

RF TEST REPORT

Test item : Wi-Fi Module
Model No. : TWFM-B001T
Order No. : 1011-01162
Date of receipt : 2010-11-03
Test duration : 2010-11-25 ~ 2010-12-03
Date of issue : 2010-12-14
Use of report : FCC Original Grant

Applicant : LG Innotek Co., Ltd.
978-1, Jangduk-dong, Gwangsan-gu, Gwangju, 506-731, Korea

Test laboratory : Digital EMC Co., Ltd.
683-3, Yubang-Dong, Cheoin-Gu, Yongin-Si, Kyunggi-Do, 449-080, Korea

Test specification : FCC Part 15.407 Subpart E
ANSI C63.4-2003

Test environment : See appended test report

Test result : Pass Fail

The test results presented in this test report are limited only to the sample supplied by applicant and the use of this test report is inhibited other than its purpose. This test report shall not be reproduced except in full, without the written approval of Digital EMC Co., Ltd.

Tested by:

Witnessed by:

Reviewed by:



Engineer
B.G.HAN

N/A



Technical Director
Harvey Sung

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1. Equipment information

1.1 Equipment description

| | |
|--------------------------|--|
| FCC Equipment Class | Unlicensed National Information Infrastructure (UNII) |
| Equipment type | Wi-Fi Module |
| Equipment model name | TWFM-B001T |
| Equipment add model name | TWFM-B002T, TWFM-B003T, TWFM-B004T |
| Equipment serial no. | Identical prototype |
| Frequency band | 802.11a/n(20MHz): 5180 ~ 5240MHz 802.11n(40MHz): 5190 ~ 5230 MHz |
| Channel number | 802.11a/n(20MHz): 4 802.11n(40MHz): 2 |
| Modulation type | OFDM |
| Data rate | 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 6.5, 13, 19.5, 39, 52, 58.5, 65Mbps |
| Antenna type | PIFA Antenna (Max. peak gain: 0.56 dBi) |
| Power Supply | DC 5.0 V |

1.2 Ancillary equipment

| Equipment | Model No. | Serial No. | Manufacturer | Note |
|-----------|-----------|------------|--------------|------|
| - | - | - | - | - |
| - | - | - | - | - |

2. Information about test items

2.1 Test mode

| | |
|-------------|---|
| Test Case 1 | - |
| Test Case 2 | - |

2.2 Auxiliary equipment

| Equipment | Model No. | Serial No. | Manufacturer | Note |
|-----------|-----------|-----------------|-----------------------|------|
| Notebook | X51RL | 85N0AS318314227 | ASUSTeK Computer Inc. | - |
| Mouse | M-UAG120 | 810-000404 | ASUSTeK Computer Inc. | - |

2.3 Frequency / Channel Operations

▪ Frequency / Channel information

| Band | Mode | Channel No. | Freq. [MHz] | Channel No. | Freq. [MHz] | Channel No. | Freq. [MHz] |
|------|------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 5GHz | 802.11a/n(20MHz) | 36 | 5180 | 44 | 5220 | - | - |
| | | 40 | 5200 | 48 | 5240 | - | - |
| | 802.11n(40MHz) | 38 | 5190 | 46 | 5230 | - | - |

▪ Supported Antenna Configuration

| Band | Mode | Single Transmitting | | Multiple Transmitting (2 TX / 2 RX) |
|------|----------------|---------------------|---------|--|
| | | Chain 0 | Chain 1 | |
| 5GHz | 802.11a | Yes | Yes | No |
| | 802.11n(20MHz) | No | No | Yes |
| | 802.11n(40MHz) | No | No | Yes |

2.4 Tested environment

| | |
|---------------------------|------------------|
| Temperature | : 18 ~ 23 °C |
| Relative humidity content | : 42 ~ 59 % R.H. |
| Details of power supply | : DC 5.0 V |

2.5 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing
→ None

3. Test Report

3.1 Summary of tests

| FCC Part Section(s) | Parameter | Limit | Test Condition | Status Note 1 |
|--|---|---|-------------------|--------------------|
| I. Test Items (TX) | | | | |
| N/A | 26 dB Bandwidth | > 500 kHz | Conducted | C |
| 15.407(a) | Maximum Conducted Output Power | < 4 + 10log ₁₀ (B) dBm (5150-5250) < 11 + 10log ₁₀ (B) dBm (5250-5350) < 11 + 10log ₁₀ (B) dBm (5470-5725) | | C |
| 15.407(a) | Peak Power Spectral Density | < 4 dBm/MHz (5150-5250) < 11 dBm/MHz (5250-5350) < 11 dBm/MHz (5470-5725) | | C |
| 15.407(a) | Peak Excursion | < 13 dB/MHz maximum difference | | C |
| 15.407(c) | Frequency Stability | N/A | | C |
| 15.407(b) | Undesirable Emissions | < -27 dBm/MHz EIRP (5150-5725) | Radiated | C |
| 15.205 15.407(b) | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | Emissions in restricted bands must meet the radiated limits detailed in 15.209 | | C Note.2 |
| 15.207 | AC Conducted Emissions | 15.207 | AC Line Conducted | C |
| 15.203 | Antenna Requirements | FCC 15.203 | - | C |
| <p>Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable</p> <p>Note 2: This test item was performed in each axis and the worst case data were reported.</p> | | | | |

The sample was tested according to the following specification:
ANSI C-63.4-2003, DA02-2138

3.2 Transmitter requirements

3.2.1 26 dB and 99% Bandwidth

- Procedure:

The bandwidth at 26 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies. The 26dB bandwidth is used to determine the conducted power limits.

- Measurement Data: Comply

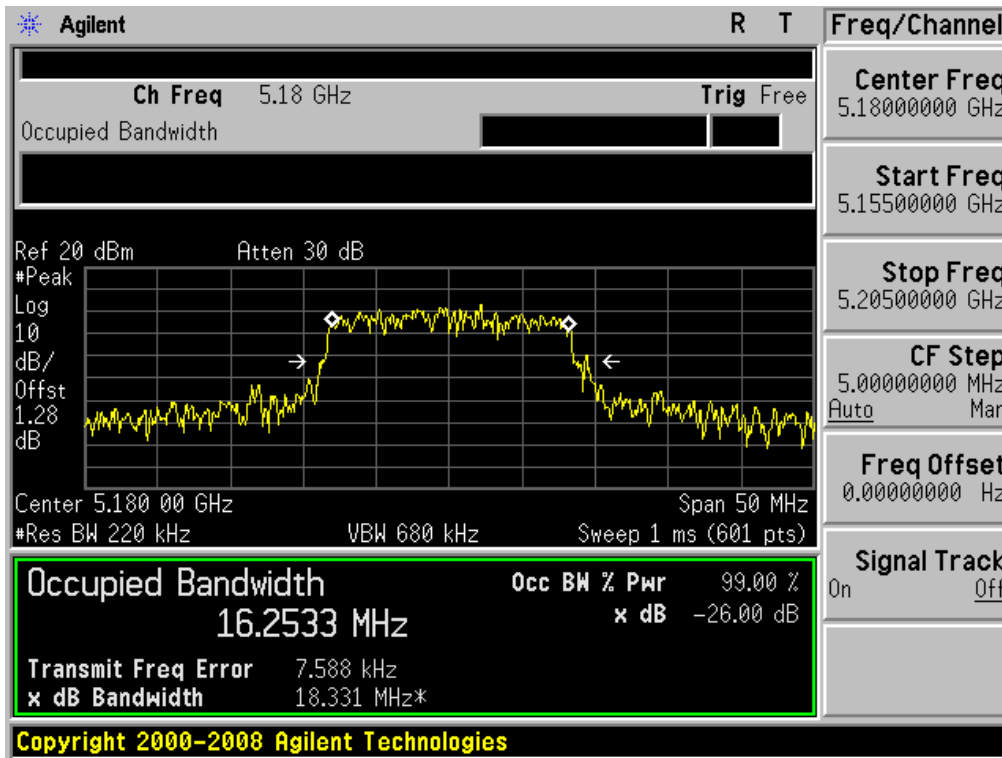
| | Mode | Channel | Frequency [MHz] | Test Result [MHz] | |
|---------------|------------------------|---------|-----------------|-------------------|---------|
| | | | | Chain 0 | Chain 1 |
| Band I | 802.11a | 36 | 5180 | 18.331 | 18.880 |
| | | 40 | 5200 | 19.011 | 18.254 |
| | | 48 | 5240 | 18.628 | 18.453 |
| | 802.11n (20MHz) | 36 | 5180 | 19.145 | 18.973 |
| | | 40 | 5200 | 19.032 | 19.026 |
| | | 48 | 5240 | 19.155 | 18.991 |
| | 802.11n (40MHz) | 38 | 5190 | 39.743 | 39.637 |
| | | 46 | 5230 | 39.671 | 39.252 |

- Minimum Standard:

| |
|---|
| The minimum 26 dB bandwidth shall be at least 500 kHz |
|---|

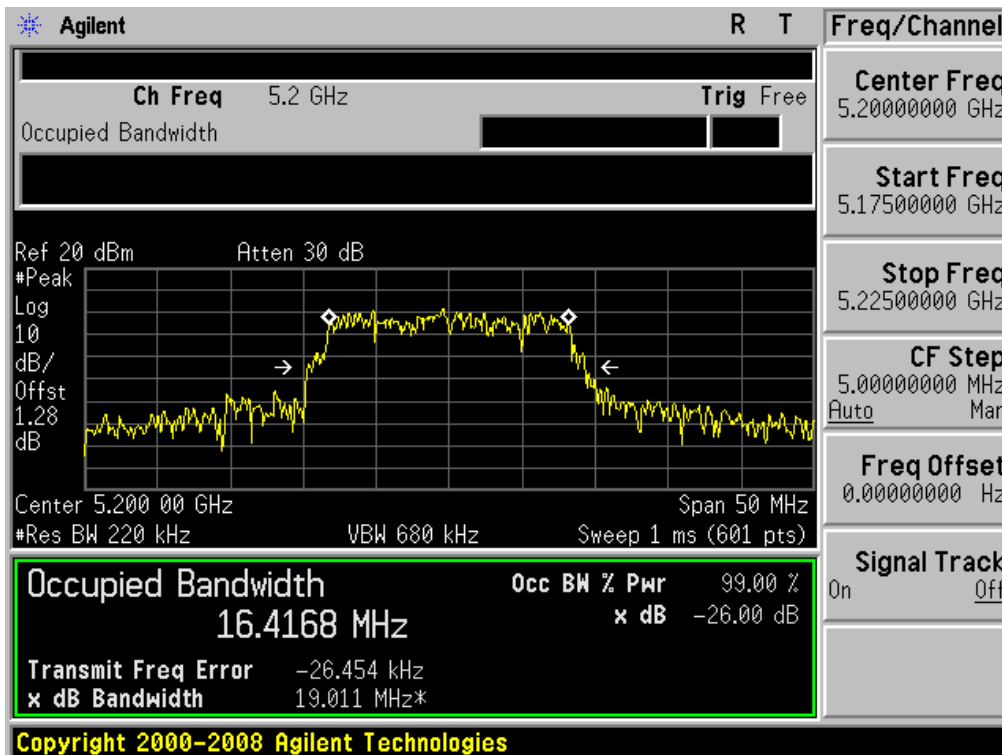
26 dB and 99% Bandwidth

Test Mode: 802.11a & Ch.36 & Chain 0



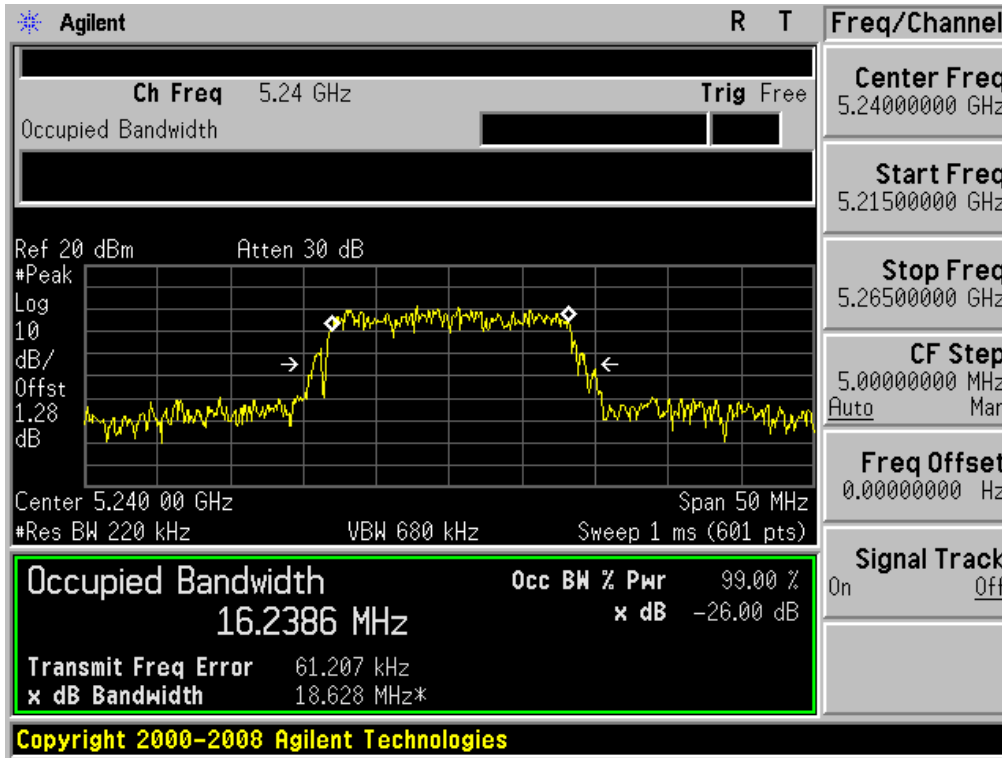
26 dB and 99% Bandwidth

Test Mode: 802.11a & Ch.40 & Chain 0



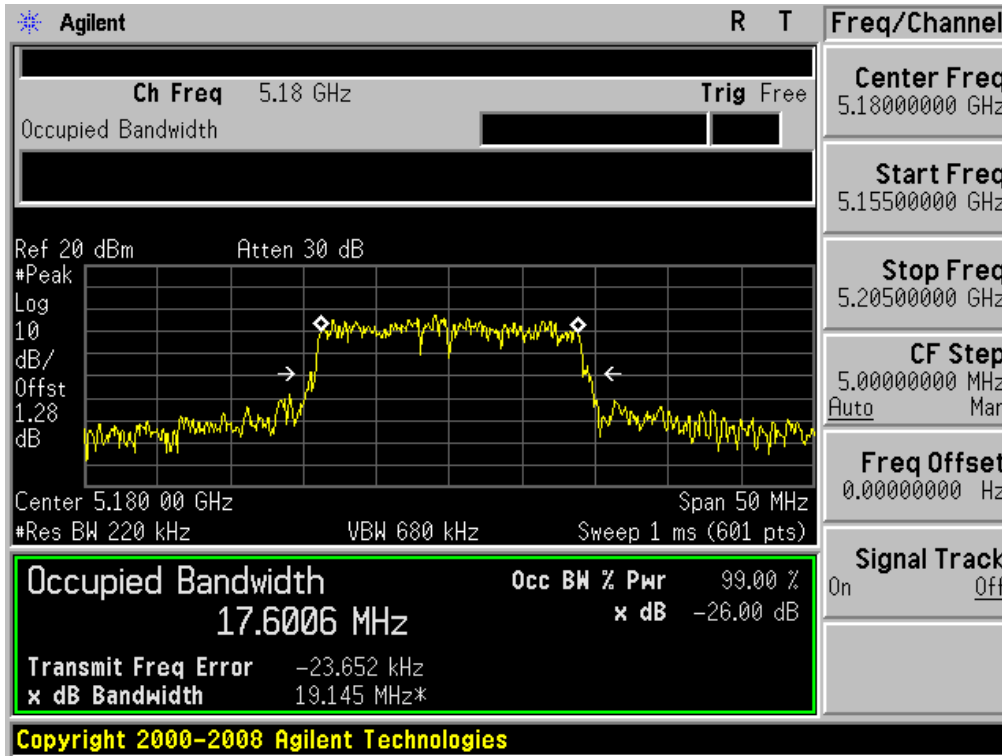
26 dB and 99% Bandwidth

Test Mode: 802.11a & Ch.48 & Chain 0



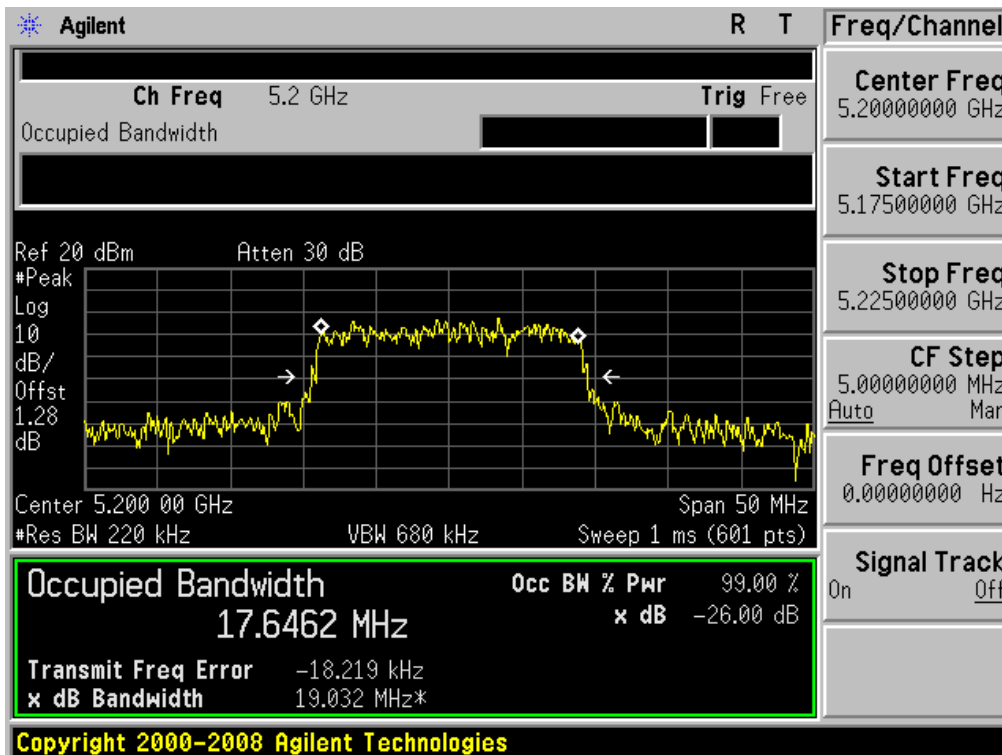
26 dB and 99% Bandwidth

Test Mode: 802.11n-HT20 & Ch.36 & Chain 0



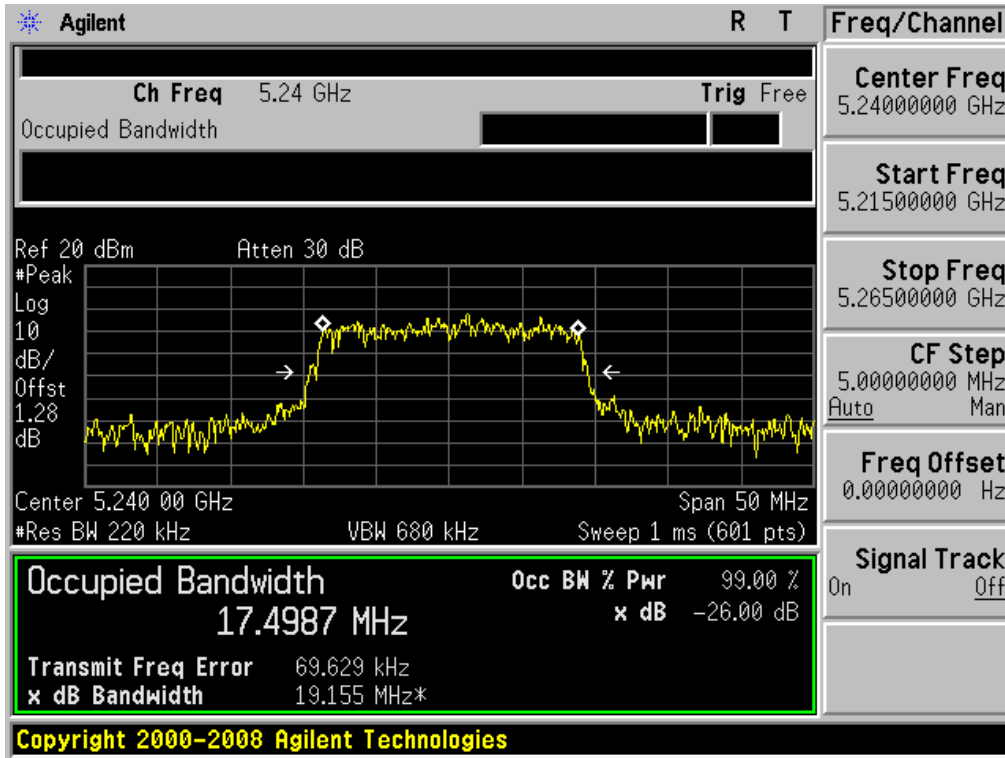
26 dB and 99% Bandwidth

Test Mode: 802.11n-HT20 & Ch.40 & Chain 0



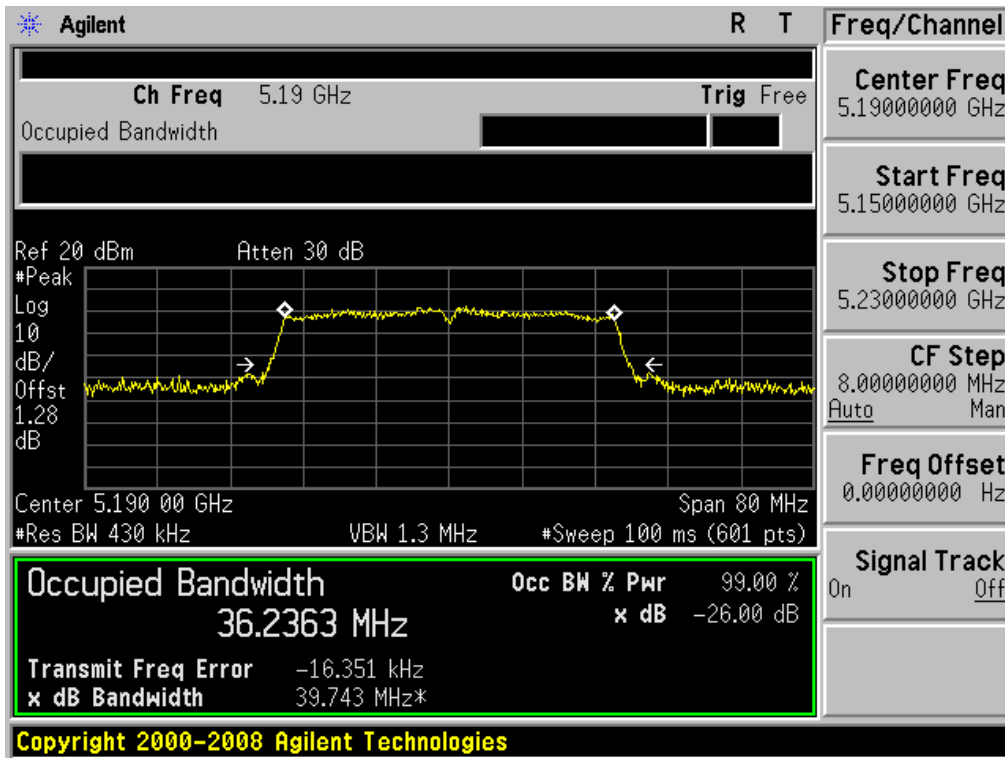
26 dB and 99% Bandwidth

Test Mode: 802.11n-HT20 & Ch.48 & Chain 0



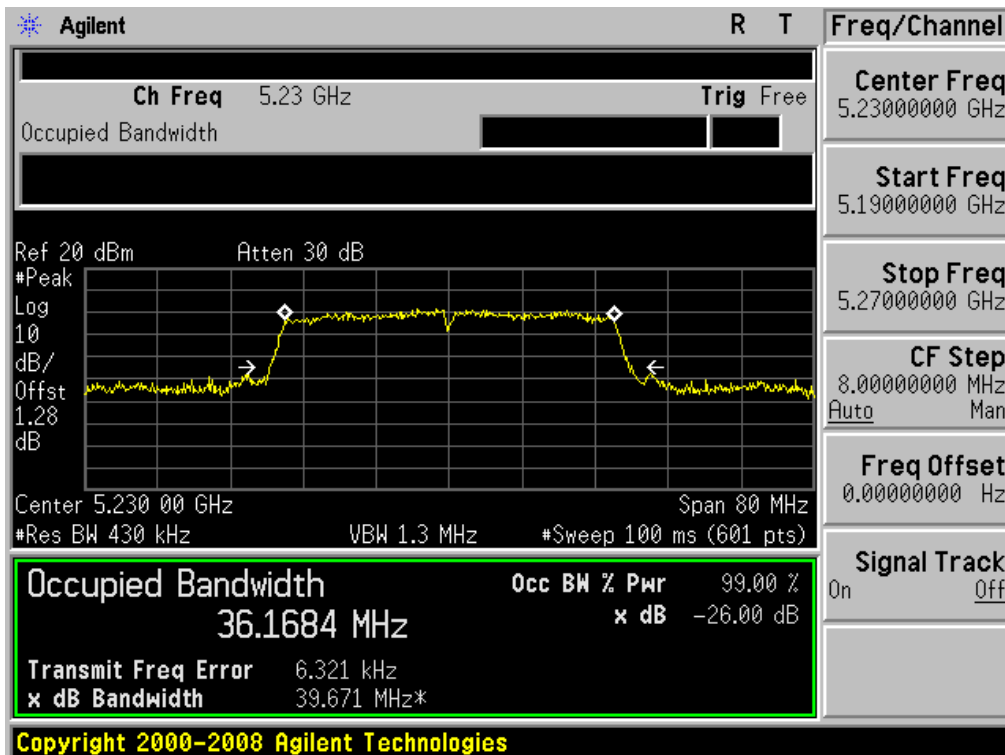
26 dB and 99% Bandwidth

Test Mode: 802.11n-HT40 & Ch.38 & Chain 0



26 dB and 99% Bandwidth

Test Mode: 802.11n-HT40 & Ch.46 & Chain 0



3.2.2 Output Power

- Test Procedure

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

- Measurement Data: **Comply**

| Mode | Channel | Frequency [MHz] | Test Result | |
|---------|---------|-----------------|-------------|---------|
| | | | Chain 0 | Chain 1 |
| | | | [dBm] | [dBm] |
| 802.11a | 36 | 5180 | 13.53 | 13.21 |
| | 40 | 5200 | 12.75 | 12.93 |
| | 48 | 5240 | 12.56 | 12.72 |

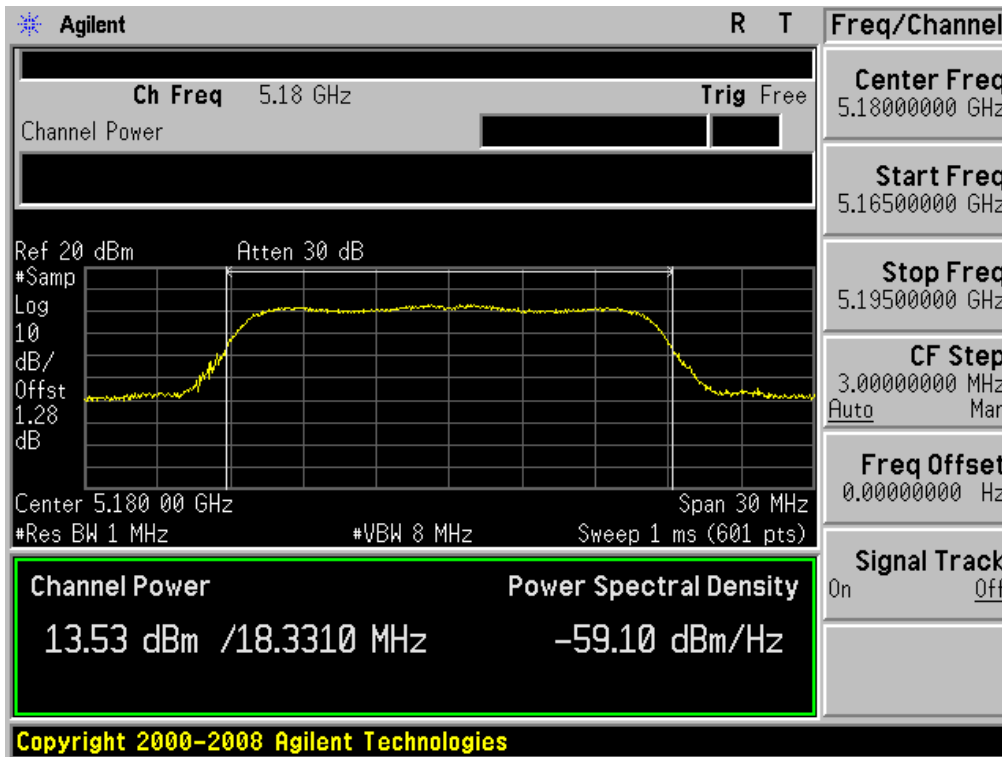
| Mode | Channel | Frequency [MHz] | Chain 0 [dBm] | Chain 1 [dBm] | Aggregate Power [dBm] |
|--------------|---------|-----------------|---------------|---------------|-----------------------|
| 802.11n HT20 | 36 | 5180 | 9.09 | 9.18 | 12.15 |
| 802.11n HT20 | 40 | 5200 | 9.32 | 9.04 | 12.19 |
| 802.11n HT20 | 48 | 5240 | 9.02 | 8.93 | 11.99 |
| 802.11n HT40 | 38 | 5190 | 11.80 | 11.23 | 14.53 |
| 802.11n HT40 | 46 | 5230 | 11.45 | 11.88 | 14.68 |

Note 1: Aggregate power calculation = $10 \log(10^{\frac{\text{chain0}}{10}} + 10^{\frac{\text{chain1}}{10}})$

| | | |
|--------------------------|----------------|--|
| Minimum Standard: | 5.150-5.250GHz | : Minimum 26dB BW = (18.254)MHz |
| | | Limit = Lesser of 16.99dBm or 4dBm + 10log(18.254) = 16.13 dBm |
| | 5.250-5.350GHz | : |
| | | Limit = Lesser of 23.98dBm or 11dBm + 10log(26dB BW) |
| | 5.470-5.725GHz | : |
| | | Limit = Lesser of 23.98dBm or 11dBm + 10log(26dB BW) |

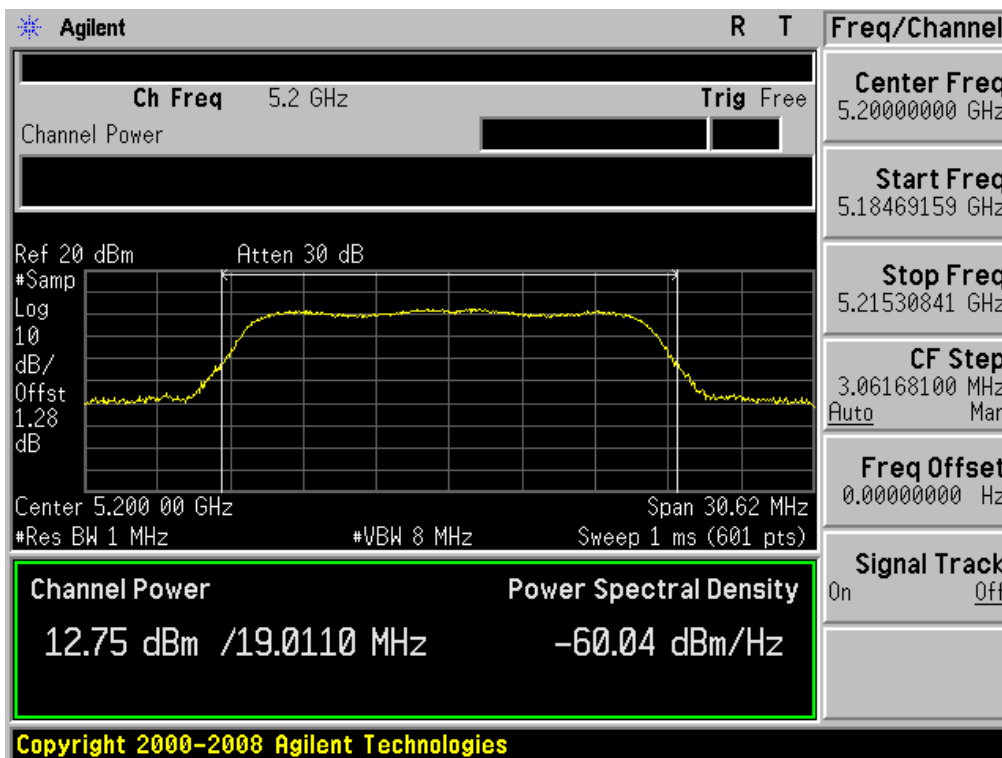
Output Power

Test Mode: 802.11a & Ch.36 & Chain 0



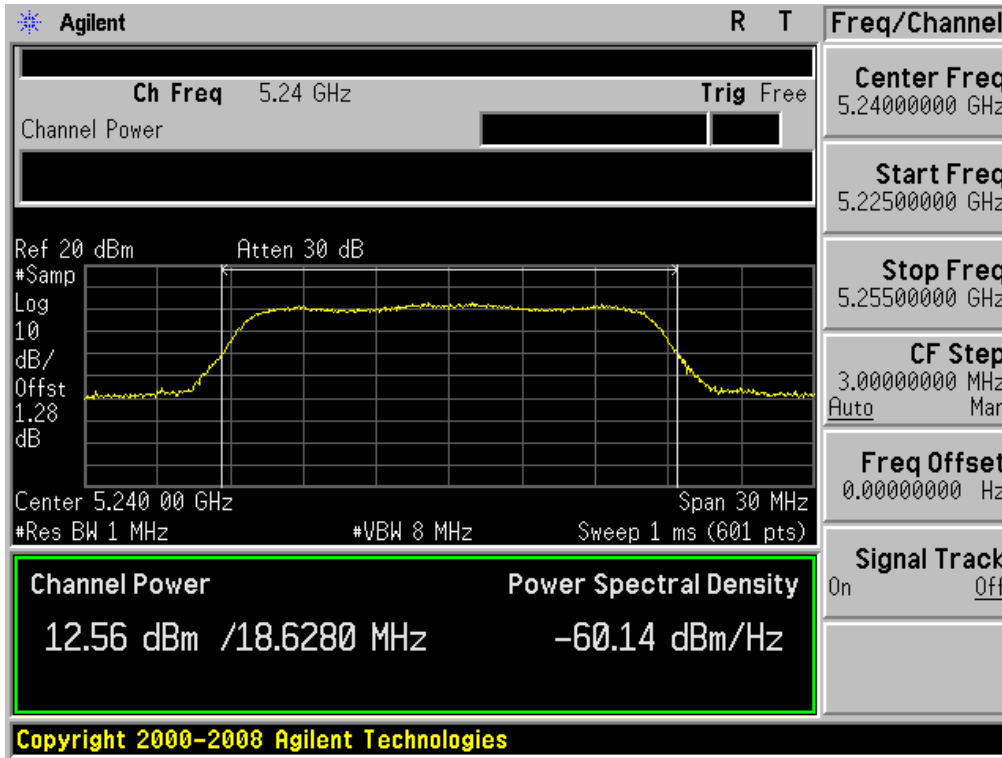
Output Power

Test Mode: 802.11a & Ch.40 & Chain 0



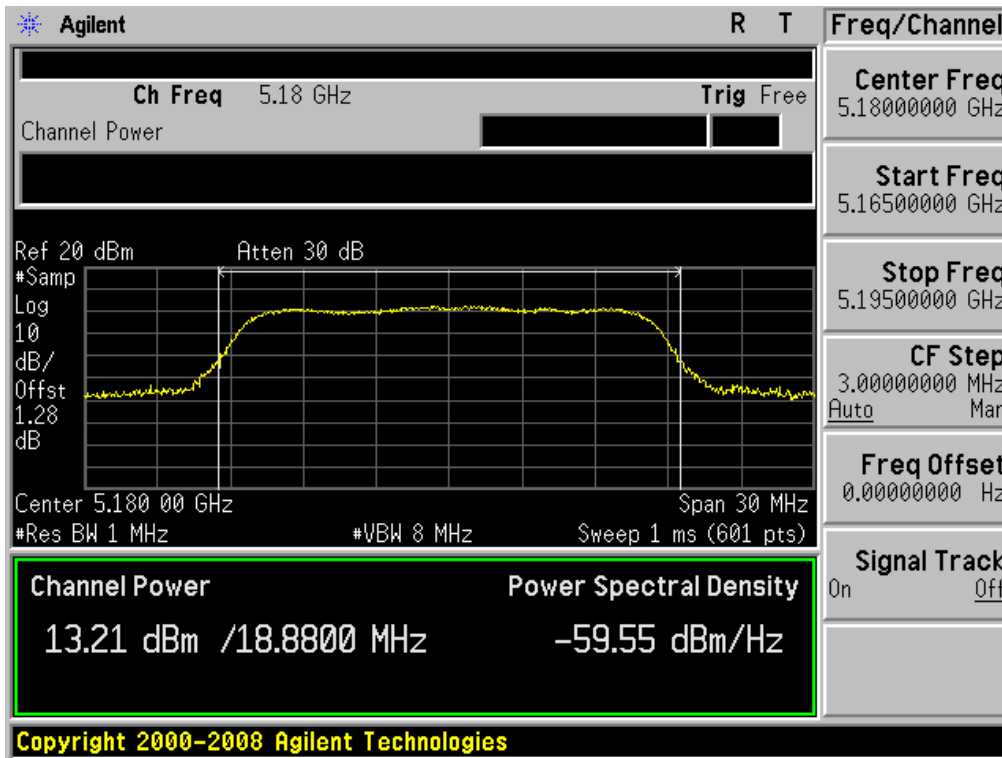
Output Power

Test Mode: 802.11a & Ch.48 & Chain 0



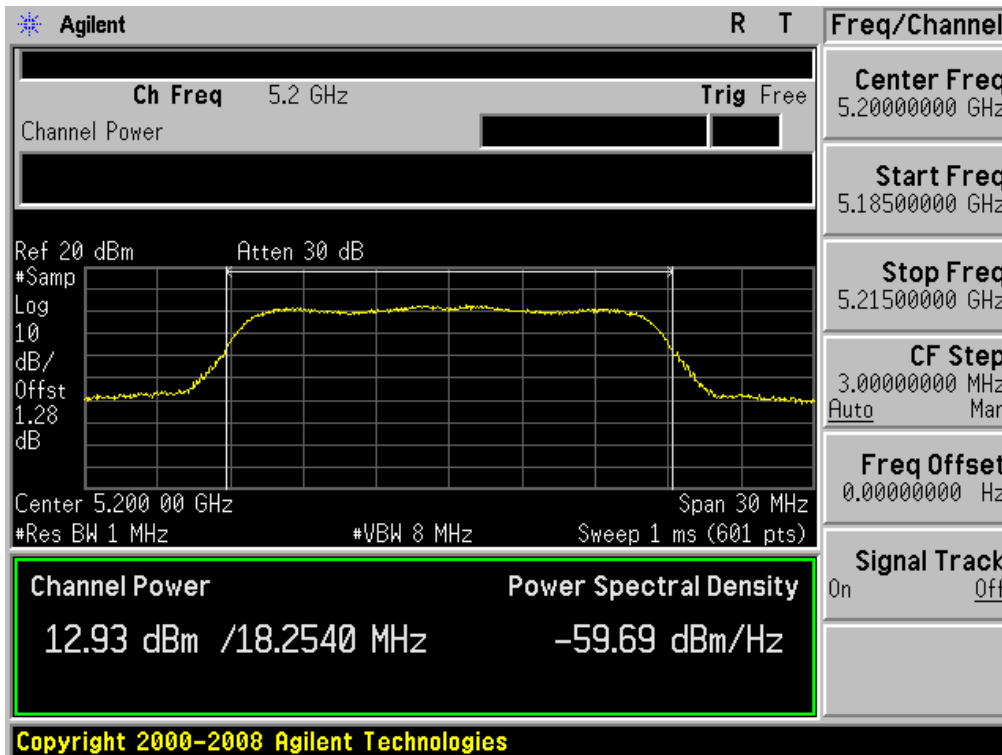
Output Power

Test Mode: 802.11a & Ch.36 & Chain 1



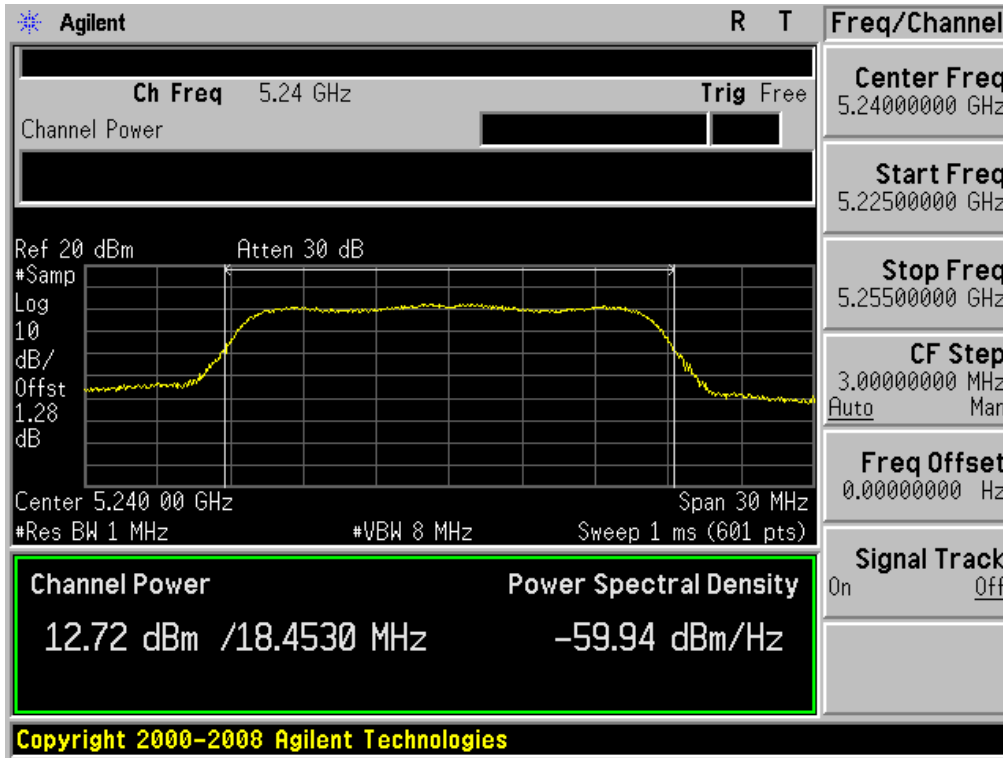
Output Power

Test Mode: 802.11a & Ch.40 & Chain 1



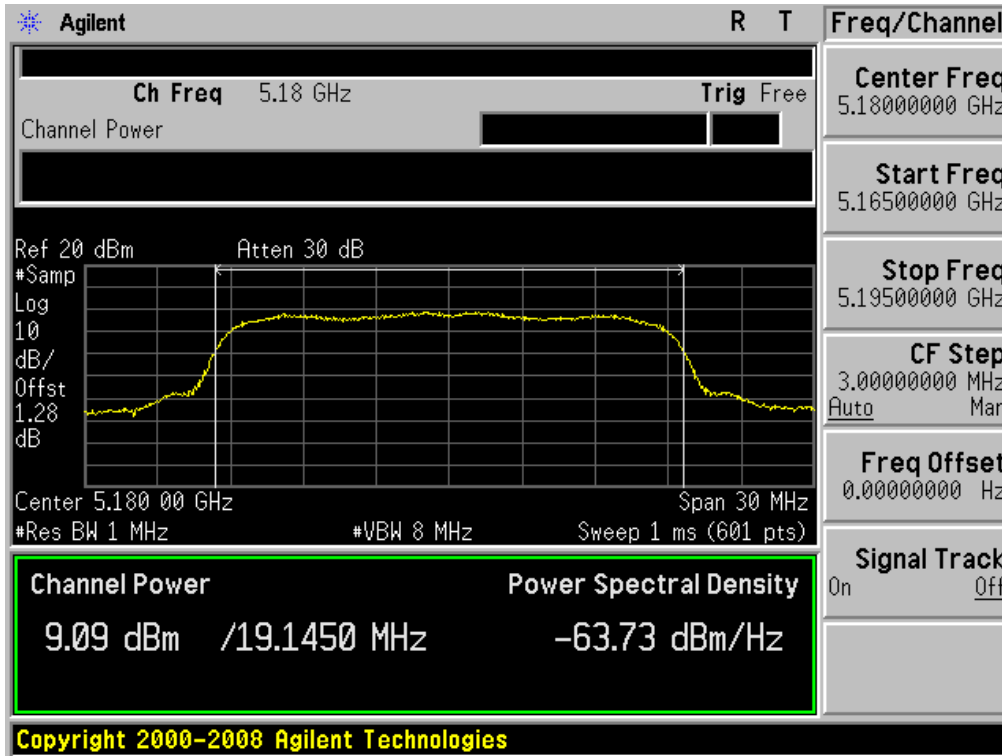
Output Power

Test Mode: 802.11a & Ch.48 & Chain 1



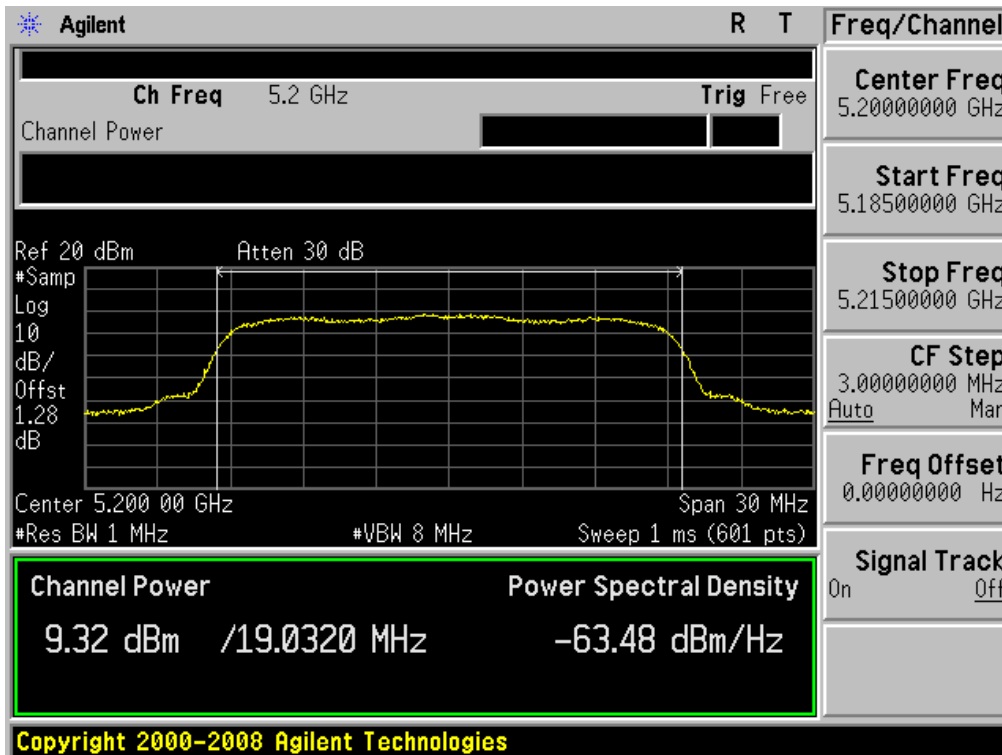
Output Power

Test Mode: 802.11n HT20 & Ch.36 & Chain 0



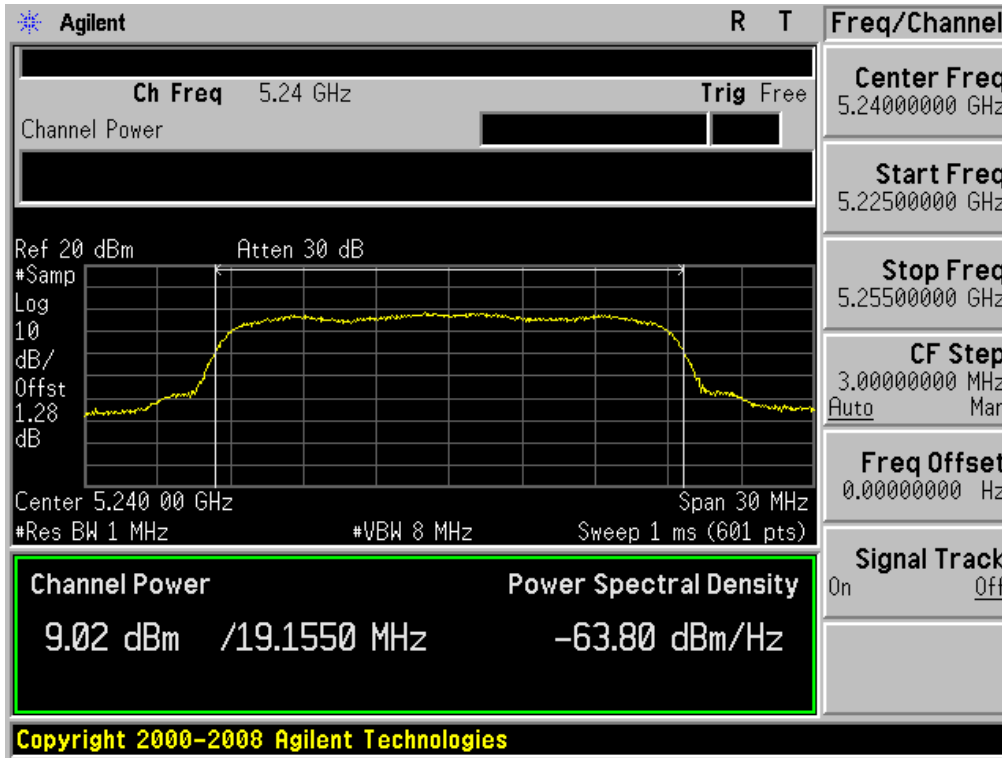
Output Power

Test Mode: 802.11n HT20 & Ch.40 & Chain 0



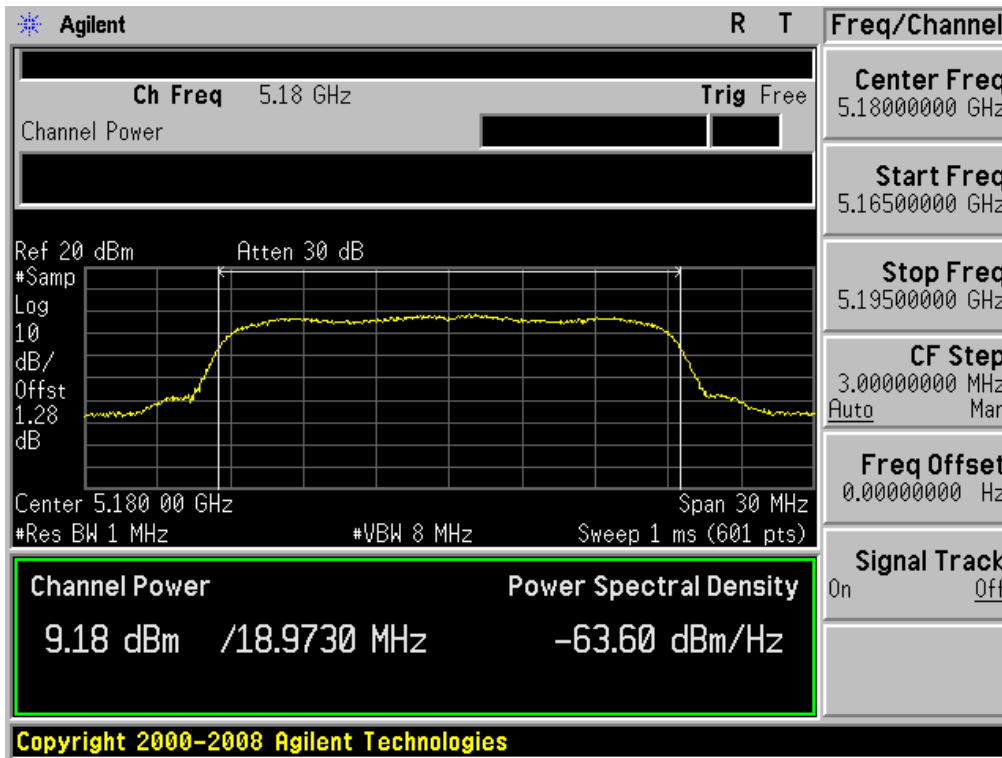
Output Power

Test Mode: 802.11n HT20 & Ch.48 & Chain 0



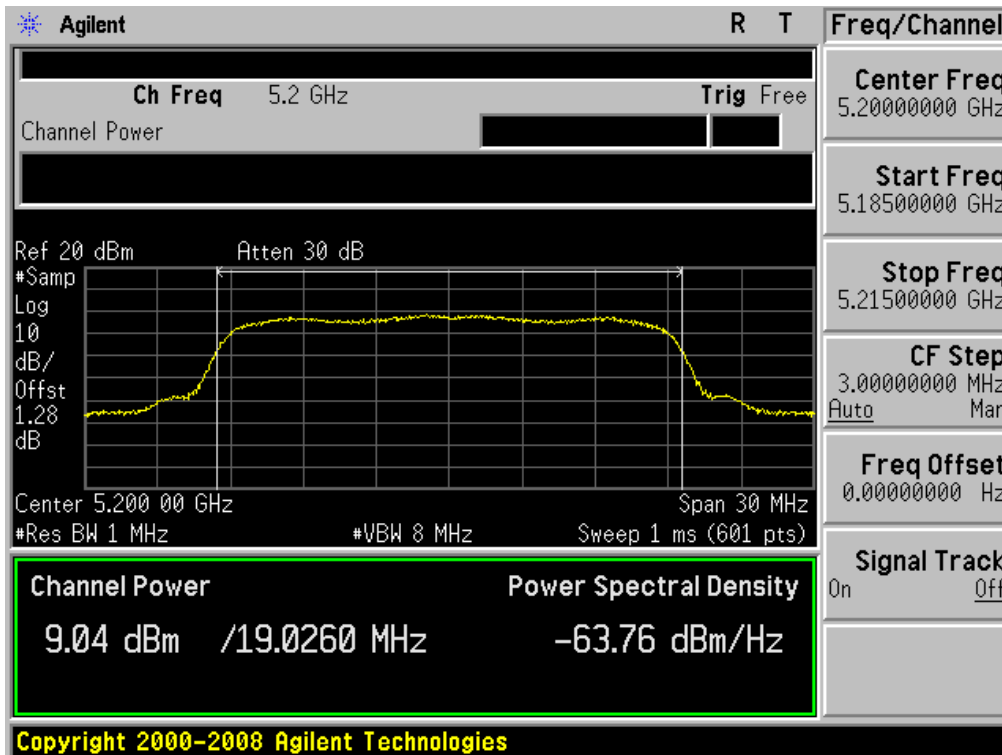
Output Power

Test Mode: 802.11n HT20 & Ch.36 & Chain 1



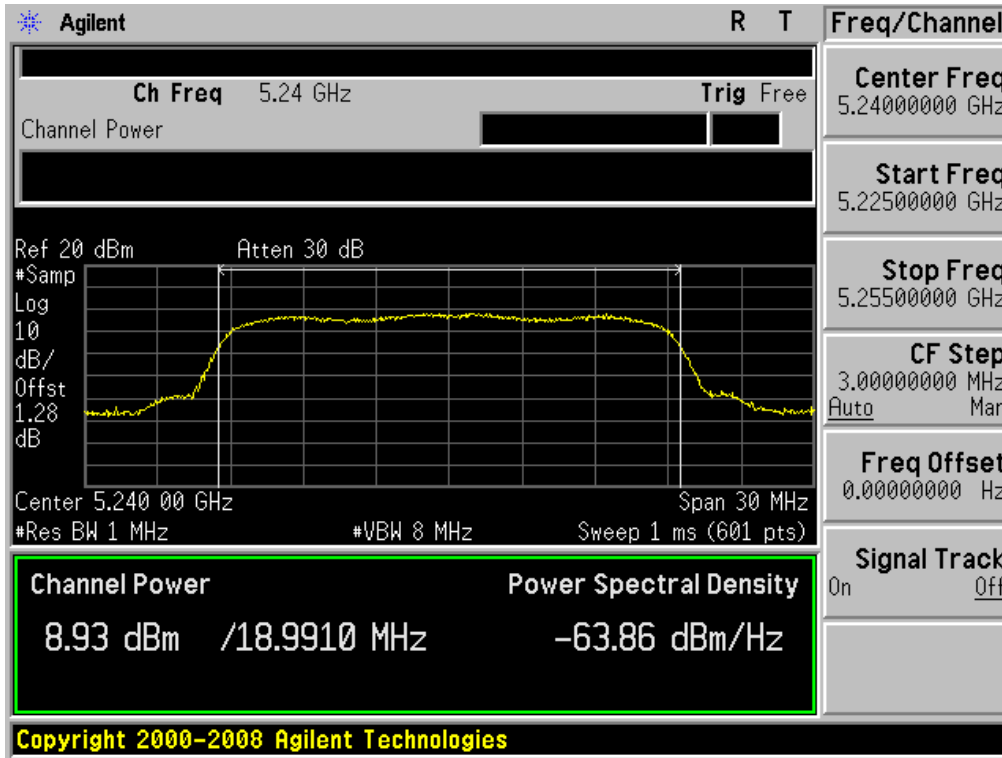
Output Power

Test Mode: 802.11n HT20 & Ch.40 & Chain 1



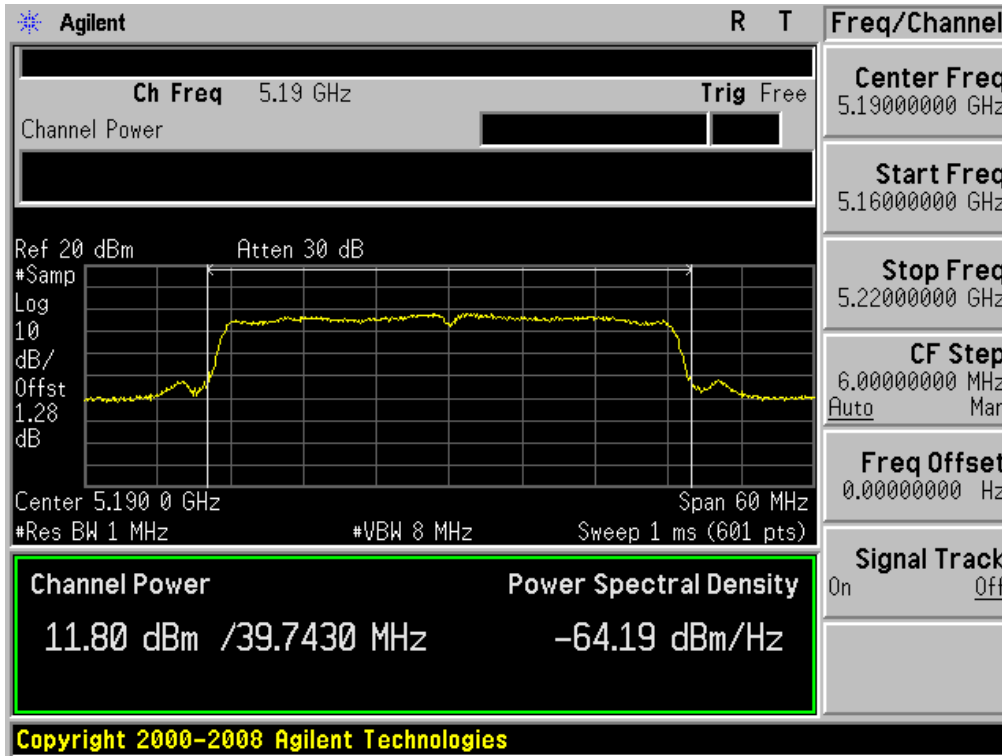
Output Power

Test Mode: 802.11n HT20 & Ch.48 & Chain 1



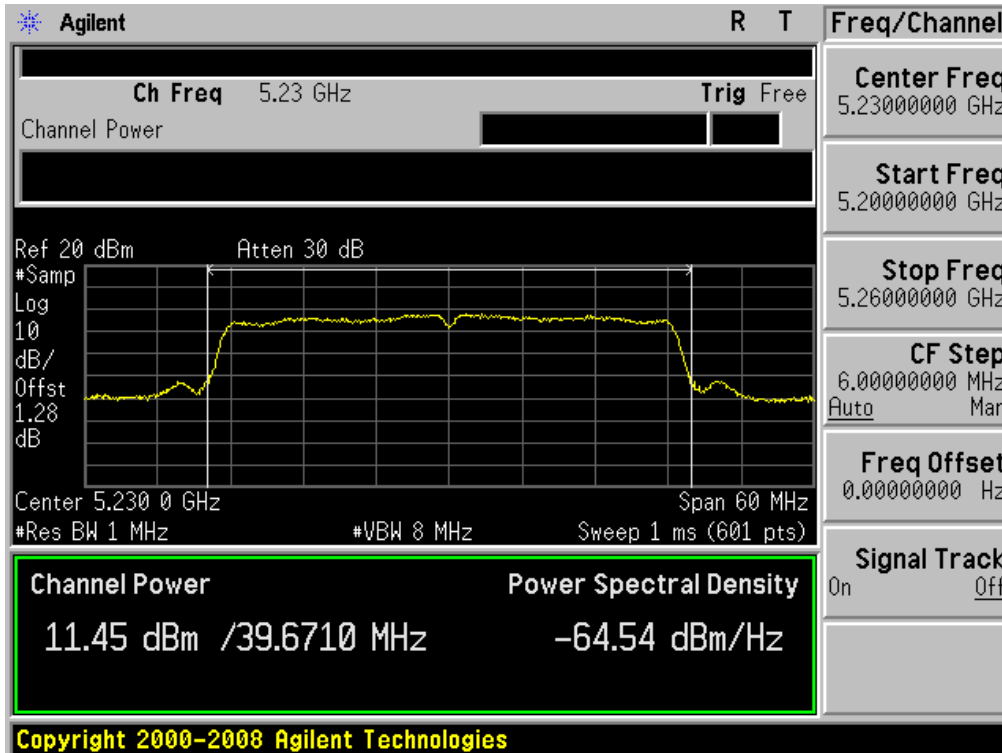
Output Power

Test Mode: 802.11n HT40 & Ch.38 & Chain 0



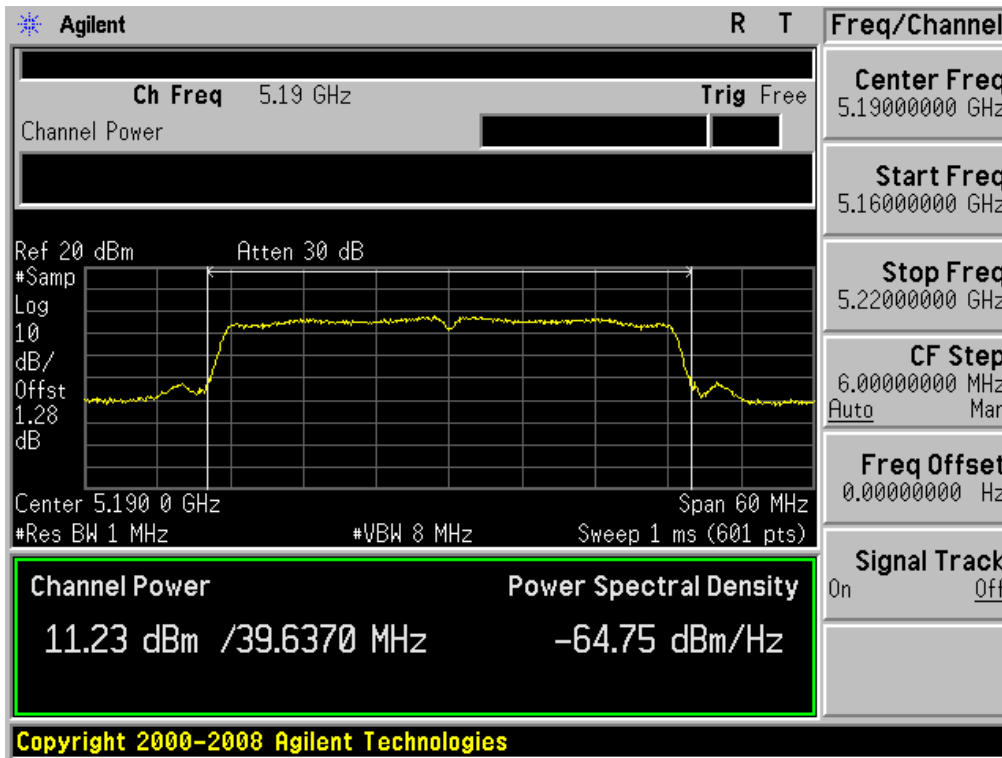
Output Power

Test Mode: 802.11n HT40 & Ch.46 & Chain 0



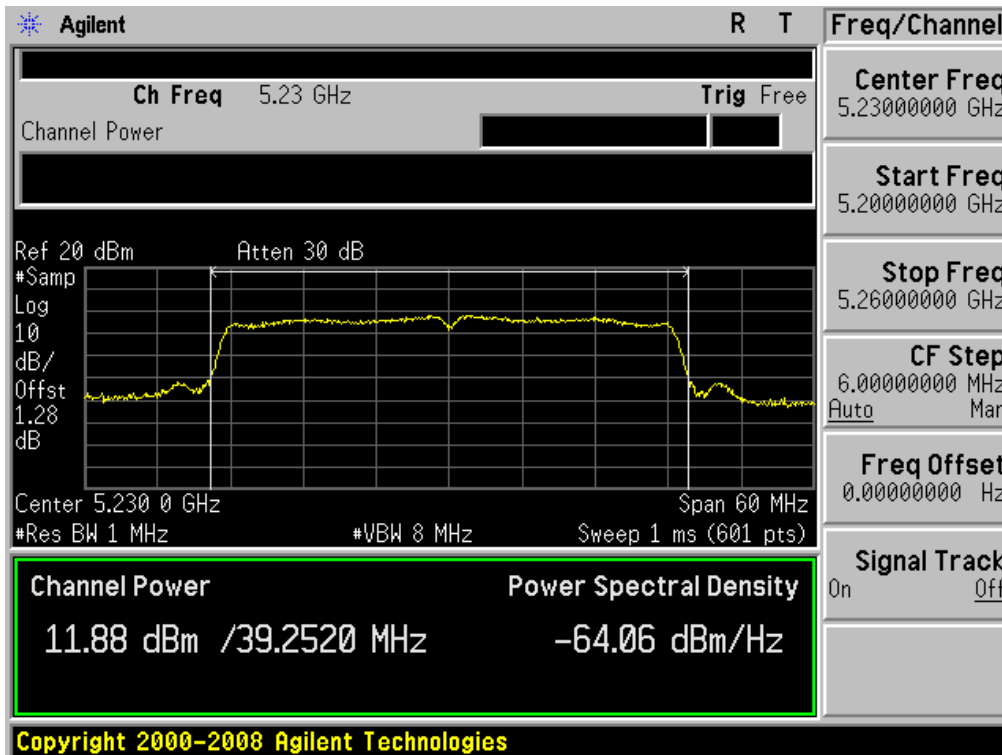
Output Power

Test Mode: 802.11n HT40 & Ch.38 & Chain 1



Output Power

Test Mode: 802.11n HT40 & Ch.46 & Chain 1



3.2.3 Peak Power Spectral Density

- Procedure:

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for assessing Unlicensed National Information Infrastructure (U-NII) devices – Part 15, Subpart E, August 2002.
PPSD method #2 was used.

- Measurement Data: Comply

| Mode | Channel | Frequency [MHz] | Test Result [dBm] | |
|---------|---------|-----------------|-------------------|---------|
| | | | Chain 0 | Chain 1 |
| 802.11a | 36 | 5180 | 3.066 | 2.546 |
| | 40 | 5200 | 3.233 | 3.056 |
| | 48 | 5240 | 2.651 | 2.665 |

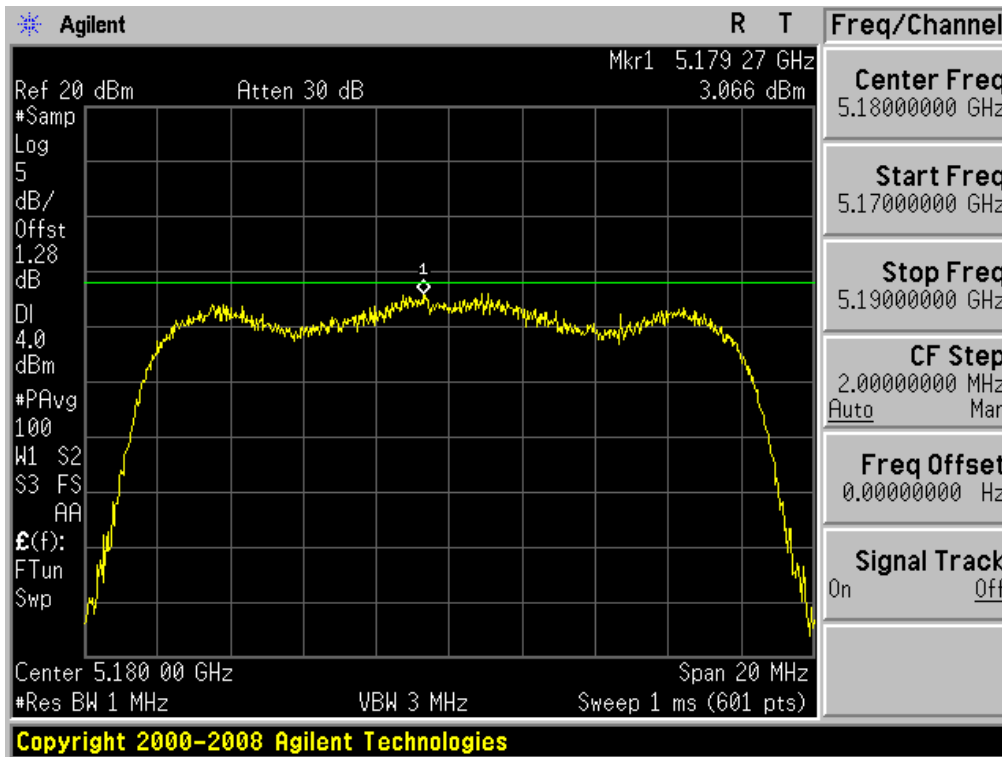
| Frequency [MHz] | Channel No. | 802.11 Mode | Chain 0 [dBm] | Chain 1 [dBm] | Aggregate PPSD [dBm] |
|-----------------|-------------|-------------|---------------|---------------|----------------------|
| 5180 | 36 | n(HT20) | -0.669 | -1.570 | 1.914 |
| 5200 | 40 | n(HT20) | -1.502 | -1.326 | 1.597 |
| 5240 | 48 | n(HT20) | -1.043 | -1.588 | 1.703 |
| 5190 | 38 | n(HT40) | -1.345 | -1.860 | 1.415 |
| 5230 | 46 | n(HT40) | -1.956 | -1.220 | 1.438 |

Note 1: Aggregate power calculation = $10 \log(10^{\frac{\text{chain0}}{10}} + 10^{\frac{\text{chain1}}{10}})$

| | |
|--------------------------|----------------------------|
| Minimum Standard: | 5.150 - 5.250 GHz : 4 dBm |
| | 5.250 - 5.350 GHz : 11 dBm |
| | 5.470 - 5.725 GHz : 11 dBm |

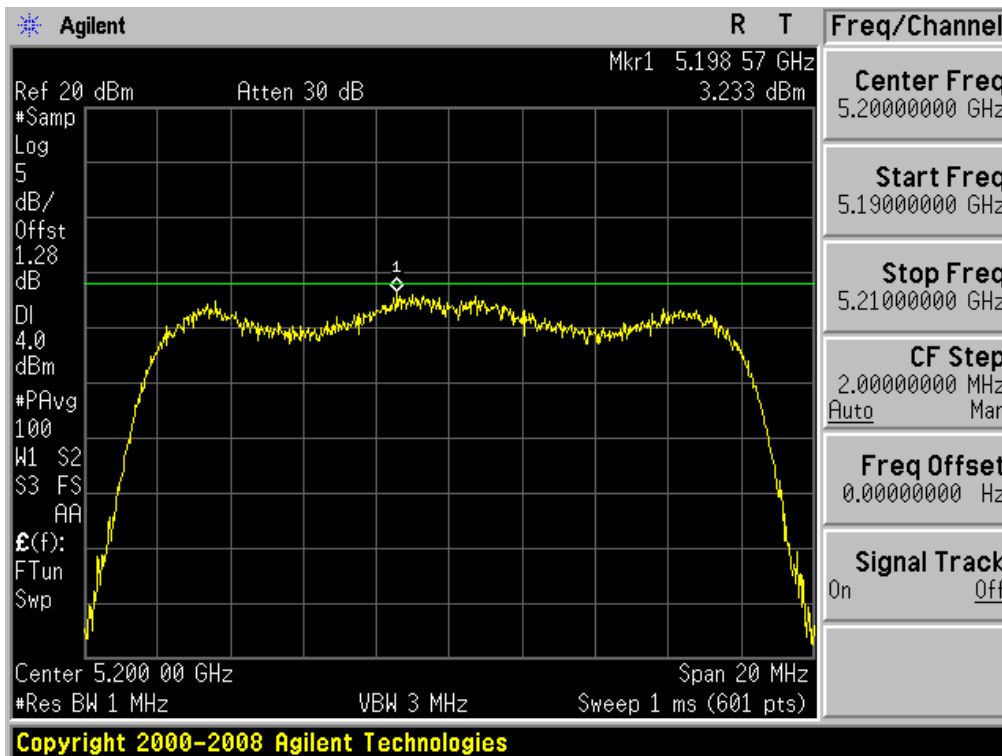
Peak Power Spectral Density

Test Mode: 802.11a & Ch.36 & Chain 0



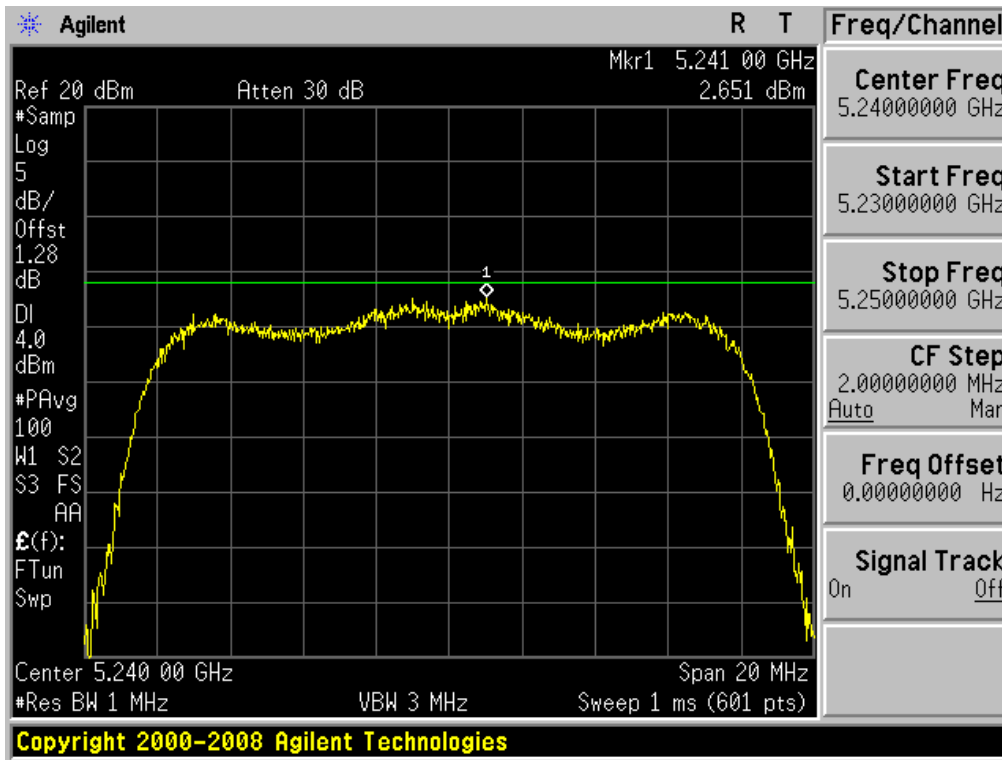
Peak Power Spectral Density

Test Mode: 802.11a & Ch.40 & Chain 0



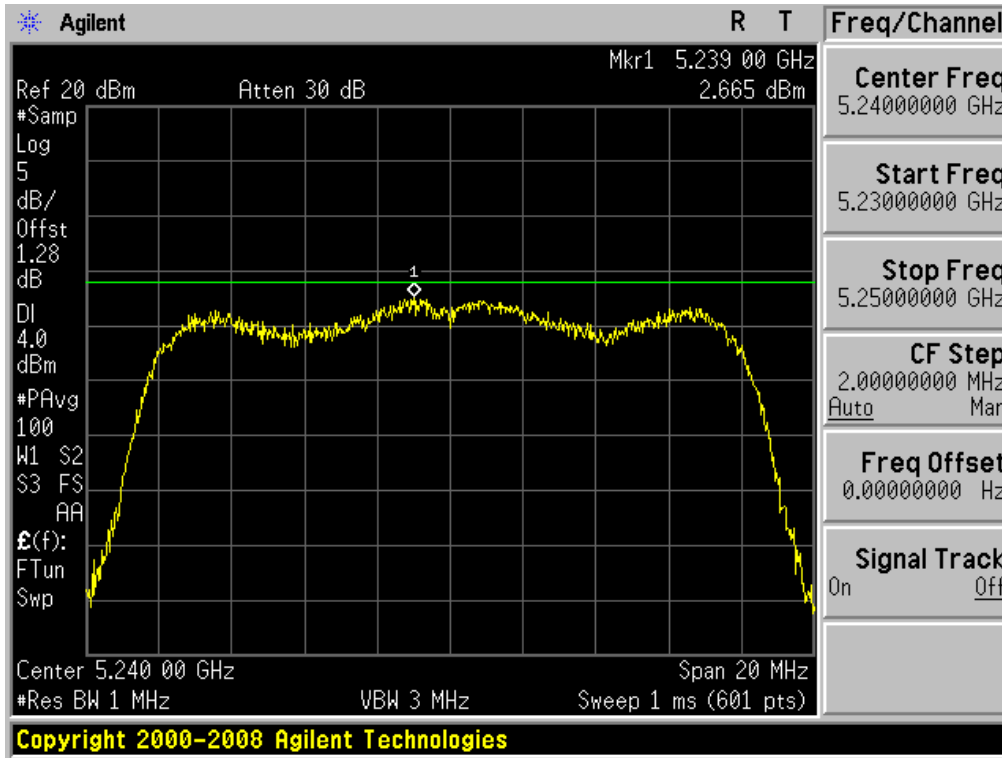
Peak Power Spectral Density

Test Mode: 802.11a & Ch.48 & Chain 0



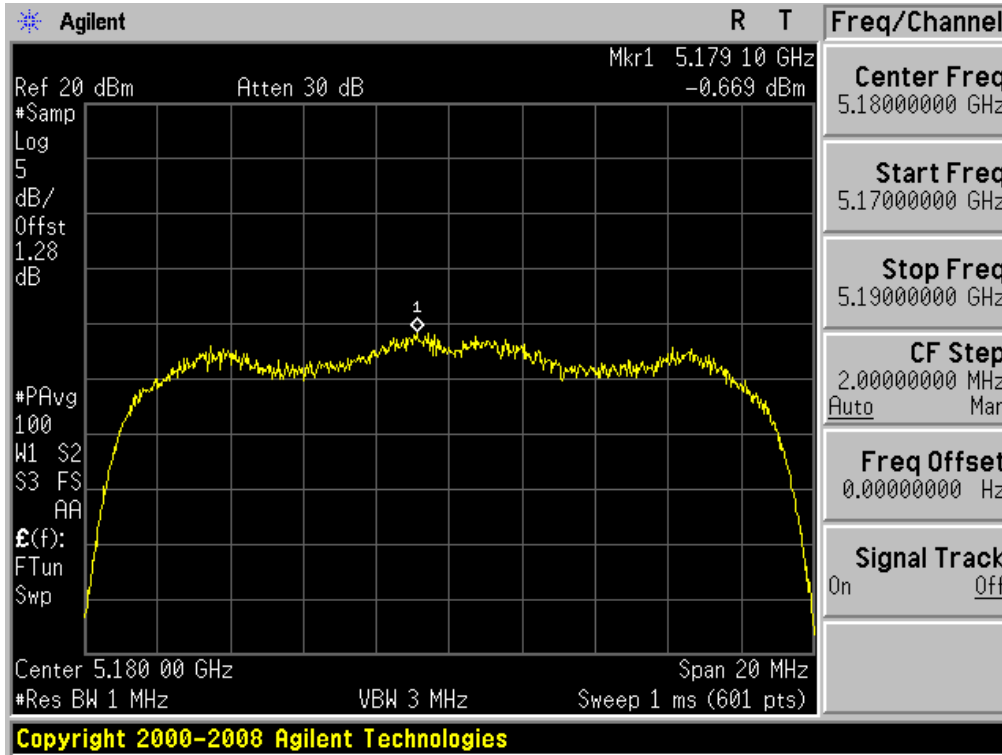
Peak Power Spectral Density

Test Mode: 802.11a & Ch.48 & Chain 1



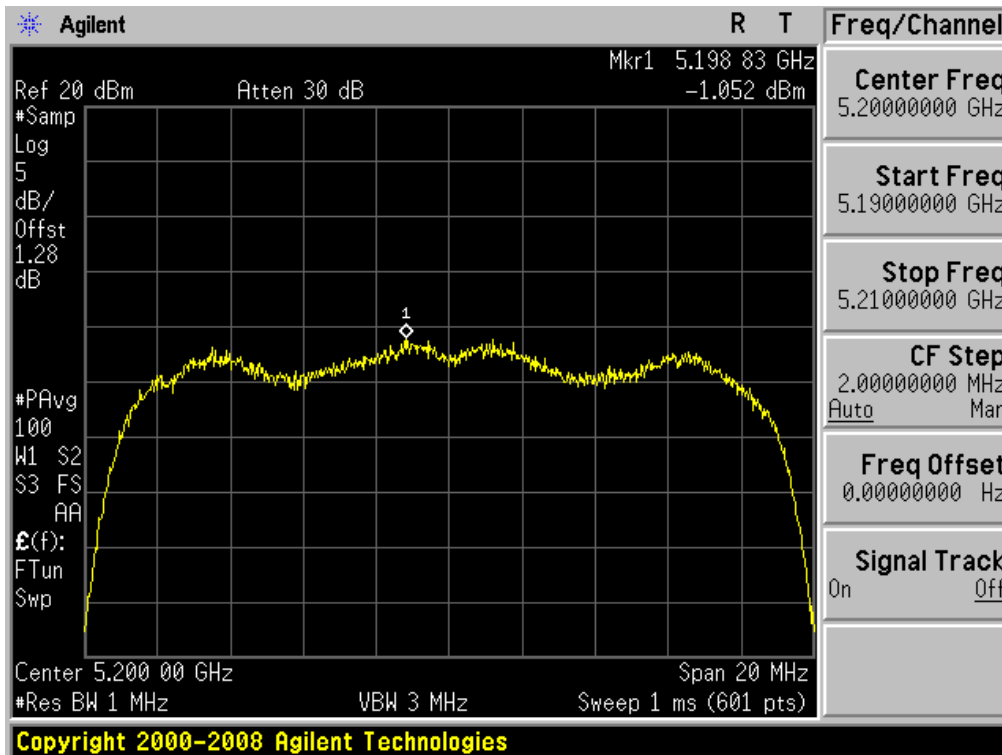
Peak Power Spectral Density

Test Mode: 802.11n HT20 & Ch.36 & Chain 0



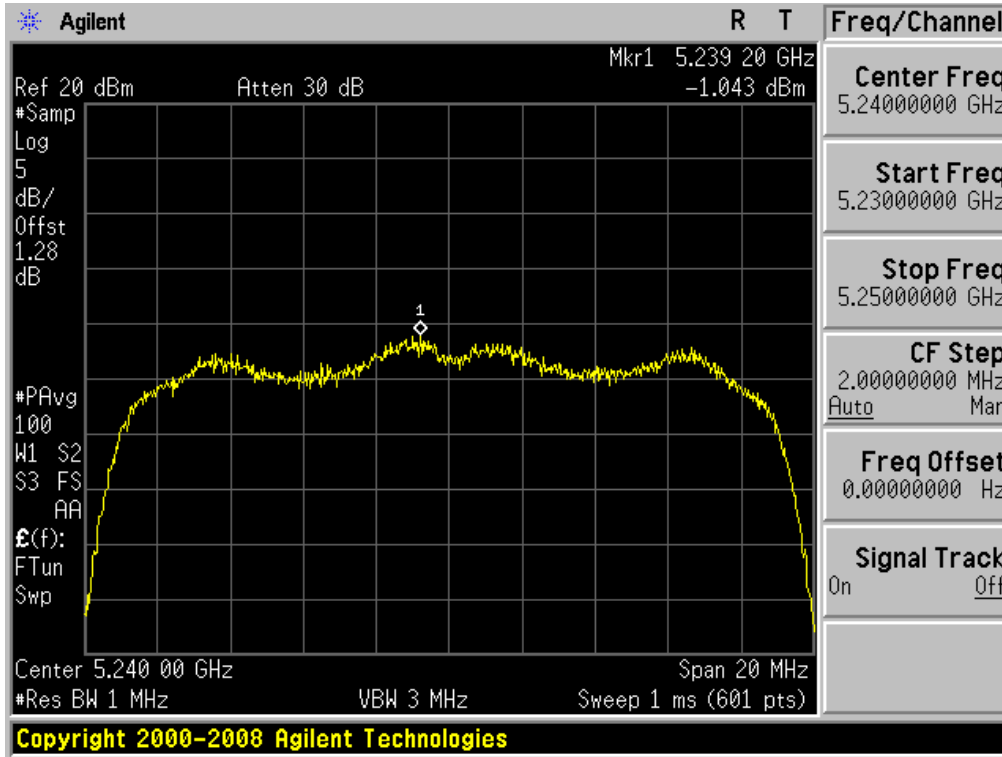
Peak Power Spectral Density

Test Mode: 802.11n HT20 & Ch.40 & Chain 0



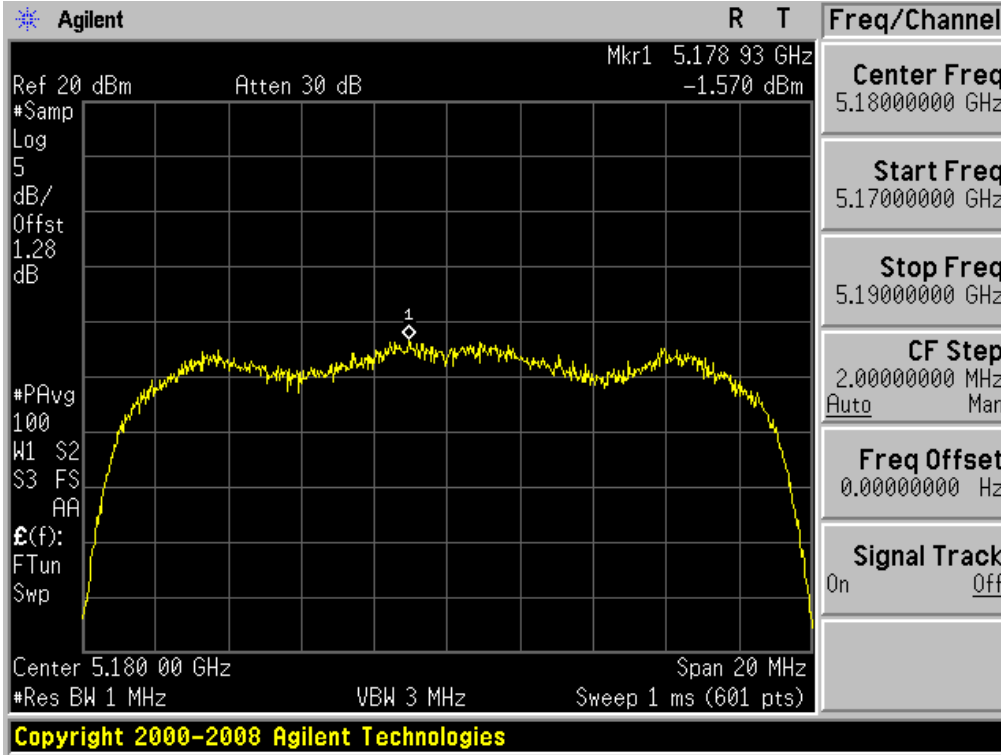
Peak Power Spectral Density

Test Mode: 802.11n HT20 & Ch.48 & Chain 0



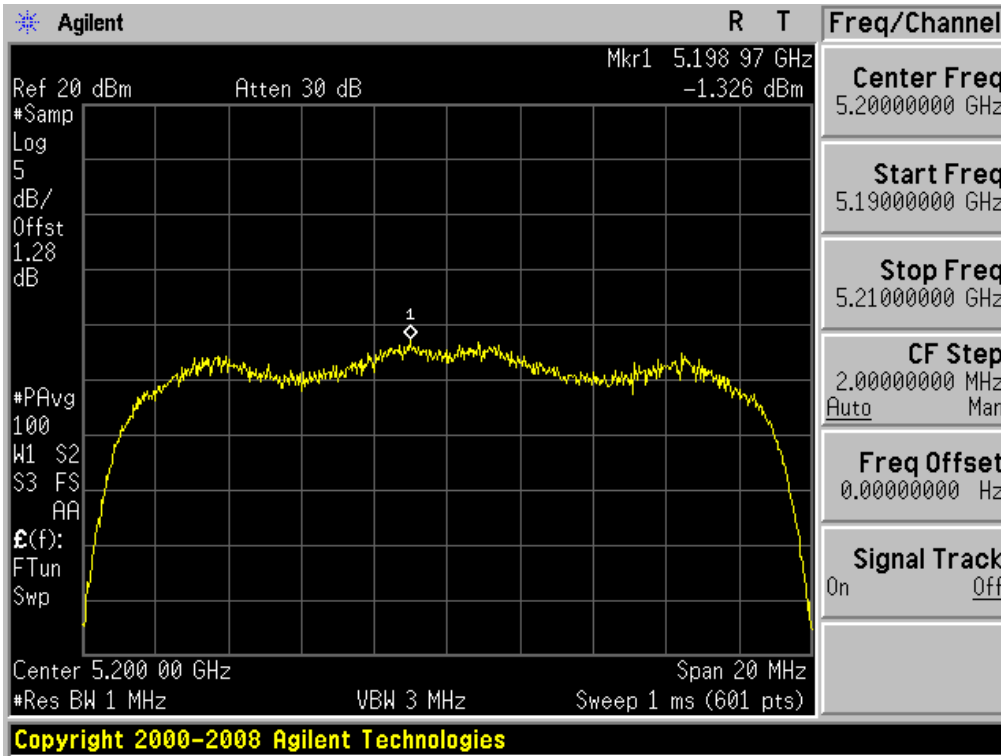
Peak Power Spectral Density

Test Mode: 802.11n HT20 & Ch.36 & Chain 1



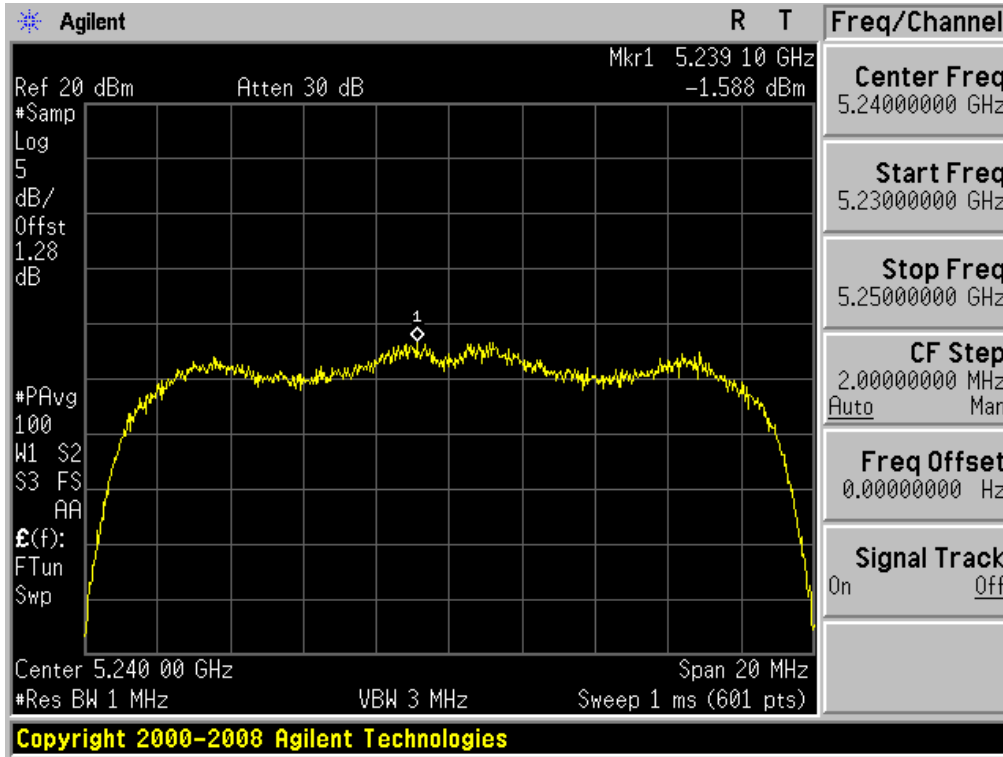
Peak Power Spectral Density

Test Mode: 802.11n HT20 & Ch.40 & Chain 1



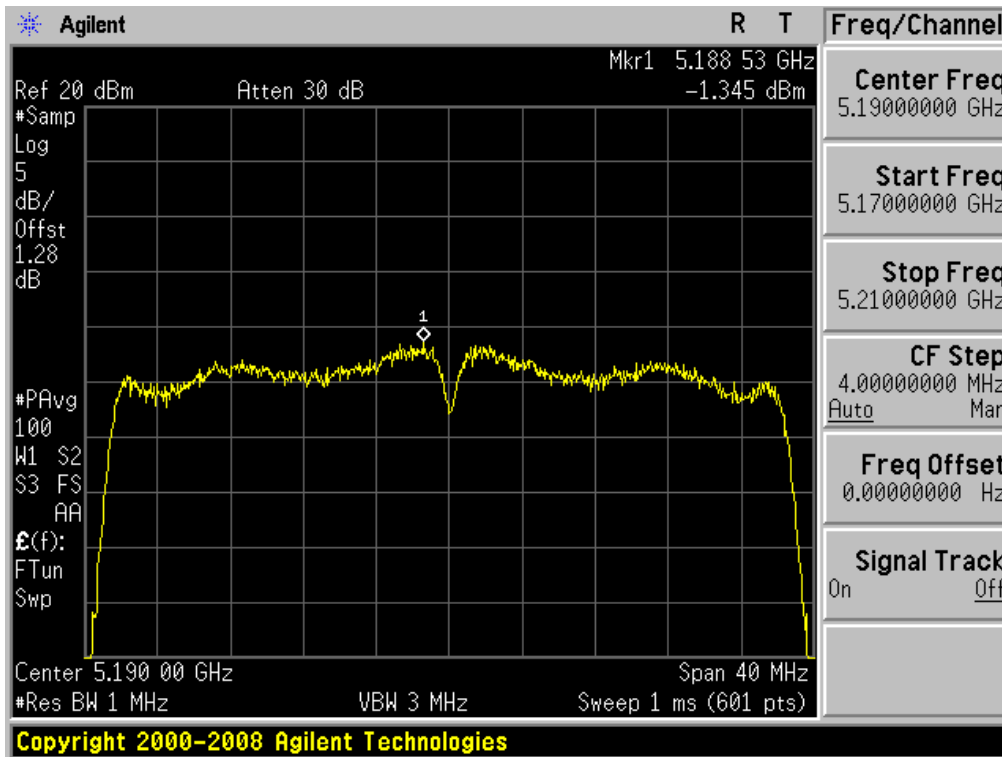
Peak Power Spectral Density

Test Mode: 802.11n HT20 & Ch.48 & Chain 1



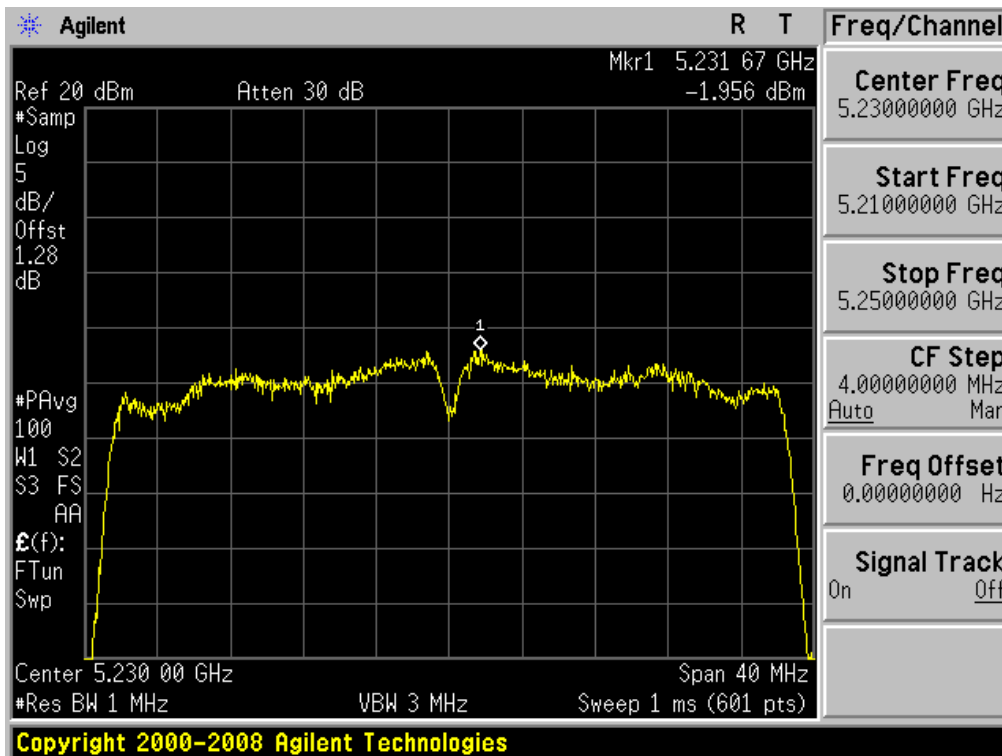
Peak Power Spectral Density

Test Mode: 802.11n HT40 & Ch.38 & Chain 0



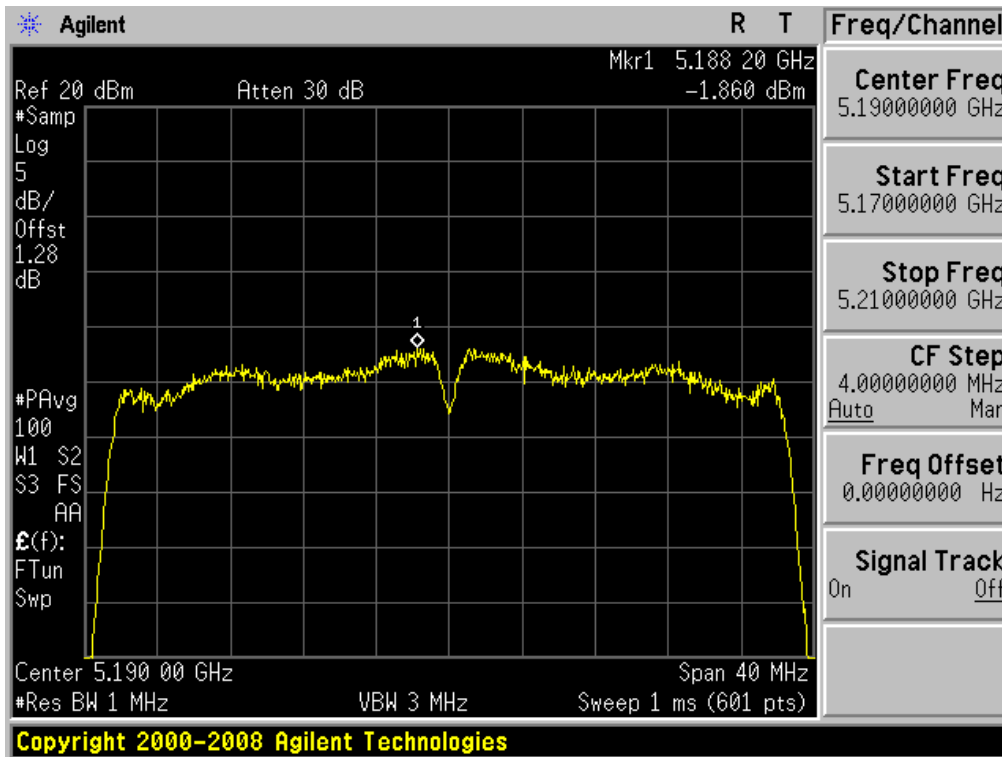
Peak Power Spectral Density

Test Mode: 802.11n HT40 & Ch.46 & Chain 0



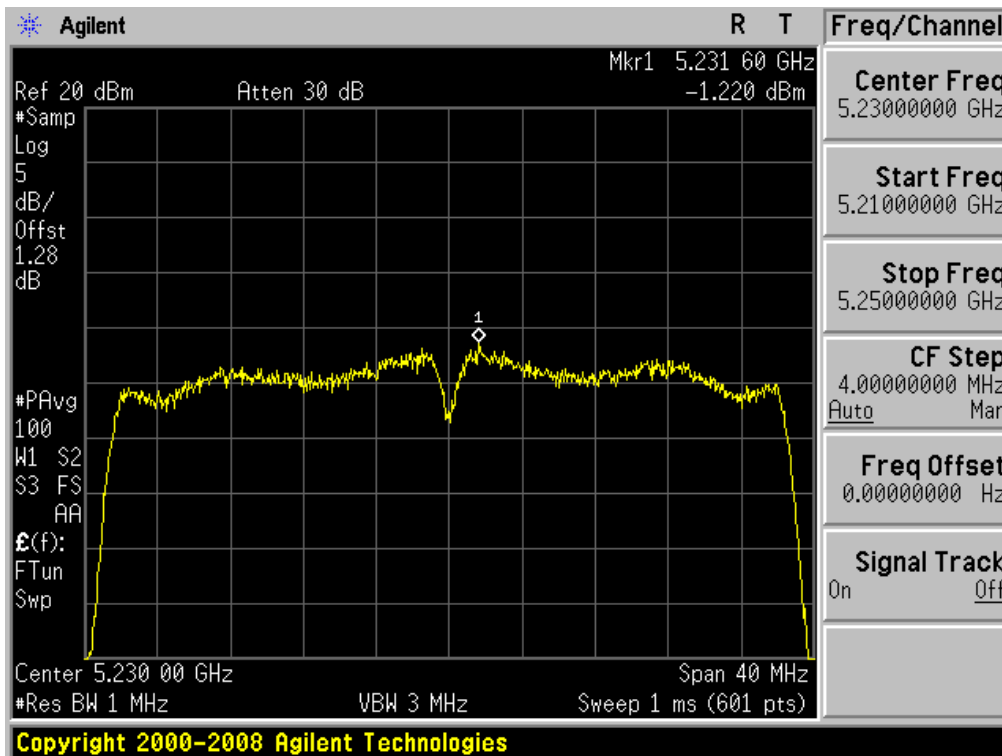
Peak Power Spectral Density

Test Mode: 802.11n HT40 & Ch.38 & Chain 1



Peak Power Spectral Density

Test Mode: 802.11n HT40 & Ch.46 & Chain 1



3.2.4 Peak Excursion Ratio

- Procedure:

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

- Measurement Data: Comply

| Mode | Channel | Frequency [MHz] | Test Result [dB] | |
|--------------|---------|-----------------|------------------|--------------|
| | | | Chain 0 | Chain 1 |
| 802.11a | 36 | 5180 | 7.61 | 7.05 |
| | 40 | 5200 | 7.81 | 7.44 |
| | 48 | 5240 | 6.93 | 7.04 |
| 802.11n HT20 | 36 | 5180 | 7.26 | 6.78 |
| | 40 | 5200 | 6.93 | 7.70 |
| | 48 | 5240 | 7.44 | 7.86 |
| 802.11n HT40 | 38 | 5190 | 9.99 | 11.50 |
| | 46 | 5230 | 10.07 | 10.51 |

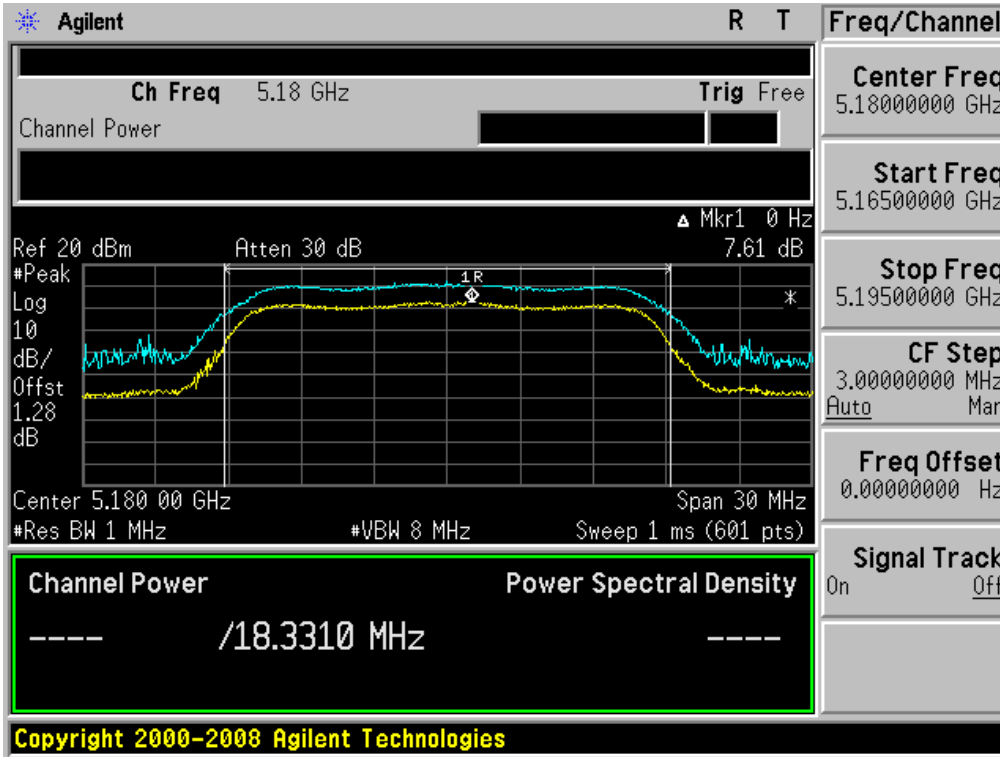
Note 1: The worst case plots are attached on next pages

- Minimum Standard:

| | |
|--------------------------|------------|
| Minimum Standard: | 13 dBm/MHz |
|--------------------------|------------|

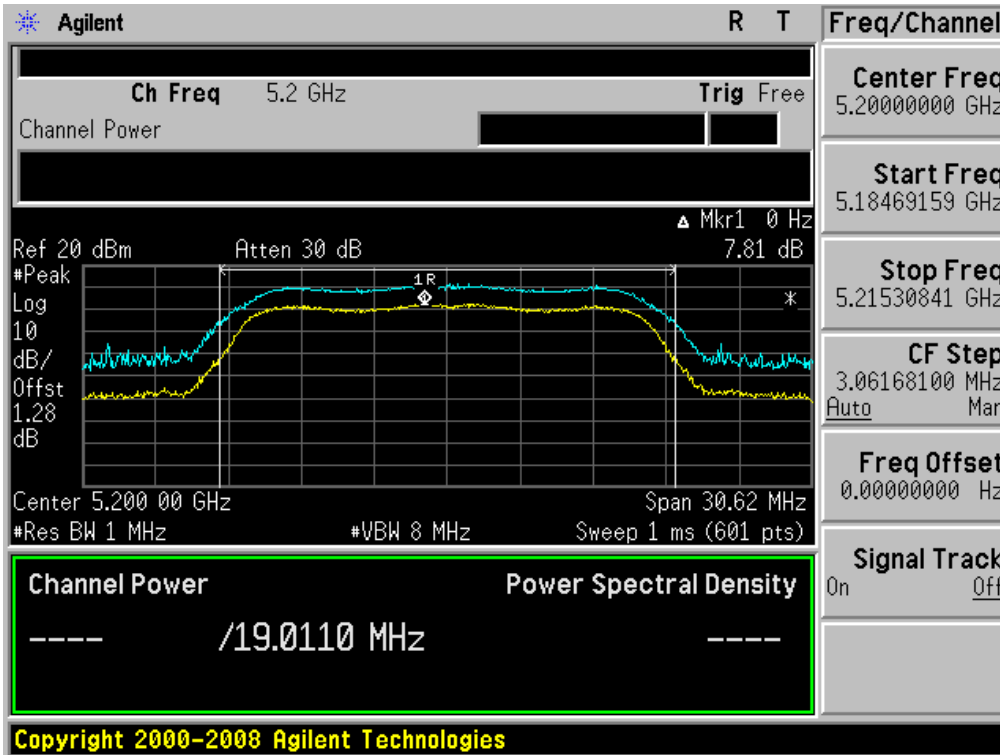
Peak Excursion Ratio

Test Mode: 802.11a & Ch.36 & Chain 0



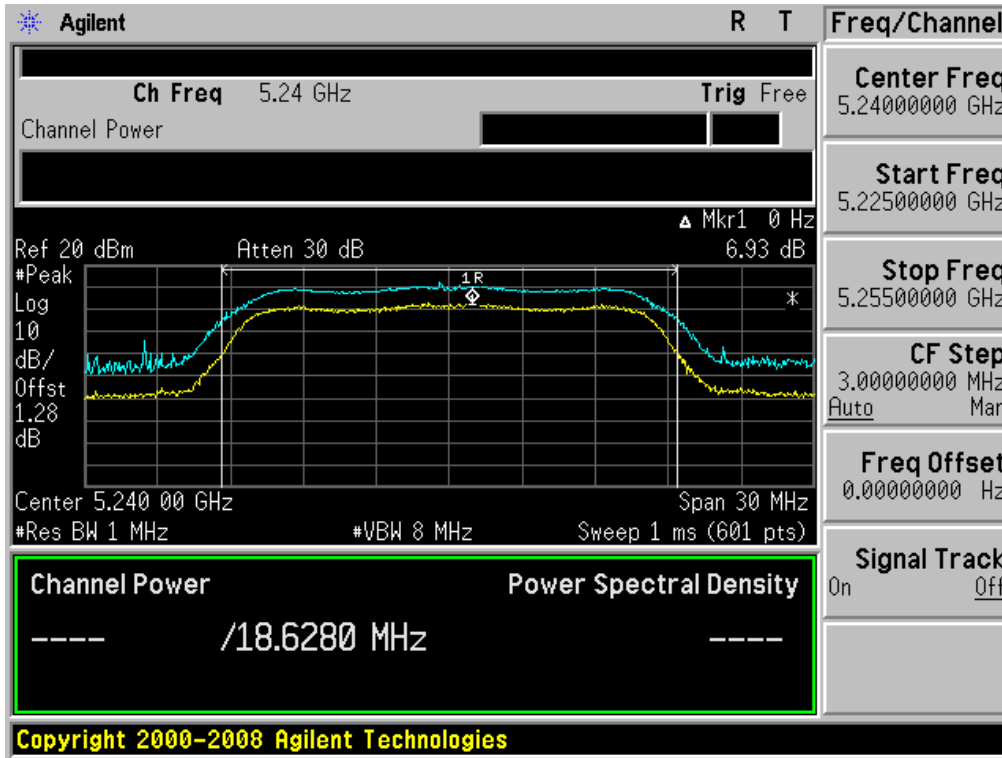
Peak Excursion Ratio

Test Mode: 802.11a & Ch.40 & Chain 0



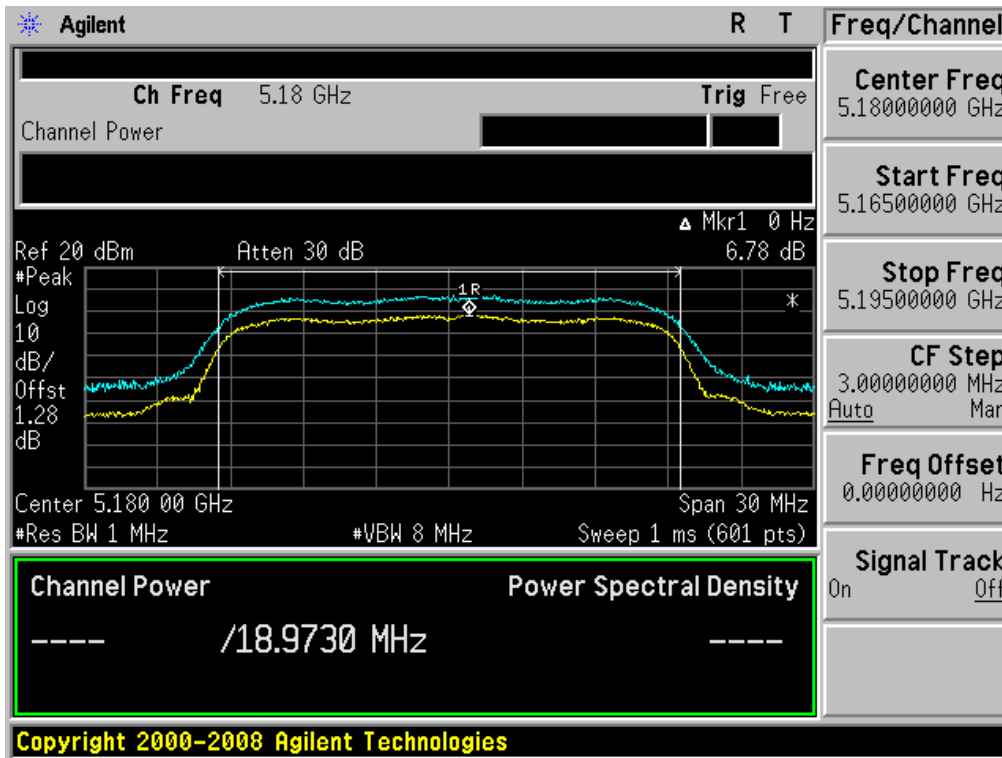
Peak Excursion Ratio

Test Mode: 802.11a & Ch.48 & Chain 0



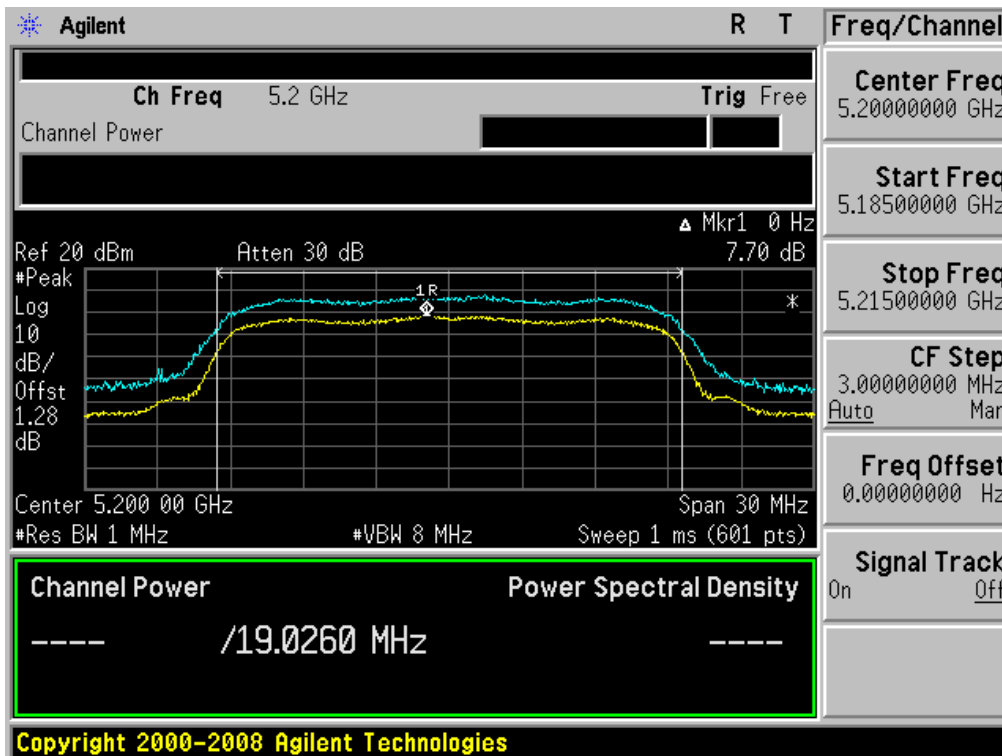
Peak Excursion Ratio

Test Mode: 802.11n HT20 & Ch.36 & Chain 1



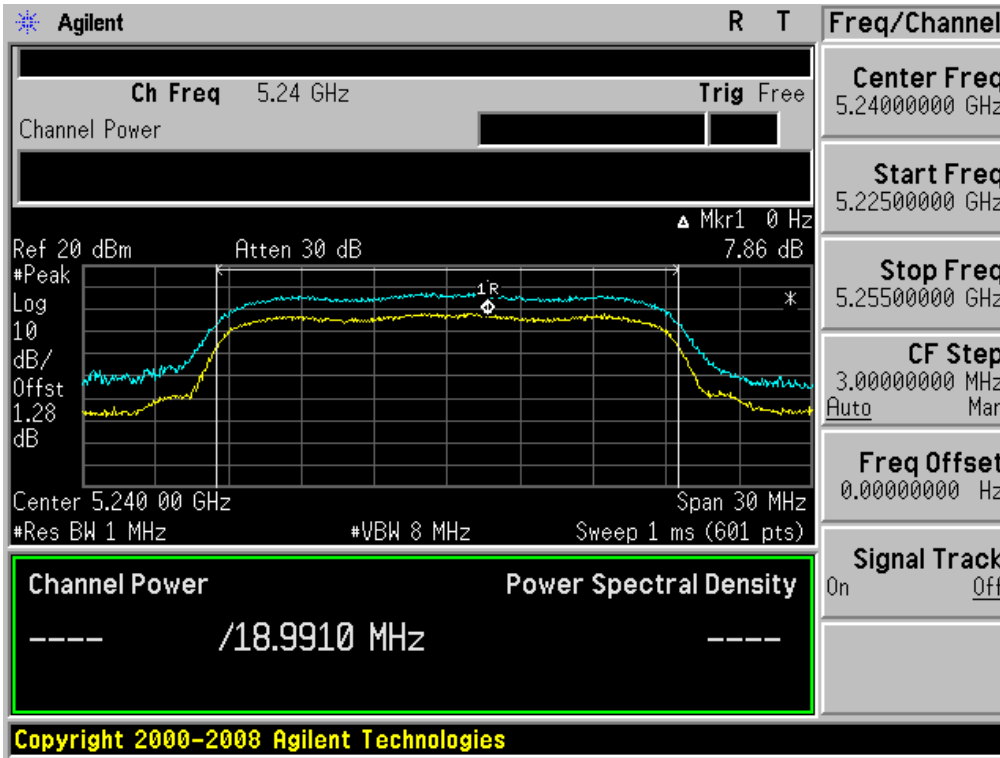
Peak Excursion Ratio

Test Mode: 802.11n HT20 & Ch.36 & Chain 1



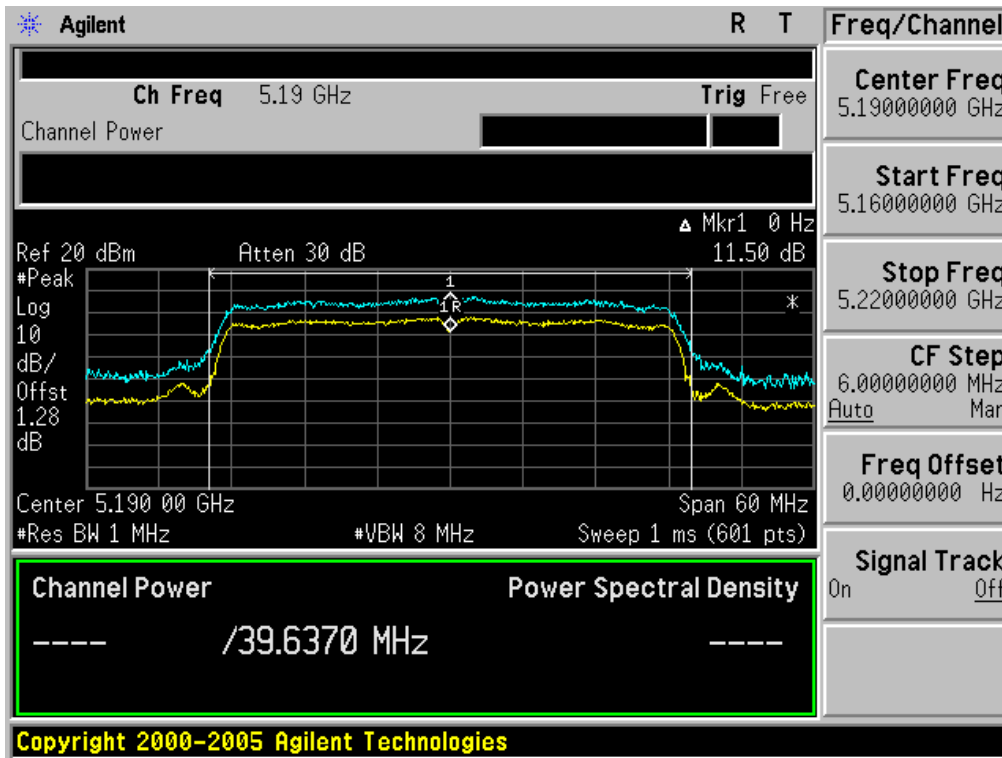
Peak Excursion Ratio

Test Mode: 802.11n HT20 & Ch.36 & Chain 1



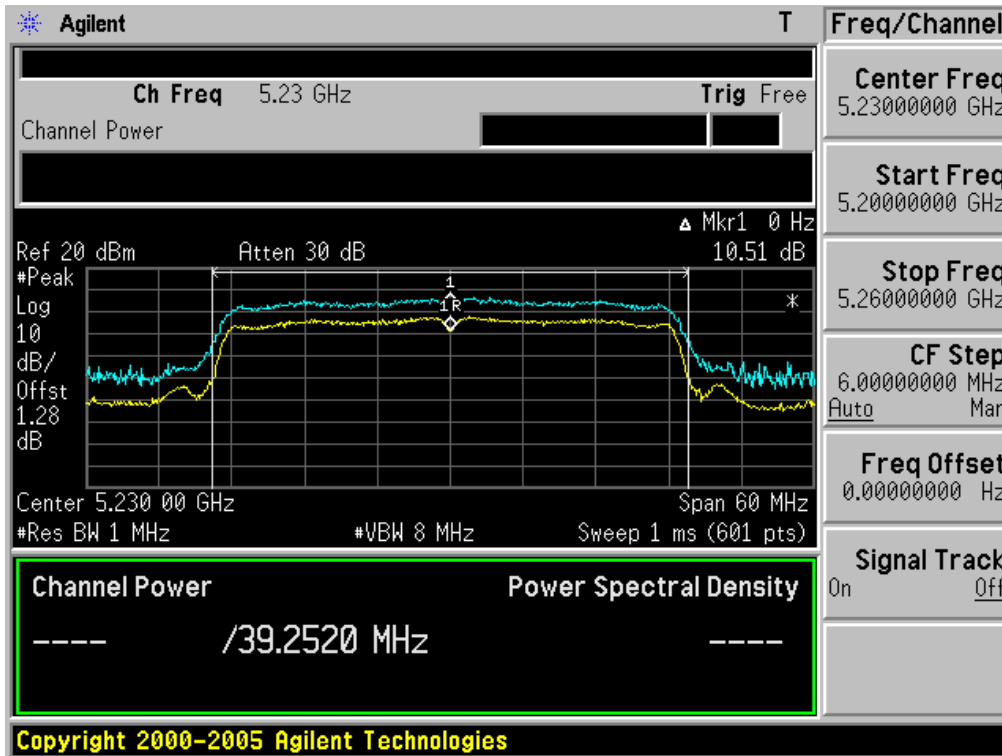
Peak Excursion Ratio

Test Mode: 802.11n HT40 & Ch.38 & Chain 1



Peak Excursion Ratio

Test Mode: 802.11n HT40 & Ch.46 & Chain 1



3.2.5 Frequency Stability

- Procedure:

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between 0°C and +50°C. The temperature was incremented by 10°C intervals and the unit was allowed to stabilize at each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.

- Measurement Data:

Test Mode : 802.11a & Ch.40 & Chain0
 OPERATING FREQUENCY : 5,200,000,000 Hz
 CHANNEL : 40
 REFERENCE VOLTAGE : 5.00 V DC

| VOLTAGE (%) | POWER (V DC) | TEMP (°C) | FREQ (Hz) | Deviation |
|---------------|--------------|-----------|---------------|-----------|
| | | | | (%) |
| 100% | 5.00 | +25(Ref) | 5,199,983,254 | -0.000322 |
| 100% | | 0 | 5,200,008,172 | 0.000157 |
| 100% | | +10 | 5,200,006,368 | 0.000122 |
| 100% | | +20 | 5,199,998,895 | -0.000021 |
| 100% | | +30 | 5,200,011,708 | 0.000225 |
| 100% | | +40 | 5,199,991,771 | -0.000158 |
| 100% | | +50 | 5,199,993,843 | -0.000118 |
| 100% | | +60 | 5,199,981,666 | -0.000353 |
| 115% | 5.75 | +25 | 5200013695 | 0.000263 |
| BATT.ENDPOINT | 4.50 | +25 | 5200010608 | 0.000204 |

Note1 : This device was tested above operating temperatures according to manufacturer's declaration

- Measurement Data:

Test Mode : 802.11n HT20 & Ch.40 & Chain1
 OPERATING FREQUENCY : 5,200,000,000 Hz
 CHANNEL : 40
 REFERENCE VOLTAGE : 5.00 V DC

| VOLTAGE (%) | POWER (V DC) | TEMP (°C) | FREQ (Hz) | Deviation |
|---------------|--------------|-----------|---------------|---------------|
| | | | | (%) |
| 100% | 5.00 | +25(Ref) | 5,200,013,881 | 0.000267 |
| 100% | | 0 | 5,199,976,397 | -0.000454 |
| 100% | | +10 | 5,200,011,042 | 0.000212 |
| 100% | | +20 | 5,200,025,790 | 0.000496 |
| 100% | | +30 | 5,200,023,134 | 0.000445 |
| 100% | | +40 | 5,200,002,237 | 0.000043 |
| 100% | | +50 | 5,199,995,786 | -0.000081 |
| 100% | | +60 | 5,200,013,458 | 0.000259 |
| 115% | | 5.75 | +25 | 5,200,015,729 |
| BATT.ENDPOINT | 4.50 | +25 | 5,200,015,420 | 0.000297 |

Note1 : This device was tested above operating temperatures according to manufacturer's declaration

- Measurement Data:

Test Mode : 802.11n HT40 & Ch.38 & Chain1
 OPERATING FREQUENCY : 5,190,000,000 Hz
 CHANNEL : 38
 REFERENCE VOLTAGE : 5.00 V DC

| VOLTAGE (%) | POWER (V DC) | TEMP (°C) | FREQ (Hz) | Deviation |
|---------------|--------------|-----------|---------------|---------------|
| | | | | (%) |
| 100% | 5.00 | +25(Ref) | 5,200,233,339 | 0.004487 |
| 100% | | 0 | 5,200,044,117 | 0.000848 |
| 100% | | +10 | 5,199,993,151 | -0.000132 |
| 100% | | +20 | 5,200,003,819 | 0.000073 |
| 100% | | +30 | 5,200,010,431 | 0.000201 |
| 100% | | +40 | 5,199,997,590 | -0.000046 |
| 100% | | +50 | 5,200,008,376 | 0.000161 |
| 100% | | +60 | 5,200,010,419 | 0.000200 |
| 115% | | 5.75 | +25 | 5,200,030,889 |
| BATT.ENDPOINT | 4.50 | +25 | 5,200,011,048 | 0.000212 |

Note1 : This device was tested above operating temperatures according to manufacturer's declaration

3.2.6 Radiated Spurious Emission Measurements

- Procedure:

The EUT was placed on a 0.8m high wooden table inside a shielded enclosure. An antenna was placed near the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed in OATS. Measurements were performed with the EUT oriented in 3 orthogonal axis and rotated 360 degrees to determine worst-case orientation for maximum emissions.

- Measurement Data: **Comply**

Note 1: See next pages for actual measured spectrum plots and data.

- Minimum Standard:

• FCC Part 15.209(a) and (b)

| Frequency (MHz) | Limit (uV/m) @ 3m |
|-----------------|-------------------|
| 30 ~ 88 | 100 ** |
| 88 ~ 216 | 150 ** |
| 216 ~ 960 | 200 ** |
| Above 960 | 500 |

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

• FCC Part 15.205 (a): Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | MHz | GHz | GHz |
|-------------------|-------------------|-------------------|-----------------|--------------|---------------|
| 0.009 ~ 0.110 | 8.41425 ~ 8.41475 | 108 ~ 121.94 | 1300 ~ 1427 | 3600 ~ 4400 | 14.47 ~ 14.5 |
| 0.495 ~ 0.505 | 12.29 ~ 12.293 | 123 ~ 138 | 1435 ~ 1626.5 | 4.5 ~ 5.15 | 15.35 ~ 16.2 |
| 2.1735 ~ 2.1905 | 12.51975 ~ | 149.9 ~ 150.05 | 1645.5 ~ 1646.5 | 5.35 ~ 5.46 | 17.7 ~ 21.4 |
| 4.125 ~ 4.128 | 12.52025 | 156.52475 ~ | 1660 ~ 1710 | 7.25 ~ 7.75 | 22.01 ~ 23.12 |
| 4.17725 ~ 4.17775 | 12.57675 ~ | 156.52525 | 1718.8 ~ 1722.2 | 8.025 ~ 8.5 | 23.6 ~ 24.0 |
| 4.20725 ~ 4.20775 | 12.57725 | 156.7 ~ 156.9 | 2200 ~ 2300 | 9.0 ~ 9.2 | 31.2 ~ 31.8 |
| 6.215 ~ 6.218 | 13.36 ~ 13.41 | 162.0125 ~ 167.17 | 2310 ~ 2390 | 9.3 ~ 9.5 | 36.43 ~ 36.5 |
| 6.26775 ~ 6.26825 | 16.42 ~ 16.423 | 167.72 ~ 173.2 | 2483.5 ~ 2500 | 10.6 ~ 12.7 | Above 38.6 |
| 6.31175 ~ 6.31225 | 16.69475 ~ | 240 ~ 285 | 2655 ~ 2900 | 13.25 ~ 13.4 | |
| 8.291 ~ 8.294 | 16.69525 | 322 ~ 335.4 | 3260 ~ 3267 | | |
| 8.362 ~ 8.366 | 16.80425 ~ | 399.90 ~ 410 | 3332 ~ 3339 | | |
| 8.37625 ~ 8.38675 | 16.80475 | 608 ~ 614 | 3345.8 ~ 3358 | | |
| | 25.5 ~ 25.67 | 960 ~ 1240 | | | |
| | 37.5 ~ 38.25 | | | | |
| | 73 ~ 74.6 | | | | |
| | 74.8 ~ 75.2 | | | | |

• **FCC Part 15.205(b):** The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

- Measurement Data:

Mode : **802.11a & Chain 0**
Operating Frequency : **5180**
Channel : **36**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 168.005 | H | Y axis | Quasi-Peak | 41.92 | -8.43 | 33.49 | 43.50 | 10.01 |
| 273.245 | H | Y axis | Quasi-Peak | 40.93 | -4.86 | 36.07 | 46.00 | 9.93 |
| 293.252 | H | Y axis | Quasi-Peak | 35.98 | -3.89 | 32.09 | 46.00 | 13.91 |
| 527.994 | H | Y axis | Quasi-Peak | 35.90 | -3.45 | 32.45 | 46.00 | 13.55 |
| 5147.4 | H | X axis | Peak | 52.85 | 5.06 | 57.91 | 74.00 | 16.09 |
| 5150.0 | H | X axis | Average | 41.32 | 5.06 | 46.38 | 54.00 | 7.62 |
| 5147.4 | V | Z axis | Peak | 55.24 | 5.06 | 60.30 | 74.00 | 13.70 |
| 5150.0 | V | Z axis | Average | 42.87 | 5.06 | 47.93 | 54.00 | 6.07 |
| - | - | - | - | - | --- | - | - | - |

Note.

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

- Measurement Data:

Mode : **802.11a & Chain 0**
Operating Frequency : **5200**
Channel : **40**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 30.931 | H | X axis | Quasi-Peak | 32.99 | -7.56 | 25.43 | 40.00 | 14.57 |
| 143.628 | H | X axis | Quasi-Peak | 40.25 | -10.05 | 30.20 | 43.50 | 13.30 |
| 168.047 | H | X axis | Quasi-Peak | 41.58 | -8.43 | 33.15 | 43.50 | 10.35 |
| 273.351 | H | X axis | Quasi-Peak | 39.44 | -4.85 | 34.59 | 46.00 | 11.41 |
| | | | | | - | | | |

Note.

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

- Measurement Data:

Mode : **802.11a & Chain 0**
Operating Frequency : **5240**
Channel : **48**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 30.266 | H | X axis | Quasi-Peak | 34.72 | -7.31 | 27.41 | 40.00 | 12.59 |
| 168.157 | H | X axis | Quasi-Peak | 38.15 | -8.42 | 29.73 | 43.50 | 13.77 |
| 273.183 | H | X axis | Quasi-Peak | 40.20 | -4.86 | 35.34 | 46.00 | 10.66 |
| 5416.9 | H | X axis | Peak | 43.90 | 5.47 | 49.37 | 74.00 | 24.63 |
| 5350.0 | H | X axis | Average | 32.22 | 5.38 | 37.60 | 54.00 | 16.40 |
| 5352.3 | V | Z axis | Peak | 44.05 | 5.38 | 49.43 | 74.00 | 24.57 |
| 5390.4 | V | Z axis | Average | 32.93 | 5.43 | 38.36 | 54.00 | 15.64 |
| | | | | | - | | | |

Note.

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

- Measurement Data:

Mode : **802.11a & Chain 1**
Operating Frequency : **5180**
Channel : **36**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 168.327 | H | Y axis | Quasi-Peak | 39.82 | -8.41 | 31.41 | 43.50 | 12.90 |
| 273.188 | H | Y axis | Quasi-Peak | 41.36 | -4.86 | 36.50 | 46.00 | 9.50 |
| 5149.4 | H | X axis | Peak | 52.34 | 5.06 | 57.40 | 74.00 | 16.60 |
| 5150.0 | H | X axis | Average | 41.65 | 5.06 | 46.71 | 54.00 | 7.29 |
| 5148.7 | V | Z axis | Peak | 47.74 | 5.06 | 52.80 | 74.00 | 21.20 |
| 5150.0 | V | Z axis | Average | 36.22 | 5.06 | 41.28 | 54.00 | 12.72 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | - | | | |

Note.

4. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
5. Above listed point data is the worst case data.
6. Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

- Measurement Data:

Mode : **802.11a & Chain 1**
Operating Frequency : **5200**
Channel : **40**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 168.268 | H | X axis | Quasi-Peak | 41.69 | -8.42 | 33.27 | 43.50 | 10.23 |
| 273.610 | H | X axis | Quasi-Peak | 39.40 | -4.84 | 34.56 | 46.00 | 11.44 |
| 431.982 | H | X axis | Quasi-Peak | 38.18 | -5.23 | 32.95 | 46.00 | 13.05 |
| 527.617 | H | X axis | Quasi-Peak | 35.97 | -3.46 | 32.51 | 46.00 | 13.49 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Note.

4. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
5. Above listed point data is the worst case data.
6. Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

- Measurement Data:

Mode : **802.11a & Chain 1**
Operating Frequency : **5240**
Channel : **48**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 273.418 | H | Y axis | Quasi-Peak | 39.81 | -4.85 | 34.96 | 46.00 | 11.04 |
| 431.647 | H | Y axis | Quasi-Peak | 37.33 | -5.23 | 32.10 | 46.00 | 13.90 |
| 5385.1 | H | X axis | Peak | 43.48 | 5.42 | 48.90 | 74.00 | 25.1 |
| 5360.4 | H | X axis | Average | 31.68 | 5.39 | 37.07 | 54.00 | 16.93 |
| 5398.3 | V | Z axis | Peak | 44.5 | 5.44 | 49.94 | 74.00 | 24.06 |
| 5350.1 | V | Z axis | Average | 31.96 | 5.38 | 37.34 | 54.00 | 16.66 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | - | | | |

Note.

4. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
5. Above listed point data is the worst case data.
6. Sample Calculation.
 $\text{Margin} = \text{Limit} - \text{Result}$ / $\text{Result} = \text{Reading} + \text{T.F}$ / $\text{T.F} = \text{AF} + \text{CL} - \text{AG}$
 Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

- Measurement Data:

Mode : **802.11n HT20**
Operating Frequency : **5180**
Channel : **36**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 168.431 | H | Z axis | Quasi-Peak | 39.17 | -8.40 | 30.77 | 43.50 | 12.73 |
| 273.462 | H | Z axis | Quasi-Peak | 40.07 | -4.85 | 35.22 | 46.00 | 10.78 |
| 431.912 | H | Z axis | Quasi-Peak | 38.64 | -5.23 | 33.41 | 46.00 | 12.59 |
| 5150.0 | H | Z axis | Peak | 50.82 | 5.06 | 55.88 | 74.00 | 18.12 |
| 5150.0 | H | Z axis | Average | 39.16 | 5.06 | 44.22 | 54.00 | 9.78 |
| 5150.0 | V | Z axis | Peak | 49.97 | 5.06 | 55.03 | 74.00 | 18.97 |
| 5150.0 | V | Z axis | Average | 39.45 | 5.06 | 44.51 | 54.00 | 9.49 |
| | | | | | | | | |
| | | | | | - | | | |

Note.

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$
Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

- Measurement Data:

Mode : **802.11n HT20**
Operating Frequency : **5200**
Channel : **40**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 30.723 | H | Y axis | Quasi-Peak | 32.67 | -7.48 | 25.19 | 40.00 | 14.81 |
| 143.681 | H | Y axis | Quasi-Peak | 38.64 | -10.05 | 28.59 | 43.50 | 14.91 |
| 168.317 | H | Y axis | Quasi-Peak | 39.17 | -8.41 | 30.76 | 43.50 | 12.74 |
| 273.634 | H | Y axis | Quasi-Peak | 39.66 | -4.84 | 34.82 | 46.00 | 11.18 |
| 431.647 | H | Y axis | Quasi-Peak | 38.47 | -5.23 | 33.24 | 46.00 | 12.76 |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Note.

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

- Measurement Data:

Mode : **802.11n HT20**
Operating Frequency : **5240**
Channel : **48**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 168.674 | H | Y axis | Quasi-Peak | 39.85 | -8.38 | 31.47 | 43.50 | 12.03 |
| 273.624 | H | Y axis | Quasi-Peak | 40.26 | -4.84 | 35.42 | 46.00 | 10.58 |
| 527.624 | H | Y axis | Quasi-Peak | 36.81 | -3.46 | 33.35 | 46.00 | 12.65 |
| 5439.8 | H | Y axis | Peak | 44.75 | 5.49 | 50.24 | 74.00 | 23.76 |
| 5419.6 | H | Y axis | Average | 31.86 | 5.47 | 37.33 | 54.00 | 16.67 |
| 5416.1 | V | Y axis | Peak | 44.24 | 5.46 | 49.70 | 74.00 | 24.30 |
| 5419.8 | V | Y axis | Average | 31.85 | 5.47 | 37.32 | 54.00 | 16.68 |
| | | | | | | | | |
| | | | | | - | | | |

Note.

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

- Measurement Data:

Mode : **802.11n HT40**
Operating Frequency : **5190**
Channel : **38**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 143.647 | H | X axis | Quasi-Peak | 40.69 | -10.05 | 30.64 | 43.50 | 12.86 |
| 168.752 | H | X axis | Quasi-Peak | 39.87 | -8.38 | 31.49 | 43.50 | 12.01 |
| 273.145 | H | X axis | Quasi-Peak | 40.03 | -4.86 | 35.17 | 46.00 | 10.83 |
| 5150.0 | H | Z axis | Peak | 61.55 | 5.06 | 66.61 | 74.00 | 7.39 |
| 5150.0 | H | Z axis | Average | 44.24 | 5.06 | 49.30 | 54.00 | 4.70 |
| 5146.8 | V | Z axis | Peak | 62.96 | 5.05 | 68.01 | 74.00 | 5.99 |
| 5150.0 | V | Z axis | Average | 44.68 | 5.06 | 49.74 | 54.00 | 4.26 |
| | | | | | | | | |
| | | | | | - | | | |

Note.

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

- Measurement Data:

Mode : **802.11n HT40**
Operating Frequency : **5230**
Channel : **46**

30MHz ~ 40GHz Radiated Spurious Emissions

| Frequency (MHz) | ANT Pol | The worst case EUT Position | Detector | Reading (dBuV) | T.F (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|---------|-----------------------------|------------|----------------|------------|-----------------|----------------|-------------|
| 168.064 | H | Z axis | Quasi-Peak | 41.98 | -8.43 | 33.55 | 43.50 | 9.95 |
| 273.146 | H | Z axis | Quasi-Peak | 38.53 | -4.86 | 33.67 | 46.00 | 12.33 |
| 527.468 | H | Z axis | Quasi-Peak | 36.17 | -3.46 | 32.71 | 46.00 | 13.29 |
| 5403.5 | H | X axis | Peak | 44.44 | 5.45 | 49.89 | 74.00 | 24.11 |
| 5350.8 | H | X axis | Average | 32.60 | 5.38 | 37.98 | 54.00 | 16.02 |
| 5417.4 | V | Z axis | Peak | 44.47 | 5.47 | 49.94 | 74.00 | 24.06 |
| 5418.6 | V | Z axis | Average | 32.10 | 5.47 | 37.57 | 54.00 | 16.43 |
| | | | | | | | | |
| | | | | | | | | |

Note.

1. No other spurious and harmonic emissions were detected at a level greater than 15dB below limit.
2. Above listed point data is the worst case data.
3. Sample Calculation.

$$\text{Margin} = \text{Limit} - \text{Result} \quad / \quad \text{Result} = \text{Reading} + \text{T.F} \quad / \quad \text{T.F} = \text{AF} + \text{CL} - \text{AG}$$

Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain,

3.2.7 AC Conducted Emissions

- Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. Emissions closest to the limit are measured in the quasi-peak mode (QP) and average mode (AV) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

- Measurement Data: Comply

Note 1: See next pages for actual measured spectrum plots and data.

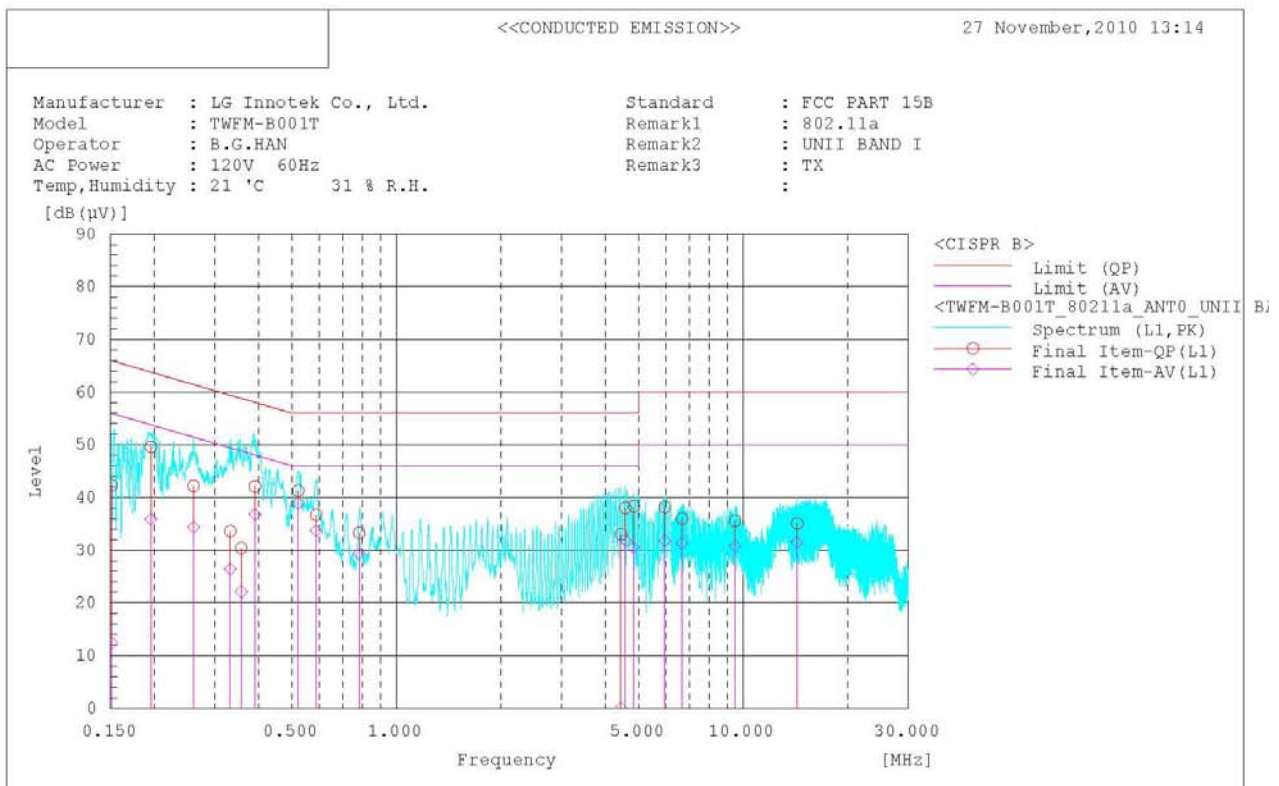
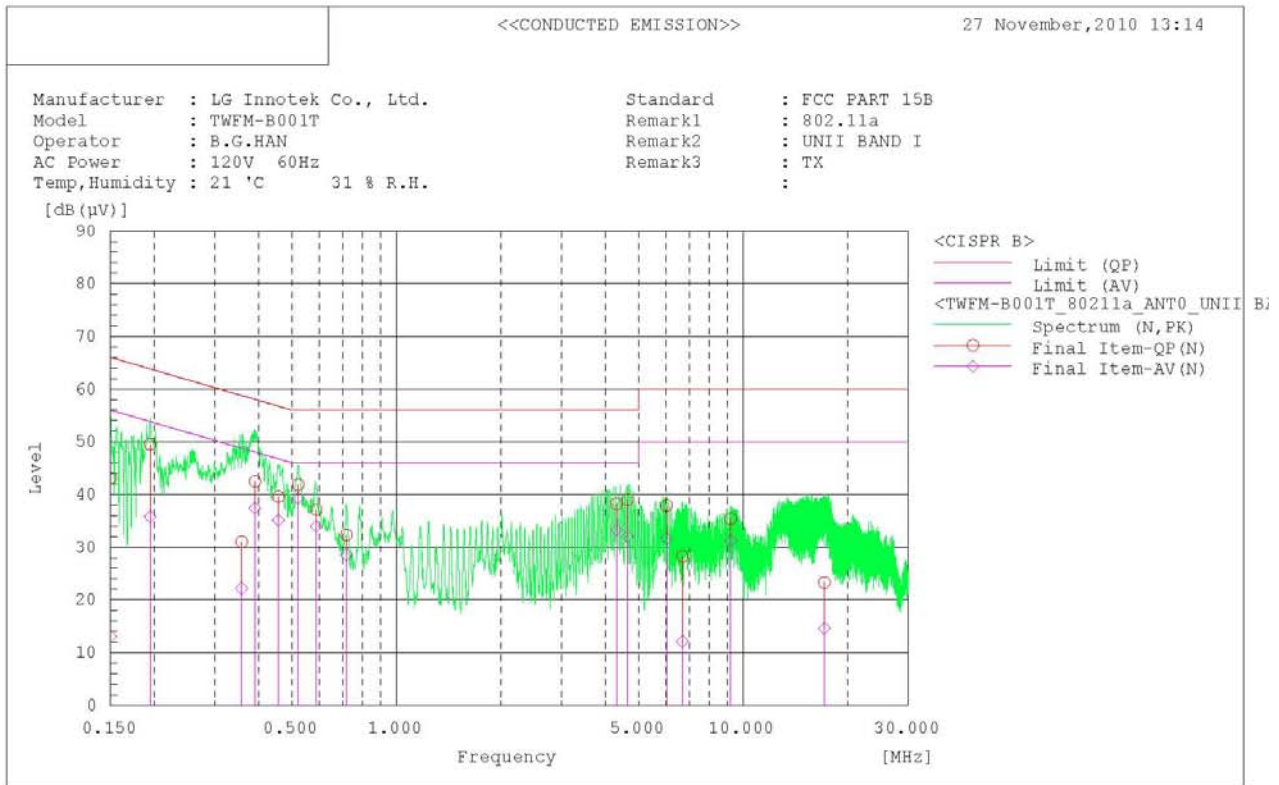
- Minimum Standard: FCC Part 15.207(a)/EN 55022

| Frequency Range (MHz) | Conducted Limit (dBuV) | |
|-----------------------|------------------------|------------|
| | Quasi-Peak | Average |
| 0.15 ~ 0.5 | 66 to 56 * | 56 to 46 * |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |

* Decreases with the logarithm of the frequency

AC Line Conducted Emissions (Graph)

Test Mode: 802.11a



AC Line Conducted Emissions (Data List)

Test Mode: 802.11a

```

.....
<<CONDUCTED EMISSION>>
27 November,2010 13:14

Standard      : FCC PART 15B
Manufacturer  : LG Innotek Co., Ltd.
Model        : TWFM-B001T
Operator      : B.G.HAN
AC Power      : 120V 60Hz
Temp, Humidity : 21 'C 31 % R.H.
Remark1      : 802.11a
Remark2      : UNII BAND I
Remark3      : TX
.....
    
```

Final Result

--- N Phase ---

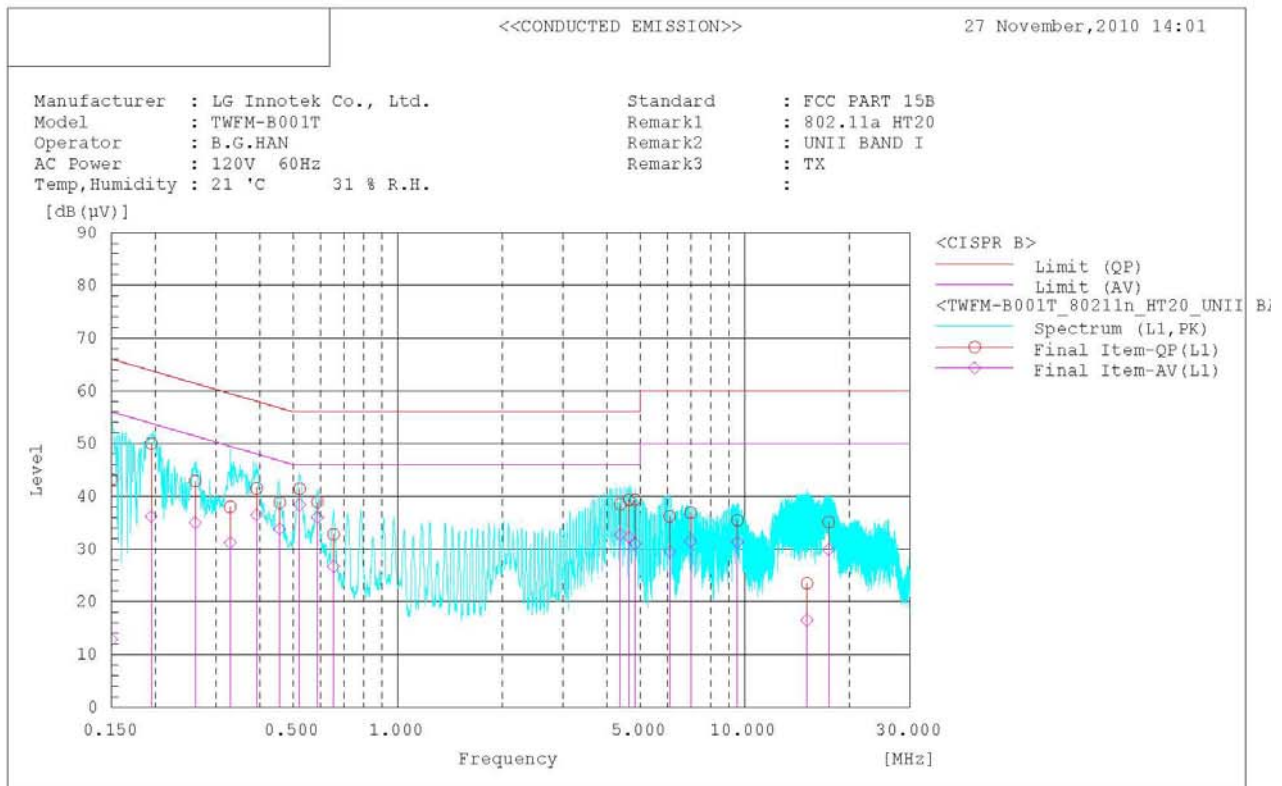
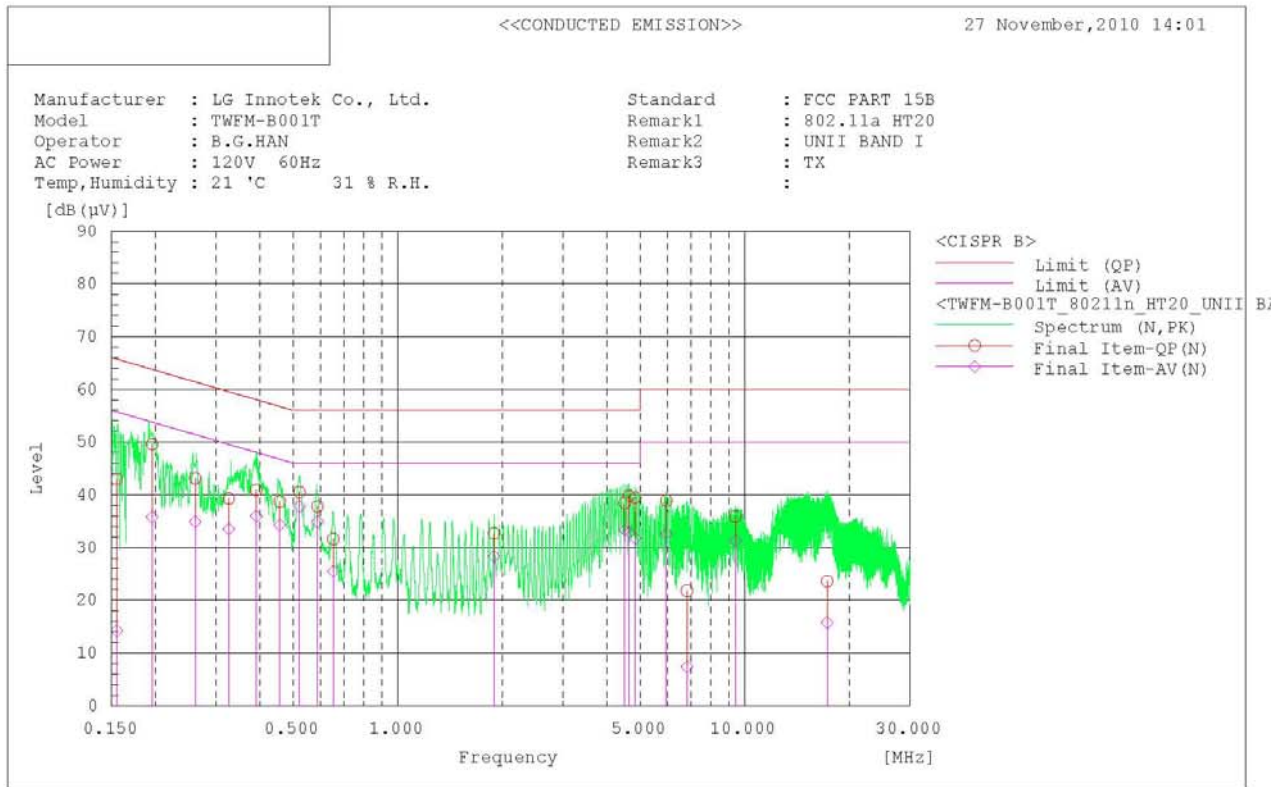
| No. | Frequency | Reading QP | Reading AV | c.f | Result QP | Result AV | Limit QP | Limit AV | Margin QP | Margin AV | Remark |
|-----|-----------|------------|------------|------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| | [MHz] | [dB (µV)] | [dB (µV)] | [dB] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB] | [dB] | |
| 1 | 0.150 | 42.9 | 12.9 | 0.2 | 43.1 | 13.1 | 66.0 | 56.0 | 22.9 | 42.9 | |
| 2 | 0.195 | 49.4 | 35.7 | 0.1 | 49.5 | 35.8 | 63.8 | 53.8 | 14.3 | 18.0 | |
| 3 | 0.358 | 30.9 | 22.1 | 0.1 | 31.0 | 22.2 | 58.8 | 48.8 | 27.8 | 26.6 | |
| 4 | 0.391 | 42.4 | 37.3 | 0.1 | 42.5 | 37.4 | 58.0 | 48.0 | 15.5 | 10.6 | |
| 5 | 0.457 | 39.5 | 35.0 | 0.1 | 39.6 | 35.1 | 56.7 | 46.7 | 17.1 | 11.6 | |
| 6 | 0.521 | 41.8 | 39.2 | 0.1 | 41.9 | 39.3 | 56.0 | 46.0 | 14.1 | 6.7 | |
| 7 | 0.587 | 37.0 | 39.9 | 0.1 | 37.1 | 34.0 | 56.0 | 46.0 | 18.9 | 12.0 | |
| 8 | 0.718 | 32.2 | 28.5 | 0.1 | 32.3 | 28.6 | 56.0 | 46.0 | 23.7 | 17.4 | |
| 9 | 4.313 | 37.9 | 33.0 | 0.3 | 38.2 | 33.3 | 56.0 | 46.0 | 17.8 | 12.7 | |
| 10 | 4.640 | 38.7 | 31.7 | 0.3 | 39.0 | 32.0 | 56.0 | 46.0 | 17.0 | 14.0 | |
| 11 | 6.010 | 37.6 | 31.4 | 0.3 | 37.9 | 31.7 | 60.0 | 50.0 | 22.1 | 18.3 | |
| 12 | 6.684 | 22.1 | 5.9 | 6.2 | 28.3 | 12.1 | 60.0 | 50.0 | 31.7 | 37.9 | |
| 13 | 9.210 | 35.0 | 30.9 | 0.4 | 35.4 | 31.3 | 60.0 | 50.0 | 24.6 | 18.7 | |
| 14 | 17.153 | 22.5 | 13.8 | 0.8 | 23.3 | 14.6 | 60.0 | 50.0 | 36.7 | 35.4 | |

--- L1 Phase ---

| No. | Frequency | Reading QP | Reading AV | c.f | Result QP | Result AV | Limit QP | Limit AV | Margin QP | Margin AV | Remark |
|-----|-----------|------------|------------|------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| | [MHz] | [dB (µV)] | [dB (µV)] | [dB] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB] | [dB] | |
| 1 | 0.151 | 42.1 | 12.2 | 0.2 | 42.3 | 12.4 | 65.9 | 55.9 | 23.6 | 43.5 | |
| 2 | 0.196 | 49.4 | 35.7 | 0.2 | 49.6 | 35.9 | 63.8 | 53.8 | 14.2 | 17.9 | |
| 3 | 0.260 | 42.0 | 34.2 | 0.2 | 42.2 | 34.4 | 61.4 | 51.4 | 19.2 | 17.0 | |
| 4 | 0.332 | 33.4 | 26.2 | 0.2 | 33.6 | 26.4 | 59.4 | 49.4 | 25.8 | 23.0 | |
| 5 | 0.357 | 30.2 | 21.9 | 0.2 | 30.4 | 22.1 | 58.8 | 48.8 | 28.4 | 26.7 | |
| 6 | 0.391 | 41.9 | 36.6 | 0.2 | 42.1 | 36.8 | 58.0 | 48.0 | 15.9 | 11.2 | |
| 7 | 0.521 | 41.0 | 38.6 | 0.3 | 41.3 | 38.9 | 56.0 | 46.0 | 14.7 | 7.1 | |
| 8 | 0.587 | 36.4 | 33.4 | 0.3 | 36.7 | 33.7 | 56.0 | 46.0 | 19.3 | 12.3 | |
| 9 | 0.782 | 33.0 | 29.0 | 0.3 | 33.3 | 29.3 | 56.0 | 46.0 | 22.7 | 16.7 | |
| 10 | 4.442 | 32.6 | 0.0 | 0.4 | 33.0 | 0.0 | 56.0 | 46.0 | 23.0 | 0.0 | |
| 11 | 4.573 | 37.6 | 31.5 | 0.4 | 38.0 | 31.9 | 56.0 | 46.0 | 18.0 | 14.1 | |
| 12 | 4.835 | 37.9 | 30.1 | 0.4 | 38.3 | 30.5 | 56.0 | 46.0 | 17.7 | 15.5 | |
| 13 | 5.943 | 37.8 | 31.3 | 0.4 | 38.2 | 31.7 | 60.0 | 50.0 | 21.8 | 18.3 | |
| 14 | 6.662 | 35.5 | 30.9 | 0.5 | 36.0 | 31.4 | 60.0 | 50.0 | 24.0 | 18.6 | |
| 15 | 9.474 | 35.1 | 30.3 | 0.5 | 35.6 | 30.8 | 60.0 | 50.0 | 24.4 | 19.2 | |
| 16 | 14.305 | 34.4 | 30.8 | 0.7 | 35.1 | 31.5 | 60.0 | 50.0 | 24.9 | 18.5 | |

AC Line Conducted Emissions (Graph)

Test Mode: 802.11n HT20



AC Line Conducted Emissions (Data List)

Test Mode: 802.11n HT20

```

-----
<<CONDUCTED EMISSION>>
27 November, 2010 14:01

Standard      : FCC PART 15B
Manufacturer  : LG Innotek Co., Ltd.
Model        : TWFM-B001T
Operator      : B.G.HAN
AC Power      : 120V 60Hz
Temp, Humidity : 21 'C 31 % R.H.
Remark1      : 802.11a HT20
Remark2      : UNII BAND I
Remark3      : TX
-----
    
```

Final Result

--- N Phase ---

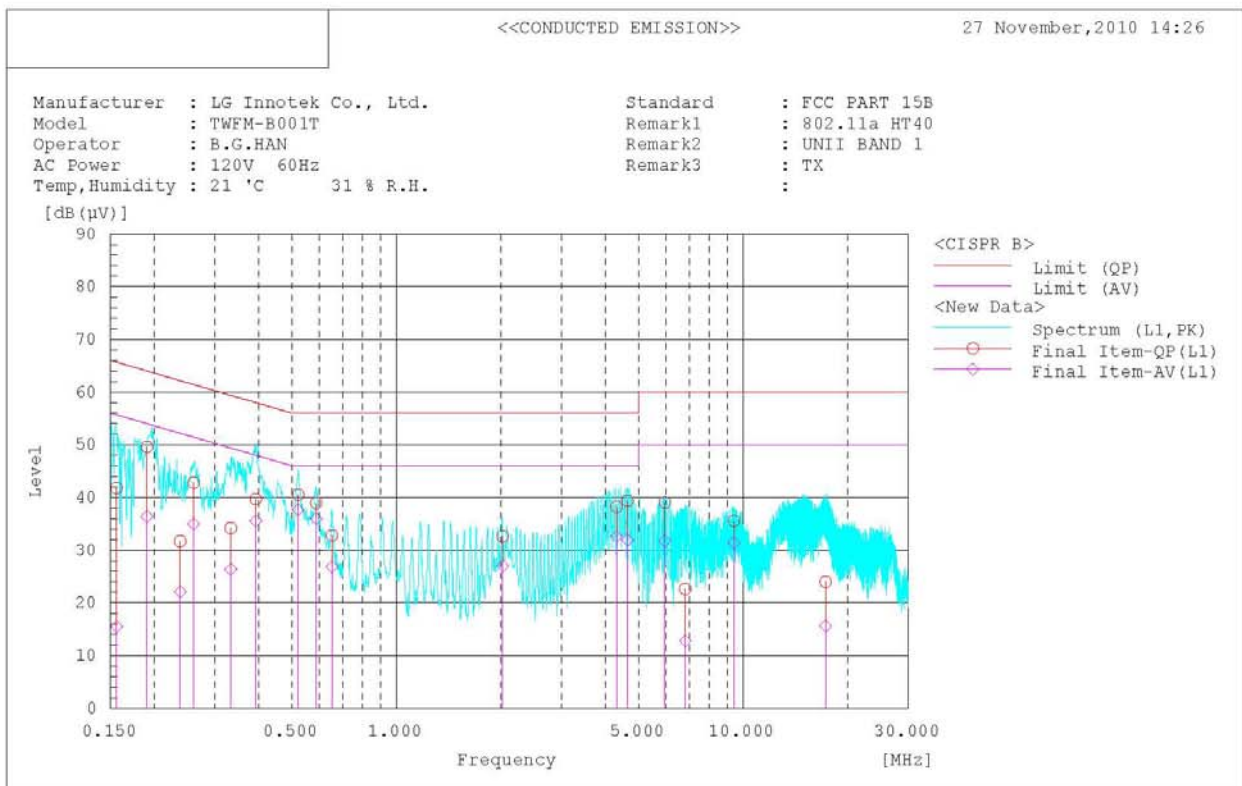
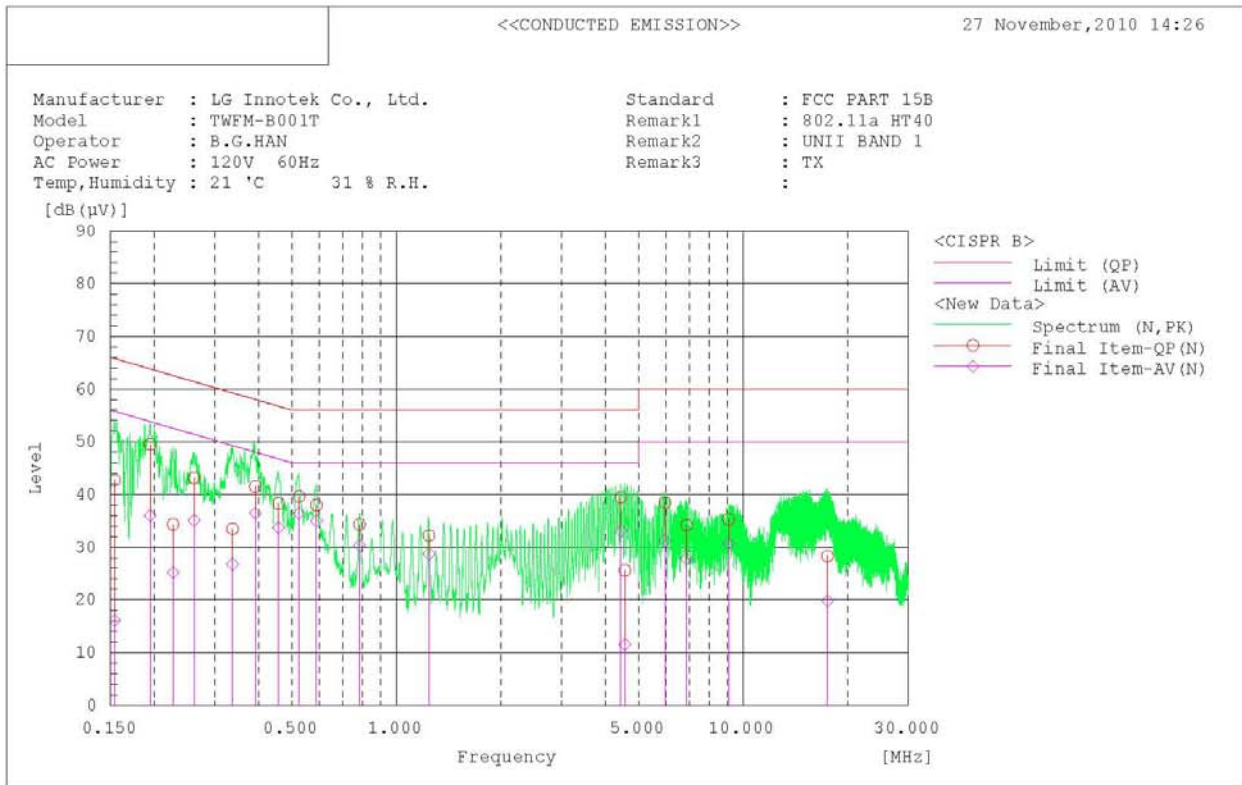
| No. | Frequency | Reading QP | Reading AV | c.f | Result QP | Result AV | Limit QP | Limit AV | Margin QP | Margin AV | Remark |
|-----|-----------|------------|------------|------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| | [MHz] | [dB (µV)] | [dB (µV)] | [dB] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB] | [dB] | |
| 1 | 0.155 | 42.8 | 14.0 | 0.2 | 43.0 | 14.2 | 65.7 | 55.7 | 22.7 | 41.5 | |
| 2 | 0.196 | 49.5 | 35.7 | 0.1 | 49.6 | 35.8 | 63.8 | 53.8 | 14.2 | 18.0 | |
| 3 | 0.261 | 43.0 | 34.8 | 0.1 | 43.1 | 34.9 | 61.4 | 51.4 | 18.3 | 16.5 | |
| 4 | 0.326 | 39.2 | 33.4 | 0.1 | 39.3 | 33.5 | 59.6 | 49.6 | 20.3 | 16.1 | |
| 5 | 0.391 | 40.8 | 35.8 | 0.1 | 40.9 | 35.9 | 58.0 | 48.0 | 17.1 | 12.1 | |
| 6 | 0.457 | 38.6 | 34.2 | 0.1 | 38.7 | 34.3 | 56.7 | 46.7 | 18.0 | 12.4 | |
| 7 | 0.521 | 40.4 | 37.7 | 0.1 | 40.5 | 37.8 | 56.0 | 46.0 | 15.5 | 8.2 | |
| 8 | 0.587 | 37.7 | 34.8 | 0.1 | 37.8 | 34.9 | 56.0 | 46.0 | 18.2 | 11.1 | |
| 9 | 0.652 | 31.5 | 25.4 | 0.1 | 31.6 | 25.5 | 56.0 | 46.0 | 24.4 | 20.5 | |
| 10 | 1.895 | 32.5 | 28.2 | 0.2 | 32.7 | 28.4 | 56.0 | 46.0 | 23.3 | 17.6 | |
| 11 | 4.508 | 38.2 | 33.0 | 0.3 | 38.5 | 33.3 | 56.0 | 46.0 | 17.5 | 12.7 | |
| 12 | 4.639 | 39.5 | 32.6 | 0.3 | 39.8 | 32.9 | 56.0 | 46.0 | 16.2 | 13.1 | |
| 13 | 4.835 | 39.2 | 31.5 | 0.3 | 39.5 | 31.8 | 56.0 | 46.0 | 16.5 | 14.2 | |
| 14 | 5.945 | 38.6 | 32.3 | 0.3 | 38.9 | 32.6 | 60.0 | 50.0 | 21.1 | 17.4 | |
| 15 | 6.813 | 21.4 | 7.0 | 0.4 | 21.8 | 7.4 | 60.0 | 50.0 | 38.2 | 42.6 | |
| 16 | 9.401 | 35.5 | 30.9 | 0.4 | 35.9 | 31.3 | 60.0 | 50.0 | 24.1 | 18.7 | |
| 17 | 17.286 | 22.8 | 15.0 | 0.8 | 23.6 | 15.8 | 60.0 | 50.0 | 36.4 | 34.2 | |

--- L1 Phase ---

| No. | Frequency | Reading QP | Reading AV | c.f | Result QP | Result AV | Limit QP | Limit AV | Margin QP | Margin AV | Remark |
|-----|-----------|------------|------------|------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| | [MHz] | [dB (µV)] | [dB (µV)] | [dB] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB] | [dB] | |
| 1 | 0.150 | 43.0 | 12.6 | 0.2 | 43.2 | 12.8 | 66.0 | 56.0 | 22.8 | 43.2 | |
| 2 | 0.195 | 49.8 | 36.0 | 0.2 | 50.0 | 36.2 | 63.8 | 53.8 | 13.8 | 17.6 | |
| 3 | 0.261 | 42.7 | 34.8 | 0.2 | 42.9 | 35.0 | 61.4 | 51.4 | 18.5 | 16.4 | |
| 4 | 0.329 | 37.8 | 31.0 | 0.2 | 38.0 | 31.2 | 59.5 | 49.5 | 21.5 | 18.3 | |
| 5 | 0.392 | 41.3 | 36.3 | 0.2 | 41.5 | 36.5 | 58.0 | 48.0 | 16.5 | 11.5 | |
| 6 | 0.457 | 38.6 | 33.6 | 0.2 | 38.8 | 33.8 | 56.7 | 46.7 | 17.9 | 12.9 | |
| 7 | 0.522 | 41.1 | 38.1 | 0.3 | 41.4 | 38.4 | 56.0 | 46.0 | 14.6 | 7.6 | |
| 8 | 0.587 | 38.6 | 35.7 | 0.3 | 38.9 | 36.0 | 56.0 | 46.0 | 17.1 | 10.0 | |
| 9 | 0.653 | 32.5 | 26.4 | 0.3 | 32.8 | 26.7 | 56.0 | 46.0 | 23.2 | 19.3 | |
| 10 | 4.376 | 38.1 | 32.3 | 0.4 | 38.5 | 32.7 | 56.0 | 46.0 | 17.5 | 13.3 | |
| 11 | 4.639 | 38.9 | 31.8 | 0.4 | 39.3 | 32.2 | 56.0 | 46.0 | 16.7 | 13.8 | |
| 12 | 4.835 | 39.0 | 30.6 | 0.4 | 39.4 | 31.0 | 56.0 | 46.0 | 16.6 | 15.0 | |
| 13 | 6.076 | 35.7 | 29.0 | 0.5 | 36.2 | 29.5 | 60.0 | 50.0 | 23.8 | 20.5 | |
| 14 | 6.991 | 36.4 | 31.0 | 0.5 | 36.9 | 31.5 | 60.0 | 50.0 | 23.1 | 18.5 | |
| 15 | 9.539 | 34.9 | 30.8 | 0.5 | 35.4 | 31.3 | 60.0 | 50.0 | 24.6 | 18.7 | |
| 16 | 15.117 | 22.7 | 15.7 | 0.8 | 23.5 | 16.5 | 60.0 | 50.0 | 36.5 | 33.5 | |
| 17 | 17.446 | 34.2 | 29.0 | 0.9 | 35.1 | 29.9 | 60.0 | 50.0 | 24.9 | 20.1 | |

AC Line Conducted Emissions (Graph)

Test Mode: 802.11n HT40



AC Line Conducted Emissions (Data List)

Test Mode: 802.11n HT40

<<CONDUCTED EMISSION>>

27 November, 2010 14:26

Standard : FCC PART 15B
 Manufacturer : LG Innotek Co., Ltd.
 Model : TWFM-B001T
 Operator : B.G.HAN
 AC Power : 120V 60Hz
 Temp, Humidity : 21 °C 31 % R.H.
 Remark1 : 802.11a HT40
 Remark2 : UNII BAND 1
 Remark3 : TX
 :

Final Result

--- N Phase ---

| No. | Frequency | Reading QP | Reading AV | c.f | Result QP | Result AV | Limit QP | Limit AV | Margin QP | Margin AV | Remark |
|-----|-----------|------------|------------|------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| | [MHz] | [dB (µV)] | [dB (µV)] | [dB] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB] | [dB] | |
| 1 | 0.154 | 42.5 | 15.9 | 0.2 | 42.7 | 16.1 | 65.8 | 55.8 | 23.1 | 39.7 | |
| 2 | 0.195 | 49.4 | 35.9 | 0.1 | 49.5 | 36.0 | 63.8 | 53.8 | 14.3 | 17.8 | |
| 3 | 0.227 | 34.2 | 25.1 | 0.1 | 34.3 | 25.2 | 62.6 | 52.6 | 28.3 | 27.4 | |
| 4 | 0.261 | 43.0 | 35.0 | 0.1 | 43.1 | 35.1 | 61.4 | 51.4 | 18.3 | 16.3 | |
| 5 | 0.337 | 33.4 | 26.7 | 0.1 | 33.5 | 26.8 | 59.3 | 49.3 | 25.8 | 22.5 | |
| 6 | 0.392 | 41.4 | 36.3 | 0.1 | 41.5 | 36.4 | 58.0 | 48.0 | 16.5 | 11.6 | |
| 7 | 0.457 | 38.2 | 39.6 | 0.1 | 38.3 | 33.7 | 56.7 | 46.7 | 18.4 | 13.0 | |
| 8 | 0.524 | 39.5 | 36.3 | 0.1 | 39.6 | 36.4 | 56.0 | 46.0 | 16.4 | 9.6 | |
| 9 | 0.588 | 37.9 | 34.9 | 0.1 | 38.0 | 35.0 | 56.0 | 46.0 | 18.0 | 11.0 | |
| 10 | 0.783 | 34.2 | 30.2 | 0.1 | 34.3 | 30.3 | 56.0 | 46.0 | 21.7 | 15.7 | |
| 11 | 1.242 | 32.1 | 28.6 | 0.1 | 32.2 | 28.7 | 56.0 | 46.0 | 23.8 | 17.3 | |
| 12 | 4.443 | 39.2 | 32.8 | 0.3 | 39.5 | 33.1 | 56.0 | 46.0 | 16.5 | 12.9 | |
| 13 | 4.561 | 25.3 | 11.2 | 0.3 | 25.6 | 11.5 | 56.0 | 46.0 | 30.4 | 34.5 | |
| 14 | 5.955 | 38.1 | 31.0 | 0.3 | 38.4 | 31.3 | 60.0 | 50.0 | 21.6 | 18.7 | |
| 15 | 6.865 | 33.8 | 27.4 | 0.4 | 34.2 | 27.8 | 60.0 | 50.0 | 25.8 | 22.2 | |
| 16 | 9.082 | 34.9 | 30.3 | 0.4 | 35.3 | 30.7 | 60.0 | 50.0 | 24.7 | 19.3 | |
| 17 | 17.500 | 27.5 | 19.0 | 0.8 | 28.3 | 19.8 | 60.0 | 50.0 | 31.7 | 30.2 | |

--- L1 Phase ---

| No. | Frequency | Reading QP | Reading AV | c.f | Result QP | Result AV | Limit QP | Limit AV | Margin QP | Margin AV | Remark |
|-----|-----------|------------|------------|------|-----------|-----------|-----------|-----------|-----------|-----------|--------|
| | [MHz] | [dB (µV)] | [dB (µV)] | [dB] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB (µV)] | [dB] | [dB] | |
| 1 | 0.156 | 41.6 | 15.3 | 0.2 | 41.8 | 15.5 | 65.7 | 55.7 | 23.9 | 40.2 | |
| 2 | 0.191 | 49.4 | 36.2 | 0.2 | 49.6 | 36.4 | 64.0 | 54.0 | 14.4 | 17.6 | |
| 3 | 0.238 | 31.5 | 21.9 | 0.2 | 31.7 | 22.1 | 62.2 | 52.2 | 30.5 | 30.1 | |
| 4 | 0.260 | 42.6 | 34.8 | 0.2 | 42.8 | 35.0 | 61.4 | 51.4 | 18.6 | 16.4 | |
| 5 | 0.333 | 34.0 | 26.2 | 0.2 | 34.2 | 26.4 | 59.4 | 49.4 | 25.2 | 23.0 | |
| 6 | 0.393 | 39.5 | 35.4 | 0.2 | 39.7 | 35.6 | 58.0 | 48.0 | 18.3 | 12.4 | |
| 7 | 0.521 | 40.2 | 37.4 | 0.3 | 40.5 | 37.7 | 56.0 | 46.0 | 15.5 | 8.3 | |
| 8 | 0.587 | 38.6 | 35.7 | 0.3 | 38.9 | 36.0 | 56.0 | 46.0 | 17.1 | 10.0 | |
| 9 | 0.652 | 32.5 | 26.6 | 0.3 | 32.8 | 26.9 | 56.0 | 46.0 | 23.2 | 19.1 | |
| 10 | 2.025 | 32.3 | 26.7 | 0.3 | 32.6 | 27.0 | 56.0 | 46.0 | 23.4 | 19.0 | |
| 11 | 4.314 | 37.8 | 32.2 | 0.4 | 38.2 | 32.6 | 56.0 | 46.0 | 17.8 | 13.4 | |
| 12 | 4.639 | 39.0 | 31.5 | 0.4 | 39.4 | 31.9 | 56.0 | 46.0 | 16.6 | 14.1 | |
| 13 | 5.945 | 38.6 | 31.4 | 0.4 | 39.0 | 31.8 | 60.0 | 50.0 | 21.0 | 18.2 | |
| 14 | 6.809 | 22.1 | 12.3 | 0.5 | 22.6 | 12.8 | 60.0 | 50.0 | 37.4 | 37.2 | |
| 15 | 9.408 | 35.1 | 30.9 | 0.5 | 35.6 | 31.4 | 60.0 | 50.0 | 24.4 | 18.6 | |
| 16 | 17.284 | 23.1 | 14.7 | 0.9 | 24.0 | 15.6 | 60.0 | 50.0 | 36.0 | 34.4 | |

3.2.8 Antenna Requirements

- Procedure:

Describe how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT.

- Conclusion: **Comply**

The antenna is permanently attached by soldering. (Refer to Internal Photo file.)

- Minimum Standard:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions.

APPENDIX

TEST EQUIPMENT FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

| | Type | Manufacturer | Model | Cal.Due.Date (dd/mm/yy) | Next.Due.Date (dd/mm/yy) | S/N |
|-------------------------------------|---|--------------------|------------------------------------|----------------------------|-----------------------------|---------------------------|
| <input checked="" type="checkbox"/> | Spectrum Analyzer | Agilent | E4440A | 30/09/10 | 30/09/11 | MY45304199 |
| <input type="checkbox"/> | Spectrum Analyzer | Rohde Schwarz | FSQ26 | 25/02/10 | 25/02/11 | 200445 |
| <input type="checkbox"/> | Spectrum Analyzer(RE) | H.P | 8563E | 04/10/10 | 04/10/11 | 3551A04634 |
| <input type="checkbox"/> | Power Meter | H.P | EPM-442A | 01/07/10 | 01/07/11 | GB37170413 |
| <input type="checkbox"/> | Power Sensor | H.P | 8481A | 01/07/10 | 01/07/11 | 3318A96332 |
| <input type="checkbox"/> | Power Divider | Agilent | 11636B | 05/10/10 | 05/10/11 | 56471 |
| <input type="checkbox"/> | Power Splitter | Anritsu | K241B | 05/10/10 | 05/10/11 | 020611 |
| <input type="checkbox"/> | Power Splitter | Anritsu | K241B | 01/07/10 | 01/07/11 | 017060 |
| <input type="checkbox"/> | Frequency Counter | H.P | 5342A | 01/07/10 | 01/07/11 | 2119A04450 |
| <input checked="" type="checkbox"/> | TEMP & HUMIDITY Chamber | JISCO | KR-100/J-RHC2 | 04/10/10 | 04/10/11 | 30604493/021031 |
| <input checked="" type="checkbox"/> | Digital Multimeter | H.P | 34401A | 12/03/10 | 12/03/11 | 3146A13475, US36122178 |
| <input type="checkbox"/> | Multifunction Synthesizer | HP | 8904A | 11/10/10 | 11/10/11 | 3633A08404 |
| <input checked="" type="checkbox"/> | Signal Generator | Rohde Schwarz | SMR20 | 12/03/10 | 12/03/11 | 101251 |
| <input type="checkbox"/> | Signal Generator | H.P | ESG-3000A | 01/07/10 | 01/07/11 | US37230529 |
| <input type="checkbox"/> | Vector Signal Generator | Rohde Schwarz | SMJ100A | 11/01/10 | 11/01/11 | 100148 |
| <input type="checkbox"/> | Vector Signal Generator | Rohde Schwarz | SMBV100A | 23/02/10 | 23/02/11 | 255571 |
| <input type="checkbox"/> | Audio Analyzer | H.P | 8903B | 02/07/10 | 02/07/11 | 3011A09448 |
| <input type="checkbox"/> | Modulation Analyzer | H.P | 8901B | 01/07/10 | 01/07/11 | 3028A03029 |
| <input type="checkbox"/> | 8960 Series 10 Wireless Comms. Test Set | Agilent | E5515C | 02/07/10 | 02/07/11 | GB43461134 |
| <input type="checkbox"/> | Universal Radio communication Tester | Rohde Schwarz | CMU 200 | 12/03/10 | 12/03/11 | 106760 |
| <input type="checkbox"/> | Bluetooth Tester | TESCOM | TC-3000B | 01/07/10 | 01/07/11 | 3000B000268 |
| <input type="checkbox"/> | Thermo hygrometer | BODYCOM | BJ5478 | 28/01/10 | 28/01/11 | 090205-3 |
| <input checked="" type="checkbox"/> | Thermo hygrometer | BODYCOM | BJ5478 | 28/01/10 | 28/01/11 | 090205-2 |
| <input type="checkbox"/> | Thermo hygrometer | BODYCOM | BJ5478 | 28/01/10 | 28/01/11 | 090205-4 |
| <input type="checkbox"/> | AC Power supply | DAEKWANG | 5KVA | 12/03/10 | 12/03/11 | 20060321-1 |
| <input checked="" type="checkbox"/> | DC Power Supply | HP | 6622A | 12/03/10 | 12/03/11 | 3448A03760 |
| <input type="checkbox"/> | DC Power Supply | HP | 6633A | 12/03/10 | 12/03/11 | 3524A06634 |
| <input type="checkbox"/> | DC Power Supply | Protek | PWS-3010D | 04/10/10 | 04/10/11 | 4072702 |
| <input type="checkbox"/> | BAND Reject Filter | Microwave Circuits | N0308372 | 05/10/10 | 05/10/11 | 3125-01DC0352 |
| <input type="checkbox"/> | BAND Reject Filter | Wainwright | WRCG1750 | 05/10/10 | 05/10/11 | 2 |
| <input type="checkbox"/> | High-Pass Filter | ANRITSU | MP526D | 04/10/10 | 04/10/11 | M27756 |
| <input type="checkbox"/> | High-pass filter | Wainwright | WHNX2.1 | N/A | N/A | 1 |
| <input type="checkbox"/> | High-pass filter | Wainwright | WHNX3.0 | N/A | N/A | 9 |
| <input type="checkbox"/> | High-pass filter | Wainwright | WHNX5.0 | N/A | N/A | 8 |
| <input type="checkbox"/> | High-Pass Filter | Wainwright | WHKX8.5 | N/A | N/A | 1 |
| <input type="checkbox"/> | Tunable Notch Filter | Wainwright | WRCT800.0 /960.0-0.2/40-8SSK | N/A | N/A | 32 |
| <input type="checkbox"/> | Tunable Notch Filter | Wainwright | WRCD1700.0 /2000.0-0.2/40-10SSK | N/A | N/A | 53 |
| <input type="checkbox"/> | Tunable Notch Filter | Wainwright | WRCT1900.0/ 2200.0-5/40-10SSK | N/A | N/A | 30 |
| <input checked="" type="checkbox"/> | HORN ANT | ETS | 3115 | 04/10/10 | 04/10/11 | 21097 |
| <input type="checkbox"/> | HORN ANT | ETS | 3115 | 14/07/10 | 14/07/11 | 6419 |
| <input checked="" type="checkbox"/> | HORN ANT | A.H.Systems | SAS-574 | 10/06/09 | 10/06/11 | 154 |
| <input type="checkbox"/> | HORN ANT | A.H.Systems | SAS-574 | 10/06/09 | 10/06/11 | 155 |

| | Type | Manufacturer | Model | Cal.Due.Date (dd/mm/yy) | Next.Due.Date (dd/mm/yy) | S/N |
|-------------------------------------|------------------------------|----------------|------------------|----------------------------|-----------------------------|---------------|
| <input type="checkbox"/> | Dipole Antenna | Schwarzbeck | VHA9103 | 29/11/10 | 29/11/11 | 2116 |
| <input type="checkbox"/> | Dipole Antenna | Schwarzbeck | VHA9103 | 29/11/10 | 29/11/11 | 2117 |
| <input type="checkbox"/> | Dipole Antenna | Schwarzbeck | UHA9105 | 29/11/10 | 29/11/11 | 2261 |
| <input type="checkbox"/> | Dipole Antenna | Schwarzbeck | UHA9105 | 29/11/10 | 29/11/11 | 2262 |
| <input type="checkbox"/> | LOOP Antenna | ETS | 6502 | 29/10/10 | 29/10/11 | 3471 |
| <input checked="" type="checkbox"/> | HORN ANT | SCHWARZBECK | BBHA9120A | 13/04/10 | 13/04/11 | 322 |
| <input type="checkbox"/> | Coaxial Fixed Attenuators | Agilent | 8491B | 01/07/10 | 01/07/11 | MY39260700 |
| <input type="checkbox"/> | Attenuator (3dB) | WEINSCHHEL | 56-3 | 05/10/10 | 05/10/11 | Y2342 |
| <input type="checkbox"/> | Attenuator (3dB) | WEINSCHHEL | 56-3 | 05/10/10 | 05/10/11 | Y2370 |
| <input type="checkbox"/> | Attenuator (10dB) | WEINSCHHEL | 23-10-34 | 01/10/10 | 01/10/11 | BP4386 |
| <input type="checkbox"/> | Attenuator (10dB) | WEINSCHHEL | 23-10-34 | 11/01/10 | 11/01/11 | BP4387 |
| <input type="checkbox"/> | Attenuator (10dB) | WEINSCHHEL | 31696 | 05/10/10 | 05/10/11 | 446 |
| <input type="checkbox"/> | Attenuator (10dB) | WEINSCHHEL | 31696 | 05/10/10 | 05/10/11 | 408 |
| <input type="checkbox"/> | Attenuator (20dB) | WEINSCHHEL | 86-20-11 | 05/10/10 | 05/10/11 | 432 |
| <input type="checkbox"/> | Attenuator (30dB) | JFW | 50FH-030-300 | 12/03/10 | 12/03/11 | 060320-1 |
| <input type="checkbox"/> | Attenuator (40dB) | WEINSCHHEL | 57-40-33 | 01/10/10 | 01/10/11 | NN837 |
| <input type="checkbox"/> | Termination | H.P | HP-909D | 02/07/10 | 02/07/11 | 02750 |
| <input type="checkbox"/> | Termination | H.P | HP-909D | 02/07/10 | 02/07/11 | 02702 |
| <input type="checkbox"/> | Type N Coaxial CIRCULATOR | NOVA MICROWAVE | 0088CAN | 01/07/10 | 01/07/11 | 788 |
| <input type="checkbox"/> | Type N Coaxial CIRCULATOR | NOVA MICROWAVE | 0185CAN | 01/07/10 | 01/07/11 | 790 |
| <input type="checkbox"/> | Type N Coaxial CIRCULATOR | NOVA MICROWAVE | 0215CAN | 01/07/10 | 01/07/11 | 112 |
| <input checked="" type="checkbox"/> | Amplifier (30dB) | Agilent | 8449B | 23/04/10 | 23/04/11 | 3008A01590 |
| <input type="checkbox"/> | Amplifier (30dB) | H.P | 8449B | 13/05/10 | 13/05/11 | 3008A00370 |
| <input type="checkbox"/> | Amplifier | EMPOWER | BBS3Q7ELU | 04/10/10 | 04/10/11 | 1020 |
| <input type="checkbox"/> | RF Power Amplifier | OPHIRRF | 5069F | 01/07/10 | 01/07/11 | 1006 |
| <input checked="" type="checkbox"/> | EMI TEST RECEIVER | R&S | ESU | 29/01/10 | 29/01/11 | 100014 |
| <input checked="" type="checkbox"/> | BILOG ANTENNA | SCHAFFNER | CBL6112B | 14/07/10 | 14/07/11 | 2737 |
| <input checked="" type="checkbox"/> | Amplifier (22dB) | H.P | 8447E | 29/01/10 | 29/01/11 | 2945A02865 |
| <input type="checkbox"/> | EMI TEST RECEIVER | R&S | ESCI | 12/05/10 | 12/05/11 | 100364 |
| <input checked="" type="checkbox"/> | LOG-PERIODIC ANT. | Schwarzbeck | UHALP 9108 A-1 | 07/10/09 | 07/10/11 | 1098 |
| <input checked="" type="checkbox"/> | BICONICAL ANT. | Schwarzbeck | VHA 9103 | 06/10/09 | 06/10/11 | 91031946 |
| <input type="checkbox"/> | LOG-PERIODIC ANT. | Schwarzbeck | UHALP9108A | 07/07/10 | 07/07/11 | 590 |
| <input checked="" type="checkbox"/> | Low Noise Pre Amplifier | TSJ | MLA-100K01-B01-2 | 12/03/10 | 12/03/11 | 1252741 |
| <input type="checkbox"/> | Low Noise Pre Amplifier | TSJ | MLA-00108-B02-36 | 08/02/10 | 08/02/11 | 1518831 |
| <input type="checkbox"/> | Amplifier (25dB) | Agilent | 8447D | 12/03/10 | 12/03/11 | 2944A10144 |
| <input type="checkbox"/> | Amplifier (25dB) | Agilent | 8447D | 01/07/10 | 01/07/11 | 2648A04922 |
| <input checked="" type="checkbox"/> | Spectrum Analyzer(CE) | H.P | 8591E | 12/03/10 | 12/03/11 | 3649A05889 |
| <input checked="" type="checkbox"/> | LISN | Kyoritsu | KNW-407 | 29/01/10 | 29/01/11 | 8-317-8 |
| <input checked="" type="checkbox"/> | LISN | Kyoritsu | KNW-242 | 29/01/10 | 29/01/11 | 8-654-15 |
| <input checked="" type="checkbox"/> | CVCF | NF Electronic | 4420 | 12/03/10 | 12/03/11 | 304935/337980 |
| <input checked="" type="checkbox"/> | 50 ohm Terminator | HME | CT-01 | 12/01/10 | 12/01/11 | N/A |
| <input checked="" type="checkbox"/> | RFI/FIELD Intensity Meter | Kyoritsu | KNM-2402 | 02/07/10 | 02/07/11 | 4N-170-3 |