FCC 47 CFR PART 15 SUBPART E

TEST REPORT

For

Prepared by

Product Name: Wireless AP

Brand Name: Aerohive

Model No.: HiveAP 350
FCC ID: WBV-HIVEAP350

Series Model: N/A

Test Report Number:
KS120327A05-RPB

Issued for

Aerohive Networks, Inc.

330 Gibraltar Drive Sunnyvale, CA 94089 United States

Issued by

Compliance Certification Services Inc.

Kun shan Laboratory

No.10 Weiye Rd., Innovation park, Eco&Tec,
Development Zone, Kunshan City, Jiangsu, China

TEL: 86-512-57355888

FAX: 86-512-57370818

ACCREDITED
TESTING CERT #2541.01

TABLE OF CONTENTS

1 TEST RESULT CERTIFICATION

Product Name:	Wireless AP
Trade Name:	Aerohive
Model Name.:	HiveAP 350
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	MOBILE DEVICES
Date of Test:	May 1, 2013~May 12, 2013
Applicant:	**Aerohive Networks, Inc.** 330 Gibraltar Drive Sunnyvale, CA 94089 United States
Manufacturer:	**Aerohive Networks, Inc.** 330 Gibraltar Drive Sunnyvale, CA 94089 United States
Application Type:	Certification

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart E	No non-compliance noted

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4:2009 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.407and KDB 789033 – 20120926.
The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Sean.yu

Test by: sean.yu

Compliance Certification Services Inc.

Reviewed by:

Pierce Peng

Approved by: pierce.peng

Compliance Certification Services Inc.

2 EUT DESCRIPTION

Product Name:	Wireless AP			
Brand Name:	Aerohive			
Model Name:	HiveAP 350			
Series Model:	N/A			
Model Discrepancy:	N/A			
Power Adapter Power Rating :	**Description**	**Model**	**Input**	**output**
	POE	PD-9001GR/AC	100-240Vac,50/60Hz,	55Vdc,0.6A
Frequency Range :	802.11a mode:5.26~5.32 GHz and 5.5~5.7 GHz 802.11an Standard-20 MHz Channel mode: 5.26~5.32 GHz and 5.5~5.7 GHz 802.11an Wide-40 MHz Channel mode: 5.27~5.31 GHz and 5.51~5.67GHz			
Transmit Power :	802.11a mode: 13.02 dBm 802.11an Standard-20 MHz Channel mode: 16.67dBm 802.11an Wide-40 MHz Channel mode: 17.35 dBm (the EUT transmitting and receiving with three antennas simultaneously working at n mode)			
Modulation Technique :	**802.11a mode:** 54, 48, 36, 24, 18, 12, 9, 6 Mbps **802.11n Standard-20 MHz Channel mode:** OFDM (6.5, 7.2, 13, 14.4, 14.44, 19.5, 21.7, 26, 28.89, 28.9, 39, 43.3, 43.33 52, 57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67, 104, 115.56, 117, 130, 144.44 Mbps) **802.11n Wide-40 MHz Channel mode:** OFDM (13.5, 15, 27, 30, 40.5, 45, 54, 60, 81, 90, 108, 120, 121.5, 135, 150, 162, 180, 216, 240, 243, 270, 300 Mbps)			
Number of Channels :	**802.11a mode:** 5260 ~ 5320 MHz: 4 CH 5500 ~ 5700 MHz: 11 CH **802.11n Standard-20 MHz Channel mode:** 5260 ~ 5320 MHz: 4 CH 5500 ~ 5700 MHz: 11 CH **802.11n Standard-40 MHz Channel mode:** 5270 ~ 5310 MHz: 2 CH 5510 ~ 5670 MHz: 5 CH			
Antenna Specification :	dipole antennas , 4 dBi Gain			

Operation Frequency:

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)	
CHANNEL	**MHz**
52	5260（802.11a mode/802.11n Standard-20 MHz Channel mode）
54	5270（802.11n Standard-40 MHz Channel mode）
56	5280（802.11a mode/802.11n Standard-20 MHz Channel mode）
60	5300（802.11a mode/802.11n Standard-20 MHz Channel mode）
62	5310（802.11n Standard-40 MHz Channel mode）
64	5320（802.11a mode/802.11n Standard-20 MHz Channel mode）
100	5500（802.11a mode/802.11n Standard-20 MHz Channel mode）
102	5510（802.11n Standard-40 MHz Channel mode）
104	5520（802.11a mode/802.11n Standard-20 MHz Channel mode）
108	5540（802.11a mode/802.11n Standard-20 MHz Channel mode）
112	5560（802.11a mode/802.11n Standard-20 MHz Channel mode）
116	5580（802.11a mode/802.11n Standard-20 MHz Channel mode）
118	5590（802.11n Standard-40 MHz Channel mode）
132	5660（802.11a mode/802.11n Standard-20 MHz Channel mode）
134	5670（802.11n Standard-40 MHz Channel mode）
136	5680（802.11a mode/802.11n Standard-20 MHz Channel mode）
140	5700（802.11a mode/802.11n Standard-20 MHz Channel mode）

Remark:

1. The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.
2. This submittal(s) (test report) is intended for FCC ID: WBV-HIVEAP350 filing to comply with Section 15.407 of the FCC Part 15, Subpart E Rules.

3 TEST METHODOLOGY

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

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 13.3 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 13.4 of ANSI C63.4.

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.50 - 5.15
0.495 - 0.505 (1)	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960.0 - 1240	7.25 - 7.75
4.125 - 4.128	25.50 - 25.67	1300 - 1427	8.025 - 8.500
4.17725 - 4.17775	37.50 - 38.25	1435.0 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73.00 - 74.60	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.80 - 75.20	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108.00 - 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	149.90 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 – 2500.0	17.7 - 21.4
8.37625 - 8.38675	156.70 - 156.90	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.1700	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.20	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358.0	36.43 - 36.5(2)
12.57675 - 12.57725	322.0- 335.4	3600 - 4400	
13.36 - 13.41			

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

[2] Above 38.6

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

3.5 DESCRIPTION OF TEST MODES

The EUT transmitting and receiving with one (chain 0) antenna working at a mode, so one antenna working configuration was used for a mode testing in this report.

The EUT transmitting and receiving with three antennas simultaneously working at n mode, so 3x3 configuration was used for all testing in this report.

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.

IEEE 802.11a mode:

Channel Low (5260MHz), Channel Mid (5300MHz) and Channel High (5320MHz) with 6Mbps data rate were chosen for full testing.

Channel Low (5500MHz), Channel Mid (5540MHz) and Channel High (5700MHz) with 6Mbps data rate were chosen for full testing

802.11n Standard-20 MHz Channel mode:

Channel Low (5260MHz), Channel Mid (5300MHz) and Channel High (5320MHz) with mcs 0 data rate were chosen for full testing.

Channel Low (5500MHz), Channel Mid (5540MHz) and Channel High (5700MHz) with mcs 0 data rate were chosen for full testing

802.11n Wide-40 MHz Channel mode:

Channel Low (5270MHz)and Channel Mid (5310MHz) with mcs 0 data rate were chosen for full testing.

Channel Low (5510MHz), Channel Mid (5550MHz) and Channel High (5670MHz) with mcs 0 data rate were chosen for full testing.

The following test mode was scanned during the preliminary test:
Mode 1: Wall, ceiling mounting, set the EUT vertically on the table top.
Mode 2: Table top mounting, set the EUT horizontally on the table top.

After the preliminary scan, the following test mode was found to produce the highest emission level.
Mode 2: Table top mounting, set the EUT horizontally on the table top.

Then, the EUT configuration and cable configuration of the above highest emission mode was recorded for all final test items.

4 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.

4.1 MEASUREMENT EQUIPMENT USED

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2013-11-14
Temp. / Humidity Chamber	TERCHY	MHK-120AK	X30109	2014-01-24
AC Power Source	EXTECH	6605	1570106	N.C.R
DC power supply	AGILENT	E3632A	MY50340053	N.C.R

977 Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver	R&S	ESI26	100068	2013-09-28
Pre-Amplfier	MITEQ	JS41-00101800-32-10P	1675713	2014-04-26
Bilog Antenna	Sunol	JB1	A062604	2014-05-01
Horn-antenna	SCHWARZBECK	BBHA9120D	D:266	2013-10-16
Horn-antenna	SCHWARZBECK	BBHA 9170	9170-515	2014-02-21
Amplifier	MITEQ	AMF-6F-260400-40-8P	1037496	2014-04-26
Turn Table	CT	CT123	4165	N.C.R
Antenna Tower	CT	CTERG23	3256	N.C.R
Controller	CT	CT1OO	95637	N.C.R
Test Software	EZ-EMC			

Conducted Emission				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI TEST RECEIVER	R&S	ESCI	100781	03/13/2014
V (V-LISN)	SCHWARZBECK	NNLK 8129	8129-143	N.C.R
LISN (EUT)	FCC	FCC-LISN-50/250-50-2-02	05012	03/13/2014
Pulse LIMITER	R&S	ESH3-Z2	100524	03/13/2014
Test Software	EZ-EMC			

Remark: *Each piece of equipment is scheduled for calibration once a year.*

4.2 MEASUREMENT UNCERTAINTY

For the test methods, according to the present document, the measurement uncertainty figures shall be calculated in accordance with TR 100 028-1 [2] and shall correspond to an expansion factor (coverage factor) k = 1,96 or k = 2 (which provide confidence levels of respectively 95 % and 95,45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Table 6 is based on such expansion factors.

Table 6: Maximum measurement uncertainty

Parameter	UNCERTAINTY
Radio frequency	±0.8 × 10-7
RF power, conducted	0.2054
Maximum frequency deviation: -within 300 Hz and 6 kHz of audio frequency	1.3%
-within 6 kHz and 25 kHz of audio frequency	0.65 dB
Adjacent channel power	0.2054
Conducted spurious emission of transmitter, valid up to 6 GHz	0.2892
Conducted emission of receivers	+1.2/-1.1 dB
Radiated emission of transmitter, valid up to 6 GHz	±3.94 dB
Radiated emission of receiver, valid up to 6 GHz	±3.94 dB
RF level uncertainty for a given BER	±0.3 dB
Temperature	0.1979
Humidity	±1 %

5 FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at
☒ **No.10Weiye Rd., Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.**
The sites are constructed in conformance with the requirements of ANSI C63.4:2003 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

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 preselectors and quasi-peak detectors are used to perform radiated measurements.

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

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

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

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

USA	A2LA
China	CNAS

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	Industry Canada
Japan	VCCI
Taiwan	BSMI
USA	FCC

Copies of granted accreditation certificates are available for downloading from our web site, http://www.ccsrf.com.

6 SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

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

6.2 SUPPORT EQUIPMENT

No.	Equipment	Model No.	Serial No.
1	Notebook	dell	E5430

Remark:

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

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

7 FCC PART 15 REQUIREMENTS

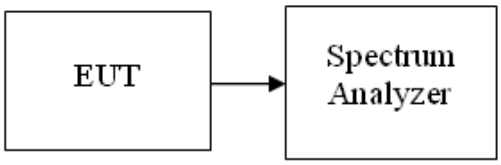
7.1 26 DB EMISSION BANDWIDTH

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

5250~5350MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5260	23.136
Mid	5300	23.294
High	5320	23.311

5470~5725MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5500	22.616
Mid	5540	22.681
High	5700	23.413

Test mode: 802.11n Standard-20 MHz Channel mode / Chain 0

5250~5350MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5260	24.514
Mid	5300	24.009
High	5320	24.288

5470~5725MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5500	23.910
Mid	5540	22.963
High	5700	24.966

Test mode: 802.11n Standard-20 MHz Channel mode / Chain 1

5250~5350MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5260	24.245
Mid	5300	24.810
High	5320	24.114

5470~5725MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5500	23.840
Mid	5540	23.144
High	5700	25.041

Test mode: 802.11n Standard-20 MHz Channel mode / Chain 2

5250~5350MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5260	24.465
Mid	5300	24.951
High	5320	24.889

5470~5725MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5500	23.556
Mid	5540	22.244
High	5700	24.798

Test mode: 802.11n Wide-40 MHz Channel mode / Chain 0

5250~5350MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5270	45.342
High	5310	46.416

5470~5725MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5510	45.531
Mid	5550	43.988
High	5670	43.767

Test mode: 802.11n Wide-40 MHz Channel mode / Chain 1

5250~5350MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5270	48.122
High	5310	47.584

5470~5725MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5510	45.531
Mid	5550	43.181
High	5670	42.940

Test mode: 802.11n Wide-40 MHz Channel mode / Chain 2

5250~5350MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5270	44.923
High	5310	45.889

5470~5725MHz

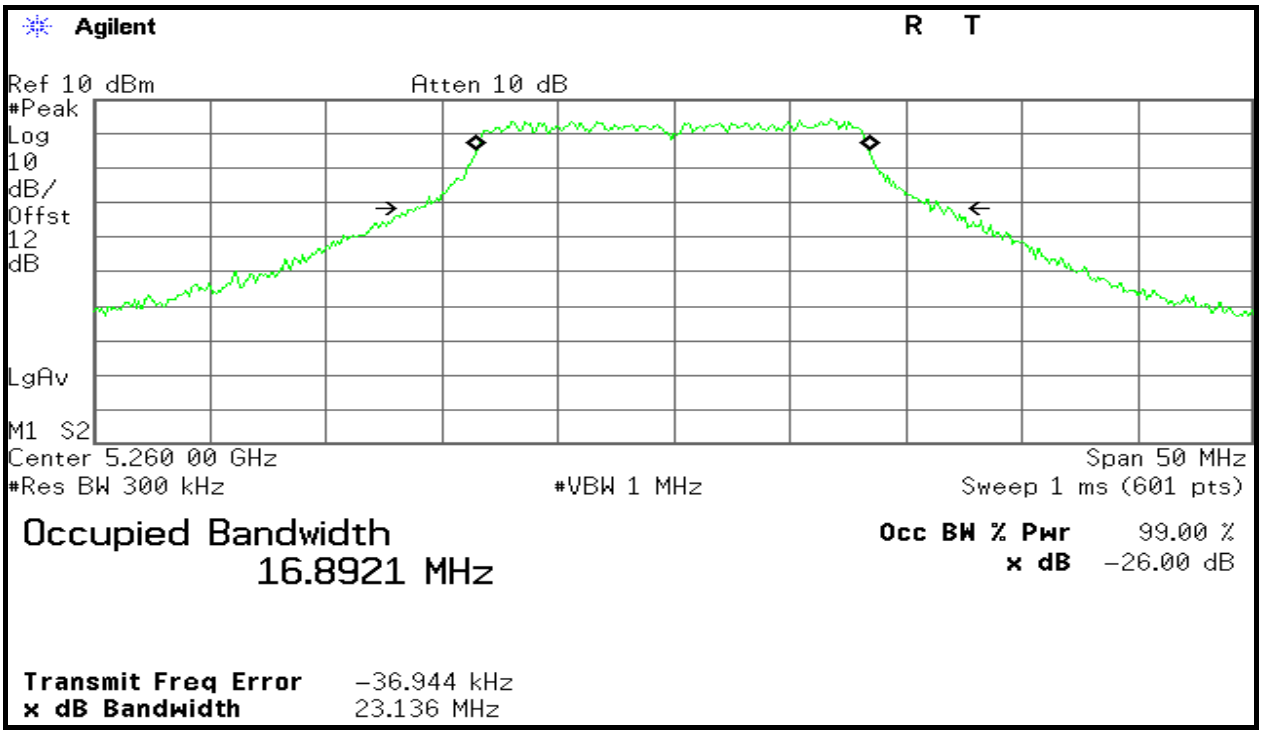
Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5510	46.618
Mid	5550	42.759
High	5670	42.604

Test Plot

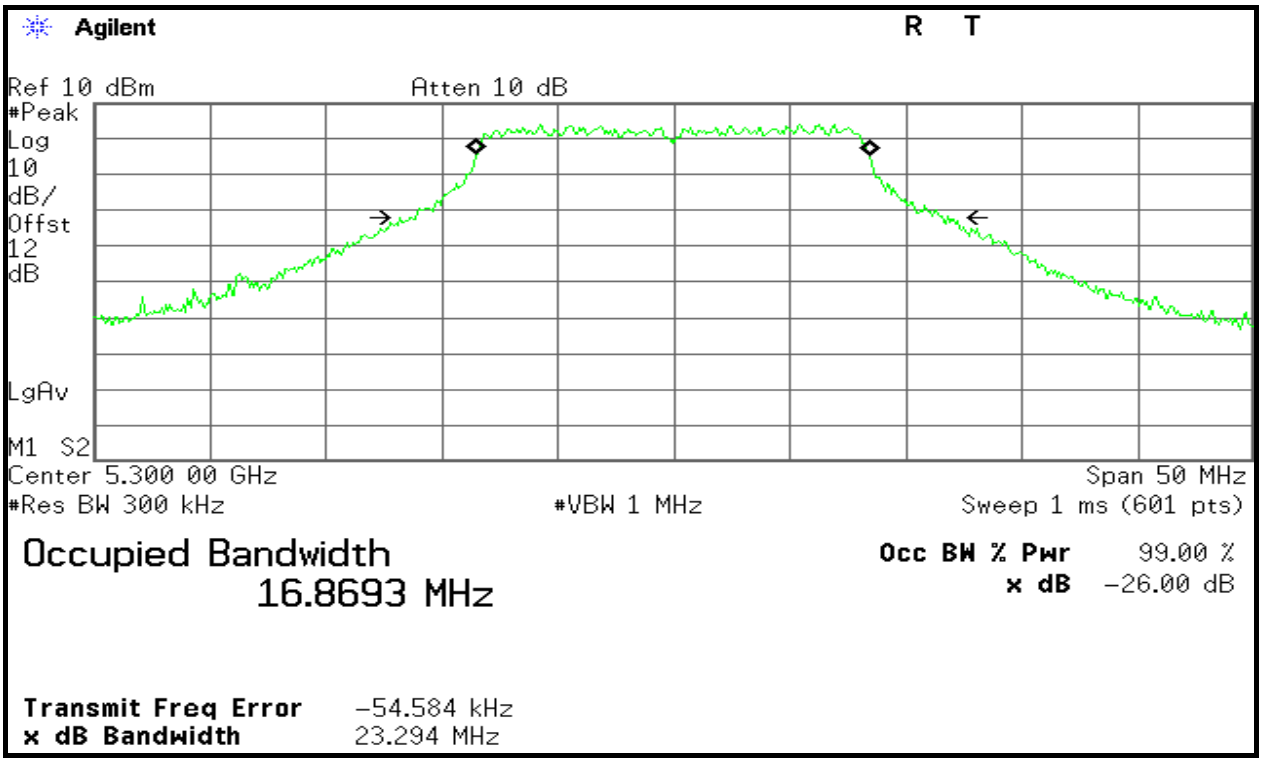
IEEE 802.11a mode:

5250~5350MHz

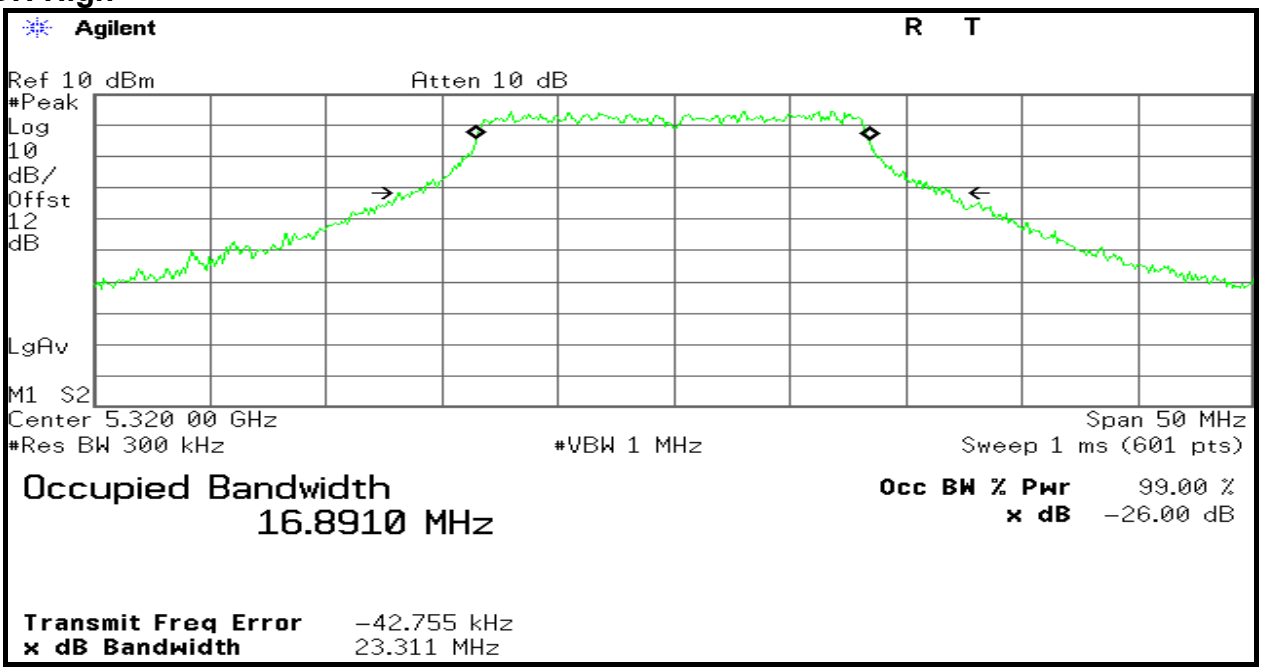
CH Low



CH Mid

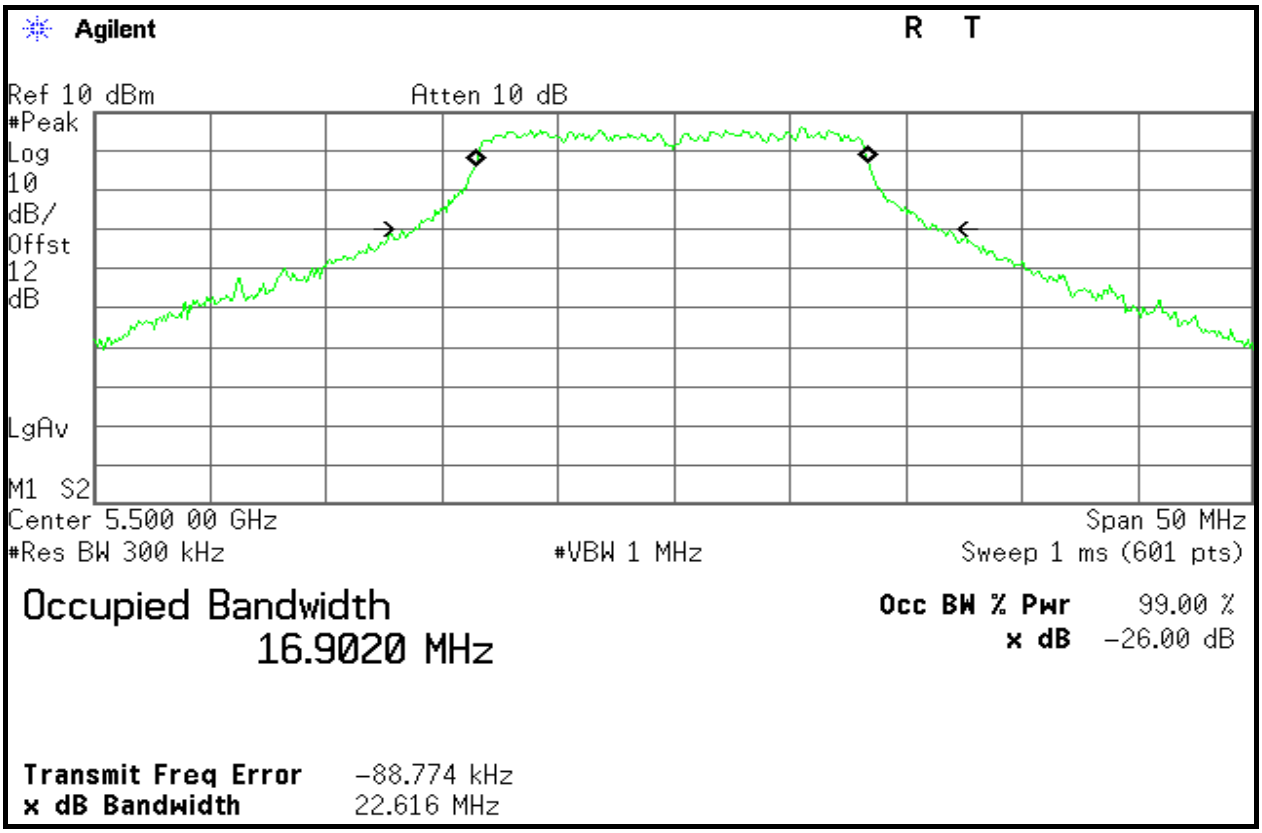


CH High

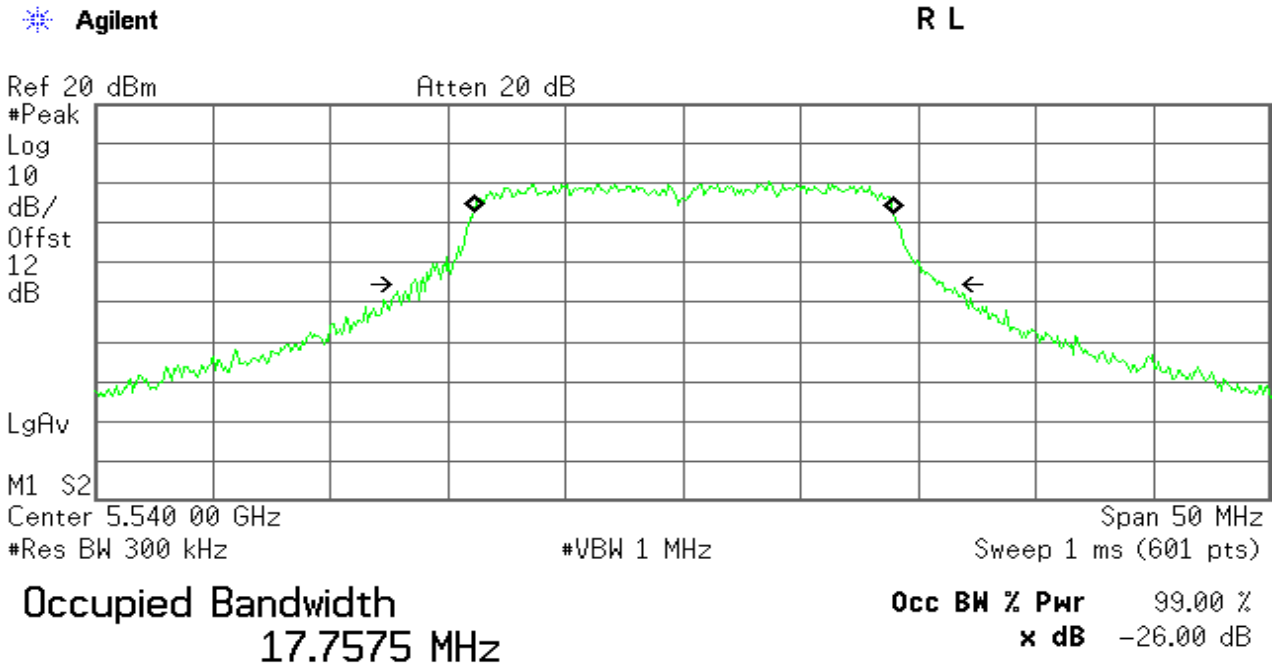


5470~5725MHz

CH Low

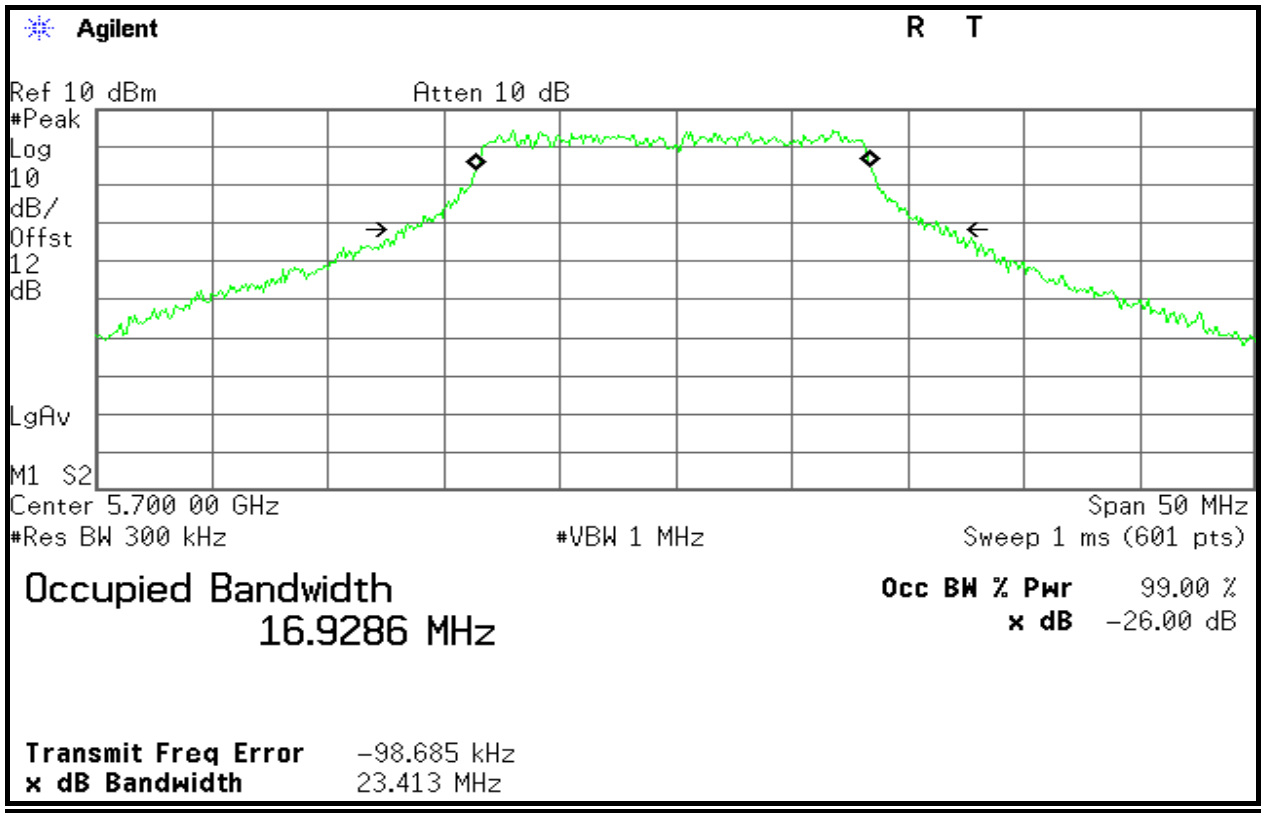


CH Mid



Transmit Freq Error	12.205 kHz
x dB Bandwidth	22.681 MHz

CH High

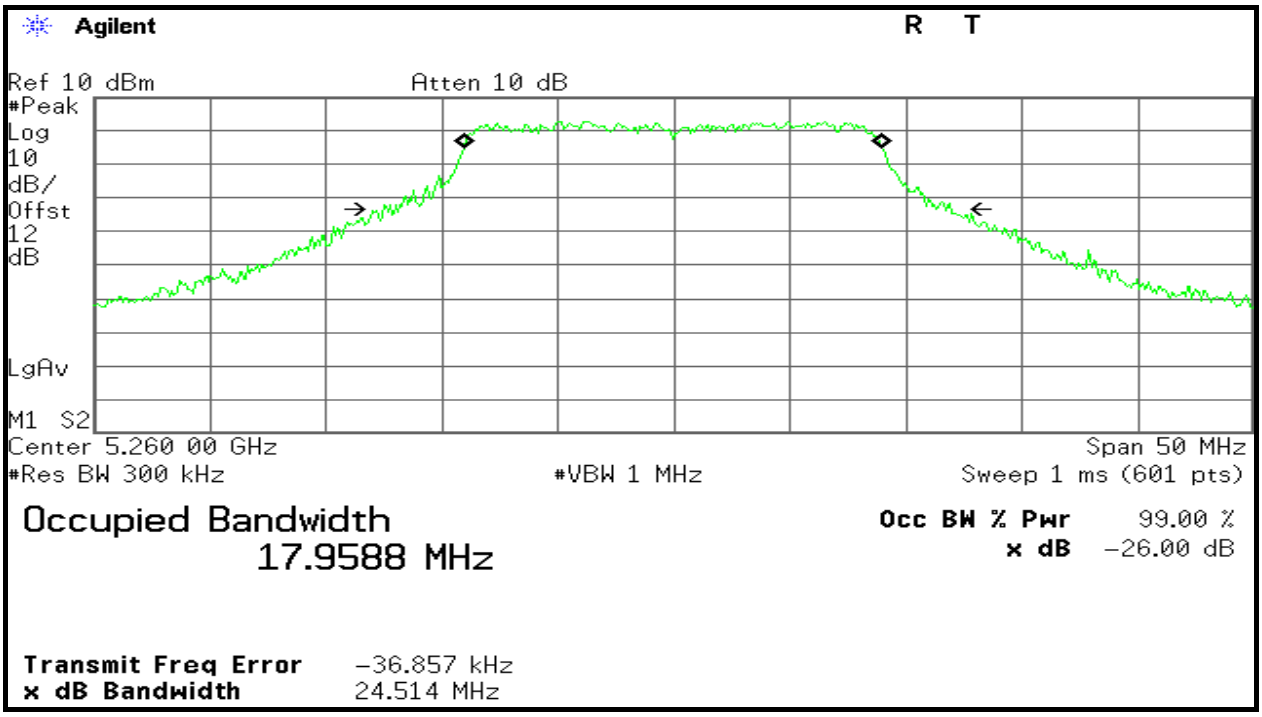


Transmit Freq Error	-98.685 kHz
x dB Bandwidth	23.413 MHz

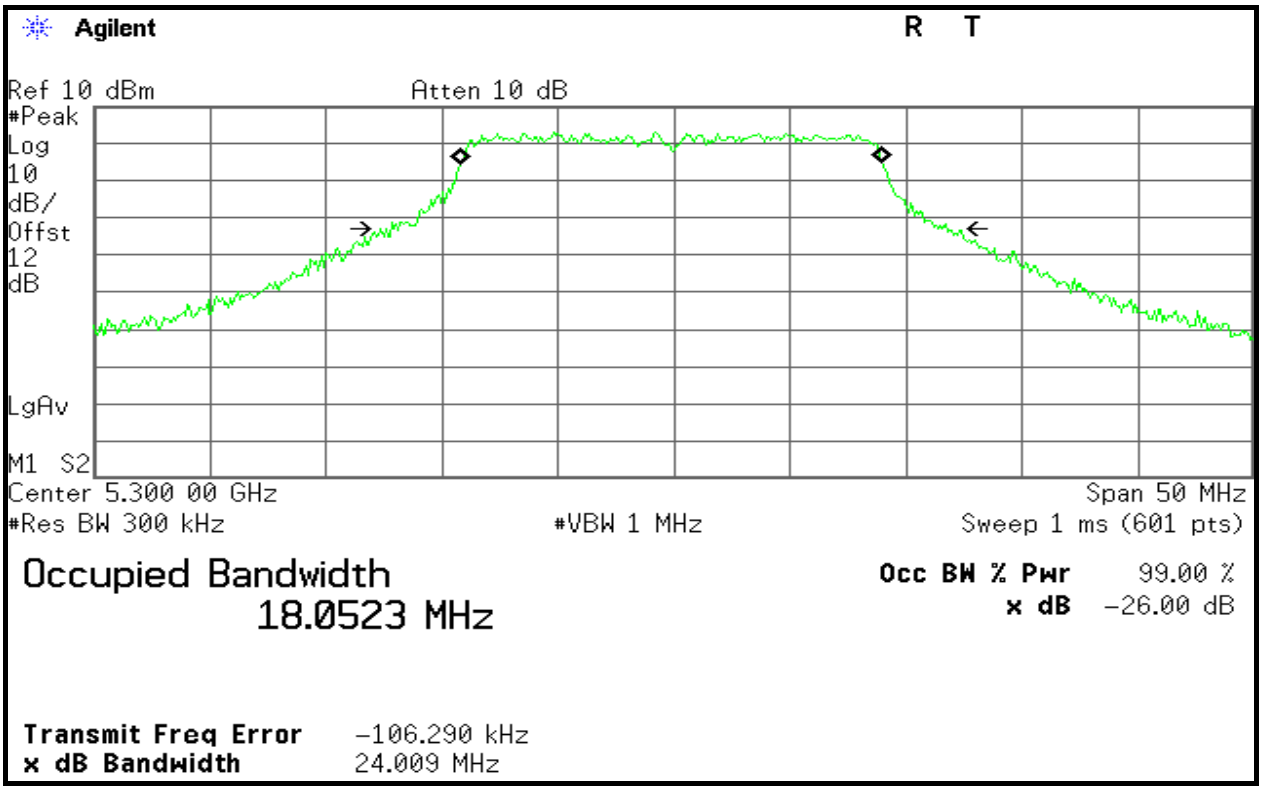
802.11n Standard-20 MHz Channel mode / Chain 0

5250~5350MHz

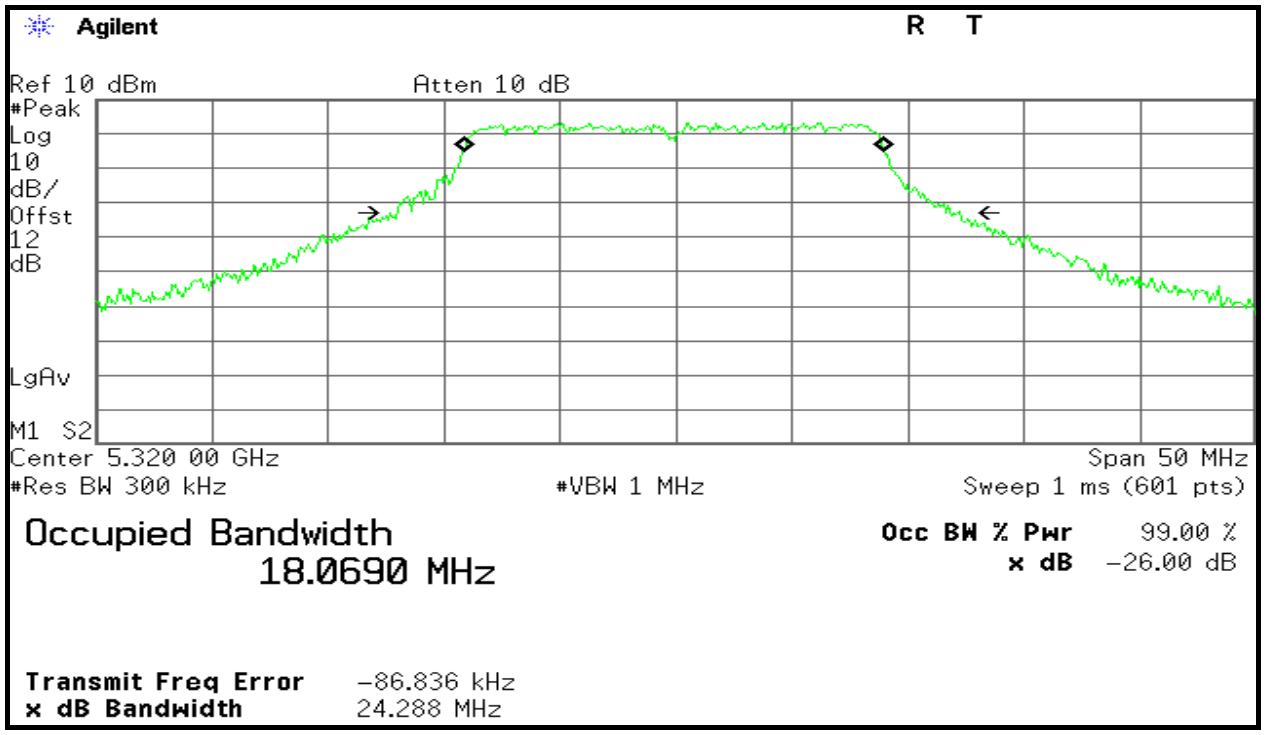
CH Low



CH Mid

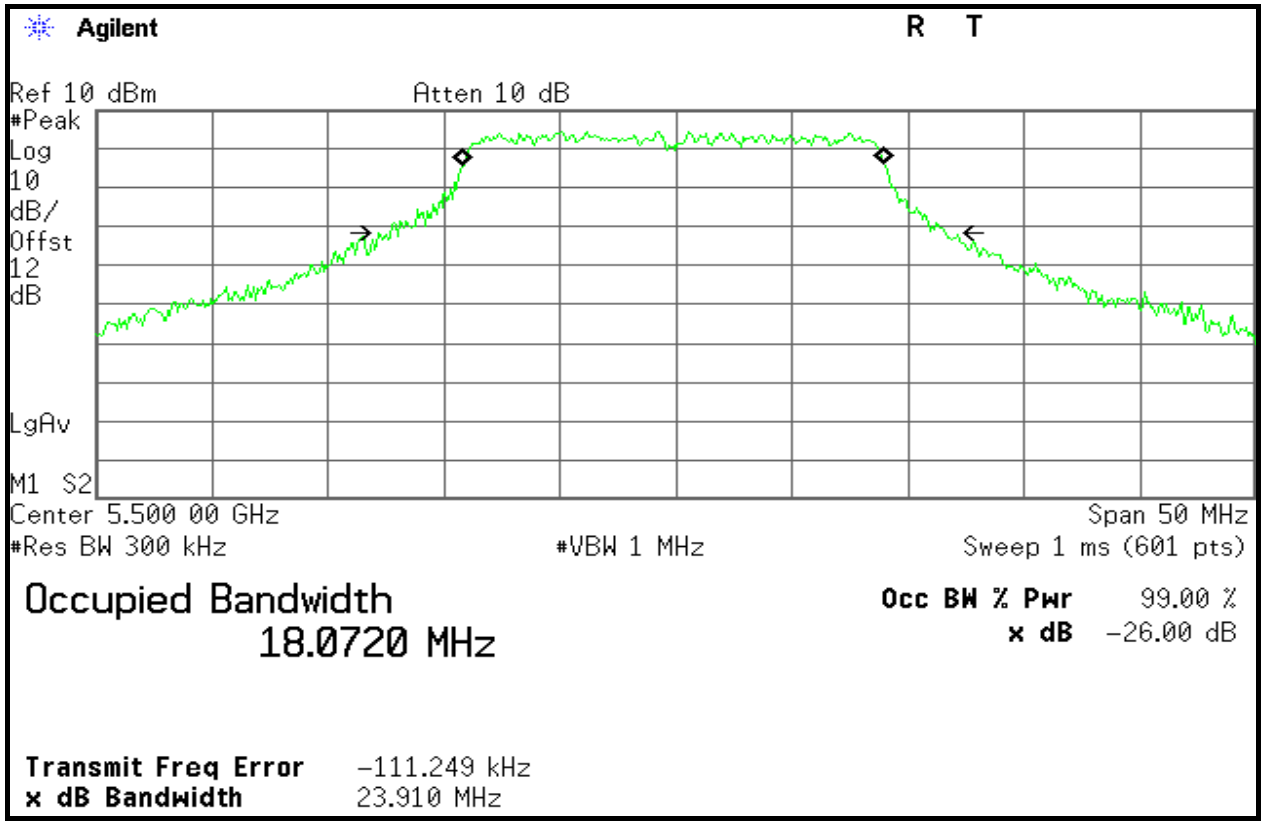


CH High

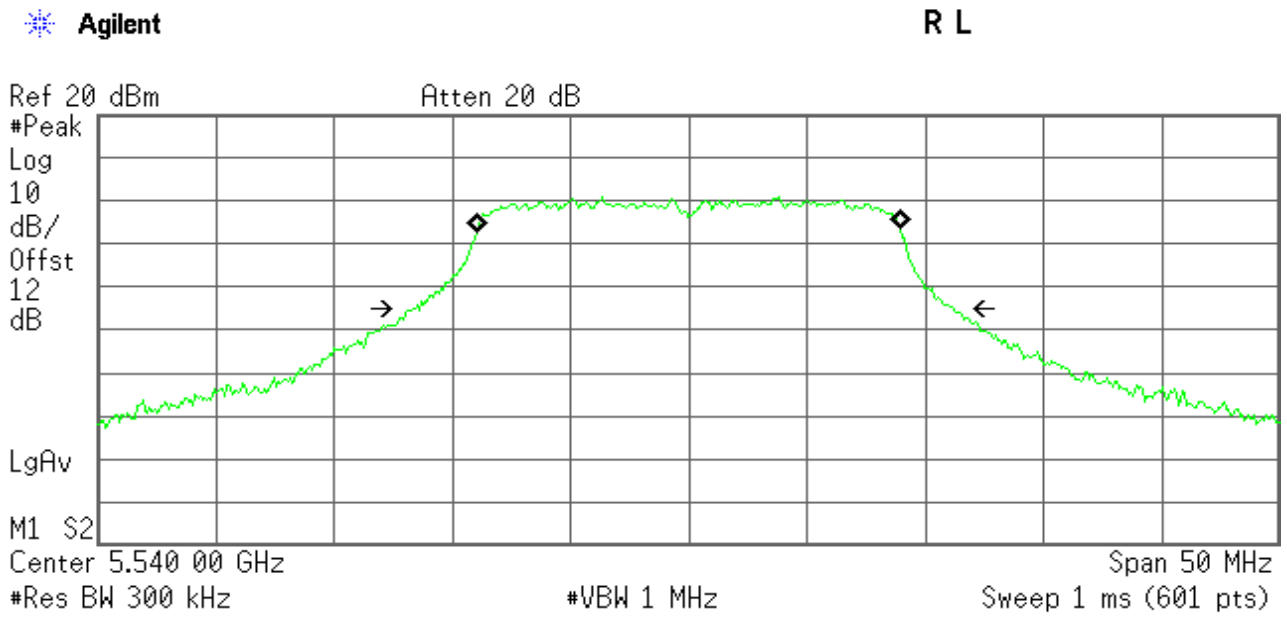


5470~5725MHz

CH Low

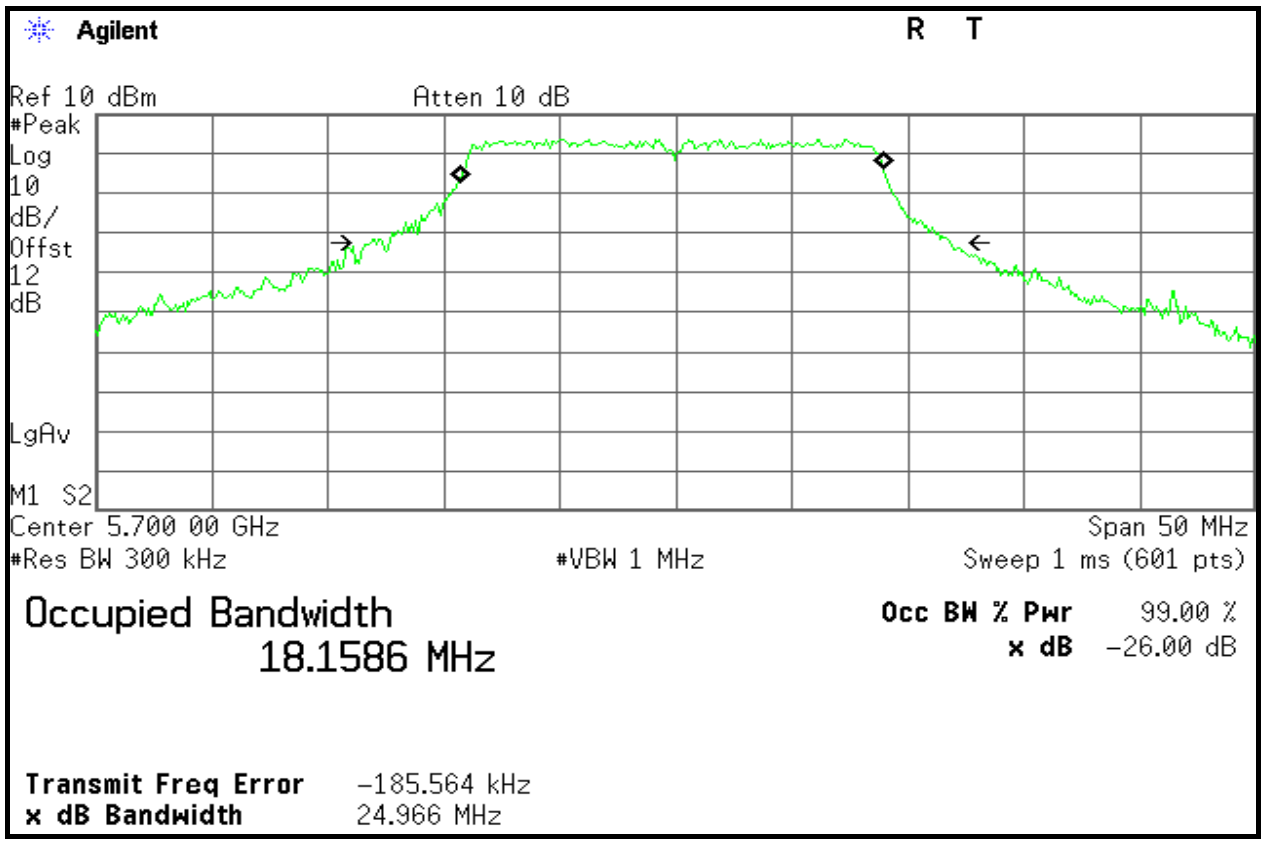


CH Mid



Transmit Freq Error -19.749 kHz
x dB Bandwidth 22.963 MHz

CH High

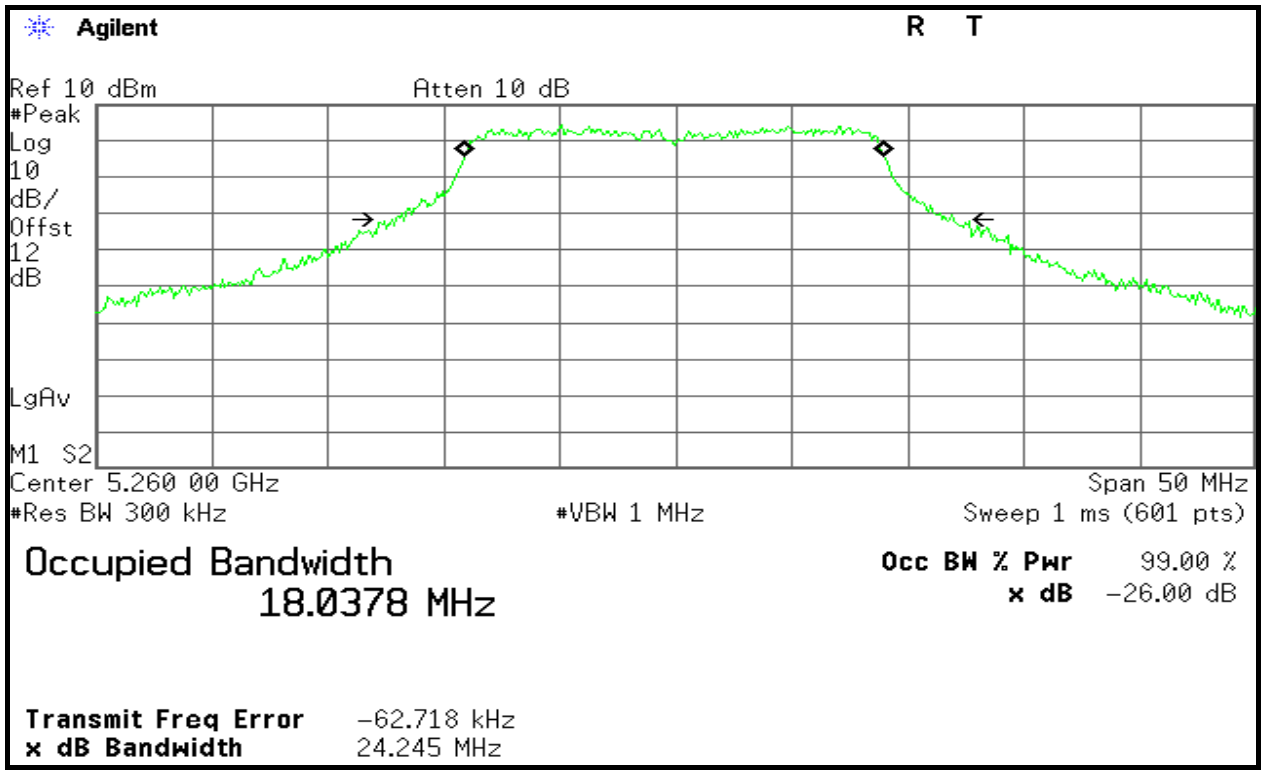


Transmit Freq Error -185.564 kHz
x dB Bandwidth 24.966 MHz

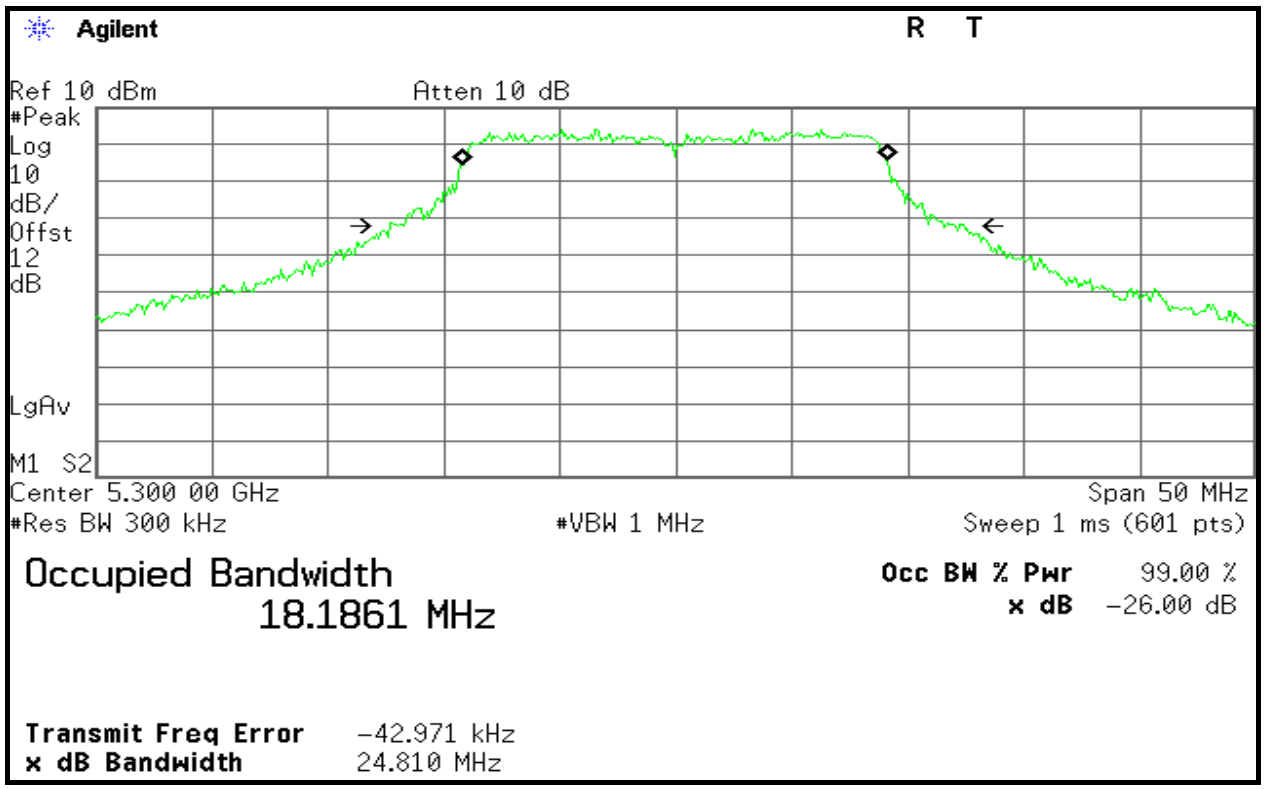
802.11n Standard-20 MHz Channel mode / Chain 1

5250~5350MHz

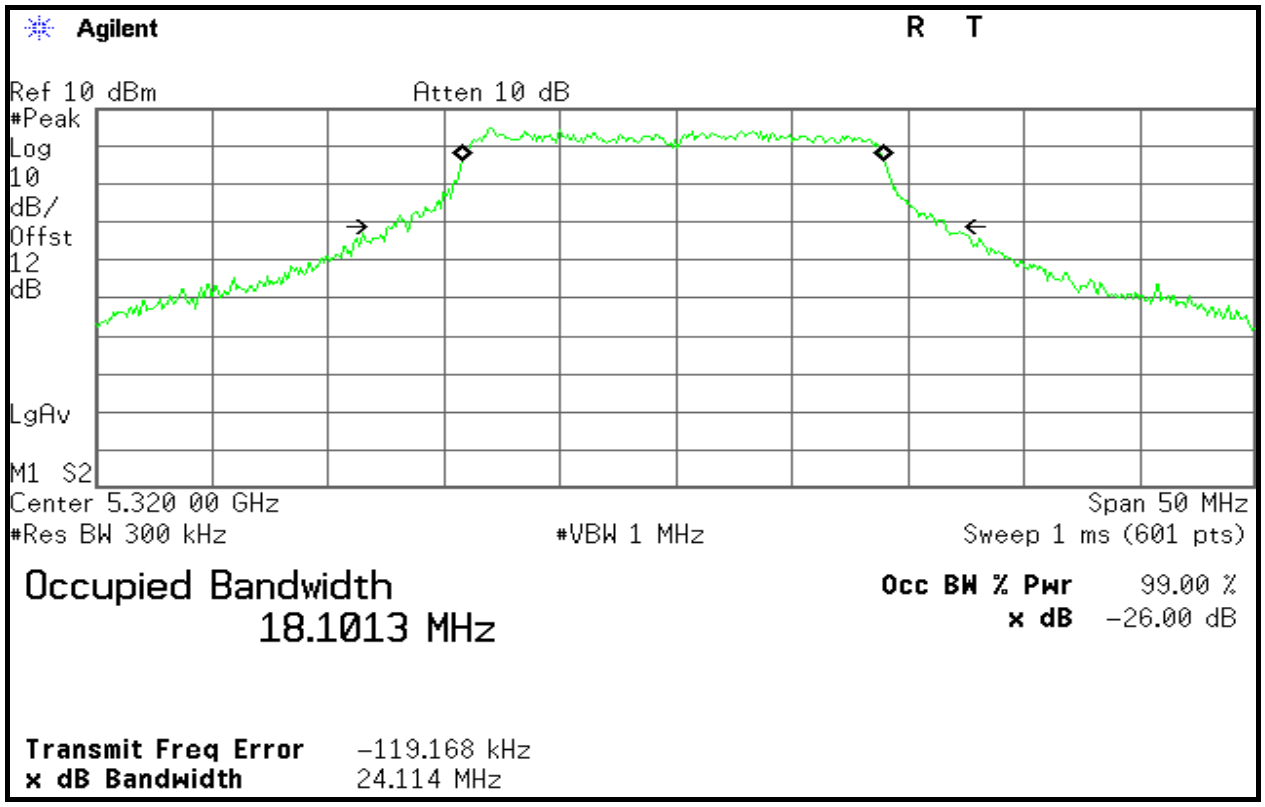
CH Low



CH Mid

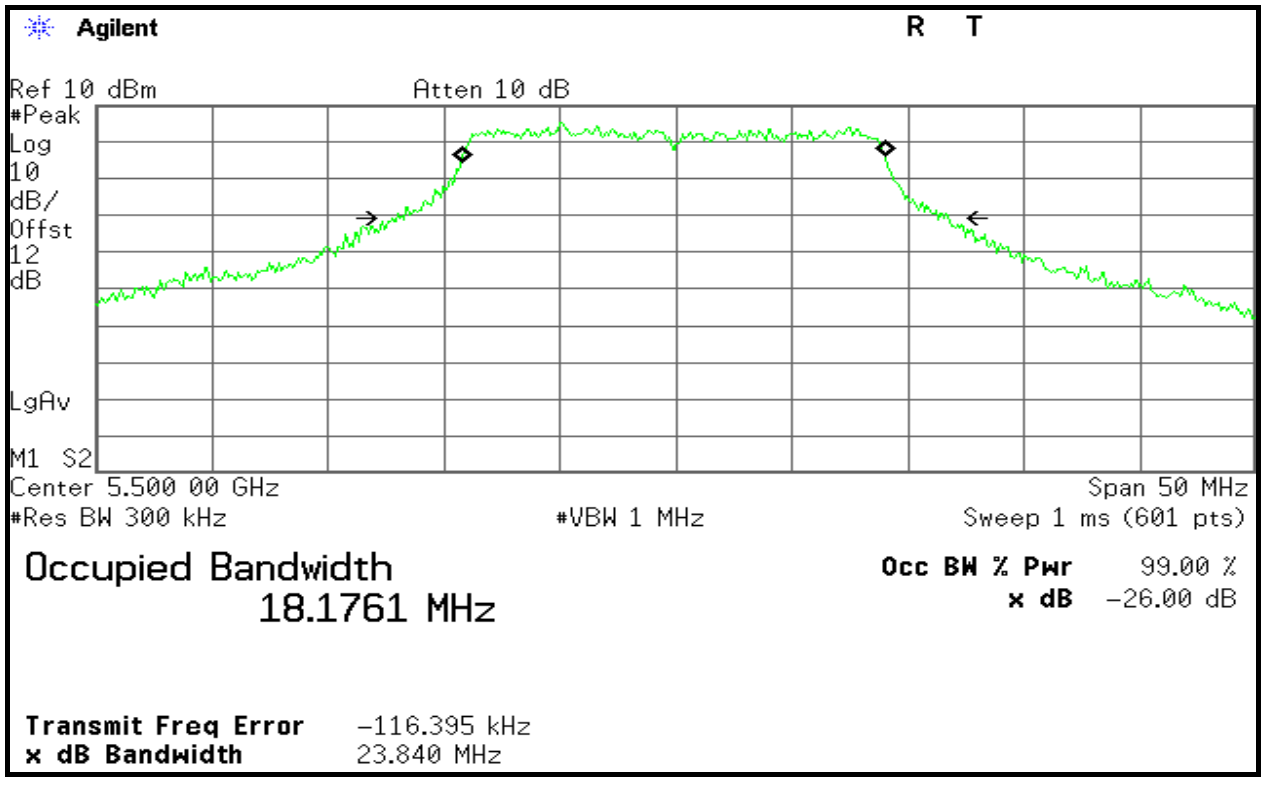


CH High

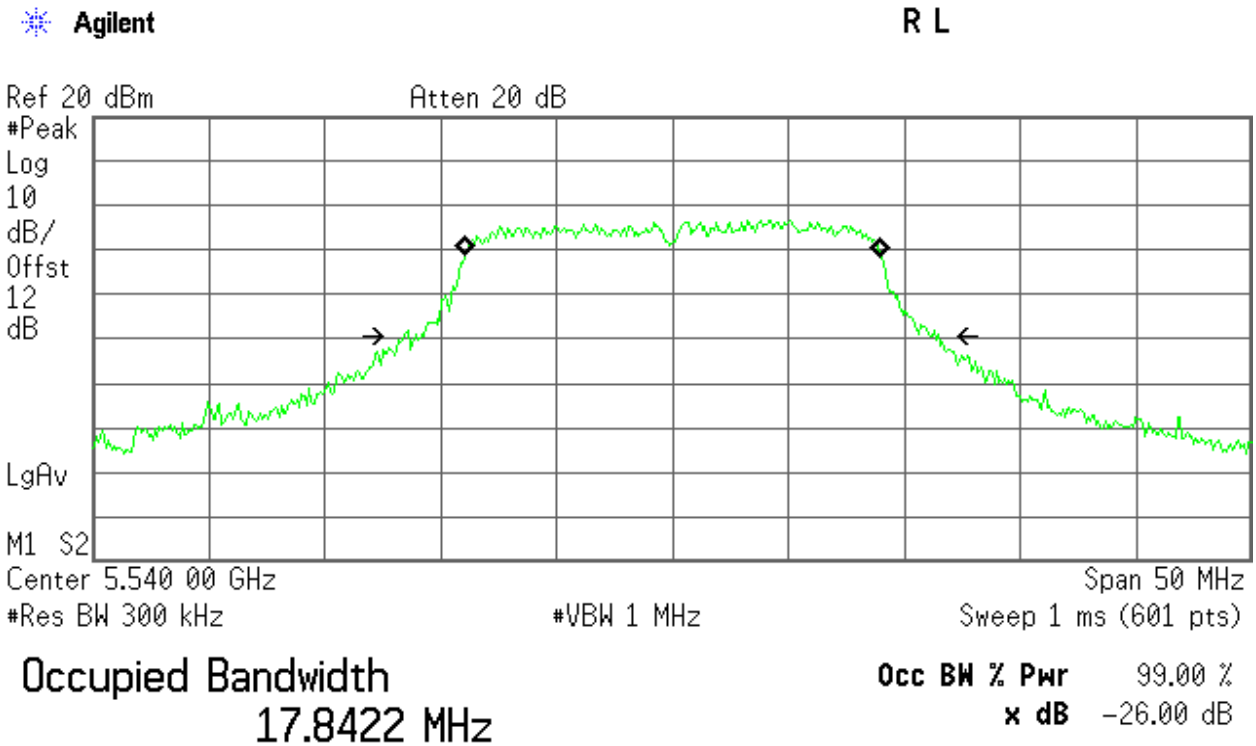


5470~5725MHz

CH Low

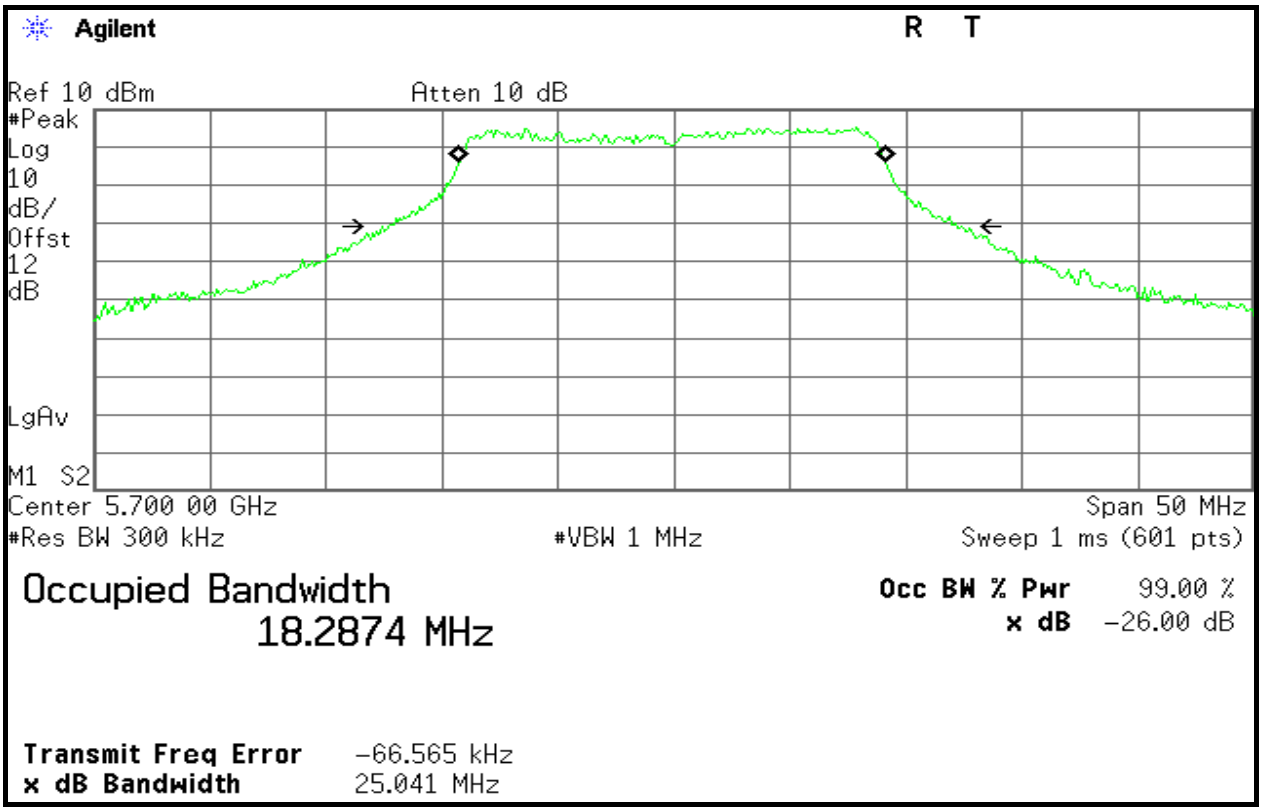


CH Mid



Transmit Freq Error 3.842 kHz
x dB Bandwidth 23.144 MHz

CH High

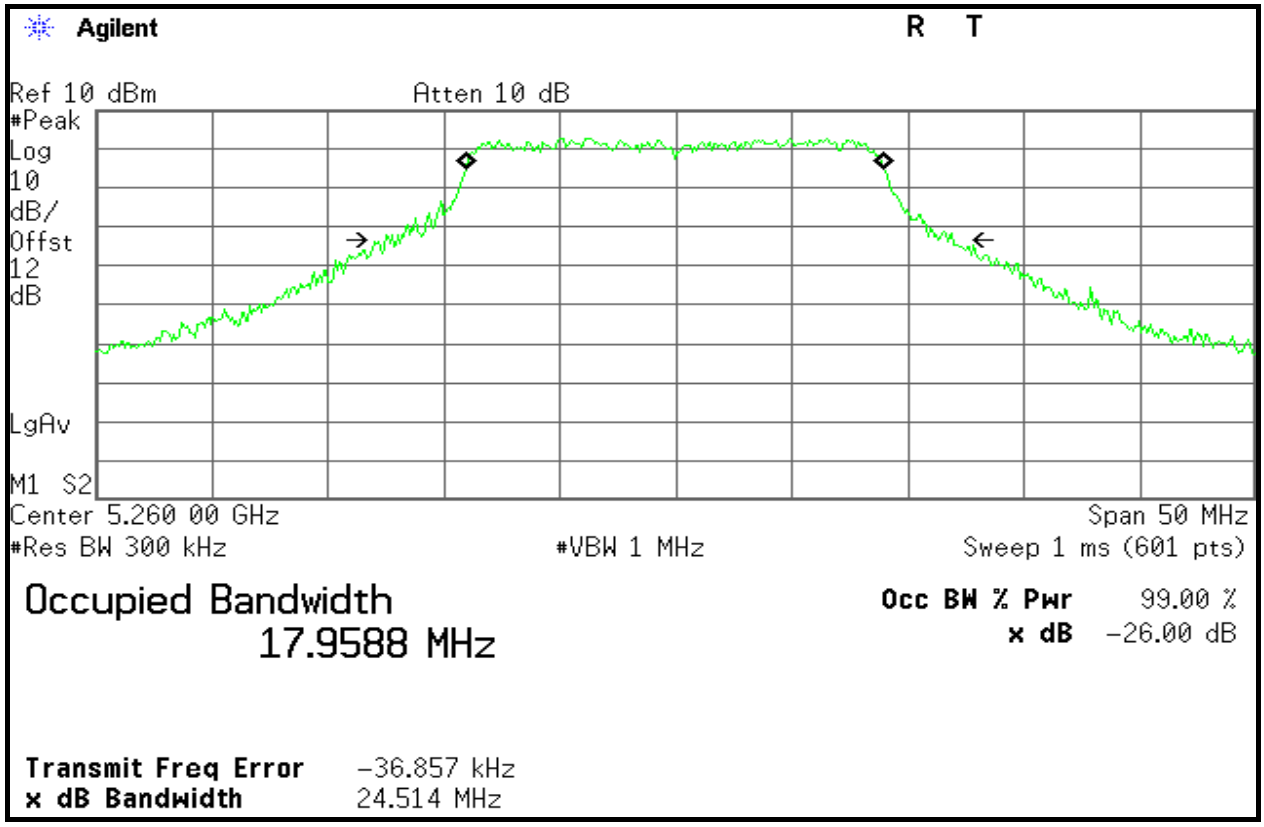


Transmit Freq Error -66.565 kHz
x dB Bandwidth 25.041 MHz

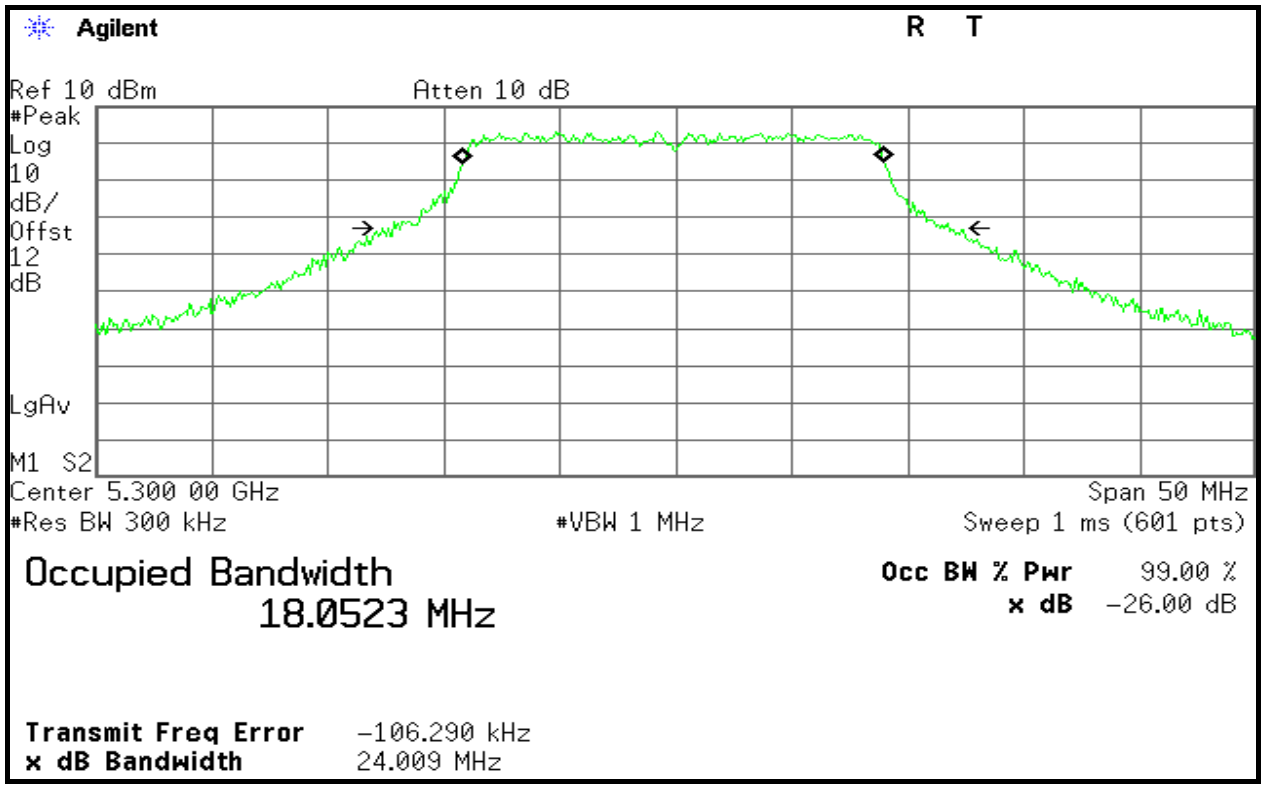
802.11n Standard-20 MHz Channel mode / Chain 2

5250~5350MHz

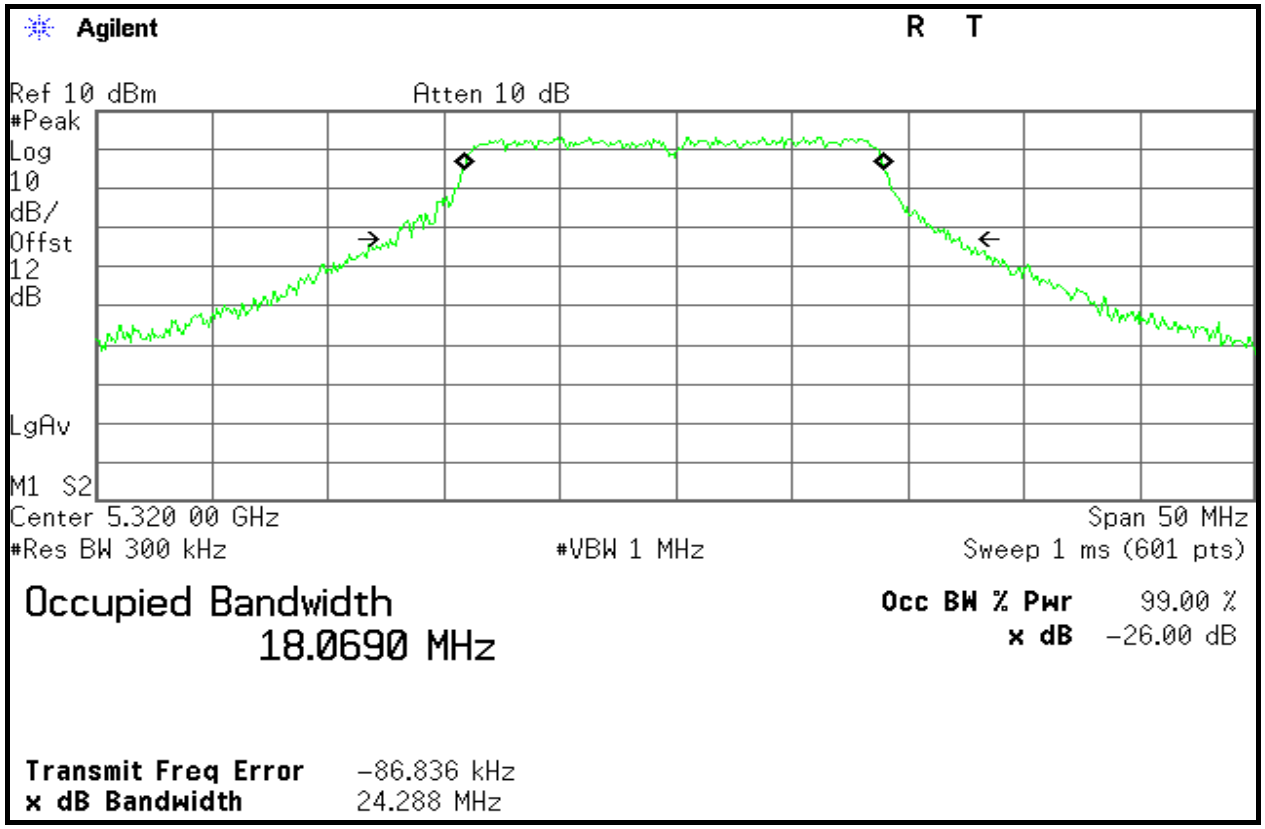
CH Low



CH Mid

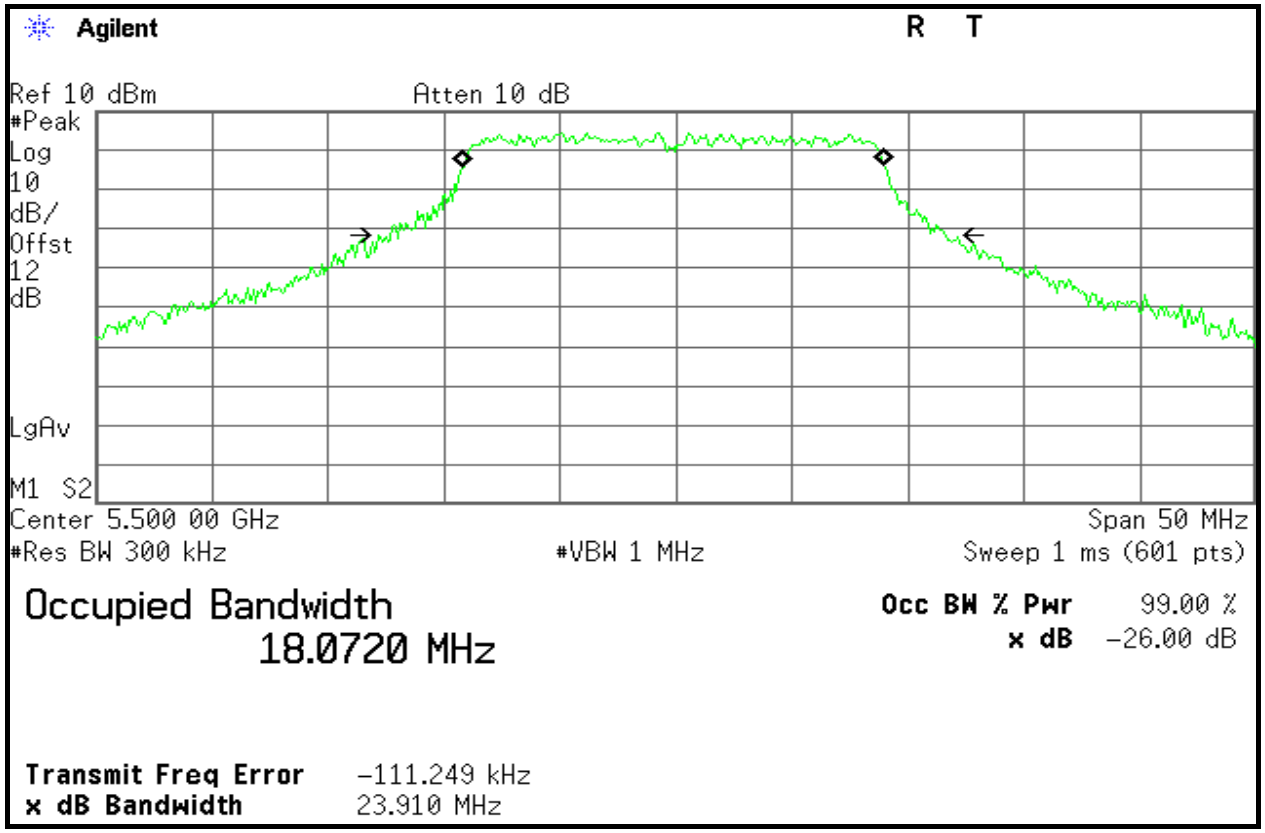


CH High

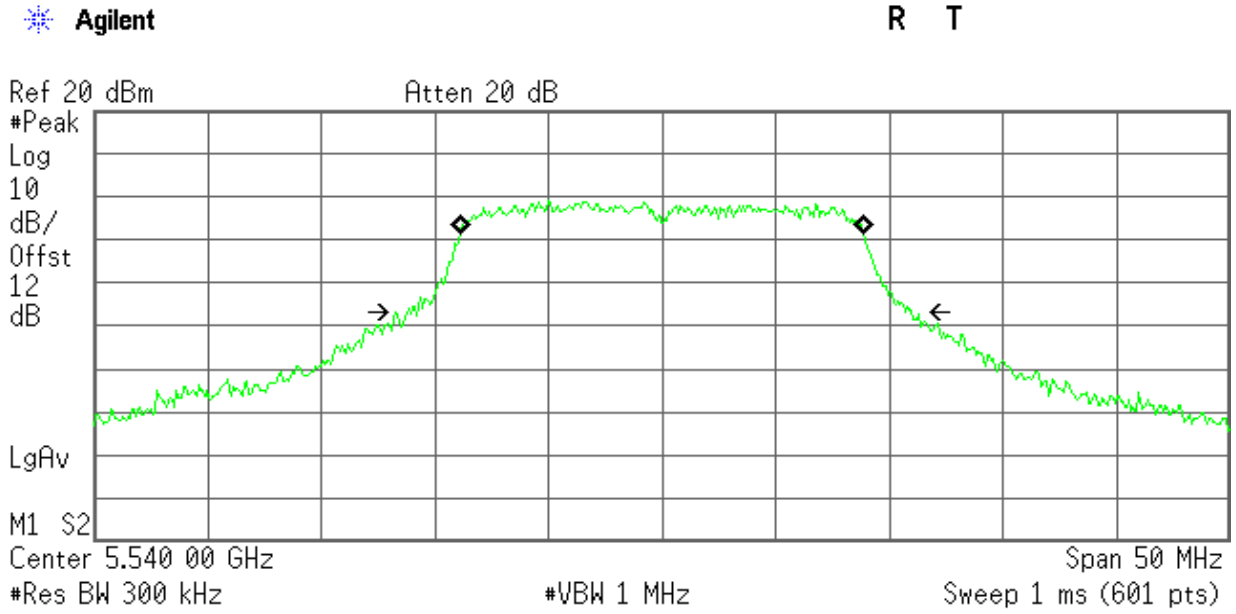


5470~5725MHz

CH Low

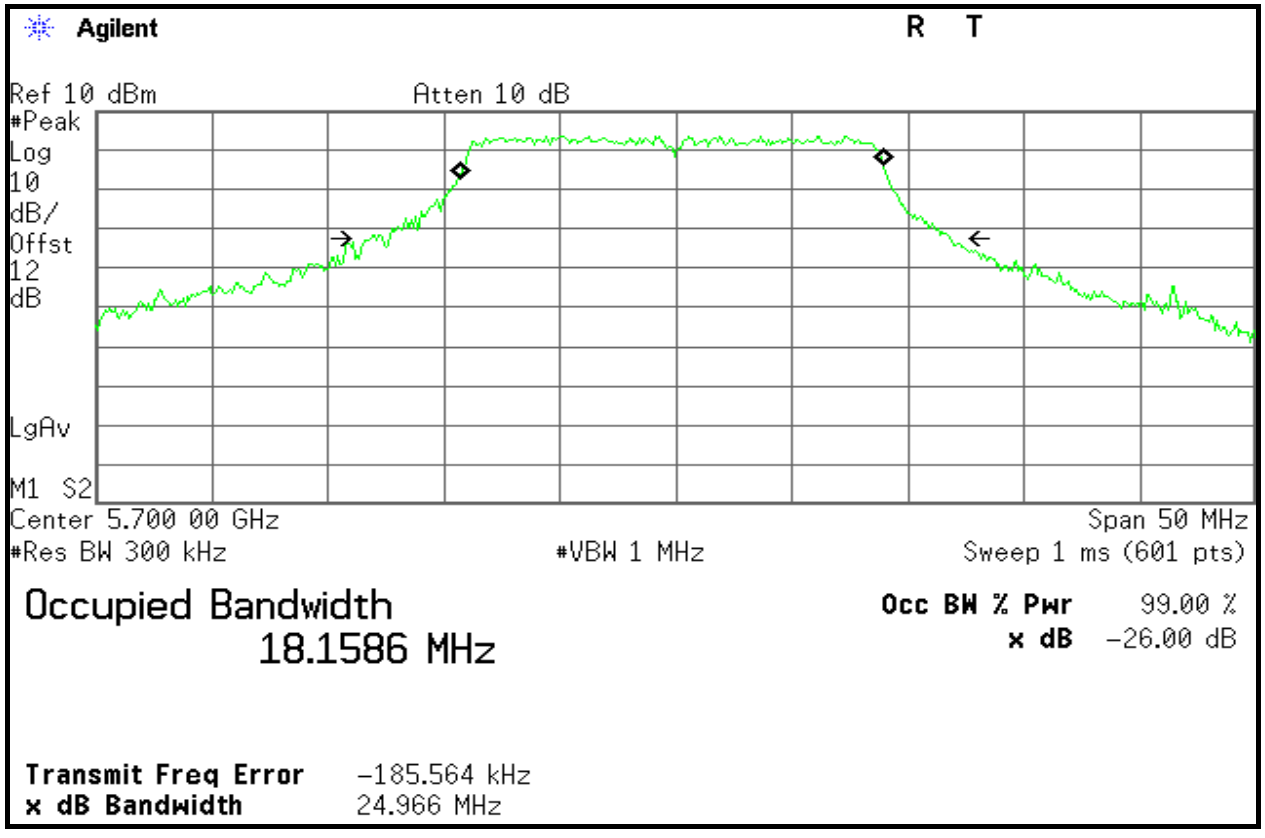


CH Mid



Transmit Freq Error -11.703 kHz
x dB Bandwidth 22.244 MHz

CH High

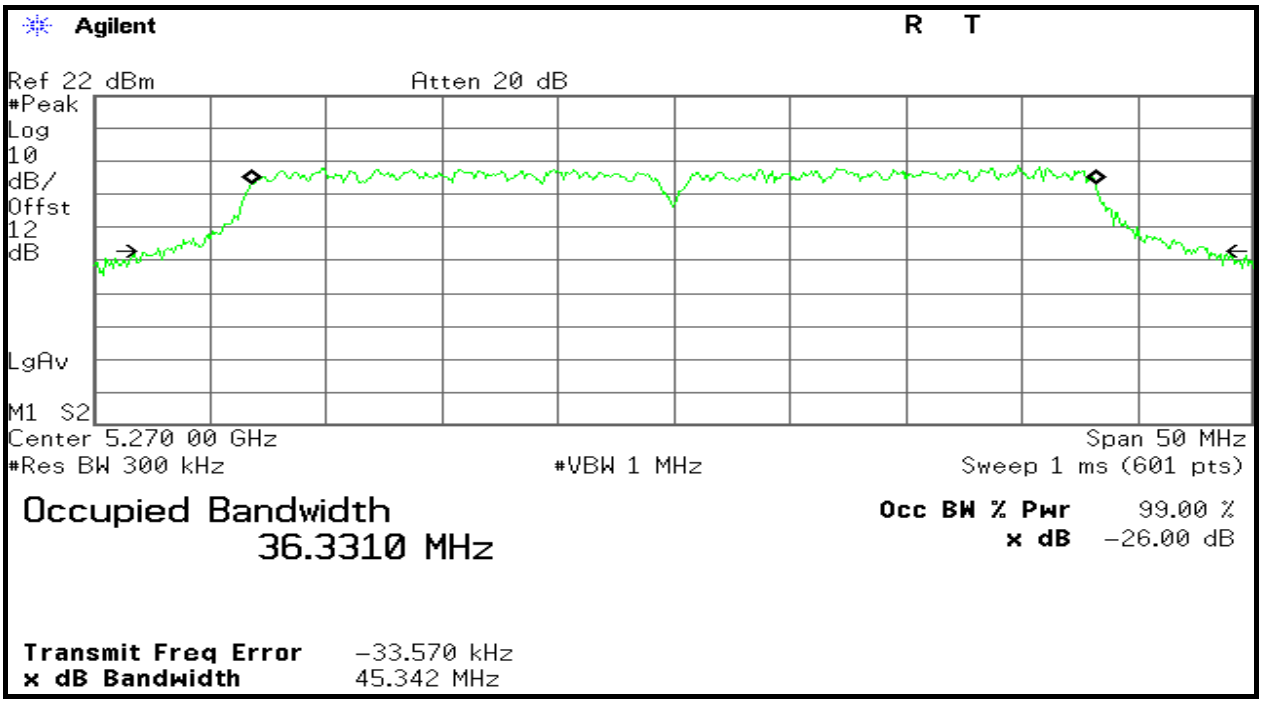


Transmit Freq Error -185.564 kHz
x dB Bandwidth 24.966 MHz

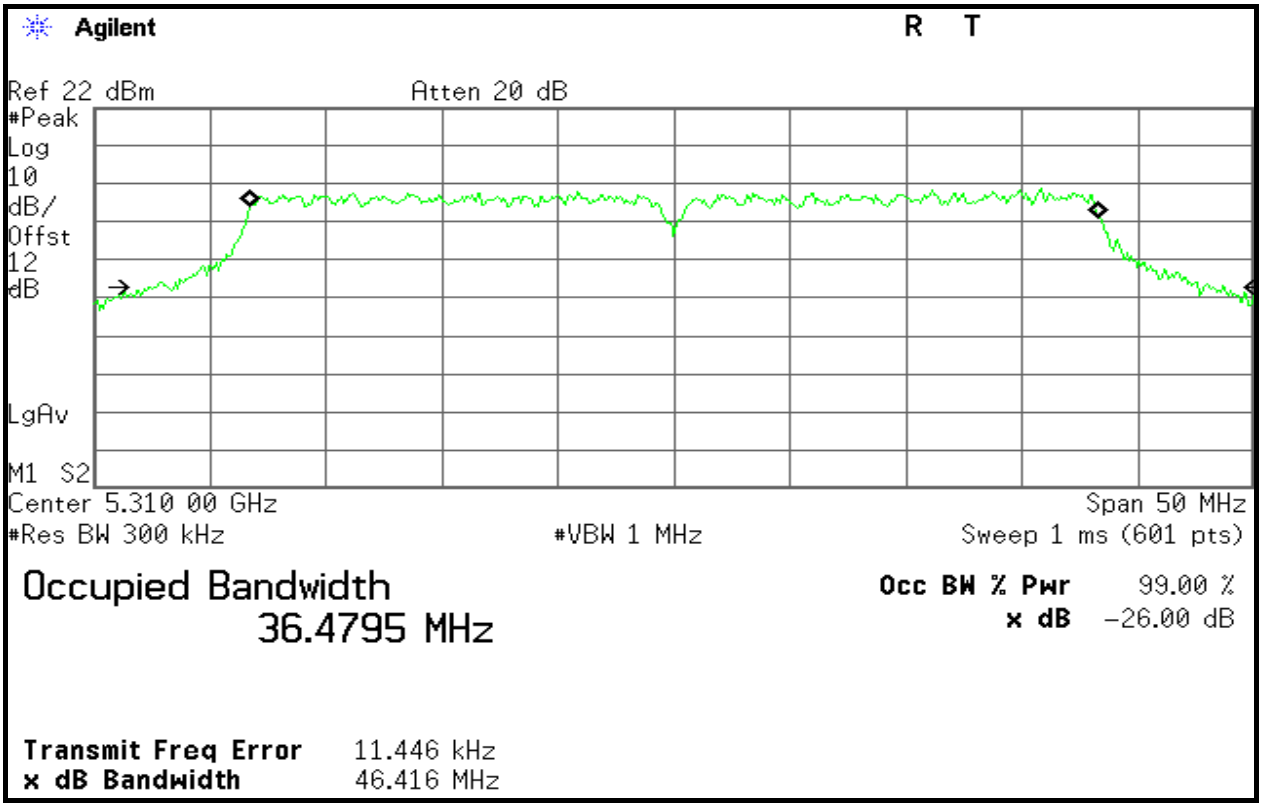
802.11n Wide-40 MHz Channel mode / Chain 0

5250~5350MHz

CH Low

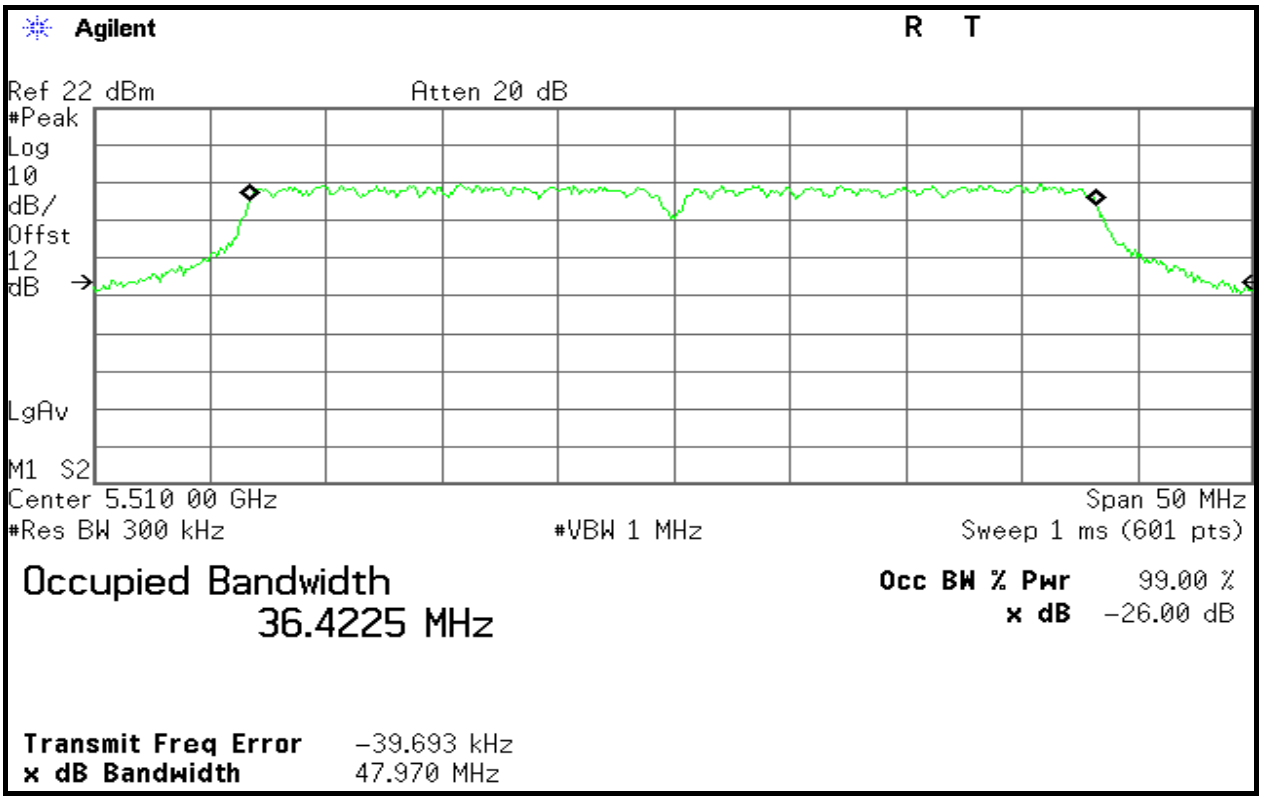


CH High

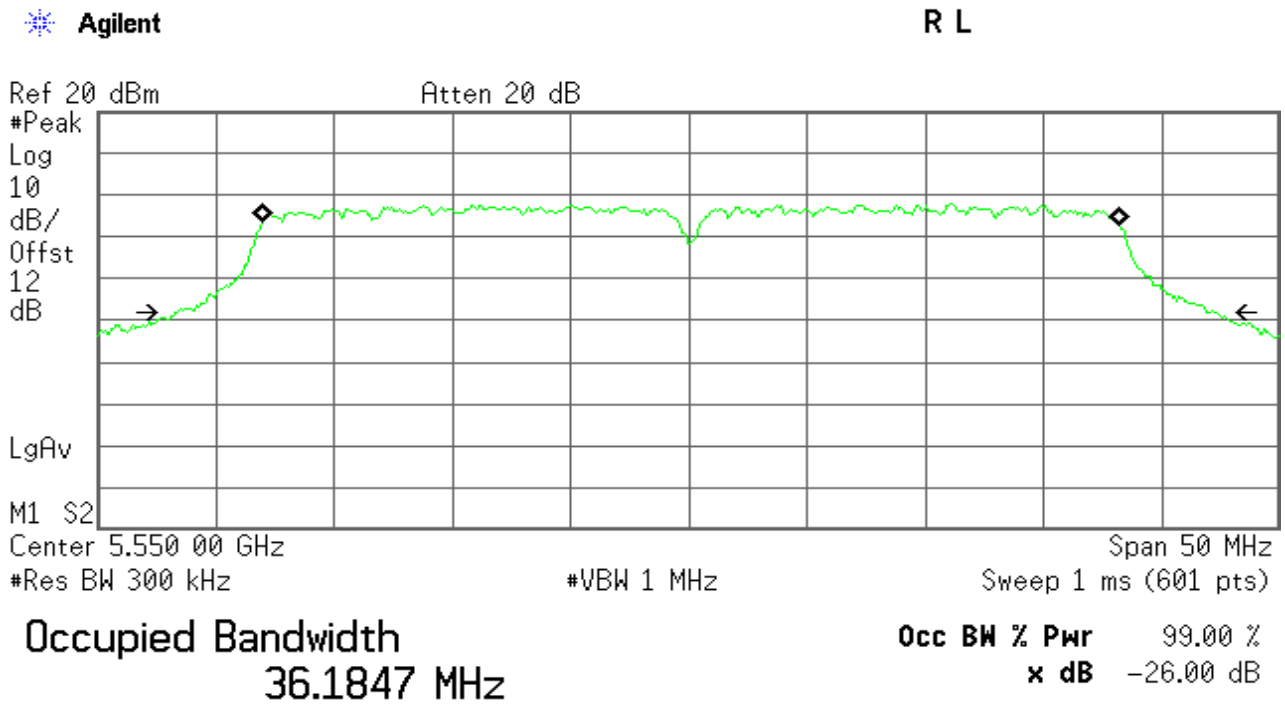


5470~5725MHz

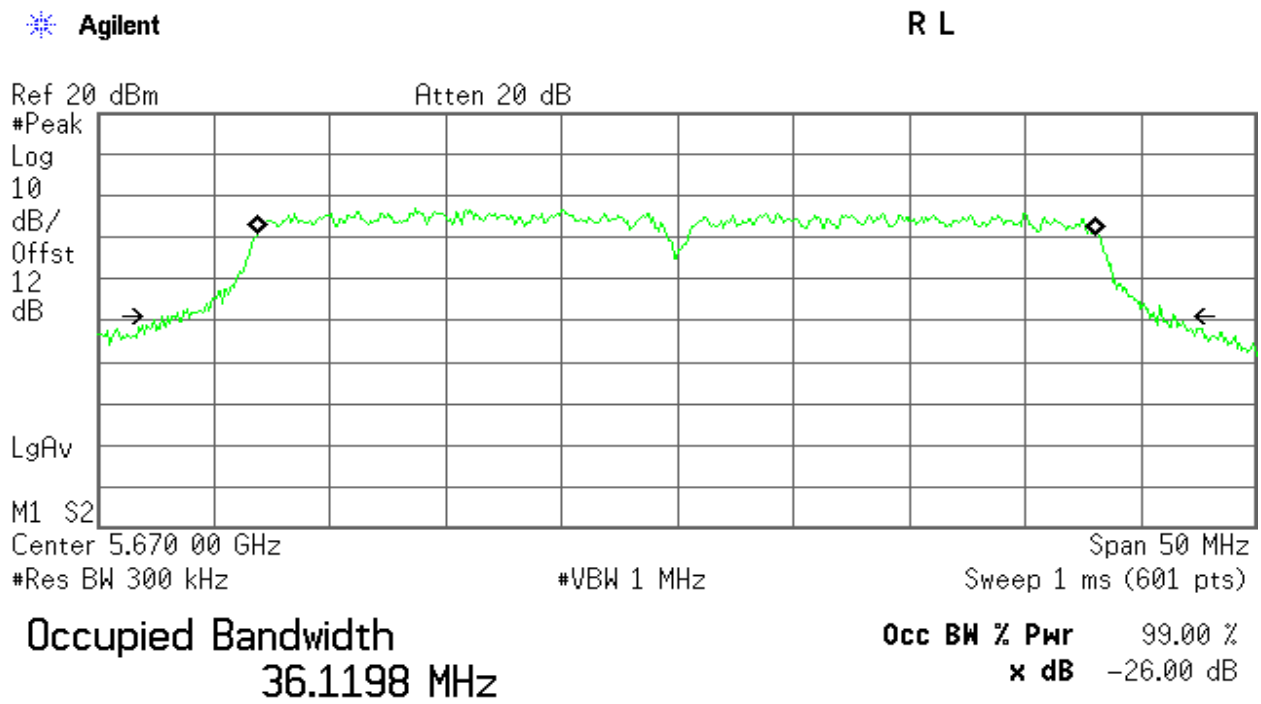
CH Low



CH Mid



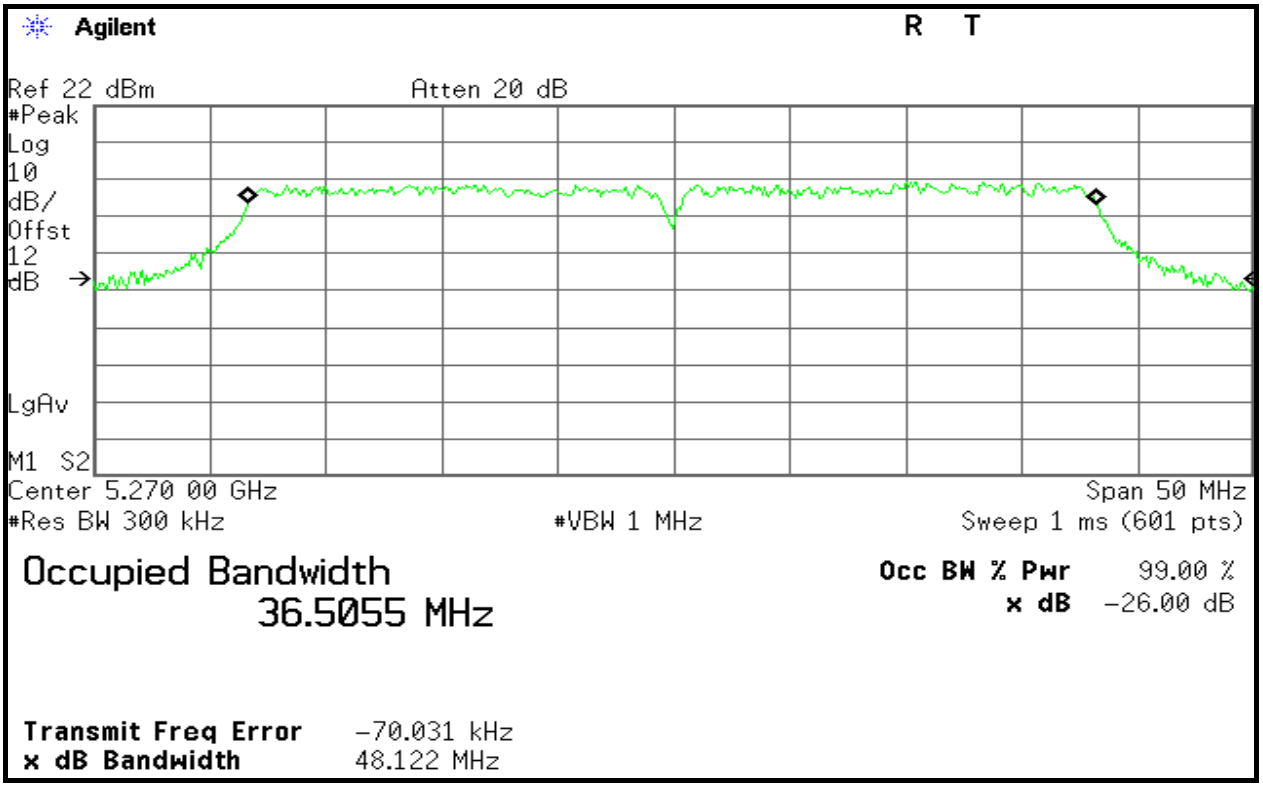
CH High



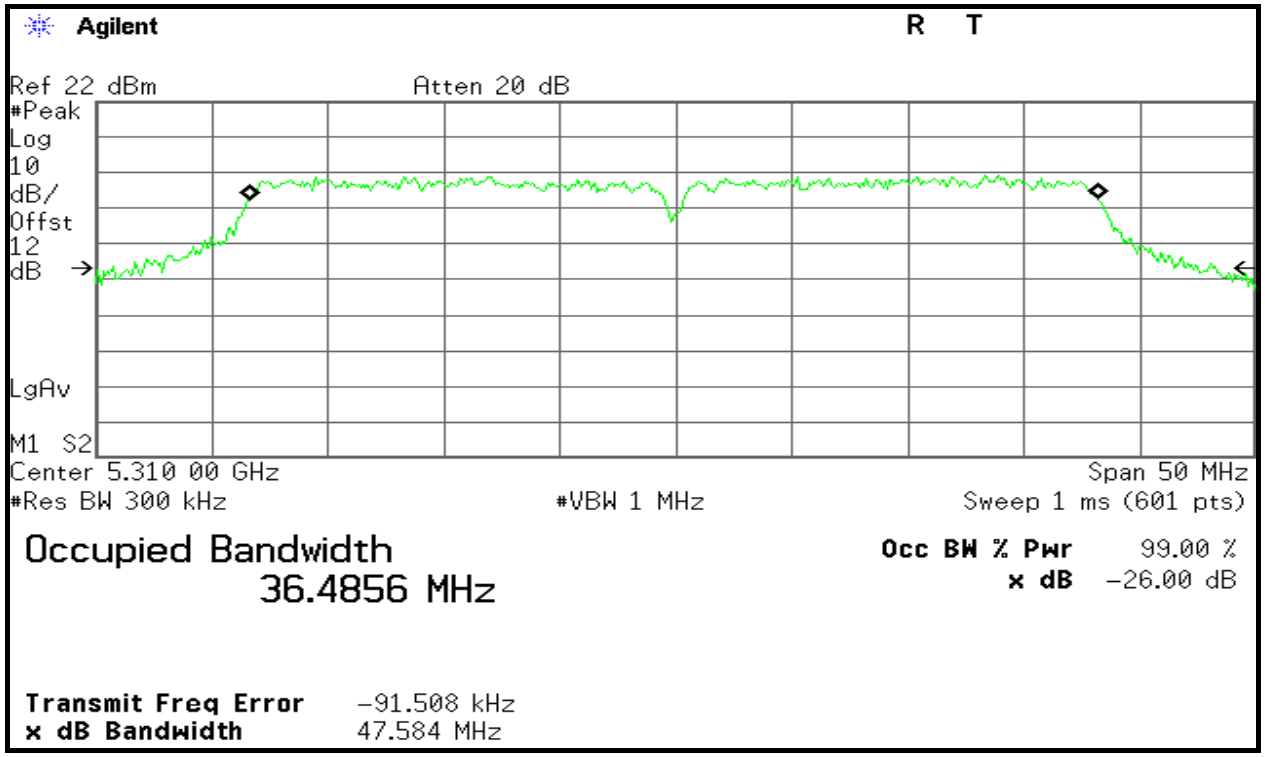
802.11n Wide-40 MHz Channel mode / Chain 1

5250~5350MHz

CH Low

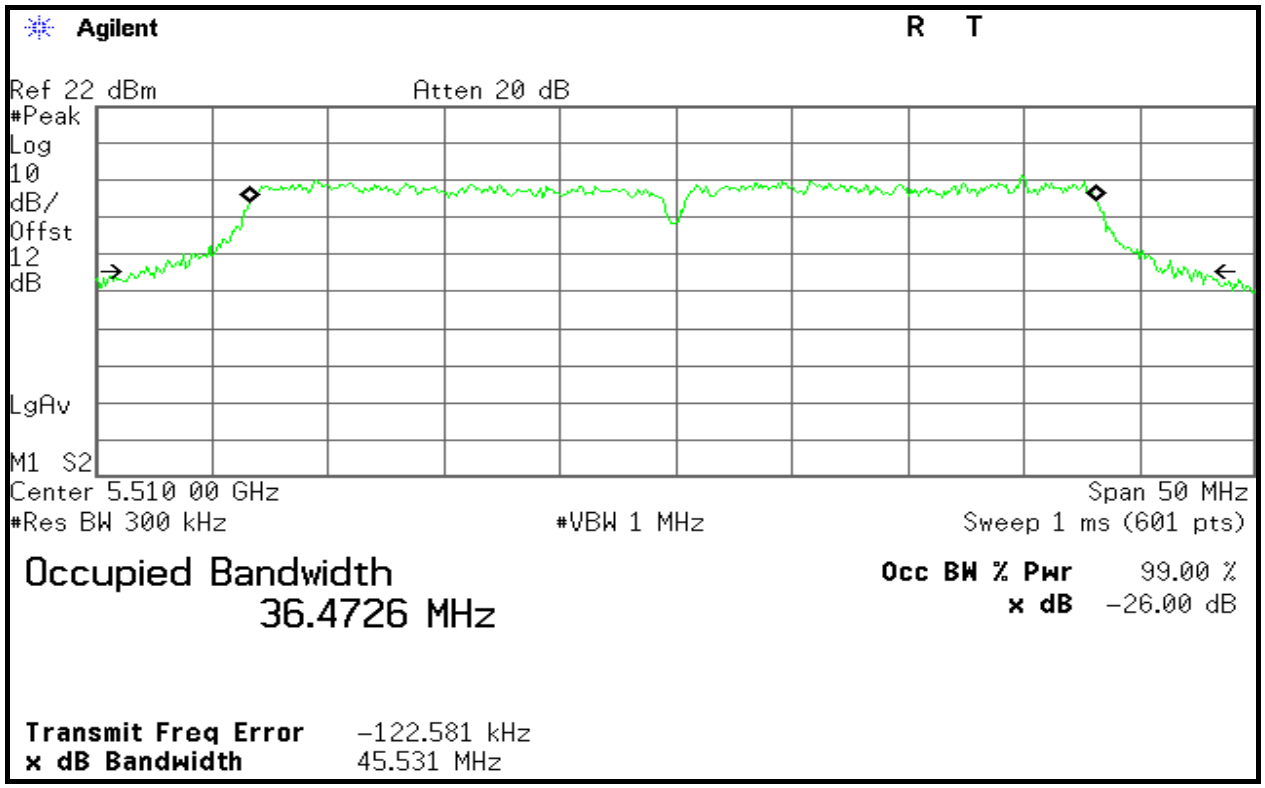


CH High

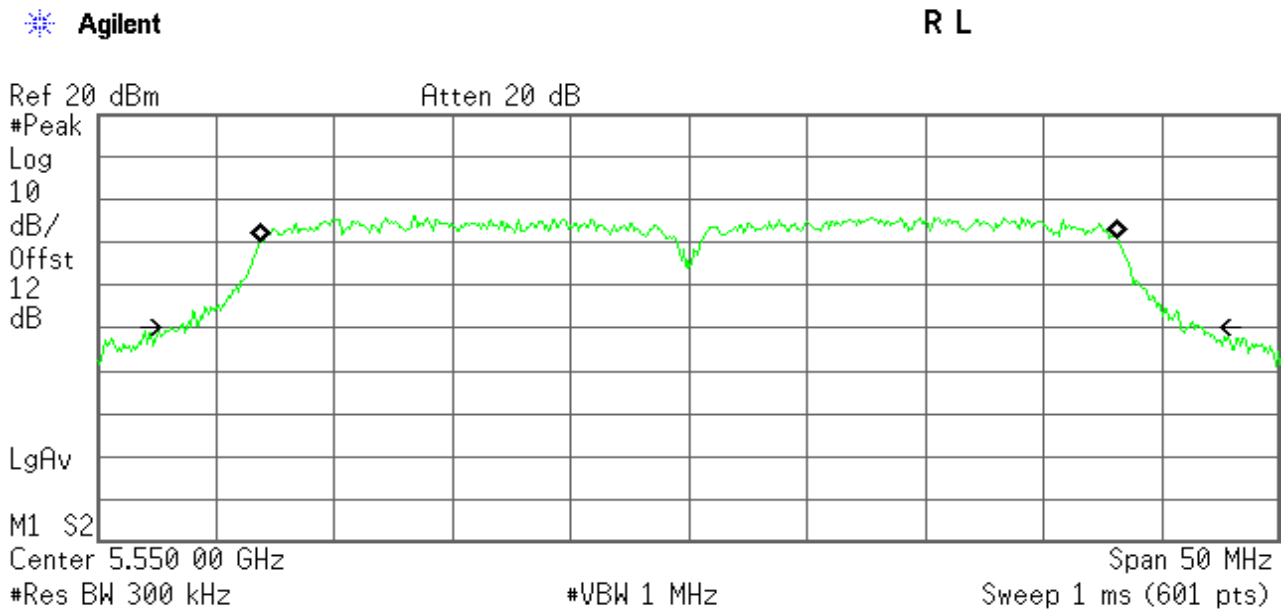


5470~5725MHz

CH Low



CH Mid

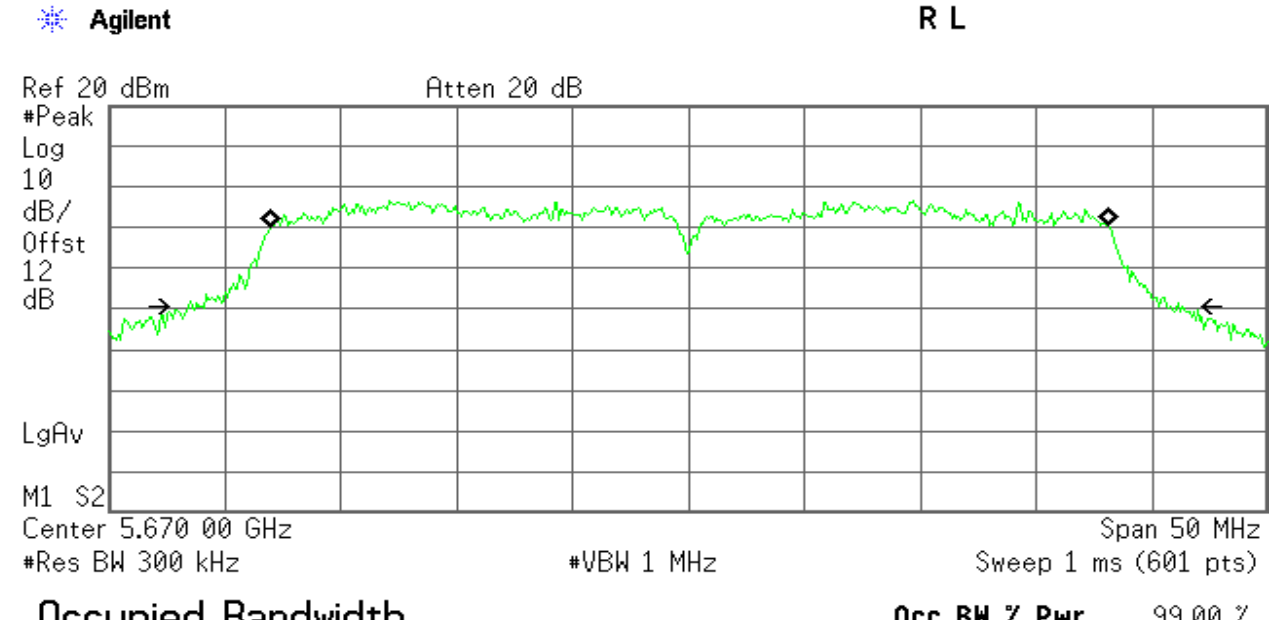


Occupied Bandwidth
36.1546 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 29.263 kHz
x dB Bandwidth 43.181 MHz

CH High



Occupied Bandwidth
36.0428 MHz

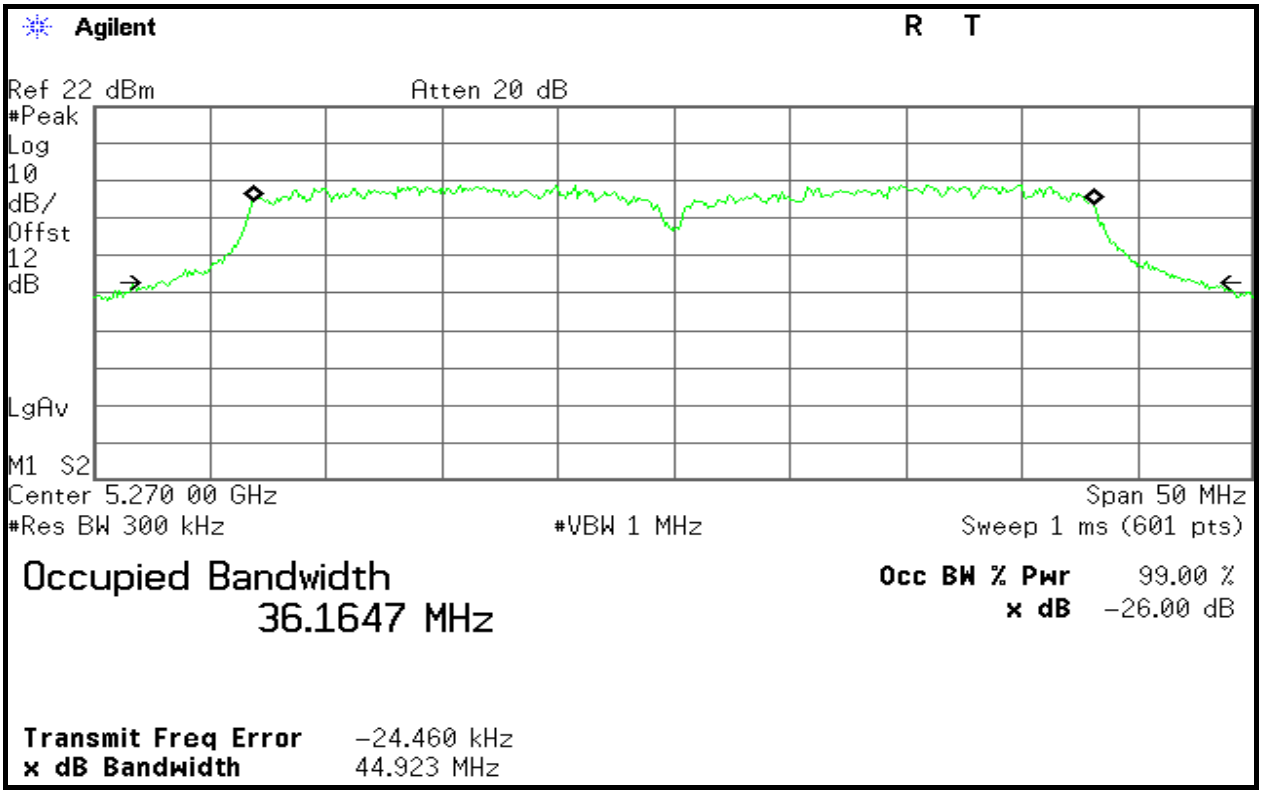
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 34.991 kHz
x dB Bandwidth 42.940 MHz

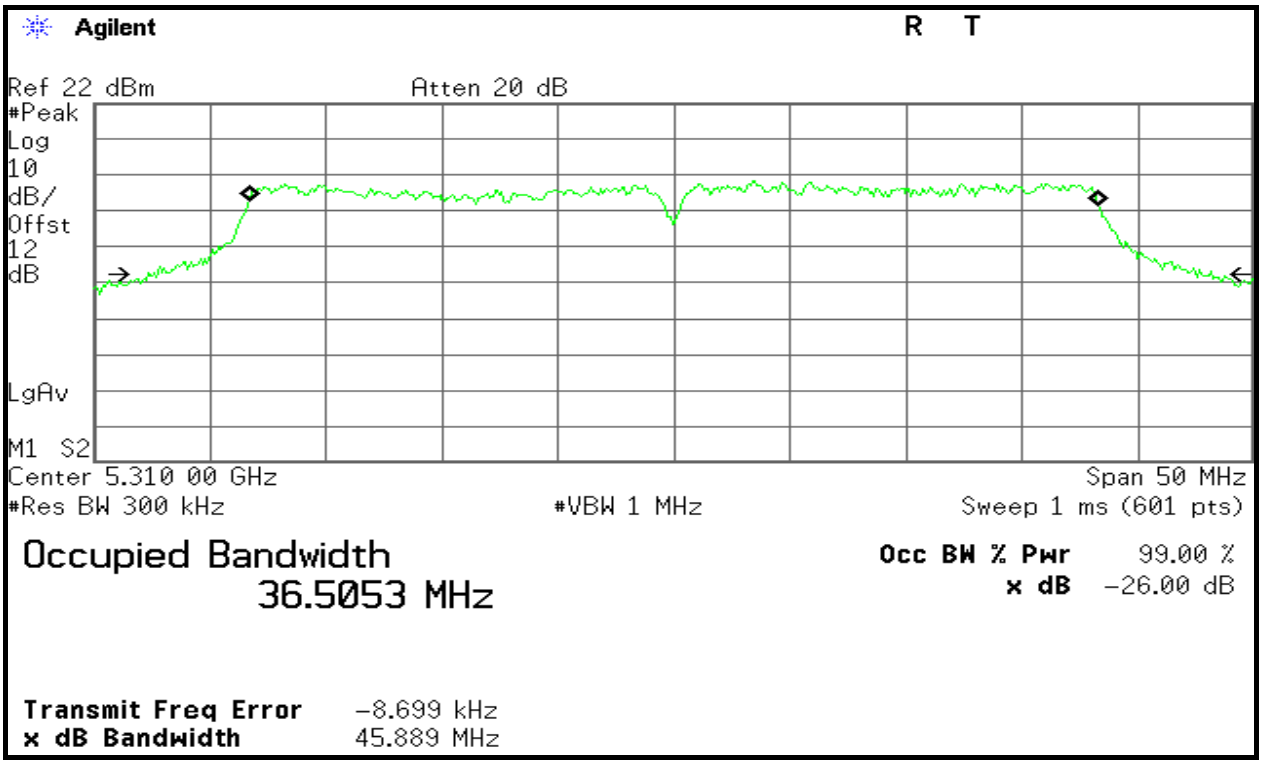
802.11n Wide-40 MHz Channel mode / Chain 2

5250~5350MHz

CH Low

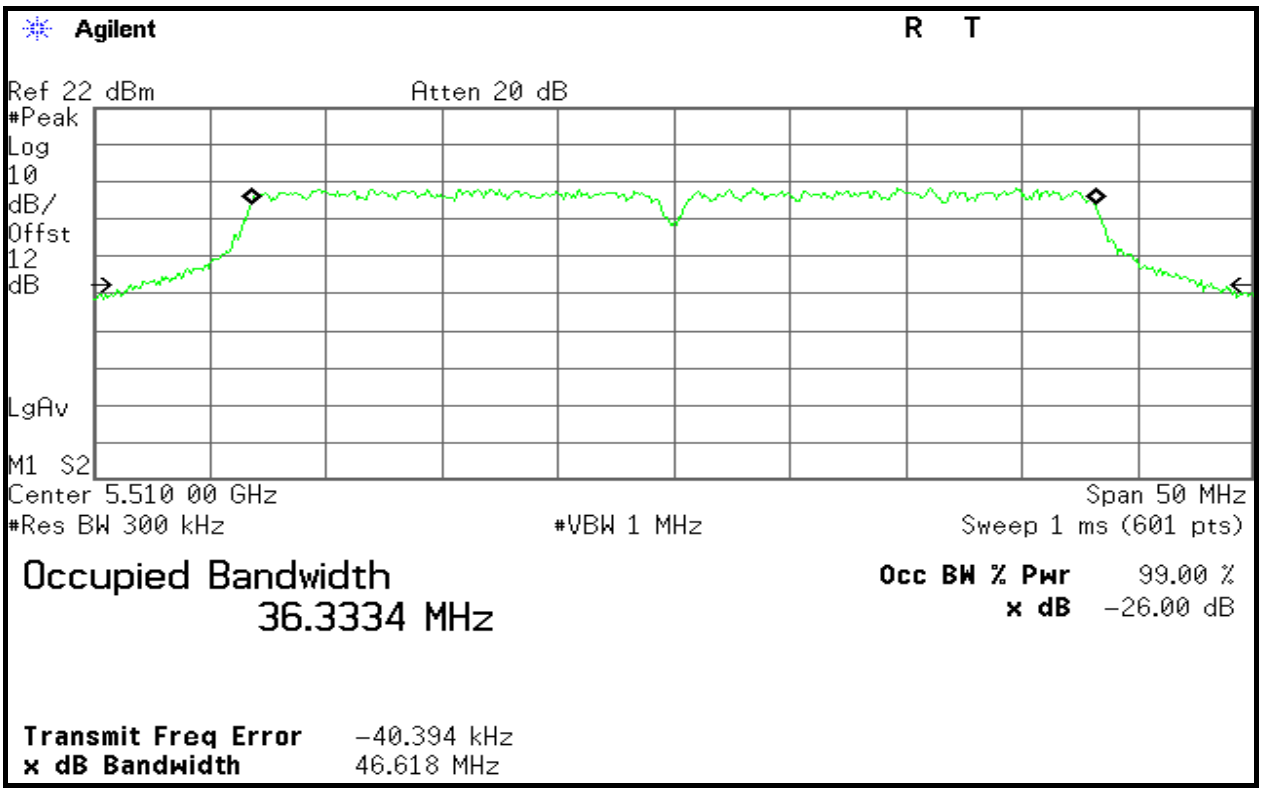


CH High

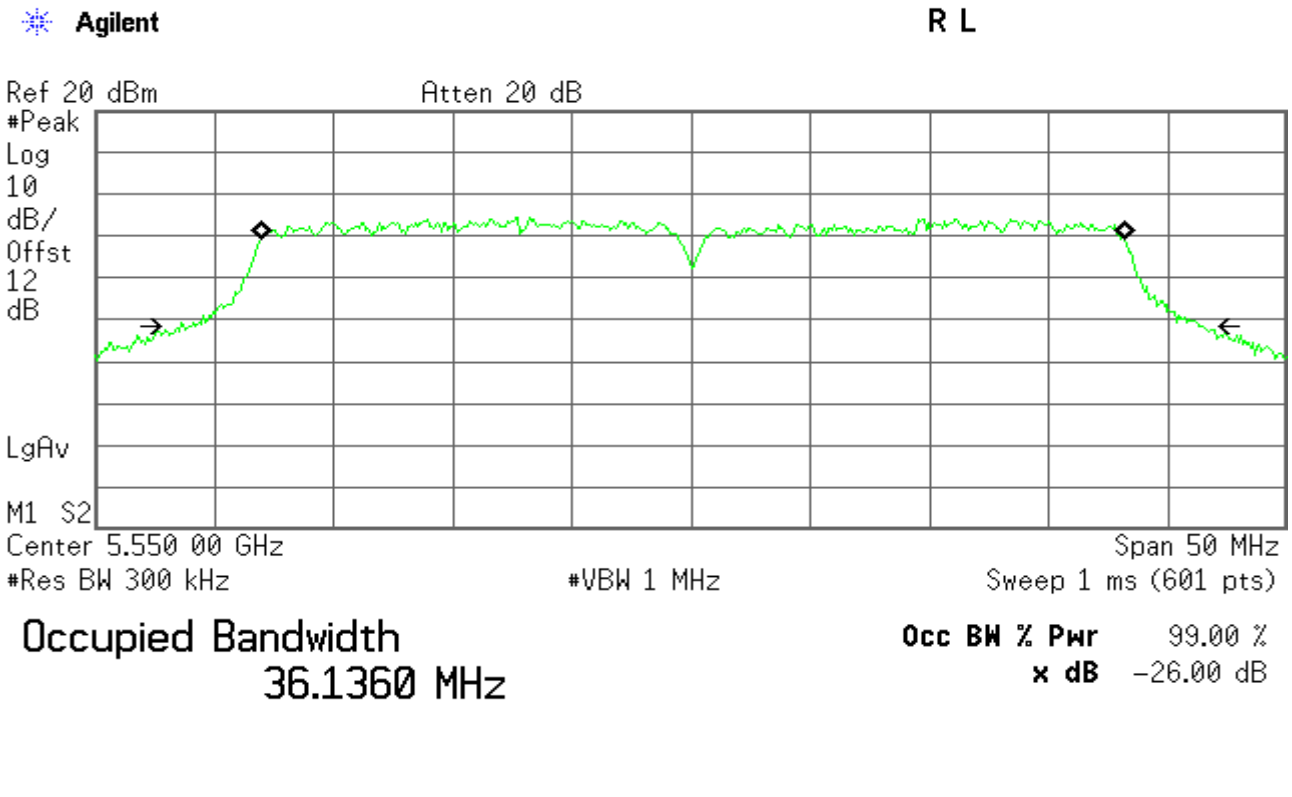


5470~5725MHz

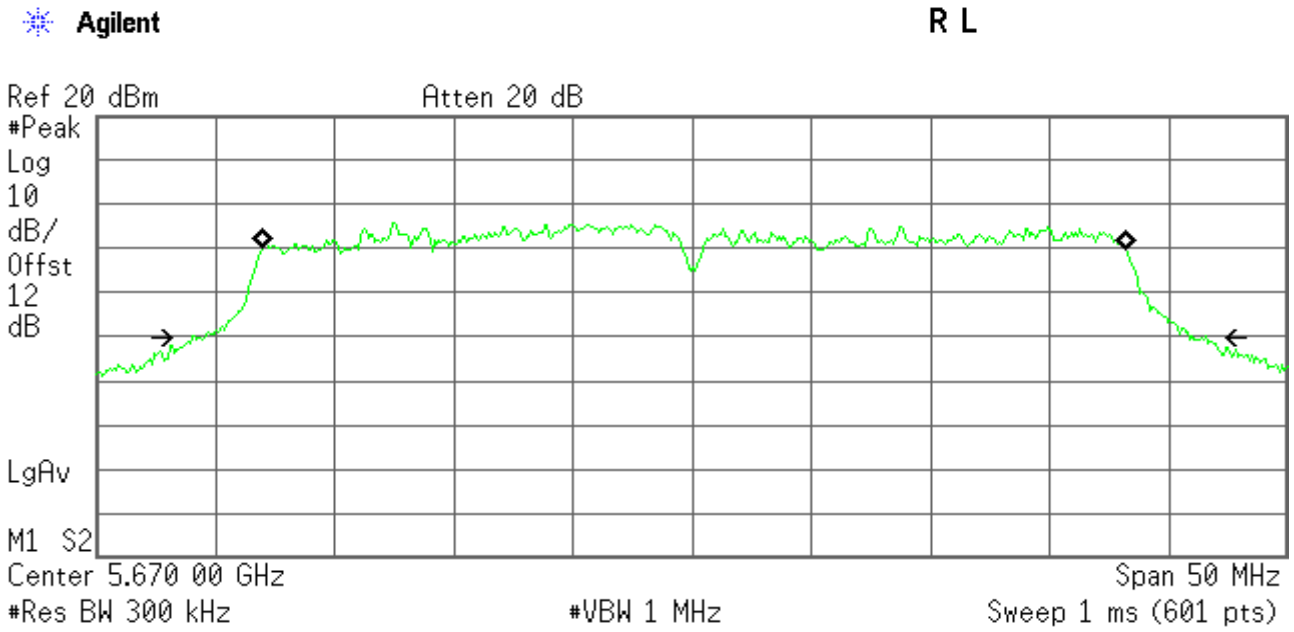
CH Low



CH Mid



CH High



Occupied Bandwidth
36.1510 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 94.982 kHz
x dB Bandwidth 42.604 MHz

7.2 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.

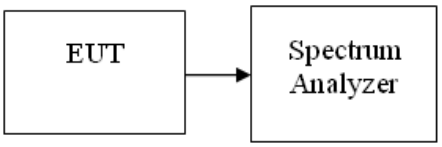
If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

The peak power shall not exceed the limit as follow:

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

5250~5350MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	11.85	24.00
Mid	5300	11.12	24.00
High	5320	10.80	24.00

5470~5725MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	12.39	24.00
Mid	5540	**13.02**	24.00
High	5700	11.51	24.00

Test mode: 802.11n Standard-20 MHz Channel mode

5250~5350MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Chain 2 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5260	10.39	11.13	11.68	15.87	24.00
Mid	5300	10.56	11.18	10.91	15.66	24.00
High	5320	11.07	11.45	11.03	**15.96**	24.00

Total maximum conducted power Chain 0+Chain 1+Chain 2:

Maximum Conducted Output Power(dBm)=10log(10^(chain0outputpower/10)+ 10^(chain1outputpower/10)+ 10^(chain2outputpower/10))

5470~5725MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Chain 2 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5500	12.41	12.15	10.76	16.60	24.00
Mid	5550	13.16	10.51	11.63	**16.67**	24.00
High	5700	11.54	12.23	11.28	16.47	24.00

Total maximum conducted power Chain 0+Chain 1+Chain 2:
Maximum Conducted Output Power(dBm)=10log(10^(chain0outputpower/10)+ 10^(chain1outputpower/10)+ 10^(chain2outputpower/10))

Test mode: 802.11n Wide-40 MHz Channel mode

5250~5350MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Chain 2 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5270	10.58	11.19	10.74	15.62	24.00
High	5310	10.91	11.14	10.67	15.68	24.00

Total maximum conducted power Chain 0+Chain 1+Chain 2:
Maximum Conducted Output Power(dBm)=10log(10^(chain0outputpower/10)+ 10^(chain1outputpower/10)+ 10^(chain2outputpower/10))

5470~5725MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Chain 2 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5510	12.16	12.20	11.15	16.63	24.00
Mid	5550	12.42	12.22	11.15	16.74	24.00
High	5670	12.57	12.44	12.73	**17.35**	24.00

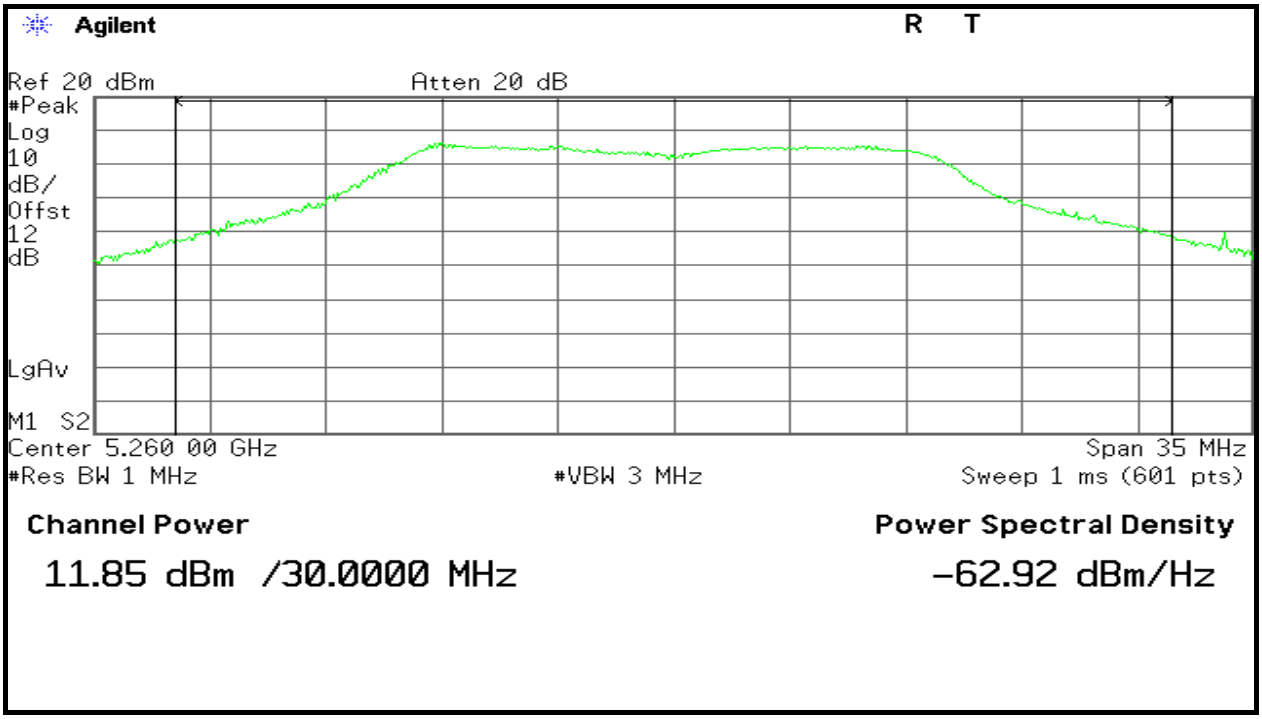
Total maximum conducted power Chain 0+Chain 1+Chain 2:
Maximum Conducted Output Power(dBm)=10log(10^(chain0outputpower/10)+ 10^(chain1outputpower/10)+ 10^(chain2outputpower/10))

Test Plot

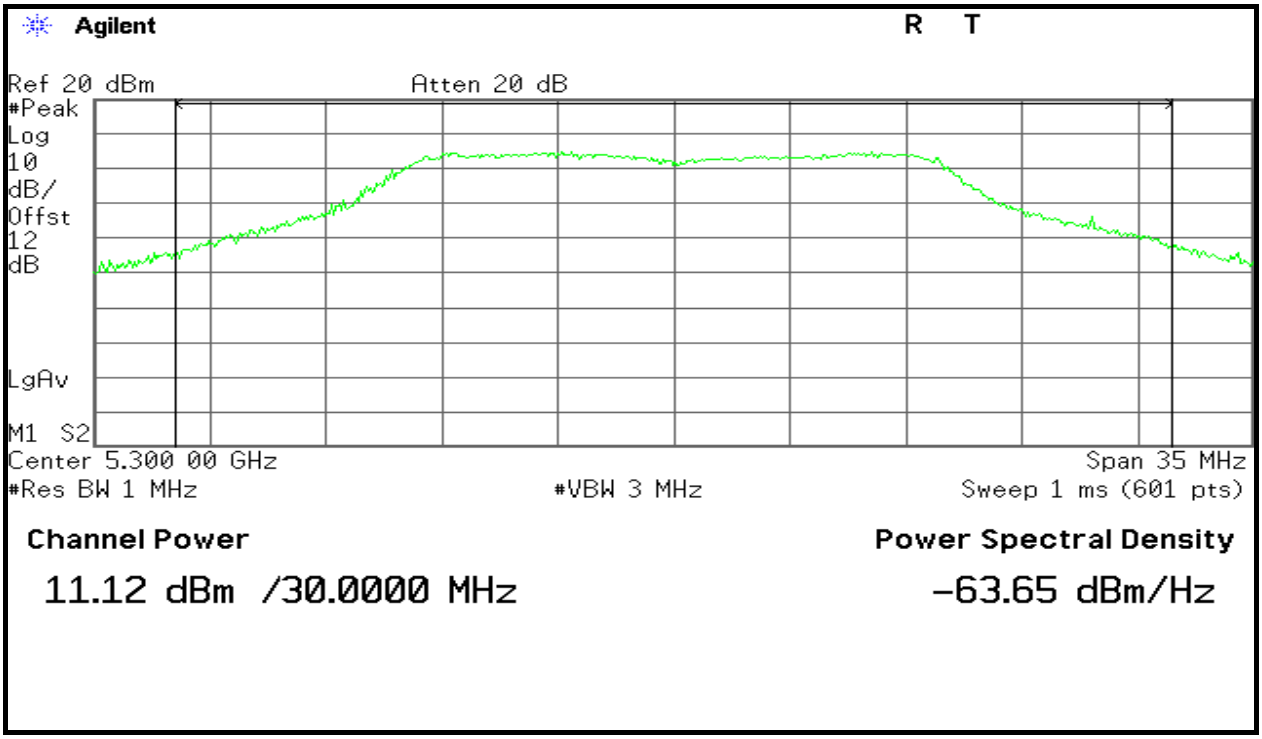
Test mode: IEEE 802.11a mode:

5250~5350MHz

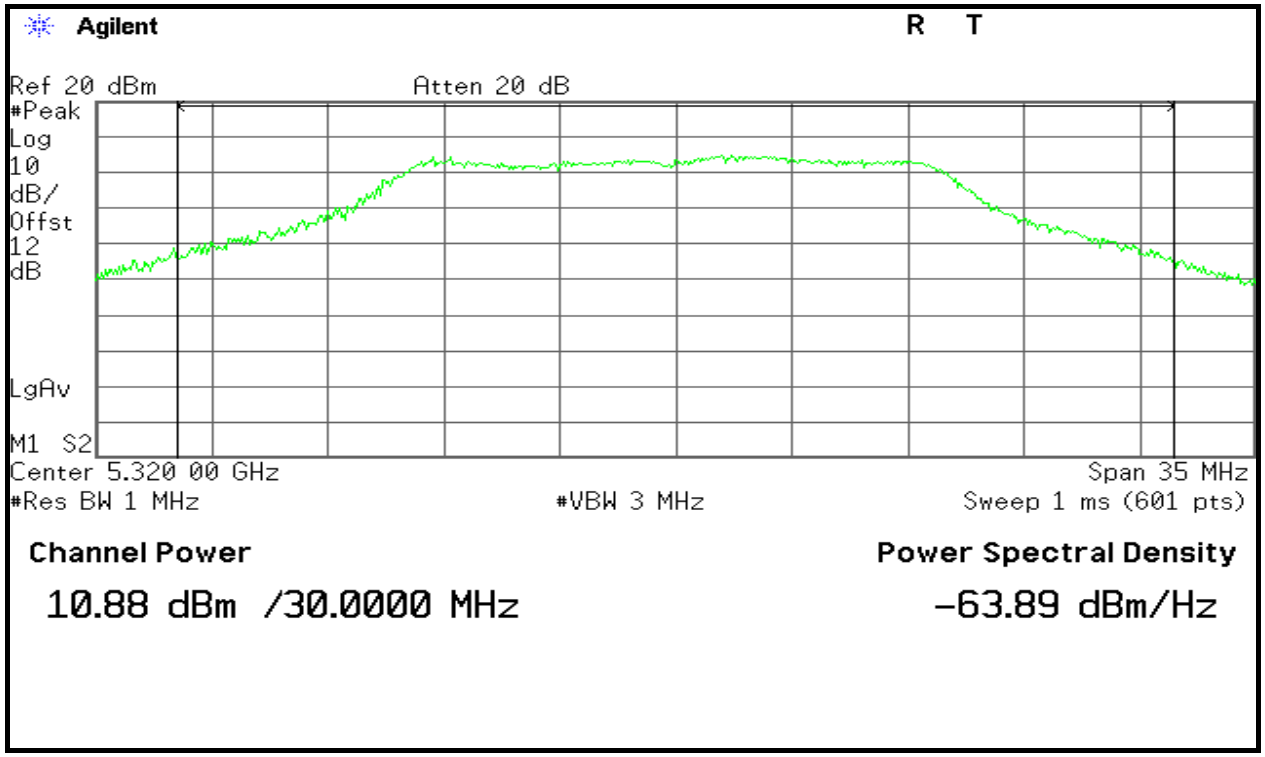
CH Low



CH Mid

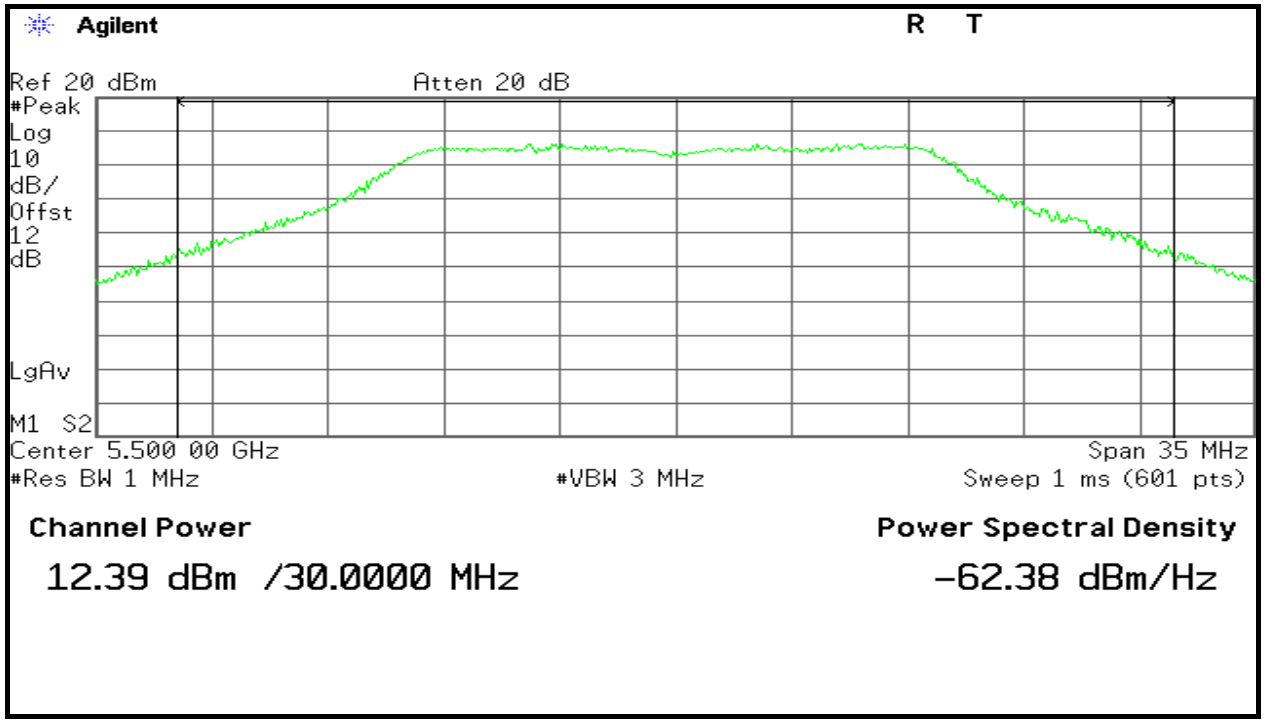


CH High

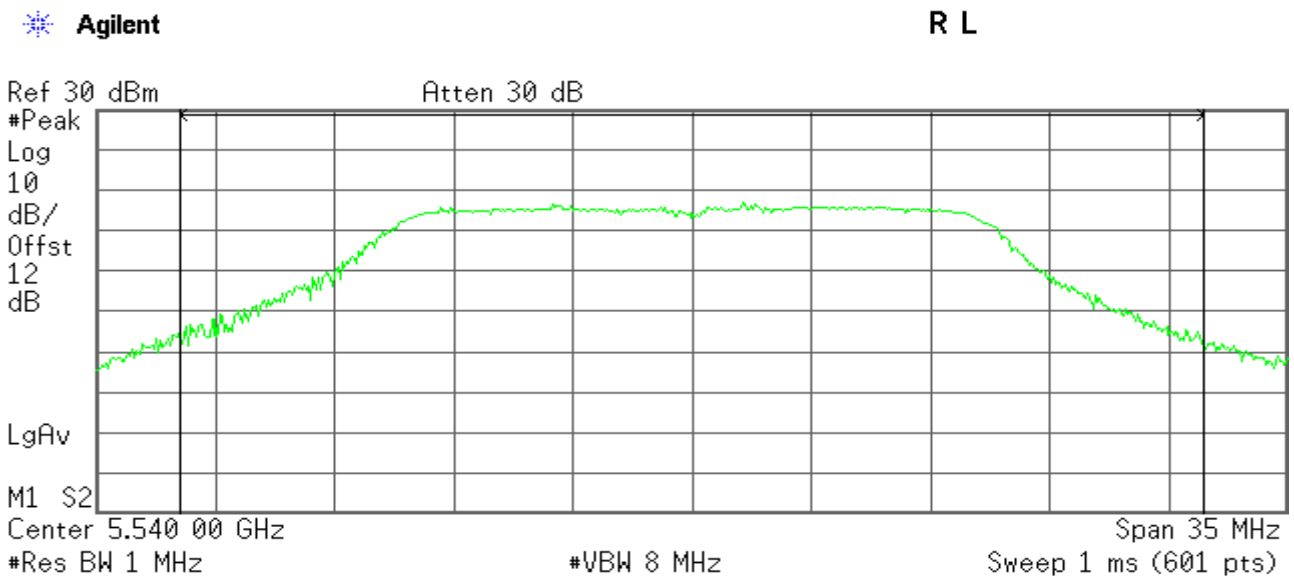


5470~5725MHz

CH Low



CH Mid



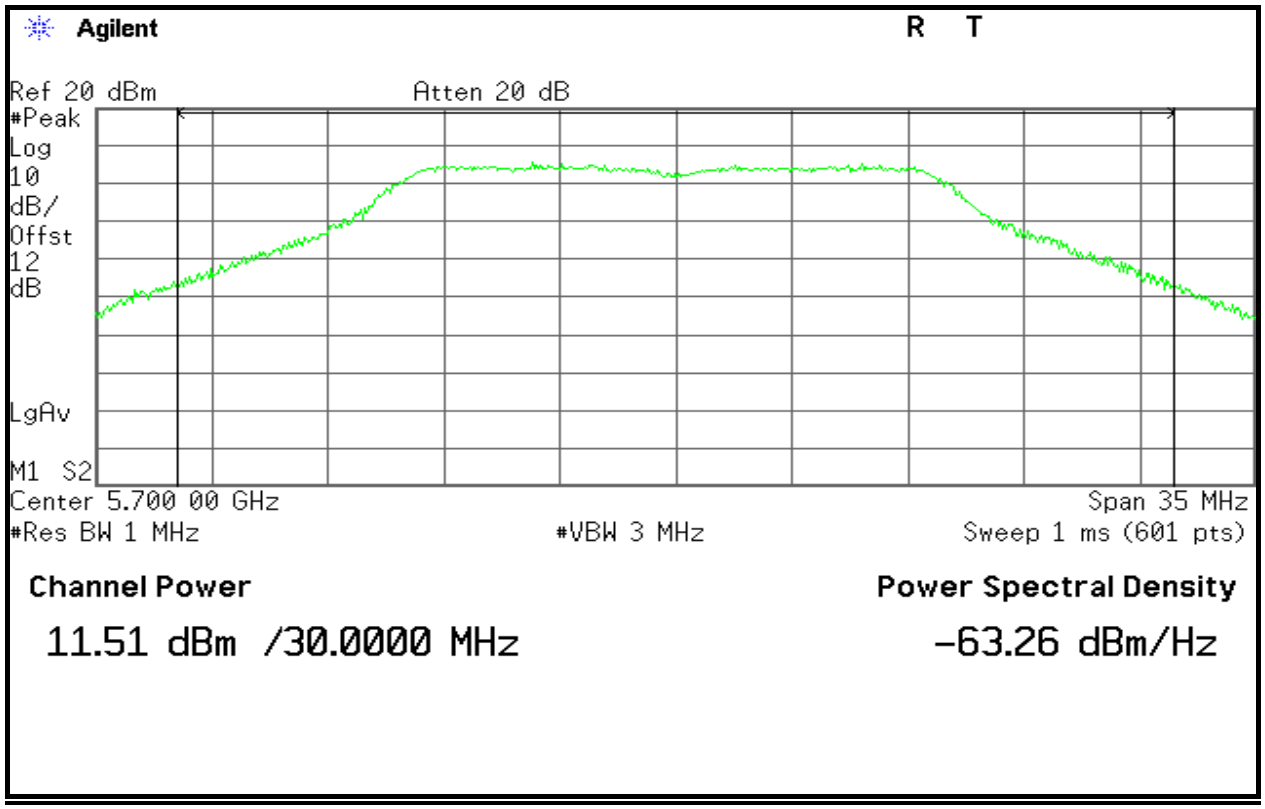
Channel Power

13.02 dBm /30.0000 MHz

Power Spectral Density

-61.75 dBm/Hz

CH High



Channel Power

11.51 dBm /30.0000 MHz

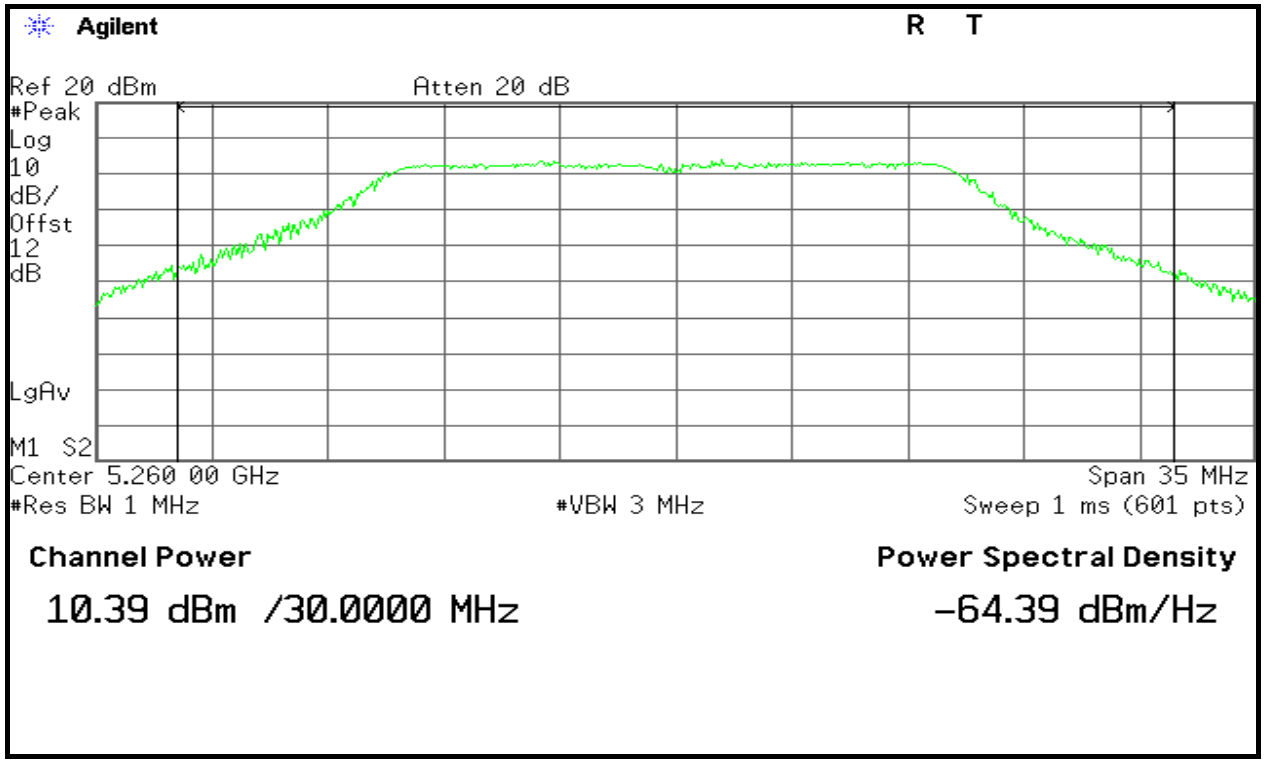
Power Spectral Density

-63.26 dBm/Hz

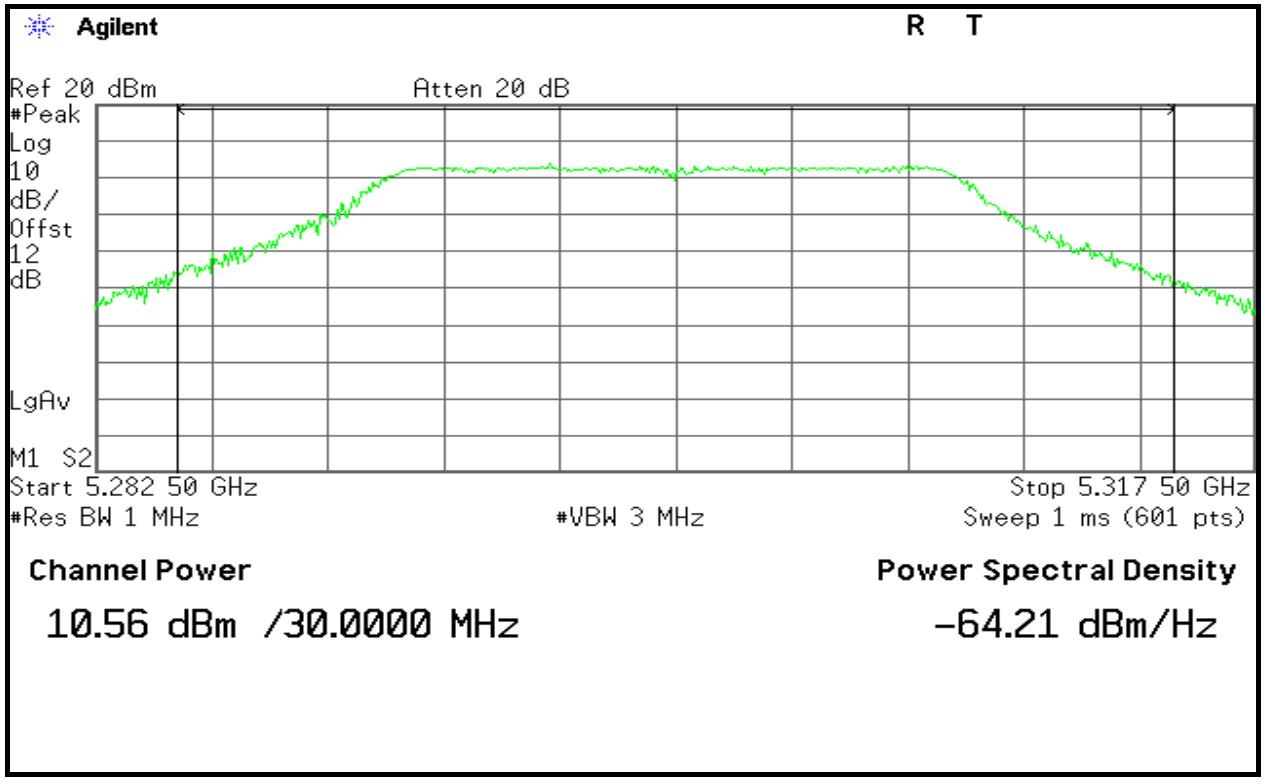
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 0:

5250~5350MHz

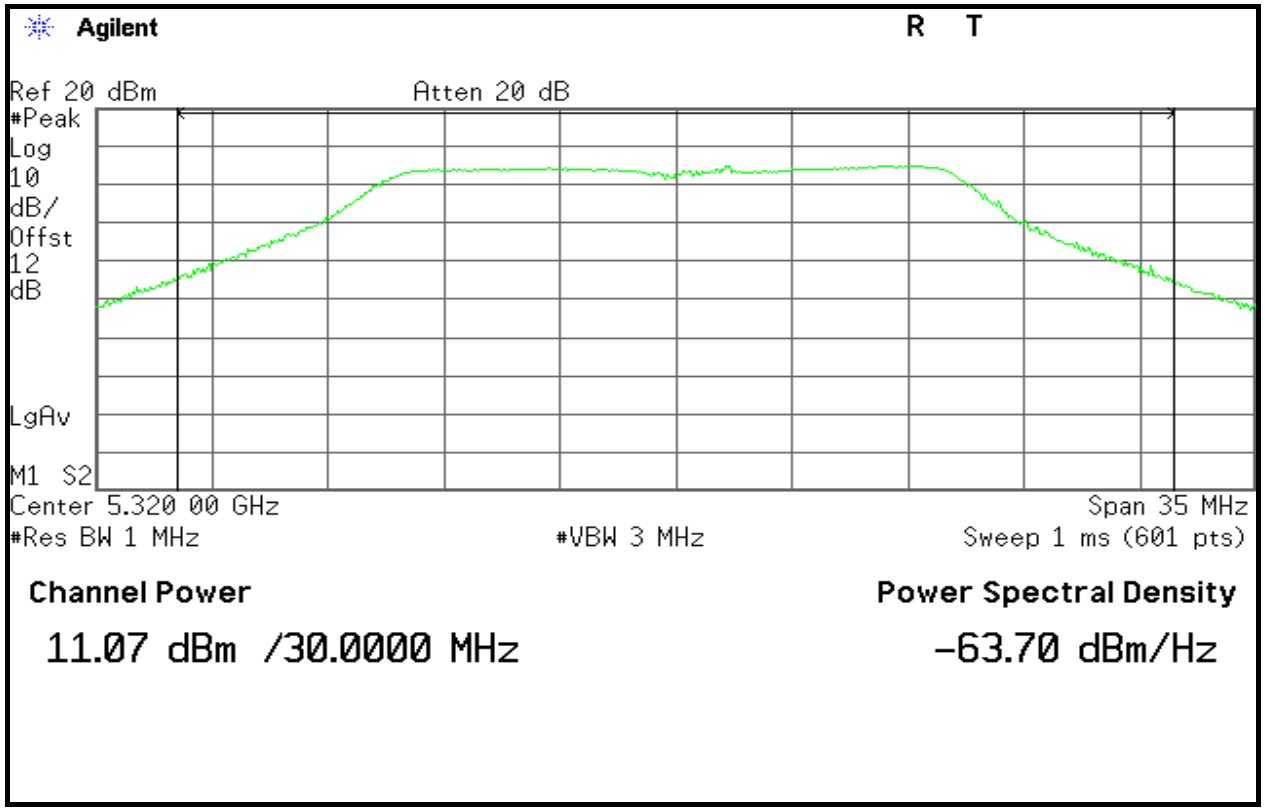
CH Low



CH Mid

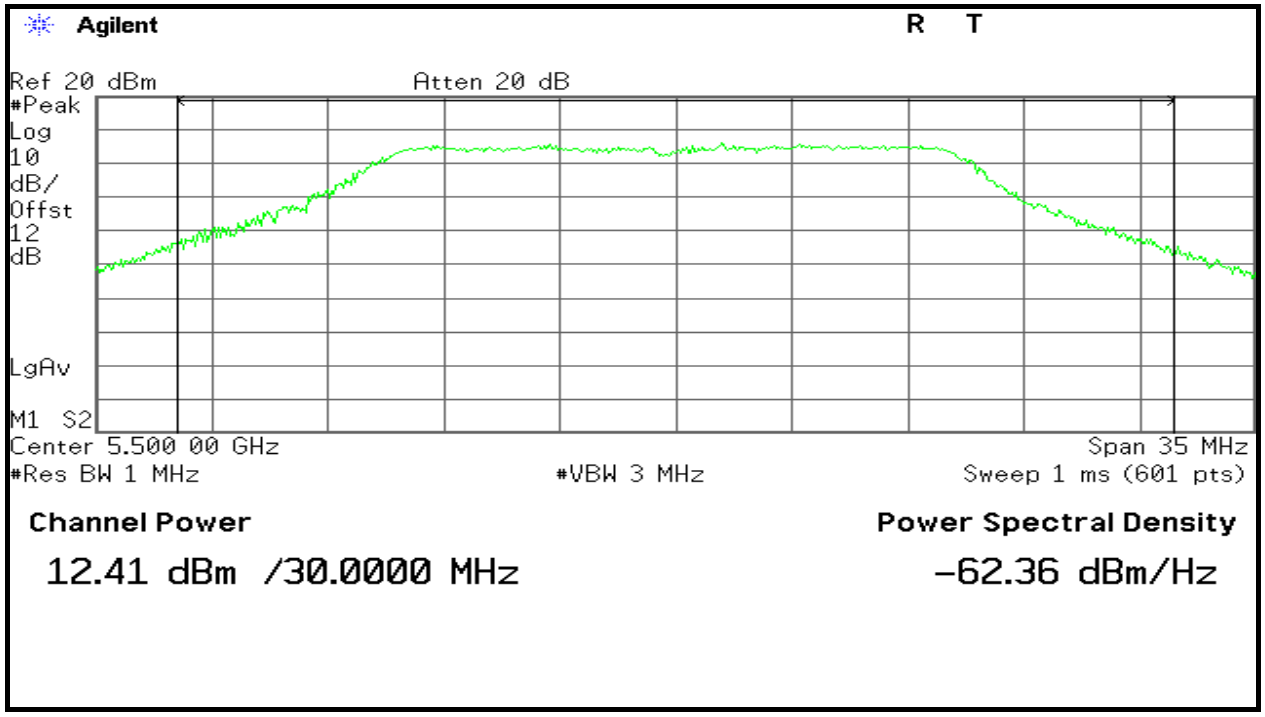


CH High

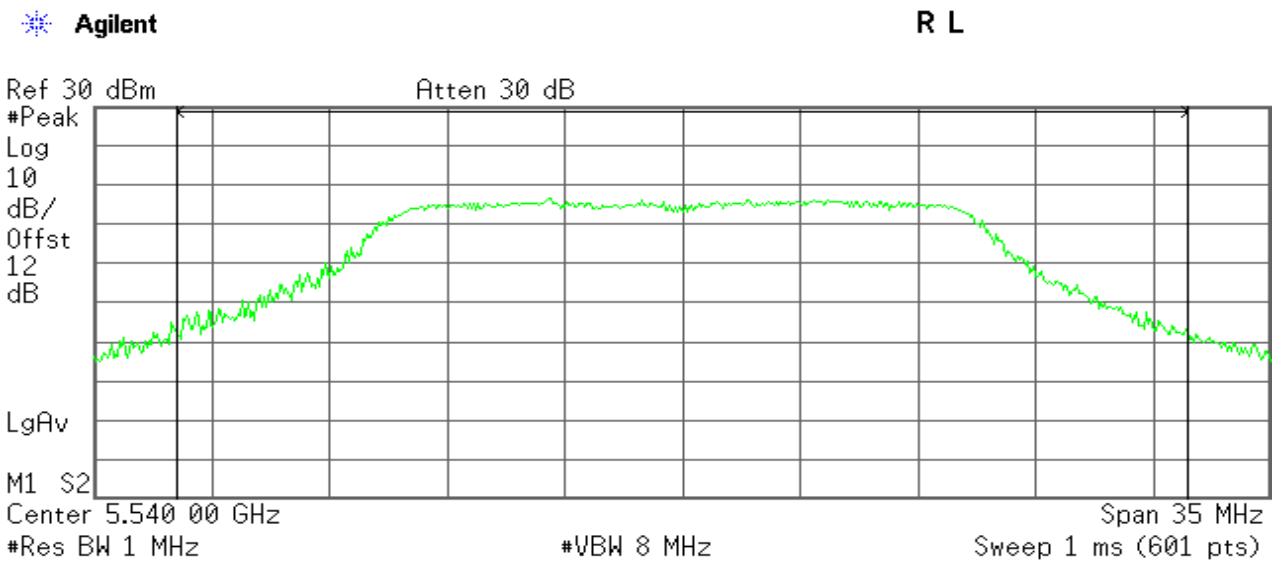


5470~5725MHz

CH Low



CH Mid



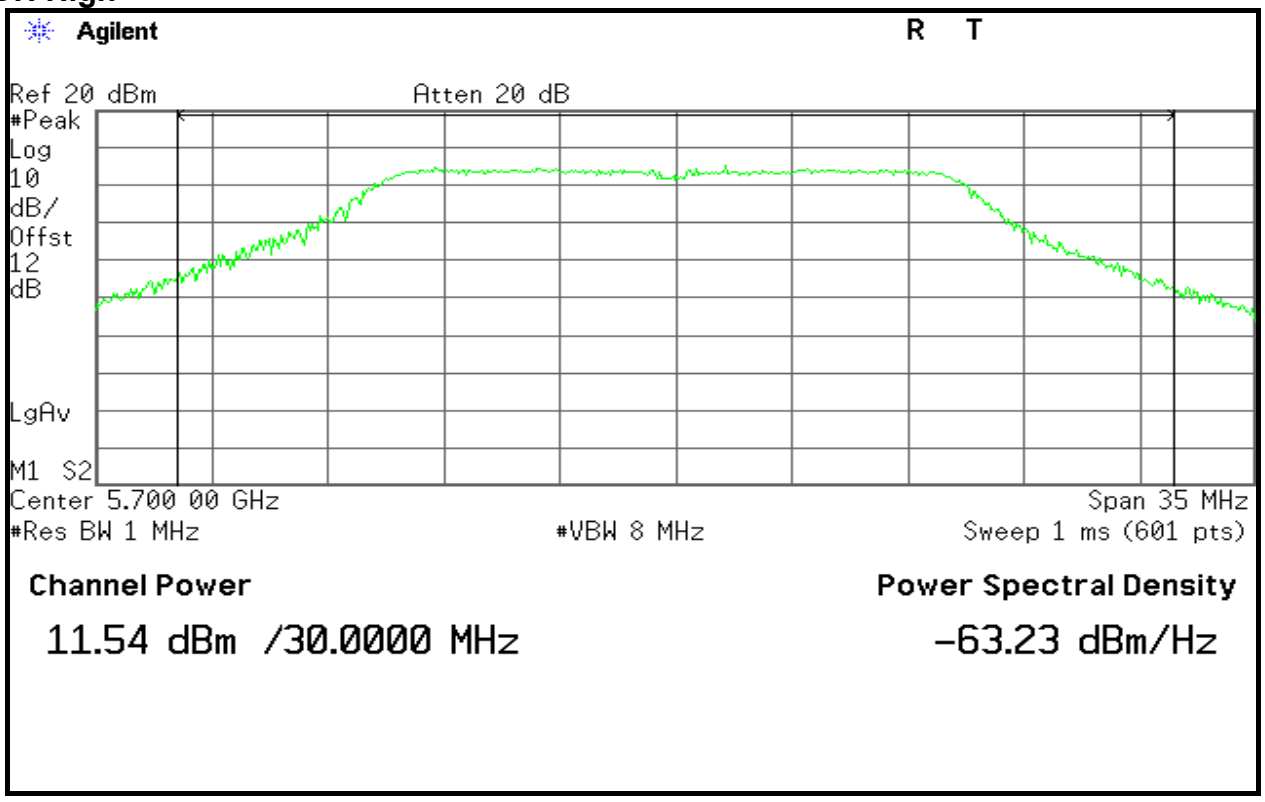
Channel Power

13.16 dBm /30.0000 MHz

Power Spectral Density

-61.61 dBm/Hz

CH High



Channel Power

11.54 dBm /30.0000 MHz

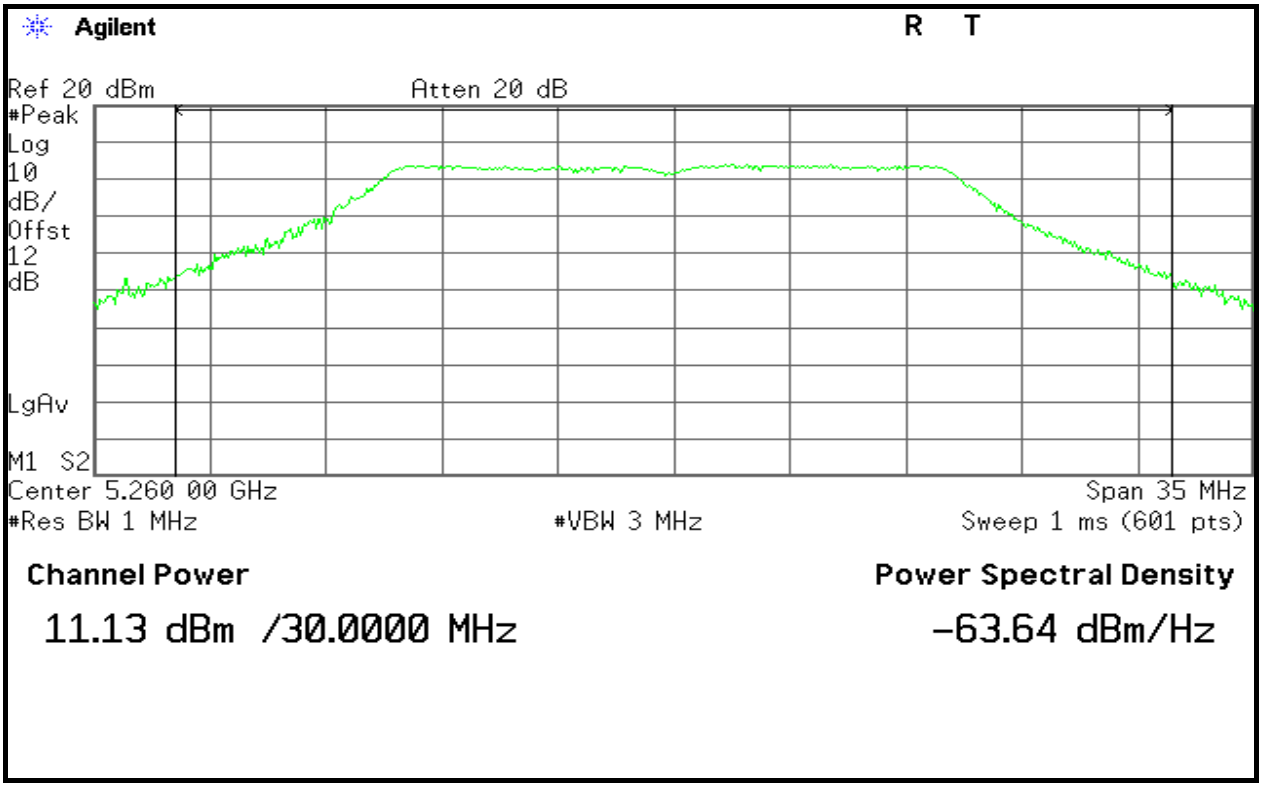
Power Spectral Density

-63.23 dBm/Hz

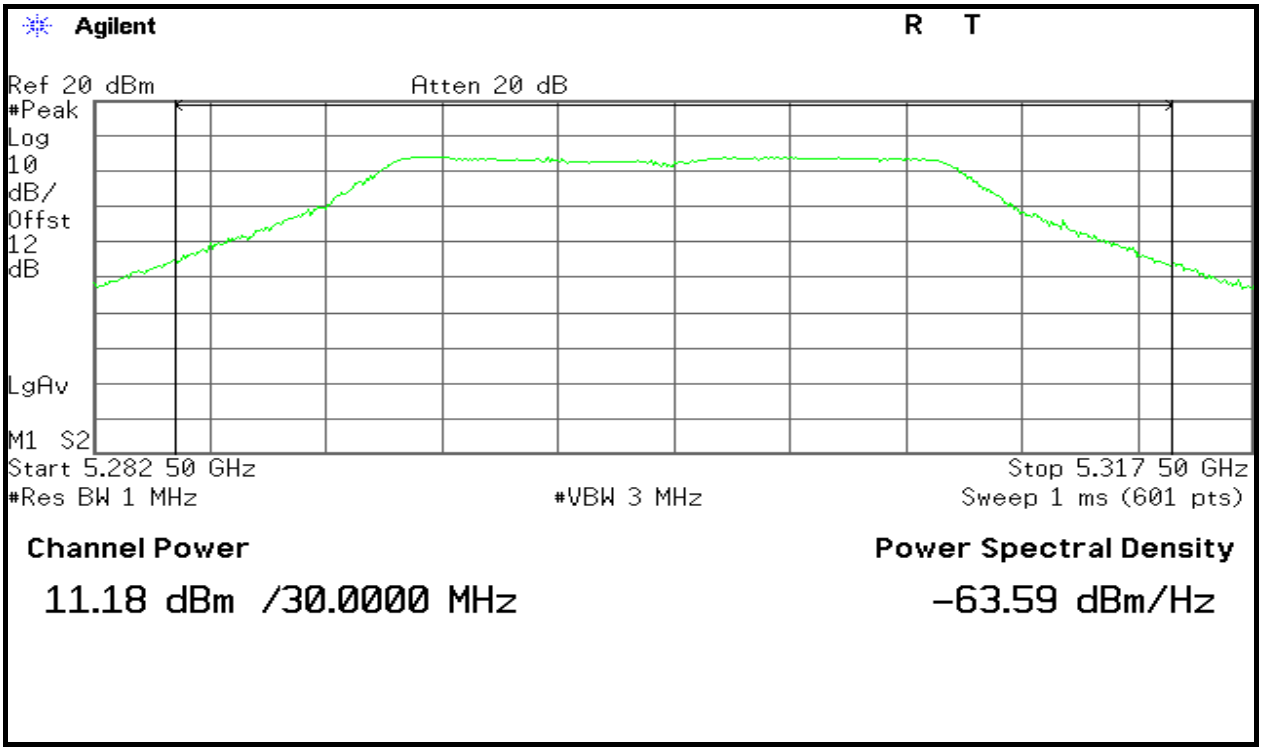
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 1:

5250~5350MHz

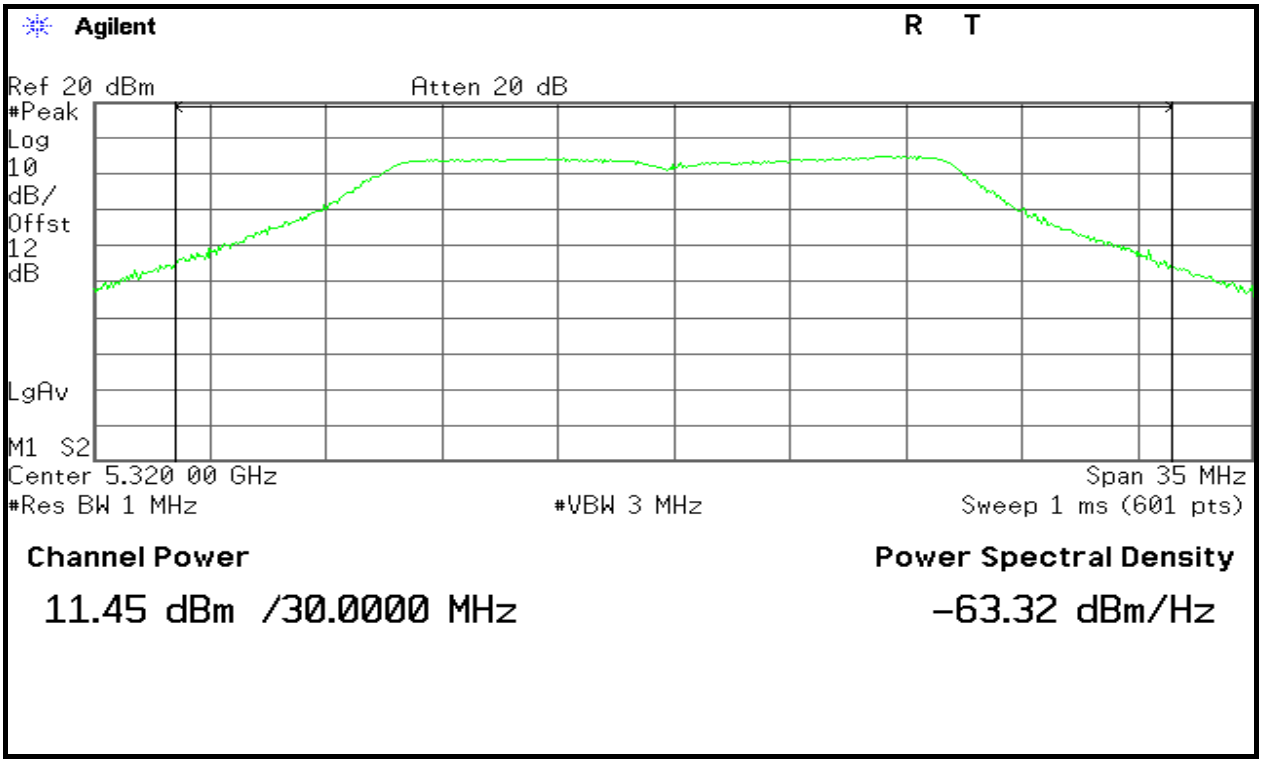
CH Low



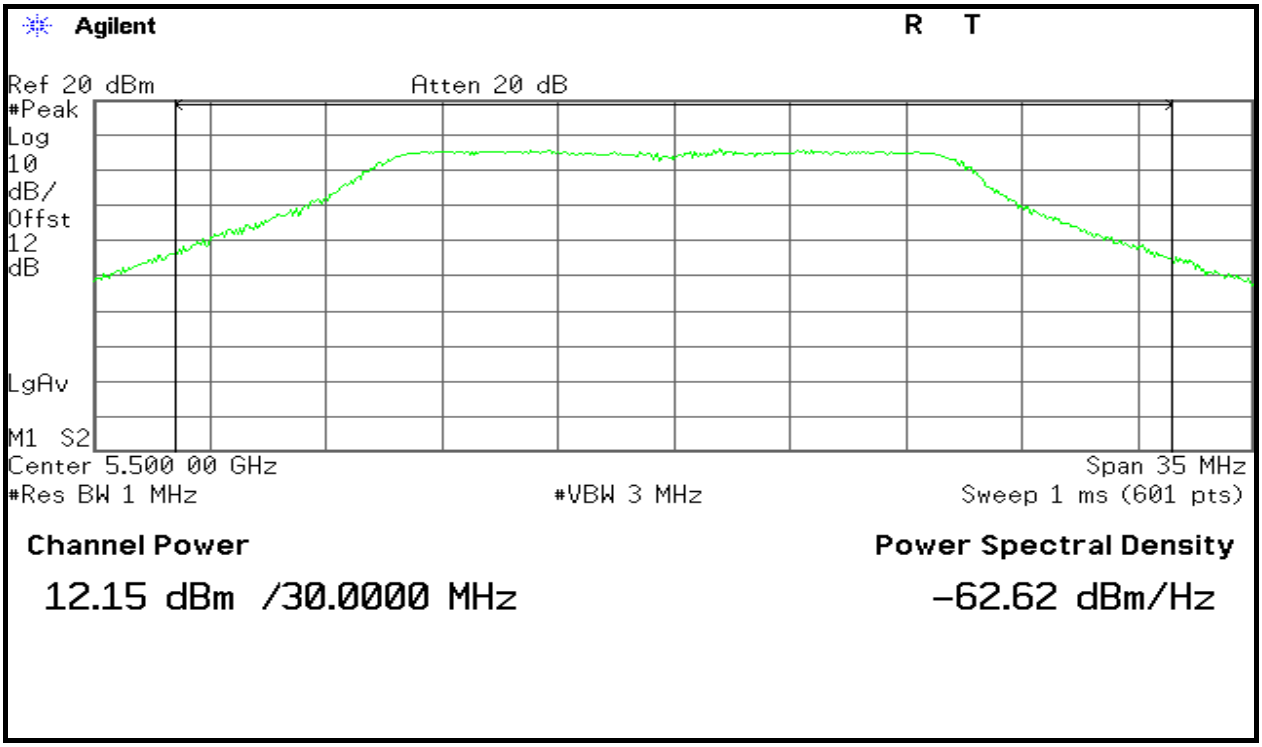
CH Mid



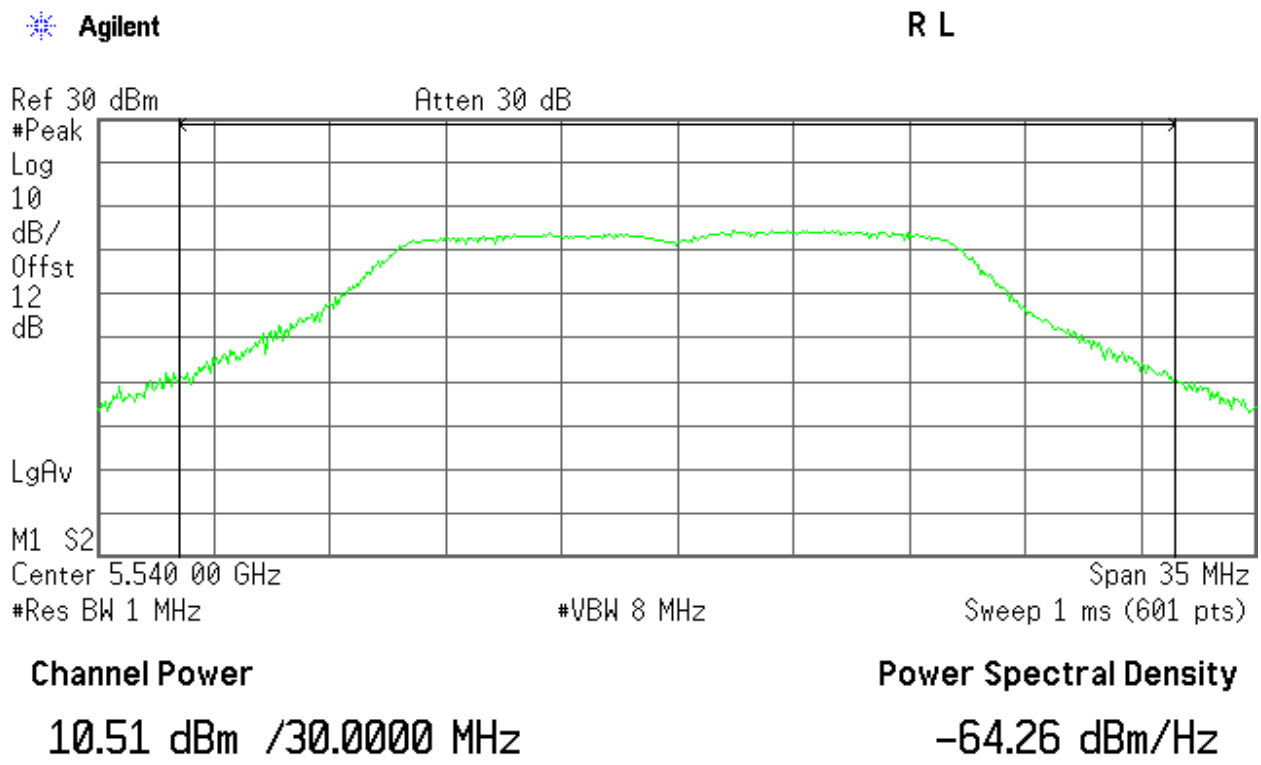
CH High



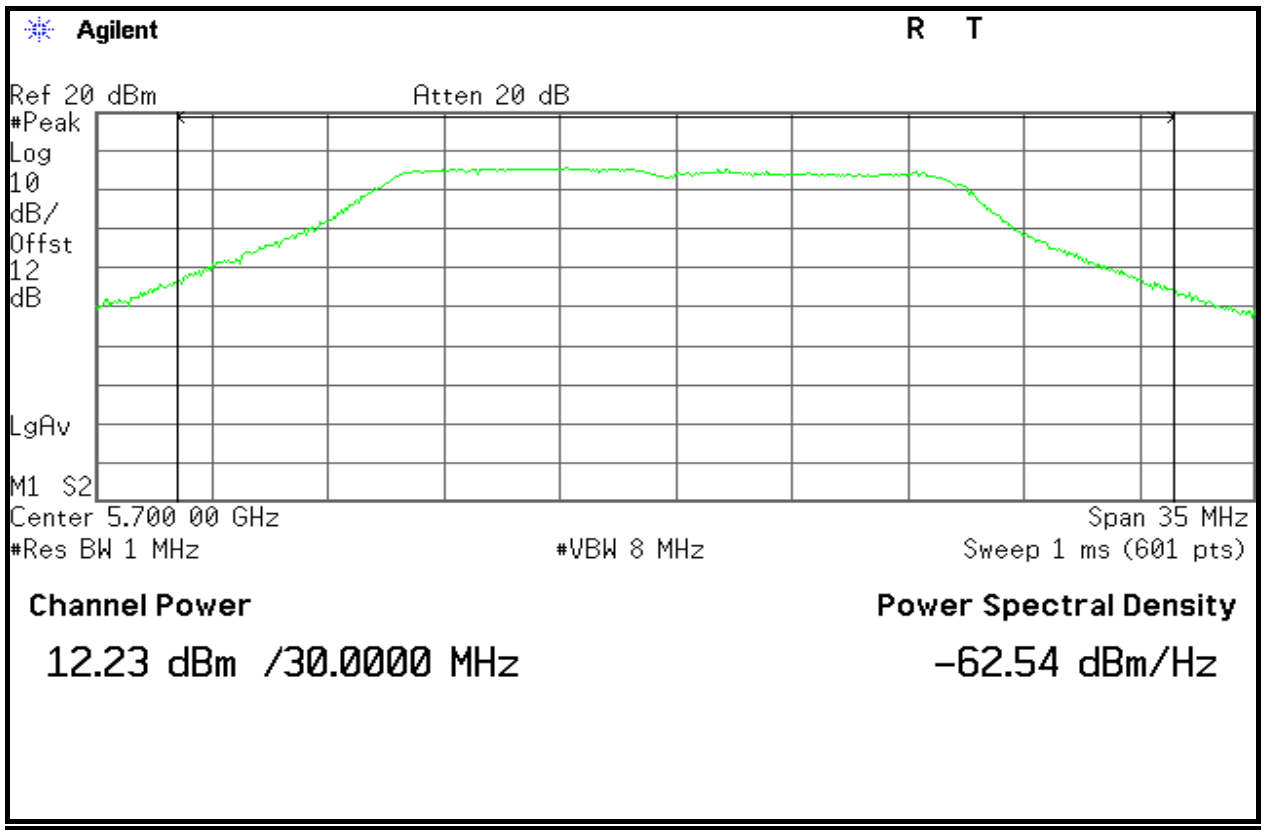
5470~5725MHz
CH Low



CH Mid



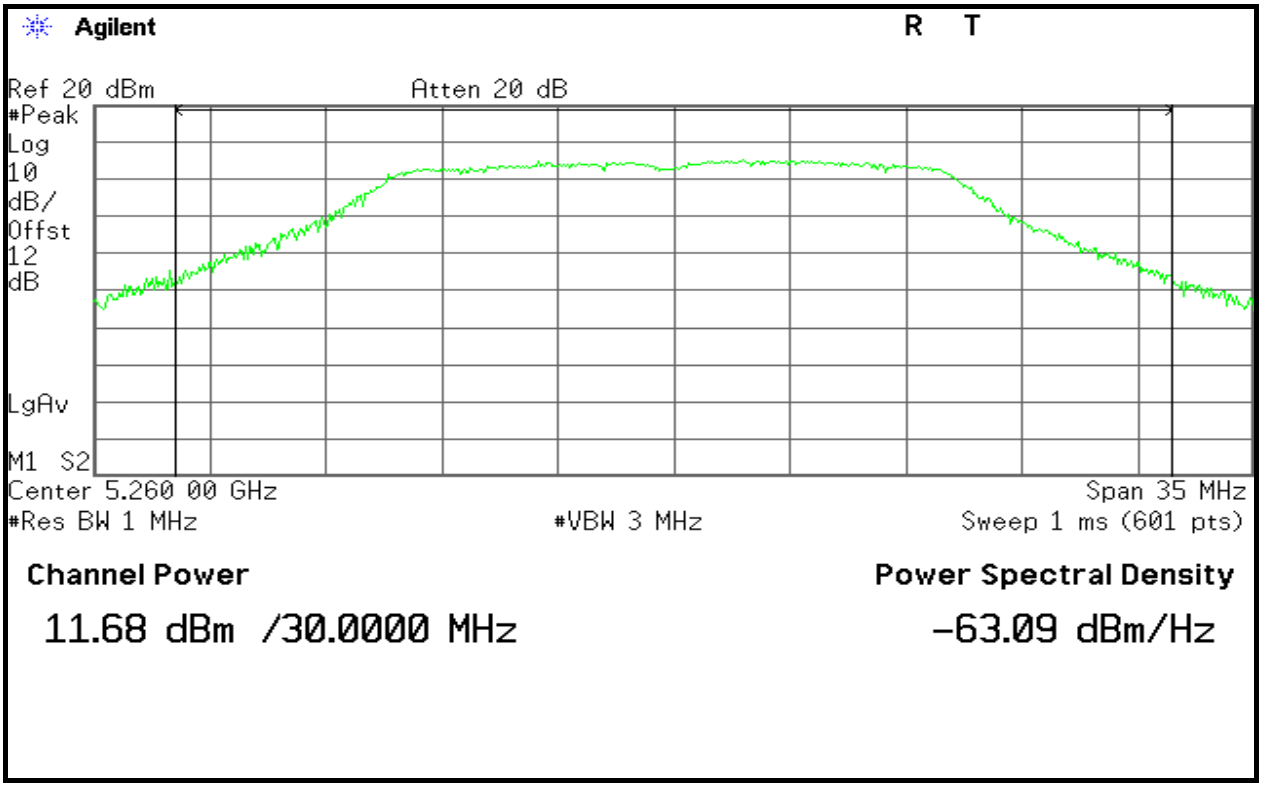
CH High



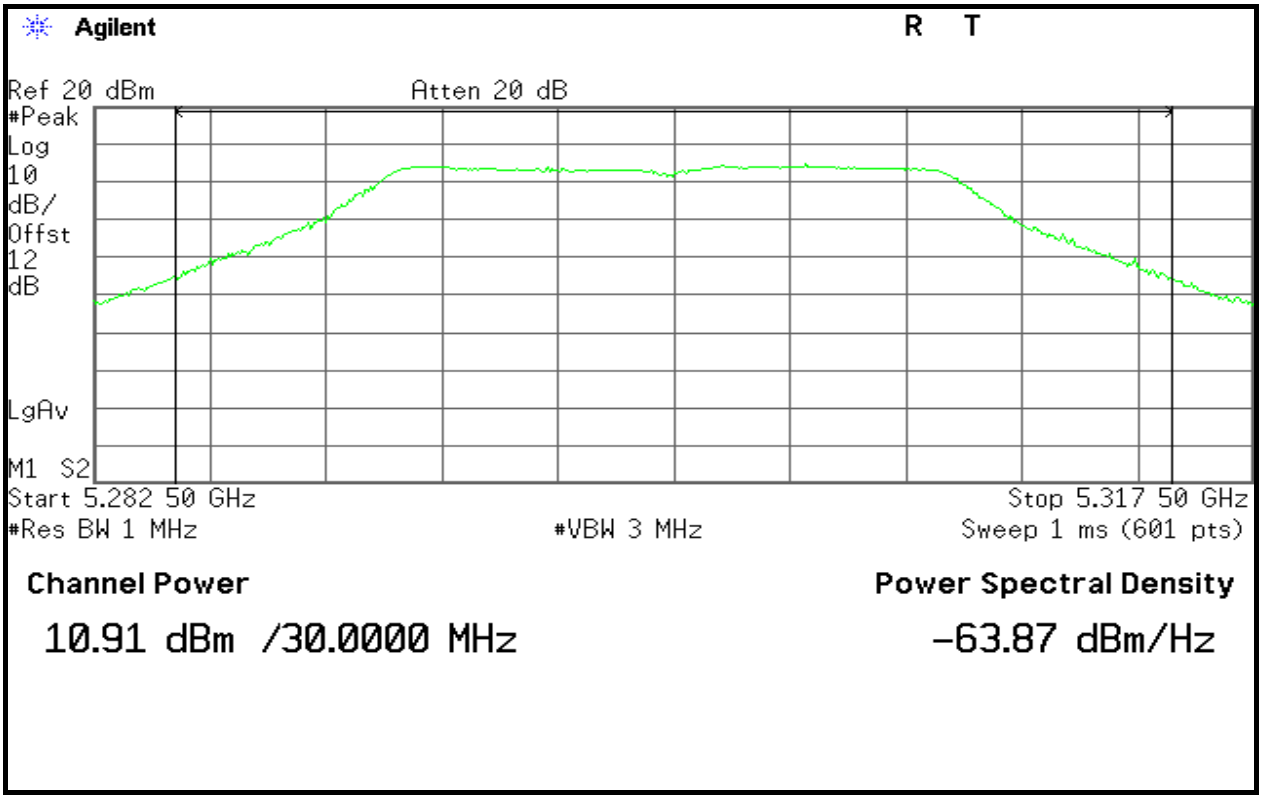
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 2:

5250~5350MHz

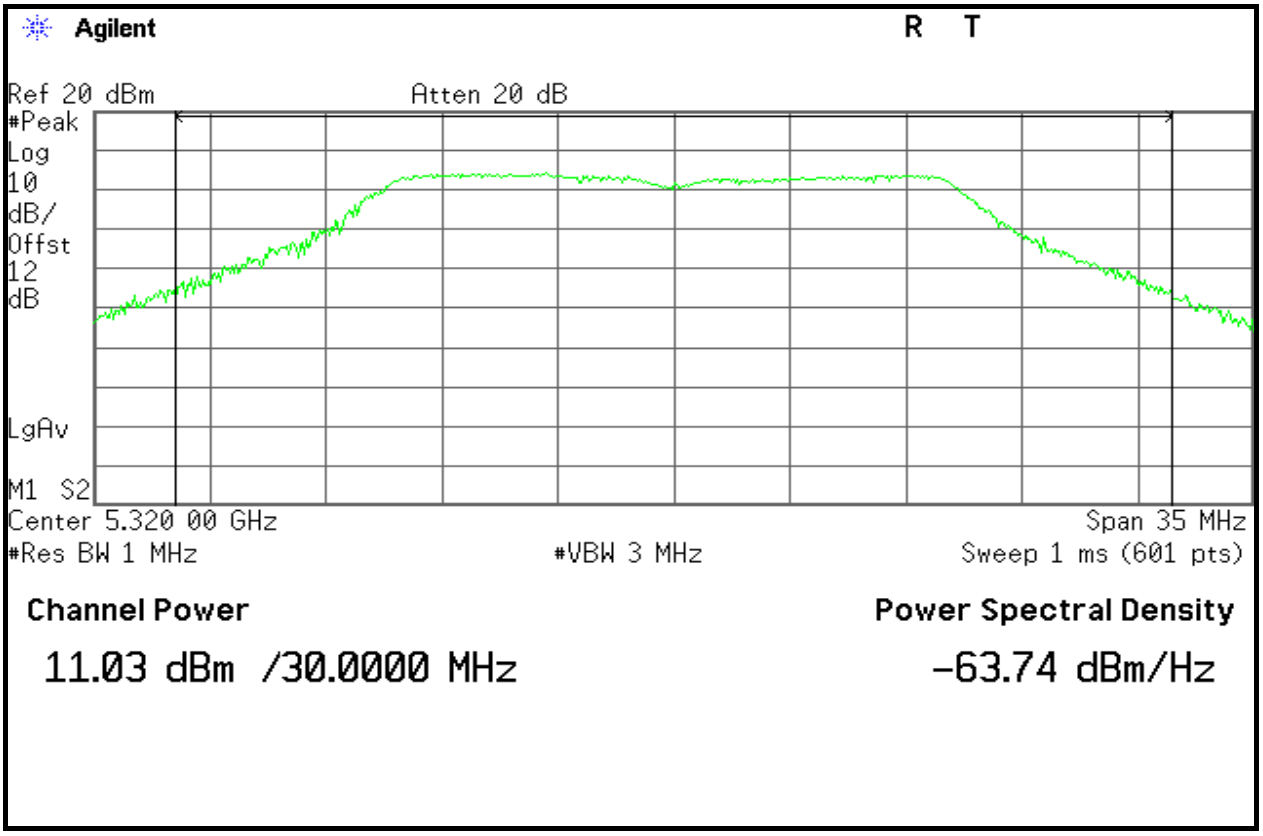
CH Low



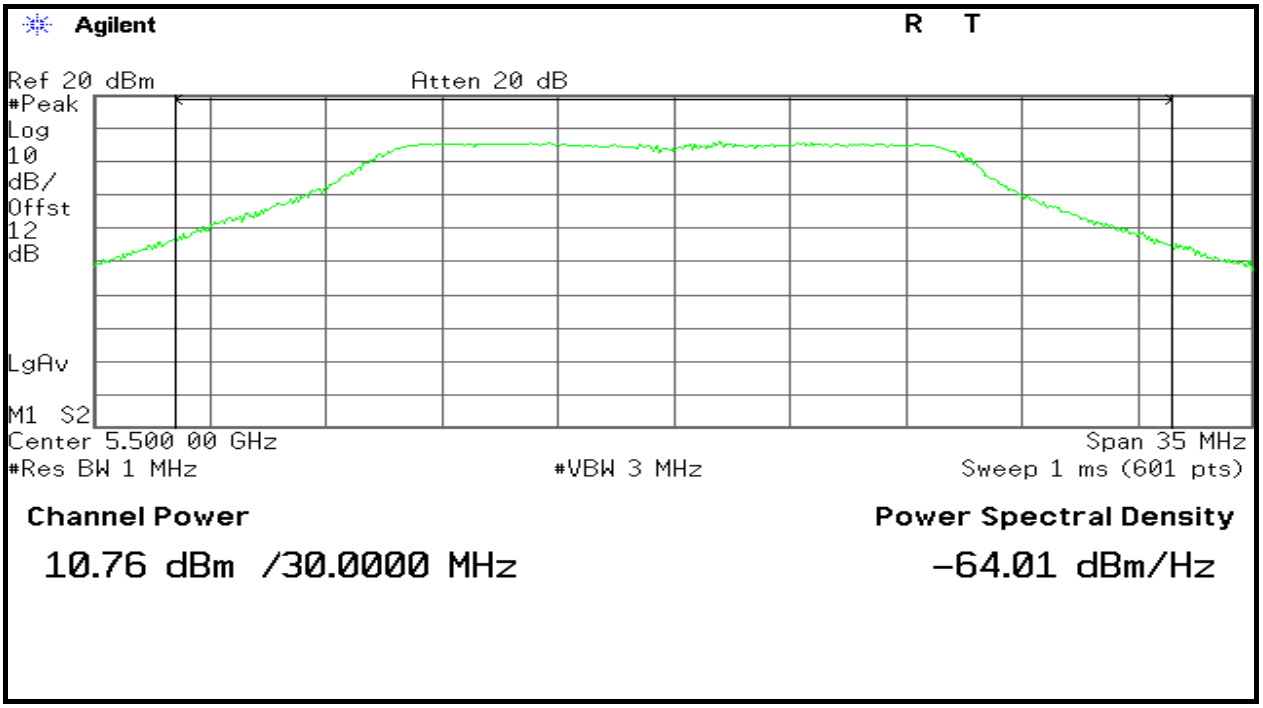
CH Mid



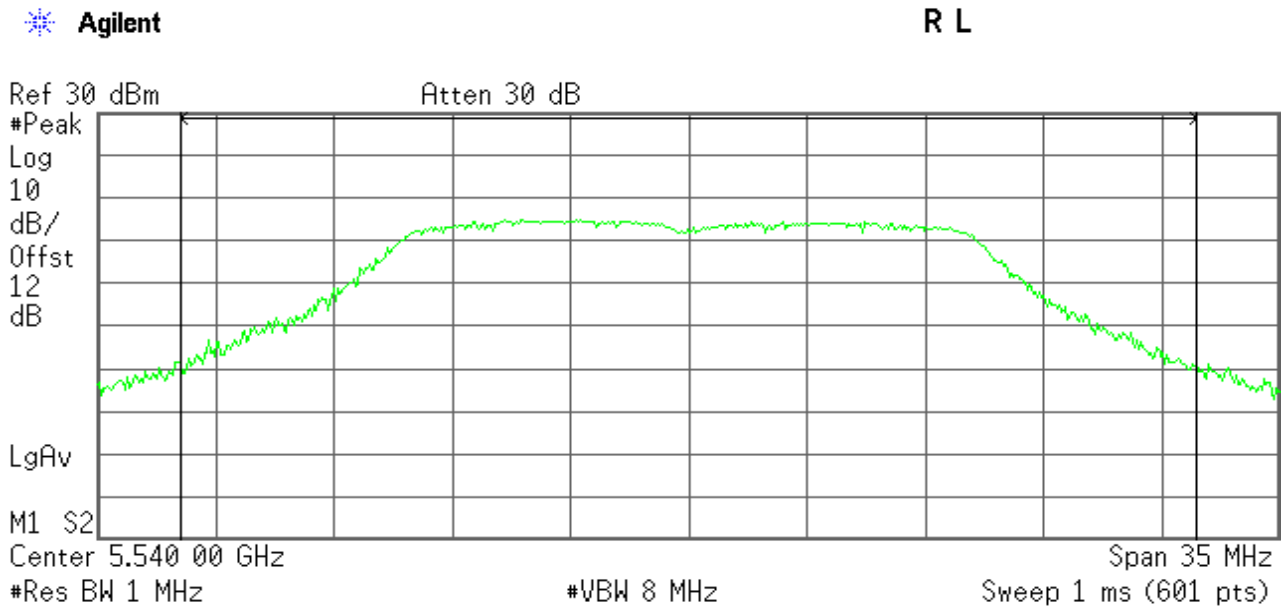
CH High



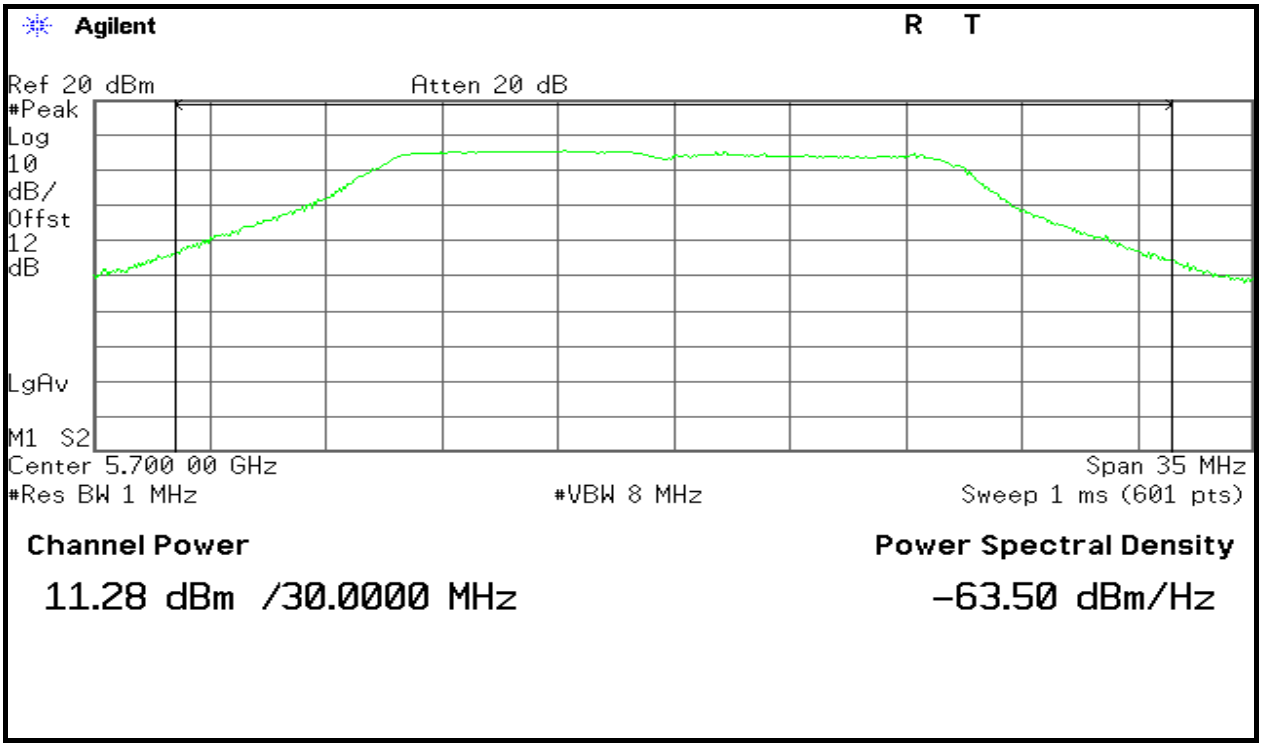
5470~5725MHz
CH Low



CH Mid



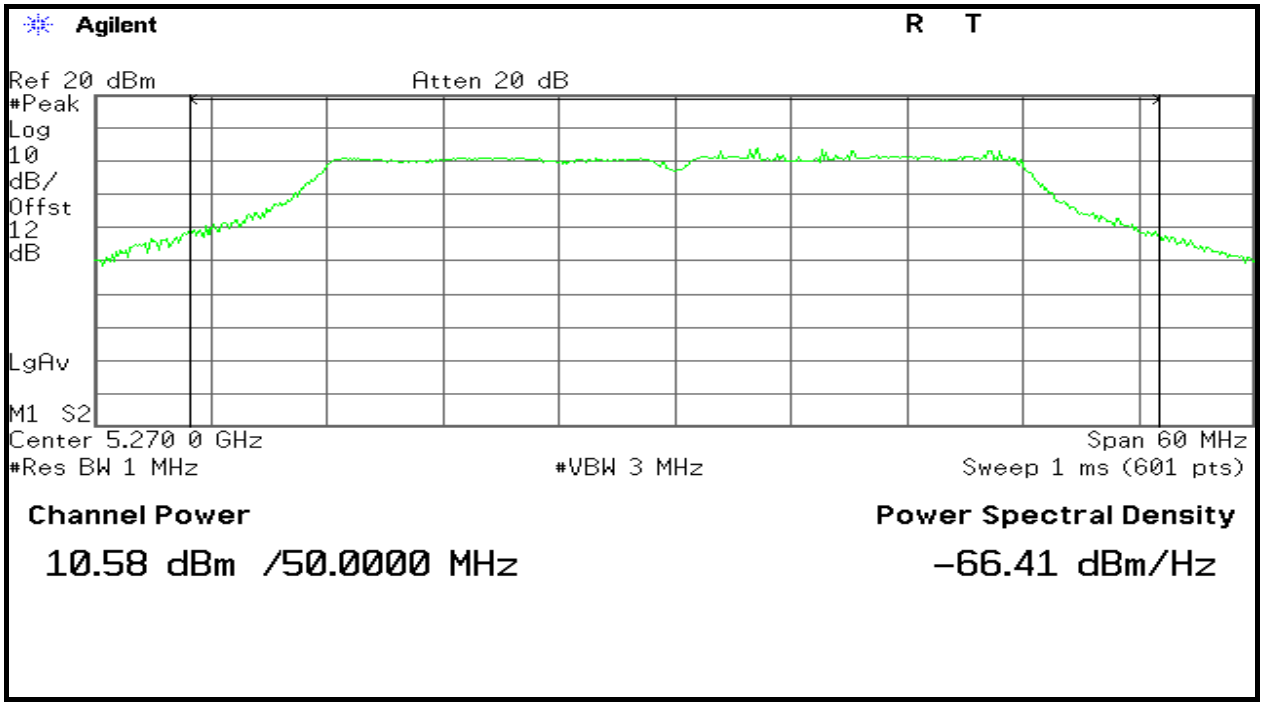
CH High



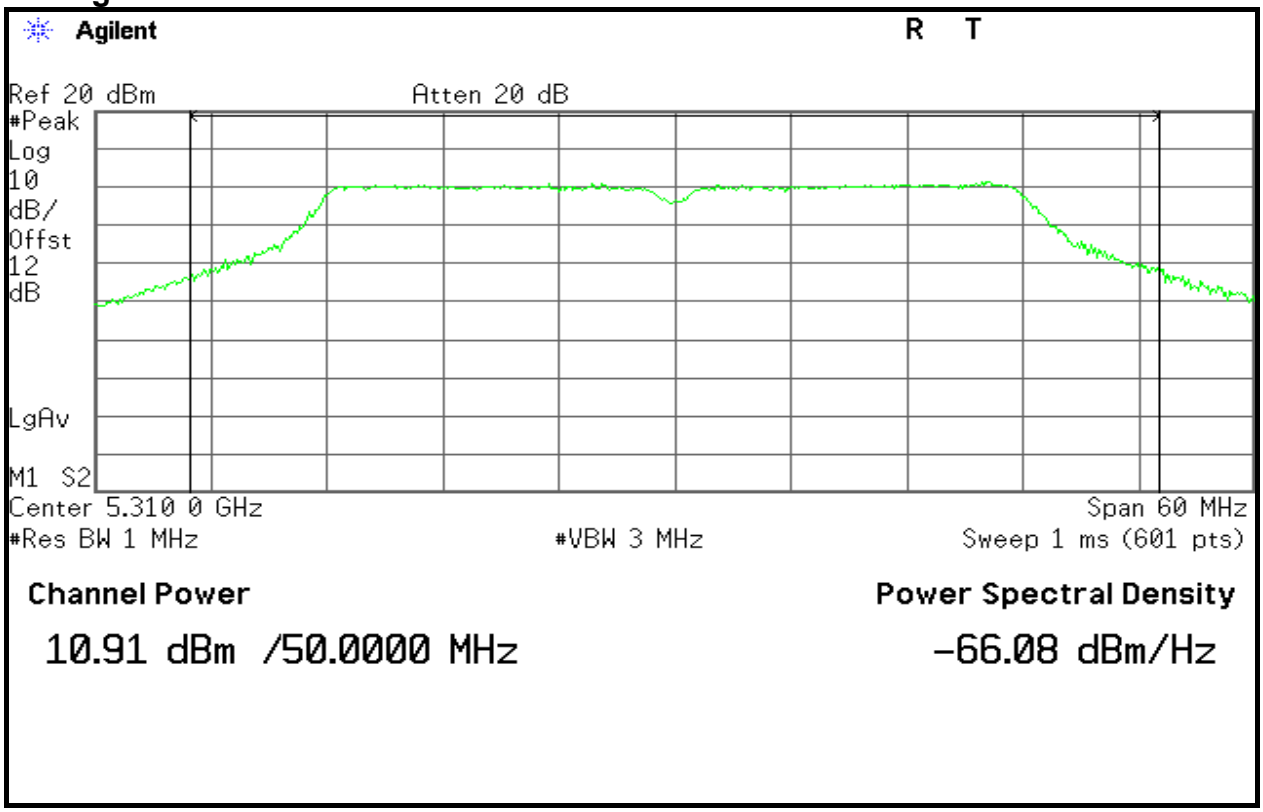
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 0:

5250~5350MHz

CH Low

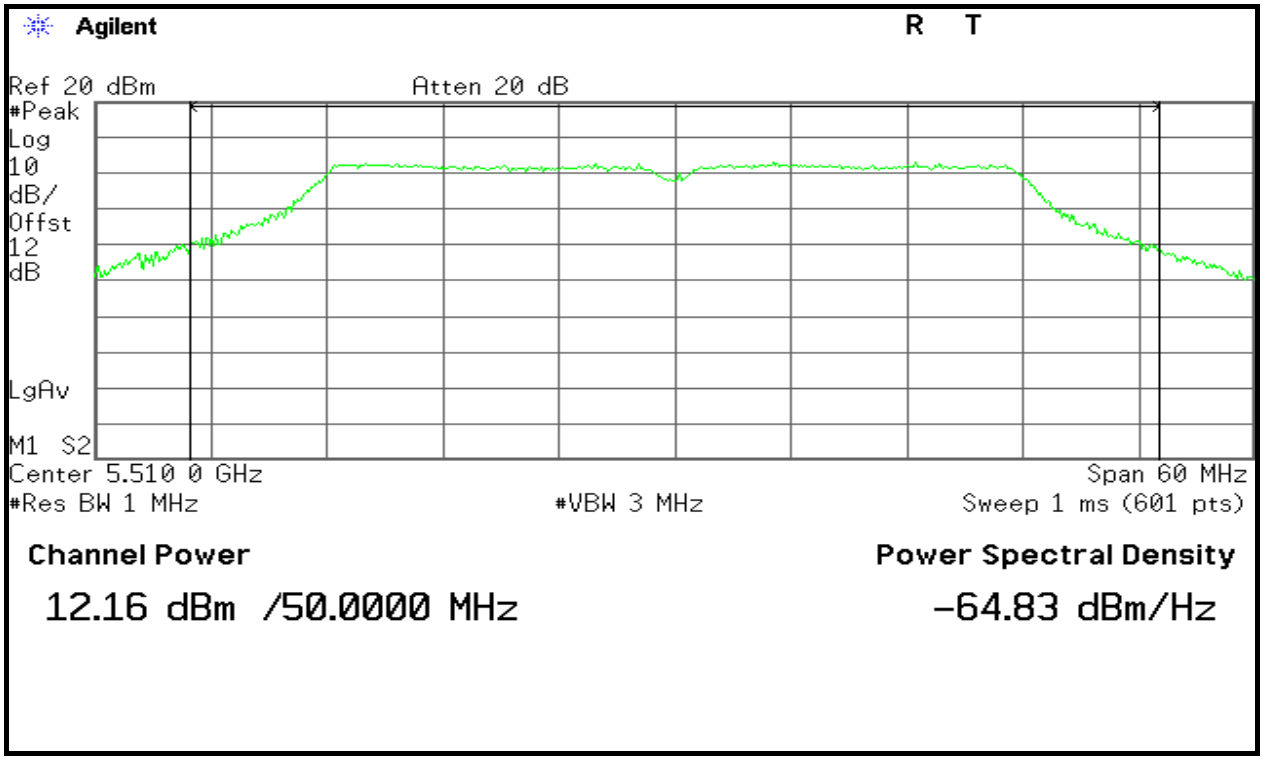


CH High

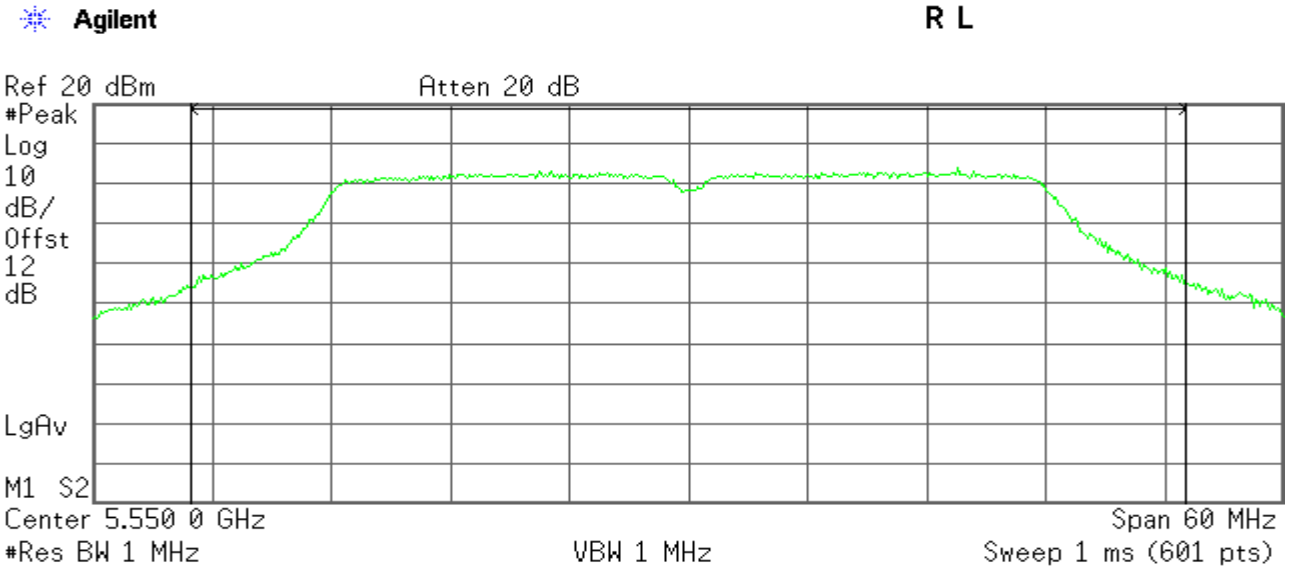


5470~5725MHz

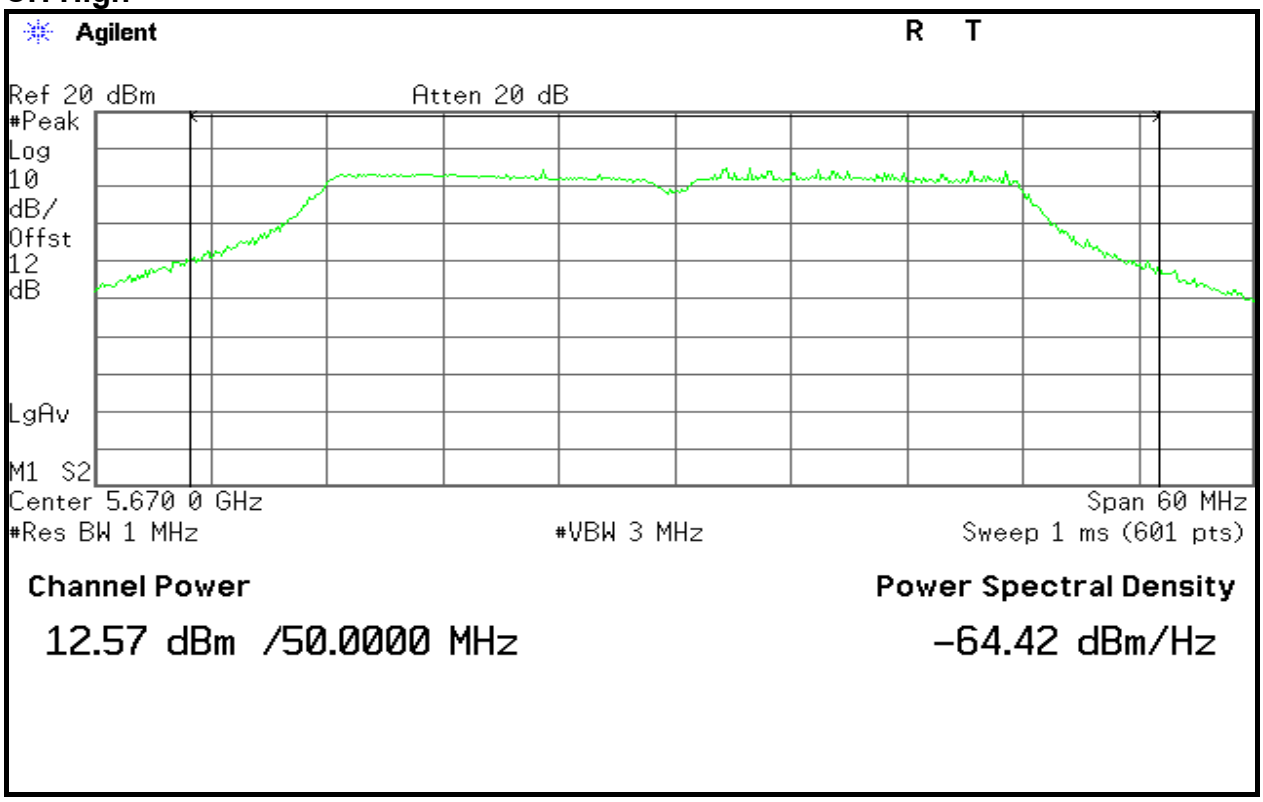
CH Low



CH Mid



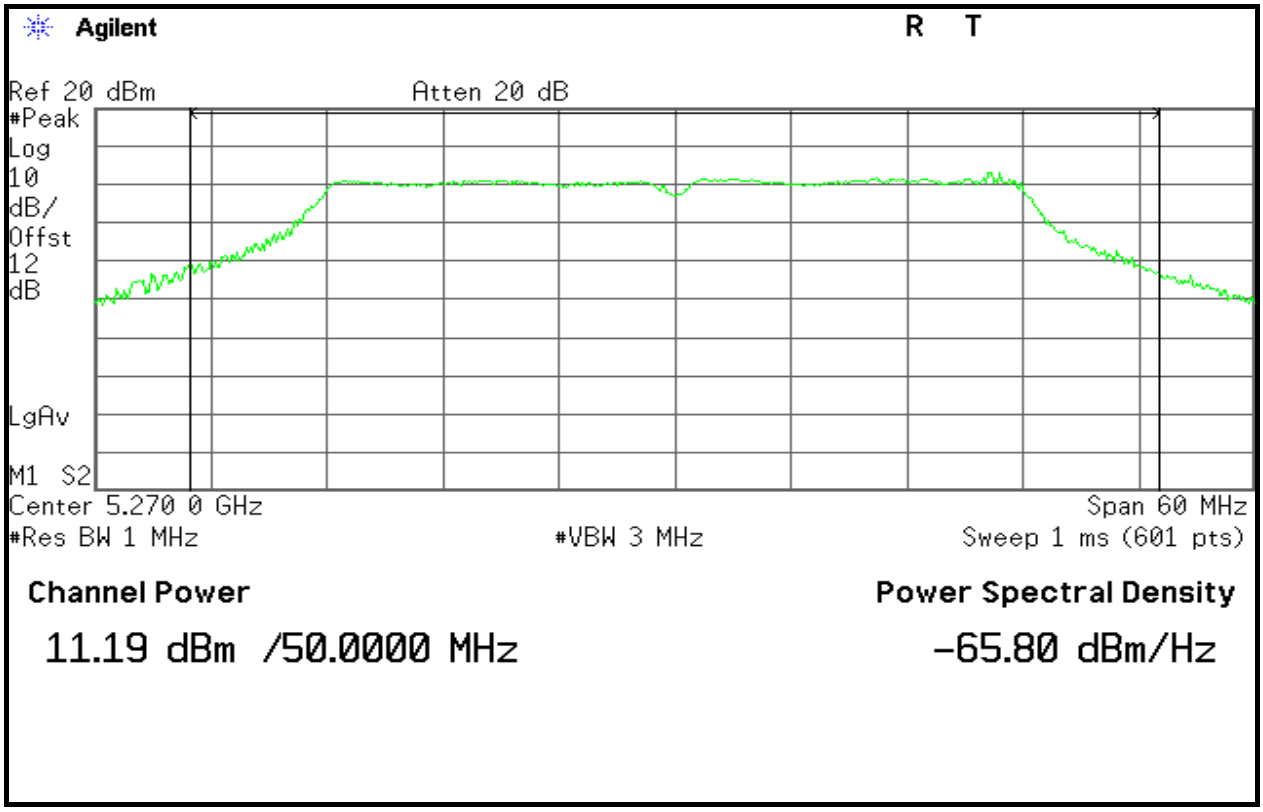
CH High



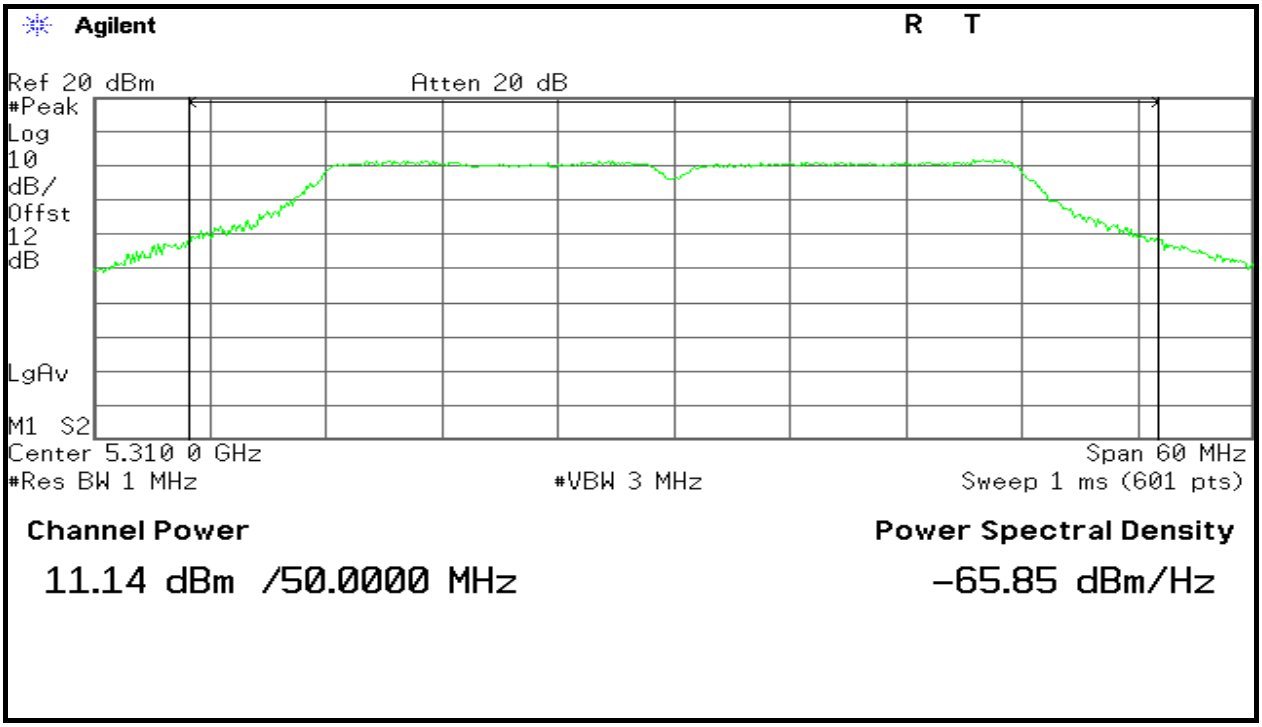
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 1:

5250~5350MHz

CH Low

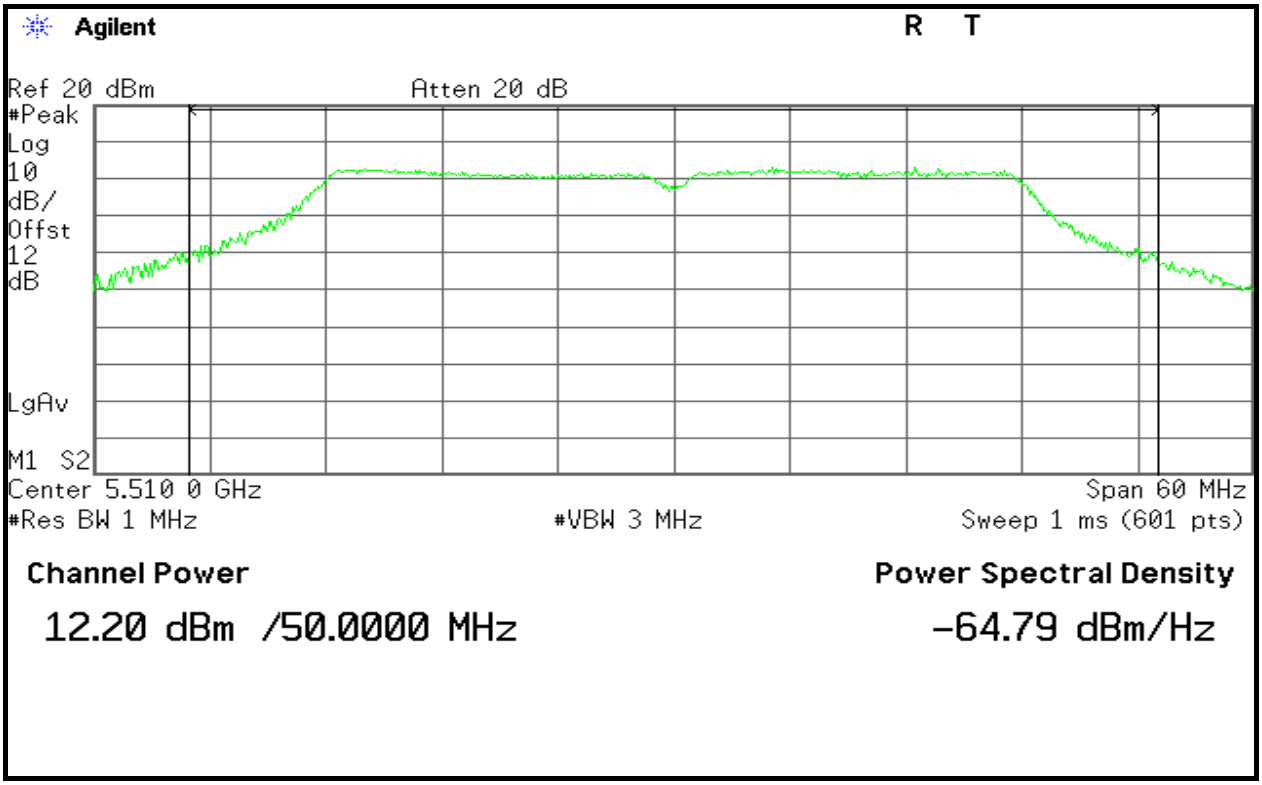


CH High

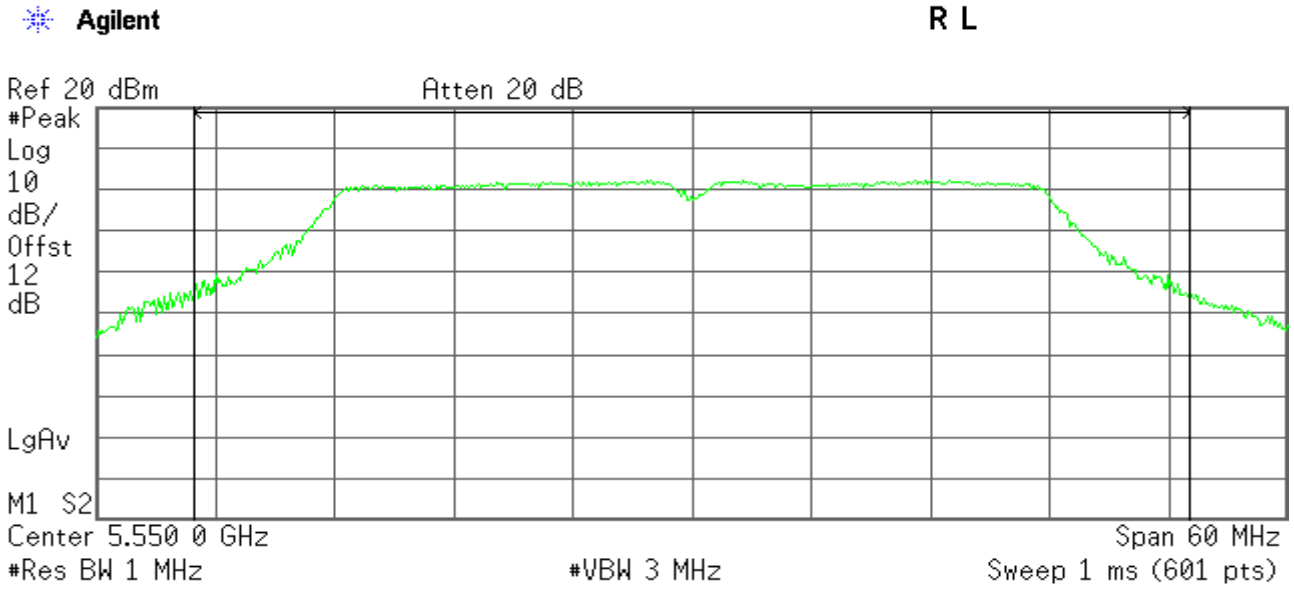


5470~5725MHz

CH Low



CH Mid



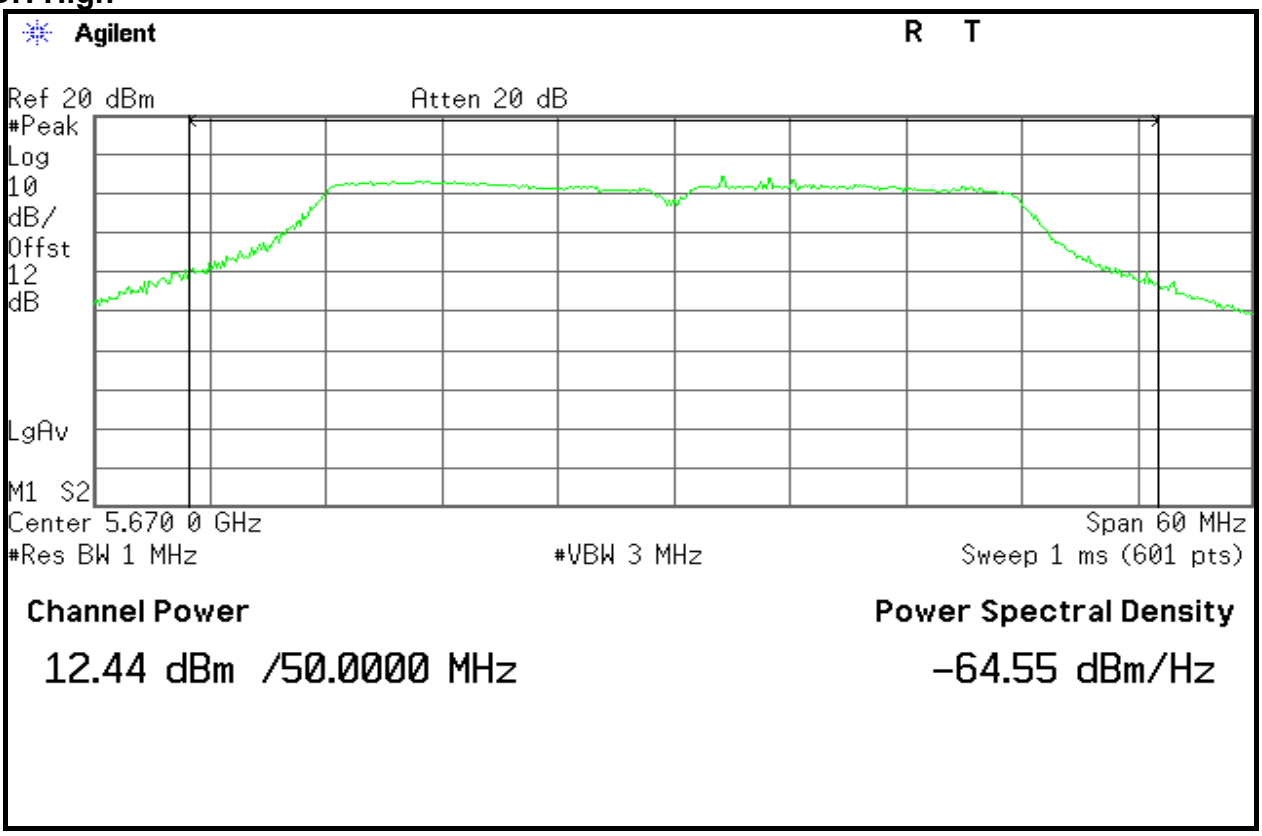
Channel Power

12.22 dBm /50.0000 MHz

Power Spectral Density

-64.77 dBm/Hz

CH High



Channel Power

12.44 dBm /50.0000 MHz

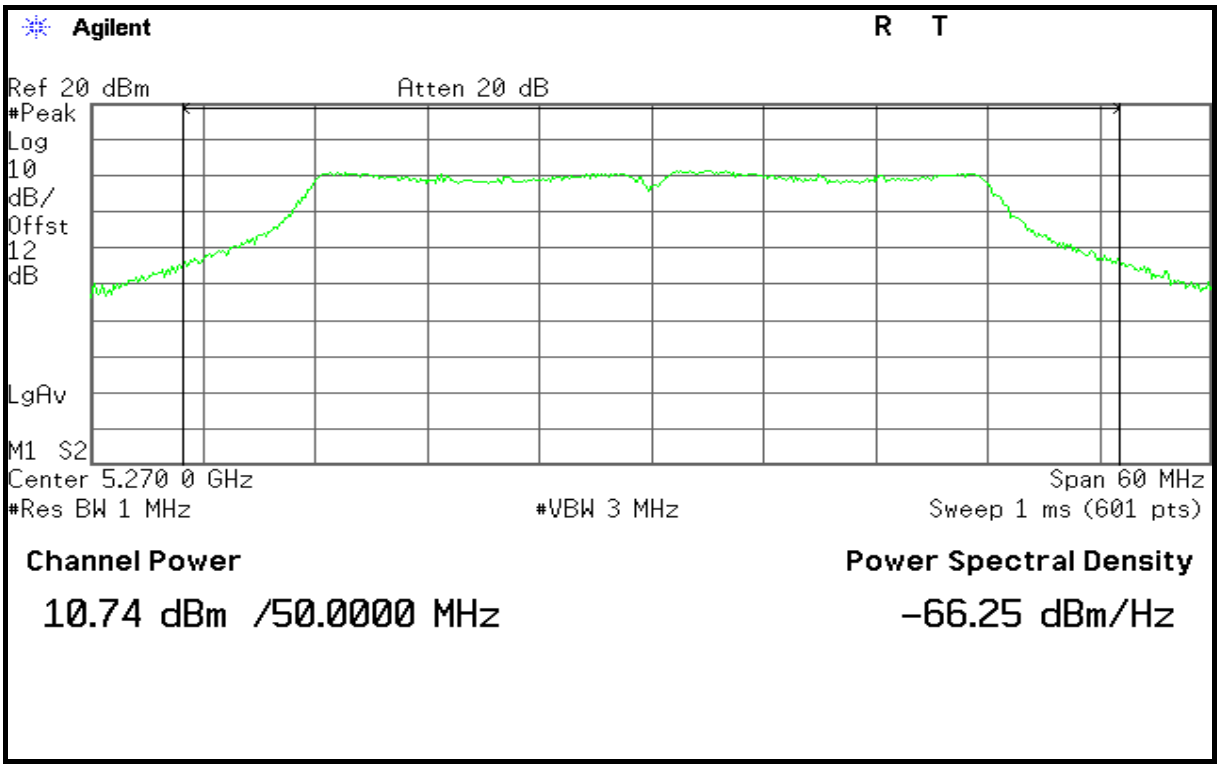
Power Spectral Density

-64.55 dBm/Hz

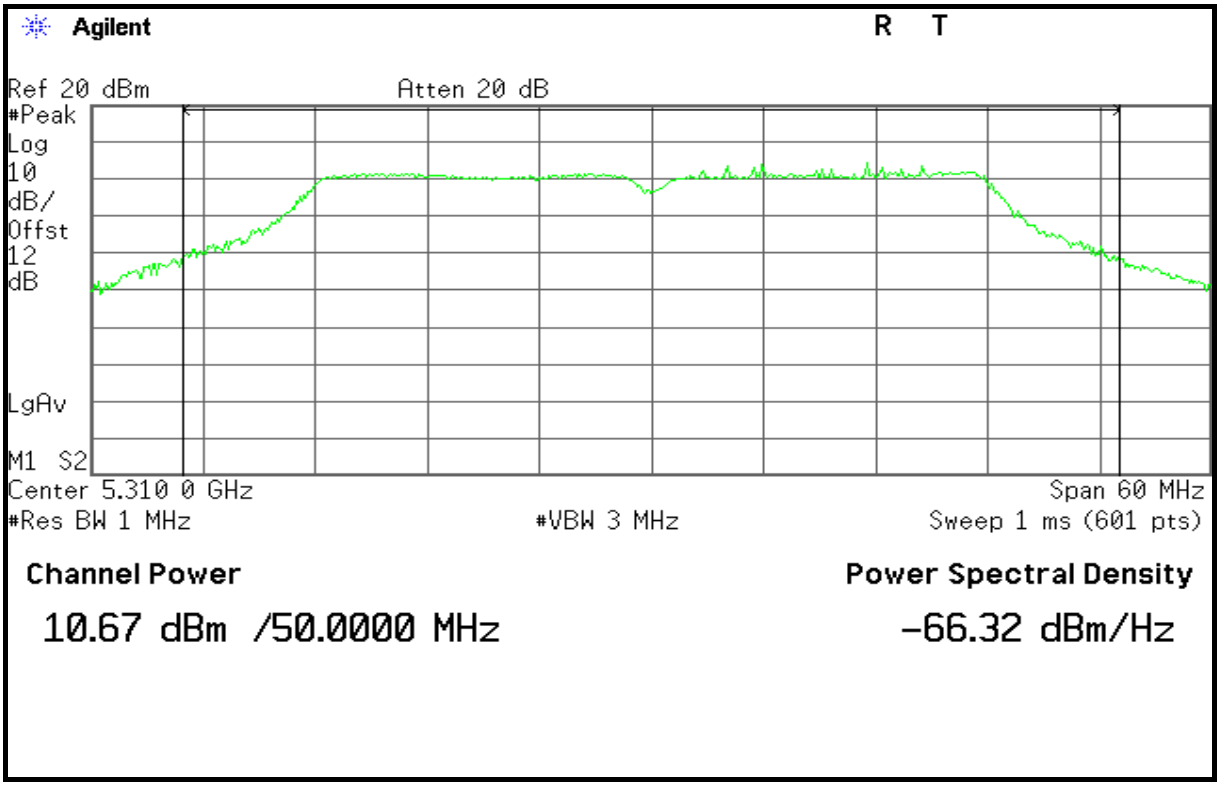
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 2:

5250~5350MHz

CH Low

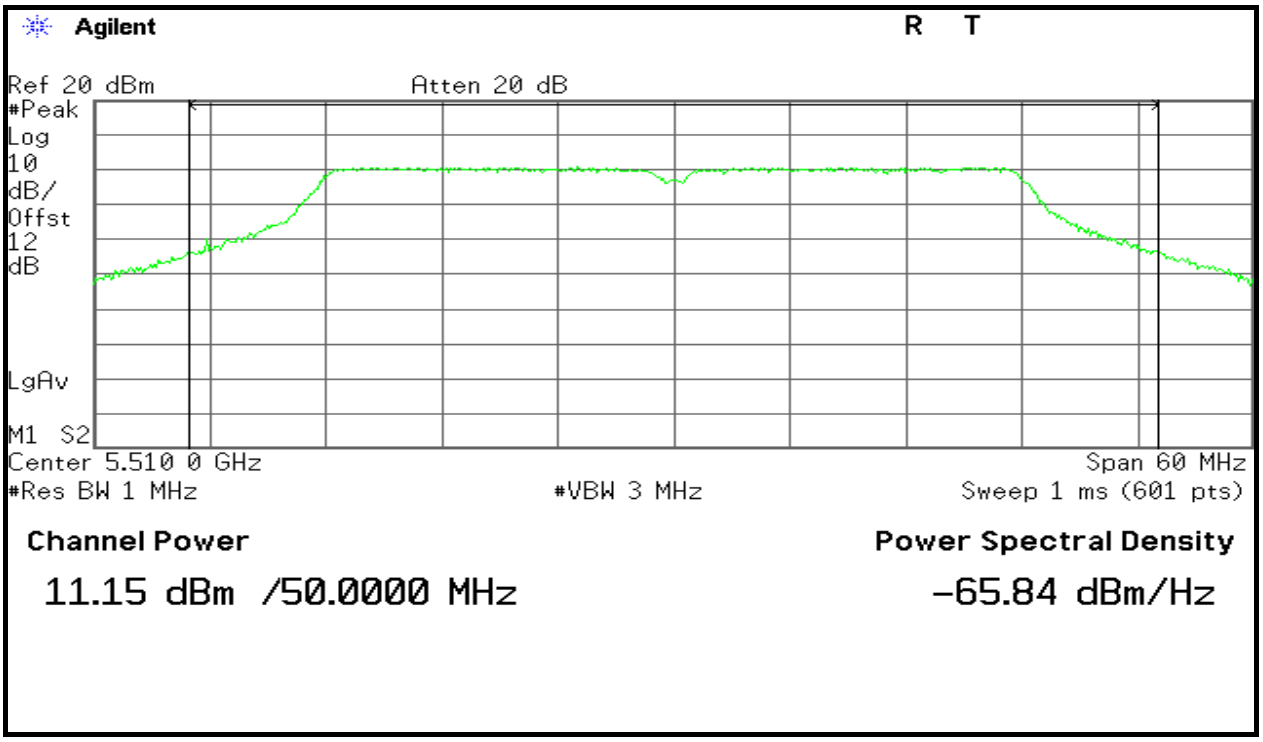


CH High

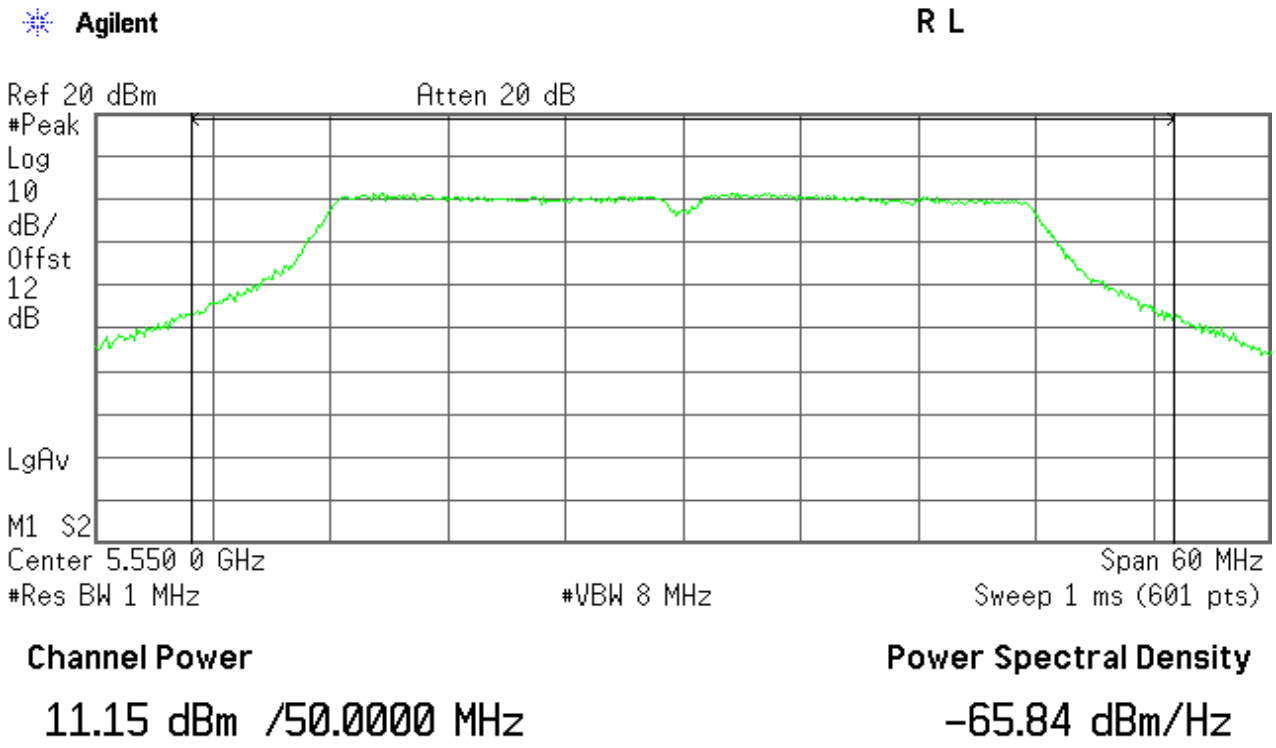


5470~5725MHz

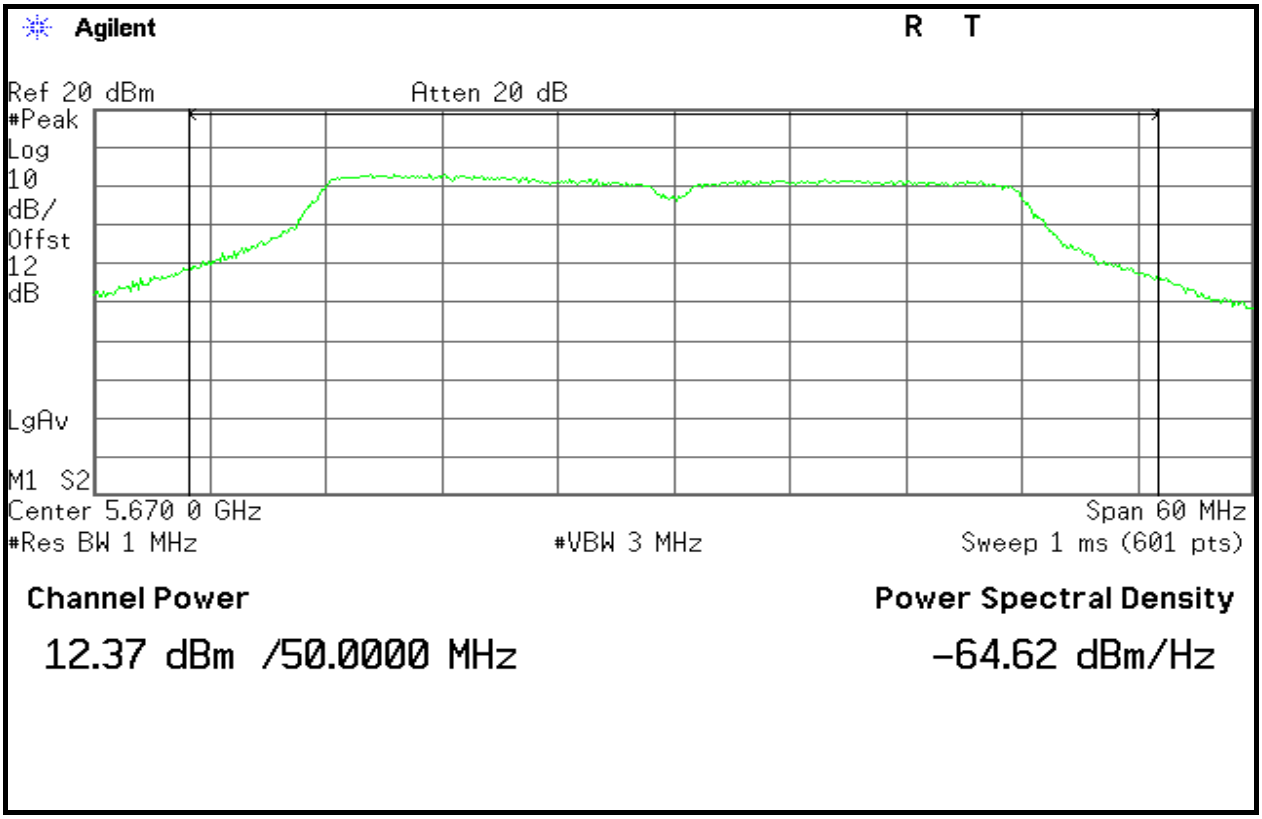
CH Low



CH Mid



CH High

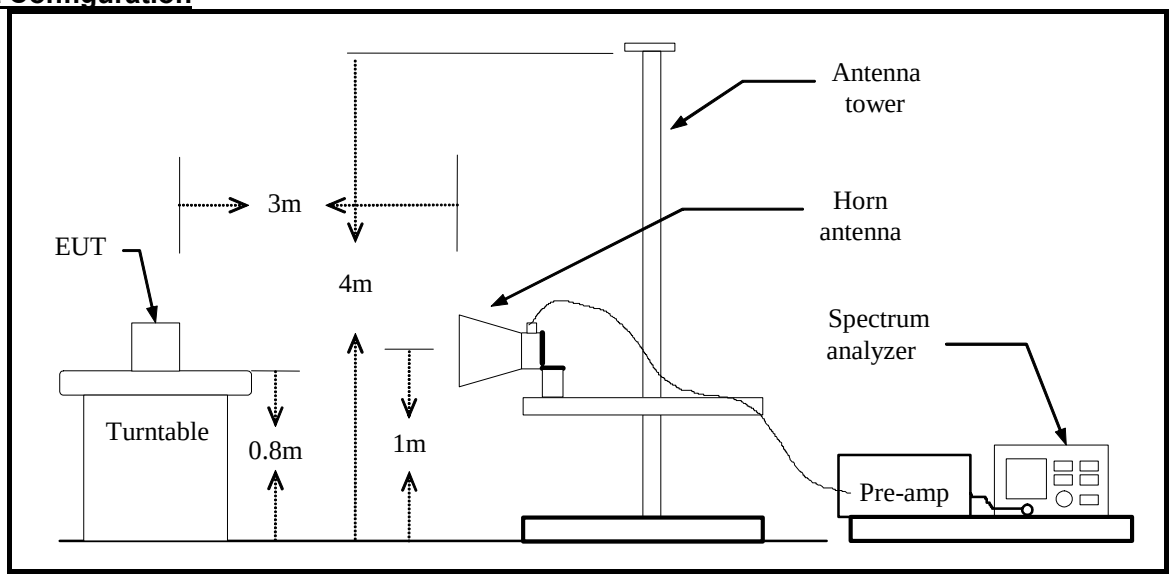


7.3 BAND EDGES MEASUREMENT

LIMIT

According to §15.407(b),
(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

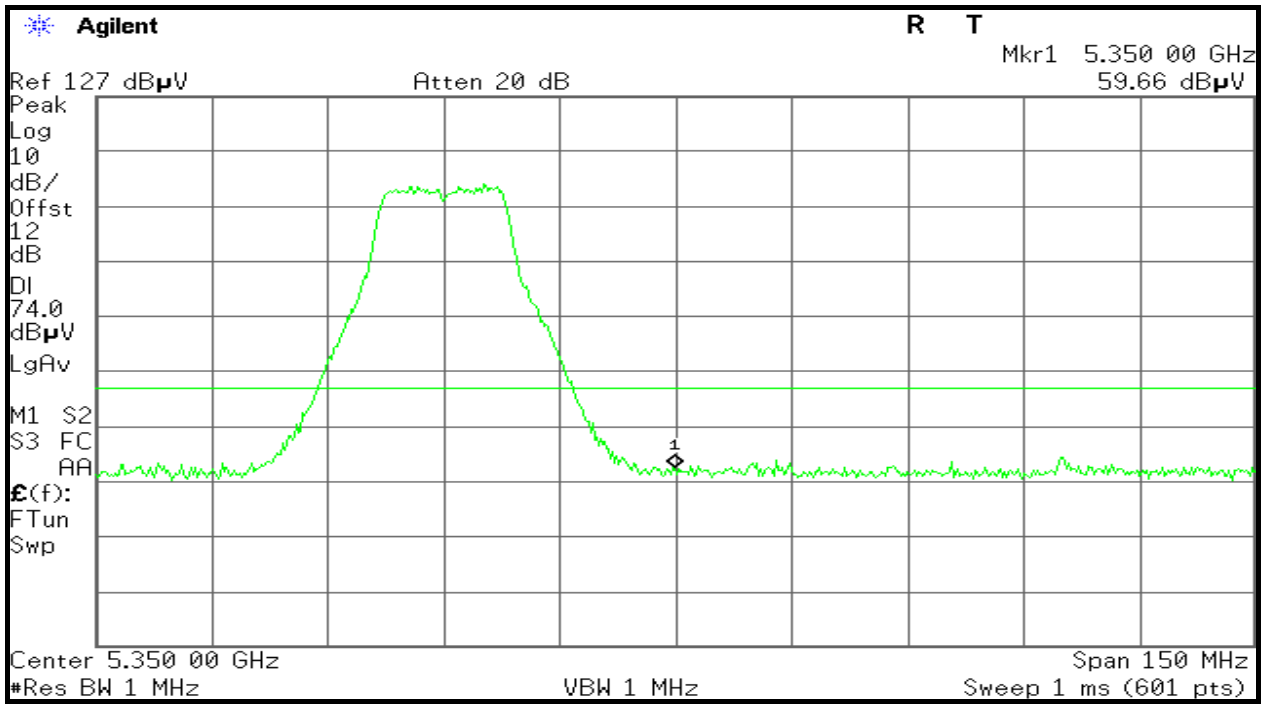
1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the 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=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

TEST RESULTS

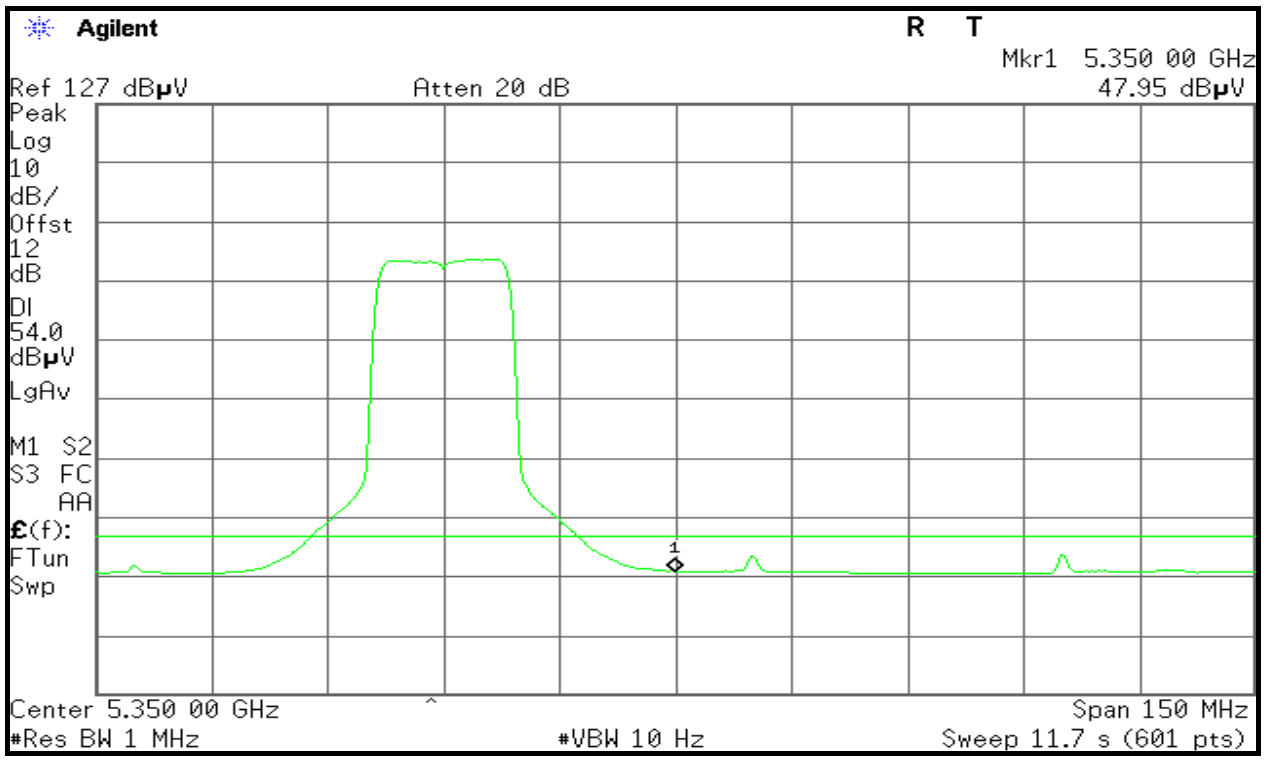
Refer to attach spectrum analyzer data chart.

Band Edges (802.11a mode 5320MHz)

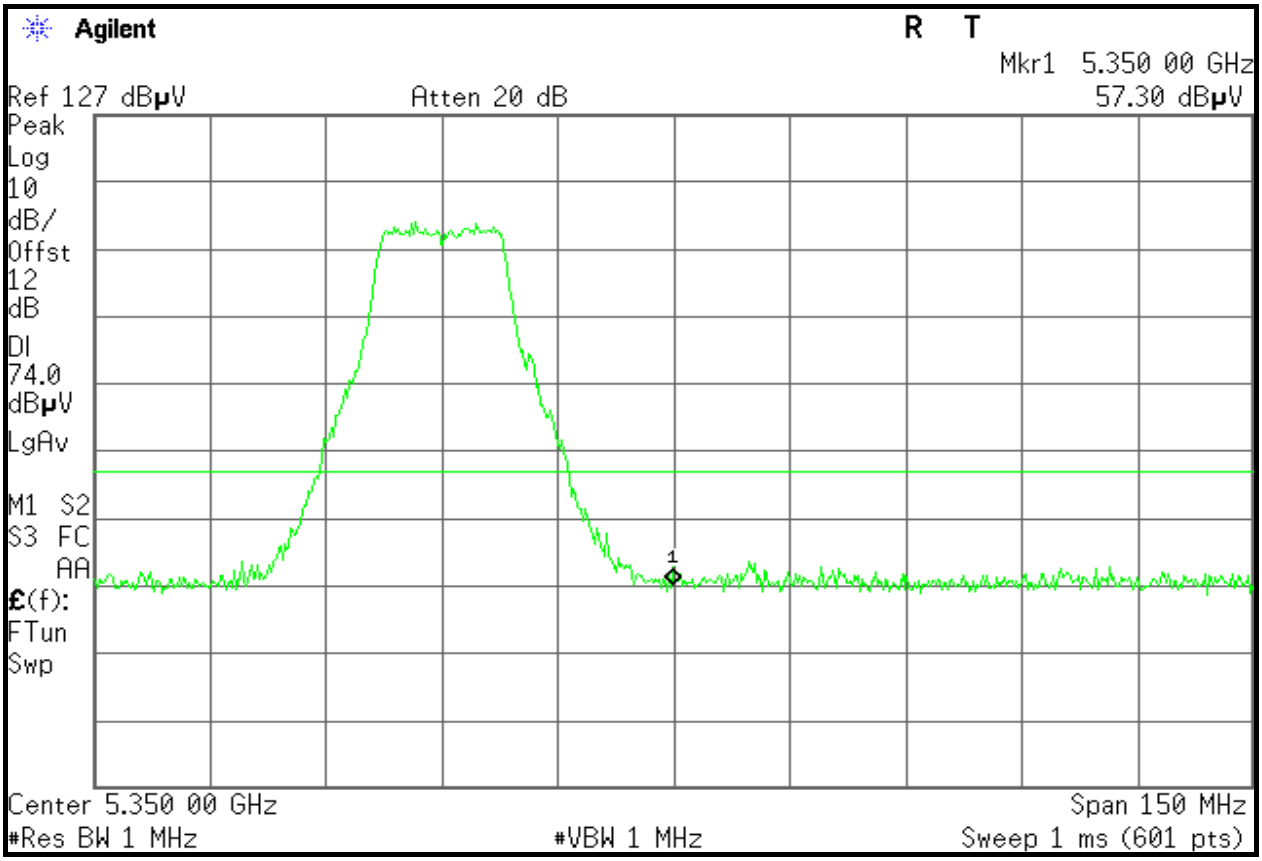
Detector mode: Peak **Polarity: Vertical**



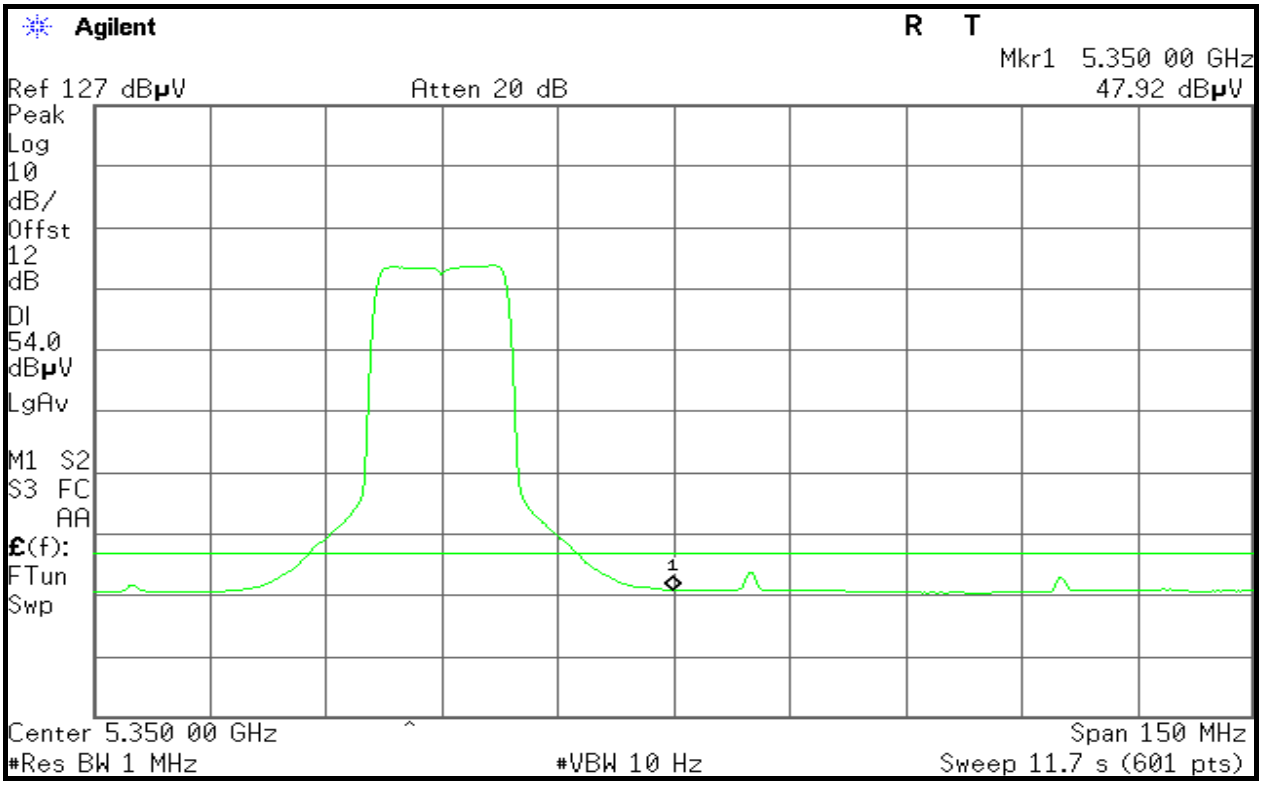
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

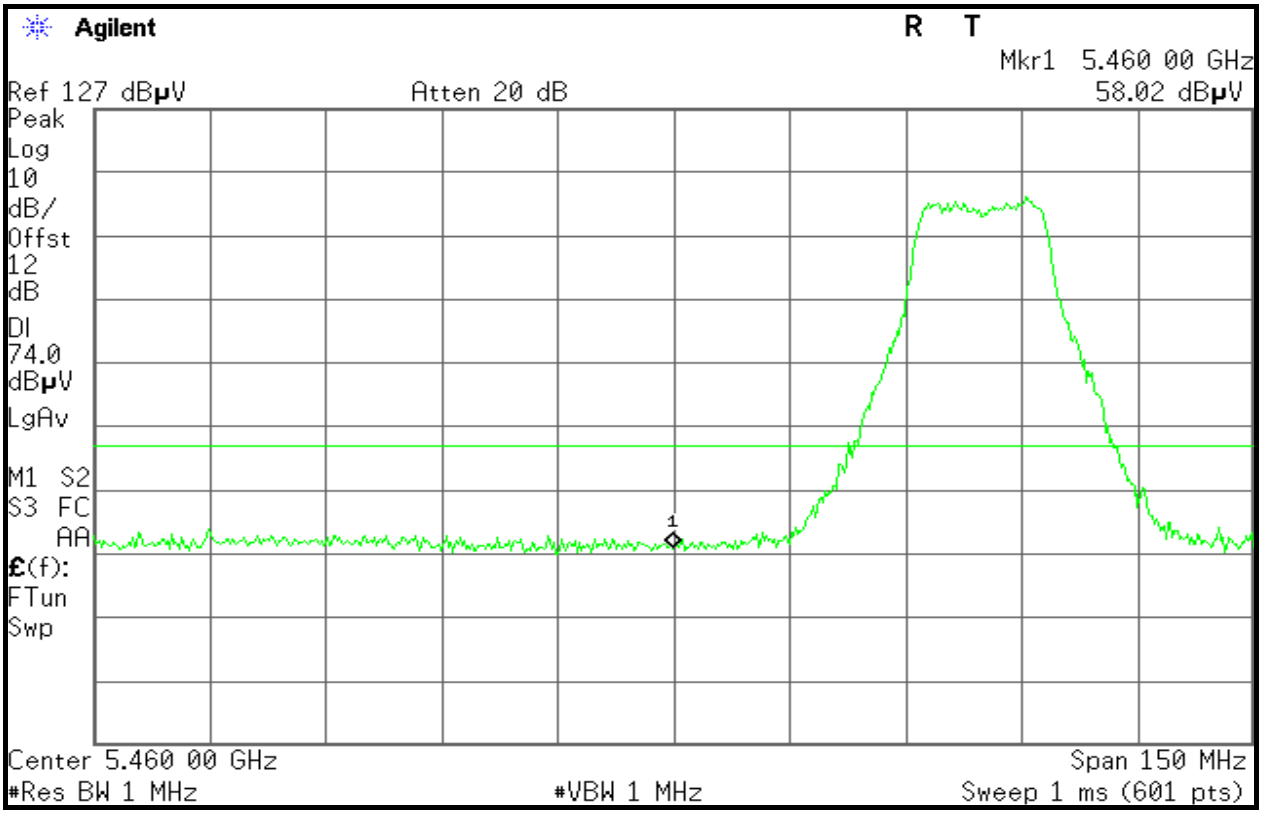


Detector mode: Average **Polarity: Horizontal**

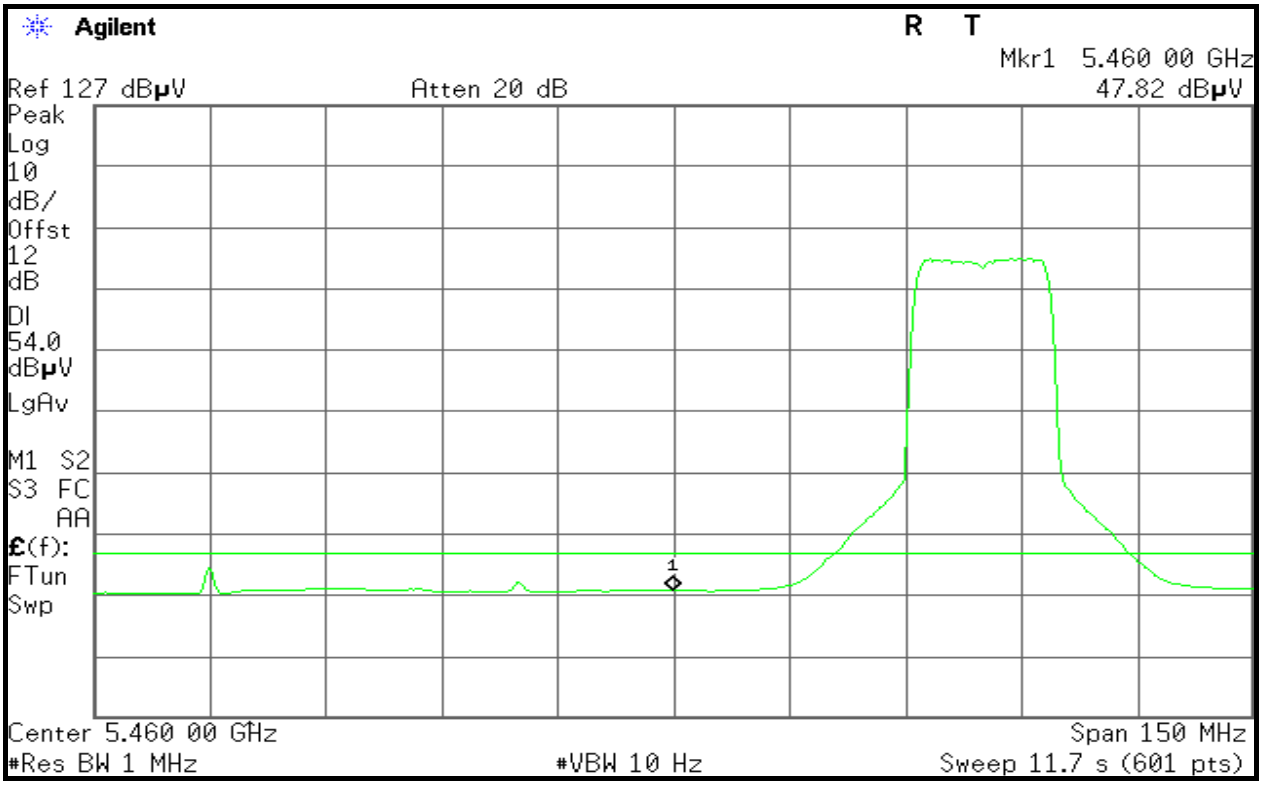


Band Edges (802.11a 5500MHz)

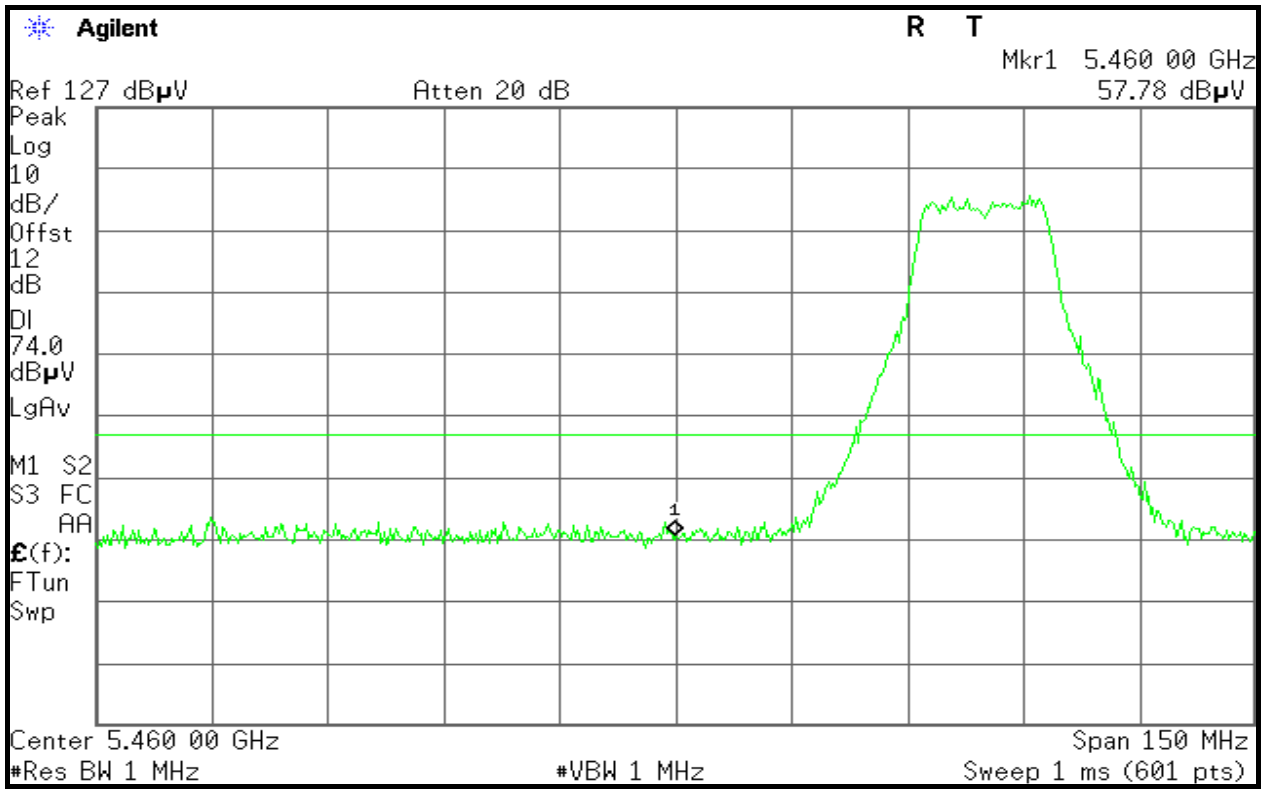
Detector mode: Peak **Polarity: Vertical**



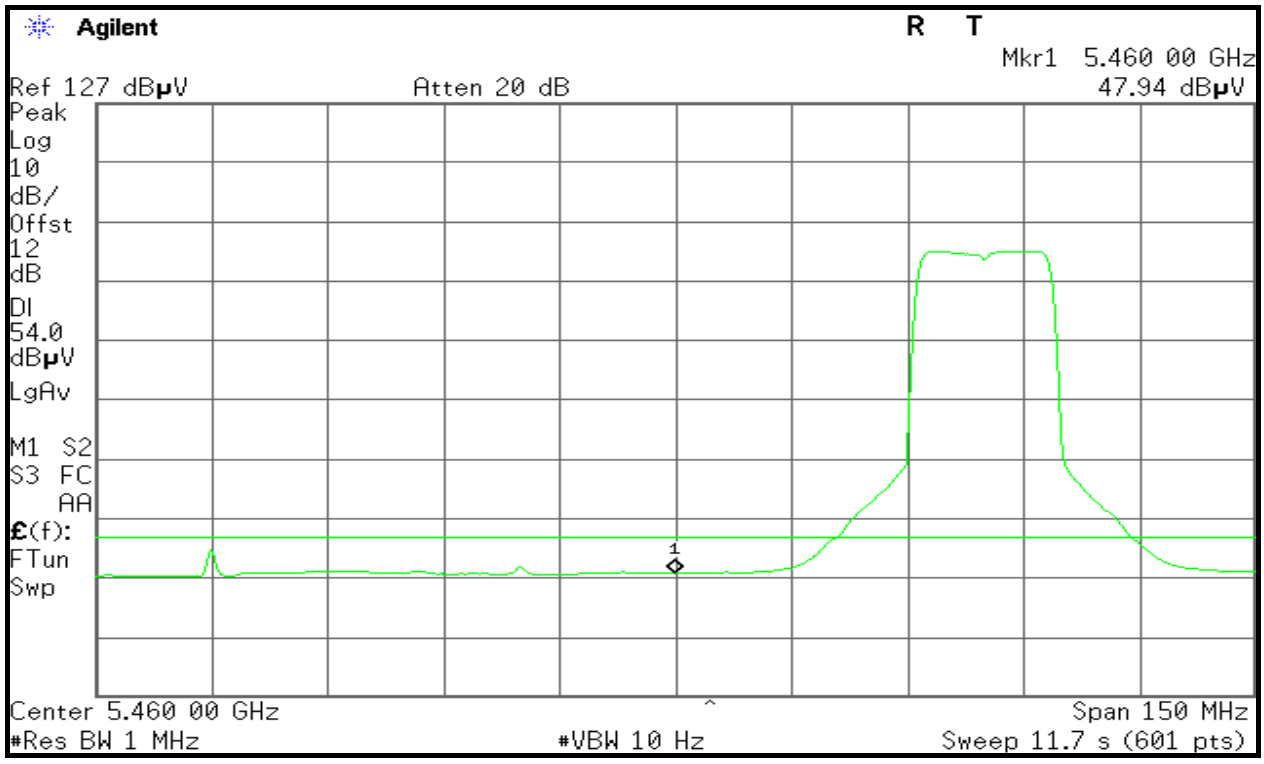
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

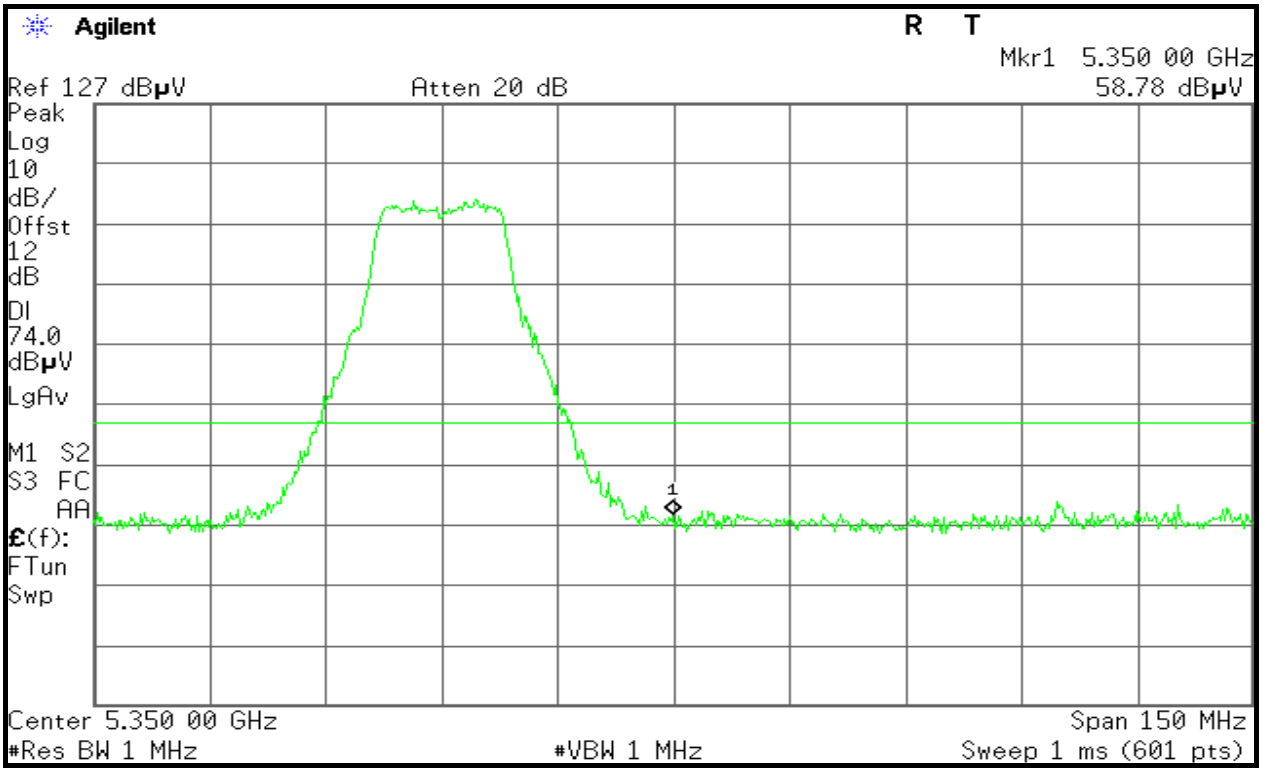


Detector mode: Average **Polarity: Horizontal**

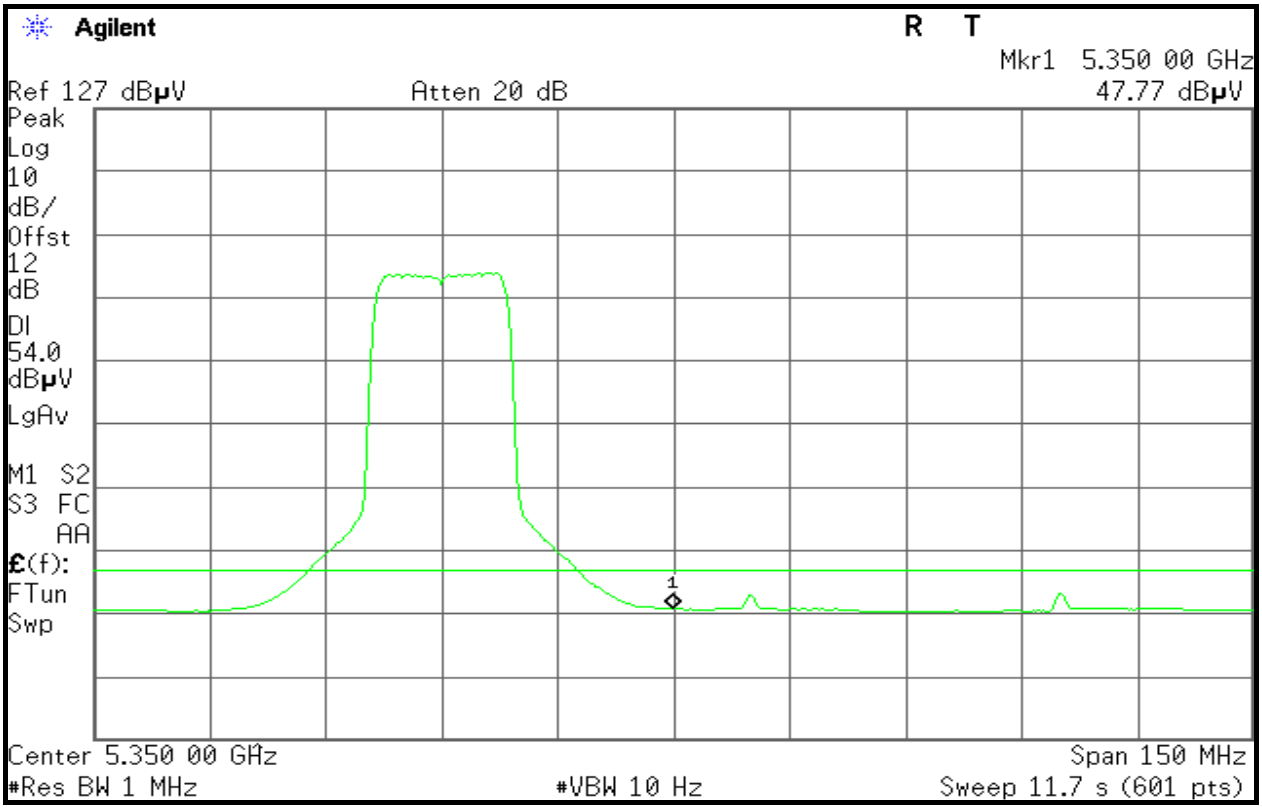


Band Edges (802.11n Standard-20 MHz Channel mode / 5320MHz)

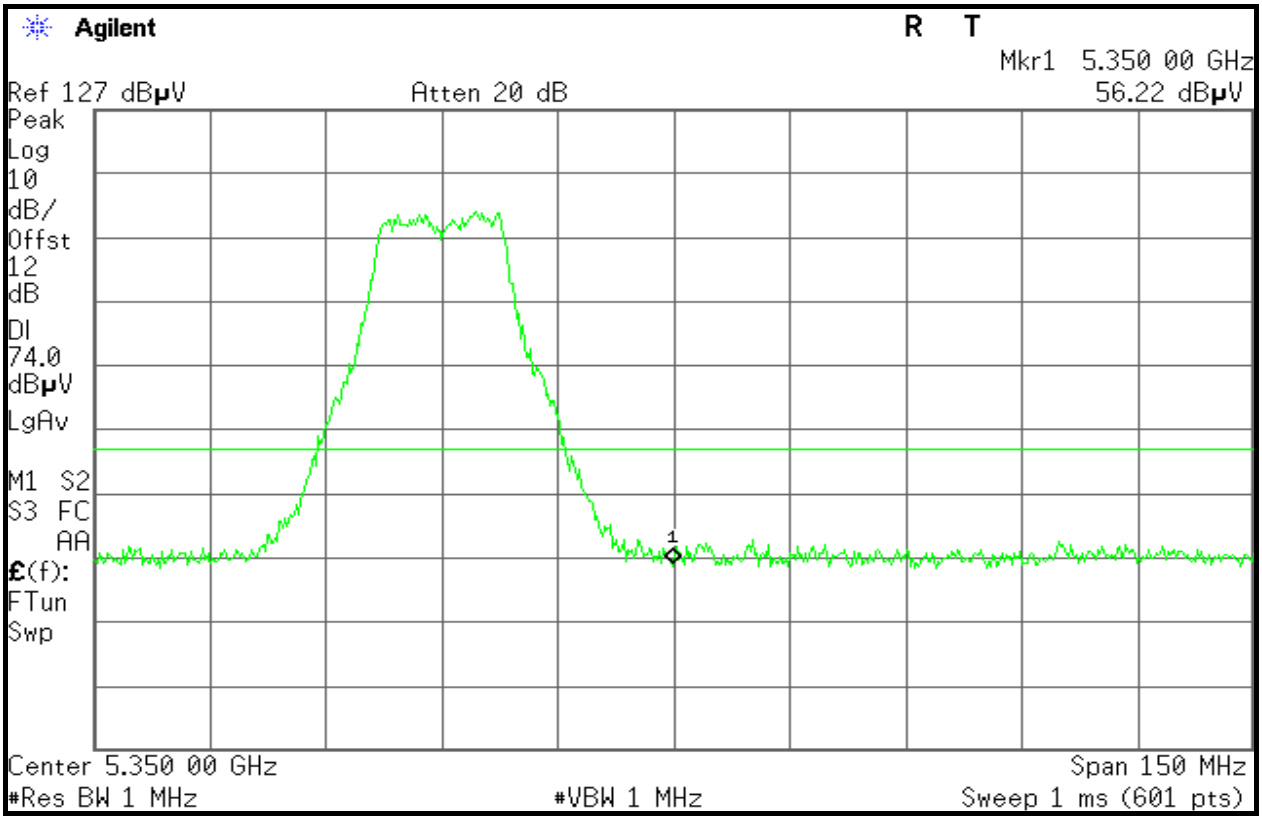
Detector mode: Peak **Polarity: Vertical**



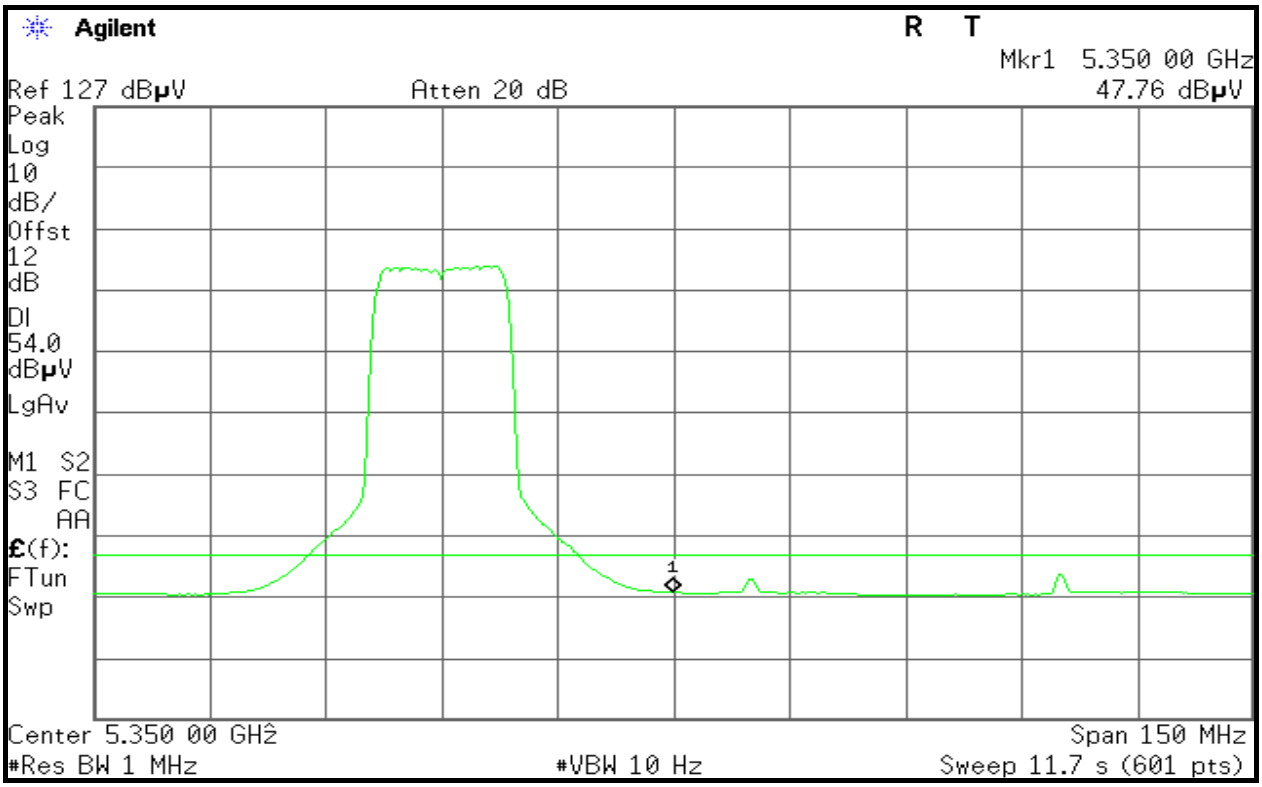
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

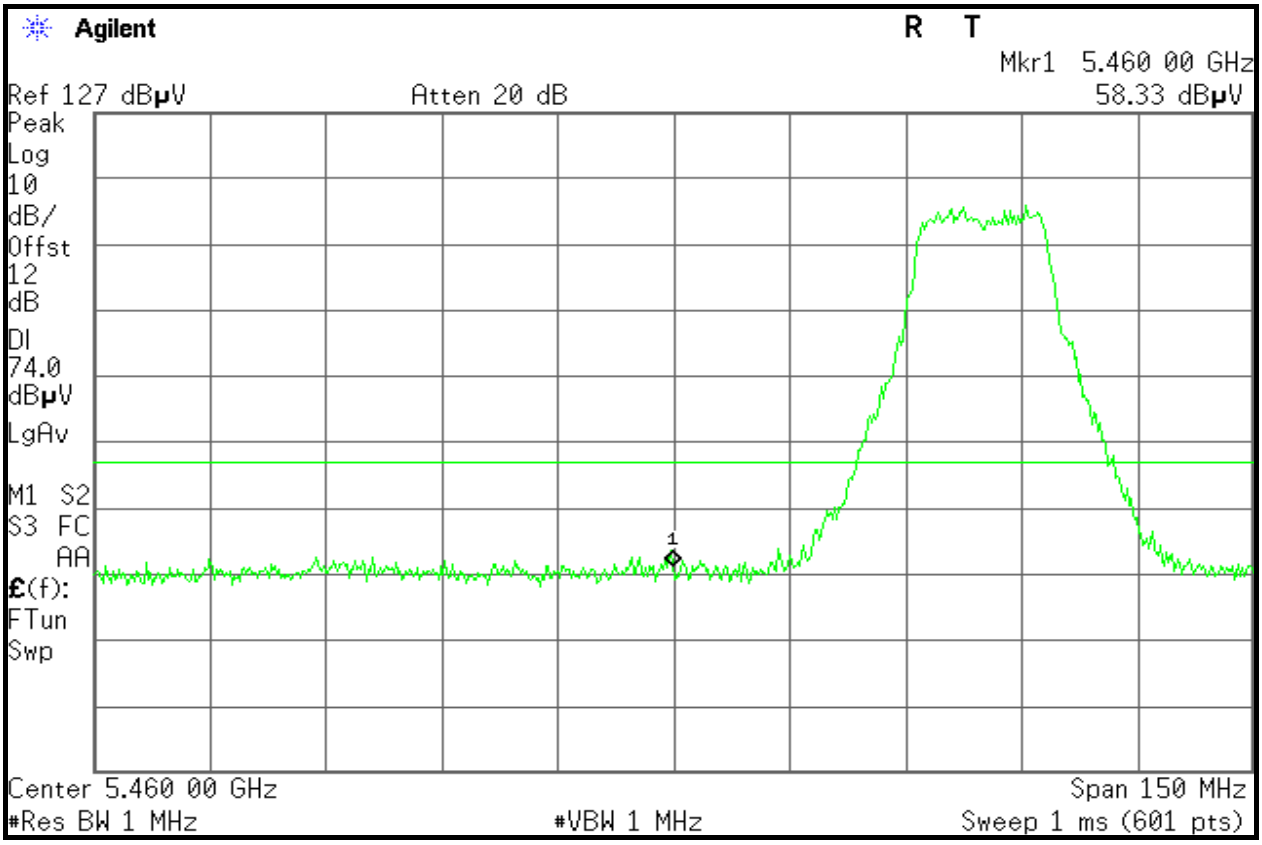


Detector mode: Average **Polarity: Horizontal**

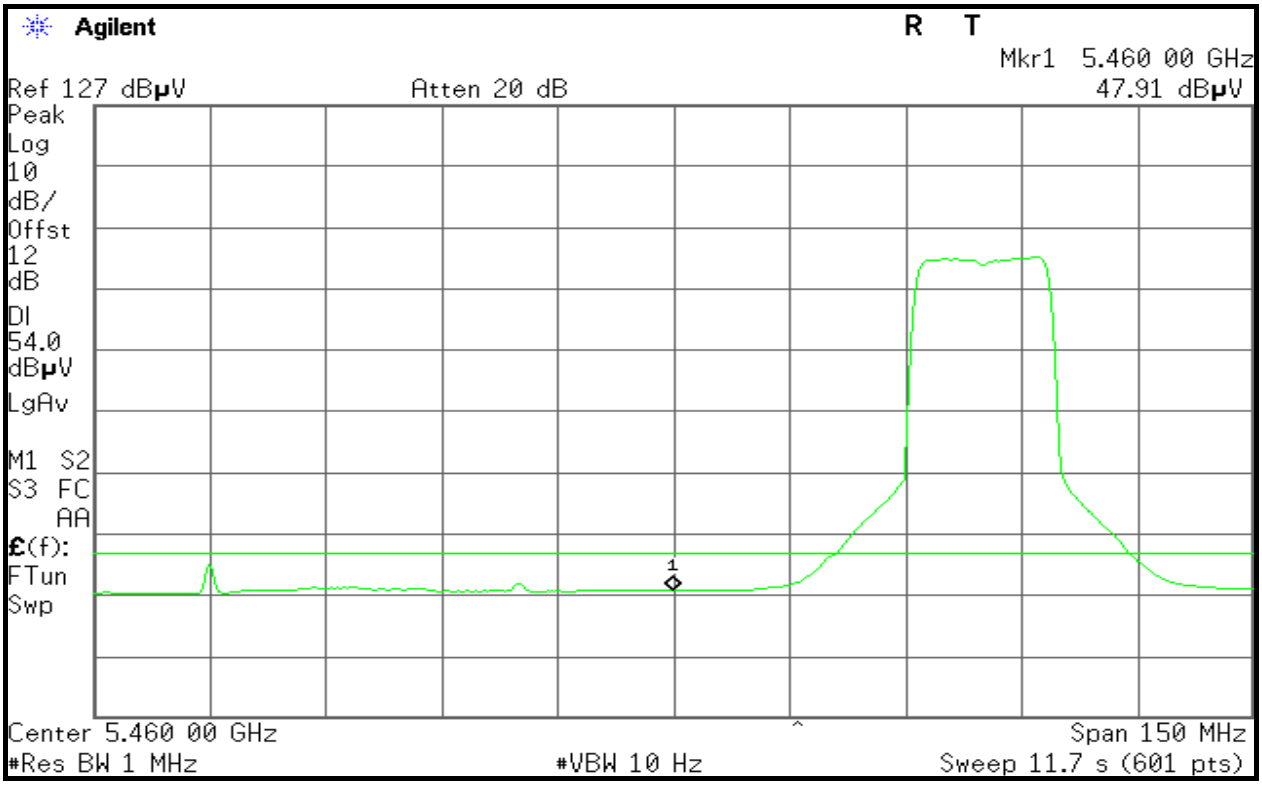


Band Edges (802.11n Standard-20 MHz Channel mode / 5500MHz)

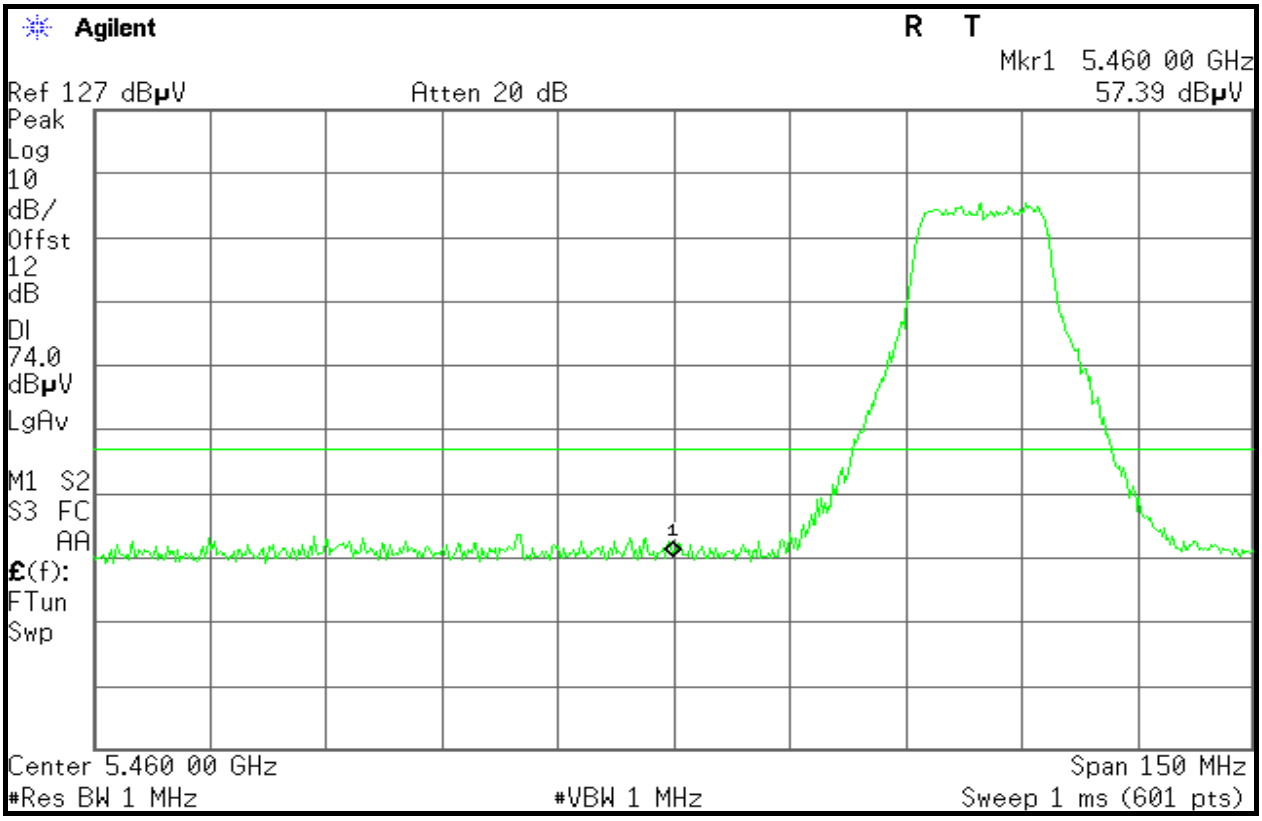
Detector mode: Peak **Polarity: Vertical**



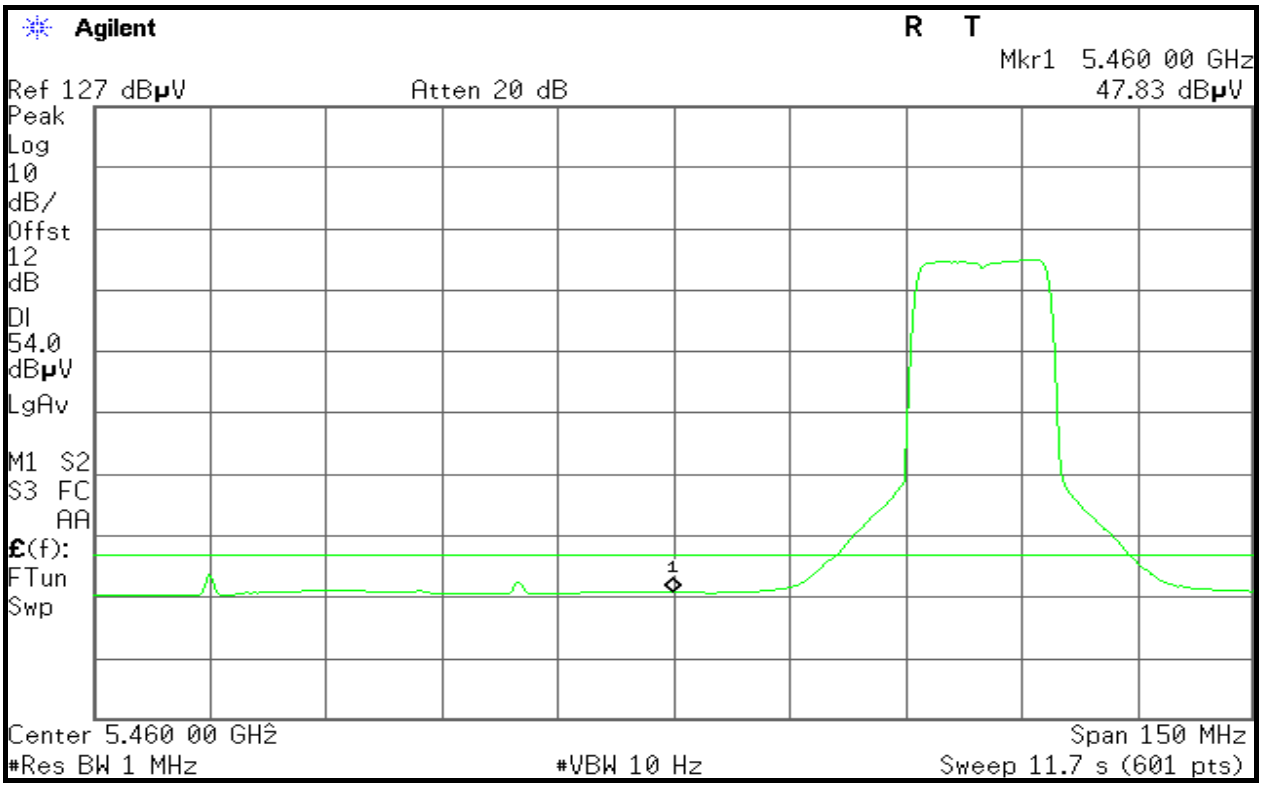
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

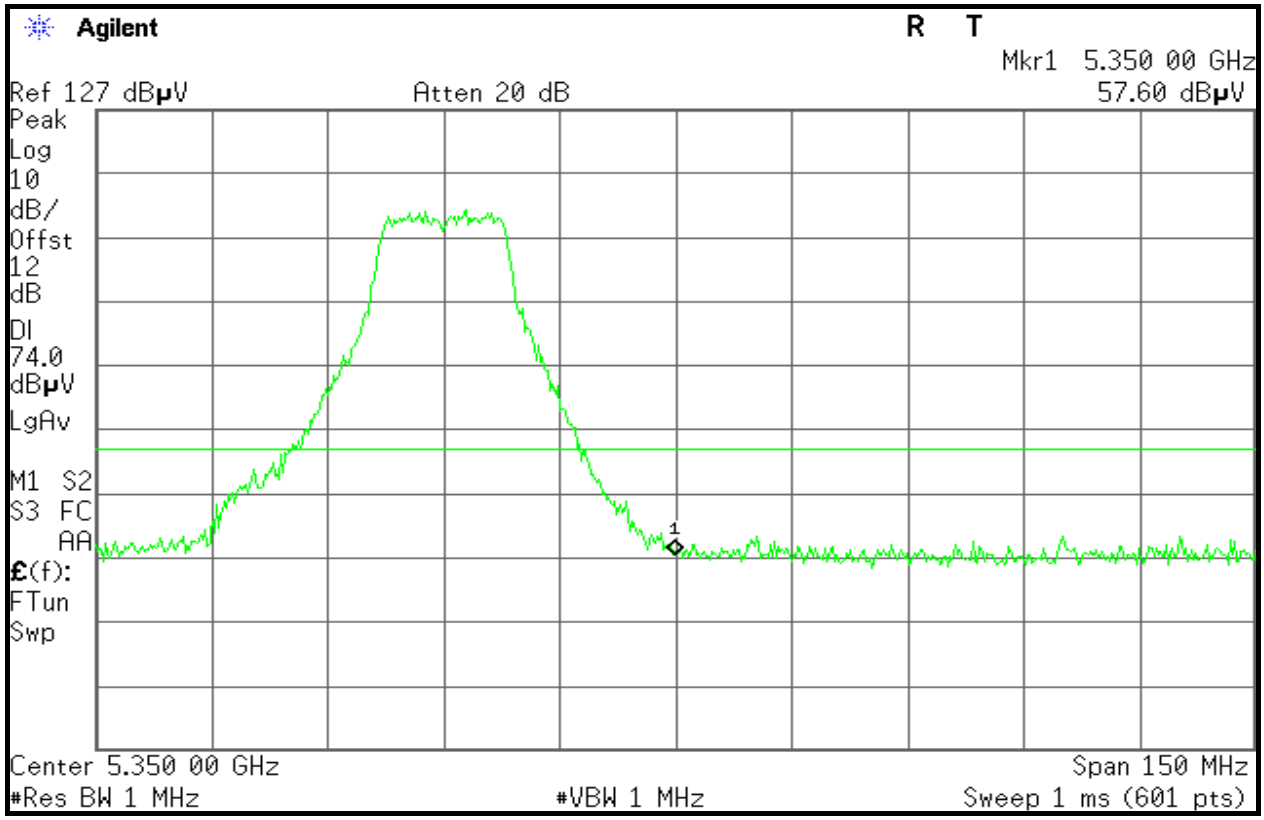


Detector mode: Average **Polarity: Horizontal**

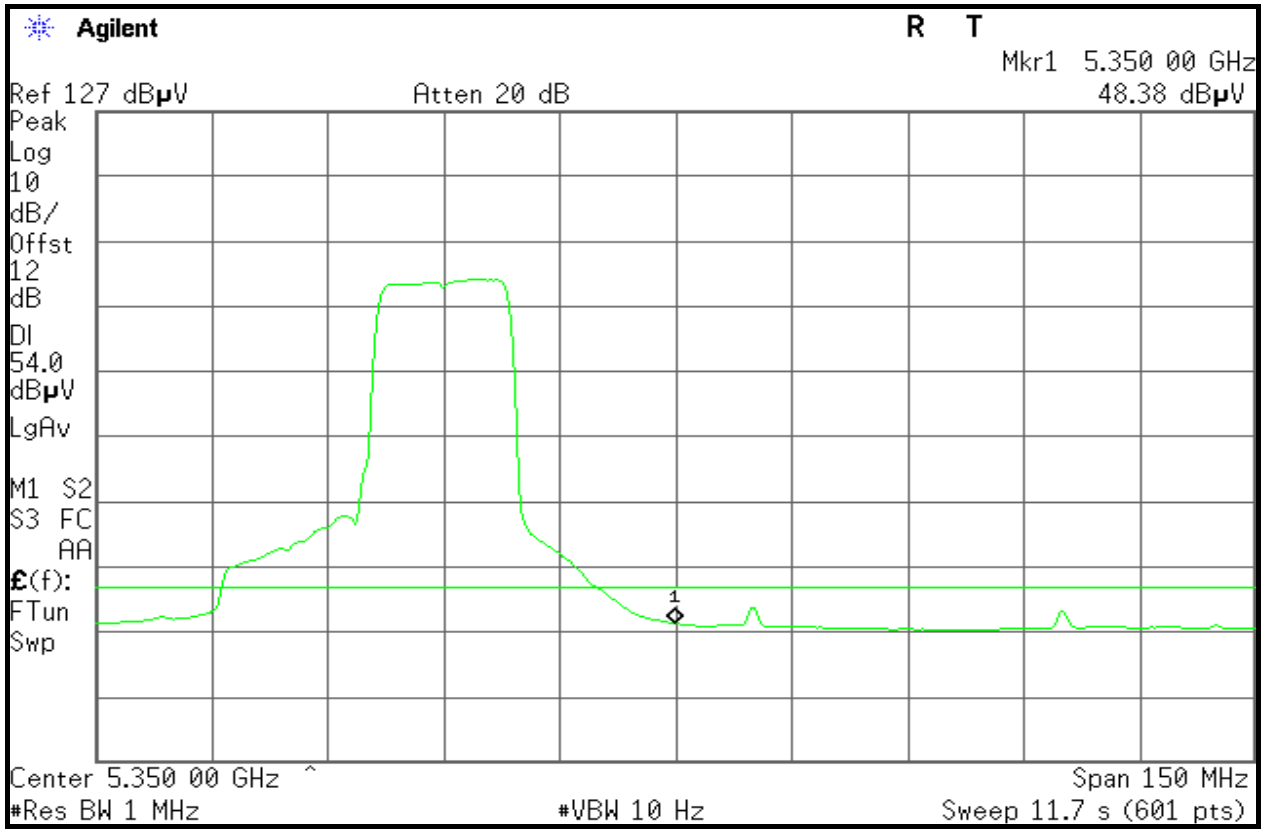


Band Edges (802.11n Wide-40 MHz Channel mode / 5310)

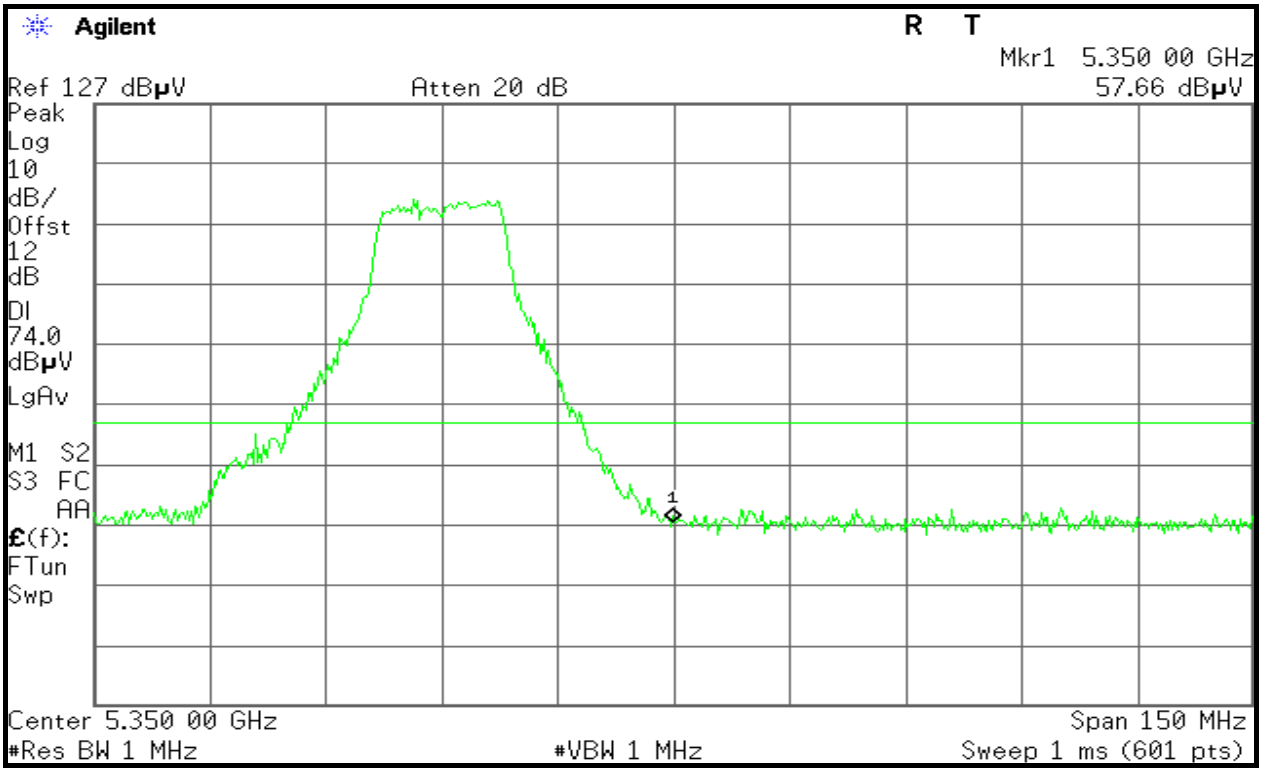
Detector mode: Peak **Polarity: Vertical**



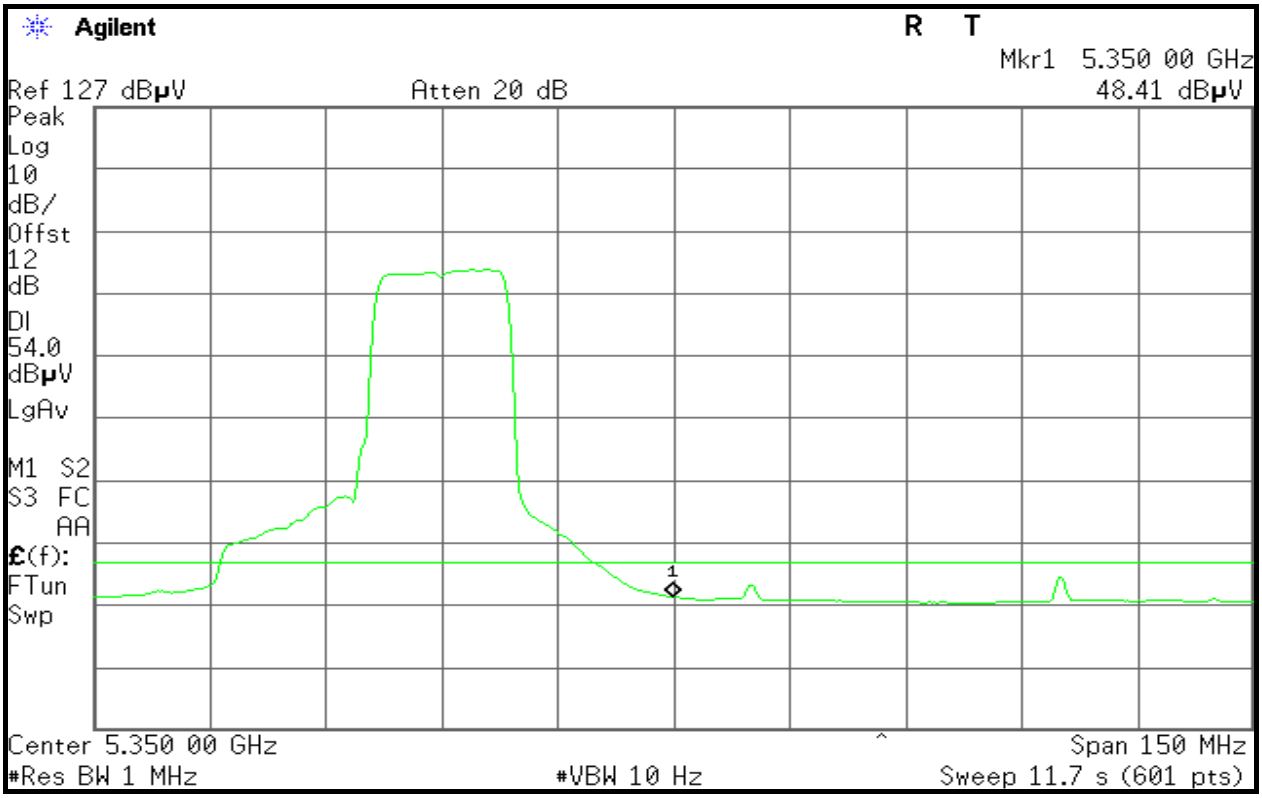
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

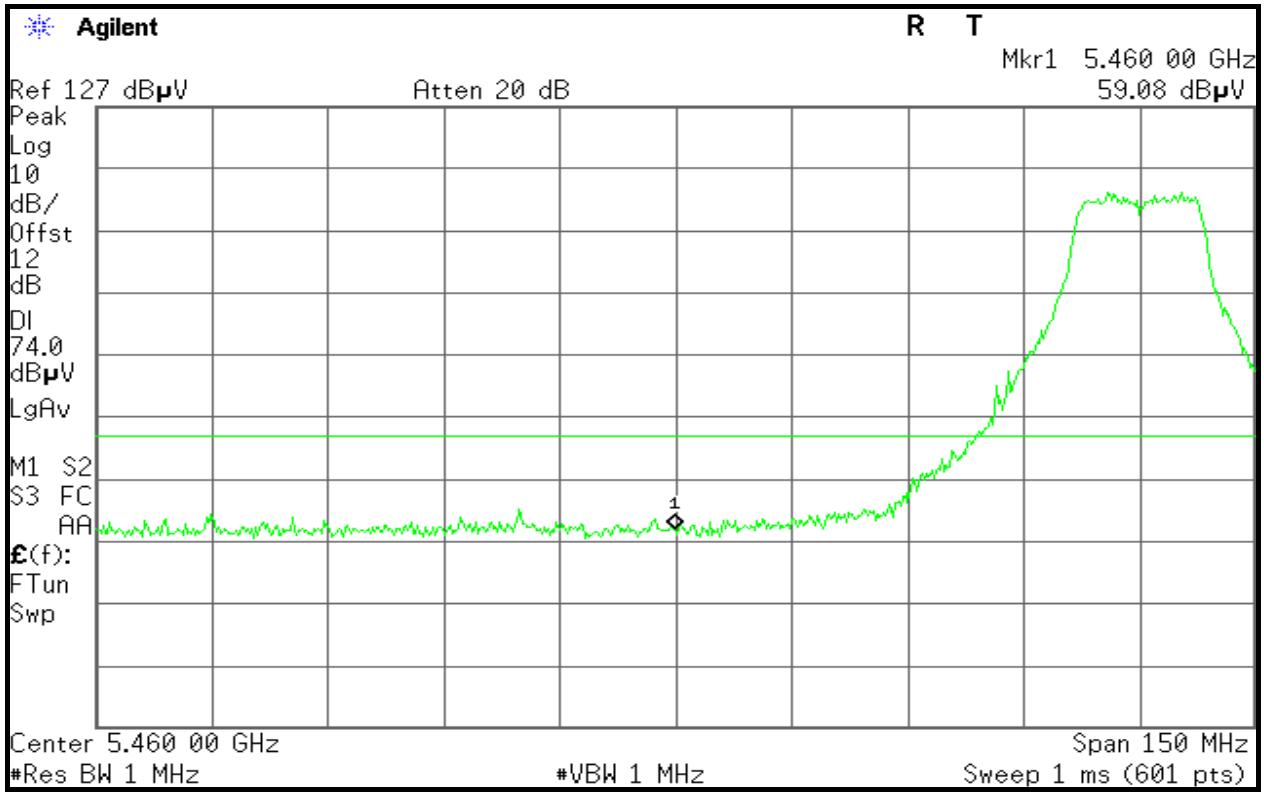


Detector mode: Average **Polarity: Horizontal**

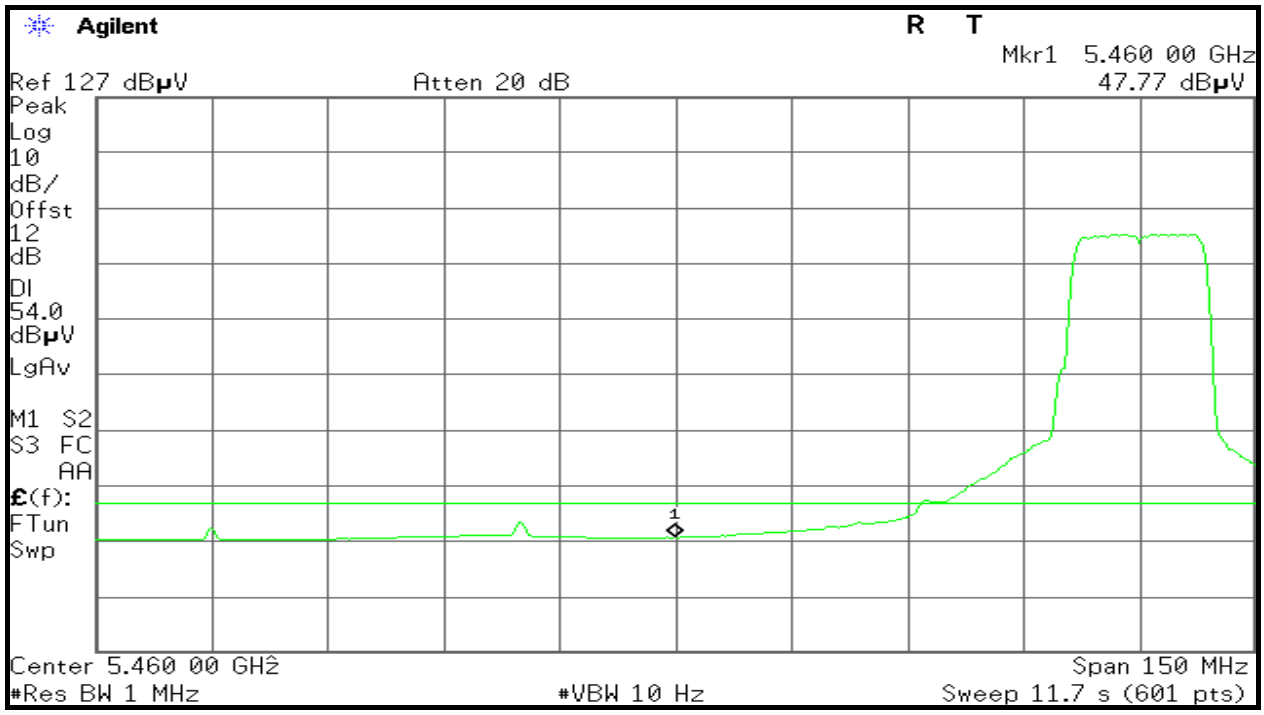


Band Edges (802.11n Standard-20 MHz Channel mode / 5510MHz)

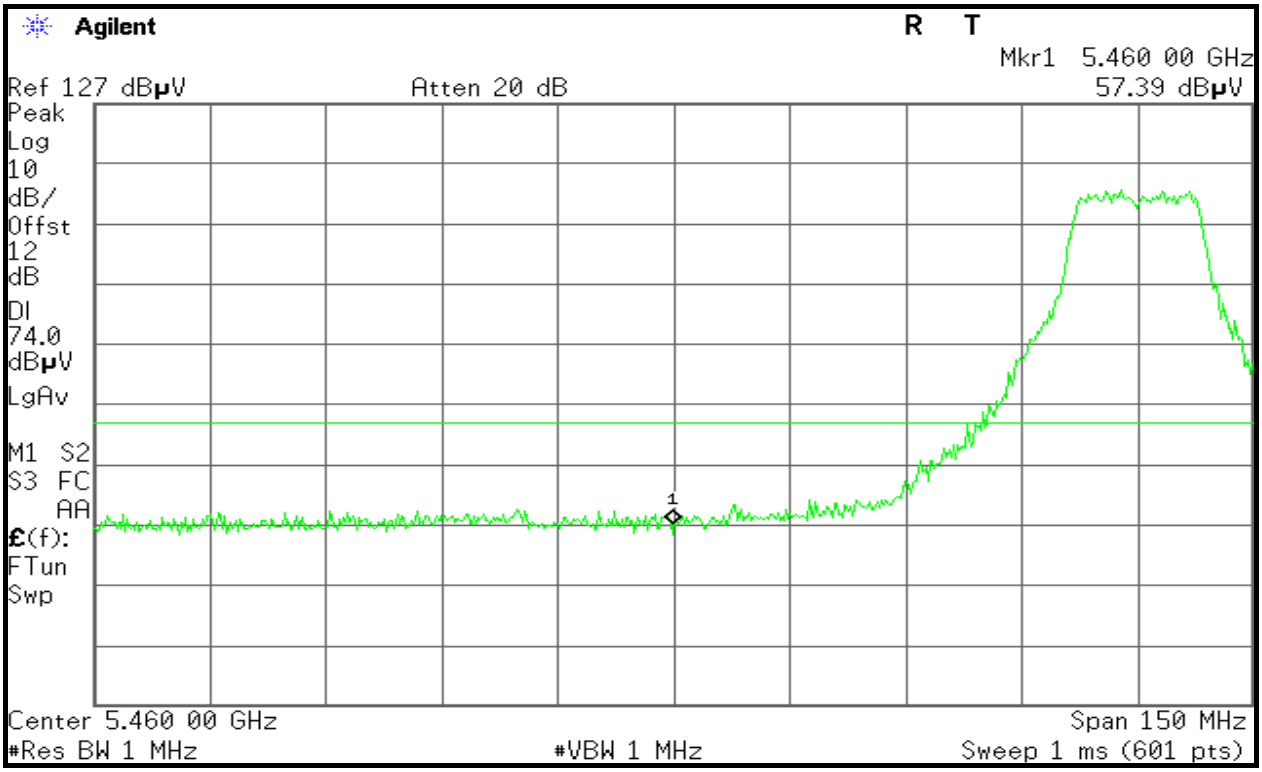
Detector mode: Peak **Polarity: Vertical**



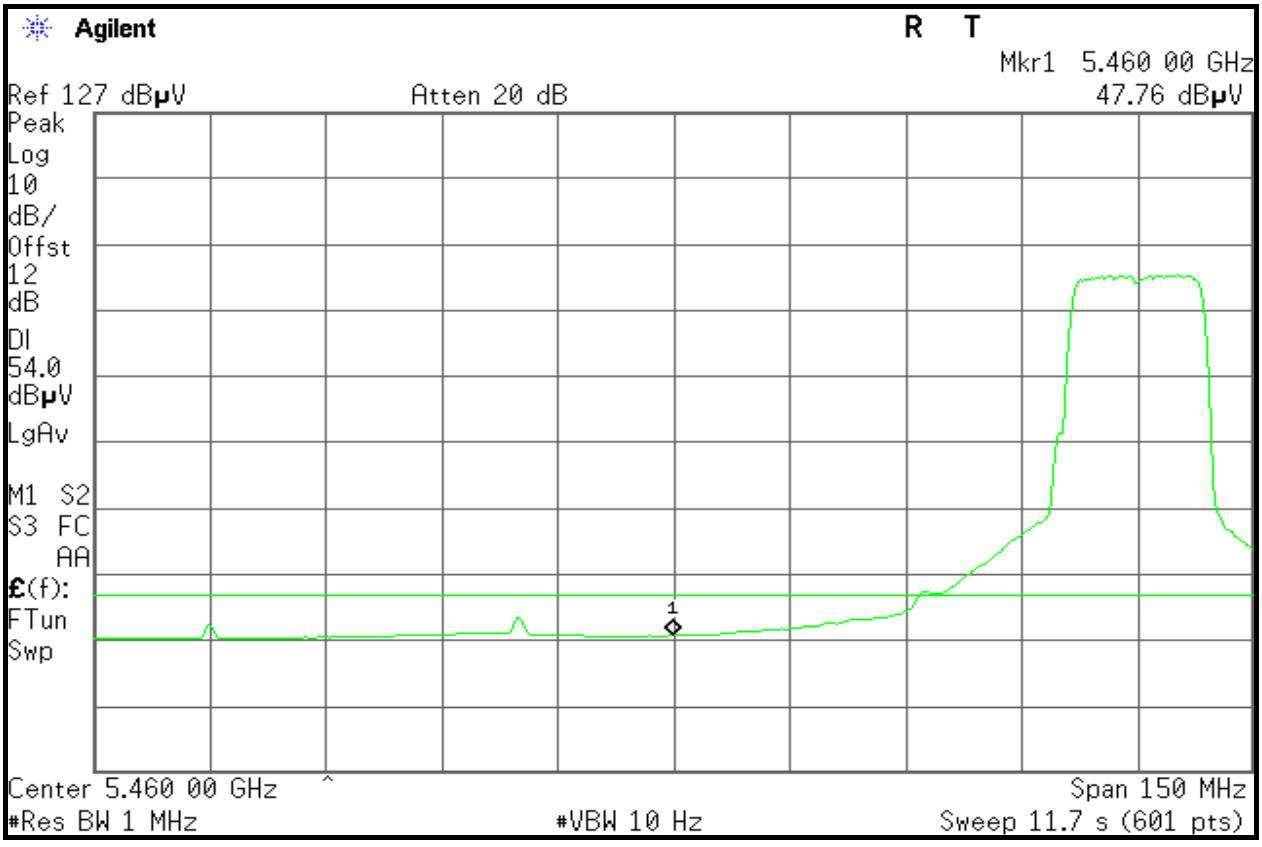
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**



7.4 PEAK POWER SPECTRAL DENSITY

LIMIT

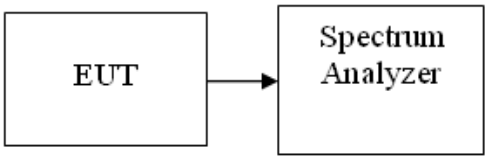
According to §15.407(a),

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

For the band 5.25-5.35 GHz and 5.47-5.725 GHz, the peak power spectral density shall not exceed 11dBm in any 1MHz 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

5250~5350MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	5260	5.75	11.00	PASS
Mid	5300	5.16	11.00	PASS
High	5320	4.80	11.00	PASS

5470~5725MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	5500	5.74	11.00	PASS
Mid	5540	6.76	11.00	PASS
High	5700	4.09	11.00	PASS

Test mode: 802.11n Standard-20 MHz Channel mode

5250~5350MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Chain 2 PPSD (dBm)	CF (dB)	Total PPSD (dBm)	Limit (dBm)	Result
Low	5260	5.07	4.97	4.96	4.77	9.84	11.00	PASS
Mid	5300	4.08	5.46	4.57	4.77	10.23.	11.00	PASS
High	5320	5.07	5.53	5.02	4.77	10.30	11.00	PASS

Total PPSD Chain 0+Chain 1+Chain 2:

Total PPSD (dBm)= CF was accounted for the number of data streams being used, 10*Log(N) per KDB 662911; where N is number of outputs.

5470~5725MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Chain 2 PPSD (dBm)	CF (dB)	otal PPSD (dBm)	Limit (dBm)	Result
Low	5500	4.50	5.90	5.46	4.77	10.67	11.00	PASS
Mid	5540	5.24	4.59	4.16	4.77	10.01	11.00	PASS
High	5700	3.92	4.02	3.98	4.77	8.75	11.00	PASS

Total PPSD (dBm)= CF was accounted for the number of data streams being used, 10*Log(N) per KDB 662911; where N is number of outputs.

Test mode: 802.11n Wide-40 MHz Channel mode

5250~5350MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Chain 2 PPSD (dBm)	CF (dB)	Total PPSD (dBm)	Limit (dBm)	Result
Low	5270	1.14	1.85	0.72	4.77	6.62	11.00	PASS
Mid	5310	0.87	4.40	1.70	4.77	9.17	11.00	PASS

Total PPSD (dBm)= CF was accounted for the number of data streams being used, 10*Log(N) per KDB 662911; where N is number of outputs.

5470~5725MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Chain 2 PPSD (dBm)	CF (dB)	Total PPSD (dBm)	Limit (dBm)	Result
Low	5510	2.02	2.92	0.77	4.77	7.69	11.00	PASS
Mid	5550	3.84	0.70	2.52	4.77	8.61	11.00	PASS
High	5670	3.40	2.75	1.98	4.77	8.17	11.00	PASS

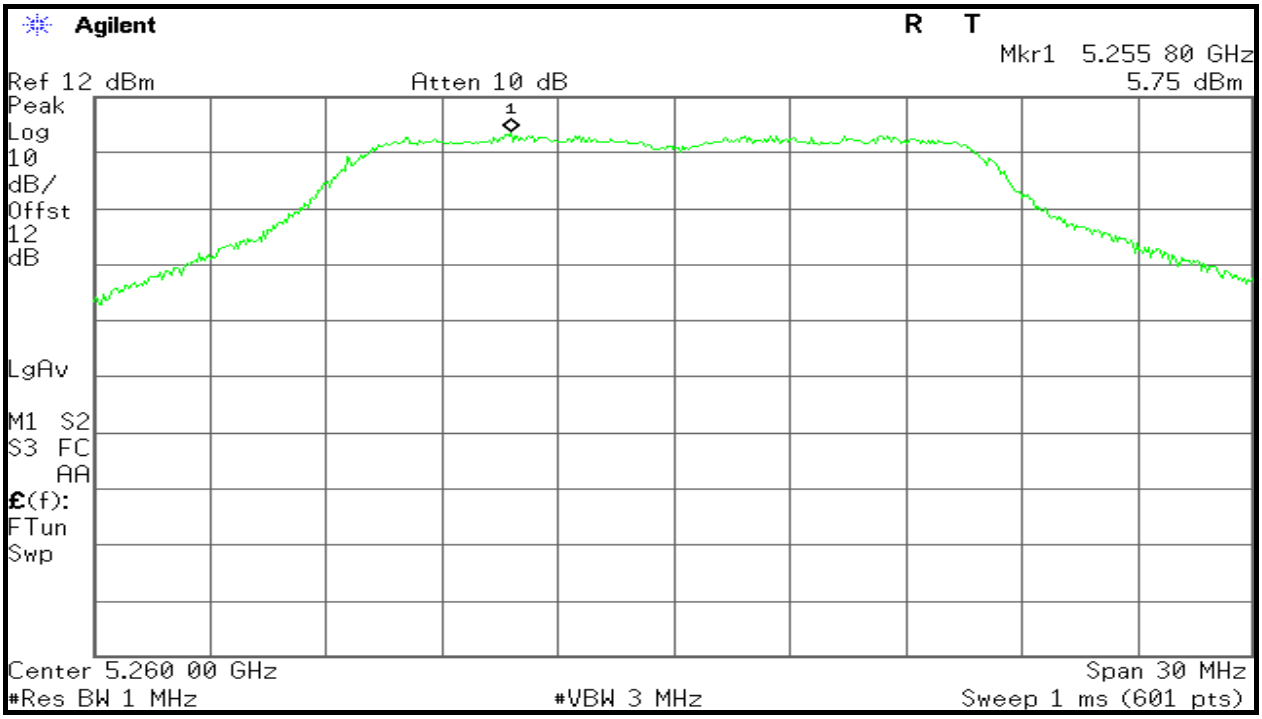
Total PPSD (dBm)= CF was accounted for the number of data streams being used, 10*Log(N) per KDB 662911; where N is number of outputs.

Test Plot

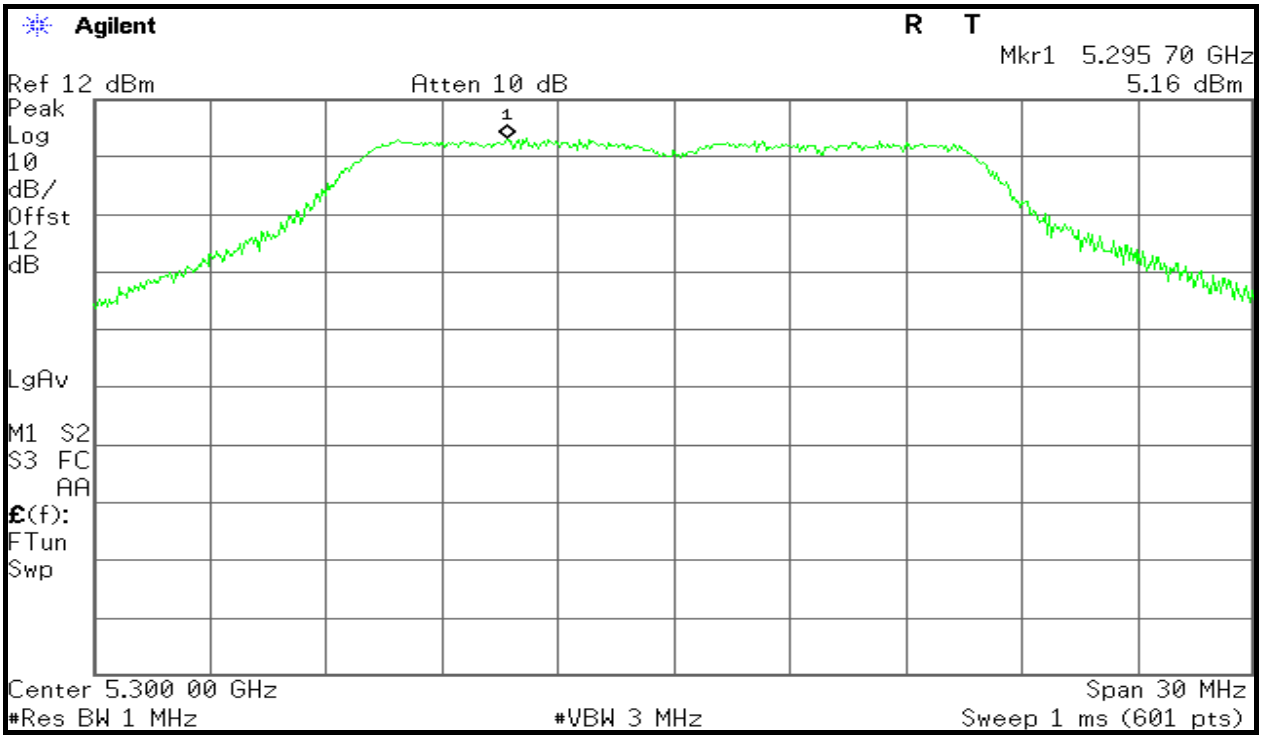
Test mode: IEEE 802.11a mode:

5250~5350MHz

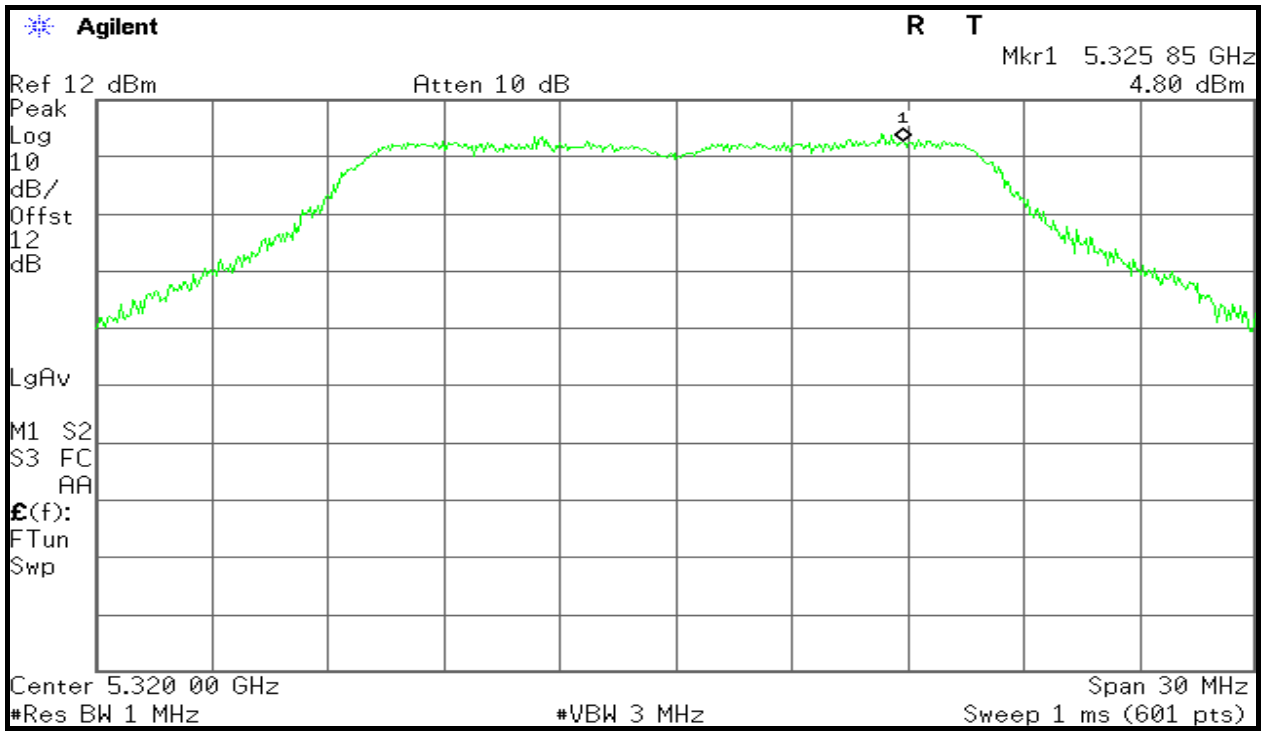
CH Low



CH Mid

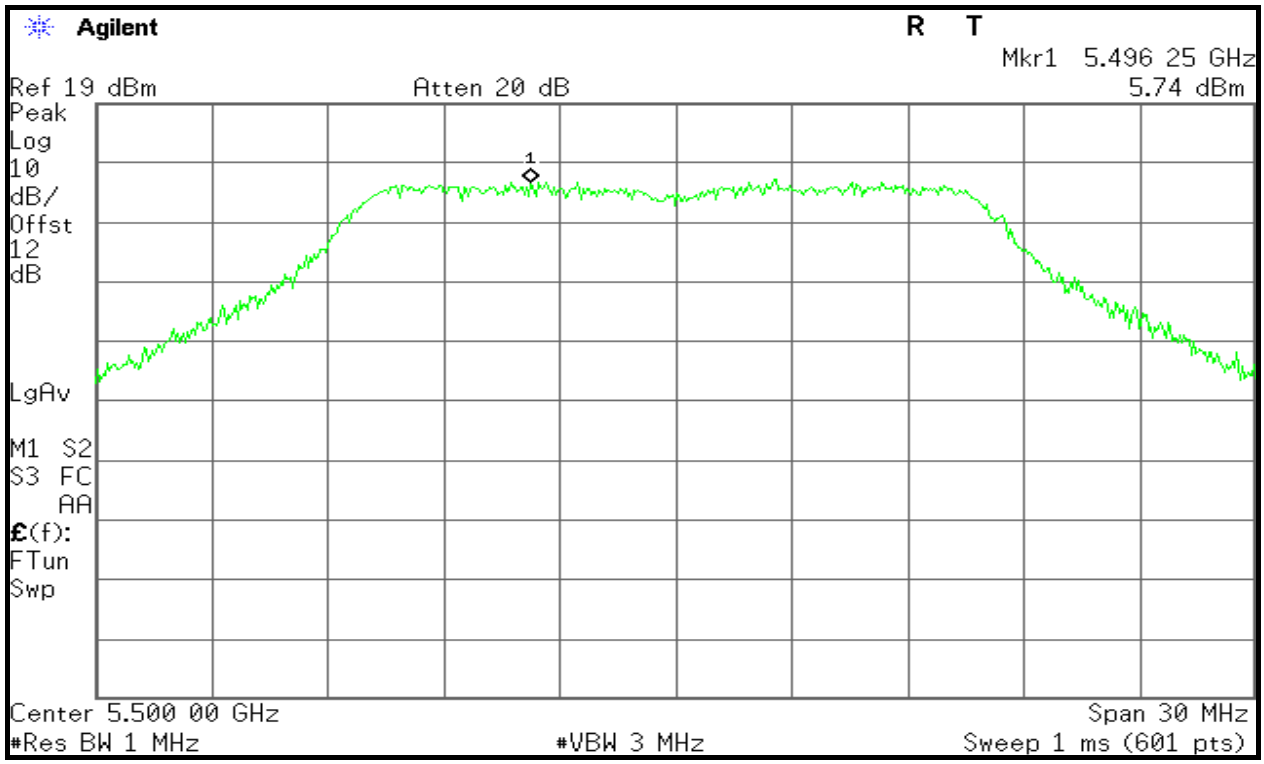


CH High

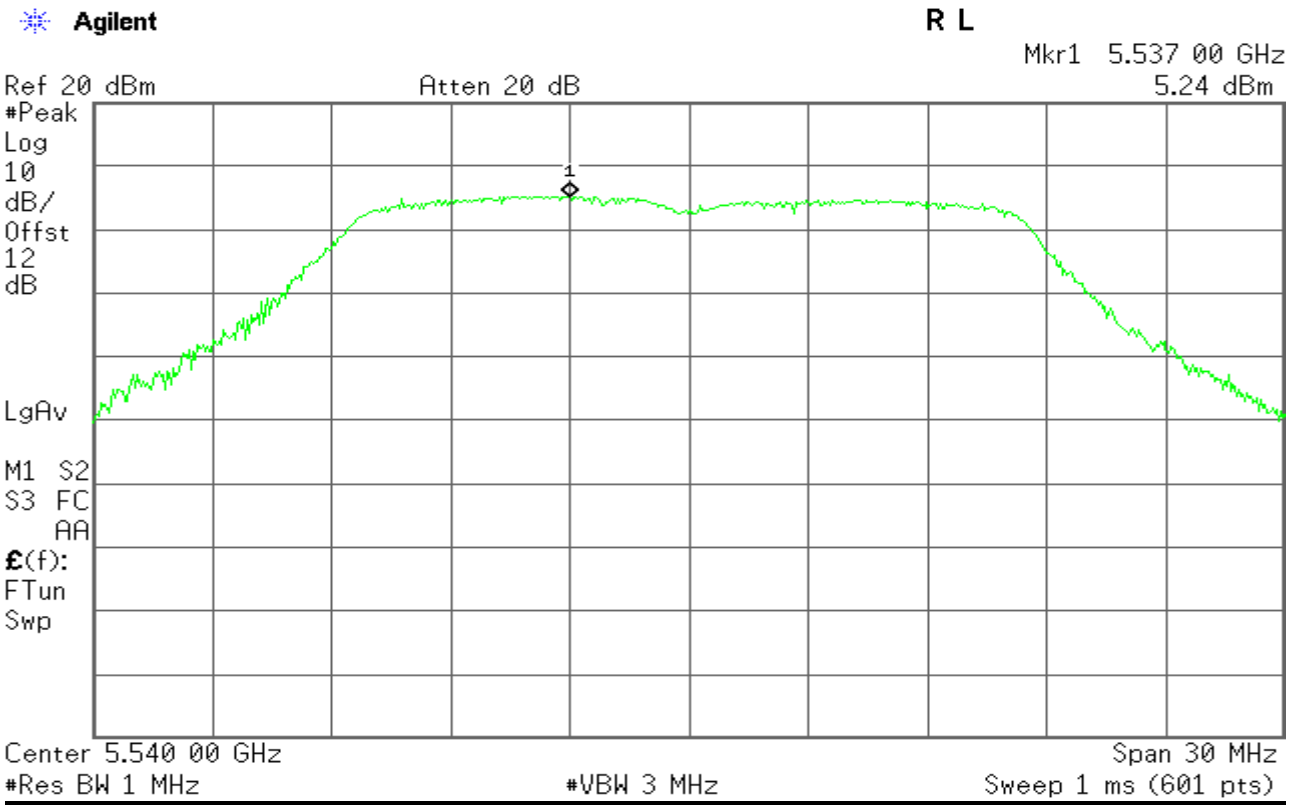


5470~5725MHz

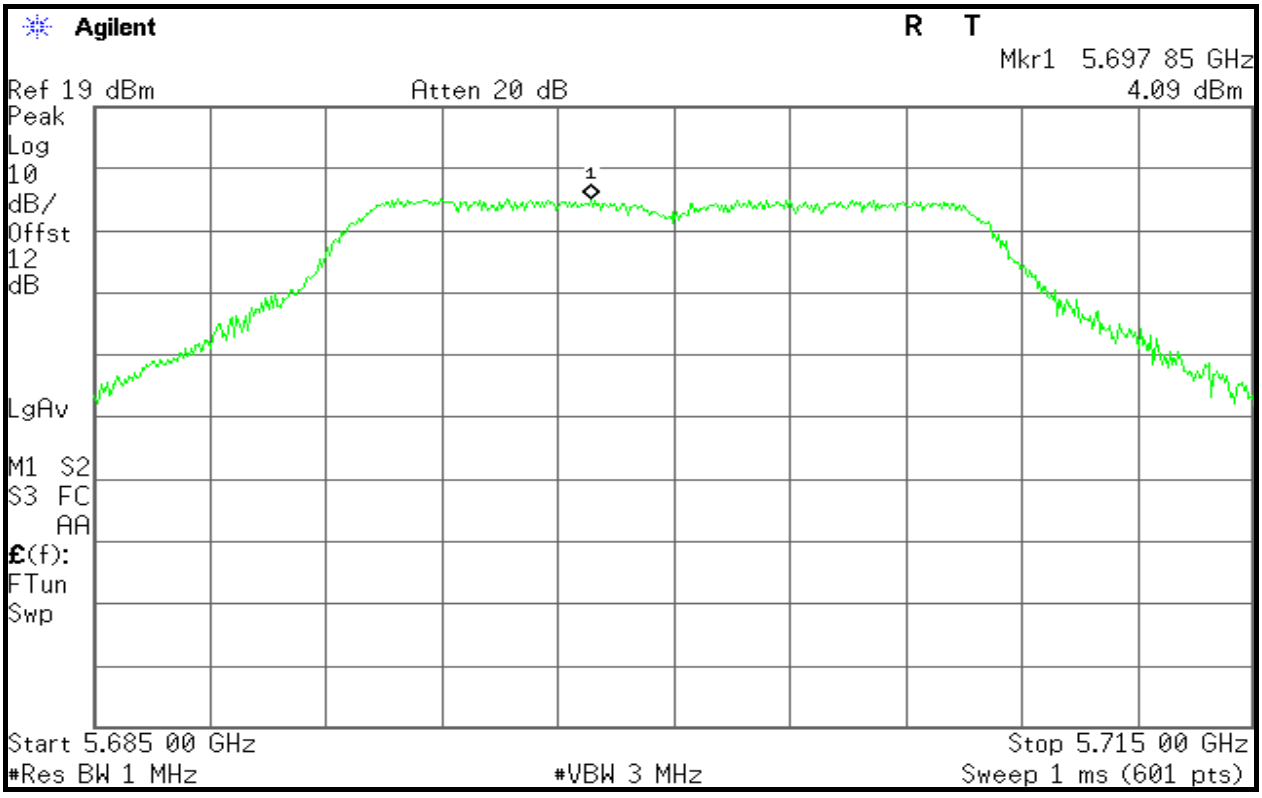
CH Low



CH Mid



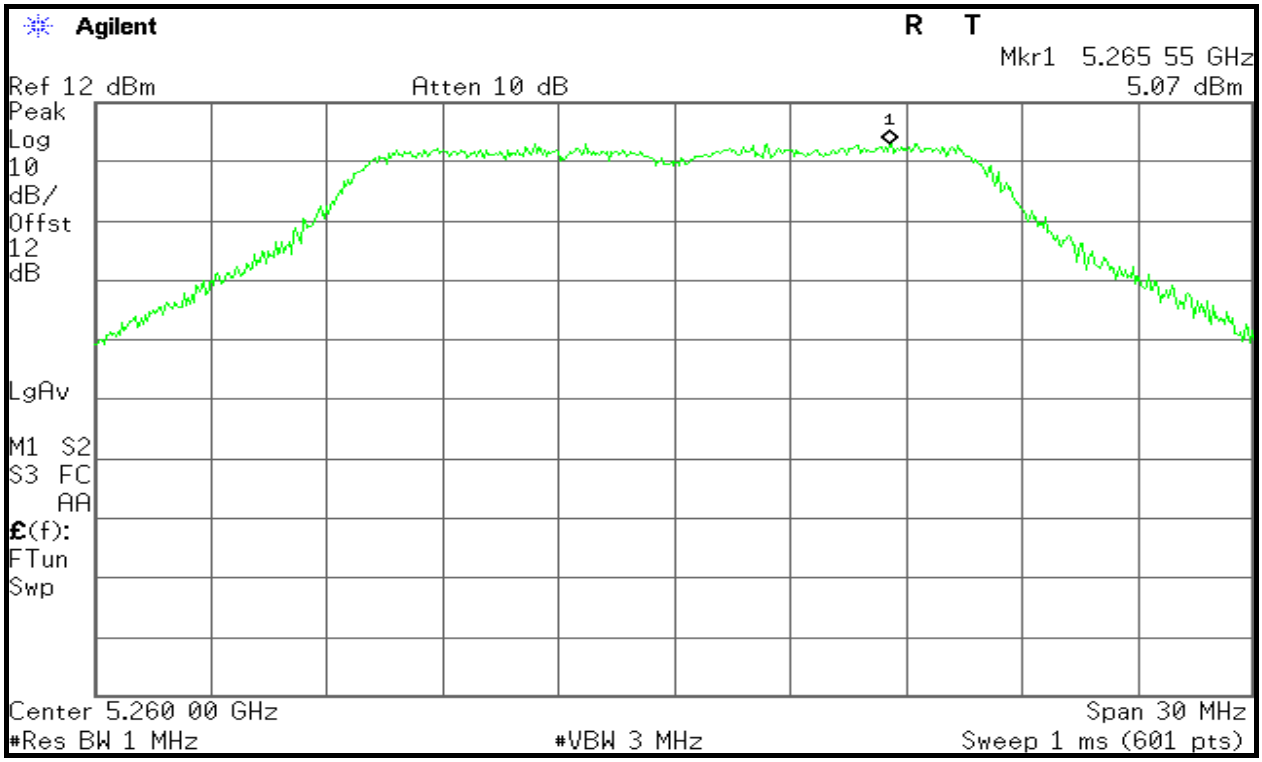
CH High



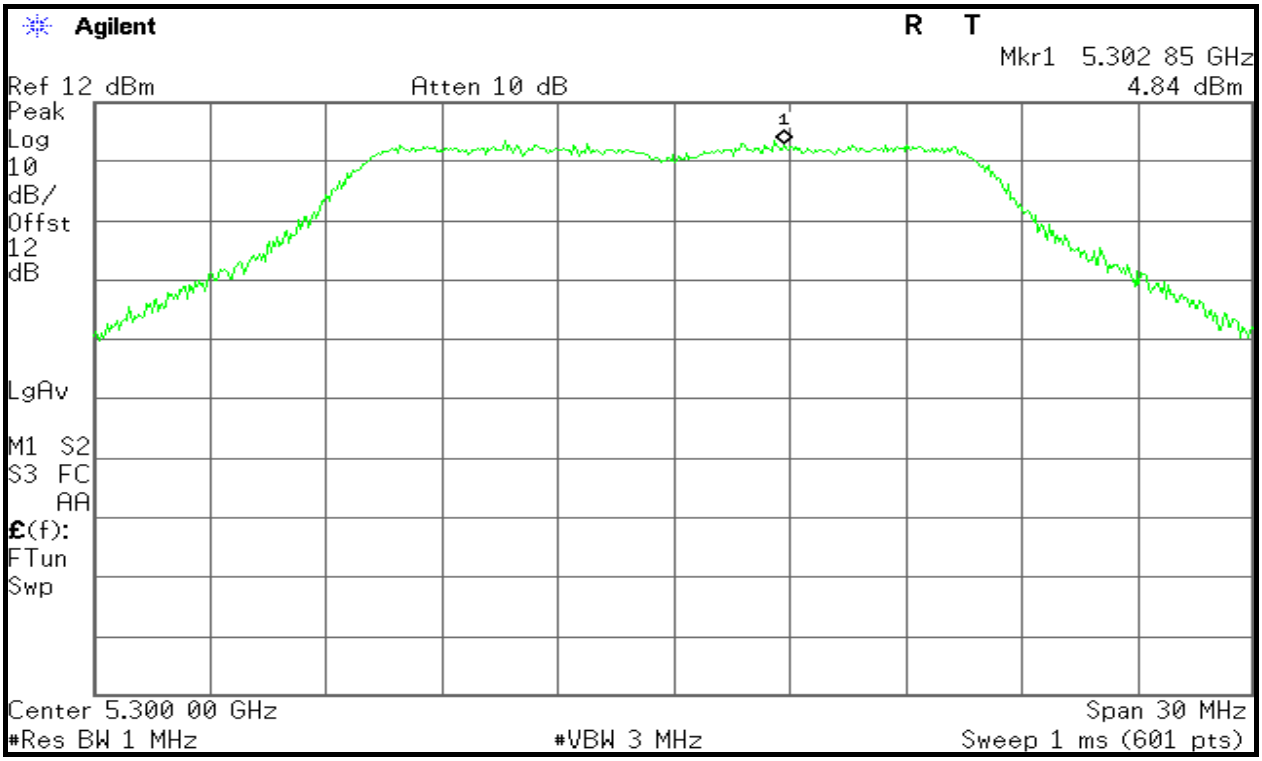
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 0:

5250~5350MHz

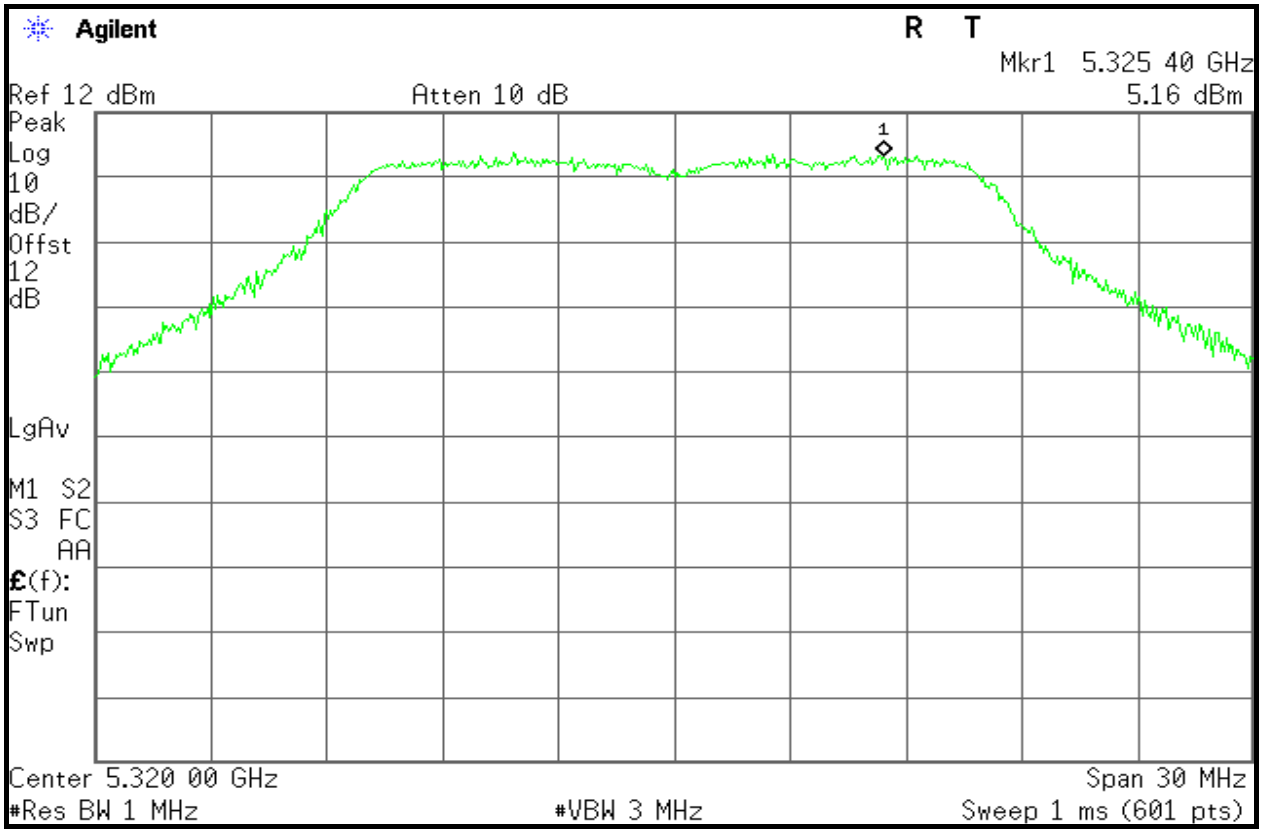
CH Low



CH Mid

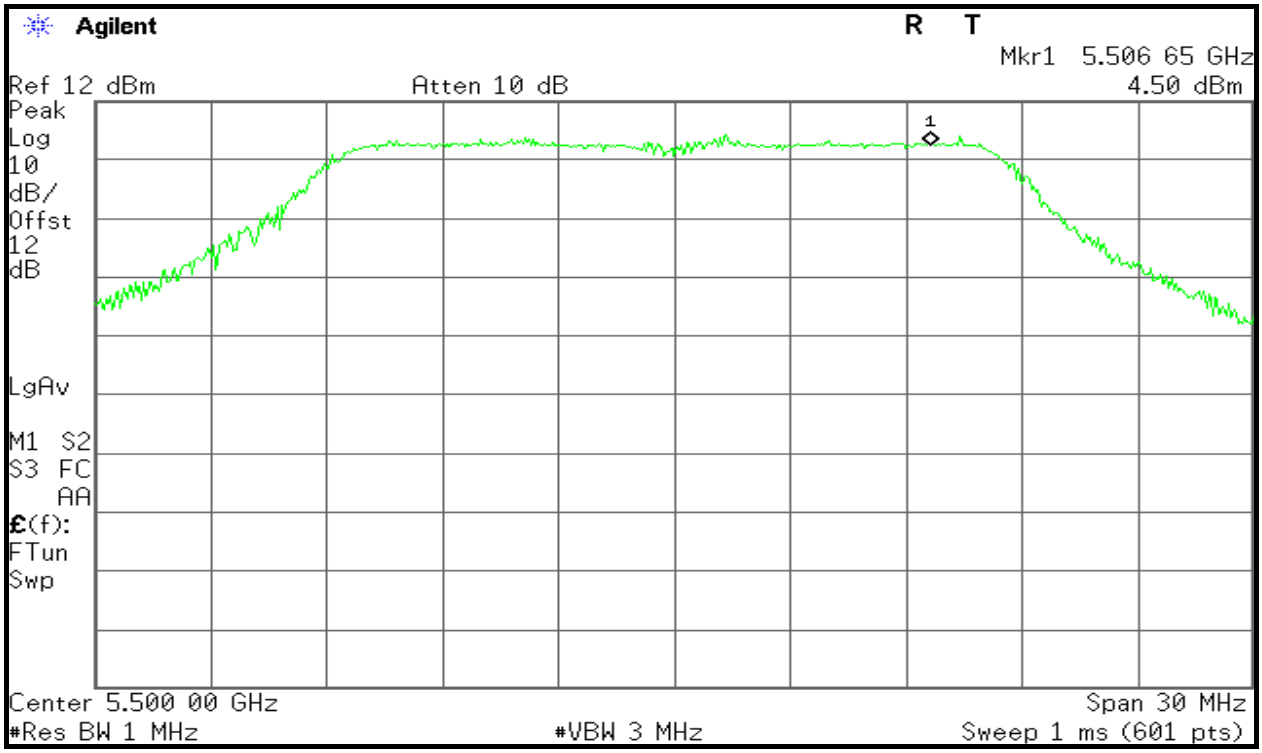


CH High

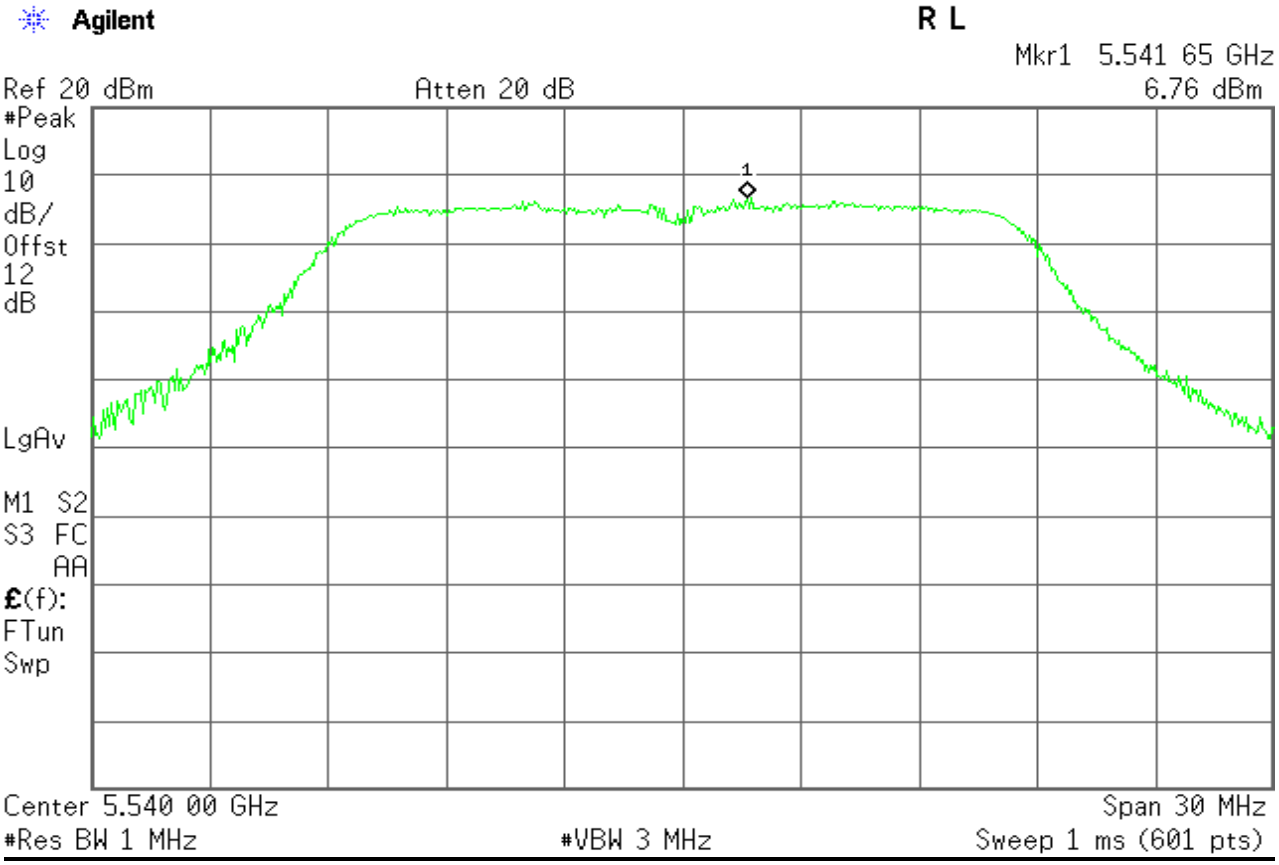


5470~5725MHz

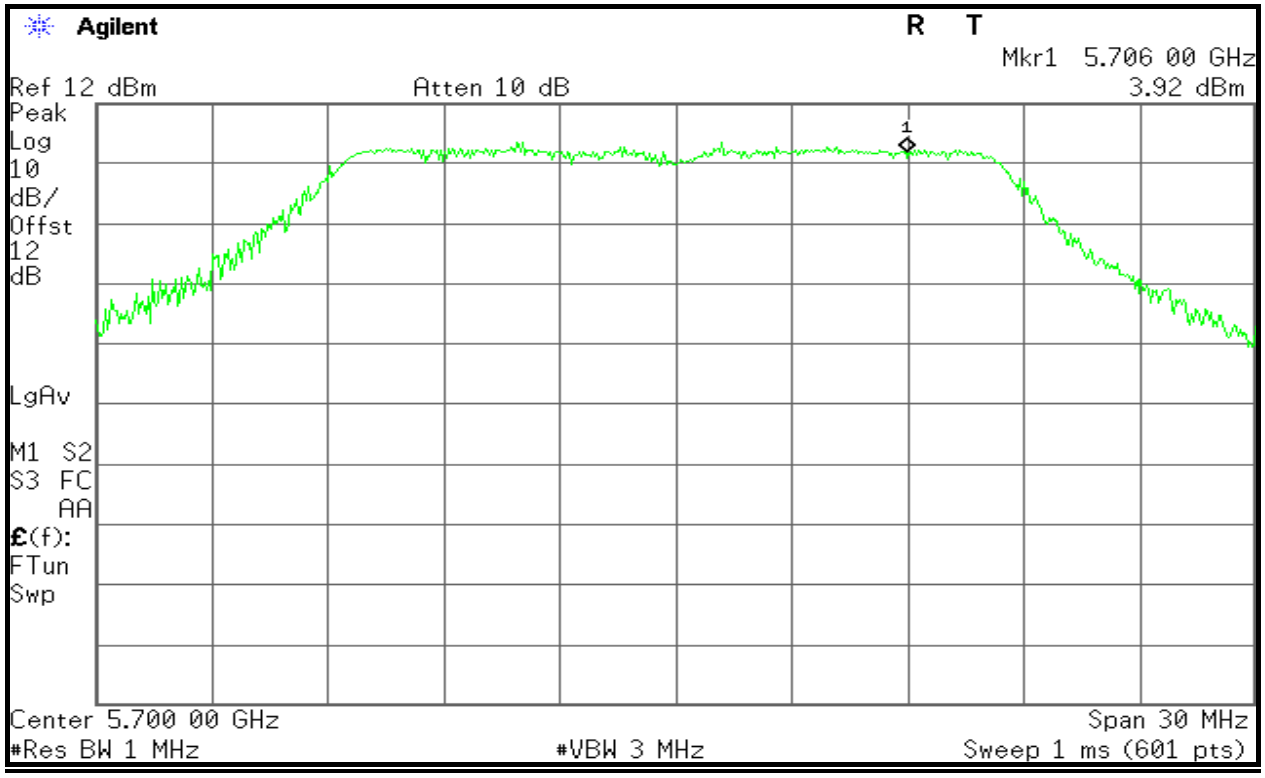
CH Low



CH Mid



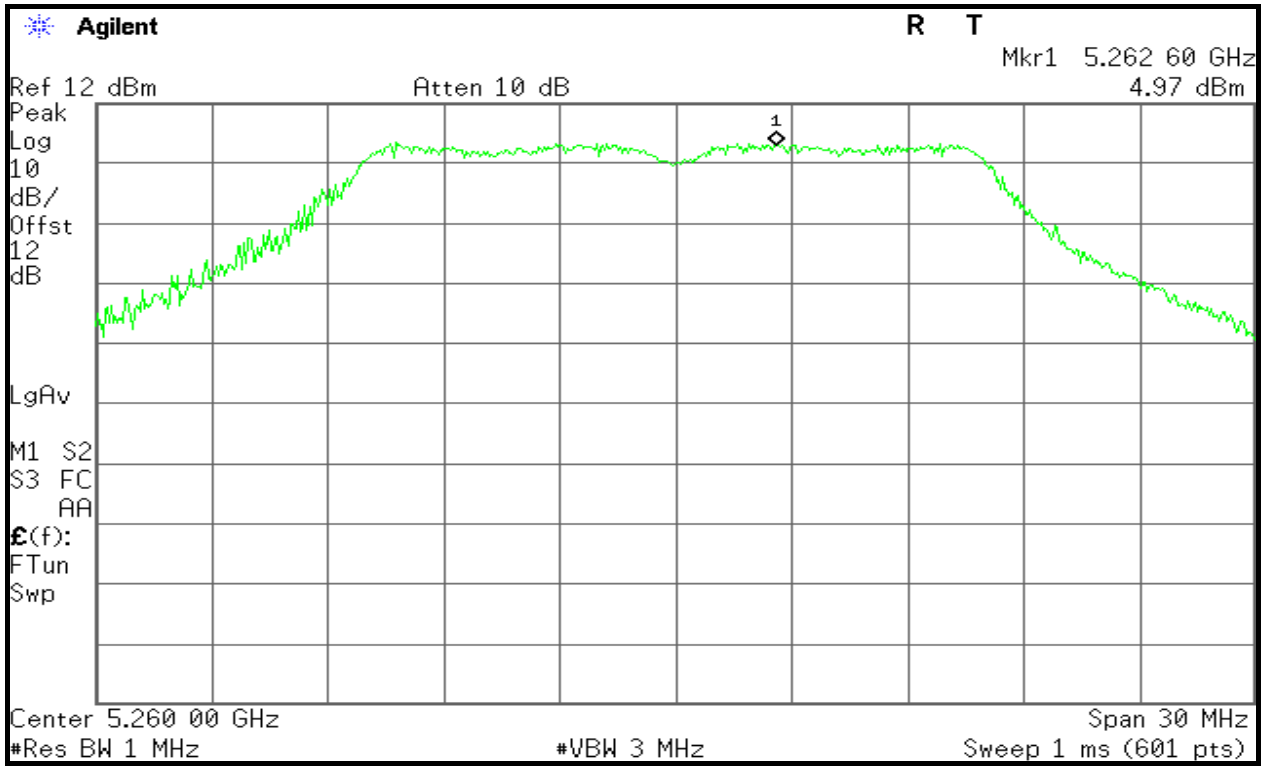
CH High



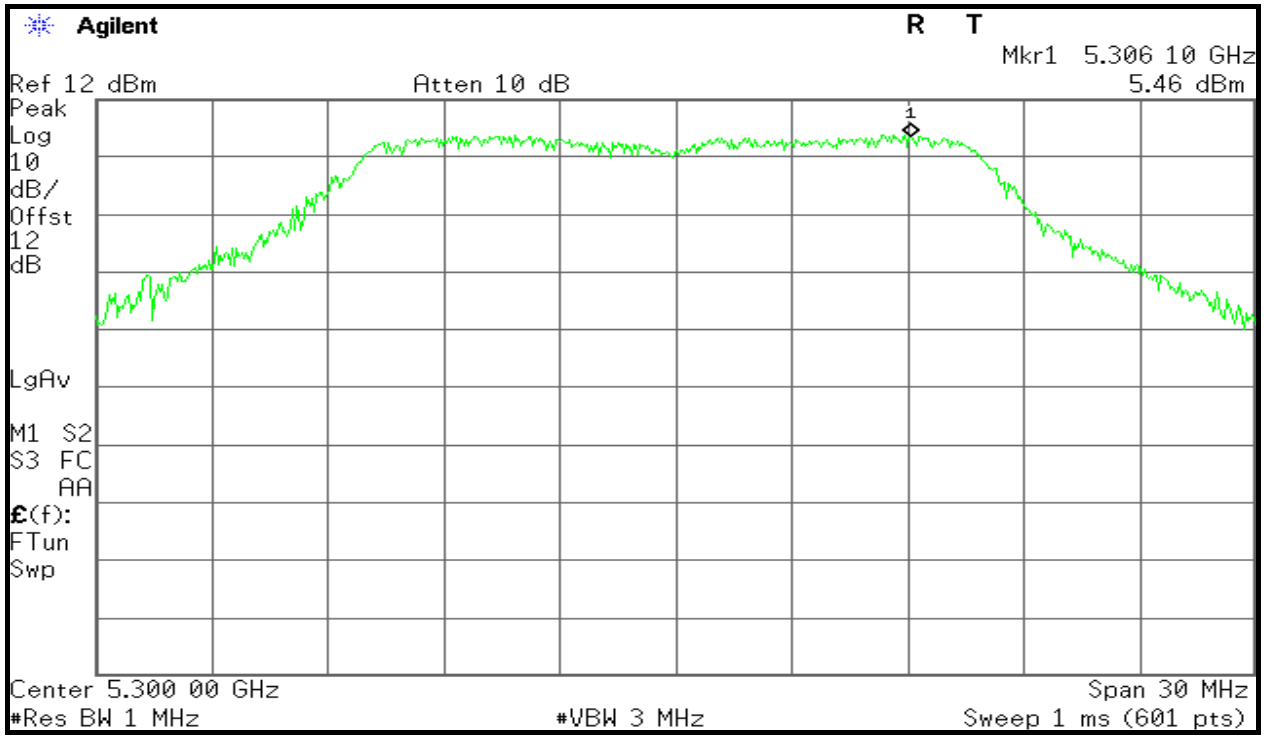
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 1:

5250~5350MHz

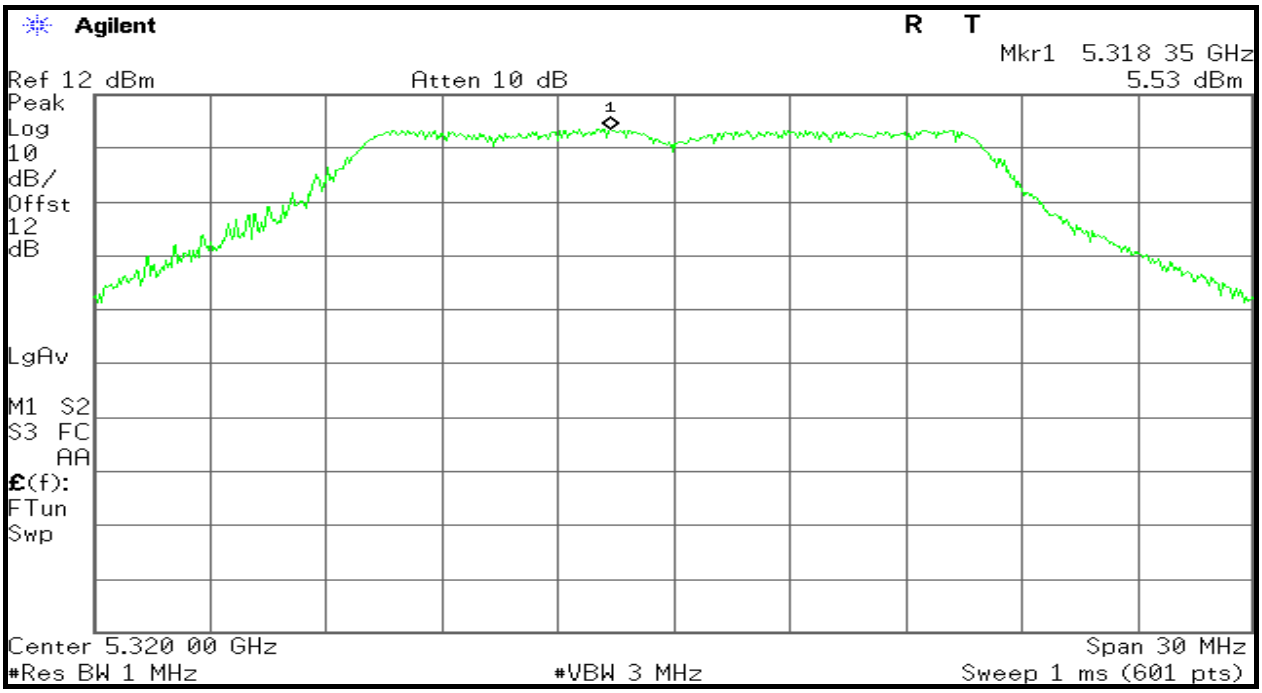
CH Low



CH Mid

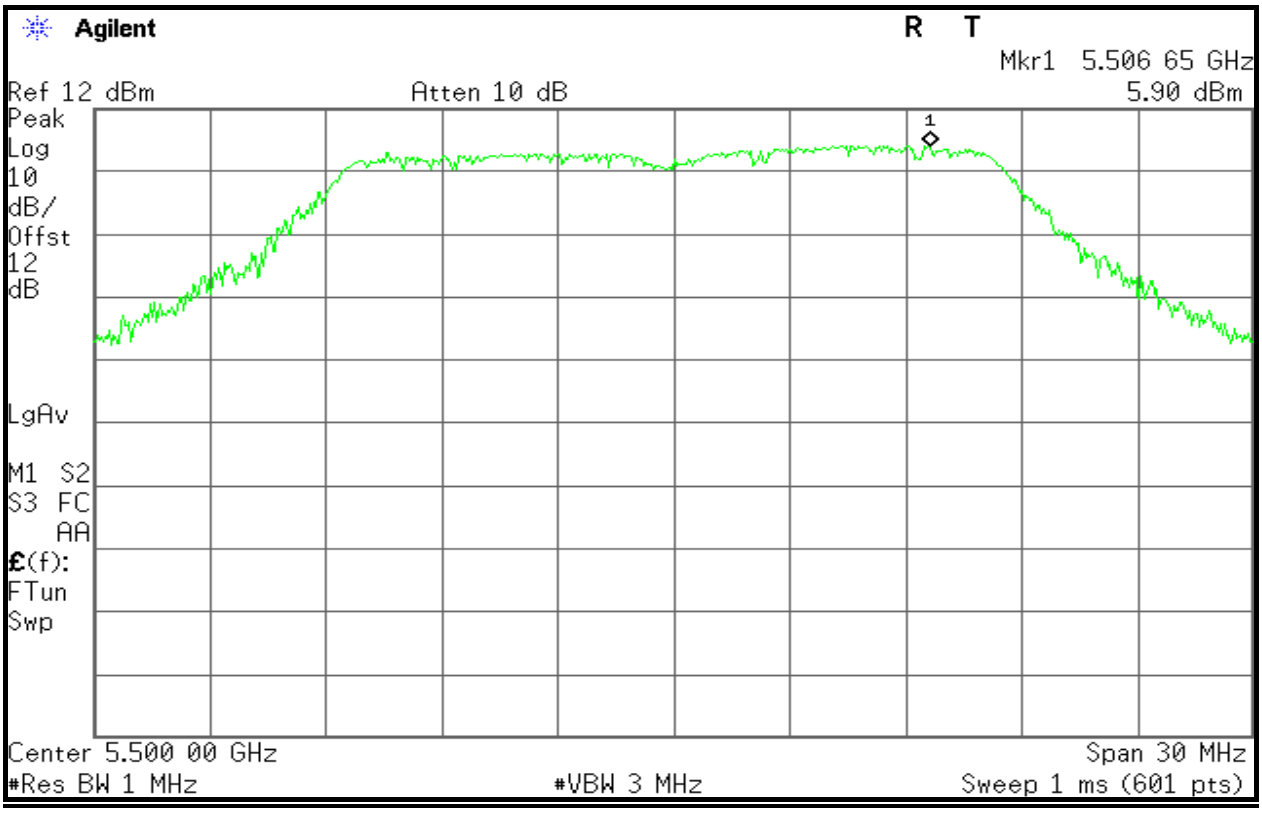


CH High

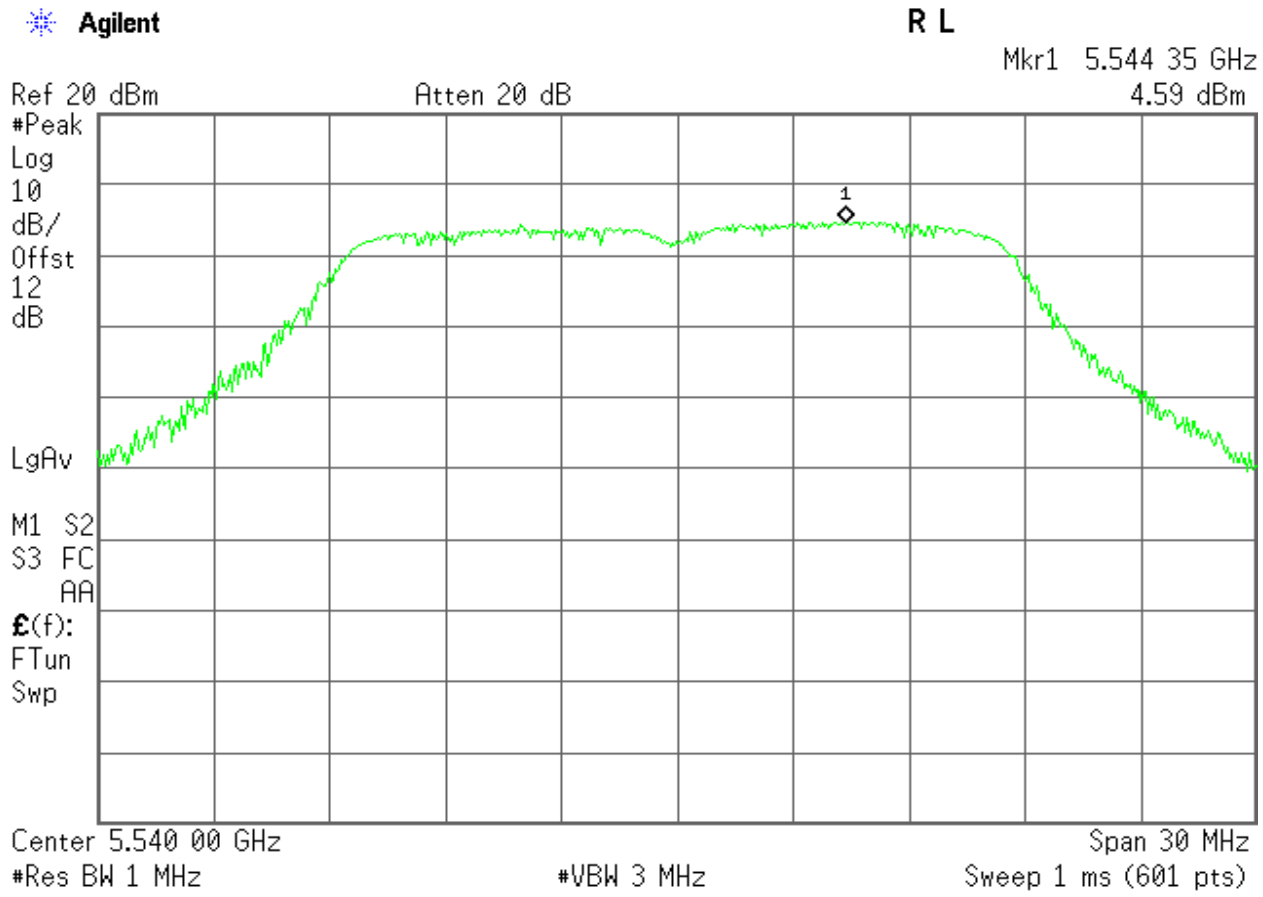


5470~5725MHz

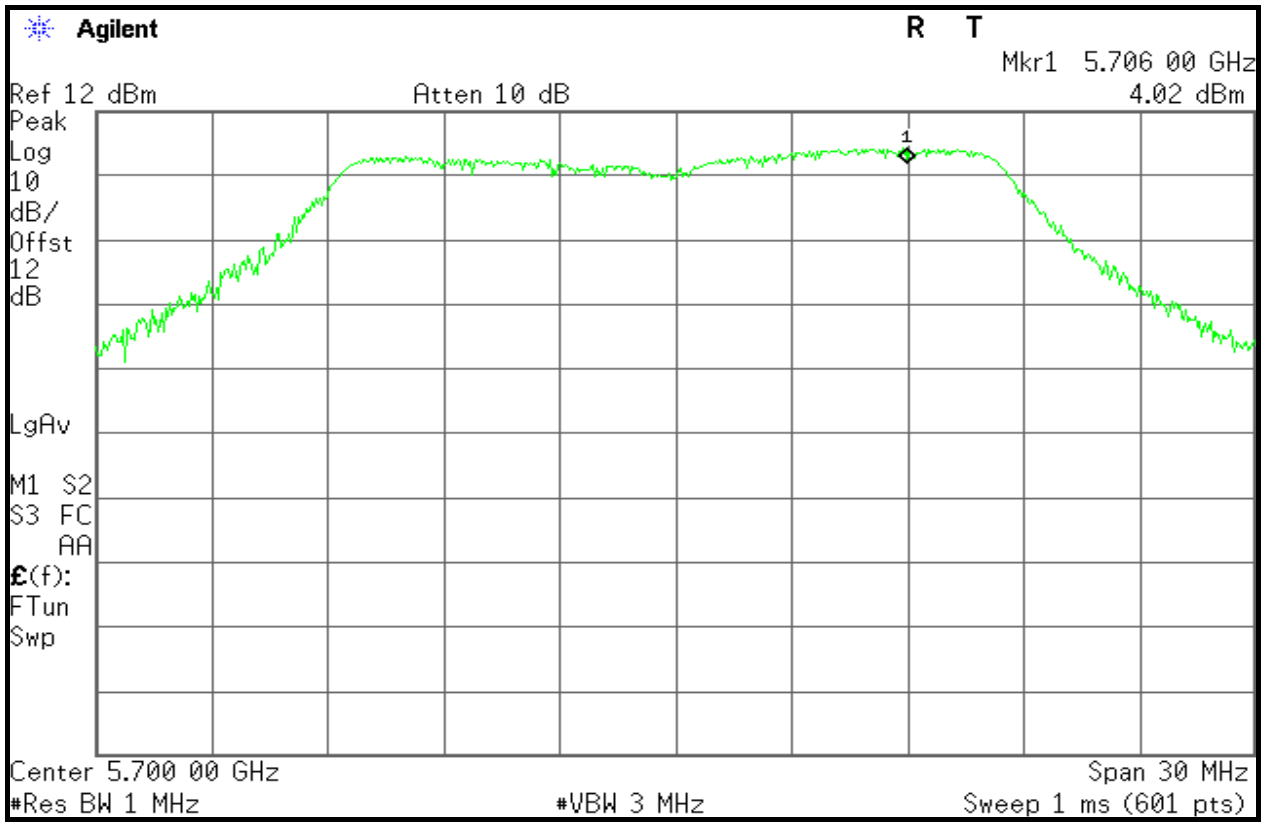
CH Low



CH Mid



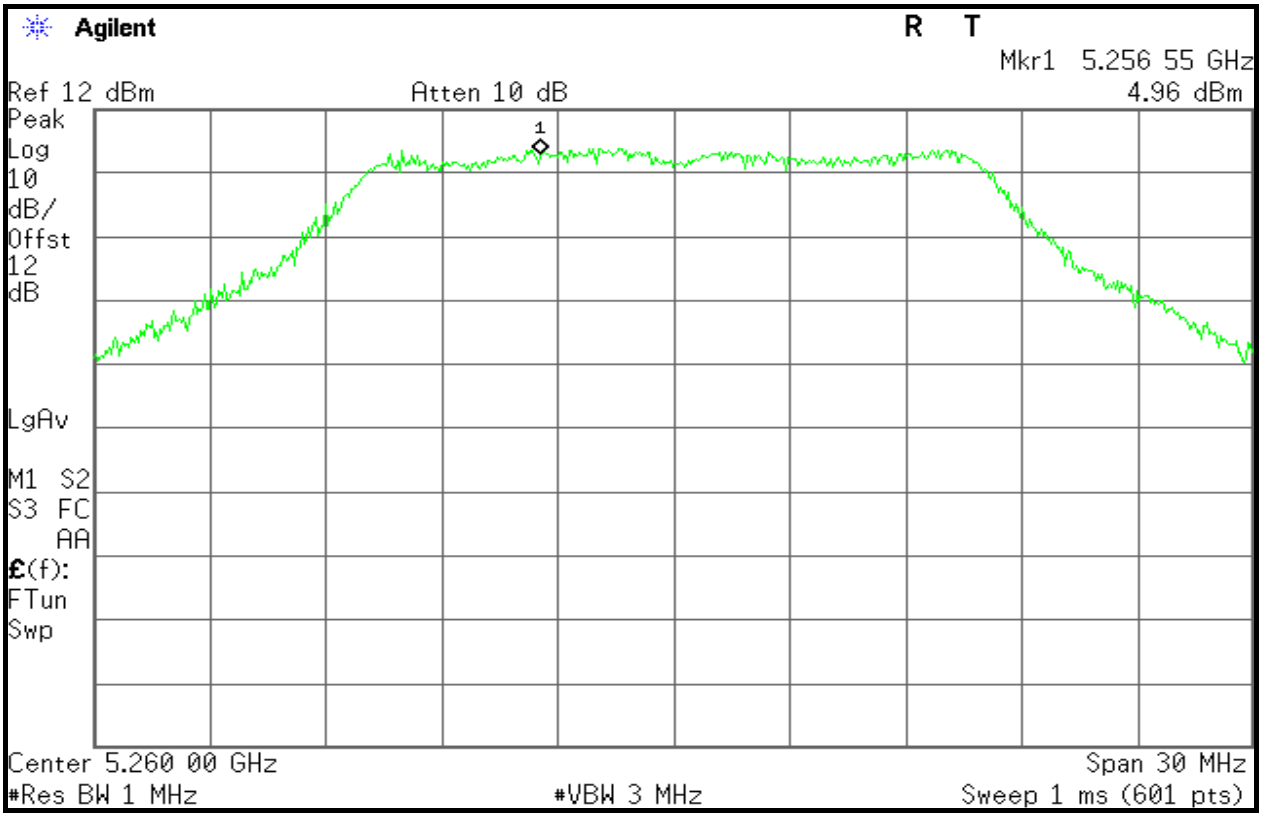
CH High



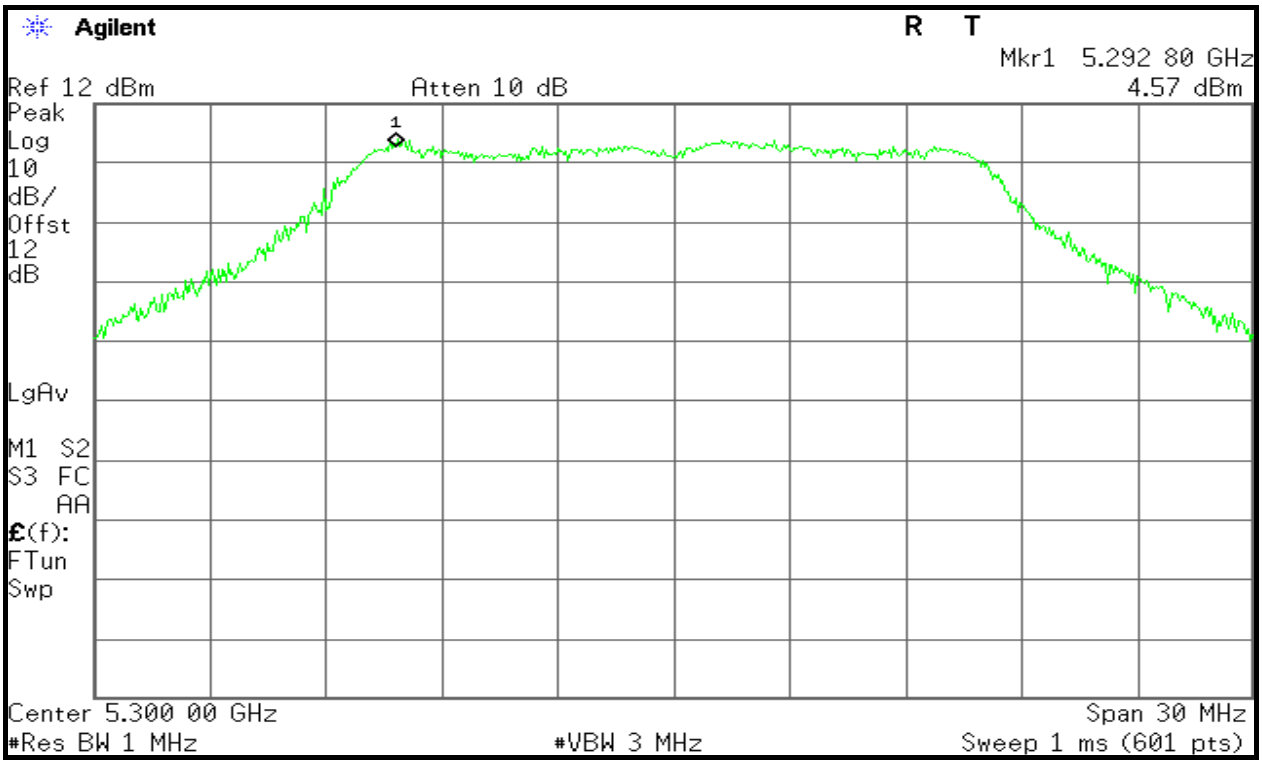
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 2:

5250~5350MHz

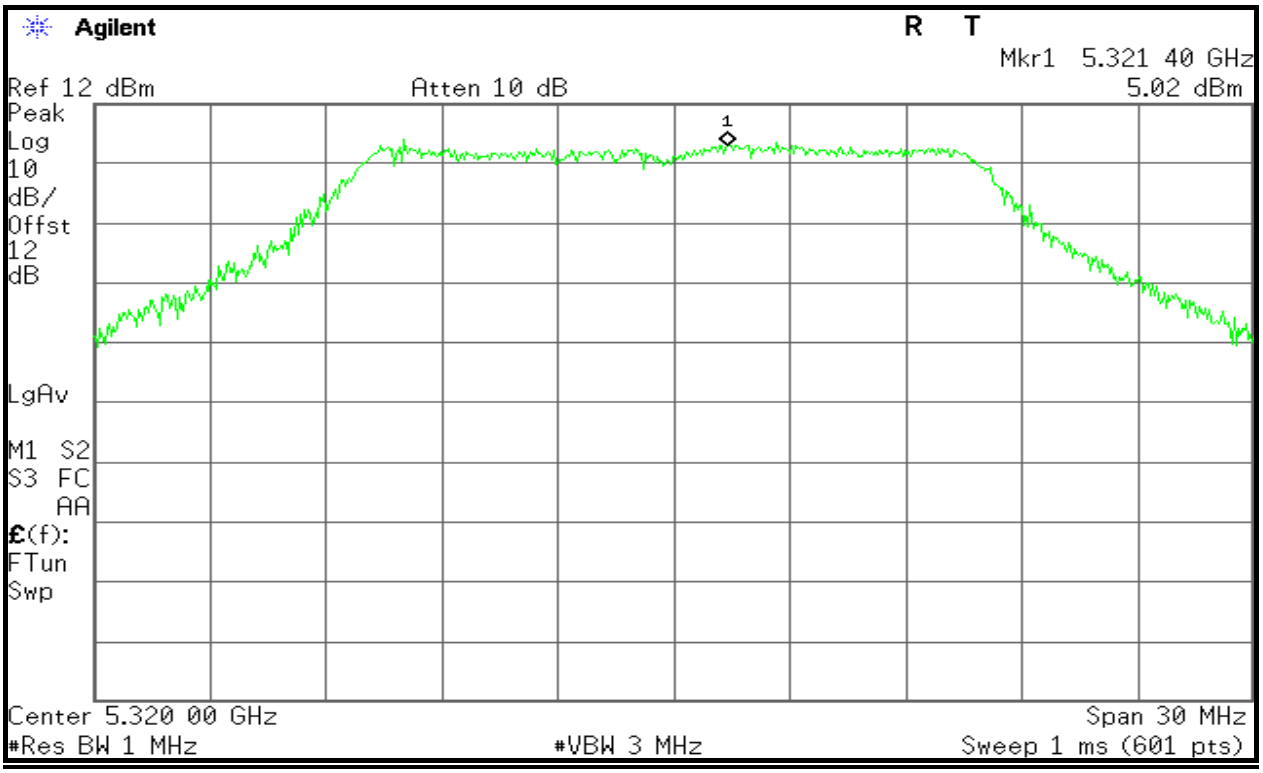
CH Low



CH Mid

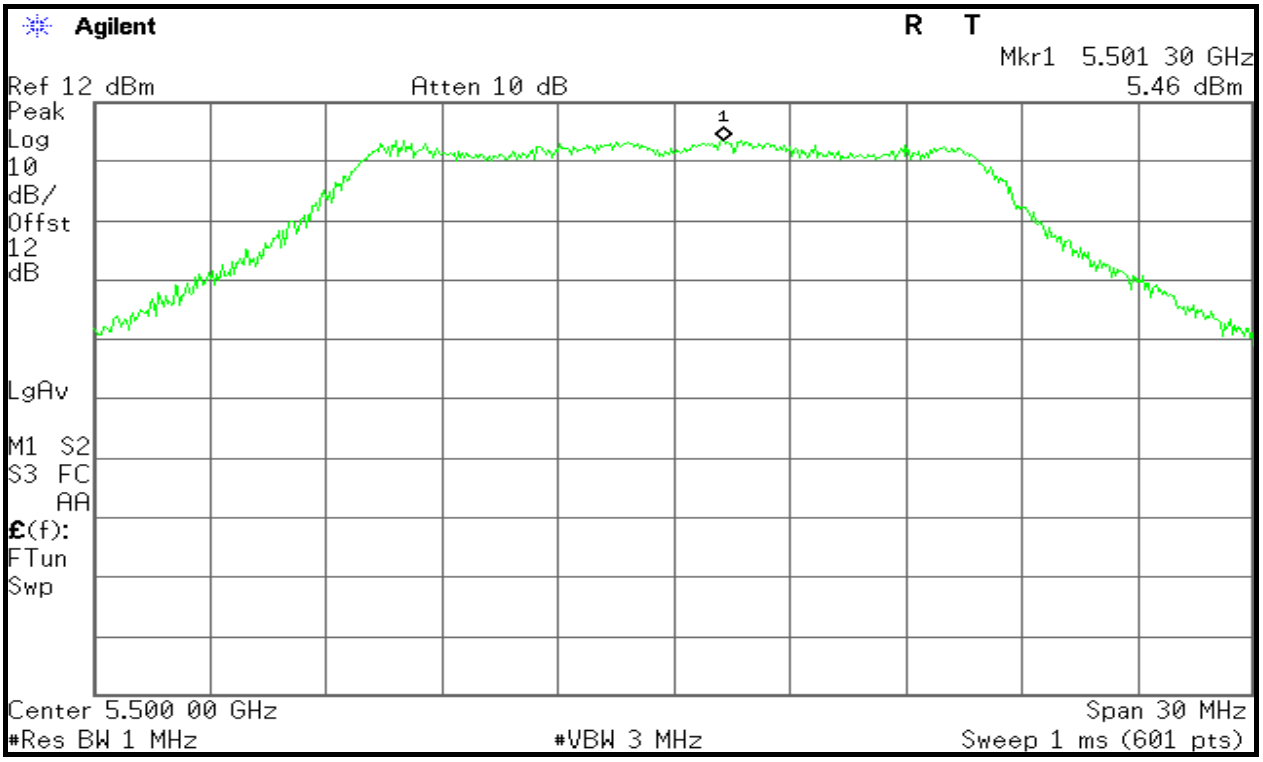


CH High

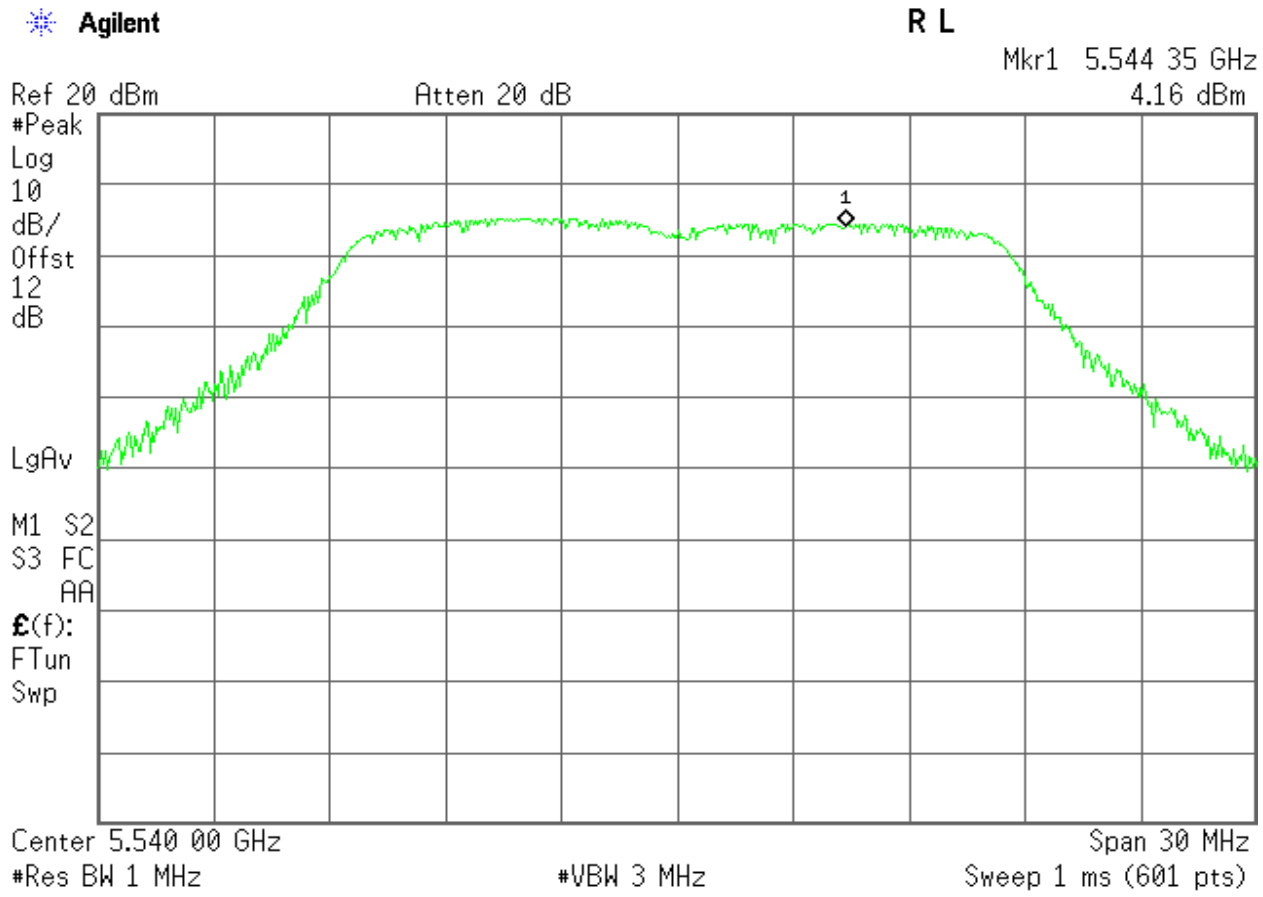


5470~5725MHz

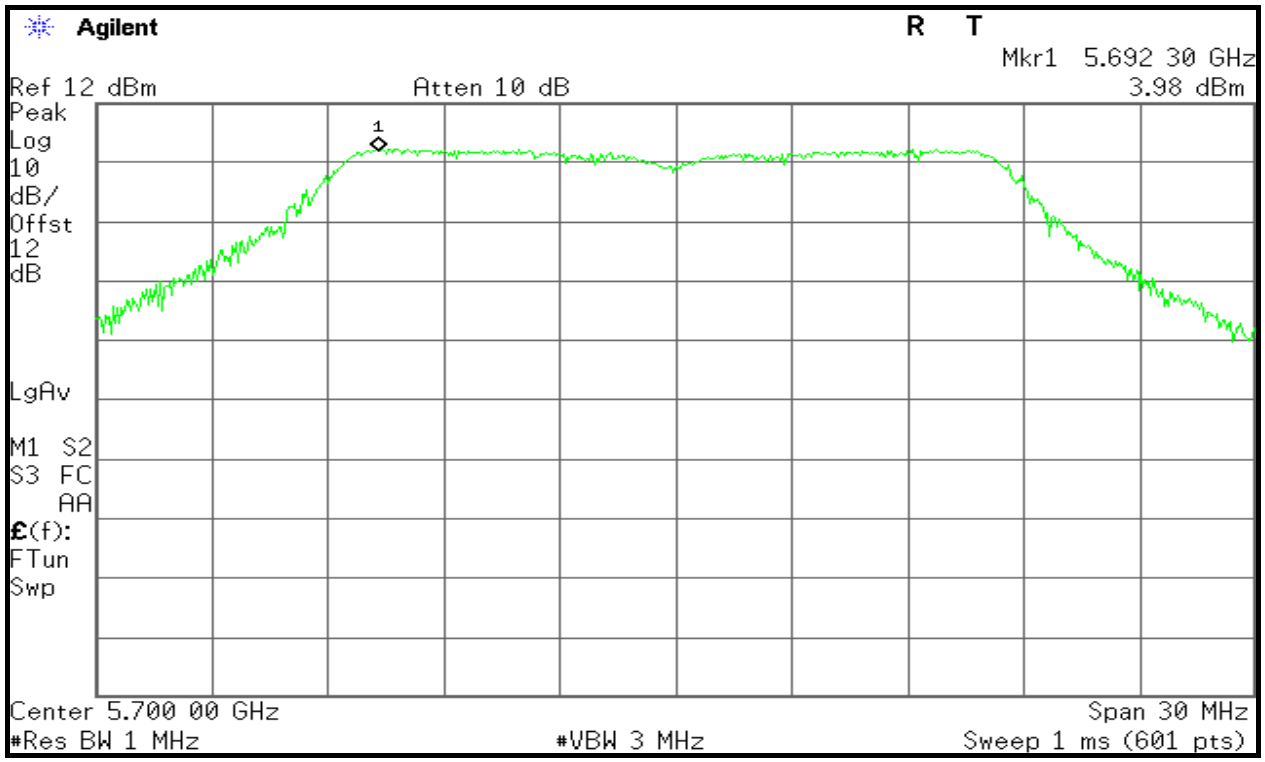
CH Low



CH Mid



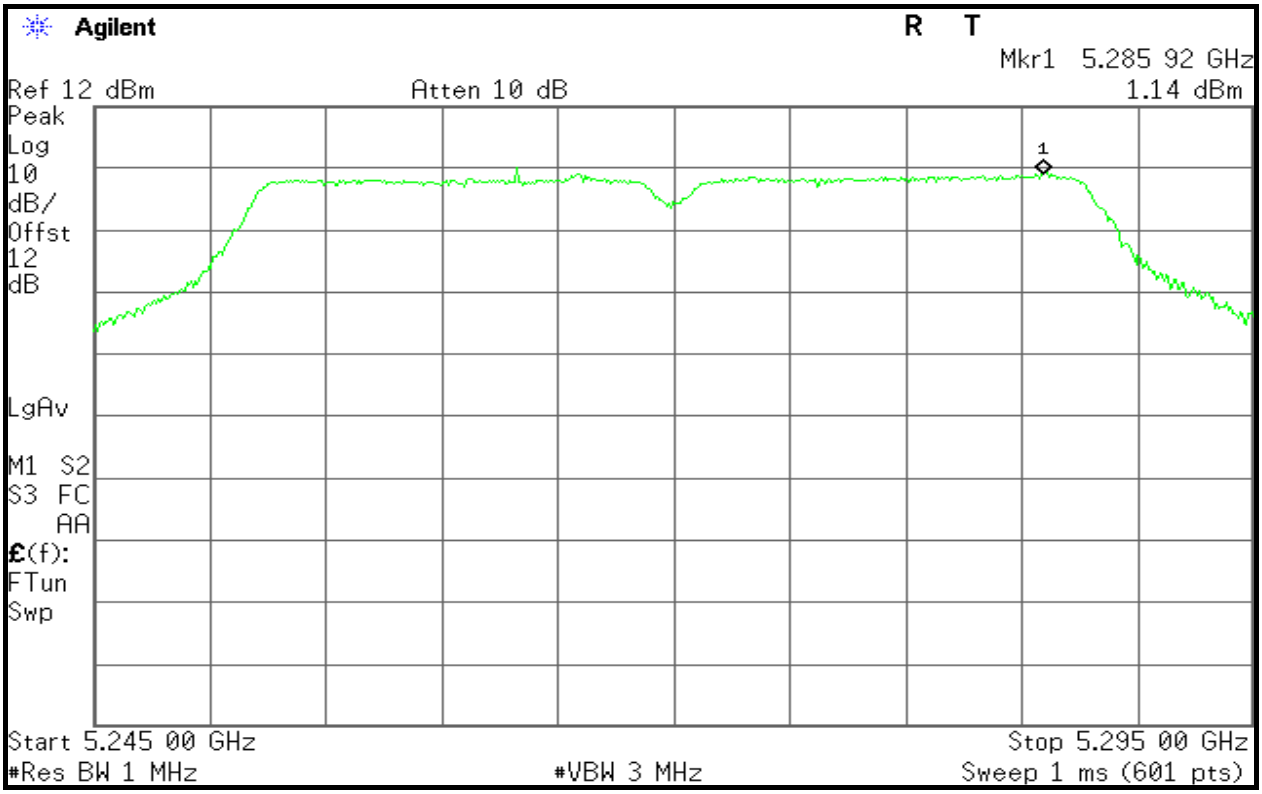
CH High



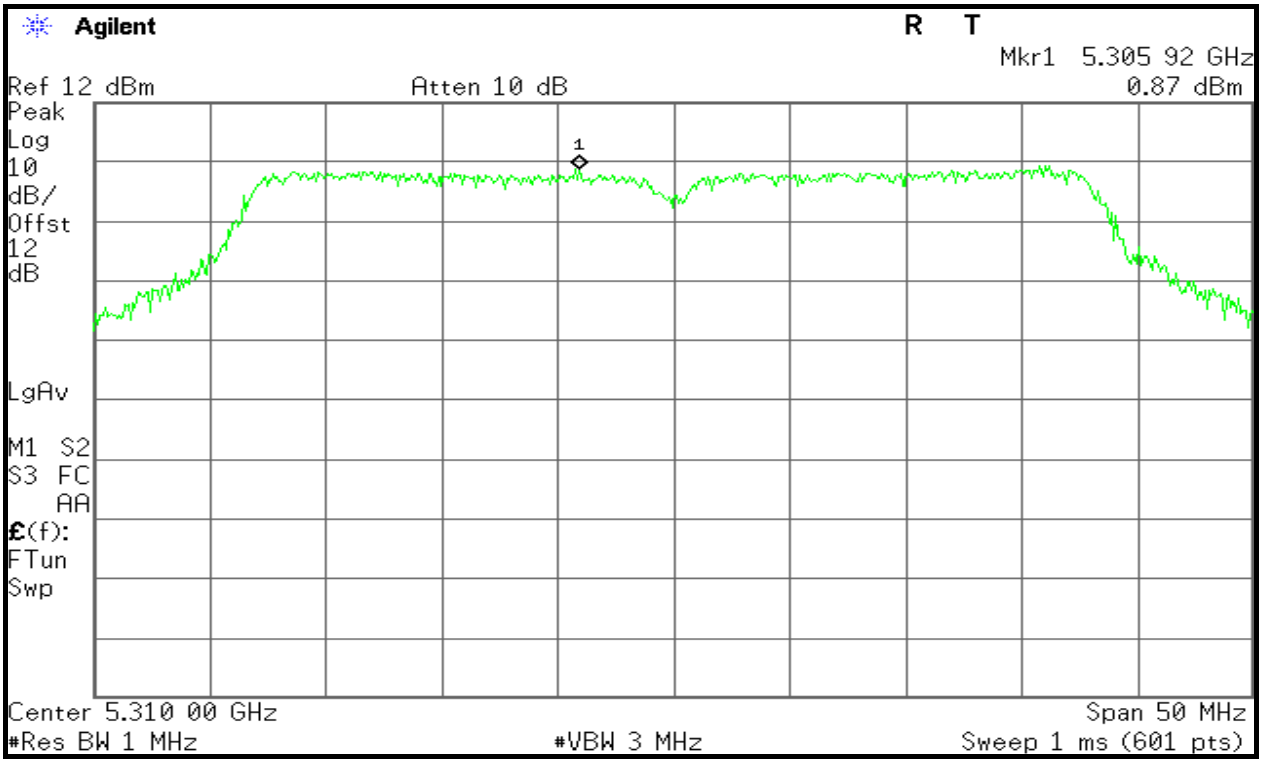
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 0:

5250~5350MHz

CH Low

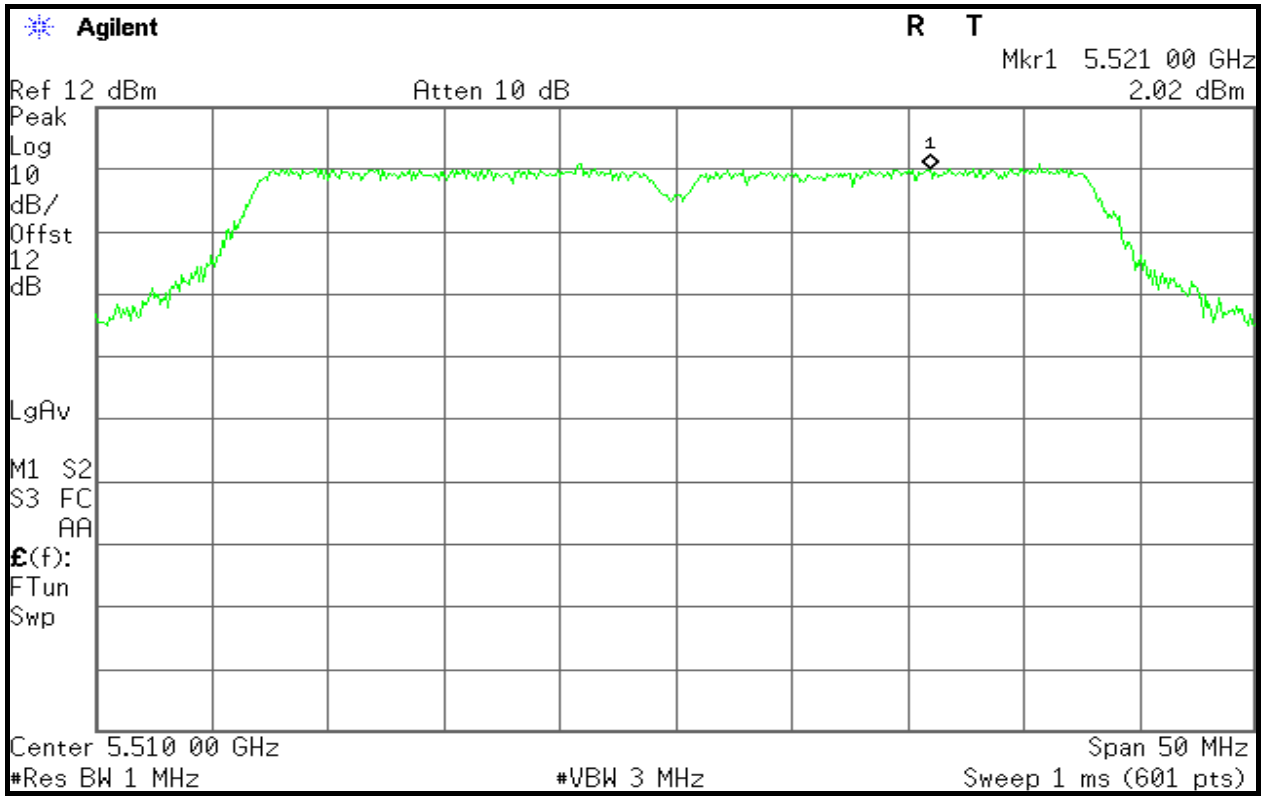


CH High

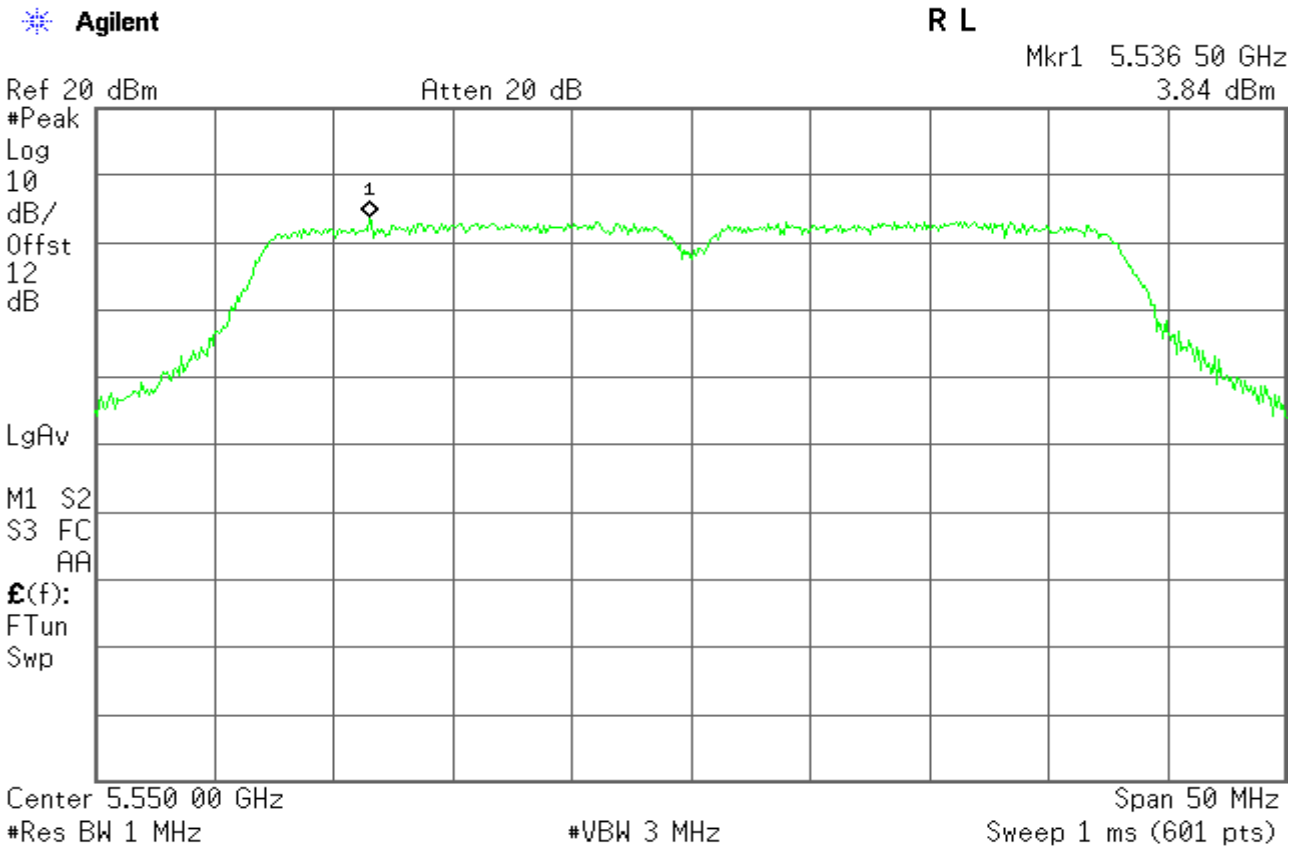


5470~5725MHz

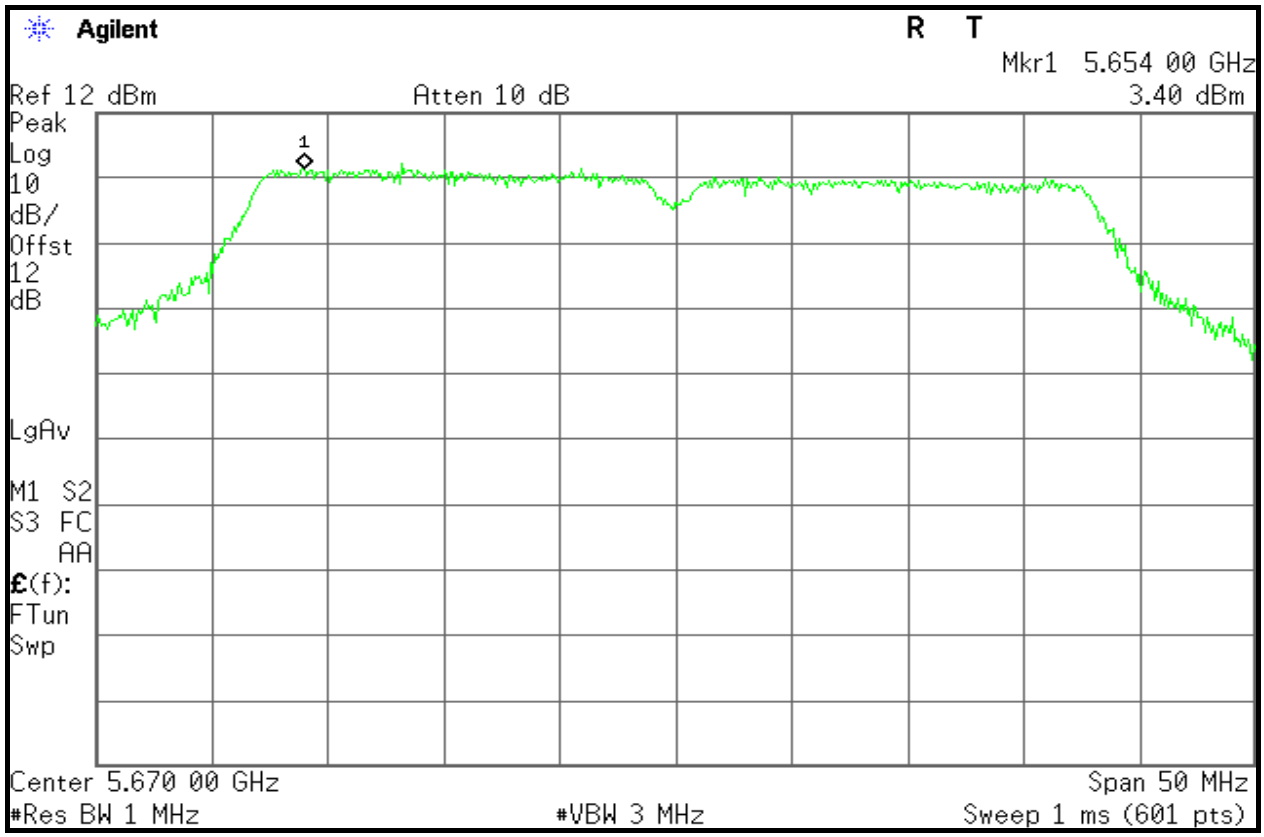
CH Low



CH Mid



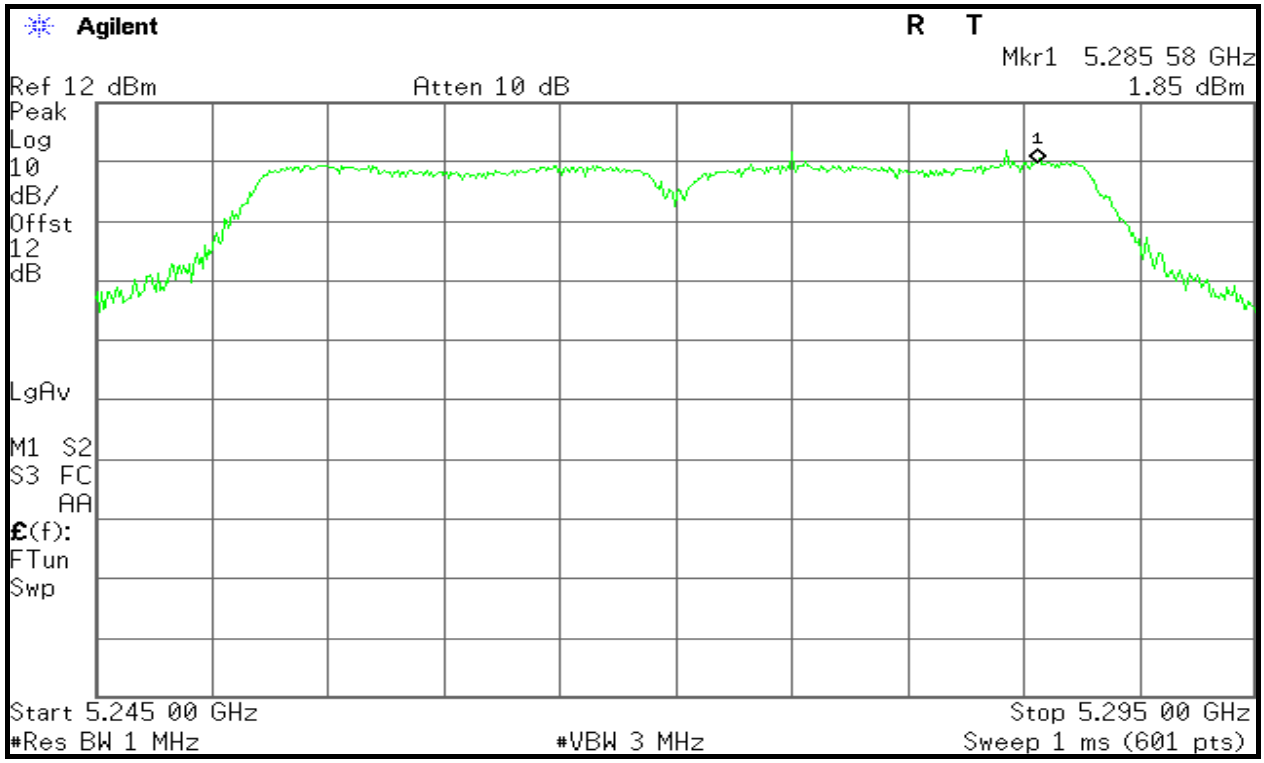
CH High



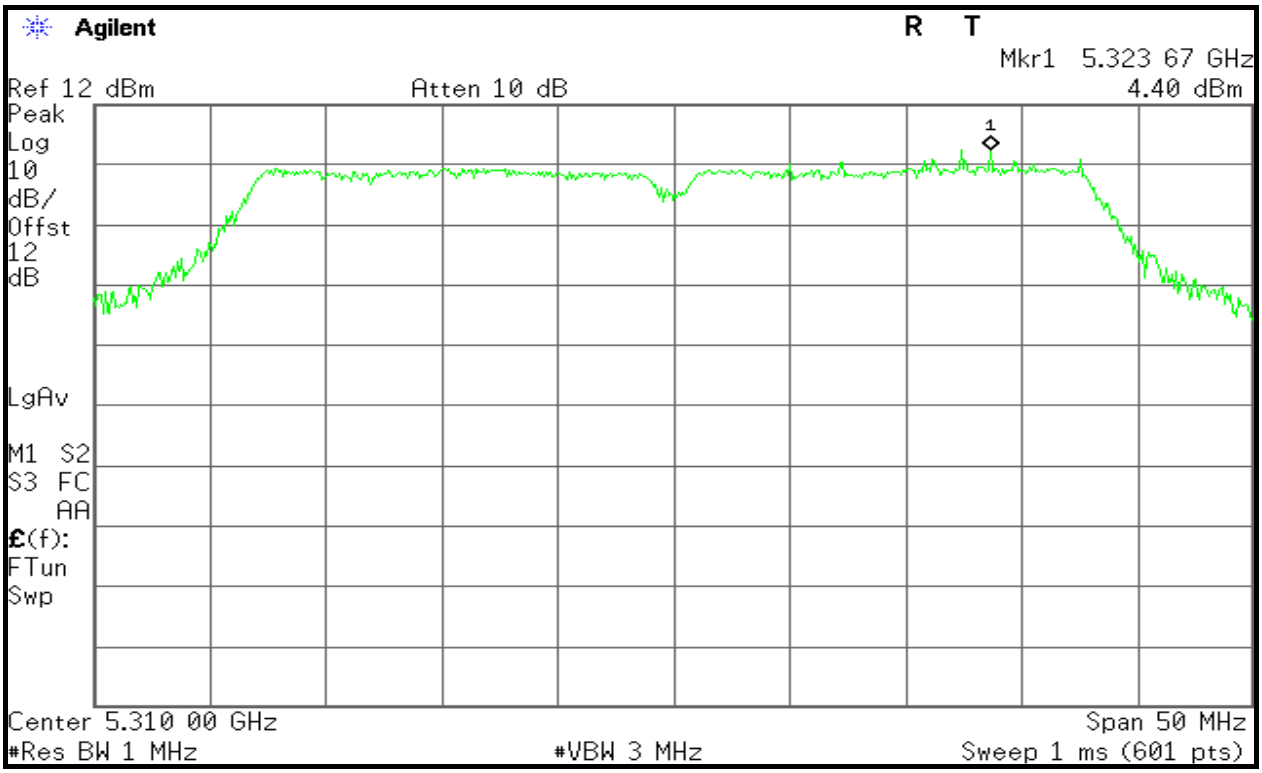
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 1:

5250~5350MHz

CH Low

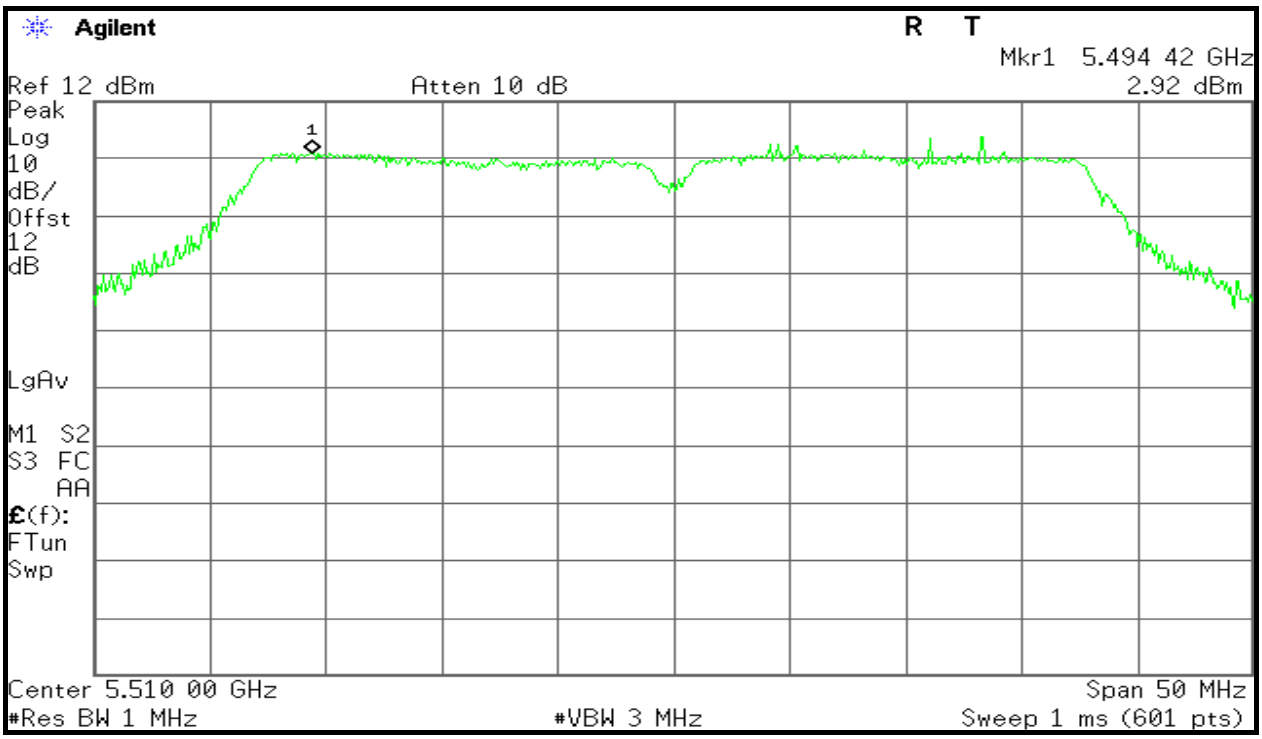


CH High

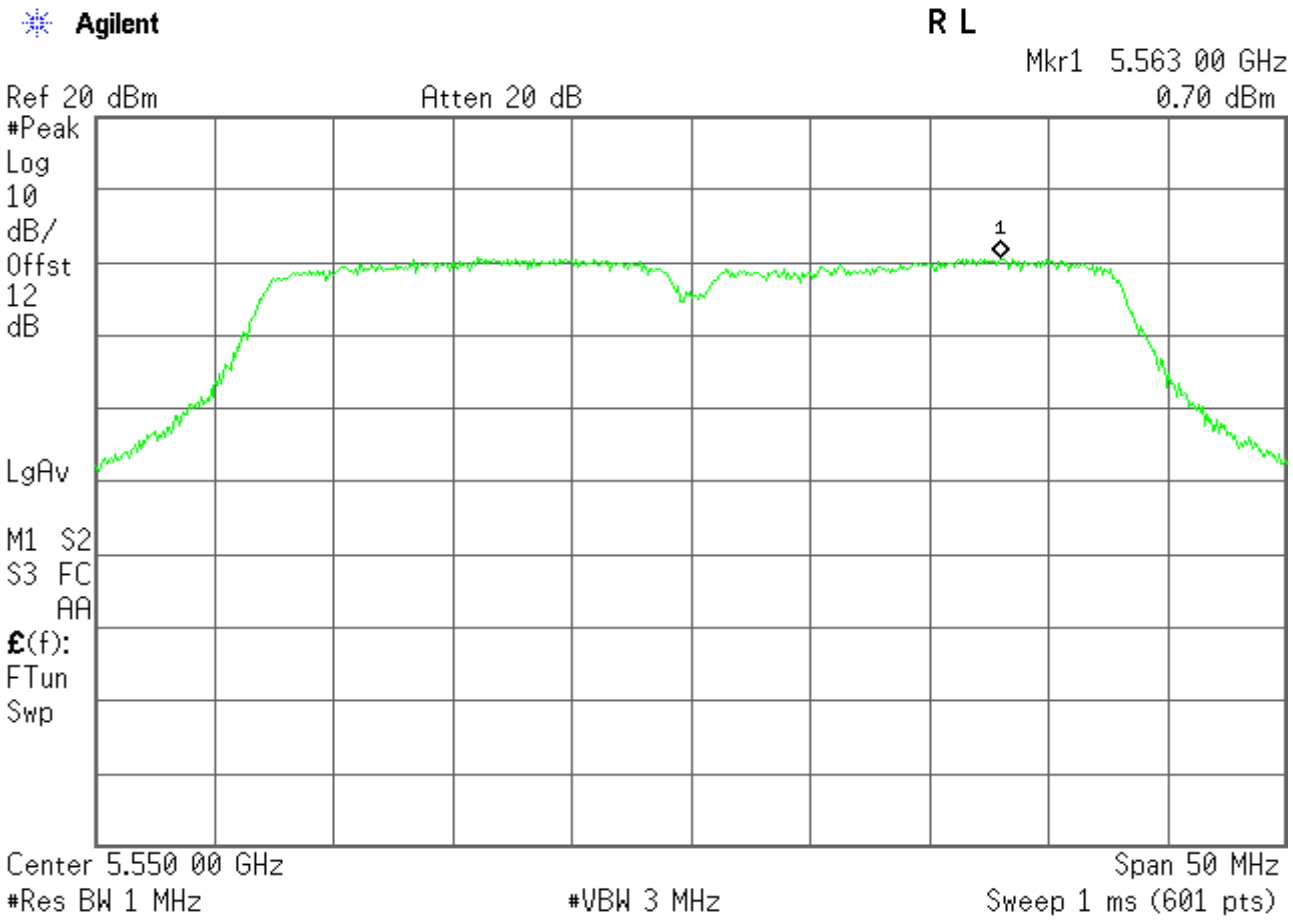


5470~5725MHz

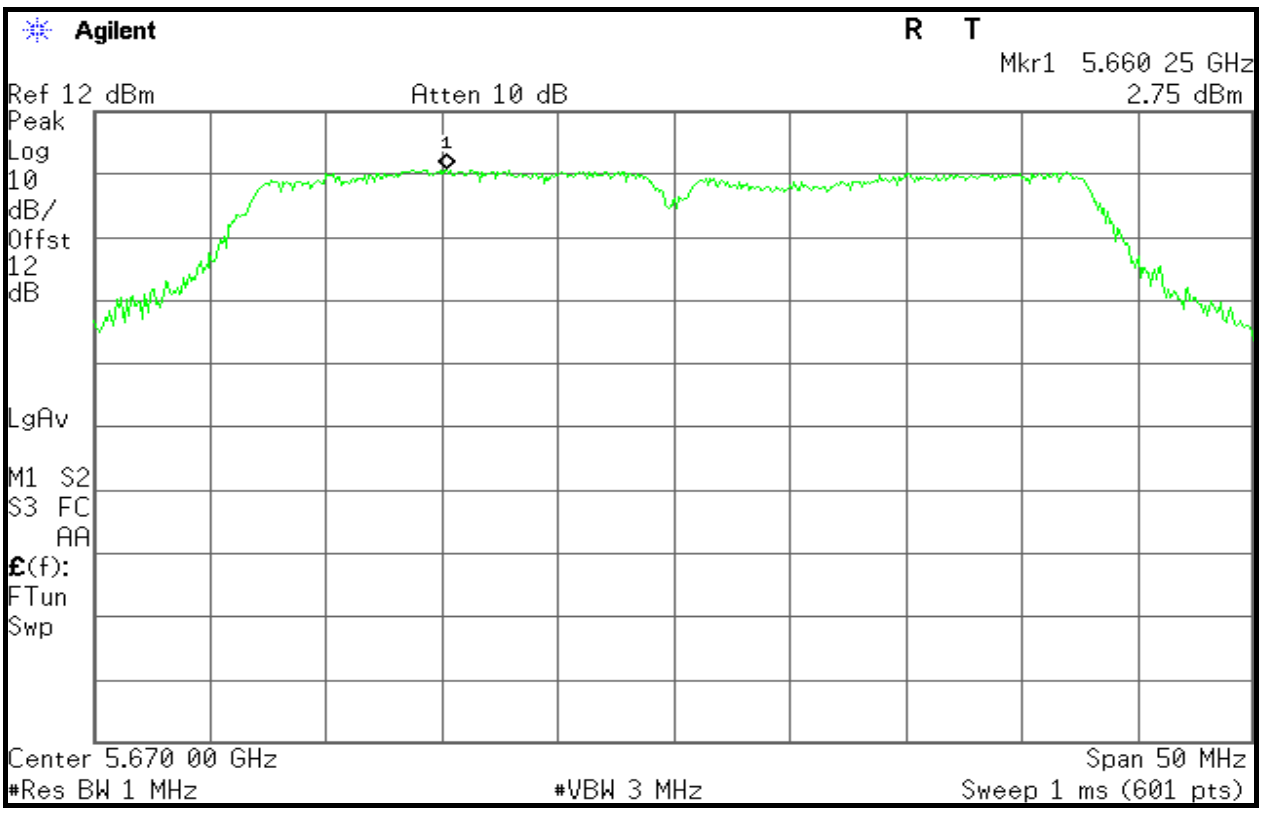
CH Low



CH Mid



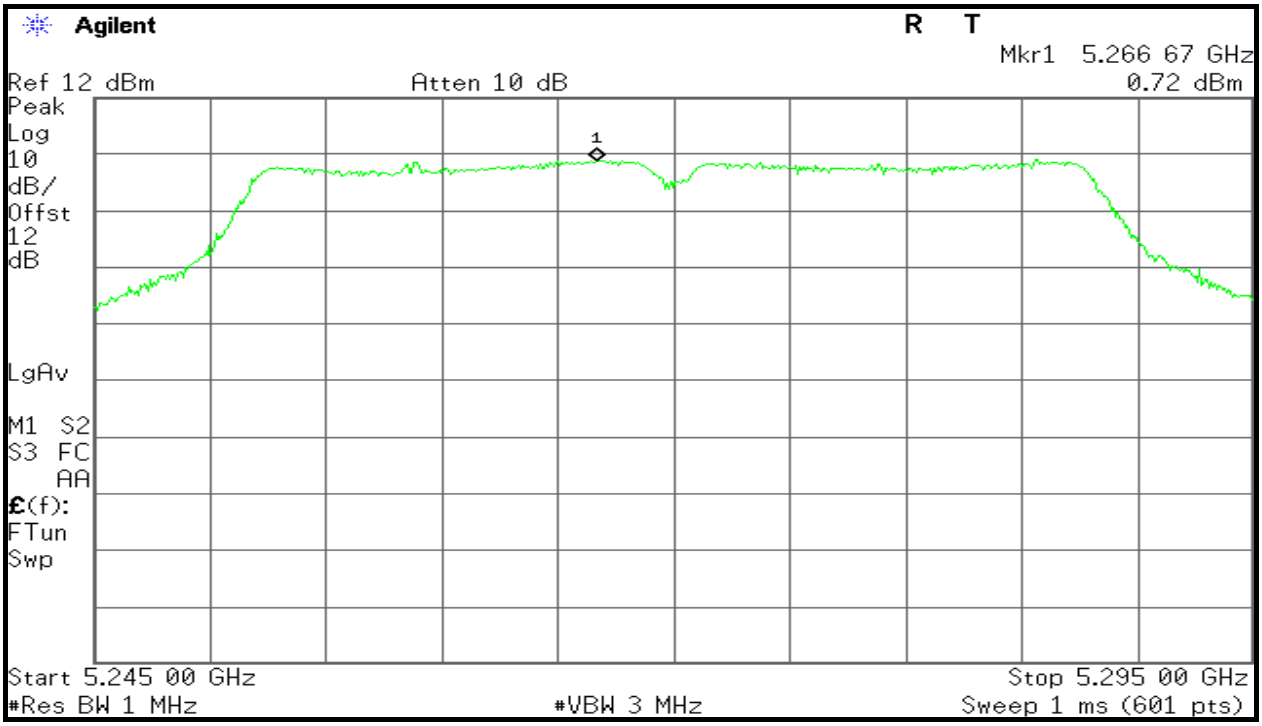
CH High



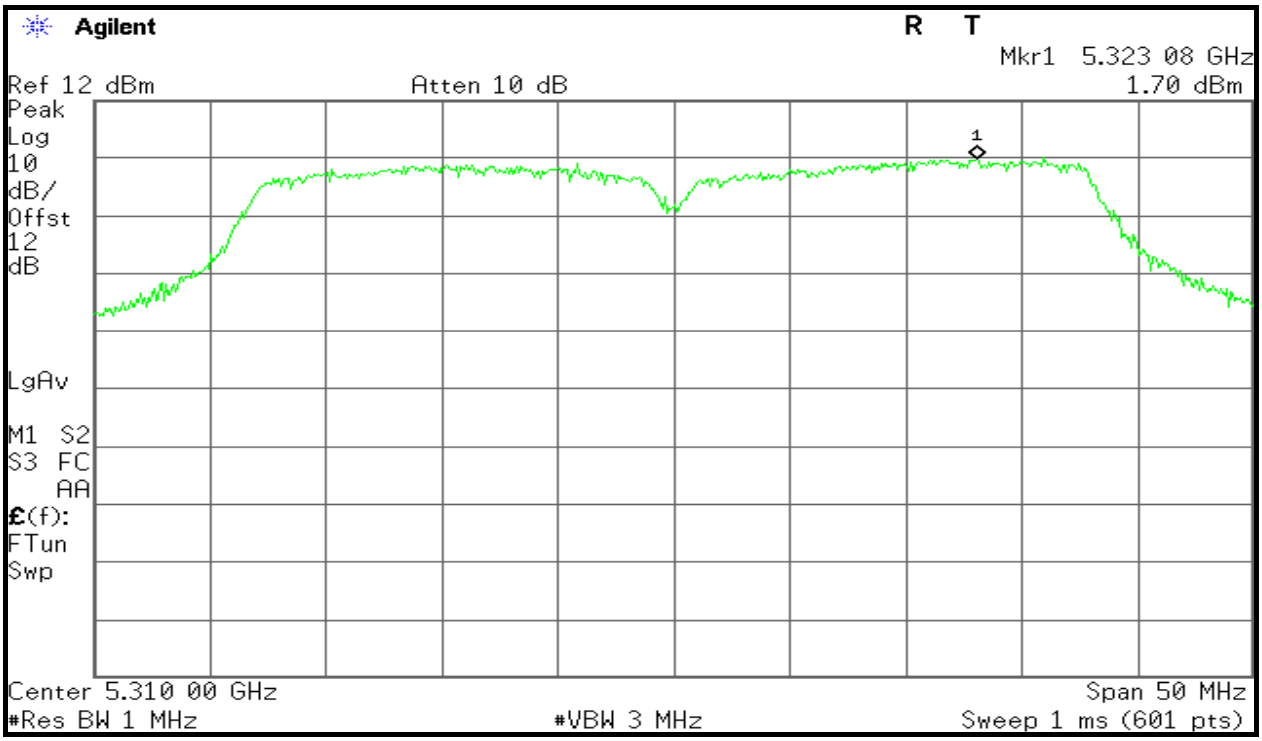
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 2:

5250~5350MHz

CH Low

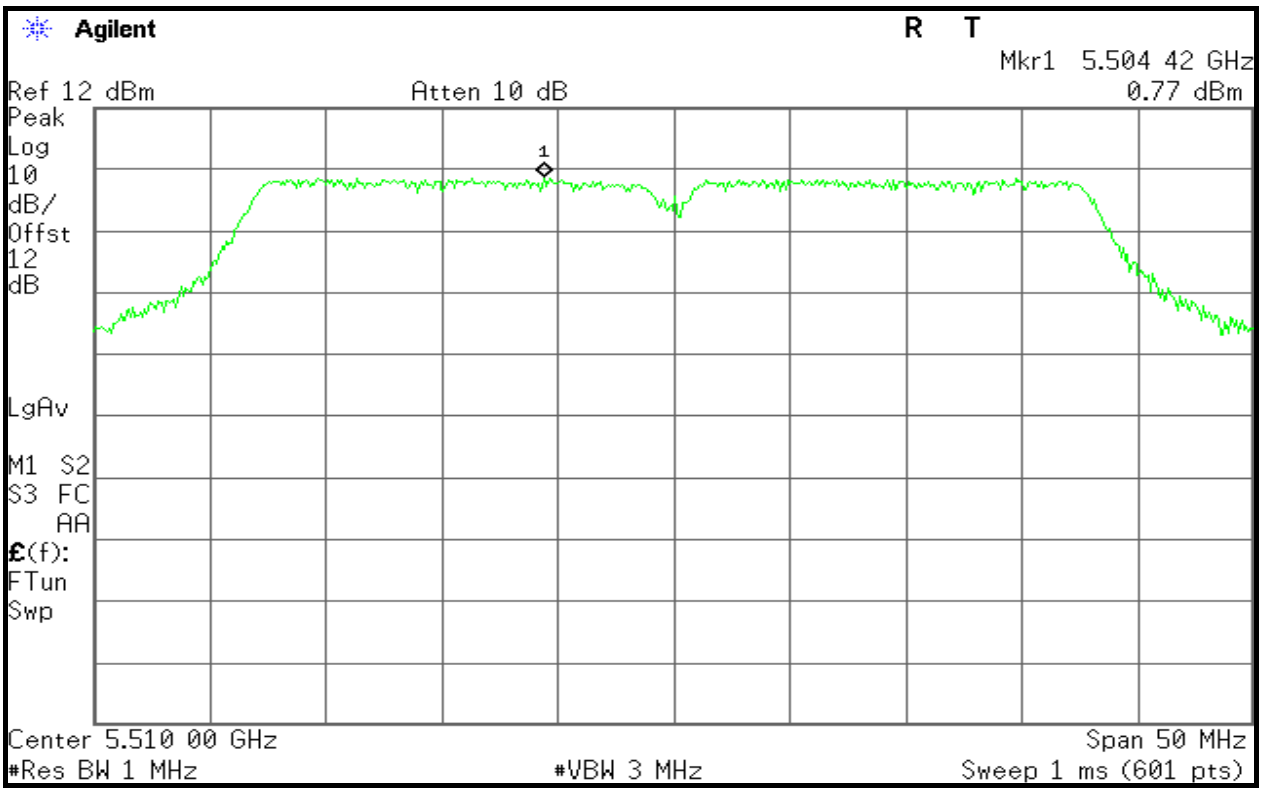


CH High

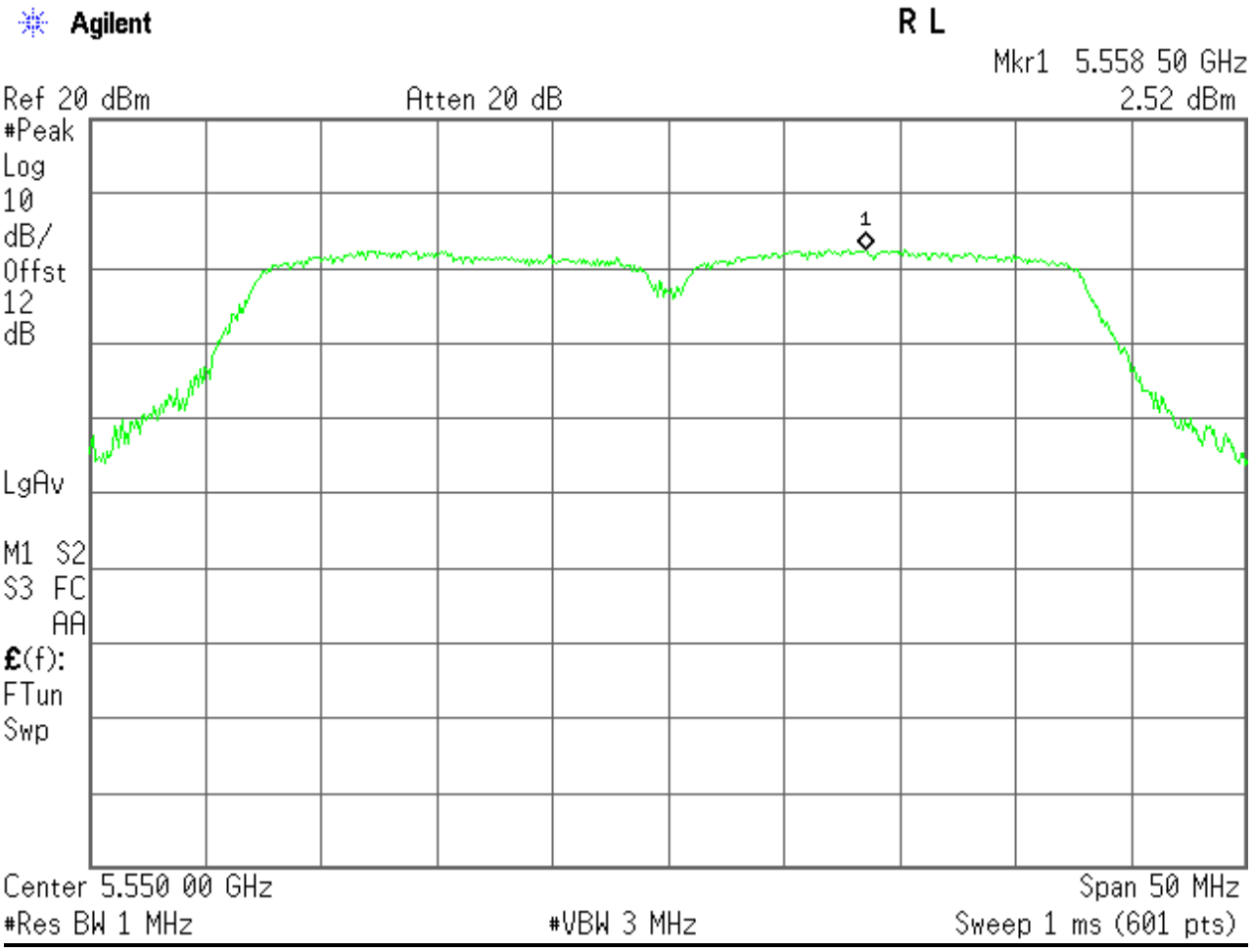


5470~5725MHz

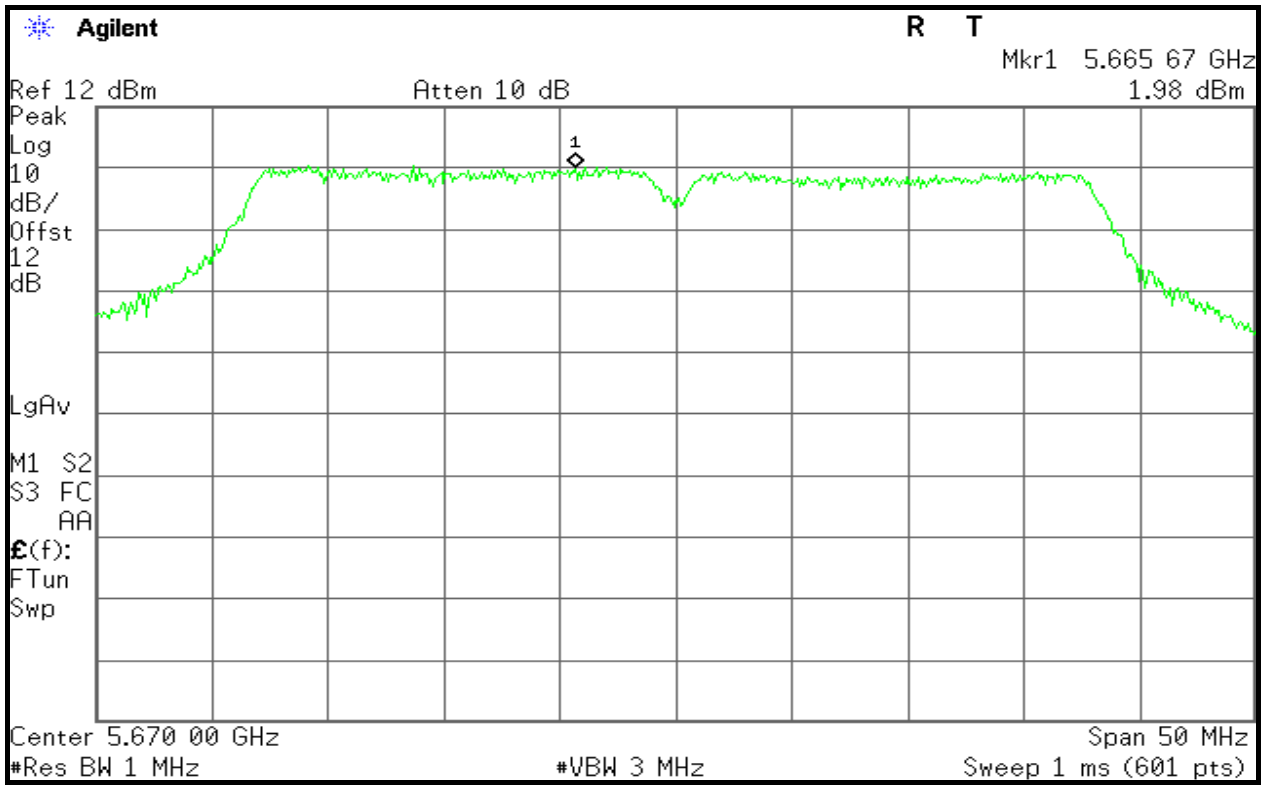
CH Low



CH Mid



CH High

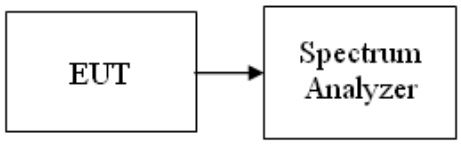


7.5 PEAK EXCURSION

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

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	8.24	13.00	-4.76	PASS
Mid	5300	8.46	13.00	-4.54	PASS
High	5320	8.76	13.00	-4.24	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	8.60	13.00	-4.40	PASS
Mid	5540	7.92	13.00	-5.08	PASS
High	5700	8.83	13.00	-4.17	PASS

Test mode: 802.11n Standard-20 MHz Channel mode / Chain 0

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	8.32	13.00	-4.68	PASS
Mid	5300	6.48	13.00	-6.52	PASS
High	5320	7.36	13.00	-5.64	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	7.25	13.00	-5.75	PASS
Mid	5540	7.64	13.00	-5.36	PASS
High	5700	7.89	13.00	-5.11	PASS

Test mode: 802.11n Standard-20 MHz Channel mode / Chain 1

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	7.48	13.00	-5.52	PASS
Mid	5300	7.11	13.00	-5.89	PASS
High	5320	7.00	13.00	-6.00	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	6.72	13.00	-6.28	PASS
Mid	5540	7.70	13.00	-5.30	PASS
High	5700	7.32	13.00	-5.68	PASS

Test mode: 802.11n Standard-20 MHz Channel mode / Chain 2

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5260	7.82	13.00	-5.18	PASS
Mid	5300	9.13	13.00	-3.87	PASS
High	5320	9.23	13.00	-3.77	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5500	8.51	13.00	-4.49	PASS
Mid	5540	7.73	13.00	-5.27	PASS
High	5700	7.49	13.00	-5.51	PASS

Test mode: 802.11n Wide-40 MHz Channel mode / Chain 0

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5270	8.75	13.00	-4.25	PASS
High	5310	8.82	13.00	-4.18	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5510	8.30	13.00	-4.70	PASS
Mid	5550	8.54	13.00	-4.46	PASS
High	5670	8.65	13.00	-4.35	PASS

Test mode: 802.11n Wide-40 MHz Channel mode / Chain 1

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5270	8.56	13.00	-4.44	PASS
High	5310	7.21	13.00	-5.79	PASS

5470~5725MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5510	6.09	13.00	-6.91	PASS
Mid	5550	8.07	13.00	-4.93	PASS
High	5670	9.71	13.00	-3.29	PASS

Test mode: 802.11n Wide-40 MHz Channel mode / Chain 2

5250~5350MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5270	6.96	13.00	-6.04	PASS
High	5310	8.51	13.00	-4.49	PASS

5470~5725MHz

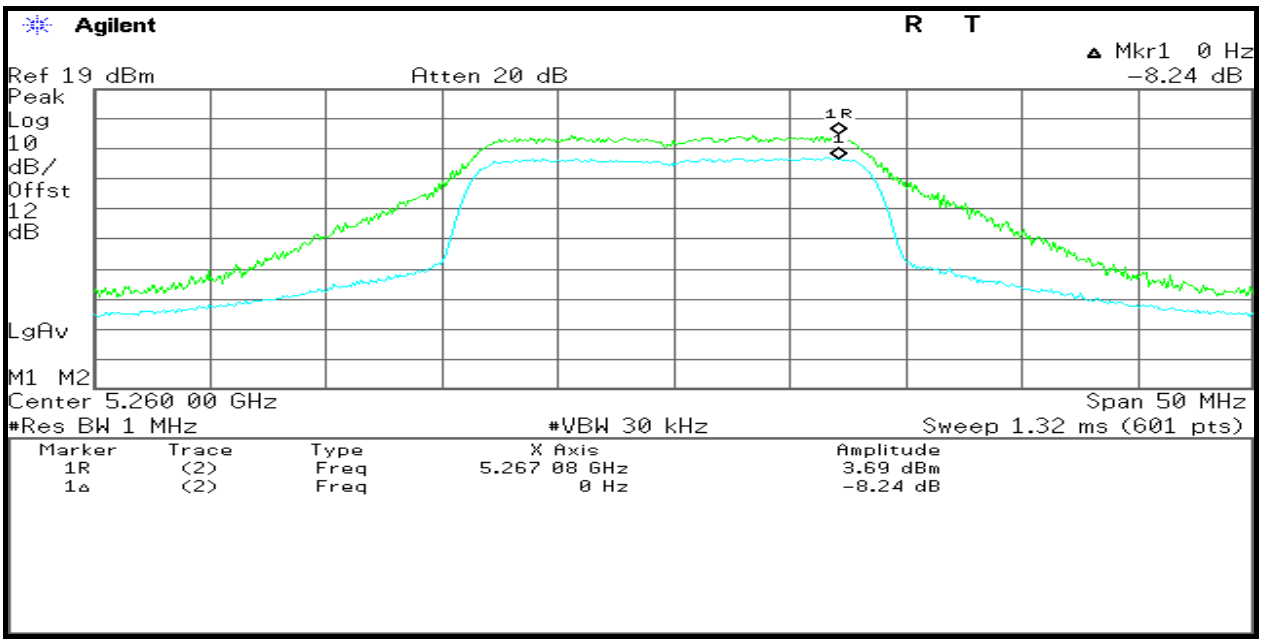
Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5510	7.78	13.00	-5.22	PASS
Mid	5550	7.61	13.00	-5.39	PASS
High	5670	7.35	13.00	-5.65	PASS

Test Plot

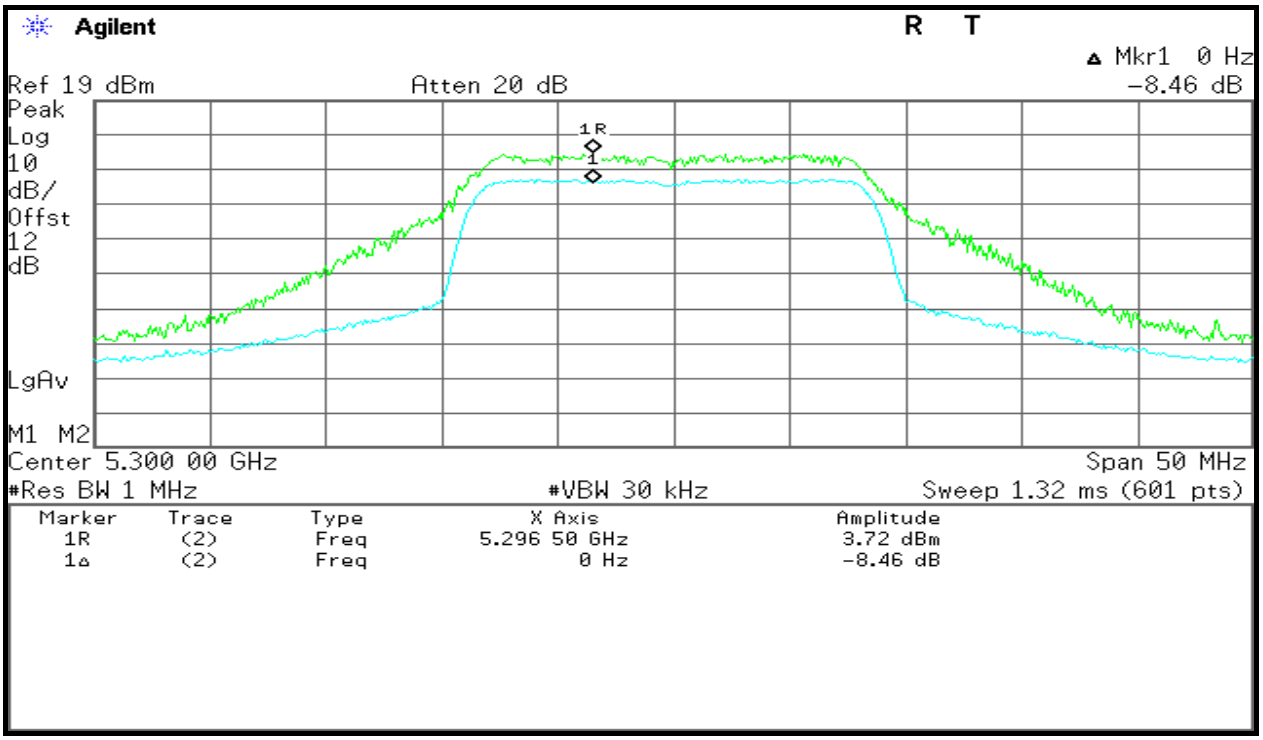
Test mode: IEEE 802.11a mode:

5250~5350MHz

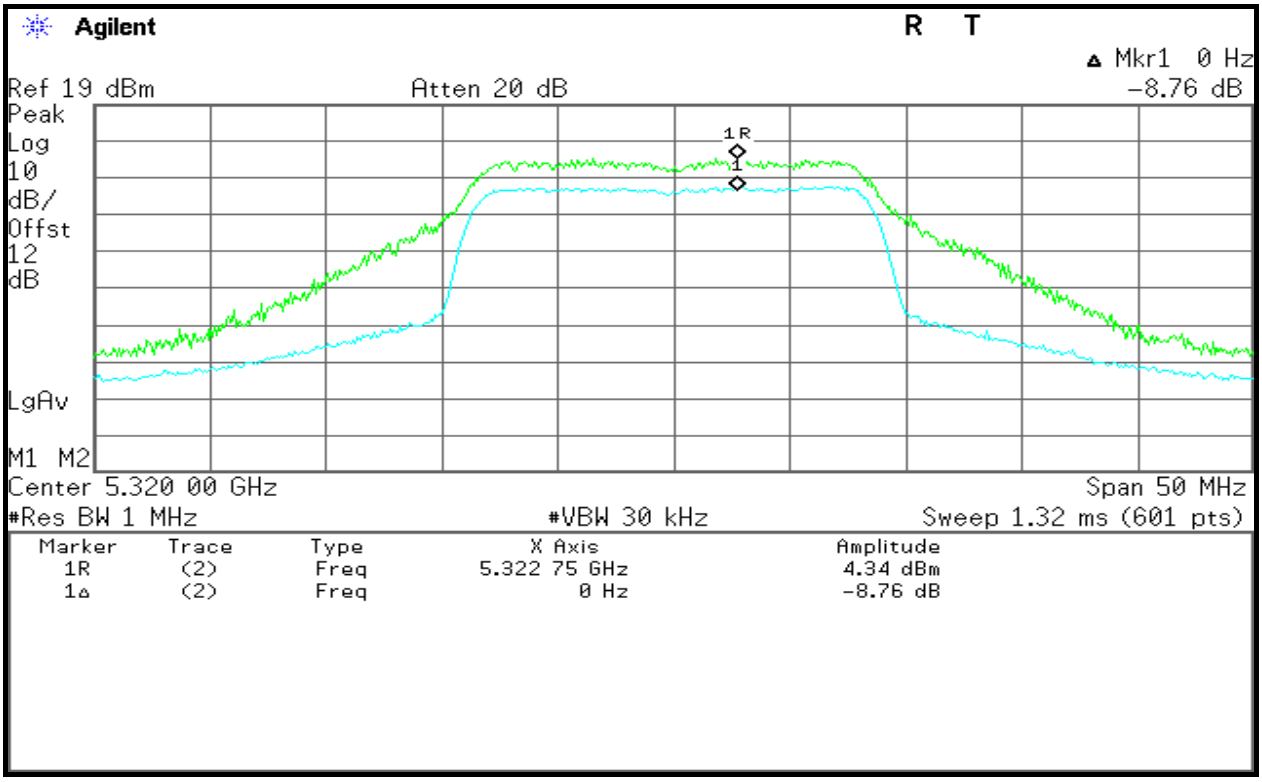
CH Low



CH Mid

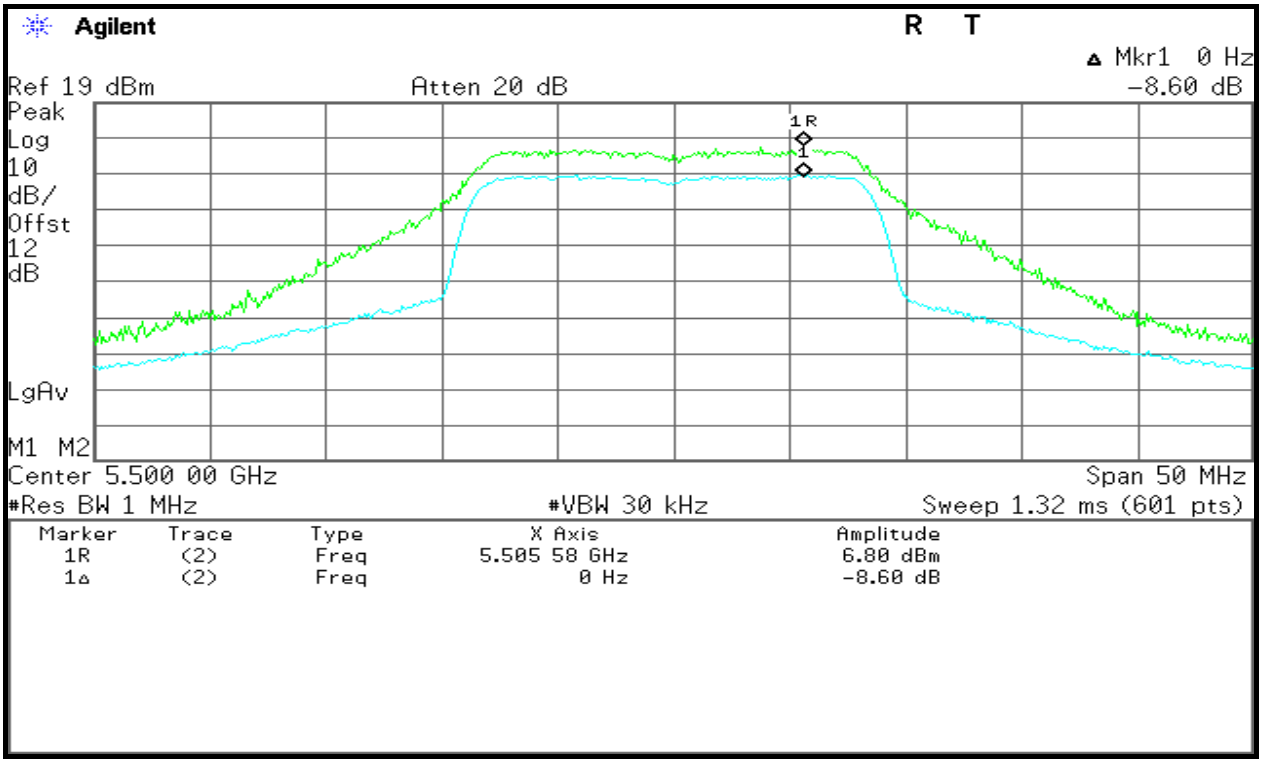


CH High

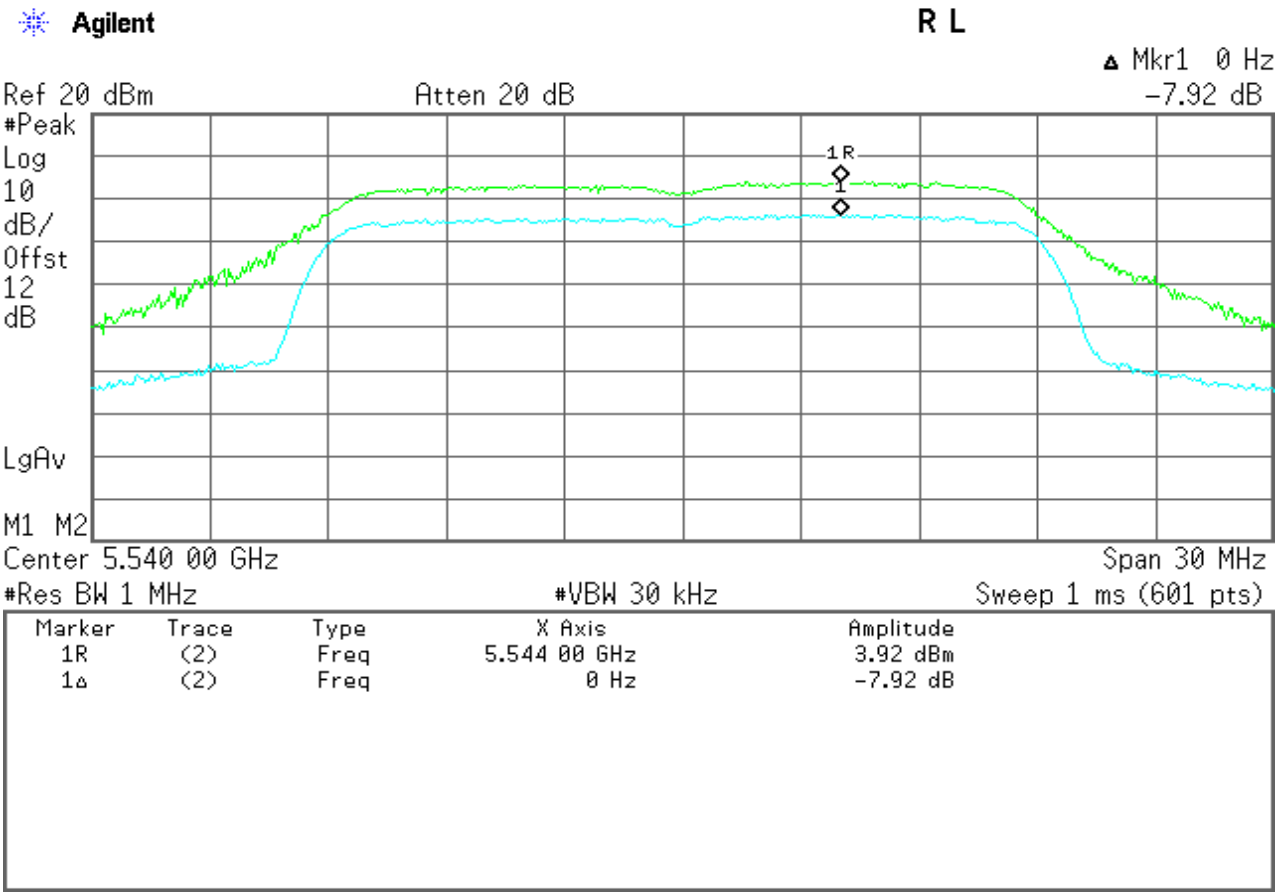


5470~5725MHz

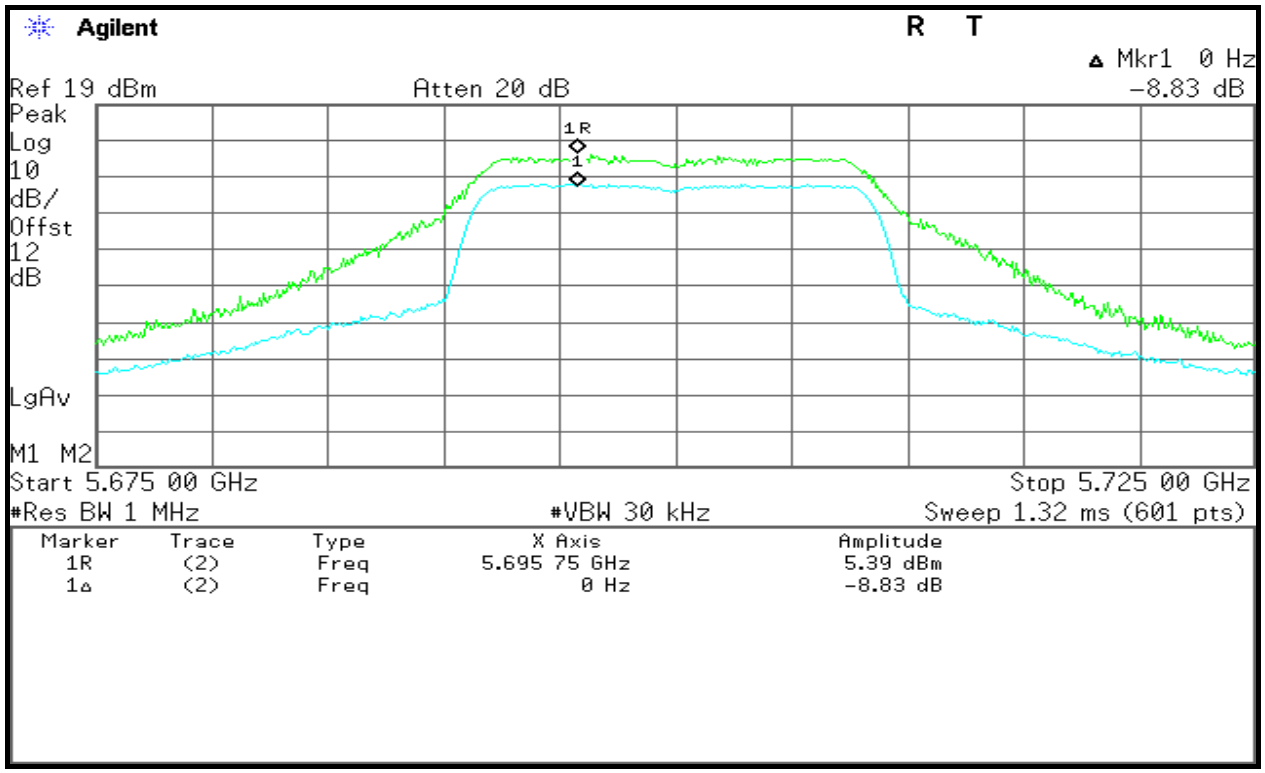
CH Low



CH Mid



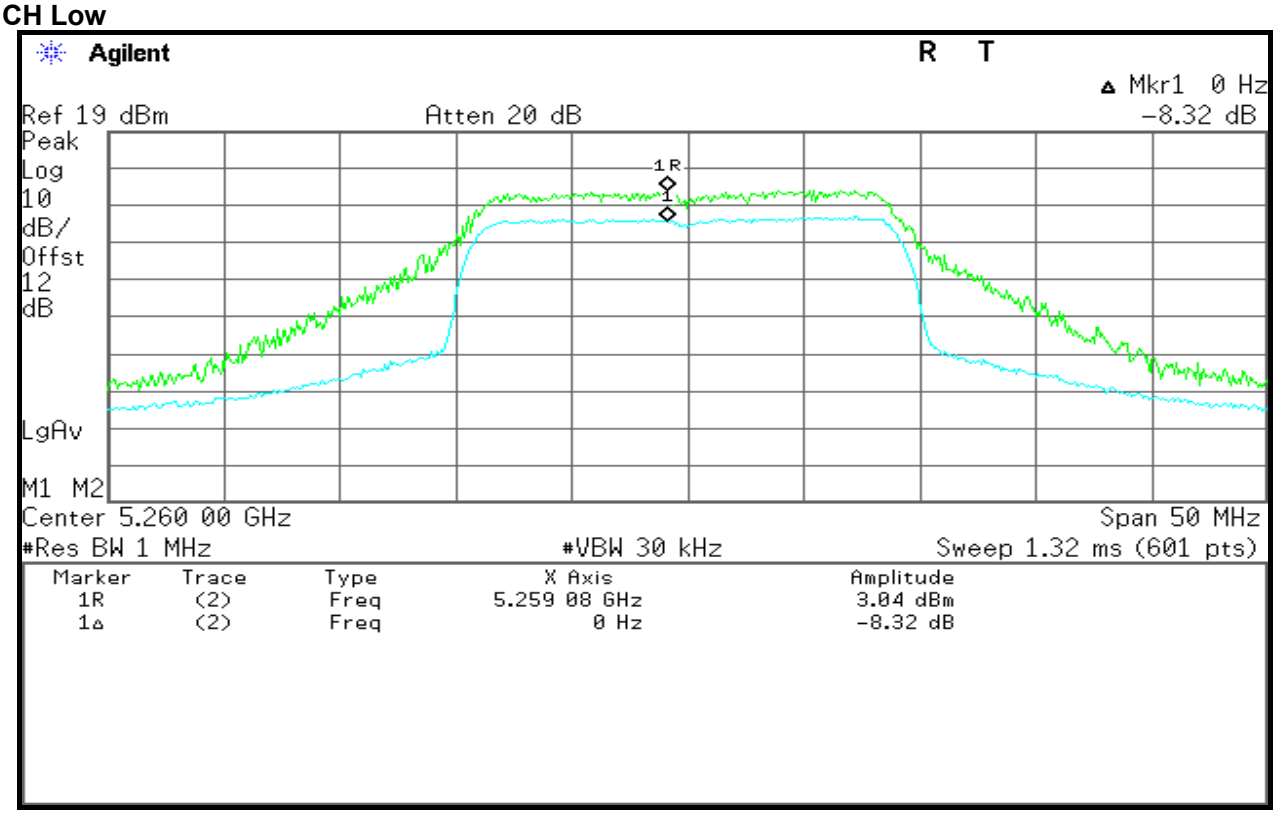
CH High



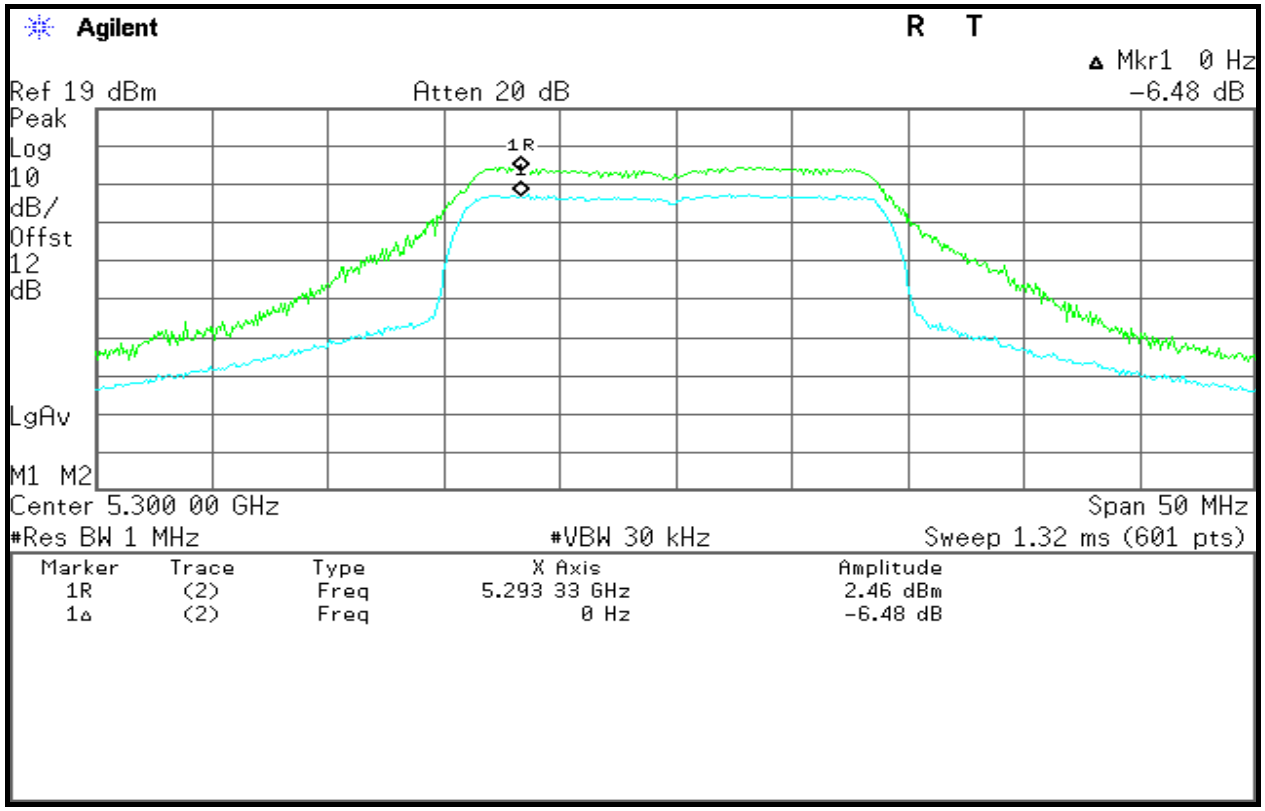
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 0:

5250~5350MHz

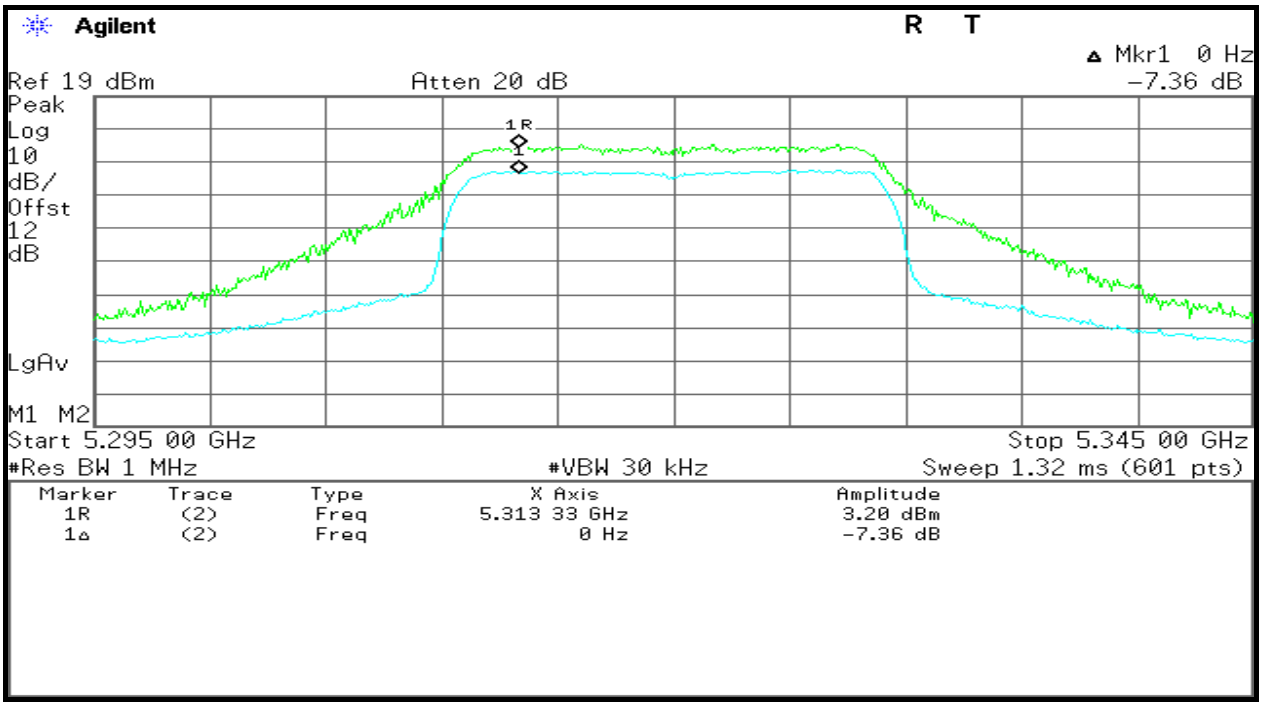
CH Low



CH Mid

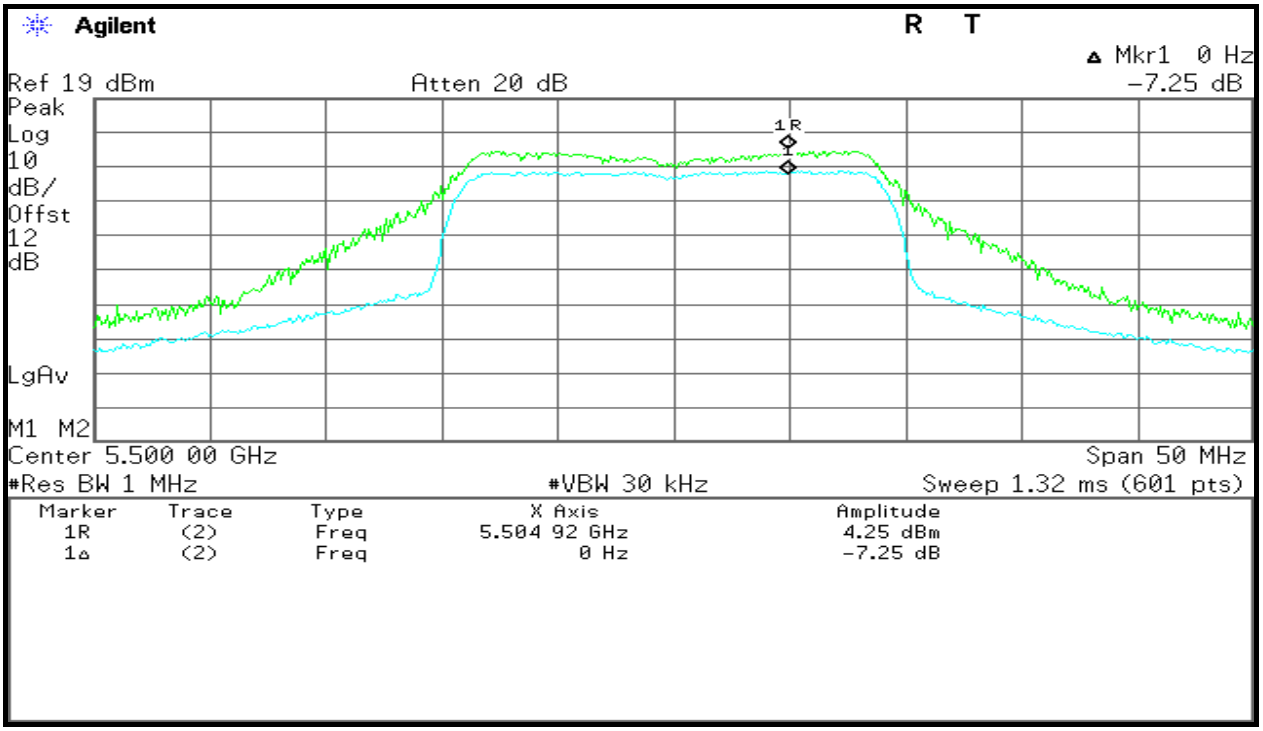


CH High

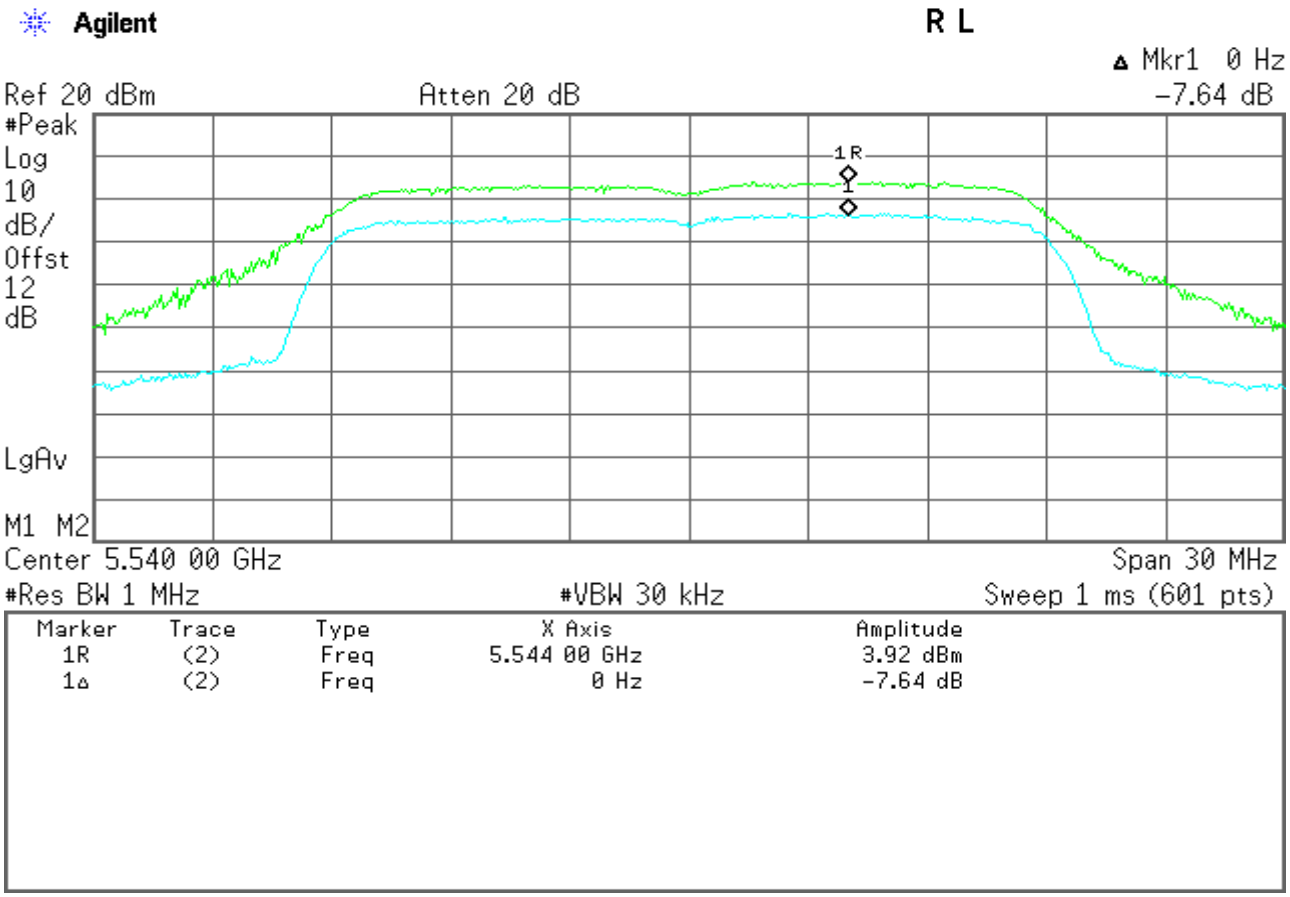


5470~5725MHz

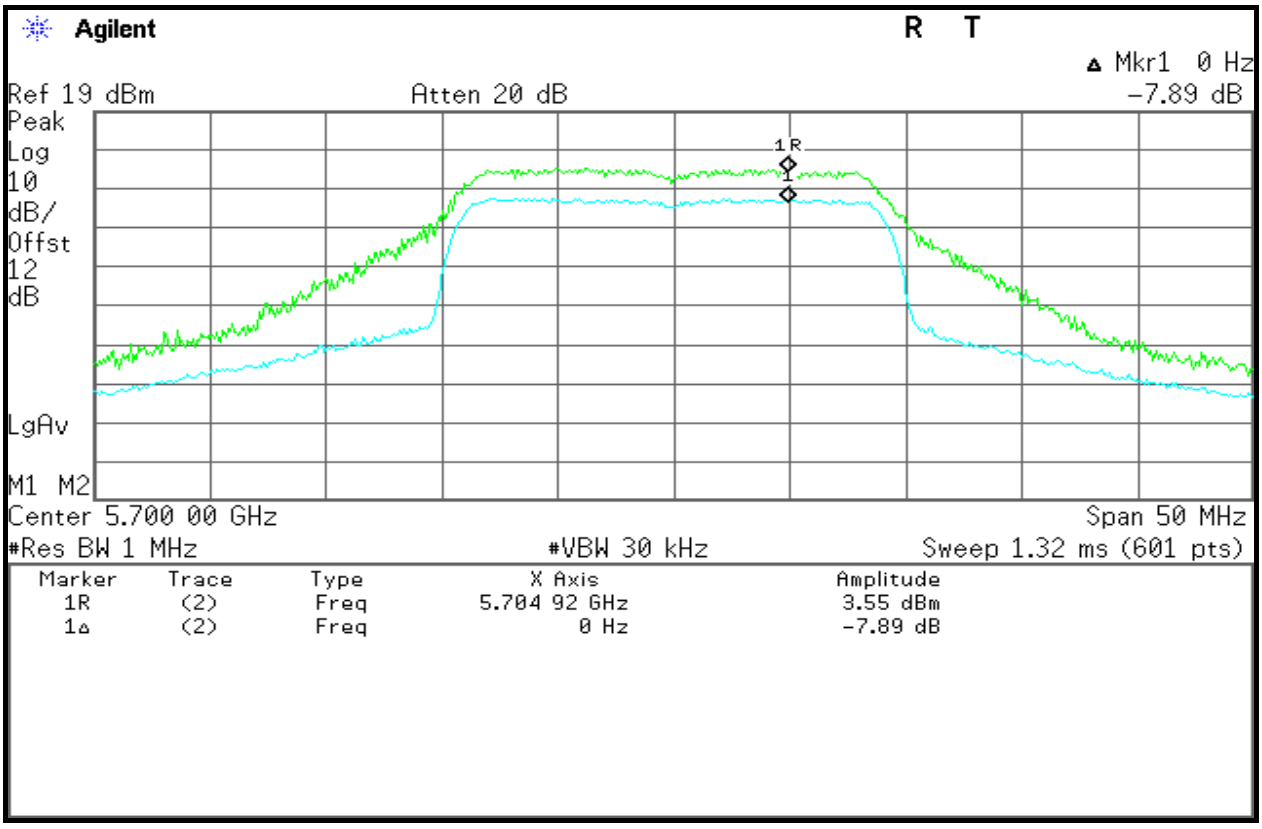
CH Low



CH Mid



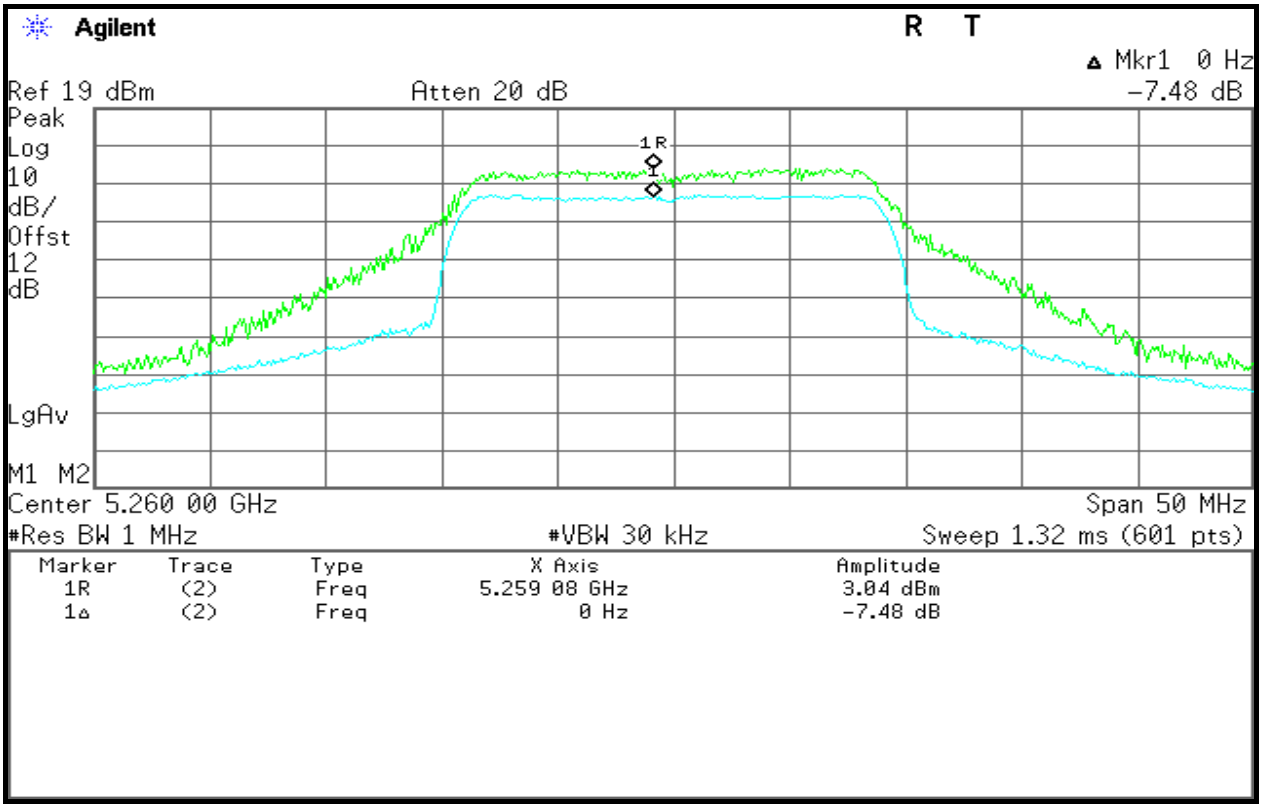
CH High



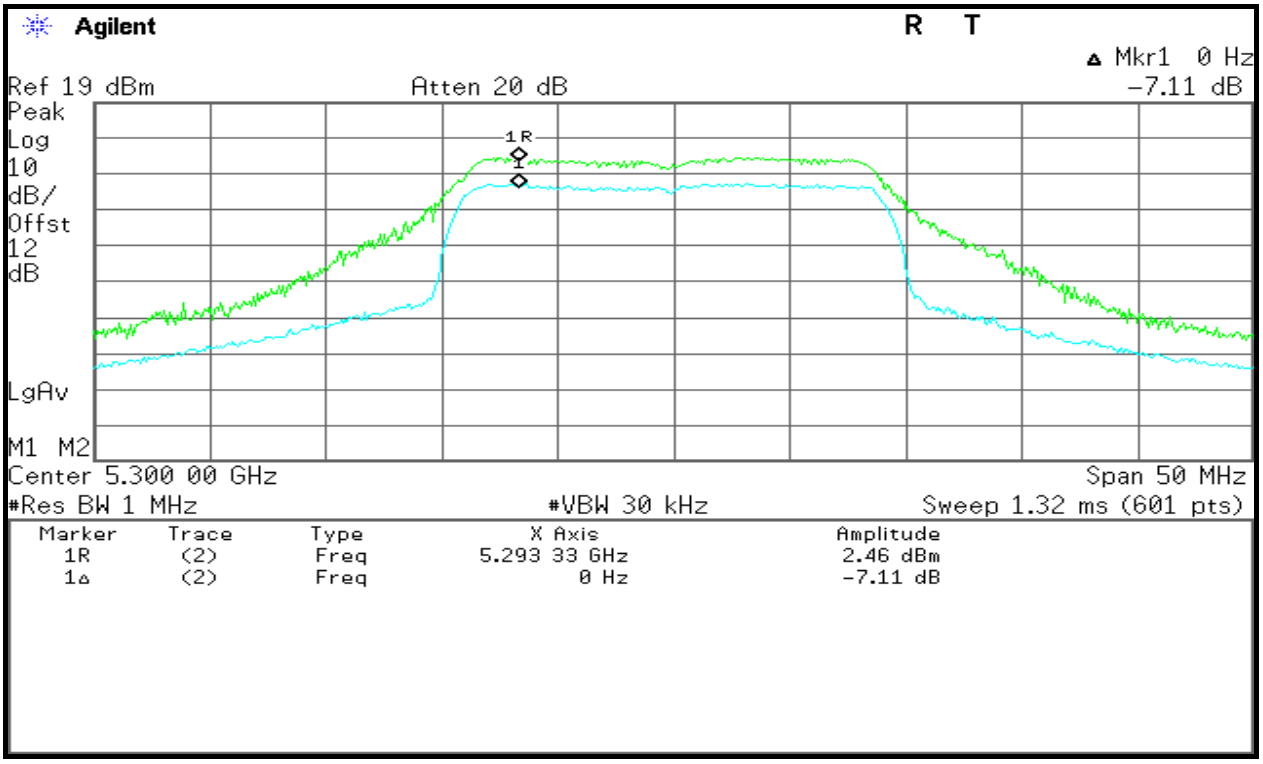
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 1:

5250~5350MHz

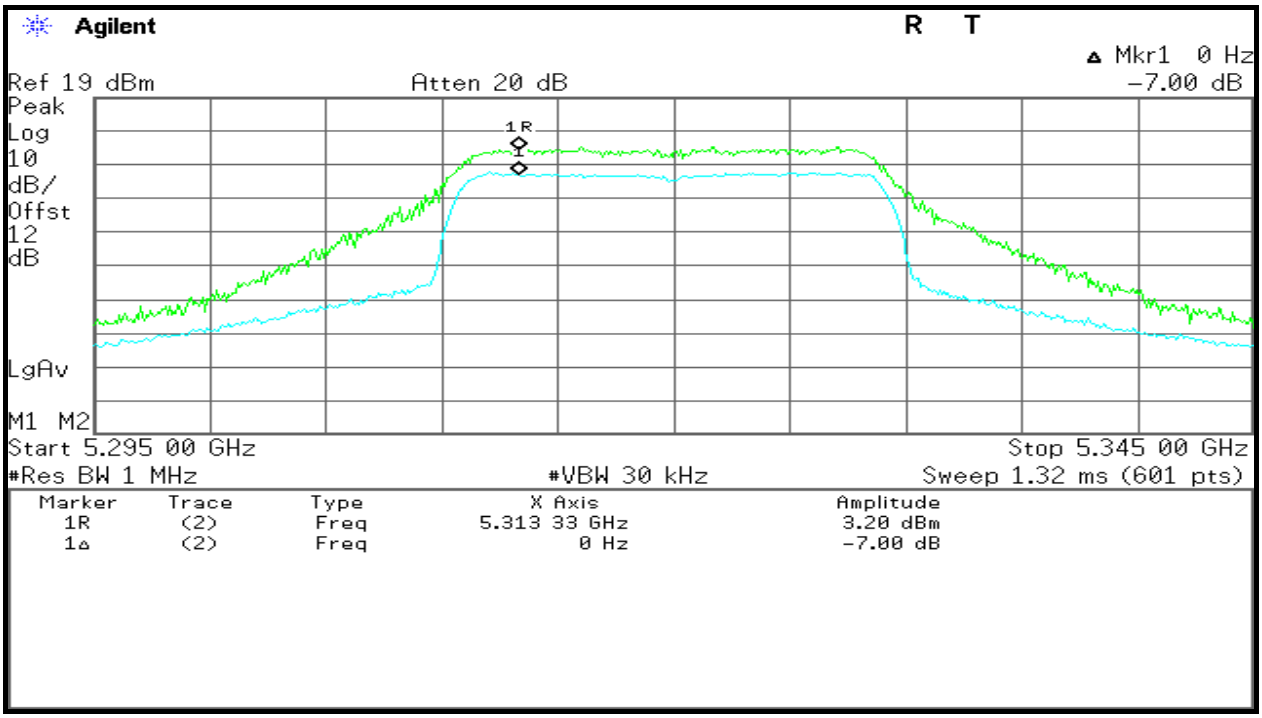
CH Low



CH Mid

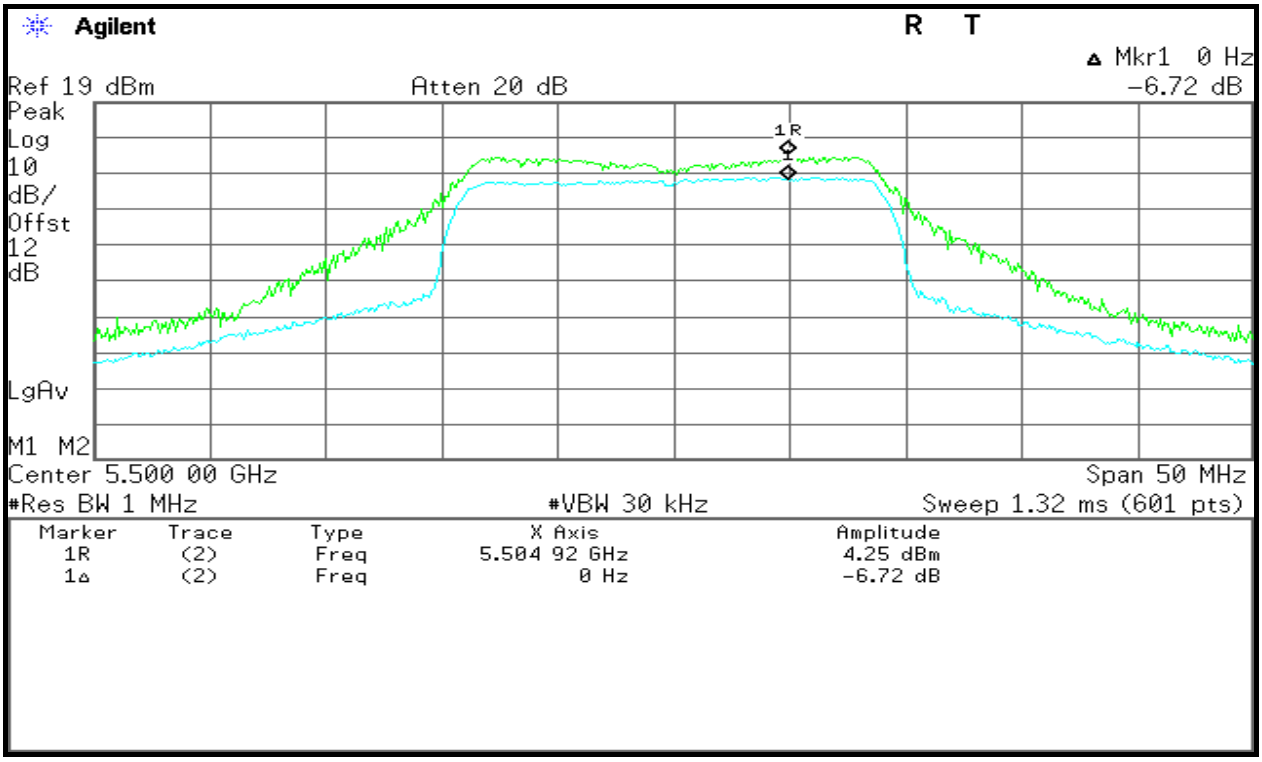


CH High

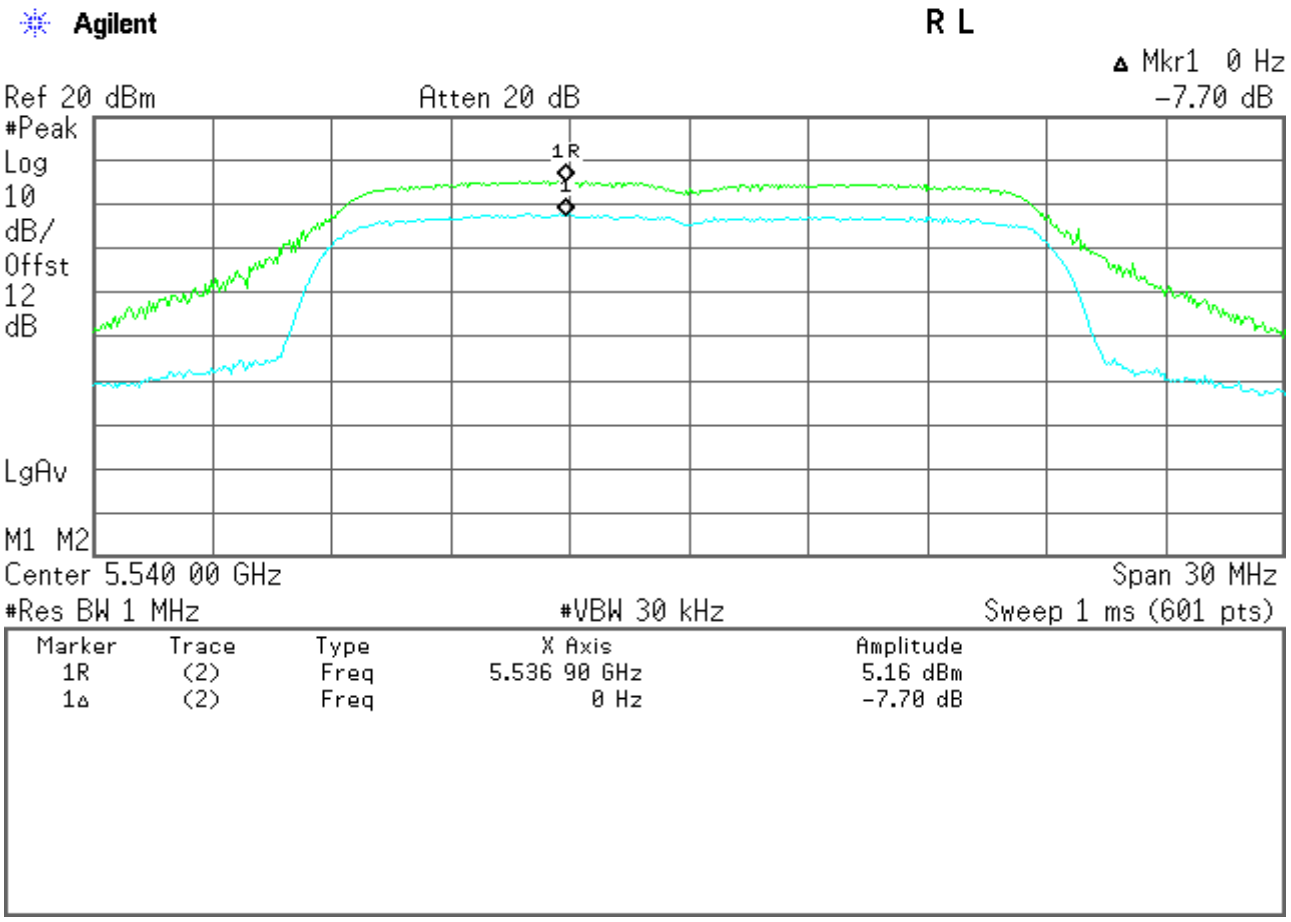


5470~5725MHz

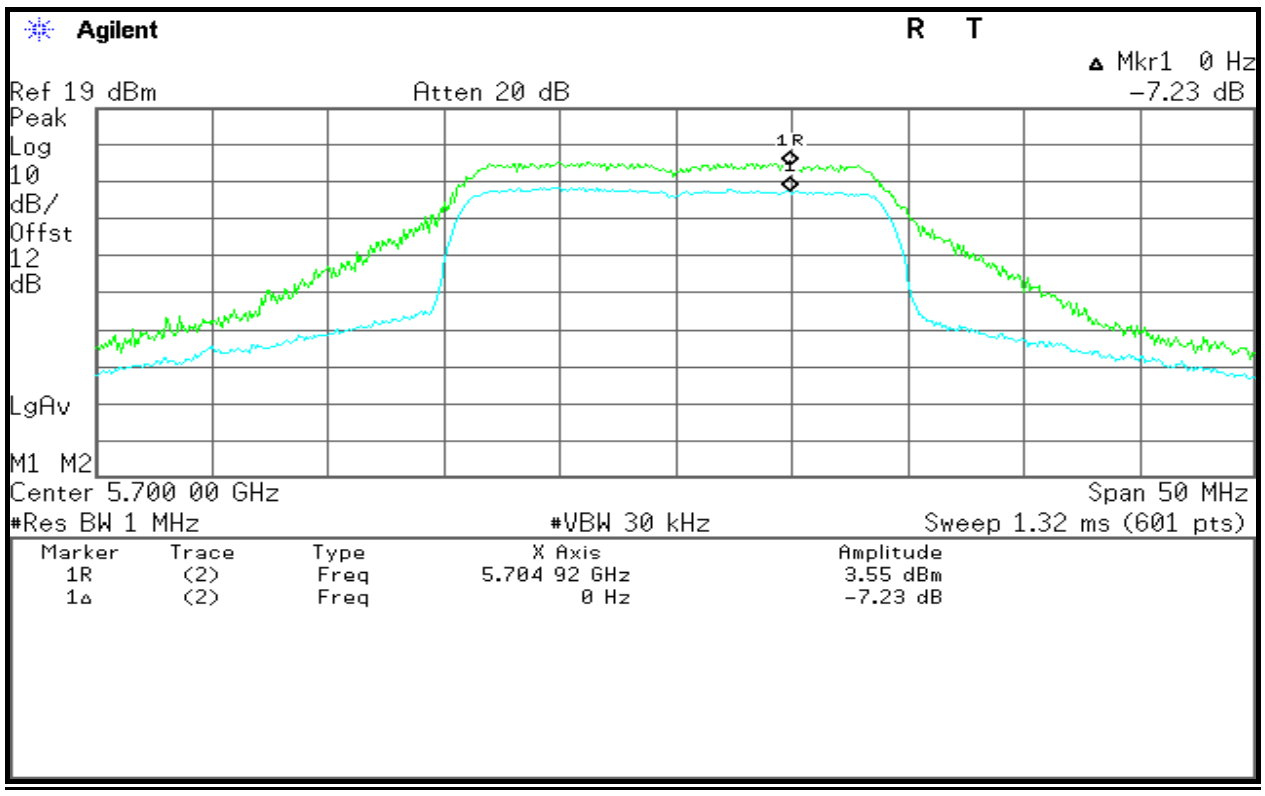
CH Low



CH Mid



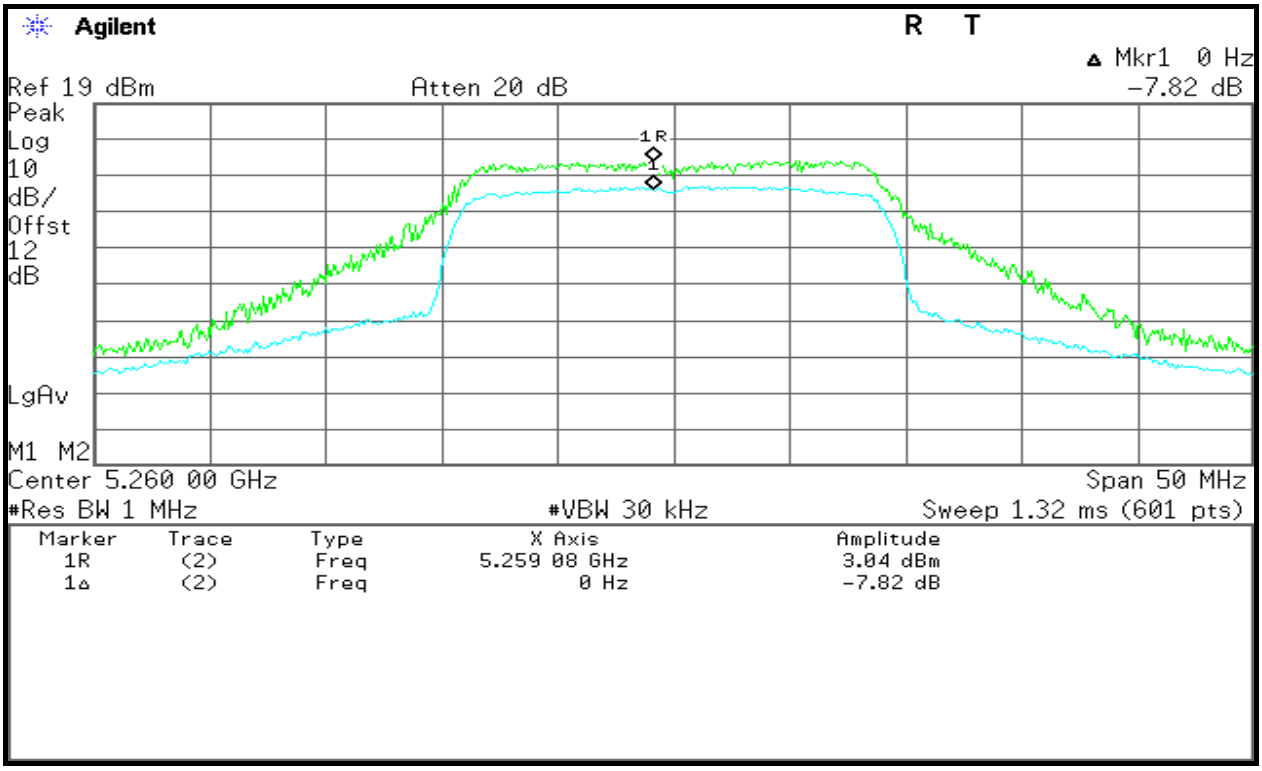
CH High



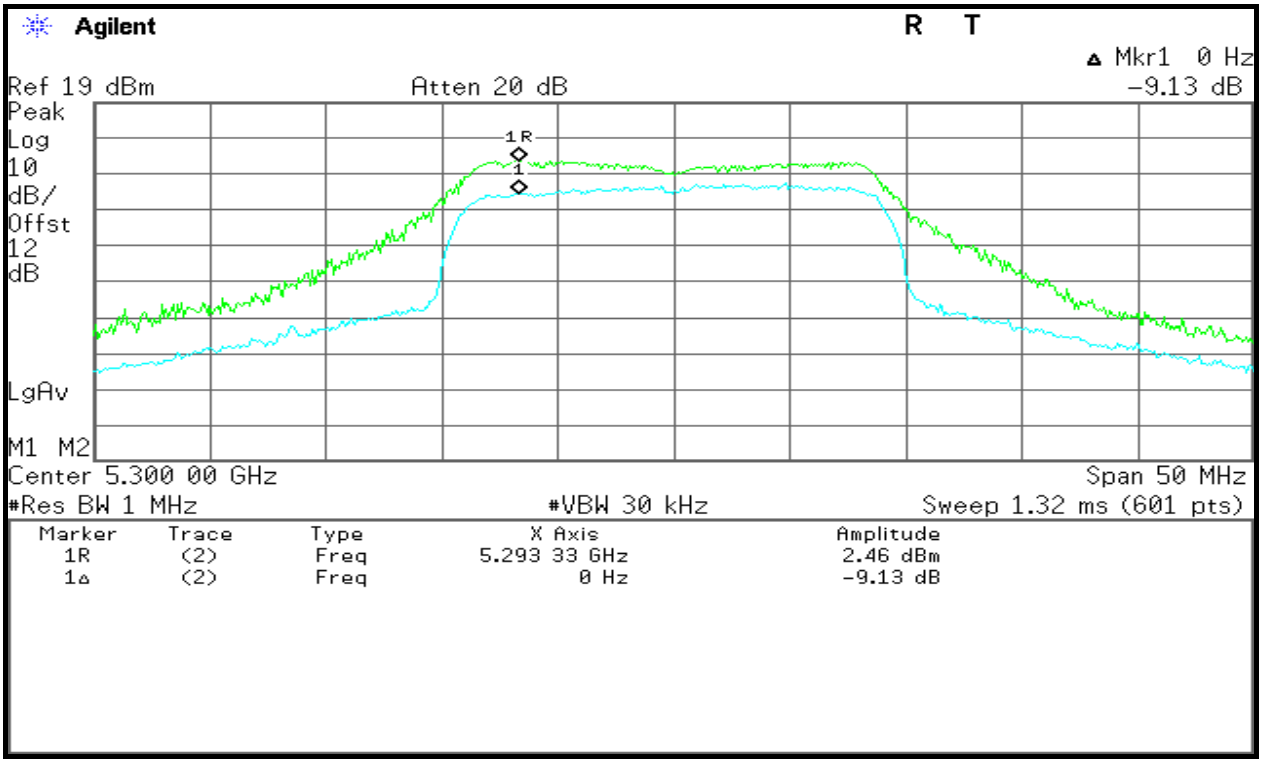
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 2:

5250~5350MHz

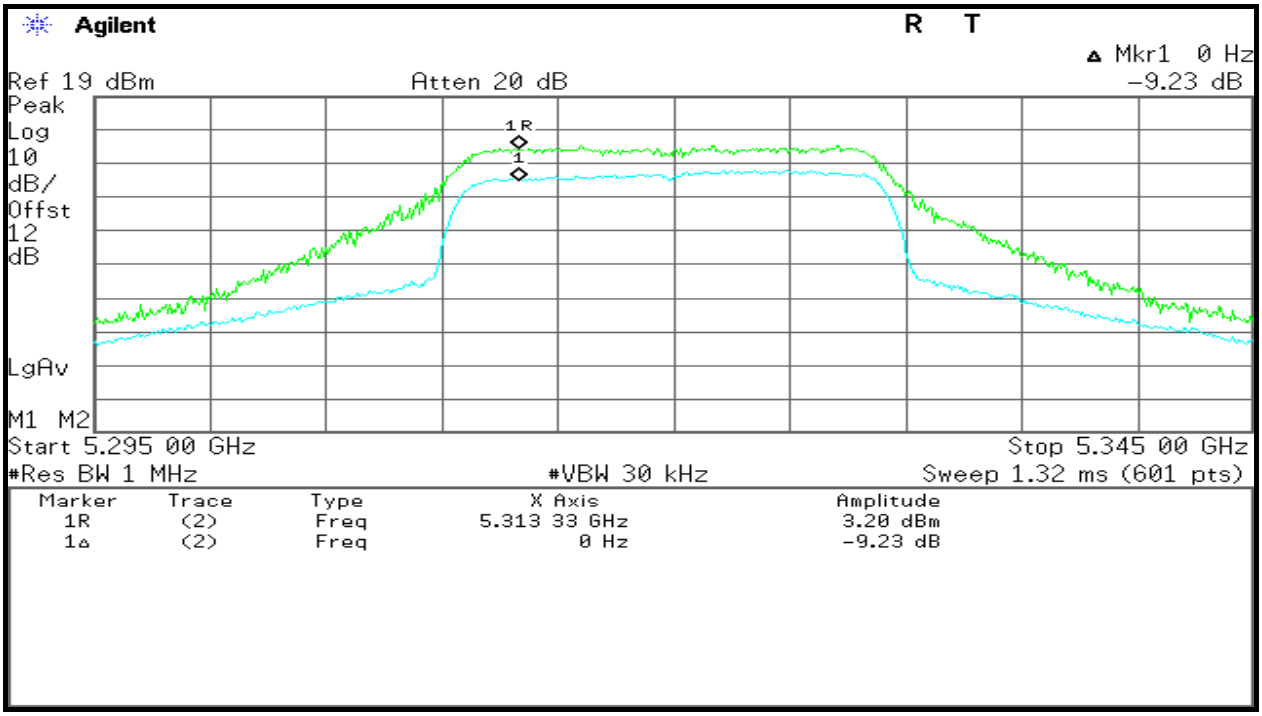
CH Low



CH Mid

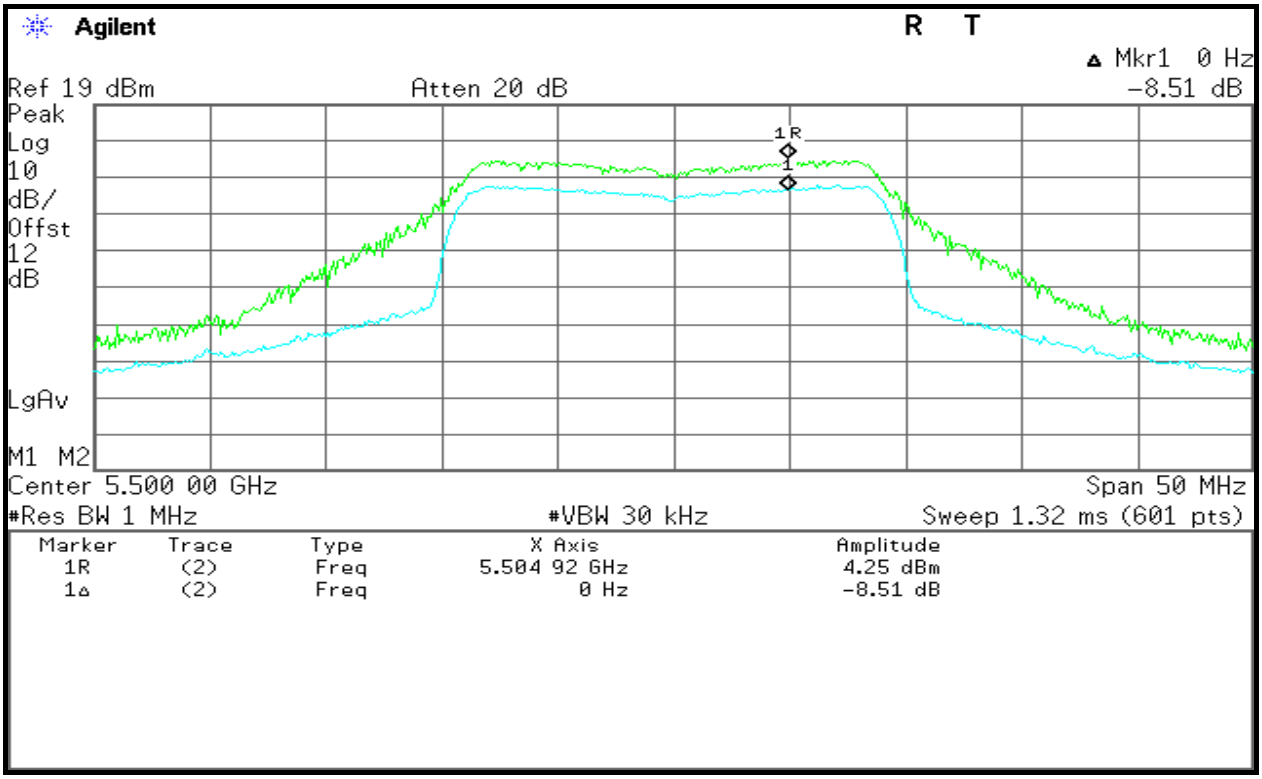


CH High

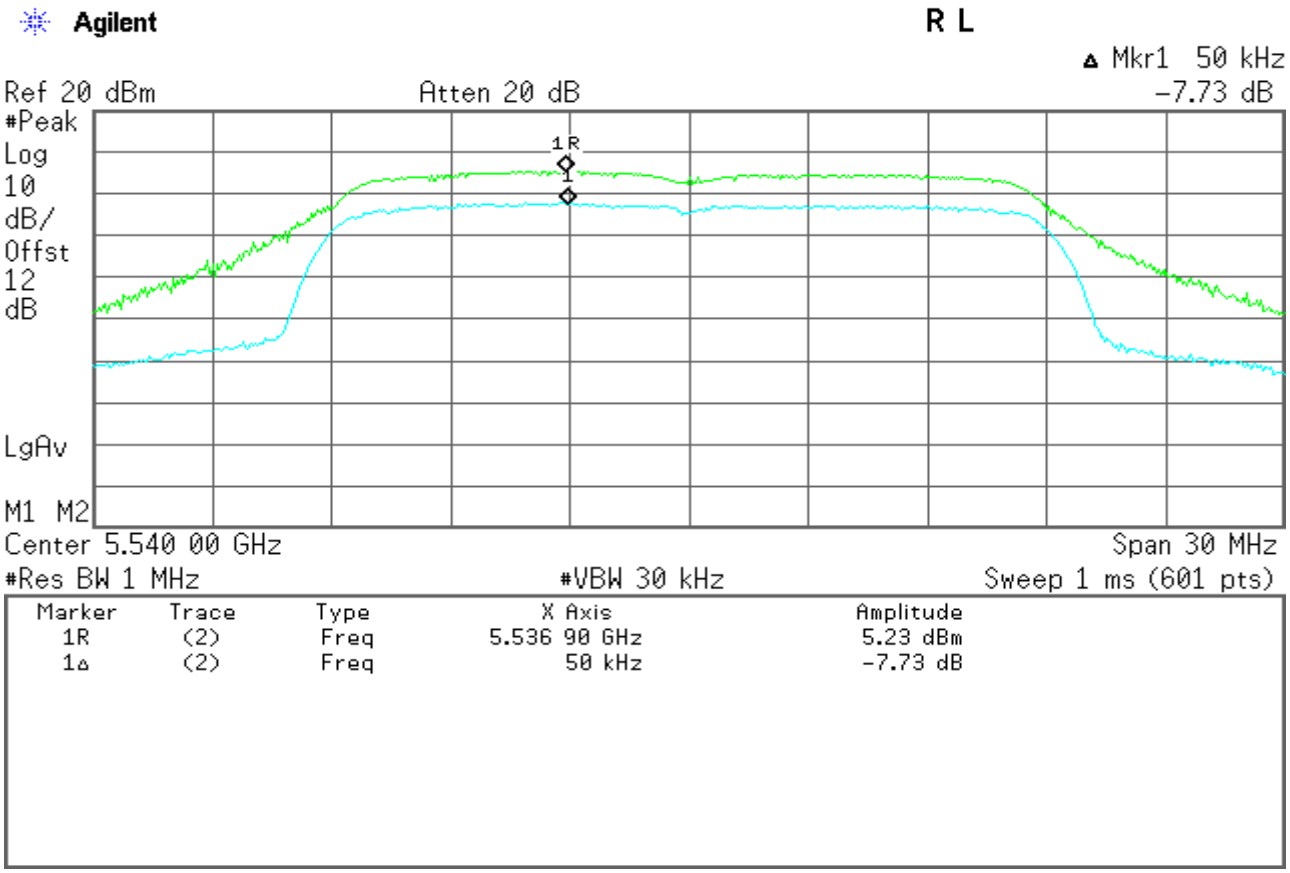


5470~5725MHz

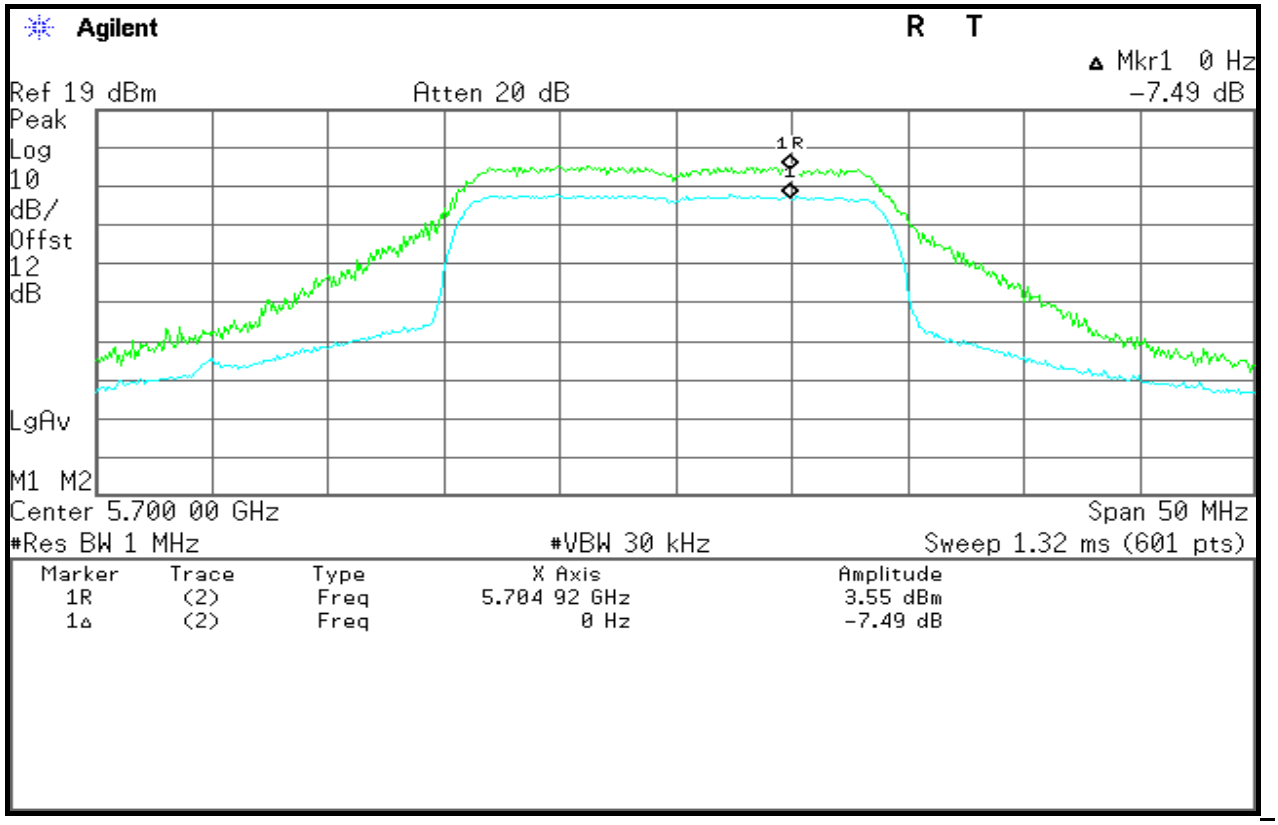
CH Low



CH Mid



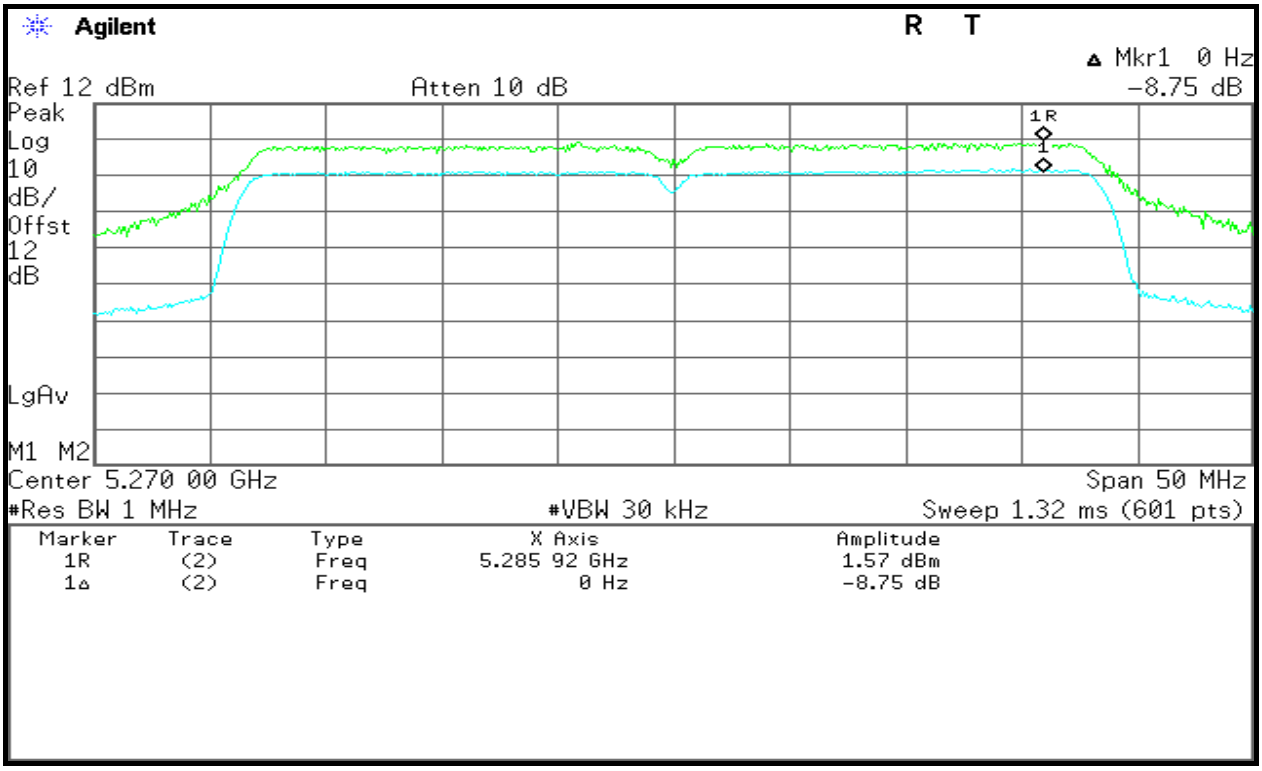
CH High



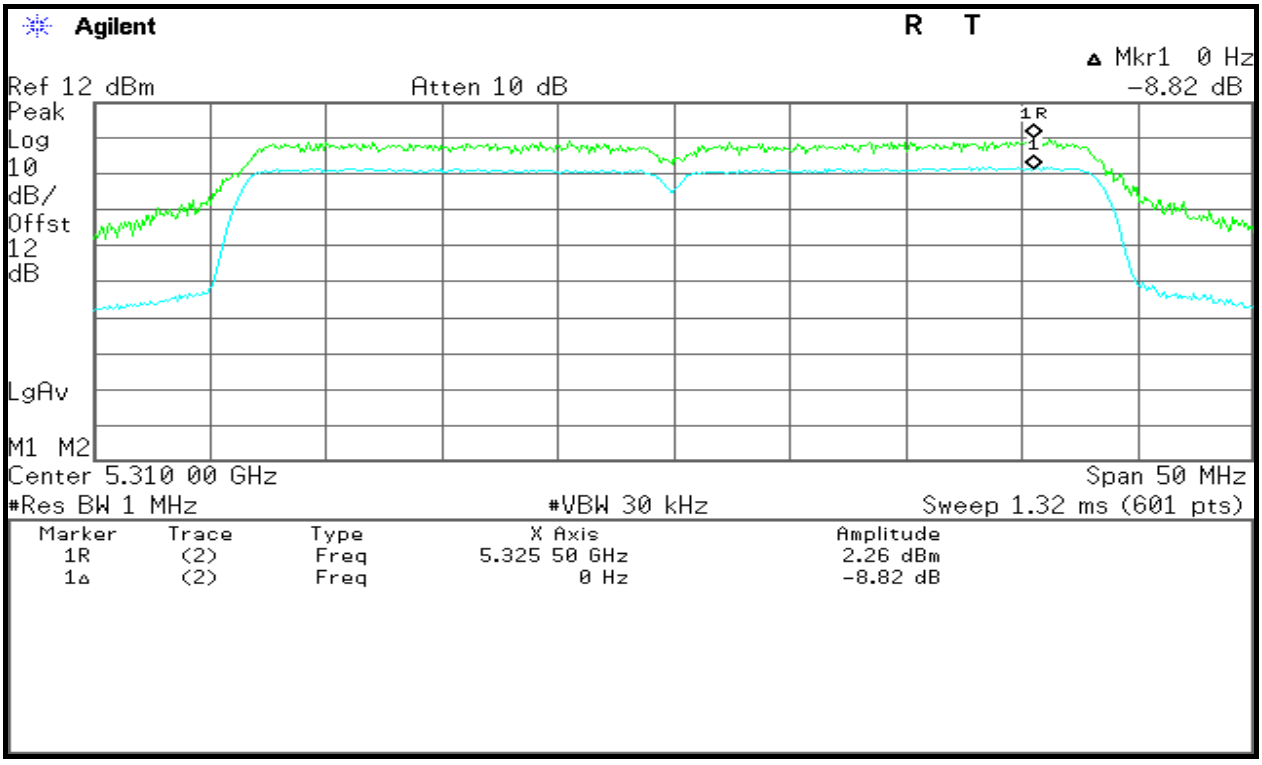
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 0:

5250~5350MHz

CH Low

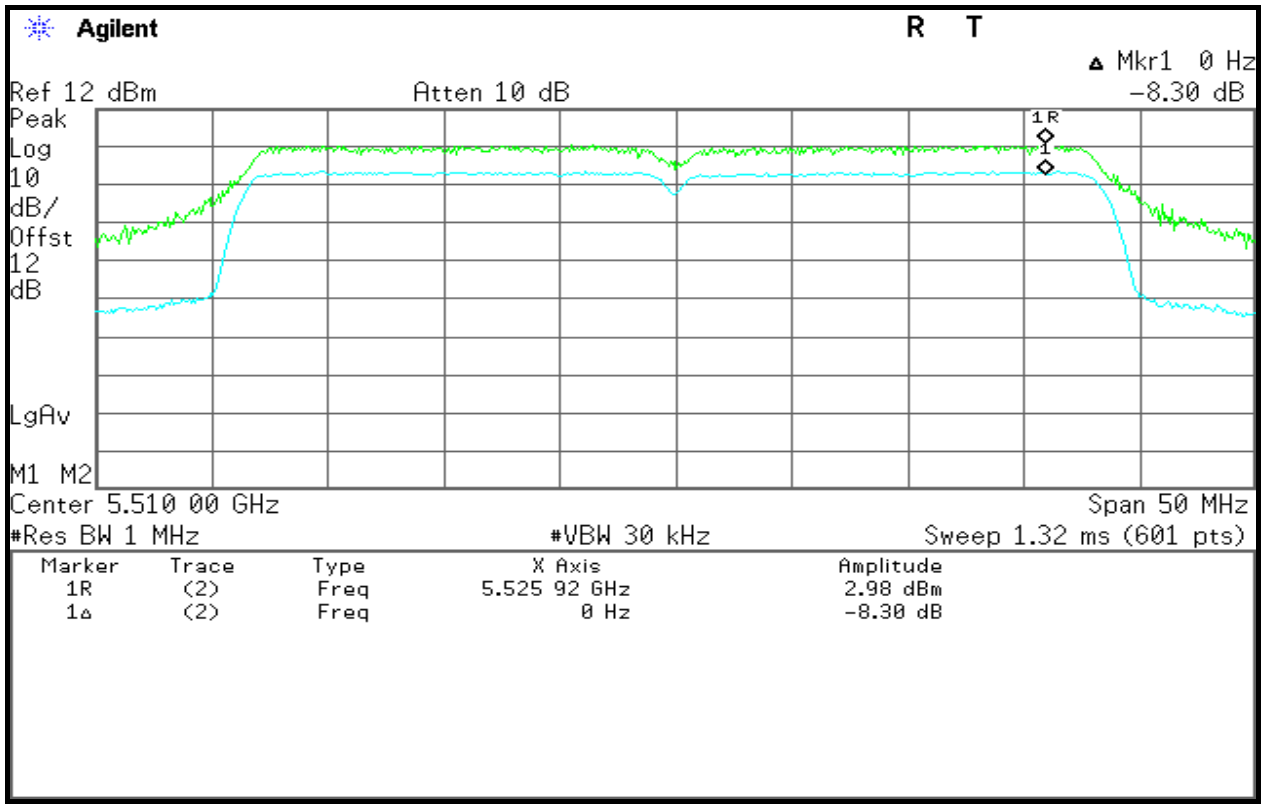


CH High

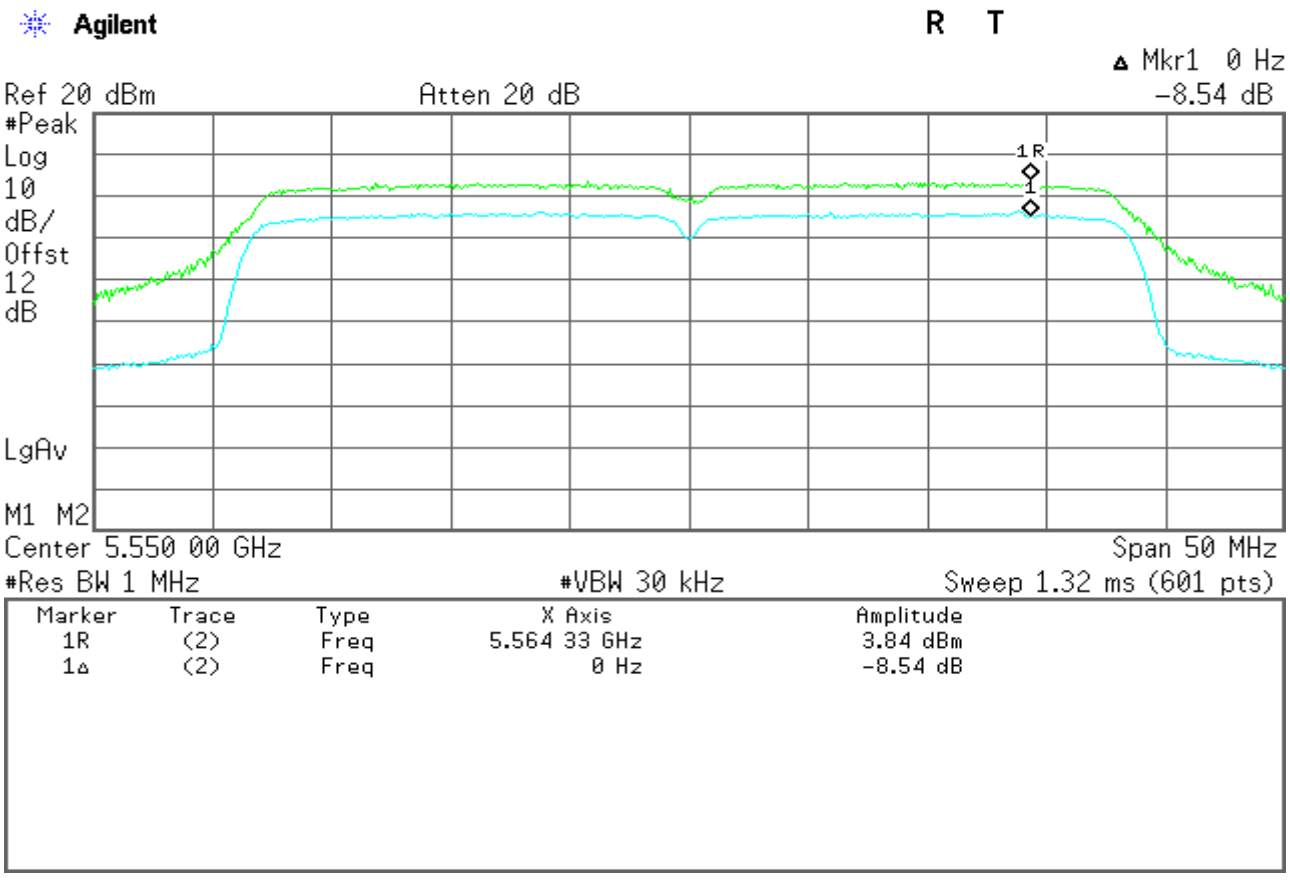


5470~5725MHz

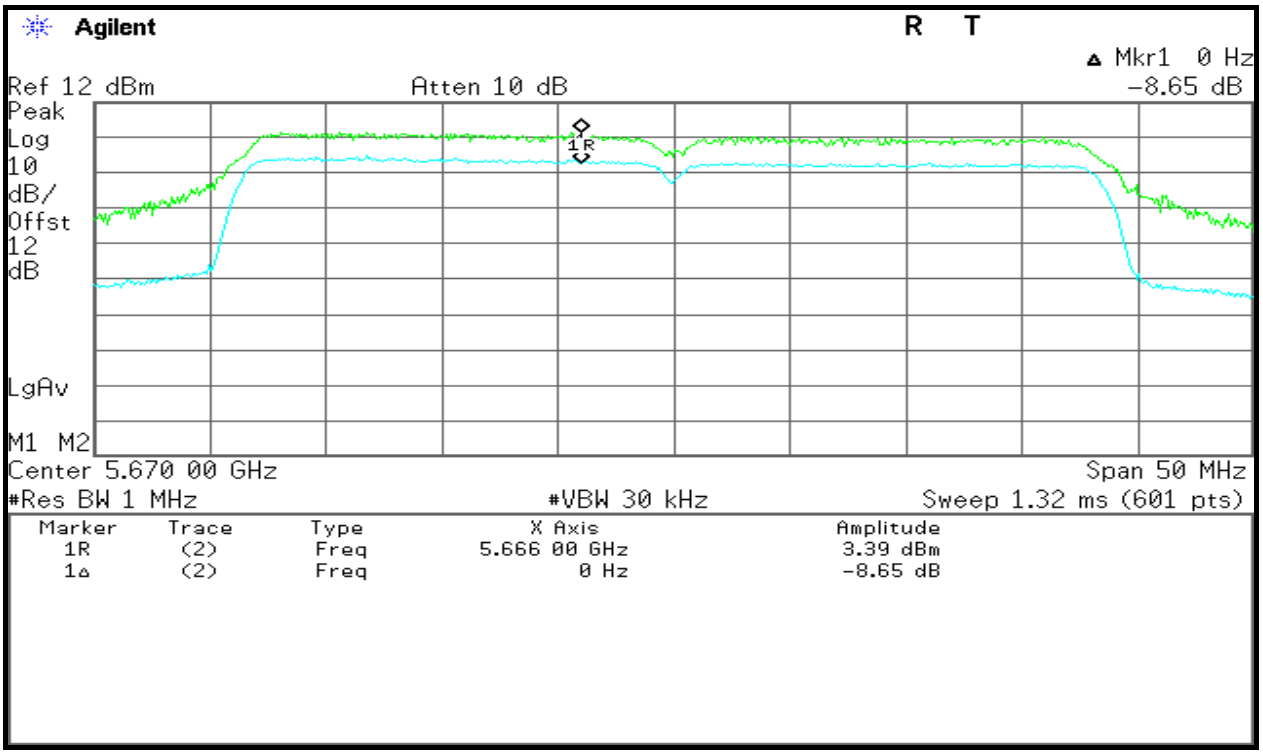
CH Low



CH Mid



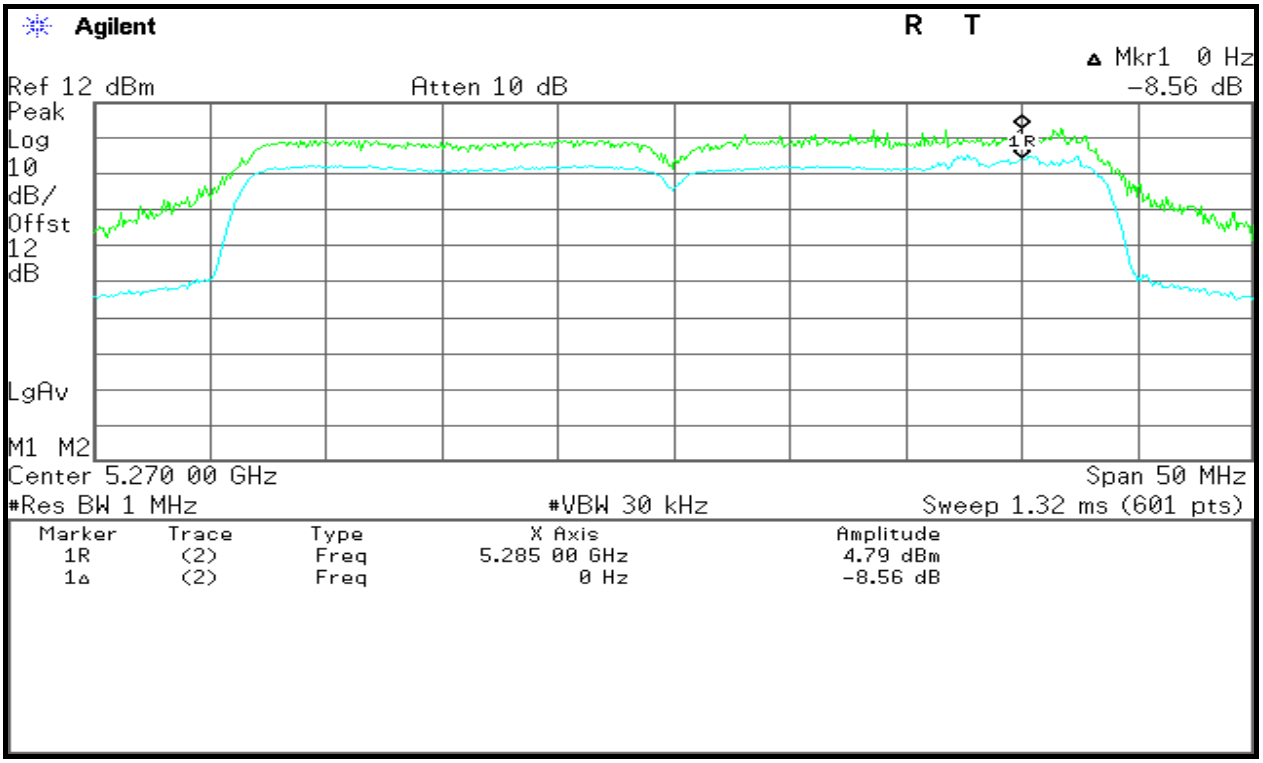
CH High



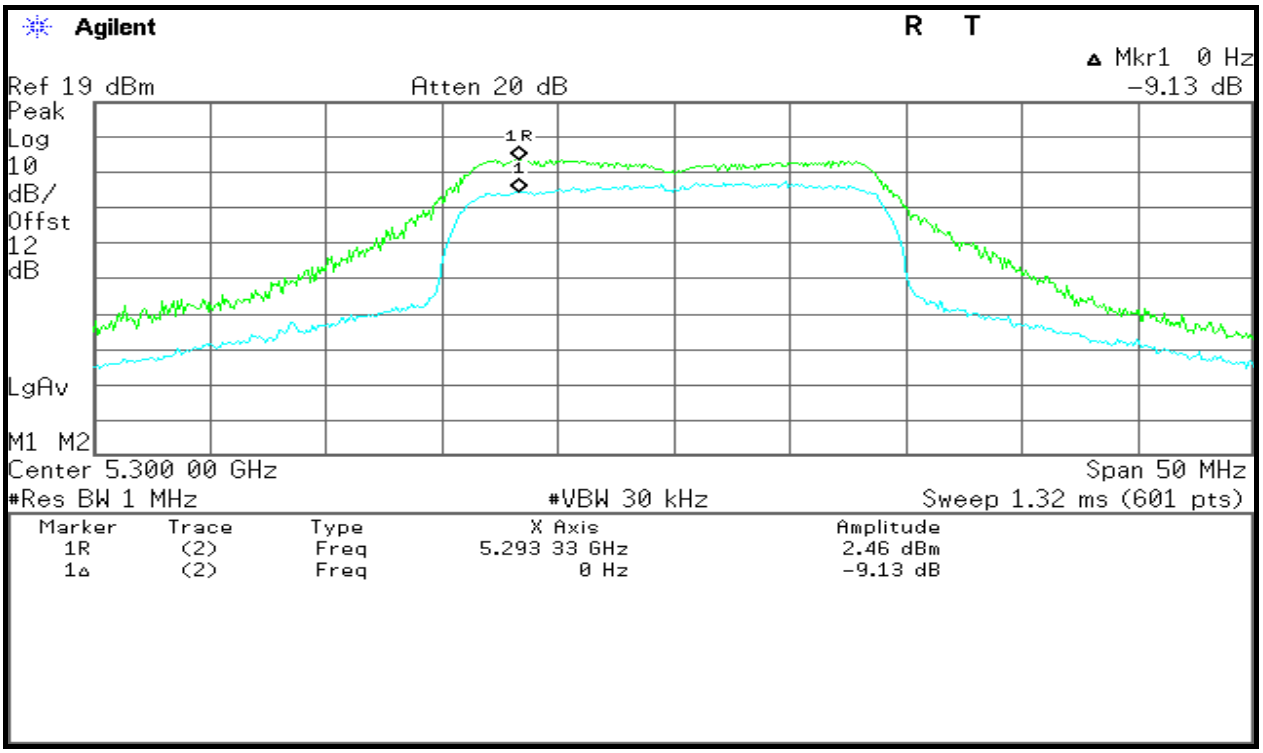
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 1:

5250~5350MHz

CH Low

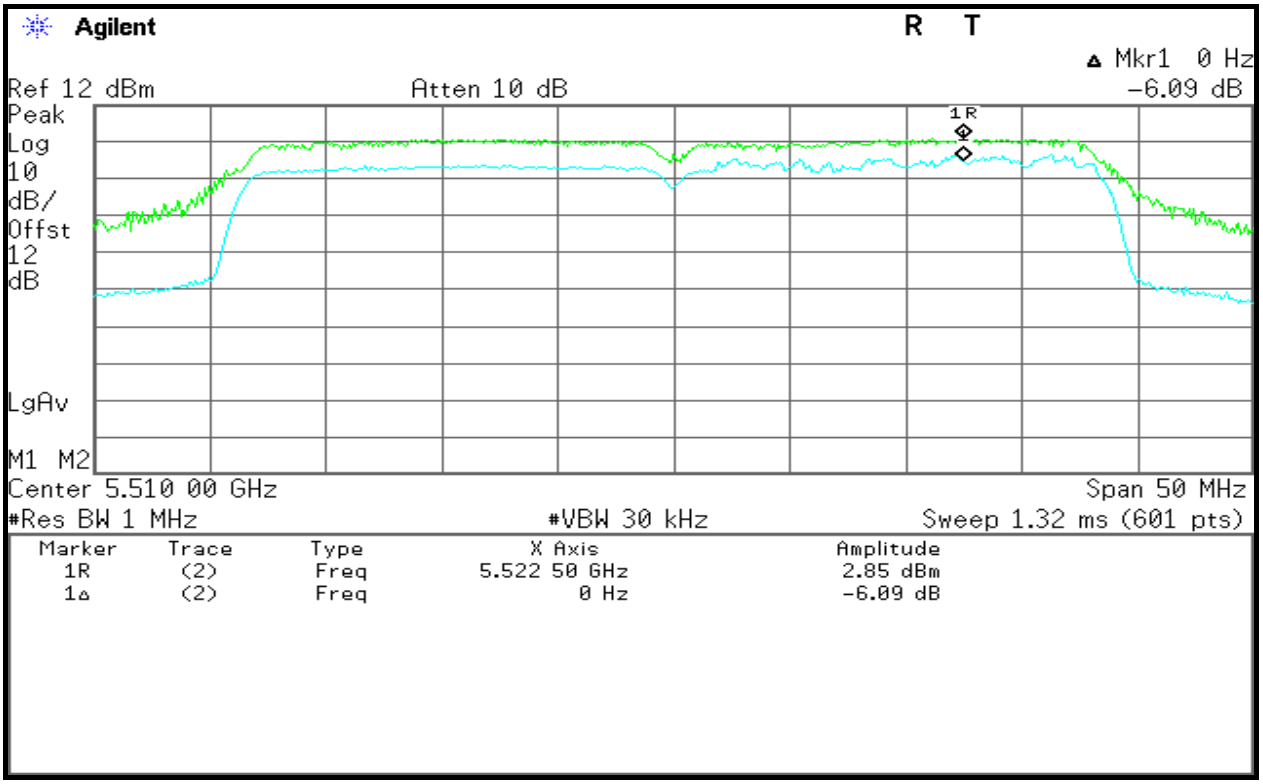


CH High

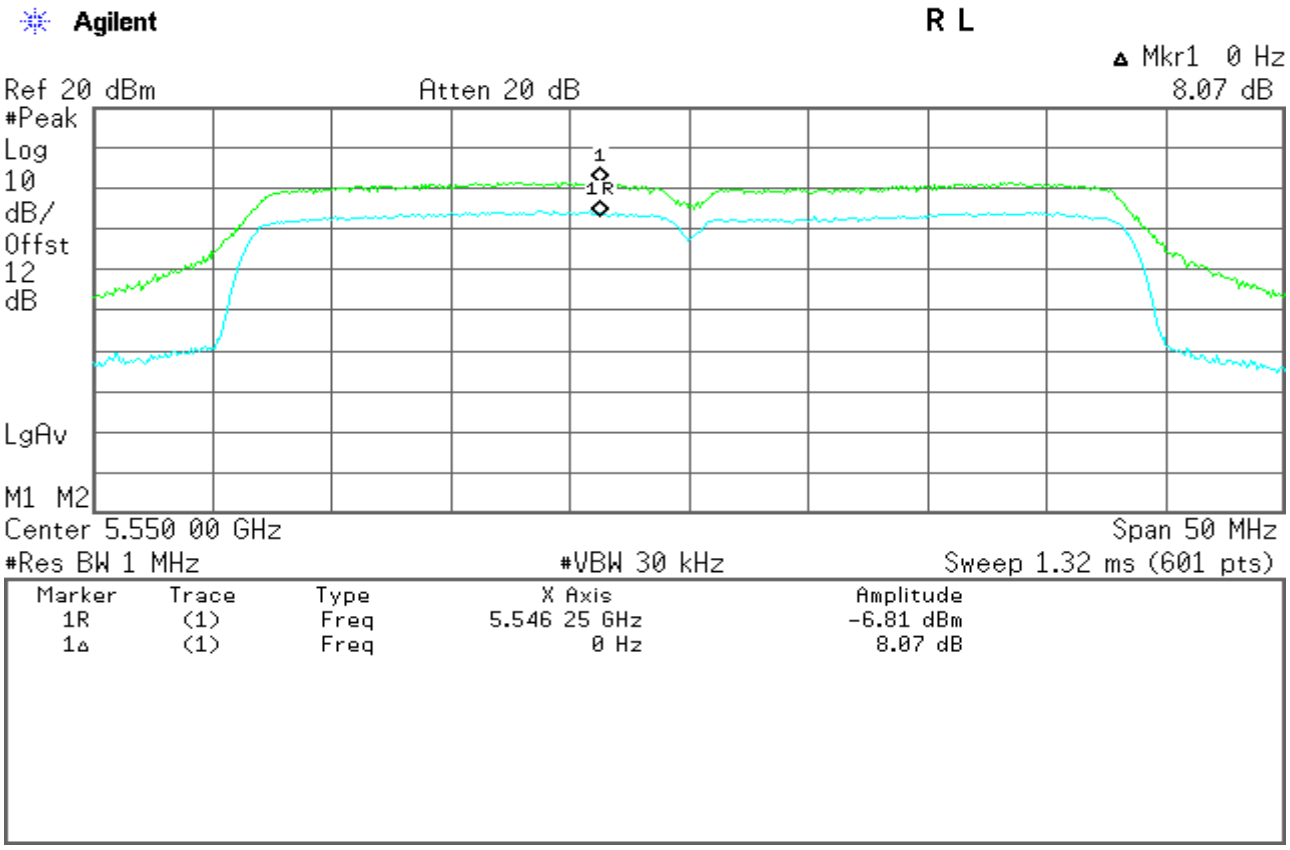


5470~5725MHz

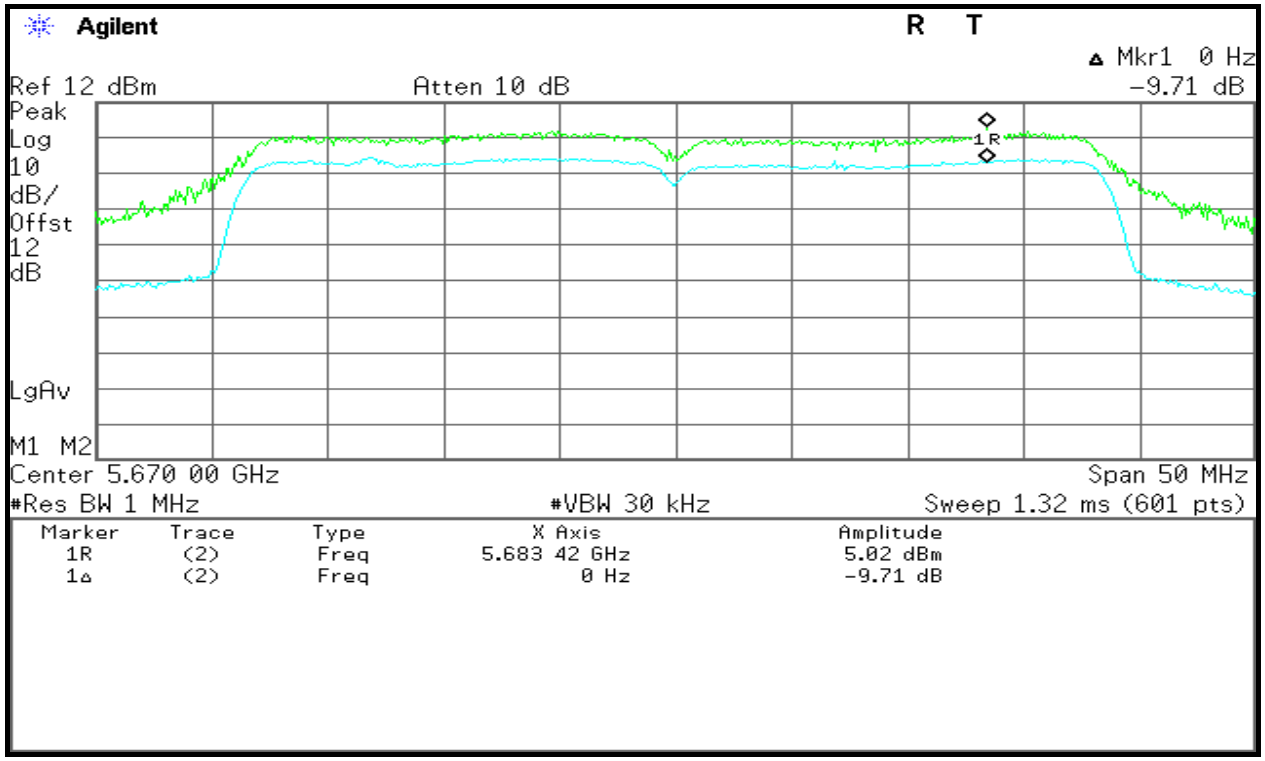
CH Low



CH Mid



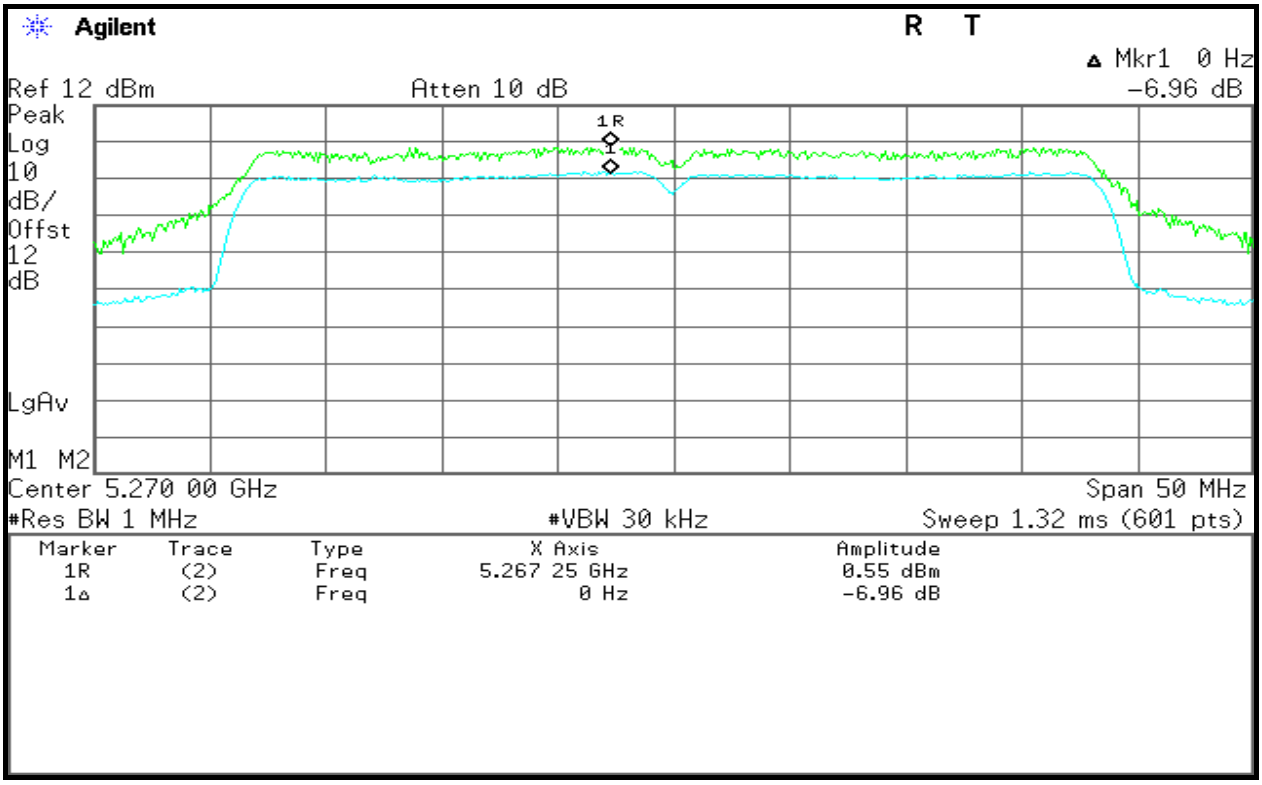
CH High



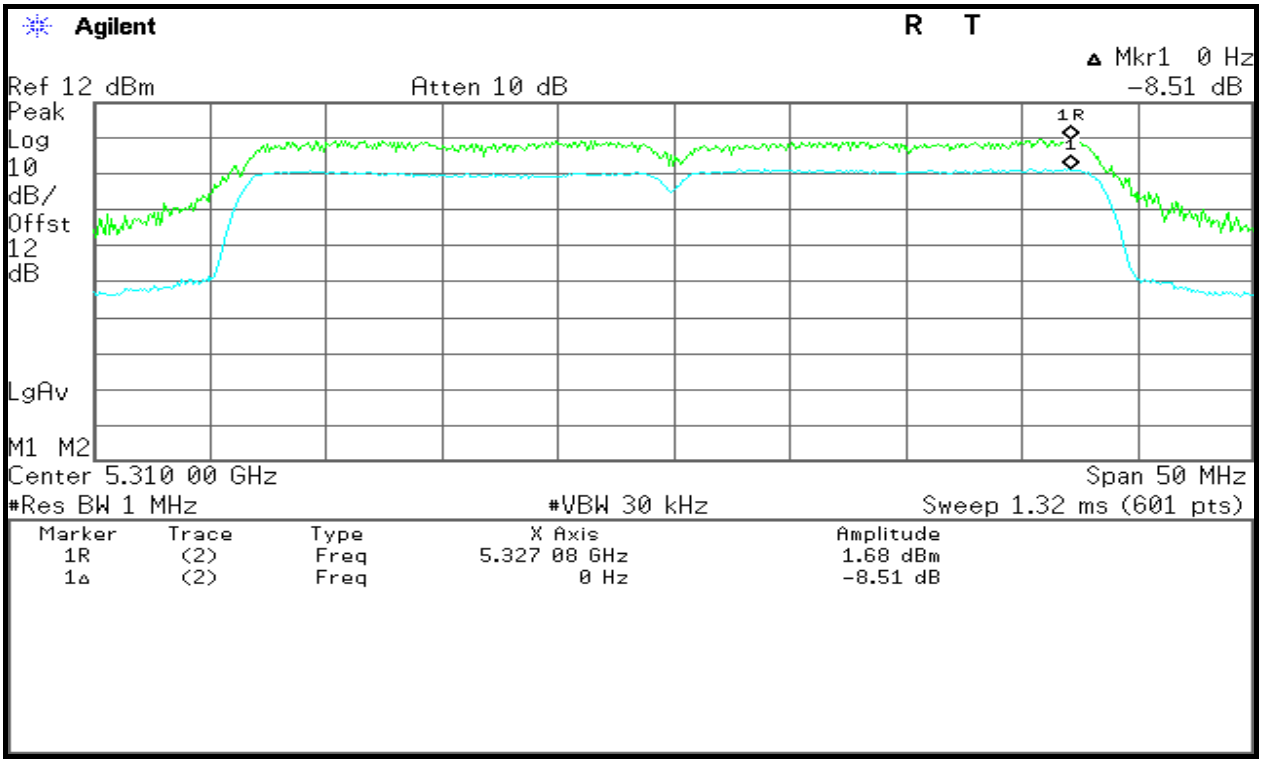
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 2:

5250~5350MHz

CH Low

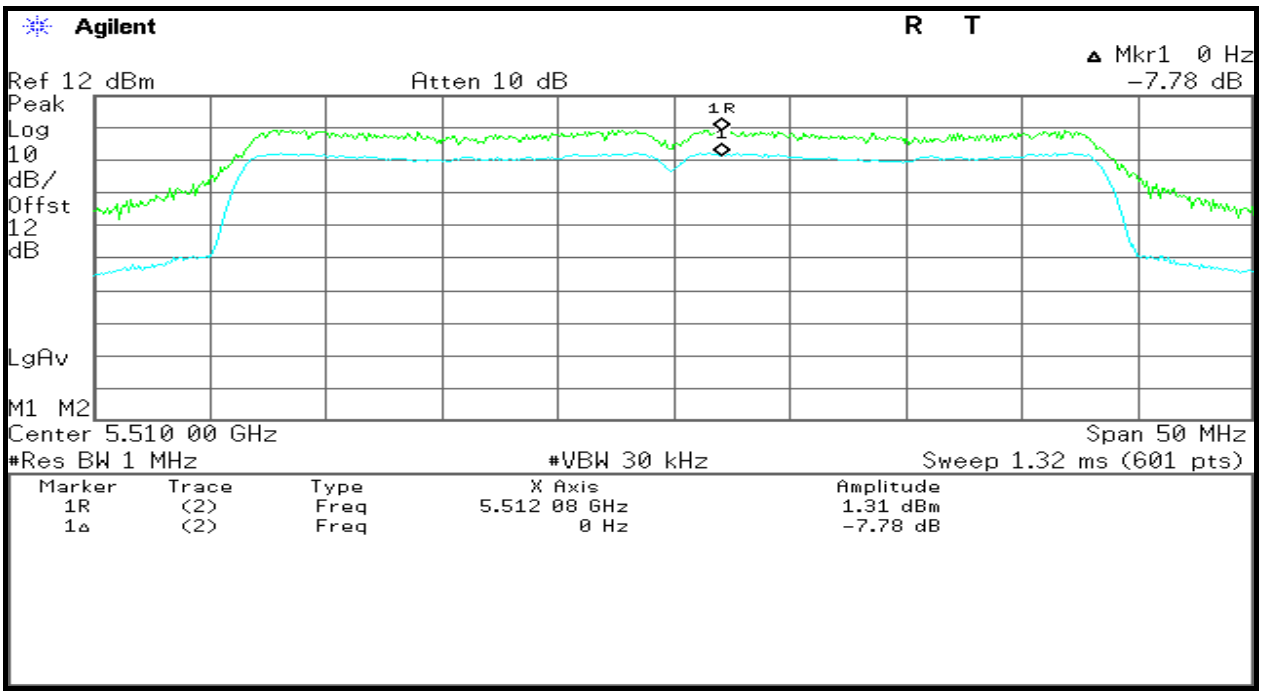


CH High

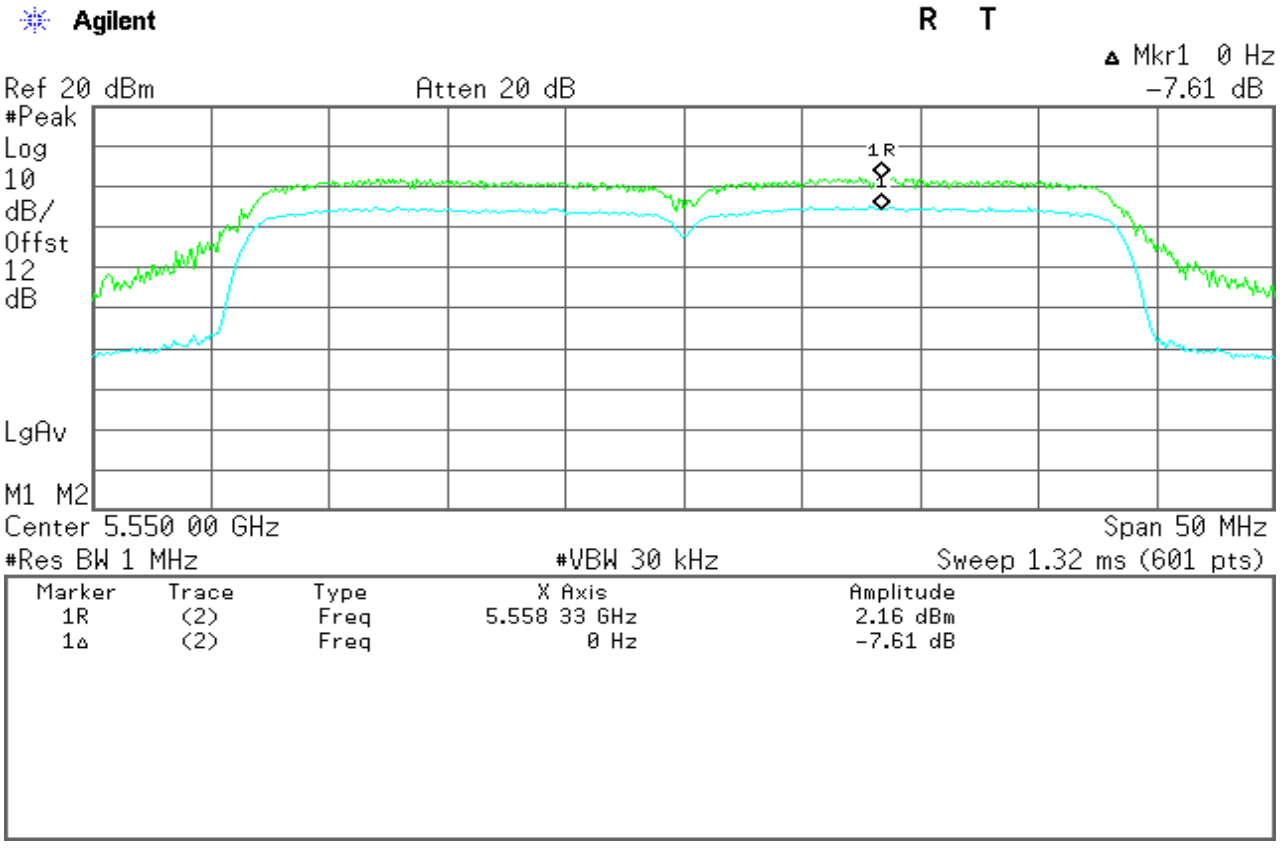


5470~5725MHz

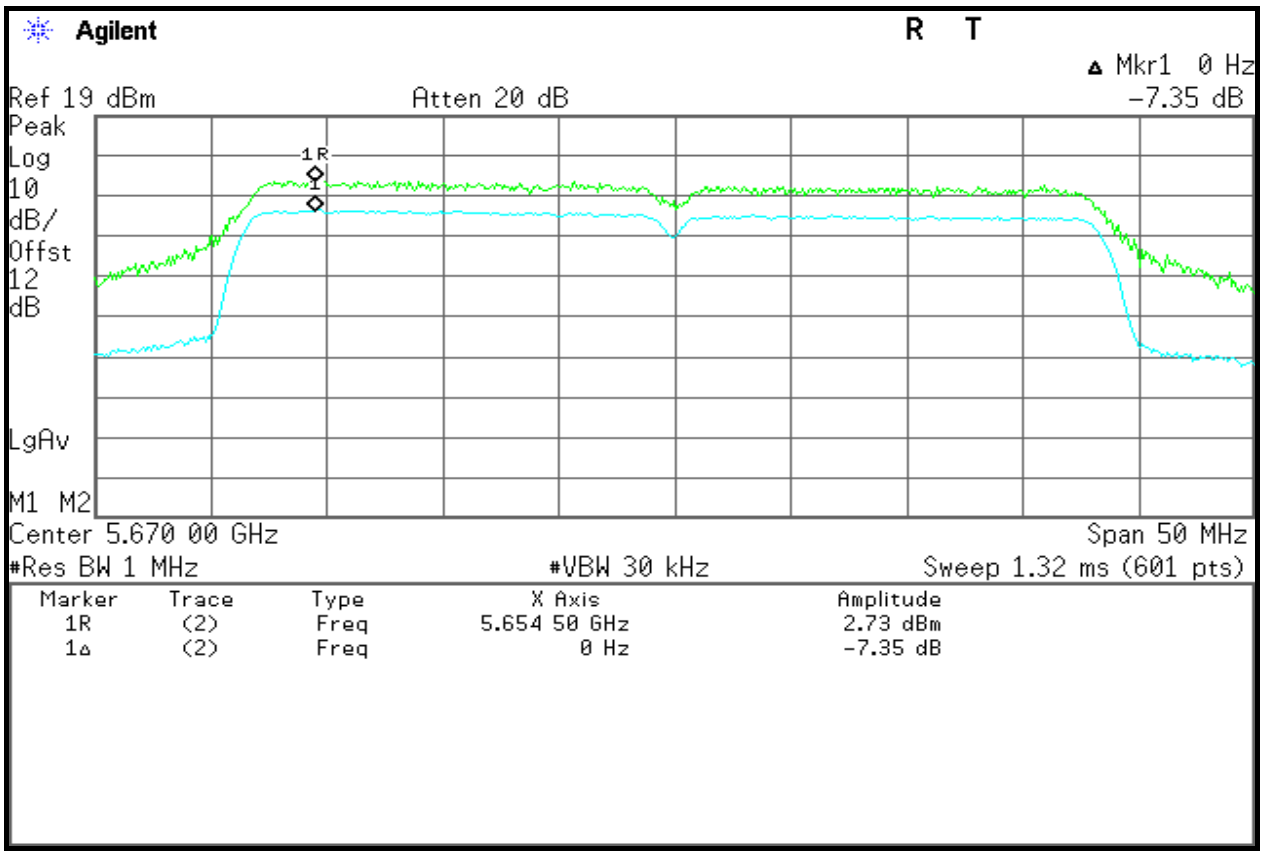
CH Low



CH Mid



CH High



7.6 RADIATED UNDESIRABLE EMISSION

LIMIT

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

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

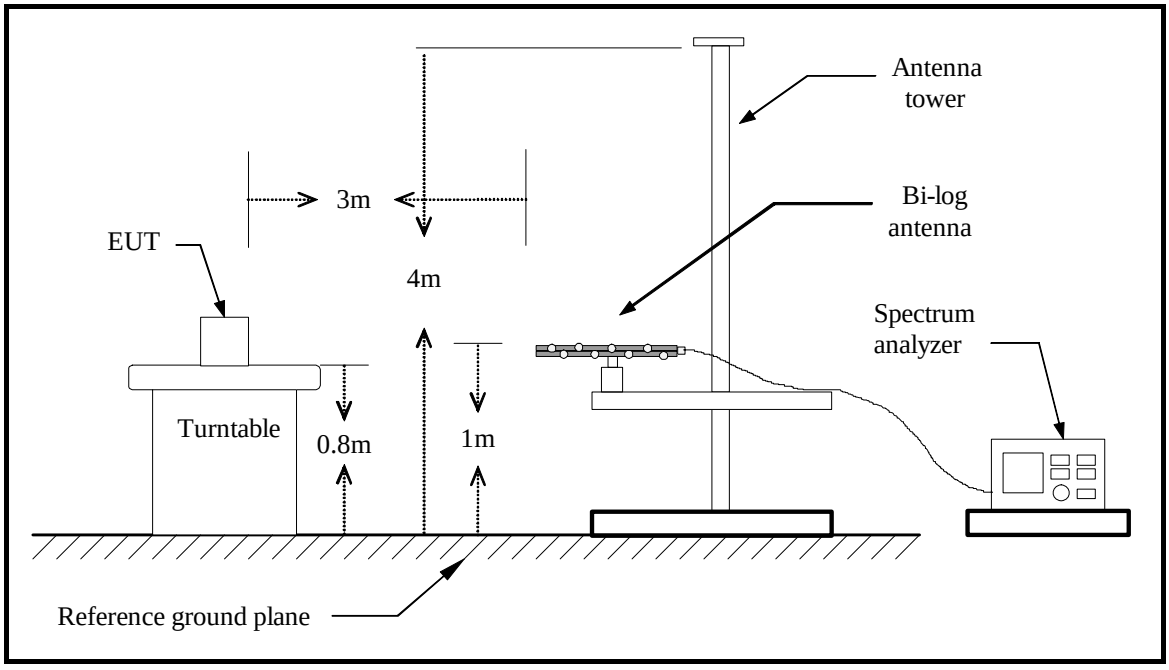
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

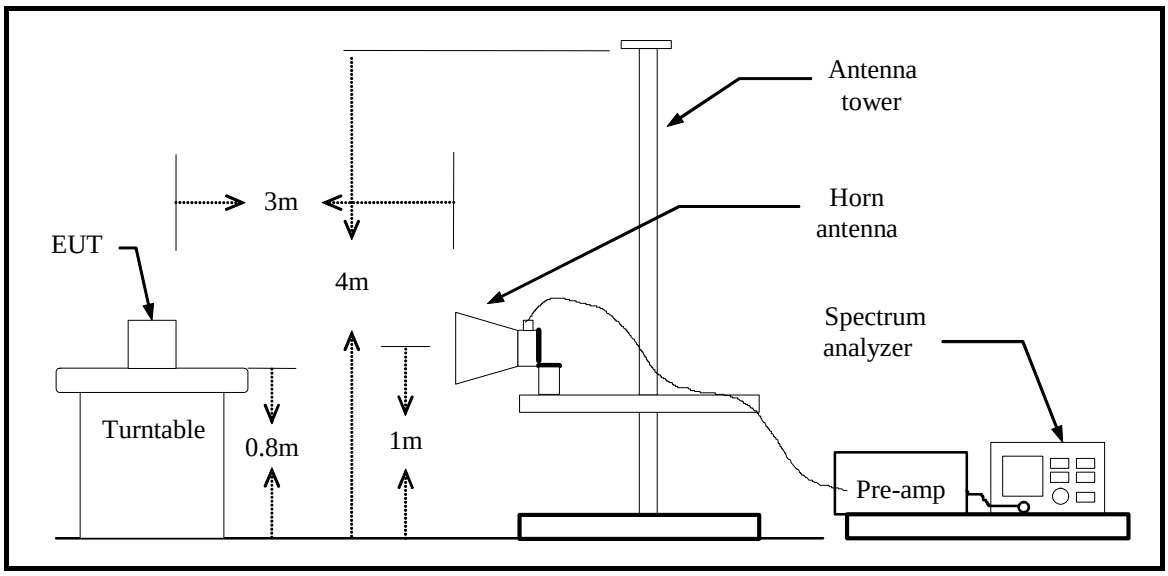
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

Below 1 GHz



Above 1 GHz



TEST PROCEDURE

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

   Below 1GHz:

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

   Above 1GHz:

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

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

TEST RESULTS

Below 1 GHz

Operation Mode:	Normal Link	Test Date:	May 12,2013
Temperature:	25°C	Tested by:	Sean
Humidity:	55% RH	Polarity:	Ver. / Hor.

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
43.6589	V	49.17	-12.22	36.95	40.00	-3.05	Peak
75.9632	V	42.55	-14.41	28.14	40.00	-11.86	Peak
157.6235	V	38	-9.49	28.51	43.50	-14.99	Peak
755.3698	V	30.35	1.44	31.79	46.00	-14.21	Peak
800.3691	V	31.26	2.38	33.64	46.00	-12.36	Peak
876.3652	V	34.11	3.27	37.38	46.00	-8.62	Peak
36.4935	H	33.96	-5.87	28.09	40.00	-11.91	Peak
77.1239	H	44.66	-14.45	30.21	46.00	-15.79	Peak
145.3698	H	38.77	-9.01	29.76	46.00	-16.24	Peak
735.1258	H	35.78	1.44	37.22	46.00	-8.78	Peak
799.3654	H	35.66	2.38	38.04	46.00	-7.96	Peak
865.3625	H	38.23	3.24	41.47	46.00	-4.53	QP

Remark:

1. Measuring frequencies from 30 MHz to the 1GHz.(no emission found from the lowest internal used/generated frequency to 30MHz)
2. Radiated emissions measured 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).

5250~5350MHz

Above 1 GHz

Operation Mode:	Tx / IEEE 802.11a mode / CH Low	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10518.54	V	42.44	37.56	2.4	44.84	39.96	74	54	-14.04	AVG
N/A										
10518.55	H	39.88	36.99	2.4	42.28	39.39	74	54	-14.61	AVG
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.*
2. *Average test would be performed if the peak result were greater than the average limit.*
3. *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.*
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) – Average limit (dBuV/m).*

Operation Mode:	Tx / IEEE 802.11a mode / CH Mid	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10600.02	V	42.55	37.44	2.4	44.95	39.84	74	54	-14.16	AVG
N/A										
10585.67	H	43.2	37.35	2.4	45.6	39.75	74	54	-14.25	AVG
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 / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10620.59	V	44.36	36.99	2.4	46.76	39.39	74	54	-14.61	AVG
N/A										
10611.36	H	43.96	38.24	2.4	46.36	40.64	74	54	-13.36	AVG
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.*

Operation Mode:	TX / 802.11n Standard-20 MHz Channel mode / CH Low	Test Date:	May 12,2013
Temperature:	25°C	Tested by:	Sean
Humidity:	55% RH	Polarity:	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10520.33	V	45.32	43.66	2.4	47.72	46.06	74	54	-7.94	AVG
N/A										
10523.45	H	44.68	42.36	2.4	47.08	44.76	74	54	-9.24	AVG
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 / 802.11n Standard-20 MHz Channel mode / CH Mid	Test Date:	May 12,2013
Temperature:	25°C	Tested by:	Sean
Humidity:	55% RH	Polarity:	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10610.35	V	45.35	43.49	2.4	47.75	45.89	74	54	-8.11	AVG
N/A										
10612.35	H	44.36	42.28	2.4	46.76	44.68	74	54	-9.32	AVG
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 / 802.11n Standard-20 MHz Channel mode / CH High	Test Date:	May 12,2013
Temperature:	25°C	Tested by:	Sean
Humidity:	55% RH	Polarity:	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10652.34	V	43.21	39.62	2.4	45.61	42.02	74	54	-11.98	AVG
N/A										
10652.66	H	43.23	38.65	2.4	45.63	41.05	74	54	-12.95	AVG
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 / 802.11n Wide-40 MHz Channel mode / CH Low	Test Date:	May 12,2013
Temperature:	25°C	Tested by:	Sean
Humidity:	55% RH	Polarity:	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10534.85	V	44.62	37.65	2.4	47.02	40.05	74	54	-13.95	AVG
N/A										
10543.69	H	44.56	38.44	2.4	46.96	40.84	74	54	-13.16	AVG
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 / 802.11n Wide-40 MHz Channel mode / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10635.44	V	45.32	38.21	2.4	47.72	40.61	74	54	-13.39	AVG
N/A										
10632.55	H	45.22	36.55	2.4	47.62	38.95	74	54	-15.05	AVG
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)

5470~5725MHz

Above 1 GHz

Operation Mode:	Tx / IEEE 802.11a mode / CH Low	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
11000.55	V	46.35	39.34	2.4	48.75	41.74	74	54	-12.26	AVG
N/A										
10997.36	H	45.32	40.23	2.4	47.72	42.63	74	54	-11.37	AVG
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 / CH Mid	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
11210.55	V	45.33	40.35	2.4	47.73	42.75	74	54	-11.25	AVG
N/A										
11215.65	H	44.31	39.68	2.4	46.71	42.08	74	54	-11.92	AVG
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 / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
11350.65	V	46.35	39.66	2.4	48.75	42.06	74	54	-11.94	AVG
N/A										
11351.15	H	45.32	38.73	2.4	47.72	41.13	74	54	-12.87	AVG
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 / 802.11n Standard-20 MHz Channel mode / CH Low	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
10990.54	V	44.38	40.12	2.4	46.78	42.52	74	54	-11.48	AVG
N/A										
11002.35	H	44.12	39.66	2.4	46.52	42.06	74	54	-11.94	AVG
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 / 802.11n Standard-20 MHz Channel mode / CH Mid	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
11189.25	V	44.65	40.11	2.4	47.05	42.51	74	54	-11.49	AVG
N/A										
11190.05	H	44.85	39.65	2.4	47.25	42.05	74	54	-11.95	AVG

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 / 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
11450.65	V	45.95	40.35	2.4	48.35	42.75	74	54	-11.25	AVG
N/A										
11446.29	H	44.25	38.66	2.4	46.65	41.06	74	54	-12.94	AVG

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 / 802.11n Wide-40 MHz Channel mode / CH Low	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
11020.33	V	45.35	40.62	2.4	47.75	43.02	74	54	-10.98	AVG
N/A										
11015.77	H	44.66	38.25	2.4	47.06	40.65	74	54	-13.35	AVG

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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 / 802.11n Wide-40 MHz Channel mode / CH Mid	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
11185.34	V	45.69	40.35	2.4	48.09	42.75	74	54	-11.25	AVG
N/A										
11180.65	H	44.29	38.62	2.4	46.69	41.02	74	54	-12.98	AVG
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 / 802.11n Wide-40 MHz Channel mode / CH Mid	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
11345.33	V	45.85	40.65	2.4	48.25	43.05	74	54	-10.95	AVG
N/A										
11350.67	H	44.35	38.65	2.4	46.75	41.05	74	54	-12.95	AVG
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).*

5250~5350MHz

Above 1 GHz

Operation Mode:	Rx / IEEE 802.11a mode / CH Low	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1795.36	V	45.66	40.34	2.4	48.06	42.74	74	54	-11.26	AVG
N/A										
1790.36	H	44.32	38.25	2.4	46.72	40.65	74	54	-13.35	AVG
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:	Rx / IEEE 802.11a mode / CH Mid	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1200.05	V	44.36	37.65	2.4	46.76	40.05	74	54	-13.95	AVG
N/A										
1200.36	H	44.23	37.32	2.4	46.63	39.72	74	54	-14.28	AVG
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:	Rx / IEEE 802.11a mode / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2015.36	V	42.69	36.89	2.4	45.09	39.29	74	54	-14.71	AVG
N/A										
2016.34	H	42.66	36.56	2.4	45.06	38.96	74	54	-15.04	AVG
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. *Mrgin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	RX / 802.11n Standard-20 MHz Channel mode / CH Low	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1795.66	V	41.69	35.62	2.4	44.09	38.02	74	54	-15.98	AVG
N/A										
1795.63	H	42.35	35.12	2.4	44.75	37.52	74	54	-16.48	AVG
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. *Mrgin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	RX / 802.11n Standard-20 MHz Channel mode / CH Mid	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1970.23	V	42.66	37.53	2.4	45.06	39.93	74	54	-14.07	AVG
N/A										
1971.25	H	43.26	37.43	2.4	45.66	39.83	74	54	-14.17	AVG
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. *Mrgin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	RX / 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2015.39	V	43.66	37.34	2.4	46.06	39.74	74	54	-14.26	AVG
N/A										
2015.66	H	43.21	37.26	2.4	45.61	39.66	74	54	-14.34	AVG
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. *Mrgin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	RX / 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1770.69	V	42.36	36.38	2.4	44.76	38.78	74	54	-15.22	AVG
N/A										
1780.55	H	42.67	36.95	2.4	45.07	39.35	74	54	-14.65	AVG
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. *Mrgin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode:	RX / 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2140.68	V	42.38	36.16	2.4	44.78	38.56	74	54	-15.44	AVG
N/A										
2141.36	H	42.62	36.46	2.4	45.02	38.86	74	54	-15.14	AVG
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. *Mrgin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

5470~5725MHz

Above 1 GHz

Operation Mode:	Rx / IEEE 802.11a mode / CH Low	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1810.55	V	42.76	36.54	2.4	45.16	38.94	74	54	-15.06	AVG
N/A										
1820.56	H	42.35	36.28	2.4	44.75	38.68	74	54	-15.32	AVG
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:	Rx / IEEE 802.11a mode / CH Mid	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1920.64	V	41.85	37.65	2.4	44.25	40.05	74	54	-13.95	AVG
N/A										
1920.34	H	41.69	36.54	2.4	44.09	38.94	74	54	-15.06	AVG
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:	Rx / IEEE 802.11a mode / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2231.36	V	42.36	36.99	2.4	44.76	39.39	74	54	-14.61	AVG
N/A										
2230.95	H	40.98	36.98	2.4	43.38	39.38	74	54	-14.62	AVG
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:	RX / 802.11n Standard-20 MHz Channel mode / CH Low	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1810.36	V	43.26	37.65	2.4	45.66	40.05	74	54	-13.95	AVG
N/A										
1809.36	H	42.68	37.52	2.4	45.08	39.92	74	54	-14.08	AVG
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:	RX / 802.11n Standard-20 MHz Channel mode / CH Mid	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1951.25	V	45.32	37.96	2.4	47.72	40.36	74	54	-13.64	AVG
N/A										
1951.35	H	45.32	37.68	2.4	47.72	40.08	74	54	-13.92	AVG

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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:	RX / 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2220.35	V	44.36	38.52	2.4	46.76	40.92	74	54	-13.08	AVG
N/A										
2220.69	H	44.36	37.68	2.4	46.76	40.08	74	54	-13.92	AVG

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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:	RX / 802.11n Wide-40 MHz Channel mode / CH Low	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55% RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1805.65	V	44.35	37.69	2.4	46.75	40.09	74	54	-13.91	AVG
N/A										
1806.55	H	44.32	36.98	2.4	46.72	39.38	74	54	-14.62	AVG

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
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:	RX / 802.11n Wide-40 MHz Channel mode / CH Mid	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1980.56	V	43.69	37.35	2.4	46.09	39.75	74	54	-14.25	AVG
N/A										
1979.55	H	43.26	37.4	2.4	45.66	39.8	74	54	-14.2	AVG
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:	RX / 802.11n Wide-40 MHz Channel mode / CH High	**Test Date:**	May 12,2013
Temperature:	25°C	**Tested by:**	Sean
Humidity:	55 % RH	**Polarity:**	Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
2200.36	V	44.35	36.89	2.4	46.75	39.29	74	54	-14.71	AVG
N/A										
2195.35	H	43.25	35.39	2.4	45.65	37.79	74	54	-16.21	AVG
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)*

7.7 CONDUCTED UNDESIRABLE EMISSION

LIMIT

According to 15.407(b),

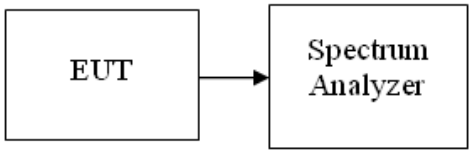
(1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.

(3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.

The provisions of §15.205 apply to intentional radiators operating under this section.

Test Configuration



TEST PROCEDURE

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

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 1 MHz. The video bandwidth is set to 1 MHz. Peak detection measurements are compared to the average EIRP limit, adjusted for the maximum antenna gain. If necessary, additional average detection measurements are made.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

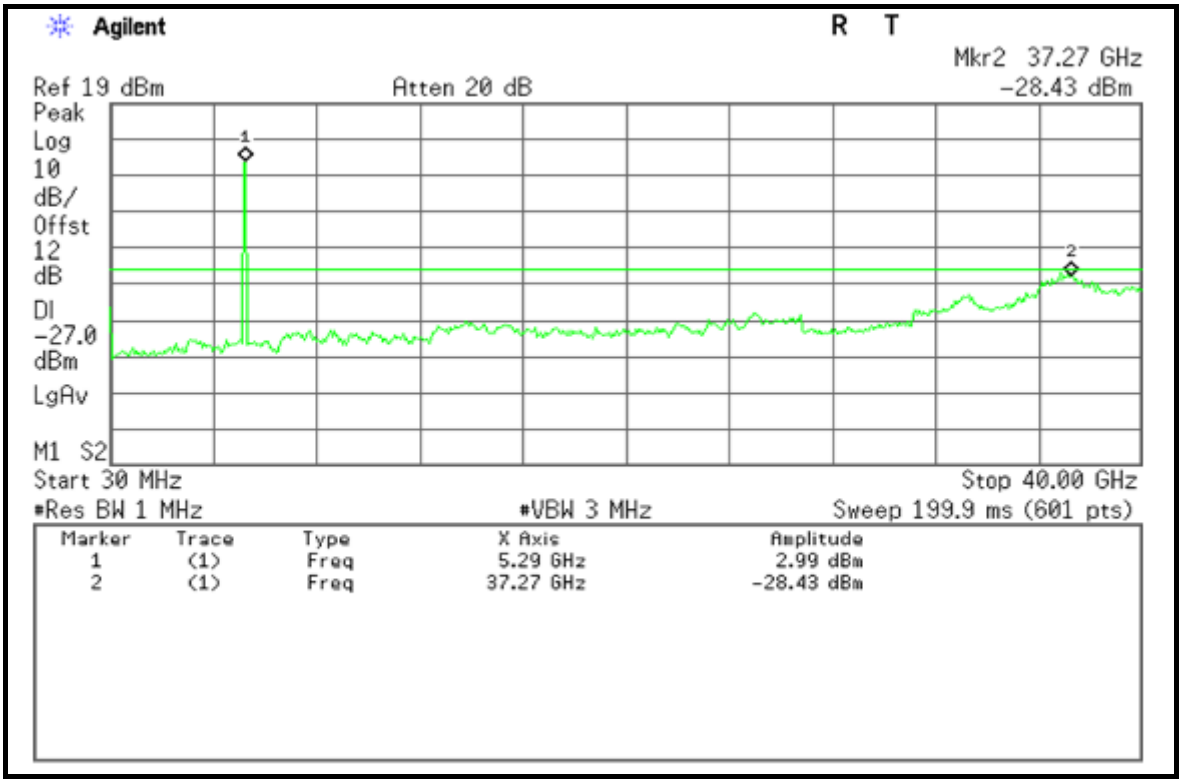
No non-compliance noted

Test Plot

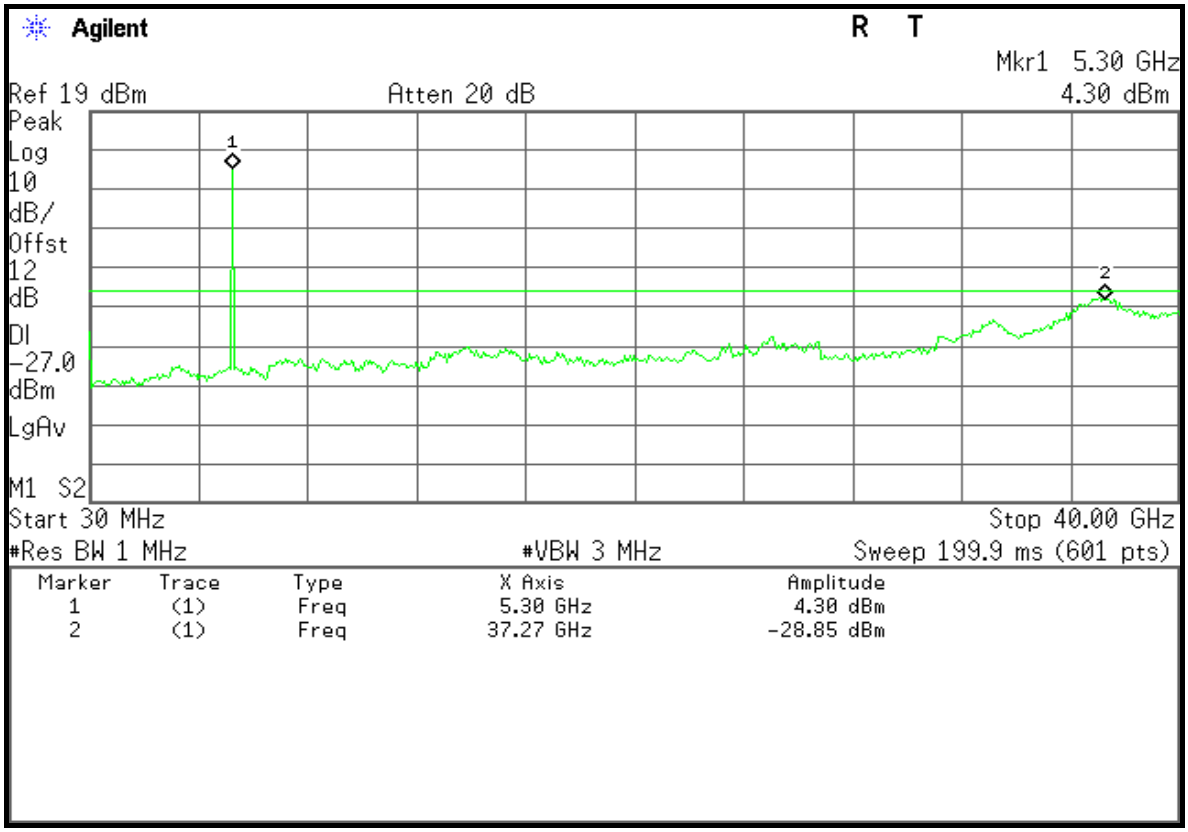
Test mode: IEEE 802.11a mode:

5250~5350MHz

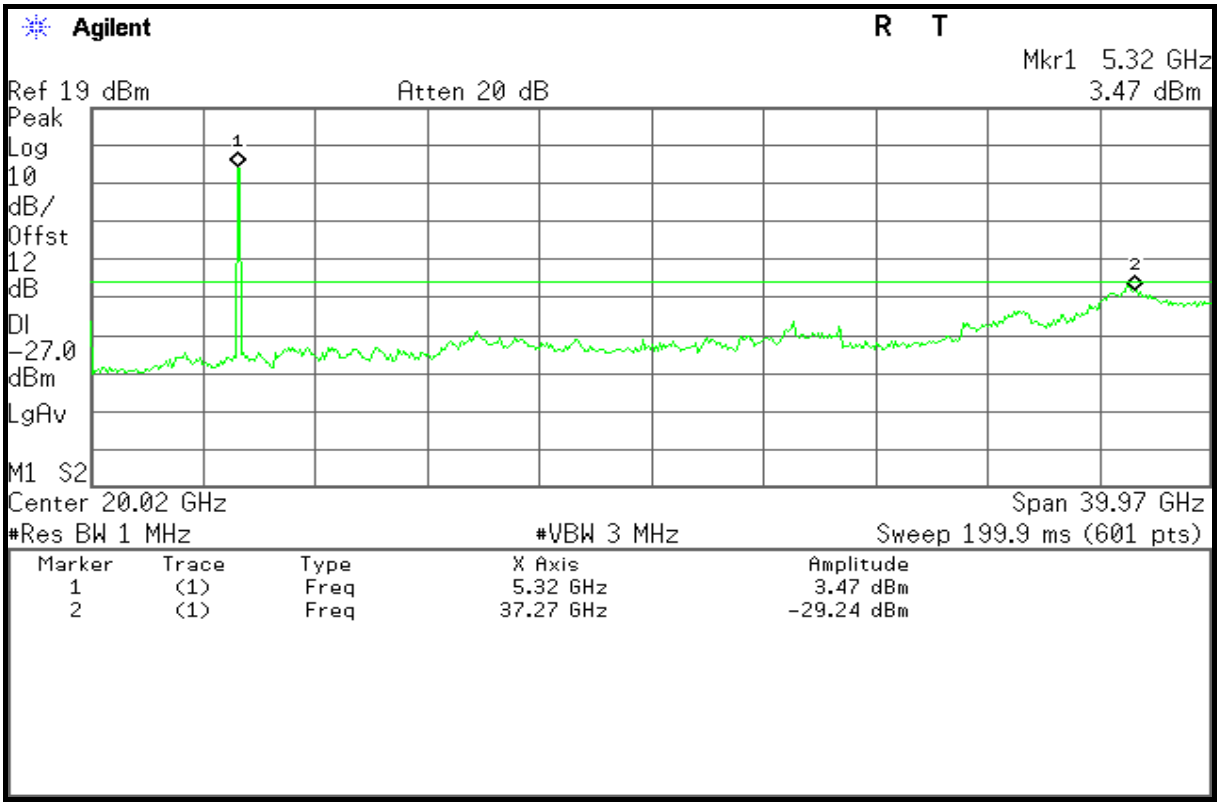
CH Low



CH Mid

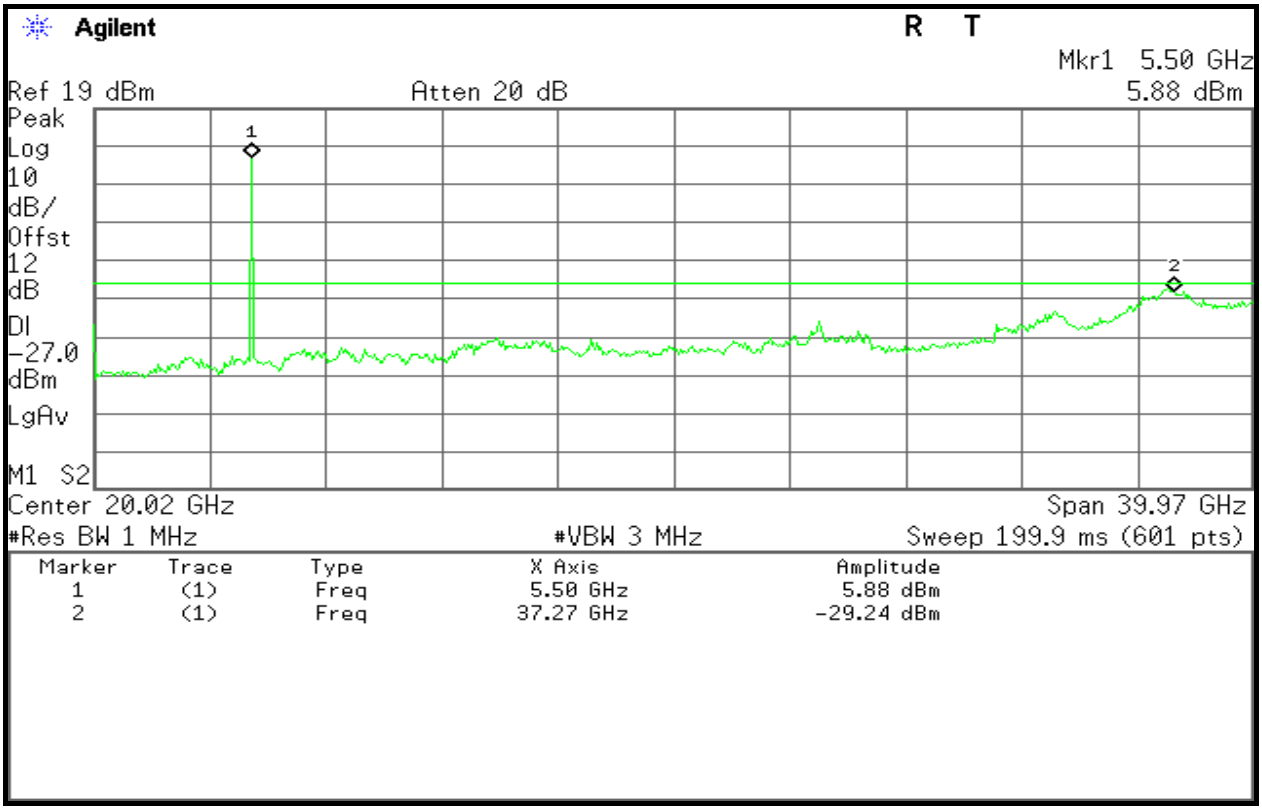


CH High

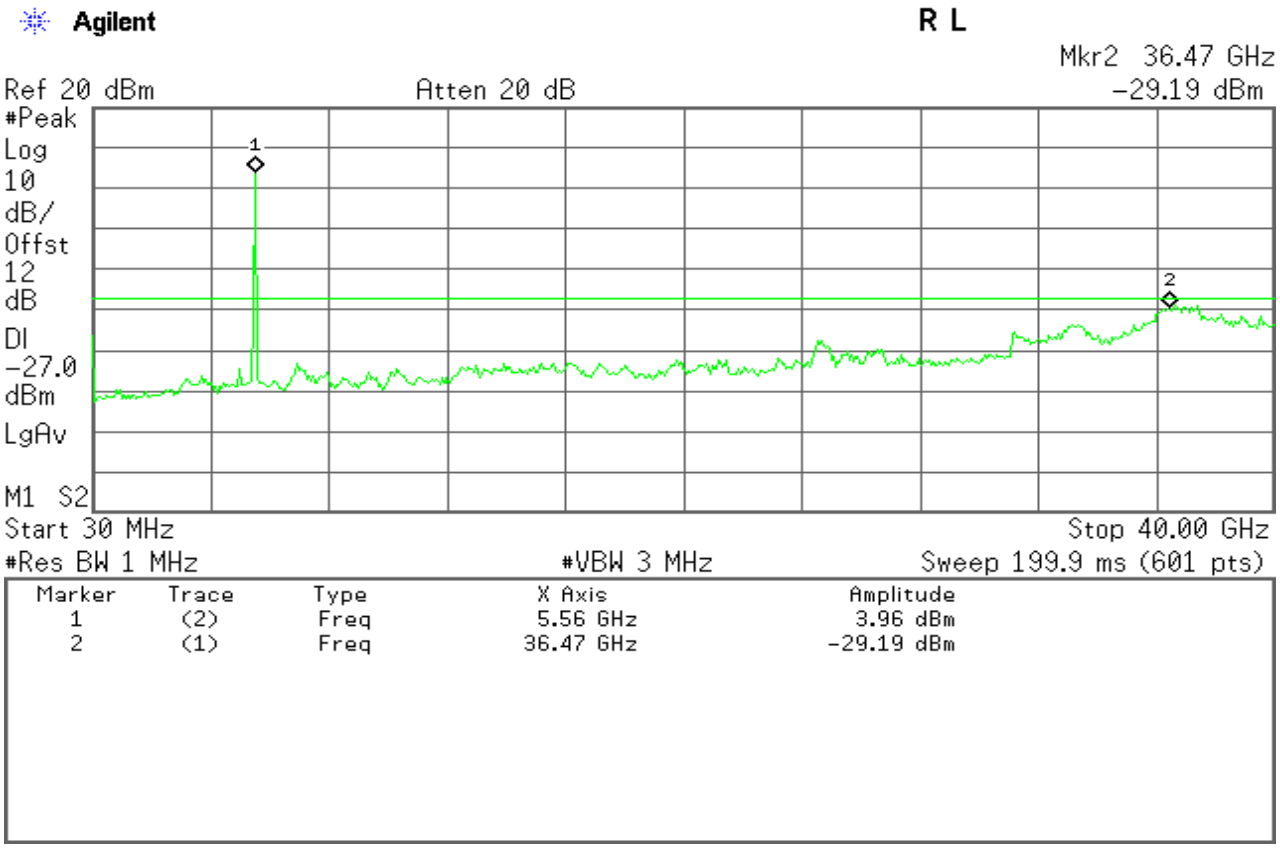


5470~5725MHz

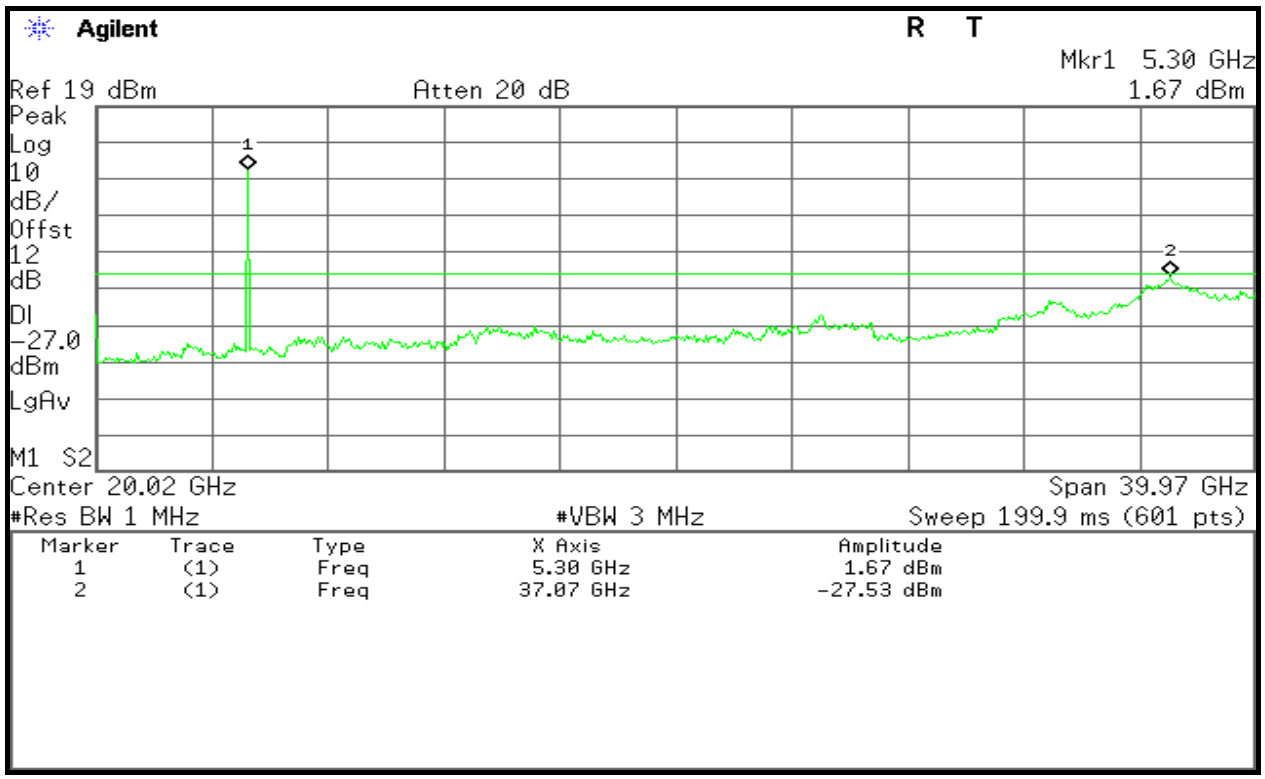
CH Low



CH Mid



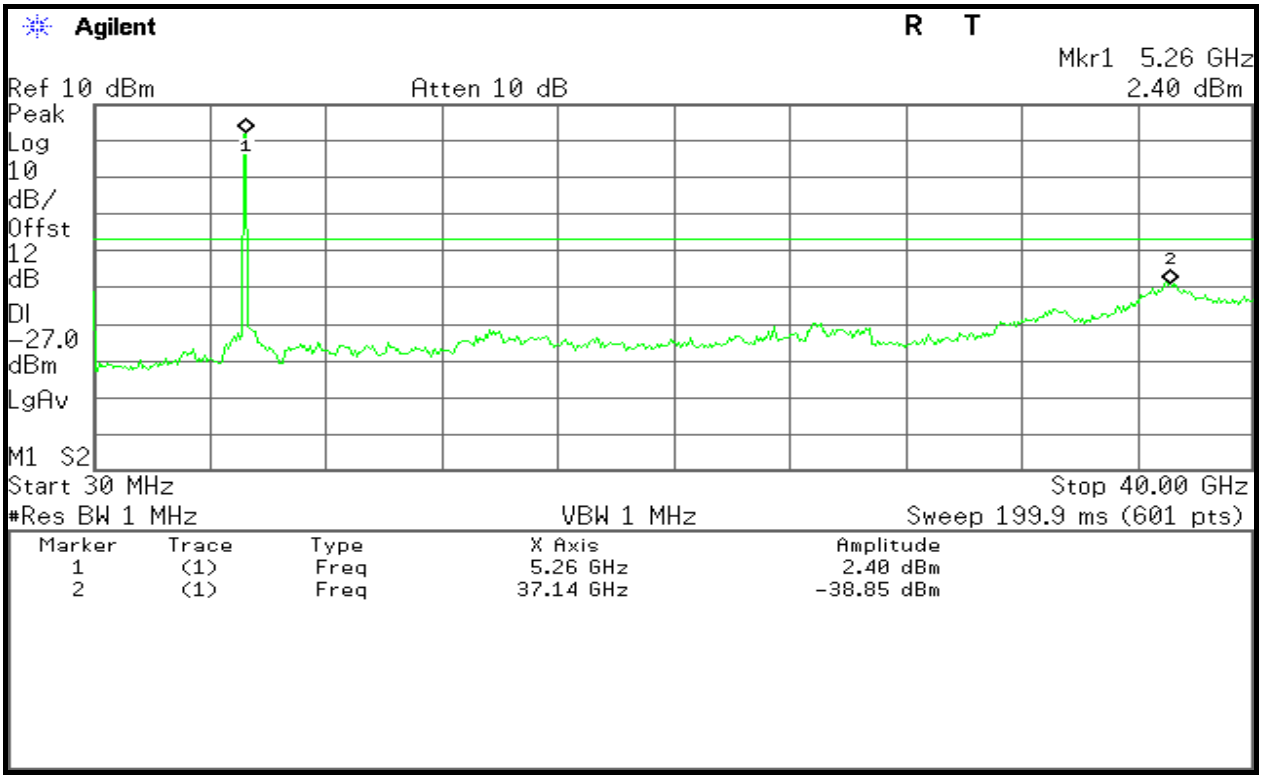
CH High



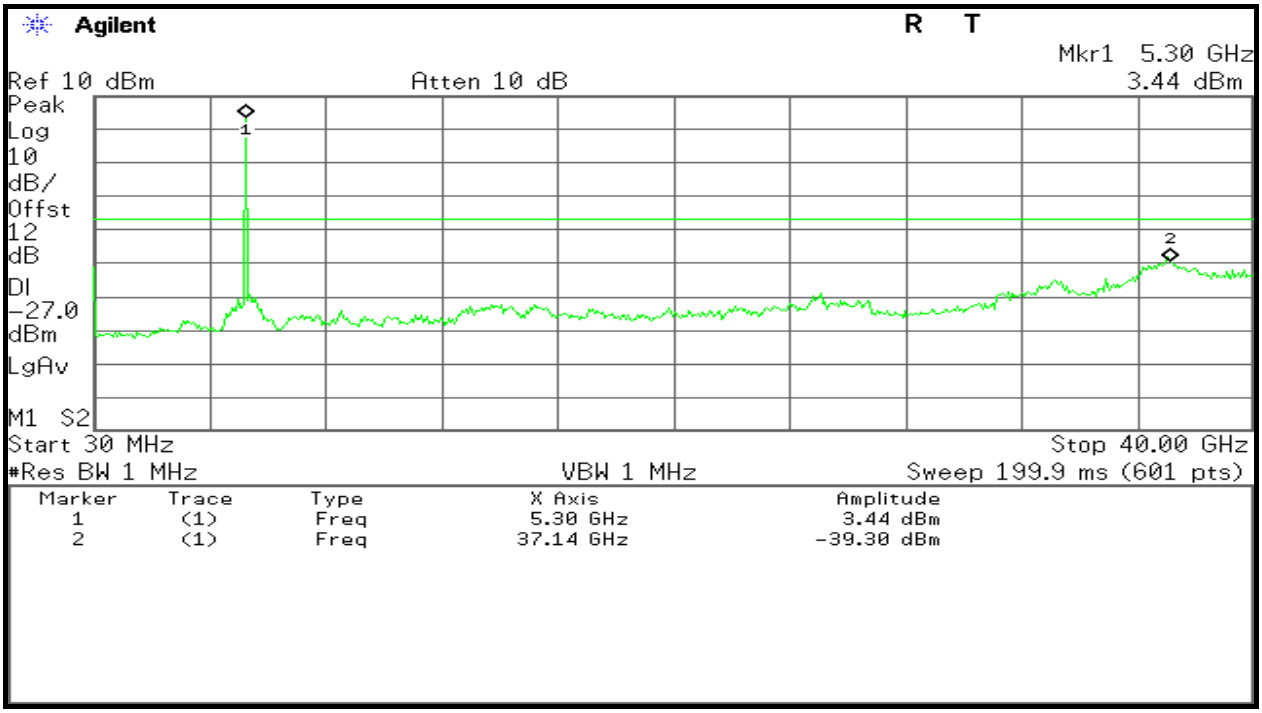
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 0:

5250~5350MHz

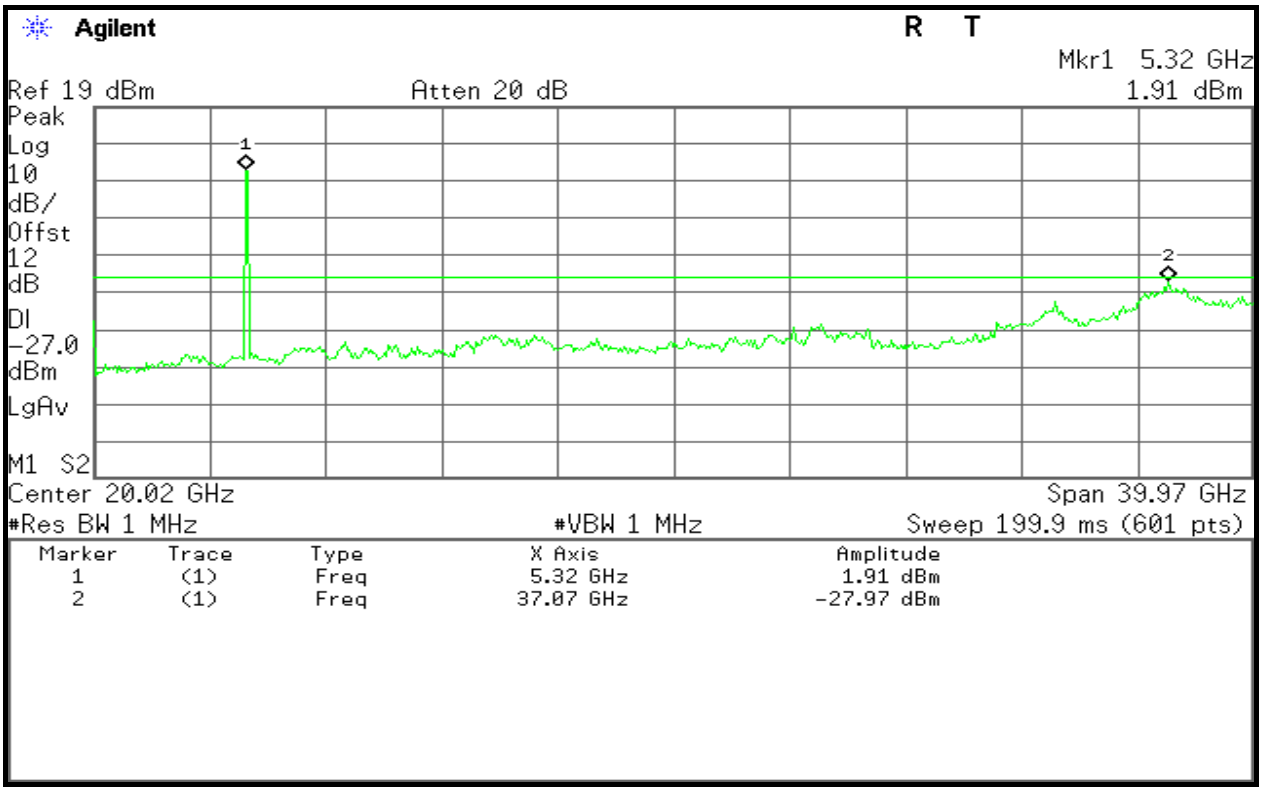
CH Low



CH Mid

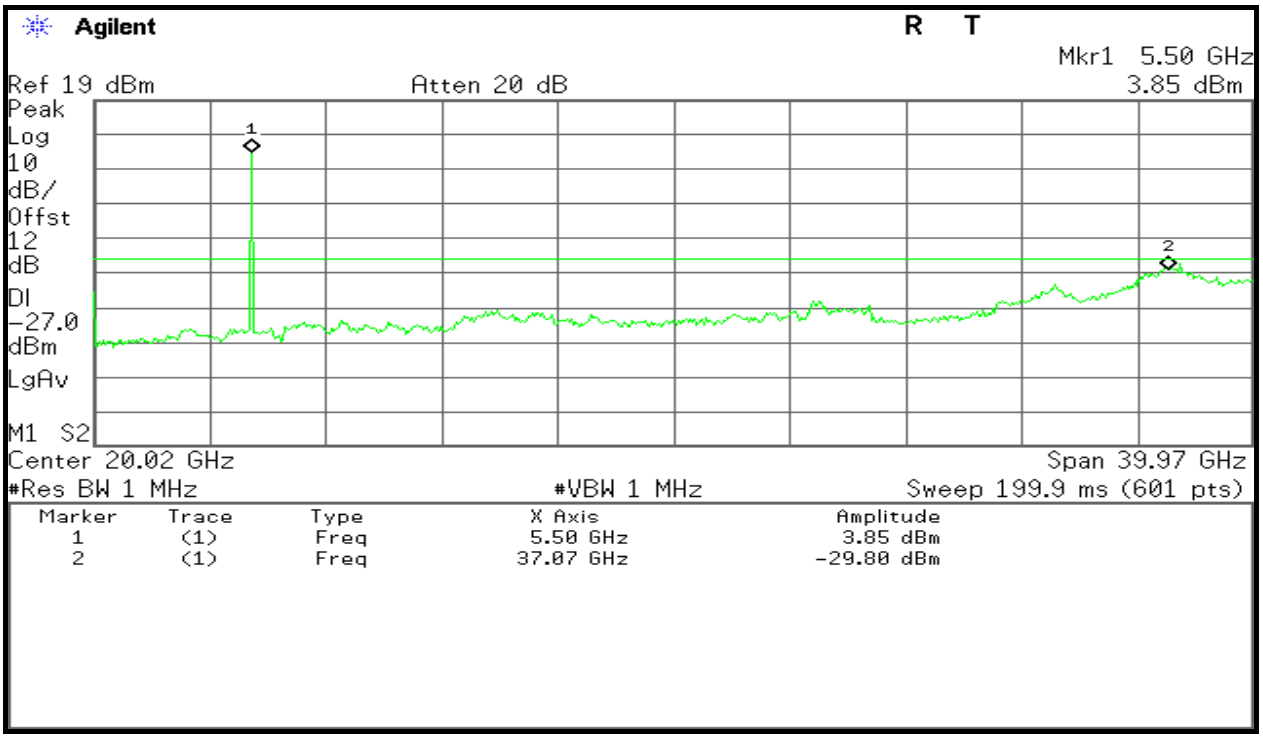


CH High

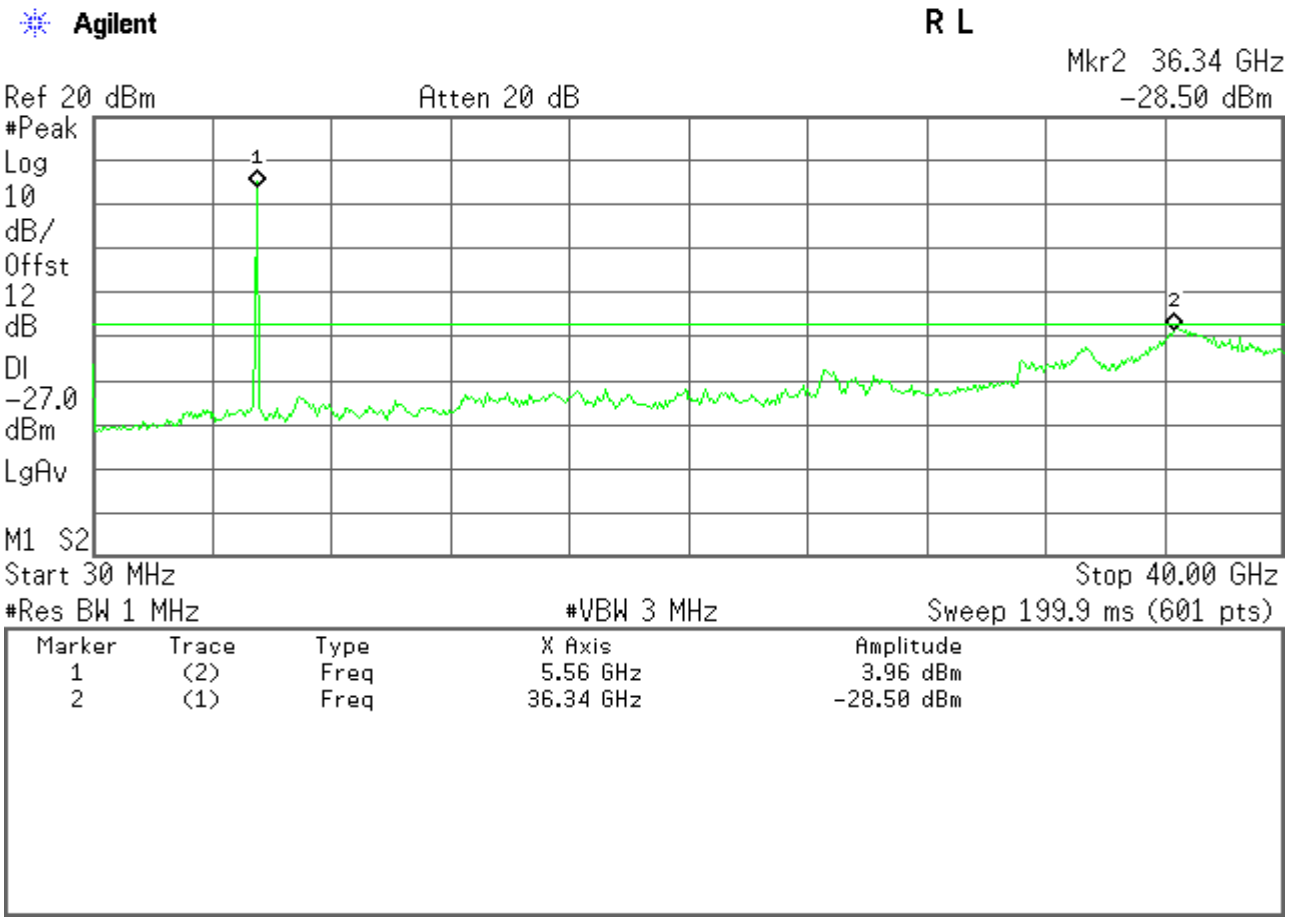


5470~5725MHz

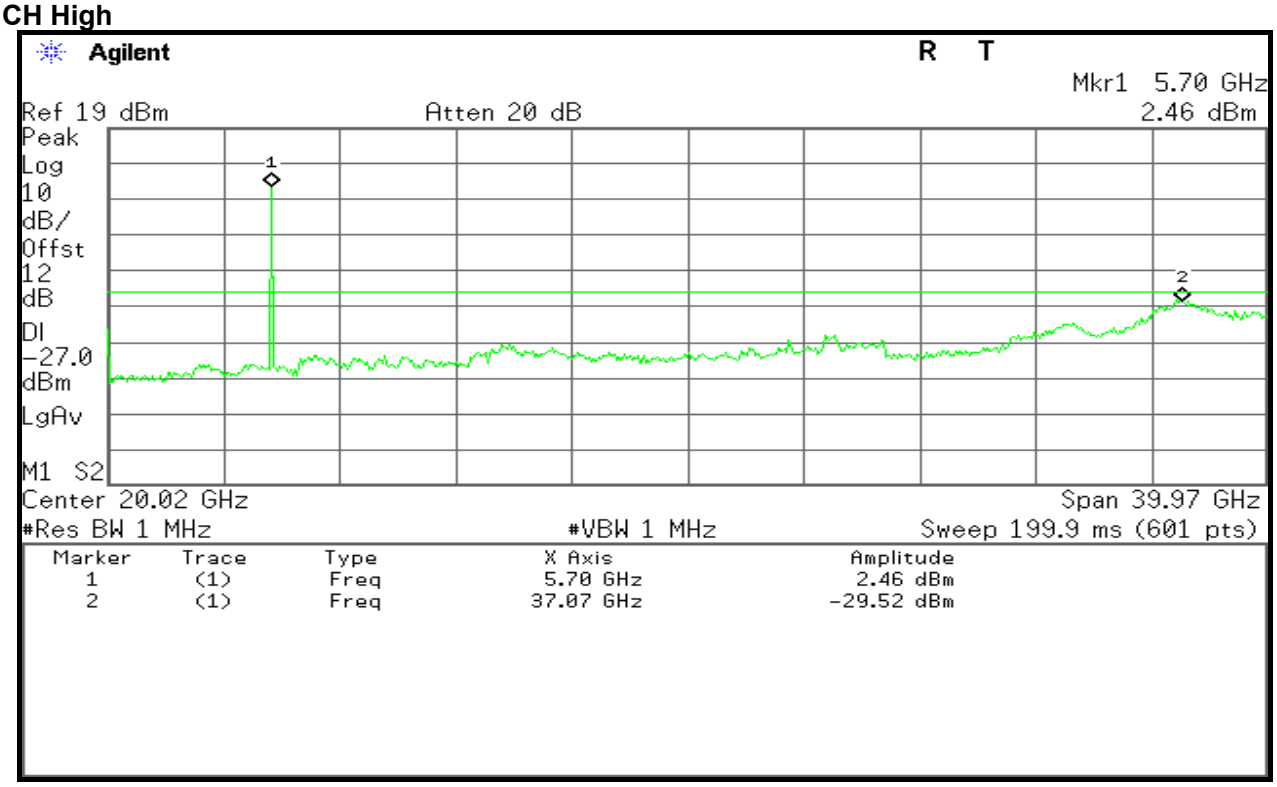
CH Low



CH Mid



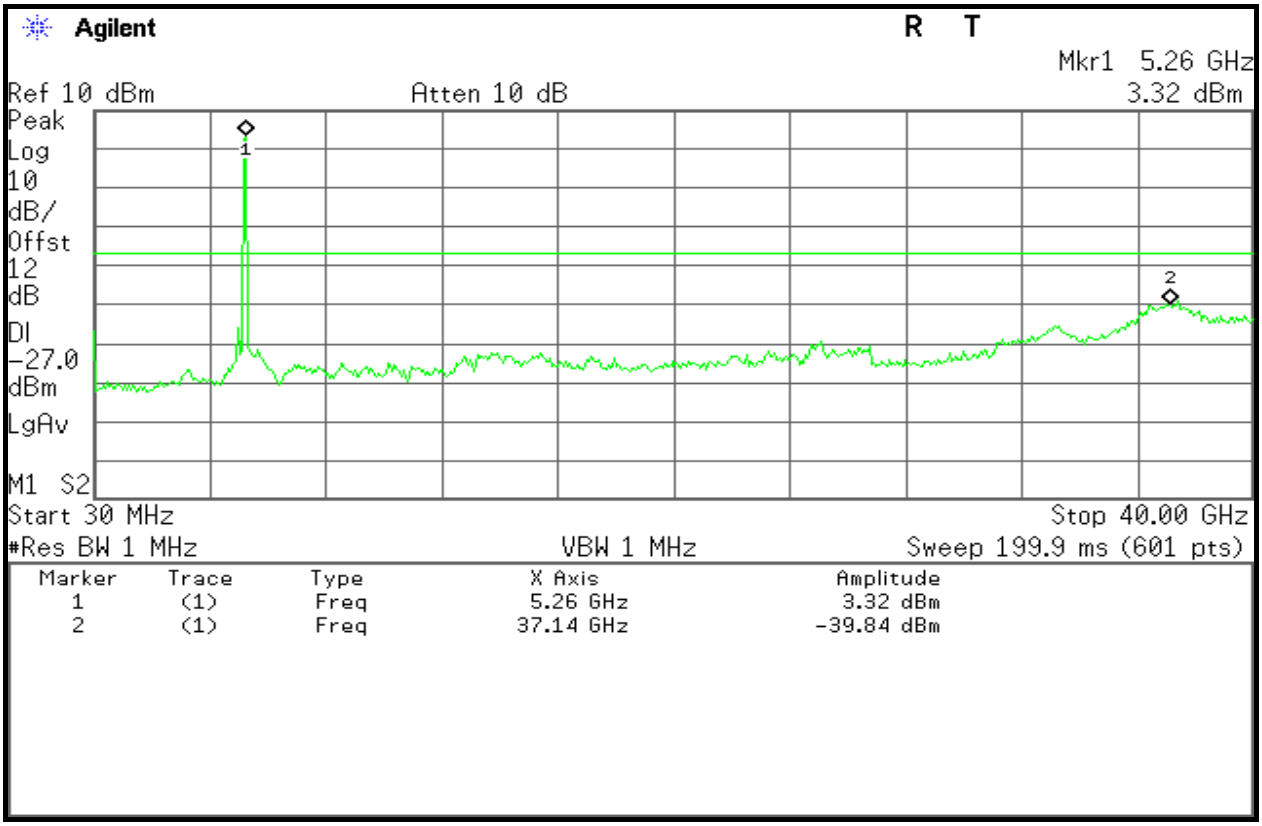
CH High



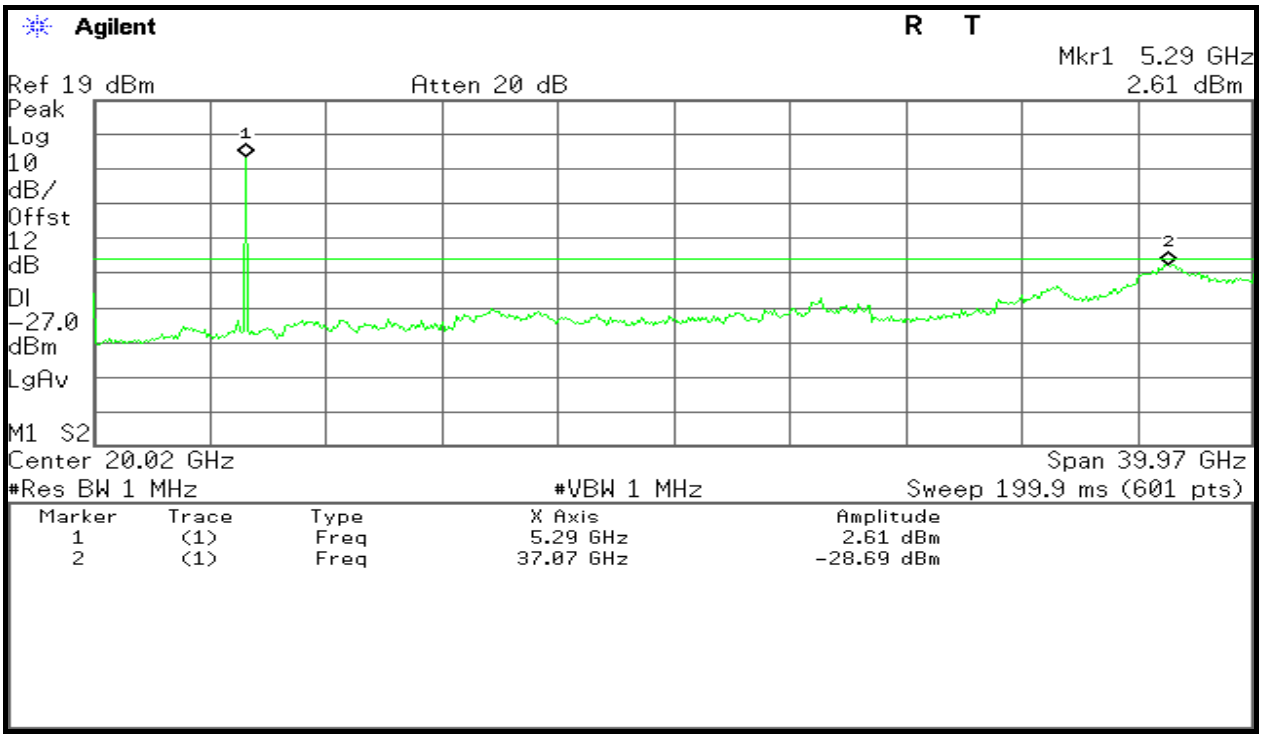
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 1:

5250~5350MHz

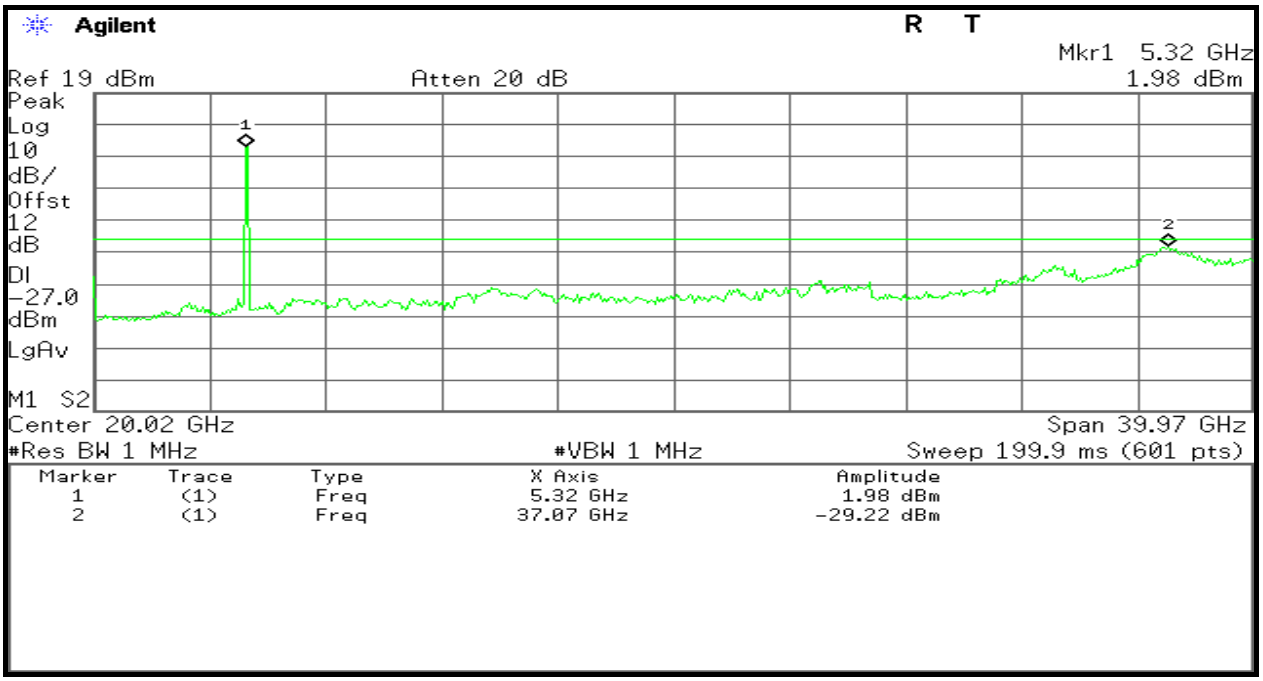
CH Low



CH Mid

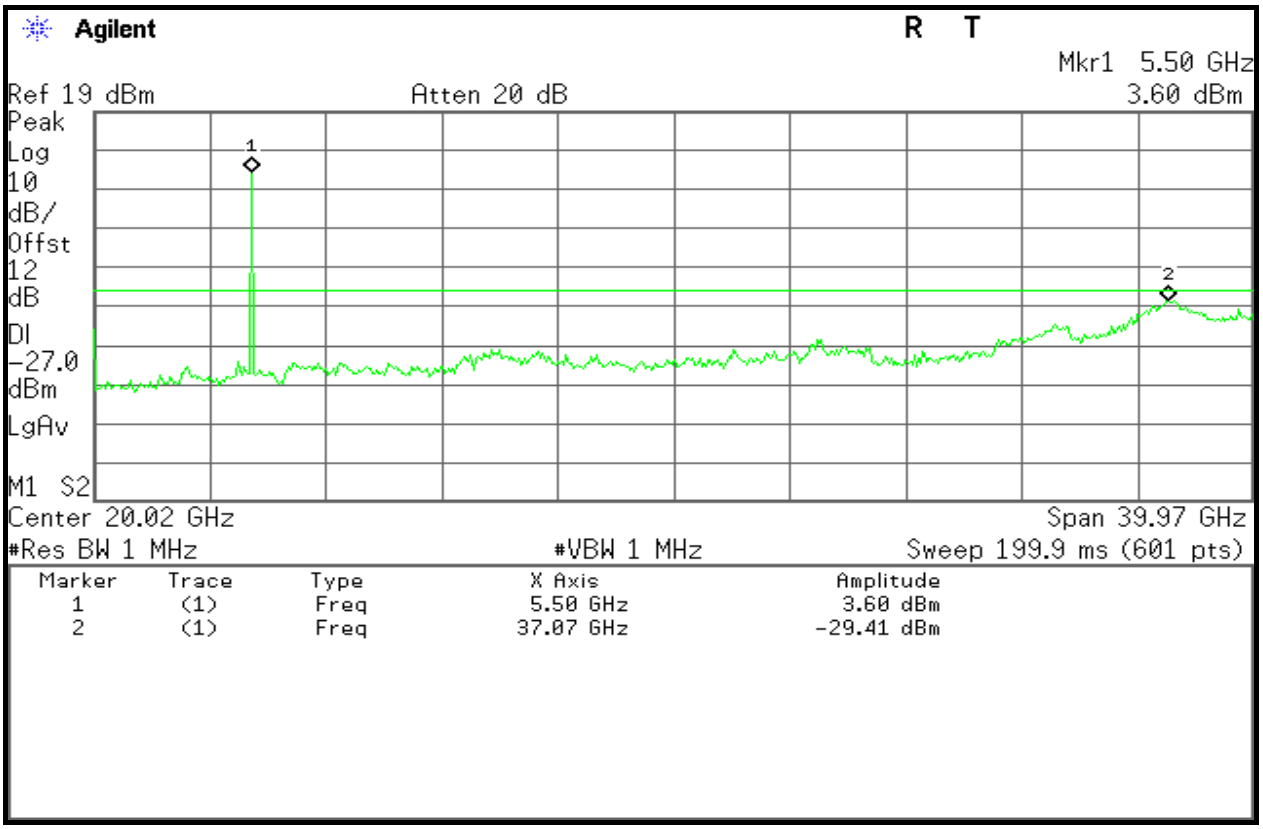


CH High

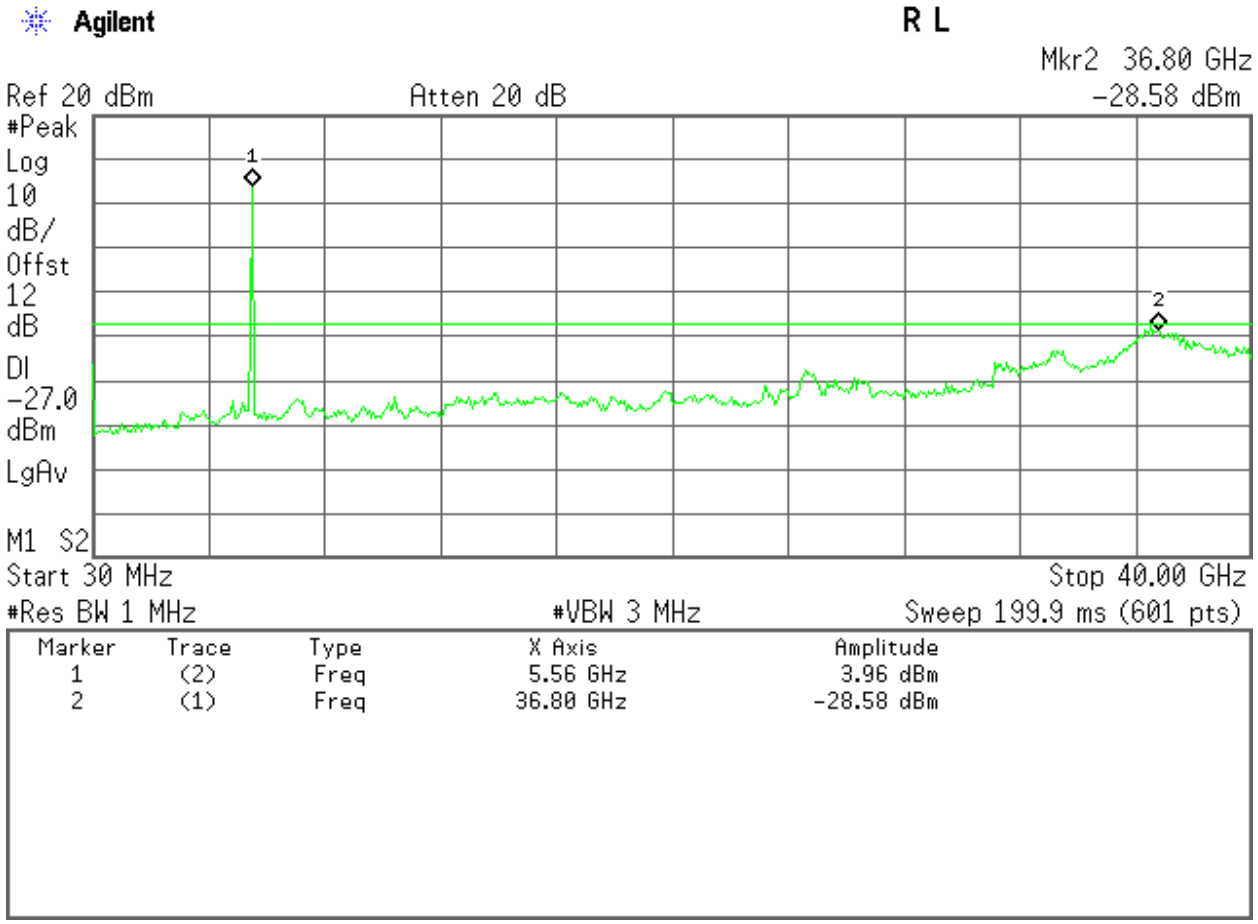


5470~5725MHz

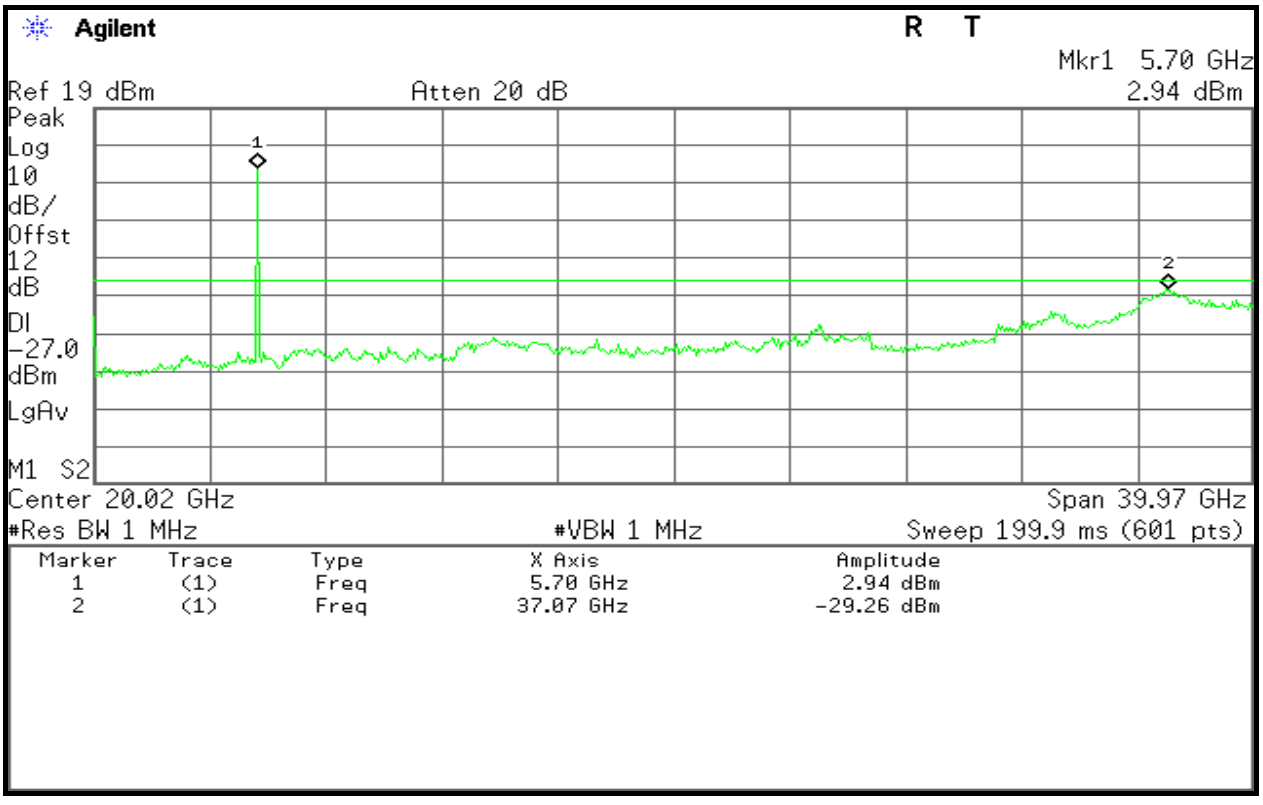
CH Low



CH Mid



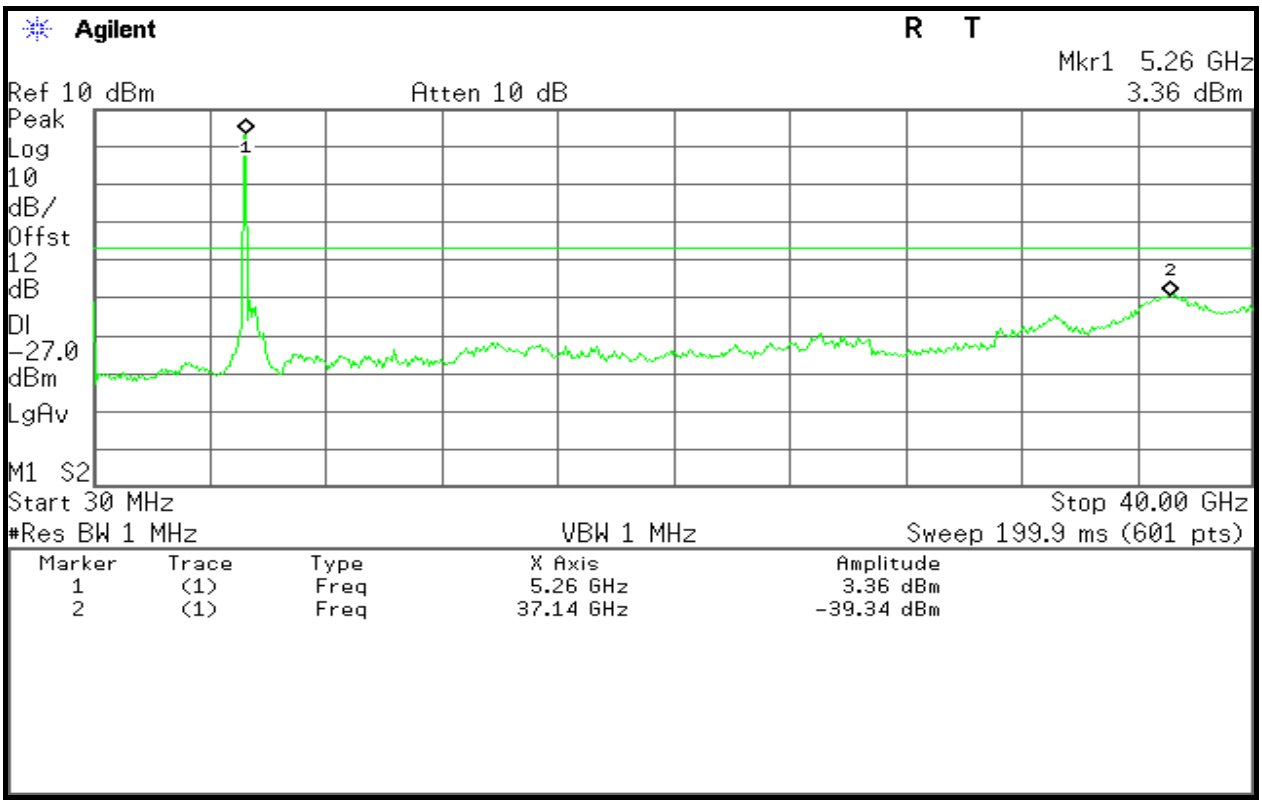
CH High



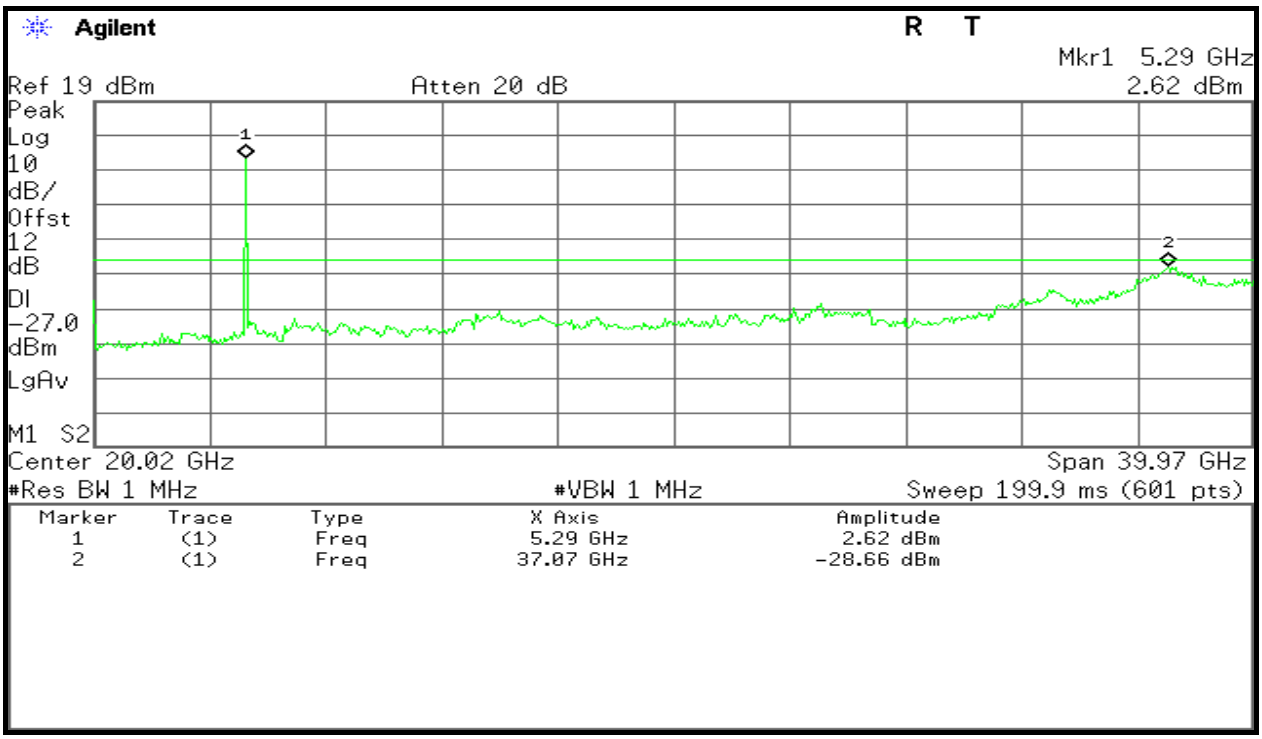
Test mode: 802.11n Standard-20 MHz Channel mode / Chain 2:

5250~5350MHz

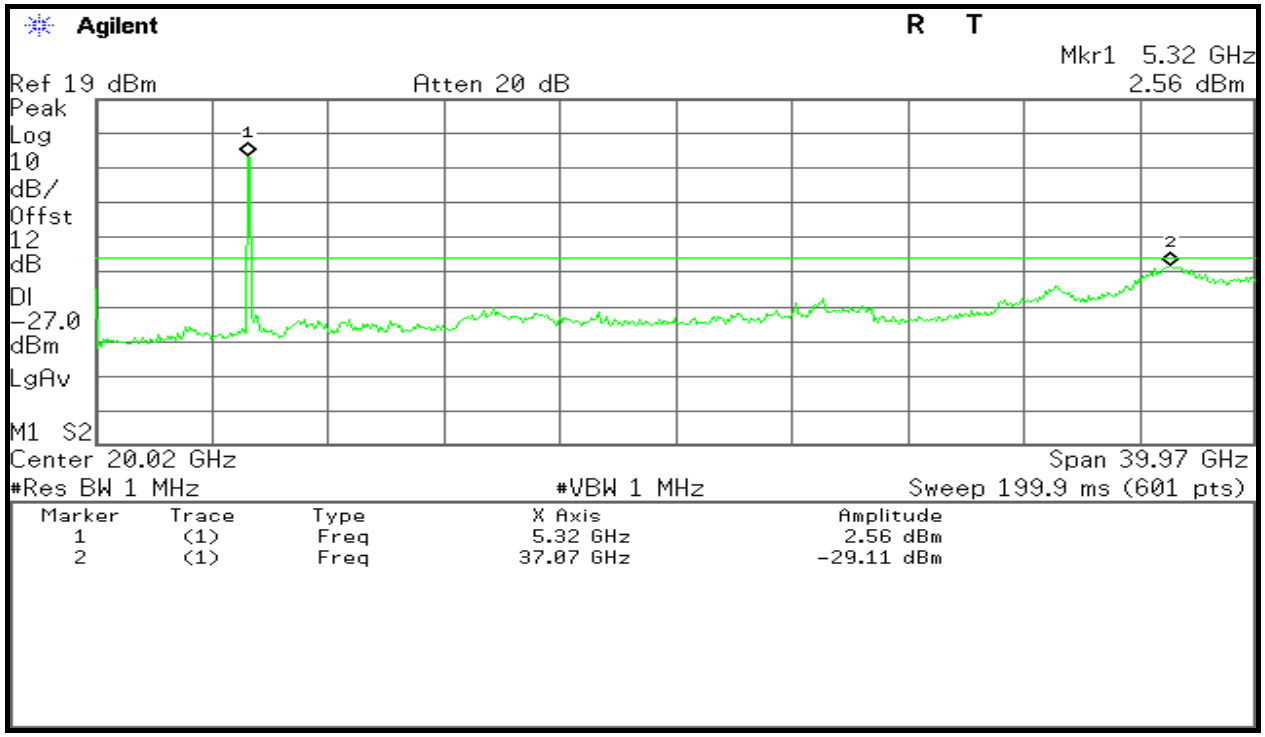
CH Low



CH Mid

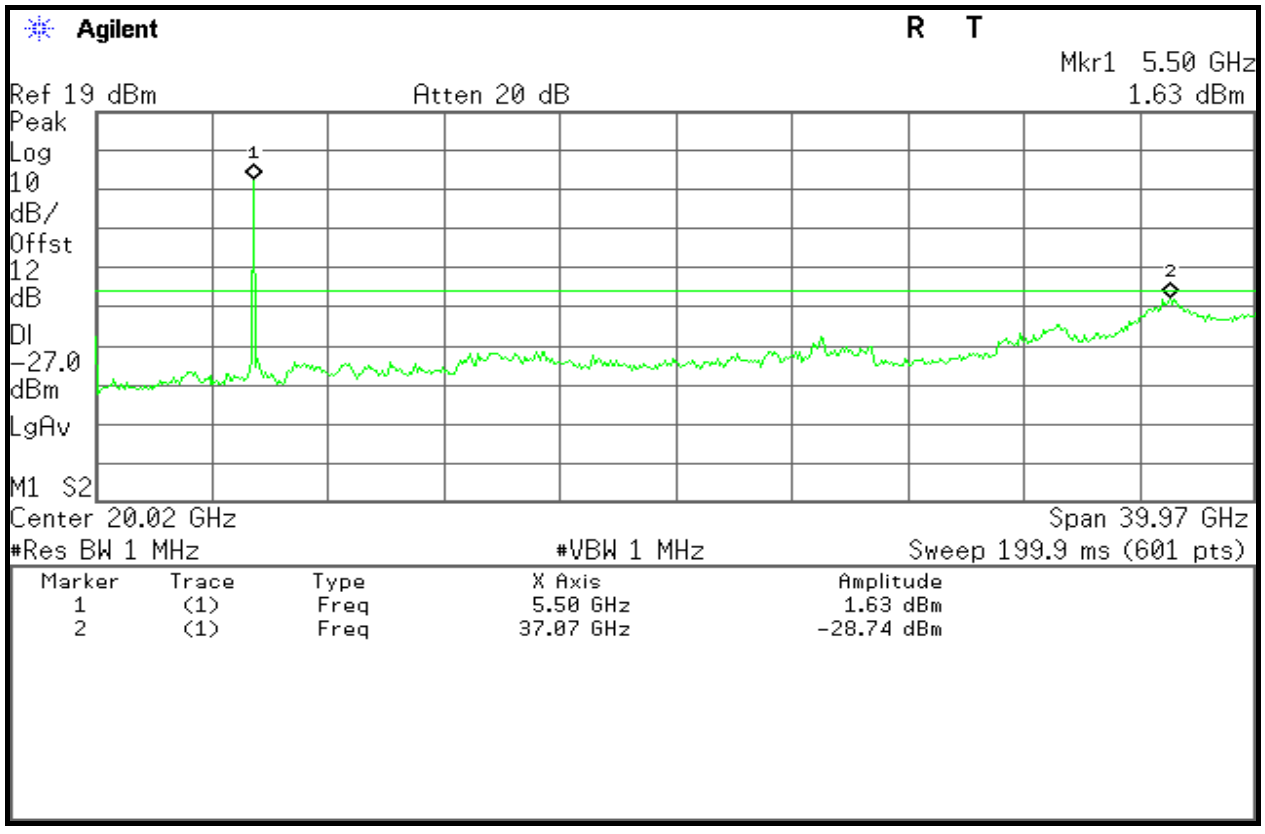


CH High

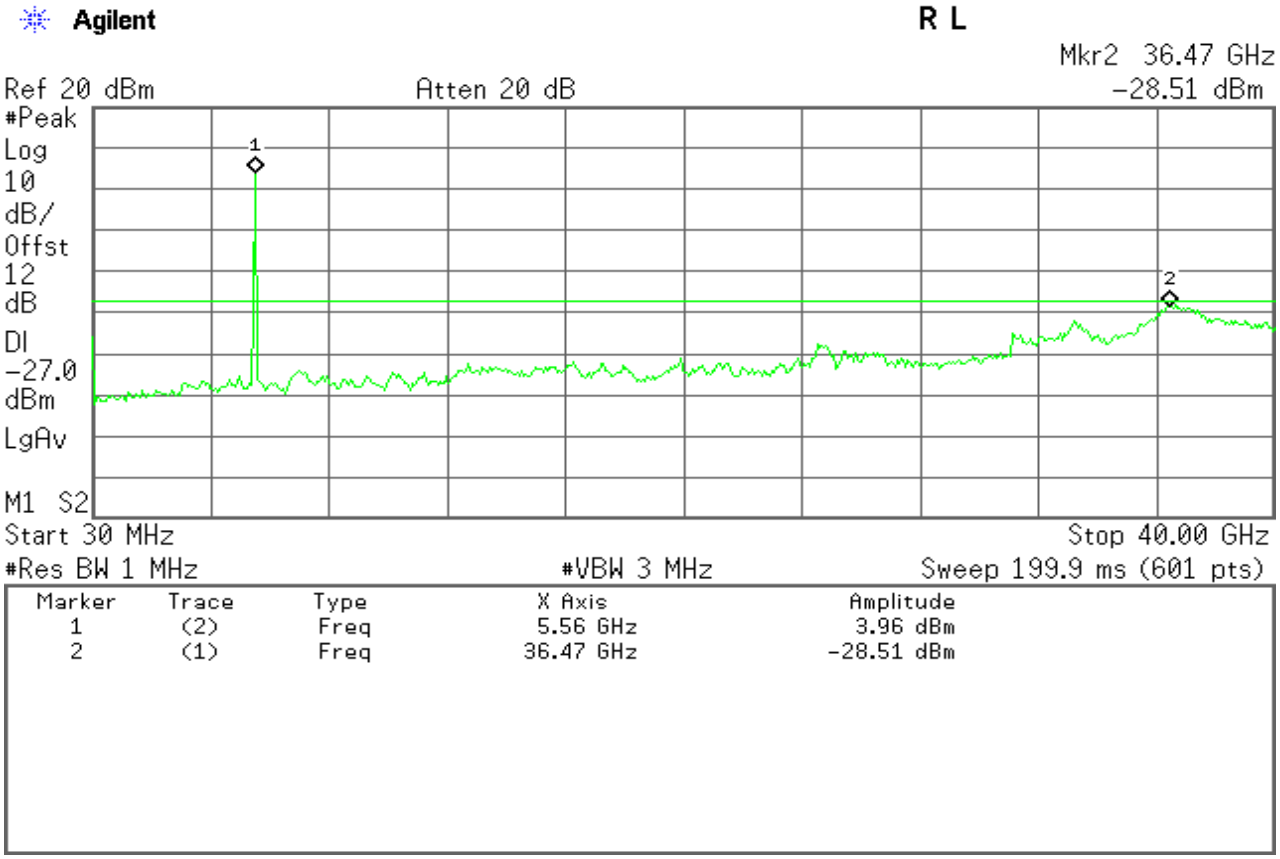


5470~5725MHz

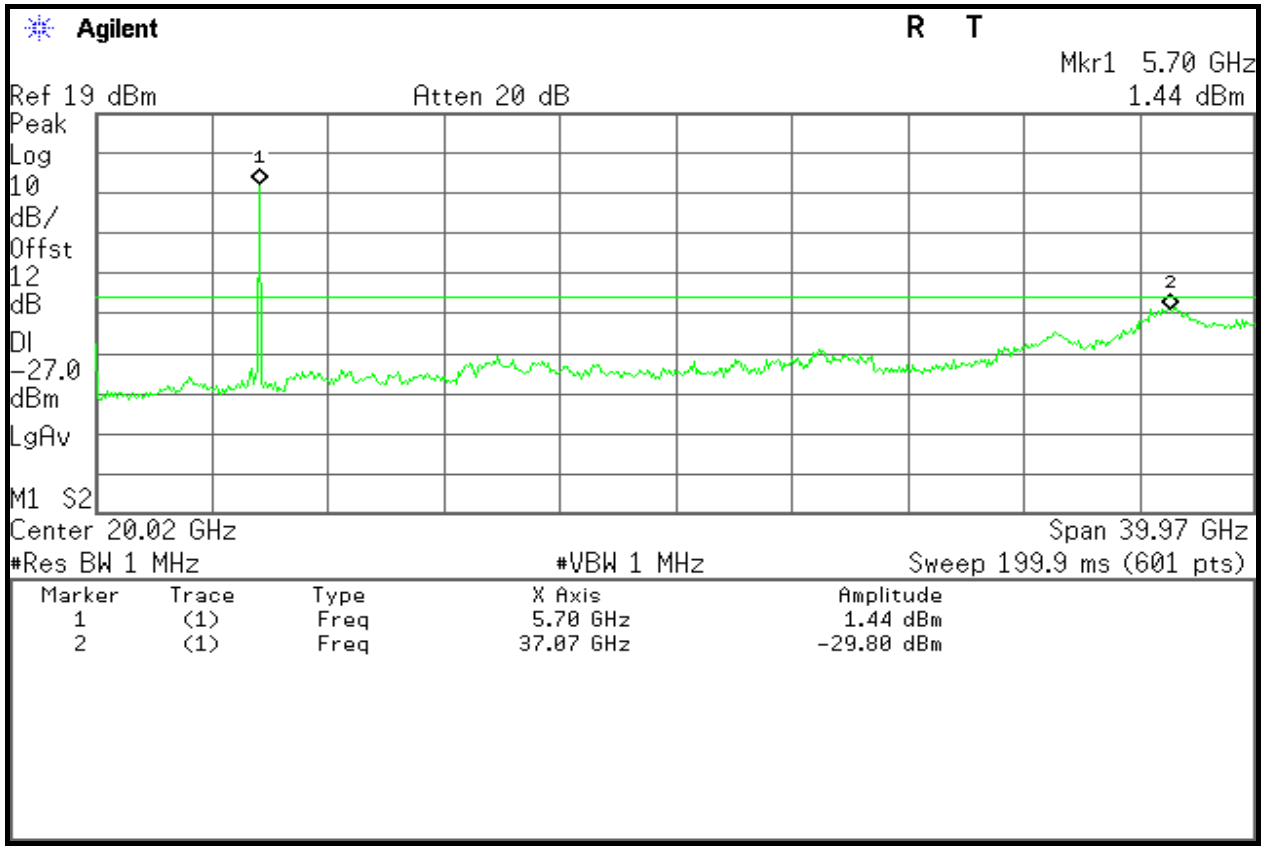
CH Low



CH Mid



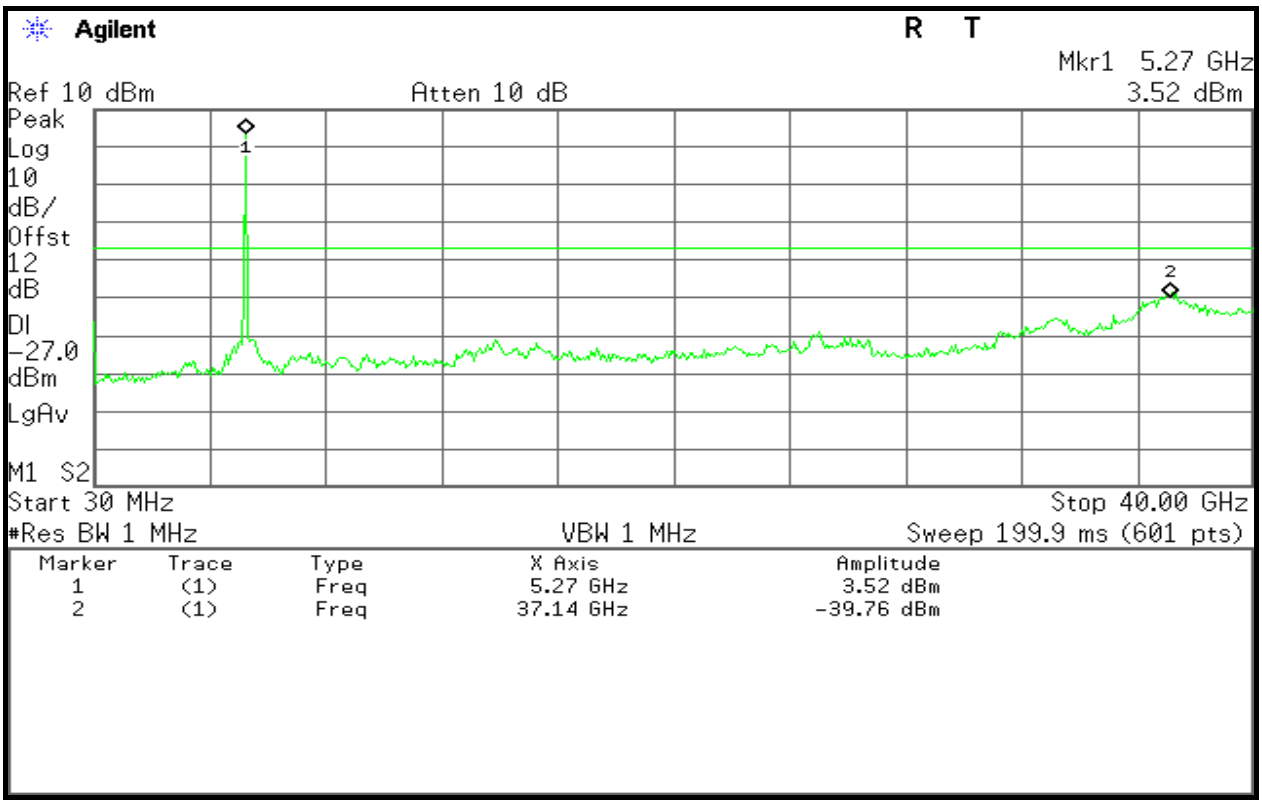
CH High



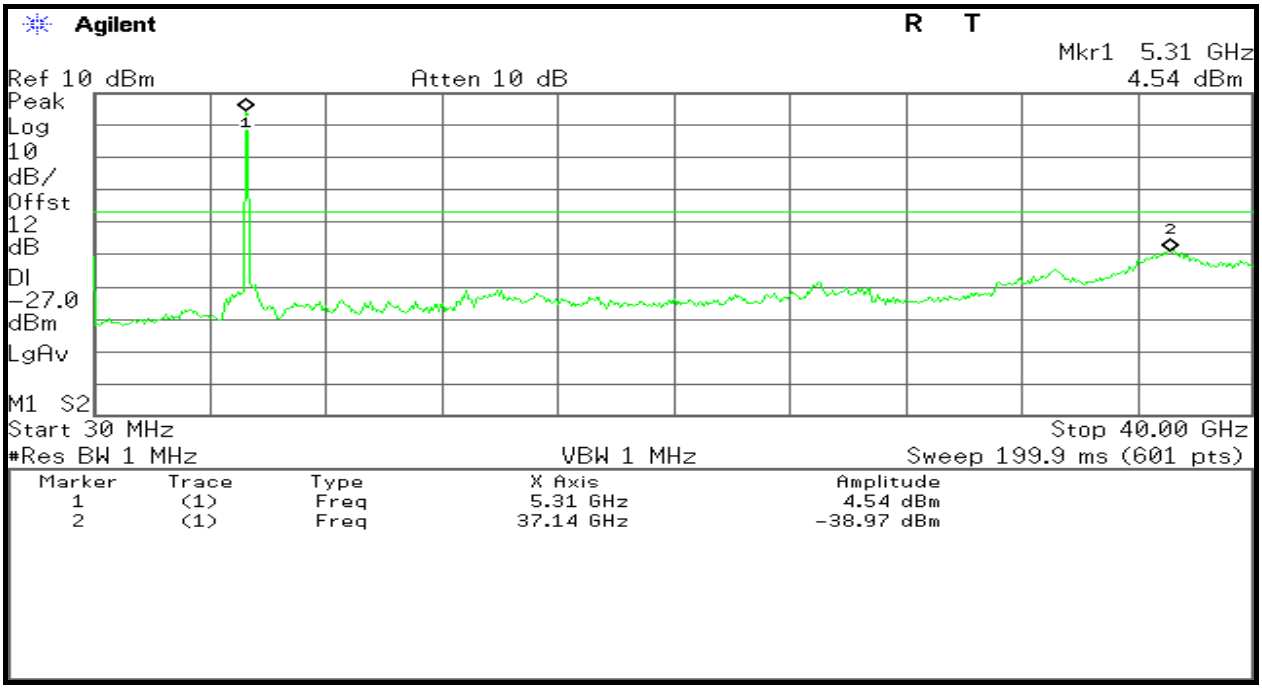
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 0:

5250~5350MHz

CH Low

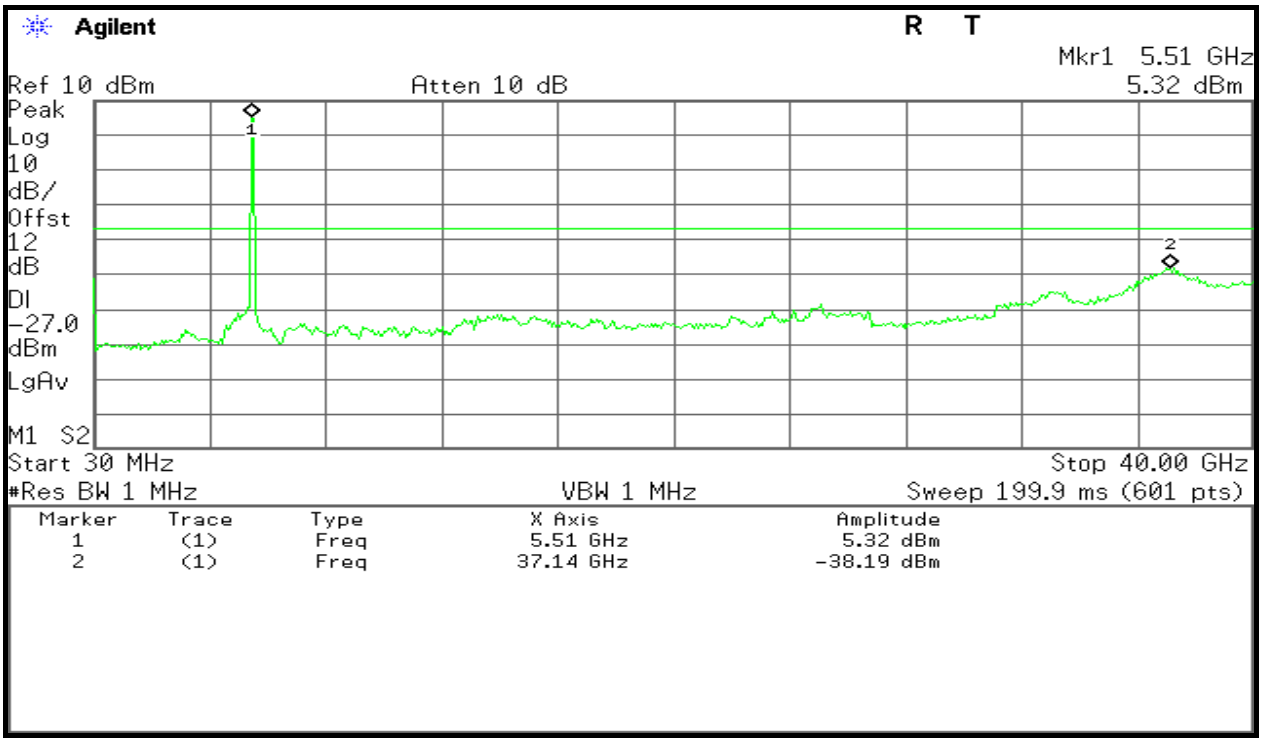


CH High

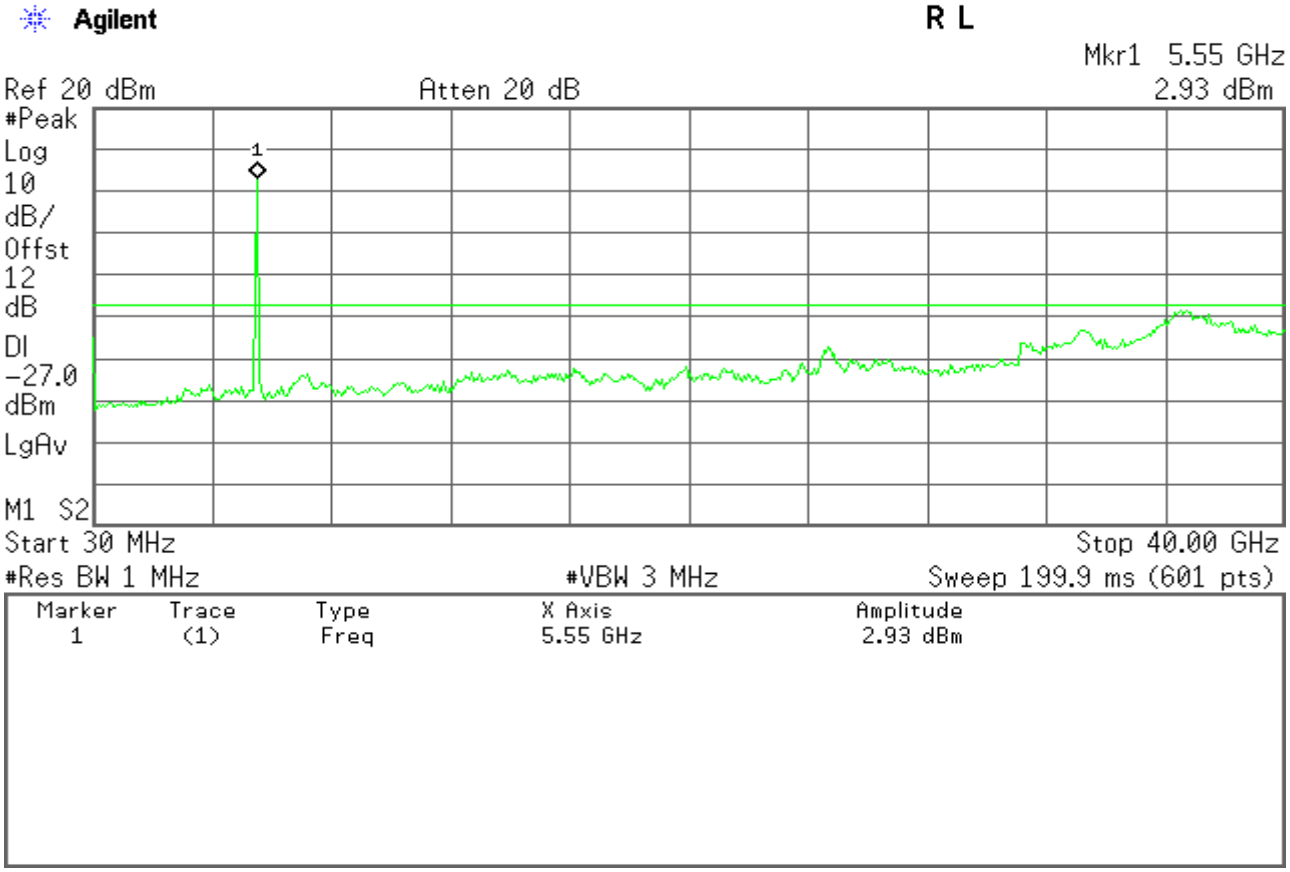


5470~5725MHz

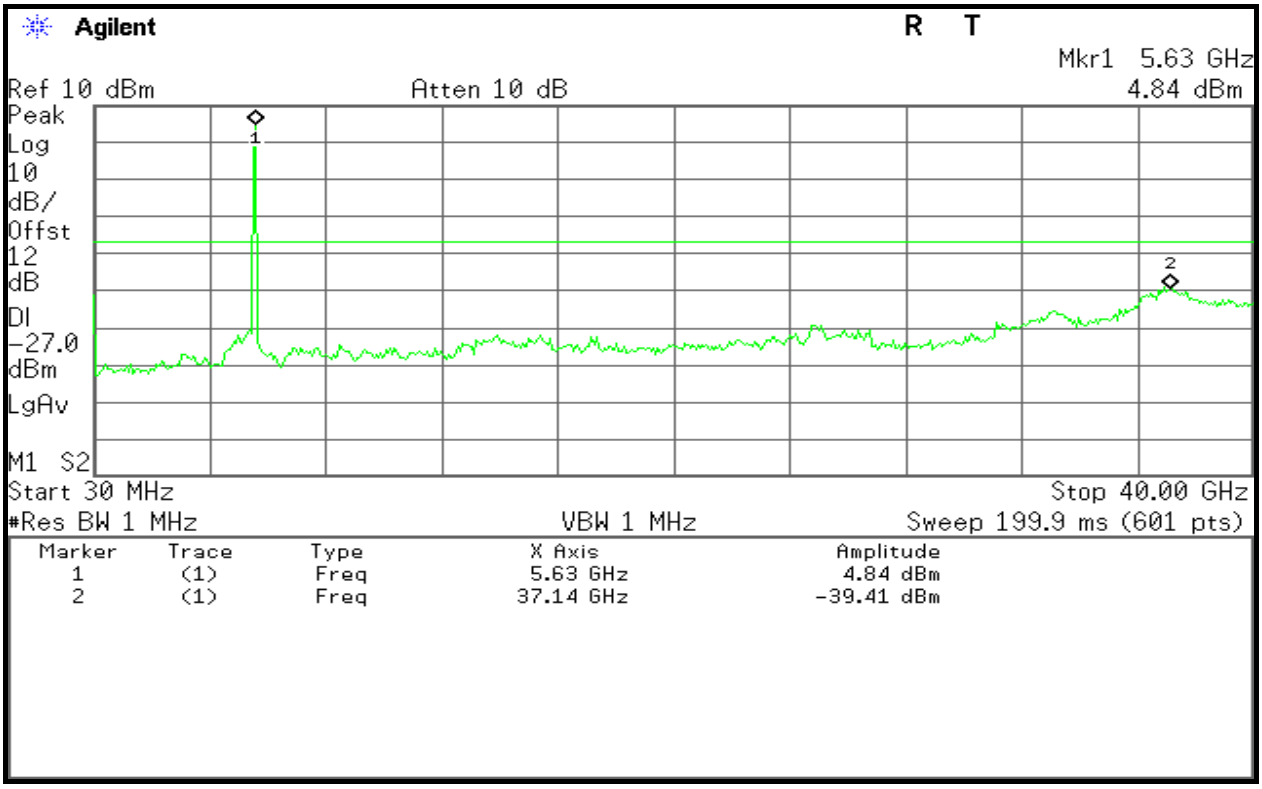
CH Low



CH Mid



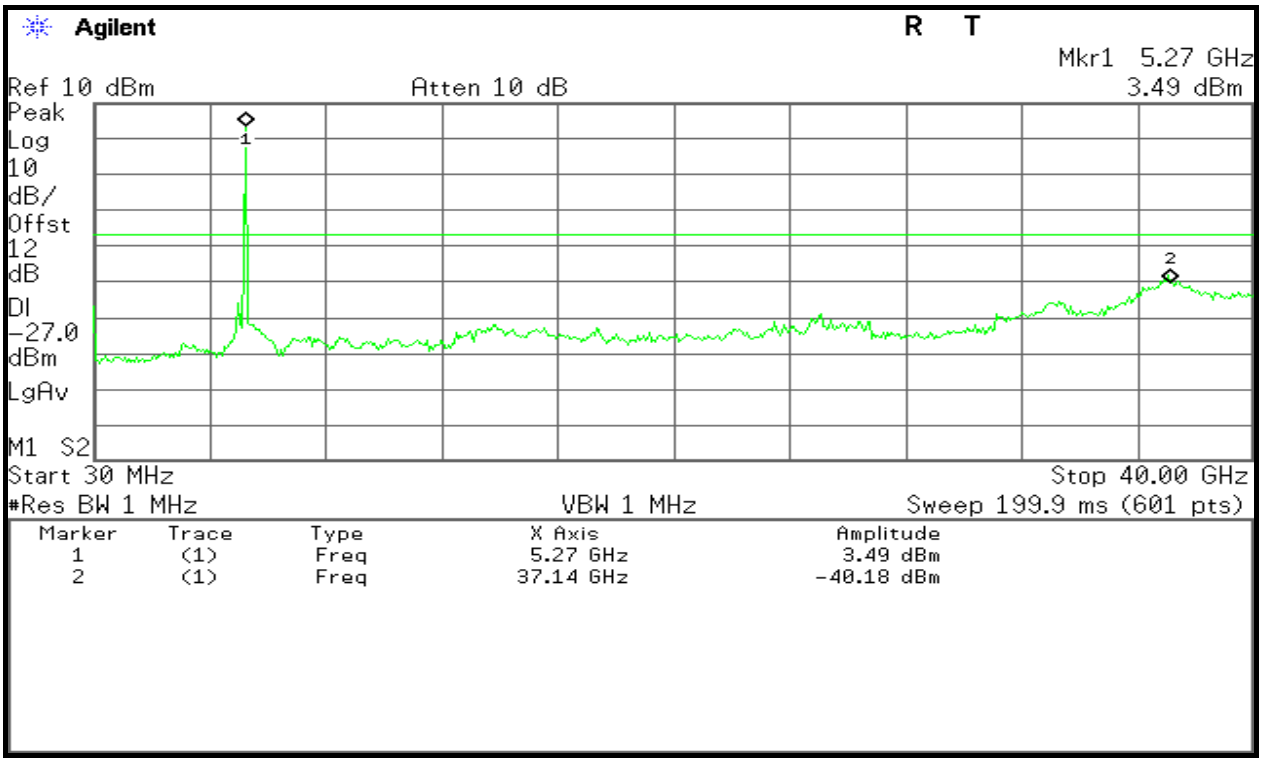
CH High



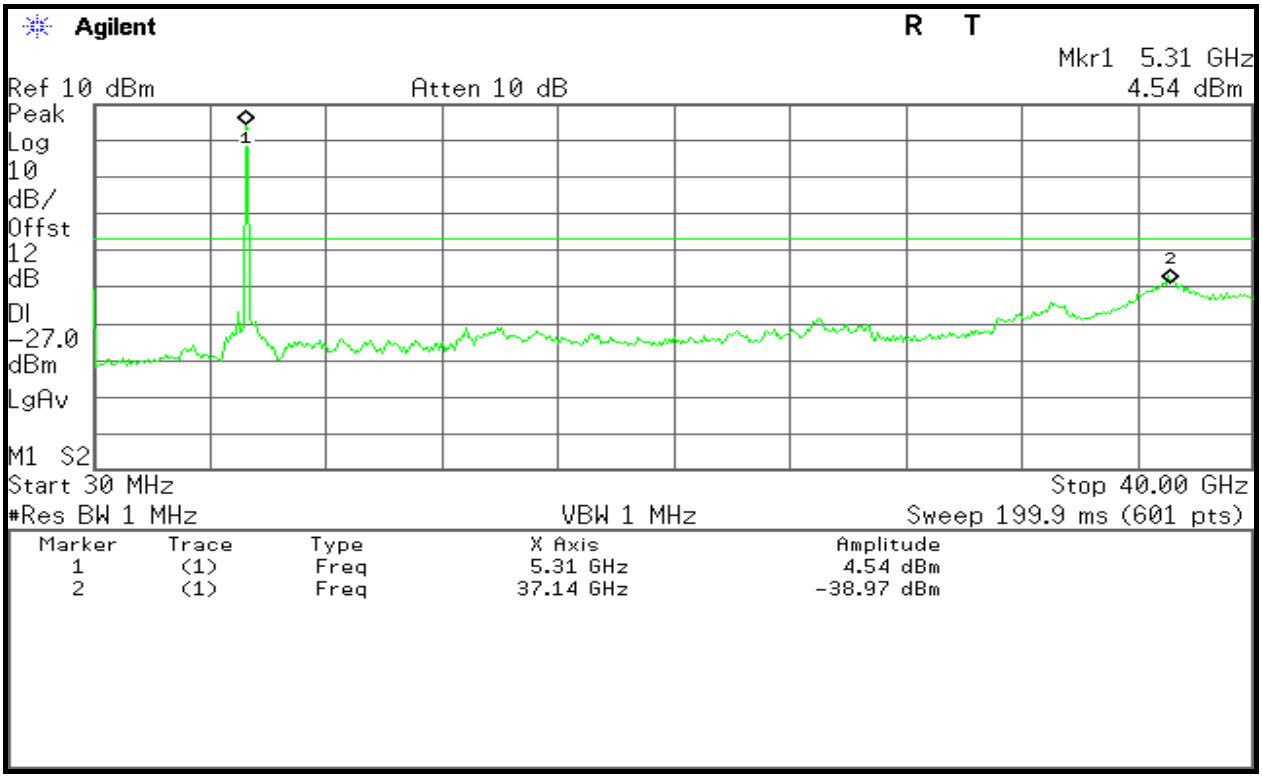
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 1:

5250~5350MHz

CH Low

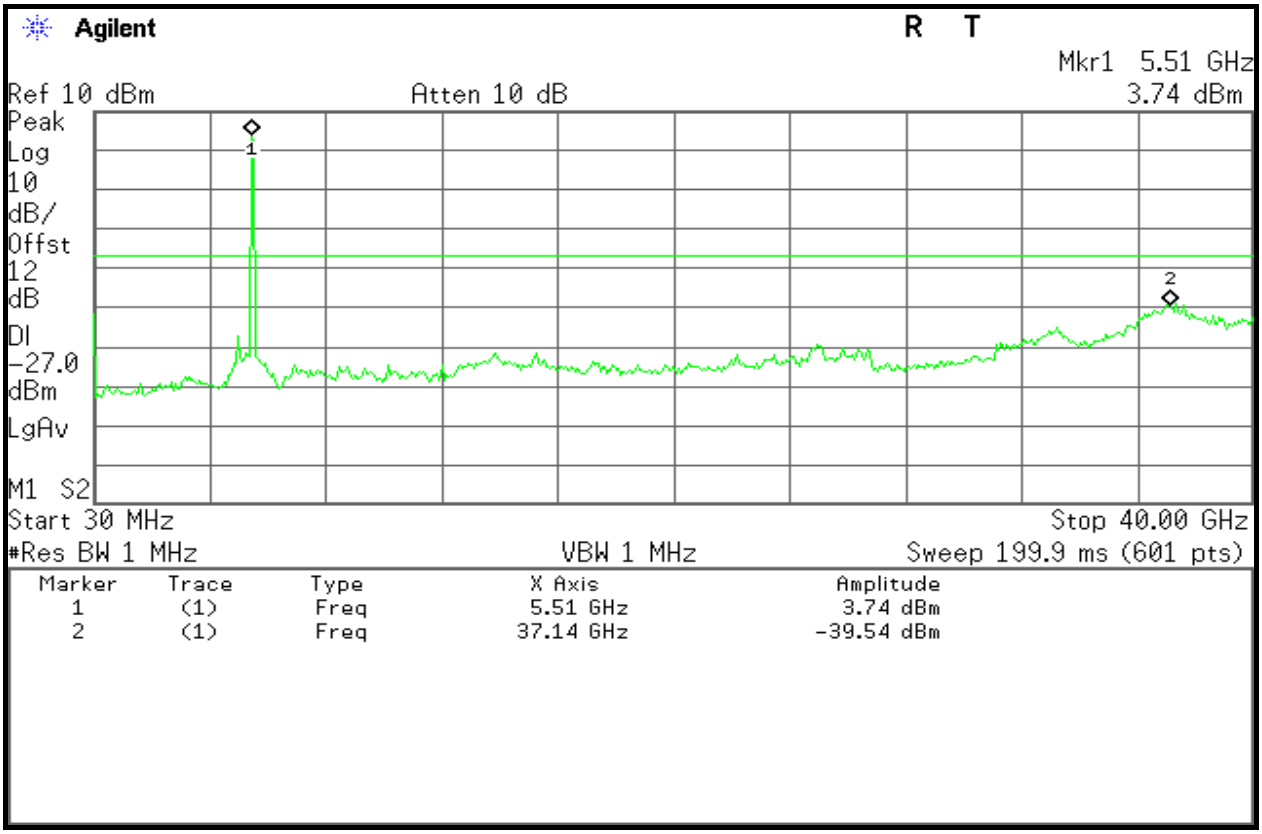


CH High

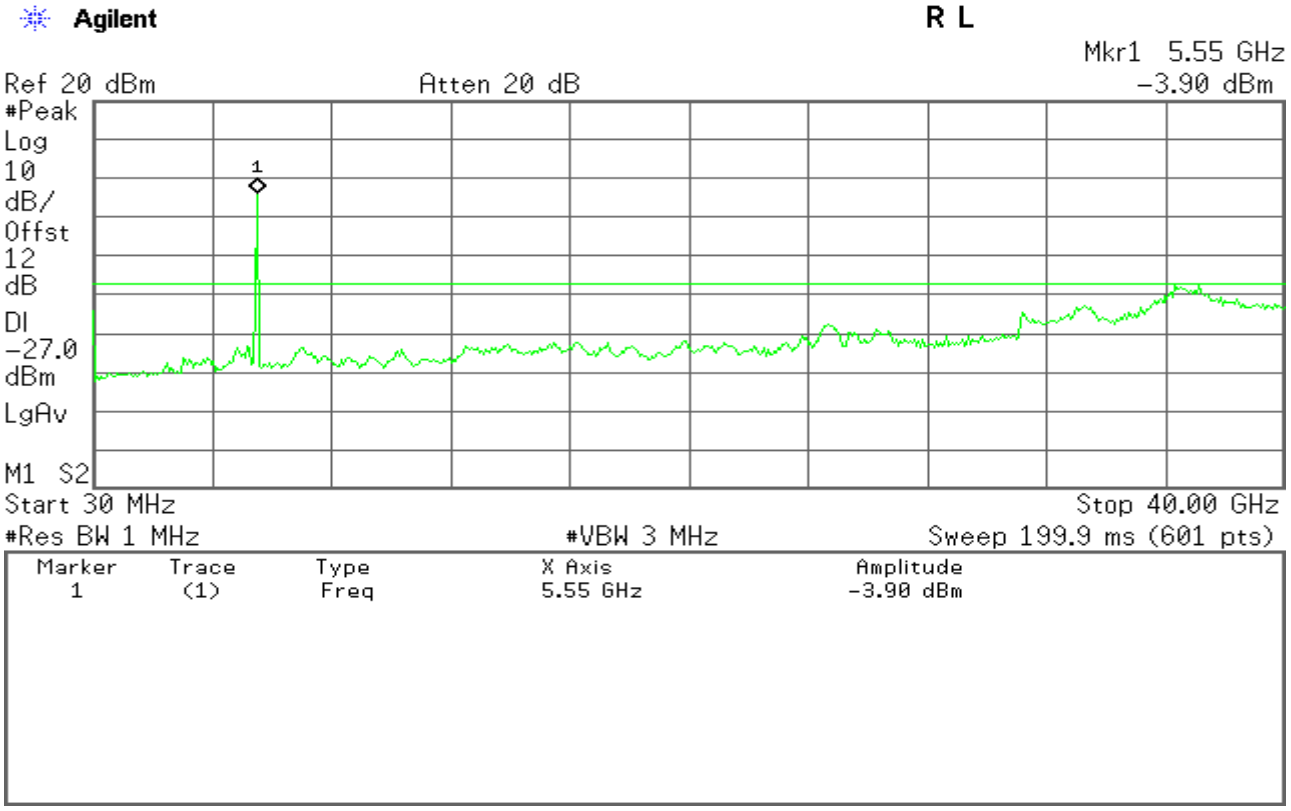


5470~5725MHz

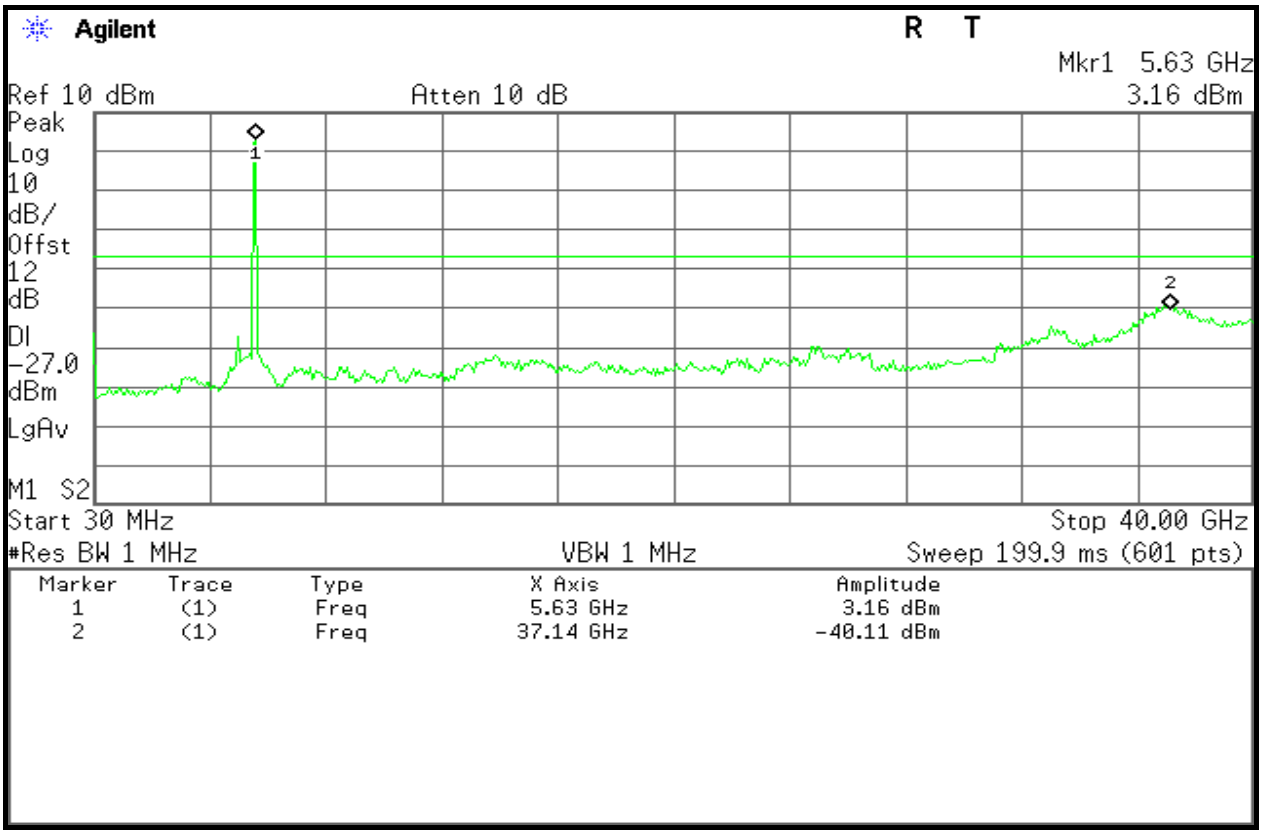
CH Low



CH Mid



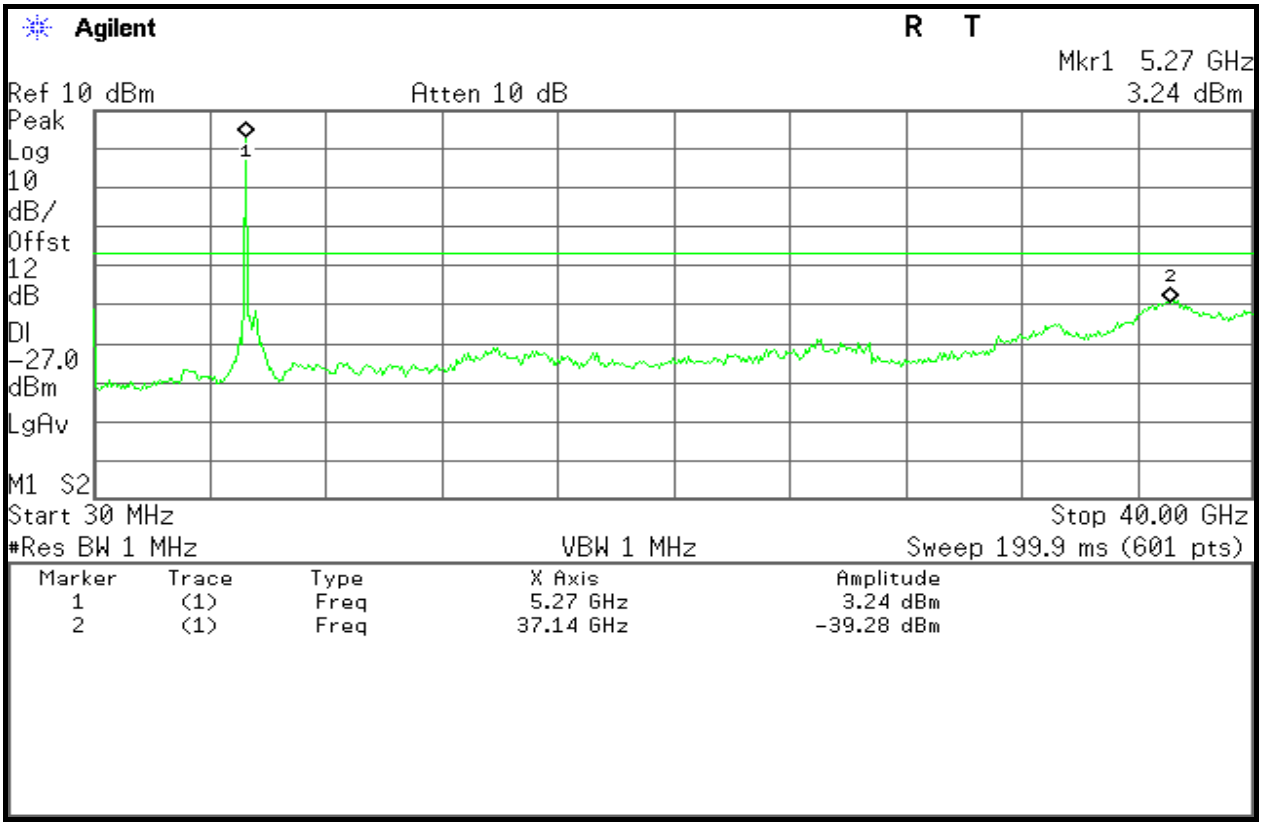
CH High



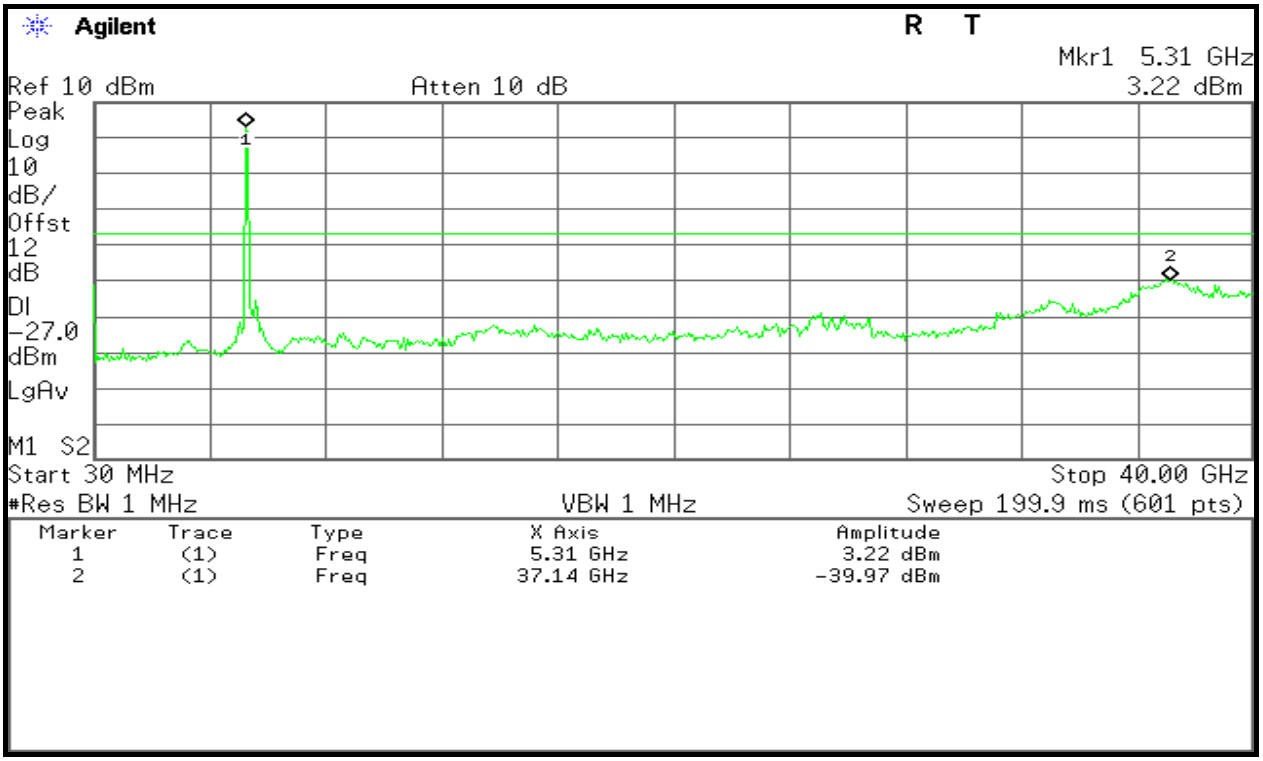
Test mode: 802.11n Wide-40 MHz Channel mode / Chain 2:

5250~5350MHz

CH Low

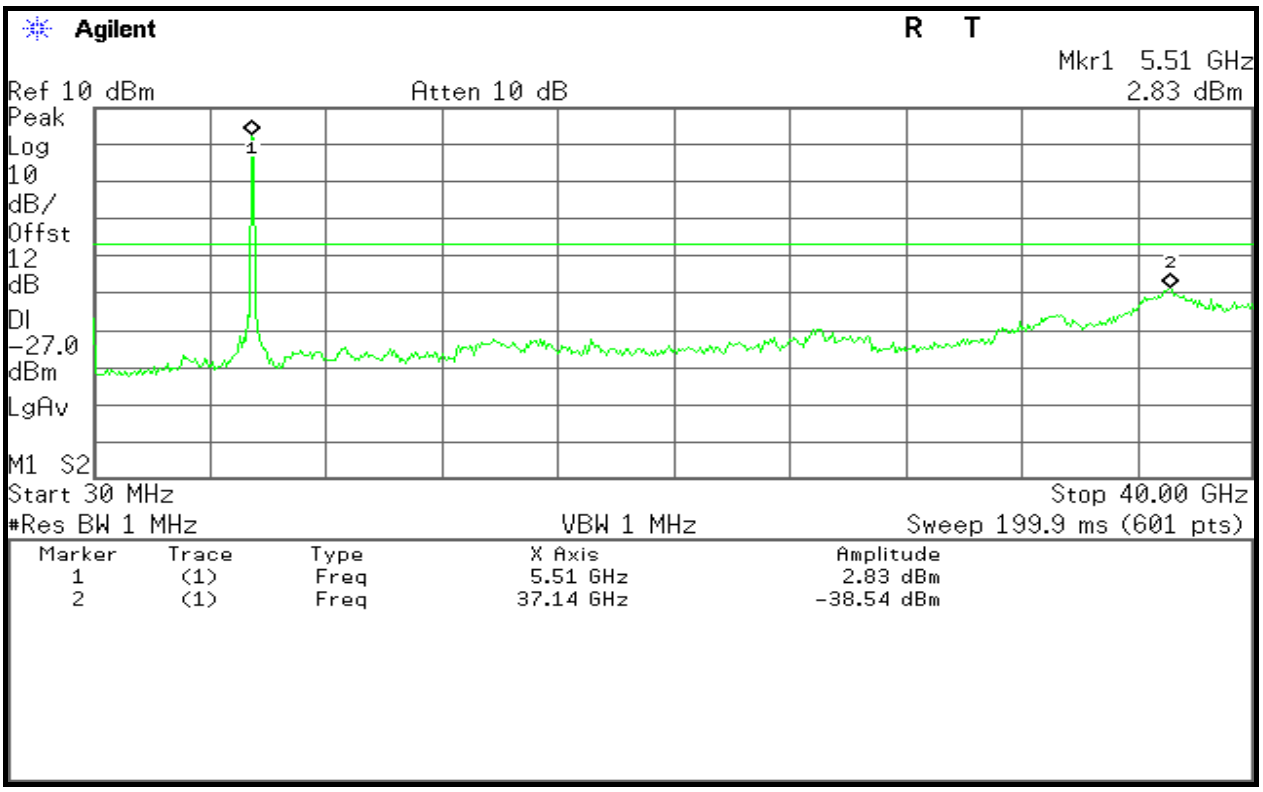


CH High

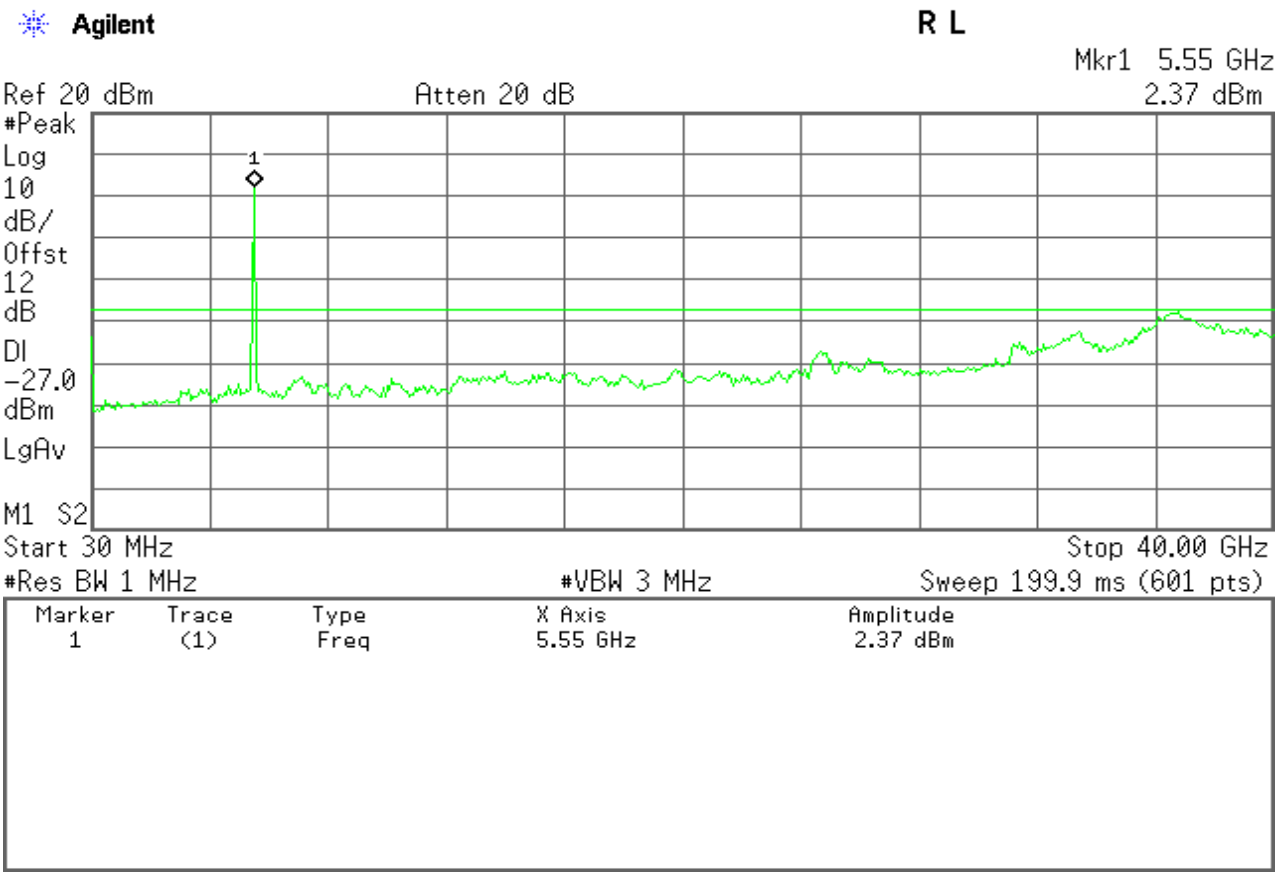


5470~5725MHz

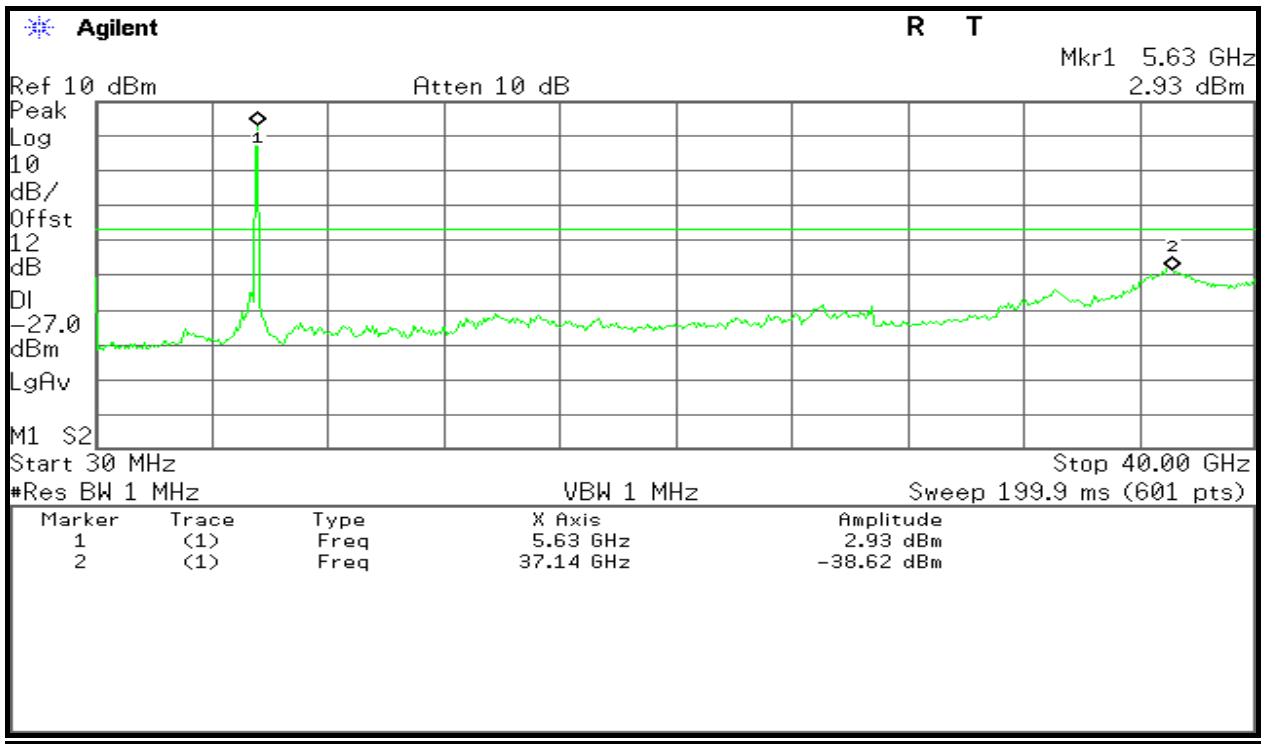
CH Low



CH Mid



CH High



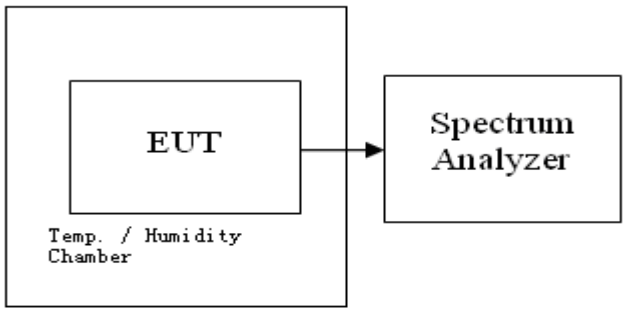
7.8 FREQUENCY STABILITY MEASUREMENT

Limit

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emissions is maintained within the band of operation under all conditions of normal operation as specified in the user's manual or ±20ppm (IEEE 802.11nspecification).

Test Configuration

TEST PROCEDURE



1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. fc is declaring of channel frequency. Then the frequency error formula is (fc-f)/fc × 106 ppm and the limit is less than ±20ppm (IEEE 802.11nspecification).
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
7. Extreme temperature rule is -30°C~50°C.

TEST RESULTS

No non-compliance noted

Test Result of Frequency Stability

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(V)	5270	5510
126.5	5269.99995	5509.99995
110	5269.9999	5509.99945
93.5	5269.99945	5510.00045
Max. Deviation (MHz)	0.0006	0.0006
Max. Deviation (ppm)	0.1044	0.0998

Temperature vs. Frequency Stability

Voltage	Measurement Frequency (MHz)	
(℃)	5270	5510
-30	5270.0801	5510.0801
-20	5270.0700	5510.0800
-10	5270.0715	5510.0800
0	5270.0710	5510.0801
10	5270.0700	5510.0716
20	5270.0012	5510.0096
30	5270.0055	5510.0080
40	5270.0032	5510.0006
50	5269.9999	5509.9999
Max. Deviation (MHz)	0.0801	0.0801
Max. Deviation (ppm)	15.19924099	14.53720508

7.9 POWERLINE CONDUCTED EMISSIONS

LIMIT

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

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

** Decreases with the logarithm of the frequency.*

TEST CONFIGURATION

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

TEST PROCEDURE

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

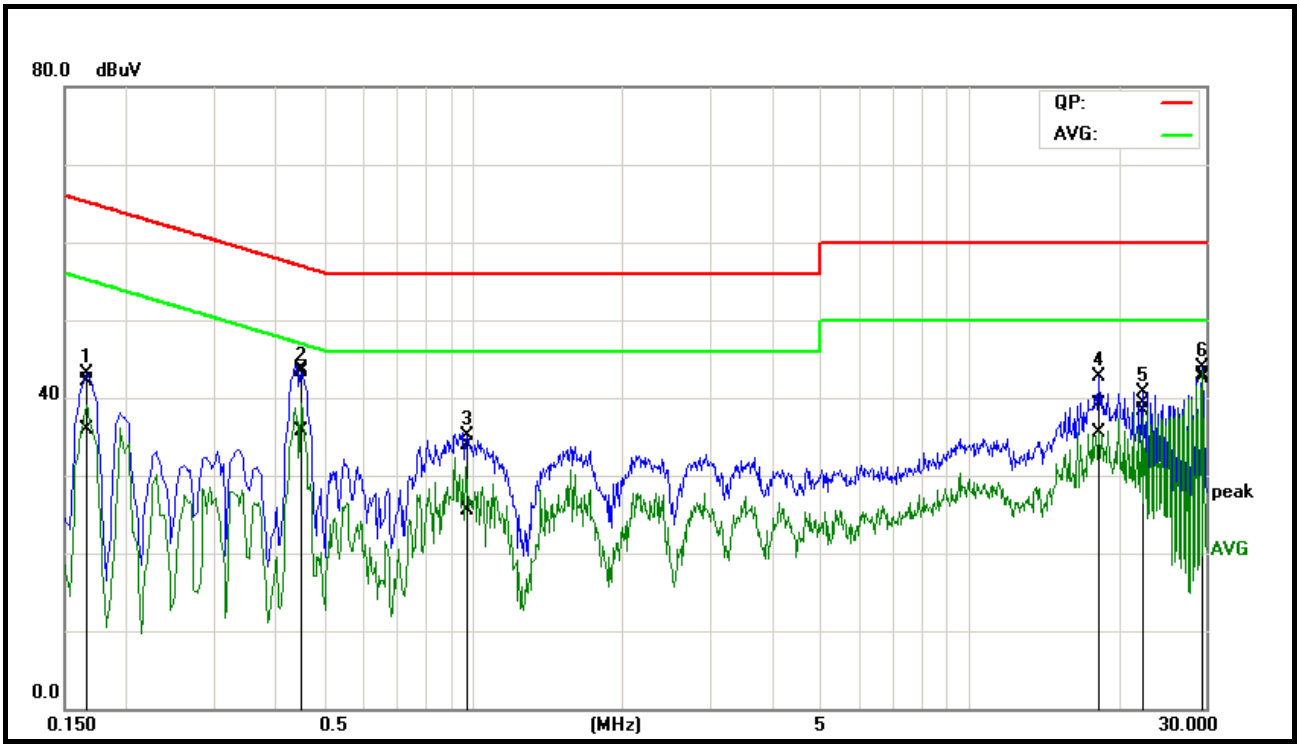
TEST RESULTS

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

Test Data

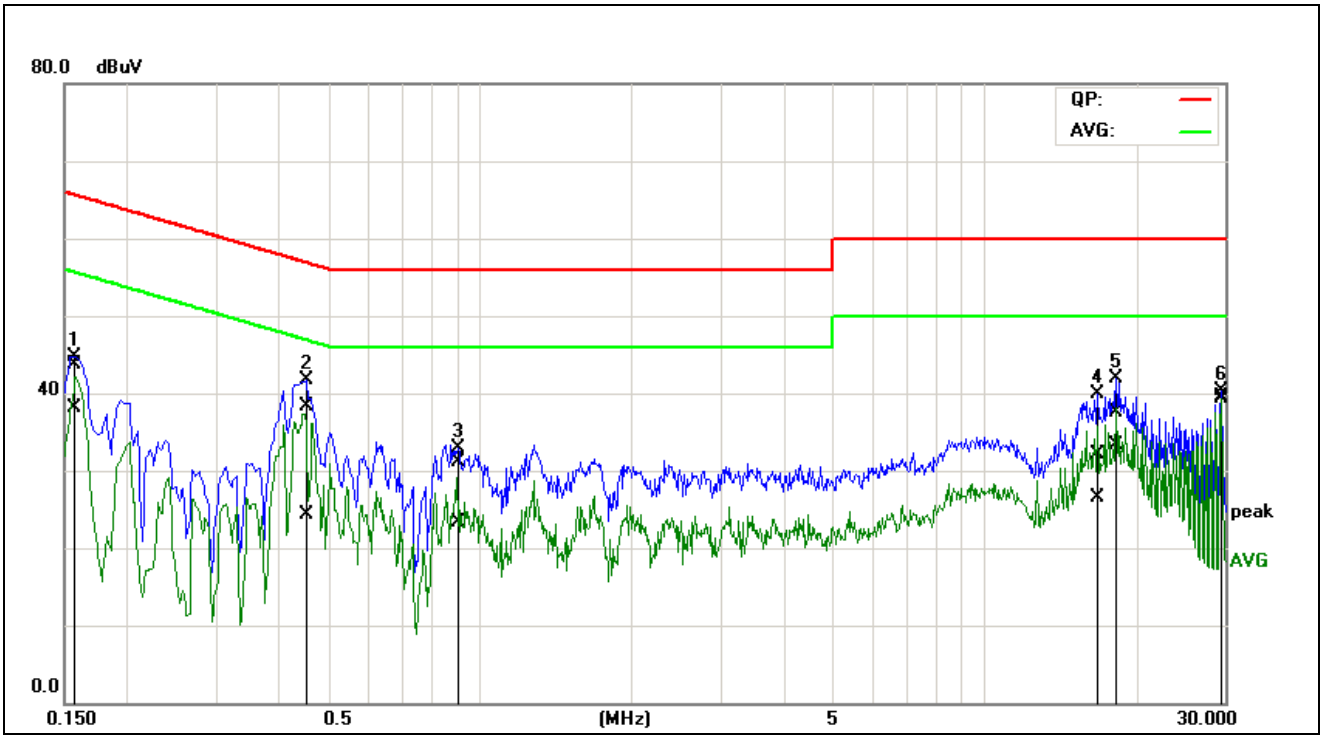
Operation Mode:	Normal Link	Test Date:	May 13,2013
Temperature:	25°C	Tested by:	Sean.yu
Humidity:	55% RH	Test Power:	110 Vac 60 Hz

L1



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1636	31.99	25.84	10.06	42.05	35.90	65.28	55.28	-23.23	-19.38	Pass
2	0.4444	33.16	25.10	10.59	43.75	35.69	56.98	46.98	-13.23	-11.29	Pass
3	0.9651	22.82	14.52	11.01	33.83	25.53	56.00	46.00	-22.17	-20.47	Pass
4	18.2453	27.51	23.88	11.54	39.05	35.42	60.00	50.00	-20.95	-14.58	Pass
5	22.2973	27.50	26.50	11.84	39.34	38.34	60.00	50.00	-20.66	-11.66	Pass
6*	29.5348	30.46	30.06	12.52	42.98	42.58	60.00	50.00	-17.02	-7.42	Pass

L2



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1	0.1570	33.74	28.11	10.05	43.79	38.16	65.62	55.62	-21.83	-17.46	Pass
2	0.4548	27.75	13.72	10.63	38.38	24.35	56.79	46.79	-18.41	-22.44	Pass
3	0.8902	20.13	12.24	11.00	31.13	23.24	56.00	46.00	-24.87	-22.76	Pass
4	16.7982	20.73	15.13	11.44	32.17	26.57	60.00	50.00	-27.83	-23.43	Pass
5	18.2411	25.99	21.79	11.54	37.53	33.33	60.00	50.00	-22.47	-16.67	Pass
6*	29.5280	27.01	26.79	12.52	39.53	39.31	60.00	50.00	-20.47	-10.69	Pass

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)*

END OF REPORT