



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Product Name: Mobile Phone

Brand Name: innos

Model No.: innos i5

Series Model: N/A

**Test Report Number:
KS120629A02-RPB**

Issued for

JSR Limited

Room 8, 12/F, Lucida Industrial Building, No. 43-4 Wang Lung Street, Tsuen Wan, HongKong

Issued by

Compliance Certification Services Inc.

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TESTING CERT #2541.01

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1. TEST RESULT CERTIFICATION

| | |
|-------------------------------|----------------------------------------------------------------------------------------------------------------|
| Product Name: | Mobile Phone |
| Trade Name: | N/A |
| Model Name.: | innos i5 |
| Series Model: | N/A |
| Applicant Discrepancy: | Initial |
| Device Category: | MOBILE DEVICES |
| Date of Test: | July 11, 2012 |
| Applicant: | JSR Limited Room 8, 12/F, Lucida Industrial Building, No. 43-4 Wang Lung Street, Tsuen Wan, HongKong |
| Manufacturer: | JSR Limited Room 8, 12/F, Lucida Industrial Building, No. 43-4 Wang Lung Street, Tsuen Wan, HongKong |
| 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:

Tested by:

Hadiif Hoo
RF Manager
Compliance Certification Service Inc.

Sean Yu
Test Engineer
Compliance Certification Service Inc.



2. EUT DESCRIPTION

| | |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name: | Mobile Phone |
| Brand Name: | innos |
| Model Name: | innos i5 |
| Series Model: | N/A |
| Model Discrepancy: | N/A |
| Frequency Range: | WIFI b/g Mode: 2412 ~ 2462 MHz gn(20MHz): 2412 ~ 2462 MHz Bluetooth: 2402 ~ 2480 MHz |
| Transmit Power: | IEEE 802.11b mode: 15.99dBm (39.70mW) IEEE 802.11g mode: 14.62dBm (26.70mW) draft 802.11gn Standard-20 MHz Channel mode: 15.36 dBm (34.40mW) |
| Modulation Technique: | IEEE 802.11b mode: DSSS (1, 2, 5.5 and 11 Mbps) IEEE 802.11g mode: DSSS /OFDM (6, 9, 12, 18, 24, 36, 48 and 54 Mbps) draft 802.11n Standard-20 MHz Channel mode: OFDM (MCS 0~7) |
| Number of Channels: | IEEE 802.11b/g mode: 11 Channels draft 802.11n Standard-20 MHz Channel mode: 11 Channels |
| Antenna Specification: | PIFA antennas for 2.4GHz Gain 3 dBi |
| Power Adapter Power Rating : | Power supply and ADP (rating): Brand: innos Model :DGL-C01-01 Input 100~240V---50/60Hz 0.2A Output L5.0V --- 700mA Battery (rating): Brand: innos Model :BL-4L-i 3.7V 1630mAh |

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: COYI5** 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 2003 and 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 Commission's 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 30 MHz 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 b/g/n 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 PPSP 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.

Draft 802.11gn Standard-20 MHz Channel mode:

Channel Low (2412MHz)

Channel Mid (2437MHz)

Channel High (2462MHz) with MCS0 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 | 2013-5-12 |
| DETECTOR NEGATIVE | Agilent | 8473B | MY42240176 | 2013-5-12 |
| OSCILLOSCOPE | Agilent | DSO6104A | MY44002585 | 2013-3-24 |
| Peak and Avg Power Sensor | Agilent | E9327A | US40441788 | 2013-3-24 |
| EPM-P Series Power Meter | Agilent | E4416A | GB41292714 | 2013-5-12 |
| Power SPLITTER | Mini-Circuits | ZN2PD-9G | SF078500430 | 2013-5-12 |
| DC POWER SUPPLY | GW instek | GPS-3303C | E903131 | 2013-5-12 |
| Temp. / Humidity Chamber | Kingson | THS-M1 | 242 | 2013-3-12 |
| Test Software | EZ-EMC | | | |

| 977 Chamber | | | | |
|-------------------|--------------|-------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| Spectrum Analyzer | Agilent | E4446A | MY44020154 | 2013-5-12 |
| EMI Test Receiver | R&S | ESPI3 | 101026 | 2013-3-15 |
| Pre-Amplifier | MINI | ZFL-1000VH2 | d041703 | 2013-5-12 |
| Pre-Amplifier | Miteq | NSP4000-NF | 870629 | 2013-5-12 |
| Bilog Antenna | Sunol | JB1 | A110204-2 | 2013-5-12 |
| 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 | CT100 | 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 | 2013-3-15 |
| V (V-LISN) | Schwarzbeck | NNLK 8129 | 8129-143 | 2013-3-15 |
| LISN (EUT) | FCC | FCC-LISN-50/250-50-2-02 | SN:05012 | 2013-3-15 |
| TRANSIENT LIMITER | SCHAFFNER | CFL9206 | 1710 | 2013-4-8 |
| Test Software | EZ-EMC | | | |

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.



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 |  TESTING CERT #2541.01 |
| USA | FCC | 3/10 meter Sites to perform FCC Part 15/18 measurements |  93105, 90471 |
| Japan | VCCI | 3/10 meter Sites and conducted test sites to perform radiated/conducted measurements | VCCI R-1600 C-1707 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. | N/A | N/A | N/A | N/A | N/A |

Remark:

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



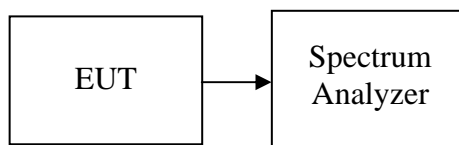
7. FCC PART 15.247 REQUIREMENTS

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 | 10.093 | >500 | PASS |
| Mid | 2437 | 10.097 | | PASS |
| High | 2462 | 10.084 | | PASS |

IEEE 802.11g mode

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---------|-----------------|-----------------|-------------|--------|
| Low | 2412 | 16.354 | >500 | PASS |
| Mid | 2437 | 16.324 | | PASS |
| High | 2462 | 16.361 | | PASS |

Draft 802.11gn Standard-20 MHz Channel mode

| Channel | Frequency (MHz) | Bandwidth (MHz) | Limit (kHz) | Result |
|---------|-----------------|-----------------|-------------|--------|
| Low | 2412 | 17.140 | >500 | PASS |
| Mid | 2437 | 16.931 | | PASS |
| High | 2462 | 17.178 | | PASS |



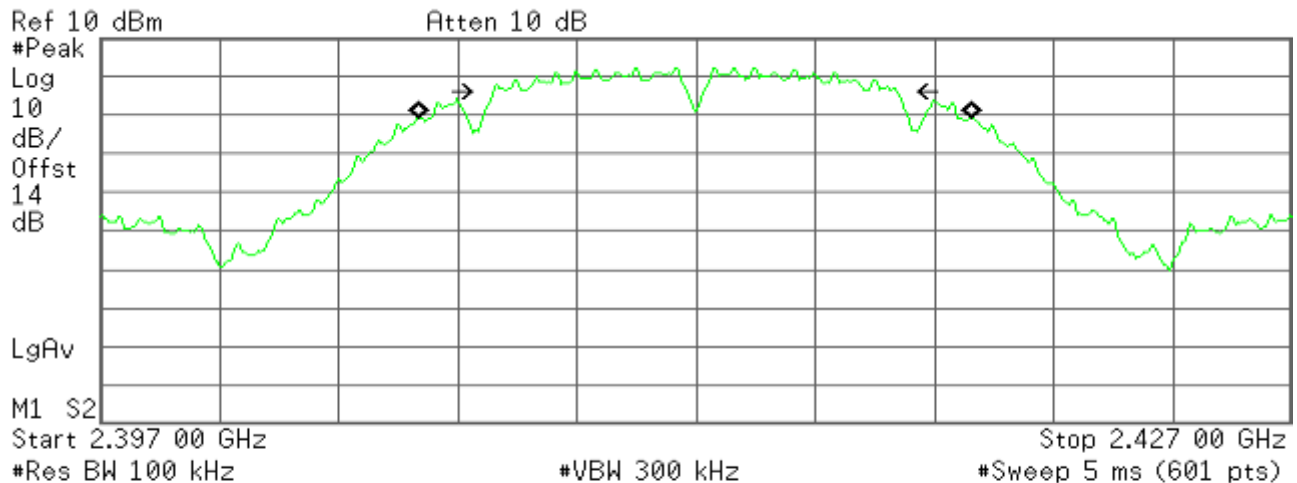
Test Plot

IEEE 802.11b MODE

6dB Bandwidth (CH Low)

* Agilent

R T



Occupied Bandwidth
13.9827 MHz

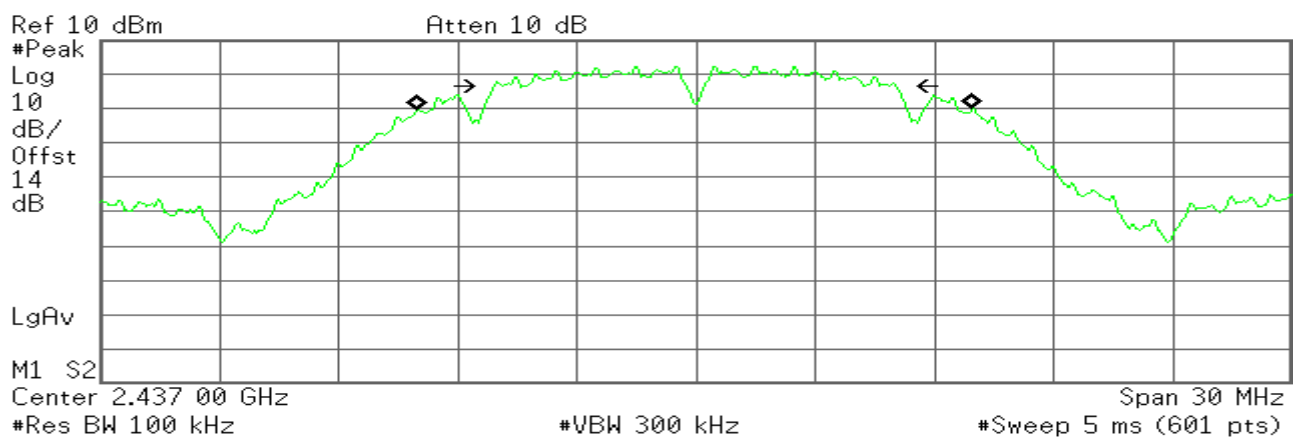
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -26.853 kHz
x dB Bandwidth 10.093 MHz

6dB Bandwidth (CH Mid)

* Agilent

R T



Occupied Bandwidth
13.9890 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

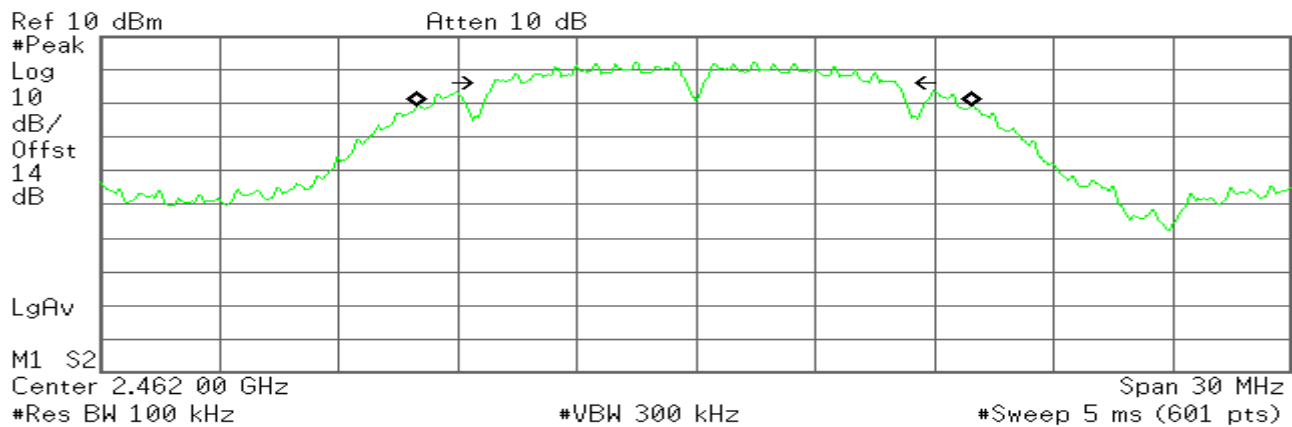
Transmit Freq Error -31.023 kHz
x dB Bandwidth 10.097 MHz



6dB Bandwidth (CH High)

Agilent

R T



Occupied Bandwidth
14.0060 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

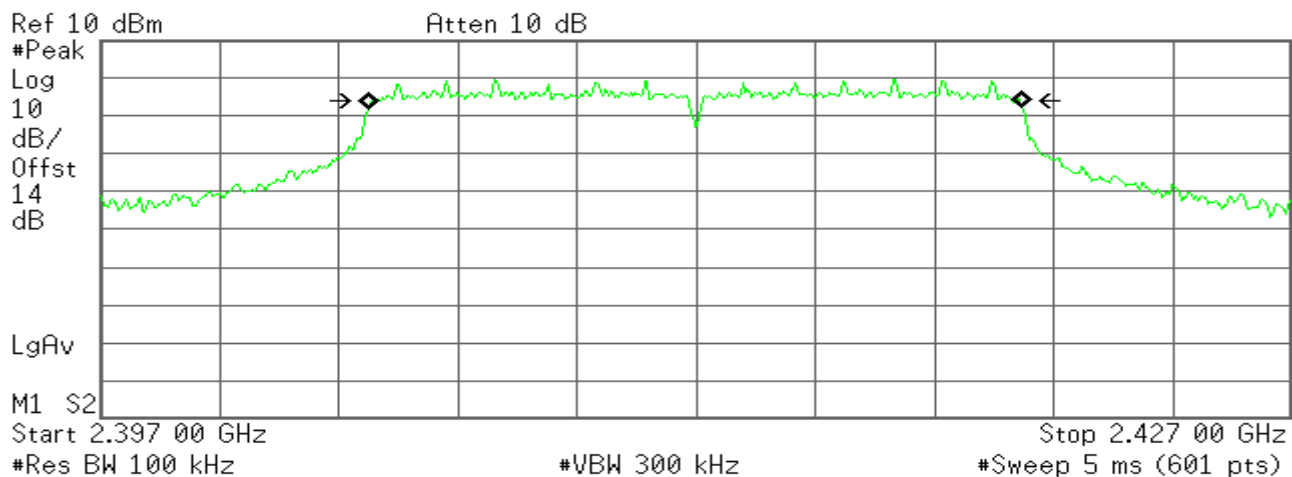
Transmit Freq Error -31.972 kHz
x dB Bandwidth 10.084 MHz

IEEE 802.11g MODE

6dB Bandwidth (CH Low)

Agilent

R T



Occupied Bandwidth
16.4515 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

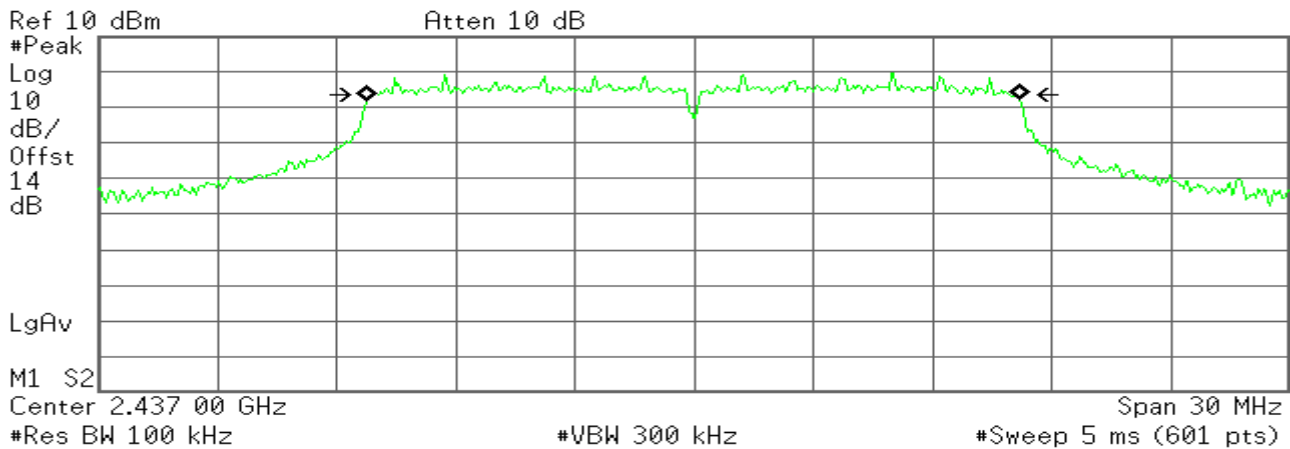
Transmit Freq Error -25.370 kHz
x dB Bandwidth 16.354 MHz



6dB Bandwidth (CH Mid)

* Agilent

R T



Occupied Bandwidth
16.4395 MHz

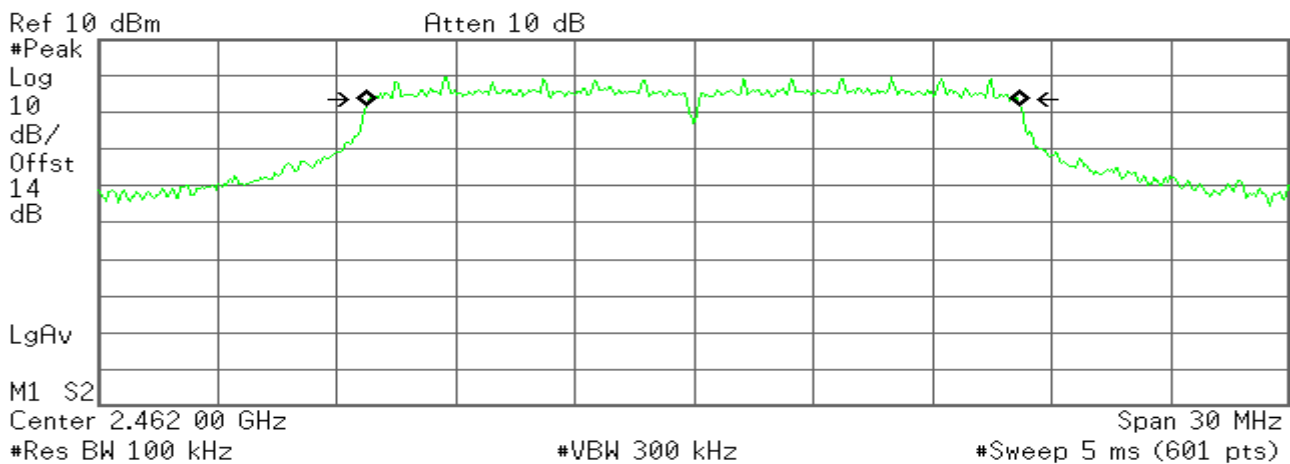
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -19.849 kHz
x dB Bandwidth 16.324 MHz

6dB Bandwidth (CH High)

* Agilent

R T



Occupied Bandwidth
16.4744 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -20.828 kHz
x dB Bandwidth 16.361 MHz

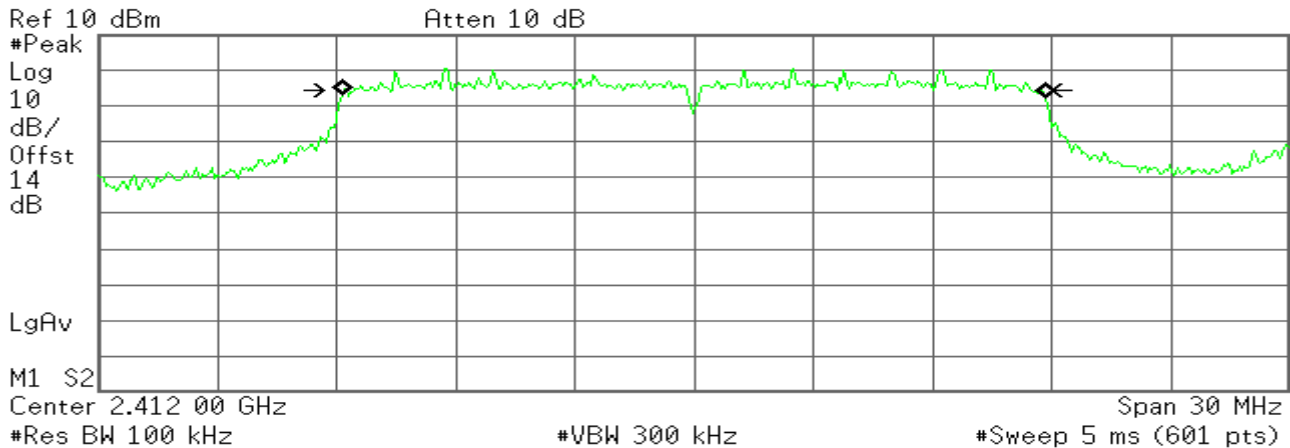


draft 802.11gn Standard-20 MHz Channel mode

6dB Bandwidth (CH Low)

* Agilent

R T



Occupied Bandwidth
17.6991 MHz

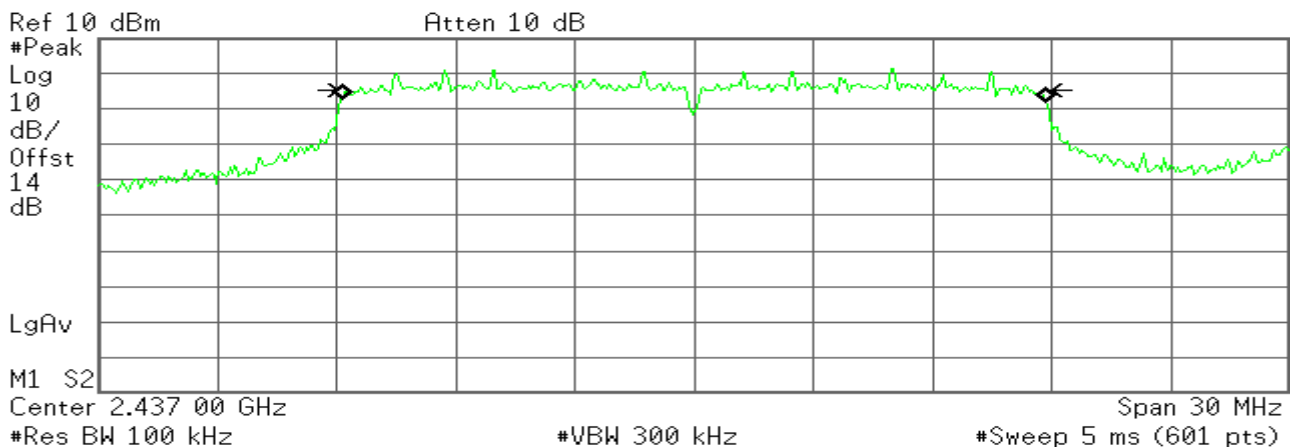
Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error 945.213 Hz
x dB Bandwidth 17.140 MHz

6dB Bandwidth (CH Mid)

* Agilent

R T



Occupied Bandwidth
17.7264 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

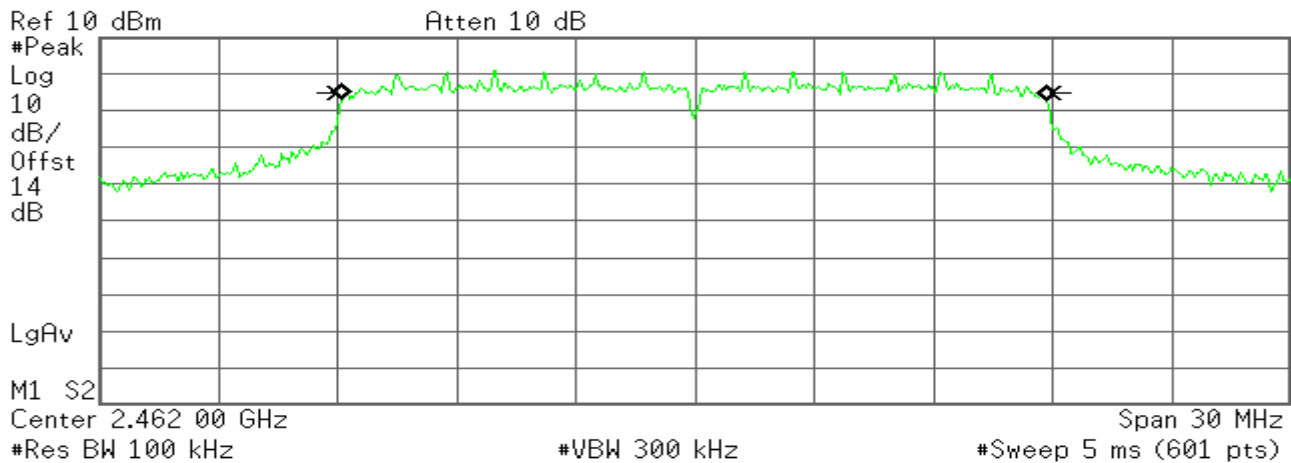
Transmit Freq Error 6.925 kHz
x dB Bandwidth 16.931 MHz



6dB Bandwidth (CH High)

* Agilent

R T



Occupied Bandwidth
17.7049 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -20.436 kHz
x dB Bandwidth 17.178 MHz



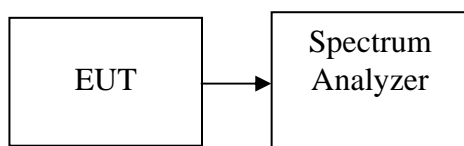
7.2. PEAK POWER

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 \geq 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 δ hichfree run δ hich.
- 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 | 15.99 | 0.0397 | 1.00 | PASS |
| Mid | 2437 | 15.92 | 0.0391 | | PASS |
| High | 2462 | 15.56 | 0.0360 | | PASS |

Test mode: IEEE 802.11g mode

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---------|-----------------|--------------------|------------------|-----------|--------|
| Low | 2412 | 14.48 | 0.0281 | 1.00 | PASS |
| Mid | 2437 | 14.62 | 0.0290 | | PASS |
| High | 2462 | 14.26 | 0.0267 | | PASS |

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

| Channel | Frequency (MHz) | Output Power (dBm) | Output Power (W) | Limit (W) | Result |
|---------|-----------------|--------------------|------------------|-----------|--------|
| Low | 2412 | 15.36 | 0.0344 | 1.00 | PASS |
| Mid | 2437 | 15.19 | 0.0330 | | PASS |
| High | 2462 | 15.19 | 0.0330 | | PASS |

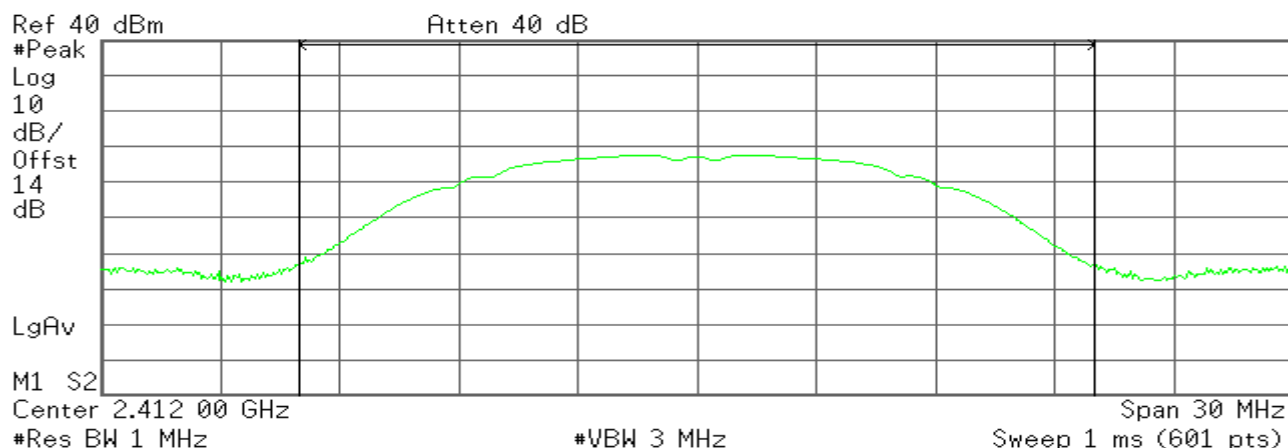
Test Plot

IEEE 802.11b mode

Peak Power (CH Low)



R T



Channel Power

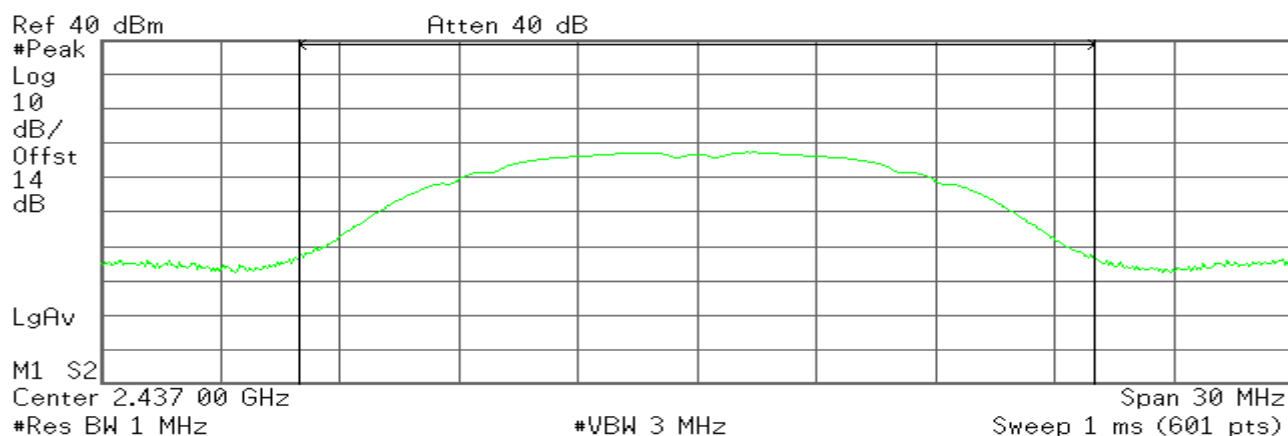
15.99 dBm /20.0000 MHz

Power Spectral Density

-57.02 dBm/Hz

Peak Power (CH Mid)

R T



Channel Power

15.92 dBm /20.0000 MHz

Power Spectral Density

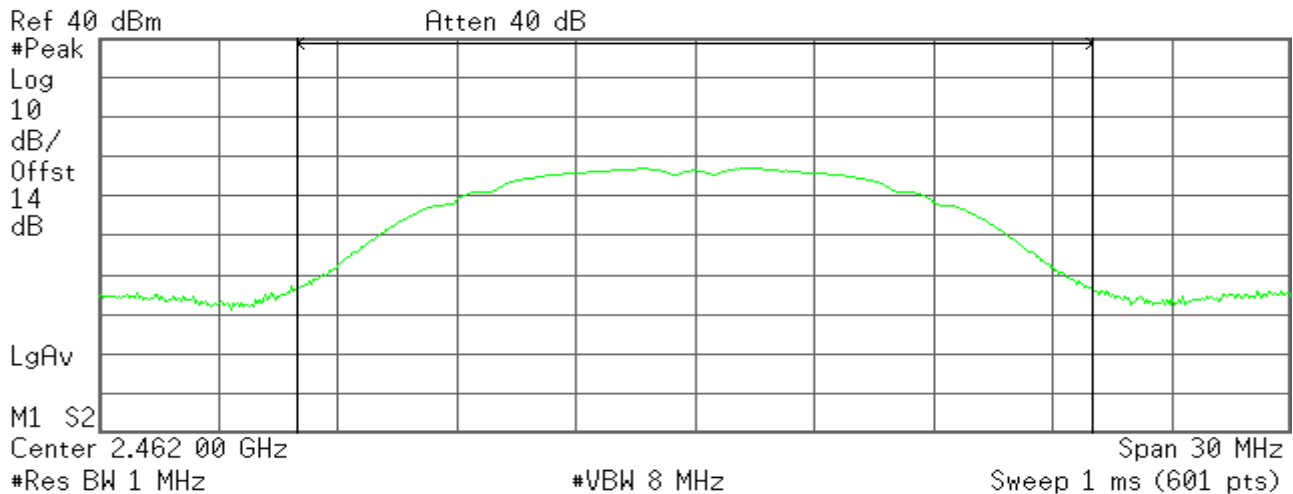
-57.09 dBm/Hz



Peak Power (CH High)

* Agilent

R T

**Channel Power**

15.56 dBm /20.0000 MHz

Power Spectral Density

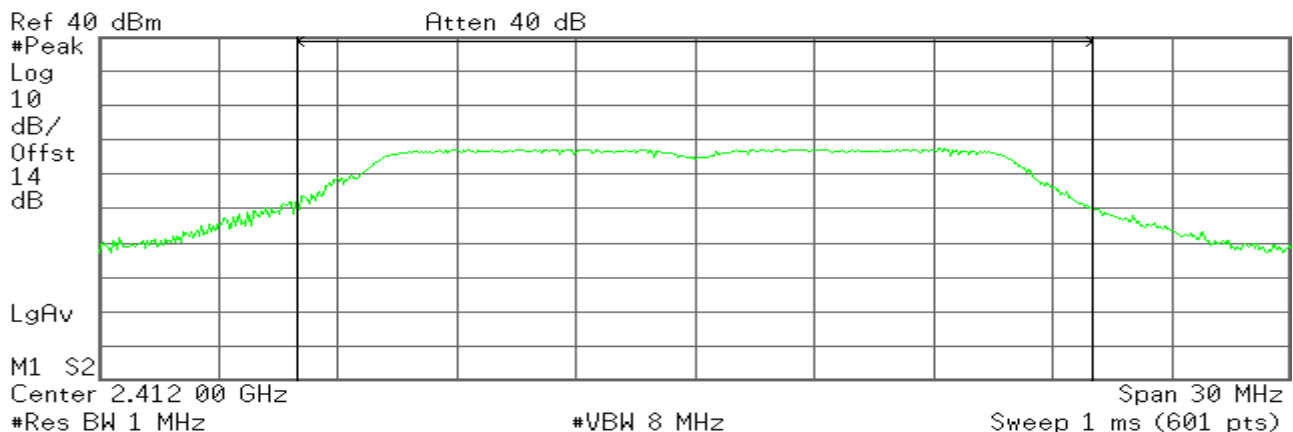
-57.45 dBm/Hz

IEEE 802.11g mode

Peak Power (CH Low)

* Agilent

R T

**Channel Power**

14.48 dBm /20.0000 MHz

Power Spectral Density

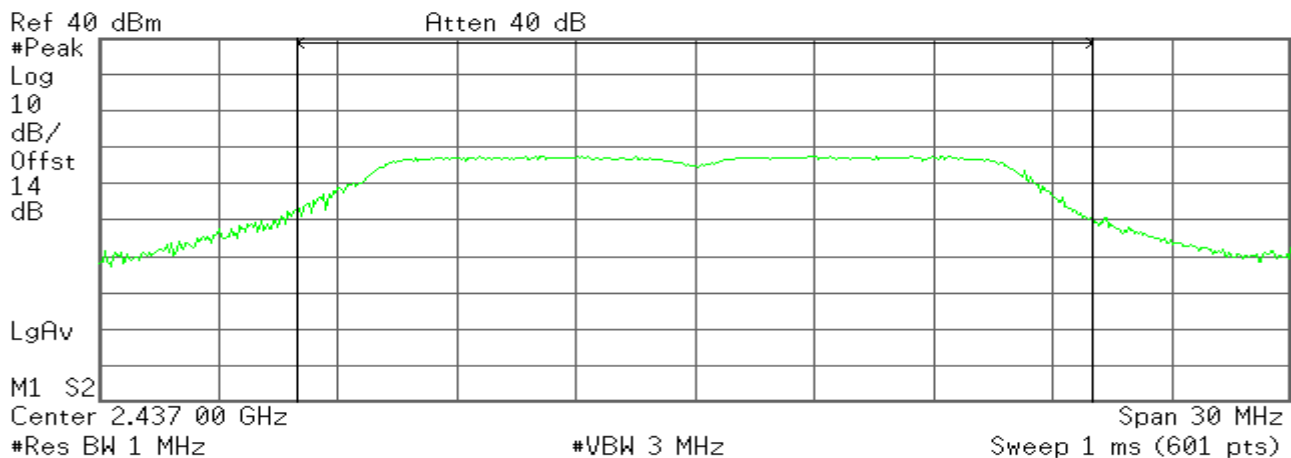
-58.53 dBm/Hz



Peak Power (CH Mid)

* Agilent

R T

**Channel Power**

14.62 dBm /20.0000 MHz

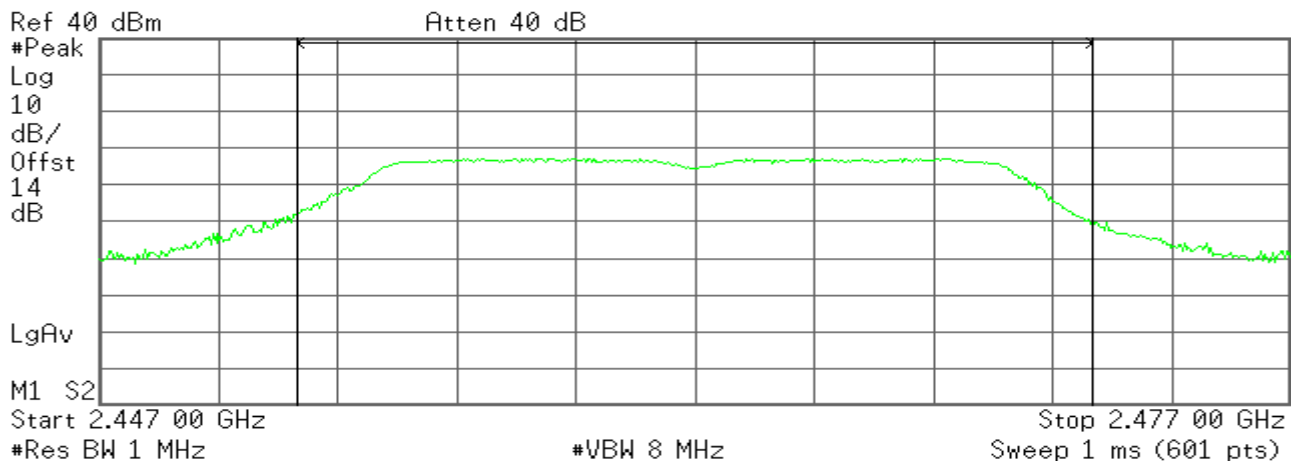
Power Spectral Density

-58.39 dBm/Hz

Peak Power (CH High)

* Agilent

R T

**Channel Power**

14.26 dBm /20.0000 MHz

Power Spectral Density

-58.75 dBm/Hz

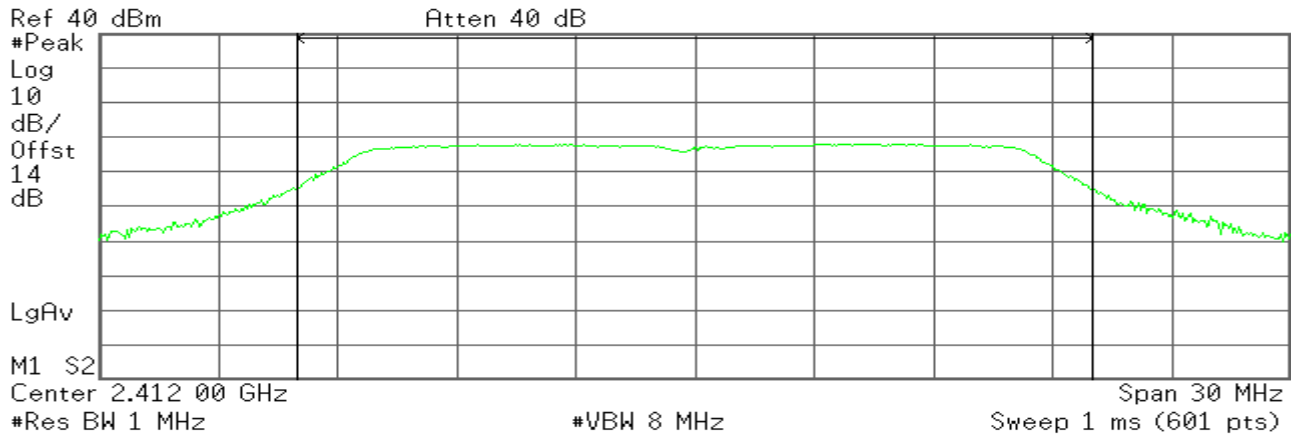


draft 802.11gn Standard-20 MHz Channel mode

Peak Power (CH Low)

* Agilent

R T

**Channel Power**

15.36 dBm /20.0000 MHz

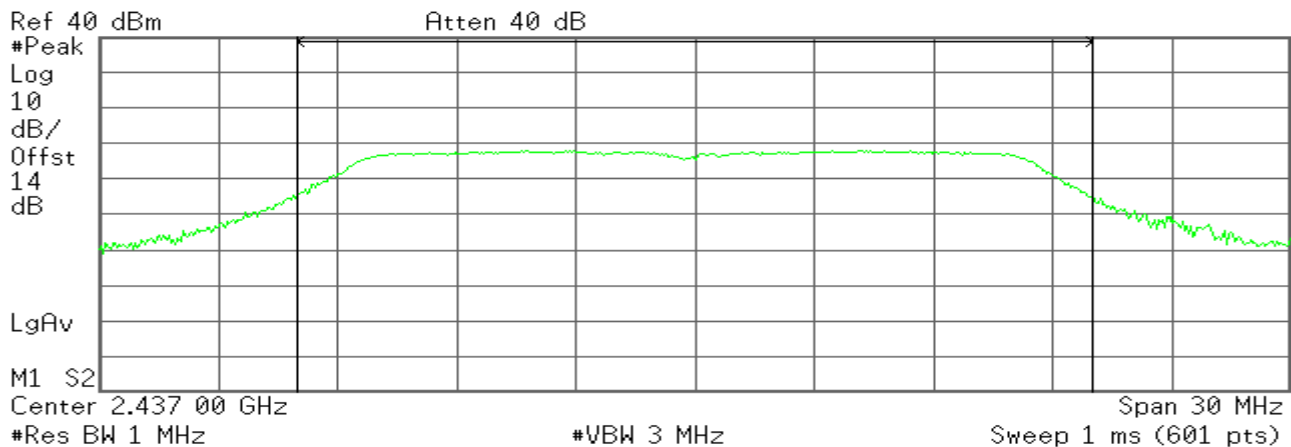
Power Spectral Density

-57.65 dBm/Hz

Peak Power (CH Mid)

* Agilent

R T

**Channel Power**

15.19 dBm /20.0000 MHz

Power Spectral Density

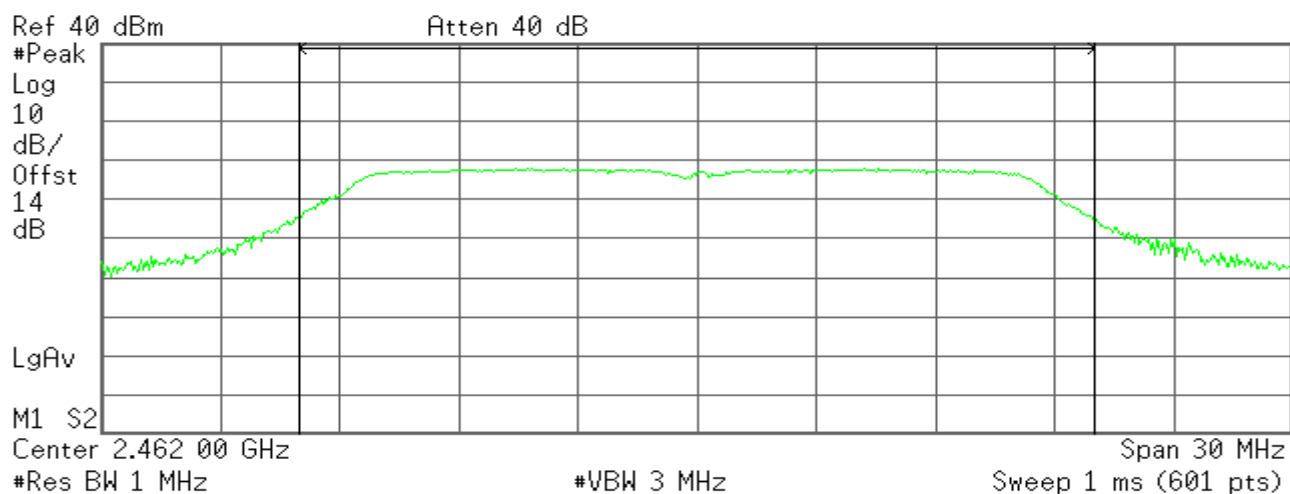
-57.82 dBm/Hz



Peak Power (CH High)

Agilent

R T



Channel Power

15.19 dBm /20.0000 MHz

Power Spectral Density

-57.82 dBm/Hz

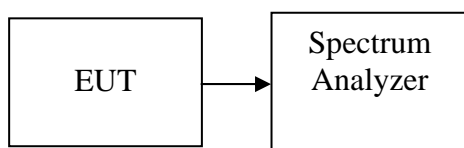


7.3. PEAK POWER SPECTRAL DENSITY

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 | -21.01 | 8.00 | PASS |
| Mid | 2437 | -21.18 | 8.00 | PASS |
| High | 2462 | -21.54 | 8.00 | PASS |

Test mode: IEEE 802.11g mode

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|------------|-------------|--------|
| Low | 2412 | -23.83 | 8.00 | PASS |
| Mid | 2437 | -23.76 | 8.00 | PASS |
| High | 2462 | -24.91 | 8.00 | PASS |

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

| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|------------|-------------|--------|
| Low | 2412 | -22.07 | 8.00 | PASS |
| Mid | 2437 | -23.30 | 8.00 | PASS |
| High | 2462 | -22.16 | 8.00 | PASS |



Test Plot

IEEE 802.11b mode

PPSD (CH Low)

Agilent

R T

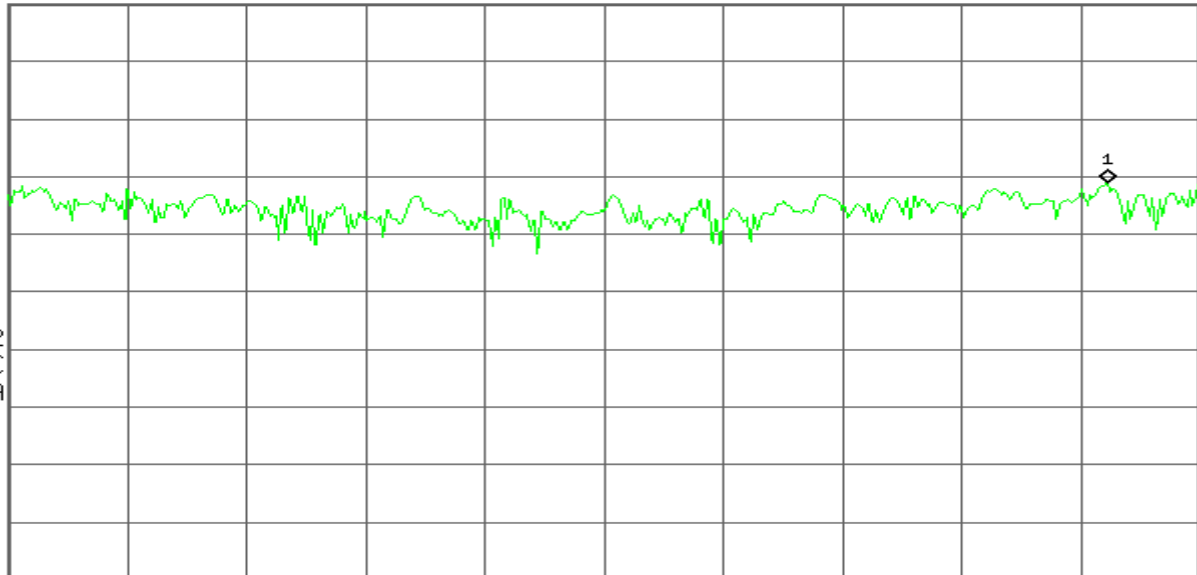
Mkr1 2.412 127 1 GHz
-21.01 dBm

Ref 10 dBm

Atten 10 dB

Peak
Log
10
dB/
Offst
14
dB

LgAv

M1 S2
S3 FC
AAE(f):
f>50k
Swp

Center 2.412 000 0 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 300 kHz

#Sweep 100 s (601 pts)

PPSD (CH Mid)

Agilent

R T

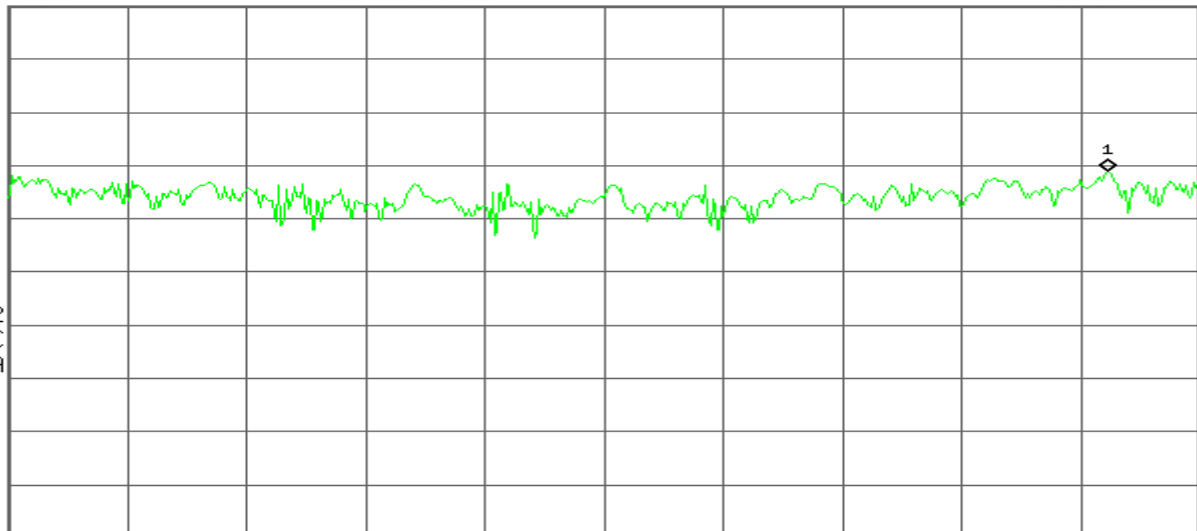
Mkr1 2.437 127 1 GHz
-21.18 dBm

Ref 10 dBm

Atten 10 dB

Peak
Log
10
dB/
Offst
14
dB

LgAv

M1 S2
S3 FC
AAE(f):
f>50k
Swp

Center 2.437 000 0 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 300 kHz

#Sweep 100 s (601 pts)



PPSD (CH High)

* Agilent

R T

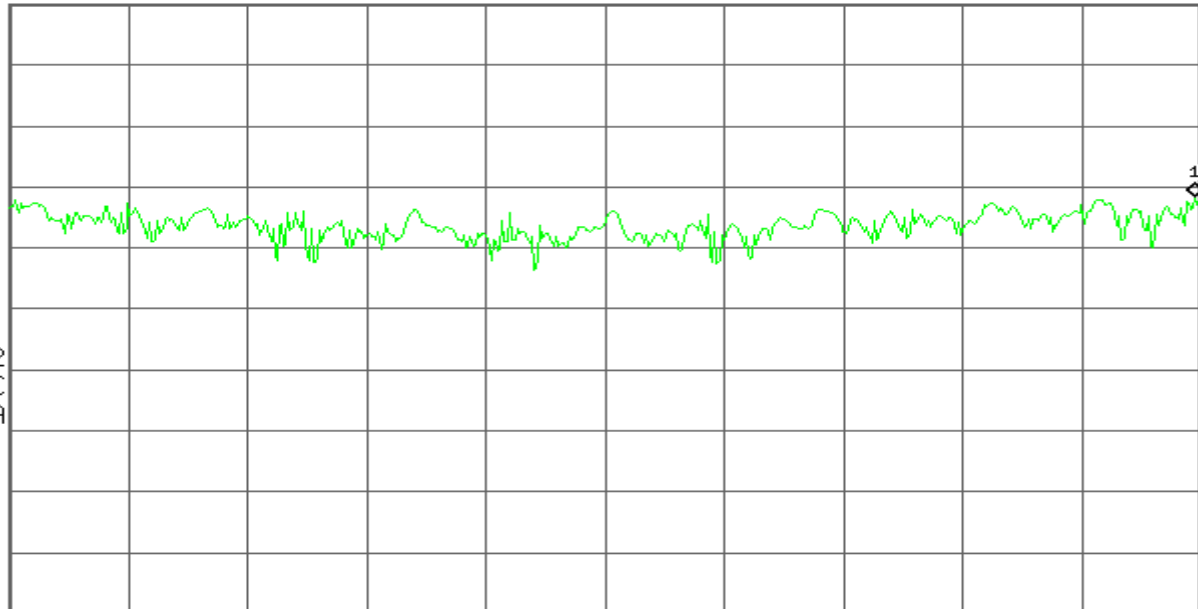
Mkr1 2.462 149 7 GHz
-21.54 dBm

Ref 10 dBm

Atten 10 dB

Peak
Log
10
dB/
Offst
14
dB

LgAv

M1 S2
S3 FC
AAE(f):
f>50k
Swp

Center 2.462 000 0 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 300 kHz

#Sweep 100 s (601 pts)

IEEE 802.11g mode

PPSD (CH Low)

* Agilent

R T

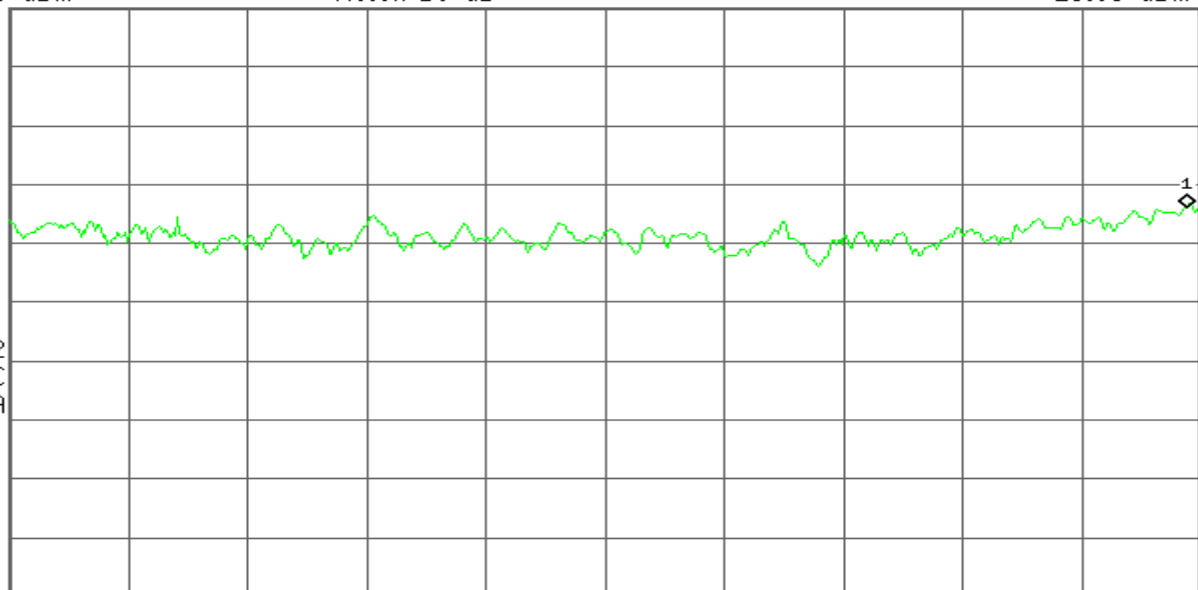
Mkr1 2.412 146 5 GHz
-23.83 dBm

Ref 10 dBm

Atten 10 dB

Peak
Log
10
dB/
Offst
14
dB

LgAv

M1 S2
S3 FC
AAE(f):
f>50k
Swp

Center 2.412 000 0 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 300 kHz

#Sweep 100 s (601 pts)



PPSD (CH Mid)

Agilent

R T

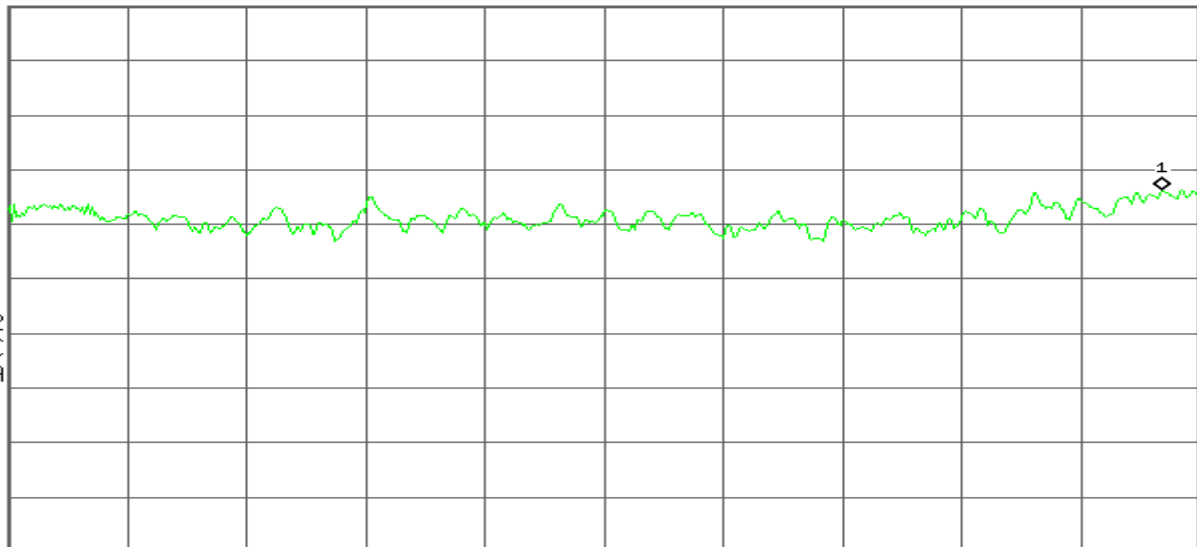
Mkr1 2.437 140 5 GHz
-23.76 dBm

Ref 10 dBm

Atten 10 dB

Peak
Log
10
dB/
Offst
14
dB

LgAv

M1 S2
S3 FC
AAE(f):
f>50k
Swp

Center 2.437 000 0 GHz

#Res BW 3 kHz

#VBW 10 kHz

Span 300 kHz
#Sweep 100 s (601 pts)

PPSD (CH High)

Agilent

R T

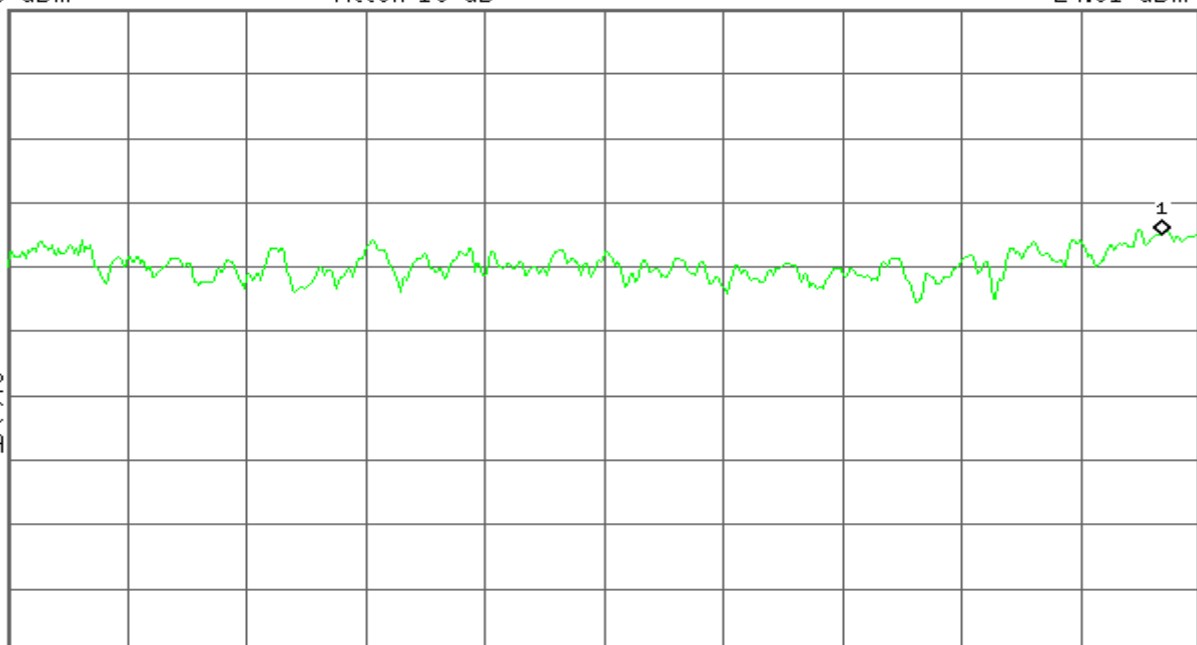
Mkr1 2.462 141 6 GHz
-24.91 dBm

Ref 10 dBm

Atten 10 dB

Peak
Log
10
dB/
Offst
14
dB

LgAv

M1 S2
S3 FC
AAE(f):
f>50k
Swp

Start 2.461^850 0 GHz

#Res BW 3 kHz

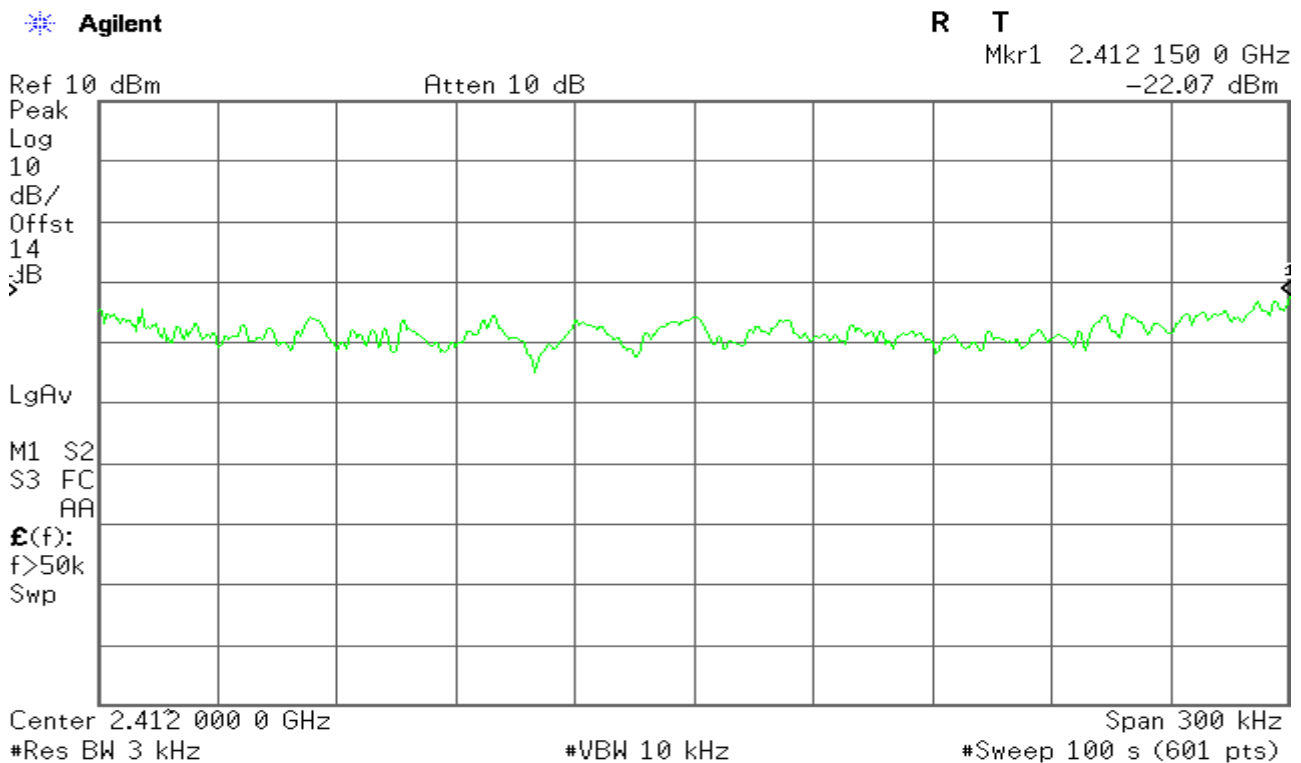
#VBW 10 kHz

Stop 2.462 150 0 GHz
#Sweep 100 s (601 pts)

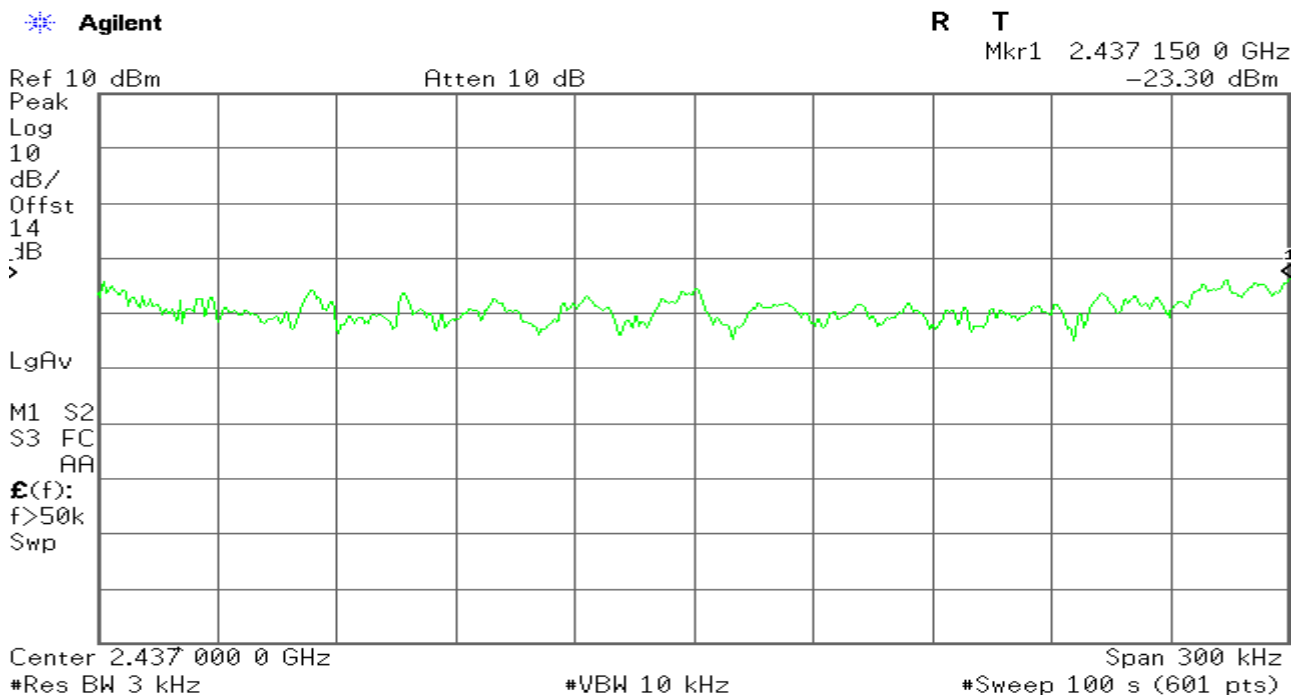


draft 802.11gn Standard-20 MHz Channel mode

PPSD (CH Low)



PPSD (CH Mid)





PPSD (CH High)

Agilent

R T

Mkr1 2.462 151 2 GHz
-22.16 dBm

Ref 10 dBm

Atten 10 dB

Peak
Log
10
dB/
Offst
14
dB

LgAv

M1 S2
S3 FC
AA

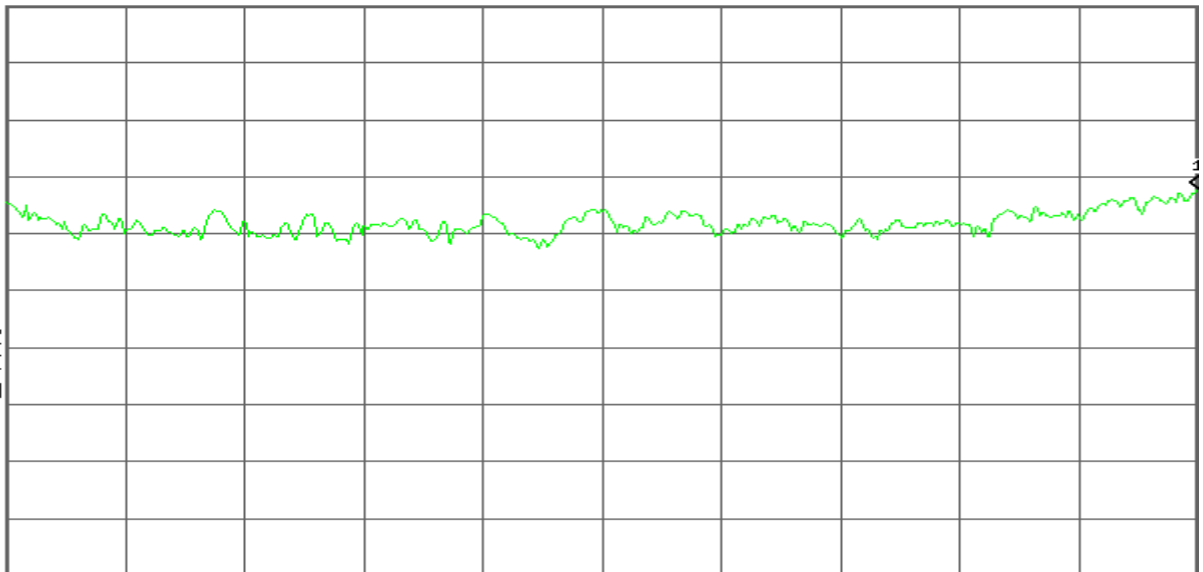
E(f):
f>50k
Swp

Center 2.462 000 0 GHz

*Res BW 3 kHz

*VBW 10 kHz

Span 300 kHz
*Sweep 100 s (601 pts)



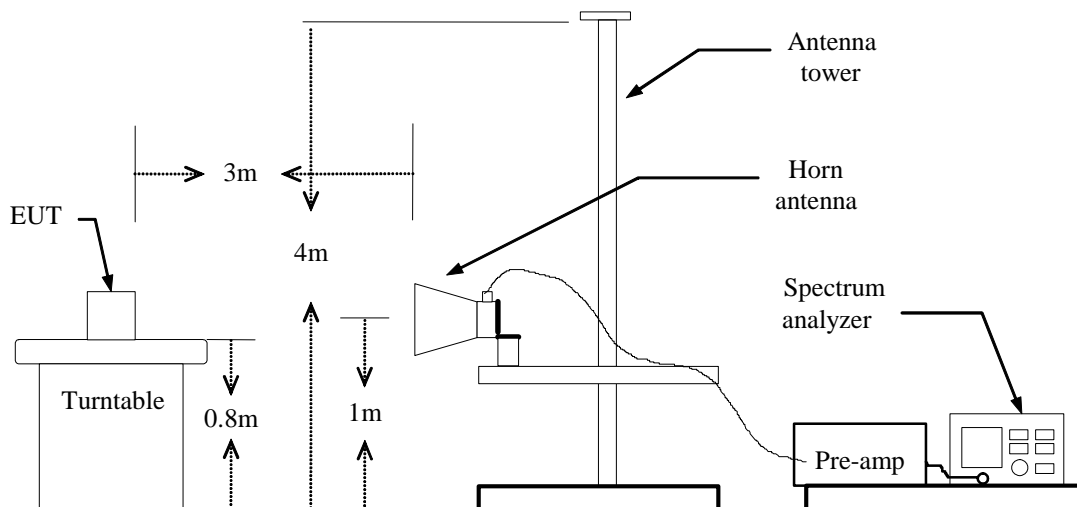


7.4. BAND EDGES MEASUREMENT

LIMIT

According to §15.247(c), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. 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).

Test Configuration



TEST PROCEDURE

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

TEST RESULT



RESTRICTED BANDEDGE (b Mode, Low Channel, Horizontal)

PEAK

* Agilent

R T

Mkr1 2.390 00 GHz
57.04 dB μ VRef 117 dB μ V

Atten 10 dB

Peak

Log

10

dB/

Offst

10

dB

DI

74.0

dB μ V

LgAv

M1 S2

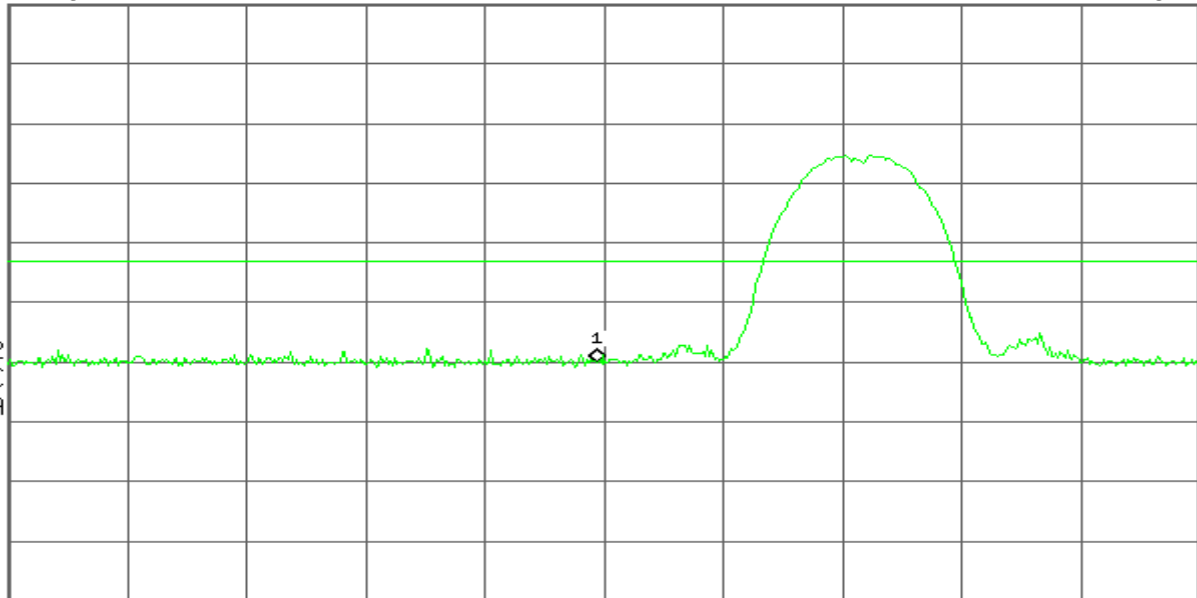
S3 FC

AA

E(f):

FTun

Swp



Center 2.390 67 GHz

#Res BW 1 MHz

#VBW 1 MHz

Span 100 MHz

Sweep 1 ms (601 pts)

AVG

* Agilent

R T

Mkr1 2.390 00 GHz
47.15 dB μ VRef 117 dB μ V

Atten 10 dB

#Avg

Log

10

dB/

Offst

10

dB

DI

54.0

dB μ V

PAvg

M1 S2

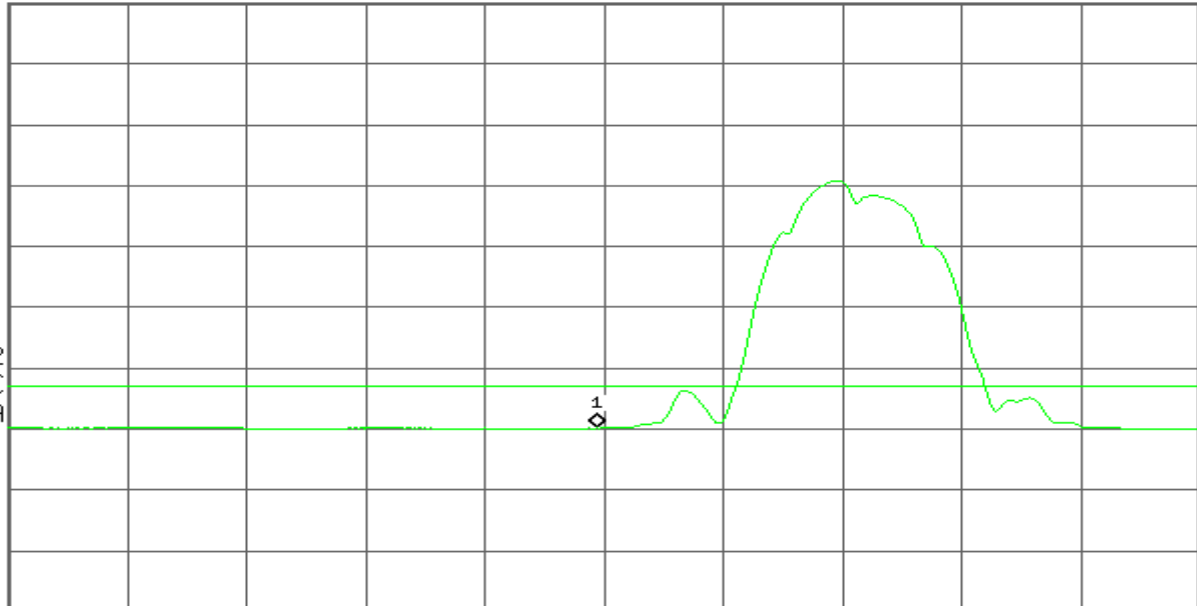
S3 FC

AA

E(f):

FTun

Swp



Center 2.390 67 GHz

#Res BW 1 MHz

#VBW 10 Hz

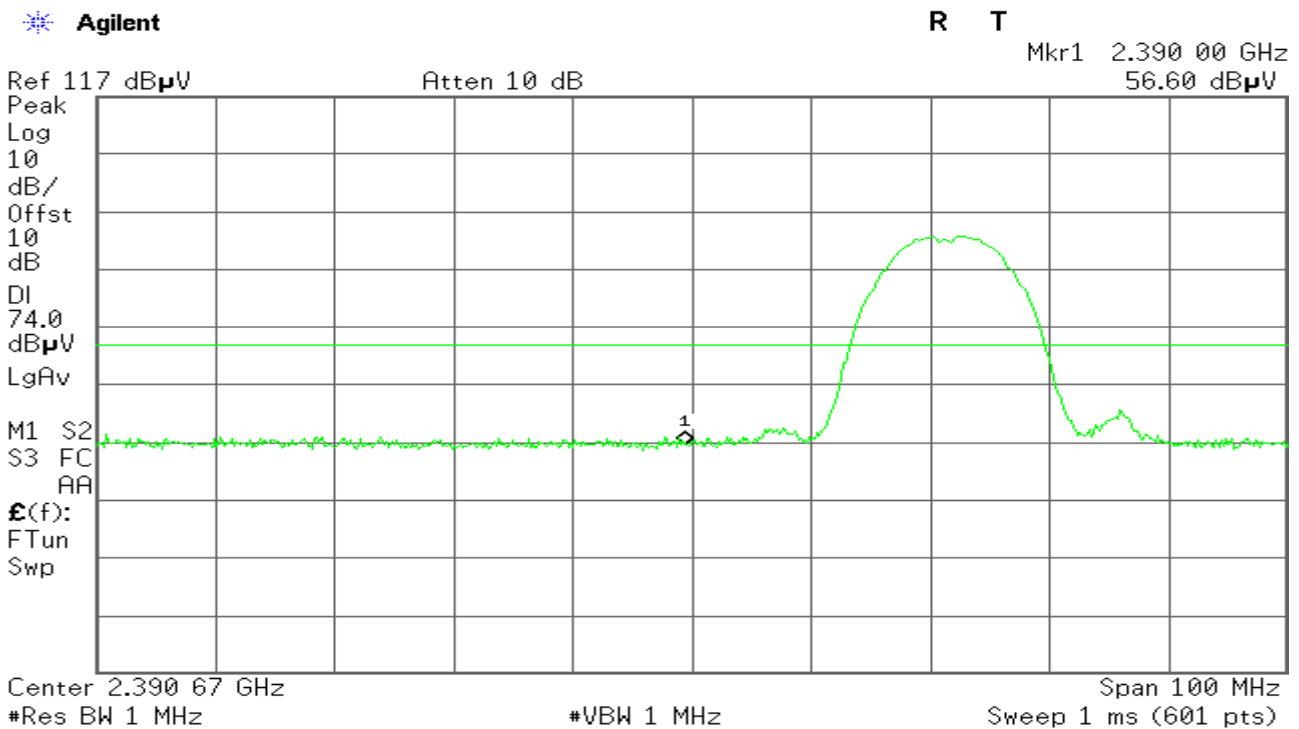
Span 100 MHz

Sweep 24.66 s (601 pts)

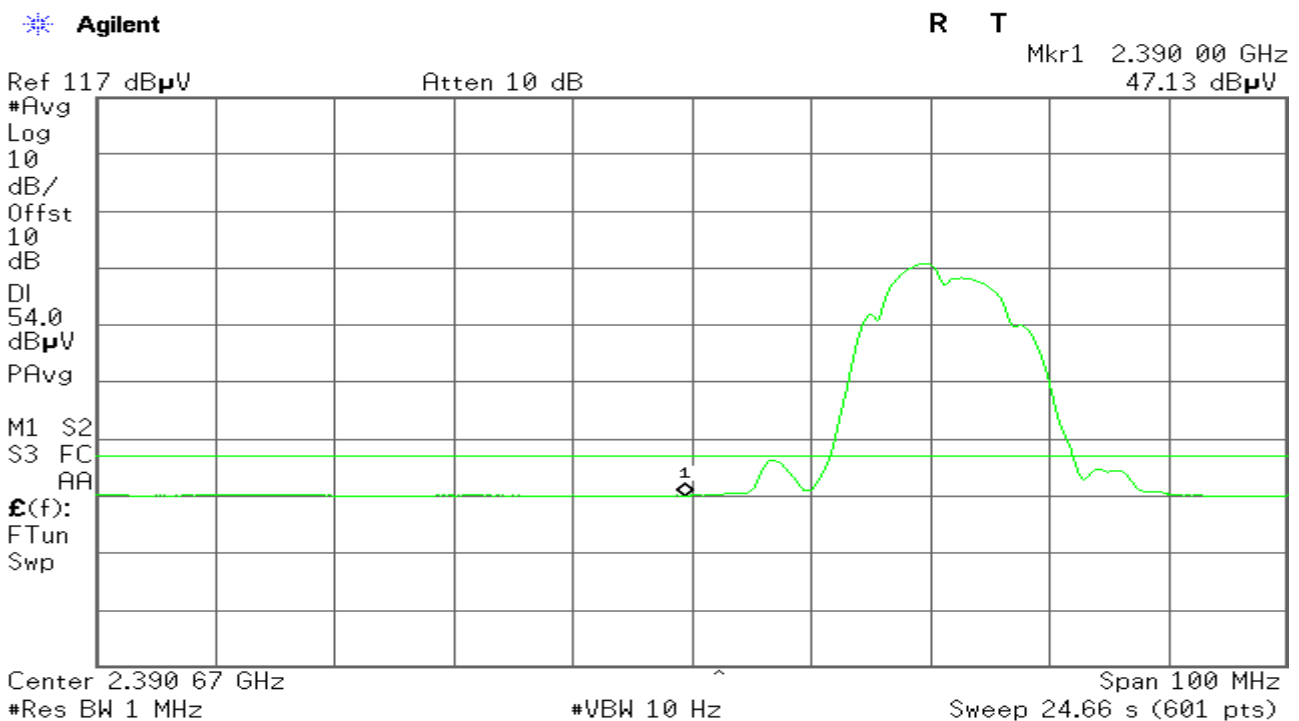


RESTRICTED BANDEDGE (b Mode, Low Channel, Vertical)

PEAK



AVG





RESTRICTED BANDEDGE (b Mode, High Channel, Horizontal)

PEAK

Agilent

R T

Mkr1 2.483 50 GHz
55.87 dB μ V

Ref 117 dB μ V

Atten 10 dB

#Peak

Log

10

dB/

Offst

10

dB

DI

74.0

dB μ V

LgAv

M1 S2

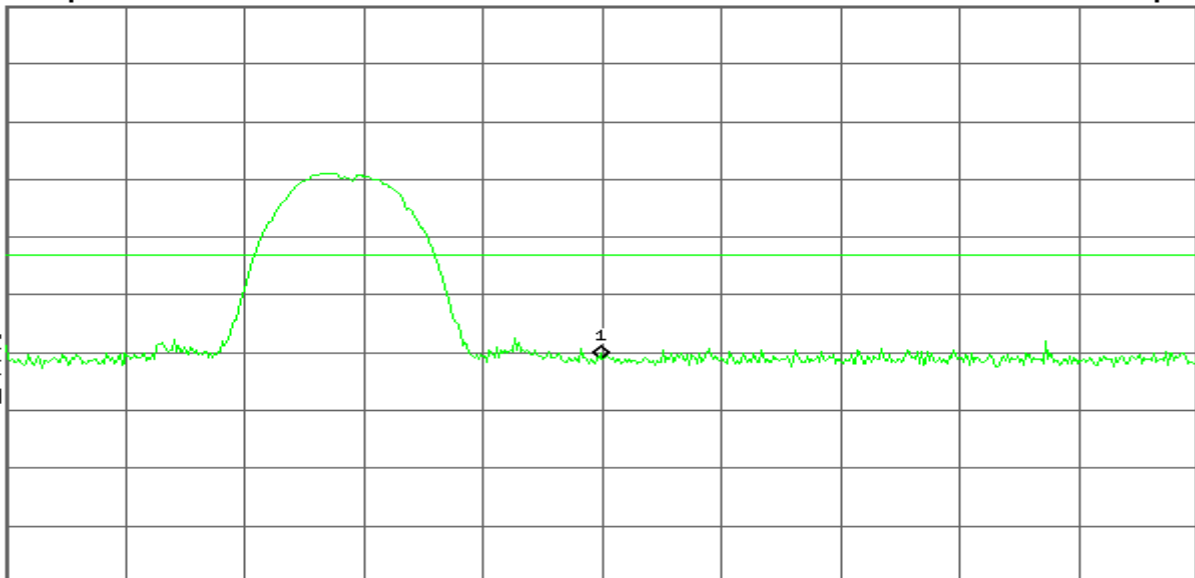
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Center 2.483 50 GHz

#Res BW 1 MHz

#VBW 1 MHz

Span 100 MHz
Sweep 1 ms (601 pts)

AVG

Agilent

R T

Mkr1 2.483 50 GHz
47.08 dB μ V

Ref 117 dB μ V

Atten 10 dB

#Avg

Log

10

dB/

Offst

10

dB

DI

54.0

dB μ V

PAvg

M1 S2

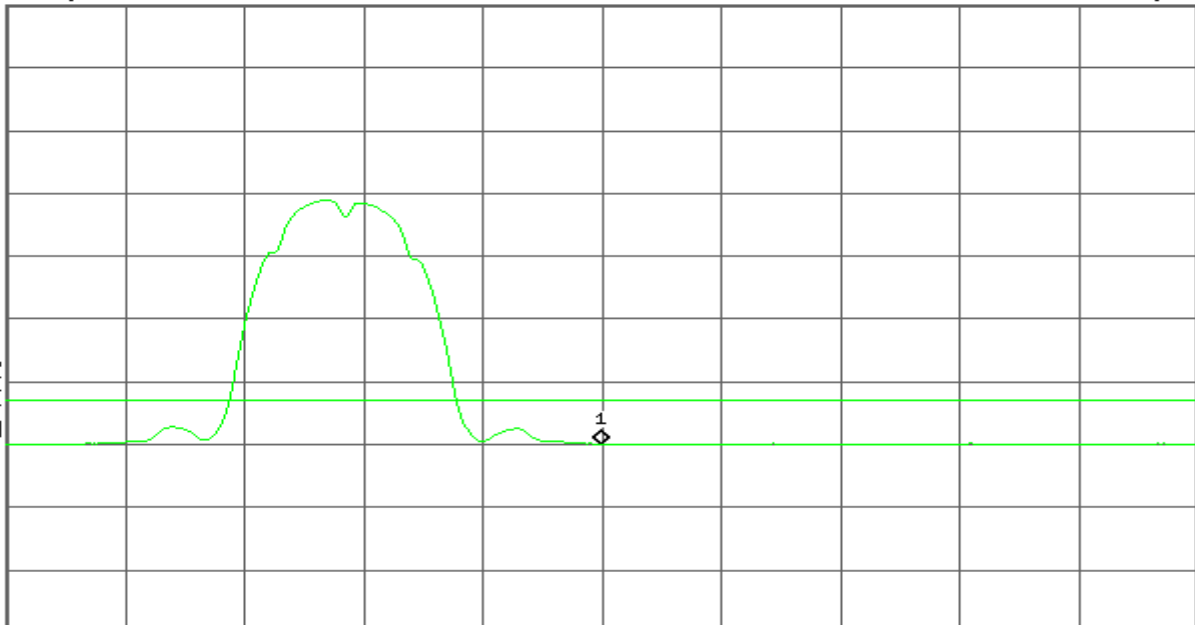
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Center 2.483 50 GHz

#Res BW 1 MHz

#VBW 10 Hz

Span 100 MHz
Sweep 24.66 s (601 pts)



RESTRICTED BANDEDGE (b Mode, High Channel, Vertical)

PEAK

Agilent

R T

Mkr1 2.483 50 GHz
55.97 dB μ VRef 117 dB μ V

Atten 10 dB

#Peak

Log

10

dB/

Offst

10

dB

DI

74.0

dB μ V

LgAv

M1 S2

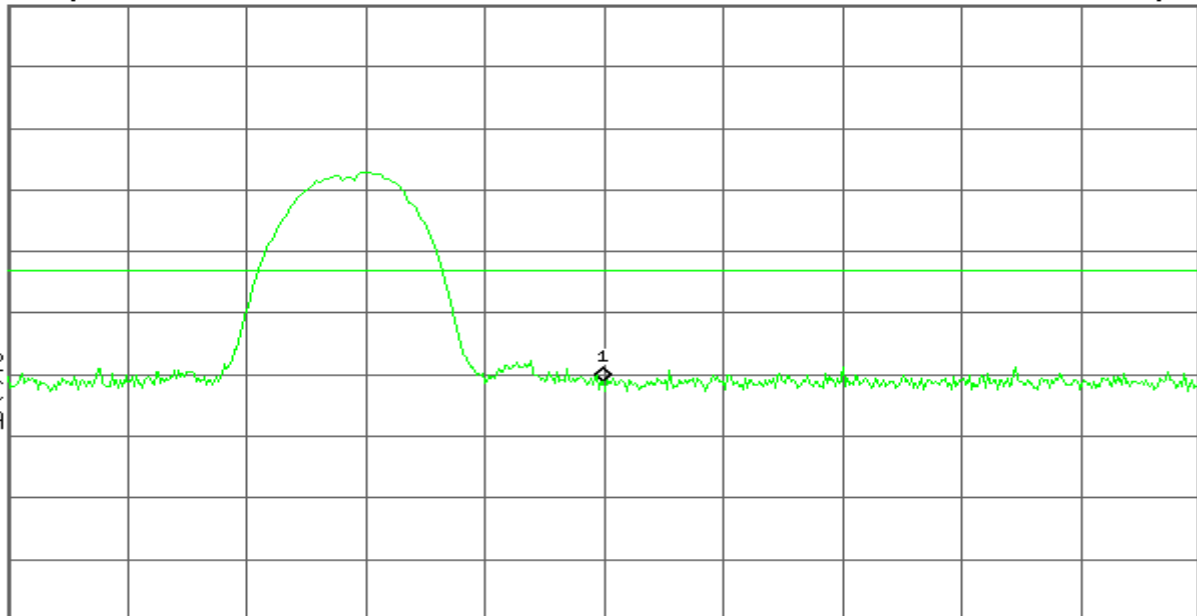
S3 FC

AA

E(f):

FTun

Swp



Center 2.483 50 GHz

#Res BW 1 MHz

#VBW 1 MHz

Span 100 MHz
Sweep 1 ms (601 pts)

AVG

Agilent

R T

Mkr1 2.483 50 GHz
47.14 dB μ VRef 117 dB μ V

Atten 10 dB

#Avg

Log

10

dB/

Offst

10

dB

DI

54.0

dB μ V

PAvg

M1 S2

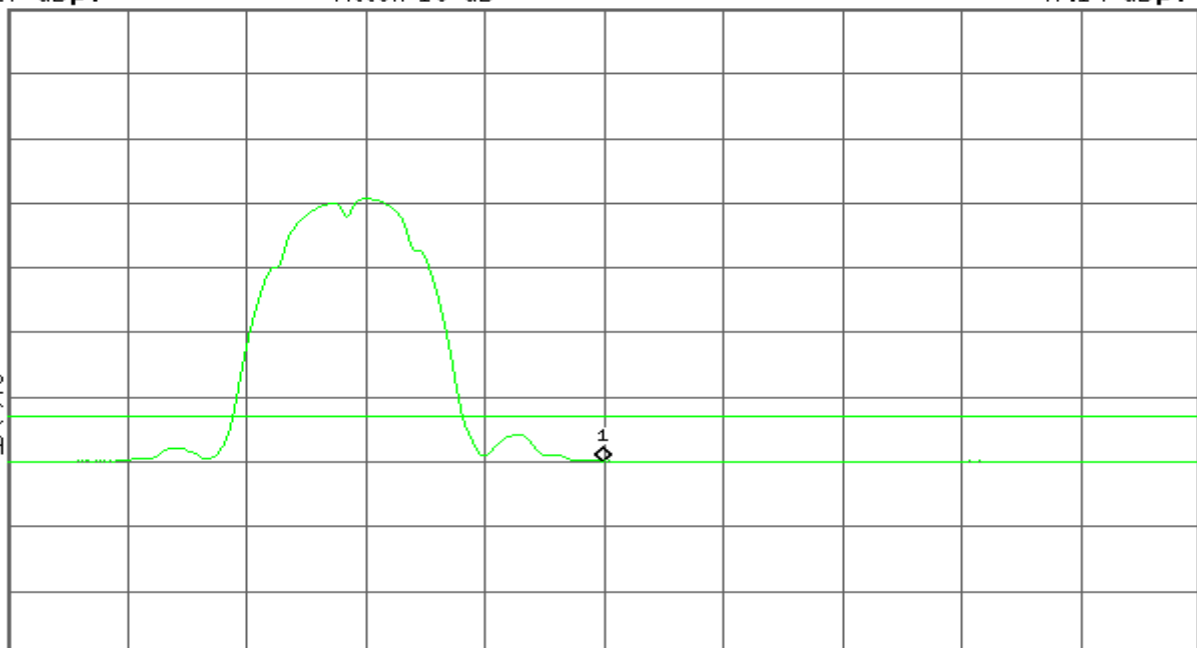
S3 FC

AA

E(f):

FTun

Swp



Center 2.483 50 GHz

#Res BW 1 MHz

#VBW 10 Hz

Span 100 MHz
Sweep 24.66 s (601 pts)



RESTRICTED BANDEDGE (g Mode, Low Channel, Horizontal)

PEAK

Agilent

R T

Mkr1 2.390 00 GHz
56.81 dB μ VRef 117 dB μ V

Atten 10 dB

#Peak

Log

10

dB/

Offst

10

dB

DI

74.0

dB μ V

LgAv

M1 S2

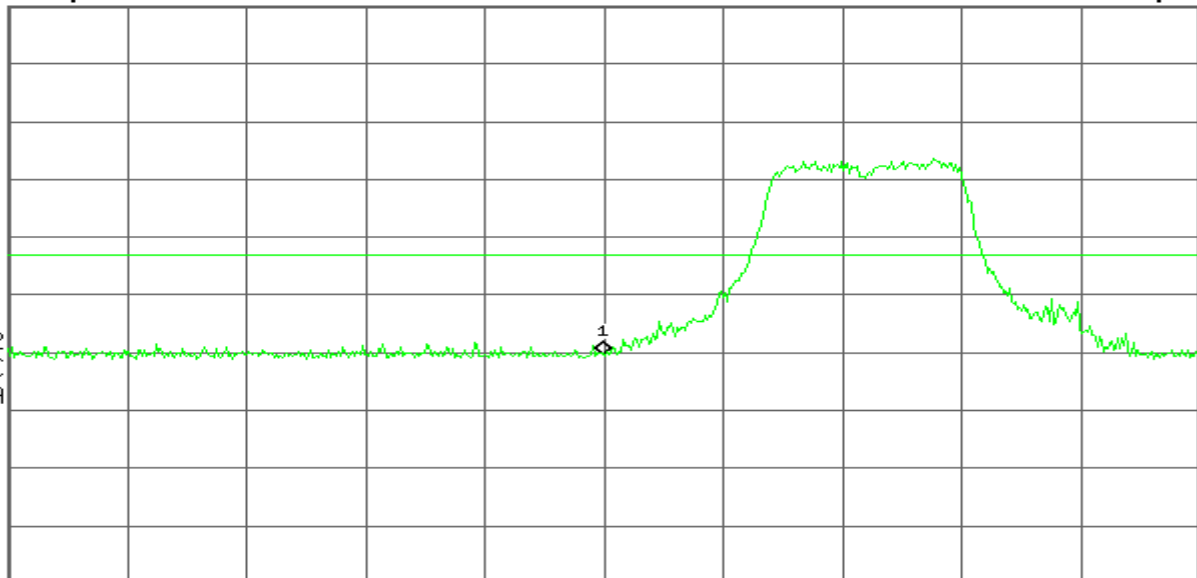
S3 FC

AA

E(f):

FTun

Swp



Center 2.390 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Span 100 MHz
Sweep 1 ms (601 pts)

AVG

Agilent

R T

Mkr1 2.390 00 GHz
47.53 dB μ VRef 117 dB μ V

Atten 10 dB

#Avg

Log

10

dB/

Offst

10

dB

DI

54.0

dB μ V

PAvg

M1 S2

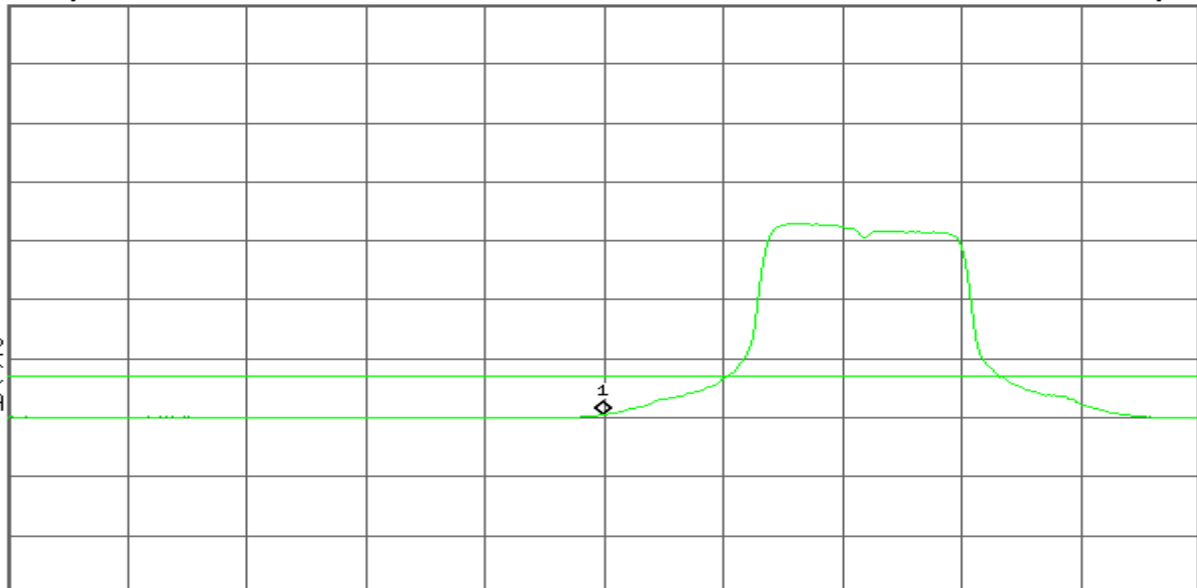
S3 FC

AA

E(f):

FTun

Swp



Center 2.390 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Span 100 MHz
Sweep 24.66 s (601 pts)



RESTRICTED BANDEDGE (g Mode, Low Channel, Vertical)

PEAK

Agilent

R T

Mkr1 2.390 00 GHz
57.07 dB μ VRef 117 dB μ V

Atten 10 dB

#Peak

Log

10

dB/

Offst

10

dB

DI

74.0

dB μ V

LgAv

M1 S2

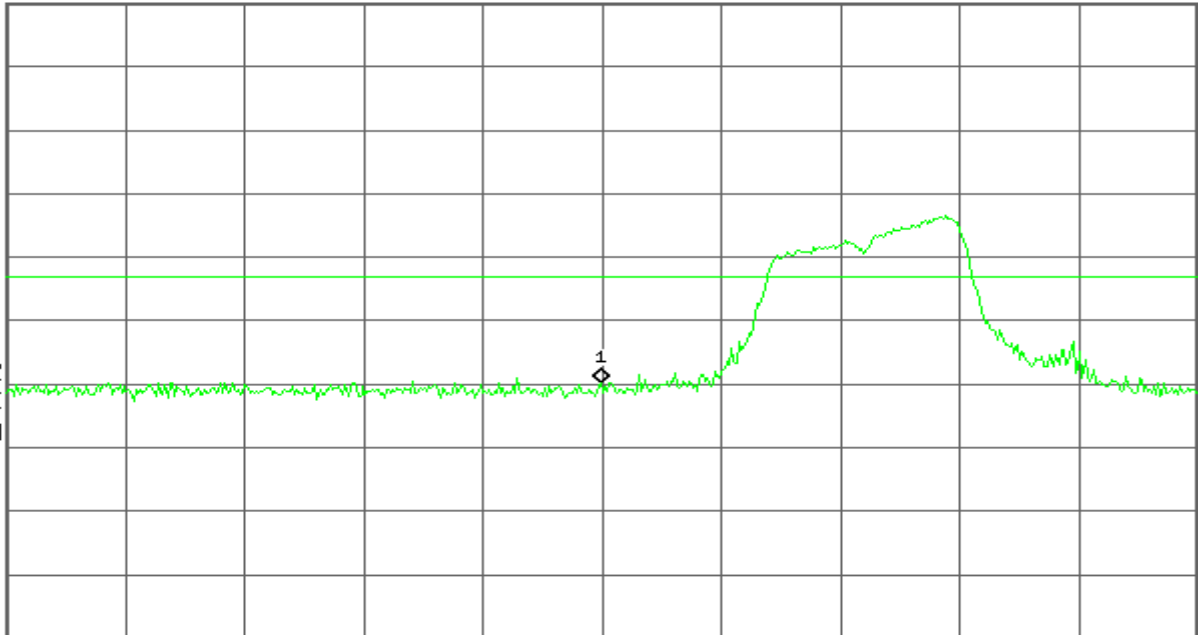
S3 FC

AA

E(f):

FTun

Swp



Center 2.390 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Span 100 MHz
Sweep 1 ms (601 pts)

AVG

Agilent

R T

Mkr1 2.390 00 GHz
47.16 dB μ VRef 117 dB μ V

Atten 10 dB

#Avg

Log

10

dB/

Offst

10

dB

DI

54.0

dB μ V

PAvg

M1 S2

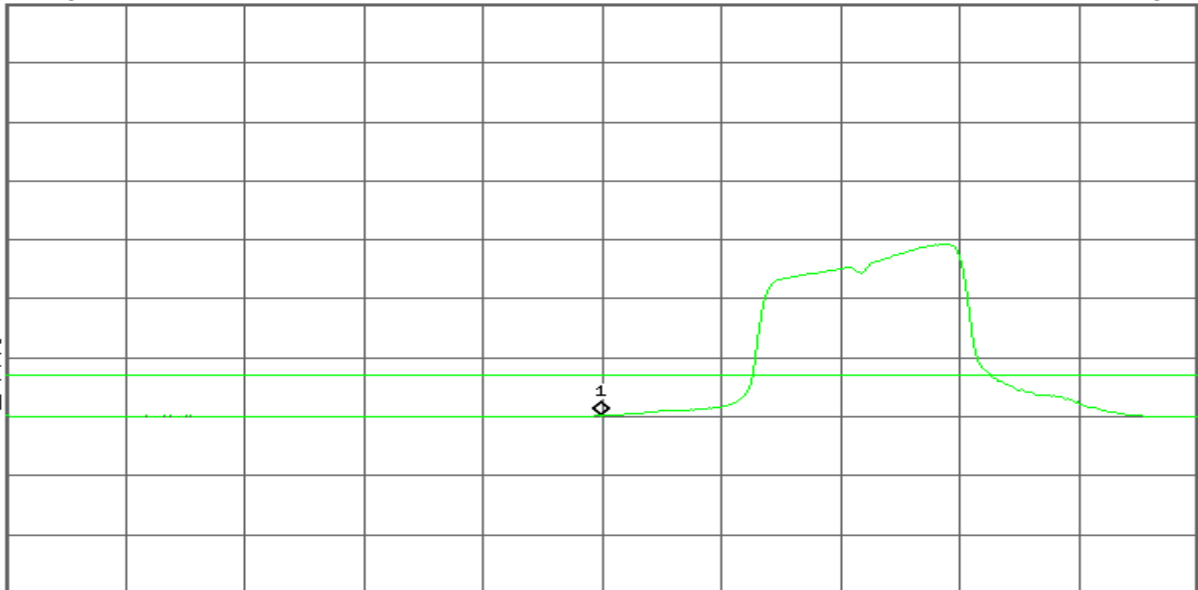
S3 FC

AA

E(f):

FTun

Swp



Center 2.390 00 GHz

#Res BW 1 MHz

#VBW 10 Hz

Span 100 MHz
Sweep 24.66 s (601 pts)



RESTRICTED BANDEDGE (g Mode, High Channel, Horizontal)

PEAK

* Agilent

R T

Mkr1 2.483 50 GHz
55.72 dB μ VRef 117 dB μ V

Atten 10 dB

#Peak

Log

10

dB/

Offst

10

dB

DI

74.0

dB μ V

LgAv

M1 S2

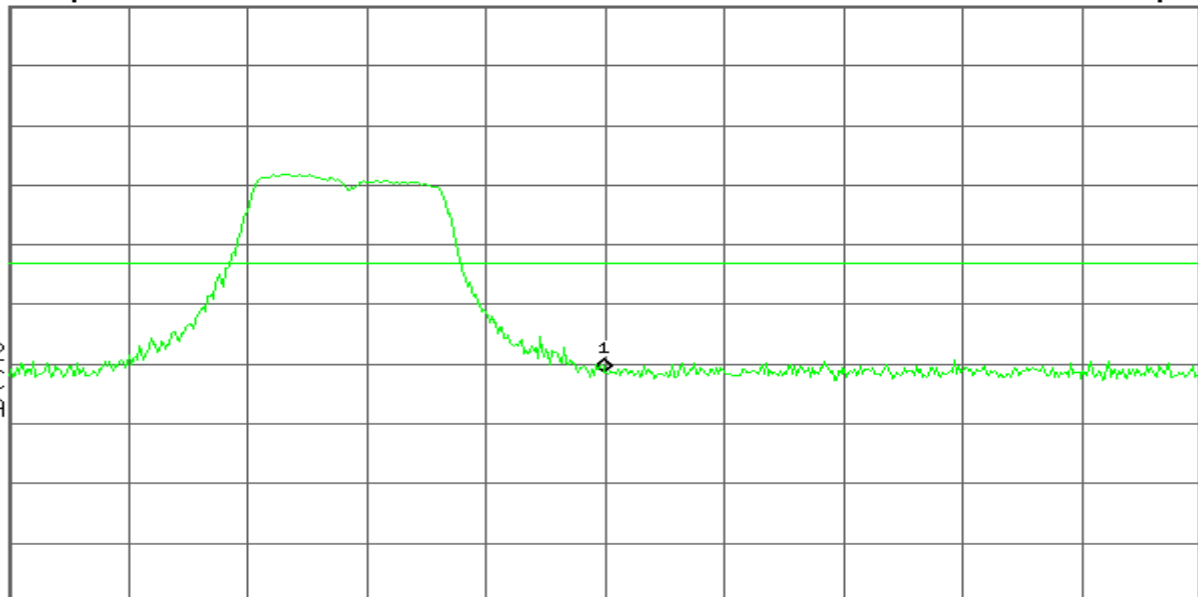
S3 FC

AA

E(f):

FTun

Swp



Center 2.483 50 GHz

#Res BW 1 MHz

#VBW 1 MHz

Span 100 MHz

Sweep 1 ms (601 pts)

AVG

* Agilent

R T

Mkr1 2.483 50 GHz
47.32 dB μ VRef 117 dB μ V

Atten 10 dB

#Avg

Log

10

dB/

Offst

10

dB

DI

54.0

dB μ V

PAvg

M1 S2

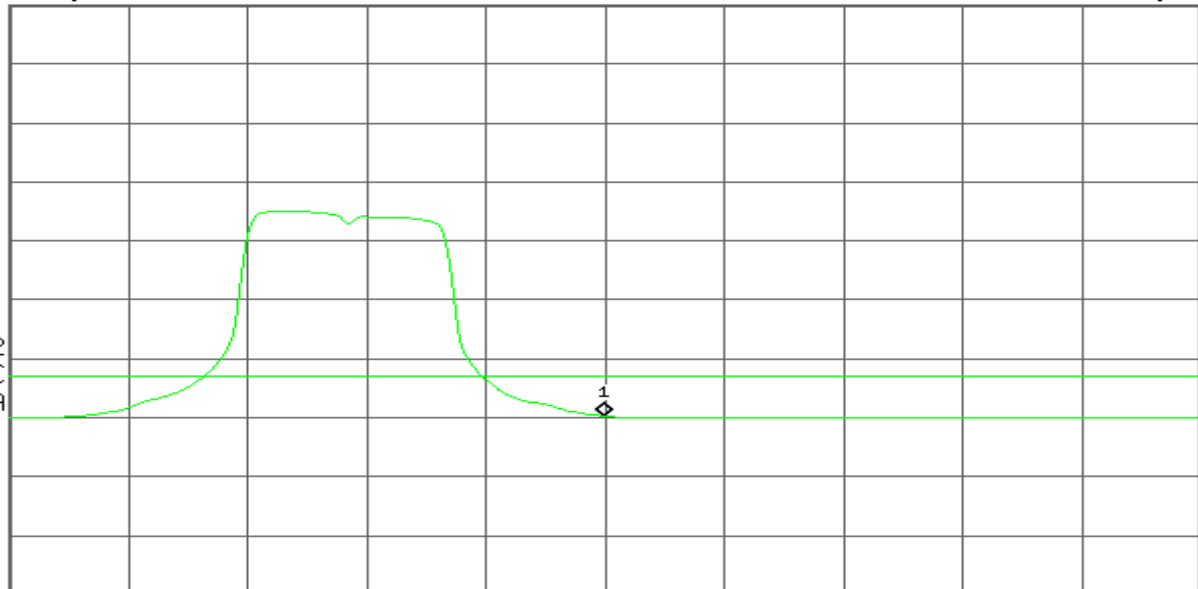
S3 FC

AA

E(f):

FTun

Swp



Center 2.483 50 GHz

#Res BW 1 MHz

#VBW 10 Hz

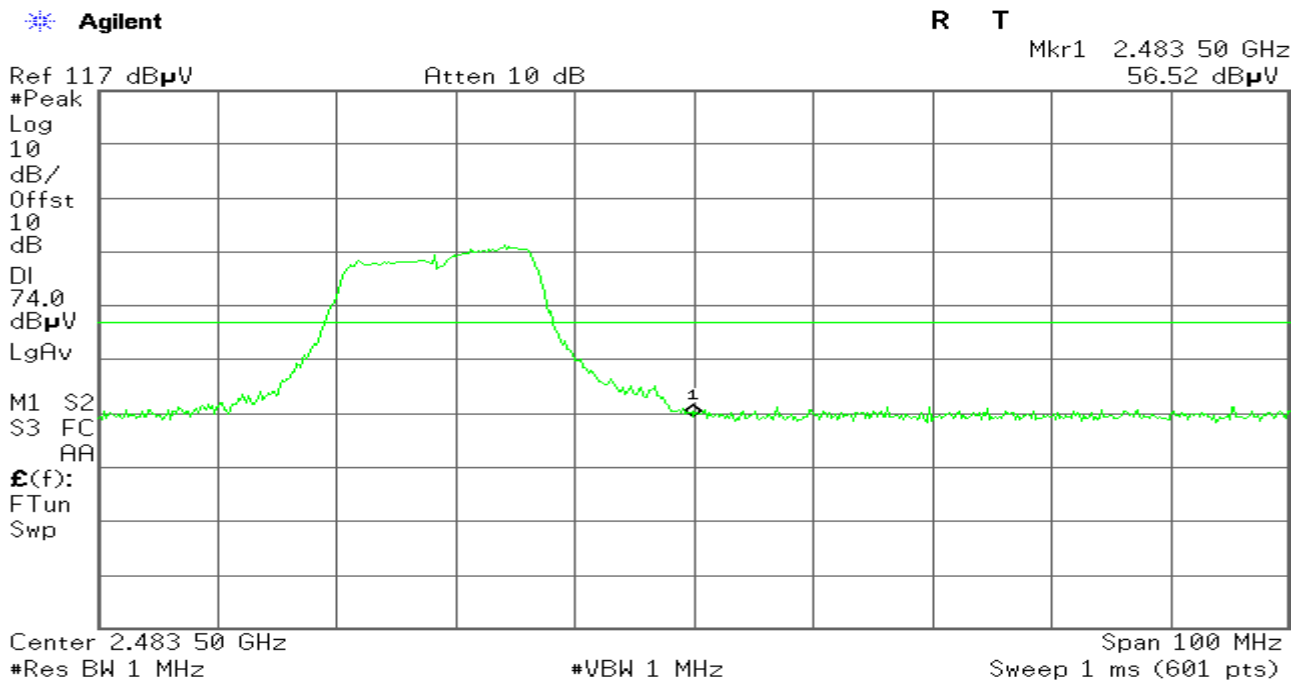
Span 100 MHz

Sweep 24.66 s (601 pts)

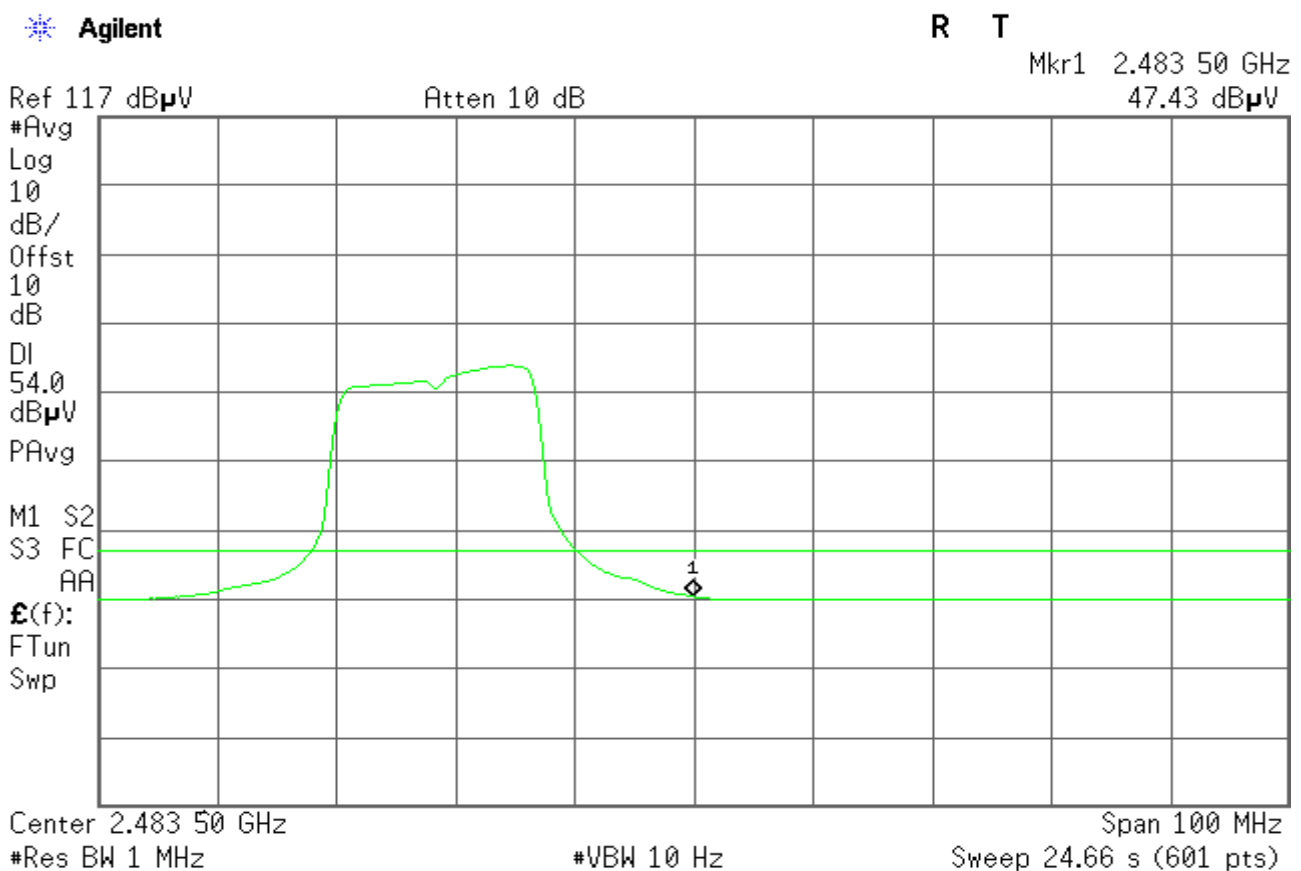


RESTRICTED BANDEDGE (g Mode, High Channel, Vertical)

PEAK



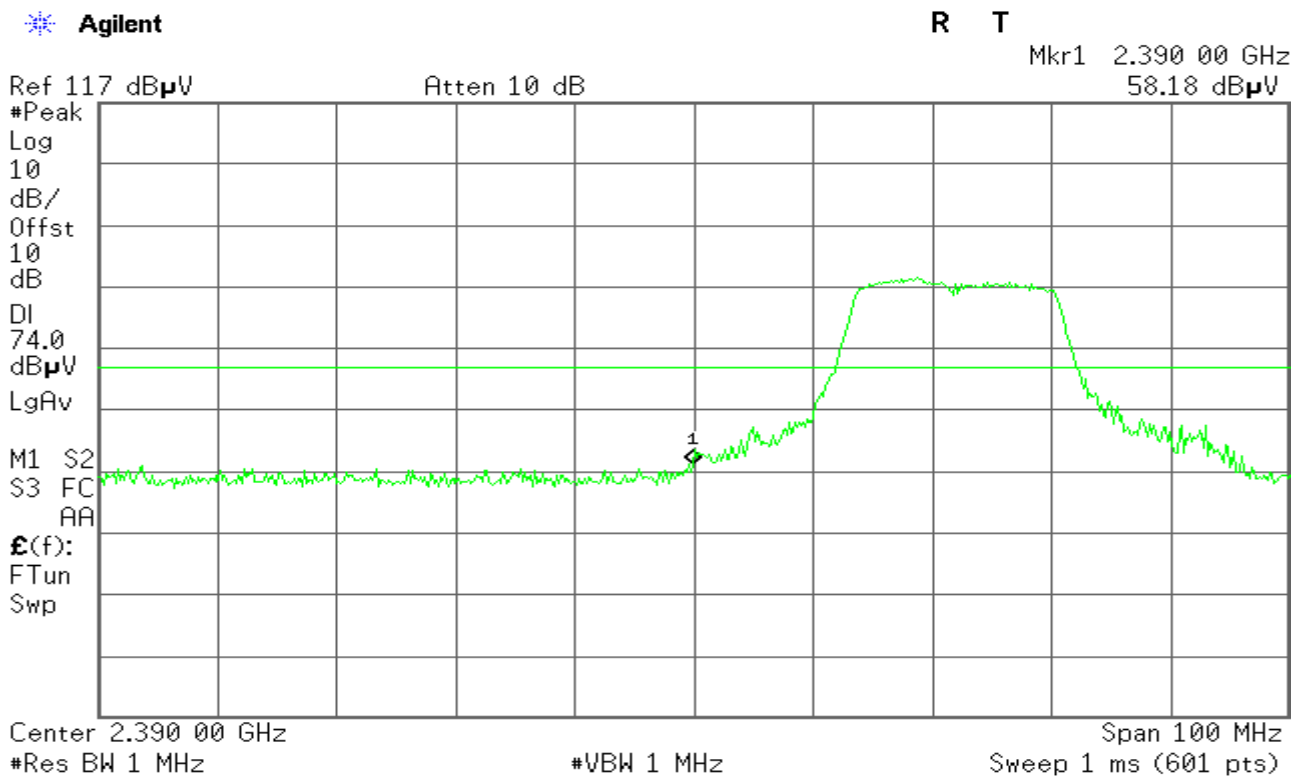
AVG



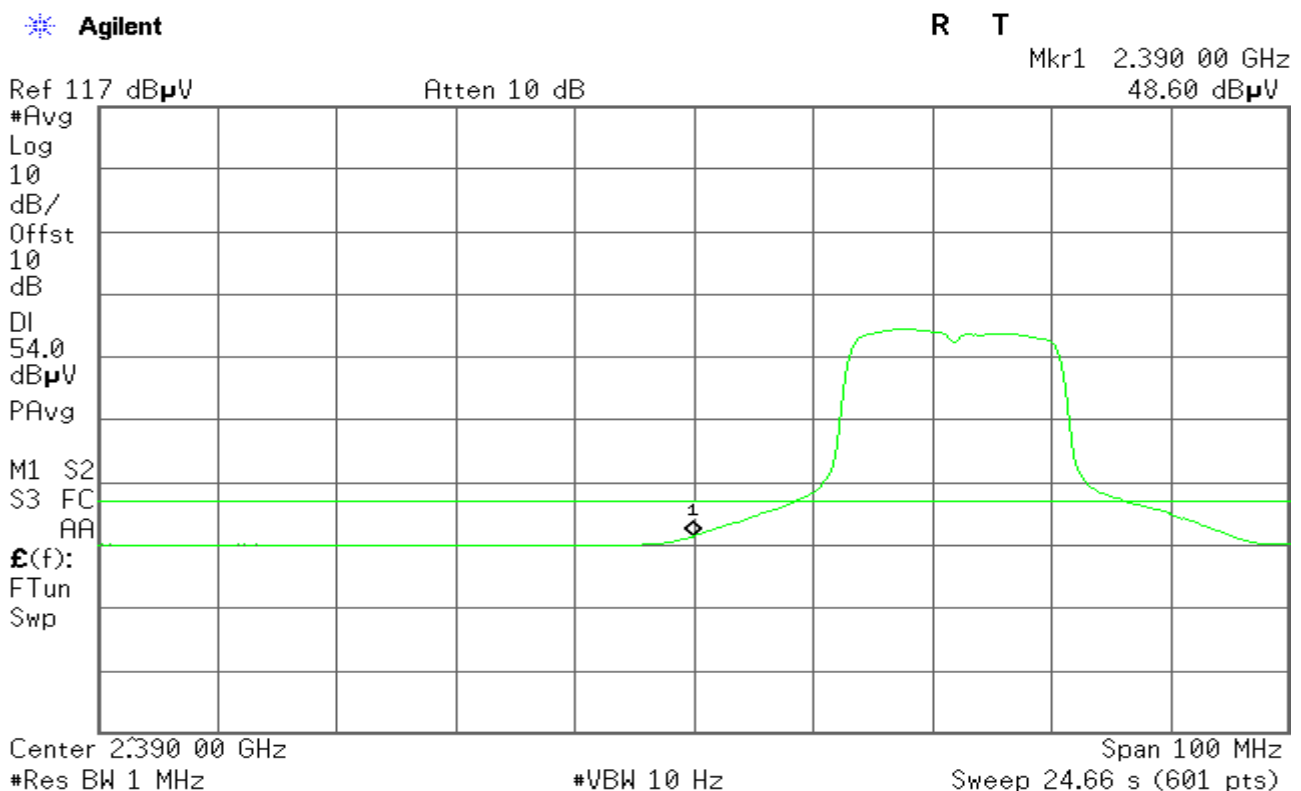


RESTRICTED BANDEDGE (draft 802.11gn Standard-20 MHz Channel mode, Low Channel, Horizontal)

PEAK



AVG





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

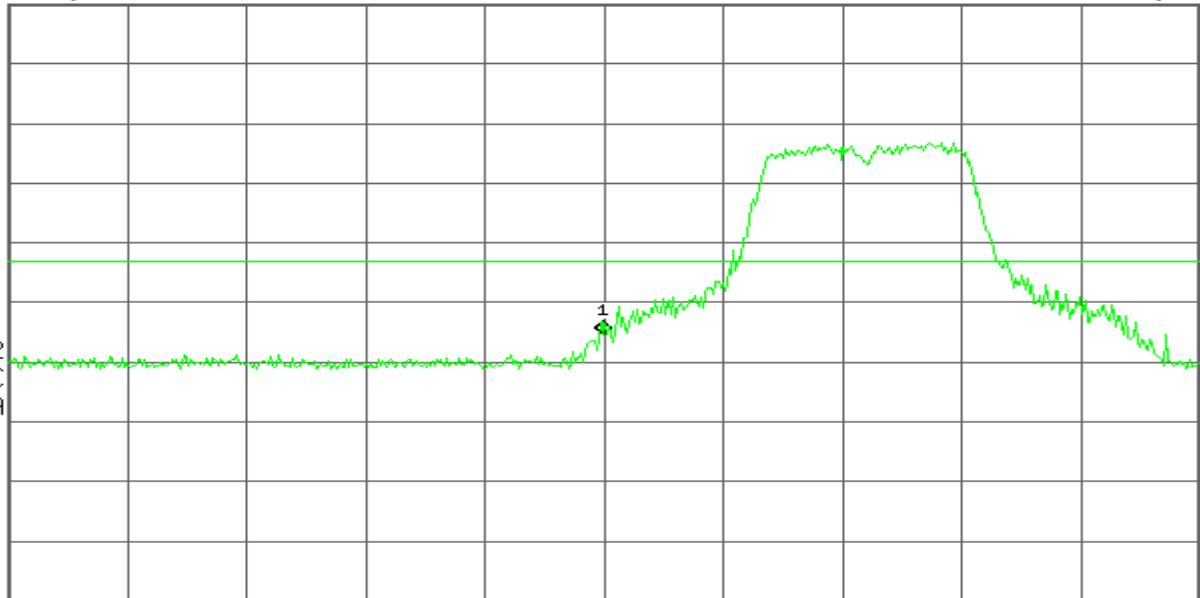
PEAK

Agilent

R T

Mkr1 2.390 00 GHz
61.65 dB μ VRef 117 dB μ V

Atten 10 dB

#Peak
Log
10
dB/
Offst
10
dB
DI
74.0
dB μ V
LgAv
M1 S2
S3 FC
AA
E(f):
FTun
Swp

Center 2.390 00 GHz

#Res BW 1 MHz

#VBW 1 MHz

Span 100 MHz
Sweep 1 ms (601 pts)

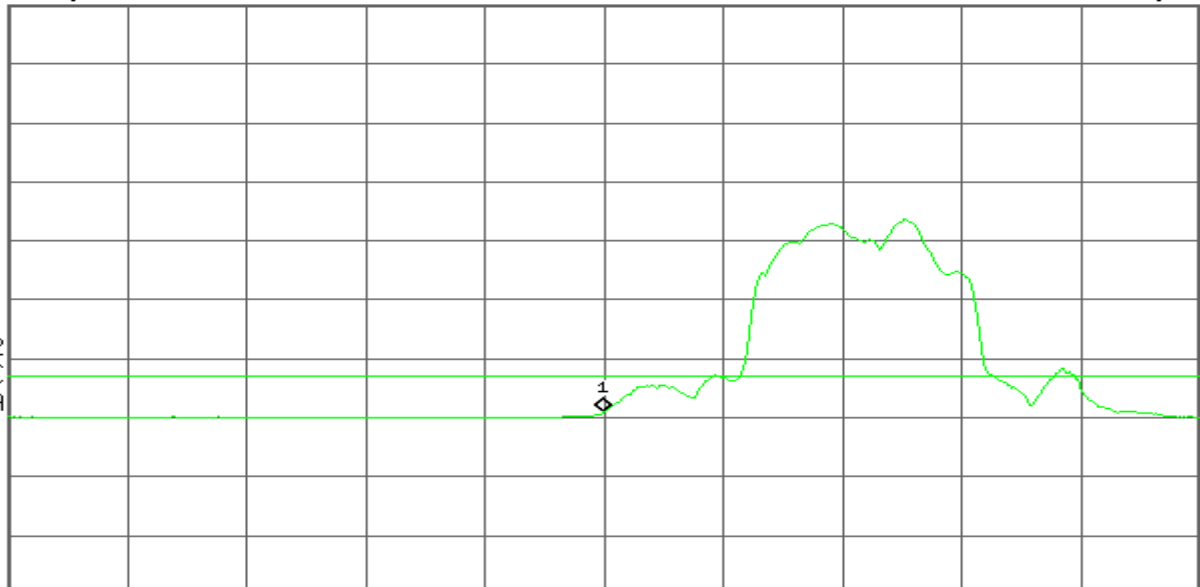
AVG

Agilent

R T

Mkr1 2.390 00 GHz
47.97 dB μ VRef 117 dB μ V

Atten 10 dB

#Avg
Log
10
dB/
Offst
10
dB
DI
54.0
dB μ V
PAvg
M1 S2
S3 FC
AA
E(f):
FTun
Swp

Center 2.390 00 GHz

#Res BW 1 MHz

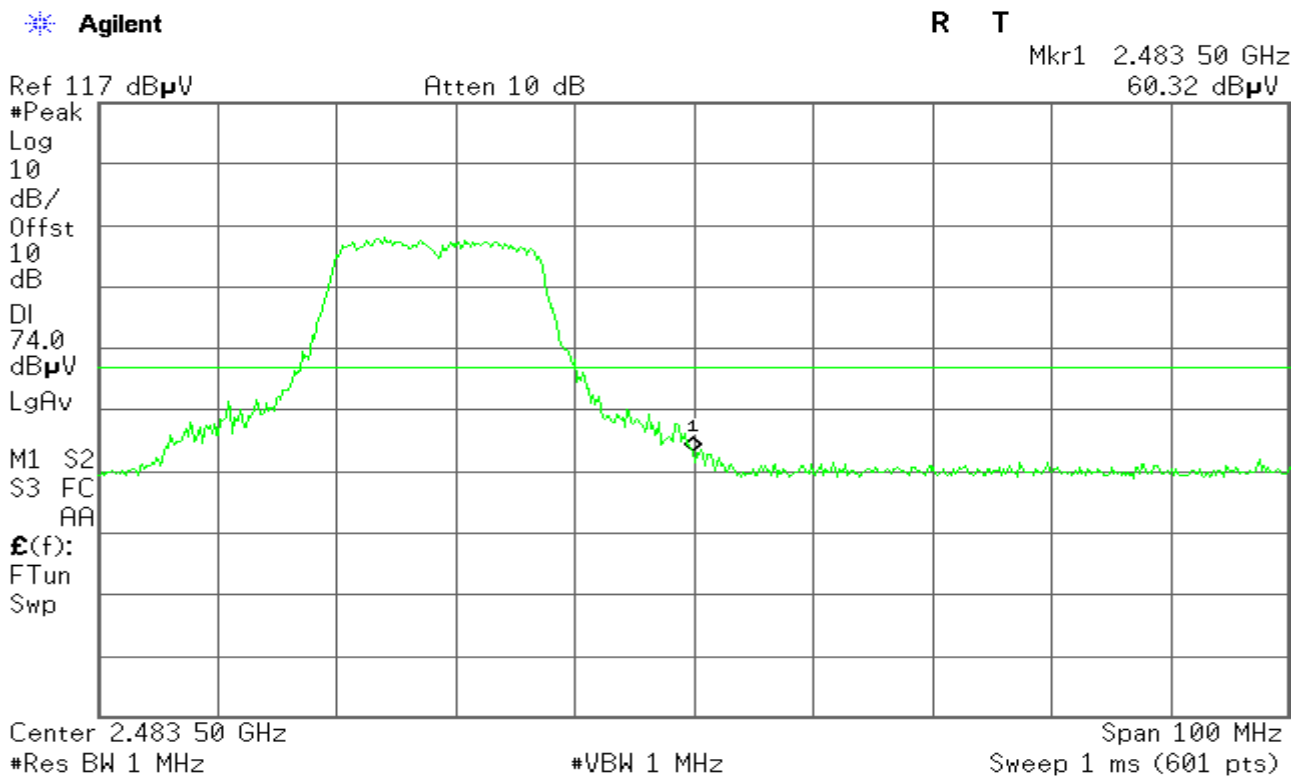
#VBW 10 Hz

Span 100 MHz
Sweep 24.66 s (601 pts)

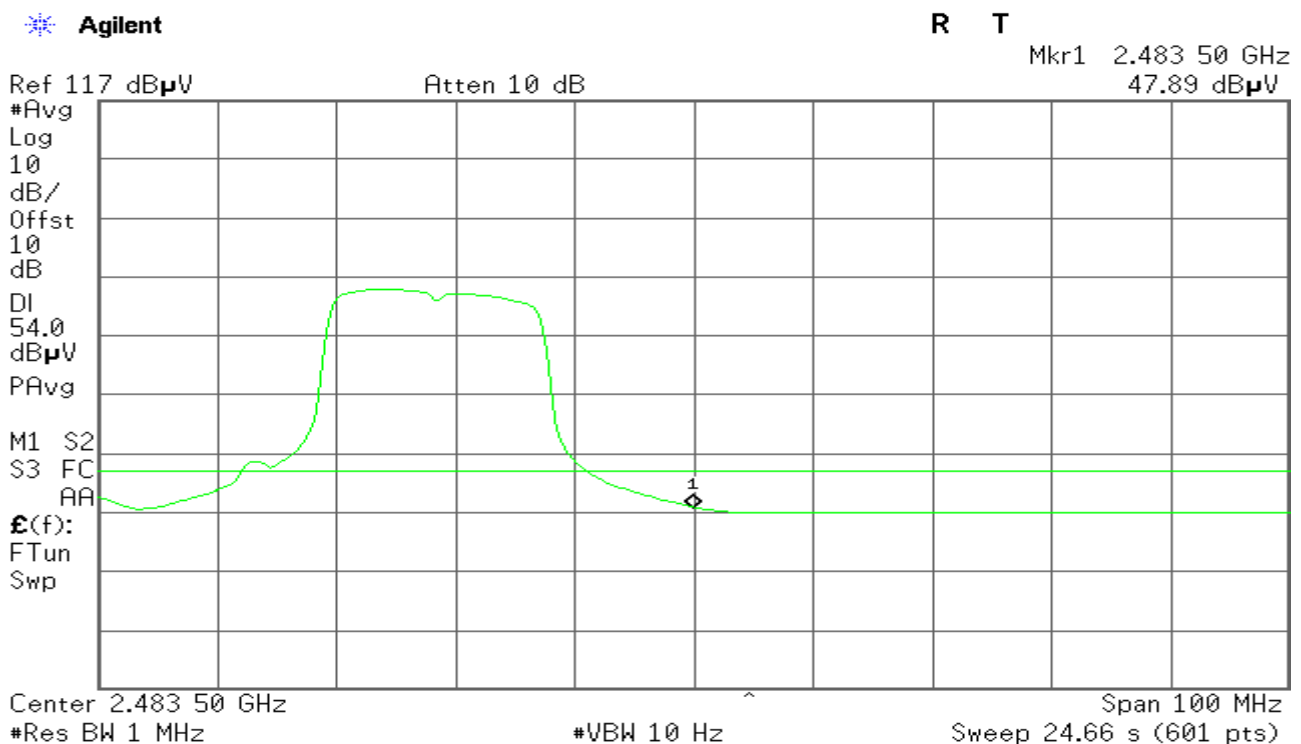


RESTRICTED BANDEDGE (draft 802.11gn Standard-20 MHz Channel mode, High Channel, Horizontal)

PEAK



AVG





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

PEAK

* Agilent

R T

Mkr1 2.483 50 GHz
60.32 dB μ VRef 117 dB μ V

Atten 10 dB

#Peak

Log

10

dB/

Offst

10

dB

DI

74.0

dB μ V

LgAv

M1 S2

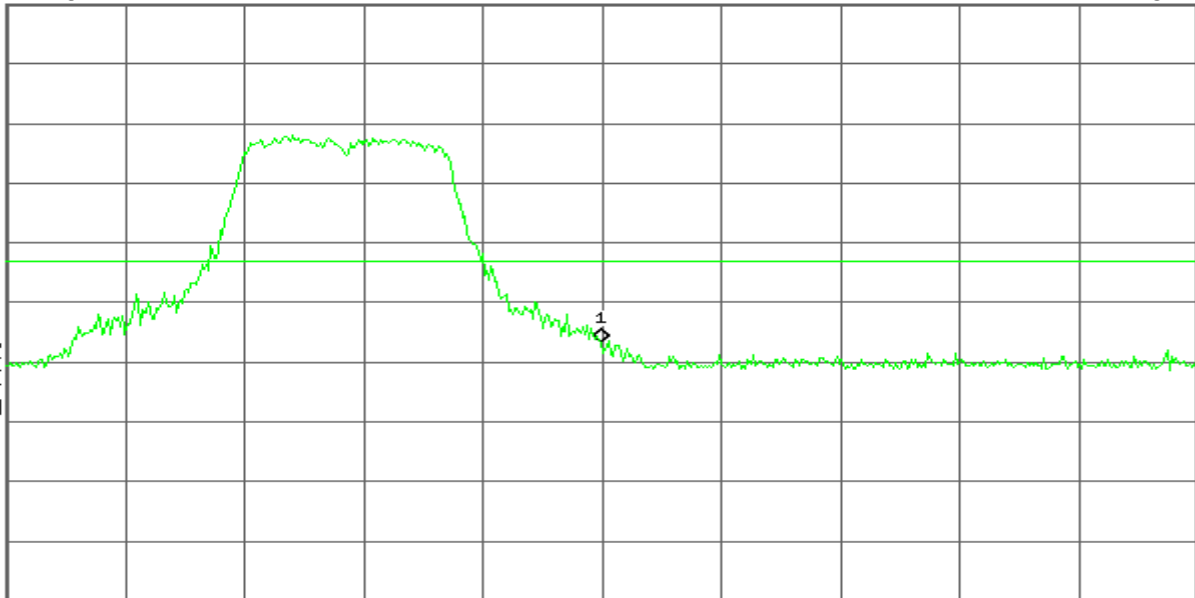
S3 FC

AA

E(f):

FTun

Swp



Center 2.483 50 GHz

#Res BW 1 MHz

#VBW 1 MHz

Span 100 MHz

Sweep 1 ms (601 pts)

AVG

* Agilent

R T

Mkr1 2.483 50 GHz
47.64 dB μ VRef 117 dB μ V

Atten 10 dB

#Avg

Log

10

dB/

Offst

10

dB

DI

54.0

dB μ V

PAvg

M1 S2

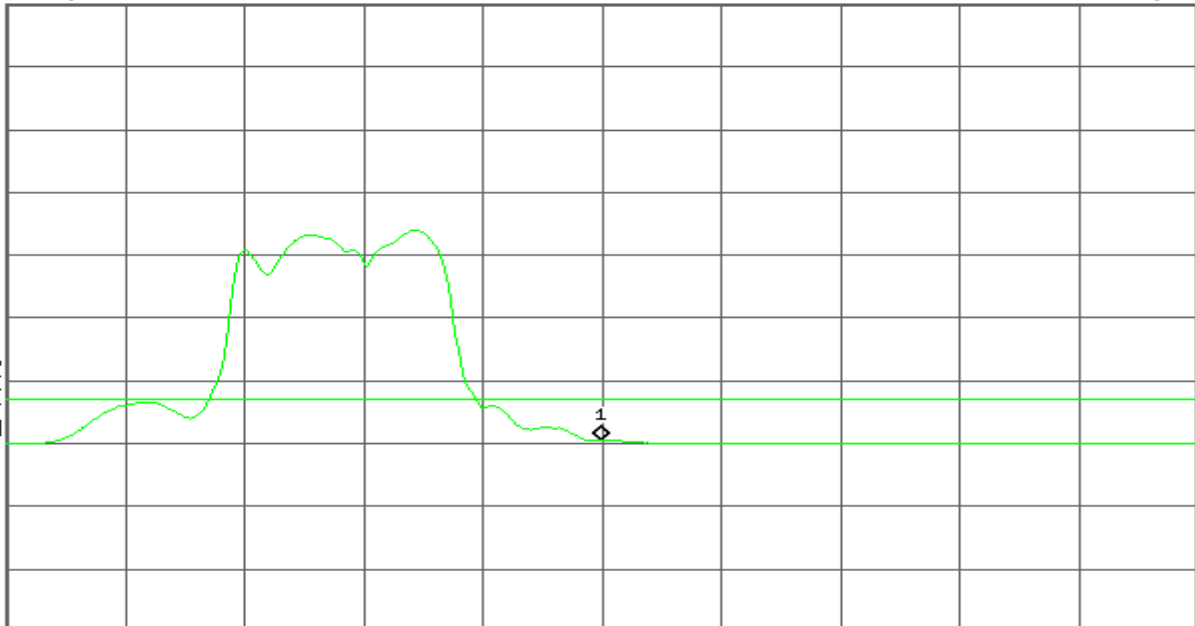
S3 FC

AA

E(f):

FTun

Swp



Center 2.483 50 GHz

#Res BW 1 MHz

#VBW 10 Hz

Span 100 MHz

Sweep 24.66 s (601 pts)



7.5. SPURIOUS EMISSIONS

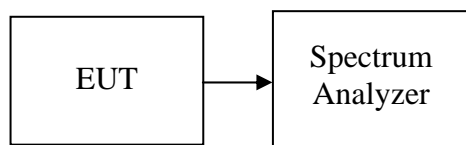
7.5.1. Conducted Measurement

LIMIT

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

Conducted power was measured based on the use of RMS averaging over a time interval, therefore the required attenuation 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

Agilent

R T

Mkr1 2.41 GHz
109.67 dBμV

Ref 117 dBμV

Atten 10 dB

Peak

Log

10

dB/

Offst

14

dB

DI

89.7

dBμV

LgAv

M1 S2

Start 30 MHz

Stop 40.00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-----------|-------------|
| 1 | (1) | Freq | 2.41 GHz | 109.67 dBμV |
| 2 | (1) | Freq | 24.61 GHz | 51.24 dBμV |
| 3 | (1) | Freq | 36.47 GHz | 60.62 dBμV |

CH Mid

Agilent

R T

Mkr1 2.44 GHz
109.37 dBμV

Ref 117 dBμV

Atten 10 dB

Peak

Log

10

dB/

Offst

14

dB

DI

89.4

dBμV

LgAv

M1 S2

Center 20.02 GHz

Span 39.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-----------|-------------|
| 1 | (1) | Freq | 2.44 GHz | 109.37 dBμV |
| 2 | (1) | Freq | 24.61 GHz | 52.01 dBμV |
| 3 | (1) | Freq | 36.47 GHz | 60.19 dBμV |



CH High

Agilent

R T

Mkr1 2.46 GHz
109.49 dBμV

Ref 117 dBμV

Atten 10 dB

Peak

Log

10

dB/

Offst

14

dB

DI

88.3

dBμV

LgAv

M1 S2

Start 30 MHz

Stop 40.00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-----------|-------------|
| 1 | (1) | Freq | 2.46 GHz | 109.49 dBμV |
| 2 | (1) | Freq | 24.61 GHz | 51.46 dBμV |
| 3 | (1) | Freq | 36.47 GHz | 60.62 dBμV |

IEEE 802.11g mode

CH Low

Agilent

R T

Mkr1 2.41 GHz
106.76 dBμV

Ref 117 dBμV

Atten 10 dB

Peak

Log

10

dB/

Offst

14

dB

DI

86.8

dBμV

LgAv

M1 S2

Start 30 MHz

Stop 40.00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-----------|-------------|
| 1 | (1) | Freq | 2.41 GHz | 106.76 dBμV |
| 2 | (1) | Freq | 24.61 GHz | 52.74 dBμV |
| 3 | (1) | Freq | 36.47 GHz | 60.25 dBμV |



CH Mid

* Agilent

R T

Mkr1 2.44 GHz
106.76 dB μ VRef 117 dB μ V

Atten 10 dB

Peak

Log

10

dB/

Offst

14

dB

DI

83.4

dB μ V

LgAv

M1 S2

Start 30 MHz

Stop 40.00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-----------|-------------------|
| 1 | (1) | Freq | 2.44 GHz | 106.76 dB μ V |
| 2 | (1) | Freq | 24.61 GHz | 52.74 dB μ V |
| 3 | (1) | Freq | 36.47 GHz | 59.82 dB μ V |

CH High

* Agilent

R T

Mkr1 2.46 GHz
103.88 dB μ VRef 117 dB μ V

Atten 10 dB

Peak

Log

10

dB/

Offst

14

dB

DI

83.3

dB μ V

LgAv

M1 S2

Start 30 MHz

Stop 40.00 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-----------|-------------------|
| 1 | (1) | Freq | 2.46 GHz | 103.88 dB μ V |
| 2 | (1) | Freq | 24.61 GHz | 52.74 dB μ V |
| 3 | (1) | Freq | 36.47 GHz | 59.79 dB μ V |



draft 802.11gn Standard-20 MHz Channel mode

CH Low

Agilent

R T

Mkr3 36.54 GHz

60.98 dB μ VRef 117 dB μ V

Atten 10 dB

Peak

Log

10

dB/

Offst

14

dB

DI

83.7

dB μ V

LgAv

M1 S2

Start 30 MHz

Stop 40.00 GHz

*Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-----------|-------------------|
| 1 | (1) | Freq | 2.43 GHz | 106.74 dB μ V |
| 2 | (1) | Freq | 24.61 GHz | 53.27 dB μ V |
| 3 | (1) | Freq | 36.54 GHz | 60.98 dB μ V |

CH Mid

Agilent

R T

Mkr1 2.43 GHz

107.66 dB μ VRef 117 dB μ V

Atten 10 dB

Peak

Log

10

dB/

Offst

14

dB

DI

83.9

dB μ V

LgAv

M1 S2

Center 20.02 GHz

Span 39.97 GHz

*Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-----------|-------------------|
| 1 | (1) | Freq | 2.43 GHz | 107.66 dB μ V |
| 2 | (1) | Freq | 24.61 GHz | 52.28 dB μ V |
| 3 | (1) | Freq | 36.47 GHz | 61.34 dB μ V |



CH High

* Agilent

R T

Mkr1 2.46 GHz

104.52 dBμV

Ref 117 dBμV

Atten 10 dB

Peak

Log

10

dB/

Offst

14

dB

DI

84.5

dBμV

LgAv

M1 S2

Center 20.02 GHz

^

Span 39.97 GHz

#Res BW 100 kHz

#VBW 300 kHz

Sweep 3.82 s (601 pts)

| Marker | Trace | Type | X Axis | Amplitude |
|--------|-------|------|-----------|-------------|
| 1 | (1) | Freq | 2.46 GHz | 104.52 dBμV |
| 2 | (1) | Freq | 24.61 GHz | 51.92 dBμV |
| 3 | (1) | Freq | 36.47 GHz | 61.36 dBμV |



7.5.2. RADIATED EMISSIONS

LIMIT

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

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

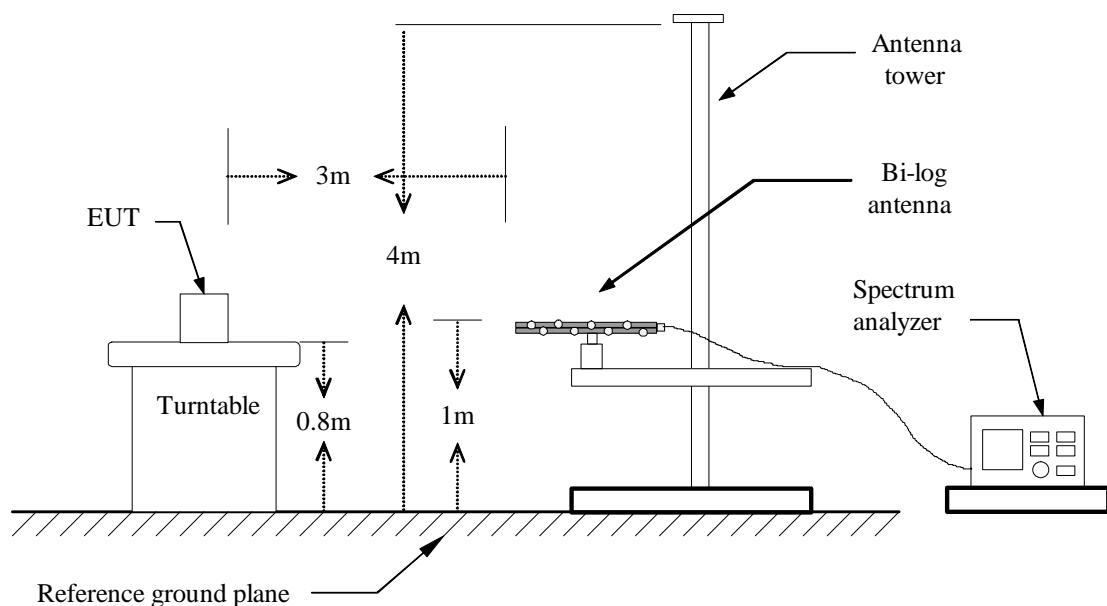
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

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

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

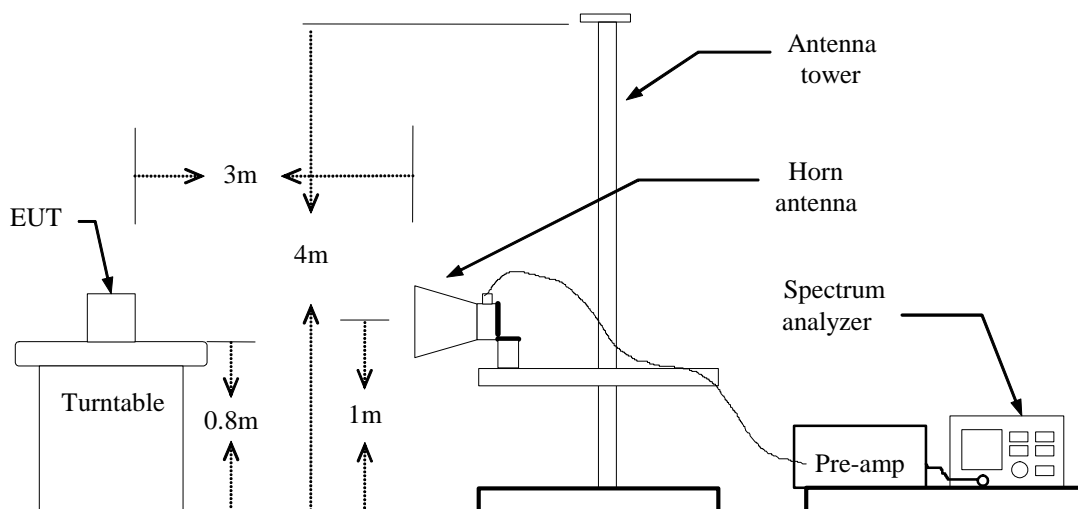
Test Configuration

Below 1 GHz





Above 1 GHz



TEST PROCEDURE

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

Below 1GHz:

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

Above 1GHz:

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

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.

TEST RESULTS

**Below 1GHz****Operation Mode:** Normal Link(with Bluetooth ON)**Test Date:** July 10,2012**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 |
|-----------------|-----------------|----------------|--------------------------|-----------------|----------------|-------------|--------|
| 65.36 | V | 49.25 | -12.22 | 37.03 | 40 | -2.97 | Peak |
| 71.65 | V | 42.46 | -14.41 | 28.05 | 40 | -11.95 | Peak |
| 199.16 | V | 34.19 | -9.49 | 24.7 | 43.5 | -18.8 | Peak |
| 399.58 | V | 31.74 | 1.44 | 33.18 | 46 | -12.82 | Peak |
| 760.16 | V | 30.75 | 2.38 | 33.13 | 46 | -12.87 | Peak |
| 765.42 | V | 34.46 | 3.27 | 37.73 | 46 | -8.27 | Peak |
| 66.35 | H | 33.76 | -5.87 | 27.89 | 40 | -12.11 | Peak |
| 70.28 | H | 42.78 | -14.45 | 28.33 | 40 | -11.67 | Peak |
| 198.45 | H | 38.48 | -9.01 | 29.47 | 43.5 | -14.03 | Peak |
| 398.25 | H | 35.75 | 1.44 | 37.19 | 46 | -8.81 | Peak |
| 755.29 | H | 34.48 | 2.38 | 36.86 | 46 | -9.14 | Peak |
| 796.35 | H | 39.65 | 3.24 | 42.89 | 46 | -3.11 | QP |

Remark:

1. Measuring frequencies from 30 MHz to the 1GHz (No emission found between lowest internal used/generated frequency to 30 MHz).
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. $\text{Margin (dB)} = \text{Result (dBuV/m)} - \text{Limit (dBuV/m)}$.



Compliance Certification Services Inc.

Report No: KS120629A02-RPB

FCC ID: COY15

Date of Issue : July 12, 2012

Above 1 GHz

Operation Mode: TX / IEEE 802.11b / CH Low(with Bluetooth ON) **Test Date:** July 10,2012

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) | Correc tion Factor (dB/m) | Result (Peak) (dBuV/ m) | Result (Average) (dBuV/m) | Lim it (Peak) (dBuV/m) | Limit (Average) (dBuV/m) | Margin Peak(d B) | Margin AVG (dB) |
|--------------------|-----------------------|-----------------------------|--------------------------------|------------------------------------|----------------------------------|---------------------------------|------------------------------|--------------------------------|------------------------|--------------------|
| 4825.71 | V | 36.22 | 28.34 | 12.41 | 48.63 | 40.75 | 74 | 54 | -25.37 | -13.25 |
| 7236.58 | V | 38.85 | 27.71 | 15.48 | 54.33 | 43.19 | 74 | 54 | -19.67 | -10.81 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 4824.54 | H | 34.55 | 28.34 | 12.41 | 46.96 | 40.75 | 74 | 54 | -27.04 | -13.25 |
| 7233.23 | H | 38.67 | 27.16 | 15.47 | 54.14 | 42.63 | 74 | 54 | -19.86 | -11.37 |
| | | | | | | | | | | |
| N/A | | | | | | | | | | |

Remark:

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



Compliance Certification Services Inc.

Report No: KS120629A02-RPB

FCC ID: COY15

Date of Issue : July 12, 2012

Operation Mode: TX / IEEE 802.11b / CH Mid(with Bluetooth ON)

Test Date: July 10, 2012

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 Peak(dB) | Margin AVG(dB) |
|-----------------|-----------------|-----------------------|--------------------------|--------------------------|------------------------|---------------------------|-----------------------|--------------------------|-----------------|----------------|
| 4865.36 | V | 36.49 | 28.75 | 12.41 | 48.9 | 41.16 | 74 | 54 | -25.1 | -12.84 |
| 7307.16 | V | 38.15 | 27.46 | 15.48 | 53.63 | 42.94 | 74 | 54 | -20.37 | -11.06 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 4866.58 | H | 34.46 | 28.72 | 12.41 | 46.87 | 41.13 | 74 | 54 | -27.13 | -12.87 |
| 7321.16 | H | 38.15 | 27.68 | 15.47 | 53.62 | 43.15 | 74 | 54 | -20.38 | -10.85 |
| | | | | | | | | | | |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Remark:

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



Compliance Certification Services Inc.

Report No: KS120629A02-RPB

FCC ID: COYI5

Date of Issue : July 12, 2012

Operation Mode: TX / IEEE 802.11b / CH High(with Bluetooth ON)**Test Date:** July 10,2012

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 Peak(dB) | Margin AVG(dB) |
|--------------------|--------------------|-----------------------------|--------------------------------|-----------------------------|------------------------------|---------------------------------|-----------------------------|--------------------------------|--------------------|-------------------|
| 4921.54 | V | 36.61 | 28.5 | 12.93 | 49.54 | 41.43 | 74 | 54 | -24.46 | -12.57 |
| 7378.33 | V | 38.35 | 27.16 | 15.82 | 54.17 | 42.98 | 74 | 54 | -19.83 | -11.02 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 4923.33 | H | 34.23 | 28.23 | 12.93 | 47.16 | 41.16 | 74 | 54 | -26.84 | -12.84 |
| 7380.67 | H | 38.45 | 27.24 | 15.82 | 54.27 | 43.06 | 74 | 54 | -19.73 | -10.94 |
| | | | | | | | | | | |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Remark:

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



Compliance Certification Services Inc.

Report No: KS120629A02-RPB

FCC ID: COY15

Date of Issue : July 12, 2012

Operation Mode: TX / IEEE 802.11g / CH Low(with Bluetooth ON)

Test Date: July 10, 2012

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 Peak(dB) | Margin AVG(dB) |
|-----------------|-----------------|-----------------------|--------------------------|--------------------------|------------------------|---------------------------|-----------------------|--------------------------|-----------------|----------------|
| 4819 | V | 36.49 | 28.21 | 12.41 | 48.9 | 40.62 | 74 | 54 | -25.1 | -13.38 |
| 7233.82 | V | 38.12 | 27.61 | 15.48 | 53.6 | 43.09 | 74 | 54 | -20.4 | -10.91 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 4823.67 | H | 34.32 | 28.63 | 12.41 | 46.73 | 41.04 | 74 | 54 | -27.27 | -12.96 |
| 7238.45 | H | 38.21 | 27.7 | 15.48 | 53.69 | 43.18 | 74 | 54 | -20.31 | -10.82 |
| | | | | | | | | | | |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Remark:

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



Compliance Certification Services Inc.

Report No: KS120629A02-RPB

FCC ID: COY15

Date of Issue : July 12, 2012

Operation Mode: TX / IEEE 802.11g / CH Mid(with Bluetooth ON)

Test Date: July 10, 2012

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 Peak(dB) | Margin AVG(dB) |
|--------------------|--------------------|-----------------------------|--------------------------------|-----------------------------|------------------------------|---------------------------------|-----------------------------|--------------------------------|--------------------|-------------------|
| 4876.54 | V | 36.7 | 28.72 | 12.68 | 49.38 | 41.4 | 74 | 54 | -24.62 | -12.6 |
| 7320.75 | V | 38.55 | 27.89 | 15.76 | 54.31 | 43.65 | 74 | 54 | -19.69 | -10.35 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| 4875.65 | H | 34.49 | 28.55 | 12.68 | 47.17 | 41.23 | 74 | 54 | -26.83 | -12.77 |
| 7318.44 | H | 38.55 | 27.32 | 15.74 | 54.29 | 43.06 | 74 | 54 | -19.71 | -10.94 |
| | | | | | | | | | | |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Remark:

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



Compliance Certification Services Inc.

Report No: KS120629A02-RPB

FCC ID: COY15

Date of Issue : July 12, 2012

Operation Mode: TX / IEEE 802.11g / CH High(with Bluetooth ON)**Test Date:** July 10,2012**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 Peak(dB) | Margin AVG(dB) |
|--------------------|--------------------|-----------------------------|--------------------------------|-----------------------------|------------------------------|---------------------------------|-----------------------------|--------------------------------|--------------------|-------------------|
| 4935.33 | V | 36.56 | 28.56 | 12.94 | 49.5 | 41.5 | 74 | 54 | -24.5 | -12.5 |
| 7391.67 | V | 38.85 | 27.24 | 15.82 | 54.67 | 43.06 | 74 | 54 | -19.33 | -10.94 |
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| | | | | | | | | | | |
| 4925.67 | H | 34.72 | 28.15 | 12.93 | 47.65 | 41.08 | 74 | 54 | -26.35 | -12.92 |
| 7389.33 | H | 38.39 | 27.21 | 15.82 | 54.21 | 43.03 | 74 | 54 | -19.79 | -10.97 |
| | | | | | | | | | | |
| 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).



Compliance Certification Services Inc.

Report No: KS120629A02-RPB

FCC ID: COY15

Date of Issue : July 12, 2012

Operation Mode: TX / draft 802.11gn Standard-20 MHz Channel mode CH Low(with Bluetooth ON)

Test Date: July 10,2012

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 Peak(dB) | Margin AVG(dB) |
|-----------------|-----------------|-----------------------|--------------------------|--------------------------|------------------------|---------------------------|-----------------------|--------------------------|-----------------|----------------|
| 4832.66 | V | 36.85 | 28.42 | 12.41 | 49.26 | 40.83 | 74 | 54 | -24.74 | -13.17 |
| 7230.43 | V | 38.85 | 27.24 | 15.48 | 54.33 | 42.72 | 74 | 54 | -19.67 | -11.28 |
| | | | | | | | | | | |
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| 4824.54 | H | 34.27 | 28.24 | 12.41 | 46.68 | 40.65 | 74 | 54 | -27.32 | -13.35 |
| 7212.56 | H | 38.56 | 27.46 | 15.48 | 54.04 | 42.94 | 74 | 54 | -19.96 | -11.06 |
| | | | | | | | | | | |
| 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).



Compliance Certification Services Inc.

Report No: KS120629A02-RPB

FCC ID: COY15

Date of Issue : July 12, 2012

Operation Mode: TX / draft 802.11gn Standard-20 MHz Channel mode CH ith Bluetooth ON)

Test Date: July 10, 2012

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 Peak(dB) | Margin AVG(dB) |
|--------------------|--------------------|-----------------------------|--------------------------------|-----------------------------|------------------------------|---------------------------------|-----------------------------|--------------------------------|--------------------|-------------------|
| 4876.54 | V | 36.85 | 28.42 | 12.68 | 49.53 | 41.1 | 74 | 54 | -24.47 | -12.9 |
| 7321.54 | V | 38.85 | 27.24 | 15.76 | 54.61 | 43 | 74 | 54 | -19.39 | -11 |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |
| 4875.65 | H | 34.27 | 28.24 | 11.02 | 45.29 | 39.26 | 74 | 54 | -28.71 | -14.74 |
| 7316.32 | H | 38.56 | 27.46 | 15.72 | 54.28 | 43.18 | 74 | 54 | -19.72 | -10.82 |
| | | | | | | | | | | |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Remark:

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



Compliance Certification Services Inc.

Report No: KS120629A02-RPB

FCC ID: COY15

Date of Issue : July 12, 2012

Operation Mode: TX / draft 802.11gn Standard-20 MHz Channel mode CH High (with Bluetooth ON)

Test Date: July 10, 2012

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 Peak(dB) | Margin AVG(dB) |
|--------------------|--------------------|-----------------------------|--------------------------------|-----------------------------|------------------------------|---------------------------------|-----------------------------|--------------------------------|--------------------|-------------------|
| 4930.66 | V | 36.45 | 28.17 | 12.93 | 49.38 | 41.1 | 74 | 54 | -24.62 | -12.9 |
| 7387.67 | V | 38.63 | 27.45 | 15.82 | 54.45 | 43.27 | 74 | 54 | -19.55 | -10.73 |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |
| 4924.67 | H | 34.63 | 28.75 | 12.93 | 47.56 | 41.68 | 74 | 54 | -26.44 | -12.32 |
| 7384.78 | H | 38.25 | 27.31 | 15.82 | 54.07 | 43.13 | 74 | 54 | -19.93 | -10.87 |
| | | | | | | | | | | |
| N/A | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Remark:

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



7.6. POWERLINE CONDUCTED EMISSIONS

LIMIT

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

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

* Decreases with the logarithm of the frequency.

Test Configuration

See test photographs attached in Appendix 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



Compliance Certification Services Inc.

Report No: KS120629A02-RPB

FCC ID: COY15

Date of Issue : July 12, 2012

Operation Mode: Normal Link
(with Bluetooth ON)

Test Date: July 10, 2012

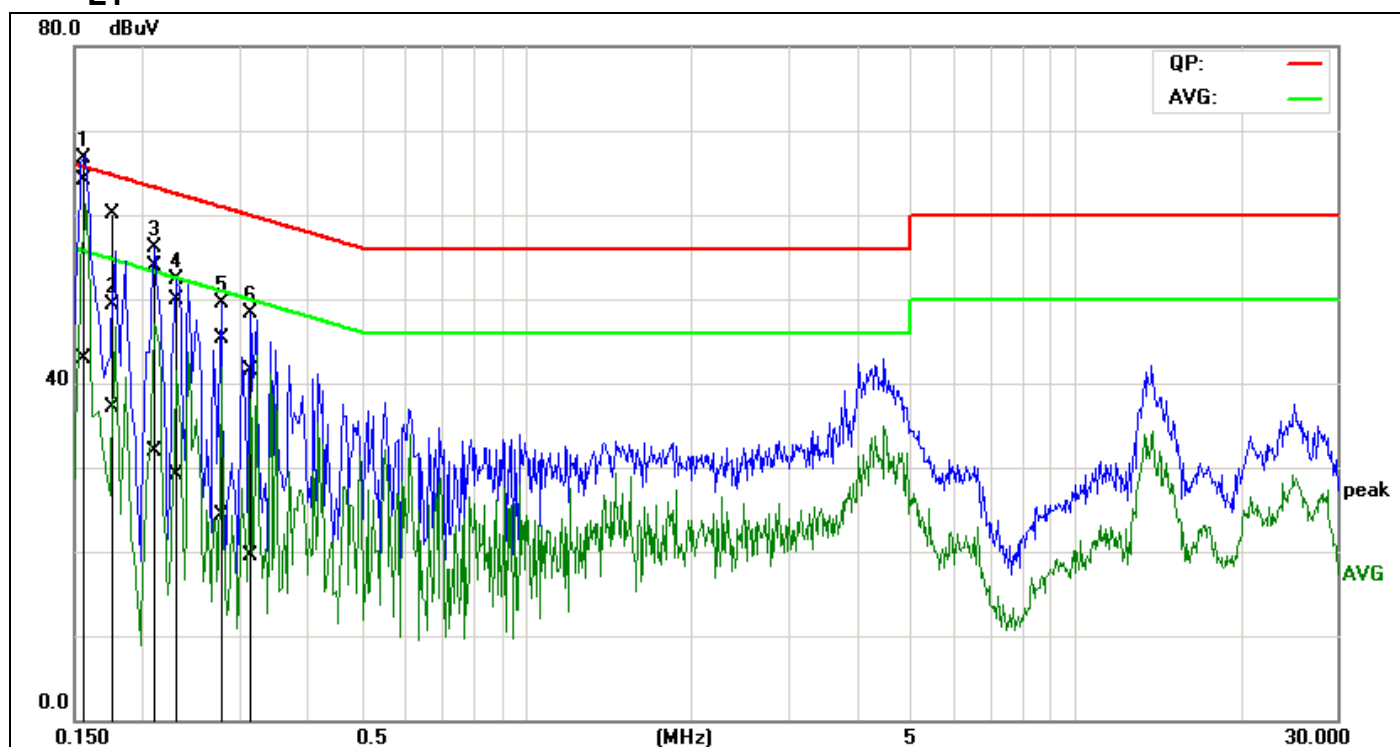
Temperature: 23°C

Tested by: Sean Yu

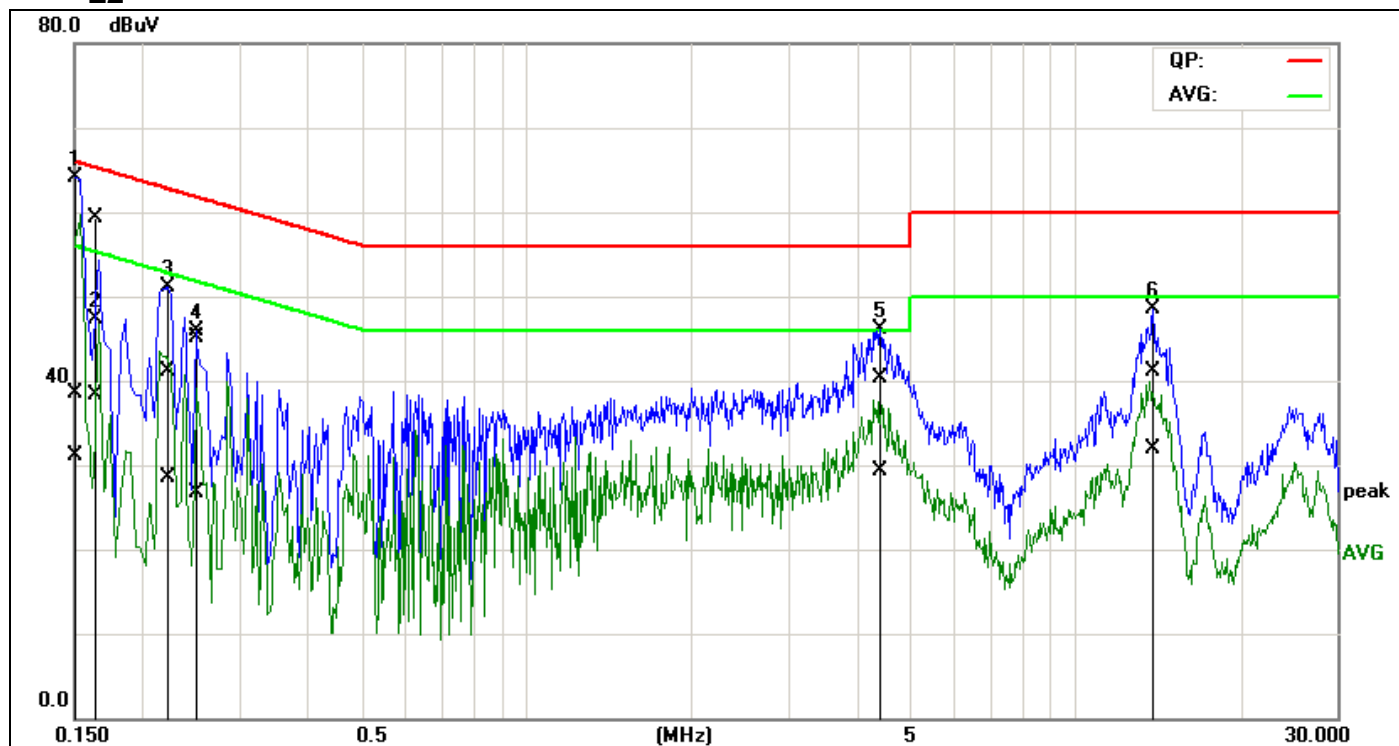
Humidity: 50% RH

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* | 0.1539 | 54.06 | 32.80 | 10.05 | 64.11 | 42.85 | 65.79 | 55.79 | -1.68 | -12.94 | Pass |
| 2 | 0.1731 | 50.01 | 27.06 | 10.07 | 60.08 | 37.13 | 64.81 | 54.81 | -4.73 | -17.68 | Pass |
| 3 | 0.2064 | 43.70 | 21.72 | 10.12 | 53.82 | 31.84 | 63.35 | 53.35 | -9.53 | -21.51 | Pass |
| 4 | 0.2313 | 39.66 | 18.97 | 10.16 | 49.82 | 29.13 | 62.40 | 52.40 | -12.58 | -23.27 | Pass |
| 5 | 0.2781 | 35.03 | 14.17 | 10.23 | 45.26 | 24.40 | 60.87 | 50.87 | -15.61 | -26.47 | Pass |
| 6 | 0.3101 | 31.20 | 9.30 | 10.28 | 41.48 | 19.58 | 59.97 | 49.97 | -18.49 | -30.39 | Pass |

**L2**

| No. | Frequency (MHz) | QuasiPeak reading (dBuV) | Average reading (dBuV) | Correction factor (dB) | QuasiPeak result (dBuV) | Average result (dBuV) | QuasiPeak limit (dBuV) | Average limit (dBuV) | QuasiPeak margin (dB) | Average margin (dB) | Remark |
|-----|--------------------|--------------------------------|------------------------------|------------------------------|-------------------------------|-----------------------------|------------------------------|----------------------------|-----------------------------|---------------------------|--------|
| 1 | 0.1493 | 28.41 | 21.02 | 10.15 | 38.56 | 31.17 | 66.03 | 56.04 | -27.47 | -24.87 | Pass |
| 2* | 0.1617 | 49.06 | 28.23 | 10.16 | 59.22 | 38.39 | 65.37 | 55.38 | -6.15 | -16.99 | Pass |
| 3 | 0.2224 | 31.01 | 18.29 | 10.18 | 41.19 | 28.47 | 62.73 | 52.73 | -21.54 | -24.26 | Pass |
| 4 | 0.2454 | 34.84 | 16.53 | 10.17 | 45.01 | 26.70 | 61.91 | 51.91 | -16.90 | -25.21 | Pass |
| 5 | 4.3606 | 29.50 | 18.36 | 10.88 | 40.38 | 29.24 | 56.00 | 46.00 | -15.62 | -16.76 | Pass |
| 6 | 13.8045 | 29.81 | 20.59 | 11.36 | 41.17 | 31.95 | 60.00 | 50.00 | -18.83 | -18.05 | 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)

End of report