FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Prepared by

Product Name: 802.11 abgn Dual Band Dual Radio Enterprise Access point with plastic shell and internal antenna

Brand Name: DCN

Model No.: DCWL-7962AP

Series Model: N/A

FCC ID:DCN00 DCWL7962AP50

Test Report Number:
C130809R03-RPB

Issued for

Digital China Networks (Beijing) Limited

Digital Technology Plaza ,No.9 shangdi 9th street, Haidian District Beijing China

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

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1 TEST RESULT CERTIFICATION

Product Name:	802.11 abgn Dual Band Dual Radio Enterprise Access point with plastic shell and internal antenna
Trade Name:	DCN
Model Name.:	DCWL-7962AP
Series Model:	N/A
Applicant Discrepancy:	Initial
Device Category:	Production unit
Date of Test:	August 31, 2013
Applicant:	**Digital China Networks (Beijing) Limited** Digital Technology Plaza ,No.9 shangdi 9th street, Haidian District Beijing China
Manufacturer:	**Digital China Networks (Beijing) Limited** Digital Technology Plaza ,No.9 shangdi 9th street, Haidian District Beijing China
Application Type:	Certification

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart C	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, 15.247.

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

Approved by:

Jeff.Fang
RF Manager
Compliance Certification Service Inc.

Tested by:

Blent.Wang
Test Engineer

Compliance Certification Service Inc.

2 EUT DESCRIPTION

Product Name:	802.11 abgn Dual Band Dual Radio Enterprise Access point with plastic shell and internal antenna
Brand Name:	DCN
Model Name:	DCWL-7962AP
Series Model:	N/A
Model Discrepancy:	N/A
Power Adapter Power Rating :	Brand Name: Model No.:CPS024014 Input: AC 100-240V/50/60HZ 0.55A Output: DC 12V/2A
Frequency Range :	5.15~5.25 GHz
Transmit Power :	IEEE 802.11a mode: 16.14 dBm draft 802.11n Standard-20 MHz Channel mode: 15.45dBm draft 802.11n Wide-40 MHz Channel mode: 15.54 dBm (the EUT transmitting and receiving with three antennas simultaneously working at n mode)
Modulation Technique :	**IEEE 802.11a mode:** 54, 48, 36, 24, 18, 12, 9, 6 Mbps **draft 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) **draft 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 :	**IEEE 802.11a mode:** 5150 ~ 5250 MHz: 4 Channels **draft 802.11n Standard-20 MHz Channel mode:** 5150 ~ 5250 MHz: 4 Channels **draft 802.11n Standard-40 MHz Channel mode:** 5150 ~ 5250 MHz: 2 Channels
Antenna Specification :	4 dBi Two TX&RX diversity dual-band Omni-directional antennas for 5GHz

Operation Frequency:

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)	
CHANNEL	**MHz**
36	5180（802.11a mode/802.11n Standard-20 MHz Channel mode）
38	5190（802.11n Standard-40 MHz Channel mode）
42	5200（802.11a mode/802.11n Standard-20 MHz Channel mode）
44	5220（802.11a mode/802.11n Standard-20 MHz Channel mode）
46	5230（802.11n Standard-40 MHz Channel mode）
48	5240（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:DCN00 DCWL7962AP50*** 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 13.1.4.1 of ANSI C63.4, the conducted emission from the EUT is measured in the frequency range between 0.15 MHz and 30MHz, using the CISPR Quasi-Peak detector mode.

Radiated Emissions

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

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 two antennas simultaneously working at n mode, so 2x2 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 (5180MHz), Channel Mid (5200MHz) and Channel High (5240MHz) with 54Mbps data rate were chosen for full testing.

draft 802.11n Standard-20 MHz Channel mode:

Channel Low (5180MHz), Channel Mid (5200MHz) and Channel High (5240MHz) with 65Mbps data rate were chosen for full testing.

draft 802.11n Wide-40 MHz Channel mode:

Channel Low (5190MHz)and Channel Mid (5230MHz) with 135Mbps data rate were chosen for full testing.

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	2014-5-12
DETECTOR NEGATIVE	Agilent	8473B	MY42240176	2014-5-12
OSCILLOSCOPE	Agilent	DSO6104A	MY44002585	2014-3-24
Peak and Avg Power Sensor	Agilent	E9327A	US40441788	2014-3-24
EPM-P Series Power Meter	Agilent	E4416A	GB41292714	2014-5-12
Power SPLITTER	Mini-Circuits	ZN2PD-9G	SF078500430	2014-5-12
DC POWER SUPPLY	GW instek	GPS-3303C	E903131	2014-5-12
Temp. / Humidity Chamber	Kingson	THS-M1	242	2014-3-12
Test Software	EZ-EMC			

977 Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY44020154	2014-5-12
EMI Test Receiver	R&S	ESPI3	101026	2014-3-15
Pre-Amplfier	MINI	ZFL-1000VH2	d041703	2014-5-12
Pre-Amplfier	Miteq	NSP4000-NF	870629	2014-5-12
Bilog Antenna	Sunol	JB1	A110204-2	2014-5-12
Horn-antenna	SCHWARZBECK	BBHA9120D	D:266	2014-6-7
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	ESCI3	100781	2014-3-15
V (V-LISN)	Schwarzbeck	NNLK 8129	8129-143	2014-3-15
LISN (EUT)	FCC	FCC-LISN-50/250-50-2-02	SN:05012	2014-3-15
TRANSIENT LIMITER	SCHAFFNER	CFL9206	1710	2014-4-7
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 -within 6 kHz and 25 kHz of audio frequency	 1.3% 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 C63.4:2009 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.	Device Type	Brand	Model	Series No.	FCC ID
1.	Notebook	DELL	E5430	CN8YYW1	N/A

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

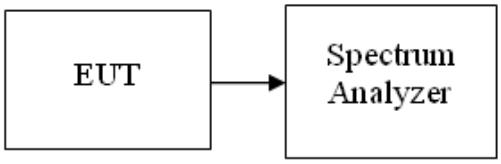
7.1 26 DB EMISSION BANDWIDTH

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

5150~5250MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	23.416
Mid	5200	23.021
High	5240	23.195

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

5150~5250MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	23.802
Mid	5200	23.906
High	5240	23.813

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

5150~5250MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5180	23.317
Mid	5200	23.520
High	5240	23.121

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

5150~5250MHz

Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	43.727
High	5230	44.516

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

5150~5250MHz

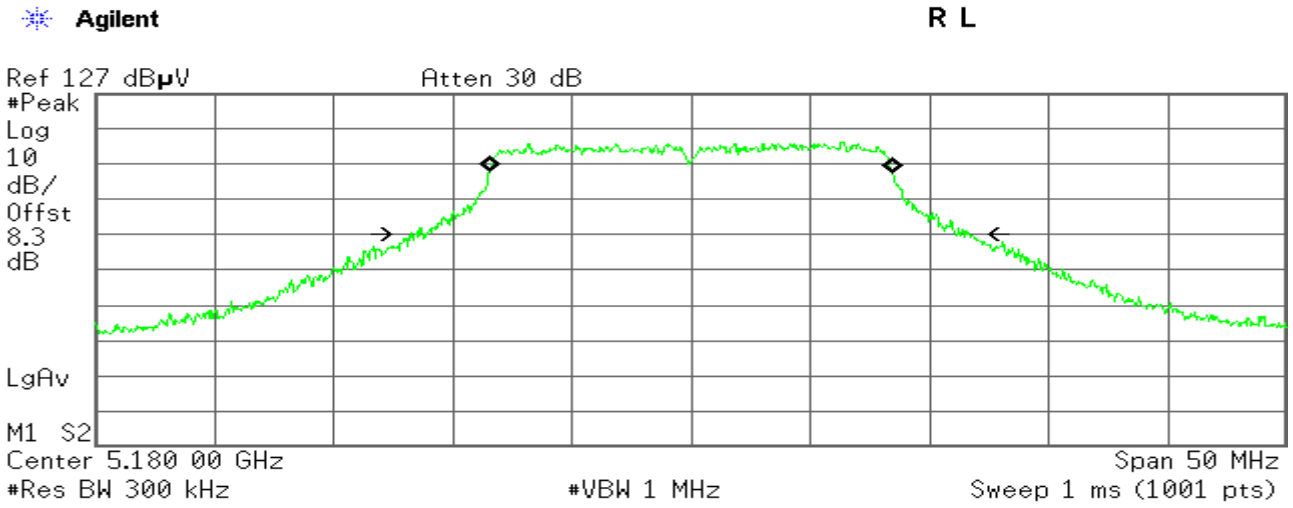
Channel	Frequency (MHz)	Bandwidth (B) (MHz)
Low	5190	45.450
High	5230	44.089

Test Plot

IEEE 802.11a mode:

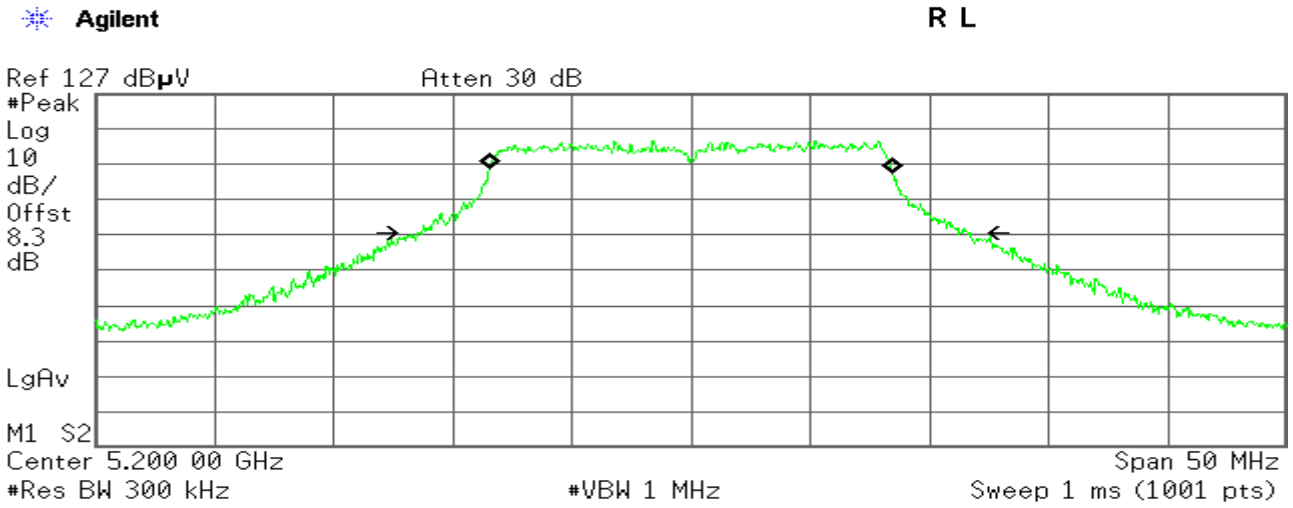
5150~5250MHz

CH Low



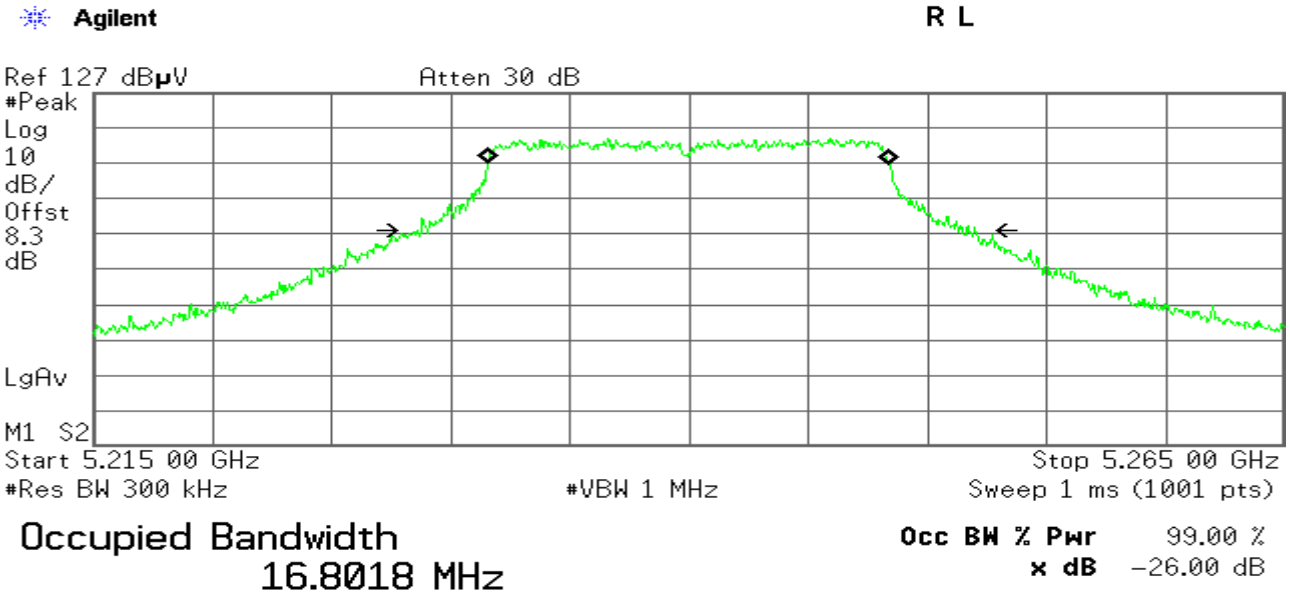
Transmit Freq Error	12.466 kHz
x dB Bandwidth	23.416 MHz

CH Mid



Transmit Freq Error	-11.505 kHz
x dB Bandwidth	23.021 MHz

CH High



Occupied Bandwidth
16.8018 MHz

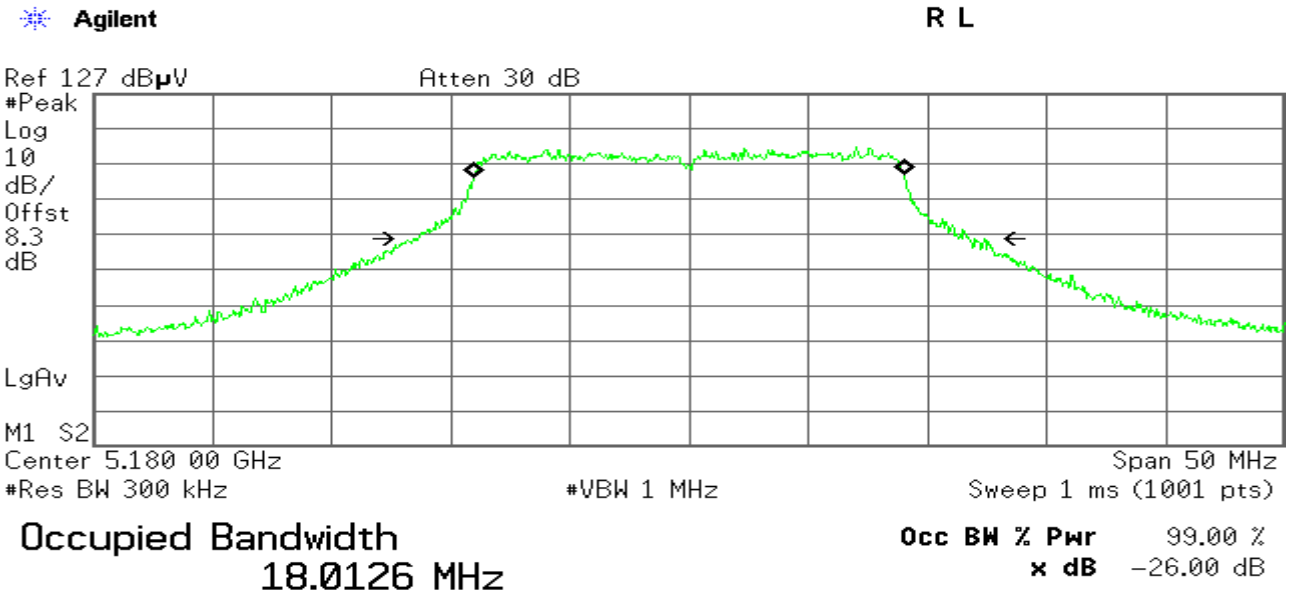
Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -33.343 kHz
x dB Bandwidth 23.195 MHz

draft 802.11n Standard-20 MHz Channel mode / Chain 0

5150~5250MHz

CH Low

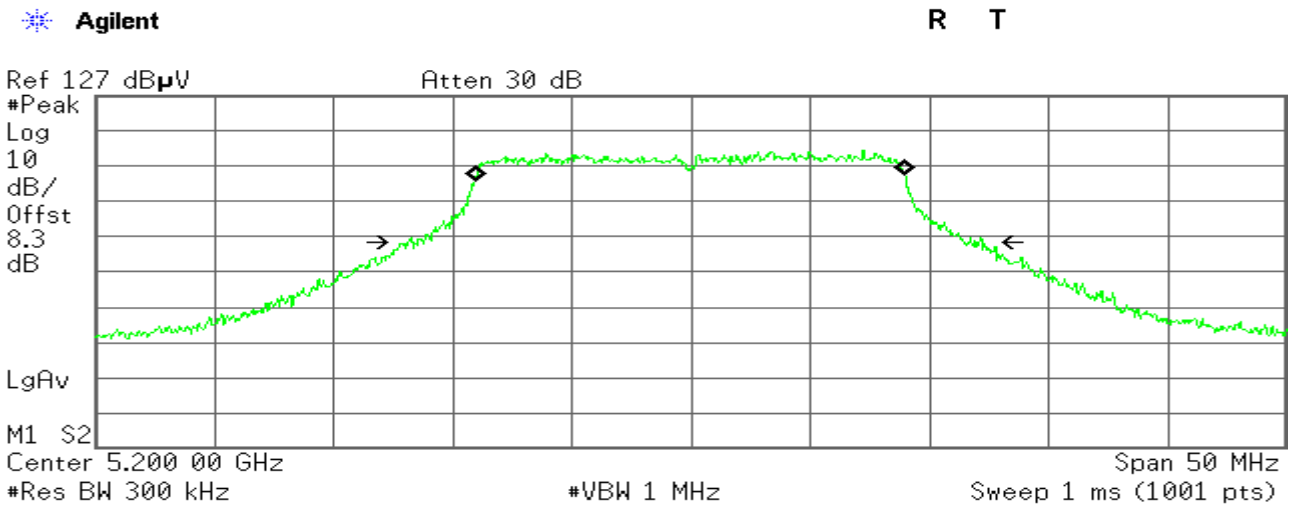


Occupied Bandwidth
18.0126 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

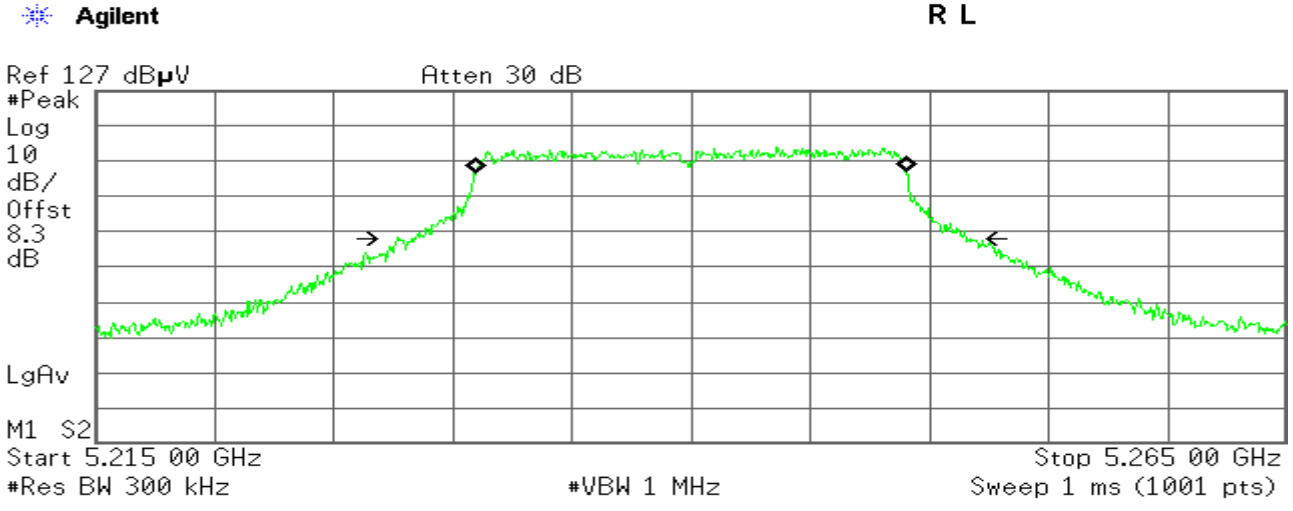
Transmit Freq Error -7.506 kHz
x dB Bandwidth 23.802 MHz

CH Mid



Transmit Freq Error -28.581 kHz
x dB Bandwidth 23.906 MHz

CH High

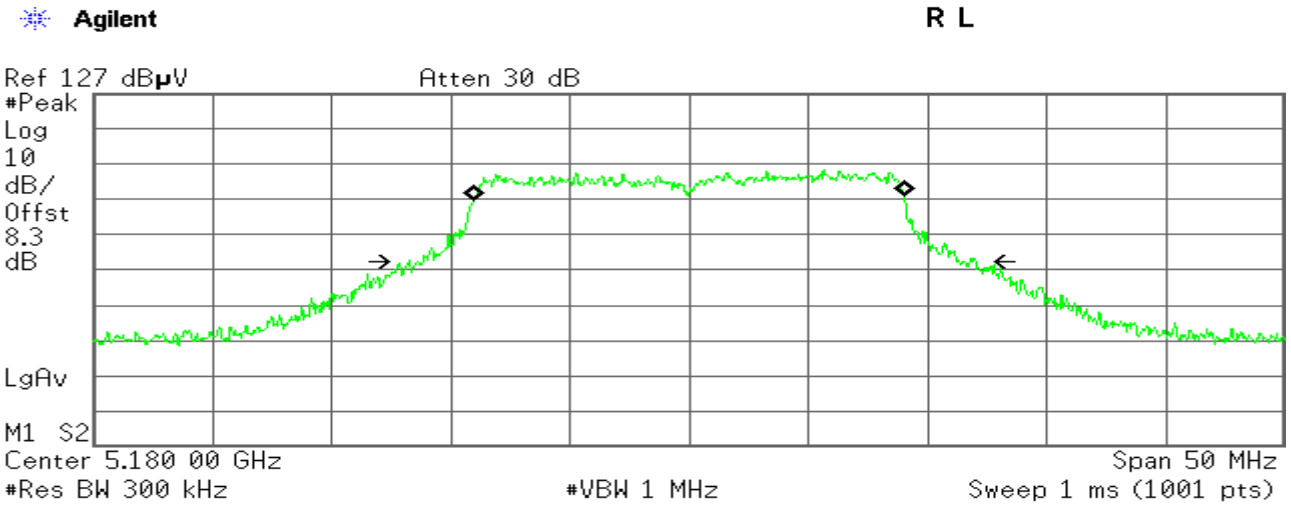


Transmit Freq Error 1.560 kHz
x dB Bandwidth 23.813 MHz

draft 802.11n Standard-20 MHz Channel mode / Chain 1

5150~5250MHz

CH Low

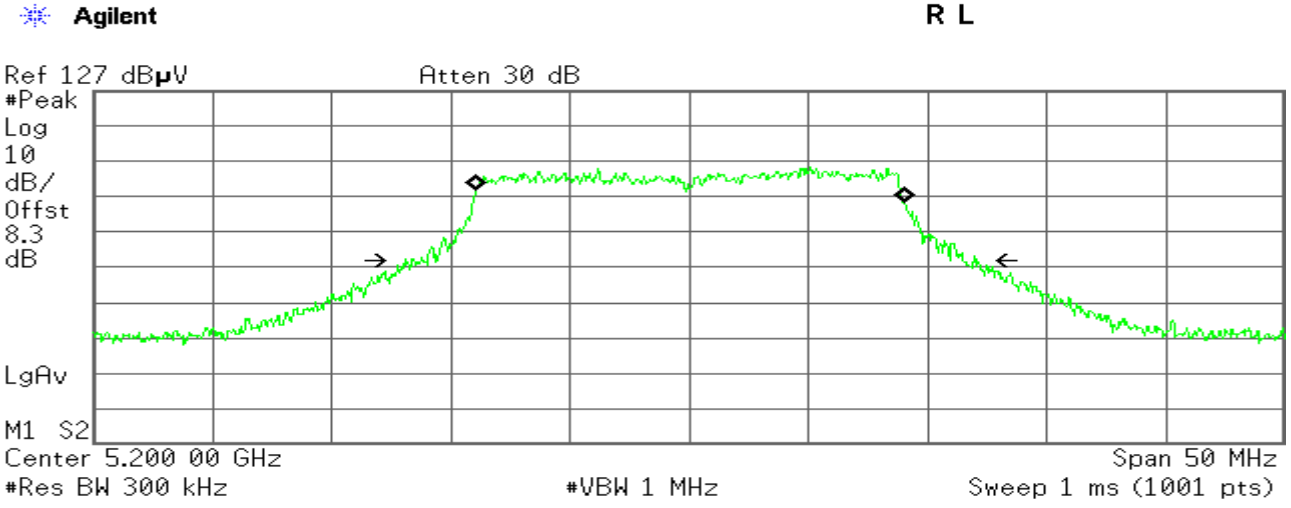


Occupied Bandwidth
17.9120 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 4.885 kHz
x dB Bandwidth 23.317 MHz

CH Mid

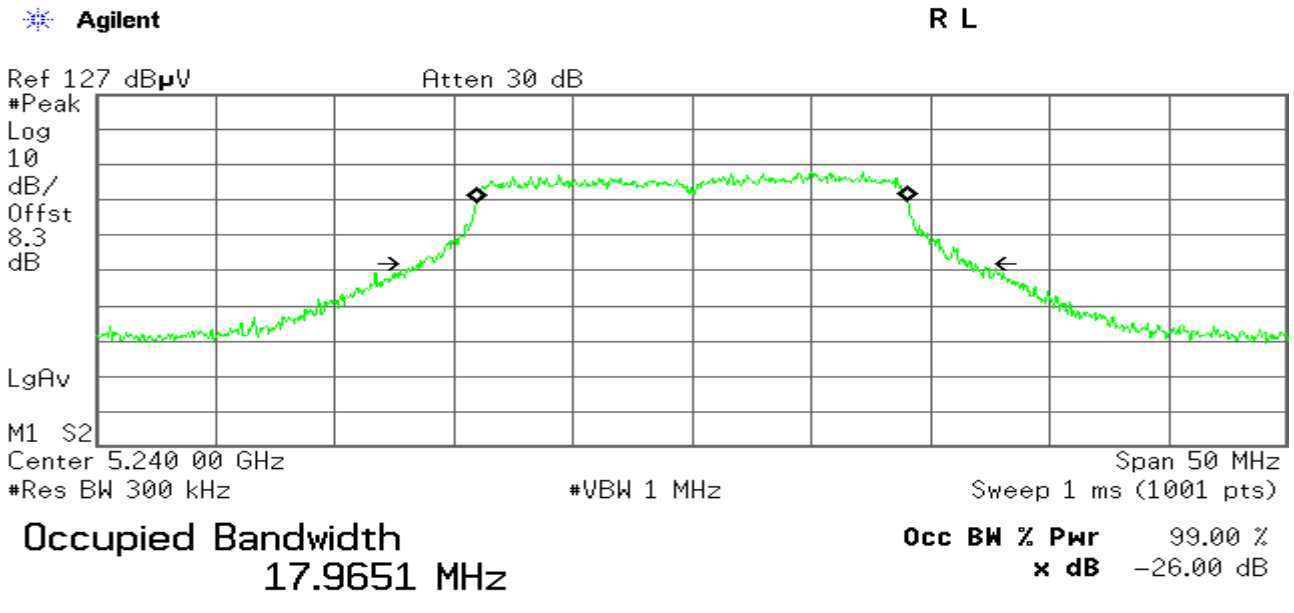


Occupied Bandwidth
17.9254 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error 14.320 kHz
x dB Bandwidth 23.520 MHz

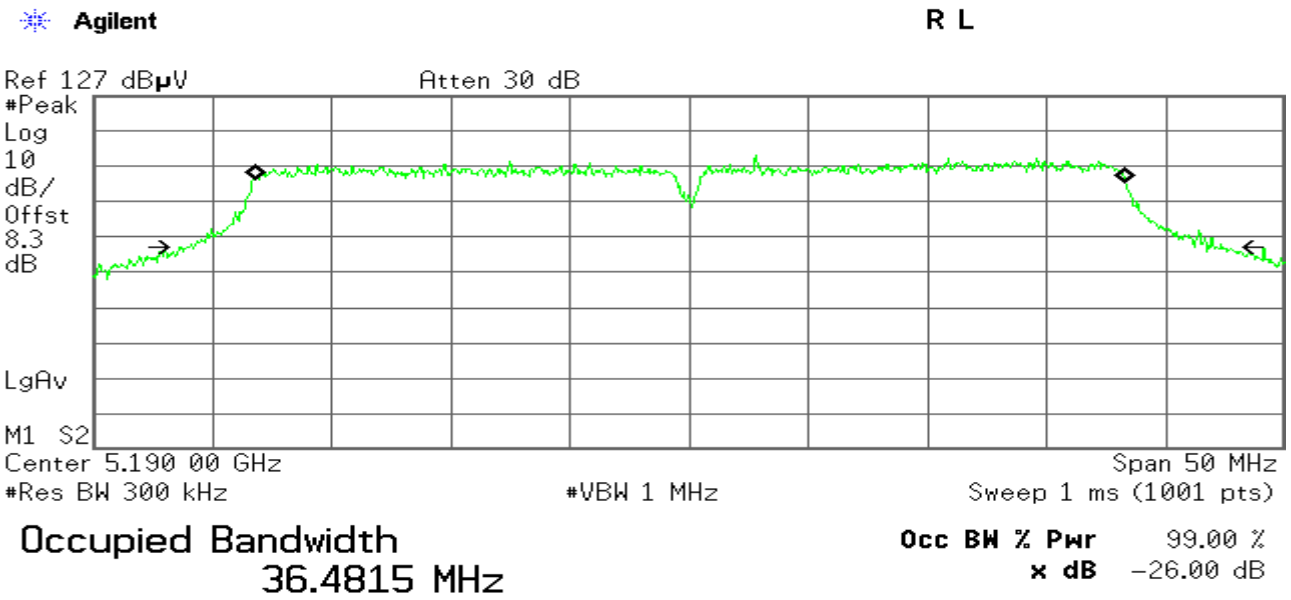
CH High



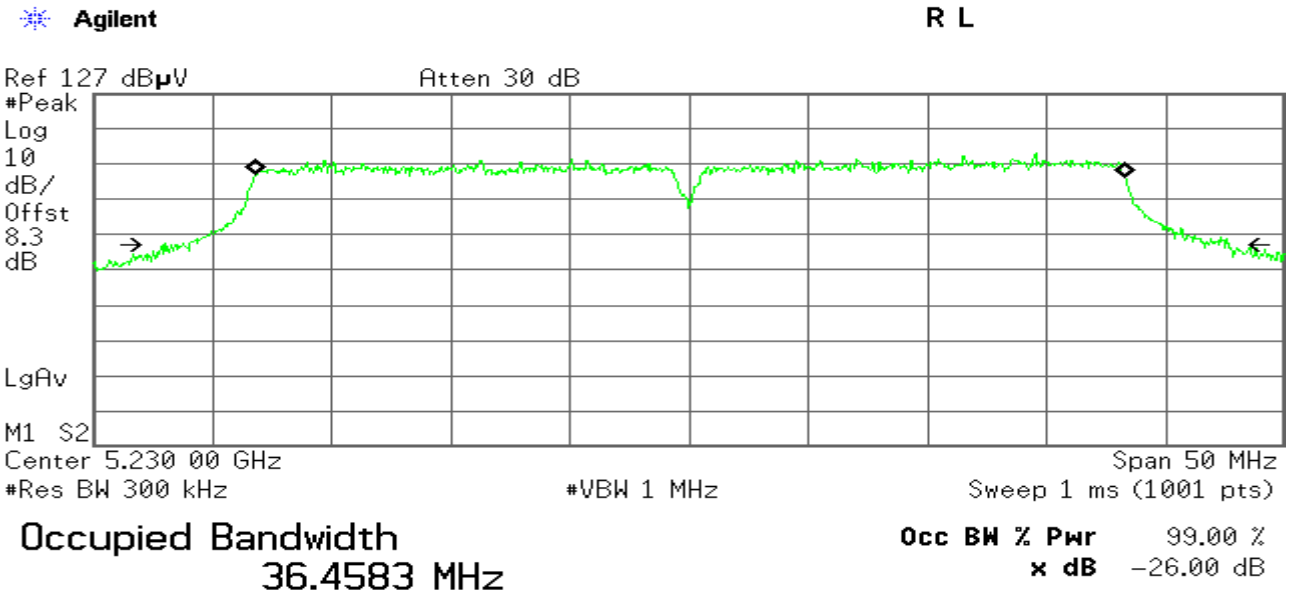
draft 802.11n Wide-40 MHz Channel mode / Chain 0

5150~5250MHz

CH Low



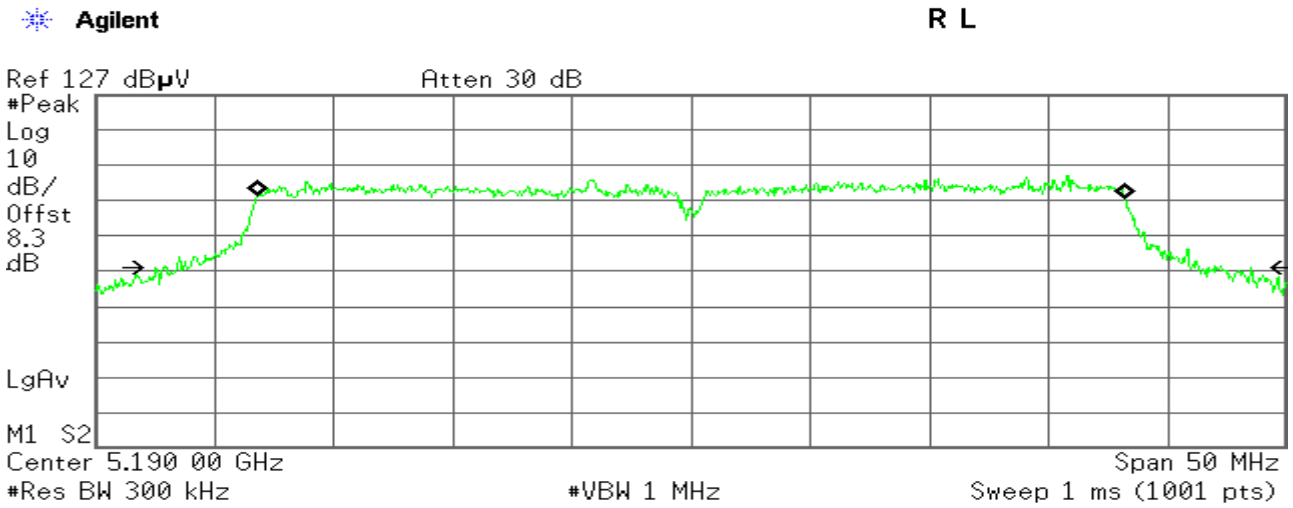
CH High



draft 802.11n Wide-40 MHz Channel mode / Chain 1

5250~5350MHz

CH Low

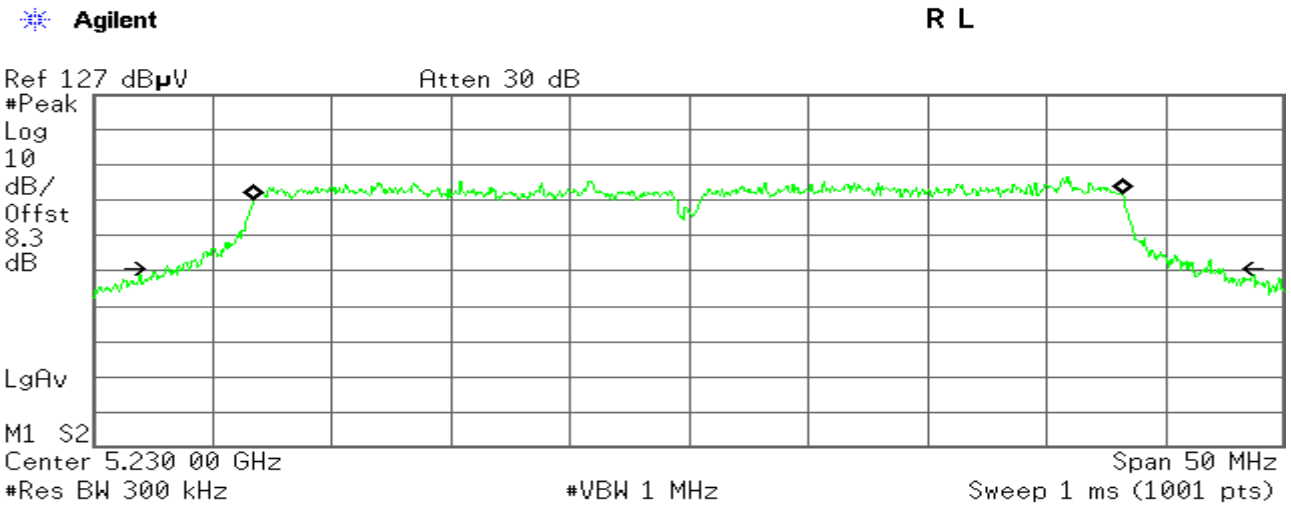


Occupied Bandwidth
36.3735 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -22.368 kHz
x dB Bandwidth 45.450 MHz

CH High



Occupied Bandwidth
36.3838 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error -36.013 kHz
x dB Bandwidth 44.089 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.

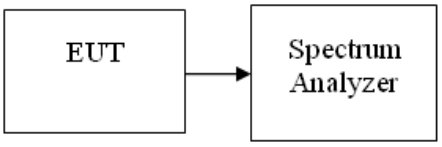
If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

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

Specified Limit of the Peak Power

Test mode: IEEE 802.11a mode

5150~5250MHz

Channel	Frequency (MHz)	26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5180	23.416	13.70	17.70	17.00
Mid	5200	23.021	13.62	17.62	17.00
High	5240	23.195	13.65	17.65	17.00

Test mode: draft 802.11n Standard-20 MHz Channel mode

5150~5250MHz

Channel	Frequency (MHz)	Chain 0 26 dB Bandwidth (B) (MHz)	Chain 1 26 dB Bandwidth (B) (MHz)	Total 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5180	23.802	23.317	26.58	14.25	18.25	17.00
Mid	5200	23.906	23.520	26.73	14.27	18.27	17.00
High	5240	23.813	23.121	26.49	14.23	18.23	17.00

Test mode: draft 802.11n Wide-40 MHz Channel mode

5150~5250MHz

Channel	Frequency (MHz)	Chain 0 26 dB Bandwidth (B) (MHz)	Chain 1 26 dB Bandwidth (B) (MHz)	Total 26 dB Bandwidth (B) (MHz)	10 Log B (dB)	4 + 10 Log B (dBm)	Maximum Conducted Output Power Limit (dBm)
Low	5190	43.727	45.450	47.68	16.78	20.78	17.00
High	5230	44.516	44.089	47.32	16.75	20.75	17.00

*(**Remark:** Maximum antenna gain = 4dBi, therefore there is no reduction due to antenna gain.)*

Test Data

Test mode: IEEE 802.11a mode

5150~5250MHz

Channel	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	15.53	17.00
Mid	5200	15.51	17.00
High	5240	**16.14**	17.00

Test mode: draft 802.11n Standard-20 MHz Channel mode

5150~5250MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5180	14.16	8.29	15.16	17.00
Mid	5200	14.12	8.20	15.11	17.00
High	5240	14.63	7.83	**15.45**	17.00

Total maximum conducted power Chain 0+Chain 1:

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

Test mode: draft 802.11n Wide-40 MHz Channel mode

5150~5250MHz

Channel	Frequency (MHz)	Chain 0 Output Power (dBm)	Chain 1 Output Power (dBm)	Total Maximum Conducted Output Power (dBm)	Limit (dBm)
Low	5190	14.55	8.64	**15.54**	17.00
High	5230	14.56	7.75	15.38	17.00

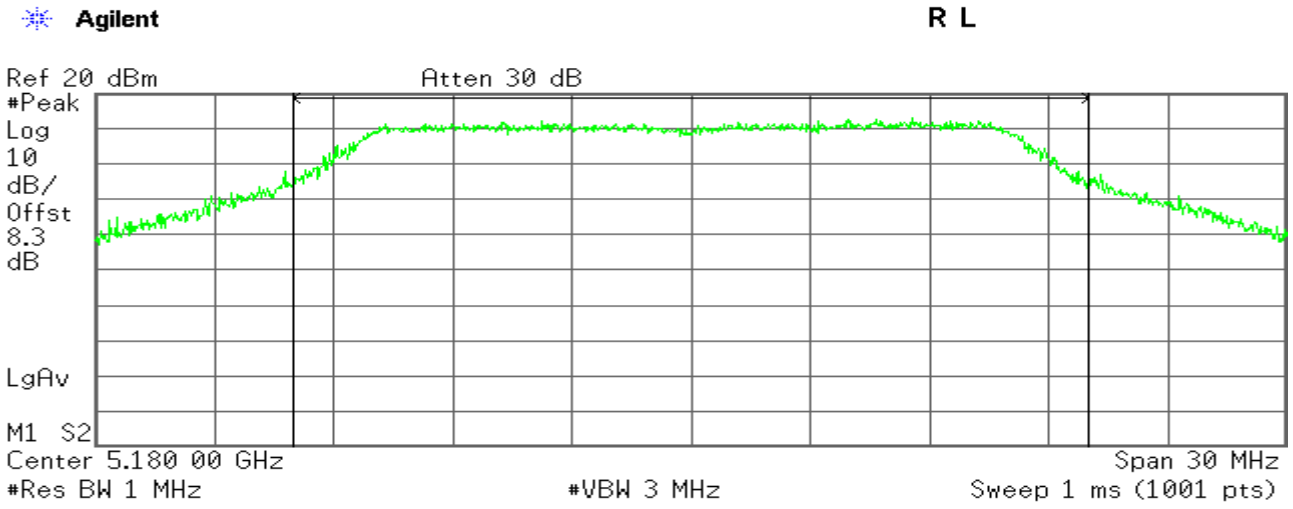
Total maximum conducted power Chain 0+Chain 1:
Maximum Conducted Output Power(dBm)=10log(10^(chain0outputpower/10)+ 10^(chain1outputpower/10))

Test Plot

Test mode: IEEE 802.11a mode:

5150~5250MHz

CH Low



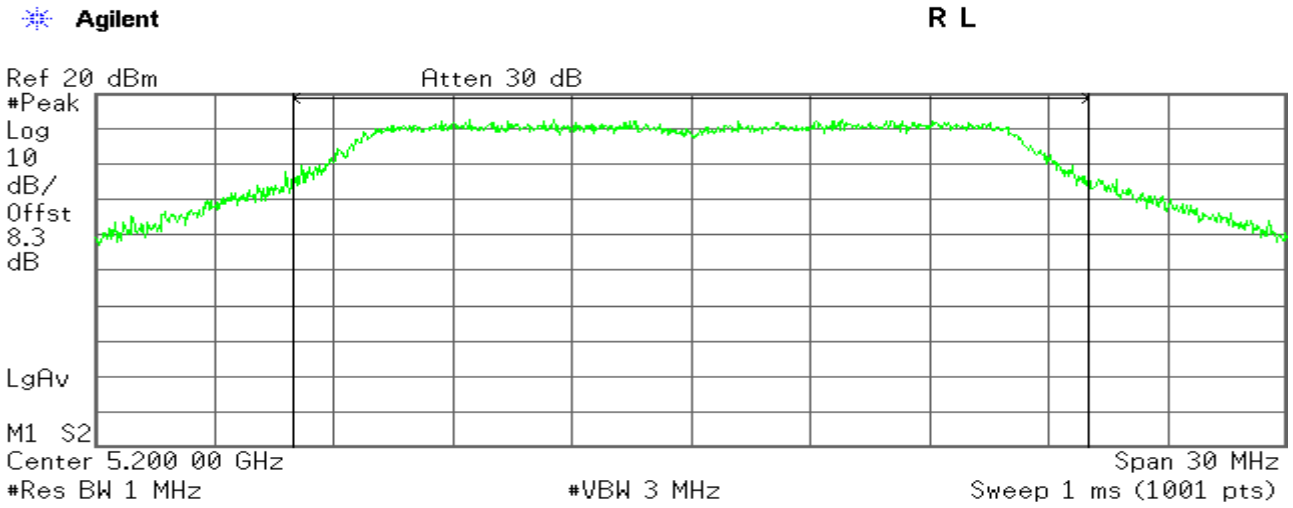
Channel Power

15.53 dBm /20.0000 MHz

Power Spectral Density

-56.48 dBm/Hz

CH Mid



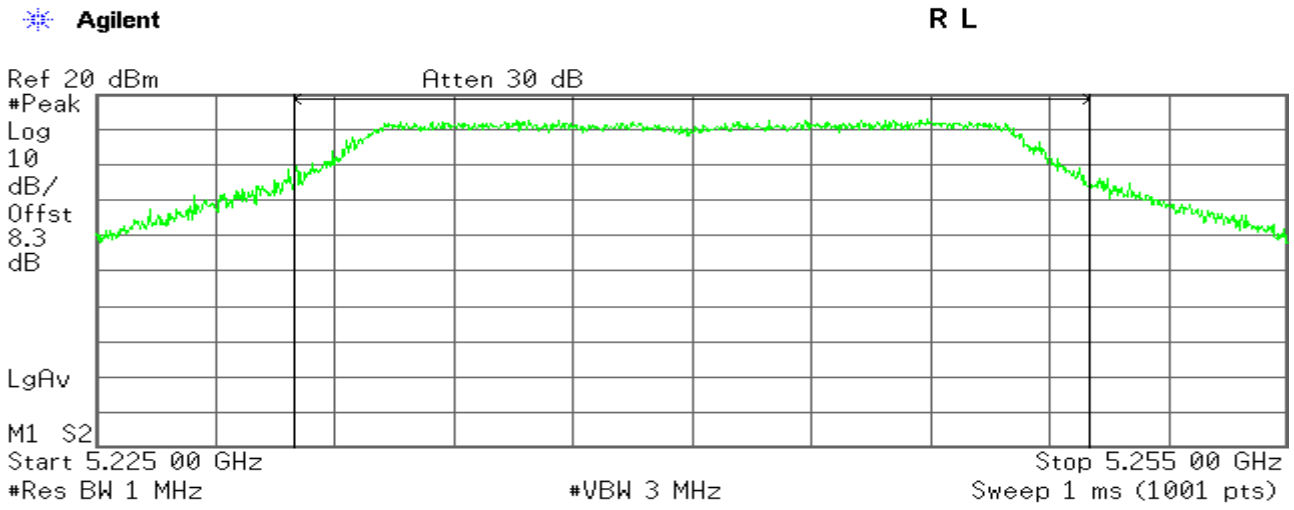
Channel Power

15.51 dBm /20.0000 MHz

Power Spectral Density

-56.50 dBm/Hz

CH High



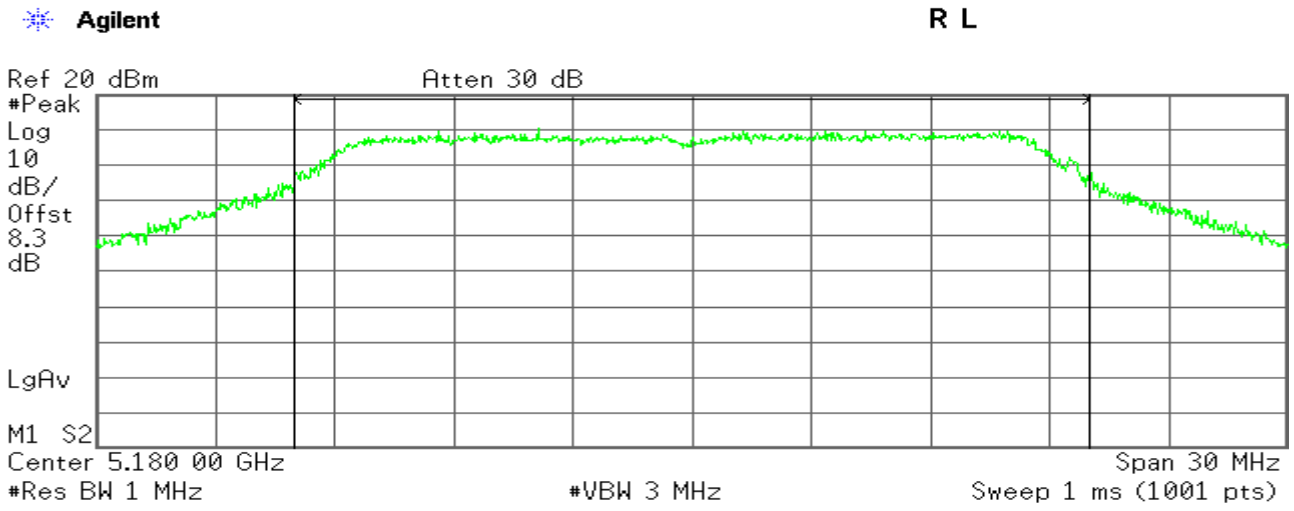
Channel Power
16.14 dBm /20.0000 MHz

Power Spectral Density
-55.87 dBm/Hz

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

5150~5250MHz

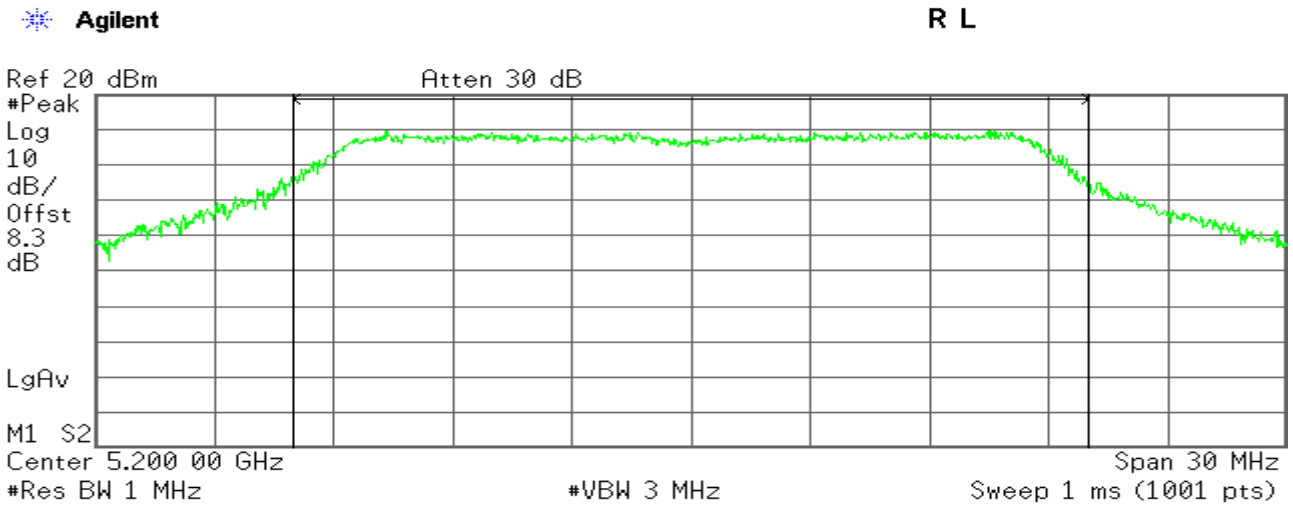
CH Low



Channel Power
14.16 dBm /20.0000 MHz

Power Spectral Density
-58.85 dBm/Hz

CH Mid



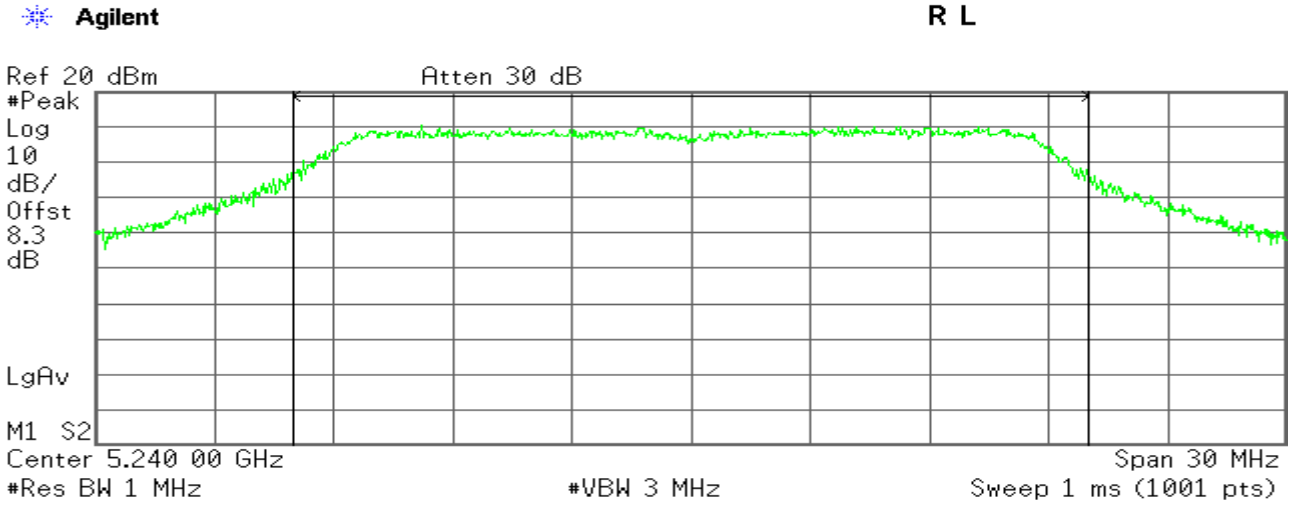
Channel Power

14.12 dBm /20.0000 MHz

Power Spectral Density

-58.89 dBm/Hz

CH High



Channel Power

14.63 dBm /20.0000 MHz

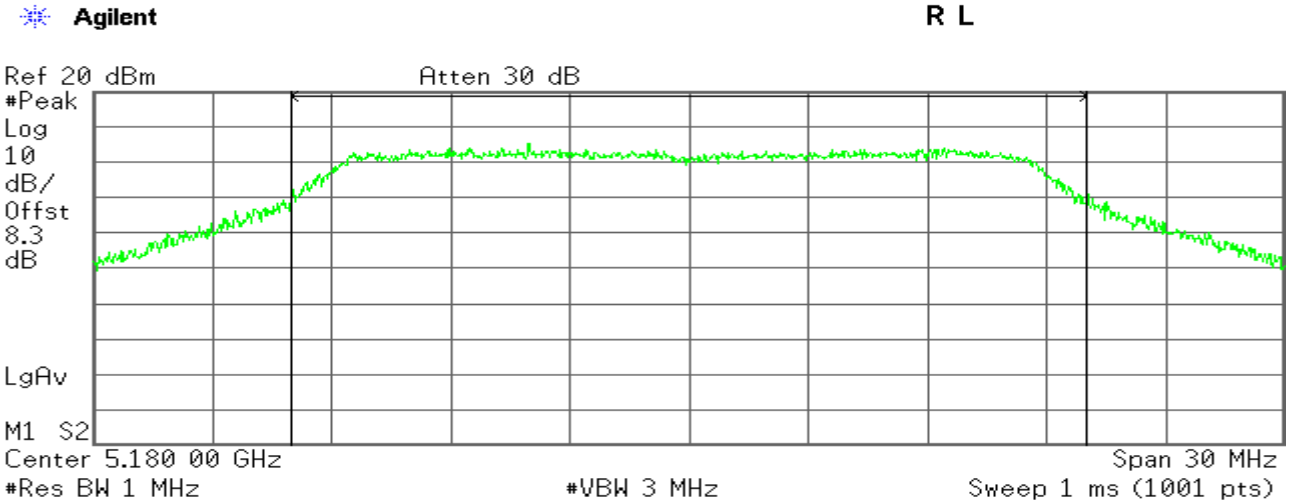
Power Spectral Density

-58.38 dBm/Hz

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

5250~5350MHz

CH Low



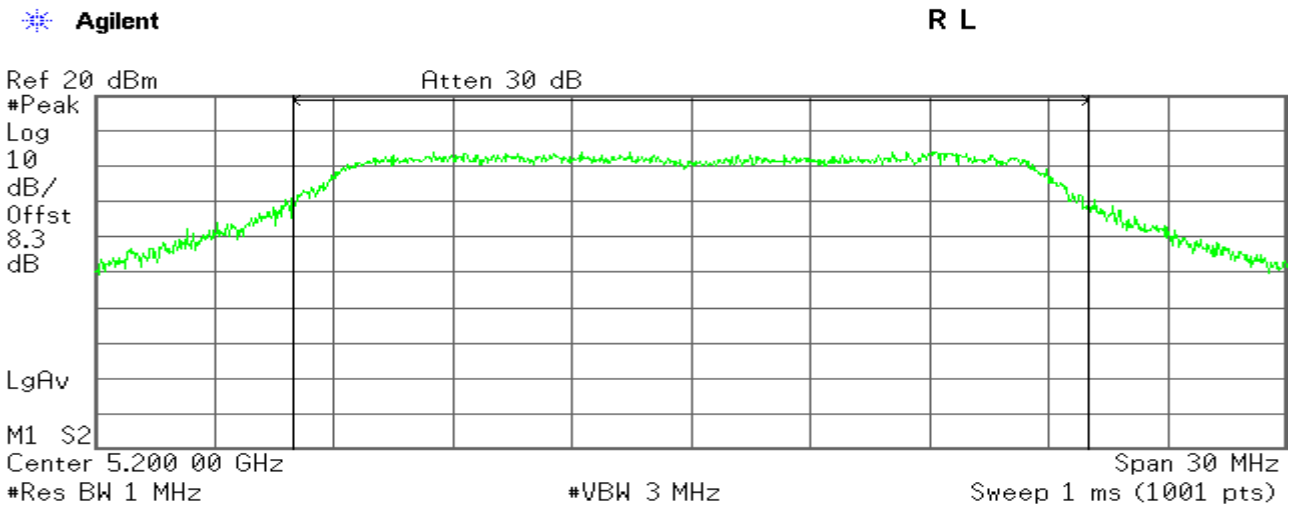
Channel Power

8.29 dBm /20.0000 MHz

Power Spectral Density

-64.72 dBm/Hz

CH Mid



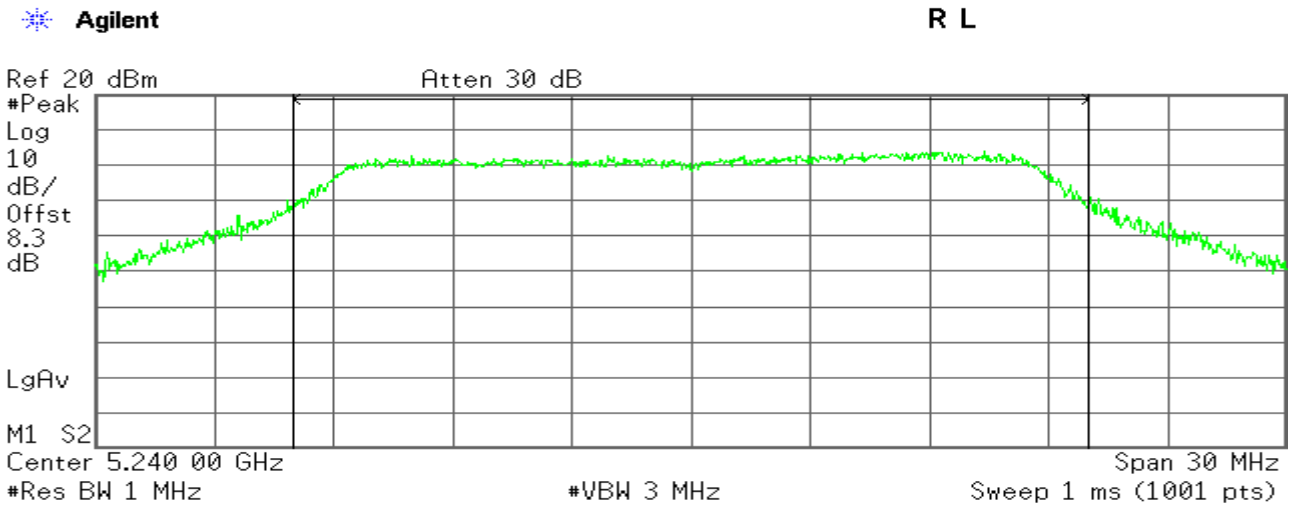
Channel Power

8.20 dBm /20.0000 MHz

Power Spectral Density

-64.81 dBm/Hz

CH High



Channel Power

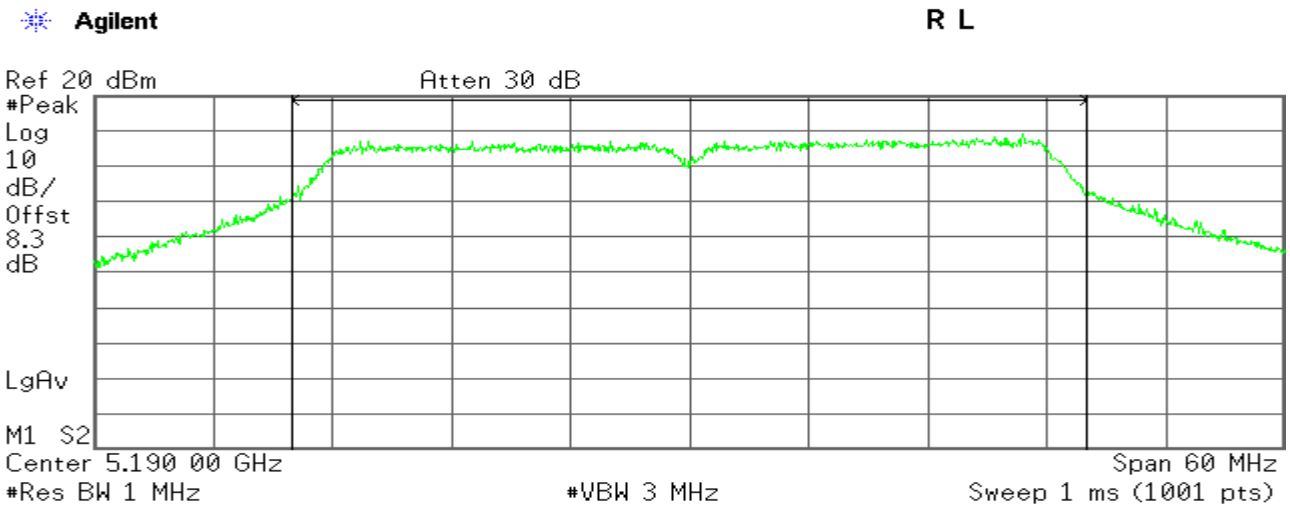
7.83 dBm /20.0000 MHz

Power Spectral Density

-65.18 dBm/Hz

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

5150~5250MHz
CH Low



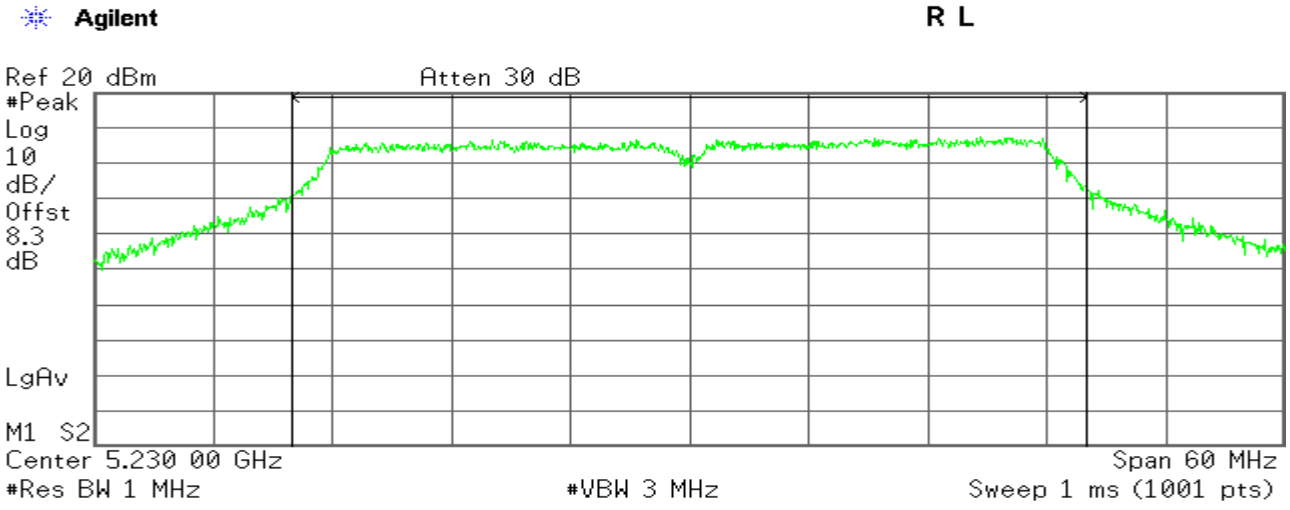
Channel Power

14.55 dBm /40.0000 MHz

Power Spectral Density

-61.47 dBm/Hz

CH High



Channel Power

14.56 dBm /40.0000 MHz

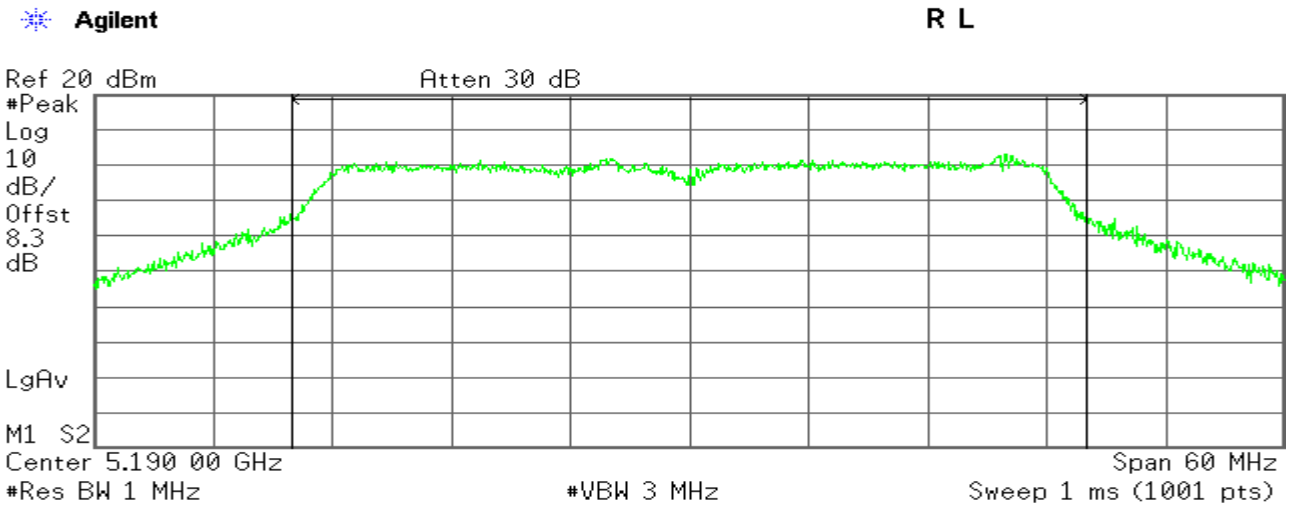
Power Spectral Density

-61.46 dBm/Hz

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

5150~5250MHz

CH Low



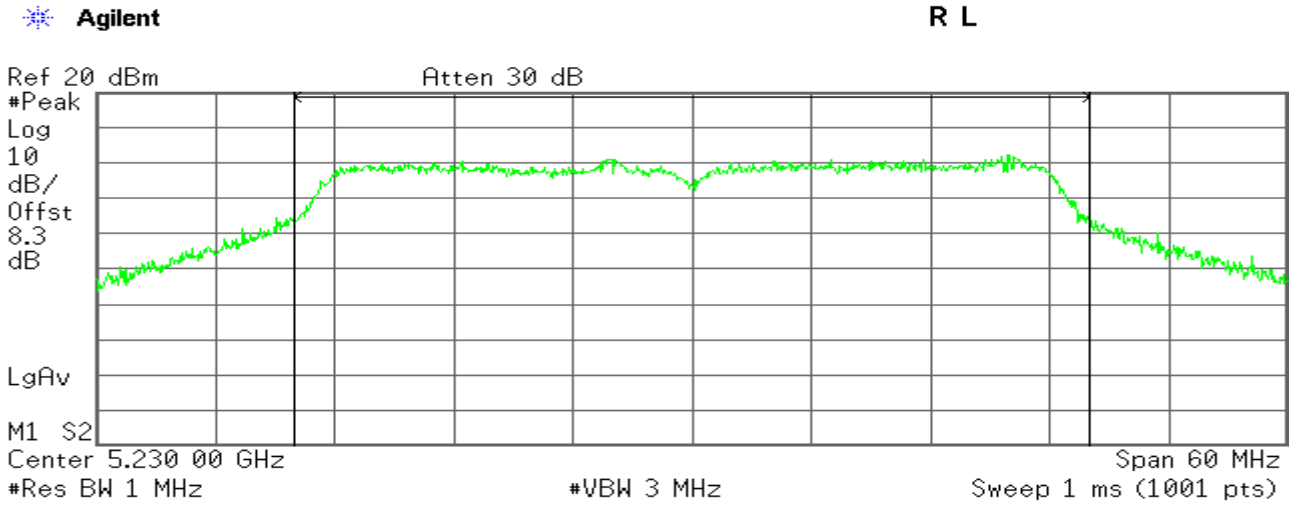
Channel Power

8.64 dBm /40.0000 MHz

Power Spectral Density

-67.38 dBm/Hz

CH High



Channel Power

7.75 dBm /40.0000 MHz

Power Spectral Density

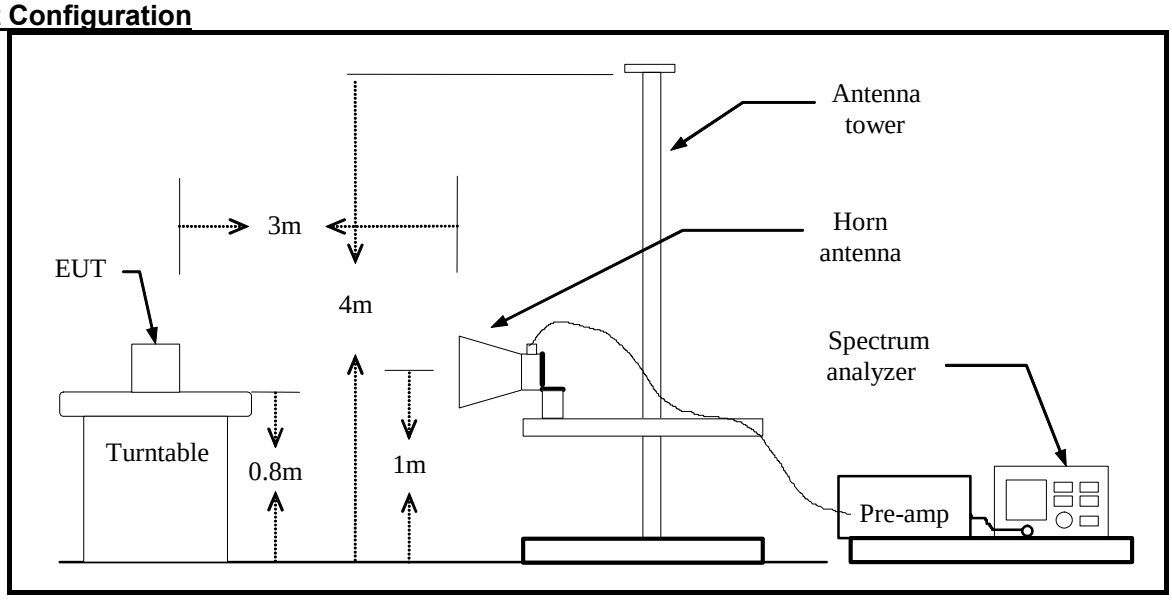
-68.27 dBm/Hz

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

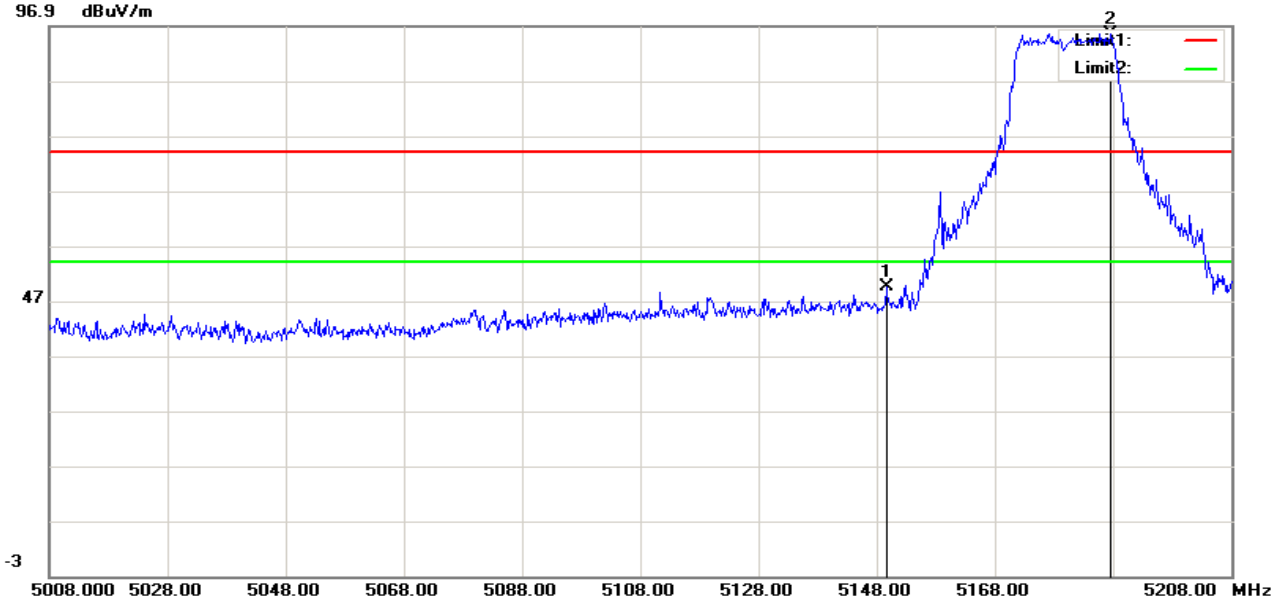
1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the 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.

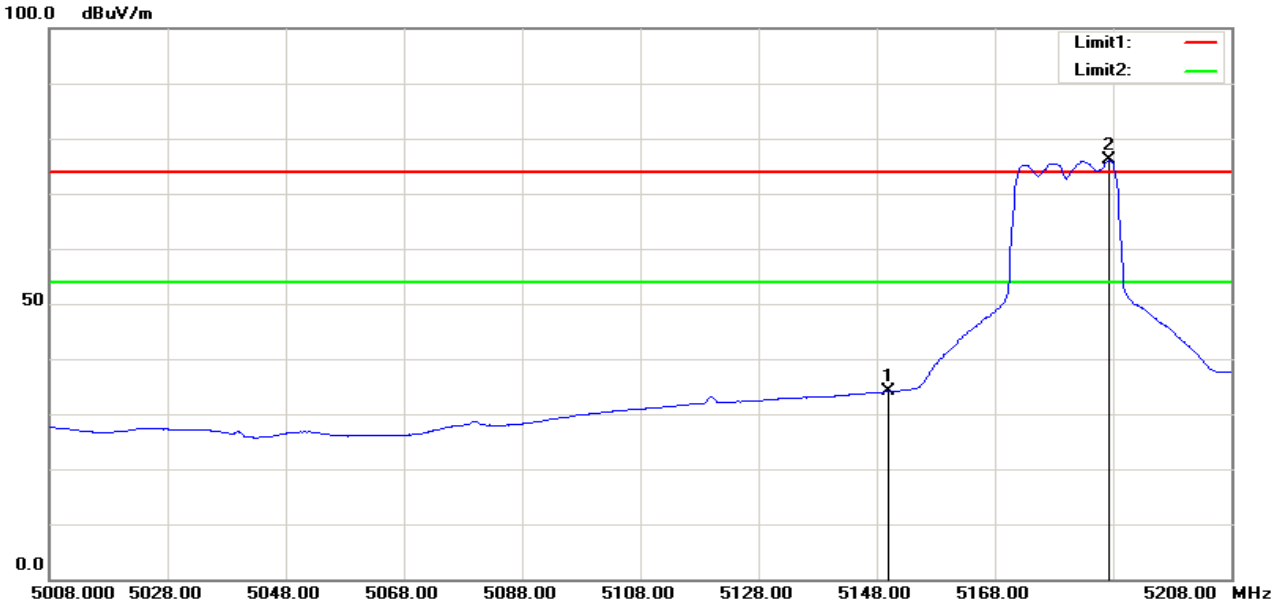
Band Edges (draft 802.11a mode 5180MHz)

Detector mode: Peak **Polarity: Vertical**



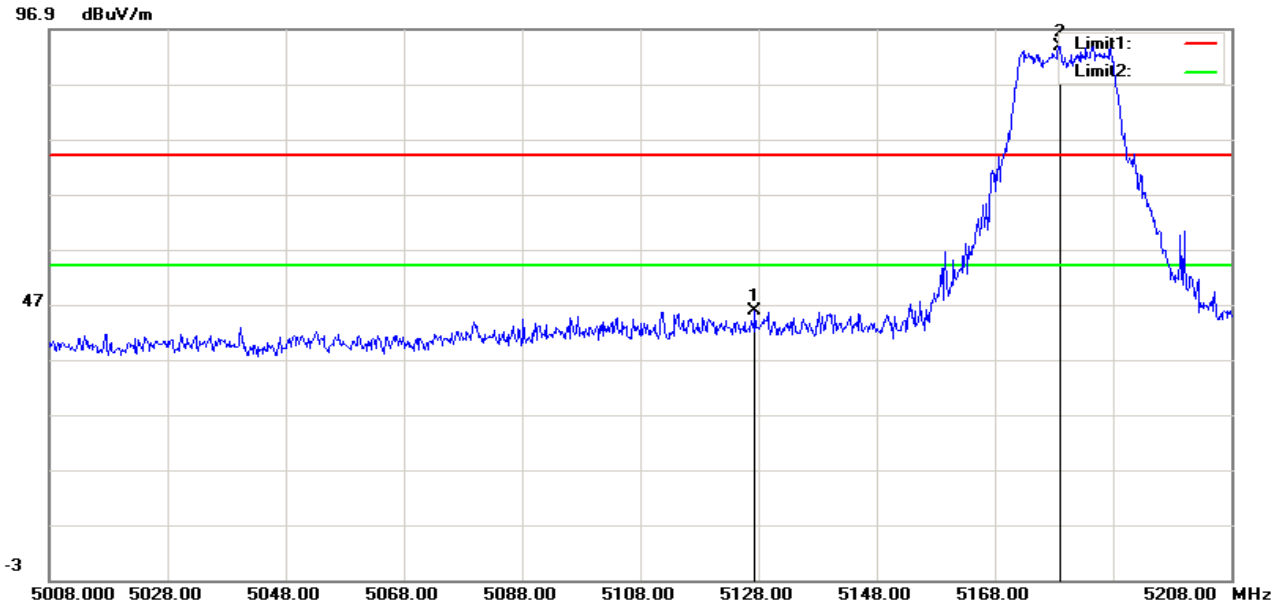
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5149.600	56.88	-7.33	49.55	74.00	-24.45	100	33	peak
2	5187.600	102.79	-7.22	95.57	74.00	21.57	100	5	peak

Detector mode: Average **Polarity: Vertical**



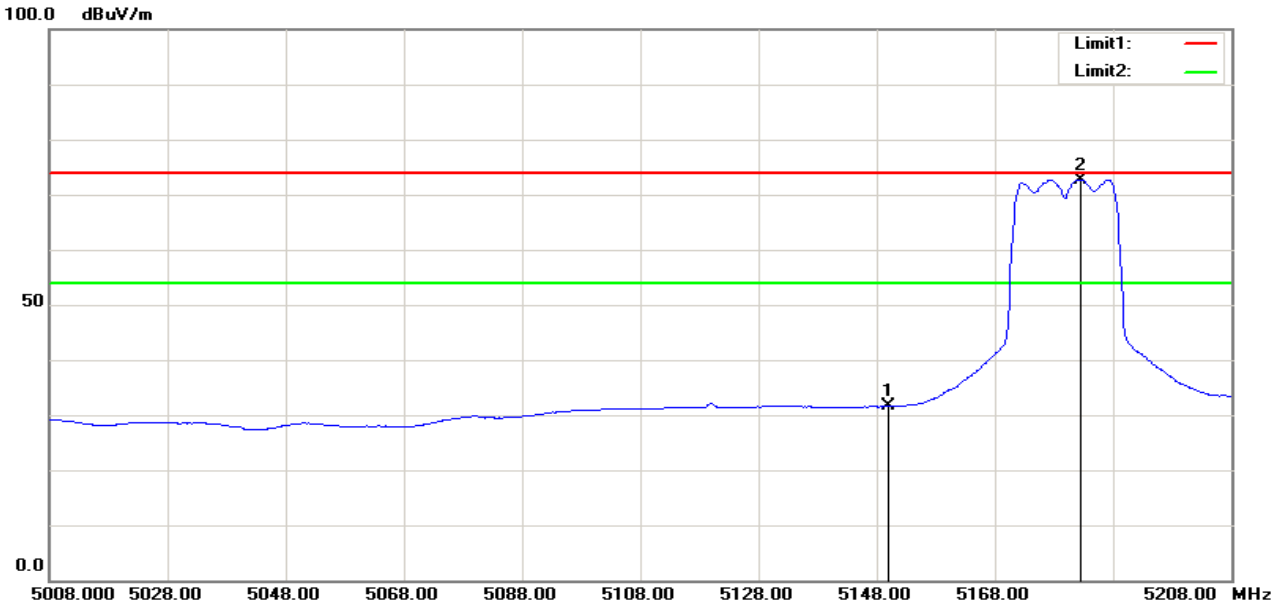
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5150.000	41.38	-7.33	34.05	54.00	-19.95	100	101	AVG
2	5187.400	83.24	-7.22	76.02	54.00	22.02	100	314	AVG

Detector mode: Peak **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5127.400	53.29	-7.39	45.90	74.00	-28.10	100	12	peak
2	5179.000	100.99	-7.25	93.74	74.00	19.74	100	23	peak

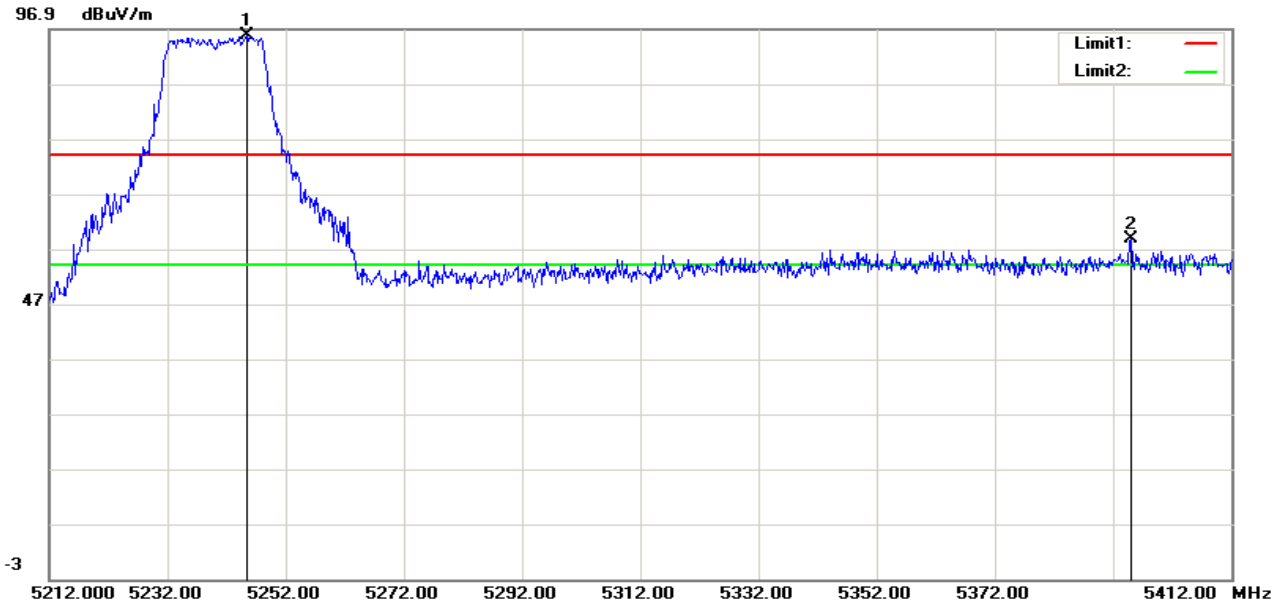
Detector mode: Average **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5150.000	38.86	-7.33	31.53	54.00	-22.47	100	12	AVG
2	5182.600	79.99	-7.24	72.75	54.00	18.75	100	18	AVG

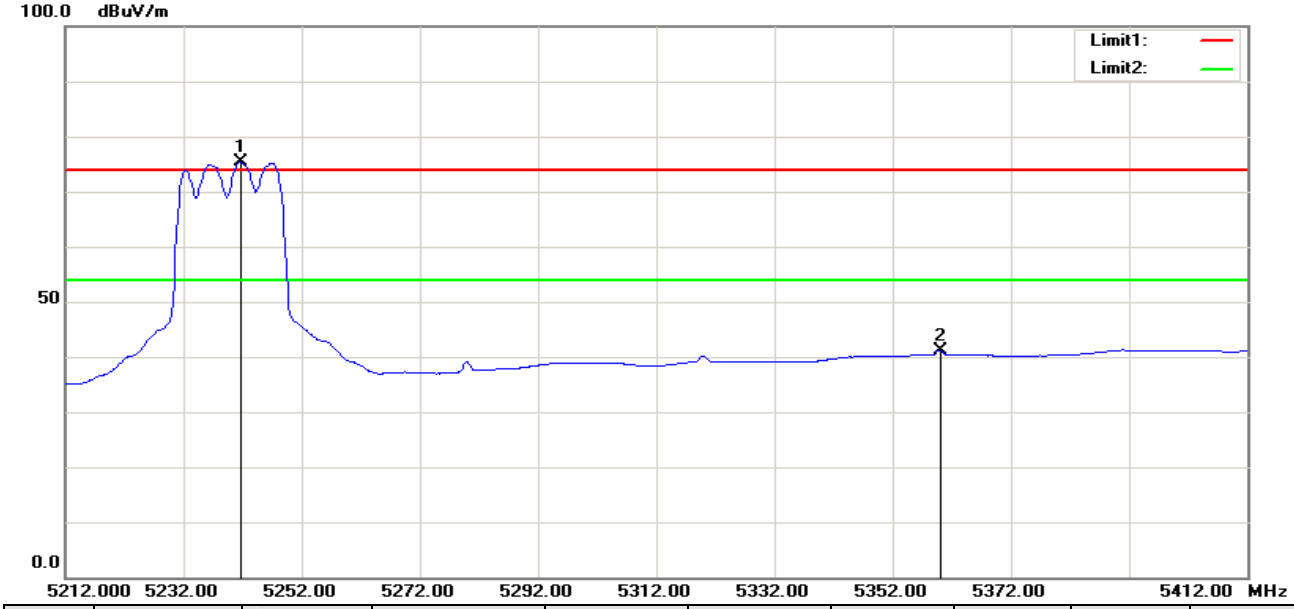
Band Edges (draft 802.11a 5240MHz)

Detector mode: Peak **Polarity: Vertical**



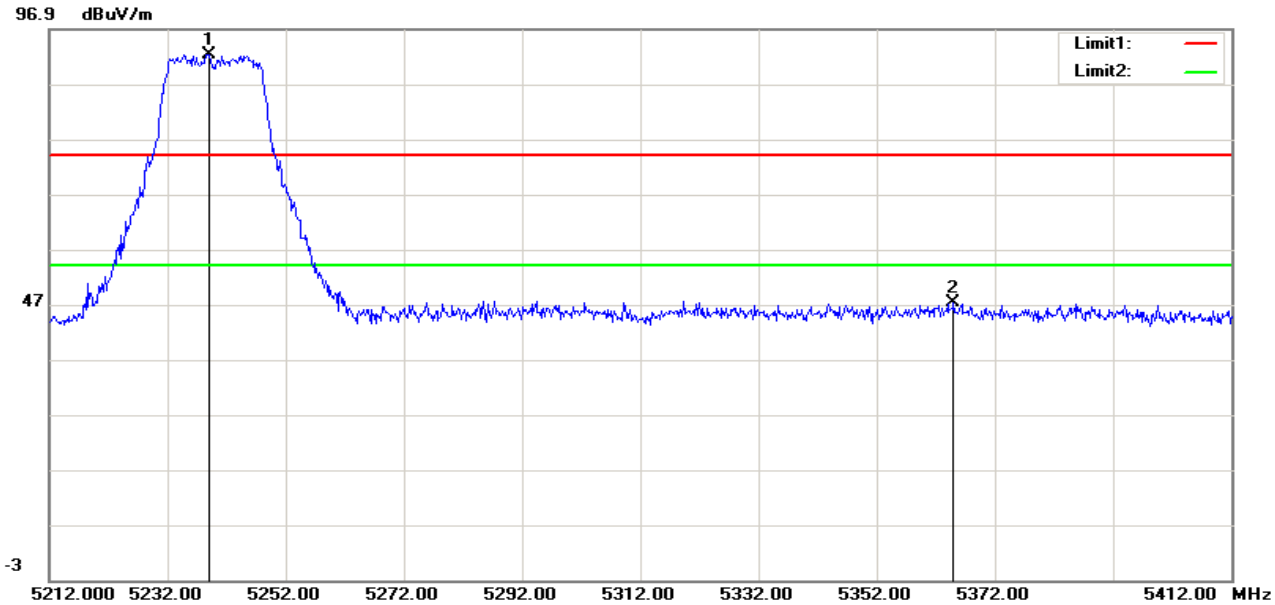
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5245.400	102.89	-7.04	95.85	74.00	21.85	100	190	peak
2	5395.000	65.91	-7.06	58.85	74.00	-15.15	100	18	peak

Detector mode: Average **Polarity: Vertical**



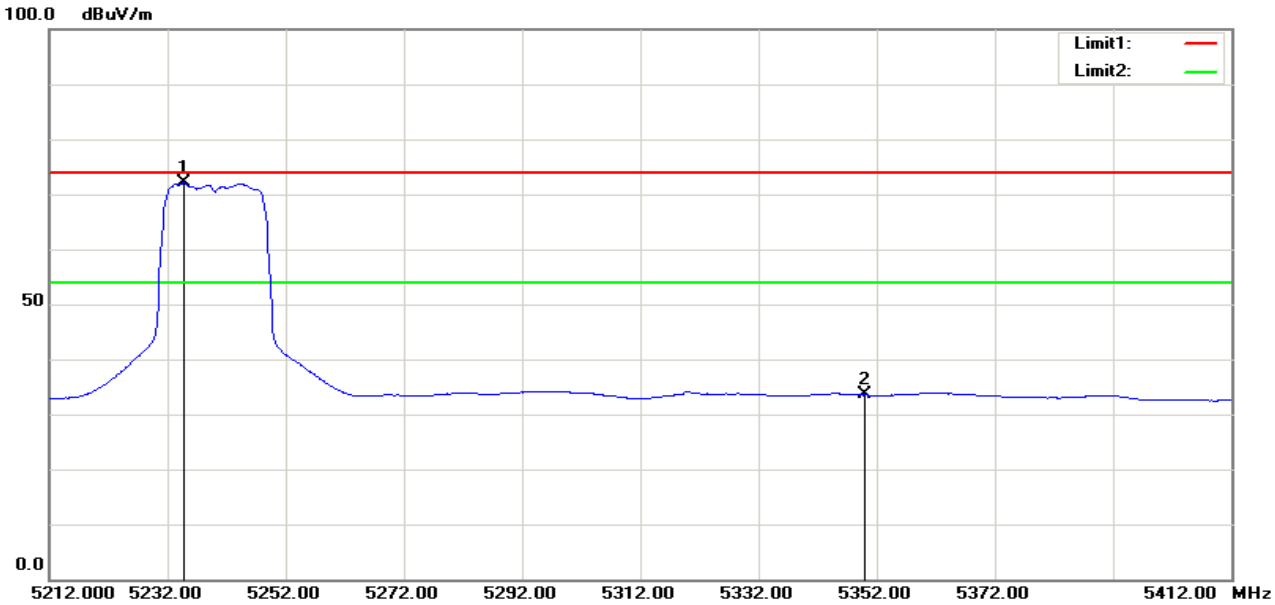
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5241.600	82.39	-7.06	75.33	54.00	21.33	100	317	AVG
2	5360.000	48.19	-6.99	41.20	54.00	-12.80	100	33	AVG

Detector mode: Peak **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5239.000	99.45	-7.06	92.39	74.00	18.39	100	360	peak
2	5365.000	54.26	-6.99	47.27	74.00	-26.73	100	360	peak

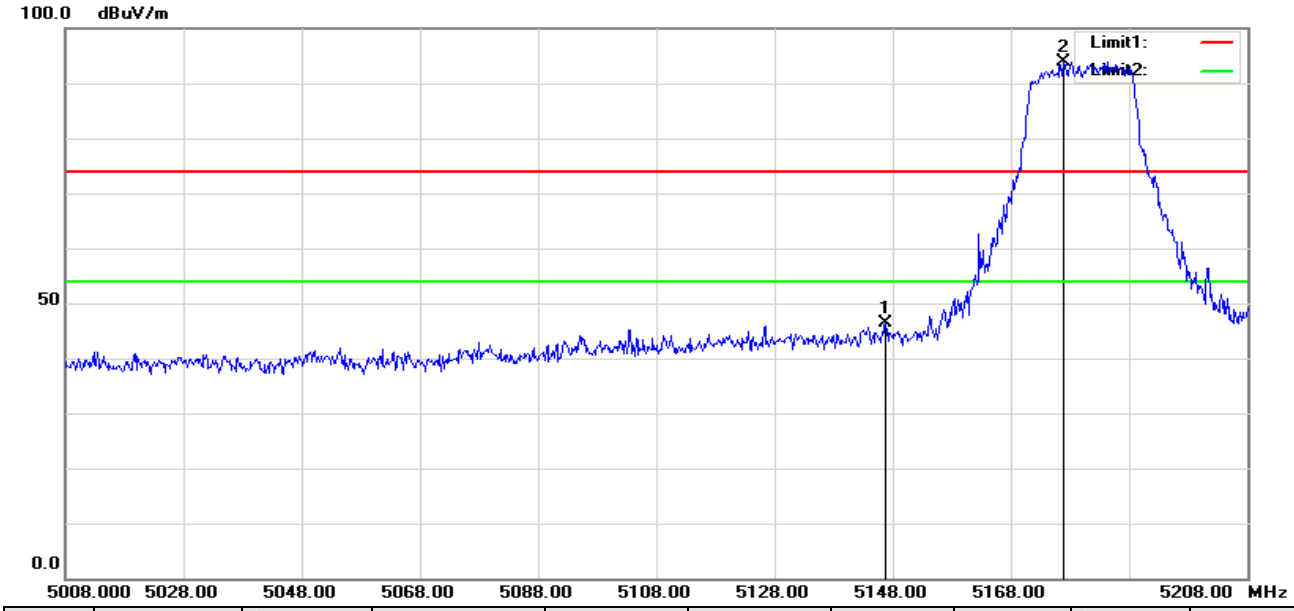
Detector mode: Average **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5234.800	79.10	-7.08	72.02	54.00	18.02	100	360	AVG
2	5350.000	40.50	-6.97	33.53	54.00	-20.47	100	360	AVG

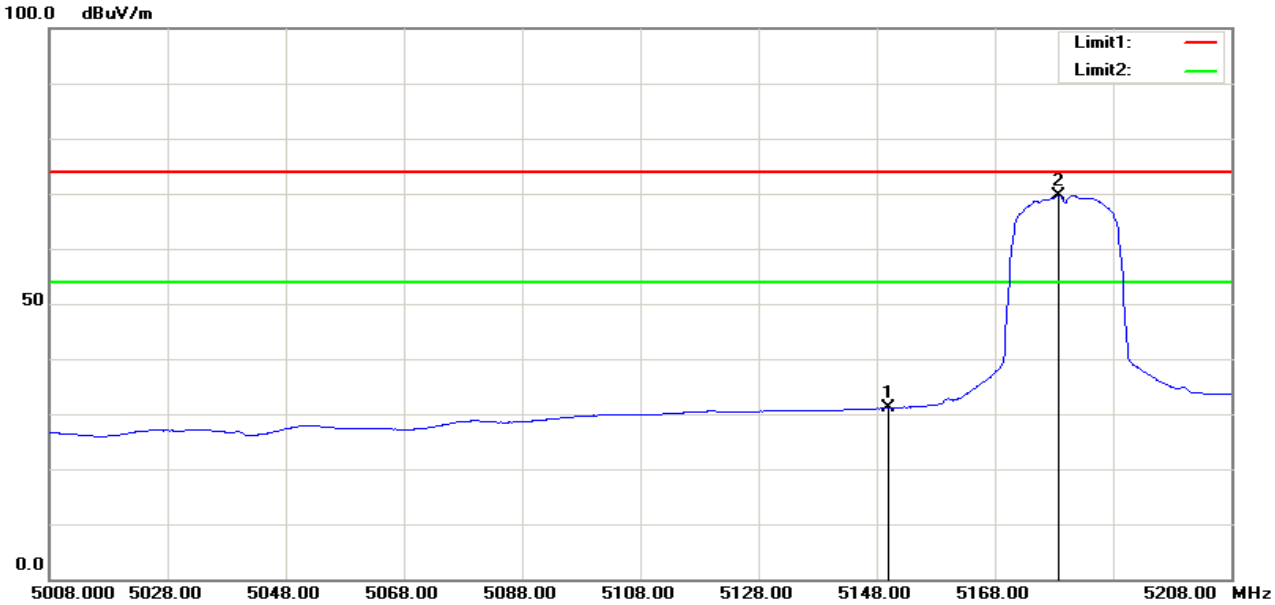
Band Edges (draft 802.11n Standard-20 MHz Channel mode / 5180MHz)

Detector mode: Peak **Polarity: Vertical**



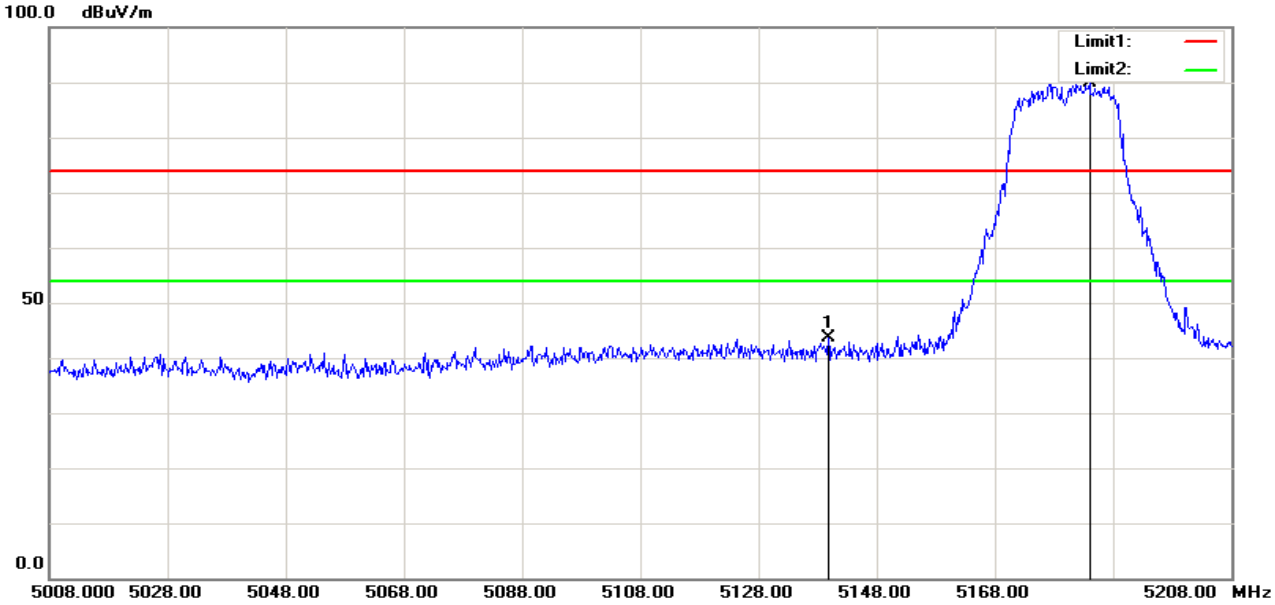
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5146.800	53.70	-7.34	46.36	74.00	-27.64	100	360	peak
2	5176.800	101.08	-7.25	93.83	74.00	19.83	100	360	peak

Detector mode: Average **Polarity: Vertical**



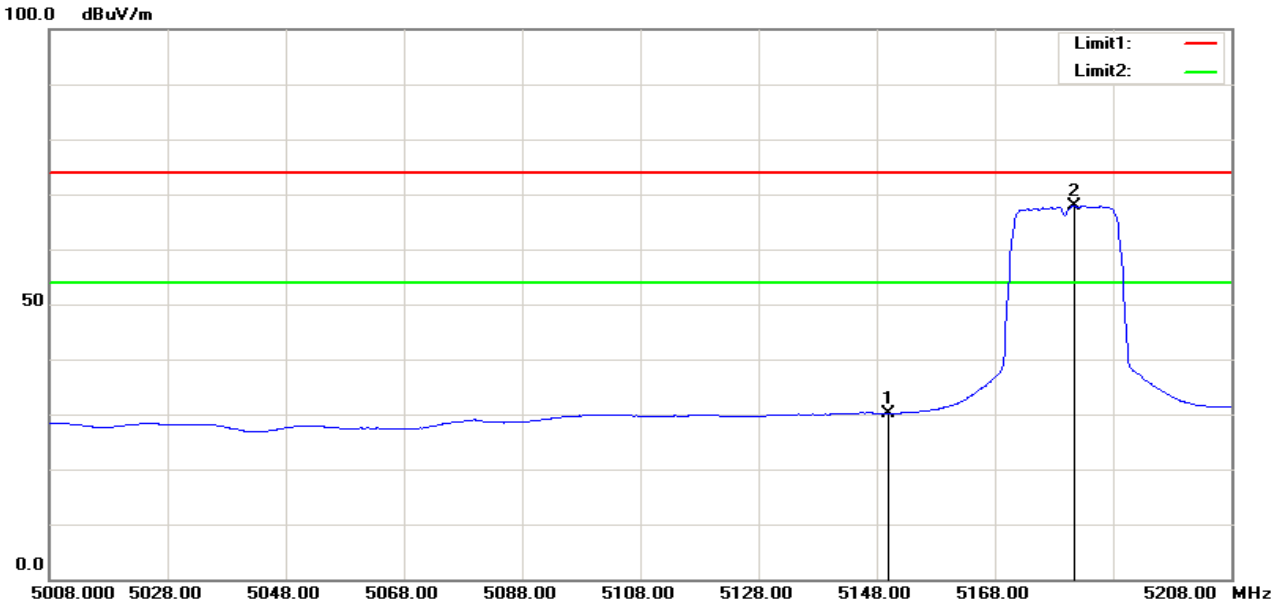
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5150.000	38.38	-7.33	31.05	54.00	-22.95	100	360	AVG
2	5178.800	76.96	-7.25	69.71	54.00	15.71	100	360	AVG

Detector mode: Peak **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5139.800	51.09	-7.36	43.73	74.00	-30.27	100	360	peak
2	5184.000	97.20	-7.24	89.96	74.00	15.96	100	8	peak

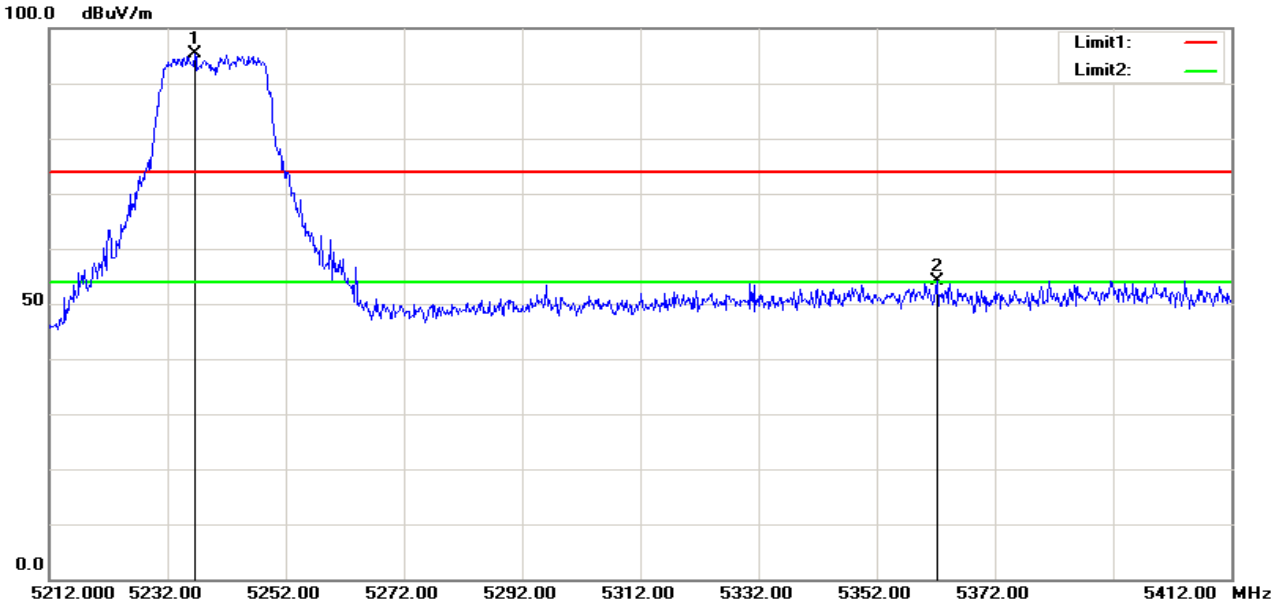
Detector mode: Average **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5150.000	37.50	-7.33	30.17	54.00	-23.83	100	360	AVG
2	5181.400	75.08	-7.24	67.84	54.00	13.84	100	360	AVG

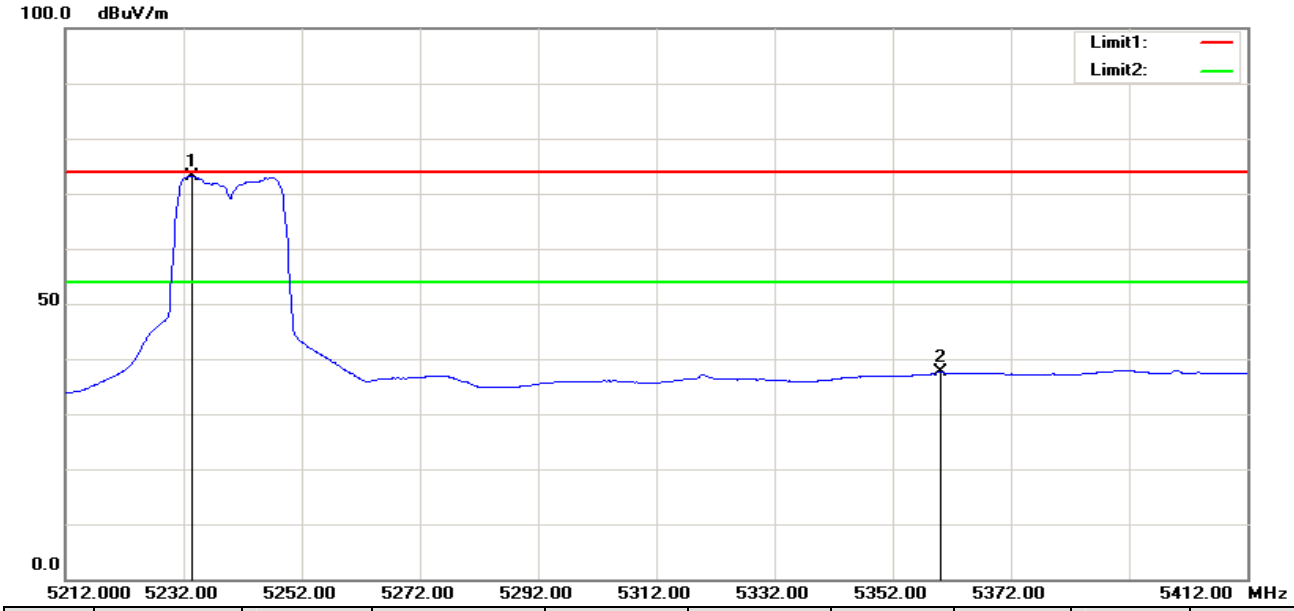
Band Edges (draft 802.11n Standard-20 MHz Channel mode / 5240MHz)

Detector mode: Peak **Polarity: Vertical**



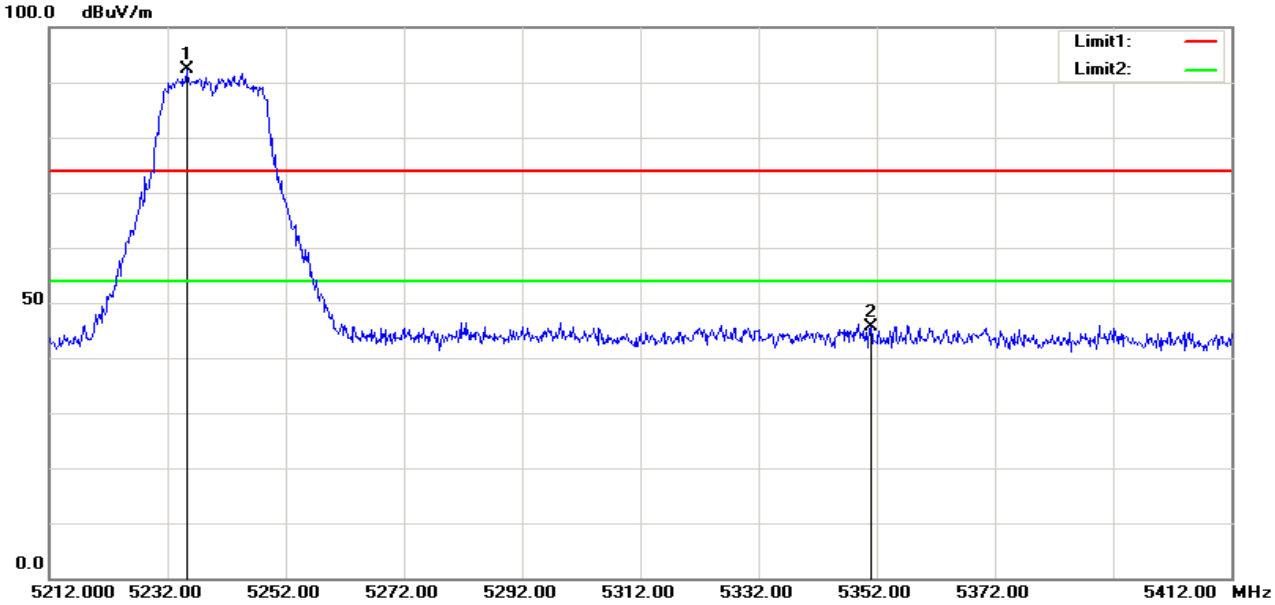
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5236.600	102.52	-7.07	95.45	74.00	21.45	100	360	peak
2	5362.200	61.19	-7.00	54.19	74.00	-19.81	100	360	peak

Detector mode: Average **Polarity: Vertical**



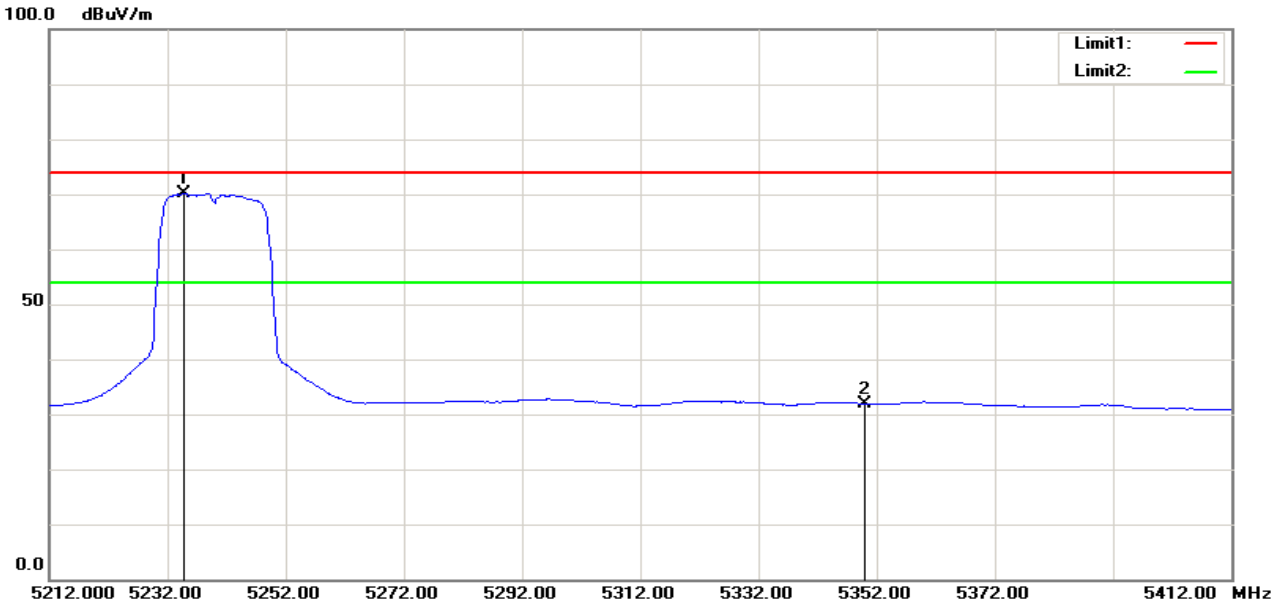
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5233.400	80.30	-7.09	73.21	54.00	19.21	100	360	AVG
2	5360.000	44.65	-6.99	37.66	54.00	-16.34	100	360	AVG

Detector mode: Peak **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5235.200	99.54	-7.07	92.47	74.00	18.47	100	360	peak
2	5351.000	52.64	-6.97	45.67	74.00	-28.33	100	360	peak

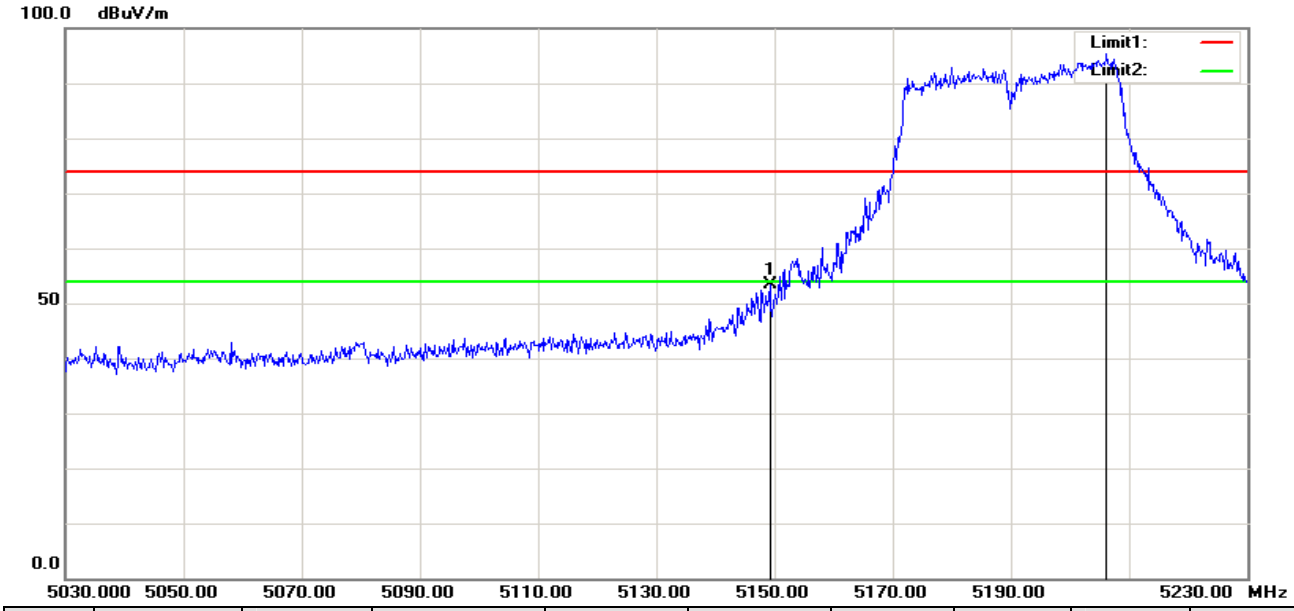
Detector mode: Average **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5234.800	77.27	-7.08	70.19	54.00	16.19	100	360	AVG
2	5350.000	38.91	-6.97	31.94	54.00	-22.06	100	360	AVG

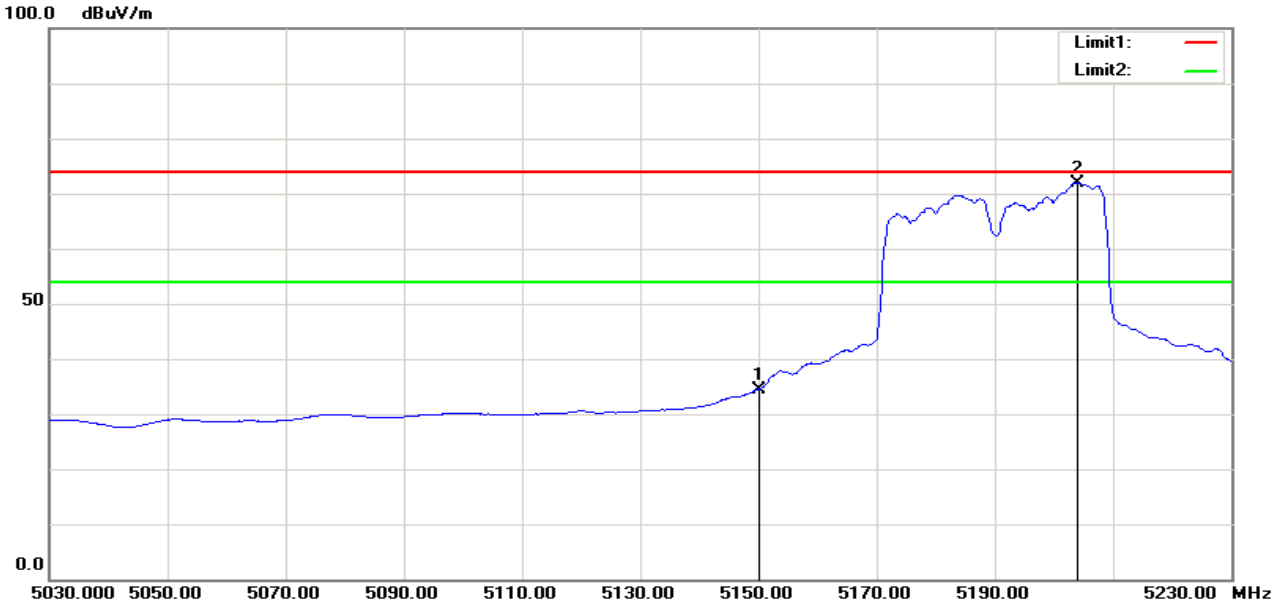
Band Edges (draft 802.11n Wide-40 MHz Channel mode / 5190)

Detector mode: Peak **Polarity: Vertical**



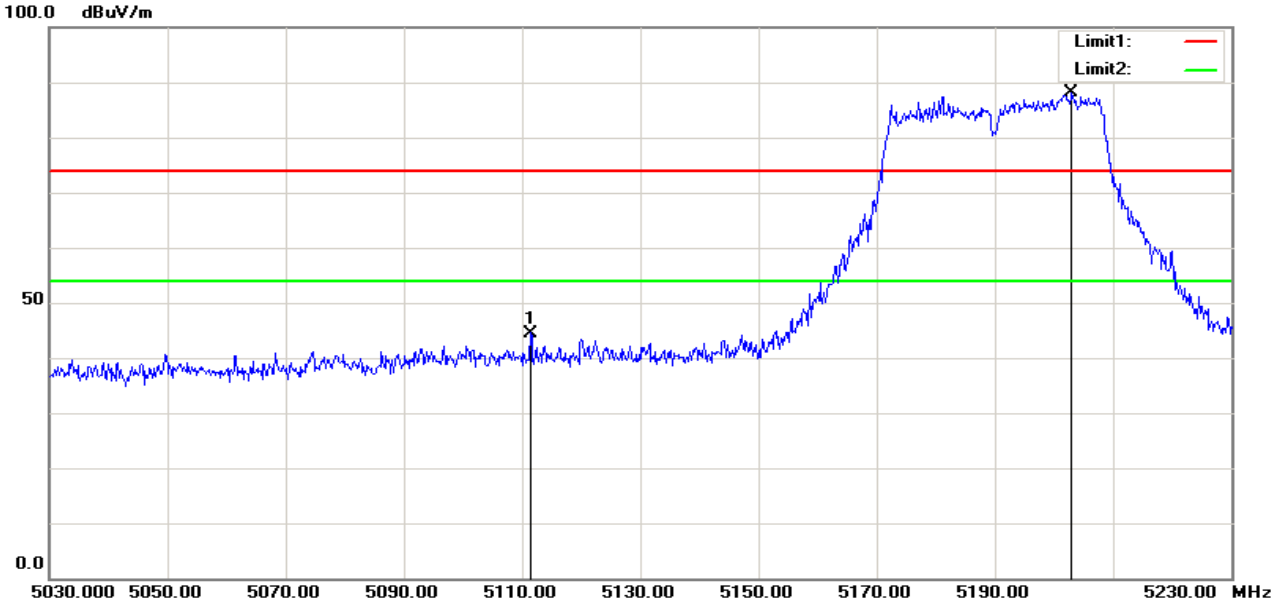
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5149.200	60.61	-7.33	53.28	74.00	-20.72	100	360	peak
2	5206.200	102.49	-7.17	95.32	74.00	21.32	100	360	peak

Detector mode: Average **Polarity: Vertical**



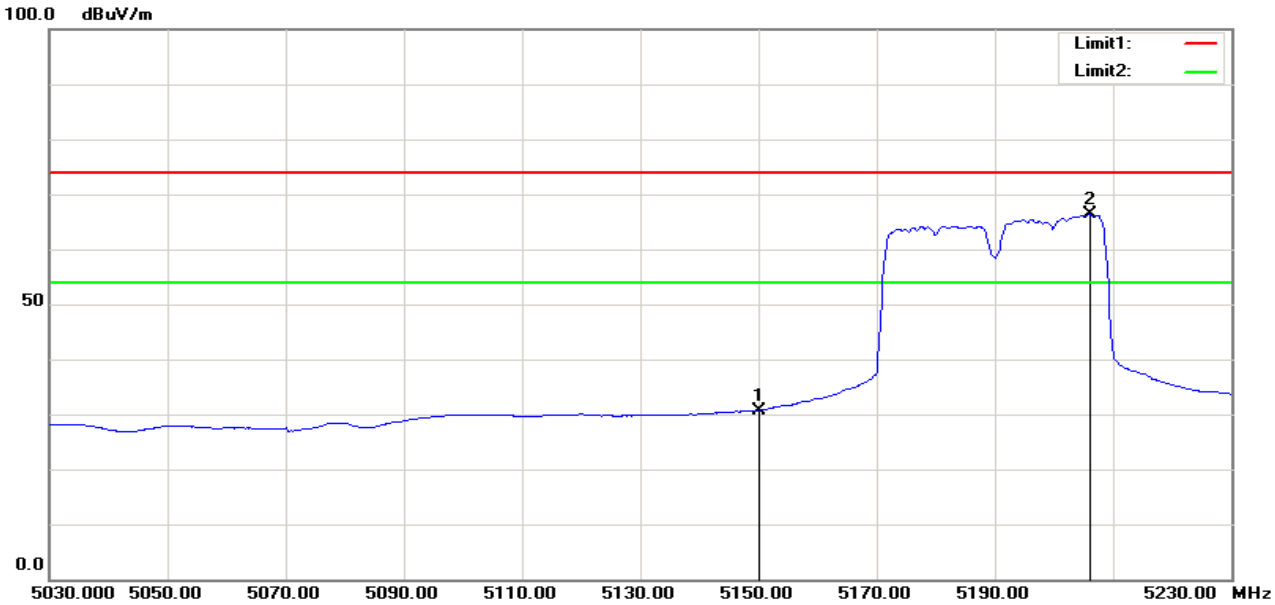
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5150.000	41.74	-7.33	34.41	54.00	-19.59	100	360	AVG
2	5204.000	79.13	-7.18	71.95	54.00	17.95	100	360	AVG

Detector mode: Peak **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5111.400	51.94	-7.44	44.50	74.00	-29.50	100	360	peak
2	5203.000	95.23	-7.18	88.05	74.00	14.05	100	360	peak

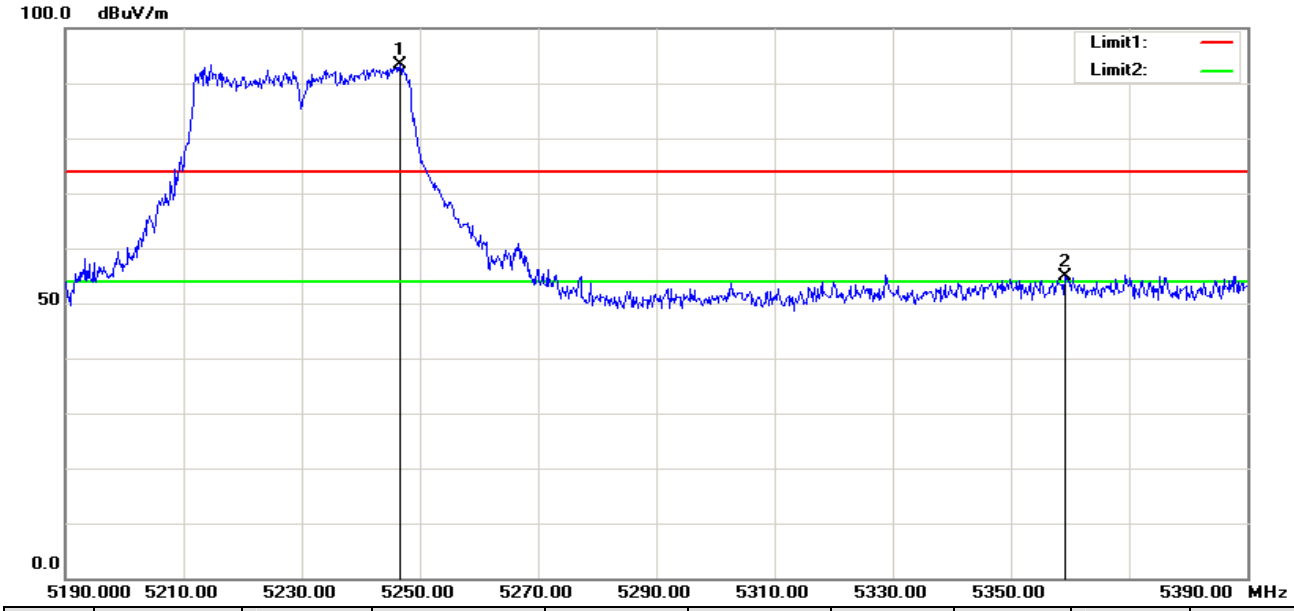
Detector mode: Average **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5150.000	38.05	-7.33	30.72	54.00	-23.28	100	360	AVG
2	5206.000	73.49	-7.17	66.32	54.00	12.32	100	8	AVG

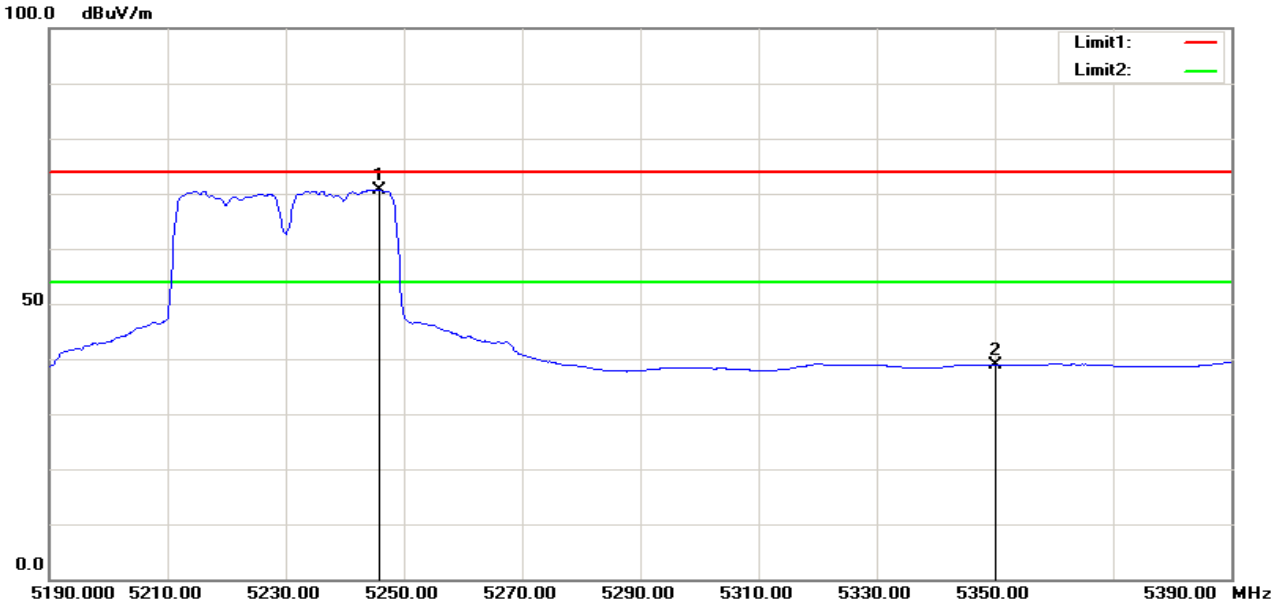
Band Edges (draft 802.11n Wide-40 MHz Channel mode / 5230MHz)

Detector mode: Peak **Polarity: Vertical**



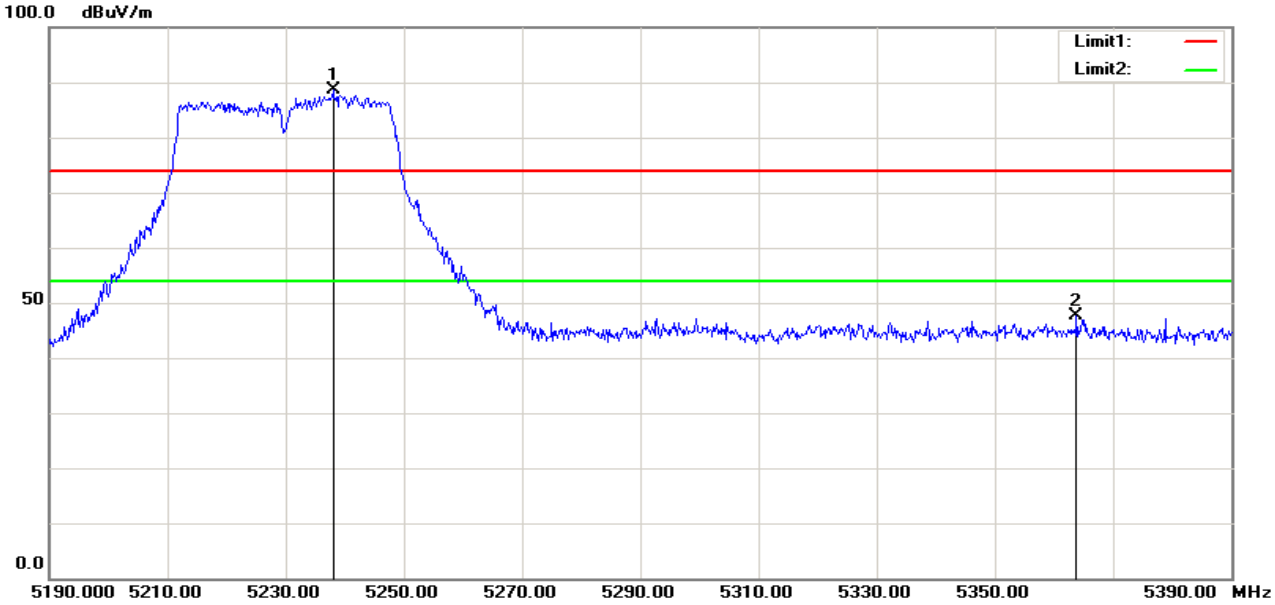
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5246.600	100.34	-7.04	93.30	74.00	19.30	100	360	peak
2	5359.200	61.80	-6.99	54.81	74.00	-19.19	100	349	peak

Detector mode: Average **Polarity: Vertical**



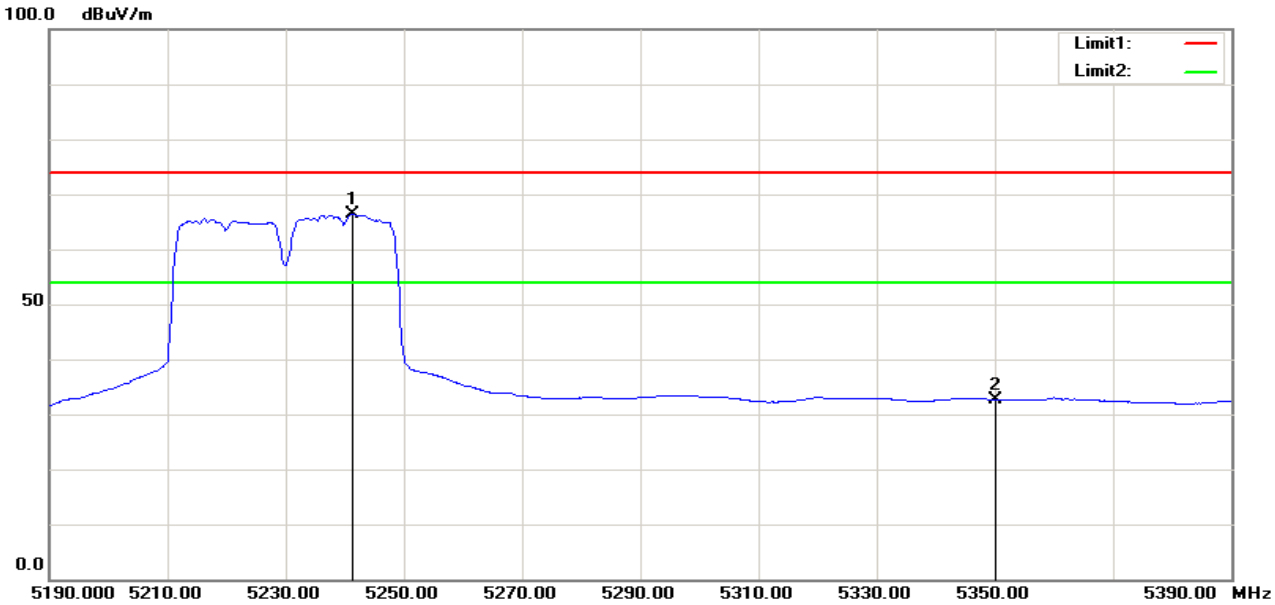
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5245.800	77.76	-7.04	70.72	54.00	16.72	100	360	AVG
2	5350.000	45.82	-6.97	38.85	54.00	-15.15	100	360	AVG

Detector mode: Peak **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5238.000	95.65	-7.07	88.58	74.00	14.58	100	360	peak
2	5363.800	54.52	-7.00	47.52	74.00	-26.48	100	360	peak

Detector mode: Average **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	5241.400	73.44	-7.06	66.38	54.00	12.38	100	360	AVG
2	5350.000	39.61	-6.97	32.64	54.00	-21.36	100	360	AVG

7.4 PEAK POWER SPECTRAL DENSITY

LIMIT

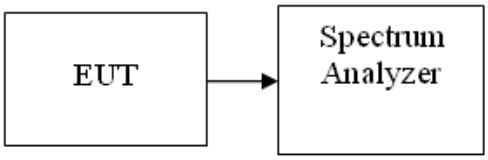
According to §15.407(a),

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

5150~5250MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	1.65	4.00	-2.35	PASS
Mid	5300	1.45	4.00	-2.55	PASS
High	5320	1.19	4.00	-2.81	PASS

Test mode: draft 802.11n Standard-20 MHz Channel mode

5150~5250MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5260	0.20	-0.27	2.98	4.00	-1.02	PASS
Mid	5300	0.57	-0.55	3.06	4.00	-0.94	PASS
High	5320	0.77	-1.40	2.83	4.00	-1.17	PASS

Total PPSD Chain 0+Chain 1:

Total PPSD (dBm)=10log(10^(chain0PPSD/10)+ 10^(chain1PPSD/10))

Test mode: draft 802.11n Wide-40 MHz Channel mode

5150~5250MHz

Channel	Frequency (MHz)	Chain 0 PPSD (dBm)	Chain 1 PPSD (dBm)	Total PPSD (dBm)	Limit (dBm)	Margin	Result
Low	5270	-1.82	-1.86	1.17	4.00	-2.83	PASS
Mid	5310	-2.46	-3.27	0.16	4.00	-3.84	PASS

Total PPSD Chain 0+Chain 1:

Total PPSD (dBm)=10log(10^(chain0PPSD/10)+ 10^(chain1PPSD/10))

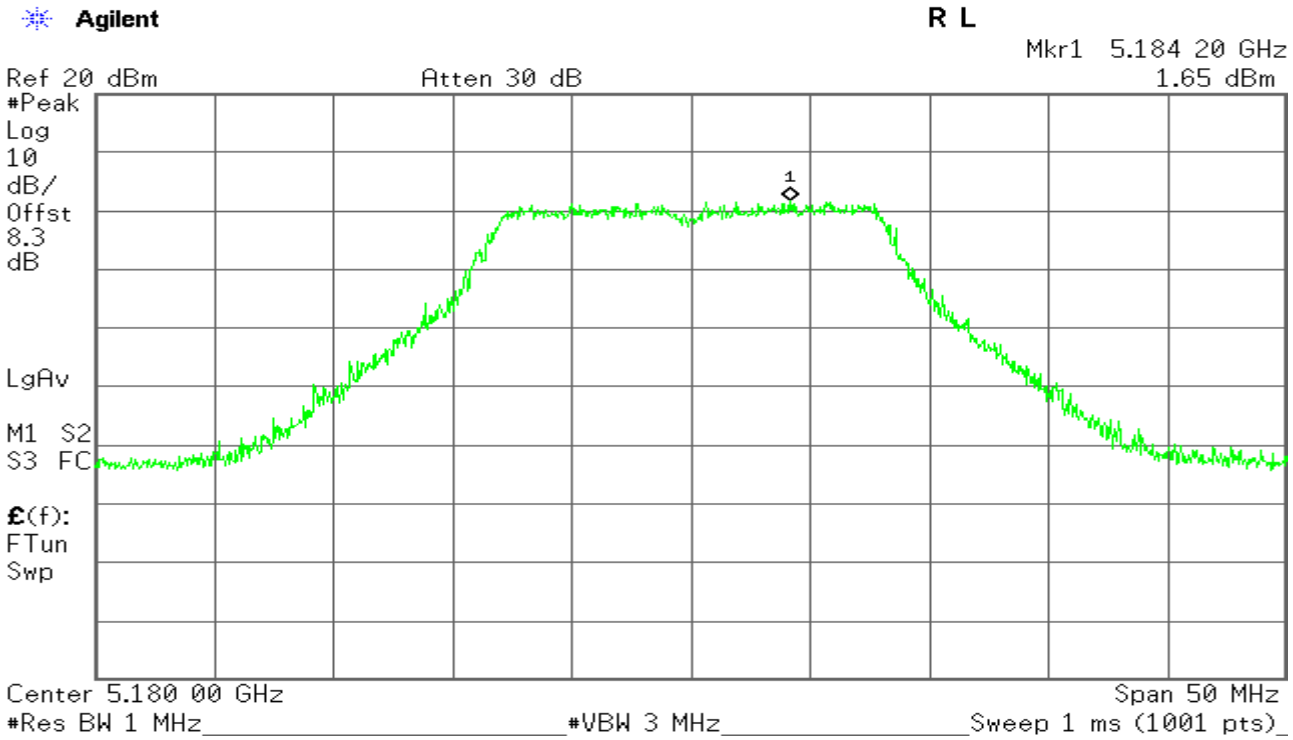
*(**Remark:** 1. Maximum antenna gain =4dBi, therefore there is no reduction due to antenna gain.)*

Test Plot

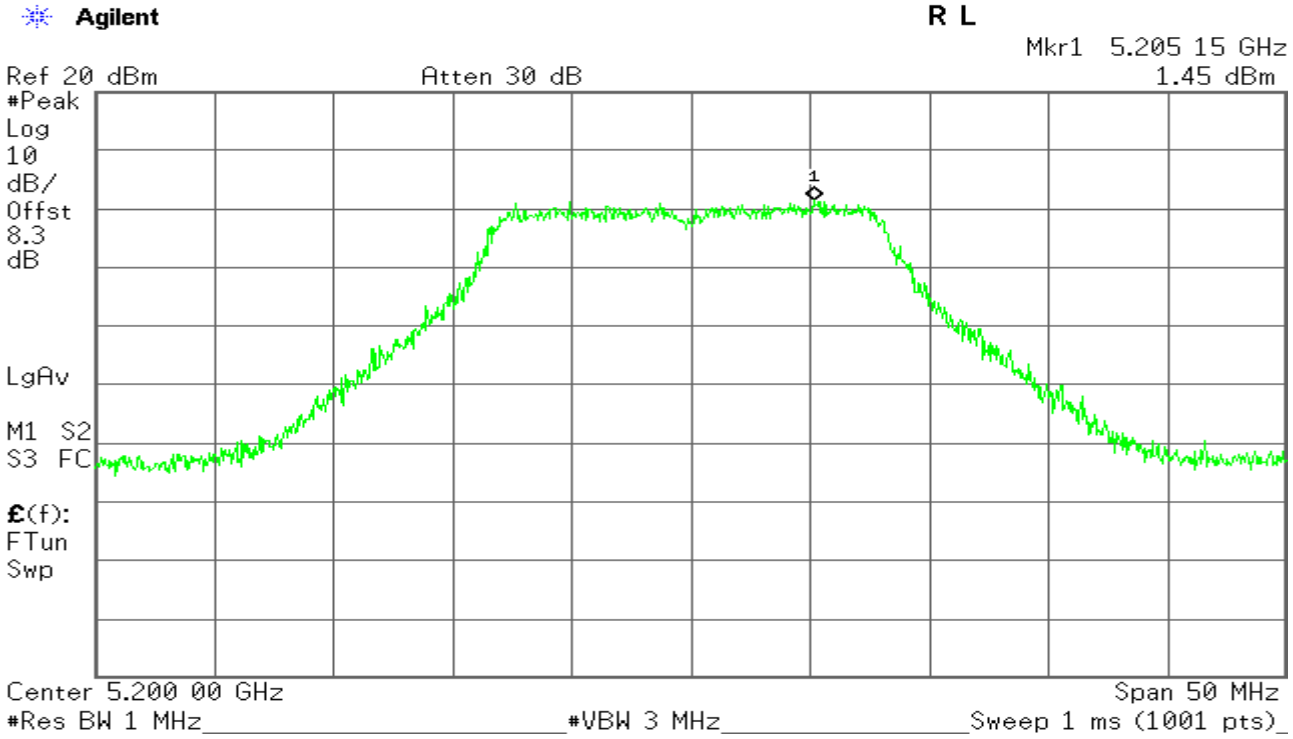
Test mode: IEEE 802.11a mode:

5150~5250MHz

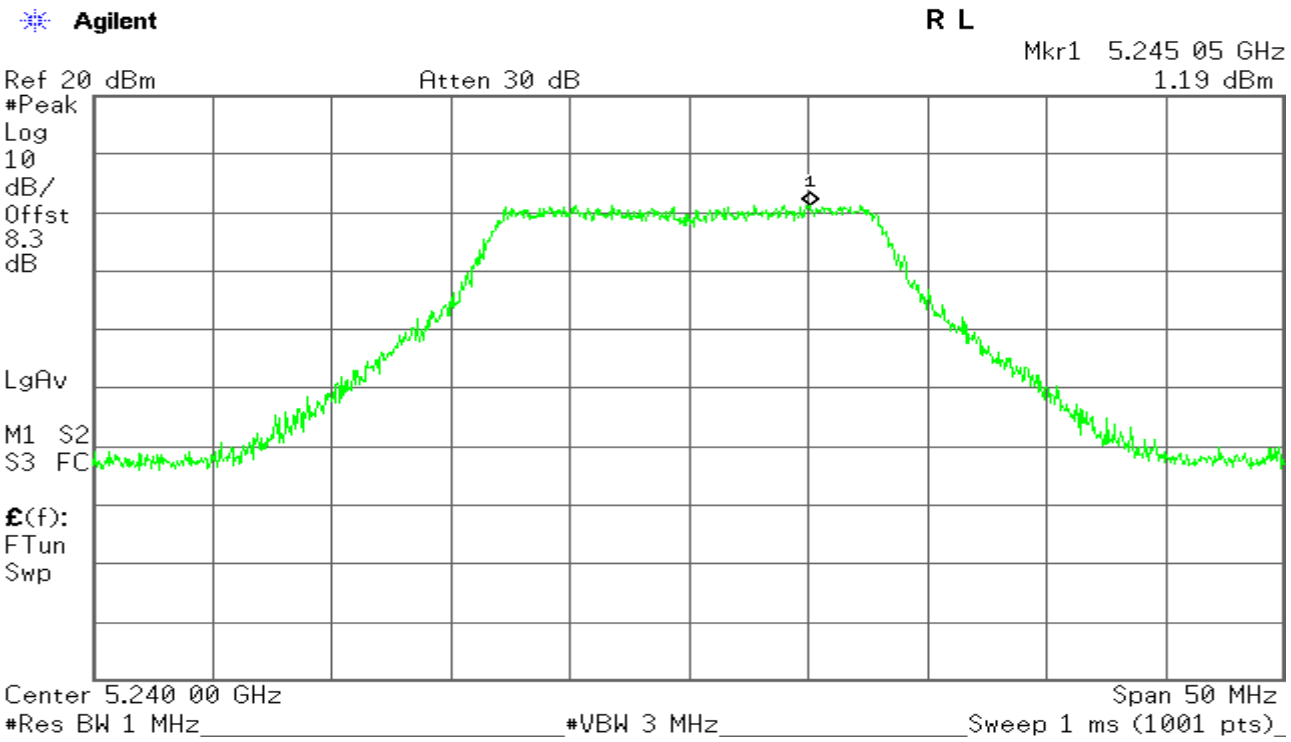
CH Low



CH Mid



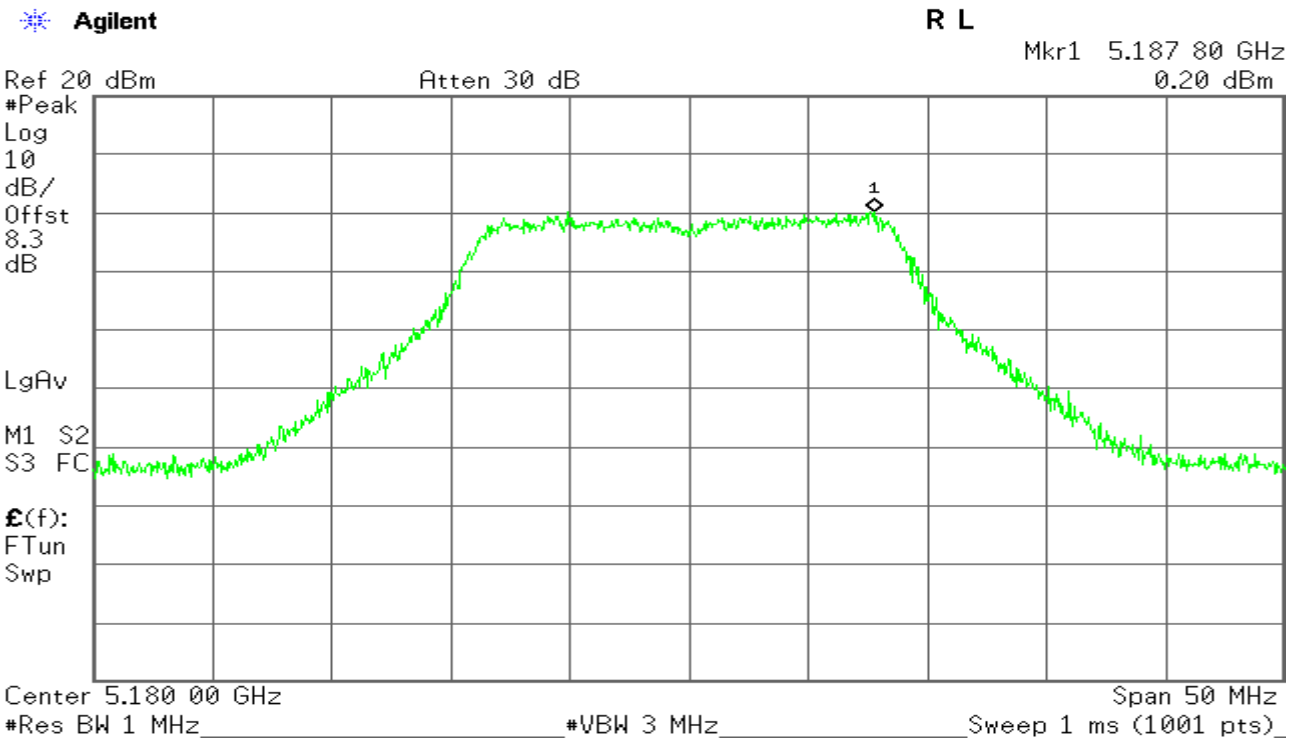
CH High



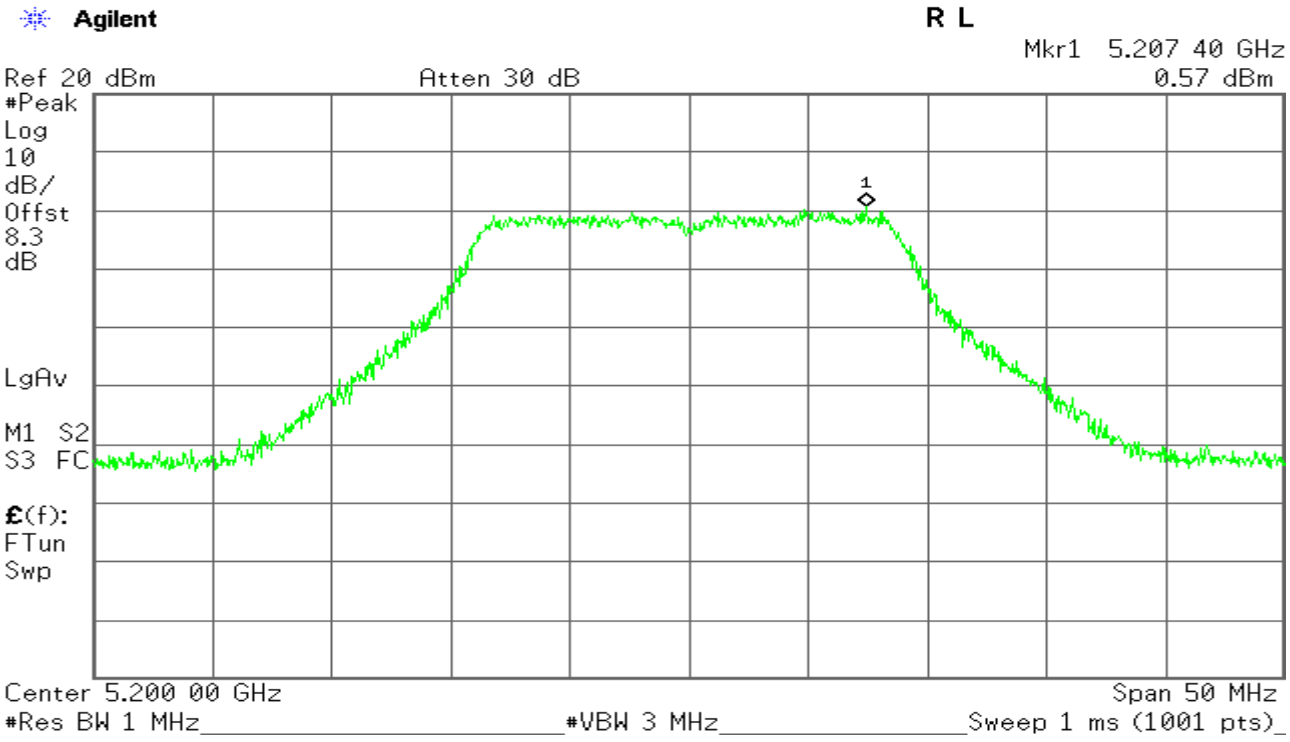
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0:

5150~5250MHz

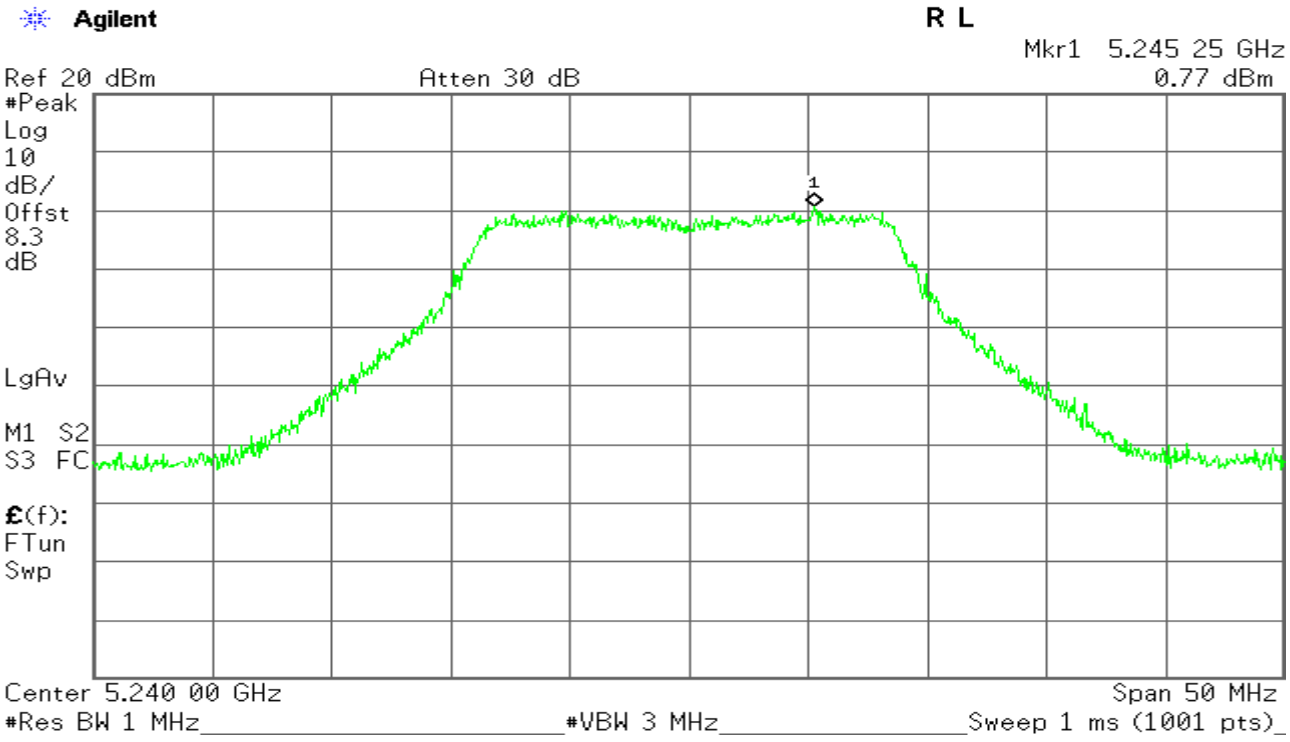
CH Low



CH Mid



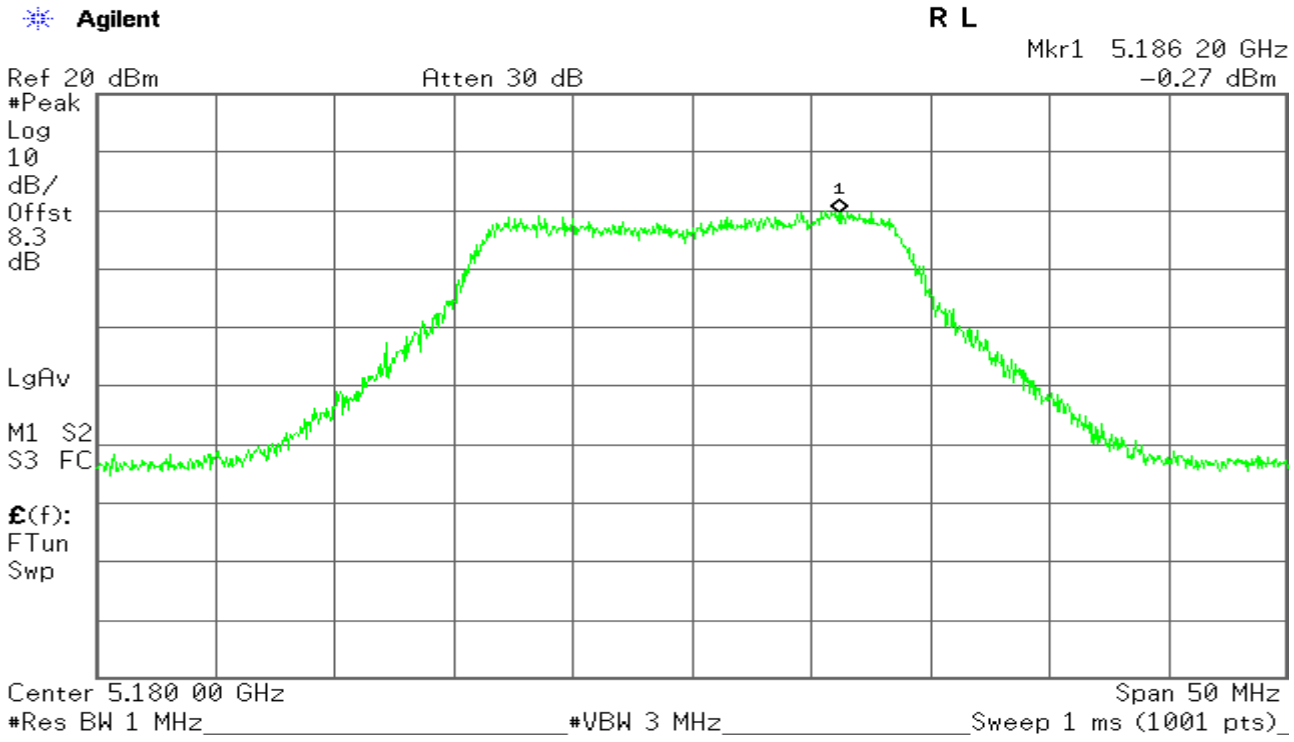
CH High



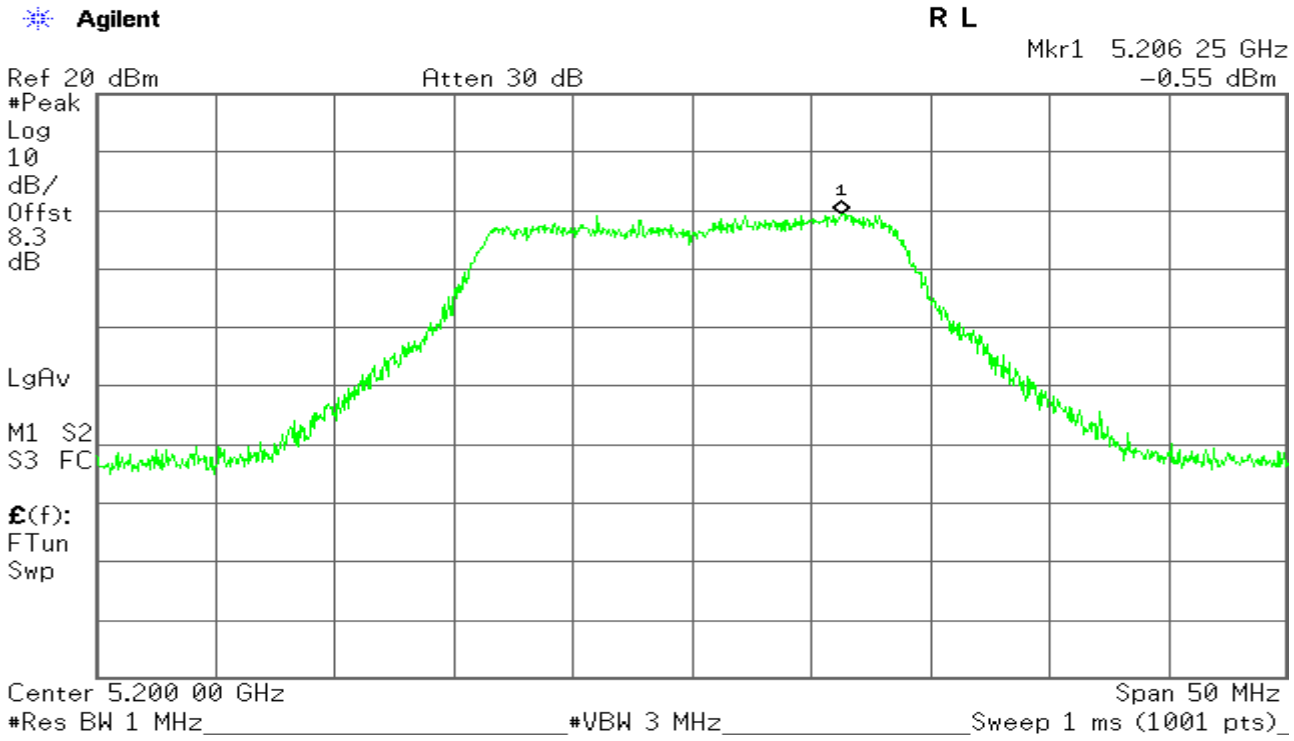
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1:

5150~5250MHz

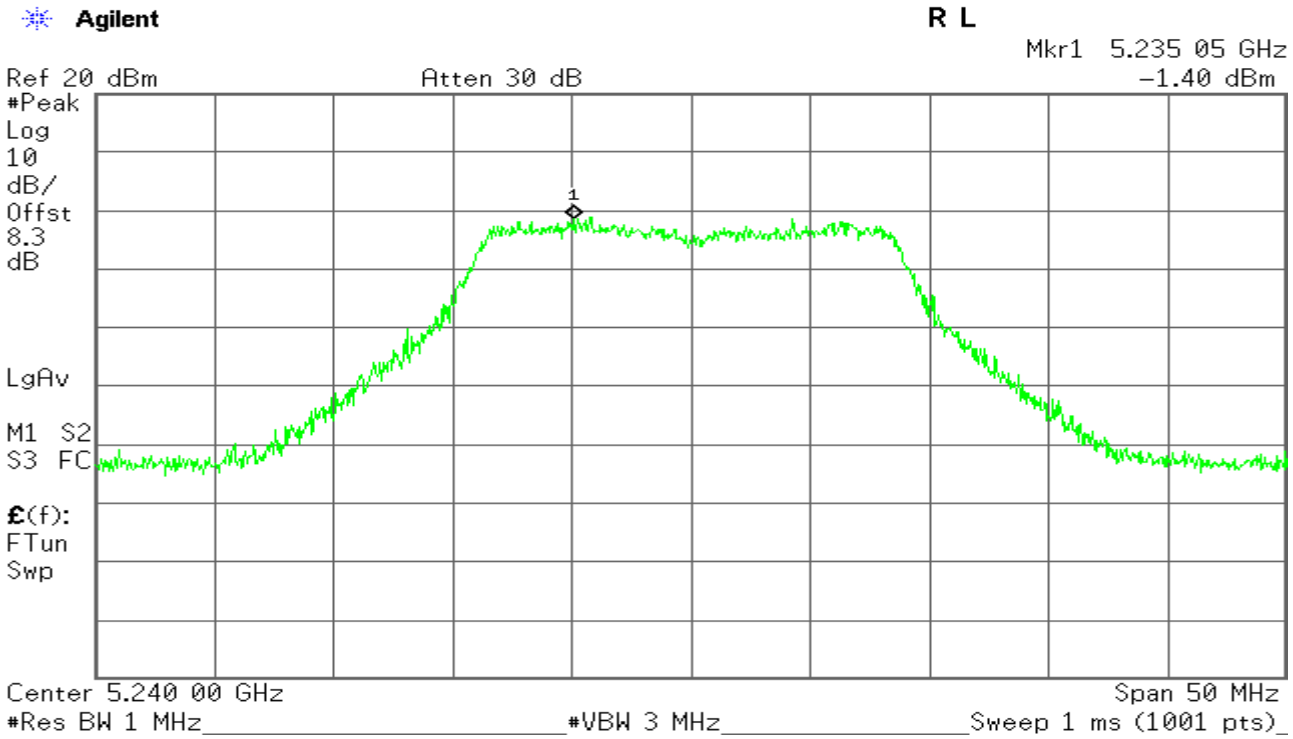
CH Low



CH Mid



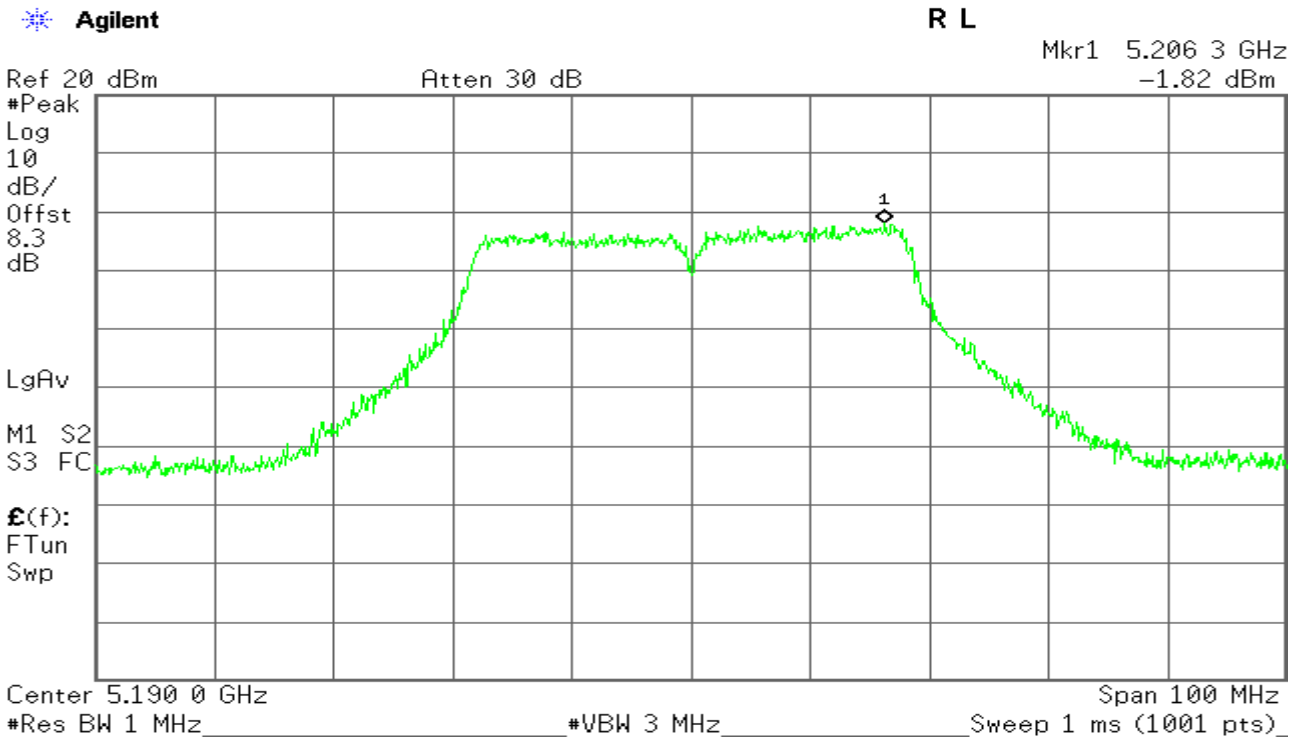
CH High



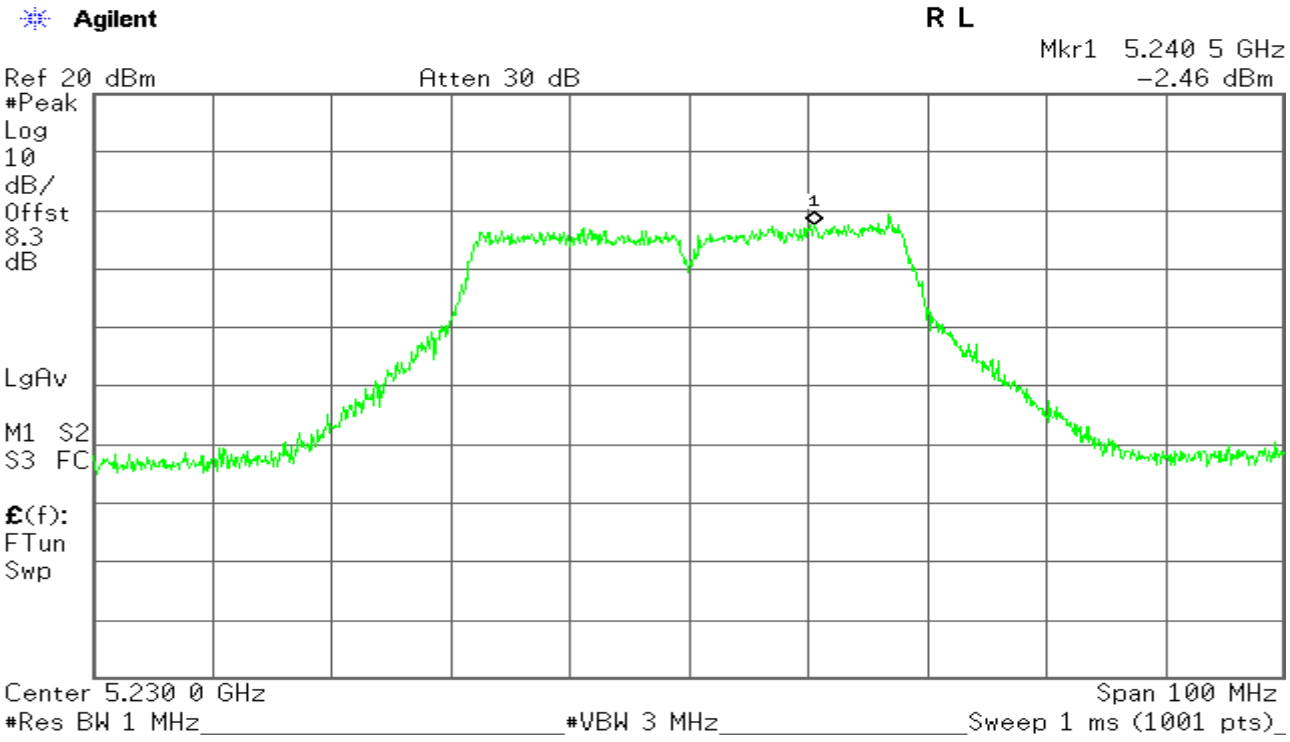
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0:

5150~5250MHz

CH Low



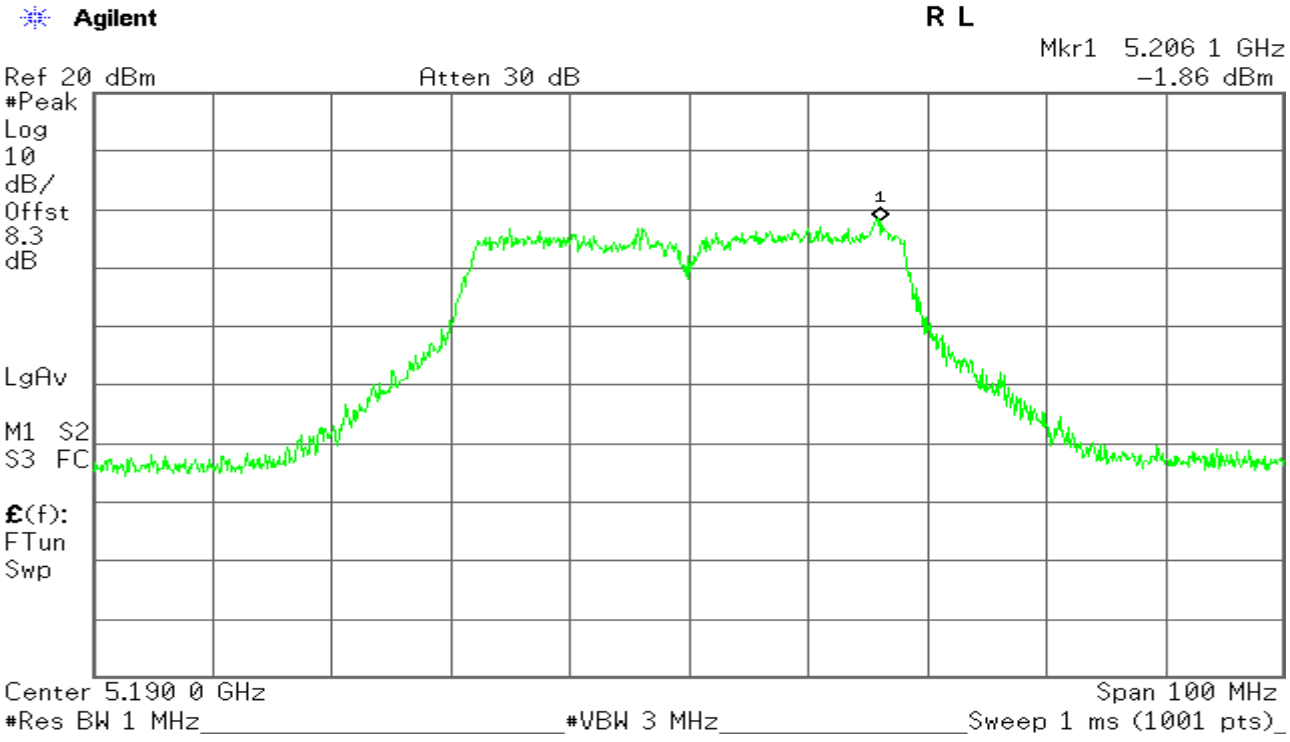
CH High



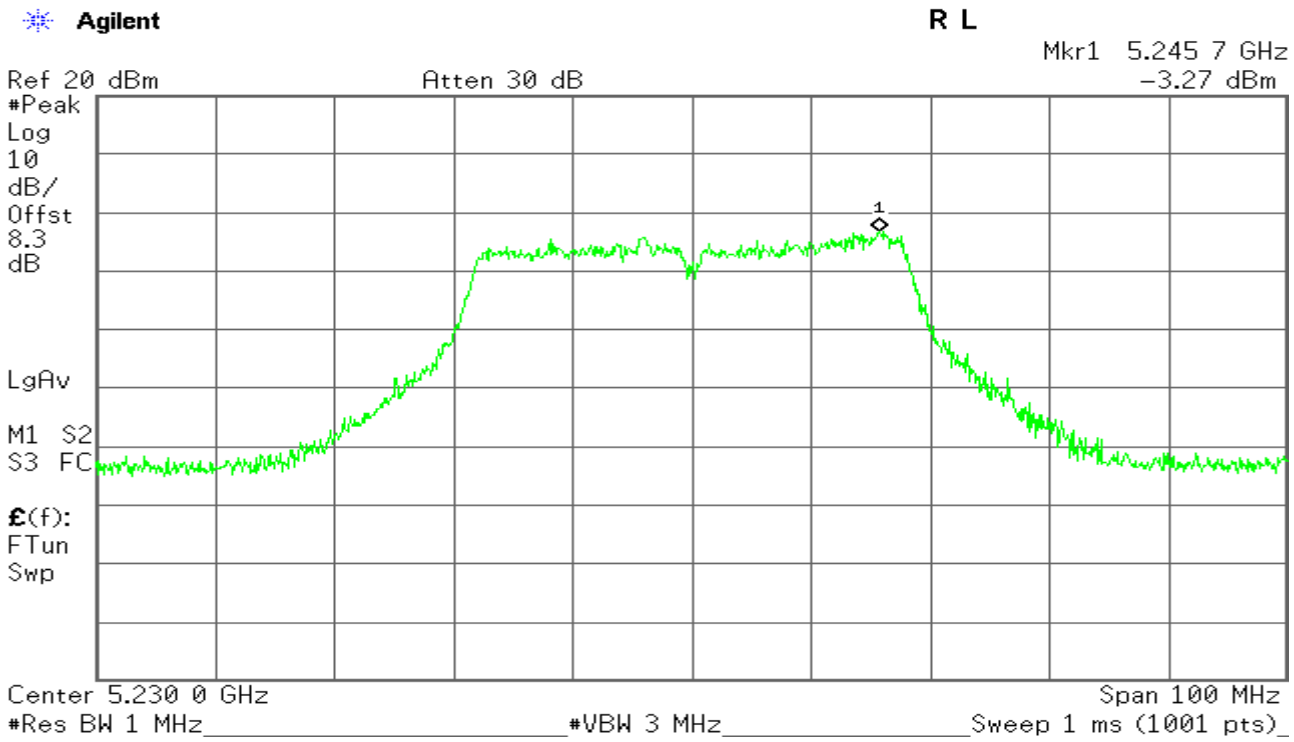
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1:

5150~5250MHz

CH Low



CH High

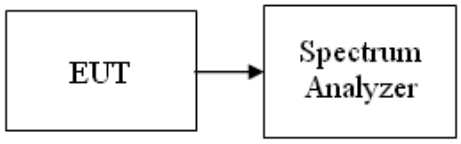


7.5 PEAK EXCURSION

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

5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	6.25	13.00	-6.75	PASS
Mid	5200	6.47	13.00	-6.53	PASS
High	5240	6.67	13.00	-5.33	PASS

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

5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	6.46	13.00	-6.54	PASS
Mid	5200	6.74	13.00	-6.26	PASS
High	5240	6.59	13.00	-6.41	PASS

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

5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5180	7.00	13.00	-6.00	PASS
Mid	5200	6.99	13.00	-6.01	PASS
High	5240	6.73	13.00	-6.27	PASS

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

5150~5250MHz

Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	6.28	13.00	-6.72	PASS
High	5230	6.43	13.00	-6.57	PASS

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

5150~5250MHz

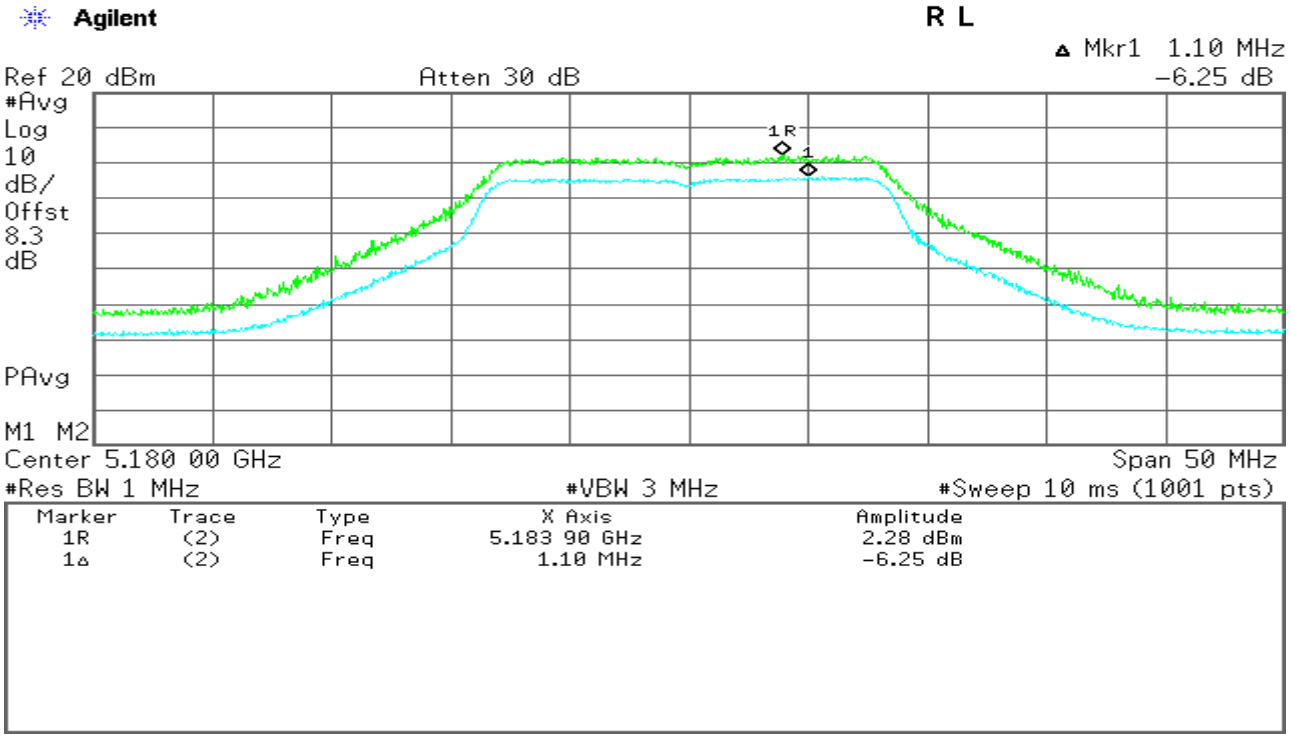
Channel	Frequency (MHz)	Peak Excursion (dB)	Limit (dB)	Margin (dB)	Result
Low	5190	7.78	13.00	-5.28	PASS
High	5230	6.48	13.00	-6.52	PASS

Test Plot

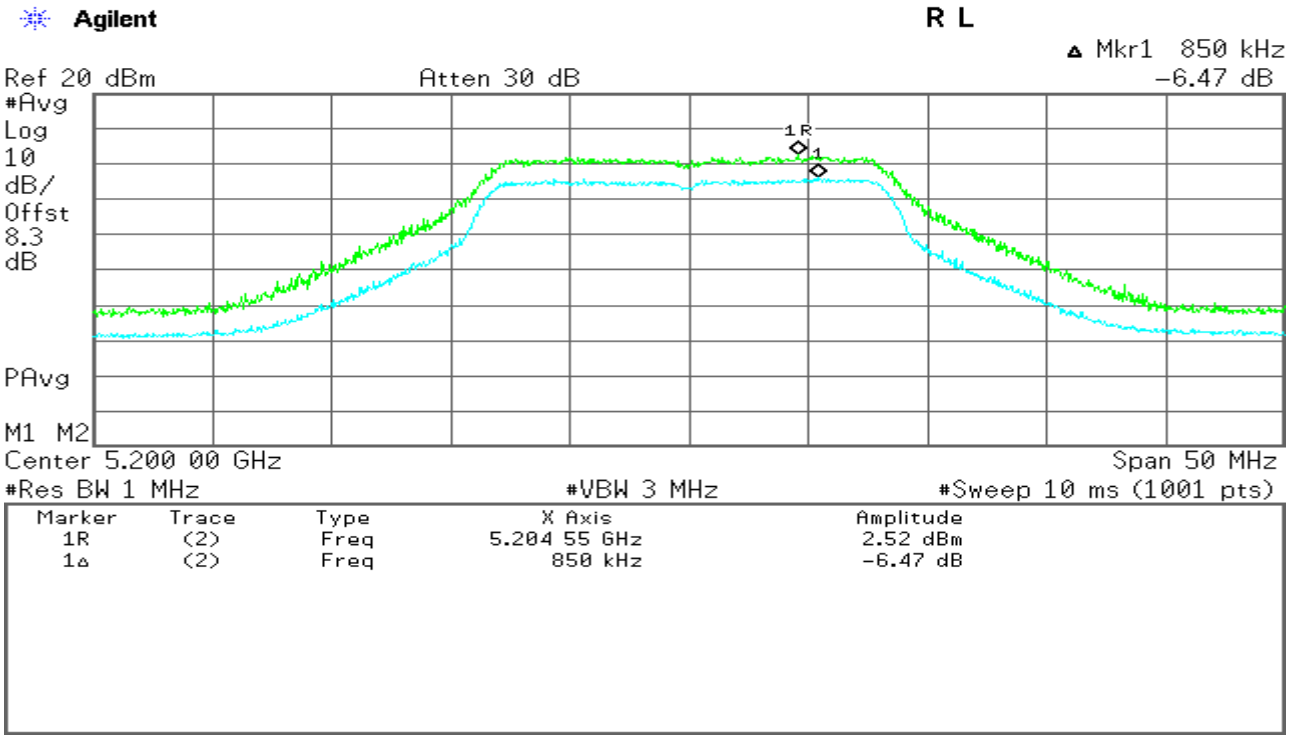
Test mode: IEEE 802.11a mode:

5150~5250MHz

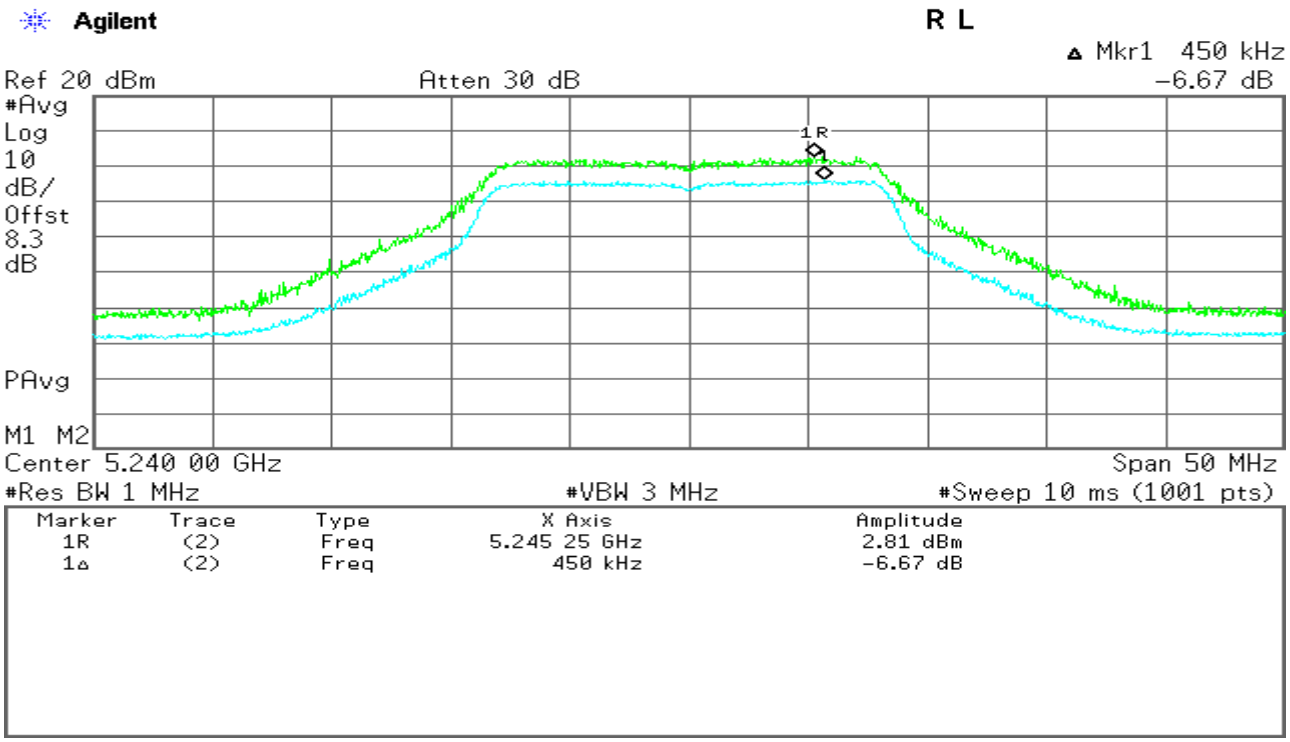
CH Low



CH Mid



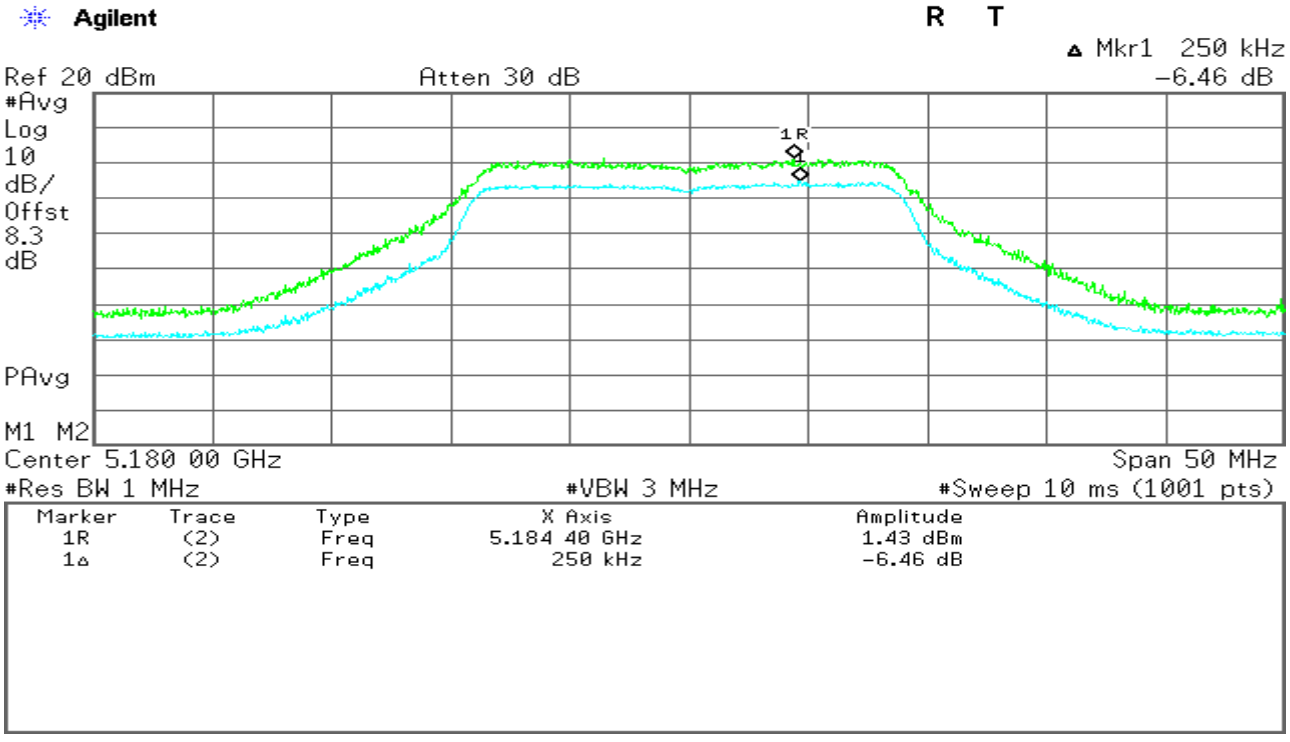
CH High



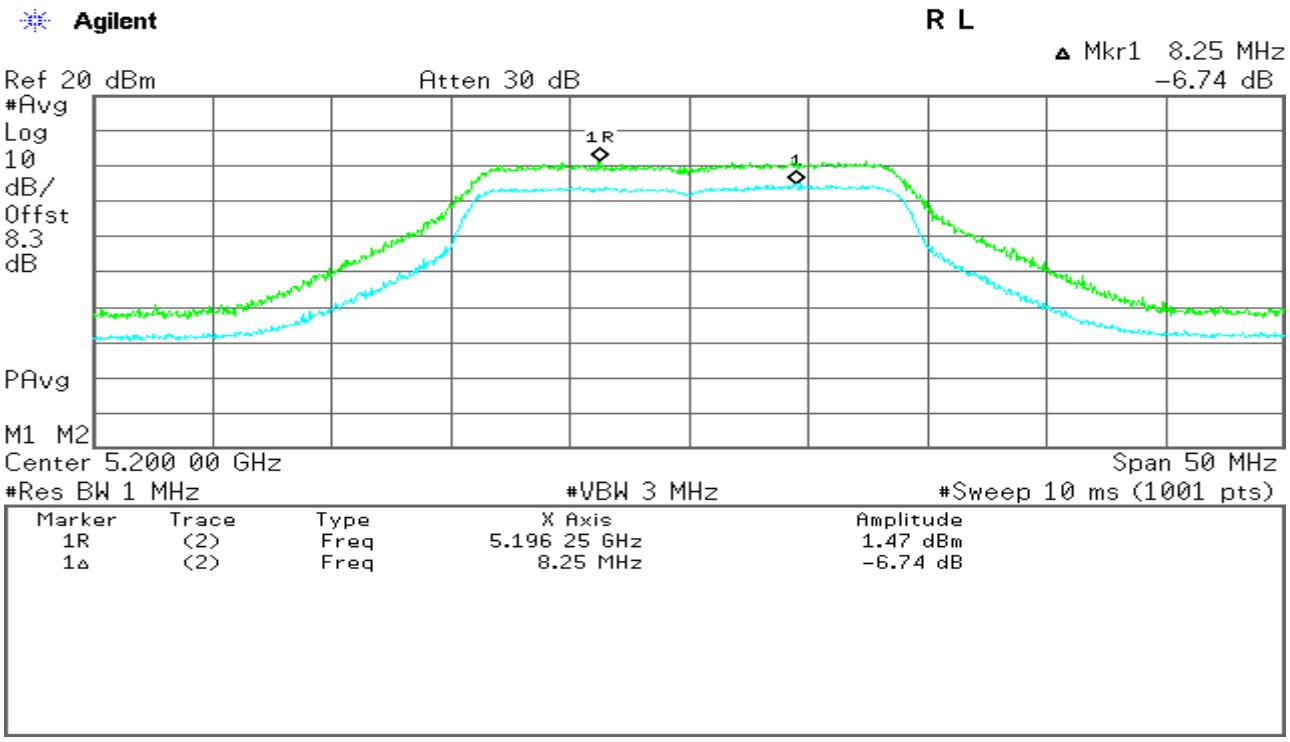
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0:

5150~5250MHz

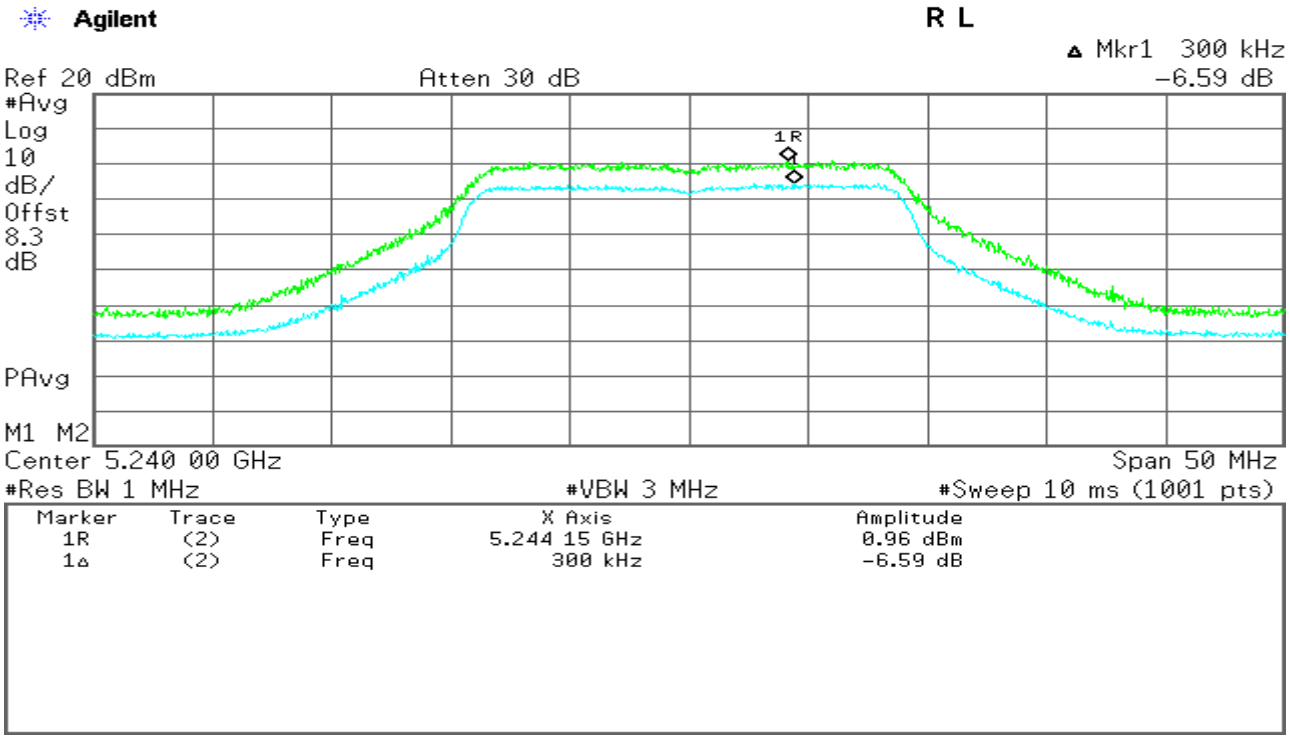
CH Low



CH Mid



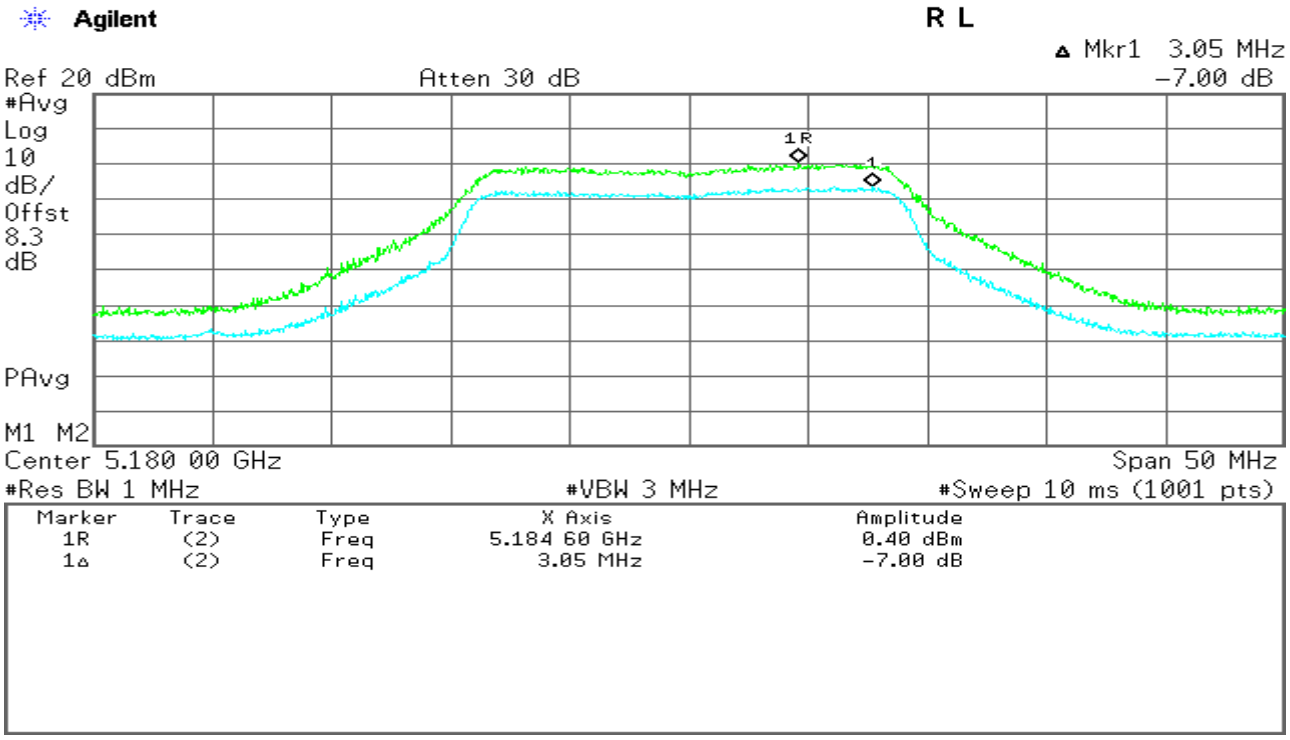
CH High



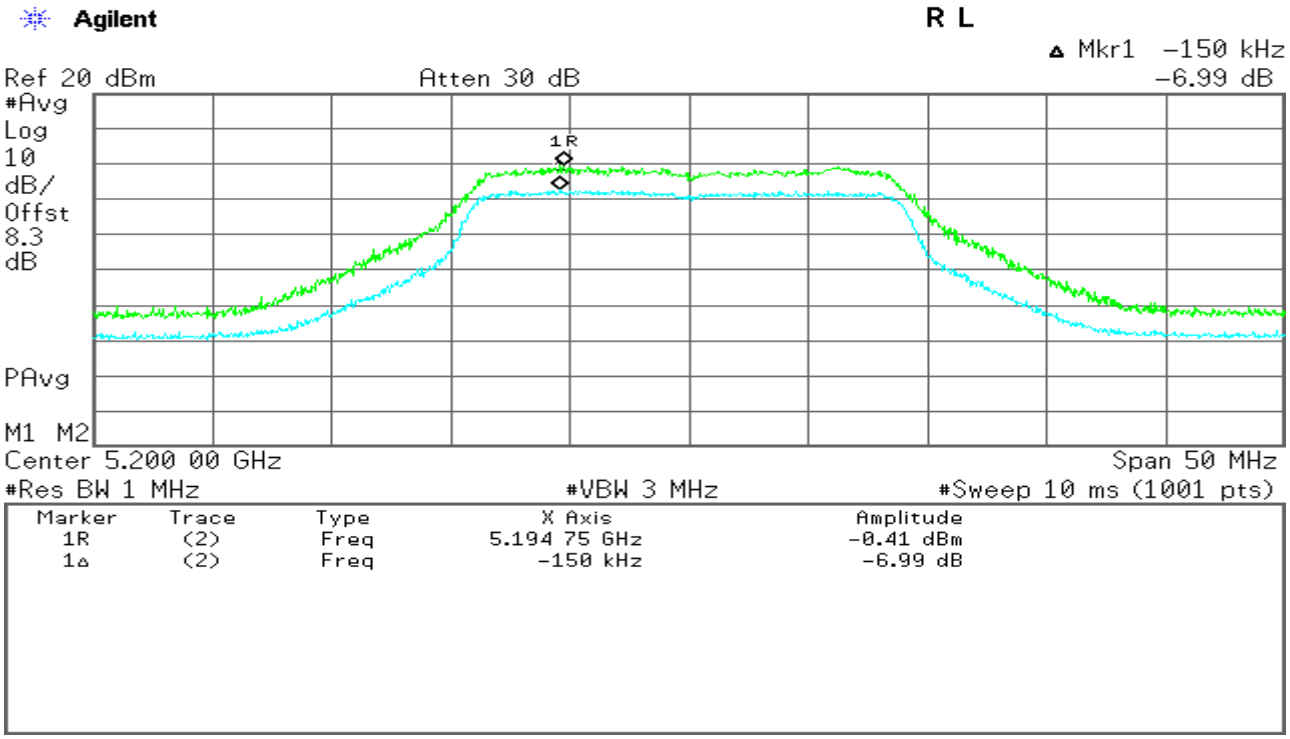
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1:

5150~5250MHz

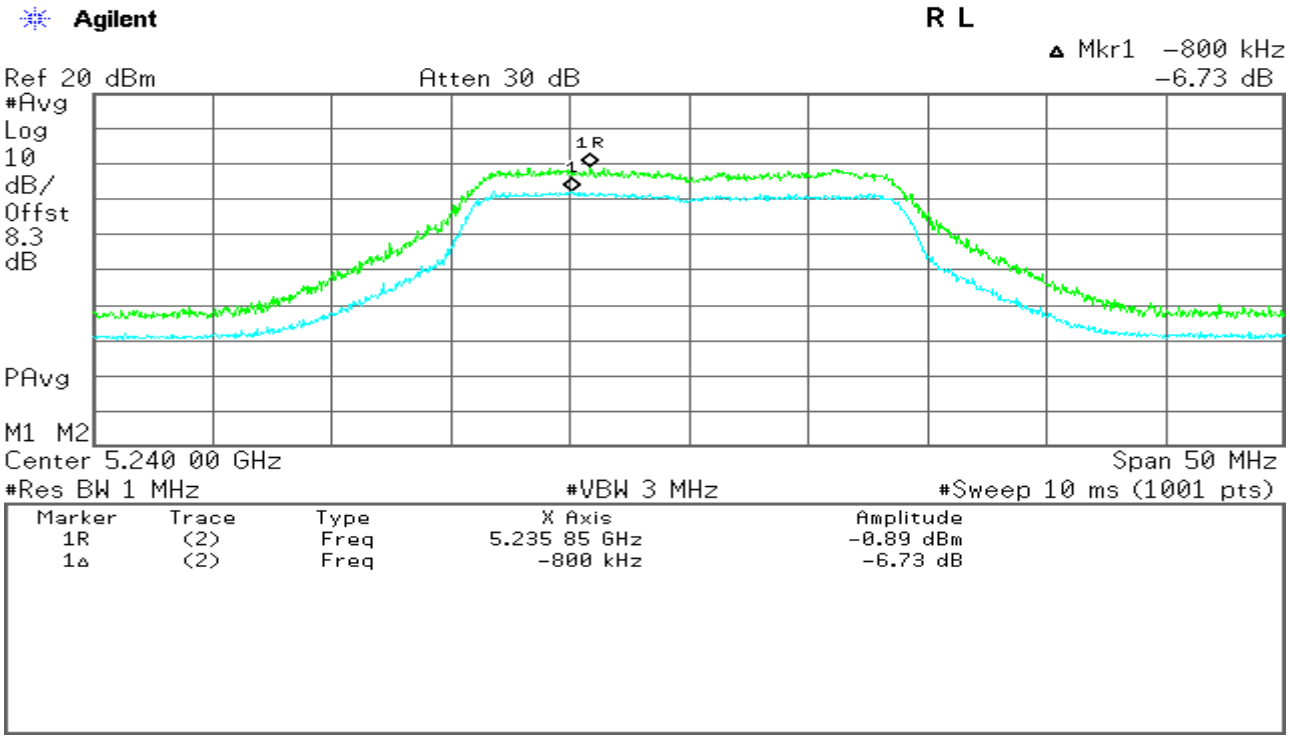
CH Low



CH Mid



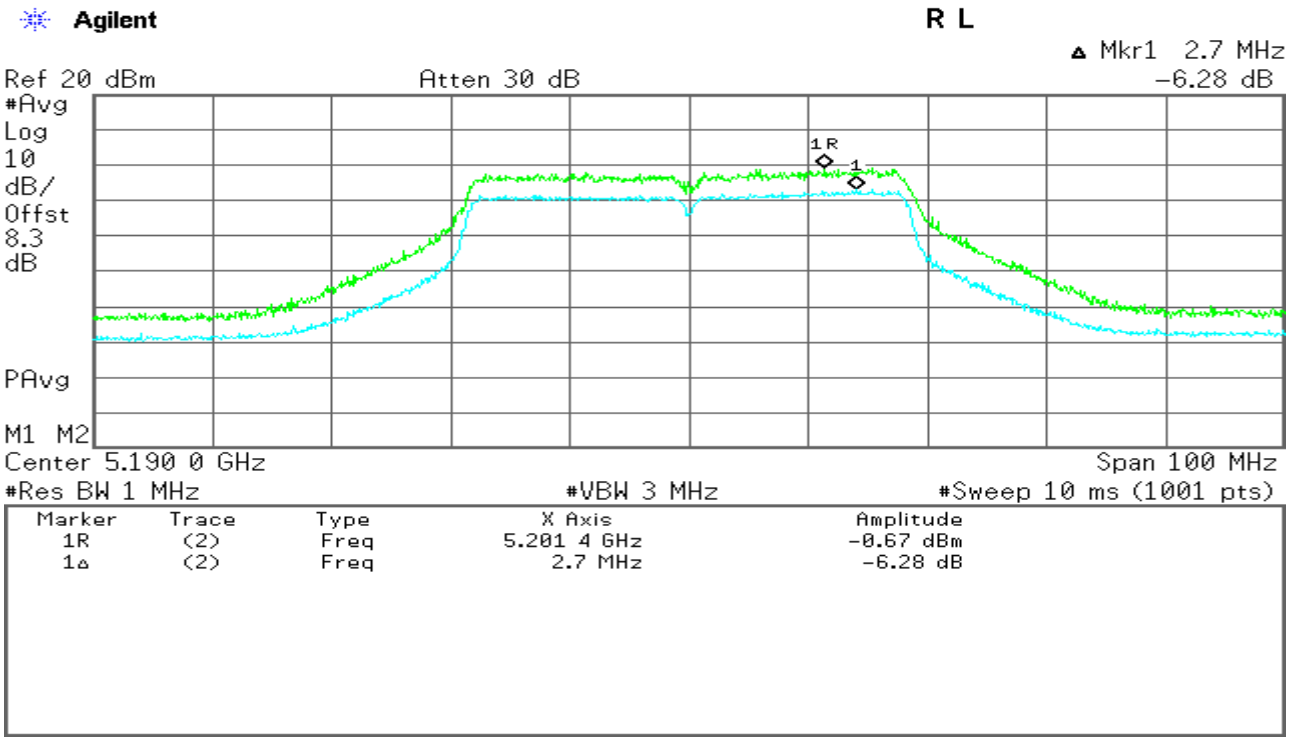
CH High



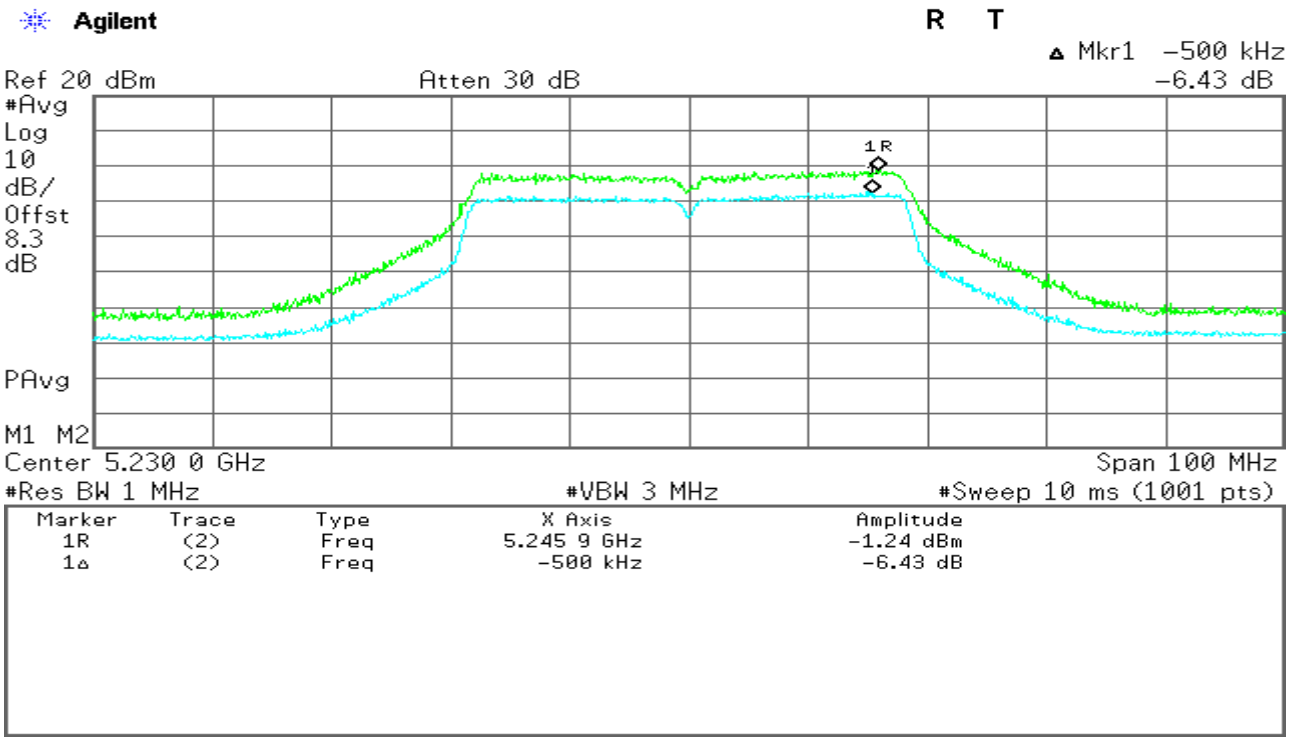
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0:

5150~5250MHz

CH Low



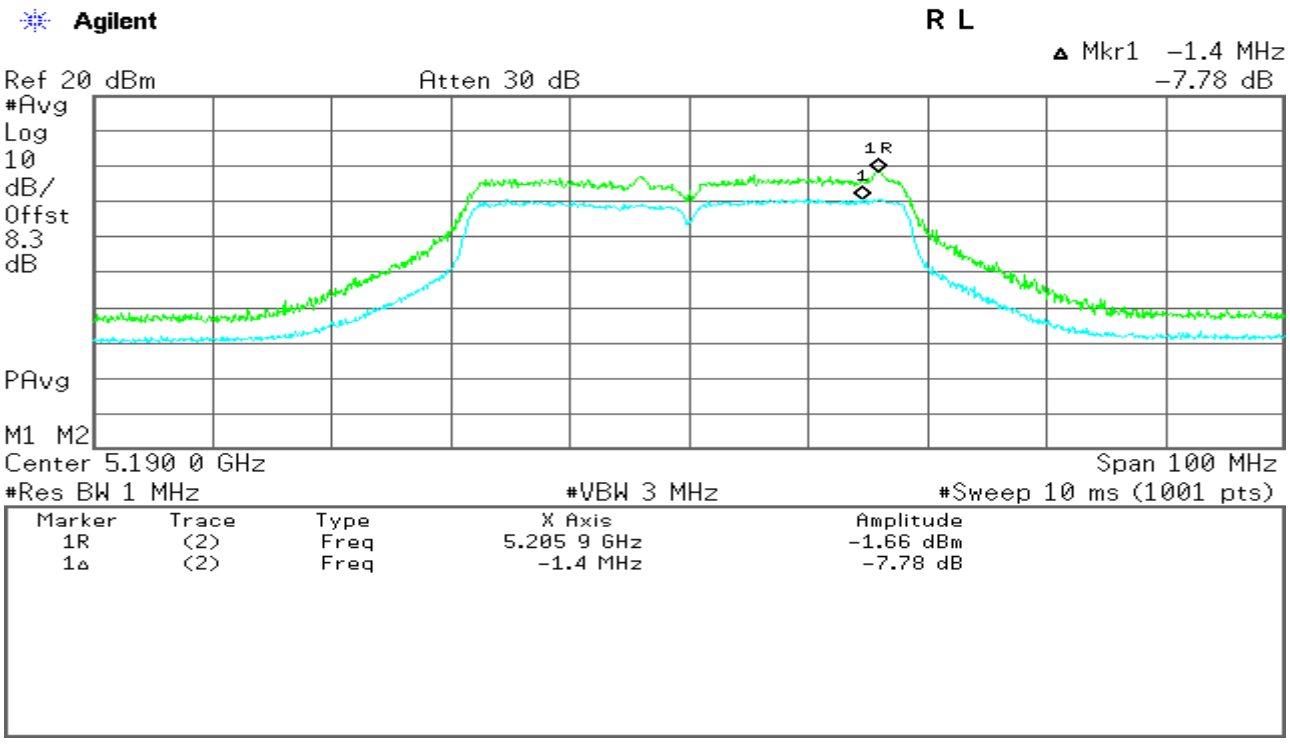
CH High



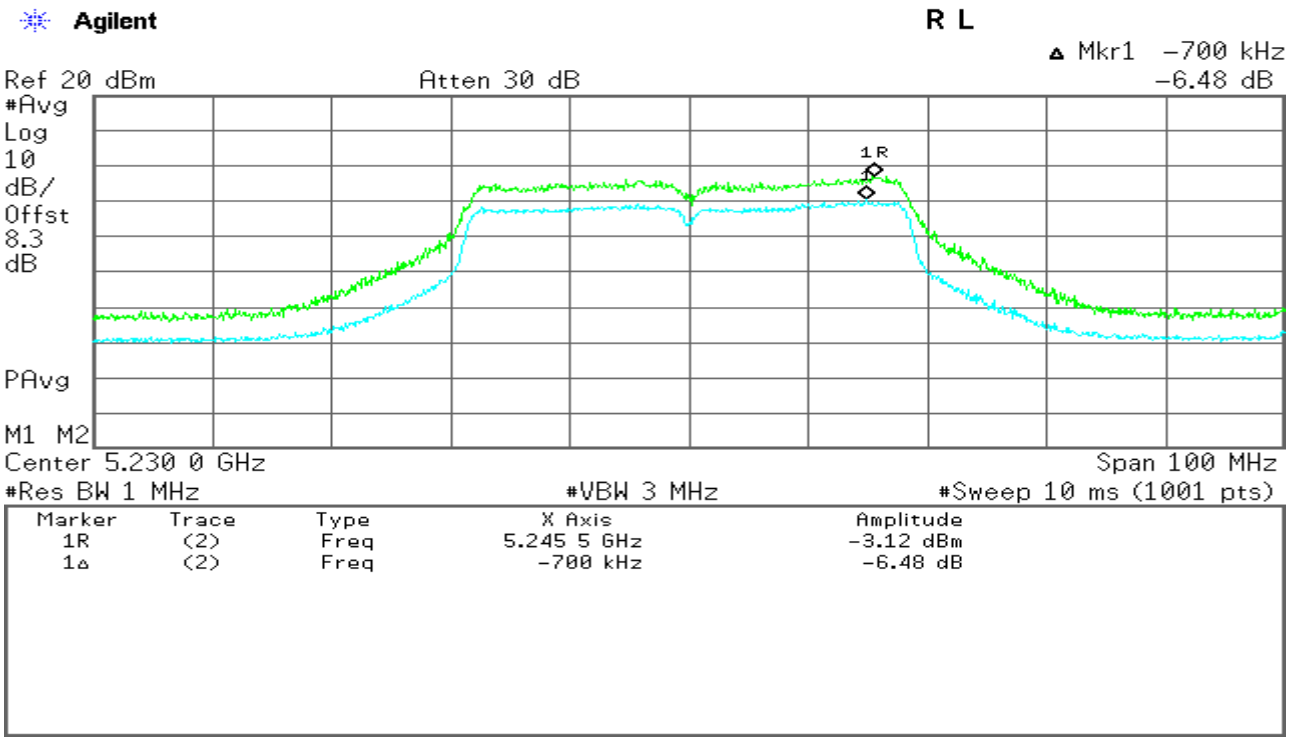
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1:

5150~5250MHz

CH Low



CH High



7.6 RADIATED UNDESIRABLE EMISSION

LIMIT

Radiated emissions from 9 kHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2009. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

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:

FREQUENCIES(MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE(meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

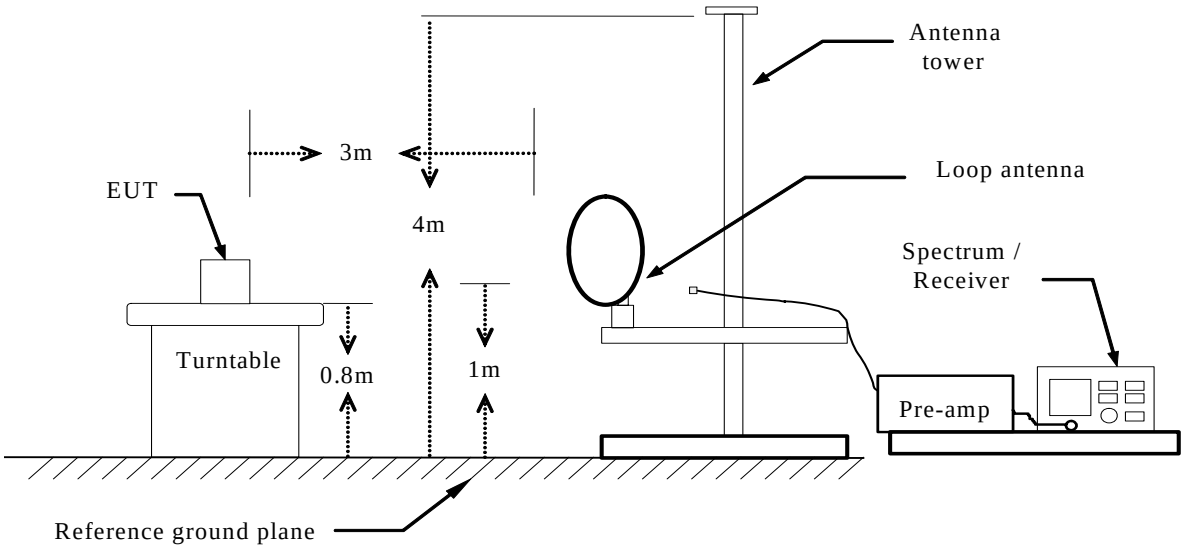
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

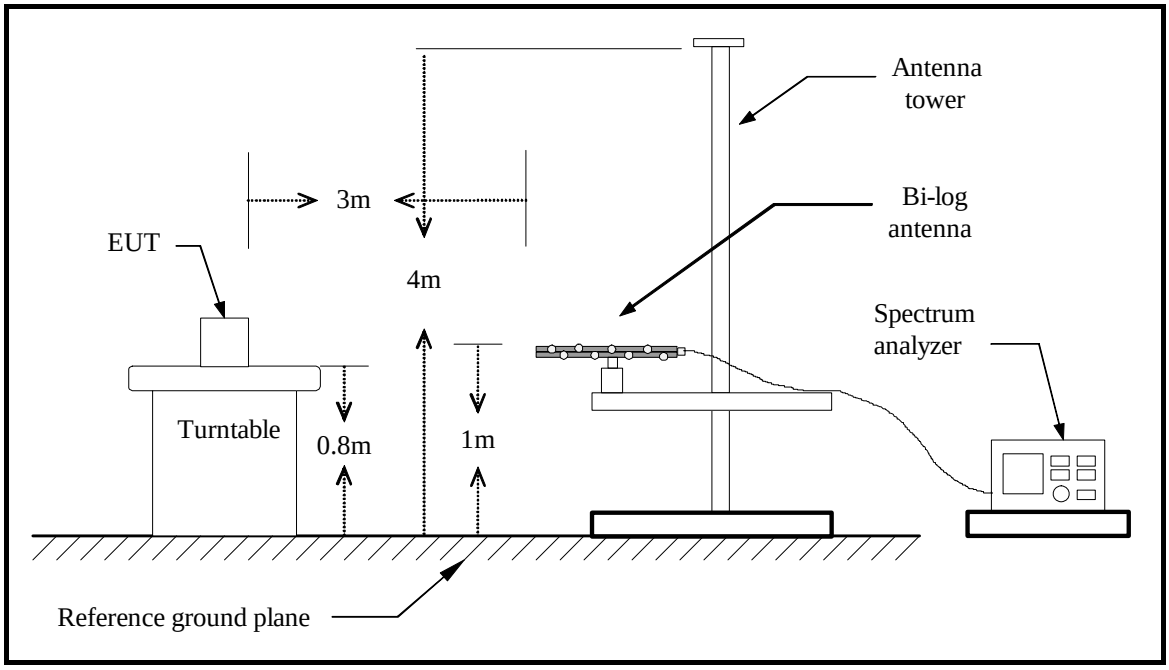
Frequency (MHz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

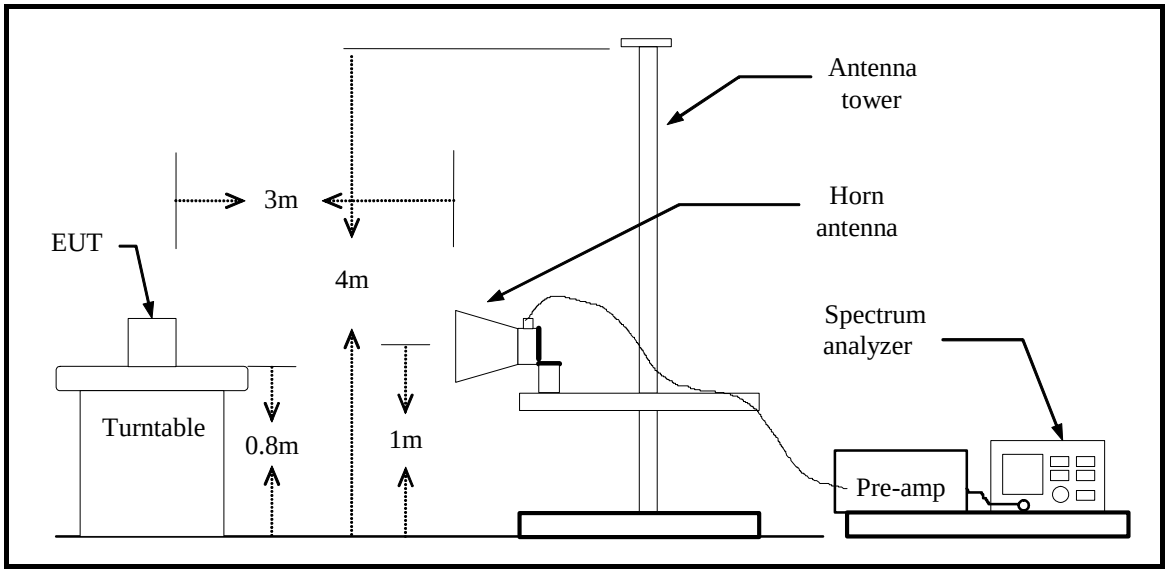
Below 30MHz



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:	August 31, 2013
Temperature:	25°C	Tested by:	Blent.Wang
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	Peak

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).

5150~5250MHz

Above 1 GHz

Operation Mode:	Tx / IEEE 802.11a mode / CH Low	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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 / draft 802.11n Standard-20 MHz Channel mode / CH Low	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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 / draft 802.11n Standard-20 MHz Channel mode / CH Mid	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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 / draft 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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 / draft 802.11n Wide-40 MHz Channel mode / CH Low	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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 / draft 802.11n Wide-40 MHz Channel mode / CH High	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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)

5150~5250MHz

Above 1 GHz

Operation Mode:	Rx / IEEE 802.11a mode / CH Low	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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 / draft 802.11n Standard-20 MHz Channel mode / CH Low	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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 / draft 802.11n Standard-20 MHz Channel mode / CH Mid	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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 / draft 802.11n Standard-20 MHz Channel mode / CH High	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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 / draft 802.11n Wide-40 MHz Channel mode / CH Low	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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 / draft 802.11n Wide-40 MHz Channel mode / CH High	**Test Date:**	August 31, 2013
Temperature:	25°C	**Tested by:**	Blent.Wang
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).*

7.7 CONDUCTED UNDESIRABLE EMISSION

LIMIT

According to 15.407(b),

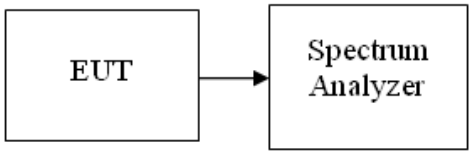
(1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

(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

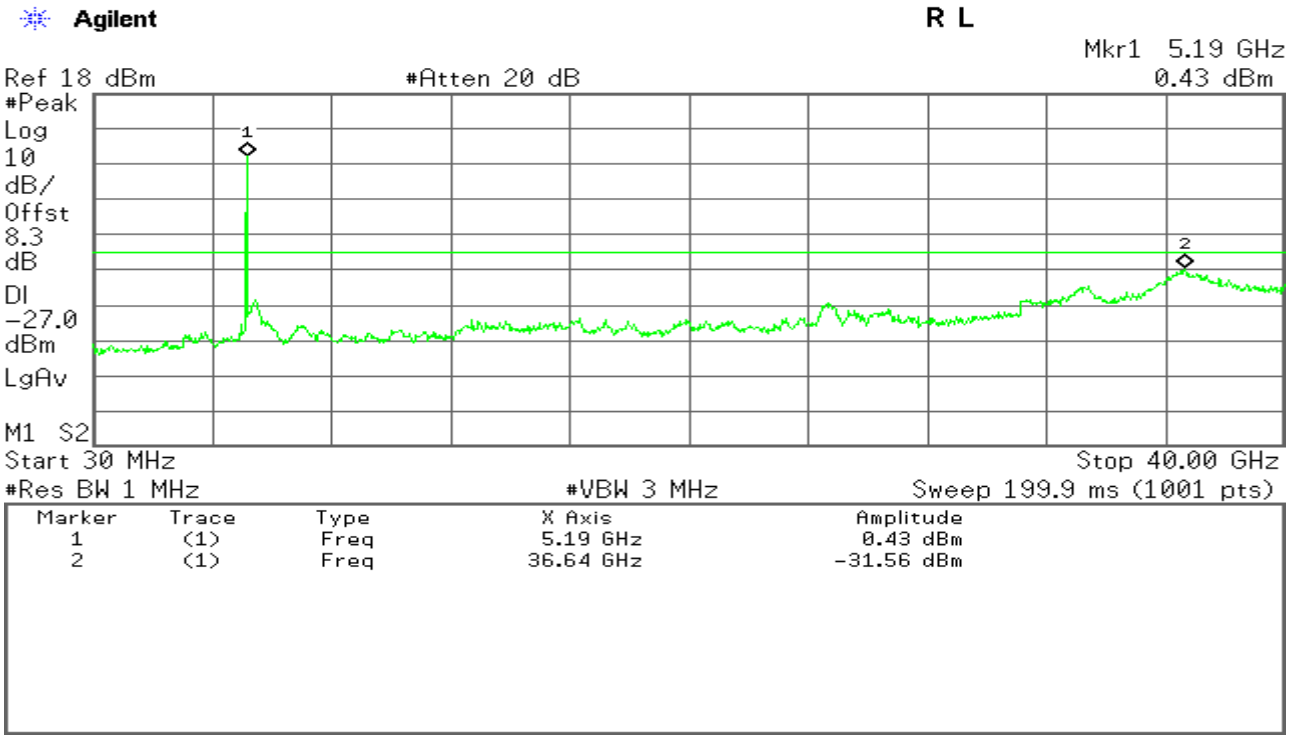
No non-compliance noted

Test Plot

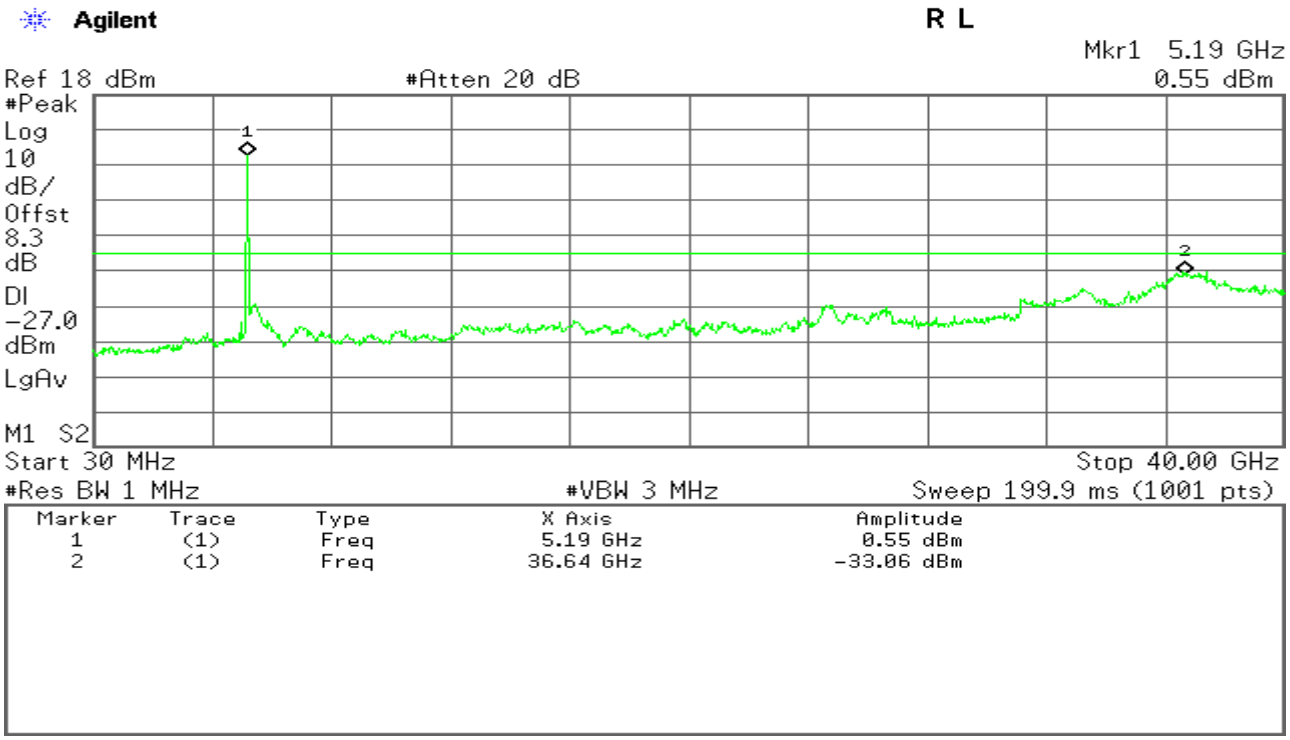
Test mode: IEEE 802.11a mode:

5150~5250MHz

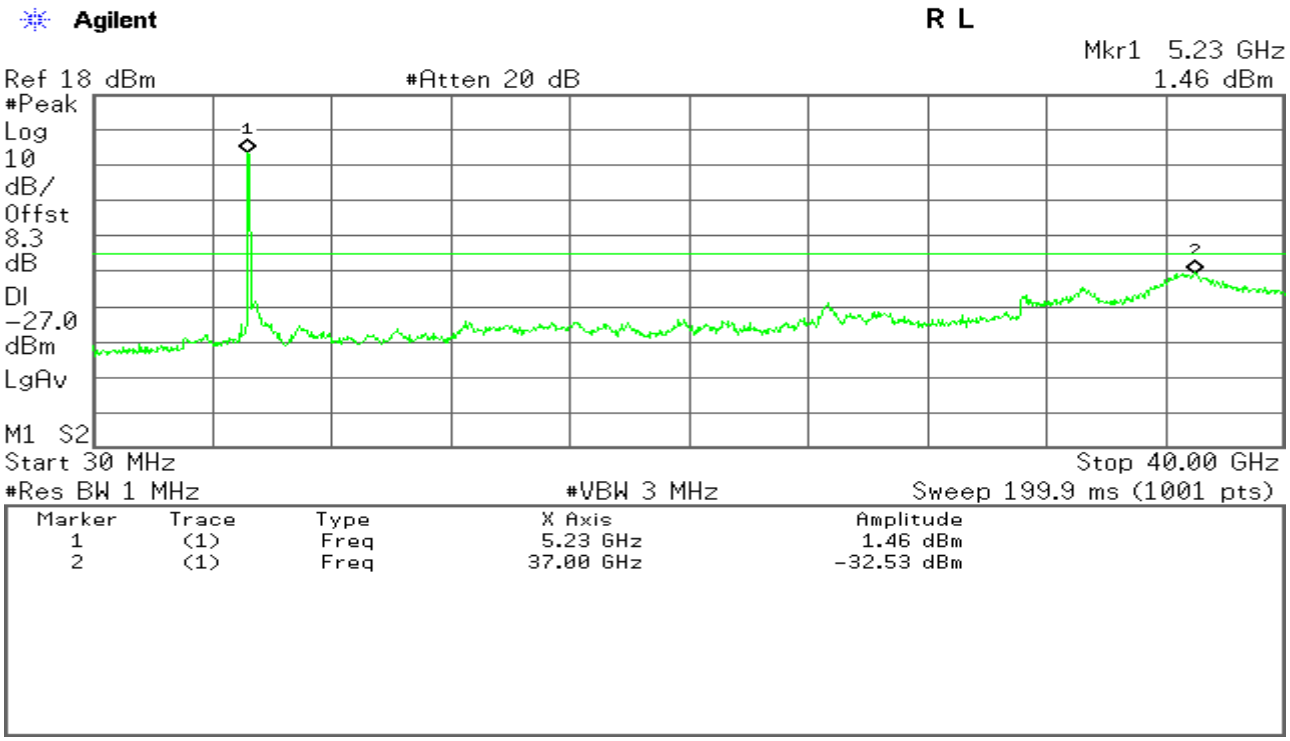
CH Low



CH Mid



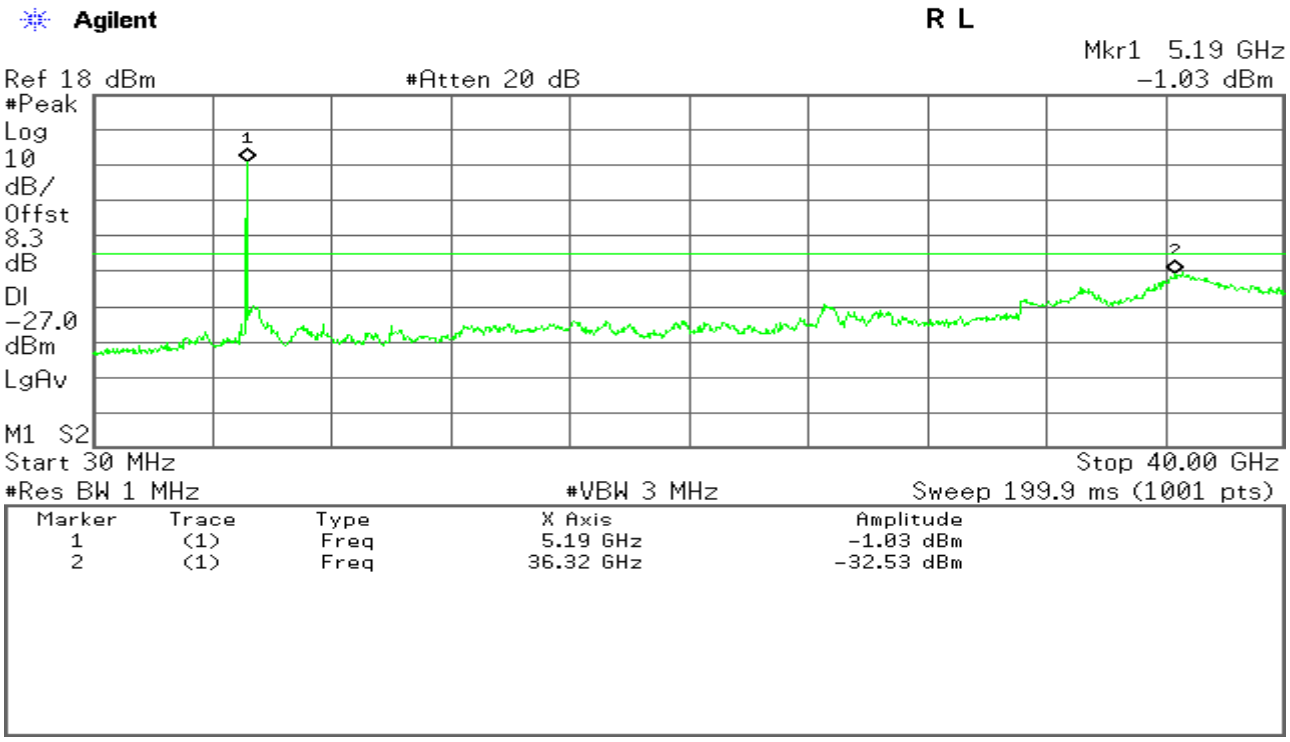
CH High



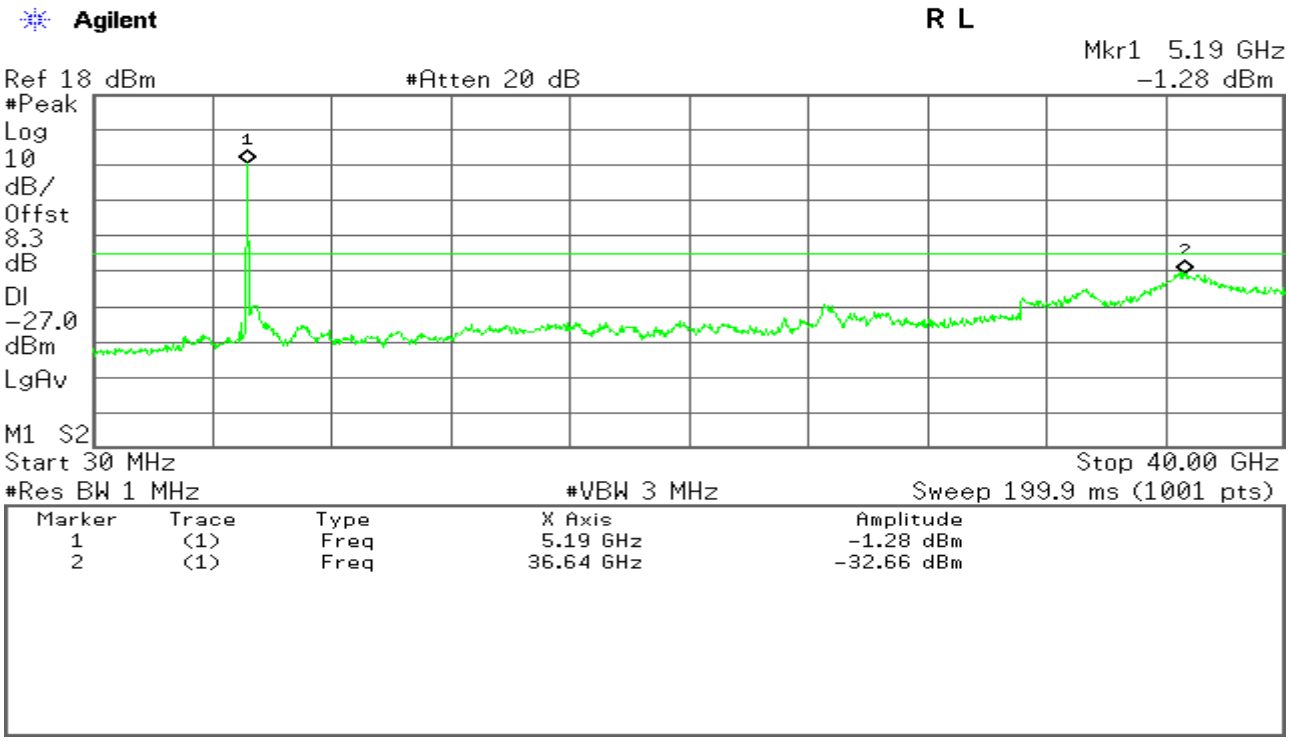
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 0:

5150~5250MHz

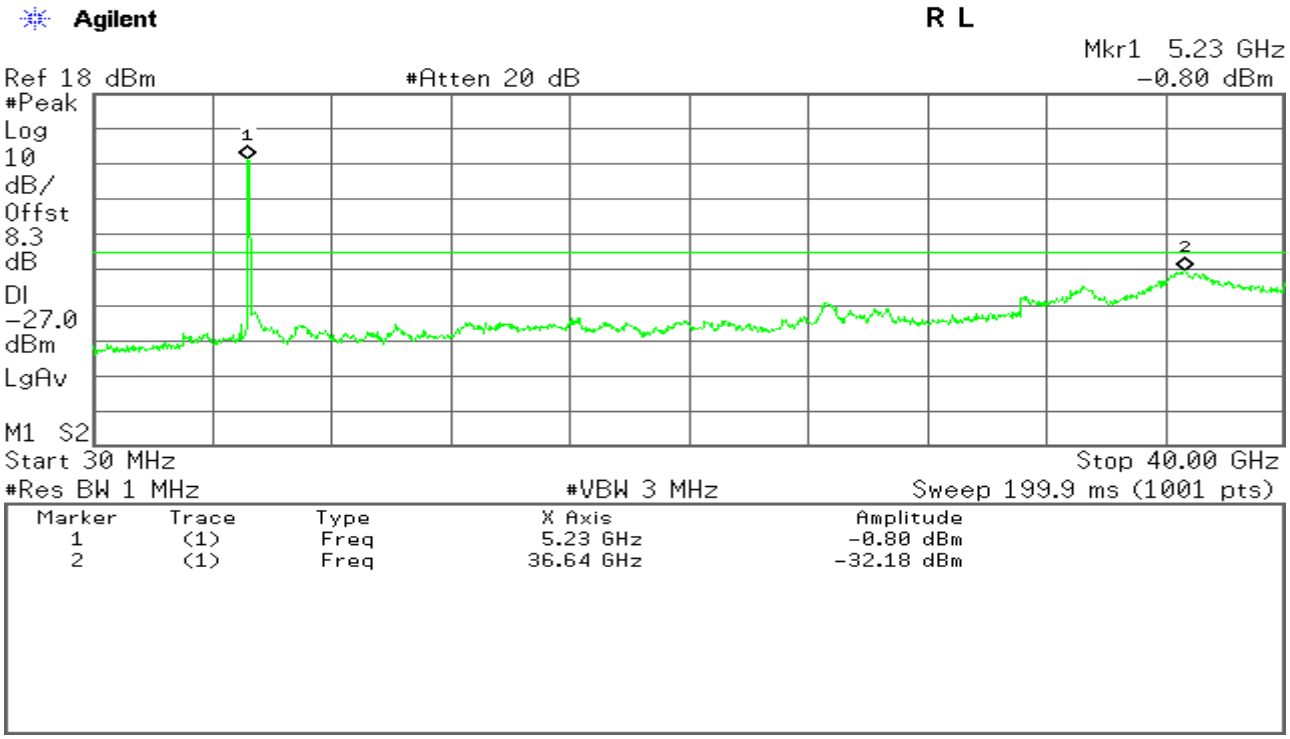
CH Low



CH Mid



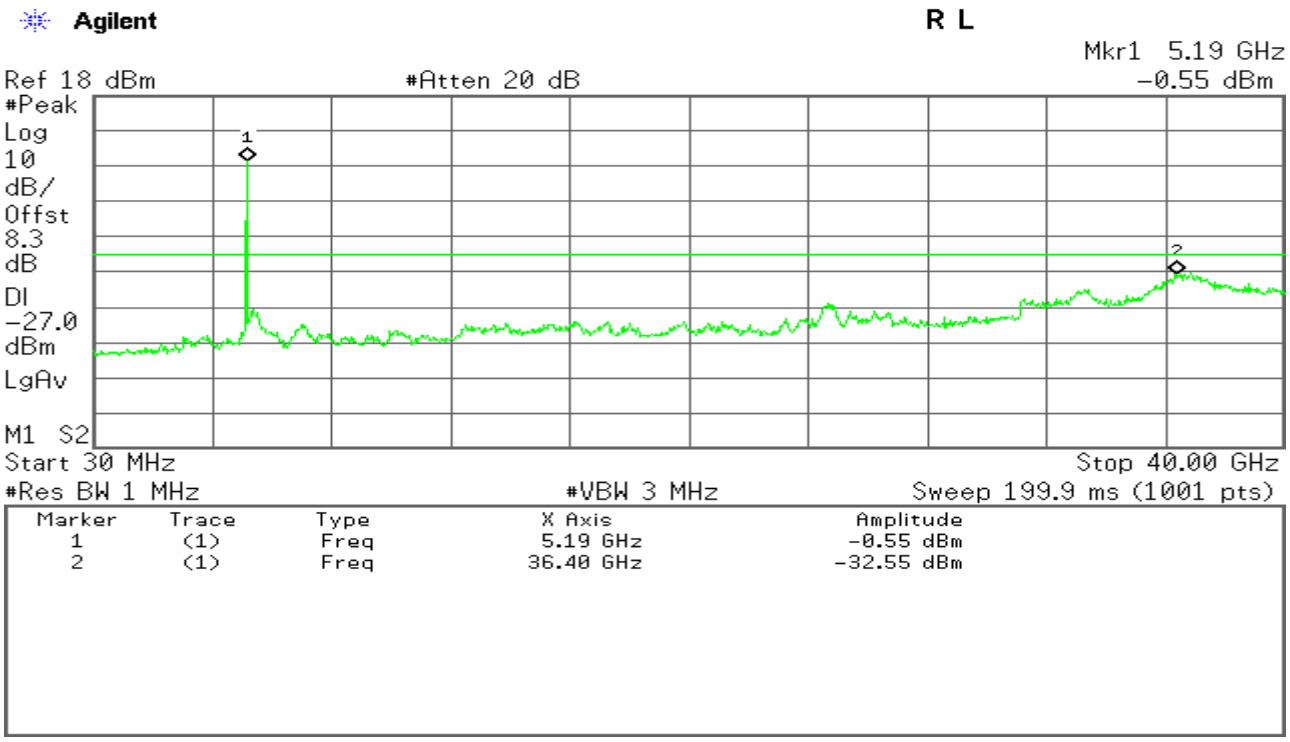
CH High



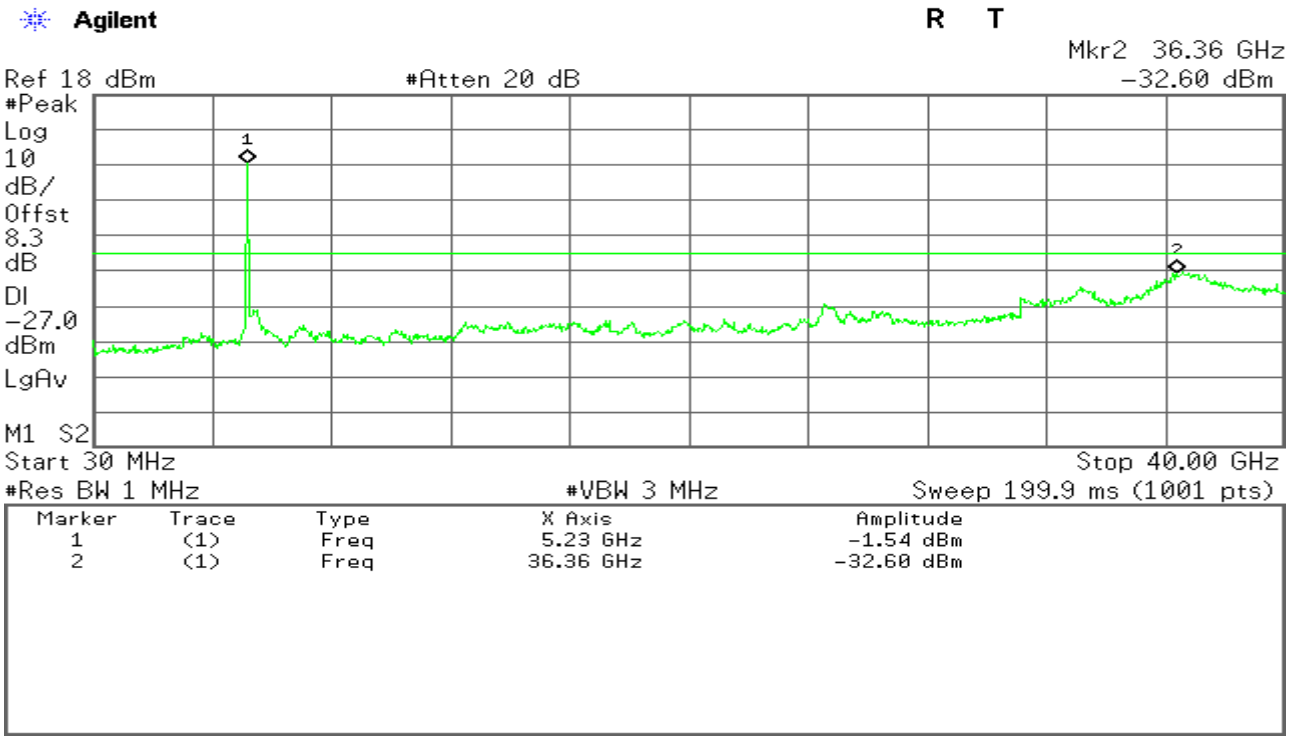
Test mode: draft 802.11n Standard-20 MHz Channel mode / Chain 1:

5150~5250MHz

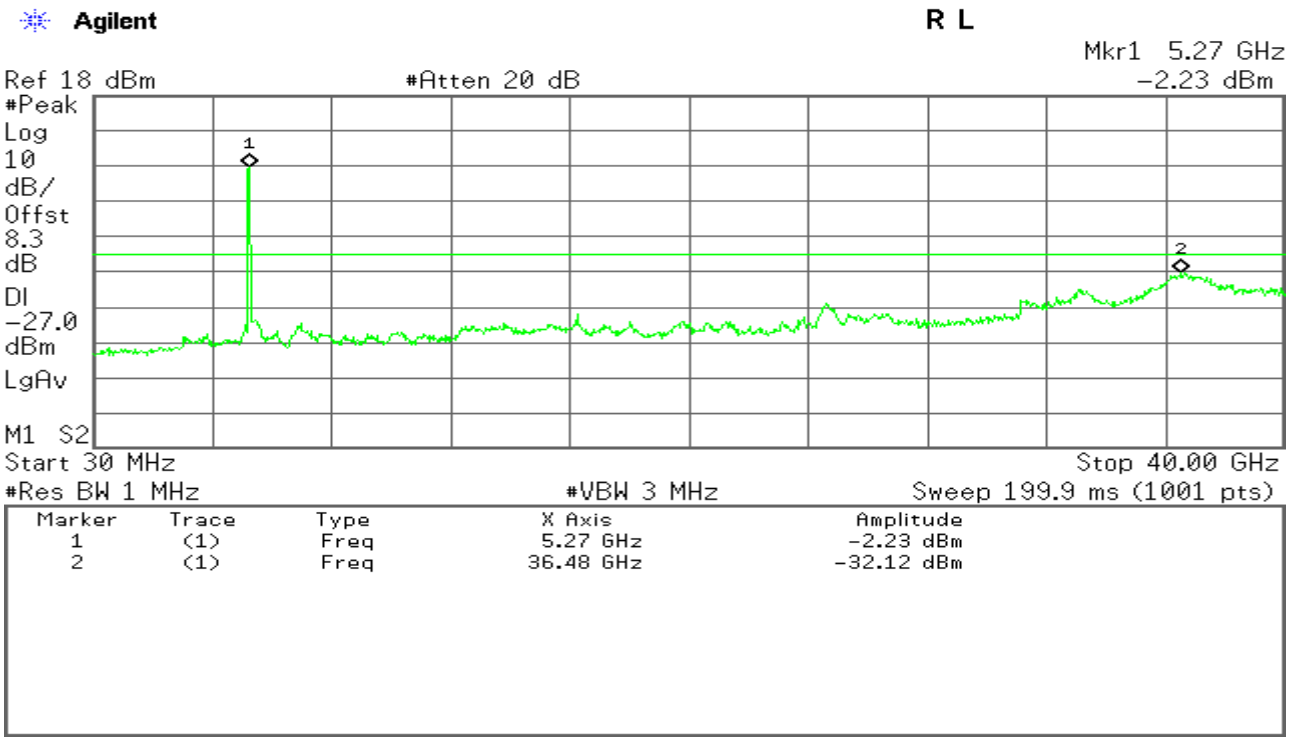
CH Low



CH Mid



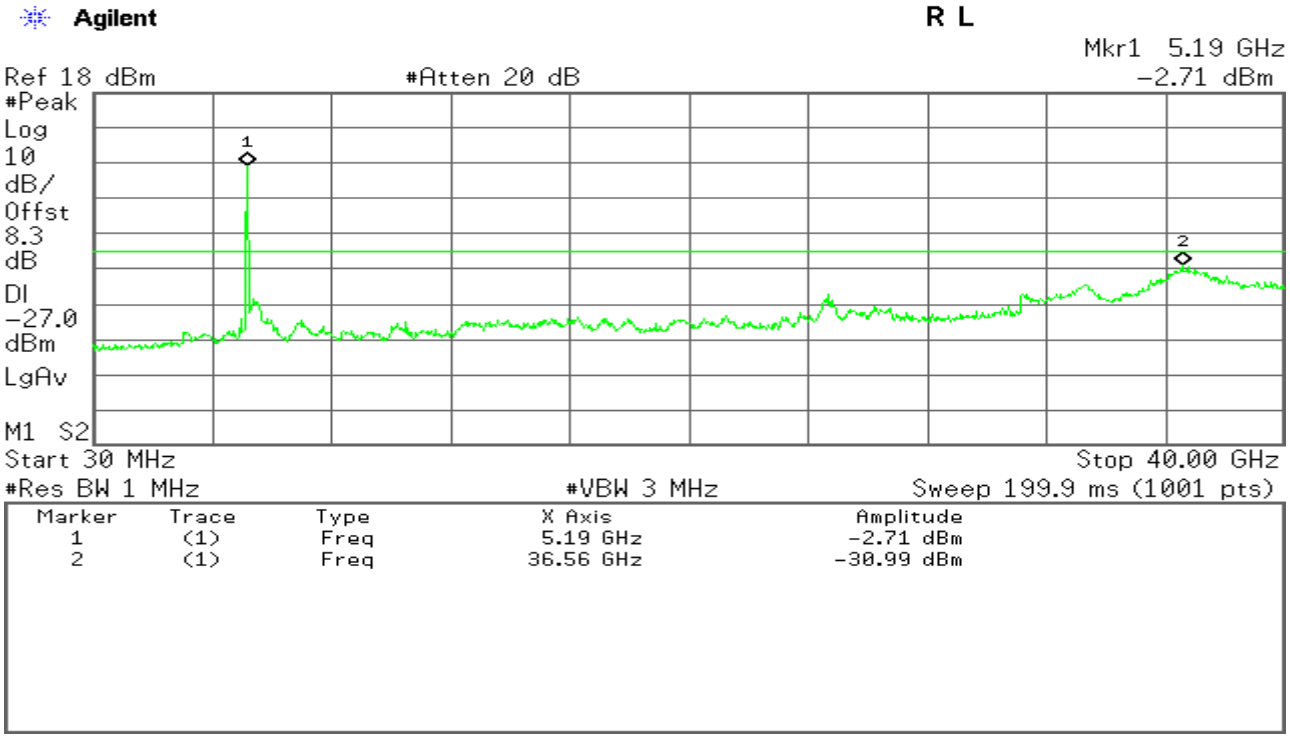
CH High



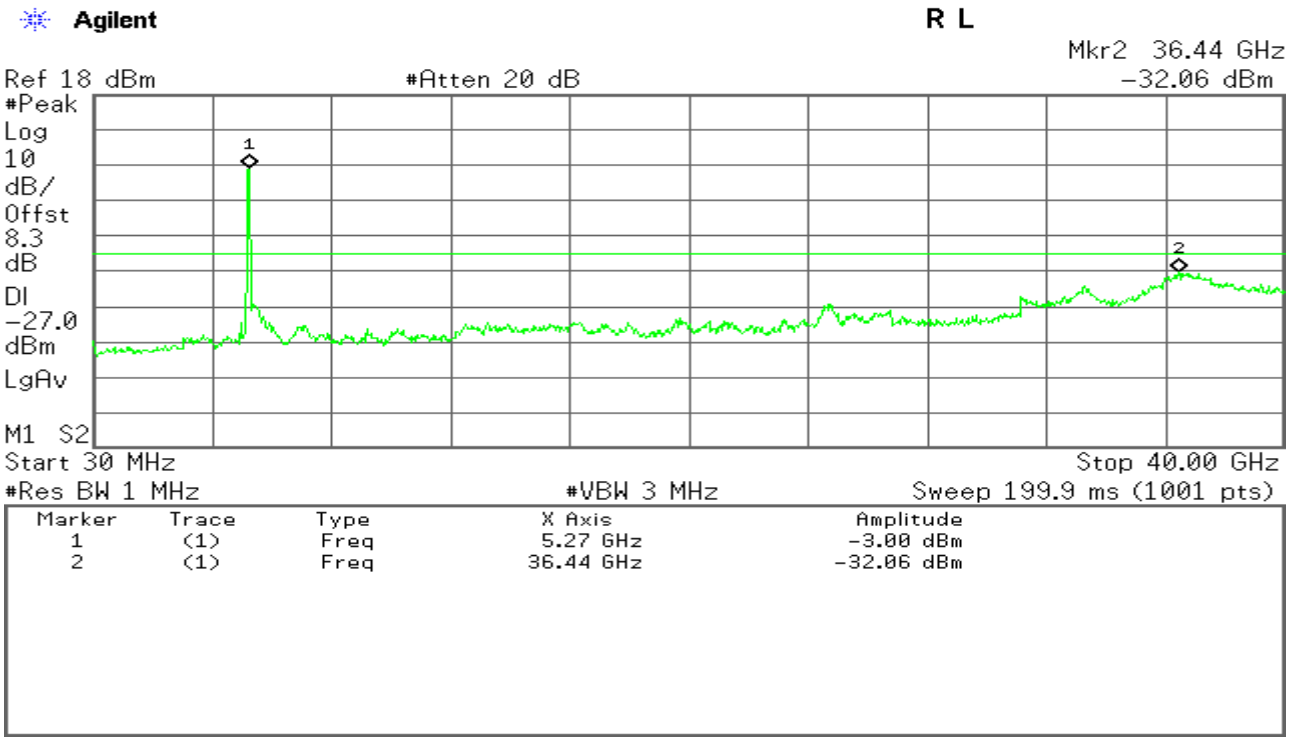
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 0:

5150~5250MHz

CH Low



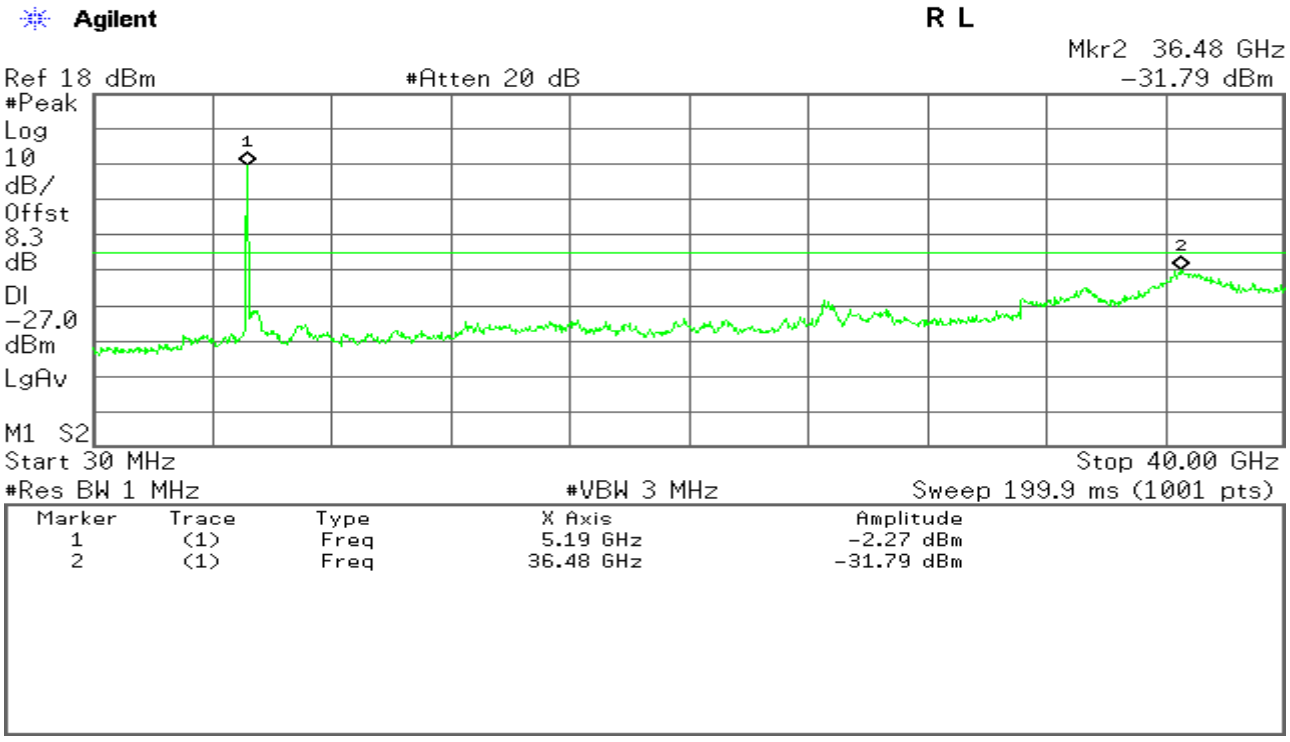
CH High



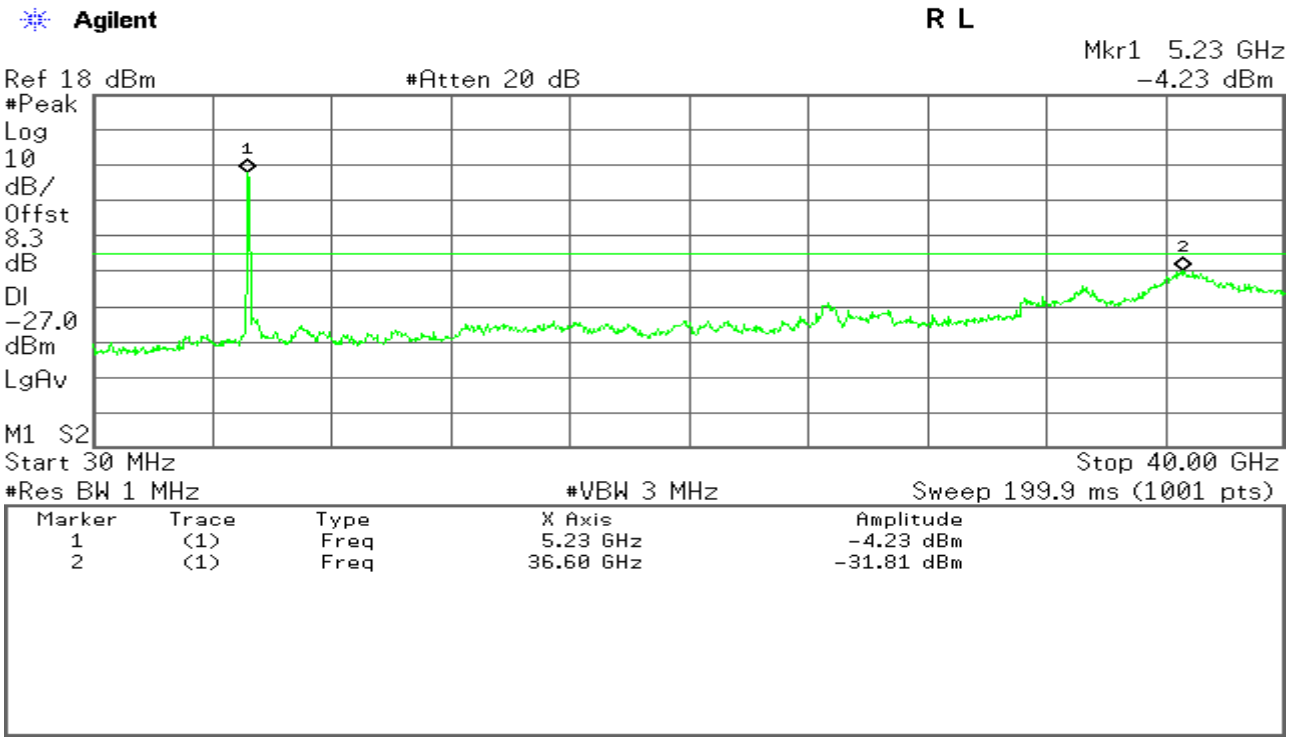
Test mode: draft 802.11n Wide-40 MHz Channel mode / Chain 1:

5150~5250MHz

CH Low



CH High



7.8 POWERLINE CONDUCTED EMISSIONS

LIMIT

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

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

** Decreases with the logarithm of the frequency.*

TEST CONFIGURATION

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

TEST PROCEDURE

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

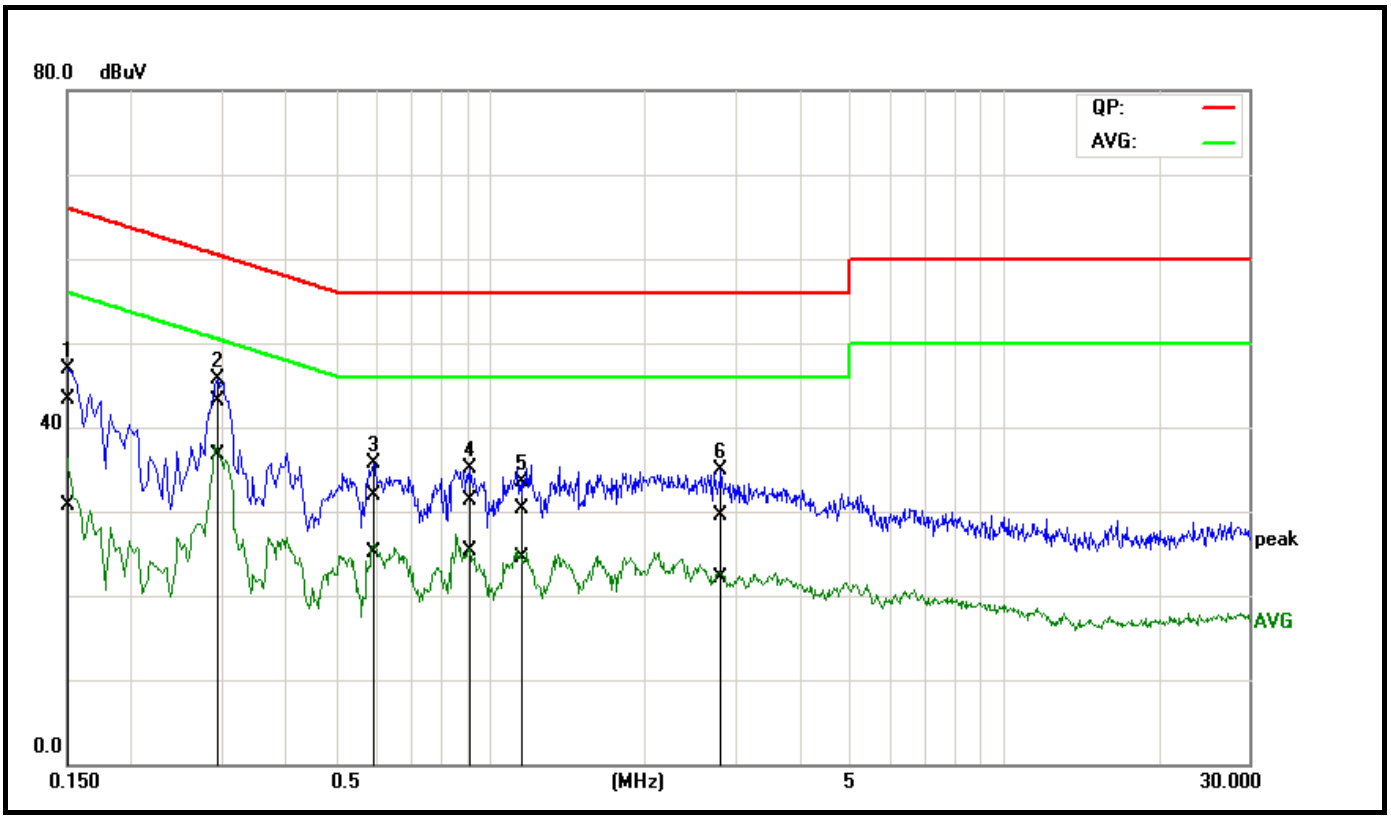
TEST RESULTS

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

Test Data

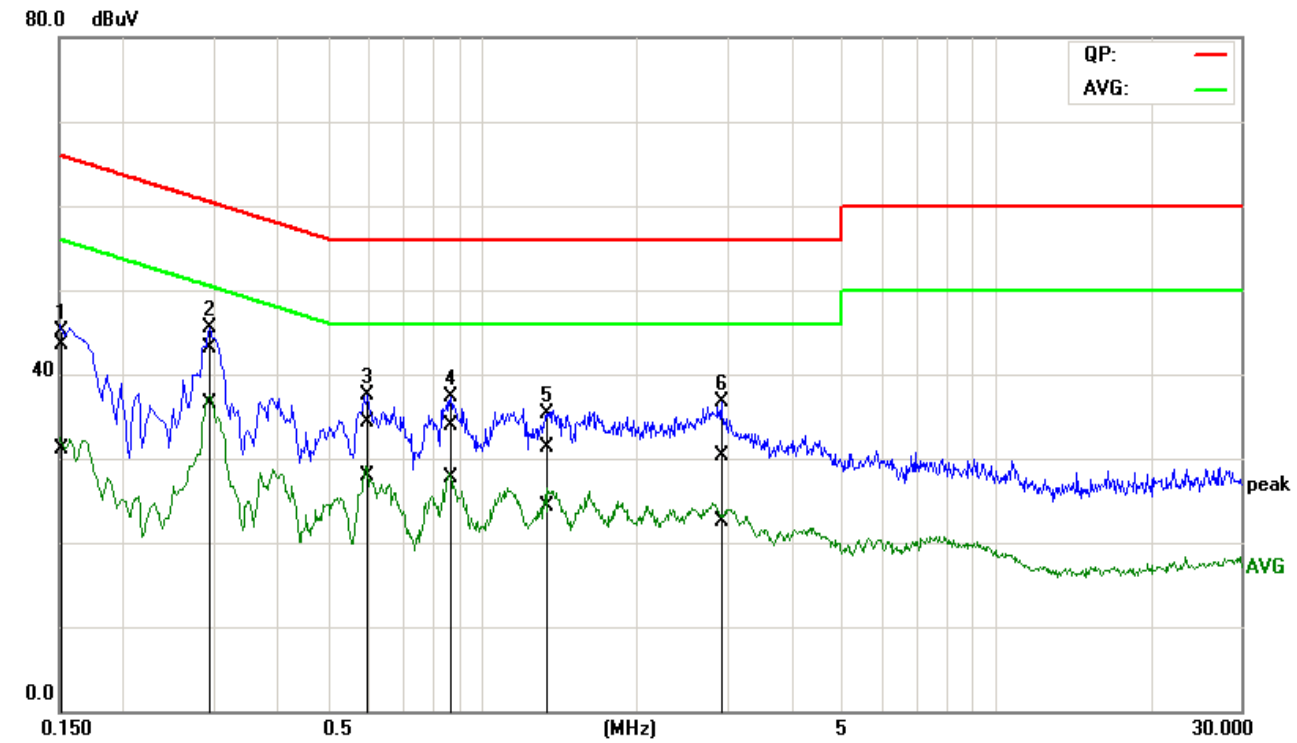
Operation Mode:	Normal Link	Test Date:	August 31, 2013
Temperature:	25°C	Tested by:	Blent.Wang
Humidity:	55% RH	Test Power:	110 Vac 60 Hz

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	0.1512	23.48	10.90	19.80	43.28	30.70	65.93	55.93	-22.65	-25.23	Pass
2	0.2949	23.48	16.99	19.67	43.15	36.66	60.39	50.39	-17.24	-13.73	Pass
3	0.5875	11.98	5.28	19.83	31.81	25.11	56.00	46.00	-24.19	-20.89	Pass
4	0.9108	11.46	5.55	19.84	31.30	25.39	56.00	46.00	-24.70	-20.61	Pass
5	1.1461	10.50	4.59	19.85	30.35	24.44	56.00	46.00	-25.65	-21.56	Pass
6*	2.8046	9.54	2.08	20.03	29.57	22.11	56.00	46.00	-26.43	-23.89	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	0.1536	23.69	11.32	19.72	43.41	31.04	65.80	55.80	-22.39	-24.76	Pass
2	0.2952	23.32	16.76	19.71	43.03	36.47	60.38	50.38	-17.35	-13.91	Pass
3	0.5903	14.50	8.15	19.84	34.34	27.99	56.00	46.00	-21.66	-18.01	Pass
4	0.8643	14.00	7.97	19.83	33.83	27.80	56.00	46.00	-22.17	-18.20	Pass
5	1.3287	11.44	4.53	19.87	31.31	24.40	56.00	46.00	-24.69	-21.60	Pass
6*	2.9308	10.29	2.38	20.07	30.36	22.45	56.00	46.00	-25.64	-23.55	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