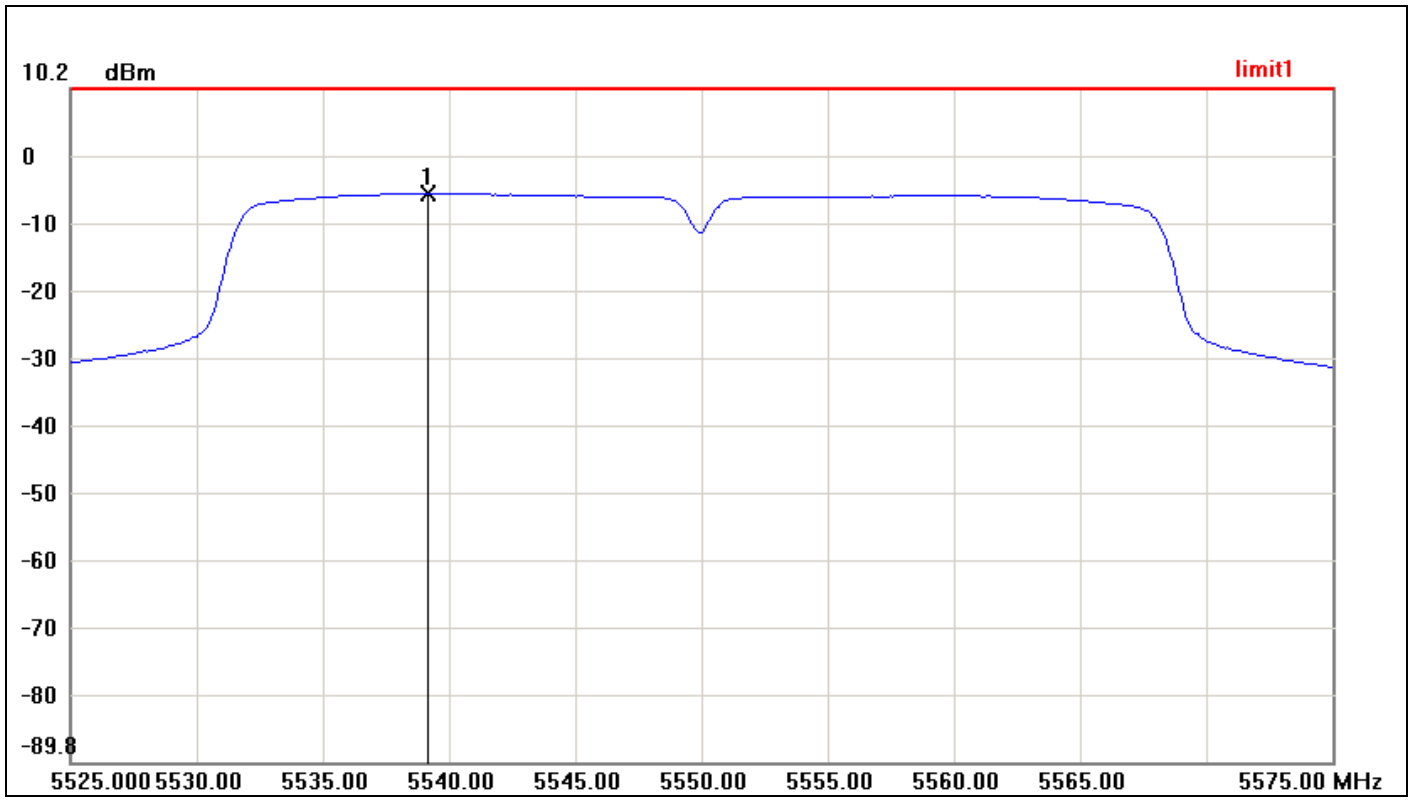
IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

CH Low



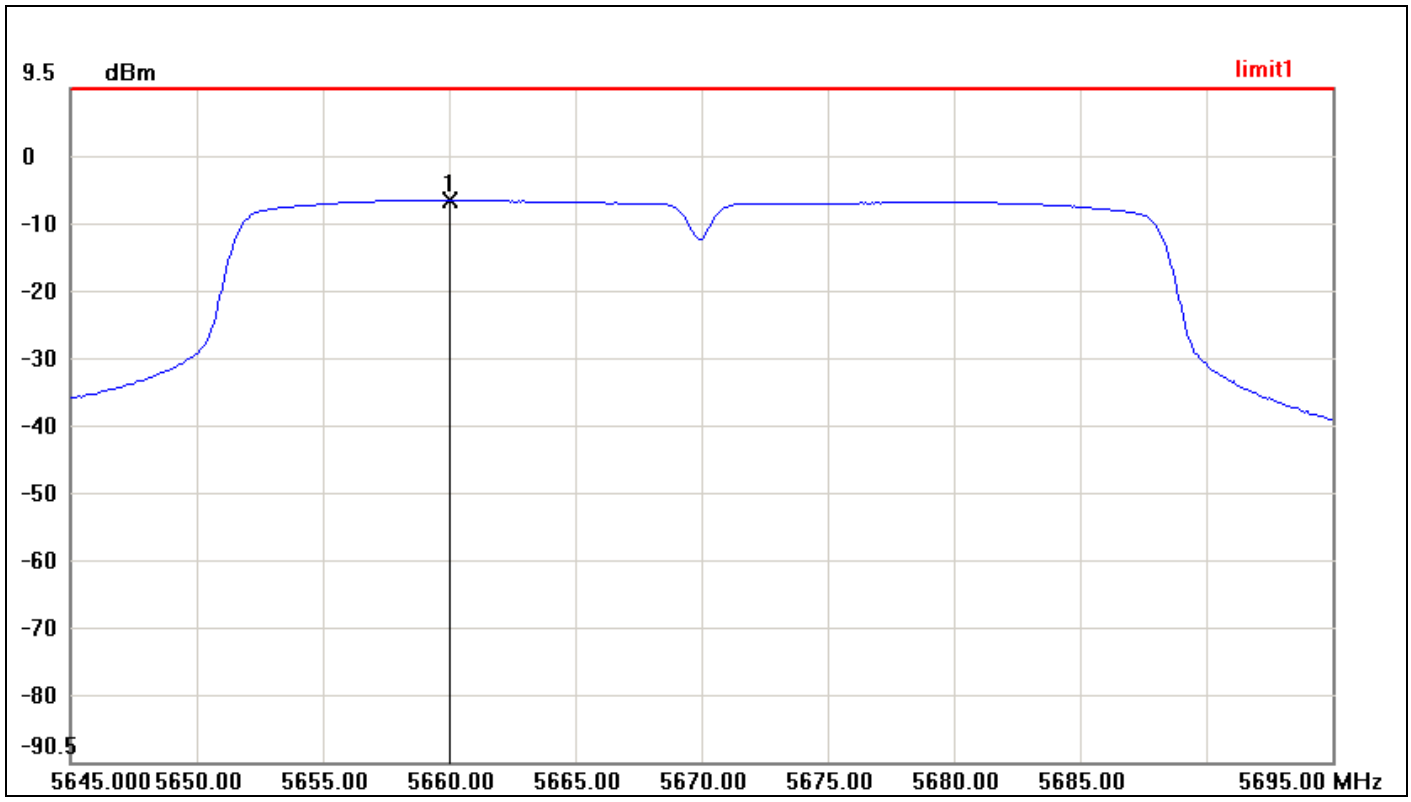
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5499.9167	-4.75	11.00	-15.75

CH Mid



No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5539.1667	-5.42	11.00	-16.42

CH High



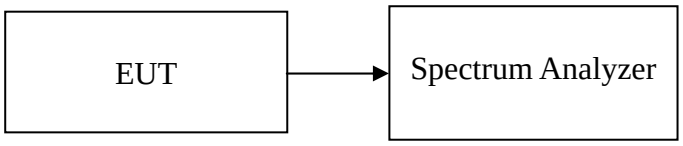
No.	Frequency(MHz)	Result(dBm)	Limit(dBm)	Margin(dBm)
1	5660.0000	-7.10	11.00	-18.10

8.6 PEAK EXCURSION

LIMIT

According to §15.407(a)(6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

Test Configuration



TEST PROCEDURE

The test is performed in accordance with <FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices> – Part 15, Subpart E, August 2002.

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to spectrum.
3. Trace A, Set RBW =1MHz, VBW = 3MHz, Span >26dB bandwidth, Max. hold.
4. Delta Mark trace A Maximum frequency and trace B same frequency.
5. Repeat the above procedure until measurements for all frequencies were complete.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	9.33	13.00	-3.67	PASS
Mid	5220	9.29	13.00	-3.71	PASS
High	5240	9.76	13.00	-3.24	PASS

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	9.69	13.00	-3.31	PASS
Mid	5220	9.73	13.00	-3.27	PASS
High	5240	9.78	13.00	-3.22	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	10.09	13.00	-2.91	PASS
High	5230	9.77	13.00	-3.23	PASS

Test mode: IEEE 802.11a mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	9.26	13.00	-3.74	PASS
Mid	5280	9.82	13.00	-3.18	PASS
High	5320	9.62	13.00	-3.38	PASS

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	10.15	13.00	-2.85	PASS
Mid	5280	9.89	13.00	-3.11	PASS
High	5320	9.84	13.00	-3.16	PASS

Test mode: IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5270	10.11	13.00	-2.89	PASS
High	5310	9.69	13.00	-3.31	PASS

Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	9.43	13.00	-3.57	PASS
Mid	5600	9.95	13.00	-3.05	PASS
High	5700	9.44	13.00	-3.56	PASS

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	9.35	13.00	-3.65	PASS
Mid	5600	9.63	13.00	-3.37	PASS
High	5700	10.23	13.00	-2.77	PASS

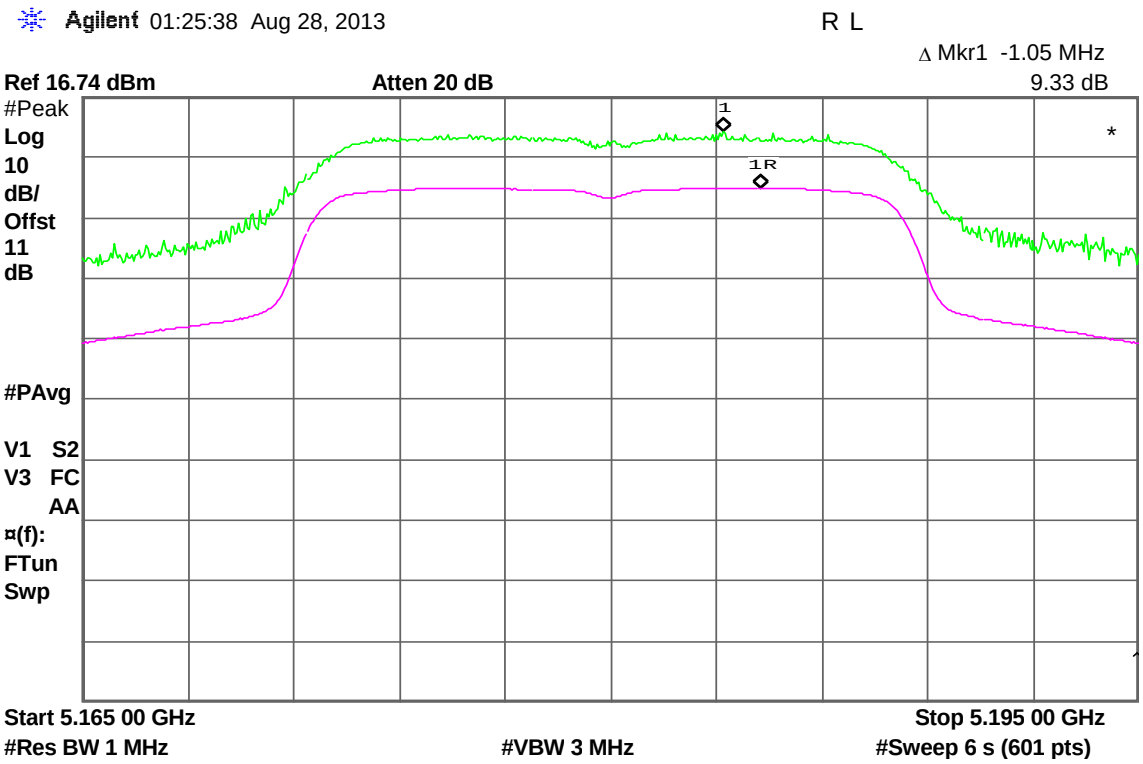
Test mode: IEEE 802.11n HT 40 MHz mode / 5500 ~ 5700MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	9.74	13.00	-3.26	PASS
Mid	5600	9.67	13.00	-3.33	PASS
High	5700	9.74	13.00	-3.26	PASS

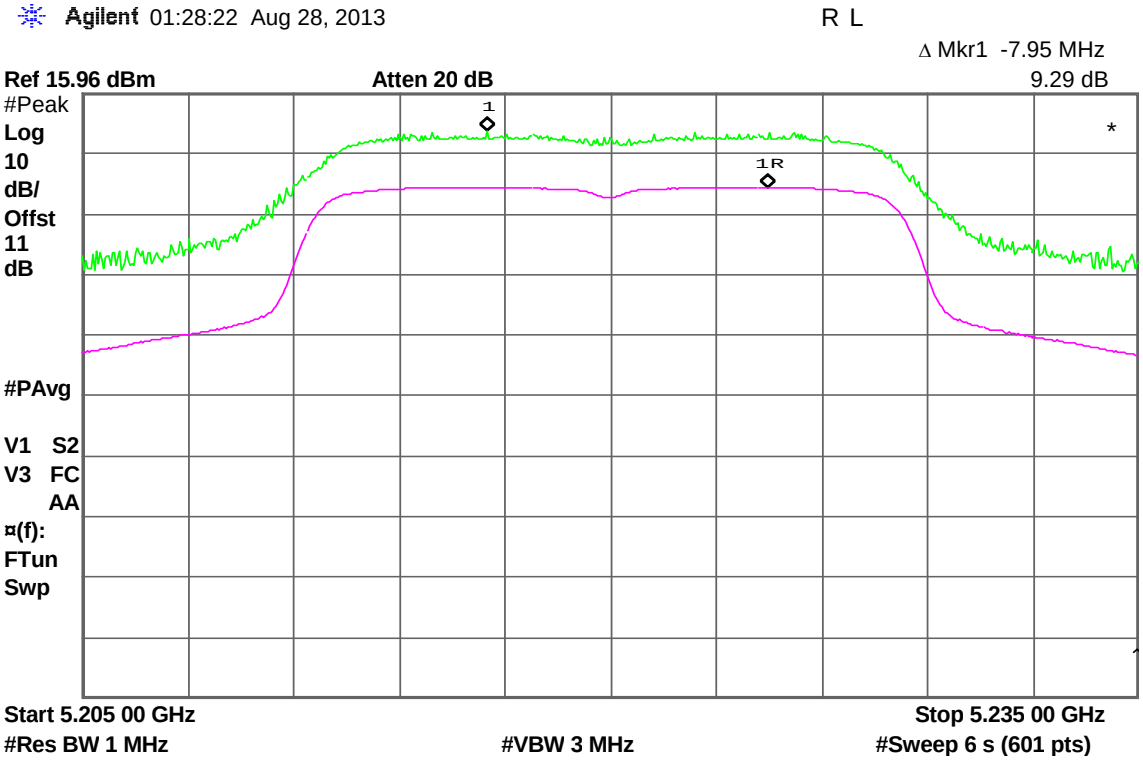
Test Plot

IEEE 802.11a mode / 5180 ~ 5240MHz

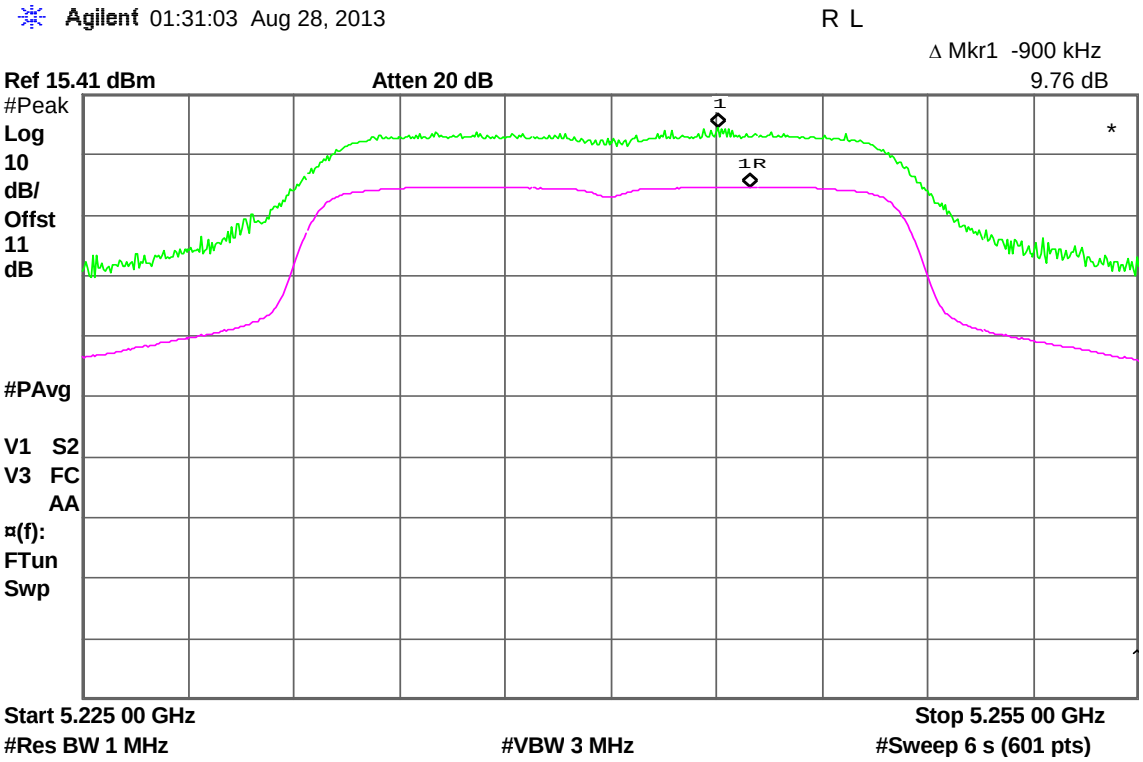
CH Low



CH Mid

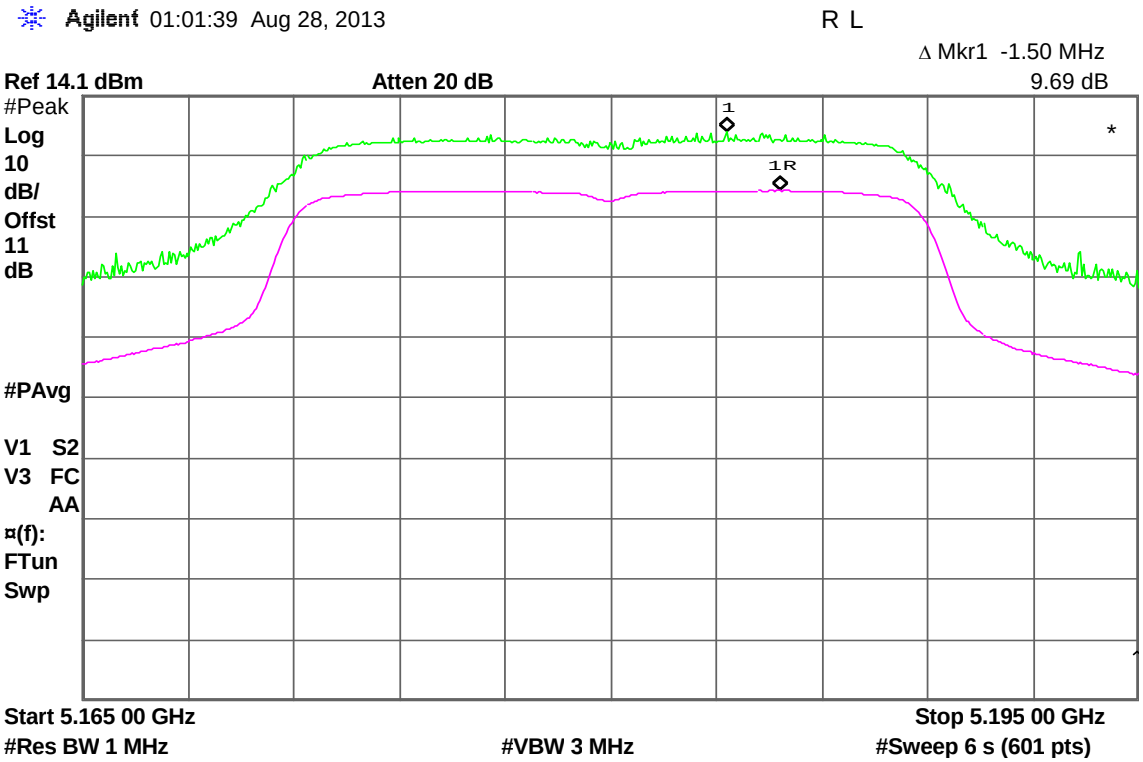


CH High

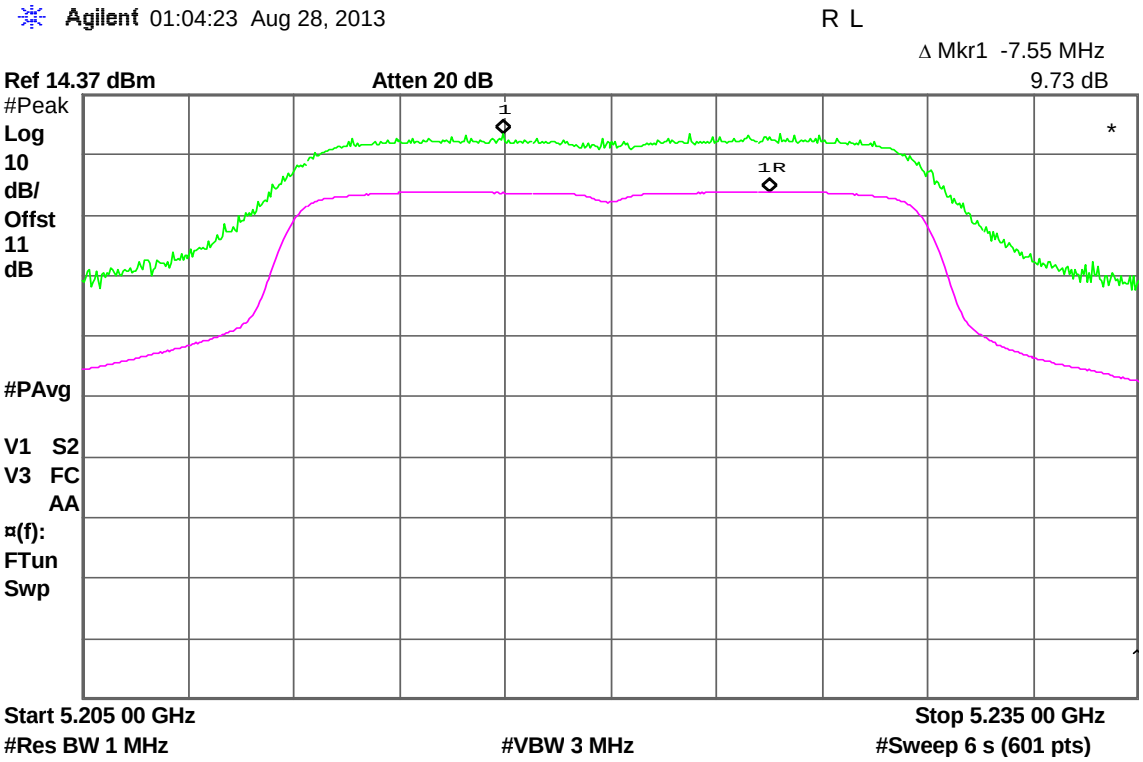


IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

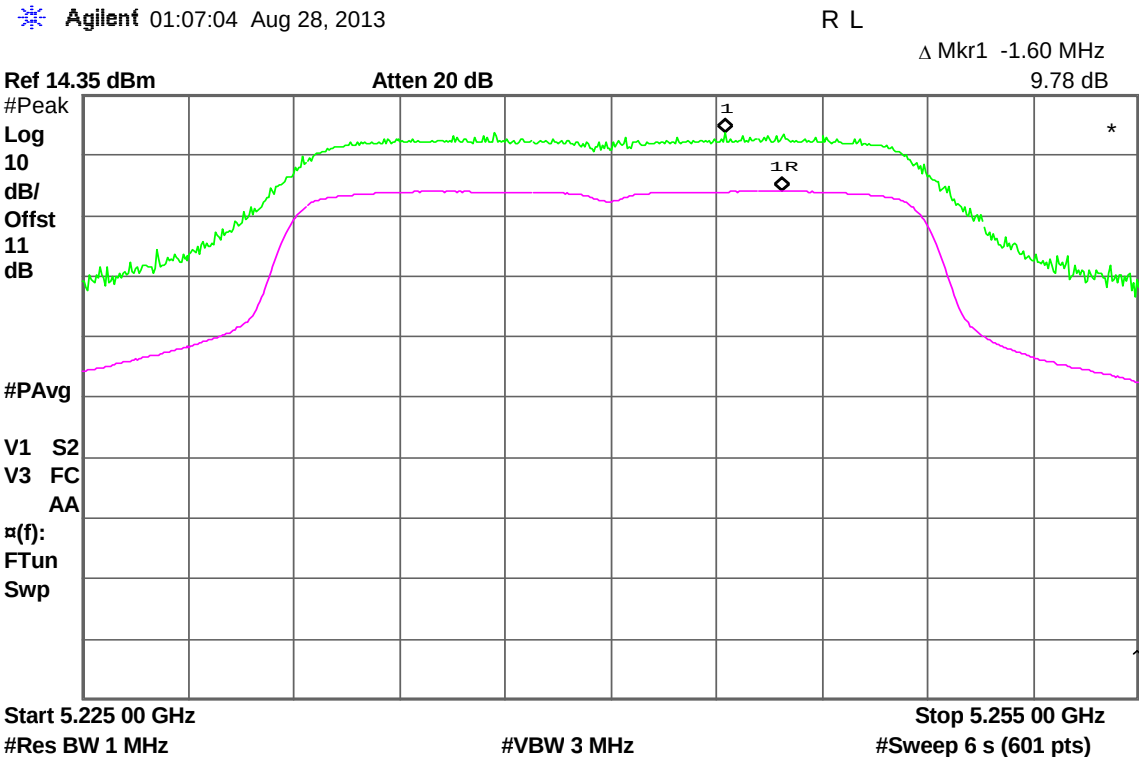
CH Low



CH Mid

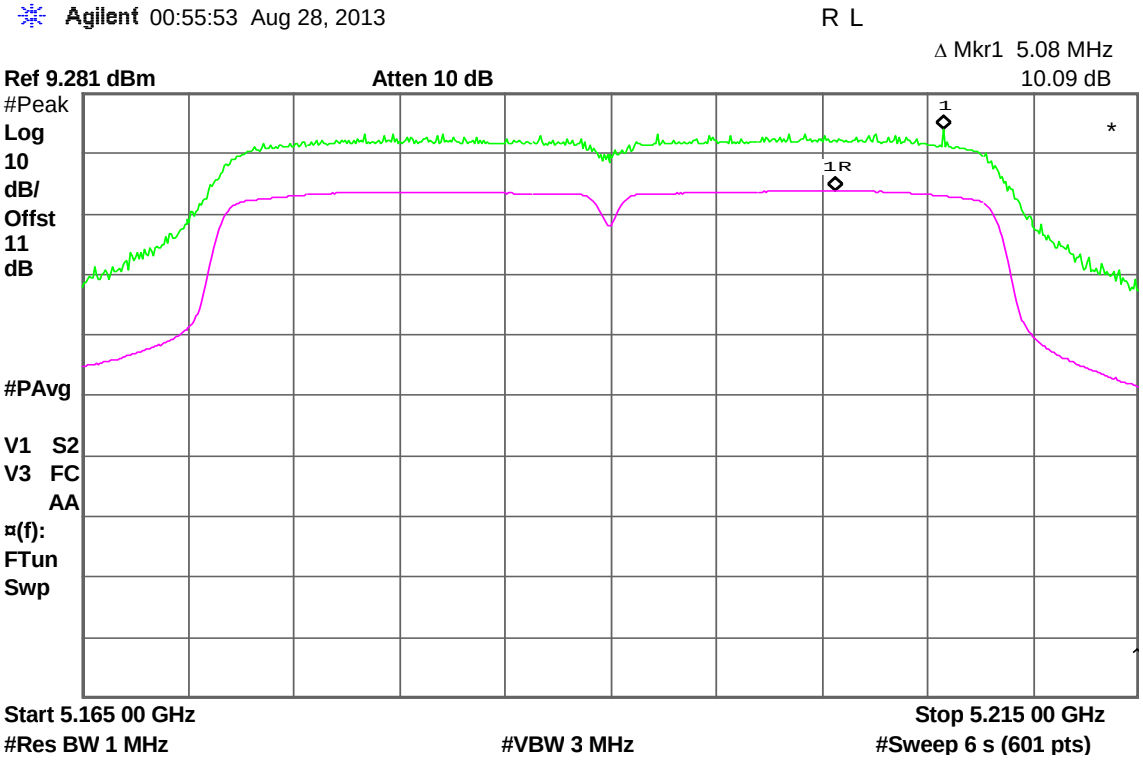


CH High

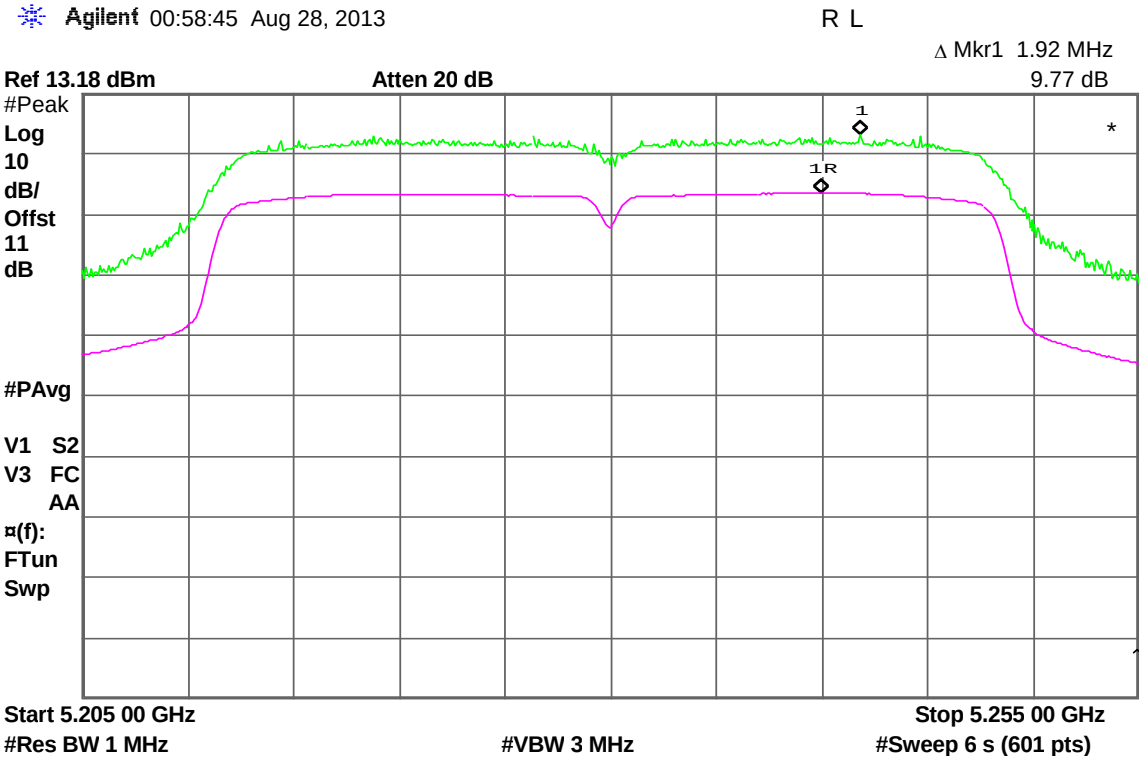


IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230MHz

CH Low

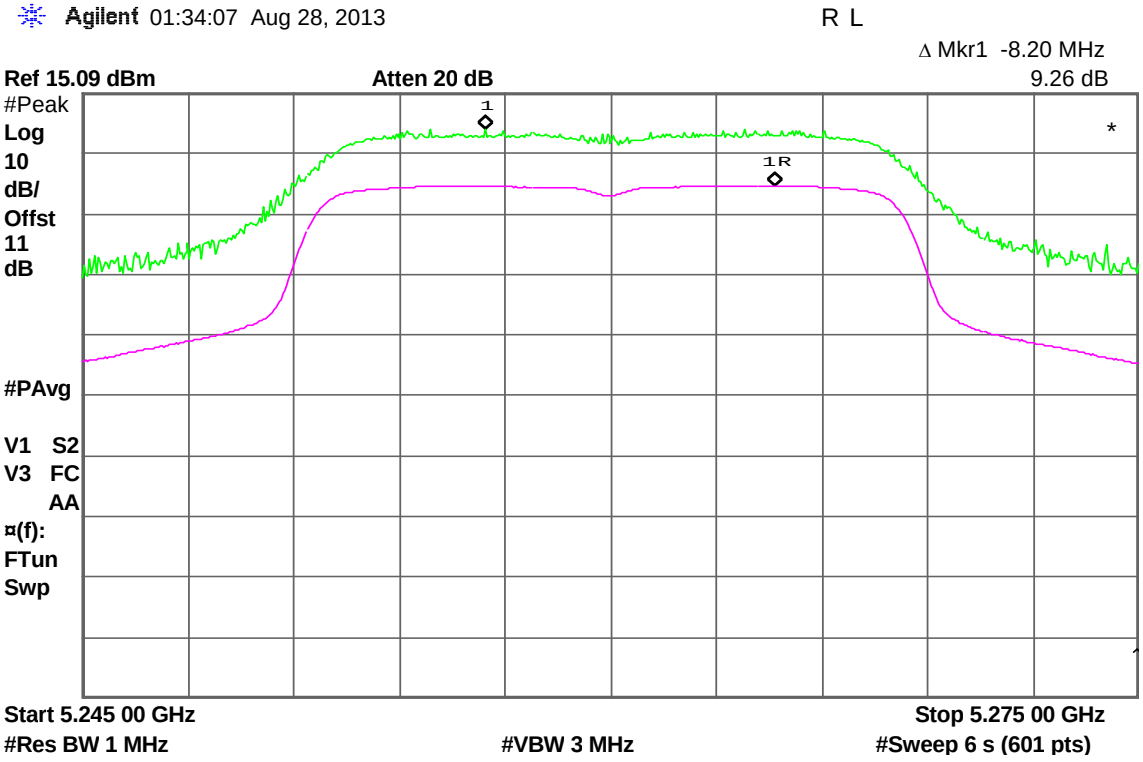


CH High

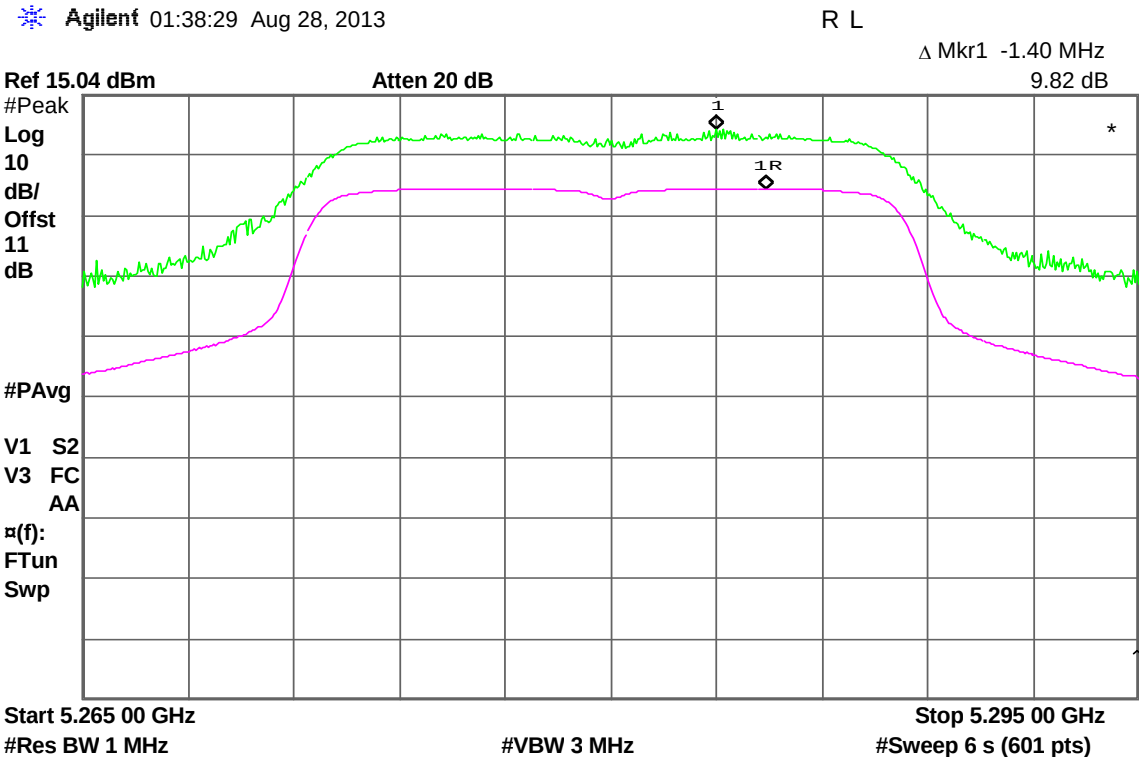


IEEE 802.11a mode / 5260 ~ 5320MHz

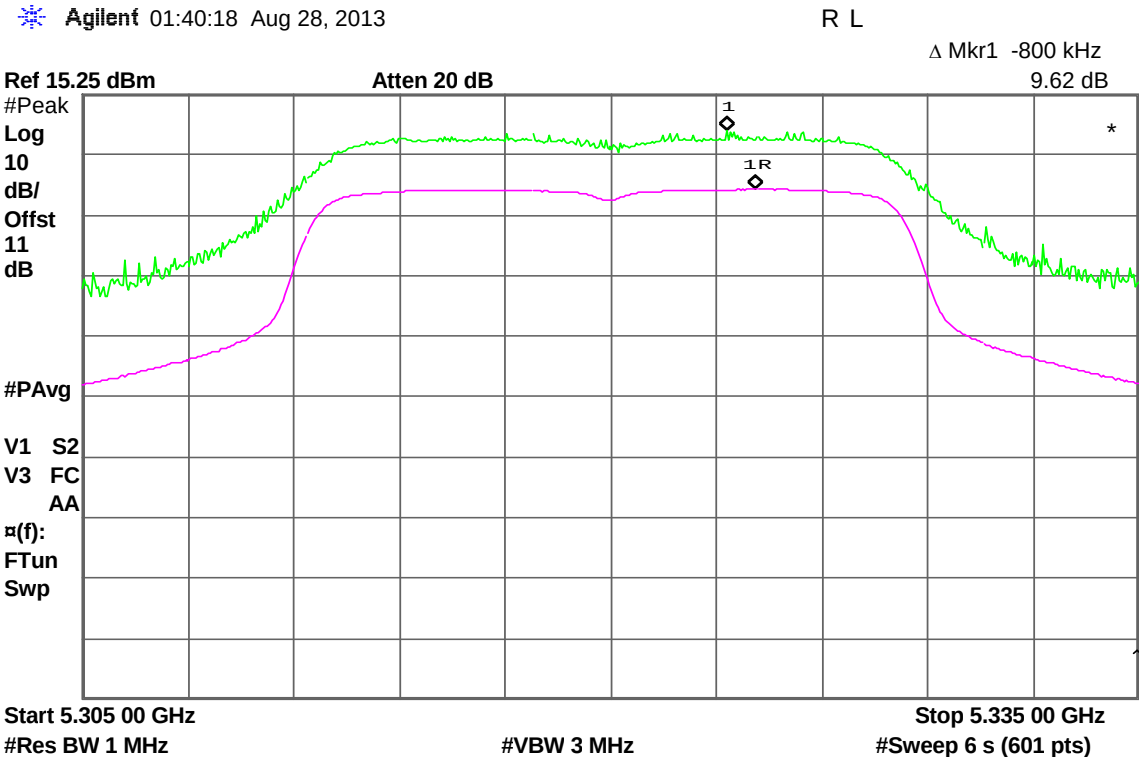
CH Low



CH Mid

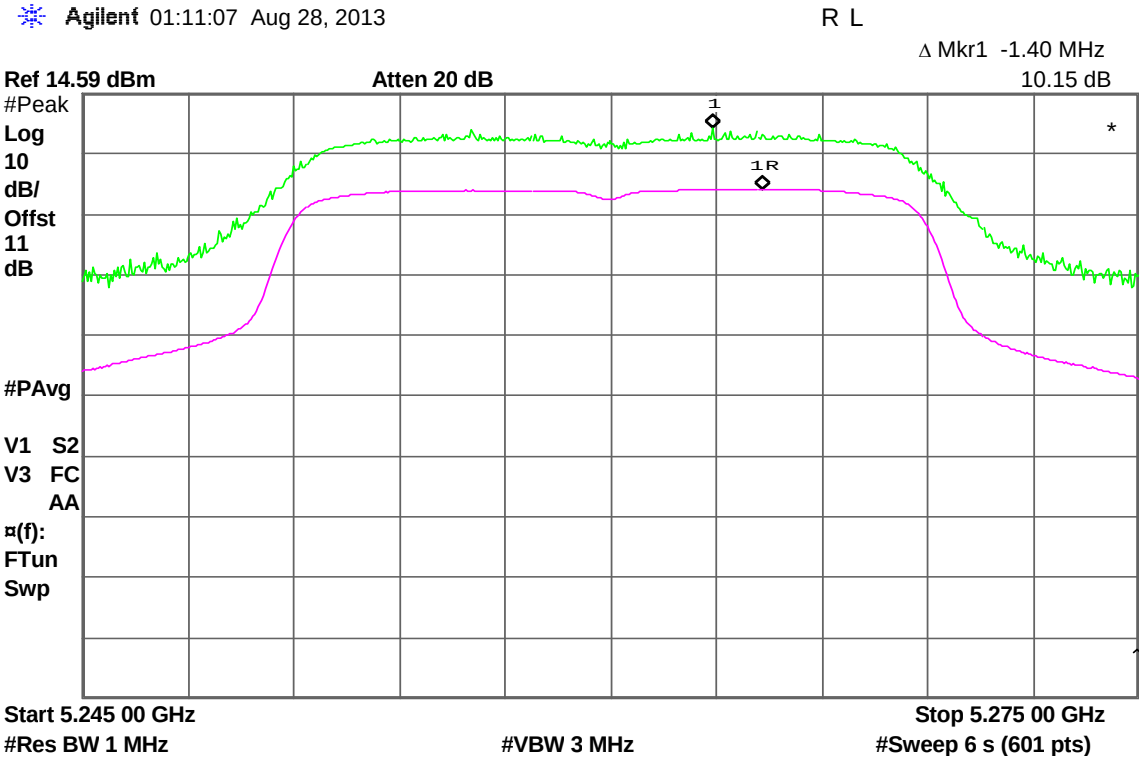


CH High

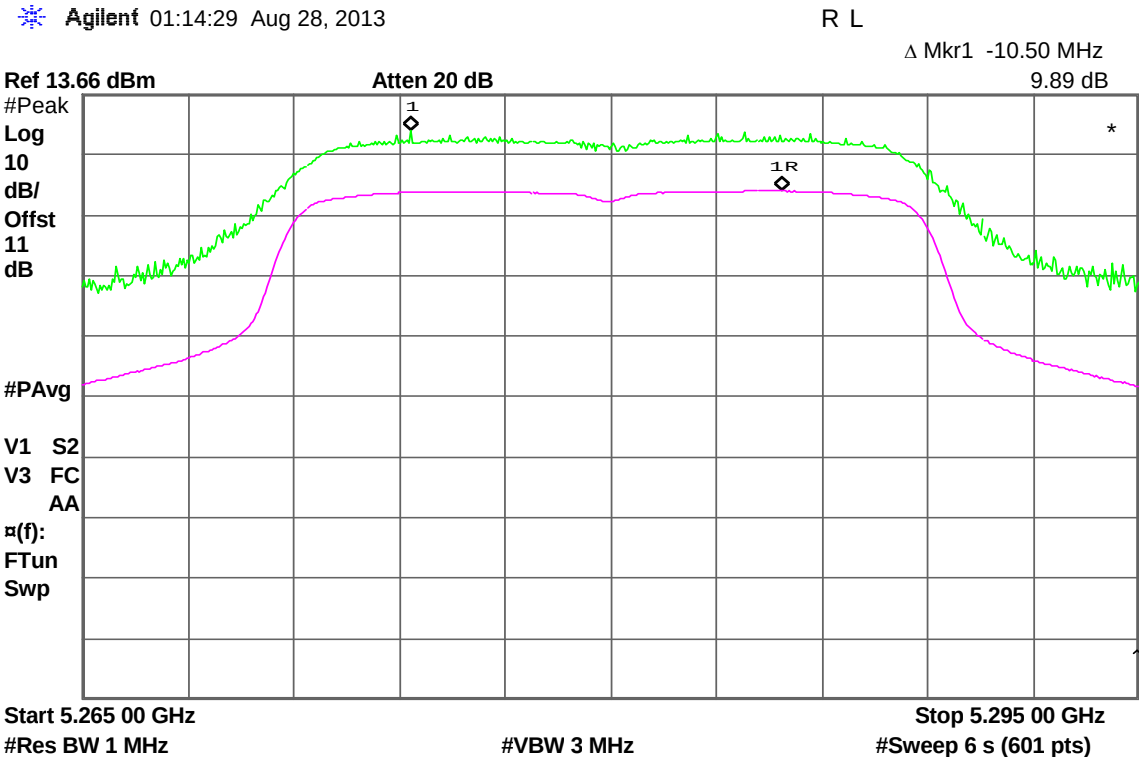


IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320MHz

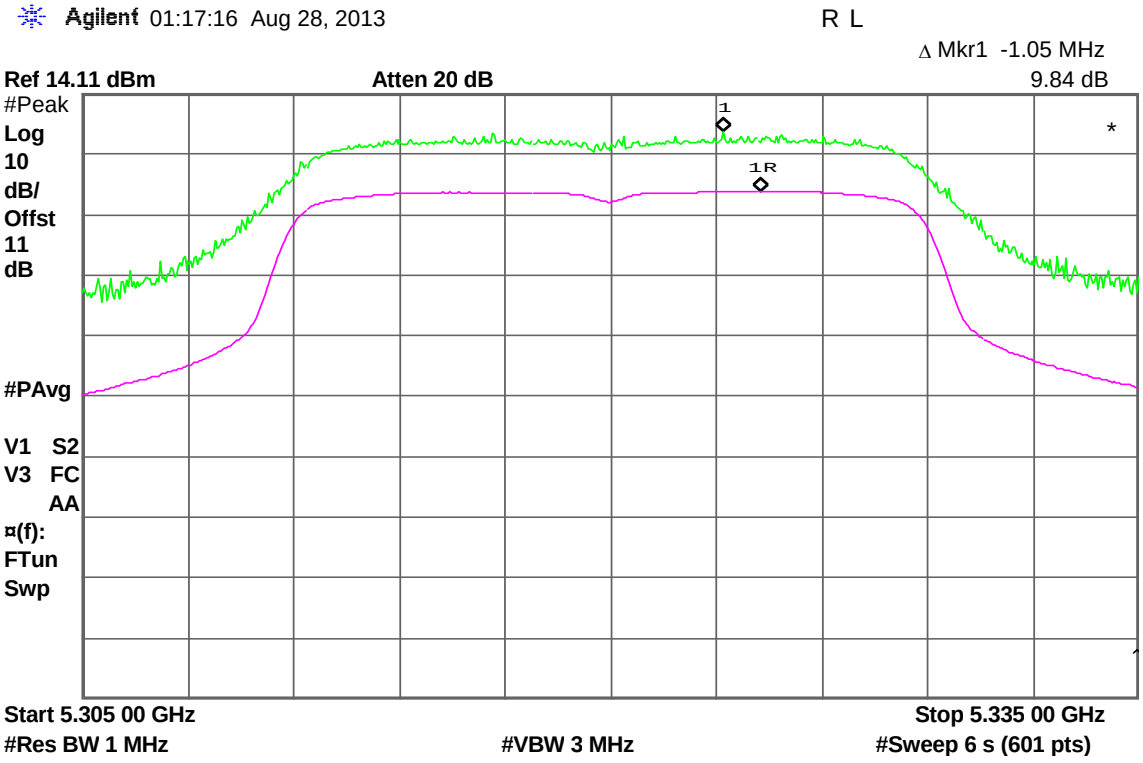
CH Low



CH Mid

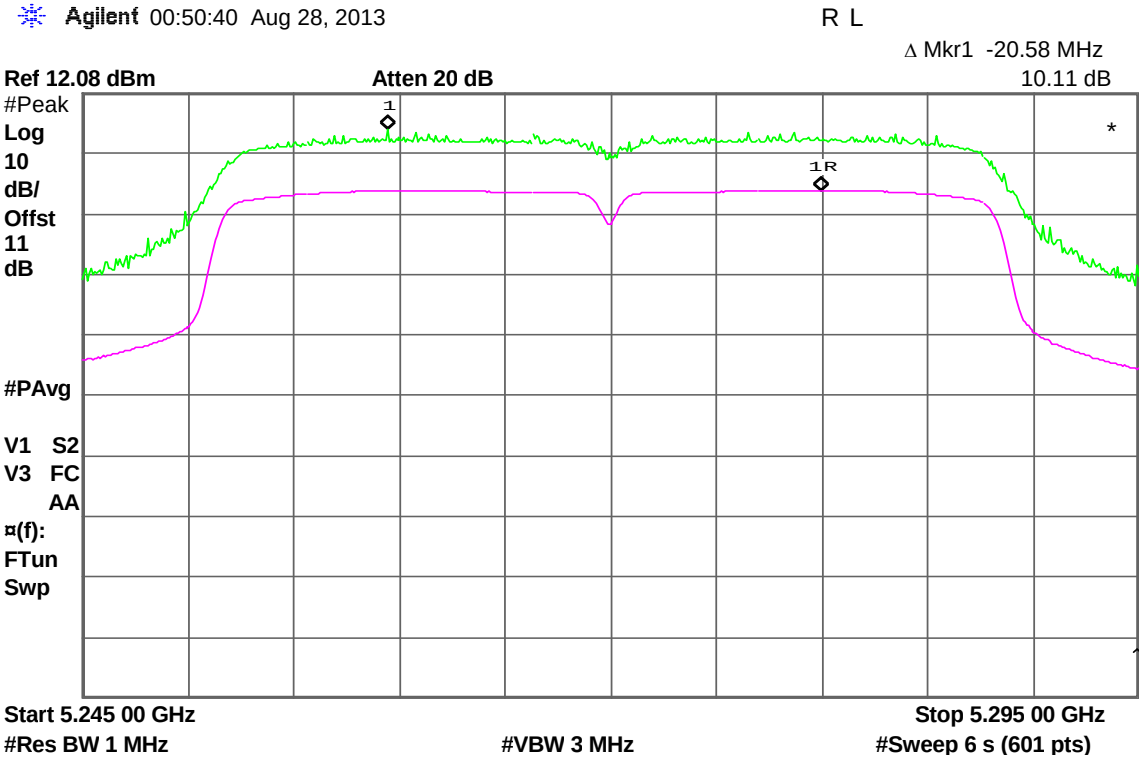


CH High

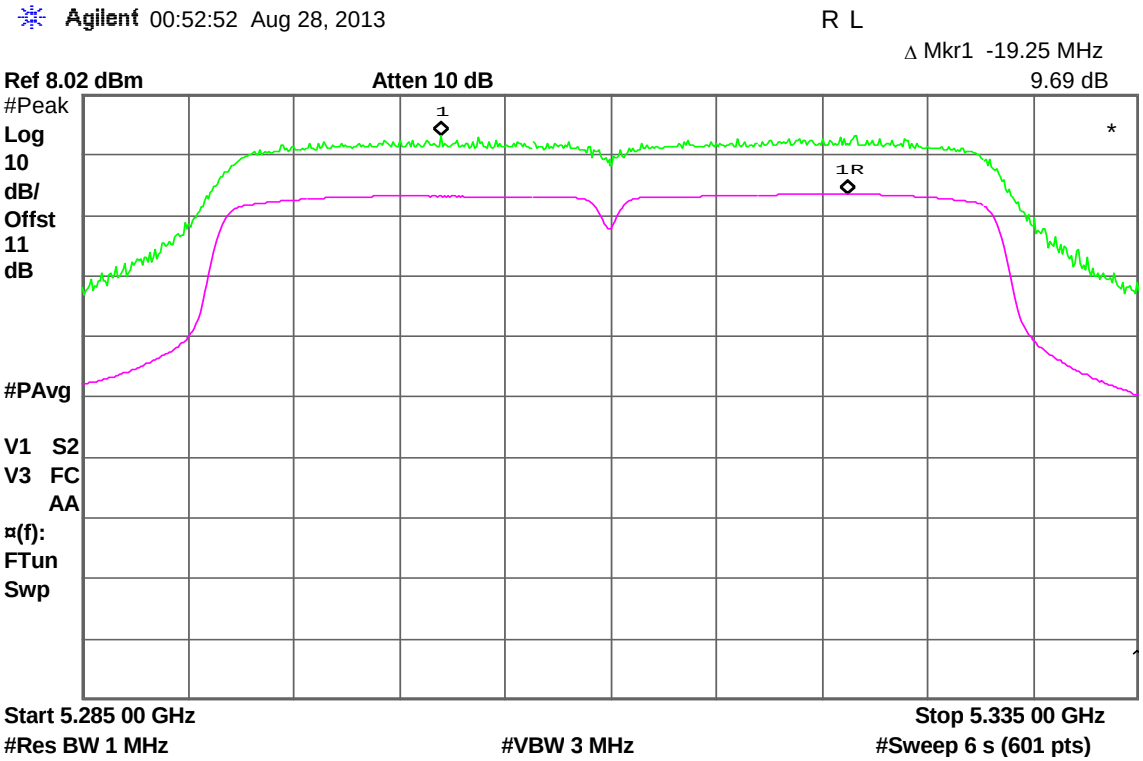


IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310MHz

CH Low

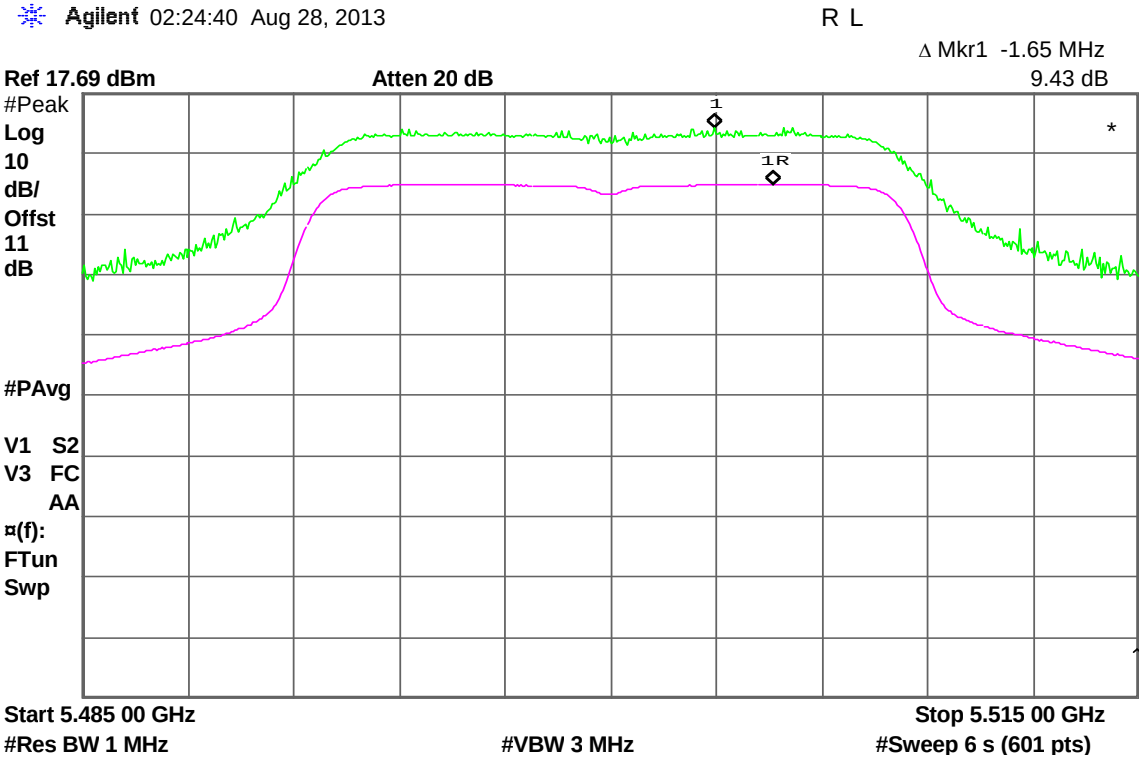


CH High

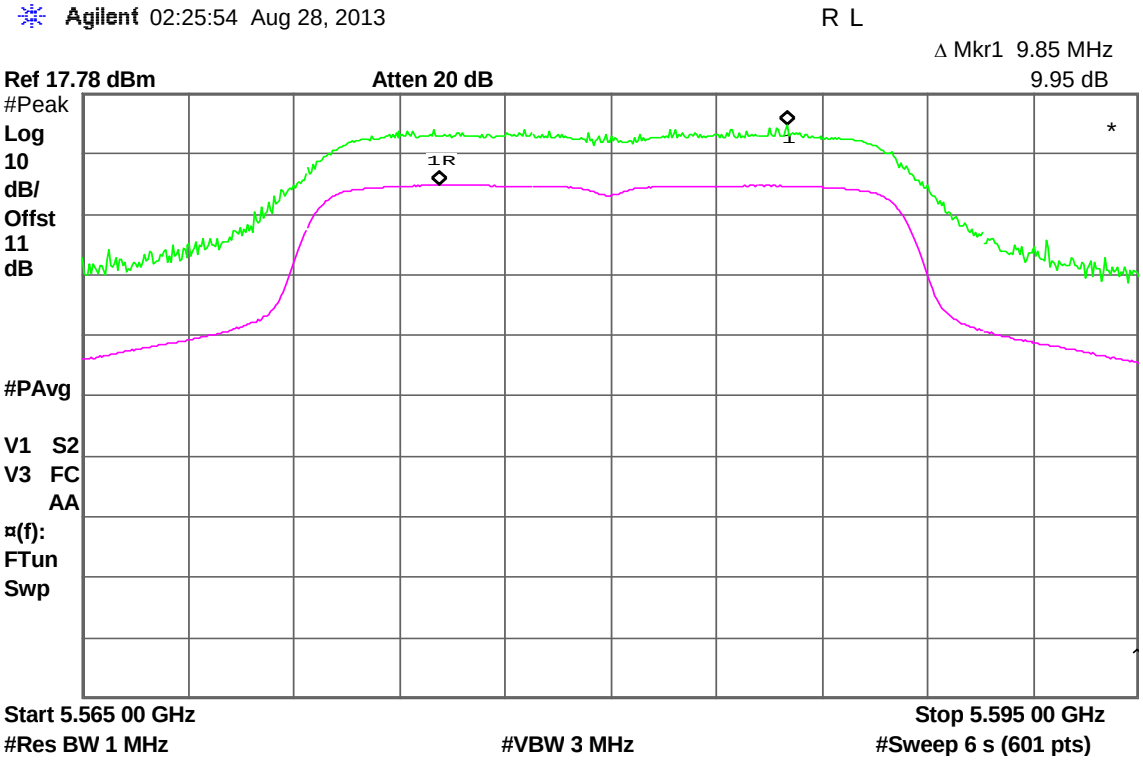


Test mode: IEEE 802.11a mode / 5500 ~ 5700MHz

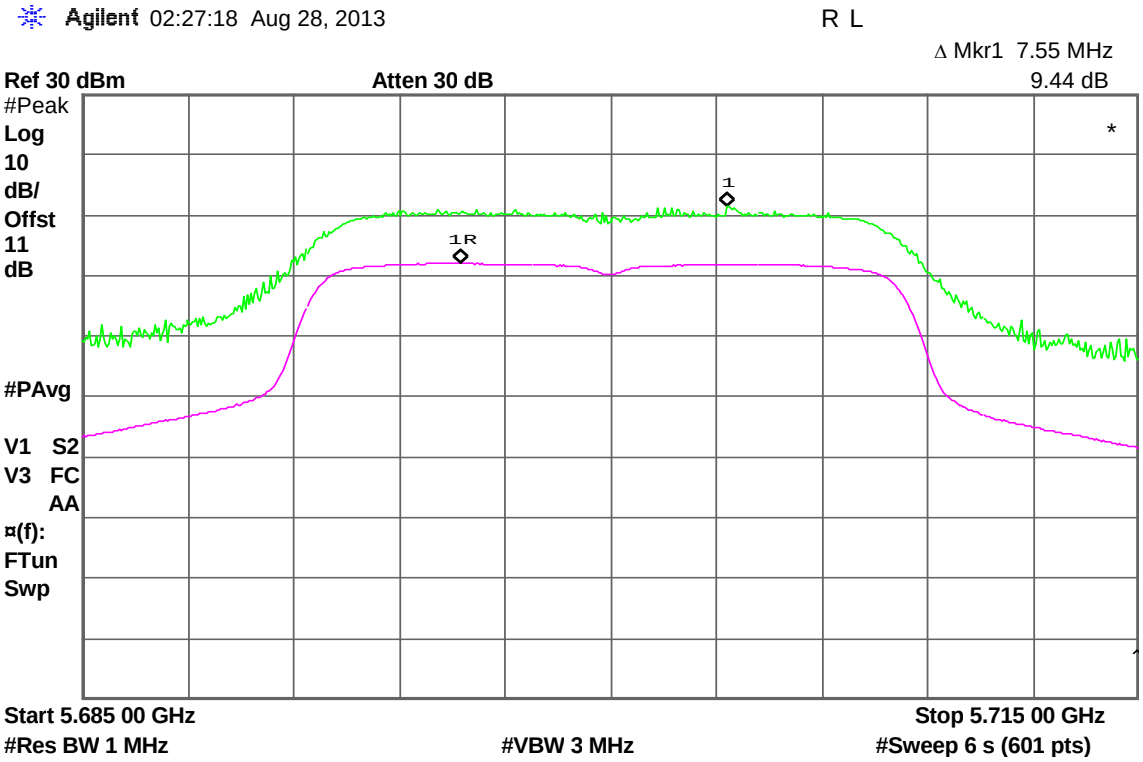
CH Low



CH Mid

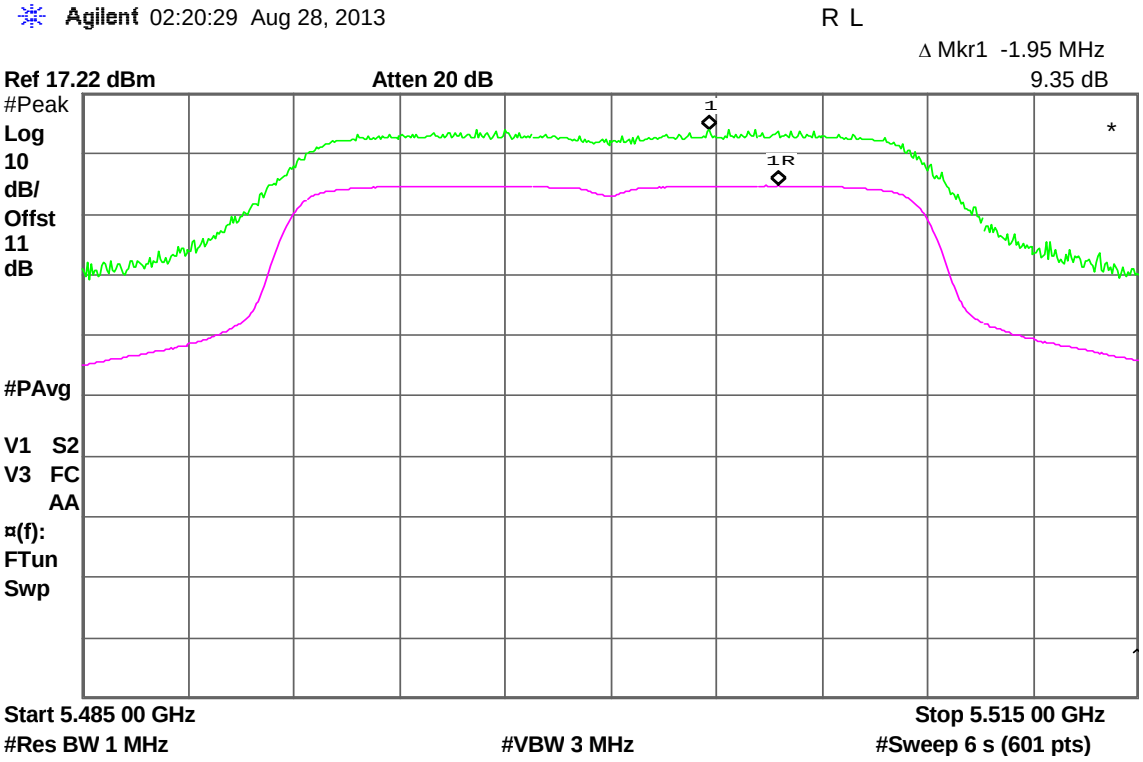


CH High

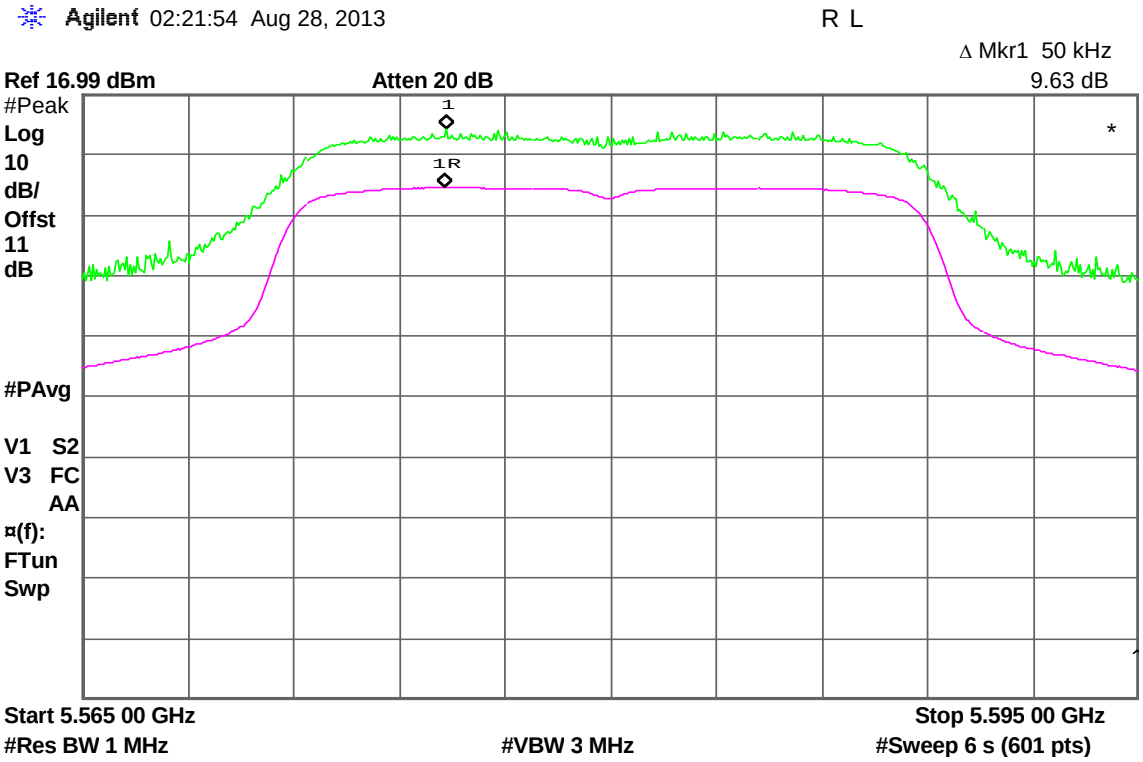


IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700MHz

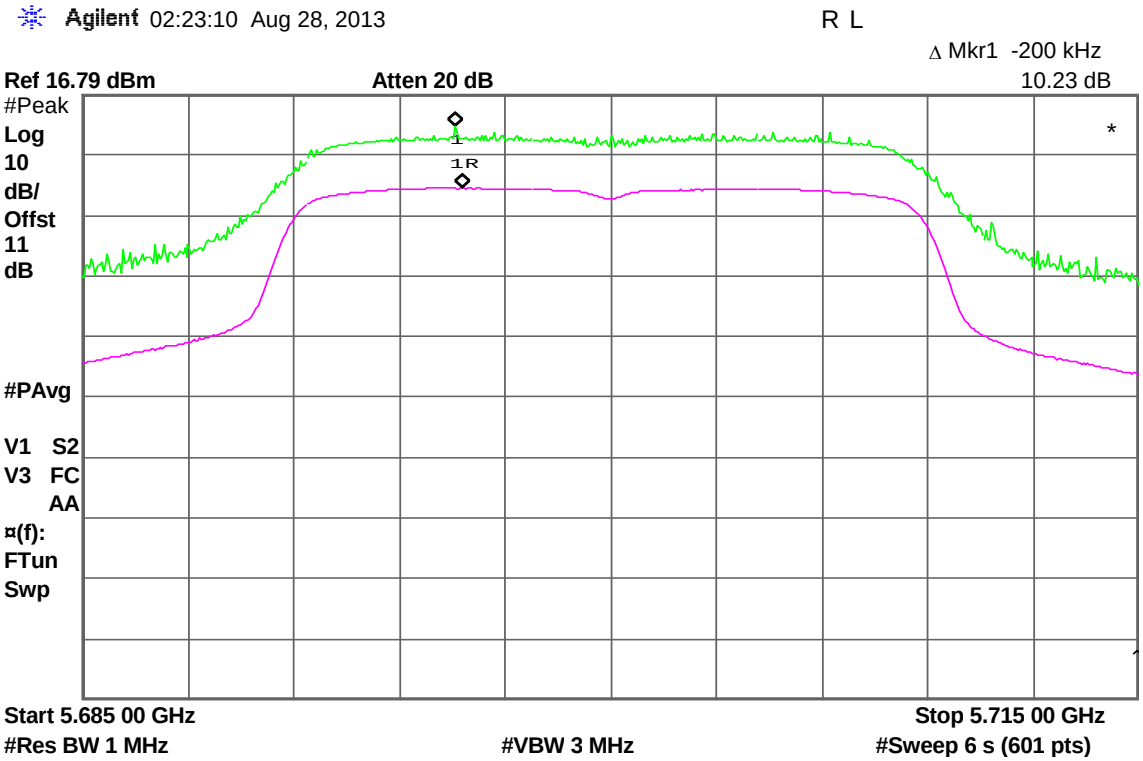
CH Low



CH Mid

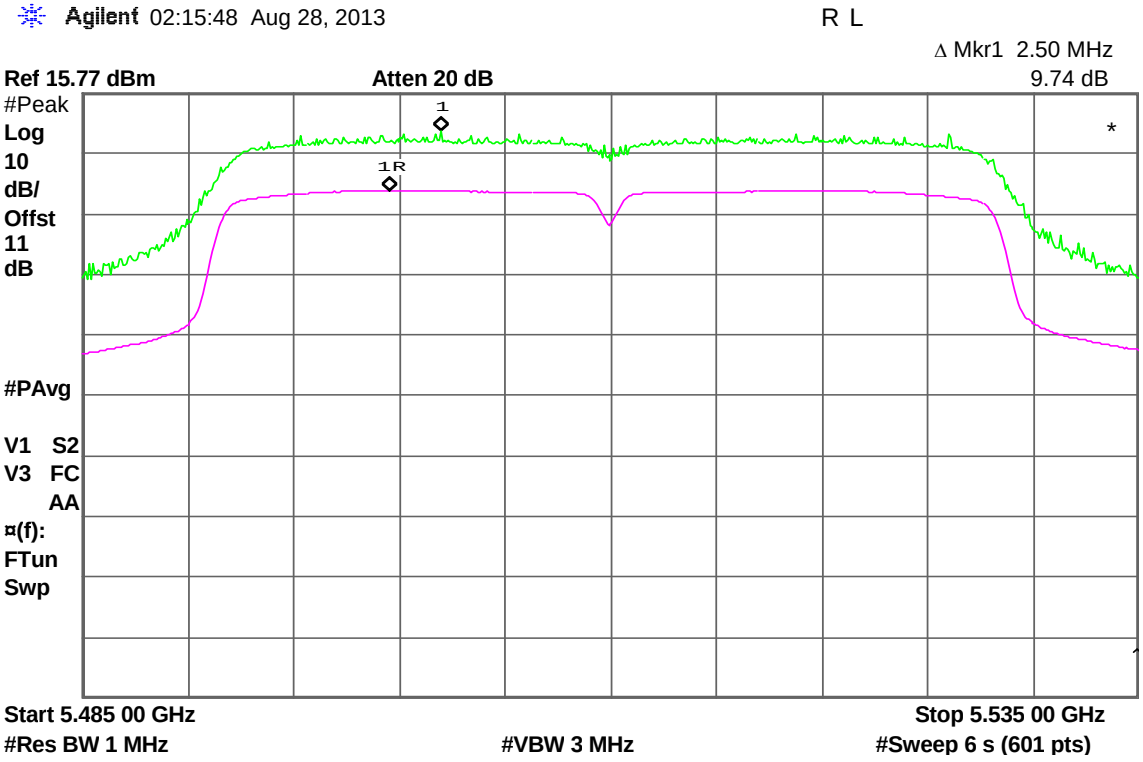


CH High

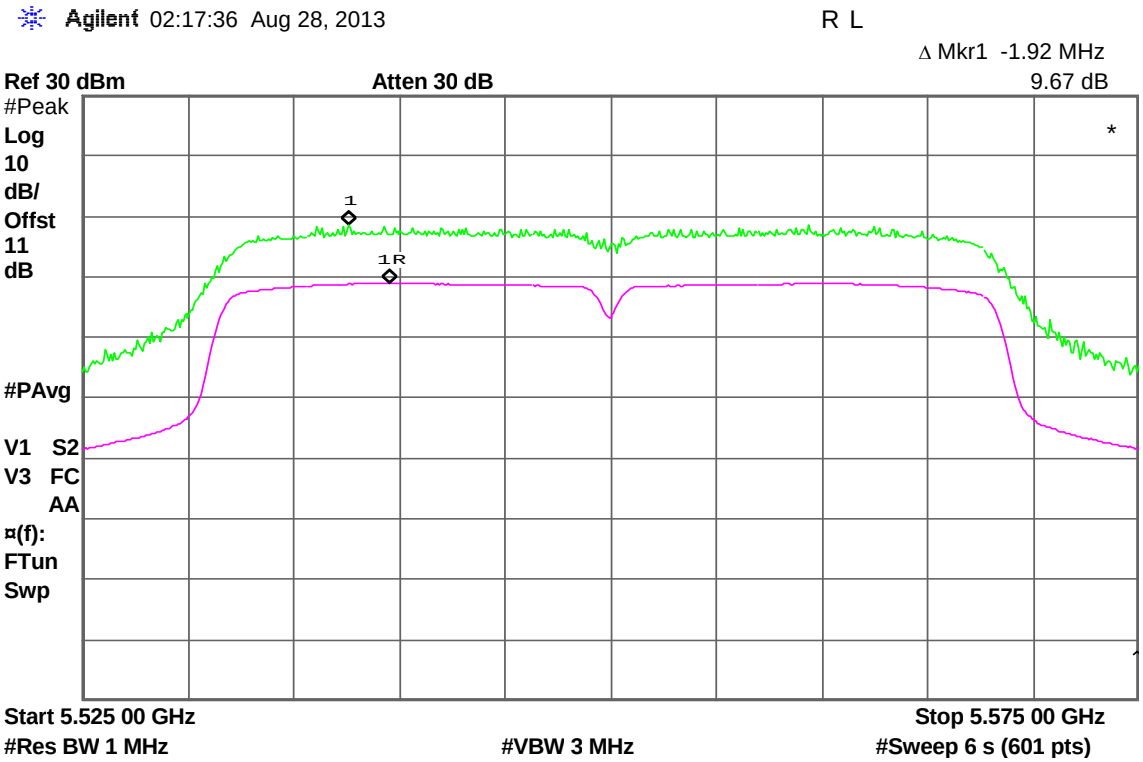


IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670MHz

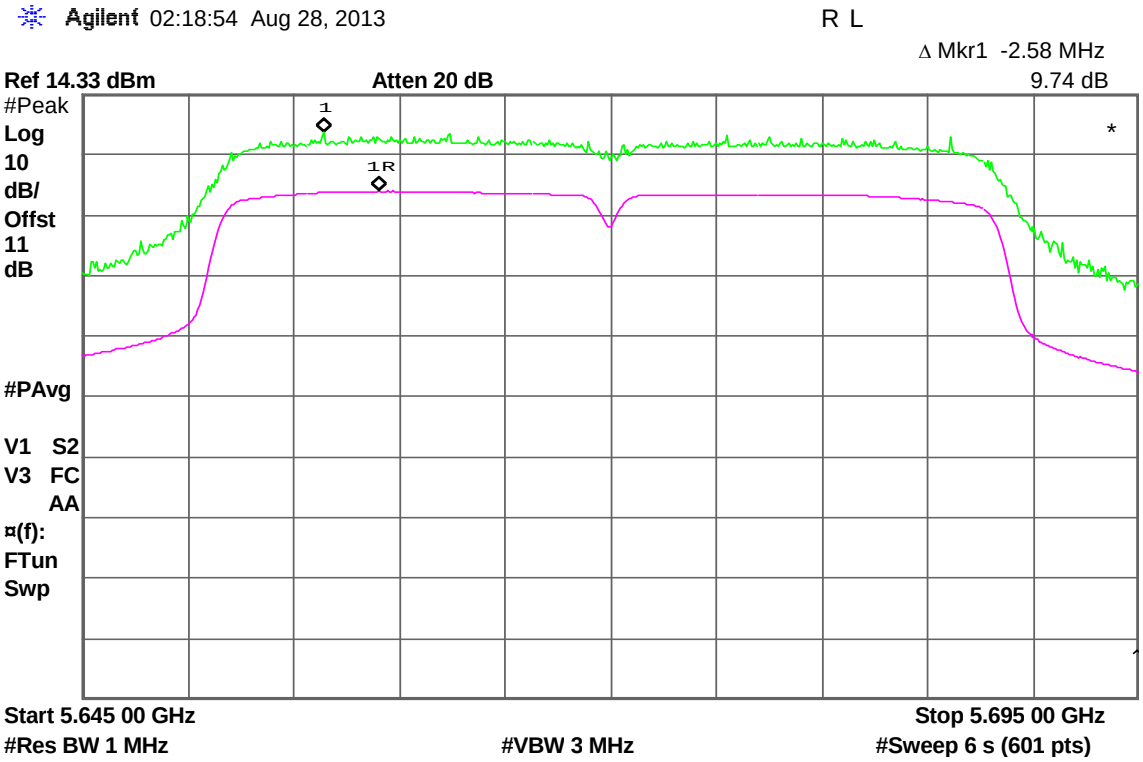
CH Low



CH Mid



CH High


Agilent 02:18:54 Aug 28, 2013
R L
Δ Mkr1 -2.58 MHz
9.74 dB
Ref 14.33 dBm
Atten 20 dB
#Peak
Log
10
dB/
Offst
11
dB
1
1R
*
#PAvg
V1 S2
V3 FC
AA
¤(f):
FTun
Swp
Start 5.645 00 GHz
#Res BW 1 MHz
#VBW 3 MHz
Stop 5.695 00 GHz
#Sweep 6 s (601 pts)

8.7 RADIATED UNDESIRABLE EMISSION

1. According to §15.209(a) & RSS-210 §A9.3, except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

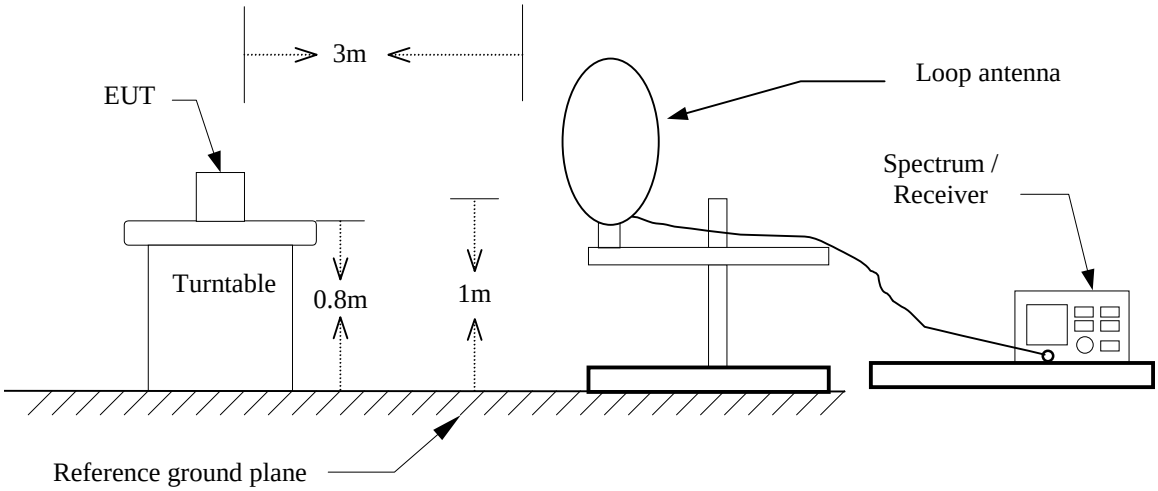
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

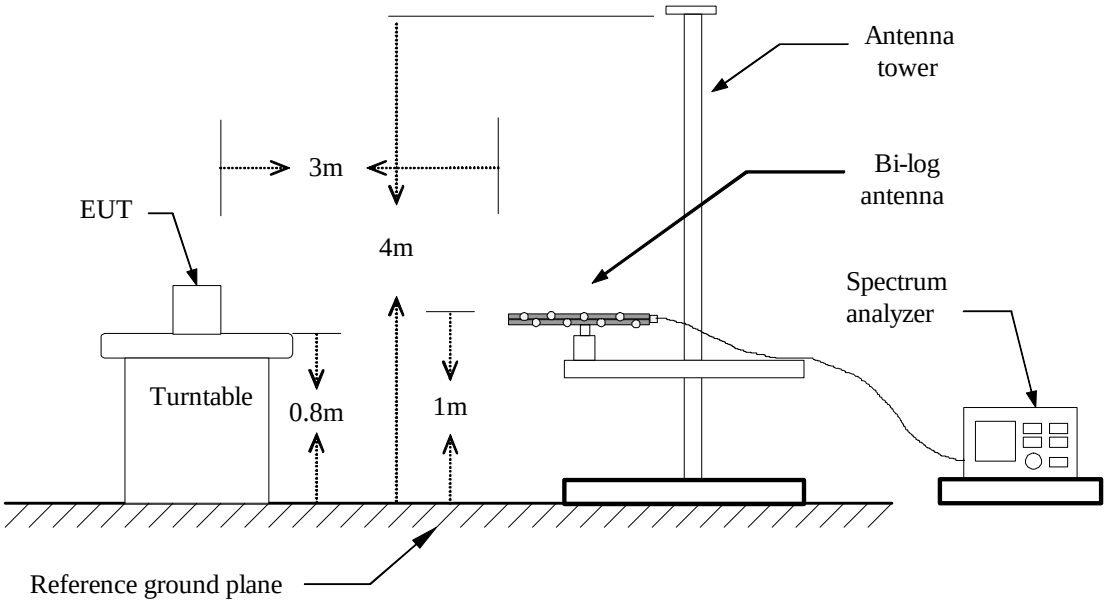
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

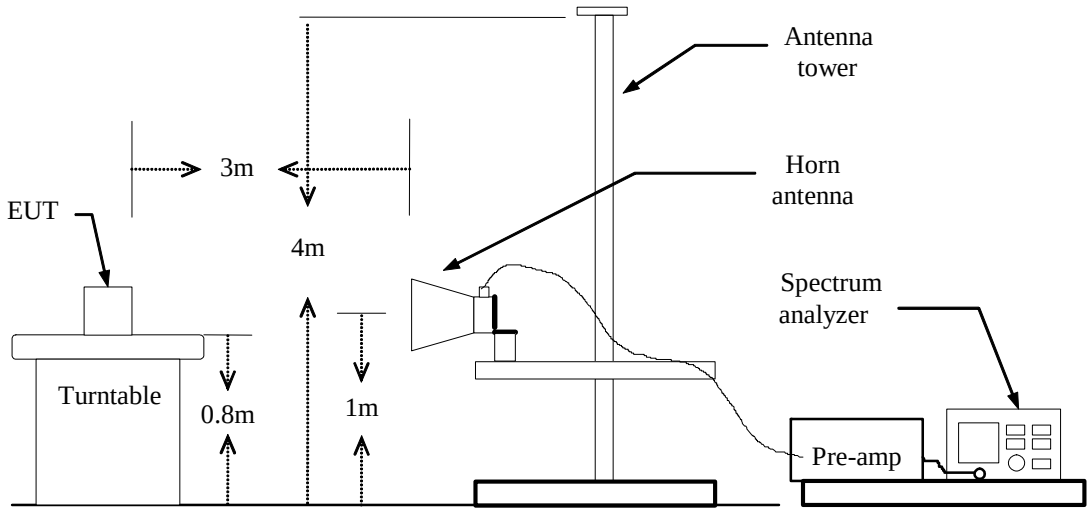
9kHz ~ 30MHz



30MHz ~ 1GHz



Above 1 GHz


Antenna
tower
3m
Horn
antenna
EUT
4m
Spectrum
analyzer
Turntable
0.8m
1m
Pre-amp

TEST PROCEDURE

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

   Below 1GHz:

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

   Above 1GHz:

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

   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

Below 1 GHz

Operation Mode:	Normal Link	**Test Date:**	July 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
72.0333	69.96	-33.47	36.49	40.00	-3.51	Peak	V
96.2833	73.04	-32.61	40.43	43.50	-3.07	Peak	V
120.5333	68.41	-28.26	40.15	43.50	-3.35	Peak	V
144.7833	68.56	-28.77	39.79	43.50	-3.71	Peak	V
191.6667	69.85	-29.37	40.48	43.50	-3.02	Peak	V
666.9667	63.71	-20.59	43.12	46.00	-2.88	Peak	V
107.6000	70.43	-30.39	40.04	43.50	-3.46	Peak	H
167.4167	69.51	-29.67	39.84	43.50	-3.66	Peak	H
204.6000	69.44	-29.01	40.43	43.50	-3.07	Peak	H
227.2333	72.80	-30.02	42.78	46.00	-3.22	Peak	H
335.5500	68.44	-26.90	41.54	46.00	-4.46	Peak	H
663.7333	63.35	-20.61	42.74	46.00	-3.26	Peak	H

Remark:

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

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

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

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

5 *Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).*

Above 1 GHz

Operation Mode:	Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH Low	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2761.667	50.49	1.38	51.87	74.00	-22.13	peak	V
10366.667	42.72	13.80	56.52	74.00	-17.48	peak	V
10366.667	37.30	13.80	51.10	54.00	-2.90	AVG	V
N/A							
2656.667	50.60	1.10	51.70	74.00	-22.30	peak	H
10366.667	43.28	13.80	57.08	74.00	-16.92	peak	H
10366.667	36.53	13.80	50.33	54.00	-3.67	AVG	H
N/A							

Remark:

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

Operation Mode:	Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH Mid	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2493.333	51.96	-0.13	51.83	74.00	-22.17	peak	V
10450.000	40.26	14.01	54.27	74.00	-19.73	peak	V
10450.000	34.36	14.01	48.37	54.00	-5.63	AVG	V
N/A							
2750.000	51.22	0.60	51.82	74.00	-22.18	peak	H
10483.333	42.30	14.10	56.40	74.00	-17.60	peak	H
10483.333	34.10	14.10	48.20	54.00	-5.80	AVG	H
N/A							

Remark:

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

Operation Mode: Tx / IEEE 802.11a mode / 5180 ~ 5240MHz / CH High
Test Date: August 26, 2013
Temperature: 27°C
Tested by: Rex Huang
Humidity: 53% 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)
2586.667	51.71	0.14	51.85	74.00	-22.15	Peak	V
N/A							
2750.000	51.22	0.60	51.82	74.00	-22.18	peak	H
10483.333	42.30	14.10	56.40	74.00	-17.60	peak	H
10483.333	34.10	14.10	48.20	54.00	-5.80	AVG	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 Channel mode / 5180 ~ 5240MHz / CH Low	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2458.333	51.25	0.38	51.63	74.00	-22.37	peak	V
10366.667	41.08	13.80	54.88	74.00	-19.12	peak	V
10366.667	34.85	13.80	48.65	54.00	-5.35	AVG	V
N/A							
2551.667	50.63	0.82	51.45	74.00	-22.55	peak	H
10366.667	41.42	13.80	55.22	74.00	-18.78	peak	H
10366.667	35.16	13.80	48.96	54.00	-5.04	AVG	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 Channel mode / 5180 ~ 5240MHz / CH Mid	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2656.667	51.39	0.34	51.73	74.00	-22.27	peak	V
N/A							
2808.333	51.16	0.76	51.92	74.00	-22.08	peak	H
10433.333	41.30	13.97	55.27	74.00	-18.73	peak	H
10433.333	34.29	13.97	48.26	54.00	-5.74	AVG	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 Channel mode / 5180 ~ 5240MHz / CH High	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2773.333	51.00	0.67	51.67	74.00	-22.33	peak	V
10483.333	40.21	14.10	54.31	74.00	-19.69	peak	V
10483.333	33.31	14.10	47.41	54.00	-6.59	AVG	V
N/A							
2691.667	51.28	0.44	51.72	74.00	-22.28	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 / 5190 ~ 5230MHz / CH Low	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2656.667	50.62	1.10	51.72	74.00	-22.28	peak	V
N/A							
2446.667	51.48	0.29	51.77	74.00	-22.23	peak	H
10400.000	40.57	13.89	54.46	74.00	-19.54	peak	H
10400.000	32.01	13.89	45.90	54.00	-8.10	AVG	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 / 5190 ~ 5230MHz / CH High	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2470.000	51.87	-0.22	51.65	74.00	-22.35	peak	V
10466.667	40.11	14.06	54.17	74.00	-19.83	peak	V
10466.667	33.01	14.06	47.07	54.00	-6.93	AVG	V
N/A							
2773.333	51.08	0.67	51.75	74.00	-22.25	peak	H
N/A							

Remark:

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

Operation Mode:	Tx / IEEE 802.11a mode / 5260 ~ 5320MHz / CH Low	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2656.667	51.49	0.34	51.83	74.00	-22.17	peak	V
10516.667	40.52	14.16	54.68	74.00	-19.32	peak	V
10516.667	33.88	14.16	48.04	54.00	-5.96	AVG	V
N/A							
2726.667	51.05	0.53	51.58	74.00	-22.42	peak	H
10516.667	43.58	14.16	57.74	74.00	-16.26	peak	H
10516.667	35.66	14.16	49.82	54.00	-4.18	AVG	H
N/A							

Remark:

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

Operation Mode:	Tx / IEEE 802.11a mode / 5260 ~ 5320MHz / CH Mid	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2773.333	51.07	0.67	51.74	74.00	-22.26	peak	V
10566.667	40.50	14.23	54.73	74.00	-19.27	peak	V
10566.667	35.59	14.23	49.82	54.00	-4.18	AVG	V
N/A							
2890.000	50.94	0.99	51.93	74.00	-22.07	peak	H
10566.667	41.19	14.23	55.42	74.00	-18.58	peak	H
10566.667	34.19	14.23	48.42	54.00	-5.58	AVG	H
N/A							

Remark:

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

Operation Mode: Tx / IEEE 802.11a mode / 5260 ~ 5320MHz / CH High
Test Date: August 26, 2013
Temperature: 27°C
Tested by: Rex Huang
Humidity: 53% 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)
2820.000	50.43	1.53	51.96	74.00	-22.04	peak	V
10633.333	41.45	14.31	55.76	74.00	-18.24	peak	V
10633.333	33.84	14.31	48.15	54.00	-5.85	AVG	V
N/A							
2540.000	50.76	0.79	51.55	74.00	-22.45	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 Channel mode / 5260 ~ 5320MHz / CH Low	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2691.667	51.55	0.44	51.99	74.00	-22.01	peak	V
10483.333	40.92	14.10	55.02	74.00	-18.98	peak	V
10483.333	31.70	14.10	45.80	54.00	-8.20	AVG	V
N/A							
2446.667	51.61	-0.31	51.30	74.00	-22.70	peak	H
10516.667	40.50	14.16	54.66	74.00	-19.34	peak	H
10516.667	34.07	14.16	48.23	54.00	-5.77	AVG	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 Channel mode / 5260 ~ 5320MHz / CH Mid	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2633.333	51.58	0.27	51.85	74.00	-22.15	peak	V
10566.667	40.32	14.23	54.55	74.00	-19.45	peak	V
10566.667	34.45	14.23	48.68	54.00	-5.32	AVG	V
N/A							
2796.667	50.94	0.73	51.67	74.00	-22.33	peak	H
10550.000	40.57	14.21	54.78	74.00	-19.22	peak	H
10550.000	33.96	14.21	48.17	54.00	-5.83	AVG	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 Channel mode / 5260 ~ 5320MHz / CH High	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2586.667	50.84	0.91	51.75	74.00	-22.25	peak	V
N/A							
2621.667	50.84	1.00	51.84	74.00	-22.16	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 / 5270 ~ 5310MHz / CH Low	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2691.667	51.34	0.44	51.78	74.00	-22.22	peak	V
N/A							
2691.667	51.30	0.44	51.74	74.00	-22.26	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 / 5270 ~ 5310MHz / CH High	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2610.000	50.84	0.97	51.81	74.00	-22.19	peak	V
10616.667	39.23	14.29	53.52	74.00	-20.48	peak	V
10616.667	33.60	14.29	47.89	54.00	-6.11	AVG	V
N/A							
2656.667	50.51	1.10	51.61	74.00	-22.39	peak	H
N/A							

Remark:

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

Operation Mode:	Tx / IEEE 802.11a mode / 5500 ~ 5700MHz / CH Low	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2645.000	51.50	0.31	51.81	74.00	-22.19	peak	V
N/A							
2773.333	51.25	0.67	51.92	74.00	-22.08	peak	H
N/A							

Remark:

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

Operation Mode:	Tx / IEEE 802.11a mode / 5500 ~ 5700MHz / CH Mid	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2785.000	50.89	0.70	51.59	74.00	-22.41	peak	V
N/A							
2820.000	50.75	0.80	51.55	74.00	-22.45	peak	H
N/A							

Remark:

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

Operation Mode: Tx / IEEE 802.11a mode / 5500 ~ 5700MHz / CH High
Test Date: August 26, 2013
Temperature: 27°C
Tested by: Rex Huang
Humidity: 53% 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)
2948.333	50.62	1.16	51.78	74.00	-22.22	peak	V
N/A							
2668.333	50.93	0.37	51.30	74.00	-22.70	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.*
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 Channel mode / 5500 ~ 5700MHz / CH Low	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2656.667	51.33	0.34	51.67	74.00	-22.33	peak	V
11000.000	40.41	14.79	55.20	74.00	-18.80	peak	V
11000.000	32.04	14.79	46.83	54.00	-7.17	AVG	V
N/A							
2715.000	51.41	0.50	51.91	74.00	-22.09	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 Channel mode / 5500 ~ 5700MHz / CH Mid	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2656.667	51.05	0.34	51.39	74.00	-22.61	peak	2656.667
N/A							
2785.000	51.06	0.70	51.76	74.00	-22.24	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 Channel mode / 5500 ~ 5700MHz / CH High	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark	Ant.Pol. (H/V)
2773.333	51.23	0.67	51.90	74.00	-22.10	peak	V
16966.667	39.27	22.09	61.36	74.00	-12.64	peak	V
16966.667	28.65	22.09	50.74	54.00	-3.26	AVG	V
N/A							
2761.667	51.13	0.63	51.76	74.00	-22.24	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 / 5510 ~ 5670MHz / CH Low	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2715.000	50.90	0.50	51.40	74.00	-22.60	peak	V
N/A							
2773.333	50.87	0.67	51.54	74.00	-22.46	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 / 5510 ~ 5670MHz / CH Mid	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2680.000	51.15	0.40	51.55	74.00	-22.45	peak	V
N/A							
2796.667	50.66	0.73	51.39	74.00	-22.61	peak	H
11033.333	39.84	14.80	54.64	74.00	-19.36	peak	H
11033.333	32.65	14.80	47.45	54.00	-6.55	AVG	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 / 5510 ~ 5670MHz / CH High	**Test Date:**	August 26, 2013
Temperature:	27°C	**Tested by:**	Rex Huang
Humidity:	53% 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)
2656.667	51.65	0.34	51.99	74.00	-22.01	peak	V
N/A							
2796.667	50.69	0.73	51.42	74.00	-22.58	peak	H
N/A							

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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).*

8.8 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a) & RSS-Gen §7.2.4, except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

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

** Decreases with the logarithm of the frequency.*

Test Configuration

See test photographs attached in Appendix 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:**	July 26, 2013
Temperature:	22°C	**Tested by:**	Jason Lee
Humidity:	55% RH		

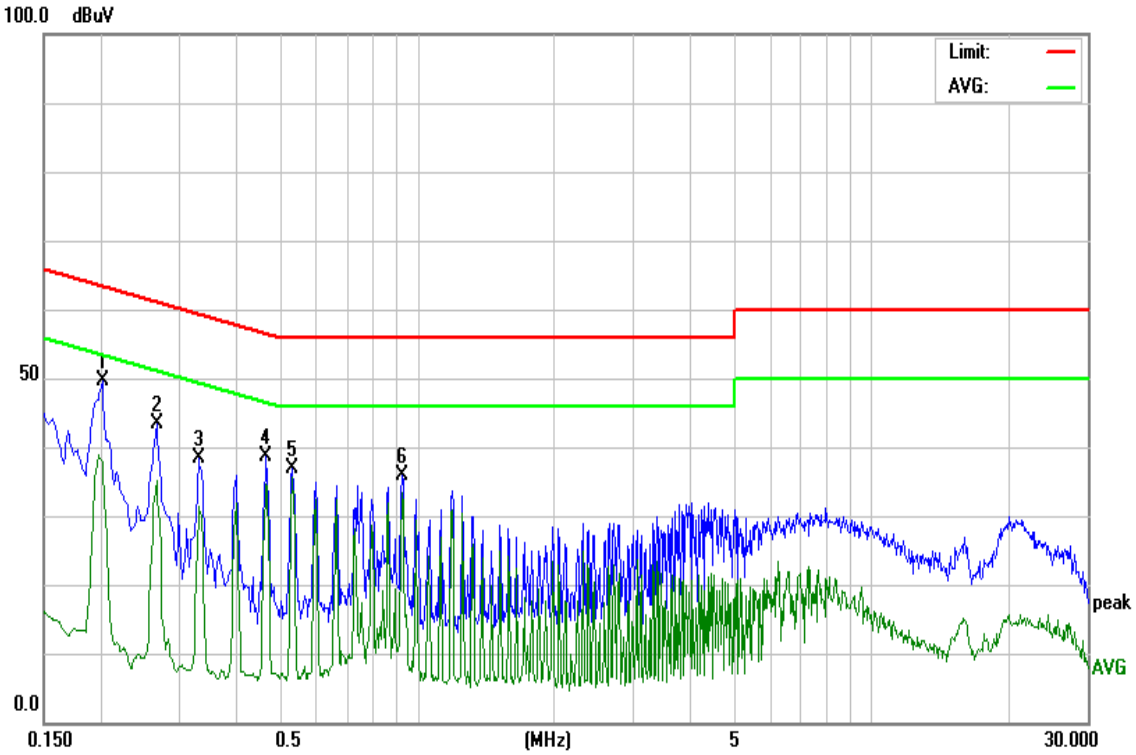
Conducted Emission Readings							
Frequency Range Investigated				**150 kHz to 30 MHz**			
Freq. (MHz)	**Reading (dBuV)**	**Factor (dB)**	**Result (dBuV)**	**Limit (dBuV)**	**Margin (dB)**	**Detector (P/Q/A)**	**Line (L1/L2)**
0.2020	39.47	10.07	49.54	63.52	-13.98	P	L1
0.2660	33.37	10.06	43.43	61.24	-17.81	P	L1
0.3300	28.27	10.05	38.32	59.45	-21.13	P	L1
0.4660	28.48	10.06	38.54	56.58	-18.04	P	L1
0.5299	26.74	10.06	36.80	56.00	-19.20	P	L1
0.9260	25.88	10.12	36.00	56.00	-20.00	P	L1
0.1980	40.59	10.05	50.64	63.69	-13.05	P	L2
0.2580	33.52	10.04	43.56	61.49	-17.93	P	L2
0.3339	27.26	10.03	37.29	59.35	-22.06	P	L2
0.4620	27.06	10.04	37.10	56.66	-19.56	P	L2
0.5299	26.74	10.04	36.78	56.00	-19.22	P	L2
0.7940	23.17	10.08	33.25	56.00	-22.75	P	L2

Remark:

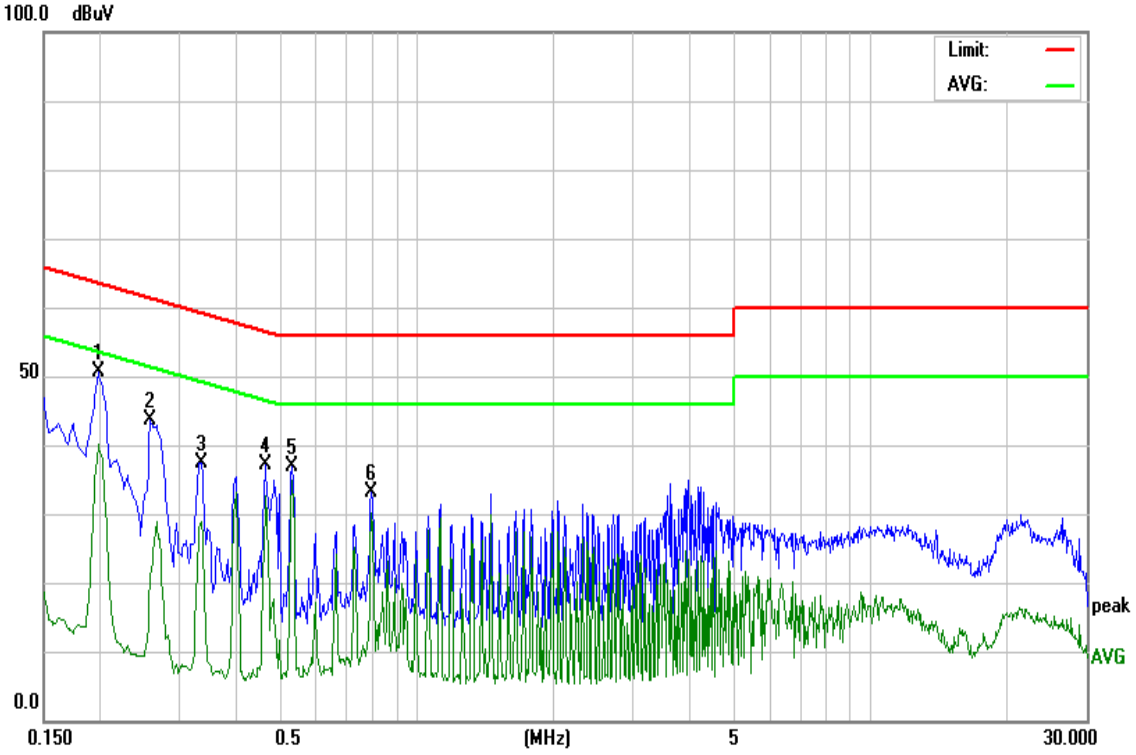
1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between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

Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)

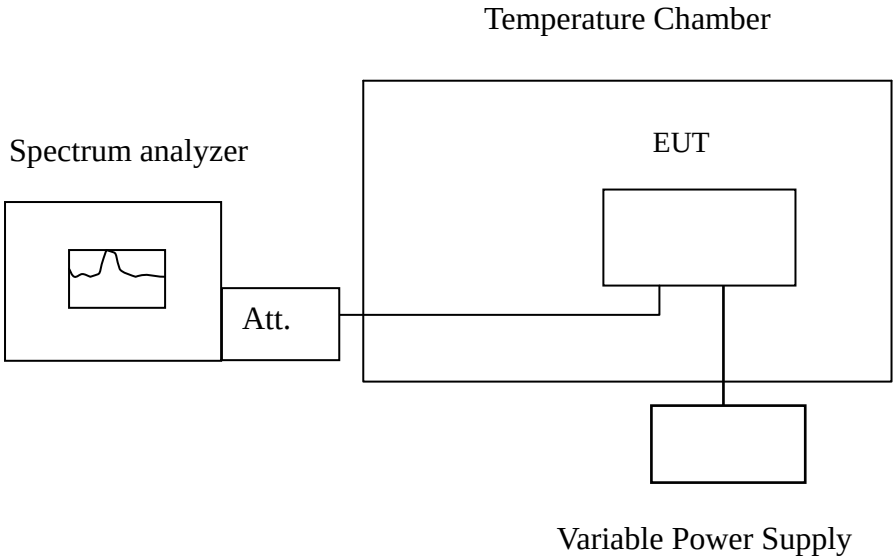


8.9 FREQUENCY STABILITY

LIMIT

According to §15.407(g) & RSS-210 §A9.5(5), manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the operational description.

Test Configuration



Remark: *Measurement setup for testing on Antenna connector*

TEST PROCEDURE

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to –20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

TEST RESULTS

No non-compliance noted.

IEEE 802.11a mode / 5180 ~ 5240 MHz:

CH Low

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5179.989523	5150~5250	Pass
40	110	5179.988312	5150~5250	Pass
30	110	5179.998286	5150~5250	Pass
20	110	5180.007437	5150~5250	Pass
10	110	5179.991483	5150~5250	Pass
0	110	5179.985953	5150~5250	Pass
-10	110	5179.974197	5150~5250	Pass
-20	110	5179.990587	5150~5250	Pass

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5180.00355	5150~5250	Pass
	110	5180.004409	5150~5250	Pass
	121	5179.998988	5150~5250	Pass

CH High

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5239.989419	5150~5250	Pass
40	110	5240.020681	5150~5250	Pass
30	110	5240.003290	5150~5250	Pass
20	110	5239.970001	5150~5250	Pass
10	110	5239.998110	5150~5250	Pass
0	110	5240.018288	5150~5250	Pass
-10	110	5240.002642	5150~5250	Pass
-20	110	5239.977821	5150~5250	Pass

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5240.017469	5150~5250	Pass
	110	5239.996448	5150~5250	Pass
	121	5239.988832	5150~5250	Pass

IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240 MHz:

CH Low

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5179.997416	5150~5250	Pass
40	110	5179.979583	5150~5250	Pass
30	110	5179.979588	5150~5250	Pass
20	110	5179.998196	5150~5250	Pass
10	110	5180.003426	5150~5250	Pass
0	110	5179.982241	5150~5250	Pass
-10	110	5179.986851	5150~5250	Pass
-20	110	5179.990860	5150~5250	Pass

Operating Frequency: 5180 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5179.970218	5150~5250	Pass
	110	5180.014203	5150~5250	Pass
	121	5180.017003	5150~5250	Pass

CH High

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5240.007436	5150~5250	Pass
40	110	5239.974199	5150~5250	Pass
30	110	5239.994157	5150~5250	Pass
20	110	5240.015372	5150~5250	Pass
10	110	5239.998311	5150~5250	Pass
0	110	5240.014170	5150~5250	Pass
-10	110	5239.985436	5150~5250	Pass
-20	110	5239.999026	5150~5250	Pass

Operating Frequency: 5240 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5239.985865	5150~5250	Pass
	110	5240.00024	5150~5250	Pass
	121	5239.976755	5150~5250	Pass

IEEE 802.11n HT 40 MHz mode / 5190 ~ 5230 MHz:

CH Low

Operating Frequency: 5190 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5189.990312	5150~5250	Pass
40	110	5190.009795	5150~5250	Pass
30	110	5189.990737	5150~5250	Pass
20	110	5190.010902	5150~5250	Pass
10	110	5189.996789	5150~5250	Pass
0	110	5189.995233	5150~5250	Pass
-10	110	5189.998835	5150~5250	Pass
-20	110	5190.001506	5150~5250	Pass

Operating Frequency: 5190 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5189.990312	5150~5250	Pass
	110	5190.009795	5150~5250	Pass
	121	5189.990737	5150~5250	Pass

CH High

Operating Frequency: 5230 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5230.005807	5150~5250	Pass
40	110	5230.001463	5150~5250	Pass
30	110	5230.005369	5150~5250	Pass
20	110	5230.008129	5150~5250	Pass
10	110	5230.002974	5150~5250	Pass
0	110	5229.990174	5150~5250	Pass
-10	110	5229.990312	5150~5250	Pass
-20	110	5230.009795	5150~5250	Pass

Operating Frequency: 5230 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5230.000007	5150~5250	Pass
	110	5230.002992	5150~5250	Pass
	121	5229.991235	5150~5250	Pass

IEEE 802.11a mode / 5260 ~ 5320 MHz:

CH Low

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5260.000790	5250~5350	Pass
40	110	5259.981939	5250~5350	Pass
30	110	5260.004912	5250~5350	Pass
20	110	5260.013449	5250~5350	Pass
10	110	5260.009856	5250~5350	Pass
0	110	5259.978192	5250~5350	Pass
-10	110	5259.971300	5250~5350	Pass
-20	110	5260.015207	5250~5350	Pass

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5260.008806	5250~5350	Pass
	110	5259.987984	5250~5350	Pass
	121	5260.001798	5250~5350	Pass

CH High

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5320.015003	5250~5350	Pass
40	110	5320.010180	5250~5350	Pass
30	110	5319.983557	5250~5350	Pass
20	110	5320.009327	5250~5350	Pass
10	110	5319.995049	5250~5350	Pass
0	110	5319.988055	5250~5350	Pass
-10	110	5319.982589	5250~5350	Pass
-20	110	5319.997877	5250~5350	Pass

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5319.979245	5250~5350	Pass
	110	5319.983498	5250~5350	Pass
	121	5320.016241	5250~5350	Pass

IEEE 802.11n HT 20 MHz Channel mode / 5260 ~ 5320 MHz:

CH Low

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5260.006767	5250~5350	Pass
40	110	5259.988357	5250~5350	Pass
30	110	5259.991982	5250~5350	Pass
20	110	5259.995440	5250~5350	Pass
10	110	5260.014623	5250~5350	Pass
0	110	5259.983867	5250~5350	Pass
-10	110	5259.994107	5250~5350	Pass
-20	110	5259.981503	5250~5350	Pass

Operating Frequency: 5260 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5260.0097	5250~5350	Pass
	110	5259.993322	5250~5350	Pass
	121	5259.978913	5250~5350	Pass

CH High

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5320.008093	5250~5350	Pass
40	110	5319.974507	5250~5350	Pass
30	110	5320.010987	5250~5350	Pass
20	110	5320.008051	5250~5350	Pass
10	110	5319.999249	5250~5350	Pass
0	110	5320.014166	5250~5350	Pass
-10	110	5319.974986	5250~5350	Pass
-20	110	5319.999356	5250~5350	Pass

Operating Frequency: 5320 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5319.970161	5250~5350	Pass
	110	5319.984009	5250~5350	Pass
	121	5319.987334	5250~5350	Pass

IEEE 802.11n HT 40 MHz mode / 5270 ~ 5310 MHz:

CH Low

Operating Frequency: 5270 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5270.007264	5250~5350	Pass
40	110	5270.004666	5250~5350	Pass
30	110	5270.000277	5250~5350	Pass
20	110	5269.996376	5250~5350	Pass
10	110	5270.006274	5250~5350	Pass
0	110	5270.002083	5250~5350	Pass
-10	110	5269.999703	5250~5350	Pass
-20	110	5269.993783	5250~5350	Pass

Operating Frequency: 5270 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5270.003714	5250~5350	Pass
	110	5270.000123	5250~5350	Pass
	121	5269.995363	5250~5350	Pass

CH High

Operating Frequency: 5310 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5310.001779	5250~5350	Pass
40	110	5310.010430	5250~5350	Pass
30	110	5309.999448	5250~5350	Pass
20	110	5310.006643	5250~5350	Pass
10	110	5309.990581	5250~5350	Pass
0	110	5310.010131	5250~5350	Pass
-10	110	5310.007507	5250~5350	Pass
-20	110	5309.994057	5250~5350	Pass

Operating Frequency: 5310 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5310.003851	5250~5350	Pass
	110	5309.994346	5250~5350	Pass
	121	5309.992727	5250~5350	Pass

IEEE 802.11a mode / 5500 ~ 5700 MHz:

CH Low

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5499.981556	5250~5350	Pass
40	110	5499.980743	5250~5350	Pass
30	110	5500.018759	5250~5350	Pass
20	110	5500.006819	5250~5350	Pass
10	110	5499.971269	5250~5350	Pass
0	110	5500.002637	5250~5350	Pass
-10	110	5500.020558	5250~5350	Pass
-20	110	5499.994926	5250~5350	Pass

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5499.976246	5250~5350	Pass
	110	5500.002323	5250~5350	Pass
	121	5499.974829	5250~5350	Pass

CH High

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5699.990575	5250~5350	Pass
40	110	5700.017006	5250~5350	Pass
30	110	5700.008576	5250~5350	Pass
20	110	5699.972451	5250~5350	Pass
10	110	5700.012964	5250~5350	Pass
0	110	5699.994966	5250~5350	Pass
-10	110	5700.013206	5250~5350	Pass
-20	110	5700.017128	5250~5350	Pass

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5700.005735	5250~5350	Pass
	110	5699.992222	5250~5350	Pass
	121	5699.98767	5250~5350	Pass

IEEE 802.11n HT 20 MHz Channel mode / 5500 ~ 5700 MHz:

CH Low

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5499.984976	5250~5350	Pass
40	110	5499.971681	5250~5350	Pass
30	110	5500.007799	5250~5350	Pass
20	110	5499.977233	5250~5350	Pass
10	110	5500.012248	5250~5350	Pass
0	110	5499.999387	5250~5350	Pass
-10	110	5499.991675	5250~5350	Pass
-20	110	5499.984289	5250~5350	Pass

Operating Frequency: 5500 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5499.990697	5250~5350	Pass
	110	5500.009397	5250~5350	Pass
	121	5499.970732	5250~5350	Pass

CH High

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5699.972288	5250~5350	Pass
40	110	5699.987482	5250~5350	Pass
30	110	5699.972719	5250~5350	Pass
20	110	5699.982575	5250~5350	Pass
10	110	5700.013833	5250~5350	Pass
0	110	5699.973165	5250~5350	Pass
-10	110	5700.002159	5250~5350	Pass
-20	110	5699.982367	5250~5350	Pass

Operating Frequency: 5700 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5699.972477	5250~5350	Pass
	110	5699.991943	5250~5350	Pass
	121	5700.012427	5250~5350	Pass

IEEE 802.11n HT 40 MHz mode / 5510 ~ 5670 MHz:

CH Low

Operating Frequency: 5510 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5510.007667	5250~5350	Pass
40	110	5509.991079	5250~5350	Pass
30	110	5510.005038	5250~5350	Pass
20	110	5510.002980	5250~5350	Pass
10	110	5509.990309	5250~5350	Pass
0	110	5509.995782	5250~5350	Pass
-10	110	5510.001216	5250~5350	Pass
-20	110	5510.000882	5250~5350	Pass

Operating Frequency: 5510 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5509.995306	5250~5350	Pass
	110	5509.991429	5250~5350	Pass
	121	5510.002996	5250~5350	Pass

CH High

Operating Frequency: 5670 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
50	110	5669.991585	5250~5350	Pass
40	110	5670.005599	5250~5350	Pass
30	110	5669.995621	5250~5350	Pass
20	110	5670.008340	5250~5350	Pass
10	110	5670.002315	5250~5350	Pass
0	110	5669.992798	5250~5350	Pass
-10	110	5670.009419	5250~5350	Pass
-20	110	5670.002928	5250~5350	Pass

Operating Frequency: 5670 MHz				
Environment Temperature (°C)	Voltage (V)	Measured Frequency (MHz)	Limit Range	Test Result
20	99	5670.006712	5250~5350	Pass
	110	5669.991156	5250~5350	Pass
	121	5670.002874	5250~5350	Pass

8.10 DYNAMIC FREQUENCY SELECTION

LIMIT

According to §15.407 (h) and FCC 06-96 appendix "compliance measurement procedures for unlicensed-national information infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection".

***Remark**: IC RSS-210* §A9.5 *is closely harmonized with FCC Part 15 DFS rules.*

Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client(with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client(with radar detection)
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes

Table 3: Interference Threshold values, Master or Client incorporating In-Service

Maximum Transmit Power	Value (see note)
>=200 Milliwatt	-64 dBm
< 200 Milliwatt	-62 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Table 4: DFS Response requirement values

Parameter	Value
Non-occupancy period	30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period

The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows:

- For the Short pulse radar Test Signals this instant is the end of the Burst.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar burst generated.
- For the Long Pulse radar Test Signal this instant is the end of the 12 second period defining the radar transmission.

The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate channel changes (an aggregate of approximately 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (Microseconds)	PRI (Microseconds)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Table 6 – Long Pulse Radar Test Signal

Radar Waveform	Bursts	Pulses per Burst	Pulse Width (µsec)	Chirp Width (µsec)	PRI (µsec)	Minimum Percentage of Successful Detection	Minimum Trials
5	8-20	1-3	50-100	5-20	1000-2000	80%	30

Table 7 – Frequency Hopping Radar Test Signal

Radar Waveform	Pulse Width (µsec)	PRI (µsec)	Burst Length (ms)	Pulses Per Hop	Hopping Rate (kHz)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	300	9	0.33	70%	30

DESCRIPTION OF EUT

Overview Of EUT With Respect To §15.407 (H) Requirements

The firmware installed in the EUT during testing was:
Firmware Rev: 3.5.2.26

The EUT operates over the 5250-5350 MHz range as a Client Device that does not have radar detection capability.

The EUT uses one transmitter connected to two 50-ohm coaxial antenna ports via a diversity switch. Only one antenna port is connected to the test system since the EUT has one antenna only.

The Slave device associated with the EUT during these tests does not have radar detection capability.

WLAN traffic is generated by streaming the video file TestFile.mp2 “6 ½ Magic Hours” from the Master to the Slave in full motion video mode using the media player with the V2.61 Codec package.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm).

The EUT utilizes the 802.11a architecture, with a nominal channel bandwidth of 20 MHz.

The Master Device is a Cisco Aironet 802.11a/b/g Access Point, FCC ID: LDK102056.

The rated output power of the Master unit is < 23dBm (EIRP). Therefore the required interference threshold level is -62 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is –62 + 5 = -57dBm.

The calibrated conducted DFS Detection Threshold level is set to -62 dBm. The tested level is lower than the required level hence it provides margin to the limit.

Manufacturer’s Statement Regarding Uniform Channel Spreading

The end product implements an automatic channel selection feature at startup such that operation commences on channels distributed across the entire set of allowed 5GHz channels. This feature will ensure uniform spreading is achieved while avoiding non-allowed channels due to prior radar events.

TEST AND MEASUREMENT SYSTEM

System Overview

The measurement system is based on a conducted test method.

The short pulse and long pulse signal generating system utilizes the NTIA software. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

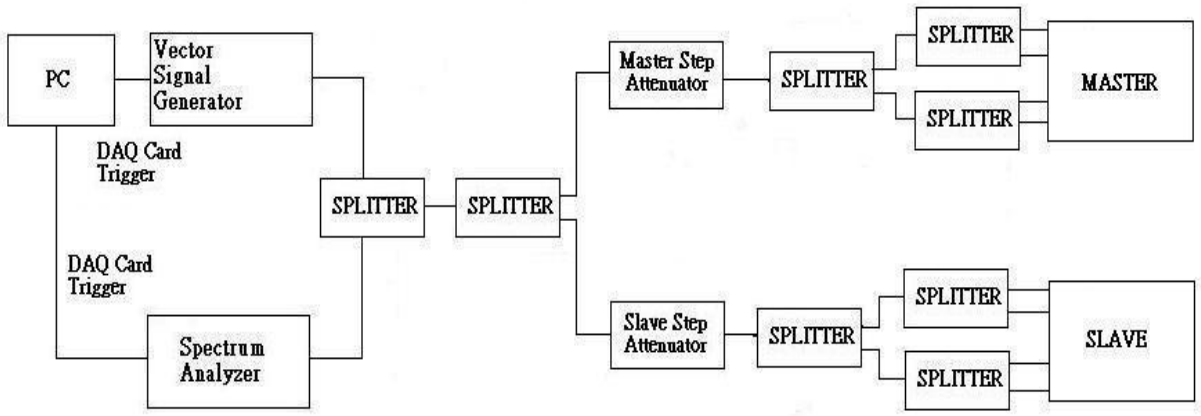
The short pulse types 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of FCC 06-96 APPENDIX. The frequency of the signal generator is incremented in 1 MHz steps from FL to FH for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer set to display 8001 bins on the horizontal axis. The time-domain resolution is 2 msec / bin with a 16 second sweep time, meeting the 10 second short pulse reporting criteria. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold. The time-domain resolution is 3 msec / bin with a 24 second sweep time, meeting the 22 second long pulse reporting criteria and allowing a minimum of 10 seconds after the end of the long pulse waveform.

Should multiple RF ports be utilized for the Master and/or Slave devices (for example, for diversity or MIMO implementations), 50 ohm termination would be removed from the splitter so that connection can be established between splitter and the Master and/or Slave devices.

Conducted Method System Block Diagram



System Calibration

Connect the spectrum analyzer to the test system in place of the master device. Set the signal generator to CW mode. Adjust the amplitude of the signal generator to yield a measured level of –62 dBm on the spectrum analyzer.

Without changing any of the instrument settings, reconnect the spectrum analyzer to the Common port of the Spectrum Analyzer Combiner/Divider and connect a 50 ohm load to the Master Device port of the test system.

Measure the amplitude and calculate the difference from –62 dBm. Adjust the Reference Level Offset of the spectrum analyzer to this difference. Confirm that the signal is displayed at –62 dBm. Readjust the RBW and VBW to 3 MHz, set the span to 10 MHz, and confirm that the signal is still displayed at –62 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –62 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

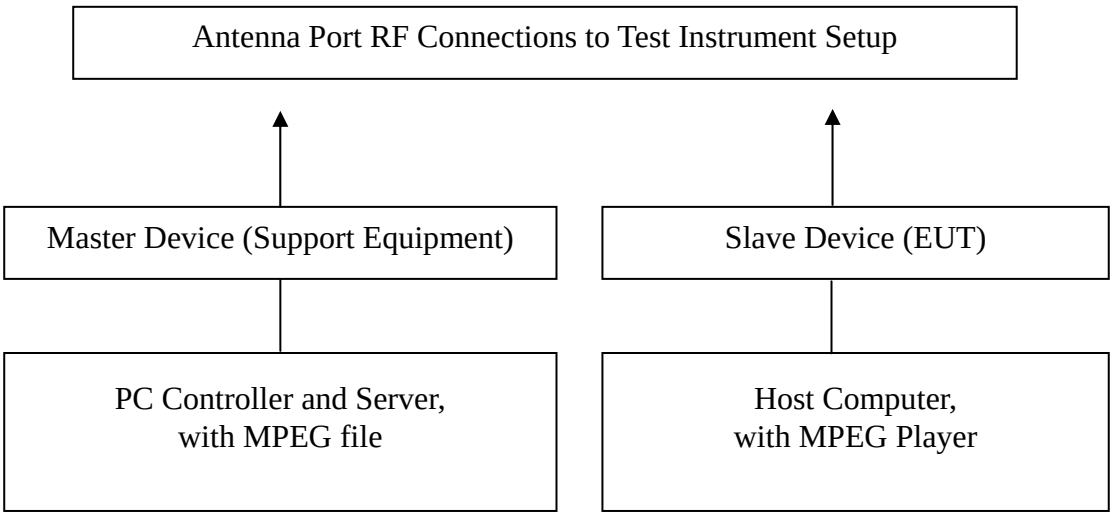
Set the signal generator to produce a radar waveform, trigger a burst manually and measure the level on the spectrum analyzer. Readjust the amplitude of the signal generator as required so that the peak level of the waveform is at a displayed level equal to the required or desired interference detection threshold. Separate signal generator amplitude settings are determined as required for each radar type.

Adjustment Of Displayed Traffic Level

Establish a link between the Master and Slave, adjusting the Link Step Attenuator as needed to provide a suitable received level at the Master and Slave devices. Stream the video test file to generate WLAN traffic. Confirm that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold. Confirm that the displayed traffic is from the Master Device. For Master Device testing confirm that the displayed traffic does not include Slave Device traffic. For Slave Device testing confirm that the displayed traffic does not include Master Device traffic.

If a different setting of the Master Step Attenuator is required to meet the above conditions, perform a new System Calibration for the new Master Step Attenuator setting.

Test Setup



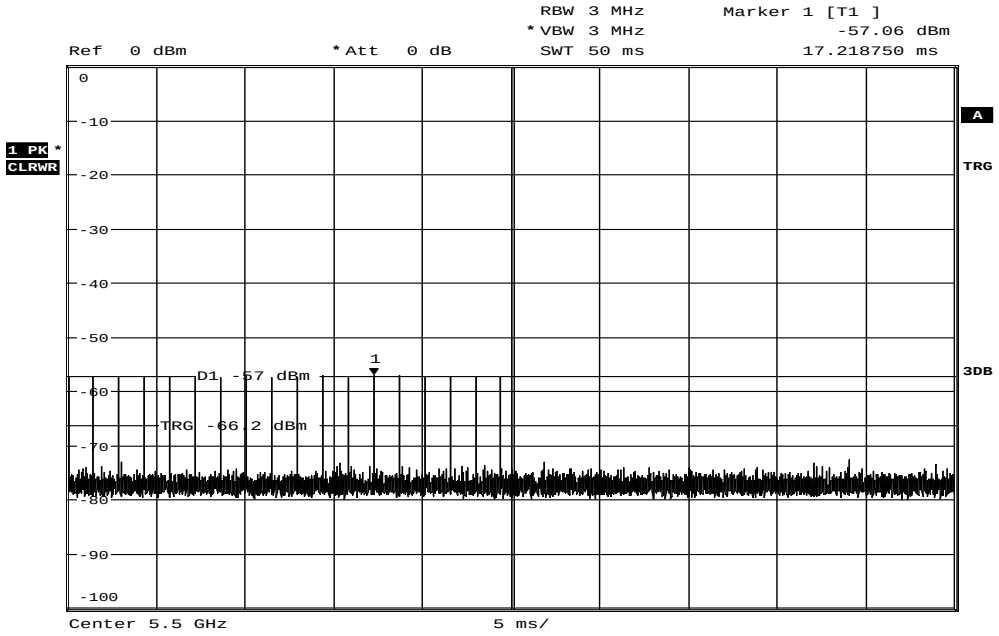
TEST RESULTS

No non-compliance noted

Test Plot

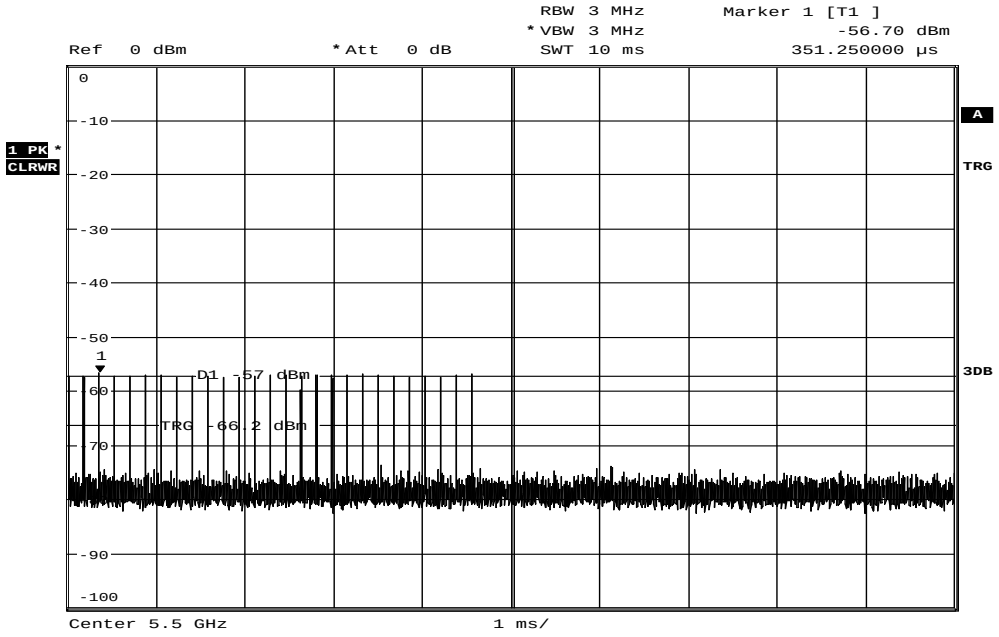
PLOTS OF RADAR WAVEFORMS

Sample of Short Pulse Radar Type 1



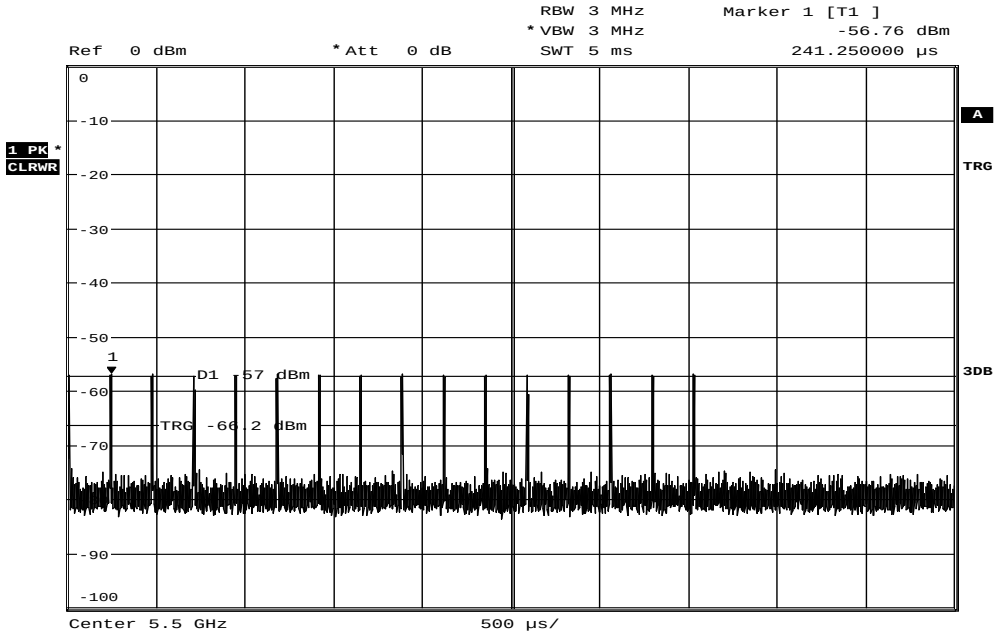
Date: 22.JUL.2013 14:06:51

Sample of Short Pulse Radar Type 2



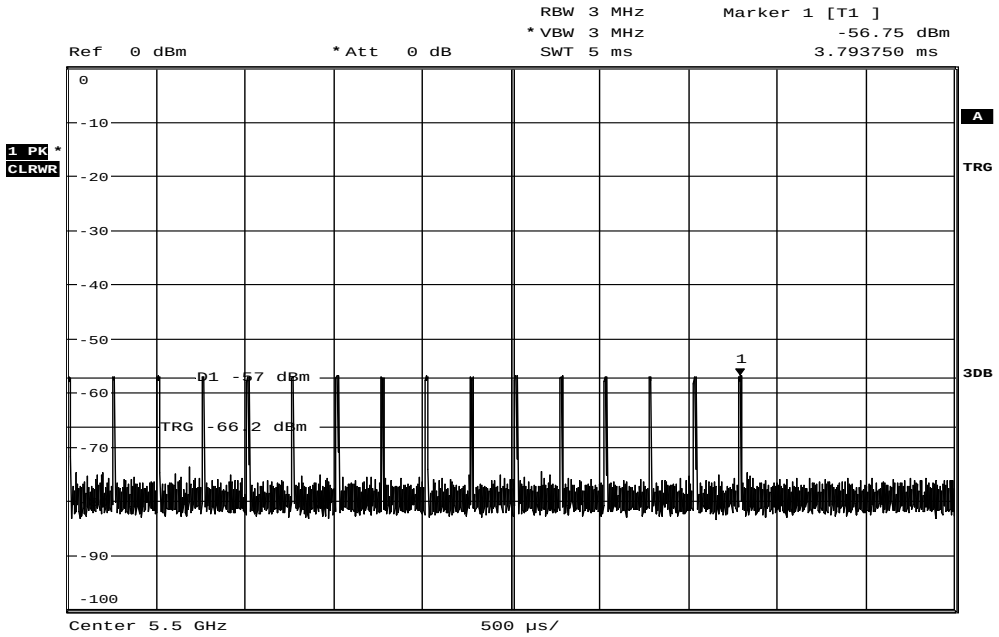
Date: 22.JUL.2013 14:08:41

Sample of Short Pulse Radar Type 3



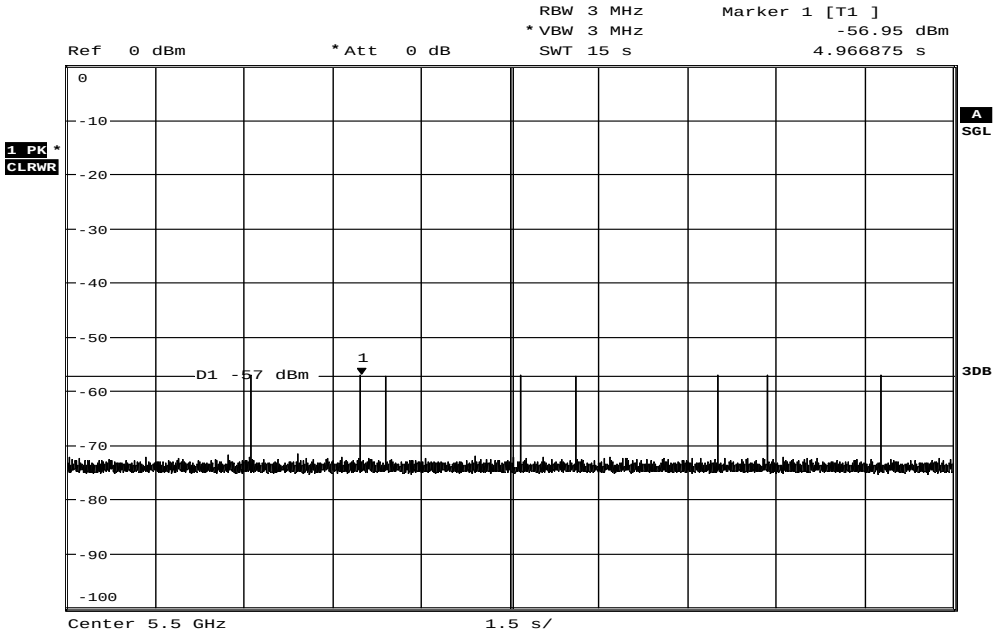
Date: 22.JUL.2013 14:09:29

Sample of Short Pulse Radar Type 4



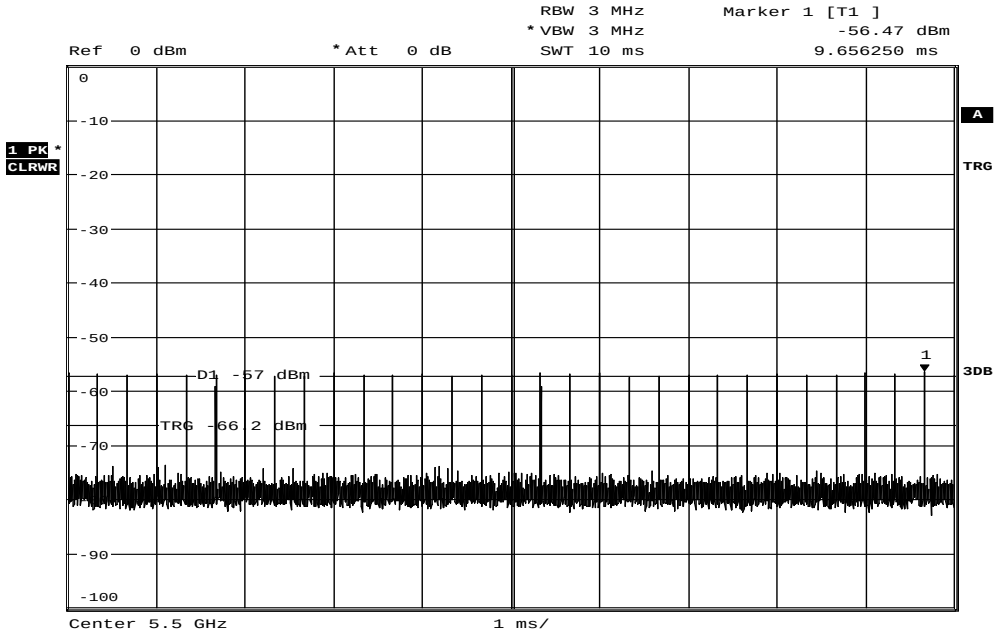
Date: 22.JUL.2013 14:10:02

Sample of Long Pulse Radar Type 5

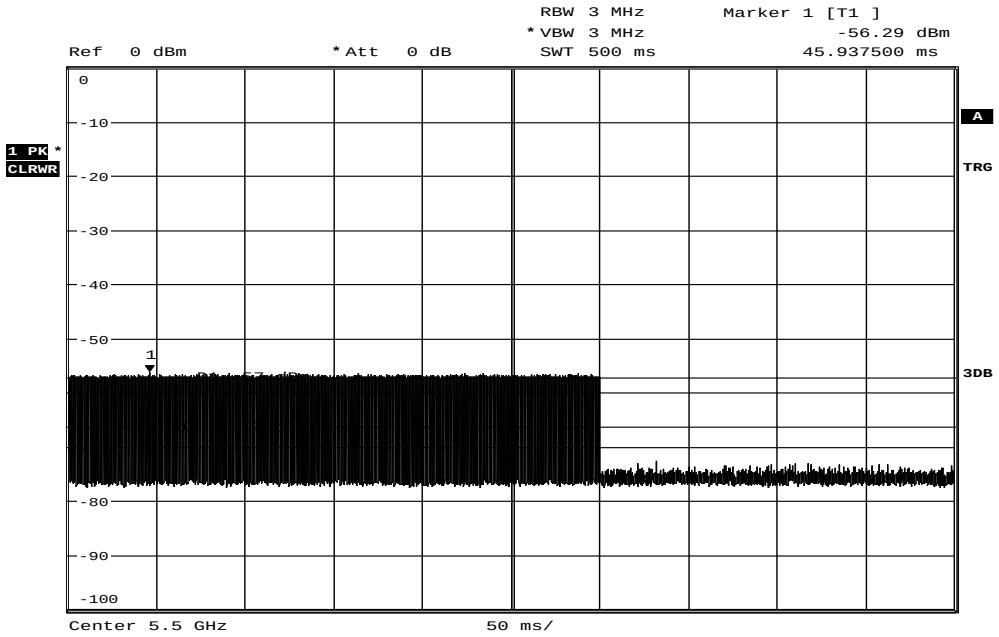


Date: 22.JUL.2013 14:12:16

Sample of Frequency Hopping Radar Type 6



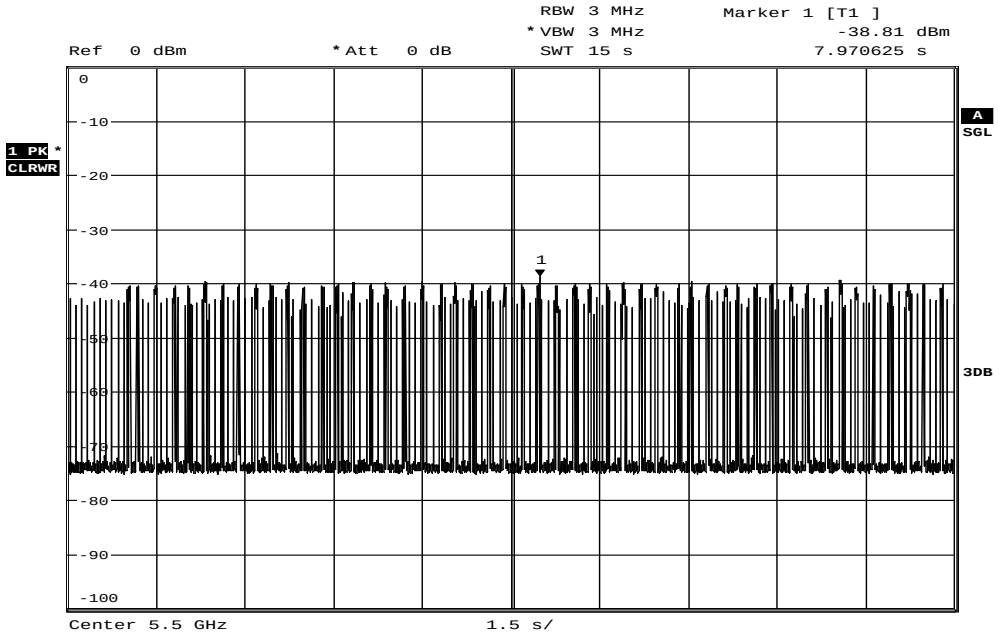
Date: 22.JUL.2013 14:20:15



Date: 22.JUL.2013 14:19:50

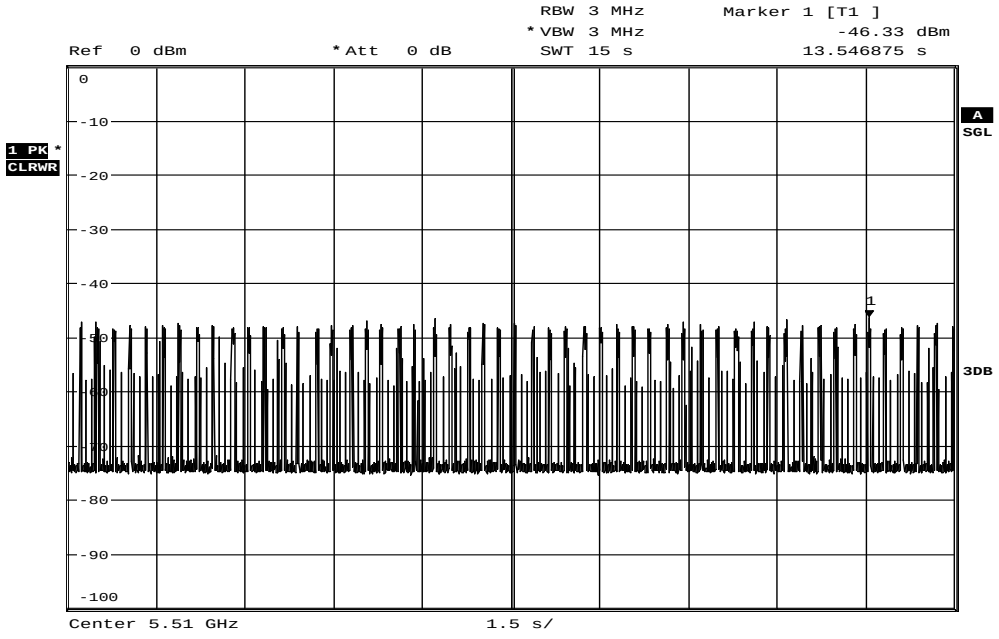
Plot of WLAN Traffic from Slave

IEEE 802.11n HT 20 MHz mode



Date: 22.JUL.2013 16:49:40

IEEE 802.11n HT 40 MHz mode



Date: 22.JUL.2013 14:44:32

TEST CHANNEL AND METHOD

All tests were performed at a channel center frequency of 5300 MHz utilizing a conducted test method.

CHANNEL MOVE TIME AND CHANNEL CLOSING TRANSMISSION TIME

GENERAL REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =

(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated

Begins at (Reference Marker + 200 msec) and

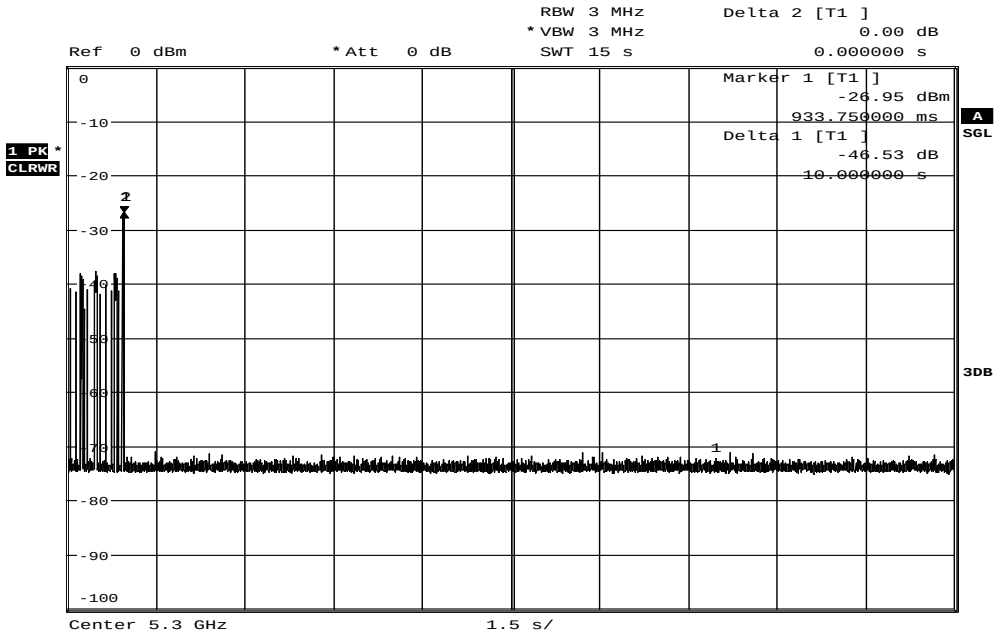
Ends no earlier than (Reference Marker + 10 sec).

IEEE 802.11n HT 20 MHz Channel mode for Band II

Type 1 Channel Move Time Results

No non-compliance noted.

Channel Move Time (s)	Limit (s)
0.93375	10



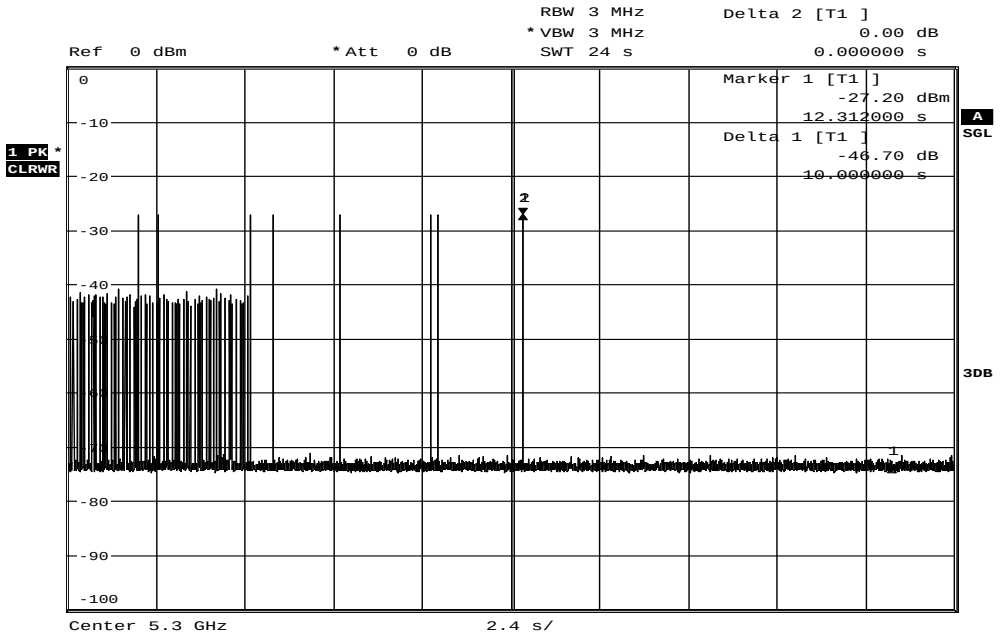
Date: 22.JUL.2013 17:43:10

IEEE 802.11n HT 20 MHz Channel mode for Band II

Type 5 Channel Move Time Results

No non-compliance noted.

Channel Move Time (s)	Limit (s)
0.012312	10



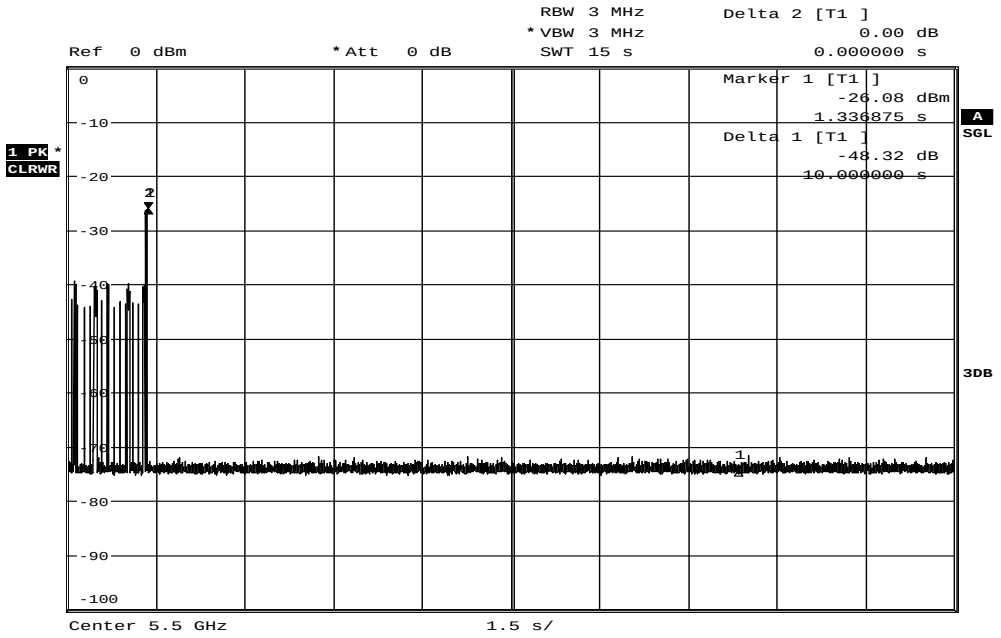
Date: 22.JUL.2013 19:09:22

IEEE 802.11n HT 20 MHz Channel mode for Band III

Type 1 Channel Move Time Results

No non-compliance noted.

Channel Move Time (s)	Limit (s)
1.336875	10



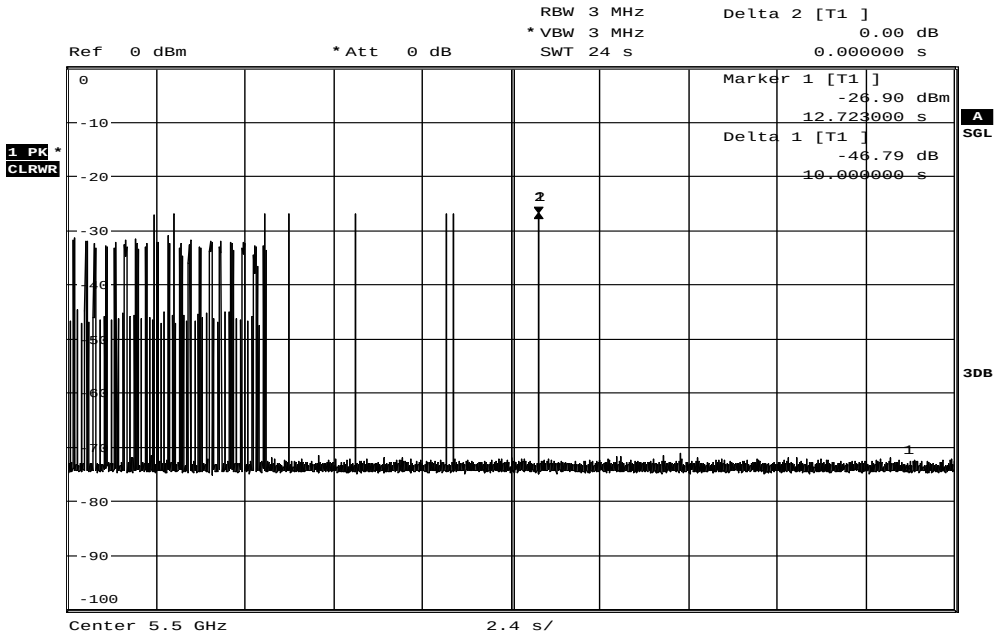
Date: 22.JUL.2013 16:53:23

IEEE 802.11n HT 20 MHz Channel mode for Band III

Type 5 Channel Move Time Results

No non-compliance noted.

Channel Move Time (s)	Limit (s)
12.723000	10



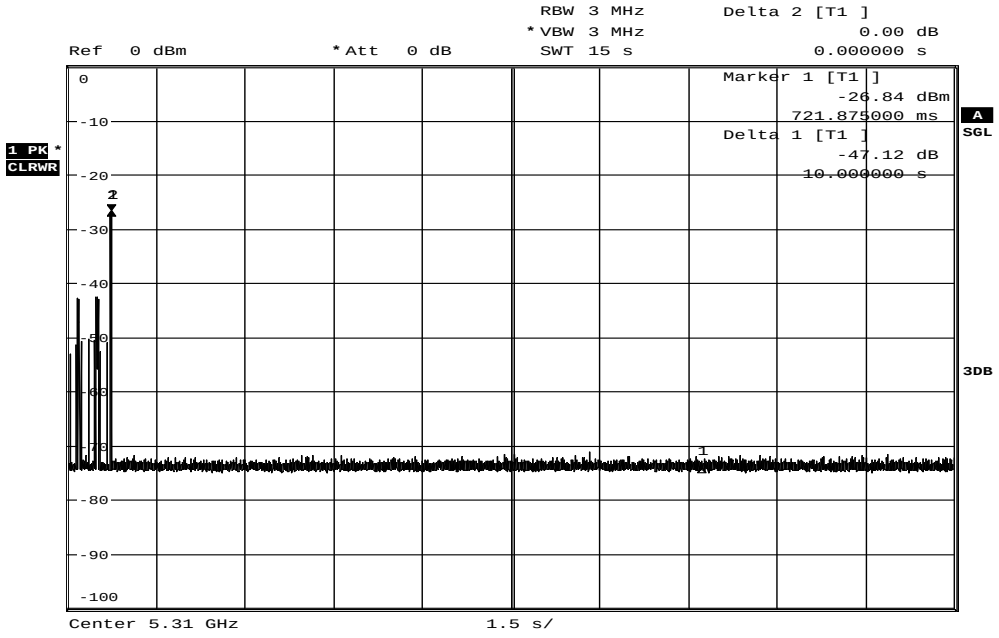
Date: 23.JUL.2013 09:04:50

IEEE 802.11n HT 40 MHz mode for Band II

Type 1 Channel Move Time Results

No non-compliance noted.

Channel Move Time (s)	Limit (s)
0.721875	10



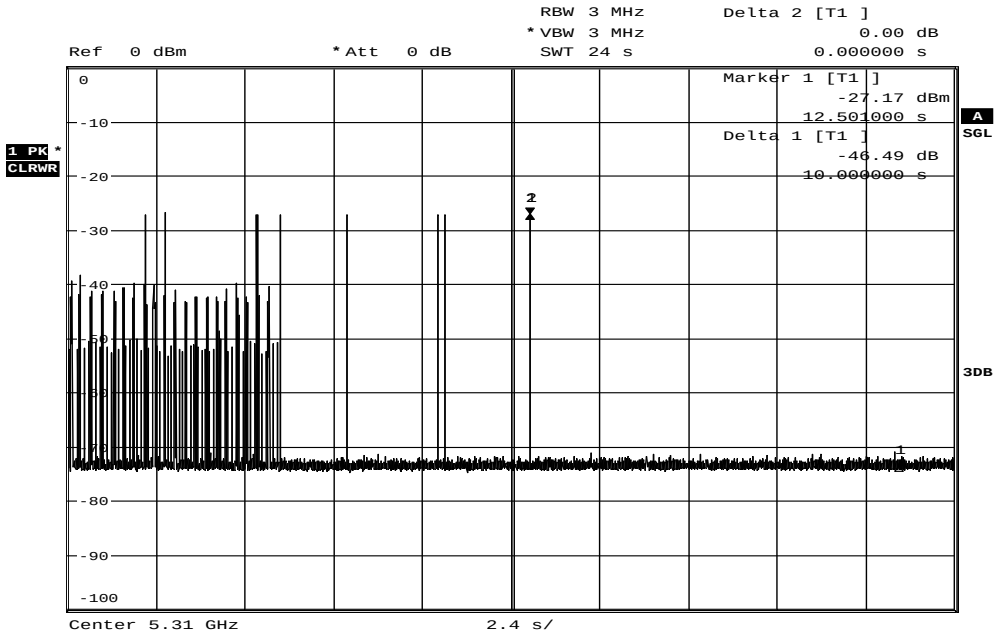
Date: 22.JUL.2013 15:53:06

IEEE 802.11n HT 40 MHz mode for Band II

Type 5 Channel Move Time Results

No non-compliance noted.

Channel Move Time (s)	Limit (s)
12.501000	10



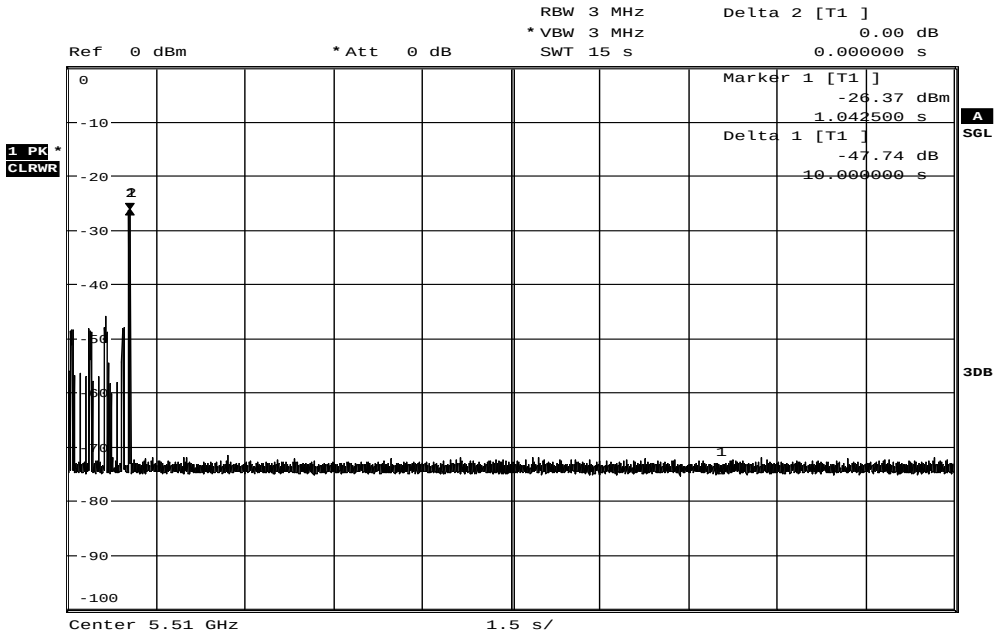
Date: 23.JUL.2013 09:17:18

IEEE 802.11n HT 40 MHz mode for Band III

Type 1 Channel Move Time Results

No non-compliance noted.

Channel Move Time (s)	Limit (s)
1.042500	10



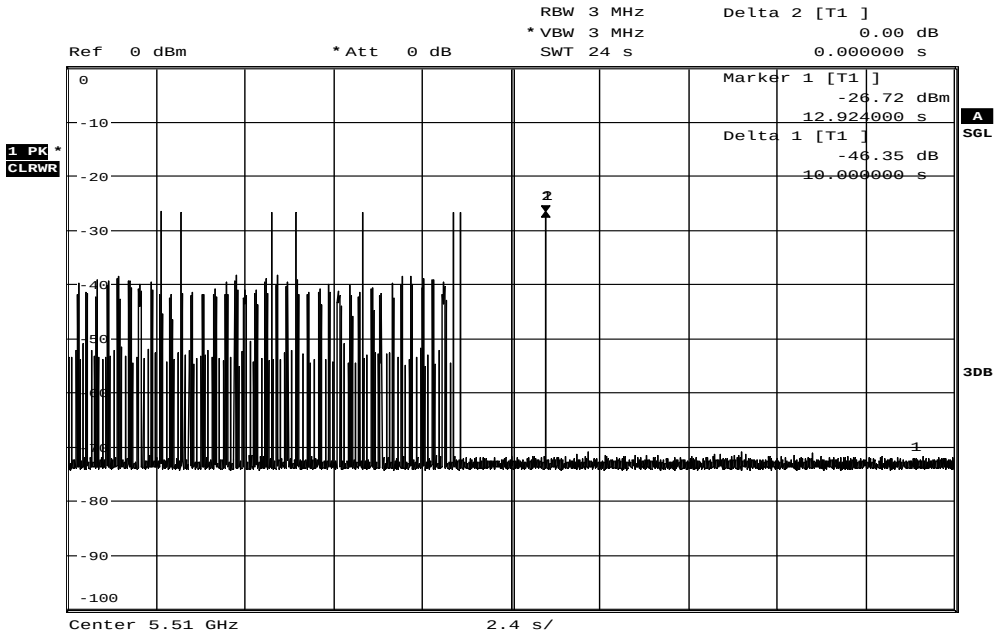
Date: 22.JUL.2013 14:56:04

IEEE 802.11n HT 40 MHz mode for Band III

Type 5 Channel Move Time Results

No non-compliance noted.

Channel Move Time (s)	Limit (s)
12.924000	10



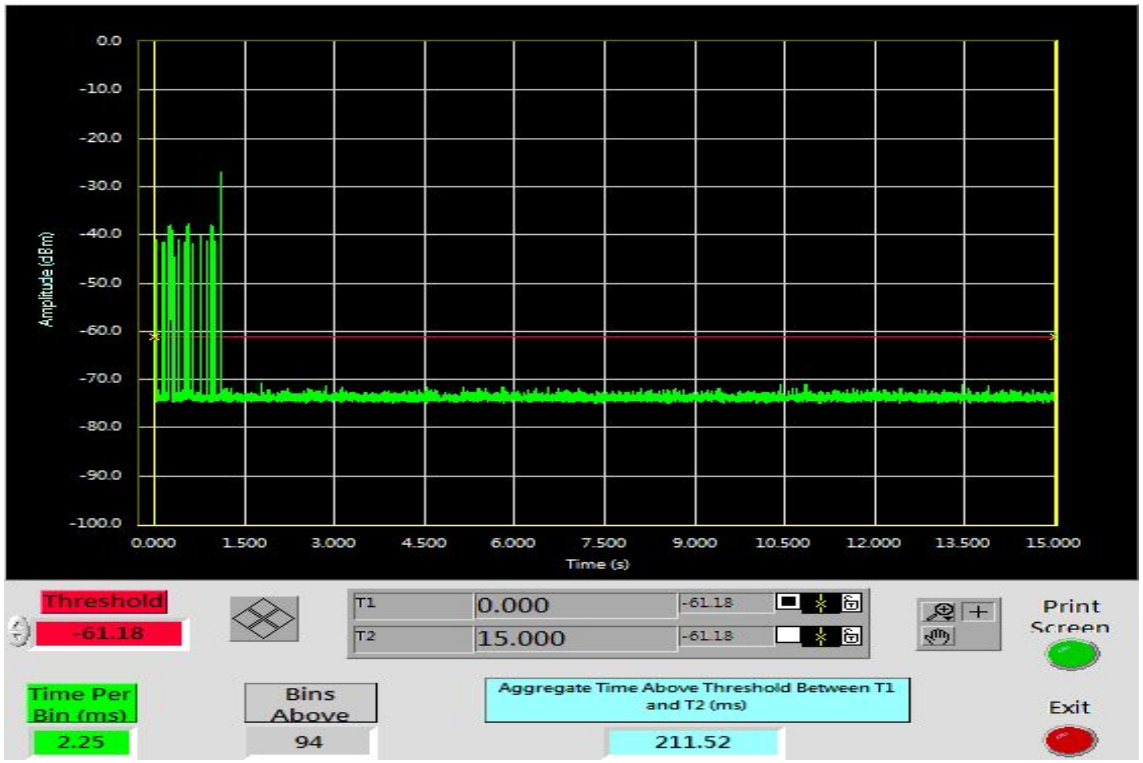
Date: 23.JUL.2013 09:30:09

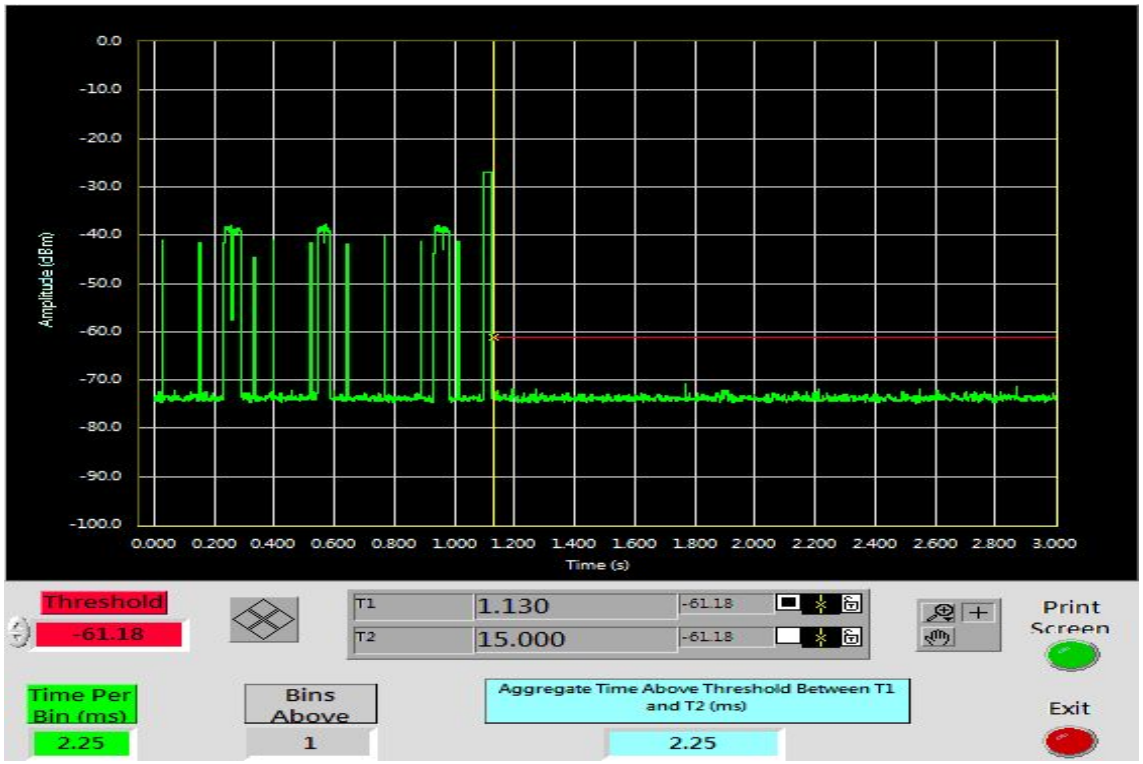
IEEE 802.11n HT 20 MHz Channel mode for Band II

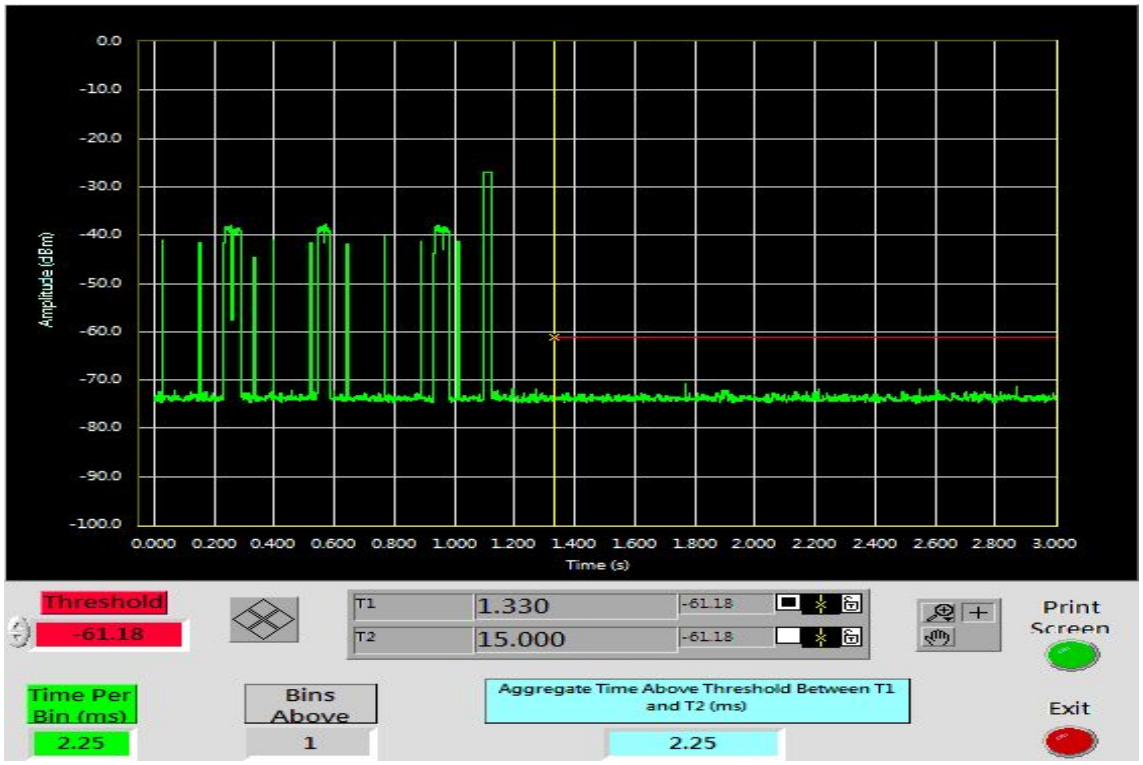
Type 1 Channel Closing Transmission Time Results

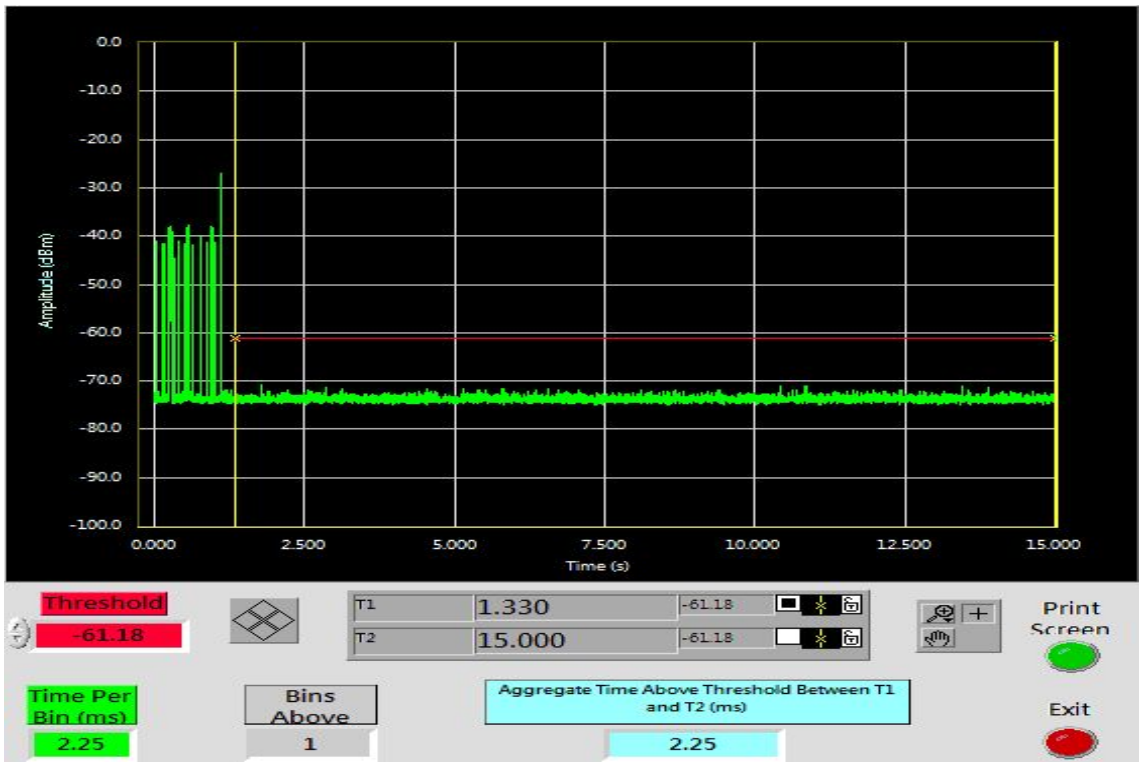
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
2.25	60	-57.75






0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 0.200 0.400 0.600 0.800 1.000 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 2.800 3.000
Time (s)
Threshold
-61.18
T1
1.330
-61.18
T2
15.000
-61.18
Print Screen
Exit
Time Per Bin (ms)
2.25
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
2.25

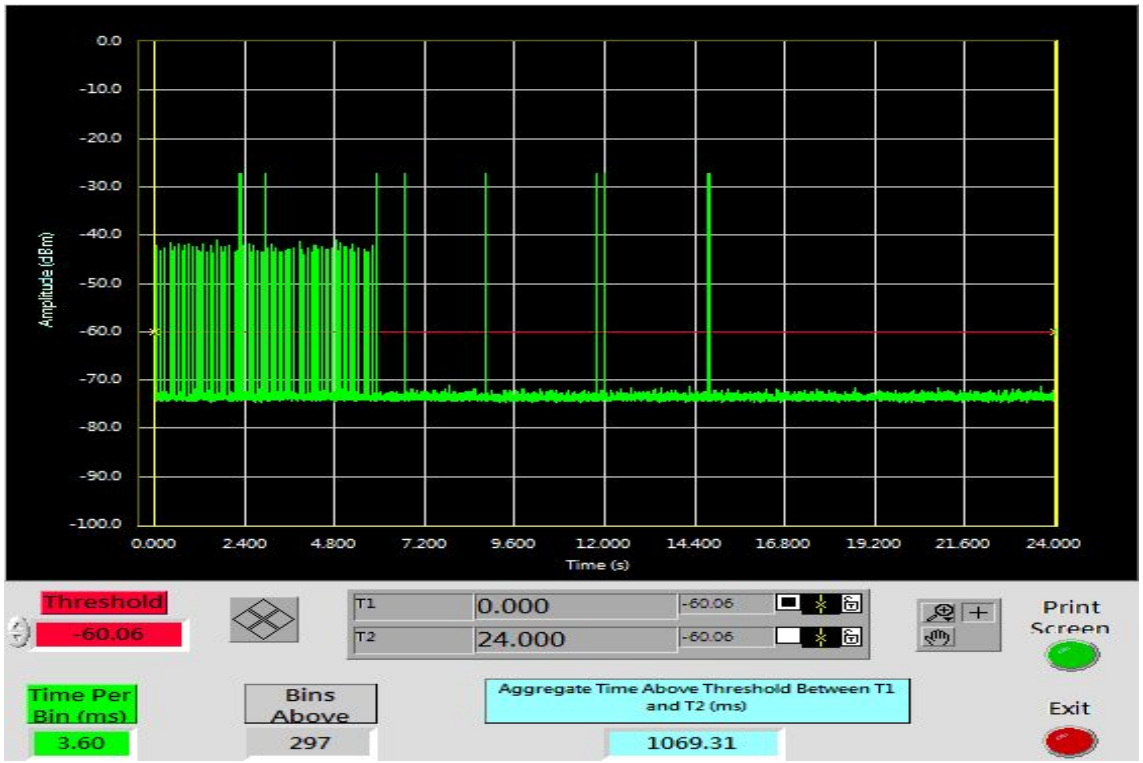

0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-61.18
T1
1.330
-61.18
T2
15.000
-61.18
Print Screen
Exit
Time Per Bin (ms)
2.25
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
2.25

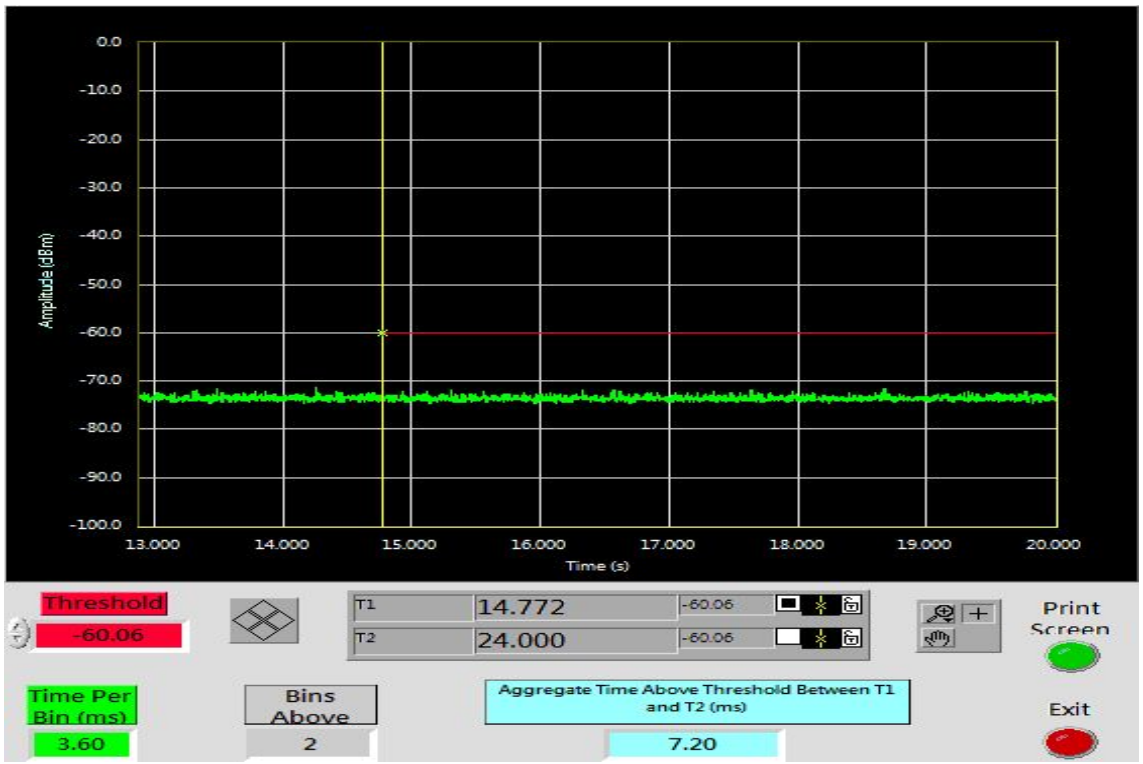
IEEE 802.11n HT 20 MHz Channel mode for Band II

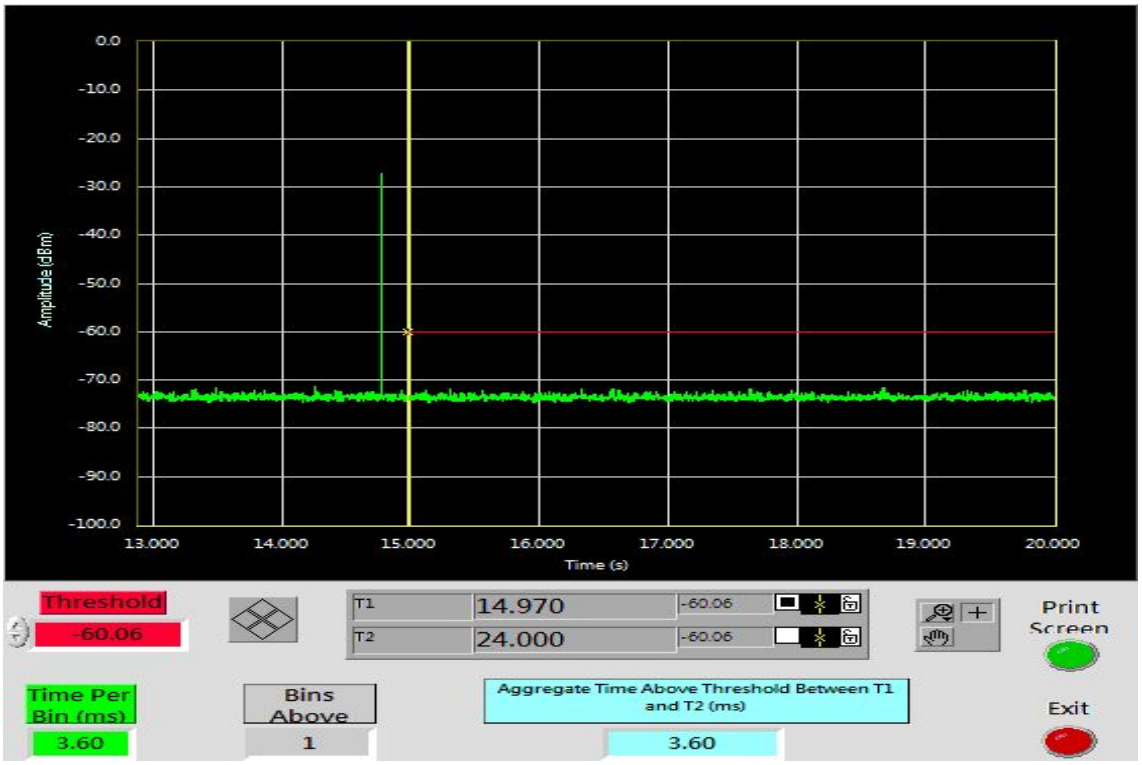
Type 5 Channel Closing Transmission Time Results

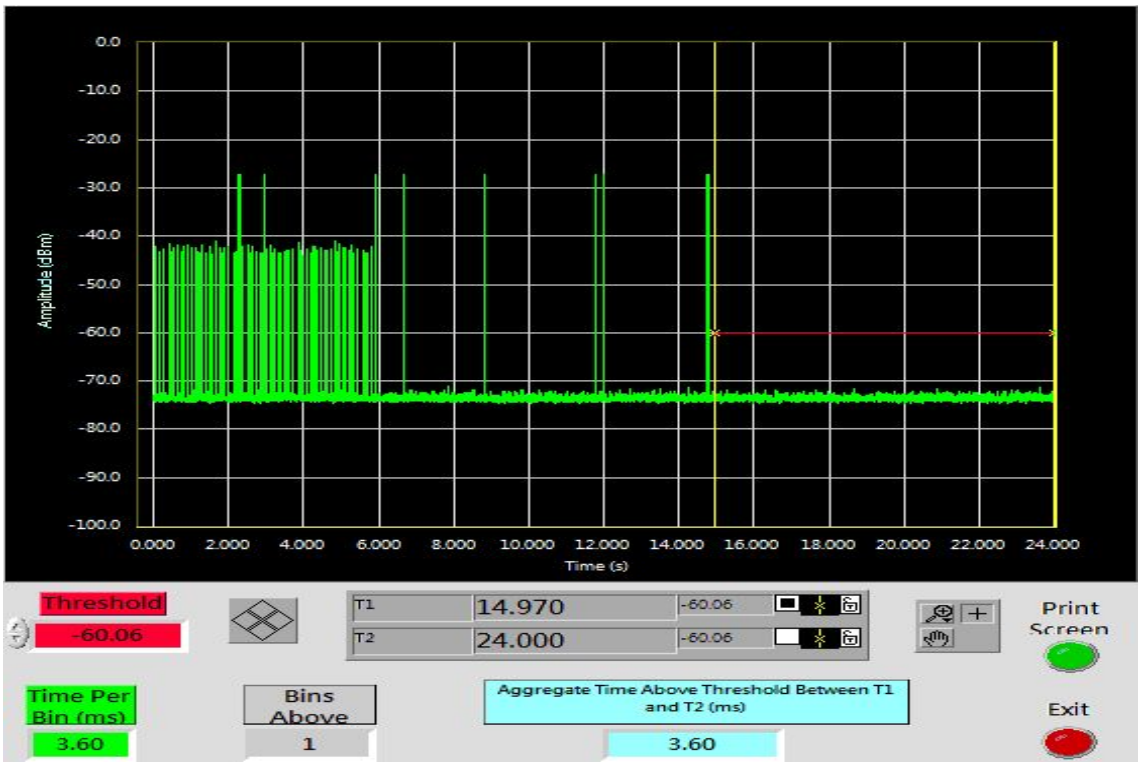
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
3.60	60	-56.4






0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
13.000
14.000
15.000
16.000
17.000
18.000
19.000
20.000
Time (s)
Threshold
-60.06
T1
14.970
-60.06
T2
24.000
-60.06
Print Screen
Time Per Bin (ms)
3.60
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
3.60
Exit

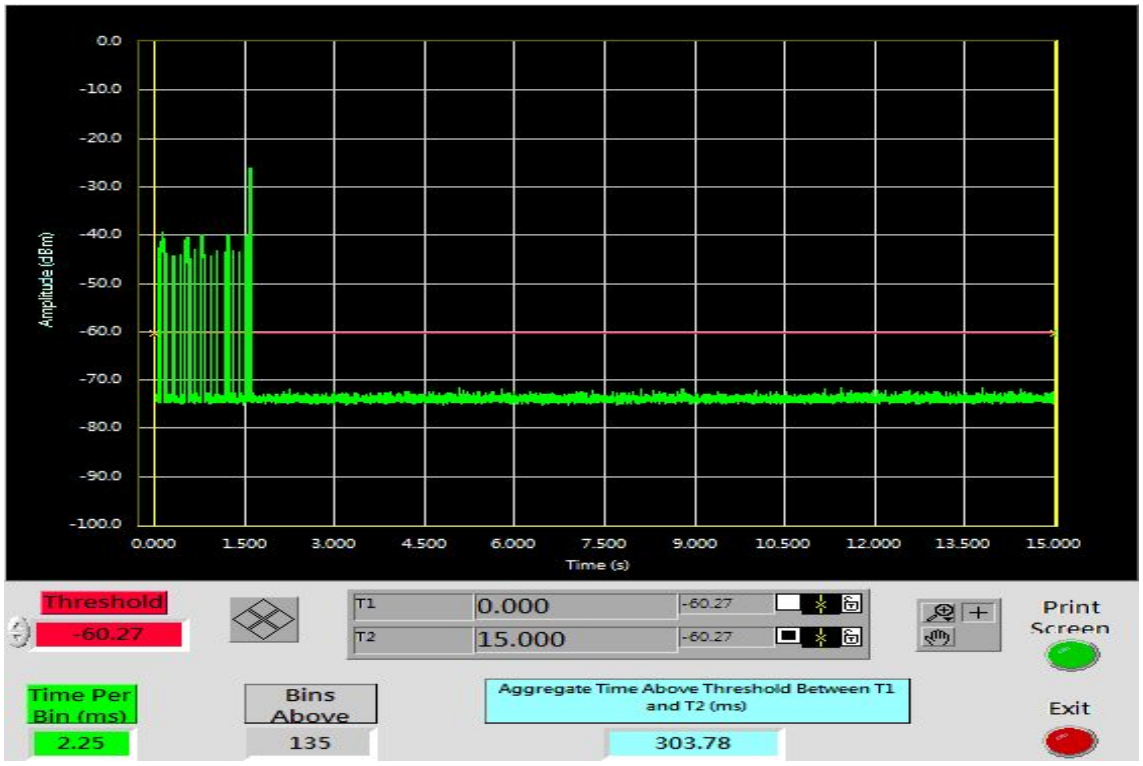

0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Time (s)
Threshold
-60.06
T1
14.970
-60.06
T2
24.000
-60.06
Print Screen
Time Per Bin (ms)
3.60
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
3.60
Exit

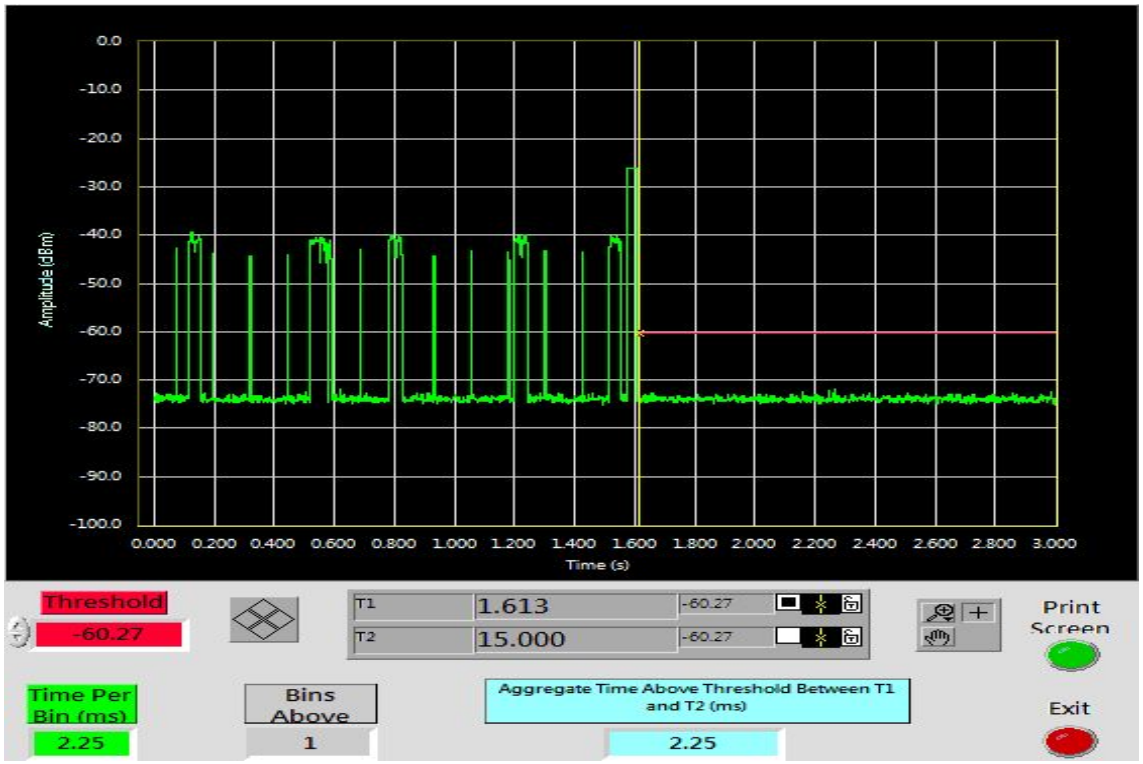
IEEE 802.11n HT 20 MHz Channel mode for Band III

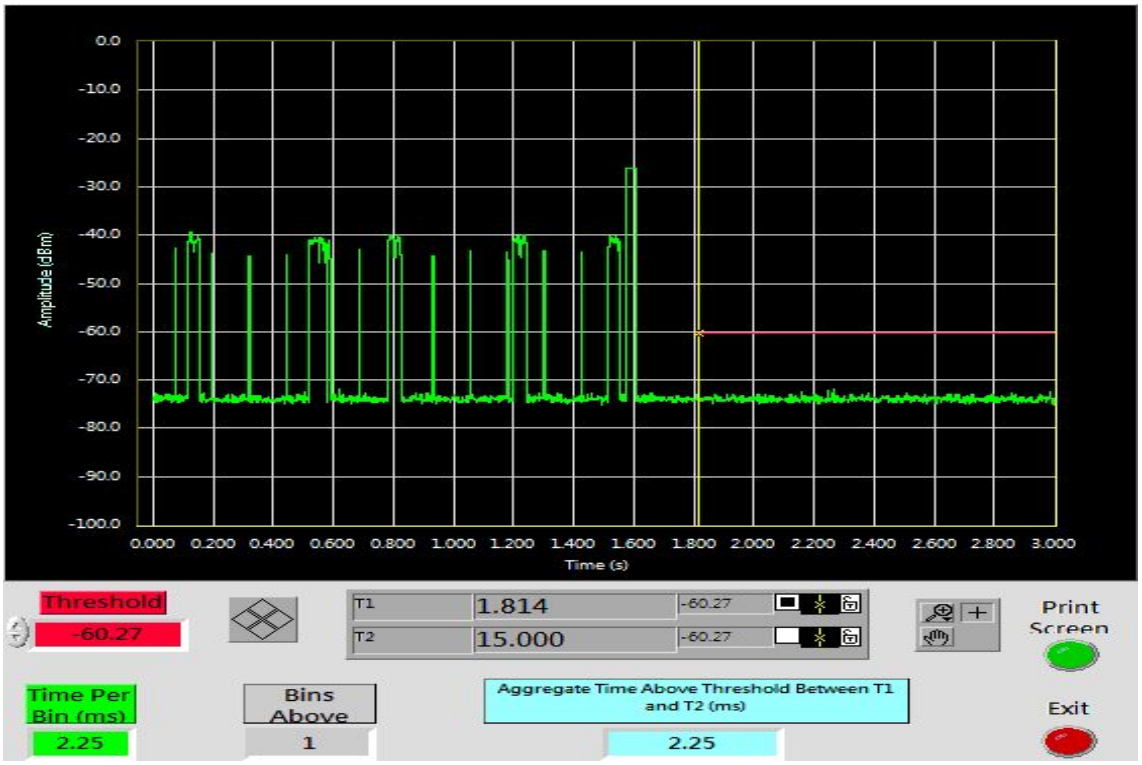
Type 1 Channel Closing Transmission Time Results

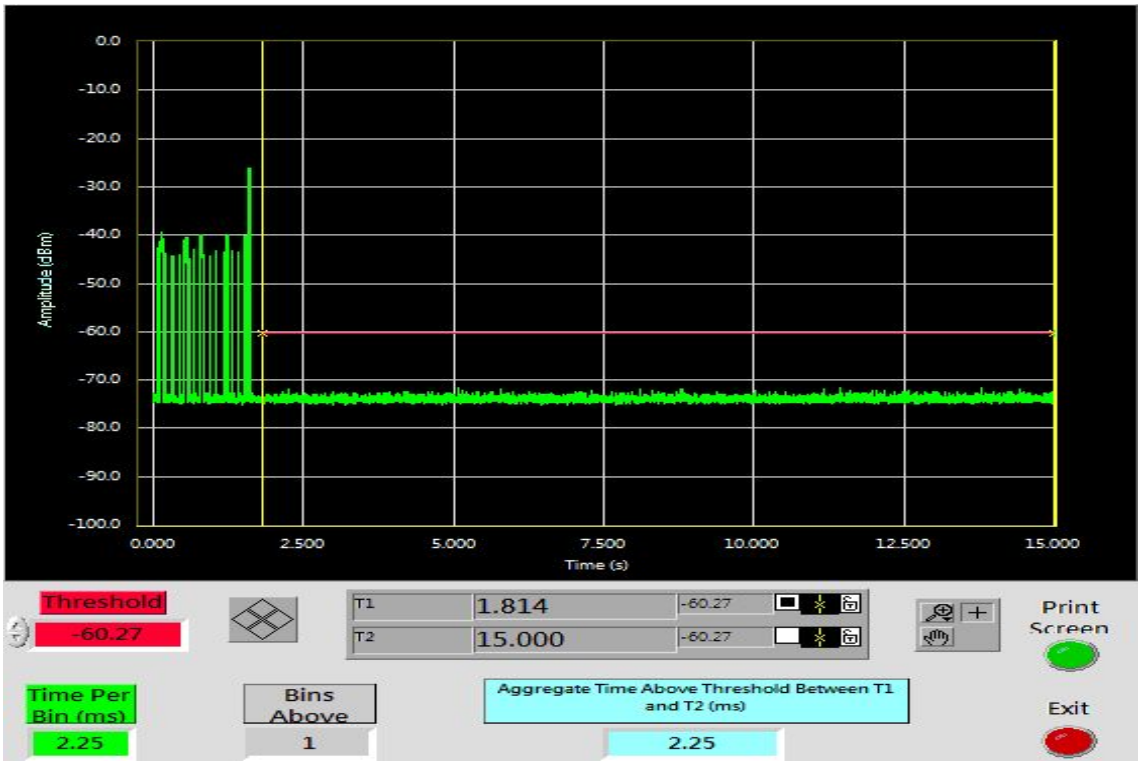
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
2.25	60	-57.75






0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 0.200 0.400 0.600 0.800 1.000 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 2.800 3.000
Time (s)
Threshold
-60.27
T1 1.814 -60.27
T2 15.000 -60.27
Print Screen
Exit
Time Per Bin (ms)
2.25
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
2.25

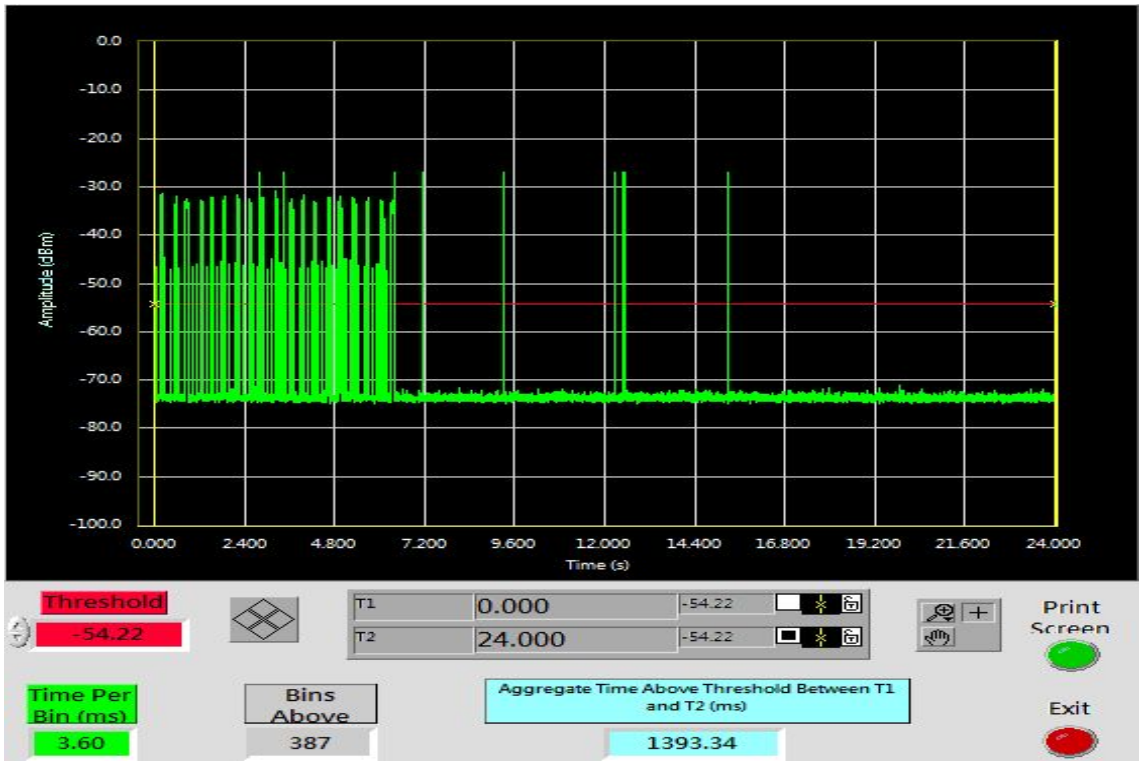

0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-60.27
T1 1.814 -60.27
T2 15.000 -60.27
Print Screen
Exit
Time Per Bin (ms)
2.25
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
2.25

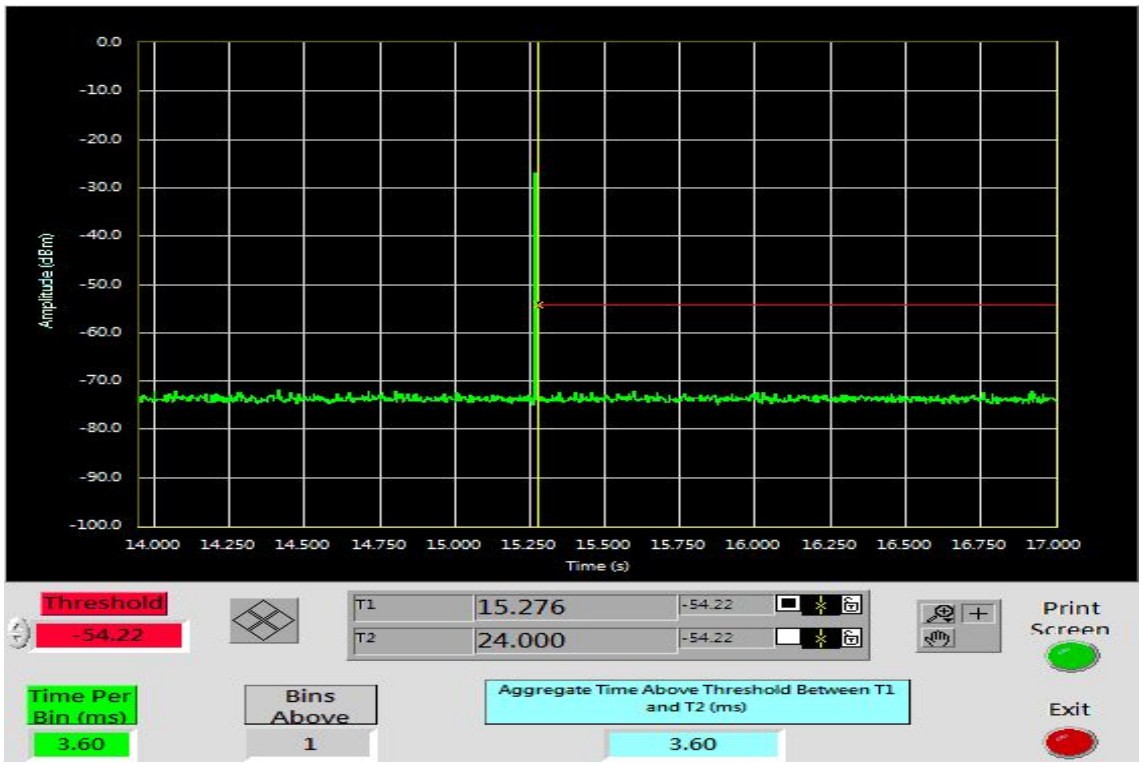
IEEE 802.11n HT 20 MHz Channel mode for Band III

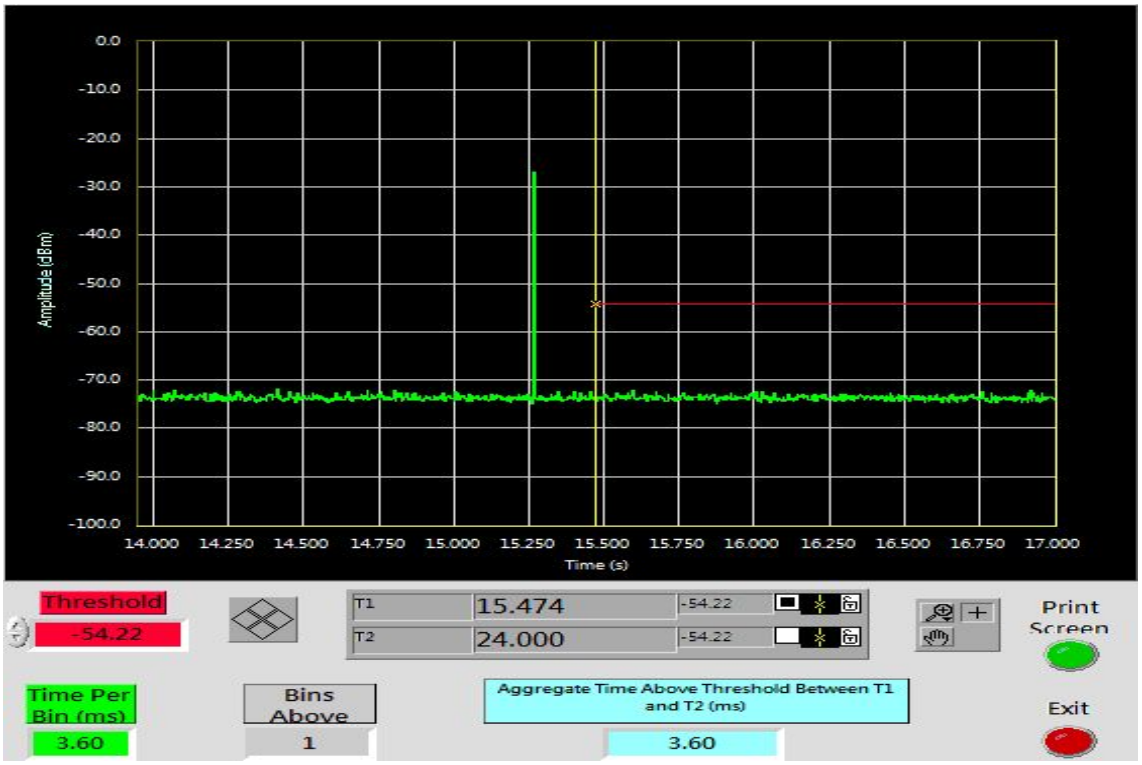
Type 5 Channel Closing Transmission Time Results

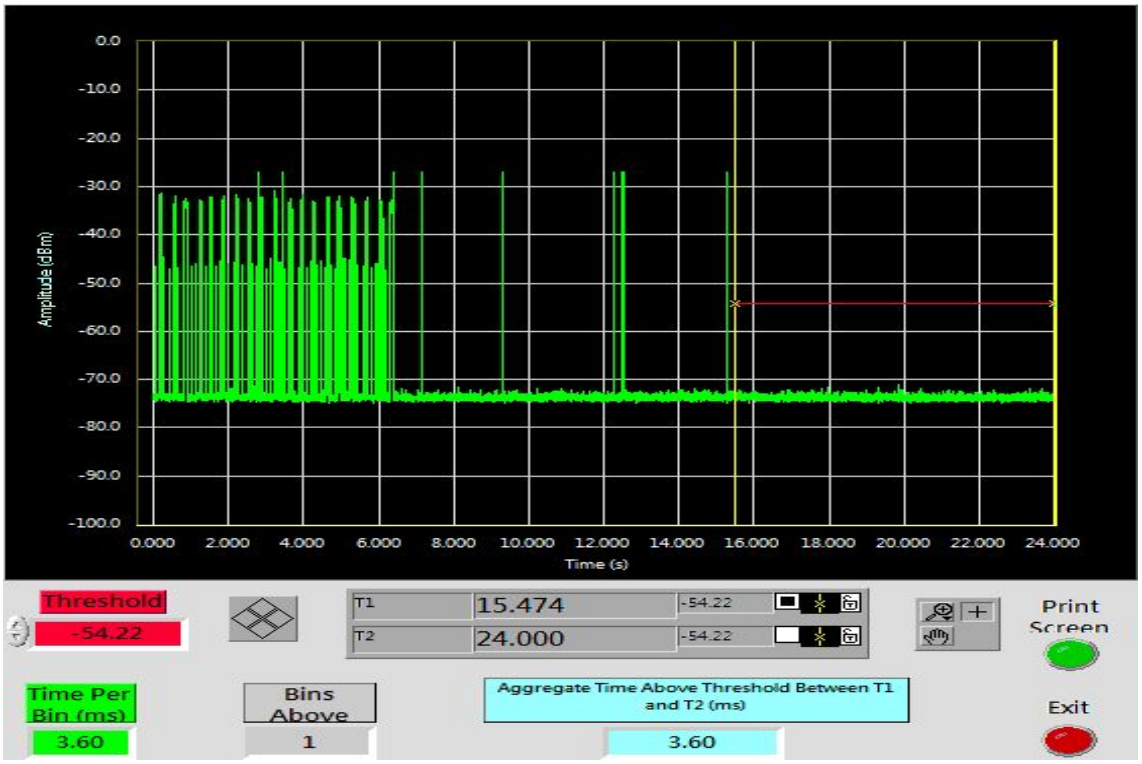
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
3.60	60	-56.4






0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
14.000 14.250 14.500 14.750 15.000 15.250 15.500 15.750 16.000 16.250 16.500 16.750 17.000
Time (s)
Threshold
-54.22
T1
15.474
-54.22
T2
24.000
-54.22
Print Screen
Time Per Bin (ms)
3.60
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
3.60
Exit

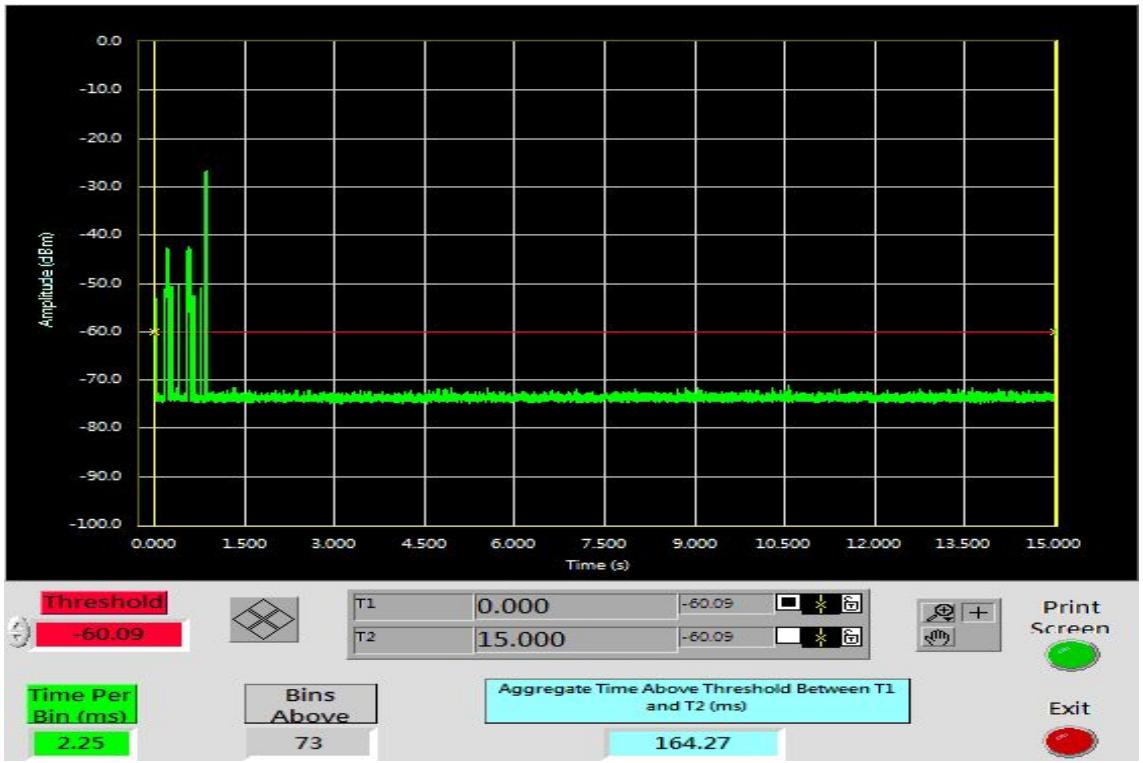

0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 2.000 4.000 6.000 8.000 10.000 12.000 14.000 16.000 18.000 20.000 22.000 24.000
Time (s)
Threshold
-54.22
T1
15.474
-54.22
T2
24.000
-54.22
Print Screen
Time Per Bin (ms)
3.60
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
3.60
Exit

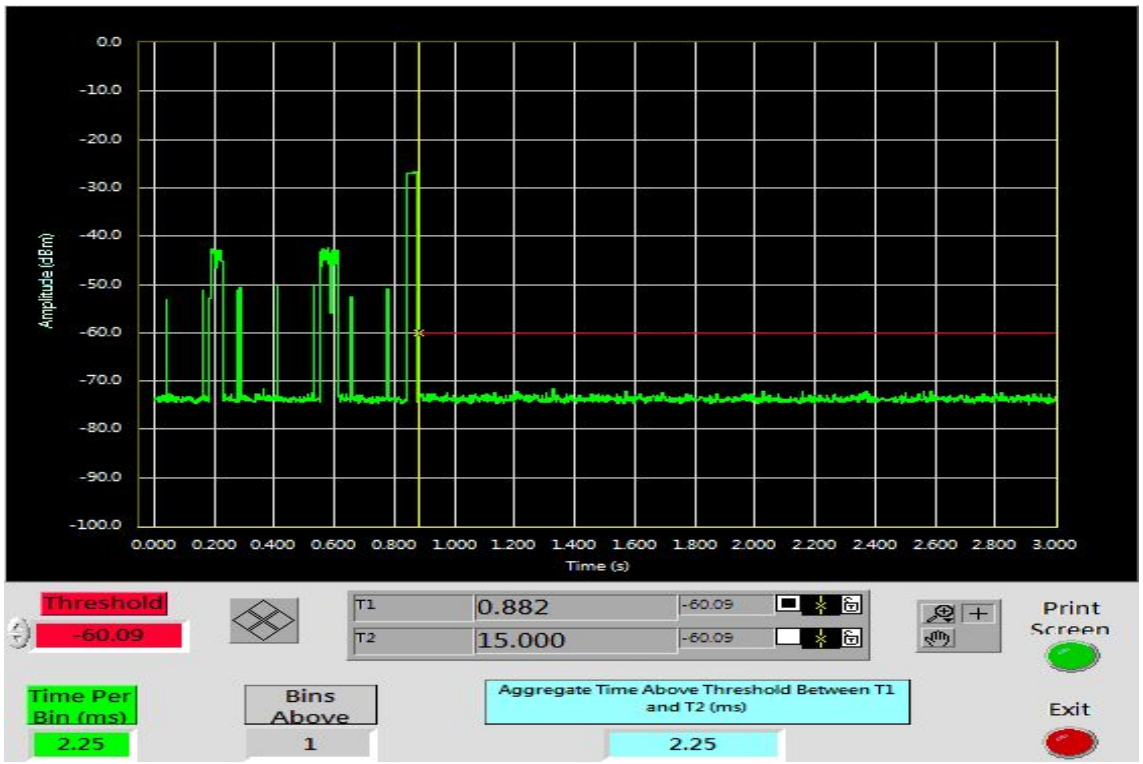
IEEE 802.11n HT 40 MHz mode for Band II

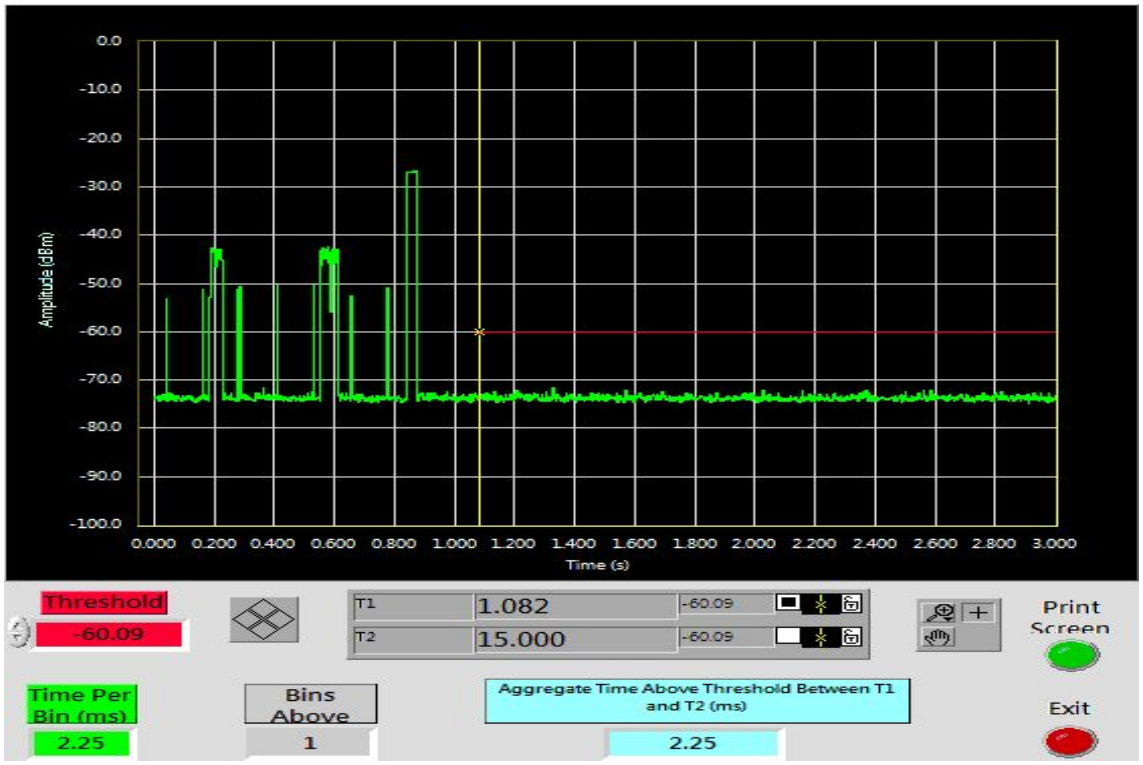
Type 1 Channel Closing Transmission Time Results

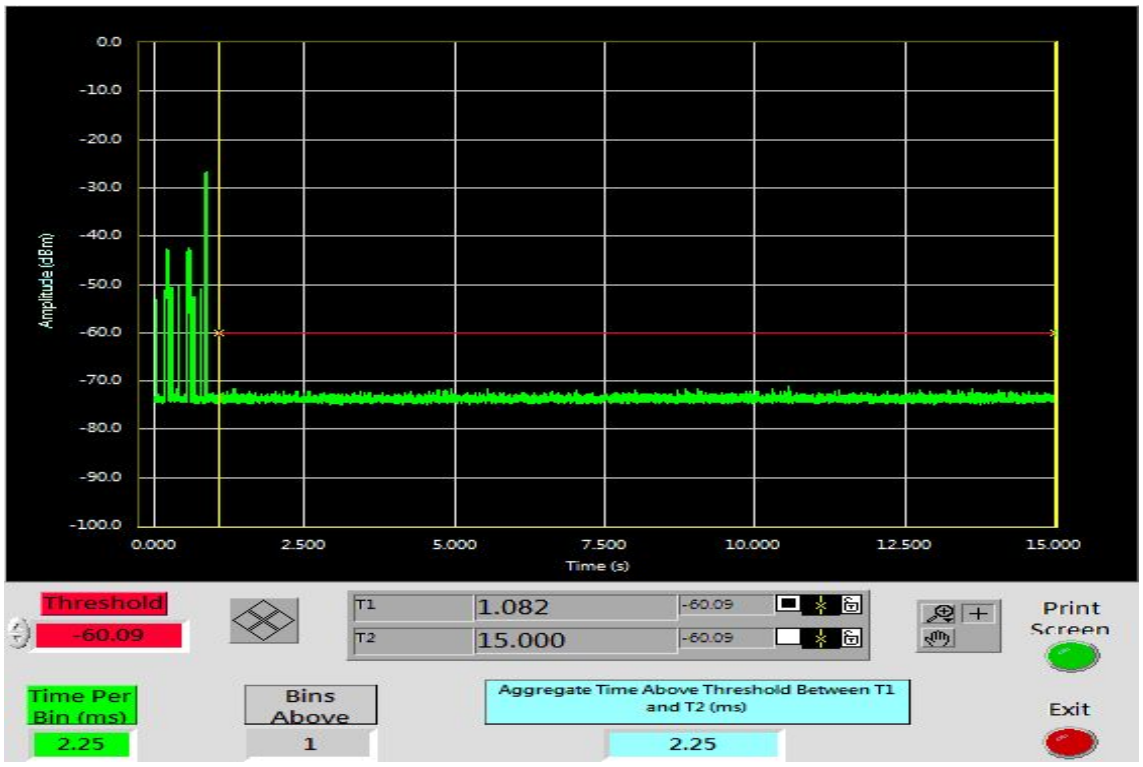
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
2.25	60	-57.75






0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 0.200 0.400 0.600 0.800 1.000 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 2.800 3.000
Time (s)
Threshold
-60.09
T1
1.082
-60.09
T2
15.000
-60.09
Print Screen
Exit
Time Per Bin (ms)
2.25
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
2.25

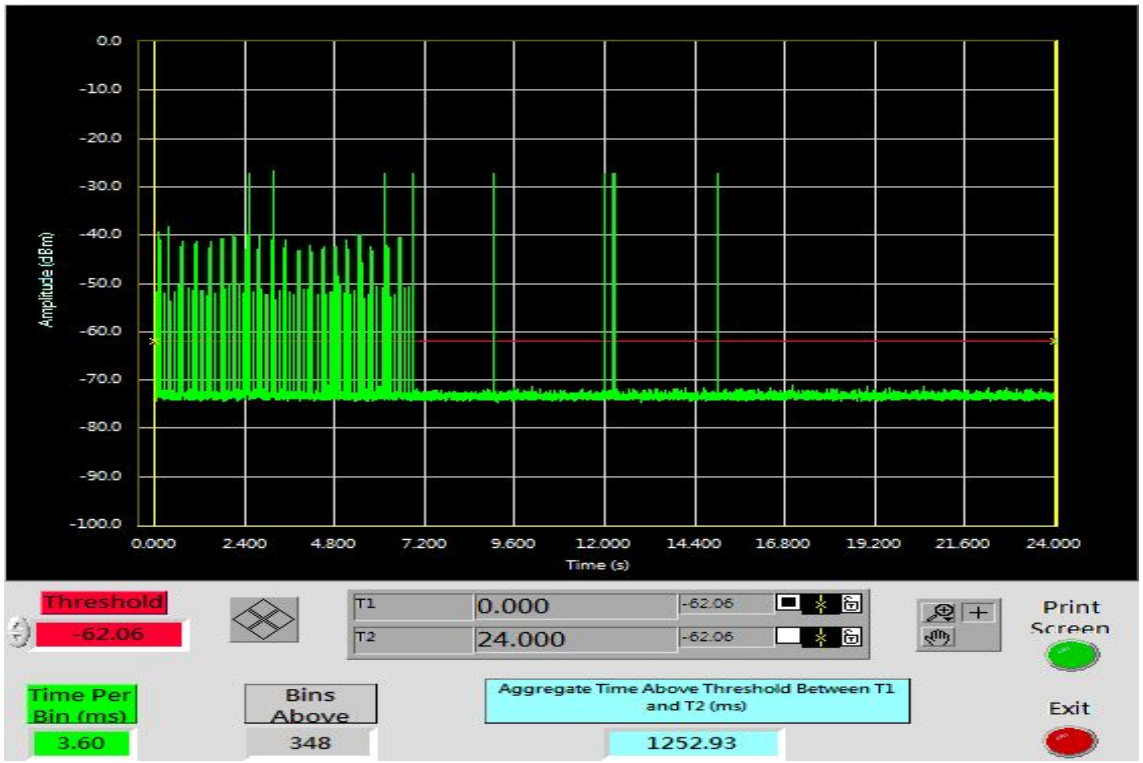

0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-60.09
T1
1.082
-60.09
T2
15.000
-60.09
Print Screen
Exit
Time Per Bin (ms)
2.25
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
2.25

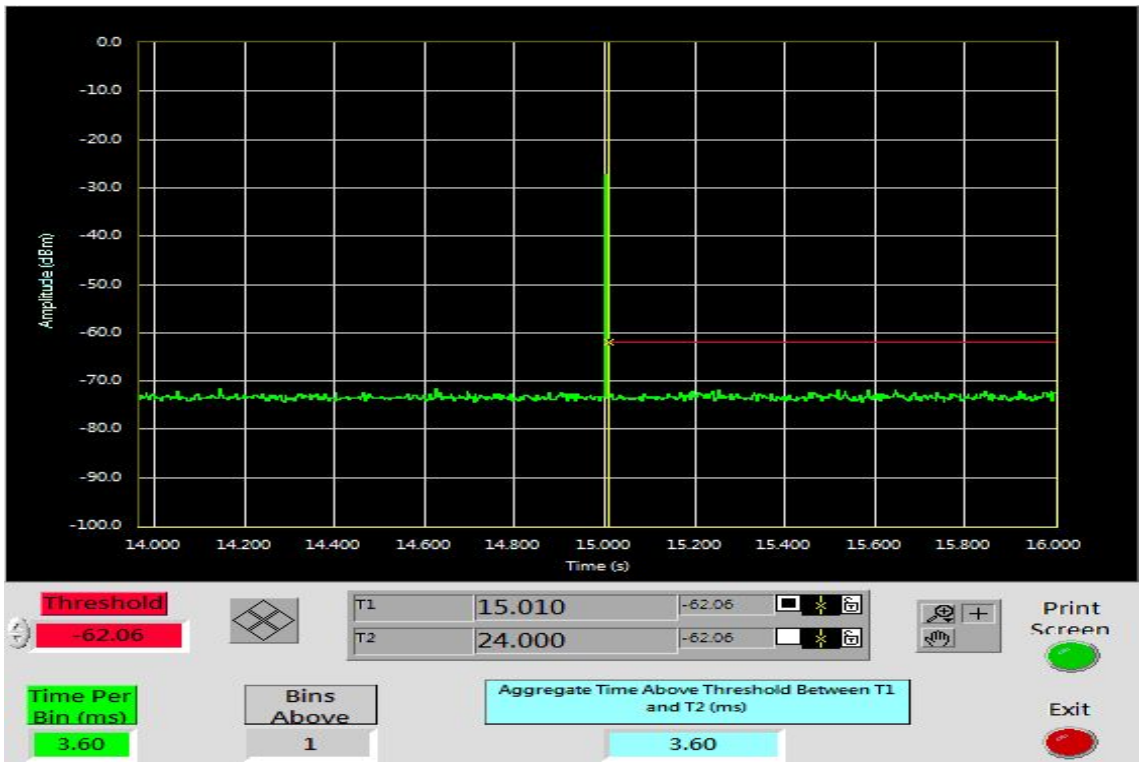
IEEE 802.11n HT 40 MHz mode for Band II

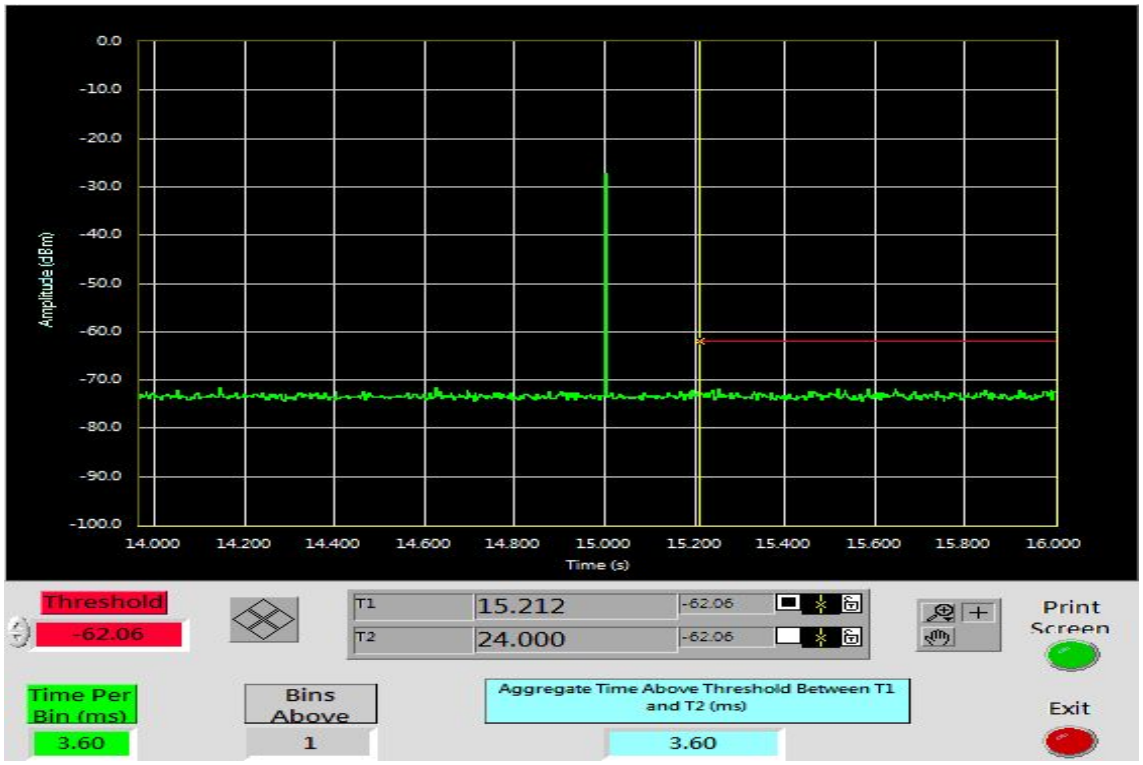
Type 5 Channel Closing Transmission Time Results

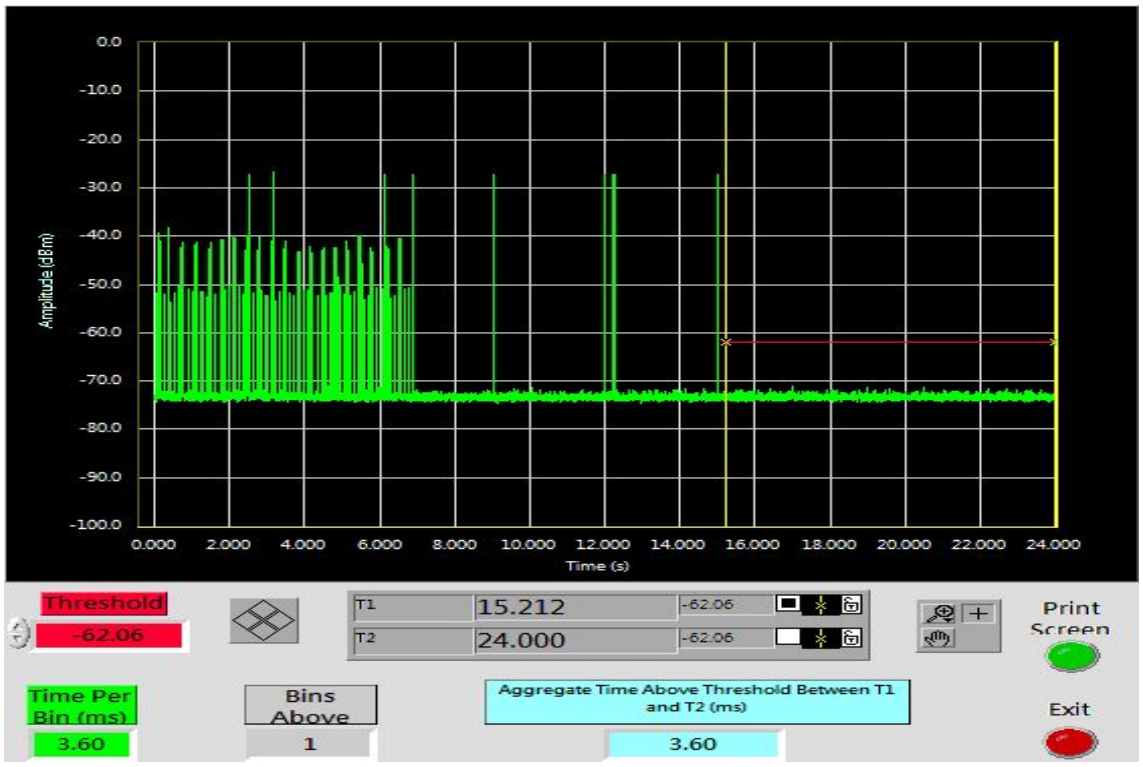
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
3.60	60	-56.4






0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
14.000
14.200
14.400
14.600
14.800
15.000
15.200
15.400
15.600
15.800
16.000
Time (s)
Threshold
-62.06
T1
15.212
-62.06
T2
24.000
-62.06
Print Screen
Time Per Bin (ms)
3.60
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
3.60
Exit

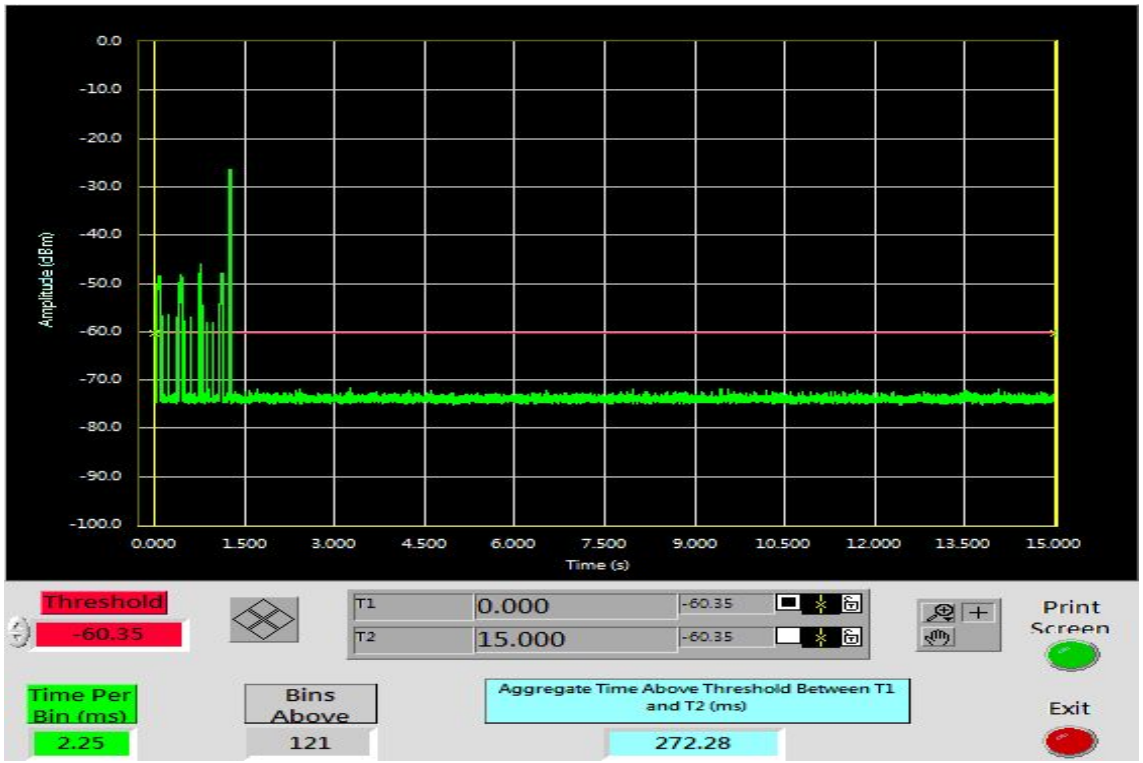

0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Time (s)
Threshold
-62.06
T1
15.212
-62.06
T2
24.000
-62.06
Print Screen
Time Per Bin (ms)
3.60
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
3.60
Exit

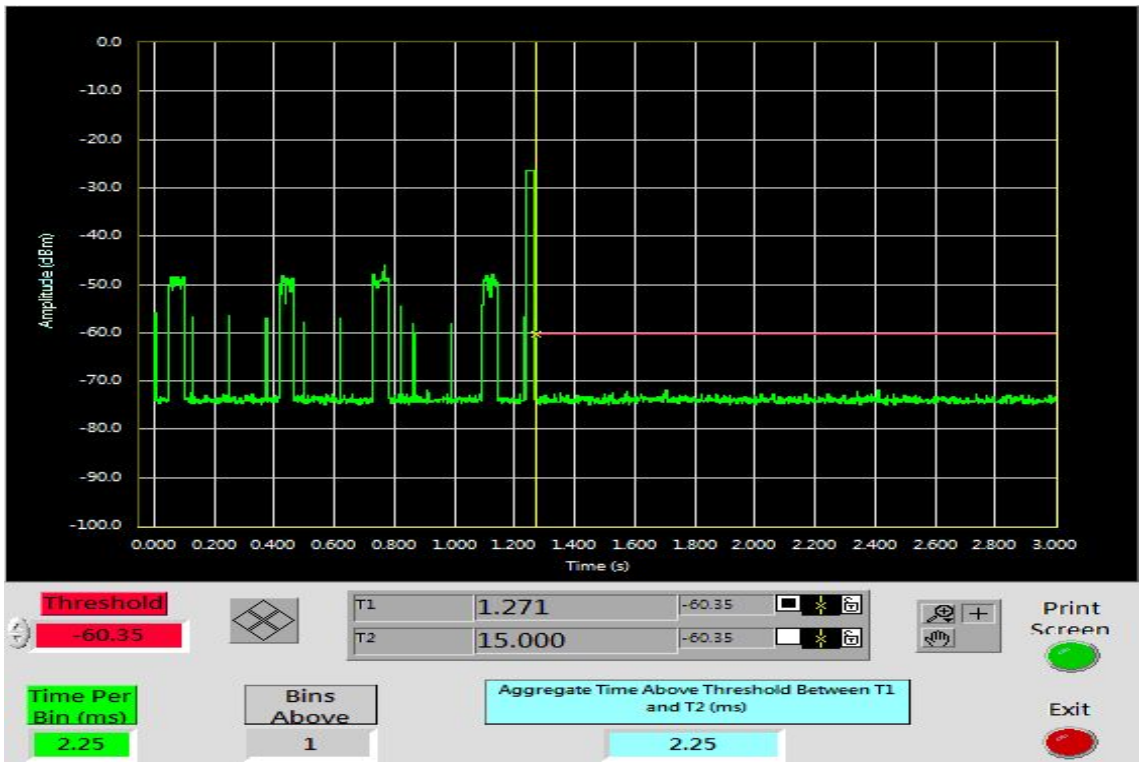
IEEE 802.11n HT 40 MHz mode for Band III

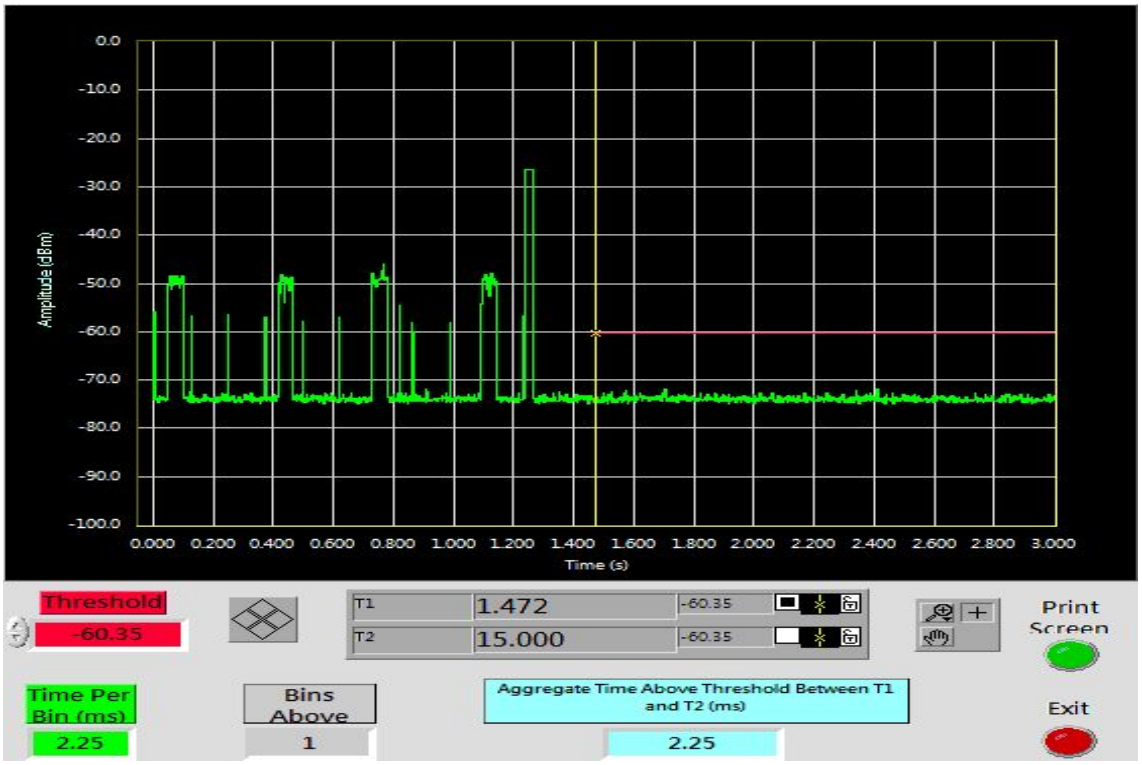
Type 1 Channel Closing Transmission Time Results

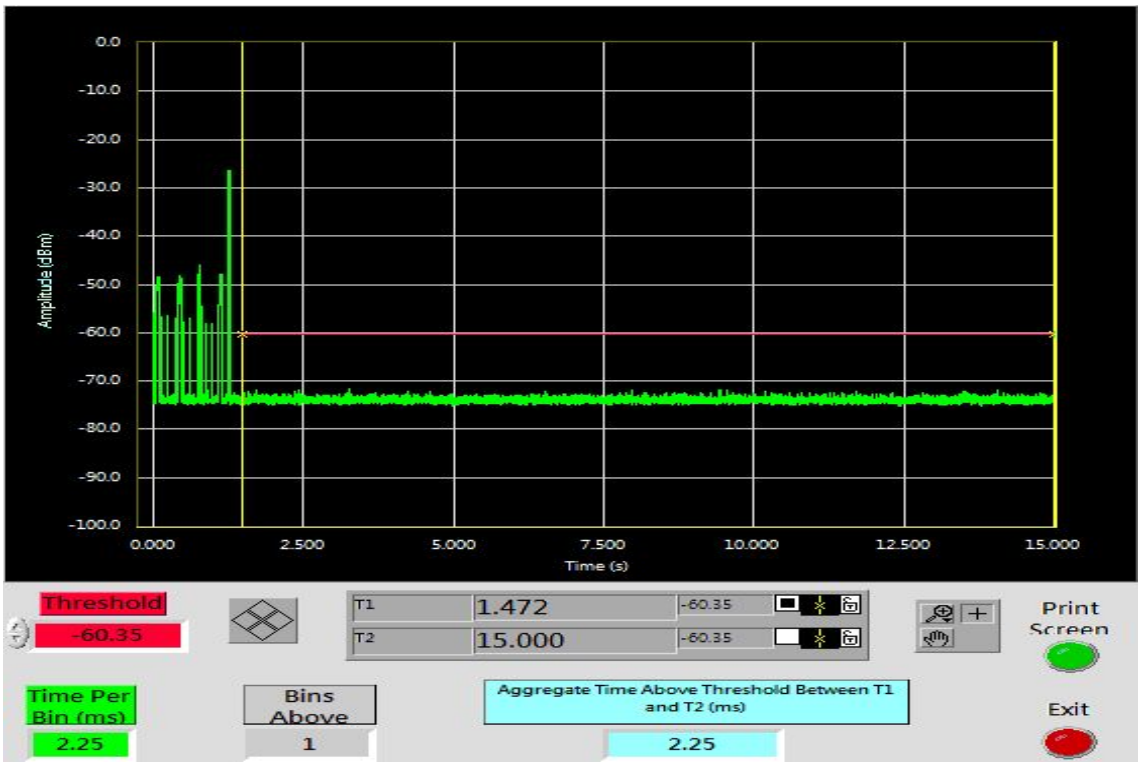
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
2.25	60	-57.75






0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 0.200 0.400 0.600 0.800 1.000 1.200 1.400 1.600 1.800 2.000 2.200 2.400 2.600 2.800 3.000
Time (s)
Threshold
-60.35
T1
1.472
-60.35
T2
15.000
-60.35
Print Screen
Exit
Time Per Bin (ms)
2.25
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
2.25

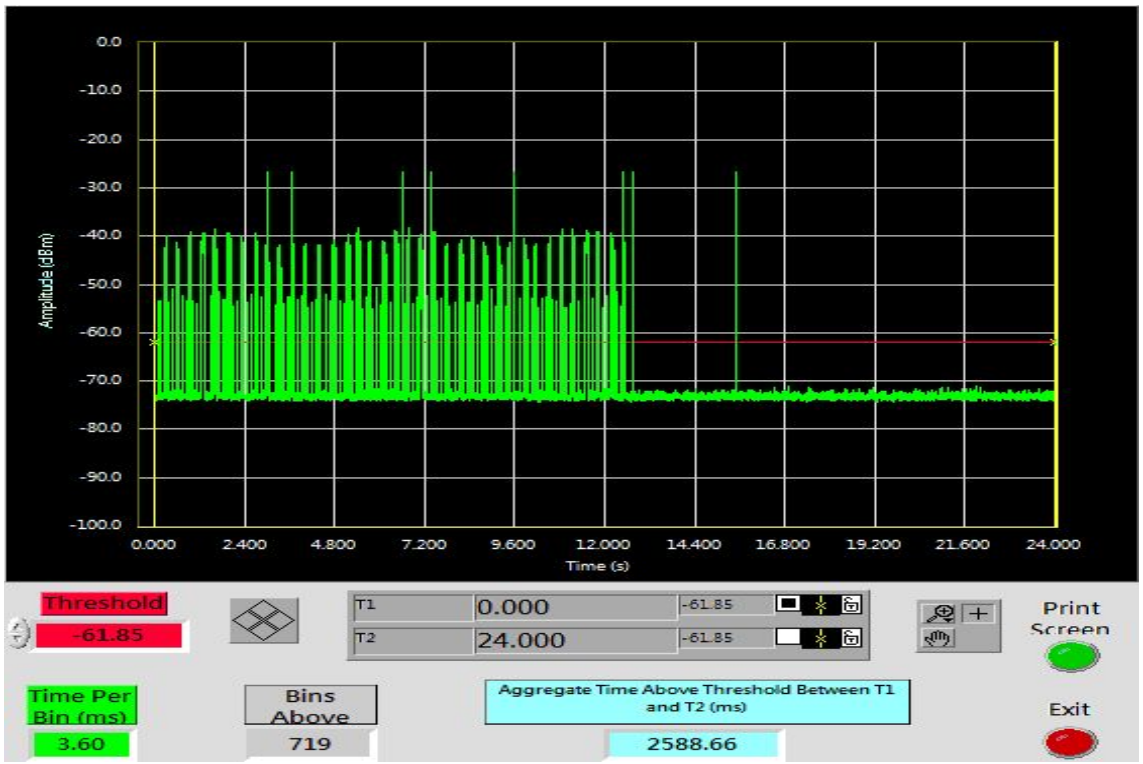

0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000 2.500 5.000 7.500 10.000 12.500 15.000
Time (s)
Threshold
-60.35
T1
1.472
-60.35
T2
15.000
-60.35
Print Screen
Exit
Time Per Bin (ms)
2.25
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
2.25

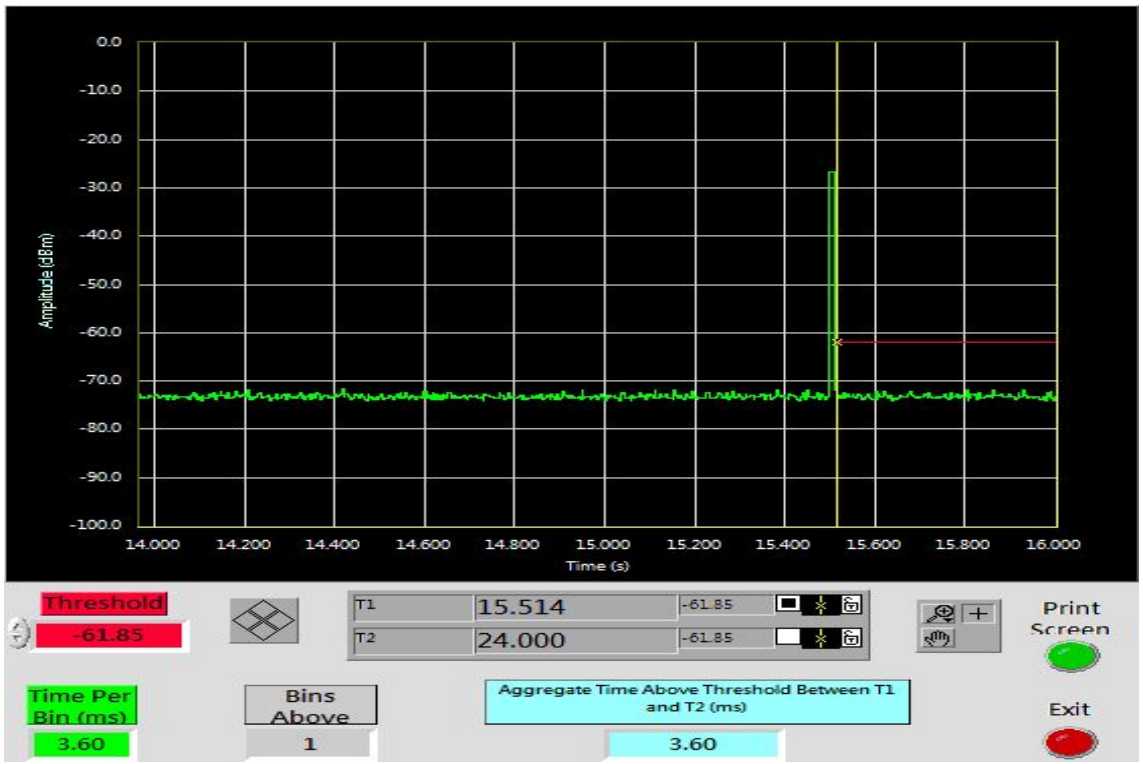
IEEE 802.11n HT 40 MHz mode for Band III

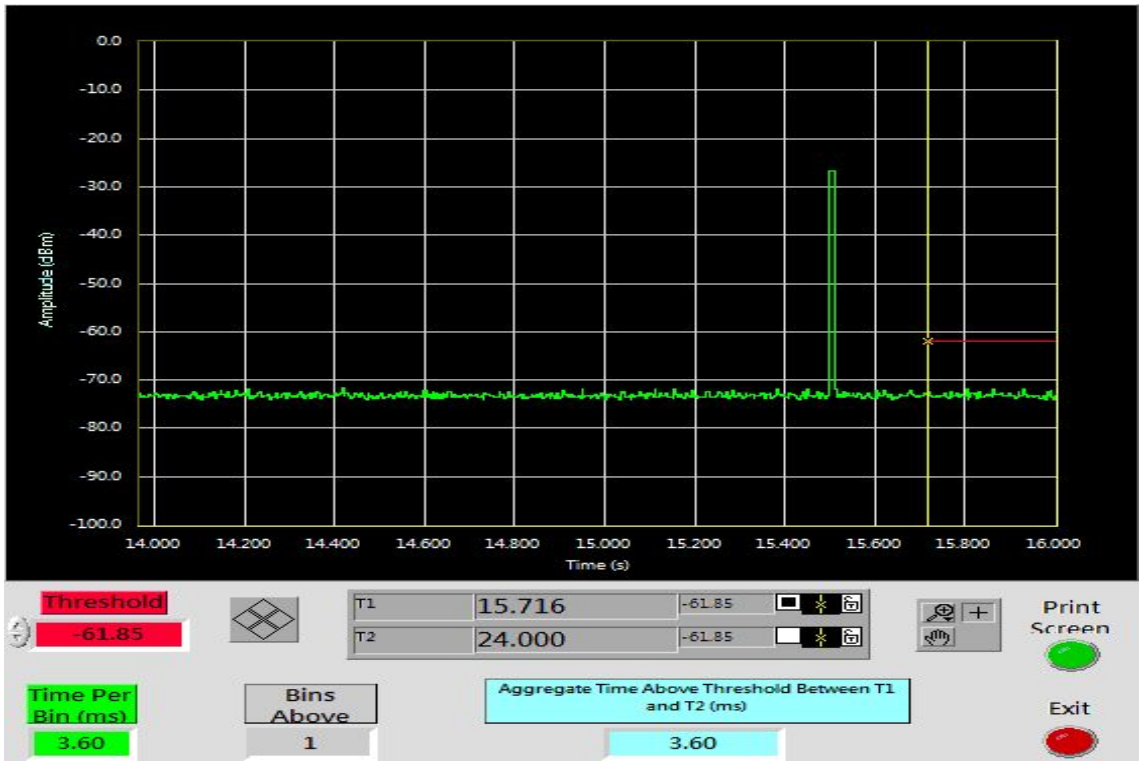
Type 5 Channel Closing Transmission Time Results

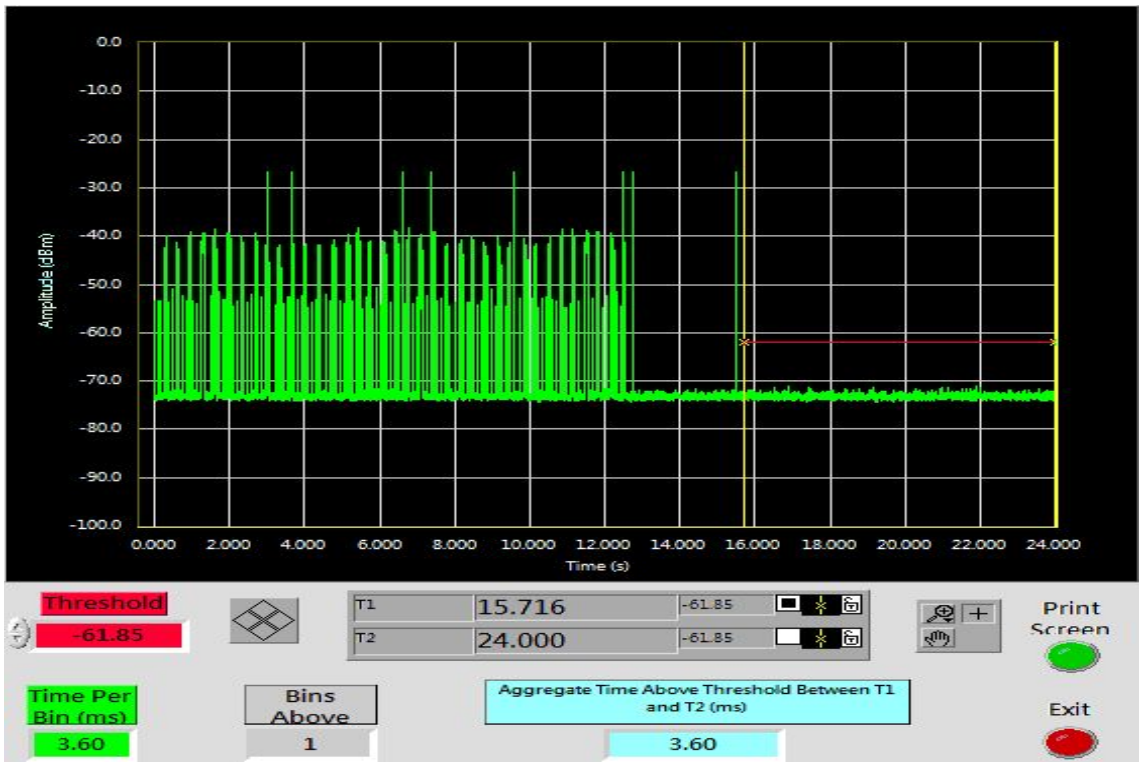
No non-compliance noted.

Aggregate Transmission Time (ms)	Limit (ms)	Margin (ms)
3.60	60	-56.4






0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
14.000
14.200
14.400
14.600
14.800
15.000
15.200
15.400
15.600
15.800
16.000
Time (s)
Threshold
-61.85
T1
15.716
-61.85
T2
24.000
-61.85
Print Screen
Time Per Bin (ms)
3.60
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
3.60
Exit


0.0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100.0
Amplitude (dBm)
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000
16.000
18.000
20.000
22.000
24.000
Time (s)
Threshold
-61.85
T1
15.716
-61.85
T2
24.000
-61.85
Print Screen
Time Per Bin (ms)
3.60
Bins Above
1
Aggregate Time Above Threshold Between T1 and T2 (ms)
3.60
Exit

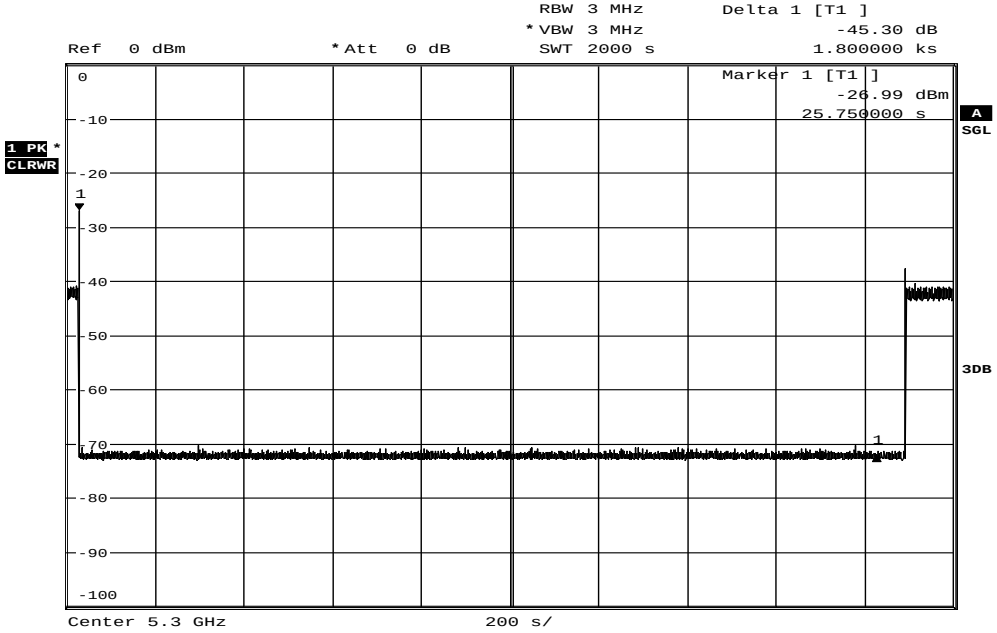
NON-OCCUPANCY PERIOD

IEEE 802.11n HT 20 MHz mode for Band II

Type 1 Non-Occupancy Period Test Results

No non-compliance noted.

No EUT transmissions were observed on the test channel during the 30 minute observation time.



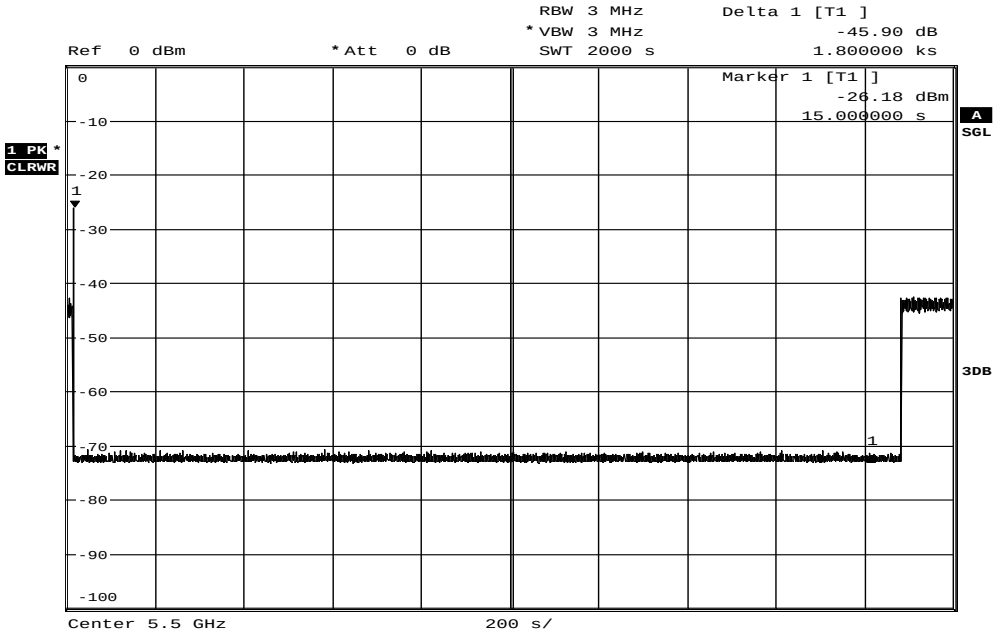
Date: 22.JUL.2013 18:27:36

IEEE 802.11n HT 20 MHz mode for Band III

Type 1 Non-Occupancy Period Test Results

No non-compliance noted.

No EUT transmissions were observed on the test channel during the 30 minute observation time.

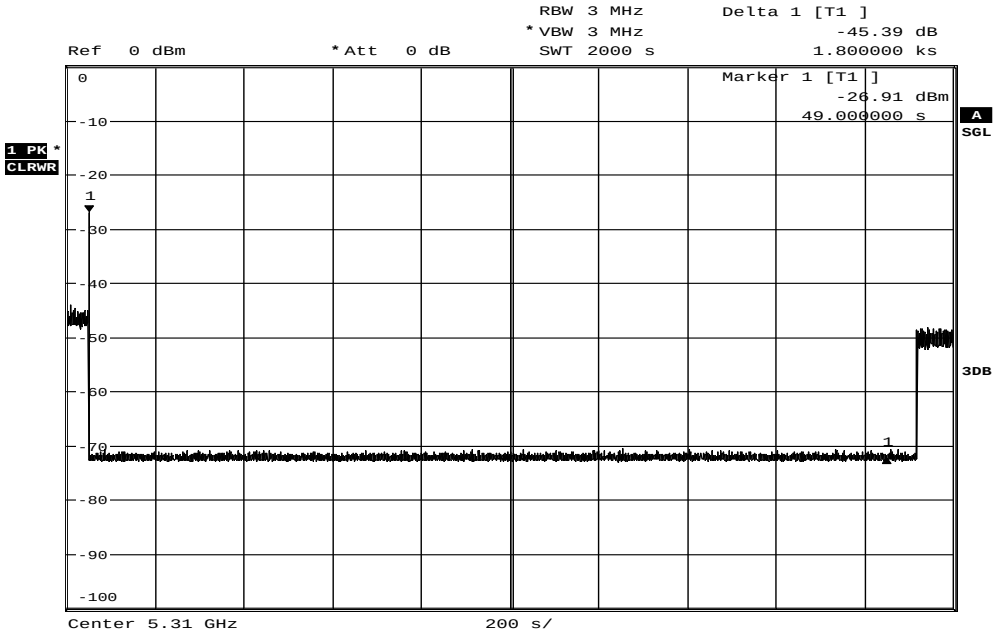


IEEE 802.11n HT 40 MHz mode for Band II

Type 1 Non-Occupancy Period Test Results

No non-compliance noted.

No EUT transmissions were observed on the test channel during the 30 minute observation time.



IEEE 802.11n HT 40 MHz mode for Band III

Type 1 Non-Occupancy Period Test Results

No non-compliance noted.

No EUT transmissions were observed on the test channel during the 30 minute observation time.