# FCC 47 CFR PART 15 SUBPART C

# TEST REPORT

**For**

**Product Name: Notebook Computer**
**Brand Name: ECS,ELITEGROUP**
**Model No.: BR45II1**
**Series Model: BR45IIX(X=0~9,A~Z OR BLANK)**
**BR40IIX(X=0~9,A~Z OR BLANK)**
**Test Report Number:**
**KS110624A01-RPB**

**Issued for**

**ELITEGROUP COMPUTER SYSTEMS CO.,LTD**

**No.239,Sec.2,Ti Ding Blvd., Taipei, Taiwan**

**Issued by**

**Compliance Certification Services Inc.**

**Kun shan Laboratory**

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

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ACCREDITED
TESTING CERT #2541.01

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# 1. TEST RESULT CERTIFICATION

| | |
|---|---|
| **Product Name:** | Notebook Computer |
| **Trade Name:** | ECS,ELITEGROUP |
| **Model Name.:** | BR45II1 |
| **Series Model:** | BR45IIX(X=0~9,A~Z OR BLANK)<br>BR40IIX(X=0~9,A~Z OR BLANK) |
| **Applicant Discrepancy:** | Initial |
| **Device Category:** | MOBILE DEVICES |
| **Date of Test:** | July 1, 2011~ July 8, 2011 |
| **Applicant:** | **ELITEGROUP COMPUTER SYSTEMS CO.,LTD**<br>No.239,Sec.2,Ti Ding Blvd., Taipei, Taiwan |
| **Manufacturer:** | **Elitegroup Computer Systems (SIP) Co.,Ltd.**<br>Comprehensive Free Zone A Zone,No.200,Central SuHong Rd. SuZhou Industrial Park, JiangSu, P.R. China |
| **Application Type:** | Certification |

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

## We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4: 2003 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

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

***Approved by:***

Hadiif Hoo
RF Manager
Compliance Certification Service Inc.

***Tested by:***

Sean Yu
Test Engineer
Compliance Certification Service Inc.

# 2. EUT DESCRIPTION

| | |
|---|---|
| **Product Name:** | Notebook Computer |
| **Brand Name:** | ECS,ELITEGROUP |
| **Model Name:** | BR45II1 |
| **Series Model:** | BR45IIX（X=0~9,A~Z OR BLANK）<br>BR40IIX(X=0~9,A~Z OR BLANK) |
| **Model Discrepancy:** | BR45&BR40 their differential sales regions,<br>X to represent the only difference of them is the appearance. |
| **Frequency Range:** | WIFI b/g Mode:2412 ~ 2462 MHz<br>a Mode:5745 ~ 5805 MHz<br>gn(-20MHz): 2412 ~ 2462 MHz<br>gn(-40MHz): 2422 ~ 2452 MHz<br>an(-20MHz):5745 ~ 5805 MHz<br>an(-40MHz):5755~ 5795 MHz<br>Bluetooth:2402 ~ 2480 MHz |
| **Transmit Power:** | IEEE 802.11b mode: 16.22dBm (41.88mW)<br>IEEE 802.11g mode: 14.54dBm (28.44mW)<br>draft 802.11gn Standard-20 MHz Channel mode: 18.07 dBm (64.12mW)<br>draft 802.11gn Wide-40 MHz Channel mode: 16.85 dBm (48.42mW)<br>IEEE 802.11a mode: 14.82dBm (30.34 mW)<br>draft 802.11an Standard-20 MHz Channel mode:17.28 dBm(53.46mW)<br>draft 802.11an Wide-40 MHz Channel mode: 16.54 dBm (45.08mW)<br>(the EUT transmitting and receiving with two antennas simultaneously working at n mode) |
| **Modulation Technique:** | IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps)<br>IEEE 802.11g mode: DSSS /OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps)<br>IEEE 802.11a mode: OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps)<br>draft 802.11n Standard-20 MHz Channel mode: OFDM (MCS 0~15)<br>draft 802.11n Wide-40 MHz Channel mode: OFDM (MCS 0~15) |
| **Number of Channels:** | IEEE 802.11b/g mode: 11 Channels<br>IEEE 802.11a mode: 4 Channels<br>draft 802.11n Standard-20 MHz Channel mode: 11 Channels<br>draft 802.11n Wide-40 MHz Channel mode: 7 Channels |
| **Antenna Specification:** | PIFA antennas for 2.4GHz Gain 2.34 dBi and 2.89 dBi /Total gain 5.63 dBi<br>and PIFA antennas for 5 GHz Gain 1.63 dBi and -0.78dBi /Total gain 3.6 dBi |

**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: WL6-BR45IIX6230*** filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.

# 3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 2003and FCC CFR 47 15.207, 15.209 and 15.247.

## 3.1.EUT CONFIGURATION

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

## 3.2.EUT EXERCISE

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

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

## 3.3.GENERAL TEST PROCEDURES

### Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 2003 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

### Radiated Emissions

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

## 3.4.FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

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

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

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

[2] Above 38.6

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

## 3.5.DESCRIPTION OF TEST MODES

The EUT transmitting and receiving with one (chain 0) antenna working at a/b/g mode, so one antenna working configuration was used for a/b/g 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.

The worst-case data rates are determined to be as follows for each mode based on investigation by measuring the average power, peak power and PPSD across all data rates, bandwidths, and modulations.

The worst-case data rates:
IEEE802.11b mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE802.11g mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

EEE802.11a:

Channel low(5745MHz),

Channel middle(5785MHz)

Channel high(5805MHz)

with preliminary test 54/48/36/24/18/12/9/6 Mbps, After the preliminary scan , the following test mode 6Mbps data rate (the worst case) are chosen for the final testing.

Draft 802.11gn Standard-20 MHz Channel mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with MCS8 data rate were chosen for full testing.

Draft 802.11gn Wide-40 MHz Channel mode:

Channel Low (2422MHz)

Channel Mid (2437MHz)

Channel High (2452MHz) with MCS8 data rate were chosen for full testing.

Draft 802.11an Wide-20 MHz Channel mode:

Channel low(5745MHz),

Channel middle(5785MHz)

Channel high(5805MHz) with MCS8 data rate were chosen for full testing.

Draft 802.11an Wide-40 MHz Channel mode:

Channel Low (5755MHz),

Channel High (5795MHz) with MCS8 data rate were chosen for full testing.

# 4. INSTRUMENT CALIBRATION

## 4.1.MEASURING INSTRUMENT CALIBRATION

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

**Equipment Used for Emissions Measurement**

| Conducted Emissions Test Site | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| Spectrum Analyzer | Agilent | E4446A | MY44020154 | 2012-5-13 |
| DETECTOR NEGATIVE | Agilent | 8473B | MY42240176 | 2012-5-13 |
| OSCILLOSCOPE | Agilent | DSO6104A | MY44002585 | 2012-3-25 |
| Peak and Avg Power Sensor | Agilent | E9327A | US40441788 | 2012-3-25 |
| EPM-P Series Power Meter | Agilent | E4416A | GB41292714 | 2012-5-13 |
| Power SPLITTER | Mini-Circuits | ZN2PD-9G | SF078500430 | 2012-5-13 |
| DC POWER SUPPLY | GW instek | GPS-3303C | E903131 | 2012-5-13 |
| Temp. / Humidity Chamber | Kingson | THS-M1 | 242 | 2012-3-13 |
| Test Software | EZ-EMC | | | |

| 977 Chamber | | | | |
|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Due** |
| Spectrum Analyzer | Agilent | E4446A | MY44020154 | 2012-5-13 |
| EMI Test Receiver | R&S | ESPI3 | 101026 | 2012-3-16 |
| Pre-Amplfier | MINI | ZFL-1000VH2 | d041703 | 2012-5-13 |
| Pre-Amplfier | Miteq | NSP4000-NF | 870629 | 2012-5-13 |
| Bilog Antenna | Sunol | JB1 | A110204-2 | 2012-5-13 |
| Horn-antenna | SCHWARZBECK | BBHA9120D | D:266 | 2012-6-8 |
| 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 | 2012-3-16 |
| V (V-LISN) | Schwarzbeck | NNLK 8129 | 8129-143 | 2012-3-16 |
| LISN (EUT) | FCC | FCC-LISN-50/250-50-2-02 | SN:05012 | 2012-3-16 |
| TRANSIENT LIMITER | SCHAFFNER | CFL9206 | 1710 | 2012-4-9 |
| Test Software | EZ-EMC | | | |

***Remark:*** *The measurement uncertainty is less than +/- 2.81dB, which is evaluated as per the NAMAS NIS 81 and CISPR/A/291/CDV.*

*Expanded Uncertainty (95% CONFIDENCE INTERVAL): K=2*

# 5. FACILITIES AND ACCREDITATIONS

## 5.1.FACILITIES

All measurement facilities used to collect the measurement data are located at
CCS China Kunshan Lab at 10#Weiye Rd, Innovation Park Eco. & Tec. Development Zone

Kunshan city JiangSu, (215300), CHINA.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 2003 and CISPR Publication 22.

## 5.2.EQUIPMENT

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

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

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

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

## 5.3.LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 200581-0 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, IC5743 for 10m chamber 10m, IC5743 for 10m chamber 3m.

## 5.4.TABLE OF ACCREDITATIONS AND LISTINGS

| Country | Agency | Scope of Accreditation | Logo |
|---|---|---|---|
| USA | A2LA | 47 CFR FCC Part 15/18 (using ANSI C63.4 :2003)；VCCI V3; CNS 13438; CNS 13439; CNS 13803; CISPR 11; EN 55011; CISPR 13; EN 55013; CISPR 22:2005; CISPR 22:1997 +A1 :2000+A2 :2002；EN 55022:2006; EN55022 :1998 +A1 :2001+A2 :2003；EN 61000-6-3 (excluding discontinuous interference); EN 61000-6-4; AS/NZS CISPR 22；CAN/CSA-CEI/IEC CISPR 22；EN 61000-3-2；EN 61000-3-3；EN550024； EN 61000-4-2；EN 61000-4-3；EN61000-4-4；EN 61000-4-5； EN 61000-4-6；IEC 61000-4-8；EN 61000-4-11；IEC61000-3-2；IEC61000-3-3；IEC 61000-4-2； IEC 61000-4-3；IEC 61000-4-4； IEC 61000-4-5；IEC 61000-4-6；IEC 61000-4-8；IEC 61000-4-11；EN 300 220-3; EN 300 328; EN 300 330-2; EN 300 440-1; EN 300-440-2; EN 300 893; EN 301 489-01; EN 301 489-3; EN 301 489-07; EN 301 489-17；47 CFR FCC Part 15, 22, 24 |  |
| USA | FCC | 3/10 meter Sites to perform FCC Part 15/18 measurements |  <br>93105, 90471 |
| Japan | VCCI | 3/10 meter Sites and conducted test sites to perform radiated/conducted measurements | VCCI<br>R-1600<br>C-1707<br>G-216 |

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

# 6. SETUP OF EQUIPMENT UNDER TEST

## 6.1.SETUP CONFIGURATION OF EUT

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

## 6.2.SUPPORT EQUIPMENT

| No. | Device Type | Brand | Model | Series No. | FCC ID |
|---|---|---|---|---|---|
| 1. | | | | | |

***Remark:***

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

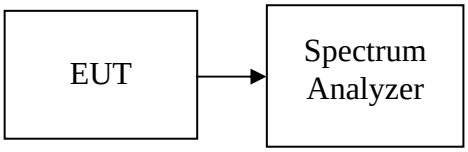
# 7. FCC PART 15.247 REQUIREMENTS

## 7.1.6DB BANDWIDTH

### LIMIT

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

### Test Configuration




### TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the selected span. The VBW is set to 3 times the RBW. The sweep time is occupied.

### TEST RESULTS

*No non-compliance noted*

**Test Data**

**IEEE 802.11b mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 2412 | 10.199 | >500 | PASS |
| Mid | 2437 | 10.129 | | PASS |
| High | 2462 | 10.165 | | PASS |

**IEEE 802.11g mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 2412 | 14.008 | >500 | PASS |
| Mid | 2437 | 15.105 | | PASS |
| High | 2462 | 15.225 | | PASS |

**TRANSMIT CHAIN 0**

**Draft 802.11gn Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 2412 | 15.170 | >500 | PASS |
| Mid | 2437 | 15.188 | | PASS |
| High | 2462 | 15.236 | | PASS |

**Draft 802.11gn Wide-40 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 2422 | 35.176 | >500 | PASS |
| Mid | 2437 | 35.153 | | PASS |
| High | 2452 | 35.199 | | PASS |

**TRANSMIT CHAIN 1**

**draft 802.11gn Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 2412 | 15.239 | >500 | PASS |
| Mid | 2437 | 15.154 | | PASS |
| High | 2462 | 15.175 | | PASS |

**Draft 802.11gn Wide-40 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 2422 | 35.162 | >500 | PASS |
| Mid | 2437 | 35.185 | | PASS |
| High | 2452 | 35.216 | | PASS |

**IEEE 802.11a mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 5745 | 16.413 | >500 | PASS |
| Mid | 5785 | 16.419 | | PASS |
| High | 5805 | 16.438 | | PASS |

**TRANSMIT CHAIN 0**

**draft 802.11an Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 5745 | 16.419 | >500 | PASS |
| Mid | 5785 | 16.423 | | PASS |
| High | 5805 | 16.413 | | PASS |

**Draft 802.11an Wide-40 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 5755 | 35.149 | >500 | PASS |
| High | 5795 | 35.256 | | PASS |

**TRANSMIT CHAIN 1**

**Draft 802.11an Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 5745 | 16.432 | >500 | PASS |
| Mid | 5785 | 16.425 | | PASS |
| High | 5805 | 16.438 | | PASS |

**Draft 802.11an Wide-40 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 5755 | 35.121 | >500 | PASS |
| High | 5795 | 35.275 | | PASS |

**TRANSMIT CHAIN 0+ CHAIN 1**

**Draft 802.11gn Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 2412 | 15.177 | >500 | PASS |
| Mid | 2437 | 15.124 | | PASS |
| High | 2462 | 15.148 | | PASS |

**Draft 802.11gn Wide-40 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 2422 | 35.179 | >500 | PASS |
| Mid | 2437 | 35.170 | | PASS |
| High | 2452 | 35.149 | | PASS |

**TRANSMIT CHAIN 0+ CHAIN 1**

**draft 802.11an Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 5745 | 16.288 | >500 | PASS |
| Mid | 5785 | 15.843 | | PASS |
| High | 5805 | 16.350 | | PASS |

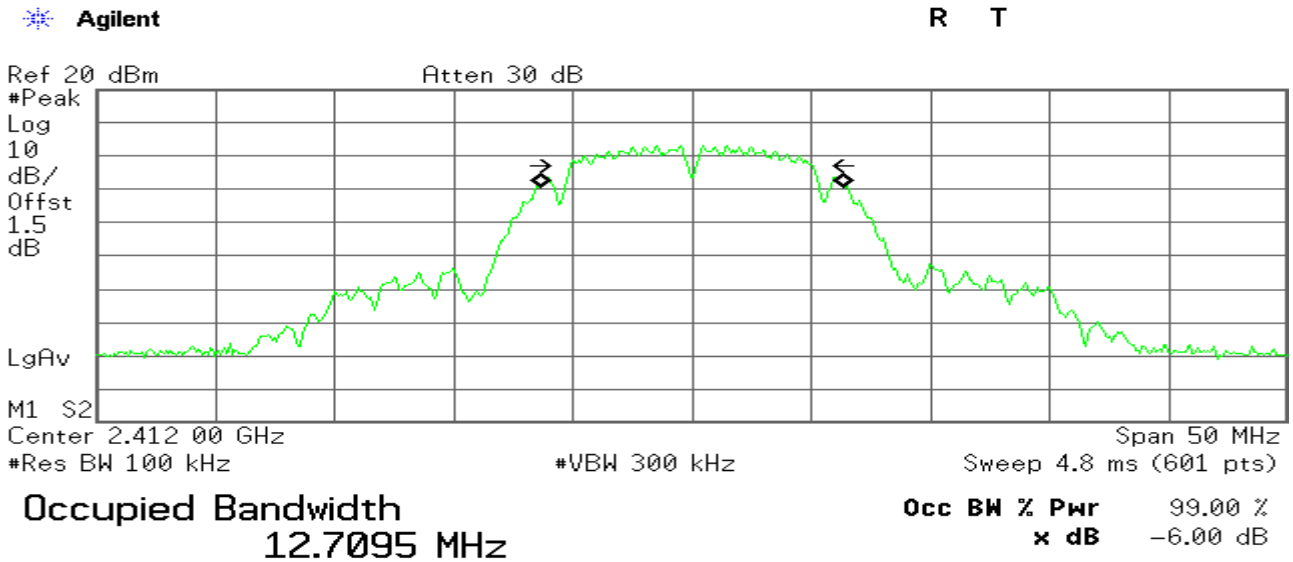
**Draft 802.11an Wide-40 MHz Channel mode**

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| Low | 5755 | 35.204 | >500 | PASS |
| High | 5795 | 35.222 | | PASS |

## Test Plot

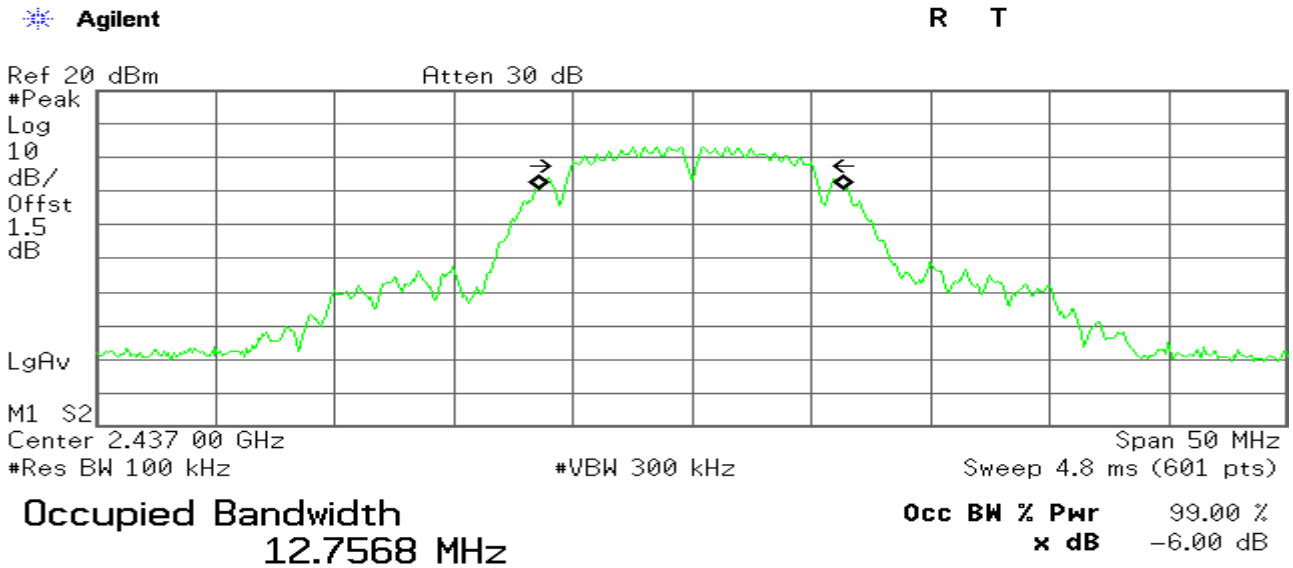
## IEEE 802.11b MODE

### 6dB Bandwidth (CH Low)



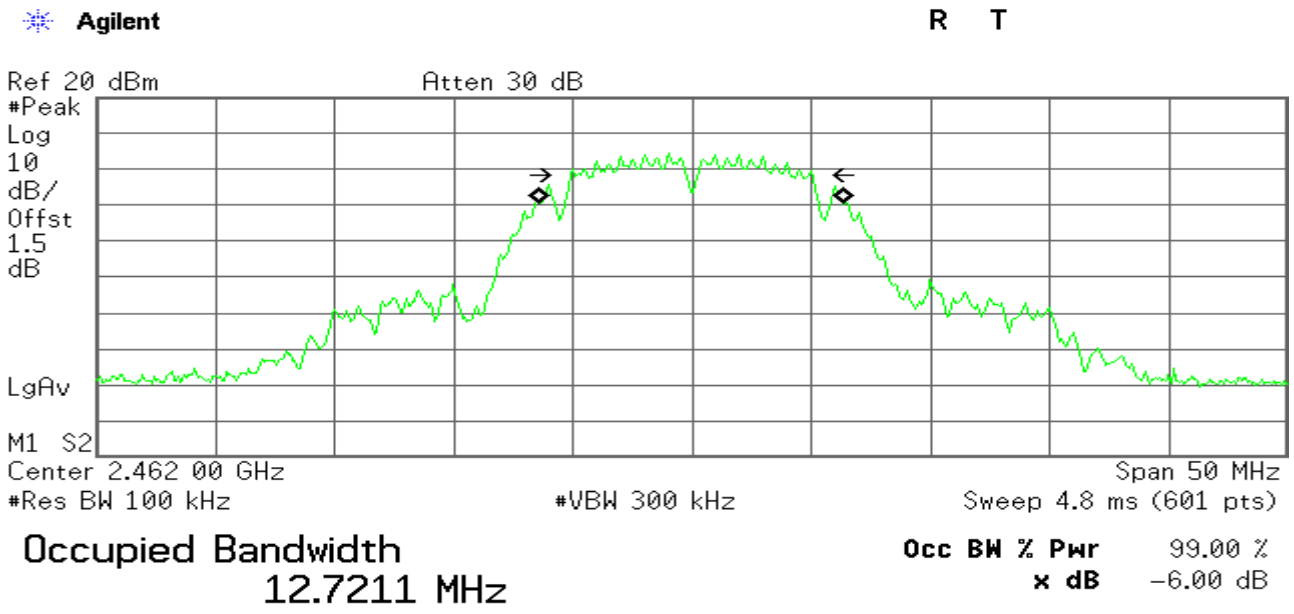

**Transmit Freq Error** −14.111 kHz
**x dB Bandwidth** 10.199 MHz

### 6dB Bandwidth (CH Mid)




**Transmit Freq Error** −30.571 kHz
**x dB Bandwidth** 10.129 MHz

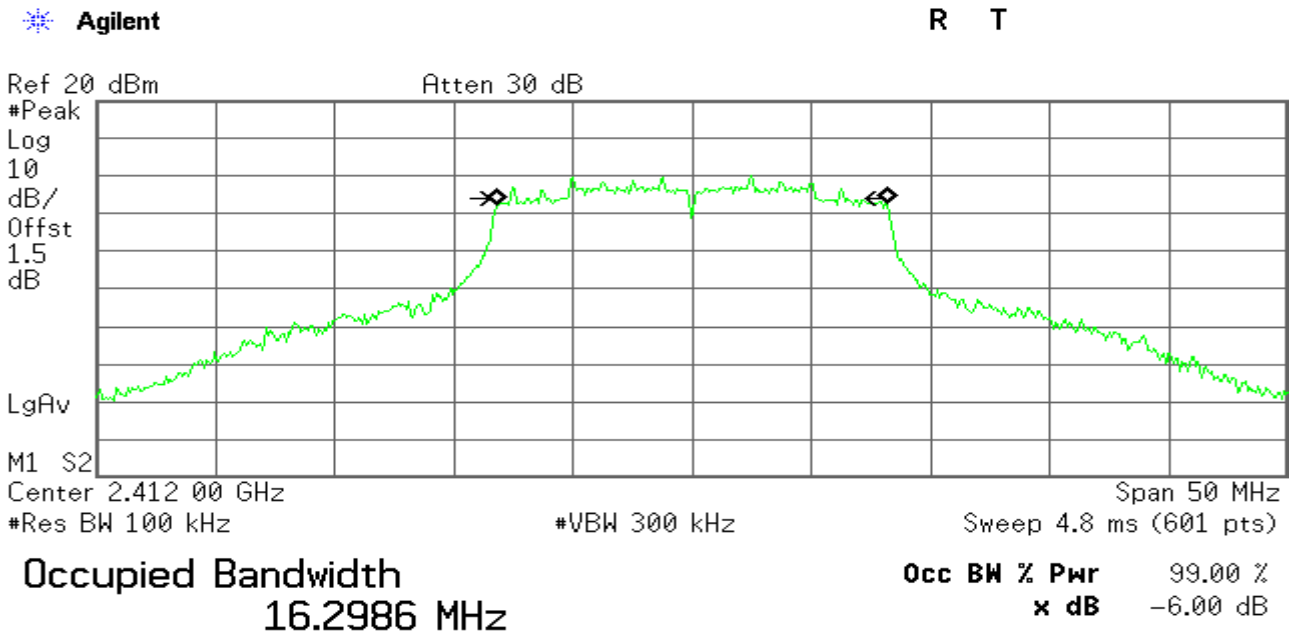
### 6dB Bandwidth (CH High)




**Transmit Freq Error** −32.339 kHz
**x dB Bandwidth** 10.165 MHz

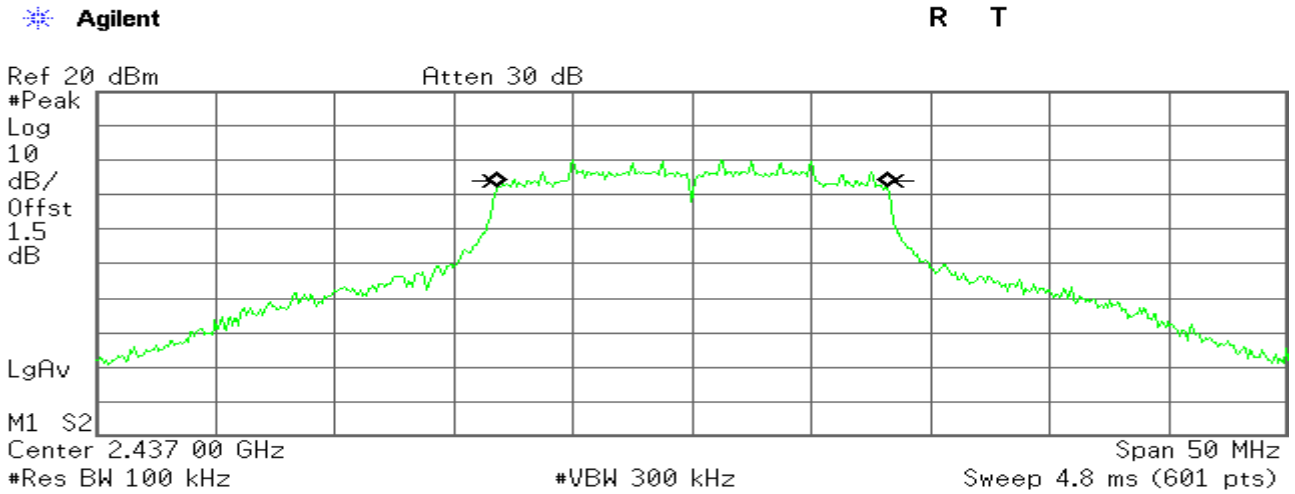
## IEEE 802.11g MODE

### 6dB Bandwidth (CH Low)




**Transmit Freq Error** −9.471 kHz
**x dB Bandwidth** 14.008 MHz

## 6dB Bandwidth (CH Mid)

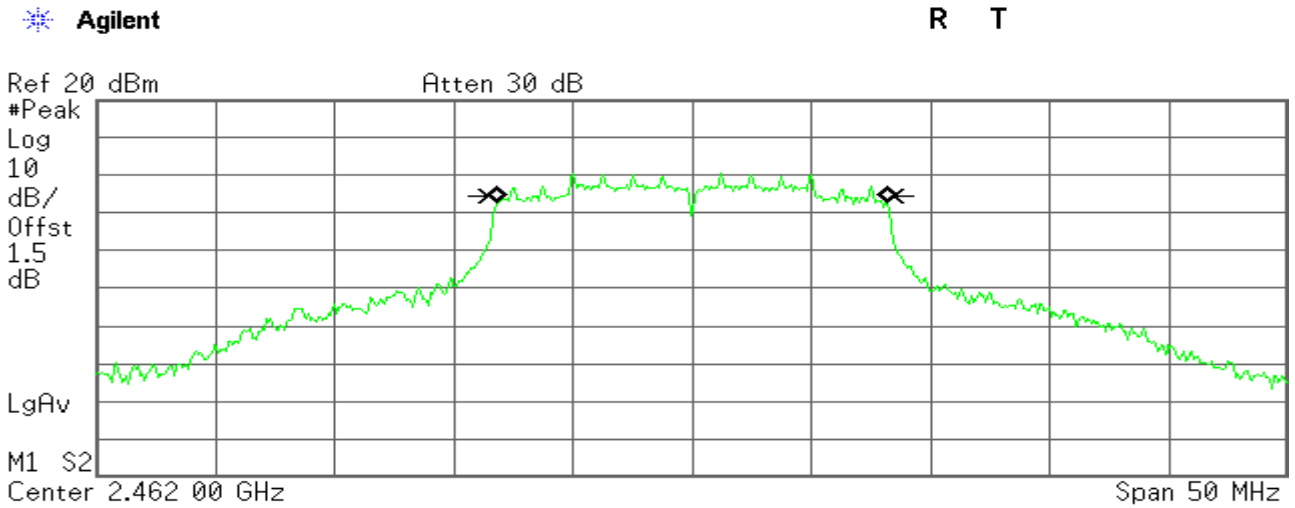



Occupied Bandwidth
16.2915 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -6.00 dB

**Transmit Freq Error** -13.405 kHz
**x dB Bandwidth** 15.105 MHz

## 6dB Bandwidth (CH High)



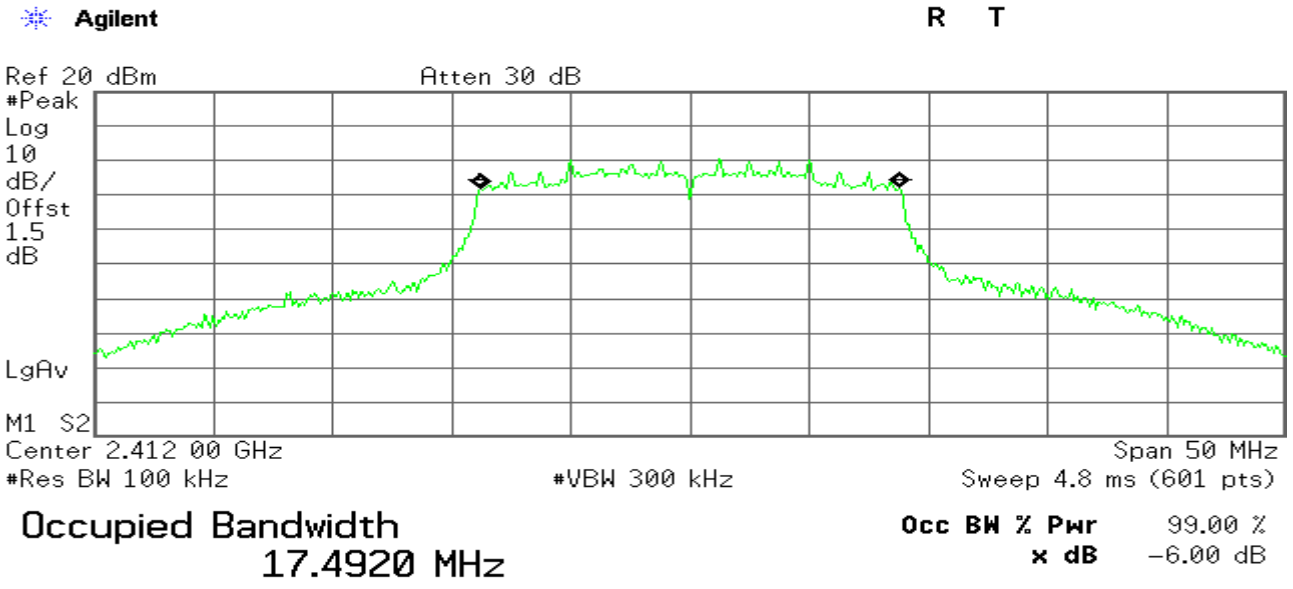

Occupied Bandwidth
16.2963 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -6.00 dB

**Transmit Freq Error** -17.755 kHz
**x dB Bandwidth** 15.225 MHz

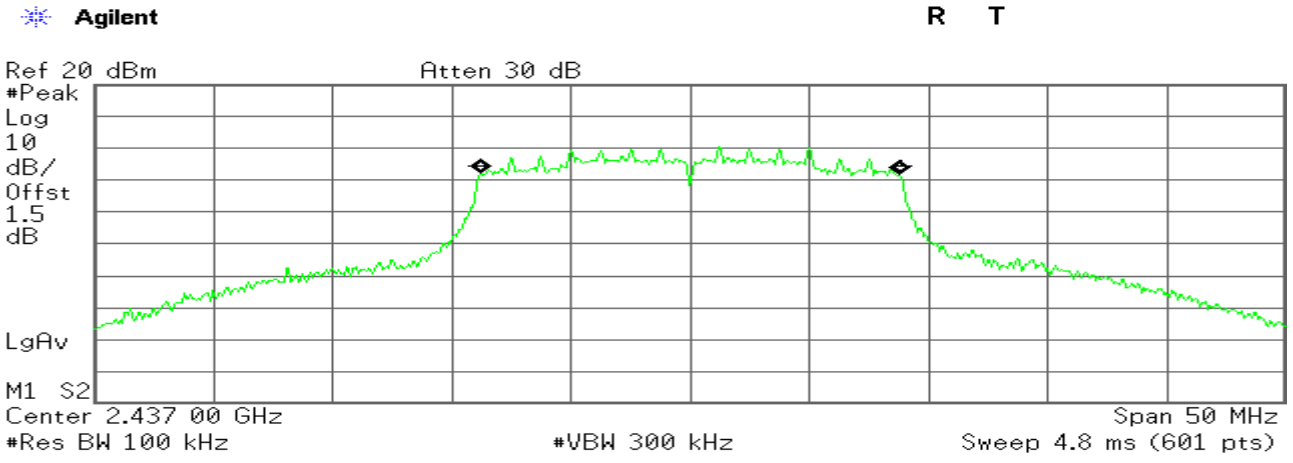
## draft 802.11gn Standard-20 MHz Channel mode / Chain 0

### 6dB Bandwidth (CH Low)



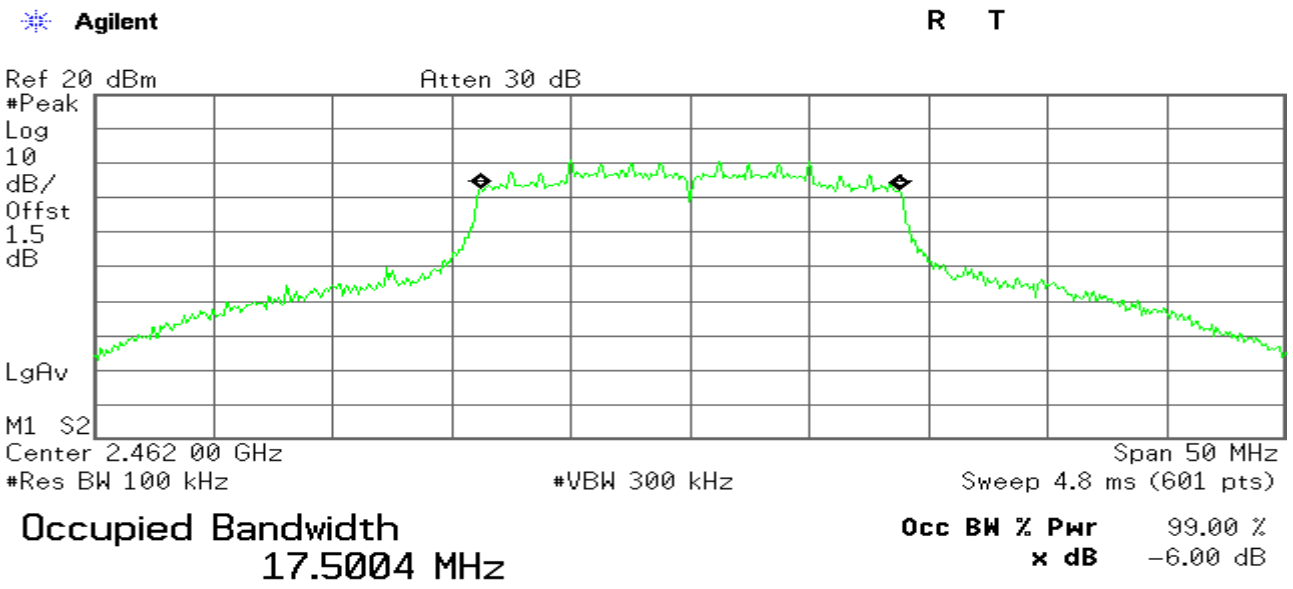

**Transmit Freq Error** −1.325 kHz
**x dB Bandwidth** 15.170 MHz

### 6dB Bandwidth (CH Mid)




**Transmit Freq Error** −6.787 kHz
**x dB Bandwidth** 15.188 MHz

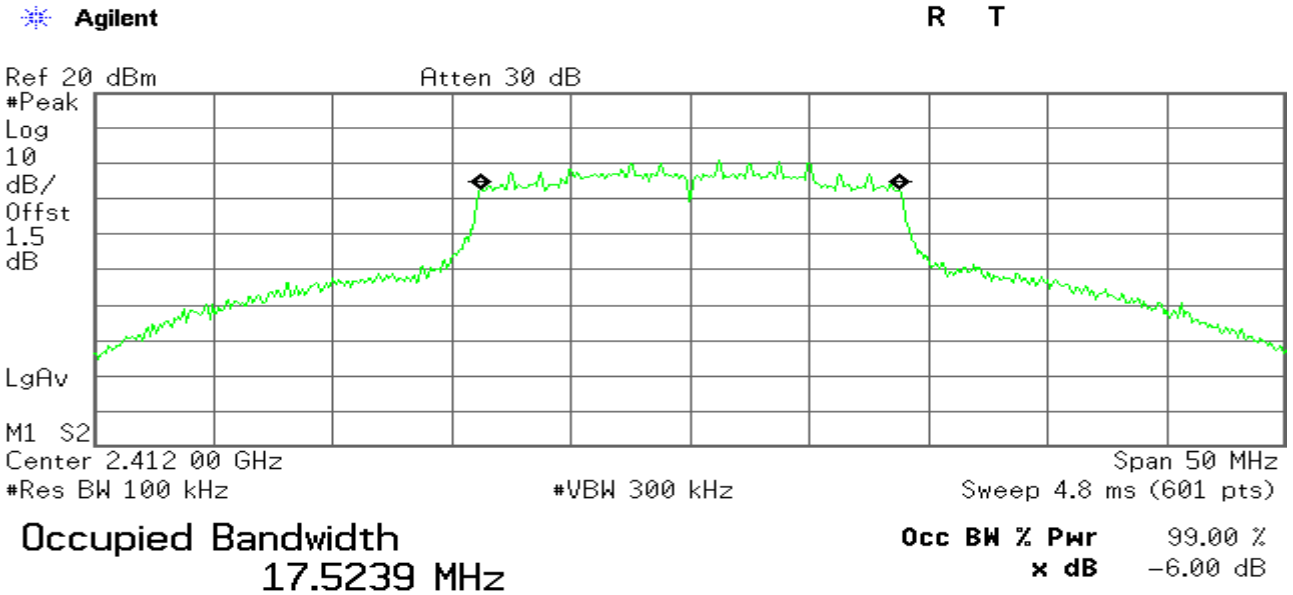
### 6dB Bandwidth (CH High)




**Transmit Freq Error** −10.041 kHz
**x dB Bandwidth** 15.236 MHz

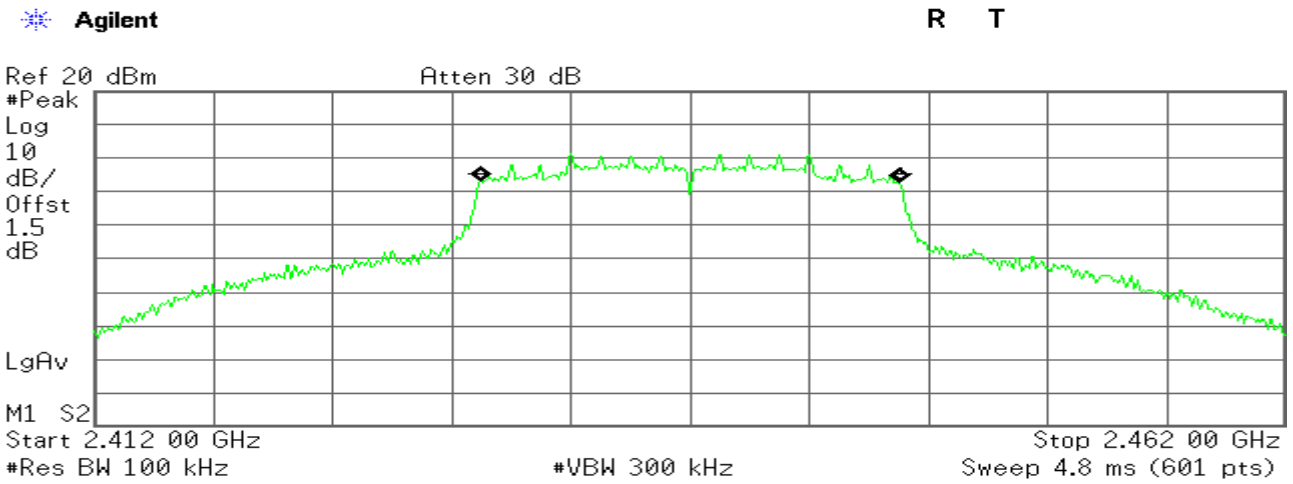
### draft 802.11gn Standard-20 MHz Channel mode / Chain 1

### 6dB Bandwidth (CH Low)



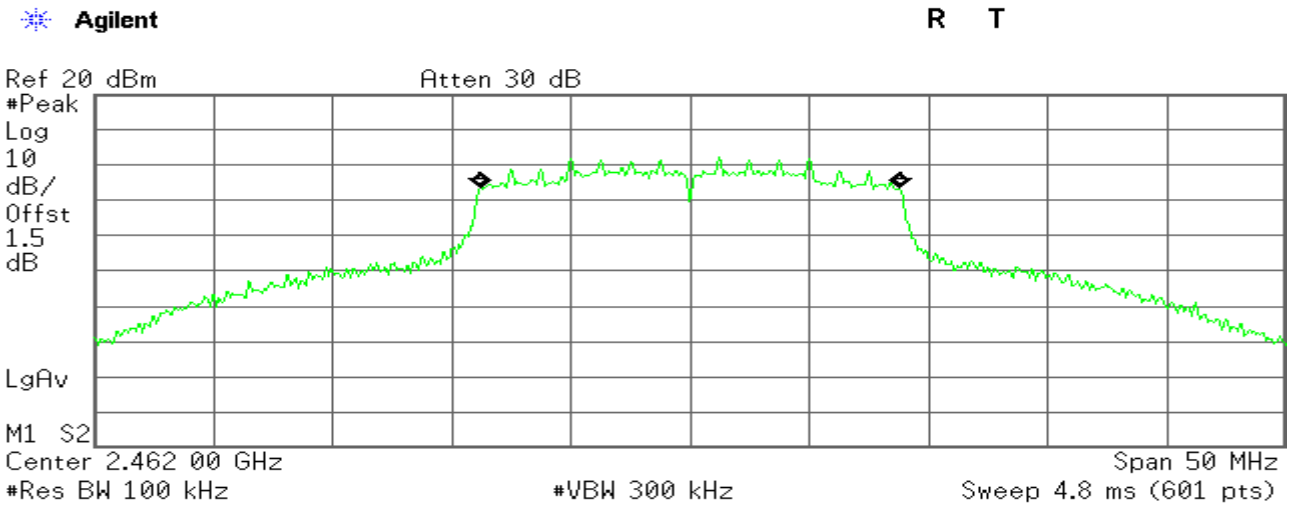

**Transmit Freq Error** −4.877 kHz
**x dB Bandwidth** 15.239 MHz

## 6dB Bandwidth (CH Mid)




**Transmit Freq Error** −17.090 kHz
**x dB Bandwidth** 15.154 MHz

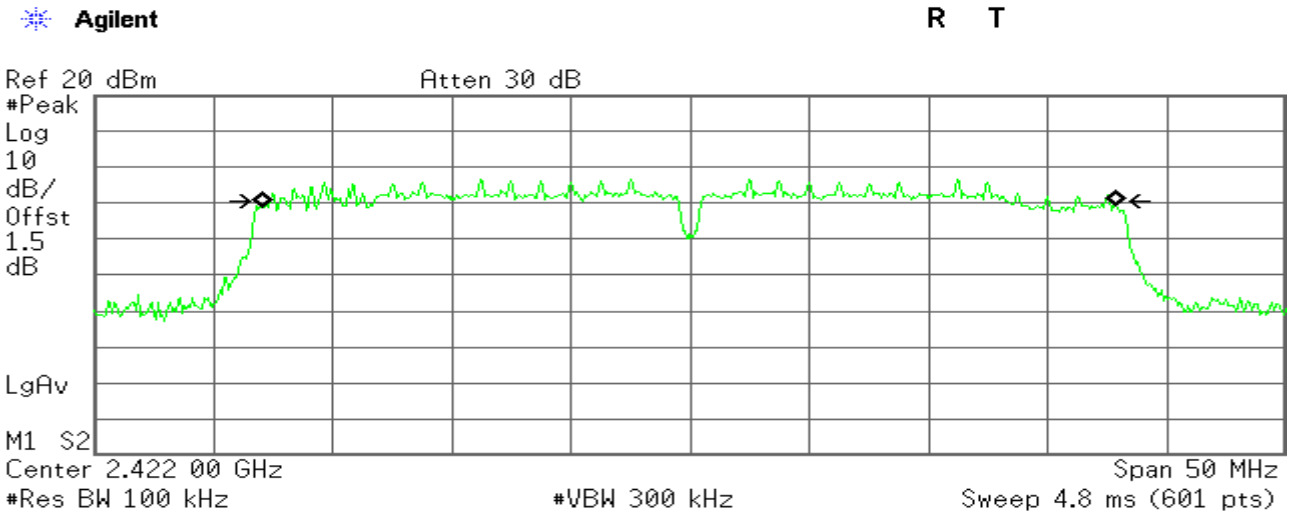
## 6dB Bandwidth (CH High)




**Transmit Freq Error** −16.468 kHz
**x dB Bandwidth** 15.175 MHz

**draft 802.11gn Wide-40 MHz Channel mode / Chain 0**

**6dB Bandwidth (CH Low)**

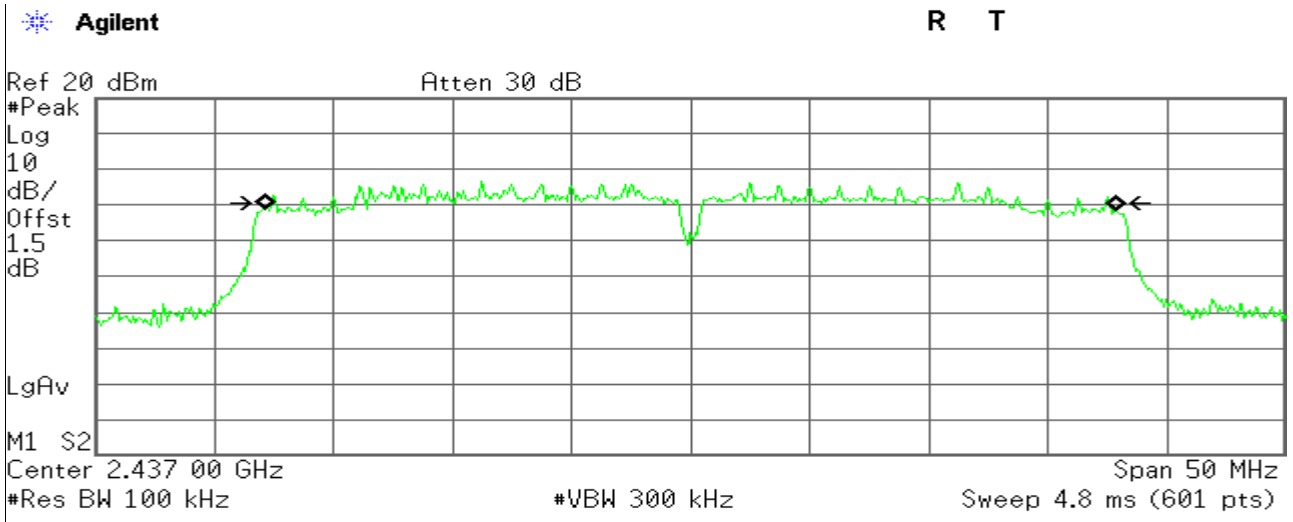



Occupied Bandwidth
35.7282 MHz

| | |
|---|---|
| **Occ BW % Pwr** | 99.00 % |
| **x dB** | -6.00 dB |

| | |
|---|---|
| **Transmit Freq Error** | -36.842 kHz |
| **x dB Bandwidth** | 35.176 MHz |

**6dB Bandwidth (CH Mid)**

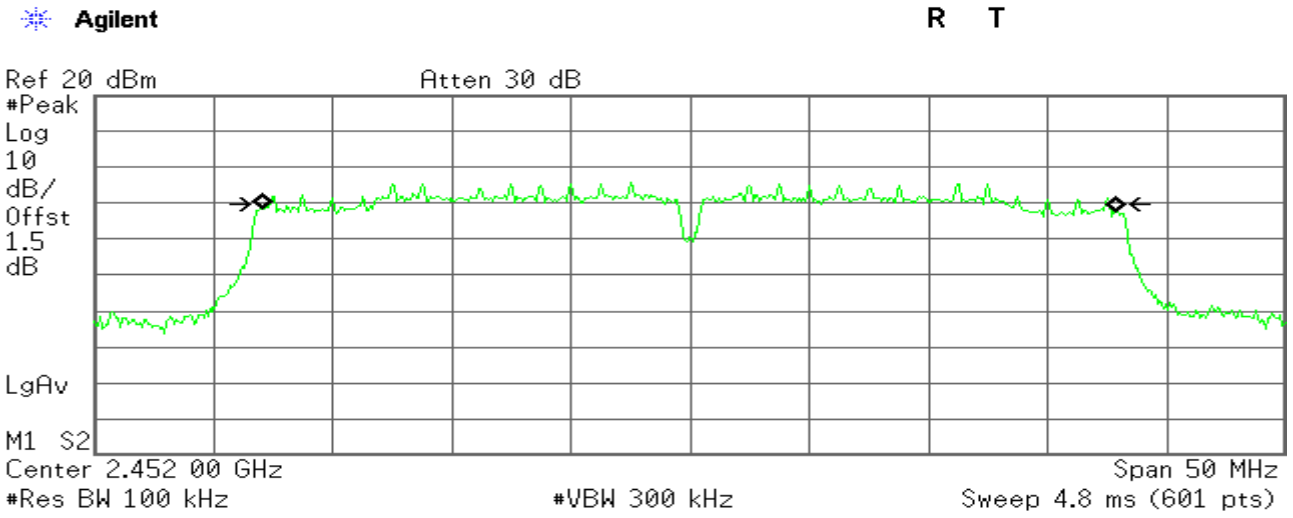



Occupied Bandwidth
35.6970 MHz

| | |
|---|---|
| **Occ BW % Pwr** | 99.00 % |
| **x dB** | -6.00 dB |

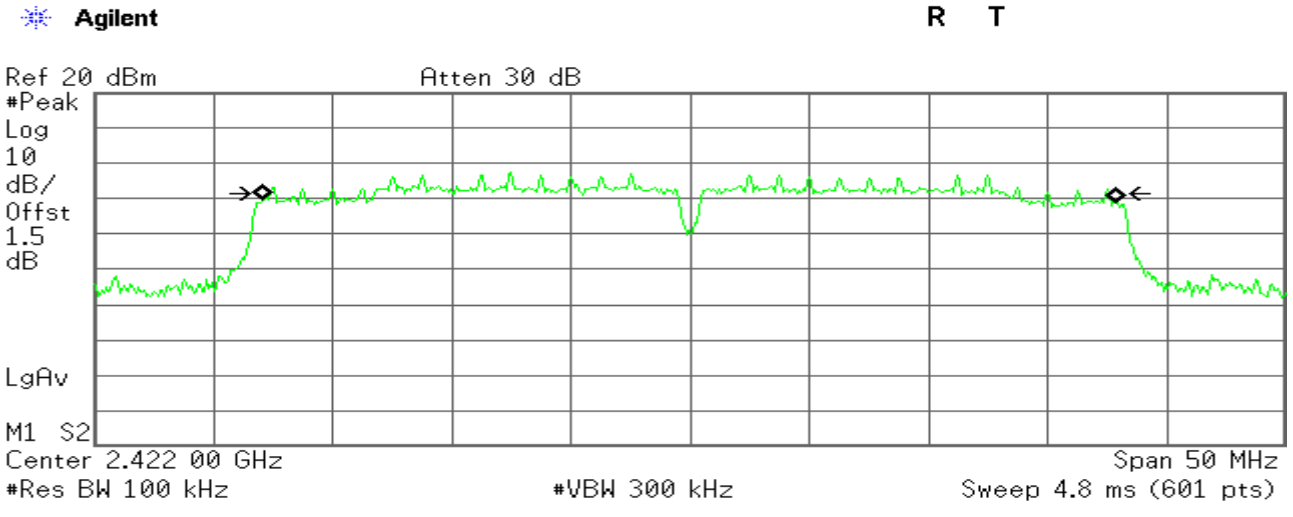
| | |
|---|---|
| **Transmit Freq Error** | -23.877 kHz |
| **x dB Bandwidth** | 35.153 MHz |

### 6dB Bandwidth (CH High)

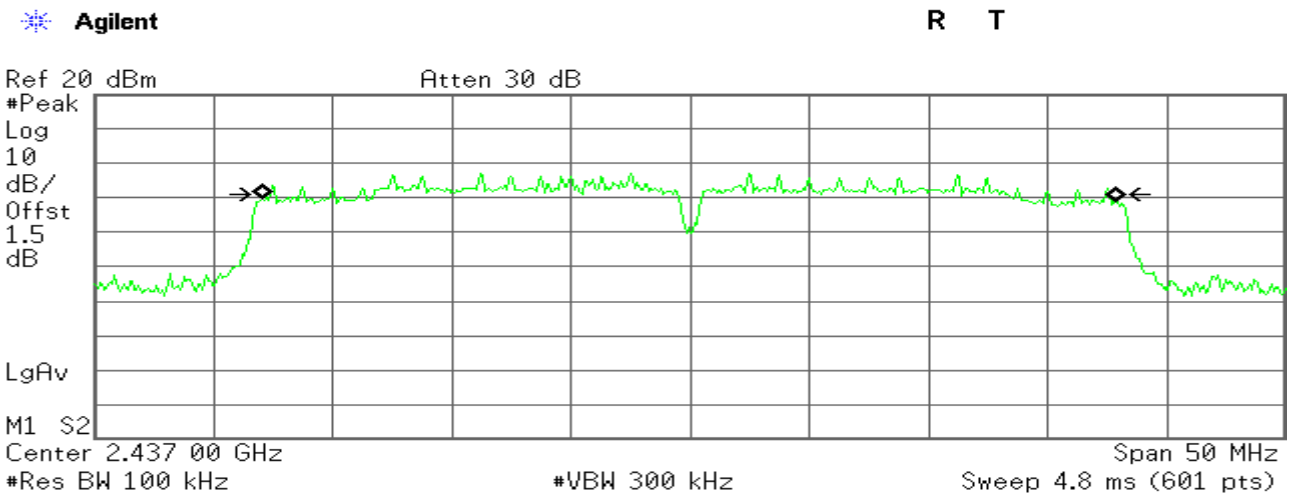



### draft 802.11gn Wide-40 MHz Channel mode / Chain 1

### 6dB Bandwidth (CH Low)



## 6dB Bandwidth (CH Mid)

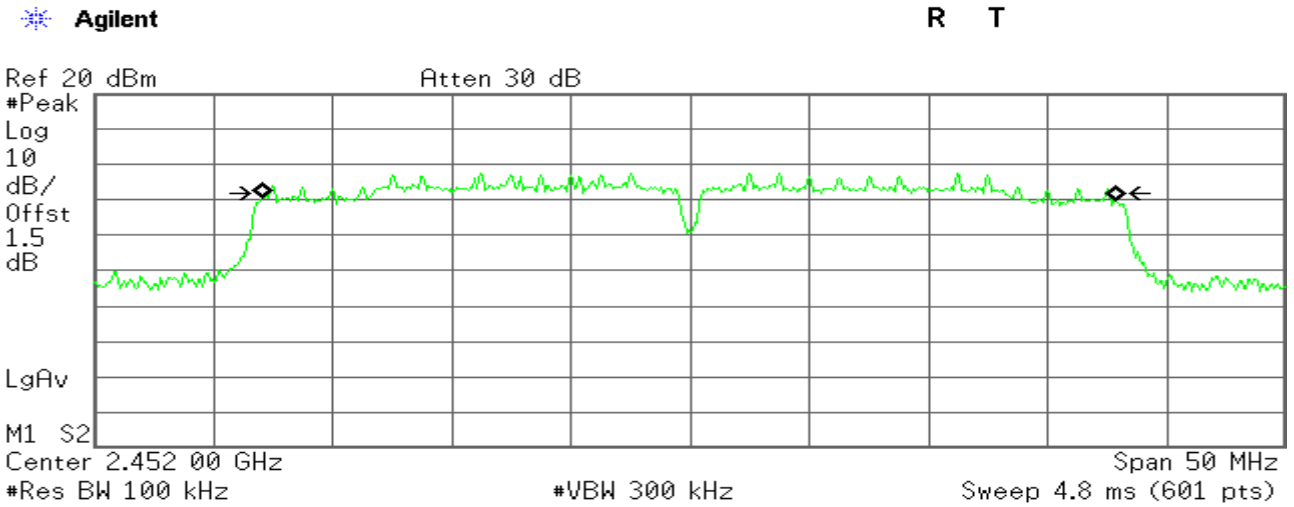



Occupied Bandwidth
35.7428 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -6.00 dB

**Transmit Freq Error** -36.512 kHz
**x dB Bandwidth** 35.185 MHz

## 6dB Bandwidth (CH High)




Occupied Bandwidth
35.7478 MHz

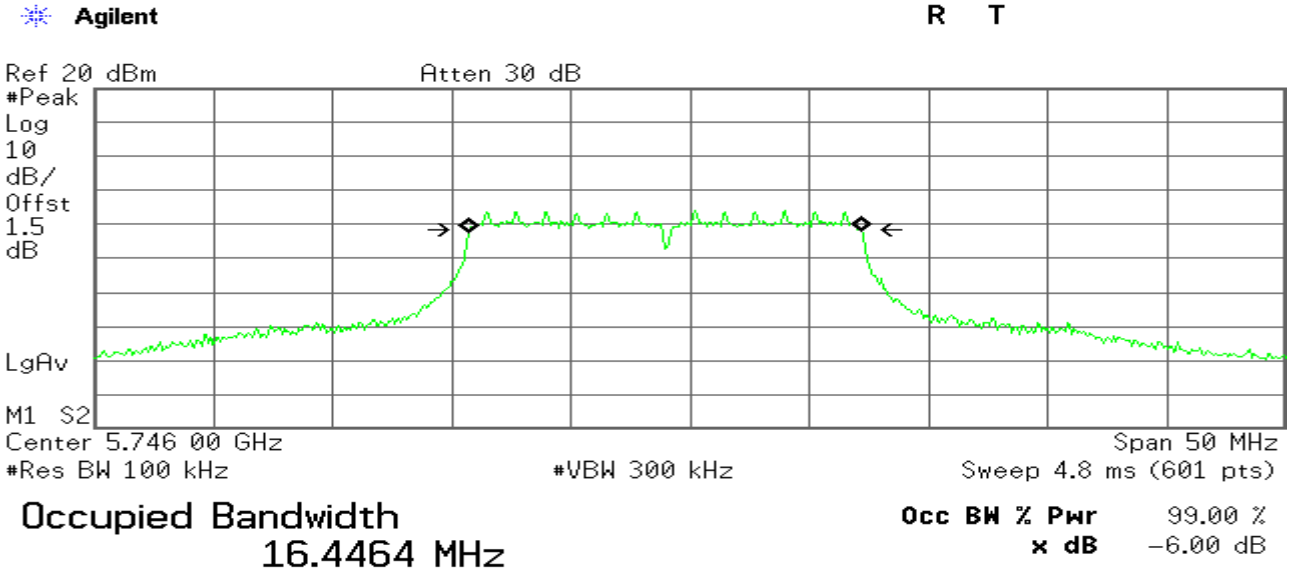
**Occ BW % Pwr** 99.00 %
**x dB** -6.00 dB

**Transmit Freq Error** -33.559 kHz
**x dB Bandwidth** 35.216 MHz

## 5725MHz-5825MHz

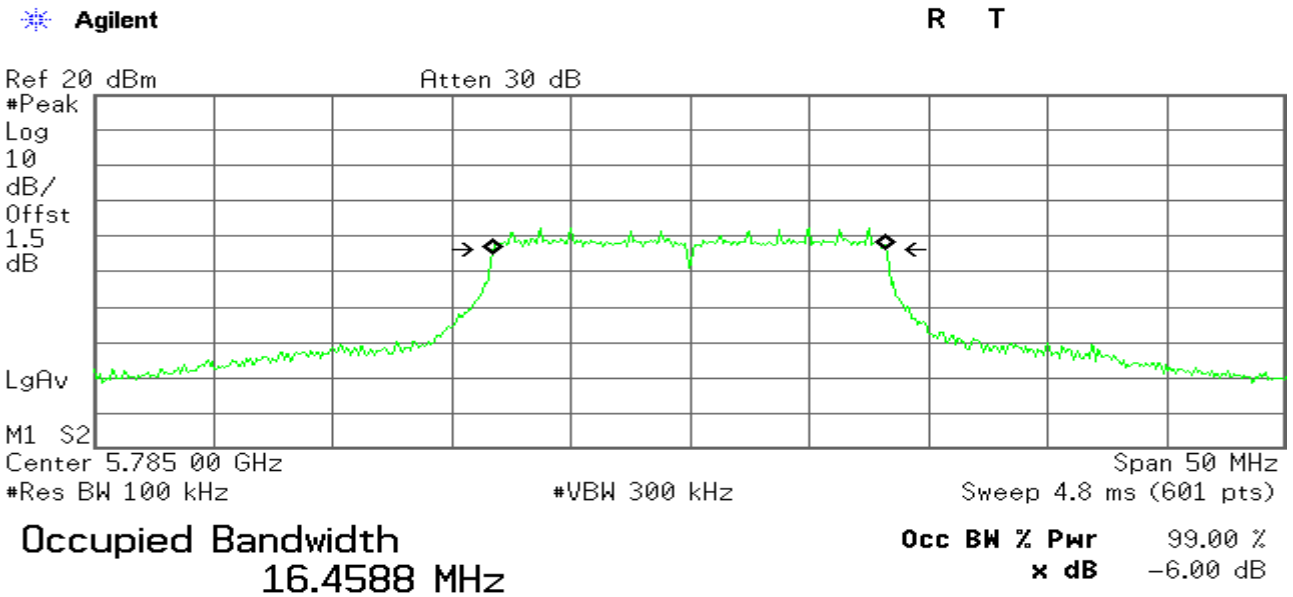
### IEEE 802.11a mode

### 6dB Bandwidth (CH Low)



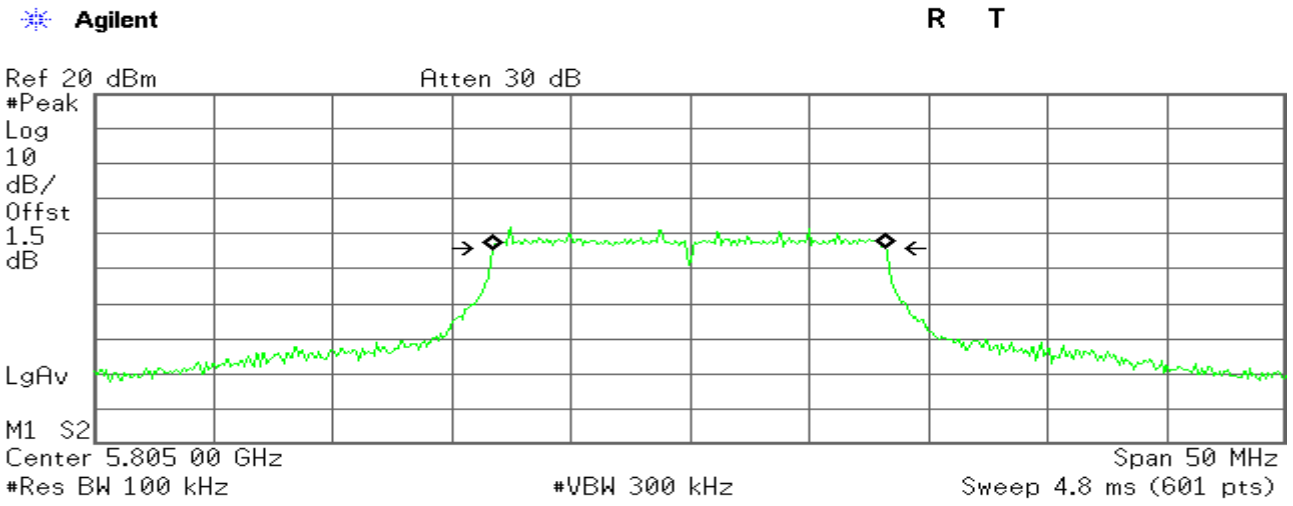

**Transmit Freq Error** −1.022 MHz
**x dB Bandwidth** 16.413 MHz

### 6dB Bandwidth (CH Mid)



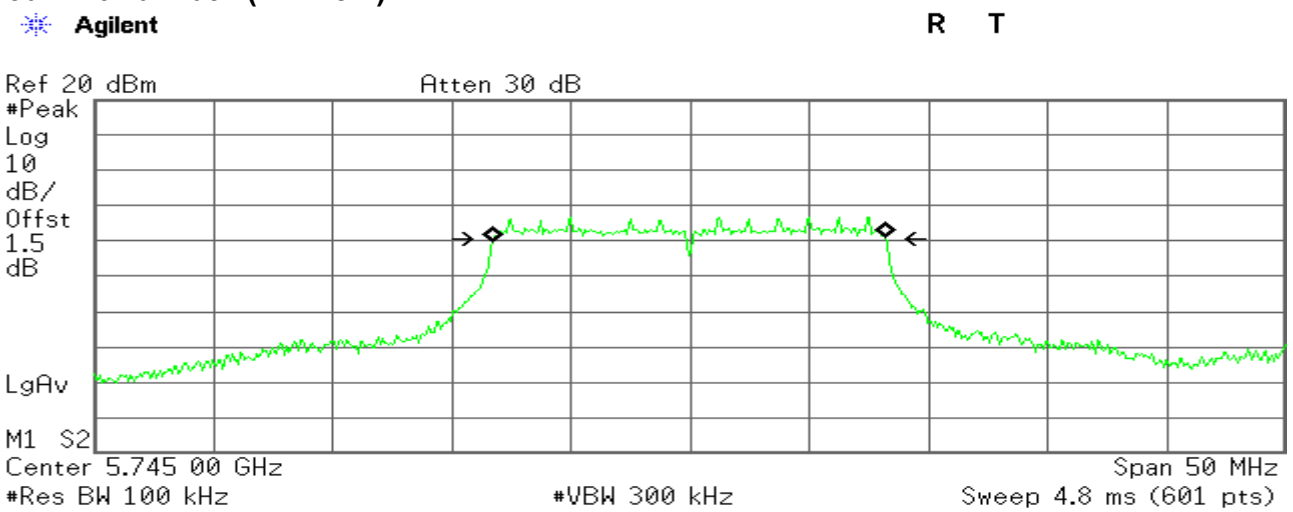

**Transmit Freq Error** −29.575 kHz
**x dB Bandwidth** 16.419 MHz

### 6dB Bandwidth (CH High)

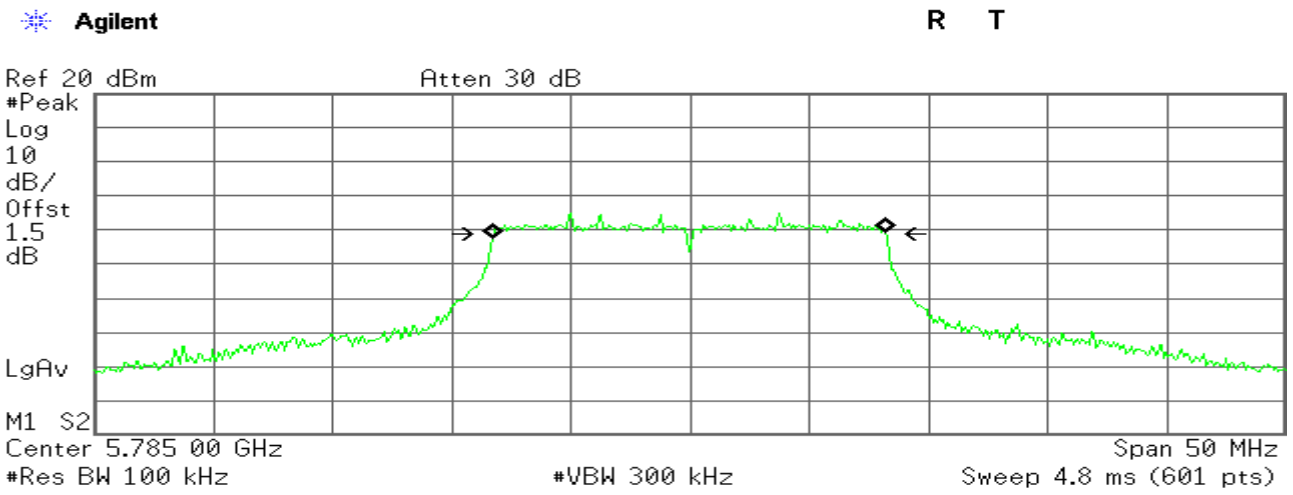



### draft 802.11an Standard-20 MHz Channel mode / Chain 0

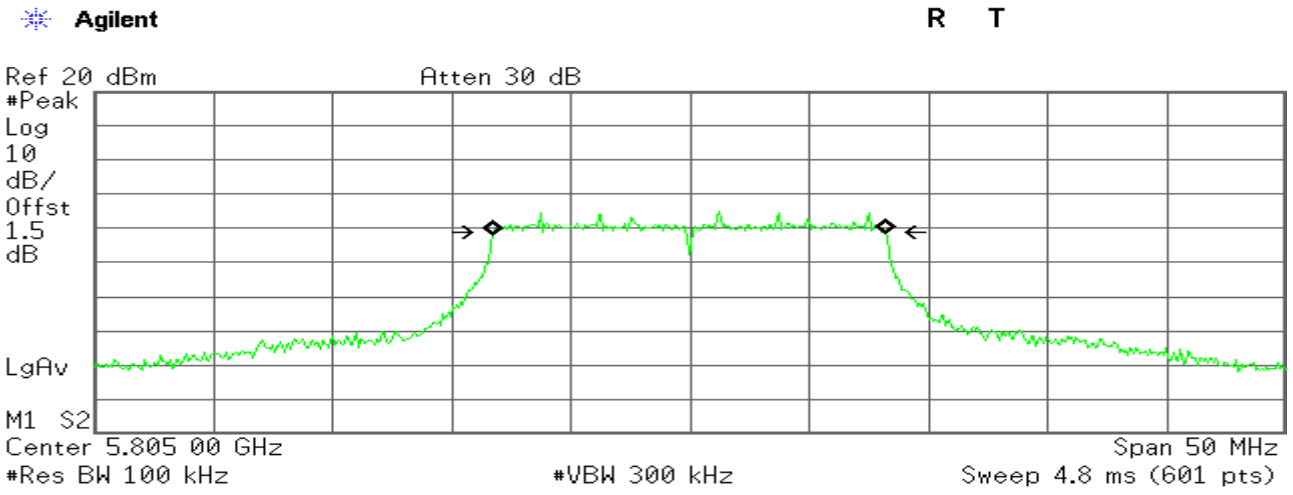
### 6dB Bandwidth (CH Low)



## 6dB Bandwidth (CH Mid)

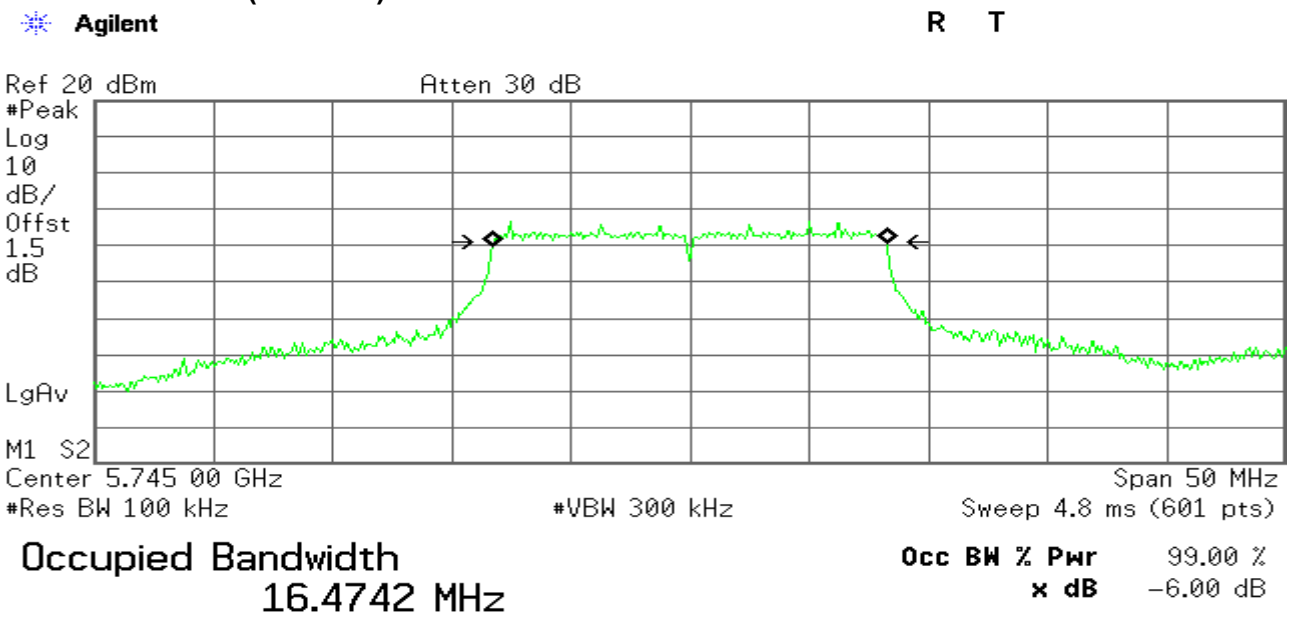



## 6dB Bandwidth (CH High)



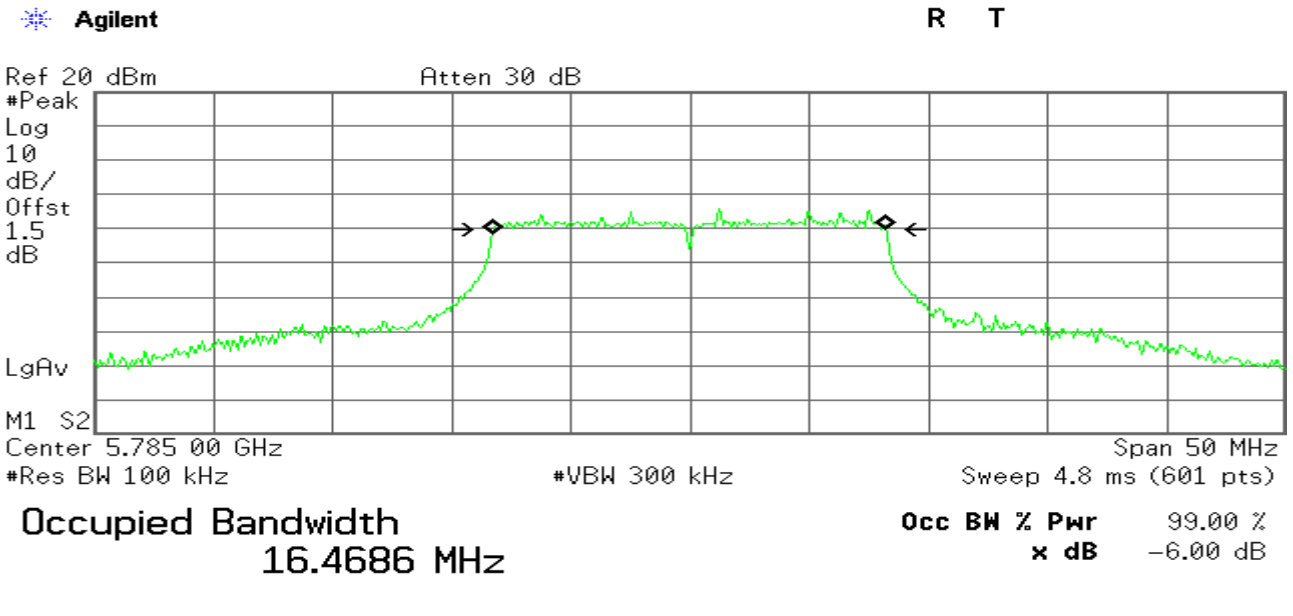
## draft 802.11an Standard-20 MHz Channel mode / Chain 1

### 6dB Bandwidth (CH Low)



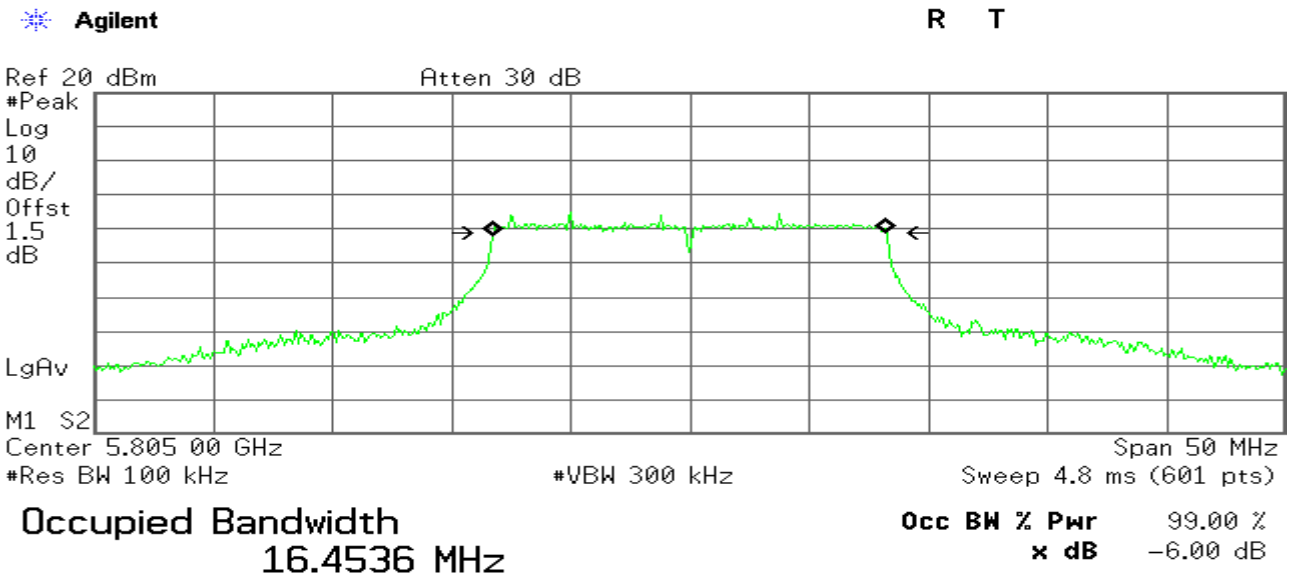

**Transmit Freq Error** −20.891 kHz
**x dB Bandwidth** 16.432 MHz

### 6dB Bandwidth (CH Mid)




**Transmit Freq Error** −32.016 kHz
**x dB Bandwidth** 16.425 MHz

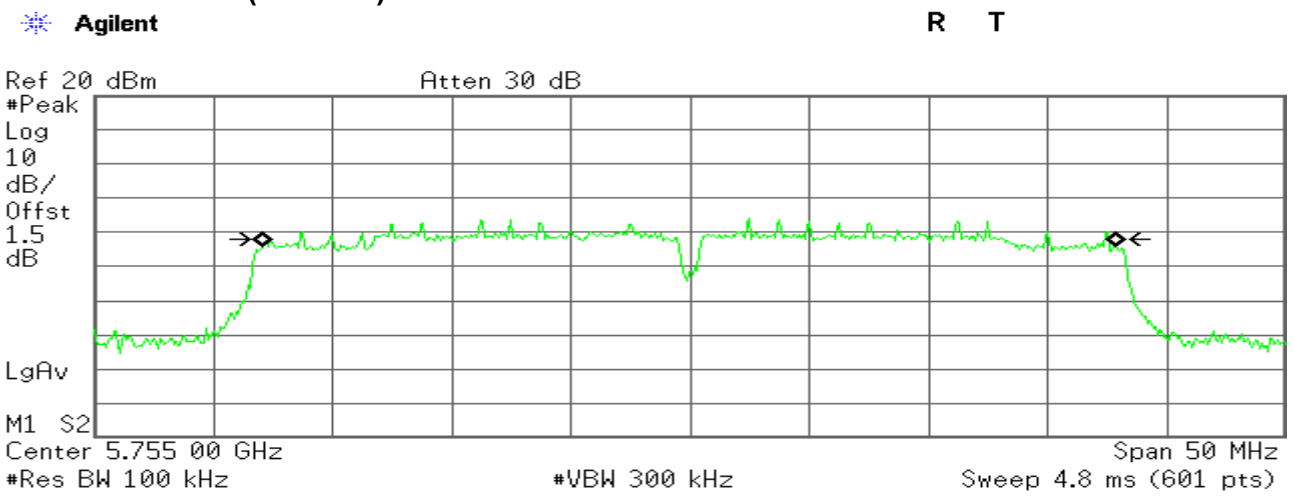
### 6dB Bandwidth (CH High)




**Transmit Freq Error** −20.688 kHz
**x dB Bandwidth** 16.438 MHz

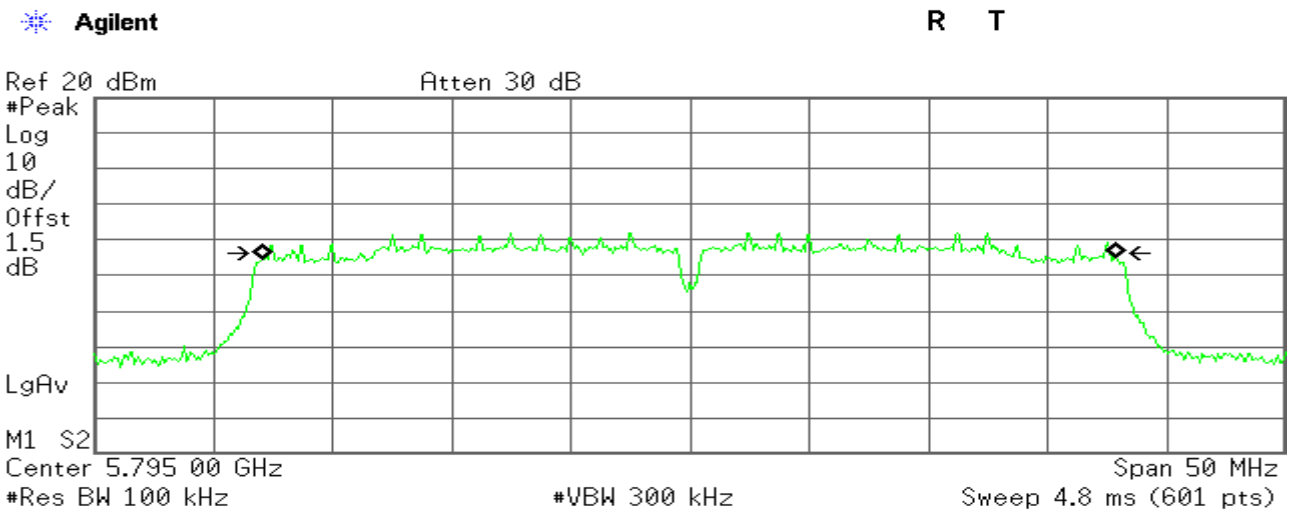
### draft 802.11an Standard-40 MHz Channel mode / Chain 0

### 6dB Bandwidth (CH Low)



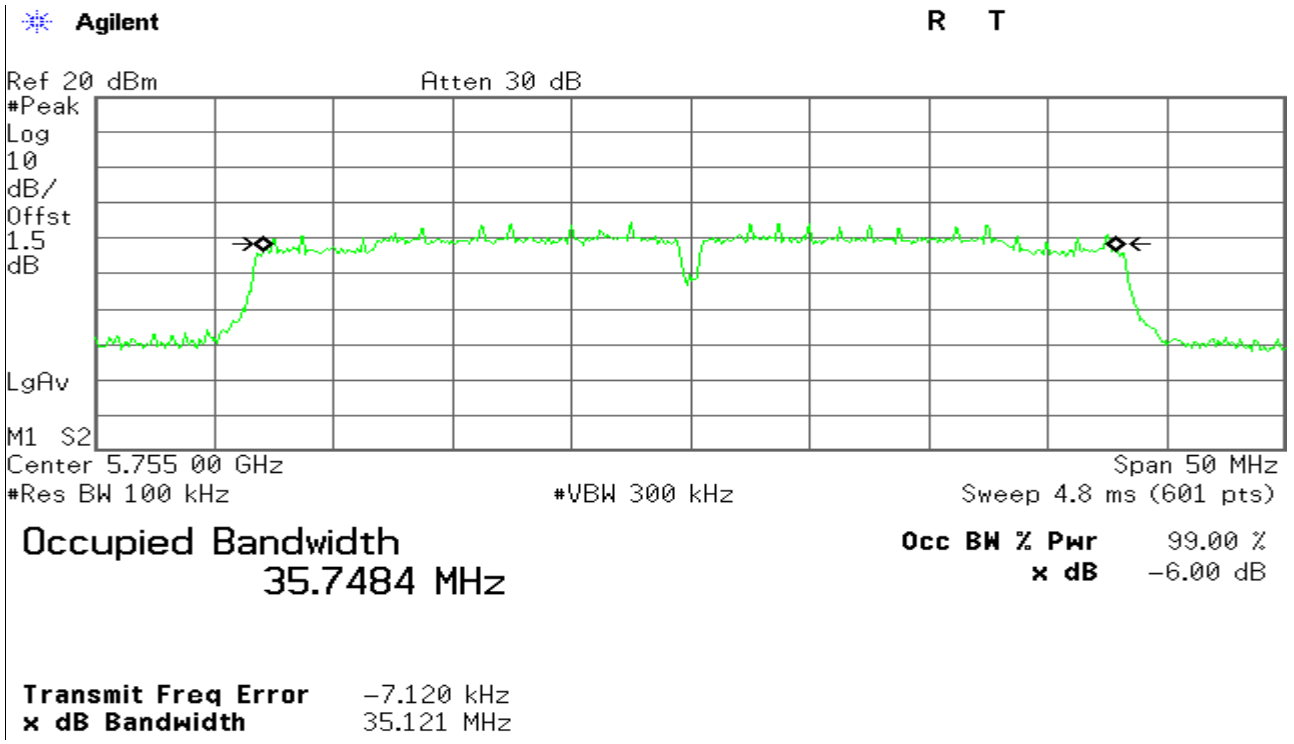

**Transmit Freq Error** −24.141 kHz
**x dB Bandwidth** 35.149 MHz

### 6dB Bandwidth (CH High)

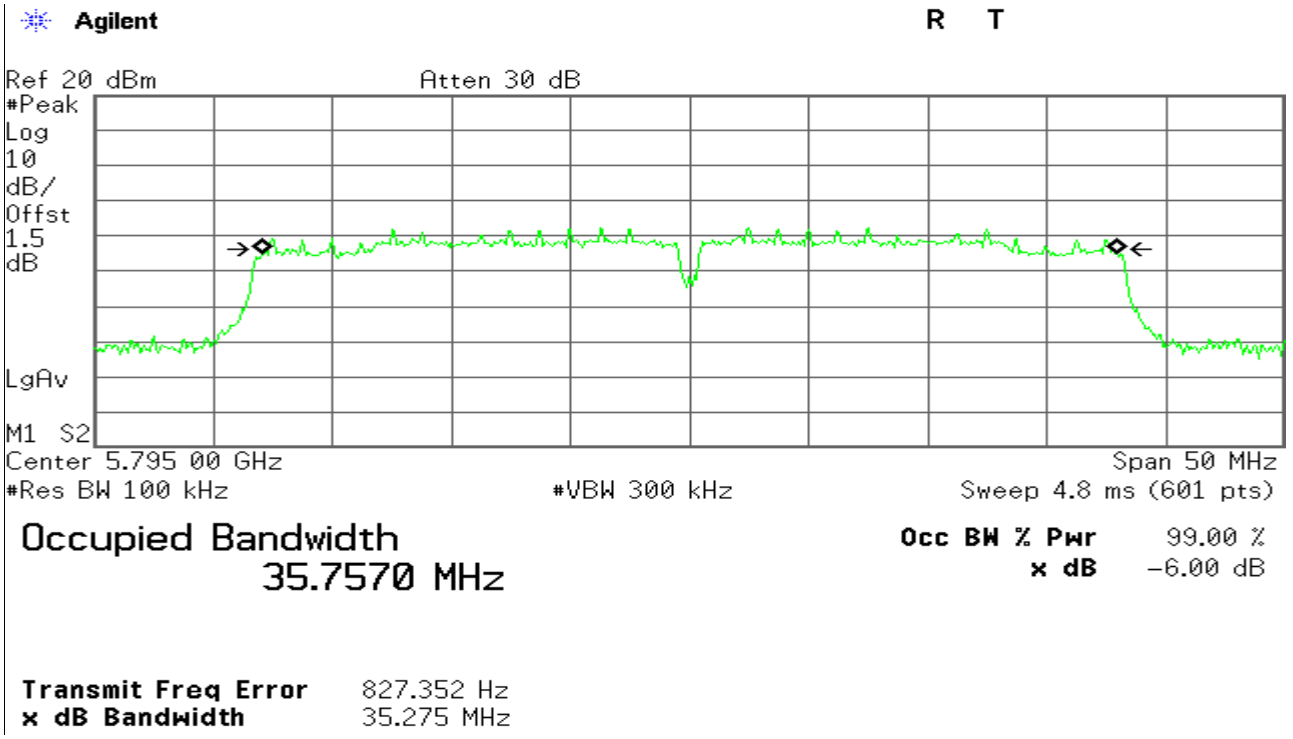



### draft 802.11an Standard-40 MHz Channel mode / Chain 1

### 6dB Bandwidth (CH Low)

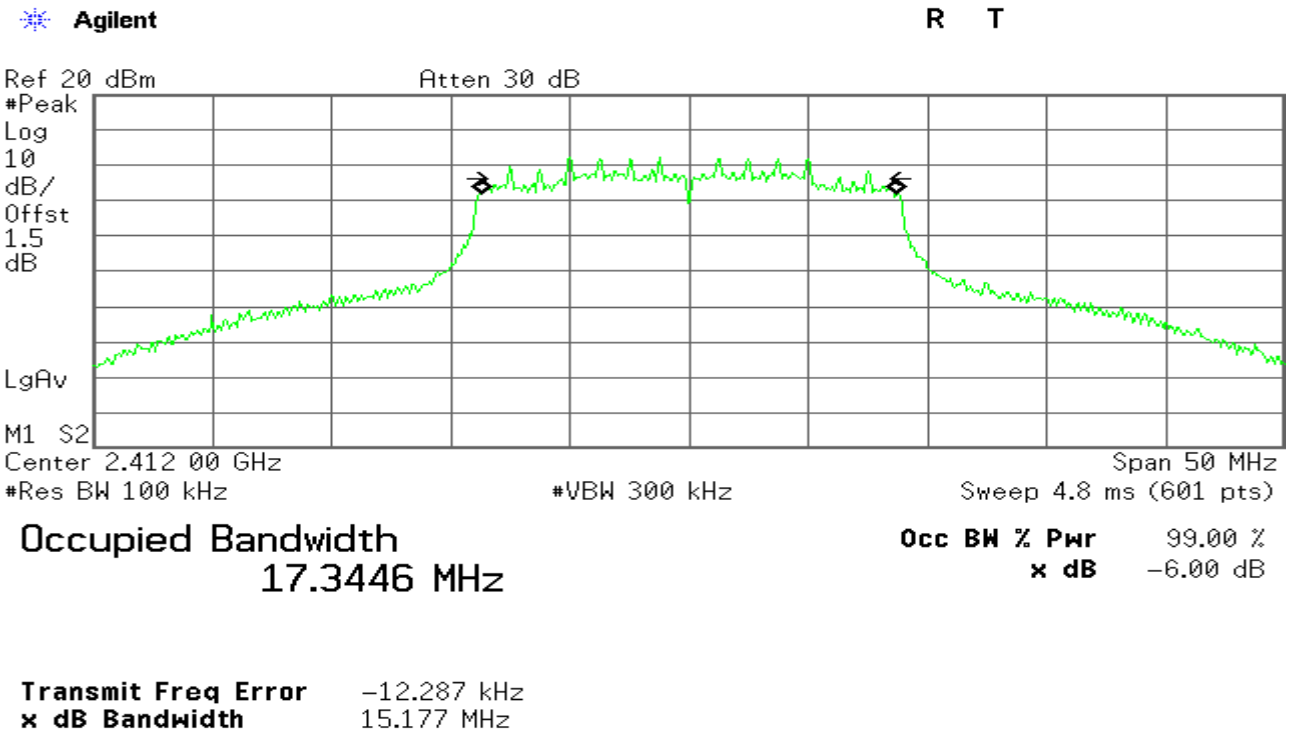


### 6dB Bandwidth (CH High)

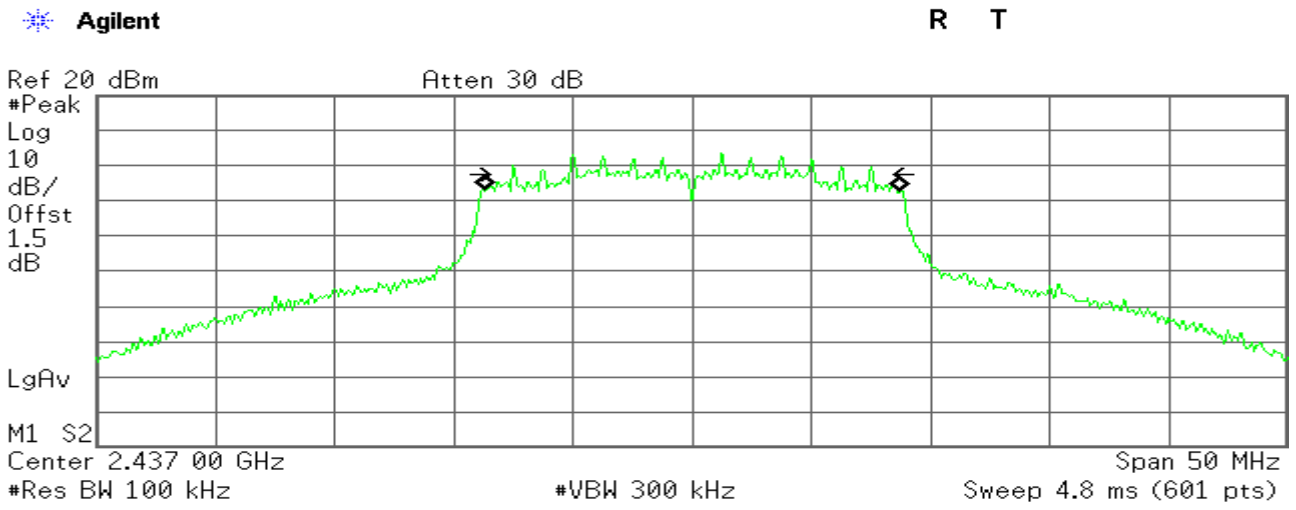



### draft 802.11gn Standard-20 MHz Channel mode / Chain 0+ Chain 1

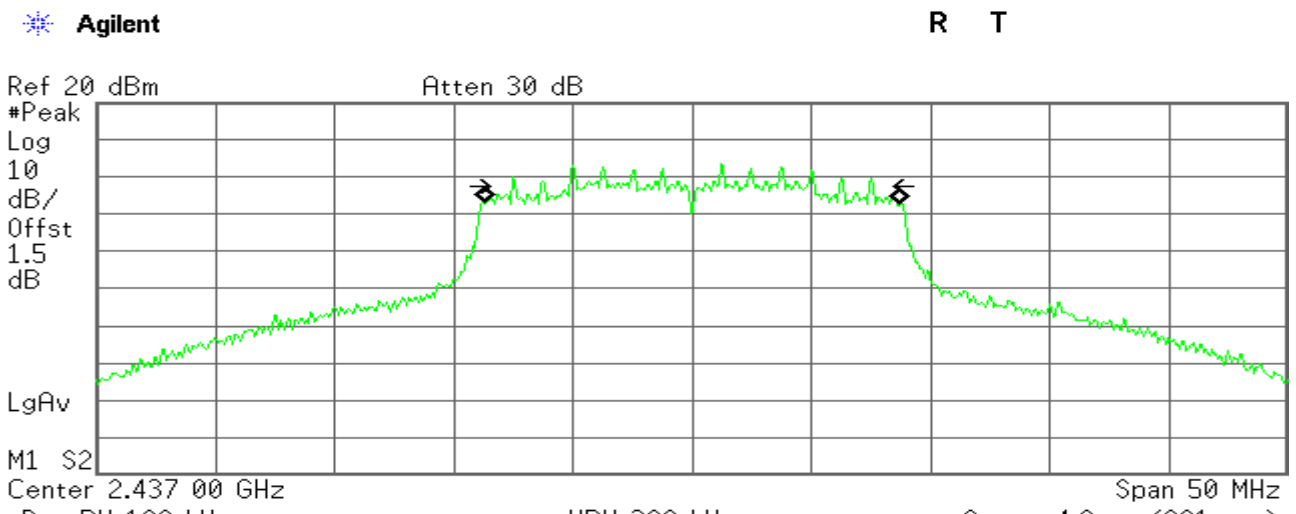
### 6dB Bandwidth (CH Low)



## 6dB Bandwidth (CH Mid)

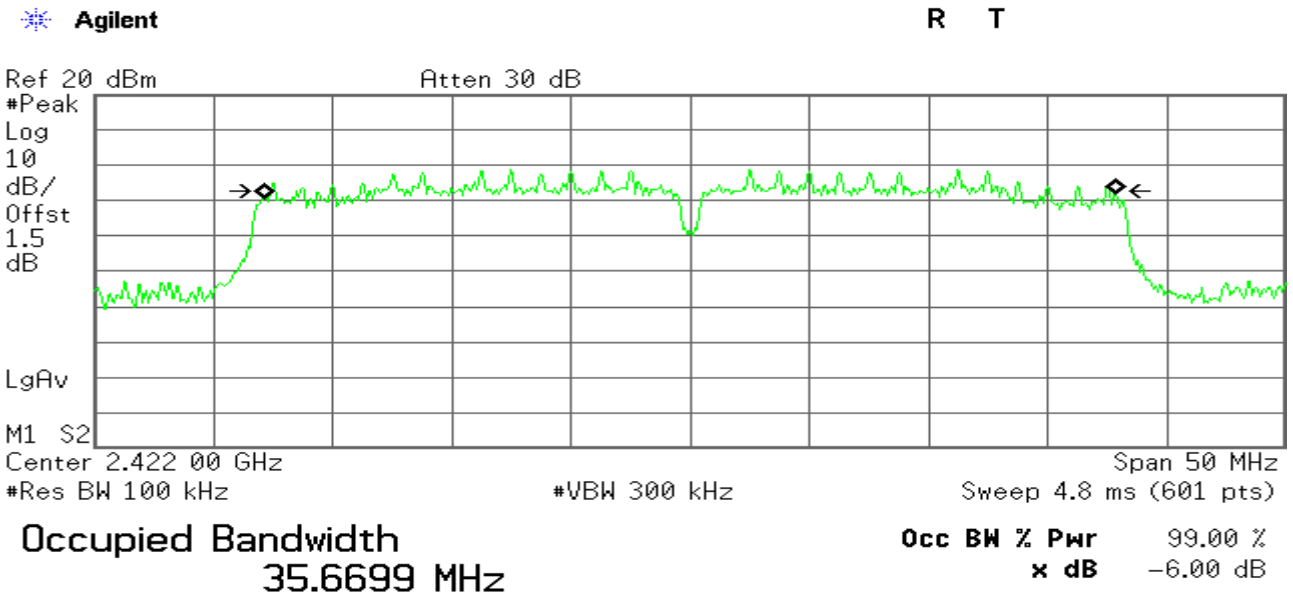



## 6dB Bandwidth (CH High)



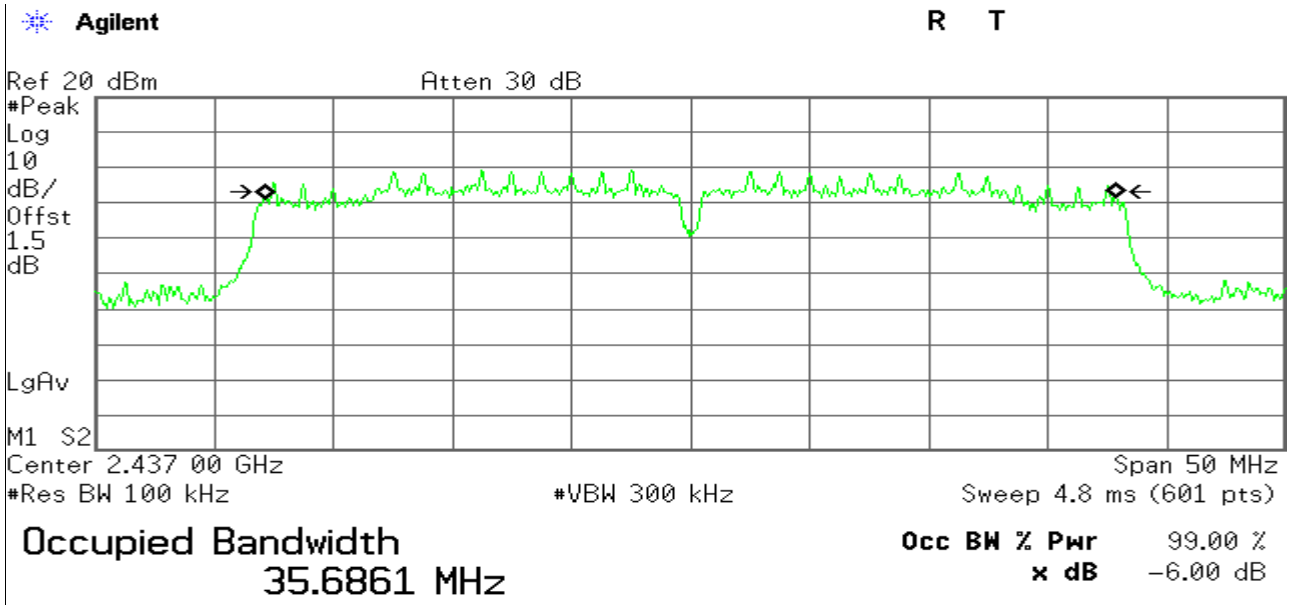
**draft 802.11gn Wide-40 MHz Channel mode / Chain 0+ Chain 1**

**6dB Bandwidth (CH Low)**



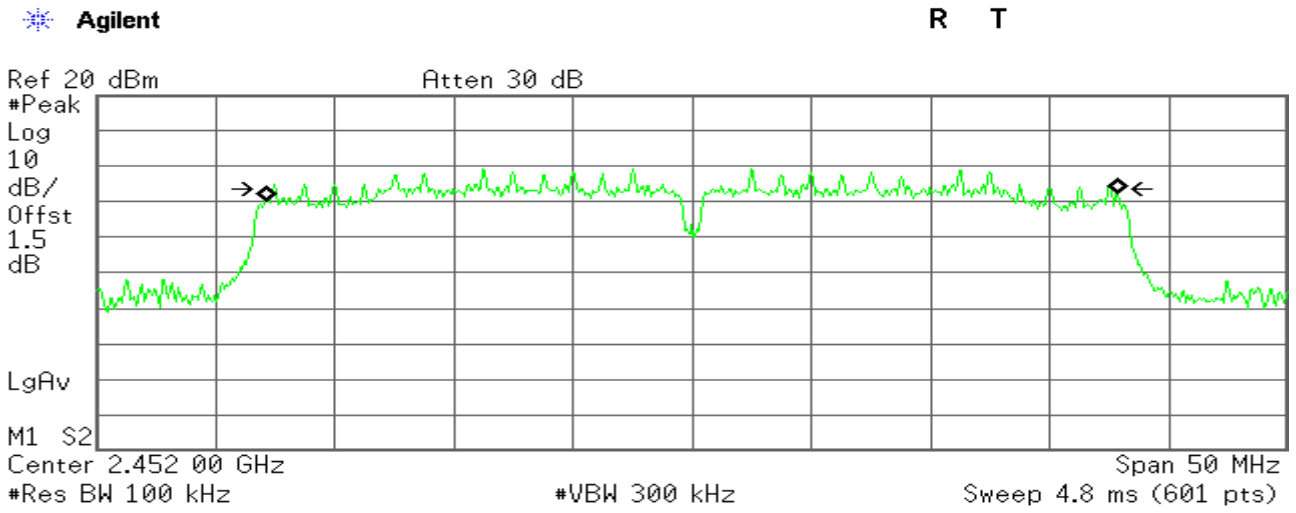

**Transmit Freq Error** 1.769 kHz
**x dB Bandwidth** 35.179 MHz

**6dB Bandwidth (CH Mid)**




**Transmit Freq Error** 2.040 kHz
**x dB Bandwidth** 35.170 MHz

### 6dB Bandwidth (CH High)

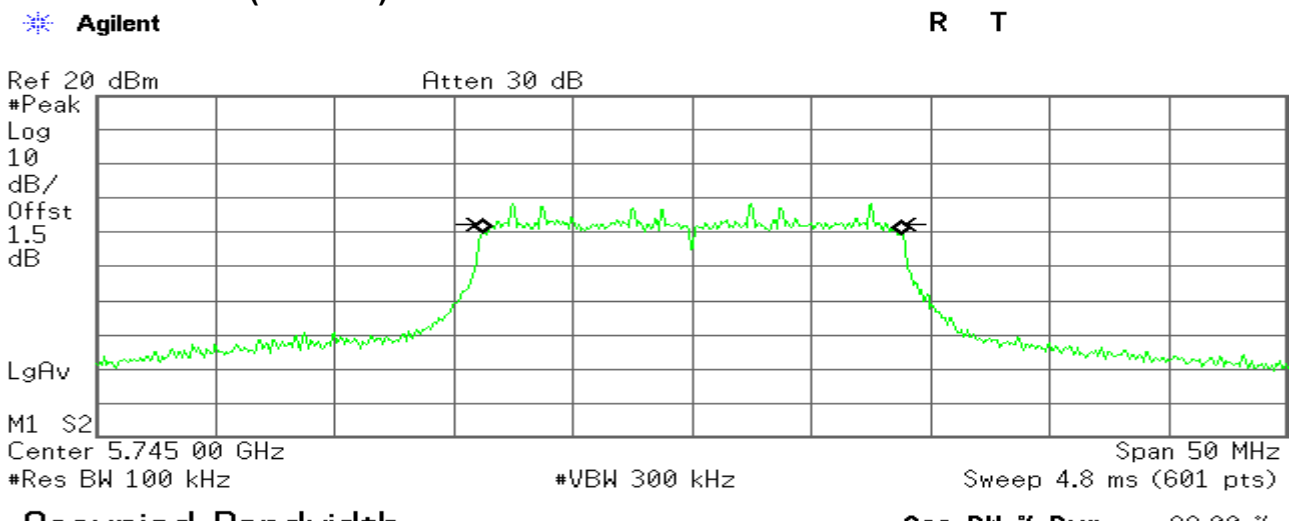



**Transmit Freq Error** -1.540 kHz
**x dB Bandwidth** 35.149 MHz

## 5725MHz-5825MHz

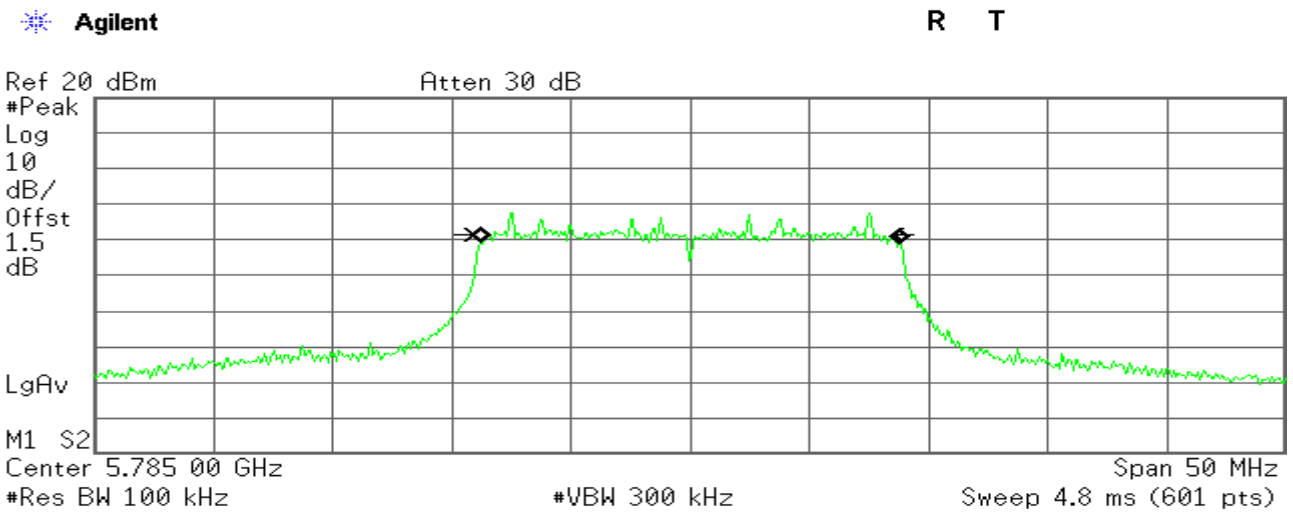
### draft 802.11an Standard-20 MHz Channel mode / Chain 0+ Chain 1

### 6dB Bandwidth (CH Low)




**Transmit Freq Error** -11.069 kHz
**x dB Bandwidth** 16.288 MHz

## 6dB Bandwidth (CH Mid)

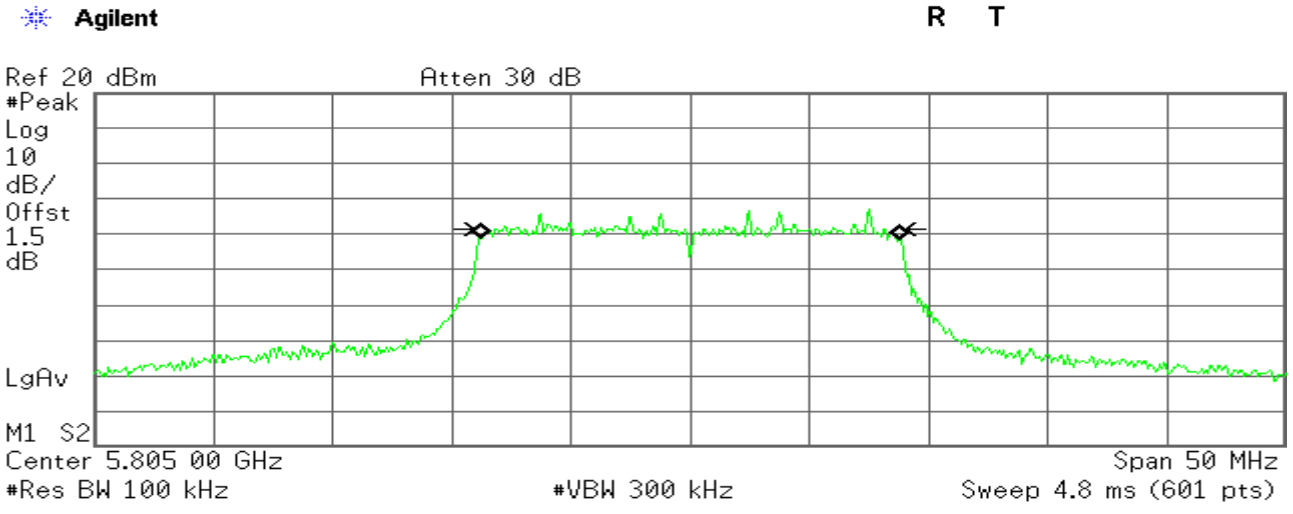



Occupied Bandwidth
17.5372 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -6.00 dB

**Transmit Freq Error** -1.745 kHz
**x dB Bandwidth** 15.843 MHz

## 6dB Bandwidth (CH High)



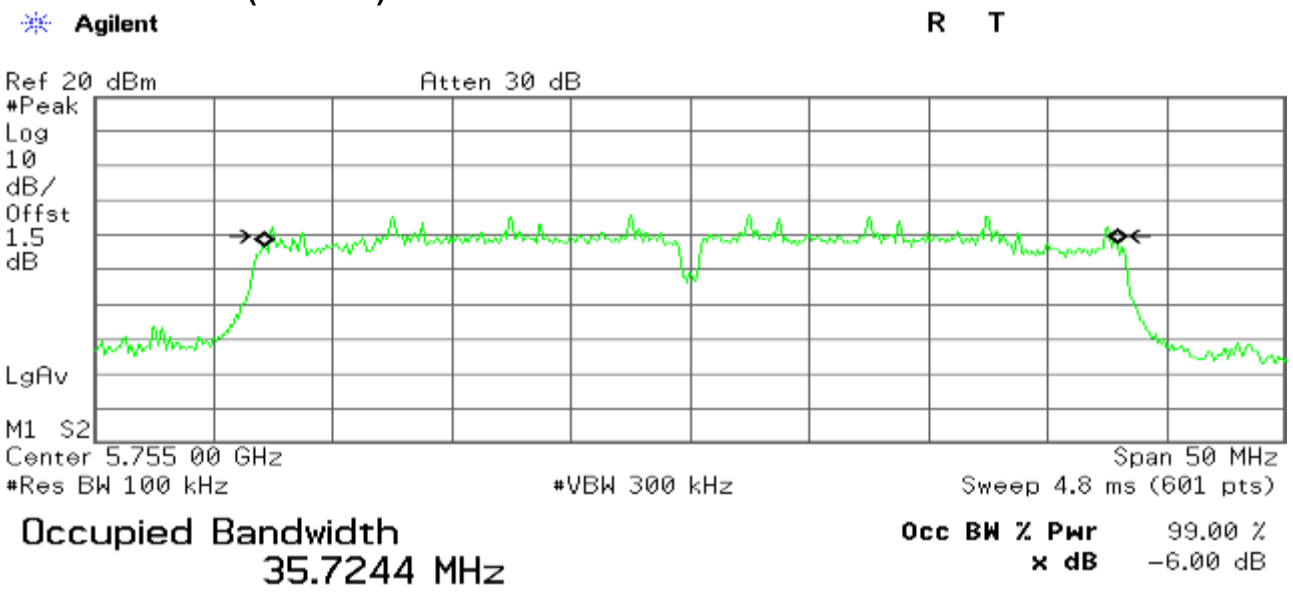

Occupied Bandwidth
17.5595 MHz

**Occ BW % Pwr** 99.00 %
**x dB** -6.00 dB

**Transmit Freq Error** -6.559 kHz
**x dB Bandwidth** 16.350 MHz

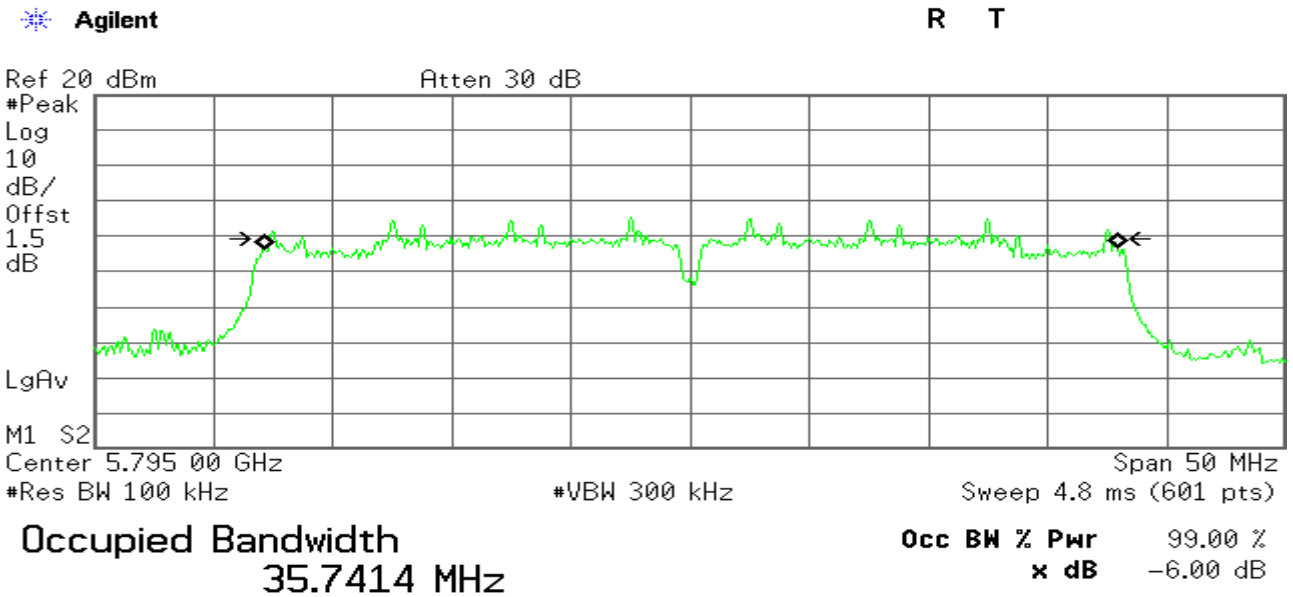
## draft 802.11an Standard-40 MHz Channel mode / Chain0 + Chain1

### 6dB Bandwidth (CH Low)




**Transmit Freq Error** 15.993 kHz
**x dB Bandwidth** 35.204 MHz

### 6dB Bandwidth (CH High)




**Transmit Freq Error** 43.612 kHz
**x dB Bandwidth** 35.224 MHz

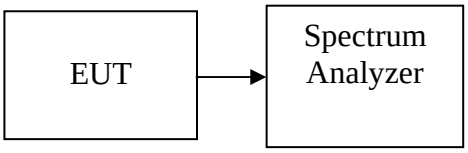
## 7.2.PEAK POWER

### LIMIT

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

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

**Test Configuration**




**TEST PROCEDURE**

1 Set span to encompass the entire emission bandwidth (EBW) of the signal.
2 Set RBW = 1 MHz.
3 Set VBW ≥ 3 MHz.
4 Use sample detector mode if bin width (i.e., span/number of points in spectrum display) < 0.5 RBW. Otherwise use peak detector mode.
5 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 ôhichfree runöhich.
6 Trace average 100 traces in power averaging mode.
7 Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges or by summing power levels in each 1 MHz band in linear power terms. The 1 MHz band power levels to be summed can be obtained by averaging, in linear power terms, power levels in each frequency bin across the 1 MHz.

### TEST RESULTS

*No non-compliance noted*

## Test Data

**Test mode: IEEE 802.11b mode**

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---|---|---|---|---|---|
| Low | 2412 | **16.22** | 0.0418 | 1.00 | PASS |
| Mid | 2437 | 16.14 | 0.0411 | | PASS |
| High | 2462 | 15.95 | 0.0394 | | PASS |

**Test mode: IEEE 802.11g mode**

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---|---|---|---|---|---|
| Low | 2412 | 13.86 | 0.0243 | 1.00 | PASS |
| Mid | 2437 | 13.92 | 0.0246 | | PASS |
| High | 2462 | **14.54** | 0.0284 | | PASS |

**Test mode: draft 802.11gn Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---|---|---|---|---|---|---|---|
| Low | 2412 | 13.74 | 14.52 | 17.16 | 0.0520 | 1.00 | PASS |
| Mid | 2437 | 13.63 | 14.91 | 17.33 | 0.0541 | | PASS |
| High | 2462 | 14.54 | 15.53 | **18.07** | 0.0641 | | PASS |

**Test mode: draft 802.11gn Wide-40 MHz Channel mode**

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---|---|---|---|---|---|---|---|
| Low | 2422 | 12.90 | 13.69 | 16.32 | 0.0428 | 1.00 | PASS |
| Mid | 2437 | 13.06 | 13.77 | 16.43 | 0.0439 | | PASS |
| High | 2452 | 13.07 | 14.50 | **16.85** | 0.0484 | | PASS |

**Test mode: IEEE 802.11a mode**

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---|---|---|---|---|---|
| Low | 5745 | **14.82** | 0.0303 | 1.00 | PASS |
| Mid | 5785 | 14.38 | 0.0274 | | PASS |
| High | 5805 | 14.18 | 0.0262 | | PASS |

**Test mode: draft 802.11an Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---|---|---|---|---|---|---|---|
| Low | 5745 | 14.18 | 14.04 | **17.28** | 0.0515 | 1.00 | PASS |
| Mid | 5785 | 12.68 | 13.93 | 16.45 | 0.0433 | | PASS |
| High | 5805 | 12.10 | 13.84 | 16.37 | 0.0404 | | PASS |

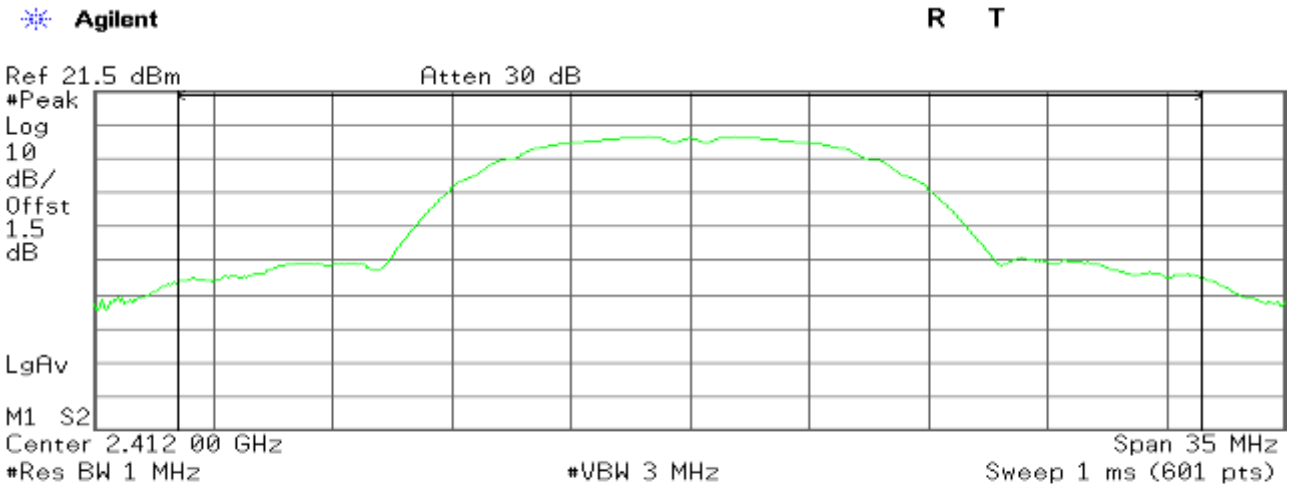
**Test mode: draft 802.11an Wide-40 MHz Channel mode**

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---|---|---|---|---|---|---|---|
| Low | 5755 | 13.57 | 13.48 | **16.54** | 0.0450 | 1.00 | PASS |
| Mid | 5795 | 12.08 | 13.40 | 15.80 | 0.0380 | | PASS |

## Test Plot

## IEEE 802.11b mode

### Peak Power (CH Low)



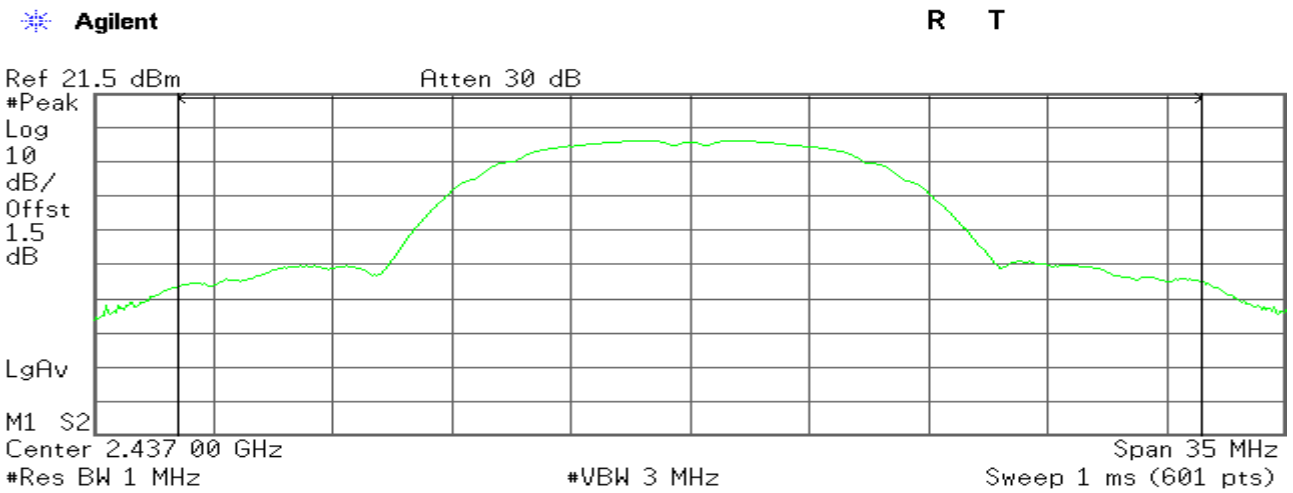

**Channel Power**

16.22 dBm /30.0000 MHz

**Power Spectral Density**

-58.55 dBm/Hz

### Peak Power (CH Mid)



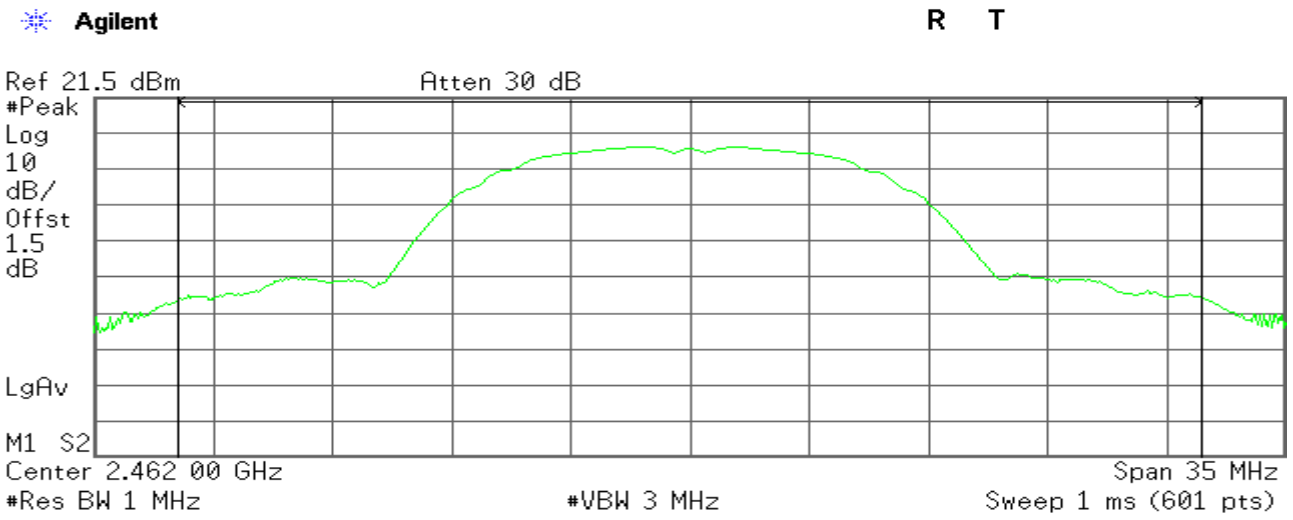

**Channel Power**

16.14 dBm /30.0000 MHz

**Power Spectral Density**

-58.63 dBm/Hz

**Peak Power (CH High)**

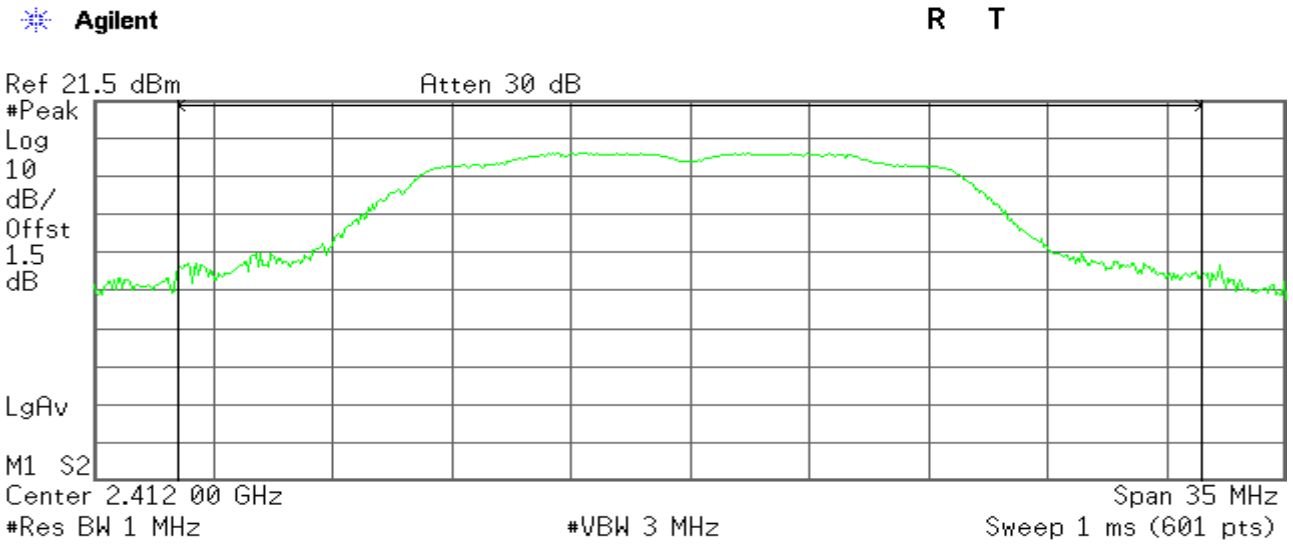



**Channel Power**
15.95 dBm /30.0000 MHz

**Power Spectral Density**
-58.82 dBm/Hz

**IEEE 802.11g mode**

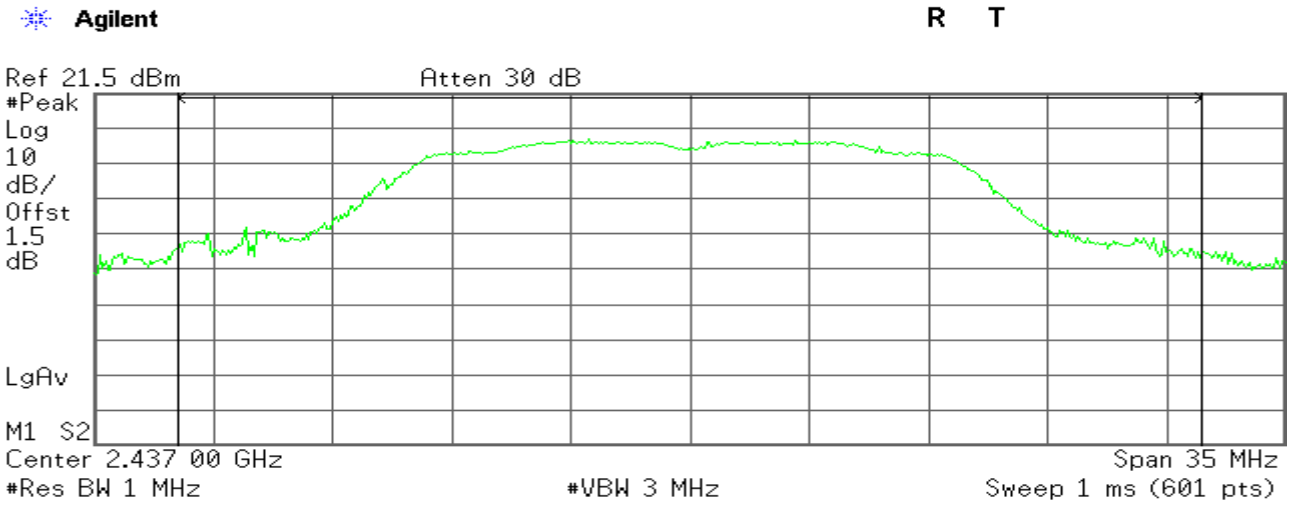
**Peak Power (CH Low)**




**Channel Power**
13.86 dBm /30.0000 MHz

**Power Spectral Density**
-60.91 dBm/Hz

## Peak Power (CH Mid)



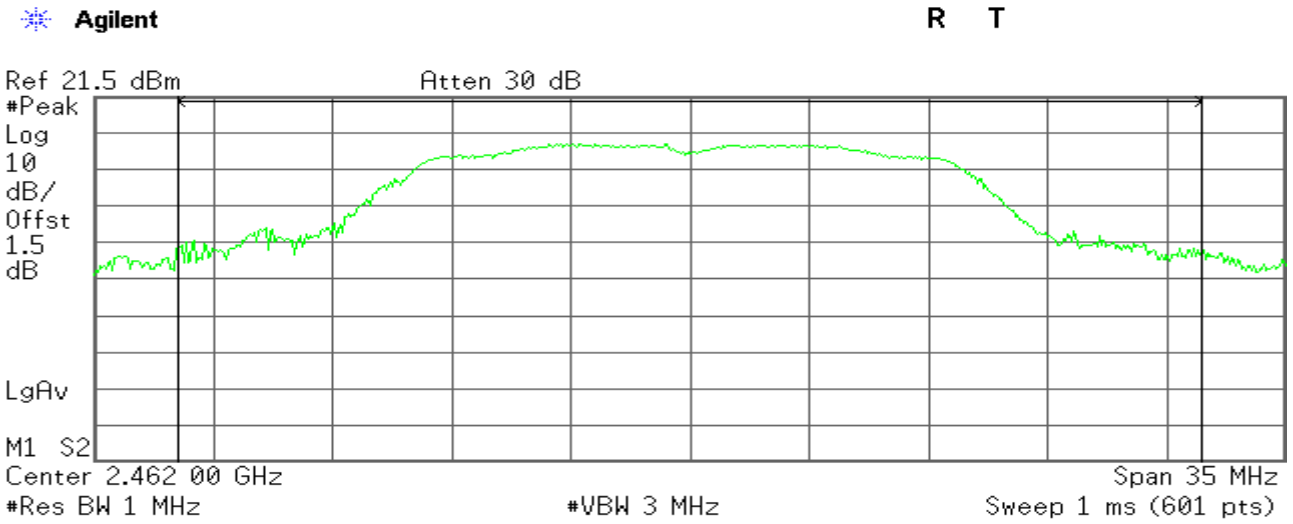

**Channel Power**

13.92 dBm /30.0000 MHz

**Power Spectral Density**

-60.86 dBm/Hz

## Peak Power (CH High)




**Channel Power**

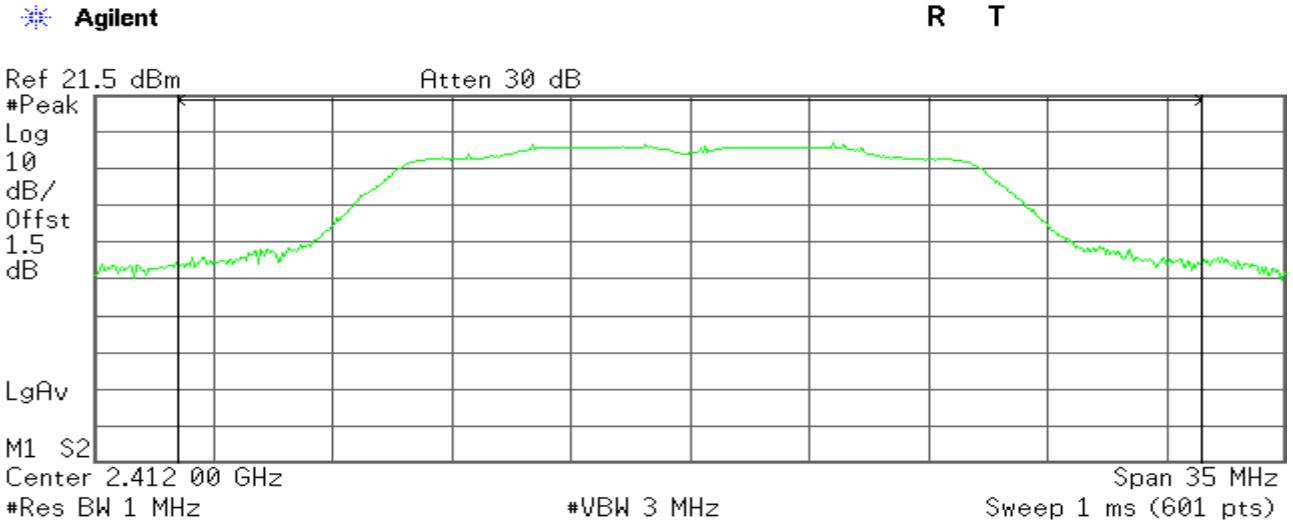
14.54 dBm /30.0000 MHz

**Power Spectral Density**

-60.23 dBm/Hz

**draft 802.11gn Standard-20 MHz Channel mode / Chain 0**

**Peak Power (CH Low)**



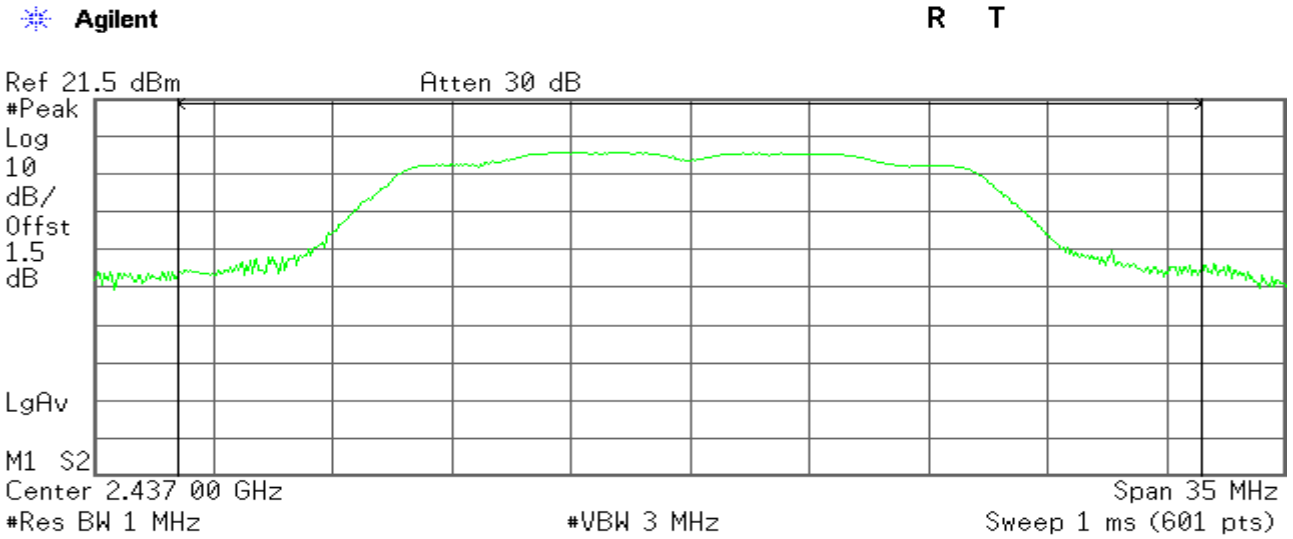

**Channel Power**

13.74 dBm /30.0000 MHz

**Power Spectral Density**

-61.03 dBm/Hz

**Peak Power (CH Mid)**



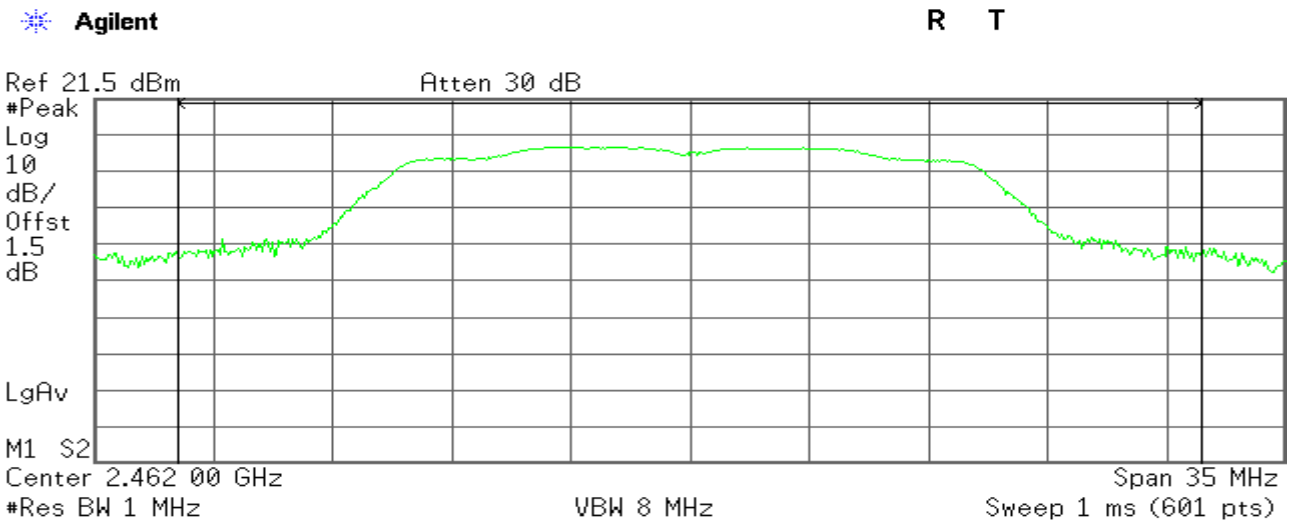

**Channel Power**

13.63 dBm /30.0000 MHz

**Power Spectral Density**

-61.14 dBm/Hz

**Peak Power (CH High)**




**Channel Power**

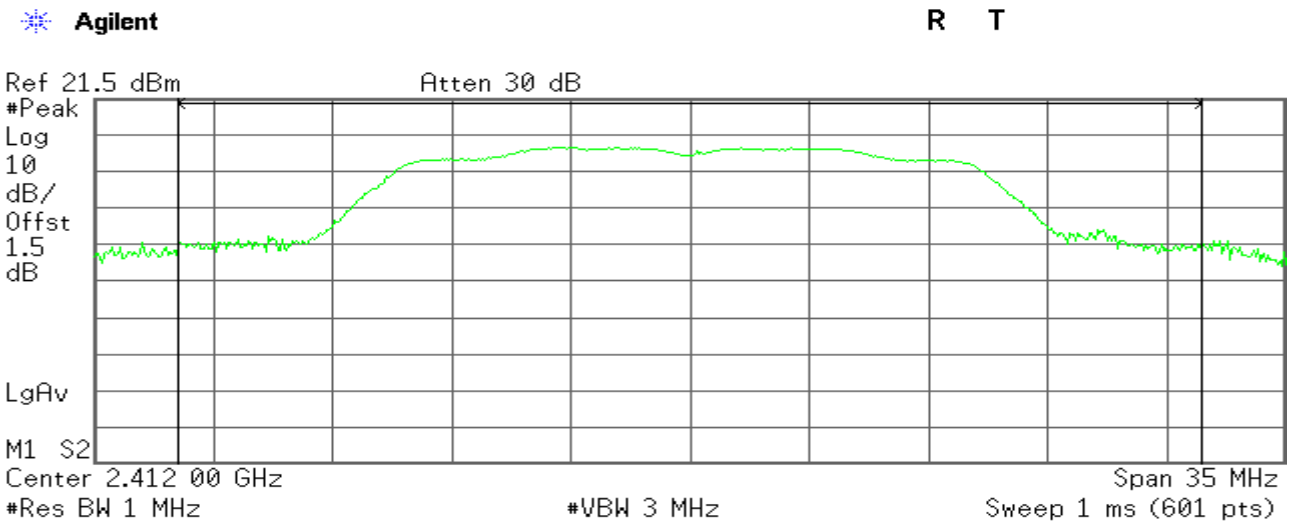
14.54 dBm /30.0000 MHz

**Power Spectral Density**

-60.23 dBm/Hz

**draft 802.11gn Standard-20 MHz Channel mode / Chain 1**

**Peak Power (CH Low)**



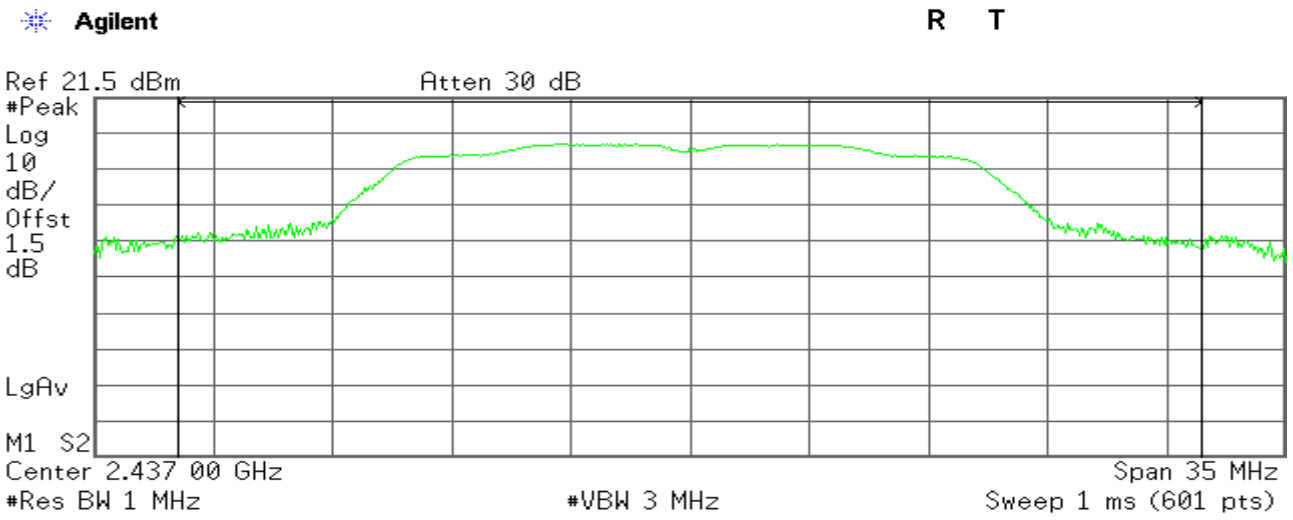

**Channel Power**

14.52 dBm /30.0000 MHz

**Power Spectral Density**

-60.25 dBm/Hz

## Peak Power (CH Mid)



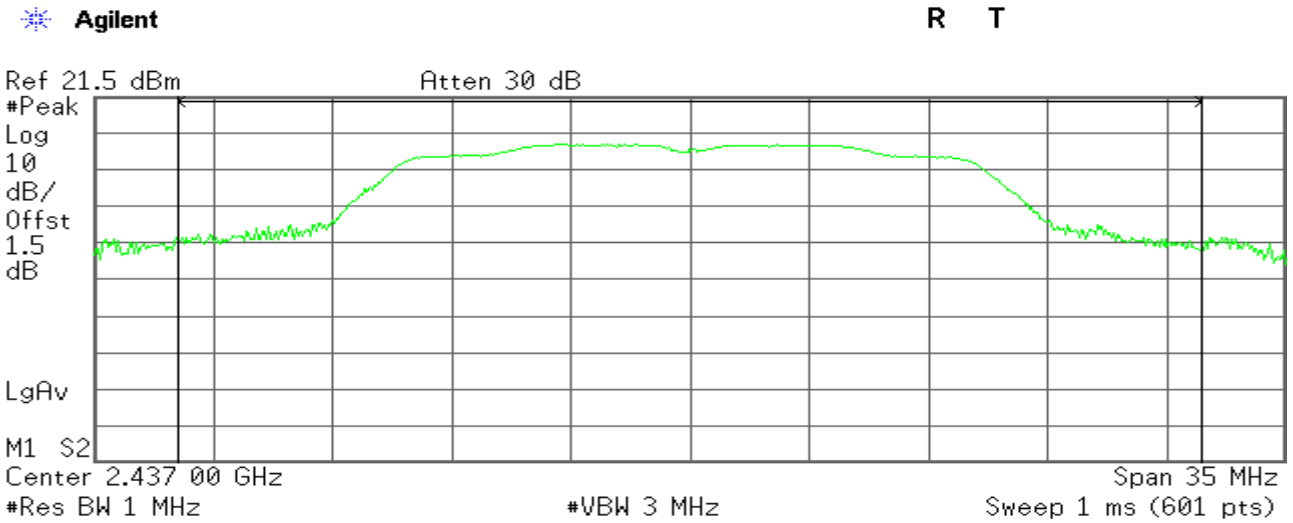

**Channel Power**

14.91 dBm /30.0000 MHz

**Power Spectral Density**

-59.87 dBm/Hz

## Peak Power (CH High)




**Channel Power**

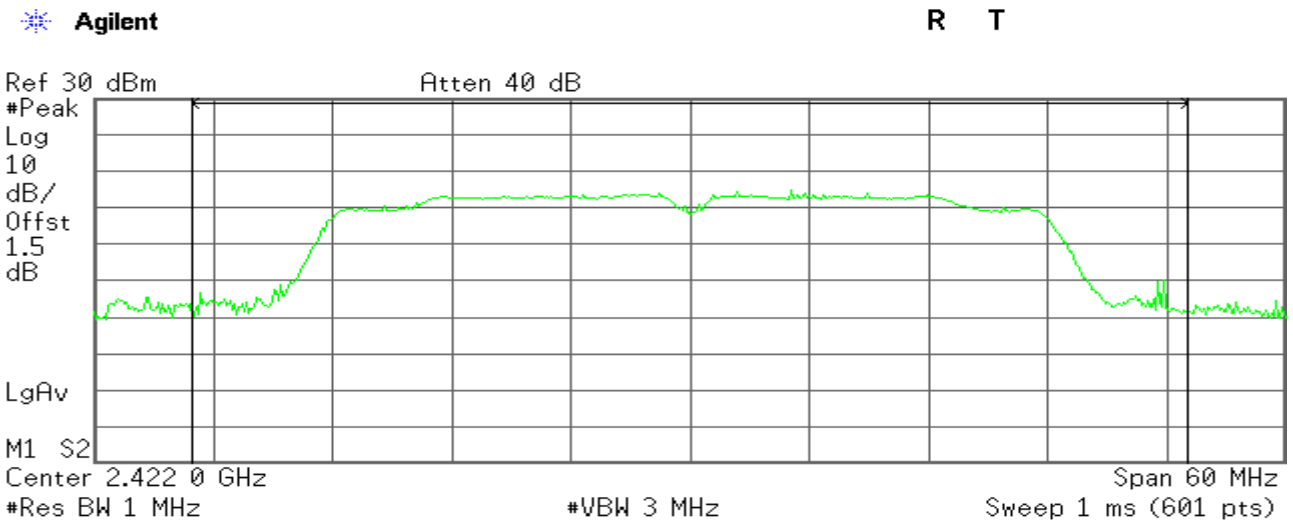
14.91 dBm /30.0000 MHz

**Power Spectral Density**

-59.87 dBm/Hz

**draft 802.11gn Wide-40 MHz Channel mode / Chain 0**

**Peak Power (CH Low)**



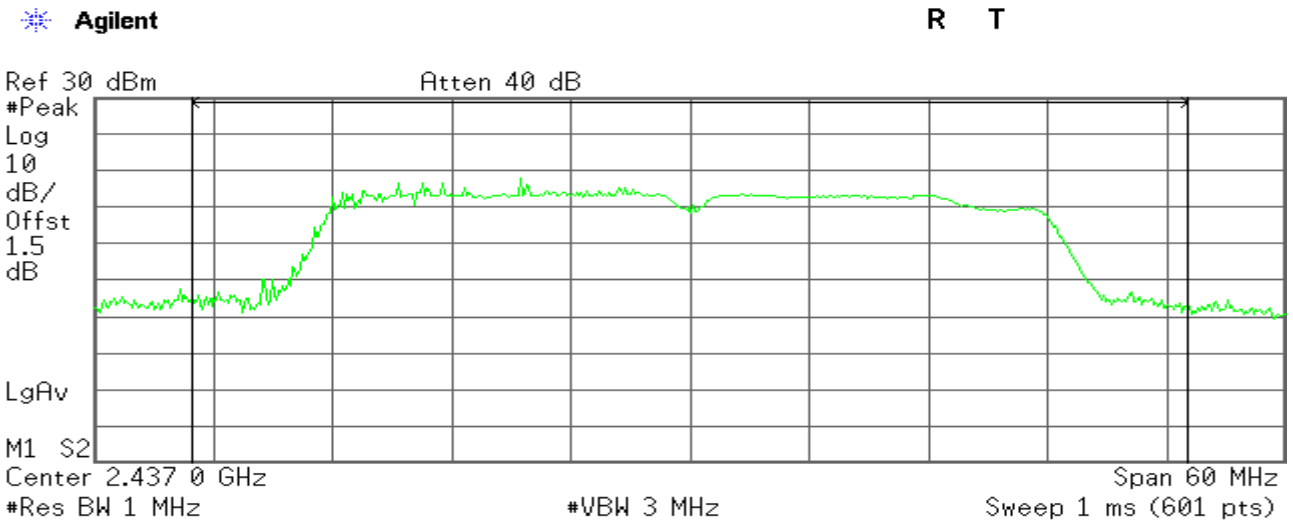

**Channel Power**

12.90 dBm /50.0000 MHz

**Power Spectral Density**

-64.09 dBm/Hz

**Peak Power (CH Mid)**



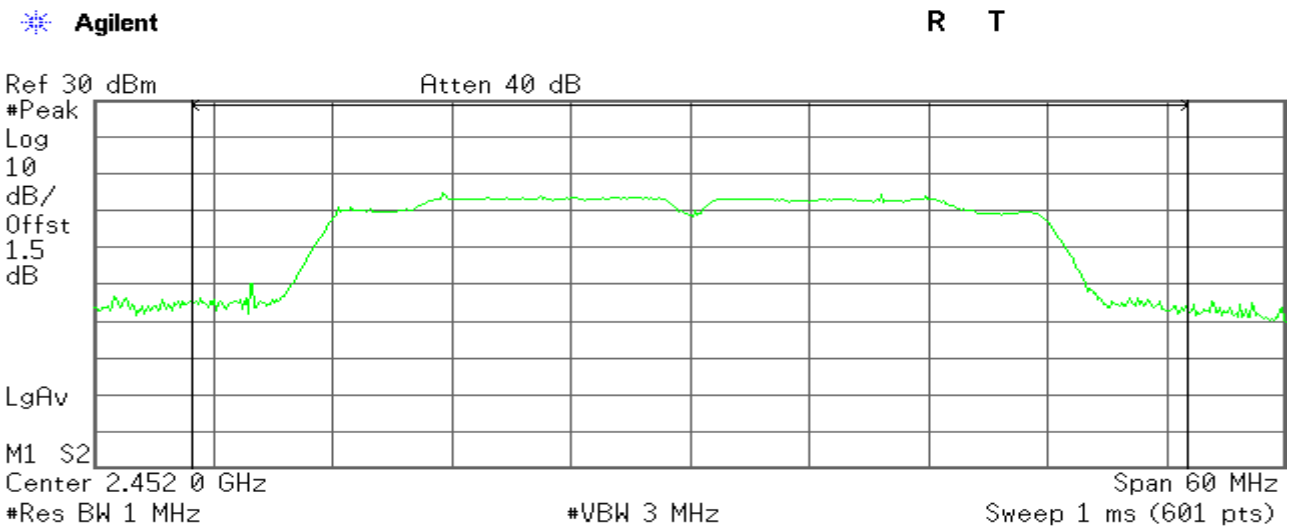

**Channel Power**

13.06 dBm /50.0000 MHz

**Power Spectral Density**

-63.93 dBm/Hz

**Peak Power (CH High)**




**Channel Power**

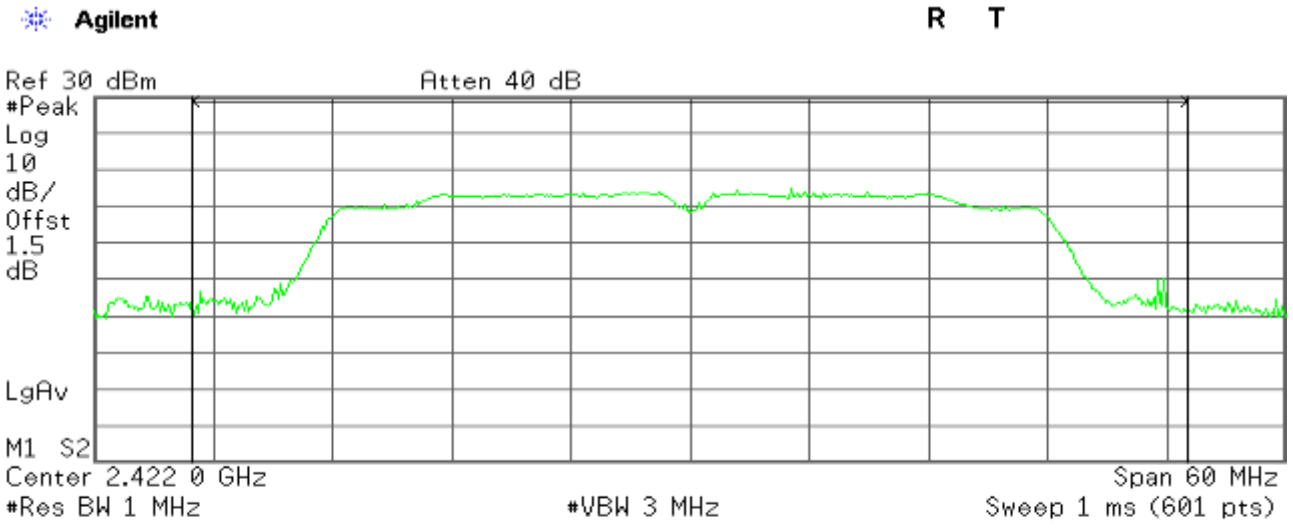
13.07 dBm /50.0000 MHz

**Power Spectral Density**

-63.92 dBm/Hz

**draft 802.11gn Wide-40 MHz Channel mode / Chain 1**

**Peak Power (CH Low)**



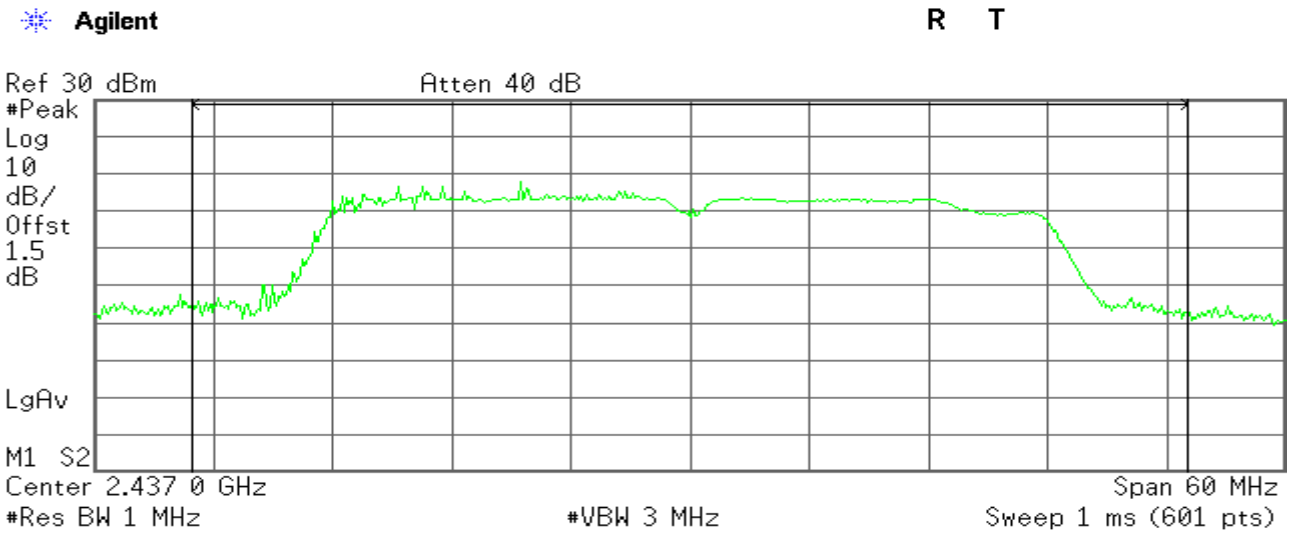

**Channel Power**

12.90 dBm /50.0000 MHz

**Power Spectral Density**

-64.09 dBm/Hz

## Peak Power (CH Mid)



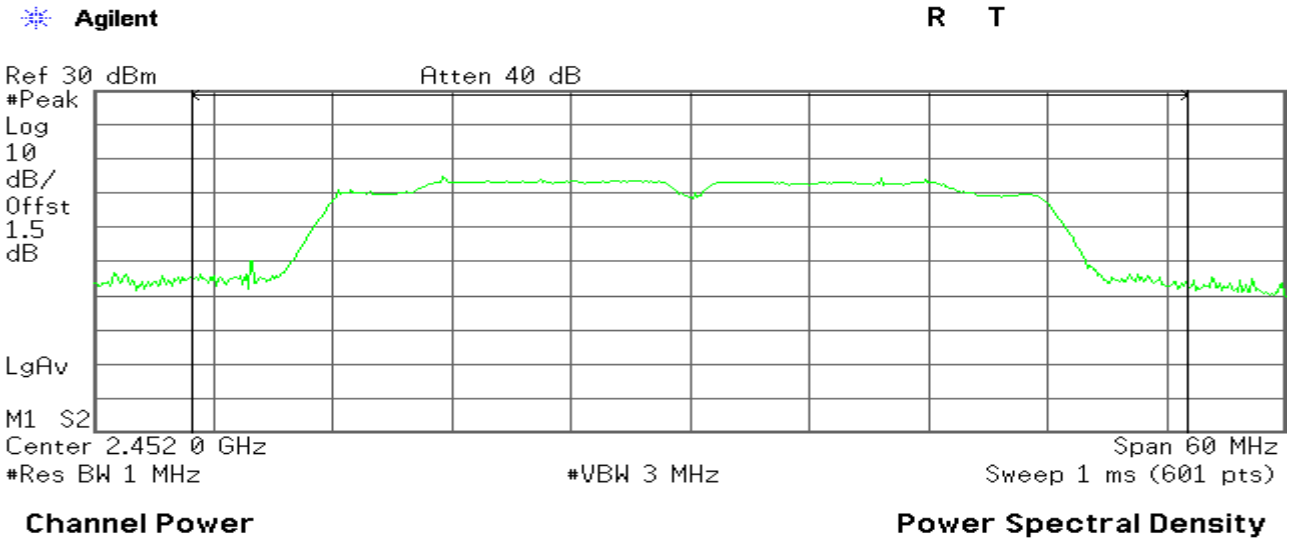

**Channel Power**

13.06 dBm /50.0000 MHz

**Power Spectral Density**

-63.93 dBm/Hz

## Peak Power (CH High)




**Channel Power**

13.07 dBm /50.0000 MHz

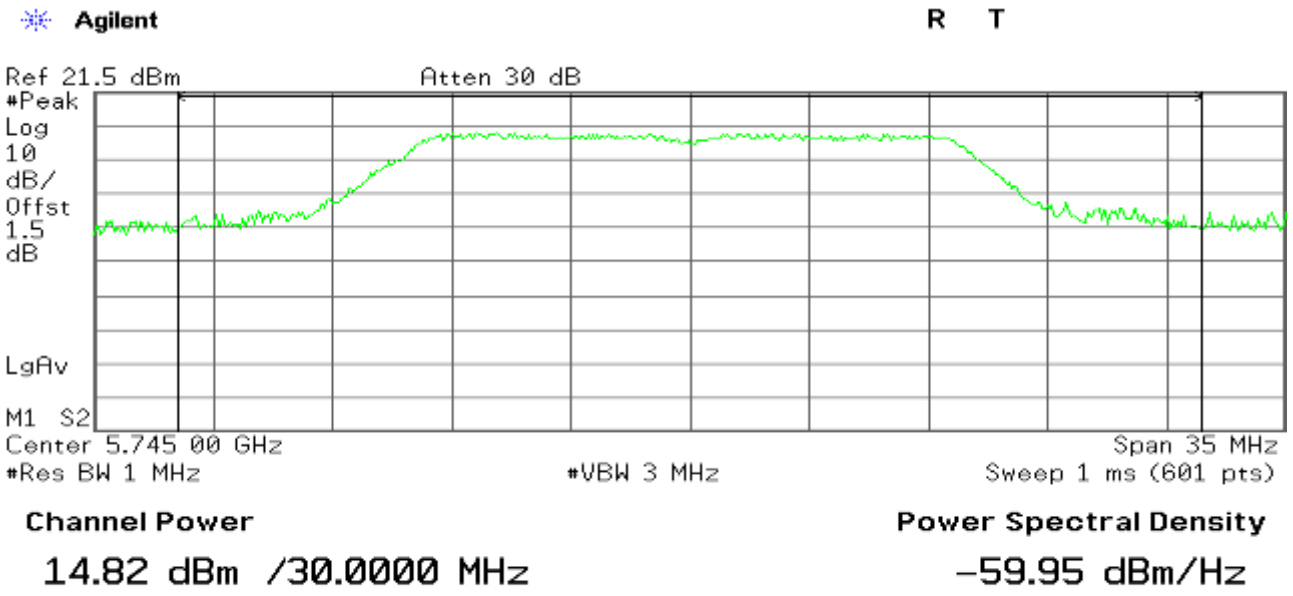
**Power Spectral Density**

-63.92 dBm/Hz

## 5725-5825

### IEEE 802.11a mode

### Peak Power (CH Low)



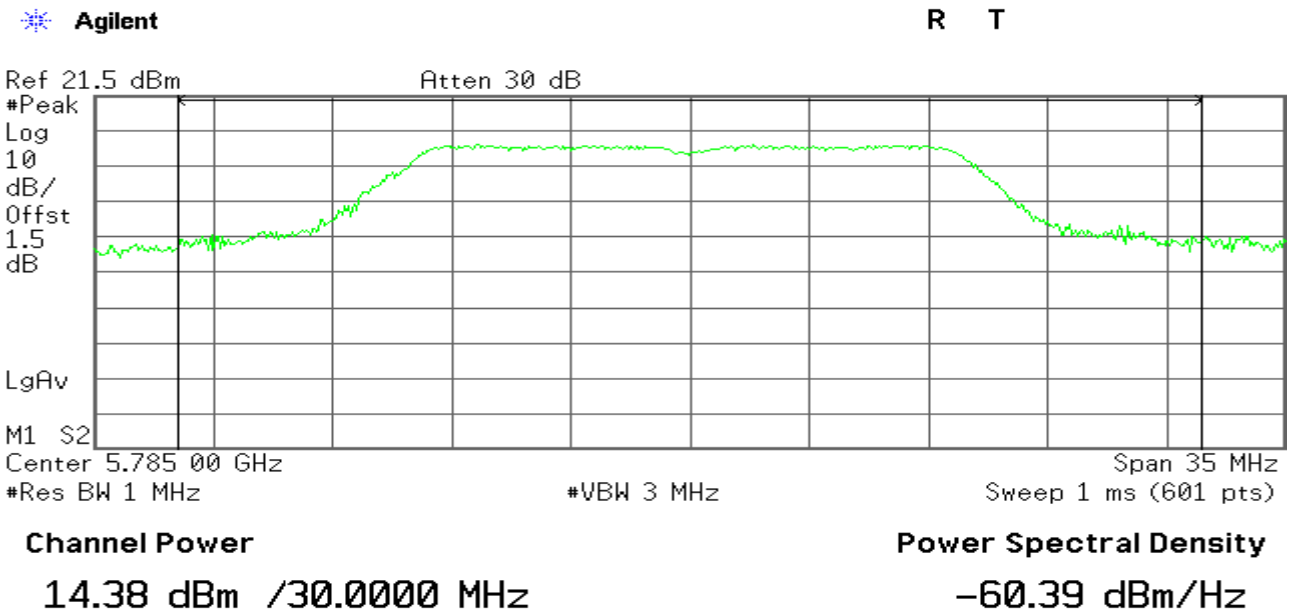

**Channel Power**

14.82 dBm /30.0000 MHz

**Power Spectral Density**

-59.95 dBm/Hz

### Peak Power (CH Mid)



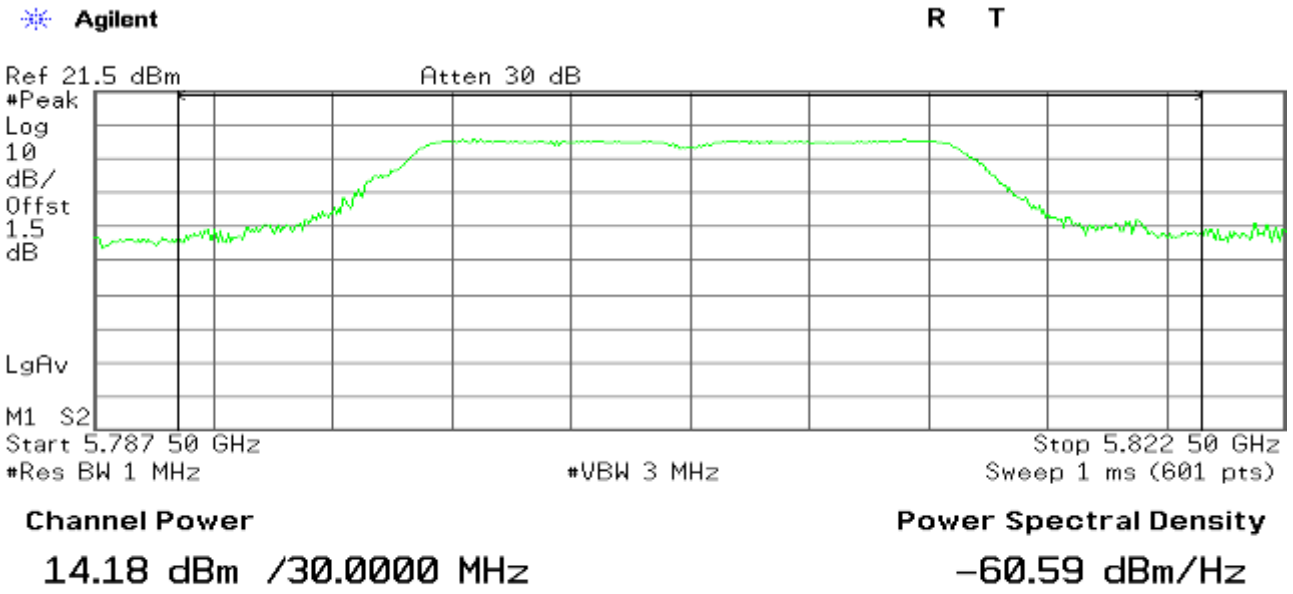

**Channel Power**

14.38 dBm /30.0000 MHz

**Power Spectral Density**

-60.39 dBm/Hz

**Peak Power (CH Hgih)**

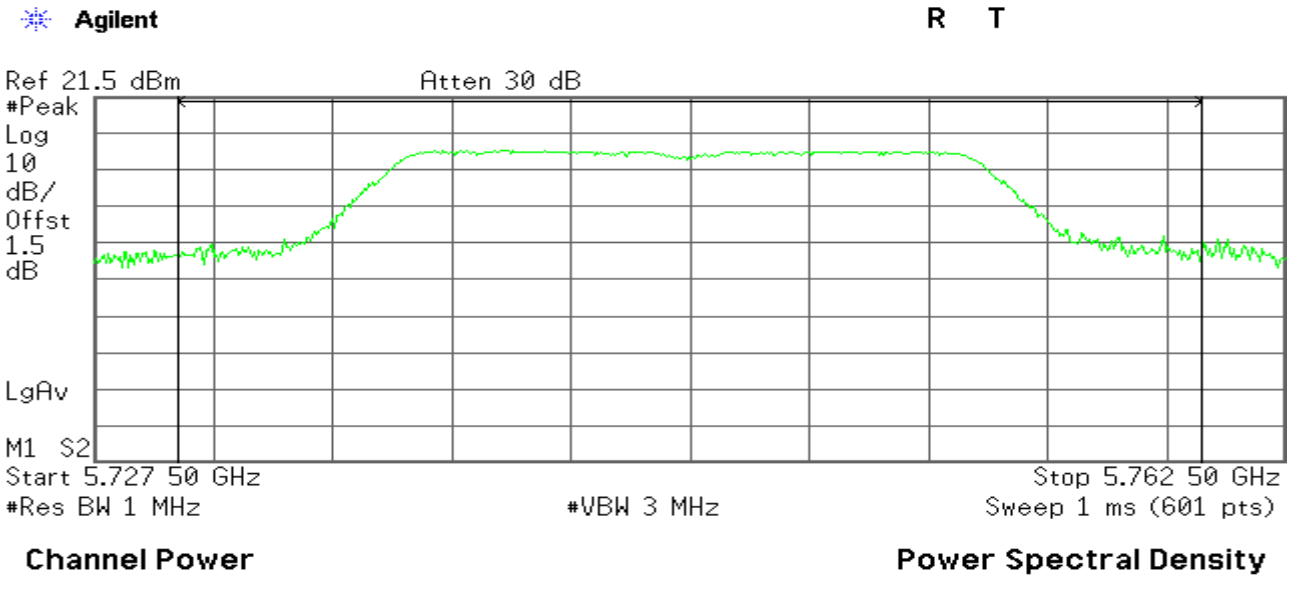



**Channel Power**
14.18 dBm /30.0000 MHz

**Power Spectral Density**
-60.59 dBm/Hz

**draft 802.11an Standard-20 MHz Channel mode / Chain 0**

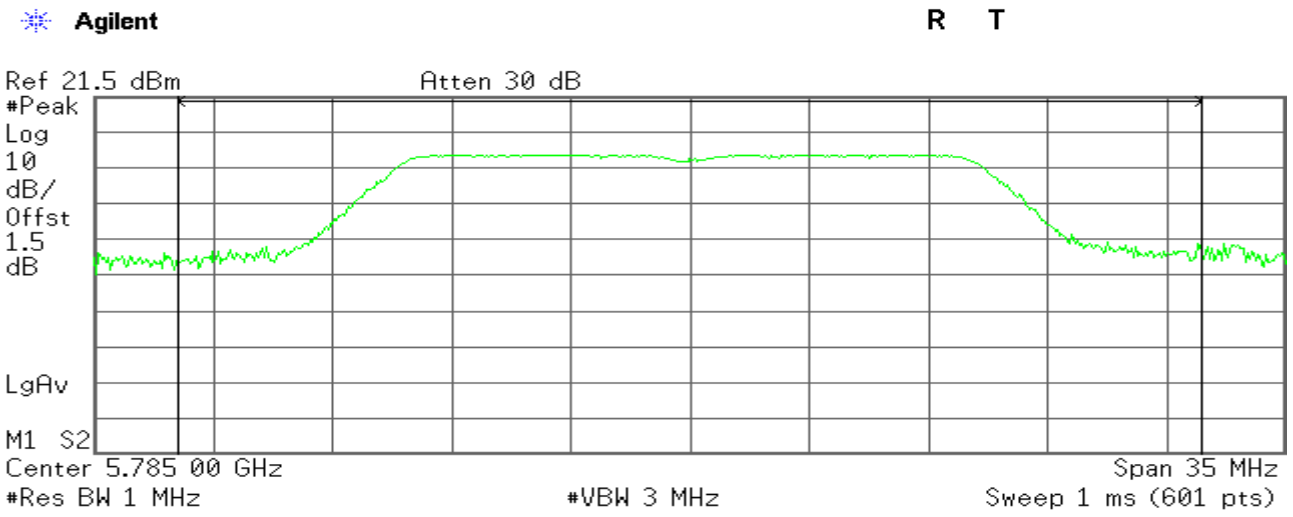
**Peak Power (CH Low)**




**Channel Power**
14.18 dBm /30.0000 MHz

**Power Spectral Density**
-60.60 dBm/Hz

**Peak Power (CH Mid)**




**Channel Power**

12.68 dBm /30.0000 MHz

**Power Spectral Density**

-62.09 dBm/Hz

**Peak Power (CH High)**


**Channel Power**

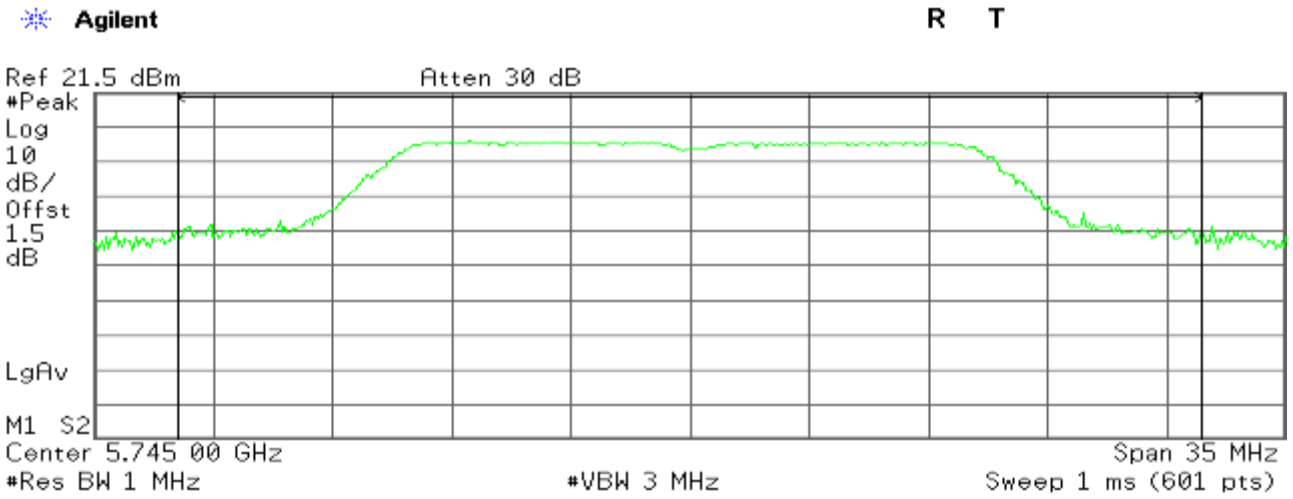
12.10 dBm /30.0000 MHz

**Power Spectral Density**

-62.67 dBm/Hz

**draft 802.11an Standard-20 MHz Channel mode / Chain 1**

**Peak Power (CH Low)**



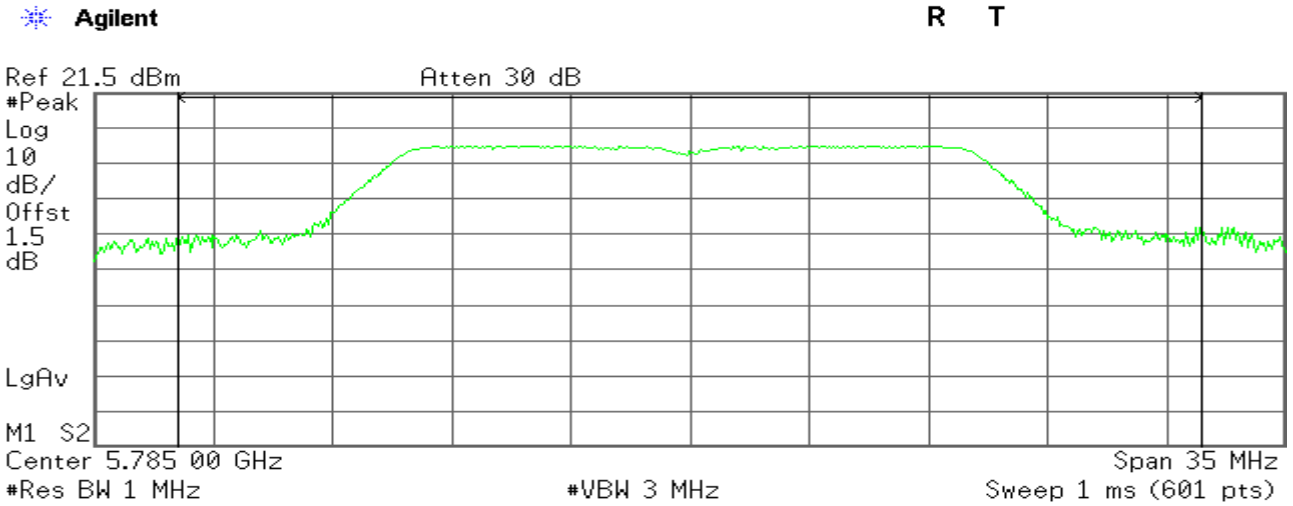

**Channel Power**

14.04 dBm /30.0000 MHz

**Power Spectral Density**

-60.73 dBm/Hz

**Peak Power (CH Mid)**



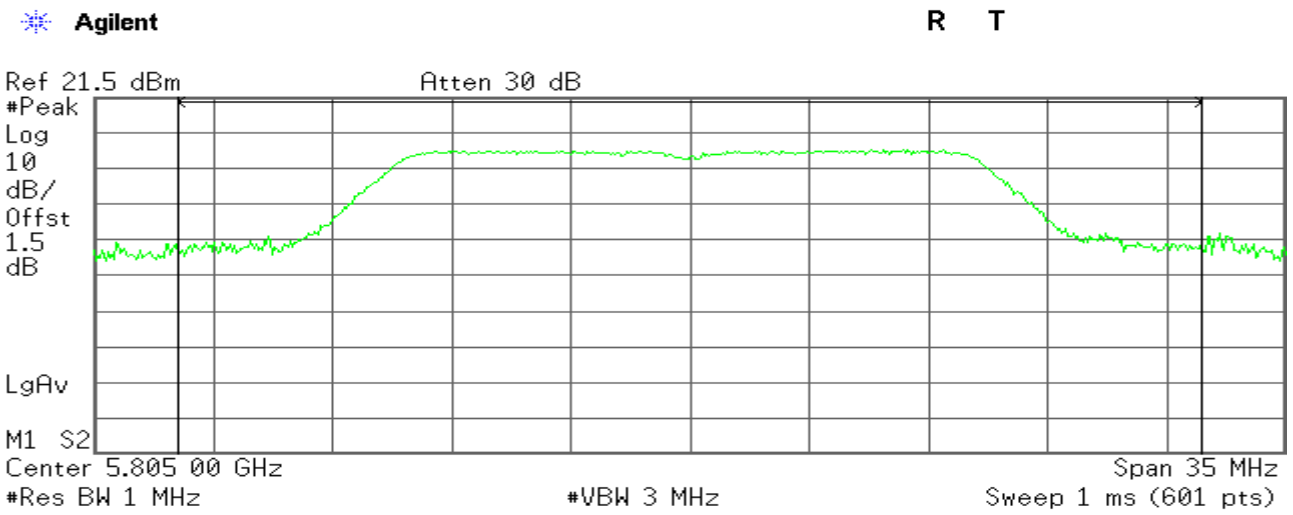

**Channel Power**

13.93 dBm /30.0000 MHz

**Power Spectral Density**

-60.84 dBm/Hz

**Peak Power (CH High)**

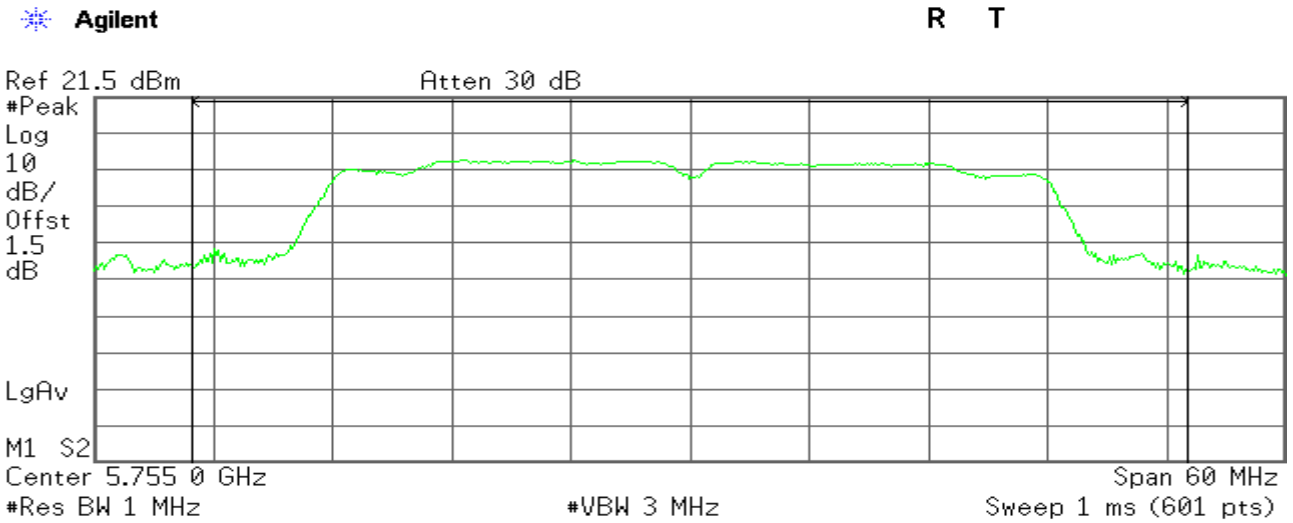



**Channel Power**
13.84 dBm /30.0000 MHz

**Power Spectral Density**
-60.93 dBm/Hz

**draft 802.11an Standard-40 MHz Channel mode / Chain 0**

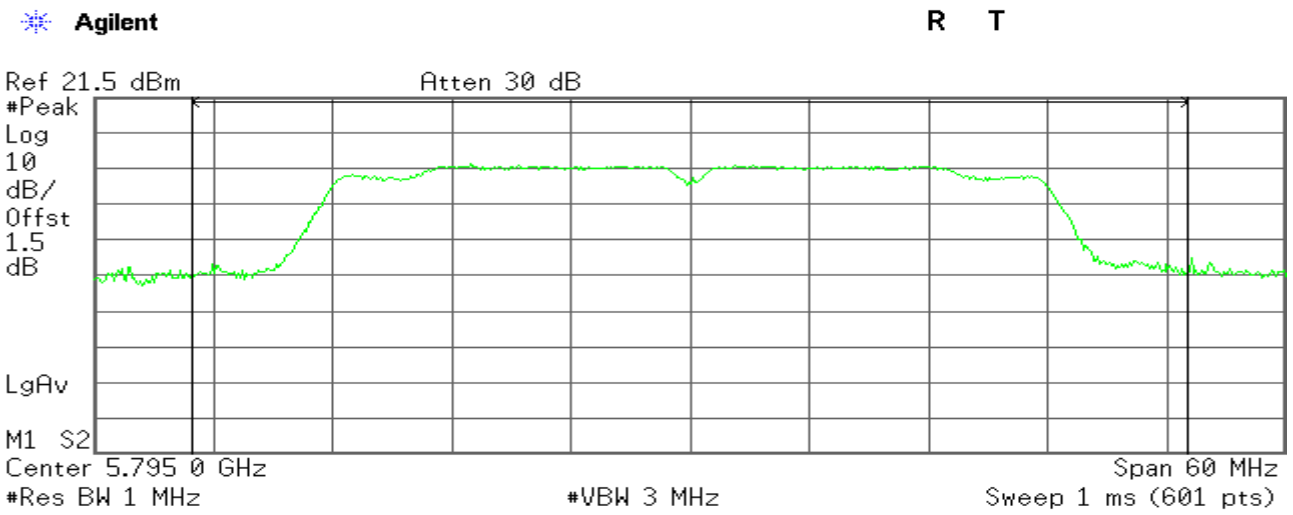
**Peak Power (CH Low)**




**Channel Power**
13.57 dBm /50.0000 MHz

**Power Spectral Density**
-63.42 dBm/Hz

**Peak Power (CH High)**

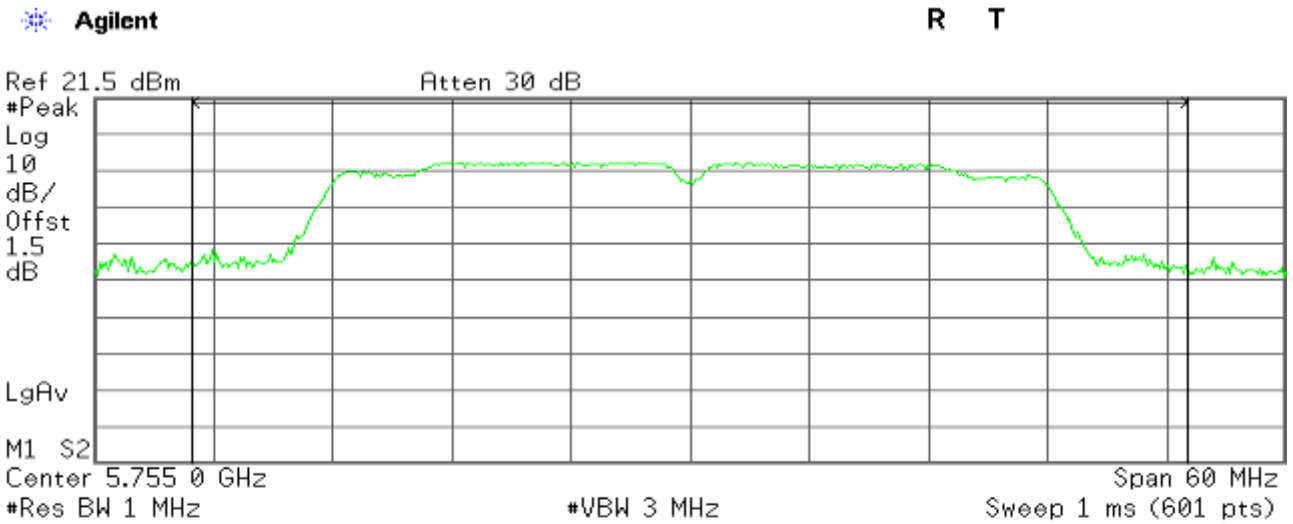



**Channel Power**
12.08 dBm /50.0000 MHz

**Power Spectral Density**
-64.91 dBm/Hz

**draft 802.11an Standard-40 MHz Channel mode / Chain 1**

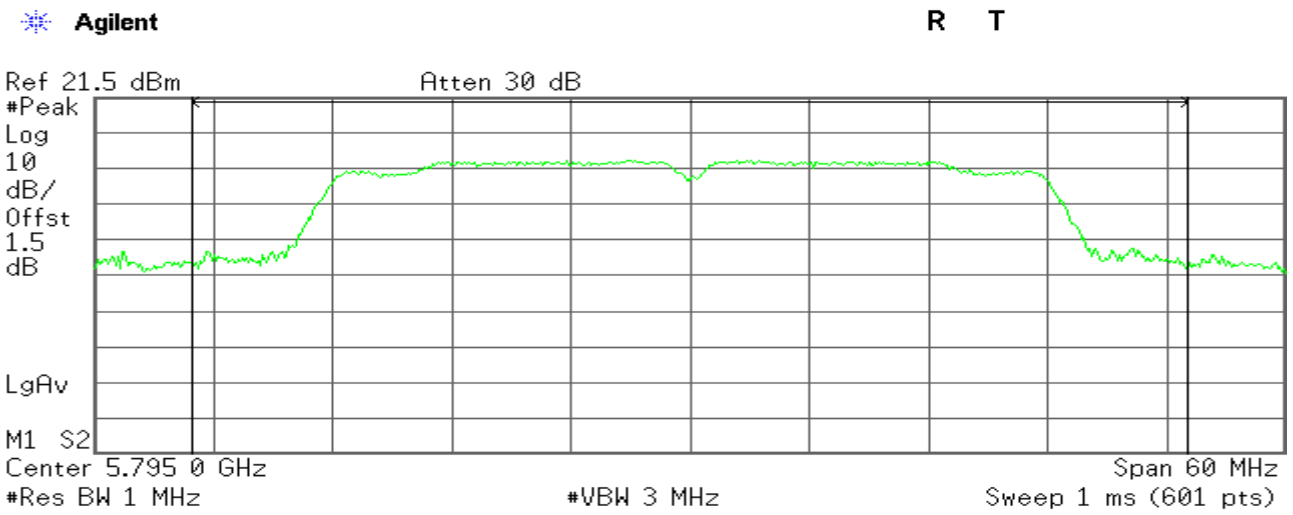
**Peak Power (CH Low)**




**Channel Power**
13.48 dBm /50.0000 MHz

**Power Spectral Density**
-63.51 dBm/Hz

**Peak Power (CH High)**




**Channel Power**

13.40 dBm /50.0000 MHz

**Power Spectral Density**

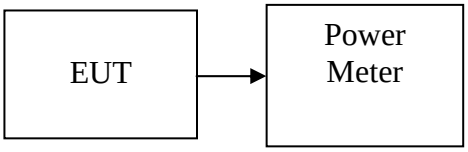
-63.59 dBm/Hz

## 7.3.AVERAGE POWER

**LIMIT**

None; for reporting purposes only.

**Test Configuration**




**TEST PROCEDURE**

The transmitter output is connected to the Power meter.

**TEST RESULTS**

*No non-compliance noted*

**Test Data**

**Test mode: IEEE 802.11b mode**

| Channel | Frequency (MHz) | Output Power (dBm) |
|---|---|---|
| Low | 2412 | 14.20 |
| Mid | 2437 | 14.15 |
| High | 2462 | 14.25 |

**Test mode: IEEE 802.11g mode**

| Channel | Frequency (MHz) | Output Power (dBm) |
|---|---|---|
| Low | 2412 | 13.01 |
| Mid | 2437 | 13.11 |
| High | 2462 | 12.98 |

**Test mode: draft 802.11gn Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Output Power (dBm) |
|---|---|---|---|---|
| Low | 2412 | 13.86 | 13.12 | 16.52 |
| Mid | 2437 | 13.74 | 13.24 | 16.51 |
| High | 2462 | 13.55 | 13.21 | 16.39 |

### Test mode: draft 802.11gn Wide-40 MHz Channel mode

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Output Power (dBm) |
|---|---|---|---|---|
| Low | 2422 | 12.98 | 12.99 | 16.00 |
| Mid | 2437 | 12.89 | 12.97 | 15.94 |
| High | 2452 | 12.96 | 12.86 | 15.92 |

### Test mode: IEEE 802.11a mode

| Channel | Frequency (MHz) | Output Power (dBm) |
|---|---|---|
| Low | 5745 | 13.82 |
| Mid | 5785 | 13.38 |
| High | 5805 | 13.18 |

### Test mode: draft 802.11an Standard-20 MHz Channel mode

| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Output Power (dBm) |
|---|---|---|---|---|
| Low | 5745 | 13.18 | 13.01 | 16.11 |
| Mid | 5785 | 11.68 | 12.22 | 14.97 |
| High | 5805 | 11.13 | 12.98 | 15.16 |

### Test mode: draft 802.11an Wide-40 MHz Channel mode

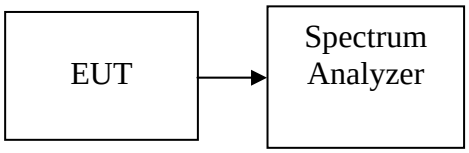
| Channel | Frequency (MHz) | Chain 0 Output Power (dBm) | Chain 1 Output Power (dBm) | Output Power (dBm) |
|---|---|---|---|---|
| Low | 5755 | 12.50 | 12.62 | 15.57 |
| Mid | 5795 | 11.56 | 12.34 | 14.98 |

## 7.4.PEAK POWER SPECTRAL DENSITY

### LIMIT

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

### Test Configuration




### TEST PROCEDURE

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

### TEST RESULTS

*No non-compliance noted*

## Test Data

**Test mode: IEEE 802.11b mode**

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 2412 | -10.53 | 8.00 | PASS |
| Mid | 2437 | -10.78 | 8.00 | PASS |
| High | 2462 | -11.68 | 8.00 | PASS |

**Test mode: IEEE 802.11g mode**

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 2412 | -22.52 | 8.00 | PASS |
| Mid | 2437 | -21.36 | 8.00 | PASS |
| High | 2462 | -22.11 | 8.00 | PASS |

**Test mode: draft 802.11gn Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | PPSD Chain 0 (dBm) | PPSD Chain 1 (dBm) | PPSD Total (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Low | 2412 | -23.29 | -22.22 | -19.71 | 8.00 | PASS |
| Mid | 2437 | -23.74 | -22.07 | -19.81 | 8.00 | PASS |
| High | 2462 | -21.85 | -22.85 | -19.31 | 8.00 | PASS |

***Remark:*** *Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*

**Test mode: draft 802.11gn Wide-40 MHz Channel mode**

| Channel | Frequency (MHz) | PPSD Chain 0 (dBm) | PPSD Chain 1 (dBm) | PPSD Total (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Low | 2422 | -24.90 | -31.75 | -24.08 | 8.00 | PASS |
| Mid | 2437 | -24.96 | -32.32 | -24.23 | 8.00 | PASS |
| High | 2452 | -25.33 | -32.31 | -24.54 | 8.00 | PASS |

***Remark:*** *Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*

**Test mode: IEEE 802.11a mode**

| Channel | Frequency (MHz) | PPSD Total (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|
| Low | 5745 | -15.57 | 8.00 | PASS |
| Mid | 5785 | -20.00 | 8.00 | PASS |
| High | 5805 | -20.36 | 8.00 | PASS |

**Test mode: draft 802.11an Standard-20 MHz Channel mode**

| Channel | Frequency (MHz) | PPSD Chain 0 (dBm) | PPSD Chain 1 (dBm) | PPSD Total (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Low | 5745 | -16.06 | -23.68 | -15.37 | 8.00 | PASS |
| Mid | 5785 | -20.47 | -24.59 | -19.05 | 8.00 | PASS |
| High | 5805 | -20.43 | -24.42 | -18.97 | 8.00 | PASS |

***Remark:*** *Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*

**Test mode: draft 802.11an Wide-40 MHz Channel mode**

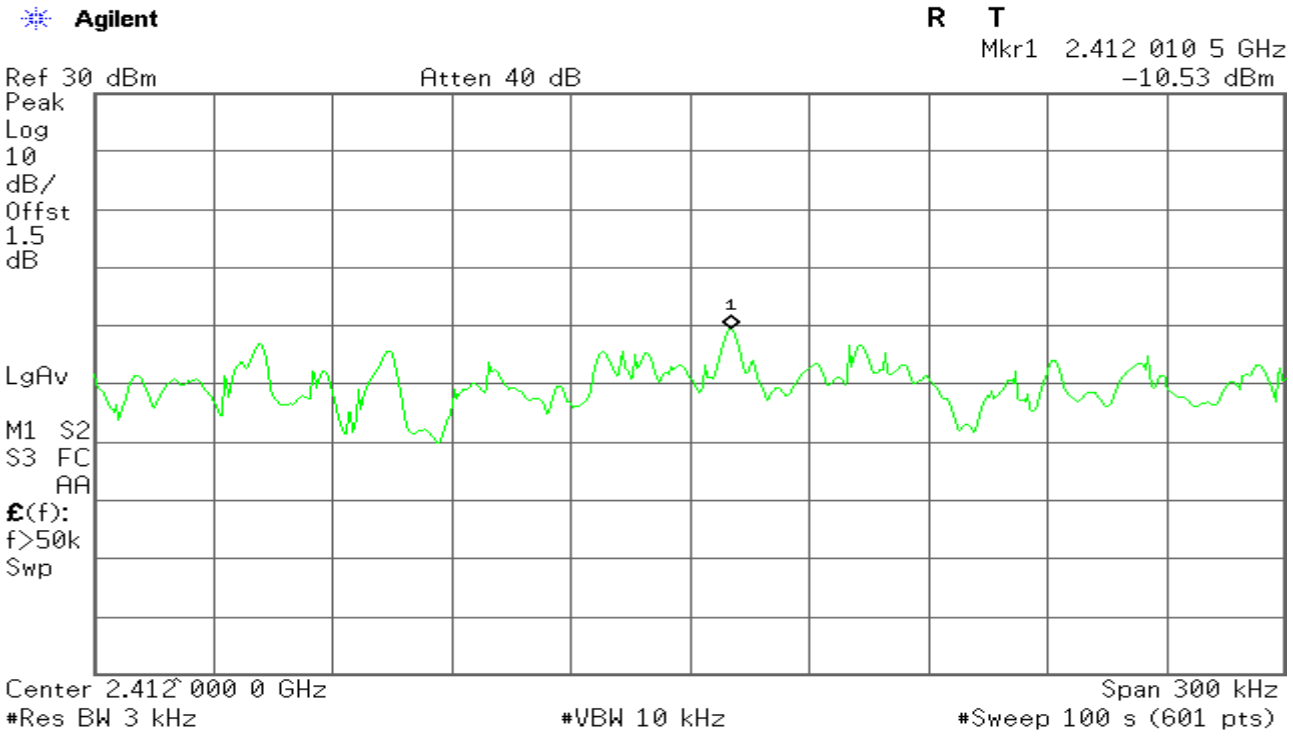
| Channel | Frequency (MHz) | PPSD Chain 0 (dBm) | PPSD Chain 1 (dBm) | PPSD Total (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|
| Low | 5755 | -27.00 | -27.08 | -24.03 | 8.00 | PASS |
| Mid | 5795 | -27.44 | -27.88 | -24.64 | 8.00 | PASS |

***Remark:*** *Total PPSD (dBm) = 10*LOG(10^(Chain 0 PPSD / 10)+10^(Chain 1 PPSD /10))*

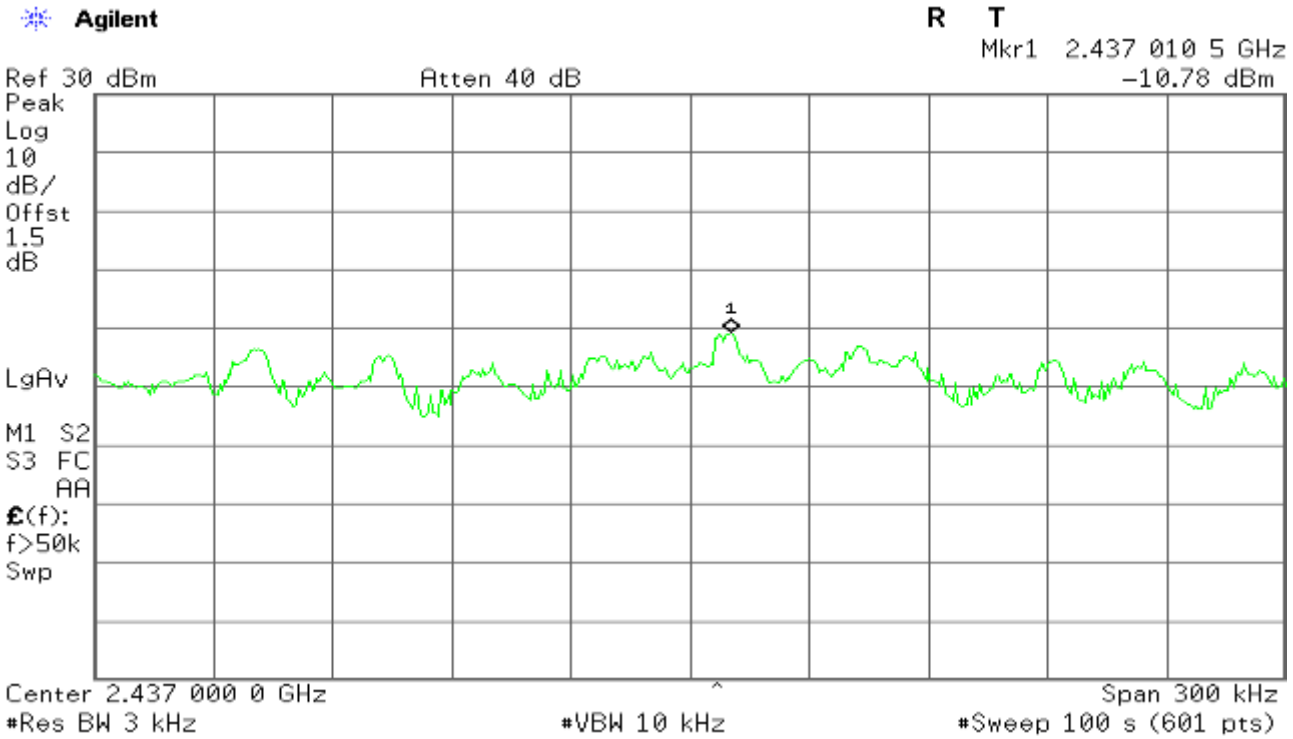
## Test Plot

## IEEE 802.11b mode

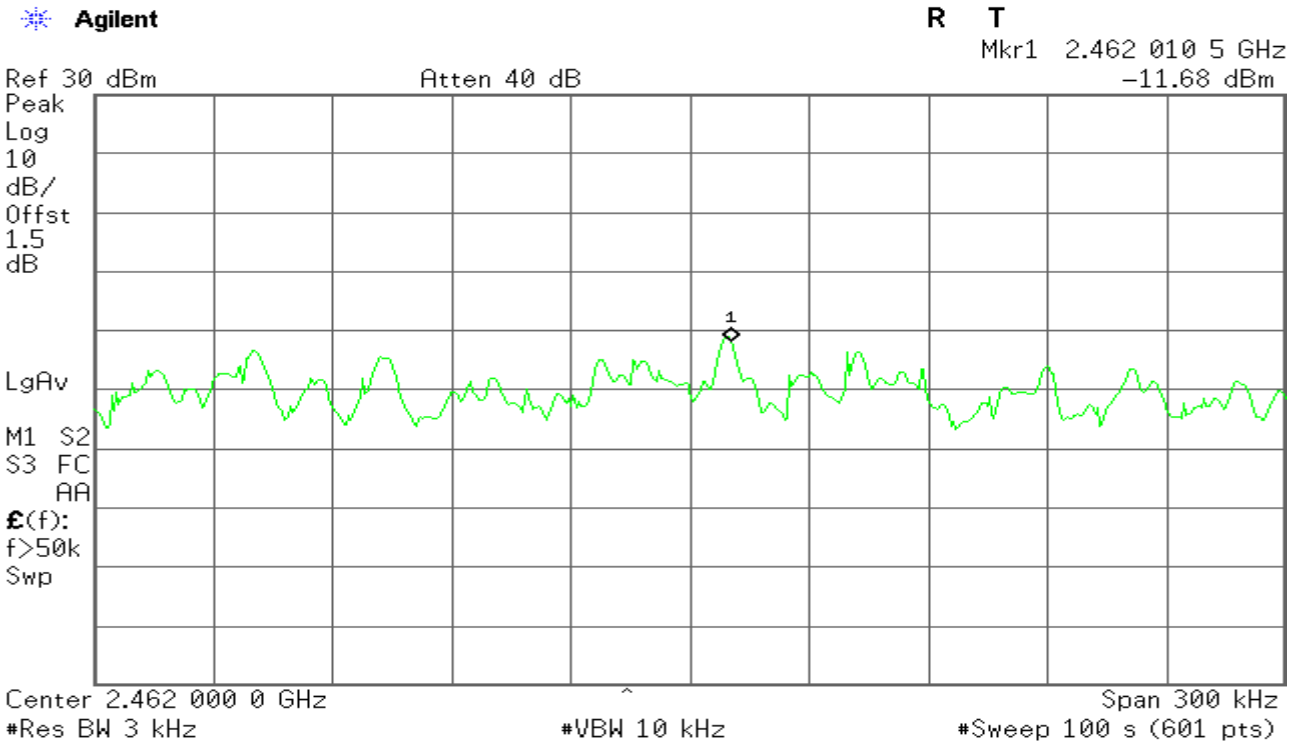
### PPSD (CH Low)




### PPSD (CH Mid)

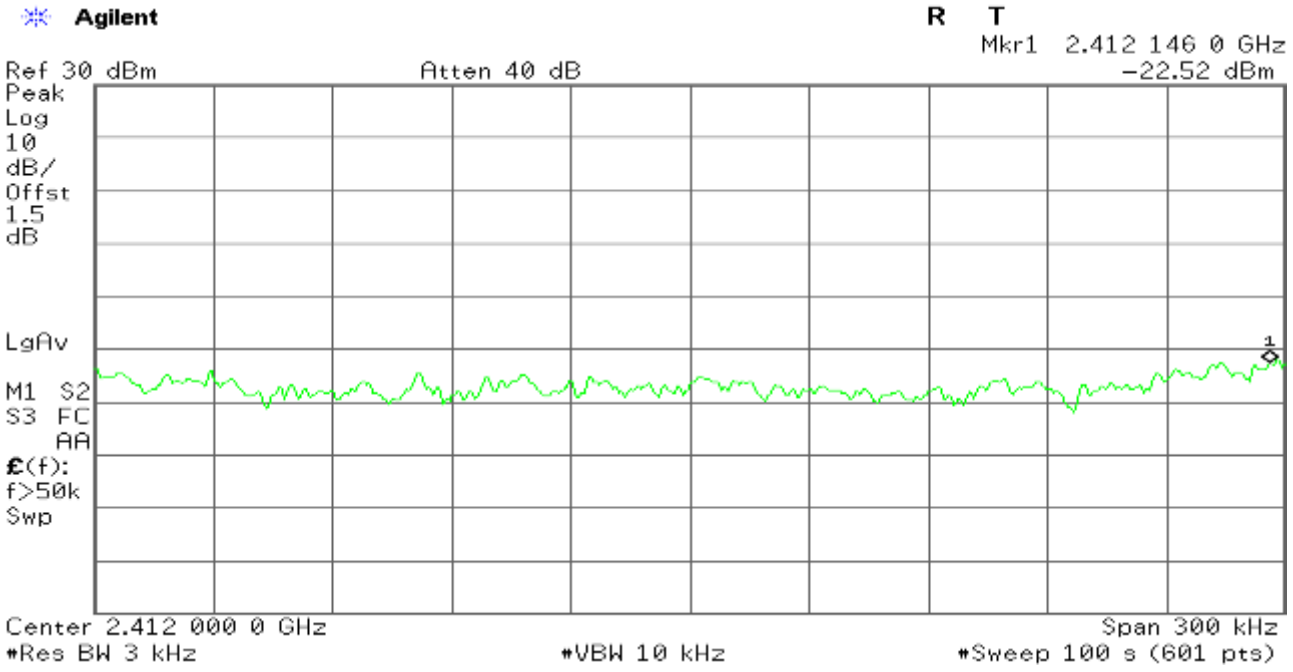


### PPSD (CH High)

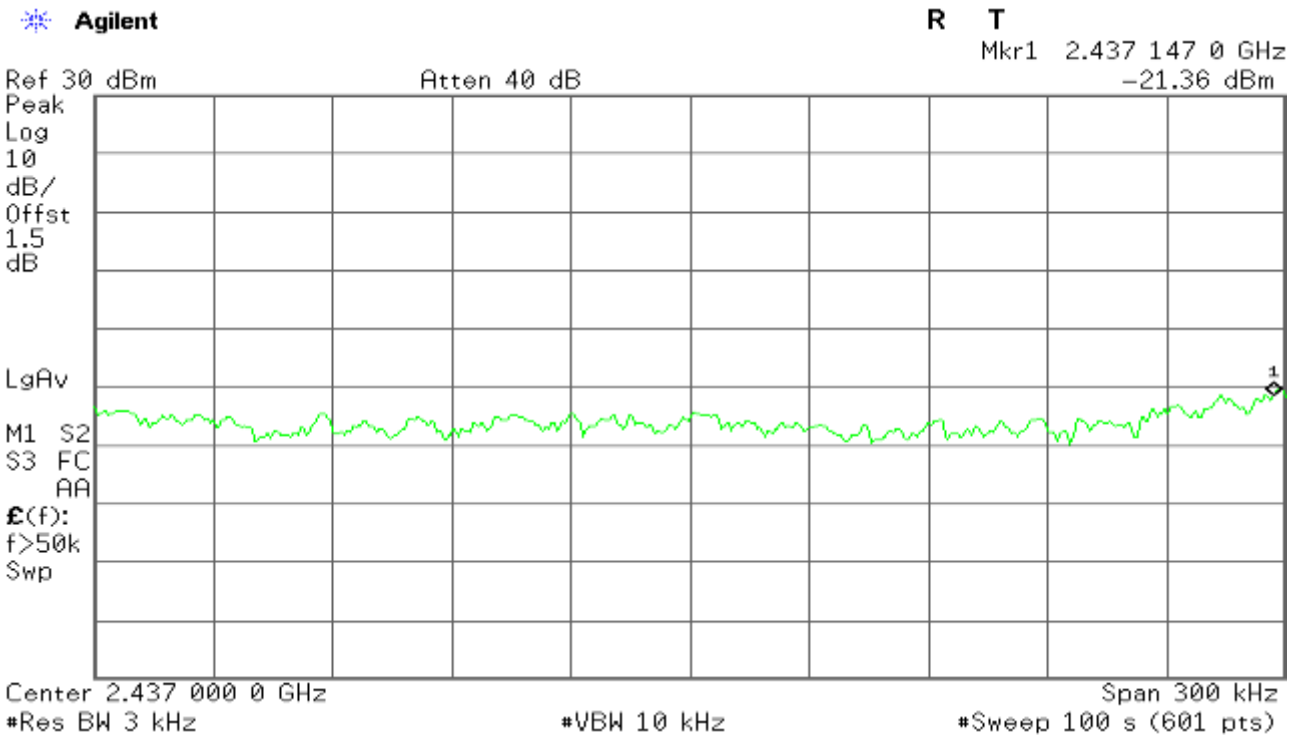



## IEEE 802.11g mode

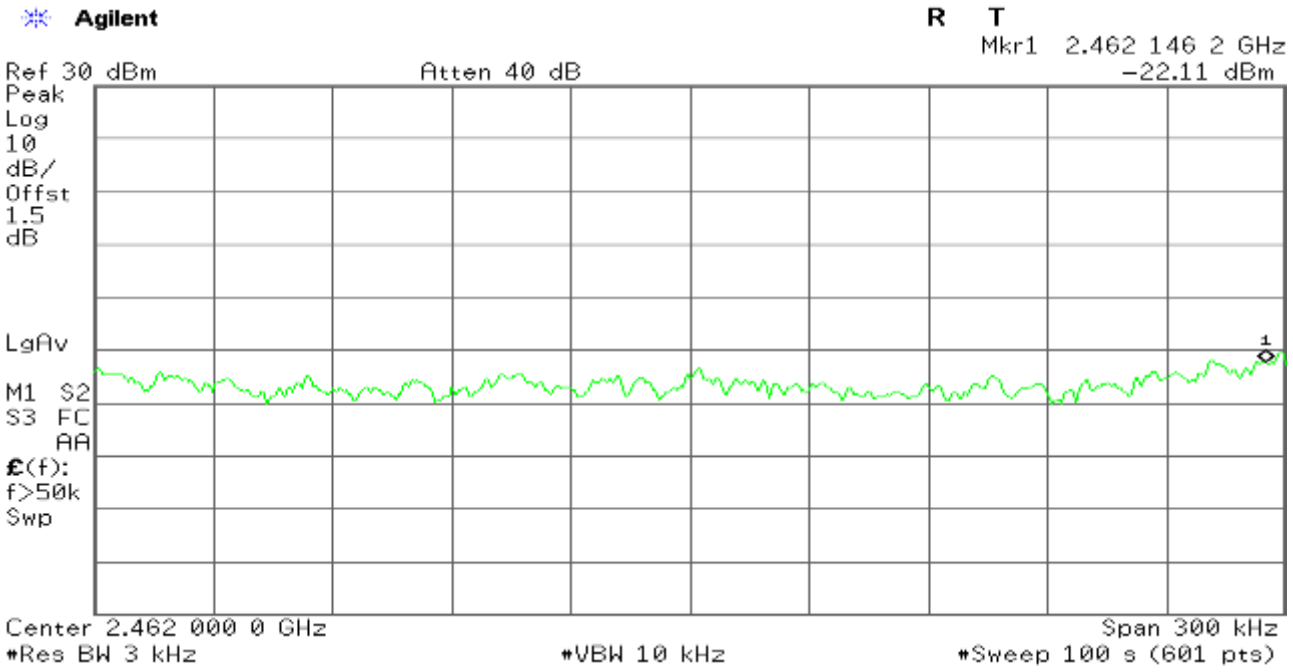
### PPSD (CH Low)



## PPSD (CH Mid)

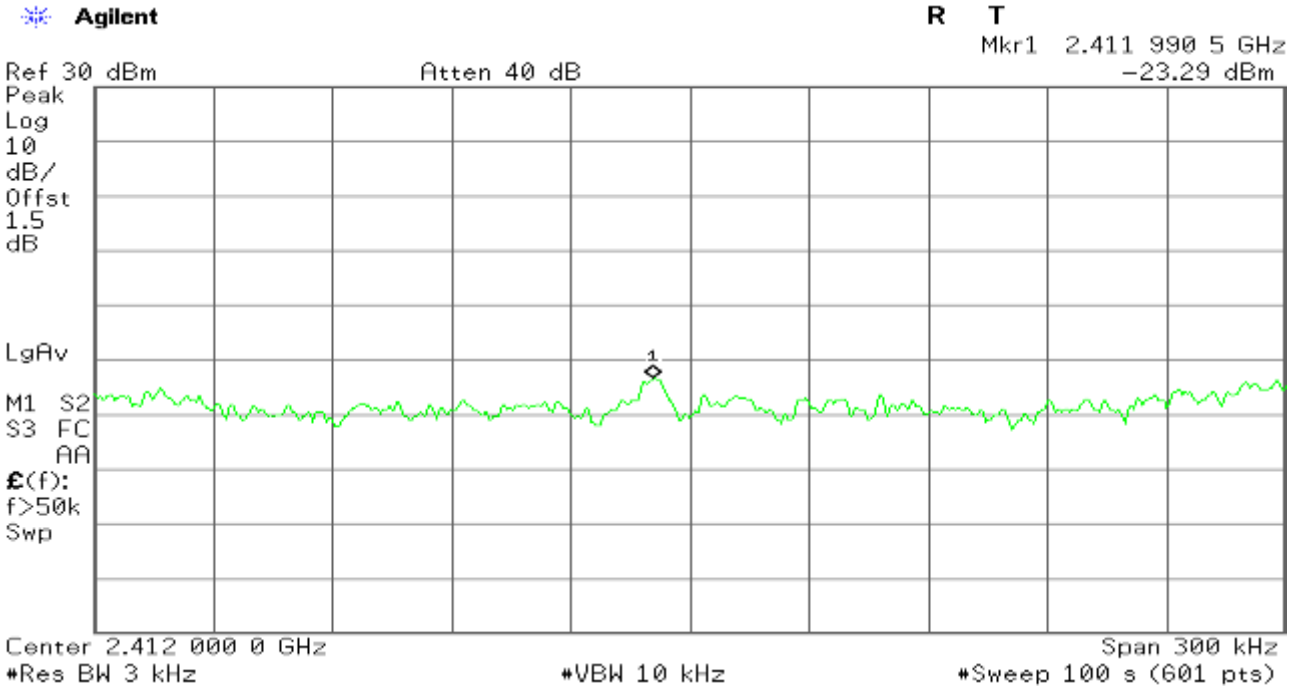



## PPSD (CH High)

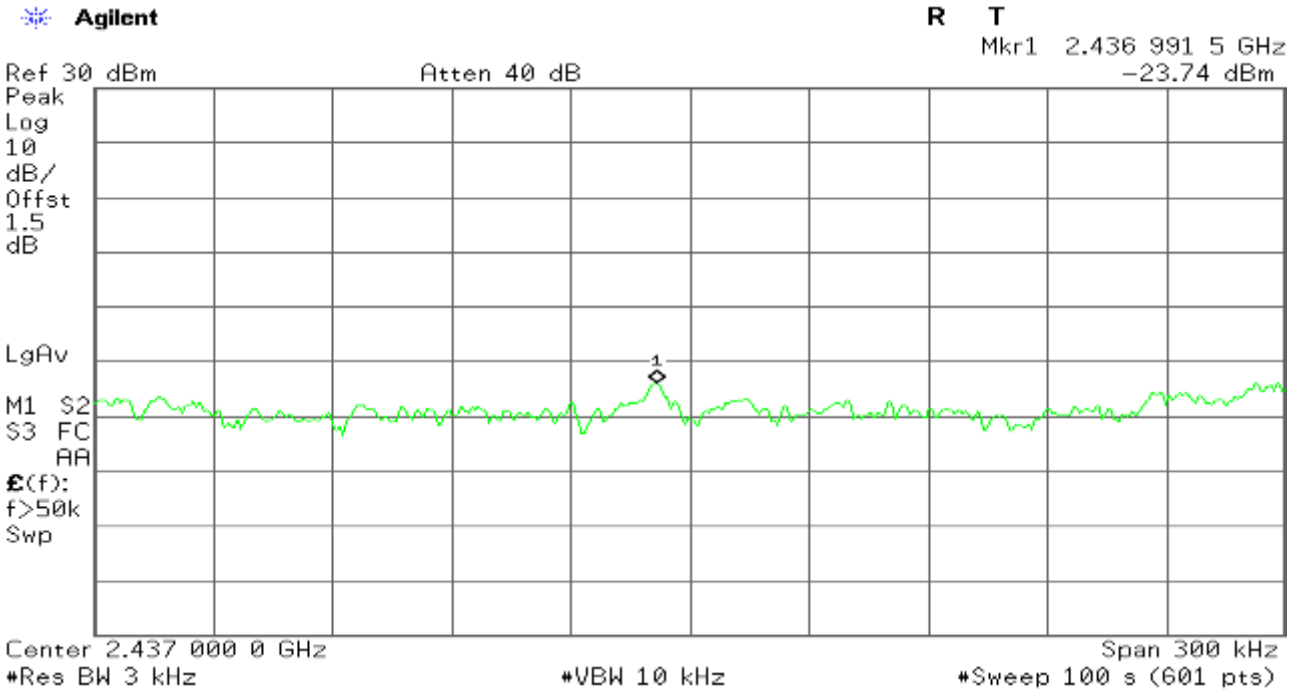


**draft 802.11gn Standard-20 MHz Channel mode / Chain 0**

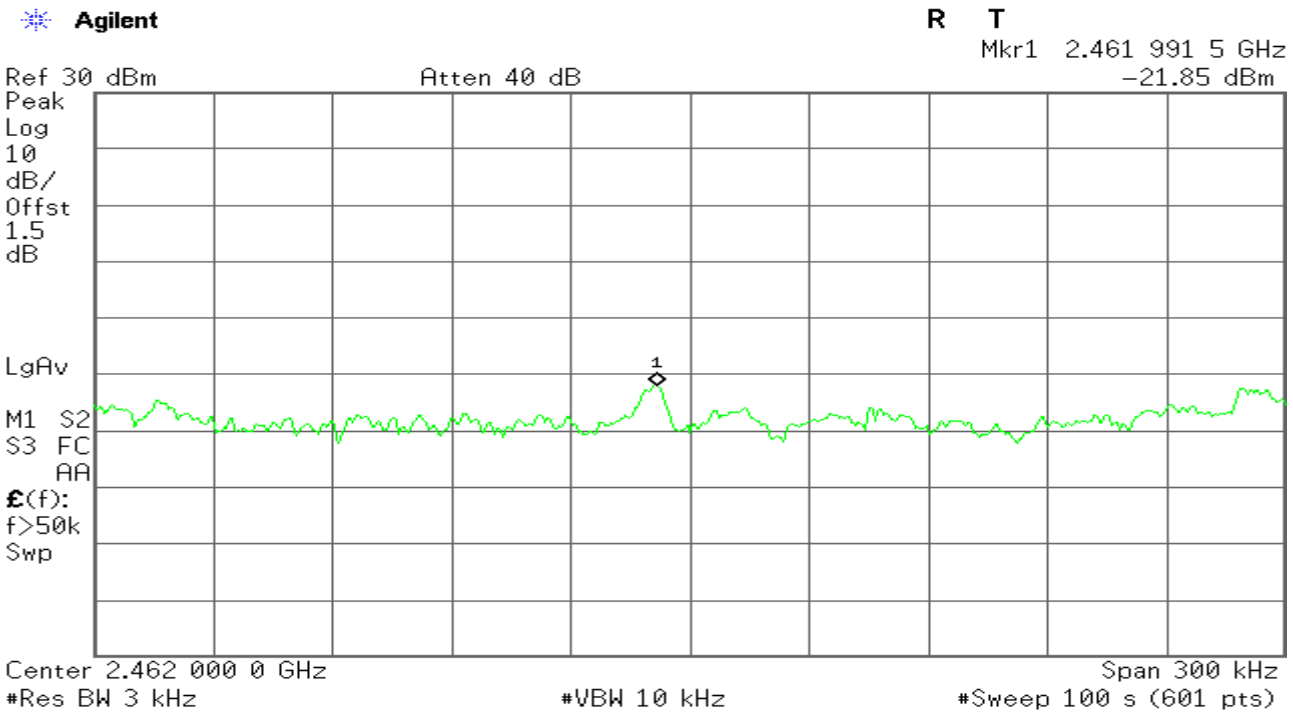
**PPSD (CH Low)**




**PPSD (CH Mid)**

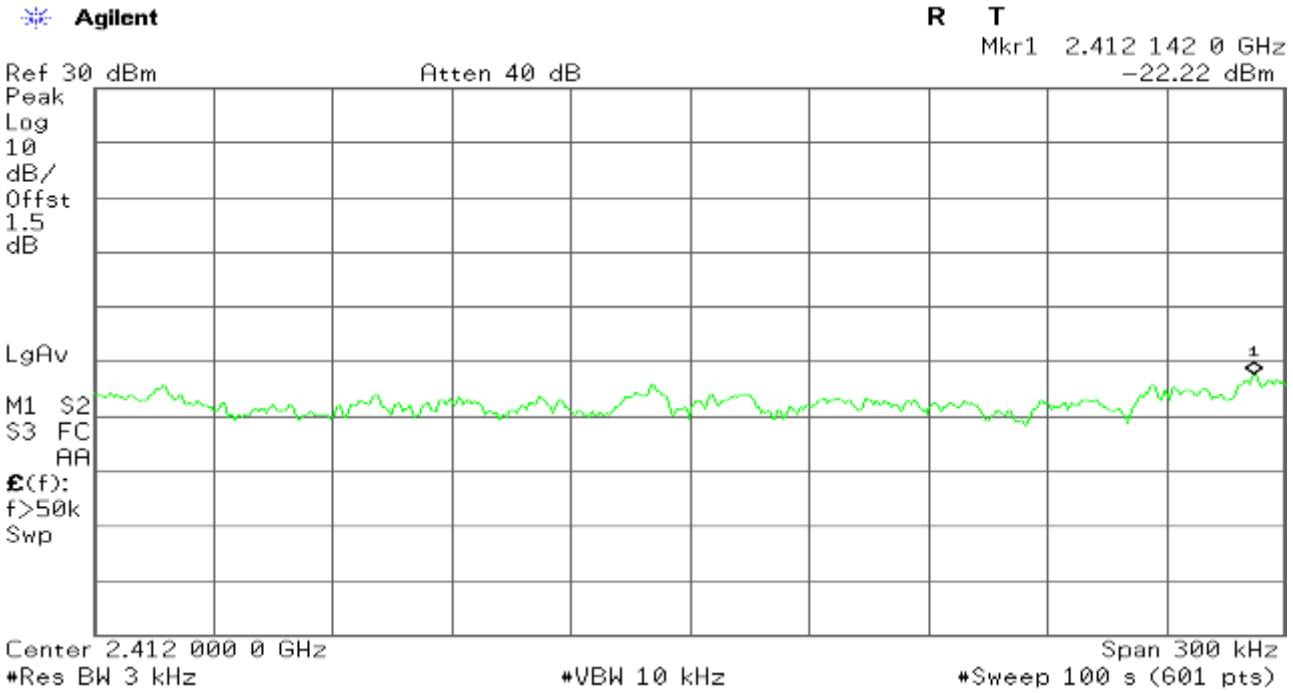


## PPSD (CH High)

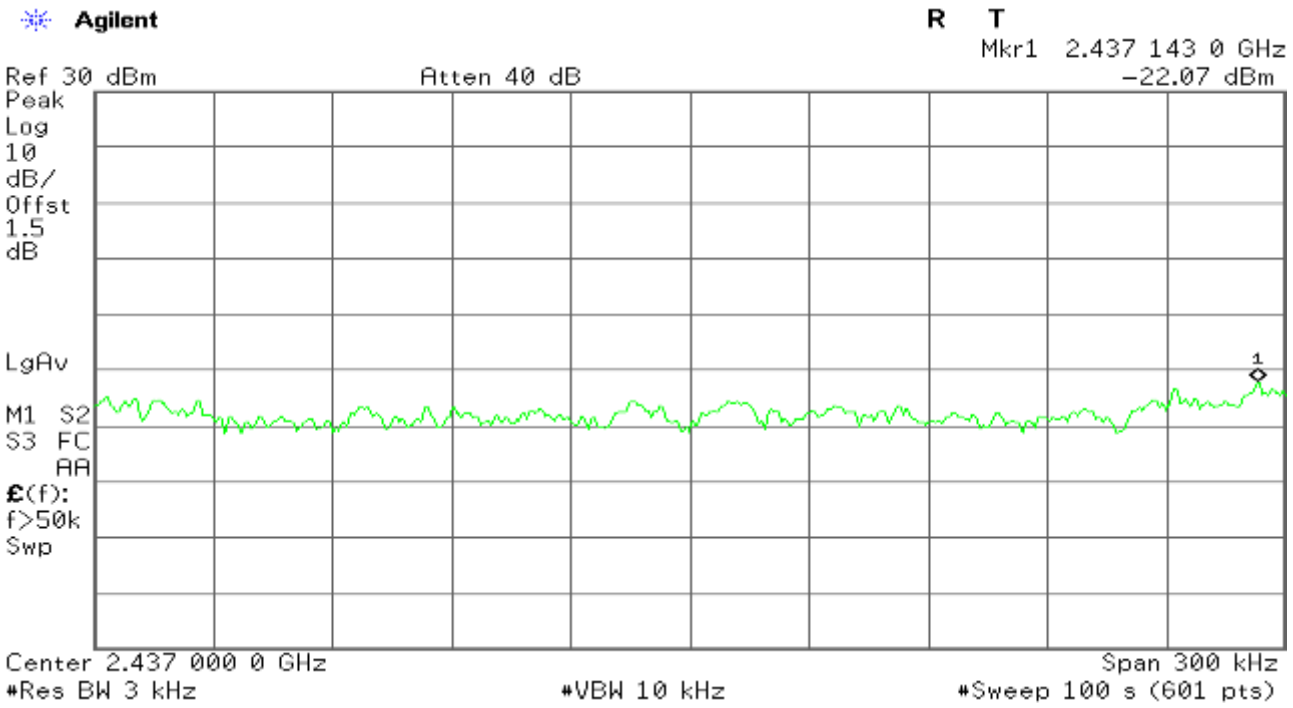



## draft 802.11gn Standard-20 MHz Channel mode / Chain 1

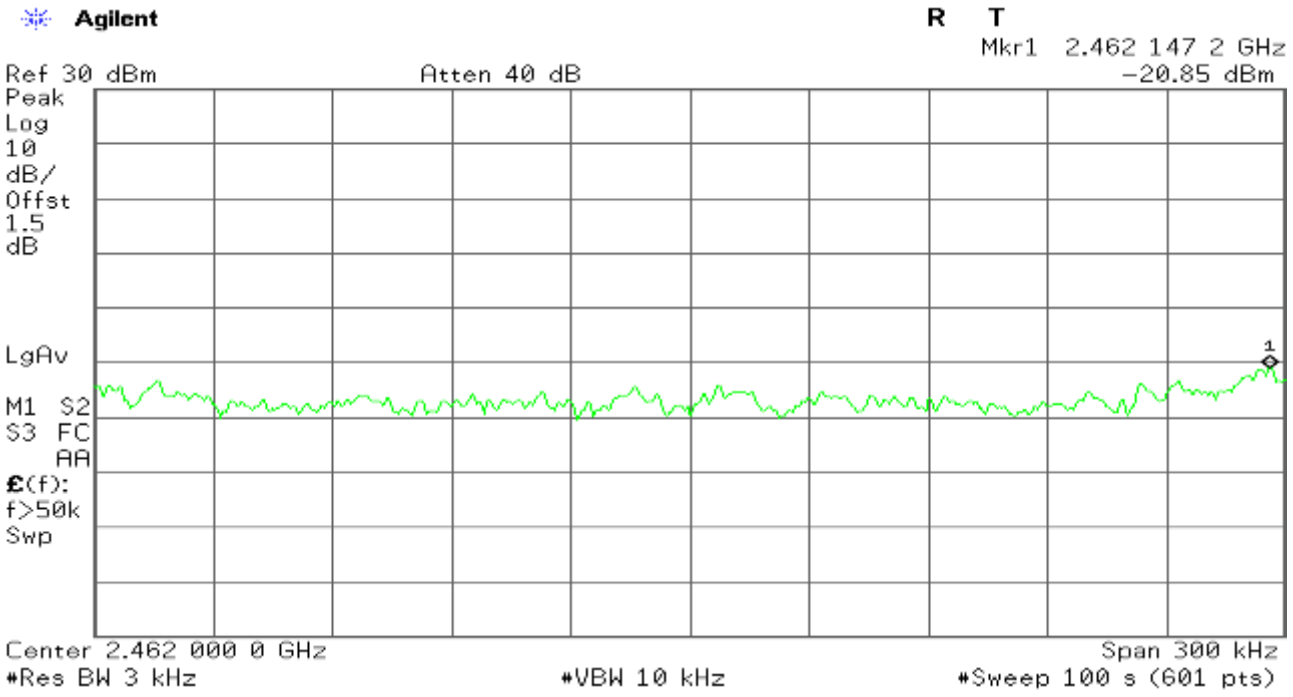
## PPSD (CH Low)



## PPSD (CH Mid)

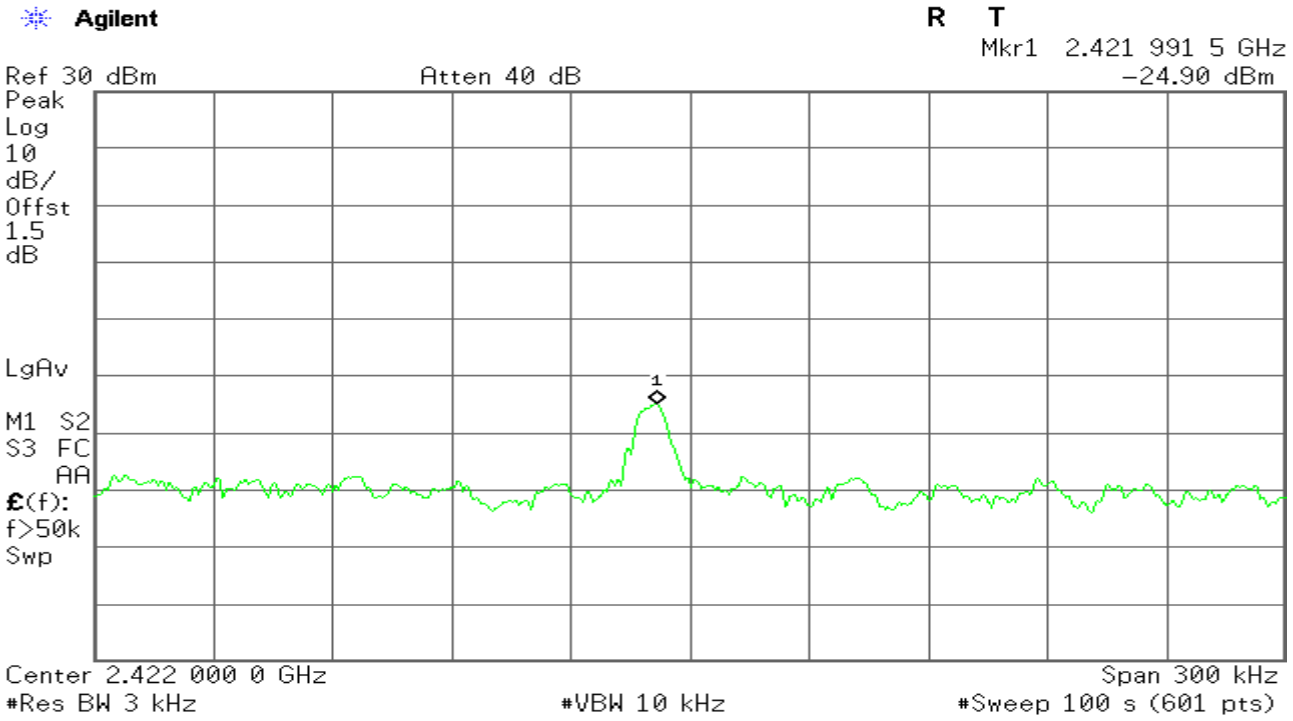



## PPSD (CH High)

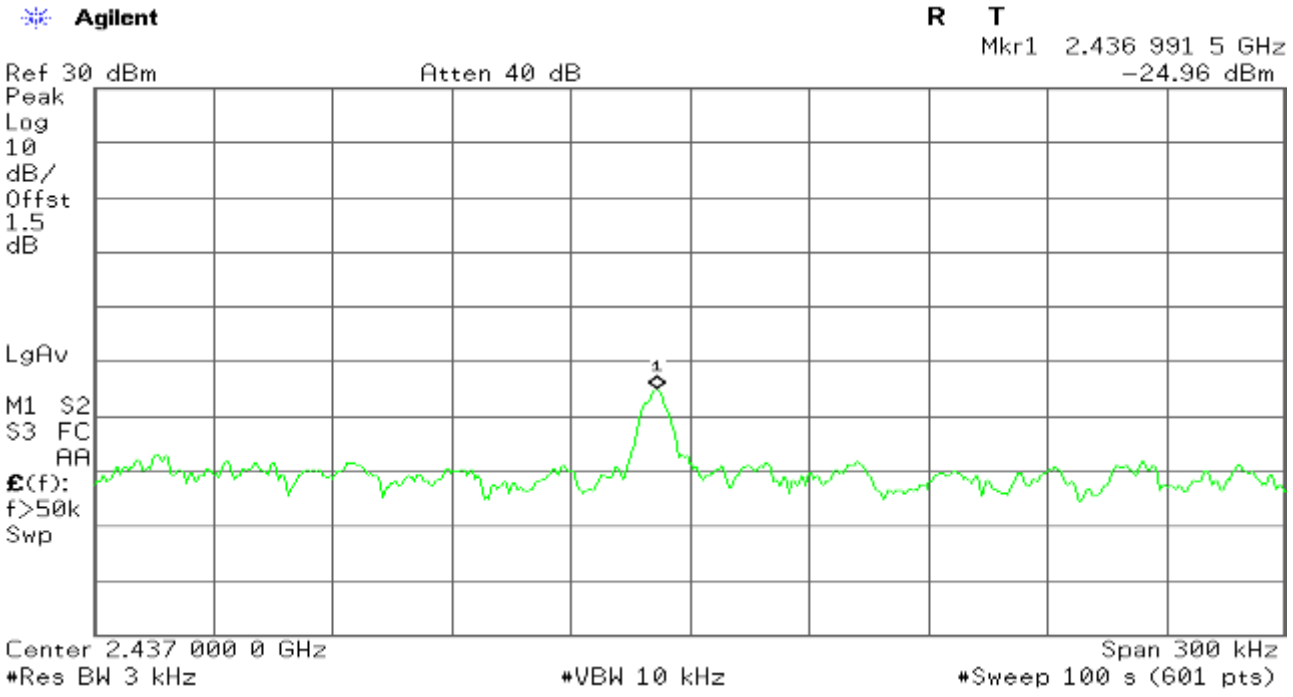


**draft 802.11gn Wide-40 MHz Channel mode / Chain 0**

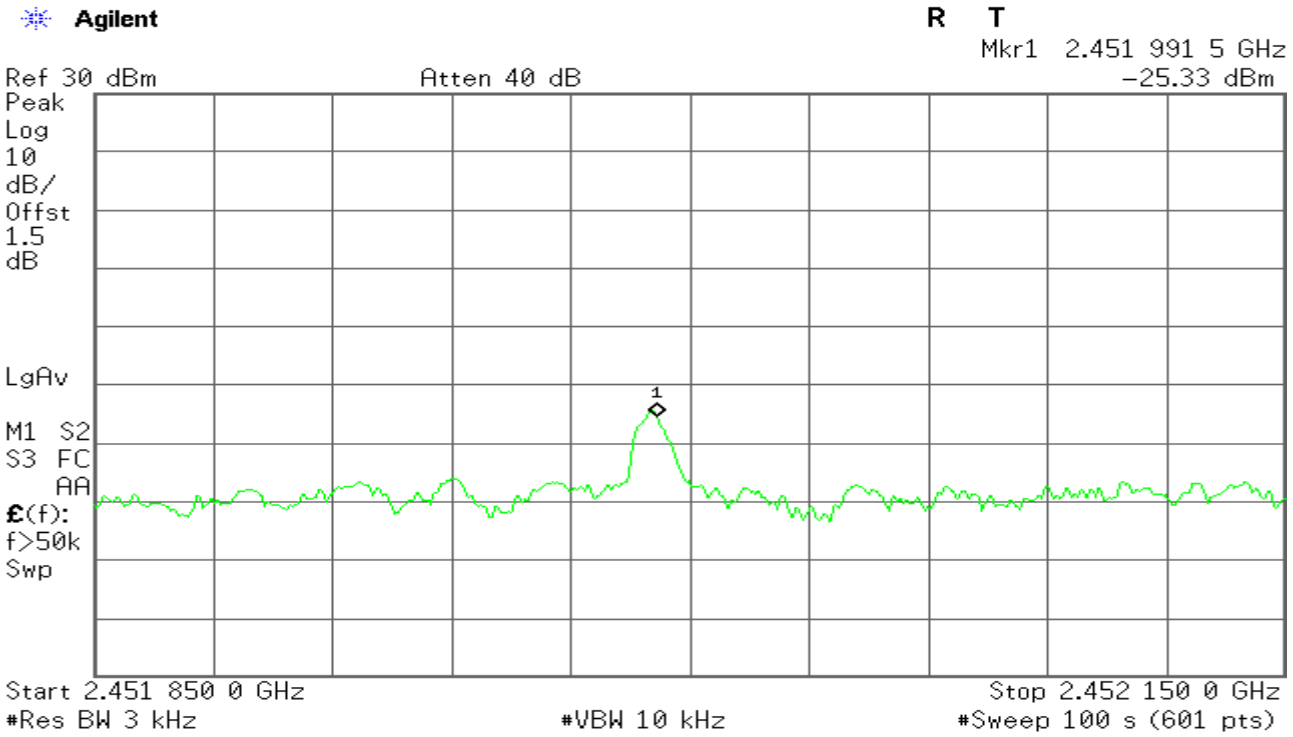
**PPSD (CH Low)**




**PPSD (CH Mid)**

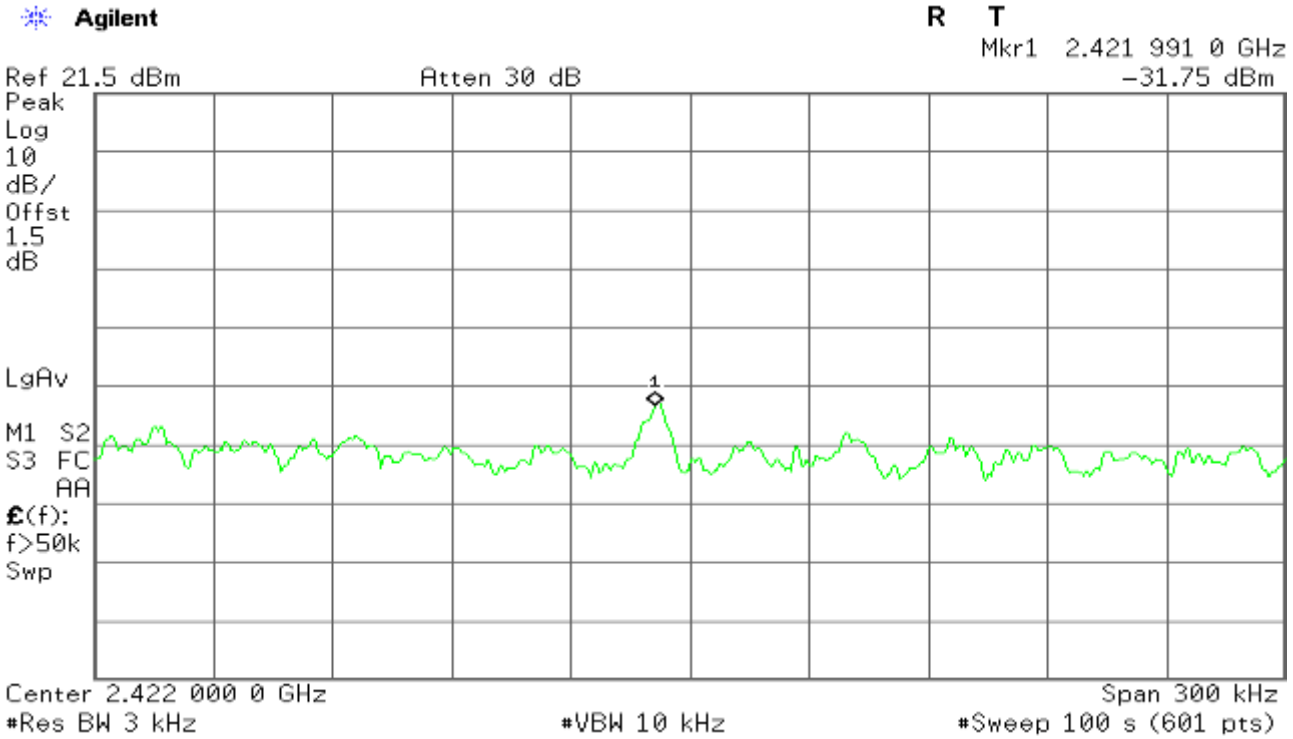


**PPSD (CH High)**

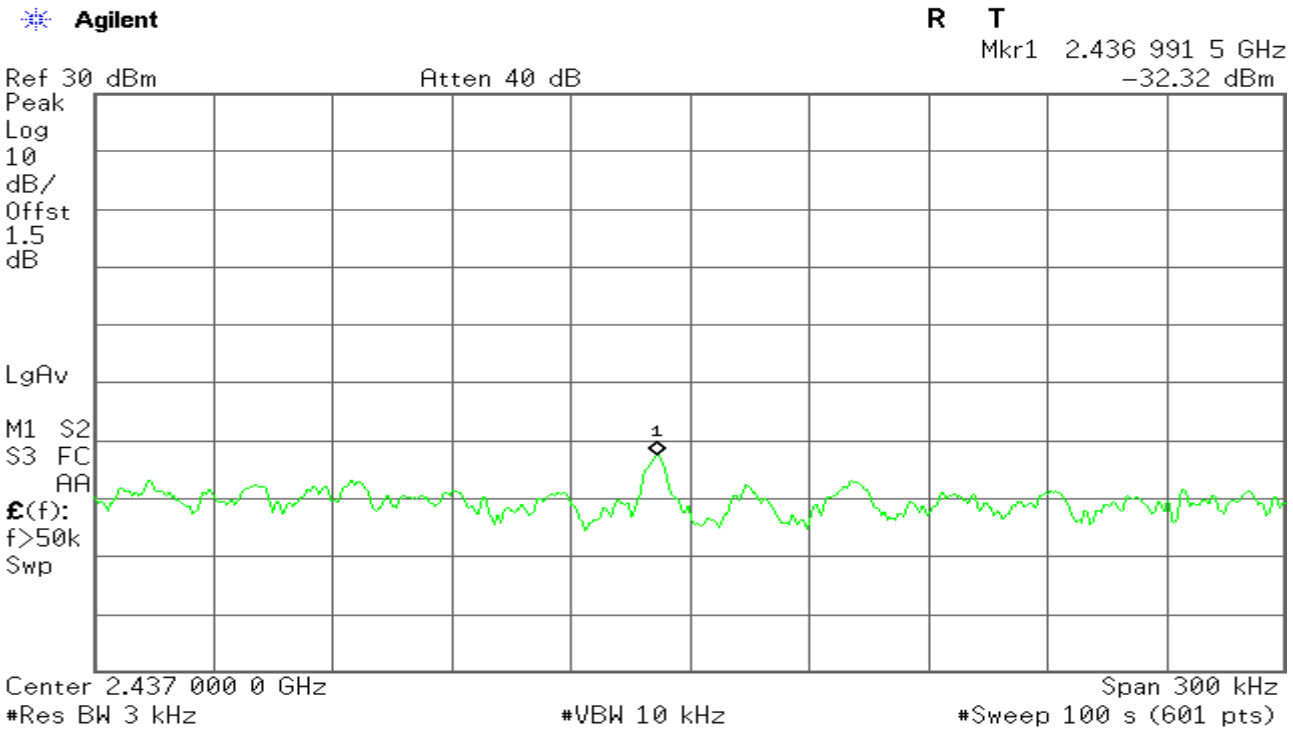



**draft 802.11gn Wide-40 MHz Channel mode / Chain 1**

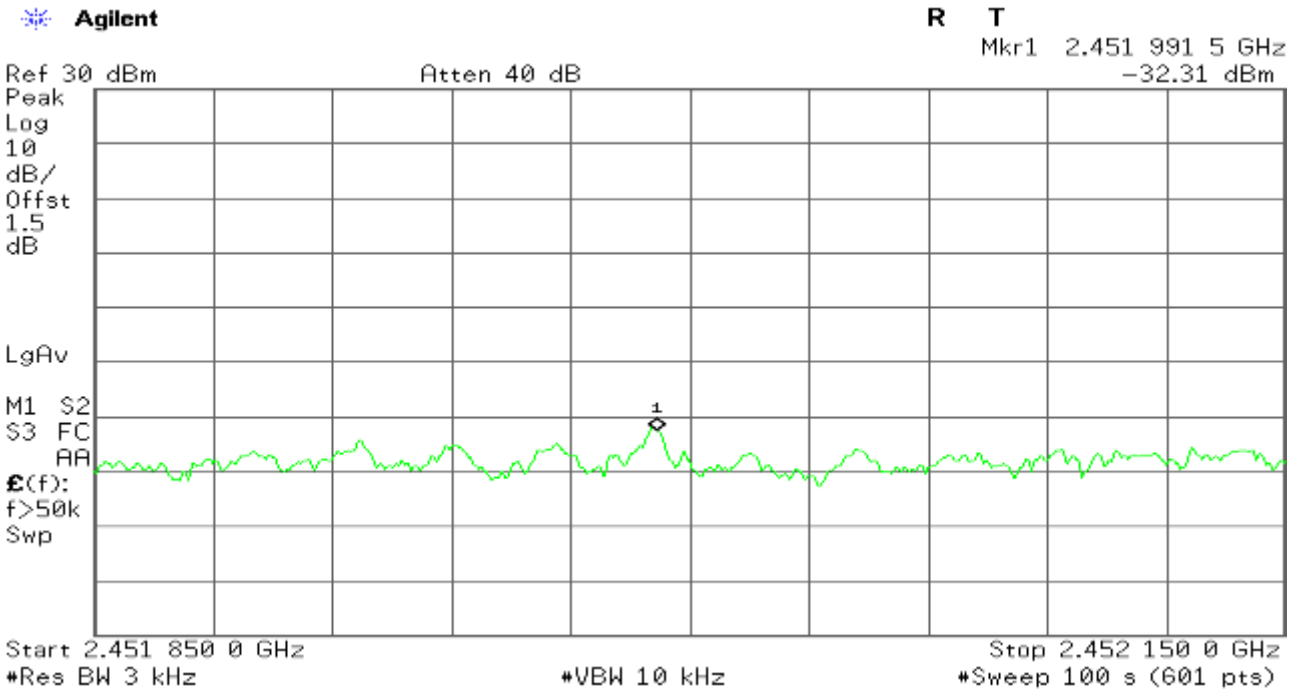
**PPSD (CH Low)**



## PPSD (CH Mid)



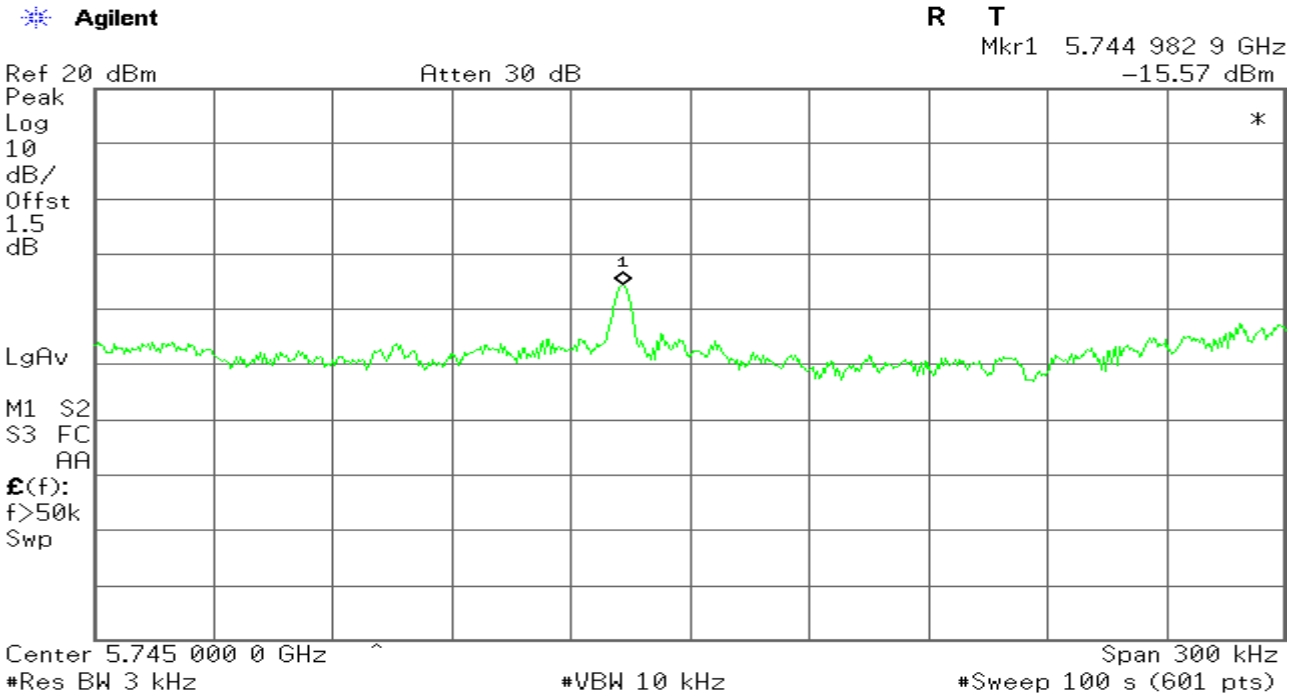

## PPSD (CH High)



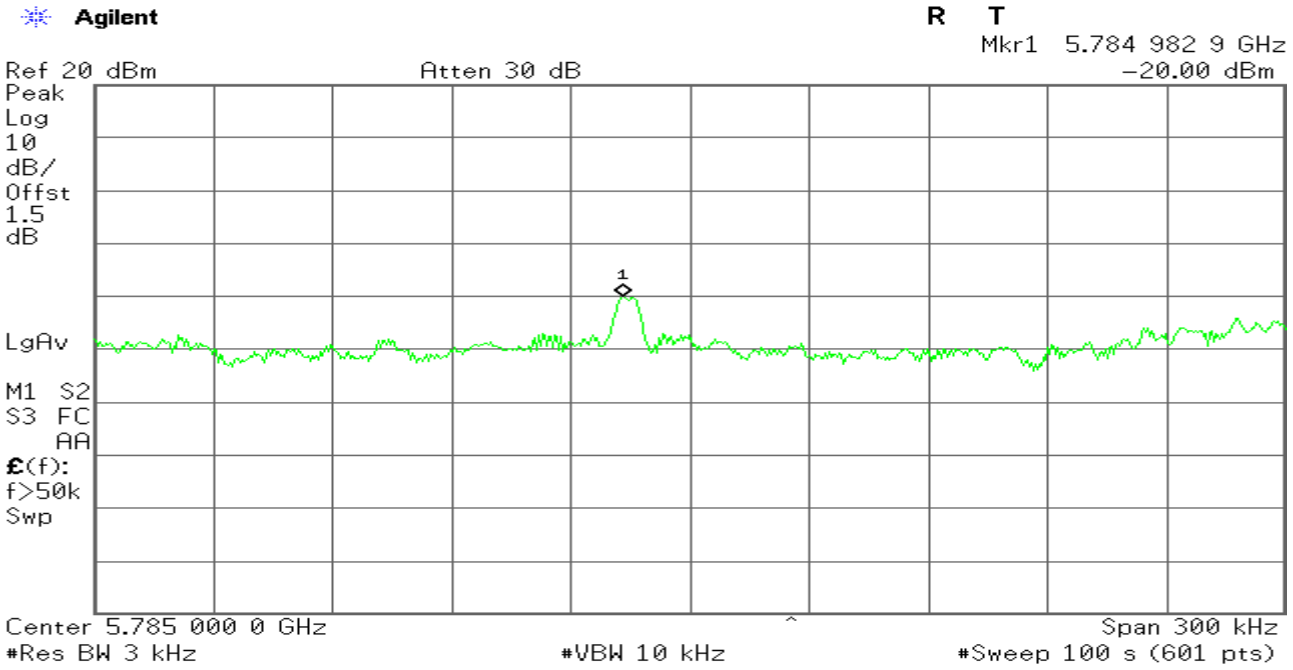
## 5725-5825

### IEEE 802.11a mode

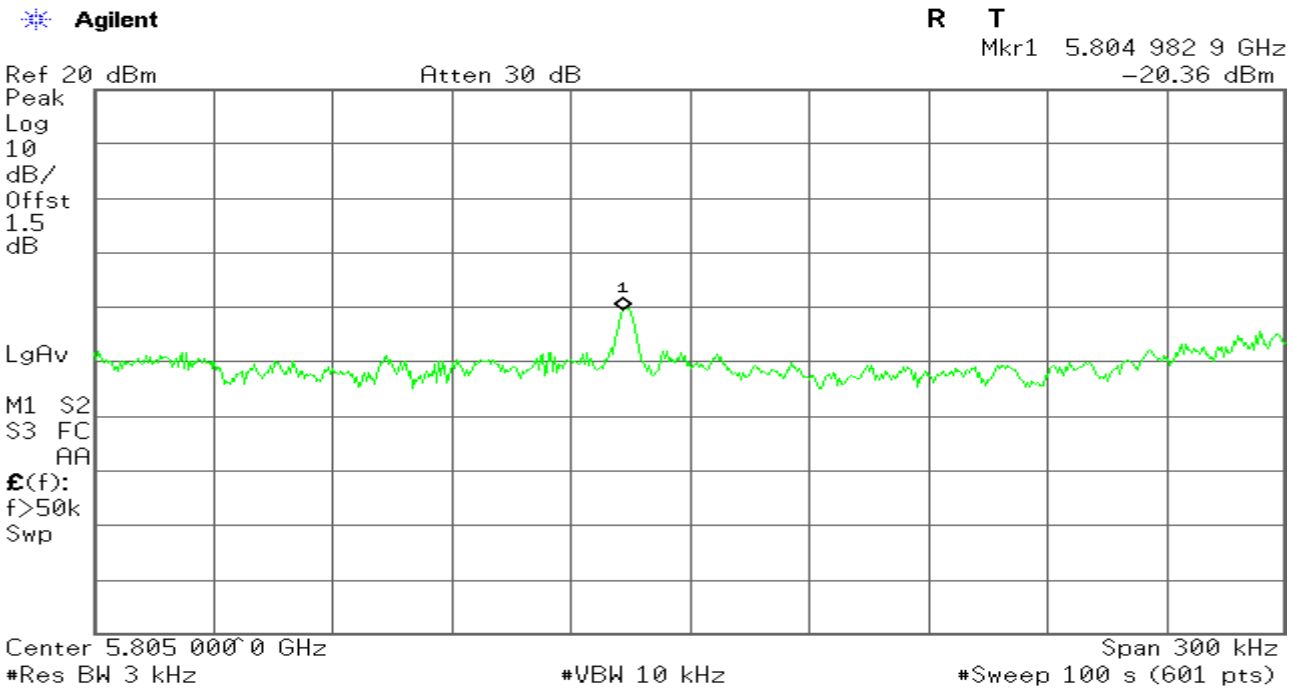
### PPSD (CH Low)




### PPSD (CH Mid)

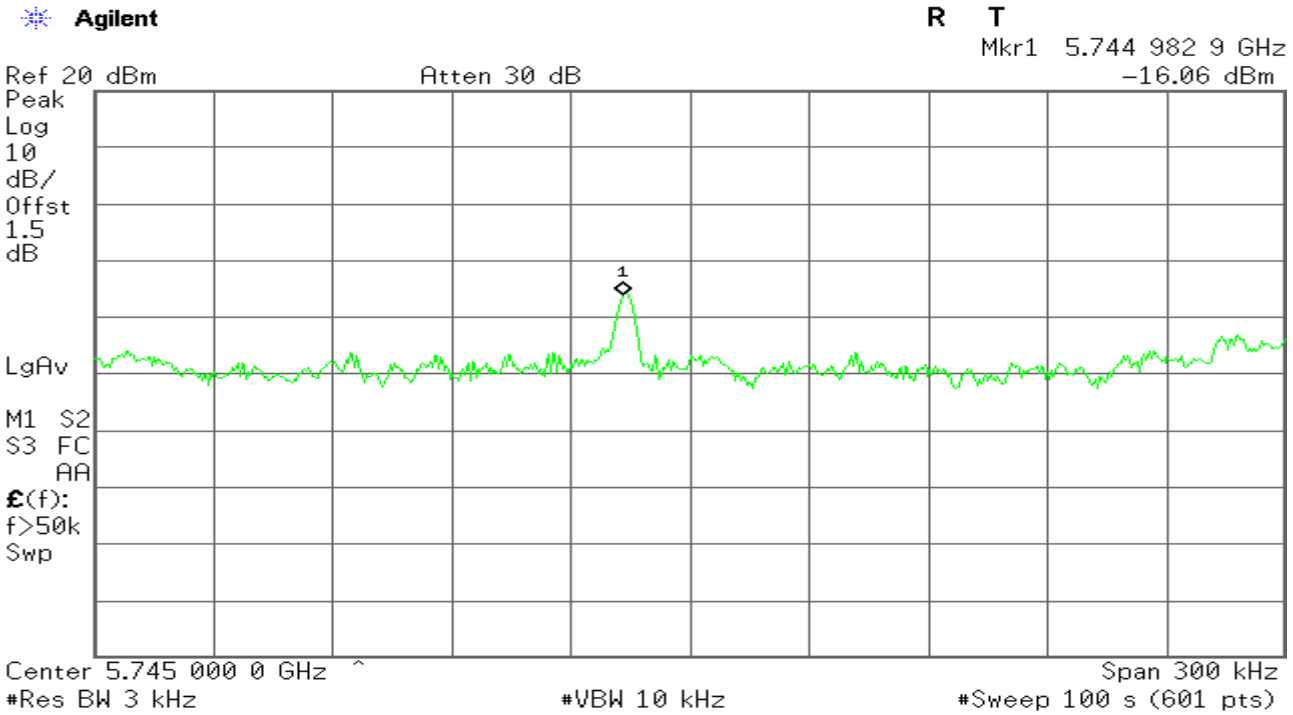


## PPSD (CH High)

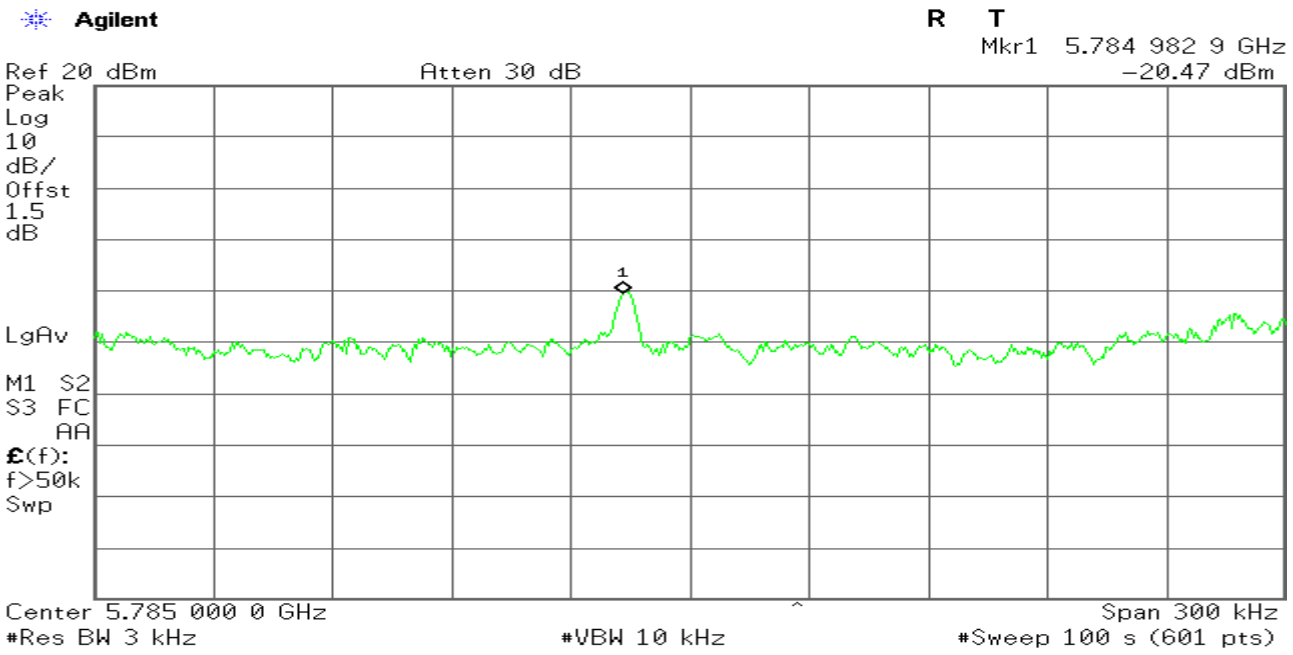



## draft 802.11an Standard-20 MHz Channel mode / Chain 0

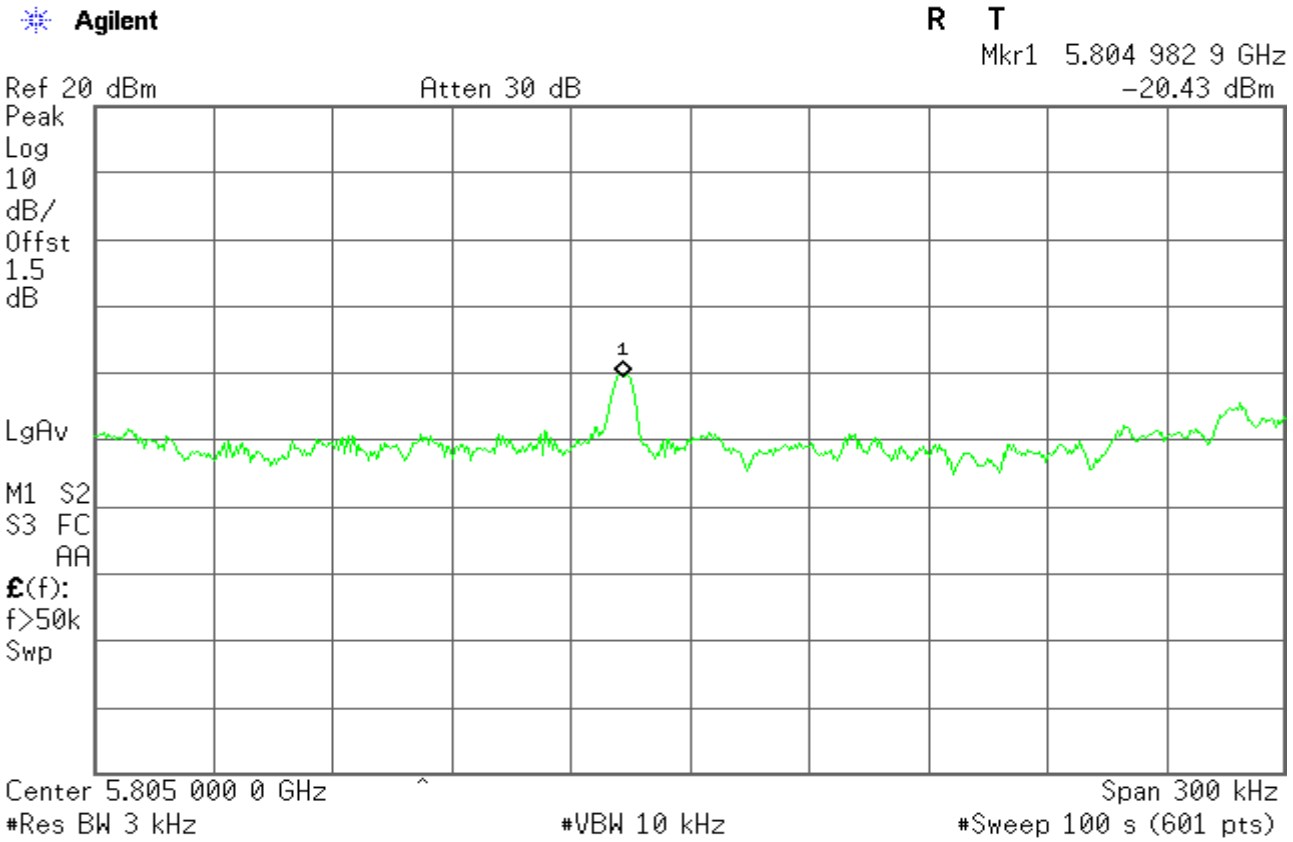
## PPSD (CH Low)



## PPSD (CH Mid)

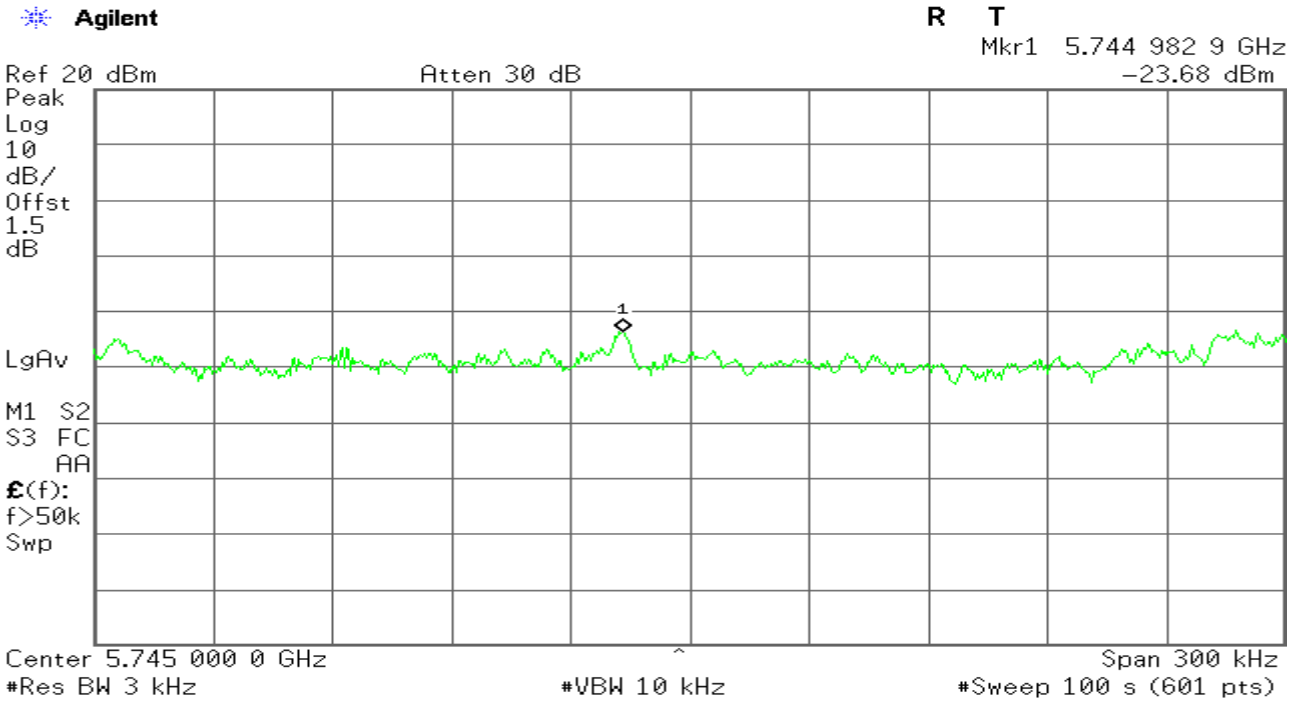



## PPSD (CH High)

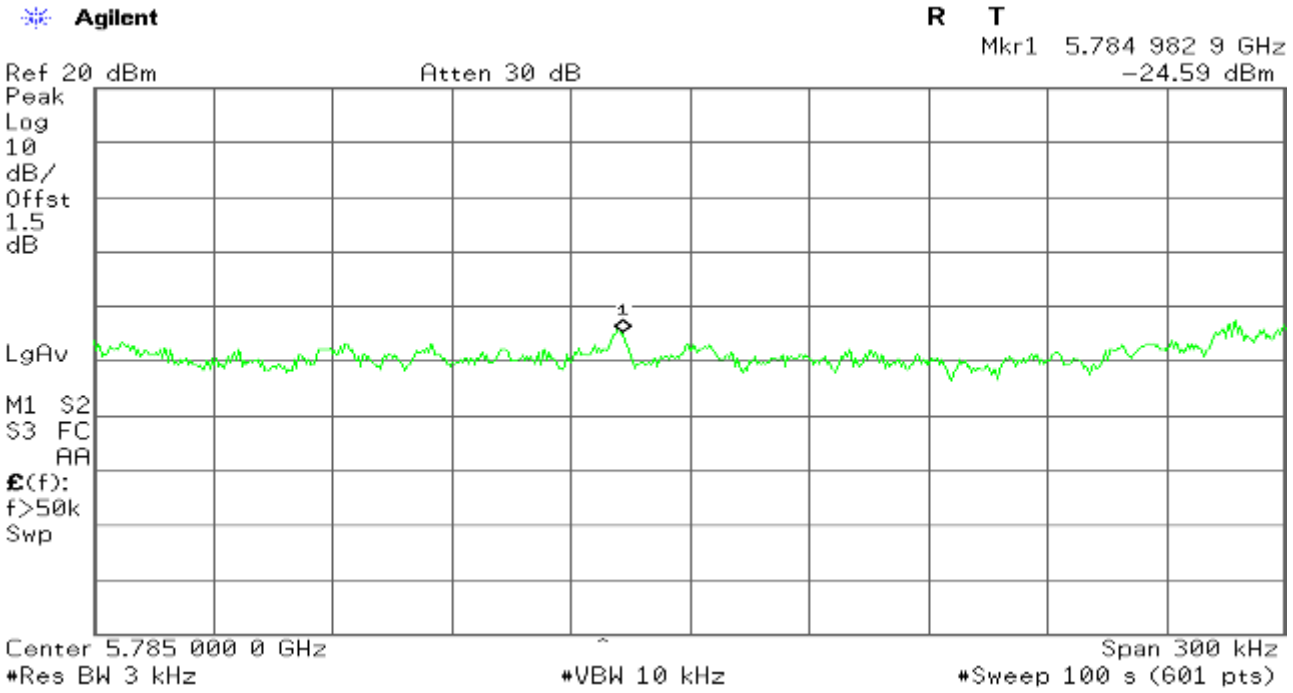


**draft 802.11an Standard-20 MHz Channel mode / Chain 1**

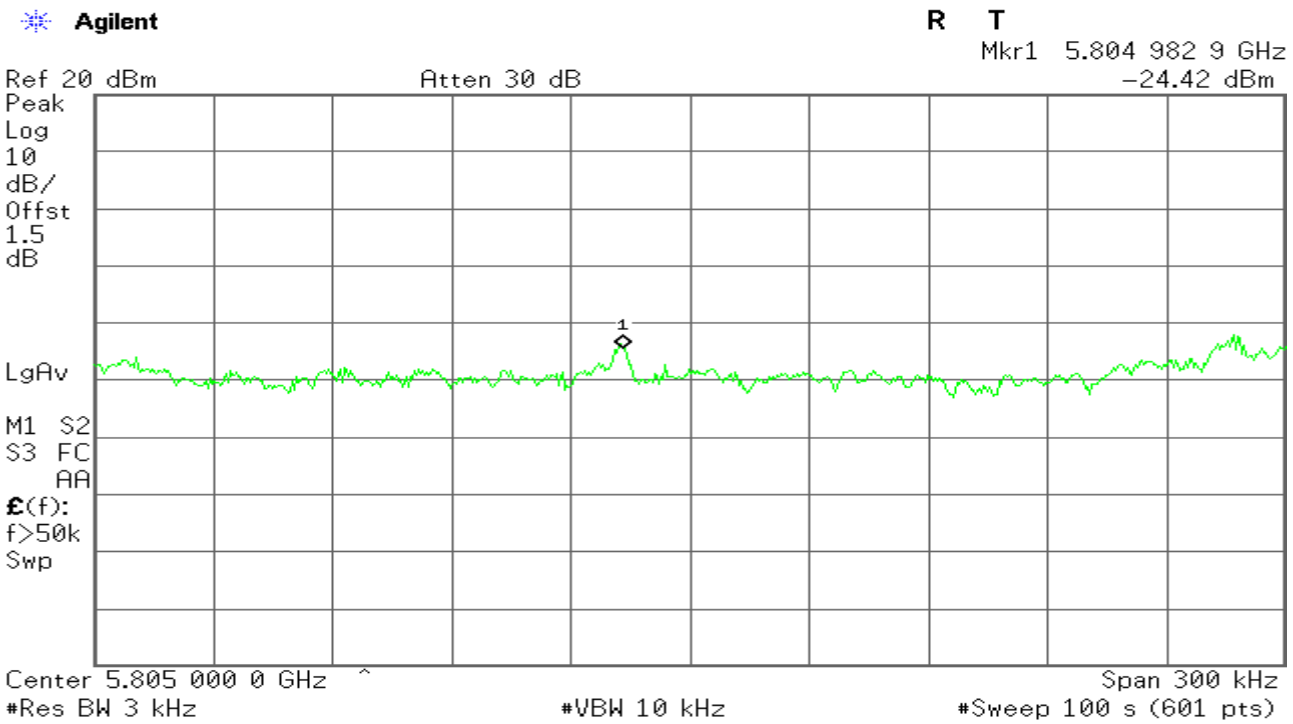
**PPSD (CH Low)**




**PPSD (CH Mid)**

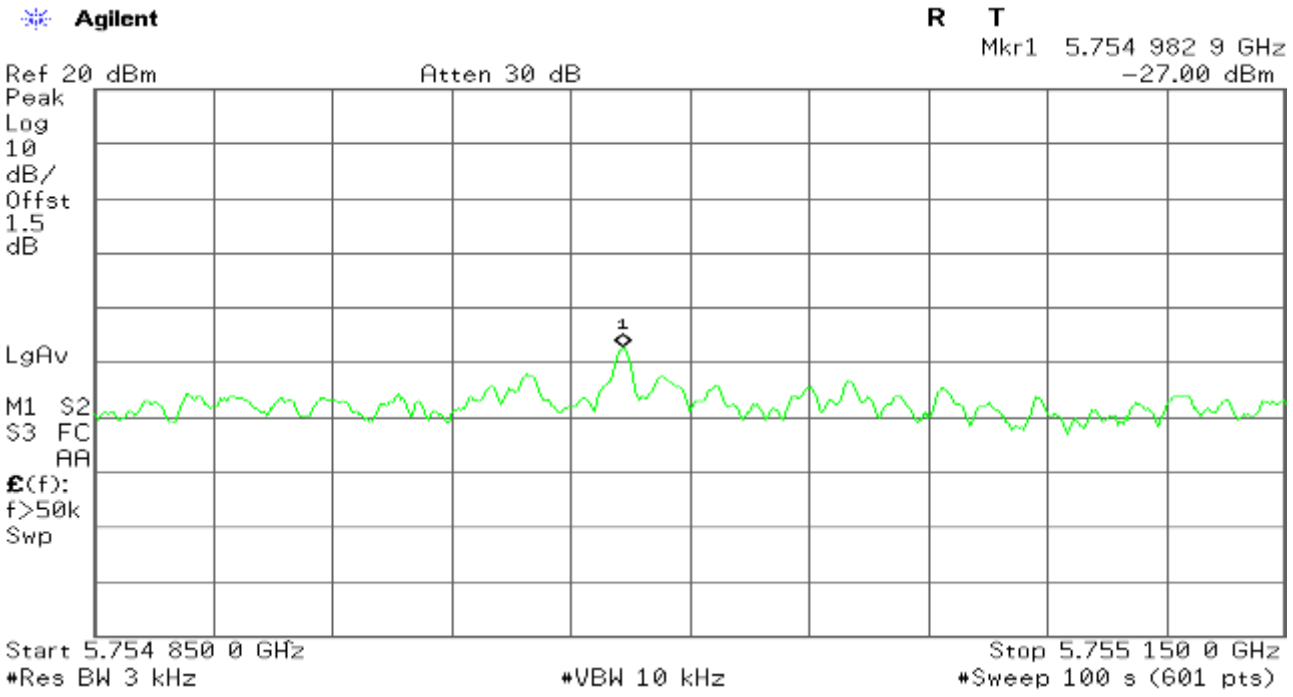


## PPSD (CH High)

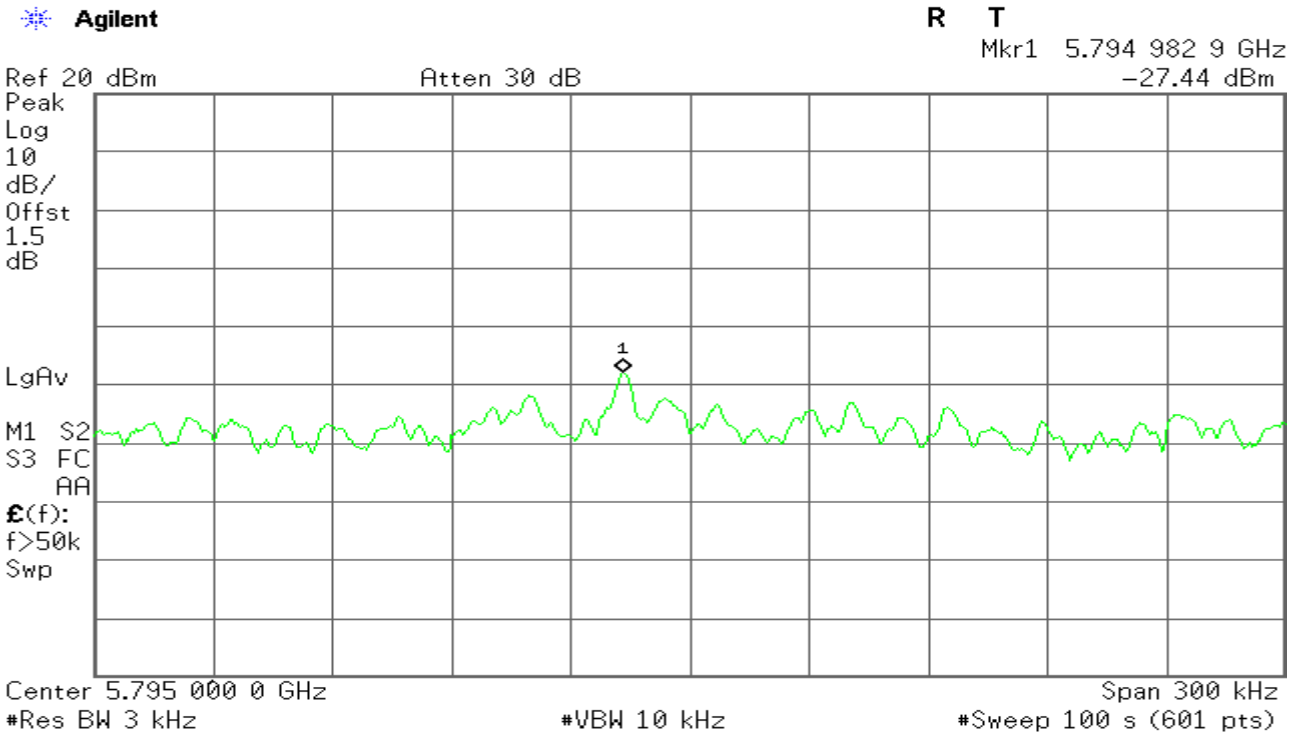



## draft 802.11an Standard-40 MHz Channel mode / Chain 0

## PPSD (CH Low)

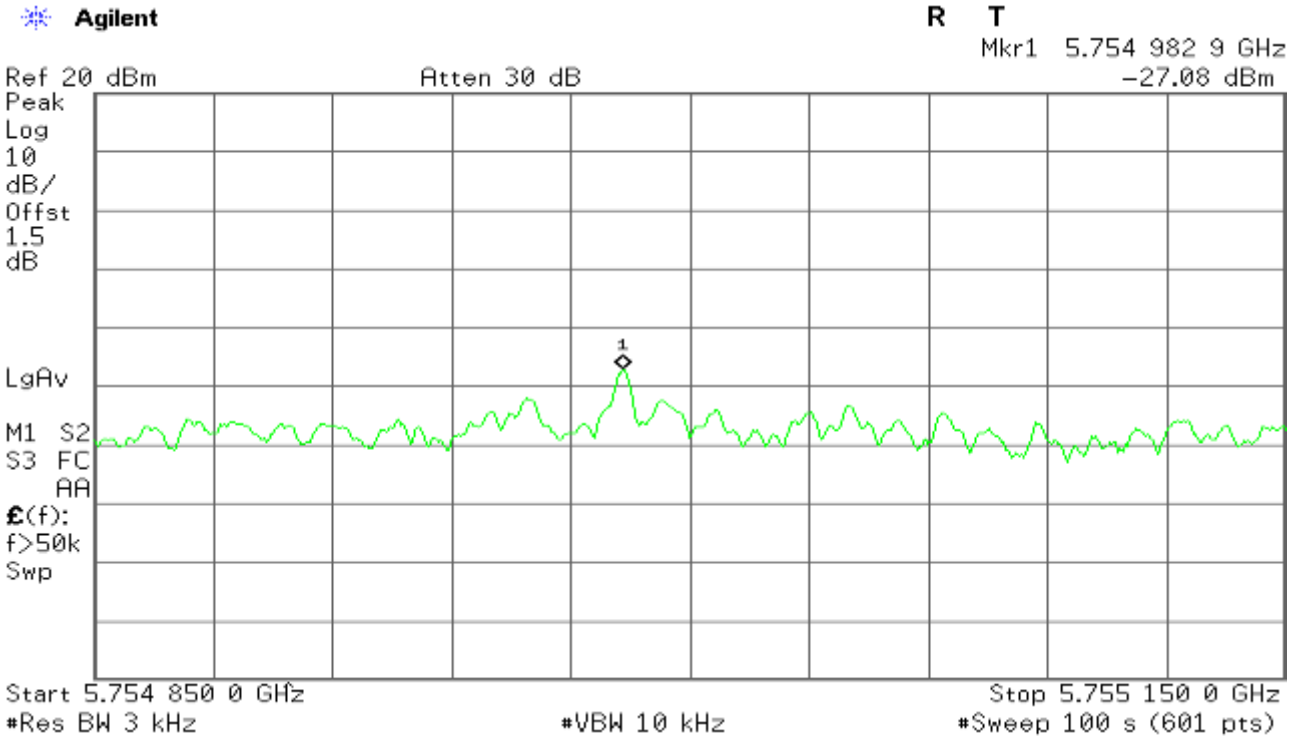


**PPSD (CH High)**

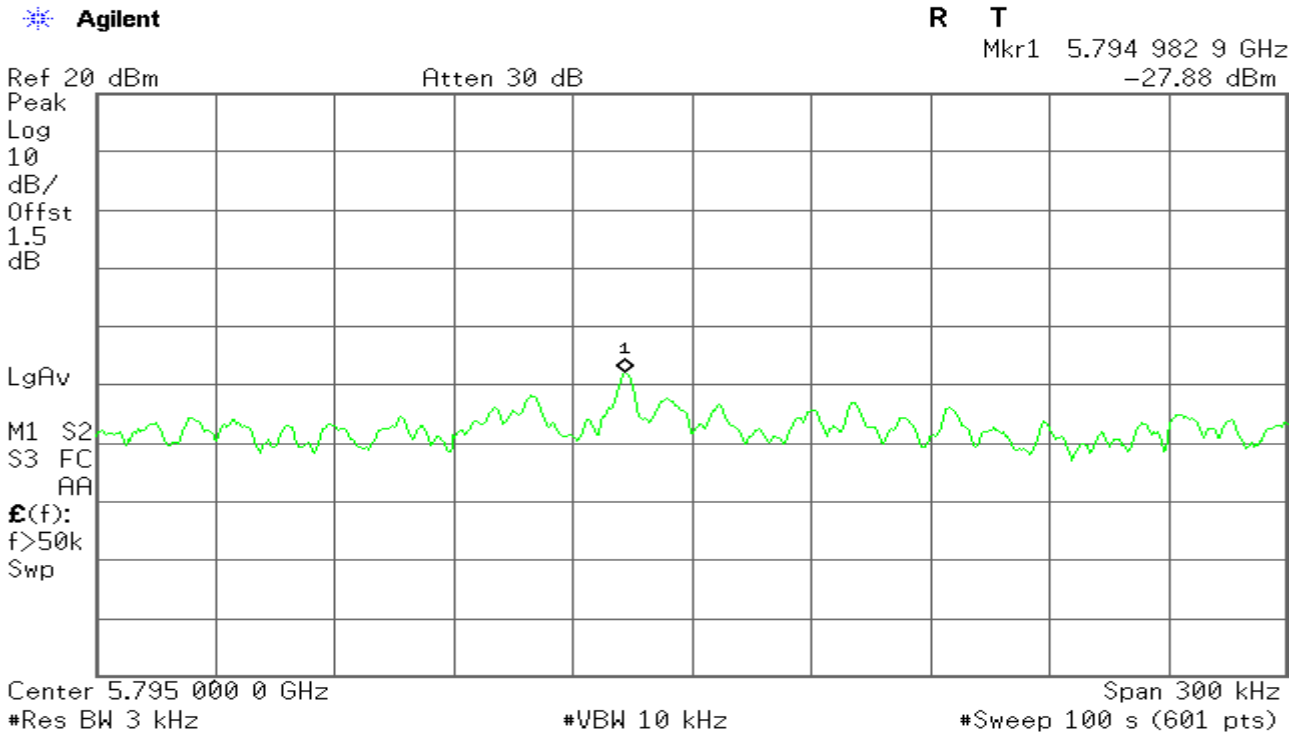



**draft 802.11an Standard-40 MHz Channel mode / Chain 1**

**PPSD (CH Low)**



## PPSD (CH High)



## 7.5.SPURIOUS EMISSIONS

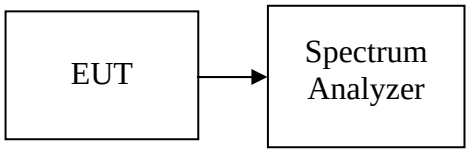
### 1.1.1. CONDUCTED MEASUREMENT

**LIMIT**

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

Conducted power was measured based on the use of RMS averaging over a time interval,therefore the required attenuntion is 30 dB.

**Test Configuration**




## TEST PROCEDURE

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

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

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

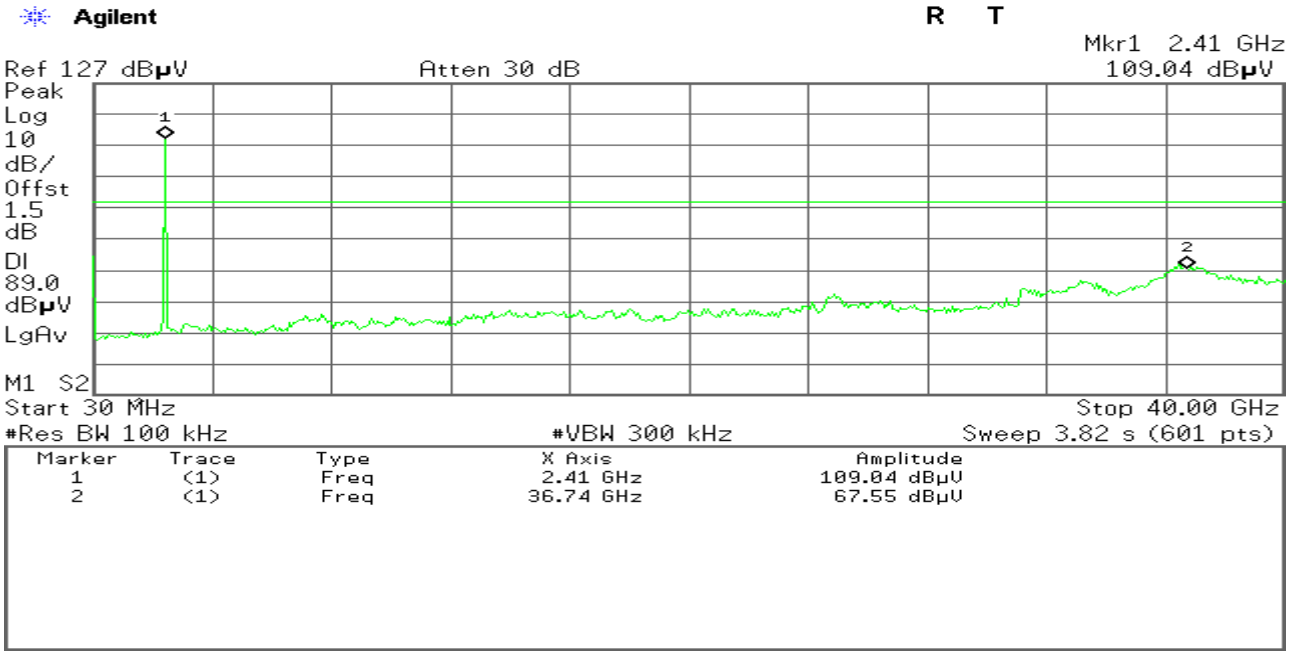
## TEST RESULTS

*No non-compliance noted*

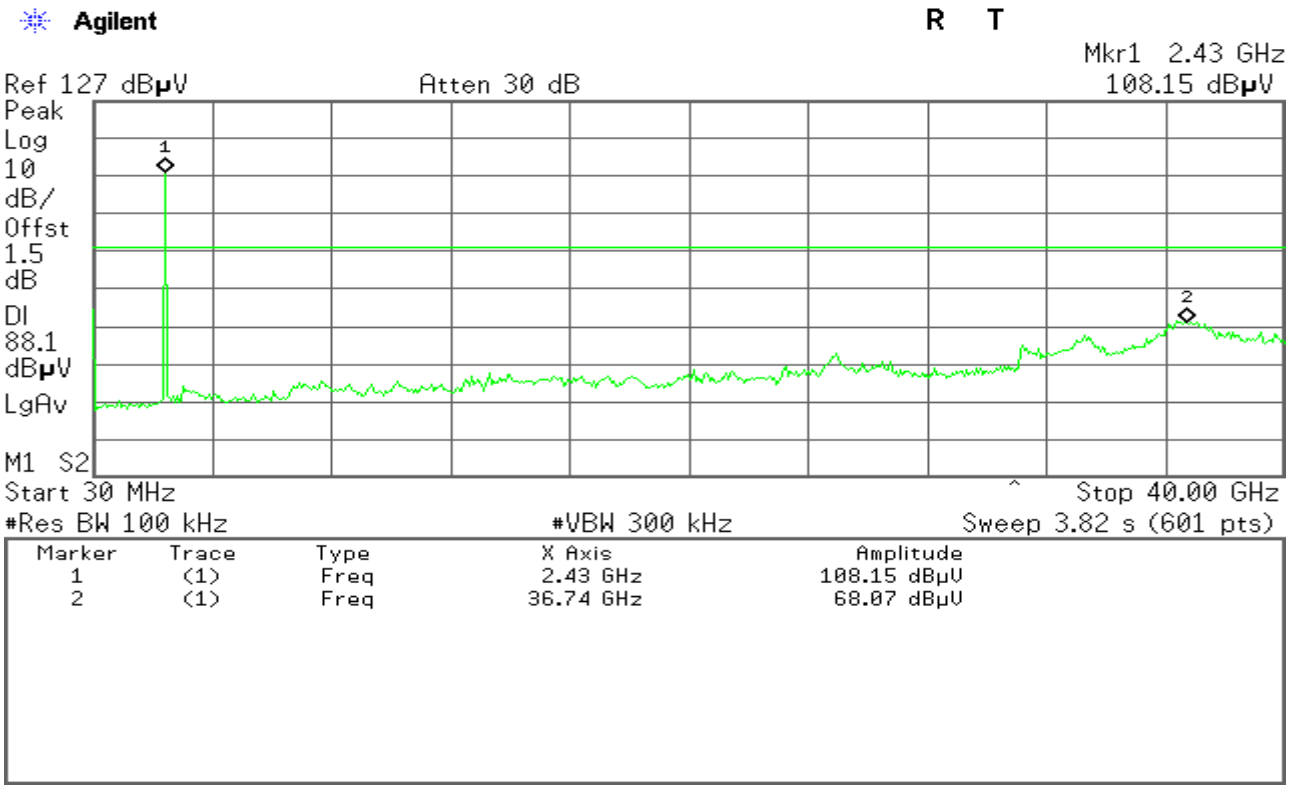
## Test Plot

## IEEE 802.11b mode

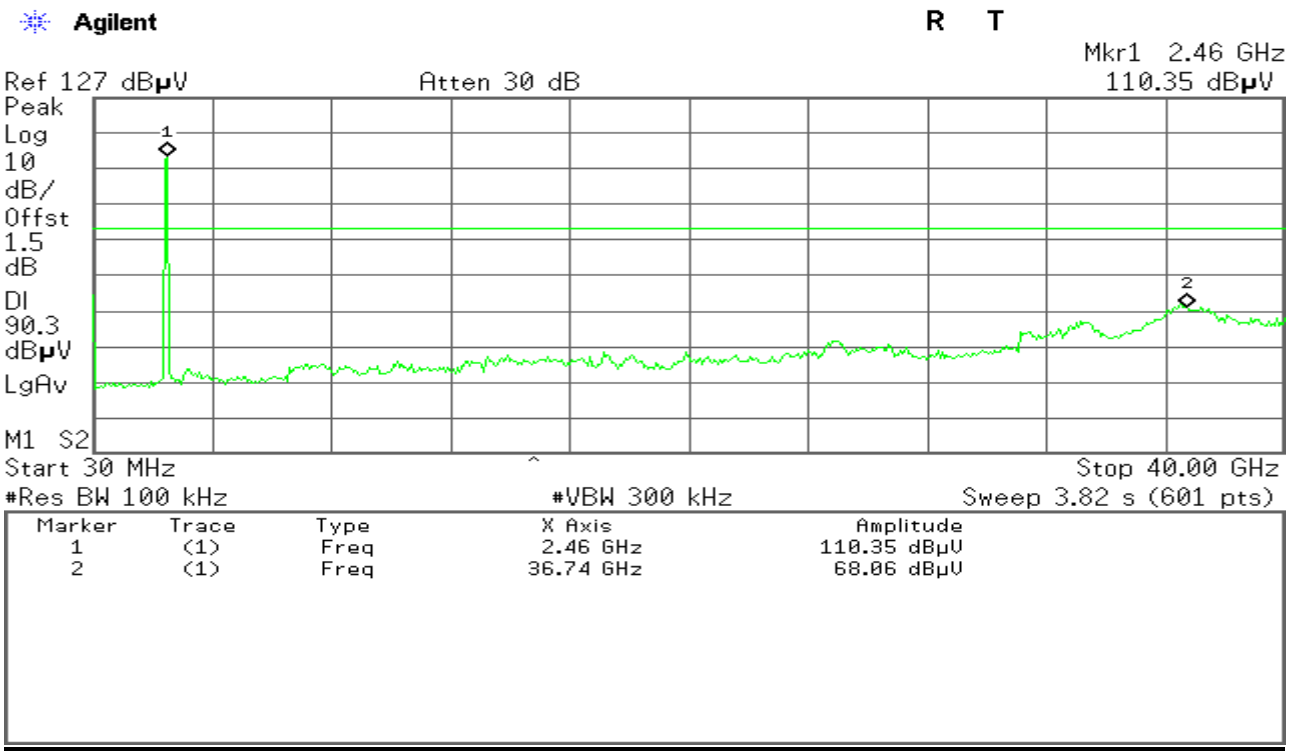
### CH Low




### CH Mid

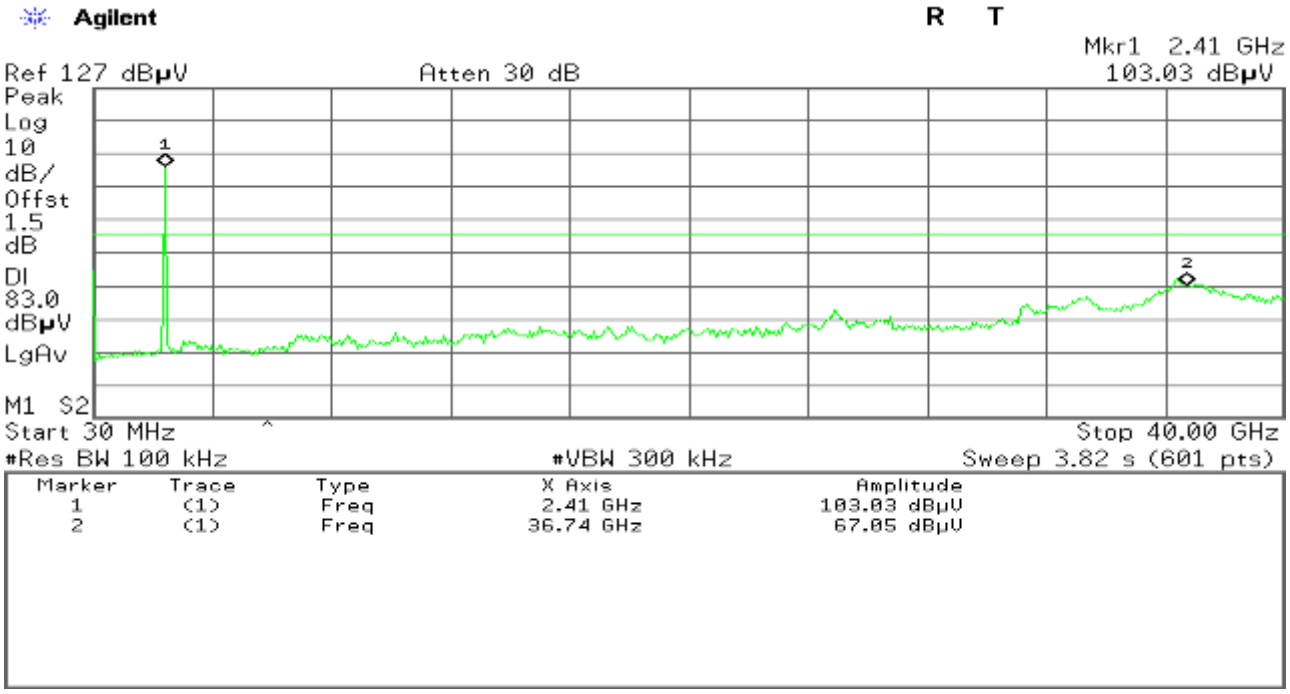


### CH High

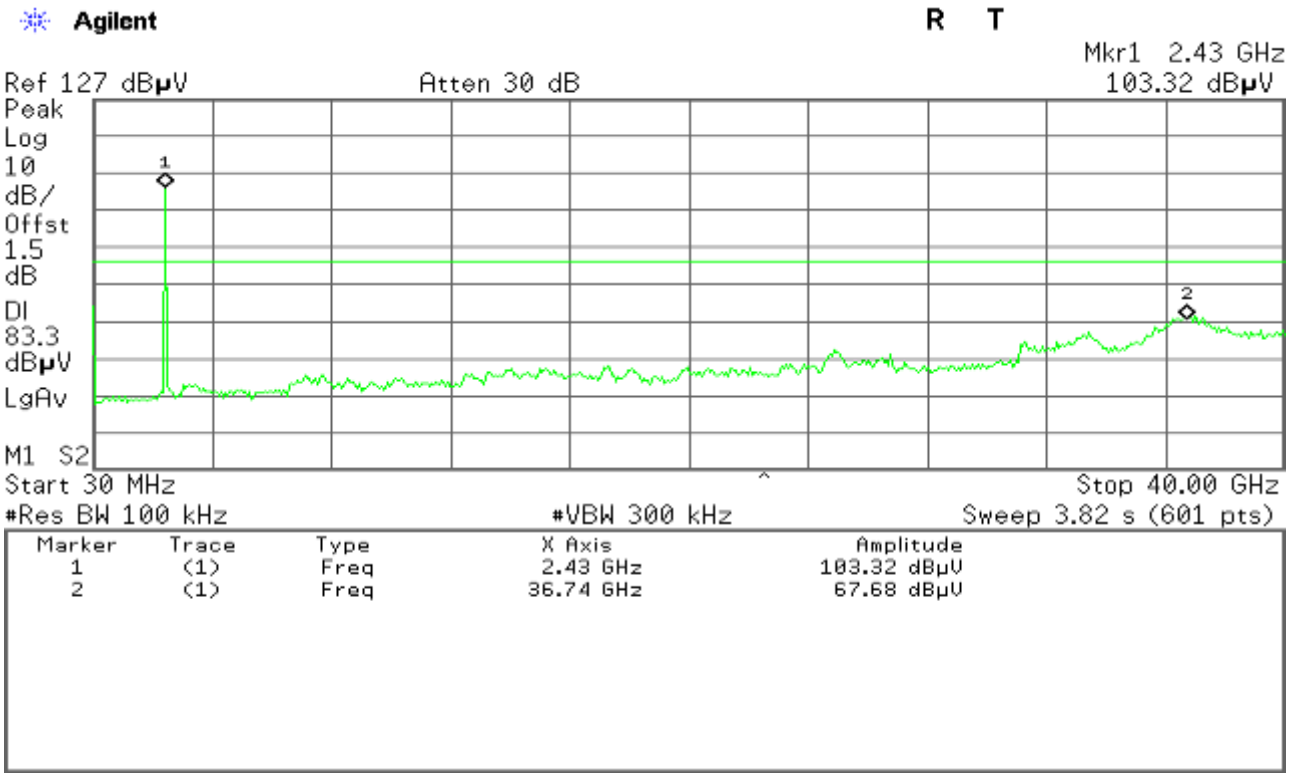



## IEEE 802.11g mode

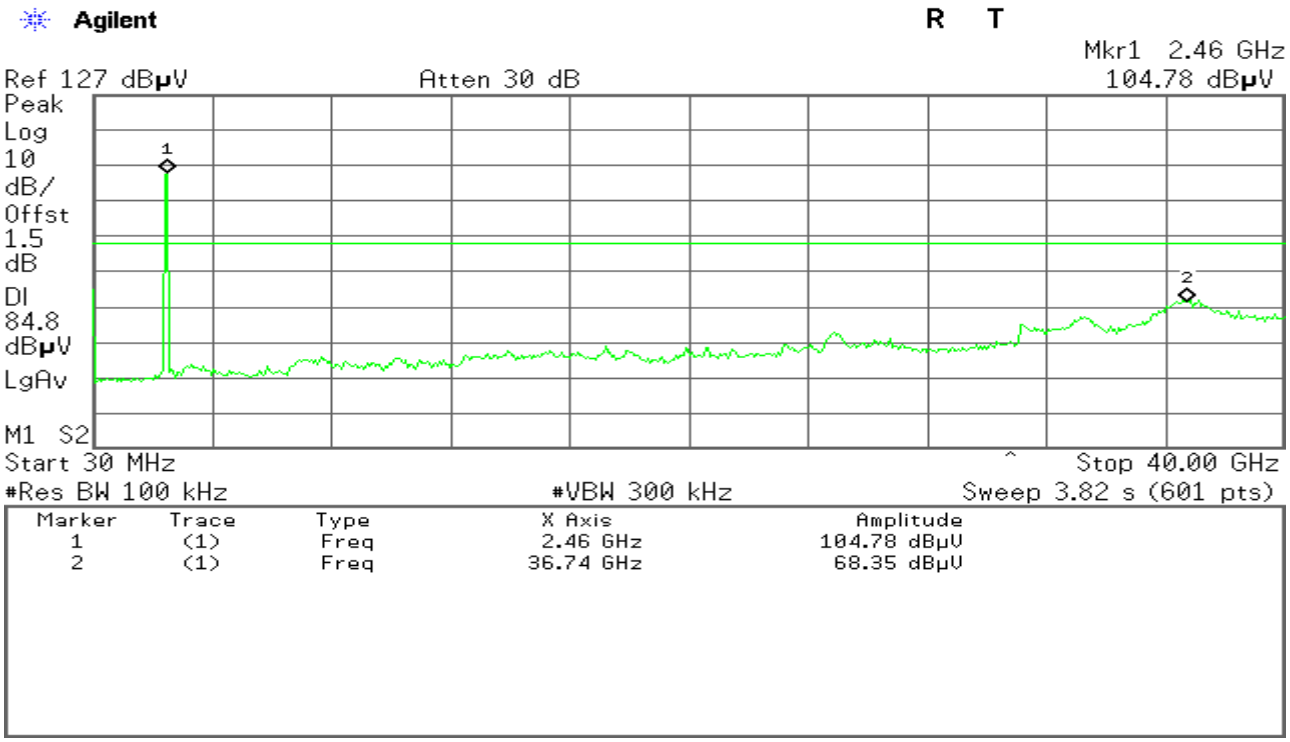
### CH Low



## CH Mid

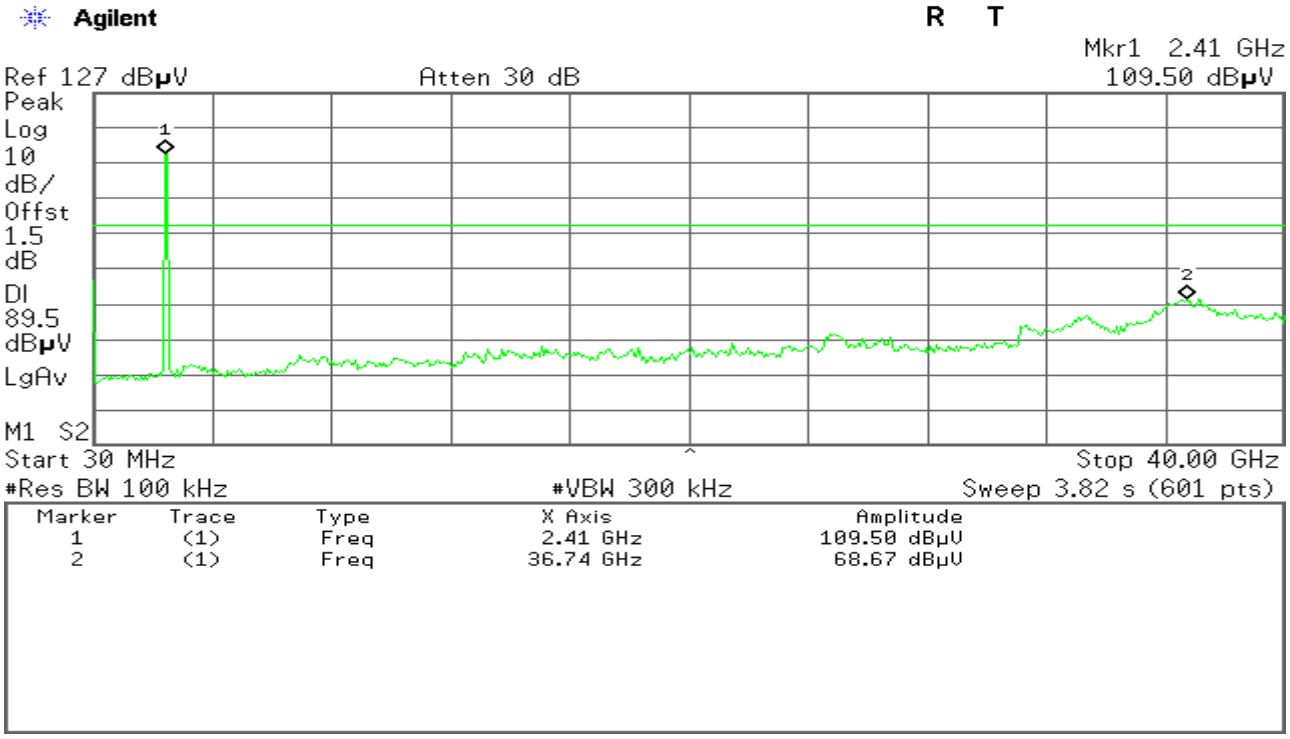



## CH High

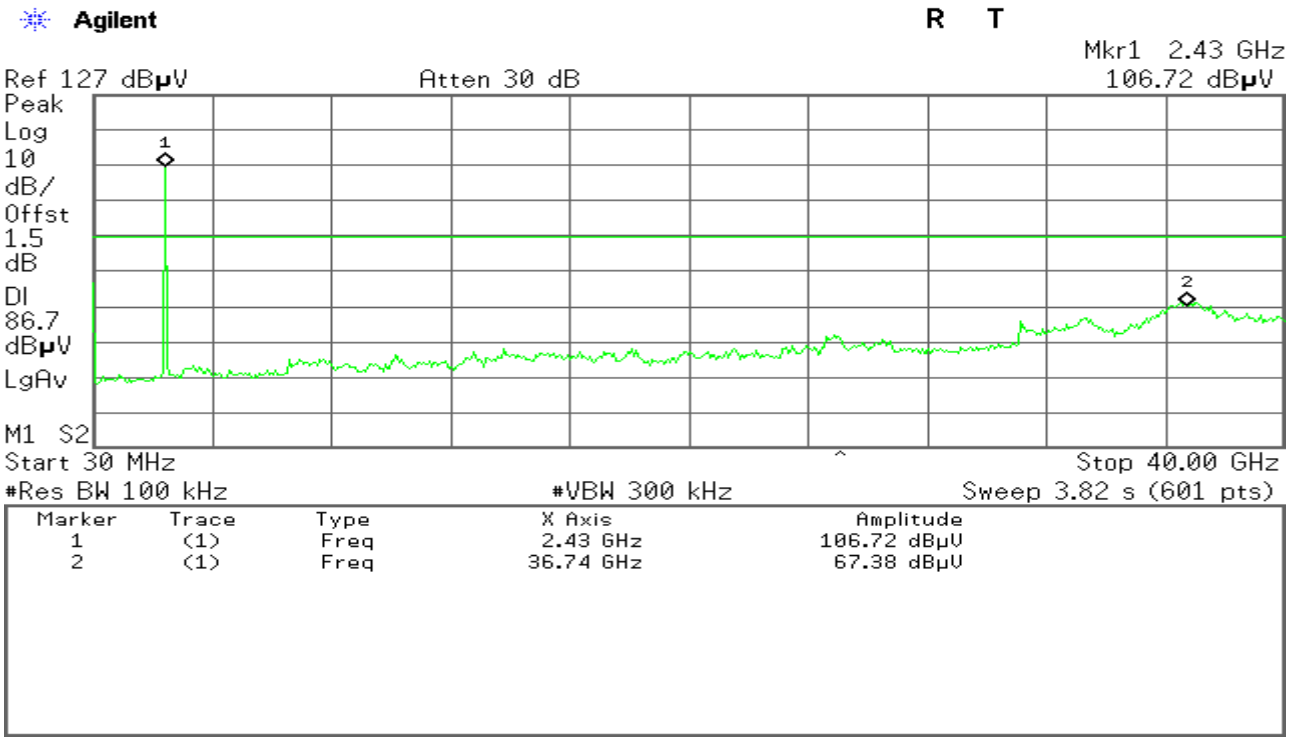


## draft 802.11gn Standard-20 MHz Channel mode / Chain 0

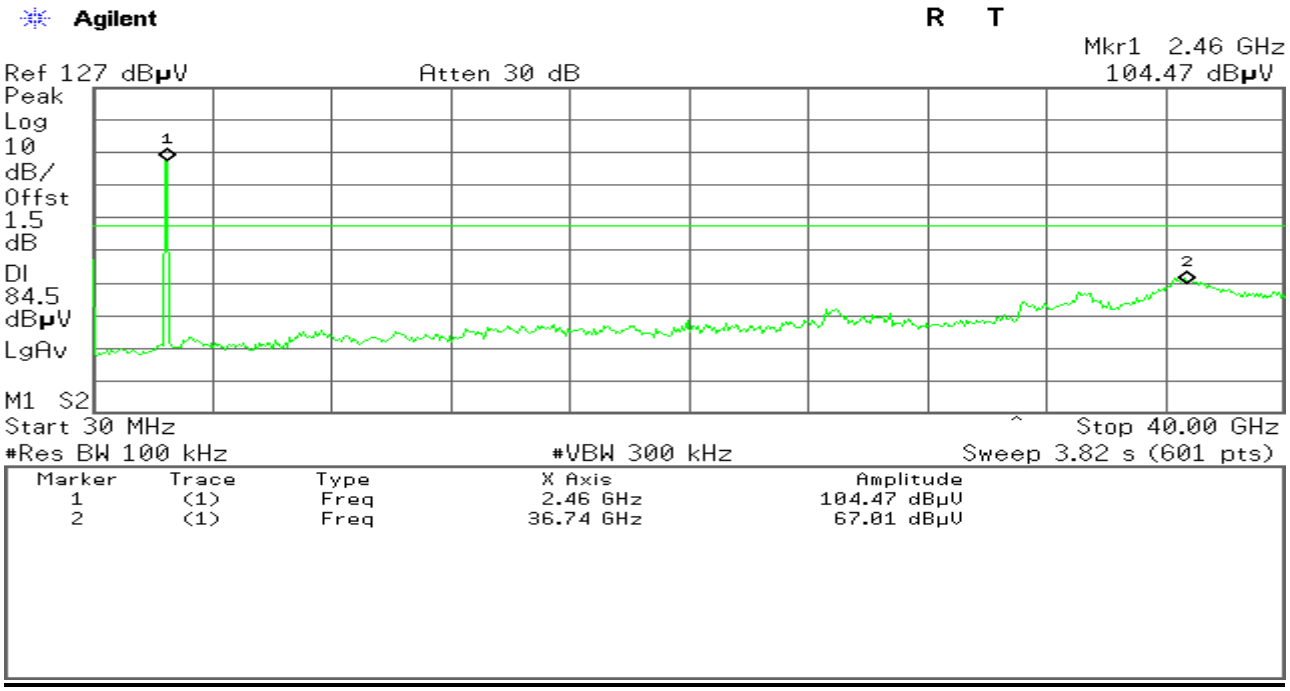
### CH Low




### CH Mid

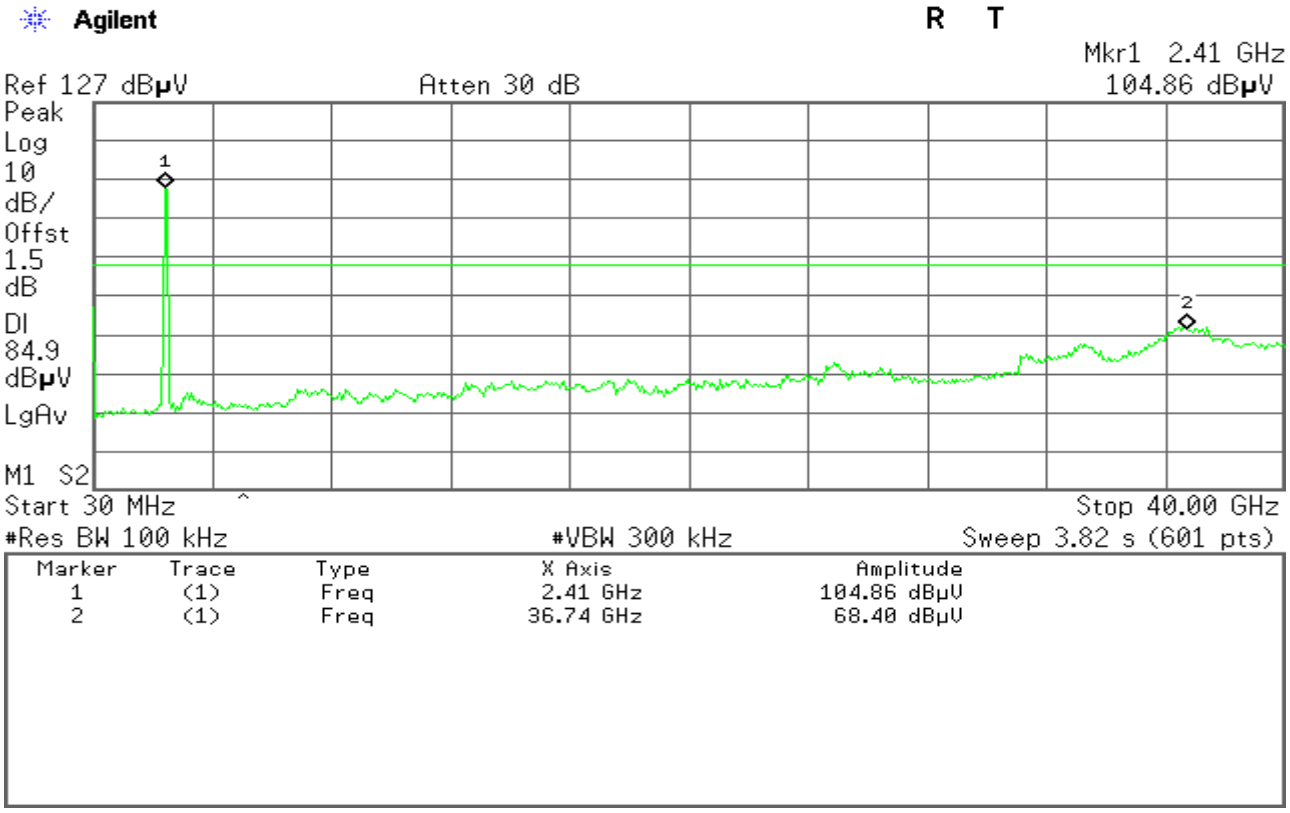


## CH High

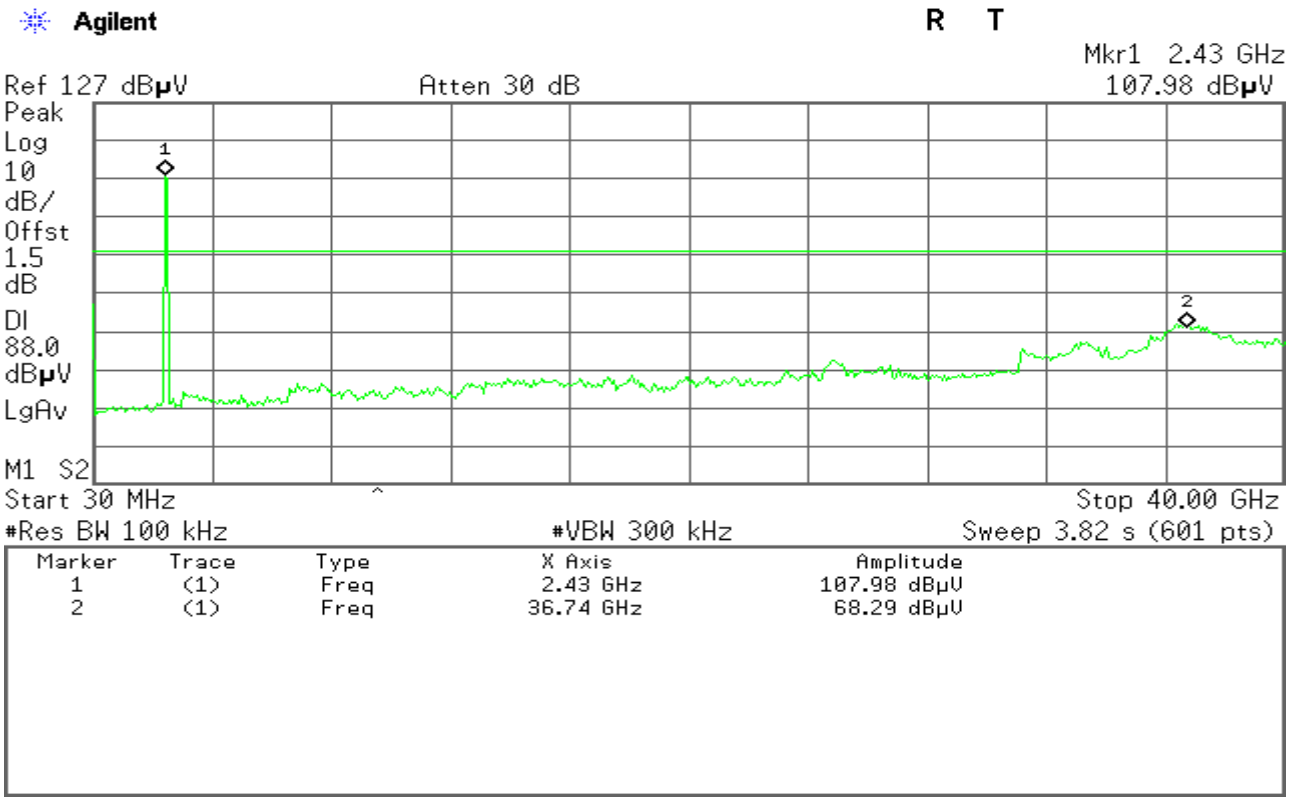



## draft 802.11gn Standard-20 MHz Channel mode / Chain 1

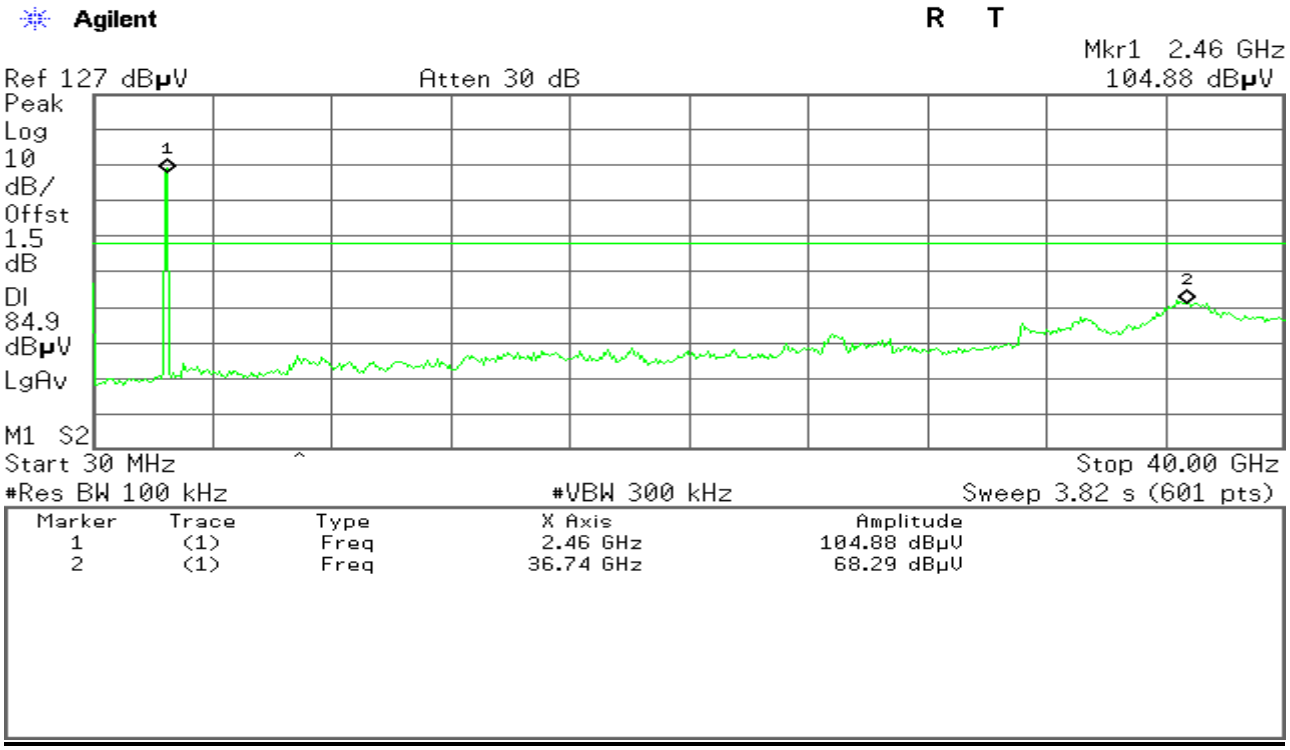
## CH Low



## CH Mid

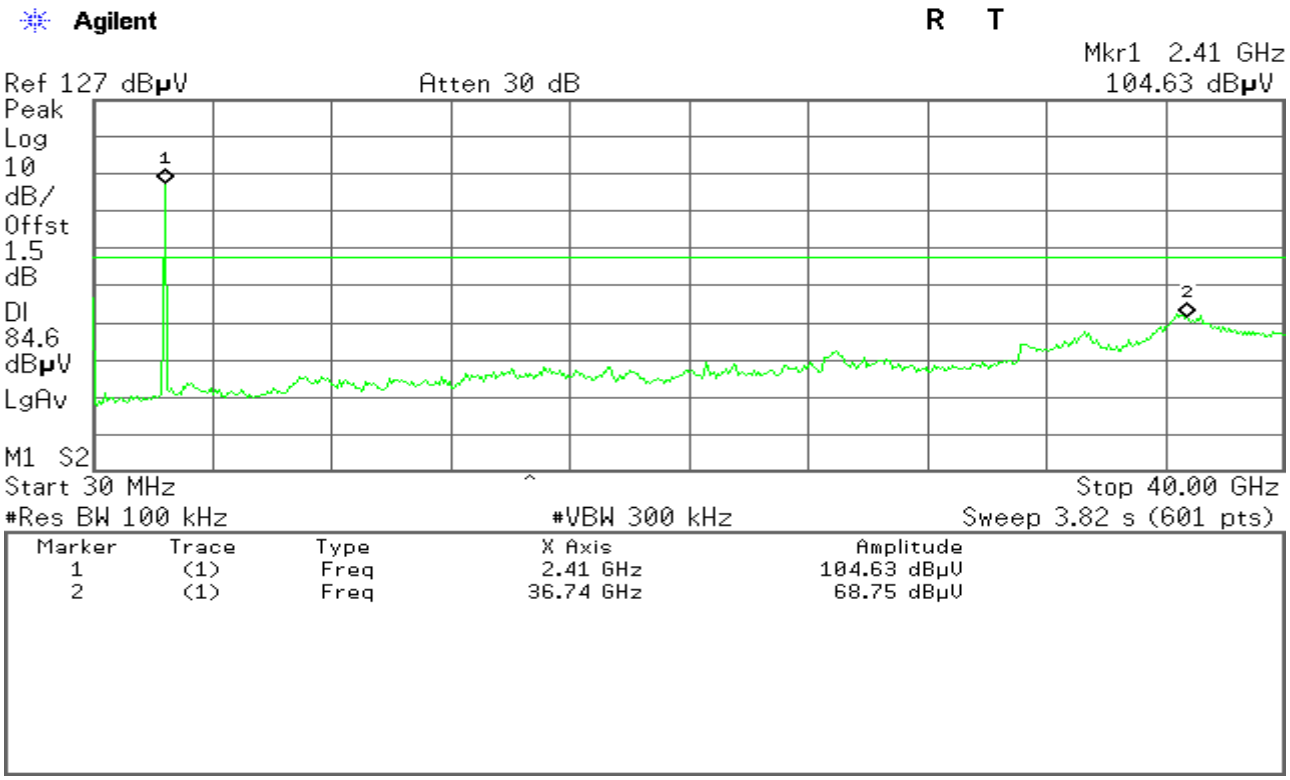



## CH High

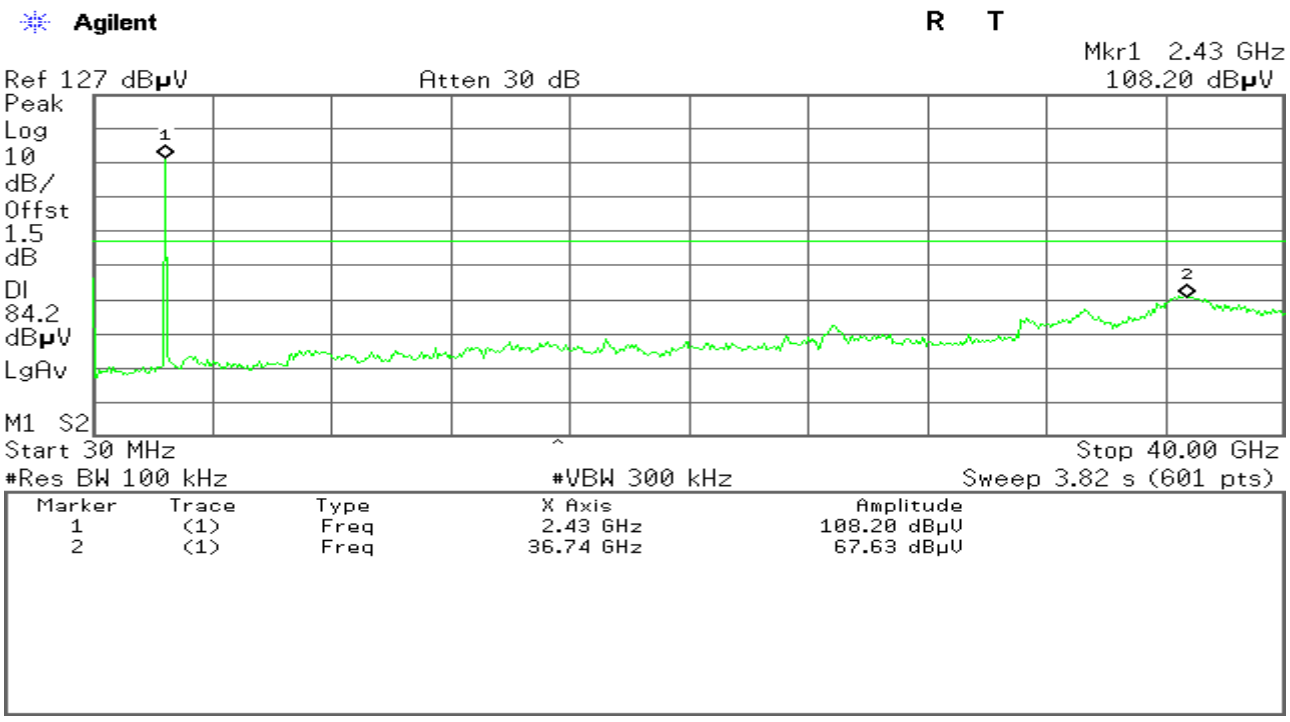


**draft 802.11gn Standard-20 MHz Channel mode / Chain 0+ Chain 1**

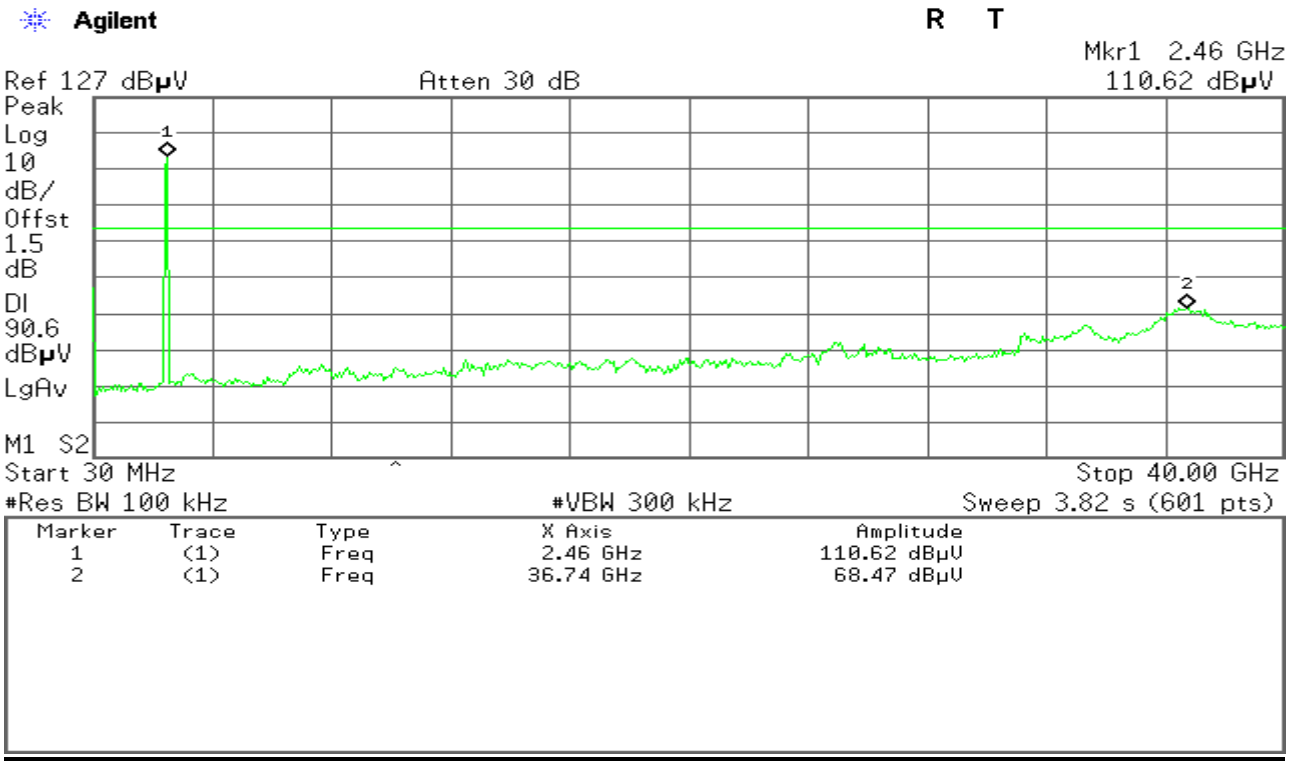
**CH Low**




**CH Mid**

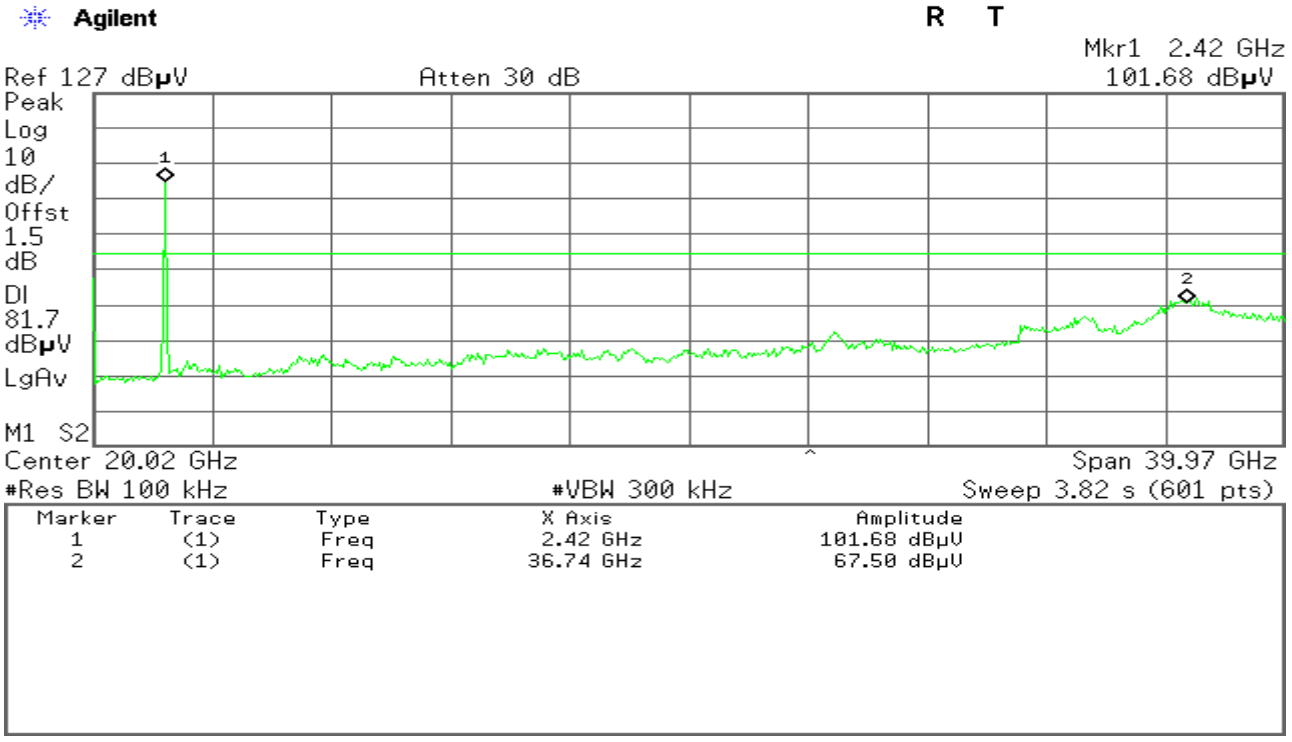


### CH High

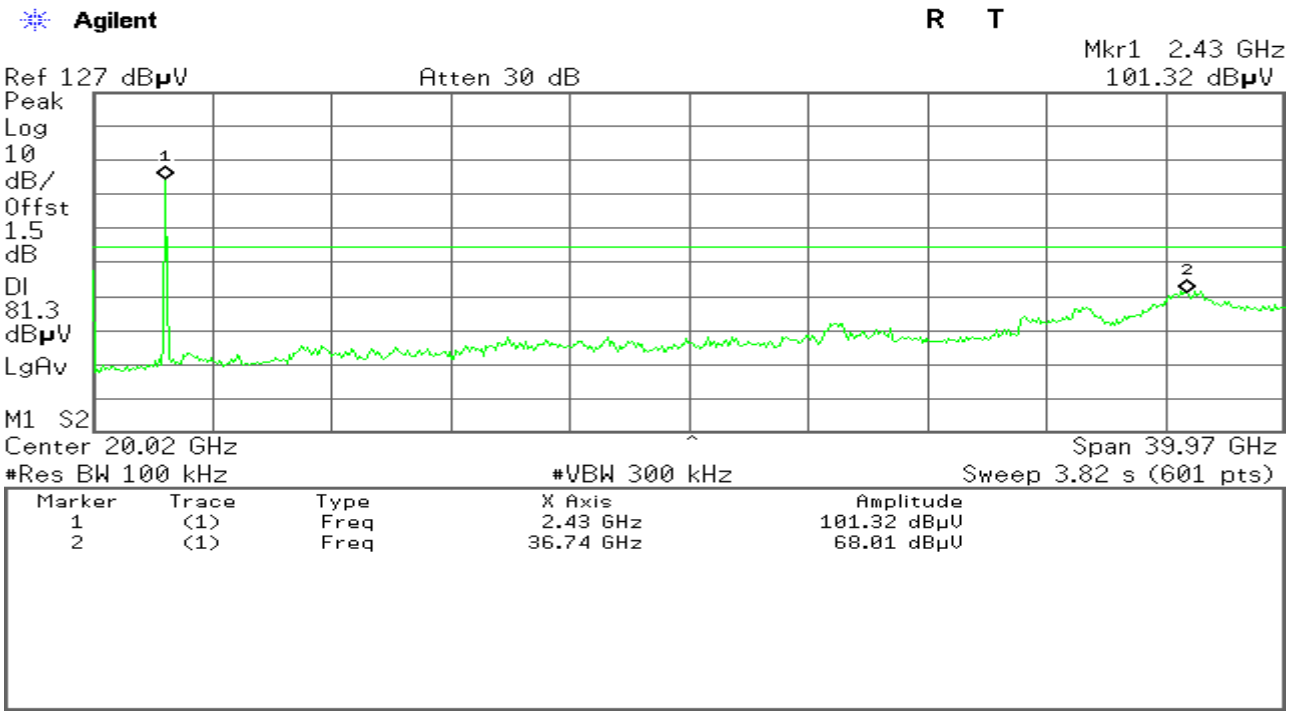



### draft 802.11gn Wide-40 MHz Channel mode / Chain 0

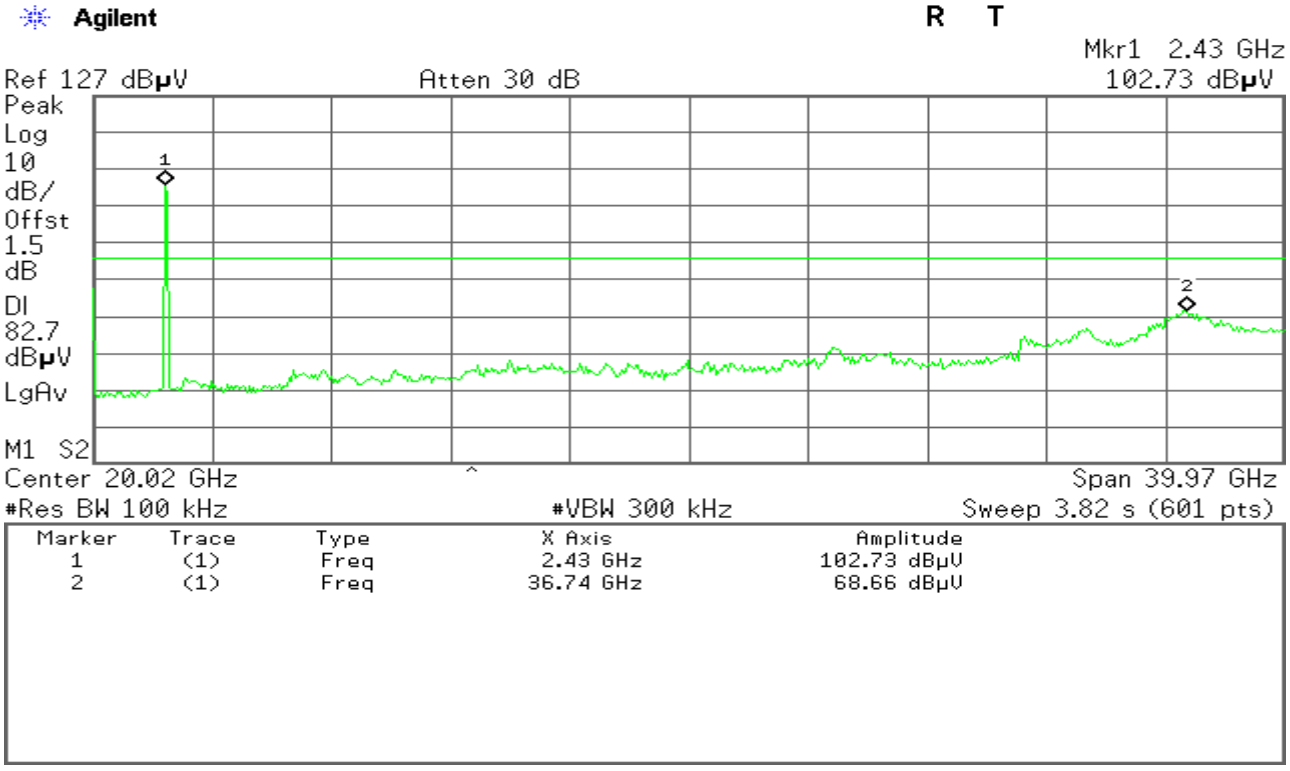
### CH Low



## CH Mid

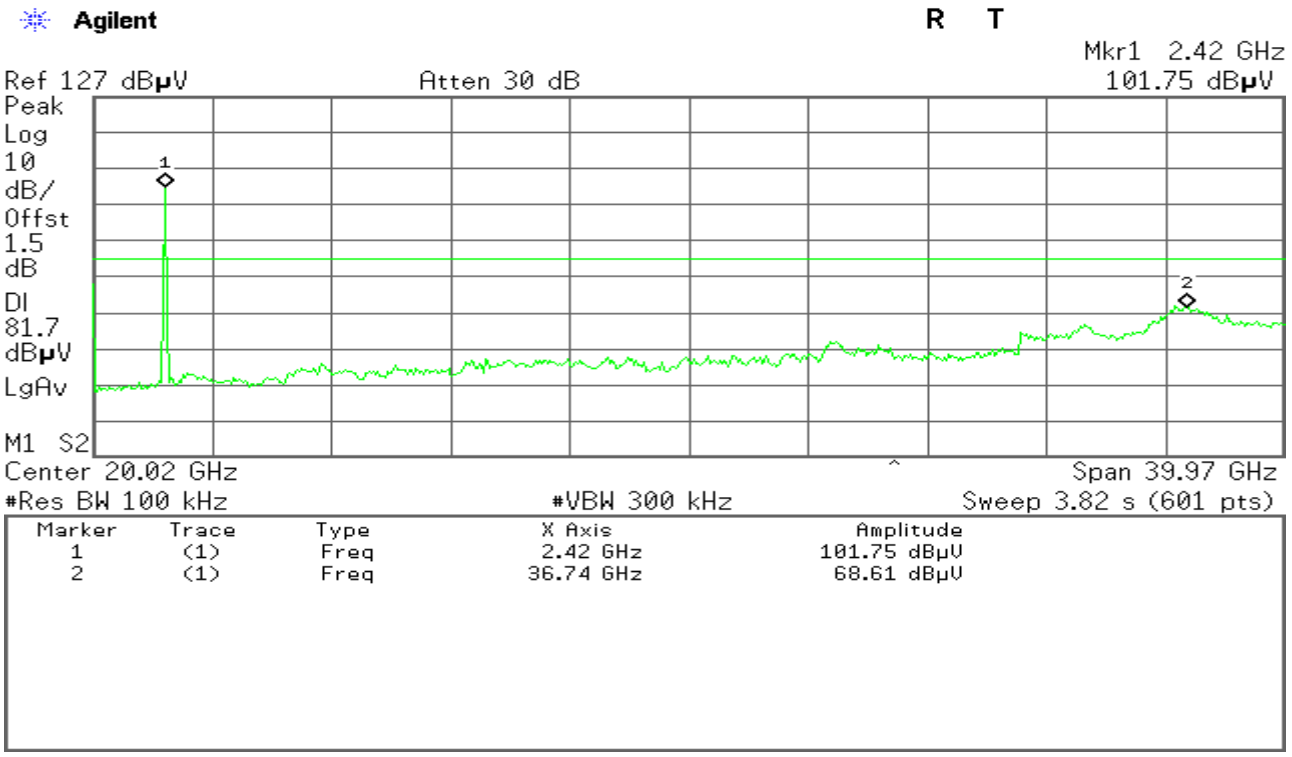



## CH High

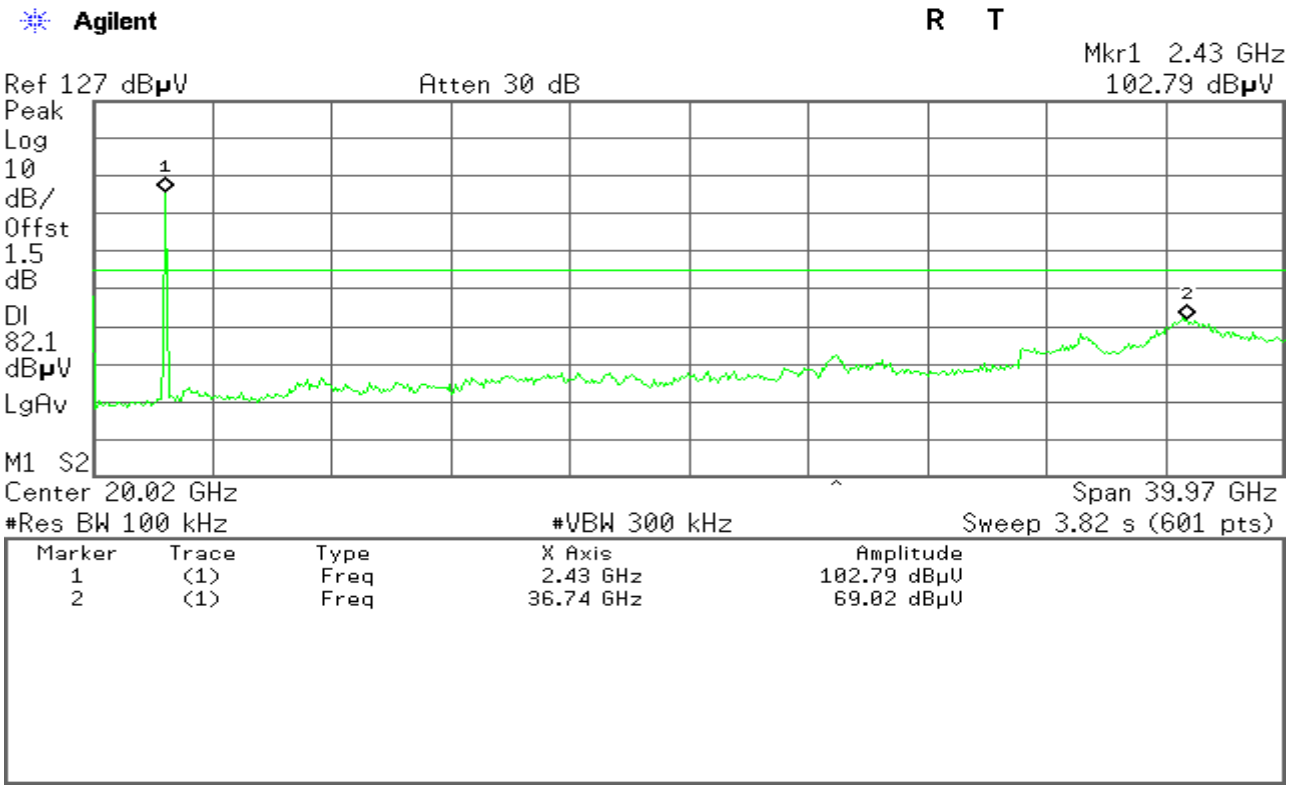


## draft 802.11gn Wide-40 MHz Channel mode / Chain 1

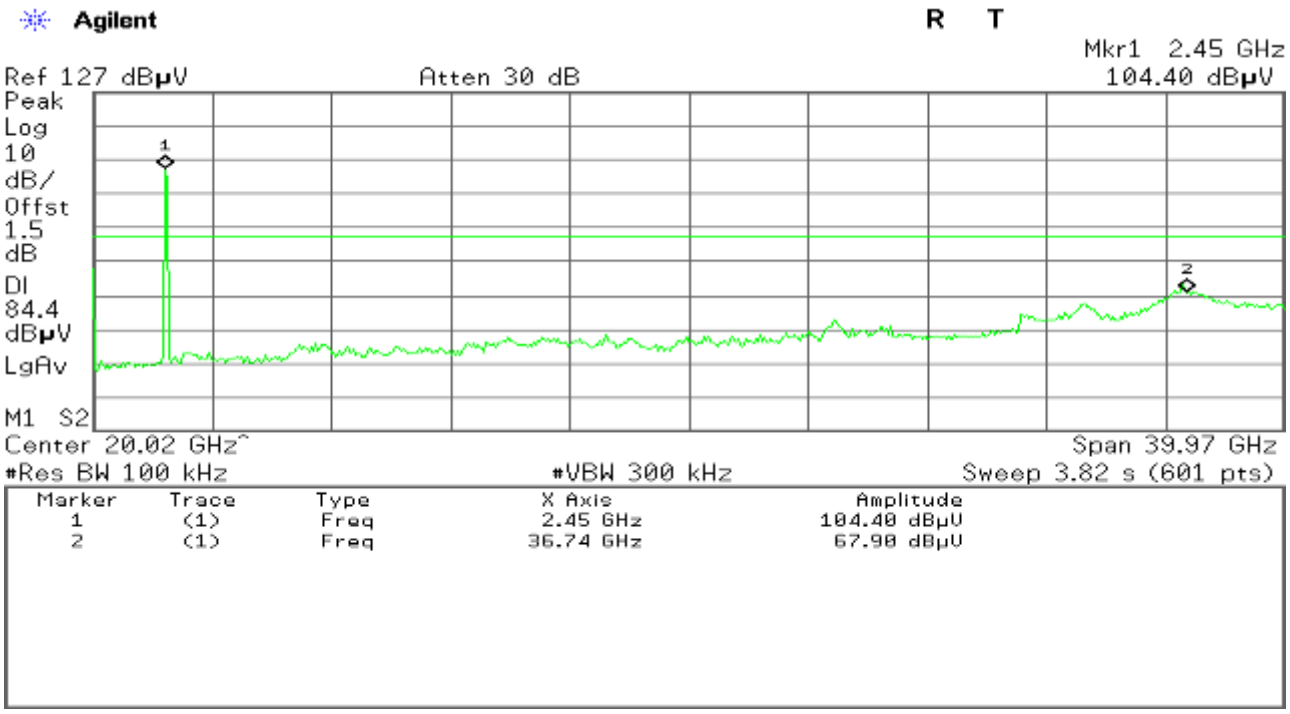
### CH Low




### CH Mid

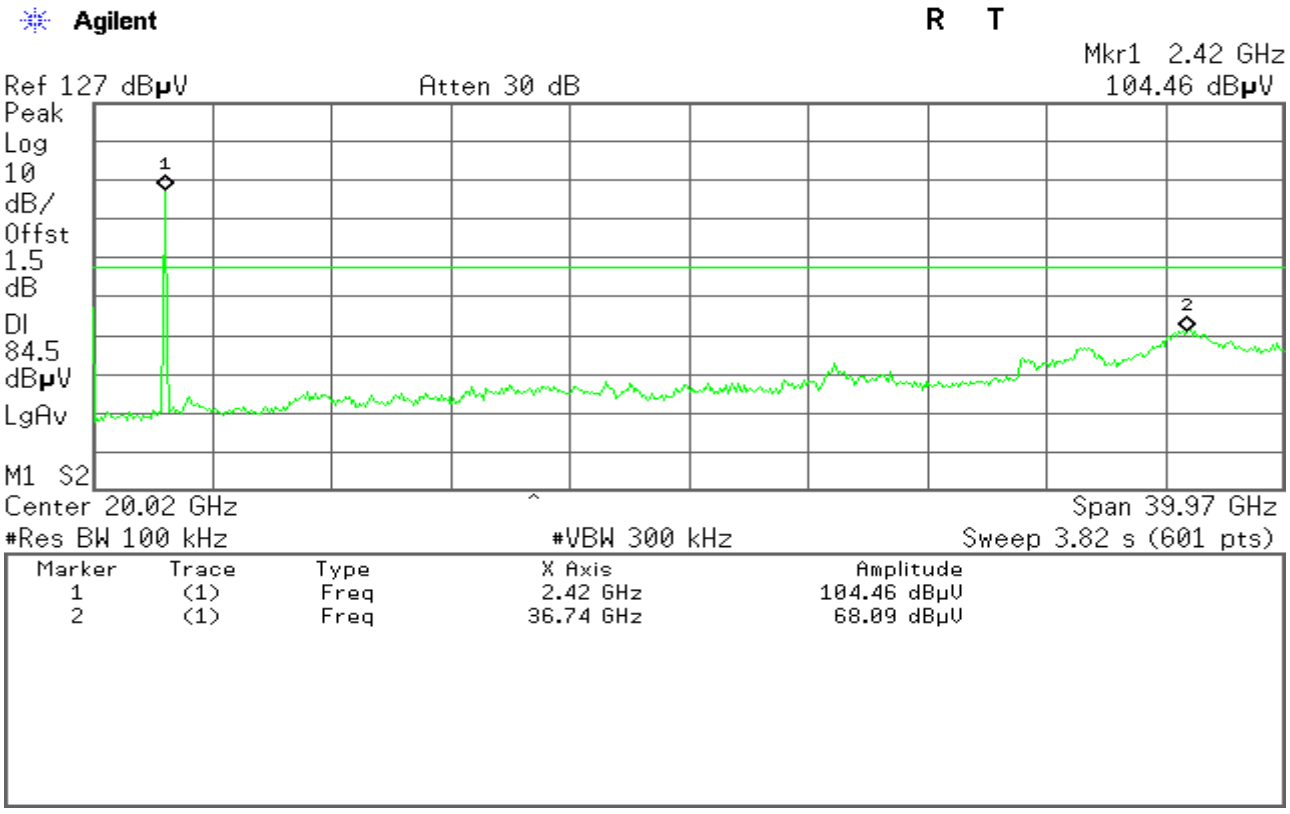


### CH High

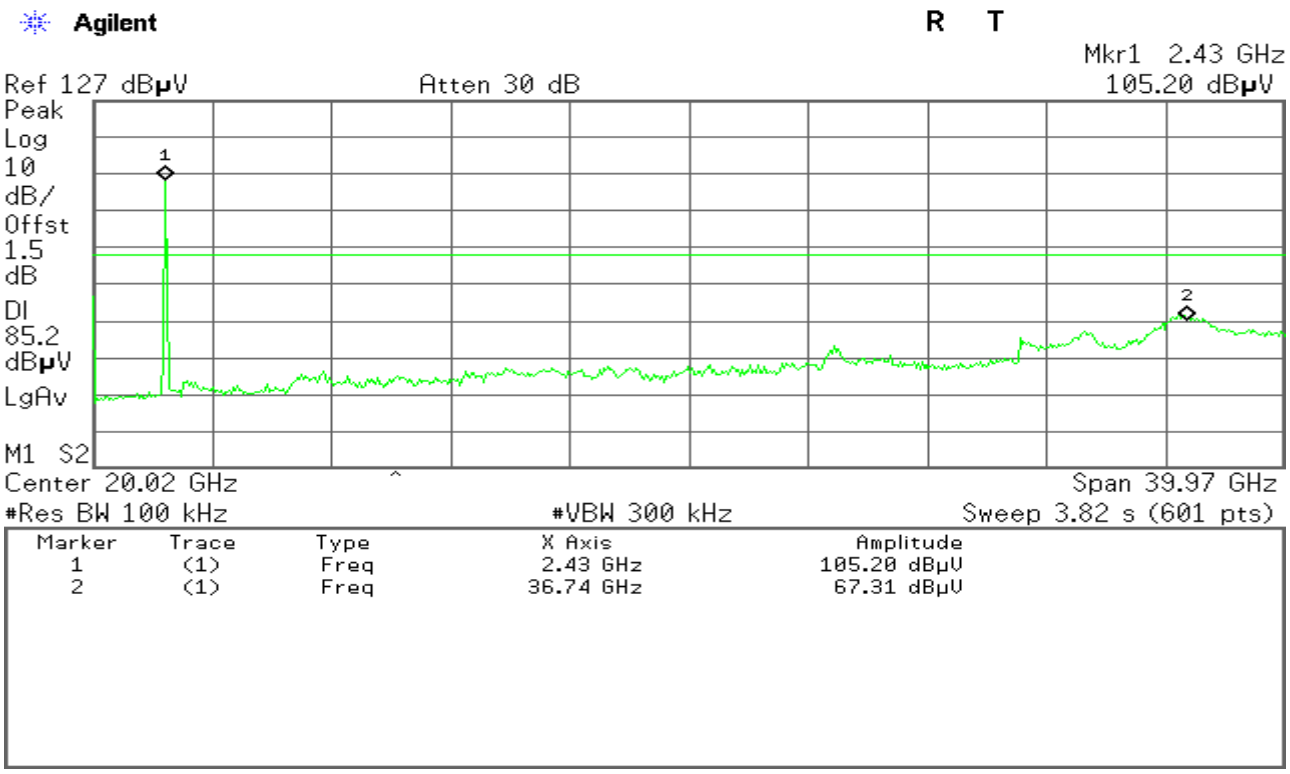



### draft 802.11gn Wide-40 MHz Channel mode / Chain 0+ Chain 1

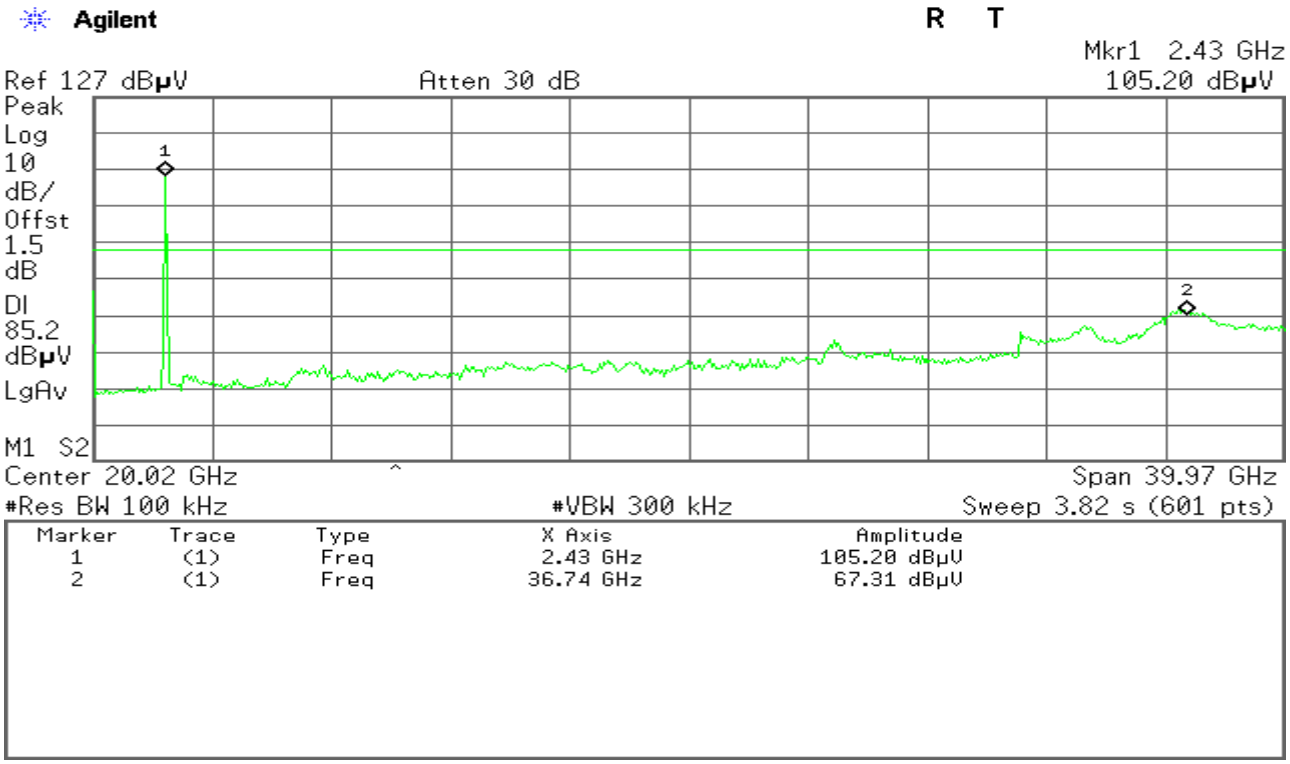
### CH Low



## CH Mid



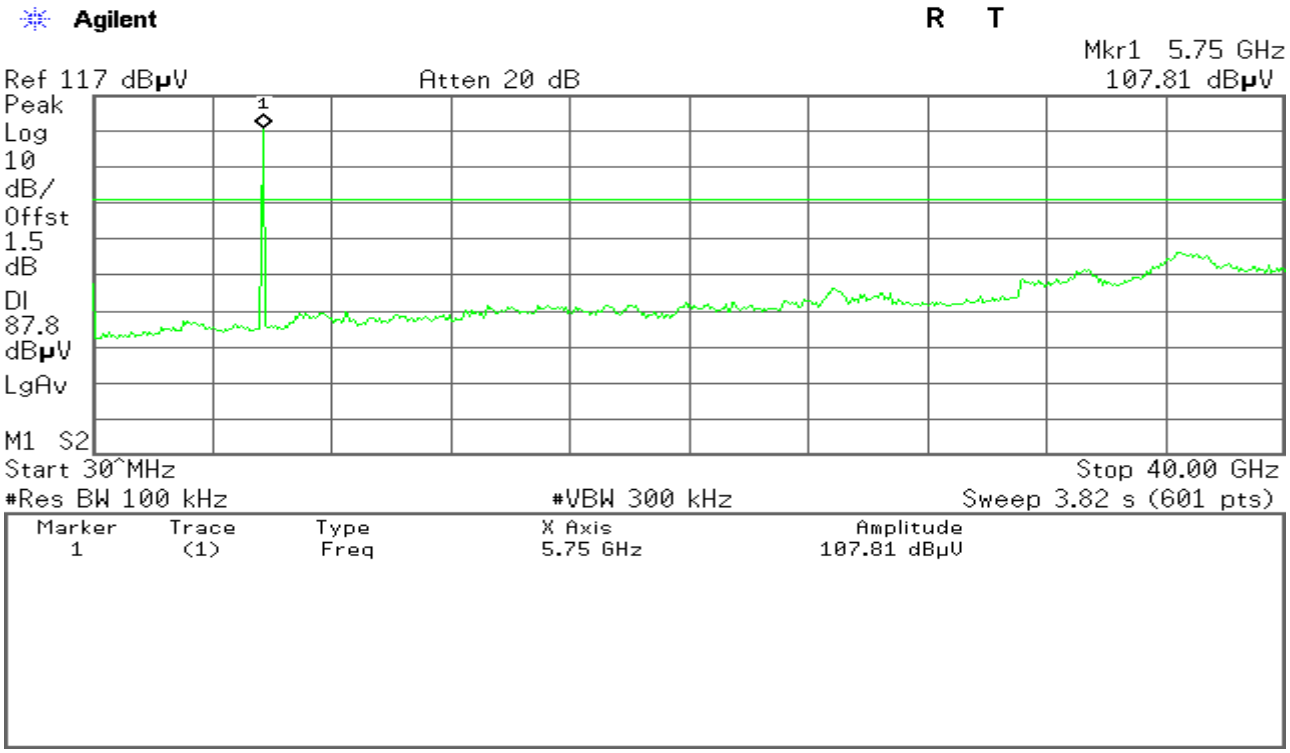

## CH High



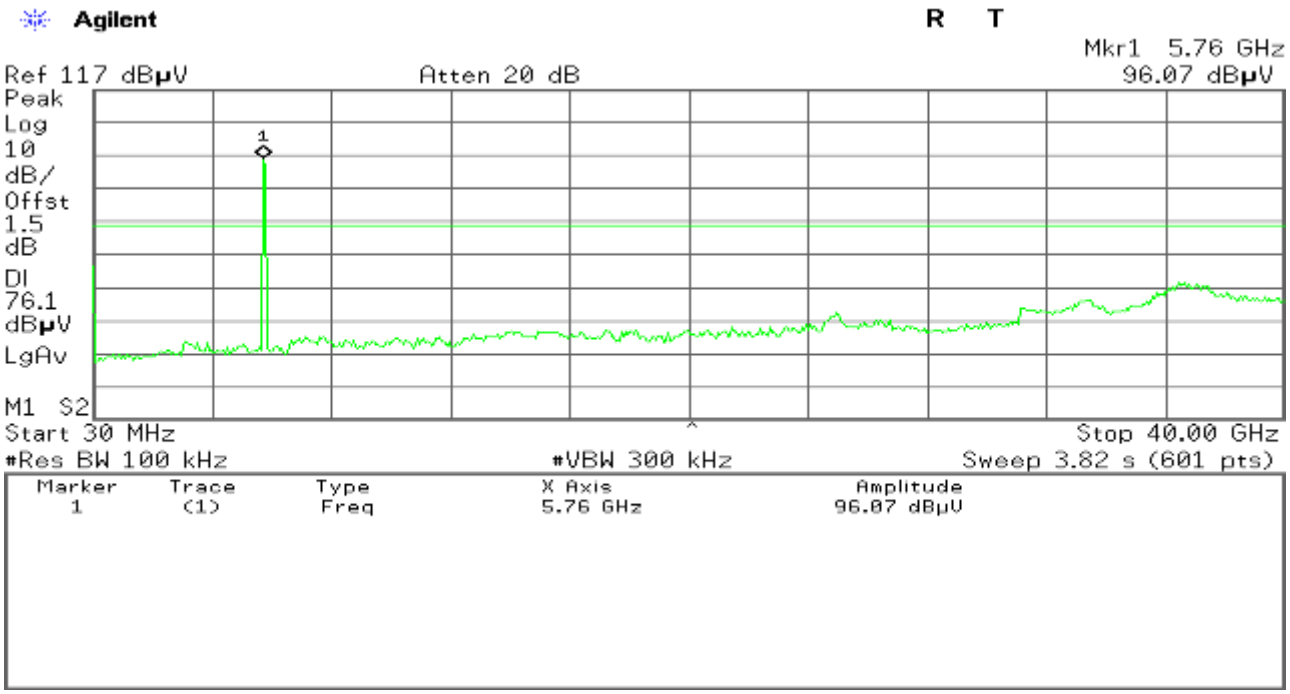
## 5725-5825

### IEEE 802.11a mode

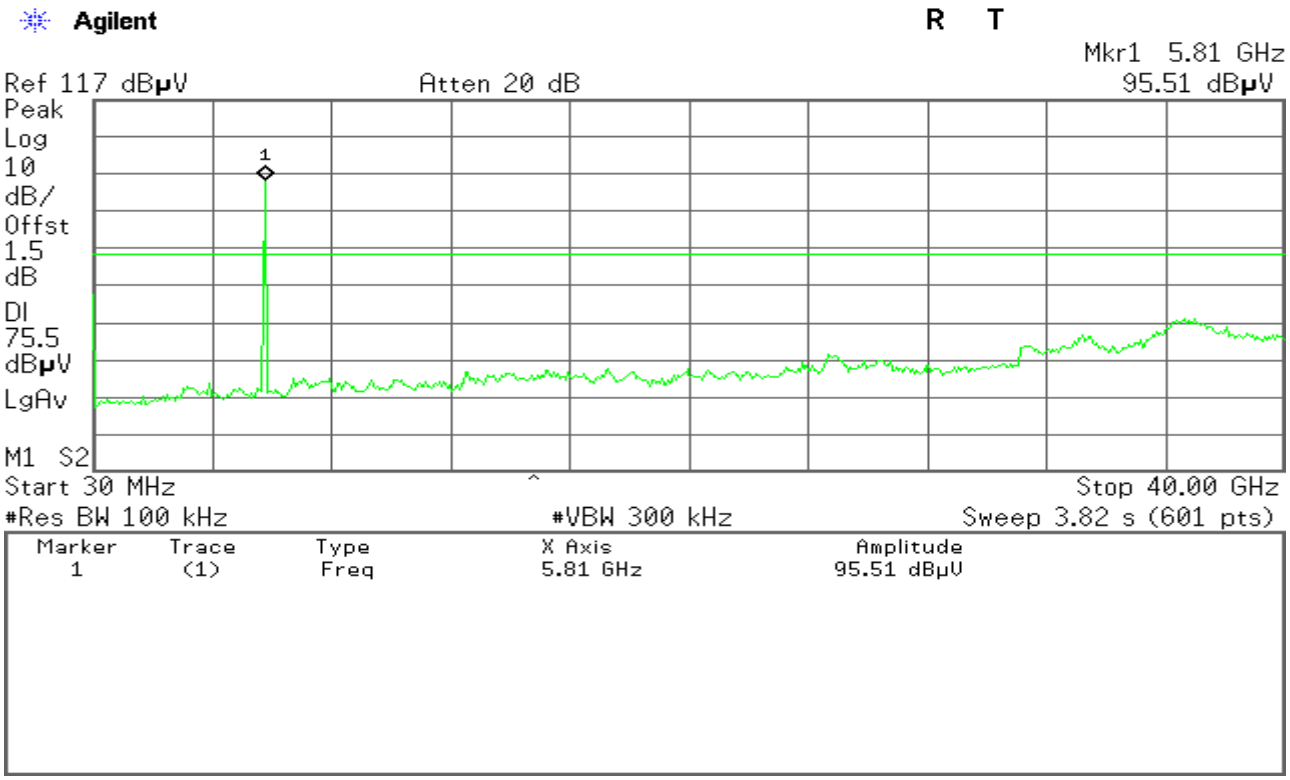
### CH Low




### CH Mid

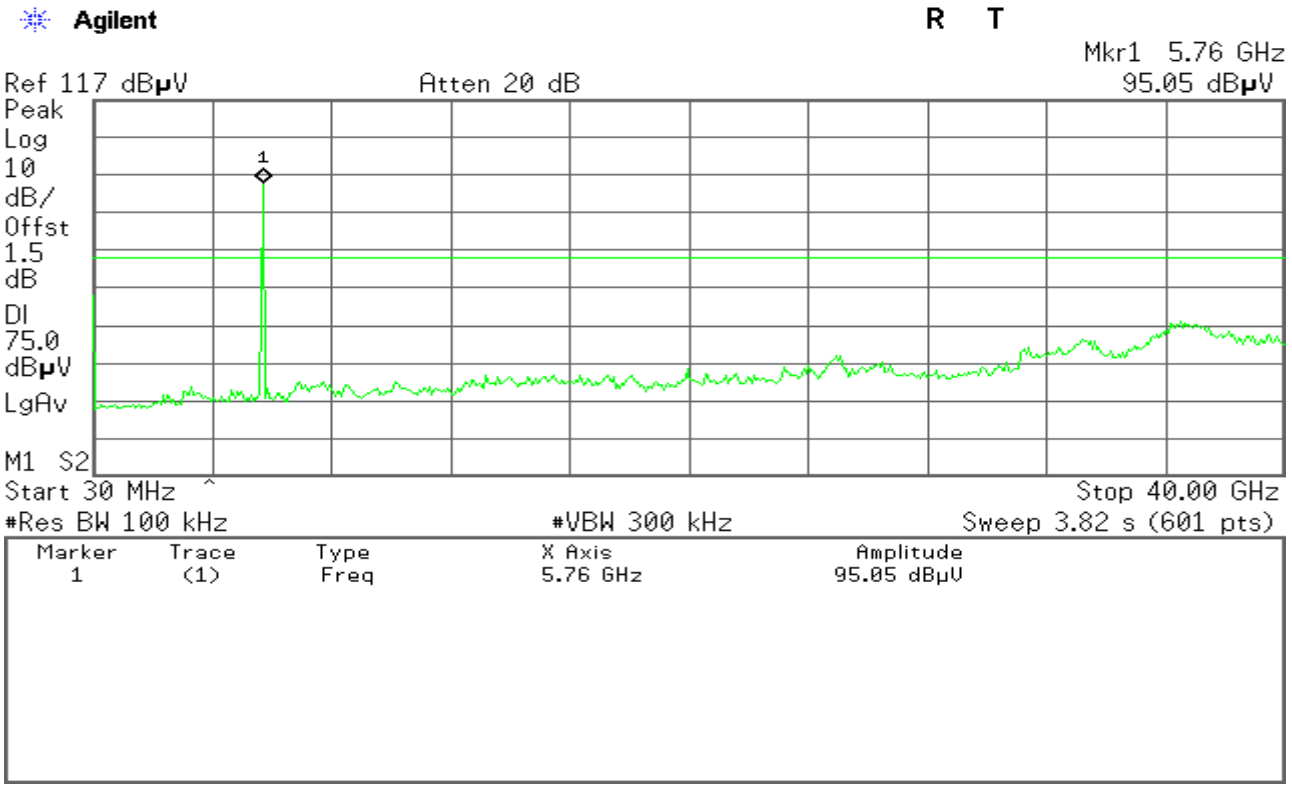


**CH High**

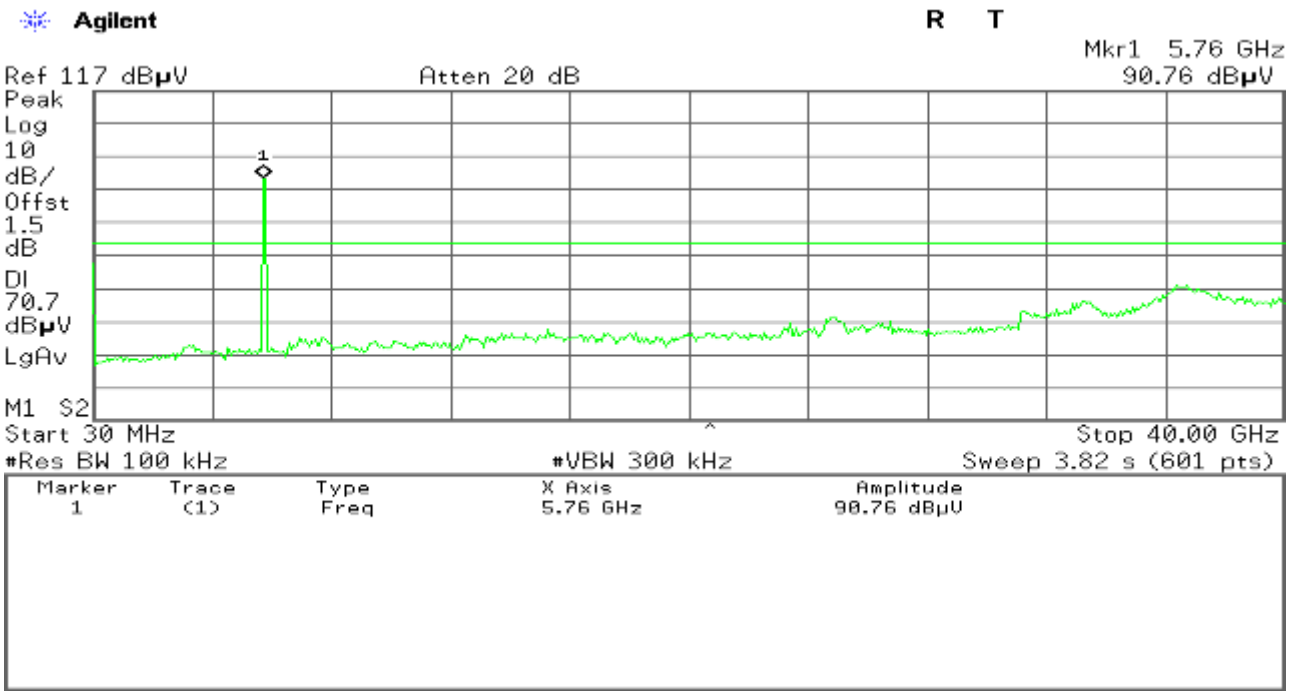



**draft 802.11an Standard-20 MHz Channel mode / Chain 0**

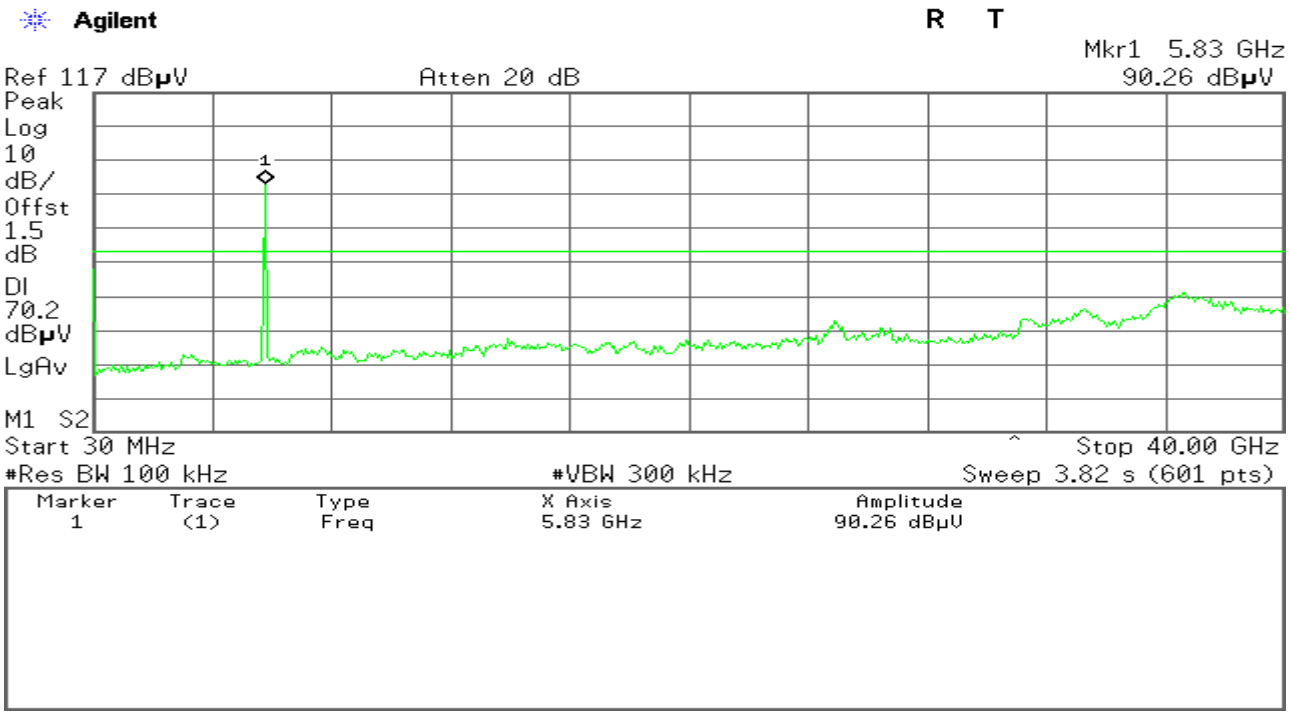
**CH Low**




**CH Mid**

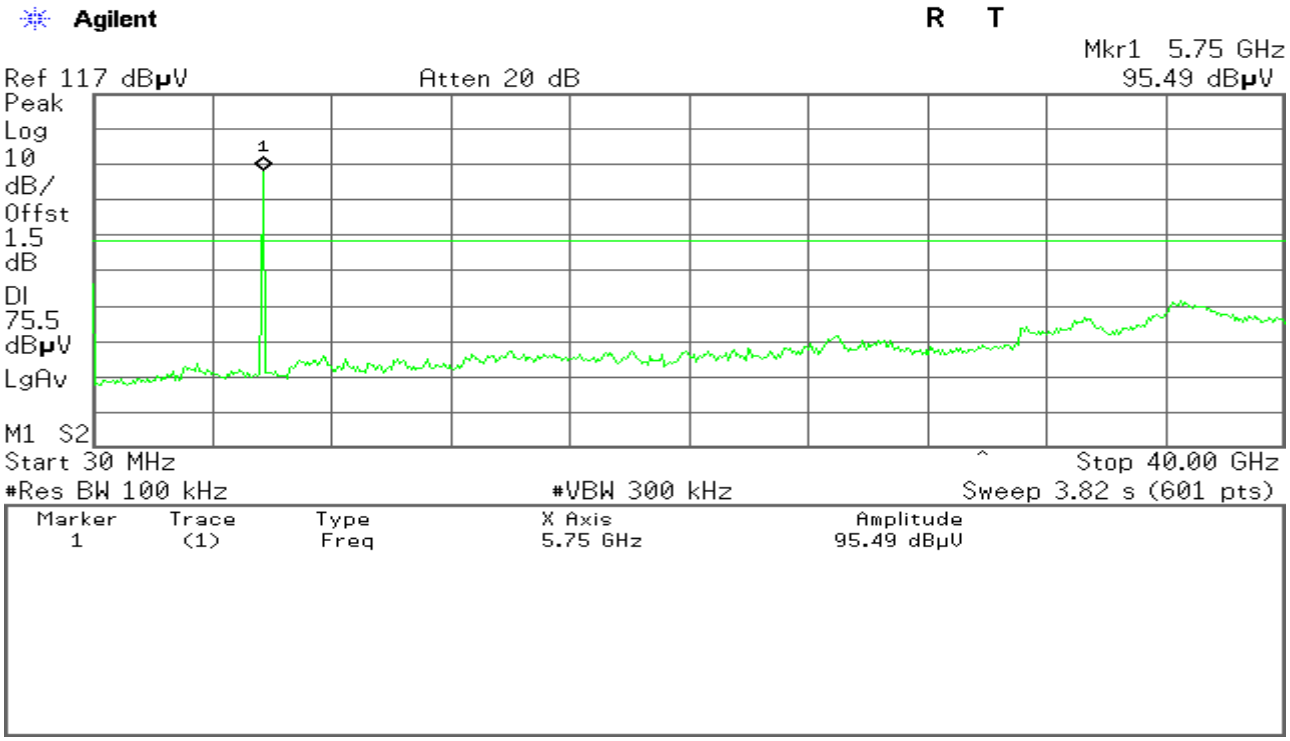


## CH High

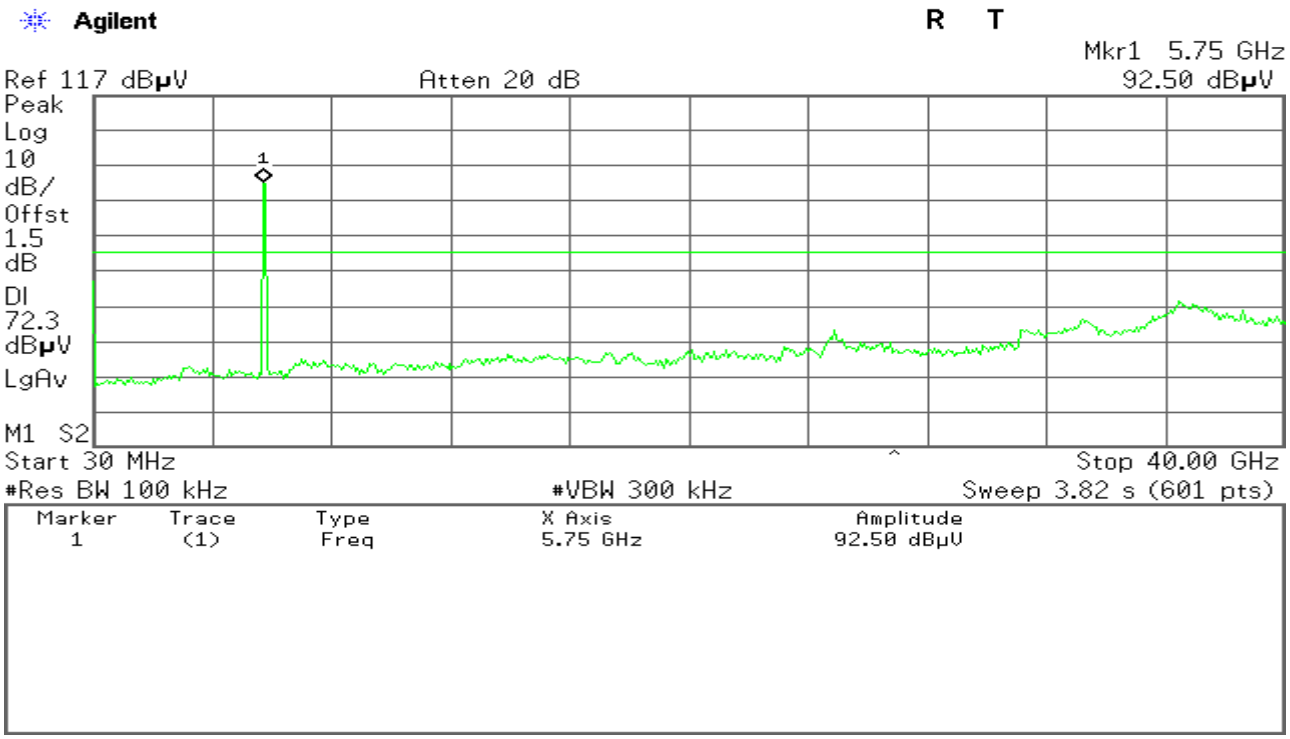



## draft 802.11an Standard-20 MHz Channel mode / Chain 1

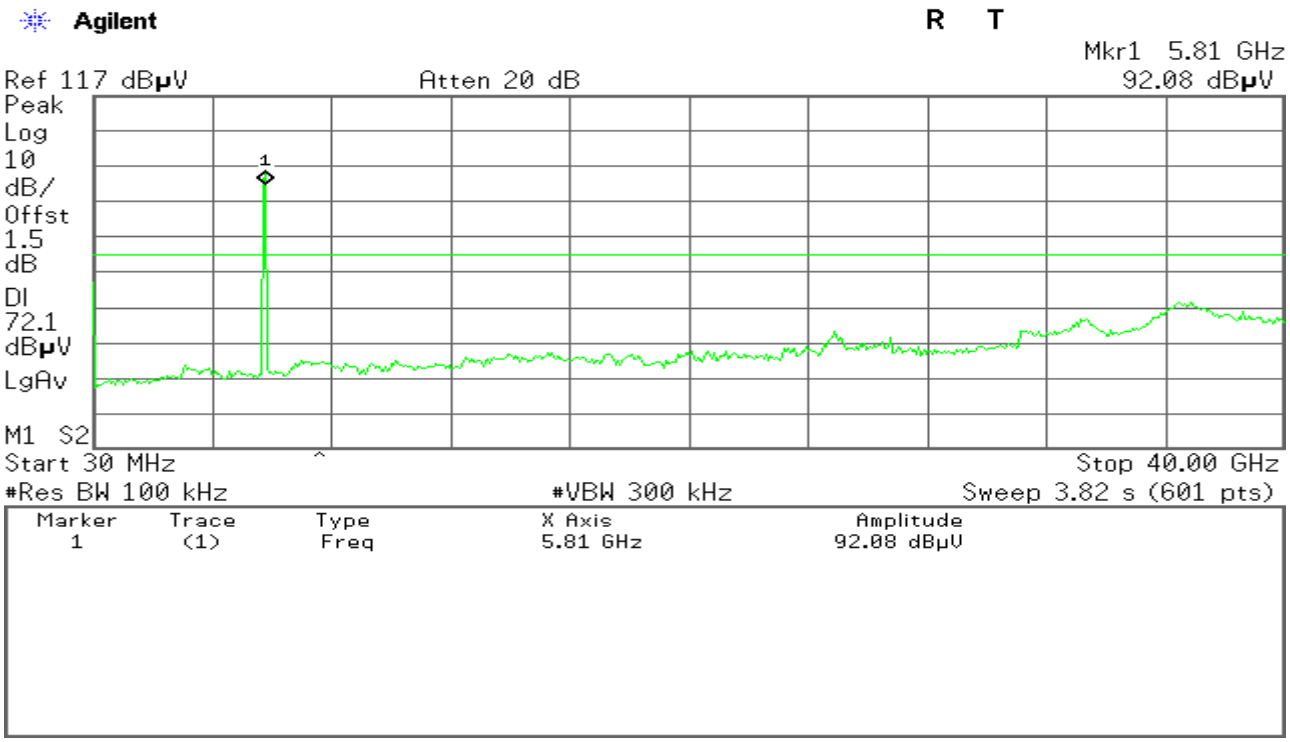
## CH Low



## CH Mid

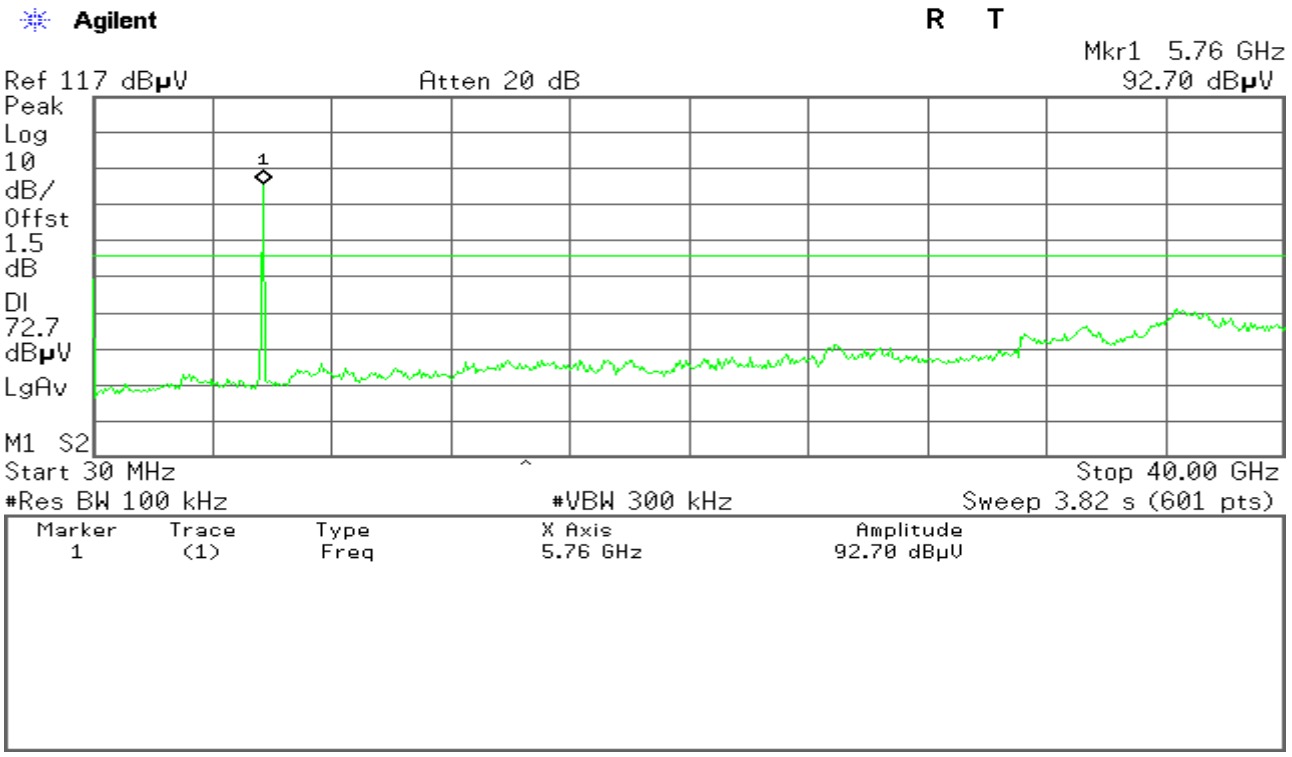



## CH High

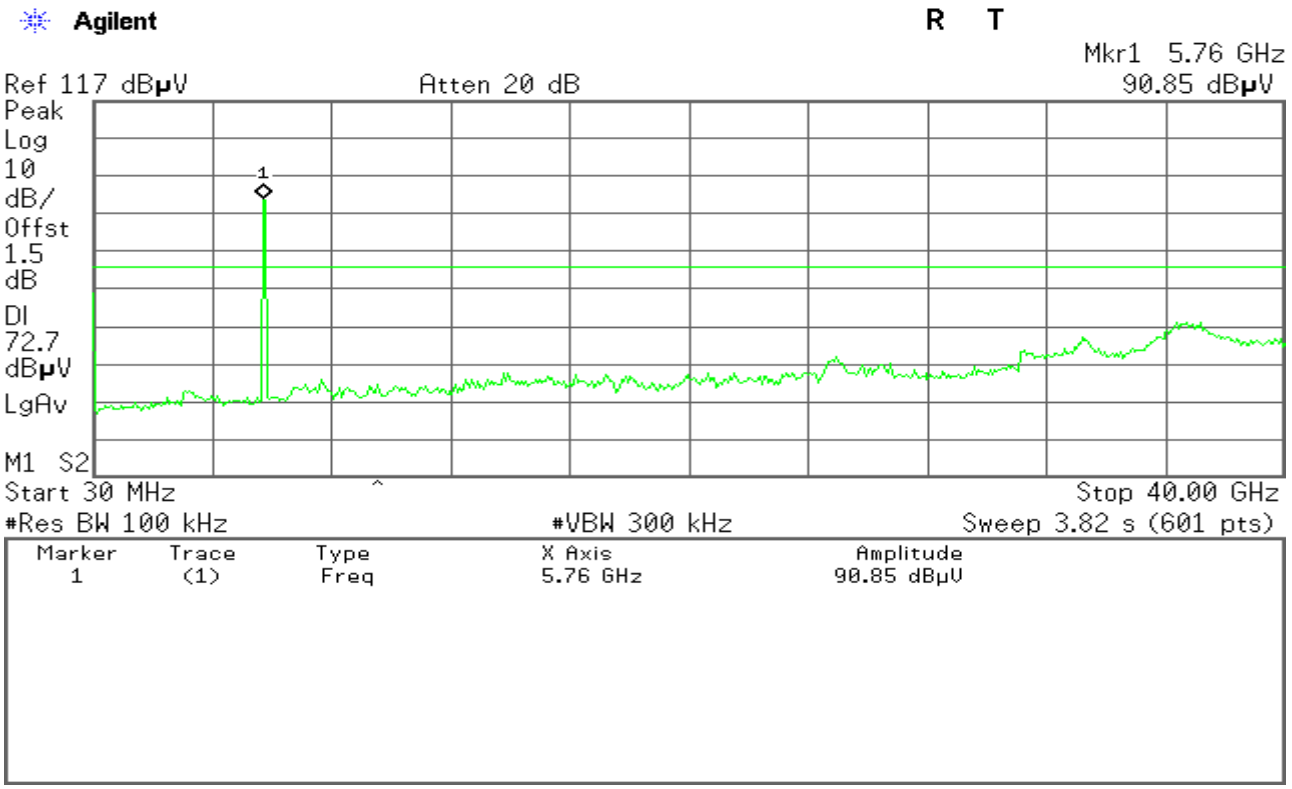


**draft 802.11an Standard-20 MHz Channel mode / Chain 0+ Chain 1**

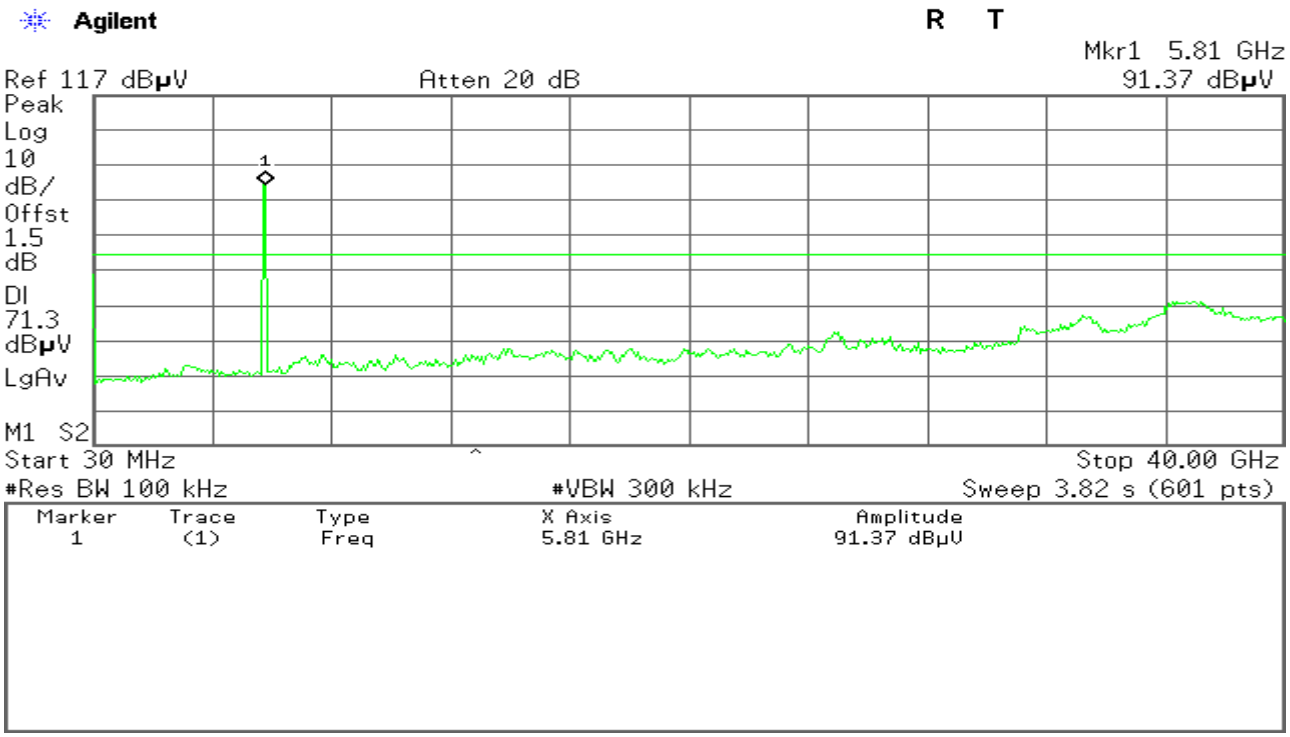
**CH Low**




**CH Mid**

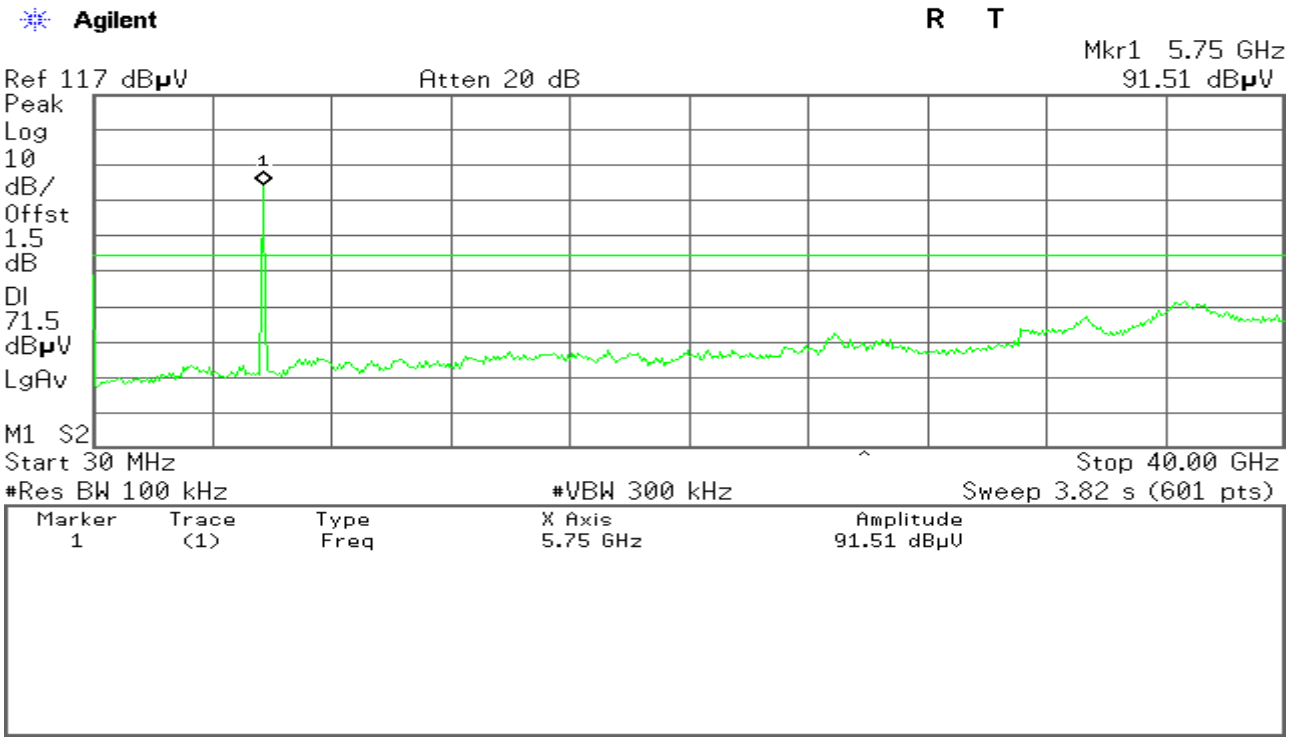


## CH High

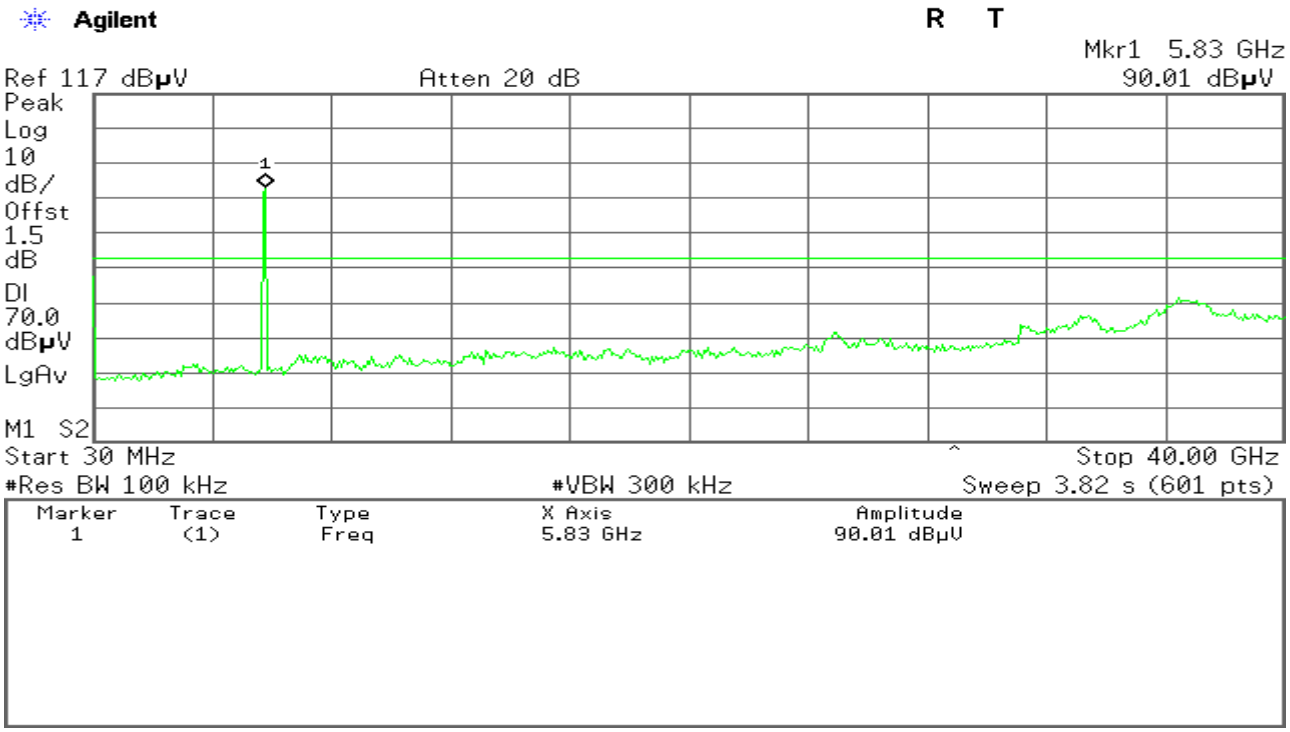



## draft 802.11an Standard-40 MHz Channel mode / Chain 0

## CH Low

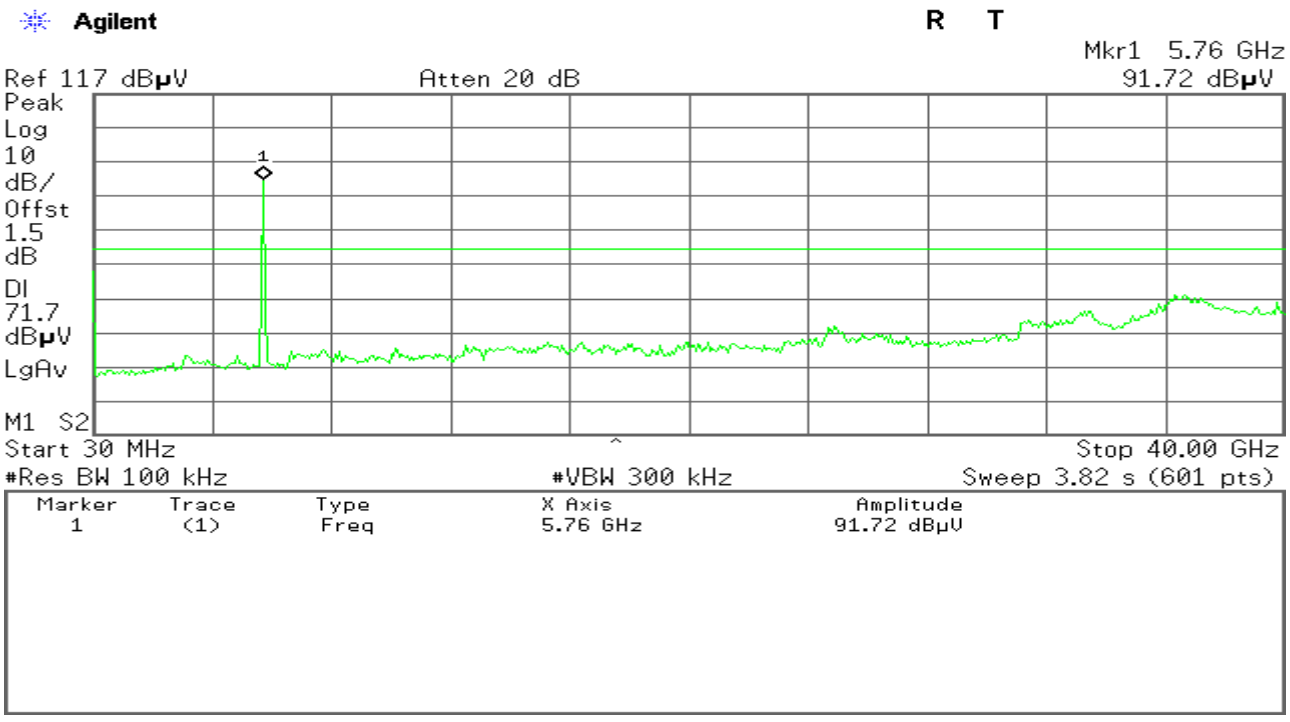


## CH High

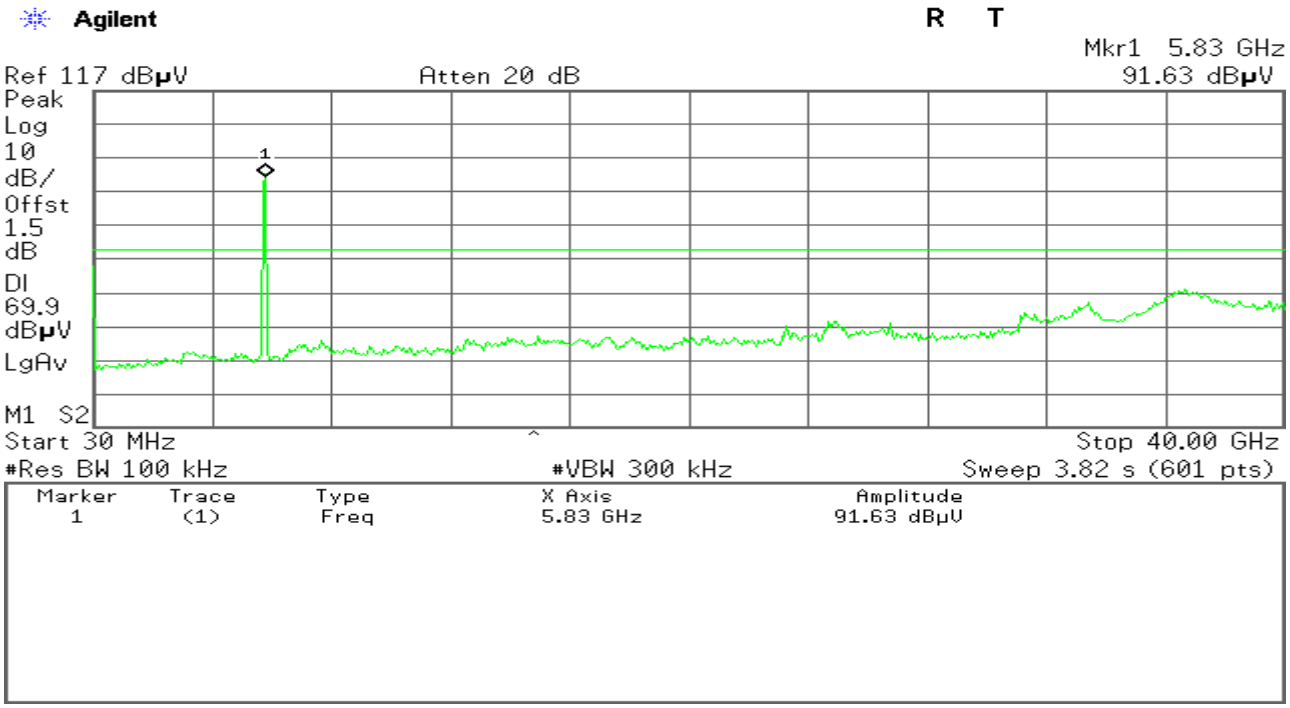



## draft 802.11an Standard-40 MHz Channel mode / Chain 1

## CH Low

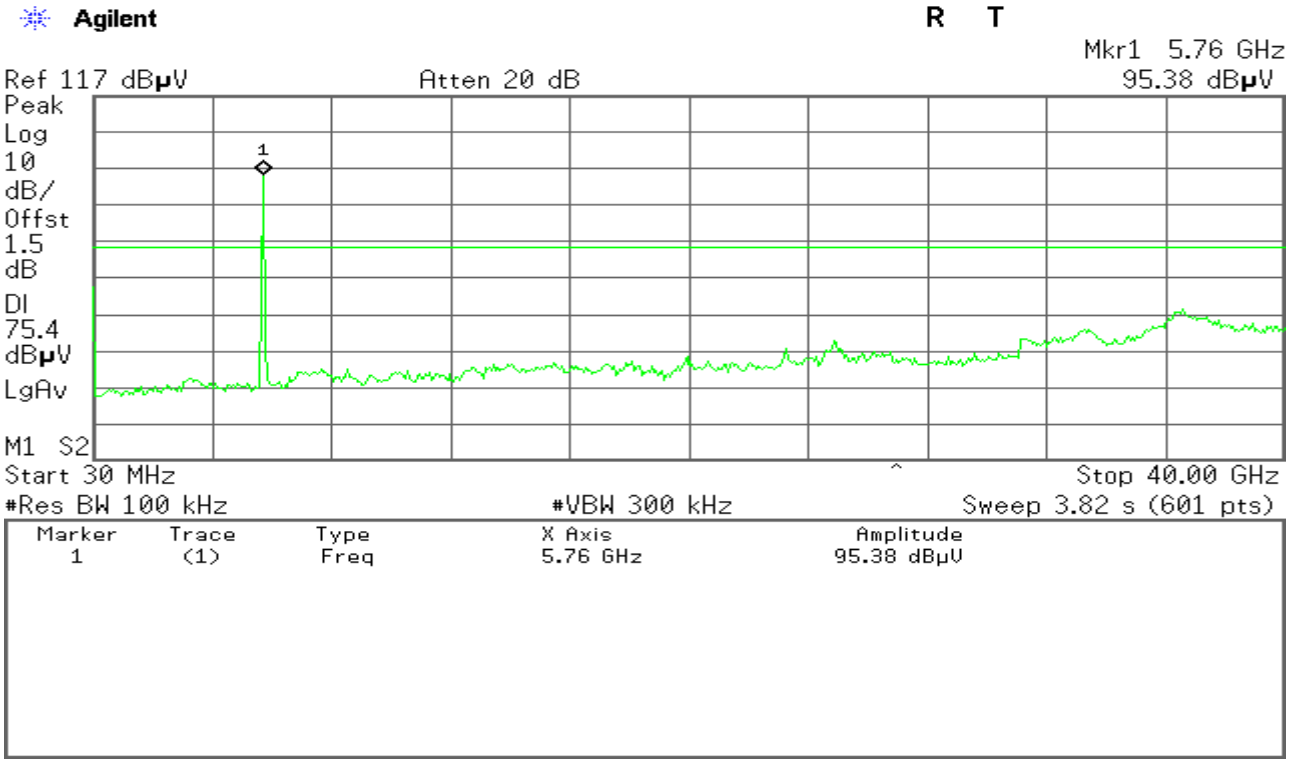


## CH High

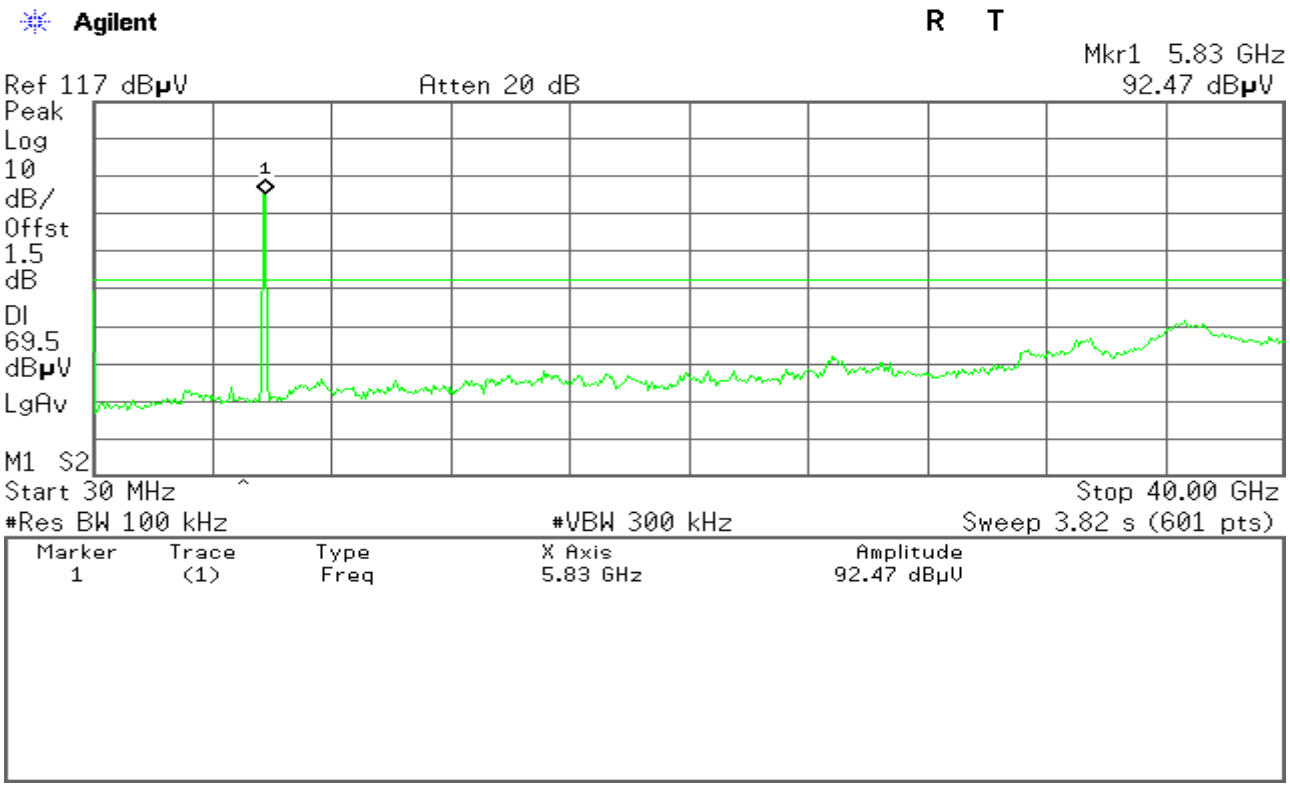



## draft 802.11an Standard-40 MHz Channel mode / Chain 0+ Chain 1

## CH Low



## CH High



## 7.6.RADIATED EMISSIONS

### LIMIT

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

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

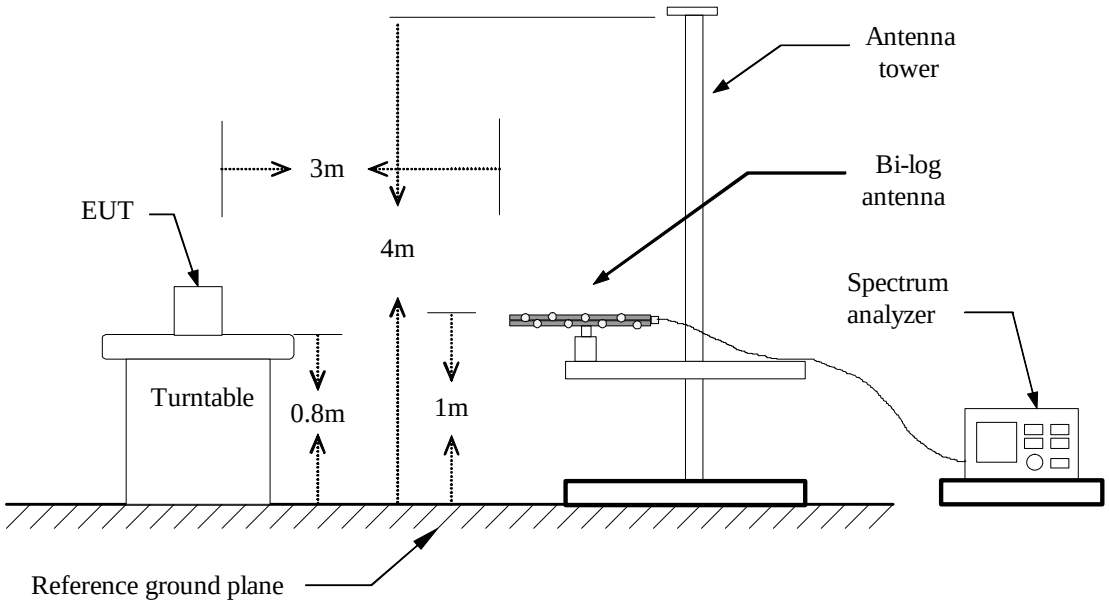
***Remark:*** *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections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

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

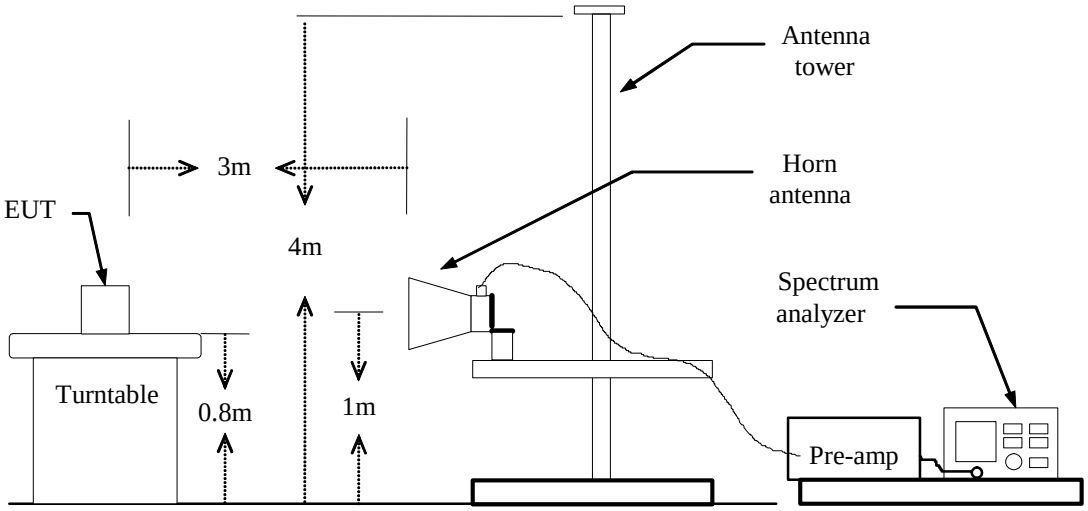
| Frequency (MHz) | Field Strength (μV/m at 3-meter) | Field Strength (dBμV/m at 3-meter) |
|---|---|---|
| 30-88 | 100 | 40 |
| 88-216 | 150 | 43.5 |
| 216-960 | 200 | 46 |
| Above 960 | 500 | 54 |

### Test Configuration

**Below 1 GHz**




**Above 1 GHz**




## TEST PROCEDURE

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

   Below 1GHz:

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

   Above 1GHz:

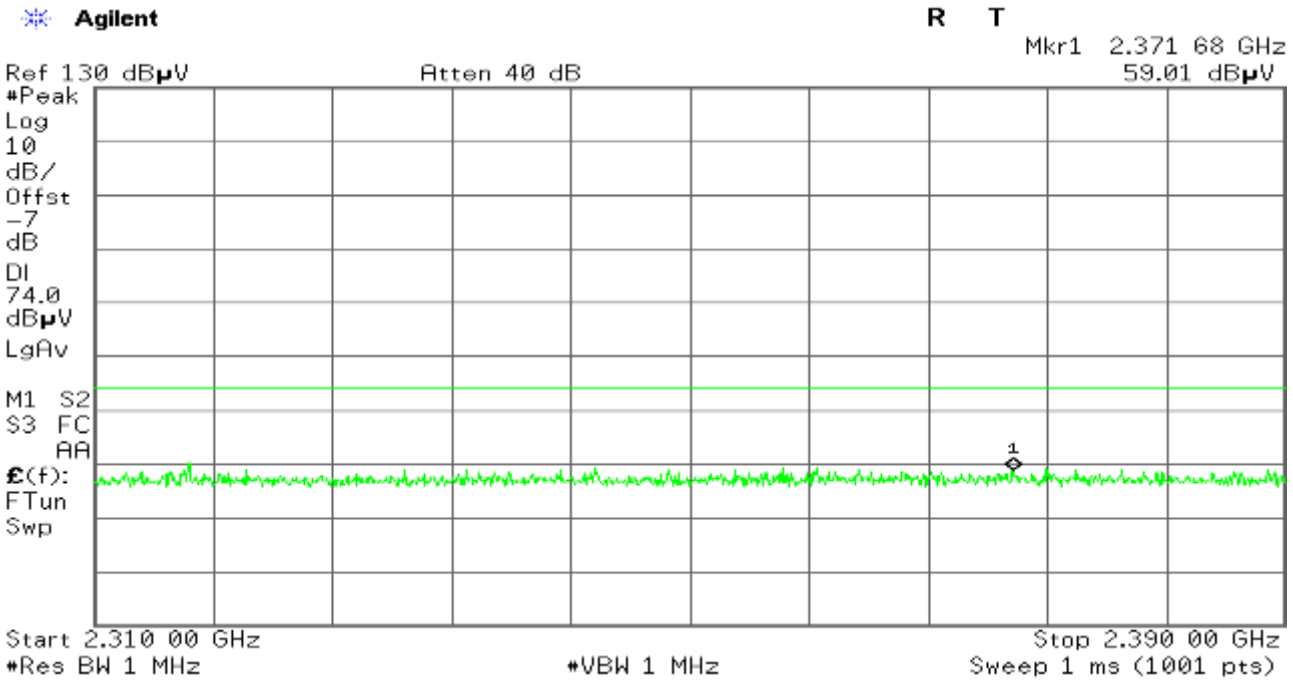
   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

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

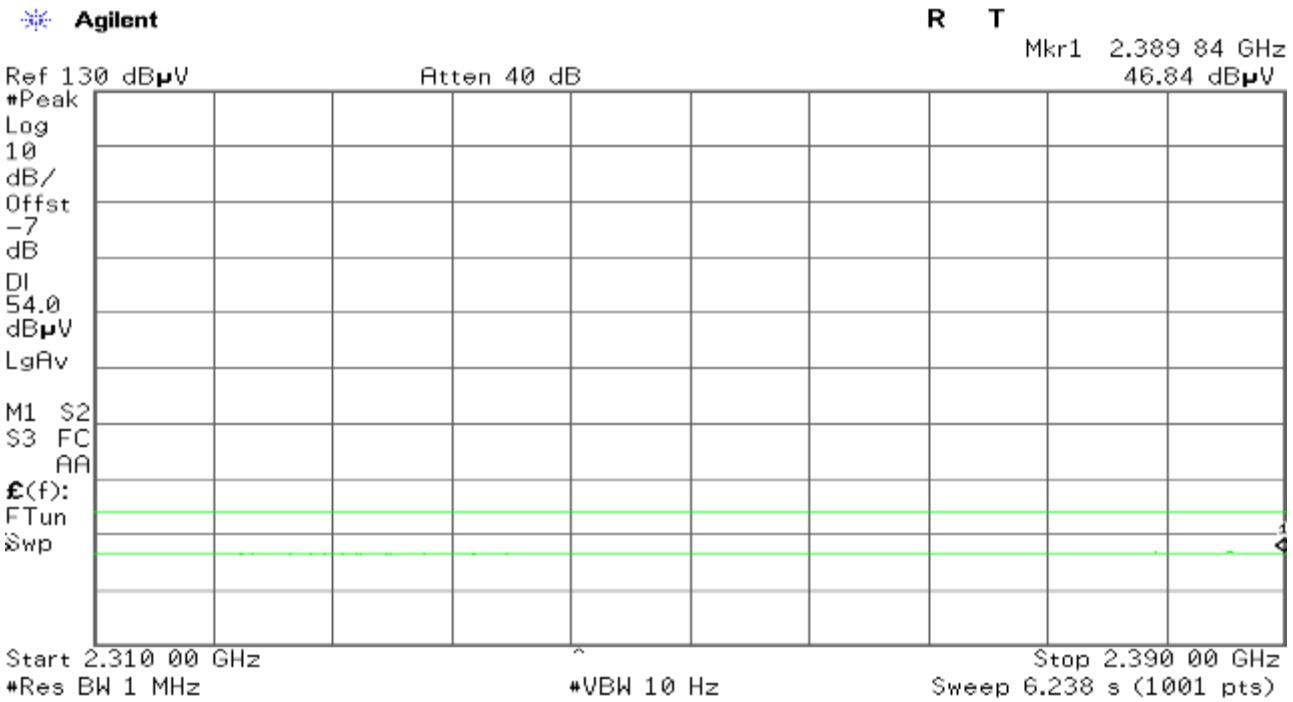
## TEST RESULTS

**RESTRICTED BANDEDGE (b Mode, Low Channel, Horizontal)**

**PEAK**

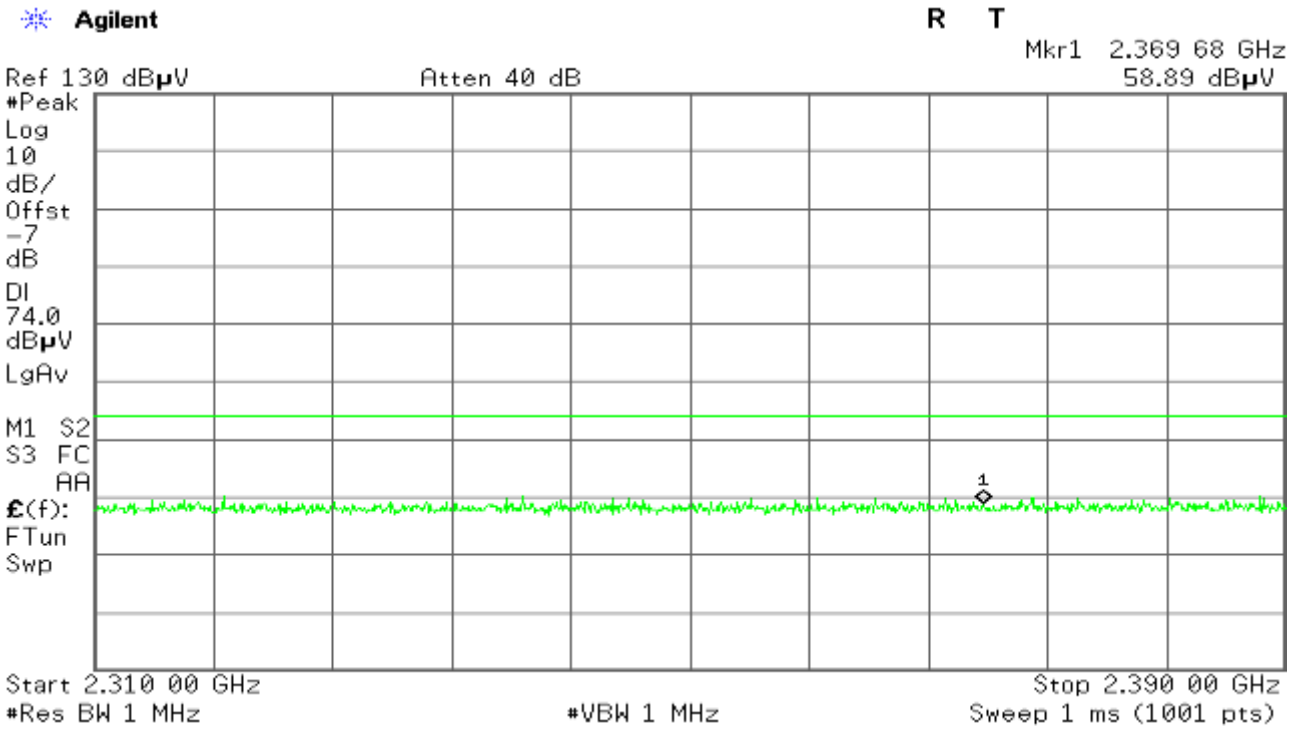



**AVG**

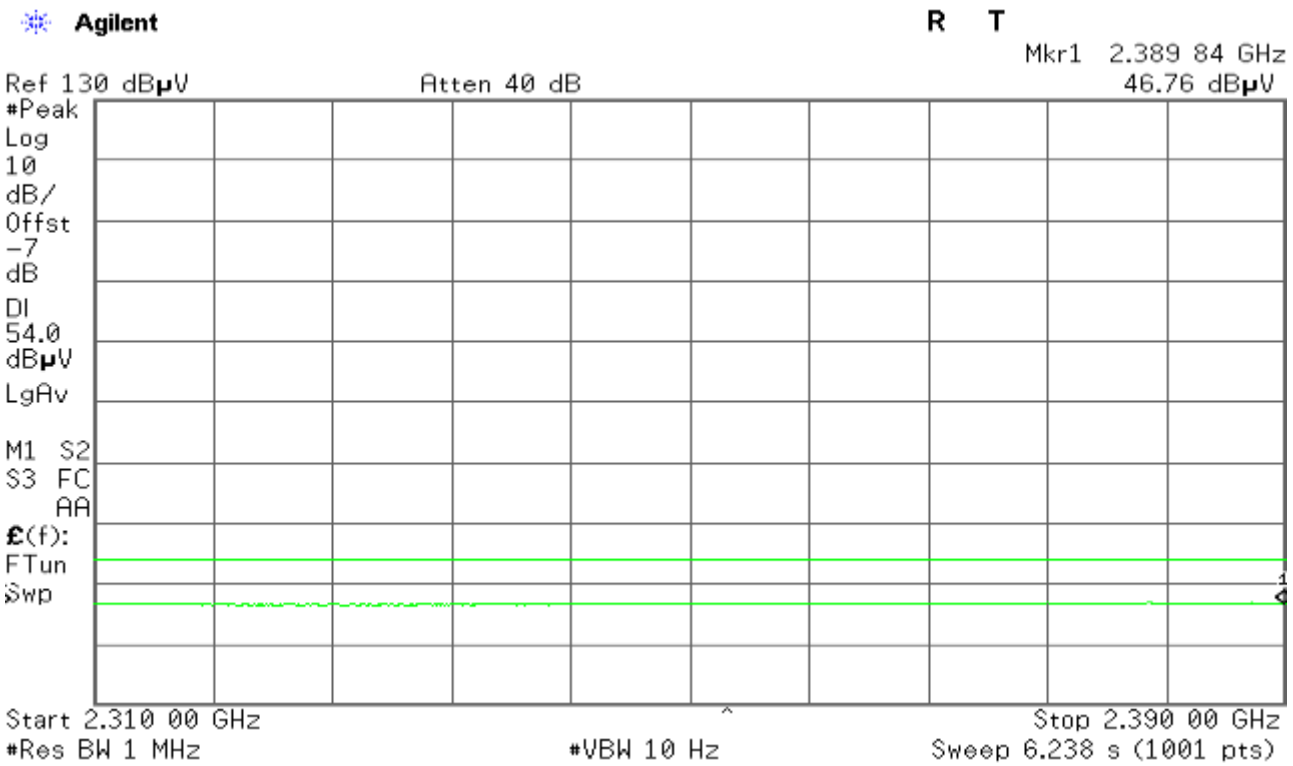


**RESTRICTED BANDEDGE (b Mode, Low Channel, Vertical)**

**PEAK**

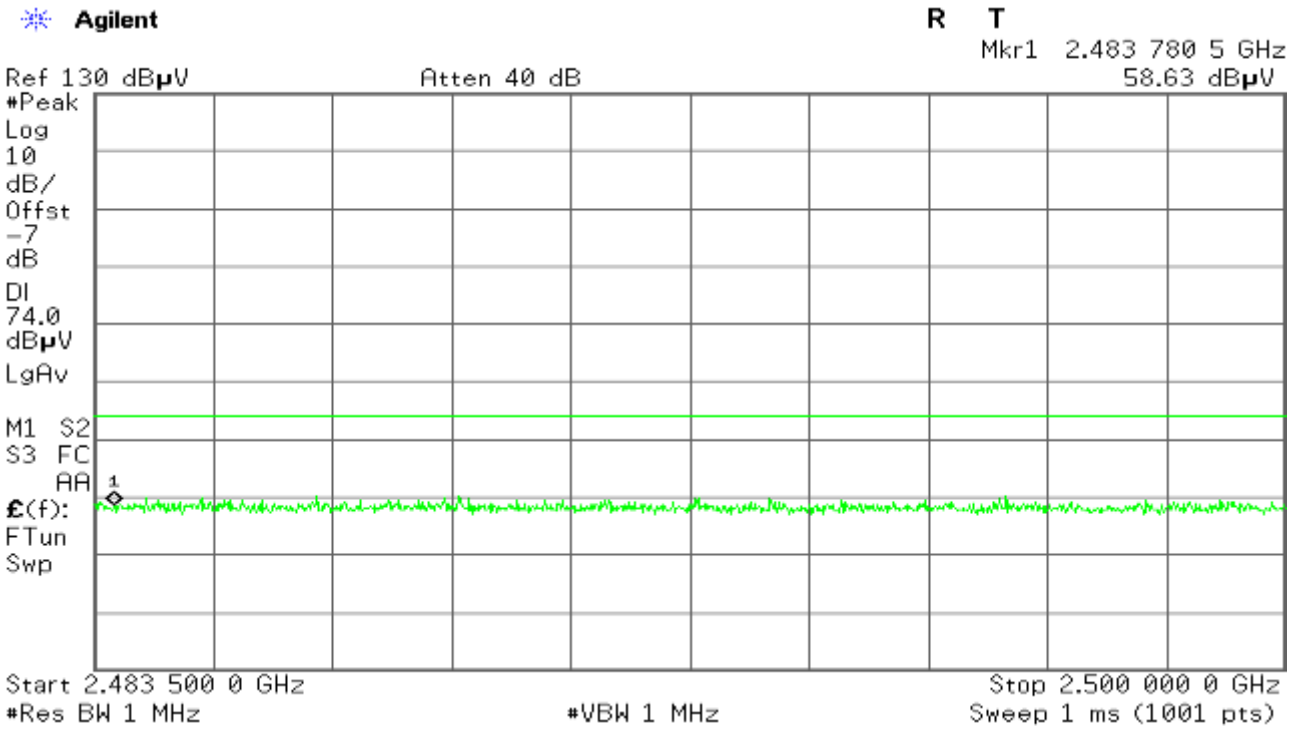



**AVG**

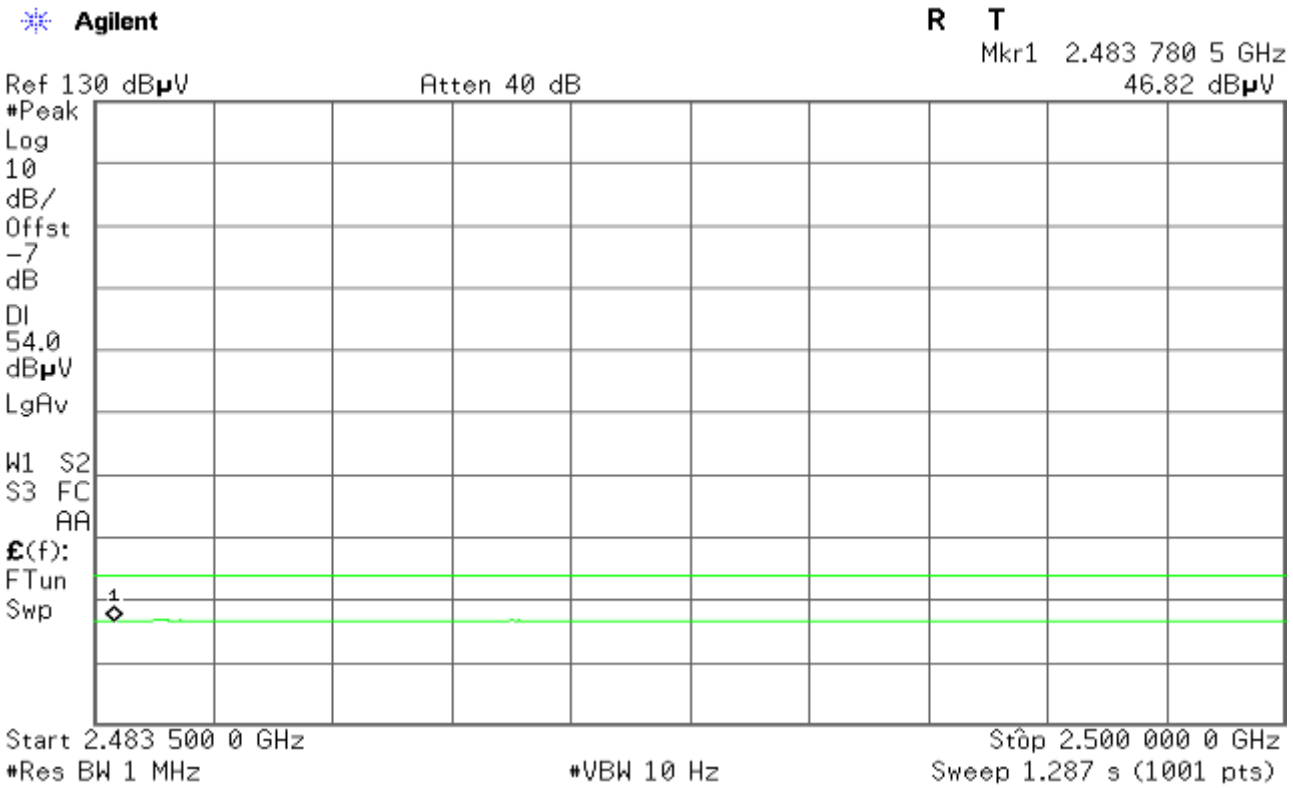


## RESTRICTED BANDEDGE (b Mode, High Channel, Horizontal)

### PEAK

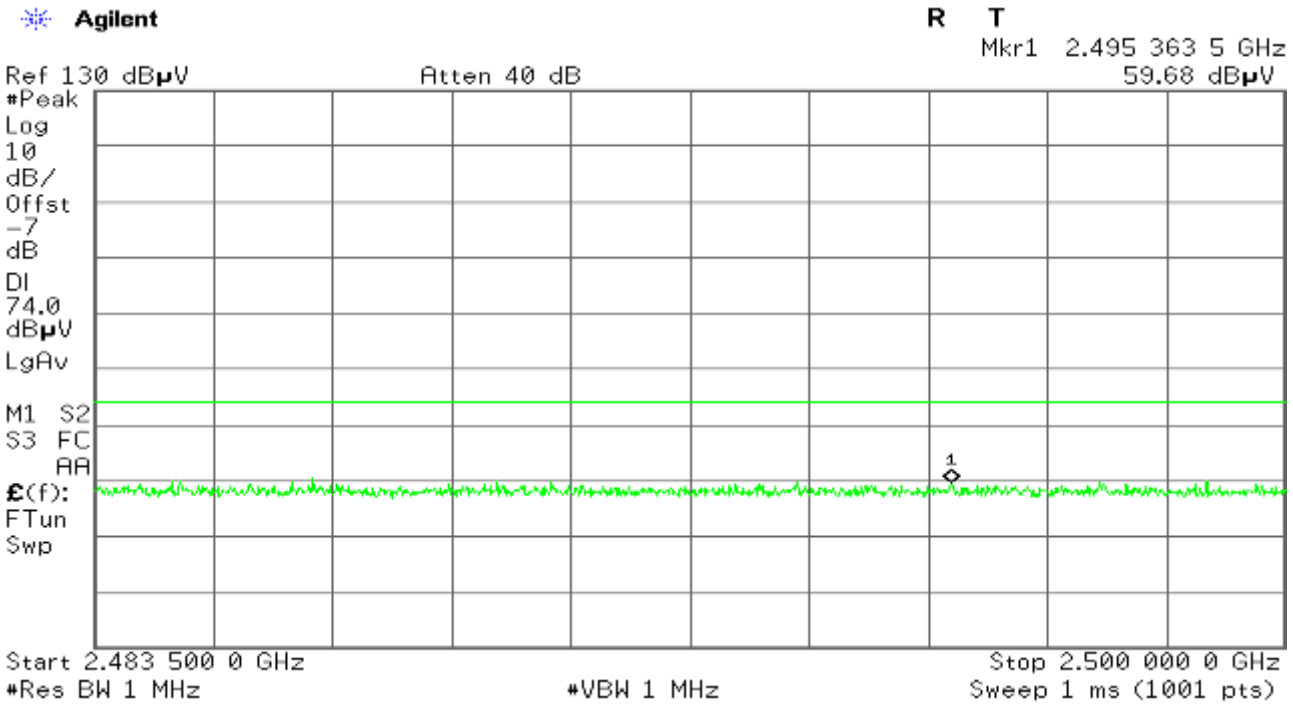



### AVG

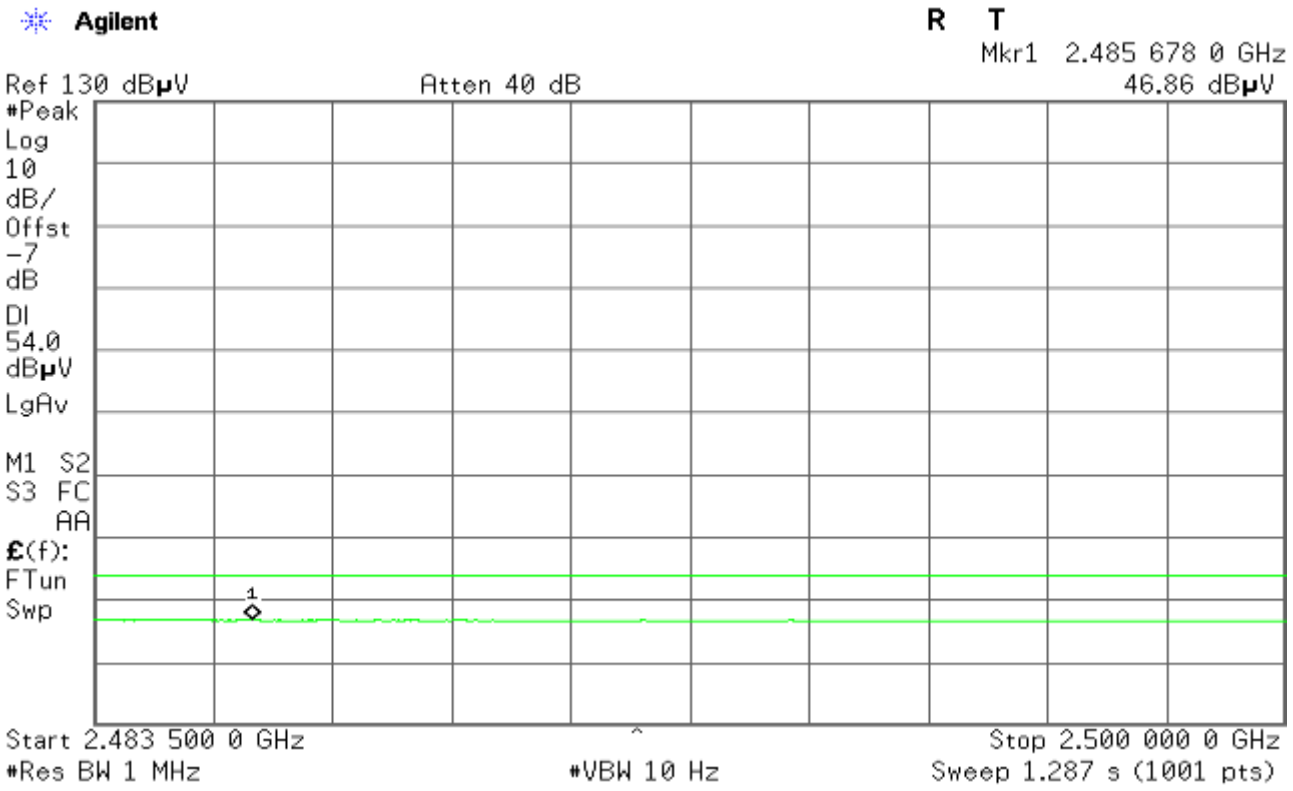


**RESTRICTED BANDEDGE (b Mode, High Channel, Vertical)**

**PEAK**

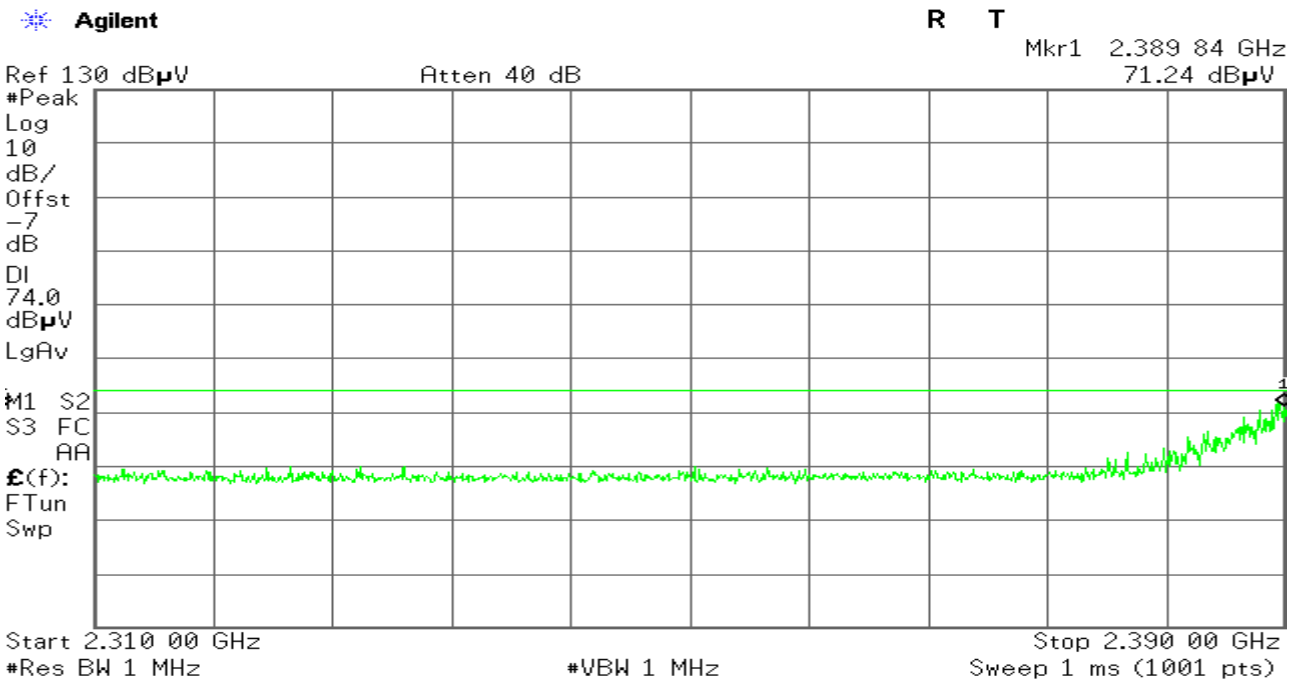



**AVG**

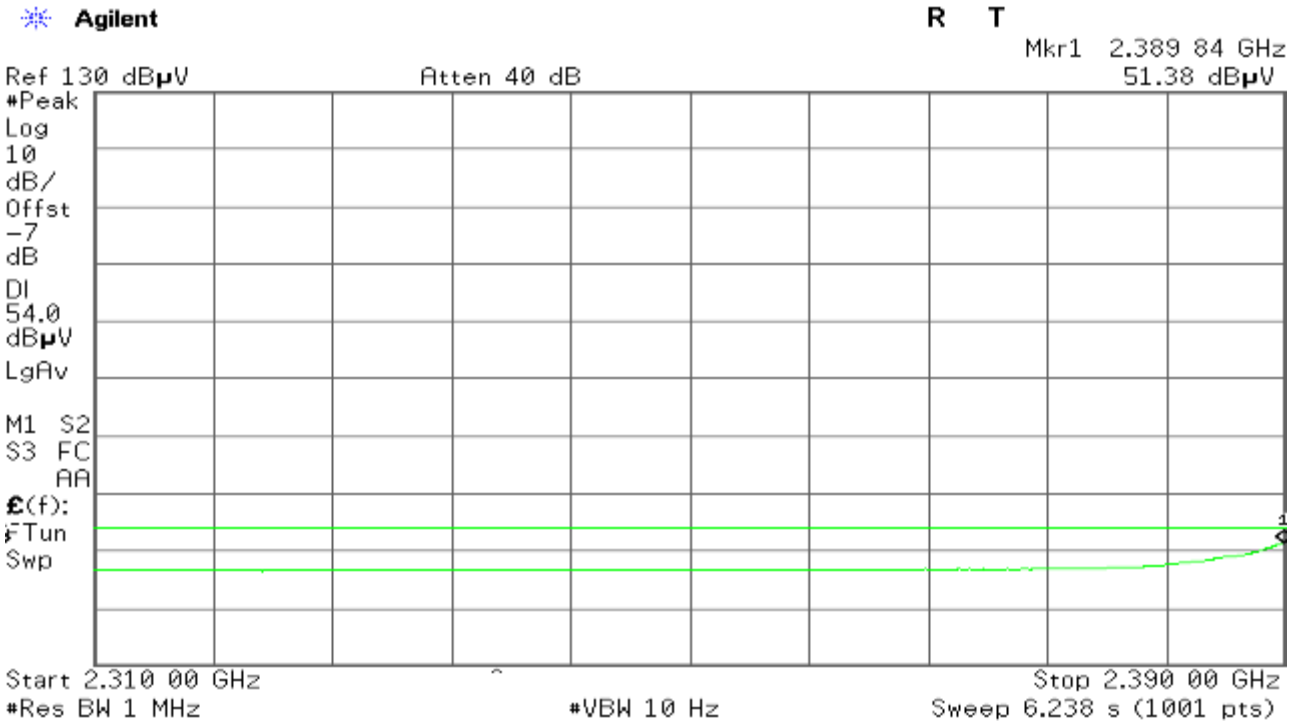


## RESTRICTED BANDEDGE (g Mode, Low Channel, Horizontal)

### PEAK

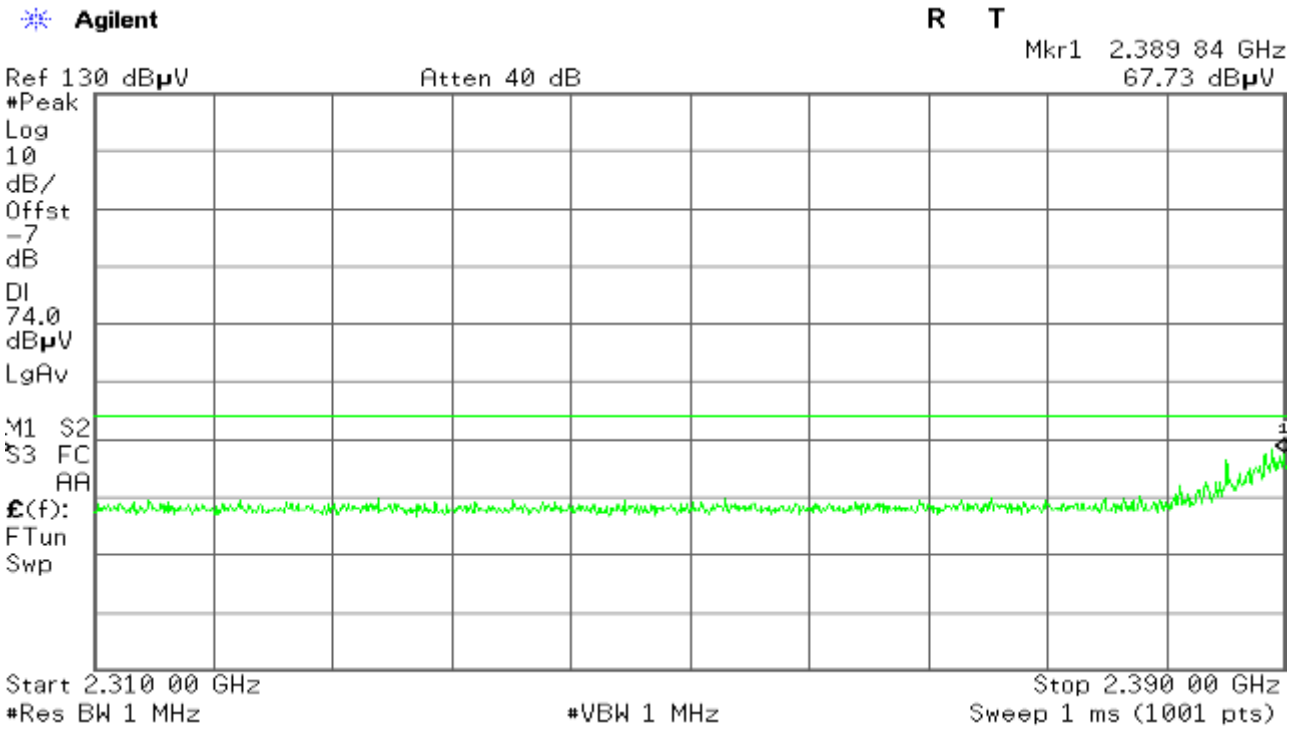



### AVG

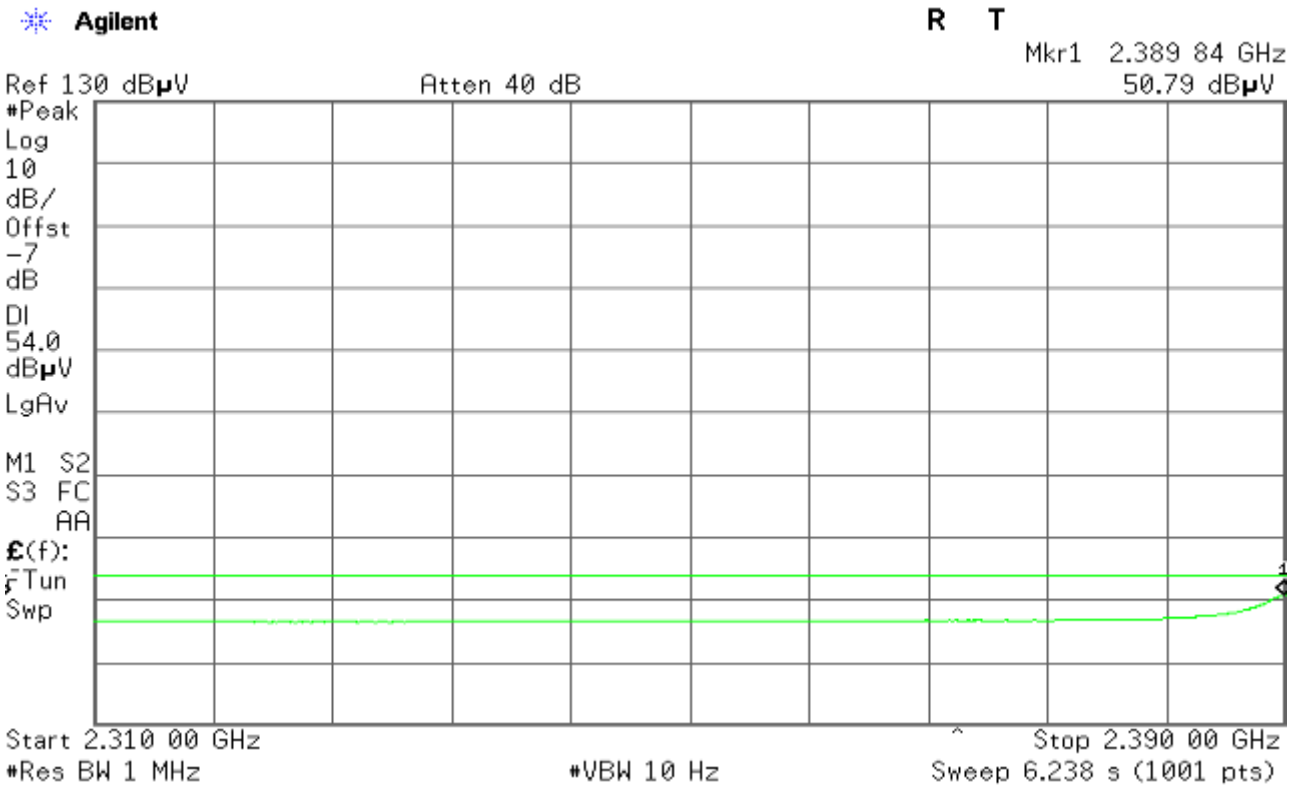


## RESTRICTED BANDEDGE (g Mode, Low Channel, Vertical)

### PEAK

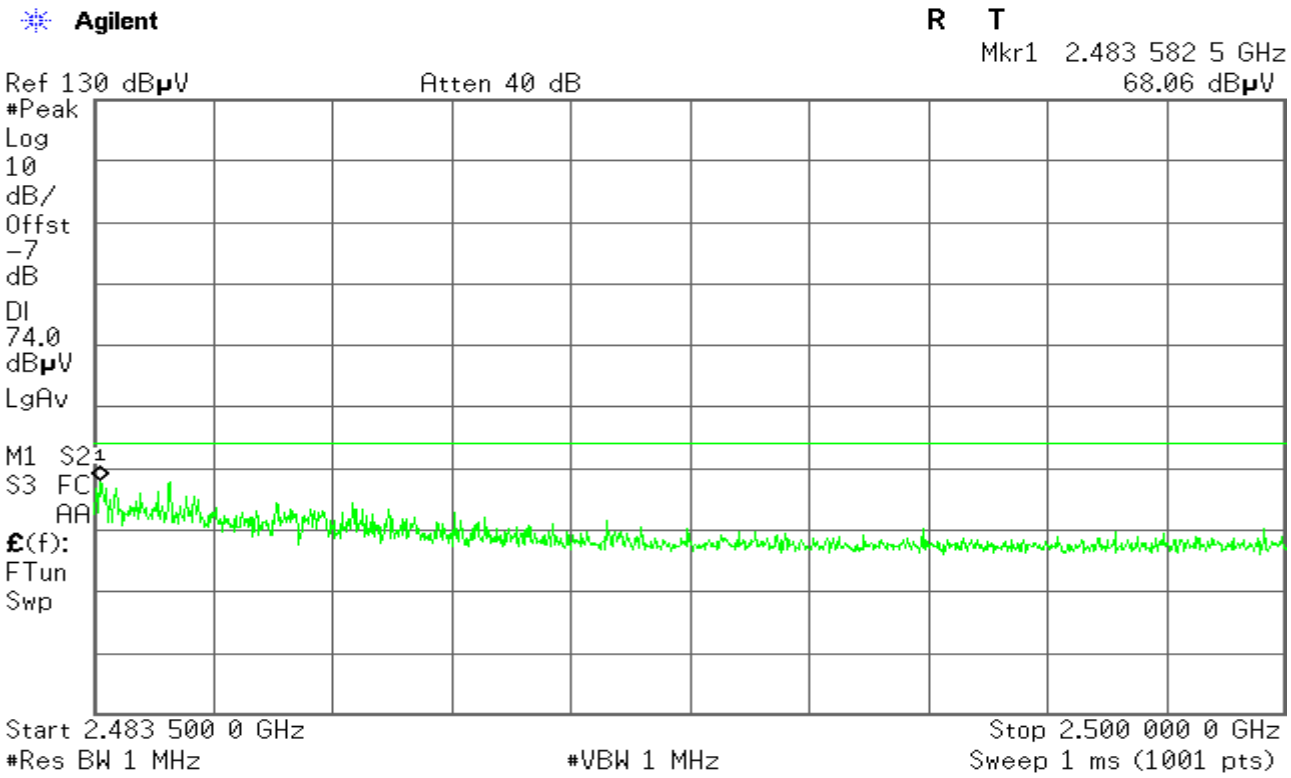



### AVG

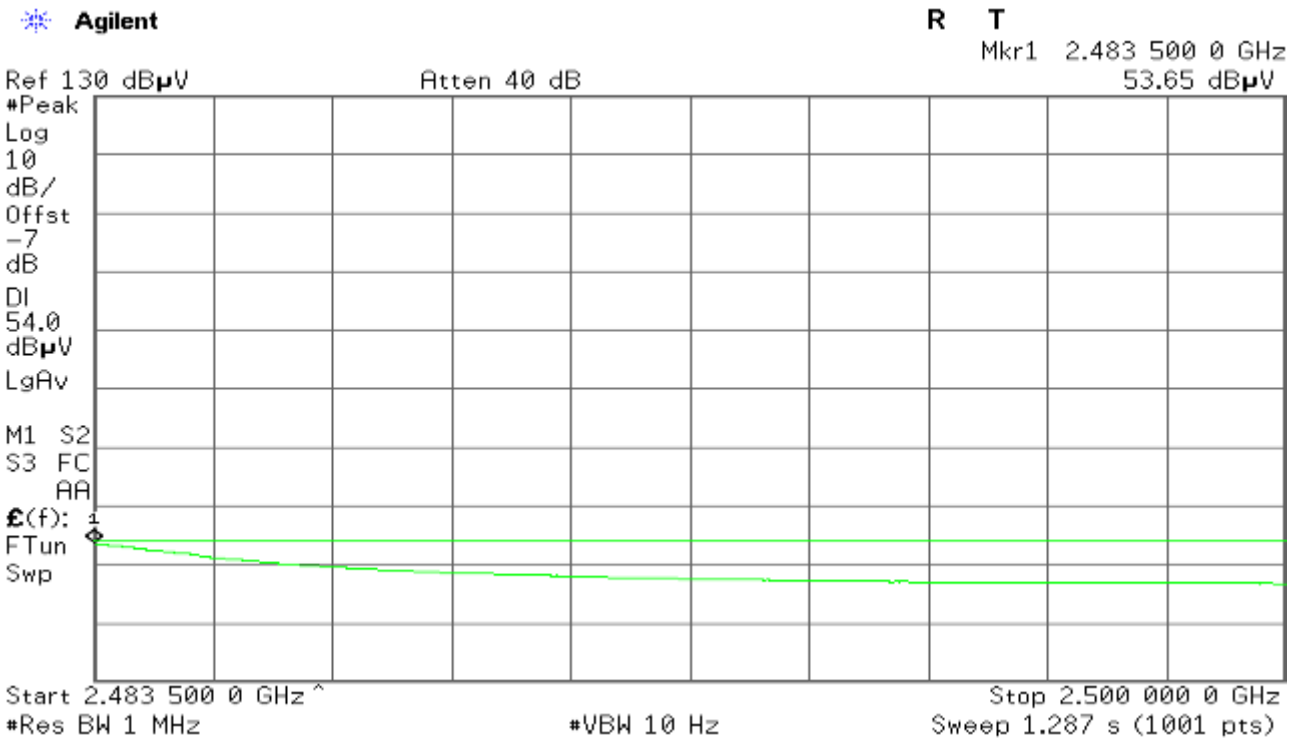


## RESTRICTED BANDEDGE (g Mode, High Channel, Horizontal)

### PEAK

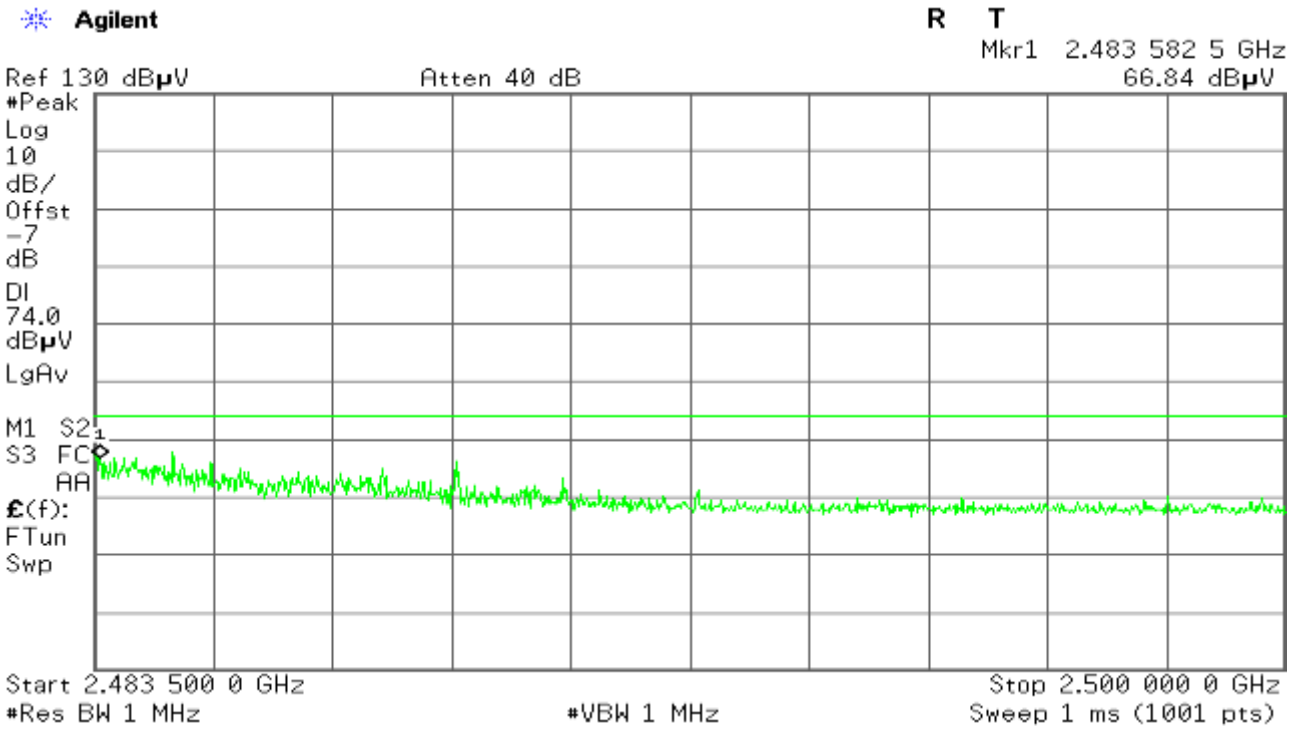



### AVG

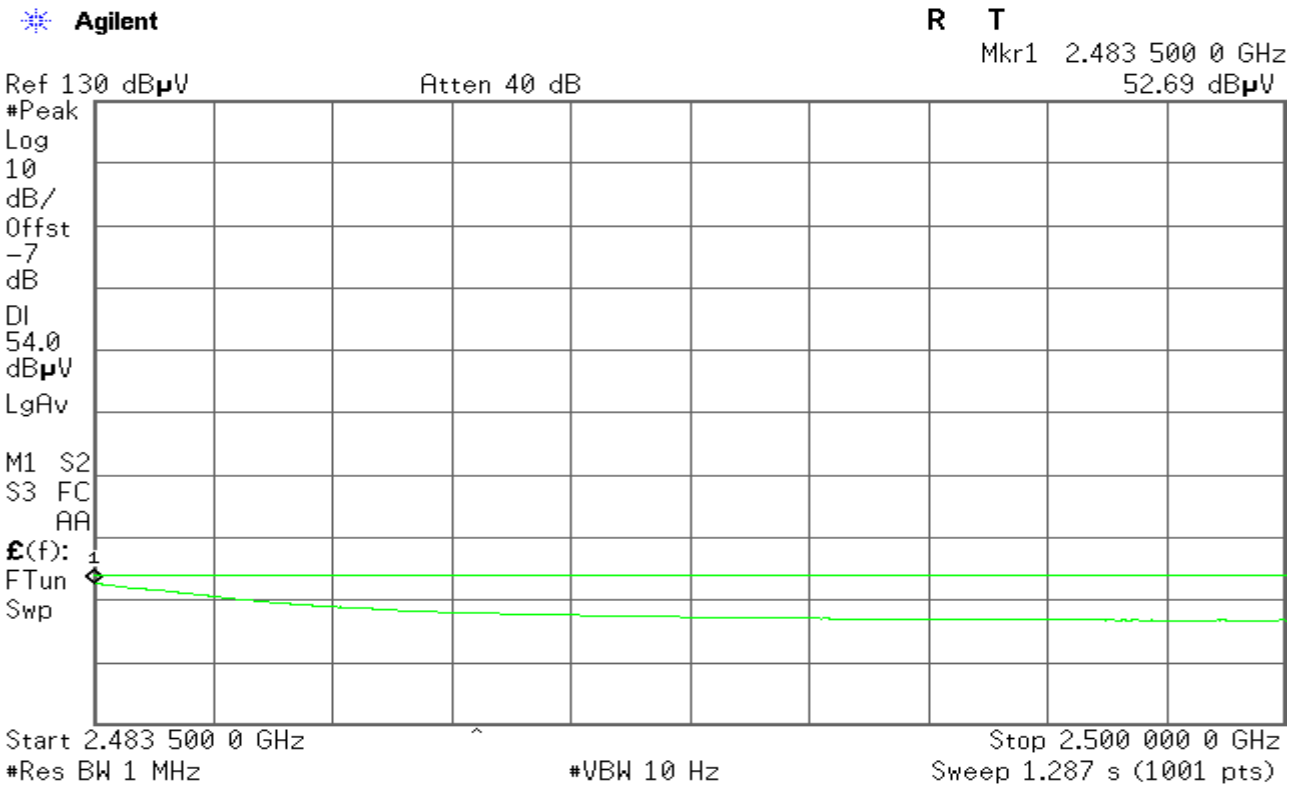


## RESTRICTED BANDEDGE (g Mode, High Channel, Vertical)

### PEAK

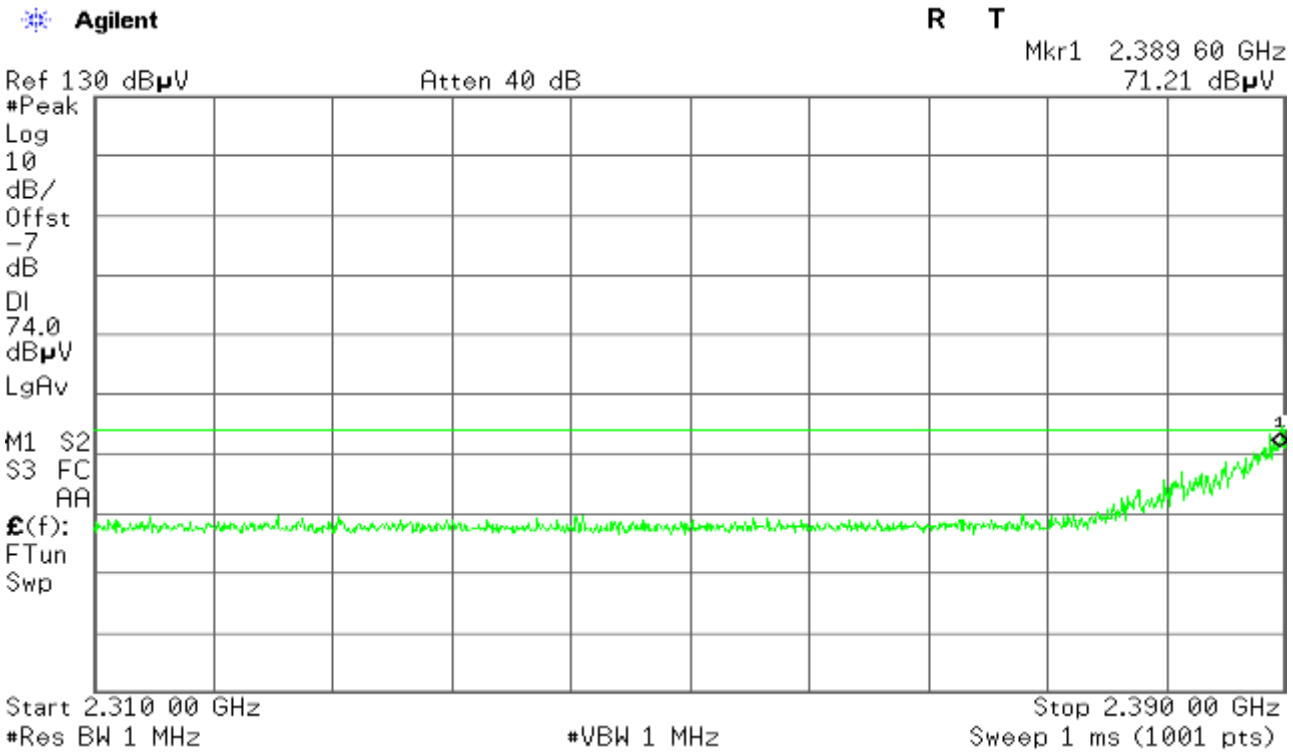



### AVG

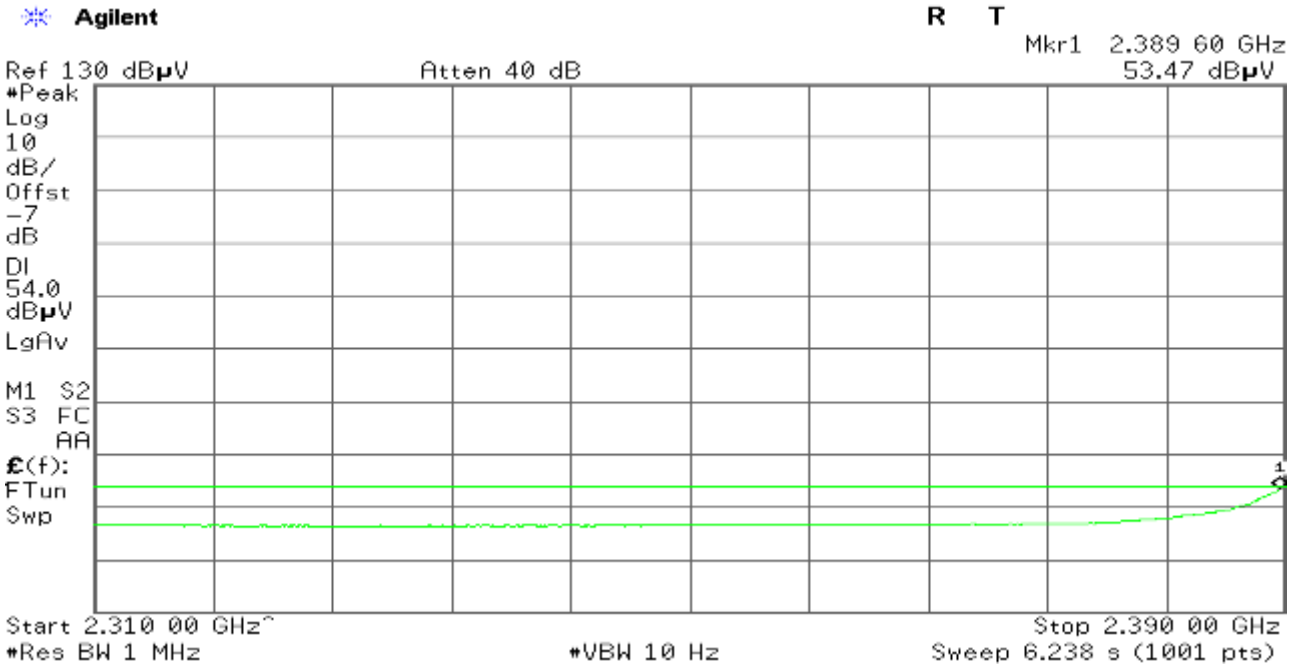


**RESTRICTED BANDEDGE (draft 802.11gn Standard-20 MHz Channel mode, Low Channel, Horizontal)**

**PEAK**

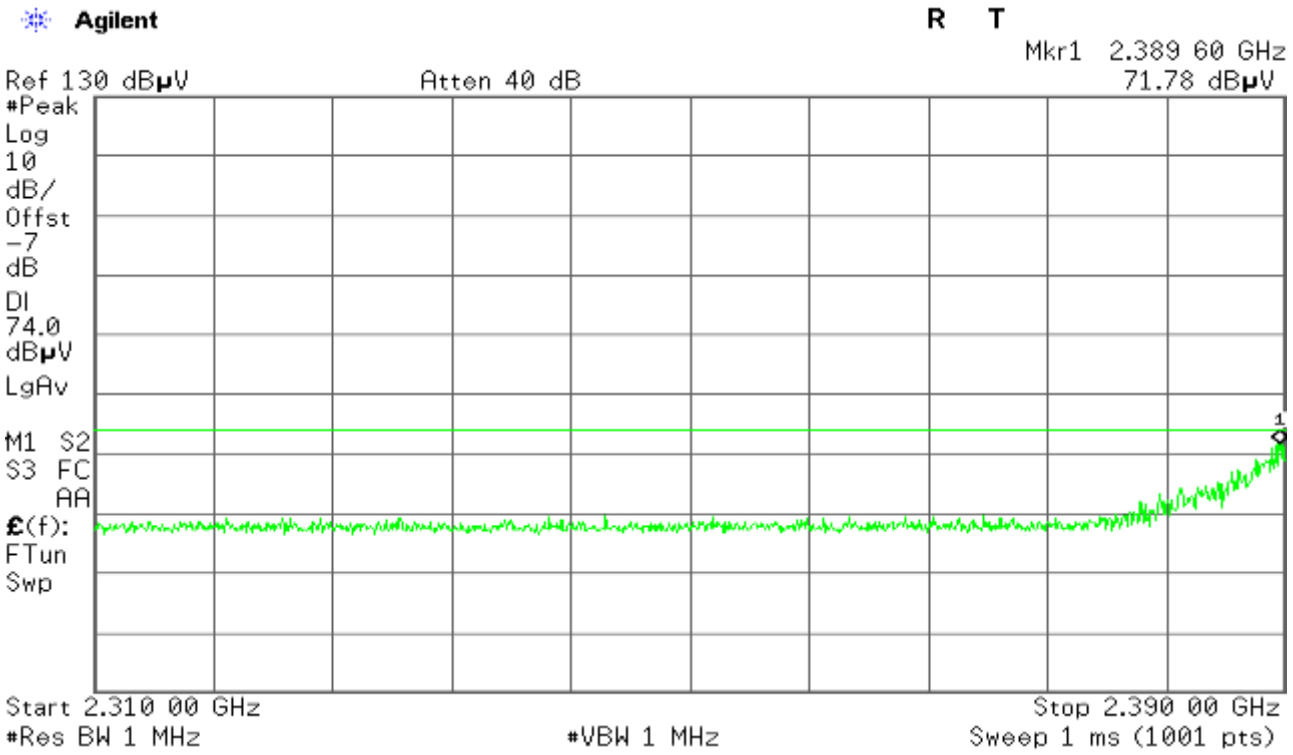



**AVG**

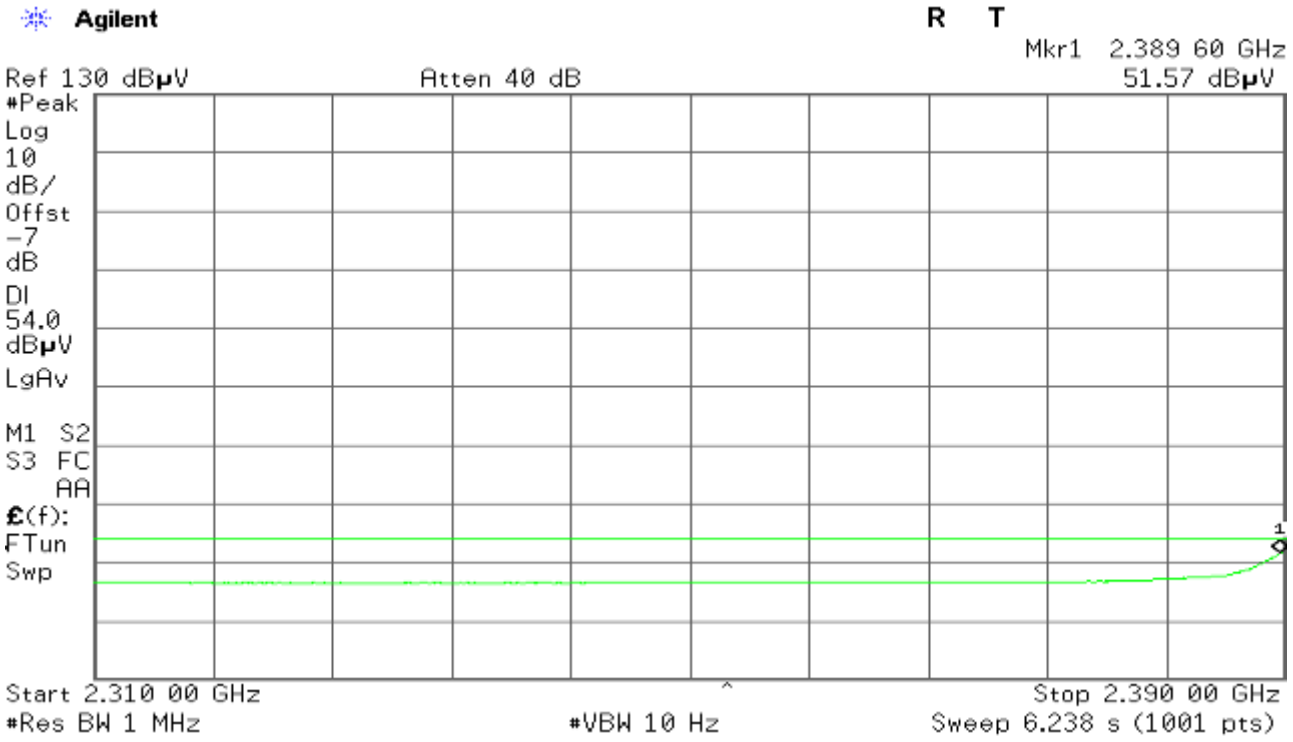


**RESTRICTED BANDEDGE (draft 802.11gn Standard-20 MHz Channel mode, Low Channel, Vertical)**

**PEAK**

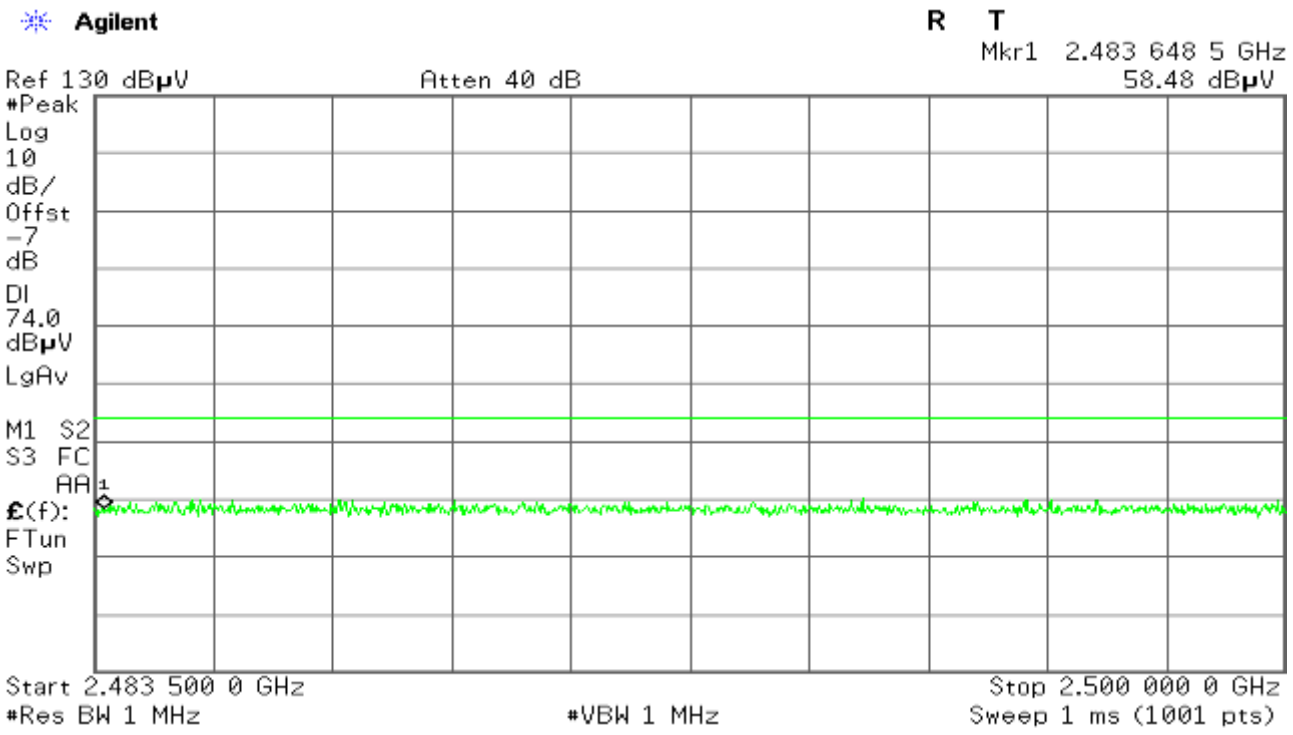



**AVG**

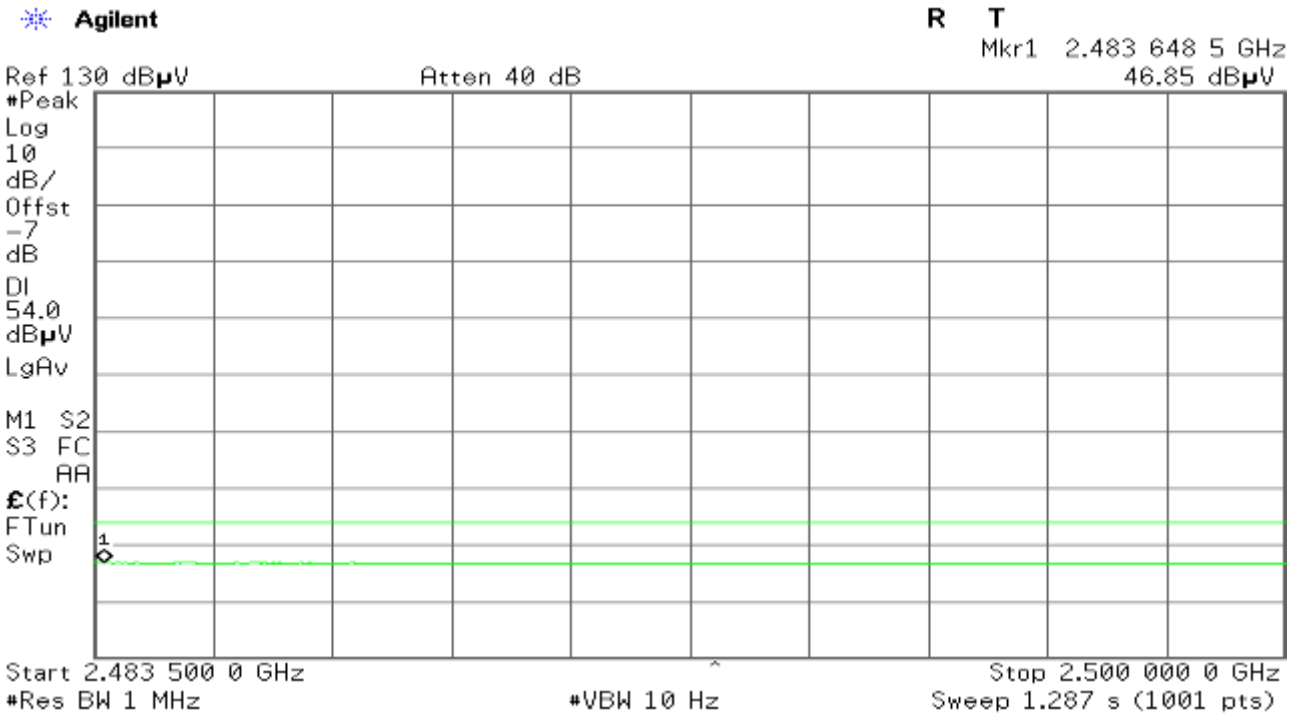


**RESTRICTED BANDEDGE (draft 802.11gn Standard-20 MHz Channel mode, High Channel, Horizontal)**

**PEAK**

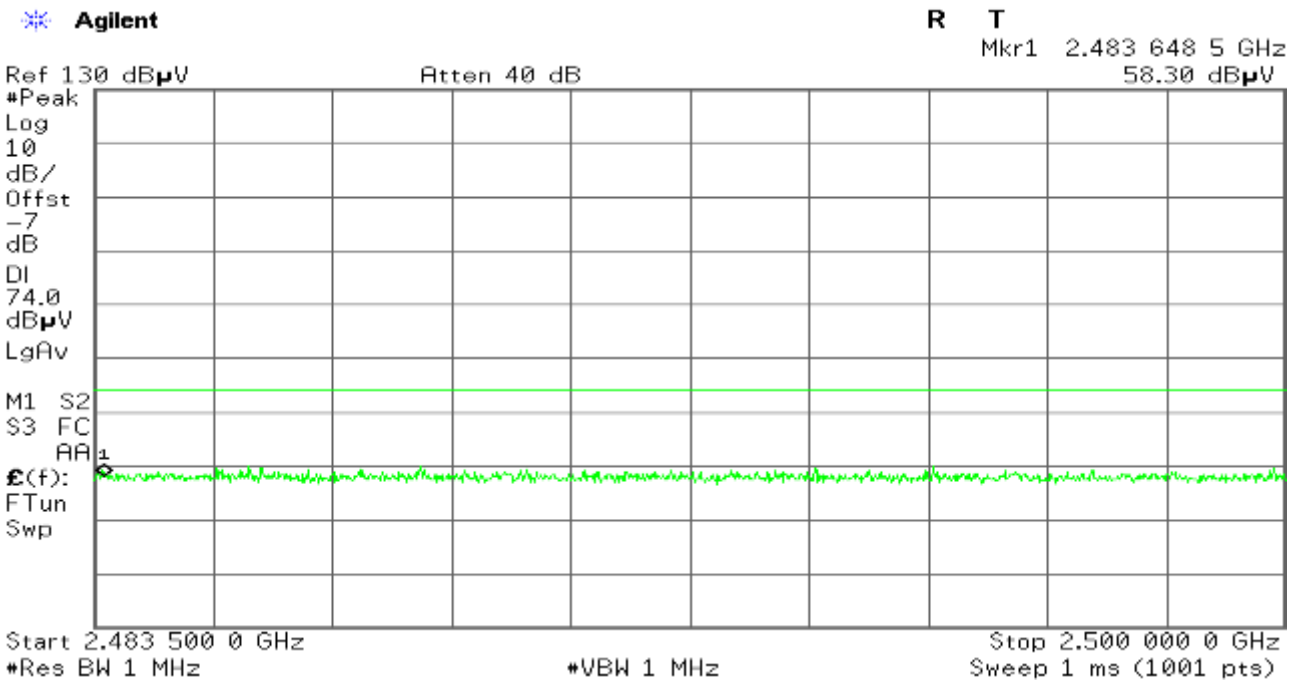



**AVG**

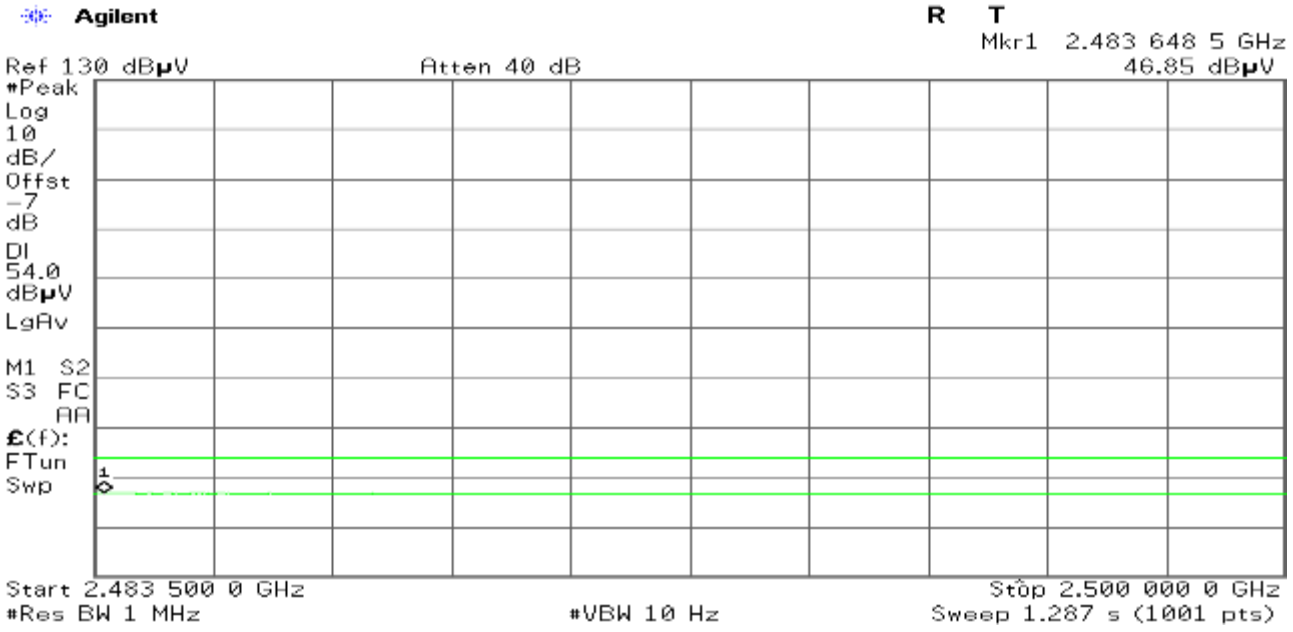


## RESTRICTED BANDEDGE (draft 802.11gn Standard-20 MHz Channel mode, High Channel, Vertical)

### PEAK

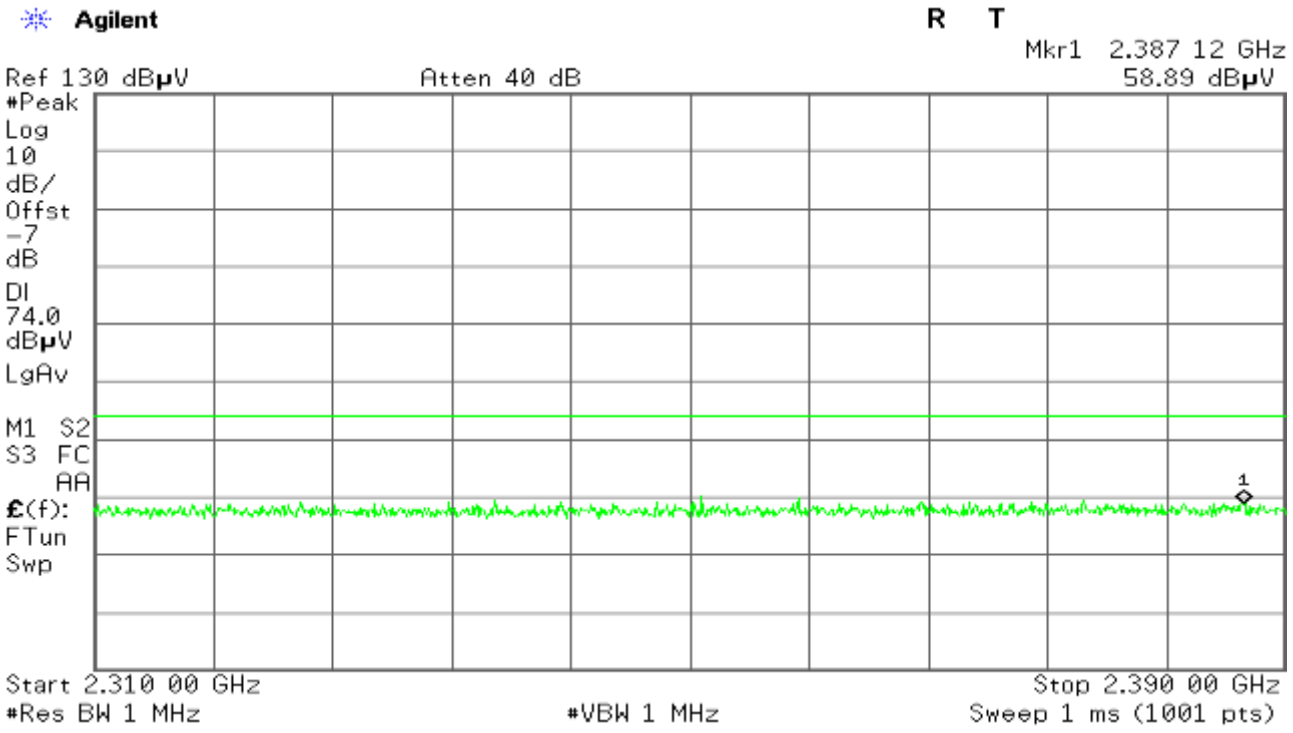



### AVG

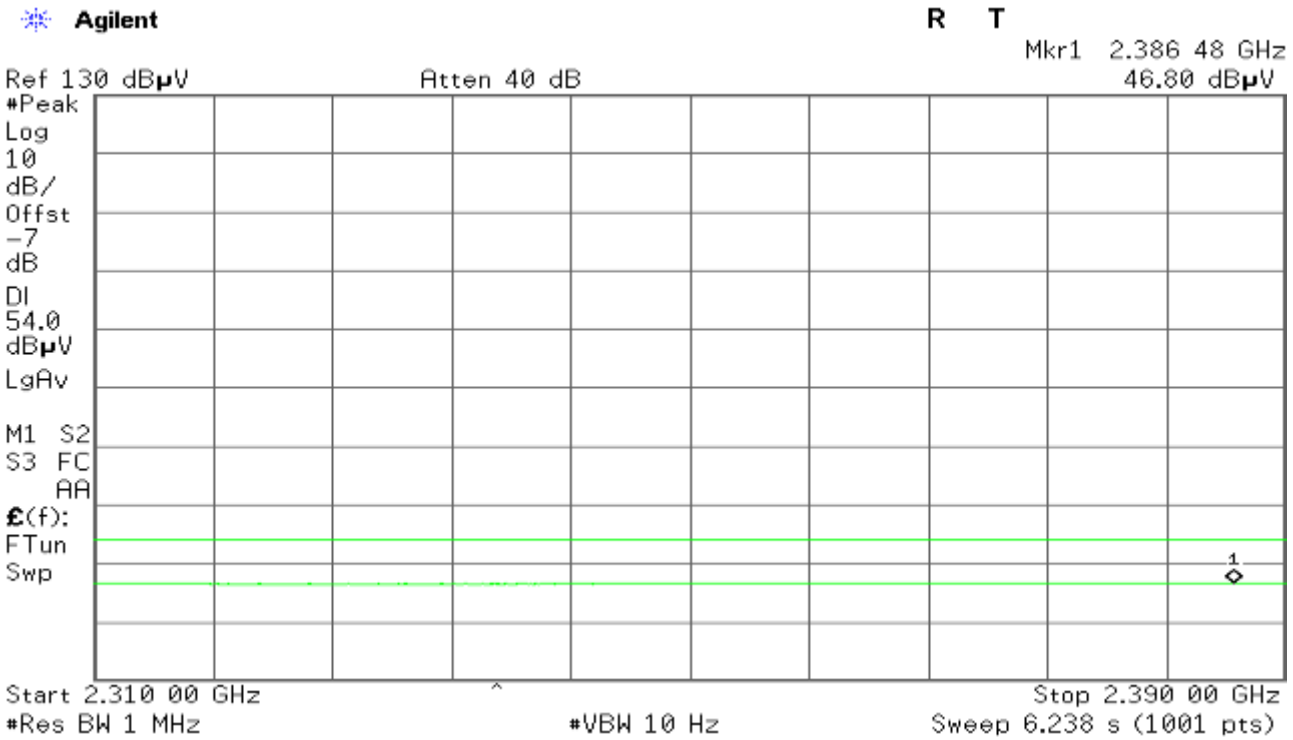


**RESTRICTED BANDEDGE (draft 802.11gn Wide -40 MHz Channel mode, Low Channel, Horizontal)**

**PEAK**

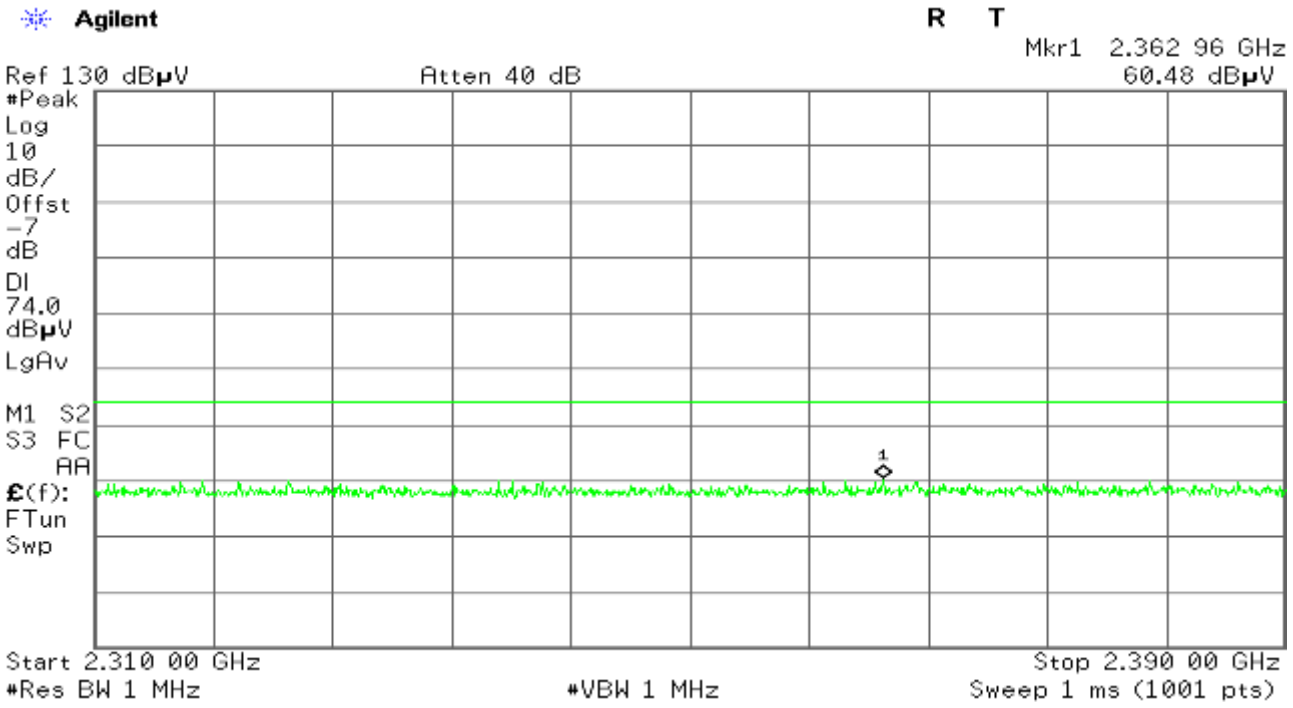



**AVG**

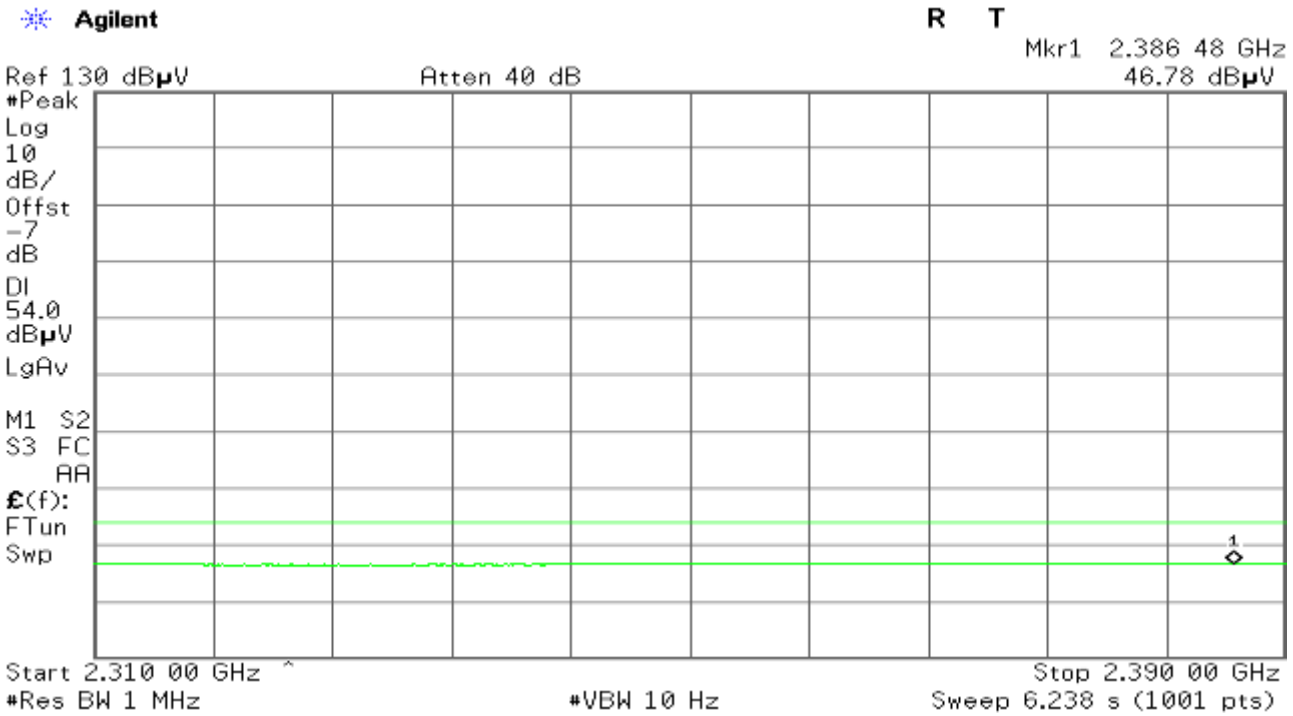


**RESTRICTED BANDEDGE (draft 802.11gn Wide -40 MHz Channel mode, Low Channel, Vertical)**

**PEAK**

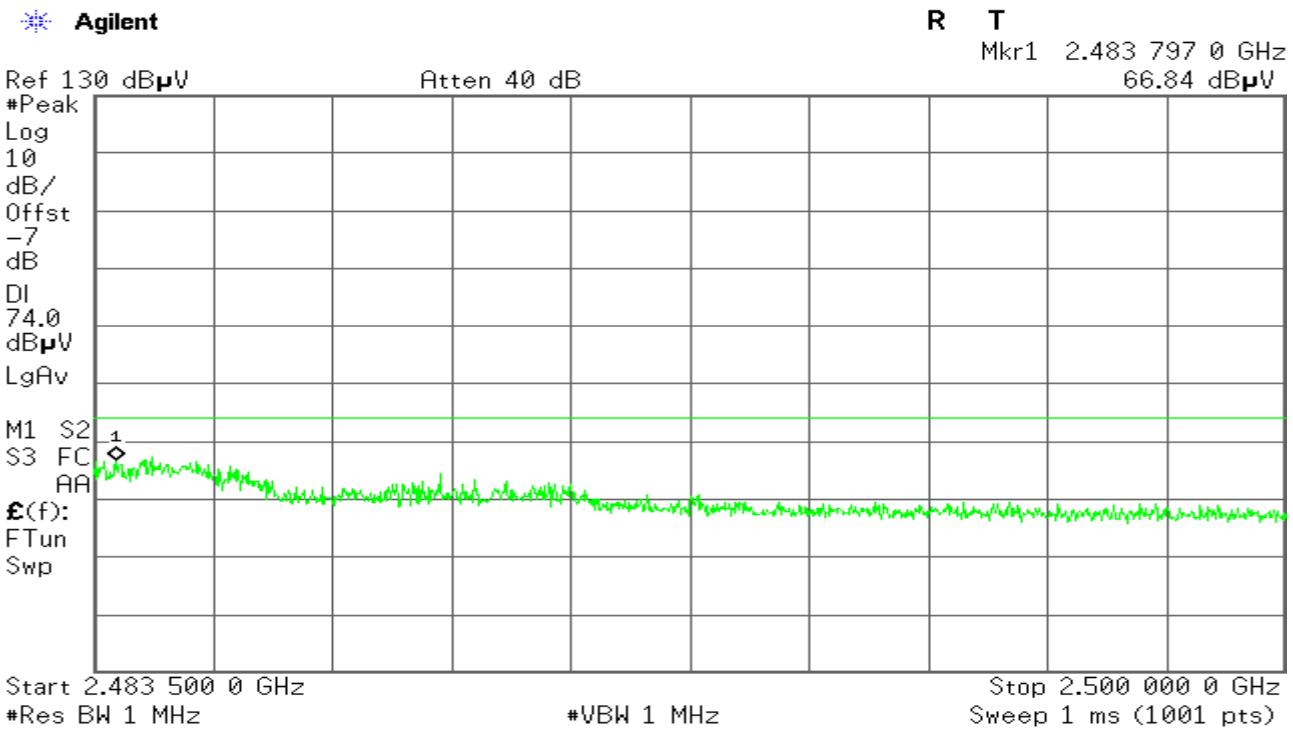



**AVG**

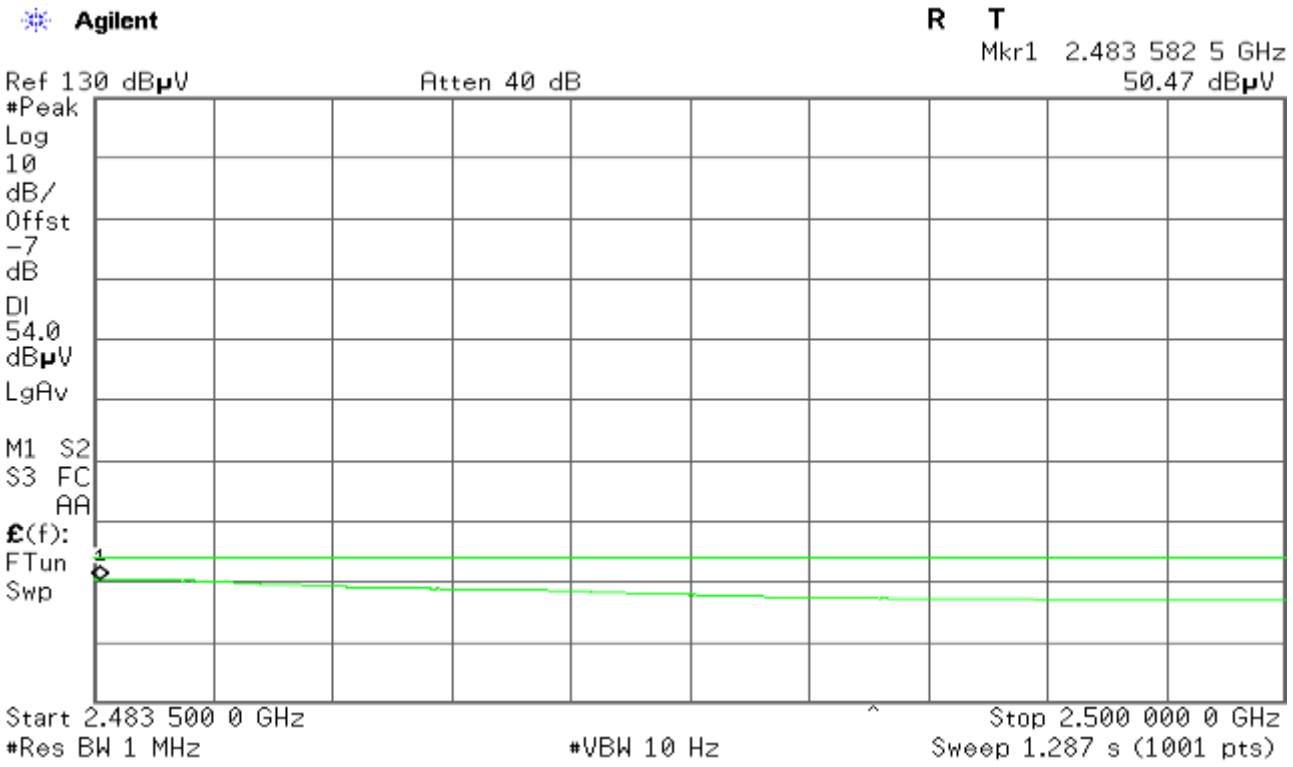


## RESTRICTED BANDEDGE (draft 802.11gn Wide -40 MHz Channel mode, High Channel, Horizontal)

### PEAK

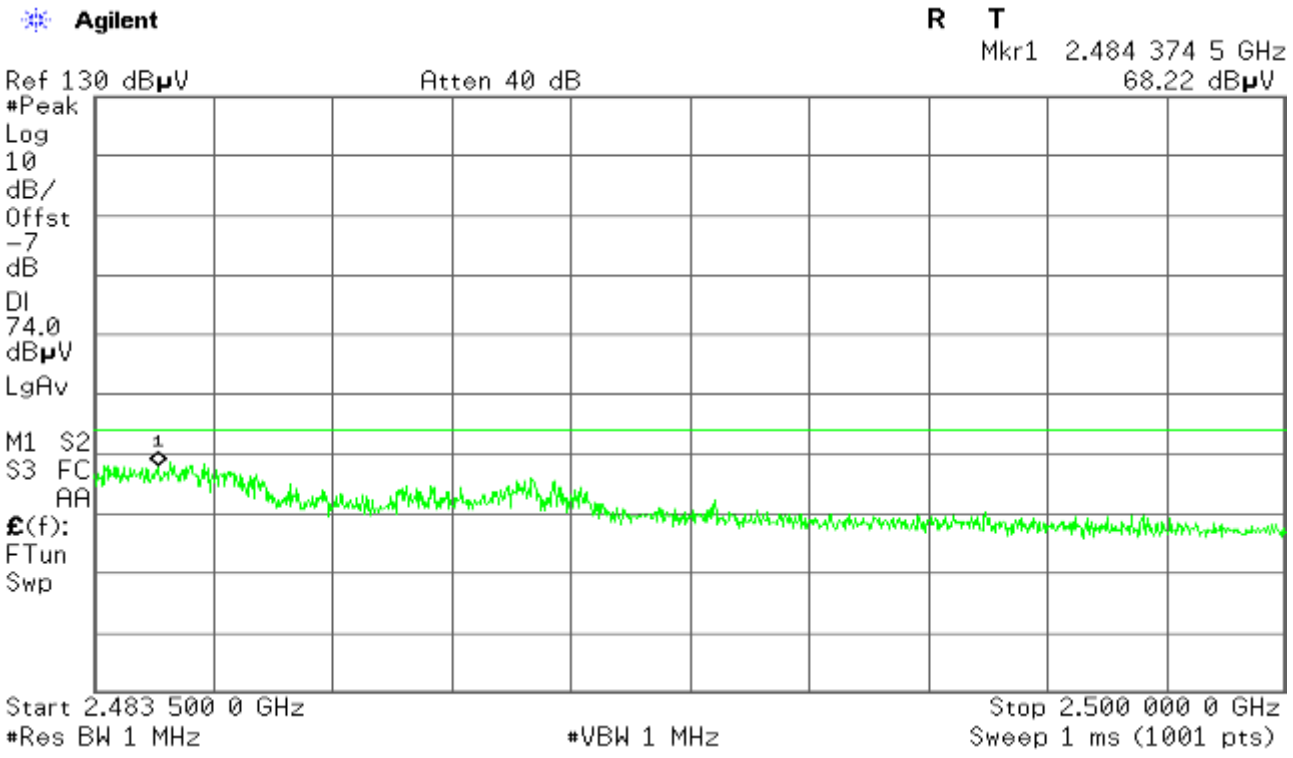



### AVG

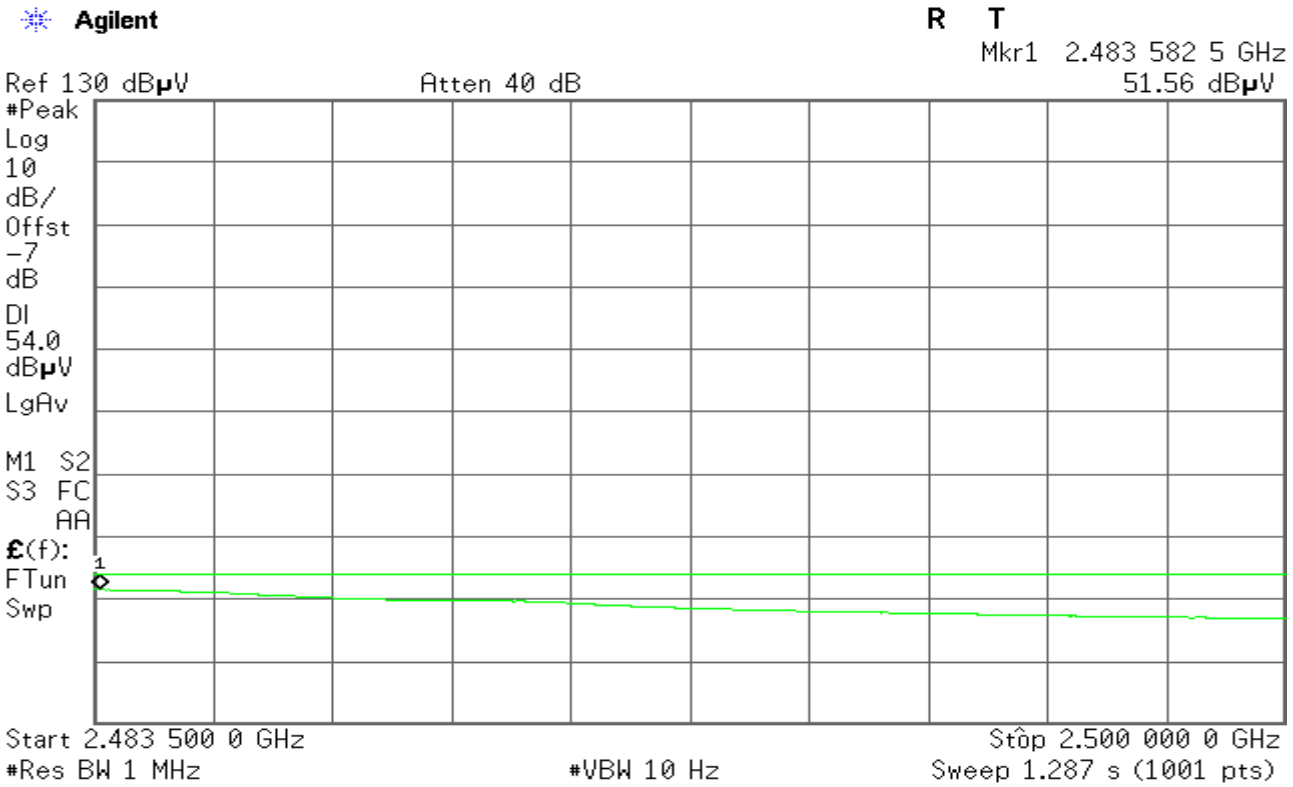


**RESTRICTED BANDEDGE (draft 802.11gn Wide -40 MHz Channel mode, High Channel, Vertical)**

**PEAK**




**AVG**



## Below 1GHz

**Operation Mode:** Normal Link(with Bluetooth ON) **Test Date:** July 4,2011

**Temperature:** 22°C **Tested by:** Sean Yu

**Humidity:** 48% 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 |
|---|---|---|---|---|---|---|---|
| 65.32 | V | 49.17 | -12.22 | 36.95 | 40.00 | -3.05 | Peak |
| 71.60 | V | 42.79 | -14.41 | 28.38 | 40.00 | -11.62 | Peak |
| 199.57 | V | 34.53 | -9.49 | 25.04 | 43.50 | -18.46 | Peak |
| 399.46 | V | 31.90 | 1.44 | 33.34 | 46.00 | -12.66 | Peak |
| 760.32 | V | 30.50 | 2.38 | 32.88 | 46.00 | -13.12 | Peak |
| 765.36 | V | 35.90 | 3.27 | 39.17 | 46.00 | -6.83 | Peak |
| | | | | | | | |
| 66.25 | H | 33.96 | -5.87 | 28.09 | 40.00 | -11.91 | Peak |
| 70.64 | H | 42.67 | -14.45 | 28.22 | 46.00 | -11.78 | Peak |
| 198.36 | H | 38.03 | -9.01 | 29.02 | 46.00 | -14.48 | Peak |
| 398.25 | H | 35.63 | 1.44 | 37.07 | 46.00 | -8.93 | Peak |
| 755.14 | H | 34.24 | 2.38 | 36.62 | 46.00 | -9.38 | Peak |
| 796.25 | H | 39.96 | 3.24 | 43.20 | 46.00 | -2.80 | QP |

***Remark:***

1. *Measuring frequencies from 30 MHz to the 1GHz (No emission found between lowest internal used/generated frequency to 30 MH)z.*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*
3. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
4. *Margin (dB) = Result (dBuV/m) – Limit (dBuV/m).*

## Above 1 GHz

**Operation Mode:** TX / IEEE 802.11b / CH Low(with Bluetooth ON) **Test Date:** July 4,2011

**Temperature:** 22°C **Tested by:** Sean Yu

**Humidity:** 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4825.71 | V | 36.18 | --- | 12.41 | 48.59 | --- | 74.00 | 54.00 | -5.74 | Peak |
| 7236.58 | V | 38.85 | 27.71 | 15.48 | 54.33 | 43.19 | 74.00 | 54.00 | -10.81 | Average |
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| 4824.54 | H | 34.36 | --- | 12.41 | 46.77 | --- | 74.00 | 54.00 | -7.23 | Peak |
| 7233.23 | H | 38.35 | 27.48 | 15.47 | 53.82 | 42.95 | 74.00 | 54.00 | -11.05 | Average |
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| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / IEEE 802.11b / CH Mid(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 22°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4865.44 | V | 36.43 | --- | 12.68 | 49.11 | --- | 74.00 | 54.00 | -4.89 | Peak |
| 7307.67 | V | 37.74 | 26.17 | 15.72 | 53.46 | 41.89 | 74.00 | 54.00 | -12.11 | Average |
| N/A | | | | | | | | | | |
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| 4866.57 | H | 35.15 | --- | 12.68 | 47.83 | --- | 74.00 | 54.00 | -6.17 | Peak |
| 7321.25 | H | 36.82 | 25.57 | 15.76 | 52.58 | 41.33 | 74.00 | 54.00 | -12.67 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

**Operation Mode:** TX / IEEE 802.11b / CH High(with Bluetooth ON) **Test Date:** July 4,2011

**Temperature:** 22°C **Tested by:** Sean Yu

**Humidity:** 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4921.54 | V | 35.63 | --- | 12.93 | 48.56 | --- | 74.00 | 54.00 | -5.44 | Peak |
| 7378.33 | V | 39.64 | 27.89 | 15.82 | 55.46 | 43.71 | 74.00 | 54.00 | -10.29 | Average |
| N/A | | | | | | | | | | |
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| 4923.33 | H | 34.28 | --- | 12.93 | 47.21 | --- | 74.00 | 54.00 | -6.79 | Peak |
| 7380.67 | H | 38.94 | 26.06 | 15.82 | 54.76 | 41.88 | 74.00 | 54.00 | -12.12 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

**Operation Mode:** TX / IEEE 802.11g / CH Low(with Bluetooth ON) **Test Date:** July 4,2011

**Temperature:** 24°C **Tested by:** Sean Yu

**Humidity:** 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4819.00 | V | 35.14 | --- | 12.41 | 47.55 | --- | 74.00 | 54.00 | -6.45 | Peak |
| 7233.82 | V | 36.85 | 27.28 | 15.48 | 52.33 | 42.76 | 74.00 | 54.00 | -11.24 | Average |
| N/A | | | | | | | | | | |
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| 4823.67 | H | 34.02 | --- | 12.41 | 46.43 | --- | 74.00 | 54.00 | -7.57 | Peak |
| 7238.45 | H | 35.30 | 25.54 | 15.48 | 50.78 | 41.02 | 74.00 | 54.00 | -12.98 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / IEEE 802.11g / CH Mid(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4876.54 | V | 33.61 | --- | 12.68 | 46.29 | --- | 74.00 | 54.00 | -7.71 | Peak |
| 7320.75 | V | 37.35 | 25.06 | 15.76 | 53.11 | 40.82 | 74.00 | 54.00 | -13.18 | Average |
| N/A | | | | | | | | | | |
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| 4875.65 | H | 32.99 | --- | 12.68 | 45.67 | --- | 74.00 | 54.00 | -8.33 | Peak |
| 7318.44 | H | 37.14 | 24.04 | 15.74 | 52.88 | 39.78 | 74.00 | 54.00 | -14.22 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

**Operation Mode:** TX / IEEE 802.11g / CH High(with Bluetooth ON) **Test Date:** July 4,2011

**Temperature:** 24°C **Tested by:** Sean Yu

**Humidity:** 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4935.33 | V | 33.60 | --- | 12.94 | 46.54 | --- | 74.00 | 54.00 | -7.46 | Peak |
| 7391.67 | V | 37.38 | 26.35 | 15.82 | 53.20 | 42.17 | 74.00 | 54.00 | -11.83 | Average |
| N/A | | | | | | | | | | |
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| 4925.67 | H | 34.38 | --- | 12.93 | 47.31 | --- | 74.00 | 54.00 | -6.69 | Peak |
| 7389.33 | H | 37.16 | 25.92 | 15.82 | 52.98 | 41.74 | 74.00 | 54.00 | -12.26 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / IEEE 802.11a / CH low(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 11490.66 | V | 44.01 | 35.74 | 3.56 | 47.57 | 39.3 | 74 | 54 | -14.7 | AVG |
| N/A | | | | | | | | | | |
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| 11491.67 | H | 43.25 | 35.01 | 3.56 | 46.81 | 38.57 | 74 | 54 | -15.43 | AVG |
| N/A | | | | | | | | | | |
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***Remark:***

7. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
8. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
9. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
10. *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.*
11. *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.*
12. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / IEEE 802.11a / CH mid (with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 11570.87 | V | 43.36 | 36.58 | 2.40 | 45.76 | 38.98 | 74.00 | 54.00 | -19.02 | AVG |
| N/A | | | | | | | | | | |
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| 11570.65 | H | 43.05 | 37.21 | 2.40 | 45.4 | 39.61 | 74.00 | 54.00 | -14.39 | AVG |
| N/A | | | | | | | | | | |
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***Remark:***

13. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
14. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
15. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
16. *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.*
17. *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.*
18. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / IEEE 802.11a / CH high(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 11611.54 | V | 42.01 | 34.02 | 3.56 | 45.57 | 37.58 | 74 | 54 | -16.42 | AVG |
| N/A | | | | | | | | | | |
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| 11615.68 | H | 41.23 | 34.14 | 3.56 | 44.79 | 37.7 | 74 | 54 | -16.30 | AVG |
| N/A | | | | | | | | | | |
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***Remark:***

19. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
20. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
21. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
22. *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.*
23. *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.*
24. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / draft 802.11gn Standard-20 MHz Channel mode (Chain 0 + Chain 1) / CH Low(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4832.66 | V | 34.48 | --- | 12.41 | 46.89 | --- | 74.00 | 54.00 | -7.11 | Peak |
| 7230.43 | V | 37.94 | 26.68 | 15.48 | 53.42 | 42.16 | 74.00 | 54.00 | -11.84 | Average |
| N/A | | | | | | | | | | |
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| 4824.54 | H | 33.32 | --- | 12.41 | 45.73 | --- | 74.00 | 54.00 | -8.27 | Peak |
| 7212.56 | H | 36.30 | 23.17 | 15.48 | 51.78 | 38.65 | 74.00 | 54.00 | -15.35 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / draft 802.11gn Standard-20 MHz Channel mode (Chain 0 + Chain 1) / CH Mid(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4876.54 | V | 34.64 | --- | 12.68 | 47.32 | --- | 74.00 | 54.00 | -6.68 | Peak |
| 7321.54 | V | 36.89 | 27.42 | 15.76 | 52.65 | 43.18 | 74.00 | 54.00 | -10.82 | Average |
| N/A | | | | | | | | | | |
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| | | | | | | | | | | |
| 4875.65 | H | 35.00 | --- | 11.02 | 46.02 | --- | 74.00 | 54.00 | -7.98 | Peak |
| 7316.32 | H | 39.74 | 27.50 | 15.72 | 55.46 | 43.22 | 74.00 | 54.00 | -10.78 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / draft 802.11gn Standard-20 MHz Channel mode (Chain 0 + Chain 1) / CH High(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4930.66 | V | 37.60 | --- | 12.93 | 46.52 | --- | 74.00 | 54.00 | -7.48 | Peak |
| 7387.67 | V | 38.30 | 26.99 | 15.82 | 54.12 | 42.81 | 74.00 | 54.00 | -11.19 | Average |
| N/A | | | | | | | | | | |
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| | | | | | | | | | | |
| 4924.67 | H | 32.74 | --- | 12.93 | 45.67 | --- | 74.00 | 54.00 | -8.33 | Peak |
| 7384.78 | H | 39.64 | 28.09 | 15.82 | 55.46 | 43.91 | 74.00 | 54.00 | -10.09 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / draft 802.11gn Wide-40 MHz Channel mode (Chain 0 + Chain 1) / CH Low(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4844.67 | V | 35.42 | --- | 12.41 | 47.83 | --- | 74.00 | 54.00 | -6.17 | Peak |
| 7382.54 | V | 39.27 | 27.80 | 15.48 | 54.75 | 43.28 | 74.00 | 54.00 | -10.72 | Average |
| N/A | | | | | | | | | | |
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| | | | | | | | | | | |
| 4850.67 | H | 34.38 | --- | 12.41 | 46.79 | --- | 74.00 | 54.00 | -5.29 | Peak |
| 7382.67 | H | 38.55 | 26.67 | 15.48 | 54.03 | 42.15 | 74.00 | 54.00 | -11.85 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

**Operation Mode:** TX / draft 802.11gn Wide-40 MHz Channel mode (Chain 0 + Chain 1) / CH Mid(with Bluetooth ON) **Test Date:** July 4,2011

**Temperature:** 24°C **Tested by:** Sean Yu

**Humidity:** 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4874.42 | V | 33.74 | --- | 12.68 | 46.42 | --- | 74.00 | 54.00 | -7.58 | Peak |
| 7313.34 | V | 36.77 | 25.38 | 15.71 | 52.48 | 41.09 | 74.00 | 54.00 | -12.91 | Average |
| N/A | | | | | | | | | | |
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| | | | | | | | | | | |
| 4874.24 | H | 32.75 | --- | 12.68 | 45.43 | --- | 74.00 | 54.00 | -8.57 | Peak |
| 7314.56 | H | 36.26 | 24.11 | 15.71 | 51.97 | 39.82 | 74.00 | 54.00 | -14.18 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / draft 802.11gn Wide-40 MHz Channel mode (Chain 0 + Chain 1) / CH High(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 4915.33 | V | 37.72 | --- | 12.93 | 47.07 | --- | 74.00 | 54.00 | -6.93 | Peak |
| 7360.67 | V | 37.89 | 26.25 | 15.83 | 53.72 | 42.08 | 74.00 | 54.00 | -11.92 | Average |
| N/A | | | | | | | | | | |
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| 4915.67 | H | 33.58 | --- | 12.93 | 46.51 | --- | 74.00 | 54.00 | -7.49 | Peak |
| 7359.33 | H | 36.35 | 24.57 | 15.82 | 52.17 | 40.39 | 74.00 | 54.00 | -13.61 | Average |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / draft 802.11an Standard-20 MHz Channel mode (Chain 0 + Chain 1) / CH Low(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 11495.33 | V | 42.36 | 35.14 | 3.56 | 45.92 | 38.7 | 74 | 54 | -15.3 | AVG |
| N/A | | | | | | | | | | |
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| 11495.00 | H | 41.85 | 34.75 | 3.56 | 45.41 | 38.31 | 74 | 54 | -15.69 | AVG |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / draft 802.11an Standard-20 MHz Channel mode (Chain 0 + Chain 1) / CH Mid(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 11572.67 | V | 40.69 | 34.96 | 3.56 | 44.25 | 38.52 | 74 | 54 | -15.48 | AVG |
| N/A | | | | | | | | | | |
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| 11571.33 | H | 40.24 | 34.12 | 3.56 | 43.80 | 37.68 | 74 | 54 | -16.32 | AVG |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / draft 802.11an Standard-20 MHz Channel mode (Chain 0 + Chain 1) / CH High(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 11611.00 | V | 41.02 | 35.11 | 3.56 | 44.58 | 38.67 | 74 | 54 | -15.33 | AVG |
| N/A | | | | | | | | | | |
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| 11612.67 | H | 40.79 | 34.74 | 3.56 | 44.35 | 38.3 | 74 | 54 | -15.7 | AVG |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / draft 802.11an Wide-40 MHz Channel mode (Chain 0 + Chain 1) / CH Low(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 11515.00 | V | 42.55 | 35.41 | 3.56 | 46.11 | 38.97 | 74 | 54 | -15.03 | AVG |
| N/A | | | | | | | | | | |
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| | | | | | | | | | | |
| 11515.67 | H | 42.35 | 34.96 | 3.56 | 45.91 | 38.52 | 74 | 54 | -15.48 | AVG |
| N/A | | | | | | | | | | |
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***Remark:***

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

| | | | |
|---|---|---|---|
| **Operation Mode:** | TX / draft 802.11an Wide-40 MHz Channel mode (Chain 0 + Chain 1) / CH High(with Bluetooth ON) | **Test Date:** | July 4,2011 |
| **Temperature:** | 24°C | **Tested by:** | Sean Yu |
| **Humidity:** | 48 % 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| 11590.00 | V | 42.36 | 35.17 | 3.56 | 45.92 | 38.73 | 74 | 54 | -15.27 | AVG |
| N/A | | | | | | | | | | |
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| 11591.00 | H | 42.11 | 34.47 | 3.56 | 45.67 | 38.03 | 74 | 54 | -15.97 | AVG |
| N/A | | | | | | | | | | |
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***Remark:***

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

## 7.7.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.

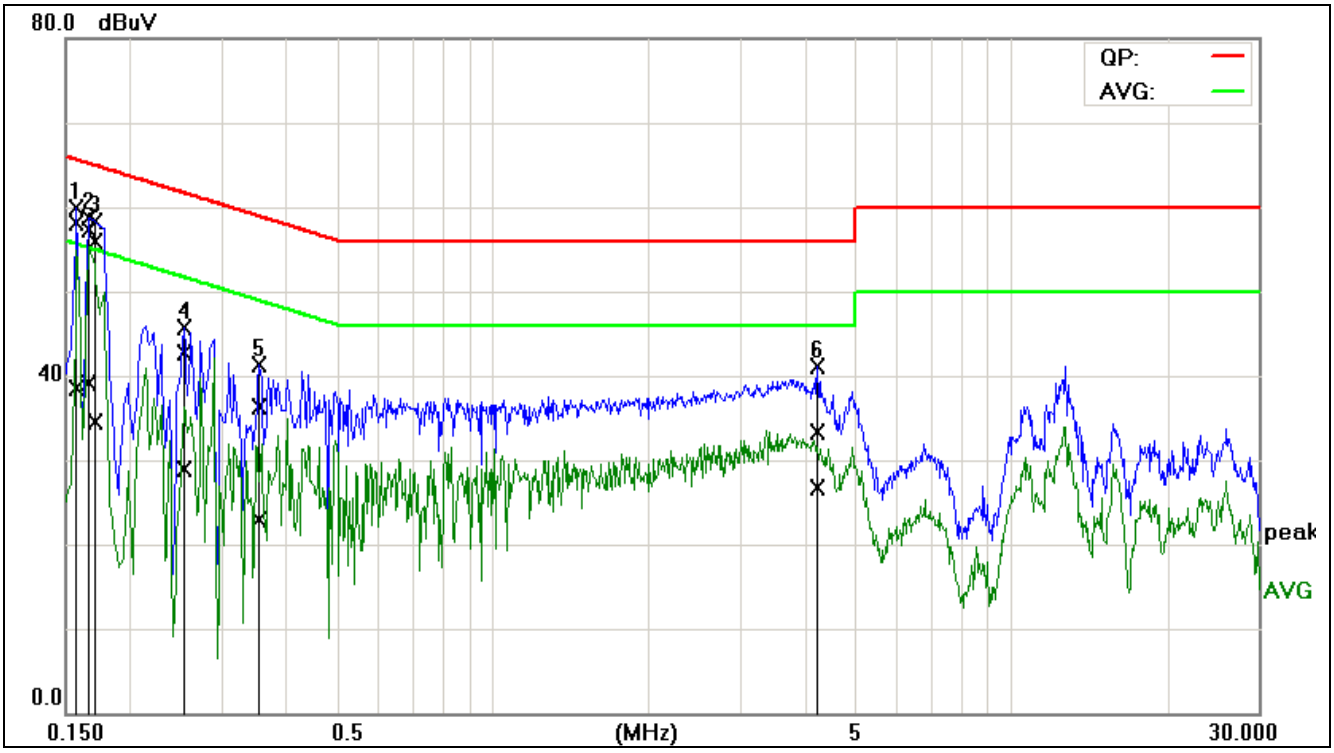
### TEST RESULTS

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

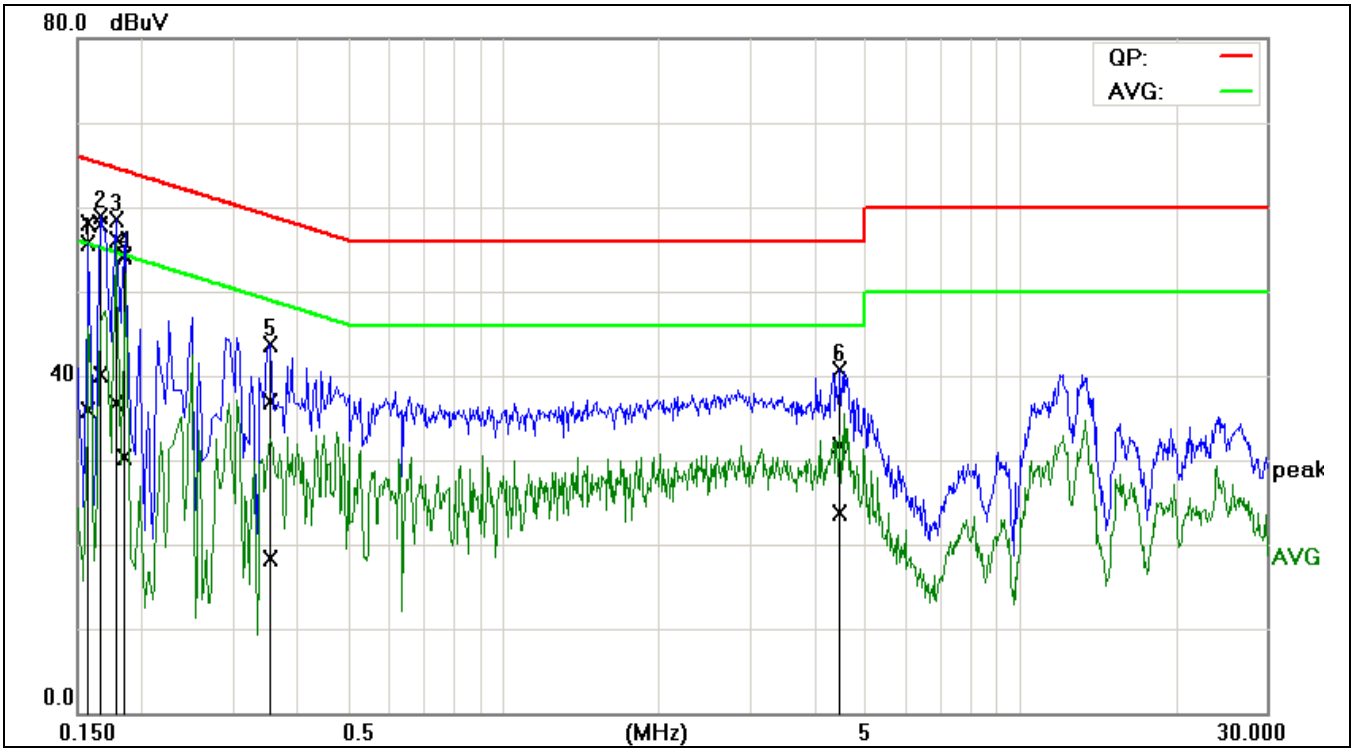
| | | | |
|---|---|---|---|
| **Operation Mode:** | **Normal Link (with Bluetooth ON)** | **Test Date:** | **July 6, 2011** |
| **Temperature:** | **23°C** | **Tested by:** | **Sean Yu** |
| **Humidity:** | **50% RH** | **Test Voltage:** | **AC 120V/60Hz** |

**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* | 0.1553 | 48.06 | 28.47 | 10.05 | 58.11 | 38.52 | 65.71 | 55.71 | -7.60 | -17.19 | Pass |
| 2 | 0.1640 | 47.19 | 29.01 | 10.06 | 57.25 | 39.07 | 65.26 | 55.26 | -8.01 | -16.19 | Pass |
| 3 | 0.1711 | 45.81 | 24.42 | 10.07 | 55.88 | 34.49 | 64.91 | 54.91 | -9.03 | -20.42 | Pass |
| 4 | 0.2551 | 32.57 | 18.67 | 10.20 | 42.77 | 28.87 | 61.59 | 51.59 | -18.82 | -22.72 | Pass |
| 5 | 0.3521 | 25.91 | 12.48 | 10.34 | 36.25 | 22.82 | 58.91 | 48.91 | -22.66 | -26.09 | Pass |
| 6 | 4.2302 | 22.23 | 15.64 | 11.16 | 33.39 | 26.80 | 56.00 | 46.00 | -22.61 | -19.20 | 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 | 0.1584 | 47.95 | 25.72 | 10.16 | 58.11 | 35.88 | 65.55 | 55.55 | -7.44 | -19.67 | Pass |
| 2* | 0.1637 | 47.84 | 29.94 | 10.16 | 58.00 | 40.10 | 65.27 | 55.27 | -7.27 | -15.17 | Pass |
| 3 | 0.1754 | 46.02 | 26.57 | 10.17 | 56.19 | 36.74 | 64.70 | 54.70 | -8.51 | -17.96 | Pass |
| 4 | 0.1819 | 44.17 | 20.15 | 10.17 | 54.34 | 30.32 | 64.40 | 54.40 | -10.06 | -24.08 | Pass |
| 5 | 0.3559 | 26.77 | 8.16 | 10.14 | 36.91 | 18.30 | 58.82 | 48.82 | -21.91 | -30.52 | Pass |
| 6 | 4.4884 | 20.88 | 12.87 | 10.89 | 31.77 | 23.76 | 56.00 | 46.00 | -24.23 | -22.24 | 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 and 30MHz was 10 kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9 kHz;*
4. *L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)*